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A Taxonomic and Phytogeographic Study of Brunswick Peninsula (Strait of Magellan) Hepaticae and Anthocerotae

JOHN J. ENGEL

December 29, 1978

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A Taxonomic and Phytogeographic Study of Brunswick Peninsula (Strait of Magellan) Hepaticae and Anthocerotae

Frontispiece. *Adelanthus tenuis* Engel & Grolle.

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A Taxonomic and Phytogeographic Study of Brunswick Peninsula (Strait of Magellan) Hepaticae and Anthocerotae

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PLATES[1]

FRONTISPIECE. *Adelanthus tenuis* Engel & Grolle.

[1]All maps with the exception of those in Plates 3, 13, 15 and 19 were made from tracings made by the author. The south polar projection was adapted from a National Geographic Society map (1943). The non-detailed map of southern South America and the world projection map were adapted from the Goode base map series, University of Chicago. The detailed map of southern South America (pl. 1) was adapted from several U.S. Naval Oceanographic Office charts. The map used in Plate 15 was kindly sent to me by Dr. Hugo Sjörs, University of Uppsala.

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Crum (MICH), Dr. Suzanne Jovet-Ast (PC), Dr. T. Koponen (H), Prof. Dr. J. Miége (G), Dr. Elsa Nyholm (S), Mr. R. Ross (BM), Dr. R. Santesson (formerly at UPS), Dr. Gary L. Smith (NY), and Prof. Dr. Carlo H. Steinberg (FI).

I. THE BRUNSWICK PENINSULA

A. Introductory Remarks

The Brunswick Peninsula lies on the Strait of Magellan and is a southern extension of the South American continent. Cabo Froward (53°53′43″ S.), its southern tip, is the most southerly point of the South American mainland. The peninsula, which is 76 miles long and 62 miles wide, lies between the Strait of Magellan on the south and east and Seno Otway on the northwest, with Canal Jeronimo connecting the two.

The Brunswick Peninsula is critically located for taxonomical, ecological, and phytogeographical studies of the Hepaticae of southern South America, and the significance of the peninsula results principally from the following two features: 1) The peninsula is historically important as it was a convenient and often necessary stopping point for ships navigating the Strait of Magellan. As was often the case with early expeditions, an individual with botanical or medical training utilized the opportunity of harbor time by collecting the flora of the area. As a result of this attention, there exists a rather high percentage of Magellanian taxa, the original material of which was gathered in the Brunswick Peninsula. 2) There is perhaps no region in southern South America better suited for studying hepatic distributions as compared to moisture gradients. The rainfall of the region varies drastically, with under 400 mm. annually in the neck portion to over 1,500 mm. annually in the western portion of the peninsula (see "Climate" below).

B. Climate

The climatic data available for southern South America is based upon a rather small number of stations, some of which have been established for only a short duration.

Precipitation

The position of southern South America in relation to the polar front places it in the path of the eastward moving cyclonic storms moving off the Pacific Ocean. The storms originate in mid-ocean where the tropical and polar Pacific air masses come into contact. The coastal cordillera acts orographically on the storms moving inland, and the windward slopes receive heavy precipitation, which except in montane areas is in the form of heavy rains or mists but not snow.

Butland (1957) published annual precipitation figures for the following three pairs of stations in southern Chile and states that these ". . . show an important similarity, and indicate the framework of a pattern which is probably common throughout the western half of the region."

Location	**Western section**	**mm. rainfall**	**Eastern Section**	**mm. rainfall**
North	Isla Guafo	1,270	Melinka	3,175
Central	Cabo Raper	2,032	San Pedro	4,724
South	Evangelistas	2,769	Bahía Felix	5,080

The stations illustrate an increase in rainfall southward and an increase westward over a relatively short distance. Elevated portions of islands to the interior of the archipelago as well as the mainland coast receive considerably more precipitation than the outer exposed islands. This is rather dramatic in the Strait of Magellan region with Bahía Felix receiving nearly twice the rainfall of Grupo Evangelistas (see also pl. 1).

Precipitation decreases markedly eastward, particularly in those localities in the rain shadow of the Andes. In the straits region this may be illustrated by the 5,080 mm. annual rainfall of Bahía Felix[1] compared to the 436 mm. of Punta Arenas (see table 1), and in the Brunswick Peninsula the western portion receives 1,500 mm. annually as compared to under 400 mm. near the peninsular neck (see pl. 1). The steady decrease in rainfall continues to the east, and Punta Dungeness at the eastern mouth of the Strait of Magellan receives only 254 mm. annually (Butland, 1957). Table 1 indicates the rainfall data available for the Brunswick Peninsula. To my knowledge no rainfall figures are available for the western portion of the peninsula, but the nearest comparable areas (i.e., Bahía Felix and Grupo Evangelistas) are included.

There are differences in seasonal distribution of rainfall in the various parts of southern Chile. The portion north of Peninsula

[1] Note that Butland (1954) and Almeyda & Saez (1958) record differing, but rather similar, rainfall figures for Bahía Felix.

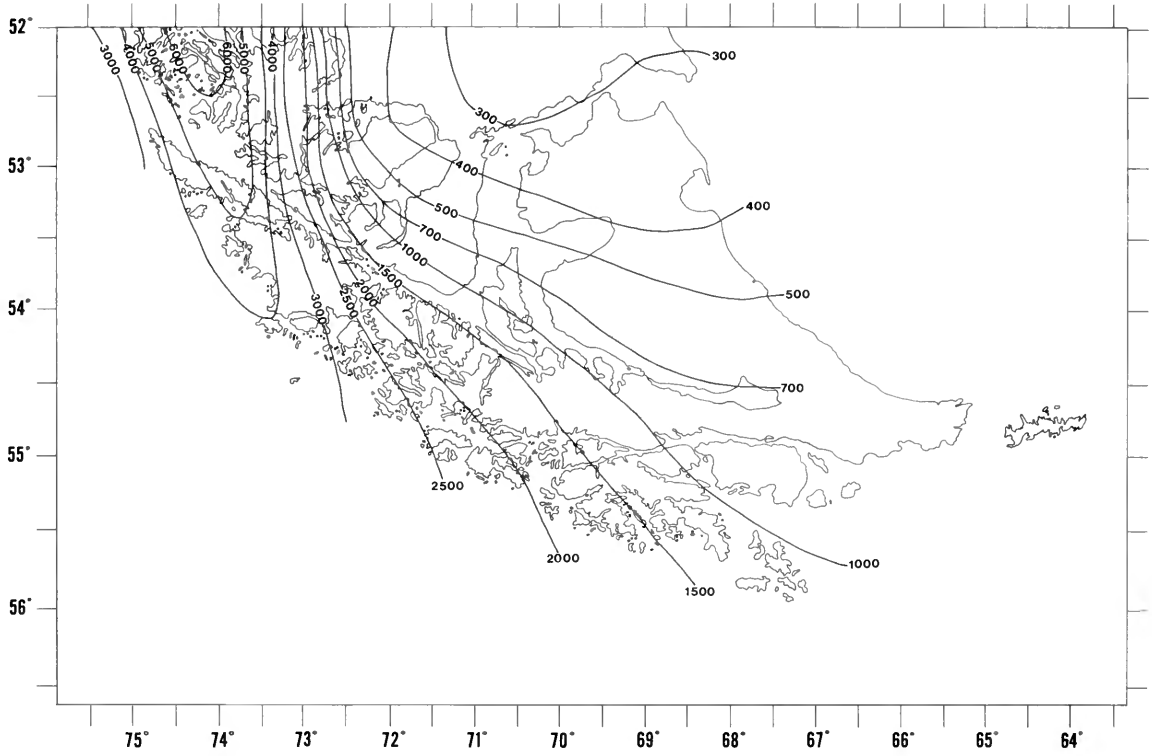


PLATE 1. Map of southern South America S. of 52° S. showing average annual rainfall (mm.) [after Almeyda & Saez (1958)].

TABLE 1. Annual and seasonal rainfall (mm.) at stations in the Brunswick Peninsula and nearest stations to the west of the peninsula for which records are available (after Almeyda and Saez, 1958).

Location	Years observed	Annual	Autumn	%	Winter	%	Spring	%	Summer	%
Punta Arenas	42	436	140	32	119	27	89	20	89	20
Puerto San Isidro (53°47′ S., 70°58′ W.)	39	864	252	29	180	21	190	22	238	28
Puerto San Miguel (53°42′ S., 71°54′ W.)	4	1,570	370	24	339	22	290	19	420	27
Bahía Felix (52°57′ S., 74°07′ W.)	42	4,866	1,293	27	1,116	23	1,174	24	1,289	26
Grupo Evangelistas (52°23′ S., 75°07′ W.)	41	2,625	720	27	630	24	620	24	670	25

Taitao has a rather distinct winter maximum while the portion to the south has a more uniform distribution (Butland, 1957). Nevertheless, as Table 1 illustrates, the majority of stations receive an autumnal maximum and a spring minimum. These differences are greater in the rain-shadow area than in the western portion; compare, for example, the data for Punta Arenas with that of Grupo Evangelistas and Bahía Felix.

Butland (1957) points out there are differences in number of days with rain between the windward and leeward portions of southern Chile. The Grupo Evangelistas station, which is characteristic of the west coast, has on the average no month with more than five days without rain, which falls in the ". . . form of a driving, drizzly, fine rain, lasting for hours, often for days and not infrequently for periods of a week or more, although downpours of heavy rain are also quite common" (Butland 1957, p. 29). The frequency of rainy days decreases to one in four in the rain shadow area.

Temperature

There is a notable absence of extremes of temperature in southern South America. The Pacific coastal area from Isla Guafo to Cabo de Hornos has similar temperatures throughout the year, with a seasonal range of less than 6° C. (Butland, 1957). The seasonal range increases eastward. No portion of southern Chile experiences average sea-level temperatures below the freezing point in July, the coldest month (Almeyda & Saez, 1958; Butland, 1957). Eastern and central Isla Grande de Tierra del Fuego apparently have the coldest winter temperatures in Tierra del Fuego with an increase northeastward.

The Pacific side of southern South America is influenced by the Pacific-Antarctic drift from the northwest and results in a mild, oceanic tendency while the Atlantic coast is influenced by the northward, cold Falkland current which results in cold conditions in eastern Tierra del Fuego and Patagonia. Butland (1957, p. 21) points out that, "In this respect it is interesting and important to note that the archipelagic character, imposed on the south of the region by the penetration of Magellan's Strait, permits an extension of maritime conditions to its eastern exit, splitting the cold Atlantic southeast into two cold nuclei around Puerto Gallegos and Río Grande, north and south of the Strait respectively." The Brunswick Peninsula lies approximately mid-way in the Strait of Magellan and is thus strongly affected by the oceanic influence of the Strait. Butland states (1957, p. 21), "The lowest recorded temperature is only 15° F. (−9° C.) at Punta Arenas, but inland temperatures in winter undoubtedly fall below this recorded minimum, although they rarely register negative values on the Fahrenheit scale." See Table 2 for temperature data. To my knowledge there are no figures for the western portion of the Brunswick Peninsula, but I have included in Table 2 figures from Grupo Evangelistas, the nearest comparable area.

TABLE 2. Median temperatures (C.) at stations in the Brunswick Peninsula and nearest stations to the west of the peninsula for which records are available (after Almeyda and Saez, 1958).

Location	**Years observed**	**Annual**	**January**	**July**	**Median maximum for January**
Punta Arenas	42	6.7	11.1	2.3	15.2
Puerto San Isidro (53°47′ S., 70°58′ W.)	29	5.9	9.3	2.6	12.4
Grupo Evangelistas (52°23′ S., 75°07′ W.)	23	6.4	8.7	4.4	10.6

During the austral summer months the cool oceanic influence decreases northeastward from the Pacific. However, in no part of southern Chile can average summer temperatures be considered as warm, with mean temperatures of the three summer months rarely exceeding 10° C. in the greater part of Province Magellanes (Butland, 1957). The lack of warmth in summer is a notable feature and one emphasized by Darlington (1965) in explaining plant and animal distribution patterns in southern South America.

Wind.

Southern Chile experiences prevailing westerly winds which most frequently originate from the northwest. Butland (1957, p. 24) published the following figures for Punta Arenas and stated, "The frequency and strength of the winds in the summer does much to explain the cool summer conditions experienced. . . ."

Season (austral)	Average strength in m.p.h.
spring	9.6
summer	10.3
autumn	8.3
winter	6.9

II. COLLECTORS OF HEPATICAE AND ANTHOCEROTAE

A. Gazetteer of Brunswick Peninsula Hepaticae Collection Localities

The localities in this gazetteer may be located on the map (pl. 2). The numbers to the left of the localities correspond to the numbers indicating specific localities on the map.

1. Amarillo, Río—53°27′ S., 70°58′ W. Halle, Skottsberg.
2. Arauz, Bahía—53°32′ S., 72°22′ W. Halle, Skottsberg.
3. Blanco, Río—53°34′ S., 70°56′ W. Hässel de Menendez.
4. Bougainville, Bahía—53°50′ S., 71°04′ W. *Astrolabe,* Commerson, Dumont d'Urville, Engel, Hombron, Jacquinot, Le Guillou.
5. Bulnes, Fuerte—53°37′ S., 70°56′ W. Engel, Fulford, C. A. & G. Hässel de Menendez, R. Hatcher.
6. Cabeza del Mar, Hotel—52°48′ S., 71°00′ W. Ostafichuk.
   Cabeza del Mar, Sección—See Sección Cabeza del Mar.
   Camden, Bahía—See Camden, Caleta.
7. Camden, Caleta—53°12′ S., 71°37′ W. Engel.
8. Club Andino—53°09′ S., 71°01′ W. Engel, Imshaug, Schuster.
9. Colorado, Río—53°28′ S., 70°58′ W. Halle, Skottsberg.
10. Condor, Monte—53°20′ S., 72°23′ W. Engel, Imshaug.
   Cutter, Caleta—See Cutter, Puerto.
11. Cutter, Puerto—53°22′ S., 72°25′ W. Engel, Halle, Skottsberg.
12. El Parrillar, Laguna—53°25′ S., 71°17′ W. Engel, Pisano.
   Famine, Port—See Hambre, Puerto del.
13. Fortescue, Bahía—53°42′ S., 72°00′ W. Engel, Safford.
14. Froward, Cabo—53°54′ S., 71°18′ W. Dusén.
15. Gallant, Puerto—53°40′ S., 71°58′ W. Cunningham, Dumont d'Urville, Dusén, Engel, Hombron, Jacquinot, Lechler, Le Guillou, Savatier, Wawra.
16. Grande, Río—53°05′ S., 71°20′ W. Pisano.
17. Hambre, Puerto del—53°38′ S., 70°56′ W. Andersson, *Astrolabe,* Engel, Hässel de Menendez, Hombron, Jacquinot, Matteri.
18. Indio, Bahía del—53°48′ S., 71°02′ W. Pisano.
19. Isabel, Isla—52°53′ S., 70°43′ W. Mégère.
   Jerome, Canal—See Jeronimo, Canal.

20. Jeronimo, Canal—53°23′ S., 72°29′ W. Halle, Skottsberg.
21. La Quema, Ch.—53°09′ S., 71°25′ W. Engel.
22. Loreto, Mina—53°08′ S., 71°01′ W. Exp. Fac. C. F. E. & N., Scott Elliot.
    Magallanes, Estrecho de—See Magellan, Strait of.
    Magelhaens Sund—General term occasionally used with reference to collections of Andersson, who visited Puerto del Hambre *(q. v.,* but see also comments on p. 39).
    Magellan, Strait of—54°00′ S., 71°00′ W. *Albatross,* Andersson, Ball, Collinson, Commerson, Coppinger, Couteaud, Cunningham, Dow, Dumont d'Urville, Dusén, Gortner, Hahn, Hombron, Hyades, Jacquinot, Lechler, Le Guillou, Mégère, Nadaud, Naumann, Popeleur de Terloo, Pehlke, Pillwax, Racovitza, Savatier, Schubert, Skottsberg, Spegazzini, Warnstorf, Wawra, (?Whinnii).
23. Mina Rica, Cerro—53°07′ S., 71°07′ W. Santesson.
24. Minas, Río de las—53°09′ S., 70°55′ W. Engel, Exp. Fac. C. F. E. & N., Halle, Imshaug, Skottsberg.
25. Nassau, Isla—53°50′ S., 71°04′ W. Imshaug.
26. Negro, Cabo—52°57′ S., 70°47′ W. Ostafichuk.
27. Pomar, Puerto—53°16′ S., 72°11′ W. Halle, Skottsberg.
28. Punta Arenas—53°09′ S., 70°55′ W. Benove, Biese, Exp. Charcot, Cunningham, Darwin, Dusén, Engel, Exp. Fac. C. F. E. & N., Halle, Hyades, Lechler, Naumann, Racovitza, Santesson, Savatier, von Schrenk, Scott Elliot, Skottsberg, Spegazzini, Thaxter.
    Sandy Point—See Punta Arenas.
29. San Isidro, Cabo—53°47′ S., 70°58′ W. Roivainen.
30. San Isidro, Puerto—53°47′ S., 70°58′ W. Roivainen.
31. San Juan, Río—53°39′ S., 70°56′ W. Engel, Imshaug.
32. San Nicolas, Bahía—53°50′ S., 71°06′ W. *Astrolabe,* Dumond d'Urville, Engel, Hombron, Jacquinot, Le Guillou, Pisano.
33. Santa Ana, Punta—53°38′ S., 70°55′ W. Engel.
34. Santa Brígada, Punta—53°50′ S., 71°04′ W. Imshaug.
35. Sección Cabeza del Mar—52°42′ S., 70°56′ W. Ostafichuk.
36. Silva Palma, Fiordo—53°27′ S., 71°46′ W. Pisano.
37. Titus, Angostura—53°26′ S., 71°46′ W. Pisano.
38. Tres Brazos, Río—53°16′ S., 70°56′ W. Benove, Ostafichuk.
39. Tres Puentes—53°07′ S., 70°56′ W. Santesson, Schwabe.
40. Wood, Bahía—53°49′ S., 71°38′ W. Cunningham.
    York, Bahía—See York, Rada.
41. York, Rada—53°34′ S., 72°19′ W. Lechler.
42. Yumbel, Río—53°48′ S., 71°02′ W. Pisano.

B. Excluded Collectors of Brunswick Peninsula Hepaticae

Burchell—See notes under *Bazzania spruceana* Steph.

Forster—John Reinhold Forster and his son John George Adam

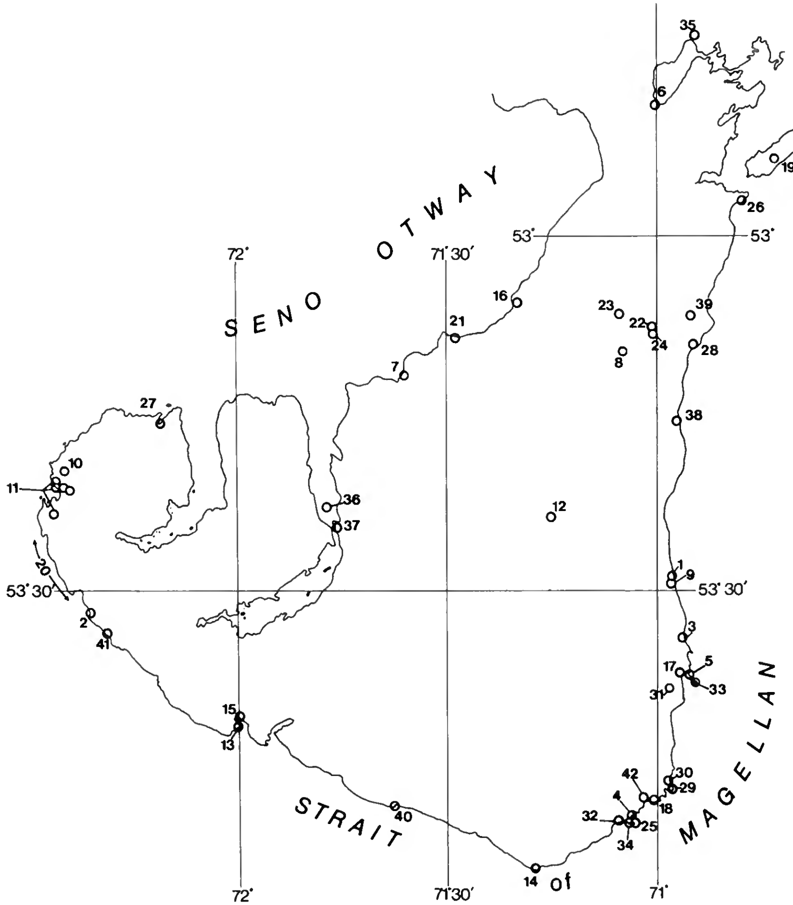


PLATE 2. Collection localities of Brunswick Peninsula Hepaticae and Anthocerotae. The numbers correspond to those to the left of specific localities in the gazetteer.

Forster accompanied Cook's second voyage. In southern South America the expedition did not enter the Strait of Magellan, but rather the botanical collections were made at Christmas Sound on the southern coast of Tierra del Fuego, and Isla Año Nuevo, north of Isla de los Estados (see Godley, 1965).

Hooker—Sir Joseph Dalton Hooker served as botanist and assistant surgeon on the H.M.S. *Erebus* under the command of Capt. James Clark Ross. In southern South America the *Erebus* and *Terror* did not enter the straits, but rather spent a period in 1842 at Cabo San Martin on Isla Hermite (see Godley, 1965).

Husnot—T. Husnot did not visit southern South America. The several references that state Husnot collected Hepaticae in Patagonia or the Magellanian region all stem from erroneous interpretation of specimens which were originally *communicated* by Husnot.

Menzies—Archibald Menzies did not visit the Strait of Magellan; his collections in southern South America were made on Isla de los Estados (see Godley, 1965).

Richard—See note under *Bazzania nitida*.

Rom—=Herbarium Roma.

Wilkes—Charles Wilkes commanded the United States Exploring Expedition, which in southern South America made collections in Tierra del Fuego at Bahía Orange and Bahía Buen Suceso (see Godley, 1965).

C. Personal Collection Localities and Numbers

1797-1855 PUERTO DEL HAMBRE: *Nothofagus* forest (ecotonal), Fuerte Bulnes, Punta Santa Ana. 17 December 1967.

1856-1879a PUERTO DEL HAMBRE: Remnants of *Nothofagus betuloides* and *Drimys* forest, N. side of Río San Juan, ca. 1 km. from straits. 17 December 1967.

1879b-1937 PUNTA ARENAS: *Nothofagus* woods E. of Mina Loreto on S. side of Río de las Minas, ca. 215 m. 18 December 1967.

1938-1991 PUNTA ARENAS: Ridge above refugio (Club Andino), 8 km. W. of Punta Arenas, 305-610 m. 19 December 1967.

1992-2043 SENO OTWAY: *Nothofagus betuloides* and *Drimys* forest at Bahía Camden. 10 December 1967.

2044-2067 SENO OTWAY: Along shore E. of Canelos and just W. of Ch. La Quema. 20 December 1967.

2068-2089 LAGUNO EL PARRILLAR: *Nothofagus antarctica* forest just E. of lake, ca. 365 m. 21 December 1967.

2090-2118 LAGUNO EL PARRILLAR: *Sphagnum* bog near E. shore of lake, ca. 365 m. 21 December 1967.

2119-2128 LAGUNO EL PARRILLAR: Old undisturbed *Nothofagus pumilio* forest, 4 km. E. of lake, ca. 305 m. 21 December 1967.

2129-2186 PUERTO CUTTER: Between copper mine and river S. of mine. 23 December 1967.

2187-2219 PUERTO CUTTER: Along shore N. of copper mine. 23 December 1967.

2220-2237 PUERTO CUTTER: Moor W. of copper mine. 24 December 1967.

2238-2264 PUERTO CUTTER: Rain forest slightly W. of copper mine. 24 December 1967.

2265-2297 PUERTO CUTTER: Coastal rocks at copper mine. 25 December 1967.

2298-2317 PUERTO CUTTER: Coastal rocks on N. side of copper mine. 25 December 1967.

2318-2357 PUERTO CUTTER: Stream in ravine at base of Monte Condor. 26 December 1967.

2358-2368 PUERTO CUTTER: Outcrops slightly W. of mine. 26 December 1967.

5944-6000 BAHIA FORTESCUE: Climax forest *(Nothofagus betuloides* and a few *Drimys).* 6 October 1969.

6001-6063 PUERTO GALLANT: Poorly developed woods *(Nothofagus betuloides, Empetrum, Pernettya)* on NE side of port. 6 October 1969.

6064-6092 PUERTO GALLANT: Stream with cascades in open stand of *Nothofagus betuloides,* NE side of port. 6 October 1969.

6305-6331 BAHIA SAN NICOLAS: Grassy slope on W. side of bay. 9 October 1969.

6332-6388 BAHIA SAN NICOLAS: Mature forest *(Drimys, Nothofagus betuloides, Rhamnus, Berberis ilicifolia)* on W. side of bay. 9 October 1969.

6389-6418 BAHIA SAN NICOLAS: Forest *(Nothofagus betuloides, Drimys)* on E. side of bay. 9 October 1969.

6419-6448 BETWEEN BAHIA BOUGAINVILLE AND BAHIA SAN NICOLAS: Scattered mounds of *Sphagnum* in open mosaic of *Empetrum* and *Nothofagus* on ridge between bays, ca. 155 m. 9 October 1969.

III. VEGETATION OF THE PENINSULA

For extensive treatment of the vegetation of the Brunswick Peninsula I refer the reader to the extensive treatment by Pisano (1973). Prior to the work of Pisano, both in 1973 and his earlier 1970 publication, comments regarding the vegetation of the Brunswick Peninsula are rather sparse. Some of the more significant contributions were made by Dusén (1903) and Skottsberg (1910, 1916).

It is of interest to note the various maps which include Brunswick Peninsula vegetation types, especially delimitation of the evergreen-deciduous forest boundaries. Bougainville (1772) included a map of the vegetation along the Strait of Magellan and delimited an eastern pampas, a central forest region, and a western non-forest region. The boundary of the central and western regions was placed at Cabo Quod, immediately west of the Jeronomo Canal [see also comments in Godley (1965, p. 142)]. The map of Skottsberg (1910) included the area south of 41° S with three vegetation types indicated in the Brunswick Peninsula: an alpine zone, an evergreen forested region and a deciduous forested region, with a boundary between the forest types roughly connected by Bahía Camden and Puerto del Hambre. A similar boundary delimiting forest types within the Brunswick Peninsula may be found in Skottsberg (1916, f. 1), Schmithüsen (1956, 1960), Butland (1957) (with a line slightly to the north), Holdgate (1961), and Hueck (1966) (with a line slightly to the north). Kuschel (1960) and Darlington (1965) include the peninsula in the "magellanic forest" region. Young (1972) includes the following "vegetation formations" in the Brunswick Peninsula: 1) evergreen rain forest which fringes the western side of the peninsula; 2) evergreen transitional (mesic) forest which extends from the eastern boundary of the evergreen rain forest east to a line which roughly connects Punta Canelo with Punta Guairabo; and 3) summergreen forest which extends from the eastern transitional forest boundary to the peninsular neck. A portion of the vast Patagonian steppe lies in the neck of the peninsula and a steppe-forest boundary has been placed near Cabo Negro by Auer (1958), Butland (1957), Holdgate (1961), Skottsberg (1910), and Young (1972).

Godley (1960) modified the southern South American vegetation regions of Skottsberg (1910) and included a Magellanian moorland [see also the comments in Holdgate (1961)]. Plate 3 shows the vegetation regions of southern Chile south of 48° S from the map in Godley (1960). The moorland region occurs south of 48° S to Cabo de Hornos and is limited by the Magellanian rain forest to the east and Pacific Ocean to the west. The moorland is extremely wet, has a permanently saturated peaty soil and is exposed to violent winds. The ground supports a variety of bog associations, the dominant plants of which are *Astelia pumila, Donatia fascicularis, Gaimardia australis, Tetroncium magellanicum, Oreobolus obtusangulus,* and *Caltha dioneaefolia* (Kuschel, 1960). *Nothofagus betuloides* forests occur only scattered and discontinuous and chiefly on coastal fringes or in sheltered gullies [see also the comments in Holdgate (1961)]. In the Strait of Magellan area Godley (1960) placed the eastern boundary of the moorland just west of Canal Jeronomo [which is similar to the data of Bougainville (1772)], thus excluding this vegetation type from the Brunswick Peninsula.

Pisano (1973) treats the meso-hygromorphic and hygromorphic plant communities of the Brunswick Peninsula and recognizes 22 plant communities at the level of association and 12 at the level of subassociation. These are grouped floristically into the following "biotic provinces": Magellanian Deciduous Forest, Magellanian Evergreen Forest, Patagonian Mixed Forest, and Magellanic Tundra. The vegetation studies of peripheral areas by Pisano should be consulted: Fiordo Toro (1970), Isla Capitan Aracena (1972), and Fiordo Parry (1971).

In the "Ecology" discussions of numerous taxa included here I have referred to a "bryophyte rich facies" occurring in the evergreen *Nothofagus* region. This facies is characterized by extensive, thick, spongy carpets of bryophytes which mostly take the form of massive mounds covering the floor, frequently accompanied by small areas of standing water between the mounds. In the Patagonian Channel region this facies usually occurred within wooded areas, while in the Brunswick Peninsula localities where I observed this facies (inner portion of Puerto Gallant and widespread in Puerto Cutter area), trees and shrubs were absent or only sparsely present. It is of interest to note that this facies was totally

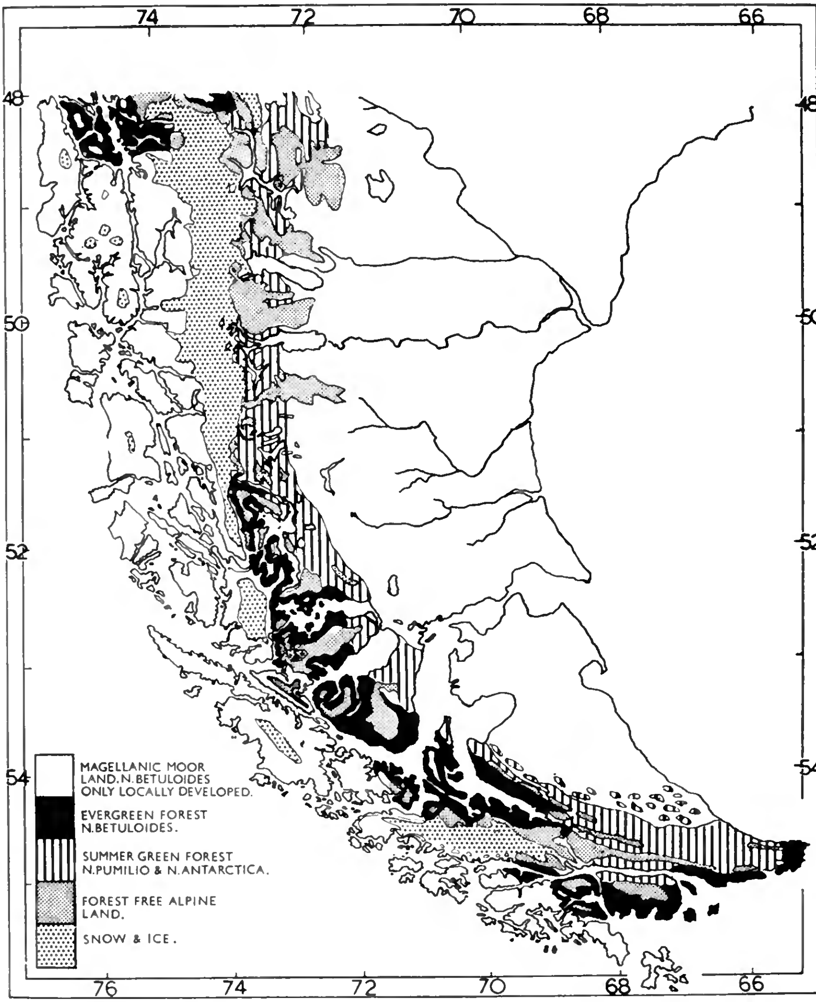


PLATE 3. The vegetation regions of southern South America south of 48° S. (after Godley, 1960).

absent from the southeastern shores of Bahía Fortesque (which supported a climax forest of *Nothofagus betuloides* and a few *Drimys* with an inconspicuous floor cover of bryophytes), while immediately to the north at Puerto Gallant it was well developed. It may be that such factors as topography, drainage, exposure, and temperature are associated with the development of the "bryophyte rich facies".[1]

[1]For a discussion of soil types and factors influencing peat formation in southern Chile see Holdgate (1961).

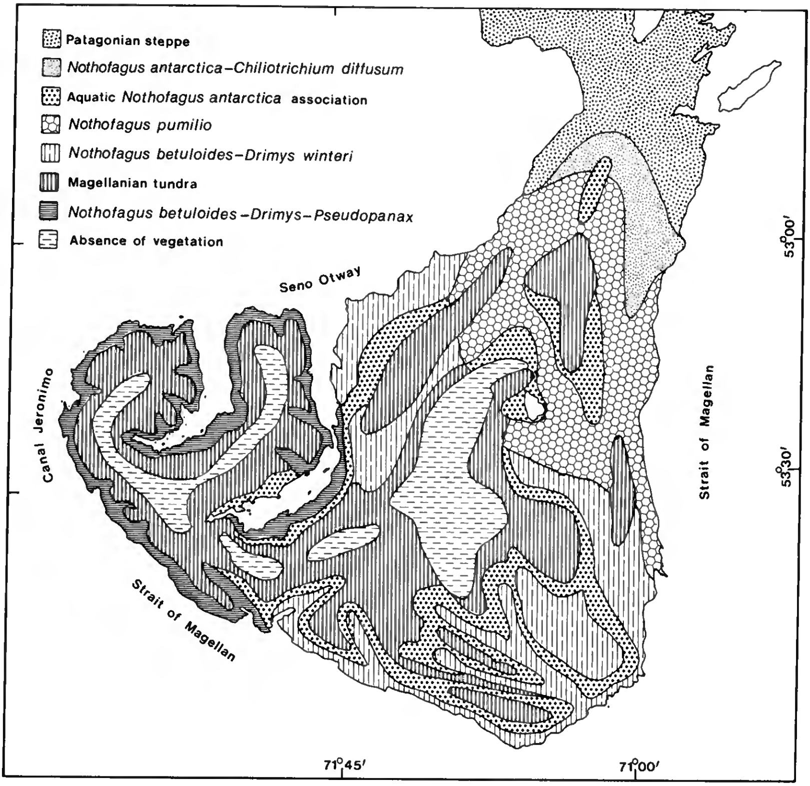


PLATE 4. Simplified map of vegetation types in the Brunswick Peninsula redrawn from map by Pisano (in litt.). For a more detailed map see Pisano (1973).

Mention should also be made here of the "scattered mounds of *Sphagnum*" which are mentioned in the "Ecology" discussions of several taxa. I encountered the rather extensive scattered *Sphagnum* mounds in an open mosaic of a few *Empetrum* and a few small *Nothofagus* on the ridge between Bahía Bougainville and Bahía San Nicolas.[1] This area likely once supported a rather extensive *Sphagnum* bog which at the present stage of succession exists merely as scattered mounds of *Sphagnum*. The mounds support an ensemble of Hepaticae typical of *Sphagnum* bogs, e.g., *Calypogeia sphagnicola* and *Lophozia patagonica*.

[1]Young (1972) includes the Bahía San Nicolas area in the "evergreen transitional (mesic) forest" and states the "*Sphagnum* moorland" is almost entirely confined to these forests. Young (p. 313) further states that in the "*Sphagnum* moorland" there is a rather deep layer of peat with trees ". . . small and infrequent, probably because of the instability of the substrate."

IV. PHYTOGEOGRAPHY

A. The Phytogeographic Categories

There are a large number of monotypic genera and stenotypic[1] species which possess a range centering about the cool, moist south temperate and subantarctic regions of the world. In this area there are also a high proportion of taxa which Schuster (1969a, 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 Brunswick Peninsula 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 (1910, 1916, 1960), Godley (1960), Wace (1960, 1965), and Greene (1964).

I have recognized 14 categories of distribution patterns of Brunswick Peninsula Hepaticae. The Anthocerotae fall within three 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: Hodgson (1953, 1961, 1962), Ashton and Gill (1965), Grolle (1966a, 1967), and Gillham (1967). 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 Brunswick Peninsula and Macquarie Island are *Jamesoniella colorata* and *Lepidozia laevifolia* (*fide* Hodgson *in* Ashton & Gill, 1965).

I recognize 193 species of Hepaticae and Anthocerotae belonging to the Brunswick Peninsula flora.

[1]Taxa with very narrow habitat requirements.

CONSPECTUS OF PHYTOGEOGRAPHICAL CATEGORIES[1]

Category	Number of Species	Percent of Total Flora
I. Temperate		
A. American Temperate		
1) Endemic	9	4.7
2) Falkland-Brunswick	0	0
3) Fuegian-Brunswick	19	9.8
4) Magellanian-Brunswick	29	15.0
5) Valdivian-Brunswick	6	3.1
6) Valdivian+Magellanian+Brunswick	91	47.2
7) Andean-Brunswick	5	2.6
B. Extra-American Temperate		
1) Amphipacific temperate	8	4.1
2) Amphiatlantic temperate	11	5.7
3) Pan-temperate	5	2.6
II. Non-temperate		
A. Subantarctic	4	2.1
B. Antarctic	0	0
C. Pan-tropical	1	0.52
D. Widespread	5	2.6
Total	193	

[1]The category reference numbers and letters in the conspectus correspond to those attached to the headings within the text.

I. *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 four species which occur in southern South America as well as South Georgia (see category 6e). Their distribution is regarded as temperate rather than subantarctic, as northward extension from the subantarctic is not confined to higher altitudes.

1) *Endemic to Brunswick Peninsula.*—It is likely that after more southern South American collections are examined the number of species endemic to the Brunswick Peninsula will be diminished, with the taxa in this category subsequently being placed in either category 4 or 5.

Apometzgeria pubescens
Cheilolejeunea intricata
Colura patagonica
Plagiochila anthracina

PLATE 5. *Lophocolea elata* (Gott.) Steph.

Plagiochila cymbiformis
(?) *Plagiochila dusenii*
Plagiochila engelii
Plagiochila parvidens
(?) *Radula diversifolia*

Although *Apometzgeria pubescens* is also distributed in the Northern Hemisphere, it is treated here because in the Southern Hemisphere it is restricted to the Brunswick Peninsula. The world-wide distribution of the species can be termed bipolar.

2) *Falkland-Brunswick Peninsula.*—Taxa known only from the Brunswick Peninsula and the Falkland Islands. No species fall within this category.

3) *Fuegian-Brunswick Peninsula.*—Species occurring in Tierra del Fuego (and occasionally Falkland Islands) and north of the

PLATE 6. *Leptoscyphus aequatus* (Hook. f. & Tayl.) Mitt.

Strait of Magellan only in the Brunswick Peninsula (pl. 5). Of the 19 taxa in this group, 63 per cent have been found to occur in the Fuegian portion of Magellanian moorland. Their occurrence in the moorland is indicated in the following list by an asterisk, and those taxa restricted to the moorland in Tierra del Fuego are indicated by a double asterisk. This region occurs south of 48° S to Cabo 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), and also the discussion by Young (1972), who uses the term "alpine moorland"]. See p. 13 for notes on the term "moorland." Of the remaining seven taxa, *Lophocolea elata* is known from deciduous *Nothofagus* forests and *Adelanthus tenuis, Frullania lobulata,* and *Pseudocephalozia cucullata* from evergreen *Nothofagus* forests. *Archeochaete kuehnemannii, Lophozia crispata,*

PLATE 7. *Hygrolembidium isophyllum* Schust.

and *Frullania patagonica* occur in the deciduous and evergreen *Nothofagus* forest regions. A dagger indicates occurrence in the Falkland Islands.

†* *Adelanthus integerrimus*
† *Adelanthus tenuis*
* *Allisoniella subbipartita*
† *Archeochaete kuehnemannii*
** *Archilejeunea fuegiana*
†** *Balantiopsis bisbifida*
** *Cephalolobus sphenoloboides*
** *Colura naumannii*
Frullania lobulata
Frullania patagonica
* *Gackstroemia hariotiana*
†** *Harpalejeunea marginalis*
* *Harpalejeunea parasitica*
* *Krunodiplophyllum squarrosum*
† *Lophocolea elata*
Lophozia crispata
** *Plagiochila arborescens*
Pseudocephalozia cucullata
†* *Riccardia fuscobrunnea*

4) *Magellanian-Brunswick Peninsula.*—Species occurring from Fuegia north to 48° S. *or* only from Brunswick Peninsula north to 48° S. (the Falkland Islands are often also included) (pl. 6-7). 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 29 taxa in this group, 79 per cent have been found in the Magellanian moorland, and these are so indicated by an asterisk. Of the remaining six taxa *Hygrolembidium isophyllum* is known from deciduous *Nothofagus* forests, and *Cephaloziella gemmata* from evergreen *Nothofagus* forests. *Anastrophyllum ciliatum, Cephalozia patagonica, Cephaloziella verrucosa,* and *Riccardia diversiflora* are known from both evergreen and deciduous *Nothofagus* forests.

A dagger indicates occurrence in the Falkland Islands.

† *Anastrophyllum ciliatum*
* *Anastrepta longissima*
* *Anastrophyllum involutifolium*
†* *Andrewsianthus australis*
* *Cephalozia heteroica*
Cephalozia patagonica
Cephaloziella gemmata
Cephaloziella verrucosa
†* *Chiloscyphus hookeri*
* *Chiloscyphus magellanicus*
* *Clasmatocolea navistipula*
* *Clasmatocolea puccioana*
†* *Evansianthus georgiensis*
†* *Frullania microcaulis*
†* *Gackstroemia patagonica*
* *Harpalejeunea decurvicuspis*
† *Hygrolembidium isophyllum*
†* *Kurzia mollis*
†* *Kurzia setiformis*
†* *Leptoscyphus aequatus*
* *Megaceros endiviaefolius*
†* *Plagiochila obovata*
* *Plagiochila pseudansata*
Riccardia diversiflora
†* *Saccogynidium vasculosum*
* *Schistochila cunninghamii*
†* *Schistochila leucophylla*
†* *Schistochila splachnophylla*
†* *Telaranea oligophylla*

5) *Valdivian-Brunswick Peninsula.*—Species occurring in the

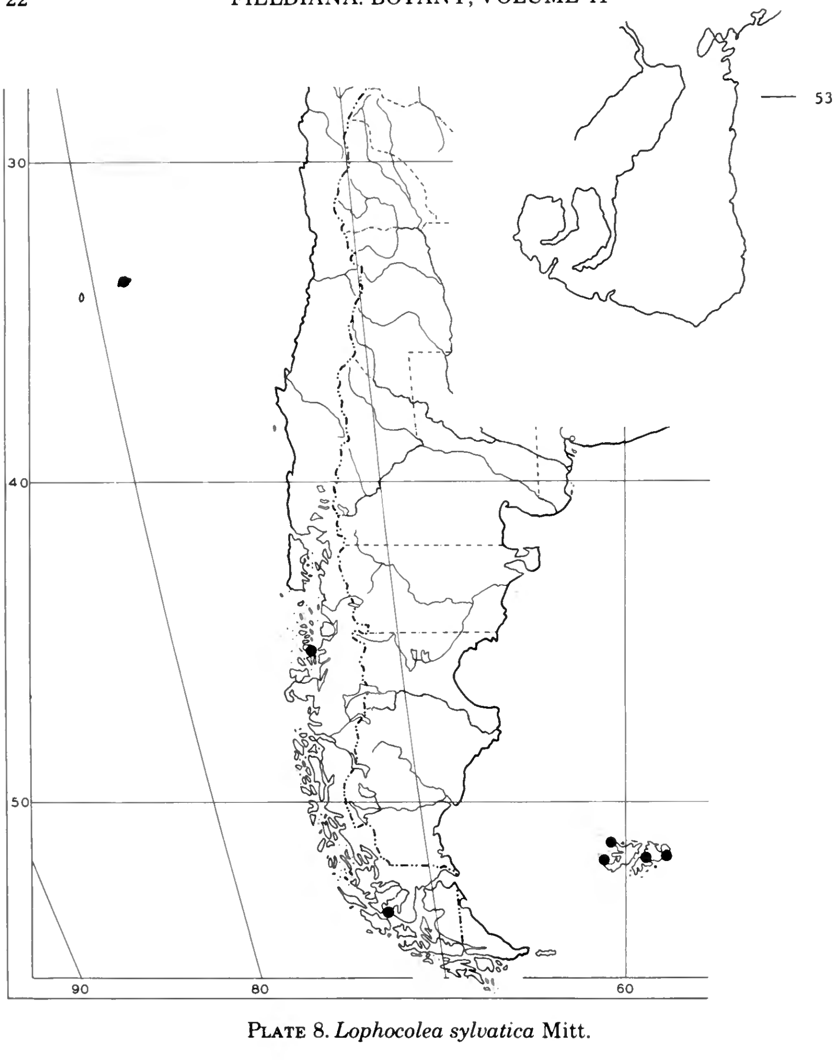


PLATE 8. *Lophocolea sylvatica* Mitt.

Brunswick Peninsula (and occasionally Falkland Islands) and Chile and/or Andean Patagonia (see p. 25 for definition) north of 48° S. and south of 36° S. (pl. 8). The taxa in this group, except for their occurrence in the Brunswick Peninsula, are unknown from the Magellanian region. 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 coastal range and 38° 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). The following species are known to occur on the mainland, and those taxa indicated by an asterisk are also found on Juan Fernandez. A dagger indicates occurrence on the Falkland Islands.

† *Lejeunea corralensis*
†* *Lophocolea sylvatica*
Lophozia patagonica
Metzgeria divaricata
†* *Plagiochila gayana*
Plagiochila latifrons

6) *Valdivian + Magellanian + Brunswick Peninsula.* — Species which are *essentially widespread* in the American temperate zone (pl. 9-12). Of the 91 taxa in this group, 77 per cent 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 23 per cent, *Clasmatocolea rigens, Diplophyllum acutilobum, Leptophyllopsis irregularis, Megaceros fuegiensis,* and *Temnoma pilosum* occur in the deciduous *Nothofagus* zone. *Aphanolejeunea asperrima, Austrolejeunea radulifolia, Isotachis grossidens, Lethocolea radicosa, Plagiochila ansata, P. equitans, P. hirta, P. neesiana, Riccardia autoica,* and *Schistochila reflexa* occur in the evergreen *Nothofagus* region. *Lophocolea sabuletorum, Metzgeria violacea, Plagiochila jacquinotii, Riccardia opuntiiformis, R. patens, Symphyogyna hochstetteri,* and *Telaranea pseudozoopsis* occur in the deciduous and evergreen *Nothofagus* regions. (I have not attempted to place *Plagiochila oligodon* and *P. remotidens* due to insufficient data regarding these taxa.) A dagger indicates occurrence in the Falkland Islands. The taxa, with the exception of groups e and f, are arranged according to their latitudinal range.

a) South from 45° S. (pl. 9):

* *Clasmatocolea obvoluta*
†* *Lepicolea rigida*
†* *Lophocolea divaricata*
* *Paraschistochila spegazziniana*
* *Plagiochila duricaulis*
* *Pseudolepicolea quadrilaciniata*
Riccardia opuntiiformis
†* *Riccardia spectabilis*

b) South from 43°30′ S. (line from north side of I. Guafo) (pl. 10):

* *Acromastigum cunninghamii*
* *Chiloscyphus pallido-virens*
†* *Clasmatocolea cookiana*
†* *Leptoscyphus patagonicus*
†* *Lophocolea leptantha*
†* *Metahygrobiella tubulata*
* *Metzgeria decrescens*
† *Plagiochila ansata*

† *Plagiochila hirta*
* *Pleurocladopsis simulans*
* *Riccardia spegazziniana*
* *Schistochila quadrifida*
†* *Telaranea plumulosa*
* *Telaranea seriatitexta*

c) South from 40° S. (pl. 11):

* *Apometzgeria frontipilis*
†* *Blepharidophyllum gottscheanum*
† *Diplophyllum acutilobum*
Isotachis grossidens
* *Leptoscyphus horizontalis*
†* *Lophocolea textilis*
† *Megaceros fuegiensis*
Plagiochila equitans
†* *Riccardia alcicornis*
Riccardia autoica
* *Riccardia fuegiensis*
* *Riccardia mycophora*
†* *Riccardia pallidevirens*
Riccardia patens
* *Riccardia rivularis*
* *Riccardia spinulifera*
†* *Riccardia tenax*
* *Schistochila gayana*
?†* *Schistochila laminigera*
† *Telaranea pseudozoopsis*
Temnoma pilosum
* *Tylimanthus flavicans*

d) South from 36° S.; from latitude indicated (pl. 12):

†* *Anastrepta bifida* (39°52′ S.)
†* *Aphanolejeunea asperrima* (39°52′ S.)
†* *Balantiopsis cancellata* (39°48′ S.)
* *Chiloscyphus valdiviensis* (39°36′ S.)
†* *Clasmatocolea fulvella* (36°50′ S.)
* *Clasmatocolea gayana* (39°53′ S.)
* *Clasmatocolea trachyopa* (39°56′ S.)
†* *Frullania boveana* (39°53′ S.)
†* *Frullania magellanica* (39°52′ S.)
†* *Gackstroemia magellanica* (39°52′ S.)
* *Herberta runcinata* (39°36′ S.)
†* *Isotachis humectata* (36°43′ S.)
* *Lepidolaena menziesii* (36°50′ S.)
†* *Lophocolea austrigena* (39°52′ S.)
* *Lophocolea gottscheoides* (36°50′ S.)
* *Lophocolea otiphylla* (36°43′ S.)
† *Metzgeria violacea* (39°46′ S.)
* *Plagiochila bispinosa* (39°16′ S.)
* *Plagiochila dura* (39°38′ S.)
†* *Plagiochila elata* (39°36′ S.)
* *Plagiochila fuegiensis* (39°38′ S.)
* *Radula flavifolia* (36°50′ S.)
†* *Radula helix* (39°38′ S.)
* *Riccardia floribunda* (39°52′ S.)
* *Riccardia umbrosa* (39°56′ S.)
* *Schistochila lamellata* (39°52′ S.)
Schistochila reflexa (39°46′ S.)
* *Schistochila subimmersa* (39°27′ S.)
* *Stolonophora abnormis* (36°50′ S.)
†* *Telaranea blepharostoma* (39°48′ S.)
* *Trichocolea elegans* (39°48′ S.)
†* *Tylimanthus urvilleanus* (39°38′ S.)

e) Valdivian+Magellanian+Brunswick Peninsula+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*
† *Clasmatocolea rigens*
†* *Lepidozia chordulifera*
†* *Roivainenia jacquinotii*

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

Austrolejeunea radulifolia
†* *Lepidozia fuegiensis*
† *Leptophyllopsis irregularis*
† *Lethocolea radicosa*

† *Lophocolea sabuletorum*
* *Plagiochila jacquinotii*
Plagiochila neesiana
Plagiochila oligodon
* *Plagiochila rectangulata*
* *Plagiochila remotidens*
† *Symphyogyna hochstetteri*

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 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 categories 3, 4, and 5, given in preceding pages here, 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. In nearly all instances, the species also occur, within the Valdivian region, on the west side of the Andes.

Apometzgeria frontipilis
Clasmatocolea fulvella
Clasmatocolea rigens
Frullania magellanica
Isotachis grossidens
Isotachis humectata
Lepidolaena menziesii
Lepidozia chordulifera
Lophocolea textilis
Megaceros fuegiensis
Metzgeria violacea
Plagiochila bispinosa
Plagiochila elata
Plagiochila rectangulata
Radula flavifolia
Riccardia alcicornis
Riccardia autoica
Riccardia floribunda
Riccardia fuegiensis
Riccardia mycophora
Riccardia patens
Riccardia rivularis
Riccardia tenax
Riccardia umbrosa
Roivainenia jacquinotii
Schistochila laminigera
Telaranea pseudozoopsis
Temnoma pilosum
Trichocolea elegans
Tylimanthus flavicans
Tylimanthus urvilleanus

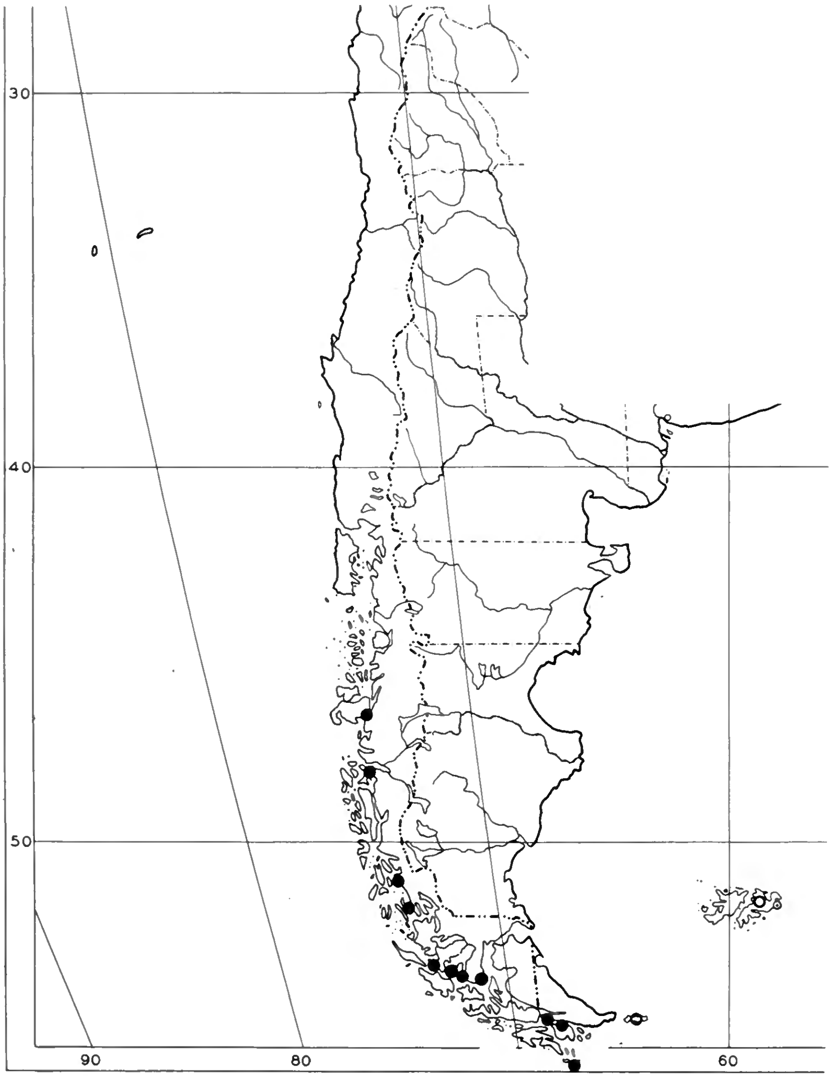


PLATE 9. *Lepicolea rigida* (De Not.) Scott.

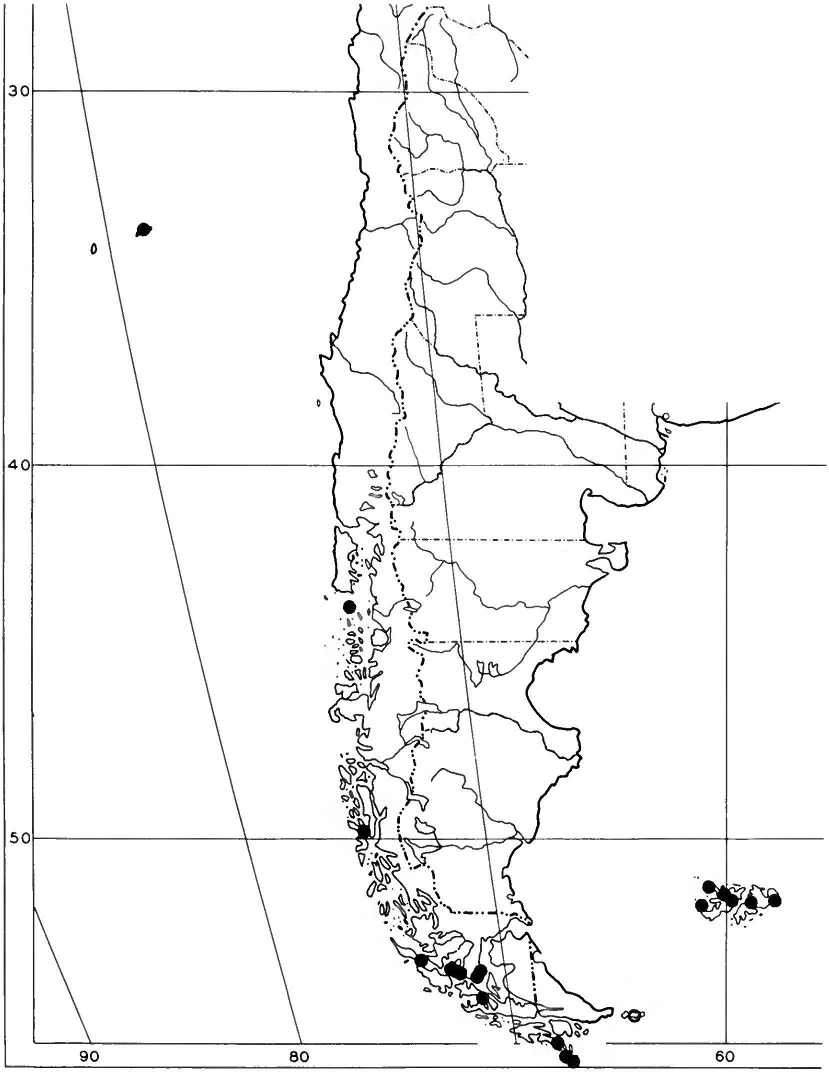


PLATE 10. *Telaranea plumulosa* (Lehm. & Lindenb.) Fulf.

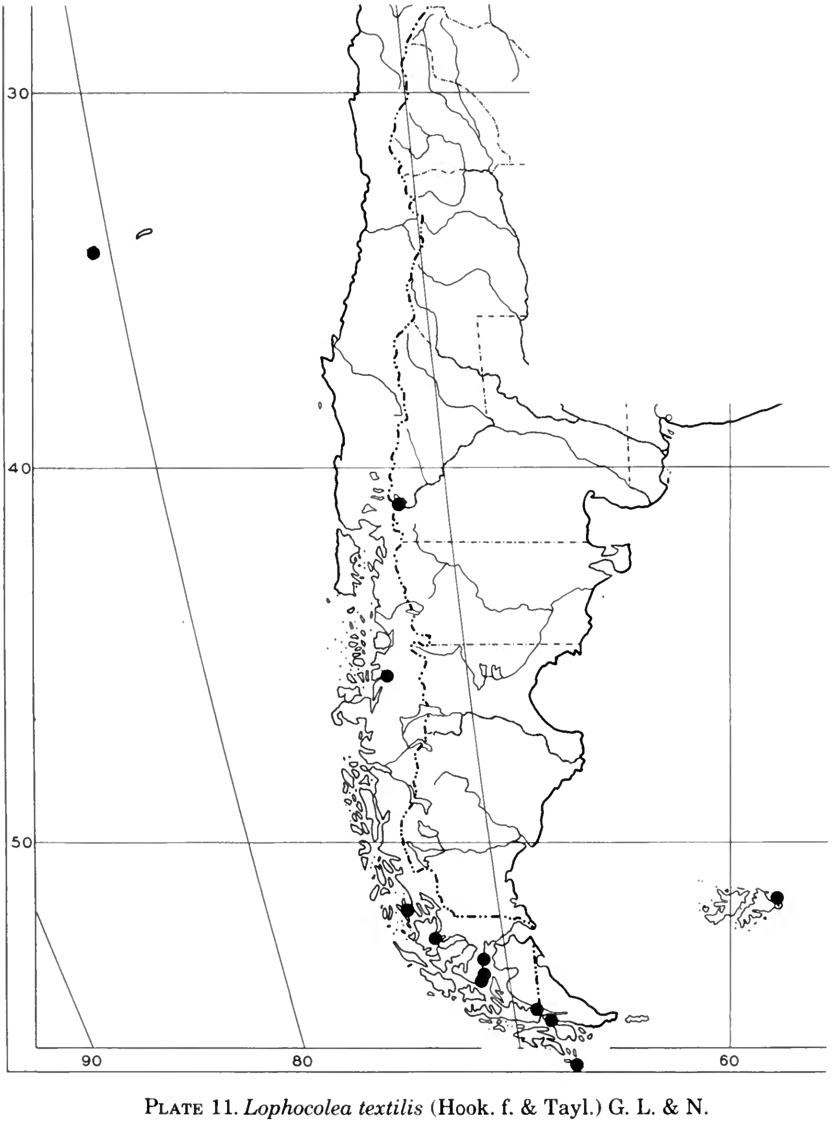


PLATE 11. *Lophocolea textilis* (Hook. f. & Tayl.) G. L. & N.

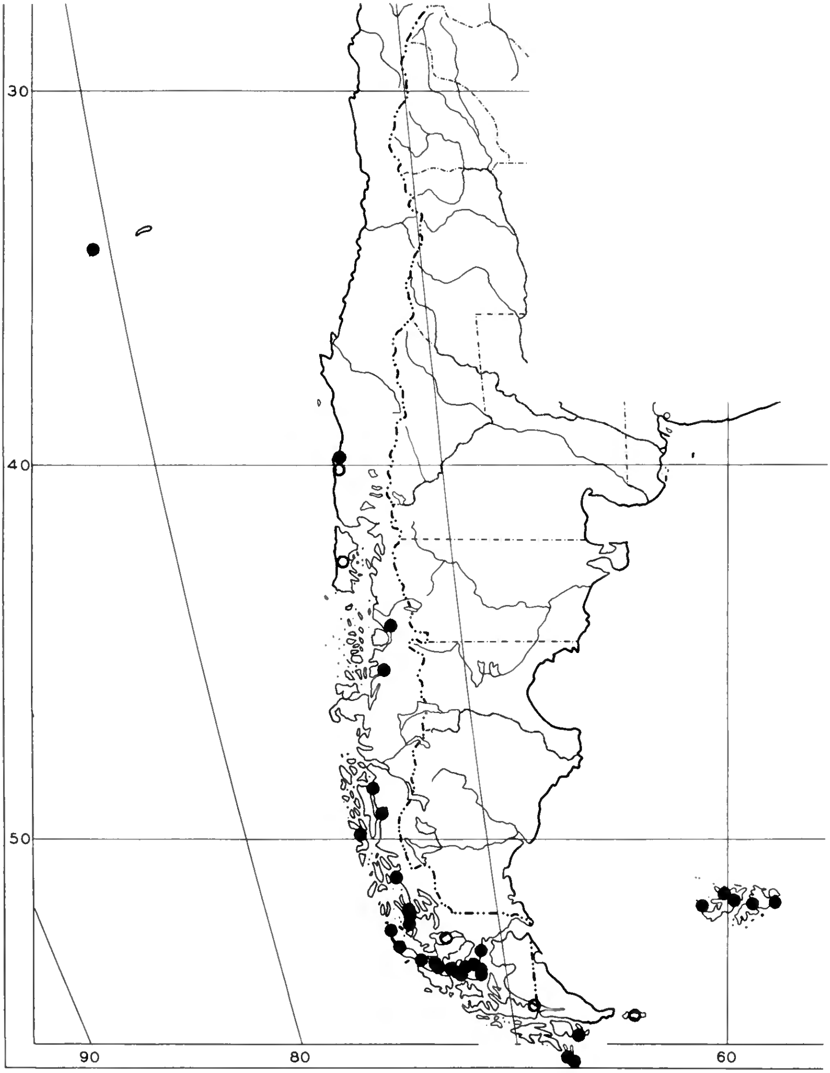


PLATE 12. *Gackstroemia magellanica* (Lam.) Trev.

Plate 13. *Pseudocephalozia quadriloba* (Steph.) Schust. (+ Inaccessible Island).

PLATE 14. *Temnoma quadripartitum* (Hook.) Mitt.

Megaceros fuegiensis is the only species of *Valdivian-Magellanian* Hepaticae or Anthocerotae to occur in east Patagonia. Of the remaining Brunswick Peninsula taxa, *Anthoceros punctatus, Leptoscyphus expansus, Marchantia berteroana, M. polymorpha,* and *Reboulia hemisphaerica* also occur here.

7) *Andean-Brunswick Peninsula.*—Species extending north of 36° S. in the Andes (pl. 13). Of the American temperate species, there are five taxa which have utilized the Andes as a migratory route. A dagger indicates occurrence on the Falkland Islands.

Bazzania peruviana
Chiloscyphus integrifolius
† *Noteroclada confluens*
Porella subsquarrosa
† *Pseudocephalozia quadriloba*

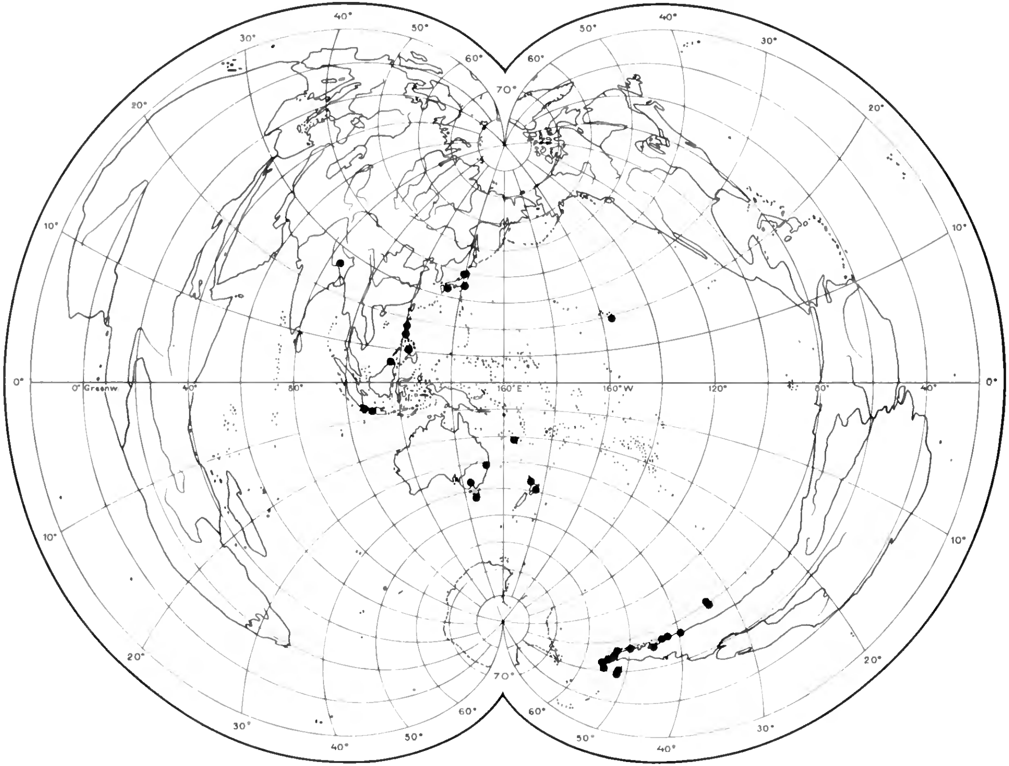


PLATE 15. *Metzgeria decipiens* (Mass.) Schiffn.

B. Extra-American Temperate

1. *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 (pl. 14-15). 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 indicate occurrence in New Zealand, and three indicate occurrence on New Zealand shelf islands and New Zealand. Only *Metzgeria decipiens* occurs in the Northern Hemisphere.

a) To North Island (pl. 14):

* *Temnoma quadripartitum*

b) To Tasmania:

*** *Anastrophyllum schismoides*
** *Calypogeia sphagnicola*
*** *Lepidozia laevifolia*
** *Triandrophyllum subtrifidum*

(The world-wide distribution of *C. sphagnicola* can be termed bipolar.)

c) To Australia:

*** *Lophocolea lenta*
*** *Riccardia crassa*

d) To Japan (pl. 15):

** *Metzgeria decipiens*

2. *Amphiatlantic Temperate*

Distributed mainly in temperate parts of the south Atlantic, i.e., temperate South America, and South Africa (plus occasionally Tristan da Cunha) (pl. 16). 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.

Adelanthus lindenbergianus
* *Blepharidophyllum clandestinum*
* *Blepharidophyllum densifolium*
* *Clasmatocolea humilis*
Clasmatocolea vermicularis
Colura calyptrifolia
Hyalolepidozia bicuspidata
Lepicolea ochroleuca
Leptoscyphus expansus
* *Riccardia prehensilis*
Schistochila alata

PLATE 16. *Leptoscyphus expansus* (Lehm.) Grolle.

Adelanthus lindenbergianus, Clasmatocolea vermicularis, Lepicolea ochroleuca, and *Leptoscyphus expansus* penetrate north via the Andes to lower latitudes and, with the exception of *L. expansus,* reach into the Northern Hemisphere. They constitute 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 six Brunswick Peninsula taxa known from the East Patagonia zone. Among the wide ranging taxa, *Lepicolea ochroleuca* perhaps has the narrowest ecological requirements, especially moisture requirements.

3. *Pan-Temperate*

Species occurring in temperate regions of South America, New Zealand/Australia, and South Africa (pl. 17).

PLATE 17. *Jamesoniella colorata* (Lehm.) Schiffn.

Acrobolbus ochrophyllus
Bazzania nitida
Cryptochila grandiflora
Jamesoniella colorata
Marchantia berteroana

II. *NON-TEMPERATE*

A. Subantarctic

Species occurring on one or more subantarctic islands (as defined by Greene, 1964) of at least one sector (e.g., American (A), Indian Ocean (I), or New Zealand (NZ)) with northward extensions only at higher altitudes (pl. 18). 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 in-

PLATE 18. *Herzogobryum erosum* (Carring. & Pears.) Grolle.

cluded the patterns under the single category of "antipodal" (Schuster 1963c, 1969a, etc.), "subantarctic" (Grolle, 1969b, and others), or "antarctic" (Fulford, 1963b, 1966). There are only four subantarctic species within the Brunswick 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.

Cephalozia badia (A)
Herzobryum erosum (A, NZ)
Leptoscyphus abditus (I)
Riccardia georgiensis (A, I)

B. Antarctic

Species occurring in the Antarctic zone (as defined by Greene, 1964), with northward extensions into the subantarctic or temper-

PLATE 19. *Metzgeria leptoneura* Spruce.

ate zones only at higher altitudes. There are no species of the Brunswick Peninsula flora that may be included here.

C. Pan-Tropical

Species occurring in tropical regions of all three sectors, i.e., America, Africa, and Asia-Australasia. The only species which may be included here is *Lophocolea muricata.*

D. Widespread

Species not in any of the above categories (pl. 19)

Anthoceros punctatus
Leptoscyphus cuneifolius
Marchantia polymorpha
Metzgeria leptoneura
Reboulia hemisphaerica

B. Distribution within the Brunswick Peninsula

The Brunswick Peninsula is ideally situated for a study of the distribution of Hepaticae in relationship to degree of rainfall, the chief climatic variable within the region. There are dramatic changes in rainfall within the Brunswick Peninsula, from under 400 mm. annually near the neck of the peninsula to 1,500 mm. at the western end (see pl. 1).[1]

The distribution of each taxon of Hepaticae and Anthocerotae within the Brunswick Peninsula is indicated in Table 4. The total number of species, which is recorded for each locality at the bottom of the table, indicates a dramatic increase in species diversity toward the south and west. As discussed below, the area traversed by the 1,000 mm. isohyet appears to be a critical one. It is of interest to note that 55 taxa are restricted to regions to the south and west, i.e., regions receiving more than 1,000 mm. annual rainfall, while only 17 are restricted to eastern-northern regions or those receiving less than 1,000 mm. annual rainfall. The species diversity thus increases nearly three-fold in the wetter portion of the Brunswick Peninsula.

In order to determine the extent of distribution of various taxa within the Brunswick Peninsula, the taxa occurring at a given locality were grouped according to the *easternmost* point at which they occur (see table 3). Only localities which were personally vis-

[1]Pisano (1973, p. 145) published a rainfall map which was adapted from Jerez & Arancibia (1972). The data is similar to that in Plate 1, except Pisano's map indicates that the southwestern portion of the peninsula is wetter (with a 2,000 mm. isohyet in this area).

ited were grouped, and on Table 3 commence with the westernmost locality visited followed by stations eastward. A taxon is included in a group *only* if it is absent from points *westward.*

Puerto Cutter Region Group

One third of the taxa occurring in the Puerto Cutter region have their easternmost locality in the Bahía San Nicolas region. The 1,000 mm. isohyet passes directly through the Bahía San Nicolas region and it is probable that this level is a critical one which creates a tension zone for distribution of Hepaticae. The paucity of taxa present at stations on the table to the right of Bahía San Nicolas is likely due to the fact that these localities lie north of the critical 1,000 mm. isohyet and receive insufficient amounts of rainfall. Further, Puerto del Hambre, which is only 17 miles north of Bahía San Nicolas and lies nearly on the 700 mm. isohyet, has only eight Puerto Cutter region group taxa.

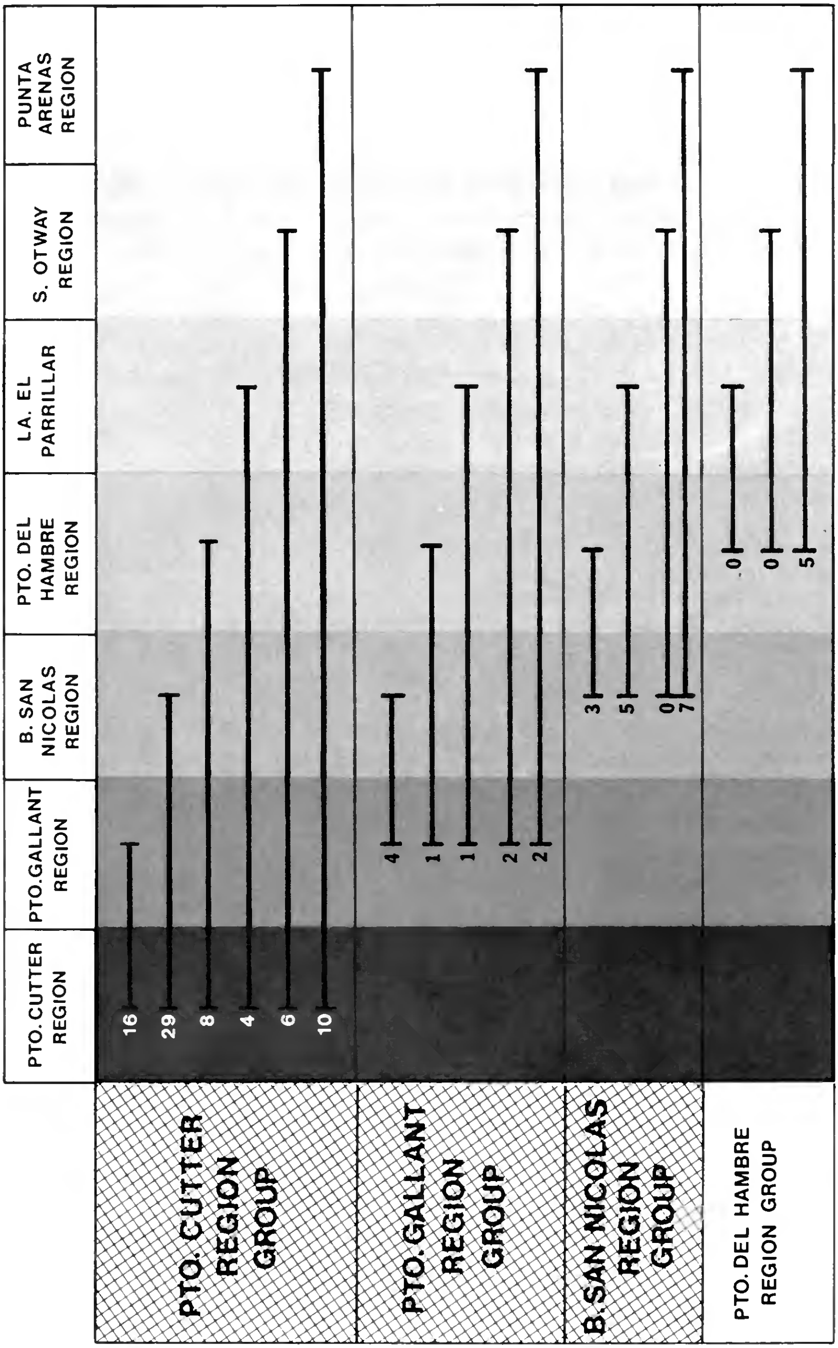
The following six taxa, collected by N. G. Andersson, were all stated to have been collected at Puerto del Hambre, but have not been re-collected there in recent times:

Anastrophyllum involutifolium	*Kurzia setiformis*
Clasmatocolia gayana	*Schistochila alata*
Clasmatocolea obvoluta	*Schistochila lamellata*

I question the precise locality of these Andersson collections, and believe there is a distinct possibility that the taxa may have been collected at localities on the Brunswick Peninsula other than Puerto del Hambre (=Port Famine), the only locality mentioned in Ångstrom (1872). The Andersson collections I have studied read either Port Famine or "Magelhaens Sund."[1]

The Bahía San Nicolas-Puerto del Hambre region is a tension zone with regard to distribution of Hepaticae within the peninsula.

[1]Andersson was a passenger on the Swedish frigate *Eugenie* which, according to Skogman (1854-1855), anchored at several stops on the Brunswick Peninsula. The party arrived at Puerto del Hambre on 30 January 1852 and spent several days at this anchorage. Skogman (*op. cit.*) states Andersson collected on the slopes of Mt. Tarn, and that a party also explored Punta Santa Ana. After departing Puerto del Hambre, the *Eugenie* next anchored at Bahía San Nicolas, but, while I find no reference to a shore party being sent to the mainland, there is mention of a party which hunted birds on a small island (which is probably Isla Nassau). The *Eugenie* subsequently anchored at Bahía Woods on 6 February followed by several days (apparently 7-9 February) at Rada York. There is thus the possibility that at least some Hepaticae may have been collected at Bahía San Nicolas, Isla Nassau, Bahía Woods, and Rada York. The frigate sailed west from Rada York on 10 February.


PTO. CUTTER REGION
PTO. GALLANT REGION
B. SAN NICOLAS REGION
PTO. DEL HAMBRE REGION
LA. EL PARRILLAR
S. OTWAY REGION
PUNTA ARENAS REGION
16
29
8
4
6
10
4
1
1
2
2
3
5
0
7
0
0
5
PTO. CUTTER REGION GROUP
PTO. GALLANT REGION GROUP
B. SAN NICOLAS REGION GROUP
PTO. DEL HAMBRE REGION GROUP

LA. EL PARRILLAR GROUP					0 1		
S. OTWAY REGION GROUP						0	
NUMBER OF "ENDEMICS"	20	23	13	10	1	2	4
TOTAL NUMBER OF TAXA	93	97	86	55	24	18	38
	Number of taxa restricted to regions receiving more than 1000 mm. of rainfall annually (hatched): 55			Number of taxa restricted to regions receiving less than 1000 mm. of rainfall annually (white): 17			

TABLE 3. Distribution of taxa of Hepaticae and Anthocerotae within the Brunswick Peninsula grouped according to the easternmost point at which the taxon occurs. The horizontal lines represent extent of eastward distribution, with the number of taxa in each category. At left, the locality at the top (Puerto Cutter) is the westernmost station followed by stations (regions) eastward. At top, the stations are arranged, left to right, from west to east. A taxon is included in a group *only* if it is absent from points westward. The darker the shading, the greater the rainfall.

TABLE 4. Distribution of taxa of Hepaticae and Anthocerotae within the Brunswick Peninsula. The data is based upon specimens examined, plus those literature records which I consider to be reliable. An asterisk indicates a report based upon an early collection; these taxa have not been re-collected there in recent times.

	Puerto Pomar Region	Puerto Cutter Region	Rada York-Bahía Arauz Region	Puerto Gallant Region	Bahía Wood	Bahía San Nicolas Region	Puerto/Cabo San Isidro	Puerto del Hambre Region	Laguno El Parrillar	Seno Otway Region	Río Tres Brazos Region	Punta Arenas Region	Chabunco Region	Cabeza del Mar Region
Acrobolbus ochrophyllus		X												
Acromastigum cunninghamii		X												
Adelanthus integerrimus				X								X		
Adelanthus lindenbergianus		X	X	X		X	X	X	X	X	X	X		
Adelanthus tenuis						X			X					
Allisoniella subbipartita		X												
Anastrepta longissima		X												
Anastrophyllum ciliatum				X		X			X			X		
Anastrophyllum involutifolium		X		X		X		*						
Anastrophyllum schismoides		X												
Andrewsianthus australis		X												
Anthoceros punctatus								X						
Aphanolejeunea asperrima				X										
Apometzgeria frontipilis		X	X	X		X								
Apometzgeria pubescens								X				X		
Archeochaete kuehnemannii						X			X					
Archilejeunea fuegiana						X								
Austrolejeunea radulifolia				X										
Balantiopsis bisbifida						X								
Balantiopsis cancellata				X										
Bazzania peruviana		X		X										
Blepharidophyllum clandestinum		X		X		X			X					
Blepharidophyllum densifolium		X	X	X		X		X	X			X		
Blepharidophyllum gottscheanum		X		X		X								
Calypogeia sphagnicola						X					X	X		
Cephalolobus sphenoloboides								X						
Cephalozia badia									X					
Cephalozia heteroica				X										
Cephalozia patagonica						X		X						
Cephaloziella dusenii						X		X						
Cephaloziella gemmata								X						

	Puerto Pomar Region	Puerto Cutter Region	Rada York-Bahía Arauz Region	Puerto Gallant Region	Bahía Wood	Bahía San Nicolas Region	Puerto/Cabo San Isidro	Puerto del Hambre Region	Laguno El Parrillar	Seno Otway Region	Río Tres Brazos Region	Punta Arenas Region	Chabunco Region	Cabeza del Mar Region
Cephaloziella verrucosa						X								
Cheilolejeunea intricata		X												
Chiloscyphus hookeri var. constantifolius				X		X	X							
Chiloscyphus hookeri var. hookeri		X	X	X		X	X							
Chiloscyphus integrifolius						X								
Chiloscyphus magellanicus				X										
Chiloscyphus pallido-virens		X	X		X	X	X	X	X		X	X		
Chiloscyphus valdiviensis		X		X		X								
Clasmatocolea cookiana		X	X	X										
Clasmatocolea fulvella		X				X						*		
Clasmatocolea gayana		X		X		X		*				*		
Clasmatocolea humilis	X	X	X	X		X								
Clasmatocolea navistipula		X		X		X		X	X					
Clasmatocolea obvoluta		X		X		X		*						
Clasmatocolea puccioana		X		X								*		
Clasmatocolea rigens						X		X	X	X	X	X	X	X
Clasmatocolea trachyopa		X		X		X								
Clasmatocolea vermicularis							X	X						
Colura calyptrifolia				X										
Colura naumannii				X										
Colura patagonica												X		
Cryptochila grandiflora		X		X										
Diplophyllum acutilobum		X												
Evansianthus georgiensis												X		
Frullania boveana		X		X		X								
Frullania lobulata		X		X		X								
Frullania magellanica		X	X	X		X		X	X	X	X	X	X	
Frullania microcaulis				X										
Frullania patagonica		X		X				X	X			*		
Gackstroemia hariotiana				X										
Gackstroemia magellanica		X	X	X	X	X	X	X	X			*		
Gackstroemia patagonica				X										
Harpalejeunea decurvicuspis		X												
Harpalejeunea marginalis				X		X								
Harpalejeunea parasitica		X				X								

	Puerto Pomar Region	Puerto Cutter Region	Rada York-Bahía Arauz Region	Puerto Gallant Region	Bahía Wood	Bahía San Nicolas Region	Puerto/Cabo San Isidro	Puerto del Hambre Region	Laguno El Parrillar	Seno Otway Region	Río Tres Brazos Region	Punta Arenas Region	Chabunco Region	Cabeza del Mar Region
Herberta runcinata		X		X										
Herzogobryum erosum								X						
Hyalolepidozia bicuspidata				X		X								
Hygrolembidium isophyllum												X		
Isotachis grossidens								X						
Isotachis humectata		X	X	X		X		X						
Jamesoniella colorata		X		X		X				X				
Krunodiplophyllum squarrosum				X										
Kurzia mollis		X		X										
Kurzia setiformis		X		X				*						
Lejeunea corralensis				X		X								
Lepicolea ochroleuca		X	X											
Lepicolea rigida		X		X		X								
Lepidolaena menziesii		X	X	X		X	X			X		*		
Lepidozia chordulifera		X		X		X	X	X	X	X		X		
Lepidozia fuegiensis		X		X		X								
Lepidozia laevifolia				X		X			X	X				
Leptoscyphus abditus									X			X		
Leptoscyphus aequatus		X	X	X								*		
Leptoscyphus cuneifolius				X										
Leptoscyphus expansus	X	X	X	X		X	X	X	X	X	X	X	X	
Leptoscyphus horizontalis		X	X	X		X								
Leptoscyphus patagonicus		X		X										
Leptophyllopsis irregularis								X						
Lethocolea radicosa						X								
Lophocolea austrigena		X						X						
Lophocolea elata												X		
Lophocolea divaricata		X												
Lophocolea gottscheoides		X		X		X								
Lophocolea lenta								X				X		
Lophocolea leptantha		X		X		X		X	X	X	X	X	X	X
Lophocolea muricata										X				
Lophocolea otiphylla		X		X		X								
Lophocolea sabuletorum		X		X										
Lophocolea sylvatica		X												
Lophocolea textilis						X	X	X				X		

	Puerto Pomar Region	Puerto Cutter Region	Rada York-Bahía Arauz Region	Puerto Gallant Region	Bahía Wood	Bahía San Nicolas Region	Puerto/Cabo San Isidro	Puerto del Hambre Region	Laguno El Parrillar	Seno Otway Region	Río Tres Brazos Region	Punta Arenas Region	Chabunco Region	Cabeza del Mar Region
Lophozia crispata						X								
Lophozia patagonica						X			X		X			
Marchantia berteroana		X						X			X	X		
Marchantia polymorpha						X		X			X	X		
Megaceros endiviaefolius		X		X		X		X				*		
Megaceros fuegiensis		X					X	X						
Metzgeria decipiens		X		X		X		X		X				
Metzgeria decrescens		X		X										
Metzgeria divaricata		X								X				
Metzgeria leptoneura		X				X						*		
Metzgeria violacea								X		X		X	X	
Noteroclada confluens						X		X				X		
Paraschistochila spegazziniana				X										
Plagiochila ansata		X		X		X								
Plagiochila anthracina				X										
Plagiochila arborescens				X										
Plagiochila duricaulis		X		X		X	X							
Plagiochila elata		X					X							
Plagiochila engelii		X												
Plagiochila equitans						X			X					
Plagiochila fuegiensis						X	X							
Plagiochila gayana				X										
Plagiochila hirta		X				X								
Plagiochila latifrons			X											
Plagiochila obovata						X								
Plagiochila parvidens										X				
Plagiochila pseudansata		X												
Pleurocladopsis simulans				X										
Porella subsquarrosa		X												
Pseudocephalozia cucullata				X										
Pseudocephalozia quadriloba						X			X					
Pseudolepicolea quadrilaciniata				X										
Radula diversifolia				X										
Radula flavifolia		X		X		X								
Radula helix		X		X		X								
Reboulia hemisphaerica								X				X		

	Puerto Pomar Region	Puerto Cutter Region	Rada York-Bahía Arauz Region	Puerto Gallant Region	Bahía Wood	Bahía San Nicolas Region	Puerto/Cabo San Isidro	Puerto del Hambre Region	Laguno El Parrillar	Seno Otway Region	Río Tres Brazos Region	Punta Arenas Region	Chabunco Region	Cabeza del Mar Region
Riccardia alcicornis		X												
Riccardia autoica				X						X				
Riccardia crassa				X										
Riccardia diversiflora						X		X						
Riccardia floribunda		X		X										
Riccardia fuegiensis				X										
Riccardia fuscobrunea						X								
Riccardia georgiensis						X		X			X	X		
Riccardia mycophora						X								
Riccardia opuntiiformis		X								X				
Riccardia pallidevirens		X		X		X								
Riccardia patens						X		X				X		
Riccardia prehensilis		X		X		X	X	X		X				
Riccardia spectabilis		X		X		X	X							
Riccardia spegazziniana		X		X										
Riccardia spinulifera		X												
Riccardia tenax		X		X		X	X	X				X		
Riccardia umbrosa		X		X										
Roivainenia jacquinotii								X	X	X	X	X		
Saccogynidium vasculosum						X								
Schistochila alata		X		X				*						
Schistochila gayana		X												
Schistochila lamellata		X	X	X		X		*						
Schistochila laminigera		X		X		X	X	X						
Schistochila leucophylla						X								
Schistochila quadrifida						X								
Schistochila reflexa								X						
Schistochila splachnophylla				X										
Schistochila subimmersa				X										
Stolonophora abnormis				X										
Symphyogyna hochstetteri								X						
Telaranea blepharostoma		X												
Telaranea oligophylla		X		X		X								
Telaranea plumulosa		X		X		X	X	X						
Telaranea pseudozoopsis		X		X										
Temnoma pilosum								X						

	Puerto Pomar Region	Puerto Cutter Region	Rada York-Bahía Arauz Region	Puerto Gallant Region	Bahía Wood	Bahía San Nicolas Region	Puerto/Cabo San Isidro	Puerto del Hambre Region	Laguno El Parrillar	Seno Otway Region	Río Tres Brazos Region	Punta Arenas Region	Chabunco Region	Cabeza del Mar Region
Temnoma quadripartitum var. quadripartitum				X		X		X	X					
Temnoma quadripartitum var. randii		X												
Triandrophyllum subtrifidum var. trifidum		X		X		X		X						
Trichocolea elegans		X		X		X		X						
Tylimanthus flavicans				X		X		X						
Tylimanthus urvilleanus		X		X		X		X	X	X	X	X		
Total number of taxa	2	93	17	97	2	86	19	55	24	18	13	38	5	2

Since I question the precise locality of several of the Andersson collections, I am not including the six taxa in the Puerto Cutter-Puerto del Hambre category. Rather, the taxa are tabulated with reference to the next collection site west, e.g., *Anastrophyllum involutifolium* is included in the Puerto Cutter-Bahía San Nicolas category (table 4).

The Puerto Gallant region receives a rainfall comparable to that of the Puerto Cutter region, and it may be that the Puerto Gallant region receives a rainfall level which is a critical amount in excess of that received by Bahía San Nicolas, as there are 16 taxa of the Puerto Cutter region group not occurring at points east-north of Puerto Gallant (table 3). For taxa in the Puerto Cutter region group the critical rainfall level regarding extent of distribution northward-eastward is thus between 1,000 and 1,500 mm. annually.

The taxa listed below occurred in both Puerto Cutter and Punta Arenas (plus the majority of points between the two). An asterisk indicates a report based upon an early collection from the Punta Arenas region. (An asterisk also marks the early Punta Arenas reports of these species in Table 4.) These species have not been recollected at Punta Arenas in recent times, and further, are not represented in my collections from that region. It may be that nineteenth-century collectors used "Punta Arenas" in a general sense to indicate a considerable expanse of territory surrounding the actual port, in which case the locality loses its meaning for our purposes. Since I regard the Punta Arenas locality as questionable with regard to those species indicated by an asterisk, I have not included them in the Puerto Cutter-Punta Arenas category in Table 3. Rather, the taxa are tabulated with reference to the next collection site west. It is certainly possible that these species were actually once collected in the Punta Arenas region, but are presently extinct in that region. The physiognomy of the Punta Arenas region has undergone profound alterations resulting from man's development and occupation of the region, and one of the chief causes of this change has been extensive lumbering. As a result of this change, many of the species which were collected in the area prior to its development are now extinct in this region.

Adelanthus lindenbergianus
Blepharidophyllum densifolium
Chiloscyphus pallido-virens
* *Clasmatocolea fulvella*
* *Clasmatocolea gayana*
* *Clasmatocolea puccioana*
Frullania magellanica
* *Frullania patagonica*

* *Gackstroemia magellanica*
* *Lepidolaena menziesii*
Lepidozia chordulifera
* *Leptoscyphus aequatus*
Leptoscyphus expansus
Lophocolea leptantha
Marchantia berteroana
* *Megaceros endivaefolius*
* *Metzgeria leptoneura*
Riccardia tenax
Tylimanthus urvilleanus

Puerto Gallant Region Group

The paucity of taxa in each of the locality categories results from the fact that most of the taxa occurring in the Puerto Gallant region also occur in the Puerto Cutter region, and are thus included in the Puerto Cutter region group.

Bahia San Nicolas Region Group

Following is a list of the 15 taxa included within this group in Table 3.

Adelanthus tenuis
Archeochaete kuehnemannii
Calypogeia sphagnicola
Cephalozia patagonica
Cephaloziella dusenii
Clasmatocolea rigens
Lophocolea textilis
Lophozia patagonica
Marchantia polymorpha
Noteroclada confluens
Plagiochila equitans
Riccardia diversiflora
Riccardia georgiensis
Riccardia patens

These species do not occur in regions receiving more than 1,000 mm. of annual rainfall and it is likely that they are largely intolerant of rainfall levels in excess of this figure. Of these taxa only *Cephaloziella dusenii* and *Lophocolea textilis* are known from the Magellanian moorland. For an enumeration of the taxa endemic to the Bahía San Nicolas region see Table 4.

Puerto Del Hambre Region Group

The following is a list of the five taxa included within this group in Table 3.

Apometzgeria pubescens
Lophocolea lenta
Metzgeria violacea
Reboulia hemisphaerica
Roivainenia jacquinotii

These species do not occur in regions receiving more than 700 mm. annual rainfall, and it is likely that they are largely intolerant of rainfall levels in excess of this figure. Of these taxa only *Roivainenia jacquinotii* occurs in the Magellanian moorland and it is not common there. None of these taxa are local in distribution: *Apometzgeria pubescens* is bipolar, *Lophocolea lenta* is amphipacific temperate, *Reboulia hemisphaerica* is widespread, and *Metzgeria violacea* and *Roivainenia jacquinotii* are rather widely distributed in southern South America.

Laguna El Parrillar Group

A single species, *Leptoscyphus abditus,* occurs in the Laguna El Parrillar-Punta Arenas category, and none in the Laguna El Parrillar-Seno Otway category.

Stenotypic Taxa in the Flora

The large number of species endemic to the specific groups above, i.e., 23 found only in the Puerto Gallant region, 19 in the Puerto Cutter region, 13 in the Bahía San Nicolas region, 10 in the Puerto del Hambre region, is a reflection of the large number of stenotypic taxa in the Brunswick Peninsula flora. I have observed, not only in the Brunswick Peninsula, but in the Patagonian Channel region as well, that there are a large number of taxa which occur only if a precise combination of microhabitat requirements is available.

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 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, with slight modification, 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 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), Dusén, and Hooker, since I have frequently found more definitive and better representative specimens in a herbarium other than that of the describing author, and I have preferred to designate these as the lectotypes.

e. Herbarium Citations

Herbarium citations follow the abbreviations in Lanjouw and Stafleu (1964).

3. *Ecology*

I have provided ecological notes for species I have collected in the Brunswick Peninsula, if I have collected a sufficient number of specimens so that a meaningful statement regarding the ecology of a taxon can be made. However, in several instances I have discussed the ecology of rare taxa.

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

4. *Distribution*

The distribution of each species has been summarized, and the terminology and concepts used have been defined in the phytogeography section (see p. 16). The expression Patagonian Channels, however, has not been defined elsewhere, and I have used it to indicate the highly dissected portion of western Chile south of Puerto Montt to and including the Brunswick Peninsula (i.e., latitudes 41°28′ S. to 53°30′ S.). It includes the western portion of the mainland, and the channels near Puerto Natales, S. Skyring, S. Otway, etc.

5. *Literature Records*

I have listed the Brunswick Peninsula literature records for species which have been recorded for this peninsula. However, references in which Brunswick Peninsula taxa were *originally* described are given only in the taxonomic citations and are not repeated in the literature record section. Records from "Fretum Magellanicum" or "Strait of Magellan" are included only if they are based upon a *known* Brunswick Peninsula locality or indefinite as to specific locality, wherein I cannot establish, after a literature search, more precise collection data. In establishing Brunswick Peninsula literature records, I have attempted to edit the collector and locality information extracted from the various literature sources. For example, I have not included records of collectors reported to have gathered a species in the Brunswick Peninsula, when in actuality they did not. This exclusion was ascertained after a search of the *basis* of a particular report, and is particularly pertinent to Stephani (especially in his *Species Hepaticarum*), who frequently used the terminology "Fretum Magellanicum" to embrace localities in the Patagonian Channel region and/or Tierra del Fuego. Also excluded are records based upon individuals who did not actually visit the peninsula (see p. 38).

The localities are cited in the manner provided in the following gazetteers: Chile (U.S. Office of Geography: Chile . . . 1967) and Argentina (American Geographical Society of New York . . . Argentina . . . 1944). 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	B.—Bahía
A.—Arroyo	Br.—Brazo

Cta.—Caleta
C.—Cerro
Cord.—Cordillera
Ens.—Ensenada
Esto.—Estuario
F.—Fiordo
I.—Isla
L.—Lago
La.—Laguna
M.—Monte
Mt.—Mount, Mountain
Pen.—Península
Pta.—Punta
Port.—Portezuelo
Pto.—Puerto
Q.—Quebrada
Ran.—Rancho
R.—Río
S.—Seno
Sa.—Serra, Sierra
Vo.—Ventisquero
V.—Volcán

I have not specifically indicated new records for Brunswick Peninsula Hepaticae. New reports are recognizable by the absence of accompanying literature records.

6. Specimens Seen

The Brunswick Peninsula specimens I have personally collected are indicated by number only, without citation of collector. 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 Anthocerotae[1]

1. Gametophytic cells (at least superficial cells) each normally with 1 (-2-several) chloroplasts; cells lacking oil bodies; gametophyte prostrate, thalloid, 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 thalloid or leafy, without stomata; sporophyte a non-linear capsule, usually 4 valved, without a columella, without stomata; sex organs exogenous, not embedded
Class Hepaticae 2
   2. Rhizoids typically dimorphic, some tuberculate, others smooth; plants clearly thalloid, without leaflike lobes, the thallus firm, fleshy, opaque, with ventral scales, with air chambers or air canals opening dorsally by pores; cells typically 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 (archegoniophores) .... Order Marchantiales
   2. Rhizoids, if present, all smooth, isolated thickenings excepted; plants leafy or thalloid, if thalloid ± delicate and translucent, without air chambers or

[1]Key adapted from Schuster (1963c).

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
Order Jungermanniales

3. Plants usually thalloid (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 stratose .... Order Metzgeriales

C. Order Jungermanniales: Key to the Genera of the Brunswick Peninsula[1]

1. Leaves of main stems with insertion and orientation distinctly incubous, at least at dorsal end of insertion; ventral portions sometimes modified to form a lobule or water-sac; rhizoids always restricted in origin, never scattered on stem, often lacking or rare 2

1. Leaves of main stems varying from transversly to succubously inserted and oriented to almost longitudinally (horizontally) oriented; ventral margin of leaf never bearing, or transformed into, a lobule or sac; rhizoids often copious, often scattered on ventral face of stem 25

2. Leaves divided into a larger dorsal lobe and a solitary, smaller ventral lobe which is usually saclike or pouchlike; 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 lobed 15

3. Underleaves lacking 4

3. Underleaves present, conspicuous 5

4. Leaves with a wide J- or U-shaped insertion; rhizoids (where present) in fascicles from lobuli; stem of many (10 or more) cell rows, ventral merophytes 3-5 or more cells broad; leaves with lamina cells without conical projections; perianth mouth wide, truncate .... *Radula* (p. 230)

4. Leaves with a narrow transverse insertion; rhizoids in fascicles from stem; stem of only 5 cell rows, ventral merophytes 1(-2) cells broad; leaves with lamina cells with conical projections (in Brunswick species); perianth beaked
Aphanolejeunea (p. 243)

5. Underleaves unlobed and edentate 6

5. Underleaves bilobed or at least emarginate 8

6. Lobule broadly united with ventral margin of lobe, and lying normally parallel with it; plants deep green to pale brown, not developing reddish pigments
Archilejeunea (p. 244)

6. Lobule nearly free from lobe, lying essentially at right angles to it; plants commonly developing reddish pigments 7

[1]Adapted, with considerable modification, from Schuster (1963c) with portions from Schuster (1965b, 1966c).

7. Lobuli, at least in large part, galeate; plants with a large perigynium *Gackstroemia* (p. 78)
7. Lobuli not saccate or galeate; plants with perianths, perigynium absent *Porella* (p. 233)
 8. Lobuli, at least those of branches, galeate, nearly free from the dorsal lobe; plants often with reddish, brownish, or dark green coloration 9
 8. Lobuli not saccate or galeate, united for most of their length with dorsal lobe along an elongated 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 beak 11
9. Underleaves not becoming galeate; plants with perianths, but without a perigynium. Leaf margins entire .... *Frullania* (p. 234)
9. Underleaves, at least of the ultimate branches, becoming galeate; plants with a large perigynium 10
 10. Underleaves of main axis bifid, emarginate or entire; main axis commonly black brown; stems without paraphyllia .... *Gackstroemia* (p. 78)
 10. Underleaves of main axis quadrifid; main axis green to ± red; stems with paraphyllia (in American species) .... *Lepidolaena* (p. 82)
11. Plants with segmentation pendulumlike, i.e., with 1 underleaf per lateral leaf. Leaves highly specialized with conversion of the lobule and lobe (or portion of it) to a complex water-sac, the lobule closed by a specialized movable valve; plants with leaves erect, oriented away from the substratum ... *Colura* (p. 247)
11. Plants with segmentation helical, i.e., with 1 underleaf per *pair* of lateral leaves 12
 12. Leaves sharply constricted at base, with a strongly abbreviated, ± transverse attachment to the stem. Lobes narrow, obovate, elongated; lobule with a very narrow insertion formed by 1-2 cells, obovate, tridentate distally along free margin; underleaves narrow, with filiform lobes which are uniseriate for most of their length .... *Austrolejeunea* (p. 245)
 12. Leaves with a wide, distinctly J- or U-shaped insertion, the dorsal lobe distinctly incubously inserted 13
13. Hyaline papilla of lobule distal to apical tooth. Leaves convex, often strongly so; lobuli always ± inflated; plants firm, often dull and opaque *Cheilolejeunea* (p. 246)
13. Hyaline papilla of lobule proximal to apical tooth 14
 14. Lobe apices acute to acuminate, narrowly ovate to lanceolate to elliptical, 1.5×3× as long as wide. Leaves without ocelli; underleaves obdeltoid, with divergent blunt to rounded lobes .... *Harpalejeunea* (p. 248)
 14. Lobe apices blunt to rounded, usually less than 1.5 × as long as wide. Leaves with or without ocelli; plants delicate, usually with leaves flat or weakly convex; leaf trigones absent or small .... *Lejeunea* (p. 251)

15. 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 laciniate. Leaves nearly transversely inserted; cells rigid, with large coarse, sometimes confluent trigones; plants without perianths but with a fleshy coelocaule densely covered with scales and paraphyllia; plants with subfloral innovations *Lepicolea* (p. 75)

15. 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 16

16. Plants frequently 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 often only weakly incubous, the orientation subtransverse 17

16. 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, or lobes of different form than those of 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 nearly always short, ventral 19

17. Leaves distinctly vittate, a "vein" of longer cells running into each lobe; leaves deeply (0.50-0.75) bifid; cells with coarse trigones. Leaf lobes slender, often falcate .... *Herberta* (p. 64)

17. Leaves non-vittate, the lobe cells not conspicuously elongated; leaves 0.2-0.5 bifid-trifid; cells with trigones absent to small 18

18. Leaves and underleaves with teeth, when present, mostly in basal portion, scarce above; male bracteoles with antheridia; perianth distinct, without a coelocaule; plants usually without conspicuous pigmentation, at most pale brown .... *Triandrophyllum* (p. 65)

18. Leaves and underleaves with teeth, when present, often in apical portion, not predominently in basal portion; male bracteoles without antheridia; coelocaule present, firm, fleshy, with vestigial perianth at its tip; plants usually with reddish and/or chestnut brown to fuscous pigmentation *Isotachis* (p. 71)

19. Leaves deeply (2-)4-6 lobed for usually one-half or more the leaf length; plants regularly ± pinnately branched, ventral branches all intercalary 20

19. Leaves with apices edentate or 2-3 dentate-lobate, lobed for less than one-half leaf length 22

20. Lateral branches irregular, plastic, i.e., of *Frullania-*, *Microlepidozia-* (and in *K. mollis Acromastigum-*) type; intercalary branching both ventral and lateral. Underleaves frequently with 1 segment shorter than others *Kurzia* (p. 88)

20. Lateral branches all of *Frullania* type 21

21. Leaves with lamina one-half-4 cells high; leaf lobes uniseriate throughout, filiform and terete, at most 2 cells wide in basal cell tier; stem with a conspicuous hyaloderm layer, formed of large cells with walls little or not thickened contrasted to the smaller medullary cells often with thick walls; leaves usually symmetrical .... *Telaranea* (p. 103)

21. Leaves with a lamina many cells high; leaf lobes triangular, never filiform; stem without a hyaloderm layer (cortical cells ± thick walled, not conspicuously larger than medullary cells); leaves usually conspicuously asymmetric (dorsal margin longer and/or arched .... *Lepidozia* (p. 94)

22. Leaves entire or finely bidentate at apex; plants with marsupia *Calypogeia* (p. 110)
22. Leaves 2-4 dentate-lobate; plants with a perianth, without marsupia 23
23. Leaves of main axis 4 dentate-lobate. Lamina cells in longitudinal rows *Telaranea* (p. 103)
23. Leaves (0-)2-3 dentate-lobate 24
24. Stolons terminal in origin, replacing one-half of an underleaf; stem with a hyaloderm, at least the branches with only 7 rows of cortical cells; leaf apices 0-2 dentate-lobate .... *Acromastigum* (p. 83)
24. Stolons intercalary in origin, from axils of underleaves; stem without a hyaloderm, the cortical cells in many rows; leaf apices typically 2-3 dentate *Bazzania* (p. 84)

25. Stem with underleaves conspicuous throughout (not merely with a minute underleaf here and there), even on sterile stems 26
25. Stem with underleaves either lacking on sterile stems, or minute, or mere small, scattered cilia or laciniae, or groups of slime papillae, never conspicuous. Rhizoids almost always scattered over ventral stem surface if present at all . 52
26. Leaves sharply complicate bilobed, with a ± smaller (rarely subequal) dorsal lobe lying over a larger ventral lobe 27
26. Leaves not complicate bilobed if lobed at all, the lobes lying in nearly the same plane, or leaf merely concave or ± naviculariform, never folded 28

27. 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 coelocaule lying in the axis of the stem ....*Schistochila* (p. 138)
27. Apex of dorsal lobe at angle to axis of ventral lobe, the lobes ± divergent; keel between lobes wingless; leaf lobes bifid; cells of leaf lobe oriented in ± distinct tiers; sporophyte in a marsupium .... *Balantiopsis* (p. 134)
28. Mature leaves (2-)4-6(-9) 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 underleaf bases 29
28. Mature leaves undivided to 2 lobed (occasionally with accessory small lobes or teeth); if leaves lobed, the lobe margins entire or dentate, but not with long cilia; stem sometimes with a hyaloderm 35
29. Leaves appearing as a mass of interwoven cilia such that the lamina is obscured; plants green, without brown pigmentation. Plants with a fleshy coelocaule .... *Trichocolea* (p. 77)
29. Leaves without interwoven cilia and/or segments (or if so, e.g., in *Temnoma pilosum*, then plants with brown pigmentation), with at least part of lamina conspicuous. Plants with perianths, a coelocaule present only in *Lepicolea* .. 30
30. Leaf lobes uniseriate throughout, filiform and terete, at most 2 cells wide in basal cell tier; stem with a conspicuous hyaloderm. Leaves with lamina of one-half-4 cells high, disk margins entire ....*Telaranea* (p. 103)
30. Leaf lobes gradually tapering, 2 or more cells wide for most of their length (or if uniseriate throughout, then with brown pigments and a ciliate disk); stem without a hyaloderm 31

31. Leaves bisbifid (rarely bi- or trifid) 32
31. Leaves of mature shoots equally quadrifid 33
32. Leaf cells with large, coarse, sometimes confluent trigones; leaf and underleaf margins and segments often ciliate or laciniate; plants with a fleshy coelocaule, without perianths; plants with subfloral innovations *Lepicolea* (p. 75)
32. Leaf cells without trigones; leaf and underleaf margins and segments entire; plants with perianths, without a coelocaule; plants without, at least fertile, subfloral innovations .... *Pseudolepicolea* (p. 68)
33. Lateral branches irregular, plastic, i.e., *Frullania-*, *Microlepidozia-* (and in *K. mollis*, *Acromastigum-*) type; intercalary branching both ventral and lateral; underleaves frequently with 1 segment shorter than others ..... *Kurzia* (p. 88)
33. Lateral branches predominately of *Frullania*-type, only very rarely of *Microlepidozia-* or *Acromastigum*-type; underleaves not regularly possessing one segment shorter than others 34
34. Lobes of mature leaves (usually of vegetative shoot sectors, at least in and below gynoecia) 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 wide at open mouth .... *Temnoma* (p. 69)
34. 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 closely contracted to the narrow mouth. Leaves with segment apices setaceous; plants distinctly anisophyllous *Archaeochaete* (p. 67)
35. Plants isophyllose or nearly so; leaves deeply (0.5-0.75) bifid, distinctly vittate, a "vein" of longer cells running into each lobe. Cells with coarse trigones; leaf lobes slender, often falcate .... *Herberta* (p. 64)
35. Plants anisophyllose or if isophyllose, then with leaves and/or underleaves undivided or variously lobed, but never deeply bifid; leaves nonvittate 36
36. Rhizoids usually frequent to common, scattered over ventral stem surface or nearly to ventral leaf bases; if rhizoids very rarely produced as in *Pleurocladopsis*, then leaves with extremely coarse trigones which are confluent or separated by narrow thin areas 37
36. 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 42
37. Underleaves large, undivided or bifid, often ciliate; plants usually without stolons or flagella; vigorous plants, to 3-5 mm wide. Plants usually ± brownish 38
37. Underleaves small or minute, usually unlobed, eciliate; plants often with flagella or stolons; small plants (shoots to 0.7-2 mm wide) 40
38. Leaf cells with extremely coarse trigones which are confluent or separated by narrow thin places; leaves occasionally unlobed; plants with a coelocaule *Pleurocladopsis* (p. 138)
38. Leaf cells with trigones minute to large, but not confluent or separated by narrow thin places; leaves always lobed; plants with perianths 39
39. Bracts of innermost series very deeply lacerated, smaller than other bracts; perianth apex twisted; capsule wall 7 stratose; cuticle with high, coarse, hemispherical papillae ....*Roivainenia* (p. 122)

39. Bracts of innermost series not deeply lacerated, larger than other bracts; perianth apex not twisted; capsule wall (2-)3-5 stratose; cuticle smooth to minutely papillose (in Brunswick taxa) .... *Lophozia* (p. 120)

40. Leaves quite unequally bilobed, the dorsal lobe smaller; leaves succubously inserted throughout, large (leaf width much greater than stem width); perianth lacking, plants with marsupia. Cells with dense, conspicuous papillae *Acrobolbus* (p. 212)

40. Leaves subequally or equally bilobed; leaves with at least dorsal half transversely inserted (occasionally dorsal half subsuccubous in *non-Brunswick Cephalolobus* taxa), small (leaf width little broader than stem width), distant; perianth present. Plants with *Cephaloziella*-like facies 41

41. Branching exclusively lateral intercalary; leaf cuticle with conspicuous, very coarse, hemispherical, hyaline papillae .... *Cephalolobus* (p. 119)

41. Branching usually ventral intercalary, occasionally of *Frullania*-type; leaf cuticle (at least in *C. dusenii* and *C. magellanica*) smooth to at most with low, rounded papillae ....*Cephaloziella* (p. 222)

42. Stem very soft, pellucid, with a cortex of large hyaline cells (hyaloderm) surrounding a ± small-celled medulla (which is usually visible through the cortex by transmitted light), or if cortical cells smaller or slightly smaller than medullary, then with leaves polystratose, especially toward the base. Cells not collenchymatous; branching mostly intercalary, both lateral and ventral (terminal branching present, but rarely, only in *Pseudocephalozia*) 43

42. 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. Perianth, if developed, usually on a ± elongated stem or branch, or on short lateral (rarely on short ventral) branches 46

43. Leaves 2 or 3-4(5-6) lobed 44

43. Leaves undivided. Leaves hemispherical and ± cucullate or spoon shaped *Hygrolembidium* (p. 87)

44. Leaves cephalozioid (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 ....*Pseudocephalozia* (p. 102)

44. Leaves lepidozioid (leaf lobes turned ventrally), transversely to feebly incubously inserted, basically incubously or transversely oriented. Branching predominantly or nearly exclusively lateral- and ventral-intercalary with rare or sporadic *Frullania*- and *Microlepidozia*-type branching; hyaloderm of 6(-8) cells; leaves bifid to one-half to two-thirds; perianth elongate cylindrical, 3-4 plicate distally, mouth crenulated by elongated cells *Hyalolepidozia* (p. 87)

45. Plants producing marsupia, perianths absent; gynoecia (and androecia) always on abbreviated ventral branches. Leaves ovate, undivided or bidentate (occasionally short bifid in *S. vasculosum*), cuticle very densely papillose; underleaves one-half to three-fourths bifid (in Brunswick species), free from and much smaller than leaves; plants dull, opaque, gray or light-green plants developing (often) some brownish pigmentation .... *Saccogynidium* (p. 200)

45. Plants producing perianths, perigynia lacking; gynoecia on apices of unmodified stems or short lateral branches, rarely on short ventral branches 46

46. Perianth[1] ± strongly laterally compressed, mouth truncate, wide, 2-lipped. Plants often ± brownish, often intensely so 47

46. Perianth trigonous to trigonous inflated 48

47. *Andrewsianthus*-type branching present; leaves medially to basally polystratose; flagelliform branches present; stem tissue with endophytic hyphae *Evansianthus* (p. 173)

47. *Andrewsianthus*-type branching absent; leaves unistratose throughout; flagelliform branches absent; stem tissue without endophytic hyphae *Leptoscyphus* (p. 174)

48. Perianth ± inflated, restricted to strongly abbreviated lateral-intercalary branches; leaves unlobed or to 3 spinose-dentate ....*Chiloscyphus* (p. 151)

48. Perianth normally on more or less long branches (at least in large part; branches rarely abbreviated, and never consistently so); leaves undivided or bifid 49

49. Leaves moderately to deeply adaxially concave (at least slightly concave in *C. vermicularis*). Leaves frequently suborbicular to reniform in shape 50

49. Leaves convex and with apices decurved or deflexed 51

50. Stolons present; plants erect; leaves vertically oriented, subtransverse; leaf cells dimorphic, with the majority possessing oil-bodies, but with 10-20 percent of the cells lacking them ....*Stolonophora* (p. 200)

50. Stolons absent; plants prostrate or essentially so; leaves succubously oriented; leaf cells not dimorphic, all possessing oil-bodies *Clasmatocolea* (p. 158)

51. Leaves with lobes and marginal teeth caducous, often giving leaf apices a ragged appearance; leaf apices often with accessory teeth and laciniae *Leptophyllopsis* (p. 173)

51. Leaves entire or if lobed, then with lobes persistent; leaves with marginal teeth, if present, persistent; leaf apices never with a ragged appearance and not with accessory laciniae ....*Lophocolea* (p. 185)

52. Leaves ± sharply complicate-bilobed, transversely to succubously inserted and oriented. Leaf margins (and/or apices) often ± denticulate to ciliate .. 53

52. Leaves lobed or not, but if lobed, never with lobes sharply bent over each other. Perianth (if present), not sharply dorsiventrally compressed 56

53. Leaf lobes ± short bifid ....*Blepharidophyllum* (p. 129)

53. Leaf lobes undivided, never bifid 54

54. Leaves unequally complicate bilobed, the dorsal lobe much smaller than the ventral ....*Diplophyllum* (p. 133)

54. Leaves equally complicate-bilobed or nearly so 55

55. Leaf cells with large knotlike trigones; distal portion of keel often narrowly

[1]If sterile plants with non-adaxially concave leaves are at hand, see key to sterile plants of the *Leptoscyphus-Chiloscyphus-Lophocolea-Leptophyllopsis* complex on p. 148. If sterile plants with distinct adaxially concave leaves are at hand, but lacking *Andrewsianthus*-type branching, see genus *Clasmatocolea*. If with adaxially concave leaves and *Andrewsianthus*-type branching, see genus *Evansianthus*.

winged (in *P. spegazziniana*, but winged throughout in remainder of taxa) *Paraschistochila* (p. 137)

55. Leaf cells without trigones; keel never winged. Dorsal lobe dorsally recurved; rhizoids scattered, never in bundles. Plants paroecious *Krunodiplophyllum* (p. 133)

56. Stem soft textured, consisting of a conspicuous, hyaline cortex of enlarged cells (surrounding a medulla of much smaller, ± thick-walled cells usually distinct by transmitted light, or medullary cells also soft but large). Leaves bilobed; cells thin walled, ± hyaline 57

56. Stem anatomy highly various, but never with a hyaline cortex of large cells surrounding a medulla of smaller, ± thick-walled cells 58

57. Leaf insertion transverse at least dorsally, extended to stem midline; pigmentation, when present, purplish or brownish; leaves ± canaliculate, plano-distichous; branching plastic, always with free *Frullania*-type branches, plus lateral-intercalary and ventral-intercalary branches; gynoecia terminal on leading axes .... *Metahygrobiella* (p. 220)

57. 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 short, ventral branches which occasionally are elongated .... *Cephalozia* (p. 218)

58. Leaves inserted ± transversely (at least in part of the dorsal half of the insertion) and transversely oriented; leaves generally appearing ± pectinate when not densely appressed-imbricate 59

58. Leaves obliquely inserted and ± succubously oriented, at least half of the insertion quite oblique on stem to nearly horizontal 65

59. Leaves unlobed or to one-fifth bifid, margins often with 1- several rows of hyaline cells forming a border .... *Herzogobryum* (p. 128)

59. Leaves usually bilobed 0.35-0.50 their length, or if undivided (as in some taxa of *Adelanthus*) then with branching nearly exclusively ventral intercalary and with sex organs restricted to short, abbreviated ventral-intercalary branches from older basal portions of plants 60

60. Plants minute or small, wiry; the leaves remote, bilobed for 0.5 or more their length 61

60. Plants large; the leaves undivided or bilobed to ca. 0.35-0.45(-0.50) their length 62

61. Leaf lobes plane; leaves bifid to nearly 0.75 their length . . *Cephaloziella* (p. 222)

61. Leaf lobes sulcate; leaves bifid to nearly the base .... *Allisoniella* (p. 221)

62. Sex organs terminal on short, abbreviated ventral-intercalary branches from older basal portions of plants. Branching nearly exclusively ventral intercalary; leaves undivided, bidentate, bilobed or with 2 awns *Adelanthus* (p. 225)

62. Sex organs on unreduced axes: gynoecia terminal on main stems or lateral branches; androecia terminal but later becoming intercalary. Leaves consistently bifid 63

63. Leaf cuticle with conspicuous, very coarse hyaline papillae. Branching strictly lateral intercalary .... *Cephalolobus* (p. 119)

63. Leaf cuticle smooth, striolate, or weakly papillose, rarely coarsely papillose . 64

64. Branching strictly intercalary, arising from near the dorsal base of the leaf, occasionally appearing to arise from dorsal side of axis; branches and main axis frequently becoming flagelliform and positively geotropic *Andrewsianthus* (p. 118)

64. Branching variable, *Frullania*-type present in some taxa, ventral- or lateral-intercalary branches usually present, if the latter, then never arising from near the dorsal base of leaf or dorsal side of axis; stems and branches never or very exceptionally becoming flagelliform, not becoming positively geotropic. Cells with coarse, conspicuous trigones and thin to sinuous intervening walls; leaves strongly dorsally secund, the dorsal end of the line of insertion arcuate and ± decurrent along dorsal midline of stem ...... *Anastrophyllum* (p. 112)

65. Plants with perianths terminal on leafy, main or lateral stems; androecia intercalary or terminal on leading stems 66

65. Plants without perianths, with pendent perigynia or with an erect, fleshy, rigid shoot-calyptra, or if perianths present, then restricted to short abbreviated ventral-intercalary branches. Leaves various, often entire or irregularly dentate 68

66. 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* (p. 118)

66. Branching various, if intercalary, then arising from the ventral portion of the leaf axil, near the ventral portion of leaf base, or ventrally 69

67. Underleaves regularly produced, small, linear, inconspicuous, bifid, with setaceous segments. Leaves adaxially concave; plants erect *Stolonophora abnormis* (p. 200)

67. Underleaves, if present, not with the above combination of characters, often of 1-several short ciliary segments which end in slime papillae 68

68. Perianth laterally sharply compressed, wide and truncate at mouth. Vegetative branches lateral intercalary and/or terminal and of *Frullania* type, never ventral intercalary .... *Plagiochila* (p. 201)

68. Perianths terete below, pluriplicate and contracted to the mouth 69

69. Leaves unlobed, usually rounded at apex 70

69. Leaves consistently 2-4 lobed. Underleaves laciniate to ciliate, reduced or absent 71

70. 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* (p. 124)

70. Terminal branching present, if only isolated; flagellae only rarely and sporadically produced, mostly absent .... *Jamesoniella* (p. 125)

71. Leaves 2-4 lobed, often deeply so; ventral leaf margin plane . *Lophozia* (p. 120)

71. Leaves very short bifid; ventral leaf margin frequently inflexed or reflexed . 72

72. Dorsal and ventral leaf margins incurved to involuted, especially near the apex .... *Anastrophyllum involutifolium* (p. 114)

72. Dorsal margin slightly recurved or plane or slightly incurved, never consistently incurved or involuted. Ventral margin frequently slightly to strongly reflexed, never incurved .... *Anastrepta* (p. 111)

73. Plants without a marsupium, the erect calyptra becoming thick, green, massive, enclosing the developing sporophyte; leaves undivided, bidentate, bilobate

or with 2 awns; plants erect, frequently red-brown pigmented *Adelanthus* (p. 225)

73. Plants with a marsupium; leaves undivided or bilobed, plants erect or depressed, not developing secondary pigments 74
  74. Leaves unlobed, leaf margins entire; marsupium slenderly cylindrical, deeply penetrating substratum. Plants closely prostrate .... *Lethocolea* (p. 213)
  74. Leaves bilobed (or if undivided, then with leaf margins dentate to lobate), leaf margins entire-dentate-lobate; marsupium ± conoidal to wide cylindrical in shape, not deeply penetrating substratum 75

75. Leafy shoots ± ascending, not adhering to substratum by rhizoids; (?) antheridia 2-3 to 10-13(-15) per bract. Gynoecia and androecia variable in position, acrotonic or basitonic; plants a clear, translucent to opaque green, often whitish when dead; capsule tips acute .... *Tylimanthus* (p. 214)
75. Leafy shoots ± creeping, often entire axis including shoot tips adhering to the substratum by rhizoids; antheridia solitary. Leaves bilobed, often asymmetrically so; cuticle coarsely papillose; capsule tips acute .... *Acrobolbus* (p. 212)

Family HERBERTACEAE

K. Müll. (Freib.) *ex* Fulf. & Hatch. Bryologist 61: 284. 1959.

HERBERTA

S. Gray, Nat. Arr. Brit. Pl. 1: 678, 705. 1821 (*Herbertus, non Herbertus* p. 684) corr. Lindb. Acta Soc. Sci. Fenn. 10: 516. 1875 *(nom. cons.).*

Herberta runcinata (Tayl.) Kuntze

Sendtnera runcinata Tayl. Lond. J. Bot. 5: 372. 1846. *Herbertia runcinata* (Tayl.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 397. 1877. *Schisma runcinata* (Trev.) Steph. Spec. Hep. 4: 21. 1909. *Herbertia runcinata* (Tayl.) Kuntze, Rev. Gen. Pl. 2: 836. 1891. Original material: Chile, Prov. Chiloé, I. Chiloé, *Cuming 1447* (FH!, NY!).

Schisma reicheanum Steph. Spec. Hep. 4: 20. 1909, *syn. fide* Fulford (1963b). Original material: Chile, Prov. Chiloé/Aisén, R. Palena, *Reiche* (G)–cited in Fulford (1963b).

Schisma ferrugineum Steph. K. Svenska VetenskAkad. Handl. 46 (9): 72. *f. 28 a.* 1911, *syn. fide* Fulford (1963b). Original material: Chile, Prov. Aisén, Cta. Hale, *Halle* and/or *Skottsberg (non vidi);* Prov. Magallanes, Cta. Rayo, I. Atalaya and S. Skyring, B. Rodriguez, *Halle* and/or *Skottsberg (non vidi).*

Ecology.—Only in the evergreen forest "bryophyte rich facies" where it commonly occurred on the sides of bryophyte mounds. The plants often become very robust here.

Phytogeography.—Tierra del Fuego, Patagonian Channels, Valdivian region north to 39°36′ S. and Juan Fernandez (1,350-1,370 m. on Mas Afuera).

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, February 1861, *Mégère* (F); I. Isabel, February 1861, *Mégère* as *Jungermannia schismoides* (F). PUERTO GALLANT REGION: NE side of Pto. Gallant *(6063 A)*. PUERTO CUTTER REGION: N. of copper mine *(2197, 2208 B & 2215 B);* W. of copper mine *(2228)*.

TRIANDROPHYLLUM

Fulf. & Hatch. Bryologist 64: 349. 1962. Fulf. & Hatch. Bryologist 61: 277. 1959, *nom. illeg. sin. gen. typ.*[1] Grolle, Bryologist 64: 25. 1961, *nom. nud.*

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

Phytogeography—The species is Amphipacific temperate; it occurs in New Zealand and Tasmania and in the American zone in southern South America and north in the Andes to Guatemala. *T. subtrifidum* var. *trifidum* is Andean American in distribution.

A single variety of the species occurs in the Brunswick Peninsula.

Triandrophyllum subtrifidum (Hook. f. & Tayl.) Fulf. & Hatch. var. **trifidum** (Gott.) Solari

?*Sendtnera trifida* Gott. Annls Sci. Nat. V. 1: 142. 1864. *Isotachis trifida* (Gott.) Steph. Spec. Hep. 3: 670. 1909 *non I. trifida* Steph. Sp. Hep. 6: 356. 1922 (=*I. sprucei* Beauv. *in* Steph. Spec. Hep. 6: 572. 1924). *Mastigophora trifida* (Gott.) Steph. Spec. Hep. 4: 37. 1909. *Triandrophyllum trifidum* (Gott.) Fulf. & Hatch. Bryologist 64: 348. 1962. *Triandrophyllum subtrifidum* (Hook. f. &

[1]*Triandrophyllum* was invalidly published in Fulford & Hatcher (1959), as no nomenclatural type was designated (see Article 37 of the *International Code of Botanical Nomenclature* (1966) and Schuster (1963a, p. 42)). *Triandrophyllum* was validated by Fulford and Hatcher (1962), but in the interim period, *Triandrophyllum fernandeziensis* (S. Arnell) Grolle was published (see Grolle, Bryologist 64 (1): 25. 1961a). This transfer is invalid as it was made prior to proper typification of the genus. The effective transfer of the species is as follows: *Triandrophyllum fernandeziensis* (S. Arnell) Grolle *ex* Fulf. & Hatch. Bryologist 64 (4): 351. 1962.

Tayl.) Fulf. & Hatch. var. *trifidum* (Gott.) Solari, Boln Soc. Argent. Bot. 15: 201. 1973. Original material: Colombia, Fusagasuga, *Lindig 1722* (G)–cited in Fulford & Hatcher (1962) and Solari (1973).

Herberta dura Steph. Hedwigia 34: 44. 1895, *syn. fide* Fulford & Hatcher (1962). *Schisma dura* (Steph.) Steph. Spec. Hep. 4: 21. 1909. *Triandrophyllum durum* (Steph.) Fulf. & Hatch. Bryologist 61: 279. 1959. Original material: "Fretum magellanicum. leg. Hooker fil. Herb Kew, sub nomine Jung. tenacifolia" (K)–cited in Fulford (1963b).

Mastigophora antarctica Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6): 56. 1900, *syn. fide* Fulford & Hatcher (1962). *Triandrophyllum antarcticum* (Steph.) Fulf. & Hatch. Bryologist 61: 281. 1959. Original material:[1] Chile, Prov. Aisén, R. Aisén Valley, *Dusén* s.n. (S-PA!), *243* (S-PA!, UPS!); Prov. Llanquihue, Peulla, *Dusén* s.n. (S-PA!), *457* (S-PA!, UPS!).

Isotachis appendiculata Steph. Spec. Hep. 3: 659. 1909, *syn. cf.* Fulford & Hatcher (1959). Original material: Patagonia, without specific locality, *Dusén* (G)–cited in Fulford (1963b).

Lepicolea boliviensis Steph. *in* Herzog, Biblthca Bot. 87: 228. *f. 171 a-c.* 1916, *syn. cf.* Fulford & Hatcher (1959). Original material: Bolivia, above Tablas, 3,400 m., May 1911, *Herzog 2853* (G–cited in Fulford, 1963b; S-PA!—c. per.).

Isotachis subtrifida (Hook. f. & Tayl.) Mitt. var. *De Gasperii* Gola, Nuovo G. Bot. Ital. II. 29: 170. 1923, *syn. nov.* Holotype: Chile, Prov. Magallanes, Valle delle Fate, 9 March 1913, *Gasperi* (FI!).

Isotachis ripensis Spruce var. *armata* Herz. Revue Bryol. Lichén. 11: 24. 1939, *syn. fide* Grolle (1964b). Holotype: Costa Rica, V. de Turrialba, 2,000-2,400 m. 1924, *Standley 35279* (JE)–cited in Grolle (1964b).

Remarks.—Stephani (1900) cites the following localities for his new species, *Mastigophora antarctica:* a) "in valle fluminis Aysen," and b) "ad Peulle." I have seen several syntypes (S-PA, UPS) from both these localities and all are *Triandrophyllum subtrifidum* var. *trifidum,* based upon the presence of one-to-several sharp, spinose teeth of the underleaves and basal portion of the ventral margins of the leaves, coupled with the preponderance of three-lobed leaves.

[1]Fulford & Hatcher (1959, p. 283) erroneously state the original material of *M. antarctica* was collected in South Georgia.

Mastigophora antarctica therefore rightfully belongs in the synonymy of *T. subtrifidum* var. *trifidum* rather than *T. subtrifidum* var. *subtrifidum* where Solari (1973) has placed it.

Ecology.—Occurring where abundant moisture available within the evergreen forests and evergreen-deciduous ecotonal areas. I found it on faces of exposed rock walls where there was some drainage from above, on stream banks and on soil and rock of a moist, well-shaded cliff face.

Brunswick Peninsula Specimens Seen.—PUERTO DEL HAMBRE REGION: Near Fuerte Bulnes, *Hatcher 4-5, 6-3, 6-7 & 6-13* (UW-M). BAHIA SAN NICOLAS REGION: W. side of bay *(6314);* E. side of bay *(6398 & 6399).* PUERTO GALLANT REGION: NE side of Pto. Gallant *(6074).* PUERTO CUTTER REGION: N. of copper mine (*2190*–c. per. & *2193*).

Family PSEUDOLEPICOLEACEAE

Fulf. & J. Tayl. Nova Hedwigia 1: 411. 1960.

ARCHEOCHAETE

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

Archeochaete kuehnemannii Schust.

Archeochaete kuehnemannii Schust. J. Hattori Bot. Lab. 26: 262. 1963. *Pseudolepicolea kuehnemannii* (Schust.) Hässel, Comun. Mus. Argent. Cienc. Nat. Bernardino Rivadavia 2: 48. 1974, *nom. inval. basion. non cit.* 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* (hb. Schuster–*non vidi*).

Remarks.—See Schuster (1965a) and Hässel de Menendez (1974).

Ecology-Phytogeography.—Rare; found in a *Sphagnum* bog, a habitat similar to that of the type, which is from Tierra del Fuego. Also encountered on a rotted log in an evergreen *Nothofagus* forest. The species is otherwise known from the Falkland Islands (leg. *Engel*) and several localities in Tierra del Fuego (*cf.* Hässel de Menendez, 1974).

Brunswick Peninsula Specimens Seen.—LAGUNO EL PARRIL-

LAR: Near E. shore of lake, ca. 365 m. (*2110* & *2114*–c. ♂). BAHIA SAN NICOLAS REGION: W. side of bay (*6342 B*).

PSEUDOLEPICOLEA

Fulf. & J. Tayl. Nova Hedwigia 1 (3-4): 412. 13 April 1960. *Lophochaete* Schust. Revue Bryol. Lichén. 26 (3-4): 126. 1957, *nom. inval. sin. descr. lat.* Schust. Bryologist 61: 25, 50. 1958, *nom. inval. sin. descr. lat.* Schust. Bryologist 62: 237. 1959, *nom. inval. sin. descr. lat.* Schust. J. Hattori Bot. Lab. 23: 197. 18 April 1961.[1]

Pseudolepicolea quadrilaciniata (Sull.) Fulf. & J. Tayl.

Sendtnera quadrilaciniata Sull. Hooker's Bot. Kew Gdn. Misc. 2: 317. 1850. *Leperoma* (?) *quadrilaciniata* (Sull.) Mass. Nuovo G. Bot. Ital. I. 17: 253. 1885. *Lepicolea quadrilaciniata* (Sull.) Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6): 56. 1900. *Blepharostoma quadrilaciniata* (Sull.) Schiffn. Hedwigia 51: 282. 1912. *Pseudolepicolea quadrilaciniata* (Sull.) Fulf. & J. Tayl. Nova Hedwigia 1: 413. 13 April 1960. *Lophochaete quadrilaciniata* (Sull.) Schust. J. Hattori Bot. Lab. 23: 199. 18 April 1961, *nom. inval.* Original material: Chile, Prov. Magallanes, B. Orange, *U.S. Exploring Exped.* (apparently lost). Neotype (*fide* Fulford 1963b): Chile, Prov. Aisén, R. Aisén Valley, *Dusén* (NY–*non vidi*).

Lepicolea georgica Steph. K. Svenska VetenskAkad. Handl. 46 (9): 73. *f. 28 f, g.* 1911, *syn. fide* Schuster (1966c). *Pseudolepicolea georgica* (Steph.) Fulf. & J. Tayl. Nova Hedwigia 1: 416. 1960. Original material: South Georgia, *Skottsberg* (G, S-PA).

Blepharostoma pigafettoanum Gola, Nuovo G. Bot. Ital. II. 29: 169. *pl. 1, f. 20-22.* 1923, *syn. nov.* Original material: Chile, Prov. Magallanes, S. Agostini (=S. Pigafetta), 8 February 1913, *Gasperi s.n.* (FI!).

Phytogeography.—South Georgia, Tierra del Fuego, and Patagonian Channels north to 45°25′ S.

Brunswick Peninsula Specimens Seen.—PUERTO GALLANT REGION: NE side of Pto. Gallant (*6080 B*, *6083*–c. ♂ & *6086*).

[1] I should like to thank Drs. Poelt and Hattori for providing the precise dates of publication for the above indicated parts of Nova Hedwigia and J. Hattori Bot. Lab. respectively.

TEMNOMA

Mitt. *in* Hook. f., Handb. N. Z. Flora Pt. 2. 753. 1867. *Teinnoma* Mitt. Phil. Trans. R. Soc. 168 (extra vol.): 32, 33. 1879, *err. typogr.*[1] (*et* Mitten, 1884).

KEY TO THE BRUNSWICK PENINSULA TAXA OF *Temnoma*

1. Leaves with numerous (50-85) long cilia; each leaf lobe with 4-7(8) pairs of cilia, the longest cilia of 6-8 superposed cells; plants isophyllous . . . . *T. pilosum*
1. Leaves without numerous long cilia; each leaf lobe of sterile stem entire or with 1-3(4) pairs of short, stiff teeth or cilia towards the base; plants anisophyllous, the underleaves ca. 0.5-0.75 × the size of lateral leaves *T. quadripartitum* . . . 2
    2. Disk margins near or at base commonly with an enlarged lobelike spine, the leaf then seemingly palmately 5-6 lobed; lobe margins entire or with isolated, usually small, abaxially displaced teeth near sinus bases; lobes 16-22(23-30) cells long . . . . var. *randii*
    2. Disk margins rarely with accessory teeth so conspicuously lobelike that the leaf is seemingly 5-6 lobed; lobe margins usually freely spinose-dentate toward base; lobes usually 12-16(17) cells long . . . . var. *quadripartitum*

Temnoma pilosum (Evans) Schust.

Blepharostoma pilosum Evans, Bull. Torrey Bot. Club 25: 413. *pl. 345, f. 1-6.* 1898. *Temnoma pilosum* (Evans) Schust. Bryologist 62: 240. 1960. Lectotype (*cf.* Fulford, 1963b): Chile, Prov. Magallanes, Ens. Villarino, *J. B. Hatcher* (Y–*non vidi*).

Blepharostoma pinnatisetum Steph. Spec. Hep. 3: 639. 1909, *syn. fide* Fulford (1963b). *Temnoma pinnatisetum* (Steph.) Schust. Bryologist 62: 240. 1960. Original material: Chile, Prov. Aisén, R. Aisén Valley, *Dusén 515* (G)–cited in Fulford (1963b).

[1]I regard the use of the genus *"Teinnoma"* as a typographical error for several reasons. First, 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." Second, *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 mouth of the perianth." Third, as *Temnoma* is a Mitten genus, there would have been little reason for this author to alter the spelling 12 years later. Fourth, in my opinion the fact that *"Teinnoma"* is twice mentioned in 1879 merely indicated the editor chose to use one spelling consistently. Finally, the paper by 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.

Temnoma chilense Fulf. Mem. N.Y. Bot. Gdn. 11: 56. *f. 2 a-c.* 1963, *syn. fide* Schuster (1967a). Holotype: Chile, Prov. Llanquihue, Puerto Varas, *Hatcher & Fulford* (hb. Fulford–*non vidi*).

Phytogeography.—Tierra del Fuego, southern Patagonian Channels (Brunswick Peninsula), and the Valdivian region north to 41°19′ S.

Brunswick Peninsula Specimens Seen.—PUERTO DEL HAMBRE REGION: Near Fuerte Bulnes, *Hatcher 1-7* & *6-6*–c. per. (UW-M).

Temnoma quadripartitum (Hook.) Mitt.

Phytogeography.—Amphipacific temperate; northward extensions in the American sector (West Patagonia to 39°16′ S., Andean Patagonia at P. N. Nahuel Huapi), and in the New Zealand sector into the mountains of North Island, New Zealand. Also present in the subantarctic, on Îles de Kerguélen, Îles Crozet, Marion Island, and Prince Edward Island (see pl. 14).

The report from Tristan da Cunha in Arnell (1958) is based on a specimen of *Archeochaete temnomoides* (see Schuster, 1966c). The report from Inaccessible Island in Arnell (1958) is questionable.

Literature Records.—*Anonymous*—Strait of Magellan (Schiffner, 1895 as *Blepharostoma,* Schuster, 1967a–var. *randii*); *Andersson*–Pto. del Hambre (Ångstrom, 1872 as *Jungermannia*, Fulford, 1963b, Schuster, 1967a–var. *typica*); *Warnstorf*–Strait of Magellan (Fulford, 1963b as *T. subintegrum*).

Two varieties of the species occur in the Brunswick Peninsula.

Temnoma quadripartitum (Hook.) Mitt. var. **quadripartitum**

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 (1967a).

Jungermannia podophylla Ångstr. Öfvers. K. VetenskAkad. Förh. 29 (4): 11. 1872, *syn. fide* Pearson (1887); *non J. podophylla* Thunb. Prodr. Fl. Cap. 2: 174. 1823 *(=Symphyogyna).* Original material: Chile, Prov. Magallanes, Pto. del Hambre, *Andersson s.n,* (S-PA)–cited in Schuster (1967a).

Brunswick Peninsula Specimens Seen.—LAGUNO EL PARRILLAR: 4 km. E. of lake, ca. 305 m. (*2122 A*–c. per.+ ♂). BAHIA SAN NICOLAS REGION: W. side of bay (*6342 A*–c. sporo., *6381*–c. sporo.+ ♂); ridge between B. Bougainville and B. San Nicolas, ca. 155 m. (*6423 C*–c. per.+sporo. & *6432 A*). PUERTO GALLANT REGION: NE side of Pto. Gallant (*6040*–c. per.+sporo.+ ♂ & *6065 B*–c. per.).

Temnoma quadripartitum (Hook.) Mitt. var. **randii** (S. Arnell) Schust.

Lepidozia randii S. Arnell, Svensk. Bot. Tidskr. 47: 417. *f. 6.* 1953. *Temnoma quadripartitum* (Hook.) Mitt. var. *randii* (S. Arnell) Schust. Candollea 21: 307. 1967. Original material: Marion Is., *Rand 3276 (S-PA)*–cited in Schuster (1967a).

Temnoma subintegrum Steph. *ex* Fulf. Mem. N.Y. Bot. Gdn. 11: 57. 1963, *syn. fide* Schuster (1967a). *Blepharostoma quadripartitum* var. *subintegrum* Steph. Icon. Hep. *Blepharostoma* no. 10b, *nom. nud.* Original material: Chile, Prov. Magallanes, Pto. Bueno, *Dusén 46* (G, H)–cited in Fulford (1963b) and Schuster (1967a) respectively.

Brunswick Peninsula Specimen Seen.—PUERTO CUTTER REGION: N. side of copper mine *(2301 E).*

Family ISOTACHIDACEAE

Hatch. Nova Hedwigia 2: 579. 1960 ("Isotachaceae").

ISOTACHIS

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

Key to the Brunswick Peninsula Species of *Isotachis*

1. Underleaf margins one to several dentate-laciniate to occasionally small lobate. The armature often coarse. Underleaves usually bifid to one-half; underleaf basal lobe cells 14-25 μ wide, 40-71(-78) μ long .... *I. grossidens*
1. Underleaf margins entire or variously dentate, occasionally small lobate. Underleaves 0.2-0.5 bifid; underleaf basal lobe cells 12-24 μ wide, 24-42(-44) μ long .... *I. humectata*

Isotachis grossidens Steph.

Isotachis grossidens Steph. K. Svenska VetenskAkad. Handl. 46 (9): 69. *f. 25 f, g.* 1911. Lectotype (*fide* Solari, 1971b): Chile, Prov.

Magallanes, I. Riesco, R. Grande, 16 April 1908, *Skottsberg 128* (UPS–*non vidi*).

Phytogeography.—Southern Patagonian Channels (Brunswick Peninsula, S. Skyring, S. Otway) and Valdivian region north to 40°08′ S.

Brunswick Peninsula Specimen Seen.—PUERTO DEL HAMBRE REGION: Near Fuerte Bulnes, *Hatcher 4-14* (UW-M).

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

Jungermannia humectata Hook. f. & Tayl. Lond. J. Bot. 3: 462. 1844. *Lophocolea humectata* (Hook. f. & Tayl.) Steph. Bull. Herb. Boissier II. 6: 656. 1906 (=Spec. Hep. 3: 72). *Isotachis humectata* (Hook. f. & Tayl.) Steph. Spec. Hep. 3: 654. 1909. Lectotype *(nov.):* Falkland Is., *Hooker* (FH!).

Jungermannia madida Hook. f. & Tayl. Lond. J. Bot. 3: 465. 1844, *non J. madida* Nees *in* Martius, Fl. Bras. seu Enum. Pl. 1 (1): 362. 1833 (=? *Porella, fide* Swails, 1970, p. 249). *Isotachis madida* (Hook. f. & Tayl.) Mitt. *in* Hook. f. Bot. Ant. Voy. 2: 149. 1854. Lectotype *(nov.):* Chile, Prov. Magallanes, I. Hermite, *Hooker* (FH!–c. sporo.).

Isotachis fusca Steph. K. Svenska VetenskAkad. Handl. 46 (9): 68. *f. 25 d, e.* 1911, *syn. fide* Hatcher (1960). Original material: Chile, Prov. Chiloé, V. Corcovado, 31 July 1908, *Halle* and *Skottsberg 126* (NY!, UPS–cited in Solari, 1971b); Prov. Magallanes, F. Peel, F. de Los Ventisqueros, *Halle* and/or *Skottsberg;* Argentina, Terr. Tierra del Fuego, Ushuaia, R. Olivia, *Halle* and/or *Skottsberg (non vidi).*

Isotachis pallens Steph. K. Svenska VetenskAkad. Handl. 46 (9): 70. *f. 25 h-l.* 1911, *syn. fide* Hatcher (1960). Original material: Chile, Prov. Chiloé, I. Chiloé, R. Pudeto, *Skottsberg* (G, UPS)–cited in Hatcher (1960) and Solari (1971b) respectively.

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, UPS)–cited in Hatcher (1960) and Solari (1971b) respectively.

Isotachis aequifoliata Steph. Spec. Hep. 6: 349. 1922, *syn. fide* Hatcher (1960). Original material: Bolivia, without specific locality, *Herzog 2848* (G)–cited in Hatcher (1960).

Isotachis flavicans Steph. Spec. Hep. 6: 351. 1922, *syn. fide* Hatcher (1960). Original material: Chile, without specific locality, *Skottsberg 739* (G)–cited in Hatcher (1960) and Solari (1971b).

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 (1963c, 1964) 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 & Taylor (1844, p. 462). Stephani (1906) transferred the species to *Lophocolea,* but 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 (p. 31) states 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 or the *Lophocolea* transfer.

Solari (1971b) recognized both *I. madida* and *I. humectata* as distinct taxa and distinguishes them by stem anatomy, leaf segment cell size, and underleaf shape and marginal characters. I have examined type material of both taxa, and I regard *I. humectata* as a hygrophilus form of a highly variable species which includes *I. madida.* I have found considerable variation in a) cortical cell size [12-27(-35 μ wide)] and wall thickness; b) medullary cell size [(14-)16-33 μ in diameter]; c) leaf segment cell size (18-35 μ long, 12-34 μ wide), wall thickness and trigone presence and size;

and d) underleaf marginal armature. The underleaf margins of *I. humectata* are entire or with 1(-2) teeth or small lobes on either side and fall well within the underleaf variation of *I. madida (s. str.)*.

Solari placed *I. obtusiloba* in synonymy of *I. humectata*. I regard *Isotachis obtusiloba* as distinct, with underleaves considerably smaller than the leaves and underleaf margins with one very large lobe on either side.

Several Brunswick Peninsula plants agree with the treatment of *I. fragilis* in Hatcher (1961) and Fulford (1963b), particularly the presence of a deep brown pigmentation and small cell size. *Isotachis fragilis* is stated to be small and compact with stems 2-3 cm. long and median leaf cells 47×16 μ. *Isotachis humectata*, however, is stated to be pale green to greenish brown, larger, with stems 3-8 cm. long and median leaf cells $60\text{-}90 \times 20\text{-}30$ μ. I have studied numerous specimens which are intermediate between the characters used to distinguish the taxa. As an example, plants of *Engel 6078* are light brown to green brown in color, are large (to 6.3 cm. long), yet possess median leaf cells of $39\text{-}46 \times 14\text{-}17$ μ, measurements within the range given for *I. fragilis*. With the incorporation of this data into that of *I. madida* in Hatcher, plants of *I. madida* may be brown pigmented, have stems 2-8 cm. long and median leaf cells of $33\text{-}90 \times 14\text{-}30$ μ. Since I have not seen type material of *I. fragilis,* I cannot assess its relationships to *I. madida* with certainty.

Solari (1971b) separates *I. fragilis* from *I. madida* on color alone, with the former brilliantly chestnut colored.

The stems and leaves of *Hatcher 7-12* are rose pigmented, a character not previously recorded for *I. humectata*.

Ecology.—Only within the evergreen forest region and then in situations where considerable moisture was available, such as on stream banks and rocks in streams, in a shallow wet depression in the "bryophyte rich facies," and on coastal rocks. Also on soil of a moist, shaded cliff base. The above mentioned coastal rocks (Pto. Cutter) received fresh water from rain and forest run-off, with salt water influence at most moderate. However, the species is able to grow in tidal zone regions (see Engel & Schuster, 1973).

Phytogeography.—Falkland Islands, Tierra del Fuego, Patagonian Channels, and in the Valdivian region north to 36°43′ S.

The nonsouthern South American records require confirmation.

Literature Records.—Anonymous–Strait of Magellan (Bonner, 1966 as *I. madida*); *Dusén*–Strait of Magellan (Hatcher, 1960; Fulford, 1963b).

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, *Dusén 242* as *I. madida* (G); *ibid., sin. coll.* (NY). PUERTO DEL HAMBRE REGION: Near Fuerte Bulnes, *Hatcher 7-12* (UW-M). BAHIA SAN NICOLAS REGION: E. side of bay *(6413 B)*. PUERTO GALLANT REGION: NE side of Pto. Gallant (*6065 A*–c. perigyn., *6066, 6072, 6073, 6078*–c. sporo.+perigyn., *6081 A, 6084 B, 6085* & *6089*–c. perigyn.). BAHIA ARAUZ: 3 May 1908, *Halle & Skottsberg 214* as *I. subtrifidum* (S-PA). PUERTO CUTTER REGION: Between copper mine and river S. of mine *(2161 E)*; N. side of copper mine *(2314)*.

Family LEPICOLEACEAE

Schust. Nova Hedwigia 5: 27. 31 January 1963. Schust. *ex* Fulf. *in* Fulford, Mem. N.Y. Bot. Gdn. 11: 30. 15 March 1963. Schust. Revue Bryol. Lichén. 26: 126. 1957, *nom. inval.*

LEPICOLEA

Dum. Recueil Obs. Jungerm. 20. 1835.

Key to the Brunswick Peninsula 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, the tip cell not a slime papilla .... *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, the tip cell a slime papilla .... *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. Lond. J. Bot. 3: 289 (*in errore pro* 389), 475. 1844, *nom. nud.*

Sendtnera ochroleuca β mexicana Gott. Kongel. Danske Vidensk. Selsk. Naturvidensk. Math. Afh. II. 6: 236. 1863, *syn. fide* Scott (1960).

Phytogeography.—Amphiatlantic; South Africa, Tristan da Cunha, Falkland Islands, Tierra del Fuego, Patagonian Channels, Valdivian region (West Patagonia north to 39°16′ S., Andean Patagonia at P. N. Nahuel Huapi), Juan Fernandez, north in Andes to Mexico; also known from Brazil [cf. Lorscheitter (1973)].

The report from India in Hooker (1867) is 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).

Literature Records.—*Cunningham*–Pto. Gallant (Scott, 1960; Fulford, 1963b); *Lechler*–Rada York (Scott, 1960; Fulford 1963b); *Schubert*–Strait of Magellan (Reimers, 1926); *Skottsberg & Halle*—Pto. Cutter (Stephani, 1911).

Brunswick Peninsula Specimens Seen.—RADA YORK: *Lechler s.n.* (NY). PUERTO CUTTER REGION: At copper mine *(2266)*.

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. I. 17: 252. 1885. *Lepicolea rigida* (De Not.) Scott, Nova Hedwigia 2: 148. 1960. Original material: Chile, "Prov. Valparaiso, Valparaiso," *Puccio* (NY!).

Lepicolea seriata Herz. Hedwigia 66: 91. *f. 8.* 1926, *syn. fide* Scott (1960). Original material: Chile, Prov. Aisén, Pta. Leopardos, *Reichert & Hicken s.n.* (JE)–cited in Scott (1960).

Ecology.—Rather common in the evergreen forest "bryophyte rich facies" where part of the bryophyte mounds and on shrub branches. In these situations the plants are often very robust. In forested areas on *Nothofagus* trunks and branches where it may form a thick dense mat.

Phytogeography.—Falkland Islands, Tierra del Fuego, Patagonian Channels, and Valdivian region north to 46°32′ S., 73°52′ W. (Pta. Leopardos) (see pl. 9).

Literature Records.—*Cunningham*–Pto. Gallant (Scott, 1960, Fulford, 1963b); *Dow*–Strait of Magellan (Scott, 1960; Fulford, 1963b); *Pillwax*–Strait of Magellan (Scott, 1960; Fulford, 1963b).

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, 1868, *Dow* (BM as *Sendtnera ochroleuca,* NY as *L. ochroleuca*); *ibid.*, Kryptogamae Exsiccatae, Editae a Museo Palatino Vindobonensi, no. 95, *Pillwax* as *Leperoma ochroleuca* (BM, F); *ibid.*, *Whinnii* as *Sendtnera ochroleuca* (BM). BAHIA SAN NICOLAS REGION: Mature forest on W. side of bay *(6361 & 6369)*. PUERTO GALLANT REGION: Pto. Gallant, *Cunningham 256* (BM as *L. ochroleuca,* NY); *ibid.*, *Cunningham 261* as *L. ochroleuca* (NY); NE side of Pto. Gallant *(6076)*. PUERTO CUTTER REGION: Between copper mine and river S. of Mine *(2155 B, 2165, 2178 & 2184 A)*; N. of copper mine *(2202 & 2208 A)*; at copper mine *(2278)*; base of M. Condor *(2351 B)*.

Family TRICHOCOLEACEAE

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

TRICHOCOLEA

Dum. Comment. Bot. 113. 1822 *(Thricholea)*, corr. Nees, Naturg. Eur. Leberm. 3: 103. 1838, *(nom. cons.)*.

Trichocolea elegans Lehm.

Trichocolea elegans Lehm. Nov. Minus Cog. Stir. Pug. 10: 8. 1857. Original material: Chile, Prov. Valdivia, *Lechler* (NY)–cited in Hatcher (1958).

Trichocolea verticillata Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6): 57. 1900, *syn. fide* Hatcher (1958). Original material: Chile, Prov. Magallanes, Pto. Bueno, 31 May 1896, *Dusén 52* (G!), S. Molyneux, 1 June 1896, *Dusén* (NY!); Prov. Aisén, R. Aisén Valley, January 1897, *Dusén* (NY!); Prov. Llanquihue, La Ensenada, *Dusén (non vidi)*; Prov. Chiloé, I. Chiloé, *Dusén (non vidi)*; Argentina, Prov. Río Negro, Puerto Blest, July 1897, *Dusén* (NY!).

Trichocolea decrescens Steph. K. Svenska VetenskAkad. Handl. 46 (9): 77. *f. 30 b, c.* 1911, *syn. fide* Hatcher (1958). Lectotype *(nov.)*: Chile, Prov. Magallanes, Cta. Rayo, 1908, *Skottsberg 587* (G! as "Patagonia occid.").

Ecology.—Forested areas (mature forests at B. San Nicolas and Pto. Gallant) where on rotted logs and on bark of trees, sometimes in a mat of vegetation covering the trunks.

Phytogeography.—Tierra del Fuego, Patagonian Channels, Valdivian region (including Andean Patagonia), and Juan Fernandez.

The report of this species (as *T. verticillata*) from Tristan da Cunha and Inaccessible Island in Arnell (1958), should be confirmed. The record from Australia in Stephani (1909) is doubtful.

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, 1901, *Schubert* as *T. verticillata* (FH). PUERTO DEL HAMBRE REGION: Near Fuerte Bulnes, *Hatcher 4-3* (UW-M). BAHIA SAN NICOLAS REGION: W. side of bay *(6337)*. PUERTO GALLANT REGION: B. Fortescue (*6000 A*–c. sporo.). PUERTO CUTTER REGION: Slightly W. of copper mine *(2254 & 2264 B)*; base of M. Condor *(2349)*.

Trichocolea Species Excluded from the Brunswick Peninsula

1. *Trichocolea tomentosa* (Sw.) Gott.

Jungermannia tomentosa Sw. Nov. Gener. Sp. Pl. Prodr. 145. 1788. *Trichocolea tomentosa* (Sw.) Gott. Annls. Sci. Nat. V. 1: 132. 1864. *Basichiton tomentosum* (Sw.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 394. 1877. Original material: Jamaica, *Swartz* (S-PA) —cited in Hatcher (1958).

Reported by Ångström (1872 as *Jungermannia*) for an Andersson Pto. del Hambre collection. According to Hatcher (1958), the species is widespread in tropical South America and the West Indies and extends north in Mexico.

Family 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 the Brunswick Peninsula Species of *Gackstroemia*

1. Dorsal lobes of main axis armed and auriculate at dorsal base; cilia of dorsal lobes of *branch* leaves and helmets consistently present and as long or longer than the helmets; plants dioecious .... *G. magellanica*
1. Dorsal lobes of main axis not armed or auriculate at dorsal base; cilia of dorsal lobes of *branch* leaves and helmets mostly absent, when present distinctly shorter than the helmet length; plants monoecious 2
   2. Helmets inflated throughout, with a lateral slit which is ca. at right angles with the helmet mouth; tooth or cilium of helmet persistent, inserted directly

above the termination of the lateral slit; perianth mouth ± ciliated; plants on soil where seepage present .... *G. patagonica*

2. Helmets contracted toward the mouth, inflated distally, without a lateral slit; free helmet margin at angle greater than 90° with helmet mouth; tooth of helmet often absent, when present considerably removed from mouth; perianth mouth entire; plants on bark .... *G. hariotiana*

Gackstroemia hariotiana (Besch. & Mass.) Grolle

Polyotus hariotianus Besch. & Mass. Bull. Mens. Soc. Linn. Paris 1: 639. 1886. *Lepidolaena hariotiana* (Besch. & Mass.) Schiffn. *in* Engl. & Prantl, Natür. Pflanzenfam. 1 (3,1): 110. 1895. *Gackstroemia hariotiana* (Besch. & Mass.) Grolle, J. Hattori Bot. Lab. 30: 12. 1967. Original material: Chile, Prov. Magallanes, I. Hermite, *Hariot* (PC)–cited in Grolle (1967).

Hariotiella hermitensis Mass. Nuovo G. Bot. Ital. II. 5: 259. 1898, *nom. inval. prov.*

Ecology.—Collected but once in the peninsula, on bark of *Nothofagus betuloides.*

Phytogeography.—Tierra del Fuego and southern Patagonian Channels (Brunswick Peninsula).

Brunswick Peninsula Specimen Seen.—PUERTO GALLANT REGION: NE side of Pto. Gallant *(6026*–c. sporo.).

Gackstroemia magellanica (Lam.) Trev.

Jungermannia magellanica Lam. Encycl. Method. Bot. 3: 284. 1789 *non J. magellanica* Spreng. Annln Wetter. Ges. Naturk. 1 (1): 25. 1809 *(=Frullania). 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. Buitzenzorg 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 L. halleana* Steph. Spec. 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. Spec. Hep. 6: 371. 1923, *syn. fide* Grolle (1967) *non L. skottsbergii* Steph. K. Svenska Vetensk-Akad. Handl. 46 (9): 76. 1911 (=*L. menziesii fide* Grolle, 1967). Original material: Falkland Is., 1909, *Skottsberg s.n.* (G)–cited in Grolle (1967).

Remarks.—*Gackstroemia magellanica* is more variable than the account in Grolle (1967) would indicate. Grolle states the ventral lobes are entire or with a "Granne" and the underleaves of the main axis are entire. I have found the margins of these structures, on occasion, copiously ciliated. Occasionally, stems possess underleaves with rather densely ciliated margins, while others on the same axis are nearly entire (see *Engel 2245 B*).

Ecology.—Evergreen *Nothofagus* forests from the very wet western end to near the evergreen-deciduous forest boundary. In forested areas on bark of *Nothofagus* and *Drimys* (often as part of a mat of vegetation covering a trunk or branch), on rotted logs and less commonly on soil. Very common and conspicuous element of the evergreen forest "bryophyte rich facies" where at the bases, sides, and apices of bryophyte mounds, very commonly intermixed with other Hepaticae such as *Adelanthus lindenbergianus, Anastrophyllum involutifolium, Clasmatocolea puccioana, Jamesoniella colorata, Leptoscyphus horizontalis, Plagiochila ansata,* and *Riccardia prehensilis* as well as the moss *Dicranoloma imponens.*

Phytogeography.—Falkland Islands, Tierra del Fuego (widespread), Patagonian Channels, Valdivian region (West Patagonia north to 39°52′ S.), and Juan Fernandez (see pl. 12).

Australasian records of the species were shown by Grolle (1967) to be plants of *G. weindorferi.*

Literature Records.—*Anonymous*–Strait of Magellan (Schwaegrichen, 1814 as *Jungermannia,* Stephani, 1909 as *Lepidolaena,* Kühnemann, 1937, 1949 as *Lepidolaena*); *Andersson*–Pto. del Hambre (Ångström, 1872 as *Jungermannia,* Grolle, 1967); *Commerson*–Strait of Magellan (Hooker, 1818 and Taylor & Hooker, 1847b as *Jungermannia,* G. L. & N., 1845 as *Polyotus,* Montagne, 1845, 1852 as *Polyotus,* Reimers, 1926 as *Lepidolaena,* Hodgson, 1959 as *Lepidolaena,* Grolle, 1967; *Dumont d'Urville*–Pto. Gallant (Montagne, 1845 as *Polyotus*), Strait of Magellan (Montagne, 1852 as *Polyotus*); *Jacquinot*–Pto. Gallant (Montagne, 1845 as *Polyotus*); *Lechler*–Rada York (Grolle, 1967), Rada York, Punta Arenas (Reimers, 1926 as *Lepidolaena*); *Le Guillou*–Strait of

Magellan (Reimers, 1926 as *Lepidolaena*); *Santesson*–C. Mina Rica (Arnell, 1955 and Müller, 1955 as *Lepidolaena*), Tres Puentes (Arnell, 1955 as *Lepidolaena*), Punta Arenas (Grolle, 1967); *Schubert*–Strait of Magellan (Reimers, 1926 as *Lepidolaena*); *Skottsberg & Halle*–Pto. Cutter (Stephani, 1911 as *Lepidolaena*).

Brunswick Peninsula Specimens Seen.—Without specific locality, 13 February 1929, *Roivainen 844c* (H). Strait of Magellan, without specific locality, *Albatross* (F, FH, NY); *ibid.*, 1868, *Dow 4, Collinson, Coppinger, Cunningham* (NY); *ibid.*, February 1861, *Nadaud* (F); *ibid.*, 1901, *Schubert* (FH). PUNTA ARENAS REGION: Punta Arenas, *Thaxter s.n., 52, 57* (FH), *Thaxter s.n.* (MICH). LAGUNO EL PARRILLAR: Just E. of lake, ca. 365 m. *(2083);* 4 km. E. of lake, ca. 305 m. *(2128).* FIORDO SILVA PALMA: Angostura Titus, *Pisano 3814* (F). PUERTO DEL HAMBRE REGION: Pto. del Hambre ("Magellan Sound"), *Andersson* (NY); N. side of R. San Juan, 1 km. from straits *(1868).* CABO SAN ISIDRO: 13 February 1929, *Roivainen 2390* as *L. hallei* (H). BAHIA SAN NICOLAS REGION: B. San Nicolas, *Pisano 3350* (F); W. side of bay *(6332, 6342 D, 6367 A, 6387 & 6388 B);* between B. Bougainville and B. San Nicolas (*6432 E*–f. depauperata). BAHIA WOOD: April 1869, *Cunningham 89* (NY). PUERTO GALLANT REGION: B. Fortescue *(5958 D & 5969);* Pto. Gallant, March 1867, *Cunningham 129* (NY); NE side of Pto. Gallant *(6004 E, 6008 E, 6022 D, 6027 B, 6037 A & 6042 D).* RADA YORK: *Lechler* (NY). PUERTO CUTTER REGION: Between copper mine and river S. of mine *(2129-2, 2135 A, 2138 B, 2141, 2157 B, 2163 B, 2167 C, 2173 A, 2175 B, 2179 C & 2186);* N. of copper mine *(2205 B);* W. of copper mine *(2232, 2234 B, 2242 B, 2245 B & 2253);* base of M. Condor *(2333, 2338 & 2351 A).*

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*).

Phytogeography.—Falkland Islands, Tierra del Fuego (R. Azopardo and Pto. Angosto), and southern Patagonian Channels (Brunswick Peninsula and Canal Gajardo).

Brunswick Peninsula Specimens Seen.—PUERTO GALLANT

REGION: NE side of Pto. Gallant (*6045 C, 6062* & *6080 A*–c. perigyn.).

LEPIDOLAENA

Dum. Recueil Obs. Jungerm. 13. 1835.

Lepidolaena menziesii (Hook.) Dum.

Jungermannia menziesii Hook. Musci Exot. 2: *pl. 118, f. 1-6.* 1820. *Lepidolaena menziesii* (Hook.) Dum. Recueil Obs. Jungerm. 13. 1835. *Polyotus menziesii* (Hook.) Gott. *in* G. L. & N. Syn. Hep. 247. 1845. Original material: Argentina, Terr. Tierra del Fuego, I. de los Estados, *Menzies* (E)–cited in Grolle (1967).

Lepidolaena skottsbergii Steph. K. Svenska VetenskAkad. Handl. 46 (9): 76. *f. 29 i, k.* 1911, *syn. fide* Grolle (1967) *non L. skottsbergii* Steph. Spec. Hep. 6: 371. 1923 *(=Gackstroemia magellanica).* Lectotype (*fide* Grolle, 1967): Chile, Prov. Magallanes, Pto. Cutter, *Halle & Skottsberg* (UPS–*non vidi*).

Lepidolaena halleana Steph. Spec. Hep. 6: 370. 1923, *syn. fide* Grolle (1967) *non L. hallei* Steph. K. Svenska VetenskAkad. Handl. 46 (9): 74. *f. 29 a-d.* 1911 *(=Gackstroemia magallanica).* Lectotype (*fide* Grolle, 1967): W. Patagonia, without specific locality, *Halle & Skottsberg* (G–*non vidi*).

Ecology.—Only in evergreen forests, in forested areas on soil and rotted logs, while in the "bryophyte rich facies" it occurred on the floor, particularly in well-shaded, wet depressions. It occasionally occurred as part of the bryophyte mounds.

Phytogeography.—Tierra del Fuego, Patagonian Channels, Valdivian region north to 36°50′ S., and Juan Fernandez (1,350 m. on Mas Afuera).

Grolle (1967) points out the reports from Campbell Island, New Zealand and Antipodes Island are erroneous, and for the most part are plants of *L. hodgsoniae.*

Literature Records.—*Andersson*–Pto. del Hambre (Ångström, 1872 as *Jungermannia*); *Savatier*–Pto. Gallant (Bescherelle & Massalongo, 1889 as *Polyotus*); *Skottsberg & Halle*–Pto. Cutter (Grolle, 1967).

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, *Cunningham 164* (NY); *ibid.*, 1868, *Dow 5* (NY). PUNTA ARENAS REGION: Punta Arenas, *Lechler* (NY).

SENO OTWAY REGION: B. Camden *(2006 A)*. CABO SAN ISIDRO: 13 February 1929, *Roivainen 2394* (H). BAHIA SAN NICOLAS REGION: W. side of bay *(6334 A)*; ridge between B. Bougainville and B. San Nicolas, ca. 155 m. *(6422 A)*; PUERTO GALLANT REGION: Pto. Gallant, 1879, *sin. coll.* (PC–c. perigyn.); B. Fortescue, 28 November 1886, *Safford* as *Trichocolea tomentella* (NY); ibid., (*5953*–c. coel. & *5958 C*). RADA YORK: *Lechler* (NY). PUERTO CUTTER REGION: Between copper mine and river S. of mine *(2170, 2171 A & 2173 B)*; W. of copper mine (*2222* & *2247*–c. coel.); at copper mine *(2269A)*; base of M. Condor *(2350 B & 2353)*.

Lepidolaena Species Excluded from the Brunswick Peninsula

1. *Lepidolaena palpebrifolia* (Hook.) Dum. *ex* Trev.

Jungermannia palpebrifolia Hook. Musci Exot. 1: *pl. 71, f. 1-9.* 1818. *Lepidolaena palpebrifolia* (Hook.) Dum. Recueil Obs. Jungerm. 13. 1835, *nom. inval. Polyotus palpebrifolius* (Hook.) Gott. *in* G. L. & N. Syn. Hep. 246. 1845. *Lepidolaena palpebrifolia* (Hook.) Dum. *ex* Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 393. 1877. Original material: New Zealand, South Island, Dusky Bay, *Menzies* (E, NY, S-PA)–cited in Grolle (1967).

Reported for the Brunswick Peninsula by G. L. & N. (1845), Montagne (1852), Mitten (1854), Taylor & Hooker (1847b), and Kühnemann (1937, 1949). All records are based upon a Dumont d'Urville collection, which according to Grolle (1967) presumably is *Lepidolaena menziesii*. *Lepidolaena palpebrifolia* is endemic to New Zealand.

Family LEPIDOZIACEAE

Limpr. *in* Cohn, Kryptogamenfl. Schles. 1: 310. 1875 [sub Lepidozieae].

ACROMASTIGUM

Evans, Bull. Torrey Bot. Club 27: 103. 1900.

Acromastigum cunninghamii (Steph.) Evans

Bazzania cunninghamii Steph. Hedwigia 32: 205. 1893. *Mastigobryum cunninghamii* (Steph.) Steph. Spec. Hep. 3: 540. 1909. *Acromastigum cunninghamii* (Steph.) Evans, Annls. Bryol.

Suppl. 3: 106. 1934. Lectotype (*cf.* Fulford, 1966): Chile, Prov. Magallanes, Pto. Gray, *Cunningham 147* (BM–*non vidi*).

Ecology.—Collected but once in the Brunswick Peninsula, and then only in the wettest portion. It grew on a well shaded soil bank in a small forested area.

Phytogeography.—Patagonian Channel region north to 43°57′ S. in the Valdivian region. Grolle (1961a) notes the reports in Herzog (1954) are actually based upon plants of *A. laetevirens.*

Brunswick Peninsula Specimen Seen.—PUERTO CUTTER REGION: Slightly W. of copper mine *(2257).*

BAZZANIA

S. Gray, Nat. Arr. Brit. Pl. 1: 704, 775. 1821 *(Bazzanius),* corr. Carrington, Trans. Bot. Soc. Edinb. 10: 309. 1870 *(nom. cons.).*

KEY TO THE BRUNSWICK PENINSULA SPECIES OF *Bazzania*

1. Leaves with a conspicuous vitta; underleaves one-third to one-half divided into 4 teeth .... *B. nitida*
1. Leaves without a vitta; underleaves with apices entire to variously incised, serrated to spinose-dentate to lobed, never with regular production of 4 teeth. Underleaves connate with leaves on both sides .... *B. peruviana*

Bazzania nitida (Web.) Grolle

Jungermannia nitida Web. Hist. Musc. Hep. Prodr. 43. 1815. *Bazzania nitida* (Web.) Grolle, Revue Bryol. Lichén. 29: 210. 1960. Original material: South Africa, Cape Prov., Cape of Good Hope, *Thunberg (non vidi).*

Mastigobryum convexum Lindenb. *in* G. L. & N. Syn. Hep. 215. 1845, *syn. cf.* Fulford (1946). *Jungermannia convexa* Thunb. Prodr. Pl. Cap. 173. 1800 *non J. convexa* Scop. Fl. Carniol. 2nd ed. 2: 349. 1772. *Bazzania convexa* (Lindenb.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 414. 1877. Original material: South Africa, Cape of Good Hope, *Thunberg (non vidi).*

Mastigobryum richardianum Mitt. *in* Hook. f. Bot. Ant. Voy. 2: 147. 1854, *syn. cf.* Fulford (1946). *Bazzania richardiana* (Mitt.) Kühnem. Revta Cent. Estud. Doct. Cienc. Nat., B. Aires 1: 156. 1937. Original material: Chile, Prov. Magallanes, Strait of Magellan, without specific locality, *sin. coll.,*[1] (Herb. Richard) (NY!).

[1]Fulford (1946, 1959, 1963b) states that Richard made the collection. Richard did not visit southern South America. According to Stephani (1909, p. 532), Hooker

Bazzania carlii Herz. Beih. Bot. Zbl. 61 (B): 565. *f. 1, e-h.* 1942, *syn. fide* Fulford (1963b). Type: Brazil, Sta. Catharina, Jaraguá, 400 m., 30 July 1937, Carl (JE)–cited in Fulford (1963b).

Remarks.—Jones (1975) has a description and two plates of the species.

Phytogeography.—Pan-temperate; reportedly occurs in New Zealand, Australia, South Africa, southern South America, and Brazil.

Literature Records.—*Anonymous*–Strait of Magellan (Stephani, 1909 as *Mastigobryum convexum,* Kühnemann, 1949 as *B. convexa*); *Richard*–Strait of Magellan (Fulford, 1946, 1959 as *B. convexa*).

Bazzania peruviana (Nees) Trev.

Mastigobryum peruvianum Nees *in* G. L. & N. Syn. Hep. 220. 1845. *Bazzania peruviana* (Nees) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 414. 1877. Original material: Peru, without specific locality, *sin. coll.* (FH!).

Bazzania brevidens Mitt. *in* Melliss, St. Helina p. 369. 1875 [*sub Bazzanius*] *non B. brevidens* (Steph.) Hatt. Bot. Mag., Tokyo 59: 26. 1946, *syn. fide* Grolle (1963a). Original material: Tristan da Cunha, *Milne* (NY)–cited in Grolle (1963a).

Mastigobryum lechleri Steph. Hedwigia 25: 134. *pl. 6, f. 10-14.* 1886, *syn. fide* Fulford (1946). *Bazzania lechleri* (Steph.) Spruce, Mem. Torrey Bot. Club 1: 129. 1900. Original material: Chile, Prov. Valdivia, Valdivia, *Lechler* (FH, G)–cited in Fulford (1959).

Mastigobryum peruvianum var. *β minimum* Schiffn. *in* Naumann, Forschungsr. *Gazelle* 4 (4): 17. *pl. 4, f. 17-18.* 1890, *syn. fide* Fulford (1946). Original material: Chile, Prov. Magallanes, I. Desolación, B. Tuesday, *Naumann* (FH)–cited in Fulford (1946).

Mastigobryum cerinum Steph. Bull. Herb. Boissier II. 8 (10): 773. 1908 (=Spec. Hep. 3: 457), *syn. fide* Fulford (1959). Original material: Chile, Prov. Magallanes, I. Newton, *Dusén* (G)–cited in Fulford (1959).

footnote continued from p. 84.

made the collection (in which case the collection locality is erroneous as Hooker did not visit the Strait of Magellan). The specimen may possibly have been collected during the visit of the *Astrolabe* and *Zélée* to the Strait of Magellan and later communicated to Richard.

Mastigobryum skottsbergii Steph. K. Svenska VetenskAkad. Handl. 46 (9): 60. *f. 22 i, k.* 1911, *syn. fide* Grolle (1963a). *Bazzania skottsbergii* (Steph.) Fulf. Ann. Crypt. Phytopath. 3: 122. 1946. Lectotype (*fide* Fulford, 1959): Juan Fernandez, Mas a Tierra, 1908, *Skottsberg 50* (G!).

Mastigobryum creberrimum Steph. K. Svenska VetenskAkad. Handl. 46 (9): 60. *f. 22 c, d.* 1911, *syn. cf.* Fulford (1959). *Bazzania creberrima* (Steph.) S. Arnell, Results Norw. Scient. Exped. Tristan da Cunha 1937-1938, 3 (42): 4. 1958. Original material: Chile, Prov. Chiloé, I. de San Pedro; Prov. Aisén, Cta. Hale; Prov. Magallanes, Cta. Rayo, *Skottsberg* and/or *Halle (non vidi).*

Ecology.—Wetter portions of the peninsular evergreen forests as part of the thick vegetation covering of tree trunks, as well as in pendent sheets of bryophytes, both situations of which are quite common in the region.

Phytogeography.—Andean South American; Tierra del Fuego, Patagonian Channels, the Valdivian region, Juan Fernandez, Peru, Brazil, and Tristan da Cunha.

Literature Records.—*Schubert*–Strait of Magellan (Fulford, 1959, 1963b).

Brunswick Peninsula Specimens Seen.—PUERTO GALLANT REGION: B. Fortescue *(5989).* PUERTO CUTTER REGION: Slightly W. of copper mine *(2242 A, 2251 B & 2255);* base of M. Condor *(2327, 2342 & 2354).*

Bazzania Species Excluded from the Brunswick Peninsula

1. *Bazzania involuta* (Mont.) Trev.

Herpetium involutum Mont. Annls. Sci. Nat. II. 19: 253. 1843. *Mastigobryum involutum* (Mont.) G. L. & N. Syn. Hep. 220. 1845. *Bazzania involuta* (Mont.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 414. 1877. Original material: Auckland Is., *Hombron (non vidi).*

Reported for the Strait of Magellan by Stephani (1908). According to Hodgson (1954), *B. involuta* occurs on Auckland and Stewart Islands and New Zealand.

2. *Bazzania spruceana* Steph.

Bazzania spruceana Steph. Hedwigia 32: 213. 1893. *Mastigobryum spruceanum* (Steph.) Steph. Bull. Herb. Boissier II. 8 (11): 845.

1908 (=Spec. Hep. 3: 469). Original material: Peru, M. Guayrapurina, *Spruce* (FH)–cited in Fulford (1946).

Mastigobryum burchellii Steph. Bull. Herb. Boissier II. 8 (12): 959. 1908 (=Spec. Hep. 3: 509), *syn. fide* Fulford (1959). Original material: Brazil, *Burchell 3847* (G)–cited in Fulford (1959).

The report of this species from the Strait of Magellan stems from the Stephani (1908) type locality information provided for *M. burchellii.* However, as discussed in Fulford (1959), the locality data accompanying the original description plus that on the type packet are erroneous, since the original material was actually gathered in Brazil.

HYALOLEPIDOZIA

S. Arnell *ex* Grolle, Revue Bryol. Lichén. 32: 179. 1963. S. Arnell, Bot. Notiser 115: 203. 1962, *nom. inval. sin. descr. lat.*

Hyalolepidozia bicuspidata (Mass.) S. Arnell *ex* Grolle

Lepidozia bicuspidata Mass. Nuovo G. Bot. Ital. I. 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).

Ecology.—Mixed with *Sphagnum* sp. in protected hollows in an open *Empetrum-Nothofagus* mosaic and on the sides of bryophyte mounds in the "bryophyte rich facies."

Phytogeography.—Amphiatlantic temperate; South Africa (Table Mt.), southern Patagonia (Brunswick Peninsula and R. Rubens), Patagonian Channels, the Valdivian region north to 41°46′ S. (West Patagonia), Juan Fernandez, and "Frai Jorge."

Brunswick Peninsula Specimens Seen.—BAHIA SAN NICOLAS REGION: Ridge between B. Bougainville and B. San Nicolas (*6429* –c. per. & *6436*–c. per.). PUERTO GALLANT REGION: NE side of Pto. Gallant *(6036 E).*

HYGROLEMBIDIUM

Schust. J. Hattori Bot. Lab. 26: 277. 1963.

Hygrolembidium isophyllum Schust.

Hygrolembidium isophyllum Schust. Nova Hedwigia 15: 467. *pl. 56*. 1968. Holotype: Argentina, Terr. Tierra del Fuego, C. Garibaldi, near L. Escondido, *Schuster 58319e* (hb. Schuster!).

Remarks.—See comments in Engel (1974).

Ecology-Phytogeography.—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 localities known for the species are the mountainous region of Isla Grande de Tierra del Fuego and the Falkland Islands (leg. *Engel*). On the mainland this taxon seems to be restricted to deciduous *Nothofagus* forests of magellanian South America (see pl. 7).

Brunswick Peninsula Specimen Seen.—PUNTA ARENAS REGION: Ridge above refugio (Club Andino), 8 km. W. of Punta Arenas, 305-610 m. (*1982*–c. per.+sporo.).

KURZIA

v. Mart., Flora 28: 417. 1870.

Microlepidozia (Spruce) Jørg. Bergens Mus. Skr. 16: 303. 1934. *Lepidozia* subg. *Microlepidozia* Spruce, J. Bot., Lond. 14: 165. 1876. *Micrisophylla* Fulf. Brittonia 14: 124. 1962, *syn. fide* Schuster, 1969c, p. 41.

There has been some degree of doubt expressed concerning the validity of the genus *Micrisophylla*. Grolle (1963b) transferred one of the species regarded by Fulford (1962) as a *Micrisophylla (M. saddlensis)* out of *Lepidozia* to *Kurzia*. Schuster (1969c, 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 *Micriso-*

phylla thus remains open to question." I regard the genus *Micrisophylla* as a distinct and highly primitive subgenus of *Kurzia.*

Micrisophylla was described in Fulford (1962) for four species of southern South American Hepaticae, and was held by her to be distinct from *Kurzia* because of the possession of the following characters: a) the radial symmetry of leafy stems; b) the long ventral stolons; c) the wide variation in gynoecial 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 ± regularly pinnate pattern with regularly alternating *Microlepidozia*- and *Frullania*-branch types which are characteristic of *Kurzia (sensu stricto).*

I regard *K. 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 irregular branch system. Fulford (1966, p. 222) implies true symmetry for the species in her statement "leaves and underleaves alike." However, the underleaves are 0.65-0.85 × the size of the leaves. I have studied the branching of *K. mollis* in some detail. *Frullania*-type, *Acromastigum*-type (a branch type not previously reported for "*Micrisophylla,*" 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 denuded of branches. *Microlepidozia*-type and lateral-intercalary branches are very rarely produced. I have found the 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, *K. mollis* is a highly unspecialized, primitive taxon. Fulford (1962) states for the gynoecial position of the species, "female inflorescence terminal on a long flagelliform branch ending in an enlarged turgid tip." While I have seen gynoecia 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 *Kurzia* (and the family Lepidoziaceae). The instability of gynoecial position is also considered a primitive condition.

Kurzia setiformis (the type species of *Micrisophylla*) was found to be intermediate between *K. mollis* and *K. saddlensis*. This species, like *K. mollis,* possesses the irregularly pinnate, diffuse branching, but differs in lacking *Acromastigum*-type branches. The underleaves are 0.45-0.75 the leaf size and are thus somewhat more anisophyllous than *K. mollis*. Fulford (1962, 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 gynoecia observed were found to occur on short, abbreviated ventral-intercalary branches. While *K. mollis* is pigmented only at the base, with upper portions green, *K. setiformis* possesses brownish secondary pigmentation throughout the entire plant.

Kurzia (Micrisophylla) saddlensis may be regarded as more advanced (reduced) than the above two taxa. The branching in *K. 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 denuded of branches, as well as branchless axes, are occasionally produced). Thus, *K. saddlensis* possesses a branch pattern similar to *Kurzia (sensu stricto)*. This taxon is slightly more anisophyllous than *K. setiformis,* with the underleaves 0.40-0.66 (-0.86) the leaf size. This species is thus the most reduced of the three taxa and culminates a reduction sequence from the primitive *K. mollis* through *K. setiformis* to *K. 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 *K. setiformis,* this species has the deep brown secondary pigmentation. It is with good reason then, that Grolle (1963b) regards *Micrisophylla saddlensis* as a species of *Kurzia*.

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 three species of *Kurzia* examined, I have found aborted underleaf segments to be a highly consistent and dependable character. *Kurzia 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 *K. 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 *K. saddlensis* have 1-2 segments of an underleaf aborted, and on a given axis, nearly all of the underleaves have aborted segments, with ± equal segments scattered or in groups among the typical individuals.

In summary, I regard *Micrisophylla* Fulf. as a subgenus of *Kurzia* for the following reasons outlined: 1) The presence of a typically Microlepidozioid branching pattern in *K. saddlensis,* which represents the extreme in a progression toward branch stabilization in the subgenus. As *K. 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 *Kurzia (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 *Kurzia,* 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 *K. setiformis*) are features which mark the subgenus as the most primitive element within the genus *Kurzia*.

KEY TO THE BRUNSWICK PENINSULA SPECIES OF *Kurzia*

1. Leaf lobes (2-3) 4 cells wide at base; 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 .... *K. mollis*
1. Leaf lobes (4-) 5-12 cells wide at base; 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 *K. setiformis*

Kurzia mollis (Steph.) Engel & Schust.

Lepidozia mollis Steph. Spec. Hep. 3: 601. 1909. *Micrisophylla mollis* (Steph.) Fulf. Brittonia 14: 131. 1962. *Kurzia mollis* (Steph.) Engel & Schust. *in* Engel, Bryologist 79: 514. 1976. Original material: Chile, Prov. Magallanes, Pto. Bueno, *Dusén s. n.* (G)–cited in Fulford (1962).

Phytogeography.—Falkland Islands, Tierra del Fuego, and the Patagonian Channels north to 50°59′ S.

Brunswick Peninsula Specimens Seen.—PUERTO GALLANT REGION: NE side of Pto. Gallant *(6064 D, 6071 A & 6088 C)*. PUERTO CUTTER REGION: N. of copper mine (*2213*–c. ♂+♀ & *2313*–c. ♀).

Kurzia setiformis (De Not.) Engel & Schust.

Lepidozia setiformis De Not. Memorie Accad. Sci. Torrino II. 16: 255. *f. XIII, 1-6. 1855. Mastigophora setiformis* (De Not.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 416. 1877. *Micrisophylla setiformis* (De Not.) Fulf. Brittonia 14: 127. 1962. *Kurzia setiformis* (De Not.) Engel & Schust. *in* Engel, Bryologist 79: 514. 1976. Neotype[1] (*fide* Fulford 1966): Argentina, Terr. Tierra del Fuego,

[1]Fulford (1962) lists a Spegazzini collection (*ex hb.* Massalongo 115[2]) 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).

I. de los Estados, *Spegazzini s.n.* (G 334! *ex hb.*Massalongo 115[2]). Original material: Chile, "Prov. Valparaiso, Valparaiso," *Puccio (non vidi).*

Lepidozia obscura Ångstr. *in* Steph. Spec. 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 cunninghamii Steph. Spec. Hep. 6: 322. 1922, *syn. fide* Fulford (1962). Original material:[1] Chile, Prov. Magallanes, Pto. Grappler, *Cunningham inter no. 179* (G)–cited in Fulford (1962).

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.*

Phytogeography.—Falkland Islands, Tierra del Fuego, and the Patagonian Channels north to 48°55′ S.; reportedly disjunct in Tasmania (*fide* Fulford, 1962, 1966).

Literature Records.[2]—*Anonymous*–Strait of Magellan (Kühnemann, 1937, 1949 as *Lepidozia obscura* and *L. setiformis*); *Andersson*–Strait of Magellan (Fulford, 1962, 1966 as *Micrisophylla*).

Brunswick Peninsula Specimens Seen.—PUERTO GALLANT REGION: NE side of Pto. Gallant (*6018 B*–c. per. + ♀ + ♂, *6048 C*–c. per. + ♂ & *6051*); NE side of Pto. Gallant *6070 A*–c. per., *6088 B*–c. mature per. + ♂). PUERTO CUTTER REGION: N. of copper mine (*2216*–c. per.)

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

[2]Stephani (1909) cites a specimen of *Lepidozia setiformis* as from "Fretum magellanicum (. . . Grappler)." This, however, is erroneous, as "Grappler" is a locality name and not a collector (Puerto Grappler is 49°25′ S., 77°19′ W. in Prov. Magallanes).

Notes on "*Kurzia*" Species

1. *Micrisophylla cucullifolia* (Steph.) Fulf.

Lepidozia cucullifolia Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6): 51. 1900. *Micrisophylla cucullifolia* (Steph.) Fulf. Brittonia 14: 133. 1962. Original material: Chile, Prov. Chiloé, I. Guaitecas, *Dusén 387* (G, K)–cited in Fulford (1962).

Isotachis symmetrica Steph. Spec. Hep. 3: 661. 1909, *syn. fide* Fulford (1962). Original material: Chile, Prov. Magallanes, Strait of Magellan, without specific locality, *Schubert* (G)–cited in Fulford (1962).

The report of this species from the Strait of Magellan region originates from the description of *Isotachis symmetrica* by Stephani (1909). Kühnemann (1937, 1949) later included the species in his catalogues and Fulford (1966) treated the species as conspecific with *M. cucullifolia.*

Study of this species is currently under investigation, and at present I am uncertain if the species is distinct from other members of the genus. Rather than make a perhaps unnecessary transfer of the species to *Kurzia,* I have not included it in the Brunswick flora.

LEPIDOZIA

(Dum.) Dum. Recueil Obs. Jungerm. 19. 1835 *(nom. cons.). Pleuroschisma* sect. *Lepidozia* Dum. Syll. Jungerm. 69. 1831.

Key to the Brunswick Peninsula Species of *Lepidozia*

1. Margins of at least some leaves and/or underleaves on well-developed axes with teeth . . . . *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 smaller than the central pair. Plants often light brown in color . *L. fuegiensis*
   2. Leaf segments not in conspicuous pairs, dorsal and ventral segments larger, not conspicuously smaller than the central pair . . . . *L. laevifolia*

Lepidozia chordulifera Tayl.

Lepidozia chordulifera Tayl. Lond. J. Bot. 5: 371. 1846. *Jungermannia chordulifera* (Tayl.) Hook. f. & Tayl. *in* Hook. f. Bot. Ant. Voy. 1: 442. 1847. *Mastigophora chordulifera* (Tayl.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 416. 1877. Original material: Chile, Prov. Aisén & Chiloé, Arch. de los Chonos, 1834, *Darwin 461* (FH–cited in Fulford 1966, NY!).

Lepidozia hastata Steph. Spec. Hep. 3: 605. 1909, *syn. fide* Fulford (1966). Original material: Chile, Prov. Aisén, R. Aisén, *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. Spec. Hep. 6: 329. 1922, *syn. fide* Fulford (1966). Original material: Chile, Prov. Magallanes, I. Hermite, *Hariot* (G, ex hb. Bescherelle)–cited in Fulford (1966).

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

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

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

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

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 which 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 ± 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* 10-18×18 μ, and for *L. cuspidata* 18-24×24 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.—One of the more common of the peninsular taxa. Particularly common in forested areas, where chiefly on rotted logs and stumps and less often on soil or bark of *Nothofagus*. I made a few collections of the species in the evergreen forest "bryophyte rich facies" at Pto. Gallant, but at Pto. Cutter, an area with a well developed "bryophyte rich facies," I encountered the species only once, on a mat of vegetation over a shaded trunk.

Phytogeography.—South Sandwich Islands, South Georgia, Falkland Islands, 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.

Literature Records.—Astrolabe–Pto. del Hambre (Fulford, 1966); *Darwin*–Punta Arenas (Fulford, 1966); *Dusén*—Punta Arenas (Stephani, 1901a); *Fulford*—Fuerte Bulnes (Fulford, 1966); *Hässel de Menendez*–Fuerte Bulnes, R. Blanco (Fulford, 1966); *Lechler*–Rada York (Fulford, 1966); *Nadaud & Popeleur de Terloo*–Strait of Magellan (Fulford, 1966); *Skottsberg & Halle*–R. de las Minas, Pto. Cutter (Stephani, 1911); *Thaxter*–Punta Arenas (Fulford, 1966 as *L. cuspidata); Warnstorf*–Strait of Magellan (Fulford, 1966).

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, 1901, *Schubert* (FH). PUNTA ARENAS RE-

GION: Punta Arenas, 16 February 1908, *Halle & Skottsberg 175* as *L. pallida* (UPS); *ibid.*, *Thaxter s.n.*, *56* (MICH); *ibid.*, *Thaxter 53 & 100* as *L. cuspidata* (MICH); *ibid.*, *Thaxter 102* as *L. fuegiensis* (MICH); *ibid.*, *sin. coll.* (NY); E. of Mina Loreto on S. side of R. de las Minas, ca. 215 m. *(1889, 1892, 1920 & 1921)*; ridge above refugio (Club Andino), 8 km. W. of Punta Arenas, 305-625 m. *(1941, 1943, 1950, 1952, 1955, 1958, 1972 A, 1973, 1980 & 1988)*; *Imshaug 38951, 38997* (MSC). SENO OTWAY REGION: B. Camden *(2000 A, 2004, 2006 B, 2015 & 2041)*. LAGUNO EL PARRILLAR: Just E. of lake, ca. 365 m. *(2079 & 2087)*; 4 km. E. of lake, ca. 305 m. *(2126)*. PUERTO DEL HAMBRE REGION: Pto. del Hambre, *Andersson* as *L. filamentosa* (S-PA); Fuerte Bulnes, Pta. Santa Ana *(1802, 1803 A, 1813, 1821, 1844, & 1850 A)*; near Fuerte Bulnes, *Hatcher 1-6, 2-5, 4-9, 5-7, 7-2 & 7-6* (UW–M); N. side of R. San Juan, 1 km. from straits *(1857)*. CABO SAN ISIDRO: 13 February 1929, *Roivainen 2393* as *L. cuspidata* (H, S-PA). BAHIA DEL INDIO: Lote San Isidro, R. Yumbel, *Pisano 4014* (F). BAHIA SAN NICOLAS REGION: W. side of bay *(6363)*; E. side of bay *(6412)*. PUERTO GALLANT REGION: B. Fortescue *(5948, 5952, 5972, 5974*–c. sporo., *5988 & 6000 B)*; NE side of Pto. Gallant *(6015, 6032 & 6058)*. PUERTO CUTTER REGION: At copper mine *(2279)*.

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, 13 April 1908, *Halle & Skottsberg 169* (S-PA!), Cta. Gomez, R. Fontaine and R. Azopardo, *Halle & Skottsberg (non vidi)*.

Lepidozia minuta Steph. Spec. Hep. 3: 603. 1909 *non L. 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 magellanica 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. Aisén, Cta. Hale and Cta. Connor, *Halle & Skottsberg*(G)–cited in Fulford (1966).

Remarks.—See notes under *Telaranea oligophylla.*

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 are robust, with plants more leafy in appearance and with a facies somewhat like that of *Telaranea 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. In the Falkland plants the dorsal and ventral sinuses of the leaf apex are 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 *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 thus is quite exposed; the stems, at least in the Falkland plants, are usually thick and fleshy.

Ecology.—Only within the evergreen forested region. In forested areas on rotted *Nothofagus* bark and in pendent sheets of bryophytes, while in the "bryophyte rich facies" occasionally in protected hollows and on rotted stumps.

Phytogeography.—Falkland Islands, Tierra del Fuego, southern

Patagonian Channels (Brunswick Peninsula), and Valdivian portion of Patagonian Channels.

The "Frai Jorge" report in Herzog (1954) requires confirmation.

Literature Records.—Skottsberg–Canal Jeronimo (Fulford, 1966), Strait of Magellan (Taylor, 1960; Fulford, 1966); *Thaxter*–Punta Arenas (Fulford, 1966).

Brunswick Peninsula Specimens Seen.—BAHIA SAN NICOLAS REGION: W. side of bay *(6376)*. PUERTO GALLANT REGION: NE side of Pto. Gallant *(6011 & 6020 A)*. PUERTO CUTTER REGION: Between copper mine and river S. of mine *(2168)*, slightly W. of copper mine *(2243)*; at copper mine *(2273)*; base of M. Condor *(2355)*.

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

Jungermannia laevifolia Hook. f. & Tayl. Lond. J. 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. Memoria Ist. Lomb. Sci. Lett. III. 4: 416. 1877. Original material: Campbell Is., *Hooker (non vidi)*.

Lepidozia jacquinotii[1] Steph. Spec. Hep. 3: 604. 1909, *syn. fide* Fulford (1966), *non L. Jacquinotii.*[1,2] Steph. Spec. Hep. 6: 330. 1922. Original material: Chile, Prov. Magallanes, Pto. Gallant, *Jacquinot* (G)–cited in Fulford (1966).

Lepidozia viridissima Steph. Spec. 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

[1]Stephani, 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 from Patagonia, *leg.* Dusén) and since Honoré Jacquinot visited Pto. Gallant while aboard the *Zélée,* and Stephani presumably named the species after its collector, I have altered the spelling.

[2]I 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."

(9): 63. *f. 24 c, d.* 1911, *syn. fide* Fulford (1966). Original material: Chile, Prov. Aisén, L. O'Higgins[1] and Falkland Is., Mt. Adam and Hearnden Water, *Halle & Skottsberg* (G)–cited in Fulford (1966).

Ecology-Phytogeography.—This amphipacific temperate species occurred on soil (sometimes on a soil layer over logs) and on bark of *Nothofagus betuloides* in evergreen forested regions; also in a *Sphagnum* bog. Observed only once as part of the bryophyte mound vegetation in the "bryophyte rich facies."

Literature Records.—*Anonymous*–Strait of Magellan (Kühnemann, 1937, 1949 as *L. jacquemontii* Fulford, 1966); *Dusén*–Strait of Magellan (Taylor, 1960 as *L. jacquemontii,* Fulford, 1966); *Fulford*–Fuerte Bulnes (Fulford, 1966); *Jacquinot*—Pto. Gallant (Taylor, 1960 as *L. jacquemontii,* Fulford, 1966); *Lechler*–Punta Arenas (Fulford, 1966); *Santesson*–Tres Puentes (Arnell, 1955 as *L. jacquemontii).*

Brunswick Peninsula Specimens Seen.—SENO OTWAY REGION: B. Camden *(1995 & 2040).* LAGUNO EL PARRILLAR: Just E. of lake, ca. 365 m. (*2075*–c. sporo.+per.); near E. shore of lake, ca. 365 m. *(2092, 2100 & 2102).* BAHIA SAN NICOLAS REGION: W. side of bay *(6313 B & 6315);* ridge between B. Bougainville and B. San Nicolas, ca. 155 m. *(6433 A).* PUERTO GALLANT REGION: B. Fortescue *(5964);* NE side of Pto. Gallant (*6036 D*–c. per.).

Lepidozia Species Excluded from the Brunswick Peninsula

1. *Lepidozia capilliramea* Steph.

Lepidozia capilliramea Steph. Spec. Hep. 6: 323. 1922. Original material: New Granada, *Wallis* (G!).

Stephani erroneously cites a Skottsberg collection from "Fretum magellanicum" in the protolog of *Lepidozia capilliramea.* The original material of this species is labeled "*Lepidozia capilliramea* St. n. sp." and was collected in New Granada by Wallis. Further, Stephani in his Icones (*Lepidozia* No. 48) states "New Granada, Wallis."

[1]Skottsberg & Halle visited the northwest arm of L. San Martin, which is in Chile, and there called L. O'Higgins.

2. *Lepidozia cupressina* (Sw.) Lindenb.

Jungermannia cupressina Sw. Nov. Gener. Sp. Pl. Prodr. 144. 1788. *Lepidozia cupressina* (Sw.) Lindenb. *in* G. L. & N. Syn. Hep. 207. 1845. *Mastigophora cupressina* (Sw.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 416. 1877. Original material: Jamaica, without specific locality, *Swartz* (G)–cited in Fulford (1966).

Reported for the Brunswick Peninsula by Reimers (1926) for a Lechler collection from Rada York and Jacquinot collections from Pto. del Hambre and Pto. Gallant. Fulford (1966) records only West Indian and Central American localities for the species.

3. *Lepidozia filamentosa* (Lehm. & Lindenb.) G. L. & N.

Jungermannia filamentosa Lehm. & Lindenb. *in* Lehm. Nov. Minus Cog. Stir. Pug. 4: 29. 1832. *Lepidozia filamentosa* (Lehm. & Lindenb.) G. L. & N. Syn. Hep. 206. 1845. Original material: Western North America, *sin. coll.*, hb. Hooker, (S-PA!, *ex hb.* Lehmann).

Reported for the Brunswick Peninsula by Taylor & Hooker (1847b as *Jungermannia*), Montagne (1845, 1852), Ångström (1872 as *Jungermannia*), and Kühnemann (1937, 1949). The specimens on which the report in Ångström (1872) are based on *Lepidozia chordulifera* Tayl. (fide S-PA!). *L. filamentosa* occurs in British Columbia and coastal Alaska; see notes in Schofield (1968).

Notes on *Lepidozia* Species

1. *Lepidozia chiloensis* Steph.

Lepidozia chiloensis Steph. Spec. Hep. 6: 322. 1922. Original material: Chile, Prov. Chiloé, I. Chiloé, *Skottsberg* (G)–cited in Fulford (1966).

Reported for the Strait of Magellan by Fulford (1966) for a Schubert collection. While I have not seen the material on which the record was based, I regard its presence as doubtful in the Brunswick Peninsula. I have observed the species only in the western portion of the Patagonian Channels.

2. *Lepidozia pallida* Steph.

Lepidozia pallida Steph. Spec. Hep. 3: 604. 1909. Original material: Patagonia, without specific locality, *Dusén (non vidi)*.

Stephani (1911) reported this species for a Halle and/or Skottsberg collection from R. de las Minas.

I have examined material from the type packet of *Lepidozia pallida* (Patagonia, *leg. Dusén 383 pp.* in G (n.0177), and found it to contain a few stems of *Kurzia* sp. (creeping) among *Sphagnum*. From the description and the label information in Stephani's handwriting which reads "mixta cum Lepidozia *(Kurzia) saddlensis*," it is clear that Stephani was not describing the *Kurzia* 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 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.

PSEUDOCEPHALOZIA

Schust. Nova Hedwigia 10: 21. 1965.

Key to the Brunswick Peninsula Species of *Pseudocephalozia*

1. Leaves cucullate, 1.0-1.6 mm. long; leaf apices slightly to distinctly incurved, dentate-small lobate, the lobes broadly triangular; perianth mouth dentate to ciliate by elongated cells, the perianth terete or slightly laterally compressed, not trigonous, plicate distally. Bract margins at most with a few slime papillae, otherwise entire . . . . *P. cucullata*
1. Leaves slightly to moderately concave, never cucullate, 0.5-1.1 mm. long; leaf apices usually erect, distinctly lobate, the lobes often apiculate (especially on well-developed leaves); perianth mouth laciniate, perianth terete in basal one-half, trigonous in distal one-half, 3 plicate distally. Bract margins dentate or lobate, occasionally entire, slime papillae present . . . . *P. quadriloba*

Pseudocephalozia cucullata Engel & Schust.

Pseudocephalozia cucullata Engel & Schust. *in* Schuster & Engel, J. Hattori Bot. Lab. 38: 694: *f. 15*. 1974. Holotype: Chile, Prov. Magallanes, R. Fontaine, 1 March 1908, *Halle & Skottsberg 132* (UPS!–c. per.).

Ecology.—See notes in Schuster & Engel (1974).

Phytogeography.—Isla Grande de Tierra del Fuego and southern

Patagonian Channels (Brunswick Peninsula); see Schuster & Engel (1974, f. 17).

Brunswick Peninsula Specimens Seen.—PUERTO GALLANT REGION: NE side of Pto. Gallant (*6048D, 6070C*–c. per. & *6088D*–c. per.).

Pseudocephalozia quadriloba (Steph.) Schust.

Isotachis quadriloba Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6): 54. 1900. *Hygrolembidium quadrilobum* (Steph.) Schust. Nova Hedwigia 10: 23. 1965. *Lembidium quadrilobum* (Steph.) Fulf. Mem. N.Y. Bot. Gdn. 11: 247. 1966. *Pseudocephalozia quadriloba* (Steph.) Schust. J. Hattori Bot. Lab. 36: 371. 1973. Original material: Chile, Prov. Chiloé, I. Guaitecas, *Dusén 182* (G 11102! as Fuegia, without specific locality).

Cephalozia quadriloba Steph. K. Svenska VetenskAkad. Handl. 46 (9): 58. *f. 22 a-b.* 1911 ≡*Lophozia crassicaulis* Steph. Spec. Hep. 6: 111. 1917, *syn. fide* Schuster & Engel (1974). Original material: Chile, Prov. Magallanes, W. end of L. Fagnano, *Skottsberg 555* (G! as Fuegia, without specific locality).

Isotachis granditexta Steph. K. Svenska VetenskAkad. Handl. 46 (9): 68. *f. 26 c-e.* 1911, *syn. fide* Fulford (1966). Original material: Chile, Prov. Magallanes, L. Fagnano, R. Azopardo region, 10-11 March 1908, *Halle 127* (UPS!).

Remarks.—See Schuster & Engel (1974).

Ecology.—See Schuster & Engel (1974, p. 693-694 and f. 17).

Phytogeography.—Andean American; Inaccessible Island (475 m.), Falkland Islands (10-300 m.), Isla Grande de Tierra del Fuego (85-650 m.), southern Patagonian Channels (Brunswick Peninsula and Hotel Rubens-Puerto Natales region), Valdivian region (at 43°57′ S., Islas Guaitecas), Colombia (3,200-3,600 m.), Venezuela (3,850 m.), Costa Rica (2,600 m.) (see pl. 13).

Brunswick Peninsula Specimens Seen.—LAGUNO EL PARRILLAR: Near E. shore of lake, ca. 365 m. *(2113 & 2116)*. BAHIA SAN NICOLAS REGION: Ridge between B. Bougainville and B. San Nicolas *(6420 B & 6444 D)*.

TELARANEA

Spruce *ex* Schiffn. *in* Engl. & Prantl, Natürl. Pflanzenfam. 1 (3, 1):

103. 1895. *Telaranea* Spruce, Trans. Proc. Bot. Soc. Edinb. 15: 365. 1885, *nom. inval. in synon.*

Neolepidozia Fulf. & J. Tayl. Brittonia 11: 81. 1959.

While *Neolepidozia* may appear to be generically distinct from *Telaranea* on the basis of study of southern South American representatives, it can be shown that the two genera merge on the basis of the New Zealand-Tasmanian-Australian taxa. For pertinent literature see Hodgson (1962), Grolle (1963b, p. 170), Schuster (1963b, 1966b), and Hamlin (1972).

Key to the Brunswick Peninsula Species of *Telaranea*

1. Leaf apices 4-6 lobed for one-half or more the leaf length; leaf disk 1-4 rows of cells high .... subg. *Telaranea* 2
1. Leaf apices 2-3 dentate-lobate, if lobate, then lobes less than one-half the leaf length; leaf disk more than 4 rows of cells high .... subg. *Neolepidozia* 4
    2. Leaves of main axis with a lamina 1 row of cells high, leaves 2-3 segmented; underleaves conspicuously smaller than the leaves; plants small, filamentous *T. pseudozoopsis*
    2. Leaves of main axis with a lamina 1½ to 4 rows of cells high, leaves 4-6 segmented; underleaves similar to leaves in size; plants large, leafy 3
3. Leaves and underleaves stiff, ascending, bristlelike, lamina 1½ cell rows high *T. blepharostoma*
3. Leaves and underleaves lax, curved, not ascending and bristlelike; lamina 2-4 cell rows high. Leaf margins 3-4 cell rows high; perianth mouth crenulate *T. plumulosa*
    4. Leaf segments 2 or 3(-4) cells long, 2 cells wide at the base, leaf cells in 8 longitudinal rows; leaves distant, 1-2 leaf widths apart .... *T. oligophylla*
    4. Leaf segments mostly 5 or 6 cells long, 2 or 3 cells wide at the base, leaf cells (especially in distal one-half of leaf) often in more than 8 longitudinal rows; leaves imbricated, or if distant, less than 1 leaf width apart ... *T. seriatitexta*

Telaranea blepharostoma (Steph.) Fulf.

Lepidozia blepharostoma Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 17): 22. 1901. *Telaranea blepharostoma* (Steph.) Herz. Revue Bryol. Lichén. 29: 189. 1960. *nom. illeg. Telaranea blepharostoma* (Steph.) Fulf. Brittonia 15: 73. 1963. Original material: Chile, Prov. Magallanes, I. Desolación, Pto. Angosto, *Dusén 142* (G)–cited in Fulford (1963a).

Lepidozia trichophylla Ångstr. *ex* Fulf. Mem. N.Y. Bot. Gdn. 11: 240. 1966, *nom. nud., pro syn.*

Phytogeography.—Falkland Islands, Tierra del Fuego, Patagonian Channels, and Valdivian region.

As the report of *T. blepharostoma* from Pto. Cutter in Stephani (1911) is based upon a misdetermination of *T. plumulosa,* this is the first authentic report of *T. blepharostoma* from the Brunswick Peninsula.

Literature Record.—Skottsberg & Halle–Pto. Cutter (Stephani, 1911 as *Lepidozia*).

Brunswick Peninsula Specimen Seen.—PUERTO CUTTER REGION: Base of M. Condor *(2318 B).*

Telaranea oligophylla (Lehm. & Lindenb.) Engel

Jungermannia oligophylla Lehm. & Lindenb. *in* Lehm. Nov. Minus Cog. Stir. Pug. 6: 26. 1834. *Lepidozia oligophylla* (Lehm. & Lindenb.) G. L. & N. Syn. Hep. 201. 1845. *Mastigophora oligophylla* (Lehm. & Lindenb.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 415. 1877. *Neolepidozia oligophylla* (Lehm. & Lindenb.) Fulf. & J. Tayl. Brittonia 11: 84. 1959. *Telaranea oligophylla* (Lehm. & Lindenb.) Engel, Bryologist 79: 514. 1976. Original material: Argentina, Terr. Tierra del Fuego, I. de los Estados, *Menzies s.n.* (NY!).

Remarks.—The leaves of *Telaranea oligophylla* (and *T. seriatexta*) occasionally appear to be grouped into two pairs, a condition resulting from a deeper middle sinus than the lateral two. Accompanying this condition, the dorsal and ventral marginal segments are smaller than the central pair. These plants should be separated with care from well-developed *Lepidozia fuegiensis,* which it superficially resembles. *Lepidozia fuegiensis* has leaf segments in conspicuous pairs and frequently has leaf cells arranged in longitudinal rows, but is immediately separable from *Telaranea* spp. by the possession of cortical cells in many rows (i.e., 18-27), and the absence of a distinct hyaloderm. The cortical cells of *L. fuegiensis* are larger than the medullary, with the former measuring 21-48 μ in diameter and the latter 10-25 μ in diameter. Occasionally, the cortical cells in a given section are locally quite enlarged, while other cells are the size more typical of the species. *Telaranea* subg. *Neolepidozia* has a ± distinct hyaloderm of to 18 cell rows (occasionally the cortical cells grade into the medullary cells because of the presence of a row, immediately to the inside of the cortex, of cells intermediate in size between the two layers; for example, see *Engel 6386 B*). It is essential that well-developed stems of *L. fuegiensis* be chosen for section.

Telaranea oligophylla may be separated from *T. seriatitexta* by the following features. *Telaranea oligophylla* possesses leaf segments 2-3 cells long, and two cells wide at the base, with leaf cells in eight longitudinal rows. This species has distant leaves which are 1-2 leaf widths from one another. *Telaranea seriatitexta* has leaf segments mostly five or six cells long, and two or three cells wide at the base, with leaf cells in more than eight longitudinal rows. The leaves of this taxon are imbricated, or if distant, then less than one leaf width apart.

Phytogeography.—Falkland Islands, Tierra del Fuego, and the Patagonian Channels north to 49°09′ S.

Literature Record.—Skottsberg & Halle–Pto. Cutter (Stephani, 1911 as *Lepidozia*).

Brunswick Peninsula Specimens Seen.—BAHIA SAN NICOLAS REGION: W. side of bay (*6344* & *6386 B*–c. ♂). PUERTO GALLANT REGION: NE side of Pto. Gallant (*6067 E*). PUERTO CUTTER REGION: N. of copper mine (*2214*–c. young per.)

Telaranea plumulosa (Lehm. & Lindenb.) Fulf.

Jungermannia plumulosa Lehm. & Lindenb. *in* Lehm. Nov. Minus Cog. Stir. Pug. 6: 30. 1834. *Lepidozia plumulosa* (Lehm. & Lindenb.) G. L. & N. Syn. Hep. 211. 1845. *Mastigophora plumulosa* (Lehm. & Lindenb.) Trev. Memorie Ist Lomb Sci. Lett. III. 4: 416. 1877. *Telaranea plumulosa* (Lehm. & Lindenb.) Herz. Revue Bryol. Lichén. 29: 189. 1960, *nom. illeg. Telaranea plumulosa* (Lehm. & Lindenb.) Fulf. Brittonia 15: 77. 1963. Original material: Argentina, Terr. Tierra del Fuego, I. de los Estados, *Menzies s.n.* (G) *ex hb.* K–cited in Fulford (1963a).

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

Ecology.—Forested or coastal areas in the evergreen forest region. In forests on the floor (often creeping over or mixed with *Megaceros endivaefolius*), on rotted logs, and on rock (mixed with *T. blepharostoma*). In coastal areas on rocks (with salt water influence minimal), in mats of pendent vegetation, or on soil among *Pernettya* on vertical banks immediately above the coastal rocks.

Phytogeography.—Falkland Islands, 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 pl. 10).

Literature Records.—*Anonymous*–Pto. del Hambre (Fulford, 1966), Strait of Magellan (Kühnemann, 1937, 1949 as *Lepidozia*); *Cunningham*–Pto. Gallant (Fulford, 1963a, 1966); *Dusén*–Strait of Magellan (Fulford, 1966); *Dumont d'Urville*–Strait of Magellan (G. L. & N., 1845, Montagne, 1845, 1852 as *Lepidozia*), Taylor & Hooker (1847b as *Jungermannia*); *Jacquinot*–Strait of Magellan (Fulford, 1966); *Lechler*–Rada York (Fulford, 1963a, 1966).

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, February 1861, *Nadaud* (F). PUERTO DEL HAMBRE REGION: Pto. del Hambre, *Astrolabe* (PC); *ibid.*, *sin. coll.* (PC, hb. Montagne). PUERTO SAN ISIDRO: 12 February 1929, *Roivainen 2401* (H). BAHIA SAN NICOLAS REGION: W. side of bay *(6349 & 6353 A)*. PUERTO GALLANT REGION: B. Fortesque (*5945, 5957 E*–c. per. & *5965*). PUERTO CUTTER REGION: Pto. Cutter, 13 April 1908, *Halle & Skottsberg 165* as *Lepidozia blepharostoma* (UPS); between copper mine and river S. of mine (*2133*–c. ♂); slightly W. of copper mine (*2240 A*–c. per.); at copper mine *(2290)*; N. side of copper mine *(2307, 2308 & 2313)*; base of M. Condor (*2318 A*–c. per. & *2325 A*).

Telaranea pseudozoopsis (Herz.) Fulf.

Lepidozia pseudozoopsis Herz. *in* Skottsberg, Nat. Hist. Juan Fernandez, Easter Is. 2: 723. *f. 5.* 1942. *Telaranea 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.—Collected only in the wettest portion of the peninsula and then only twice. In the "bryophyte rich facies" found on the side of a bryophyte mound; in a forested area it occurred over soil in a very shaded cavelike overhang.

Phytogeography.—Falkland Islands, Tierra del Fuego, southern Patagonian Channels (Brunswick Peninsula), Valdivian region, and Mas a Tierra, Juan Fernandez (400-530 m., where recorded).

Brunswick Peninsula Specimens Seen.—PUERTO GALLANT REGION: NE side of Pto. Gallant *(6035 A)*. PUERTO CUTTER REGION: Slightly W. of copper mine *(2238)*.

Telaranea seriatitexta (Steph.) Engel

Lepidozia seriatitexta Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6): 53. 1900. *Neolepidozia seriatitexta* (Steph.) Fulf. Mem. N. Y. Bot. Gdn. 11: 215. 1966. *Telaranea seriatitexta* (Steph.) Engel, Bryologist 79: 514. 1976. Original material: Chile, Prov. Magallanes, I. Newton, *Dusén 21* (G–cited in Fulford, 1966, NY!); S. Molyneux, June 1896, *Dusén 62* (NY!); Prov. Chiloé, I. Guaitecas, April 1897, *Dusén 396* (NY!).

Lepidozia husnoti Steph. Spec. Hep. 6: 329. 1922, *syn. fide* Fulford (1966). *Neolepidozia husnoti* (Steph.) Fulf. & J. Tayl. Brittonia 11: 85. 1959. Original material: Chile, Prov. Magallanes, *sin. coll.,* hb. Husnot 11 p.p. (G)–cited in Fulford (1966).

Phytogeography.—(?) South Georgia, Tierra del Fuego, Patagonian Channels (?Brunswick Peninsula) north to 43°57′ S.

Literature Record.—Anonymous–Strait of Magellan (Fulford, 1966).

Telaranea Species Excluded from the Brunswick Peninsula

1. *Telaranea capilligera* (Schwaegr.) Schust.

Jungermannia capilligera Schwaegr. Hist. Musc. Hep. Prodr. 21. 1814. *Lepidozia capilligera* (Schwaegr.) G. L. & N. Syn. Hep. 204. 1845. *Mastigophora capilligera* (Schwaegr.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 416. 1877. *Neolepidozia capilligera* (Schwaegr.) Fulf. & J. Tayl. Brittonia 11: 84. 1959. *Telaranea capilligera* (Schwaegr.) Schust. J. Hattori Bot. Lab. 26: 256. 1963. Original material: Australasia, without specific locality, *sin. coll. (non vidi).*

Jungermannia tridactylis Lehm. & Lindenb. *in* Lehm. Nov. Minus Cog. Stir. Pug. 4: 41. 1832, *syn. fide* G. L. & N. (1845). *Lepidozia tridactylis* (Lehm. & Lindenb.) Lehm. & Lindenb. *in* Mont. *in* Dumont d'Urville, Voy. au Pôle Sud (Bot.) 1: 245. 1845. Original material: Australia, *sin. coll. (non vidi).*

Reported for the Strait of Magellan by Kühnemann (1937, 1949 as *Lepidozia tridactylis*), Montagne (1845 as *L. tridactylis*) and Taylor & Hooker (1847b as *Jungermannia tridactylis*). Fulford (1966) states "*Neolepidozia*" *capilligera* occurs in Campbell Island, New Zealand, Tasmania, and Australia and that she has not seen specimens from southern South America.

2. *Telaranea neesii* (Lindenb.) Fulf.

Lepidozia neesii Lindenb. *in* G. L. & N. Syn. Hep. 212. 1845. *Telaranea neesii* (Lindenb.) Fulf. Brittonia 15: 80. 1963. Original material: Java *(non vidi)*.

Jungermannia capillaris β javanica Nees, Enum. Plant. Crypt. Javae . . . p. 13. 1830. *Lepidozia javanica* (Nees) Mont. *in* Dumont D'Urville, Voy. au Pôle Sud (Bot.) 1: 246. 1845. *Jungermannia javanica* (Nees) Tayl. & Hook. f. *in* Hook. f. Bot. Ant. Voy. 1: 442. 1847 *non J. javanica* Sw. *in* L. Amoenit. Acad. 10: 115. 1781 *(=Plagiochila)*. *Mastigophora javanica* (Nees) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 416. 1877. Original material: Java *(non vidi)*.

Reported for Pto. del Hambre by Montagne (1845, 1856 as *Lepidozia javanica* and 1852 as *L. neesii*), Taylor & Hooker (1847b as *Jungermannia javanica*) and Ångström (1872 as *J. neesii*). The specimens on which the records of *Lepidozia (Jungermannia) javanica* are based are *Telaranea plumulosa* (*fide* specimens labeled *Jungermannia capillaris* in PC!). Fulford (1966, p. 244) states, "The plants labeled *L. neesii* from South America which I have examined belong to *T. (elaranea) tetradactyla* or *T. plumulosa* and I have seen no plants of *L. neesii* from this area." According to Grolle (1966c), *T. neesii* occurs in Sumatra, Java, Borneo, Halmahera, and New Guinea.

3. *Telaranea tetradactyla* (Hook. f. & Tayl.) Hodgs.

Jungermannia tetradactyla Hook. f. & Tayl. Lond. J. 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: 106. 1962. Original material: Auckland Is., *Hooker s.n.* (NY)–cited in Fulford (1963a).

Reported by Fulford (1966) for a Nadaud collection from the Strait of Magellan. The specimen on which the record is based is actually poorly developed material of *T. plumulosa* (F!).

Family CALYPOGEIACEAE

H. Arnell *in* Holmberg, Skand. Fl. 2: 189. 1928.

CALYPOGEIA

Raddi, Jungermanniogr. Etrusca, Modena p. 31. 1818 *(sub Calypogeja)* corr. Corda *in* Opiz. Beitr. Naturg. 653. 1829.

Calypogeia sphagnicola[1] (H. Arnell & J. Perss.) Warnst. & Loeske

Kantia sphagnicola H. Arnell & J. Perss. *in* Arnell, Revue Bryol. 29 (2): 26. *f. 1-8.* 1902. *Calypogeia sphagnicola* (H. Arnell & J. Perss.) Warnst. & Loeske, Abh. Bot. Ver. Brandenburg 47: 320. 1905. *Cincinnulus trichomanis* var. *sphagnicola* (H. Arnell & J. Perss.) Meyl. Bull. Herb. Boissier II. 6: 499. 1906. *Calypogeia trichomanis* var. *sphagnicola* (H. Arnell & J. Perss) Meyl. Revue Bryol. 36: 53. 1909. Original material: Sweden, *J. Persson (non vidi).*

Remarks.—The leaves of the Brunswick Peninsula plants are undivided to often bidentate to occasionally shallowly bilobed. The trigones are small and median leaf cells to 48 μ long and 39 μ wide. The plants thus fit the circumscription of *C. sphagnicola* f. *bidenticulata* (see Schuster, 1969c). The above remarks pertain to *Engel 6427 D; Engel 6428 D* consists of very flaccid plants in poor condition.

Ecology.—As Schuster (1969c, p. 136) points out, "*Calypogeia sphagnicola,* as the name implies, is nearly restricted to peat bogs and to *Sphagnum*-capped crests of cliffs." I have found the species in scattered mounds of *Sphagnum* in an open *Empetrum-Nothofagus* mosaic, and Ostafichuk collected the species in a *Sphagnum* bog. In both instances, the species grew intermixed with *Lophozia patagonica.*

Phytogeography.—Bipolar; in the southern hemisphere known from Tierra del Fuego, southern Patagonian Channels (Brunswick Peninsula), New Zealand, and Tasmania, while in the northern hemisphere chiefly in northern North America, the Azores, northern and central Europe, and Japan (see Schuster, 1969c).

Brunswick Peninsula Specimens Seen.—RIO TRES BRAZOS REGION: Plateau above R. Tres Brazos at road crossing, ca. 160 m. *Ostafichuk 1383 D* (MSC). PUNTA ARENAS REGION: Punta Arenas, 29 November 1895, *Dusén 17,* mixed with plants of *Ce-*

[1]See Schuster (1969c) for a full synonymy of *C. sphagnicola.*

phaloziella sp. (G). BAHIA SAN NICOLAS REGION: Ridge between B. Bougainville and B. San Nicolas, ca. 155 m. *(6427 D & 6428 D)*.

Family LOPHOZIACEAE

Cavers, New Phytol. 9: 293. 1910.

ANASTREPTA

(Lindb.) Schiffn. *in* Engl. & Prantl. Natürl. Pflanzenfam. 1 (3, 1): 85. 1893. *Jungermannia* sect. *Anastrepta* Lindb. *in* Lindberg & H. Arnell, K. Svenska VetenskAkad. Handl. 23 (5): 40. 1889.

KEY TO THE BRUNSWICK PENINSULA SPECIES OF *Anastrepta*

1. Leaves chordate, as long as wide, at least 1.8 mm. long; underleaves absent *A. longissima*
1. Leaves ovoid to oblong, always longer than wide, at most 1.2 mm. long; underleaves lanceolate, almost always present toward stem apices .... *A. bifida*

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 (=Spec. Hep. 2: 193). Original material: Chile, Prov. Magallanes, Pto. Caracciolo, *De Amezaga* (G!).

Tylimanthus bilobatus Steph. K. Svenska VetenskAkad. Handl. 46 (9): 24. *f. 9b.* 1911, *syn. fide* Grolle (1961b). Lectotype (*cf.* Grolle, 1961b): 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 (1961b). Lectotype (*fide* Grolle, 1961b): Juan Fernandez, Mas Afuera, Camp Correspondencia, 1908, *Skottsberg* (UPS–*non vidi*).

Phytogeography.—Falkland Islands, Patagonian Channels (?Brunswick Peninsula), Valdivian region (north to 39°52′ S.), and Juan Fernandez; not reported for Tierra del Fuego or Andean Patagonia.

Literature Records.—*Anonymous*–Strait of Magellan (Bonner, 1962); *Cunningham*–Strait of Magellan (Stephani, 1902).

Anastrepta longissima (Steph.) Steph.

Anastrophyllum longissimum Steph. Bih. K. Svenska Vetensk-Akad. Handl. 26 (III, 17): 13. 1901. *Anastrepta longissima* (Steph.) Steph. Bull. Herb. Boissier II. 2 (5): 474. 1902 (=Spec. Hep. 2: 193). Original material: Chile, Prov. Magallanes, I. Desolación, Pto. Angosto, April 1896, *Dusén* (G–cited in Grolle, 1961b, S-PA!–c. per.).

Anastrophyllum decurrens Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6): 25. 1900, *nom. nud. Anastrophyllum decurrens* Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 17): 13. 1901, *nom. nud. Anastrophyllum decurrens* Steph. Bull. Herb. Boissier II. 1 (11): 1129. 1901 (=Spec. Hep. 2: 112), *syn. nov.* Lectotype *(nov.)*: Chile, Prov. Magallanes, I. Newton, Cta. Columbine, 30 May 1896, *Dusén 116* (G!).

Anastrophyllum giganteum Steph. K. Svenska VetenskAkad. Handl. 46 (9): 20. *f. 7a.* 1911, *syn. fide* Grolle (1961b). Original material: Chile, Prov. Magallanes, Pto. Cutter, 13 April 1908, *Halle & Skottsberg 58* (G–cited in Grolle, 1961b, S-PA!, UPS!).

Ecology.—Rare not only in the Brunswick Peninsula, but in the Patagonian Channel region as well. Collected in the Brunswick Peninsula but once, in a wet depression of the evergreen forest "bryophyte rich facies."

Phytogeography.—Western part of Tierra del Fuego (I. Desolación) and Patagonian Channel region.

Literature Records.—Skottsberg–Pto. Cutter (Bonner, 1962 as *Anastrophyllum giganteum*).

Brunswick Peninsula Specimen Seen.—PUERTO CUTTER REGION: Between copper mine and river S. of mine (*2145*–c. ♂).

ANASTROPHYLLUM

(Spruce) Steph. Hedwigia 32: 139. 1893. *Jungermannia* subg. *Anastrophyllum* Spruce, J. Bot., Lond. 14: 235. 1876.

Key to the Brunswick Peninsula Species of *Anastrophyllum*

1. Leaves retuse; leaf margins usually incurved to involuted near the apex. Trigones coarse, irregularly protuberant, usually separated by narrow thin places, occasionally confluent .... *A. involutifolium*
1. Leaves bifid to at least one-third, leaf margins (at least near apices) not incurved 2
   2. Leaves entire. Ventral lobe distinctly larger than the dorsal lobe, the lobes

apiculate, hyaline, caducous; leaf cells with trigones large, distinctly knot like, intervening walls thin .... *A. schismoides*

2. Leaves with dorsal margins 1 (-2-3)(dentate-) laciniate-lobate at the base .. 3

3. Leaves varying from canaliculate to distinctly conduplicate, keel strongly arced; leaf cells with large knot-like trigones with thin (very rarely slightly thickened) intervening walls; perianths broadly ovate in shape .... *A. ciliatum*

3. Leaves at most only slightly canaliculate, never conduplicate; leaf cells with large trigones which are confluent, or if not confluent, then with intervening walls thickened; perianths fusiform to subcylindrical to obovate in shape *A. crebrifolium*

Anastrophyllum ciliatum Steph.

Anastrophyllum ciliatum Steph. Hedwigia 32: 139. 1893 [*sub Anastrophylum*]. *Sphenolobus ciliatus* (Steph.) Steph. Bull. Herb. Boissier II. 2 (2): 175. 1902 (=Spec. Hep. 2: 167). Original material: Argentina, Terr. Tierra del Fuego, I. de los Estados, *Spegazzini s.n.* (G!).

Anastrophyllum pampaninii Gola, Nuovo G. Bot. Ital. 29: 165. *pl. 2, f. 1-2*. 1923, *syn. nov.* Original material: Chile, Prov. Magallanes, B. Angelito, 300-400 m., 10 February 1913, *De Gasperi* (FI!).

Ecology.—On soil, occasionally under protective shrub or tree cover in evergreen and deciduous *Nothofagus* forests. Also on side of a bryophyte mound in the evergreen *Nothofagus* "bryophyte rich facies." I found the species only above 155 m. It is absent from points west of Pto. Gallant.

Phytogeography.—Falkland Islands and southern Magellanian region (I. de los Estados, Brunswick Peninsula, and V. Inga, Canal Gajardo).

Brunswick Peninsula Specimens Seen.—PUNTA ARENAS REGION: Ridge above refugio (Club Andino), 8 km. W. of Punta Arenas, 305-610 m. (*1954, 1957*–c. per., & *1962c*). LAGUNO EL PARRILLAR: Near E. shore of lake, ca. 365 m. *(2118)*. BAHIA SAN NICOLAS REGION: Ridge between B. Bougainville and B. San Nicolas, ca. 155 m. *(6435 B* & *6444 B)*. PUERTO GALLANT REGION: NE side of Pto. Gallant (*6053 B*–c. per. & *6063 B*).

Anastrophyllum crebrifolium (Hook. f. & Tayl.) Steph.

Jungermannia crebrifolia Hook. f. & Tayl. Lond. J. Bot. 3: 467. 1844. *Anastrophyllum crebrifolium* (Hook. f. & Tayl.) Steph.

Hedwigia 32: 140. 1893. Lectotype *(nov.)*: Chile, Prov. Magallanes, Cabo de Hornos, 1843, *Hooker* (FH!–c. per.).

Jungermannia leucocephala Tayl. Lond. J. Bot. 5: 272. 1846, *syn. nov. Anastrophyllum leucocephalum* (Tayl.) Steph. Hedwigia 32: 140. 1893. Original material: Ecuador, V. Cayambe, 4,265 m., 1827, *Jameson* (FH!, NY!).

Anastrophyllum semifissum Steph. K. Svenska VetenskAkad. Handl. 46 (9): 21. *f. 7b.* 1911, *syn. nov.* Lectotype *(nov.)*: Chile, Prov. Magallanes, Canal Gajardo, Cta. Inga, 27 April 1908, *Halle & Skottsberg 62* (UPS!–c. ♂) (isolectotype–hb. Schuster!–c. ♂).

Remarks.—This species was added to the flora *after* submission of the manuscript for publication; it is placed in the key to *Anastrophyllum* taxa for the peninsula, but has not been included in the section on phytogeographical categories.

The species is reported for the Brunswick Peninsula by Stephani (1901) and Bonner (1962). The report here, however, is likely the first authentic one of the species for our area. This species and *A. involutifolium,* which is quite common in the Brunswick Peninsula, have been erroneously treated as conspecific by several authors including Stephani (1901) (see notes under *A. involutifolium*). The specimen(s) on which the previous *A. crebrifolium* records are based are therefore likely *A. involutifolium*.

Phytogeography.—Andean; Tierra del Fuego (known only from Cabo de Hornos), Patagonian Channels (where sporadic), Mas Afuera, Juan Fernandez (915-1,325 m.) and the higher reaches of the Andes of Peru and Ecuador.

Literature Records.—*Anonymous*–Strait of Magellan (Bonner, 1962); *Cunningham*–Strait of Magellan (Stephani, 1901).

Brunswick Peninsula Specimen Seen.—Pto. Pomar, 14 April 1908, *Skottsberg 59* (UPS–c. ♂).

Anastrophyllum involutifolium (Mont.) Steph.

Jungermannia involutifolia Mont. *in* G. L. & N. Syn. Hep. 81. 1844. *Anastrophyllum involutifolium* (Mont.) Steph. Hedwigia 32: 140. 1893. Original material: Chile, Prov. Magallanes, B. San Nicolas, *Hombron* (PC!).

Jungermannia decurvifolia Sull. Hooker's J. Bot. Kew Gdn. Misc. 2: 317. 1850, *syn. fide* Stephani (1893, p. 139). *Anastrophyllum* *decurvifolium* (Sull.) Steph. Hedwigia 32: 140. 1893. Original material: Chile, Prov. Magallanes, B. Orange, *U. S. Exploring Exped.* (apparently lost).

Remarks.—Anastrophyllum involutifolium and *A. crebrifolium* have long been confused. Perhaps at least a portion of this confusion may be traced to Mitten, as the following note is handwritten onto a Mitten Herbarium (NY) sheet labeled "*involutifolia*" with this name crossed out and "*crebrifolia*" added: "*J. crebrifolia* Tayl. seems to be only a state of the same sp. connected by the other Cape Horn specimens and the differences in the degree of emargination seem to correspond with that obtainable in this species." Stephani (1901) also treats the two taxa as conspecific, with *Jungermannia involutifolia* a synonym of *Anastrophyllum crebrifolium.*

Anastrophyllum involutifolium and *A. crebrifolium,* however, are highly distinct taxa which should in no way be confused. *Anastrophyllum involutifolium* has leaves which are retuse and with margins often incurved to involute near the apex, while *A. crebrifolium* has leaves which are bifid to at least one-half and with margins plane and not incurved.

The following combination of characters will serve to identify material of *A. crebrifolium:* a) leaves bifid to one-half or more; b) leaves at most only slightly canaliculate and never conduplicate; c) dorsal margins 1-2 laciniate-lobate near the base; d) leaf lobes acuminate to narrowly to broadly triangular and frequently apiculate; e) leaf margins plane, not incurved or inrolled; f) leaf cells with large *trigones which are confluent, or if not confluent, then with intervening walls thickened;* g) perianths fusiform to subcylindrical to obovate in shape, contracted and strongly plicate distally, few sulcate, the sulci of varying lengths with some to the base; and h) bract segments dentate.

The name *Anastrophyllum leucocephalum* (type-Ecuador) has been used by various authors for southern South American collections and deserves mention here. Type material of this species appears much like that of *A. crebrifolium,* but the two differ in several features, which are outlined in Table 5. With the examination of more material of this complex the differing characters merge, and I am of the opinion that one moderately variable taxon is at hand (see table 5). Therefore, *Anastrophyllum leucocephalum* (Tayl.) Steph. is here regarded as new synonym of *Anastrophyllum*

TABLE 5. Comparative characteristics of *Anastrophyllum leucocephalum* and *A. cre-brifolium*

Character	**Type of *A. leucocephalum* Ecuadorean Andes, leg. Jameson (FH, NY)**	**Type of *A. crebrifolium* Cape Horn, leg. Hooker (FH)**	**Peru, leg. Jameson (FH) and Ecuador, leg. Jameson (NY) *sub A. leucocephalum***	**Juan Fernandez, Mas Afuera, leg. Hatcher & Engel (MSC) and Patagonian Channels (NY)**
Leaf segment shape and angle outline formed by lobe margins	Elongate and narrowly triangular, often ± acuminate, 34-50°	Broadly triangular, 57-89°	Acuminate to narrow to broadly triangular, 31-65°	Broadly triangular, 40-90°
Dorsal lobe orientation	Recurved	Incurved and convex	Incurved to recurved	Recurved to straight to incurved
Cuticle	Distinctly striate	Smooth	Smooth and faintly striate	Smooth to distinctly striate
Perianth shape	Fusiform	Obovate	Cylindrical-subfusiform	Fusiform-subcylindrical
Degree of perianth emergence	ca. ⅓	ca. ½	ca. ⅔	ca. ⅔-¾

crebrifolium (Hook. f. & Tayl.) Steph. The species is known from Tierra del Fuego, Patagonian Channels, Juan Fernandez, and north in the Andes to Ecuador.

Ecology.—Rather common in the evergreen forest "bryophyte mound facies." Here it occurs on the sides and apices of bryophyte mounds, often intermixed with other Hepaticae, particularly *Adelanthus lindenbergianus, Clasmatocolea puccioana, Jamesoniella colorata, Plagiochila ansata,* and *Riccardia prehensilis.*

Phytogeography.—Tierra del Fuego and the southern Patagonian Channel region (Brunswick Peninsula, I. Riesco), and 1,220 m. on Mas Afuera, Juan Fernandez *(Hatcher & Engel 66).*The report from the Valdivian region (in Stephani, 1900) requires confirmation.

Literature Records.—*Anonymous*–Strait of Magellan (Bonner, 1962); (Ångström, 1872 as *Jungermannia*); *Hombron*–Pto. del Hambre (Montagne, 1845, 1852, and 1856 as *Jungermannia*), Strait of Magellan (Taylor & Hooker, 1847b as *Jungermannia*), "Magellaens Land" (G. L. & N., 1844 as *Jungermannia*).

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, *Coppinger,* with *Anastrepta longissima* (NY); *ibid., Dumont d'Urville* (PC); *ibid., sin. coll., ex. hb.* Montagne (NY). PUERTO DEL HAMBRE REGION: Pto. del Hambre, *Andersson* (S-PA). BAHIA SAN NICOLAS REGION: Ridge between B. Bougainville and B. San Nicolas (*6443*–c. ♂). PUERTO GALLANT REGION: NE side of Pto. Gallant (*6004 G*–c. per., *6008 B*–c. per.+♂, *6037 B*–c. ♂, *6042 B*–c. per.+♂, & *6059 B*). PUERTO CUTTER REGION: Between copper mine and river S. of mine (*2139*–c. per., *2157 A, 2161 D, 2163 C, 2176 C,* & *2179 A*); W. of copper mine *(2233 A, 2234 C & 2367).*

Anastrophyllum schismoides (Mont.) Steph.

Jungermannia schismoides Mont. Annls. Sci. Nat. II. 19: 250. 1843. *Anastrophyllum schismoides* (Mont.) Steph. Hedwigia 32: 140. 1893. Original material: Auckland Is., *Hombron (non vidi).*

Remarks.—*Anastrophyllum schismoides* is a rather close relative of *A. crebrifolium,* but the two taxa are separable by the former having leaves with a) entire dorsal margins (very rarely with a single lacinium); and b) large trigones with intervening walls thin; while the latter has a) dorsal margins often 1-2 laciniate-lobate;

and b) large trigones which are confluent, or if not confluent, then with intervening walls thickened.

Phytogeography.—Amphipacific temperate; in the American sector reported to occur as far north as the Valdivian region; in the New Zealand sector on the New Zealand shelf islands, New Zealand and Tasmania.

The Valdivian and Fuegian records require confirmation. Bonner (1962) erroneously states "St. Helena" for the distribution of this taxon.

Brunswick Peninsula Specimen Seen.—PUERTO CUTTER REGION: N. of copper mine (*2204*–c. per.).

Anastrophyllum Species Excluded from the Brunswick Peninsula

1. *Anastrophyllum minutum* (Schreb.) Schust.

Jungermannia minuta Schreb. *in* Cranz, Fortsetz. Hist. Grönl. p. 285. 1770. *Diplophyllum minutum* (Schreb.) Dum. Recueil Obs. Jungerm. 16. 1835. *Lophozia minuta* (Schreb.) Schiffn. *in* Engl. & Prantl, Naturl. Pflanzenfam. 1 (3, 1): 85. 1893. *Sphenolobus minutus* (Schreb.) Steph. Bull. Herb. Boissier II. 2 (2): 165. 1902 (=Spec. Hep. 2: 157). *Anastrophyllum minutum* (Schreb.) Schust. Am. Midl. Nat. 42: 576. 1949. *Eremonotus minutus* Schust. *in* Schuster *et al.*, Bull. Natn. Mus. Can. 164: 40. 1959. Original material: Greenland, *sin. coll.*, hb. Dillenius (OXF)–cited in Grolle (1961b).

Reported by Ångström (1872 as *Jungermannia*) for a Pto. del Hambre collection by Andersson. The report is erroneous as the specimen is actually one of *Cephalolobus sphenoloboides* (*fide* S-PA!). According to Schuster (1968b, p. 488), *Anastrophyllum minutum* is "holarctic in range, with disjunct extensions southward to Mexico; it also occurs southward to Sikkim and Nepal," with isolated stations in South Africa and New Guinea (13,500 ft.).

ANDREWSIANTHUS

Schust. Revue Bryol. Lichén. 30: 66. 1961.

Andrewsianthus australis Engel

Andrewsianthus australis Engel, Bryologist 75: 328. *f. 1-42.* 1972.

Holotype: Chile, Prov. Magallanes, Cta. Amalia, 1 October 1969, *Engel 5411A* (MSC!–c. per.+sporo.+ ♂).

Ecology.—Restricted to and rare in the wettest portion of the evergreen forested region. In the evergreen forest "bryophyte rich facies" it was collected in a shallow depression mixed with *Anastrophyllum involutifolium, Isotachis humectata, Lophocolea otiphylla, Plagiochila ansata,* and *Riccardia spectabilis.* Also observed on a thin layer of soil over rock in this facies, where it was mixed with *Cryptochila grandiflora.* Further encountered on a coastal rock, mixed with *Cryptochila grandiflora, Radula helix,* and *Temnoma quadripartitum.*

The above mentioned coastal rocks received fresh water from rain and forest run-off, with salt water influence at most moderate. This species is not among those that I repeatedly collected in tidal zone regions in the Patagonian Channels (see Engel & Schuster, 1973).

Phytogeography.—Falkland Islands and Patagonian Channels north to 50°56′ S., 73°52′ W.

Brunswick Peninsula Specimens Seen.—PUERTO CUTTER REGION: Between copper mine and river S. of mine (*2161 G*–c. per.); N. of copper mine (*2219 B*–c. ♂ & *2301 B*).

CEPHALOLOBUS

Schust. Revue Bryol. Lichén. 34: 244. 1966. *Cephalolobus* Schust. J. Hattori Bot. Lab. 26: 211, 266. 1963, *nom. nud.*

Cephalolobus sphenoloboides Schust.

Cephalolobus sphenoloboides Schust. Revue Bryol. Lichén. 34: 251. 1966. Original material: Chile, Prov. Magallanes, I. Desolación, Pto. Angosto, 28 March 1896, *Dusén 177* (G)–cited in Schuster (1966a).

Phytogeography.—Known only from the type locality and the Brunswick Peninsula.

Brunswick Peninsula Specimen Seen.—Strait of Magellan, without specific locality, *Andersson* as *Jungermannia minuta* (S-PA–c. ♂). PUERTO DEL HAMBRE REGION: Puerto del Hambre, *Andersson* as *Jungermannia minuta* (S-PA–c. per.+ ♂).

LOPHOZIA

(Dum.) Dum. Recueil Obs. Jungerm. 17. 1835. *Jungermannia* sect. *Lophozia* Dum. Syll. Jungerm. 53. 1831.

KEY TO THE BRUNSWICK PENINSULA SPECIES OF *Lophozia*

1. Underleaves present, polymorphous, bifid or undivided and oblong, lingulate or lanceolate; plants monoecious. Leaves 0.4-0.5 bifid, lobes mostly lanceolate or narrowly triangular, often twisted or recurved; lobe margins recurved in region of sinus .... *L. crispata*
1. Underleaves absent; plants dioecious 2
   2. Gemmae present; medulla with ventral half of small cells which are brownish at the base; leaves with trigones medium .... *L.* sp. 1
   2. Gemmae absent; medulla uniform, ventral cells not smaller, brownish cells absent; leaves with trigones absent .... *L. patagonica*

Lophozia crispata Schust.

Lophozia crispata Schust. Nova Hedwigia 15: 474. *pl. 59*. 1968. Holotype: Argentina, Terr. Tierra del Fuego, R. Harubre Valley, S. of P. Garibaldi, *Schuster 59417b* (hb. Schuster–*non vidi*).

Phytogeography.—Isla Grande de Tierra del Fuego and the Brunswick Peninsula.

Brunswick Peninsula Specimens Seen.—BAHIA SAN NICOLAS REGION: W. side of bay (*6346 B*–c. per.+ ♂); ridge between B. Bougainville and B. San Nicolas, ca. 155 m. *(6432 D)*.

Lophozia patagonica Herz. & Grolle

Lophozia patagonica Herz. & Grolle *in* Grolle, Revue Bryol. Lichén. 28: 343. *f. 1 a-e.* 1959. Original material: Chile, Prov. Osorno, between San Juan de la Costa and Pucatrihue, 800 m., 1958, *Oberdorfer 246* (hb. Oberdorfer & hb. Grolle–*non vidi*).

Remarks.—Grolle (1959b) states the leaves of *L. patagonica* are constantly bilobed, however, the leaves of the Brunswick Peninsula plants are frequently three lobed. Variation in lobe number is of rather frequent occurrence for taxa in the subgenus *Massula*, and this variability in *L. patagonica* lends further support to its close relationship to *L. capitata, L. grandiretis,* and *L. marchica* of the northern hemisphere.

Ecology.—Known only in association with *Sphagnum*, either in *Sphagnum* bogs or in scattered mounds of *Sphagnum* in an open mosaic of *Empetrum-Nothofagus* as in the B. San Nicolas region. It may be mixed with *Calypogeia sphagnicola.*

Phytogeography.—Southern Patagonian Channels (Brunswick Peninsula) and the Valdivian region.

It is likely that this species will have a wider distribution after more *Sphagnum* bogs are sampled.

Brunswick Peninsula Specimens Seen.—RIO TRES BRAZOS REGION: Plateau above R. Tres Brazos at road crossing, ca. 160 m., *Ostafichuk 1383 E* (MSC). LAGUNA EL PARRILLAR: Near E. shore of lake, ca. 365 m., *(2117)*. BAHIA SAN NICOLAS REGION: Ridge between B. Bougainville and B. San Nicolas, ca. 155 m. *(6420 A & 6428 A)*.

Lophozia sp. 1

Material of *Engel 1968,* which is androecial, but without perianths, belongs to subg. *Lophozia.* The plant has the facies of a *Lophozia ventricosa* (Dicks.) Dum., which is circumboreal and circumpolar, but without study of more copious materials, including perianth and oil body data, assignment of a specific name for this plant would be wholly premature. For a treatment of *L. ventricosa* see Schuster (1969c).

Brunswick Peninsula Specimen Seen.—PUNTA ARENAS REGION: Ridge above refugio (Club Andino), 8 km. W. of Punta Arenas, 305-610 m. *(1968)*.

Lophozia Species Excluded from the Brunswick Peninsula

1. *Lophozia laxifolia* (Mont.) Grolle

?*Sarcoscyphus laxifolius* Mont. Annls. Sci. Nat. III. 4: 346. 1845. *Nardia laxifolia* (Mont.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 400. 1877. *Anastrophyllum laxifolium* (Mont.) Steph. Bull. Herb. Boissier 1 (11): 1131. 1901 (=Spec. Hep. 2: 114). *Lophozia laxifolia* (Mont.) Grolle, J. Jap. Bot. 39: 173. 1964. Original material: Chile, without specific locality, *sin. coll., ex hb.* Montagne (FH–hb. Taylor!).

This species was reported by Stephani (1911) as *Anastrophyllum laxifolium* for a Skottsberg collection from Pto. Pomar. The specimen (UPS!), however, is not *Lophozia laxifolia* but rather *A. crebrifolium q.v.* The only other report of *Lophozia ("Anastrophyllum") laxifolium* in the Magellanian region is that of a second station mentioned in Stephani (1911)—above Río

Azopardo, Tierra del Fuego. The specimen is actually one of *Anastrophyllum ciliatum* [3 March 1908, *Halle & Skottsberg 59* (UPS!)]. *Lophozia laxifolia* is known only from the Valdivian region.

ROIVAINENIA

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

Roivainenia jacquinotii (Mont.) Grolle

Jungermannia Jacquinotti 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* Persson & Grolle, Nova Hedwigia 3: 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: 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. I. 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. Edén, *Cunningham (non vidi).*

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: 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.* Persson & Grolle, 1961): Chile, Prov. Aisén, 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.—Very common in deciduous forests, drier aspects of evergreen forests and deciduous-evergreen ecotonal areas. Most frequently in dense, thick mats over rotted logs, often intermixed with other Hepaticae, particularly *Lepidozia* sp. and *Leptoscyphus expansus.* Occasionally on soil, and rarely on bark of living, upright trees.

Phytogeography.—South Georgia, Falkland Islands, 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).

Literature Records.—Anonymous–Strait of Magellan (Kühnemann, 1949 and Bonner, 1963 as *Chiloscyphus jacquinotii); Andersson*–Strait of Magellan (Stephani, 1901 as *Lophozia antarctica); Dumont d'Urville*–Strait of Magellan (Montagne, 1845a as *C. jacquinotii,* Taylor & Hooker, 1847b as *J. jacquinotii); Dusén*–Punta Arenas (Stephani, 1901a as *Jungermannia pigafettoana*), Strait of Magellan (Stephani, 1901a as *L. antarctica); Jacquinot*–Strait of Magellan (G. L. & N., 1845 as *C. jacquinotii,* Montagne, 1845, 1852 and 1856 as *C. jacquinotii,* Persson & Grolle, 1961); *Santesson*–Tres Puentes (Persson & Grolle, 1961); *Wawra*–Strait of Magellan (Stephani, 1901a as *L. antarctica*).

Brunswick Peninsula Specimens Seen.—PUNTA ARENAS REGION: Punta Arenas, *Cunningham 194* (NY); *ibid., sin. coll.* (NY); E. of Mina Loreto on S. side of R. de las Minas, ca. 215 m. *(1918, 1927, 1929), Imshaug 38864* (MSC); ridge above refugio (Club Andino), 8 km. W. of Punta Arenas, 305-610 m. *(1972 B, 1984 & 1990).* RIO TRES BRAZOS REGION: Plateau above R. Tres Brazos at road crossing, ca. 160 m., *Ostafichuk 1340, 1349 B & 1353 C* (MSC). SENO OTWAY REGION: B. Camden *(2038).* LAGUNO EL PARRILLAR: Just E. of lake, ca. 365 m. (*2082*–c. per. & *2089*); near E. shore of lake, ca. 365 m. *(2094);* 4 km. E. of lake, ca. 305 m.

(2123). PUERTO DEL HAMBRE REGION: Fuerte Bulnes, Pta. Santa Ana *(1805, 1814, 1826, 1828, 1849 A* & *1851)*; near Fuerte Bulnes, *Hatcher 2-3, 4-6, 5-9, 6-4* & *6-16* (UW-M); N. side of R. San Juan, 1 km. from straits *(1874)*.

Family JUNGERMANNIACEAE

Reichenb. Botanik für Damen, Künstler und Freunde ... 256. 1827.

CRYPTOCHILA

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

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, Reprium. Nov. Spec. Regni. Veg. 82 (1): 19. 1971. Lectotype (*cf.* Grolle 1971a): Chile, Prov. Valdivia, Valdivia, "*mis. Montagne* 1845 as *J. colorata;* W (Lindenb. Hep. no. 1807)," *sin. coll.* (Gay) *(non vidi)*.

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

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

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

Jamesoniella nervosa Berggr. N.Z. Hep. 13. *f. 10 a-m.* 1898, *syn. cf.* Stephani (1901). Lectotype (*fide* Grolle, 1971a): 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, 1971a): New Zealand, South Island, Bealey River, *Berggren 2843* (LD–*non vidi*).

Jamesoniella Allionii Steph. *in* Herz. Biblthca Bot. 87: 182. 1916, *syn. fide* Grolle (1971a). Lectotype (*fide* Grolle, 1971a): Bolivia, above Tablas, 3,400 m., *Herzog 2847* (JE–*non vidi*).

Jamesoniella pyrogea Mass. Atti Ist. Veneto Sci. 87: 235. *pl. 3, f. 1-4*. 1927, *syn. fide* Grolle (1971a). Original material: Chile, Prov. Magallanes, I. Basket and B. Sarmiento, *Spegazzini (non vidi)*.

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

Ecology.—Wetter portions of the evergreen *Nothofagus* region in exposed situations such as coastal rocks and large rock outcrops. The above coastal rocks (Pto. Cutter) received fresh water from rain as well as run-off from the forest above; salt water influence was at most moderate. The species is not among those that I repeatedly found in intertidal regions in the Patagonian Channels (see Engel & Schuster, 1973).

Phytogeography.—Pan-temperate; South Sandwich Islands, South Georgia, Falkland Islands, Tierra del Fuego, Andes north to Guatemala, Brazil (Serra do Itatiaia), Africa from Cape of Good Hope to Natal (3,150 m.), Marion Island, Prince Edward Island, Îles Crozet, and northeast New Guinea (4,400-4,600 m.).

Brunswick Peninsula Specimens Seen.—PUERTO GALLANT REGION: NE side of Pto. Gallant (*6064 E* & *6071 C*–c. per.). PUERTO CUTTER REGION: N. of copper mine *(2219 A* & *2301 A)*; slightly W. of copper mine *(2358 A* & *2360)*.

JAMESONIELLA

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

Jamesoniella colorata (Lehm.) Schiffn.

Jungermannia colorata Lehm. Linnaea 4: 366. 1829. *Jamesoniella colorata* (Lehm.) Schiffn. *in* Engl. & Prantl, Natürl. Pflanzenfam. (3, 1): 83. 1893. Lectotype (*fide* Grolle, 1971a): 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 (1971a). *Jamesoniella oenops* (Lindenb. & Gott.) Steph. Bull. Herb. Boissier II. 1 (10): 1028. 1901

(=Spec. Hep. 2: 91). Lectotype (*cf.* Grolle, 1971a): 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, "Prov. Valparaiso, Valparaiso," *Puccio* (K, S-PA)–cited in Grolle (1971a).

Jungermannia? spectabilis De Not. Memorie Accad. Sci. Torino II. 16: 219. *pl. 7, f. 1-4.* 1855, *syn. fide* Grolle (1971a). *Jamesoniella spectabilis* (De Not.) Steph. Bull. Herb. Boissier II. 1 (10): 1038. 1901 (=Spec. Hep. 2: 101). Original material: Chile, "Prov. Valparaiso, Valparaiso," *Puccio* (S-PA)–cited in Grolle (1971a).

Jungermannia malouina Gott. Annls. Sci. Nat. IV. 8: 337. 1857, *syn. fide* Grolle (1971a). *Jamesoniella maluina* (sic) (Gott.) Steph. Bull. Herb. Boissier II. 1 (10): 1027. 1901 (=Spec. Hep. 2: 90). Lectotype (*cf.* Grolle, 1971a): Falkland Is., *Lesson* (PC—*non vidi*).

Jamesoniella dusenii Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6): 22. 1900, *syn. fide* Grolle (1971a). Original material: Chile, Prov. Llanquihue, near Puerto Varas, *Dusén 479* (BM, FH, FI, K, LD, O, S-PA, UPS)–cited in Grolle (1971a).

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

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

Jamesoniella colorata f. *marginata* Herz. Hedwigia 64: 3. 1923, *syn. fide* Grolle (1971a). *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 (1971a). Holotype: Chile, Prov. Aisén, 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 (1971a). Holotype: Chile, Prov. Valdivia, Corral (Quitaluto), *Hosseus 643B* (JE–*non vidi*).

Jamesoniella colorata var. *libera* Herz. Beih. Bot. Zbl. 60 (B): 2. 1939, *syn. fide* Grolle (1971a). 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 (1971a). Lectotype (*fide* Grolle, 1971a): 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 (1971a). Lectotype (*fide* Grolle, 1971a): Juan Fernandez, Mas a Tierra, Portezuelo, 475 m., *Skottsberg 197* (JE–*non vidi*).

Jamesoniella colorata var. *oblata* Herz. Revue Bryol. Lichén, 23: 31. 1954, *syn. fide* Grolle (1971a). Holotype: Chile, Prov. Valdivia, L. Puyehue, *Schwabe 93* p.p. (JE–*non vidi*).

Jamesoniella grolleana Herz. Revue Bryol. Lichén. 27: 145. *f. 1 a-m.* 1958, *syn. fide* Grolle (1971a). Holotype:[1] Chile, Prov. Osorno, L. Rupanco, *Schwabe 11d* (JE–*non vidi*).

Jamesoniella colorata f. *subtilis* Herz. Revue Bryol. Lichén. 29: 184. 1960, *syn. fide* Grolle (1971a). Holotype: Chile, Prov. Valdivia, L. Pellaifa, *Schwabe 18 p.p.* (JE–*non vidi*).

Ecology.—Variety of exposed situations in the evergreen forested region. On coastal rocks, rotted logs of an open grassy slope and at pool margins in an open *Empetrum-Nothofagus* mosaic. Quite common in the "bryophyte rich facies" on the sides and apices of bryophyte mounds, often occurring mixed with other Hepaticae, particularly *Adelanthus lindenbergianus, Anastrophyllum involutifolium, Gackstroemia magellanica,* and *Plagiochila ansata.* The above mentioned coastal rocks (Pto. Cutter) received fresh water from rain and forest run-off, with salt water influence at most moderate. However, the species is able to grow in tidal zone regions (see Engel & Schuster, 1973).

Phytogeography.—Pan-temperate in distribution.

The species does not occur north of temperate regions in any of the sectors. It is, however, fairly well represented in the subantarctic, as it occurs on Marion and Prince Edward Islands, Îles Crozet, and Îles de Kerguélen. Grolle (1971a) states the records from Neotropical regions are erroneous (see pl. 17).

[1]Grolle (1971a) states the holotype was collected at Río Puelo (Prov. Llanquihue).

Literature Records.—Anonymous–Strait of Magellan (Kühnemann, 1937, 1949 and Bonner, 1966 as *J. oenops*); *Cunningham*–Strait of Magellan (Stephani, 1901 as *J. oenops*); *Skottsberg & Halle*–Pto. Cutter (Stephani, 1911), B. Arauz (Stephani, 1911 as *J. colorata* and *J. oenops*); Pto. Pomar (Stephani, 1911 as *J. dusenii* and *J. oenops*).

Brunswick Peninsula Specimens Seen.—SENO OTWAY REGION: E. of Canelos and just W. of Ch. La. Quema *(2046)*. BAHIA SAN NICOLAS REGION: W. side of bay *(6324 B)*; ridge between B. Bougainville and B. San Nicolas, ca. 155 m. *(6431 & 6432 B)*. PUERTO GALLANT REGION: NE side of Pto. Gallant (*6012 A*–c. per+sporo. & *6022 B*–c. per.). PUERTO CUTTER REGION: Between copper mine and river S. of mine *(2157 D, 2163 A, 2174 A & 2184 B)*; N. of copper mine *(2203)*; W. of copper mine *(2234 A)*.

Family GYMNOMITRIACEAE

Klinggr. Die höheren Cryptogamen Preussens 16. 1858.

HERZOGOBRYUM

Grolle, Revue Bryol. Lichén. 32: 160. 1963. *Chondrophyllum* Herz. Revue Bryol. Lichén. 21: 46. 1952 *non Chondrophyllum* Kylin, Lundes Univ. Arsskr. N. F., Avd. 2, 20 (6): 442. 1924 (Rhodophyta).

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 (1966b).

Cesia stygia var. *denticulata* Berggr. N. Z. Hep. 4. 1898, *syn. fide* Grolle (1966b). *Acolea denticulata* (Berggr.) Steph. Bull. Herb. Boissier II. 1 (2): 143. 1901 (=Spec. Hep. 2: 4). *Gymnomitrium denticulatum* (Berggr.) K. Müll. (Freib.) Revue Bryol. Lichén. 20: 176-177. 1951. Lectotype (*fide* Grolle, 1966b): New Zealand, South Island, Westland, Kelly's Hill, 1,200 m., 1874, *Berggren 2870* (LD–*non vidi*).

Phytogeography.—Subantarctic in distribution; South Georgia, Falkland Islands, Tierra del Fuego (I. de los Estados), southern

Patagonian Channels (Brunswick Peninsula), Tristan da Cunha, and 500-2,000 m. in the New Zealand sector, occurring on Stewart Island north to Tasmania (see pl. 18).

Brunswick Peninsula Specimens Seen.—PUERTO DEL HAMBRE REGION: near Fuerte Bulnes, *Hatcher 6-8 B* (UW-M).

Family SCAPANIACEAE

Mig. Krypt.-Fl. Deutschl. . . . 1: 479. 1904.

BLEPHARIDOPHYLLUM

Ångstr. Öfvers K. VetenskAkad. Förh. 30: 151. 1873.

KEY TO THE BRUNSWICK PENINSULA SPECIES OF *Blepharidophyllum*

1. Leaves not keeled, not conduplicately bilobed, bifid to the middle, insertion curved; leaf cells with large knotlike trigones; perianth mouth copiously long ciliate, the cilia of highly elongated cells . . . . *B. densifolium*
1. Leaves keeled, conduplicately bilobed, divided three-fourths to seven-eighths into 2 lobes, insertion nearly transverse; leaf cells ± equally thick walled, or with thin walls and small (rarely medium) trigones; perianth mouth with numerous teeth and short spines, the armature of 1-2 cells which are thick walled, especially at the apices 2
   2. Leaf margins irregular and with numerous small teeth, at least on the dorsal margin of dorsal lobe; leaf segments apiculate; lobes never undivided; cell walls thick, especially toward the leaf apices and margins, trigones absent *B. clandestinum*
   2. Leaf margins entire; leaf segments triangular; lobes occasionally undivided or 1 dentate-lobate; cell walls thin, with small or rarely medium trigones *B. gottscheanum*

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: 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 (3, 1): 112. 1895. *Diplophyllum clandestinum* (Mont.) Steph. Bih. K. Svenska VetenskAkad. Handl. 25 (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, *Hombron* (PC–*non vidi*).

Balantiopsis incrassata Mitt. J. Linn. Soc. 15: 197. 1876, *syn. fide* Mitten (1879). Original material: Îles de Kerguélen, Hill NW of Mt. Crozier, *Eaton* (NY!).

Ecology.—With the exception of its occurrence in a *Sphagnum* bog near the evergreen-deciduous forest boundary, confined to the evergreen forest region. In the "bryophyte rich facies" it occurred on the floor as well as on the sides of bryophyte mounds, often under *Empetrum* and *Pernettya* cover. It also occurred on mats of pendent vegetation.

Phytogeography.—Îles de Kerguélen, Falkland Islands, Tierra del Fuego, the Patagonian Channels, and the Valdivian region (to 42°30′ S. in West Patagonia).

Literature Records.—*Anonymous*–Strait of Magellan (Stephani, 1910 as *Diplophyllum*), Pto. Gallant (Grolle, 1965b); *Andersson*–Pto. del Hambre (Ångström, 1872 as *Jungermannia*); *Hombron*–Pto. del Hambre and Pto. Gallant (Montagne, 1845, 1852, 1856 as *Scapania,* Taylor & Hooker, 1847b as *Jungermannia,* Reimers, 1926 as *Diplophyllum*), Pto. Gallant (Grolle, 1965b), Strait of Magellan (G. L. & N., 1844 as *Scapania,* Bonner, 1962 as *Plagiochila*).

Brunswick Peninsula Specimens Seen.—LAGUNO EL PARRILLAR: Near E. shore of lake, ca. 365 m. *(2103 & 2104).* BAHIA SAN NICOLAS REGION: W. side of bay (*6346 A*–c. per.+sporo.). PUERTO GALLANT REGION: Pto. Gallant, *sin. coll.* (NY); NE side of Pto. Gallant (*6028 A*–c. per.+sporo., *6036 A*–c. per.+sporo., *6038* & *6041*); NE side of Pto Gallant *(6082 B).* PUERTO CUTTER REGION: Slightly W. of copper mine *(2245 A);* N. side of copper mine *(2315).*

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 densifolium* (Hook.) Ångstr. *ex* Mass. Nuovo G. Bot. Ital. I. 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. Lond. J. Bot. 3: 467. 1844, *syn. fide* Bescherelle & Massalongo (1889). *Scapania chloroleuca* (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 662. 1847. *Schis-*

tocalyx 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. I. 17: 208. 1885. *Blepharidophyllum 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, I. Hermite, *Hooker* (NY!).

Scapania pycnophylla De Not. Memorie Accad. Sci. Torino II. 16: 215. *pl. 3. f. 1-6.* 1855, *syn. fide* Bescherelle & Massalongo (1889). *Martinellia pycnophylla* (De Not.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 411. 1877. ?*Blepharidophyllum pycnophyllum* (De Not.) Angstr. *ex* Mass. Nuovo G. Bot. Ital. I. 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. Valparaiso, Valparaiso," *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.—Moderately wide in ecological amplitude, occurring at nearly all stations in the peninsula. In forested situations it occurs on rotted logs, particularly where there is a layer of vegetation covering the log; it is less common on bare soil. In the evergreen forest "bryophyte rich facies" it is quite common on the sides and apices of bryophyte mounds as well as part of the floor cover and here it quite frequently grows in pure or nearly pure mats, a feature uncommon for hepatics of this habitat. The species occasionally is intermixed with other Hepaticae such as *Clasmatocolea obvoluta* and *Leptoscyphus horizontalis.* It also occurs in *Sphagnum* bogs mixed with *Sphagnum* sp. or other Hepaticae.

Phytogeography.—Îles de Kerguélen, Îles Crozet, Marion Island, Prince Edward Island, Gough Island, Falkland Islands, Tierra del Fuego, Patagonian Channels, and north in Valdivian region (West Patagonia) to 36°50′ S.

Literature Records.—Anonymous–Strait of Magellan (Bonner, 1963 as *B. chloroleucum, B. densifolium,* and *B. pycnophyllum*); *Andersson*–Pto. del Hambre (Ångström, 1872 as *Jungermannia chloroleuca*); *Skottsberg & Halle*–Pto. Cutter (Stephani, 1911 as *Diplophyllum densifolium* and *D. pycnophyllum*); *Wawra*–Pto. Gallant (Grolle, 1965b).

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, 1901, *Schubert* (FH); *ibid., sin. coll.* as *Schistocalyx chloroleuca* (NY). PUNTA ARENAS REGION: Ridge above refugio (Club Andino), 8 km. W. of Punta Arenas, 305-610 m. *(1948)*. LAGUNO EL PARRILLAR: Near E. shore of lake, ca. 365 m. *(2091 & 2108 B)*. PUERTO DEL HAMBRE REGION: Fuerte Bulnes, Pta. Santa Ana *(1850 B)*. BAHIA SAN NICOLAS REGION: W. side of bay (*6352 & 6386 A*–c. per.+sporo.); ridge between B. Bougainville and B. San Nicolas, ca. 155 m. *(6430 & 6441)*. PUERTO GALLANT REGION: Pto. Gallant, March 1867, *Cunningham 154* (NY); NE side of Pto. Gallant (*6009, 6029 D*–c. per.+sporo., *6033 C*–c. per.+sporo., *6048 A*–c. per. & *6064 C*). RADA YORK: September 1853, *Lechler* as *Scapania chloroleuca* (FH, NY). PUERTO CUTTER REGION: Between copper mine and river S. of mine *(2134 B, 2137, 2167 A & 2169)*; N. of copper mine *(2211)*; W. of copper mine *(2223)*; base of M. Condor *(2319)*.

Blepharidophyllum gottscheanum Grolle

Blepharidophyllum gottscheanum Grolle, J. Hattori Bot. Lab. 28: 69. *f. 4*. 1965. Original material: Chile, Prov. Magallanes, I. Desolación, *Dusén* (JE)–cited in Grolle (1965b).

Ecology.—Only in evergreen *Nothofagus* forests, where in "bryophyte rich facies" it occasionally occurred in depressions and hollows. In an open *Empetrum-Nothofagus* mosaic at B. San Nicolas the species commonly formed large mats at the edges of and submerged in small ponds.

Phytogeography.—Falkland Islands, western Tierra del Fuego, the Patagonian Channels and north to 40°45′ S. in the Valdivian region (West Patagonia) (see Schuster, 1971).

Literature Record.—*Hombron*–Pto. Gallant (Grolle, 1965b).

Brunswick Peninsula Specimens Seen.—BAHIA SAN NICOLAS REGION: Ridge between B. Bougainville and B. San Nicolas, ca. 155 m. *(6421 B, 6422 C & 6439)*. PUERTO GALLANT REGION: NE side of Pto. Gallant *(6024)*. PUERTO CUTTER REGION: Between copper mine and river S. of mine *(2181);* slightly W. of copper mine *(2246 & 2248).*

DIPLOPHYLLUM

(Dum.) Dum. Recueil Obs. Jungerm. 15. 1835 *(nom. cons.). Jungermannia* sect. *Diplophyllum* Dum. Syll. Jungerm. 44. 1831.

Diplophyllum acutilobum Steph.

Diplophyllum acutilobum Steph. K. Svenska VetenskAkad. Handl. 46 (9): 83. *f. 32 f.* 1911. Original material: Chile, Prov. Magallanes, W. end of L. Fagnano, *Halle & Skottsberg s.n.* (S)–cited in Grolle (1965b).

Phytogeography.—Falkland Islands, Tierra del Fuego (L. Fagnano), Patagonian Channels, and the Valdivian region north to 40°42′ S.

Brunswick Peninsula Specimen Seen.—PUERTO CUTTER REGION: Slightly W. of copper mine *(2358 B).*

KRUNODIPLOPHYLLUM

Grolle, J. Hattori Bot. Lab. 28: 70. 1965.

Krunodiplophyllum squarrosum (Steph.) Grolle

Diplophyllum squarrosum Steph. Spec. Hep. 4:116. 1910. *Krunodiplophyllum squarrosum* (Steph.) Grolle, J. Hattori Bot. Lab. 28: 71. 1965. *Blepharidophyllum squarrosum* (Steph.) Schust. Bull. Natn. Sci. Mus., Tokyo 14: 655. 1971. Original material: Chile, Prov. Magallanes, R. Azopardo, 600 m., *Dusén 125* (G)–cited in Grolle (1965b).

Diplophyllum recurvifolium Mass. Atti Ist. Veneto Sci. 87: 221. *pl. 3, f. 9-17.* 1927, *syn. fide* Grolle (1965b). Original material: Chile, Prov. Magallanes, I. Basket, *Spegazzini (non vidi).*

Phytogeography.—Tierra del Fuego and southern Patagonian Channels (Brunswick Peninsula).

Grolle (1965b) points out the Valdivian records in Herzog (1954) are erroneous and actually are based upon plants of *Diplophyllum* cf. *acutilobum.*

Brunswick Peninsula Specimen Seen.—PUERTO GALLANT REGION: NE side of Pto. Gallant *(6071 D).*

Family BALANTIOPSACEAE

Buch, Mitt. Thüring. Bot. Ges. 1: 23. 1955 ("Balantiopsidaceae").

BALANTIOPSIS

Mitt. *in* Hook. f., Handb. N. Z. Flora Pt. 2. 753. 1867.

KEY TO THE BRUNSWICK PENINSULA SPECIES OF *Balantiopsis*

1. Dorsal lobes ± 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); plants light green in color, not developing secondary pigmentation ....*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; plants frequently with a deep red pigmentation. Leaf lobe cells in highly regular tiers, dorsal lobes (3-)9-34 dentate-laciniate, the dorsal lobes narrowed to the apex ....*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: 25. 1968. Original material: Chile, Prov. Magallanes, I. Desolación, *Dusén 228* (G!).

Balantiopsis latifolia Steph. Spec. Hep. 4: 101. 1910, *syn. fide* Engel (1968). *Steereocolea latifolia* (Steph.) Schust. Bull. Natn. Sci. Mus., Tokyo 11: 25. 1968. Lectotype (*cf.* Engel, 1968): Chile, prov. unknown, *Dusén p.p.* (G!).

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." However, Schuster (1972b) re-evaluated the status of *Steereocolea,* and treated the taxon as a subgenus of *Balantiopsis*. Critical to this re-evaluation is a Brunswick Peninsula collection *(Engel, 6389)* which has mature marsupia. The perianth associated with the mature marsupia is represented by remnants that are small to large laciniae (which may be ± large and somewhat leaf like) and 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. See the discussion in Schuster (1972b) and that in Solari (1974).

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 regard the leaf condition in *B. bisbifida* as 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, pp. 86-87), 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.*

This species exhibits a variation of dorsal lobe size. On well-developed axes the dorsal lobes equal the stature of the ventral lobes. However, on less-developed axes the dorsal lobes are ca. one-half the ventral lobe in size and thus approximate the leaf lobe size relationship of *B. asymmetrica.* The taxonomic significance of the dorsal lobe variability will be made in another connection, but for the present the specimens are referrable to a somewhat variable *B. bisbifida.*

Ecology.—On soil of a well-shaded slope as well as on soil of a moist, well-shaded cliff face where it covered extensive areas. The species apparently is quite local in evergreen *Nothofagus* forests.

Phytogeography.—Falkland Islands, the mountainous region of southern Isla Grande de Tierra del Fuego, western Tierra del Fuego, and the southern Patagonian Channels (Brunswick Peninsula).

Brunswick Peninsula Specimens Seen.—BAHIA SAN NICOLAS REGION: E. side of bay (*6389*–c. marsup.+sporo., *6406* & *6407*).

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. *in* Thomson & Murray, 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. *in* Thomson & Murray, Rep. Scient. Results *Challenger*. (Bot.) 1 (3): 87. 1884, *syn. fide* Engel (1968). Lectotype (*cf.* Engel, 1968): Chile, Prov. Magallanes: I. Desolación, 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: 25. 1968. Lectotype (*cf.* Engel, 1968): Chile, prov. unknown, *sin. coll.*, "com. Müller" (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, W. end of L. Fagnano), *Skottsberg s.n.* (G!).

Remarks.—I have studied material of *B. cancellata* with mature marsupia (Juan Fernandez, Mas Afuera, *Hatcher & Engel 739*), which has small to ± large laciniae mostly surrounding the marsupium mouth, with a few laciniae 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.*

I have previously stated (Engel, 1968) the dorsal lobes of *B. cancellata* are 9-34 dentate-laciniate. The Brunswick Peninsula plants, however, have armature more sparingly developed. In *Engel 6084A* the dorsal lobes are 3-8(-9) dentate-laciniate, while those in *Engel 6087* are (5-)7-19 dentate-laciniate.

Ecology.—Rare in the Brunswick Peninsula, where it was observed but once—on rocks in and banks of a stream in an open stand of *Nothofagus betuloides.*

Phytogeography.—Falkland Islands, Tierra del Fuego, Patagonian Channels, north in the Valdivian region to 39°48′ S. and Mas a Tierra and Mas Afuera of the Juan Fernandez Islands. Not reported for Andean Patagonia.

I regard the type locality (Peru) as questionable, and rather think it was gathered in southern Chile.

Brunswick Peninsula Specimens Seen.—PUERTO GALLANT REGION: NE side of Pto. Gallant *(6084 A & 6087).*

Balantiopsis Species Excluded from the Brunswick Peninsula

1. *Balantiopsis diplophylla* (Hook. f. & Tayl.) Mitt.

Jungermannia diplophylla Hook. f. & Tayl. Lond. J. Bot. 3: 377. 1844. *Gottschea diplophylla* (Hook. f. & Tayl.) Nees *in* G. L. & N. Syn. Hep. 624. 1846. *Gymnanthe diplophylla* (Hook. f. & Tayl.) Mitt. *in* Hook. f. Bot. Ant. Voy. 3: 230. 1859. *Balantiopsis diplophylla* (Hook. f. & Tayl.) Mitt. *in* Hook. f. Handb. N. Z. Flora 753. 1867. Original material: Auckland Is., *Hooker* (NY!).

Reported from the Brunswick Peninsula as *Jungermannia diplophylla* by Ångström (1872) for Andersson collections from Pto. del Hambre; two packets are so labeled in the Stockholm Herbarium. All stems, with the exception of a single stem of *B. diplophylla* in one of the packets, are *Schistochila alata* (one or two stems of *Clasmatocolea* sp. and *Lepidozia* sp. excepted). The stem of *B. diplophylla* was likely collected in Australasia and erroneously placed with the Andersson collected plants from Pto. del Hambre. *Balantiopsis diplophylla* occurs in the Auckland Islands, New Zealand, Tasmania, Australia, New Caledonia, and the Philippines (see Engel, 1968).

Family SCHISTOCHILACEAE

Buch, Comment. Biol. 3 (1): 9. 1928.

Pleurocladopsidaceae Solari, Comun. Mus. Argent. Cienc. Nat. Bernardino Rivadavia 2 (4): 16. 1971.

See Schuster & Engel (1977) for plates, descriptions, relationships, etc., of the South American Schistochilaceae taxa.

PARASCHISTOCHILA

Schust. J. Hattori Bot. Lab. 26: 259. 1963. *Schistochila* sect. *Paraschistochila* (Schust.) Haml. Rec. Dom. Mus., Wellington 7: 333. 1972.

Tegulifolium Hässel, Boln Soc. Argent. Bot. 15: 252. 1973, *syn. nov.*

Paraschistochila spegazziniana (Mass.) Schust.

Gottschea spegazziniana Mass. Nuovo G. Bot. Ital. I. 17: 206. *pl. 12, f. 3.* 1885. *Schistochila spegazziniana* (Mass.) Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 17): 29. 1901. *Schistochilastrum spegazzinianum* (Mass.) H. Mill. Phytologia 20: 319. 1970. *Paraschistochila spegazziniana* (Mass.) Schust. Bull. Natn.

Sci. Mus., Tokyo 14: 643. 1971. *Tegulifolium spegazzinianum* (Mass.) Hässel, Boln Soc. Argent. Bot. 15: 252. 1973. Lectotype (*fide* Hässel de Menendez, 1973): Argentina, Terr. Tierra del Fuego, I. Gable, June 1882, *Spegazzini 302B* (LPS–*non vidi*).

Phytogeography.—Tierra del Fuego (I. de los Estados) and the Patagonian Channels north to Río Aisén (45°25′ S. in the Valdivian region).

The report from Tasmania in Rodway (1916) is erroneous; the specimen upon which the record is based is actually *Goebelobryum unguiculatum* (Hook. f. & Tayl.) Grolle.

Brunswick Peninsula Specimens Seen.—PUERTO GALLANT REGION: NE side of Pto. Gallant *(6055, 6068, 6090 & 6091)*.

PLEUROCLADOPSIS[1]

Schust. Nova Hedwigia 8: 279. 1964.

Pleurocladopsis simulans (Mass.) Schust.

Cephalozia ? simulans Mass. Nuovo G. Bot. Ital. I. 17: 236. *pl. 21. f. 22.* 1885. *Pleurocladopsis simulans* (Mass.) Schust. Nova Hedwigia 8: 279. 1964. Original material: Chile, Prov. Magallanes, I. Basket, June 1882, *Spegazzini 193* (LPS)–cited in Solari (1971a).

Phytogeography.—Tierra del Fuego and Patagonian Channels north to 43°57′ S. (I. Guaitecas).

Brunswick Peninsula Specimen Seen.—PUERTO GALLANT REGION: NE side of Pto. Gallant *(6067 B)*.

SCHISTOCHILA

Dum. Recueil Obs. Jungerm. 15. 1835.

Key to the Brunswick Peninsula Species of *Schistochila*

1. Rhizoids colorless (brownish with age), limited to underleaf (and sometimes ventral lobe) bases, apices often copiously septate and branched. Leaf surfaces never armed; keel of leaves without a wing, or (normally) with a single wing. Leaf margins edentate, or with low broad-based teeth formed of nondifferentiated cells. Leaves often polystratose. Secondary cell wall pigmentation always absent. Perianth normally quite lacking; no conspicuous apical crown of modified and crowded bracts. No terminal (*Frullania*-type) branching 2

[1]See Schuster (1972c) for a discussion of the relationships of *Pleurocladopsis* to other members of the Schistochilaceae.

1. Rhizoids claret-red to vinaceous, some or many usually scattered and originating away from leaf- and underleaf-bases, the apices often highly ramified (branches at tips often connate, leaving fenestra) but not or tardily and slightly septate, when branched the branching irregular, sinuous and variable. Leaves with paired abaxial wings, or with surfaces armed with processes or lamellae, and/or with margins (usually copiously) serrate to ciliate, at least distally [exc. entire or paucidentate phenotypes of *S. alata*]; teeth, where formed, usually of elongated, modified cells differing from the (usually collenchymatours) laminar cells. Leaves always 1-stratose, except sometimes near keel where with limited polystraty. Often with secondary cell wall pigments. Sometimes with perianth distinct, or with a crown of crowded, conspicuous bracts at coelocaule summit 5
2. Leaf hardly to shallowly bilobed, the dorsal lobe without a free, triangular apex (keel as long to longer than dorsal lobe); underleaves small, broadly transverse, attached by a very broad line, short, with a narrow and usually shallow notch. Rigid plants, convex ventrally; leaves rigid, fleshy, conspicuously polystratose 3
2. Leaf distinctly bilobed: the dorsal lobe with a free, sharp to blunt to rounded apex (keel clearly shorter than length of dorsal lobe); underleaves variable: subrectangular to narrowly ovate or wide ovate to subsquarrose. Plants small (2-5 mm. wide), loosely prostrate to procumbent to erect and caespitose, not attached, to the apex of the shoot, by dense rhizoid fascicles 4
3. Axes 7-15 mm. wide, stems (22-)24-36 cells in diameter; underleaf lamina margins frequently undulate to crispate; leaves exceedingly brittle and rigid *S. splachnophylla*
3. Axes 3-5 mm. wide, stems 14-21 cells in diameter; underleaf lamina margins plane; leaves much less rigid and brittle .... *S. subimmersa*
4. Underleaves subrectangular to narrowly ovate, clearly longer than broad, 0.5-0.8 width of stem; ventral half of leaf little concave, never inflated; dorsal half not or hardly concave; plants small-celled (median cells (25-)32-42×30-54 μ), firmer, more rigid. Underleaves 0.35-0.40(-0.50) bifid .. *S. leucophylla*
4. Underleaves wide ovate-quadrate, 0.8-1.2 as wide as stem; ventral half of leaf strikingly concave (adaxially), inflated in aspect; dorsal half strongly concave (adaxial view) (the leaves, as a whole, billowed out); plants large-celled [median cells 46-66(-72)×52-92 μ], subhyaline. Underleaves 0.20-0.35(-0.45) bifid; leaves often with incurved lobes, the ventral of which is rounded to blunt .... *S. cunninghamii*
5. Abaxial leaf surfaces clearly armed: either with ciliate lamellae, or with simple to furcate pluricellular processes, or both. Elaters rigid, with 2 broad, close spirals, the elater diameter 1-1.5 × the diameter of the finely granulate to vermiculate spores. Plants with *Frullania*-type branching, and with a distinct perianth 6
5. Leaf surfaces never armed, wholly smooth (except for the 1 or 2 abaxial wings) 7
6. Apices of ventral lobe with cilia and/or lamellae on *both* surfaces; ventral lobe with ventral surface sometimes interrupted, to 5 cells wide; underleaves (2-)4-6 lobed; shoots 4-8 mm. wide .... *S. laminigera*
6. Apices of ventral lobes with lamellae and/or cilia strictly confined to abaxial surface; ventral lobe lamellae continuous, not interrupted, those toward keel to 23 cells wide; underleaves bifid, shoots 7-13 mm. wide .... *S. lamellata*

7. Leaves strongly unequally bifid: the dorsal lobe much smaller than the ventral; dorsal lobe, *in situ* on leaf, appearing either subtruncate at apex, or oblique (never with a free, triangular, lobelike apex), the keel as long or longer than dorsal lobe length. Ventral margins of ventral lobes with several large, conspicuous teeth in proximal half; apex of dorsal lobe with a conspicuous tooth immediately distal to carina; ventral lobe ventral surface often with a single, rudimentary lamella descending from sinus base; dorsal lobe free dorsal margin to 16 dentate . . . . *S. reflexa*
7. Leaves subequally bifid (dorsal lobe similar in shape to ventral, 0.50-1.20 size of ventral lobe); dorsal lobe triangular and free at apex, the keel less than 0.8 length of dorsal lobe. Never with *Frullania*-type branches (only *Radula* and intercalary) 8
   8. Plants light green, except for the rhizoids; trigones never coarse and angular-radiate; leaf with paired wings, the ventral wing broad, the dorsal narrow and sometimes incomplete; underleaves usually ± lamellate, usually quadrifid; perianth distinct; spores minutely vermiculate and tuberculate *S. quadrifida*
   8. Plants strongly golden-brown to fuscous-pigmented, with cells with coarse and triradiate trigones; leaves with a single wing; underleaves not lamellate, 2(-3)-fid; perianth, at most, rudimentary, the coelocaule crowned with irregular, crowded, variable, laciniae; spores with conspicuous high, uniform tubercles 9
9. Ventral lobe dorsal margin nonincised, entire or sparingly dentate; ventral lobe entire in subapical portion; dorsal lobes with free dorsal margin nonincised, entire to sparingly dentate; leaves subequally bifid, the dorsal lobe typically 1.0-1.2 the length of the ventral lobe; spores averaging 1.6 × elater diameter *S. alata*
9. Ventral lobe dorsal margin with 1 deep, conspicuous incision and often a few shallow incisions, the margin dentate to lobulate; ventral lobe with a few small teeth in subapical portion; dorsal lobes with free dorsal margin incised, dentate to laciniate to lobulate, the sinus bases often reflexed; leaves unequally bifid, the dorsal lobe 0.65-0.95 the length of the ventral lobe; spores equal to elaters in diameter . . . . *S. gayana*

Schistochila alata (Lehm.) Schiffn.

Jungermannia alata Lehm. Linnaea 4: 359. 1829. *Gottschea alata* (Lehm.) Nees *in* G. L. & N. Syn. Hep. 16. 1844. *Notarisia alata* (Lehm.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 392. 1877. *Schistochila alata* (Lehm.) Schiffn. *in* Engl. & Prantl, Natürl. Pflanzenfam. 1 (3, 1): 111. 1895. Original material: South Africa, Cape Prov., E. side of Table Mt., *Ecklon (non vidi).*

Jungermannia pachyla Hook. f. & Tayl. Lond. J. Bot. 3: 456. 1844, *syn. fide* Schuster & Engel (1977). *Gottschea pachyla* (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 621. 1846. *Schistochila pachyla* (Hook. f. & Tayl.) Schiffn. *in* Engl. & Prantl, Natür. Pflanzenfam. 1 (3, 1): 111. 1895. Original material: Chile, Prov. Magallanes, I. Hermite, *Hooker* (FH!, MICH!, NY!, hb. Schuster!, W!).

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, 13 April 1908, *Halle & Skottsberg 307* (BM!, UPS!).

Ecology.—Wetter portions of peninsular evergreen forests. In the "bryophyte rich facies" at Pto. Cutter it is very common on the bases of bryophyte mounds, often forming mats.

Phytogeography.—South Africa, Falkland Islands (leg. *Engel*), Tierra del Fuego, southern Patagonian Channel region, and Juan Fernandez; not reported from the Valdivian region.

Literature Records.—Anonymous–Strait of Magellan (Schiffner, 1895); *Naumann*–Strait of Magellan (Schiffner, 1890 as *Gottschea*).

Brunswick Peninsula Specimens Seen.—PUERTO DEL HAMBRE REGION: Pto. del Hambre, *Andersson* as *Gottschea diplophylla* (S-PA). PUERTO GALLANT REGION: NE side of Pto. Gallant *(6003 A & 6044)*. PUERTO CUTTER REGION: Between copper mine and river S. of mine *(2146, 2151 & 2159);* N. of copper mine *(2205 A);* base of M. Condor, *Imshaug 39453* (MSC).

Schistochila cunninghamii Steph.

Schistochila cunninghamii Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 17): 27. 1901. Original material: Chile, Prov. Magallanes, R. Azopardo, 200 m., *Dusén (non vidi);* Strait of Magellan, without specific locality, *Cunningham (non vidi);* I. Desolación, Pto. Angosto, 6 April 1896, *Dusén 274* (LD!, NY!, hb. Schuster!, UPS!).

Phytogeography.—Tierra del Fuego on Isla Desolación and the Patagonian Channel region north to 50°03′ S.

Literature Record.—Cunningham–Strait of Magellan (Stephani, 1901a).

Schistochila gayana (Gott.) Steph.

Gottschea gayana Gott. Annls. Sci. Nat. IV. 8: 320. 1857. *Schistochila gayana* (Gott.) Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6): 58. 1900. Original material: Southern Chile, without specific locality, *Gay* (PC–*non vidi*).

Ecology–Phytogeography.—Known from wetter portions of Tierra del Fuego (including Isla Desolación), Patagonian Channels, and north to 40°45′ S. (885 m.) in the Valdivian region. In the Brunswick Peninsula, it occurred only in the very wet evergreen forests of the western end of the peninsula. The species occurs on *Nothofagus* and *Drimys* bark, often in a layer of bryophyte vegetation covering the bark.

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, *Dow* as *Gottschea stratosa* (NY), *Dow 1, 2* as *Gottschea stratosa* (BM), *Lechler* (BM), *Naumann* (BM), *Savatier 222* as *Schistochila gayana* var. *nana, ex hb.* Stephani (BM). PUERTO CUTTER REGION: Slightly W. of copper mine *(2251 A);* base of M. Condor *(2320, 2321, 2324 & 2337 A).*

Schistochila lamellata (Hook.) Dum.

Jungermannia lamellata Hook. Musci Exot. 1: *pl. 49, f. 1-4.* 1818. *Schistochila lamellata* (Hook.) Dum. Recueil Obs. Jungerm. 15. 1835. *Gottschea lamellata* (Hook.) Nees *in* G. L. & N. Syn. Hep. 20. 1844. *Fulfordistria lamellata* (Hook.) H. Mill. Phytologia 20: 321. 1970. Original material: Argentina, Terr. Tierra del Fuego, I. de los Estados, *Menzies* (FH!, NY!, S-PA!).

Schistochila reicheana Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6): 59. 1900, *syn. fide* Schuster & Engel (1975). *Fulfordistria reicheana* (Steph.) H. Mill. Phytologia 20: 321. 1970. Original material: Chile, Prov. Aisén, R. Aisén Valley, 28 January 1897, *Dusén s. n.* (NY!, S-PA!); Prov. Chiloé, I. Guaitecas, 21 April 1897, *Dusén 400* (NY!–c. ♂), May 1897, *Dusén s. n.* (hb. Schuster!), April 1897, *Dusén s. n.* (S-PA!), May 1897, *Dusén s. n., 379* (S-PA!); Prov. Valdivia, Corral, November 1896, *Dusén 189* (NY!, S-PA!).

Schistochila lamellistipula Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6): 59. 1900, *syn. fide* Schuster & Engel (1975). *Fulfordistria lamellistipula* (Steph.) H. Mill. Phytologia 20: 321. 1970. Original material: Chile, Prov. Magallanes, I. Newton, May 1896, *Dusén* (LD!, S-PA!).

Schistochila savatieri Steph. Spec. Hep. 4: 94. 1909, *syn. fide* Schuster & Engel (1975). *Fulfordistria savatieri* (Steph.) H. Mill. Phytologia 20: 321. 1970. Original material: Chile, Prov. Magallanes, I. Desolación, Pto. Churruca, *Savatier* 1938, *ex hb.* Bescherelle (G!).

Ecology.—This most striking species was found only within the evergreen *Nothofagus* forest regions. It is particularly common where bryophyte mounds occur beneath a well-shaded forest canopy. Here the species occurs in shaded, shallow, wet depressions between the mounds. It also occurs in climax forests (with a firm soil floor) on the forest floor or in sheets of vegetation from logs.

Phytogeography.—Tierra del Fuego (sporadically), Patagonian Channels, and Valdivian region north to 39°52′ S.

Literature Records.—*Anonymous*–Strait of Magellan (Bonner, 1966 as *Gottschea;* Schniffer, 1895; Stephani, 1909); *Andersson*–Pto. del Hambre (Ångström, 1872 as *Jungermannia*); *Jacquinot*–Pto. Gallant (Montagne, 1845, 1852 as *Gottschea*); *Savatier*–Pto. Gallant (Bescherelle & Massalongo, 1889 as *Gottschea*); *Skottsberg & Halle*–Pto. Cutter (Stephani, 1911).

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, *Collinson* (NY); *ibid.*, February 1861, *Mégère* as *Scapania clandestina* (F); *ibid.*, February 1861, *Nadaud* (F); *ibid.*, 1901, *Schubert* (FH). PUERTO DEL HAMBRE REGION: Puerto del Hambre ("Magellaens Sound"), *Andersson* (NY, S-PA). BAHIA DEL INDIO: Lote San Isidro, R. Yumbel, *Pisano 4011* (F). BAHIA SAN NICOLAS REGION: W. side of bay *(6345)*. PUERTO GALLANT REGION: B. Fortescue *(5944)*; Pto. Gallant, *Cunningham s.n., 254* (NY). RADA YORK: *Lechler 1349* (FH, NY, S-PA). PUERTO CUTTER REGION: Puerto Cutter, 13 April 1908, *Halle & Skottsberg 310* (S-PA); between copper mine and river S. of mine *(2136, 2140, 2147 & 2149);* base of M. Condor *(2334 A & 2350 C).*

Schistochila laminigera (Hook. f. & Tayl.) Evans

Jungermannia laminigera Hook. f. & Tayl. Lond. J. 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: 321. 1970. Lectotype (*fide* Schuster & Engel, 1977): Chile, Prov. Magallanes, I. Hermite, *Hooker* (BM!–c. sporo) (isolectotypes: MICH!, NY! hb. Schuster!).

Schistochila spinosissima Gola, Nuovo G. Bot. Ital. II. 29: 170. *pl. 2, f. 28-29.* 1923, *syn. fide* Schuster & Engel (1975). Original material: Chile, Prov. Magallanes, bay at base of M. Sarmiento, 24 February 1913, *Gasperi s. n.* (FI!).

Remarks.—I cannot recognize the genus *Fulfordistria* for the following reasons:

a) The genus 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. Some examples of such elements are: 1) *Lophocolea muricata* with spinose leaf surfaces; 2) *Lophocolea striatella* with sulcate stems; and 3) *Riccardia fuegiensis,* with ventral lamellation of the thalli.

c) The lamellation character "breaks down" both in New Zealand taxa (see Schuster, 1971, particularly pp. 629-631), as well as the South American representatives of *Schistochila* (see Schuster & Engel, 1977 for discussion of this feature).

Ecology.—Sporadic in evergreen forests where on rotted logs and on the forest floor of mature forests.

Phytogeography.—(?) Falkland Islands, Tierra del Fuego, Patagonian Channels, and Valdivian region (West Patagonia north to 40°45′ S., and in Andean Patagonia in L. Nahuel Huapi area).

Literature Records.—*Anonymous*–Strait of Magellan (Schiffner, 1895); *Andersson*–Pto. del Hambre (Ångström, 1872 as *Jungermannia*).

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, February 1861, *Nadaud* (F). PUERTO DEL HAMBRE REGION: Pto. del Hambre ("Magellaen Sound"), *Andersson* (S-PA). CABO SAN ISIDRO: 13 February 1929, *Roivainen 2387* (H). BAHIA SAN NICOLAS REGION: W. side of bay *(6336 & 6351 C)*. PUERTO GALLANT REGION: B. Fortescue *(5958 E & 5980)*. PUERTO CUTTER REGION: At copper mine *(2269 B)*.

Schistochila leucophylla (Lehm.) Steph.

Gottschea leucophylla Lehm. *in* G. L. & N. Syn. Hep. 17. 1844. *Jungermannia leucophylla* (Lehm.) Hook. f. & Tayl. *in* Hook. f. Bot. Ant. Voy. 1: 424. 1847 *non J. leucophylla* Hook. f. & Tayl. Lond. J. Bot. 3: 384. 1844. *Schistochila leucophylla* (Lehm.) Steph. Spec. Hep. 4: 98. 1910. Original material: Chile, Prov. Magallanes, Strait of Magellan, without specific locality, *Commerson* (G!–*ex hb.* Bescherelle, S-PA!).

Schistochila subintegerrima Steph. K. Svenska VetenskAkad. Handl. 46 (9): 81. *f. 32e.* 1911, *syn. fide* Schuster & Engel (1975).

Lectotype *fide* Schuster & Engel (1977): Chile, Prov. Magallanes, W. end of L. Fagnano, 10 March 1908, *Halle 313* (NY!–c. per.) (lectotype duplicates: BM!, hb. Schuster!).

Phytogeography.—Falkland Islands (leg. *Engel*), subalpine-alpine areas of I. Grande de Tierra del Fuego. Known also from Patagonian Channels (Brunswick Peninsula and Fiordo Peel, 50°59′ S.). See comments in Schuster & Engel (1977) regarding the northern station.

*Literature Records.—Anonymous–*Strait of Magellan (Montagne, 1852 as *G. leucophylla,* Kühnemann, 1937, 1949 as *S. leucophylla*); *Commerson–*Strait of Magellan (G. L. & N. 1844 as *G. leucophylla,* Taylor & Hooker, 1847b as *J. leucophylla,* Bonner, 1962 as *G. leucophylla*).

Brunswick Peninsula Specimen Seen.—BAHIA SAN NICOLAS REGION: W. side of bay *(6311)*.

Schistochila quadrifida Evans

Schistochila quadrifida Evans, Contr. U.S. Natn. Herb. 1: 141. *pl. 16, f. 1-4.* 1892. Original material: Chile, Patagonia, without specific locality, 1888, *Albatross* (Y!).

Schistochila planifolia Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 17): 29. 1901, *syn. fide* Schuster & Engel (1975). Original material: Chile, Prov. Magallanes, I. Desolación, Pto. Angosto, ca. 400 m., *Dusén 235* (S-PA!, UPS!).

Schistochila diptera Herz. Revue Bryol. Lichén. 21: 257. *f. 2 a-d.* 1952, *syn. fide* Schuster & Engel (1975). Isotype: Chile, Prov. Aisén, C. Tesoro, 860 m., 13 February 1940, *Schwabe 41 a, p.p.* (hb. Grolle!).

Remarks.—As pointed out by Schuster & Engel (1977), the species should not be confused with any other member of the genus, and the following ensemble of features will immediately serve to identify it: a) the paired wings of the leaf, with the ventral wing broad and the dorsal narrow and sometimes incomplete; b) underleaves usually four-lobed and usually with lamellae descending for varying lengths from the lobe bases; c) leaf lobe margins spinose dentate or occasionally laciniate; d) shoot and leaf lobe apices strikingly decurved. The underleaf lamellae are sometimes quite short and should be searched for with care.

Phytogeography.—Isla Grande de Tierra del Fuego (380-650 m.), Patagonian Channels [Brunswick Peninsula and at Fiordo Peel (50°56′ S.)], and the Valdivian region at 44°19′ S., 72°40′ W. (*S. diptera* type). See comments in Schuster & Engel (1977).

Brunswick Peninsula Specimen Seen.—BAHIA SAN NICOLAS REGION: W. side of bay *(6366A)*.

Schistochila reflexa (Mont.) Steph.

Gottschea reflexa Mont. Annls. Sci. Nat. III. 4: 347. 1845. *Schistochila reflexa* (Mont.) Steph. Spec. Hep. 4: 97. 1910. Original material: Southern Chile, without specific locality, *Gay* (PC!–c. ♂).

Gottschea parvula Ångstr. Öfvers. K. VetenskAkad. Förh. 29 (4): 9. 1872, *syn. fide* Schuster and Engel, 1975. *Schistochila parvula* (Ångstr.) Steph. Spec. Hep. 4: 96. 1909. Original material: Chile, Prov. Magallanes, Pto. del Hambre, *Andersson* (G!–c. ♂, S-PA!–c. ♂).

Remarks.—As pointed out by Schuster & Engel (1977), *S. reflexa* is a close ally of *S. stratosa,* which occurs in the Valdivian region and on Juan Fernandez. The following features of *S. reflexa* will readily distinguish it from *S. stratosa:* a) the conspicuous teeth of the proximal half of ventral lobe ventral margins; b) the conspicuous tooth of the dorsal lobe apex immediately distal to the terminus of the carina; c) the stem paraphyllia in the androecial region; and d) the suberect growth of the plants. Further distinguishing features may be found in the key utilized in Schuster & Engel (1977).

Phytogeography.—Tierra del Fuego, Southern Patagonian Channel region (Seno Skyring area [see Engel, 1973b], and the *Gottschea parvula* type from the material collected on the eastern side of the Brunswick Peninsula), the Valdivian region north to 39°46′ S. (occurring in both coastal and Andean mountain ranges) and Mas a Tierra (500 m.), Juan Fernandez.

Literature Records.—Anonymous–Pto. del Hambre (Stephani, 1909 as *S. parvula*); *Andersson*–Pto. del Hambre (Bonner, 1966 as *G. parvula*).

Schistochila splachnophylla (Hook. f. & Tayl.) Steph.

Jungermannia splachnophylla Hook. f. & Tayl. Lond. J. Bot. 3: 455. 1844. *Gottschea splachnophylla* (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 621. 1846. *Schistochila splachnophylla* (Hook. f. & Tayl.) Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 17):

28. 1901. Lectotype (*fide* Schuster & Engel, 1977): Chile, Prov. Magallanes, I. Hermite, *Hooker* (FH!) (isolectotypes: BM!, NY!, hb. Schuster!).

Schistochila lanceolata Steph. K. Svenska VetenskAkad. Handl. 46 (9): 79. *f. 31 b.* 1911, *syn. fide* Schuster & Engel (1975). Original material: Falkland Is., Mt. Adam, 700 m., 1907, *Skottsberg 12* (BM!, G!, hb. Schuster!).

Remarks.—Besides the characters noted in the key which separate this species from *S. subimmersa,* there are several supplementary characters which differ in magnitude and which are taxonomically meaningful (see Schuster & Engel, 1977).

Phytogeography.—Falkland Islands, Tierra del Fuego (350-650 m.), Patagonian Channels north to 50°39′ S. (I. Chatham, E. of B. Wide, leg. *Engel*) and Juan Fernandez (1,100 m. on Mas Afuera!); unknown from the Valdivian region.

Brunswick Peninsula Specimens Seen.—PUERTO GALLANT REGION: NE side of Pto. Gallant *(6070 E, 6071 E & 6088 A).*

Schistochila subimmersa Engel & Schust.

Schistochila subimmersa Engel & Schust. *in* Schuster & Engel, Phytologia 30: 247. 1975. Holotype: Chile, Prov. Magallanes, E. side of Pto. Bueno, *Schuster 69-4223* (hb. Schuster!).

Remarks.—See comments in Schuster & Engel (1975, 1977).

Phytogeography.—Patagonian Channels and in Valdivian region at 39°27′ S., 73°06′ W. (Prov. Valdivia, above R. El Lingue, between Mehuín and Lleco, *Engel 3870 B*).

Brunswick Peninsula Specimens Seen.—PUERTO GALLANT REGION: Pto. Gallant, 1841, *Le Guillou 44* as *Gottschea pachyphylla* (PC); NE side of Pto. Gallant *(6064 F & 6079).*

Schistochila Species Excluded from the Brunswick Peninsula

1. *Schistochila stratosa* (Mont.) Evans

Gottschea stratosa Mont. Annls. Sci. Nat. III. 4: 346. 1845. *Schistochila stratosa* (Mont.) Evans, Contr. U.S. Natl. Herb. 1: 141. 1892. Original material: Chile, "Provinces Australes," *Gay* (PC!).

Reported by Ångström (1872 as *Gottschea*) for an Andersson collection from Pto. del Hambre. *S. stratosa* is restricted to Juan Fernandez (Mas Afuera) and the Valdivian zone and is absent from the Magellanian zone. For comments on the relationships of this species see under *S. reflexa*.

NOTES ON *Schistochila* SPECIES

1. *Schistochila pachyphylla* (Lehm.) Steph.

Jungermannia pachyphylla Lehm. Nov. Minus Cog. Stir. Pug. 6: 61. 1834. *Gottschea pachyphylla* (Lehm.) Nees *in* G. L. & N. Syn. Hep. 19. 1844. *Schistochila pachyphylla* (Lehm.) Steph. Spec. Hep. 4: 99. 1910. Original material: Tristan da Cunha.

Reported by Gottsche (1857 as *Gottschea*) for a Le Guillou collection from Pto. Gallant; the specimen is one of *Schistochila subimmersa* (*fide* specimen in PC!). *S. pachyphylla* was treated as a "dubious name" in Schuster & Engel (1977).

Family LOPHOCOLEACEAE

(Jørg.) Vand. Bergh. *in* Robyns, Flore Géner. Belgique, Bryophytes 1: 208. 1956. Jungermaniaceae (sic) Tribus Lophocoleae Jørg. Bergens Mus. Skr. 16: 61, 180. 1934.

KEY TO THE STERILE PLANTS OF THE *Chiloscyphus-Leptoscyphus-Lophocolea* COMPLEX

The taxa of *Chiloscyphus, Leptoscyphus,* and *Lophocolea* are not only frequently sterile but quite variable and it is often impossible to distinguish genera based upon sterile material, particularly if one has not previously encountered fertile plants. A key to sterile plants of this complex is especially necessary if a name is sought for a limited number of specimens of any one taxon. I have also included three species of *Clasmatocolea* that may be confused with members of this complex; the genus is otherwise distinct by the possession of deeply adaxially concave leaves. The highly variable, polytypic *Leptoscyphus expansus* is fortunately nearly always with gynoecia. A thorough search for perianths of *L. expansus* is often necessary, and even when very young perianths are at hand, they are nevertheless diagnostic.

1. Leaf apices undivided, entire (exc. sometimes in *Lophocolea sabuletorum*) 2
1. Leaf apices various, at least some leaves on an axis with apices 1-dentate-lobate or bifid 20
   2. Leaves at least slightly adaxially concave 3
   2. Leaves plane or convex, not adaxially concave (exc. sometimes in *Leptoscyphus cuneifolius*) 4
3. Leaves slightly concave, orbicular in shape; underleaves narrower than stem; leaf cells with trigones usually absent to small, occasionally medium; stems 6-9 cells high .... [*Clasmatocolea vermicularis*]
3. Leaves deeply adaxially concave, orbicular to reniform in shape; underleaves 1.0-4.3 × stem width; leaf cells with trigones frequently large to bulging to knotlike; stems 8-14 cells high .... [*Clasmatocolea humilis*]

4. Underleaves completely free from the leaves 5
4. Underleaves connate on one or both sides with the leaves 9
5. Underleaves undivided or at most retuse 6
5. Underleaves conspicuously bifid 7
6. Leaves connate dorsally, usually imbricate; leaves wide-reniform in shape, the ventral-basal portion expanded and broad auriculate; plants larger, not wirelike, commonly light green, without red-brown pigments *Lophocolea otiphylla*
6. Leaves completely free dorsally, usually remote; leaves wide obovate to wide cuneate in shape, the ventral-basal portion not expanded; plants small and wirelike, commonly with red-brown pigments ......*Leptoscyphus cuneifolius*
7. Leaf apices variable, broadly rounded to truncate to retuse to emarginate to 1- or bidentate. Underleaves as wide as to 1.5 × stem width, the margins entire to 2 dentate-small laciniate .... *Lophocolea sabuletorum*
7. Leaf apices consistently broadly rounded, never retuse, emarginate, 1- or bidentate 8
8. Leaves expanded near ventral base and here often reflexed; leaf cells without trigones. Underleaves one-half stem width to as wide as stem, the segments often differing in size and configuration .... *Lophocolea elata*
8. Leaves not expanded near ventral base, the ventral margin plane, not reflexed; leaf cells frequently with trigones. Leaves strongly erect, often appressed to one another dorsally; underleaves long-linear, entire *Leptoscyphus abditus*
9. Underleaves connate with leaves on *one* side 10
9. Underleaves connate with leaves on *both* sides 16
10. Underleaf apices undivided and entire to bidentate to retuse 11
10. Underleaf apices deeply divided 12
11. Underleaves plane, the underleaf apices entire, never retuse; leaves remote; plants small and wirelike, commonly developing red-brown pigments; plants corticolous. Leaves wide obovate to wide cuneate .....*Leptoscyphus cuneifolius*
11. Underleaves often strongly convex (recurved) to canaliculate, the underleaf apices often bidentate, occasionally retuse; leaves imbricate; plants larger, not wirelike, not developing secondary pigments; plants terricolous or saxicolous *Lophocolea austrigena*
12. At least some axes developing a red-brown or brown pigmentation, if only tinged locally 13
12. Axes green, without secondary pigmentation present 14
13. Plants (3.2-)3.5-7.7 mm. wide; plants light brown or cocoa brown, never with red-brown pigments ....*Chiloscyphus hookeri* var. *constantifolius*
13. Plants 1.9-3.6(-4.2) mm. wide; plants frequently with red-brown pigments *Leptoscyphus expansus*
14. Leaf apices with rather minimal variation, usually broadly rounded to truncate, rarely retuse ....*Chiloscyphus hookeri* var. *constantifolius*
14. Leaf apices with considerable variation, frequently retuse to emarginate . 15
15. Underleaves bifid nearly to the base, the segments setaceous. [Antheridial stalk cells in two rows] .... *Leptoscyphus expansus*[1]

[1]Rather poorly developed shade forms of *L. expansus* will key here; for comments see under this species.

15. Underleaves bifid usually to ca. one-half, the segments triangular. [Antheridial stalk cells in a single row.] Leaf apices broadly rounded to truncate to retuse to emarginate to 1- or bidentate .... *Lophocolea sabuletorum*
16. Leaves connate dorsally. Leaves distinctly opposite; sinus of underleaf shallow .... *Leptoscyphus aequatus*
16. Leaves completely free dorsally 17
17. Ventral leaf margin abruptly inflexed (curved dorsally). Underleaves widely ovate, the margins dentate-laciniate; plants (4.4-)5.4(-6.8) mm. wide *Leptoscyphus horizontalis*
17. Ventral leaf margin plane or deflexed (curved ventrally) 18
18. Underleaves distinctly connate by several cells; plants dull green to light brown in color, not developing red-brown pigments. Leaves ± symmetrically ovate .... *Chiloscyphus integrifolius*
18. Underleaves, at least on one side, obscurely connate, i.e., connate by a long decurrent underleaf base; plants developing red-brown pigments 19
19. Leaves opposite or subopposite, the dorsal leaf margin often *abruptly* decurved to revolute; subapical leaf cells 31-56 μ long .... *Chiloscyphus magellanicus*
19. Not with the above combination of characters; subapical leaf cells (25-)35-40 (-50) μ long .... *Leptoscyphus expansus*
20. Leaves on a single axis usually with apices variable, e.g., broadly rounded to truncate to retuse to single lobed to (rarely) bifid 21
20. Leaves with apices consistently bifid, bidentate or single lobate 22
21. Underleaves one-half to at most three-fourths of stem width, distinctly concave and recurved; ventral leaf margin distinctly recurved, occasionally revolute *Chiloscyphus pallido-virens*
21. Underleaves as wide as stem, never concave or recurved; ventral leaf margin plane, at most only slightly recurved .... *Chiloscyphus hookeri* var. *hookeri*
22. Underleaves connate with leaves on both sides 23
22. Underleaves connate with leaves on one side or completely free 24
23. Leaves connate dorsally; leaf segments setaceous; leaves with a distinct adaxial concavity toward the base; leaf cells with large, knotlike trigones. Plants frequently with light-brown or red pigmentation .... *Chiloscyphus valdiviensis*
23. Leaves free dorsally; leaf segments tooth like to small lobate; leaves plane, without an adaxial concavity; leaf cells without trigones. Leaf sinus truncate or lunate .... *Lophocolea sylvatica*
24. Leaves with at least a slight adaxial concavity present. Underleaves often semi-obliquely inserted, i.e., the underleaf directed at an acute angle from the stem .... [*Clasmatocolea rigens*]
24. Leaves plane or convex, not adaxially concave 25
25. Leaf apices consistently with a single large tooth; plants isophyllous or nearly so. Leaves transversely oriented; underleaves free, extremely long decurrent *Lophocolea gottscheoides*
25. Leaf apices consistently bifid; plants distinctly anisophyllous 26
26. 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 .... *Leptophyllopsis irregularis*
26. Leaf lobes and marginal teeth, if present, persistent, the leaf apices never with a ragged appearance; leaves never with accessory laciniae. Leaf margins

entire to 1-dentate 27

27. Leaves bifid to one-half, with leaf segments frequently canaliculate. Leaf segments very wide triangular, widely divergent .... *Lophocolea divaricata*
27. Leaves bidentate or bifid to at most one-third, with leaf segments plane, never canaliculate 28
 28. Dorsal and ventral leaf surfaces covered with short spines *Lophocolea muricata*
 28. Dorsal and ventral leaf surfaces smooth 29
29. Leaf cells with trigones large and knotlike. Dorsal leaf margin straight to slightly curved, ventral margin greatly curved; plants frequently brown pigmented .... *Leptoscyphus patagonicus*
29. Leaf cells with trigones absent or very small 30
 30. Median leaf cells (46-)52-91 $\times$ 33-65 μ. Dorsal leaf margin straight or nearly so, entire; ventral leaf margin rounded (especially toward the apex), entire-1-dentate; underleaves elongate-ovate in shape, as wide as or slightly wider than stem, connate on *one* side .... *Lophocolea textilis*
 30. Median leaf cells 17-48(-52) $\times$ 20-43 μ 31
31. Leaf segments ending in a uniseriate row of 4-15 cells, the segments piliferous; underleaf margins 1-large laciniate-lobate .... *Lophocolea leptantha*
31. Leaf segments ending in a uniseriate row of 1-6 cells, the segments narrow to broadly triangular; underleaf margins entire or 1-dentate or occasionally ciliate-small laciniate .... *Lophocolea lenta*

CHILOSCYPHUS

Corda[1] *in* Opiz, Beitr. Naturg. 12: 651. 1829 [*sub Cheiloscyphos*].

KEY TO THE BRUNSWICK PENINSULA SPECIES OF *Chiloscyphus*

1. Underleaves connate with leaves on *one* side [or if connate on both sides (rare) then with underleaves one-half to three-fourths $\times$ stem width], as wide as or of lesser width than stem; plants light green to brownish 2
1. Underleaves connate with leaves on *both* sides, ca. twice as wide as stem; plants dull green or red brown 4
 2. Underleaves one-half to at most three-fourths of stem width, greatly concave and recurved; ventral leaf margin distinctly recurved, occasionally revolute *C. pallido-virens*
 2. Underleaves as wide as stem, spreading, never concave or recurved; ventral leaf margin plane to occasionally slightly recurved .... *C. hookeri* 3
3. Leaves on a single axis usually with apices variable, e.g., broadly rounded to truncate to retuse to single lobed to bifid .... *C. hookeri* var. *hookeri*
3. Leaves on a single axis with apices exhibiting little variation, e.g., consistently broadly rounded or truncate, occasionally retuse, never toothed or bifid *C. hookeri* var. *constantifolius*

[1]Grolle (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*."

4. Leaves bifid, ventral margins 3-9 dentate. Leaves connate dorsally, with a distinct adaxial concavity near the base; underleaves connate on both sides by 6-18 cells; trigones large, knotlike .... *C. valdiviensis*
4. Leaves undivided or with a single tooth, ventral margins entire. 5

5. Underleaves distinctly connate by several cells; leaves ± symmetrically ovate; plants light (rare) or dull green to light brown in color, not developing red pigments .... *C. integrifolius*
5. Underleaves connate on both sides, on one side connate by a long decurrent underleaf base; leaves asymmetically ovate; plants red brown in color. Leaves opposite or subopposite; dorsal margin often abruptly decurved to revolute; leaf cells with medium to large trigones, subapical cells 31-56 μ long; perianth cupulate in shape, mouth wide, with 8-9 large lobes and a few laciniae *C. magellanicus*

Chiloscyphus hookeri Engel

Phytogeography.—Falkland Islands, Tierra del Fuego, and Patagonian Channels north to 49°02′ S.

Both varieties of the species occur in the Brunswick Peninsula.

Chiloscyphus hookeri Engel var. **constantifolius** Engel

Chiloscyphus hookeri Engel var. *constantifolius* Engel, J. Hattori Bot. Lab. 36: 155. 1973. Holotype: Chile, Prov. Magallanes, B. Tekenika, 5 November 1902, *Skottsberg ser. III, nr. 33* (S-PA!–c. per.).

Ecology.—On floor of climax forests and both in and at the margins of a pool in an *Empetrum-Nothofagus* mosaic in the evergreen forest region. Unlike var. *hookeri,* not in the evergreen forest "bryophyte rich facies."

Brunswick Peninsula Specimens Seen.—CABO SAN ISIDRO: 12 February 1929, *Roivainen 2401* (H); 13 February 1929, *Roivainen 2395* & *2398* as *Lophocolea pallido-virens* (H). BAHIA SAN NICOLAS REGION: E. side of bay *(6397);* ridge between B. Bougainville and B. San Nicolas, ca. 155 m. *(6422 B).* PUERTO GALLANT REGION: B. Fortescue (*5949*–c. ♂).

Chiloscyphus hookeri Engel var. **hookeri**

Chiloscyphus hookeri Engel var. *hookeri* J. Hattori Bot. Lab. 36: 150. *pl. 1-2.* 1973. Holotype: Chile, Prov. Magallanes, I. Hermite, *Hooker 12,* mixed with syntype plants of *Jungermannia pallido-virens* (NY!).

Ecology.—Only in evergreen *Nothofagus* forest region where on rotted branches and over litter of the floor in forested areas and on mounds of bryophytes in the "bryophyte rich facies." The ecology of the varieties differ as var. *constantifolius* is unknown from the "bryophyte rich facies."

Brunswick Peninsula Specimens Seen.—CABO SAN ISIDRO: 12 February 1929, *Roivainen 2402* as *Lophocolea pallido-virens* (H). BAHIA SAN NICOLAS REGION: W. side of bay (*6334 B*–c. per.). PUERTO GALLANT REGION: B. Fortescue (*5957 A*–c. per.+ ♂, *5979 D, 5987* & *5996*–c. ♂); NE side of Pto. Gallant (*6014 B, 6025*–c. ♂, *6027 C, 6028 B*–c. sporo., *6029 B*). RADA YORK: *sin. coll. (Lechler)* as *C. subhorizontalis* (G–c. young per.). PUERTO CUTTER REGION: At copper mine (*2274*–c. young per.).

Chiloscyphus integrifolius (Lehm. & Lindenb.) G. L. & N.

Jungermannia integrifolia Lehm. & Lindenb. *in* Lehm. Nov. Minus Cog. Stir. Pug. 6: 32. 1834. *Chiloscyphus integrifolius* (Lehm. & Lindenb.) G. L. & N. Syn. Hep. 180. 1845. Original material: Peru, without specific locality, *sin. coll.* (S-PA! *ex hb.* Lehmann).

Leioscyphus ligulatus Steph. K. Svenska VetenskAkad. Handl. 46 (9): 37. *f. 14 b.* 1911, *syn. fide* Grolle (1962). *Mylia ligulata* (Steph.) Herz. *in* Skottsberg, Nat. Hist. Juan Fernandez Easter Is. 2: 714. 1942. *Leptoscyphus ligulatus* (Steph.) Schust. Am. Midl. Nat. 62: 12. 1959. Original material: Chile, Prov. Magallanes, Cta. Rayo, *Skottsberg* (UPS)–cited in Grolle (1962).

Remarks.—*Chiloscyphus integrifolius* exhibits a certain but rather slight degree of variation. The leaf shape varies from occasionally wide ovate to the usual condition of narrowly ovate to elliptic to subrectangular. Leaf apices vary from broadly rounded to truncate to emarginate to occasionally one-dentate. The leaves rarely are sporadically, feebly bidentate.

Phytogeography.—Andean South American; Patagonian Channels, Valdivian region, and Peru.

The Fuegian record in Stephani (1901a) requires confirmation. I am not yet certain if this species occurs in Juan Fernandez; this matter is currently under investigation.

Brunswick Peninsula Specimen Seen.—BAHIA SAN NICOLAS REGION: SE end of I. Nasau near Pta. Sta. Brígida, *Imshaug 45439 A* (MSC).

Chiloscyphus magellanicus Steph.

Chiloscyphus magellanicus Steph. Bull. Herb. Boissier II. 8 (2): 140. 1908 (=Spec. Hep. 3: 256). Lectotype *(nov.):* Chile, Patagonia, without specific locality, *Dusén 373* (FH!).

Remarks.—This species may offer some confusion with *Leptoscyphus expansus* when sterile plants are at hand. The large subapical leaf cells (31-56 μ long) of *C. magellanicus* will immediately separate the species from *L. expansus,* which according to Grolle (1962) has subapical leaf cells (25-)35-40(-50) μ. *Leptoscyphus expansus* very frequently produces perianths, and these laterally compressed structures will immediately remove it from *Chiloscyphus.*

Chiloscyphus magellanicus may also be confused with *C. hooker* var. *constantifolius.* The former has underleaves connate on both sides, while the latter has underleaves connate on one side.

I have examined original material of *C. magellanicus* from the Geneva and Farlow herbaria. The following perianth-bearing plants were selected as lectotype candidates: Geneva 0306, which possessed a single perianth, and the Farlow specimen. In his original description Stephani stated the perianth mouth was lobate and, as the Farlow plant has well-developed lobes, I have selected it as the lectotype. The Geneva plant has the perianth mouth regularly dentate with teeth three to six cells high. Both Geneva 0306 and the Farlow specimen were mixed with *Chiloscyphus integrifolius.*

Ecology.—Encountered at only a single locality, where found on sides and apices of bryophyte mounds in the evergreen forest "bryophyte rich facies."

Phytogeography.—Known only from the Patagonian Channel region. The Valdivian report in Stephani (1911) requires confirmation.

Brunswick Peninsula Specimens Seen.—PUERTO GALLANT REGION: NE side of Pto. Gallant (*6033 B*–c. per., *6036 B*–c. per.+sporo. & *6053 A*–c. per.).

Chiloscyphus pallido-virens (Hook. f. & Tayl.) G. L. & N.

Jungermannia pallido-virens Hook. f. & Tayl. Lond. J. Bot. 3: 473. 1844. *Chiloscyphus pallido-virens* (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 178. 1845. *Lophocolea pallido-virens* (Hook. f. & Tayl.) Mitt. J. Linn. Soc. 15: 72. 1876. Original material: Chile, Prov.

Magallanes, I. Hermite, Cta. San Martin, *Hooker* (FH!, MICH!, NY!).

Mylia ligulata (Steph.) Herz. var. *reflexistipula* Herz. Revue Bryol. Lichén. 23: 38. *f. 5 a-e.* 1954. *syn. fide* Grolle (1962). *Leptoscyphus ligulatus* (Steph.) Schust. var. *reflexistipulus* (Herz.) Schust. Am. Midl. Nat. 62: 12. 1959, Lectotype (*fide* Grolle, 1962): Chile, Prov. Aisén, C. Tesoro, 860-900 m, 1940, *Schwabe 41/a p.p.* (JE, *non vidi*).

Remarks.—*Chiloscyphus pallido-virens* bears a superficial resemblance to *Leptoscyphus horizontalis.* When fertile, plants of *C. pallido-virens* are immediately distinguished by the trigonous perianth on short lateral-intercalary branches, while *L. horizontalis* possesses laterally compressed perianths which are terminal on the main axis. Sterile plants of the two taxa are also readily distinguishable. The leaves of *C. pallido-virens* have ventral margins *deflexed,* and leaf apices which are often emarginate, with a single segment or more rarely short bifid; while *L. horizontalis* has leaves with ventral margins abruptly *inflexed* and with leaf apices never emarginate or segmented.

Dried plants of *C. pallido-virens* have a distinctive, diagnostic appearance due to the sharply inrolled leaf margins.

Ecology.—On bare soil, over forest floor litter, and on rotted logs in the evergreen *Nothofagus* forests and evergreen-deciduous ecotonal areas. In the Pto. Cutter region, where a soil cover is rare and is largely replaced by a thick, spongy bryophyte cover (the "bryophyte rich facies"), the species was found only on bare soil exposed by a stream cut. Also in *Sphagnum* bogs and may be intermixed with *Sphagnum* sp.

Phytogeography.—Tierra del Fuego and Patagonian Channels north to 44°19′ S. The reports from Lota (37°05′ S.) (Herzog, 1943), Juan Fernandez (Herzog, 1942), and Tasmania (Rodway, 1916) require investigation.

Literature Records.—*Anonymous*–Strait of Magellan (Kühnemann, 1937, 1949 as *Lophocolea*); *Andersson*–Pto. del Hambre (Ångström, 1872 as *Jungermannia*); *Cunningham*–Strait of Magellan (Stephani, 1906 as *Lophocolea*).

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, *sin. coll., ex hb.* Husnot as *Lophocolea husnoti (nom. nud.)* (FH). PUNTA ARENAS REGION: Near Punta Arenas, *Lechler* as *Lophocolea husnoti* (*nom. nud.;* det. Stephani) (L). RIO TRES BRAZOS REGION: Plateau above R. Tres Brazos at road crossing, ca. 160 m., *Ostafichuk 1383 B* (MSC). LAGUNO EL PARRILLAR: Near E. shore of lake, ca. 365 m. (*2078 B, 2108 A*–c. ♀+♂, *2109 A* & *2112*). PUERTO DEL HAMBRE REGION: Fuerte Bulnes, Pta. Santa Ana (*1806*–c. mature per.+♀, *1847*–c. ♀); Puerto del Hambre, 8 October 1971, *Matteri & Menendez 3703* (BA); near Fuerte Bulnes *Hatcher 2-8* (UW-M); N. side of R. San Juan, 1 km. from straits *(1869 A & 1875 B)*. CABO SAN ISIDRO: 13 February 1929, *Roivainen 1307* as *Mylia fuegiensis* (H–c. ♂). BAHIA SAN NICOLAS REGION: W. side of bay *(6307, 6341 B & 6362);* ridge between B. Bougainville and B. San Nicolas, ca. 155 m. *(6421 A)*. BAHIA WOOD: *Cunningham 90* (NY). RADA YORK: *Lechler* as *Lophocolea husnoti* (*nom. nud.;* det. Stephani) (L). PUERTO CUTTER REGION: Base of M. Condor *(2344 & 2356)*.

Chiloscyphus valdiviensis Mont.

Chiloscyphus valdiviensis Mont. Annls. Sci. Nat. III. 4: 351. 1845. *Heteroscyphus valdiviensis* (Mont.) Schiffn. Öst. Bot. Z. 60: 172. 1910. Original material: Chile, Prov. Valdivia, Valdivia, *sin. coll. (Gay)* (S-PA!–c. ♂).

Chiloscyphus massalongoanus Steph. Hedwigia 32: 325. 1893,[1] *syn. nov.* Original material (*cf.* Massalongo, 1885): Chile, Prov. Magallanes, I. Basket, I. Hoste, and Argentina, Terr. Tierra del Fuego, B. Slogget, I. Gable, *Spegazzini (non vidi)*.

Lophocolea pulcherrima Steph. K. Svenska VetenskAkad. Handl. 46 (9): 51. *f. 17 g, h.* 1911, *syn. nov.* Lectotype *(nov.):* Chile, Prov. Magallanes, S. Skyring, B. Rodriguez, 25 April 1908, *Halle & Skottsberg* (UPS!).

Chiloscyphus chiloensis Steph. K. Svenska VetenskAkad. Handl. 46 (9): 56. *f. 21 b.* 1911, *syn. nov.* Lectotype *(nov.):* Chile, Prov. Chiloé, I. Chiloé, R. Pudeto, 17 July 1908, *Halle & Skottsberg 103* (UPS!–c. per.+sporo.) (isolectotypes: G!–c. per., UPS!–c. young. per.).

[1]Stephani (1893) described this species on the assumption that Massalongo (1885) described a new species, *C. fissistipus,* which would have been a later homonym of *C. fissistipus* (Hook. f. & Tayl.) G. L. & N. However, Massalongo *(loc. cit.)* was clearly not describing a new taxon, but merely referred to the Hooker & Taylor name, as all five references cited refer to the New Zealand sector name. Evans (1898) perpetuated the misconception in his synonymy of *C. massalongoanus*.

Chiloscyphus similis Steph. K. Svenska VetenskAkad. Handl. 46 (9): 56. *f. 21 c.* 1911, *syn. nov.* Original material: Chile, Prov. Magallanes, Cta. Gomez, *Halle & Skottsberg* (G!, UPS!–c. ♂).

Lophocolea baccarinii Gola, Nuovo G. Bot. Ital. II. 29: 167. *pl. 1, f. 11-14.* 1923, *syn. nov.* Original material: Chile, Prov. Magallanes, I. Laberinto, 6 February 1913, *De Gasperi s. n.* (FI!–c. per.).

Ecology.—Only within evergreen *Nothofagus* forests and here loosely adhering to *Nothofagus* bark, particularly as part of a mat of vegetation covering tree trunks; frequently associated with *Porella subsquarrosa.* Also covering extensive areas on a moist, well-shaded cliff.

Phytogeography.—Tierra del Fuego, Patagonian Channels, and Valdivian region north to 39°36′ S.

*Literature Record.—Cunningham–*Strait of Magellan (Stephani, 1908).

Brunswick Peninsula Specimens Seen.—BAHIA SAN NICOLAS REGION: E. side of bay *(6395 A, 6405, 6408 & 6414 A).* PUERTO GALLANT REGION: NE side of Pto. Gallant *(6047).* PUERTO CUTTER REGION: Between copper mine and river S. of mine *(2162 B–*c. ♂*)*; W. of copper mine *(2225 A & 2235);* at copper mine *(2277);* base of M. Condor *(2335 & 2352).*

Chiloscyphus Species Excluded from the Brunswick Peninsula

1. *Chiloscyphus physanthus* (Hook. f. & Tayl.) Mitt.

Jungermannia physantha Hook. f. & Tayl. Lond. J. Bot. 3: 561. 1844. *Lophocolea physantha* (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 700. 1847. *Chiloscyphus physanthus* (Hook. f. & Tayl.) Mitt. *in* Hook. f. Bot. Ant. Voy. 2: 141. 1854. Original material: New Zealand, *Hooker (non vidi).*

Leioscyphus repens Mitt. *in* Hook. f. Bot. Ant. Voy. 2: 134. 1854, *syn. fide* Hodgson (1943). *Leptoscyphus repens* (Mitt.) Kühnem. Revta Cent. Estud. Doct. Cienc. Nat., B. Aires 1: 176. 1937. *Mylia repens* (Mitt.) Herz. *in* Skottsberg, Nat. Hist. Juan Fernandez Easter Is. 2: 714. 1942. Original material: New Zealand, North Island, Bay of Islands, *Lyall* (NY)–cited in Hodgson (1943).

The Strait of Magellan record of this species originates from the Stephani (1906) report of *Leioscyphus repens.* Grolle (1962) notes that the specimens on which this report is based are of *Leptoscyphus patagonicus*. Kühnemann (1937, 1949) reported the species from the Strait of Magellan in his catalogues. See Hodgson (1943) for a treatment of *C. physanthus*.

NOTES ON *Chiloscyphus* SPECIES

1. *Chiloscyphus retroversus* Schiffn.

Chiloscyphus retroversus Schiffn. *in* Naumann, Forschungsr. *Gazelle* 4 (4): 15. *pl. 3, f. 17-19.* 1890. *Lophocolea retroversa* (Schiffn.) Steph. K. Svenska VetenskAkad. Handl. 46 (9): 52. 1911. Original material: Îles de Kerguélen, *Naumann (non vidi).*

Reported for the Brunswick Peninsula by Stephani (1911) for a Halle and/or Skottsberg collection from Pto. Pomar. I have not seen the specimen on which the report was based and I am uncertain as to the identity of the species.

2. *Chiloscyphus subhorizontalis* Gott. & Hampe

This name was reported (without a description or reference to a description) for the Brunswick Peninsula by Ångström (1872) as "*Jungermannia (Chiloscyphus) subhorizontalis*" and to my knowledge this is the only mention of this name in the literature, with the exception of the Bonner reference below. I have seen a specimen in the Stephani herbarium (G) labeled *Chiloscyphus subhorizontalis* Gott. & Hampe, York Bay, and the plant is one of *C. hookeri* var. *hookeri*. Bonner (1963) lists this specimen as the "type" of *C. subhorizontalis.*

CLASMATOCOLEA

Spruce, Trans. Proc. Bot. Soc. Edinb. 15: 440. 1885.

KEY TO THE BRUNSWICK PENINSULA SPECIES OF *Clasmatocolea*

1. Leaves basically bilobed 2
1. Leaves unlobed 5
    2. Leaves bifid from one-half to nearly the base, dorsal lobes with 2-5 oppositely arranged teeth-laciniae, dorsal leaf margin with a canaliculate lobe *C. trachyopa*
    2. Leaves bifid to less than one-half, dorsal lobes entire or 1-dentate, dorsal leaf margin entire or 1-dentate 3
3. Underleaves bifid from ca. one-half to usually near the base, often semi-obliquely inserted; leaves usually longer than wide. Branches mostly of *Frullania*-type, often slender and copiously produced .... *C. rigens*
3. Underleaves emarginate to bifid to at most one-fourth, transversely inserted; leaves wider than long 4

4. Dorsal leaf lobe canaliculate, ventral leaf lobe consistently with a single, conspicuous tooth on ventral margin; ratio of distance between leaf lobe apices and leaf width less than 1:3.5 (1:2-3.5) .... *C. obvoluta*
4. Dorsal leaf lobe plane, ventral leaf lobe entire or occasionally with a single tooth on ventral margin; ratio of distance between leaf lobe apices and leaf width more than 1:3.5 (1:3.5-8.8) .... *C. cookiana*

5. Leaves slightly concave, orbicular in shape; antheridial stalk of 2 rows of cells. 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*
5. Leaves deeply adaxially concave, orbicular to reniform in shape; (?) antheridial stalks uniseriate 6
6. Leaves with 16-22 very regularly placed teeth .... [*C. ctenophylla*]
6. Leaves entire to sparingly and irregularly dentate-laciniate 7
7. Underleaves of *main axis* inconspicuous, scalelike 8
7. Underleaves large, conspicuous, not scalelike 9
8. Underleaves with segments setaceous, underleaves never undivided and of only a few cells; plants erect; leaves subtransversely oriented (and with a superficial facies to those of *Plagiochila ansata*) .... [*Stolonophora abnormis*]
8. Underleaves of main axis with segments highly variable, but not setaceous, underleaves occasionally undivided and of only a few cells; plants prostrate or essentially so; leaves distinctly succubously oriented .... *C. navistipula*
9. Leaves of lateral-intercalary branches closely imbricated, giving the branch a narrow, wormlike appearance, branches often short and often copiously produced, smaller in width than main axis; underleaves of lateral-intercalary branches may be small, scalelike, often of only a few cells 10
9. Leaves of lateral-intercalary branches not more closely imbricated than in main axis, not wormlike, often very long, usually of the same width as the main axis; underleaves of lateral-intercalary branches large, never small and scalelike 11
10. Leaves on main axis sinuous to incurved in moistened condition; lateral-intercalary branch underleaves large, orbicular, deeply concave .. *C. fulvella*
10. Leaves on main axis plane in moistened condition; lateral-intercalary branch underleaves small, erect or nearly so, scalelike, often of only a few cells, frequently unlobed and ovate-lanceolate .... *C. puccioana*
11. Branch apices enlarged; at least some of leaves of main axis incurved in dried condition; dried plants highly nitid in incident light; perianths nearly always present; plants on bark .... *C. gayana*
11. Branch apices not enlarged; leaves not incurved in dried condition; dried plants dull in incident light; perianths rarely produced; plants on ground or rock, very seldom on bark .... *C. humilis*

Clasmatocolea cookiana (Mass.) Engel

Lophocolea cookiana Mass. Nuovo G. Bot. Ital. I. 17: 224. *pl. 16, f. 11.* 1885. *Clasmatocolea cookiana* (Mass.) Engel, J. Hattori Bot. Lab. 36: 156. 1973. Lectotype (*fide* Engel, 1973a): Argentina, Terr. Tierra del Fuego, I. de los Estados, Pto. Cook, February 1882, *Spegazzini 14* (VER!–c. ♂).

Lophocolea latissima Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6): 42. 1900, *syn. fide* Engel (1973a). Original material: Chile, Prov. Magallanes, S. Molyneux, 1 June 1896, *Dusén 68* (G!).

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 dorsal 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.

Phytogeography.—Falkland Islands (a few depauperate plants), Tierra del Fuego and Patagonian Channels north to 43°57′ S. (I. Guaitecas).

Literature Record.—Skottsberg & Halle–Pto. Cutter, B. Arauz (Stephani, 1911 as *Lophocolea latissima*).

Brunswick Peninsula Specimens Seen.—PUERTO GALLANT REGION: NE side of Pto. Gallant *(6035 B).* BAHIA ARAUZ: 3 May 1908, *Halle & Skottsberg 214* as *Lophocolea latissima* (S-PA). PUERTO CUTTER REGION: Between copper mine and river S. of mine *(2150).*

Clasmatocolea fulvella (Hook. f., & Tayl.) Grolle

Jungermannia fulvella Hook. f. & Tayl. Lond. J. 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. I. 17: 227. 1885. *Clasmatocolea fulvella* (Hook. f. & Tayl.) Grolle, Revue Bryol. Lichén. 29: 72. 1960. Original material: Chile, Prov. Magallanes, I. Hermite, *Hooker s.n.* (NY! S-PA!).

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.—Forming dense carpeting on very rotted logs in the evergreen *Nothofagus* region. It may be intermixed with other Hepaticae, such as *C. puccioana* or *Lepidozia* sp.

Phytogeography.—Falkland Islands, Tierra del Fuego, and north to 36°50′ S. in West Patagonia; also in P. N. Nahuel Huapi of Andean Patagonia.

Literature Record.—*Naumann*–Punta Arenas (Schiffner, 1890 as *Lophocolea*).

Brunswick Peninsula Specimens Seen.—PUNTA ARENAS REGION: Punta Arenas, *Charcot Exped. 9* as *Lophocolea navistipula* (G); *ibid.*, *Naumann s. n.* (FH–c. per.). BAHIA SAN NICOLAS REGION: W. side of bay (*6323*–c. ♂ & *6388 A*–c. sporo.). PUERTO CUTTER REGION: W. of copper mine (*2236*–c. per.).

Clasmatocolea gayana (Mont.) Grolle

Jungermannia gayana Mont. Annls. Sci. Nat. III. 4: 349. 1845. *Chiloscyphus gayanus* (Mont.) G. L. & N. Syn. Hep. 710. 1847. *Lophocolea gayana* (Mont.) Mitt. *in* Seemann, Fl. Vit. 404. 1873. *Clasmatocolea gayana* (Mont.) Grolle, Revue Bryol. Lichén. 29: 72. 1960. Original material: Chile, Prov. Valdivia, Valdivia, *Gay 44* (S-PA!).

Lophocolea vinciguerreana Mass. Nuovo G. Bot. Ital. I. 17: 229. *pl. 18, f. 1-9.* 1885, *syn. nov.* Lectotype *(nov.):* Chile, Prov. Magallanes, I. Basket, Cabo Desolación, June 1882, *Spegazzini 317* (VER!).

Ecology.—Strictly corticolous, and in the Brunswick Peninsula on *Nothofagus betuloides* and *Drimys,* occasionally associated with the filmy fern *Serpyllopsis.*

Phytogeography.—Tierra del Fuego, Patagonian Channels, and Valdivian region north to 39°53′ S.

Literature Record.—*Andersson*–Pto. del Hambre (Ångström, 1872 as *Jungermannia*).

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, *Dusén s.n.* as *Lophocolea humilis* (FH–c. per.). PUNTA ARENAS REGION: Punta Arenas, March 1868, *Cunningham 194* as *Lophocolea humilis* (BM). PUERTO DEL HAMBRE

REGION: Pto. del Hambre, *Andersson* (S-PA–c. per.). BAHIA SAN NICOLAS REGION: W. side of bay (*6377*–c. young per., *6378*–c. ♂). PUERTO GALLANT REGION: B. Fortescue *(5978, 6000 C)*. PUERTO CUTTER REGION: W. of copper mine (*2226*–c. ♂), base of M. Condor (*2357*–c. per.).

Clasmatocolea humilis (Hook. f. & Tayl.) Grolle

Jungermannia humilis Hook. f. & Tayl. Lond. J. 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. *Leioscyphus humilis* (Hook. f. & Tayl.) Pears. Bull. Misc. Inf. R. Bot. Gdns. Kew 1922: 249. 1922. *Clasmatocolea humilis* (Hook. f. & Tayl.) Grolle, Rev. Bryol. Lichén. 29: 72. 1960. Original material: Îles de Kerguélen, *Hooker s.n.* (S-PA!, *ex hb.* Lehmann).

Jungermannia palustris Hook. f. & Tayl. Lond. J. 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, I. Hermite, *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. Desolación, B. Tuesday, 2 February 1876, *Naumann s.n.* (FH!–c. per.).

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!).

Lophocolea multispinula Steph. Spec. Hep. 6: 284. 1922, *syn. nov.* Original material: Chile, Prov. Magallanes, I. Desolación, B. Tuesday, *sin. coll.* (G!).

Remarks.—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.* In undivided underleaves, 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 incurved (dorsal view). Further, apices vary from unlobed and broadly rounded or truncate to retuse to bifid to varying degrees, but not to greater than 0.35. The unlobed apices may be entire or bidentate. Underleaf margins are usually entire or 1- dentate to 1- lobate in the middle third, but may be dentate or small to large lobate in either upper, middle or lower third of the underleaf margin.

Engel 6030 is an interesting variant. The leaves occasionally have a tooth near or at the leaf apices. The leaves sporadically are truncate and more rarely retuse at the apices. The leaves normally are entire and wide reniform in shape and with very broadly rounded leaf apices.

Ecology.—Where abundant moisture is available, such as in stream beds, on logs over streams, in shallow pools, and on coastal rocks which received fresh water from rain as well as run-off from the forest above. Salt water influence was at most moderate. However, the species is able to grow in tidal zone regions (see Engel & Schuster, 1973).

Phytogeogrpahy.—Îles de Kerguélen, Îles Crozet, Marion Island, Prince Edward Island, Tristan da Cunha, Falkland Islands, Tierra del Fuego, Patagonian Channels, and the Valdivian region north to 36°43′ S.; also in P. N. Nahuel Huapi of Andean Patagonia.

Brunswick Peninsula Specimens Seen.—BAHIA SAN NICOLAS REGION: Ridge between B. Bougainville and B. San Nicolas, ca. 155 m. *(6447).* PUERTO GALLANT REGION: NE side of Pto. Gallant (*6030*–c. per., *6052 A*). BAHIA ARAUZ: 3 May 1908, *Halle & Skottsberg 222* as *Lophocolea otiphylla* (S-PA). PUERTO CUTTER REGION: N. of copper mine (*2198, 2298*–c. per.+ ♂, *2310*–c. per., *2317*–c. per.); base of M. Condor (*2331*–c. per.). PUERTO POMAR: 14 April 1908, *Halle & Skottsberg 225* as syntype of *Lophocolea patulistipa* (S-PA).

Clasmatocolea navistipula (Steph.) Grolle

Lophocolea navistipula Steph. Bull. Herb. Boissier II. 6 (7): 543. 1906 (=Spec. Hep. 3: 57). *Clasmatocolea navistipula* (Steph.) Grolle, Reprium Nov. Spec. Regni Veg. 82 (1): 88. 1971. Original material: Chile, Prov. Magallanes, I. Desolación, *Dusén (non vidi).*

Jamesoniella difficilis Steph. K. Svenska VetenskAkad. Handl. 46 (9): 17. *f. 6a.* 1911, *syn. fide* Grolle (1971a). Original material: Chile, Prov. Magallanes, Pto. Grappler, *Skottsberg* (BM, UPS)–cited in Grolle (1971a); I. Atalaya, *Halle* and/or *Skottsberg (non vidi);* S. Skyring, B. Rodriguez, *Halle & Skottsberg* (S-PA, UPS)–cited in Grolle (1971a); Canal Gajardo, V. Inga, *Halle* and/or *Skottsberg (non vidi);* B. Arauz, *Halle* and/or *Skottsberg (non vidi);* W. end of L. Fagnano, *Skottsberg* (LD, UPS)–cited in Grolle (1971a).

Lophocolea subcapillaris Steph. K. Svenska VetenskAkad. Handl. 46 (9): 54. *f. 18 e, f.* 1911, *syn. nov.* Lectotype *(nov.):* Chile, Prov. Magallanes, R. Fontaine, 1 March 1908, *Halle & Skottsberg 234* (UPS!).

Remarks.—C. navistipula is a close ally of *C. puccioana.* They may be separated as follows: *C. navistipula* has a) main axis underleaves usually scalelike, often ca. one-half or less the stem width and covering only a small fraction of stem tissue; b) underleaf segments frequently with one segment smaller than the other; and c) plants sparingly branched and only occasionally producing numerous lateral-intercalary branches. *C. puccioana* has a) main axis underleaves ca. twice the stem width and covering large areas of stem tissue; b) underleaf segments of equal size; and c) lateral-intercalary branches copiously produced.

The absence of regularly produced, well-developed underleaves of *C. navistipula* will immediately separate it from *C. humilis.*

The main axis underleaves of *C. navistipula* are quite polymorphous. They are usually scalelike and subrectangular or occasionally ovate, and when the latter they may be undivided and acute at the apex. The apices are usually emarginate or short bifid and with lobes rounded (rarely acute) and usually of unequal sizes; one lobe may be quite large while the other is reduced to a tooth. Occasionally, the underleaves of *C. navistipula* are sporadically well developed on the main axis, but as with the scalelike individuals, are polymorphous and with one segment smaller than the other.

The branch underleaves of *C. navistipula* are small and scale-like.

Stephani (1911), in his description and drawings of *Lophocolea subcapillaris,* was clearly not referring to the syntypes from Insula Pacheco, which are misdeterminations of *Stolonophora abnormis.*

Ecology.—Evergreen *Nothofagus* forests and near the evergreen-deciduous ecotonal areas. I found it on rotted logs and stumps, in and at the margins of pools, and in a *Sphagnum* bog. The plants are often saturated with water and appear as feltlike cushions.

Phytogeography.—Tristan da Cunha (Arnell, 1958), Tierra del Fuego, and the Patagonian Channel region north to 49°25′ S.

Brunswick Peninsula Specimens Seen.—LAGUNO EL PARRILLAR: Near E. shore of lake, ca. 365 m. *(2105).* PUERTO DEL HAMBRE REGION: Near Fuerte Bulnes, *Hatcher 7-5* (UW-M); N. side of R. San Juan, 1 km. from straits (*1856*–c. per.+cap. & *1867*). BAHIA SAN NICOLAS REGION: Ridge between B. Bougainville and B. San Nicolas, ca. 155 m. (*6425, 6444 A*–c. per.+ ♂). PUERTO GALLANT REGION: NE side of Pto. Gallant *(6046).* PUERTO CUTTER REGION: Between copper mine and river S. of mine (*2129–1*–c. per.); N. of copper mine (*2212*–c. per.+cap.).

Clasmatocolea obvoluta (Hook. f. & Tayl.) Grolle

Jungermannia obvoluta Hook. f. & Tayl. Lond. J. Bot. 4: 80. 1845. *Lophocolea obvoluta* Evans, Bull. Torrey Bot. Club 25: 421. 1898. *Clasmatocolea obvoluta* (Hook. f. & Tayl.) Grolle, Revue Bryol. Lichén. 29: 72. 1960. Lectotype *(nov.):* Chile, Prov. Magallanes, I. Hermite, Cta. San Martin, *Davis s.n.* (FH!).

Jungermannia obvolutaeformis De Not. Memorie Accad. Sci. Torino II. 16: 220. *pl. 8, f. 1-4.* 1855. *syn. fide* Stephani (1906). *Lophocolea obvolutaeformis* (De Not.) Mass. Nuovo G. Bot. Ital. I. 17: 223. 1885. Original material: Chile, "Prov. Valparaiso, Valparaiso," *Puccio (non vidi).*

Ecology.—Only in the evergreen *Nothofagus* forest region. In forested areas on soil, rotted logs, and submerged or floating in shallow pools, while in the "bryophyte rich facies" on the sides and apices of bryophyte mounds, as well as on the floor between the mounds.

Phytogeography.—Tierra del Fuego and Patagonian Channels north to 46°19′ S. I have eliminated the species from the Falkland Islands.

Literature Records.—*Andersson*–Pto. del Hambre (Ångström, 1872 as *Jungermannia*); *Cunningham, Dusén, Hyades*–Strait of Magellan (Stephani, 1906 as *Lophocolea*); *Skottsberg & Halle*–Pto. Cutter (Stephani, 1911 as *Lophocolea*).

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, 1901, *Schubert* as *Lophocolea latissima* (FH–c. per.). PUERTO DEL HAMBRE REGION: Pto. del Hambre, *Andersson* (S-PA). BAHIA SAN NICOLAS REGION: W. side of bay (*6346 C*–c. per., *6384*); ridge between B. Bougainville and B. San Nicolas, ca. 155 m. (*6433 B* & *6437* c. ♂). PUERTO GALLANT REGION: B. Fortescue *(5951);* Pto. Gallant, March 1867, *Cunningham 258, 260* (BM, NY); NE side of Pto. Gallant (*6018 A*–c. per.+sporo., *6019, 6029 A, 6033 A* & *6034*). PUERTO CUTTER REGION: Between copper mine and river S. of mine (*2134 A*–c. per.); slightly W. of copper mine (*2239*–c. per.); base of M. Condor (*2330*–c. per.)

Clasmatocolea puccioana (De Not.) Grolle

Jungermannia ?puccioana De Not. Memorie Accad. Sci. Torino II. 16: 221. *pl. IX, 1-6.* 1855. *Lophocolea puccioana* (De Not.) Mass. Nuovo G. Bot. Ital. I. 17: 227. 1885. *Clasmatocolea puccioana* (De Not.) Grolle, Revue Bryol. Lichén. 29: 72. 1960. Original material: Chile, "Prov. Valparaiso, Valparaiso," *Puccio (non vidi).*

Lophocolea diversistipa Steph. K. Svenska VetenskAkad. Handl. 46 (9): 42. *f. 15 e, f.* 1911, *syn. nov.* Original material: Chile, Prov. Magallanes, Pto. Gray, 7 June 1908, *Skottsberg 198* (UPS!–c. per.); Pto. Ramirez, *Halle* and/or *Skottsberg (non vidi);* Pto. Cutter, 13 April 1908, *Halle & Skottsberg 198* (UPS!).

Lophocolea patagonica Beauv. *in* Steph. Spec. Hep. 6: 572. 1924 *ut nom. nov. pro Lophocolea rotundistipula* Steph. K. Svenska VetenskAkad. Handl. 46 (9): 52. *f. 20 a-e.* 1911, *syn. nov. non Lophocolea rotundistipula* Steph. Bull. Herb. Boissier II. 6 (9): 793. 1906 (=Spec. Hep. 3: 93). Original material: Chile, Prov. Magallanes, F. Peel, 16 June 1908, *Skottsberg s.n.* (UPS!).

Ecology.—Only in the evergreen forest "bryophyte rich facies," where in depressions and on the sides and apices of bryophyte mounds where it grew intermixed with other Hepaticae, such as *Adelanthus lindenbergianus, Anastrophyllum involutifolium, Gackstroemia magellanica, Leptoscyphus patagonicus,* and *Riccardia prehensilis.*

Phytogeography.—Restricted to the Patagonian Channel region, where it occurs north to 48°56′ S.

Reports of *C. puccioana* from the Falkland Islands are misdeterminations of *C. fulvella.* The records of this species in Arnell (1955) are misdeterminations of *Clasmatocolea gayana.* The remainder of Valdivian reports (Herzog, 1939, 1954; Stephani, 1900), as well as the report from Tristan da Cunha in Arnell (1958) require confirmation.

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, *Naumann s.n.* as *Lophocolea humilis, ex hb.* Stephani (BM). PUNTA ARENAS REGION: Punta Arenas, *Cunningham 194* as *L. humilis* (BM). PUERTO GALLANT REGION: NE side of Pto. Gallant *(6004 D, 6008 C, 6021, 6037 C & 6059 A).* PUERTO CUTTER REGION: N. of copper mine *(2199);* W. of copper mine *(2233 B);* Pto. Cutter, 1908, *Halle & Skottsberg s. n.* (hb. Grolle).

Clasmatocolea rigens (Hook. f. & Tayl.) Engel

Jungermannia rigens Hook. f. & Tayl. Lond. J. Bot. 3: 461. 1844. *Cephalozia rigens* (Hook. f. & Tayl.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 417. 1877. *Lophocolea rigens* (Hook. f. & Tayl.) Evans, Bull. Torrey Bot. Club 25: 423. 1898. *Clasmatocolea rigens* (Hook. f. & Tayl.) Engel, J. Hattori Bot. Lab. 36: 156. 1973. Original material: Falkland Is., *Hooker* (BM!).

Lophocolea koeppensis Gott. Ergebn. Dt. Polar-Exped. 2 (16): 453. *pl. 2, f. 4-9.* 1890, *syn. fide* Engel (1973a). *Clasmatocolea koeppensis* (Gott.) Grolle, Revue Bryol. Lichén. 29: 72. 1960. Lectotype (*fide* Grolle, 1972b): South Georgia, Köppenberg, 10 February 1883, *Will 35* (M!).

Lophocolea debilis Steph. K. Svenska VetenskAkad. Handl. 46 (9): 42. *f. 19 a-c.* 1911, *syn. fide* Engel (1973a). Lectotype (*fide* Engel, 1973a): Chile, Prov. Magallanes, S. Skyring, Pta. Eulogio, 22 April 1908, *Halle & Skottsberg 196* (UPS!, isolectotype–G!).

Remarks.—The original material of *Jungermannia rigens* represents a very small form of the species that is not uncommon.

The identity of *Clasmatocolea rigens* has been confused, and there are several misdetermined specimens of this taxon in various herbaria. The following brief description which somewhat supplements the description in Evans (1898) 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 toward the apex; leaf apices one-fourth to one-third 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. one-half to usually near the base.

Perianths often produced, exerted by about one-fourth to one-half their length beyond the bracts, ± campanulate in shape and quite wide at the mouth, or broadest near the base and narrowing slightly at the mouth, the keels sharp to ± rounded, with wings of a few cells high; sides slightly convex (especially toward 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.

Ecology.—Rare in the evergreen forest region and then only in the drier portion, but quite common in the deciduous forests. Also in the steppe region at the peninsular neck. In the deciduous forests on soil, particularly at the bases of *Nothofagus,* on rotted logs (sometimes in dense, thick mats) and stumps, and on the bark of *Nothofagus.*

In southern South America the species seems to be characteristic of deciduous forests and boundaries between deciduous and evergreen *Nothofagus* forests.

Phytogeography.—South Sandwich Islands, South Georgia, Falkland Islands, Tierra del Fuego (vicinity of Ushuaia and R. Azopardo), southern Patagonian Channels (Brunswick Peninsula, S. Skyring, Pta. Eulogio), and the Valdivian region (West Patagonia north to 45°25′ S. and Andean Patagonia at 43°30′ S.).

Literature Record.—Skottsberg & Halle–R. de las Minas (Stephani, 1911 as *Lophocolea*).

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, *Dusén s.n.* (FH–c. per.). CABEZA DEL MAR REGION: Just E. of Sección Cabeza del Mar, *Ostafichuk 1309, 1317 & 1318* (MSC). CHABUNCO REGION: Headland at Cabo Negro, *Ostafichuk 1233, 1263 B & 1266*–c. ♂(MSC). PUNTA ARENAS REGION: Punta Arenas, November 1867, Cunningham 100 as *Lophocolea bispinosa* (BM); *ibid.*, 27 June 1895, *Dusén 15* as *Lophocolea latissima* (NY–c. per.); *ibid.*, 27 June 1895, *Dusén s.n.*

as *L. latissima,* mixed with *Lophocolea cfr. lenta* (S-PA); *ibid.*, 26 May 1896, *Dusén 31* as *Lophocolea humifusa* (S-PA, UPS); *ibid.*, *Thaxter 101* (MICH); E. of Mina Loreto on S. side of R. de las Minas, ca. 215 m. (1906 & 1928), *Imshaug 38882* (MSC); ridge above refugio (Club Andino), 8 km W. of Punta Arenas, 305-610 m. (*1945*–c. ♂, *1966*–c. per., *1974, 1985*–c. per., *1987*–c. per., & *1989*–c. per.), *Imshaug 39033* (MSC). RIO TRES BRAZOS REGION: Plateau above R. Tres Brazos at road crossing, ca. 160 m., *Ostafichuk 1359 A*–c. sporo.+♂ & *1364 B* (MSC). SENO OTWAY REGION: B. Camden (*2008* & *2031*–c. ♂); E. of Canelos and just W. of Ch. La Quema *(2044, 2048, 2053)*. LAGUNO EL PARRILLAR: Just E. of lake, ca. 365 m. (*2076*–c. per.); 4 km. E. of lake, ca. 305 m. *(2125)*. PUERTO DEL HAMBRE REGION: Fuerte Bulnes, Pta. Santa Ana (*1804*–c. ♂, *1815*–c. per.+cap., *1823*–c. per., *1827*–c. per.+cap., *1836*–c. per., *1845*–c. per.+♀ & *1846*); near Fuerte Bulnes, *Hatcher 2-7, 4-2, 4-13, 5-1, 5-5, 7-1, 7-9, 7-14, 8-3* & *9-2* (UW-M); N. side of R. San Juan, 1 km. from straits (*1877*–c. per.). BAHIA SAN NICOLAS REGION: W. side of bay (*6326*–c. per.).

Clasmatocolea trachyopa (Hook. f. & Tayl.) Grolle

Jungermannia trachyopa Hook. f. & Tayl. Lond. J. Bot. 3: 471. 1844. *Lophocolea trachyopa* (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 699. 1847. *Clasmatocolea trachyopa* (Hook. f. & Tayl.) Grolle, Revue Bryol. Lichén. 29: 73. 1960. Original material: Chile, Prov. Magallanes, I. Hermite, *Hooker* (NY!).

Lophocolea arenaria Schiffn. *in* Naumann, Forschungsr. *Gazelle* 4 (4): 13. *pl. 3, f. 20-24.* 1890, *syn. fide* Stephani (1906). Original material: Chile, Prov. Magallanes, Punta Arenas, 7 February 1876, *Naumann s.n.* (FH!–c. per.).

Lophocolea lacerata Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6): 41. 1900, *syn. fide* Stephani (1906). Original material: Chile, Prov. Magallanes, Pto. Bueno, 31 May 1896, *Dusén 35* (NY!); Prov. Aisén, R. Aisén Valley, *Dusén* (G!–c. per., NY!–c. per., S-PA!–c. per.).

Blepharostoma acanthifolium Gola, Nuovo G. Bot. Ital. II. 29: 169. *pl. 1, f. 18-19.* 1923, *syn. nov.* Original material: Chile, Prov. Magallanes, I. Laberinto, 5 February 1913, *Gasperi s.n.* (FI!).

Ecology.—Occasionally on rotted logs in the evergreen *Nothofagus* region.

Phytogeography.—Tierra del Fuego, Patagonian Channels, and north in the Valdivian region to 39°56′ S.

Literature Records.—*Anonymous*–Strait of Magellan (Kühnemann, 1937, 1949 as *Lophocolea,* Bonner, 1963); *Ball, Naumann*–Strait of Magellan (Stephani, 1906 as *Lophocolea*).

Brunswick Peninsula Specimens Seen.—BAHIA SAN NICOLAS REGION: W. side of bay (*6359*–c. per.). PUERTO GALLANT REGION: B. Fortescue (*5973*–c. per.). PUERTO CUTTER REGION: Slightly W. of copper mine (*2261*–c. per.).

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 (=Spec. Hep. 2: 35). *Clasmatocolea vermicularis* (Lehm.) Grolle, Revue Bryol. Lichén. 29: 78. 1960. Original material: South Africa, Cape Province, Devils Peak, *Ecklon* (S)–cited in Grolle (1960a).

Jungermannia flexuosa Lehm. Linnaea 4: 361. 1829, *syn. fide* Stephani (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. Lond. J. Bot. 3: 477. 1844, *syn. fide* Grolle (1960a). *Lejeunea subintegra* (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 376. 1845. *Lophocolea subintegra* (Hook. f. & Tayl.) Grolle, Trans. Br. Bryol. Soc. 3: 587. 1959. Original material: Falkland Is., *Hooker* (FH!, W–cited in Grolle, 1960a).

Jungermannia chamissonis Gott. & Lindenb. *in* G. L. & N. Syn. Hep. 668. 1847, *syn. fide* Grolle (1960a). *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 (1960a).

Chiloscyphus nigrescens Lindenb. & Hampe, *in* Hampe, Linnaea 24: 640. 1851, *syn. fide* Grolle (1960a). Original material: Costa

Rica, Reventado, 350 m., *Oersted* (S *ex hb.* Lehmann)–cited in Grolle (1960a).

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 (1964d). *Alicularia lindmanii* (Steph.) Steph. Bull. Herb. Boissier II. 1 (5): 481. 1901 (=Spec. Hep. 2: 43). *Notoscyphus lindmanii* (Steph.) Schiffn. Hedwigia 51: 276. 1912. Original material: Brazil, Río Grande do Sul, Porto Alegre, *Lindman 42* (G)–cited in Grolle (1964d).

Clasmatocolea chilensis Steph. Bih. K. Svenksa VetenskAkad. Handl. 26 (III, 6): 33. 1900, *syn. cf.* Grolle (1956). Original material: Chile, Prov. Concepción, Concepción, 5 September 1896, *Dusén 157, 166, 473* (G)–cited in Grolle (1956).

Lophocolea turbiniflora Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6): 45. 1900, *syn. fide* Grolle (1960a). Original material: Chile, Prov. Valparaiso, El Salto, 1896, *Dusén s. n.* (S)–cited in Grolle (1960a).

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. Chiloé, I. Guafo, Cta. Samuel, 25 July 1908, *Halle 201* (UPS!–c. sporo., isolectotype–G!).

Lophocolea ligulata Steph. K. Svenska VetenskAkad. Handl. 46 (9): 47. *f. 17 e, f.* 1911, *syn. fide* Grolle (1960a). Original material: Chile, Prov. Chiloé, I. Guafo, *Halle* (G, UPS)–cited in Grolle (1960a).

Lophocolea skottsbergii Steph. K. Svenska VetenskAkad. Handl. 46 (9): 53. *f. 20 f.* 1911, *syn. fide* Grolle (1960a). Original material: Chile, Prov. Chiloé, I. Chiloé, Ancud, *Skottsberg s. n.* (UPS)–cited in Grolle (1960a); S. Skyring, Pto. Pinto, *Halle* and/or *Skottsberg (non vidi);* S. Otway, R. Grande, *Halle* and/or *Skotts-*

berg (non vidi). Argentina, Terr. Tierra del Fuego, R. Olivia, near Ushuaia, *Halle* and/or *Skottsberg (non vidi).* Chile, Prov. Magallanes, I. Dawson, B. Harris, *Halle* and/or *Skottsberg (non vidi);* Puerto Barrow, *Halle* and/or *Skottsberg (non vidi).* Falkland Islands, Port Louis, *Halle* and/or *Skottsberg (non vidi).* South Georgia, Cumberland Bay, *Halle* and/or *Skottsberg (non vidi).*

Lophocolea boliviensis Steph. *in* Herzog, Biblthca Bot. 87: 217. 1916, *syn. fide* Grolle (1960a). Original material: Bolivia, near Altamachi, 3,500 m., 1911, *Herzog* (JE)–cited in Grolle (1960a).

Alicularia grandistipula Herz. Biblthca Bot. 88: 30. 1921, *syn. fide* Grolle (1960a), *non A. 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 (1960a).

Odontoschisma variabile Sim, Trans. R. Soc. S. Afr. 15: 77. *unnumbered plate on p. 77.* 1926, *syn. fide* Grolle (1960a), *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 Mt., 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 (1960a). Original material: South Africa, Natal, "Pietermaritzburg, Botanischer Garten," 1922, *Rolfes* (JE)–cited in Grolle (1960a).

Lophocolea elata (Gott.) Steph. f. *aquatica* Herz. Reprium Nov. Spec. Regni Veg. 57: 164. 1955, *syn. fide* Grolle (1960a). Original material: Colombia, Eastern Cord., Laguna de Cunta, 1927, *Killip & Smith* (JE)–cited in Grolle (1960a).

Lophocolea minima S. Arnell, Results Norw. Scient. Exped. Tristan da Cunha 3 (42): 18. *f. 14 a-d.* 1958, *syn. fide* Grolle (1960a). Original material: Inaccessible Is., NE of Blendon Hall, *Christophersen & Mejland 2431* (O–*non vidi*).

Phytogeography.—Amphiatlantic temperate; Marion Island, South Africa, Natal, Transvaal, East African mountains (Burundi), Réunion Island, Tristan da Cunha, Gough Island, South Georgia, Falkland Islands, Tierra del Fuego, 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; also known from Brazil.

Brunswick Peninsula Specimens Seen.—PUERTO DEL HAMBRE REGION: Near Fuerte Bulnes, *Hatcher 1-5* (UW-M). PUERTO SAN ISIDRO: 12 February 1929, *Roivainen 2406* & *2424* as *Lophocolea abnormis* (H). CABO SAN ISIDRO: 12 February 1929, *Roivainen 338* as *Lophocolea abnormis* (H).

EVANSIANTHUS

Schust. & Engel, Bryologist 76: 516. 1974.

Evansianthus georgiensis (Gott.) Schust. & Engel

Lophocolea georgiensis Gott. Ergebn. Dt. Pol.-Exped. 2 (16): 453. *pl. 3-4.* 1890. *Clasmatocolea georgiensis* (Gott.) Grolle, Brit. Antarct. Surv. Bull. 28: 86. 1972. *Evansianthus georgiensis* (Gott.) Schust. & Engel, Bryologist 76: 518. 1973. Lectotype (*fide* Grolle, 1972b): South Georgia, 10 May 1883, *Will 11* (M!).

Remarks.—See Schuster & Engel (1973).

Ecology.—On bare soil in an ecotone between a *Nothofagus* "Krumholz" zone and alpine zone of cushion plants at Club Andino. The plants were mixed with *Hygrolembidium isophyllum.*

Phytogeography.—South Georgia, Falkland Islands, Isla Grande de Tierra del Fuego, and Patagonian Channels north to 50°59′ S.

Brunswick Peninsula Specimen Seen.—PUNTA ARENAS REGION: W. of Punta Arenas, Club Andino, *Schuster 69-018* (hb. Schuster).

LEPTOPHYLLOPSIS

Schust. J. Hattori Bot. Lab. 26: 270. 1963.

Leptophyllopsis irregularis (Steph.) Engel

Lophocolea irregularis Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6): 40. 1900. *Leptophyllopsis irregularis* (Steph.) Engel, Bryologist 76: 533. 1973. Original material: Chile, Prov. Aisén, R. Aisén Valley, 9 February 1897, *Dusén s. n.* (S-PA!–c. per.).

Remarks.—This taxon may be distinguished by its 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 ± 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, 1963c, 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 exserted.

Phytogeography.—Reported from Tierra del Fuego (R. Grande), southern Patagonian Channels (Brunswick Peninsula and the Puerto Natales-R. Rubens area), the Valdivian region, Juan Fernandez, and Tristan da Cunha.

Literature Record.—*Dusén*–Punta Arenas (Stephani, 1901a as *Lophocolea*).

Brunswick Peninsula Specimen Seen.—PUERTO DEL HAMBRE REGION: Fuerte Bulnes, Pta. Santa Ana (*1839*–c. per.).

LEPTOSCYPHUS

Mitt. Hooker's J. Bot. Kew Gdn. Misc. 3: 358. 1851.

KEY TO THE BRUNSWICK PENINSULA SPECIES OF *Leptoscyphus*

1. Leaves convex, at least in the apical ventral margins; leaf cells with very small to subnodulose trigones 2
1. Leaves concave, at least in the apical ventral margins; leaf cells mostly with large knotlike trigones 3
 2. Leaves unlobed .... *L. expansus*
 2. Leaves bifid. Dorsal leaf margin straight to slightly curved, ventral margin greatly curved .... *L. patagonicus*
3. Underleaves undivided .... *L. cuneifolius*
3. Underleaves shallowly to deeply bifid 4
 4. Leaves connate dorsally, distinctly opposite; sinus of underleaf shallow .... *L. aequatus*
 4. Leaves free from one another, ± alternate; sinus of underleaf deep 5
5. Underleaves long-linear, entire; ventral leaf margin plane; leaves strongly

erect, often appressed to one another dorsally; perianths barely exserted beyond bracts; plants (1.4-)2.5(-3.2) mm. in diameter; male bracts with paraphyllia *L. abditus*

5. Underleaves widely ovate, dentate-laciniate; ventral leaf margin abruptly inflexed; leaves spreading, rarely erect; perianths exserted well above bracts; plants (4.4-)5.4(-6.8) mm wide; male bracts without paraphyllia . *L. horizontalis*

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: 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 de Kerguélen, *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).

Solenostoma fuegiensis Gola, Nuovo G. Bot. Ital II. 29: 163. *pl. 1, f. 9-10.* 1923, *syn. fide* Váňa (1974). Original material: Chile, Prov. Magallanes, B. Ainsworth, 1913, Gasperi (FI)–cited in Váňa (1974).

Ecology.—On bark of *Nothofagus* and (less frequently) on soil or rotted logs above ca. 215 m. in deciduous forests and drier areas of evergreen forests.

Phytogeography.—Subantarctic distribution; occurring in South Georgia, Falkland Islands, Tierra del Fuego (490-600 m. where recorded), southern Patagonian Channels (Brunswick Peninsula), and West Patagonian zone of the Valdivian region (860-1,200 m. on C. Tesoro, 39°38′ S.).

Brunswick Peninsula Specimens Seen.—PUNTA ARENAS REGION: E. of Mina Loreto on S. side of R. de las Minas, ca. 215 m. *(1900)*; ridge above refugio (Club Andino), 8 km. W. of Punta Arenas, 305-610 m. (*1964*–c. per., *1977*–c. per. & *1981*–c. per.). LAGUNO EL PARRILLAR REGION: Just E. of lake, ca. 365 m. *(2072 & 2073)*.

Leptoscyphus aequatus (Hook. f. & Tayl.) Mitt.

Jungermannia aequata Hook. f. & Tayl. Lond. J. Bot. 3: 465. 1844. *Chiloscyphus aequatus* (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 704. 1847. *Leptoscyphus aequatus* (Hook. f. & Tayl.) Mitt. Hooker's J. Bot. Kew Gdn. Misc. 3: 358. 1851. *Leioscyphus aequatus* (Hook. f. & Tayl.) Mitt. *in* Hook. f. Bot. Ant. Voy. 3: 225. 1859. *Mylia aequata* (Hook. f. & Tayl.) Kühnem. Lilloa 19: 340. 1949. Lectotype *(nov.):* Chile, Prov. Magallanes, I. Hermite, *Hooker* (FH!–c. ♂).

Jungermannia surrepens Hook. f. & Tayl. Lond. J. 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. 1949. Lectotype *(nov.):* Chile, Prov. Magallanes, I. Hermite, *Davis* (FH!).

Phytogeography.—Falkland Islands, Tierra del Fuego, the Patagonian Channels north to 50°16′ S. and Gough Island (see pl. 6).

Literature Records.—*Andersson*–Pto. del Hambre (Ångström, 1872 as *Jungermannia surrepens*); *Dusén*–Punta Arenas (Grolle, 1962); *Skottsberg & Halle*–Canal Jeronimo (Grolle, 1962).

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, *Naumann* as *Chiloscyphus surrepens* (FH). PUERTO GALLANT REGION: NE side of Pto. Gallant *(6045 B)*. BAHIA ARAUZ: 3 May 1908, *Halle & Skottsberg 214* (S-PA). PUERTO CUTTER REGION: At copper mine *(2291)*.

Leptoscyphus cuneifolius (Hook.) Mitt.

Jungermannia cuneifolia Hook. Brit. Jungerm. *pl. 64.* 1814. *Mylius cuneifolius* (Hook.) S. Gray, Nat. Arr. Brit. Pl. 1: 694. 1821. *Aplozia cuneifolia* (Hook.) Dum. Bull. Soc. Roy. Bot. Belg. 13: 55. 1874. *Coleochila cuneifolia* (Hook.) Dum. Bull. Soc. Roy. Bot. Belg. 13: 106. 1874. *Clasmatocolea cuneifolia* (Hook.) Spruce, Trans. Proc. Bot. Soc. Edinb. 15: 440. 1885. *Leptoscyphus cuneifolius* (Hook.) Mitt. Hooker's J. Bot. Kew Gdn. Misc. 3: 358. 1851. *Leioscyphus cuneifolius* (Hook.) Steph. Bull. Herb. Boissier II. 6 (3): 218. 1906 (=Spec. Hep. 3: 18). *Anomylia cuneifolia* (Hook.)

Schust. Am. Midl. Nat. 62: 53. 1959. Original material: Ireland, Bantry, *Hutchins* (NY)–cited in Grolle (1962).

Leioscyphus fragilis Jack & Steph. Hedwigia 31: 20. 1892. *Mylia fragilis* (Jack & Steph.) Herz. Revue Bryol. Lichén. 23: 38. 1954, *nom. inval. Mylia fragilis* S. Arnell *in* Bartram & Arnell, Bryologist 64: 249. 1961. *Anomylia fragilis* (Jack & Steph.) Schust. Am. Midl. Nat. 62: 53. 1959. *Leptoscyphus cuneifolius* (Hook.) Mitt. subsp. *fragilis* (Jack & Steph.) Grolle, Nova Acta Leopoldina 25 (161): 28. 1962. Original material: Colombia, Prov. Antioquia, Páramo de Sonsón, 3,300 m., 1872, *Wallis* (W)–cited in Grolle (1962).

Mylia antillana Carring. & Spruce *in* Besch. & Spruce, Bull. Soc. Bot. Fr. 36: 177. 1889, *syn. fide* Grolle (1962). *Leioscyphus antillanus* (Carring. & Spruce) Steph. Bull. Herb. Boissier II. 6 (3): 219. 1906 (=Spec. Hep. 3: 19). *Anomylia antillana* (Carring. & Spruce) Schust. Am. Midl. Nat. 62: 53. 1959. Original material: Guadeloupe, *Perrottet* (MANCH)–cited in Grolle (1962).

Remarks.—See remarks in Paton (1967) and Grolle (1969a).

Ecology.—Climax evergreen *Nothofagus* forest, where it occurred on bark among Hepaticae, the lichens *Menegazzia wilsonii* and *Pseudocyphelaria flavicans* and the filmy fern *Serpyllopsis.*

Phytogeography.—Widespread and largely oceanic in distribution. Tristan da Cunha (650 m.) Patagonian Channels north to 44°40′ S. in the Valdivian region, Juan Fernandez (1,370 m. on Mas Afuera), Colombia (3,300 m.), Venezuela, British Guiana (Mt. Roraima), West Indies, North America (1,725-2,200 m. in the southern Appalachians), Azores (1,400 m.), and British Isles.

Brunswick Peninsula Specimens Seen.—PUERTO GALLANT REGION: B. Fortescue *(5954, 5976* & *5983).*

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., Table Mt., *Ecklon* (W)–cited in Grolle (1962); Devils Peak, *Ecklon (non vidi).*

Plagiochila chiloscyphoides Lindenb. *in* Lehm. Nov. Minus Cog.

Stir. Pug. 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: 225. 1859. *Mylia chiloscyphoidea* (Lindenb.) Evans, Bull. Torrey Bot. Club 25: 426. 1898. Original material: Chile, Prov. Magallanes, Strait of Magellan, *Jacquinot 59a* (P)–cited in Grolle (1962).

Plagiochila gottscheana Lindenb. *in* Lehm. Nov. Minus Cog. Stir. Pug. 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 (=Spec. Hep. 3: 27). Original material: South Africa, Cape Prov., "Promontario Bonae Spei," *Ecklon (non vidi)*.

Jungermannia reclinans Hook. f. & Tayl. Lond. J. 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. Lectotype[1] *(nov.):* Falkland Is., *Hooker* (NY!).

Jungermannia fuscovirens Hook. f. & Tayl. Lond. J. Bot. 3: 474. 1844, *syn. fide* Grolle (1962). *Chiloscyphus fuscovirens* (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 189. 1845. *Lophocolea fuscovirens* (Hook. f. & Tayl.) Mitt. *in* Hook. f. Bot. Ant. Voy. 3: 226. 1859. *Leioscyphus fuscovirens* (Hook. f. & Tayl.) Steph. Bull. Herb. Boissier II. 6 (3): 226. 1906 (=Spec. Hep. 3: 26). *Mylia fuscovirens* (Hook. f. & Tayl.) Herz. *in* Skottsberg, Nat. Hist. Juan Fernandez, Easter Is. 2: 714. 1942. Lectotype *(nov.):* Chile, Prov. Magallanes, I. Hermite, *Hooker s.n.* (FH!–c. sporo.).

Chiloscyphus huidobroanus Mont. Annls. Sci. Nat. III. 4: 352. 1845, *syn. fide* Grolle (1962). *Leioscyphus huidobroanus* (Mont.) Steph. Bull. Herb. Boissier II. 6 (3): 228. 1906 (=Spec. 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 J. obscura* Sw. Flora Ind. Occid. 3: 1869. 1806. (=*Frullania* sp.). *Mylia obscura* (Ångstr.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 412. 1877.

[1]Grolle (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.

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 (=Spec. Hep. 3: 224), *syn. fide* Grolle (1962). Lectotype (*cf.* Grolle, 1962): Madagascar, South Betsileo, 1891, *Hildebrandt s.n.* (G–*non vidi*).

Chiloscyphus lobatus Steph. Bull. Herb. Boissier II. 8 (2): 140. 1908 (=Spec. Hep. 3: 256), *syn. fide* Grolle (1962). *Heteroscyphus lobatus* (Steph.) Kühnem. Lilloa 19: 333. 1949. Original material: Chile, Prov. Magallanes, I. Descolación, Pto. Angosto, *Dusén 376* (FH!–c. per.).

Lophocolea dura Steph. K. Svenska VetenskAkad. Handl. 46 (9): 43. *f. 16 a-d.* 1911, *syn. fide* Grolle (1962). Original material: Chile, Prov. 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. 2,600 m., 1911, *Herzog, s.n.* (M)–cited in Grolle (1962).

Lophocolea subretusa Pears. Bull. Roy. Bot. Gard. Kew 1922: 251. *1 pl.* 1922, *syn. nov.* Holotype: Falkland Is., Tyssen Islands, January 1868, *Cunningham 106* (BM!).

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).*

[1]Grolle (1962) erroneously lists *Lejoscyphus (sic) magellanicus* Mass. Atti Ist. Veneto Sci. 87: 229. 1927 as a synonym of *Leptoscyphus expansus.*

Plagiochila knysnana S. Arnell, Revue Bryol. Lichén. 23: 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).

Remarks.—There is a form of *Leptoscyphus expansus* which is not of infrequent occurrence, is often 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. one-half; 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 trigonous.

Pearson (1922, Bull. Roy. Bot. Gard. Kew 1922: 248-253. 1922) described a new species, *Lophocolea subretusa,* based upon a specimen collected in 1868 by Cunningham in the Falkland Islands and named by Stephani as *Lophocolea humilis.* The outside of the packet of the holotype specimen (BM) neither bears the name *Lophocolea subretusa* nor an indication that Pearson saw the collection. However, within the packet there is a small blue slip of paper labeled "*Lophocolea subretusa* n. sp. Pearson M. S."

Ecology.—Very common in the deciduous and drier regions of the evergreen forests. On soil, rotted logs (often in pure, compact mats covering extensive areas), and stumps and only rarely on tree bark. Rare in the wetter evergreen forests and then only on coastal rocks and in climax forests (it is absent from the evergreen forest "bryophyte rich facies.") Also in the steppe region of the peninsular neck.

The above-mentioned coastal rocks (Pto. Cutter) received fresh water from rain and forest run-off, with salt water influence minimal here. However, the species is able to grow in tidal zone regions [see Engel & Schuster, 1973].

Phytogeography.—Amphiatlantic temperate; Îles de Kerguélen, Îles Crozet, Marion Island, Prince Edward Island, the Mascarenes, Madagascar, South Africa, Natal, Tristan da Cunha, Gough Island, South Georgia, Falkland Islands, 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 (2,600 m.) (see pl. 16).

Literature Records.—*Anonymous*–Strait of Magellan (Kühnnemann, 1949 as *Lophocolea fuscovirens* and *Plagiochila chiloscyphoides;* Bonner, 1963 as *Chiloscyphus fuscovirens, Leptoscyphus obscurus, Lophocolea fuscovirens,* and *Plagiochila chiloscyphoides*); *Andersson*–Strait of Magellan (Stephani, 1906 as *Leioscyphus obscurus*); *Dumont d'Urville*–Pto. Gallant (G.L. & N., 1847 as *Plagiochila chiloscyphoides*), Strait of Magellan (Bonner, 1962 as *P. chiloscyphoides*); *Dusén*–Punta Arenas (Stephani, 1900 as *Lophocolea fuscovirens*), Cabo Froward (Stephani, 1901a as *Lophocolea fuscovirens*), Strait of Magellan (Stephani, 1906 as *Lophocolea fuscovirens*); *Jacquinot*–Pto. Gallant (Montagne, 1845, 1852 as *P. chiloscyphoides,* G.L. & N., 1847 as *P. chiloscyphoides*), Strait of Magellan (Stephani, 1906 as *Leioscyphus chiloscyphoides;* Grolle, 1962); *Santesson*–Tres Puentes (Arnell, 1955 as *Chiloscyphus lobatus* and *Mylia fuscovirens*); *Skottsberg & Halle*–Pto. Pomar, Pto. Cutter and R. de las Minas (Stephani, 1911 as *Leioscyphus chiloscyphoides*), R. de las Minas, Pto. Pomar (Grolle, 1962), R. de las Minas (Stephani, 1911 as *Lophocolea fuscovirens*).

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, *Dumont d'Urville* as *Chiloscyphus amphibolius* (PC). CHABUNCO REGION: Headland at Cabo Negro, *Ostafichuk 1245*–c. per., *1249*–c. sporo., *1250*–c. per., *1251*–c. per. (MSC). PUNTA ARENAS REGION: Punta Arenas, *Charcot Exped. 30* as *Chiloscyphus magellanicus* (PC–c. per.+sporo.); *ibid., Thaxter 27, 50* (MICH); near Mina Loreto, 9 December 1903, *Scott Elliot 115* as *Leioscyphus aequatus* (G–c. per.); near R. de las Minas, 20 February 1908, *Halle & Skottsberg 203* as *Lophocolea fuscovirens (S-PA*–c. per.). E. of Mina Loreto on S. side of R. de las Minas, ca. 215 m. (*1881 A*–c. per., *1883*–c. per.+♂, *1886 B*–c. per.+♂, *1891*–c. per., *1897 B*–c. young per., *1904*–c. per.+♂, *1905*–c. per., *1909*–c. per., *1912*–c. per., *1913*–c. per., *1915*–c. per., *1926*–c. per., *1930*–c. per., *1937*–c. ♂), *Imshaug 38860, 38864*–c. per. & *38881* (MSC); ridge above refugio (Club Andino), 8 km W. of Punta Arenas, 305-610 m.

(*1940*–c. per., *1946 A, 1951*–c. per., *1963, 1975*–c. per. & *1983*–c. per.), *Imshaug 39008* (MSC). RIO TRES BRAZOS REGION: Plateau above R. Tres Brazos at road crossing, ca. 160 m., *Ostafichuk 1342*–c. sporo., *1349A*–c. per. (MSC). RIO COLORADO REGION: Between R. Amarillo and R. Colorado, 3 June 1908, *Halle 183* as *Lophocolea aequifolia* (S-PA–c. per.). SENO OTWAY REGION: B. Camden (*2001 A*–c. per., *2003*–c. per.+ ♂, *2011*–c. per.+ ♂, *2021*–c. per., *2024*–c. per., *2025 B*); E. of Canelos and just W. of Ch. La Quema (*2067*–c. per.+ ♂). LAGUNO EL PARRILLAR: Just E. of lake, ca. 365 m. (*2069*–c. per., *2070*–c. per., & *2085*–c. per.). PUERTO DEL HAMBRE REGION: Fuerte Bulnes, Pta. Santa Ana (*1803 B, 1825*–c. per.+sporo., *1840*–c. per.+ ♂, *1843*–c. per., *1849 B*—c. ♂, *1852*–c. per.+ ♂ & *1854*); near Fuerte Bulnes, *Hatcher 1-9, 2-9, 6-12, 7-7, 8-1, 8-5, 8-7, 9-3, 9-7* (UW-M); N. side of R. San Juan, 1 km. from straits, *Imshaug 38813 & 38819* (MSC). PUERTO SAN ISIDRO: 12 February 1929, *Roivainen 335* (H–c. per.); 13 February 1929, *Roivainen 1281* as *Mylia maculata* (H–c. ♂+young per.). BAHIA SAN NICOLAS REGION: W. side of bay (*6313 A*–c. per.+cap.+ ♂, *6318*–c. ♂, *6331*–c. per.); mature forest on W. side of bay (*6335*–c. per., & *6342 C*–c. per.); E. side of bay *(6394 B);* sea cliffs with forest above southeast end of I. Nassau near Pta. Sta. Brigada, *Imshaug 45439 B* (MSC–c. per.+sporo.+ ♂); ridge between B. Bougainville and B. San Nicolas, ca. 155 m. (*6448*–c. per.). PUERTO GALLANT REGION: B. Fortescue (*5963*–c. per. & *5979 A*–c. per.). RADA YORK: *Lechler 1300* (NY). PUERTO CUTTER REGION: At copper mine (*2280* & *2293 B*–c. per.). PUERTO POMAR: 14 April 1908, *Halle & Skottsberg 182* as *Lophocolea abnormis* (S-PA).

Leptoscyphus horizontalis (Hook.) Herz.

Jungermannia horizontalis Hook. Musci Exot. 1: *pl. 96. f. 1-7.* 1818. *Chiloscyphus horizontalis* (Hook.) Dum. Recueil Obs. Jungerm. 19. 1835. *Lophocolea horizontalis* (Hook.) Evans, Bull. Torrey Bot. Club 25: 421. 1898. *Leioscyphus horizontalis* (Hook.) Steph. Wiss. Ergebn. Schwed. Südpolarexped. 4 (1): 5. 1905. *Mylia horizontalis* (Hook.) Kühnem. Lilloa 19: 341. 1949. *Leptoscyphus horizontalis* (Hook.) Herz. Geogr. Moose p. 195, 377. 1926. Original material: Argentina, Terr. Tierra del Fuego, I. de los Estados, *Menzies* (FH!, S)–cited in Grolle (1962).

Jungermannia grandifolia Hook. f. & Tayl. Lond. J. Bot. 3: 474. 1844, *syn. fide* Stephani (1893) *non J. grandifolia* (Berggr.)

Hodg. Trans. R. Soc. N. Z. 85: 582. 1958. *Chiloscyphus grandifolius* (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 185. 1845. Lectotype *(nov.)*: Chile, Prov. Magallanes, I. Hermite, *Hooker* (FH!).

Lophocolea concava Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6): 36. 1900, *syn. fide* Grolle (1962). Type (according to Stephani's correction in Spec. Hep. 3: 59): Chile, Prov. Magallanes, R. Azopardo, *Dusén 43* (S-PA, UPS, W)—cited in Grolle (1962, p. 44).

Ecology.—Only within the evergreen forested regions; rather common in the "bryophyte rich facies" where it occurs at the bases, sides, and apices of bryophyte mounds as well as in shaded, wet depressions of the floor. Also on rotted branches and logs and on soil in mature forests.

Phytogeography.—Tierra del Fuego, Patagonian Channels, and Valdivian region north to 40°58′ S. (665 m.).

Literature Records.—*Anonymous*–Strait of Magellan (Bonner, 1963 as *Chiloscyphus*, Stephani, 1906 as *Leioscyphus*); *Andersson*–Pto. del Hambre (Ångström, 1872 as *Jungermannia grandiflora*); *Lechler*–Rada York (Grolle, 1962); *Savatier*–Pto. Gallant (Bescherelle & Massalongo, 1889 as *Chiloscyphus* [?] *grandifolius*); *Skottsberg & Halle*–R. de las Minas (Stephani, 1911 as *Lophocolea concava*), Pto. Cutter (Stephani, 1911 as *Lophocolea*).

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, 1868, *Dow s. n.* (NY); *ibid.*, *Lechler* (S-PA); *ibid.*, February 1861, *Mégère* as *Jungermannia involutifolia* (F); *ibid.*, February 1861, *Nadaud* (F). BAHIA SAN NICOLAS REGION: W. side of bay *(6353 B & 6366 C)*. PUERTO GALLANT REGION: B. Fortescue *(5957 B)*; Pto. Gallant, *sin. coll.* (NY–c. per.); NE side of Pto. Gallant (*6029 C*–c. ♂, *6031 & 6064 B*). RADA YORK: *Lechler* as *Chiloscyphus grandifolius* (S-PA). PUERTO CUTTER REGION: Between copper mine and river S. of mine (*2148*–c. ♂, *2167 B, 2171 B & 2175 C*); slightly W. of copper mine (*2240 B, 2259*–c. per.+ ♂).

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).

Phytogeography.—Falkland Islands, I. de los Estados and I. Grande de Tierra del Fuego, southern Patagonian Channels (Brunswick Peninsula and S. Skyring region), Valdivian region (44°19′ S. in West Patagonia), and Juan Fernandez; not reported from Andean Patagonia.

Literature Record.—*Skottsberg & Halle*–Pto. Cutter (Grolle, 1962).

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, *Cunningham* as *Lophocolea recurvula* (NY); *ibid.*, *sin. coll.* (NY). PUERTO GALLANT REGION: NE side of Pto. Gallant (*6004 A*–c. per. + ♂). PUERTO CUTTER REGION: Pto. Cutter, 13 April 1908, *Halle & Skottsberg 195* as *Lophocolea cunninghamii* (UPS); at copper mine *(2267)*.

Leptoscyphus Species Excluded from the Brunswick Peninsula

1. *Leptoscyphus amphibolius* (Nees) Grolle

Jungermannia amphibolia Nees *in* Martius, Fl. Bras. seu Enum. Pl. 1 (1): 334. 1833. *Lophocolea amphibolia* (Nees) Nees & Mont. Annls. Sci. Nat. II. 5: 56. 1836. *Chiloscyphus amphibolius* (Nees) Nees *in* G. L. & N. Syn. Hep. 178. 1845. *Heteroscyphus amphibolius* (Nees) Schiffn. Öst. Bot. Z. 60: 172. 1910. *Leptoscyphus amphibolius* (Nees) Grolle, Nova Acta Leopoldina 25 (161): 54. 1962. Original material: Brazil, "In Districtu Adamantam," *Martius* (S-PA, W)–cited in Grolle (1962).

Reported for the Strait of Magellan (without specific locality) by Montagne (1845 as *Chiloscyphus*) followed by Kühnemann (1937 as *Chiloscyphus* and 1949 as *Heteroscyphus*) in his catalogues. I have seen a specimen from PC labeled "*Chiloscyphus amphibolius* Nees, Magellan, d'Urville" which is actually *Leptoscyphus expansus* (Lehm.) Grolle. *Leptoscyphus amphibolius,* according to Grolle (1962), is restricted to the Neotropics.

LOPHOCOLEA

(Dum.) Dum. Recueil Obs. Jungerm. 17. 1835. *Jungermannia* sect. *Lophocolea* Dum. Syll. Jungerm. 59. 1831.

Key to the Brunswick Peninsula Species of *Lophocolea*

1. Leaves consistently bifid 2
1. Leaves (well developed) entire, emarginate or 1-dentate 8
 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 dioecious ... [*Leptophyllopsis irregularis*]
 2. Leaf lobes and marginal teeth, if present, persistent, leaf apices never with a ragged appearance; leaves not with accessory teeth and laciniae; leaf margins entire to 1-dentate 3
3. Leaves bifid to one-half, leaf segments frequently canaliculate. Leaf segments very wide triangular, widely divergent; perianth wings dentate-laciniate *L. divaricata*
3. Leaves bidentate or bifid to at most one-third, leaf segments plane, never canaliculate 4
 4. Underleaves connate with the leaves on *both* sides. Leaves symmetrically ovate or nearly so to subrectangular in shape, the sinus truncate or lunate *L. sylvatica*
 4. Underleaves connate on only *one* side or completely free 5
5. Dorsal and ventral leaf surfaces with spines .... *L. muricata*
5. Dorsal and ventral leaf surfaces smooth 6
 6. Median leaf cells (46-)52-91 $\mu \times$ 33-65 μ; perianth terete or obscurely triangular below. Dorsal leaf margin straight or nearly so, entire, ventral margin rounded, especially toward the apex, entire-1-dentate; underleaves elongate-ovate in shape, as wide as or slightly wider than stem, connate on *one* side *L. textilis*
 6. Median leaf cells 17-48(-52) $\mu \times$ 20-43 μ; perianth triangular below 7
7. Leaf segments ending in a uniseriate row of 1-6 cells, segments narrow to broadly triangular. Underleaf margins entire-1-dentate or occasionally ciliate-small laciniate; plants monoecious .... *L. lenta*
7. Leaf segments ending in a uniseriate row of 4-15 cells, segments piliferous. Underleaves deeply bifid, margins usually with a single long lacinia-lobe; perianths 3.6-5.3 $\times$ longer than broad; perianth lobes narrowly triangular, dentate-laciniate; margins of innermost bracts entire-3 dentate; plants monoecious *L. leptantha*
 8. Leaves connate dorsally; ventral-basal leaf portion expanded and broad auriculate. Leaves wide-reniform in shape; underleaves free, never connate, apices truncate to retuse .... *L. otiphylla*
 8. Leaves not connate dorsally; ventral-basal leaf portion not expanded or auriculate, or if expanded as in *L. elata*, then with underleaves bifid to over one-half 9

9. Underleaves bifid to ca. one-half or more (rarely to only one-third), plane, underleaf margins entire-4 dentate-laciniate; leaf apices variable, i.e., broadly rounded to truncate to emarginate 10
9. Underleaves retuse, 1-dentate, or entire, never bifid to one-half, *frequently convex to ± canaliculate;* underleaf margins entire; leaf apices entire to 1-dentate 11
   10. Leaves expanded near ventral base and here often reflexed; leaf apices broadly rounded, never retuse; underleaves one-half stem width to as wide as stem. Underleaf segments often differing in size and configuration; stems thick, fleshy .... *L. elata*
   10. Leaves not expanded near ventral base; leaf apices variable, broadly rounded to truncate to retuse to emarginate to 1- or bidentate; underleaves as wide as to 1.5 × stem width. Underleaf margins entire-2-dentate-small laciniate *L. sabuletorum*
11. Leaf apices entire; underleaves connate on one side; plants clearly anisophyllous. Underleaves entire, strongly convex (recurved) to canaliculate, apices entire to bidentate to retuse .... *L. austrigena*
11. Leaf apices one dentate; underleaves free, not connate with the leaves; plants isophyllous or nearly so. Leaves transversely oriented; underleaf apices 1 toothed, margins extremely long decurrent .... *L. gottscheoides*

Lophocolea austrigena (Hook. f. & Tayl.) G. L. & N.

Jungermannia austrigena Hook. f. & Tayl. Lond. J. Bot. 3: 466. 1844. *Lophocolea austrigena* (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 702. 1847. Original material: Chile, Prov. Magallanes, I. Hermite, *Hooker s. n.* (BM!–c. per., NY!–c. per., S-PA!, W–cited in Grolle, 1962).

Jungermannia cavispina Hook. f. & Tayl. Lond. J. 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. Aisén, R. Aisén Valley, 13 January 1897, *Dusén 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. Revta. Cent. Estud. Doct. Cienc. Nat., B. Aires 1: 176. 1937. *Mylia grandistipa* (Steph.) Kühnem. Lilloa 19: 341. 1949. Lectotype *(nov.)*: 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. ♂).

Remarks.—It appears that Stephani did not have a concept of *Lophocolea austrigena*. The 1896 Dusén 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 Dusén 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, 1905) as *L. austrigena* from I. de los Estados, Pto. 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 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 exserted far beyond bracts. *Lophocolea boveana* has a) leaves longer than broad; b) leaf apices narrowly rounded (rarely *obliquely* truncate), and c) perianths only slightly exserted beyond bracts.

This species is a close relative of the rather rare *L. patulistipa*. The two may be separable by underleaf characters. *Lophocolea austrigena* has entire underleaves with apices entire to bidentate to retuse, while *L. patulistipa* has underleaf margins often one dentate, with apices bifid to one-third. The latter taxon has underleaves often short bifid, but never bidentate or entire.

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 plus free underleaf margins that are 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.—Not uncommon in the Patagonian Channels, but unexpectedly rare in the Brunswick Peninsula.

Phytogeography.—Falkland Islands, 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.

Brunswick Peninsula Specimens Seen.—PUERTO DEL HAMBRE REGION: Near Fuerte Bulnes, *Hatcher 1-10* (UW-M). PUERTO CUTTER REGION: Between copper mine and river S. of mine (*2154*–c. ♂).

Lophocolea divaricata Hook. f. & Tayl.

Lophocolea divaricata Hook. f. & Tayl. Lond. J. Bot. 5: 367. 1846 *non L. divaricata* Herz. Archos Esc. Farm. Córdoba 7: 19. 1938. *Jungermannia divaricata* (Hook. f. & Tayl.) Hook. f. & Tayl. *in* Hook. f. Bot. Ant. Voy. 1: 437. 1847 *non J. divaricata* Sm. *in* Sowerby, Engl. Bot. 10: 719. 1800 *(=Cephaloziella) non J. divaricata* Nees, Enum. Plant. Crypt. Javae . . . p. 60. 1830 (cf. *Acromastigum*). Original material: Chile, Prov. Magallanes, I. Hermite, *Hooker* (NY!).

Ecology.—Rare in the Brunswick Peninsula as well as southern South America. I found it only once, on soil of coastal rocks under *Libocedrus* cover in the wet western end of the peninsula. The salt water influence of these coastal rocks was minimal.

Phytogeography.—Falkland Islands, Tierra del Fuego, Patagonian Channels (Brunswick Peninsula), and the Valdivian region (45°17′ S., 73°43′ W.).

Brunswick Peninsula Specimen Seen.—PUERTO CUTTER REGION: At copper mine (*2293 C*–c. per.)

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. Südpolarexped. 4 (1): 7. 1905. Original material: South Georgia, 1882, *Will–non vidi.*

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. one-half 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 lobelike. 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.

Grolle (1972b) lectotypifies *Jungermannia elata* and treats *Lophocolea elata* as a synonym of *Leptoscyphus expansus.*

Phytogeography.—South Georgia, Falkland Islands, I. Grande de Tierra del Fuego, and southern Patagonian Channels (Brunswick Peninsula) (see pl. 5).

The report from Grupo Evangelistas in Stephani (1911) requires investigation.

Brunswick Peninsula Specimen Seen.—PUNTA ARENAS REGION: E. of Mina Loreto on S. side of R. de las Minas, ca. 215 m. *(1902).*

Lophocolea gottscheoides Besch. & Mass.

Lophocolea? gottscheoides Besch. & Mass. Bull. Mens. Soc. Linn. Paris 1 (79): 631. 1866. Original material: Chile, Prov. Magallanes, I. Hermite, *Hariot (non vidi).*

Lophocolea apiculata Evans, Contr. U.S. Natn. Herb. 1: 140. *pl. 15,* *f. 1-10.* 1892, *syn. nov.* Original material: Chile, Prov. Magallanes, I. Desolación, Pto. Churruca, 2 February 1888, *Albatross* (F!NY!).

Ecology.—Sporadic in evergreen forested region, nowhere very common. I found it on soil in forested areas, sometimes on stream banks.

Phytogeography.—Tierra del Fuego, Patagonian Channels, and north to 36°50′ S. in the Valdivian region.

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, *sin. coll., ex hb. Husnot* (FH). BAHIA SAN NICOLAS REGION: W. side of bay *(6368 B & 6372)*. PUERTO GALLANT REGION: NE side of Pto. Gallant *(6057 A)*. PUERTO CUTTER REGION: Base of M. Condor *(2322, 2323 B & 2326)*.

Lophocolea lenta (Hook. f. & Tayl.) G. L. & N.

Jungermannia lenta Hook. f. & Tayl. Lond. J. 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. Lond. J. 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!).

Remarks.—The Dusén specimen cited below is of interest. The specimen is actually referrable to the *L. lenta* complex, as it consists only of male stems, while to my knowledge, *L. lenta* is monoecious. After further study the species may prove to be either monoecious or dioecious.

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), and Mitten (1854, 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 have one large lacinium-lobe 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 gynoecia. In *L. bidentata* a) the plants are robust; b) the leaves are wide ovate in shape; and c) the plants are dioecious and seldom produce gynoecia.

The underleaves of *Lophocolea lenta* exhibit considerable variation. They are frequently quite small, i.e., three-fourths 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 the Falkland Islands. In more robust plants the underleaves are ca. 1.5 as wide as the stem and have margins 1 ciliate-laciniate. The apex varies from bifid to ca. one-half to nearly the base. The sinus is narrow to broadly rounded, and the segments vary from directed straight forward to widely spreading.

Phytogeography.—Amphipacific; reported from the Falkland Islands, Tierra del Fuego, and the Valdivian region in the American sector and Auckland Island, Campbell Island, Snares Island, New Zealand, Tasmania, and Australia in the New Zealand sector.

Brunswick Peninsula Specimens Seen.—PUNTA ARENAS REGION: Punta Arenas, 27 June 1895, *Dusén s. n.* as *L. latissima* (S-PA). PUERTO DEL HAMBRE REGION: Puerto del Hambre, 8 October 1971, *Hässel de Menendez 3696, 3701* (BA).

Lophocolea leptantha (Hook. f. & Tayl.) G. L. & N.

Jungermannia leptantha Hook. f. & Tayl. Lond. J. Bot. 3: 471. 1844. *Lophocolea leptantha* (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 694. 1847. Lectotype *(nov.):* Chile, Prov. Magallanes, I. Hermite, *Hooker s. n.* (NY!–c. sporo.).

Jungermannia alternifolia Hook. f. & Tayl. Lond. J. 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 gibbosa Mont. Annls. Sci. Nat. III. 4: 351. 1845, *syn. nov.* Original material: Southern Chile, without specific locality, *Gay* (PC!–c. per.).

Lophocolea cunninghamii Steph. Bull. Herb. Boissier 6 (8): 652.

1906 (=Spec. Hep. 3: 68), *syn. nov.* Original material: Chile, Prov. Magallanes, Pto. Eden, 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.).

Remarks.—The lectotype material of *Lophocolea leptantha* is monoecious, a critical 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 × longer than broad.

Some notes on synonymy will be documented in a future publication.

Ecology.—Rather common on soil and rotted logs in the deciduous forested region and drier regions of evergreen forests. Rare in the wetter evergreen forests and then occurs in sheets of vegetation in mature forests or on rotted logs over coastal rocks (with only minimal salt water influence), i.e., it is totally absent from the evergreen forest "bryophyte rich facies." Also in the steppe region of the peninsular neck.

Phytogeography.—Falkland Islands, Tierra del Fuego, Patagonian Channels, and the Valdivian region (West Patagonia 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 rigens.*

Literature Records.—*Anonymous*–Strait of Magellan (Kühnemann, 1937, 1949); *Andersson*–Pto. del Hambre (Ångström, 1872 as *Jungermannia*); *Dusén*–Punta Arenas (Stephani, 1900), Strait of Magellan (Stephani, 1906); *Skottsberg & Halle*–Pto. Cutter (Stephani, 1911 as *L. cunninghamii*).

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, *sin. coll.* (NY). CABEZA DEL MAR REGION: Just E. of Sección Cabeza del Mar, *Ostafichuk 1314 B* (MSC–c. per.+ ♂. CHABUNCO REGION: Headland at Cabo Negro, *Ostafichuk 1232* & *1269*–c. sporo.+ ♂ (MSC). PUNTA ARENAS REGION: Punta Arenas, April 1882, *Spegazzini 1* as *L. bispinosa*

(NY, VER); E. of Mina Loreto on S. side of R. de las Minas, ca. 215 m. (*1881 B, 1925*–c. per. & *1936*). RIO TRES BRAZOS REGION: Plateau above R. Tres Brazos at road crossing, ca. 160 m., *Ostafichuk 1368 B* (MSC–c. per.+♂). SENO OTWAY REGION: B. Camden (*1993*–c. per.+♂, *1996*–c. per.+♂ & *2001 B*–c. per.+♂). LAGUNO EL PARRILLAR: Just E. of lake, ca. 365 m. *(2080)*. PUERTO DEL HAMBRE REGION: Fuerte Bulnes, Pta. Santa Ana (*1808, 1820, 1831*–c. per.+cap. & *1848*); near Fuerte Bulnes, *Hatcher 5-8, 7-3, 8-5* & *9-4* (UW-M); N. side of R. San Juan, *1875 A* & *1878*–c. per.+sporo.+♂). BAHIA SAN NICOLAS REGION: W. side of bay (*6324 A*–c. sporo.). PUERTO GALLANT REGION: B. Fortescue (5979 B); Pto. Gallant, 20 April 1896, *Dusén 280* as *L. cunninghamii* (G); *ibid.*, 20 April 1896, *Dusén 282* as *Lophocolea fuscovirens* (S-PA). PUERTO CUTTER REGION: At copper mine (*2293 A*–c. per.).

Lophocolea muricata (Lehm.) Nees

Jungermannia muricata Lehm. Linnaea 4: 363. 1829. *Lophocolea muricata* (Lehm.) Nees *in* G. L. & N. Syn. Hep. 169. 1845. Original material: South Africa, Cape Prov., Table Mt., *Ecklon (non vidi)*.

Ecology-Phytogeography.—This pan-tropical species (see map in Grolle, 1969b) is represented by only a single Brunswick Peninsula collection, which is the southernmost occurrence of the taxon. It occurred on a very large rock in a *Nothofagus betuloides-Drimys* forest.

Brunswick Peninsula Specimen Seen.—SENO OTWAY REGION: B. Camden (*2014*–c. per.+♂).

Lophocolea otiphylla (Hook. f. & Tayl.) Mitt.

Jungermannia otiphylla Hook. f. & Tayl. Lond. J. Bot. 3: 466. 1844. *Lophocolea otiphylla* (Hook. f. & Tayl.) Mitt. *in* Hook. f. Bot. Ant. Voy. 3: 226. 1859. Original material: Chile, Prov. Magallanes, I. Hermite, *Hooker* (NY!, S-PA!, W–cited in Grolle, 1962).

Chiloscyphus notophylloides Mass. Nuovo G. Bot. Ital. I. 17: 230. *pl. 19, f. 17.* 1885, *syn. fide* Bescherelle & Massalongo (1889). Original material: Chile, Prov. Magallanes, I. Basket, June 1882, *Spegazzini*, (FH!, *ex hb.* Massalongo).

Leioscyphus oppositifolius Steph. K. Svenska VetenskAkad. Handl. 46 (9): 38. *f. 13 e.* 1911, *syn. fide* Grolle (1962). Original material:

Chile, Prov. Magallanes, Cta. Barrow, *Skottsberg* (S–cited in Grolle, 1962).

Remarks.—*Lophocolea otiphylla* may possibly be confused with *L. austrigena,* another entire-leaved member of the genus. *Lophocolea otiphylla* has widely reniform leaves which are connate dorsally, expanded near the ventral-basal portion, and has underleaves never connate with the leaves or strongly convex to canaliculate. *Lophocolea austrigena* has orbicular to wide ovate leaves which are not connate dorsally or expanded near the ventral-basal portion, and has underleaves which are connate on one side and often strongly convex (recurved) to canaliculate.

The ventral leaf margin plus the expanded ventral portion of the leaf may be slightly inflexed giving the leaf an adaxial concavity. When this occurs (as in *Engel 6064 A)* the plants bear a superficial resemblance to hygrophilus forms of *Clasmatocolea humilis. Lophocolea otiphylla,* however, may be immediately distinguished by the dorsally connate and ventrally expanded leaves, neither of which occur in *C. humilis.*

Ecology.—Within evergreen *Nothofagus* forests where there is considerable moisture available, such as in wet depressions, near streams, and on moist, shaded cliff faces.

Phytogeography.—Tierra del Fuego, Patagonian Channels, north in Valdivian region to (?) 36°43′ S. and central Chile (Valparaiso, !).

The reports in Stephani (1900) (Valdivian) are erroneous; those from the Río Aisen valley are misdeterminations of *Lophocolea austrigena,* while those from I. Guaitecas are misdeterminations of *Clasmatocolea humilis.* The records in Herzog (1939) as well as all Falkland Island reports of this species are misdeterminations of *Clasmatocolea humilis.*

Literature Record.—*Skottsberg & Halle*–B. Arauz (Stephani, 1911).

Brunswick Peninsula Specimens Seen.—BAHIA SAN NICOLAS REGION: E. side of bay *(6402).* PUERTO GALLANT REGION: NE side of Pto. Gallant *(6043 A, 6052 B, 6064 A & 6067 C).* PUERTO CUTTER REGION: Between copper mine and river S. of mine *(2161 B).*

Lophocolea sabuletorum (Hook. f. & Tayl.) G. L. & N.

Jungermannia sabuletorum Hook. f. & Tayl. Lond. J. 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. Lond. J. Bot. 3: 469. 1844, *syn. nov. Lophocolea rivalis* G. L. & N. Syn. Hep. 701. 1847. Lectotype *(nov.):* Falkland Is., Port Louis, *Hooker* (NY!–c. ♂).

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 ± large and very flaccid, and have a light brown coloration. I have designated a Hooker collection (♂) 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 one-half but may occasionally be bifid to one-third or to two-thirds and margins entire to 1-dentate. *Leptoscyphus expansus* is fortunately often fertile, and the bilaterally compressed perianths will immediately distinguish it.

Phytogeography.—Falkland Islands, I. Grande de Tierra del Fuego, southern Patagonian Channels (Brunswick Peninsula), the Valdivian region, and Tristan da Cunha.

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, *Dusén* as *L. microstipula* (FH–c. per.). PUERTO GALLANT REGION: Pto. Gallant, 20 April 1896, *Dusén s. n.* as *Lophocolea fuscovirens* (S-PA); NE side of Pto. Gallant *(6010)*. PUERTO CUTTER REGION: At copper mine *(2268 & 2295 A)*.

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)*.

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 (one 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 Hepaticarum*.

Ecology.—Only in the wet, western end of the peninsula, and here occasionally in pendent sheets of vegetation along the coast.

Phytogeography.—Falkland Islands, southern Patagonian Channels (Brunswick Peninsula), the Valdivian region (West Patagonian zone), and Juan Fernandez (see pl. 8).

Brunswick Peninsula Specimens Seen.—PUERTO CUTTER REGION: N. side of copper mine *(2303 & 2308 B)*.

Lophocolea textilis (Hook. f. & Tayl.) G. L. & N.

Jungermannia textilis Hook. f. & Tayl. Lond. J. Bot. 3: 468. 1844. *Lophocolea textilis* (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 696. 1847. Lectotype *(nov.)*: Falkland Is., *Hooker* (FH!–c. ♂).

Lophocolea campanulata Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6): 34. 1900, *syn. nov.* Original material: Chile, Prov. Aisén, R. Aisén Valley, ca. 200 m., 19 January 1897, *Dusén 260* (G!–c. per., without specific locality, NY!–c. per., UPS!–c. per.).

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.—Falkland Islands, 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 (see pl. 11).

There have been no reports of the species in West Patagonia north of I. Guaitecas. I regard the New Zealand report in Mitten (1854) as doubtful. Hodgson (1953) includes *L. textilis* in the synonymy of *L. bidentata.*

Literature Records.—*Dusén*–Cabo Froward (Stephani, 1901a), Punta Arenas (Stephani, 1906).

Brunswick Peninsula Specimens Seen.—PUNTA ARENAS REGION: Punta Arenas, *Dusén 20* (FH–c. sporo., NY as *L. irregularis* —c. sporo., S-PA as *L. irregularis*–c. sporo.); R. de las Minas, 16 February 1908, *Halle 21* as *L. chilensis* (BM, S-PA); E. of Mina Loreto on S. side of R. de las Minas, ca. 215 m. *(1910).* PUERTO DEL HAMBRE REGION: Near Fuerte Bulnes, *Hatcher 1-8, 4-7, 6-9* (UW-M). PUERTO SAN ISIDRO: 12 February 1929, *Roivainen 2420, 2421* & *2430* (H). BAHIA SAN NICOLAS REGION: W. side of bay *(6312).*

Lophocolea Species Excluded from the Brunswick Peninsula

1. *Lophocolea bispinosa* (Hook. f. & Tayl.) G. L. & N.

Jungermannia bispinosa Hook. f. & Tayl. Lond. J. Bot. 3: 378. 1844. *Lophocolea bispinosa* (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 162. 1845. Original material: Campbell Is., *Hooker (non vidi).*

Reported by Massalongo (1885, 1927) for a Spegazzini collection from Punta Arenas. The report, however, is erroneous as it is based upon a misdetermination of *Lophocolea leptantha* (*fide* NY!, VER!).

2. *Lophocolea coadunata* (Sw.) Mont.

Jungermannia coadunata Sw. Fl. Ind. Occid. 3: 1850. 1806. *Lopho-*

colea coadunata (Sw.) Mont. *in* d'Orbigny, Voy. dans l'Am. Mérid. 7: 77. 1839. Original material: Jamaica *(non vidi)*.

Reported for the Strait of Magellan by Montagne (1845), G. L. & N. (1847), and Kühnemann (1937, 1949). I regard the presence of this species in the Brunswick Peninsula as doubtful, and I am therefore excluding it from the flora.

3. *Lophocolea patulistipa* Steph.

Lophocolea patulistipa Steph. K. Svenska VetenskAkad. Handl. 46 (9): 50. *f. 18 c, d.* 1911. Lectotype *(nov.)*: Chile, Prov. Magallanes, R. Olivia, near Ushuaia, *Skottsberg s.n.* (G!).

Stephani (1911) lists the following localities for the species: Cta. Rayo, Pto. Pomar (Brunswick Peninsula), and R. Olivia, "unweit Ushuaia." Of the three syntypes from Geneva, two are referrable to *Clasmatocolea humilis*. These are labeled Patagonia austral (G 14146, which presumably represents the Pto. Pomar collection) and Patagonia (G 14145, which presumably represents the Cta. Rayo collection). The third is labeled Fuegía, original (G 14147), and as this specimen best fits the original description and figures I have designated it as the lectotype. Both the Pto. Pomar and Cta. Rayo syntypes in Skockholm (S-PA) are referable to *C. humilis*, although there are a few stems of *L. austrigena* among plants from the former locality. The underleaves of *L. patulistipa* are connate on one side and not two, as in Stephani's description.

This rare species is a close relative of *L. austrigena*. The two may be separable by underleaf characters. *Lophocolea austrigena* has entire underleaves with apices entire to bidentate to retuse, while *L. patulistipa* has underleaf margins often one dentate, with apices bifid to one-third. The later taxon has underleaves often short bifid, but never bidentate or entire.

4. *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)*.

Reported for the Brunswick Peninsula as *Lophocolea aequifolia* by Stephani (1911) for a Halle collection from between R. Amarillo and R. Colorado. The record, however, is erroneous as it is based upon a misdetermination of a specimen of *Leptoscyphus expansus* (*fide* S-PA!).

NOTES ON *Lophocolea* SPECIES

1. *Lophocolea chilensis* De Not.

Lophocolea chilensis De Not. Memorie Accad. Sci. Torino II. 16: 222. *pl. 10, f. 1-6.* 1855. *Leptoscyphus chilensis* (De Not.) Grolle *in* Herz. Revue Bryol. Lichén. 29: 187. 1960, *nom. illeg.* Original material: Chile, "Prov. Valparaiso, Valparaiso," *Puccio (non vidi).*

Reported for the Brunswick Peninsula by Stephani (1911) for a collection from R. de las Minas. The specimen on which the record is based is actually one of *Lophocolea textilis* (*fide* BM!, S-PA!). As discussed in Grolle (1962, p. 60), the identity of *L. chilensis* is questionable.

2. *Lophocolea microstipula* Steph.

Lophocolea microstipula Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6): 43. 1900. Original material: Chile, Prov. Aisén, R. Aisén Valley, *Dusén (non vidi).*

Reported for the Strait of Magellan region by Stephani (1906) for Cunningham and Dusén collections. While I have not seen the Cunningham material, the Dusén collection is one of *L. sabuletorum* (*fide* FH!). *Lophocolea microstipula* and *L. sabuletorum* may eventually be found to be conspecific.

3. *Lophocolea virens* Tayl.

Lophocolea virens Tayl. *in* Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 17): 20. 1901, *nom. nud.*

Stephani (1901a) listed the following localities for *L. virens:* Punta Arenas, Cabo Froward, Ushuaia, and Isla Desolación, Pto. Angosto. I have not seen the Brunswick specimens (Punta Arenas and Cabo Froward), but the specimen from I. Desolación, Pto. Angosto is *Chiloscyphus pallido-virens* (*fide* S-PA!) and that from Ushuaia is *Chiloscyphus hookeri* var. *hookeri* (*fide* S-PA!).

SACCOGYNIDIUM

Grolle, J. Hattori Bot. Lab. 23: 43. 1960.

Saccogynidium vasculosum (Hook. f. & Tayl.) Grolle

Jungermannia vasculosa Hook. f. & Tayl. Lond. J. 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-PA!).

Remarks.—Grolle (1960b, 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.—Quite common in the Falkland Islands, but rare on the mainland. Collected but once in the Brunswick Peninsula, at the margin of a pool in an open *Empetrum-Nothofagus* mosaic in the B. San Nicolas region.

Phytogeography.—Falkland Islands and Patagonian Channels. As discussed above, the remaining reports are erroneous.

Brunswick Peninsula Specimen Seen.—BAHIA SAN NICOLAS REGION: Ridge between B. Bougainville and B. San Nicolas, ca. 155 m. *(6426).*

STOLONOPHORA

Engel & Schust. Fieldiana, Bot. 36: 111. 1975.

Stolonophora abnormis (Besch. & Mass.) Engel & Schust.

Leioscyphus (?) *abnormis* Besch. & Mass. Bul. Mens. Soc. Linn. Paris 1: 629. 1886. *Lophocolea abnormis* (Besch. & Mass.) Steph. Bull. Herb. Boissier II. 6 (7): 548. 1906 (=Spec. Hep. 3: 62). *Clasmatocolea abnormis* (Besch. & Mass.) Grolle, Revue Bryol. Lichén. 29: 71. 1960. *Stolonophora abnormis* (Besch. & Mass.) Engel & Schust. Fieldiana, Bot. 36: 114. 1975. Original material: Chile, Prov. Magallanes, I. Hoste, *Hyades* (FH!).

Jamesoniella gracilis Gola, Nuovo G. Bot. Ital. II. 29: 164. 1923, *syn. nov.* Original material: Chile, Prov. Magallanes, B. Ainsworth, (Ghiacciaio), 27 February 1913, *De Gasperi s. n.* (FI!).

Remarks.—This is a most distinctive taxon and should not be confused with any other member of the Lophocoleaceae complex. The following features will immediately identify the plant: a) erect growth; b) presence of stolons; c) deep brown pigmentation; d) subtransversely oriented leaves; e) moderately to distinctly thick-walled leaf cells; f) and small inconspicuous underleaves which are linear in shape and possess ± setaceous segments. Underleaves should be searched for toward the stem apices.

See Engel & Schuster (1975) for notes on relationships of the species.

Ecology-Phytogeography.—I collected *S. abnormis* but twice in the Brunswick Peninsula—in the bed of and banks of a shallow, rather rapid moving stream in the evergreen forest region. In the Magellanian region the species is known from Tierra del Fuego and in the Patagonian Channel region only from the Brunswick Peninsula and I. Pacheco (52°17′ S.). Also known from near Concepción [ca. 36°50′ S. in Prov. Concepcion, leg. *Dusén,* (S-PA!)] in the Valdivian region. Arnell (1958) reports the species from Tristan da Cunha.

This is the first authentic record of the species from the Brunswick Peninsula as the report in Stephani (1911) is actually based upon a specimen of *Leptoscyphus expansus* (*fide* S-PA!).

Literature Records.—*Anonymous*–Strait of Magellan (Bonner, 1963 as *Clasmatocolea abnormis*); *Skottsberg & Halle*–Pto. Pomar (Stephani, 1911 as *Lophocolea abnormis*).

Brunswick Peninsula Specimens Seen.—PUERTO GALLANT REGION: NE side of Pto. Gallant (*6065 D*–c. per. & *6092*–c. per.+sporo.).

Family PLAGIOCHILACEAE

(Jørg.) K. Müll. (Freib.) *in* Rabenhorst, Kryptogamenfl. 6 (2): 877. 1956. Jungermaniaceae (sic) Tribus Plagiochileae Jørg. Bergens Mus. Skr. 16: 61, 172. 1934.

PLAGIOCHILA

(Dum.) Dum. Recueil Obs. Jungerm. 14. 1835. *Radula* sect. *Plagiochila* Dum. Syll. Jungerm. 42. 1831.

Key to the Brunswick Peninsula Species of *Plagiochila*[1]

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 2
  2. Leaf margins with teeth present on entire margin (teeth smaller and more sparing on strongly recurved dorsal margin); teeth spinose, with tip cells usually more than 3.0 times as long as wide, especially on ventral margin. Well developed axes (5.0-)6.0-8.8 mm. wide 3
  2. Leaf margins, *at least* in basal one-half of dorsal margin, entire, or if teeth on entire margin as in Brunswick plants of *P. gayana,* then axis width 3.0 mm. or less; teeth small, with tip cells usually less than 3.0 mm. times as long as wide 5
3. Leaves widest at the middle, oblong or oblong-ovate .... *P. dusenii*
3. Leaves widest at the base, broadly ovate or ovate-oblong 4
  4. Leaf apices rounded; teeth on leaf margin small, on ventral margin usually 1-3 celled .... *P. duricaulis*
  4. Leaf apices truncate, and usually with 2-3 large teeth; teeth on leaf margin large, on ventral margin usually 2-3 cells wide at the base and 4-6 or more cells long .... *P. bispinosa*
5. Branches frequent, forming a somewhat flabellate or palmate habit. Apices of branches often attenuate 6
5. Branches moderate or few in number, not forming flabellate or palmate habit, main shoot always distinct 8
  6. Leaves broadly ovate. Teeth of leaf margins small to large triangular, (1-)2-6(-9) cells wide at the base, with tip cells less than 2.1 times as long as wide; leaves occasionally appearing bifid .... *P. arborescens*
  6. Leaves oblong-ovate 7
7. Leaves with ventral margins densely spinose dentate from base to apex, the apices with small teeth; marginal cells often with ± thickened outer walls forming a pale brown border on leaf margin .... *P. neesiana*
7. Leaves with ventral margins irregularly dentate or entire, the apices mostly shallowly bilobed or trilobed; marginal cells not with thickened outer walls, not with pale brown border on leaf margin .... *P. oligodon*
  8. Leaves small, scalelike, strongly appressed to stem (the habit thus seemingly filiform); leaf cell walls equally thickened .... *P. dura*
  8. Leaves large, widely patent, never appressed to stem; leaf cell walls thin to moderately thickened but never equally thick walled 9
9. Leaves broadly ovate or suborbicular (occasionally subreniform, obovate, subquadrate or ovate-quadrate, *cf. P. ansata* variants), length/width ratio usually 0.8-1.5 10
9. Leaves oblong or rectangular or sometimes oblong-ovate, length/width ratio more than 1.2 19
  10. Median leaf cells small, usually 14-20(-26)×12-25(-30) μ or less 11
  10. Median leaf cells large, usually 30-40×25-35 μ or more 17
11. Leaf margins ciliate-laciniate, or if dentate, then with teeth usually more than

[1]Key initially prepared by Dr. H. Inoue, but freely modified by the author.

2 celled. Trigones large and knotlike in basal two-thirds of leaf, frequently absent or small in upper one-third of leaf; underleaves of 1-2 uniseriate, filamentous segments; perianths (mature) pyriform, mouth dentate-long ciliate *P. gayana*

11. Leaf margins denticulate, teeth mostly 1-2 celled, margins occasionally entire, but never ciliate-laciniate 12
   12. Axes small in size, 2 mm. or less wide 13
   12. Axes medium or large in size, more than 2 mm. wide 15
13. Leaf margins often entire, or if dentate, then with teeth 1(-2) celled, very rarely more than 2 celled; dorsal leaf margins usually weakly to moderately recurved, only occasionally strongly recurved or revolute. Trigones of leaf cells absent or small; plants of coastal rocks subject to tidal influence. .... *P. pseudansata*
13. Leaf margins consistently dentate, never entire, teeth 1-6 celled; dorsal leaf margins consistently strongly recurved to revolute 14
   14. Leafy branches rather frequent; leaves broadly ovate or suborbicular, being 1.0-1.1 times as long as wide .... *P. parvidens*
   14. Leafy branches very few (or with lower, rhizomatous portion freely branched), mostly simple; leaves distinctly oblong or oblong-ligulate, being 1.2-1.4 times as long as wide .... *P. remotidens*
15. Leaves closely imbricated, with not or sometimes short decurrent dorsal base. Ventral margin often undulate .... *P. equitans*
15. Leaves remote, with long decurrent dorsal base. Ventral margin usually plane, occasionally undulate 16
   16. Ventral leaf base long decurrent (thus leaves strongly conduplicate); teeth present on entire leaf margin .... *P. cymbiformis*
   16. Ventral leaf base not or short decurrent (leaves never conduplicate); teeth absent from dorsal leaf margin .... *P. anthracina*
17. Dorsal margin not revolute, hardly decurrent at base; trigones of leaf cells absent; leaves obliquely spreading; plants soft textured, pale green . *P. latifrons*
17. Dorsal margin weakly to strongly revolute, moderate to long decurrent at base; trigones of leaf cells large, nodulose, truncate; leaves laterally appressed or subobliquely spreading (to usually not more than 45°); plants rigid, deep brown or yellowish brown 18
   18. Dorsal stem surface widely exposed, not hidden by the leaves; leaves asymmetric, suborbicular, subreniform, obovate, subquadrate or ovate-quadrate, usually remote; ventral leaf margin entire, rarely with an isolated tooth. Perianth long clavate, slightly inflated except at the apex; apex truncate, mouth spinosely dentate .... *P. ansata*
   18. Dorsal stem surface nearly or totally hidden by the leaves; leaves broadly or narrowly ovate, closely imbricate; ventral leaf margin spinosely toothed, rarely entire. Leaves with dorsal, basal portion ± *adaxially* inflated; axes large, robust, usually 2.5-3.0 mm. wide; branches few, leafy or flagelliform, the latter common .... *P. elata*
19. Axes with a *lophocoleoid* facies in dorsal view; leaves frequently subrectangular in shape, often appearing bifid or trifid, apices often transversely or obliquely truncate. Ventral leaf margins with teeth-cilia when present, usually restricted to apical portion .... *P. fuegiensis*

19. Axes with a *plagiochiloid* facies; leaves oblong, oblong-ovate, oblong-obovate or lingulate in shape, apices rounded. Ventral leaf margins toothed from base to apex, or sometimes entire 20
    20. Leaf margins (except in basal one-half of dorsal margin) densely toothed, teeth spinose 21
    20. Leaf margins entire, or with a few teeth from distal half of ventral margin to apex (never on dorsal margin), teeth triangular, not spinose 22
21. Teeth on leaf margin irregular in size, (1-)2-4 cells long, absent from basal portion of ventral margin; leaf cells thin walled, trigones absent or minute *P. engelii*
21. Teeth on leaf margin rather regular in size, 1-2 cells long, present to the base of ventral margin; leaf cells ± thick walled, trigones distinct, acute *P. jacquinotii*
    22. Leaves oblong-obovate or ligulate (with widest portion ca. two-thirds the length); margins entire or with 1-3 small, triangular teeth at or near apices; median leaf cells usually 25-36(-51)×23-29(-34) μ. Leaves usually remote (contiguous in very robust plants); underleaves of 2-4 uniseriate filamentous segments; trigones of leaf cells medium to large and nodulose ..... *P. obovata*
    22. Leaves oblong-ovate; margins usually with two prominent teeth on apex, and 1-4 small teeth on distal portion of ventral margin; median leaf cells usually 15-21×12-20 μ .... *P. rectangulata*

Plagiochila ansata (Hook. f. & Tayl.) G. L. & N.

Jungermannia ansata Hook. f. & Tayl. Lond. J. Bot. 3: 457. 1844. *Plagiochila ansata* (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 649. 1847. Original material: Falkland Is., *Hooker* (FH!).

Ecology.—Only within the evergreen forest region and primarily in exposed sites. Particularly common on the sides and apices of bryophyte mounds in the "bryophyte rich facies," and commonly intermixed with other Hepaticae, particularly *Anastrophyllum involutifolium, Adelanthus lindenbergianus, Gackstroemia magellanica, Jamesoniella colorata,* and *Riccardia prehensilis.*

Phytogeography.—Falkland Islands, Tierra del Fuego, the Patagonian Channels, 44°19′ S. in the Valdivian region, Nightingale Island (250 m.) and Inaccessible Island (450 m.).

Inoue & 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.

Literature Records.—*Anonymous*–Strait of Magellan (Kühnemann, 1937, 1949); *Cunningham, Spegazzini*–Strait of Magellan (Stephani, 1904).

Brunswick Peninsula Specimens Seen.—BAHIA SAN NICOLAS

REGION: W. side of bay *(6320 & 6330)*; E. side of bay (*6394 G*–c. ♂). PUERTO GALLANT REGION: NE side of Pto. Gallant *(6022 C, 6053 D)*. PUERTO CUTTER REGION: Between copper mine and river S. of mine *(2138 A, 2157 C, 2158*–c. ♂, *2161 C, 2163 D & 2179 B)*; W. of copper mine (*2225 B*–c. per. & *2234 D*–c. per.).

Plagiochila anthracina Inoue

Plagiochila anthracina Inoue, Bull. Natn. Sci. Mus., Tokyo 15: 173. *f. 1.* 1972. Holotype: Chile, Prov. Magallanes, NE side of Pto. Gallant, *Engel 6001* (TNS!).

Phytogeography.—Known only from the type collection.

Plagiochila arborescens Steph.

Plagiochila arborescens Steph. K. Svenska VetenskAkad. Handl. 46 (9): 26. *f. 10 a.* 1911. Original material: Chile, Prov. Magallanes, I. Felix, *Skottsberg* and/or *Halle (non vidi)*.

Phytogeography.—Tierra del Fuego and southern Patagonian Channels (Brunswick Peninsula).

Brunswick Peninsula Specimen Seen.—PUERTO GALLANT REGION: NE side of Pto. Gallant *(6023)*.

Plagiochila bispinosa Lindenb.

Plagiochila bispinosa Lindenb. *in* Gott. Annls Sci. Nat. IV. 8: 326. *pl. 11, f. 7-13.* 1857. Original material: Chile, without specific locality, *Gay*, "Herb. Mus. Paris, n°42" *(non vidi)*.

Phytogeography.—Tierra del Fuego, Patagonian Channels, and Valdivian region north to 39°16′ S.; also known from Andean Patagonia (Puerto Blest).

Literature Records.—*Anonymous*–Strait of Magellan (Kühnemann, 1937, 1949); *Cunningham*–Strait of Magellan (Stephani, 1904).

Plagiochila cymbiformis Inoue

Plagiochila cymbiformis Inoue *in* Engel, Bryologist 79: 514. 1976. Holotype: Chile, Prov. Magallanes, F. Silva Palma, Angostura Titus, R. Raul, 9 January 1973, *Pisano V. 3842* (F!).

This species is known only from the type collection.

Plagiochila dura De Not.

Plagiochila dura De Not. Memorie Accad. Sci. Torina II. 16: 214. *pl. 2, f. 1-5.* 1855. Original material: Chile, "Prov. Valparaiso, Valparaiso," *Puccio (non vidi).*

Phytogeography.—(?)Tierra del Fuego, Patagonian Channels and Valdivian region north to 39°38′ S.

Literature Record.—*Couteaud, Cunningham*–Strait of Magellan (Stephani, 1904).

Plagiochila duricaulis (Hook. f. & Tayl.) G. L. & N.

Jungermannia duricaulis Hook. f. & Tayl. Lond. J. Bot. 3: 458. 1844. *Plagiochila duricaulis* (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 641. 1847. Original material: Chile, Prov. Magallanes, I. Hermite, *Hooker (non vidi).*

Plagiochila leguillovii Gott. Annls. Sci. Nat. IV. 8: 331. 1857, *syn. fide* Stephani (1904). Original material: Chile, Prov. Magallanes, B. San Nicolas and B. Bougainville, *Le Guillou (non vidi).*

Ecology.—On soil or on vegetation over rotted logs in well-shaded evergreen *Nothofagus* forests. Apparently confined to the wettest portions of the peninsula.

Phytogeography.—Tierra del Fuego and Patagonian Channels north to 46°50′ S. (Peninsula Tres Montes).

Literature Records.—*Anonymous*–Strait of Magellan (Kühnemann, 1949); *Astrolabe*–Strait of Magellan (Bonner, 1962 as *P. leguillovii*); *Cunningham, Schubert*–Strait of Magellan (Stephani, 1904); *Le Guillou*–Strait of Magellan (Dugas, 1929; Stephani, 1904); *Roivainen*–Pto. San Isidro (Buch, 1934); *Savatier*–Pto. Gallant (Bescherelle & Massalongo, 1889), Strait of Magellan (Dugas, 1929; Stephani, 1904).

Brunswick Peninsula Specimens Seen.—CABO SAN ISIDRO: 13 February 1929, *Roivainen 2391* (H). BAHIA DEL INDIO: Lote San Isidro, R. Yumbel, *Pisano 4013* (F). BAHIA SAN NICOLAS REGION: W. side of bay *(6339, 6360 & 6368).* PUERTO GALLANT REGION: B. Fortescue *(5958 B & 5960);* Pto. Gallant, 1879, *Savatier 213* (PC). PUERTO CUTTER REGION: Between copper mine and river S. of mine *(2152);* base of M. Condor *(2323 A & 2334 C).*

Plagiochila dusenii Steph.

Plagiochila dusenii Steph. Bull. Herb. Boissier II. 4 (10): 979. 1904

(=Spec. Hep. 2: 475). Original material: Chile, Prov. Magallanes, Strait of Magellan, without specific locality, *Dusén (non vidi).*

Phytogeography.—Known only from type.

Literature Record.—*Anonymous*–Strait of Magellan (Bonner, 1962).

Plagiochila elata Tayl.

Plagiochila elata Tayl. Lond. J. Bot. 5: 259. 1846. Original material: Chile, Prov. Chiloé, I. Chiloé, *Cuming 1449,* hb. Hooker (NY)–cited in Inoue (1972).

Plagiochila ambusta Mass. Nuovo G. Bot. Ital. I. 17: 210. *pl. 28, f. 38.* 1885, *syn. fide Stephani* (1904). *Plagiochila patagonica* var. γ. *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: 626. 1886, *syn. fide* Stephani (1904). Original material: Chile, Prov. Aisén, Pt. Barroso, *Savatier* (G)–cited in Inoue (1972).

Phytogeography.—Falkland Islands, 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.

Literature Records.—*Cunningham*–Strait of Magellan (Stephani, 1904); *Dusén*–Cabo Froward (Stephani, 1901a as *P. ambusta*), Strait of Magellan (Stephani, 1904); *Naumann*–Punta Arenas (Schiffner, 1890 as *P. patagonica* f. *typica* and f. *minor*), Strait of Magellan (Stephani, 1904).

Brunswick Peninsula Specimens Seen.—PUERTO SAN ISIDRO: 12 February 1929, *Roivainen 2409* as *P. homomalla* (H). PUERTO CUTTER REGION: At copper mine *(2270 & 2284).*

Plagiochila engelii Inoue

Plagiochila engelii Inoue, Bull. Natn. Sci. Mus., Tokyo 15: *171. f. 1.* 1972. Holotype: Chile, Prov. Magallanes, Pto. Cutter, base of M. Condor, *Engel 2336* (TNS!).

Phytogeography.—Known only from the type collection.

Plagiochila equitans Gott.

Plagiochila equitans Gott. Annls. Sci. Nat. IV. 8: 331. 1857. Original material: Chile, Prov. Magallanes, B. San Nicolas and B. Bougainville, *Le Guillou* (PC–*non vidi*).

Phytogeography.—Tierra del Fuego, southern Patagonian Channels (Brunswick Peninsula), and Valdivian region.

The report from Tristan da Cunha in Arnell (1958) requires confirmation.

Literature Records.—*Anonymous*–Rada York (Carl, 1931); Strait of Magellan (Kühnemann, 1937, 1949); *Astrolabe*–B. San Nicolas and B. Bougainville (Bonner, 1962); *Lechler*–Strait of Magellan (Dugas, 1929; Stephani, 1904); *Le Guillou*–Strait of Magellan (Stephani, 1904); *Skottsberg & Halle*–Pto. Cutter (Stephani, 1911).

Brunswick Peninsula Specimen Seen.—LAGUNO EL PARRILLAR REGION: Just E. of lake, ca. 365 m. *(2088)*.

Plagiochila fuegiensis (Mass.) Besch. & Mass.

Leioscyphus repens? var. *β fuegiensis* Mass. Nuovo G. Bot. Ital. I. 17: 212. *pl. 28, f. 37.* 1885. *Leioscyphus fuegiensis* (Mass.) Besch. & Mass. Bul. Mens. Soc. Linn. Paris 1 (79): 630. 1886. *Plagiochila fuegiensis* (Mass.) Besch. & Mass. Mission Scient. Cap Horn 5: 210. 1889. *Leptoscyphus fuegiensis* (Mass.) Kühnem. Revta Cent. Estud. Doct. Cienc. Nat., B. Aires 1: 176. 1937. *Mylia fuegiensis* (Mass.) Kühnem. Lilloa 19: 341. 1949. Original material: Argentina, Terr. Tierra del Fuego, B. Slogget, *Spegazzini (non vidi)*.

Plagiochila filipendula Steph. K. Svenska VetenskAkad. Handl. 46 (9): 30. *f. 12 b.* 1911, *syn. fide* Inoue *(in litt.)*. Original material: Chile, Prov. Chiloé, R. Pudeto, *Skottsberg* and/or *Halle (non vidi)*.

Phytogeography.—Tierra del Fuego, Patagonian Channels, and north in Valdivian region to 39°38′ S., 72°00′ W. (C. Lungoico).

Brunswick Peninsula Specimens Seen.—PUERTO SAN ISIDRO: 12 February 1929, *Roivainen 2418, 2419* as *Lophocolea leptantha* (H). BAHIA SAN NICOLAS REGION: E. side of bay *(6390 B, 6394 C, 6411 & 6414 C)*.

Plagiochila gayana Gott.

Plagiochila gayana Gott. Annls. 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)*.

Phytogeography.—Disjunct in distribution; Falkland Islands, southern Patagonian Channels (Brunswick Peninsula), Valdivian region to 41°12′ S. and Juan Fernandez (400-600 m. on Mas a Tierra).

Brunswick Peninsula Specimen Seen.—PUERTO GALLANT REGION: B. Fortescue (*5999*–c. per.).

Plagiochila hirta Tayl.

Plagiochila hirta Tayl. *in* Hook. f. Bot. Ant. Voy. 2: 134. 1854. Original material: Falkland Is., *Hooker 199b* (FH!); Chile, Prov. Magallanes, I. Hermite, *Hooker (non vidi).*

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.—Only in the very wet western end of the peninsula, where often a component of pendent sheets of vegetation (often only of bryophytes) in forested areas.

Phytogeography.—Falkland Islands, Tierra del Fuego, and north in the Patagonian Channels (leg. *Engel,* unpublished) to 44°19′ S. in West Patagonia.

Literature Records.—*Cunningham, Schubert*–Strait of Magellan (Stephani, 1903); *Dusén*–Strait of Magellan (Carl, 1931); *Skottsberg & Halle*–Pto. Cutter (Stephani, 1911).

Brunswick Peninsula Specimens Seen.—BAHIA SAN NICOLAS REGION: W. side of bay *(6367 B).* PUERTO CUTTER REGION: Between copper mine and river S. of mine *(2164);* N. of copper mine *(2215 A);* slightly W. of copper mine *(2258, 2264 A);* base of M. Condor *(2347).*

Plagiochila jacquinotii Mont.

Plagiochila jacquinotii Mont. *in* d'Urville, Voy. au Pôle Sud (Bot.) 1: 273. 1845. Original material: Chile, Prov. Magallanes, Strait of Magellan, without specific locality, *Dumont d'Urville (non vidi).*

Phytogeography.—Reported from Tierra del Fuego, Patagonian Channels, and the Valdivian region.

Literature Records.—*Anonymous*–Strait of Magellan (Kühnemann, 1937, 1949); *Dumont d'Urville*–Strait of Magellan (G. L. & N., 1847; Montagne, 1852, 1856; Stephani, 1904; Bonner, 1962);

Lechler–Rada York (Dugas, 1929), Strait of Magellan (Stephani, 1904).

Plagiochila latifrons Gott. & Hampe

Plagiochila latifrons Gott. & Hampe *in* Hampe, Linnaea 27: 553. 1854. Original material: Chile, Prov. Magallanes, Rada York, *Lechler (non vidi).*

Phytogeography.—Southern Patagonian Channels (Brunswick Peninsula) and to 39°36′ south in the Valdivian region.

Literature Records.—Anonymous–Strait of Magellan (Lechler, 1857); *Dusén*–Strait of Magellan (Stephani, 1904); *Lechler*–Rada York (Dugas, 1929; Bonner, 1962), Strait of Magellan (Stephani, 1904).

Plagiochila neesiana Lindenb.

Plagiochila neesiana Lindenb. Spec. Hep. 1 (2-4): 71. 1840. Original material: Juan Fernandez, *Bertero 1600 (non vidi).*

Phytogeography.—Southern Patagonian Channels (Brunswick Peninsula and S. Skyring), Valdivian region, and Juan Fernandez.

Literature Record.—Dusén–Cabo Froward (Stephani, 1901a).

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* and/or *Halle (non vidi).*

Phytogeography.—Falkland Islands, southern Patagonian Channels (Brunswick Peninsula and 50°21′ S., 74°47′ W.); reported from Mas Afuera, Juan Fernandez (Arnell, 1957).

Brunswick Peninsula Specimen Seen.—BAHIA SAN NICOLAS REGION: E. side of bay (*6403*–c. per.).

Plagiochila oligodon Mont.

Plagiochila oligodon Mont. Annls. Sci. Nat. III. 4: 348. 1845. Original material: Chile, without specific locality, *Gay*, "Herb. Mus. Par." *(non vidi).*

Phytogeography.—This species occurs in (?)Tierra del Fuego, (?)Patagonian Channels, and Valdivian region.

Literature Record.—Dusén–Strait of Magellan, without specific locality (Stephani, 1903).

Plagiochila parvidens Inoue

Plagiochila parvidens Inoue, Bull. Natn. Sci. Mus., Tokyo 15: 174. *f. 2.* 1972. Holotype: Chile, Prov. Magallanes, S. Otway, B. Camden, *Engel 2025A* (TNS!).

Phytogeography.—Known only from the type collection.

Plagiochila pseudansata Inoue

Plagiochila pseudansata Inoue, Bull. Natn. Sci. Mus., Tokyo 15: 176. *f. 2.* 1972. Holotype: Chile, Prov. Magallanes, Pto. Bueno, *Engel 5616 A* (TNS!).

Ecology.—Collected only in the very wet western end of the peninsula, where on coastal rocks subject to at most moderate tidal action, with a fresh water supply from rain and forest run-off. The species is otherwise known only from tidal zone regions (see Engel & Schuster, 1973).

Phytogeography.—Tierra del Fuego and Patagonian Channels north to 50°03′ S. (I. Grant, Pto. del Moro, leg. *Engel*); see Engel & Schuster (1973).

Brunswick Peninsula Specimens Seen.—PUERTO CUTTER REGION: At copper mine (*2288*–c. per. & *2289*); N. side of copper mine (*2302, 2309*–c. young per.).

Plagiochila rectangulata Steph.

Plagiochila rectangulata Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6): 31. 1900. Original material: Chile, Prov. Magallanes, Pto. Bueno, *Dusén (non vidi).*

Phytogeography.—(?)Tierra del Fuego, Patagonian Channels, Valdivian region (including Andean Patagonia), and Juan Fernandez.

Literature Record.—Dusén–Cabo Froward (Stephani, 1901a).

Plagiochila remotidens Steph.

Plagiochila remotidens Steph. Bull. Herb. Boissier II. 4 (10): 985. 1904 (=Spec. Hep. 2: 481). Original material: Chile, without specific locality, *Dusén, Hahn;* Prov. Magallanes, Strait of Magellan, without specific locality, *Schubert (non vidi).*

Phytogeography.—This species occurs in Tierra del Fuego, (?)Patagonian Channels, Valdivian region, and Juan Fernandez.

Literature Record.—*Schubert*-Strait of Magellan (Stephani, 1904).

Plagiochila Species Excluded from the Brunswick Peninsula

1. *Plagiochila asplenioides* (L.) Dum.

Jungermannia asplenioides L. Spec. Pl. 2: 1131. 1753. *Candollea asplenioides* (L.) Raddi, Mem. Soc. It. Mod. 18: 11. 1818. *Radula asplenioides* (L.) Dum. Comment. Bot. 112. 1822. *Plagiochila asplenioides* (L.) Dum. Recueil Obs. Jungerm. 14. 1835. Original material: Europe, India, *sin. coll. (non vidi).*

Reported for the Strait of Magellan by Montagne (1845, 1852) and Taylor & Hooker (1847b as *Jungermannia*), and Kühnemann (1937, 1949). Schuster (1959) states *P. asplenioides* is Holoarctic in distribution.

Family ACROBOLBACEAE

Hodg. Rec. Dom. Mus., Wellington 4: 117. 1962.

ACROBOLBUS

Nees *in* G. L. & N. Syn. Hep. 5. 1844.

Acrobolbus ochrophyllus (Hook. f. & Tayl.) Schust.

Jungermannia ochrophylla Hook. f. & Tayl. Lond. J. Bot. 3: 368. 1844. *Gymnomitrium ochrophyllum* (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 617. 1846. *Sphenolobus ochrophyllus* (Hook. f. & Tayl.) Steph. Bull. Herb. Boissier II. 2 (2): 165. 1902 (=Spec. Hep. 2: 157). *Acrobolbus ochrophyllus* (Hook. f. & Tayl.) Schust. Revue Bryol. Lichén. 30: 64. 1961. Original material: Auckland Island, *Hooker s.n.* (S)-cited in Grolle (1964a).

Marsupidium excisum Mitt. J. Linn. Soc. 15: 69. 1876, *syn. fide* Grolle (1964a). *Acrobolbus excisus* (Mitt.) Schiffn. *in* Engl. & Prantl, Natürl. Pflanzenfam. 1 (3, 1): 86. 1893. Original material: Îles de Kerguélen, *Moseley s.n. (non Eaton) (non vidi).*

Gymnanthe ? crystallina Mass. Nuovo G. Bot. Ital. I. 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 (1964a).

Sarcoscyphus kerguelensis Schiffn. *in* Naumann, Forschungsr. *Gazelle* 4 (4): 2. *pl. 1, f. 4.* 1890, *syn. fide* Grolle (1964a). *Marsupella kerguelensis* (Schiffn.) Steph. Bull. Herb. Boissier II. 1 (2): 170. 1901 (=Spec. Hep. 2: 31). Original material: Îles de Kerguélen, Successful Harbour, 1874, *Naumann* (G, *ex hb.* Schiffner)–cited in Grolle (1964a).

Jungermannia kerguelensis Warnst. Hedwigia 60: 71. 1918, *syn. fide* Grolle (1964a). Original material: Îles de Kerguélen, 1874, *Naumann* (B)–cited in Grolle (1964a).

Ecology.—Encountered only in the wettest portion of the peninsula, and there on branches of a shrub and mixed with *Schistochila gayana* on a rotted tree in a very protected ravine.

Phytogeography.—Pan-temperate; Falkland Islands, Tierra del Fuego, Patagonian Channels, Mas Afuera (1,350 m.), Tristan da Cunha (600-1,200 m.), South Africa (660-1,000 m.), Marion Island, Îles Crozet, Îles de Kerguélen, Campbell Island, Auckland Island, and South Island, New Zealand (1,500-1,800 m.).

Literature Records.—*Anonymous*–Strait of Magellan (Bonner, 1962 as *A. excisus*); *Skottsberg & Halle*–between R. Amarillo and R. Colorado (Stephani, 1911 as *A. excisus*).

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, *Gortner* as *A. excisus* (FH). PUERTO CUTTER REGION: At copper mine *(2271);* base of M. Condor (*2337 B*–c. marsup.).

LETHOCOLEA

Mitt. *in* Hook. f., Handb. N. Z. Flora Pt. 2. 753. 1867.

Lethocolea radicosa (Lehm. & Lindenb.) Grolle

Jungermannia radicosa Lehm. & Lindenb. *in* Lehm. Nov. Minus Cog. Stir. Pug. 6: 35. 1834. ?*Sphagnoecetis radicosa* (Lehm. & Lindenb.) Nees *in* G. L. & N. Syn. Hep. 149. 1845. *Odontoschisma radicosa* (Lehm. & Lindenb.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 419. 1877. *Lethocolea radicosa* (Lehm. & Lindenb.) Grolle, Bot. Mag. Tokyo 78: 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 (3, 1): 81. 1893. Original 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* (O)–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* (G!, 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.—Îles Crozet, Marion Island, Prince Edward Island, Falkland Islands, Tierra del Fuego, southern Patagonian Channels (Brunswick Peninsula), the Valdivian region, and Juan Fernandez.

The species is known from only a few collections, and further study may reveal the taxon has a type of subantarctic distribution.

Brunswick Peninsula Specimen Seen.—BAHIA SAN NICOLAS REGION: E. side of bay (*6414 B*–c. ♂).

Remarks.—This species may be recognized by the following ensemble of vegetative characters: a) scattered rhizoids; b) absence of underleaves; c) elongate oblong to elongate elliptic leaf shape; d) rounded or occasionally obliquely truncate leaf apices; e) conspicuously elongated basal, ventral leaf cells; f) rather large papillose cuticle; and g) medium-sized trigones of median leaf cells. See Grolle (1965a) for notes regarding *Lethocolea* species variability.

TYLIMANTHUS

Mitt. *in* Hook. f., Handb. N. Z. Flora Pt. 2. 753. 1867.

KEY TO THE BRUNSWICK PENINSULA SPECIES OF *Tylimanthus*

1. Dorsal leaf margin deflexed, rarely plane; apex bifid, never undivided; leaf margins entire; underleaves regularly produced, rudimentary ..... *T. flavicans*
1. Dorsal margin inflexed, rarely plane; apex broadly rounded, occasionally retuse, rarely bifid; leaf margins dentate to lobate, rarely entire; isolated underleaves only rarely produced .... *T. urvilleanus*

Tylimanthus flavicans (Engel & Grolle) Hässel & Solari

Marsupidium flavicans Engel & Grolle, J. Hattori Bot. Lab. 34: 438. *pl. 1-2.* 1971. *Tylimanthus flavicans* (Engel & Grolle) Hässel & Solari, Darwiniana 17: 579. 1972. Holotype: Chile, Prov. Magallanes, near Fuerte Bulnes, *Hatcher 7-10* (UWM!) (isotype–F!).

Phytogeography.—Tierra del Fuego, Patagonian Channels, and the Valdivian region including Andean Patagonia.

Brunswick Peninsula Specimens Seen.—BAHIA SAN NICOLAS REGION: E. side of bay (*6394 A*–c. sporo.+ ♂ & *6401 B*–c. ♀+old marsup.+ ♂). PUERTO GALLANT REGION: NE side of Pto. Gallant *(6057 C)*.

Tylimanthus urvilleanus (Mont.) Hässel & Solari

Plagiochila (Scapania) urvilleana Mont. Annls. Sci. Nat. II, 19: 247. 1843. *Jungermannia urvilleana* (Mont.) Hook. f. & Tayl. Lond. J. 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 urvilleanum* (Mont.) Mitt. *in* Hook. f. Handb. N. Z. Flora Pt. 2. 754. 1867. *Acrobolbus urvilleanus* (Mont.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 423. 1877. *Tylimanthus urvilleanus* (Mont.) Hässel & Solari, Darwiniana 17: 580. 1972. Original material: Strait of Magellan, *Dumont d'Urville* (PC)–cited in Hässel & Solari (1972), (STR)–cited in Engel & Grolle (1971).

Gymnanthe anderssonii Ångstr. Öfvers. K. VetenskAkad. Förh. 33 (4): 50. 1876, *syn. fide* Engel & Grolle (1971). *Tylimanthus anderssonii* (Ångstr.) Evans, Bull. Torrey Bot. Club 25: 429. 1898. Lectotype (*cf.* Engel & Grolle, 1971): Chile, Prov. Magallanes, Pto. del Hambre, *Andersson s. n.* (S-PA!).

Gymnanthe faminensis Ångstr. Öfvers. K. VetenskAkad. Förh. 33 (4): 51. 1876, *syn. fide* Engel & Grolle (1971). Lectotype (*cf.* Engel & Grolle, 1971): Chile, Prov. Magallanes, Pto. del Hambre, *Andersson s. n.* (S-PA!).

Adelanthus (?) *brecknockiensis* Mass. Nuovo G. Bot. Ital. I. 17: 213. *pl. 27, f. 35.* 1885, *syn. fide* Stephani (1908). *Marsupidium brecknockiensis* (Mass.) Schiffn. *in* Engl. & Prantl, Natürl. 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), (LPS)–cited in Hässel & Solari (1972).

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 & Skottsberg s. n.* (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 rotundifolius Steph. K. Svenska VetenskAkad. Handl. 46 (9): 26. *f. 9 h.* 1911, *syn. fide* Engel & Grolle (1971) *non T. rotundifolius* (Berggr.) Hodgs. Trans. R. Soc. N. Z. 85: 575. 1958 (*=Acrobolbus concinnus*). Lectotype (*fide* Engel & Grolle, 1971): Chile, Prov. Magallanes, S. Skyring, B. Pinto, *Skottsberg 620* (G–*non vidi*).

Remarks.—See comments in Engel & Grolle (1971) and Hässel & Solari (1972).

Ecology.—Rather common in the deciduous and forested areas of the evergreen forest regions. It "prefers" mature forests with little undergrowth and a rather sparcely covered floor. Here *T. urvilleanus* occurs on soil or on rotted logs (often in dense, pure tufts), sometimes as part of a mat of vegetation over the logs.

Phytogeography.—Falkland Islands, Tierra del Fuego, Patagonian Channels, and north in the Valdivian region to 39°38′ S.

Literature Records.—*Anonymous*–Strait of Magellan (Kühnemann, 1937, 1949 as *Marsupidium* and *Scapania*), (Bonner, 1962 as *Acrobolbus,* 1966 as *Gymnanthe*); *Andersson*–Pto. del Hambre (Ångström, 1872 as *Jungermannia,* 1876 as *Gymnanthe anderssonii*); *Cunningham*–Strait of Magellan (Stephani, 1908 as *Marsupidium*); *Dumont d'Urville*–Strait of Magellan (G. L. & N., 1844 and Montagne, 1845 as *Scapania,* 1852 and 1856 as *Gymnanthe,* Taylor & Hooker, 1847b as *Jungermannia,* Stephani, 1908, as *Marsupidium,* Bonner, 1962, as *Plagiochila*); *Hombron*–Strait of Magellan (G. L. & N. 1847 as *Scapania*); *Racovitza*–Strait of Magellan (Stephani, 1908 as *Marsupidium*); *Skottsberg*–Punta Arenas (Hässel de Menendez & Solari, 1972).

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, *Andersson* as *Tylimanthus saccatus* (S-PA); *ibid.*, *Cunningham* (FH). PUNTA ARENAS REGION: E. of Mina Loreto on S. side of R. de las Minas, ca. 215 m. (*1935*–c. ♀). RIO TRES BRAZOS REGION: Plateau above R. Tres Brazos at road crossing, ca. 160 m., *Ostafichuk 1365 B* (MSC–c. ♂). SENO OTWAY REGION: B. Camden (*2010*–c. ♀, *2030*–c. ♂ & *2043*–c. marsup.). LAGUNO EL PARRILLAR: Ridge SW of lake, *Pisano 3882, 3883* (F); near E. shore of lake, ca. 365 m. (*2098*–c. ♀). PUERTO DEL HAMBRE REGION: Near Fuerte Bulnes, *Hatcher 1-3, 1-4* & *2-2* (UW-M); N. side of R. San Juan, 1 km. from straits (*1859*–c. ♀, *1869 B*–c. ♀ & *1879*). BAHIA SAN NICOLAS REGION: W. side of bay (*6355* & *6373 B*–c. young marsup.); E. side of bay *(6416)*. PUERTO GALLANT REGION: B. Fortescue (*5957 C*–c. sporo., *5958 A, 5968* & *5975*). PUERTO CUTTER REGION: Slightly W. of copper mine *(2249)*.

Tylimanthus Species Excluded from the Brunswick Peninsula

1. *Tylimanthus tenellus* (Tayl. *ex* Lehm.) Mitt.

Gymnanthe tenella Tayl. *ex* Lehm. Nov. Minus Cog. Stir. Pug. 8: 1. 1844. *Jungermannia tenella* (Tayl. *ex* Lehm.) Hook. f. & Tayl. Lond. J. Bot. 3: 377. 1844. *Acrobolbus tenellus* (Tayl. *ex* Lehm.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 423. 1877. *Tylimanthus tenellus* (Tayl. *ex* Lehm.) Mitt. *in* Carring. & Pears. Pap. Proc. R. Soc. Tasm. 1887: 52. 1888. Original material: Tasmania, *sin. coll.*, "Herb. Tayl. et Greville" *(non vidi).*

Reported by Ångström (1872 as *Jungermannia*) for an Andersson collection from Pto. del Hambre. However, Ångström (1876) described *Gymnanthe anderssonii (=Tylimanthus urvilleanus, q. v.)* based upon this specimen. According to Hodgson (1958), *T. tenellus* occurs in Auckland, Campbell, and Antipodes Islands, New Zealand, and Tasmania.

Family CEPHALOZIACEAE

Mig. Krypt.-Fl. Deutsch . . . 1: 465. 1904.

CEPHALOZIA

(Dum.) Dum. Recueil Obs. Jungerm. 18. 1835. *Jungermannia* sect. *Cephalozia* Dum. Syll. Jungerm. 60. 1831.

KEY TO THE BRUNSWICK PENINSULA SPECIES OF *Cephalozia*

1. Leaf insertion dorsally not extending to stem midline, the stem typically with a "leaf-free strip" 2 cells broad; plants green throughout, not developing brown or purple pigments; leaf cell walls thin; gynoecia usually on short, infrequently elongating ventral-intercalary branches. Plants monoecious ..... *C. patagonica*
1. Leaf insertion dorsally nearly extending to stem midline, a distinct "leaf-free strip" lacking; plants developing brown or occasionally purple pigments; leaf cell walls uniformly thickened; gynoecia variable in position, usually on ± elongate ventral-intercalary branches, but also terminal on leading stems, on *Frullania*-type branches, occasionally on very short ventral-intercalary branches 2
   2. Stems with 11-12 rows of thick-walled cortical cells; leaves sporadically tri-lobed. Plants paroecious or sporadically heteroecious .... *C. heteroica*
   2. Stems with 13-15 rows of thin-walled cortical cells; leaves uniformly bilobed *C. badia*

Cephalozia badia (Gott.) Steph.

Jungermannia badia Gott. Ergebn. Dt. Pol.-Exped. 2 (16): 452. *pl. 1, f. 1-5.* 1890. *Lophozia badia* (Gott.) Steph. Wiss. Ergebn. Schwed. Südpolarexped. 4 (1): 8. 1905. *Cephalozia badia* (Gott.) Steph. Bull. Herb. Boissier II. 8 (7): 483. 1908 (=Spec. Hep. 3: 313). Lectotype (*fide* Grolle, 1972b): South Georgia, Köppenberg, 1883, *Will* (M–*non vidi*).

Cephalozia cucullifolia Steph. Wiss. Ergebn. Schwed. Südpolarexped. 4 (1): 2. 1905, *syn. fide* Grolle (1972b): Original material: South Shetland Islands, Nelson Island, *Skottsberg 400* (G)–cited in Grolle (1972b).

Ecology.—Single collection known for the Brunswick Peninsula collected in a *Sphagnum* bog.

Phytogeography.—Subantarctic distribution; South Shetland Islands, South Georgia, Falkland Islands, and Tierra del Fuego (L. Fagnano).

Stephani (1911, p. 57) states the L. Fagnano collection is from a "Berge am Westende von Lago Fagnano."

Brunswick Peninsula Specimen Seen.—LAGUNO EL PARRILLAR: Near E. shore of lake, ca. 365 m. *(2099).*

Cephalozia heteroica Schust. & Engel, n. sp.[1]

Planta mollis, prostrata, nitida, albida viridis ad pallidobrunnea, in partibus gynoeceis interdum purpurata. Rami frequentes, typibus intercalares-ventrales et *Frullaniae.* Caules molles; hyalodermide perspicua praedita; cortice 10-12 seriata, parietibus cellularum crassis; parietibus cellularum medullosarum crassis. Foliae succubaliter insertae, insertio fere ad mediam caulis extendens; dispositione succuba vel interdum subtransversa; foliis bifidis, interdum trifidis, usque ad ca. 0.5-0.6 divisas; lobis angustis triangularibus, leniter ad perspicue apiculatis, in ordinem uniseriatam 1-2 cellularum terminantibus.

Plantae paroicae, interdum heteroicae; caulibus gynoeciis saepe elongatis.

Holotype: Chile, Prov. Magallanes, E. side of Pto. Bueno, *Engel 5610 B* (MSC!).

Ecology.—Mixed with *Kurzia setiformis* and *Pseudocephalozia cucullata,* etc. on stream banks or dripping rocks in the evergreen *Nothofagus* region.

Phytogeography.—Brunswick Peninsula and apparently fairly common in the Magellanian Patagonian Channel region.

Brunswick Peninsula Specimens Seen.—PUERTO GALLANT REGION: NE side of Pto. Gallant *(6048 B, 6070 D).*

Cephalozia patagonica Fulf.

Cephalozia patagonica Fulf. Mem. N. Y. Bot. Gdn. 11: 319. *pl. 79, f. 7 a-g.* 1968. Holotype: Chile, Prov. Magallanes, 190 km. N. of Punta Arenas, *Fulford & Hatcher 283* (hb. Fulford–*non vidi*).

Remarks.—Fulford (1968) erroneously states the species is dioecious when actually it is monoecious. The species possesses the following characteristics not mentioned in the original description: a) ventral-intercalary flagelliform branches; b) cortical cells in 11-16 rows; c) leaves concave and with segments incurved (often distinctly so); d) dorsal margin short decurrent, at least in robust plants; and e) ventral margins of leaves often more strongly curved than the dorsal margins. The basal segment cells are 26-58 μ long $\times$ 30-49 μ wide and thus more variable than the account in Fulford (1968) would indicate.

[1]I am grateful to Dr. John Fay for assistance with the Latin diagnosis.

Ecology-phytogeography.—Known only in association with *Sphagnum.* Fulford (1968) records the species from *Sphagnum* bogs 190-198 km. north of Punta Arenas, and I gathered the plant from scattered *Sphagnum* mounds in the B. San Nicolas region.

Brunswick Peninsula Specimens Seen.—PUERTO DEL HAMBRE REGION: Pto. del Hambre (cited as "Magelhaens Sund"), *Andersson* as *Jungermannia connivens* (with *Sphagnum* sp.) (S-PA). BAHIA SAN NICOLAS REGION: Ridge between B. Bougainville and B. San Nicolas (*6419 A*–c. per., *6420 E*–c. per. & *6428 B*).

Cephalozia Species Excluded from the Brunswick Peninsula

1. *Cephalozia connivens* (Dicks.) Lindb.

Jungermannia connivens Dicks. Fasc. (IV) Pl. Crypt. Brit. p. 19. *pl. 11, f. 15.* 1801. *Blepharostoma connivens* (Dicks.) Dum. Recueil Obs. Jungerm. 18. 1835. *Trigonanthus connivens* (Dicks.) Hartm. Handb. Skand. Fl. ed. 10. p. 143. 1871. *Cephalozia connivens* (Dicks.) Lindb. Acta Soc. Sci. Fenn. 10: 238. 1872. *Eucephalozia connivens* (Dicks.) Schiffn. *in* Engl. & Prantl, Natür. Pflanzenfam. 1 (3, 1): 97. 1895. Original material: England, *non vidi.*

Reported for the Brunswick Peninsula by Ångström (1872, as *Jungermannia*) for an Andersson collection from Pto. del Hambre. The specimen on which the record is based is actually one of *Cephalozia patagonica* (*fide* S-PA!). *Cephalozia connivens* is restricted to the Northern Hemisphere; see Schuster (1974) for notes on a "rather puzzling distribution" of the species.

METAHYGROBIELLA

Schust. Bryologist 64: 205. 1961.

Metahygrobiella tubulata (Hook. f. & Tayl.) Schust. *ex* Engel

Jungermannia tubulata Hook. f. & Tayl. Lond. J. 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. Metahygrobiella tubulata* (Hook. f. & Tayl.) Schust. *ex* Engel, Bryologist 79: 514. 1976. Original material: Falkland Is., *Hooker s.n.* (BM!).

Remarks.—Schuster (1965b, 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.*

The above comments are based upon my study of type material as well as my unpublished Falkland Island collections. I did not observe the species in the Brunswick Peninsula.

Phytogeography.—Falkland Islands, Tierra del Fuego, and north in Patagonian Channels to 44°19′ S. (C. Tesoro).

Literature Records.—*Andersson*–Pto. del Hambre (Ångström, 1872 as *Jungermannia*); *Santesson*–Punta Arenas (Fulford, 1968 as *Cephalozia*).

Family CEPHALOZIELLACEAE

Douin, Mém. Soc. Bot. Fr. 29: 1, 5, 13. 1920.

ALLISONIELLA

Hodg. Trans. R. Soc. N. Z. 3: 80. 1965.

Allisoniella subbipartita (Mass.) Schust. & Engel

Cephalozia subbipartita Mass. Nuovo G. Bot. Ital. I. 17: 235. *pl. 20, f. 21.* 1885. *Cephaloziella subbipartita* (Mass.) Mass. Atti Ist. Veneto Sci. 87: 227. 1927. *Allisoniella subbipartita* (Mass.) Schust. & Engel *in* Schust. Nova Hedwigia 22: 147. 1972. Original material: Chile, Prov. Magallanes, I. Navarino and I. Basket, *Spegazzini (non vidi).*

Phytogeography.—Tierra del Fuego and southern Patagonian Channels (Brunswick Peninsula).

Brunswick Peninsula Specimens Seen.—PUERTO CUTTER REGION: Between copper mine and river S. of mine (*2161 A*–c. per.+ ♂); N. side of copper mine *(2301 D).*

CEPHALOZIELLA

(Spruce) Steph. Hedwigia 32: 318. 1893. *Cephalozia* subg. *Cephaloziella* Spruce, On Cephalozia 62. 1882.

KEY TO THE BRUNSWICK PENINSULA SPECIES OF *Cephaloziella*

1. Apical lobe cells elongated, thick walled and distinctly incurved, often clawlike; plants restricted to *Sphagnum* associations; monoecious. Plants with red pigments .... *C. verrucosa*
1. Apical lobe cells not with the above combination of characters; plants not restricted to *Sphagnum* associations; monoecious or (?)dioecious 2
    2. Gemmae present; cuticle of leaves frequently with large, warty, globular or sometimes spinelike excrescenses; plants 115-190 μ wide .... *C. gemmata*
    2. Gemmae absent; cuticle of leaves smooth, or at most with low rounded papillae; plants 170-700 μ wide .... *C. dusenii*

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 (=Spec. Hep. 3: 334). *Alobiella dusenii* (Steph.) Steph. Bull. Herb. Boissier II. 8 (8): 571. 1908 (=Spec. Hep. 3: 355), *nom. illeg., non Alobiella dusenii* Steph. Bih. K. Svenska VetenskAkad Handl. 26 (III, 6): 48. 1900. ≡*Alobiella stephanii* Bonn. Candollea 14: 98. 1953. Lectotype (*fide* Bonner 1953): Chile, Prov. Valdivia, Corral, 5 June 1896, *Dusén 94* (G!; duplicates in S-PA!–c. per., UPS!–c. per.).

Remarks.—Schuster (1972a) includes *Cephaloziella dusenii* in the synonymy of *C. byssacea* subsp. *byssacea* (Roth) Warnst. Schuster (1972a, p. 194) states he has seen "the type" of *C. dusenii* and lists the following label information, "(Chile: Corral, June 6, 1896, *Dusén;* 'in rupibus')." Since the lectotype of *C. dusenii* was collected on 5 June 1896 at Corral, the synonymy of Schuster is not based upon lectotype plants and therefore open to question. I have seen many specimens labeled *Cephaloziella dusenii* collected by Dusén, but none collected on 6 June 1896 at Corral, Chile. Future studies may indeed reveal the two taxa as conspecific, but for the present I am treating *C. dusenii* as a distinct species.

Cephaloziella dusenii is a distinctive taxon and is quite easily recognized. The leaves are transversely inserted and are concave to frequently canaliculate to ± 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 to denticulate. The leaf cells are ± 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 gynoecial bracts are connate to one-half with the bracteoles and have lobes which are sparingly to ± 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 ± 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.

Phytogeography.—South Georgia, Falkland Islands, Patagonian Channels, and the 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

1969b, p. 666). However, see the comments on sexuality of *C. exiliflora* in Schuster (1972a, p. 195).

Brunswick Peninsula Specimens Seen.—PUERTO DEL HAMBRE REGION: Near Fuerte Bulnes, *Hatcher 6-8* (UW-M). BAHIA SAN NICOLAS REGION: Ridge between B. Bougainville and B. San Nicolas (*6432 C*–c. per., *6435 C*).

Cephaloziella gemmata Engel

Cephaloziella gemmata Engel, Bryologist 76: 531. *f. 1-17.* 1973. Holotype: Chile, Prov. Magallanes, Cabo Leon, 17 February 1962, *Hatcher 25-8* (F!).

Remarks.—See Engel (1973b) for notes on species relationships.

Ecology-Phytogeography.—Evergreen *Nothofagus* forests of the southern Patagonian Channel region (known only from the Brunswick Peninsula and type locality). The Brunswick Peninsula specimen grew on rotted wood.

Brunswick Peninsula Specimens Seen.—PUERTO DEL HAMBRE REGION: Fuerte Bulnes, Punta Santa Ana *(1809).*

Cephaloziella verrucosa Steph.

Cephaloziella verrucosa Steph. Hedwigia 32: 318. 1893 *non C. verrucosa* (C. Jens.) Bryhn & Kaal. Christiana, Vid. Selsk. Forhandl. 5: 4. 1908. *Cephalozia verrucosa* (Steph.) Steph. Bull. Herb. Boissier II. 8 (7): 505. 1908 (=Spec. Hep. 3: 335) *non C. verrucosa* (C. Jens.) Bryhn & Kaal. *in* Nansen, Rep. 2nd Norw. Arct. Exped. *Fram* 2 (11): 45. 1906. *Cephaloziella exiliflora* var. *verrucosa* (Steph.) Douin, Mém. Soc. Bot. Fr. 29: 72. 1920. Original material: Chile, Prov. Magallanes, Strait of Magellan, *sin. coll.,* com. Husnot 9 (G 12748!).

Cephaloziella magellanica S. Arnell, Svensk Bot. Tidskr. 49: 230. *f. 1 a-h.* 1955, *syn. fide* Engel (1973b). Holotype: Chile, Prov. Magallanes, near Hotel Rubens, 16 January 1941, *Santesson 718* (S-PA)–*non vidi.*

Remarks.—I have examined the type of *C. verrucosa* Steph. on loan from Geneva, and with only a few fertile plants at hand, it is difficult to firmly establish whether the plants are monoecious. However, I am inclined to regard them as monoecious (and not dioecious as stated in Stephani's original diagnosis), for there are a few gynoecia-bearing plants which have toward the base rather enlarged "bracts" which are considerably more closely imbricated than the leaves. However, the "bracts" have no associated antheridia. Traces of antheridia in hepatics are commonly absent in androecia of older portions of axes.

Ecology.—Only in association with *Sphagnum.*

Phytogeography.—Isla Grande de Tierra del Fuego and the Brunswick Peninsula-Río Rubens region.

Literature records.—Anonymous–Strait of Magellan (Stephani, 1908 as *Cephalozia verrucosa,* Bonner, 1963).

Brunswick Peninsula Specimens Seen.—BAHIA SAN NICOLAS REGION: Ridge between B. Bougainville and B. San Nicolas (*6423 B*–c. per., *6424 A* & *6428 C*).

Family ADELANTHACEAE

(Jørg.) Grolle, J. Hattori Bot. Lab. 35: 327. 1972.

ADELANTHUS

Mitt. J. Proc. Linn. Soc. 7: 243. 1864, *(nom. cons.)*

Key to the Brunswick Peninsula Species of *Adelanthus*

1. Dorsal margin of leaf only weakly incurved; leaves without distinct differentiation of a vitta of elongated cells; subapical cells of leaf thin to slightly thickened; plants small .... *A. tenuis*
1. Dorsal margin of leaf distinctly incurved; leaves on well-developed plants with ± distinctly developed vittae of elongated cells; subapical cells of leaf thick walled; plants mostly robust 2
   2. Leaf margins dentate .... *A. lindenbergianus*
   2. Leaf margins entire .... *A. integerrimus*

Adelanthus integerrimus Grolle

Adelanthus integerrimus Grolle, J. Hattori Bot. Lab. 35: 340. *f. 4.* 1972. Holotype: Chile, Prov. Magallanes, Punta Arenas, C. Mina Rica, 550 m., *Santesson M 746* (S-PA–*non vidi*).

Phytogeography.—Falkland Islands, Tierra del Fuego, and southern Patagonian Channels (Brunswick Peninsula).

Brunswick Peninsula Specimens Seen.—PUNTA ARENAS REGION: Ridge above refugio (Club Andino), 8 km. W. of Punta Arenas, 305-610 m. *(1960, 1962 B).* PUERTO GALLANT REGION: NE side of Pto. Gallant *(6048 E).*

Adelanthus lindenbergianus (Lehm.) Mitt.

Jungermannia lindenbergiana Lehm. Linnaea 4: 367. 1829. *Plagiochila lindenbergiana* (Lehm.) G. L. & N. Syn. Hep. 59. 1844. *Adelanthus lindenbergianus* (Lehm.) Mitt. J. Proc. Linn. Soc. 7: 244. 1864. *Adelanthus magellanicus* var. *lindenbergianus* (Lehm.) Schiffn. Nova Acta Acad. Caesar. Leop. Carol. 60 (2): 261. 1893. Lectotype (*cf.* Grolle, 1972a): South Africa, near Cape Town, *Ecklon* (S-PA–*non vidi*).

Plagiochila magellanica Lindenb. Spec. Hep. 1 (5): 163. 1843, *syn. cf.* Mitten (1859). *Adelanthus magellanicus* (Lindenb.) Mitt. J. Proc. Linn. Soc. 7: 244. 1864. *Calyptrocolea magellanica* (Lindenb.) Schust. J. Hattori Bot. Lab. 26: 287. 1963, *nom. illeg.* Lectotype (*fide* Grolle, 1972a): Chile, Prov. Magallanes, B. San Nicolas, *Dumont d'Urville* (PC–*non vidi*).

Jungermannia unciformis Hook. f. & Tayl. Lond. J. Bot. 3: 457. 1844, *syn. cf.* Mitten (1859). *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: 409. 1898. Original material: Chile, Prov. Magallanes, I. Hermite, *Hooker* (BM, MANCH, W)–cited in Grolle (1972a).

Jungermannia sphalera Hook. f. & Tayl. Lond. J. Bot. 3: 458. 1844, *syn. cf.* Mitten (1859). *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 (=Spec. Hep. 3: 383). Original material: Chile, Prov. Magallanes, I. Hermite, *Hooker* (W)–cited in Grolle (1972a).

Jungermannia ? *haliotiphylla* De Not. Memorie Accad. Sci. Torino II. 16: 217. *pl. V, 1-7.* 1855, *syn. cf.* Schiffner (1890). Original material: Chile, "Prov. Valparaiso, Valparaiso," *Puccio s. n.* (L, MANCH, S-PA)–cited in Grolle (1972a).

Adelanthus dugortiensis Douin & Lett. *in* Douin, Revue Bryol. 31: 53. 1904, *syn. cf.* K. Müller (1956). Original material: Ireland, Dugort, *Lett* (BM, FH, G, S-PA)–cited in Grolle (1972a).

Plagiochila cristato-dentata Steph. Bull. Herb. Boissier II. 4 (2): 160. 1904 (=Spec. Hep. 2: 412), *syn. cf.* Vanden Berghen (1965). Original material: (?) Uganda/Zaire, Mt. Runssoro, 3,300 m., *Scott Elliot 278* (G)–cited in Grolle (1972a).

Plagiochila aloysii-sabaudiae Gola, Annali Bot. 6: 273. 1907, *syn.*

cf. Vanden Berghen (1965). Original material: Uganda/Zaire, Mt. Ruwenzori, Bujongolo, 3,800 m., *Duke of Apruti Exped. (non vidi).*

Plagiochila attenuata Steph. *in* Mildbraed, Wiss. Ergebn. Dt. ZentAfr.-Exped. 2: 114. 1911, *syn. cf.* Vanden Berghen (1965). Original material: Uganda/Zaire, Mt. Ruwenzori, 3,300 m., *Exp. A. F. v. Mecklenburg 2631* (G)–cited in Grolle (1972a).

Plagiochila subviminea Steph. *in* Herz. Biblthca Bot. 21: 212. *f. 146 d.* 1916, *syn. fide* Grolle (1972a). Original material: Bolivia, *Herzog 2853/a* (G)–cited in Grolle (1972a).

Adelanthus trollii Herz. Hedwigia 74: 91. *f. 6 a-c.* 1934, *syn. fide* Grolle (1972a). Original material: Bolivia, Challana, Mina Fabulosa, *Troll 50/a* (JE)–cited in Grolle (1972a).

Adelanthus parvus Herz. Revue Bryol. Lichén. 11: 18. 1938, *syn. fide* Grolle (1972a). Original material: Costa Rica, Prov. San Jose, C. de Las Vueltas, 2,700-3,000 m., *Standley 43723/c* (JE)–cited in Grolle (1972a).

Plagiochila subviminea f. *paramicola* Herz. Revue Bryol. Lichén. 11: 12. 1938, *syn. fide* Grolle (1972a). Lectotype (*cf.* Grolle, 1972a): Costa Rica, Prov. San Jose, C. de Las Vueltas, 2,700-3,000 m., *Standley & Valerio 43862* (JE).

Remarks.—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 species was gathered at nearly all stations in the peninsula and thus must be able to subsist not only in the relatively dry Punta Arenas region but in the very wet Puerto Cutter area as well. In woodland regions it is rather common on rotted logs, stumps, and branches and forms dense, deep, and often large tufts which are frequently composed partially of *Lepidozia* spp. It only rarely occurs on soil of the forest floor. In the "bryophyte rich facies" of evergreen forests the species is rather common on the sides of bryophyte mounds, where it is often intermixed with other Hepaticae, particularly *Anastrophyllum involutifolium, Clasmatocolea puccioana, Gackstroemia magellanica, Jamesoniella colorata, Plagiochila ansata,* and *Riccardia prehensilis.*

Phytogeography.—Amphiatlantic temperate; Réunion Is., Madagascar, South Africa (1,000-2,000 m.), Uganda (3,100-3,500 m.), Congo (3,100 m.), Tristan da Cunha (200-800 m.), Inaccessible Is. (300 m.), Falkland Islands, Tierra del Fuego, Patagonian Channels, Valdivian Region, Juan Fernandez, Andes north to Mexico, and western Ireland (450-700 m.).

The report of *Adelanthus magellanicus* from Punta Arenas, Cerro Mina Rica in Arnell (1955) is based upon misdetermined specimens of *A. integerrimus fide* Grolle (*in litt.*, specimens in S-PA examined).

According to Grolle (1972a), the Australasian records of *A. magellanicus* are actually *A. occlusus* and that from Îles de Kerguélen is *Jamesoniella* sp.

Literature Records.—*Anonymous*–Strait of Magellan (G. L. & N., 1844 as *Plagiochila magellanica,* Schiffner, 1895 as *A. unciformis,* Stephani, 1908 as *A. magellanicus* and *A. unciformis,* Kühnemann, 1937 and 1949 as *A. unciformis,* Arnell, 1953 as *A. unciformis,* Bonner, 1962 as *A. sphalerus, A. unciformis,* and *Plagiochila magellanica,* Schuster, 1967b as *A. magellanicus*); *Andersson*–Pto. del Hambre (Ångström, 1872 as *Jungermannia sphalera*); *Cunningham*–Pto. Gallant (Stephani, 1908 as *A. sphalerus*); *Dusén*–Punta Arenas (Stephani, 1901a as *A. unciformis,* 1908 as *A. sphalerus*), Pto. Gallant (Stephani, 1908 as *A. sphalerus*), Strait of Magellan (Stephani, 1908 as *A. unciformis*); *Dumont d'Urville*–B. San Nicolas (Montagne, 1845a as *P. magellanica,* Taylor & Hooker, 1847b as *Jungermannia magellanica*); *Jacquinot*–B. San Nicolas (Montagne, 1845, 1852 as *P. magellanica*) Taylor & Hooker (1847b as *J. magellanica*); *Lechler*–Rada York (Grolle, 1972a); *Santesson*–C. Mina Rica (Arnell, 1955 as *A. magellanicus*), Punta Arenas, Tres Puentes (Arnell, 1955 as *A. sphalerus,* Grolle, 1972a); *Skottsberg & Halle*–Pto. Cutter (Stephani, 1911 as *A. unciformis*).

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, *sin. coll.* as *A. sphalerus* and *A. unciformis* (FH); *ibid.*, February 1861, *Nadaud* (F). PUNTA ARENAS RE-

GION: Punta Arenas, March 1906, *Thaxter 115* (MICH); E. of Mina Loreto on S. side of R. de las Minas, ca. 215 m. *(1917)*; ridge above refugio (Club Andino), 8 km. W. of Punta Arenas, 305-610 m. (*1960* –c. ♀ & *1962 B*). RIO TRES BRAZOS REGION: Plateau above R. Tres Brazos at road crossing, 160 m., *Ostafichuk 1339* & *1363* (MSC). SENO OTWAY REGION: B. Camden (*1999*–c. ♀, *2002* & *2027*). LAGUNO EL PARRILLAR: Near E. shore of lake, ca. 365 m. (*2101*–c. ♂+♀); 4 km. E. of lake, ca. 305 m. (*2119*–c. ♀). PUERTO DEL HAMBRE REGION: Fuerte Bulnes, Pta. Santa Ana (*1818* & *1829*–c. ♂); near Fuerte Bulnes, *Hatcher 2-4, 4-11* & *7-13* (UW-M); N. side of R. San Juan, 1 km. from Straits *(1860 B* & *1861)*. PUERTO SAN ISIDRO: 13 February 1929, *Roivainen 844b* & *2389* as *A. sphalerus* (H); 13 February 1929, *Roivainen 2399* as *Tylimanthus patagonicus* (H). BAHIA SAN NICOLAS REGION: W. side of bay *(6333, 6370* & *6373 D)*; E. side of bay *(6391)*; ridge between B. Bougainville and B. San Nicolas, ca. 155 m. *(6435 A* & *6446)*. PUERTO GALLANT REGION: B. Fortescue *(5957 D* & *5962)*; NE side of Pto. Gallant (*6004 B, 6006*–c. sporo., *6008 D*–c. sporo., *6020 B, 6042 A, 6053 E* & *6071 F*). RADA YORK: *Lechler* s. n. as *A. falcatus* (FH). PUERTO CUTTER REGION: Between copper mine and river S. of mine *(2163 E, 2174 B, 2176 B, 2179 D* & *2185)*; W. of copper mine (*2233 C, 2234 E* & *2363*–c. ♂); base of M. Condor *(2341)*.

Adelanthus tenuis Engel & Grolle

Adelanthus tenuis Engel & Grolle *in* Grolle, J. Hattori Bot. Lab. 35: 333. *f. 1-2.* 1972. Holotype: Chile, Prov. Magallanes, Brunswick Peninsula, La. El Parrillar region, ca. 365 m., 21 December 1967, *Engel 2093* (MSC!).

Ecology.—In a *Sphagnum* bog near the deciduous-evergreen *Nothofagus* boundary and at the margin of a pool in an open *Empetrum-Nothofagus* mosaic in the evergreen *Nothofagus* region. It was not collected below 155 m.

Phytogeography.—Falkland Islands, Tierra del Fuego, and the Brunswick Peninsula (La. Parrillar region).

It is of phytogeographical interest to note that the New Zealand *A. gemmiparus* is a very close ally of this species.

Brunswick Peninsula Specimens Seen.—LAGUNO EL PARRILLAR: Near E. shore of lake, ca. 365 m. *(2108 C)*. BAHIA SAN NICOLAS REGION: Ridge between B. Bougainville and B. San Nicolas, ca. 155 m. *(6444 C)*.

Family RADULACEAE

K. Müll. (Freib.), Rabenh. Krypt.-Fl. Deutschl . . . ed. 2, 6 (1): 404. 1909 ("Raduloideae").

RADULA

Dum. Comment. Bot. 112. 1822.

KEY TO THE BRUNSWICK PENINSULA SPECIES OF *Radula*

1. Gynoecia always on short branches bearing 1-2 pairs of vegetative leaves, never terminal on main axes or elongated branches; basal free portion of lobule distinctly auriculate .... *R. diversifolia*
1. Gynoecia terminal on main axes or on elongated branches; basal free portion of lobule not auriculate 2
    2. Dorsal lobes with apices acute to acuminate; lobules less than one-half the size of dorsal lobe; plants dioecious .... *R. flavifolia*
    2. Dorsal lobes with apices broadly rounded; lobules one-half or more the size of the dorsal lobes; plants paroecious. Apex of lobule with a slime papilla; dorsal margin straight or nearly so; ventral margin very broadly rounded .. *R. helix*

Radula diversifolia Steph.

Radula diversifolia Steph. Spec. Hep. 4: 212. 1910. Original material: Chile, Prov. Magallanes, Strait of Magellan, without specific locality, *sin. coll., ex hb.* Husnot, (G)–cited in Castle (1937).

Radula drepanophylla Steph. Spec. Hep. 4: 212. 1910, *syn. fide* Castle (1937). Original material: Chile, Prov. Magallanes, Pto. Gallant, *Cunningham* "inter No. 123" (G)–cited in Castle (1937).

Phytogeography.—May be endemic to the Brunswick Peninsula.

Literature Records.—*Anonymous*–Strait of Magellan (Castle, 1937; Kühnemann, 1937, 1949 as *R. diversifolia* and *R. drepanophylla*); *Cunningham*–Puerto Gallant (Castle, 1937).

Brunswick Peninsula Specimen Seen.—PUERTO GALLANT REGION: NE side of Pto. Gallant *(6039 A)*.

Radula flavifolia (Hook. f. & Tayl.) G. L. & N.

Jungermannia flavifolia Hook. f. & Tayl. Lond. J. Bot. 3: 476. 1844. *Radula flavifolia* (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 259. 1845. Original material: Chile, Prov. Magallanes, I. Hermite, *Hooker* (FH!–c. per.+sporo., NY–cited in Castle, 1961).

Radula intempestiva Schiffn. *in* Naumann, Forschungsr. *Gazelle* 4 (4): 20. *pl. 5, f. 6.* 1890, *syn. fide* Castle (1961). Original material:

Chile, Prov. Magallanes, I. Desolación, B. Tuesday, *Naumann* (FH–cited in Castle, 1961).

Radula cunninghamii Steph. Spec. Hep. 4: 214. 1910, *syn. fide* Castle (1961). Lectotype (*fide* Castle, 1961): Chile, Prov. Aisén, Pto. Barroso, *Cunningham* (G–*non vidi*).

Phytogeography.—Tierra del Fuego, Patagonian Channels, Valdivian region north to 36°50′ S. and Juan Fernandez.

The report from "Frai Jorge" (Prov. Coquimbo) in Herzog (1954) requires confirmation.

Literature Records.—*Cunningham*–Rada York (*?sic*) and Strait of Magellan (Castle, 1961); *Skottsberg & Halle*–Pto. Cutter (Stephani, 1911 as *R. cunninghamii*).

Brunswick Peninsula Specimens Seen.—BAHIA SAN NICOLAS REGION: W. side of bay (*6354, 6380*–c. per., *6383*–c. per.). PUERTO GALLANT REGION: B. Fortescue (*5955*–c. per., *5977, 5982*–c. ♂ & *5984*–c. per.); NE side of Pto. Gallant (*6061*–c. ♀). PUERTO CUTTER REGION: Between copper mine and river S. of mine (*2180*); N. of copper mine (*2218*); W. of copper mine (*2227* & *2260*–c. per.).

Radula helix (Hook. f. & Tayl.) G. L. & N.

Jungermannia helix Hook. f. & Tayl. Lond. J. Bot. 3: 475. 1844. *Radula helix* (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 260. 1847. Original material: Chile, Prov. Magallanes, I. Hermite, *Hooker* (FH!), (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, Natür. Pflanzenfam. 1 (3, 1): 114. 1895. Original material: Chile, Prov. Magallanes, I. Desolación, 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, W. end of L. Fagnano, *Skottsberg* (G)–cited in Castle (1963).

Remarks.—This is perhaps the easiest species to recognize among the Magellanian *Radula* taxa. The plants are small and yellow-green. The leaves are semi-erect 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. The dorsal margin of the dorsal lobe has a slime papilla which varies in position, but is usually located in the proximal one-half. 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, but the distal portion is appressed to the dorsal lobe. The lobules are ca. one-half 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, and have thin to $\pm$ thickened walls, and trigones small to medium in size. Intermediate thickenings are present or absent. Oil bodies were present 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.

Castle (1963), who includes the taxon in the section Saccatae, provides a description and plate of the species, but omits several critical features.

Ecology.—In a variety of habitats in the evergreen forest region. In densely forested areas on filmy fern fronds and on a mat of vegetation over a moist cliff face. Also in exposed areas such as coastal rocks which had accumulated a thin soil covering. In these situations *R. helix* grew among other Hepaticae (particularly *Andrewsianthus australis* and *Harpalejeunea decurvicuspis*) in a densely packed mat covering the rock. Further encountered on a stream bank and wet slope of a poorly developed woods.

The above mentioned coastal rocks (Pto. Cutter) received fresh water from rain and forest run-off, with salt water influence at most moderate. This species is not among those that I repeatedly collected in tidal zone regions in the Patagonian Channels (see Engel & Schuster, 1973).

Phytogeography.—This species occurs in the Falklands, Tierra del Fuego (widespread), Patagonian Channels, and in the Valdivian region at 39°38′ S.; not reported from Andean Patagonia.

The Auckland Island locality in Stephani (1910) is doubtful, and the species is not mentioned in Hodgson (1962).

Literature Records.—Anonymous–Strait of Magellan (Kühnemann, 1937, 1949; Stephani, 1910); *Andersson*–Pto. del Hambre (Ångström, 1872 as *Jungermannia*); *Cunningham*–Strait of Magellan (Castle, 1963); *Warnstorf*–Strait of Magellan (Castle, 1963).

Brunswick Peninsula Specimens Seen.—BAHIA SAN NICOLAS REGION: E. side of bay *(6417)*. PUERTO GALLANT REGION: B. Fortescue (*5994 D*–c. per.+sporo.); NE side of Pto. Gallant (*6045 A* –c. per. & *6067 D*). PUERTO CUTTER REGION: N. of copper mine (*2219 C* & *2301 C*–c. per.).

Family PORELLACEAE

Cavers, New Phytol. 9: 292. 1910; (*nom. cons. prop., cf.* Grolle, Taxon 21: 708. 1972).

PORELLA

L. Spec. Pl. 2: 1106. 1753.

Porella subsquarrosa (Nees & Mont.) Trev.

Lejeunea subsquarrosa Nees & Mont. Annls Sci. Nat. II. 5: 57. 1836 *non L. subsquarrosa* (Aust.) Aust. Bull. Torrey Bot. Club. 5: 15. 1874. *Madotheca subsquarrosa* (Nees & Mont.) Mont. Annls Sci. Nat. II. 19: 256. 1843. *Porella subsquarrosa* (Nees & Mont.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 407. 1877. Original material: Juan Fernandez, *sin. coll.* ("Hb Nees")–cited in Swails (1970).

Madotheca foetens De Not. Memorie Accad. Sci. Torino II. 16: 231. *pl. 17, f. 1-7.* 1855, *syn. fide* Stephani (1910). *Porella foetens* (De Not.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 407. 1877. Original material: Chile, "Prov. Valparaiso, Valparaiso," *Puccio* (NY! *sub M. foetida*).

Ecology.—Only in the very wet western end of the peninsula where common on *Nothofagus* bark. Frequently the tree bases were surrounded by bryophyte mounds, with *Porella* on bark immediately above the mounds. Frequently associated with *Chiloscyphus valdiviensis*.

Phytogeography.—Andean American; Tierra del Fuego, Patagonian Channels, Valdivian region, Juan Fernandez, and Peru (St. Gaven Mts.).

Literature Records.—Naumann–Strait of Magellan (Reimers, 1926 as Madotheca); *Skottsberg & Halle*–Pto. Cutter and Pto. Pomar (Stephani, 1911 as *Madotheca*), Canal Jeronimo (Reimers, 1926 as *Madotheca*).

Brunswick Peninsula Specimens Seen.—PUERTO CUTTER REGION: Between copper mine and river S. of mine *(2155 A & 2162 A);* N. of copper mine (*2210*–c. per.).

Family JUBULACEAE

Klinggr. Die höheren Cryptogamen Preussens 40. 1858.

FRULLANIA

Raddi, Jungermanniogr. Etrusca, Modena p. 9. 1818.

Key to the Brunswick Peninsula Species of *Frullania*

1. Basal one-half to one-third of lobule strongly dorsiventrally compressed, lobule conspicuously flaring near point of attachment. Plants monoecious, gynoecia on short, often abbreviated branches; trigones usually large and bulging *F. patagonica*
1. Lobules inflated throughout, or if *somewhat* dorsiventrally compressed (as in *F. magellanica*), then lobules not flaring near point of attachment 2
 2. Lobules mostly obliquely inserted, often with the long axis parallel with the ventral leaf margin; rim of perianth beak papillate. Plants dioecious, perianth 5 plicate, gynoecia with subfloral innovations; stylus acute, inconspicous, of only a few cells .... *F. boveana*
 2. Lobules with long axis ± parallel with stem axis; rim of perianth beak smooth, entire 3
3. Lobules without conspicuously projecting cells; styli large, conspicuous, the terminal 2 cell rows of 3-6 cells; dorsal lobes nearly always broadly rounded. Plants monoecious ....*F. magellanica*
3. Lobules with a conspicuous angularly projecting cell inserted directly above the lateral slit; styli small, inconspicuous, terminated by a unicellular row of 2 cells; dorsal lobes acute 4
 4. Plants monoecious, perianth beak straight, not expanded at the mouth; underleaves usually as wide as or slightly wider than the stem (rarely 2.0-2.7 × stem width); lobules small in proportion to the dorsal lobes; plants saxicolous *F. microcaulis*
 4. Plants dioecious, perianth beak expanded at the mouth; underleaves (2.0-) 2.3-3.0 × stem width; lobules very large in proportion to the dorsal lobes; plants corticolous .... *F. lobulata*

Frullania boveana Mass.

Frullania boveana Mass. Nuovo G. Bot. Ital. I. 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 patentiloba Steph. K. Svenska VetenskAkad. Handl. 46 (9): *f. 35 d-g.* 1911, *syn. nov.* Lectotype *(nov.):* Chile, Prov. Chiloé, I. Guafo, Cta. Samuel, 25 July 1908, *Halle 118* (UPS!–c. per.+sporo.).

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. three-fourths 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 dioecious while *F. magellanica* is monoecious. Further, *F. boveana* has a papillose rim of the perianth beak, while that of *F. magellanica* is smooth.

The underleaves of *F. boveana* are quite variable. They may be ovate to orbicular (and quite large) to obovate in shape, have sinuses acute and conspicuous to narrow, slit-like, and inconspicuous, and have margins entire to one dentate. This variation may be seen on a single axis.

Ecology.—On the bark of *Nothofagus* and *Drimys* in the evergreen *Nothofagus* forest region.

Phytogeography.—Falkland Islands, Tierra del Fuego, and in the Valdivian region north to 39°53′ S.

The report of *F. boveana* from the Brunswick Peninsula (B. Arauz) in Stephani (1911) is based upon an erroneous determination of *F. magellanica* (*fide* S-PA!).

Literature Record.—*Skottsberg & Halle*–B. Arauz (Stephani, 1911); Pto. Pomar (Stephani, 1911 as *F. patentiloba*).

Brunswick Peninsula Specimens Seen.—BAHIA SAN NICOLAS REGION: W. side of bay *(6348, 6350, 6371 B & 6385 A)*. PUERTO GALLANT REGION: B. Fortescue *(5967 & 5995);* NE side of Pto. Gallant *(6005)*. PUERTO CUTTER REGION: Between copper mine and river S. of mine (*2182*–c. per.+♂); N. of copper mine (*2209*–c. young ♀); at copper mine *(2282);* base of M. Condor (*2339* –c. per.); slightly W. of copper mine (*2362*–c. very young ♀).

Frullania lobulata (Hook.) Dum.

Jungermannia lobulata Hook. Musci Exot. 2: *pl. 119. f. 1-5.* 1820. *Frullania lobulata* (Hook.) Dum. Recueil Obs. Jungerm. 13. 1835. Original material: Argentina, Terr. Tierra del Fuego, I. de los Estados, *Menzies* (BM!).

Remarks.—Hooker (1820) in his description and discussion of *Jungermannia lobulata,* made no note of leaf apices, which are of considerable importance in the identification of the species. In the description he merely states for the leaf "... ovato-rotundatis ..." and in the discussion "... convexis integerrimis...." Hooker's figures of the species show some leaves rounded at the apex and a few acute. I have seen a single stem of the original material from the British Museum and the dorsal leaf lobe apices are clearly acuminate. *Frullania lobulata* has abruptly decurved dorsal lobes with the acuminate portion absent from dorsal view, and it is probable that Hooker did not observe the dorsal leaf lobe apices and thus did not include them in his figures.

The figures of the perianth in Hooker show a simple ovate structure which gradually slopes toward the apex and without the beak of the perianth expanded at the mouth. The perianths of my collections are obovate in shape and usually truncated to broadly rounded near the apex and with a beak mouth expanded and cup shaped. Hooker probably illustrated immature perianths, as I have observed such which are very similar in shape to those figured in *Musci Exotici*. The British Museum specimen possesses gynoecia, but in very poor condition.

Frullania lobulata is a very distinctive species which may be distinguished from the other Magellanian representatives of the genus by the following ensemble of characters: the small plant size, the very narrow, wirelike stems, the long-acuminate dorsal leaf lobe apices, the extremely large lobule size, the dioecious state, and the expanded mouth of the perianth beak.

The closest relative of *F. lobulata* is *F. microcaulis;* for comments on distinguishing these taxa, see "Remarks" under the latter taxon.

Ecology.—On bark of *Nothofagus* and less commonly *Libocedrus* and *Drimys* in the evergreen *Nothofagus* forest region. Occasionally on rotted trunks.

Phytogeography.—Tierra del Fuego and southern Patagonian Channels (Brunswick Peninsula).

The reports from the Valdivian region (Stephani, 1900) and Juan Fernandez (Herzog, 1942) require confirmation.

Brunswick Peninsula Specimens Seen.—BAHIA SAN NICOLAS REGION: W. side of bay (*6340*–c. per., *6364*–c. per., *6365* & *6379*–c. per.). PUERTO GALLANT REGION: B. Fortescue (*5946*–c. per., *5956, 5959* & *5961*). PUERTO CUTTER REGION: Between copper mine and river S. of mine (*2144*–c. per.); N. of copper mine (*2201*–c. per.); W. of copper mine (*2224*–c. per. & *2230*–c. per.).

Frullania magellanica Web. & Nees

Frullania magellanica Web. & Nees *in* G. L. & N. Syn. Hep. 446. 1845. *Jungermannia magellanica* Spreng. Annls. Wetter. Ges. Naturk. 1: 25. 1809 *non J. 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, Valparaiso," *Puccio* (FH!, *ex hb.* De Notaris).

Remarks.—The dorsal leaf lobe apices are nearly always broadly rounded. Occasionally, however, dorsal lobes may be narrowly rounded to ± 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.—Wide in moisture tolerance as it occurs in evergreen and deciduous *Nothofagus* forests as well as in the steppe region in the peninsular neck. The species occurs on a variety of substrates and exhibits the widest ecological amplitude of the Brunswick Peninsula species of *Frullania.* I found it on bark of *Nothofagus, Drimys,* and occasionally *Berberis illicifolia* and on rotted logs and stumps as well as on rock.

Phytogeography.—Falkland Islands, Tierra del Fuego, Patagonian Channels, Valdivian region (West Patagonia north to 39°52′ S. and P. N. Nahuel Huapi in Andean Patagonia), Juan Fernandez (above 600 m. on Mas a Tierra) and "Frai Jorge" (Prov. Coquiumbo).

The Campbell Island reports (Hodgson, 1962; Hooker, 1867, Taylor & Hooker, 1847a, and Tasmanian reports (Herzog, 1942; Arnell, 1958) require confirmation; Hodgson (1962) expressed the possibility that Taylor may have misidentified the plant on which the Campbell Island report was based.

Literature Records.—*Dumont d'Urville*–B. San Nicolas (Taylor & Hooker, 1847b as *Jungermannia*); *Skottsberg & Halle*–between R. Amarillo and R. Colorado (Stephani, 1911 as *F. fertilis*).

Brunswick Peninsula Specimens Seen.—CHABUNCO REGION: Headland at Cabo Negro, *Ostafichuk 1242 B*–c. per. & *1264*–c. per. (MSC). PUNTA ARENAS REGION: Punta Arenas, November 1895, *Dusén 12, 22* as *F. diplota* (UPS–c. per.); *ibid.*, *Thaxter 49* as *F. fertilis* (FH & MICH–c. per.). RIO TRES BRAZOS REGION: Plateau above R. Tres Brazos at road crossing, ca. 160 m., *Ostafichuk 1344*–c. per., *1359 B*–c. young per. (MSC). RIO COLORADO REGION: Between R. Amarillo and R. Colorado, 3 June 1908, *Halle 114* as *F. fertilis* (S-PA, UPS). SENO OTWAY REGION: B. Camden (*1992, 2009* & *2022*–c. per.); E. of Canelos and just W. of Ch. La Quema (*2049*–c. per. & *2066*–c. per.). LAGUNO EL PARRILLAR: Just E. of lake, ca. 365 m. (*2077 A*–c. per.); 4 km E. of lake, ca. 305 m. (*2120*–c. per. & *2121*–c. per.). PUERTO DEL HAMBRE REGION: Pto. del Hambre, *Andersson* as *F. rostrata* (S-PA–c. per.); Fuerte Bulnes, Pta. Santa Ana (*1797, 1816 B*–c. per., *1830*–c. per., *1833*–c. per., *1835*–c. per. & *1842*–c. per.); near Fuerte Bulnes, *Hatcher 5-2, 6-1, 6-5* & *8-4* (UW-M); N. side of R. San Juan, 1 km. from straits (*1862*–c. per.). BAHIA SAN NICOLAS REGION: W side of bay *(6356)*. PUERTO GALLANT REGION: NE side of Pto. Gallant (*6002 A*–c. per. & *6007*). BAHIA ARAUZ: 3 May 1908, *Halle & Skottsberg 113* as *F. boveana* (S-PA–c. per.). PUERTO CUTTER REGION: Between copper mine and river S. of mine (*2142 B*–c. per. & *2172*–c. per.); W. of copper mine (*2221*–c. per.); at copper mine (*2285*–c. per. & *2295 B*–c. per.); N. side of copper mine (*2300*–c. per. & *2306*–c. per.).

Frullania microcaulis Gola

Frullania microcaulis Gola, Nuovo G. Bot. Ital. II. 29: 172. *pl. 2, f. 20-27.* 1923. Holotype: Chile, Prov. Magallanes, bay W. of B. Parry, 17 February 1913, *Gasperi* (FI!–c. per.+ ♂).

Amphijubula spruceana Schust. J. Hattori Bot. Lab. 33: 301. 1970, *syn. nov.* Holotype: Chile, Prov. Magallanes: F. Peel, N. shore of Cta. Amalia, *Schuster 69-8901* (hb. Schuster).

Remarks.—Schuster (1970) established a new genus *Amphijubula* based essentially upon seta anatomy. Schuster states the genus has setae (below the hypophysis) of 16 rows of epidermal cells and four rows of internal cells, gynoecia sometimes with subfloral innovations and axes to 750 μ wide, while *Frullania,* a close ally, has setae (below the hypophysis) of (27)28-32 rows of epidermal cells and ca. 30-38(-40) rows of internal cells, gynoecia never with subfloral innovations and axes usually over 750 μ wide. Schuster included a single species, *A. spruceana.*

Based upon study of southern South American taxa, there are several species which possess characters intermediate between both genera. The most critical is *F. patagonica,* which has setae of 22-30 outer rows and 14-28 inner rows (regretably this statement is based upon sections of only two setae which is all the sporophyte material that could be located). This species is the largest of Magellanian *Frullania* taxa and has no subflora innovations. Another critical species is *F. boveana,* with subfloral innovations nearly always present and has axes 0.98-1.3 mm. wide.

The oldest available name for "*Amphijubula spruceana*" is *Frullania microcaulis* of Gola (1923). Rather than create a new combination by the transfer of *F. microcaulis* to *Amphijubula* (and probably also *F. lobulata,* a very closely related species), I believe the best course is to treat *Amphijubula* as a synonym of *Frullania.* Further studies of seta anatomy of the complex are necessary (particularly of *F. patagonica*) to establish the genus *Amphijubula* with certainty.

Gola (1923) erroneously states *F. microcaulis* is dioecious, when in fact the type plants are monoecious.

For identification of plants of this species, see the description of *Amphijubula spruceana* in Schuster (1970). The following points may be added to this description. The plants are usually prostrate or slightly erect and only rarely erect and creeping over erect stems of *Herberta*. The axes are usually to 504 μ wide, vinaceous or blackish in color and occasionally became brown toward the base of the plant. The stems in surface view have conspicuous irregular thickenings; the stem cuticle is smooth. Rhizoids, when present, are in clusters from the stem at the base of the underleaves, and have simple or branched very thick-walled tips. The leaves have dorsal lobes incubous to incubous-subtransversely oriented, contiguous to loosely or closely imbricated and only rarely remote. The apical portion of the dorsal lobe, while usually gradually tapering to an acute apex, occasionally tapers to a narrowly rounded apex. The lobules are 1.3-1.8 times longer than broad and have cell walls with large, bulging, intermediate thickenings which are of greater magnitude than those of the dorsal lobe. The stylus is long decurrent on the stem, and terminates in a unicellular row of two cells with the terminal cell a hyaline slime papilla which eventually collapses. The slime papillae are turgid on leaves toward the stem apex and become progressively more collapsed on progressively older leaves. The underleaves are 1.0-1.5(-2.7) times the stem width. The bases of bracts of the innermost series have enlarged, unpigmented cells; the bracteoles of the innermost series are ± folded along the midline and also have enlarged unpigmented cells at the base. The perianth beaks are cylindrical, have a smooth mouth, but have the inner beak surface densely covered with large single-celled protuberances. The inner capsule wall layer has, in surface view, three ridges parallel with the long valve axis. The spores are light yellow-brown in color and have surfaces with papillae of varying sizes. Only the larger are observable under the light microscope and the smaller must be observed under the scanning electron microscope. The surface has scattered, irregularly thickened cuplike depressions which in surface view under the light microscope appear circular and coarsely papillose.

Frullania microcaulis 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 angularly projecting cell 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 two cells, the terminal cell of which is a slime papilla which eventually collapses.

Frullania microcaulis 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) dioecious 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. microcaulis* as the former has dorsal lobes usually broadly rounded, underleaves 1.5-2.0 times the stem width, lobules without conspicuous projecting cells, and large styli, the terminal two cell rows of which are composed of 3-6 cells.

Ecology.—Rather narrow in ecological amplitude. Typically in very compact mats closely adnate to rocks. Schuster (1970) described *Amphijubula spruceana* for plants which are "erect" with "main axes creeping over erect stems of *Herberta,*" a habit which likely accounts for the somewhat etiolated condition of these plants. In the Brunswick Peninsula I found *F. microcaulis* only on wet rock (including that in a stream) at a single locality in the evergreen forest region.

Phytogeography.—Falkland Islands (leg. *Engel*), Tierra del Fuego, and southern Patagonian Channels (Brunswick Peninsula and 50°56′ S. at Cta. Amalia).

Brunswick Peninsula Specimens Seen.—PUERTO GALLANT REGION: NE side of Pto. Gallant (*6050*–c. per.+ ♂, *6060*–c. per.+ ♂ & *6075*–c. per.+ ♂).

Frullania patagonica Steph.

Frullania patagonica Steph. K. Svenska VetenskAkad. Handl. 46 (9): 88. *f. a-c.* 1911. Lectotype *(nov.):* Chile, Prov. Magallanes, Pto. Cutter, 13 April 1908, *Halle & Skottsberg 117* (UPS!–c. young per.).

Remarks.—Stephani (1911) erroneously stated the species is dioecious, when in fact the lectotype plants are clearly monoecious. Further, Stephani omits a critical character from the original description of *F. patagonica* in making no mention of the strongly dorsiventrally compressed lobules.

The following ensemble of characters will serve to distinguish the species: a) the large size of axes; b) the strongly compressed lobules which conspicuously flare near the point of attachment; c) the usually large trigones often with the intervening walls thickened; d) the sharply decurved leaf apices; and e) the underleaves which often possess broadly rounded apices and appear undivided. The undivided appearance of the underleaves results from segments which frequently overlap and obscure the slitlike sinus. The underleaf sinuses are otherwise emarginate or very narrowly triangular.

Herzog (1954, f. 12) includes figures of the species.

Phytogeography.—Tierra del Fuego and southern Patagonian Channels (Brunswick Peninsula).

Brunswick Peninsula Specimens Seen.—PUNTA ARENAS REGION: Punta Arenas, 27 November 1895, *Dusén* (G, S-PA as *F. diplota*–c. per., UPS as *F. fertilis*–c. per., G). LAGUNO EL PARRILLAR: Just E. of lake, ca. 365 m. (*2077 B* & *2081*–c. per.+sporo.). PUERTO DEL HAMBRE REGION: Fuerte Bulnes, Pta. Santa Ana (*1812*–c. per.+sporo. & *1816 A*–c. per.); near Fuerte Bulnes, *Hatcher 4-4* (UW-M). PUERTO GALLANT REGION: NE side of Pto. Gallant *(6016)*. PUERTO CUTTER REGION: Between copper mine and river S. of mine *(2142 A)*.

Frullania Species Excluded from the Brunswick Peninsula

1. *Frullania diplota* Tayl.

Frullania diplota Tayl. Lond. J. Bot. 5: 405. 1846. Original material: Australia, New South Wales, 1836, *Cunningham (non vidi)*.

Reported from the Brunswick Peninsula by Stephani (1901a) for Dusén collections from Punta Arenas. The specimens on which the record is based are actually *Frullania magellanica* (UPS!) and *F. patagonica* (S-PA!, UPS!).

2. *Frullania rostrata* (Hook. f. & Tayl.) G. L. & N.

Jungermannia rostrata Hook. f. & Tayl. Lond. J. Bot. 4: 87. 1845.

Frullania rostrata (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 445. 1845. Original material: Auckland Is., *Hooker (non vidi).*

Reported for the Brunswick Peninsula by Ångström (1872) for Andersson collections from Pto. del Hambre. The report is erroneous as the specimens are actually *Frullania magellanica* (*fide* collections in S-PA!). According to Hodgson (1962), the species is common in New Zealand (see also Hodgson, 1949).

Notes on *Frullania* Species

1. *Frullania cyparioides* (Schwaegr.) G. L. & N.

Jungermannia cyparioides Schwaegr. Hist. Musc. Hep. Prodr. 14. 1814. *Frullania cyparioides* (Schwaegr.) G. L. & N. Syn. Hep. 419. 1845. Original material: Strait of Magellan, without specific locality, *sin. coll.*

I have not as yet seen original material of this taxon and I am uncertain of its taxonomic position.

2. *Frullania sprengelii* Steph.

Frullania sprengelii Steph. Hedwigia 33: 167. 1894. Original material: Strait of Magellan, without specific locality, *sin. coll.,* hb. Sprengel *(non vidi).*

I have not as yet seen original material of this taxon, and I am uncertain of its taxonomic position. See notes in Hattori (1975).

Family LEJEUNEACEAE

Cas.-Gil. Fl. Ibér., Hepát. 703. 1919; (*nom. cons. prop., cf.* Grolle, Taxon 22: 504. 1973.

APHANOLEJEUNEA

Evans, Bull. Torrey Bot. Club 38: 272. 1911.

Aphanolejeunea asperrima (Steph.) Steph.

Cololejeunea asperrima Steph. Bih. K. Svensk VetenskAkad. Handl. 26 (III, 6): 64. 1900. *Aphanolejeunea asperrima* (Steph.) Steph. Spec. Hep. 5: 859. 1916. Original material: Chile, Prov. Aisén, R. Aisén Valley, January 1897, *Dusén s. n.* (G!) (*sub Cololejeunea a.* labeled specimens only); Prov. Valdivia, Corral, 29 October 1896, *Dusén 192, 194* (G!).

Remarks.—I have examined the following suite of specimens on loan from Geneva: a) G 15151—*Aphanolejeunea asperrima,* Corral, 29 October 1896, *Dusén 192,* (no name added to label); b) G 15152 —*Cololejeunea asperrima,* Corral, 29 October 1896, *Dusén 194* (*Aphanolejeunea* also written on label in Stephani's hand); c) G 15153—*Cololejeunea asperrima,* Chile (without specific locality or date), *Dusén 278* (*Aphanolejeunea* also written on label in Stephani's hand); d) G 15154—*Cololejeunea asperrima,* Chile (without specific locality or date), *Dusén 256* (*Aphanolejeunea* also written on label in Stephani's hand); e) G 15155—*Aphanolejeunea asperrima,* without locality or collector (no name added to label); f) G 15156—*Cololejeunea asperrima,* in valle fluminis Aysén, January 1897, *Dusén s. n.* (no name added to label); g) G 15157—same information as f) except with "*Strepsilejeunea gayana.*" In my opinion, all specimens are of *Aphanolejeunea asperrima.*

Since Stephani (1916) adds neither a basionym reference nor gives citation or reference to an earlier described taxon, but cites "St. n. sp." after the entry, it may be argued that *Aphanolejeunea asperrima* Stephani (1916) is a newly described species and is not a transfer based upon the basionym *Cololejeunea asperrima* Stephani (1900). I would rather believe, however, that the name *Aphanolejeunea asperrima* is based upon *Cololejeunea asperrima* and indeed a transfer is made, since a) Stephani later added "*Aphanolejeunea*" to several specimens originally labeled *Cololejeunea* (including original material of *C. asperrima* from Corral); and b) the treatment of taxa in *Species Hepaticarum* is often very casual, with "St. n. sp." added to names which had previously been described by Stephani. Bonner (1962-1963) cites for *Cololejeunea asperrima,* "Steph., Sp. Hep. 5: 859–1916 *(sub Aphanolejeunea).*"

This is the first report of the genus *Aphanolejeunea,* or for that matter Subfamily *Paradoxae,* from the Magellanean region.

Ecology.—With *Austrolejeunea radulifolia* and *Colura calyptrifolia,* etc. on fronds of filmy fern in the evergreen forest region.

Phytogeography.—Magellanian (Brunswick Peninsula only), Valdivian, and 650 m. on Mas a Tierra, Juan Fernandez.

Brunswick Peninsula Specimens Seen.—PUERTO GALLANT REGION: B. Fortescue (*5991 C, 5994 A*–c. per. & *5998 A*–c. per.).

ARCHILEJEUNEA

(Spruce) Schiffn. *in* Engl. & Prantl, Natürl. Pflanzenfam. 1 (3, 1):

130. 1895. *Lejeunea* subg. *Archilejeunea* Spruce, Trans. Proc. Bot. Soc. Edinb. 15: 74, 88. 1884.

Archilejeunea fuegiana (Besch. & Mass.) Steph.

Lejeunea fuegiana Besch. & Mass. Bull. Mens. Soc. Linn. Paris 1: 638. 1886. *Archilejeunea fuegiana* (Besch. & Mass.) Steph. Spec. Hep. 4: 714. 1911. Original material: Chile, Prov. Magallanes, I. Hermite, *Hooker (non vidi);* I. Hermite, *Hariot (non vidi).*

Remarks.—The hyaline papilla of this species is very large and may be found basal to the median tooth of the lobule apex. The hyaline papilla is internally displaced and is inserted on the dorsal lobule surface, on the second cell from the apical row.

Ecology-Phytogeography.—Known from Tierra del Fuego and southern Patagonian Channels (Brunswick Peninsula). In the latter region the species occurred on filmy fern fronds in a climax evergreen *Nothofagus* forest.

Brunswick Peninsula Specimen Seen.—BAHIA SAN NICOLAS REGION: W. side of bay (*6374*–c. per.+sporo.)

AUSTROLEJEUNEA

(Schust.) Schust. J. Hattori Bot. Lab. 26: 244. 1963. *Siphonolejeunea* subg. *Austrolejeunea* Schust. Beih. Nova Hedwigia 9: 187. 1963.

Austrolejeunea radulifolia (Mass.) Schust.

Lejeunea radulaefolia Mass. Nuovo G. Bot. Ital. I. 17: 248. *pl. 24, f. 29.* 1885. *Microlejeunea radulaefolia* (Mass.) Steph. K. Svenska VetenskAkad. Handl. 46 (9): 87. 1911. *Austrolejeunea radulaefolia* (Mass.) Schust. J. Hattori Bot. Lab. 26: 244. 1963. Original material: Argentina, Terr. Tierra del Fuego, I. de los Estados, *Spegazzini (non vidi).*

Cheilolejeunea angustistipa Steph. Spec. Hep. 5: 650. 1914, *syn. fide* Bischler *et al.* (1963). Original material: "Patagonia," without specific locality, *sin. coll. (non vidi).*

Remarks.—*Austrolejeunea radulifolia* (*cf.* Lanjouw, 1966, Art. 73) is closely related to, yet clearly distinct from *A. olgae* of New Zealand. For useful notes regarding this species pair, see Schuster (1968b). Another differentiating character which may be added to those in Schuster is that of the perianth plicae. In *A. olgae* the perianths are 5-carinate for 0.6-0.75 their length, while the perianths of *A. radulifolia* are 5-plicate to the base. The perianths of the two taxa are otherwise alike. See also the notes in Grolle (1973a), who treats *A. olgae* as conspecific with *A. nudipes* (Hook. f. & Tayl.) Grolle.

Phytogeography.—Tierra del Fuego, southern Patagonian Channels (Brunswick Peninsula), and in the Valdivian region in Prov. Malleco (1,250 m. in Depto. Angol).

Brunswick Peninsula Specimens Seen.—PUERTO GALLANT REGION: B. Fortescue (*5991 B* & *5998 B*–c. per.).

CHEILOLEJEUNEA

(Spruce) Schiffn.[1] *in* Engl. & Prantl, Natürl. Pflanzenfam. 1 (3, 1): 124. 1895. *Lejeunea* subg. *Cheilolejeunea* Spruce, Trans. Proc. Bot. Soc. Edinb. 15: 79, 251. 1884.

Cheilolejeunea intricata (Steph.) Engel

Harpalejeunea intricata Steph. Spec. Hep. 5: 269. 1913. *Jungermannia (Lejeunea) intricata* Ångstr. Öfvers. K. VetenskAkad. Förh. 29 (4): 12. 1872 *non J. intricata* Lindenb. & Gott. *in* G. L. & N. Syn. Hep. 679. 1847. *Cheilolejeunea intricata* (Steph.) Engel, Bryologist 79: 514. 1976. Lectotype *(nov.):* Chile, Prov. Magallanes, Pto. del Hambre, *Andersson* (S-PA!–c. per.+ ♂).

Remarks.—I am following the treatment of Schuster (1963b, c) in the broad delimitation of the *Cheilolejeunea-Strepsilejeunea* complex, the latter being treated as a subgenus of *Cheilolejeunea.*

Cheilolejeunea intricata may be separated from *C. savateriana* of the Falklands Islands and Patagonian Channels by the former having a) leaf apices usually narrowly rounded and only occasionally acute; and b) apical teeth not elongated but rather blunt and occasionally hardly protruding above the lobule apex, while the latter has a) leaf apices sharply acute to apiculate; and b) apical teeth usually narrowly elongated and narrowing to the tip. Both taxa are monoecious.

Phytogeography.—Known only from the Brunswick Peninsula.

Literature Record.—*Anonymous*–Strait of Magellan (Bonner, 1966 as *Harpalejeunea intricata*).

Brunswick Peninsula Specimen Seen.—PUERTO CUTTER REGION: At copper mine (*2297*–c. per.+ ♂).

[1]For notes regarding the transfer date of *Cheilolejeunea* see Bonner *et al.* (1961).

COLURA

(Dum.) Dum. Recueil Obs. Jungerm. 12. 1835. *Lejeunea* Sect. 1. *Colura* Dum. Syll. Jungerm. 32. 1831.

Key to the Brunswick Peninsula Species of *Colura*

1. Sac terminating in a long cylindrical extension; gemmae frequently produced on the cylindrical extensions; perianth with keels projecting into spreading horns, the horns without bulging cells .... *C. calyptrifolia*
1. Sac broadly rounded, not terminating in a long cylindrical extension; gemmae absent; perianth with keels rounded, not projecting into horns, the keels with the cells gibbous giving a crenulated appearance 2
   2. Leaves to 1.7 mm. long; sac longer than one-half the total leaf length; lobe cells 45-60 $\mu \times$ 20-35 μ; valve 0.17 mm. and formed of ca. 46 cells *C. naumannii*
   2. Leaves to 1.0 mm. long; sac shorter than one-half the total leaf length; 20-30$\times$12-15 μ; valve 0.09 mm. and formed of ca. 28 cells .... *C. patagonica*

Colura calyptrifolia (Hook.) Dum.

Jungermannia calyptrifolia Hook. Brit. Jungerm. *pl. 43, f. 1-13.* 1813. *Lejeunea calyptrifolia* (Hook.) Dum. Comment. Bot. 111. 1822. *Colura calyptrifolia* (Hook.) Dum. Recueil Obs. Jungerm. 12. 1835. *Colurolejeunea calyptrifolia* (Hook.) Steph. Hedwigia 29: 97. 1890, *nom. illeg.* Original material: British Isles, *Hutchins* and *Lyell. (non vidi).*

Colura bulbosa Herz. *in* Skottsberg, Nat. Hist. Juan Fernandez, Easter Is. 2: 751. *f. 14 g-k.* 1942, *syn. fide* Jovet-Ast (1953). Holotype: Juan Fernandez, Mas Afuera, 22 February 1917, *Skottsberg 103pp.* (JE–*non vidi).*

Phytogeography.—Amphiatlantic temperate; Marion Island, Prince Edward Island, South Africa (Arnell, 1963), Transvaal, Kilimandjaro (3,300 m.), Tristan da Cunha (Arnell, 1958), western Tierra del Fuego (I. Desolación), Patagonian Channels, Juan Fernandez, "Frai Jorge" (Prov. Coquimbo), Brazil, Bolivia (1,400 m.), Azores (800-900 m.), the British Isles and France.

It has a distribution somewhat comparable to that of *Adelanthus lindenbergianus.*

Colura naumannii (Schiffn.) Steph.

Lejeunea (Coluro-Lejeunea) Naumanni Schiffn. *in* Naumann, Forschungsr. *Gazelle* 4 (4):36. *pl. 7, f. 13-15.* 1890. *Colurolejeunea* *naumannii*[1] (Schiffn.) Schiffn. *in* Engl. & Prantl, Natür. Pflanzenfam. 1 (3, 1): 121. 1895, *comb. illeg. Colura naumannii* (Schiffn.) Steph. Spec. Hep. 5: 935. 1916. Original material: Chile, Prov. Magallanes, I. Desolación, B. Tuesday, *Naumann* (FH)–cited in Jovet-Ast (1953).

Ecology.—Evergreen *Nothofagus* region on small branches mixed with *Frullania* sp. and *Metzgeria* sp. and on the ventral sides of *Gackstroemia magellanica* which grew on the apex of a mound of bryophytes (in the evergreen forest "bryophyte rich facies").

Phytogeography.—Western Tierra del Fuego (I. Desolación) and southern Patagonian Channels (Brunswick Peninsula).

Brunswick Peninsula Specimens Seen.—PUERTO GALLANT REGION: NE side of Pto. Gallant (*6002 B*–c. per., *6022 A*–c. per.).

Colura patagonica Jov.-Ast

Colura patagonica Jov.-Ast Revue Bryol. Lichén. 22: 239. *f. 25.* 1953. Holotype: Chile, Prov. Magallanes, Punta Arenas, 4 February 1875, *Savatier 1979* (PC–*non vidi*).

Phytogeography.—Known only from the type locality.

Literature Record.—*Savatier*–Punta Arenas (Bonner, 1963).

HARPALEJEUNEA

(Spruce) Schiffn.[2] *in* Engl. & Prantl, Näturl. Pflanzenfam. 1 (3, 1): 126. 1895. *Lejeunea* subg. *Harpalejeunea* Spruce, Trans. Proc. Bot. Soc. Edinb. 15: 76, 164. 1884.

Key to the Brunswick Peninsula Species of *Harpalejeunea*

1. Leaves long acuminate, terminating in a unicellular row of 2-4 cells, apices distinctly recurved; carina 0.3-0.5 leaf length; ocelli not obviously differentiated. Dorsal leaf margins very broadly rounded, ventral margins straight or slightly curved .... *H. decurvicuspis*
1. Leaf apices (narrowly rounded-) narrow to broad triangular to apiculate to short acuminate, terminating in a unicellular row of 1-2 cells, apices stiff, erect, often projecting parallel with axis, rarely recurved; carina 0.60-0.75 leaf length;

[1]Bonner (1963) states *Colurolejeunea naumannii* of Schiffner (1890) is a "comb. illeg." in his *Index Hepaticarum.* Schiffner (1890) described the species as a *Lejeunea* (subgen. *Coluro-Lejeunea*) and the subgenus, being treated at its own level, is not superfluous and has priority in its own rank. It is clear from Schiffner's notes on page 35, that he intended to treat *Colurolejeunea* at the subgeneric level.

[2]For notes regarding the transfer date of *Harpalejeunea* see Bonner *et al.* (1961).

ocelli obvious, consisting of several median basal enlarged cells 2
2. Dorsal leaf margins entire, rarely crenulate- ± denticulate ... *H. marginalis*
2. Dorsal leaf margins sparingly to densely denticulate, rarely irregularly crenulate. .... *H. parasitica*

Harpalejeunea decurvicuspis (Besch. & Mass.) Steph.

Lejeunea decurvicuspis Besch. & Mass. Bull. Mens. Soc. Linn. Paris 1: 639. 1886. *Harpalejeunea decurvicuspis* (Besch. & Mass.) Steph. Spec. Hep. 5: 270. 1913. Original material: Chile, Patagonia, without specific locality, *Savatier (non vidi).*

Remarks.—This taxon is recognizable by the following ensemble of features: a) the strongly erect leaves with the basal portion at an angle of ca. 90° with the stem; b) the long acuminate, distinctly recurved leaf apices which terminate in a unicellular row of 2-4 cells; c) the comparatively short carina length, which is 0.3-0.5 the leaf length; d) the very broadly rounded dorsal leaf margins with the ventral margins straight or only slightly curved; and e) the poorly differentiated ocelli, which consist of several only moderately enlarged median-basal leaf cells. It is essential that complete leaves are dissected for the study of ocelli.

Ecology.—Quite rare in the peninsula where it occurred mixed with *Cryptochila grandiflora* on a thin soil layer over coastal rocks. The above coastal rocks (Pto. Cutter) received fresh water from rain and forest run-off, with salt water influence at most moderate. This species is not among those I repeatedly collected in tidal zone regions in the Patagonian Channels (see Engel & Schuster, 1973).

Phytogeography.—Western Tierra del Fuego (I. Desolación) and Patagonian Channels.

Brunswick Peninsula Specimens Seen.—PUERTO CUTTER REGION: N. of copper mine *(2219 D & 2301 F).*

Harpalejeunea marginalis (Hook. f. & Tayl.) Steph.

Jungermannia marginalis Hook. f. & Tayl. Lond. J. Bot. 4: 91. 1845. *Lejeunea marginalis* (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 345. 1845. *Harpalejeunea marginalis* (Hook. f. & Tayl.) Steph. Spec. Hep. 5: 271. 1913. Original material: Chile, Prov. Magallanes, I. Hermite, *Hooker s.n.* (FH!).

Remarks.—*Harpalejeunea marginalis* is very closely related to *H. parasitica. Harpalejeunea marginalis,* which appears otherwise identical to *H. parasitica,* differs in possessing leaves which are usually entire, but leaves with crenulate- ± denticulate margins may be of sporadic occurrence. Hooker & 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 crenulate.

The leaf apices of *H. marginalis* are very rarely narrowly rounded at the apex. The apices are usually narrowly triangular to apiculate to acuminate, terminating in a unicellular row of 1-2 cells.

Ecology.—On filmy ferns and bark of *Drimys* and *Nothofagus* in the evergreen forest region.

Phytogeography.—Falkland Islands, Tierra del Fuego (I. Hermite), and south Patagonian Channels (Brunswick Peninsula).

Brunswick Peninsula Specimens Seen.—BAHIA SAN NICOLAS REGION: W. side of bay *(6371 A & 6385 B).* PUERTO GALLANT REGION: B. Fortescue *(5991 D).*

Harpalejeunea parasitica (Hook. f. & Tayl.) Steph.

Jungermannia parasitica Hook. f. & Tayl. Lond. J. Bot. 3: 477. 1844. *Lejeunea parasitica* (Hook. f. & Tayl.) G. L. & N. 377. 1845. *Harpalejeunea parasitica* (Hook. f. & Tayl.) Steph. Hedwigia 29: 85. 1890, *nom. illeg. Harpalejeunea parasitica* (Hook. f. & Tayl.) Steph. Spec. Hep. 5: 268. 1913. Original material: Chile, Prov. Magallanes, I. Hermite, *Hooker* (FH!).

Lejeunea subfenestrata Mass. Nuovo G. Bot. Ital. I. 17: 249. *pl. 25, f. 30.* 1885, *syn. fide* Arnell (1958). *Harpalejeunea subfenestrata* (Mass.) Evans, Bull. Torrey Bot. Club 25: 416. 1898. Original material: Argentina, Terr. Tierra del Fuego, I. de los Estados, *Spegazzini* (G!). Chile, Prov. Magallanes, M. Sarmiento, *Spegazzini (non vidi).*

Remarks.—See "Remarks" under *H. marginalis.*

The leaves, like *H. marginalis,* are narrowly triangular to apiculate at the apices, which terminate in a unicellular row of 1-2 cells. The leaves of *H. parasitica* are only occasionally acuminate, while those of *H. marginalis* are frequently so.

Ecology.—On shrubs and branches of *Libocedrus* and *Calafate* in the evergreen forest region; in all cases mixed with *Metzgeria* sp.

Phytogeography.—Tierra del Fuego and southern Patagonian Channels (Brunswick Peninsula).

The reports from the Valdivian region (Bescherelle & Massalongo, 1889) and Tristan da Cunha (Arnell, 1958) require confirmation.

Brunswick Peninsula Specimens Seen.—BAHIA SAN NICOLAS REGION: E. side of bay *(6415)*. PUERTO CUTTER REGION: At copper mine *(2272 B & 2275)*.

LEJEUNEA[1]

Lib. 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)*.

Remarks.—There are slight differences between the Brunswick Peninsula and Falkland Island populations of this species. The two populations are compared in Table 6.

Ecology.—Evergreen *Nothofagus* region on a filmy fern and on rock or mixed with *Chiloscyphus valdiviensis* on a moist shaded cliff face.

Phytogeography.—Rare on basis of literature records; known only from the Falkland Islands, southern Patagonian Channels (Brunswick Peninsula), and Valdivian region (39°52′ S., 73°26′ W.).

Brunswick Peninsula Specimens Seen.—BAHIA SAN NICOLAS REGION: E. side of bay (*6395 B*–c. per.+ ♂, *6396*–c. per.+ ♂ & *6404*–c. per.+ ♂). PUERTO GALLANT REGION: B. Fortescue (*5994 C*–c. young ♀ + ♂).

Notes on *Lejeuneaceae* Species

1. *Cheilolejeunea savatieriana* (Besch. & Mass.) Engel

Lejeunea savatieriana Besch. & Mass. Bull. Mens. Soc. Linn. Paris 1: 638. 1886. *Harpalejeunea savatieriana* (Besch. & Mass.) Schiffn. *in* Naumann, Forschungsr. *Gazelle* 4 (4): 29. 1890. *Strep-*

[1]For details of the typification of *Lejeunea*, see Bonner & Miller (1961) and Grolle (1973b).

TABLE 6. Comparative characteristics of Brunswick Peninsula and Falkland Island populations of *Lejeunea corralensis*.

Character	Brunswick Peninsula Population	Falkland Island Population *(Engel 2582, 2587)*
leaf imbrication	distant to approximate to imbricate	closely imbricate
dorsal lobe margin	distinctly erect near insertion	slightly erect near insertion
leaf apices	narrowed to the apex, the apex broadly to rather narrowly rounded	± narrowed to a broadly rounded apex, occasionally narrowly rounded, frequently not tapering toward apex
lobe median cell size	18-29 μ long 16-23 μ wide	22-34 μ long 20-29 μ wide
angle of lobule and ventral margin of lobe	angle distinct; leaves are sharply constricted at juncture of lobe and lobule, where ventral margin of lobe flares dorsally immediately distal to juncture	angle indistinct to moderately developed

silejeunea savatieriana (Besch. & Mass.) Steph. K. Svenska VetenskAkad. Handl. 46 (9): 87. 1911, [sub *S. savatieri*]. *Cheilolejeunea savatieriana* (Besch. & Mass.) Engel, Bryologist 79: 514. 1976. Original material: Chile, Prov. Aisén, Pen. Tres Montes, Pto. Barroso, *Savatier (non vidi)*

Reported by Stephani (1911) for a Pto. Pomar collection by Halle and/or Skottsberg. I have not seen this specimen. See notes under *C. intricata* (Steph.) Engel.

2. *Strepsilejeunea setifera* Steph. Spec. Hep. 5: 296. 1913. Original material: Strait of Magellan, without specific locality, *sin. coll. (non vidi)*.

Kühnemann (1937, 1949) also reported the species for the Strait of Magellan in his catalogues. I have not seen original material of the species and I hesitate to make a perhaps unnecessary transfer to *Cheilolejeunea*.

3. *Strepsilejeunea warnstorfii* Steph. Hedwigia 35: 131. 1896. Original material: Strait of Magellan, without specific locality, *sin. coll.*, "Herb. Warnstorff" *(non vidi)*.

Kühnemann (1937, 1949) also reported the species for the Strait of Magellan in his catalogues; see also Stephani (1913). I have not seen original material of the species and I hesitate to make a perhaps unnecessary transfer to *Cheilolejeunea*.

D. Order Metzgeriales: Key to the Genera of the Brunswick Peninsula[1]

1. Plants with distinct, free, succubous lateral leaves. Antheridia sunken in small cavities on upper surface of axis; pseudoperianth tubular, contracted toward the mouth; leaves polystratose in median, basal portion ...... *Noteroclada* (p. 253)
1. Plants thalloid, without leaflike lateral lobes 2
  2. Sex organs dorsal on main thallus, neither lateral on small branches, nor on small ventral branches or in ventral masses. Each archegonial cluster subtended by a ± laciniate, scalelike involucre and with free involucral margins directed forward (not tubular or cuplike); shoot calyptra massive *Symphyogyna* (p. 254)
  2. Sex organs either lateral or ventral on extremely reduced branches, then seemingly sessile on ventral side of midrib 3
3. Thalli without a midrib; sex organs lateral on the thallus, never ventral *Riccardia* (p. 255)
3. Thalli with a well-defined midrib; sex organs ventral on the main thallus. Thallus of a unistratose wing and sharply defined midrib 4
  4. Thallus without hairs on dorsal surface; midrib cortical cells at most in 11 rows; setae 4-6 cells in diameter, outer layer of ca. 15 cells . *Metzgeria* (p. 271)
  4. Thallus with a dense covering of hairs on dorsal surface; midrib cortical cells in up to 18 rows; setae 8-10 cells in diameter, outer layer of 25-32 cells *Apometzgeria* (p. 269)

Family PELLIACEAE

Klinggr. Die höheren Cryptogamen Preussens 13. 1858.

NOTEROCLADA

Tayl. *ex* Hook. & Wils. Lond. J. Bot. 3: 166. 1844.

Noteroclada confluens Tayl. *ex* Hook. & Wils.

Noteroclada confluens Tayl. *ex* Hook. & Wils. Lond. J. Bot. 3: 166. 1844. *Jungermannia confluens* (Tayl. *ex* Hook. & Wils.) Hook. f. & Tayl. Lond. J. Bot. 3: 478. 1844. *Androcryphia confluens* (Tayl. *ex* Hook. & Wils.) Nees *in* G. L. & N. Syn. Hep. 471. 1846.

[1]Adapted and modified from Schuster (1963c).

Heteroclada confluens (Tayl. *ex* Hook. & Wils.) K. Müll. (Freib.) Reprium Nov. Spec. 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* Stephani (1900). *Androcryphia leucorhiza* (Spruce) Steph. K. Svenska VetenskAkad. Handl. 46: 15. 1911. Original material: Andes Quitensis, Mt. Altar, 3,000 m., *Spruce s. n. (non vidi).*

Remarks.—See notes in Proskauer (1955).

Ecology.—Only in drier areas of the evergreen forest region and in deciduous-evergreen ecotonal areas. In the Pto. del Hambre region it occurred on well shaded, wet soil in seepage areas and in the B. San Nicolas area on a stream bank of a grass-covered slope.

Phytogeography.—Andean South American; Falkland Islands, 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; disjunct in the Bolivian Andes (1,800 m.), Brazil, Uruguay (leg. Osorio!) and (?) Kerguelen.

Literature Records.—*Dusén*–Punta Arenas (Stephani, 1901a as *Androcryphia*); *Savatier*–Punta Arenas (Bescherelle & Massalongo, 1889); *Skottsberg & Halle*–R. de las Minas (Stephani, 1911 as *A. leucorrhiza*).

Brunswick Peninsula Specimens Seen.—RIO GRANDE: Reserva Forestal, *Pisano 3715* (F). PUNTA ARENAS REGION: Punta Arenas, December 1895, *Dusén 3* (NY); *ibid.*, *Lechler 1167* (NY–c. sporo.); *ibid.*, *Savatier 228* (PC). PUERTO DEL HAMBRE REGION: Fuerte Bulnes, Punta Santa Ana *(1817);* near Fuerte Bulnes, *Hatcher 5-4, 5-6* & *9-1* (UW-M); N. side of R. San Juan, 1 km. from straits *(1870).* BAHIA SAN NICOLAS REGION: W. side of bay *(6317 A).*

SYMPHYOGYNA

Nees & Mont. Annls. Sci. Nat. II. 5: 66. 1836.

Symphyogyna hochstetteri Nees & Mont.

Symphyogyna hochstetteri Nees & Mont. Annls. Sci. Nat. II. 5: 68. 1835. Original material: Juan Fernandez, 1830, *Bertero s. n.* (NY, S-PA)–cited in Evans (1925).

Phytogeography.—Falkland Islands, Tierra del Fuego (see Engel, 1976a), southern Patagonian Channels [Brunswick Peninsula and S. Skyring area, *cf.* Engel (1973b)], Valdivian region [38°43′ S. at Prov. Cautin, C. Ñielol, leg. *Roivainen, cf.* Engel (1976a)] and Juan Fernandez (rather common on both Mas a Tierra and Mas Afuera from 250-900 m. as well as in the cool caves of Cumberland Bay).

The report from Andean Patagonia of *S. hochstetteri* f. *simplicior* is based upon a misdetermination of *S. circinata* (*fide* Hässel de Menendez, 1961).

Brunswick Peninsula Specimen Seen.—PUERTO DEL HAMBRE REGION: Near Fuerte Bulnes, *Hatcher 3-1* (UW-M).

Symphyogyna Species Excluded from the Brunswick Peninsula

1. *Symphyogyna circinata* Nees & Mont.

Symphyogyna circinata Nees & Mont. Annls. Sci. Nat. II. 5: 69. 1836. Original material: Chile, Prov. Valparaiso, Quillota, 1829, *Bertero* (S-PA)–cited in Hässel de Menendez (1961).

The only collection with a possibility of being traceable to the Brunswick Peninsula is that of Dusén, cited in Stephani's *Species Hepaticarum* (1900, p. 338). I am excluding the species from the Brunswick, since a) the species is nearly exclusively Valdivian in southern South America, and b) Hässel de Menendez (1961) makes no reference to Strait of Magellan region collections of this species. The taxon is known from Tristan da Cunha, Inaccessible Island, Chile and Argentina [largely Valdivian, but with a single collection cited from Tierra del Fuego in Hässel de Menendez (1961)], and Juan Fernandez.

Family ANEURACEAE

Klinggr. Die höheren Cryptogamen Preussens 11. 1858.

RICCARDIA

S. Gray, Nat. Arr. Brit. Pl. 1: 679, 683. 1821 *(Riccardius),* corr. Trevisan, R. Ist. Lombardo Sci. Lett. Rend. II 7: 785. 1874.

Key to the Brunswick Peninsula Species of *Riccardia*[1]

1. Thallus without 1-many celled projections (excluding papillae) 2
1. Thallus with 1-many celled projections 17

[1]Adapted, with modifications, from treatment in Hässel de Menendez (1972).

2. Thallus, at least in the branch extremities, differentiated into a nerve of various cells in thickness and wing of 1 cell in thickness. Branches generally subopposite, pinnate or pluripinnate 3
2. Thallus never differentiated into nerve and wing 5
3. Axis similar to the branch pinnae in width and structure, etc., differentiated into nerve and wing. Antheridial cavities separated by partitions of 2-3 cells wide, the border parallel, elevated, crenulate, with 1 layer of protuberating cells; inner capsule wall layer without thickenings .... *R. patens*
3. Axis conspicuous, generally of larger diameter and with a structure distinct from the branches, etc., with or without wings 4
4. Axis 15-18 cells thick; dorsal papillae absent; stolons absent; plants dioecious; spores 11-12 μ in diameter .... *R. umbrosa*
4. Axis 8-11 cells thick; dorsal papillae present; stolons present; plants monoecious; spores 12-17 μ in diameter .... *R. autoica*
5. Thallus filamentous, biconvex, semiterete, of 120-600 μ wide (the width equivalent to approximately 1-2.5 × the thickness) 6
5. Thallus ribbonlike, at least at the branch apices (the axis width generally equivalent to more than 2.5 × the thickness) 7
6. Cell walls thin, dorsal cells of axis 24-95 μ long, 19-40 μ wide; dorsal papillae absent; plants dioecious .... *R. fuscobrunnea*
6. Cell walls thick, dorsal cells of axis 15-30(-48) μ long, 15-24 μ wide; dorsal papillae present; plants monoecious .... *R. alcicornis*
7. Thallus stratified. Capsule wall with outer layer with thickened nodular columes 8
7. Thallus not stratified 9
8. Cells of dorsal epidermal layer smaller in diameter than the internal cells *R. pallidevirens*
8. Cells of dorsal epidermal layer more or less equal in transverse diameter to the internal cells .... *R. opuntiiformis*
9. Cuticle striated .... *R. crassa*
9. Cuticle smooth 10
10. Ventral median band absent 11
10. Ventral median band differentiated 15
11. Thallus in cross-section with 1-2 peripheral layers of cells smaller in transverse diameter (i.e., narrower) 12
11. Thallus in cross-section with epidermal cells approximately equal to the internal cells, if smaller, then not forming a defined peripheral layer 14
12. Thallus in cross-section with 2 rows of peripheral cells of smaller diameter, internal cells gradually becoming larger. Ventral strata with large numbers of cells of smaller diameter frequently present; endophytic hyphae present; inner capsule wall layer with weak thickenings .... *R. spectabilis*
12. Thallus in cross-section with 1 outer row of cells smaller in transverse diameter than internal cells 13
13. Plants in dense carpets, apices of axes extending in same direction; branches inconspicuous, very short; internal cells of approximately equal width; endophytic hyphae in ventral cells. Thallus large .... *R. floribunda*
13. Plants creeping, apices of axes extending in various directions; branches conspicuous, simple or pinnate; internal lateral cells of greater transverse diame-

ter than the central cells; endophytic hyphae absent. Thallus sheetlike *R. rivularis*

14. Plants rigid; main axis biconvex, in cross-section with a subepidermal orange-brown pigmented band of thick-walled cells surrounding an inner core of cells with walls thin to slightly thickened; plants dioecious; antheridial cavities separated by 4-5 cells .... *R. tenax*
14. Plants flaccid; main axis nearly plane dorsally, convex ventrally, in cross-section without a differentiated subepidermal layer; plants monoecious; antheridial cavities separated by 1-2 cells .... *R. diversiflora*

15. Median ventral epidermal cells cubicle or rectangular .... *R. spegazziniana*
15. Median ventral epidermal cells elongated longitudinally, frequently with endophytic hyphae 16

16. Plants dioecious. Dorsal papillae absent .... *R. mycophora*
16. Plants monoecious .... *R. georgiensis*

17. Thallus with a layer of empty rounded peripheral, imbricated cells representing projections of surface cells .... *R. prehensilis*
17. Thallus without a layer of empty, peripheral, projecting cells 19

18. Ventral, longitudinal lamellae present .... *R. fuegiensis*
18. Ventral lamellae absent; squamiform multicellular projections present *R. spinulifera*

Riccardia alcicornis (Hook. f. & Tayl.) Trev.

Jungermannia alcicornia Hook. f. & Tayl. Lond. J. 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: 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* (G, K)–cited in Hässel de Menendez (1972), (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, *Skottsberg* (UPS)–cited in Hässel de Menendez (1972);[1] F. de los Ventisqueros, *Skottsberg* (G, UPS)–cited in Hässel de Menendez (1972).

Phytogeography.—Falkland Islands, Tierra del Fuego, Patagonian Channels, and north to 41°46′ S. in Valdivian West Patagonia and 41°02′ S. in Andean Patagonia.

The species is recorded for Tasmania by Hewson (1970) and Rodway (1916) and for Campbell Island by Hodgson (1962).

[1]Hässel de Menendez (1972) includes *A. subnigra* in the synonymy of both *R. alcicornis* (the syntype from F. de los Ventisqueros) and *R. tenax* (the syntype from F. Peel).

Literature Records.—Anonymous–(Bonner, 1962 as *Aneura*); *Andersson*–Pto. del Hambre (Ångström, 1872 as *Jungermannia*).

Brunswick Peninsula Specimen Seen.—PUERTO CUTTER REGION: Between copper mine and river S. of mine *(2160)*; west of copper mine *(2231)*.

Riccardia autoica (Steph.) Evans

Aneura autoica (Steph.) Evans, Bull. Herb. Boissier I. 7 (9): 691. 1899 (=Spec. Hep. 1: 232). *Riccardia autoica* (Steph.) Evans, Trans. Conn. Acad. Arts Sci. 25: 159. 1921. Original material: Chile, Prov. Aisén, R. Aisén Valley, *Dusén 298* (G, S-PA, UPS)–cited in Hässel de Menendez (1972), (UPS)–cited in Evans (1921).

Phytogeography.—Tierra del Fuego, Patagonian Channels, and north to 41°19′ S. in Valdivian West Patagonia and 40°47′ S. in Andean Patagonia; also on Juan Fernandez.

The Inaccessible Island report in Arnell (1958) should be confirmed.

Literature Record.—Roivainen–Pto. San Isidro (Arnell, 1954).

Brunswick Peninsula Specimens Seen.—SENO OTWAY REGION: B. Camden *(2039)*. PUERTO GALLANT REGION: B. Fortescue *(5985)*.

Riccardia crassa (Schwaegr.) Carring. & Pears.

Jungermannia crassa Schwaegr. Hist. Musc. Hep. Prodr. 31. 1814. *Aneura crassa* (Schwaegr.) Nees *in* G. L. & N. Syn. Hep. 500. 1846. *Sarcomitrium crassum* (Schwaegr.) Mitt. *in* Hooker f., Bot. Ant. Voy. 2: 167. 1855. *Riccardia crassa* (Schwaegr.) Carring. & Pears. Proc. Linn. Soc. N.S.W. 12: 1056. 1888. Original material: "Australasia" *(non vidi)*.

Aneura stolonifera Steph. Hedwigia 28: 129. *pl. 3, f. 1.* 1889. *Riccardia stolonifera* (Steph.) Hodgs. Rec. Dom. Mus., Wellington 4: 130. 1962. Original material: Australia, Illawarra, 1881, *Kirton* (G)–cited in Hässel de Menendez (1972).

Aneura striolata Steph. J. Linn. Soc. 29: 265. *pl. 26, f. 1-3.* 1892. Original material: New Zealand, North Island, Great Barrier Island, *Colenso 1111 (G)*–cited in Hässel de Menendez (1972).

Phytogeography.—Amphipacific; Auckland Island (Hodgson, 1962), New Zealand, Tasmania, Australia, Tierra del Fuego, and

Patagonian Channels north to 48°04′ S. in the Valdivian region.

Literature Record.—(?)*Thummie*-Strait of Magellan (Hässel de Menendez, 1972).

Brunswick Peninsula Specimen Seen.—PUERTO GALLANT REGION: NE side of Pto. Gallant *(6067 Ab)*.

Riccardia diversiflora Evans

Riccardia diversiflora Evans, Trans. Conn. Acad. Arts Sci. 25: 167. *f. 8 c, 9 a-g.* 1921. Holotype: Chile, Prov. Magallanes, Est. Gente Grande, 1895, *Dusén 25* (UPS–*non vidi*).

Phytogeography.—Tierra del Fuego and southern Patagonian Channels (Brunswick Peninsula and S. Skyring area).

The records from Tristan da Cunha and Inaccessible Island, in Arnell (1958) should be confirmed.

Brunswick Peninsula Specimens Seen.—PUERTO DEL HAMBRE REGION: N. side of R. San Juan, 1 km. from straits *(1876)*. BAHIA SAN NICOLAS REGION: Ridge between B. Bougainville and B. San Nicolas, ca. 155 m. *(6427 A)*.

Riccardia floribunda (Steph.) Evans

Aneura floribunda Steph. Bull. Herb. Boissier I. 7 (10): 749. 1899 (=Spec. Hep. 1: 259). *Riccardia floribunda* (Steph.) Evans, Trans. Conn. Acad. Arts Sci. 25: 182. 1921. Lectotype (*fide* Hässel de Menendez, 1972): Chile, Prov. Magallanes, B. Halt, April 1868, *Cunningham* (K–*non vidi*).

Aneura profunda Steph. K. Svenska VetenskAkad. Handl. 46 (9): 8. *f. 1 e.* 1911, *syn. fide* Hässel de Menendez (1972). Original material: Chile, Prov. Chiloé, I. Guaitecas, Melinca, *Skottsberg* (G)–cited in Hässel de Menendez (1972).

Riccardia innovata S. Arnell, Suomal. Eläin–Ja Kasvit. Seur. Van. Tiedon. 9: 50. *f. 5.* 1954, *syn. fide* Hässel de Menendez (1972). Holotype: Chile, Prov. Magallanes, S. Contraalmirante Martinez, B. Sarmiento, ca. 300 m., 18 February 1929, *Roivainen 2366* (S-PA–*non vidi*).

Phytogeography.—Tierra del Fuego, Patagonian Channels, and Valdivian region north to 39°52′ S. in West Patagonia and 41°02′ S. in Andean Patagonia.

The report from Inaccessible Island in Arnell (1958) requires confirmation.

Literature Records.—*Anonymous*–Strait of Magellan (Kühnemann, 1937); *Cunningham*–Pto. Gallant (Evans 1921; Hässel de Menendez, 1972) *Dusén*–Punta Arenas (Stephani, 1901a as *Aneura*).

Brunswick Peninsula Specimens Seen.—PUERTO GALLANT REGION: B. Fortescue *(5950)*. PUERTO CUTTER REGION: Between copper mine and river S. of mine *(2183)*; W. of copper mine *(2229)*.

Riccardia fuegiensis Mass.

Riccardia fuegiensis Mass. Nuovo G. Bot. Ital. I. 17: 255. *pl. 26, f. 34.* 1885. *Pseudoneura fuegiensis* Schiffn. *in* Naumann, Forschungsr. *Gazelle* 4 (4): 40. 1890. *Aneura fuegiensis* (Mass.) Evans, Contr. U.S. Natn. Herb. 1: 142. 1892. Lectotype (*fide* Hässel de Menendez, 1972): Chile, Prov. Magallanes, I. Basket, June 1882, *Spegazzini 224a* (LPS–*non vidi*).

Phytogeography.—Tierra del Fuego, Patagonian Channels north to 46°33′ S., Valdivian West Patagonia at 40°08′ S., Andean Patagonia in Prov. Chubut (L. Menéndez area), and Juan Fernandez.

Literature Records.—*Cunningham*–Strait of Magellan (Hässel de Menendez, 1972); *Savatier*–Pto. Gallant (Hässel de Menendez, 1972).

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, W. end of L. Fagnano, *Halle* (G, S-PA, UPS)–cited in Hässel de Menendez (1972), (UPS)–cited in Evans (1921).

Phytogeography.—Falkland Islands, Tierra del Fuego, and southern Patagonian Channels (Brunswick Peninsula).

Brunswick Peninsula Specimens Seen.—BAHIA SAN NICOLAS REGION: E. side of bay *(6413 A)*.

Riccardia georgiensis (Steph.) Hässel

Aneura georgiensis Steph. Wiss. Ergebn. Schwed. Südpolarexped. 4

(1): 2. 1905. *Riccardia georgiensis* (Steph.) Hässel *in* Grolle, Lindbergia 1: 80. 1971. Original material: South Georgia, Cumberland Bay, 4 May 1902, *Skottsberg* (G, S-PA)–cited in Hässel de Menendez (1972).

Aneura subantarctica Kaal. Nyt. Mag. Naturvid. 49: 87. 1911, *syn. fide* Grolle (1971b). Original material: Îsles Crozet, Île de la Possession, 1907-1908, *Ring & Raknes 4* (JE, O)–cited in Hässel de Menendez (1972).

Riccardia roivainenii S. Arnell, Suomal. Eläin–Ja Kasvit. Seur. Van Tiedon. 9: 52. *f. 8.* 1954, *syn. fide* Hässel de Menendez (1972). Holotype: Chile, Prov. Magallanes, I. Dawson, Pta. Valdes, 13 February 1929, *Roivainen 1317* (S-PA–*non vidi*).

Ecology.—Deciduous and drier portions of the evergreen forest regions, where it occurred on soil or rotted logs in *Nothofagus* forests (or in subalpine regions under protective cover of wind shorn *Nothofagus*). Also in an open *Empetrum-Nothofagus* mosaic in small pockets in the soil and in the scattered mounds of *Sphagnum* which are common in this area. The species did not occur below 155 m. in the peninsula.

Phytogeography.—Subantarctic in distribution; Îles Crozet, South Sandwich Islands, South Georgia, Falkland Islands, Tierra del Fuego, southern Patagonian Channels (only in Brunswick Peninsula-S. Skyring-Puerto Natales area), and in the Valdivian region only in Andean Patagonia (Prov. Río Negro, El Bolsón, and Prov. Santa Cruz, L. Argentino region).

Literature Records.—*Dusén*–Punta Arenas (Hässel de Menendez, 1972); *Hässel de Menendez*–Fuerte Bulnes (Hässel de Menendez, 1972).

Brunswick Peninsula Specimens Seen.—PUNTA ARENAS REGION: E. of Mina Loreto on S. side of R. de las Minas, ca. 215 m. *(1898)*; ridge above refugio (Club Andino), 8 km. W. of Punta Arenas, 305-610 m. *(1978 & 1979)*. RIO TRES BRAZOS REGION: Above river at road crossing, 155-160 m., *Ostafichuk 1368C* (MSC). BAHIA SAN NICOLAS REGION: Ridge between B. Bougainville and B. San Nicolas, ca. 155 m. (*6423 E*–c. sporo.+ ♀ + ♂ & *6434*).

Riccardia mycophora Evans

Riccardia mycophora Evans, Trans. Conn. Acad. Arts Sci. 25: 175. *f. 10. d-f.* 1921. Original material: Chile, Prov. Magallanes, Pto. Mayne, *Albatross* (US, Y–*non vidi*).

Phytogeography.—Tierra del Fuego (I. Desolación), Patagonian Channels north to 50°59′ S., and Andean Patagonia north to ca. 41° S.; not recorded from Valdivian West Patagonia.

Literature Records.—*Cunningham*–Strait of Magellan (Hässel de Menendez, 1972); *Roivainen*–Pto. San Isidro (Arnell, 1954).

Brunswick Peninsula Specimen Seen.—BAHIA SAN NICOLAS REGION: W. side of bay *(6319)*.

Riccardia opuntiiformis S. Arnell

Riccardia opuntiiformis S. Arnell, Suomal. Eläin–Ja Kasvit. Seur. Van. Tiedon. 9: 52. *f. 7.* 1954. Original material: Chile, Prov. Magallanes, B. Keta, Pto. Queta, 24 February 1929, *Roivainen 2513* (H)–cited in Hässel de Menendez (1972).

Riccardia trichomatosa S. Arnell, Suomal. Eläin–Ja Kasvit. Seur. Van. Tiedon. 9: 54. *f. 10.* 1954, *syn. fide* Hässel de Menendez (1972): Original material: Chile, Prov. Magallanes, I. Capitan Arecena, S. Staples, 15 February 1929, *Roivainen 2507* (H)–cited in Hässel de Menendez (1972).

Phytogeography.—Falkland Islands, Tierra del Fuego, and Patagonian Channels [Brunswick Peninsula and Pto. Barroso (46°49′ S.)].

Brunswick Peninsula Specimens Seen.—SENO OTWAY REGION: B. Camden *(2032 B)*; PUERTO CUTTER REGION: W. of copper mine *(2220)*.

Riccardia pallidevirens (Steph.) Evans

Aneura pallidevirens Steph. Bull. Herb. Boissier I. 7 (10): 762. 1899 (=Spec. Hep. 1: 272). *Riccardia pallidevirens* (Steph.) Evans, Trans. Conn. Acad. Arts Sci. 25: 189. 1921. Lectotype (*fide* Hässel de Menendez, 1972); Chile, Prov. Magallanes, I. Desolación, Pto. Angosto, 28 March 1896, *Dusén 171* (G–*non vidi*).

Riccardia laminaris Gola, Nuovo G. Bot. Ital. II. 29: 163. *pl. 1, f. 1.* 1923, *syn. fide* Hässel de Menendez (1972). Lectotype (*fide* Hässel de Menendez, 1972): Chile, Prov. Magallanes, Valle della Fate, 9 March 1913, *Gasperi* (TO–*non vidi*).

Phytogeography.—Inaccessible Island, Falkland Islands, Tierra del Fuego, Patagonian Channels (Brunswick Peninsula-Río Rubens area), Valdivian region (Prov. Valdivia only), and Juan Fernandez; not recorded for Andean Patagonia.

Brunswick Peninsula Specimens Seen.—BAHIA SAN NICOLAS REGION: Ridge between B. Bougainville and B. San Nicolas, ca. 155 m. (*6420 C*–c. perigyn.+sporo.+ ♂, *6423 D* & *6438*). PUERTO GALLANT REGION: NE side of Pto. Gallant (*6043 B, 6067 A, 6077* & *6082 A*). PUERTO CUTTER REGION: N. of copper mine (*2217*).

Riccardia patens Hässel

Riccardia patens Hässel, Revta Mus. Argent. Cienc. Nat. Bernardino Rivadavia Inst. Nac. Invest. Cienc. Nat. 4: 165. *f. 44 a-k.* 1972. Holotype: Chile, Prov. Magallanes, Fuerte Bulnes, 4 February 1962, *C. A.* and *G. Hässel de Menendez 532* (BA–*non vidi*).

Phytogeography.—Inaccessible Island, Tierra del Fuego (I. Grande de Tierra del Fuego), Patagonian Channels (Brunswick Peninsula-S. Skyring area), and Valdivian region (West Patagonia at 40°08′ S. and Andean Patagonia north to 40°49′ S.); also at Talinay (Prov. Coquimbo).

Literature Record.—*Hässel de Menendez*–Fuerte Bulnes (Hässel de Menendez, 1972).

Brunswick Peninsula Specimens Seen.—PUNTA ARENAS REGION: E. of Mina Loreto on S. side of R. de las Minas, ca. 700 ft. (*1880*). BAHIA SAN NICOLAS REGION: E. side of bay (*6401 A*–c. sporo.).

Riccardia prehensilis (Hook. f. & Tayl.) Mass.

Jungermannia prehensilis Hook. f. & Tayl. Lond. J. 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: 167. 1855. *Pseudoneura prehensilis* (Hook. f. & Tayl.) Schiffn. *in* Naumann, Forschungsr. *Gazelle* 4 (4): 41. 1890. *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. I. 17: 255. 1885. Original material: Chile, Prov. Magallanes, I. Hermite, *Hooker* (G, K, S-PA)–cited in Hässel de Menendez (1972), (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. 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.*

Aneura savatieri Steph. Hedwigia 32: 26. 1893, *syn. fide* Hässel de Menendez (1972). *Riccardia savatieri* (Steph.) Evans, Trans. Conn. Acad. Arts Sci. 25: 124. 1921. *Aneura prehensilis* var. *savatieri* (Steph.) Mass. Atti Ist. Veneto Sci. 87: 241. 1927. Original material: Chile, Prov. Magallanes, Strait of Magellan, without specific locality, *Savatier 205 (non vidi).*

Aneura lindaviana Steph. Spec. Hep. 6: 33. 1917. Original material: "without definite locality, southern Chile," 1902, *Reiche* (G) —cited in Evans (1921) and Hässel de Menendez (1972).

Ecology.—Only in wetter regions of the evergreen forest region. Common in the "bryophyte rich facies" on sides of bryophyte mounds, often intermixed with other Hepaticae, particularly *Adelanthus lindenbergianus, Anastrophyllum involutifolium, Gackstroemia magellanica,* and *Jamesoniella colorata.* In addition, the species is corticolous in forested areas and saxicolous in coastal areas.

The above-mentioned coastal rocks (Pto. Cutter) received fresh water from rain and forest run-off, with salt water influence at most moderate. This species is not among those that I repeatedly collected in tidal zone regions in the Patagonian Channels (see Engel & Schuster, 1973).

Phytogeography.—Îles Crozet, Marion Island, Tristan da Cunha, Gough Island, Falkland Islands, Tierra del Fuego, Patagonian Channels, north to 39°25′ S. in Valdivian West Patagonia and 40°43′ S. in Andean Patagonia.

Literature Records.—*Anonymous*–Strait of Magellan (Hässel de Menendez, 1972); *Andersson*–Pto. del Hambre (Ångström, 1872 as *Jungermannia*), Strait of Magellan and Pto. del Hambre (Hässel de Menendez, 1972); *Naumann*–Punta Arenas (Schiffner, 1890 as *Pseudoneura*); *Roivainen*–Pto. San Isidro (Arnell, 1954; Hässel de Menendez, 1972); *Skottsberg & Halle*–Pto. Cutter (Stephani, 1911 as *Aneura*; Hässel de Menendez, 1972).

Brunswick Peninsula Specimens Seen.—SENO OTWAY REGION: B. Camden (*2032*). PUERTO SAN ISIDRO: 12 February 1929, *Roivainen 2401* as *R. mycophora* & *2401b* (H); 13 February 1929, *Roivainen 844* & *2389b* (H). BAHIA DEL INDIO: Lote San Isidro, R. Yumbel, *Pisano 4008* (F). BAHIA SAN NICOLAS REGION: W. side of bay *(6347, 6357* & *6373 A)*. PUERTO GALLANT REGION: B. Fortescue *(5971)*; NE side of Pto. Gallant (*6004 C, 6008 A, 6012 B, 6027 A*–c. ♀+♂, *6042 C*–c. perigyn. & *6053 C*). PUERTO CUTTER REGION: Between copper mine and river S. of mine *(2143, 2175 A, 2176 A* & *2179 B-1)*; N. of copper mine (2195); slightly W. of copper mine *(2252)*.

Riccardia rivularis Hässel

Riccardia rivularis Hässel, Revta Mus. Argent. Cienc. Nat. Bernardino Rivadavia Inst. Nac. Invest. Cienc. Nat. 4: 52. 1972. Holotype: Argentina, Prov. Río Negro, P. Nac. Nahuel Huapi, Puerto Blest, road to L. Frias, 27 April 1965, *Hässel de Menendez 1842* (BA–*non vidi*).

Phytogeography.—Tierra del Fuego, Patagonian Channels north to 50°59′ S., and Andean Patagonia in L. Nahuel Huapi area.

Literature Record.—*Cunningham*–Strait of Magellan (Hässel de Menendez, 1972).

Riccardia spectabilis (Steph.) Evans

Aneura spectabilis Steph. Bull. Herb. Boissier I. 7 (10): 746. 1899 (=Spec. Hep. 1: 256). *Riccardia spectabilis* (Steph.) Evans, Trans. Conn. Acad. Arts Sci. 25: 140. 1921. Lectotype (*fide* Hässel de Menendez, 1972): Chile, Prov. Magallanes, I. Desolación, Pto. Angosto, 27 March 1896, *Dusén 166* (UPS–*non vidi*).

Phytogeography.—Falkland Islands, Tierra del Fuego, and Patagonian Channels north to 46°44′ S. in the Valdivian region.

Literature Records.—*Cunningham*–Pto. Gallant (Evans, 1921); *Roivainen*–Pto. San Isidro (Hässel de Menendez, 1972).

Brunswick Peninsula Specimens Seen.—BAHIA SAN NICOLAS REGION: Ridge between B. Bougainville and B. San Nicolas, ca. 155 m. *(6420 D)*. PUERTO GALLANT REGION: B. Fortescue *(5986)*; NE side of Pto. Gallant *(6070 F)*. PUERTO CUTTER REGION: Between copper mine and river S. of mine *(2161 F* & *2177)*.

Riccardia spegazziniana Mass.

Riccardia spegazziniana Mass. Nuovo G. Bot. Ital. I. 17: 254. *pl. 25, f. 32.* 1885. *Aneura spegazziniana* (Mass.) Steph. Hedwigia 32: 138. 1893. Original material: Argentina, Terr. Tierra del Fuego, I. de los Estados, *Spegazzini* (LPS)–cited in Hässel de Menendez (1972), (VER)–cited in Evans (1921).

Aneura spiniloba Steph. K. Svenska VetenskAkad. Handl. 46 (9): 9. *f. 1 g.* 1911, *syn. fide* Hässel de Menendez (1972). Original material: Chile, Prov. Magallanes, S. Skyring, B. Rodriguez, 25 April 1908, *Halle & Skottsberg 82* (S-PA, UPS)–cited in Hässel de Menendez (1972).

Ecology.—Well-shaded soil near a stream in a forested ravine in the very wet western end of the peninsula.

Phytogeography.—Tierra del Fuego and Patagonian Channels north to 44°19′ S. in Valdivian region (400-860 m. on C. Tesoro).

Literature Record.—*Savatier*–Pto. Gallant (Hässel de Menendez, 1972).

Brunswick Peninsula Specimen Seen.—PUERTO CUTTER REGION: Base of M. Condor *(2334 B).*

Riccardia spinulifera Mass.

Riccardia spinulifera Mass. Nuovo G. Bot. Ital. I. 17: 254. *pl. 26, f. 33.* 1885. *Aneura spinulifera* (Mass.) Steph. Hedwigia 32: 138. 1893. Lectotype (*fide* Hässel de Menendez, 1972): Chile, Prov. Magallanes, M. Sarmiento, May 1882, *Spegazzini 237* (LPS–*non vidi*).

Riccardia spinulifera Mass. var. *β scabrifrons* Mass. Nuovo G. Bot. Ital. I. 17: 255. 1885. Original material: Chile, Prov. Magallanes, I. Basket, June 1882, *Spegazzini* (LPS)–cited in Hässel de Menendez (1972).

Spinella magellanica Schiffn. *in* Naumann, Forschungsr. *Gazelle* 4 (4): 42. *pl. 8, f. 17-19.* 1890, *nom. illeg. incl. spec. prior.* Original material: Chile, Prov. Magallanes, I. Desolación, B. Tuesday, 2 February 1876, *Naumann* [F(H)]–cited in Hässel de Menendez (1972), (Y)–cited in Evans (1921).

Ecology.—Collected but once in the peninsula and then in the very wet western end. It formed extensive masses on vertical soil banks immediately above the coastal rocks but below the forest.

Phytogeography.—Tierra del Fuego, Patagonian Channels north to 46°33′ S. and at ca. 40° S. in Valdivian region.

Literature Record.—*Anonymous*–Strait of Magellan (Hässel de Menendez, 1972).

Brunswick Peninsula Specimen Seen.—PUERTO CUTTER REGION: N. side of copper mine *(2316)*.

Riccardia tenax (Steph.) Evans

Aneura tenax Steph. Bull. Herb. Boissier I. 7 (10): 755. 1899 (=Spec. Hep. 1: 265). *Riccardia tenax* (Steph.) Evans, Trans. Conn. Acad. Arts Sci. 25: 186. 1921. "Lectotype" (*fide* Hässel de Menendez, 1972): Chile, Prov. Magallanes, I. Desolación, Pto. Angosto, 30 March 1896, *Dusén 195* (G, S-PA, UPS).

Aneura nudimitra Steph. Spec. Hep. 6: 35. 1917, *syn. fide* Hässel de Menendez (1972). *Riccardia nudimitra* (Steph.) Evans, Trans. Conn. Acad. Arts Sci. 25: 177. 1921. Original material: Chile, Prov. Magallanes, I. Capitan Arecena, B. Morris, *Harriot 62* (G)–cited in Evans (1921), (G, PC)–cited in Hässel de Menendez (1972).

Phytogeography.—Falkland Islands, Tierra del Fuego, Patagonian Channels north to 46°45′ S. in Valdivian region; also West Patagonia at ca. 40°08′ S., Andean Patagonia at 41°05′ S., and Juan Fernandez.

Literature Records.—*Anonymous*–Strait of Magellan (Kühnemann, 1937); *Cunningham*–Pto. Gallant (Hässel de Menendez, 1972), Strait of Magellan (Stephani, 1899 as *Aneura*); *Dusén*–Punta Arenas (Hässel de Menendez, 1972); *Hässel de Menendez*–Fuerte Bulnes (Hässel de Menendez, 1972); *Roivainen*–Pto. San Isidro (Hässel de Menendez, 1972).

Brunswick Peninsula Specimens Seen.—PUERTO SAN ISIDRO: 13 February 1929, *Roivainen 2396* (H). BAHIA SAN NICOLAS REGION: W. side of bay *(6351 B)*. PUERTO CUTTER REGION: Base of M. Condor *(2329)*.

Riccardia umbrosa (Schiffn.) Hässel

Aneura umbrosa Schiffn. *in* Naumann, Forschungsr. *Gazelle* 4 (4): 42. *pl. 8, f. 10, 11.* 1890. *Riccardia umbrosa* (Schiffn.) Hässel, Boln Soc. Argent. Bot. 11: 98, 101. 1967, *nom. illeg. Riccardia umbrosa* (Schiffn.) Hässel, Revta Mus. Argent. Cienc. Nat. Bernardino Rivadavia Inst. Nac. Invest. Cienc. Nat. 4: 184. 1972. Original material: Chile, Prov. Magallanes, I. Desolación, B. Tuesday, *Naumann* (FH)–cited in Evans (1921) and Hässel de Menendez (1972).

Pseudoneura crispa Schiffn. *in* Naumann, Forschungsr. *Gazelle* 4 (4): 41. *pl. 8. f. 14-15.* 1890. *Aneura crispa* (Schiffn.) Steph. Hedwigia 32: 137. 1893 *non A. crispa* Col. Trans. Proc. N.Z. Inst. 18: 552. 1885. *Riccardia crispa* (Schiffn.) Evans, Trans. Conn. Acad. Arts Sci. 25: 131. 1921 *non R. crispa* (Col.) Hodgs. Trans. R. Soc. N. Z. 3: 90. 1965. Original material: Chile, Prov. Magallanes, I. Desolación, B. Tuesday, 2 February 1876, *Naumann* (FH)–cited in Evans (1921) and Hässel de Menendez (1972), (Y)–cited in Evans (1921).

Aneura endiviaefolia Goeb. Organog. Pflanzen p. 279. *f. 176.* 1898, *syn. fide* Evans (1921). Original material: Without specific locality or collector [1] *(non vidi).*

Phytogeography.—Tierra del Fuego, Patagonian Channels, Valdivian West Patagonia north to 39°56′ S., and Andean Patagonia in L. Nahuel Huapi area.

Literature Records.—*Anonymous*–Strait of Magellan (Stephani, 1900 as *Aneura crispa*); *Dusén*–Strait of Magellan (Hässel de Menendez, 1972); *Lechler*–Pto. Gallant (Evans, 1921 as *R. crispa*); *Savatier*–Pto. Gallant (Hässel de Menendez, 1972), Strait of Magellan (Stephani, 1899 as *A. crispa*); *Skottsberg & Halle*–Pto. Cutter (Stephani, 1911 as *A. crispa*; Hässel de Menendez, 1972).

Brunswick Peninsula Specimens Seen.—PUERTO GALLANT REGION: NE side of Pto. Gallant *(6057 B)*. PUERTO CUTTER REGION: Between copper mine and river S. of mine *(2156);* slightly W. of copper mine (*2241*–c. sporo); base of M. Condor *(2348)*.

Riccardia Species Excluded from the Brunswick Peninsula

1. *Riccardia granulata* (Steph.) Evans

Aneura granulata Steph. Hedwigia 32: 21. 1893. *Riccardia granu-*

[1]According to Evans (1921), Goebel's figure and description of *Aneura endiviaefolia* were drawn from Dusén material from Isla Desolación as they correspond to Dusén material gathered from this locality on deposit in the Stephani herbarium. However, Hässel de Menendez (1972) lists two additional localities for Dusén specimens labeled *Aneura endiviaefolia* in the Stephani herbarium, e.g., I. Guaitecas and I. Newton-Caleta Columbine. These specimens were apparently unknown to Evans.

lata (Steph.) Evans, Trans. Conn. Acad. Arts Sci. 25: 192. 1921. Original material: Argentina, I. de los Estados, March 1882, *Spegazzini 17* (LPS)–cited in Hässel de Menendez (1972).

The report of the species in Stephani (1911) for a Halle and/or Skottsberg collection from R. de las Minas is erroneous since, according to Hässel de Menendez (1972), it is based upon a specimen of *Phaeoceros* sp. (*fide* specimen in UPS). *Riccardia granulata* is known from South Georgia, Falkland Islands, and Tierra del Fuego (Hässel de Menendez, 1972).

2. *Riccardia pinnatifida* (Sw.) Trev.

Jungermannia pinnatifida Sw. *in* Nees, Enum. Plant. Crypt. Javae . . . p. 9. 1830. *Aneura pinnatifida* (Sw.) Dum. Recueil Obs. Jungerm. 26. 1835. *Sarcomitrium pinnatifidum* (Sw.) Mitt. *in* Hook. f. Bot. Ant. Voy. 2: 167. 1855. *Riccardia pinnatifida* (Sw.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 431. 1877. Original material: Java, *sin. coll. (non vidi);* Jamaica, *Swartz (non vidi);* Brazil, *Martius (non vidi).*

Reported by Stephani (1901a as *Aneura*) for a Dusén collection from Punta Arenas. Hässel de Menendez (1972, p. 231), who excluded the species for southern South America, pointed out the specimen on which the Brunswick report is based is actually one of *Riccardia georgiensis*.

Family METZGERIACEAE

Klinggr. Die höheren Cryptogamen Preussens 10. 1858.

APOMETZGERIA

Kuw. Revue Bryol. Lichén. 34: 212. 1966.

Key to the Brunswick Peninsula Species of *Apometzgeria*

1. Thallus strongly convex, often with margin inrolled; ventral wing surface with hairs either absent or very sparcely developed .... *A. frontipilis*
1. Thallus plane, if convex, only locally and slightly, not with margins inrolled; ventral wing surface densely covered with hairs .... *A. pubescens*

Apometzgeria frontipilis (Lindb.) Kuw. & Engel

Metzgeria frontipilis Lindb. Acta Soc. Fauna Flora Fenn. 1 (2): 14. *f. 2.* 1877. *Apometzgeria frontipilis* (Lindb.) Kuw. & Engel *in* Engel & Kuwahara, Bryologist 76: 295. 1973. Original material: Chile, Prov. Magallanes, Strait of Magellan, without specific locality, *Jacquinot (non vidi);* Prov. Magallanes, I. Hermite, *Hooker (non vidi).*

Metzgeria brevialata Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6): 20. 1900, *syn. fide* Evans (1923). Original material: Chile, Prov. Chiloé, I. de San Pedro, *Dusén (non vidi).*

Ecology.—In the wetter portions of the evergreen *Nothofagus* forests this species occurred on *Pernettya* branches, with other plants in sheets of vegetation pendent from branches or logs and on the side of a mound of bryophytes in the evergreen forest "bryophyte rich facies." In drier evergreen forests the species occurred on soil.

Phytogeography.—Tierra del Fuego, Patagonian Channels, and north in the Valdivian region to 41°02′ S. in Andean Patagonia.

Literature Records.—*Anonymous*–Strait of Magellan (Kühnemann, 1937, 1949 as *Metzgeria*); *Cunningham, Hahn, Pehlke*–Strait of Magellan (Stephani, 1899 as *Metzgeria*); *Dow*–Strait of Magellan (*Evans,* 1923 as *Metzgeria*); *Lechler*–Rada York (Evans, 1923 as *Metzgeria*), Strait of Magellan (Stephani, 1899 as *Metzgeria*); *Naumann*–Punta Arenas (Schiffner, 1890 as *Metzgeria*), Strait of Magellan (Stephani, 1899 as *Metzgeria*).

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, 1901, *Schubert* (FH). BAHIA SAN NICOLAS REGION: W. side of bay *(6338).* PUERTO GALLANT REGION: B. Fortescue (*5947*–c. ♂ & *5990*); NE side of Pto. Gallant *(6013).* PUERTO CUTTER REGION: Between copper mine and river S. of mine *(2132);* at copper mine *(2283).*

Apometzgeria pubescens (Schrank) Kuw.

Jungermannia pubescens Schrank, Prim. Fl. Salisb. 231. 1792. *Metzgeria pubescens* (Schrank) Raddi, Jungermanniogr. Etrusca, Modena p. 35. 1818. *Herverus pubescens* (Schrank) S. F. Gray, Nat. Arr. Brit. Pl. 1: 685. 1821. *Fasciola pubescens* (Schrank) Dum. Comment. Bot. 114. 1822. *Echinogyna pubescens* (Schrank) Dum. Syll. Jungerm. Eur. 84. 1831. *Echinomitrium furcatum* var. *pubescens* (Schrank) Corda *in* Sturm, Deutschl. Fl. 2: 78. 1829. *Echinomitrium pubescens* (Schrank) Hüb. Hep. Germ. 48. 1834. *Apometzgeria pubescens* (Schrank) Kuw. Revue Bryol. Lichén. 34 (1-2): 214. 1966. Original material: *non vidi.*

Metzgeria duricosta Steph. Spec. Hep. 6: 50. 1917, *syn. fide* Kuwahara (1966). Original material: Korea, Quelpart Is., *Faurie* (G)–cited in Kuwahara (1966).

Phytogeography.—Bipolar; in the southern hemisphere known only from the Brunswick Peninsula (see notes in Engel & Kuwahara, 1973) and in the northern hemisphere from the Himalayas, Interior China, Korea, Japan, Aleutians, North America (principally Pacific coast and New England), and Europe (*fide* Kuwahara, 1966).

Literature Records.—*Jacquinot*–Strait of Magellan (Montagne, 1845, 1852 as *Metzgeria;* G. L. & N., 1846 as *Metzgeria.*).

Brunswick Peninsula Specimens Seen.—PUNTA ARENAS REGION: Punta Arenas, February 1906, *Thaxter 91* (MICH–c. perigyn.). PUERTO DEL HAMBRE REGION: Near Fuerte Bulnes, *Hatcher 2-6* (UW-M).

METZGERIA

Raddi, Mem. Soc. It. Modena 18: 34. 1818.

KEY TO THE BRUNSWICK PENINSULA SPECIES OF *Metzgeria*

1. Dorsal surface of thallus with a dense covering of hairs; midrib cortical cells in up to 18 rows; setae 8-10 cells in diameter, the outer layer of 25-32 cells [see genus *Apometzgeria*]
1. Dorsal surface of thallus without hairs; midrib cortical cells at most in 11 rows; setae 4-6 cells in diameter, the outer layer of ca. 15 cells 2
 2. *Dorsal* cortical cells of midrib in more than 2 rows. Hairs on margin and ventral surface of midrib, borne singly; gemmae absent .... *M. decrescens*
 2. *Dorsal* cortical cells of midrib in 2 rows 3
3. *Ventral* cortical cells of midrib in 4-8 rows. Marginal hairs often in divaricate pairs, ventral surface of wings usually with scattered hairs; thallus plane or slightly convex; gemmae marginal on unspecialized branches .... *M. divaricata*
3. *Ventral* cortical cells of midrib in 2 rows 4
 4. Dried plants becoming bluish with age; gemmae convex, borne on narrow ± ascending branches. Marginal hairs usually single .... *M. violacea*
 4. 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*) 5
5. Marginal hairs single; thallus plane or only slightly convex ...... *M. decipiens*
5. Marginal hairs paired; thallus strongly convex to revoluted ..... *M. leptoneura*

Metzgeria decipiens (Mass.) Schiffn.

Metzgeria furcata β decipiens Mass. Nuovo G. Bot. Ital. I. 17: 256. *pl. 28, f. 36.* 1885. *Metzgeria decipiens* (Mass.) Schiffn. *in* Naumann, Forschungsr. *Gazelle* 4 (4): 43. 1890. Original material:

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 (=Spec. Hep. 1: 287), *syn. fide* Evans (1923). Original material: Chile, Strait of Magellan, without specific locality, *Dusén, Naumann, Spegazzini;* Chile, without specific locality, *Gay, Krause;* New Zealand, *Beckett,* Auckland, *Cheeseman* (G) and *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: Falkland Is., near Port Stanley, 1907, *Skottsberg 356* (UPS)–cited in Evans (1923).

Metzgeria howeana Steph. *in* Steph. & Watts, J. Proc. R. Soc. N. S. W. 48: 126. 1914, *syn. fide* Kuwahara (1966). Lectotype (*cf.* Kuwahara, 1966): Australia, *Watts* (G–*non vidi*).

Metzgeria caledonica Steph. Spec. Hep. 6: 48. 1917, *syn. fide* Kuwahara (1966). Lectotype (*cf.* Kuwahara 1966): New Caledonia, *Le Rat* (G–*non vidi*).

Remarks.—The cortical cells of *M. decipiens* are consistently in two rows dorsally and usually in two rows ventrally. However, on the ventral surface a midrib may be locally three or four cells across. This condition is usually present immediately basal to the origin of a branch.

Ecology.—Rather common in forested situations in the evergreen forest region and in evergreen-deciduous ecotone areas where on soil, rock, bark at the bases of *Nothofagus* and *Drimys* and, less commonly, in sheets of vegetation or on rotted stumps. In the "bryophyte rich facies" area it grew on bark of *Berberis illicifolia.*

Phytogeography.—Amphipacific temperate; north to 39°38′ S. in West Patagonia (also present on Juan Fernandez); well represented in temperate areas in the New Zealand sector with extension in this sector north to Japan; also on Marion and Prince Edward Islands (see pl. 15).

Literature Records.—*Anonymous*–Strait of Magellan (Kühnemann, 1937, 1949 as *M. glaberrima*); *Dusén*–Pto. Gallant

(Evans, 1923); *Naumann*–Strait of Magellan (Stephani, 1899 as *M. glaberrima*).

Brunswick Peninsula Specimens Seen.—SENO OTWAY REGION: B. Camden (*1994*–c. ♀, *2016*–c. ♂, *2019*–c. ♂+♀, *2026*–c. ♀ & *2033*–c. ♂+♀). PUERTO DEL HAMBRE REGION: Fuerte Bulnes, Pta. Santa Ana (*1811*–c. ♀); near Fuerte Bulnes, *Hatcher 4-12 & 8-2* (UW-M); N. side of R. San Juan, 1 km. from straits (*1865*). BAHIA SAN NICOLAS REGION: E. side of bay (*6390 A*–c. ♂). PUERTO GALLANT REGION: B. Fortescue (*5979 C*–c. sporo.+♀+♂ & *5981*–c. ♀). PUERTO CUTTER REGION: Between copper mine and river S. of mine (*2166*–c. ♀); at copper mine (*2272 A*–c. ♀).

Metzgeria decrescens Steph.

Metzgeria decrescens Steph. Bull. Herb. Boissier I. 7 (12): 932. 1899 (=Spec. Hep. 1: 280). Original material: Chile, Prov. Aisén, R. Aisén Valley, January 1897, *Dusén 416* (NY)–cited in Evans (1923).

Metzgeria terricola Steph. Bull. Herb. Boissier I. 7 (12): 933. 1899 (=Spec. Hep. 1: 281), *syn. fide* Evans (1923). Original material[1]: Chile, Prov. Magallanes, Strait of Magellan, without specific locality, *Savatier* and *Dusén (non vidi)*.

Metzgeria longiseta Steph. Bull. Herb. Boissier I. 7 (12): 934. 1899 (=Spec. Hep. 1: 282), *syn. fide* Evans (1923). Original material: Chile, Strait of Magellan, without specific locality, July 1885, *sin. coll.* (G)–cited in Evans (1923).

Metzgeria dusenii Steph. Bull. Herb. Boissier I. 7 (12): 942. 1899 (=Spec. Hep. 1: 290), *syn. fide* Evans (1923). Original material: Chile, Prov. Magallanes, I. Desolación, Pto. Angosto, March 1896, *Dusén 159* (NY, S-PA, UPS)–cited in Evans (1923).

Remarks.—Kuwahara (1969) recognized *M. decrescens* and *M. terricola* as distinct species utilizing cortical cell number and wing cell protrusion as distinguishing characters. According to Kuwa-

[1]According to Evans (1923), Stephani based *M. terricola* on a Savatier specimen from I. Desolación and a Dusén specimen from I. Newton. Evans (*loc. cit.*, p. 279 and 283) cited a Savatier specimen in hb. G as "presumably the type of *M. terricola*." This typification should be ignored as it is based on a closer resemblance of the Savatier specimen to the type of *M. decrescens* than that of the Dusén specimen. Further, Evans (*loc. cit.*, p. 283) states the Dusén collection "evidently formed a part of the material from which the description of *M. terricola* was drawn."

hara (*loc. cit.*, p. 361), *M. decrescens* has "Epidermal cells of the midrib in (2-)3(-4) rows on the dorsal side (and) (2-)4(-5) rows on the ventral side (with) cells of the lamina more or less protruded," while *M. terricola* has "Epidermal cells of the midrib in 3-5 rows on the dorsal side (and) 3-7 rows on the ventral side (with) cells of the lamina not protruded."

Evans (1923, figures 2, B-E) illustrates a series of transverse sections through midribs of type material. The figures illustrate a rather wide variation in dorsal and ventral midrib cell number from three rows dorsally and four ventrally (fig. E) to six dorsally and 10 ventrally (fig. B). Based upon material of this species I have studied to date, the dorsal cortical cells occur in 2-9 rows dorsally and 3-11 rows ventrally with a variation in protrusion of cells. As the characters utilized by Kuwahara are variable and there are apparently no other distinguishing features, I am following Evans in the treatment of *M. terricola* as a synonym of *M. decrescens*.

Phytogeography.—Tierra del Fuego, Patagonian Channels, Valdivian region north to 44°15′ S. and Juan Fernandez (1,000-1,150 m. on Mas Afuera).

Hodgson (1962) records the species from Campbell Island, but states "the identification may be subject to further investigation."

Literature Records.—*Anonymous*–Strait of Magellan (Evans, 1923; Kuwahara, 1969 as *M. decrescens and M. terricola*); *Dusén*–Strait of Magellan (Hodgson, 1961, 1962).

Brunswick Peninsula Specimens Seen.—PUERTO GALLANT REGION: NE side of Pto. Gallant *(6069)*. PUERTO CUTTER REGION: N. side of copper mine (*2312*–c. ♀).

Metzgeria divaricata Evans

Metzgeria divaricata Evans, Proc. Am. Acad. Arts Sci. 58: 288. *f. 4.* 1923. Original material: Chile, Prov. Concepción, Concepción, *Thaxter 90* (FH, Y–*non vidi*).

Ecology.—Only on *Drimys* bark.

Phytogeography.—Valdivian-Brunswick Peninsula in distribution; also known from "Frai Jorge" (Prov. Coquimbo).

Brunswick Peninsula Specimens Seen.—SENO OTWAY REGION: B. Camden (*2007*–c. ♀ & *2034*). PUERTO CUTTER REGION: At copper mine *(2265)*.

Metzgeria leptoneura Spruce

Metzgeria leptoneura Spruce, Trans. Proc. Bot. Soc. Edinb. 15: 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: Scotland, Co. Sutherland, 1837, *Greville.* Ireland, Co. Kerry, Co. Killarney, *sin. coll.;* Co. Kerry, Brandon Mts., *Lindberg, D. Moore.* United States, Alleghany Mts., 1843, *Sullivant & Gray.* Jamaica, *Swartz.* Chile, Prov. Magallanes, I. Hermite, *sin. coll.* New Zealand, *Hooker 164.* Sikkim, *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).

Metzgeria 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 (=Spec. Hep. 1: 293), *syn. cf.* Kuwahara (1966). Lectotype (*cf.* Kuwahara 1966): Java, Mt. Megamendong, 1,220-1,830 m., *Motley* (G-1031–*non vidi*).

Metzgeria longipila Steph. *in* Stephani & Watts, J. Proc. 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. Spec. Hep. 6: 47. 1917, *syn. cf.* Kuwahara (1969). Original material: Africa, Mt. Kenya, *Allan (non vidi).*

Metzgeria pilosa Steph. Spec. 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, 1,400-1,500 m., *Schwabe 101* (? JE, *non vidi*).

[1]*M. 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).

Remarks.—*Metzgeria leptoneura* is apparently the oldest available name for the "*Metzgeria hamata*" complex; see comments in Engel (1976b).

This species apparently differs from *M. procera* chiefly with respect to cell size, as discussed in Kuwahara (1969), who states the median lamina cells of *M. hamata* are 40-60×25-35 μ and those of *M. procera* 67-105×40-74 μ. The FH collection and *Engel 2343* and *6400* possess quite large cells, collectively measuring 42-68×39-59 μ. While the cell width measurements fit those given for *M. procera*, the length measurements are more comparable to those given for *M. hamata*. These Brunswick collections are thus somewhat intermediate between *M. procera* and *M. leptoneura*. Further study of this complex may reveal there is but a single, even more variable, species at hand. Kuwahara (1969) admits *M. hamata* is a "very variable species."

Engel 2237 is an interesting specimen which Dr. Y. Kuwahara regards as a form of "*M. hamata*" and close to *M. procera*. The plants are monoecious and possess median lamina cells 56-103×35-54. *M. leptoneura* is otherwise known only in the dioecious condition and has smaller (see above) median lamina cells.

Phytogeography.—Widespread in distribution; it seems highly oceanic in distribution, and is absent from interior continental areas (see pl. 19).

Literature Records.—*Naumann*–Punta Arenas (Evans, 1923 and Reimers, 1926 as *M. hamata*).

Brunswick Peninsula Specimens Seen.—PUNTA ARENAS REGION: Punta Arenas, *sin. coll.* as *M. linearis* (FH). BAHIA SAN NICOLAS REGION: E. side of bay (*6400*). PUERTO CUTTER REGION: W. of copper mine (*2237*–c. ♂+♀); base of M. Condor (*2343*–c. ♂+♀).

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* Hüb. 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.) Hodgs. *in* Hodgson & Sainsbury, Svensk. Bot. Tidskr. 42: 278. 1948. Original material: New Zealand, Dusky Bay, 1773, *Sparrmann* (LD)–cited in Evans (1923).

Metzgeria antarctica Steph. Spec. Hep. 6: 47. 1917, *syn. fide* Evans (1923). Original material: Chile, Prov. Magallanes, Punta Arenas, *von Schrenk* (G)–cited in Evans (1923).

Ecology.—In steppe region, deciduous forests, and drier portions of evergreen forests. In the peninsula the species is usually corticolous (commonly *Berberis illicifolia*), but may occasionally be saxicolous in protected situations.

Phytogeography.—Falkland Islands, Tierra del Fuego, Southern Patagonian Channels (Brunswick Peninsula), Valdivian region (West Patagonia north to 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." See also Bizot & Pócs (1974).

Literature Records.—*Dusén*–Punta Arenas (Reimers, 1926); *von Schrenk*–Punta Arenas (Evans, 1923).

Brunswick Peninsula Specimens Seen.—CHABUNCO REGION: Headland at Cabo Negro, *Ostafichuk 1231*–c. ♀ & *1263A* (MSC). PUNTA ARENAS REGION: Punta Arenas, 22 November 1895, *Dusén* as *M. angusta* (G, H). SENO OTWAY REGION: E. of Canelos and just W. of Ch. La Quema *(2047 & 2050)*. PUERTO DEL HAMBRE REGION: Fuerte Bulnes, Pta. Santa Ana (*1822*–c. ♂ + ♀, *1853*–c. ♂ & *1855*–c. ♀), *Imshaug 38736* (MSC); near Fuerte Bulnes, *Hatcher 4-8* (UW-M).

Metzgeria Species Excluded from the Brunswick Peninsula

1. *Metzgeria fucoides* (Sw.) Mont. & Nees

Jungermannia fucoidea Sw. Nov. Gener. Sp. Pl. Prodr. 145. 1788. *Metzgeria fucoides* (Sw.) Mont. & Nees *in* d'Orbigny, Voy. dans l'Am. Mérid. 7: 60. 1839. *Pseudoneura fucoides* (Sw.) Gott. Kongel. Danske Vidensk. Selsk. Naturvidensk. Math. Afh. II. 6: 355. 1863, *nom. inval. Aneura fucoides* (Sw.) Besch. J. Bot., Paris 7:

192. 1893. *Riccardia fucoides* (Sw.) Schiffn. Conspect. Hep. Arch. Ind. 54. 1898. Original material: Jamaica, *sin. coll. (non vidi).*

Reported for the Strait of Magellan region by Montagne (1845, 1852), G. L. & N. (1846), and Kühnemann (1937, 1949). As the species appears to be a tropical one, I have excluded it from the flora. See note in Evans (1921, p. 197).

2. *Metzgeria linearis* (Sw.)?

Jungermannia linearis Sw. Nov. Gener. Sp. Pl. Prodr. 145. 1788. *Metzgeria linearis* (Sw.) Aust. Bull. Torrey Bot. Club 6: 18. 1875. *Metzgeria linearis* (Sw.) Lindb. Acta Soc. Sci. Fenn. 10: 494. 1875. Original material: Jamaica, Hispaniola, *sin. coll. (non vidi).*

Reported for the Brunswick Peninsula by Schiffner (1890). The record, however, is erroneous as it is based upon a misdetermination of a specimen of *M. leptoneura* (*fide* FH!).

NOTES ON *Metzgeria* SPECIES

1. *Metzgeria angusta* Steph.

Metzgeria angusta Steph. Bull. Herb. Boissier I. 7 (12): 944. 1899 (=Spec. Hep. 1: 292). Original material: Brazil, *Ule, Glaziou, Lindman (non vidi);* Venezuela, *Fendler (non vidi);* "Chile et Patagonia," *Dusén (non vidi);* Trinidad, *Crüger (non vidi);* Mexico, *Sartorius (non vidi);* Guatemala, *Levier (non vidi);* United States, Louisiana, *Langlois (non vidi);* Apiahy, *Puiggari (non vidi); Dominican Republic, Eggers (non vidi).*

Stephani (1901a) reported *M. angusta* for Dusén collections from Punta Arenas and Porvenir, Tierra del Fuego. These reports, however, are erroneous, as the specimens from these localities are actually *M. violacea* (*fide* G!). In addition, the report of *M. angusta* from L. Nahuel Huapi in Stephani (1900) is also based upon a misdetermined specimen of *M. violacea* (*fide* S-PA!). The disposition of *M. angusta* cannot be made until it is typified.

E. Order Marchantiales: Key to the Genera of the Brunswick Peninsula

1. Ventral scales in 2-3 rows on either side of median portion; median scales with a single appendage; thallus pores conspicuous, compound; air chambers in a single layer, with photosynthetic filaments; plants with gemmae cups; plants dioecious; archegoniophores with 2 rhizoid furrows; antheridial recepticles pedunculate .... *Marchantia* (p. 280)
1. Ventral scales in a single row on either side of median portion; scales with 2-3

filiform appendages; thallus pores inconspicuous, simple; air chambers in several layers, without photosynthetic filaments; plants without gemmae cups; plants monoecious; archegoniophores with a single rhizoid furrow; antheridial recepticles sessile, not pedunculate .... *Reboulia* (p. 279)

Family AYTONIACEAE

Cavers, New Phytol. 10: 42. 1911.

REBOULIA

Raddi, Opusc. Sci. Bologna 2: 357. 1818 *(Reboullia),* corr. Nees *in* G. L. & N. Syn. Hep. 547. 1846, *(nom. cons.).*

Reboulia hemisphaerica[1] (L.) Raddi

Marchantia hemisphaerica L. Spec. Pl. 2: 1138. 1753. *Asterella hemisphaerica* (L.) P. Beauv. *in* Lamarck, Dict. Sci. Nat. 3: 257. 1805. *Rebouillia hemisphaerica* (L.) Raddi, Opusc. Sci. Bologna 2: 357. 1818. *Strozzia hemisphaerica* (L.) S. Gray, Nat. Arr. Brit. Pl. 1: 682. 1821. *Grimaldia hemisphaerica* (L.) Lindenb. Nova Acta Acad. Caesar. Leop. Carol. 14: Suppl. 106. 1829. *Fegatella hemisphaerica* (L.) Tayl. Trans. Linn. Soc. Lond. 17: 383. 1837. Original material: Europe, *sin. coll. (non vidi).*

Phytogeography.—Widespread; according to Hässel de Menendez (1962), in South America, North America, Europe, Asia, Africa, and Australia.

Brunswick Peninsula Specimens Seen.—PUNTA ARENAS REGION: Punta Arenas, *Thaxter s. n.* (MICH–c. ♀). PUERTO DEL HAMBRE REGION: N. side of R. San Juan, ca. 1 km. from straits, *Imshaug 38812* (MSC–c. ♀+sporo.).

Aitoniaceae SPECIES EXCLUDED FROM THE BRUNSWICK PENINSULA

1. *Plagiochasma rupestre* (Forst. & Forst.) Steph.

Aytonia rupestris Forst. & Forst. Char. Gener. Pl. 148. *pl. 74 a-f.* 1776. *Rupinia rupestris* (Forst. & Forst.) Sw. Meth. Musc. 39. 1781. *Otiona rupestris* (Forst. & Forst.) Dum. Hep. Europ. 148. 1874. *Plagiochasma rupestre* (Forst. & Forst.) Steph. Bull. Herb. Boissier I. 6 (10): 783. 1898 (=Spec. Hep. 1: 80). Original material: without specific locality, *sin. coll. (non vidi).*

Plagiochasma aitonia Lindenb. & Nees *in* Nees, Naturg. Europ.

[1]For a full synonymy of *R. hemisphaerica,* see Hässel de Menendez (1962).

Leberm. 4: 41. 1838. Original material: Madeira Is., *Berthelot, Forster, Holl, Raddi;* I. Canarias, Tenerife, *Berthelot (non vidi).*

Reported for the Strait of Magellan as *Plagiochasma aitonia* by G. L. & N. (1847) and Schiffner (1893). Since the species has not since been reported for the Magellanian region (including Hässel de Menendez, 1962), I am excluding it from the flora. Hässel de Menendez (1962) records only non-Valdivian records for Argentina, without mention of the taxon for Chile.

Family MARCHANTIACEAE

(Bisch.) Lindl. Nat. Sys. Bot. ed. 2, 26, 412. 1836. (Bisch.) Endl. Genera Pl. 44. 1836.[1]

MARCHANTIA

L. Spec. Pl. 1137. 1753.

KEY TO THE BRUNSWICK PENINSULA SPECIES OF *Marchantia*

1. Plants with cruciate pores; thallus margin scalloped, membranous; appendages of median scales minutely and regularly crenulate (occasionally with scattered small teeth), and with a clearly differentiated border of 1-3 rows of smaller cells; marginal scales, if present, never reaching the thallus border; archegoniophore rays smooth .... *M. berteroana*
1. Plants with irregular and non-cruciate pores; thallus margin entire or minutely denticulate, plane or slightly undulated; appendages of median scales irregularly crenulate to denticulate and with cells gradually diminishing in size toward the border; marginal scales always present, ± reaching or extending slightly beyond the thallus border, archegoniophore rays papillate *M. polymorpha*

Marchantia berteroana Lehm. & Lindenb.

Marchantia berteroana Lehm. & Lindenb. *in* Lehm. Nov. Minus Cog. Stir. Pug. 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., *Ecklon, Bergius (non vidi).*

Marchantia cephaloscypha Steph. Hedwigia 22: 51. 1883. Original material: "without definite locality, date, or collector's name . . ." (G)–cited in Evans (1917).

[1]Grolle (1972c) lists Endlicher as the transfer author of the family, and also lists Lindley as having made the transfer in the same year. According to Stafleu (1967), Lindley (1836) was probably published in July of that year and pages 1-80 (including the transfer in question) of Endlicher (1836-1840) in August, 1836.

Phytogeography.—Pan-temperate in distribution; South Sandwich Islands, South Georgia, Falkland Islands, Magellanian and Valdivian regions, Juan Fernandez, Argentine steppe region (Prov. Tucuman, Córdoba, San Luis, Buenos Aires), Inaccessible and Nightingale Islands, St. Helena, South Africa, Marion Island, Îles Crozets, Îles de Kerguélen, Auckland and Campbell Islands, and New Zealand.

Literature Records.—*Benove*–Punta Arenas (Hässel de Menendez, 1962); *Biese*–Punta Arenas–C. Otway (Hässel de Menendez, 1962); *Dusén*–Punta Arenas (Stephani, 1901a as *M. tabularis*); *Racovitza*–Punta Arenas (Stephani, 1901b as *M. cephaloscypha*); *Savatier*–Punta Arenas (Bescherelle & Massalongo, 1889 as *M. cephaloscypha*); *Schwabe*–Tres Puentes (Herzog, 1939).

Brunswick Peninsula Specimens Seen.—PUNTA ARENAS REGION: Punta Arenas, *Savatier s.n.* as *M. cephaloscypha* (G); ridge above refugio (Club Andino), 8 km. W. of Punta Arenas, 305-610 m. *(1944)*; Mina Loreto, December 1903, *Scott Elliot 111* as *M. cephaloscypha* (G). RIO TRES BRAZOS REGION: Plateau above R. Tres Brazos at road crossing, ca. 160 m., *Ostafichuk 1332* & *1385* (MSC). PUERTO DEL HAMBRE REGION: Near Fuerte Bulnes, *Hatcher 3-2* (UW-M). PUERTO SAN ISIDRO: 12 February 1929, *Roivainen 336* as *M. polymorpha* (H); 13 February 1929, *Roivainen 2378* as *M. polymorpha* (H). BAHIA DEL INDIO: Lote San Isidro, R. Yumbel, *Pisano 3947* (F). PUERTO CUTTER REGION: Between copper mine and river S. of mine *(2131)*.

Marchantia polymorpha L.[1]

Marchantia polymorpha L. Spec. Pl. 2: 1137. 1753. Original material: Europe, *sin. coll. (non vidi)*.

Ecology-Phytogeography.—This cosmopolitan species occurs on soil, particularly in seepage areas, in deciduous and drier evergreen forests.

Literature Records.—*Anonymous*–Strait of Magellan (Kühnemann, 1937, 1949; Montagne, 1852); *Andersson*–Pto. del Hambre (Ångström, 1872); *Benove*–R. Tres Brazos (Hässel de Menendez, 1962); *Cunningham*–Strait of Magellan (Evans, 1917); *Dumont d'Urville*–Strait of Magellan (Montagne, 1845); *Dusén*–Punta Arenas (Evans, 1917); *Exp. Fac. C.F.E.&N.*–Punta Arenas (Spegazzini,

[1]For a full synonymy of *M. polymorpha* see Hässel de Menendez (1962).

1922), Mina Loreto (Hässel de Menendez, 1962); *Naumann*–Punta Arenas (Schiffner, 1890); *Thaxter*–Punta Arenas (Evans, 1917).

Brunswick Peninsula Specimens Seen.—PUNTA ARENAS REGION: Punta Arenas, 22 April 1895, *Dusén 19* as *M. berteroana* (H—c. ♂); *ibid.*, *Naumann* (FH–c. ♀+♂); *ibid.*, *Savatier 227* as *M. cephaloscypha* (PC–c. ♀); *ibid.*, December 1903, *Scott Elliot 112* as *M. cephaloscypha* ("on ground in forest burnt recently") (G–c. ♀); E. of Mina Loreto on S. side of R. de las Minas, ca. 215 m. (*1916*–c. ♂ & *1923*–c. ♂). PUERTO DEL HAMBRE REGION: Fuerte Bulnes, Pta. Santa Ana *(1800);* N. side of R. San Juan, 1 km. from straits *(1873).* BAHIA SAN NICOLAS REGION: W. side of bay *(6327).*

Marchantiales Species Excluded from the Brunswick Peninsula

1. *Conocephalum conicum* (L.) Dum.

Marchantia conica L. Spec. Pl. 2: 1138. 1753. *Strozzius conicus* (L.) S. Gray, Nat. Arr. Brit. Pl. 1: 682. 1821. *Conocephalum conicum* (L.) Dum. Comment. Bot. 115. 1822. *Fegatella conica* (L.) Corda *in* Opiz, Beitr. Naturg. 12: 649. 1829. *Hepatica conica* (L.) Lindb. Hep. Utveckl. 16. 1877. Original material: Europe, *sin. coll. (non vidi).*

Reported for a Racovitza collection from Punta Arenas by Stephani (1901b). As the species is unknown for South America, I am excluding it from the Brunswick flora.

F. Order Anthocerotales: Key to the Genera of the Brunswick Peninsula

1. Pseudoelaters with distinct spiral thickenings; sporophyte wall without stomata .... *Megaceros* (p. 283)
1. Pseudoelaters without spiral thickenings; sporophyte wall with stomata present *Anthoceros* (p. 282)

Family Anthocerotaceae

Dum. Anal. Fam. Pl. 68, 69. 1829 [*sub* Anthocereae].

ANTHOCEROS

L. Spec. Pl. 2: 1139. 1753.

Anthoceros punctatus L.[1]

[1]See K. Müller (1951) for a full synonymy of *A. punctatus*.

Anthoceros punctatus L. Spec. Pl. 2: 1139. 1753. Original material: England, Italy, *sin. coll. (non vidi).*

Phytogeography.—Widespread; according to Hässel de Menendez (1962), in southern South America, North America, Europe, and Asia. In southern South America, previously known only from east Patagonia (Prov. Misiones, Buenos Aires).

Reports based upon Hooker collection(s) from I. Hermite are misdeterminations of *M. endivaefolius,* as Evans (1898, p. 413) states, "In the Taylor Herbarium, there is an *Anthoceros* from Cape Horn, labeled *A. punctatus* which belongs . . ." to "*Anthoceros*" *endiviaefolius.*

Brunswick Peninsula Specimen Seen.—PUERTO DEL HAMBRE REGION: Near Fuerte Bulnes, *Hatcher 10-1* (UW-M).

MEGACEROS

Campb. Annls Bot. 21: 484. 1907.

KEY TO THE BRUNSWICK PENINSULA SPECIES OF *Megaceros*

1. Thallus in rosettes or with short, irregular branches; thallus 8-11 cells in thickness, the single-celled border 0.2-0.5 mm. wide, often undulated; spores 28-40 μ in diameter . . . . *M. fuegiensis*
1. Thallus elongated, not in rosettes; thallus (11-)15-27 cells in thickness, the single-celled border 1-3 mm. wide, highly folded and very undulated, frilled, sometimes perforated; spores 45-56 μ in diameter . . . . *M. endivaefolius*

Megaceros endiviaefolius (Mont.) Steph.

? *Anthoceros endiviaefolius* Mont. *in* Dumont d'Urville, Voy. au Pôle Sud (Bot.) 1: 211. 1845. *Megaceros endiviaefolius* (Mont.) Steph. Spec. Hep. 5: 950. 1916. *Dendroceros endiviaefolius* (Mont.) Prosk. Bull. Torrey Bot. Club 80: 67. 1953. Original material: Chile, Prov. Magallanes, Pto. del Hambre, *Jacquinot (non vidi).*

Ecology.—Evergreen forests on forest floor and in the "bryophyte rich facies" as a rare constituent of bryophyte mounds. Plants of *Telaranea plumulosa* frequently grow over and among *M. endiviaefolius.*

Phytogeography.—Tierra del Fuego and southern Patagonian Channels (Brunswick Peninsula, I. Riesco).

Literature Records.—*Anonymous*–Strait of Magellan (Stephani, 1916; Kühnemann, 1937, 1949); *Dusén*–Punta Arenas (Stephani, 1901a as *Anthoceros*; Hässel de Menendez, 1962 as *Dendroceros*); *Jacquinot*–Pto. del Hambre (Montagne, 1845, 1852, 1856 as *Anthoceros,* G. L. & N., 1846 as *Anthoceros,* Proskauer, 1953 as *Dendroceros,* Bonner, 1962), B. San Nicolas and B. Bougainville (Bescherelle & Massalongo, 1889 as *Anthoceros*); *Skottsberg & Halle*–Pto. Cutter (Stephani, 1911 as *Anthoceros*; Hässel de Menendez, 1962 as *Dendroceros*).

Brunswick Peninsula Specimens Seen.—Strait of Magellan, without specific locality, February 1888, *Albatross* (F). BAHIA SAN NICOLAS REGION: W. side of bay *(6366 B* & *6382)*. PUERTO GALLANT REGION: B. Fortescue *(5966)*. PUERTO CUTTER REGION: Between copper mine and river S. of mine (*2173 C*–c. young sporo.); slightly W. of copper mine (*2256*–c. ♂, *2263*–c. sporo.).

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 de Menendez (1962).

Ecology.—On well-shaded soil in a seepage area (Pto. del Hambre region) and on fallen logs over streams (Pto. Cutter region).

Phytogeography.—Falkland Islands, the deciduous forested region of Tierra del Fuego, Patagonian Channels only in the Brunswick Peninsula, 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.

Brunwick Peninsula Specimens Seen.—FIORDO SILVA PALMA: Angostura Titus, *Pisano 3815* (F). PUERTO DEL HAMBRE REGION: N. side of R. San Juan, ca. 1 km. from straits (*1863*–c. young sporo. & *1871*–c. sporo.). CABO SAN ISIDRO: 13 February 1929, *Roivainen 2385* as *M. endiviaefolius* (H). PUERTO CUTTER REGION: Between copper mine and river S. of mine (*2153*–c. sporo. + ♂); base of M. Condor (*2325 B*–c. sporo).

NOTES ON *Anthocerotae* SPECIES

1. *Anthoceros* sp. See comments under *Megaceros* sp.

Brunswick Peninsula Specimens Seen.—PUERTO SAN ISIDRO: 12 February 1929, *Roivainen 337, 342* (H).

2. *Megaceros* sp. I have cited two specimens (see below) 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).

It is likely that, if sporophytes were present, the specimens would be referable to *Megaceros fuegiensis*.

Brunswick Peninsula Specimens Seen.—PUERTO SAN ISIDRO: 13 February 1929, *Roivainen 2379* as *Anthoceros* sp. (H). BAHIA SAN NICOLAS REGION: W. side of bay *(6341 A)*.

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VII. INDEX OF TAXA

Recognized taxa are in roman type, illegitimate or synonymous taxa are italicized, and new taxa are in boldface.

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