[*Discovery Reports. Vol. XXVI, pp.* 47–196, *Plates V–X, March,* 1951.]

ANTARCTIC AND SUBANTARCTIC MOLLUSCA: PELECYPODA AND GASTROPODA

By

A. W. B. POWELL, F.R.S.N.Z.

CONTENTS

ANTARCTIC AND SUBANTARCTIC MOLLUSCA: PELECYPODA AND GASTROPODA

COLLECTED BY THE SHIPS OF THE DISCOVERY COMMITTEE DURING THE YEARS 1926–1937

By A. W. B. Powell, F.R.S.N.Z.
Auckland Museum

(Plates V–X; Text-figs. A–N)

INTRODUCTION

The material covered by this report is largely from the American Quadrant of the Antarctic and Subantarctic Zones, but with the addition of odd dredgings from Bouvet Island, Marion Island and the Ross Sea. My report covers the Gastropoda (with the exception of the Pteropoda and the Nudibranchiata) and some Pelecypoda. The Pteropoda were reported upon by Anne L. Massy (1932) and the Cephalopoda (in part) by G. C. Robson (1930).

The areas best represented by the Discovery collections are the Falkland Islands and the Patagonian Shelf, South Georgia and the higher latitudes of the Scotia Arc from the South Shetland Islands to the Palmer Archipelago.

The varied nature of these respective areas is ably described by E. Heron-Allen and A. Earland (1932) and A. Earland (1934) in their outstanding work on the Foraminifera. A description of the physical characteristics of each of the biogeographic areas concerned with the present collections follows.

FALKLAND ISLANDS

The Falklands are a group of two large and many small islands lying upon the very extensive East Patagonian Continental Shelf, but almost severed from it by the transverse Falkland Trough which lies at a depth of from 150 to 200 m. between two tongues of deep water which impinge both from the north and the south. The Falklands lie within the Subantarctic Zone of surface waters (isotherms between 6 and 12° C.), and are outside the northern limit of pack-ice. They are strongly influenced by the Cape Horn Current, composed largely of water of Pacific origin, which is swept through Drake Strait by the West Wind Drift and then turns northwards to the Falklands and resolves into the Falkland Current, which continues northward between the Falklands and Patagonia. The West Wind Drift proper passes well to the south of the Falklands. Owing to its position upon the Patagonian Shelf the Falkland marine molluscan fauna is predominantly Magellanic, and the terrestrial fauna, notably the presence of the fresh-water genus *Chilina*, points to a former land link with the Patagonian mainland.

North of the Falklands at the limit of the Continental Shelf, the bottom descends steeply to the Argentine Basin, which comes within the influence of the warm Brazilian Current, which there has a seasonal temperature range of from 11·5 to 14·5° C. (Hart, 1946, p. 243).

Another important factor influencing the Falkland fauna is the presence of the Atlantic-Indian cross-ridge which runs from the Argentine Basin almost to the Kerguelen-Gaussberg (radial) ridge and forms the northern boundary of the Atlantic-Antarctic Basin.

Deep water to the south effectively separates the Falklands from the Burdwood Bank and the rest of the extensive Scotia Arc.

The Falkland molluscan check list which follows is compiled from a number of published papers plus the Discovery Committee's material,* described in this report. The principal contributors to the Falkland fauna were Cooper and Preston (1910), Eliot (1907), Melvill & Standen (1907, 1912, 1914), Preston (1913), Smith (1915) and Strebel (1905–8).

Since the Falkland Islands are situated on the vast East Patagonian Continental Shelf it is not remarkable that the molluscan fauna of these islands is almost wholly Magellanic. A few species appear to be restricted to the Falklands, but their number is bound to be reduced as the Magellanic fauna becomes better known.

The marine molluscan fauna is Subantarctic with a strong admixture of continental temperate extralimital forms which have been induced to extend far south of their usual station through the continuity of the Patagonian land mass, which has many sheltered inlets, bays and channels.

One species of the characteristic Antarctic genus *Prosipho* occurs, but otherwise Antarctic forms are almost wholly absent.

Characteristic Subantarctic genera which are well represented are *Gaimardia*, *Cyamium*, *Nacella*, *Patinigera*, *Margarella*, *Laevilitorina*, *Pareuthria* and *Kerguelenella*.

The following instance temperate forms induced far south of their normal range: *Fissurella* (*Balboaina*), *Calliostoma*, *Polinices*, *Trochita*, *Nassarius*, *Acanthina*, *Typhis*, *Adelomelon* and *Marginella*.

Restricted Magellanic genera are the two Calliostomid derivatives *Photinula* and *Photinastoma*, the Trophonids *Xymenopsis*, *Fuegotrophon* and *Stramonitrophon*, and the Buccinoid genera *Savatieria*, *Anomacme* and *Meteuthria*.

The Atlantic-Indian Ocean cross-ridge has allowed an interchange of several genera and species between the Falklands and the Marion Island-Kerguelen area, notably *Trophon declinans*, *Provocator pulcher*, *Philine kerguelensis* and *Notoficula*. Also the range of two otherwise restricted Magellanic genera, *Glypteuthria* and *Parmaphorella*, has been extended thus to South African waters (Tomlin, 1932). This ridge has facilitated also the considerable eastern Subantarctic extension of the 'bipolar' genera *Fusitriton* and *Aforia*.

Falkland Islands Check List

This check list and those for other areas that follow are provisional only, since I have been unable to examine the actual material upon which many identifications were based. Nevertheless, these lists serve to give an approximate indication of the respective faunule for each biogeographic area. In most instances I have brought the nomenclature up to date, but in a few entries of doubtful taxonomic status the original record is cited, with quotation marks.

Species preceded by an asterisk are represented in the Discovery material; (T.) indicates that the type locality for the species is within the faunal area covered by the list, and the authorities following the names refer to the literature cited at the end of this report.

PELECYPODA

Nucula falklandica Preston, 1912 (T.).
N. pisum Sowerby, 1832; Melvill & Standen, 1914.
Yoldia eightsii (Couthouy, 1839) Melvill & Standen, 1914.
Y. woodwardi Hanley, 1860; Melvill & Standen, 1914.
Limopsis hardingii Melvill & Standen, 1914 (T.).
**L. hirtella* Rochebrune & Mabille, 1889.
'*Philobrya* sp.' Melvill & Standen, 1914.
'*Pecten*' *rufiradiatus* Reeve, 1853; Melvill & Standen, 1914.
Mytilus sp. Melvill & Standen, 1907, 1914 as '*edulis*' Linn.

Editor's Note: By no means all of the Discovery molluscan collections have been reported upon.

'*M. bifurcatus* Conrad' Melvill & Standen, 1914.
'*M. ovalis* Lamarck' Melvill & Standen, 1907.
Aulacomya magellanica Lamarck, 1819; Melvill & Standen, 1907, 1914.
Hormomya blakeana Melvill & Standen, 1914 (T.).
Anomia sp. Melvill & Standen, 1914 as '*ephippium*' Linn.
Gaimardia bennetti Preston, 1913 (T.).
G. exilis (H. & A. Adams, 1853); Melvill & Standen, 1914.
G. gemma (Cooper & Preston, 1910) (T.).
G. mesembrina Melvill & Standen, 1907 (T.) (= *G. picturata* Cooper & Preston, 1910) (T.).
G. trapesina (Lamarck, 1822); Melvill & Standen, 1914.
Cyamium antarcticum Philippi, 1845; Melvill & Standen, 1907.
C. bennetti Preston, 1912 (T.).
C. copiosum Preston, 1913 (T.).
C. cuneatum Preston, 1913 (T.).
C. exasperatum Preston, 1912 (T.).
C. falklandicum Melvill & Standen, 1898 (T.); Melvill & Standen, 1907, 1912, 1914.
C. iridescens Cooper & Preston, 1910 (T.).
C. piscium Preston, 1912 (T.).
C. stanleyense Preston, 1913 (T.).
Cyamionema decoratum Melvill & Standen, 1914 (T.).
Astarte longirostra d'Orbigny (T.).
Carditella naviformis Reeve, 1843; Melvill & Standen, 1914.
Lasaea consanguinea Smith, 1879; Melvill & Standen, 1907, 1914.
Lasaea sp. Melvill & Standen, 1914 as '*miliaris*' Philippi.
'*Kellia cycladiformis* Deshayes, 1851'; Melvill & Standen, 1907 1912, 1914.
Davisia bennetti Preston, 1912 (T.).
D. cobbi Cooper & Preston, 1910 (T.); Melvill & Standen 1914.
D. concentrica Preston, 1912 (T.).
Malvinasia arthuri Cooper & Preston, 1910 (T.).
?*Scacchia plenilunium* Melvill & Standen, 1907 (T.).
Thyasira falklandicus (Smith, 1885); Melvill & Standen, 1907, 1914.
Gomphina (*Acolus*) *foveolata* (Cooper & Preston, 1910) (T.); Melvill & Standen, 1914.
Samarangia exalbida Chemnitz, 1788; Melvill & Standen, 1907.
Darina solenoides King & Broderip, 1830–31; Melvill & Standen, 1914.
Cardium delicatulum Smith, 1915 (T.).
Lyonsia cuneata Gray, Melvill & Standen, 1907, 1914.
Mytilimeria falklandica Preston, 1913 (T.).
Laternula elliptica (King & Broderip, 1832) (= *Thracia antarctica* Melvill & Standen, 1898 (T.) = *Mya antarctica* Melvill & Standen, 1914 (T.)).
Solen macha Molina, 1789; Melvill & Standen, 1914.
Hiatella antarctica (Philippi, 1845); Melvill & Standen, 1914; Preston, 1913 as *Saxicava subantarctica* Preston.
Bankia odlneri Roch, 1931 (T.).
Cuspidaria (*Cardiomya*) *simillima* Smith, 1915.

GASTROPODA

**Patelloida ceciliana* (Orbigny, 1841) (T.); Melvill & Standen, 1907, 1914.
P. ceciliana magellanica (Strebel, 1907); Strebel, 1908; Melvill & Standen, 1914.
'*Acmaea inquilinus* Preston, 1913' (T.).
'*A. perconica* Preston, 1913' (T.).
Scurria scurra (Lesson, 1830); Melvill & Standen, 1914; Preston, 1913 as var. *charon* Preston.
'*Nacella falklandica* Preston, 1913' (T.).
N. mytilina (Helbling, 1779); Melvill & Standen, 1914.
**Patinigera aenea* (Martyn, 1784); Melvill & Standen as '*deaurata* Gmel.', 1907, 1914.

'*P. bennetti* (Preston, 1913)' (T.) (*Helcioniscus*) = ?*aenea*.
**P. delicatissima* (Strebel, 1907); Strebel, 1908; Melvill & Standen, 1914.
P. fuegiensis (Reeve, 1855); Melvill & Standen, 1907.
**Lepeta coppingeri* (Smith, 1881); Strebel, 1908.
**Fissurella* (*Balboaina*) *oriens* Sowerby, 1834; Melvill & Stand, 1907 as var. *mexicana* Sowb.; Strebel, 1908.
**F.* (*Balboaina*) *picta* (Gmelin, 1791); Melvill & Standen, 1907, 1914.
'*F. exquisita* Reeve', Strebel, 1908.
'*F. radiosa* (Lesson, 1826)'; Melvill & Standen, 1914 + *polygona* Sowerby.
**Megatebennus patagonicus* Strebel, 1907; Strebel, 1908; Melvill & Standen, 1914.
**Puncturella conica* (d'Orbigny, 1841) (T.); Strebel, 1908 as *noachina*.
**Parmaphorella melvilli* (Thiele, 1912).
**Calliostoma falklandicum* Strebel, 1908 (T.).
**C. modestulum* Strebel, 1908 (T.); Melvill & Standen, 1912.
C. venustulum Strebel, 1908 (T.).
**Falsimargarita iris* (Smith, 1915) (T.).
**Photinula coerulescens* (King & Broderip, 1830–31); Strebel, 1908; Melvill & Standen, 1914.
**Photinastoma taeniata* (Wood, 1828) (T.); Melvill & Standen, 1907, 1914; Strebel, 1908.
**P. taeniata nivea* (Cooper & Preston, 1910) (T.).
**Margarella expansa* (Sowerby, 1838) (T.); Strebel, 1908; Melvill & Standen, 1907.
**M. violacea* (King & Broderip, 1830–31); Melvill & Standen, 1907, 1914.
'*M. solidula* (Cooper & Preston, 1910)' (T.) (*Photinula*).
'*M. solidula depressa* (Preston, 1913)' (T.) (*Photinula*).
**Solariella kempi* n.sp. (T.).
**Brookula calypso* (Melvill & Standen, 1912).
Laevilitorina bennetti Preston, 1912 (T.).
L. caliginosa (Gould, 1849); Melvill & Standen, 1907, 1914.
L. caliginosa aestualis Strebel, 1908 (T.).
L. latior Preston, 1912 (T.).
Subonoba grisea Martens, 1885; Strebel, 1908.
'*Rissoa inornata* Strebel, 1908' (T.).
Ovirissoa georgiana (Pfeffer, 1886); Strebel, 1908.
Eatoniella kerguelenensis contusa Strebel, 1908 (T.).
**Ataxocerithium pullum* (Philippi, 1845); Melvill & Standen, 1907, 1914; Strebel, 1908.
**Colpospirella algida* (Melvill & Standen, 1912).
**Mathilda malvinarum* Melvill & Standen, 1907 (T.); Strebel, 1908; Melvill & Standen, 1912.
Odostomia biplicata Strebel, 1908; Melvill & Standen, 1914.
Diacolax cucumariae Barth, 1946 (T.).
**Cirsotrema magellanica* (Philippi, 1845); Strebel, 1908.
**C. magellanica latecostata* (Strebel, 1905).
**Acirsa annectens* n.sp. (T.).
Amauropsis anderssoni Strebel, 1907 (T.).
Falsilunatia falklandica (Preston, 1913) (T.).
**F. recognita* (Rochebrune & Mabille, 1889).
**F. soluta* (Gould, 1848); Strebel, 1908.
Polinices patagonicus (Philippi, 1845); Strebel, 1908.
P. subantarcticus (Preston, 1913) (T.).
**Sinuber sculpta* (Martens, 1878) '*Form A*'.
**Tectonatica impervia* (Philippi, 1845); Melvill & Standen, 1914.
Lamellaria ampla Strebel, 1906; Melvill & Standen, 1914.
**L. elata* Strebel, 1907.
**L. patagonica* Smith, 1881.
**Lamellaria* sp.A.
Crepipatella dilatata (Lamarck, 1822); Melvill & Standen, 1907, 1914; Strebel, 1908 as var. *pallida*.

**Trochita clypeolum* (Reeve, 1859).
**T. trochiformis* (Gmelin, 1791) (T. ?); Strebel, 1908; Melvill & Standen, 1914.
**Fusitriton cancellatum* (Lamarck, 1822).
Pareuthria cerealis (Rochebrune & Mabille, 1889); Melvill & Standen, 1914.
**P. fuscata* (Bruguière, 1792) (T. ?); Melvill & Standen, 1907, 1914; Strebel, 1908; Preston, 1913 as *curta* Preston
P. janseni (Strebel, 1905); Strebel, 1908.
**P. magellanica* (Philippi, 1848); Melvill & Standen, 1907, 1914.
**P. michaelseni* (Strebel, 1905); Melvill & Standen, 1907, 1914.
P. mulachi (Strebel, 1905); Melvill & Standen, 1914.
P. plumbea (Philippi, 1844); Melvill & Standen, 1914.
**P. ringei* (Strebel, 1905).
**P. rosea* (Hombron & Jacquinot, 1854); Strebel, 1908.
**P. scalaris* (Watson, 1882).
**Tromina bella* n.sp.
**T. fenestrata* n.sp.
**T. simplex* n.sp.
**Notoficula problematica* n.sp.
Glypteuthria acuminata Smith, 1915 (T.).
G. kobelti (Strebel, 1905); Melvill & Standen, 1914.
G. meridionalis (Smith, 1881); Melvill & Standen, 1914.
Anomacme smithi Strebel, 1905; Melvill & Standen, 1914.
Prosipho crassicostatus (Melvill & Standen, 1907); Melvill & Standen, 1914.
Savatieria areolata (Strebel, 1905); Melvill & Standen, 1914.
S. bertrandi Melvill & Standen, 1914 (T.).
S. molinae Strebel, 1905; Strebel, 1908.
Nassarius vallentini Melvill & Standen, 1907 (T.).
**Trophon declinans* Watson, 1882.
**T. geversianus* (Pallas, 1769); Melvill & Standen, 1907, 1914; Strebel, 1908.
T. malvinarum Strebel, 1908 (T.).
**T. ohlini* Strebel, 1904.
T. pelseneeri Smith, 1915 (T.).
T. philippianus Dunker, 1878; Melvill & Standen, 1907.
**T. (Stramonitrophon) laciniatus* (Martyn, 1789); Melvill & Standen, 1914.
T. (Fuegotrophon) pallidus (Broderip, 1833) (T.); (=*crispus* Gould) Melvill & Standen, 1907, 1914; Strebel, 1908.
**Xymenopsis albidus* (Philippi, 1846).
X. brucei (Strebel, 1904); Melvill & Standen, 1907.
X. couthouyi (Strebel, 1904); Strebel, 1908; Melvill & Standen, 1914.
X. decolor (Philippi, 1845); Strebel, 1908.
X. elegans (Strebel, 1904).
X. elongatus (Strebel, 1904); Strebel, 1908.
**X. falklandicus* (Strebel, 1908) (T.).
X. hoylei (Strebel, 1904); Melvill & Standen, 1907.
X. liratus (Gould, 1849); Melvill & Standen, 1907, 1914; Strebel, 1908.
X. ornatus (Strebel, 1904).
X. standeni (Strebel, 1904).
Acanthina calcar (Martyn, 1789); Melvill & Standen, 1914; Strebel, 1908.
Typhina belcheri (Broderip, 1832); (Smith, 1915).
**Admete magellanica* Strebel, 1905; Melvill & Standen, 1907, 1914.
**Adelomelon ancilla* (Solander, 1786); Melvill & Standen, 1907, 1914.
A. becki (Broderip, 1836).
A. ferussacii (Donovan, 1824).
**A. mangeri* (Preston, 1901) (T.).
A. martensi Strebel, 1906.

A. tuberculata (Swainson, 1822).
**Miomelon scoresbyana* n.sp.
**Provocator pulcher* Watson, 1882.
**Marginella warrenii* Marrat, 1876 (T., *hahni*).
**Belalora thielei* n.sp.
'*Bela*' *fulvicans* Strebel, 1908; Melvill & Standen, 1914.
'*B.*' *michaelseni* Strebel, 1905; Strebel, 1908.
**Pleurotomella anomalapex* n.sp. (T.)
**P.? ohlini* (Strebel, 1905).
**Aforia goniodes* (Watson, 1881).
**Leucosyrinx falklandica* n.sp.
**Eumetadrillia fuegiensis* Smith, 1888.
'*Aeolidia serotina* Bergh, 1874'; Eliot, 1907.
'*Cratena valentini* Eliot, 1907'.
Eubranchus falklandica (Eliot, 1907) '*Galvina*'.
'*Coryphella falklandica* Eliot, 1907'.
Necromantes challengeriana ((Bergh) Eliot, 1907) '*Tritonia*'.
'*Diaulula vestita* (Abraham, 1877)'; Eliot, 1907.
'*Staurodoris falklandica* Eliot, 1907'.
'*Acanthodoris falklandica* Eliot, 1907'.
**Acteon bullatus* (Gould, 1847).
**Toledonia perplexa* Dall, 1902.
**Philine falklandica* n.sp. (T.).
**P. kerguelensis* Thiele, 1925.
**Parvaplustrum tenerum* n.sp. (T.).
**Diaphana paessleri* (Strebel, 1905); Strebel, 1908.
Kerguelenella lateralis (Gould, 1846); Melvill & Standen, 1907, 1914.
Pachysiphonaria lessoni (Blainville, 1824); Melvill & Standen, 1914.
'*P. tristensis* (Leach, 1824)'; Strebel, 1908; Falkland Is. records unreliable according to Hubendick, 1946.

AMPHINEURA

Tonicia atrata (Sowerby, 1840); Melvill & Standen, 1907, 1914.
'*T. bennetti* Iredale, ms.' Melvill & Standen, 1914.
Icoplax punicea (Gould, 1846); Melvill & Standen 1907, 1914 as '*illuminatus*'.
Plaxiphora aurata (Spalowsky, 1795); Melvill & Standen, 1914 as '*carmichaelis*'.

CEPHALOPODA

Benthoctopus magellanicus Robson, 1930 (T.).
Octopus rugosus (Bosc, 1792); Robson, 1930.
O. tehuelchus d'Orbigny, 1835; Hoyle, 1912.

The following records are rejected:

(1) '*Anadara chemnitzi* Philippi', Smith, 1915.
(3) '*Cardium edule* Linn.', Melvill & Standen, 1914.
(2) '*Cryptogramma subimbricata* Sowerby', Melvill & Standen, 1914.
(3) '*Lacuna divaricata* Fabricius', Melvill & Standen, 1907.
(3) '*Mangilia costata* Donovan', Melvill & Standen, 1907.
(3) '*Retusa truncatula* Bruguière', Melvill & Standen, 1907.
(3) '*Rissoa parva*' Melvill & Standen, 1907.
(3) '*R.* (*Manzonia*) *zetlandica* Montagu', Melvill & Standen, 1907.
(3) '*Tellina squalida* Pulteney', Melvill & Standen, 1914.

(1) Probable error in Station number; off Rio de Janeiro most likely. (2) Central American species, probably from ship's ballast. (3) Common English species either accidentally introduced through shipping or from ballast.

BURDWOOD BANK

This is a large shoal of from 80 to 150 m. in depth situated south of the Falklands and separated from them by deep water, 500–2000 m. The shoal lies east of Tierra del Fuego, and it is now generally accepted that the line of folding represented by the Andes and their former continuity in what is now termed the Scotia Arc passed through the Burdwood Bank and not the Falkland Islands. A trough of moderately deep water, 250–500 m. severs the bank from Tierra del Fuego, and the ridge connecting it to the eastward with Shag Rocks and South Georgia varies between 1000 and 2000 m., severed in several places by deeper water of between 3000 and 4000 m. (Herdman, 1932, pp. 205–36).

From his studies on fossil Foraminifera dredged from the Burdwood Bank, Macfadyen (1933) states on p. 16 in summarizing these fossil occurrences that the 'beds are clearly shown to be the continuation of those exposed on Tierra del Fuego and Staten Island, and a part of the (renamed) Scotia Arc of folding, which is continued on a trend precisely determined by soundings to lie on the line of the Shag Rocks, South Georgia, Clerke Rocks, South Sandwich Islands, South Orkney Islands to the South Shetlands and Graham Land'.

Only a small molluscan list of fifty-five species is available for this area (Melvill & Standen, 1912, and the Discovery Committee's Collections), but at least thirteen species are apparently restricted to the locality. Of the remainder, fifteen are found in the Falkland Islands, but only three of them, *Davisia cobbi*, *Brookula calypso* and *Colpospirella algida*, are not generally distributed in the Magellanic Province. The bulk of the fauna is Magellanic, but four Antarctic species, *Schizotrochus euglyptus*, *Pellilitorina pellita*, *Balcis antarctica* and *Paradmete fragillima*, here apparently reach their northern limit for the American Quadrant.

Burdwood Bank Check List

PELECYPODA

Hochstetteria sublaevis (Pelseneer, 1903); Melvill & Standen, 1912.
H. wandelensis (Lamy, 1906); Melvill & Standen, 1912.
'*Crenella decussata* Montagu 1808' Melvill & Standen, 1912; probably not this European species.
Cyamium denticulatum Smith, 1907; Melvill & Standen, 1912.
Carditella pallida duodecimcostata Melvill & Standen, 1912 (T.).
Venericardia congelascens Melvill & Standen, 1912 (T.).
Astarte magellanica Smith, 1881; Melvill & Standen, 1912.
'*Diplodonta lamellata* Smith, 1881'; Melvill & Standen, 1912.
Davisia cobbi Cooper & Preston, 1910; Melvill & Standen, 1912.
'*Kellyia cycladiformis* Deshayes, 1855'; Melvill & Standen, 1912.
'*K. magellanica* Smith, 1881'; Melvill & Standen, 1912.

GASTROPODA

Schizotrochus euglyptus (Pelseneer, 1903); Melvill & Standen, 1912.
Scissurella eucharista Melvill & Standen, 1912 (T.).
S. supraplicata Melvill & Standen, 1912 (T.).
Parmaphorella melvilli (Thiele, 1912); Melvill & Standen, 1907 (T.).
Puncturella conica (d'Orbigny, 1841); Melvill & Standen, 1912.
Calliostoma modestulum Strebel, 1908; Melvill & Standen, 1912.
Brookula calypso (Melvill & Standen, 1912) (T.).
Liotella coatsianum (Melvill & Standen, 1912) (T.).
'*Cyclostrema*' *gaudens* Melvill & Standen, 1912 (T.).
Subonoba fuegoensis (Strebel, 1908); Melvill & Standen, 1912.
S. paucilirata (Melvill & Standen, 1912) (T.).
S. sulcata Strebel, 1908; Melvill & Standen, 1912.
S. turqueti (Lamy, 1906); Melvill & Standen, 1912.

'*Homalogyra atomus burdwoodianus* Strebel, 1908' (T).
Pellilitorina pellita (Martens, 1885); Melvill & Standen, 1912.
**Ataxocerithium pullum* (Philippi, 1845); Melvill & Standen, 1912.
'*Bittium*' *burdwoodianum* Melvill & Standen, 1912 (T.).
Cerithiopsis macroura Melvill & Standen, 1912 (T.).
Colpospirella algida (Melvill & Standen, 1912) (T.).
Mathilda rhigomaches Melvill & Standen, 1912 (T.).
Balcis antarctica (Strebel, 1908); Melvill & Standen, 1912.
'*Turbonilla*' *smithi* Strebel, 1905; Melvill & Standen, 1912.
'*T.*' *xenophyes* Melvill & Standen, 1912 (T.).
'*Trichotropis bruceana* Melvill & Standen, 1916' n.nom. for *T. antarctica* Melvill & Standen, 1912, non Thiele, 1912 (T.).
Tectonatica impervia (Philippi, 1845); Melvill & Standen, 1912.
**Trochita trochiformis* (Gmelin, 1791); probably covers '*Calyptraea chinensis*' of Melvill & Standen, 1912.
**T. clypeolum* Reeve, 1859.
Cirsotrema magellanica (Philippi, 1845); Melvill & Standen, 1912.
Trophon philippianus Dunker, 1878; Melvill & Standen, 1912.
T. (*Fuegotrophon*) *pallidus* (Broderip, 1832); Strebel, 1908 as *crispus burdwoodianum* (T.).
Xymenopsis falklandicus Strebel, 1908; Melvill & Standen, 1912.
Antistreptus magellanicus Dall, 1902; Melvill & Standen 1912.
**Pareuthria ringei* (Strebel, 1905).
P. rosea (Hombron & Jacquinot, 1854); Melvill & Standen, 1912.
Savatieria concinna Melvill & Standen, 1912.
Paradmete fragillima (Watson, 1882); Melvill & Standen, 1912 as *typica* Strebel, 1908.
'*Mitra* (*Volutomitra*) *porcellana* Melvill & Standen, 1912'; probably a *Marginella*.
**Leucosyrinx parageuota* n.sp.
'*Bela anderssoni* Strebel, 1908'; Melvill & Standen, 1912.
'*B. fulvicans* Strebel, 1908'; Melvill & Standen, 1912.
Toledonia limnaeaeformis (Smith, 1879); Melvill & Standen, 1912.
'*Retusa truncatula* (Bruguière)' Melvill & Standen, 1912; probably not this European species.

CEPHALOPODA

Octopus brucei Hoyle, 1912 (T.).
Benthoctopus sp. Robson, 1930.

SOUTH GEORGIA AND SHAG ROCKS

This very distinctive biogeographic unit lies from 12 to 20° east of the Burdwood Bank and is part of the Scotia Arc, although it is surrounded by deep water, 3000 m. As pointed out by Earland (1933, p. 29), South Georgia is located in only slightly higher latitudes (54–55° S.) than the Falklands (51°–52° 30′ S), yet the contrast in both their physical conditions and their respective faunas is profound.

The Falklands are situated on the Patagonian Shelf, not the Scotia Arc, and the surrounding waters are ice-free, being out of the influence of the cold West Wind Drift. South Georgia, on the other hand, is an isolated area in a region of deep water, entirely within the influence of the cold West Wind Drift and even land conditions are glacial. Partially resolving upon these conditions the bottom sediments are mainly tenacious blue muds in contrast to the sandy deposits of the Falkland area and the coarse sandy and often volcanic debris of the South Sandwich—South Shetland section of the Scotia Arc. Owing to the far southward extension of the South American land mass the Antarctic Convergence is forced below its average latitude, with the result that the Falklands lie in the Subantarctic and South Georgia, since it is well to the eastward, comes within the Antarctic zone of surface waters.

Regarding the Foraminifera, Earland (1934, p. 8) remarked that 'In its isolation, South Georgia has either preserved or developed species which are almost confined to the island'.

The molluscan fauna has scarcely any species common to the Falklands. On the other hand, the present collections include a number of genera and species previously considered characteristic of the Kerguelen and the Ross Sea areas. Their significance, however, is partly ecological, in that the blue muds of South Georgia are more comparable with the Ross Sea bottom than they are with the coarse sandy bottom of the shallower areas of much of the Scotia Arc. This would account for the presence in South Georgia of the antarctic species *Trichoconcha mirabilis*, but its apparent absence from other Scotia Sea localities.

A physical factor which must have the effect of distributing Ross and Victorian Quadrant species eastward into the Weddell Quadrant is the East Wind Drift which operates contrary to the West Wind Drift at and below 65° S.

The South Georgian fauna must now be fairly completely known. It is very distinctive, and as already noted has little in common with that of the Falklands, which are almost of the same latitude.

There are several endemic genera; *Venustatrochus*, *Promargarita*, *Pfefferia*, *Chlanidotella* and *Cavineptunea*. Antarctic genera and species are strongly represented: *Patinigera polaris*, *Laevilacunaria*, *Trichoconcha*, *Prosipho*, *Chlanidota*, *Probuccinum* and *Neactaeonina*. The widely distributed Antarctic-Subantarctic genera *Gaimardia* and *Margarella* are represented almost entirely by endemic species.

The characteristic Magellanic genera *Nacella*, *Photinula*, *Photinastoma*, *Xymenella* and *Adelomelon* are not represented. Evidence, however, that the Scotia Arc was formerly a more effective route than at present for the southward spread of the Magellanic fauna is shown by the presence of a *Trochita* (*georgiana* n.sp.) and a derivative of *Calliostoma* (*Venustatrochus georgianus* n.gen. and n.sp.). Deep-water severing of the arc has culminated by isolation in the development of the South Georgian fauna as a distinctive unit.

On the other hand, there is a strong representation of both eastern Subantarctic and Antarctic forms characteristic of the Victoria and Enderby Quadrants: *Pellilitorina setosa*, *Amauropsis* (*Kerguelenatica*) *grisea*, *Perissodonta georgiana*, *Simuber*, *Falsimohnia*, *Proneptunea*, *Trichoconcha*, *Probuccinum* and *Prosipho hunteri*.

South Georgia Check List

PELECYPODA

Nucula minuscula Pfeffer, 1886 (T.).
Lissarca miliaris (Philippi, 1845); David, 1934.
L. rubrofusca Smith, 1875; Martens & Pfeffer, 1886; David, 1934.
Hochstetteria quadrata (Pfeffer, 1886) (T.).
H. ungulata (Pfeffer, 1886) (T.).
Cyamium imitans Pfeffer, 1886; David, 1934.
C. willii Pfeffer, 1886 (T.) (=*mosthaffi* Pfeffer, David, 1934).
Cyamionema decoratum Melvill & Standen, 1914; David, 1934.
Gaimardia faba (Pfeffer, 1886) (T.).
G. nigromarginata (Pfeffer, 1886) (T.).
G. subquadrata (Pfeffer, 1886) (T.).
G. trapesina (Lamarck, 1822); Martens & Pfeffer, 1886.
Kidderia bicolor (Martens, 1885) (T.); David, 1934.
Mysella charcoti (Lamy, 1906); David, 1934.
'*Lepton*' *costulatum* Martens, 1885 (T.).
'*Lyonsia*' *arcaeformis* Martens, 1885 (T.).
Hiatella antarctica (Philippi, 1845); Martens & Pfeffer, 1886; David, 1934.
Laternula elliptica (King & Broderip, 1832); David, 1934.

GASTROPODA

**Schizotrochus euglyptus* (Pelseneer, 1903).
**Patinigera polaris* (Hombron & Jacquinot, 1841) (T.); Strebel, 1908; David, 1934.
**P. polaris concinna* (Strebel, 1908) (T.).
**Puncturella conica* (d'Orbigny, 1841).
**Venustatrochus georgianus* n.sp. (T.).
**Margarella jason* n.sp. (T.).
M. notalis Strebel, 1908 (T.).
**M. steineni* (Strebel, 1905) (T.); Strebel, 1908; David, 1934.
M. subantarctica Strebel, 1908 (T.).
**M.* (*Promargarita*) *achilles* (Strebel, 1908) (T.).
**M.* (*Promargarita*) *tropidophoroides* (Strebel, 1908) (T.); David, 1934.
**M.* (*Promargarita*) *tropidophoroides obsoleta* n.subsp. (T.).
**Submargarita impervia* Strebel, 1908 (T.).
**Tropidomarga biangulata* n.sp. (T.).
Microdiscula subcanaliculata (Smith, 1875); (*Skenea*) Strebel, 1908.
**Brookula pfefferi* n.sp. (T.).
**B. strebeli* n.sp. (T.).
**Leptocollonia thielei* n.sp. (T.).
**Laevilitorina caliginosa* (Gould, 1849); Strebel, 1908; David, 1934.
L. granum Pfeffer, 1886 (T.).
L. pygmaea Pfeffer, 1886 (T.); Strebel, 1908.
L. umbilicata Pfeffer, 1886 (T.).
L. venusta Pfeffer, 1886 (T.).
Laevilacunaria antarctica (Martens, 1885) (T.); Strebel, 1908; David, 1934.
**Pellilitorina pellita* (Martens, 1885) (T.); Strebel, 1908; David, 1934.
**P. setosa* (Smith, 1875) Strebel, 1908; David, 1934.
'*Hydrobia*' *georgiana* Pfeffer, 1886 (T.).
Ovirissoa anderssoni (Strebel, 1908) (T.).
O. insignificans (Strebel, 1908) (T.).
**O. georgiana* (Pfeffer, 1886) (T.); Strebel, 1908.
Subonoba grisea (Martens, 1885) (T.).
**Subonoba* cf. *paucilirata* (Melvill & Standen, 1912).
S. schraderi (Strebel, 1908) (T.).
S. steineni (Strebel, 1908) (T.).
S. sulcata (Strebel, 1908) (T.).
**Eatoniella kerguelenensis major* Strebel, 1908 (T.).
E. kerguelenensis contusa Strebel, 1908.
E. subgoniostoma Strebel, 1908 (T.); David, 1934.
Skenella georgiana Pfeffer, 1886 (T.); Strebel, 1908.
**Cerithiella seymouriana* (Strebel, 1908).
Cerithiopsilla bisculpta (Strebel, 1908) (*Bittium*) (T.).
C. georgiana (Pfeffer, 1886) (*Cerithium*) (T.).
**Colpospirella algida* (Melvill & Standen, 1912) (*Turritella*).
'*Liostomia*' *georgiana* Pfeffer, 1886 (T.).
Odostomia translucens (Strebel, 1908) (T.) (*Volutaxiella*).
Streptocionella singularis Pfeffer, 1886 (T.).
Balcis subantarctica (Strebel, 1908) (T.) (*Volutaxiella*).
**Cirsotrema fenestrata* (Strebel, 1908) (T.).
**Amauropsis anderssoni* (Strebel, 1907); Strebel, 1908.
**A. aureolutea* (Strebel, 1908) (T.).
A. georgianus (Strebel, 1908) (T.).

A. (*Kerguelenatica*) *grisea* (Martens, 1878); Strebel, 1908; David, 1934.
**Polinices patagonicus* (Philippi, 1845).
**Sinuber sculpta scotiana* n.subsp.
**Tectonatica impervia* (Philippi, 1845).
**Marseniopsis pacifica* Bergh, 1886.
**Trochita georgiana* n.sp. (T.).
**Trichoconcha mirabilis* Smith, 1907.
**Perissodonta georgiana* Strebel, 1908 (T.).
**Falsimohnia albozonata* (Watson, 1882); David, 1934.
**Prosipho astrolabiensis* (Strebel, 1908).
**P. chordatus* (Strebel, 1908) (T.).
**P. hunteri* Hedley, 1916.
**P. perversus* n.sp. (T.).
**Chlanidota densesculpta* (Martens, 1885) (T.); Strebel, 1908; David, 1934.
**C. paucispiralis* n.sp. (T.).
Pfefferia chordata Strebel, 1908 (T.).
**P. cingulata* Strebel, 1908 (T.).
**P. elata* Strebel, 1908 (T.).
P. palliata Strebel, 1908 (T.).
**Probuccinum angulatum* n.sp. (T.).
**P. delicatulum* n.sp. (T.).
**Cavineptunea monstrosa* n.sp. (T.).
**Chlanidotella modesta* (Martens, 1885) (T.); Strebel, 1908; David, 1934.
**Proneptunea duplicarinata* n.sp. (T.).
**P. fenestrata* n.sp. (T.).
**Trophon albolabratus* Smith, 1875; Strebel, 1908.
**T. brevispira* Martens, 1885 (T.); Strebel, 1908; David, 1934.
T. cribellum Strebel, 1908 (T.); David, 1934.
**T. cuspidarioides* n.sp. (T.).
T. distantelamellatus Strebel, 1908 (T.).
**T. minutus* Melvill & Standen, 1907.
**T. scotianus* n.sp. (T.).
**T. shackletoni paucilamellatus* n.subsp. (T.).
Paradmete curta Strebel, 1908 (T.).
**P. fragillima* (Watson, 1882) (=*typica* Strebel, 1908, T.).
**P. longicauda* Strebel, 1908 (T.).
**Admete antarctica* Strebel, 1908.
**A. consobrina* n.sp. (T.).
**Belaturricula turrita* (Strebel, 1908) (T.).
**Lorabela notophila* (Strebel, 1908) (T.).
**L. pelseneri* (Strebel, 1908) (T.).
'*Bela*' *anderssoni minor* Strebel, 1908 (T.).
'*Bela*' *fulvicans* Strebel, 1908 (T.).
Pleurotomella bathybia Strebel, 1908 (T.).
**Typhlodaphne purissima* (Strebel, 1908) (T.).
Cleodora sulcata (Pfeffer, 1879); Massy, 1932.
Limacina helicina (Phipps, 1774); Massy, 1932.
L. balea (Moeller, 1841) Massy, 1932.
Clione antarctica Smith, 1902; Massy, 1932.
Spongiobranchaea australis d'Orbigny, 1840; Massy, 1932.
'*Aeolis antarctica* Pfeffer, 1886'.
'*A. georgiana* Pfeffer, 1886'.
'*A. schraderi* Pfeffer, 1886'.

'*Tritonia antarctica* Pfeffer, 1886'.
**Neactaeonina cingulata* (Strebel, 1908) (T.).
**N. edentula* (Watson, 1883).
**Toledonia punctata* Thiele, 1912.
**Philine gibba* Strebel, 1908 (T.).
'*Cylichna*' *cumberlandiana* Strebel, 1908 (T.).
Cylichnina georgiana Strebel, 1908 (T.).
**Kaitoa scaphandroides* n.sp. (T.).
Diaphana anderssoni (Strebel, 1908) (T.).
D. antarctica (Pfeffer, 1886) (T.).
D. inflata (Strebel, 1908) (T.).
D. pfefferi (Strebel, 1908) (T.).
**Kerguelenella lateralis* (Gould, 1846).

AMPHINEURA

Terenochiton kerguelenensis (Haddon, 1886) (=*Leptochiton pagenstecheri* Martens & Pfeffer 1886, T.).
Hemiarthrum setulosum (Dall, 1878) Martens & Pfeffer, 1886; David, 1934.
Icoplax steinenii Pfeffer, 1886 (T.).
Tonicina zschaui (Pfeffer, 1886) David, 1934.

CEPHALOPODA

Graneledone charcoti Joubin, 1905; Robson, 1930.
G. turqueti Joubin, 1905; Robson, 1930.
G. polymorpha Robson, 1930 (T.).
Thaumeledone gunteri Robson, 1930 (T.).

SOUTH SANDWICH ISLANDS AND REMAINDER OF SCOTIA ARC

Earland (1934), on the basis of the distribution of the Foraminifera, has divided this section of the Antarctic into the following faunal areas: (1) Weddell Sea; (2) South Sandwich Islands; (3) South Orkney Islands to Clarence Island on the Continental Shelf and Slope; (4) Scotia Sea from 29° 15′ to 60° W; (5) Drake Strait from 60° W; (6) Bransfield Strait and South Shetland Islands; (7) Palmer Archipelago; (8) Bellingshausen Sea.

The whole area is within Antarctic waters, and most of it is either on the Antarctic Continental Shelf or tied to it through the Scotia Arc, which links with Graham Land.

I have added a number of species to the faunal list of the South Sandwich-Palmer Archipelago section of the Scotia Arc, but even now our knowledge of the molluscs of this area is too scanty to reveal any marked molluscan segregation, so for the present the area mentioned above is treated as one faunal unit.

The molluscan list is made up as follows: South Sandwich Islands, 12 species; South Orkneys, 48 species; South Shetlands, 35 species; Palmer Archipelago, 20 species; with a total of 93 species for the four areas, obviously an incomplete list. Contrary to the foraminiferal evidence, a number of molluscs are found to be common to two or more of Earland's eight areas.

Regarding the above four localities provisionally as a whole, there are three marked influences apart from an apparently endemic faunule: (1) South Georgian, (2) Kerguelen, and (3) eastern Antarctic.

The South Georgian influence is represented by *Tropidomarga biangulata*, *Leptocollonia thielei*, *Pellilitorina pellita*, *Eatoniella kerguelenensis major*, *Amauropsis aureolutea*, *Sinuber sculpta scotiana*, *Prosipho astrolabiensis*, *Trophon minutus*, *T. shackletoni paucilamellatus* and *Neactaeonina cingulata*, although perhaps some of the above-mentioned species would be more correctly regarded as a Weddell influence in the South Georgian fauna.

The Kerguelen influence is shown by *Pellilitorina setosa*, *Amauropsis* (*Kerguelenatica*) *grisea*, *Marseniopsis pacifica*, *Paradmete fragillima* and *Neactaeonina edentula*.

Finally, the eastern Antarctic (Enderby and Victoria Quadrants) influence is provided by *Falsimargarita gemma*, *Antimargarita dulcis*, *Subonoba fraudulenta*, *Balcis solitaria*, *Neobuccinum eatoni*, *Prosipho madigani*, *Acteon antarcticus*, *Philine alata* and *Toledonia major*.

Many of these correlatives are of deep-water occurrence, and in consequence are not restricted by the deep-water breaks in the Scotia Arc. The occurrence of the Magellanic genus *Tromina* may be accounted for in this manner.

It will serve no useful purpose to name the apparently endemic species for this group of islands, since further collecting will probably show many of them to be of wider range than our present knowledge indicates. The ultimately acceptable endemic species will be found amongst those indicated in the respective locality columns by 'T.', which signifies type locality. Localization in *Chlanidota* at least is shown by the occurrence of three species not recorded from elsewhere.

In this list an asterisk, as before, indicates that the species occurs in the Discovery collections, 'L.' refers to Lamy's 1906 paper, 'M. & S.' to Melvill & Standen's 1907 and 1912 papers, 'M.' to Massy (1920), 'R.' to Robson (1930), and 'Th.' to Thiele (1912).

South Sandwich Islands, South Orkneys, South Shetland Islands and Palmer Archipelago Check List

PELECYPODA	S. Sand.	S. Ork.	S. Shet.	Palm.
Nucula minuscula Pfeffer, 1886	—	M. & S.	—	—
Yoldia eightsi (Couthouy, 1839)	—	M. & S.	—	—
Y. inaequisculpta Lamy, 1906	—	T.	—	—
Y. woodwardi Hanley, 1860	—	L.	—	—
Lissarca bennetti Preston, 1916	—	—	T.	—
L. miliaris (Philippi, 1845)	—	Th.	—	—
L. notorcadensis Melvill & Standen, 1907	—	T.	—	—
L. rubrofusca Smith, 1879	—	M. & S.	—	—
Limatula deceptionensis Preston, 1916	—	—	T.	—
L. pygmaea (Philippi, 1845)	—	M. & S.	—	—
Hochstetteria meridionalis (Smith, 1885)	—	M. & S.	—	—
H. quadrata (Pfeffer, 1886)	—	M. & S.	—	—
H. wandelensis (Lamy, 1906)	—	M. & S.	—	—
Palliolum pteriola Melvill & Standen, 1907	—	T.	—	—
Thyasira falklandica (Smith, 1885)	—	M. & S.	—	—
Lasaea consanguinea (Smith, 1879)	—	M. & S.	—	—
Mysella flavida (Preston, 1916)	—	—	T.	—
'*Kellia*' *lamyi* Melvill & Standen, 1907	—	M. & S.	—	—
Cyamiomactra laminifera (Lamy, 1906)	—	T.	—	—
Laternula elliptica (King & Broderip, 1832)	—	Th.	Th.	—
GASTROPODA				
**Schizotrochus euglyptus* (Pelseneer, 1903)	—	—	—	*
Scissurella timora Melvill & Standen, 1912	—	T.	—	—
**Puncturella conica* (d'Orbigny, 1841)	—	—	*	—
**Patinigera polaris* (Hombron & Jacquinot, 1841)	—	*	*	*
**Falsimargarita gemma* (Smith, 1915)	—	—	*	—
**Antimargarita dulcis* (Smith, 1907)	—	—	*	—
**Tropidomarga biangulata* Powell n.sp.	—	—	*	—
**Margarella antarctica* (Lamy, 1905)	—	T.*	*	*

	S. Sand.	S. Ork.	S. Shet.	Palm.
**Leptocollonia thielei* n.sp.	—	—	—	*
'*Cyclostrema*' *meridionale* Melvill & Standen, 1912	—	T.	—	—
**Laevilitorina claviformis* Preston, 1916	—	—	T.	*
**L.* (*Corneolitorina*) *coriacea* (Melvill & Standen, 1907)	—	—	T.*	—
**Laevilacunaria bransfieldensis* (Preston, 1916)	—	—	T.*	—
**L.* (*Pellilacunella*) *bennetti* (Preston, 1916)	—	—	T.	*
**Pellilitorina pellita* (Martens, 1885)	—	*	—	—
P. setosa (Smith, 1875)	—	M. & S.	—	—
Subonoba deserta (Smith, 1907)	—	M. & S.	—	—
**S. fraudulenta* (Smith, 1907)	—	*	—	—
Ovirissoa adarensis (Smith, 1902)	—	M. & S.	—	—
O. scotiana (Melvill & Standen, 1907)	—	T.	—	—
'*Rissoa*' *edgariana* Melvill & Standen, 1907	—	T.	—	—
'*Rissoa*' *filostria* Melvill & Standen, 1912	—	T.	—	—
Eatoniella kerguelenensis major Strebel, 1908	—	M. & S.	—	—
Cerithiopsilla georgiana (Pfeffer, 1886)	—	M. & S.	—	—
**Cerithiella astrolabiensis* (Strebel, 1908)	*	—	—	—
**Turritellopsis thielei*, n.sp.	—	—	—	T.
**Balcis antarctica* (Strebel, 1908)	*	—	—	—
**Balcis* cf. *solitaria* (Smith, 1915)	—	—	—	*
**Balcis* cf. *tumidula* (Thiele, 1912)	—	*	—	—
**Amauropsis aureolutea* (Strebel, 1908)	*	—	*	—
A. bransfieldensis (Preston, 1916)	—	—	T.	—
A. godfroyi (Lamy, 1910)	—	—	T.	—
**A.* (*Kerguelenatica*) *grisea* (Martens, 1878)	—	—	*	—
**Sinuber sculpta scotiana* n.subsp.	—	T.	—	
**Marseniopsis pacifica* Bergh, 1886	—	*	—	*
Prolacuna notorcadensis (Melvill & Standen, 1907)	—	T.	—	—
**Antitrichotropis wandelensis* (Lamy, 1906)	—	—	*	T.
**Discotrichoconcha cornea* n.gen and n.sp.	—	—	—	T.
**Chlanidota elongata* (Lamy, 1910)	—	—	T.*	—
C. gaini (Lamy, 1910)	—	—	T.	—
**C. signeyana* n.sp.	—	T.	—	—
**Neobuccinum eatoni* (Smith, 1875)	*	M. & S.	*	—
**Tromina tricarinata* n.sp.	—	—	T.	—
**Prosipho astrolabiensis* (Strebel, 1908)	—	—	—	*
**P. madigani* Hedley, 1916	—	—	—	*
P. crassicostatus (Melvill & Standen, 1907)	—	T.	—	—
'*Mitra* (*Volutomitra*) *porcellana* Melvill & Standen, 1912' (probably a *Marginella*)	—	T.	—	—
**Trophon echinolamellatus* n.sp.	—	—	T.	—
T. minutus Melvill & Standen, 1907	—	T.	—	—
**T. poirieria* n.sp.	—	—	*	T.
**T. shackletoni paucilamellatus*, n.subsp.	*	—	—	—
**Harpovoluta charcoti* (Lamy, 1910)	—	—	T*	—
**Paradmete fragillima* (Watson, 1882)	—	—	—	*
**P. percarinata* n.sp.	—	—	T.	—
**Admete antarctica* Strebel, 1908	—	—	*	—
**Leucosyrinx paratenoceras* n.sp.	—	—	T.	*
**Aforia magnifica* (Strebel, 1908)	*	—	*	*
**Conorbela antarctica* (Strebel, 1908)	—	—	*	—
**Acteon antarcticus* Thiele, 1912	—	—	*	—

	S. Sand.	S. Ork.	S. Shet.	Palm.
**Neactaeonina cingulata* (Strebel, 1908)	—	—	*	—
**N. edentula* (Watson, 1883)	—	—	*	—
**Toledonia major* (Hedley, 1911)	—	—	*	—
**Philine alata* Thiele, 1912	*	*	*	*
'*Retusa*' *antarctica* Melvill & Standen, 1912	—	T.	—	—
Cleodora sulcata (Pfeffer, 1879)	M.	—	—	—
Limacina helicina (Phipps, 1774)	M.	—	—	—
'*L. costulata* Preston, 1916'	—	—	T.	—
L. balea (Moeller, 1841)	M.	—	—	—
Clione antarctica Smith, 1902	M.	—	—	—
Spongiobranchaea australis d'Orbigny, 1840	M.	—	—	—
Notaeolidia gigas Eliot, 1905	—	T.	—	—
N. purpurea Eliot, 1905	—	T.	—	—
Necromantes appendiculata (Eliot, 1905) *Tritonia*	—	T.	—	—
AMPHINEURA				
Terenochiton kerguelenensis (Haddon, 1886) (=*pagenstecheri* Martens & Pfeffer, 1886)	—	M. & S.	—	—
Chaetopleura brucei (Iredale) Melvill & Standen, 1912	—	T.	—	—
Plaxiphora aurata (Spalowsky, 1795)	—	M. & S.	—	—
Hemiarthrum setulosum Dall, 1876	—	M. & S.	—	—
CEPHALOPODA				
Cirroteuthis glacialis Robson, 1930	—	—	—	T
Graneledone turqueti Joubin, 1905	—	—	—	R.

BIPOLARITY

Early workers on the southern high-latitude molluscs noted the general similarity of the fauna to that of the Arctic, but as pointed out by Smith (1902 (*a*), p. 166): 'It is a notorious fact that Mollusca from high latitudes and from deep water are to a great extent devoid of bright colours. Even this prevailing dull appearance of the shells from the Arctic and Antarctic areas is almost enough to suggest an imaginary resemblance.'

Subsequent workers have eliminated many molluscan claims to bipolar distribution either by demonstrating from anatomical researches that quite different animals are concerned, or by revealing the presence of a more or less cosmopolitan distribution for species formerly thought to be restricted to high latitudes. This is especially true in the Pteropoda. Nevertheless, a number of apparently genuine instances of bipolarity remain for consideration.

The term bipolarity has long been in use to indicate the presence of supposedly identical animals in the higher latitudes of both hemispheres and their apparent absence from intervening temperate and tropical waters.

It has been noted that whereas certain stenothermic animals are present at moderate depths only in both polar regions, they achieve continuity over the warm zones by descending to the cold waters of the ocean deeps. The distribution of the molluscan genus *Aforia* is a case in point.

Sverdrup, Johnson & Fleming (1942) define the three hypotheses that have been advanced to explain bipolarity. They are:

(1) 'Bipolar animals are relics of a previous cosmopolitan fauna, the tropical portion of which is now extinct.'

(2) 'Animals have migrated through cold deep water.'

(3) 'Parallel development of the bipolar forms.'

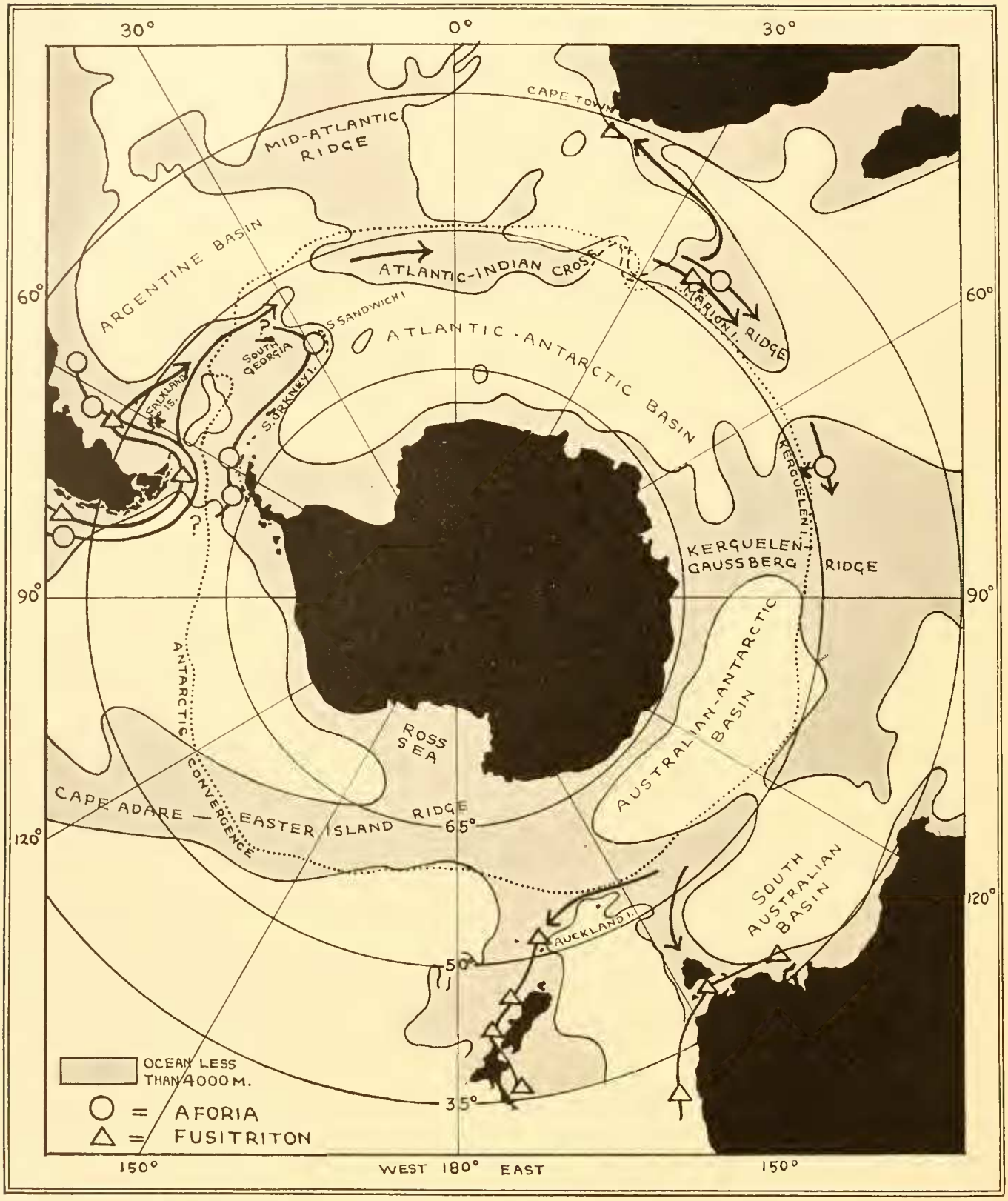

Fig. A. Southern Ocean (Polar Projection), showing distribution of *Aforia* and *Fusitriton*. Tinted areas less than 4000 m. deep. Map adapted from Deacon (1937) and Mackintosh (1946).

It would seem that hypotheses (1) and (2), which are basically the same, adequately explain this apparent phenomenon in general, and that (3) is scarcely justified, since present anomalies in distribution probably result only from incomplete knowledge of past conditions. For instance, did the periods of glaciation in the Pleistocene bring the cold-water faunas of both hemispheres sufficiently close together to allow of a more efficient interchange of species than at present?

In Figs. A and B I have plotted the known ranges of the molluscan genera *Aforia*, *Fusitriton* and *Acanthina*. These genera occur both in northern and southern high latitudes; they are not cosmopolitan, yet they have preserved a connected range that is obviously resultant from the continuity of the western coastline of the Americas plus their southern extension as the Scotia Arc. *Aforia* is stenothermic and has achieved continuity by going deep beneath the surface warm zones, but *Acanthina* is eurythermic and maintains a connected distribution over the shallow warm zones. It is best developed in the central warm-water portion of its range, but has developed a cold-water tolerance also. *Fusitriton* is apparently

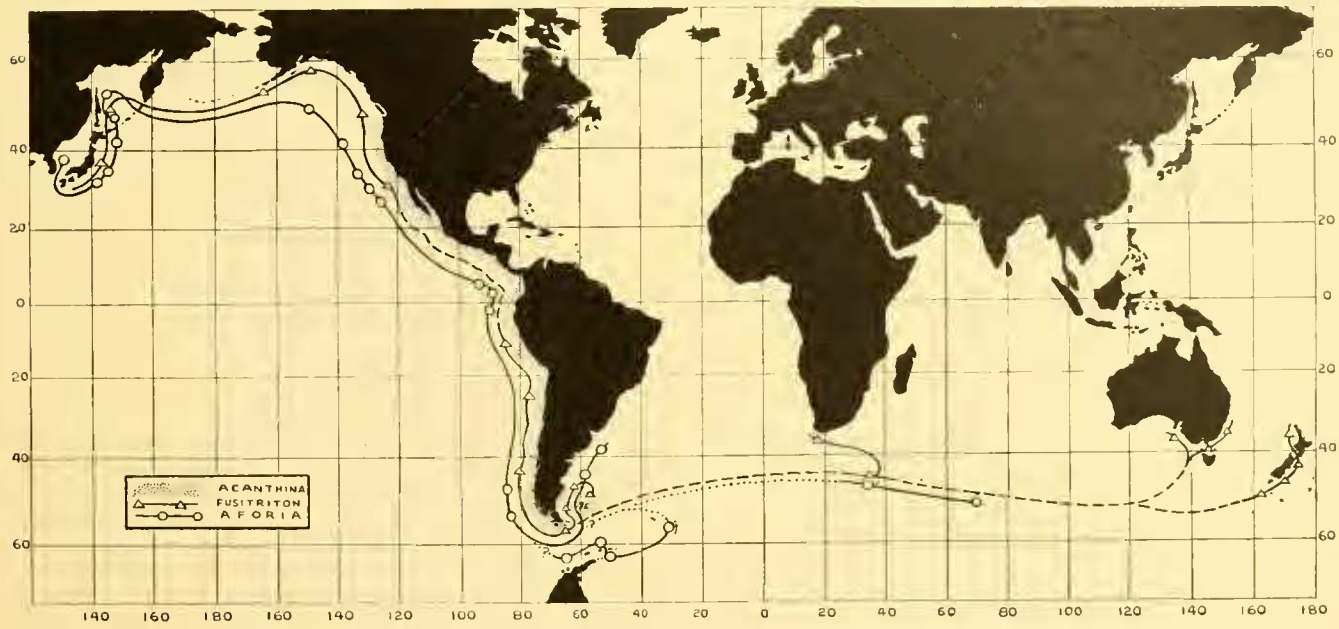

Fig. B. Distribution of *Acanthina* (shallow water) and *Fusitriton* and *Aforia* (continental shelf and deeper).

stenothermic, with a considerable depth range, to as much as 1800 fathoms in one instance, but it is restricted for the most part to the continental shelves. Its almost complete continuity along the western coastline of the Americas is undoubtedly due in some measure to upwelling of cold currents such as the Peru coastal current.

The littoral southern molluscs of the genera *Kerguelenella* and *Pachysiphonaria* have their northern counterpart in *Liriola*, but connecting forms are absent from warm seas, since these stenothermic animals apparently have not adapted themselves to a benthic habitat. The question is, under what former conditions did they achieve a connected range?

Stephen (1941, p. 243), in his report on the *Echiuridae*, *Siphunculidae* and *Priapulidae*, lists twenty-three Antarctic and Subantarctic species, of which ten are identical with and two close to Arctic species. A remark, applicable also to the molluscs, is that 'most of the bipolar species are confined to the South American Quadrant'.

The bulk of the Antarctic and Subantarctic molluscs are derivatives of a few cosmopolitan families: notably the *Patellidae*, *Fissurellidae*, *Trochidae*, *Littorinidae*, *Naticidae*, *Muricidae*, *Neptuniidae*, *Volutidae* and *Turridae*.

The inference is that the present Antarctic fauna is of comparatively recent immigration, probably no earlier than Tertiary times, and that the continuity of the Americas is and has been the chief colonizing route.

Distribution of Aforia

Species and location	Depth in fathom	Temp. ° F.	Date
insignis (Jeffreys, 1883), 'Icy Sea', Siberia	—	—	—
okhotskensis Bartsch, 1945, Okhotsk Sea, 50–60° N	73	30·9	—
kincaidi (Dall, 1920), Shelikoff Strait, Alaska	—	—	—
sakhalinensis Bartsch, 1945, off Sakhalin I.	399	38·1	—
diomedea Bartsch, 1945, Hokkaido, Japan	266–399	32·1–38·1	—
chosenensis Bartsch, 1945, Japan Sea, 40° N	122	34·1	—
japonica (Dall, 1925), Honshu, Japan, 35° N	369	41·8	—
hondoana (Dall, 1925), Hondo, Japan	614	37·5	—
crebristriata (Dall, 1908), south-west of Sitka, Alaska	1569	34·9	—
persimilis leonis (Dall, 1908), Washington	877	36·6	—
persimilis blanca (Dall, 1919), Cape Blanco, Oregon	1064	35·9	—
amycus (Dall, 1920), off Monterey, California	871	38	—
persimilis (Dall, 1889), Cortez Bank, California	984	38	—
Gulf of Panama	1020	36·8	10 Mar. 1891
off Panama	1067	37	27 Feb. 1891
off Ecuador, 1° 03′ N	741	38·4	—
south-west coast of Chile	677	38	—
goodei (Dall, 1889), north-west Patagonia, 45° 35′ S	1050	36·9	—
goniodes (Watson, 1881), south-east of Rio de Plata, Argentina	600	37·2	14 Feb. 1876
between Falklands and Patagonia	82	—	30 Mar. 1932
staminea (Watson, 1881), off Marion and Prince Edward Is.	1375	35·6	29 Dec. 1873
Kerguelen I.	105	—	—
magnifica (Strebel, 1908), south-west of Snow Hill I. 64° S	82	—	—
Palmer Archipelago	152–273	32·38	14 Mar. 1927
South Shetlands	214	32·07	11 Jan. 1937
South Sandwich Is.	180	32·7	26 Feb. 1930

The temperatures cited are associated with specimens dredged at various seasons of the year, nevertheless the lowest temperature record, 30·9° F., and the highest, 41·8° F., show a surprisingly small range, with a maximum difference of only 10·9°. That these stenothermic animals go deep over the tropics in order to keep within their temperature requirements is clearly shown by the *persimilis* records, especially that of the Ecuador occurrence, which at a depth of 741 fathoms and a temperature of 38·4° F. is situated only 1° 03′ N of the equator.

BIOGEOGRAPHICAL PROVINCES

It is not desirable at this stage of our knowledge of southern high-latitude molluscs to formulate a comprehensive scheme of biogeographical provinces.

A set of quadrant names proposed by Markham (1912) for the Antarctic and by Waite (1916) for the Subantarctic extensions of these quadrants may be usefully employed for indicating positions and in recording distribution.

The Antarctic quadrants named by Markham were:

The Victoria Quadrant:	90° to 180° E
The Ross Quadrant:	180° to 90° W
The Weddell Quadrant:	90° to 0° W
The Enderby Quadrant:	0° to 90° E.

The Subantarctic extended quadrants proposed by Waite were:

Australian Zonal Quadrant:	An extension of Victoria Quadrant.
Pacific Zonal Quadrant:	An extension of Ross Quadrant.
American Zonal Quadrant:	An extension of Weddell Quadrant.
African Zonal Quadrant:	An extension of Enderby Quadrant.

To these arbitrarily defined areas Waite proposed the following faunal districts:

A. Antipodes District. Subantarctic Islands of New Zealand, including Macquarie Island, Stewart Island, and southern Otago of the South Island of New Zealand.

M. Magellan District.

K. Kerguelen District. Includes Marion Island, Crozets, Heard Island and Kerguelen.

G. Glacial District. The whole of the Antarctic within the Antarctic Convergence.

Finlay (1926, p. 328) proposed five New Zealand faunal provinces, the last two of which, the Forsterian for South and Stewart Islands, New Zealand, and the Rossian for the Subantarctic Islands of New Zealand including Macquarie Island, are relevant to this discussion.

The name Rossian is an unfortunate choice, since it precludes a more appropriate use of this name for the Ross Sea area. In any case I recommend the substitution of Antipodean for Finlay's Rossian, since Waite's earlier propositions were overlooked by Finlay. I also advocate the use of Waite's Magellan and Kerguelen Districts, but consider his fourth one, the Glacial, pointless, since it merely substitutes a term for the restricted Antarctic circumpolar area which will later require subdivision on a faunal basis.

At the present stage I nominate only one addition to the biogeographic areas already outlined, that is, the Georgian for the South Georgia-Shag Rocks area.

Mackintosh (1946, pp. 177–212) gave a detailed account of the Antarctic Convergence with charts. The plotting of the mean position of the Convergence places South Georgia within the Antarctic Zone, Macquarie Island in the Subantarctic Zone, Kerguelen Island right on the convergence, with Heard Island below, and Marion Island-Crozets above it.

The following named southern high-latitude provinces are recommended for the present:

(1) *Magellan.* Patagonia from below Chiloe Island (west coast) and Cape Blanco (east coast) (Regan, 1924, p. 26), Tierra del Fuego, East Patagonian Continental Shelf including the Falkland Islands and the Burdwood Bank.

(2) *Georgian.* South Georgia and Shag Rocks.

(3) *Kerguelenian.* Kerguelen Island plus Heard Island, the Crozets, Marion and Prince Edward Islands. Possibly Bouvet Island.

(4) *Antipodean* (=Rossian). Subantarctic Islands of New Zealand including Macquarie Island.

DISTRIBUTION OF SOUTHERN HIGH-LATITUDE MOLLUSCA

The bulk of the Antarctic and Subantarctic molluscs are derivatives of a few cosmopolitan families, notably the Patellidae, Trochidae, Naticidae, Muricidae, Neptuniidae, Volutidae and Turridae.

Family Patellidae

The limpets belong to two characteristic Magellanic genera, *Patinigera* and *Nacella*. The former ranges from the Magellan Province to Graham Land and eastwards to Kerguelen Island, Macquarie Island and the Subantarctic Islands of New Zealand. True *Nacella* is recorded from the Magellan Province and Kerguelen, but does not seem to occur elsewhere. *Nacella* and *Patinigera*, to some extent, live attached to the giant kelp *D'Urvillea*, and this habit is the main cause, aided by the West Wind Drift, of their eastern extended range.

These genera are stenothermic, for in the New Zealand Subantarctic groups, Campbell and Auckland Islands, the common limpets are of the subtropical genus *Cellana* which occurs to the entire exclusion of *Patinigera* over the rest of the New Zealand area to the north.

Family Fissurellidae

The large Fissurellid subgenus *Balboaina* is restricted to the Magellan Province. The species *Puncturella conica*, which is found in most southern high latitudes, is distinguished only with difficulty from the boreal genotype. It is a good example of a 'bipolar' genus which ranges deep over the warm zones. The route of migration to the south or vice versa could be either the eastern or western American coastlines, or both. *Parmaphorella* occurs in the Magellan Province and extends via the Atlantic-Indian Ocean cross-ridge to South Africa. The related genus *Tugalia* is found in warm water in the East Indian-Australian-New Zealand regions.

Family Trochidae

The Trochoids form a conspicuous element in the Antarctic-Subantarctic region (see Fig. C).

A. *Calliostoma* group. True *Calliostoma* does not extend farther south than the Magellan Province, but the following genera are specialized Antarctic-Subantarctic derivatives of *Calliostoma*:

(1) *Photinula*. Magellan, 0–202 m.

(2) *Photinastoma*. Magellan, 0–115 m.

(3) *Venustatrochus* n.g. South Georgia only, 120–204 m.

(4) *Falsimargarita* n.g. Falkland Islands, South Shetland Islands and off Oates Land, 69° 43′ S, 163° 24′ E, 250–468 m.

B. *Margarella* group. This is a wide-ranging, high-latitude southern genus related to the boreal *Margarita*. Many of its members are directly herbivorous, and its circum-subantarctic range no doubt has been assisted by the direct agency of the West Wind Drift. The genus is common in the Magellan Province, South Georgia to Graham Land, eastward along the Antarctic Continental Shelf to the Ross Sea and via the Atlantic-Indian Ocean cross-ridge to Marion Island, the Crozets, Kerguelen, Macquarie Island, the subantarctic islands of New Zealand, and the southern and eastern coastline of the South Island of New Zealand to about 42° S. The New Zealand members are littoral species mostly restricted to the holdfasts of the giant kelp *D'Urvillea*.

The subgenus *Promargarita* is restricted to South Georgia, and the somewhat related *Submargarita* ranges from South Georgia to Kerguelen and the Davis Sea.

Other *Margarita*-like genera are the elaborately sculptured *Antimargarita* n.g., circum-antarctic in deep water (130–400 fathoms) and *Tropidomarga* n.g., South Georgia and Clarence Island, 160–342 m.

Solariella occurs in deep water from the Falklands to Heard Island and Kerguelen. The genotype is from the English Pliocene, but the genus is well represented in north-west America, the North Atlantic and the Indian Ocean.

From the above it can be assumed that this considerable southern high-latitude radiation of Trochoids originated from the American Quadrant.

Family Littorinidae

The periwinkles are represented by the wide-ranging, mainly subantarctic genus *Laevilitorina*, several specialized genera from the higher latitudes of the Scotia Arc, and *Pellilitorina*, which has been recorded from the Burdwood Bank, South Georgia, South Orkneys, South Shetlands, Bouvet Island, Kerguelen and Cape Adare (Antarctica). A South Australian species, *globula* Angas, 1880, has been referred to *Pellilitorina*, which it certainly resembles, but this claim requires confirmation.

True *Laevilitorina* ranges from Patagonia to the subantarctic islands of New Zealand, but is replaced on the New Zealand mainland by *Zelaxitas*. Here again the Australian '*Laevilitorina*' *mariae* Tennyson Woods, 1876, requires investigation. The distribution of the Laevilitorinids is again suggestive of an eastern subantarctic drift from the American Quadrant.

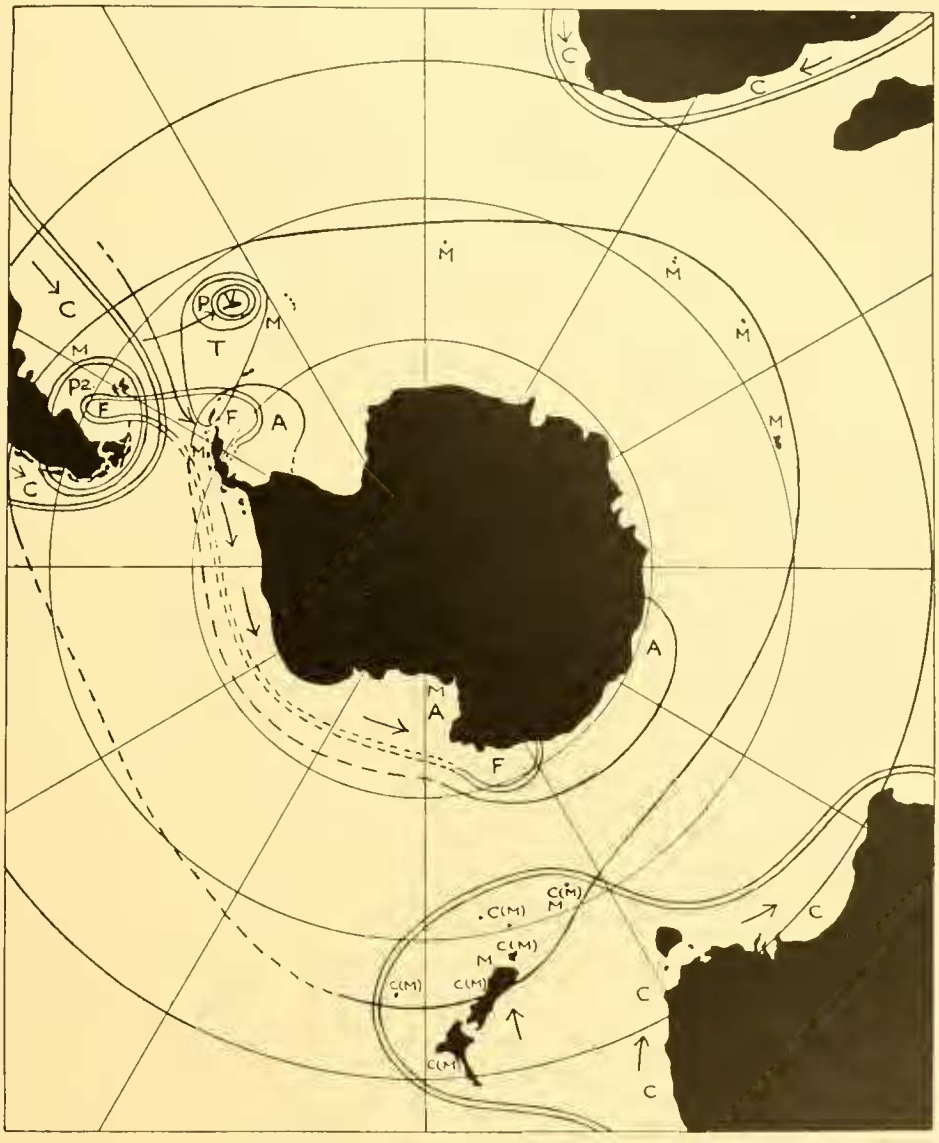

Fig. C. Distribution of Antarctic and Subantarctic Trochoids. Calliostomatinae bounded by double lines, Stomatellinae by a single line. *A* = *Antimargarita*. *C* = *Calliostoma*. *C* (*M*) = *Calliostoma* (*Venustas*). *F* = *Falsimargarita*. *M* = *Margarella*. *P* = *Promargarita*. *P2* = *Photinula* and *Photinastoma*. *T* = *Tropidomarga*. *V* = *Venustatrochus*.

Family Naticidae

If I am correct in assigning most of the southern high-latitude Naticoids to the boreal genus *Amauropsis*, there is no doubt that the continuity of the west coast of the Americas indicates the former route. Of the remaining Naticoid genera, *Falsilunatia* has most in common with northern *Lunatia*, *Tectonatica* is a Mediterranean Pliocene genus, *Sinuber* ranges from the Falkland Islands and South Georgia to the South Shetland Islands and eastwards to Kerguelen and the Ross Sea, and *Prolacuna* is apparently restricted to deep water of Antarctic occurrence, extending from the Davis Sea to the Ross Sea. The American route is again indicated.

Family Trichotropidae

There are four endemic southern high-latitude genera in this family, clearly related to the boreal genera, *Trichotropis* and *Torellia*. The range of the four southern genera is:

(1) *Antitrichotropis*: Antarctic, Palmer Archipelago to Ross Sea.
(2) *Trichoconcha*: Antarctic, South Georgia to Ross Sea.
(3) *Neoconcha*: Ross Sea.
(4) *Discotrichoconcha*: Palmer Archipelago.

Familes Crepidulidae and Calyptraeidae

The genus *Crepipatella* is of West American origin, *dilatata* occurring from the west coast of South America and the Magellan Province, and *lingulata* from the Bering Sea to Panama.

The genus *Trochita* is West American also, ranging from Panama to the Magellan Province and occurring also at South Georgia. The simplification of the septum in the South Georgian species suggests that it and the New Zealand *Zegalerus* may have had a common origin in the south.

Family Struthiolariidae

In the systematic section I suggest that the only living southern high-latitude Struthiolarid genus, *Perissodonta*, is identical with a South American Oligocene group (*Struthiolarella*). The known range of the Struthiolariidae is: Patagonia (Oligocene), South Georgia and Kerguelen Island (Recent), *Perissodonta*; New Zealand, *Conchothyra* (Upper Cretaceous), *Perissodonta* (*Struthiolarella minor* (Marshall, 1917)) (Danian, Upper Cretaceous), *Monalaria* (Lower Tertiary), *Callusaria* (Middle and Upper Tertiary), *Struthiolaria* (Middle Tertiary to Recent), *Pelicaria* (Upper Tertiary to Recent); Southern Australia, *Tylospira*, Upper Tertiary to Recent.

The family seems to have had its origin in the Jurassic to Recent Aporrhaidae, which are of northern hemisphere origin, to have spread down the Americas to Patagonia and finally reached South Georgia, Kerguelen, New Zealand and Australia by shallow-water extensions from Antarctica. The present discontinuous distribution of Struthiolarids is evidently the result of extinctions over much of the probable former range of the family.

Family Cymatiidae

The genus *Fusitriton* has been referred to in the previous section on 'Bipolarity' and is dealt with more fully in the systematic section. Its range is from Japan via the Aleutian Chain, the western coast of the Americas, Falkland Islands, South Africa, Marion Island via the Atlantic-Indian Ocean cross-ridge, New Zealand and southern to eastern Australia.

Family Buccinulidae

The southern whelks are apparently related to the northern Neptuniidae rather than to the northern Buccinidae. There is a considerable radiation of southern generic groups, even more so than in the Trochidae. The distribution of these genera is as follows:

(1) *Pareuthria*. Magellan, Davis Sea and Campbell Island, New Zealand Subantarctic.
(2) *Tromina*. Magellan, and Clarence Island, South Shetlands.
(3) *Notoficula*. Bouvet Island and Falkland Islands. Atlantic-Indian Ocean cross-ridge.
(4) *Falsimohnia* n.g. South Georgia and Kerguelen Island.
(5) *Glypteuthria*. Magellan and South Africa. Atlantic-Indian Ocean cross-ridge.
(6) *Chlanidota*. South Shetlands, South Orkneys, South Georgia, Bouvet Island, Kerguelen Island and Cape Adare.
(7) *Pfefferia*. South Georgia.
(8) *Neobuccinum*. Graham Land to Ross Sea and Kerguelen Island.

(9) *Probuccinum*. South Georgia to Ross Sea, Kerguelen Island and Macquarie Island. North-west Patagonia?

(10) *Cavineptunea* n.g. South Georgia and Shag Rocks.

(11) *Prosipho*. Graham Land to Ross Sea; South Georgia to Kerguelen Island and Macquarie Island.

(12) *Anomacme*. Magellan.

(13) *Meteuthria*. Magellan to Heard and Kerguelen Islands.

(14) *Proneptunea*. Kerguelen Island, South Georgia and Shag Rocks.

(15) *Chlanidotella*. South Georgia.

Family Muricidae

The family is represented by numerous Trophons, the West American genus *Acanthina* in the Magellan Province and the Falkland *Typhina belcheri*, probably of warm-water African origin. Typical *Trophon* ranges from the Magellan Province over the whole circumference of the Antarctic Continental Shelf via the Scotia Arc, as well as to Kerguelen and Macquarie Islands. The new genus *Xymenopsis* and the new subgenera *Fuegotrophon* and *Stramonitrophon* are restricted to the Magellan Province.

The *Trophons* are of world-wide distribution, but the southern typical members are most like northern *Boreotrophon*, again suggesting West American continuity, since the North Pacific is the stronghold of the latter genus.

Family Volutidae

The large heavy Volutes, *Adelomelon*, are South American and Magellanic. The Magellanic Tertiary-to-Recent *Miomelon* and the New Zealand Tertiary-to-Recent *Pachymelon-Palomelon* evidently had a common ancestry, yet no volutes of this style are known from intermediate areas.

The other high-latitude southern volutes belong to several specialized genera:

(1) *Harpovoluta*: A small thin-shelled Volute resembling the Buccinid *Volutharpa*. Distribution: South Shetlands, Davis Sea and Macquarie Island (Tomlin, 1948).

(2) *Provocator*: A small, elongated, thin-shelled Volute from Kerguelen Island and between Falkland Islands and Patagonia.

(3) *Guivillea*: A large, thin-shelled Volute from Marion Island to the Crozets.

(4) *Paradmete*: Small, solid, *Mitra*-like shells closely allied to the boreal genus *Volutomitra*. Distribution: Kerguelen Island, off Tierra del Fuego, South Georgia, South Shetlands and Palmer Archipelago.

Family Turridae

The Turrids are represented by a number of regional genera of uncertain affinity with those from northern seas. The '*Bela*' complex covers several new genera and others that for the present have been left in this conventional location.

The large attractive *Aforia* is a splendid example of 'bipolar' distribution and has been dealt with in the previous section. Another member of the Cochlespirinae, *Leucosyrinx*, probably has a connected range up the eastern South American coast in deep water to the West Indies, where similar species to those from the Falklands-Scotia Arc localities are well represented.

A new genus of the Daphnelliinae, *Typhlodaphne*, from Magellan and South Georgia to Kerguelen, closely resembles *Typhlosyrinx* from deep water in the Gulf of Aden.

Family Acteonidae

The type genus *Acteon*, represented by magellanic and antarctic species, is cosmopolitan, but *Neactaeonina* is restricted to the Antarctic, ranging from South Georgia to the South Shetlands and eastwards to Kreguelen Island and the Ross Sea. Another subantarctic-antarctic genus, *Toledonia*, ranges from the Falkland Islands to the South Shetlands and eastwards to Kerguelen and the Ross Sea.

Family PHILINIDAE

The cosmopolitan genus *Philine* is represented by four species: *kerguelensis* extends via the Atlantic-Indian Ocean cross-ridge from Kerguelen Island to north of the Falklands, *alata* from the Palmer Archipelago to the Davis Sea, *gibba* appears to be restricted to South Georgia and *falklandica* to the vicinity of the Falklands.

Family SCAPHANDRIDAE

If my reference of a new South Georgian species to *Kaitoa* is correct, then this link with a Miocene New Zealand genus is of interest.

Family SIPHONARIIDAE

The characteristic subantarctic genus *Kerguelenella* ranges from the Magellan Province to South Georgia and eastwards to Kerguelen, the Macquarie Islands, and the subantarctic islands and Stewart Island of New Zealand. The genus shows relationship with the North Pacific boreal *Liriola*, but connecting links are no longer apparent.

SUMMARY

The above discussion shows that it is reasonable to suppose that the bulk of the southern high-latitude molluscan fauna could have been derived from the Americas, particularly the western coast-line, which links more than two-thirds of the structural margin of the Pacific. Southern and eastern dispersal has been assisted by the continuity of the Americas in the Scotia Arc, which reaches the Antarctic Continent at Graham Land and in the Atlantic-Indian Ocean cross-ridge, which runs from the Argentine Basin almost to the Kerguelen-Gaussberg (radial) ridge. Possibly other radial extensions from Antarctica in former times may have operated also in distributing southern fauna to the Australian and New Zealand areas. The subantarctic cross-ridges may also have been much shallower during some former period than at the present time and thus more effective in distributing organisms more or less restricted to the Continental Shelf.

The prevailing West Wind Drift north of the Antarctic Circle and the opposite East Wind Drift to its south are present factors which must greatly facilitate the lateral distribution of many species.

With the exception of the Struthiolariidae, which have an ancestry extending back to the Cretaceous, the present southern high-latitude molluscan fauna presents no indication of antiquity. The bulk of the fauna probably results from a series of comparatively recent immigrations during Tertiary to Pleistocene times. There is a marked absence of archaic types such as *Pleurotomaria*.

INDEX TO THE DISCOVERY INVESTIGATIONS MOLLUSCA

(New species*, new genera†)

The report covers 215 species and includes descriptions of a new subfamily, the Solariellinae, 26 new genera and subgenera, and 46 new species and subspecies.

The material, including the types, will be deposited in the British Museum (Natural History).

PELECYPODA

GASTROPODA

ACKNOWLEDGEMENTS

The present work would have been impossible of accomplishment by one situated so far away from the libraries and collections associated with the larger and older scientific centres, but for the fortunate chance that the R.R.S. 'Discovery II' refitted in Auckland, New Zealand, during August 1932. Through the kindness of the late Commander W. M. Carey and the scientific staff under Mr Dilwyn John, I was allowed the privilege of referring to the extensive library of Antarctic reports in the ship's laboratory. During the six weeks of the vessel's stay in Auckland I worked constantly, typing relevant sections of text and photographing plates.

A subsequent visit to Sydney in 1937 enabled the completion of references by working on the extensive collection of separates accumulated by the late Mr Charles Hedley for his researches on the British Antarctic Expedition 1907–9 and the Australian Antarctic Expedition molluscan collections.

At the Australian Museum, Sydney, I examined their considerable collection of Antarctic Mollusca, and later received on loan from Dr Nils H. Odhner of Stockholm a representative series from the collections made by the Swedish South Polar Expedition.

My private collection of Mollusca, now deposited in the Auckland Museum, contains much southern material, and this has proved useful for comparative purposes.

For many requests for other comparative material I have to thank Mr J. R. le B. Tomlin of Sussex.

To all members of the Discovery Committee who have helped with this work, and to those specifically referred to above, I am most grateful.

SYSTEMATIC

PELECYPODA

Family NUCULANIDAE

Genus **Propeleda** Iredale, 1924

Type (o.d.): *Leda ensicula* Angas

Propeleda longicaudata

Leda longicaudata Thiele, 1912, p. 229, pl. 17, fig. 22.
Poroleda longicaudata Hedley, 1916, p. 18.
Propeleda longicaudata Iredale, 1924, p. 186.

TYPE LOCALITY. Gauss Station, Davis Sea, Antarctica.

St. 600. West of Adelaide I., Bellingshausen Sea, 67° 09′ S, 69° 27′ W., 17 Jan. 1931, 487–512 m. (one living example).

Length 16 mm.; height 6 mm. (holotype).

Length 21 mm.; height 6 mm. (Hedley, St. X, Davis Sea).

Length 26 mm.; height 10·25 mm. (St. 600).

As already noted by Hedley (1916), large examples tend to become proportionately narrower than small ones, e.g. the holotype. The rostrum tends to lengthen disproportionately to the rest of the shell.

Family LIMOPSIDAE

Genus **Limopsis** Sassi, 1827

Type (s.d. Gray, 1847): *Arca aurita* Brocchi, Miocene and Pliocene of Italy

Limopsis hirtella Rochebrune & Mabille.

Limopsis hirtella Rochebrune & Mabille, 1889, p. 115.
Limopsis hirtella Lamy, 1911*a*, p. 25, pl. 1, figs. 18, 19, 20.

TYPE LOCALITY. Orange Bay, Patagonia.

St. WS 773. North of Falkland Is., 47° 28′ S, 60° 51′ W, 31 Oct. 1931, 291 m. (one valve, length 9·75 mm., height 9 mm., thickness 3 mm.).

RANGE. Patagonia (Rochebrune & Mabille); north of Falkland Is.; Petermann I. (Lamy).

Subgenus **Felicia** Rochebrune & Mabille, 1889

Type (monotypy): *Felicia jousseaumi* Rochebrune & Mabille

Limopsis (Felicia) jousseaumi (Rochebrune & Mabille).

Felicia jousseaumi Rochebrune & Mabille, 1889, p. 116, pl. 7, fig. 9*a*, *b*.
Limopsis jousseaumi Dall, 1908, p. 394.
Limopsis jousseaumei Lamy, 1911 *a*, p. 26.
Limopsis jousseaumei Thiele, 1912, p. 228.

TYPE LOCALITY. Beagle Channel, Tierra del Fuego.

St. 600. West of Adelaide I., Bellingshausen sea, 67° 09′ S, 69° 27′ W, 17 Jan. 1931, 487–512 m. (one living example, 34 × 28 × 11 mm., exclusive of periostracum).

RANGE. Beagle Channel, Tierra del Fuego (type); off Alexander Land, 297 m. (Lamy, 1911); off southern coast of Chile, 53° 1′ S in 369 fathoms (Dall, 1908).

Lamy (1911 *a*, p. 27) synonymized *Limopsis grandis* Smith (1907*b*), with *jousseaumi*, but Thiele (1912) maintained them as distinct and figured the hinge characters of both. Dall (1908) did not recognize *Felicia*, as the 'absence of a fossette', upon which supposed character the genus was founded, was shown to be a misconception. However, these Antarctic, large, thin-shelled, deep-water Limopsids would seem to be worth separating subgenerically on account of the relatively small, weakly developed hinge and tiny fossette. Related species are: *grandis* Smith (1907*b*), from Davis Sea, 254 fathoms; *marionensis* Smith, 1885 from off Marion Island in 140 fathoms; *laevinscula* Pelseneer, 1903 from 71° S, 89° W; and *longipilosa* Pelseneer (1903), from 71° 22′ S, 16° 34′ W in 1410 fathoms.

Genus **Lissarca** Smith, 1877

Type (monotypy): *Arca* (*Lissarca*) *rubrofusca* Smith

Lissarca cf. **notorcadensis** Melvill & Standen

Lissarca notorcadensis Melvill & Standen, 1907, p. 144, figs. 14, 14*a*.
Arca (*Bathyarca*) *gourdoni* Lamy, 1911 *a*, p. 28, pl. 1, figs. 21, 22.
Lissarca gourdoni Thiele, 1912, p. 228, pl. 18, fig. 3.
Lissarca notorcadensis Smith, 1915, p. 75.
Lissarca notorcadensis Hedley, 1916, p. 19.

TYPE LOCALITIES. Scotia Bay, South Orkneys, 9–15 fathoms (*notorcadensis*); Alexander I., 250 m., Bellingshausen Sea (*gourdoni*).

St. WS 838. Between Patagonia and Falkland Is., 53° 11′ 45″ S, 65° W, 5 Feb. 1932, 148 m. (one living example).

RANGE. Alexander I. (Lamy); South Orkneys (Melvill & Standen); Gauss Station (Thiele); Commonwealth Bay, Adelie Land, 25–400 fathoms (Hedley); Ross Sea, 140–160 fathoms (Smith).

The reference of the St. WS 838 specimen to the above species is not certain, for the single example is not adult.

Family PANDORIDAE

Genus Pandora Lamarck, 1799

Subgenus Kennerlia Carpenter, 1864

Type (s.d. Dall, 1903): *K. filosa* Carpenter. Recent, North-west America

Pandora (Kennerlia) braziliensis Sowerby

Pandora braziliensis Sowerby, 1874*b*, pl. 2, fig. 15.
Pandora (*Kennerlia*) *braziliensis* Smith, 1881, p. 40, pl. 5, fig. 4*a–c*.

St. WS 854. Off Cape Dos Bahias, Patagonia, 22 Mar. 1932, 97–97 m.

The species has been recorded previously from the Magellan Province by Smith (1881), i.e. Port Rosario, 2–30 fathoms.

Family HIATELLIDAE

Genus Hiatella Daudin, 1801

Hiatella antarctica (Philippi)

Saxicava antarctica Philippi, 1845, p. 51.
Saxicava sp. (cf.) *antarctica* Smith, 1881, p. 40.
Saxicava antarctica Rochebrune & Mabille, 1889, p. H. 102.
Saxicava arctica var. *antarctica* Melvill & Standen, 1907, p. 121.
Saxicava antarctica Thiele, 1912, p. 256.
Saxicava antarctica Hedley, 1916, p. 33.

TYPE LOCALITY. Strait of Magellan.

St. WS 228. North-east of Falkland Is., 50° 50′ S, 56° 58′ W, 30 June 1928, 229 m., 227–236 m.
St. WS 834. Below eastern entrance to the Strait of Magellan, 2 Feb. 1932, 27–28 m.
St. WS 836. Off Patagonia, 53° 05′ 30″ S, 67° 38′ W, 3 Feb. 1932, 64 m.

RANGE. Patagonia (Philippi, 1845; Rochebrune & Mabille, 1889); Gough I., 100 fathoms and Burdwood Bank, 56 fathoms (Melvill & Standen, 1907); Kerguelen I. (Thiele, 1912); Macquarie I. (Hedley, 1916).

Shells of the nestling habit are so variable in shape that it is almost impossible to select characters of any taxonomic importance. It seems reasonable to suppose that there is only one wide-ranging southern species. The following nominal species have been described from Antarctic and Subantarctic Seas: *antarctica* Philippi, 1845, Strait of Magellan; *bisulcata* Smith, 1879, Kerguelen Island; *chilensis* Hupé (Gay), Calbuco, Chile; *frigida*, *lebruni* and *mollis* Rochebrune & Mabille, 1889, Orange Bay, Patagonia; and *subantarctica* Preston, 1913, Falkland Islands.

GASTROPODA

Family SCISSURELLIDAE

Genus Schizotrochus Monterosato, 1877

Type: *Scissurella crispata* Fleming

Schizotrochus euglyptus (Pelseneer)

Scissurella euglypta Pelseneer, 1903, p. 17, pl. 4, figs. 43–45.
Scissurella euglypta Thiele, 1912, p. 187.
Scissurella euglypta Melvill & Standen, 1912, p. 345.

TYPE LOCALITY. *Circa* 70° S, 83–87° W.

St. 144. Off mouth of Stromness Harbour, South Georgia, from 54° 04′ S, 36° 27′ W, to 53° 58′ S, 36° 26′ W, 5 Jan. 1927, 155–178 m.
St. 190. Bismarck Strait, Palmer Archipelago, 64° 56′ S, 65° 35′ W, 24 Mar. 1927, 93–130 m. (one broken specimen).

RANGE. Recorded also from Gauss Station, Davis Sea (Thiele, 1912) and Burdwood Bank, 56 fathoms, south of Falkland Is. (Melvill & Standen, 1912).

Family PATELLOIDIDAE

Genus Patelloida Quoy & Gaimard, 1834

Type (s.d. Gray 1847): *Acmaea rugosa* Quoy & Gaimard = *Acmaea* Eschscholtz, 1833 non *Acmea* Hartmann, 1821 (see Winckworth, 1934)

Patelloida ceciliana (Orbigny)

Patella ceciliana Orbigny, 1841, p. 482, pl. 81, figs. 4–6.
Patella ceciliana (Gay) Hupé, 1854, p. 260.
Acmaea ceciliana Tryon & Pilsbry, 1891, p. 33, pl. 34, figs. 14–21.
Acmaea ceciliana Melvill & Standen, 1907, p. 126.

TYPE LOCALITY. Falkland Is.?

St. 51. Off Eddystone Rock, east of Falkland Is. from 7 miles N 50° E to 7·6 miles N 63° E of Eddystone Rock, 4 May 1926, 105–115 m. (one dead shell). Falkland Islands (A.W.B.P. coll. Auck. Mus.).

RANGE. Antofagasta to Valparaiso, Chile (Dall, 1909); Falkland Is. (Melvill & Standen, 1898, 1901, 1907).

Strebel (1907) described a subspecies *magellanica* from Tierra del Fuego.

Family PATELLIDAE

Genus Nacella Schumacher, 1817

Type (s.d. Gray, 1847): *Patella mytilina* Helbling

The genus is here restricted to the thin, ovate shells with anterior apex. The thicker shelled southern limpets with a bronze iridescence and subcentral apex, usually included in *Nacella*, are here segregated into *Patinigera*. True *Nacella* lives upon the giant seaweeds, *D'Urvillea* and *Macrocystis*.

Nacella mytilina (Helbling)

Patella mytilina Helbling, 1779, p. 104, pl. 1, figs. 5, 6.
Patella mytilina Gmelin, 1791, p. 3698.
Patella conchacea Gmelin, 1791, p. 3708.
Nacella mytiloides Schumacher, 1817, p. 179.
Nacella mytilina Dall, 1870, p. 274.
Nacella compressa Rochebrune & Mabille, 1889, p. 98, pl. 5, fig. 9.
Nacella mytilina Pilsbry, 1891, p. 115, pl. 50, figs. 32–39.
Nacella mytilina Smith, 1905, p. 336.
Patella mytilina Strebel, 1907, p. 113, pl. 3, fig. 44; pl. 4, figs. 49, 51–55, 57, 57*a*, 59.
Nacella mytilina Thiele, 1912, p. 234.
Nacella falklandica Preston, ?1913, p. 221, pl. 4, fig. 6.
Nacella mytilina Melvill & Standen, 1914, p. 114.

The following are probable synonyms also: *Patella cymbularia* Lamarck (1819), Strait of Magellan; *P. hyalina* Philippi (1845) (maintained as distinct by Melvill & Standen, 1914); and *P. vitrea* Philippi (1845) (maintained as distinct by Strebel, 1907). Preston's *Nacella falklandica* appears to be an individual variant of *mytilina* with strong radials. I have typical examples of *mytilina* from Port Stanley, Falkland Islands, collected by Mr A. G. Bennett.

TYPE LOCALITY. Strait of Magellan.

St. 222. St Martin's Cove, Hermite Island, Cape Horn, 24 April. 1927, on *Macrocystis*.

RANGE. Strait of Magellan; Tierra del Fuego (Smith, 1905); Falkland Is. (Strebel, 1907; Melvill & Standen, 1914; A. G. Bennett, loc. cit.); Kerguelen I. (Thiele, 1912).

Length 27·00 mm.; breadth 18·0 mm.; height 7·5 mm. (St. 222).

Length 35·75 mm.; breadth 22·5 mm.; height 11·0 mm. (Falkland Islands).

Length 41·00 mm.; breadth 24·0 mm.; height 17·0 mm. (Pilsbry, 1891).

Genus Patinigera Dall, 1905

n.nom. for *Patinella* Dall, 1871 *non* Gray, 1848

Type (o.d.) *Patella magellanica* Gmelin

This genus and *Nacella* have the gill cordon continuous and the foot encircled by a scalloped epipodial ridge, which is interrupted in front by the head. They both differ in these respects from *Cellana*, which has an incomplete branchial cordon and no epipodial ridge.

The shell in *Patinigera* has a subcentral apex and is of normal shape and solidity, as in *Patella* and *Cellana*, but is at once distinguished by the bronzy lustre of the nacreous interior.

The range of *Patinigera* covers most of the Antarctic and Subantarctic, but *Nacella* seems to be restricted to the Subantarctic from the Magellan region to Kerguelen Island.

The valid species and subspecies of *Patinigera* appear to be as follows: *clypeata* (Lesson, 1830), Valparaiso, Chile; *magellanica* (Gmelin, 1791), Strait of Magellan, Tierra del Fuego and southern Patagonia; *magellanica venosa* (Reeve, 1854) (=*chiloensis* Reeve, 1855), Island of Chiloe, Chile; *fuegiensis* (Reeve, 1855), Subantarctic, Tierra del Fuego to Kerguelen Island; *aenea* (Martyn, 1784) (=*deaurata* Gmelin, 1791), Straits of Magellan, eastern Tierra del Fuego and Falkland Islands; *polaris* (Hombron & Jacquinot, 1841), Antarctic, South Georgia and Seymour Island to Bouvet Island; *polaris concinna* (Strebel, 1908), South Georgia; *kerguelenensis* (Smith, 1879), Kerguelen Island and Macquarie Island?; *macquariensis* (Finlay, 1926), Macquarie Island; and *terroris* (Filhol, 1880), Campbell Island.

I have not seen *fuegiensis* (Reeve, 1855), a seaweed-frequenting species, or *delesserti* (Philippi, 1849), Marion Island, probably distinct, or *depsta* (Reeve, 1855, Island of St Paul) which may be a *Cellana*.

Patinigera magellanica Gmelin

Patella magellanica Gmelin, 1791, p. 3703.
Patella atramentosa Reeve, 1854, fig. 41.
Patella magellanica Reeve, 1854, fig. 19.
Patella meridionalis Rochebrune & Mabille, 1885, p. 109.
Patella tincta Rochebrune & Mabille, 1885, p. 110.
Patella pupillata Rochebrune & Mabille, 1885, p. 120.
Patella metallica Rochebrune & Mabille, 1885, p. 109.
Nacella aenea magellanica Pilsbry, 1891, p. 119, pl. 44, figs. 9–12, 15, 16.

TYPE LOCALITY. Strait of Magellan.

Possession Bay Patagonia (Hassler Exped. 1872, ex Mus. Comp. Zool. Massachusetts).
Straits of Magellan, Chile (W. J. Eyerdam, 1939).

RANGE. Magellan, Patagonia and Tierra del Fuego.

This is a solid, high-conical, rounded-oval shell with strong, rather smooth radial ribs. The central area is dark bronzy brown.

Reeve's *venosa* (=*chiloensis*), from the Island of Chiloe, is a relatively smooth, more rounded form, which may be a regional subspecies.

Length 51 mm.; breadth 40 mm.; height 28 mm. (Straits of Magellan).

Length 51 mm.; breadth 38·5 mm.; height 25 mm. (Possession Bay).

Length 46 mm.; breadth 43 mm.; height 25 mm. (Straits of Magellan).

Patinigera aenea (Martyn)

Patella aenea Martyn, 1784, pl. 17.
Patella deaurata Gmelin, 1791, p. 3719.
Patella varicosa Reeve, 1854, fig. 21.
Nacella strigatella Rochebrune & Mabille, 1885, p. 110.
Nacella aenea and *aenea deaurata*, Pilsbry, 1891, pp. 117, 118, pl. 15, figs. 5, 6; pl. 45, figs. 22, 23; pl. 46, figs. 28–36.
Patinella deaurata Strebel, 1908, p. 80.
Helcioniscus bennetti Preston, 1913, p. 221, pl. 4, fig. 7.

Strebel's *Patinella delicatissima* (1907, p. 145 and 1908, pl. 1, figs 75, 75*a*) is a benthic form of the above.

Type locality. Strait of Magellan.

North-east coast, Tierra del Fuego (R. T. Reynolds, 1934); Falkland Is. (W. R. le. B. Tomlin & A. G. Bennett).

Range. Tierra del Fuego, Strait of Magellan and Falkland Is.

This species is larger and more elongate-ovate than *magellanica* and has the strong radial ribs prominently scaled by the concentric growth lines. Thin shells with a near anterior apex were subspecifically separated as *deaurata* by Pilsbry (1891), but this does not seem warranted. If, however, the move to ban Martyn's names becomes generally accepted, then Gmelin's *deaurata* must come into use for the species.

Length 33·5 mm.; breadth 23·0 mm.; height 10·0 mm. (Falkland Islands).
Length 55·5 mm.; breadth 38·0 mm.; height 23·0 mm. (Falkland Islands).
Length 60·5 mm.; breadth 43·0 mm.; height 25·5 mm. (Falkland Islands).
Length 70·0 mm.; breadth 46·0 mm.; height 32·0 mm. (Tierra del Fuego).

Patinigera delicatissima (Strebel)

Patinella delicatissima Strebel, 1907, p. 145, pl. 5, figs. 71, 72.
Patinella delicatissima Strebel, 1908, pl. 1, figs. 75, 75*a*.
Patella delicatissima Melvill & Standen, 1914, p. 114.

Type locality. Strait of Magellan, 20–30 fathoms.

St. 51. Off Eddystone Rock, East Falkland Is., from 7 miles N 50° E to 7·6 miles N 63° E of Eddystone Rock, 4 May 1926, 115 m.
St. 55. Entrance to Port Stanley, East Falkland Is., 2 cables S 24° E of Navy Point, 16 May 1926, 10–16 m.
St. 56. Sparrow Cove, Port William, East Falkland Is., $1\frac{1}{2}$ cables N 50° E of Sparrow Point, 16 May 1926, $10\frac{1}{2}$–16 m.

This is a small, thin species of low profile with delicately squamose ribs. It is apparently constant and not merely a benthic form of *aenea*. Strebel (1907) recorded it from Berkeley Sound, 16 m., and Port Louis, 7 m., Falkland Islands, and Melvill & Standen (1907) from Rapid Point and Roy Cove, West Falkland Islands, at low water.

Patinigera polaris (Hombron & Jacquinot)

Patella polaris Hombron & Jacquinot, 1841, p. 191.
Patella polaris Martens & Pfeffer, 1886, p. 101, pl. 2, figs. 11–13.
Nacella polaris Pilsbry, 1891, p. 120, pl. 49, figs. 21–27.
Patinella polaris Strebel, 1908, p. 81, pl. 5, fig. 77.
Nacella (*Patinella*) *polaris* Lamy, 1911*a*, p. 15.
Nacella (*Patinigera*) *polaris* L. David, 1934, nos. 2–3, p. 127.

TYPE LOCALITY. South Georgia (littoral).

St. 45. 2·7 miles S 85° E of Jason Lt., South Georgia, 6 Apr. 1926, Shore Coll.
St. 163. Paul Harbour, Signy I., South Orkneys, 17 Feb. 1927, 18–27 m.
St. 164. East end of Normanna Strait, South Orkneys, 18 Feb. 1927, 24–36 m.
St. 166. South-east point of Paul Harbour, Signy I., South Orkneys, 19 Feb. 1927, Shore Coll.
St. 173. Port Foster, Deception I., South Shetlands, 28 Feb. 1927, 5–60 m.
St. 179 Melchior I., Schollaert Channel, Palmer Archipelago, in creek to south of south-west anchorage, 10 Mar. 1927, 4–10 m.
St. 456. 1 mile east of Bouvet I., 18 Oct. 1930, 40–45 m.
St. 1092. Signy I., South Orkneys, 23 Jan. 1933, Shore Coll.
St. 1486. Harmony Cove, Nelson I., South Shetlands, 3 Jan. 1935, Shore Coll.
St. 1487. Desolation I., Livingston I., South Shetlands, 8 Jan. 1935, Shore Coll.
Wilhelmina Bay, Danco Land, South Shetlands, 64° 30′ S, 62° W, 8 Feb. 1922, 1–8 fathoms, A. G. Bennett.
St. WS 564. Moltke Harbour, South Georgia, 24 Feb. 1931, in rock pool.

RANGE. South Georgia, South Orkneys, South Shetlands, Palmer Archipelago and Bouvet Island ('Discovery'), Seymour I. and Paulet I. (Strebel, 1908), 0–60 m.

This strictly Antarctic limpet is, typically, large, elevated, oblongovate, lightly built, sparingly and weakly radially ribbed, mostly smooth, drab externally and more or less uniformly bronzy black within. Examples from below the littoral are of paler colour—bronzy reddish brown within.

Length 51 mm.; breadth 36 mm.; height 23 mm. (South Georgia).
Length 48 mm.; breadth 35 mm.; height 26 mm. (South Georgia).
Length 48 mm.; breadth 34 mm.; height 25 mm. (South Shetlands, St. 1487).
Length 58 mm.; breadth 42 mm.; height 19 mm. (Palmer Archipelago, St. 179).

Patinigera polaris concinna (Strebel)

Patinella polaris concinna Strebel, 1908, p. 82, pl. 5, figs. 76*a–e*, 78*a*, *b*.

TYPE LOCALITY. Cumberland Bay, South Georgia, 15–25 m.

A. Typical form, with crisp radials:
St. 145. Stromness Harbour, South Georgia, between Grass I. and Tonsberg Point, 7 Jan. 1927, 26–35 m.
St. WS 25. Undine Harbour (north), South Georgia, 17 Dec. 1926, 18–27 m.
St. MS 12. East Cumberland Bay, 1 cable E to 1 mile S × E½, east of Hobart Rock, South Georgia, 17 Feb. 1925, 25–53 m.
St. MS 66. East Cumberland Bay, 2¼ miles south-east of King Edward Point Lt. to 1½ cables W × N of Macmahon Rock, South Georgia, 28 Feb. 1926, 18 m.

B. Depressed form, radials obsolete towards margin:
St. MS 6. East Cumberland Bay, ¼ mile south of Hope Point to 1¼ cables S × E of King Edward Point Lt., 12 Feb. 1925, 24–30 m.
St. MS 10. East Cumberland Bay, ¼ mile south-east of Hope Point to ¼ mile south of Government Flagstaff, 14 Feb. 1925, 27 m.
St. MS 71. East Cumberland Bay, 9¼ cables E × S to 1·2 miles E × S of Sappho Point., South Georgia, 9 Mar. 1926, 110–60 m.

RANGE. South Georgia, 15–110 m.

A benthic form of *polaris*. Typically it is small, thin-shelled, moderately elevated, with narrow, crisp radials crossed by dense concentric growth lines. Colour buff, blotched or variously marked in reddish brown. With it (Form B) is a very depressed form which reaches a larger adult size and is probably the adult *concinna*. It commences with crisp radials on a normally conic shell, but later flattens out, the radials become either obsolete or are present as very weak corrugations, but the concentric growth lines persist over the whole shell.

The *concinna* form is represented in the collections only from South Georgia. Benthic shells from the South Orkneys and South Shetlands have the shape and sculpture of typical *polaris*.

Form A (typical):

Length 27·25 mm.; breadth 19·0 mm.; height 8·0 mm. (St. MS 12).
Length 28·75 mm.; breadth 20·0 mm.; height 8·5 mm. (St. MS 66).
Length 20·70 mm.; breadth 14·0 mm.; height 4·5 mm. (Strebel, 1908).
Length 32·00 mm.; breadth 21·5 mm.; height 7·7 mm. (Strebel, 1908).

Form B:

Length 35·75 mm.; breadth 24·6 mm.; height 8·5 mm.
Length 36·00 mm.; breadth 24·5 mm.; height 7·0 mm.
Length 39·50 mm.; breadth 27·5 mm.; height 9·5 mm.
Length 42·00 mm.; breadth 29·0 mm.; height 9·0 mm.
} (St. MS 10).

A near relative to *polaris* is the Kerguelen Island *Patella* (*Patinella*) *kerguelenensis* Smith (1879, p. 177, pl. 9, figs. 13, 13*a*). This has a large thin elevated shell with subobsolete radial sculpture, very like *polaris* except for a constant narrowing of the anterior end which results in a true oval outline. Hedley (1916, p. 44) recorded this species from Macquarie Island, but I have not seen the material.

Family LEPETIDAE

Genus Lepeta Gray, 1840

Type (monotypy): *Patella caeca* Mueller, Boreal Seas

Lepeta coppingeri (Smith)

Tectura (*Pilidium*) *coppingeri* Smith, 1881, p. 35, pl. 4, figs. 12, 12*a*.
Tectura coppingeri Rochebrune & Mabille, 1889, p. H. 90.
Lepeta coppingeri Pilsbry, 1891, p. 71, pl. 39, figs. 20, 21.
Lepeta (*Pilidium*) *antarctica* Smith, 1907, p. 12, pl. 2, figs. 11, 11*a*.
Pilidium coppingeri Strebel, 1907, p. 110, pl. 3, fig. 38.
Pilidium coppingeri Strebel, 1908, p. 83.
Lepeta antarctica Hedley, 1911, p. 4.
Lepeta coppingeri Smith, 1915, p. 62.
Lepeta coppingeri Hedley, 1916, p. 41.
Lepeta coppingeri Eales, 1923, p. 6.

TYPE LOCALITIES. Sandy Point, 9–10 fathoms, Patagonia (*coppingeri*); McMurdo Sound, 130 fathoms (*antarctica*).

St. 1652. Ross Sea, 75° 56·2′ S, 178° 35·5′ W, 23 Jan. 1936, 567 m. (one example).
St. WS 246. Off south end of West Falkland Is., 52° 25′ S, 61° W, 19 July 1928, 267–208 m. (one empty shell).

Family FISSURELLIDAE

Genus Fissurella Lamarck, 1799

Type (monotypy): *Patella nimbosa* Linné, 1758

Subgenus Balboaina Farfante, 1943

Type (monotypy): *Patella picta* Gmelin, 1791

The subgenus *Balboaina* was proposed for large species (up to 100 mm. in length) with the shell margin entirely in one plane, not crenulated and with a broad dark internal border. Orifice a little in front of the middle and surrounded internally by a broad callus. Distribution: Chile and Magellan Province.

Fissurella (Balboaina) picta (Gmelin)

Patella picta Gmelin, 1791, p. 3729.
Fissurella picta Hupé (Gay), 1854, p. 237.
Fissurella picta Rochebrune & Mabille, 1889, p. 70.
Fissurella picta Pilsbry, 1890, p. 144, pl. 45, figs. 9–11.
Fissurella picta Melvill & Standen, 1907, p. 98.
Fissurella picta Strebel, 1906, p. 83.

TYPE LOCALITY. Strait of Magellan.

St. 51. Off Eddystone Rock, East Falkland Is., from 7 miles N 50° E to 7·6 miles N 63° E of Eddystone Rock, 4 May 1926, 105–115 m. (small dead shells only).
Port Stanley, Falkland Is. (A. G. Bennett and J. R. le B. Tomlin).

RANGE. Valparaiso, Chile (Pilsbry, Gay); Tierra del Fuego (Strebel); Santa Cruz, Punta Arenas and Baie Orange (Rochebrune and Mabille); Port Stanley, Falkland Is. (Melvill & Standen and Strebel).

Length 17·5 mm.; breadth 11·0 mm.; height 4·0 mm. (St. 51).
Length 60·0 mm.; breadth 39·0 mm.; height 16·0 mm. (Falkland Islands).
Length 84·5 mm.; breadth 54·5 mm.; height 26·0 mm. (Falkland Islands).
Length 86·0 mm.; breadth 55·5 mm.; height 27·0 mm. (Falkland Islands).

Fissurella (Balboaina) oriens Sowerby

Fissurella oriens Sowerby, 1834, p. 124.
Fissurella oriens Pilsbry, 1890, p. 152, pl. 46, figs. 18, 19; pl. 34, fig. 58.
Fissurella oriens Strebel, 1906, p. 88, pl. 1, figs. 8–14; pl. 2, figs. 15–20.
Fissurella oriens Melvill & Standen, 1907, p. 97.
Fissurella oriens Strebel, 1908, p. 78, pl. 6, fig. 97*a*, *b*.

TYPE LOCALITY. Valparaiso, Chile.

St. 51. Off Eddystone Rock, East Falkland Is., 4 May 1926, 105–115 m. (one small empty shell).
Port Stanley, Falkland Is. (ex Australian Museum).

Length 24·0 mm.; breadth 12·0 mm.; height 4·0 mm. (Falkland Islands).
Length 43·0 mm.; breadth 23·0 mm.; height 8·0 mm. (Falkland Islands).
Length 46·0 mm.; breadth 27·0 mm.; height 11·0 mm. (Pilsbry).

RANGE. Coast of Chile and Island of Chiloe (Pilsbry); various Magellan localities including Falkland Is. (Strebel); Port William, Falkland Is. (Melvill & Standen, shore; Strebel, 12 m.).

The two species occur together at the Falkland Islands, but do not seem to intergrade. The species *picta* reaches a large size, has an ovate outline, and the length of the orifice is one-seventh to one-eighth that of the shell; '*oriens*' is smaller, narrow, with parallel sides, and the length of the orifice is one-sixth that of the shell. The former is white, conspicuously rayed with dark purplish brown and the latter diffused greyish and reddish purple, in concentric zones and crossed by reddish radials. I have no topotypic material of *oriens*, so cannot comment on the correctness or otherwise of applying the name of a Chilean species to Falkland Islands material.

Genus Megatebennus Pilsbry, 1890

Type (o.d.): *Fissurellidea bimaculata* Dall, California

Megatebennus patagonicus Strebel

Megatebennus patagonicus Strebel, 1907, p. 98, pl. 2, fig. 23*a–f*.
Megatebennus patagonicus Strebel, 1908, p. 79.

TYPE LOCALITY. Lennox I., Tierra del Fuego.

St. 57. Port William, East Falkland Is., 5½ cables S 20° W of Sparrow Point, 16 Ma 1926, 15 m. (one example).

Genus Puncturella Lowe, 1827

Type (o.d.): *Patella noachina* Linn.

The southern Puncturellas have long proved to be a stumbling block, and most authors have lumped the southern records with the boreal *noachina*. Certainly on external shell characters there is no marked difference between the northern *noachina* and the Antarctic-Subantarctic shells.

Dall, however (1889*a*, pp. 356–7), revived *falklandica* A. Adams for shells from 449 fathoms, west coast of Patagonia. He remarked concerning these Patagonian shells that they are 'amazingly like *P. noachina*; the only differences I have been able to see in the shells are that in *P. noachina* the fissure is generally longer and less vertical, and the apex more posterior'.

Dall did not examine the dentition of his southern shells, but I have found the radula of *conica* (=*falklandica*) from St. 27, South Georgia, to show striking differences from the figures of the Greenland *noachina* in Troschel & Thiele (1891, pl. 27, fig. 2).

Allowing for differences in interpretation of these small radulae, especially difficult in the Rhipidoglossa, owing to the numerous minute and crowded marginals and the large hooked outer lateral, which assumes a different shape with the varying angles taken up in mounting, there is a marked difference between the central and inner laterals in northern and southern examples. Since the central and inner laterals always lie in one flat plane, and are easily seen, the differences noted between Troschel & Thiele's figure and my slides demonstrate that in spite of similarity in the shells *noachina* can no longer be applied to these southern shells.

The difficulty, now, is to determine how many of the names that have been proposed for southern shells represent valid species, and which of these names is applicable to the Discovery material.

Rimula conica d'Orbigny (1841, p. 471) from the Falkland Islands is a juvenile of 4 mm. in length, tall and strongly recurved at the apex. It can be matched exactly with young examples from the Discovery material.

Cemoria princeps Mighels (1841, p. 42, pl. 4, fig. 9), type locality Maine, is a synonym of typical *noachina*.

Puncturella cognata Gould (1852, p. 321, pl. 31, fig. 478), Orange Harbour, 16 fathoms, Patagonia, is not so laterally compressed and has weaker sculpture than the Discovery material.

P. analoga Martens (1903, p. 70, pl. 5, fig. 8), Kerguelen Island (length 8 mm., breadth 5 mm., height 5 mm.), is sculptured with strong radials and can be matched with half-grown shells from the Discovery material. Recorded from Macquarie Island by Hedley (1916, p. 37), and Tomlin (1948).*

P. spirigera Thiele (1912). Evidently a distinct species with regular ribs separated by linear grooves; a tall shell with strongly recurved apex.

Puncturella conica (d'Orbigny)

Rimula conica d'Orbigny, 1841, p. 471.
Cemoria falklandica A. Adams, 1862, p. 208, fig. 14.
Puncturella noachina Watson, 1886, p. 42.
Puncturella falklandica Dall, 1889*a*, p. 356.
Puncturella falklandica Pilsbry, 1890, p. 231, pl. 63, fig. 33.
Puncturella analoga Martens, 1903, p. 70, pl. 5, fig. 8.
Puncturella noachina Strebel, 1907, pl. 2, figs. 24*a–c*, 25*a–d*.
Puncturella noachina Strebel, 1908, p. 79.
Puncturella noachina Thiele, 1912, p. 234.
Puncturella noachina (='*falklandiana*' sic): Melvill & Standen, 1912, p. 344.

* Since the above was written I have examined this B.A.N.Z.A.R.E. material consisting of fifty-one specimens, and find that they are constant in having very weakly developed radials. These Macquarie Island shells are probably neither *conica* nor *analoga*, but topotypes of the latter are required to determine this.

TYPE LOCALITIES. Falkland Is. (*conica* and *falklandica*); Kerguelen I. (*analoga*).

St. 27. West Cumberland Bay, South Georgia, 3·3 miles S 44° E of Jason L., 15 Mar. 1926, 110 m.
St. 42. Off mouth of Cumberland Bay, South Georgia, 1 Apr. 1926, 120–204 m.
St. 144. Off mouth of Stromness Harbour, South Georgia, 5 Jan. 1927, 155–178 m.
St. 156. Off north coast of South Georgia, 53° 51′ S, 36° 21′ 30″ W, 20 Jan. 1927, 200–236 m.
St. 159. North-east of South Georgia, 52° 52′ 30″ S, 36° 08′ W, 21 Jan. 1927, 160 m.
St. 170. Off Cape Bowles, Clarence Is., 61° 25′ 30″ S, 53° 46′ W, 23 Feb. 1927, 342 m.
St. 175. Bransfield Strait, South Shetlands, 63° 17′ 20″ S, 59° 48′ 15″ W, 2 Mar. 1927, 200 m.
St. 1562. Near Marion I., from 46° 51′ 7″ S, 37° 56′ 5″ E to 46° 54′ 8″ S, 37° 53′ 8″ E, 7 Apr. 1935, 97–104 m.
St. WS 85. 8 miles S 66° E of Lively I., East Falkland Is., 25 Mar. 1927, 79 m.
St. WS 228. North-east of Falkland Is., 50° 50′ S, 56° 58′ W, 30 June 1928, 229–236 m.
St. WS 246. South-west Falkland Is., 52° 25′ S, 61° W, 19 July 1928, 267–208 m.
St. WS. 799. North-west of Falkland Is. 48° 04′ 15″ S, 62° 48′ 07″ W, 21 Dec. 1931, 141–137 m.
St. WS 824. South-east of Falkland Is., 52° 29′ S, 58° 27′ W, 19 Jan. 1932, 146–137 m.
St. MS 71. East Cumberland Bay, $9\frac{1}{4}$ cables E × S to 1·2 miles E × S of Sappho Point, 9 Mar. 1926, 110–60 m.

RANGE. Approximately Magellan to Kerguelen I. (possibly Macquarie Island) and south to Bransfield Strait, 60–342 m. (449 fathoms, Dall, 1889, loc. cit.).

Length 16·0 mm.; breadth 9·8 mm.; height 11·4 mm. (St. 27).
Length 9·0 mm.; breadth 6·0 mm.; height 5·2 mm. (St. WS 228).
Length 8·8 mm.; breadth 6·0 mm.; height 6·8 mm. (St. 170).
Length 7·0 mm.; breadth 5·25 mm.; height 4·25 mm. (*noachina*, Pilsbry, 1890, p. 230).

Forbes & Hanley (1850) state that their largest example of *noachina* 'measures four lines in breadth and rather exceeds five in length'.

DENTITION. (Fig. G, 2, p. 189, from example of length 16 mm., breadth 9·8 mm., height 11·4 mm., St. 27.) The four laterals are all narrow and lie erect and parallel to the axis of the central, not oblique to it as in *noachina* (Fig. G, 1, p. 189).

Genus **Parmaphorella** Strebel, 1907

Type (monotypy): *Tugalia antarctica* Strebel 1907 (*non* Melvill & Standen 1907)
(See Tomlin, 1932, p. 163)

Parmaphorella melvilli (Thiele)

Tugalia antarctica Melvill & Standen, 1907, p. 98, pl., fig. 1 (*non* Strebel, 1907).
Tugalia melvilli Thiele, 1912, p. 257.

TYPE LOCALITY. Burdwood Bank, South of Falkland Is. in 56 fathoms.

St. 388. Off Tierra del Fuego, 56° $19\frac{1}{2}$′ S, 67° $09\frac{3}{4}$′ W, 16 Apr. 1930, 121 m.
St. WS 825. North-east of Falkland Is., 50° 50′ 00″ S, 57° 15′ 15″ W, 18–19 Jan. 1932, 135–144 m.

DENTITION. Fig. G, 3, p. 189. $\infty+(1+1+4)+1+(4+1+1)+\infty$. Central tooth broad but reduced above to a comparatively narrow cutting edge. Four narrow laterals lying parallel to the oblique sides of the central—fourth lateral pointed but without a cutting edge—fifth lateral massive, hooked and with a prominent cusp in addition to the terminal cutting point. There is a sixth incipient or obsolescent lateral, which is less than half the size of the fifth. Similar accessory plates are shown in *Puncturella* and in Thiele's figures of the dentition of several Fissurellids, e.g. *Emarginula obovata*, *E. elongata* and *Scutus australis* (1891). The marginals are very numerous, slender and curved, and all are delicately cusped towards the outer extremity.

Three species of the genus are known: *antarctica* (Strebel, 1907) from Strait Le Maire, Tierra del Fuego; *melvilli* (Thiele, 1912) and *barnardi* (Tomlin, 1932) from Cape Point, South Africa, in 180 fathoms.

THE TROCHACEA

The radula

The Rhipidoglossid radula is undoubtedly one of the most difficult to interpret owing to the large number and the intricate overlapping of the teeth. In the Calliostomid radula in particular, long, slender, foliated cusps form a complicated network that effectively obscures the form of the bases of the individual teeth unless these teeth are laboriously segregated on the slide. Even then it is difficult to estimate the outlines these teeth would present when viewed from above in their natural working position. Each angle from which an individual tooth is observed gives a different result, especially with the laterals.

I have achieved the best results, where there is sufficient material, by mounting several radulae—one stained with eosin and mounted in Canada balsam, one unstained and mounted in glycerine jelly and one or more in either medium with individual teeth and groups of teeth segregated from the mass. Staining is essential to bring out the form of the base, but by this method the elaborate foliated cusps so characteristic of the Calliostomids are not easily seen. On the other hand, glycerine jelly brings out detail of the cusps to perfection but shows little else.

In general terms the dental formula of the Trochacea consists of a central tooth, four to sixteen laterals (usually four to five) and a large number of marginals (usually too many to count with accuracy (expressed as ∞)). The inner marginal in the Calliostomidae is always massive and clearly the most effective working tooth. The rest of the teeth are so delicate that they can scarcely be operative in mastication.

The radula types covered by the present material are as follows:

A. Marginal teeth very numerous.
  a. Central and laterals with long, slender, foliated cusps.
    aa. Inner marginal massive, crooked, with cusps on lower edge. — Calliostomatinae
  b. Central and lateral teeth with short denticulated cusps.
    bb. Inner marginal not noticeably larger or more massive than neighbouring ones — Stomatellinae = Margaritinae
      Transverse rows forming a simple arc — Margarites
      Transverse rows with a slight dip at the middle — Margarella

B. Marginal teeth few (5–10).
    Transverse rows with a pronounced dip at the middle. — Solariellinae

The epipodial processes

Interesting confirmation of differences shown by study of the Trochoid radula is shown by the tentacles or filaments associated with the epipodial fringe.

Calliostoma Swainson, 1840 (type: *Calliostoma zizyphinum* (Linn.) England).

Two long, slender cephalic tentacles with the eyes at the extremities of a pair of short tentacles, each close against the outer side of the base of one of the long tentacles. Epipodial tentacles, three on each side of the foot, long and slender (see Forbes & Hanley, 1851, 3, pl. EE and Fischer, 1887, p. 826, fig. 585).

1. Calliostoma modestulum Strebel. Two long slender cephalic tentacles and eyes as in *Calliostoma* typical. Epipodial tentacles four on each side of the foot, long and slender (Fig. D, 1).

Dall (1889 *a*, p. 343), in describing *C. platinum*, 414 fathoms, California, stated that there were four moderate-sized epipodial 'filaments' and that the tentacles were long and slender.

In *Venustas cunninghami* (Griffiths & Pidgeon), New Zealand, the cephalic tentacles are short and stout and there are four pairs of short epipodial tentacles.

2. **Photinula coerulescens** (King & Broderip). Two short cephalic tentacles. Epipodial tentacles six pairs, slender, moderately long, and of approximately equal size (Fig. D, 4).

3. **Photinastoma taeniata** (Wood). Two short cephalic tentacles. Epipodial tentacles four pairs, rather short and stout and of equal size (Fig. D, 2).

4. **Venustatrochus georgianus** n.g. and n.sp. Two long and slender cephalic tentacles. Epipodial tentacles seven pairs, all slender, first two short, remainder long (Fig. D, 6).

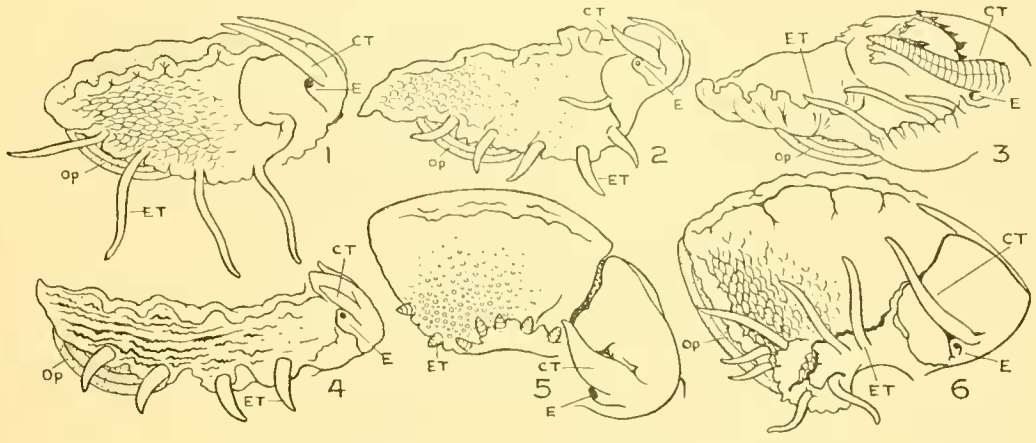

Fig. D. Epipodial processes in Trochoids. *CT*=cephalic tentacles, *ET*=epipodial processes and *Op*=opercula in: (1) *Calliostoma modestulum* Strebel; (2) *Photinastoma taeniata* (Wood); (3) *Solariella kempi* n.sp.; (4) *Photinula coerulescens* (King & Broderip); (5) *Falsimargarita iris* (Smith); (6) *Venustatrochus georgianus* n.g., n.sp.

5. **Falsimargarita iris** (Smith). Two short and very stout cephalic tentacles. Epipodial tentacles seven pairs, very short and stout and of equal size (Fig. D, 5).

Eales (1923, p. 8) described *F. gemma* (Smith) as being similar but with the epipodial tentacles scarcely distinguishable from the lobes of the epipodial fringe.

6. **Margarella expansa** (Sowerby); also *steineni* (Strebel), *bouveti* n.sp., *M.* (*Promargarita*) *tropidophoroides* Strebel and *achilles* (Strebel). All with short and stout cephalic tentacles and four pairs of moderately long epipodal tentacles, which increase in size gradually from the front.

7. **Margarella antarctica** (Lamy). Similar to the typical *Margarella* series listed above except for five instead of four pairs of epipodial tentacles.

Family TROCHIDAE

Subfamily Calliostomatinae

Genus Calliostoma Swainson, 1840

Type (S.D. Herrmannsen, 1846): *Trochus conulus* Linn.

The Magellanic Calliostomids seem to have more affinity with West American stock than with European typical members. As already mentioned, *Calliostoma* typically has three pairs of long, slender, epipodial tentacles, whereas the Magellanic *modestulum* has four. In the latter, also, the central tooth of the radula is narrow with a deep base and the laterals have the cusps on long slender necks. *C. platinum* Dall, 414 fathoms, California, has four long epipodial tentacles, and *C. annulatus* Martyn, California, has 'goose-necked' laterals. The New Zealand *Venustas cunningham* (G. & P.) has four pairs of short epipodial tentacles, but the central and lateral teeth are more like those of typical *Calliostoma*.

On shell characters the Magellanic *nordenskjoldi*, *modestulum* and *anderssoni* appear respectively to belong to distinct groups, but there is scarcely any difference in dentition between *nordenskjoldi* and *modestulum*.

There is insufficient comparative material available to me properly to evaluate the differences indicated by the dentition, so for the present the Magellanic members are retained in *Calliostoma* (*sensu lato*).

Calliostoma nordenskjoldi Strebel

Calliostoma nordenskjoldi Strebel, 1908, p. 66, pl. 1, figs. 5, 5*a*, *b*.

TYPE LOCALITY. Coast of northern Argentina, 37° 50′ S, 56° 11′ W, 100 m.

St. WS 776. Gulf of St. George, Patagonia, 46° 18′ 15″ S, 65° 02′ 15″ W, 3 Nov. 1931, 107–99 m. (one living example).

DENTITION. Fig. H, 22, p. 190. $(\infty+1)+4+1+4+(1+\infty)$. The central tooth of the radula in the above species, *coppingeri*, *modestulum* and the new genus *Photinastoma*, differ from that of typical *Calliostoma* in having a narrow and deep base. The laterals in this group are elaborately foliated and attached to their bases by slender extensions like 'goose-necks'. The central tooth in *nordenskjoldi* is distinctive, in that although most of the tooth is narrow it suddenly widens at the base.

Calliostoma modestulum Strebel

Calliostoma modestulum Strebel, 1908, p. 70, pl. 1, figs. 13*a*, *b*.
Calliostoma modestulum Melvill & Standen, 1912, p. 347.

TYPE LOCALITY. South of Falkland Is., 52° 29′ S, 60° 36′ W, 197 m.

St. 1321. From 4 miles S 72° W of East Tussac Rock, Cockburn Channel, to 5·6 miles S 75° W of East Tussac Rock, Tierra del Fuego, 16 Mar. 1934, 66 m.
St. WS 72. North of Falkland Is., 51° 07′ S, 57° 34′ W, 5 Mar. 1927, 79 m.
St. WS 80. North-west of Falkland Is., 50° 58′ S, 63° 39′ W to 50° 55′ 30″ S, 63° 36′ W, 14 Mar. 1927, 152-156 m.
St. WS 81. 8 miles N 11° W of North I., West Falkland Is., 19 Mar. 1927, 81–82 m.
St. WS 212. North of Falkland Is., 49° 22′ S, 60° 10′ W, 30 May 1928, 242–249 m.
St. WS 225. North-west of Falkland Is., 50° 20′ S, 62° 30′ W, 9 June 1928, 162–161 m.
St. WS 243. Between Falkland Is. and Patagonia, 51° 06′ S, 64° 30′ W, 17 July 1928, 144–141 m.
St. WS 250. North of Falkland Is., 51° 45′ S, 57° W, 20 July 1928, 251–313 m.
St. WS 750. North-east of Falkland Is., 50° 50′ S, 57° 15′ 13″ W, 18–19 Jan. 1932, 135–144 m.
St. WS 877. Off south-west coast of West Falkland Is., 52° 35·5′ S, 61° 04′ W, 4 Apr. 1932, 350–0 m.

RANGE. From 49° 22′ to 52° 29′ S and 57° 15′ 13″ to about 65° W in 66–350 m. Falklands area to Tierra del Fuego and Patagonia.

DENTITION. Fig. H, 15, p. 190. $(\infty+1)+5+1+5+(1+\infty)$. Central tooth narrow with a deep base, laterals foliated and 'goose-necked'. Innermost marginal massive and hooked with seven strong cusps on its inner distal face and a row of denticles near the outer distal edge.

ANIMAL. Two long, slender cephalic tentacles and eyes at the end of short stalks at the outer base of each tentacle as in typical *Calliostoma*. Four pairs of long, slender, epipodial tentacles.

Calliostoma falklandicum Strebel

Calliostoma falklandicum Strebel, 1908, p. 69, pl. 6, fig. 89*a–d*.

TYPE LOCALITY. Port Albemarle, Falkland Is., 52° 9′ S, 60° 33′ W, 15 m.

St. WS 97. North-west of Falkland Is., 49° S, 62° W to 49° 01′ S, 61° 56′ W, 18 Apr. 1927, 146–145 m.
St. WS 225. North-west of Falkland Is., 50° 20′ S, 62° 30′ W, 9 June 1928, 162–161 m.
St. WS 237. North of Falkland Is., 46° S, 60° 05′ W, 7 July 1928, 150–256 m.

St. WS 239. North-west of Falkland Is., 51° 10′ S, 62° 10′ W, 15 July 1928, 196–192 m.
St. WS 784. North of Falkland Is., 49° 47′ 45″ S, 61° 05′ W, 5 Dec. 1931, 170–164 m.
St. WS 804. North-west of Falkland Is., 50° 22′ 45″ S, 62° 49′ W, 6 Jan. 1932, 143–150 m.
St. WS 824. Off East Falkland Is., 52° 29′ S, 58° 27′ W, 19 Jan. 1932, 146–137 m.
St. WS 829. North-west of Falkland Is., 50° 51′ S, 63° 13′ 30″ W, 31 Jan. 1932, 155–0 m.
St. WS 854. Off Golfo de San Jorge, Patagonia, 45° 16′ S, 64° 25′ W, 22 Mar. 1932, 97 m.

RANGE. From 45° 16′ to 52° 9′ S and 58° 27′ to 64° 25′ W. in 15-256 m., Falklands area to Golfo de San Jorge, Patagonia.

In addition to the above, Strebel (1908) described a third species, *venustulum*, from Port Albemarle, Falkland Islands, at 40 m.

All three are closely allied and may yet prove to be variations of a single species.

The Discovery material is covered by both *modestulum* and *falklandicum*, but no examples of the stronger sculptured *venustulum* were taken. The chief differences between *modestulum* and *falklandicum* are that the former has a rounded periphery and only subobsolete spirals on the base, whereas the latter is carinated by a peripheral ridge and has several distinct spirals on the inner part of the base, bordering the pillar. The third member of the group, *venustulum*, resembles *falklandicum*, but has granulated spirals on the upper portion of each whorl.

Taking the station lists for both *modestulum* and *falklandicum*, only two stations, WS 80 and WS 225, produced both species, but on the other hand only one or two examples were taken at most of the stations.

The two forms do not indicate obvious bathymetric variation except that *modestulum* alone is represented at the deepest station, 350 m. The range is similar also, except that on the available records *falklandicum* extends farther northwards and *modestulum* farther westwards than the centre of distribution, which appears to be just north of the Falklands.

Calliostoma sp.

Specimens from three Magellanic stations have the shape of *falklandicum* but have three broad spiral bands of pink on the spire whorls. The carina bears a smooth raised spiral ridge, and there are two subsidiary spiral cords on the upper surface of the whorls. They closely resemble Strebel's (1905) figure of *C. nuda roseotincta* and *C. optimum* Rochebrune & Mabille (1889). Compare also *nuda* Philippi, *nuda flavidocarnea*, *irisans* and *kophameli* Strebel, *dozei* Rochebrune & Mabille and *consimilis* Smith.

I am unable to determine satisfactorily the undermentioned material since it does not include adults and there are a number of Magellan species, all very similar as far as one can judge from descriptions and figures.

St. 1321. From 4 miles S 72° W of East Tussac Rock, Cockburn Channel, to 5·6 miles S 75° W of Tussac Rock, Tierra del Fuego, 16 Mar. 1934, 66 m.
St. WS 222. South-east of Point Desire, Patagonia, 48° 23′ S, 65° W, 8 June 1928, 100–106 m.
St. WS 243. Between Falkland Is. and Patagonia, 51° 06′ S, 64° 30′ W, 17 July 1928, 144–141 m.

Calliostoma coppingeri (Smith)

Trochus (*Zizyphinus*) *coppingeri* Smith, 1880, p. 320.
Calliostoma coppingeri Dall, 1889*a*, p. 344, pl. 12, fig. 4.

TYPE LOCALITY. Mouth of Rio de la Plata, 28 fathoms, Argentina.

St. WS 852. 44° 12·5′ S, 64° 13′ W, 21 Mar. 1932, 86–88 m.

DENTITION. Fig. H, 18, p. 190.

RANGE. Off Rio de la Plata, 10 fathoms, and off Cape Delgado, 43 fathoms (Dall, 1889).

Genus Venustatrochus n.g.

Type: *V. georgianus* n.sp.

This genus is provided for a benthic species from South Georgia, which on external shell features is not dissimilar from normal deep-water thin-shelled Calliostomids. The dentition, however, is so different from that of typical *Calliostoma*, *Photinula* and the *Photinula*-like Calliostomids of the Magellan Province that generic separation is essential. Normal Calliostomids exhibit a radula with from four to seven laterals and a central tooth with a simple, more or less rectangular base, which is deeper than it is broad. The inner marginal is massive, long and somewhat crooked at the end, and bears on the underside a small number of prominent comb-like denticles. The central and laterals have long and slender curved cusps which are delicately serrated, and it is difficult to imagine how they can be effectively used without suffering damage.

The radula of *Venustatrochus* resembles that of the Calliostomids in the possession of large inner marginals with comb-like cusps and elaborately serrated, slender, curved cusps on the central and laterals. The discordant features are shown in the central tooth, which has a long, very narrow cusp on a large diamond-shaped base, and in the laterals, which are as the central except for being cut away on the inner side of the base. The most remarkable difference is in the number of laterals (sixteen) which is greater than in any other known Trochoid.

Formerly the West Indian *Livonia pica*, which has nine laterals, was quoted as the Trochoid with the largest known number of these teeth (Fig. H, 17). A curious similarity between the radulae of *Venustatrochus* and *Livonia* is that they both have a diamond-shaped base to the central. In *Livonia*, however, the inner marginal is a massive hooked tooth and none of the teeth has the long, slender serrated cusps of the Calliostomids. I do not consider that the resemblances noted between the radulae of *Venustatrochus* and *Livonia* indicate close relationship, and certainly the shell features are discordant in almost every particular.

Venustatrochus georgianus n.sp., Pl. X, fig. 68

Shell large, very thin, conical with biangulate whorls, the lower one coincident with the suture and forming the periphery of the last whorl; imperforate. Colour uniformly pale buff, with a greenish iridescence showing through. Whorls eight (seven in holotype), including the protoconch, which is small but projecting, slightly asymmetrical and consists of one unsculptured whorl somewhat immersed at the tip with a dull, slightly malleated white surface. First two post-nuclear whorls with two spiral threads above the peripheral carina and one below it; third with two above and two below, fourth with six above and three below, fifth with twelve above and ten below, penultimate with seventeen above and sixteen below, and base with about forty threads. The suture is ledged by the uppermost thread, and immediately below this on the later whorls there is a smooth, very slight concavity. The upper surface of the whorls is crossed by retractively arcuate fine dense threads which render the spirals minutely granular, but the basal spirals are smooth. Pillar plain, arcuate, much thickened above and with a spreading callus which completely fills the umbilical area. Interior of aperture iridescent and delicately spirally grooved. Outer lip thin and sharp. Operculum horny, circular, multispiral, reddish brown.

Diameter 40·0 mm.; height 40·0 mm. (paratype).

Diameter 32·0 mm.; height 30·5 mm. (holotype).

The smaller specimen is selected for the holotype, since the other has the protoconch missing and the surface is eroded and encrusted.

The species resembles in a general way Dall's *Calliostoma platinum* (1889*a*, p. 343, pl. VII, fig. 2) from

near Santa Barbara Islands, 414 fathoms, California. Since the radula of *platinum* has not been described, actual relationship with *georgianus* cannot be claimed.

TYPE LOCALITY. St. 42. Off mouth of Cumberland Bay, South Georgia, from 6·3 miles N 89° E of Jason Lt. to 4 miles N 39° E of Jason Lt., 1 Apr. 1926, 120–204 m.

DENTITION. Fig. H, 16, p. 190. $(\infty+1)+16+1+16+(1+\infty)$.

Falsimargarita n.gen.

Type: *Margarites gemma* Smith

Eales (1923, p. 8) gave a good description and figure of the dentition of *gemma*. This and the allied species *iris* have the radula of the Calliostomid type, that is, with more or less rectangular-based central and lateral teeth having long curved foliaceous cusps bearing numerous sharp denticles.

The shell is very thin, white or pale cream, iridescent both externally and internally, elaborately sculptured with fine crisp spirals and axial threads and with a deep but relatively narrow umbilicus.

This new genus differs from *Calliostoma* in the thin externally iridescent shell, open umbilicus and in details of the radula. The broad central tooth, more than twice the width of any of the laterals, is a distinctive feature. There is, of course, no relationship to *Margarita*.

Falsimargarita gemma (Smith)

Margarites gemma Smith, 1915, p. 62, pl. 1, fig. 1.
Margarites gemma Eales, 1923, pt. 5, p. 8.

DENTITION. Fig. H, 23, p. 190.

TYPE LOCALITY. Off Oates Land, 180–200 fathoms.

St. 175. Bransfield Strait, South Shetlands, 63° 17′ 20″ S, 59° 48′ 15″ W, 2 Mar. 1927, 200 m.

Major diameter 22·0 mm.; minimum diameter 19·0 mm.; height 18 mm. (holotype).

Major diameter 17·4 mm.; minimum diameter 15·0 mm.; height 15 mm. (St. 175).

The finding of this superb and rare species on the opposite side of Antarctica from the type locality is of interest.

The Bransfield Strait specimen agrees in minute detail with Smith's full description and excellent figure, and the radula is exactly as figured by Eales (1923, loc. cit.). The specimen is not quite fully grown.

Falsimargarita iris (Smith)

Margarites iris Smith, 1915, p. 91, pl. 2, fig. 4.
Margarites iris Eales, 1923, p. 7.

TYPE LOCALITY. West of Falkland Is., 125 fathoms.

St. WS 245. Between Falkland Is. and Patagonia, 52° 36′ S, 63° 40′ W, 18 July 1928, 304–290 m.
St. WS 818. Between Falkland Is. and Patagonia, 52° 31′ 15″ S, 63° 25′ W, 17 Jan. 1932, 272–278 m.
St. WS 821. Off Falkland Is., 52° 55′ 45″ S, 60° 55′ 00″ W, 18 Jan. 1932, 461–468 m.

Genus Photinula H. & A. Adams, 1854

Type (s.d. Pilsbry 1889), *Margarita coerulescens* King & Broderip

Thiele has shown by his work on Trochoid dentition that *Photinula* is allied to *Calliostoma* (Thiele, 1906*c*, pp. 12–15 and 1921, p. 68).

Photinula coerulescens (King & Broderip)

Margarita coerulescens King & Broderip, 1831, p. 346, fig. 54.
Photinula ringei Pfeffer, 1887, p. 133.
Photinula coerulescens Rochebrune & Mabille, 1889, p. H81.

Photinula coerulescens Pilsbry, 1889, p. 278, pl. 44, figs. 18, 19.
Photinula coerulescens Strebel, 1905, p. 140, pl. 5, figs. 25*a*, *b*, 27*a*, *b* and 30.
Photinula coerulescens Strebel, 1908, p. 71, pl. 6, fig. 93*a*, *b*.
Photinula taeniata coerulescens Melvill & Standen, 1914, p. 116.

DENTITION. Fig. H, 24, 190.

TYPE LOCALITY. Strait of Magellan.

St. 51. Off Eddystone Rock, East Falkland Is., 4 May 1926, 115 m.
St. 55. Entrance to Port Stanley, East Falkland Is., 2 cables S 24° E of Navy Point, 16 May 1926, 10–16 m.
St. 56. Sparrow Cove, Port William, East Falkland Is., 1½ cables N 50° E of Sparrow Point, 16 May 1926, 10½–16 m.
St. 1230. 6·7 miles N 62° W from Dungeness Lt., Magellan Strait, 23 Dec. 1933, 27 m.
St. WS 79. Between Falkland Is. and Patagonia, 51° 01′ 30″ S, 64° 59′ 30″ W, 13 Mar. 1927, 132–131 m.
St. WS 80. Between Falkland Is. and Patagonia, 50° 57′ S, 63° 37′ 30″ W, 14 Mar. 1927, 152–156 m.
St. WS 217. North-north-west of Falkland Is., 47° 06′ S, 62° 12′ W, 3 June 1928, 116–114 m.
St. WS 764. Between Falkland Is. and Argentina, 44° 38′ 15″ S, 61° 58′ 30″ W, 17 Oct. 1931, 110–104 m.
St. WS 775. Between Falkland Is. and Argentina, 46° 44′ 45″ S, 63° 33′ W, 2 Nov. 1931, 115 m.
St. WS 782. North of Falkland Is., 50° 29′ 15″ S, 58° 23′ 45″ W, 4 Dec. 1931, 141–146 m.
St. WS 816. Between Falkland Is. and Patagonia, 52° 09′ 45″ S, 64° 56′ W, 14 Jan. 1932, 150 m.
St. WS 817. Between Falkland Is. and Patagonia, 52° 23′ S, 64° 19′ W, 14 Jan. 1932, 191–202 m.
St. WS 834. Off Santa Cruz, Patagonia, 50° 18′ 45″ S, 67° 44′ W, 9 Feb. 1932, 27–38 m.
St. WS 836. Off Patagonia, 53° 05′ 30″ S, 67° 38′ W, 3 Feb. 1932, 64 m.
St. WS 854. Off Patagonia, 45° 16′ S, 64° 25′ W, 22 Mar. 1932, 97 m.
St. WS 869. Between Falkland Is. and Patagonia, 52° 15′ 30″ S, 64° 13′ 45″ W, 31 Mar. 1932, 187–0 m.

RANGE. Southern Argentina to Tierra del Fuego and Falkland Is., 0–202 m.

A handsome, depressed, smooth, pale, opalescent shell with a few conspicuous heavy spiral bands of purplish brown to dark blue, often with subsidary spirals of green and grey.

Genus **Photinastoma** n.g.

Type: *Trochus taeniatus* Wood

The Falkland Islands *taeniatus* is very similar in appearance to the genotype of *Photinula*, but study of the radula and epipodial characters shows that although they are both derivatives from Calliostomid stock they are sufficiently distinct from each other to warrant generic separation. That *taeniatus* is not a typical *Photinula* has been pointed out already by Dall (1889*a*, p. 344), who wrote: 'This species is referred to *Photinula* by H. & A. Adams, but appears to be simply a smooth *Calliostoma*. There is no umbilical callus as in *Photinula coerulescens*...', etc., and by Strebel (1908, p. 71), who segregated it from *Photinula* s.str. under 'Gruppe *Calliostoma-Photinula* Strebel'. This hyphenated combination has been cited as of nomenclatural status by Neave (1939, p. 535), but it seems very clearly indicated that Strebel did not intend this. The manner of presentation of subgenera in this same work of Strebel's proves this, i.e. p. 74 'Gruppe *Promargarita* n.subg.' The question remains, that notwithstanding Strebel's intention, does the entry fulfil the then existing requirements for a new name? The mere hyphenating, without alteration, of two valid generic names, is apparently not covered by the rules, and in my opinion does not amount to the proposition of a new genus or subgenus.

Study of the dentition and epipodial fringe in *taeniatus* and *coerulescens* confirms that although they compare in a general way with *Calliostoma* there are sufficient differences between them to warrant separation.

In *Photinastoma taeniata* the radula is almost identical with that of the Magellan Calliostomids. Also it has four epipodial tentacles as in certain Californian and New Zealand Calliostomids, but not as in the English genotype, which has three. Features of the *taeniata* radula, which are common to the Magellan

Calliostomids, and to the species *Calliostoma annulata* from California but not to the genotype of *Calliostoma*, are the very deep, narrow-based central tooth and the long 'goose-necked' cusps on the laterals.

In *Photinula coerulescens* the laterals are not so conspicuously 'goose-necked' and the central is broad and shallow-based, more nearly approaching the typical Calliostomid radula. The epipodial tentacles, however, are six, and there is a distinct but small veil covering the top of each cephalic tentacle at its base.

Photinastoma taeniata (Wood)

Trochus taeniatus Wood, 1828, pl. 5, fig. 12.
Photinula taeniata H. & A. Adams, 1858, p. 427.
Photinula taeniata Pilsbry, 1889, p. 278, pl. 44, figs. 18, 19.
Photinula taeniata Rochebrune & Mabille, 1889, p. H87.
Photinula taeniata v. Ihering, 1902, p. 101.
Photinula taeniata Strebel, 1905, p. 135, pl. 5, figs. 28*a*, *b*, 29.
Photinula taeniata var. elata Strebel, 1905, p. 138, pl. 5, fig. 28*c*.
Photinula taeniata Melvill & Standen, 1907, p. 98.
Photinula taeniata Strebel, 1908, p. 71.
Photinula taeniata Melvill & Standen, 1914, p. 116.

Dentition. Fig. H, 25, p. 190.

Type locality. Unknown. Port Stanley, Falkland Is., here designated.

St. 52. Port William, East Falkland Is., 7·4 cables N 17° E of Navy Point, 5 May 1926, 17 m.
St. 53. Port Stanley, East Falkland Is. (hulk of 'Great Britain'), 12 May 1926, 0–2 m.
St. 55. Entrance to Port Stanley, East Falkland Is., 2 cables S 24° E of Navy Point, 16 May 1926, 10–16 m.
St. 56. Sparrow Cove, Port William, East Falkland Is., 1½ cables N 50° E of Sparrow Point, 16 May 1926, 10½–16 m.
St. WS 834. Off Coy Inlet, Santa Cruz, Patagonia, 52° 57′ 45″ S, 68° 08′ 15″ W, 2 Feb. 1932, 27–38 m.
St. WS 847. Off Santa Cruz, Patagonia, 50° 18′ 45″ S. 67° 44′ 00″ W, 9 Feb. 1932, 56–84 m.

Range. Strait of Magellan (Pilsbry, 1889), Patagonia ('Discovery') and Falkland Is. (Strebel, 1905; Melvill & Standen, 1907; 'Discovery'), 0–84 m.

A handsome species with red spiral lines on a smooth pearly white surface.

Photinastoma taeniata nivea (Cooper & Preston)

Photinula taeniata var. *nivea* Cooper & Preston, 1910, p. 112.

Type locality. Falkland Is.

St. 51. Off Eddystone Rock, East Falkland Is., 4 May 1926, 115 m.

This seems to be something more than an albinistic form of *taeniata*. Paratypes, together with the St. 51 material, show the following features not common to *taeniata* typical: no traces of colour pattern, subobsolete spirally incised lines, and a taller spire with more globose whorls. Both species and subspecies have three strong spiral cords on the first post-nuclear whorl. Unfortunately, only empty shells are available.

Subfamily Stomatellinae

Genus **Margarella** Thiele, 1893

n.nom. for *Margaritella* Thiele, 1891 *non* Meek & Hayden, 1860
Type (o.d.?): *Margarita violacea* King

Margarella expansa (Sowerby)

Margarita expansa Sowerby, 1838, p. 24.
Margarita expansa Sowerby, 1841, figs. 16, 17.
Photinula expansa H. & A. Adams, 1858, pp. 427–8.
Trochus (*Photinula*) *expansus* E. A. Smith, 1879, p. 167.

Photinula expansa Pilsbry, 1889, p. 279, pl. 39, figs. 51, 52.
Photinula expansa V. Ihering, 1902, p. 99.
Photinula expansa Smith, 1902, p. 207.
Photinula expansa Strebel, 1905, p. 152, pl. 5, figs. 9–11, 14, 15.
Photinula expansa Melvill & Standen, 1907, p. 98.
Photinula (*Margarella*) *expansa* Strebel, 1908, p. 72, pl. 5, fig. 68.
Margarella expansa Thiele, 1912, p. 234.

TYPE LOCALITY. Falkland Is.

St. 51. Off Eddystone Rock, East Falkland Is., 7 miles N 50° E to 7·6 miles N 63° E of Eddystone Rock, 4 May 1926, 105–115 m.
St. 55. Entrance to Port Stanley, East Falkland Is., 2 cables S 24° E of Navy Point, 16 May 1926, 10–16 m.
St. 56. Sparrow Cove, Port William, East Falkland Is., 16 May 1926, 10½–16 m.
St. 58. Port Stanley, East Falkland Is., 19 May 1926, 1–2 m.
St. WS 85. 8 miles S 66° E of Lively I., East Falkland Is., 25 Mar. 1927, 79 m.

Margarella violacea (King)

Margarita violacea King & Broderip, 1830–31, p. 346.
Margarita persica Gould, 1852, p. 192.
Photinula almyris Rochebrune & Mabille, 1885, p. 108.
Photinula halmyris Rochebrúne & Mabille, 1889, p. 89, pl. 4, fig. 6.
Photinula violacea Rochebrune & Mabille, 1889 p. 87.
Photinula violacea V. Ihering, 1902, p. 98.
Photinula violacea Strebel, 1905, p. 145, pl. 5, fig. 1–8, 12, 13.
Photinula violacea Smith, 1905, p. 336.
Photinula violacea Melvill & Standen, 1907, p. 99.
Photinula (*Margarella*) *violacea* Strebel, 1908, p. 72.

TYPE LOCALITY. Strait of Magellan.

St. 56. Sparrow Cove, Port William, East Falkland Is., 16 May 1926. 10½–16 m.
St. 724. Fortescue Bay, Magellan Strait, 16 Nov. 1931, 0–5 m. on kelp.
St. 1321. From 4 miles S 72° W of East Tussac Rock, Cockburn Channel, Tierra del Fuego, to 5·6 miles S 75° W of East Tussac Rock, 16 Mar. 1934, 66 m.
St. WS 71. 6 miles N 60° E of Cape Pembroke Lt., East Falkland Is., 23 Feb. 1927, 82–80 m.
St. WS 80. North-west of Falkland Is., 50° 57′ S, 63° 37′ 30″ W, 14 Mar. 1927, 152–156 m.
St. WS 88. North of Le Maire Strait, Patagonia, 54° 00′ S, 64° 57′ 30″ W, 6 April 1927, 118 m.
St. WS 824. Off south-east of Falkland Is., 52° 29′ S, 58° 27′ W, 19 Jan. 1932, 146–137 m.
St. WS 825. Off north-east of Falkland Is., 50° 50′ S, 57° 15′ 13″ W, 19 Jan. 1932, 135–144 m.
St. WS 829. Between Falkland Is. and Patagonia, 50° 51′ S, 63° 13′ 30″ W, 31 Jan. 1932, 155 m.
St. WS 836. Off Patagonia, 53° 05′ 30″ S, 67° 38′ W, 3 Feb. 1932, 64 m.
St. WS 838. Between Falklands Is. and Patagonia, 53° 11′ 45″ S, 65° 00′ W, 5 Feb. 1932, 148 m.
St. WS Shore collecting. Ringdove Inlet, Wide Channel, 7 May 1931.

RANGE. Magellan Province: Patagonia and Tierra del Fuego (Rochebrune & Mabille, 1885; Strebel, 1905, 1908; 'Discovery'); Falkland Is. (Melvill & Standen, 1907; 'Discovery').

It is often difficult to distinguish between *violacea* and pinkish forms of *expansa*. Typical *expansa* is olivaceous, with a bright green iridescence showing through on the upper whorls, and it has a relatively large ovate aperture. In *violacea* the coloration is constantly pink, the form is more conical, the whorls more tightly coiled, and in consequence the aperture is smaller and approximately circular. Both species have the columellar callus deeply excavated in the middle. Examples from deep water (Sts. WS 824, WS 829 and WS 838) are pure white.

I have not seen *Photinula solidula* Cooper & Preston (1910, p. 111, pl. 4, fig. 3), Falkland Islands, which is most likely a synonym of *violacea*.

Margarella steineni (Strebel)

Margarita (*Photinula*) *expansa* Martens & Pfeffer (*non* Sowerby), 1886, pl. 2, figs. 10*a*, *c*.
Photinula steineni Strebel, 1905, p. 158, pl. 5, figs. 16*a–d*.
Photinula steineni Strebel, 1908, p. 73.
Margarella steineni L. David, 1934, p. 127.

Type locality. South Georgia.

St. 141. East Cumberland Bay, South Georgia, 200 yards from shore, 29 Dec. 1926, 17–27 m.
St. 145. Stromness Harbour, South Georgia, 7 Jan. 1927, 26–35 m.
St. WS 25. Undine Harbour (North), South Georgia, 17 Dec. 1926, 18–27 m.

Range. South Georgia, 0–35 m.

A small, pale cream-coloured shell, pearly externally, and greenish iridescent inside the aperture.

Margarella jason n.sp., Pl. V, fig. 1

A pale cream, pearly shell with pale iridescent interior to the aperture. Whorls four, rapidly increasing. Spire half height of aperture, suture plain, tangential to slightly adpressed over last half-whorl. Columella lip broad, slightly concave, rapidly contracted below to the thin-edged basal outer lip. Outer edge of columellar callus sharp, outwardly curved and partly encroaching upon a crescentic umbilicus, which is incised with four concentric narrow grooves. Operculum normal, horny, with a central nucleus.

This new species resembles *antarctica* (Lamy, 1905), but differs in reaching only half the linear dimensions, in having a much smaller umbilicus, incised with grooves, a broadly expanded columellar callus and more rapidly increasing whorls. Both species have the whorls rather narrowly rounded at the periphery.

Major diameter 6·0 mm.; minimum diameter 5·0 mm.; height 4·5 mm. (holotype).

Type locality. St. 45. 2·7 miles S 85° E of Jason Lt., South Georgia, 6 Apr. 1926, 238-270 m.

This species is almost certainly a benthic relative of Strebel's *Margarita subantarctica* (1908, p. 76). Strebel's species is based upon juveniles (1·4 × 1·2 mm.) from low water, Cumberland Bay, South Georgia. The smooth unicoloured *Margarella* forms are difficult enough to separate even as adults. It is possible that when fully grown littoral shells are found, my *jason* n.sp. may prove to be a synonym of *subantarctica*, but, on the other hand, it is unlikely that shells from such different habitats will be identical. Thiele (1912, p. 258) included *subantarctica* in the synonymy of *antarctica*. For the present Strebel's species is best considered indeterminate.

Margarella bouvetia n.sp., Pl. V, fig. 3

Shell small, white, with a faint iridescence. Turbinate, thin, of $4\frac{1}{2}$ rounded whorls. Spire three-fifths height of aperture. Suture impressed, not margined. Columellar callus moderately wide medially, rapidly contracted below to the thin-edged basal outer lip, and above, partly bridging a deep open umbilicus. Umbilicus about one-tenth major diameter of shell, sculptured between the outer area of the umbilicus and the base with nine deeply incised spiral grooves. Eight of these grooves are closely spaced, but the outermost is double-spaced. The rest of the shell is smooth, except for weak, distant, irregular, axial growth lines which become concentrated within the umbilicus. Operculum horny with a central nucleus.

Dentition. Fig. G, 8, p. 189.

Major diameter 8·4 mm.; minimum diameter 7·0 mm.; height 7·5 mm. (holotype).
Major diameter 9·0 mm.; minimum diameter 7·8 mm.; height 8·0 mm. (largest).

Type locality. St. 456. 1 mile east of Bouvet I. 18 Oct. 1930, 40–45 m.

The species resembles *M. refulgens* Smith (1907) (*Valvatella*), from McMurdo Sound, 10–130 fathoms. Smith's species, however, is much smaller (5 × 5 mm.) and lacks the spiral grooves surrounding the umbilicus.

Margarella porcellana n.sp., Pl. V, fig. 2

Shell small, uniformly white, polished and faintly iridescent within the aperture. Whorls $4\frac{1}{2}$, relatively slowly increasing, broadly convex above and more narrowly convex at lower third of whorl height. Spire five-sixths the height of the aperture. Suture adpressed throughout, giving the appearance of a narrow submargining. Columellar callus broad with a sharply defined edge, concave and completely covering the umbilical area. The species is close to *steineni*, but differs in having a higher spire and adpressed false-margined sutures. Also, it lacks the pearly appearance of the exterior and the intense iridescence of the interior, which features are so characteristic of *steineni*.

Major diameter 8·0 mm.; minimum diameter 7·0 mm.; height 7 mm. (holotype).

Major diameter 8·5 mm.; minimum diameter 6·7 mm.; height 6·5 mm. (*steineni*, St. 145).

TYPE LOCALITY.

St. 1562. Off Marion I., 46° 51·7′ S, 37° 56·5′ E to 46° 54·8′ S, 37° 53·8′ E, 7 Apr. 1935, 97–104 m.
St. 1564. Off Marion I., 46° 36·5′ S, 38° 02·3′ E, 7 Apr. 1935, 108-113 m.
St. 1563. Off Marion I., 46° 48·4′ S, 37° 49·2′ E, 7 Apr. 1935, 113–99 m.

Margarella antarctica (Lamy)

Margarita antarctica Lamy, 1905, p. 481.
Margarita antarctica Lamy, 1907, p. 9, pl. 1, figs. 2, 3, 4.
Valvatella antarctica Melvill & Standen, 1907, p. 99.
Valvatella antarctica Lamy, 1911 *a*, p. 13.

DENTITION. Fig. G, 9, p. 189.

TYPE LOCALITY. South Orkney Is.

St. 164. East end of Normanna Strait, South Orkneys, near Cape Hansen, Coronation Is., 18 Feb. 1927, 24–36 m.
St. 179. Melchior I., Schollaert Channel, Palmer Archipelago, 10 Mar. 1927, 4–10 m.
St. 1486. Harmony Cove, Nelson I., South Shetlands, 3 Jan. 1935, shore coll.
Wilhelmina Bay, Danco Land, South Shetlands, 64° 30′ S, 62° W, 1–8 fathoms (A. G. Bennett).

RANGE. Palmer Archipelago ('Discovery'), Wandel I. and Moureau I. (Thiele, 1912), Petermann I. (Lamy, 1911), South Orkneys (Lamy, 1905) and South Shetlands ('Discovery').

Subgenus **Promargarita** Strebel, 1908

Type (monotypy): *Promargarita tropidophoroides* Strebel

The genotype appears strikingly different from typical *Margarella* which has a smooth surface and rounded whorls. Strebel's *Promargarita tropidophoroides* is biangulated by two heavy spiral keels, and the entire surface is deeply incised with closely spaced spiral grooves. It is pointed out below, however, that *achilles* Strebel has incised spiral sculpture both on the early whorls and surrounding the umbilical area, but the rest of the shell is smooth. My new subspecies *obsoleta* has uniformly developed incised spirals over the whole shell, but it is only weakly biangulate as also is *achilles*. All three are uniformly brownish except for a white zone around the umbilical area and one or two narrow white bands in place of the keels where these have been reduced to subangles.

The radulae of both *tropidophoroides* and *achilles* show no essential differences from that of *Margarella*.

Strebel's *Promargarita* is retained as a subgenus, since it expresses a localized spirally sculptured trend in a genus that normally has smooth polished shells.

Margarella (Promargarita) tropidophoroides (Strebel)

Promargarita tropidophoroides Strebel, 1908, p. 74, pl. 5, fig. 73*a–d*.
Promargarita tropidophoroides Thiele, 1912, pl. 15, fig. 17 (radula).
Margarella (*Promargarita*) *tropidophoroides* L. David, 1934, p. 127.

Dentition. Fig. G, 4, p. 189.

Type locality. South Georgia, 20 m.

St. 1941. Leith Harbour, South Georgia, 29 Dec. 1936, 55–22 m.
St. MS 6. East Cumberland Bay, $\frac{1}{4}$ mile south of Hope Point to $1\frac{1}{4}$ cables S × E of King Edward Lt., South Georgia, 12 Feb. 1925, 24–30 m.
St. MS 10. East Cumberland Bay, $\frac{1}{4}$ mile south-east of Hope Point to $\frac{1}{4}$ mile south of Government Flagstaff, South Georgia, 14 Feb. 1925, 26–18 m.
St. MS 67. East Cumberland Bay, 3 cables north-east of Hobart Rock to $\frac{1}{2}$ cable west of Hope Point, South Georgia, 28 Feb. 1926, 38 m.
St. WS 25. Undine Harbour (North), South Georgia, 17 Dec. 1926, 18–27 m.

Major diameter 14·2 mm.; minimum diameter 11·5 mm.; height 11·7 mm. (St. MS 67).
Major diameter 17·5 mm.; minimum diameter 14·5 mm.; height 14·0 mm. (St. MS 10).

Margarella (Promargarita) tropidophoroides obsoleta n.subsp., Pl. V, fig. 4

This is a form of *tropidophoroides* with the spiral keels reduced to a weak biangulation.

Shell thin, depressed-turbinate, very weakly biangulate, imperforate, pale yellowish brown with a white zone surrounding the umbilical area and occasionally a narrow white band at the lower subangle. Spire half height of aperture. Uniformly sculptured with numerous deeply incised spiral lines. Whorls five, broadly rounded, but weakly angulate above the middle on the spire-whorls, and at the periphery. The spirals number seven on the first post-nuclear whorl, fifteen to twenty on the penultimate and about forty-five on the body-whorl. The columellar callus is white, broad, concave and completely fills the umbilical area. Compared with *achilles* of similar size, *obsoleta* has a taller spire, a more rounded aperture, is of lighter colour and has evenly developed spirals over the whole shell.

Major diameter 13·5 mm.; minimum diameter 11·0 mm.; height 11·0 mm. (St. MS 6).

Type locality. St. MS 6. East Cumberland Bay, $\frac{1}{4}$ mile south of Hope Point to $1\frac{1}{4}$ cables S × E of King Edward Point Lt., South Georgia, 12 Feb. 1925, 24–30 m.

Margarella (Promargarita) achilles (Strebel)

Photinula achilles Strebel, 1908, p. 73, pl. 5, fig. 69*a*, *b*.

Type locality. South Georgia, 1–2 m.

St. 145. Stromness Harbour, South Georgia, between Grass I. and Tonsberg Point, 7 Jan. 1927, 26–35 m.
St. MS 6. East Cumberland Bay, $\frac{1}{4}$ mile south of Hope Point to $1\frac{1}{4}$ cables S × E of King Edward Point Lt., South Georgia, 12 Feb. 1925, 24–30 m.
St. WS 25. Undine Harbour (north), South Georgia, 17 Dec. 1926, 18–27 m.

This is a large, thin-shelled species, depressed-turbinate, with a relatively large ovate aperture. It is light reddish brown with a broad zone of white surrounding the umbilical area, occasionally a narrow white band just below the periphery and rarely a second narrow white band above the periphery. The body-whorl is weakly biangulate. Sculpture consisting of incised lines, clearly shown on the early whorls and around the umbilical area, but obsolete elsewhere. In the adult there are about eight lirations on the early whorls and six or seven around the umbilical area. The umbilicus is completely covered by a broad concave white columellar callus. Strebel compares this species with *expansa*, but the relationship is certainly with *Promargarita tropidophoroides*.

Major diameter 19·0 mm.; minimum diameter 16·2 mm.; height 16·5 mm. (St. WS 25).

Dentition. The radula is scarcely distinguishable from that of *tropidophoroides*.

Genus Submargarita Strebel, 1908

Type (monotypy): *Submargarita impervia* Strebel

Submargarita impervia Strebel

Submargarita impervia Strebel, 1908, p. 75, pl. 5, fig. 71 *a–c*.
Submargarita impervia Thiele, 1912, p. 188, pl. 15, fig. 18 (radula).

Dentition. Fig. G, 10, p. 189.

Type locality. Cumberland Bay, 252–310 m., South Georgia.

St. 27. West Cumberland Bay, 3·3 miles 44° E of Jason Lt., South Georgia, 15 Mar. 1926, 110 m. (one example).

Genus Antimargarita n.g.

Type: *Valvatella dulcis* Smith

This is provided for thin-shelled, colourless, elaborately sculptured depressed-turbinate species with a wide, deep, steep-sided umbilicus. The dentition (Eales, 1923, p. 7, fig. 4) resembles that of *Margarita* in the evenly arcuate sweep of the laterals and central, but individually these teeth are of very different shape.

The simple coiled shells of the Trochoids mask a diversity of internal structures in an ancient and primitive group. Thiele (1921, p. 68) has shown this in his valuable researches on the dentition.

On shells alone there would be every excuse for classing together such species as *Valvatella dulcis* Smith, *Margarita gemma* Smith and *Solariella kempi* n.sp. All three are thin-shelled, umbilicated, and elaborately sculptured with crisp spiral ridges and axial threads, but the dentition clearly indicates that not only are three genera required for their reception, but also they fall individually into three distinct subfamilies of the Trochacea.

The genus probably includes *Submargarita smithiana* Hedley (1916, p. 38, Pl. 5, fig. 58) from off Shackleton Ice-shelf, 65° 20′ S, 95° 27′ E, in 240 fathoms, and *Minolia thielei* Hedley (loc. cit.) from near Shackleton Ice-shelf, 64° 32′ S, 97° 20′ E in 110 fathoms.

Antimargarita dulcis (Smith)

Valvatella dulcis Smith, 1907, p. 10, pl. 11, fig. 8.
Margarites dulcis Thiele, 1912, p. 190, pl. 11, fig. 21.
Margarites dulcis Smith, 1915, p. 63.
Minolia dulcis Hedley, 1916, p. 38.
Margarites dulcis Eales, 1923, p. 6.

Type locality. Discovery Winter Quarters, McMurdo Sound, 77° 50′ 50″ S, 166° 44′ 45″ E, 130 fathoms.

St. 175. Bransfield Strait, South Shetlands, 63° 17′ 20″ S, 59° 48′ 15″ W, 2 Mar. 1927, 200 m.
St. 1660. Ross Sea, 74° 46·4′ S, 178° 23·4′ E, 27 Jan. 1936, 351 m.

Dentition. Fig. G, 5, p. 189 (after Eales, 1923).

Range. Ross Sea ('Discovery'), Adelie Land (Smith, 1907, 1915), Gauss Station (Thiele, 1912), South Shetlands ('Discovery'), 130–400 fathoms. The 'Discovery' records extend the range of this species to three-fourths of the circumference of Antarctica.

Antimargarita thielei (Hedley)

1916. *Minolia thielei* Hedley, *Aust. Antarct. Exped.* (ser. C), IV (1), Moll. p. 39, pl. 5, fig. 59.

Type locality. Near the Shackleton Ice-shelf, 64° 32′ S, 97° 20′ E, 110 fathoms.

St. 1652. Ross Sea. 75° 56′ 2″ S, 178° 35′ 5″ W, 23 Jan. 1936, 567 m.

The largest example from St. 1652 has $3\frac{1}{2}$ whorls and is 3·8 mm. in diameter by 3·4 mm. in height. The type has four whorls and measures 8 × 7 mm.

Genus **Tropidomarga** n.g.

Type: *Tropidomarga biangulata* n.sp.

The type of this new genus bears a superficial resemblance to *Minolia*, but the dentition shows close alliance with the boreal '*Pupillaria*' *cinerea* (Couthouy). Both differ from all other *Margarites*-like species (of which the dentition is known to me) in the form of the basal plates of the central and laterals. The central has a large circular base, and the laterals are similar except that they are cut away on the inner side.

The type of *Pupillaria* (*Trochus pupillus* Gould, California) is tall, conical, solid, angulate at the periphery, narrowly umbilicate and sculptured with narrow spiral cords. The species *cinerea* (boreal) is relatively large and thin with a rounded periphery, surface sculptured with narrow, distinct, sharply raised spiral cords and has a deep narrowly open umbilicus about one-eight the major diameter of the base.

The type of *Margarites* (*Helix margarita* Montagu = *Turbo helicinus* Phipps) is depressed turbinate, umbilicate and smooth surfaced.

Although there is apparently a relationship between the antarctic *Tropidomarga* and the boreal *cinerea*, the latter does not conform to the genotypes of either *Margarites* or *Pupillaria*, or any other available genus.

For the antarctic species described below, I propose therefore the new generic name *Tropidomarga*.

This new genus has a conical shell with strongly shouldered spire whorls and a prominently bi-angulate body-whorl. The surface is sculptured with thin spiral lirations crossed by finer dense axial threads. At the suture the axials are thickened to form a crenulated submargining. The umbilicus is deep with straight-sided walls and has a width of about one-fifth that of the major diameter of the shell.

Tropidomarga biangulata n.sp., Pl. V, fig. 5

Shell of moderate size, depressed-conical, with prominently shouldered spire-whorls and biangulate body-whorl, broadly umbilicated and sculptured with numerous spiral lirations crossed by dense retractive axial threads. Whorls six, including a low rounded protoconch of one smooth whorl. First post-nuclear whorl with two spiral lirae, second with six, body-whorl with twelve lirations between the suture and upper angulation, nine between the upper and lower angulations (about fifteen, angulations included) and about thirty on the base. They continue just over the edge of the umbilicus, but the remainder of the surface of the walls of the steep-sided umbilicus is plain. Umbilicus about one-fifth major diameter of the base. The suture is delicately crenulated by the axial threads. The angulations are broadly rounded and do not interrupt the sculpture.

Aperture rhomboidal, outer lip thin, strongly retractive in profile, inner lip inclined but moderately straight, slightly thickened medially and slightly encroaching upon the umbilicus, where it curves above and finally spreads as a very thin nacreous glaze over the parietal wall. This glaze is so thin that it does not obliterate the spiral sculpture. Colour buff to very light brown above, creamy white on the base and iridescent within the aperture. Operculum horny, thin, yellowish brown, circular and multispiral.

The biangulate whorls give the species a superficial resemblance to Strebel's *Promargarita tropidophoroides*.

Diameter 14·6 mm.; height 13·0 mm. (holotype).

Diameter 14·0 mm.; height 12·5 mm. (paratype).

TYPE LOCALITY. St. 159. North-east of Cumberland Bay, South Georgia, 53° 52′ 30″ S, 36° 08′ W, 21 Jan. 1927, 160 m.

St. 170. Off Cape Bowles, Clarence I., 61° 25′ 30″ S, 53° 46′ W, 23 Feb. 1927, 342 m.

Dentition. Fig. G, 6, p. 189. $\infty+4+1+4+\infty$. Very similar to that of '*Margarita striata*' = *Pupillaria cinerea* Couth (Thiele, 1891, pl. 25, fig. 9) from Gulf of St Lawrence. Both have the central tooth with a circular base and laterals of the same form except that each is cut away on its inner side.

Thiele's drawing of the radula of '*striata*' shows a vestigial fifth lateral and a very weak innermost marginal. In *biangulata* there is no trace of a fifth lateral, and the innermost marginal is the largest of that series, but it is not disproportionately large as in the Calliostomids.

Animal. There are six pairs of epipodial tentacles—the sixth from the front long and slender, almost twice the length of the other five, which are of approximately equal size. Cephalic tentacles moderately long, blunt and flattened. Eye at the end of a short stalk, lying at the outer side of the base of each tentacle. The stalk is confluent with a short veil which crosses the base of a tentacle but does not join up with its opposite member across the head. Head narrow in front and produced into a wrinkled proboscis, with a frilled edge. Epipodial fringe continued to the area in front of the head in an elaborate series of folds.

Subfamily Solariellinae n.subfam.

This new subfamily is provided for the group of genera *Solariella*, *Machaeroplax* and *Cidarina*. The shells are conical, openly umbilicated, with a more or less circular simple aperture, and sculpture of spiral keels or ribs, usually crenulated or granulated below the suture and bordering the umbilicus.

The radula has an approximate formula of $10+5+1+5+10$, the most distinctive feature being the small number of marginals. In all other Trochoid groups the marginals are so numerous and crowded that it is impossible to determine their exact number. Other distinctive radular features are the very pronounced dip to the centre of each row and the elongate shape of the two outer laterals which resemble the enlarged functional inner marginals of the Calliostomids.

Genus Solariella Searles Wood, 1842

Type (monotypy): *Solariella maculata* S. Wood

The genotype is from the English Pliocene and is a heavily carinated shell with prominent beading or crenulations both at the suture and on a ridge bounding the wide funnel-shaped umbilicus.

There is a group of subantarctic species, *Trochus* (*Margarita*) *brychius* Watson, from 900 miles south-east of Kerguelen Island in 900 fathoms, *T.* (*Margarita*) *charopus* Watson from off Kerguelen Island in 105 fathoms, var. *caeruleus* Watson from off Heard Island in 175 fathoms and the new species *kempi* described below. These have the general features of *Solariella*, but lack the sutural and umbilical crenulations.

The radula of *kempi* n.sp., however, is essentially similar to that of *varicosa* Mighels & Adams from Newfoundland to Nova Zembla as figured by Pilsbry (1889, pl. 50, fig. 17) and *biradiatula* Martens from Dar-es-Salam in 400 m. as figured by Martens & Thiele (1903, pl. 8, fig. 37; see Text-fig. G, 12). Both these species have crenulations, but the other shell characters are not very similar, neither are they to the Pliocene genotype nor to the subantarctic group mentioned above. This subantarctic group is for the present retained in *Solariella* pending a revision of the members of the subfamily.

Solariella kempi n.sp., Pl. I, fig. 6

Shell globosely conoidal, thin, sculptured with closely spaced, sharply raised, narrow, spiral cords and dense axial interstitial threads; widely umbilicate. Whorls $5\frac{3}{4}$, regularly increasing and including a minute apparently smooth helicoid protoconch of one whorl. First post-nuclear whorl with three wide-spaced, narrow, sharply raised, spiral cords, second with four, increasing to fifteen on the penultimate, by the addition of intermediate cords, and about sixty on the body whorl from the suture to the edge of the umbilical cavity; about thirty within the umbilicus. The whole surface is crowded with

fine, crisp, retractively oblique radial threads which cross the spiral cords, rendering them minutely gemmate. Whorls strongly convex, slightly flattened below the suture on the early whorls, but resolving into a slight subsutural concavity over the last whorl. Suture impressed to adpressed. Spire equal to height of aperture. Umbilicus wide, perspective outwardly, one-third major diameter of the base but rapidly contracted within to one-ninth the diameter of the base. Aperture circular, discontinuous, outer lip thin; columellar lip slightly thickened and reflexed; parietal wall with a very thin glaze that does not obscure the sculpture. Colour pale pinkish buff, interior of the aperture faintly iridescent. Operculum circular, thin, horny, yellowish brown, of about eight spirals.

Diameter 12·0 mm.; height 11·75 mm. (holotype).

TYPE LOCALITY. St. WS 766. Between Falkland Is. and Argentina, 45° 13′ S, 59° 56′ 30″ W, 18 Oct. 1931, 545 m.

St. WS 228. North-east of Falkland Is., 50° 50′ S, 56° 58′ W, 30 June 1928, 229–236 m.
St. WS 237. North of Falkland Is., 46° 00′ S, 60° 05′ W, 7 July 1928, 150 m.
St. WS 244. West of Falkland Is., 52° 00′ S, 62° 40′ W, 18 July 1928, 253 m.*
St. WS 869. Between Falkland Is. and Patagonia, 52° 15′ 30″ S, 64° 13′ 45″ W, 31 Mar. 1932, 187–0 m.

DENTITION. Fig. G, 11, p. 189. 10+5+1+5+10. The cusps on the first and second laterals are exceptionally long. Lateral number 3 has a very broad base and numbers 4 and 5 are large, long and hooked, closely resembling in form the innermost enlarged marginals of the Calliostomids. In the figure only the upper portions of numbers 4 and 5 are drawn, and they are shown in relation to the central and laterals 1–3, but from the row immediately below. The two outer laterals are actually superimposed upon numbers 2 and 3. The marginals are long, slender and curved.

ANIMAL. Head narrow behind but broad in front, with a deeply laciniated fringe overhanging the small mouth. In front of the mouth there are folded laciniated lappets. Epipodial fringe with three slender tentacles, anterior one long, others reducing in size towards the head (Fig. D, 3).

Family LIOTIIDAE

Genus Cirsonella Angas, 1877

Type: *Cirsonella australis* Angas

Cirsonella extrema Thiele

Cirsonella extrema Thiele, 1912, p. 191, pl. 11, fig. 23.

TYPE LOCALITY. Gauss Station, Davis Sea.

St. 1660. Ross Sea, 74° 46·4′ S, 178° 23·4′ E, 351 m. (one empty shell).

Genus Brookula Iredale, 1912

Type (o.d.): *Brookula stibarochila* Iredale, Kermadec Islands

The following four species are certainly congeneric and conform with the superficial features of *Brookula*. However, since the soft parts of these minute shells are unknown, the generic identity of these antarctic and subantarctic species of the American Quadrant is provisional only.

Brookula calypso (Melvill & Standen)

Cyclostrema calypso Melvill & Standen, 1912, p. 345, pl. 1, fig. 3.

TYPE LOCALITY. Burdwood Bank, south of Falkland Is., 54° 25′ S, 57° 32′ W, 56 fathoms.

St. 51. Off Eddystone Rock, east of Falkland Is., from 7 miles N 50° E to 7·6 miles N 63° E of Eddystone Rock, 4 May 1926, 115 m.

* The single half-grown example from St. WS 244 is more definitely shouldered, but is otherwise typical.

Brookula pfefferi n.sp., Pl. V, fig. 8

Shell minute, solid, white, globose-turbinate, umbilicate, sculptured with crisp axial ribs and finer, closely spaced spiral threads. Whorls $4\frac{1}{2}$, including a smooth, globular protoconch of one whorl. Spire equal to height of aperture. Aperture circular with complete simple peristome. Axial sculpture of crisp narrow radials becoming weaker over the base, about twenty-four on the penultimate. Spiral threads about 12 on the penultimate and twenty-four on the body whorl, plus four very much stronger broad flat-topped cords within the funnel-shaped umbilical cavity, which rapidly contracts to a small deep pit. Operculum horny, circular and multispiral.

Height 2·0 mm.; diameter 1·75 mm.

Type locality. St 144. Off mouth of Stromness Harbour, South Georgia, from 54° 04′ S, 36° 27′ W to 53° 58′ S, 36° 26′ W, 5 Jan. 1927, 155–178 m. (the holotype only).

This species is closely allied to *calypso* Melvill & Standen (1912) which is smaller, 1 × 1·15 mm., and lacks the four strong umbilical spirals.

Brookula strebeli n.sp., Pl. V, fig. 7

Shell minute, white, elongate-turbinate, imperforate, sculptured with crisp axial ribs and spiral threads. Whorls $3\frac{3}{4}$, including a smooth, globular protoconch of one whorl. Spire slightly taller than height of aperture. Aperture circular with complete simple peristome. Axial sculpture of prominent rounded radials becoming weaker over the base, about twenty-three on the penultimate. Spiral sculpture consisting of six moderately strong lirations on the upper spire-whorls and about sixteen on the body-whorl; they continue strongly for a short distance over the periphery and then suddenly diminish to minute, closely spaced threads, too indistinct to count, and finally there are four stronger spirals around the closed umbilical area.

Height 1·5 mm.; diameter 1·25 mm.

Type locality. St. 144. Off mouth of Stromness Harbour, South Georgia, from 54° 04′ S, 36° 27′ W to 53° 58′ S, 36° 26′ W, 5 Jan. 1927, 155–178 m. (the holotype only).

This species is smaller than *pfefferi*, taller, imperforate and differently sculptured.

The names of Pfeffer and Strebel are associated with the two above new species in recognition of their respective major contributions on South Georgian molluscan systematics.

Brookula decussata (Pelseneer)

Cyclostrema decussatum Pelseneer, 1903, pl. 5, fig. 48.

Type locality. Bellingshausen Sea, 70° S, 80° 48′ W.

St. 182. Schollaert Channel, Palmer Archipelago, 64° 21′ S, 62° 58′ W, 14 Mar. 1927, 278–500 m.

The specimens from St. 182 seem to be identical with Pelseneer's species as far as I can judge from the rather sketchy illustration. They are very similar to *pfefferi*, but are smaller and have crisp, more definite sculpture with more numerous axials but fewer spirals.

Family TURBINIDAE

Genus Homalopoma Carpenter, 1864

Type (monotypy): *Turbo sanguineus* Linn. = *Leptothyra* Dall, 1871 (*non* Pease 1869)

Homalopoma cunninghami Smith

Collonia cunninghami Smith, 1881, p. 33, pl. 4, fig. 10.
Leptothyra cunninghami Pilsbry, 1888, p. 249.

TYPE LOCALITY. Port Rosario and Portland Bay, Patagonia.

St. 1321. From 4 miles S 72° W to 5·6 miles S 75° W of East Tussac Rock, Cockburn Channel, Tierra del Fuego, 16 Mar. 1934, 66 m.

One example of this attractive little rose-coloured, finely striated species; diameter 4·75 mm., height 4·0 mm. The operculum is calcareous and spirally grooved on its outer surface for $1\frac{1}{2}$ whorls, enclosing a roughened central area.

I have followed Vokes (1939, p. 179) in preferring *Homalopoma* to the better known name *Leptothyra*.

Genus Leptocollonia n.g.

Type: *Leptocollonia thielei* n.sp.

This new genus is provided for a southern group of *Homalopoma*-like (*Leptothyra*) shells which differ in being umbilicate, relatively thin-shelled, colourless, and in having a distinctive operculum, which is concave externally and deeply spirally channelled. The radula of *Leptocollonia* is very similar to that of *Homalopoma*, the chief difference being in the marginals, which are plain in the former and serrated in the latter.

Thiele's *Leptothyra innocens* (1912, p. 192, pl. 11, fig. 24) from Gauss Station, Antarctic, is a *Leptocollonia*, and the operculum of *Leptothyra* sp. (Thiele, loc. cit.), also from Gauss Station, is so similar to that of *thielei* n.sp. that it probably originated from this same species.

Leptocollonia thielei n.sp., Pl. V, fig. 9

Shell small, depressed-turbinate, perforate, dull yellowish buff, sculptured with narrow prominently raised spiral ridges. Whorls rounded, four, including the protoconch which is apparently one slightly convex and smooth whorl (protoconch eroded in all examples). First post-nuclear whorl with two spiral ridges, penultimate with from six to eight (seven plus an incipient eighth in holotype), body-whorl with fifteen, last two bordering the umbilicus, weak. The spirals are rounded but narrow and prominently raised with interspaces of from three to four times their width. The whole surface is crowded with delicate axial growth striae. Umbilicus narrow and deep, about one-ninth the major diameter, but half-obscured by the thin reflexed outer edge of the columellar callus. Peristome continued across the parietal wall by a thin glaze. Outer-basal lip thin and corrugated by the terminal points of the external spiral sculpture. The operculum is calcareous and multispiral of about seven whorls. Externally dull white, concave and deeply spirally channelled. Internally smooth and convex with a yellowish chitinous layer. The edge is thick, bevelled, with a median groove.

Diameter 9·0 mm.; height 7·5 mm. (holotype).

DENTITION. Fig. G, 13, p. 189. The radulae of these small Turbinids are most difficult to interpret on account of the minute size of the teeth and the complicated manner in which the bases overlap. My conclusions were made prior to reference to the results arrived at by Troschel & Thiele (1878, p. 213, pl. 22, fig. 7) and Tryon & Pilsbry (1888, pl. 60, fig. 73). The *Leptocollonia thielei* radula (Fig. G, 13) shows a marked resemblance to Pilsbry's figure of that of *Homalopoma carpenteri* (Fig. G, 14), and is almost totally at variance with Troschel and Thiele's interpretation based upon '*coccineus* Deshayes', the same species. The 'double-decked' appearance of the central tooth is not paralleled in any other known group. In both *Homalopoma* and *Leptocollonia* this tooth has a projecting plate above as well as below, and lateral wings form a broad arc across the median area. The central appears to be functionless, for it bears no cusps, just an irregular thickening at the crest of the median arc. The laterals, five in number, are long, excavated on the inner side to accommodate the lateral wings of the central, and produced on the outer side. These features are well developed in four of the laterals, but not in the fifth.

TYPE LOCALITY. St. 153. Off Cumberland Bay, South Georgia, 54° 08′ 30″ S, 36° 27′ 30″ W, 17 Jan. 1927, 106 m.

St. 20. 14·6 miles N 41° E of Cape Saunders, South Georgia, 4 Mar. 1926, 200 m.
St. 42. Off mouth of Cumberland Bay, South Georgia, 1 Apr. 1926, 120–204 m.
St. 140. Stromness Harbour to Larsen Point, South Georgia, 23 Dec. 1926, 122–136 m.
St. 156. North of South Georgia 53° 51′ S, 36° 21′ 30″ W, 20 Jan. 1927, 200–236 m.
St. 190. Bismarck Strait, Palmer Archipelago, 24 Mar. 1927, 315 m.

Family LITTORINIDAE

Study of the radulae of the southern Laevilitorinids indicates a greater complexity than is suggested by their respective shells. Four genera have been in use—*Laevilitorina*, *Pellilitorina*, *Haloconcha* and *Macquariella*. The first, second and fourth names were proposed for antarctic-subantarctic shells, but the genotype of the third is northern and is based upon a little known and apparently quite local species from the Aleutian Islands.

Two main radula types are found in the southern shells: (*a*) with a broad, shallow-based central tooth bearing five cusps, and (*b*) with a narrow, deep-based central tooth, variously cusped. Type (*a*) is restricted to *Pellilitorina* and type (*b*) to the remainder. Type (*b*), however, subdivides into (*b*1) with prominent, narrowly pointed cusps on both the central and lateral teeth, and (*b*2) with very broad chisel-shaped cusps. Type (*a*) is found in relatively large, globose shells with only a narrow umbilical perforation and an epidermis covered with hair-like processes. Type (*b*1) is found in *Laevilitorina*, which is small, ovate-conical and imperforate, and in *Macquariella*, which is small, subglobose and narrowly umbilicate. Type (*b*2) is found in *Lacuna antarctica* Martens, 1885, which Thiele (1912) referred to *Haloconcha*; *Pellilitorina bransfieldensis* Preston, 1916, which is almost identical with *antarctica*; *Pellilitorina bennetti* Preston, 1916; and *Laevilitorina coriacea* Melvill & Standen, 1907.

The type (*b*2) group, however, present three distinct shell types: (1) *antarctica* and *bransfieldensis*, which have a broad, depressed, heliciform shell with a wide umbilicus; (2) *bennetti*, which is globose and narrowly umbilicated; and (3) *coriacea*, which is ovate-conical and imperforate and of identical shape to *Laevilitorina*.

Several new names are required to arrange these shells in a natural grouping and they are diagnosed as follows:

Genus *Laevilitorina* Pfeffer, 1886 (Type: *Hydrobia caliginosa* Gould). Tierra del Fuego to Macquarie Island. Shell small, ovate conical, imperforate or almost so, epidermis smooth. Radula (Fig. I, 26) with a narrow central tooth, central and laterals with several prominent, narrowly pointed cusps, marginals fan-shaped and multidenticulate. Includes *pygmaea*, *venusta*, *granum* and *umbilicata* Pfeffer, 1886, South Georgia, *bennetti* and *latior* Preston, 1912, Falklands and probably *claviformis* Preston.

Subgenus *Corneolitorina* n.subg. (of *Laevilitorina*) (Type: *L. coriacea*, Melvill & Standen), South Orkneys. Shell small, ovate-conical, imperforate, as in *Laevilitorina*, but scarcely any shell substance apart from a thick leathery epidermis. Radula (Fig. I, 27) with a narrow central tooth, central and laterals with the main cusps blunt, chisel-shaped, marginals narrow with about seven denticles. Pelseneer's *L. elongata* (1903, pl. 5, fig. 58) from Two Hummocks Islands may belong here also.

Genus *Macquariella* Finlay, 1926 (Type *Paludestrina hamiltoni* Smith) Macquarie Island. Shell small, subglobose and narrowly umbilicated. Radula (Fig. I, 31) with an extremely narrow central tooth bearing only one long, sharp cusp, first lateral with a long central cusp and two shorter cusps, second lateral with three long cusps, marginals multidentate. Includes *Macquariella aucklandica* Powell, 1933, from Auckland, Chatham and Stewart Islands, New Zealand.

Genus *Laevilacunaria* n.g. (Type: *Pellilotorina bransfieldensis* Preston), South Shetlands. Shell

larger than that of *Laevilitorina*, depressed, heliciform with a wide umbilicus and smooth epidermis. Radula (Fig. I, 29) with a narrow central tooth, central and lateral teeth with broad chisel-shaped main cusps and weak side denticles, marginals foliate with few denticles. Includes *Lacuna antarctica* Martens from South Georgia and possibly *Hydrobia pumilis* Smith from Swains Bay, Kerguelen Island.

Since these southern Littorinids vary in shape between ovate-conical and depressed helicoid forms, even within one radula group, the use of the northern genus name *Haloconcha* for this group, merely upon external resemblances, is undesirable. Until some knowledge of the animal of *Haloconcha* is available it is more satisfactory to disassociate the southern shells under a new generic name.

Subgenus *Pellilacunella* n.subg. (of *Laevilacunaria*) (Type: *Pellilitorina bennetti* Preston), South Shetlands. Shell larger than that of *Laevilitorina*, globose, narrowly umbilicated and with a smooth epidermis. The radula (Fig. I, 30) resembles that of *Laevilacunaria*, except that the broad chisel-shaped cusps are denticulated along their cutting edges.

Genus *Pellilitorina* Pfeffer, 1886 (Type: *Littorina setosa* Smith), Kerguelen Island, South Georgia and South Orkneys. Shell relatively large, globose, narrowly umbilicated; epidermis set with hair-like processes. Radula (Fig. I, 32) with a broad shallow-based central tooth, bearing five cusps, the middle one strongest, laterals with three strong cusps, marginals foliated and with several denticles.

Genus Laevilitorina Pfeffer, 1886

Type (Suter, 1913): *Hydrobia caliginosa* Gould

Laevilitorina caliginosa (Gould)

Littorina caliginosa Gould, 1848, p. 83.
Hydrobia caliginosa Smith, 1879, p. 173, pl. 9, fig. 8.
Laevilitorina caliginosa Martens & Pfeffer, 1886, p. 81, pl. 1, fig. 8*a–d*.
Laevilitorina caliginosa Tryon, 1887, p. 254, pl. 46, fig. 29.
Laevilitorina caliginosa Pelseneer, 1903, p. 8.
Laevilitorina caliginosa Lamy, 1906*a*, p. 112.
Littorina (*Laevilitorina*) *caliginosa* Melvill & Standen, 1907, p. 100.
Laevilitorina caliginosa Strebel, 1908, p. 50.
Laevilitorina caliginosa Lamy, 1911*a*, p. 8.
Laevilitorina caliginosa Thiele, 1912, p. 235.
Littorina (*Laevilitorina*) *caliginosa* Melvill & Standen, 1912, p. 348.
Laevilitorina caliginosa Melvill & Standen, 1914, p. 118.
Laevilitorina caliginosa Hedley, 1916, p. 45.
Laevilitorina caliginosa var. L. David, 1934, fig. 1*a–d*.

DENTITION. Fig. I, 26.

TYPE LOCALITY. Royal Sound, Kerguelen I. (Suter, 1913)

St. 122. Maiviken, West Cumberland Bay, South Georgia, 14 Dec. 1926, 0–1 m.
St. MS 70. Maiviken, West Cumberland Bay, South Georgia, 9 Mar. 1926, shore coll.
St. WS 564. Moltke Harbour, South Georgia, 21 Feb. 1931, shore coll.

RANGE. Kerguelen I. (Gould, 1849; Smith, 1879; Thiele, 1912), Macquarie I. (Suter, 1913; Hedley, 1916), South Georgia (Pfeffer, 1886; Strebel, 1908; David, 1934), South Orkneys (Lamy, 1906*a*), South Shetlands (Lamy, 1911*a*), Falkland Is. (Melvill & Standen, 1907, 1912; Strebel, 1908), Tierra del Fuego (Tryon, 1887).

In all probability more than one species is covered in the above locality records. It may be noted that Strebel (1908) proposed *Laevilitorina caliginosa aestualis* for a shell from Port Louis, Falkland Islands, noting that it was only half as large as the South Georgia form. Also Macquarie Island shells

are very thin, never more than 4 mm. in height and show a narrow umbilical cleft, while those from South Georgia are more solid, from 6 to 8 mm. in height, and have a spreading parietal callus without a definite umbilical cleft. A range of topotypes will be required before anything further can be done.

Laevilitorina claviformis Preston

Laevilitorina claviformis Preston, 1916, p. 270, pl. 13, fig. 3.

TYPE LOCALITY. Deception Harbour, South Shetlands, on rocks at low water.

St. 179. Melchior I., Schollaert Channel, Palmer Archipelago, in creek to south of south-west anchorage, 10 Mar. 1927, 4–10 m.

Subgenus Corneolitorina n.subg.

Type: *Laevilitorina coriacea* Melvill & Standen

(See above for diagnosis)

Laevilitorina (Corneolitorina) coriacea Melvill & Standen

Littorina (*Laevilitorina*) *coriacea* Melvill & Standen, 1907, p. 130, pl. , fig. 2.

TYPE LOCALITY. Scotia Bay, South Orkneys, 5–10 fathoms.

St. 166. South-east point of Paul Harbour, Signy I., South Orkneys, 19 Feb.1927, shore coll.

DENTITION. Fig. I, 27, p. 191 (St. 166).

Pelseneer's *Laevilitorina elongata* (1903, pl. 5, fig. 58) from Two Hummocks Islands appears to be closely allied.

Genus Laevilacunaria n.g.

Type: *Pellilitorina bransfieldensis* Preston

(See above for diagnosis)

Laevilacunaria bransfieldensis (Preston)

Pellilitorina bransfieldensis Preston, 1916, p. 271, pl. 13, fig. 5.

TYPE LOCALITY. From stomachs of fish taken in Bransfield Straits, off Deception I., South Shetlands.

St. 1486. Harmony Cove, Nelson I., South Shetlands, 3 Jan. 1935, shore coll.

Wilhelmina Bay, Danco Land, South Shetlands, 64° 30′ S, 62° W, 1–8 fathoms (A. G. Bennett).

Preston failed to recognize in the above species a very close relative of the South Georgian species described by Martens (1885, p. 92) as *Lacuna antarctica*. This species was admirably figured by Martens & Pfeffer (1886, pl. 2, fig. 1*a–f* and pl. 3, fig. 13), and on external characters there seems to be no obvious differences between figures of the South Georgian shell and actual paratypes of Preston's species. The radula of Preston's species, however, shows sufficient differences from that figured by Martens and Pfeffer for the South Georgian *antarctica*, to warrant recognition of both names for the present.

DENTITION. Fig. I, 29, p. 191. The radula in these shells is remarkable in having very broad chisel-shaped cusps on both the central and lateral teeth. In detail the central tooth of *bransfieldensis* differs from that of *antarctica* in being widest at the top, not medially, and in the cusp occupying most of the width of that tooth, not half the width as shown in Martens and Pfeffer's figure. In *bransfieldensis* both laterals have broad cusps with a small denticle on each side. In *antarctica*, however, the second lateral is shown with a reduced, chisel-shaped main cusp and two strong, pointed cusps on the inner side. These differences would seem greater than one can ascribe to either normal range of variation or to vagaries in interpretation.

A radula very similar to that of *bransfieldensis* is figured by Thiele (1929, p. 123) for *Carinolacuna carinifera* A. Adams from Borneo.

Subgenus **Pellilacunella** n.subg.

Type: *Pellilitorina bennetti* Preston

(See above for diagnosis)

Laevilacunaria (Pellilacunella) bennetti (Preston)

Pellilitorina bennetti Preston, 1916, p. 270, pl. 13, fig. 4.

TYPE LOCALITY. Bransfield Strait, South Shetlands, on seaweed, 15 fathoms.

St. 179. Melchior I., Schollaert Channel, Palmer Archipelago, in creek to south of south-west anchorage, 10 Mar. 1927, 4–10 m.

Height 2·0 mm.; diameter 2·0 mm. (holotype).

Height 5·4 mm.; diameter 5·0 mm. (St. 179).

Height 6·0 mm.; diameter 5·0 mm. (St. 179).

DENTITION. Fig. I, 30, p. 191 (St. 179).

The 'Discovery' shells attain a much larger size than Preston's holotype, but are assumed to be the adult of the species. The diagrams show an adult (Fig. M, 101) and a juvenile (Fig. M, 100) compared with a tracing of Preston's holotype (Fig. M, 99, p. 195).

Genus **Pellilitorina** Pfeffer, 1886

Type (Thiele, 1929): *Littorina setosa* Smith

Pellitorina setosa (Smith)

Littorina setosa Smith, 1875, p. 69.
Littorina setosa Smith, 1879, p. 172, pl. 9, fig. 6.
Pellilitorina setosa Martens & Pfeffer, 1886, p. 77, pl. 1, fig. 7*a*, *b*.
Littorina (*Pellilitorina*) *setosa* Smith 1902*b*, p. 204.
Littorina (*Pellilitorina*) *setosa* Melvill & Standen, 1907, p. 101.
Pellitorina (sic) *setosa* Strebel, 1908, p. 50.
Pellilitorina setosa Thiele, 1912, p. 235.
Pellilitorina setosa L. David, 1934, p. 127.

DENTITION. Fig. I, 32, p. 191.

TYPE LOCALITY. Swain's Bay, 3–4 fathoms, Kerguelen Island.

St. 145. Stromness Harbour, South Georgia, between Grass I. and Tonsberg Point, 7 Jan. 1927, 26–35 m.
St. 456. 1 mile east of Bouvet I., 18 Oct. 1930, 40–45 m.
St. 1941. Leith Harbour, South Georgia, 29 Dec. 1931, 55–22 m. (one empty shell).
St. MS 10. East Cumberland Bay, $\frac{1}{4}$ mile south-east of Hope Point, to $\frac{1}{4}$ mile south of Government Flagstaff, South Georgia, 14 Feb. 1925, 26–18 m.
St. MS 71. East Cumberland Bay, $9\frac{1}{4}$ cables E × S to 1·2 miles E × S of Sappho Point, South Georgia, 9 Mar. 1926, 110–60 m.
St. WS 25 Undine Harbour (north), South Georgia, 17 Dec. 1926, 18–27 m.

RANGE. Kerguelen I.; Bouvet I. and Cape Adare (Smith, 1902); South Georgia (Pfeffer, Strebel and L. David) and South Orkneys (Melvill & Standen).

Pellilitorina pellita (Martens)

Littorina pellita Martens, 1885, p. 92.
Pellilitorina pellita Martens & Pfeffer, 1886, p. 79, pl. 1, fig. 6*a–c*.
Littorina (*Pellilitorina*) *pellita* Smith, 1902*b*, p. 204.
Littorina (*Pellilitorina*) *pellita* Melvill & Standen, 1907, p. 101.
Pellitorina (sic) *pellita* Strebel, 1908, p. 50.
Littorina (*Pelliltorina*) *pellita* Melvill & Standen, 1912, p. 348.
Pellilitorina pellita L. David, 1934, p. 127.

DENTITION. Fig. I, 33, p. 191.

TYPE LOCALITY. South Georgia.

St. 45. 2·7 miles S 85° E of Jason Lt., South Georgia, 6 Apr. 1926, 238–270 m. (eroded dead shells).
St. 164. North of Normanna Strait, South Orkneys, near Cape Hansen, Coronation I., 18 Feb. 1927, 24–36 m.
Uruguay Bay, Laurie I., 3 Jan. 1933, 16 m., from weed on anchor.

Family RISSOIDAE

Genus Ovirissoa Hedley, 1916

Type (o.d.): *Rissoa adarensis* Smith

Ovirissoa georgiana (Pfeffer)

Rissoa georgiana Pfeffer, 1886, p. 92, pl. 2, fig. 3.
Rissoa georgiana Strebel, 1908, p. 54.
Ovirissoa georgiana Hedley, 1916, p. 47.

TYPE LOCALITY. South Georgia.

St. 28. West Cumberland Bay, South Georgia, 3·3 miles S 45° W of Jason Lt., 16 Mar. 1926, 168 m.
St. WS 25. Undine Harbour (north), South Georgia, 17 Dec. 1926, 18–27 m.

Genus Subonoba Iredale, 1915

Type (o.d.): *Rissoa fumata* Suter.

Subonoba cf. paucilirata (Melvill & Standen)

Rissoa (*Onoba*) *paucilirata* Melvill & Standen, 1912, p. 350, pl. 1, fig. 10.

TYPE LOCALITY. Burdwood Bank, 56 fathoms.

St. 144. Off mouth of Stromness Harbour, South Georgia, from 54° 04′ S, 36° 27′ W to 53° 58′ S, 36° 26′ W, 5 Jan. 1927, 155–178 m.

Subonoba fraudulenta (Smith, 1907)

Rissoa fraudulenta Smith, 1907, p. 9, pl. 2, fig. 3.
Rissoa fraudulenta Melvill & Standen, 1907, p. 103.
Rissoa fraudulenta Hedley, 1911, p. 5.
Rissoa fraudulenta Thiele, 1912, p. 194.

TYPE LOCALITY. McMurdo Sound.

St. 164. East end of Normanna Strait, South Orkneys, near Cape Hansen, Coronation I., 18 Feb. 1927, 24–36 m.

RANGE. Scotia Bay, South Orkneys, 6 fathoms (Melvill & Standen); Gauss Station (Thiele); McMurdo Sound, 10–20 fathoms (Hedley); Macquarie I. 69 m. (Tomlin, 1948).

Genus Eatoniella Dall, 1876

Eatonia Smith, 1875 *non* Hall, 1857

Type (o.d.): *Eatonia kerguelenensis* Smith

Eatoniella kerguelenensis major Strebel

Eatoniella kerguelenensis forma *major* Strebel, 1908, p. 57, pl. 4, fig. 56*a–c*.
Eatoniella kerguelenensis major Melvill & Standen, 1912, p. 351.

TYPE LOCALITY. Cumberland Bay, South Georgia, low tide.

St. 163. Paul Harbour, Signy I., South Orkneys, 17 Feb. 1927, 18–27 m.

RANGE. Recorded also from Scotia Bay, South Orkneys, 9–10 fathoms (Melvill & Standen, 1912); south-west of Snow Hill I., 64° 36′ S, 57° 42′ W, 125 m.; South Georgia, 22 m.; Astrolabe I., 63° 9′ S, 58° 17′ W, 95 m. (Strebel, 1908).

Family TROCHACLIDIDAE

Genus Trochaclis Thiele, 1912

Type (monotypy): *Trochaclis antarctica* Thiele

Trochaclis antarctica Thiele

Trochaclis antarctica Thiele, 1912, p. 192, pl. 11, fig. 29.
Trochaclis antarctica Hedley, 1916, p. 51.

TYPE LOCALITY. Gauss Station.

St. 1652. Ross Sea, 75° 56′ 2″ S, 178° 35′ 5″ W, 23 Jan. 1936, 567 m.
St. 1658. Off Franklin I., Ross Sea, 76° 09′ 6″ S, 168° 40′ E, 26 Jan. 1936, 520 m.

Hedley (1916) recorded the species from off the Shackleton Ice-shelf, 65° 20′ S, 95° 27′ E in 240 fathoms.

Family CERITHIIDAE

Genus Ataxocerithium Tate, 1893

Type (o.d.): *Cerithium serotinum* Adams, Tasmania

The Magellan species *pullum* is referred to the above genus with some hesitation, since I know nothing of either the opercular or the radula characters of the Tasmanian genotype. On shell features, however, *pullum* is not dissimilar from *serotinum*.

The operculum in *pullum* is ovate, slightly D-shaped, paucispiral, with the nucleus near to the inner lower margin, which makes it a typical member of the Cerithiidae. The protoconch is very small and slender, consisting of $1\frac{1}{2}$ smooth papillate whorls followed by $1\frac{1}{2}$ whorls of brephic axials. The radula is of the same general type as that of *Cerithium* except for the marginals, which have, in addition to their normal bifid extremities, several well-developed cusps, which branch at right angles from the ventral margin. There is only one of these side cusps on the inner marginal, but there are three on the outer marginal. There is nothing comparable with these marginals in the Cerithiidae radulae figured by Troschel (1858, pls. 9–12).

Ataxocerithium pullum (Philippi)

Cerithium pullum Philippi, 1845*b*, p. 66.
Cerithium caelatum Couthouy, 1849, p. 148, fig. 174*a–d*.
Cerithium pullum Rochebrune & Mabille, 1889, p. H 40.
Cerithium pullum Strebel, 1905*b*, p. 652, pl. 23, fig. 40*a–d*.
Cerithium pullum Melvill & Standen, 1907, p. 105.
Cerithium pullum Strebel, 1908, p. 47.
Cerithium pullum Melvill & Standen, 1912, p. 351.

DENTITION. Fig. I, 34, p. 191. St. WS 225. PROTOCONCH. Fig. N, 102, p. 196.

TYPE LOCALITY. Strait of Magellan.

St. 51. Off Eddystone Rock, East Falkland Is., 7 miles N 50° E to 7·6 miles N 63° E, 4 May 1926, 105–115 m.
St. 388. Off Tierra del Fuego, 56° $19\frac{1}{2}$′ S, 67° $09\frac{3}{4}$′ W, 16 Apr. 1930, 121 m.
St. WS 72. Off north coast of East Falkland Is., 51° 07′ S, 57° 34′ W, 5 Mar. 1927, 79 m.
St. WS 86. Burdwood Bank, 53° 53′ S, 60° 37′ W, to 53° 54′ S, 60° 32′ W, 3 Apr. 1927, 151–147 m.
St. WS 97. North-west of Falkland Is., 49° S, 62° W to 49° 01′ S, 61° 56′ W, 18 Apr. 1927, 146–145 m.
St. WS 225. North-west of Falkland Is., 50° 20′ S, 62° 30′ W, 9 June 1928, 162–161 m.
St. WS 239. North-west of Falkland Is., 51° 10′ S, 62° 10′ W, 15 July 1928, 196–192 m.
St. WS 243. Between Falkland Is. and Point Santa Cruz, Patagonia, 51° 06′ S, 64° 30′ W, 17 July 1928, 144–141 m
St. WS. 247. North of Falkland Is., 52° 40′ S, 60° 05′ W, 19 July 1928, 172 m.
St. WS 250. North of Falkland Is., 51° 45′ S, 57° W, 20 July 1928, 251-313 m.

St. WS 750. North-east of Falkland Is., 50° 50′ S, 57° 15′ 13″ W, 18–19 Jan. 1932, 95 m.
St. WS 824. Off East Falkland Is., 52° 29′ S, 58° 27′ W, 19 Jan. 1932, 146–137 m.
St. WS 865. Between Falkland Is. and Patagonia 50° 03 S, 64° 14 W, 29 Mar. 32, 128–126 m.

RANGE. Patagonia, Burdwood Bank (Melvill & Standen, 1912) and Falkland Is., 8–196 m.

Genus **Cerithiella** Verril, 1882

n.nom. for *Lovenella* Sars, 1878, *non* Hincks, 1869

Type (monotypy): *Cerithium metula* Loven

Strebel (1908) and Thiele (1912) have placed a number of small Antarctic species in this Recent European genus. These shells conform to the genotype in having a stout, bulging, smooth protoconch of about two whorls and similar apertural features, but two series are represented: (1) *astrolabiensis* Strebel, 1908, *erecta* Thiele, 1912, *similis* Thiele, 1912, and *seymouriana* Strebel, 1908, all of which have plain spiral keels without axials; and (2) *superba* Thiele, 1912, and *werthi* Thiele, 1912, which, like the genotype, have the spiral keels crossed and beaded by axials.

The two empty shells recorded below provide no additional information concerning the relationships of these southern groups, so Thiele's placing is retained.

Cerithiella seymouriana (Strebel)

Bittium seymourianum Strebel, 1908, p. 47, pl. 4, fig. 50*a–c*.
Cerithiella seymouriana Thiele, 1912, p. 261.

TYPE LOCALITY. South-east of Seymour I., 64° 20′ S, 56° 38′ W, 150 m.

St. WS 33. Off South Georgia, 54° 59′ S, 35° 24′ W, 21 Dec. 1926, 130 m.

One example, 8 × 2·4 mm., compared with 8·2 × 2·9 mm. for Strebel's type.

Cerithiella astrolabiensis (Strebel)

Bittium astrolabiensis Strebel, 1908, p. 48, pl. 4, fig. 51*a–c*.
Cerithiella astrolabiensis Thiele, 1912, p. 261.

TYPE LOCALITY. Astrolabe I., 63° 9′ S, 58° 17′ W, 95 m.

St. 363. 2·5 miles S 80° E of South-east point of Zavodovski I., South Sandwich Is., 26 Feb. 1930, 329–298 m.

Strebel's type was a juvenile of five post-nuclear whorls and measured 3·3 × 1·3 mm. The St. 363 example, which I judge to be the adult of this species, has $9\frac{1}{2}$ post-nuclear whorls and measures 11·5 × 3·9 mm. The species differs from *seymouriana* only in being proportionately broader and more tightly coiled.

Family TURRITELLIDAE

Genus **Turritellopsis** Sars, 1878

Type (monotypy): *Turritellopsis acicula* Stimpson
Recent, North Atlantic

Turritellopsis thielei n.sp., Pl. VII, fig. 26

Shell with an attenuated spire of slowly increasing whorls, sculptured with prominent flat-topped spiral cords, four to five per whorl. The spiral cords are separated by interspaces of about $1\frac{1}{2}$ times their width, except for the uppermost, which has a double space between it and the suture, and the lowest, which is almost joining the suture below. The body-whorl has the addition of six cords on the base, but the lower two or three are weak. In the paratype, which is a young shell, the subsutural space is occupied by two subsidiary linear-spaced cords, which are much weaker than the rest. Aperture subcircular, the columellar-basal portion of the peristome split in two by a deep median groove. Both examples have the early whorls missing.

Length (4 whorls only) 8·5 mm.; diameter 3·8 mm. (holotype).

Length ($5\frac{3}{4}$ whorls only) 9·25 mm.; diameter 3·0 mm. (paratype).

TYPE LOCALITY. St. 181. Schollaert Channel, Palmer Archipelago, 64° 20′ S, 63° 01′ W, 12 Mar. 1927, 160–335 m.

The species is nearest related to *Turritellopsis gratissima* Thiele from Gauss Station, Davis Sea, which has one spiral less per whorl.

It is possible that my paratype of *theilei* is not identical with the holotype, but more material is necessary to determine this.

These Antarctic species seem to be correctly placed in *Turritellopsis*, the radula of which lacks marginal teeth. Thiele (1912, pl. 15, fig. 23) figured the dentition of his *T. gratissima*, and this also shows three teeth only, a central and a pair of laterals only.

Genus Colpospirella n.g.

Type: *Turritella algida* Melvill & Standen

This is a very small Turritellid, apparently never more than 6 mm. in height, having a relatively large, smooth, papillate protoconch of $2\frac{1}{2}$ whorls, the last with a blunt median keel. The protoconch is very like that of the Australian *Colpospira*, but the labial profile is only moderately sigmoid, not deeply sinused as in the Australian genus.

Colpospirella algida (Melvill & Standen)

Turritella algida Melvill & Standen, 1912, p. 352, pl. fig. 14.

TYPE LOCALITY. Burdwood Bank, south of the Falkland Is., 56 fathoms.

St. 27. West Cumberland Bay, South Georgia, 3·3 miles S 44° E of Jason Lt., 15 Mar. 1926, 110 m.

St. 144. Off mouth of Stromness Harbour, South Georgia, from 54° 04′ S, 36° 27′ W to 53° 58′ S, 36° 26′ W, 15 Jan. 1927, 155–178 m.

St. WS 816. West of Falkland Is., 52° 09′ 45″ S, 64° 56′ W, 14 Jan. 1932, 150 m.

St. WS 210. North of Falkland Is., 50° 17′ S, 60° 06′ W, 29 May 1928, 161 m.

St. WS 211. 50° 17′ S, 60° 06′ W, 29 May 1928, 174 m.

St. WS 838. Between Falkland Is. and Patagonia, 53° 11′ 45″ S, 65° W, 5 Feb. 1932, 148 m.

Genus Mathilda Semper, 1865

Type: *Turbo quadricarinata* Brocchi, Pliocene, Italy

Mathilda malvinarum (Strebel)

Cerithiopsis malvinarum Strebel, 1908, p. 49, pl. 1, fig. 10*a–c*.

TYPE LOCALITY. Port Louis, Falkland Is., 1 m.

St. WS 225. North-west of Falkland Is., 50° 20′ S, 62° 30′ W, 9 June 1928, 162–161 m.

St. WS 243. Between Falkland Is. and Patagonia, 51° 06′ S, 64° 30′ W, 17 July 1928, 144–141 m.

Family EULIMIDAE

Genus Balcis Leach, 1847

Type: *Balcis montagui* (=*B. alba* da Costa)

Balcis antarctica (Strebel)

Eulima antarctica Strebel, 1908, p. 65, pl. 6, fig. 91*a–c*.

TYPE LOCALITY. South-east of Seymour I., 64° 20′ S, 56° 38′ W, 150 m.

St. 363. 2·5 miles S 80° E of south-east point of Zavodovski I., South Sandwich Is., 26 Feb. 1930, 329–278 m.

Melvill & Standen (1912, p. 352) ascribed to this species an immature example from Burdwood Bank in 56 fathoms, but the record requires confirmation.

Balcis cf. tumidula (Thiele)

Eulima tumidula Thiele, 1912, p. 193, pl. 11, fig. 31.

Type locality. Gauss Station, Davis Sea.

St. 170. Off Cape Bowles, Clarence I., 61° 25′ 30″ S, 53° 46′ W, 23 Feb. 1927, 342 m.

If I have correctly determined the St. 170 shells, the species attains a larger size than cited by Thiele.
Height 5·25 mm.; diameter 2·0 mm. (holotype).
Height 8·0 mm.; diameter 3·2 mm. (St. 170).

Balcis cf. solitaria (Smith)

Eulima solitaria Smith, 1915, p. 64, pl. 1, fig. 3.

Type locality. Off Cape Bird Peninsula, 250 fathoms, McMurdo Sound.

St. 190. Bismarck Strait, Palmer Archipelago, 64° 56′ S, 65° 35′ W, 24 Mar. 1927, 93–130 m.

One example, 8·34 × 2·8 mm., of $8\frac{1}{2}$ whorls, which appears to be the adult of Smith's species of seven whorls and dimensions of 4 × 1·5 mm.

Family EPITONIIDAE

Genus Cirsotrema Moerch, 1852

Type: *Scalaria varicosa* Lamarck

Cirsotrema magellanica (Philippi)

Scalaria magellanica Philippi, 1845*b*, p. 46.
Scalaria (*Opalia*) *magellanica* Strebel, 1905*b*, p. 656, pl. 23, fig. 44*a–f*.
Scalaria magellanica Strebel, 1908, p. 63.
Scala magellanica Melvill & Standen, 1912, p. 347.

Type locality. Strait of Magellan.

St. 51. Off Eddystone Rock, East Falkland Is., from 7 miles N 50° E to 7·6 miles N 63° E of Eddystone Rock, 4 May 1926, 105–115 m.
St. WS 228. Off north-east end of Falkland Is., 50° 50′ S, 56° 58′ W, 30 June 1928, 229 m.

Range. Lively I., Falkland Is. (Strebel, 1905); Port William, 40 m., Falkland Is. (Strebel, 1908); Punta Arenas (shore), Puerto Harris, 15 fathoms (Strebel, 1905); Burdwood Bank, 56 fathoms (Melvill & Standen, 1912).

Cirsotrema magellanica latecostata (Strebel)

Scalaria magellanica var. *latecostata* Strebel, 1905*b*, p. 658, pl. 23, figs. 43*a–d*.

Type locality. Strait of Magellan.

St. 388. Between Cape Horn and Staten I., 56° $19\frac{1}{2}$′ S, 67° $09\frac{3}{4}$′ W, 16 Apr. 1930, 121 m.
St. WS 222. Between Patagonia and Falkland Is., 48° 23′ S, 65° W, 8 June 1928, 100–106 m.
St. WS 766. Between Falkland Is. and Argentina, 45° 13′ S, 59° 56′ 30″ W, 18 Oct. 1931, 545 m.
St. WS 797. Between Patagonia and Falkland Is., 47° 45′ 18″ S, 64° 10′ 30″ W, to 47° 47′ 43″ S, 64° 07′ 30″ W, 19 Dec. 1931, 117 m.

Cirsotrema fenestrata (Strebel)

Scalaria fenestrata Strebel, 1908, p. 63, pl. 4, fig. 61*a–d*.

Type locality. Cumberland Bay, South Georgia, 253–310 m.

St. 140. Stromness Harbour to Larsen Point, South Georgia. From 54° 02′ S, 36° 38′ W to 54° 11′ 30″ S, 36° 29′ W, 23 Dec. 1926, 122–136 m. (one half-grown example).

Genus Acirsa Moerch, 1857

Type (Cossmann, 1912): *Scalaria costulata* Mighels

Acirsa antarctica (Smith)

Scala antarctica Smith, 1907, p. 8, pl. 1, figs. 10, 10*b*.
Epitonium antarcticum Smith, 1915, p. 64.

Type locality. Hole 12, 'Discovery' Winter Quarters, McMurdo Sound.

St. 1660. Ross Sea, 74° 46·4′ S, 178° 23·4′ E, 27 Jan. 1936, 351 m. (two juveniles).

Recorded by Smith (1915) from the Ross Sea, 158 fathoms.

Acirsa annectens n.sp. Pl. VII, fig. 23

Shell moderately large, attenuated, of rapidly increasing convex whorls, dull white, solid, axially costate but axials subobsolete on last two whorls. A prominent supra-sutural spiral fold forms a heavy carina on the last whorl. Protoconch missing, $6\frac{1}{2}$ post-nuclear whorls remaining in holotype, the only adult specimen. The axials number about twenty on the early whorls. The whole surface is crossed by subobsolete spiral cords too indistinct to be accurately counted but approximately twenty on the penultimate.

Height 11·5 mm.; diameter 4·5 mm.

Type locality. St. WS 766. North of Falkland Is. 45° 13′ S, 59° 56′ 30″ W, 18 Oct. 1931, 545 m.

The species resembles *antarctica* Smith, but is not so definitely sculptured and has a more massive sutural carina.

Family NATICIDAE

Genus Amauropsis *Moerch*, 1857

Type (s.d. Dall, 1909): *Natica helicoides* Johnson

Hedley (1916) diagnosed an Antarctic series of Naticoids as follows: 'There is an Antarctic naticoid group which cannot be received by any of the above (i.e. *Natica*, *Cochlis*, *Cryptonatica*, *Polinices*, *Euspira*, *Cepatia*, *Mamillaria*), or by other known extra-limital groups such as *Cernina* or *Mammilla*, not discussed by Dr Dall. So far this amounts to about a dozen rather featureless species, all small, mostly uniform olive buff in colour, four whorls, a slightly raised spire, a caducous epidermis, comparatively thin, unsculptured, except for incremental striae, without umbilical funicle or a callus pad at the insertion of the right lip. Operculum corneous paucispiral.'

Unfortunately, in nominating the Recent south-eastern Australian *Natica beddomei* Johnston as genotype of his new genus *Friginatica*, Hedley has in effect deviated from his intention, for *beddomei* as figured by Watson (1886, pl. 28, fig. 3) is a small solid shell with a channelled suture but apparently no epidermis.

Smith (1907) used the Arctic Recent genus *Amauropsis* for one of this Antarctic series, i.e. *A. rossiana* Smith from 'Discovery' Winter Quarters, and since these shells fit this genus in a general way there is no reason why at this stage of our knowledge *Amauropsis* should not be used. The genotype of *Amauropsis* is a large shell (1–1·5 in.), thin, with channelled suture; umbilicus a narrow line; chalky white, covered with a light yellowish brown epidermis (Tryon, 1886, p. 53, pl. 22, fig. 31). The operculum is horny.

There is no marked difference between the radula of the Arctic *helicoides* (Troschel, 1861, pl. 15, fig. 6) (Fig. J, 41) and that of the Antarctic *anderssoni* Strebel, *aureolutea* Strebel and *rossiana* (Eales, 1923) (Fig. J, 43). Each has a tricuspid central tooth, a bifid inner marginal and a simple outer marginal.

The laterals alone vary slightly in that those of *helicoides*, *anderssoni* and *rossiana* are tricuspid and those of *aureolutea* bicuspid. The Antarctic members range in height between 6 (*georgianus*) and 30 mm. (*aureolutea*).

Amauropsis anderssoni (Strebel) Pl. X, figs. 58, 59

Natica anderssoni Strebel, 1906, p. 142, pl. 11, fig. 67*a*, *b*.
Natica anderssoni Strebel, 1908, p. 61, pl. 5, fig. 64*a*, *b*.

TYPE LOCALITY. Falkland Is.

St. 27. West Cumberland Bay, South Georgia, 3·3 miles S 44° E of Jason Lt, 15 Mar. 1926, 110 m.
St. 30. West Cumberland Bay, South Georgia, 2·8 miles S 24° W of Jason Lt., 16 Mar. 1926, 251 m.
St. 39. East Cumberland Bay, South Georgia, from 8 cables S 81° W of Merton Rock to 1·3 miles N 70 E of Macmahon Rock, 25 Mar. 1926, 179–235 m.
St. 42. Off mouth of Cumberland Bay, South Georgia, 1 Apr. 1926, 120–204 m.
St. 123. Off mouth of Cumberland Bay, South Georgia, 15 Dec. 1926, 230–250 m.
St. 1941. Leith Harbour, South Georgia, 29 Dec. 1936, 55–22 m.
St. MS 68. East Cumberland Bay, 1·7 miles S ½° E to 8½ cables SE × E of Sappho Point, 2 Mar. 1925, 220–247 m.
St. WS 32. Mouth of Drygalski Fjord, South Georgia, 21 Dec. 1926, 91–225 m.
St. WS. 62. Wilson Harbour, South Georgia, 19 Jan. 1927, 15–45 and 26–83 m.

RANGE. Falkland Is. and South Georgia, 20–310 m.

The 'Discovery' material is identical with examples examined from the Swedish South Polar Expedition's St. 34, off Cumberland Bay, South Georgia, 252–310 m., but I have not seen Falkland examples.

DENTITION. Fig. J, 44, p. 192.

Amauropsis aureolutea (Strebel)

Natica aureolutea Strebel, 1908, p. 63, pl. 5, fig. 63*a*, *b*.

TYPE LOCALITY. South Georgia, 24–52 m.

St. 140. Stromness Harbour to Larsen Point, South Georgia, 54° 02′ S, 36° 38′ W to 54° 11′ 30″ S, 36° 29′ W, 23 Dec. 1926, 122–136 m.
St. 159. North-east of South Georgia, 53° 52′ 30″ S, 36° 08′ 00″ W, 21 Jan. 1927, 160 m.
St. 170. Off Cape Bowles, Clarence Is., 61° 25′ 30″ S, 53° 46′ 00″ W, 23 Feb. 1927, 342 m.
St. 363. 2·5 miles S 80° E of south-east point of Zavodovski I., South Sandwich Is., 26 Feb. 1930, 329–278 m
St. WS 177. Off south-east of South Georgia, 54° 58′ S, 35° 00′ W, 7 Mar. 1928, 97 m.

RANGE. South-west of Snow Hill I., 64° 36′ S, 57° 42′ W, 152 m. (Strebel); Clarence Is., South Sandwich Is. and South Georgia, 24–342 m.

The 'Discovery' material is identical with examples examined from the Swedish South Polar Expedition's St. 6, south-west of Snow Hill Island, 125 m. The species differs from *anderssoni* in having a brighter epidermis which is orange brown, subobsolete spiral ridges, and in being larger with a taller spire. The apical whorls are almost invariably eroded.

The largest 'Discovery' example is 27 mm. in height and 24 mm. in diameter (St. WS 177). Strebel's type is 14·9 × 14·2 mm.

DENTITION. Fig. J, 42, p. 192.

Amauropsis rossiana Smith

Amauropsis rossiana Smith, 1907*a*, p. 5, pl. 1, figs. 6, 6*a*.
Amauropsis rossiana Smith, 1915, p. 69.
Pellilitorina rossiana Hedley, 1916, p. 52.
Amauropsis rossiana Eales, 1923, pp. 19, 21, fig. 21.

TYPE LOCALITY. Hut Point, 'Discovery' Winter Quarters, McMurdo Sound.

St. 1660. Ross Sea, 74° 46·4′ S, 178° 23·4′ E, 27 Jan. 1936, 351 m. (one juvenile, 12 × 11·5 mm.).

RANGE. McMurdo Sound, 140–300 fathoms; off Mertz Glacier Tongue, Adelie Land, 288 fathoms; Ross Sea.

DENTITION. Fig. J, 43, p. 192 (Eales, 1923, loc. cit. p. 21, fig. 21).

This species is very closely allied to *aureolutea*, but has a more deeply impressed suture and the spiral sculpture is more pronounced. The operculum is horny.

The solitary 'Discovery' example has a slightly lower spire than topotypic examples from McMurdo Sound, 250 fathoms.

Amauropsis georgianus Strebel

Natica georgiana Strebel, 1908, p. 62, pl. 5, fig. 65*a*, *b*.

TYPE LOCALITY. South Georgia, 64–74 m.

St. 45. 2·7 miles S 85° E of Jason Lt., South Georgia, 238–270 m.

I have not seen type material, but suspect that this may be merely a form of *anderssoni*.

Subgenus **Kerguelenatica** n.subg.

Type: *Natica grisea* Martens, 1878

At least subgeneric status is warranted for *grisea*, for it has an operculum which is formed of both horny and calcareous materials. It is admirably described by Watson (1886, p. 432) as follows: 'It has a thinnish calcareous layer over a pretty strong horny interior, which projects uncovered round the entire edge, but this uncovered edge is narrowest on the inner side, i.e. near the pillar of the shell or spire of the operculum. Here the exterior flat surface of the calcareous layer is thickened by a thin, dirty grey, spreadout spot of limy substance. Beyond this spot the surface of the calcareous layer is strongly scored with radiating lines. Its inner surface can be seen through the horny layer to be sharply and delicately striate spirally.' Like the *Amauropsis* series the shell lacks a funicular callus and has a thick yellowish brown epidermis.

As already explained under *Amauropsis*, the species *grisea* cannot be covered by *Friginatica* as Hedley intended, for the south-eastern Australian genotype, *beddomei*, apparently lacks epidermis, and according to Cotton (1931, p. 20) the operculum is horny.

Unfortunately, in describing the Macquarie Island *Friginatica pisum* Hedley (1916) made no reference to the operculum, but Tomlin (1948), p. 228, remarked that it is 'dark coloured and horny.' The species may be located provisionally in *Amauropsis*. I favour reinstating Marwick's *Sulconacca* (1924, p. 556), type: *S. vaughani* Marwick, Lower Miocene, New Zealand, in preference to *Friginatica* which becomes restricted to its Recent south-eastern Australian genotype. *Sulconacca* has the umbilical area margined by a strong spiral ridge.

The presumed occurrence of *Amauropsis* in both the Arctic and Antarctic regions may seem unnatural and certainly brings up once more the question of bipolarity.

Amauropsis is a high-latitude stenothermic mollusc related to *Polinices*, which is widely distributed in warmer seas. *Polinices* is of considerable antiquity (common in the Tertiary of most regions), and it is likely that *Amauropsis* also had sufficient time and opportunity during the colder periods of the Pleistocene to accomplish bipolar distribution. The new subgenus *Kerguelenatica* is considered to be a local product from *Amauropsis* originating in the Kerguelenian Province. From consideration of time *Sulconacca* is probably not related nor is *Friginatica* in its restricted usage.

Amauropsis (Kerguelenatica) grisea (Martens), Pl. X, fig. 60

Natica grisea Martens, 1878, p. 24.
Natica grisea Watson, 1886, p. 432, pl. 28, fig. 5.
Natica delicatula Smith, 1902, p. 206, pl. 24, fig. 6.
Natica grisea Martens & Thiele, 1903, p. 64, pl. 4, figs. 2, 3, and pl. 8, fig. 44 (radula).
Natica grisea Strebel, 1908, p. 61.
Natica delicatula Thiele, 1912, p. 199, pl. 12, figs. 16, 17.
Natica grisea Smith, 1915, p. 69.
Frigiuatica grisea Hedley, 1916, p. 52.
Polinices (*Lunatia*) *grisea* L. David, 1934, p. 128.

Type locality. Kerguelen I.

St. 175. Bransfield Strait, South Shetlands, 63° 17′ 20″ S, 59° 48′ 15″ W, 2 Mar. 1927, 200 m.
St. 456. 1 mile east of Bouvet I., 18 Oct. 1930, 40–45 m. (two empty shells).
St. 1660. Ross Sea, 74° 46′ 45″ S, 178° 23·4′ E, 27 Jan. 1936, 351 m.
St. 1952. Between Penguin I. and Lion's Rump, King George Is., South Shetlands, 11 Jan. 1937, 367–383 m.

Range. Graham Land, 64° 3′ S, 56° 37′ W, 360 m. (Strebel); South Shetlands; South Georgia, 252–310 m., and between South Georgia and Falkland Islands, 2675 m. (Strebel); Bouvet I.; Kerguelen I., 25–95 fathoms (Watson); Cape Adare, 26 fathoms (Smith); McMurdo Sound, 190–250 fathoms (Smith); Commonwealth Bay, 25 fathoms and off Shackleton Ice-shelf, 240 fathoms (Hedley); Ross Sea.

The species is easily recognized, as explained above, by the composite nature of the operculum, which is horny but with an outer limy covering. It is possible that more than one species is represented in the range covered, but I do not have access to sufficient material to determine this. The South Georgian? shell figured by Strebel (1908) is not so depressed as Kerguelen topotypes, two of which, from Royal Sound, 20 fathoms (British Museum) are figured.

Dentition. Fig. J, 45, p. 192 (Martens & Thiele, 1903).

Genus Polinices Montfort, 1810

Type (o.d.): *Polinices albus* Montfort = *Nerita mammilla* Linn., West Indies

Polinices patagonicus (Philippi)

Natica patagonica Philippi, 1845*b*, p. 65.
Natica patagonica Hupé (Gay), 1854, p. 221.
Natica patagonica Tryon, 1886, p. 37, pl. 14, fig. 24.
Natica patagonica Rochebrune & Mabille, 1889, p. H 35.
Natica patagonica Strebel, 1906, p. 137, pl. 11, fig. 63.
Natica patagonica Strebel, 1908, p. 61.

Type locality. North-east Strait of Magellan.

St. 158. North-east of South Georgia, 53° 48′ 30″ S, 35° 57′ 00″ W, 21 Jan. 1927, 401–411 m.
St. WS 247. South of Falkland Is., 52° 40′ S, 60° 05′ W, 19 July 1928, 172 m.

Range. Strait of Magellan (type); Punta Arenas, Tierra del Fuego and Puerto Pantalon, 7 fathoms (Strebel); Lively I., Falkland Is. (Strebel); South Georgia.

The 'Discovery' material consists of two badly eroded shells which are probably the above species. They measure respectively: height 28·5 mm., diameter 27 mm. (St. WS 247); height 26 mm., diameter 22 mm. (St. 158).

Genus Falsilunatia n.g.

Type: *Natica soluta* Gould, 1848

On shell and opercular characters *soluta* is not dissimilar from *catena* Da Costa, the Recent English genotype of *Lunatia*, but the dentition is most distinctive.

In *catena* the radula is normal for the family—a tricuspid central tooth of more or less rectangular form, laterals with three or four cusps and the inner marginal with a side cusp, thus approximating the bifid form. In *soluta* the central tooth is hemispherical with a large, broadly triangular central cusp but merely vestigial side cusps. The laterals have a broad massive cusp with a slight incision or incipient denticle near the base of its inner margin. The marginals are simple, not bifid, the outer one the longer.

The umbilicus is narrower than in *Lunatia* and may be open or closed according to the relative downward encroachment of the parietal callus.

Falsilunatia soluta (Gould)

Natica soluta Gould, 1848, p. 239.
Natica soluta Tryon, 1886, p. 39, pl. 9, fig. 71.
Natica soluta Strebel, 1906, p. 138, pl. 11, figs. 61, 62 and 64–66.
Natica soluta Strebel, 1908, p. 60.

Type locality. Southern coast of South America.

St. 48. 8·3 miles N 53° E of William Point Beacon, Port William, Falkland Is., 3 May 1926, 105–115 m.
St. 51. Off Eddystone Rock, East Falkland Is., 4 May 1926, 115 m.
St. WS 244. West of Falkland Is., 52° 00′ S, 62° 40′ W, 18 July 1928, 247 m.
St. WS 808. Between Falkland Is. and Patagonia, 49° 40′ 15″ S, 65° 42′ W, 8 Jan. 1932, 109–107 m.
St. WS 817. Between Falkland Is., and Patagonia, 52° 23′ S, 64° 19′ W, 14 Jan. 1932, 191–202 m.

Dentition. Fig. J, 47, p. 192.

Strebel (loc. cit. 1907) subdivided his material, on the size of the umbilical cavity, into forms 'A', 'B' and 'C'. Forms A and C are here covered by *soluta* typical, but form B, which equals Mabille & Rochebrune's *recognita*, I consider to be specifically separable on account of the spreading of the parietal callus pad, which results in the closing of the umbilicus from above and a disproportionate thickening and flexing of the columellar callus.

Falsilunatia recognita (Rochebrune & Mabille)

Natica recognita Rochebrune & Mabille, 1889, p. H 33.

Type locality. Orange Bay, Patagonia, 120 m.

St. WS 766. Between Falkland Is., and Argentina, 45° 13′ S, 59° 56′ 30″ W, 18 Oct. 1931, 545 m.

Dentition. Fig. J, 48, p. 192. The radula is very similar to that of *soluta*, but presents minor differences in the shape of the central tooth, which is narrower and more acutely arched, and in the laterals, which have a shorter cusp and the addition of several denticles. The inner basal plate of the central tooth is strengthened by two massive vertical processes, which, when viewed laterally, are shown to act as buttresses. The marginals are simple as in *soluta*.

A similar style of central tooth is found in the New Zealand genus *Globisinum* (Powell, 1933, p. 170) (Fig. J, 49) and in *Natica fartilis* Watson (1881), from between Marion Island and Prince Edward Island in 50–140 fathoms.

Apart from radula similarities, *Falsilunatia* differs from *Globisinum* in having an animal that is completely retractive and a smaller, more solid shell. The animal in the New Zealand *G. venustum* Suter resembles that of *Sinum* in being much larger than the shell, but it is not known if an operculum is normally present. The operculum in *Natica fartilis* is shelly.

A third member of *Falsilunatia* appears to be Preston's *Natica falklandica* (1913, p. 218) from Port Stanley, Falkland Islands. It is thin and globose, relatively large and with more elevated spire-whorls than in either *soluta* or *recognita*, but its shape suggests *Falsilunatia* rather than *Globisinum*. Two examples from the British Museum collection were examined (Pl. X, fig. 61). The dimensions of these specimens are respectively: height 17 mm., diameter 14·5 mm.; and height 14·75 mm., diameter 13 mm.

Genus Sinuber n.g.

Type: *Natica sculpta* Martens

The above new genus is provided for small *Sinum*-like species, the true relationship of which is probably with *Polinices* rather than with *Sinum*. The shell is thin, white, with a very inconspicuous epidermis, a transparent, almost colourless film; protoconch smooth and glossy, or with faint spiral lines; post-nuclear sculpture of deeply incised linear grooves; umbilicus narrow and partly bridged, not infilled, by a reflexed columellar callus; columella almost vertical; operculum paucispiral and horny.

The radula is of a style common in the family and similar to that of *Polinices* and *Amauropsis*. Minor differences are that the side cusps of the central tooth are relatively small, the laterals are deeply sinused on their inner edge and bear three weak cusps, while the marginals have simple arcuately pointed, not bifid cusps. It was shown by Troschel (1861, pl. 15, figs. 15, 16) and by Iredale (1924, p. 256) that true *Sinum* has a broad central tooth with the two side cusps more prominent than the central one. The *Sinum*-like genera of *Polinices* affinity—i.e. *Sigaretotrema* Sacco, 1890 (= *Propesinum* Iredale 1924) and *Eunaticina* Fischer, 1885—are not applicable either, for Iredale pointed out (loc. cit.) that their tendency is for the central to become unicuspid.

Sinuber sculpta (Martens)

Natica sculpta Martens, 1878, p. 24.
Natica sculpta Martens & Thiele, 1903, p. 65, pl. 4, fig. 1.

Type locality. Kerguelen I.

Form A. St. 1660. Ross Sea, 74° 46·4′ S, 178° 23·4′ E, 27 Jan. 1936, 351 m.
Form B. St. WS 212. North of Falkland Is., 49° 22′ S, 60° 10′ W, 30 May 1928, 242–249 m.
St. WS 773. North of Falkland Is., 47° 28′ S, 60° 51′ W, 31 Oct. 1931, 291–296 m.

The type locality for *sculpta* is Kerguelen Island, and closely allied forms of it range southward to the Ross Sea and westward to north of the Falklands, South Georgia and South Orkneys.

Unfortunately, I do not have access to topotypic material, and Marten's description is rather lacking in detail. His figure of the holotype, however (1903, pl. 4, fig. 1), and his measurements of the shell, show that the South Orkney-South Georgia form is relatively wider and that the aperture is lower in relation to the height of the shell. This form is described below as a new subspecies.

Ross Sea examples (St. 1660) and those from north of the Falklands (St. WS 212 and WS 773) are small, relatively narrow forms, the former openly umbilicate and the latter with the umbilicus almost closed by the reflexed columellar callus. These two forms exhibit a difference in the number of spiral grooves, but since I cannot make an accurate comparison with *sculpta* on this point, Ross Sea and Falkland material must be tentatively referred to *sculpta*.

Sinuber sculpta scotiana n.subsp., Pl. V, fig. 10

Natica sculpta: Strebel, 1908, p. 62.

This form differs from typical *sculpta*, as shown by reference to Marten's original description and figure, in being relatively wider and with a lower aperture. The protoconch is faintly spirally striate, and there are from sixteen to eighteen linear grooves on the first post-nuclear whorl, twenty on the

penultimate, forty-five moderately widely spaced on the body-whorl, plus a further twenty-five much weaker spirals, which are crowded into the umbilical cavity. Spire about half height of aperture. Umbilicus a narrow pit partially bridged by a thin-edged broadly reflexed columellar lip. Columella vertical, basal section of lip rounded and thickened; outer lip thin.

The differences between the several forms of *sculpta* are best shown in tabular form. (Spirals= number of spiral grooves on the first post-nuclear whorl.)

Height 9·0 mm.; diam. 7 mm.; aperture 7 × 4 mm.; spirals (*sculpta*).
Height 9·5 mm.; diam. 8 mm.; aperture 6·75 × 4·5 mm.; spirals 16–18 (*scotiana*).
Height 9·0 mm.; diam. 7·8 mm.; aperture 6·5 × 4 mm.; spirals 16–18 (*scotiana*).
Height 8·9 mm.; diam. 7·5 mm.; aperture 6·5 × 4 mm.; spirals 16–18 (*scotiana*).
Height 8·5 mm.; diam. 7·2 mm.; aperture 6·0 × 4 mm.; spirals 16–18 (*scotiana*).
Height 6·5 mm.; diam. 5·0 mm.; aperture 4·3 × 2·5 mm.; spirals 12–17 (Form A).
Height 6·3 mm.; diam. 5·0 mm.; aperture 4·5 × 2·5 mm.; spirals 9–12 (Form B).

Dentition. Fig. J, 50, p. 192. The radula is so minute that it must be almost functionless. The only difference in detail between the radula of *sculpta* (Form, B, St. WS 773) and *scotiana* (St. 167) are that the former has better developed cusps on the laterals and a bifid inner marginal.

St. 45. 2·7 miles S 85° E of Jason Lt., South Georgia, 6 Apr. 1926, 238–270 m.
St. 167. Off Signy I., South Orkneys, 60° 50′ 30″ S, 46° 15′ 00″ W, 20 Feb. 1927, 244–344 m. (holotype and numerous paratypes).
St. WS 32. Mouth of Drygalski Fjord, South Georgia, 21 Dec. 1926, 225 m.

Genus **Prolacuna** Thiele, 1913.

n.nom. for *Sublacuna* Thiele, 1912 *non* Pilsbry, 1895

Type (o.d.): *Sublacuna indecora* Thiele (=*Frigidilacuna* Tomlin, 1930, another substitute for *Sublacuna* Thiele, 1912)

Prolacuna indecora (Thiele)

Sublacuna indecora Thiele, 1912, p. 195, pl. 12, fig. 4; pl. 15, fig. 19.
Sublacuna indecora Smith, 1915, p. 66.
Sublacuna indecora Eales, 1923, p. 21.

Type locality. Gauss Station, Davis Sea.

St. 1660. Ross Sea, 74° 46·4′ S, 178° 23·4′ E, 27 Jan. 1936, 351 m.

Range. Davis Sea to Ross Sea.

Eales (loc. cit. pp. 21–3) figured the operculum, jaws and radula which, together with general anatomical considerations, show that the genus is Naticoid. It differs from other Naticoids in two unimportant details—the absence of a 'veil' over the snout and the coalescence of the tentacle bases in the mid-dorsal line.

According to Thiele (1912) the genus includes the following three species: *Sublacuna trilirata* Thiele, 1912, Gauss Station; *Lacuna macmurdensis* Hedley (1911) 10–20 fathoms, Cape Royds; and *Lacuna notorcadensis* Melvill & Standen (1907), Scotia Bay, South Orkneys, 9–10 fathoms.

It is doubtful if these heavily spirally keeled species are really congeneric with the smooth *indecora*.

Prolacuna? macmurdensis (Hedley)

Lacuna macmurdensis Hedley, 1911, p. 4, pl. 1, fig. 6.

Type locality. 10–20 fathoms, Cape Royds, Ross Sea.

St. 1660. Ross Sea, 74° 46·4′ S, 178° 23·4′ E, 27 Jan. 1936, 351 m.

Genus Tectonatica Sacco, 1890

Type (monotypy): *Natica tectula* Bonelli, Pliocene, Italy

Tectonatica impervia (Philippi) Pl. X, fig. 62

Natica impervia Philippi, 1845*a*, 11, fig. 6.
Natica impervia Hupé (Gay), 1854, p. 221.
Natica impervia Tryon, 1886, p. 31, pl. 9, fig. 66.
Natica impervia Rochebrune & Mabille, 1889, p. H 34.
Natica impervia Strebel, 1906, p. 134, pl. XI, fig. 60.
Natica impervia Strebel, 1908, p. 61.
Natica impervia Melvill & Standen, 1912, no. 18, p. 348.

TYPE LOCALITY. Strait of Magellan.

St. 51. Off Eddystone Rock, East of Falkland Is., 4 May 1926, 105–115 m.
St. 159. Off South Georgia, 53° 52′ 30″ S, 36° 08′ 00″ W, 21 Jan. 1927, 160 m.
St. WS 795. North of Falkland Is., 46° 14′ S, 60° 24′ W, 18 Dec. 1931, 157–161 m.
St. WS 838. Between Falkland Is. and Strait of Magellan, 53° 11′ 45″ S, 65° 00′ 00″ W, 5 Feb. 1932, 148 m.

These shells are characterized by a massive funicle which fills the umbilicus and is defined on its outer edge by a crescentic grove. The operculum is white and calcareous except for a thin horny layer on the inner side. The exterior is smooth, without sulci. The 'Discovery' examples have been compared with Falkland Islands material from the British Museum.

Strebel (1908) described a var. *major* from Paulet Island, 100–150 m., but I have not seen examples.

DENTITION. Fig. J, 46, p. 192. The radula conforms in general features with that most commonly found in Naticoids. The central tooth is tricuspid, but the side cusps are much shorter than the central, which reaches right to the basal margin. The laterals have a large centre cusp with a very weak one on each side. The inner marginal is simple, long and slender, the outer shorter, more robust and bifid at the tip, a reversal of the usual arrangement, for in all other instances known to me it is the inner marginal that is the bifid member.

Several authors (Dall, 1892; Woodring, 1928; Finlay & Marwick, 1937) have synonymized *Cryptonatica* Dall, 1892 (type *Natica clausa* Brod. & Sowb.), but the dentition of this Arctic species does not conform with that of *impervia*. In *clausa* (Troschel, 1861, pl. 14, fig. 14), the central has a single large cusp and the marginals are both simple.

Since the radula and opercular features are unknown quantities for the Pliocene genotype of *Tectonatica*, I am at present justified only in disassociating *impervia* from *Cryptonatica*.

RANGE. Strait of Magellan (type); Tierra del Fuego, 36 m. (Strebel); off Falkland Is., 105–161 m.; Burdwood Bank, Falklands area, 56 fathoms (Melvill & Standen); South Georgia; Paulet I., 100–150 m. (var. *major*).

Family LAMELLARIIDAE

Genus Lamellaria Montagu, 1815

Type: *Lamellaria perspicua* Linn.

Lamellaria patagonica Smith

Lamellaria patagonica Smith, 1881, p. 32, pl. 4, figs. 9, 9*a*, 9*b*.
Lamellaria patagonica Rochebrune & Mabille, 1889, p. H 36.

TYPE LOCALITY. Trinidad Channel, 30 fathoms, Patagonia.

St. 56. Sparrow Cove, Port William, East Falkland Is., 16 May 1926, 10½–16 m.

One example only, easily recognized by the dirty yellow ground colour of the mantle, which is lined and blotched with vandyke brown, as described by Smith.

Lamellaria sp. A

The examples recorded below are probably *L. fuegoensis* Strebel (1906), but owing to hardening of the animal in alcohol and the extreme fragility of the shell I was unable to extract any shells intact.

Dentition. Fig. J, 53, p. 192. St. WS 867. The central tooth is the characteristic saddle-shape, but the cusps are very poorly developed. The laterals are massive, of typical shape, and bear prominent denticles along the upper and lower cutting edges.

St. WS 243. Between Falkland Is. and Patagonia, 51° 06′ S, 64° 30′ W, 17 July 1928, 144–141 m.
St. WS 867. Between Falkland Is. and Patagonia, 51° 10′ S, 64° 15·5′ W, 29 Mar. 1932, 137–144 m.

Lamellaria elata Strebel

Lamellaria elata Strebel, 1906, p. 146, pl. 11, fig. 72.

Type locality. Puerto Condor, Patagonia.

St. WS 81. 8 miles N 11° W of North I., West Falkland Is., 19 Mar. 1927, 81–82 m.

Dentition. Very similar to that of 'sp. A'. Central tooth saddle-shaped with a broad, short, central cusp and five denticles on each side of it. Laterals massive and hooked with prominent denticles along both the upper and lower cutting edges.

Genus Marseniopsis Bergh, 1886

Type (Thiele, 1929): *Marseniopsis pacifica* Bergh

Marseniopsis pacifica Bergh

Marseniopsis pacifica Bergh, 1886, p. 19, pl. 1, figs. 7–27.

Type locality. Kerguelen I.

St. 42. Off mouth of Cumberland Bay, South Georgia, 1 Apr. 1926, 120–204 m.
St. 167. Off Signy I., South Orkneys, 60° 50′ 30″ S, 46° 15′ W, 20 Feb. 1927, 244–344 m.
St. 190. Bismarck Strait, Palmer Archipelago, 64° 56′ S, 65° 35′ W, 24 Mar. 1927, 93–130 m.

Dentition. Formula 2+1+1+1+2. The central tooth is narrow with a deep entire base, not saddle-shaped as in *Lamellaria*, and there is a long, narrow, central cusp with four denticles on each side. The lateral is massive and hooked with four serrations near the lower cutting edge. In addition, there are paired smooth slender marginals. The radula in a St. 190 example is exactly as figured by Bergh.

Unfortunately, the specimens were too contracted and hardened to extract the shell, but since the figured central tooth of both *murrayi* Bergh, 1886, and *conica* Smith (Eales, 1923) are very different in shape and detail, I have no hesitation in assuming that the 'Discovery' material represents Bergh's *pacifica*. Further, the dorsal surface of the animal in the material listed above is covered with depressed, rounded tubercles exactly as in Bergh's description of *pacifica*.

Family TRICHOTROPIDAE

Genus Antitrichotropis n.g.

Type: *Trichotropis antarctica* Thiele, 1912

The above new genus is necessary for the Antarctic species recorded below, which differ from the boreal *Trichotropis* in being depressed turbinate and in having simple lateral teeth without denticles.

Antitrichotropis antarctica (Thiele)

Trichotropis antarctica Thiele, 1912, p. 197, pl. 12, fig. 6.
Trichotropis antarctica Smith, 1915, p. 67, pl. 1, fig. 6.
Trichotropis antarctica Hedley, 1916, p. 50.

TYPE LOCALITY. Gauss Station, Davis Sea.

St. 1660. Ross Sea, 74° 46·4′ S, 178° 23·4′ E, 27 Jan. 1936, 351 m.

RANGE. McMurdo Sound, 300 fathoms (Smith, 1915); Adelie Land, 288 fathoms (Hedley, 1916).

DENTITION. Thiele (1912).

Unfortunately, Melvill & Standen (1912, 26 August) used the same combination '*Trichotropis antarctica*' for a different shell from Burdwood Bank in 56 fathoms, but they subsequently (1916) renamed it *Trichotropis bruceana*. Melvill & Standen's shell is in very poor preservation, and the figure suggests an immature *Trophon* (*Xymenopsis*) rather than a *Trichotropis*.

Antitrichotropis wandelensis (Lamy)

Lacuna wandelensis Lamy, 1907, p. 5, pl. 1, figs. 5–7.
Lacuna wandelensis Melvill & Standen, 1912, p. 349.

TYPE LOCALITY. Wandel I., Palmer Archipelago.

St. 175. Bransfield Strait, South Shetlands, 63° 17′ 20″ S, 59° 48′ 15″ W, 2 Mar. 1927, 200 m.
St. 195. Admiralty Bay, King George I., South Shetlands, 62° 07′ S, 53° 28′ 30″ W, 30 Mar. 1927, 391 m.

Only one example from each of the above stations. They are minus the animal, but the epidermis is well preserved and shows odd tufts of hair-like processes disposed at regular intervals on the carinae. Lamy's type is evidently denuded of epidermis.

RANGE. Recorded also from Scotia Bay, South Orkneys, 9–10 fathoms (Melvill & Standen, 1912).

Genus Trichoconcha Smith, 1907

Type (monotypy): *T. mirabilis* Smith, 1907

Trichoconcha mirabilis Smith

Trichoconcha mirabilis Smith, 1907, p. 6, pl. 1, figs. 7, 7*b*.
Torellia (*Trichoconcha*) *mirabilis* Thiele, 1912, p. 197.
Torellia (*Trichoconcha*) *mirabilis* Smith, 1915, p. 68.
Trichoconcha mirabilis Hedley, 1916, p. 50.
Trichoconcha mirabilis Eales, 1923, p. 14.

TYPE LOCALITY. Off Coulman I. in 100 fathoms.

St. 123. Off mouth of Cumberland Bay, South Georgia. From 4·1 miles N 54° E of Larsen Point to 1·2 miles S 62° W of Merton Rock, 15 Dec. 1926, 230–250 m.
St. 140. Stromness Harbour to Larsen Point, South Georgia. From 54° 02′ S, 36° 38′ W to 54° 11′ 30″ S, 36° 29′ W, 23 Dec. 1926, 122–136 m.
St. 144. Off mouth of Stromness Harbour, South Georgia. From 54° 04′ S, 36° 27′ W to 53° 58′ S, 36° 26′ W, 5 Jan. 1927, 155–178 m.
St. 148. Off Cape Saunders, South Georgia. From 54° 03′ S, 36° 39′ W to 54° 05′ S, 36° 36′ 30″ W, 9 Jan. 1927, 132–148 m.
St. 149. Mouth of East Cumberland Bay, South Georgia. From 1·15 miles N 76½° W to 2·62 miles S 11° W of Merton Rock, 10 Jan. 1927, 200–234 m.

RANGE. Coulman I., Ross Sea (Smith); Commonwealth Bay, 350–400 fathoms; and off Mertz Glacier Tongue, Adelie Land, 157 fathoms; Drygalski I., Davis Sea (Hedley); Gauss Station (Thiele); South Georgia, 122–250 m. ('Discovery').

The 'Discovery' records extend the range of this species to more than half the circumference of the Antarctic continent.

Major diameter 29 mm.; minimum diameter 20·5 mm.; height 19 mm. (holotype).

Major diameter 42 mm.; minimum diameter 31·0 mm.; height 31 mm. (St. 42).

DENTITION. Figured by Eales (1923, loc. cit. p. 15, fig. 12).

Genus **Neoconcha** Smith, 1907

Type (monotypy): *Neoconcha vestita* Smith

Neoconcha vestita Smith

Neoconcha vestita Smith, 1907*a*, p. 6, pl. 1, figs. 11–11*c*.
Neoconcha vestita Smith, 1915, p. 68, pl. 1, fig. 8.
Neoconcha vestita Eales, 1923, p. 11.

TYPE LOCALITY. Off Coulman I., 100 fathoms, Ross Sea.

St. 1652. Ross Sea, 75° 56′ 2″ S, 178° 35′ 5″ W, 23 Jan. 1936, 567 m.

Major diameter 7 mm.; height 8 mm. (holotype).
Major diameter 28 mm.; height 23 mm. (Smith, 1915).
Major diameter 17·5 mm.; height 17 mm. (St. 1652).

DENTITION. Figured by Eales (1923, loc. cit. p. 12, fig. 9).
The buff-coloured epidermis is like a heavy coating of cotton-wool.

Genus **Discotrichoconcha** n.g.

Type: *Discotrichoconcha cornea* n.sp.

This new genus is considered necessary for a small species of the same horny shell substance as *Trichoconcha* but much smaller, paucispiral and discoidal, being vertically compressed like the fresh-water genus *Planorbis*. The few rapidly increasing whorls coupled with the extreme compression of the shell results in a curious broad, very shallow, rectangular aperture.

The only example is too fragile to attempt extracting the animal, which is retracted so much that the operculum is not visible. Its great departure in shape and small size compared with *Trichoconcha* seems to warrant generic separation.

Discotrichoconcha cornea n.sp., Pl. VII, fig. 21

Shell small, horny, discoidal-planorbid, of $2\frac{3}{4}$ whorls, including a blunt, low, rounded, microscopically spirally striated protoconch of one whorl. Spire slightly sunken; umbilicus broad, open, about one-fifth diameter of base, showing all the whorls, even the protoconch. Sculpture consisting of dense arcuate lamellar epidermal processes, each set with numerous short, hair-like filaments. Colour yellowish brown. The aperture is reflected over the parietal wall and slightly dilated all round; the shape is rectangular, about three times wider than high.

Major diameter 5·3 mm.; minimum diameter 4·0 mm.; height 1·7 mm.

TYPE LOCALITY. St. 182. Schollaert Channel, Palmer Archipelago, 64° 21′ S, 62° 58′ W, 14 Mar. 1927, 278–500 m. (holotype only).

Family CREPIDULIDAE

Genus **Crepipatella** Lesson, 1831

Type: *Crepidula dilatata* Lamarck

Crepipatella dilatata (Lamarck)

Crepidula dilatata Lamarck, 1822, p. 25.
Crepidula pallida Broderip, 1835, p. 204.
Crypta subdilitata Rochebrune & Mabille, 1889, p. H 37, pl. 4, fig. 11.
Crepidula dilatata Strebel, 1906, p. 166, pl. 12, fig. 87*a*, *b*; pl. 13, figs. 100*a*, *b*, 101*a*, *b*.
Crepidula dilatata Melvill & Standen, 1907, p. 130.
Crepidula dilatata Melvill & Standen, 1914, p. 117.

TYPE LOCALITIES.? (*dilatata*); Falkland I. (*pallida*); Orange Bay, Patagonia (*subdilitata*).

St. 55. Entrance to Port Stanley, East Falkland Is., 2 cables S 24° E of Navy Point, 16 May 1926, 10–16 m.

Family CALYPTRAEIDAE

Genus Trochita Schumacher, 1817

Type: *Patella trochiformis* Gmelin = *Infundibulum* of Tryon, 1886 (*non* Montfort, 1810)*

This genus covers shells with a circular outline, a conical spire with a central nucleus and a moderate sigmoid outline to the edge of the septum. The shape and central position of the nucleus recall both the English *Calyptraea sinensis* Linn. and the New Zealand genus *Zegalerus*. The former, however, has a more elaborate septum which terminates as a tongue forming both a spiral umbilicus and a deep sinus at its outer extremity. In *Zegalerus* the septum is gently concave to almost straight. A second Austro-neozelanic genus, *Sigapatella*, has a simple arcuate septum as in *Zegalerus*, but the shell has more rapidly increasing whorls with the apex off centre (see Fig. E).

The radula of *Trochita trochiformis* (Fig. J, 40) differs from that of *Calyptraea sinensis* (Fig. J, 38) and *Sigapatella terraenovae* (Fig. J, 39) in having a central tooth with a massive cusp and very weak side denticles, and perfectly plain marginals.

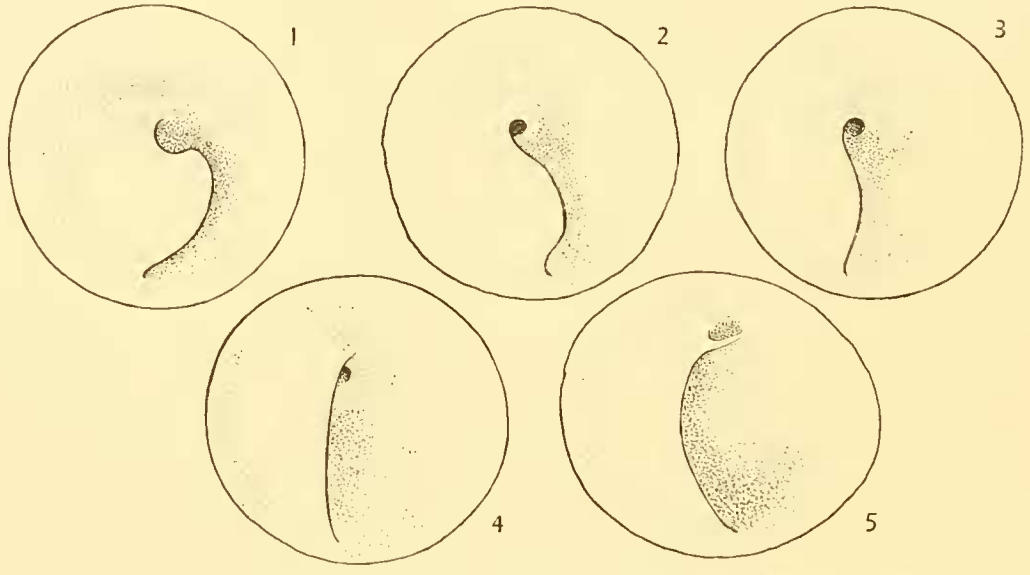

Fig. E. Septa in Calyptraeidae. (1) *Calyptraea sinensis* (Linn.), England. (2) *Trochita trochiformis* (Gmelin), Falkland Is. (3) *Trochita georgiana* n.sp., South Georgia. (4) *Zegalerus tenuis* (Gray), New Zealand. (5) *Sigapatella novaezelandiae* Lesson, New Zealand.

Trochita trochiformis (Gmelin)

Patella trochiformis Gmelin, 1791, p. 3693.
Patella trochiformis Dillwyn, 1817, p. 1018.
Calyptraea radians Lamarck, 1836, p. 626.
Calyptraea costellata Philippi, 1845*a*, p. 62.
Trochita corrugata Reeve, 1858, fig. 96.
Calyptraea (*Infundibulum*) *radians* Tryon, 1886, p. 121, pl. 35, figs. 84–88.
Calyptraea costellata Strebel, 1906, p. 159, pl. 13, figs. 88–92, 94–97.
Calyptraea costellata Melvill & Standen, 1907, p. 100.
Calyptraea costellata Strebel, 1908, p. 59.

* Montfort's name would undoubtedly have priority if the extremely poor figure of his genotype, '*Infundibulum typus*', was determinable and found to be a Calyptraeid as the figure suggests. Thiele (1929, p. 55) interprets Montfort's *Infundibulum* as a section of *Trochus*.

TYPE LOCALITIES. 'Tranquebar et insulas Falkland' (*trochiformis*); Peru and Chile (*radians*); Patagonia (*costellata*).

St. 51. Off Eddystone Rock, East Falkland Is. from 7 miles N 50° E to 7·6 miles N 63 E of Eddystone Rock, 4 May 1926, 115 m.
St. WS 88. Off Tierra del Fuego, 54° S, 64° 57′ 30″ W, 6 Apr. 1927, 118 m.
St. WS 92. Between Falkland Is. and Patagonia, 51° 58′ 30″ S, 65° 01′ W, 8 Apr. 1927, 145–143 m.
St. WS 841. Burdwood Bank, 54° 11′ 45″ S, 60° 21′ 30″ W, 6 Feb. 1932, 110–120 m.

DENTITION. Fig. J, 40, p. 192. St. WS 92.

Gay (1854, Hupé, p. 232) recognizes both *trochiformis* (=*radians*) and *costellata*, the former with a range from Peru to Chile and the latter in the Strait of Magellan.

If two species are represented, it is important to ascertain the correct type locality for *trochiformis*, which is quoted as 'Tranquebar et insulas Falkland'. Dillwyn's (1817) entry for this species reads 'Inhabits the coasts of the Falkland Islands, Favanne. Tranquebar, Chemnitz'. It seems that the Falklands can be assumed to be the type locality and in order to obviate further confusion I nominate these islands as type locality for the radially ribbed *Trochita* of that area.

Trochita clypeolum Reeve

Trochita clypeolum Reeve, 1859, pl. 3, fig. 14.
Trochita clypeolum Rochebrune & Mabille, 1889, VI, p. 37.
Calyptraea costellata form *clypeolum* Melvill & Standen, 1907, p. 100.
Calyptraea costellata clypeolum Strebel, 1906, p. 159, pl. 13, fig. 93*a*, *b*.

TYPE LOCALITY. Strait of Magellan.

St. 51. Off Eddystone Rock, East Falkland Is., from 7 miles N 50° E to 7·6 miles N 63° E of Eddystone Rock, 4 May 1926, 115 m.
St. 1321. From 4 miles S 72° W to 5·6 miles S 75° W of East Tussac Rock, Cockburn Channel, Tierra del Fuego, 16 Mar. 1934, 66 m.
St. WS 85. 8 miles S 66° E of Lively I., East Falkland Is., 25 Mar. 1927, 79 m.
St. WS 86. Burdwood Bank, 53° 53′ S, 60° 34′ 30″ W, 3 Apr. 1927, 151 m.
St. WS 92. Between Falkland Is. and Patagonia, 51° 58′ 30″ S, 65° 01′ W, 8 Apr. 1927, 145–143 m.
St. WS 93. 7 miles S, 80° W of Beaver I., West Falkland Is., 9 Apr. 1927, 133 m.
St. WS 97. North-west of Falkland Is., 49° 00′ 30″ S, 61° 58′ W, 18 Apr. 1927, 146 m.
St. WS 214. North of Falkland Is., 48° 25′ S, 60° 40′ W, 31 May 1928, 208 m.
St. WS 221. Off East Patagonia, 48° 23′ S, 65° 10′ W, 4 June 1928, 76 m.
St. WS 231. North of Falkland Is., 50° 10′ S, 58° 42′ W, 4 July 1928, 167–159 m.
St. WS 237. North of Falkland Is., 46° S, 60° 05′ W, 7 July 1928, 150 m.
St. WS 243. Between Falkland Is. and Patagonia, 51° 06′ S, 64° 30′ W, 17 July 1928, 144–141 m.
St. WS 244. West of Falkland Is., 52° S, 62° 40′ W, 18 July 1928, 253 m.
St. WS 871. North of Falkland Is., from 50° 29′ S, 58° 52′ W to 50° 31′ S, 58° 48′ W, 6 Nov. 1931, 148 m.
St. WS 813. Off East Patagonia, 51° 35′ 15″ S, 67° 16′ 15″ W, 13 Jan. 1932, 106–102 m.
St. WS 818. West of Falkland Is., 52° 30·5′ S, 63° 27′ W, 17 Jan. 1932, 278–285 m.

Trochita georgiana n.sp., Pl. VII, fig. 22

Shell small, white, smooth except for irregular concentric growth wrinkles, and covered with a thin pale buff epidermis which slightly overlaps the peristome. Conical, of circular outline, with the apex almost central. Protoconch of $1\frac{1}{2}$ loosely wound, rapidly increasing whorls, first smooth with a median blunt keel but later developing five spiral ribs, two above and three below the keel. The actual apex is slightly excavated. The protoconch and succeeding whorl form a narrow dome-shaped spire in relation to the last whorl, which is more spread. The shell is very similar to that of *clypeolum* except for the outline of the septum, which is only weakly sigmoid, the outer sinus being only slightly developed. It

approaches the New Zealand genus *Zegalerus*, which is of similar shape but has an even more simplified septum which is merely shallowly concave.

Dentition. The paired marginals are plain as in *trochiformis*, but the main cusp on both the central and laterals is much weaker.

Height 7·5 mm.; diameter 12·5 mm. (holotype).

Type locality. St. 160. Near Shag Rocks, West of South Georgia, 53° 43′ 40″ S, 40° 57′ W, 7 Feb. 1927, 177 m.

St. 27. West Cumberland Bay, South Georgia, 3·3 miles S 44° E of Jason Lt., 15 Mar. 1926, 110 m.
St. 140. Stromness Harbour to Larsen Point, South Georgia, 23 Dec. 1926, 122–136 m.
St. 152. North of South Georgia, 53° 51′ S, 36° 18′ 30″ W, 17 Jan. 1927, 245 m.
St. 156. North of South Georgia, 53° 51′ S, 36° 21′ 30″ W, 20 Jan. 1927, 200–236 m.
St. 159. North of South Georgia, 53° 52′ 30″ S, 36° 08′ W, 21 Jan. 1927, 160 m.
St. WS 33. Off south end of South Georgia, 54° 59′ S, 35° 24′ W, 21 Dec. 1926, 130 m.

Family STRUTHIOLARIIDAE

Genus Perissodonta Martens, 1878

Type (monotypy): *Struthiolaria mirabilis* Smith, 1875, Recent, Kerguelen I.
= *Struthiolarella* Steinmann & Wilckens, 1908

Type (o.d.): *Struthiolaria ameghinoi* v. Ihering, Oligocene, South America

Members of the Struthiolariidae are restricted to southern lands, and their distribution can be accounted for only by an assumed former closer unity of these lands, either in the shape of the early Gondwanaland Continent of geologists, or by an enlarged Antarctica with northern radial extensions.

The family was already well developed in the Upper Cretaceous of both Patagonia and New Zealand in the form of the gerontic genus *Conchothyra*, which shows relationship with the more widely distributed Aporrhaidae.

In the Tertiary the Struthiolariidae were represented in Patagonia by *Struthiolarella* (which seems to equal the Recent *Perissodonta*), in New Zealand by a series of genera, *Monalaria*, *Struthiolaria*, *Callusaria* and *Pelicaria*, and in southern Australia by *Tylospira*.

The distribution of living members of the family is as follows: South Georgia (*Perissodonta*, one species), Kerguelen Island (*Perissodonta*, one species), New Zealand (*Struthiolaria* and *Pelicaria*, one species and a subspecies of each) and south-eastern Australia (*Tylospira*, one species).

Marwick (1924), in his excellent monograph of the Struthiolariidae, referred the Kerguelen species to *Struthiolarella* and omitted reference to Marten's *Perissodonta*. This genus was again overlooked by Finlay & Marwick (1937, p. 15), when a further valuable contribution was made to the phylogeny of the family.

In the light of the adult characteristics of *Perissodonta*, revealed below for the first time by the production of South Georgian examples with a fully grown, deeply sinused peristome, it seems certain that the South American Oligocene? *ornata* (Sowerby) is identical with the recent *P. georgiana*. Both species are presumed to be close to their respective genotypes.

Unfortunately, there are no well-preserved apices in the several South Georgian examples, but opercular and radular characters were noted.

The operculum in *P. georgiana* is elongated leaf-shaped with an attenuated terminal nucleus and a median sharply defined sulcus. In both *Struthiolaria papulosa* and *Pelicaria vermis* the operculum is shaped like a reversed comma, for it is oval, but with a narrow hooked terminal nucleus. In *papulosa* there are several radial planes, but these are ill defined (exaggerated in the text figure) compared with

the deep sulcus in *georgiana*. In *vermis* there are no radial planes, just a slight strengthening rib along the lower inner margin (Fig. N, 120, 121, p. 196).

I have not seen the operculum of *Perissodonta mirabilis*, but Smith's figure (1877, pl. fig. 3*a*) shows a prominent hook, but this may have been due to warping of the operculum in drying and the breaking away of the lower outer margin. However, a significant similarity to the *georgiana* operculum is the median sulcus which is clearly shown in Smith's figure.

Some interesting points arise from study of the dentition of three of the Recent genera: *Struthiolaria*, *Pelicaria* and *Perissodonta* (Fig. I, 35–37, p. 191). First, *Struthiolaria* and *Pelicaria*, as one would expect, show closer alliance to each other than either do to *Perissodonta*, which stands apart by the duplication of its marginals to four or five teeth and the erect, narrowly triangular shape of the laterals as opposed to the rectangular outline of these teeth in both *Struthiolaria* and *Pelicaria*. The triangular-shaped lateral of *Perissodonta* approaches that of *Aporrhais*, and this feature, coupled with that of the deep labial sinus, makes the derivation of the Struthiolariidae from the Aporrhaidae a very reasonable assumption.

Duplication of marginals is evidently an archaic stable feature of *Perissodonta*, for it occurs in the four examples of *georgiana* studied, one of which was prepared by Mr John Morton of Auckland University College, who first drew my attention to this fact. Fischer (1884, Text-fig. 442) gives a curious rendering of the radula of the Kerguelen *P. mirabilis* (as *Struthiolaria costulata* Martens), in which the laterals and marginals are drawn in an unnaturally erect position, but the essential points, five pairs of marginals and tall narrow laterals, are shown.

In *Perissodonta georgiana* all the teeth are denticulate to some degree. The central has blunt, irregular denticles that vary greatly even from tooth to tooth in the same radula. The lateral has a broadly rounded terminal cusp followed by a series of denticles, the innermost marginal is intermediate between the lateral and the slender marginals and bears ten to twelve small but regular denticles, while the outer marginals have only weak serrations towards their blunt, narrowly rounded extremities.

Although both *Struthiolaria* and *Pelicaria* have normal taenioglossid paired marginals and almost identical rectangular laterals, the central tooth is distinctive for each genus. That of *Struthiolaria* is square-based with a multiserrate, broadly triangular cutting edge that does not extend to half the depth of the base. That of *Pelicaria* is oblong, more broad than deep, but has a very large narrowly triangular serrated cusp that extends far below the base. In *Pelicaria* both marginals are plain, but in *Struthiolaria* the inner one is weakly denticulate on its lower inner margin. Unfortunately, the dentition of *Tylospira* is not known.

Perissodonta georgiana Strebel, Pl. VIII, figs. 40–42.

Perissodonta mirabilis georgiana Strebel, 1908, p. 46, pl. 3, figs. 33*a*, *b*, *c*.

Type locality. Cumberland Bay, South Georgia, 252–310 m.

St. 1941. Leith Harbour, South Georgia, 29 Dec. 1936, 38 m.
St. WS 33. Off Southern end of South Georgia, 54° 59′ S, 35° 24′ W, 2 Dec. 1926, 130 m.
St. WS 62. Wilson Harbour, South Georgia, 19 Jan. 1927, 26–83 m.

Dentition. Fig. I, 35, p. 191, *georgiana*; Fig. I, 36, *Struthiolaria papulosa*, Takapuna, Auckland, New Zealand; Fig. I, 37, *Pelicaria vermis*, Auckland Harbour, New Zealand.

Operculum. Fig. N, 120, *georgiana*; Fig. N, 122, *Struthiolaria papulosa*, Fig. N, 121, p. 196, *Pelicaria vermis*.

Family CYMATIIDAE

Genus Fusitriton Cossman 1903

Type (o.d.): *Triton cancellatum* Lamarck = *Cyrotritonium* Martens 1903, Type

Lampresia murrayi Smith = *Priene* of Cossmann, 1906, *non* H. & A. Adams, 1858

Fusitriton cancellatum (Lamarck)

Murex magellanicus Chemnitz, 1788, p. 275, pl. 184, fig. 1570 (non binom.).
Triton cancellatum Lamarck, 1822, p. 187.
Triton cancellatum Lamarck, 1845, p. 638.
Fusus cancellatus Reeve, 1848, pl. 16, fig. 62.
Priene magellanica Rochbrune & Mabille, 1889, p. H 42.
Triton cancellatus Strebel, 1905*b*, p. 647, pl. 23, fig. 50*a–e*.
Triton cancellatum (Gay) Hupé, 1854, p. 182.
Triton cancellatus Tryon, 1881, p. 34, pl. 16, fig. 164.

TYPE LOCALITY. Strait of Magellan.

St. WS 71. 6 miles N 60° E of Cape Pembroke Lt., East Falkland Is., 51° 38′ 00″ S, 57° 32′ 30″ W, 23 Feb. 1927, 82–80 m.
St. WS 80. Between Falkland Is. and Patagonia, 50° 58′ 00″ S, 63° 39′ 00″ W to 50° 55′ 30″ S, 63° 36′ 00″ W, 14 Mar. 1927, 152–156 m.
St. WS 83. 14 miles S 64° W of George I., East Falkland Is., 24 Mar. 1927, 137–129 m.
St. WS 85. 8 miles S 66° E of Lively I., East Falkland Is., 52° 09′ 00″ S, 58° 14′ 00″ W to 52° 08′ 00″ S, 58° 09′ 00″ W, 25 Mar. 1927, 79 m.
St. WS 109. North of Falkland Is., 50° 19′ 00″ S, 58° 27′ 00″ W to 50° 18′ 36″ S, 58° 30′ 00″ W, 26 Apr. 1927, 145 m.
St. WS 225. North-west of Falkland Is., 50° 20′ 00″ S, 62° 30′ 00″ W, 9 June 1928, 162–161 m.
St. WS 243. Between Falkland Is. and Patagonia, 51° 06′ 00″ S, 64° 30′ 00″ W, 17 July 1928, 144–141 m.
St. WS 250. North-east of Falkland Is., 51° 45′ 00″ S, 57° 00′ 00″ W, 20 July 1928, 251–313 m.
St. WS 756. North of Falkland Is., 50° 53′ S, 60° 00′ W, 10 Oct. 1931, 118–90 m.
St. WS 799. North-west of Falkland Is., 48° 04′ 15″ S, 62° 48′ 07″ W, 21 Dec. 1931, 141–137 m.
St. WS 804. North-west of Falkland Is., 50° 23·5′ S, 62° 47′ W, 6 Jan. 1931, 143–150 m.
St. WS 866. Between Falkland Is. and Patagonia, 50° 36′ S, 64° 15′ W to 50° 39·5′ S, 64° 15′ W, 29 Mar. 1932, 137–144 m. (juvenile dead shells).
St. WS 867. Between Falkland Is. and Patagonia, 51° 10′ S, 64° 15·5′ W, 30 Mar. 1932, 150–147 m. (half-grown dead shells).
St. 222. St. Martin's Cove, Hermit I., Cape Horn, 23 Apr. 1927, 30–35 m.

RANGE. Magellan and Falkland I. Watson (1886) recorded *cancellatum* from off Marion I., 46° 48′ S, 37° 49′ 30″ E, 69 fathoms. I have not seen this specimen, but it most likely represents a new species.

The finding of numerous examples of this species from a range of stations around the Falkland Islands is of interest, as the species has not hitherto been recorded from this locality. These new records are probably due to the fact that the Discovery Committee's 'William Scoresby' used the otter-trawl extensively in these waters, thus covering a far greater area and securing large, sparsely distributed, species, which previously had only been obtained in small specimen dredges by the merest chance.

The known distribution of the genus is now as follows (See Figs. A and B):

cancellatum (Lamarck 1822): Strait of Magellan; Tierra del Fuego; South Patagonia and Falkland Islands to Patagonia in 30-251 m.;

scaber (King & Broderip, 1831): Valparaiso, 7–45 fathoms to Bolivia (Tryon);

rudis (Broderip, 1833): Chile to Peru (Tryon, Rochebrune & Mabille, 1889);

oregonensis (Redfield, 1848): San Diego, California, Bering Sea and Japan;

murrayi (Smith, 1891): South Africa, off Cape of Good Hope, 150 fathoms and Agulhas Bank, 40 fathoms;

aurora Hedley (1916): Off South Australia, 35° 55′ 30″ S, 134° 18′ 00″ E, 1800 fathoms;

retiolum (Hedley, 1914): Off Green Cape and Gabo Island, New South Wales, Australia, 50–100 fathoms;

laudandum Finlay (1926): New Zealand, Otago Heads, 40 fathoms (type); Auckland Islands; Ninety Mile Beach, North Auckland.

With these additional records for the genus the probable routes of dispersal become more evident. Thus the western coasts of the Americas are considered to have extended the range of this southern genus to the North Pacific via California, Alaska, the Aleutian Chain and thence southward to Japan. The Australian and New Zealand occurrences no doubt had their origin in the Subantarctic rather than as a further southward extension from Japan. The 'Challenger' record ascribed to *cancellatus* from Marion Island is strongly suggestive of the former supposition. This and the South African occurrence indicate an Atlantic-Indian Ocean cross-ridge source which is supported by the recently reported occurrence in South African waters of *Parmaphorella* and *Glypteuthria*, both of which are characteristic Magellan genera (see Tomlin, 1932, pp. 163–4).

THE BUCCINACEA

The whelks are a vigorous, highly plastic group of world-wide range, but especially diversified in the polar regions of both hemispheres.

In 1929 (pp. 57–9) I proposed a classification based largely upon radula and opercula characters, and advocated the use of four families: the Buccinidae, Neptuniidae, Buccinulidae and Cominellidae. Further consideration, however, indicated that the classification I proposed is not nearly so clear-cut as could be desired. Thiele (1929, pp. 305–19) grouped all the genera, covered in the following discussion, in the Buccinidae without the use of either subfamilies or sections.

However, none of the antarctic and subantarctic whelks appears to have much in common with the northern *Buccinum*, which has an ovate operculum with a median submarginal nucleus, and a radula with more than three cusps on both the central and lateral teeth. The southern whelks have the operculum either leaf-shaped with a terminal nucleus or ovate with a paucispiral subterminal nucleus. They appear therefore to be derivatives of the Neptuniidae rather than of the Buccinidae.

Considerable radiation in form has taken place in the southern whelks, making necessary the employment of a series of genera. Not one of these genera, however, is closely similar to *Neptunea*, and I prefer to consider them members of a characteristic southern family, the Buccinulidae. The chief characteristics of the Buccinulidae are the tricuspid central tooth and an operculum with a terminal or subterminal nucleus. Diversity in the form of the lateral teeth, however, suggests the following subfamily grouping:

A. Cominellinae (central tooth tricuspid, lateral teeth bicuspid). *Pareuthria*, *Tromina*, *Notoficula*, *Falsimohnia** and *Glypteuthria*.* Correlatives are *Cominella* and *Fax*, New Zealand and Australia, *Phos*, tropical Pacific and *Searlesia*, North-west America.

B. Buccinulinae (central and lateral teeth tricuspid). *Chlanidota*, *Pfefferia*, *Neobuccinum*, *Probuccinum*, *Cavineptunea* and *Bathydomus*. In the last mentioned, the central tooth has an incipient cusp on each side of the central three and the middle cusp of the laterals is split into two or three small cusps. The sum of characters, however, indicates the genus as a near ally of *Chlanidota*. Correlatives are *Buccinulum*, *Aeneator* and *Verconella*, New Zealand, *Austrosipho* and *Berylsma*, Australia, and *Kelletia*, California.

* In *Falsimohnia* the central tooth has the cusps reduced to one and in *Glypteuthria* a third incipient cusp on the laterals results from bifurcation; otherwise they closely resemble *Pareuthria*.

C. Prosiphiinae (central tooth tricuspid, lateral teeth multicuspid). Typically, the laterals have a long basal projection, like a handle; without this projection but with lateral denticles, in *Proneptunea*; and combining the features of basal projection and lateral denticles, but minus the central tooth in *Meteuthria*, *Prosipho*, *Anomacme*, *Fusinella*, *Meteuthria*, *Proneptunea* and *Chlanidotella*. The *Prosipho* radula, including its variations, does not appear to occur outside Antarctic and Subantarctic seas.

The above arrangement is provisional only and is probably more convenient than real. It is advanced, however, as a step towards the unravelling of the complexity of southern Buccinoid development.

There is no reason why we should look for the origin of these shells from outside the Southern Ocean, for they could have developed in that region concurrently with the northern Buccinidae and Neptuniidae, a common ancestry being assumed in the geological past. It would seem that *Searlesia* (the West American *dira*) and *Kelletia* are both invading Buccinulidae from the south and conversely that the South African *Burnupena* is a true member of the northern Buccinidae.

In this connexion the present distribution of *Fusitriton* demonstrates the effectiveness of the continuity of the Americas with the Scotia Arc, and the Atlantic-Indian Ocean cross-ridge in giving that genus a bipolar circum-Pacific range.

Family BUCCINULIDAE

Subfamily COMINELLINAE

Genus Pareuthria Strebel, 1905

Type (s.d. Tomlin, 1932), *Fusus plumbeus* Philippi

A characteristic Subantarctic and Antarctic genus of small, elongately fusiform shells resembling *Euthria* and *Buccinulum* in shell features, but with bicuspid instead of tricuspid lateral teeth, which feature allies the genus with the Cominellinae. The protoconch is smooth and papillate, of about two whorls, and the operculum is leaf-shaped with a terminal nucleus.

The genus is best developed in the Magellan region, but extends eastwards to Campbell Island, New Zealand, and southwards to the Davis Sea.

Pareuthria fuscata (Bruguière)

Buccinum fuscatum Bruguière, 1789, p. 282.
Buccinum antarcticum Reeve, 1846, fig. 30.
Euthria antarctica Adams, 1858, p. 86.
Tritonium schwartzianum Crosse, 1861, p. 174, pl. 6, figs. 9, 10.
Fusus (*Euthria*) *fuscatus* Watson, 1886, p. 209.
Euthria fuscata Strebel, 1905*b*, p. 611, pl. 24, figs. 69–72, 74–79.
Euthria antarctica Lamy, 1905, p. 476.
Euthria fuscata Lamy, 1907, p. 2.
Euthria fuscata Melvill & Standen, 1907, p. 139.
Euthria (*Pareuthria*) *fuscata* Strebel, 1908, p. 28.
Euthria (*Pareuthria*) *fuscata* Melvill & Standen, 1914, p. 121.

TYPE LOCALITIES. ? (*fuscatum*); Falkland Is. (*antarcticum*).

St. 54. Port Stanley, East Falkland Is., 15 May 1926, Shore collecting.
St. 55. Entrance to Port Stanley, East Falkland Is., 2 cables S 24° E of Navy Point, 16 May 1926, 10–16 m.
St. 56. Sparrow Cove, Port William, East Falkland Is., 1½ cables N 50° E of Sparrow Point, 16 May 1926, 10½–16 m.
St. 58. Port Stanley, East Falkland Is., 19 May 1926, 1–2 m.

DENTITION. Fig. L, 69, p. 194.

RANGE. Strait of Magellan and Falkland Is.

Pareuthria magellanica (Philippi)

Buccinum magellanicum Philippi, 1848, p. 48, pl. 1, fig. 14.
Fusus rufus Hombron & Jacquinot, 1854, p. 107, pl. 25, fig. 3.
Euthria magellanica Strebel, 1905*b*, p. 601, pl. 24, figs. 57–68, 73.
Euthria magellanica Melvill & Standen, 1907, p. 109.
Euthria magellanica Strebel, 1908, p. 29.
Euthria (*Pareuthria*) *magellanica* Melvill & Standen, 1914, p. 121.

TYPE LOCALITY. Strait of Magellan.

St. 51. Off Eddystone Rock, East Falkland Is., from 7 miles N 50° E to 7·6 miles N 63° E of Eddystone Rock, 4 May 1926, 105–115 m.

Strebel (1905) recorded this from Port Stanley, 1 fathom, Falkland Islands and Melvill & Standen (1914) from low water, Roy Cove, Falkland Islands. All the fifty-one 'Discovery' examples are empty shells and may have washed down from shallow waters.

The species is not distinctive and may be only a smooth variation of *fuscata*.

Pareuthria plumbea (Philippi)

Fusus plumbeus Philippi, 1844, p. 108.
Euthria plumbea Strebel, 1905*b*, p. 600, pl. 24, figs. 52–54.
Euthria (*Pareuthria*) *plumbea* Strebel, 1908, p. 28.

TYPE LOCALITY. Strait of Magellan.

St. 724. Fortescue Bay, Magellan Strait, 16 Nov. 1931, 0–5 m.

Pareuthria rosea (Hombron & Jacquinot)

Fusus roseus Hombron & Jacquinot, 1854, p. 107, pl. 25, figs. 4, 5.
Euthria rosea Rochebrune & Mabille, 1889, p. 59.
Euthria rosea Strebel, 1905*b*, p. 616, pl. 21, figs. 1–4.
Euthria (*Pareuthria*) *rosea* Strebel, 1908, p. 28.
Euthria rosea Melvill & Standen, 1912, p. 355.

TYPE LOCALITY. Strait of Magellan.

St. 48. 8·3 miles N 53° E of William Point Beacon, Port William, Falkland Is., 3 May 1926, 115 m.
St. 51. Off Eddystone Rock, East Falkland Is., from 7 miles, N 50° E to 7·6 miles N 63° E of Eddystone Rock, 4 May 1926, 105–115 m.
St. WS 92. Between Falkland Is. and Patagonia, 52° S, 65° W to 51° 57′ S, 65° 02′ W, 8 Apr. 1927, 145–143 m.
St. WS 94. Between Falkland Is. and Patagonia, 50° S, 65° W to 50° 00′ 30″ S, 64° 55′ 30″ W, 16 Apr. 1927, 110–126 m.
St. WS 797. Off Cape Blanco, Patagonia, 19 Dec. 1931, 117 m.
St. WS 867. Between Falkland Is. and Patagonia, 51° 10′ S, 64° 15·5′ W, 30 Mar. 1932, 150–147 m.
St. WS 869. Between Falkland Is. and Patagonia, 52° 15′ 30″ S, 64° 13′ 45″ W, 31 Mar. 1932, 187–201 m.

Pareuthria ringei (Strebel)

Euthria ringei Strebel, 1905*b*, p. 619, pl. 21, fig. 5*a–c*.

TYPE LOCALITY. Strait Le Maire, between Staten I. and Tierra del Fuego.

St. 388. Between Cape Horn and Staten I., 56° 19½′ S, 67° 09¾′ W, 16 Apr. 1930, 121 m. (numerous well-preserved empty shells).
St. WS 86. Burdwood Bank, south of Falkland Is., 53° 53′ 30″ S, 60° 34′ 30″ W, 3 Apr. 1927, 151 m.

RANGE. Also recorded by Strebel (1905, loc. cit.) from Puerto Gallegos, east coast of Patagonia.

Pareuthria michaelseni (Strebel)

Euthria michaelseni Strebel, 1905*b*, p. 621, pl. 21, fig. 6*a*, *b*.
Euthria michaelseni Melvill & Standen, 1907, p. 109.
Euthria (*Pareuthria*) *michaelseni* Strebel, 1908, p. 28.
Euthria (*Pareuthria*) *michaelseni* Melvill & Standen, 1914, p. 121.

TYPE LOCALITY. Smyth Channel, Strait of Magellan.

St. WS 71. 6 miles N 60° E of Cape Pembroke, Lt., East Falkland Is., 51° 38′ S, 57° 32′ 30″ W, 23 Feb. 1927, 82 m.
St. WS 80. North-west of Falkland Is., 50° 58′ S, 63° 39′ W to 50° 55′ 30″ S, 63° 36′ W, 14 Mar. 1927, 152–156 m.
St. WS 88. Off Tierra del Fuego, 54° S, 65° W to 54° S, 64° 55′ W, 6 Apr. 1927, 118 m.
St. WS 97. North-west of Falkland Is., 49° S, 62° W to 49° 01′ S, 61° 56′ W, 18 Apr. 1927, 146–145 m.
St. WS 243. Between Falkland Is. and Patagonia, 51° 06′ S, 64° 30′ W, 17 July 1928, 144–141 m.
St. WS 804. North-west of Falkland Is., 50° 22′ 45″ S, 62° 49′ W, 6 Jan. 1932, 143–150 m.

This is a slender, finely striated shell of light chestnut colour, relieved by a narrow white peripheral band on the body-whorl.

Pareuthria paessleri (Strebel)

Euthria paessleri Strebel, 1905*b*, p. 625, pl. 21, fig. 9*a*, *b*.

TYPE LOCALITY. Smyth Channel, Strait of Magellan.

St. WS 834. Near eastern entrance to Strait of Magellan, 2 Feb. 1932, 27–28 m.

This species has a distinct submargined suture and spiral striations on the base only.

Pareuthria scalaris (Watson)

Fusus (*Sipho*) *scalaris* Watson, 1882, p. 377.
Fusus (*Neptunea*) *scalaris* Watson, 1886, p. 203, pl. 12, fig. 5.
Probuccinum scalare Thiele, 1912, p. 263.

TYPE LOCALITY. 47° 48′ 30″ S, 70° 47′ W, north-west Patagonia, 125 fathoms.

St. WS 80. North-west of Falkland Is., 50° 57′ S, 63° 37′ 30″ W, 14 Mar. 1927, 152–156 m.
St. WS 237. North of Falkland Is., 46° S, 60° 05′ W, 7 July 1928, 150–256 m.
St. WS 804. North-west of Falkland Is., 50° 22′ 45″ S, 62° 49′ W, 6 Jan. 1932, 143–150 m.

Pareuthria venustula n.sp., Pl. VI, fig. 17

Shell narrowly fusiform with a tall spire and short canal, very thin, semi-transparent, dull white and without colour markings. Whorls $6\frac{1}{2}$, moderately convex but slightly excavated below the suture. Protoconch smooth and glossy, papillate of $2\frac{1}{2}$ whorls, the apex flattened, tilted and slightly immersed. Post-nuclear whorls delicately and densely spirally lirate, eighteen to twenty-six lirations on the spire-whorls and about fifty-two on the body-whorl. There are numerous slightly sinuous and irregularly disposed axial growth lines. The neck of the canal is smooth except for weak axial growth lines. Spire one and a third times height of aperture plus canal. Aperture simple without internal lirations or denticles. Outer lip thin. Basal sinus broad and shallow.

Height 13·3 mm.; diameter 5·9 mm. (holotype).

TYPE LOCALITY. St. 388. Between Cape Horn and Staten I., 56° $19\frac{1}{2}$′ S, 67° 09″ W, 16 April 1930, 121 m. (one living example and several well-preserved empty shells).

DENTITION. Fig. L, 70, p. 194. Typical, with tricuspid central and bicuspid lateral teeth.

Genus **Tromina** Dall, 1918

Type (o.d.): *Fusus unicarinatus* Philippi, Strait of Magellan

This generic name was provided on the basis of a few empty shells from the Strait of Magellan in 20 fathoms, and although comparisons with the Neptuniidae were made by Dall (1902) he considered the genus to be Trophonoid (Dall, 1902*b*, p. 536).

In 1925 Dall (pl. 21, fig. 7) figured the species for the first time, showing a strongly keeled shell very similar to a new species from Clarence Islands, 61° 25′ 30″ S, 53° 46′ W, which proves to be Cominellid close to *Pareuthria*.

These shells have a relatively large, dome-shaped protoconch with a smooth, blunt nucleus, but later developing brephic axial threads and fine spiral striae. The operculum is horny, ovate and paucispiral, occupying about half the area of the aperture, and the radula has a tricuspid central tooth and bicuspid laterals. The radula resembles that of *Pareuthria* except for the form of the laterals, which have the cusps set closer together, the inner one massive and incurved. A similar style of radula occurs in the species *Notoficula problematica* n.sp., described following.

I have included in *Tromina* a group of smaller Magellan species with rounded whorls and numerous regular spiral cords, crossed by weak axial threads, but they lack the prominent keels of both the genotype and the Clarence Island *tricarinata*. The protoconch, operculum and radula, however, are similar to those features in the typical species, Fig. N, 103, 126, p. 196.

Tromina tricarinata n.sp., Pl. X, figs. 64, 65

Shell small, dull white, biconic, the body-whorl with three strong spiral keels. Whorls five, including a large, blunt, dome-shaped protoconch of two whorls, the first smooth and almost flat-topped, the second with numerous fine crisp axial threads and dense microscopic spiral striae. First post-nuclear whorls with a prominent, bluntly rounded, median keel, the penultimate with a second keel emergent at the lower suture and the body-whorl with three keels. Outline of shell strongly concave on the shoulder, between the keels and below the lowest keel on the base. Surface delicately reticulated by dense axial and spiral threads. The spirals, which are slightly stronger than the axials, number about fourteen on the shoulder of the body-whorl, five on the rounded keels, nine to eleven between the keels and about thirty below the lowest keel. Spire less than height of aperture plus canal. Aperture produced below into a short open spout-like canal. Outer lip thin, columella strongly incurved above and spirally flexed below. Operculum small, occupying about half the area of the aperture, ovate, thin, horny and paucispiral, the nucleus subterminal and on the inner side.

Height 13·5 mm.; diameter 8·5 mm.

Type locality. St. 170. Off Cape Bowles, Clarence Is., 61° 25′ 30″ S, 53° 46′ W, 23 Nov. 1927, 342 m.

Dentition. Fig. L, 71, p. 194.

Tromina fenestrata n.sp., Pl. VI, fig. 14

Shell small, white, squat, sculptured with numerous sharply raised spiral cords, crossed by fine, crisp, axial threads which render the cords weakly gemmulate. Whorls weakly shouldered by an extra strong cord situated just above the middle, $4\frac{1}{2}$, including a large dome-shaped protoconch of $1\frac{1}{2}$ whorls, smooth at first, but the last half-whorl with closely spaced minute axial threads and indistinct spirals. All spire-whorls with six narrow, sharply raised spiral cords, number three from the top the strongest and forming the peripheral angulation. Body-whorl with twenty spiral cords, more closely spaced over the middle of the base, and including five on the neck. The axial threads number about forty-five on the

body-whorl, and in addition there is an interstitial surface sculpture of dense microscopic axial threads. Aperture as in the other species except for a peripheral angulation of the outer lip.

The epidermis is so thin and transparent that it is scarcely apparent. Operculum ovate, paucispiral, occupying slightly more than half the area of the aperture.

Height 6·0 mm.; diameter 4·0 mm. (holotype).

TYPE LOCALITY. St. WS 766. Between Falkland Is. and Argentina, 45° 13′ S, 59° 56′ 30″ W, 18 Oct. 1931, 545 m.

Tromina bella n.sp., Pl. VI, fig. 16

Shell small, ovate, squat, with broadly rounded whorls, evenly sculptured with moderately strong rounded spiral cords and covered with a thin, pale buff epidermis. Whorls $4\frac{1}{2}$, including a blunt, dome-shaped protoconch of $1\frac{1}{2}$ whorls, the tip smooth, followed by a whorl of weak axial threads, becoming more distinct over the last half-whorl which has the addition of weak spiral threads. First and second post-nuclear whorls with seven rounded spiral cords, penultimate with eight and body-whorl with about thirty, ten of which are on the neck. The whole surface is crowded with dense axial threads which render weakly gemmulate some of the spiral cords of the shoulder. Aperture ovate-pyriform with a short open canal. Outer lip thin, columella straight medially and spirally flexed below. Parietal callus weak, shining white with the spiral sculpture showing through towards the outer edge. Operculum ovate, paucispiral, occupying about half the area of the aperture.

Height 7·4 mm.; diameter 5·0 mm. (holotype, St. 817).

TYPE LOCALITY. St. WS 817. Between Falkland Is. and Patagonia, 52° 28′ S, 64° 19′ W, 14 Jan. 1932, 191–202 m.

St. WS 212. North of Falkland Is., 49° 22′ S, 60° 10′ W, 30 May 1928, 242–249 m.
St. WS 244. West of Falkland Is., 52° S, 62° 40′ W, 18 July 1928, 253–247 m.
St. WS 816. Between Falkland Is. and Patagonia, 52° 09′ 45″ S, 64° 56′ W, 14 Jan. 1932, 150 m.
St. WS 818. Between Falkland Is. and Patagonia, 52° 31′ 15″ S, 63° 25′ W, 17 Jan. 1932, 272–278 m.

DENTITION. Fig. L, 72, p. 194 (St. WS 818). PROTOCONCH. Fig. N, 104, p. 196.

Tromina simplex n.sp., Pl. VI, fig. 15

Shell small, ovate, squat with lightly convex whorls sculptured with dense spiral threads. Whorls $4\frac{1}{2}$, including a blunt dome-shaped protoconch of $1\frac{1}{2}$ whorls, smooth at first but sculptured with closely spaced axial and spiral threads over the last half-whorl. First and second post-nuclear whorls with ten spiral threads, penultimate with sixteen and body-whorl plus neck with about fifty. Surface crowded with very weak axial growth lines. Aperture ovate-pyriform with a short open canal. Outer lip thin. Columella straight medially and spirally flexed below. Parietal callus smooth, sharply marked off from the sculptured body-whorl.

Height 7·25 mm.; diameter 4·25 mm. (holotype, St. WS 237).

TYPE LOCALITY. St. WS 237, north of the Falkland Is., 46° S, 60° 05′ W, 7 July 1928, 150–256 m.

St. WS 216. North of the Falkland Is., 47° 37′ S, 60° 50′ W, 1 June 1928, 219–133 m.

The species is easily distinguished from *bella* by its much less inflated sagging whorls and much finer and denser spiral sculpture. No living examples were obtained, but the style of apex renders reference to *Tromina* almost certain.

Genus Notoficula Thiele, 1917

n.nom. for *Ficulina* Thiele, 1912, non Gray, 1867

Type: *Ficulina bouveti* Thiele

Thiele (1912, p. 270, pl. 19, fig. 13) based this genus upon a small 'Ficus'-shaped shell from Bouvet Island, which he first placed subgenerically under *Cominella* and later (1929, p. 315) as a section of *Chlanidota*.

Living examples, possibly not fully adult, of what appears to be an allied species are described below.

If my reference of these shells to *Notoficula* is correct, then that genus is indicated as allied to *Pareuthria* and quite close to *Tromina*. These shells have a tricuspid central tooth and bicuspid laterals, but the laterals are distinct from those of *Pareuthria* in that the two cusps are set much closer together and the inner one is the more robust. Also the inner cusp is strongly incurved with a deeply concave inner margin. The protoconch is dome-shaped and smooth, and the operculum ovate to D-shaped, paucispiral, with the nucleus near to the lower inner margin, Fig. N, 125.

Notoficula problematica n.sp., Pl. VI, fig. 18

Shell small, ovate, white, few whorled, surface regularly incised with spiral linear grooves. Whorls $3\frac{3}{4}$, including a relatively large, smooth, dome-shaped protoconch of $1\frac{3}{4}$ whorls. Spire less than half height of aperture. Sculpture of post-nuclear whorls in the form of regularly spaced linear grooves, which cut the surface into low, flat-topped spiral cords, nine on the penultimate and about thirty on the body-whorl. The whole surface is crossed by dense axial threads, more conspicuous in the grooves. Aperture ovate-pyriform, outer lip thin with a broad open anterior canal, neither produced nor sinused, but partially constricted by a callused fold at the base of the pillar. Parietal wall deeply concave medially, but not excavated, covered with a thin callus. Operculum much smaller than the aperture, horny, ovate to D-shaped, paucispiral, the nucleus near to the lower inner margin.

Height 5·25 mm.; diameter 3·6 mm. (holotype).

Height 6·9 mm.; diameter 5·0 mm. (St. WS 766, a worn shell, probably adult).

Type locality. St. WS 766. Between Falkland Is. and Argentina, 45° 13′ S, 59° 56′ 30″ W, 18 Oct. 1931, 545 m.

Dentition. Fig. K, 61, p. 193. Operculum. Fig. N, 125, p. 196.

The material upon which this species is based may not be fully adult, but it is certainly distinct from the larger *bouveti*, which is of more pyriform outline and has less conspicuous spiral sculpture.

Genus Falsimohnia n.g.

Type: *Buccinum albozonatum* Watson

This genus has a dentition of similar style to that of the Boreal genus *Mohnia* Friele, 1878, but on shell characters the relationship is much more in accord with *Pareuthria* or *Glypteuthria*. Both *Mohnia* and *Falsimohnia* have the central tooth with a single cusp and bicuspid laterals. The reduction of the cusps of the central tooth to a single member also occurs in the Mediterranean *Chauvetia* (=*Lachesis* Risso), and this fact no doubt influenced Martens & Thiele in their placing of *Lachesis australis* (1903, p. 62).

I would consider *Falsimohnia* as a derivative of *Pareuthria* in which the normal three cusps of the central tooth have been reduced to a single member. There is a parallel case in the Naticoid genus *Tanea*, which has a central tooth with only one cusp, whereas most other genera of the family are tricuspid. Also the operculum of *Falsimohnia* has a blunt terminal nucleus as in *Pareuthria*, whereas in *Mohnia* it is ovate and paucispiral.

Falsimohnia albozonata (Watson)

Buccinum albozonatum Watson, 1882, p. 358.
Buccinum albozonatum Watson, 1886, p. 212, pl. 13, fig. 7.
Mangelia antarctica Martens & Pfeffer, 1886, pl. 1, figs. 5*a*, *b*.
Lachesis? *australis* Martens & Thiele, 1903, p. 62, pl. 5, fig. 18.
Pareuthria albozonata Thiele, 1912, p. 244.
Pareuthria albozonata L. David, 1934, p. 128.

TYPE LOCALITIES. Royal Sound, Kerguelen I., 28 fathoms (*albozonatum*); South Georgia (*antarctica*); Kerguelen I. (*australis*).

St. 123. Off mouth of Cumberland Bay, South Georgia, from 4·1 miles N 54° E of Larsen Point to 1·2 miles S 62° W of Merton Rock, 15 Dec. 1926, 230–250 m.

St. 140. Stromness Harbour to Larsen Point, South Georgia, from 54° 02′ S, 36° 38′ W to 54° 11′ 30″ S, 36° 29′ W, 23 Dec. 1926, 122–136 m.

St. 149. Mouth of Cumberland Bay, South Georgia, from 1·15 miles N 76½° W to 2·62 miles S 11° W of Merton Rock, 10 Jan. 1927, 200–234 m.

St. WS 25. Undine Harbour (north), South Georgia, 17 Dec. 1926, 18–27 m.

DENTITION. Fig. K, 59 (St. 149); Fig. K, 60, p. 193 (after Marten's (1903) for *Lachesis*? *australis*).

OPERCULUM. Fig. N, 127, p. 196.

The shallow-water St. WS 25 example has the typical colour pattern—brownish with a median pale spiral band, but material from the deeper water stations is uniformly buff.

Genus Glypteuthria Strebel, 1905

Type (s.d. Tomlin 1932): *Euthria meridionalis* Smith

The shells of this genus differ from those of *Pareuthria* in having more obvious sculpture, composed of equally well-developed spiral and axial ribs. Thiele (1929, pp. 311–18) associated *Glypteuthria* and *Probuccinum*, but disassociated them from *Pareuthria*, which he made a subgenus of *Northia*. I cannot understand Thiele's action in doing this, for there is no evidence against the view that *Glypteuthria* is a strongly sculptured relative of *Pareuthria*, apart from the fact that the lateral teeth in *Glypteuthria* are not strictly bicuspid. In *Pareuthria* the laterals are bicuspid, but in *Glypteuthria meridionalis* bifurcation of the inner cusp results in a third incipient cusp, but this condition is not comparable with that of *Probuccium*, in which there are three strongly developed and evenly spaced cusps.

The distribution of *Glypteuthria*, previously considered Magellanic, is now known to extend to South African waters, i.e. *capensis* (Thiele, 1925, p. 179) *capensis** and *solidissima* (Tomlin, 1932, pp. 164–7). The Magellan species are *meridionalis* Smith, 1881, *kobelti* Strebel, 1905, and *acuminata* Smith, 1915.

Glypteuthria meridionalis (Smith)

Euthria meridionalis Smith, 1881, p. 29, pl. 4, fig. 6.
Euthria meridionalis Rochebrune & Mabille, 1889, p. 61.
Euthria (*Glypteuthria*) *meridionalis* Strebel, 1905*b*, p. 627, pl. 21, fig. 11*a*, *b*.
Glypteuthria meridionalis Thiele, 1912, pl. 13, fig. 6 and pl. 16, fig. 17.

TYPE LOCALITY. Portland Bay, St Andrew's Sound, 10 fathoms, Patagonia.

St. WS 834. Near eastern entrance to Strait of Magellan, 2 Feb. 1932, 27–38 m.

DENTITION. Fig. K, 58, p. 193 (after Thiele, 1912, loc. cit.).

* Renamed *Glypteuthria scutpturata*, Tomlin (1945).

Subfamily BUCCINULINAE

Genus Chlanidota Martens, 1878

Type (monotypy): *Cominella* (*Chlanidota*) *vestita* Martens, Kerguelen Island

The genus is restricted to the Antarctic region, with a known range extending over the Weddell, Enderby and Victoria quadrants. Only one species, the genotype, extends to as far north as the Antarctic Convergence.

The shell is very thin and is covered with a pilose epidermis. Anterior canal truncated, deeply notched, with a ridge-margined fasciole. Operculum disproportionately small for the size of the aperture, irregularly ovate, horny, excentric, with the nucleus at the anterior margin (Figs. F and N, 129).

The radula is very uniform; it has a tricuspid central tooth with a broad excavated basal plate and a tricuspid lateral on either side of it. Specific differentiation is most clearly shown in the respective shapes of the central tooth. The tricuspid laterals have the central cusp weak and situated close alongside the inner cusp suggesting bifurcation of the inner of two original cusps. However, the three lateral cusps are now so stable a feature that *Chlanidota* is more naturally placed with the Buccinulinae than with the Cominellinae. In fact *Chlanidota*, *Neobuccinum* and the next genus, *Pfefferia*, may well represent a transitional stage between the short canalled Cominellids and the long canalled Buccinulids.

Reference to the Buccinidae is even less appropriate as shown by radula and opercular characters as well as from geographical considerations.

Chlanidota vestita (Martens)

Cominella (*Chlanidota*) *vestita* Martens, 1878.
Chlanidota vestita Tryon, 1881, p. 201, pl. 79, fig. 391.
Neobuccinum vestitum Watson, 1886, p. 216.
Chlanidota vestita Smith, 1902, p. 203.
Cominella (*Chlanidota*) *vestita* Martens & Thiele, 1903, p. 63.
Cominella (*Chlanidota*) *vestita* Lamy, 1911*a*, p. 63.

Type locality. Kerguelen Island, Subantarctic.

Range. Subantarctic, Kerguelen I., 88 m. (Martens); Antarctic, Cape Adare, 24–26 fathoms (Smith). I have been unable to check the Cape Adare record with material.

Chlanidota pilosa n.sp., Pl. VIII, figs. 29 and 30

Compared with the South Georgian *densesculpta*, the Bouvet Island species is more globose, the spire more depressed (telescoped) and the shoulder quite distinctive in being noticeably inrolled to a more deeply incised suture. The sculpture also is more pronounced, consisting of less dense but stronger spiral threads.

Shell thin and fragile, white, covered with a light yellowish brown epidermis which develops dense short bristles on all the spiral treads. Spire short, depressed, dome-shaped, 0·37 height of aperture. Twenty-one narrow, crisp spiral threads on penultimate and about fifty-seven on body-whorl. Spiral sculpture weakly concellated by closely spaced finer axial threads. In *densesculpta* there are from thirty to thirty-six spiral threads on the penultimate. Anterior canal deeply notched. Fasciole well defined by arcuate growth lines, but not ridge-margined above as in *densesculpta*.

Height 25·5 mm.; diameter 20 mm. (St. 456, holotype *pilosa* n.sp.)
Height 34·5 mm.; diameter 24 mm. (holotype of *densesculpta*).
Height 30·0 mm.; diameter 20 mm. (St. 1941, *densesculpta*).

Dentition. Fig. L, 73, p. 194. The radula is very similar to that of *densesculpta* except that the cusps of the central tooth are closer together, more broadly triangular and the middle one is much larger than the other two.

Operculum. Typical, horny, small for size of aperture, irregularly ovate, flattened along the lower or anterior edge which is the nucleus. Aperture of shell 3·3 times height of operculum.

Type locality. St. 456. 1 mile east of Bouvet I., 18 Oct. 1930, 40–45 m. (one living example, the holotype, and one empty shell).

Chlanidota densesculpta (Martens) Pl. VIII, figs. 31–33

Cominella (*Chlanidota*) *densesculpta* Martens, 1885, p. 91.
Cominella (*Chlanidota*) *densesculpta* Martens & Pfeffer, 1886, p. 71, pl. 1, fig. 3*a–f*.
Chlanidota densesculpta Strebel, 1908, p. 33.
Chlanidota densesculpta David, 1934, p. 128.

The species is quite variable in shape as shown by the following dimensions:
Height 31·0 mm.; diameter 20 mm. (Martens & Pfeffer).
Height 34·5 mm.; diameter 24 mm. (Martens & Pfeffer holotype).
Height 30·0 mm.; diameter 21 mm. (St. 1941), Pl. VIII, fig. 31.
Height 30·0 mm.; diameter 18 mm. (St. WS 62), Pl. VIII, fig. 32.
Height 40·0 mm.; diameter 23 mm. (St. WS 62), Pl. VIII, fig. 33.

Dentition. Fig. L, 75, p. 194. The radula is most like that of *pilosa* n.sp.

Type locality. South Georgia.

St. 45. 2·7 miles S 85° E of Jason Lt., South Georgia, 6 Apr. 1926, 238–270 m.
St. 141. East Cumberland Bay, South Georgia, 200 yards from shore under Mt. Duse, 29 Dec. 1926, 17–27 m.
St. 145. Stromness Harbour, South Georgia, between Grass I. and Tonsberg Point, 7 Jan. 1927, 26–35 m.
St. 1941. Leith Harbour, South Georgia, 29 Dec. 1936, 55–22 m.
St. WS 62. Wilson Harbour, South Georgia, 19 Jan. 1927, 15–45 m. and 26–83 m.
St. MS 6. East Cumberland Bay, $\frac{1}{4}$ mile south of Hope Point to $1\frac{1}{4}$ cables S × E of King Edward Point Lt., 12 Feb. 1925, 24–30 m.
St. MS 10. East Cumberland Bay, $\frac{1}{4}$ mile south-east of Hope Point to $\frac{1}{4}$ mile south of Government Flagstaff, 14 Feb. 1925, 26–18 m.

Range. Antarctic; South Georgia 0–270 m.; south-west of Snow Hill I., 64° 36′ S, 57° 42′ W, 125 m. (Strebel, 1908). *Note:* Marten's 1903 Bouvet I. record of *densesculpta* is Thiele's *Notoficula bouveti* (Thiele, 1912).

Chlanidota elongata (Lamy)

Cominella (*Chlanidota*) *vestita* var. *elongata* Lamy, 1910*b*, xvi, p. 319.
Cominella (*Chlanidota*) *vestita* var. *elongata* Lamy, 1911*a*, p. 6, pl. 1, fig. 6.

Type locality. Off King George I., South Shetlands, 420 m.

St. 170. Off Cape Bowles, Clarence I., 61° 25′ 30″ S, 60° 28′ 00″ W, 23 Feb. 1927, 342 m.
St. 175. Bransfield Strait, South Shetlands, 63° 17′ 20″ S, 59° 48′ 15″ W, 2 Mar. 1927, 200 m.
St. 1952. Between Penguin I. and Lion's Rump, King George I, South Shetlands 11 Jan. 1937, 367–383 m.
St. 1957. Off South Side of Clarence I., South Shetlands, 7 miles east of Cape Bowles, 3 Feb. 1937, 785–810 m.

Range. Antarctic; South Shetlands, 200–810 m.

Dentition. Fig. L, 76, p. 194.

Chlanidota signeyana n.sp., Pl. VIII, figs. 34, 35

The species is closely allied to the South Shetlands *elongata* but is constantly broader and of ovate rather than cylindrical outline.

Shell thin and fragile, white, covered with a thin, pale buff epidermis. Spire tall for the genus, 0·56 height of aperture. Whorls sculptured with moderately strong but narrow sharply raised spiral cords, ten to eleven on penultimate and twenty-three to twenty-six on the body-whorl, plus a few weak intermediates. Surface crossed by dense exceedingly fine axial growth lines. Anterior canal deeply notched; fasciole margined above by a sharply raised narrow ridge.

Height 38 mm.; diameter 24·5 mm. (holotype).
Height 32 mm.; diameter 21·0 mm. (paratype).
Height 29 mm.; diameter 19·0 mm. (paratype).
Height 32 mm.; diameter 19·0 mm. (*elongata*, St. 1952).
Height 28 mm.; diameter 16·5 mm. (*elongata*, St. 1952).

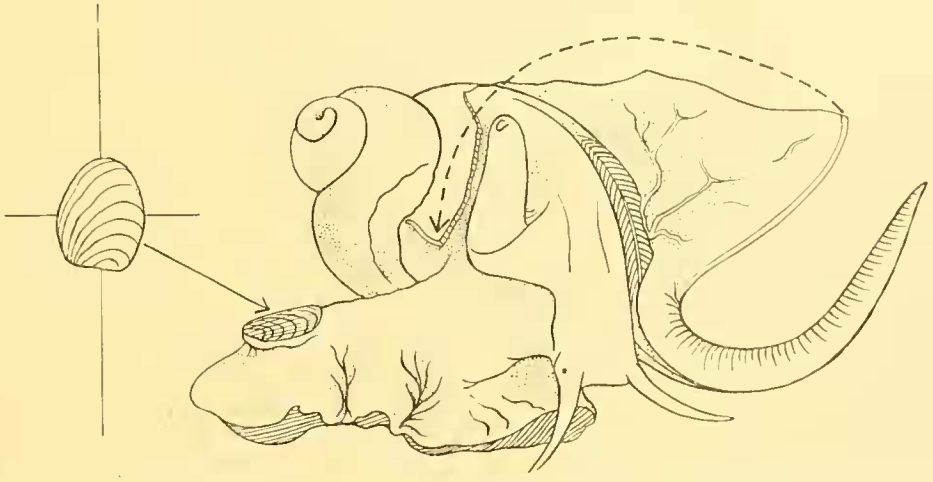

Fig. F. *Chlanidota signeyana*, n.sp. View of the whole animal with the mantle cut and folded back. Note the vestigial operculum, in relation to the size of the aperture (shown by crossed lines to the left).

Dentition. Fig. L, 74, p. 194. Operculum. Fig. N, 129, p. 196. The central tooth has a wide but comparatively shallow base, deeply excavated below.

Animal. The external features of the animal are shown in Fig. F.

Type locality. St. 167. Off Signy I., South Orkneys, 60° 50′ 30″ S, 46° 15′ 00″ W, 20 Feb. 1927, 244–344 m.

St. 162. Off Signy I., South Orkneys, 60° 48′ 00″ S, 46° 08′ 00″ W, 17 Feb. 1927, 320 m.

Chlanidota paucispiralis n.sp., Pl. VIII, figs. 36, 37

Shell small, thin and fragile, narrowly ovate, white, covered with a thin buff epidermis. Spire tall for the genus, 0·6 height of aperture. Whorls sculptured with a few wide-spaced prominent but narrow, sharply raised, spiral ridges, four on penultimate and eleven on the body-whorl. Surface crossed by dense, exceedingly fine axial growth lines. Anterior canal deeply notched; fasciole not margined above by a ridge.

Height 22·1 mm.; diameter 13·5 mm. (holotype).

Dentition. Fig. L, 77, p. 194. The radula is almost identical with that of *elongata*.

Operculum. Typical, horny, ovate, with apical nucleus; very small. Aperture of shell 3·6 times height of operculum.

TYPE LOCALITY. St. 159. South Georgia, 53° 52′ 30″ S, 36° 08′ 00″ W, 160 m.

St. 157. Off South Georgia, 53° 51′ 00″ S, 36° 11′ 15″ W, 20 Jan. 1927, 970 m.
St. 158. Off South Georgia, 53° 48′ 30″ S, 35° 57′ 00″ W, 21 Jan. 1927, 401–411 m.

?Chlanidota gaini (Lamy)

Sipho gaini Lamy, 1910*b*, p. 319.
Sipho gaini Lamy, 1911*a*, p. 7, pl. 1, figs. 7, 8.
Prosipho? gaini Thiele, 1912, p. 262.

TYPE LOCALITY. Off King George I., South Shetlands, 420 m.

This species, known to me only by Lamy's figure of the damaged holotype, seems to be a very narrow, produced-spired *Chlanidota*. The thin shell, style of sculpture, and columellar twist recall *Chlanidota*, also the large size (33 × 12 mm.) suggests this genus rather than *Prosipho*, the members of which are quite small. Hedley (1916) suggested relationship between *Sipho gaini* and his *Pontiothauma ergata*, but that seems unlikely also.

Genus Pfefferia Strebel, 1908

Type (here designated): *Pfefferia palliata* Strebel

South Georgia, non *Pfeifferia* Gray, 1853

The genera *Chlanidota* and *Pfefferia*, as already explained, appear to be transitional between the Cominellinae and the Buccinulinae. In *Chlanidota* the shell is very thin, the operculum disproportionately small for the size of the aperture, and the lateral teeth of the radula are tricuspid. In *Pfefferia* the shell is much stouter, the operculum almost fills the aperture, is of peculiar form, with a heavy ridged outer margin, and the lateral teeth of the radula are tricuspid also. In *Cominella* the operculum is relatively large and ovate, with an apical nucleus, but no margining ridge and the lateral teeth of the radula are bicuspid.

The genus *Pfefferia* is known only from deep water off South Georgia.

Pfefferia elata Strebel

Pfefferia elata Strebel, 1908, p. 35, pl. 3, fig. 40.

TYPE LOCALITY. South Georgia, 54° 17′ S, 36° 28′ W, 75 m.

St. 30. West Cumberland Bay, South Georgia, 2·8 miles S 24° W of Jason Lt., 16 Mar. 1926, 251 m.

Height 34·5 mm.; diameter 23·5 mm. (St. 30).
Height 31·0 mm.; diameter 21·0 mm. (St. 30).

DENTITION. Fig. L, 78, p. 194. The radula is abnormal in the only specimen, for there are two additional incipient cusps and they are situated one on each side of the normal group of three cusps on the central tooth.

OPERCULUM. Fig. N, 128, p. 196. Typical, horny, leaf-shaped, with apical nucleus and a very massive, raised, striated border along the entire outer margin. Aperture of shell 1·3 times height of operculum.

RANGE. South Georgia, 75–251 m.

Pfefferia cingulata Strebel

Pfefferia cingulata Strebel, 1908, pl. 3, figs. 42*a–c*.

TYPE LOCALITY. Cumberland Bay, South Georgia, 252–310 m.

St. 146. Off South Georgia, 53° 48′ 00″ S, 35° 37′ 30″ W, 8 Jan. 1927, 728 m.
St. 158. Off South Georgia, 53° 48′ 30″ S, 35° 57′ 00″ W, 21 Jan. 1927, 401–411 m.

Height 21·3 mm.; diameter 14 mm. (St. 146, young example).

Dentition. Fig. L, 79, p. 194. The central tooth has three strong equally developed cusps and a deeply excavated base. Laterals with a tall slender incurved outer cusp and a shorter truncated, heavy inner cusp, plus a small narrow middle cusp situated close alongside the inner cusp.

Operculum. Typical, horny, narrowly ovate, with apical nucleus and thickened margining ridge along the upper part of the outer edge. In the other species of the genus this margining ridge extends along the entire outer margin. Aperture 1·6 times height of operculum (Strebel, 1908, pl. 3, fig. 42*b*).

Range. South Georgia, 75–728 m.

The following two species complete the known members of the genus.

Pfefferia palliata Strebel

Pfefferia palliata Strebel, 1908, p. 34, pl. 3, fig. 39*a–f*.
Pfefferia palliata Thiele, 1912, pl. 16, fig. 20 (radula).

Type locality. South Georgia, 54° 17′ S, 36° 28′ W, 75 m.

Pfefferia chordata Strebel

1908. *Pfefferia chordata* Strebel, *Schwed. Südpol. Exped.* VI (1), pl. 3, fig. 41*a–c*.

Type locality. Cumberland Bay, South Georgia, 252–310 m.

Genus Neobuccinum Smith, 1877

Type (monotypy): *Neobuccinum eatoni* Smith

Neobuccinum eatoni (Smith)

Buccinopsis eatoni Smith, 1875, p. 68.
Neobuccinum eatoni Smith, 1879, p. 169, pl. 9, figs. 1, 1*a*.
Neobuccinum eatoni Studer, 1879, p. 129.
Neobuccinum eatoni Watson, 1886, p. 216.
Neobuccinum eatoni Smith, 1902, p. 202.
Neobuccinum eatoni Thiele, 1903, p. 168, pl. 9, fig. 57.
Neobuccinum eatoni Lamy, 1906*b*, p. 2.
Neobuccinum eatoni Smith, 1907*a*, p. 1.
Neobuccinum eatoni Melvill & Standen, 1907, p. 139.
Neobuccinum praeclarum Strebel, 1908, p. 31, pl. 3, fig. 38.
Neobuccinum eatoni Lamy, 1910*b*, p. 199.
Neobuccinum eatoni Lamy, 1911*a*, p. 5.
Neobuccinum eatoni Hedley, 1911, p. 6, pl. 1, figs. 11, 12.
Neobuccinum eytoni Thiele, 1912, p. 211.
Neobuccinum eatoni Smith, 1915, p. 72.
Neobuccinum eatoni Lamy, 1915, p. 69.
Neobuccinum eatoni Hedley, 1916, p. 59, pl. 9, fig. 97.
Neobuccinum eatoni Eales, 1923, p. 28.

Type localities. 3–7 fathoms Royal Sound, Kerguelen I. (*eatoni*); Graham Land, 64° 3′ S, 56° 37′ W, 360 m. (*praeclarum*).

St. 363. 2·5 miles S 80° E of south-east point of Zavodovski I., South Sandwich Is., 26 Feb. 1930, 329–278 m.
St. 1644. Bay of Whales, 78° 24·8′ S, 164° 10·3′ W, 16 Jan. 1936, 626 m.
St. 1952. Between Penguin I. and Lion's Rump, King George I., South Shetlands, 11 Jan. 1937–383 m.

Range. Graham Land (Strebel); South Orkneys (Melvill & Standen); South Shetlands (Lamy); McMurdo Sound and Commonwealth Bay (Hedley); Ross Sea (Smith) and Kerguelen Island (Smith).

Hedley (1916, loc. cit. p. 59) was apparently quite correct in placing *praeclarum* in the synonym of *eatoni*. I cannot find any valid points of difference in this variable species.

Dentition. Eales (1923) figured the radula of an example from McMurdo Sound in 20 m. and noted that it showed characters intermediate between *Buccinum* and *Cominella*.

The radula is decidedly more in accord with that of *Cominella* than with that of *Buccinum*, for it has a tricuspid central and although the inner cusp of the laterals is incised to form several weak cusps this tooth is still basically bicuspid. The boreal *Buccinum* on the other hand has six cusps on the central and four on the laterals. The operculum also conforms more to that of *Cominella* than to that of *Buccinum*. In *Cominella* and *Neobuccinum* the operculum has a terminal nucleus whereas in *Buccinum* it is median submarginal with concentric growth lines.

Genus Probuccinum Thiele, 1912

Type (o.d.): *Neobuccinum tenerum* Smith

This is an Antarctic and Subantarctic *Buccinulum*-like group characterized by a thin, semi-transparent shell, ovate operculum with a small paucispiral terminal nucleus, and a radula with both the central and lateral teeth tricuspid.

The following species were ascribed to the genus by Thiele (1912, loc. cit.): *Neobuccinum tenerum* Smith, 1907, Coulman Island, 100 fathoms; *Probuccinum costatum* Thiele, 1912, Gauss Station, Davis Sea; *Fusus* (*Neptunea*) *regulus* Watson, 1882, Kerguelen I., 28 fathoms; *Fusus* (*Neptunea*) *edwardiensis* Watson, 1882, between Marion I. and Prince Edward I., 140 fathoms; and *Fusus* (*Neptunea*) *scalaris* Watson, 1882, north-west Patagonia, 125 fathoms. The latter, however, seems to be a *Pareuthria*.

Hedley (1916) added a further species in *Probuccinum tenuistriatum* from the D'Urville Sea in 157 fathoms, and Tomlin (1948) recorded *tenerum* from 69 m. off Macquarie I.

Probuccinum delicatulum n.sp., Pl. VII, fig. 28

Shell ovate-fusiform, truncated below, thin, semi-transparent, white, covered with a very thin pale buff epidermis. Whorls six, including a large, smooth, dome-shaped protoconch of $2\frac{1}{2}$ whorls. Post-nuclear sculpture of weak, very numerous, dense spiral striations crossed by crowded, somewhat irregular, faint, crisp, axial growth lines. There are about thirty-two spirals on the antepenultimate and about forty-five at the close of the penultimate whorl. The axial growth lines are nowhere strong enough to assume the role of axial ribs, and a casual impression is that the shell is smooth. Spire about one and an eighth times height of aperture. Aperture obliquely D-shaped; outer lip thin, steeply descending from the suture, effuse below the middle and flattened basally, with a broad, very shallow anterior notch. In profile the outer lip is slightly insinuated just below the suture. Columella and parietal wall with an evenly arcuate, narrow, thinly glazed callus. Operculum horny, ovate, with a small, paucispiral, apical nucleus, Fig. N, 123.

Height 20·5 mm.; diameter 10·5 mm. (holotype).

Height 16·0 mm.; diameter 8·0 mm. (St. 160).

Type locality. St. 140. Stromness Harbour to Larsen Point, South Georgia, from 54° 02′ S, 36° 38′ W to 54° 11′ 30″ S, 36° 29′ W, 23 Dec. 1926, 122–136 m.

St. 159. Off South Georgia, 53° 52′ 30″ S, 36° 08′ W, 21 Jan. 1927, 160 m.

St. 160. Between South Georgia and Shag Rocks, 53° 43′ 40″ S, 40° 57′ W, 7 Feb. 1927, 177 m.

Dentition. Fig. K, 63, p. 193 (holotype). Compared with Thiele's figure of the radula of *tenerum* (Fig. K, 64) the central tooth is proportionately wider, not sinused at the base, and the three cusps are of equal size, not with the central one stronger.

Operculum. Fig. N, 123, p. 196.

The species is nearest allied to *Probuccinum tenuistriatum* Hedley (1916, p. 58, pl. 8, figs. 95, 96). Compared with the South Georgian species, *tenuistriatum* is proportionately wider and has the addition of a varix near the outer lip.

Probuccinum angulatum n.sp., Pl. VII, fig. 27

Shell broadly conical with a sharply angled periphery on the last whorl; smooth, except for weak irregular axial growth folds; white, covered with a thin, pale buff epidermis. Protoconch conical, erect, of $2\frac{3}{4}$ smooth whorls with a bluntly rounded tip. The holotype has two post-nuclear whorls but is evidently not adult. Operculum horny ovate-pyriform, slightly produced on the lower inner edge and with a terminal nucleus.

TYPE LOCALITY. St. 156. North of South Georgia, 53° 51′ S, 36° 21′ 30″ W, 20 Jan. 1927, 200–236 m.

St. 159. North of South Georgia, 53° 52′ 30″ S, 36° 08′ W, 21 Jan. 1927, 160 m.

Height 9·9 mm.; diameter 7·0 mm. (holotype).

DENTITION. Fig. K, 65, p. 193. St. 159. Unfortunately, the only example containing the animal has an abnormal radula with five cusps on the left lateral and four on the right. The central is of similar shape to that of *delicatulum*, but it also is abnormal in having an additional weak cusp between the central cusp and the right-hand outer one.

This species is of heavier build than *delicatulum*, and although the material is not adult the species will be easily recognized by its strong peripheral angulation.

Genus **Cavineptunea** n.gen.

Type: *Cavineptunea monstrosa* n.sp.

This genus is provided for a *Neptunea*-like shell with a remarkable protoconch, quite unlike any other I have seen. It is large, like a tall, spirally wound collar, and surrounds a deep apical cavity. The nucleus is small and central, and the spiral collar emerges from it with rapidly increasing whorls. The effect is definitely neither the result of erosion nor the loss of a prior horny envelope. A juvenile in a perfectly non-eroded state has a protoconch of exactly the same form. The operculum is irregularly ovate with a blunt terminal nucleus, and the radula consists of a tricuspid central tooth and three or four cusps on the laterals. A similar abnormality is shown in Troschel & Thiele's figure of the radula of *N. bulbacea* (1868, pl. 6, fig. 16) which has three cusps on one lateral and four on the other. Unfortunately, I was able to prepare only one radula mount, so the normal number of lateral cusps is in doubt.

The shell is tall-spired, with a short, twisted canal and an angulate periphery.

It is difficult to determine whether *Cavineptunea* is an Antarctic relative of the Neptuniidae or simply another example of the adaptive radiation so marked in the Cominellid-Buccinuloid assemblage of the southern regions, but the latter supposition is the more likely. Unfortunately, the only available animal was not well enough preserved to do more than examine the dentition.

Cavineptunea monstrosa n.sp., Pl. VIII, figs. 38, 39

Shell thin, white, with a film of yellowish buff epidermis. Spire tall, $1\frac{2}{5}$ times height of aperture; base concave, strongly contracted; pillar flexuous. Whorls seven, including a relatively large concave protoconch of about $2\frac{1}{2}$ whorls, with a tall, straight-sided spiral rim, as described above. The first whorl of the protoconch is smooth, but the second develops closely spaced, weak, flattened spiral cords, and the carinate edge rapidly resolves into one of these spirals as the coiling becomes normal with steep straight-sided whorls. First post-nuclear whorl with ten flattened linear spaced spiral cords, penultimate with sixteen, and body whorl, including base, with thirty-eight. Aperture obliquely pyriform;

outer lip thin, straight in profile and obliquely retractive to the axis. Parietal wall deeply excavated. Pillar flexuous and strongly recurved, but the end is broken in the only near adult specimen, so the length of the anterior canal is not known. It cannot be very long, however, judging by the strongly reflexed pillar.

Height 36 mm. (actual), 38 mm. (estimated); diameter 18 mm.

Localities. St. 159. Off South Georgia, 53° 52′ 30″ S, 36° 08′ W, 21 Jan. 1927, 160 m. (holotype).

St. 160. Between South Georgia and Shag Rocks, 53° 43′ 40″ S, 40° 57′ W, 7 Feb. 1927, 177 m. (two juveniles).

Dentition. Fig. K, 68, p. 193 (St. 159). Protoconch. Fig. N, 105, p. 196.

Subfamily Prosiphiinae

Genus Prosipho Thiele, 1912

Type (s.d. Thiele 1929): *Prosipho gaussianus* Thiele

Prosipho astrolabiensis (Strebel)

Sipho (?*Mohnia*) *astrolabiensis* Strebel, 1908, p. 31, pl. 3, figs. 37*a–d*.
Prosipho astrolabiensis Thiele, 1912, p. 262.

Type locality. Astrolabe I., 63° 9′ S, 58° 17′ W, 95 m.

St. 45. 2·7 miles S 85° E of Jason Lt., South Georgia, 6 Apr. 1926, 238–270 m.
St. 140. Stromness Harbour to Larsen Point, South Georgia, 23 Dec. 1926, 122–136 m.
St. 144. Off mouth of Stromness Harbour, South Georgia, 5 Jan. 1927, 155–178 m.
St. 190. Bismarck Strait, Palmer Archipelago, 64° 56′ S, 65° 35′ W, 24 Mar. 1927, 93–130 m.
St. WS 27. Off South Georgia, 53° 55′ S, 38° 01′ W, 19 Dec. 1926, 107 m.

Range. Palmer Archipelago to South Georgia, 95-279 m. Melvill & Standen's record (1912) of *crassicostatus* from Burdwood Bank, 56 fathoms, requires confirmation.

Melvill & Standen (1912, p. 355) made this species a synonym of their *Chrysodomus* (*Sipho*) *crassicostatus*, described in 1907 (p. 138) from Scotia Bay, South Orkneys, 9–10 fathoms, off weed and stones. Thiele (1912) recognized both as distinct species of *Prosipho*.

I have not seen shallow-water examples comparable with *crassicostatus*, which from Melvill & Standen's figures appears to have coarser spirals and one less on the penultimate and body-whorl than in *astrolabiensis*.

This species and the next, *chordatus* Strebel, are very similar in size, build and sculpture, so much so that they are separable only with difficulty, yet the radulae differ considerably.

Both have a long basal outer extension of the laterals, like a handle, a peculiar feature of *Prosipho*, but *astrolabiensis* is bicuspid, whereas in *chordatus* the laterals fan out above and have six cusps. All the *Prosipho* radulae figured by Thiele (1912) have more than two cusps: *similis*, *glacialis*, *pusillus*, *nodosus*, *gaussianus* and *certus*. The central in all the species is narrow and deep based, more or less rectangular and with three cusps.

Radula. Fig. K, 56, p. 193.

Prosipho chordatus (Strebel)

Sipho? *chordatus* Strebel, 1908, p. 30, pl. 2, fig. 29*a–c*.

Type locality. Cumberland Bay, South Georgia, 252–310 m.

St. 123. Off Cumberland Bay, South Georgia. From 4·1 miles N 54° E of Larsen Point to 1·2 miles S 62° W of Merton Rock, 15 Dec. 1926, 230–250 m.
St. 140. Stromness Harbour to Larsen Point, South Georgia, 23 Dec. 1926, 122–136 m.
St. 152. Off South Georgia, 53° 51′ 30″ S, 36° 18′ 30″ W, 17 Jan. 1927, 245 m.
St. 156. Off South Georgia, 53° 51′ S, 36° 21′ 30″ W, 20 Jan. 1927, 200–236 m.

Range. South Georgia, 122–310 m.

Although they are of similar size and colour *chordatus* can be always distinguished from *astrolabiensis* by the number of spiral cords which range, as the whorls increase, from two to four in *astrolabiensis* and four to six in *chordatus*. If Melvill & Standen's figures of *crassicostatus* are correct, their species shows the spiral cords increasing from two to three. The cords in *astrolabiensis* are narrower and more sharply raised than in *chordatus*.

Radula. Fig. K, 55, p. 193.

Prosipho hunteri Hedley

Prosipho hunteri Hedley, 1916, p. 56, pl. 8, fig. 92.

Type locality. Commonwealth Bay, Adelie Land, 25 and 45–50 fathoms.

St. 140. Stromness Harbour to Larsen Point, South Georgia, 23 Dec. 1926, 122–136 m.
St. 152. Off South Georgia, 53° 51′ 30″ S, 36° 18′ 30″ W, 17 Jan. 1927, 245 m.

These 'Discovery' records extend the range of this species to the opposite side of the Antarctic Continent. Although I have not seen actual topotypes, the South Georgia examples compare exactly with Hedley's description and excellent figure.

Height 6·0 mm.; diameter 3·0 mm. (holotype).
Height 6·0 mm.; diameter 3·0 mm. (St. 152).
Height 6·5 mm.; diameter 3·1 mm. (St. 140).

Prosipho cancellatus Smith

Prosipho cancellatus Smith, 1915, p. 71, pl. 1, fig. 13.

Type locality. Ross Sea, 76° 56′ S, 164° 12′ E, 160 fathoms.

St. 1660. Ross Sea, 74° 46·4′ S, 178° 23·4′ E, 27 Jan 1936, 351 m.

The shell figured by Smith (loc. cit. pl. 2, fig. 15) from 'off Rio de Janeiro in 40 fathoms' appears to be correctly identified, but the locality is certainly incorrect, as Smith suspected.

Prosipho contrarius Thiele

Prosipho contrarius Thiele, 1912, p. 209, pl. 13, fig. 1.

Type locality. Gauss Station.

St. 1660. Ross Sea, 74° 46·4′ S, 178° 23·4′ E, 27 Jan. 1936, 351 m.

Prosipho perversus n.sp., Pl. VI, fig. 11

This species is very similar to *contrarius*, but it is smaller and has more prominent spiral keels, which increase to four instead of three over the last two whorls. Whorls $4\frac{1}{2}$, including a narrowly conic smooth protoconch of 1 whorl, which has an asymmetric nucleus. First and second post-nuclear whorls with three well-developed spiral keels, penultimate with a fourth emergent from the lower suture and body-whorl with four strong, equally developed keels. There are four spiral cords on the neck and these are almost as strong as the keels. In *contrarius* there are seven comparatively weak cords on the neck.

Height 4·0 mm.; diameter 2·0 mm. (*perversus*).
Height 4·6 mm.; diameter 2·3 mm. (holotype of *contrarius*).
Height 5·6 mm.; diameter 2·7 mm. (*contrarius*, St. 1660).

Type locality. St. 144. Off mouth of Stromness Harbour, South Georgia. From 54° 04′ S, 36° 27′ W to 53° 58′ S, 36° 26′ W, 5 Jan 1927, 155–178 m. (one example, the holotype).

Prosipho madigani Hedley

Prosipho madigani Hedley, 1916, p. 56, pl. 8, fig. 93.

TYPE LOCALITY. 25–50 fathoms, Commonwealth Bay, Adelie Land.

St. 182. Schollaert Channel, Palmer Archipelago, 64° 21′ S, 62° 58′ W, 14 Mar. 1927, 278–500 m.

This sole example measures 10·5 × 4·9 mm. and has $5\frac{1}{2}$ whorls, compared with 13·5 × 4·3 mm. and six whorls for Hedley's type. Hedley's measurements are evidently incorrect, however, for the figure shows proportions and sculptural detail in accord with the St. 182 specimen.

The above new record extends the range of the species to the opposite side of the Antarctic Continent. It is of interest also to note that Tomlin (1948, p. 229) has recently recorded the species from Macquarie Island, which is considerably north of the type locality and just outside the Antarctic convergence.

DENTITION. Fig. K, 54, p. 193. The laterals resemble those of *astrolabiensis*, but the basal plate is more produced and there are three cusps instead of two.

Genus Anomacme Strebel, 1905

Type (monotypy): *Anomacme smithi* Strebel

The genotypes of both *Antistreptus* (Dall, 1902*b*, p. 532) and *Anomacme* are superficially very similar, apart from the fact that the former is sinistral. The apices are different, however, that of *Anomacme* being decidedly Trophonoid in its asymmetric elongated and almost straight-sided whorls. The radula of *A. smithi*, however (Thiele 1912, pl. 16, fig. 14), is similar to that of *Prosipho*, for the laterals have the basal plate produced into long narrow process resembling a handle. Unfortunately, the dentition of *Antistreptus magellanicus* is not known, so for the present it is not advisable to follow Thiele (1929, p. 318) in closely associating *Antistreptus* and *Anomacme*.

Anomacme smithi Strebel

Anomacme smithi Strebel, 1905*b*, p. 633, pl. 22, fig. 28*a–e*.
Anomacme smithi Thiele, 1912, pl. 13, fig. 8 and pl. 16, fig. 14.
Antistreptus (*Anomacme*) *smithi* Thiele, 1929, p. 318.

TYPE LOCALITY. Smyth Channel, Strait of Magellan.

St. 388. Between Cape Horn and Staten I., 56° $19\frac{1}{2}$′ S, 67° $09\frac{3}{4}$′ W, 16 Apr. 1930, 121 m. (one empty shell).

DENTITION. Fig. K, 57, p. 193 (after Thiele, 1912).

Strebel's *Glypteuthria contraria* (1908, pl. 1, fig. 4) is a synonym of *Antistreptus magellanicus* Dall (1902).

Genus Meteuthria Thiele, 1912

Type (o.d.): *Euthria martensi* Strebel

Although *martensi* appears to be a heavily sculptured *Pareuthria*, comparable with *Glypteuthria*, the dentition indicates closer relationship with *Proneptunea*. Both have triangular or fan-shaped laterals, the top slope with from four to six cusps and the outer edge with a series of denticles. In *Meteuthria* only the laterals are present, but *Proneptunea* has the addition of a tricuspid central tooth.

Thiele (1929, p. 317) included the Antarctic *Chlanidotella*, *Proneptunea* and *Meteuthria* as subgenera of *Thalassoplanes*, a tropical mid-Pacific genus from 2463 fathoms.

The genotype of *Meteuthria* has a conical protoconch of $2\frac{1}{2}$ whorls, the tip smooth, small and projecting, followed by a whorl of closely spaced, thin, crisp axials and the remainder reticulated by axials and somewhat stronger spirals. Other members of the genus are Watson's *Fusus* (*Sipho*) *futile* from between Kerguelen and Heard Islands in 150 fathoms (Watson, 1886) and *Euthria* (*Glypteuthria*) *agnesia* Strebel (1905) from Strait of Magellan.

In *Glypteuthria* the protoconch consists of a relatively large, mammillate, smooth, brownish apex of $1\frac{1}{2}$ whorls followed by a brephic reticulated stage.

Meteuthria martensi (Strebel)

Euthria (*Glypteuthria*) *martensi* Strebel, 1905*b*, p. 630, pl. 21, fig. 13*a*, *b*.
Meteuthria martensi Thiele, 1912, p. 243, pl. 13, fig. 7 and pl. 16, fig. 18.

TYPE LOCALITY. Smyth Channel, 10 fathoms, Strait of Magellan.

St. 388. Between Cape Horn and Staten I., 56° $19\frac{1}{2}'$ S, 67° $09\frac{3}{4}'$ W, 16 Apr. 1930, 121 m. (empty shells only).

DENTITION. Fig. K, 62, p. 193 (after Thiele, 1912).

Genus Proneptunea Thiele, 1912

Type (o.d.): *Fusus* (*Troschelia*?) sp. Martens & Thiele, 1903 = *Proneptunea amabilis* Thiele, 1912

The shells of this genus are small, fusiform, with a thick brownish epidermis and are sculptured with prominent spiral keels. The protoconch is relatively large, paucispiral with straight sides, slightly concave on top and with an inrolled nucleus. The operculum is horny, irregularly ovate-quadrate, with a terminal nucleus. The radula consists of a deep and narrow-based tricuspid central and quadrate laterals with five well-formed cusps on the upper edge and a series of small denticles down the outer margin.

Martens and Thiele's *Fusus* (*Troschelia*?) sp. and Thiele's *Proneptunea amabilis*, both from Kerguelen Island and acknowledged to be identical by Thiele (1912), have this same style of dentition.

Proneptunea fenestrata n.sp., Pl. VI, fig. 12

Shell small, fusiform, with a thick yellowish brown epidermis, prominently sculptured with heavy spiral keels and interstitial thin axial lamellae. Whorls five including a relatively large paucispiral erect protoconch of $1\frac{1}{2}$ straight-sided whorls inrolled at the tip, leaving an apical depression. Spire slightly taller than height of aperture plus canal. Spire whorls bearing two very prominent keels, the uppermost, which defines a broad, almost flat shoulder, becoming bifid at the commencement of the penultimate whorl. Body-whorl with the addition of a third prominent keel at the top of the aperture and three much weaker spirals on the base. The shoulder, the interspaces and base crossed by regular crisp axial epidermal lamellae, twenty-one on the penultimate and twenty-nine on the body-whorl. Aperture approximately ovate-pyriform, deeply grooved on the inside, corresponding to the external keels. Outer lip deeply scalloped between the keels, but bridged by the lamellae. Anterior canal short, oblique, and spirally twisted, causing a prominent fasciole which is crossed transversely by a concentration of the terminals of the lamellate processes. In some examples the bifid peripheral keel shows the lamellae in the interspace, but on the crest of the keels the lamellae are scarcely apparent. Operculum irregularly ovate-quadrate, with a terminal nucleus.

Height 12·0 mm.; diameter 6·6 mm. (holotype, St. 141).

TYPE LOCALITY. St. 141. East Cumberland Bay, 200 yards from shore, under Mt Duse, South Georgia, 29 Dec. 1926, 17–27 m.

St. 140. Stromness Harbour to Larsen Point, South Georgia, from 54° 02′ S, 36° 38′ W to 54° 11′ 30″ S, 36° 29′ W, 23 Dec. 1926, 122–136 m.

St. 145. Stromness Harbour, between Grass I. and Tonsberg Point, South Georgia, 7 Jan. 1927, 26–35 m.

St. WS 25. Undine Harbour (north), South Georgia, 17 Dec. 1926, 18–27 m.

St. MS 10. East Cumberland Bay, $\frac{1}{4}$ mile south-east of Hope Point to $\frac{1}{4}$ mile south of Government Flagstaff, South Georgia, 14 Feb. 1926, 26–18 m.

DENTITION. Fig. K, 67, p. 193 (St. 141). PROTOCONCH and OPERCULUM. Fig. N, 106, 124, p. 196.

Proneptunea duplicarinata n.sp., Pl. VI, fig. 13

Shell small, fusiform, thin, covered with a pale yellowish brown epidermis, prominently sculptured with heavy spiral keels, the main ones divided into two or three by linear grooves, and crossed by distant fringe-like axial epidermal processes. Whorls five, including a relatively large, smooth, paucispiral protoconch of two straight-sided whorls, the top concave, oblique, with a slightly inrolled nucleus. Spire slightly less than height of aperture plus canal. First post-nuclear whorl sculptured with three prominent spiral keels, the uppermost, at about three-fourths whorl height, defining a broad, slightly concave shoulder. Second post-nuclear whorl with both the uppermost and lowest keels bifid and penultimate with the uppermost and lowest trifid and the middle one bifid. Body-whorl with the same development as the penultimate plus another bifid keel, level with the top of the aperture, six simple, widely spaced spirals on the base and neck, and six closely spaced, weak spiral cords on the fasciole. Axials in the form of fringe-like epidermal lamellate processes, eleven per whorl. The lamellae are regularly deeply scored, causing them to split into a series of moderately long, narrow tags. Aperture broadly ovate but produced below into a relatively long, obliquely recurved anterior canal. Outer lip thin, corrugated by the external sculpture and deeply spirally scored within.

Height 17·0 mm.; diameter 7·0 mm.

TYPE LOCALITY. St. 160. Between South Georgia and Shag Rocks, 53° 43′ 40″ S, 40° 57′ W, 7 Feb. 1927, 177 m.

DENTITION. Fig. K, 66, p. 193.

Genus **Chlanidotella** Thiele, 1929

Type (monotypy): *Cominella modesta* Martens

Chlanidotella modesta (Martens)

Cominella modesta Martens, 1885, p. 91.
Cominella modesta Martens & Pfeffer, 1886, p. 73, pl. 1, fig. 4*a–e*.
Chlanidota modesta Strebel, 1908, p. 33.
Thalassoplanes (*Chlanidotella*) *modesta* Thiele, 1929, p. 317.
Chlanidota (*Chlanidotella*) *modesta* David, 1934, 2–3, p. 128.

TYPE LOCALITY. South Georgia.

St. WS 56. Larsen Harbour, Drygalski Fjord, South Georgia, 14 Jan. 1927, 2 m.
St. MS 10. East Cumberland Bay, ¼ mile south-east of Hope Point to ¼ mile south of Government Flagstaff, 14 Feb. 1925, BTS, 26–18 m.

RANGE. South Georgia, 0–18 m.

DENTITION. Fig. L, 80, p. 194. The laterals bear four cusps, evidently the result of regular bifurcation of an original two. The central tooth has the usual three cusps of the family, but the basal plate is deeper than in either *Chlanidota* or *Pfefferia*. The operculum has a terminal nucleus.

Family MURICIDAE

The dentition of the southern Trophons does not present any clear-cut types. In fact, the radulae of both the Muricidae and the Thaisidae conform remarkably to a single type which presents only minor variations. The protoconch, however, clearly divides the southern Trophons into two main groups: (1) with a paucispiral asymmetrical nucleus and (2) with a polygyrate conical nucleus.

The Trophons are members of the Muricidae because they have an operculum with a terminal or subterminal nucleus and a rounded, not flattened or excavated columella. The members of the Thaisidae, on the other hand, have an operculum with a lateral nucleus and the columella is definitely flattened to excavated. Muricids are mostly lightly built with lamellate to spinose sculpture and a long anterior canal. Thaisids, on the other hand, are usually solid, ovate, with rugged sculpture and relatively short anterior canal.

That the Muricids and Thaisids are more closely interrelated than is generally supposed would seem to be indicated by the dentition. On shell and opercular characters there is little to distinguish the South Georgian *Trophon shackletoni paucilamellatus* from the Magellanic *T. laciniatus*, but whereas the former has a radula typical of most Trophons that of the latter closely agrees with the rather distinctive type found in the Thaisid genus *Stramonita* and also in certain of the *Drupa*-like genera. The similarity would appear to be too strong to be accounted for by mere coincidence. This type of radula differs from that of the remaining members of the family in having well-developed denticles along the outer edge of the side cusps of the central tooth.

I am not suggesting that on the one-sided evidence of the radula only one family should be admitted, for it seems that the characters of both the operculum and the columella afford a satisfactory differentiation that is in accord with general shell characters.

It is yet to be satisfactorily explained to what extent the radula can become modified to suit different feeding methods. In cases where a shellfish, presumed to have been an active feeder, has developed a ciliary method, the response appears to be a reduction of the radula to vestigial and functionless size rather than a radical change in the form and arrangement of the teeth. This has apparently occurred in *Trophon echinolamellatus* (described below), a shell of equal size to that of the genotype, *Trophon geversianus*, but with a radula that is many times smaller than that of the second named species.

Genus Trophon Montfort, 1810

Type (o.d.): *Trophon magellanicus* Gmelin (=*geversianus* Pallas)

The genus *Trophon* is well developed in the southern ocean and has its counterpart in *Boreotrophon* of Arctic and North Temperate seas. Typical *Trophon* has a large globose thin shell with prominent axial lamellae and a smooth paucispiral asymmetrical protoconch. The radula consists of a central tooth with an L-shaped lateral on each side. The central tooth is broad and shallow with three main cusps and two intermediates. Operculum horny, ovate with a terminal nucleus.

Trophon geversianus (Pallas)

Buccinum geversianus Pallas, 1769, p. 33, pl. 3, fig. 1.
Murex magellanicus Gmelin, 1792, p. 3548, no. 80 (excl. var. B).
Murex magellanicus Dillwyn, 1817, p. 725.
Murex lamellosus Dillwyn, 1817, p. 730.
Murex magellanicus Wood, 1818, p. 132, pl. 26, fig. 90.
Murex patagonicus, *magellanicus* and *varians* d'Orbigny, 1841, pp. 451–4.
Trophon geversianus Gould, 1852, p. 227, pl. 6, fig. 227.
Fusus geversianus (Gay) Hupé, 1854, p. 167.
Trophon geversianus Tryon, 1880, p. 144, pl. 32, figs. 337–340.
Trophon geversianus Rochebrune & Mabille, 1889, p. H 53.
Trophon geversianus Strebel, 1905*a*, p. 173, pls. 4–6.
Trophon geversianus Smith, 1905, p. 334.
Trophon geversianus Melvill & Standen, 1907, p. 106.
Trophon geversianus Strebel, 1908, p. 37, pl. 6, fig. 94*a*, *b*.
Trophon geversianus Melvill & Standen, 1914, p. 120.

TYPE LOCALITY. Strait of Magellan.

St. 56. Sparrow Cove, Port William, East Falkland Is., 1½ cables N 50° E of Sparrow Point, 16 May 1926, 10½–16 m.
St. 58. Port Stanley, East Falkland Is., 19 May 1926, 1–2 m.
St. 1230. 6·7 miles N 62° W from Dungeness Lt., Magellan Strait, 23 Dec. 1933, 27 m.
St. WS 847. Off Santa Cruz, Patagonia, 50° 18′ 45″ S, 67° 44′ W, 9 Dec. 1932, 56–84 m.

RANGE. Southern Chile and Argentina, Strait of Magellan, Tierra del Fuego and Falkland Is., 0–100 m. Recorded also by Melvill & Standen (1907, loc. cit.) from Scotia Bay, South Orkneys, 9–10 fathoms, but this record probably refers to the new species *echinolamellatus* described following.

DENTITION. Fig. L, 81, p. 194. The central tooth has three massive cusps, the middle one tallest, two very weak intermediates which appear as offshoots from the inner faces of the outer cusps and upturned projections at the extremities of the basal plate which may serve as cusps also. PROTOCONCH. Fig. N, 107, p. 196.

Trophon philippianus Dunker

Fusus intermedius (Gay) Hupé, 1854, p. 166, pl. 4, fig. 6 (non *Fusus intermedius* Cristofori & Jan., 1832 or Michelotti, 1846).
Trophon philippianus Dunker, 1878, p. 277, pl. 72, figs 4, 5.
Fusus intermedius Tryon, 1880, pl. 70, fig. 433 (reproduction of Gay's pl. 4, fig. 6).
Trophon intermedius Rochebrune & Mabille, 1889, 53.
Trophon geversianus philippianus Strebel, 1904*a*, p. 174, pl. 8, fig. 81 *a–d*.
Trophon philippianus Melvill & Standen, 1907, p. 107.
Trophon philippianus Melvill & Standen, 1912, p. 354.

TYPE LOCALITY. Strait of Magellan.

St. WS 834. Off Strait of Magellan, 52° 57′ 45″ S, 68° 08′ 15″ W, 2 Feb. 1932, 27–38 m.

RANGE. Strait of Magellan; Falkland Is.; Burdwood Bank, South of Falkland Is., 56 fathoms (Melvill & Standen, 1912, loc. cit.).

This species lacks the lamellate axials of *geversianus*, but more material than I have at hand may show that Strebel was correct in considering *philippianus* as merely a subspecies of *geversianus*. Both forms are present in a small series of littoral shells I have from Port Stanley, Falkland Islands.

Trophon echinolamellatus n.sp., Pl. IX, figs. 44, 45

Shell large, fusiform, strongly sculptured with sharply raised spiral cords crossed by closely spaced lamellae produced into hollow recurved spines at the points of intersection. Whorls six including the last whorl of a small protoconch, much eroded in only available material. Spire tall, 0·83 of height of aperture plus canal. Sculptured with fairly prominent flat-topped spiral cords with interspaces mostly of about the same width as the cords. They number four on the first and second post-nuclear whorls, six on the penultimate and twelve on the body-whorl and base, those on the base having somewhat wider interspaces. All the post-nuclear whorls are crossed by numerous thin lamellae which are developed into sharp recurved hollow spines wherever they cross the spiral cords. There are about twenty-two axial lamellae on the penultimate and about twenty on the body-whorl, but they are irregularly disposed. In addition, the surface is scored by weak spiral striations, even on the cords, but not on the actual spines. Aperture ovate, produced below into a short obliquely recurved anterior canal. Fasciole as a high, narrow, spiral ridge imbricated with numerous hollow spines. Outer lip dilated into a polished recurved rim which is crenulated and scalloped along its outer edge by the effect of the surface sculpture. Inner lip, a moderately wide smooth callus with a well-marked, almost free edge. Colour cinnamon-buff to orange-cinnamon with traces of a spirally zoned pattern in slightly darker or more reddish brown; upper zone occupying most of the upper portion of the body-whorl, middle zone much narrower and lowest zone on the fasciole.

Height 63 mm.; diameter 35 mm. (holotype).

Height 64 mm.; diameter 39 mm. (paratype).

TYPE LOCALITY. St. 170. Off Cape Bowles, Clarence I., 61° 25′ 30″ S, 53° 46′ W, 23 Feb. 1927, 342 m.

This species stands nearest to *geversianus*, from which it differs in being more elongate and in having the lamellae produced into hollow spines. Also the surface spiral striations are not present in *geversianus*, which is white with the interior of the aperture often diffused with brown.

Dentition. Fig. L, 83, p. 194. The central tooth has a broad, shallow, arched, basal plate, bearing three large triangular cusps, middle one tallest, and two very weak intermediate denticles which are situated in the troughs, not offshoots from the outer cusps as in *geversianus*.

Trophon scotianus n.sp., Pl. IX, figs. 48, 49

Shell rather large, thin, light buff; sculptured with elevated, coronated, thin lamellae and a surface pattern of low, rounded, spiral cords. Post-nuclear whorls five, plus a minute, smooth, papillate protoconch of $1\frac{1}{2}$ whorls, the apex oblique and inrolled. Spire 0·6 height of aperture plus canal. Axial sculpture of very prominent, thin lamellae, produced into erect coronated processes on the shoulder and extending over base to neck of canal, which is rendered prominently scaly by successive terminals of labial varices. Axials six per whorl. Spiral sculpture of rather broad, low, rounded, spiral cords with a narrow thread in each interspace. Labial varix broad, expanded and recurved, evenly arcuate right to the shallowly sinused termination of the anterior canal. Operculum irregularly ovate, with terminal nucleus.

Height 34 mm.; diameter 24 mm. (holotype).

Type locality. St. WS 27. Off South Georgia, 53° 55′ 00″ S, 38° 01′ 00″ W, 19 Dec. 1926, 107 m. (holotype, sole example).

Dentition. Fig. M, 88, p. 195. The central tooth resembles that of *echinolamellatus* in having an arched base and three triangular main cusps, but the intermediates are better developed.

The species differs from *shackletoni paucilamellatus* in having fewer axial lamellae, well-developed spiral sculpture, the labial varix extending to the end of the anterior canal, and in being coloured.

Trophon shackletoni paucilamellatus n.subsp., Pl. IX, fig. 52

Shell moderately large and thin, white, with a short spire, long canal and prominent sculpture in the form of a few wide, recurved, thin, smooth lamellae which rise high above the whorls and coronate the spire. Whorls five, including a small, smooth protoconch. Axial lamellae twelve on the first post-nuclear whorl, but reduced to eight on both the penultimate and the body-whorl. The lamellae vary between seven and ten on the last two whorls in examples from other South Georgian stations. Surface of shell smooth. Spire half the height of the aperture plus canal. Canal long, slightly reflexed and recurved.

Height 31 mm.; diameter 21 mm. (holotype, St. 148).

Type locality. St. 148. Off Cape Saunders, South Georgia, from 54° 03′ S, 36° 39′ W to 54° 05′ S, 36° 36′ 30″ W, 9 Jan. 1927, 132–148 m.

St. 27. West Cumberland Bay, South Georgia, 3·3 miles S 44° E of Jason Lt., 15 Mar. 1926, 100 m.
St. 140. Stromness Harbour to Larsen Point, South Georgia, from 54° 02′ S, 36° 38′ W to 54° 11′ 30″ S, 36° 29′ W, 23 Dec. 1926, 122–136 m.
St. 144. Off Stromness Harbour, South Georgia, from 54° 04′ S, 36° 27′ W to 53° 58′ S, 36° 26′ W, 5 Jan. 1927, 155–178 m.
St. 159. Off South Georgia, 53° 52′ 30″ S, 36° 08′ W, 21 Jan. 1927, 160 m.
St. 363. 2·5 miles S 80° E of south-east point of Zavodovski I., South Sandwich Is., 26 Feb. 1930, 329–278 m.
St. WS 33. Off South Georgia, 54° 59′ S, 35° 24′ W, 21 Dec. 1926, 130 m.

The species *shackletoni* Hedley (1911) is found from seven to twenty fathoms off Cape Royds, in the Ross Sea on the opposite side of the Antarctic Continent.

From *shackletoni* the South Georgian subspecies differs in having fewer and more prominent axial lamellae. In Cape Royds and South Georgian shells of adult size the lamellae number from twelve to fourteen in the former and from seven to ten in the latter. Hedley's series consisted of ten examples and mine of five adults and six juveniles, so the differences noted appear constant enough to warrant separating the South Georgian shells as a new regional subspecies.

DENTITION. Fig. L, 82, p. 194 (St. 144). The central tooth is very broad and shallow, slightly arched and bears three long slender main cusps and two intermediates which lie close to the outer cusps.

Trophon brevispira von Martens

Trophon brevispira Martens, 1885, p. 91.
Trophon brevispira Martens & Pfeffer, 1886, p. 68, pl. 1, figs. 1*a*, *b*.
Trophon brevispira Strebel, 1908, p. 42, pl. 4, fig. 48*a–c*.
Trophon brevispira L. David, 1934, 2–3, p. 128.

TYPE LOCALITY. South Georgia.

St. WS 25. Undine Harbour (north), South Georgia, 17 Dec. 1926, 18–27 m.
St. 45. 2·7 miles S 85° E of Jason Lt., South Georgia, 6 Apr. 1926, 238–270 m.

Only worn empty shells from both stations and evidently washed down from shallow water.

Trophon distantelamellatus Strebel

Trophon distantelamellatus Strebel, 1908, p. 43.

TYPE LOCALITY. South Georgia, 54° 23′ S, 36° 26′ W, 64–74 m.

This species bears close resemblance to young, non-eroded examples of *albolabratus*, but differs constantly in its narrower proportions and regularly crenulated axials.

St. MS 10. East Cumberland Bay, $\frac{1}{4}$ mile south-east of Hope Point to $\frac{1}{4}$ mile south of Government Flagstaff, South Georgia, 14 Feb. 1925, 26–18 m.
St. MS 67. East Cumberland Bay, 3 cables north-east of Hobart Rock to $\frac{1}{2}$ cable west of Hope Point, South Georgia, 28 Feb. 1925, 38 m.
St. MS 71. East Cumberland Bay, $9\frac{1}{4}$ cables E × S to 1·2 m. E × S of Sappho Point, South Georgia, 9 Mar. 1926, 110–60 m.

DENTITION. Fig. M, 87, p. 195.

Height 40·0 mm.; diameter 18·0 mm. (holotype, *albolabratus*).
Height 24·5 mm.; diameter 16·0 mm. (holotype, *cinguliferus*).
Height 15·1 mm.; diameter 7·9 mm. (holotype, *distantelamellatus*).
Height 15·0 mm.; diameter 7·8 mm. (St. MS 67, *distantelamellatus*).
Height 19·0 mm.; diameter 9·2 mm. (St. MS 10, *distantelamellatus*).

Trophon ohlini Strebel

Trophon ohlini Strebel, 1905*a*, p. 203, pl. 3, fig. 9*a–e*.

TYPE LOCALITY. Puerto Harris, 15 fathoms, Patagonia.

St. WS 80. Between Falkland Is. and Patagonia, 50° 58′ S, 63° 39′ W to 50° 55′ 30″ S, 63° 36′ W, 3 Feb. 1927, 152–156 m.
St. WS 216. North of Falkland Is. and east of Cape Blanco, Patagonia, 47° 37′ S, 60° 50′ W, 1 June 1928, 219–133 m.
St. WS 225. Between Falkland Is. and Patagonia, 50° 20′ S, 62° 30′ W, 9 June 1928, 162–161 m.
St. WS 243. Between Falkland Is. and Point Santa Cruz, Patagonia, 51° 06′ S, 64° 30′ W, 17 July 1928, 144–141 m.

DENTITION. Fig. L, 84, p. 194. The basal plate of the central tooth is broad and shallow, slightly arched, and bears three tall narrowly triangular main cusps of equal size and two well-developed intermediates, two-thirds the height of the main cusps.

The protoconch is paucispiral, asymmetrical, with almost straight-sided whorls, the top flattened, tilted, and slightly inrolled. The present material has the spiral sculpture slightly stronger than shown in Strebel's figure.

Trophon minutus (Strebel ms.) Melvill & Standen

Trophon minutus (Strebel ms.) Melvill & Standen, 1907, p. 107, pl. 1, figs. 7, 7*a*.
Trophon minutus Strebel, 1908, p. 44, pl. 4, fig. 47*a*, *b*.
Trophon minutus Melvill & Standen, 1912, p. 354.

TYPE LOCALITIES. Scotia Bay, South Orkneys, 9–15 fathoms (Melvill & Standen); South Georgia, 24–52 m. (Strebel).

St. 190. Bismark Strait, Palmer Archipelago, 64° 56′ S, 65° 35′ W, 93–130 m. (one example).

Trophon poirieria n.sp., Pl. IX, fig. 51

Shell small, thin, white, angulate-fusiform, tall spired, sculptured with distant upwardly produced hollow spines. Whorls 6, including the usual asymmetrical paucispiral smooth protoconch of $1\frac{1}{2}$ whorls. Spire taller than height of aperture plus canal. Whorls angled just above the middle and sculptured with upwardly inclined and recurved hollow peripheral spines, seven on the penultimate and 10 on the body-whorl. Surface smooth except for axial growth lines connected with the peripheral spines. Aperture broadly ovate but produced below into a relatively long, narrow, oblique and recurved anterior canal.

Height 15·5 mm.; diameter 8·75 mm. (holotype, St. 190).

TYPE LOCALITY. St. 190. Bismark Strait, Palmer Archipelago, 64° 56′ S, 65° 35′ W, 24 Aug. 1927, 93–130 m.

St. 170. Off Cape Bowles, Clarence I., South Shetlands, 61° 25′ 30″ S, 53° 46′ W, 23 Feb. 1927, 342 m.

The species is so named on account of its resemblance to the New Zealand genus *Poirieria*. It is apparently nearest allied to *Trophon coulmanensis* Smith, 1907, but lacks both the longitudinal development of the axial lamellae and the surface striations of that species.

Trophon declinans Watson

Trophon declinans Watson, 1882, p. 388.
Trophon declinans Watson, 1886, p. 168, pl. 10, fig. 10.

TYPE LOCALITY. Off Marion I., 46° 48′ S, 37° 49′ 30″ E, 69 fathoms.

St. 1563. Off Marion I., 46° 48·4′ S, 37° 49·2′ E, 7 Apr. 1935, 113–99 m.
St. WS 228. North-east of Falkland Is., 50° 50′ S, 56° 58′ W, 30 June 1928, 229–236 m.

Tomlin (1948, p. 228) recently recorded *declinans* from 69 m. off Macquarie Island, but this material now before me is of an angulate species with the addition of spiral sculpture. It closely resembles *pelseneeri* Smith, 1915.

Trophon cuspidarioides n.sp., Pl. IX, fig. 50

Shell small, fusiform, with a rather short spire but a disproportionately long, flexed and recurved anterior canal. Whorls about $5\frac{1}{2}$, including the protoconch, which is damaged in both examples, but evidently paucispiral. Spire 0·4 time height of aperture plus canal, slightly shouldered at two-thirds whorl height. Sculpture defaced on spire whorls but on the body-whorl there are five ill-defined, blunt spiral cords, first at the shoulder angle, second between the shoulder and the lower suture, third level with the top of the aperture, fourth and fifth on the base, the fifth almost obsolete. Axials irregular, mostly weak and fold-like, about twenty-five on the body-whorl. Actual aperture ovate but produced below into a very long flexed and recurved anterior canal, very little tapered and with a blunt termina-

tion. From the back, the canal bears a striking resemblance to the rostrum of the bivalve *Cuspidaria*. Colour dull white. Operculum normal, ovate-pyriform with a terminal nucleus.

Height 13 mm.; diameter 5·7 mm. (holotype, St. 42).

Type locality. St. 42. Off mouth of Cumberland Bay, South Georgia, 1 Apr. 1926, 120–204 m.

St. 144. Off mouth of Stromness Harbour, South Georgia, 5 Jan. 1927, 155–178 m.

This species belongs to a southern group comprising *Trophon scolopax* Watson from between Kerguelen and Heard Islands, 150 fathoms, *Trophon septus* Watson, Royal Sound, 28 fathoms, Kerguelen Island and *Trophon acanthodes* Watson from West Patagonia in 175–245 fathoms (all figured by Watson, 1886, pl. 10).

The dentition, operculum and protoconch, so far as can be judged by the available material, shows no marked departure from those of typical *Trophon*. The abnormally long anterior canal is scarcely of sufficient taxonomic importance to warrant even subgeneric separation of this group of species.

Dentition. Fig. M, 89, p. 195 (St. 42).

Subgenus Stramonitrophon n.subg.

Type: *Trophon laciniatus* Martyn

This new subgenus is proposed solely on account of the dentition, which is quite unlike that of other Trophons but bears a remarkable resemblance to the radula of the Thaisid genus *Stramonita* (see Troschel, 1869, pl. 12, figs. 3–9). The central tooth has a broad, shallow, rectangular base with upturned denticulate ends and three very large and tall main cusps. The middle one is slender and tallest and the side ones broad, rendered bifid by a semi-detached cusp on the inner slope and bearing four denticles on the outer slope.

The protoconch is paucispiral as in typical *Trophon*, the operculum ovate with a terminal nucleus, and the shell is fusiform with prominent lamellate axials.

Apart from the anomalous dentition, there is nothing to distinguish *laciniatus* from a normal *Trophon*.

Trophon (Stramonitrophon) laciniatus (Martyn)

Buccinum laciniatum Martyn, 1789, pl. 42.
Fusus laciniatus (Gay) Hupé, 1854, p. 168.
Trophon laciniatus Rochebrune & Mabille, 1889, p. 53.
Trophon laciniatus Strebel, 1905*a*, pl. 3, figs. 1–8.
Trophon laciniatus Strebel, 1908, p. 37.

Type locality. Strait of Magellan.

St. WS 85. 8 miles S 66° E of Lively I., East Falkland Is. 25 Mar. 1927, 79 m.
St. WS 788. Between Falkland Is. and Patagonia, 45° 07′ S, 65° W to 45° 07′ S, 64° 54′ W, 13 Dec. 1931, 82–88 m.

Range. Strebel (1904, loc. cit) records this species from many Magellan localities; Falkland Is., 25 m.; Burdwood Bank, 137–150 m. and South Georgia, 75 m.

The South Georgia record, however, is probably based upon *shackletoni paucilamellatus* n.subsp.

I am not certain if the 'Discovery' material is correctly placed in *laciniatus*, but certainly the St. WS 85 shell closely resembles Strebel's (1904) fig. 1, pl. 3, and the St. WS 788 shell his fig. 7, pl. 3.

Dentition. Fig. L, 86, p. 194 (St. WS 788). The radula of a St. WS 85 specimen is identical.

Subgenus **Fuegotrophon** n.subg.

Type: *Fusus crispus* Gould, 1849

This new subgenus is provided for a small group of Magellan Trophons of fusiform shape with turreted spire and long canal, and sculptured with spiral cords crossed by bluntly rounded axials and a dense surface covering of low crisp lamellate ridges. Its distinctive features are a paucispiral, asymmetrical, rather bulbous, smooth protoconch and a dentition that departs somewhat from the stereotyped monotony of most Trophonoid radulae. These differences are exhibited in the central tooth, which has the massive central cusp reinforced by a buttress which extends below the lower margin of the basal plate. The basal plate is broad, shallow and rectangular, but with three basal projections caused by a downward extension of the outer basal extremities, plus the base of the central buttress. The upper and outer extremities of this plate are upwardly produced to form two extra cusps, giving a formula of seven cusps instead of the usual five. The three primary cusps are well developed with the central one largest; the intermediates are very little less in size than the outer primary cusps and of approximately equal size to the extra cusps on the outer extremities of the basal plate. The transverse ridge representing the upper edge of the central tooth bears groups of several parallel vertical grooves, or incipient denticles, at each outer extremity.

The operculum is ovate-quadrate with a blunt terminal nucleus situated at the lower right-hand corner.

Trophon (Fuegotrophon) pallidus (Broderip)

Murex pallidus Broderip, 1832, p. 194.
Fusus crispus Gould, 1849, p. 141 (non *Fusus crispus* Borson, 1821 (1822?)).
Fusus fimbriatus (Gay) Hupé, 1854, p. 165, pl. 4, fig. 7 (non *Fusus fimbriatus* Borson, 1821 (1822?)).
Fusus fasciculatus Hombron & Jacquinot, 1854, p. 110, pl. 25, figs. 15, 16.
Trophon crispus Tryon, 1880, 11, p. 143, pl. 31, figs. 328, 329, pl. 70, fig. 437.
Trophon crispus Strebel, 1905*a*, p. 204, pl. 3, fig. 10 *a–g*.
Trophon crispus Melvill & Standen, 1907, p. 106.
Trophon crispus burdwoodianum Strebel, 1908, p. 38, pl. 1, fig. 15*a–c*.

Type localities. Falkland Is. (*pallidus*); Strait of Magellan (*crispus*, *fimbriatus* and *fasciculatus*); Burdwood Bank, 137–150 m. (*burdwoodianum*).

St. 51. Off Eddystone Rock, East Falkland I., from 7 miles N 50° E to 7·6 miles N 63° E of Eddystone Rock, 4 May 1926, 105–115 m.
St. 56. Sparrow Cove, Port William, East Falkland Is., 1½ cables N 50° E of Sparrow Point, 16 May 1926, 10½–16 m.
St. 57. Port William, East Falkland Is., 5½ cables S 20° W of Sparrow Point, 16 May 1926, 15 m.
St. 388. Between Cape Horn and Staten I., 56° 19½′ S, 67° 09¾′ W, 16 Apr. 1930, 121 m.
St. WS 85. 8 miles S 66° E of Lively I., East Falkland Is., 25 Mar. 1927, 79 m.
St. WS 88. North of Staten I. from 54° S, 65° W to 54° S, 64° 55′ W, 6 Apr. 1927, 118–118 m.
St. WS 750. Off entrance to Strait of Magellan, 19 Sept. 1931, 95 m.
St. WS 824. Off Falkland Is., 52° 29′ S, 58° 27′ W, 19 Jan. 1932, 146–137 m.

I have selected *pallidus* as the earliest name for the well-known but preoccupied *crispus* since the type locality Falkland Islands and Sowerby's figure seem to indicate this species, but if my interpretation should prove to be incorrect, then *fasciculatus* Hombron & Jacquinot must be used. Cossmann's substitute name *Trophon gouldi* (1903, p. 54) was bestowed upon a New Zealand Pliocene fossil, wrongly ascribed to *crispus*.

The small sculptural differences upon which Strebel based his *burdwoodianum* are covered by the normal range of variation within the species. The *burdwoodianum* type of sculpture (widely spaced spirals) is mostly found in the deep-water stations, but the fact that both forms occur at the shallow-water (10½–16 m) St. 56 precludes the interpretation of *burdwoodianum* as a benthic subspecies.

Dall (1902*b*, p. 535) described an apparently closely related species, *T. pelecetus*, which is based upon Gould's *Fusus crispus* var. (1852, p. 229, pl. 16, fig. 279*b*).

Dentition. Fig. L, 85, p. 194 (St. 56). Protoconch. Fig. N, 111, p. 196.

Genus Xymenopsis n.g.

Type: *Fusus liratus* Gould

This genus is provided for a large group of Magellan species which differ from typical *Trophon* in having a tall, narrowly conic, polygyrate protoconch instead of a paucispiral asymmetrical one, and sculpture in the form of rounded axial varices crossed by spiral cords, but never lamellate processes.

The style of protoconch is similar to that of the New Zealand genus *Zeatrophon* and the sculpture to that of *Xymene*, another New Zealand genus.

The central tooth of the radula is distinctive in that the base is a simple, broad, shallow, almost straight bar with rounded ends and the cusps, consisting of three tall, slender primaries and two intermediates appear as serrations of a single outgrowth from the basal plate.

There is a large number of nominal species in this group, but doubtless many of them ultimately will prove to be synonyms. The following names refer to members of the genus *Xymenopsis: acuminatus* Strebel, 1904; *albidus* Philippi, 1846; *albus* and *brucei* Strebel, 1904; *cancellarioides* Reeve, 1847 (=*liratus* Gould); *cancellinus* Philippi, 1845; *candidatus* Rochebrune & Mabille, 1889; *corrugatus* Reeve 1848; *couthouyi* Strebel, 1904; *decolor* Philippi, 1845; *dispar* Rochebrune & Mabille, 1889; *elegans* and *elongatus* Strebel, 1904; *falklandicus* Strebel, 1908; *fenestratus* and *hoylei* Strebel, 1904; *lebruni* Rochebrune & Mabille, 1889; *liratus* Gould, 1849; *loebbeckei* Rochebrune & Mabille, 1889; *obesus*, *ornatus*, *paessleri* and *paessleri turrita* Strebel, 1904; *plumbeus* Gould, 1852; *pseudoelongatus* and *ringei* Strebel, 1904; *roseus* Hombron & Jacquinot, 1853 (=*plumbeus*?); *standeni* Strebel, 1904; *textiliosus* Hombron & Jacquinot, 1854 (=*liratus* Gould); and *violaceus* Rochebrune & Mabille, 1889.

An evaluation of these names is not possible without recourse to the type material which is in European museums.

Xymenopsis liratus (Gould)

Buccinum cancellarioides Reeve, ?1847 (Feb.) (non *Buccinum cancellaroides* Bast. in Grateloup '1840–1846', stated by Sherborn to be 1847).
Fusus liratus (Couthouy ms.) Gould, 1849, p. 141 (non *Fusus lyratus* Deshayes, 1843).
Fusus textiliosus Hombron & Jacquinot, 1854, pl. 25, figs. 9, 10 (non Deshayes, 1835).
Trophon liratus Strebel, 1905*a*, p. 238, pl. 8, fig. 74*a–c*.
Trophon liratus Melvill & Standen, 1907, p. 107.
Trophon liratus Strebel, 1908, p. 37.
Trophon liratus Melvill & Standen, 1914, p. 120.

Type locality. Patagonia (*liratus*).

St. 52. Port William, East Falkland Is., 7·4 cables N 17° E of Navy Point, 5 May 1926, 17 m.
St. 1230. 6·7 miles N 62° W from Dungeness Lt., Magellan Strait, 23 Dec. 1933, 27 m.
St. WS 784. North of Falkland Is., 49° 47′ 45″ S, 61° 05′ W, 5 Dec. 1931, 170 m.

It seems probable that Reeve's *Buccinum cancellarioides* from unknown locality is identical with Gould's *Fusus liratus*, but I hesitate to upset a well-known name, expecially since the actual date of the

conflicting *Buccinum cancellaroides* Bast. is in doubt. Deshayes's *Fusus lyratus* does not affect Gould's *F. liratus*, since the derivations are different.

I have placed in *liratus* all the shells with the axials cut by linear spiral grooves. These number about seven on the penultimate. In the numerous allied species the spiral ribs have wider interspaces which are either plain or with an intermediate spiral. PROTOCONCH. Fig. N, 110, p. 196.

The shallow-water shells from the Falkland Islands usually seen in collections as '*liratus*' are *brucei* Strebel, 1904. Compared with my interpretation of *liratus* these shells have wider spiral interspaces with intermediates on the last whorl and the aperture is rather square and more capacious.

Xymenopsis albidus (Philippi)

Fusus albidus Philippi, 1846, p. 119.
Trophon albidus Strebel, 1904, p. 222, pl. 7, fig. 64*a–d*.

TYPE LOCALITY ?Magellanic

St. WS 71. 6 miles N 60° E of Cape Pembroke Lt., East Falkland Is., 23 Feb. 1927, 82 m.
St. WS 88. Off Staten I., Tierra del Fuego, 54° S, 65° W to 54° S, 64° 55′ W, 6 Apr. 1927, 118–118 m.
St. WS 97. Between Falkland Is. and Patagonia, 49° S, 62° W to 49° 01′ S, 61° 56′ W, 18 Apr. 1927, 146–145 m.
St. WS 222. South-east of Puerto Deseado, Patagonia, 48° 23′ S, 65° W, 8 June 1928, 100 m.
St. WS 243. Off Santa Cruz, Patagonia, 51° 06′ S, 64° 30′ W, 17 July 1928, 144–141 m.
St. WS 750. North-east of Falkland Is., 51° 50′ S, 57° 15′ 13″ W, 18/19 Jan. 1932, 135–144 m.
St. WS 805. Between Falkland Is. and Patagonia, from 50° 11′ S, 63° 27′ W to 50° 09·5′ S, 63° 31′ W, 6 Jan. 1932, 150–148 m.
St. WS 808. Off Santa Cruz, Patagonia, 49° 40′ 15″ S, 65° 42′ W, 8 Jan. 1932, 109–107 m.
St. WS 829. Between Falkland Is. and Patagonia, 50° 51′ S, 63° 13′ 30″ W, 31 Jan. 1932, 155 m.
St. WS 834. Off Bahia Grande, Patagonia, 52° 57′ 45″ S, 68° 08′ 15″ W, 2 Feb. 1932, 27–38 m.
St. WS 838. Between Falkland Is. and Patagonia, 53° 11′ 45″ S, 65° W, 5 Feb. 1932, 148 m.
St. WS 861. Off Puerto Deseado, Patagonia, 47° 40′ S, 64° 12′ W, 27 Mar. 1932, 117–124 m.
St. WS 863. Between Falkland Is. and Patagonia, 49° 05′ S, 64° 09′ W, 28 Mar. 1932, 121–117 m.
St. WS 865. Between Falkland Is. and Patagonia, 50° 03′ S, 64° 14′ W, 29 Mar. 1932, 126–128 m.
St. WS 867. Between Falkland Is. and Patagonia, 51° 10′ S, 64° 15′ W, 29 Mar. 1932, 137–144 m.
St. WS 869. Between Falkland Is. and Patagonia, 52° 15′ 30″ S, 64° 13′ 45″ W, 31 Mar. 1932, 187–0 m.

This shell, which is widely distributed in the deeper waters of the Falklands-Magellan area, is referred to *albidus* on the basis of Strebel's interpretation (1904).

DENTITION. Fig. M, 90, p. 195 (St. 834).

Xymenopsis falklandicus Strebel, Pl. IX, figs. 46, 47

Trophon falklandicus Strebel, 1908, p. 39, pl. 1, fig. 8*a–c*.
Trophon falklandicus Melvill & Standen, 1912, p. 354.

TYPE LOCALITY. Falkland Is., 7–40 m.

St. 55. Entrance to Port Stanley, East Falkland Is., 2 cables S 24° E of Navy Point, 16 May 1926, 10–16 m.
St. 56. Sparrow Cove, Port William, East Falkland Is., 1½ cables N 50° E of Sparrow Point, 16 May 1926, 10½–16 m.

Melvill & Standen (1912) consider this species doubtfully distinct from *paessleri* Strebel, 1904, from Smyth Channel, Strait of Magellan, but it is much nearer to, if not identical with *hoylei* Strebel 1904.

As previously remarked, Strebel described so many closely similar Trophons of this group from the Magellan Region that it is useless to attempt their evaluation without recourse to the type specimens.

Family MARGINELLIDAE

Genus Marginella Lamarck, 1799

Type (monotypy): *Voluta glabella* Linn.

Marginella warrenii Marrat, Pl. X, fig. 67.

Marginella warrenii Marrat, 1876, p. 136.
Marginella warrenii Tryon, 1883, p. 56.
Marginella hahni Mabille, 1884, p. 132.
Marginella hahni Rochebrune & Mabille, 1889, p. H 51, pl. 3, fig. 3*a*, *b*.
Marginella warrenii Tomlin, 1917, p. 305.

Type localities. Between Falkland Is. and Strait of Magellan, '50° 23′ 5″ N, 64° 0′ 4″ W' (N cited in error for S latitude) (*warrenii*); between Strait of Magellan and Falkland Is. in 120 m. (*hahni*).

St. WS 88. Off Le Maire Strait, Tierra del Fuego, 54° 00′ 00″ S, 64° 57′ 30″ W, 6 Apr. 1927, 118 m.
St. WS 212. North of Falkland Is., 49° 22′ 00″ S, 60° 10′ 00″ W, 30 May 1928, 242-249 m.
St. WS 213. North of Falkland Is., 49° 22′ 00″ S, 60° 10′ 00″ W, 30 May, 1928, 249–239 m.
St. WS 216. North of Falkland Is., 47° 37′ 00″ S, 60° 50′ 00″ W, 1 June 1928, 219–133 m.
St. WS 228. North-east of Falkland Is., 50° 50′ 00″ S, 56° 58′ 00″ W, 30 June 1928, 229–236 m.
St. WS 237. North of Falkland Is., 46° 00′ 00″ S, 60° 05′ 00″ W, 7 July 1928, 150–256 m.
St. WS 244. North-west of Falkland Is., 52° 00′ 00″ S, 62° 40′ 00″ W, 18 July 1928, 253–247 m.
St. WS 245. West of Falkland Is., 52° 36′ 00″ S, 63° 40′ 00″ W, 18 July 1928, 304–290 m.
St. WS 816. West of Falkland Is., 52° 09′ 45″ S, 64° 56′ 00″ W, 14 Jan. 1932, 150 m.
St. WS 820. North-east of West Falkland Is., 52° 53′ 15″ S, 61° 51′ 30″ W, 18 Jan, 1932, 351–367 m.
St. WS 867. Between Falkland Is. and Patagonia, 51° 10′ S, 64° 15·5′ W, 30 Mar. 1932, 150–147 m.

Range. Falkland Is. to Patagonia and Tierra del Fuego, 118–367 m.

Dentition. A number of examples were dissected but no radula was located.

This is a handsome shell over 20 mm. in height, highly glazed and white with two equally broad flesh-coloured spiral bands. By an initial error the locality was given as north instead of south latitude, which credited the species to eastern Canadian waters until the error was discovered by Bavay (see Tomlin, loc. cit. p. 305).

Marginella dozei Rochebrune & Mabille, Pl. X, fig. 66

Marginella dozei Rochebrune & Mabille, 1889, p. H 52, pl. 3, fig. 4*a*, *b*.

Type locality. Between Strait of Magellan and Falkland Is. in 120 m.

St. 388. Between Cape Horn and Tierra del Fuego, 56° 19½′ S, 67° 09¾′ W, 16 Apr. 1930, 121 m.

A similar species to *warrenii* but smaller and with a different colour pattern. There are two spiral colour bands, the upper one being narrow and submargining the suture and the lower one occupying most of the base.

Large, highly glazed Marginellids are usually of tropical occurrence.

Family VOLUTIDAE

Genus Adelomelon Dall, 1906

Type (o.d.): *Voluta ancilla* Solander

The vexed question of the type designation of Swainson's *Cymbiola* was dealt with in detail by Marwick (1926, pp. 263, 264). This requires pointing out, for Thiele (1931, p. 350) has persisted in the old interpretation of *ancilla* Solander as type of Swainson's *Cymbiola*. The actual genotype of *Cymbiola*

Swainson, 1832 is *C. broderipia* Swainson (n.nom. for *Voluta cymbiola* Swainson. Type by tautonomy). Dall's substitute name *Adelomelon*, 1906, is therefore the correct genus for the series of Magellan volutes centred around Solander's *ancilla*.

Adelomelon ancilla (Solander)

(*ancilla*)

'Grand Buccin Magellanique', D'Avila, 1767, pl. 8, fig. S, no. 181.
Voluta ancilla, Solander, 1786, p. 137, no. 3061.
Voluta magellanica, Chemnitz, 1788, pp. 138–9 (exclusive of figures).
Voluta spectabilis, Gmelin, 1791, p. 3468. no. 142.
Voluta ancilla Lamarck, 1816, pl. 385, fig. 3.
Cymbiola ancilla Pace, 1902, p. 28, pl. 7, figs. 1–16.
Voluta ancilla Strebel, 1906, pl. 8, figs. 25 (copy of D'Avila's figure), 18, 20, 22, 23; pl. 9, figs. 37, 45, 50, 51.
Adelomelon ancilla Dall, 1906, p. 143.
Adelomelon ancilla Dall, 1907, p. 355.
Adelomelon ancilla Smith, 1942, p. 55, pl. 25, fig. 171.

(*magellanica*)

Voluta magellanica Chemnitz, 1788, pp. 138–9 (in part), figs. 1383, 1384.
Voluta magellanica Gmelin, 1791, p. 3465, no. 110.
Voluta magellanica Kiener, 1839, pl. 51.
Voluta ancilla Reeve, 1849, pl. 17, fig. 39.
Voluta bracata Rochebrune & Mabille, 1889, p. 48.
Scaphella (*Voluta*) *arnheimi* Rivers, 1891, locality 'Monterey Bay, California' false.
Voluta ancilla with vars. *typica*, *ponderosa*, *elongata*, *expansa* and *abbreviata* Lahille, 1895, p. 311.
Voluta magellanica Strebel, 1906, pl. 8, figs. 17, 19, 21, 24–32; pl. 9, figs. 36 and 41.
Adelomelon magellanica Dall, 1907, p. 355.
Adelomelon magellanica Smith, 1942, p. 57, pl. 11, fig. 83.

(The above is an abridged synonomy.)

Most of the 'Discovery' volutes are more or less elongated shells without nodules. Larger series than I have available will be necessary to determine if *magellanica* is really distinct from *ancilla*. Variation is considerable, so much so that it is difficult to match individual specimens with the original figures. In several instances *ancilla* and *magellanica* forms are present in one dredging station, and more often than not, examples tend to combine in varying degrees the differentiating criteria set out by Dall (1889*a* p. 312). Dall stated that '*S. magellanica* is much like the *S. ancilla* from which it is chiefly distinguished by its smaller size, more slender form and usually fewer plaits'.

Since I am unable to draw a satisfactory line between *ancilla* and *magellanica* I have for the present referred the 'Discovery' material to the prior name. That is all the examples that range between the figure of D'Avila (1767)=*ancilla* and that of Chemnitz (1788)=*magellanica*.

Type localities. Strait of Magellan (*ancilla* and *magellanica*).

St. 51. Off Eddystone Rock, East Falkland Is., 4 May 1926, 115 m.
St. 1902. Off Santa Cruz, Patagonia, 49° 48′ S, 67° 39·5′ W, 28 Nov. 1936, 50–30 m.
St. WS 71. 6 mile N 60° E of Cape Pembroke Lt., East Falkland Is., 23 Feb. 1927, 82–80 m.
St. WS 83. 14 miles S 64° W of George I., East Falkland Is., 52° 28′ S, 60° 06′ W to 52° 30′ 00″ S, 60° 09′ 30″ W, 24 Mar. 1927, 137–129 m.
St. WS 109. North of Falkland Is., 50° 19′ S, 58° 27′ W to 50° 18′ 36″ S, 58° 30′ W, 26 Apr. 1927, 145 m.
St. WS 243. Between Falkland Is. and Patagonia, 51° 06′ S, 64° 30′ W, 17 July 1928, 144–141 m. (two empty shells).
St. WS 247. North of Falkland Is., 52° 40′ S, 60° 05′ W, 19 July 1928, 172 m.
St. WS 776. Gulf of St George, Patagonia, 46° 18′ 15″ S, 65° 02′ 15″ W, 3 Nov. 1931, 50–80 m.

Range. Argentina, Patagonia, Straits of Magellan and Falkland Is., 0–172 m.

Tables A and B show the difficulty of recognizing more than one variable species with the 'Discovery' material.

Table A. Ancilla *and* magellanica *forms*

Height (mm.)	Diameter (mm.)	Ratio (aperture to total height)	Plaits	Station
212	76	1·6	3	1902
205	80	1·5	3	1902
180	78	1·4	3	WS 776
126	41	1·9	2	WS 83
120	39	1·8	2	WS 83
100	37	1·6	2	WS 109
96	34	1·7	2	WS 83
95	37	1·6	2	WS 109
82	32	1·8	2	WS 247

Table B. *Showing variation in individuals from the same station*

Height (mm.)	Diameter (mm.)	Spire ratio	Plaits	Fasciole	Protoconch	Station
141	45	1·8	2	Slight	Small	WS 71)
123	55	1·48	3	Bulging	Large	WS 71 ∫
111	44	1·45	3	Bulging	Large	WS 243)
93	35	1·85	2	Slight	Small	WS 243 ∫

If two forms require to be recognized, examples from St. 1902 and WS 776 conform with *ancilla* in being large with three plaits and a spire ratio ranging between 1·4 and 1·6. The remaining stations represent the smaller *magellanica* form which is more slender has two plaits and a spire ratio ranging between 1·6 and 1·9.

However, in the writer's opinion, such arbitrarily selected criteria lose status when other varying characters are considered, such as the relative size of the protoconch and the presence or otherwise of a bulging fasciole.

It has been pointed out by Dall (1919, pp. 207–34) and others that where several embryos develop in one egg capsule competition results in varying sizes in these embryos. In the New Zealand *Alcithoe arabica* it has been noted that when a capsule develops two or more embryos they are invariably small and in instances where only one persists it grows abnormally large.

It seems that in *Adelomelon ancilla* a small protoconch develops into a narrow tall-spired shell with a slight fasciole development and two columellar plaits, and conversely a large protoconch is associated with a wider, short-spired shell, a bulging fasciole and three columella plaits.

Dentition. Pace (1902).

The radula is reduced to a row of tricuspid central teeth, as in most volutes.

Adelomelon mangeri (Preston)

Cymbiola mangeri Preston, 1901, p. 237, fig. in text.
Adelomelon mangeri Smith, 1942, p. 59, pl. 12, fig. 89.

Type locality. Falkland Is.

Off Jetty, Port Stanley, Falkland Is., 23 Mar. 1937, 1 m.

Height (mm.)	Diameter (mm.)	Ratio (aperture to total height)	Plaits	Station
103	56	1·3	3	(Holotype)
180	92	1·25	3	(Disc. II St.)
121	62	1·3	3	(Falkland Is.) (A.W.B.P. Coll.)

This seems to be a stable species so far known only from the Falkland Islands. It is characterized by its large, swollen body-whorl, short spire, large protoconch and lack of both nodules and colour pattern. It has apparently developed either as an inflated squat derivative of *ancilla* or more likely as a smooth patternless form of *subnodosa*.

Other species of *Adelomelon* recorded from the Magellan province are: *beckii* Broderip, 1836; *ferussacii* Donovan, 1824; *martensi* Strebel, 1906; and *tuberculata* Swainson, 1821.

Genus Miomelon Dall, 1907

Type (o.d.): *Volutilithes philippiana* Dall

Although it has several atypical features, the shell described below is probably correctly placed in *Miomelon*. The genus was proposed for a small Volute, 36·5 mm. in height, from 677 fathoms, south-west coast of Chile. The genotype is dark olivaceous-ash colour, with a tall spire equal to the height of the aperture, and the surface is sculptured with weak axial narrow folds and numerous half-obsolete spiral striations. The columellar plaits number three, the anterior sinus is broad and very shallow, there is no columellar callus plate and the fasciole is not margined. A very characteristic feature is the form of the suture, which is deeply and narrowly channelled, but adpressed below by a distinct concavity.

The new species described below has a short spire and the sculpture is almost obsolete, but the form of the suture, the plaits, absence of a columellar plate, weak, broad anterior notch and ill-defined fasciole are the significant characters in accord with *Miomelon*.

The Chilean Tertiary Volutes, *d'orbignyana*, *domeykoana* and *gracilis* Philippi, *indurata* Conrad and *triplicata* Sowerby, were quoted as congeneric with *philippiana* by Dall (1907). The new species is not unlike the New Zealand *Palomelon* Finlay, 1926, but that genus lacks the channelled suture, has a more clearly defined fasciole and no spiral sculpture.

Miomelon scoresbyana n.sp., Pl. IX, fig. 43

Shell small, solid, white, broadly fusiform with low conical spire 0·35 time height of aperture. Whorls about six (protoconch eroded). Suture deeply and narrowly channelled and adpressed below by a wide shallow concavity. Anterior notch broad and very shallow, fasciole defined only by the trend of the growth lines, not marked off in any way. Posterior notch deep, narrow and constricted, forming a weak sutural sinus. Plaits three, strong and of equal development, or four if the anterior thickened edge of the columella is included. Sculpture consisting of very numerous but very weak axial growth lines and equally numerous subobsolete spiral threads. The parietal glaze is cream coloured and extends half-way across the front of the body-whorl.

Height 48·4 mm.; diameter 25·5 mm.

Type locality. St. WS 816. Between Falkland Is. and Strait of Magellan, 52° 09′ 45″ S, 64° 56′ W, 14 Jan. 1932, 150 m.

The animal has the foot rather pointed posteriorly, is comparatively smooth, and the tentacles are long and tapered (10 mm.) with the eyes at the outer side of the bases. Dall found the eyes to be absent in the genotype, but the much greater depth at which it was taken (677 fathoms) would account for this absence.

The radula has not been removed, since it seems desirable to keep the only available animal intact. Experience has shown that the Volutid radula is almost invariably of the same type, that is, a single row of tricuspid central teeth.

The species is named in recognition of the many novelties obtained in the trawling surveys in Magellan waters from the R.R.S. *William Scoresby*.

Genus Harpovoluta Thiele, 1912

Type (monotypy): *Harpovoluta vanhoffeni* Thiele

Harpovoluta charcoti (Lamy)

Buccinum charcoti Lamy, 1910*b*, p. 318.
Buccinum charcoti Lamy, 1911*a*, p. 4, pl. 1, figs. 1, 2.
Harpovoluta charcoti Thiele, 1912, p. 271.
Volutharpa charcoti Smith, 1915, p. 72.
Volutharpa charcoti Eales, 1923, p. 33 (anatomy and radula).

Type locality. Off King George Sound, South Shetlands, 420 m.

St. 170. Off Cape Bowles, Clarence I., 61° 25′ 30″ S, 53° 46′ W, in 342 m.

Range. South Shetlands, 420 m.; Clarence I., 342 m.; off Oates Land, 180–200 fathoms (Smith, 1915).

Dentition. Eales (1923) gives a very full account of the anatomy, a figure of the dentition, and refers this shellfish to the Volutidae. For some unaccountable reason, however, Thiele's *Harpovoluta* was suppressed by Smith and Eales in favour of *Volutharpa*, which is, however, definitely Buccinoid. The radula in *charcoti* is typically Volutid, consisting of a tricuspid central tooth only.

Tomlin (1948, p. 229) recorded *Harpovoluta vanhoffeni* Thiele from 69 m. off Macquarie Island.

Genus Provocator Watson, 1882

Type (monotypy): *Provocator pulcher* Watson

Provocator cf. pulcher Watson

Provocator pulcher Watson, 1882, p. 330.
Provocator pulcher Watson, 1886, p. 260, pl. 13, fig. 5.

Type locality. Off Cumberland Bay, Kerguelen I. 105 fathoms. Between Kerguelen I. and Heard I., 150 fathoms (Challenger).

St. WS 245. Between Falkland Is. and Patagonia, 52° 36′ S, 63° 40′ W, 18 July 1928, 304–290 m.

The solitary 'Discovery' example is a juvenile of only three post-nuclear whorls, but it tallies well with Watson's detailed description of the adult holotype. The holotype is about 90 mm. in height (3·6 in.) —the St. WS 245 example 32 × 14 mm. The present example has an excellently preserved 'Caricellid' protoconch, the apical spike being prominent and curved to one side. The deep sutural sinus, concave, smooth, enamelled subsutural band and delicately axially and spirally sculptured surface, are particularly noticeable. In the holotype the outer lip bulges prominently outwards below the middle, but the 'Discovery' example lacks this feature, no doubt because this shell is juvenile.

The animal is very contracted in the one available juvenile, but the elongate-oval foot is shown to be strongly rugose on the posterior upper surface, and the head is broad with two rather flattened short stout tentacles. There are no eyes.

Dentition. The radula is typically Volutid, consisting of a long series of the usual tricuspid central tooth.

The finding of this genus in the Magellan Province represents a considerable westward extension of the range of the genus, which previously was recorded only from the vicinity of Kerguelen and Heard Islands.

Genus Paradmete Strebel, 1908

Type (here designated): *Paradmete typica* Strebel

This Antarctic genus was ascribed by its author to the Cancellariidae, but Thiele (1929, p. 351) figured the radula which is very similar to that of the Boreal *Volutomitra*, an atypical member of the Volutidae. Both *Paradmete* and *Volutomitra* have a spur-shaped central tooth and a pair of irregularly shaped lateral plates, without cusps.

There are sufficient differences in detail, however, between the radulae of each to warrant retaining both genera at present, but that they have had a common ancestry is almost certain.

Thiele (1929, loc. cit.) evaluated these shells as follows:

Subfamily Volutomitrinae (of the Volutidae).
Genus *Volutomitra* H. & A. Adams, 1853.
Section *Volutomitra* (S.S.)
Section *Microvoluta* Angas, 1877 (=*Paradmete* Strebel, 1908).

Peile (1922, p. 18, text-fig. 8) figured and described the radula of the New South Wales *australis* Angas, the genotype of *Microvoluta*. This species has a central tooth more like that of *Paradmete* than that of *Volutomitra*, but differs from both in the absence of laterals. There is no marked similarity between the relatively large and thin *Paradmete*, which has narrow, nôt very conspicuous columellar plaits and the quite small, solid *Microvoluta*, with strong, very oblique plaits and a disproportionately large, smooth, paucispiral protoconch. They should be kept separate until more is known concerning their anatomy.

Unfortunately, the several living examples from the 'Discovery' material had been plunged into strong alcohol and were too hardened and contracted to be worth dissecting.

Paradmete fragillima (Watson)

Volutomitra fragillima Watson, 1882, p. 334.
Volutomitra fragillima Watson, 1886, p. 263, pl. 14, fig. 7.
Paradmete typica Strebel, 1908, p. 22, pl. 3, fig. 35*a–f*.
Paradmete typica Melvill & Standen, 1912, p. 357.
Volutomitra fragillima Smith, 1915, p. 74.

Type localities. Royal Sound, 28 fathoms, Kerguelen I. (*fragillima*); South Georgia, 75 m. (*typica*).

St. 27. West Cumberland Bay, South Georgia, 3·3 m. S 44° E of Jason Lt., 15 Mar. 1926, 110 m.
St. 140. Stromness Harbour to Larsen Point, South Georgia, 54° 02′ S, 36° 38′ W to 54° 11′ 30″ S, 36° 29′ W, 23 Dec. 1926, 122–136 m.
St. 156. North of South Georgia, 53° 51′ S, 36° 21′ 30″ W, 20 Jan. 1927, 200–236 m.
St. 159. North of South Georgia, 53° 52′ 30″ S, 36° 08′ W, 21 Jan. 1927, 160 m.
St. 190. Bismarck Strait, Palmer Archipelago, 64° 56′ S, 65° 35′ W, 24 Mar. 1927, 315 m.

Range. Kerguelen I., 28 fathoms (Watson); off Oates Land, 69° 43′ S, 163° 24′ E, 180–200 fathoms (Smith); South Georgia, 24–310 m. (Strebel and 'Discovery'); Palmer Archipelago, 315 m. ('Discovery') and Burdwood Bank, 56 fathoms (Melvill & Standen).

I have seen only South Georgian and Palmer Archipelago material, but Smith (1915) remarked that 'The Kerguelen shell figured by Watson has a much shorter spire than other specimens from the same locality which agree perfectly with Strebel's figure of *Paradmete typica*'.

Paradmete longicauda Strebel

Paradmete longicauda Strebel, 1908, p. 24.

Type locality. South Georgia, 54° 22′ S, 36° 27′ W, 95 m.

St. 27. West Cumberland Bay, South Georgia, 3·3 miles S 44° E of Jason Lt., 15 Mar. 1926, 110 m.

This species has only two columellar plaits, whereas *fragillima* has four. There is a third member of the genus, *Paradmete curta* Strebel (1908), from off Shag Rock Bank, north of South Georgia, in 160 m.

Melvill & Standen's *Mitra* (*Volutomitra*) *porcellana* (1912) from Scotia Bay, 9–10 fathoms, South Orkneys, is not congeneric and will probably prove to be a *Marginella*.

Paradmete percarinata n.sp., Pl. IX, fig. 57

Shell broadly ovate, with a prominent peripheral carina, a flat shoulder, and a short, tabulated spire. Whorls four, exclusive of the protoconch, which is missing. Spire-whorls with the carina slightly below the middle, the flat-sloping shoulder with the upper half smooth and the lower half with five to six linear-spaced, weak, spiral threads; the area below the carina straight, slightly undercut, and sculptured with four to six linear-spaced spirals. Body-whorl and base with about forty-five spirals between the carina and the fasciole, which is devoid of spirals. Axial sculpture confined to weak, irregular growth lines. Aperture long and narrow, produced below into a short anterior canal. Outer lip thin, inner lip with three columella plaits, upper two well developed, lowest one weak.

Height 16·5 mm. (estimated, 17 mm.); diameter 10·5 mm.

Type locality. St. 1957. Off south side of Clarence I., 7 miles east of Cape Bowles, South Shetland Is., 3 Feb. 1937, 785–810 m. (one empty shell).

In form this species closely resembles *Cancellaria* (*Admete*) *carinata* Watson (1886, pl. 18, fig. 9) from Kerguelen Island in 28 fathoms, but Watson's species has 'two indistinct folds' on the pillar, which suggests that it is correctly placed in the Cancellariidae. The well-developed plaits in *percarinata*, on the other hand, are of similar style and strength to those of both *fragillima* and *longicauda*.

Paradmete crymochara (Rochebrune & Mabille)

Mitra crymochara Rochebrune & Mabille, 1885, p. 102.
Mitra crymochara Rochebrune & Mabille, 1889, p. H 49, pl. 3, fig. 1.

Type locality. South-east of Tierra del Fuego, 220 m.

St. 388. Between Cape Horn and Staten I., 56° 19½′ S, 67° 09¾′ W, 16 Apr. 1930, 121 m. (two empty shells).

Height 12·0 mm.; diameter 6·0 mm. (holotype).

Height 20·5 mm.; diameter 7·25 mm. (St. 388).

Although the 'Discovery' specimens are much larger than the holotype of *crymochara* they seem to be the adult of that species. The shell is narrowly ovate-fusiform, has a smooth papillate protoconch of 2½ whorls, the tip asymmetrical, four well-developed plaits on the pillar, a weakly defined shoulder bearing three fine spiral threads and dense subobsolete spiral lirations over the remainder of the whorls. The whole shell is covered with a thin, pale buff epidermis.

Family CANCELLARIIDAE

Genus Admete Kroyer, 1842

Type (monotypy): *Admete crispa* Moeller, 1842

Admete magellanica Strebel

Admete magellanica Strebel, 1905*b*, p. 594, pl. 22, fig. 29*a–d*.
Admete magellanica Melvill & Standen, 1907, p. 111.

Type locality. Smyth Channel, Strait of Magellan.

St. WS 84. 7½ miles S 9° W of Sea Lion I., East Falkland Is., 52° 33′ S, 59° 08′ W to 52° 34′ 30″ S, 59° 11′ W, 24 Mar. 1927, 75–74 m.

St. WS 228. North-east of Falkland Is., 50° 50′ S, 56° 58′ W, 30 June 1928, 229–236 m.

St. WS 243. Between Falkland Is. and Patagonia, 51° 06′ S, 64° 30′ W, 17 July 1928, 144–141 m.

St. WS 244. West of Falkland Is., 52° S, 62° 40′ W, 18 July 1928, 253–247 m.
St. WS 250. North of Falkland Is., 51° 45′ S, 57° W, 20 July 1928, 251–313 m.
St. WS 797. North-west of Falkland Is. to Patagonia, 51° 06′ S, 64° 10′ 30″ W to 47° 47′ 43″ S, 64° 07′ 30″ W 19 Dec. 1931, 117 m.
St. WS 801. North-west of Falkland Is. to Patagonia, 48° 26′ 15″ S, 61° 28′ W, 22 Dec. 1931, 165–165 m.

RANGE. Many localities around Strait of Magellan, 10–20 fathoms (Strebel); Port Stanley, Falkland Is., shore (Melvill & Standen).

The carinate form figured by Strebel (1905*b*, fig. 29*b*) was not encountered. The example from St. WS 250 has finer and more numerous spiral ribs, fourteen on the penultimate, but eight to eleven spirals is characteristic of the other 'Discovery' material. Strebel's figures show a variation of between five and nine penultimate spirals.

This species is not dissimilar from the boreal genotype, and like it has neither radula nor operculum.

Admete cf. antarctica Strebel

Admete antarctica Strebel, 1908, p. 21, pl. 4, fig. 44*a–c*.

TYPE LOCALITY. South-west of Snow Hill I., 64° 36′ S, 57° 42′ W, 125 m.

St. 170. Off Cape Bowles, Clarence I., 61° 25′ 30″ S, 53° 46′ W, 23 Feb. 1927, 342 m. (one living example).
St. 175. Bransfield Strait, South Shetland Is., 63° 17′ 20″ S, 59° 48′ 15″ W, 2 Mar. 1927, 200 m.

The St. 170 example is only 7 mm. in height compared with 11·6 mm. for Strebel's type, but it is a half-whorl smaller and evidently not fully grown. The weak shoulder carination is slightly stronger than shown in Strebel's figure, but the number of spiral ribs is approximately the same.

Admete consobrina n.sp. Pl. X, fig. 63

Shell small, thin, translucent with a pale buff epidermis; ovate with a carinated shoulder. Spire less than one-third height of aperture. Whorls about $4\frac{1}{2}$, protoconch small, eroded in only specimen. Sculpture consisting of distinct flat-topped spiral cords with interspaces varying from linear to half the width of the cords. The peripheral cord is strongest, and there are five cords above it and four below it on the spire-whorls and about thirty on the body-whorl from below the carina. The columella is a smooth vertical callus slightly flexed at the anterior canal and bears two very weak plications. Aperture narrowly ovate-pyriform. Outer lip thin and delicately corrugated by the external sculpture.

Height 9·75 mm.; diameter 6·6 mm.

TYPE LOCALITY. St. 159. North of South Georgia, 53° 52′ 30″ S, 36° 08′ W, 21 Jan. 1927, 160 m.

It is very similar to *Cancellaria* (*Admete*) *carinata* Watson from Kerguelen Island, 28 fathoms, but that species has a smooth shoulder and only two spiral cords between the carina and the lower suture.

Family TURRIDAE

Genus Aforia Dall, 1889

Type (o.d.) *Pleurotoma circinata* Dall = *Irenosyrinx* Dall, 1908

Grant & Gale (1931, p. 508) have pointed out that there is no obvious distinction between *Aforia* and *Irenosyrinx*. Dall (1889) stated that *Aforia* was without an operculum but according to Grant & Gale (loc. cit.) it has since been shown to have one. The type of *Aforia* is from the Bering Sea in deep water and that of *Irenosyrinx*, *Pleurotoma* (*Leucosyrinx*) *goodei* Dall, is from north-west of Patagonia in 1050 fathoms.

Aforia magnifica (Strebel)

Surcula magnifica Strebel, 1908, p. 19, pl. 2. fig. 23*a–d*.

Type locality. South-west of Snow Hill I., 64° 20′ S, 56° 38′ W, 150 m.

St. 182. Schollaert Channel, Palmer Archipelago, 64° 21′ S, 62° 58′ W, 14 Mar. 1927, 278–500 m.
St. 195. Admiralty Bay, King George I., South Shetland Is., 62° 07′ S, 58° 28′ 30″ W, 391 m.
St. 363. 2·5 miles S 80° E of south-east point of Zavodovski I., South Sandwich Is., 26 Feb. 1930, 329–278 m.
St. 1952. Between Penguin I. and Lion's Rump, King George I., South Shetland Is., 11 Jan. 1937, 367–382 m.

Height 63·0 mm.; diameter 22·8 mm. (holotype).
Height 63·0 mm.; diameter 22·0 mm. (St. 195).

Dentition. Fig. M, 91, p. 195. St. 182. 1+0+1+0+1. Central tooth large and broad with a convex upper margin and a single small cusp in the centre. The single series of marginals are composed of large approximately shuttle-shaped teeth, tapered to a single point, and without serrations or denticles. The absence of laterals has enabled a great increase in the size and lateral spread of the central.

A very similar type of radula is found in *Ptychosyrinx bisinuata* (Martens) (Thiele, 1931, p. 359) and *Leucosyrinx crispulata* Martens (Thiele, loc. cit.).

This species and *Fusitriton cancellatum*, both of which belong to groups with an extensive western American range, show how the continuity of the western coasts of the Americas has been and still is a supply route to the Antarctic waters of the Weddell Quadrant.

Aforia goniodes (Watson)

Pleurotoma clara Martens, 1880, 35, pl. 8, fig. 1 (non *Pl. clara* Reeve, 1845).
Pleurotoma (*Surcula*) *goniodes* Watson, 1881, p. 394.
Pleurotoma (*Surcula*) *goniodes* Watson, 1886, pl. 20, fig. 4.
Leucosyrinx goniodes (=*clara*) Martens & Thiele, 1903, p. 90.

Type localities. Patagonia, 60 fathoms (*clara*); south-east of Rio de la Plata, Argentina, 600 fathoms (*goniodes*).

St. WS 867. Between Falkland Is. and Grande Bay, Patagonia, 51° 10′ S, 64° 15·5′ W, 30 Mar. 1932, 150–147 m.

One empty shell, 37 × 15 mm.

Genus Leucosyrinx Dall, 1889

Type (o.d.): *Pleurotoma verrilli* Dall, North Carolina to Gulf of Mexico. 150–850 fathoms

I have included the two following species in *Leucosyrinx* in preference to *Aforia* because the anal sinus is broad, occupying most of the shoulder, and the species lack the strong peripheral carina which is so characteristic of *Aforia*. Unfortunately, none of the specimens contained the animal. Both *Aforia* and *Leucosyrinx* belong to the subfamily Cochlespirinae.

Leucosyrinx paratenoceras n.sp., Pl. IX, fig. 54

Shell large, elongate fusiform, with a long, slender spire; lightly convex whorls, except for a concave shoulder; white, covered with a thin, shining, almost colourless, faintly iridescent epidermis and sculptured with closely spaced spiral cords, most of which finally become bifid. Whorls eight, including a smooth papillate protoconch of about two whorls with a small erect central nucleus. Spire tall and narrow, about $1\frac{1}{3}$ times height of aperture plus canal. Post-nuclear sculpture consisting of one or two weak spiral threads near the outer extremity of the otherwise smooth shoulder and seven or eight strong, flat-topped spiral cords between the shoulder angle and the lower suture. About twenty-six cords on the body-whorl plus about ten closely spaced fine threads on the fasciole. Most of the cords on the later whorls are bifurcated by linear grooves. There is no true axial sculpture apart from numerous irregular growth lines. Aperture elongate-oval and produced below into a relatively short and straight spout-like anterior canal. Sinus concave, occupying the whole of the shoulder. Outer lip

produced forwards in a considerable arcuate sweep. Parietal and columellar callus smooth, porcellanous, and abruptly marked off from the surface sculpture.

Height 38·75 mm.; diameter 11·5 mm. (St. 1952, holotype).

Height 43·5 mm.; diameter 13·0 mm. (St. 1957).

TYPE LOCALITY. St. 1952. Between Penguin I. and Lion's Rump, King George I., South Shetland, Is., 2 Jan. 1937, 367–382 m.

St. 170. Off Cape Bowles, Clarence I., 61° 25′ 30″ S, 53° 46′ W, 23 Feb. 1927, 342 m.

St. 175. Bransfield Strait, South Shetlands Is., 63° 17′ 20″ S, 59° 48′ 15″ W, 2 Mar. 1927, 200 m.

St. 182. Schollaert Channel, Palmer Archipelago, 64° 21′ S, 62° 58′ W, 14 Mar. 1927, 278–500 m.

St. 1957. Off south side of Clarence I., 7 miles east of Cape Bowles, South Shetlands Is., 3 Feb. 1937, 785–810 m.

In its slender form the species resembles *Leucosyrinx tenoceras* Dall from off Gaudeloupe in 583 fathoms (1889*b*, p. 76, pl. 36, fig. 5).

Leucosyrinx paragenota n.sp., Pl. IX, fig. 56

Shell of similar shape and proportions to *paratenoceras*, but smaller, with finer and more numerous spiral cord-sculpture, the whole of the shoulder spirally lirate, a shorter anterior canal and a much more prominent fasciole. Whorls seven, including a rather large papillate protoconch of $1\frac{1}{2}$ smooth whorls plus a brephic half-whorl of closely spaced sinuous axials. Post-nuclear sculpture consisting of closely spaced spirals crossed by numerous oblique axials. Five weak spiral threads on the narrow concave shoulder, nine to fourteen flat-topped, linear-spaced cords from the shoulder to the lower suture, and about thirty-six on the body whorl from the shoulder to the fasciole, which bears approximately a further fourteen spirals, but they are closely spaced, weak and ill-defined threads. Axials narrow, protractively oblique and extending from the shoulder to the lower suture, eighteen to twenty per whorl, but subobsolete on the body-whorl. Aperture narrow, with a very short, spout-like anterior canal. Anal sinus deeply concave, occupying the whole of the shoulder. Outer lip produced forwards in a considerable arcuate sweep. Fasciole prominently bulging, commencing above the middle of the aperture. Parietal and columellar callus smooth and porcellanous, abruptly marked off from the external sculpture and not interrupted by the fasciole. Colour white, covered with a thin, buff-coloured epidermis.

Height 21·25 mm.; diameter 7·5 mm. (holotype, St. 652).

TYPE LOCALITY. St. 652. Burdwood Bank, south of Falkland Is., 54° 04′ S, 61° 40′ W, 14 Mar. 1931, 171–169 m. PROTOCONCH. Fig. N, 113, p. 196.

Leucosyrinx falklandica n.sp., Pl. IX, fig. 55

Shell very similar to *paragenota*, but with a larger, more bulbous protoconch, a smooth shoulder and an inconspicuous fasciole. Whorls six, including a large, bluntly rounded smooth protoconch of two whorls, followed by a half-whorl of closely spaced, strong, brephic axials. Post-nuclear spiral sculpture consisting of flat-topped, linear-spaced, spiral cords, extending from the shoulder to the lower suture, nine to eleven on the spire-whorls and about forty on the body-whorl including the ill-defined fasciole. Axials prominent, protractively oblique, commencing at the shoulder, but becoming obsolete towards the lower suture and on the last half-whorl. Colour white, covered by a pale buff epidermis. Apertural features and sinus as in the above two species.

Height 15·75 mm.; diameter 5·8 mm.

TYPE LOCALITY. St. WS 871. North of Falkland Is., 53° 16′ S, 64° 12′ W, 1 Apr. 1932, 336–342 m. (one example only). PROTOCONCH. Fig. N, 112, p. 196.

Genus **Belaturricula** n.g.

Type: *Bela turrita* Strebel

This genus is provided for a large narrowly fusiform species with a tall spire, a bluntly rounded, paucispiral smooth protoconch, a short straight spout-like anterior canal and a very shallow Turriculid style of anal sinus, with the outer lip very little produced and parallel to the axis of the shell. The dentition is not known, nor has it been determined if an operculum is present or not.

The type species seems to be very similar to Watson's *Pleurotoma* (*Surcula*) *dissimilis* (1886, p. 298, pl. 26, fig. 3) from south-east of the Philippine Islands in 500 fathoms.

Strebel's shell has no resemblance to '*Bela*' auct., which name has long served as a dumping ground for species of uncertain affinity.

The sinus in the St. 159 example, recorded below, although shallow, is much more distinct than shown in Strebel's figure.

Belaturricula turrita (Strebel)

Bela turricula Strebel, 1908, p. 18, pl. 3, fig. 32*a–c*.

Type locality. Shag Rock Bank, west of South Georgia, 53° 34′ S, 43° 23′ W, 160 m.

St. 159. Off Cumberland Bay, South Georgia, 53° 52′ 30″ S, 36° 08′ W, 21 Jan. 1927, 160 m.

One empty shell, 50 × 17·5 mm., compared with 60 × 21 mm. for Strebel's holotype.

Genus **Conorbela** n.g.

Type: *Bela antarctica* Strebel

A new genus is required for this shell, which has little in common with the several other Antarctic and Subantarctic species ascribed to '*Bela*' auct. by Strebel (1908).

The shell is comparatively large, thin and ovate-biconic with a prominent, flat, sloping shoulder defined by a rounded peripheral keel. The protoconch, so far as can be judged from available material, is relatively large, dome-shaped and paucispiral. The anterior canal is spout-like, very little produced but slightly constricted by a spiral termination to the smooth, arcuate columella. The posterior sinus is a broad, very shallow arc extending from the suture to the peripheral keel. The operculum is irregularly ovate, with a terminal nucleus, vestigial, occupying only a third the linear dimensions of the aperture. No radula was located.

The form of the sinus suggests relationship with the Conorbiinae and the presence of an operculum disassociates it from *Gymnobela*, the only other Turrid genus of similar form. Except for the lack of columellar plaits and the shallow but definite posterior sinus, *Conorbela* resembles the Cancellarid *Admete carinata* Watson and the Volutid, *Paradmete percarinata* n.sp.

Conorbela antarctica (Strebel)

Bela antarctica Strebel, 1908, p. 16, pl. 3, fig. 30*a*, *b*.

Type locality. South-west of Snow Hill I., 64° 36′ S, 57° 42′ W, 125 m.

St. 170. Off Cape Bowles, Clarence I., 61° 25′ 30″ S, 53° 46′ W, 23 Feb. 1927, 342 m. (one old eroded shell).

St. 363. 2·5 miles S 80° E of south-east point of Zavodovski I., South Sandwich Is., 26 Feb. 1930, 329–278 m. (three living but somewhat eroded examples).

Genus Lorabela n.g.

Type: *Bela pelseneri* Strebel

Bartsch (1941) reviewed the Boreal Turrids of the groups previously ascribed to *Bela*, *Lora*, *Oenopota* and *Propebela* and proposed ten new genera and subgenera. He explained, as I did, independently (Powell, 1942, pp. 9, 12 and 16), that *Bela* Gray, 1847, applies to the Mangeliinae and *Lora* Gistel, 1848, was proposed as a n.nom. for the preoccupied *Defrancia* Millet, 1826 = *Pleurotomoides* Bronn, 1831, an Italian Miocene member of the Mangeliinae. The available names for the '*Bela*' auct. shells are thus restricted to *Oenopota* Moerch, 1852, *Propebela* Iredale, 1918, and the ten new propositions of Bartsch.

A group of Antarctic shells, typified by the South Georgian *Bela pelseneri*, resembles the boreal *Propebela* in build and adult sculptural plan of strong axials crossed by regular spiral cords, but has a smooth, paucispiral protoconch and a deep rounded anal sinus occupying the shoulder.

The protoconch in *Propebela* has a smooth initial whorl followed by one bearing spiral threads and finally a brephic stage with the spirals crossed by weak, closely spaced axial riblets. The anal sinus is so shallow that it is scarcely apparent.

The genotype of *Lorabela* has a vestigial, thin, oval operculum with a terminal nucleus and radula very similar to that of *Propebela turricula*, which consists of bundles of slender, twisted rods.

Lorabela pelseneri (Strebel, 1908)

Bela pelseneri Strebel, 1908, p. 15, pl. 2, fig. 27 *a*, *b*.

Type locality. Cumberland Bay, 252–310 m., South Georgia.

St. 45. 2·7 miles S 85° E of Jason Lt., South Georgia, 6 Apr. 1926, 238–270 m.

St. 144. Off mouth of Stromness Harbour, South Georgia, from 54° 04′ S, 36° 27′ W to 53° 58′ S, 36° 26′ W, 5 Jan. 1927, 155–178 m.

Lorabela notophila (Strebel)

Bela notophila Strebel, 1908, p. 16, pl. 2, fig. 28*a*, *b*.

Type locality. Cumberland Bay, 252–310 m., South Georgia.

St. 123. Off mouth of Cumberland Bay, South Georgia, from 4·1 miles N 54° E of Larsen Point to 1·2 miles S 62° W of Merton Rock, 15 Dec. 1926, 230–250 m.

St. 149. Mouth of East Cumberland Bay, South Georgia, from 1·15 miles N 76½° W to 2·62 miles S 11° W of Merton Rock, 10 Nov. 1927, 200–234 m.

St. WS 27. Off northern end of South Georgia, 53° 55′ S, 38° 01′ W, 19 Dec. 1926.

Protoconch. Fig. N, 114, p. 196.

Lorabela plicatula (Thiele)

Bela plicatula Thiele, 1912, p. 215, pl. 14, fig. 4.

Type locality. St. 1660. Ross Sea, 74° 46·4′ S, 178° 23·4′ E, 27 Jan. 1936, 351 m.

Genus Belalora n.g.

Type: *Belalora thielei* n.sp.

This genus resembles *Propebela* in build and adult sculpture, but has a relatively larger, more dome-shaped protoconch consisting of a smooth planorbid tip, a whorl of closely spaced spiral threads and, finally, a whorl of spiral ribs crossed by axial threads. As in the previous genus, *Lorabela*, the posterior sinus is deep and rounded. There is a vestigial oval operculum with a terminal nucleus. Theile's *Bela striatula* (1912, p. 215, pl. 14, fig. 3), from Gauss Station, Davis Sea, belongs to this genus. It has the same style of protoconch as *thielei*, but the post-nuclear axials are more numerous.

Belalora thielei n.sp., Pl. VI, fig. 20

Shell small, biconic, with turreted spire and sculptured with strong axials and dense spiral lirations. Whorls six, including a relatively large, bulbous to dome-shaped sculptured protoconch of three whorls, as described above. Spire equal to height of aperture plus canal. Spire-whorls with a prominent slightly concave shoulder; outline steep from below the shoulder and sculptured with prominent, bluntly rounded, slightly protractively oblique axials, fourteen on the penultimate and fifteen on the body-whorl. All post-nuclear whorls crossed by dense spiral lirations, six to eight weak spirals on the shoulder and twelve strong spirals from the shoulder to the lower suture of the spire-whorls. Body-whorl, including base, with about fifty-eight spirals, much finer on the shoulder, the fasciole, and neck. Aperture narrowly ovate-pyriform with a short, broad anterior canal and a deeply concave posterior sinus, occupying the shoulder. Inner lip strengthened by a massive, smooth, rounded parietal-columellar callus, which is separated from the base by a narrow excavated area. There is a conspicuous, bulging fasciole.

Height 7·1 mm.; diameter 3·7 mm. (holotype, St. WS 801).

Type locality. St. WS 801. North-west of Falkland Is. to Patagonia, 48° 26′ 15″ S, 61° 28′ W, 22 Dec. 1931, 165–165 m.

St. WS 216. North of Falkland Is., 47° 37′ S, 60° 50′ W, 1 June 1928, 219–133 m.

St. WS 797. North-west of Falkland Is. to Patagonia, 51° 06′ S, 64° 10′ 30″ W. to 47° 47′ 43″ S, 64° 07′ 30″ W, 19 Dec. 1931, 117 m.

St. WS 808. From 49° 41′ S, 65° 40′ W to 49° 39·5 S, 65° 44′ W, 8 Jan. 1932, 110–106 m.

Protoconch. Fig. N, 115, p. 196.

Genus Pleurotomella Verril, 1873

Type (monotypy): *Pleurotomella packardi* Verril Recent, north-east coast of U.S.

The first species recorded below has a three-whorled, conical, pale brownish, 'sinusigerid' protoconch, a Daphnellid reversed L-shaped sinus and general features closely similar to the north-east American genotype. Dall (1889*b*, pp. 119–26) has described or recorded a number of deep-water species from the West Indies. He accounts for the presence of two types of protoconch in the genus by a suggestion that the smooth, shelly nucleus is an infilling of a horny 'sinusigerid' envelope which has subsequently weathered away (loc. cit. p. 124).

The remaining two species recorded below have this blunt, white, shelly, few-whorled protoconch, and the *ohlini* material, several of which contain the animal, resemble typical *Pleurotomella* in the lack of an operculum.

Pleurotomella simillima Thiele

Pleurotomella simillima Thiele, 1912, p. 216, pl. 14, fig. 8.

Type locality. Gauss Station, Davis Sea.

St. 1660. Ross Sea, 74° 46·4′ S, 178° 23·4′ E, 27 Jan. 1936, 351 m. (one empty shell).

Protoconch. Fig. N, 117, p. 196.

Pleurotomella? ohlini (Strebel)

Thesbia ohlini Strebel, 1905*b*, p. 592, pl. 22, figs. 22, 22*a*.

Type locality. Fortescue Bay, 10–12 fathoms, Strait of Magellan.

St. WS 212. North of Falkland Is., 49° 22′ S, 60° 10′ W, 30 May 1928, 242 m.

St. WS 228. North-east of Falkland Is., 50° 50′ S, 56° 58′ W, 30 June 1928, 229–236 m.

St. WS 244. West of Falkland Is., 52° S, 62° 40′ W, 8 July 1928, 253–247 m.

Protoconch. Fig. N, 116, p. 196.

Pleurotomella? anomalapex n.sp., Pl. VI, fig. 19

Shell small, white, fusiform with strongly convex and weakly shouldered whorls, sculptured with dense, wavy, spiral lirations and protractively arcuately oblique axials. Whorls five, including a blunt paucispiral, smooth protoconch of two whorls. Spire-whorls sculptured with ten to twelve spirals, body-whorl including base and neck with about forty-spirals, shoulder without spirals. Axial sculpture of narrowly rounded, oblique axials, which commence strongly at the shoulder, but become subobsolete over the lower half of the whorls. There is a weak surface pattern also, of dense axial threads which are more apparent on the otherwise smooth concave shoulder. The posterior sinus is deep, Daphnellid reversed L-shaped, and the outer lip swings forward in an arcuate sweep. The anterior canal is sharp and comparatively straight, its length emphasized by the relatively long neck, resulting from an excavated base.

Height 7·8 mm.; diameter 3·9 mm.

Type locality. St. WS 225. Between Falkland Is. and Patagonia, 50° 20′ S, 62° 30′ W, 9 June 1928, 162–161 m. (holotype only).

The species resembles *ohlini*, but has the addition of well-developed axials. Although both these species lack the sinusigerid protoconch of the genotype, the adult characters of build and sinus are in accord with *Pleurotomella*. I have already referred to Dall's view that some Turrids commence with a horny sinusigerid envelope which wears off and leaves a limy mould in its place. The somewhat irregular shape and minute surface malleations of the nucleus in two of the above species, and especially the raised terminal varix, seem to be in accord with Dall's explanation.

Genus Eumetadrillia Woodring, 1928

Type (o.d.): *Agladrillia* (*Eumetadrillia*) *serra* Woodring Miocene, Jamaica

The shells which I have referred below to Smith's unfigured *fuegiensis* seem to represent the adult of that species. They certainly tally with Smith's description better than they do with any other Magellanic '*Drillia*' known to me, and most of them have been adequately figured by Strebel (1905, 1908).

The shells before me match Smith's description in every particular—protoconch, number and very oblique trend of the axials, which are thickest above, smooth concave shoulder, aperture two-fifths the total height, sinus deep, and even the purplish pink colour. Also, young examples approximate to the dimensions cited by Smith.

The generic location seems to fall between the Recent and Tertiary Austro-Neozelanic *Splendrillia* Hedley, 1922, and Woodring's *Eumetadrillia*, with more leaning towards the latter.

The protoconch is large, broad and dome-shaped as in *Splendrillia*, but the shoulder is entirely free from the subsutural spiral fold which is so characteristic of that genus. Although the protoconch in *Eumetadrillia* is rather slender the smooth concave shoulder and general features of build and axial ribbing are in accord with those features in the Magellanic shell.

Most of the 'Discovery' shells have a very weak parietal callus, but in one aged example this feature is quite as well developed as in Woodring's genotype.

Eumetadrillia fuegiensis (Smith)

Pleurotoma (*Surcula*) *fuegiensis* Smith, 1888, p. 300.

Type locality. Strait of Magellan.

St. WS 85. 8 miles S 66° E of Lively I., East Falkland Is., 52° 09′ S, 58° 14′ W to 52° 08′ S, 58° 09′ W 25 Mar. 1927, 79 m.

St. WS 88. Off north of Staten I., 54° S, 64° 57′ 30″ W, 6 Apr. 1927, 118 m.

St. WS 95. Between Falkland Is. and Patagonia, 48° 57′ S, 64° 45′ W to 48° 59′ 30″ S 64° 45′ W, 17 Apr. 1927, 109–108 m.
St. WS 222. Between Falkland Is. and Patagonia, 48° 23′ S, 65° W, 8 June 1928, 100–106 m.
St. WS 243. Between Falkland Is. and Patagonia, 51° 06′ S, 64° 30′ W, 17 July 1924, 144–141 m.
St. WS 764. Between Falkland Is. and Argentina, 44° 38′ 15″ S, 61° 58′ 30″ W, 17 Oct. 1931, 110–104 m.
St. WS 787. Off Patagonia, 48° 44′ S, 65° 24′ 30″ W, 7 Dec. 1931, 106–110 m.
St. WS 808. Off Santa Cruz, Patagonia, 49° 40′ 15″ S, 65° 42′ W, 8 Jan. 1932, 109–107 m.
St. WS 838. Between Falkland Is. and Tierra del Fuego, 53° 11′ 45″ S, 65° W, 5 Feb. 1932, 148 m.

Height 11·5 mm.; diameter 4·0 mm. (holotype).
Height 10·5 mm.; diameter 4·25 mm. (St. WS 95).
Height 17·5 mm.; diameter 6·25 mm. (St. WS 243).
Height 20·3 mm.; diameter 6·5 mm. (St. WS 88).

Protoconch. Fig. N, 118, p. 196.

Genus **Typhlodaphne** n.g.

Type: *Bela purissima* Strebel, 1908

The relationships of this genus are puzzling. It has a bluntly rounded, smooth, paucispiral protoconch of two whorls, with an asymmetrical nucleus, a type found in any of the subfamilies. The sinus is most like that of *Daphnella* in being subsutural, steeply descending and then produced forward at an angle to meet the arcuately produced outer lip, but the presence of an operculum is foreign to the Daphnellinae. The dentition consists of paired marginals only, of the awl-shaped Conid type, not the hilted dagger form, characteristic of the '*Bela*' complex, but very similar to those of *Phenatoma* (Clavinae).

In several respects, shape, sinus and dentition, *Typhlodaphne* closely resembles *Typhlosyrinx vepallida* Martens, 1903, from 1840 m. in the Gulf of Aden, but that genus lacks an operculum and has a globular initial whorl to its smooth, paucispiral protoconch.

Since the only important difference between *Typhlodaphne* and *Typhlosyrinx* is the presence of an operculum in the former and its absence in the latter, I feel that the placing of a high taxonimic value upon the presence or absence of an operculum would sever what appears to be rather close relationship. Admittedly one of the criteria used in the segregation of the Mangeliinae and the Daphnellinae is the absence of an operculum, but in the case of *Typhlodaphne* the operculum is of vestigial size and may well reflect an archaic condition just as some members of the Clavinae preserve the prototypic complete dental formula of central, lateral and marginal teeth.

Both *Typhlodaphne* and *Typhlosyrinx* are here referred to the Daphnellinae mainly on the evidence of the sinus, which is of a type seemingly excusive to that subfamily.

Typhlodaphne purissima (Strebel)

Bela purissima Strebel, 1908, p. 17, pl. 3, fig. 31 *a–d.*

Type locality. Off Shag Rocks, west of South Georgia, 160 m.

St. 159. Off Cumberland Bay, South Georgia, 53° 52′ 30″ S, 36° 08′ W, 21 Jan. 1927, 160 m.
St. 160. Near Shag Rocks, west of South Georgia, 53° 43′ 40″ S, 40° 57′ W, 7 Feb. 1927, 177 m.

Dentition. Fig. M, 92, p. 195 (St. 159).

Protoconch. Fig. N, 119. Operculum. Fig. N, 130, p. 196.

Typhlodaphne strebeli n.sp., Pl. IX, fig. 53

This species differs from the glossy, milk-white *purissima* in being uniformly warm-buff, more slender, with a smaller protoconch and with flexuous, subobsolete axials over all post-nuclear whorls. Shell elongate ovate-fusiform, with a tall spire, slightly less than height of aperture plus canal. Whorls

$6\frac{1}{2}$, including a small, smooth, papillate protoconch of $1\frac{1}{2}$ whorls. Post-nuclear sculpture of narrow, flexuous, protractive, closely spaced axials, commencing just below the slightly concave shoulder, but becoming subobsolete towards the lower suture and on the base of the body-whorl. The axials number from eighteen to twenty-four on the spire-whorls. Sinus subsutural, occupying the shoulder, steeply descending at first and then produced forwards in the arcuate sweep of the outer lip. Aperture narrowly ovate with a rounded, broadly channelled anterior end not constricted and scarcely differentiated. Surface with numerous microscopic spiral lirations, not distinct enough to be counted.

Height 20·0 mm.; diameter 7·25 mm. (holotype).

Height 24·5 mm.; diameter 10·0 mm. (St. 160 = topotype of *purissima*).

Type locality. St. 388. Between Cape Horn and Staten I., 56° $19\frac{1}{2}'$ S, 67° $09\frac{3}{4}$ W, 16 Apr. 1930, 121 m.

Typhlodaphne translucida (Watson)

Pleurotoma (*Thesbia*) *translucida* Watson, 1881, p. 444.
Pleurotoma (*Thesbia*) *translucida* Watson, 1886, p. 330, pl. 25, fig. 11.
Thesbia translucida Thiele, 1912, p. 248.

Type locality. Half-way between Marion I. and Prince Edward I., 140 fathoms.

St. 1563. Between Marion I. and Prince Edward I., 46° 48·4′ S, 37° 49·2′ E, 7 Apr. 1935, 113–99 mm. (one empty shell).

Typhlodaphne filostriata (Strebel)

Thesbia filostriata Strebel, 1905*b*, p. 591, pl. 22, figs. 21, 21*a*.

Type locality. Borja Bay, 10 fathoms, Strait of Magellan.

St. 388. Between Cape Horn and Staten I., 56° $19\frac{1}{2}'$ S, 67° $09\frac{3}{4}'$ W, 16 Apr. 1930, 121 m. (two empty shells).

Family ACTEONIDAE

Genus Acteon Montfort, 1810

Type (monotypy): *Acteon tornatilis* Montfort (= *Voluta tornatilis* Linn.)

Acteon bullatus (Gould)

Tornatella bullata Gould, 1847, p. 251.
Actaeon bullatus Tryon & Pilsbry, 1893, p. 163, pl. 49, figs. 10, 11.

Type locality. Off Patagonia.

St. WS 71. 6 miles N 60° E of Cape Pembroke Lt., East Falkland Is., 51° 38′ S, 57° 32′ 30″ W, 23 Feb. 1927, 82–80 m.
St. WS 80. Between Falkland Is. and Patagonia, 50° 57′ S, 63° 37′ 30″ W, 14 Mar. 1927, 152 m.
St. WS 854. Off Patagonia, 45° 16′ S, 64° 25′ W, 22 Mar. 1932, 97 m.
St. WS 856. Off Patagonia, 46° 35′ S, 64° 11′ W, 23 Mar. 1932, 104 m.

Acteon antarcticus Thiele

Actaeon antarcticus Thiele, 1912, p. 219, pl. 14, fig. 17.

Type locality. Gauss Station, 380 m. Davis Sea.

St. 170. Off Cape Bowles, Clarence I., 61° 25′ 30″ S, 53° 46′ W, 23 Feb. 1927, 342 m.
St. 175. Bransfield Strait, South Shetland Is. 63° 17′ 20″ S, 59° 48′ 15″ W, 2 Mar. 1927, 200 m.

Genus Neactaeonina Thiele, 1912

Type (o.d.): *Actaeonina cingulata* Strebel

Neactaeonina cingulata (Strebel)

Actaeonina cingulata Strebel, 1908, p. 8, pl. 2, fig. 17*a–c*.
Neactaeonina cingulata Thiele, 1912, p. 219.

TYPE LOCALITY. South Georgia, 24–52 m.

St. 159. Off South Georgia, 53° 52′ 30″ S, 36° 08′ W, 21 Jan. 1927, 160 m. (one example).
St. 170. Off Cape Bowles, Clarence I., 61° 25′ 30″ S, 53° 46′ W, 23 Feb. 1927, 342 m. (one example).

DENTITION. Thiele (1912, loc. cit., text-figs. 4, 5).

Neactaeonina edentula (Watson)

Actaeon edentulus Watson, 1883, p. 284.
Actaeon (*Actaeonina*) *edentulus* Watson, 1886, p. 632, pl. 47, fig. 6.
Neactaeonina edentula Thiele, 1912, p. 219.

TYPE LOCALITY. Balfour Bay, 60 fathoms, Royal Sound, Kerguelen I.

St. 144. Off mouth of Stromness Harbour, South Georgia, from 54° 04′ S, 36° 27′ W to 53° 58′ S, 36° 26′ W, 5 Jan. 1927, 155–178 m. (one example).
St. 195. Admiralty Bay, King George I., South Shetland Is., 62° 07′ S, 58° 28′ 30″ W, 30 Mar. 1927, 391 m. (one example).

Height 25·2 mm.; diameter 12·75 mm. (holotype).
Height 16·5 mm.; diameter 10·5 mm. (St. 144).

DENTITION. Unfortunately, the teeth became scattered in the only mount I was able to prepare, but individually they resemble those figured by Thiele for *cingulata*.

The South Georgian example (St. 144) is slightly more globose than the type, and if this feature should prove to be constant a new species is indicated.

Neactaeonina fragilis Thiele

Neactaeonina fragilis Thiele, 1912, p. 219.
Neactaeonina fragilis Hedley, 1916, p. 63.

TYPE LOCALITY. Gauss Station, Davis Sea.

St. 1660. Ross Sea, 74° 46·4′ S, 178° 23·4′ E, 27 Jan. 1936, 351 m.

Hedley (1916) recorded the species from off Adelie Land, 66° 52′ S, 145° 30′ E in 288 fathoms.

Genus Toledonia Dall, 1902

Type (o.d.): *Toledonia perplexa* Dall, 1902, Strait of Magellan = *Odostomiopsis* Thiele in Martens & Thiele, 1903 = *Ohlinia* Strebel, 1905, Type (monotypy): *Admete*? *limnaeaeformis* Smith

Toledonia limnaeaeformis (Smith)

Admete? *limnaeaeformis* Smith, 1879, p. 172, pl. 9, fig. 4.
Odostomiopsis typica Martens & Thiele, 1903, p. 68, pl. 7, fig. 27.
Ohlinia limnaeaeformis Strebel, 1905*b*, p. 597, pl. 21, fig. 32 (only).
Toledonia limnaeaeformis Thiele, 1912, p. 249.

TYPE LOCALITY. Kerguelen I. (*limnaeaeformis* and *typica*).

St. WS 88. North of Le Maire Strait, Tierra del Fuego, 54° S, 64° 57′ 30″ W, 6 Apr. 1927, 118 m.

Toledonia perplexa Dall

Toledonia perplexa Dall, 1902*b*, p. 513.
Ohlinia limnaeaeformis Strebel, 1905*b*, p. 597, pl. 21, fig. 32*a* (only).

TYPE LOCALITY. East of Punta Arenas, 61 fathoms, Strait of Magellan.

St. 53. Port Stanley, East Falkland Is. on hulk 'Great Britain', 12 May 1926, 0–2 m.

Dall's species was synonymized with *limnaeaeformis* by Thiele (1912), but it seems to be a stable species of globose outline and with a very short spire. The St. 53 examples have the same dimensions as *perplexa* (3·2 × 2·3 mm.; aperture 2·2 mm. in height) and correspond to Strebel's (1905, loc. cit. pl. 22) fig. 32*a* from Hope Harbour, 6–10 fathoms, Patagonia.

Toledonia punctata Thiele

Toledonia punctata Thiele, 1912, p. 249, pl. 14, fig. 23.

TYPE LOCALITY. Observatory Bay, Kerguelen I.

St. 144. Off Mouth of Stromness Harbour, South Georgia, from 54° 04′ S, 36° 27′ W to 53° 58′ S, 36° 26′ W, 5 Jan. 1927, 155–178 m.

Toledonia globosa Hedley

Toledonia globosa Hedley, 1916, p. 63, pl. 9, fig. 101.

TYPE LOCALITY. Off Mertz Glacier Tongue, 66° 55′ S, 145° 21′ E, 288 fathoms.

St. 1652. Ross Sea, 75° 56·2′ S, 178° 35·5′ W, 23 Jan. 1936. 567 m.
St. 1660. Ross Sea, 74° 46·4′ S, 178° 23·4′ E, 27 Jan. 1936, 351 m.

Tomlin (1948, p. 229) recorded this species from 69 metres off Macquarie Island.

Toledonia major (Hedley)

Odostomiopsis major Hedley, 1911, p. 6, pl. 1, figs. 9, 10.

TYPE LOCALITY. Cape Royds.

St. 175. Bransfield Strait, South Shetland Is., 63° 17′ 20″ S, 59° 48′ 15″ W, 2 Mar. 1927, 200 m.

One small example, 4·0 × 2·25 mm., but of identical shape and the same style of protoconch as the type, which measures 6 × 4 mm.

Family PHILINIDAE

Genus **Philine** Ascanius, 1772

Type: *Philine aperta* Linn.

Philine alata Thiele

Philine alata Thiele, 1912, p. 220, pl. 14, figs. 19, 20.

TYPE LOCALITY. Gauss Station, Davis Sea.

St. 163. Paul Harbour, Signy I., South Orkney Is., 17 Feb. 1927, 18–27 m.
St. 175. Bransfield Strait, South Shetland Is., 63° 17′ 20″ S, 59° 48′ 15″ W, 2 Mar. 1927, 200 m.
St. 187. Neumayr Channel, Palmer Archipelago, 64° 48′ 30″ S, 63° 31′ 30″ W, 18 Mar. 1927, 259 m.
St. 363. 2·5 miles S 80° E of south-east point of Zavodovski I., South Sandwich Is., 26 Feb. 1930, 329–278 m.
St. 1872. Scotia Sea, 63° 29·6′ S, 54° 03·1′ W, 12 Nov. 1936, 247 m.

Philine gibba Strebel

Philine gibba Strebel, 1908, p. 13, pl. 2, fig. 22.

TYPE LOCALITY. South Georgia, 20 m.

St. WS 32. Mouth of Drygalski Fjord, South Georgia, 21 Dec. 1926, 225 m., 329–278 m.

Philine cf. kerguelensis Thiele

Philine kerguelensis Thiele, 1925, p. 279 (245), pl. 32, figs. 22, 22*a*.

Type locality. Kerguelen I.

St. WS 219. North-west of Falkland Is., 47° 06′ S, 62° 12′ W, 3 June 1928, 116–114 m.

Height 2·8 mm.; diameter 2·0 mm. (holotype).
Height 6·0 mm.; diameter 4·2 mm. (St. WS 219).

The shells from St. WS 219 seem to represent fully grown examples of Thiele's species, which is rather distinctive with its planorbid spire, finely spirally punctate surface striations and rather deep posterior sinus.

The animal exhibits the usual Philinid characteristics of a large, oblong, head disk without eyes or tentacles, and three large lozenge-shaped calcareous gizzard plates. These plates have a sharply raised cigar-shaped external central area surrounded by a rounded rim; the inner surface is plain and convex. The plates are enormous for the size of the animal, 4 mm. long in an animal with a shell of 6 mm. height.

Dentition. Fig. M, 95, p. 195. The radula consists of the first lateral only, which is claw-shaped with minute serrations on the concave side. These laterals are very similar in form and detail to those of the genotype. Some species of *Philine* have the addition of up to six marginals.

Philine falklandica n.sp., Pl. VII, fig. 24

Shell small, white, semi-pellucid, ovate-rhomboidal with a very large aperture; outer lip slightly taller than the spire and reaching the sunken inrolled apex by a broadly convex but deeply sinused curve; basal lip broad and flattened. Dorsally there is a slight constriction just below the shoulder. The surface is delicately sculptured with dense, very regular, minutely granulated, axial lirations.

Height 4·9 mm.; diameter 3·9 mm. (holotype).

Type locality. St. WS 219. Between Falkland Is. and Patagonia, 47° 06′ S, 62° 12′ W, 3 June 1928, 116 m.

St. WS 210. North of Falkland Is., 50° 17′ S, 60° 06′ W, 29 May 1928, 161 m.
St. WS 215. North of Falkland Is., 47° 37′ S, 60° 50′ W, 31 May 1928, 219 m.
St. WS 225. Between Falkland Is and Patagonia, 50° 20′ S, 62° 30′ W, 9 June 1928, 162 m.

The distinctive axial sculpture should make this species easily recognizable. The calcareous gizzard plates are minute, irregularly oval bodies only 0·4 mm. long in a shell measuring 5·4 × 3·9 mm.

Dentition. Fig. M, 94, p. 195. There is no central tooth but a massive hooked lateral with minute serrations along the median section of the upper cutting edge and two moderately large marginals shaped like conventional finger-pointers.

Family SCAPHANDRIDAE

Genus Kaitoa Marwick, 1931

Type (o.d.): *Kaitoa haroldi* Marwick

Apart from much weaker spiral sculpture the South Georgian species described below has the essential shell characteristics of the New Zealand Miocene *Kaitoa*. The dentition shows that it is not far removed from the Boreal *Bullinella alba* (Brown).

Both genera are cylindrical with an involute spire, but *Kaitoa* resembles *Scaphandra* in having a smooth, concave columella, margined by a deep groove, and *Bullinella* (= *Cylichna*) has a slightly twisted, more or less vertical columella bearing a single oblique plait.

The radula of *Bullinella alba* consists of a small bilobed central tooth with a serrated apical cutting edge, a massive hooked lateral with a median ridge of small denticles and five small hooked smooth marginals. In *Kaitoa scaphandroides* there are only two marginals and none of the teeth bear serrations or denticles. The central varies greatly in form and shows evidence of considerable wear; it is normally composed of two slightly overlapping convex ridged plates on a rectangular base. The lateral is massive and robustly hooked and the two marginals are much smaller with long flexed hooks. The laterals in *Scaphandra* are long, slender and incurved like mammalian ribs.

Kaitoa scaphandroides n.sp., Pl. X, figs. 69, 70

Shell relatively large, cylindrical, with involute spire, the concave apex callused by an effuse extension of the outer lip. Surface smooth except for axial growth lines and subobsolete, sparse spiral lirations. Shell white, covered with a thick, dark, reddish brown epidermis. Outer lip thin, straight and slightly protractive medially, truncated and broadly open below. Aperture narrow above but considerably expanded below. Inner lip with a relatively broad callus which becomes thick over the concave columella. There are no plaits, but the columellar callus is bordered by a groove followed by a narrowly arched ridge.

Height 19·2 mm.; diameter 8·0 mm. (holotype, St. 30).

Height 23·0 mm.; diameter 9·2 mm. (St. 30).

TYPE LOCALITY. St. 30. West Cumberland Bay, South Georgia, 2·8 miles S 24° W. of Jason L., 16 Mar. 1926, 251 m.

St. WS 62. Wilson Harbour, South Georgia, 19 Jan. 1927, 26–83 m.

DENTITION. Fig. M, 93, p. 195.

There is a conical ferruginous deposit on the spire of the paratype.

Genus **Cylichnina** Monterosato, 1884

Type (s.d. Cossmann, 1895): *Cylichna strigella* Loven. (=*Bulla umbilicata* Montagu)

Mediterranean

Cylichnina georgiana Strebel

Cylichnina georgiana Strebel, 1908, p. 10, pl. 2, fig. 20*a–c*.

TYPE LOCALITY. Cumberland Bay, South Georgia, 252–310 m.

St. 144. Off mouth of Stromness Harbour, South Georgia, from 54° 04′ S, 36° 27′ W to 53° 58′ S, 36° 26′ W, 5 Jan. 1927, 155–178 m.

Cylichnina cf. **gelida** (Smith)

Bullinella gelida Smith, 1907, p. 12, pl. 2, fig. 12.
Cylichna gelida Thiele, 1912, p. 220.

TYPE LOCALITY. 'Discovery' Winter Quarters, 130 fathoms, McMurdo Sound.

St. 1660. Ross Sea, 74° 46·4′ S, 178° 23·4′ E, 27 Jan. 1936, 351 m.

One immature example of 5 mm. height; the holotype is recorded as 13 × 7 mm. Thiele (1912) recorded an example 4 mm. in height from Gauss Station.

Genus **Diaphana** Brown, 1827

Type: *Retusa minuta* Brown

Diaphana paessleri (Strebel)

Retusa paessleri Strebel, 1905*b*, p. 577, pl. 22, figs. 34, 34*a*.

TYPE LOCALITY. Patagonia.

St. 51. Off Eddystone Rock, East Falkland Is., from 7 miles N 50° E to 7·6 miles N 63° E of Eddystone Rock, 4 May 1926, 115 m.

Family APLUSTRIDAE

Genus Parvaplustrum n.g.

Type: *Parvaplustrum tenerum* n.sp.

A minute, white, extremely fragile, *Haminea*-like shell occurred abundantly at depths between 100 and 320 m. in fourteen dredgings, mostly north and north-west of the Falklands.

It is a tectibranch of uncertain affinity, but probably lies nearest to Aplustridae. There are four cephalic tentacles, the outer two with a dorsal groove, rendering them almost auriculate, the inner two simple, no apparent eyes, a prominent bilobed proboscis and two protective shields to the head, the upper one formed by the mantle and its lower counterpart by a widening of the foot, which posteriorly tapers to a broadly V-shaped tail. The stomach plates are numerous, small, cartilaginous, more or less diamond-shaped bodies, which are closely grouped like paving stones (Fig. M, 98). The radula is a rake-like device composed of long, slender, arcuate rods (laterals), each with a shorter and even more slender forked member set directly underneath it (Fig. M, 96). The form of the gills could not be determined owing to the unsatisfactory preservation of the internal structures. The shell is lightly held along the outer edge of the aperture by a thin reflexion of the mantle, and even when the animal is fully expanded most of the shell is probably exposed. The animal is apparently completely retractive (Fig. M, 97, p. 195).

The presence of four cephalic tentacles suggests relationship with either *Aplustrum* or *Hydatina*, the only other tectibranchs, apart from *Pterygophysis* and the *Aplysiomorpha*, possessing two pairs of cephalic tentacles. The *Aplysiomorpha* have neither head disk nor dorsal shield and *Pteryophysis* has four conspicuous wing-like pleuropodial lobes. The stomach-plates resemble those of *Akera bullata* Mueller (Tryon & Pilsbry, 1893) but the radula is not comparable with that of any tectibranch known to me.

Not only a new genus but probably a new family is represented by this anomalous species, but I hesitate to erect a new family without recourse to better preserved material.

Parvaplustrum tenerum n.sp., Pl. VII, fig. 25

Shell minute, pure white, thin and extremely fragile. Ovate-globose. Body-whorl occupying full height of the shell. Aperture wide below, but somewhat constricted above. Spire a shallow cavity occupied by a low, convex, smooth protoconch of one translucent whorl. Outer lip thin, retracted to form a moderately deep sinus with a narrowly rounded termination; basal lip broadly arcuate. Sculpture consisting of extremely fine and dense spiral striations.

Height 2·8 mm.; diameter 2·15 mm. (shell of holotype, St. WS 219).

Type locality. St. WS 219. North-west of Falkland Is., 47° 06′ S, 62° 12′ W, 3 June 1928, 116–114 m.

St. 51. Off Eddystone Rock, East Falkland Is., from 7 miles N 50° E to 7·6 miles N 63° E of Eddystone Rock, 4 May 1926, 105–115 m.
St. WS 210. North of Falkland Is., 50° 17′ S, 60° 06′ W, 29 May 1928, 161 m.
St. WS 211. North of Falkland Is., 50° 17′ S, 60° 06′ W, 29 May 1928, 161–174 m.
St. WS 213. North of Falkland Is., 49° 22′ S, 60° 10′ W, 30 May 1928, 249–239 m.
St. WS 214. North of Falkland Is., 48° 25′ S, 60° 40′ W, 31 May 1928, 208–219 m.
St. WS 216. North of Falkland Is., 47° 37′ S, 60° 50′ W, 1 June 1928, 219–133 m.
St. WS 220. North-west of Falkland Is., 47° 56′ S, 62° 38′ W, 3 June 1928, 108–104 m.
St. WS 227. North-east of Falkland Is., 51° 08′ S, 56° 50′ W, 12 June 1928, 320–295 m.
St. WS 229. North-east of Falkland Is., 50° 35′ S, 57° 20′ W, 1 July 1928, 210–271 m.
St. WS 234. North of Falkland Is., 48° 52′ S, 60° 25′ W, 5 July 1928, 195–207 m.
St. WS 235. North of Falkland Is., 47° 56′ S, 61° 10′ W, 6 July 1928, 155–155 m.

St. WS 236. North of Falkland Is., 46° 55′ S, 60° 40′ W, 6 July 1928, 272–300 m.
St. WS 239. North-west of Falkland Is., 51° 10′ S, 62° 10′ W, 15 July 1928, 196–192 m.

DENTITION. Fig. M, 96, p. 195.

Family SIPHONARIIDAE

Genus Kergulenella Powell, 1946

n.nom. for *Kerguelenia* Rochebrune & Mabille, 1887 *non* Stebbing, 1888 (Crustacea)

Type: *Siphonaria lateralis* Gould, 1846

Kerguelenella lateralis (Gould)

Siphonaria lateralis Gould, 1846, p. 153.
Siphonaria redimiculum Reeve, 1856, pl. 5, fig. 24.
Siphonaria magellanica Philippi, 1857, p. 165.
Siphonaria lateralis Rochebrune & Mabille, 1889, p. 29.
Siphonaria lateralis Strebel, 1907, p. 172, pl. 3, figs. 27–29*a*.
Siphonaria (*Liriola*) *lateralis* Thiele, 1912, p. 250.
Siphonaria (*Kerguelenia*) *lateralis* Hubendick, 1946, p. 26, pl. 1, figs. 22–25.

TYPE LOCALITY. Burnt I., Orange Harbour, Strait of Magellan.

St. MS 70. Maiviken, west Cumberland Bay, South Georgia, 9 Mar. 1926, shore coll.

The 'Discovery' South Georgian specimens have low rounded ribs and are exactly as in Hubendick's figures of material from this same location. Topotypes, however, agree with Strebel's figures in having sharply raised radial ribs.

Hubendick has synonymized with *lateralis* my *macquariensis* (Powell, 1939, p. 238) from Macquarie Island. It is certainly nearer to South Georgian examples than to Tierra del Fuegan topotypes, but appears to differ from both in being constantly more elongate. Unfortunately no animals are available for study.

RANGE. Patagonia, Strait of Magellan, Falkland Is., South Georgia (Hubendick, 1946) and possibly Kerguelen I. Hubendick's Auckland, Campbell and Antipodes I. records refer to undescribed species and the Tasmanian record is most unlikely. An example from St. WS 123. Gough I., is too immature for exact determination.

Genus *Pachysiphonaria* Hubendick, 1945

Type (o.d.): *Siphonaria lessoni* Blainville

Pachysiphonaria lessoni (Blainville)

Siphonaria lessoni Blainville, 1824, p. 49.
Siphonaria lessoni Rochebrune & Mabille, 1889, p. 28.
Siphonaria (*Pachysiphonaria*) *lessoni* Hubendick, 1946, p. 26, pl. 1, figs 1–3.

TYPE LOCALITY. Falkland Is.

St. 54. Port Stanley, Falkland Is., 15 May 1926, shore coll.
Falkland Is. (A.W.B.P. coll. Auck. Mus.).
Comodoro Rividavia, Patagonia (A.W.B.P. coll. Auck. Mus.)

RANGE. West coast of South America below 12° S, Strait of Magellan, Graham Land, Patagonia, Argentina, Uruguay and Falkland Is. (Hubendick, 1946). Hubendick also adds with a query Kerguelen Island and Port Alfred, South Africa.

AMPHINEURA

Family LEPIDOCHITONIDAE

Genus Icoplax Thiele, 1892

Type (monotypy): *Chiton puniceus* Couthouy

Icoplax punicea (Gould)

Chiton puniceus Gould, 1846, p. 143.
Chiton illuminatus Reeve, 1847, pl. 22, fig. 147.
Callochiton illuminatus Melvill & Standen, 1914, p. 113.

TYPE LOCALITIES. Orange Harbour, Patagonia (*puniceus*); Strait of Magellan (*illuminatus*).

St. WS 834. Off Bahia Grande, Patagonia, 52° 57′ 45″ S, 68° 08′ 15″ W, 2 Feb. 1932, 27–38 m.

BIBLIOGRAPHY

ABRAHAM, P. S., 1877. *Revision of the Authobranchiate Nudibranchiate Mollusca.* Proc. Zool. Soc. Lond., pp. 196–269.

ADAMS, A. See Sowerby (1862).

ADAMS, H. & A., 1853–58. *Genera of Recent Mollusca*, 3 vols., 4th ed. London.

BARTH, G. MANDAHL, 1946. Diacolax cucumariae, *n.gen and n.sp.* Vidensk. Medd. naturh. Foren. Kbh., pp. 55–68.

BARTSCH, P., 1903. *A new Scissurella from Patagonia.* Nautilus, XVII, pp. 90–1.

—— 1911. *The recent and fossil mollusks of the genus* Cerithiopsis *from the west coast of America.* Proc. U.S. Nat. Mus., XL, p. 358.

—— 1941. *The nomenclatorial status of certain northern Turritid mollusks.* Proc. Biol. Soc. Wash. Acad. Sci., LIV, pp. 1–13.

—— 1945. *The west Pacific species of the molluscan genus* Aforia. J. Wash. Acad. Sci., XXXV, no. 12, pp. 388–93.

BATY, R. du, 1911. *Quinze mois aux île Kerguelen. Mollusques terrestres.* Ann. Inst. océanogr. Monaco, III, pp. 46–7.

BERGENHAYN, J. R. M., 1937. *Antarktischen und subantarktischen Polyplacophoren.* Sci. Res. Norweg. Antarct. Exped., XVII, pp. 1–12, 1 pl.

BERGH, L. S. R., 1874. *Beiträge zur Kenntnis der Aeolidiaden.* Ver. zool.-bot. Ges. Wien, XXIII.

BERGH, R., 1886. *Report on the Marseniadae, collected by H.M.S. 'Challenger'.* Zool. Chall. Exped., XV, pt. 41, pp. 1–24, 1 pl.

BERRY, S. S., 1916. *Cephalopoda.* Austr. Antarct. Exped. 1911–14, Ser. C., IV, pt. 2, pp. 1–39, pls. 10–14.

BLAINVILLE, H. M. DE, 1824. *Voyage autour du monde exécuté sur l'Uranie et la Physicienne pendant* 1817–20. Zoologie, par MM. Quoy et Gaimard.

BOSC, L. A. G. See Buffon, G. L. L. de.

BRODERIP, W. J., 1832–34. *Characters of new species of Mollusca and Conchifera collected by Mr Cuming.* Proc. Zool. Soc. Lond., pp. 173–9, 194–202.

—— 1832–36. *Species Conchyliorum.*

—— 1835. *Descriptions of some new species of Calyptraeidae.* Trans. Zool. Soc. Lond., I, pp. 195–206, 3 pls.

—— 1836. *Descriptions of new species of shells belonging to the genera* Voluta, Conus, Purpura *and* Bulinus. Proc. Zool. Soc. Lond., pp. 43–5.

BRUGUIÈRE, J. G., 1789–92. *Histoire naturelle des Vers.* Dict. Encycl. Méth.

—— 1792. *Journal d'histoire naturelle*, 2 vols.

BUFFON, G. L. L. DE, 1802. *Histoire naturelle classée par R. R. Castel.* Histoire naturelle des Coquilles, par L. A. G. Bosc.

CHEMNITZ, 1788. *Neues systematisches Conchylien-Cabinet*, fortgesetzt, X.

CHUN, C., 1897. *Die Beziehungen zwischen dem arktischen und antarktischen Plankton.* Stuttgart, pp. 1–64.

—— 1910. *Die Cephalopoden: Oegopsida.* Wiss. Ergeben. 'Valdivia', XVIII.

COOPER, J. E. & PRESTON, H. B., 1910. *Diagnoses of new species of marine and freshwater shells from the Falkland Islands, including descriptions of two new genera of marine Pelecypoda.* Ann. Mag. Nat. Hist. (series 8), V, pp. 110–14, 1 pl.

COSSMANN, M., 1903. *Essais de Paléoconchologie comparée*, V, pp. 1–215. Paris.

COTTON, B. C., 1931. *Pelecypoda of the Flindersian region, Southern Australia.* Rec. S. Aust. Mus., IV.

—— 1937. *Loricata.* B.A.N.Z.A.R.E. Rep., IV B, pp. 9–19.

COUTHOUY, J. P., 1839. See Jay's *Catalogue of Shells*, 3rd ed., p. 22.

—— 1849. See Gould (1849).

CROSSE, H. 1861. *Beschreibung neuer Arten*, Cerithium gourmyi, Oliva thomsoni, *etc.* J. Conchyl., IX, pp. 171–6.

CUNNINGHAM, R. O., 1868. *Extracts of a letter relating to the zoology of the Magellan Straits.* Proc. Zool. Soc. Lond., pp. 184–7.

—— 1871. *Mollusca of Fuegia and the Magellan Straits.* Trans. Linn. Soc. Lond., XXVII, pp. 474–88.

DALL, W. H., 1870. *On limpets, with special reference to the west coast of America, and to a more natural classification of them.* Amer. J. Conch., VI, p. 274.

—— 1876. *Seminal products in limpets and the phylogeny of the* Docoglossa. Proc. Acad. Nat. Sci. Philad., pp. 239–47.

—— 1878. *Mollusca of the expedition of the U.S. Coast Survey Steamer 'Blake'.* Bull. Mus. Comp. Zool. Harv., V, pp. 60–62.

—— 1889*a*. *Preliminary report on the collection of Mollusca and Brachiopoda obtained in* 1887–88. *Scientific results of explorations by the U.S. Fishery Commission Steamer 'Albatross'*, no. 7. Proc. U.S. Nat. Mus., XII, pp. 219–362, pls. 5–14.

—— 1889*b*. *Reports on the results of dredging under the supervision of Alexander Agassiz in the Gulf of Mexico* (1877–78) *and in the Caribbean Sea* (1879–80) *by the U.S. Coast Survey Steamer 'Blake'.* No. 29, *Report on the Mollusca*, Part 2, *Gastropoda and Scaphopoda.* Bull. Mus. Comp. Zool. Harv., XVIII, pp. 1–492, 31 pls.

—— 1892. *Contributions to the tertiary fauna of Florida.* Part 2. Trans. Wagner Inst. Sci. Philad., III, pp. 201–473, pls. 13–22.

—— 1901. *Synopsis of the Lucinacea and of the American species.* Proc. U.S. Nat. Mus., XXIII, pp. 779–833.

—— 1902*a*. *Notes on the giant* Limas. Nautilus, XVI, pp. 15–16.

—— 1902*b*. *Illustrations and descriptions of new, unfigured or imperfectly known shells, chiefly American, in the U.S. National Museum.* Proc. U.S. Nat. Mus. XXIV, pp. 499–566.

—— 1905. *Notes on some preoccupied names of mollusks.* Nautilus, XVIII, p. 113.

—— 1907. *A review of the American Volutidae.* Smithsonian Misc. Coll., XLVIII, pp. 341–73.

—— 1908. *Reports of the dredging operations off the west coast of Central America to the Galapagos, to the west coast of Mexico and in the Gulf of California, under Alexander Agassiz, by the U.S. Fishery Commission Steamer 'Albatross'.* Bull. Mus. Comp. Zool. Harv., XLIII, pp. 205–487.

—— 1909. *Report on a collection of shells from Peru, etc.*, Proc. U.S. Nat. Mus., XXXVII, pp. 147–294, pls. 20–28.

—— 1914. *Mollusca from South Georgia.* Sci. Bull. Brooklyn Inst., II, pp. 69–70.

—— 1919. *Notes on* Chrysodomus *and other mollusks from the North Pacific Ocean.* Proc. U.S. Nat. Mus., LIV, pp. 207–234.

—— 1920. *Descriptions of new species of mollusks of the family Turritidae, from the west coast of America.* Proc. U.S. Nat. Mus., LVI, pp. 1–86, pls. 1–24.

—— 1925. *Illustrations of unfigured types of shells in the collection of the United States National Museum.* Proc. U.S. Nat. Mus., LXVI, pp. 1–41.

DAUTZENBERG, P., 1896. *Liste de Mollusques du Chili.* Act. Soc. sci. Chili, VI, pp. 64–67.

DAVID, L., 1934. *Zoologische Ergebnisse der Reisen von Dr Kohl-Larsen nach den subantarktischen Inseln bei Neuseeland und nach Südgeorgien*, Part 9. Senckenbergiana, XVI, pp. 126–37.

DEACON, G. E. R., 1937. *The hydrology of the Southern Ocean.* Discovery Reports, XV, pp. 1–124, pl. 44.

DESHAYES, G. P., 1851. *Traité élémentaire de Conchyliologie.*

—— 1855. *Descriptions de nouvelles espèces du genre* Erycina. Proc. Zool. Soc. Lond., pp. 181–3.

DILLWYN, L. W., 1817. *A Descriptive Catalogue of Recent Shells*, vols. I and II. London.

DONOVAN, E., 1824. *The Naturalist's Repository*, vol. II.

DUNKER, W., 1878. See Küster, H. C. (1878).

EALES, N. B., 1923. *Mollusca.* Pt. 5. *Anatomy of Gastropoda* (*except the Nudibranchiata*). Brit. Antarct. ('Terra Nova') Exped. 1910, Zool., VII, no. 1, pp. 1–46.

EARLAND, A., 1933. *Foraminifera.* Part II. *South Georgia.* Discovery Reports, VII, pp. 27–138, plates.

—— 1934. *Foraminifera.* Part III. *The Falkland sector of the Antarctic* (*excluding South Georgia*). Discovery Reports, X, pp. 1–208, plates.

ELIOT, C. N. E., 1905. *The Nudibranchiata of the Scottish National Antarctic Expedition.* Trans. Roy. Soc. Edinb., XLI, pp. 519–532.

ELIOT, Sir CHARLES, 1907. *Nudibranchs from New Zealand and the Falkland Islands.* Proc. Malacol. Soc. Lond., VII, pp. 327–61, pl. 28.

—— 1907. *Mollusca.* 4. *Nudibranchiata in National Antarctic Expedition* (1901–1904). Nat. Hist., II, pp. 1–28, 1 pl.

—— 1907. *Mollusca.* 6. *Pteropoda in National Antarctic Expedition* (1901–1904). Nat. Hist., III, pp. 1–15, 2 pls.

—— 1910. *The Nudibranchiata of the Scottish National Antarctic Expedition.* Rep. Sci. Res. Voy. S.Y. 'Scotia' V, pp. 11–24.

FILHOL, H., 1880. *Mollusques marins vivant sur les côtes de l'île Campbell.* C.R. Acad. Sci., Paris, XCI, pp. 1094–5.

FINLAY, H. J., 1926. *A further commentary on New Zealand molluscan systematics.* Trans. Proc. N.Z. Inst., LVII, pp. 320–485.

FINLAY, H. J. & MARWICK, J., 1937. *The Wangaloan and associated molluscan faunas of Kaitangata-Green Island subdivision.* Bull. Geol. Surv. N.Z., XV, pp. 1–140.

FISCHER, P. H., 1880–87. *Manuel de Conchyliologie*, 11 parts, pp. 1–1370. Paris.

FLETCHER, H. O., 1938. *Marine tertiary fossils and a description of a recent* Mytilus *from Kerguelen Island.* B.A.N.Z.A.R.E. Rep. Ser. A., II, pt. 6. pp. 103–16.

FORBES, E. & HANLEY, S., 1843–53. *History of the British Mollusca*, vols. I–IV. London.

GAY, C. & HUPÉ, L. H., 1854. *Historia fisica y politica de Chile*, vol. VIII. Mollusca.

GERMAIN, L., 1911. See Baty, R. du (1911).

GMELIN, J. F., 1791. *Systema Naturae*, 13th ed., vol. I, pp. 3021–3910.

GOULD, A. A., 1846–48. *Descriptions of new shells collected by the U.S. Exploring Expedition under Captain Wilkes* (several papers). Proc. Boston Soc. Nat. Hist., II.

—— 1848–51. *Descriptions of new shells brought home by the U.S. Exploring Expedition.* Proc. Boston Soc. Nat. Hist., III, pp. 83–5.

—— 1852–56. *Mollusca and shells of the United States Exploring Expedition, 1838–42. Wilkes' Exped.*, XII.

GRANT, U. S. & GALE, H. R., 1931. *Catalogue of the marine pliocene and pleistocene Mollusca of California.* Mem. S. Diego Soc. Nat. Hist., I, pp. 1–1036.

GRAY, J. E., 1828–30. *Spicilegia Zoologica*, Parts 1 and 2. London.

HADDON, A. C., 1886. *Report on the Polyplacophora collected by H.M.S. 'Challenger'.* Zool. Chall. Exped. XV, pt. 43, pp. 1–50, pls. 1–3.

HANLEY, S., 1860. *On some new species of Nuculaceae in the collection of Hugh Cumming, Esq.* Proc. Zool. Soc. Lond., pp. 370–1.

HART, T. J., 1946. *Trawling surveys on the Patagonian Continental Shelf.* Discovery Reports, XXIII, pp. 203–408, plates.

HEDLEY, C , 1911. *Mollusca*, British Antarctic Exped. (1907–9), Biol., II, pt. 1, pp. 1–8, 1 pl.

—— 1916. *Mollusca.* Australian Antarctic Exped., Ser. C., Zoology and Botany, IV, pt. 1, pp. 1–80, pls. 1–9.

HELBLING, G. S., 1779. *Beiträge zur Kenntnis neuer und seltener Konchylien.* Abh. Privatges. Böhmen, IV, pp. 102–31, 4 pls.

HERDMAN, H. F. P., 1932. *Soundings taken during the Discovery Investigations.* Discovery Reports, VI, pp. 205–36, plates.

HERON-ALLEN, E., & EARLAND, A., 1932. *Foraminifera.* Part 1. *The Ice-free area of the Falkland Islands and adjacent seas.* Discovery Reports, IV, pp. 291–460, plates.

HERTLEIN, L. G. & STRONG, A. M., 1940. *Mollusks from the west coast of Mexico and Central America.* Part 1. *Eastern Pacific expeditions of the New York Zoological Society*, 22. Zoologica, N.Y., XXV, pp. 369–430, pls. 1, 2.

HOMBRON & JACQUINOT, 1841. *Description de quelques Mollusques provenant de la campagne de l'Astrolabe et de la Zélée.* Ann. Sci. Nat. (Zool)., XVI, pp. 62–4, 190–2.

—— —— 1854. *Voyage au Pôle Sud*, vol. V.

HOYLE, W. E., 1907. *Mollusca.* Part 1. *Cephalopoda.* Nat. Ant. Exped. Zool., II.

—— 1912. *Cephalopoda of the Scottish National Antarctic Expedition.* Trans. Roy. Soc. Edinb., XLVIII, pp. 273–83.

HUBENDICK, B., 1946. *Systematic monograph of the* Patelliformia. K. svenska VetenskAkad. Handl. XXIII, no. 5, pp. 1–94.

HUPÉ, L. H., 1854. See Gay, C. & Hupé, L. H. (1854).

IHERING, H. VON, 1902. *Die Photinula-Arten der Magellan-Strasse.* NachrBl. dtsch. malakozool. Ges., pp. 97–104.

IREDALE, T., 1924. *Results from Roy Bell's molluscan collections.* Proc. Linn. Soc. N.S.W., XLIX, pp. 179–278.

JOUBIN, L., 1903. *Céphalopodes.* Résultats du voyage du S.Y. 'Belgica', Zool. pp. 1–4.

—— 1905. *Description de deux Elédones provenant de l'expédition du Dr Charcot dans l'Antarctique.* Mém. Soc. Zool. Fr., XVIII, pp. 22–31.

—— 1907. *Expédition Antarctique Française, 1903–05, commandée par Dr Jean Charcot. Céphalopodes.*

—— 1914. *Némertines, Céphalopodes, Brachiopodes.* Deux. Expéd. Antarct. Franç. (1908–10).

KIENER, L. C., 1839. *Espèces général et iconographie des Coquilles vivantes, etc.*

KING, P. P. & BRODERIP, W. J., 1830–31. *Description of the Cirrhipedia, Conchifera and Mollusca in a collection by H.M.S. 'Adventure' and 'Beagle' in the years 1826 to 1830, etc.* Zool. J., V, pp. 332–49.

KÜSTER, H. C., 1878. *Systematisches Conchylien-Cabinet*, fortgesetzt von Kobelt und Weinkauff, 2nd ed., pt. 284, pp. 57–68.

LAHILLE, F., 1895. *Contribucion al estudio de las Volutas Argentinas.* Rev. Mus. La Plata, VI, pp. 293–332, 12 pls.

—— 1918. *Sobre Chitones de la Patagonia.* Physis, B. Aires, IV, pp. 343–4.

LAMARCK, J. B. P. A. DE M. DE, 1816. *Tableau encyclopédique des trois règnes de la Nature*, pts. 21, 23. Encyclopédie Méthodique.

—— 1819. *Histoire naturelle des Animaux sans vertèbres, etc.* vol. VI.

—— 1822. *Histoire naturelle des Animaux sans vertèbres, etc.*, vol. VII.

—— 1836. *Histoire naturelle des Animaux sans vertèbres, augmentée de notes par MM. G. P. Deshayes et Milne Edwards.*

LAMY, ED., 1905. *Gastropodes prosobranches recueillis par l'expédition antarctique française du Dr Charcot.* Bull. Mus. Paris, pp. 475–83.

—— 1906*a*. *Sur quelques Mollusques des Orcades du Sud.* Bull. Mus. Paris, pp. 121–6.

—— 1906*b*. *Lamellibranches recueillis par l'expédition antarctique française du Dr Charcot.* Bull. Mus. Paris, pp. 44–52.

—— 1907. *Gastropodes Prosobranches et Pélécypodes.* Expéd. Antarct. Franç. (1903–5), pp. 1–20. 1 pl.

—— 1908. *Description d'un Lamellibranche nouveau des Îles Malouines.* Bull. Mus. Paris, pp. 128–9.

—— 1910*a*. *Mollusques recueillis par M. Rallier du Baty aux Îles Kerguelen.* Bull. Mus. Paris, p. 198.

—— 1910*b*. *Mission dans l'Antarctique dirigée par le Dr Charcot: Collections recueillies par le Dr J. Liouville. Gastropodes* (pp. 318–24), *Pelecypodes* (pp. 388–94). Bull. Mus. Paris, XVI.

—— 1911*a*. *Gastropodes Prosobranches, Scaphopodes et Pélécypodes.* Deux. Expéd. Antarct. Franç. (1908–10), pp. 1–32, pl. 1.

LAMY, ED., 1911*b*. *Sur quelques Mollusques de la Géorgie du Sud, et des îles Sandwich du Sud.* Bull. Mus. Paris, pp. 22–7.
—— 1911*c*. See Baty, R. du (1911).
—— 1915. *Mollusques recueillis aux îles Kerguelen par M. Loranchet.* Bull. Mus. Paris, pp. 68–76.
LESSON, R. P., 1830. *Voyage autour du monde, sur la corvette la Coquille*, 1822–1825, *Zool.*, II, pt. 1.
LÖNNBERG, E., 1899. *On the Cephalopods collected by the Swedish Expedition to Tierra del Fuego* (1895–96). Svenska Exped. Magellansländern, II, pp. 49–64, pls. 4, 5.
MACFADYEN, W. A., 1933. *Fossil Foraminifera from the Burdwood Bank.* Discovery Reports, VII, pp. 1–16.
MACKINTOSH, N. A., 1934. *Distribution of macroplankton in the Atlantic sector of the Antarctic.* Discovery Reports, IX, pp. 69–160.
—— 1946. *The Antarctic convergence and the distribution of surface temperatures in Antarctic waters.* Discovery Reports, XXIII, pp. 177–212.
MARKHAM, C. R., 1912. Geogr. J., XXXIX, p. 575.
MARRAT, F. P., 1876. *Descriptions of five new Marginellae.* J. Conch., I, pp. 136–7.
MARSHALL, P., 1917. *The Wangaloa Beds.* Trans. N.Z. Inst., XLIX, pp. 450–6, pls. 34–37.
MARTENS, E. VON, 1872*a*. *Conchylien von Cook's Reisen.* Mal. Blätt., XIX, pp. 1–48.
—— 1872*b*. *Conchylien von Bougainville's Reise.* Mal. Blätt., XIX, pp. 49–65.
—— 1878. *Einige Conchylien aus dem kälteren Meeresgegenden der südlichen Erdhälfte.* S.B. Ges. naturf. Fr. Berl., pp. 20–6.
—— 1880. *Conchologische Mittheilungen*, vol. I.
—— 1881. *Conchologische Mittheilungen*, vol. II.
—— 1885. *Vorläufige Mitteilung über die Mollusken-fauna von Süd-Georgien.* S.B. Ges. naturf. Fr. Berl., pp. 89–94.
—— 1902. *Einige neue Arten von Meer-Conchylien aus der Sammlung der deutschen Tiefsee-Expedition*, 1898–99. S.B. Ges. naturf. Fr. Berl., pp. 237–44.
MARTENS, E. VON & PFEFFER, G., 1886. *Die Mollusken von Süd-Georgien.* J. hamburg. wiss. Anst. III, pp. 65–135, pls. 1–4.
MARTENS, E. VON & THIELE, J., 1903. *Die beschalten Gastropoden der deutschen Tiefsee-Expedition*, 1898–99 (A). Wiss. Ergebn. 'Valdivia', VII, pp. 1–146.
MARTYN, T., 1784–92. *Universal Conchologist.*
MARWICK, J., 1924*a*. *The Struthiolariidae.* Trans. Proc. N.Z. Inst., LV, pp. 161–90.
—— 1924*b*. The Tertiary and recent Naticidae and Naricidae of New Zealand. *Trans. Proc. N.Z. Inst.*, LV, pp. 545–79.
—— 1926. The Tertiary and recent Volitudae of New Zealand. *Trans. Proc. N.Z. Inst.* LVI, pp. 259–303.
MASSY, ANNE L., 1916. *Mollusca.* Pt. 2. *Cephalopoda.* British Antarct. ('Terra Nova') Exped. (1910), Zool., II, pp. 141–75.
—— 1920. *Mollusca.* Pt. 3. *Eupteropoda* (*Pteropoda Thecosomata*) *and Pterota* (*Pteropoda Gymnosomata*). Brit. Antarct. ('Terra Nova') Exped. (1910), Zool., II, pp. 203–32.
—— 1932. *Mollusca: Gastropoda Thecosomata and Gymnosomata.* Discovery Rep. III, pp. 267–96.
MELVILL, J. C., & STANDEN, R., 1898. *Notes on a collection of marine shells from Lively Island, Falklands, with list of species.* J. Conch., IX, pp. 97–105.
—— —— 1901. *Mollusca collected by Mr Rupert Vallentin at Stanley Harbour, Falkland Isles.* J. Conch., X, pp. 43–7.
—— —— 1907. *The marine Mollusca of the Scottish National Antarctic Expedition.* Trans. Roy. Soc. Edinb. XLVI, pp. 119–57, 1 pl.
—— —— 1912. *The marine Mollusca of the Scottish National Antarctic Expedition*, pt. 2. Trans. Roy. Soc. Edinb, XLVIII, pp. 333–66, 1 pl.
—— —— 1914. *Notes on Mollusca collected in the north-west Falklands, by Mr Rupert Vallentin, F.L.S., with descriptions of six new species.* Ann. Mag. Nat. Hist. (ser. 8), XIII, pp. 109–36, pl. 7.
—— —— 1916*a*. *Note on* Trichotropis antarctica *Melvill & Standen* (*non Thiele*). J. Conch., XV, p. 90.
—— —— 1916*b*. *Description of a new Rissoid shell from the Antarctic region.* J. Conch., XV, pp. 120–1.
—— —— 1918. Photinula wacei *sp.n. from the Falkland Islands.* J. Conch., XV, p. 234.
MIGHELS, J. W., 1841–44. *Descriptions of new American shells.* Proc. Boston Nat. Hist. Soc., I, pp. 187–90.
MIGHELS, J. W. & ADAMS, C. B., 1841–44. *Description of twenty-five new species of New England shells.* Proc. Boston Nat. Hist. Soc., I, pp. 48–51.
MOELLER, H. P. C., 1841. *Bemaerkninger til slaegten* Limacina. Kroyer. Nat. Tidssk., III, pp. 481–90.
MOLINA, G. I., 1789. *Essai sur l'histoire naturelle du Chili, etc.* Paris.
MOLL, F. & ROCH, F., 1931. *The Teredinidae of the British Museum and the Jeffreys Collection.* Proc. Malacol. Soc. Lond. XIX, pp. 201–18.
MONTAGU, G., 1808. *Testacea Britannica, Supplement with additional plates*, p. 20, table 28, fig. 1.
NEAVE, S. A., 1939–40. *Nomenclator Zoologicus*, vols. I–IV. London.
NIERSTRASZ, H. F., 1909. *Solenogastres.* Nat. Antarct. Exped. (1901–4), pp. 1–13, 2 pls.
ODHNER, N. H., 1923. *Die Chitonen.* Wiss. Ergebn. schwed. Südpolar-Exped., I, no. 3, pp. 1–4.

ODHNER, N. H., 1923. *Die Cephalopoden.* Wiss. Ergebn. schwed. Südpolar-Exped., I, no. 4, pp. 1–7.
—— 1926. *Die Opisthobranchien.* Wiss. Ergebn. schwed. Südpolar-Exped., 2, pp. 1–100.
—— 1931. *Die Scaphopoden.* Wiss. Ergebn. schwed. Südpolar-Exped., 2, no. V, pp. 1–8.
—— 1934. *The Nudibranchiata.* Brit. Antarct. ('Terra Nova') Exped. (1910), Zool., VII, pp. 229–310.
ORBIGNY, A. D', 1835–46. *Voyage dans l'Amérique Méridionale*, vol. 5, Mollusques (pp. 1–48, 1835; 49–184, 1836; 185–376, 1837; 377–408, 1840; 409–88, 1841; 489–758, 1846; atlas, pp. 4, pls. 1–84, 1846).
PACE, S., 1902. *On the anatomy and relationships of* Voluta musica *Linn.; with notes upon certain other supposed members of the Volutidae.* Proc. Malacol. Soc. Lond., 5, pp. 21–31.
PALLAS, P. S., 1769. *Spicilegia Zoologica*, X.
PEILE, A. J., 1922. *Some notes on Radulae.* Proc. Malacol. Soc. Lond., XV, pp. 13–18.
—— 1924. *A new species of* Sigapatella (S. terranovae). Proc. Malacol. Soc. Lond., XVI, pp. 21–3, fig. 1.
PELSENEER, P., 1901. *Les Néoméniens de l'Expédition Antarctique belge et la distribution géographique des* Aplacophora. Bull. Acad. Belg., 1901, pp. 528–34, 1 pl.
—— 1903. *Résultats du Voyage du S.Y. 'Belgica'.* Zoologie. Mollusques (Amphineures, Gastropodes, et Lamellibranches). Anvers, 85 pp.
—— 1904. *Quelques problèmes zoologiques de l'Antarctique.* C.R. Ass. franç. Av. Sci., 1903, pt. 2, pp. 810–12.
PFEFFER, G., 1879–1880. *Die Pteropoden des Hamburger Museums.* Abh. naturw. Ver. Hamb., VII.
—— 1886. *Mollusken, Krebse und Echinodermen von Cumberland-Sund nach der Ausbeute der deutschen Nordexpedition, 1882 und* 1883. Jb. wiss. Anst. Hamb., III, pp. 25–50, figs. 1–6.
—— 1887. *Zoologische Kleinigkeiten.* Verh. Ver. naturw. Unterhalt. Hamb., VI, pp. 98–116.
PHILIPPI, R. A., 1844. *Abbildungen und Beschreibungen neuer oder wenig gekannter Conchylien*, I, pp. 77–178.
—— 1845*a*. *Abbildungen und Beschreibungen neuer oder wenig gekannter Conchylien*, II (2), pp. 33–64.
—— 1845*b*. *Diagnosen einiger neuen Conchylien.* Arch. Naturgesch., XI, pp. 50–71.
—— 1846. *Abbildungen und Beschreibungen neuer oder wenig gekannter Conchylien*, II (3), pp. 65–122.
—— 1848. *Centuria altera Testaceorum novorum*, pp. 129–44.
—— 1856. *Ueber die Conchylien der Magellanstrasse.* Malak. Bl., III, pp. 157–73.
—— 1868. *Conchylia nova potissimum magellanica.* Malak. Bl., XV, pp. 222–6.
PHIPPS, C. J., 1774. *A Voyage towards the North Pole undertaken in* 1773, 4th ed. London.
PILSBRY, H. A., 1888. *Manual of Conchology*, X, pl. 60, fig. 73.
—— 1889*a*. *Manual of Conchology*, XI.
—— 1889*b*. *Littoral mollusks from Cape Fairweather, Patagonia.* Amer. J. Sci. VII, pp. 126–8, pl. 1.
—— 1890. *Manual of Conchology*, XII.
—— 1900. *Species of* Chlorostoma *of southern and eastern Patagonia.* Nautilus, XIII, p. 110–12.
PLATE, L., 1908. *Scaphopoden. Résultats du Voy. du S.Y. 'Belgica' en* 1895–9, pp. 1–4.
—— 1908. *Die Scaphopoden der Deutschen Sudpolar Exped.* (1901–3). Wiss. Ergebn. dtsch. Sudpol Exped., X, pp. 1–6.
POWELL, A. W. B., 1929. *The recent and Tertiary species of the genus Buccinulum in New Zealand, with a review of related genera and families. Trans. N.Z. Inst.* LX, pp. 57–98.
—— 1933. *Notes on the taxonomy of the recent Cymatiidae and Naticidae of New Zealand.* Trans. Proc. N.Z. Inst., LXIII, pp. 154–70.
—— 1939. *The Mollusca of Stewart Island.* Rec. Auck. Inst. Mus., II (4), pp. 211–38.
—— 1942. *The New Zealand recent and fossil Mollusca of the family Turridae.* Bull. Auck. Inst. Mus., II, pp. 1–188.
PRESTON, H. B., 1901. *Description of* Cymbiola mangeri, *a supposed new species from the Falkland Islands.* Proc. Malacol. Soc. Lond., IV, p. 237.
—— 1912. *Characters of six new Pelecypods and two new Gastropods from the Falkland Islands.* Ann. Mag. Nat. Hist. (ser. 8), IX, pp. 636–40, pl. 21
—— 1913. *Descriptions of fifteen new species and varities of marine shells from the Falkland Islands.* Ann. Mag. Nat. Hist., XI, pp. 218–23, pl. 4.
—— 1916. *Descriptions of eight new species of marine Mollusca from the South Shetland Islands.* Ann. Mag. Nat. Hist., XVIII, pp. 269–72, pl. 13.
REDFIELD, J. H., 1848. *Descriptions of some new species of shells.* Ann. Lyceum Nat. Hist., IV, pp. 163–8.
REEVE, L. A., 1843–78. *Conchologia Iconica.*
—— 1845. *On a new species of* Cardita. Proc. Zool. Soc. Lond., XI, pp. 191–5.
REGAN, C. TATE, 1924. *Fishes.* Brit. Antarct. ('Terra Nova') Exped., Zool., I, p. 26.
RIVERS, J. J., 1891. *A new Volutid shell* (Scaphella arnheimi) *from Monterey Bay.* Proc. Calif. Acad. Sci. (ser. 2), 3, p. 107.
ROBSON, G. C., 1930. *Cephalopoda.* I. *Octopoda.* Discovery Reports, II, pp. 373–402.
ROCH, F., 1931. *Die Teridiniden der skandinavischen Museums Sammlungen.* Ark. Zool. Stock., XXII, A 13, pp. 1–29.
ROCHEBRUNE, A. T. DE, 1889. *Polyplacophora.* Mission scientifique de Cap Horn (1882–3), VI, Zool., pp. 131–43, pl. 9.

ROCHEBRUNE, A. T. DE & MABILLE, J., 1885. *Diagnoses de Mollusques nouveaux, recueillis par les membres de la mission du Cap Horn, etc.* Bull. Soc. Phil. Paris (7), IX, pp. 100–11.

—— —— 1889. *Cephalopoda, Gastropoda et Lamellibranchiata. Mission scientifique du Cap Horn* (1882–3), VI, Zool., pp. 1–126, pls. 1–8.

SCHUMACHER, H. C. F., 1817. *Essai d'un nouveau système des habitations des Vers Testacés.* Copenhagen.

SHAW, H. O. N., 1909. *On the dates of issue of Sowerby's 'Conchological Illustrations' from the copy preserved in the Radcliffe Library, Oxford.* Proc. Malacol. Soc. Lond., VIII, pp. 333–40.

SMITH, E. A., 1875. *Descriptions of some new shells from Kerguelen's Island.* Ann. Mag. Nat. Hist. (4), XVI, pp. 67–73.

—— 1877. *Mollusca in zoology of the Transit of Venus Expedition.* Phil. Trans. Roy. Soc. Lond. for 1879. Separate copies distributed during 1877. See Zool. Rec., XIV (for year 1877), 1879, p. M 6.

—— 1879. *Mollusca, Transit of Venus Expeditions.* Phil. Trans. Roy. Soc. Lond., CLXVIII (extra vol.), pp. 167–92.

—— 1880. *Descriptions of five new species of shells from Uruguay.* Ann. Mag. Nat. Hist. (5th series), VI, pp. 319–22.

—— 1881. *Account of the zoological collections made during the survey of H.M.S. 'Alert' in the Straits of Magellan, and on the coasts of Patagonia. Mollusca.* Proc. Zool. Soc. Lond., pp. 22–44, pls. 3–5.

—— 1885. *Report on the Lamellibranchiata collected during the voyage of H.M.S. 'Challenger'.* Zool. Chall. Exped., XIII, pt. 35, pp. 1–341, 23 pls.

—— 1888. *Diagnoses of new species of Pleurotomidae in the British Museum.* Ann. Mag. Nat. Hist. (6), II, pp. 300–17.

—— 1891. *Descriptions of new species of shells from the Challenger Expedition.* Proc. Zool. Soc. Lond., pp. 436–45, 2 pls.

—— 1902*a*. *On the supposed similarity of the Mollusca of the Arctic and Antarctic regions.* Proc. Malacol. Soc. Lond., V, pp. 162–6.

—— 1902*b*. *Report on the collections of Mollusca made in the Antarctic during the voyage of the 'Southern Cross'*, pt. 7, pp. 201–13.

—— 1905. *On a small collection of Mollusca from Tierra del Fuego.* Proc. Malacol. Soc. Lond., VI, pp. 333–39.

—— 1907*a*. *Mollusca and Brachiopoda.* Nat. Antarct. Exped. ('Discovery'), Nat. Hist., II, pp. 1–12, pls. 1–3.

—— 1907*b*. *Lamellibranchiata.* Nat. Antarct. Exped. ('Discovery'), Nat. Hist., II, pp. 1–7, pls. 2, 3.

—— 1915. *Mollusca.* Pt. 1. *Gastropoda, Prosobranchia, Scaphopoda and Pelecypoda.* Brit. Antarct. ('Terra Nova') Exped. (1910), Zool., II, pp. 61–112, pls. 1–2.

SMITH, M., 1942. *Review of the Volutidae.* Lantana, Florida.

SOLANDER, D. C., 1786. *Catalogue of the Portland Museum*, pp. 1–194.

SOWERBY, G. B., 1832–41. *Conchological Illustrations.*

—— 1832. *Thesaurus Conchyliorum*, III, p. 153, pl. 229, fig. 133.

—— 1834. *Characters of new species of Mollusca and Conchifera collected by Mr Cuming.* Proc. Zool. Soc. Lond., pp. 123–8 and pp. 333–40.

—— 1938. *A descriptive catalogue of the species of Leach's genus* Margarita. Malac. Conch. Mag. 1, pp. 23–7.

—— 1840. *Descriptions of new Chitons.* Ann. Mag. Nat. Hist. IV, pp. 287–94.

—— 1862. *Thesaurus Conchyliorum*, parts 21 and 22.

—— 1874*a*. *Thesaurus Conchyliorum.* Parts 31 and 32. *Containing a monograph of the genus* Mitra, pp. 1–46.

—— 1874*b*. *Monograph of the genus* Pandora. Conch. Icon., 19.

SPALOWSKY, J. J. N. A., 1795. *Prodromus in system historicum Testaceorum.* Vienna.

STEMPELL, W., 1899. *Die Muscheln der Sammlung Plate.* Zool. Jb., Suppl. 4, pp. 217–50, pl. 12.

STEPHEN, A. C., 1941. *The Echiuridae, Sipunculidae and Priapulidae collected by the ships of the Discovery Committee during the years* 1926 *to* 1937. Discovery Reports, XXI, pp. 235–60, plates.

STREBEL, H., 1904. *Beiträge zur Kenntnis der Mollusken Fauna der Magalhaen-Provinz.* 1. Zool. Jb., Abt. Syst., Jena, XXI, pp. 171–248, pls. 3–4.

—— 1905*a*. *Beiträge zur Kenntnis der Mollusken Fauna der Magalhaen-Provinz.* 2. *Die Trochiden.* Zool. Jb., Abt. Syst., Jena, XXI, Suppl. 8, pp. 121–66, pls. 5.

—— 1905*b*. *Beiträge zur Kenntnis der Mollusken Fauna der Magalhaen-Provinz.* 3. Zool. Jb., Abt. Syst., Jena, XXII, pp. 575–666, pls. 21–24.

—— 1906. *Beiträge zur Kenntnis der Mollusken Fauna der Magalhaen-Provinz.* 4. Zool. Jb., Abt. Syst., Jena, XXIV, pp. 91–174, pls. 7–13.

—— 1907. *Beiträge zur Kenntnis der Mollusken Fauna der Magalhaen-Provinz.* 5. Zool. Jb., Abt. Syst., Jena, 25, pp. 79–196, pls. 1–8.

—— 1908. *Die Gastropoden.* Wiss. Ergeb. schwed. Südpolar-Exped. (1901–3), VI, 1, pp. 1–112, pls. 1–6.

STUDER, T., 1879. *Die Fauna von Kerguelensland.* Arch. Naturgesch. XLV, pp. 104–141.

SUTER, H., 1913. *Report on the Mollusca. The Sub-Antarctic Islands of New Zealand.* Phil. Inst. Cant. N.Z.

SVERDRUP, H. U., JOHNSON, M. W. & FLEMING, R. H., 1942. *The Oceans, their Physics, Chemistry and General Biology.* New York.

SWAINSON, W., 1822. *Exotic Conchology*, Part 4.

—— 1840. *A Treatise on Malacology*, p. 218. London.

Thiele, J., 1903. *Die beschalten Gastropoden der deutschen Tiefsee-Expedition*, 1898–9 (B). Wiss. Ergebn. 'Valdivia', vii, pp. 147–74, pls. 6–9.
—— 1906*a*. *Note sur les Chitons de l'Expédition Antarctique du Dr Charcot.* Bull. Mus. Paris, xii, pp. 549–50.
—— 1906*b*. *Ueber die Chitonen der deutschen Tiefsee-Expedition.* Wiss. Ergebn. 'Valdivia', ix, pp. 325–36.
—— 1906*c*. *Bemerkung über die Gattung* Photinula. NachrBl. dtsch. Malakozool. Ges. xxxviii, pp. 12–15.
—— 1907. *Amphineures.* Expéd. Antarct. Franç. (1903–5), pp. 1–3.
—— 1908. *Die antarktischen und subantarktischen Chitonen.* Dtsch. Südpolar-Exped. (1901–3), x, pp. 7–23, 1 pl.
—— 1909. *Revision des Systems der Chitonen.* Zoologica (Stuttgart), xxii (1–2), 10 pls.
—— 1911. *Amphineures.* Deuxième Expéd. Antarct. Franç. (1908–10), pp. 33–4.
—— 1912. *Die antarktischen Schnecken und Muscheln.* Dtsch. Südpolar-Exped. (1901–3), xiii, pp. 183–285, pls. 11–19.
—— 1913. *Antarktische Solenogastren.* Dtsch. Südpolar-Exped. (1901–3), xiv, pp. 35–65, 5 pls.
—— 1920. *Die Cephalopoden der Deutschen Südpolar-Exped.* Dtsch. Südpolar-Exped. (1901–3), xvi, Zool. 8, pp. 431–65.
—— 1924. *Revision des Systems der Trochacea.* Mitt. Zool. Mus. Berl., xi, 1, pp. 47–74.
—— 1925. *Gastropoda der deutschen Tiefsee-Expedition* 2. Wiss. Ergebn. 'Valdivia', xvii, 2, pp. 36–382, pls. 13–46.
—— 1929–34. *Handbuch der systematischen Weichtierkunde*, 1 and ii, Jena.
Tomlin, J. R. le B., 1917. *A systematic list of the Marginellidae.* Proc. Malacol. Soc. Lond., xii, pp. 242–306.
—— 1932. *Reports on the marine Mollusca in the collections of the South African Museum.* vi–viii. Ann. S. Afr. Mus. xxx, pt. 2, pp. 157–69.
—— 1938. Thracia antarctica *M. & S. and* Mya antarctica *M. & S.* J. Conch., xxi (3), p. 84.
—— 1945. *Two South African species renamed.* J. Conch., xxii (6), p. 135.
—— 1948. *The Mollusca of Macquarie Island.* B.A.N.Z.A.R.E. Rep. (Ser. B), v (5), pp. 221–32.
Troschel, F. H., 1856–63. *Das Gebiss der Schnecken*, 1, pp. 1–252, plates. Berlin.
Troschel, F. H. & Thiele, J., 1866–93. *Das Gebiss der Schnecken*, 2, pp. 1–410, plates. Berlin.
Tryon, G. W., 1880. *Manual of Conchology*, ii.
—— 1881. *Manual of Conchology*, iii.
—— 1883. *Manual of Conchology*, v.
—— 1886. *Manual of Conchology*, viii.
—— 1887. *Manual of Conchology*, ix.
Tryon, G. W. & Pilsbry, H. A., 1888. *Manual of Conchology*, x.
—— —— 1891. *Manual of Conchology*, xiii.
—— —— 1893. *Manual of Conchology*, xv.
Vallentin, R., 1904. *Notes on the Falkland Islands.* Mem. Manch. Lit. Phil. Soc. xlviii, no. 23, 50 pp.
Vayssière, A., 1906*a*. *Diagnoses génériques des Mollusques gastéropodes nouveaux rapportés par l'expédition antarctique du Dr Charcot.* Bull. Mus. Paris, pp. 147–9.
—— 1906*b*. *Sur les Gastéropodes Nudibranches de l'expédition antarctique du Dr Charcot.* C.R. Acad. Sci. Paris, cxlii, pp. 718–19.
—— 1907. *Mollusques Nudibranches et Marséniadés.* Expéd. Antarct. Franç. (1903–5), pp. 1–51, 4 pls.
—— 1916. *Sur un Amphineure et sur quelques Gastropodes opisthobranches et prosobranches de la Deuxième Expéd. du Dr Charcot.* C.R. Acad. Sci. Paris, clxii, pp. 271–3.
—— 1917. *Recherches zoologiques et anatomiques sur les mollusques amphineures et gastéropodes (Opisthobranches et Prosobranches).* Deuxième Expéd. Antarct. Franç. (1908–10), Paris, pp. 1–50, pls. 1–4.
Vokes, H. E., 1939. *Molluscan faunas of the Domengine and Arroyo Hondo formations of the California Eocene.* Ann. N.Y. Acad. Sci., xxxviii, pp. 1–246.
Waite, E. R., 1916. *The Fishes.* Sci. Rep. Austr. Antarct. Exped., 1911–14, iii (1), p. 8.
Watson, R. B., 1879. *Mollusca of H.M.S. 'Challenger' Expedition*, pts. 1 and 2. *Solenoconchia*, pp. 506–529; parts 3 and 4, *Trochidae*, pp. 586–605 and 692–716. J. Linn. Soc. xiv.
—— 1880. *Mollusca of H.M.S. 'Challenger' Expedition*, part 5, pp. 87–126; pt. 6, pp. 217–30. J. Linn. Soc. xv.
—— 1881. *Mollusca of H.M.S. 'Challenger' Expedition*, part 7, pp. 254–74; part. 8, pp. 388–412; part 9, pp. 413–55; part 10, pp. 457–75. J. Linn. Soc., xv.
—— 1882. *Mollusca of H.M.S. 'Challenger' Expedition*, part 11, pp. 247–54; part 12, pp. 324–43; part 13, pp. 358–72; part 14, pp. 372–92. J. Linn. Soc., xvi.
—— 1883. *Mollusca of H.M.S. 'Challenger' Expedition*, parts 15 and 16, pp. 594–611; part 17, pp. 26–40, 112–30; part 18, pp. 284–93; part 19 and 20, pp. 319–46. J. Linn. Soc., xvi.
—— 1886. *Report on Scaphopoda and Gasteropoda collected by 'Challenger'.* Zool. Chall. Exped., xv, pt. 42, pp. 1–756, pls. 1–50.
Wood, W., 1818. *Index Testaceologicus*, London.
—— 1828. *Index Testaceologicus*, Supplement, xvi, pl. 5, fig. 12.
Woods, J. E. Tenison, 1876. *On some new Tasmanian marine shells and a new reversed Tasmanian* Helix. Pap. Roy. Soc. Tasm., pp. 3–34.
Woodring, W. P., 1928. *Miocene Mollusks from Bowden, Jamaica.* Pt. 2. Publ. Carneg. Instn., pp. 1–564.

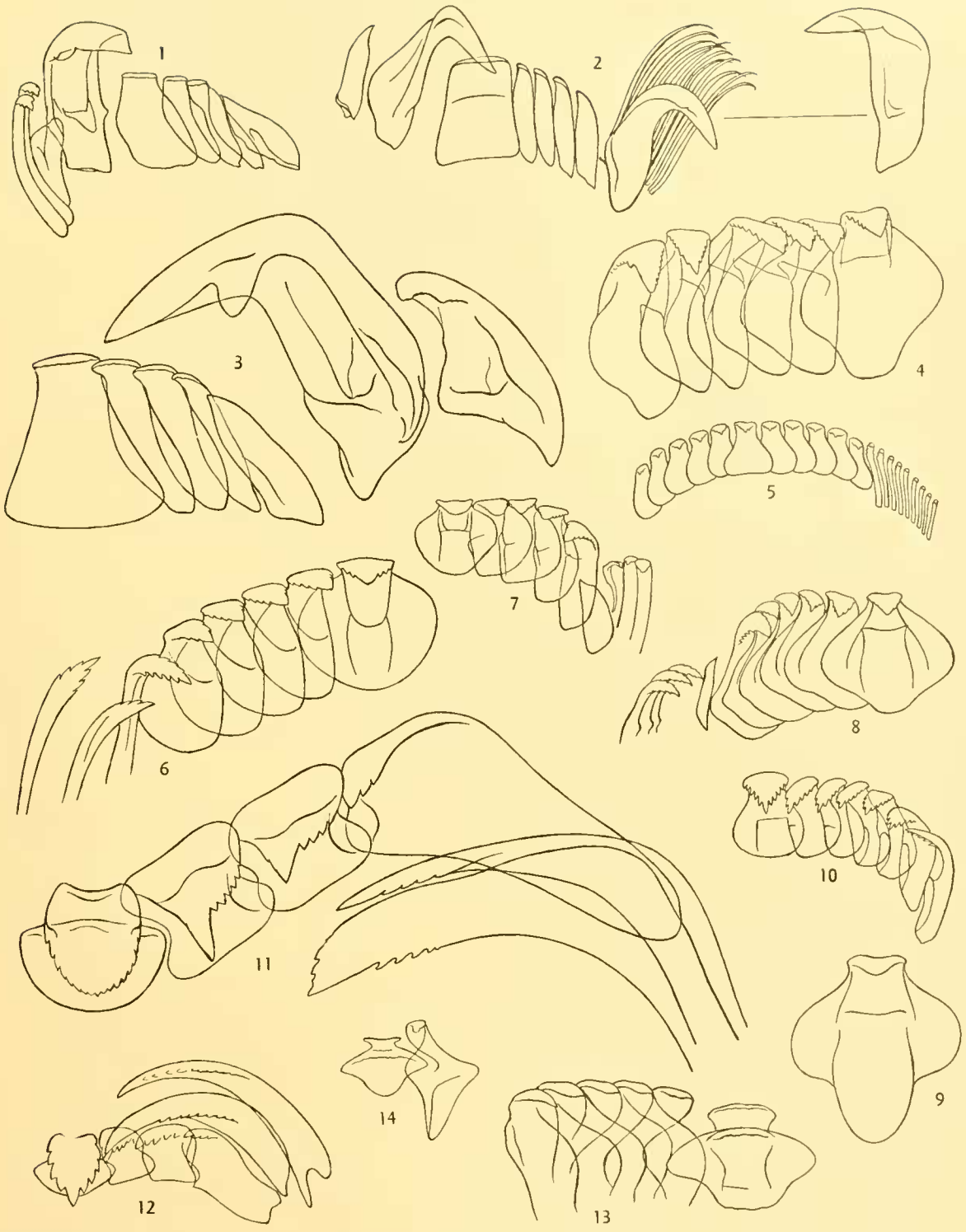

Fig. G. Dentition of Fissurellidae, Trochidae and Turbinidae. (1) *Puncturella noachina* Linn., Greenland (Troschel & Thiele, 1891, pl. 27, fig. 2). (2) *Puncturella conica* (d'Orbigny), South Georgia, St. 27. (3) *Parmaphorella melvilli* (Thiele), Falkland Is., St WS 825. (4) *Margarella* (*Promargarita*) *tropidophoroides* (Strebel), South Georgia (Thiele, 1912, pl. 15, fig. 17). (5) *Antimargarita dulcis* (Smith), McMurdo Sound (Eales, 1923, fig. 4). (6) *Tropidomarga biangulata* n.g. and n.sp., South Georgia, St. 159. (7) '*Margarita striata*' = *Pupillaria cinerea* Couthouy, Greenland (Troschel & Thiele, 1891, pl. 25, fig. 9). (8) *Margarella bouvetia* n.sp., Bouvet I. (9) *Margarella antarctica* (Lamy), South Orkneys, St. 164. (10) *Submargarita impervia* Strebel, South Georgia (Thiele, 1912, pl. 15, fig. 18). (11) *Solariella kempi* n.sp., Falkland Is., St. WS 766. (12) *Solariella biradiatula* Martens, Dar-es-Salam (Martens & Thiele, 1903, pl. 8, fig. 37). (13) *Leptocollonia thielei* n.g. and n.sp., South Georgia, St. 156. (14) *Homalopoma carpenteri* Pilsbry, California (Pilsbry, 1888, pl. 60, fig. 73).

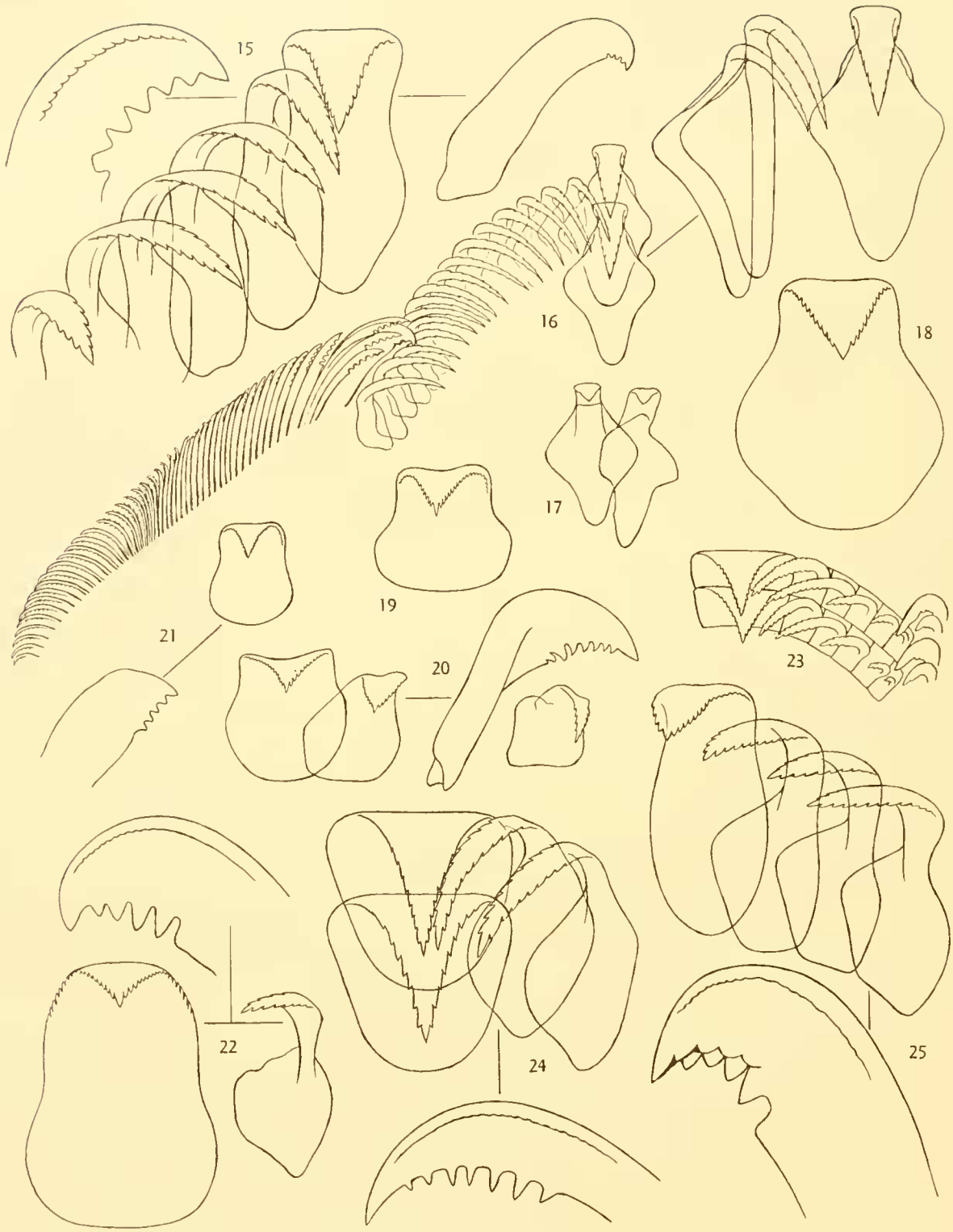

Fig. H. Dentition of Trochidae (Calliostomatinae). (15) *Calliostoma modestulum* Strebel, Falkland Is., St. WS 80. (16) *Venustatrochus georgianus* n.g. and n.sp., South Georgia, St. 42. (17) *Livonia pica* Linn., West Indies (Thiele, 1924, fig. 11). (18) *Calliostoma coppingeri* (Smith), Falkland Is., St WS. 852. (19) *Calliostoma granulatus* Born., Mediterranean (Troschel & Thiele, 1879, pl. 24, fig. 18). (20) *Calliostoma sublaevis chuni* Martens, off Somaliland (Martens & Thiele, 1903, pl. 8, fig. 42). (21) *Calliostoma conulus* Linn., Messina (Troschel & Thiele, 1879, pl. 24, fig. 16). (22) *Calliostoma nordenskjoldi* Strebel, Patagonia, St. WS. 776. (23) *Falsimargarita gemma* (Smith), off Oates Land (Eales, 1923, fig. 6). (24) *Photinula coerulescens* (King & Broderip), Falkland Is., St. WS 869. (25) *Photinastoma taeniata* (Wood), Falkland Is., St. 56.

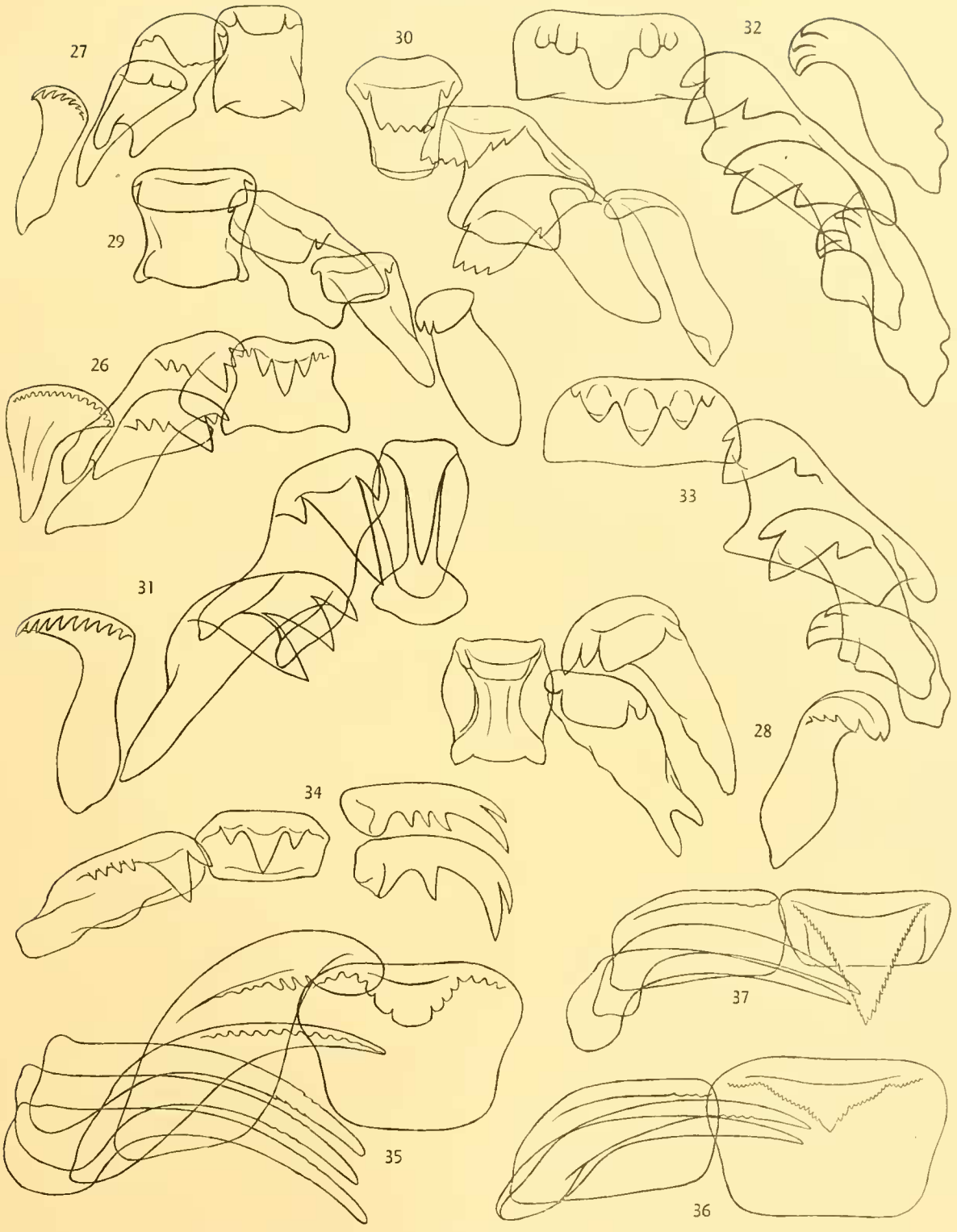

Fig. 1. Dentition of Littorinidae, Cerithiidae and Struthiolariidae. (26) *Laevilitorina caliginosa* (Gould), South Georgia St. MS 70. (27) *Laevilitorina* (*Corneolitorina*) *coriacea* Melvill & Standen, South Orkneys, St. 166. (28) *Laevilacunaria antarctica* (Martens), South Georgia (Martens & Pfeffer, 1886, pl. 3, fig. 13). (29) *Laevilacunaria* n.g. *bransfieldensis* (Preston), South Shetland Is., St. 1486. (30) *Laevilacunaria* (*Pellilacunella*) *bennetti* (Preston), Palmer Archipelago, St. 179. (31) *Macquariella aucklandica* Powell, New Zealand. (32) *Pellilitorina setosa* (Smith), South Georgia, St. MS. 71. (33) *Pellilitorina pellita* (Martens), South Orkney Is., St. 164. (34) *Ataxocerithium pullum* (Philippi), Falkland Is., St. WS. 225. (35) *Perissodonta georgiana* Strebel, South Georgia, St. WS 62. (36) *Struthiolaria papulosa* (Martyn), New Zealand. (37) *Pelicaria vermis* (Martyn), New Zealand.

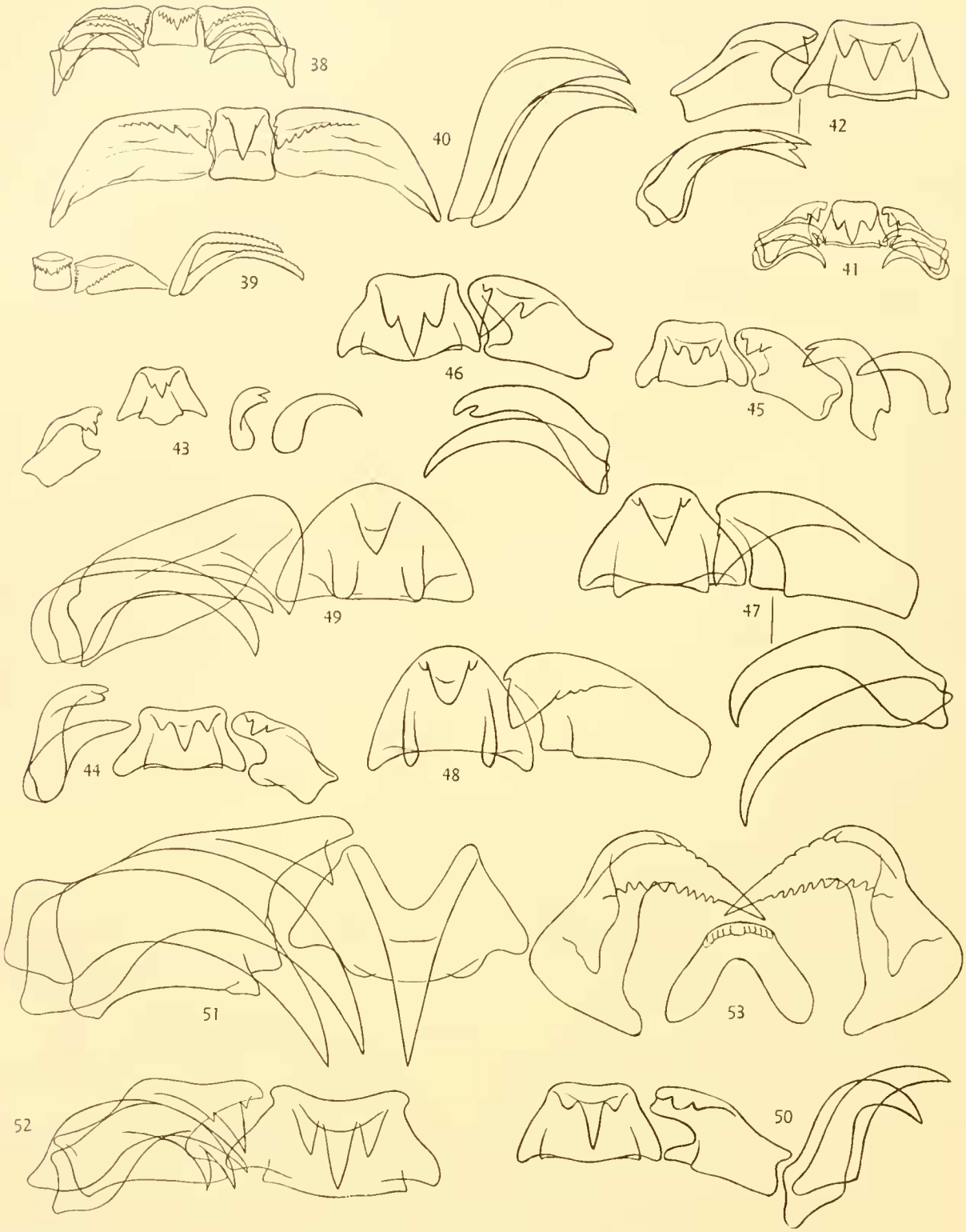

Fig. J. Dentition of Calyptraeidae and Naticidae. (38) *Calyptraea sinensis* (Linn.) (Troschel, 1861, pl. 13, fig. 7). (39) *Sigapatella terraenovae* Peile (Peile, 1924, fig. 1). (40) *Trochita trochiformis* (Gmelin), Falkland Is., St. WS 92. (41) *Amauropsis helicoides* (Johnson) (Troschel, 1861, pl. 15. fig. 6). (42) *Amauropsis aureolutea* (Strebel), South Georgia, St. WS 177. (43) *Amauropsis rossiana* Smith, McMurdo Sound (Eales, 1923, figs. 20–22). (44) *Amauropsis anderssoni* (Strebel), South Georgia, St. MS 68. (45) *Amauropsis* (*Kerguelenatica*) *grisea* (Martens), Kerguelen I. (Martens & Thiele, 1903, pl. 8, fig. 44). (46) *Tectonatica impervia* (Philippi), South Georgia, St. 159. (47) *Falsilunatia soluta* (Gould), Falkland Is., St. WS 808. (48) *Falsilunatia recognita* (Rochebrune & Mabille), Falkland Is., St. WS 766. (49) *Globisinum venustum* (Suter), New Zealand. (50) *Sinuber sculpta scotiana* n.subsp., South Orkney Is., St. 167. (51) *Tanea zelandica* (Quoy & Gaimard), New Zealand. (52) *Notocochlis migratoria* (Powell), Australia. (53) *Lamellaria* sp., Falkland Is., St. WS 867.

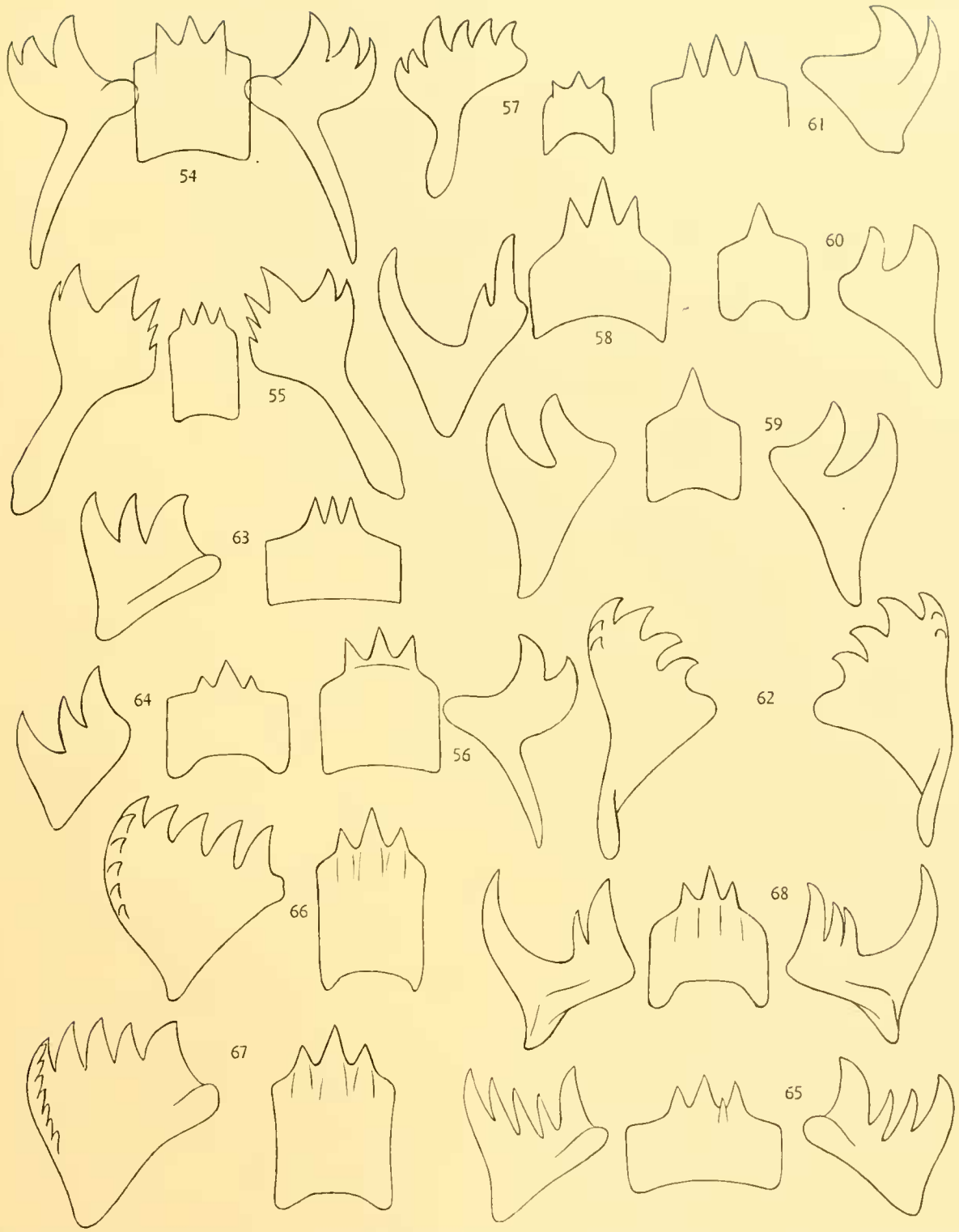

Fig. K. Dentition of Buccinacea. (54) *Prosipho madigani* Hedley, Palmer Archipelago, St. 182. (55, *Prosipho chordatus* (Strebel), South Georgia, St. 123. (56) *Prosipho astrolabiensis* (Strebel), South Georgia, St. 140. (57) *Anomacme smithi* Strebel (Thiele, 1912, pl. 16, fig. 14). (58) *Glypteuthria meridionalis* (Smith) (Thiele, 1912, pl. 16, fig. 17). (59) *Falsimohnia albozonata* (Watson), South Georgia, St. 140. (60) *Lachesis australis* Martens = *F. albozonata* Martens & Thiele, Kerguelen I. (Martens & Thiele, 1903, pl. 9, fig. 55). (61) *Notoficula problematica* n.sp., Falkland Is., St. WS 766. (62) *Meteuthria martensi* (Strebel) (Thiele, 1912, pl. 16, fig. 18). (63) *Probuccinum delicatulum* n.sp., South Georgia, St. 140. (64) *Probuccinum* '*tenerum*' Thiele (Thiele, 1912, pl. 16, fig. 21). (65) *Probuccinum angulatum* n.sp., South Georgia, St. 156. (66) *Proneptunea duplicarinata* n.sp., South Georgia, St. 160. (67) *Proneptunea fenestrata* n.sp., South Georgia, St. 141 (68) *Cavineptunea monstrosa* n.g. and n.sp., South Georgia, St. 159.

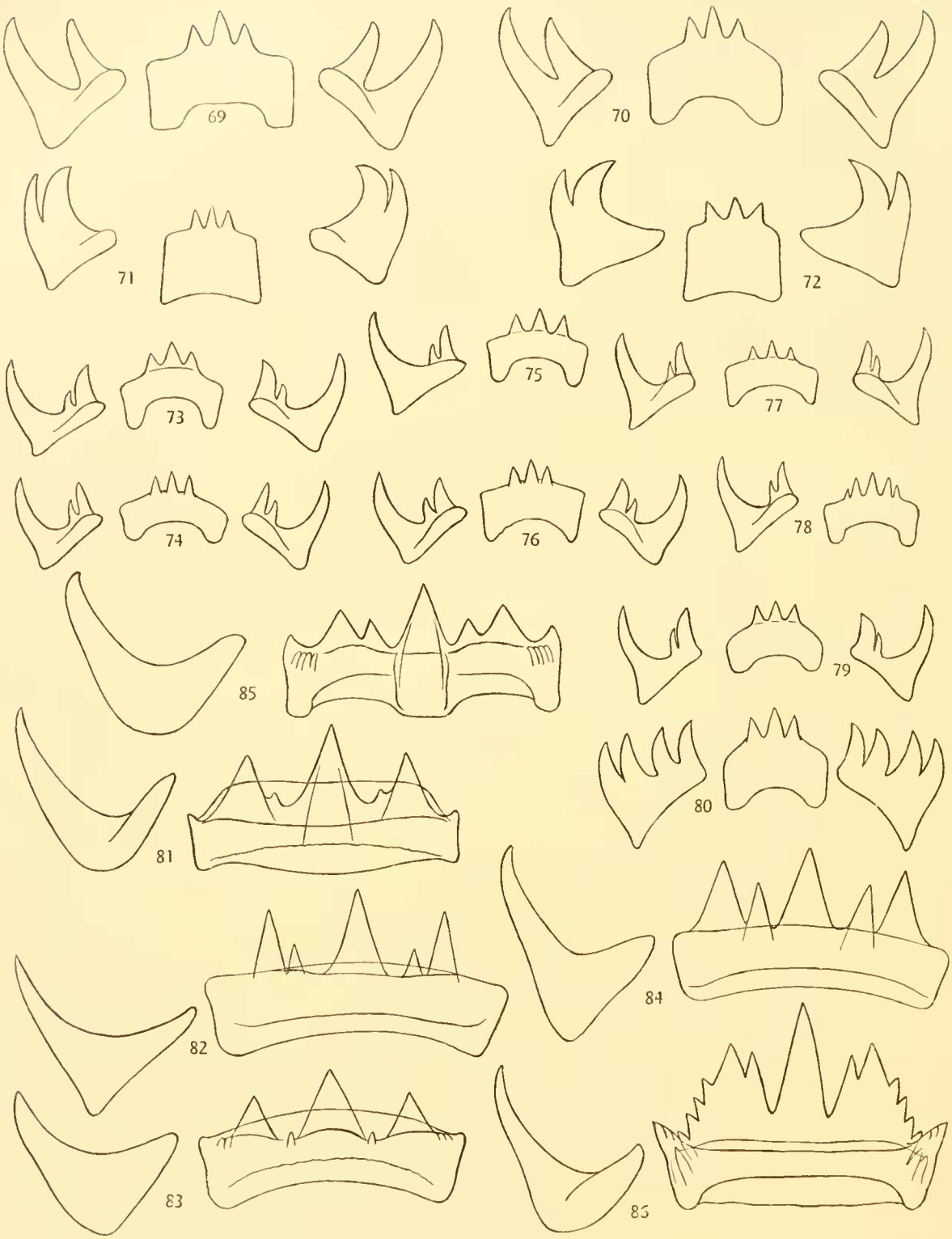

Fig. L. Dentition of Buccinacea and Muricidae. (69) *Pareuthria fuscata* (Brug.), Falkland Is., St. 56. (70) *Pareuthria venustula* n.sp., Cape Horn—Staten I., St. 388. (71) *Tromina tricarinata* n.sp., Clarence I., St. 170. (72) *Tromina bella* n.sp., Falkland Is., St. WS 818. (73) *Chlanidota pilosa* n.sp., Bouvet I., St. 456. (74) *Chlanidota signeyana* n.sp., South Orkney Is., St. 167. (75) *Chlanidota densesculpta* (Martens), South Georgia, St. MS 10. (76) *Chlanidota elongata* (Lamy), South Shetland Is., St. 1952. (77) *Chlanidota paucispiralis* n.sp., South Georgia, St. 159. (78) *Pfefferia elata* Strebel, South Georgia, St. 30. (79) *Pfefferia cingulata* Strebel, South Georgia, St. 146. (80) *Chlanidotella modesta* (Martens), South Georgia, St. MS. 10. (81) *Trophon geversianus* (Pallas), off Patagonia, St. WS 847. (82) *Trophon shackletoni paucilamellatus* n.subsp., South Georgia, St. 144. (83) *Trophon echinolamellatus* n.sp., Clarence I., St. 170. (84) *Trophon ohlini* Strebel, Falkland Is., St. WS 80. (85) *Trophon* (*Fuegotrophon*) *pallidus* (Brod.), Falkland Is., St. 56. (86) *Trophon* (*Stramonitrophon*) *laciniatus* (Martyn), Falkland Is., St. WS 788.

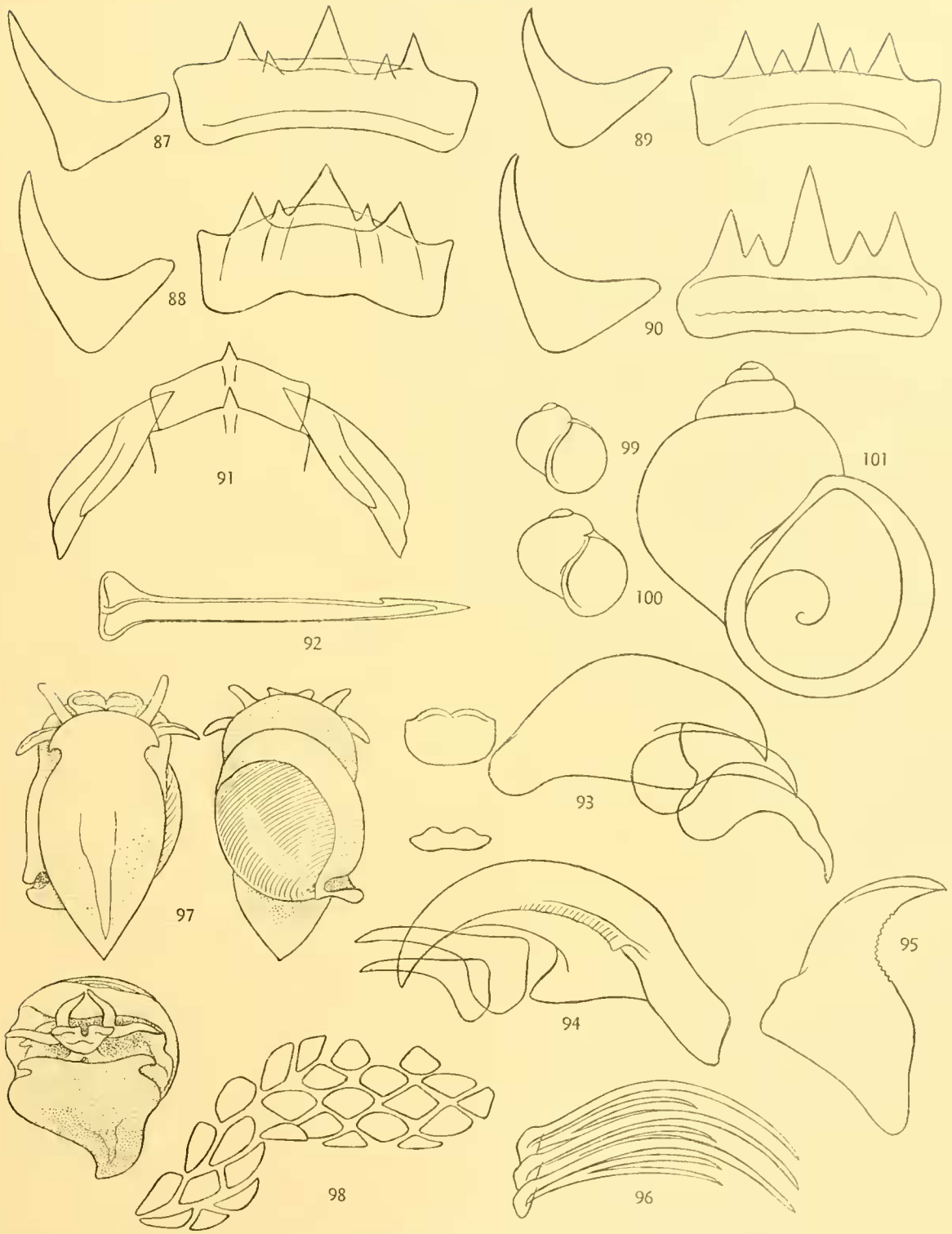

Fig. M. Dentition of Muricidae, Turridae and Tectibranchia. (87) *Trophon distantelamellatus* Strebel, South Georgia, St. MS 67. (88) *Trophon scotianus* n.sp., South Georgia, St. WS 27. (89) *Trophon cuspidarioides* n.sp., South Georgia, St. 42. (90) *Xymenopsis albidus* (Philippi), off Patagonia, St. WS 834. (91) *Aforia magnifica* (Strebel), Palmer Archipelago, St. 182. (92) *Typhlodaphne purissima* (Strebel), South Georgia, St. 159. (93) *Kaitoa scaphandroides* n.sp., South Georgia, St. 30. (94) *Philine falklandica* n.sp., Falkland Is., St. WS 225. (95) *Philine* cf. *kerguelensis* Thiele, Falkland Is., St. WS 219. (96) *Parvaplustrum tenerum* n.sp., Falkland Is., St. WS 219. (97) *Parvaplustrum tenerum* n.sp., ventral, dorsal and frontal views. (98) *Parvaplustrum tenerum* n.sp., stomach plates. (99) *Laevilacunaria* (*Pellilacunaria*) *bennetti* (Preston). Tracing of Preston's figure of holotype (2 × 2 mm.). (100) *Laevilacunaria bennetti*, juvenile (2 × 2 mm.). (101) *Laevilacunaria bennetti*, adult (6 × 5 mm.). Palmer Archipelago, St. 179.

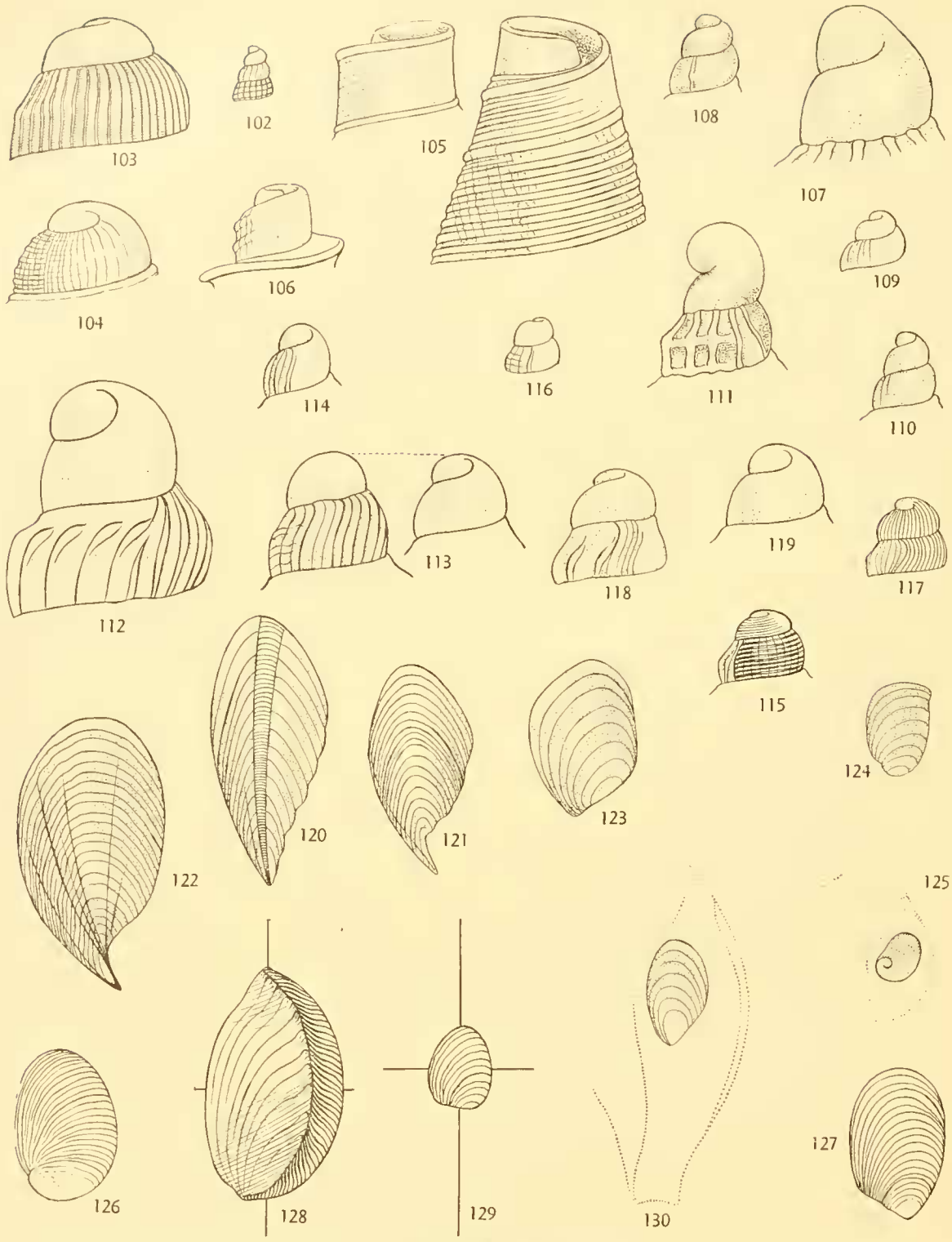

Fig. N. Protoconchs (all to uniform scale). (102) *Ataxocerithium pullum* (Philippi), Falkland Is., St. WS 225. (103) *Tromina tricarinata* n.sp., Clarence I., St. 170. (104) *Tromina bella* n.sp., Falkland Is., St. WS 817. (105) *Cavineptunea monstrosa* n.g. and n.sp., South Georgia, St. 159. (106) *Proneptunea fenestrata* n.sp., South Georgia, St. 140. (107) *Trophon geversianus* (Pallas), Falkland Is. (108) *Zeatrophon ambiguus* (Philippi), New Zealand. (109) *Xymene plebejus* (Hutton), New Zealand. (110) *Xymenopsis liratus* (Gould), Falkland Is., St. 52. (111) *Trophon* (*Fuegotrophon*) *pallidus* (Broderip), Staten I., St. WS 88. (112) *Leucosyrinx falklandica* n.sp., Falkland Is., St. WS 781. (113) *Leucosyrinx paragenota* n.sp., Burdwood Bank, St. 652. (114) *Lorabela* n.g. *notophila* (Strebel), South Georgia, St. WS 27. (115) *Belalora thielei* n.g. and n.sp., Falkland Is., St. WS 801. (116) *Pleurotomella? ohlini* (Strebel), Falkland Is. (117) *Pleurotomella simillima* (Thiele), Ross Sea, St. 1660. (118) *Eumetadrillia fuegiensis* (Smith), off Patagonia, St. WS 787. (119) *Typhlodaphne* n.g. *purissima* (Strebel), South Georgia, St. 159. Opercula (Figs. 120, 121, 123–126, 130 all to uniform scale. Fig. 122 = $\frac{5}{8}$, and Fig. 127 = × 2). (120) *Perissodonta georgiana* Strebel, South Georgia, St. WS 62. (121) *Pelicaria vermis* (Martyn), New Zealand. (122) *Struthiolaria papulosa* (Martyn), New Zealand. (123) *Probuccinum delicatulum* n.sp., South Georgia, St. 159. (124) *Proneptunea fenestrata* n.sp., South Georgia, St. 140. (125) *Notoficula problematica* n.sp., Falkland Is., St. WS 766. (126) *Tromina tricarinata* n.sp., Clarence I., St. 170. (127) *Falsimohnia albozonata* (Watson), South Georgia, St. 149. (128) *Pfefferia elata* Strebel, South Georgia. (129) *Chlanidota signeyana* n.sp., South Orkney Is. (size relationship between operculum and aperture represented by crossed lines). (130) *Typhlodaphne* n.g. *purissima* (Strebel), South Georgia, St. 159.