

LAKE LAND

MOLLUSCS

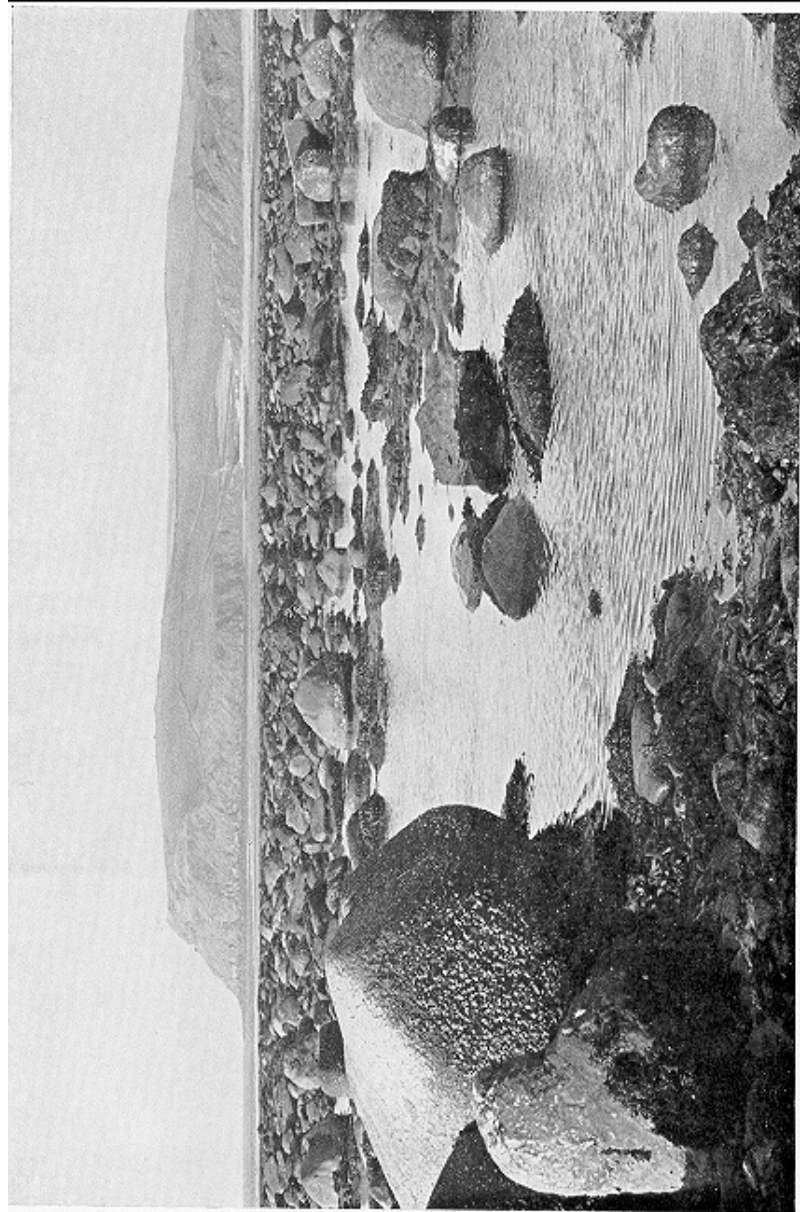
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Photograph: Clifford Johnson

Boulder Scar, south of St. Bees Head

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From photographs by Clifford Johnson

Marine Mollusca of Lakeland

By

MARJORY GARNETT AND MARY M. MILNE

FOREWORD.

This preliminary list of the Marine Mollusca of the coast of Lakeland—Cumberland, Westmorland and Lancashire North of the Sands—makes no claim to be in any way complete, especially for the southern part of the region and for the large class of sea-slugs, but is published in its present form in the hope that it may encourage others to continue the much needed field-work on this most interesting group.

The authors themselves have relied for their results mainly on “beach-combing,” but they have been fortunate in being allowed by Mr. G. W. Pitchford to use his valuable list, consisting largely of records of living specimens. Other friends have contributed local collections of shells which have helped in building up the tabulated distribution charts, and the general collection of Marine Molluscs at Tullie House, Carlisle, has been made readily available for comparison. Most of all the authors are grateful to Mrs. Nora F. McMillan, Assistant Keeper of Natural History at the City of Liverpool Museums, without whose helpful advice and identification of many doubtful specimens the compilation of this list would hardly have been possible. We also thank Mr. Ralph Stokoe and Mr. Ernest Blezard for much useful advice and criticism in the early stages of the writing.

In addition to this help on the scientific side we are greatly indebted to Mr. Clifford Johnson for so generously contributing the beautiful photographs which he took especially to illustrate the work.

MARCH, 1966.

The nomenclature and arrangement followed throughout is that of “The British Marine Mollusca” by R. Winckworth, M.A., *The Journal of Conchology*, Vol. 19, No. 7, June, 1932, and “A List of the Marine Mollusca of the British Isles: Additions and Corrections,” *The Journal of Conchology*, Vol. 23, No. 5, March, 1951.

English names are given where possible from *Shell Life*, by E. Step, 1945 edition.

A BRIEF DESCRIPTION OF THE COAST-LINE.

The most striking feature of the coast-line of Lakeland, the whole of which lies within Area 25 "Solway, 54N. and 4W.", of the British Marine Census, is the great lateral range of the tide over much of its length. In the Solway Firth the tide goes out for miles, leaving wide sand- and mud-flats with some mussel scars far out, shifting river channels and a few shingle beaches. Here, as in the southern estuaries, even the mud-flats are for the most part firm to walk on, though the creeks running back into the salt-marshes are of a more slimy mud. From Grune Point, near the western end of the Solway, to St. Bees Head, the intertidal range gradually narrows; the lower shore is of sand or mud, backed by sand or shingle beaches, and with extensive boulder scars, especially at Dubmill Point. At Maryport there are reefs of sandstone outcrops on the beach and out in the sand.

It is probably the shape of the coast-line, jutting out at St. Bees Head and falling away to north and south, combined with the influence of wind and, perhaps, also of offshore currents, that causes so much sea-drift of all kinds to be washed up at Allonby Bay and Drigg beach in particular and, to a less extent, on most of the Cumberland beaches, making them so attractive to the beachcomber and marine conchologist.

Between Maryport and St. Bees Head is the least interesting and least attractive part of the coast-line, owing to the influence of the industrial background. The beaches are for the most part shingly with a mixture of sea-coal and here and there short stretches of sand. South of Workington the intertidal zone narrows rapidly and the raised beach vanishes, the sea bank coming right to the high tide line. Scars and rock outcrops increase at the expense of sand, Whitehaven sandstone outcrops near Parton and slag banks from the iron works and shale tips have been eroded by the tides and contribute to the beach shingle.

At St. Bees Head tumbled red sandstone rocks fringe the base of the cliffs except for a narrow pebble beach running down to reefs of solid rock at Fleswick Bay, between the North and South Heads. Below the North Head in particular the wave platform, where not encumbered by fallen rocks, runs out to sea in level or gently inclined slabs of rock, pitted with deep waterworn cracks and pools, many of which never dry out, and which contain a rich marine fauna and flora. South of St. Bees, sands broken by boulder scars begin again and gradually widen down the coast to Seascale and Drigg, and on to Haverigg and the Duddon estuary, interrupted only by the mud-flats and channels running inland at Ravenglass, where the combined estuaries of Irt, Mite and Esk enter the sea, and by a stretch of shingle and boulder beach south of Tarn Bay.

As will be seen from the Distribution Tables, the shell fauna of this long stretch of coast south of the Head varies considerably from place to place, and shells are found here which are either absent or scarce to the north and vice versa. The proportion of mud in the sand may be one cause of this; again the scars differ from each other in many respects. The great Barn Scar at Drigg, which begins out in the sand and is well raised in the centre, extends out into the sea to the laminarian zone, and is only partly uncovered even at spring tides; others, like Whitrigg Scar at Seascale, run out from the shingle beach and are surrounded by sand at low water. These smaller scars vary in extent as the tides shift banks of sand over their lower tracts or wash them clean again, and their fauna and flora in consequence lead a precarious existence. Some of the low lying cobble reefs remain permanently bare. Dubmill Scar, north of Allonby, Whitrigg Scar at Seascale and probably others, rest on glacial boulder-clay, not infrequently laid bare by the tides, and this again may affect the distribution of some shells.

Low water of spring tides on this coast occurs about 7 a.m. and 7 p.m., so that during the winter months the lower reaches of the shore and of the scars are only uncovered in the hours of darkness, and even in summer never suffer drying out by the noonday sun. The intertidal fauna is, therefore, more likely to be affected by extremes of cold, as in the winter of 1962-63, than of heat, though C. M. Yonge records "an exceptional mortality of large cockles and of lug-worms on the sands of Morecambe Bay ... during the summer of 1933, probably caused by a period of exceptionally high and sudden rise of temperature in May."

To continue the survey of the coast line; south of the deeply indented Duddon estuary, Walney Island lies like a long breakwater between Barrow-in-Furness, with its dockyards, and the open sea, and is fringed on both sides with many boulder scars in the wide intertidal zone. Finally, the southern estuaries of the Leven and Kent, like that of the River Duddon, run far back into the land, their seaward channels joining at low tide to form the immense sand- and mud-flats of Morecambe Bay. Much of the landward side is salt-marsh but there are a few stoney or sandy beaches; at Humphrey Head on the west side of the Kent estuary there is a limestone cliff, and reefs and outcrops of limestone occur at several places on the shore or as small islands in the sands.

As a footnote to the description of the coastline, two passages in *The Geology of the Lake District*, by J. E. Marr, Sc.D., F.R.S., are of interest. They refer to deposits of marine shells on this coast-line due to ice action and to changes that have taken place in the Post Glacial Period:—

p.180. "Though no shells have been found in the drift accumulations of the actual Lake District, they have been found in deposits of the adjacent lowlands, ...At Gutterby Lane End, Gutterby Spa, near the sea coast to the west of Black Combe, Bernard Smith records the occurrence of 80 feet of drift consisting of loamy clays, sands, gravels and boulder beds. The boulder beds contain fragments of marine shells, including *Turritella communis*, *Buccinum undatum*, *Anomia ephippium*, *Ostrea* and *Mytilus edulis*. This drift, it will be observed, is in the tract of country where the boulders give proof of the encroachment of ice from over the Solway, and the shells, as in similar cases elsewhere, have no doubt been carried by the ice from the old sea floor over which it moved."

p.207. "The filling in of the estuaries of the coast-line around Lakeland is generally similar in its effects to that of the lakes, save that it is modified by marine scour. Much of the material which is deposited in these estuaries is of the nature of alluvium brought down by the rivers of Lakeland, and the estuaries, like the lakes, were once filled with water to points considerably beyond their present upper limits.

"The beaches of these estuaries are not unlike those of the lakes, for wave action is not pronounced, but tidal action produces some differences.

"There is evidence that since some of the beaches were formed, a slight elevation of this coast has occurred, and we meet with raised beaches a few feet above the present sea-level. A specimen of a raised beach from near Silverdale containing sea shells is preserved in the Sedgewick Museum, Cambridge, and we have other evidence of their occurrence."

Silverdale is just outside our area, but raised beaches can be traced in the cliffs at Seascale and elsewhere.

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Class: **LORICATA.**
Order: **LEPIDOPLEURIDA.**
Family: **LEPIDOPLEURIDAE.**

LEPIDOPLEURUS Risso, 1826.

1. **asellus** (Gmelin, 1791). (Grey Mail-shell).
Walney Island, Ernse Point, rare under boulders, low water, spring
tide, 16 September 1951. G.W.P.

Order: **CHITONIDA.**
Family: **LEPIDOCHITONIDAE.**

TONICELLA Carpenter, 1873.

6. **rubra** (Linné, 1767). (Red Mail-shell).
Walney Island, Ernse Point, rare under boulders at low water, spring
tide, 16 September 1951. G.W.P.

LEPIDOCHITONA Gray, 1821.

7. **cinereus** (Linné, 1767). (Bordered Mail-shell).
Common on scars near Saltpans and Maryport. M.M.
Found under stones in the intertidal scars at Braystones,
Seascale (common), and Barn Scar, Drigg. M.G.
Seascale, under stones near low water mark, very common,
18 July 1955. Walney Island, abundant under boulders between
lower water mark of neap and spring tides, 16 September 1951.
G.W.P.

Class: **GASTEROPODA.**
Sub-class: **PROSOBRANCHIA.**
Order: **ARCHAEOGASTROPODA.**
Family: **FISSURELLIDAE.**

EMARGINULA Lamarck, 1801.

2. **reticulata mulleri** Forbes & Hanley, 1849. (Common Slit-limpet).
Fairly rare between Maryport and Dubmill. M.M.
Dead shells rather rare on the shore from Seascale to north of

Drigg Point. One found at Tarn Bay, 17 February 1962.
M.G.

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Family: **PATELLIDAE**.

PATELLA Linne, 1758.

7. **vulgata** Linne, 1758. (Common Limpet).
Common Maryport to Dubmill M.M.
St. Bees, South Head and Fleswick Bay, common on red sandstone rocks.
28 August 1950. Seascale, common on boulders, 18 July 1955. G.W.P.
Very common on boulders, Braystones and Calder to Esk, less common
at Tarn Bay and Silecroft. M.G.
Walney Island, Ernse Point to Hollow Scar, abundant on boulders
between tide marks, 6 September 1950. G.W.P.

PATINA Leach, 1847.

10. **pellucida** (Linné, 1758). (Blue-rayed Limpet).
Fairly common at Maryport. M.M.
One, St. Bees Head. R. Stokoe.
Dead shells rare on the Seascale and Drigg beaches. M.G.
Walney Island, between Ernse Point and Hollow Scar, on
Laminariae at low water mark, 4 September 1950. G.W.P.

Family: **LOTTIIDAE**.

PATELLOIDA Quoy & Gaimard, 1843.

S.G. **COLLISELLA** Dall, 1871.

12. **tessulata** (Muller, 1776). (Tortoiseshell Limpet).
Rare, Maryport to Dubmill. M.M.
Dead shells fairly rare on the Seascale and Drigg beaches. M.G. S.G.

TECTURA Gray, 1847.

13. **virginea** (Muller, 1776). (White Tortoiseshell Limpet).
Dead shells rare on Seascale and Drigg beaches; one Tarn Bay, 17
February 1962. M.G.

Family: **TROCHIDAE**.

CALLIOSTOMA Swainson, 1840.

20. **zizyphinum conuloide** (Lamarck, 1822). (Common Top~shell)*.
Common at Maryport and two dead shells at Haverigg, 21
November 1964. M.M.
Dead shells not uncommon, Seascale and Drigg, also found at
Braystones and Tarn Bay. A few live specimens on Barn Scar,
Drigg, at low water spring tides; but here they seem to be
decreasing. M.G.

Walney Island, between Mill Scar and Hollow Scar, dead shells, 4 September 1950. G.W.P.

*We should have preferred to follow C. M. Yonge in calling this beautiful shell the "Painted Top" but that would have left

Gibbula magus without an English name, so reluctantly we have kept E. Step's name of "Common Top."

GIBBULA Risso, 1826.

23. **magus tuberculata** (da Costa, 1778). (Painted Top-shell).

A broken shell found near Workington and another on the beach near the gas works at Maryport. M.M.

25. **cineraria** (Linné, 1758). (Grey Top-shell).

Common on Barn Scar, Drigg, but fewer of late years. Also dead shells on the shore from Dubmill to Maryport and Seascale, Drigg, Tarn Bay and Silecroft. M.M. & M.G.

Walney Island, Tummer Hill Scar, on boulders and seaweed, 8 September 1949. Hollow Scar, plentiful on boulders and sea weed at low water mark, 4 September 1950. G.W.P.

26. **umbilicalis** (da Costa, 1778). (Flat Top-shell).

Worn specimens found rarely, Dubmill to Maryport. One quite good specimen, Maryport, July 1964. M.M.

Dead shells very scarce at Seascale and Drigg, only two or three found. M.G.

Walney Island, Hollow Scar, on boulders of lower shore, scarce, 4 September 1950. G.W.P.

Order: MESOGASTROPODA.

Family: LACUNIDAE.

LITTORINA Ferrusac, 1822.

41. **littorea** (Linné, 1758). (Common Winkle).

Common at Port Carlisle and from Dubmil to Whitehaven; fairly common between Grune Point and Mawbray. M.M.

St. Bees, South Head, plentiful on shore, 28 August 1950. Seascale, common, 18 July 1955. G.W.P.

Very common on all scars, Braystones to Esk, Tarn Bay and Gutterby, but not on rocks between tide marks south of Suecroft. M.G.

Walney Island, abundant between tide marks, 27 August 1950, and on Foulney Island, among *Fucus vesiculosus*, 27 July 1955. G.W.P.

S.G. LITTORIVAGA Dali, 1918.

42. **saxatilis** (Olivi, 1792). (Rough Winkle).
Fairly common from Grune Point to Mawbray, and common at Maryport. M.M.
St. Bees, South Head, common on rocks from middle to upper shore, 28 August 1950. Seascale, middle shore, 18 July 1955. G.W.P.
Common, St. Bees North Head, and on Whittrigg Scar, Seascale. M.G.
Walney Island, common. G.W.P.
Dead shells, Grange-over-Sands. M. & J. Bennett.

- 42b. **saxatilis tenebrosa** (Montagu, 1803).
Walney Island, Tummer Hill Marsh, plentiful, 22 July 1956. G.W.P.

- 42f. **saxatilis rudis** (Maton, 1797).

St. Bees Head, upper shore, 28 August 1950. Walney Island, plentiful, 4 September 1950. G.W.P.

S.G. NERITOIDES. Brown, 1827.

45. **littoralis** (Linné, 1758). (Flat or Dwarf Winkle). Fairly common Grune Point to Mawbray, and common from Dubmil to Whitehaven. M.M.
Common all scars, Calder to Esk, and fairly common on the scar south of Tam Bay. M.G.
Seascale, common among seaweed, 18 July 1955; Duddon estuary, Roanhead and near Askam-in-Furness, 1 September 1950; Walney Island, 6 September 1950, and Foulney Island, abundant among *Fucus vesiculosus* growing among stones, 14 September 1952. G.W.P.

Family: HYDROBIIDAE.

HYDROBIA. Hartmann, 1821.

S.G. PERINGIA Paladilhe, 1874.

48. **ulvae** Pennant, 1777. (Layer Spire-shell).
Dead shells found occasionally on the beach at Maryport. M.M.
Askam-in-Furness, Duddon estuary, among *Aster tripolium* on the mud-flats, 1 September 1950. Between Roa Island and Foulney Island, common on mud-flats, 27 July 1955. Walney Island, Tummer Hill Marsh, abundant, 22 July 1956. G.W.P.
Grange-over-Sands, dead shells. M. & J. Bennett.

Family: **TURRITELLIDAE.****TURRITELLA** Lamarck, 1799.

- 87.
- communis**
- Risso, 1826. (Cockspur or Auger-shell).

Broken shells fairly rare from Grune Point to Maryport. M.M. Dead shells, including the white variety, common at Braystones, from Calder to Esk, and at Tarn Bay and Silecroft. Often used by small Hermit Crabs, *Eupagurus bernhardus*. MG.

Haverigg Point, dead shells plentiful, 30 August 1950. Duddon estuary, between Roanhead and Lowsy Point, 1 September 1950; and Walney Island, Ernse Point, 6 September 1950.

G.W.P.

Family: **CERITHIIDAE.****BITTIUM** Leach, 1847.

- 90.
- reticulatum**
- (da Costa, 1778). (Small Needle-whelk).

Two shells found near Maryport and three at Flimby. M.M.

Family: **EPITONIIDAE.****CLATHRUS** Oken, 1815.

- 100.
- clathrus**
- (Linné, 1758). (Common Wentletrap).

One near Bank End and two near Maryport. One, containing a baby Hermit Crab, near Saltpans, at low water, 11 August 1964. M.M.

Dead shells very rare at Seascale, Drigg and Silecroft. M.G.

- 101.
- turtonis**
- (Turton 1819). (Turton's Wentletrap).

Between Silecroft and Haverigg Point, one recently dead shell, 8 September 1957. (A new record for Region X). G.W.P.

Family: **CAPULIDAE.****CAPULUS** Montfort, 1810.

- 167.
- ungaricus**
- (Linné, 1758). (Hungarian Cap or Cap of Liberty).

Dead shells fairly rare between Grune Point and Maryport. A very large specimen, 39.8 mm. across, found at Drigg, June 1957. M.M.

Dead shells found occasionally between Seascale and Drigg Point, but not common. Two, Tarn Bay, 17 February 1962. M.G.

Walney Island, Ernse Point, one recently dead shell cast up on shore, 16 September 1951; and between Ernse Point and North Scar, two fresh shells, 12 September 1957. D.P. & G.W.P.

Family: **CALYPTRAEIDAE.**

CREPIDULA Lamarck, 1799.

169. **fornicata** (Linné, 1758). (Slipper Limpet). A dead but not worn shell washed up at Seascale in February, 1961. This is an interesting record, as the Slipper Limpet is a parasitic species, introduced into this country with re-laid American Oysters, and as far as is known no American Oysters have been laid down on this coast. (But see under *Ostrea edulis*). Mrs. N. F. McMilan informs us that a Slipper Limpet was found in the last eight years in the Morecambe-Hey sham area, and another at Caldey, Wirral, Cheshire. M.G.

Family: **APORRHAIIDAE.**

APORRHAIs da Costa, 1778.

170. **pes-pelican**i *quadrifidus* da Costa, 1778. (Pelican's-foot).

Seven found near Maryport in six years. M.M.

Dead shells common, Calder to Esk, also found at St. Bees, Tarn Bay and Silecroft. M.G.

Between Silecroft and Haverigg Point, dead shells, 8 September 1957. Walney Island, between Ernse Point and Hollow Scar, 6 September 1950, and between Ernse Point and North Scar, 12 September 1957. G.W.P.

Dead shell, Grange-over-Sands. M. & J. Bennett.

Family: **NATICIDAE.**

NATICA Scopoli, 1777.

S.G. **EUSPIRA** Agassiz, 1838.

175. **fusca** Blainville, 1825. (Sordid Necklace-shell).

A dead shell found at Seascale, 7 February 1964. M.G.

Silecroft to Haverigg Point, four living specimens taken at extreme low water mark, 23 July 1956. G.W.P.

176. **catena** (da Costa, 1778). (Large Necklace-shell).

Very rare at Maryport, one dead shell near the gas works and one near the golf course, 14 August 1964. M.M.

Dead shells common Calder to Esk, and at times many egg-bands on the sands. Also found at Tarn Bay and Silecroft. M.G. Silecroft to Haverigg Point, dead shells, 30 August 1950, and Walney Island, North Scar, 12 September 1957. G.W.P.

177. **poliana** *alden* Forbes, 1838. (Common Necklace-shell).

Very rare at Maryport, one dead shell, Bank End, 22 February 1962. M.M.

Dead shells common at Seascale and Drigg, also found at Tarn Bay and Silecroft. M.G.

Between Silecroft and Haverigg Point, common at low water mark, 8 September 1957. Walney Island, North Scar, 12 September 1957. G.W.P.

Family: ERATOIDAE.

TRIVIA Broderip, 1837.184. **monacha** (da Costa, 1778). (European Cowry).

Spotted and unspotted (*arctica*) shells, not uncommon among coal dust on the tide line from north of Maryport to St. Bees Head. M.M.

Walney Island, Ernse Point, dead shells cast on shore, 16 September 1951. G.W.P.

184b. **arctica** (Montagu, 1803).

Seascale and Drigg, dead shells rare; all unspotted, as were three found at Tarn Bay, 17 February 1962. M.G.

Shells of the Indo-Pacific Cowry *Ornamentaria annulus* (L.) which are washed up at Seascale from time to time, are said to come from a cargo vessel wrecked near the mouth of the Calder about 1879.

Family: LAMELLARHDAE.

VELUTINA Fleming, 1822.179. **velutina** (Muller, 1776). (Velvet-shell).

Maryport, rare, odd shells found between Maryport and Bank End, one near Mawbray. M.M.

Seascale and Drigg, dead shells rare. M.G.

Between Silecroft and Haverigg Point, two recently dead shells, 8 September 1957. G.W.P.

Order: STENOGLOSSA.

Family: MURICIDAE.

TROPHON Montfort, 1810.

S.G. TROPHONOPSIS Bucquoy Dautzenberg & Dolifus.

187. **truncatus** (Strom, 1768). (Ribbed Spindle-Shell).

Dead shells were not uncommon in gravel on the tide-line at Maryport up to the winter of 1963-64 when the character of this part of the shore changed, the gravel and sand were washed away, leaving reefs of bare rock at the high tide mark. M.M.

NUCELLA Roding, 1798.

190. **lapillus** (Linné, 1758). (Dog-whelk or Purple).

Common at Mawbray and very common from Dubmil to Maryport. On these beaches most of the dead shells are noticeably larger than those found at Seascale. M.M.

Very common on all scars from Braystones and Calder to Esk and at Tarn Bay. Also found at St. Bees. There are many beautiful colour varieties, from white through orange to blackish—in plain colours, or more rarely banded in red and white or black and white. On the Seascale and Drigg beaches a large proportion of the dead shells are white, and some of these show an elongated distortion of the whorls next above the body whorl. Similar shells are found near Maryport. M.G.

Seascale, common, browsing on barnacles, 18 July 1951. Walney Island, Ernse Point to Hilpsford Scar, abundant, and at Tummer Hill Scar specimens of large size at extreme lower water mark of spring tides, 8 September 1949. G.W.P.

OCENEBRA Leach, 1847.

192. **erinacea** (Linné, 1758).

Sting-whelk).

Not uncommon, Dubmill to Maryport. M.M.

Calder to Esk, dead shells common, also found at Tarn Bay.

M.G.

Between Foulney Island and Roa Island, dead shells abundant on shore, 14 September 1952. G.W.P.

Family: BUCCINIDAE.

COLUS Röding, 1798.

199. **gracilis** (da Costa, 1778).

(Slender Spindle-shell).

Two dead shells found between Saltfans and Bank End, Maryport. M.M.

Dead and usually broken shells, not common at Seascale; rather more plentiful north of Silcroft. M.G.

Between Silcroft and Haverigg Point, 30 August 1950. Walney Island, Ernse Point to Hollow Scar, dead shells plentiful on shore, 16 September 1951. G.W.P.

NEPTUNEA Röding, 1798.

203. **antiqua** (Linné, 1758). (Red Whelk). Fairly common, Grune to Mawbray, common Dubmill to Maryport and fairly common again from Maryport to Whitehaven. M.M.

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Dead shells common, Braystones, Calder to Esk, Tarn Bay, Silecroft. Live specimens sometimes washed up at Seascale. M.G.

Walney Island, Ernse Point to Hollow Scar, dead shells abundant on shore, 4 September 1950. G.W.P.

BUCCINUM Linné, 1758.

204. **undatum** Linné, 1758.

Fairly common from Grune to Mawbray and very common from Dubmill to Maryport, particularly between Salt pans and Maryport and especially after autumn gales, when vast numbers are sometimes cast up. In January, February and September 1962, and January 1963, hundreds of thousands of dead Whelks were washed up on the beach north of Maryport. Counts showed an average of two or three hundred per square yard in places. Thousands again washed up 5 and 6 February 1966. Shells on this part of the coast average smaller than those found at Seascale. M.M.

Very common, Calder to Esk, also Braystones, Tarn Bay and Silecroft. Large shells occur at Seascale and Drigg and live specimens are sometimes found on the sand, especially south of Barn Scar. M.G.

Walney Island, Ernse Point, 16 September 1951. G.W.P.

Family: NASSARIIDAE.

NASSARIUS Duméril, 1806.

S.G. Hima Leach, 1852.

207. **reticulatus** (Linné, 1758). (Netted Dog-whelk).

Two dead shells between Allonby and Salt pans, Maryport, April 1957, and 16 August 1964, one at Maryport, 23 September 1961, and one at Drigg, June 1959. M.M.

A worn shell at Maryport, 23 September 1961, and another, badly worn, at Drigg, 25 February 1964. M.G.

208. **incrassatus** (Strom, 1768). (Thick-lipped Dog-whelk).

Rather rare, Dubmill to Maryport. M.M.

Not uncommon just north of Barn Scar, in gravel between cobble scars and beach, otherwise rare, Seascale to Drigg.

Three or four, Tarn Bay, 17 February 1962, and one Silecroft, 7 November 1962. M.G.

Family: TURRIDAE.

HAEDROPLEURA Bucquoy, Dautzenberg & Dolifus, 1883.

211. **septangularis** (Montagu, 1803). (Seven-ribbed Conelet). Very rare between gas works, Maryport and Bank End. M.M. A worn shell, Tarn Bay, 17 February 1962. M.G.

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LORA Gistel, 1848.

212. **turricula** (Montagu, 1803). (Turreted Conelet).
Two dead shells found at Seascale and one at Drigg. M.G.

214. **rufa** (Montagu, 1803). (Red Conelet). Very rare between gas works and Bank End, Maryport; one at Drigg. M.M.

Two Maryport, in gravel near high tide mark. One washed onto the sand at Drigg. M.G.

MANGELLA Risso, 1826.

S.G. **BELA** Leach, 1847.

219. **coarctata** (Forbes, 1840).

Several specimens found at Drigg, where these and other small conelets are occasionally washed onto the sand south of Barn Scar, with crumbs of coal and other debris. M.G.

222. **nebula** (Montagu, 1803).

Two shells of this species, found at Drigg, have been identified by Mrs. N. F. McMillan. M.G.

Sub-class: *OPISTHOBRANCHIA*.

Order: *BULLOMORPHA*.

Family: *ACTEONIDAE*.

ACTEON Montfort, 1810.

230. **tornatilis** (Linné, 1758). (Acteon-shell).

One near Saltpans, Maryport, and several at Drigg. M.M.

Dead shells rather rare at Seascale, one found at Silecroft.

M.G.

Near Haverigg Point, 23 July 1956. G.W.P.

Family: *TRICLIDAE*.

TRICLA Retzius, 1788.

245. **lignaria brownii** Leach 1852. (Canoe-shell).

Dead shells rare, Seascale and Drigg; one south of Silecroft,

2 August 1961. M.G.

One at Drigg. M.M.

Between Silecroft and Haverigg Point, dead shells plentiful,
12 September 1954. Walnev Island, North Scar, 12 September
1957. G.W.P.

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Family: **PHILINIDAE.**

PHILINE Ascanius, 1772.

247. *aperta quadripartita* Ascanius, 1772. (Lobe-shell).

Dead shells have been found from time to time at Seascale, among large numbers of young *Tellina tenuis* da Costa, washed on the sand, chiefly north of Whitrigg Scar. Also found at Silecroft, October 1962. M.G.

Order: PLEUROBRANCHOMORPHA.

Family: GLOSSODORIDAE.

ARCHIDORIS Bergh, 1878.

312. *pseudoargus* (Rapp, 1827). (Rough Sea-lemon).

Egg ribbons on Barn Scar, Drigg, at low water spring tides in summer, 1954 and 1961. Three small specimens under a stone in a scar at Braystones, in winter, 1961. M.G.

Class: SCAPHOPODA.

Family: DENTALIIDAE.

DENTALIUM Linné, 1758.

1. *entalis* Linné, 1758. (Elephant's Tusk-shell).

Near Haverigg Point, in sand at low water, spring tide, 23 July 1956.
G.W.P.

Class: **LAMELLIBRANCHIA.**

Sub-class: *PRIONODESMACEA.*

Order: PROTOBRANCHIA.

Family: NUCULIDAE.

NUCULA Laxnærck, 1799.

2. *nucleus* (Linné, 1758). (Common Nut-shell).

Dead shells common, Dubmill to Maryport, less common at Mawbray and between Maryport and Whitehaven. M.M.
Silecroft to Haverigg Point, dead shells cast on shore,
23 July 1956. G.W.P.

4. *turgida* Leckenby & Marshall, 1875. (Shining Nut-shell). Nut-shells, some of them newly dead, are commonly washed up on the sand of the

Seascale and Drigg beaches and at Tarn Bay and Silecroft. Sopic specimens from Seascale have been identified by Mrs. N. F. McMillan as probably of this species. M.G.

Order: FILLIBRANCHIA.

Family: ARCIDAE.

GLYCYMERIS da Costa, 1778.

12. **glycymeris** (Linné, 1758). (Dog-cockle).
Dead shells, usually much worn, found rarely on the beaches at Seascale and Drigg. M.G.

Family: ANOMIIDAE.

ANOMIA Linné, 1758.

16. **ephippium** Linné, 1758. (Saddle-oyster).
Dead shells fairly common, Dubmill to Whitehaven. M.M.
Dead shells common at Seascale and Drigg, also found at
Braystones, Tarn Bay and Silecroft. Fairly common,
Haverigg, 1 March 1962. M.G.

MONIA Gray, 1849.

17. **patelliformis** (Linné, 1761). (Ribbed Saddle-oyster).
Small dead shells not uncommon, Dubmill to Maryport. M.M. Dead
shells common at Seascale, Drigg, Tarn Bay; also found at Braystones.
M.G.

Family: MYTILIDAE.

MYTILUS Linné, 1758.

20. **edulis** Linné, 1758. (Common Mussel).
Abundant on mussel scars of lower Solway, where, as on Stenor Scar off
Grune Point, they form the walking surface and seem almost to grow
from the sand. All are small specimens. At St. Bees Head, too, they seem
unable to grow to any size, but are abundant on the sides of the rocks
sheltered from the full force of the waves. R. Stokoe.
Very common, Moricambe and West Silloth and again from Dubmill to
Maryport. M.M.
Very common on scars between tide marks, Braystones and Calder to
Esk, especially in the great mussel beds on Barn Scar at Drigg. M.G.
Seascale, plentiful between tide marks, 18 July 1955. Silecroft to
Haverigg Point, living specimens of large size cast on shore, 8 September

1957. Walney Island, abundant between Ernse Point and Cross Dyke Scar, 6 September 1950. G.W.P.

Barrow-in-Furness, abundant on walls of Devonshire Dock, 4 September 1949. J.H. & G.W.P.

Dead shells common, Grange-over-Sands. M. & J. Bennett.

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MODIOLUS Lamarck, 1799.

22. **modiolus** (Linné, 1758). (Horse-mussel).

In recent years this Mussel, purple-brown in colour rather than blue, living in deeper water than the Common Mussel and growing to a much larger size, has become very common between Dubmill and Maryport. The shells cast up here are younger and fresher than those usually found at Seascale.

M.M.

Dead shells, some of large size, and usually attached to wrack cast up after gales, have been found at Seascale and Drigg, but are not common. A live shell, attached to seaweed, was cast up at Seascale in February 1962. M.G.

Silecroft to Haverigg Point, recently dead shells cast on shore, 8 September 1957. G.W.P.

Order: OSTREIFORMES.

Family: OSTREIDAE.

OSTREA, Linné, 1758.

35. **edulis** Linné, 1758. (Common Oyster).

Dead shells are fairly common from Grune Point to Mawbray and common from Dubmill to Maryport. Several recently dead shells have been washed up at Flimby. M.M.

Dead shells are common on the shore at Seascale and Drigg, especially just north and south of Barn Scar. Two shells containing recently dead molluscs found there at different times suggest the possibility of an oyster bed in the vicinity. M.G.

Silecroft to Haverigg, dead shells on shore, 30 August 1950, and Walney Island, between Ernse Point and Hollow Scar, dead shells, 4 September 1950. G.W.P.

Dead shell, Grange-over-Sands. M. & J. Bennett.

About forty years or more ago there were artificial oyster beds for a time at Grune Point on the Solway and near Port Carlisle in the Eden estuary, but these have long been abandoned and it has not been possible to find out whether or not American oysters were ever laid down there.

Order: PSEUDOLAMELLIBRANCHIA.

Family: PECTINIDAE.

PECTEN Muller, 1776.

39. **maximus** (Linné, 1758). (Great Scallop).
Very rare between Mawbray and St. Bees, only broken shells
found. M.M.
One small complete dead shell found at Seascale, spring 1955.
M.G.

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CHLAMYS Röding, 1798.

42. **varia** (Linné, 1758). (Variegated Scallop).
Dead shells common, Dubmill to Maryport, chiefly in winter and spring.
M.M.
Dead shells and valves common at Seascale and Drigg, all colours from
pure white, pink and yellow to brown. Usually freshest and most
numerous in late winter and spring. Also found at Tarn Bay and
Silecroft. M.G.
Silecroft to Haverigg Point, dead valves on shore, 8 September 1957.
Walney Island, Emse Point to Hollow Scar, dead shells, 4 September
1950. G.W.P.

- 42b. **varia purpurea** (Jeifreys, 1863).
Walney Island, Ernse Point, 16 September 1951. G.W.P.

43. **distorta** (da Costa, 1778). (Hunch-back Scallop).
Dead shells fairly common, Dubmill to Maryport. M.M.
Dead shells not uncommon on Seascale and Drigg beaches, also found at
Tarn Bay. M.G.

S.G. **AEQUIPECTEN** Fischer, 1886.

44. **opercularis** (Linné, 1758). (Quin or Queen Scallop).
Rare between Mawbray and Maryport. M.M.
Dead shells common on Drigg beach, but not so numerous as those of *C. varia*. Between Seascale and the Calder, where neither species is so
plentiful, there may be a larger proportion of *opercularis*. As with *varia*
most are found in late winter and early spring. Two, Tarn Bay, 17
February 1962. M.G.
Silecroft to Haverigg Point, dead shells, 30 August 1950. Walney Island,
between Ernse Point and Hollow Scar, dead shells plentiful, 4 September
1950. G.W.P.

S.G. **PALLIOLUM** Monterosato, 1884.

47. **tigerina** (Muller, 1776). (Tiger Scallop).
Two found near Maryport, one in 1956 and one in 1962, both very worn.
M.M.

Sub-class: **TELEODESMACEA**.

Family: **LUCINIDAE**.

PHACOIDES Gray, 1847.

S.G. **LUCINOMA** Dall, 1901.

66. **borealis** (Linné, 1767). (Northern Lucina).

One small complete shell found south of Drigg. M.G.

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Family: **MONTACUTIDAE**.

MONTACUTA Turton, 1822.

79. **ferruginosa** (Montagu, 1808). (Rusty Montagu-shell).

A recently dead shell of this species, which Step says "affects the burrows of the Heart Urchin *Echinocardium cordatum*," was found washed on the sand north of Whitrigg Scar, Seascale, in June 1962. Heart Urchins abound in the sand at low water mark on all this part of the coast. M.G.

Family: **CYPRINIDAE**.

CYPRINA Lamarck, 1818.

84. **islandica** (Linné, 1767). (Iceland Cyprina).

Part of a shell found near Maryport and a broken shell near Mawbray, July 1964. M.M.

Fragments have been found at Braystones and Tarn Bay. At Seascale whole valves are not common between Whitrigg Scar and Barn Scar, but from Barn Scar to Drigg Point they are fairly plentiful and south of Silecroft they are abundant. M.G. Haverigg Point, dead valves abundant, 30 August 1950. Walney Island, North Scar, dead shells plentiful, 12 September 1957.

G.W.P.

Family: **CARDIIDAE**.

CARDIUM Linné, 1758.

S.G. **ACANTHOCARDIA** Gray, 1851.

87. **echinatum** Linné, 1758. (Prickly Cockle).

Fairly common, Dubmill to Maryport. M.M.

One of the commonest shells cast up on the beaches of Seascale, Drigg and Silecroft, though its abundance, like that of many other species, varies greatly from time to time. Living specimens are occasionally washed up on the sand at Seascale. Also found at Braystones and Tarn Bay. Many newly dead shells were washed up at Silecroft with the great wreck of *Ensis siliqua* in March 1963. M.G.

Silecroft to Haverigg Point, dead shells on shore, 30 August 1950. Walney Island, Ernse Point to Hollow Scar, dead shells common, 4

September 1950; and Ernse Point to North Scar, living specimens juvenile to adult, cast on shore, 12 September 1957. G.W.P.
Dead shell, Grange-over-Sands. M. & J. Bennett.

S.G. CERASTODERMA Poli, 1795.

93. **edule** Linné, 1758. (Common Cockle).
Common, Eden estuary and Silloth to Maryport. M.M. Seascale and Drigg, dead shells common, though not nearly so numerous as *echinatum*; south of Silecroft the proportions are reversed. Dead shells not common at Tarn Bay, 17 February 1962. M.G.
Haverigg Point, living specimens of large size, cast on shore, 8 September 1957. Askam-in-Furness, Duddon estuary below Roanhead, abundant in muddy sand, 1 September 1950. Rampside Sands and near Lifeboat Station, Roa Island, abundant 14 September 1952. G.W.P.
Dead shells common, Grange-over-Sands. M. & J. Bennett.

S.G. LAEVICARDIUM Swainson, 1840.

94. **crassum** Gmelin, 1791. (Smooth Cockle).
Three between gas works and Bank End, Maryport, also found between Workington and Whitehaven. M.M.
Worn shells of small size and fragments, occasionally found on the Seascale and Drigg beaches. M.G.

Family: VENERIDAE.

DOSINIA Scopoli, 1777.

95. **exoleta** (Linné, 1758). (Rayed Artemis).
Old and worn shells sometimes cast on shore at Seascale and Drigg; not common. M.G.
96. **lupinus lincta** (Montagu, 1803). (Smooth Artemis).
Dead shells rare, Seascale and Drigg, more plentiful at Silecroft, where several recently dead shells were cast on the sand after the cold spell of January-February 1963. M.G.
Silecroft to Haverigg Point, dead shells cast on shore, 30 August, 1950, Walney Island, Ernse Point to North Scar, living specimens cast on shore, 12 September 1957. G.W.P.

VENUS Linné, 1758.

S.G. CLAUSINELLA Gray, 1851.

102. **fasciata** (da Costa, 1778). (Banded Venus).

One found near Maryport. M.M.

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S.G. CHAMELEA Mörch, 1853.

103. **striatula** (da Costa, 1778). (Striped Venus).

Five found between Maryport and Saltpans. One at Mawbray and two at Allonby. M.M.

Seascale, Drigg and Silecroft, common in sand, at low water spring tides.
Dead shells, Tarn Bay. M.G.

Silecroft to Haverigg Point, abundant at low water mark of spring tides,
30 August 1950. Walney Island, North Scar, 12 September 1957. G.W.P.

Dead shells, Grange-over-Sands, M. & J. Bennett.

VENERUPIS Lamarck, 1818.

S.G. POLITTAPES Chiamenti, 1900.

105. **rhomboides** (Pennant, 1777). (Banded Carpet-shell). Walney Island, Ernse Point to Hollow Scar, dead shells, 4 September 1950. G.W.P.

106. **pullastra** (Montagu, 1803). (Pullet Carpet-shell). Fairly common Port Carlisle and Mawbray to Dubmill and common from gas works to Bank End, Maryport. One at Allonby, 7 August 1964. M.M.
Dead shells common, Seascale, Drigg and Tarn Bay; living specimens in pools on Barn Scar, Drigg, and one in a crevice in a *Sabellaria* colony at Tarn Bay, 17 February 1962. Dead shells also found at Braystones and Silecroft. M.G.

Silecroft to Haverigg Point, dead shells plentiful, 30 August 1950, and Walney Island, Ernse Point to Hollow Scar, dead shells plentiful, 4 September 1950. G.W.P.

107. **saxatilis** (Fleuriau, 1802).

Dead shells have been found between Dubmill and Maryport.
M.M.

Dead shells are found from time to time between Seascale and Drigg, but are not common. M.G.

S.G. RUDITAPES Chiamenti, 1900.

108. **decussata fusca** (Gmelin, 1791). (Cross-cut Carpet-shell). An old shell found at Maryport, May 1962. M.M.

Dead shells very rare at Seascale, one or two worn shells at Haverigg, 1 March 1962. M.G.

Family: PETRICOLIDAE.

PETRICOLA Lamarck, 1801.

S.G. PETRICOLARIA Stoliczka, 1871.

110. **pholadiformis** Lamarck, 1818. (Rock-borer).
Haverigg Point, dead shells, 30 August 1950. G.W.P.

MYSIA Lamarck, 1818.

111. *undata* (Pennant, 1777). (Wavy Venus).
Two shells found washed on the shore south of Silecroft, 2 October 1961 and 6 October 1962. M.G.

Family: DONACIDAE.

DONAX Linné, 1758.

112. **vittatus** (da Costa, 1778). (Banded Wedge-shell).
Very rarely found between Mawbray and Maryport. M.M. Seascale and Drigg, common in sand at low water spring tides, and very common at Tarn Bay and Silecroft. M.G.
Silecroft to Haverigg Point, abundant in sand at low water spring tides, 1 September 1951. Walney Island, Ernse Point to North Scar, common, 12 September 1957. G.W.P.

Family: TELLINIDAE.

TELLINA Linné, 1758.

116. **tenuis** da Costa, 1778. (Thin Tellin).
Common, Grune Point to Mawbray and fairly common between Dubmill and St. Bees. M.M.
Seascale and Drigg, dead shells common. M.G.
Silecroft to Haverigg Point, abundant at low water mark spring tides, 30 August 1950. Walney Island, Ernse Point to North Scar, fine specimens common, 12 September 1957. G.W.P.

S.G. FABULINA Gray, 1851.

117. **fabula** Gmelin, 1791. (Bean-like Tellin).
Silecroft to Haverigg Point, not common, 30 August 1950.
G.W.P.

S.G. ARCOPAGIA Brown, 1827.

120. **crassa** Pennant, 177S. (Blunt Tellin).
Silecroft to Haverigg Point, dead shells rare, 30 August 1950.
G.W.P.

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MACOMA Leach, 1819.

123. **balthica** (Linné, 1758). (Baltic Tellin).
Dead shells very common from Grune Point to Dubmill Scar and common between there and Maryport. Less common from Maryport to St. Bees. M.M.
Shells of all colours from white to pink and yellow, many with newly dead animals in them, very plentiful near Silloth, 23 September 1961. Dead shells rather rare at Seascale, but common at Silecroft; one at Tarn Bay, 17 February 1962. M.G. Askam-in-Furness, Duddon estuary below Roanhead, in muddy sand, abundant, 1 September 1950. Between Foulney Island and Roa Island, in muddy sand, 27 August 1955. G.W.P.

Dead shells very common at Grange-over-Sands. M. & J. Bennett.

Family: **SCROBICULARIIDAE**.

SCROBICULARIA Schumacher, 1817.

124. **plana** (da Costa, 1778). (Peppery Furrow-shell).
Dead shells fairly common in the Eden estuary at Port Carlisle and from Grune Point to Dubmill Point, rather rare from Dubmill to Maryport, but more numerous again from Maryport to St. Bees Head. M.M.
Very common in mud in the Esk estuary at Eskmeals, both above and below the railway bridge. A single valve at Silecroft, 11 September 1962. M.G.
Askam-in-Furness, Duddon estuary below Roanhead, in muddy sand abundant, 1 September 1950, and between Foulney Island and Roa Island, common in muddy sand, 27 August 1955. G.W.P.
Dead shells common, Grange-over-Sands. M. & J. Bennett.

ABRA Lamarck, 1818.

126. **alba** (W. Wood, 1802). (White Furrow-shell).
Small shells common, washed on sand, Seascale and Drigg, also found at Braystones, Tarn Bay and Silecroft. M.G.

Haverigg Point, shells cast on shore, 23 August 1956. Walney Island, Emse Point to Hollow Scar, living specimens cast on shore, 12 September 1957. G.W.P.

Family: ASPHIDAE.

GARI Schumacher, 1817.

129. **fervensis** (Gmelin, 1791). (Faroe Sunset-shell).

Dead shells not uncommon at Seascale and Drigg; one at Tarn Bay, 17 February 1962. Common at Silecroft. M.G.

Silecroft to Haverigg Point, dead shells, 30 August 1950. G.W.P.

Family: SOLENIDAE.

PHARUS Brown, 1843.

135. *legumen major* Bucquoy Dautzenberg & Dollfus

(Egg-shell Razor).

Dead shells common, Seascale and Drigg; several Tarn Bay, 17 February 1962. M.G.

Silecroft to Haverigg Point, plentiful, 30 August 1950. G.W.P.

ENSIS Schumacher, 1817.

137. **ensis** (Linné, 1758). (Sword Razor).

Dead shells rather rare, Maryport to St. Bees Head. M.M.

Dead shells common, Seascale and Drigg; two living specimens once seen in the sand off Whitrigg Scar, Seascale, at low tide.

Also found at Braystones, Tarn Bay and Silecroft. M.G.

Silecroft to Haverigg Point, abundant, 30 August 1950. **G.W.P.**

138. **arcuatus** (Jeffreys, 1865).

Two shells, one from Seascale, one from Silecroft, identified by Mrs. N. F. McMillan. M.G.

Haverigg Point, not common, 8 September 1957. G.W.P.

139. **siliqua** (Linné, 1758).

(Pod Razor).

One near the gas works, Maryport, 9 May 1964. M.M.

Freshly dead shells common at Drigg, but not so many north of Barn Scar. Also found at Braystones and Tarn Bay and very common at Silecroft.

The above was written before the severe cold of January and February 1963, when the tide line on the sand was rimmed with ice for weeks on

end. This, apparently, resulted in great mortality among sand-living species, particularly *Ensis siliqua*. Many thousands of newly dead shells were cast up in late March all along the beach from Silecroft north for about three miles, and again slightly smaller numbers at Drigg and at Seascale south of Whitrigg Scar. *Cardium echinatum* L. and *flosinia lupinus lincta* Montagu, were affected to a less degree

and at Drigg many dead Masked Crabs *Corystes cassivelaunus* and on one stretch numbers of the Sand-burrowing Starfish, *Astropecten irregularis*, were cast up with the shells. M.G.

Silecroft to Haverigg Point, 17 September 1951, and Walney Island, North End, 18 September 1951. G.W.P.

Family: MACTRIDAE.

MACTRA Linné, 1767.

141. **corallina cinerea** Montagu, 1803. (Rayed Trough-shell).

Not found at Maryport or between there and Grune Point. M.M.

Both rayed and unrayed shells are common at Seascale, Drigg, Tarn Bay and Silecroft; also found at Braystones. On 3 August 1961, after rough weather, many fresh shells were washed onto the sand north of Whitrigg Scar, Seascale; with them were great numbers of newly dead Masked Crabs, *Corystes cassivelaunus*. M.G.

Silecroft to Haverigg Point, rayed and unrayed shells plentiful at low water mark, spring tides, 30 August 1950. Rayed shells, Walney Island, North Scar, 12 September 1957. **G.W.P.**

SPISULA Gray, 1837.

142. **elliptica** (Brown, 1827). (Elliptical Trough-shell).

Worn valves are found from time to time at Seascale but are not common: the species is more numerous at Silecroft and Haverigg. M.G.

Walney Island, Ernse Point to North Scar, 12 September 1957. G.W.P.

143. **solida** (Linné, 1758). (Thick Trough-shell). Dead shells rare at Seascale. M.G.

Walney Island, Ernse Point to North Scar, living specimens cast on shore, 12 September 1957. G.W.P.

144. **subtruncata** (da Costa, 1778). (Cut Trough-shell).

Dead shells fairly common between Dubmill and Maryport. M.M.

Dead shells fairly common at Seascale. Plentiful on sand south of Silecroft, and a living specimen partly dug out by a bird was found there, 2 October 1961. Two or three dead shells, Tarn Bay, 17 February 1962. M.G.

Silecroft to Haverigg Point, dead shells plentiful, 30 August 1950. G.W.P.

Family: **LUTRARHDAE.**

LUTRARIA Lamarck, 1799.

145. **lutraria** (Linné, 1758). (Common Otter-shell).

One very small dead shell on sand south of Whitrigg Scar, Seascale, 27 January 1962, a broken valve at Drigg, 5 May 1964, and many young dead shells on sand south of Silecroft, 2 October 1961. M.G.

Haverigg Point, dead shells plentiful, 30 August 1950, and Roanhead to Lowsey Point, dead shells 1 September 1950. G.W.P.

Family: **MYIDAE.**

MYA Linné, 1758.

147. **truncata** Linné, 1758. (Blunt Gaper). Fairly common between Grune Point and Dubmill Scar, rare between Dubmill and Maryport. One at Flimby, 3 December 1964. M.M.

Dead shells fairly common, Seascale and Drigg, also Silecroft; several Tarn Bay, 17 February 1962. M.G.

S.G. **ARENOMYA** Winckworth, 1930.

148. **arenaria** Linné, 1758. (Sand Gaper).

Very common in the Eden estuary, common between Grune Point and Dubmill Scar, very rarely found between Dubmill and Maryport. M.M. Very rare at Seascale, three distorted and rough small shells and one fragment. Two of the small shells were identified by Mrs. N. F. McMillan. M.G.

Askam-in-Furness, Duddon estuary below Roanhead, in muddy sand, abundant, 1 September 1950. G.W.P.

Young dead shells common, Grange-over-Sands. M. & J. Bennett.

Family: **ERODONIDAE.**

CORBULA Lamarck, 1799.

150. **gibba** (Olivier, 1792). (Common Basket-shell).

Fairly common between Dubmill Scar and Maryport. M.M.

Dead shells common at Seascale and Drigg, also found at Tam Bay. M.G.

Near Haverigg Point, dead shells, 23 July, 1956. G.W.P.

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Family: **HIATELLIDAE**.

HIATELLA Bosc, 1801.

152. **striata** Fleuriau, 1802. (Wrinkled Rock-borer).

Dead shells moderately rare from Dubmill to Maryport. M.M. Dead shells not uncommon at Seascale and Drigg; chiefly found in perforated stones cast up on the beach just south of Barn Scar, Drigg. It would seem that underwater outcrops of limestone must exist not far away. M.G.

Family: **PHOLADIDAE**.

PHOLAS Linné, 1758.

156. **dactylus** Linné, 1758. (Common Piddock).

Rare at Seascale, two fragments only. Dead shells south of Silecroft, October 1962. M.G.

Haverigg Point, dead shells plentiful, 30 August 1950. G.W.P.

BARNEA Risso, 1826.

157. **candida** (Linné, 1758). (White Piddock).

One at Saltpans, Maryport, 21 June 1959, and fragments at Mawbray, February 1964. M.M.

Seascale, rare, no dead shells found on the shore, but in 1954 or 1955 there were half a dozen dead shells *in situ* in red clay laid bare by the tide in Whitrigg Scar. Their tips had been broken off when the clay was eroded. Dead shells are not uncommon at Silecroft and Haverigg. Large pieces of peat, broken off and drifted from a submerged forest, came ashore between Seascale and Ravenglass in the winter of 1964-65, and in October 1965 fresh blocks washed onto the sand north of Drigg Point had large colonies of *Barnea candida* in their upper surfaces. None of the shells contained animals and some may have been eaten by birds as there were many empty holes. The nearest exposure of undersea or intertidal peat is on Walney Island, but the blocks may have drifted from further south. M.G.

Haverigg Point, dead shells, 30 August 1950. Walney Island, Ernse Point to North Scar, dead shells, 12 September 1957.

G.W.P.

ZIRFAEA Gray, 1847.

159. **crispata** (Linné, 1758). (Oval Piddock).

Dead shells fairly common at Silecroft and south to Haverigg
M.G.

Haverigg Point, dead shells plentiful, 30 August 1950. G.W.P.

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LAKELAND MOLLUSCS

Sub-class: *ANOMALODESMACEA*.

Order: LATERNULACEA.

Family: **THRACIIDAE**.

THRACIA Blainville, 1824.

170. **phaseolina** (Lamarck, 1818). (Papery Lantern-shell).

A young shell washed on sand among shells of *Abra alba* at Drigg Point,
11 November 1961. M.G.

Class: **CEPHALOPODA**.

Order: DECEMBRACHIATA.

Sub-order: *TEUTHOIDEA*.

Family: **SEPIIDAE**.

SEPIA Linné, 1758.

9. **officinalis** Linné, 1758. (Common Cuttle).

Normally rather rare between Grune Point and St. Bees Head, but common during the winter of 1960, and in the following summer and autumn large quantities of egg bunches were found on the tide line from Maryport north. M.M.

"Cuttle-fish Bone" was rather uncommon between the Calder and the Esk from 1953 until the autumn and winter of 1960, when vast quantities of fresh shell were washed up, especially on Drigg beach. In the spring of 1961 more worn shell came in, but no eggs were found, and the winter of 1961-62 showed a return to normal quantities. Dead shell was common again for a short time in the early spring of 1963 at Seascale and Drigg. M.G.

Silecroft to Haverigg Point, the well known depressed ovate-oblong shell, cast on the shore, plentiful, 30 August 1950. Walney Island, North End, 18 September 1951. G.W.P.

A NOTE ON THE DISTRIBUTION TABLES

These tables are perforce neither complete nor more than approximate as regards density in the different regions. (This may vary widely from time to time owing to a variety of causes). They do, however, show at a glance a rough picture of the distribution of many species in the various zones from north to south, in a form which can be modified and elaborated as more data come to hand. In the lettering used we have followed Sowerby, who says: "To indicate the comparative rarity or abundance of the species, the letters C., Cc., Mc., R., Mr., Rr., signifying 'common,' 'extremely common,' 'moderately common,' 'rare,' etc., are placed after the localities." We have added 'P' to indicate 'present, no details,' and have defined 'Rr' as less than five records for the locality: more exact calculations are not possible with the data at present available. It is hoped that other workers will be stimulated to fill in the gaps and to add new species on the blank sheet provided for the purpose.

DISTRIBUTION of MARINE MOLLUSCA on the COAST of LAKELAND.

36

LAKELAND MOLLUSCS

EXPLANATION. Cc = very common C = Common Mc = Moderately common Mr = Moderately rare R = Rare Rr = Very rare (not more than five records) P = Recorded	I. SOLWAY		II. SKIBURNNESS to ST. BEES HEAD				III. ST. BEES to DUDDON ESTUARY				IV. WALNEY ISLAND and BARROW		V. MORECAMBE BAY		
	Eden Estuary	Morecambe Bay	Grune Point to Mawbray	Dubmill Point to Maryport	Maryport to Whitehaven	St. Bees Head	St. Bees to River Calder	Calder to Esk	Esk Estuary	Esk to Haverigg Point	Duddon Estuary	WALNEY ISLAND and BARROW	Foulny Island to Bardsey	Leven Estuary	Kent Estuary
SPECIES.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
												R			
												R			
												Cc			
Class: LORICATA															
<i>Lepidopleurus asellus</i> (Grey Mail-shell)															
<i>Tonicella rubra</i> (Red Mail-shell)															
<i>Lepidochitona cinereus</i> (Bordered Mail-shell)				C			P	C							
Class: GASTEROPODA															
<i>Emarginula reticulata</i> mülleri (Common Slit-limpet)				Mr				Mr							
<i>Patella vulgata</i> (Common Limpet)			Mc	C	C	Cc	Cc	Cc		C		Cc			
<i>Patina pellucida</i> (Blue-rayed Limpet)				Mc		P		R				P			

<i>Pateilloida tessulata</i> (Tortoiseshell Limpet)		R				Mr							
<i>Pateilloida virginea</i> (White Tortoiseshell Limpet)						R		P					
<i>Calliostoma zizyphinum</i> conuloides (Common Top-shell)	Mc	C	Mc			Mc		P		P			
<i>Gibbula magus</i> (Painted Top-shell)		Rr	Rr										
<i>Gibbula cineraria</i> (Grey Top-shell)	Mc	C	C	P		C		C		C			
<i>Gibbula umbilicalis</i> (Flat Top-shell)		Rr	Rr			Rr				R			
<i>Littorina littorea</i> (Common Winkle)	C	Mc	C	Cc	Cc	Cc		P		Cc			
<i>Littorina saxatilis</i> (Rough Winkle)		Mc	C		C	C				C		P	
<i>L. saxatilis tenebrosa</i>										C			
<i>L. saxatilis rudis</i>				P						C			
<i>Littorina littoralis</i> (Flat or Dwarf Winkle)	Mc	C	C	C		C		Mc	P	P	C		
<i>Hydrobia ulvae</i> (Laver Spire-shell)		P							P	C	C	P	
<i>Turritella communis</i> (Auger Shell)	P	Mr	P	P	C	C		C	P	P			
<i>Bittium reticulatum</i> (Small Needle-whelk)		Rr	Rr										
<i>Clathrus clathrus</i> (Common Wentletrap)		Rr				Rr		R					
<i>Clathrus turtonis</i> (Turton's Wentletrap)								Rr					

EXPLANATION.	I.		II.				III.				IV.		V.		
	SOLWAY		SKINBURNNESS to ST. BEES HEAD				ST. BEES to DUDDON ESTUARY				WALNEY ISLAND and BARROW		MORECAMBE BAY		
SPECIES.	Eden Estuary		Grune Point to Mawbray				St. Bees to River Calder				Waldon Estuary		Foulney Island to Bardsey		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<i>Capulus ungarius</i> (Hungarian Cap)			Mr	Mc				Mr		Mr		P			
<i>Crepidula fornicata</i> (Slipper Limpet)								Rr							
<i>Aporrhais pespelicani</i> quadridens (Pelican's Foot)				R	R	P	C	C		C					P
<i>Natica fusca</i> (Sordid Necklace-shell)								Rr		P					
<i>Natica catena</i> (Large Necklace-shell)				Rr				C		Mc					
<i>Natica poliana alderi</i> (Common Necklace-shell)				Rr				C		C		P			
<i>Trivia monacha</i> (European Cowry—spotted)				P								P			
<i>Trivia arctica</i> (European Cowry—unspotted)				Mc	Mc			R		P					

Cc = very common

C = Common

Mc = Moderately common

Mr = Moderately rare

R = Rare

Rr = Very rare (not more than five records)

P = Recorded

[illegible]

EXPLANATION.	I.		II.				III.				IV.		V.		
	SOLWAY		SKINBURNNESS to ST. BEES HEAD				ST. BEES to DUDDON ESTUARY				WALNEY ISLAND and BARROW		MORECAMBE BAY		
Cc = very common	Eden Estuary	2	Morcambe Bay										Foulney Island to Bardsey		
C = Common		1											Leven Estuary		
Mc = Moderately common			3	4	5	6	7	8	9	10	11	12	13	14	15
Mr = Moderately rare			Grune Point to Mawbray	Dubmill Point to Maryport	Maryport to Whitehaven	St. Bees Head	St. Bees to River Calder	Calder to Esk	Esk Estuary	Esk to Haverigg Point	Duddon Estuary				
R = Rare								Mc		P					
Rr = Very rare (not more than five records)							P	P							
P = Recorded										P					
SPECIES.															
<i>Philine aperta</i> quadripartita (Lobe Shell)															
<i>Archidoris pseudargus</i> (Rough Sea-lemon)															
Class: SCAPHOPODA															
<i>Dentalium entalis</i> (Elephant's Tusk-shell)															
Class: LAMELLIBRANCHIA															
<i>Nucula nucleus</i> (Common Nut-shell)		Mc		C	Mc			C		C					
<i>Nucula turgida</i> (Shining Nut-shell)								P							
<i>Glycymeris glycymeris</i> (Dog-cockle)								R							
<i>Anomia ephippium</i> (Saddle-oyster)				Mc	Mc			C		Mc					

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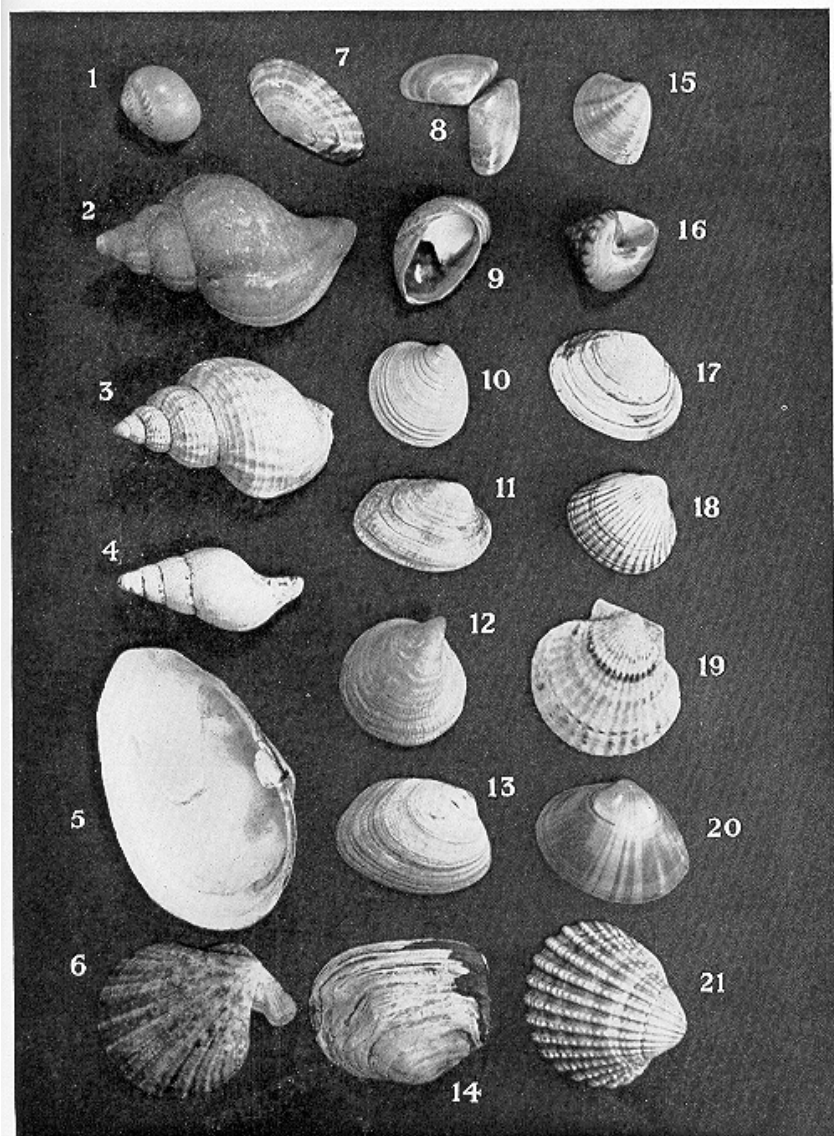
								Rr				
<i>Mysis undata</i> (Wavy Venus)								Cc	C			
<i>Donax vittatus</i> (Banded Wedge-shell)				P	P	Rr	R	Cc				
<i>Tellina tenuis</i> (Thin Tellin)					Mc	Mc	C	Cc	C			
<i>Tellina fabulina</i> (Bean-like Tellin)								Mr				
<i>Tellina crassa</i> (Blunt Tellin)								R				
<i>Macoma balthica</i> (Baltic Tellin)	Cc			P	Mc	C	Cc	Mr	Cc	P	Cc	Cc
<i>Scrobicularia plana</i> (Peppery Furrow-shell)	C				Mc	Mr	Mc		Cc		C	C
<i>Abra alba</i> (White Furrow-shell)								P	C	P		
<i>Gari fervensis</i> (Faroe Sunset-shell)								Mc				
<i>Pharus legumen major</i> (Egg-shell Razor)								C	Cc			
<i>Ensis ensis</i> (Sword Razor)					Mr			P	C			
<i>Ensis arcuatus</i>								P				
<i>Ensis siliqua</i> (Pod Razor)						Rr		Cc		P		
<i>Maetra corallina cinerea</i> (Rayed Trough-shell)								C	Cc		P	
<i>Spisula elliptica</i> (Elliptical Trough-shell)						C		Mr			P	
<i>Spisula solida</i> (Thick Trough-shell)					Mc	Mc	P				P	

EXPLANATION. Cc = very common C = Common Mc = Moderately common Mr = Moderately rare R = Rare Rr = Very rare (not more than five records) P = Recorded	I. SOLWAY		II. SKINBURNNESS or ST. BEES HEAD				III. ST. BEES to DUDDON ESTUARY				IV. WALNBY ISLAND and BARROW				V. MORECAMBE BAY		
	Eden Estuary	Moricambe Bay	Grune Point to Mawbray	Dubmill Point to Maryport	Maryport to Whitehaven	St. Bees Head	St. Bees to River Calder	Calder to Esk	Esk Estuary	Esk to Haverigg Point	Duddon Estuary				Poulney Island to Bardey	Leven Estuary	Kent Estuary
SPECIES.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
<i>Spisula subtruncata</i> (Cut Trough-shell)				Mc				Mc		C							
<i>Lauraria lauraria</i> (Common Otter-shell)								Rr		Cc							
<i>Mya truncata</i> (Blunt Gaper)			Mc	R	P			Mc		Mc							
<i>Mya arenaria</i> (Sand Gaper)	Cc		C	R	P			Rr			Cc						C
<i>Corbula gibba</i> (Common Basket-shell)				Mc				C		P							
<i>Hiatella striata</i> (Wrinkled Rock-borer)				Mr				Mc									
<i>Pholas dactylus</i> (Common Piddock)								Rr		C							
<i>Barnea candida</i> (White Piddock)			R	Rr				R		C							P

PLATE I.

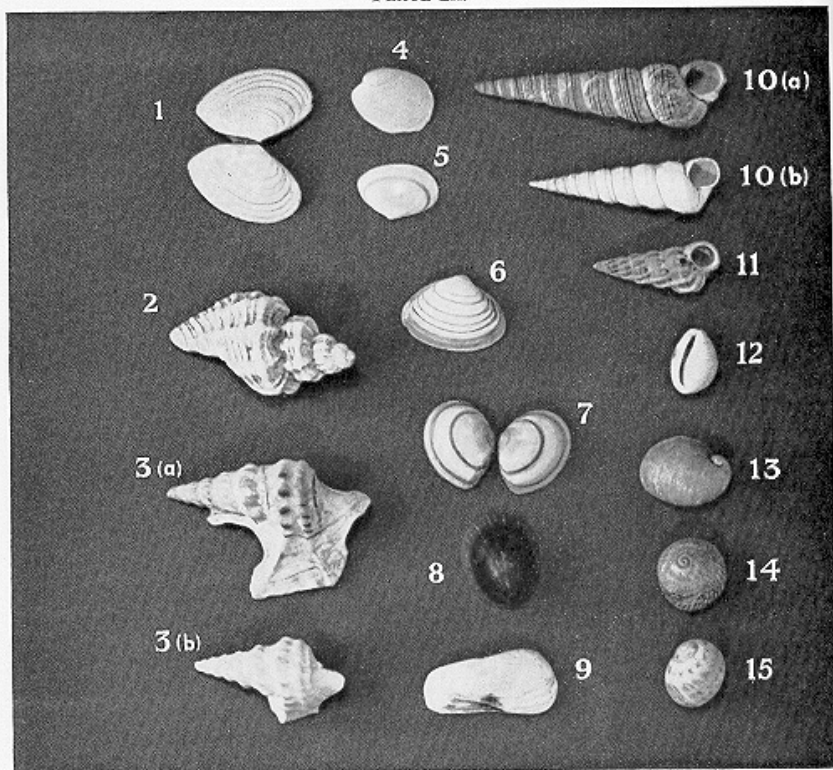
1. *Natica catena* (da Costa, 1778). Large Necklace-shell.
2. *Neptunea antiqua* (Linné, 1758). Red Whelk.
3. *Buccinum undatum* Linné, 1758. Common Whelk.
4. *Colus gracilis* (da Costa, 1778). Slender Spindle-shell.
Length 58 mm.
5. *Mya arenaria* Linne, 1758. Sand Gaper.
6. *Chlamys varia* (Linné, 1758). Variegated Scallop.
7. *Gari fervensis* (Gmelin, 1791). Faroe Sunset-shell.
8. *Donax vittatus* (da Costa, 1778). Banded Wedge-shell.
9. *Crepidula fornicata* (Linné, 1758). Slipper Limpet.
10. *Dosinia lupinus* lincta (Montagu, 1803). Smooth Artemis.
11. *Venerupis pullastra* (Montagu, 1803). Pullet Carpet-shell.
12. *Capulus ungaricus* (Linné, 1758). Hungarian Cap.
13. *Venerupis decussata* fusca (Gmelin, 1791). Cross-cut Carpet-shell.
14. *Mya truncata* Linné, 1758. Blunt Gaper.
15. *Venus striatula* (da Costa, 1778). Striped Venus.
16. *Calliostoma zizyphinum* conuloide (Lamarck, 1822). Common Top-shell.
17. *Scrobicularia plana* (da Costa, 1778). Peppery Furrow-shell.
18. *Cardium edule* Linné, 1758. Common Cockle.
19. *Chiamys opercularis* (Linné, 1758). Quin or Queen Scallop.
20. *Mactra corallina* cinerea Montagu, 1803. Rayed Trough-shell.
21. *Cardium echinatum* Linné 1758. Prickly Cockle.

PLATE 1.



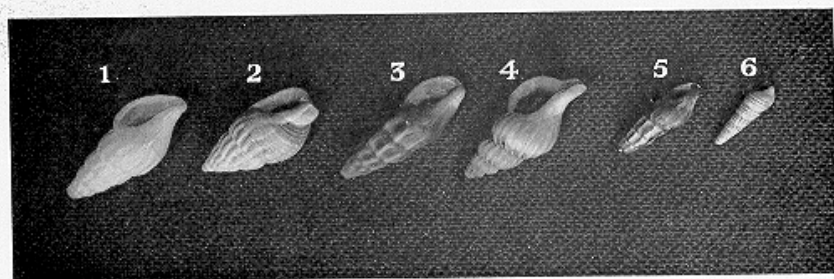
Scale c. 1/2.

PLATE 2A.



Scale c. 3/4.

PLATE 2B.



Scale c. 3/2.

PLATE 11(a)

1. *Tellina tenuis* da Costa, 1778. Thin Tellin.
2. *Ocenebra erinacea* (Linné, 1758). Sting-whelk.
- 3(a). *Aporrhais pes-pellicani* quadrifidus da Costa 1778. Pelican's-foot.
- 3(b). *Aporrhais pes-pellicani* quadrifidus (a young specimen).
4. *Philine aperta* quadripartita Ascanius, 1772. Lobe-shell.
5. *Abra alba* (W. Wood, 1802). White Furrow-shell.
6. *Spisula subtruncata* (da Costa, 1778). Cut Trough-shell.
7. *Macoma baithica* (Linné, 1758). Baltic Tellin.
8. *Patina pellucida* (Linné, 1758). Blue-rayed Limpet.
9. *Hiatella striata* Fleuriau, 1802. Wrinkled Rock-borer.
- 10(a). *Turritella communis* Risso, 1826. Cockspur or Auger-shell. Length 50 mm.
- 10(b). *Turritella communis* (white variety).
11. *Clathrus clathrus* (Linné, 1758). Common Wentletrap.
12. *Trivia arctica* (Montagu, 1803). European Cowry (unspotted).
13. *Velutina velutina* (Muller, 1776). Velvet-shell.
14. *Gibbula cineraria* (Linné, 1758). Grey Top-shell.
15. *Natica poliana alderi* Forbes, 1838. Common Necklace-shell.

PLATE 11(b).

1. *Lora turricula* (Montagu, 1803). Turreted Conelet.
2. *Nassarius incrassatus* (Strom, 1768). Thick-lipped Dog-whelk.
3. *Haedro pleura septangularis* (Montagu, 1803). Seven-ribbed Conelet.
4. *Trophon truncatus* (StrOm, 1768). Ribbed Spindle-shell. Length 15 mm.
5. *Mangelia coarctata* (Forbes, 1840).
6. *Bittium reticulatum* (da Costa, 1778). Small Needle-whelk.

NON-MARINE MOLLUSCA OF LAKELAND

Ernest Blezard

A previous paper on the subject, written by James Murray in the form of a county list, "The Land and Freshwater Shells of Cumberland," appears in our *Transactions* (1909), 1: 114-21. The author of that paper is remembered as the first acquaintance to enliven my interest in snails.

My succeeding list, so far as it goes, results from my own finds, supplemented by those of my family and various friends, in Cumberland, V.C. 70, and Westmorland with Lancashire North of the Sands, V.C. 69. It had its beginnings in snails collected and recorded, particularly on account of their vertical range, during the course of other pursuits. Some of these are noted in my "Vertical Range of Snails," *North Western Naturalist*, N.S. (1955), 3: 255.

The present contribution offers more general information on the distribution of familiar species and may include six or seven new records for Cumberland. Localities are in this county where they are not distinguished as being in Westmorland or Lancashire North of the Sands.

Long disused limestone quarries, which are among the best hunting grounds for land snails, are perhaps equalled in that respect by the slag heaps remaining from the bygone ironworks at Maryport. Much more restricted habitats, relatively prolific, are well represented by old and thickly lime-mortared walls, tumbledown and overgrown. One such piece of wall provided ten species in close association, and another, eight. Blackwell figures prominently because it is the home locality with convenient opportunity. Here, a small bed of Reed-grass has up to now yielded seven out of eighteen species for the wood, still full of possibilities, in which it grows.

Snail and plant associations were behind a whimsical idea, which proved not so entirely far-fetched, about the presence of Copse Snails at some altitude on volcanic crags. These snails were promptly linked with tell-tale mosses and lichens as indicators of calcareous rock and a possible place for the rare alpine plants that two of us were seeking. It so happened that we did find our plant rarities close to the snails.

Where birds are concerned, molluscs usually feature as prey or food, but there was apparent evidence of avian transport from one place to another in a River Limpet found firmly attached to the head of a Dipper.

The fondness of the Song Thrush for land snails is to be gauged by the “anvils” on which it smashes away the shells of the bigger kinds. During a short period of work, the selected cobblestone can become surrounded by a conspicuous litter of shards. Eleven anvils, all in use or freshly used by thrushes, were found along a short stretch of Marram ground at Mawbray on a day in the month of February. Each one, a beach cobble, had about twenty broken-up shells of the Brown-lipped Snail lying around it. This same snail commonly comes under treatment inland as well, one anvil seen there being an odd cobblestone in the coping of a low, sandstone retaining wall. High ranging thrushes in the Pennines crack Copse Snails on blocks of whinstone and limestone. The large and stout shells of Common Snails had been broken on a limestone anvil in the low country.

Many other kinds of molluscs are eaten by many kinds of birds. Size permitting, they are commonly swallowed whole and they, or their shells, are often to be recovered from the insides of untimely-killed birds and from castings or pellets.

The appended paper on bird food, the fourth of a series to appear in our *Transactions*, is largely made up of molluscan findings. Some of these, along with others of a different nature, may not have been previously recorded in the dietary of the respective birds. With the exception of one for Galloway and two for High Furness, the food records represent the gut contents of birds or the composition of pellets from Cumberland localities.

My grateful thanks go to Mrs. N. F. McMillan and to Dr. M. P. Kerney for their kindly interest in all my work and for naming so many of my specimens; to Mr. F. R. Woodward and to Mr. S. P. Dance for their help on specialised subjects and to Dr. H. E. Quick for his determination of some critical species.

The absence of crushing penalties for collecting snail shells allows due thanks to be paid to my family and those of my friends, here named, who have joined in the field work or contributed to my collection on which the account is based –

My wife, Dorothy, and our three sons, Peter Stewart, Andrew

Thirlwall and Crispin Linné.

Allan Allison, Linton Holme, Carlisle.

Mr. and Mrs. M. Bennett, Grange-over-Sands.

R. J. Birkett, Little Langdale.

Mrs. K. (Peg) Braithwaite, Walney Island.

Thomas Brown, Currock, Carlisle.

Miss Marjory Garnett, Seascale.

Wilson Kirkup, Currock, Carlisle.

W. R. Laidler, L. A. Laidler and R. J. Laidler, Durdar, Carlisle.

Dr. D. A. Ratcliffe, Stanwix, Carlisle.

Ralph Stokoe, Cockermouth.

Their initials are given with the appropriate records.

The scientific names and the arrangement follow "Census of the Distribution of British Non-Marine Mollusca," A. E. Ellis, *The Journal of Conchology* (1951), 23: 171-244.

The English names are taken from *British Snails* (1926), A. E. Ellis, and *The Young Specialist Looks at Land and Freshwater Molluscs* (1965), Horst Janus.

Blackwell,
Cumberland.

GASTROPODA

Hydrobia ulvae (Pennant)—Laver Spire Snail.

Grune Point, Solway.

Dead shells numerous in tide rubbish, 17 August 1966. D.B. and E.B.

Potamopyrgus jenkinsi (Smith)—Jenkins' Spire Snail.

Cocklakes, near Cotehil.

Extremely abundant, especially in the biggest of the four ponds, 10 October 1965.

Bithynia tentaculata (L.)—Common Bithynia.

Monkhill Lough.

Plentiful at the open, north end, 19 July 1930. The lough since drained and reduced to swamp.

Cummersdale.

Many in a small pond, covered with Broad Pondweed—*Potamogeton natans* L.—in a former channel of the River

Caldew, 22 August 1953. Still numerous in this pond, now thickly grown with *Callitriche*, *Elodea*, *Glyceria* and *Equisetum*, 18 October 1964.

Carychium minimum (Müller)—Short-toothed Herald Snail.

Todhills Wood, Blackwell.

Abundant among wet, dead leaves of Black Poplar and Alder, 6 March 1966.

Carychium tridentatum (Risso)—Long-toothed Herald Snail.

Todhills Wood, Blackwell.

Abundant along with *C. minimum*, 6 March 1966.

High Pow Wood, Ratten Row.

Twenty-four sifted out of damp leaf mould, 2 August 1966.

Scarrowmanwick Fell, Pennines.

Thirteen under a turf-bedded block of limestone, at 1100 feet, 14 May 1966.

Physa myosotis (Draparnaud)—Mouse-ear-shelled Snail.

Grune Point, Solway.

Nineteen shells, mostly fresh, collected in tide rubbish along an old high water mark, 17 August 1966. D.B. and E.B.

Lymnaea truncatula (Müller)—Dwarf Pond Snail.

Blackwell.

In a small, muddy dub grown with Flote-grass—*Glyceria fluitans* (L.)

Br. and Water Pepper—*Polygonum hydro piper* L., September and October 1963.

Broadfield.

In a ditch at Beck House and in a small dub at Monk Castle, May 1966.

Lymnaea palustris (Müller)—Marsh Snail.

Biglands Bog.

Clustered in hollows in drying-out beds of Reed-grass--*-Phalaris arundinacea* L., 18 April 1954.

Lymnaea stagnalis (L.)—Great Pond Snail.

Blackwell.

Three on Canadian Pondweed—*Elodea canadensis* Michx.—in a flooded claypit, 15 August 1948.

North Western Naturalist, N.S. (1953), 1: 95.

Lymnaea peregra (Müller)—Wandering Snail.

Blackwell.

Adults and small young in Racecourse Beck, September and October 1963. Cummersdale.

In ponds in a former channel and in a stony backwater of the River Caldew, 18 October 1964.

High Wreay.

Profusely studding the Duckweed—*Lemna minor* L.—covering a field pond, 15 September 1963.

Broadfield.

Dark-coloured form in a ditch at Beck House, 20 July 1964, and normal in a small field pond at Longrigg, 1 November 1964.

Cocklakes.

Plentiful in the well-vegetated shallows, 10 October 1965. Carrock Fell.

Very thin-shelled form in the beck flowing over broken, acidic rock into Black Dub, at 750 feet, 9 September 1956.

Matterdale Common.

In a beck choked with Opposite-leaved Pondweed—*Groenlandia densa* (L.) Fourr., at 1300 feet, 23 August 1959.

Sunbiggin Tarn, Westmorland.

In a feeder containing *G. densa*, at 820 feet, 15 June 1958.

Physa fontinatis (L.)—Bladder Snail.

Cummersdale.

Nine found in the thickly plant-grown pond, 18 October 1964.

Planorbis planorbis (L.)—Ram's-horn Snail.

Cummersdale.

Numerous in the above pond, 18 October 1964.

Planorbis leucostoma Millet—White-lipped Ram's-horn Snail.

Blackwell.

Plentiful on Starwort—*Callitriche*—in a ditch through a meadow, 24 October 1965.

Planorbis albus (Müller)—White Ram's-horn Snail.

Cocklakes.

Seven taken in two of the ponds, 10 October 1965.

Ancylus fluviatilis Müller—River Limpet.

Blackwell.

Numerous on wet brickwork of a pumping ram house at The Springs, 1950-51, A.T.B. On discarded building bricks, as well as Stones, in Racecourse Beck, 8 September 1963.

Cummersdale.

Plentiful in a stony backwater of the River Caldw, 18 October 1964.

Crowdendale, Pennines.

In the Cumberland/Westmorland boundary beck up to at least 1800 feet, 3 June 1939.

Succinea putris (L.)—Amber Snail.

Todhills Wood, Blackwell.

Colony in a swampy bed of Reed-grass—*Phalaris*—intergrown with Meadowsweet—*Filipendula*, Hemp Agrimony—*Eupatorium* and Horsetail—*Equisetum*. The snails wintering in the ground litter 9 March; numerous on the leaves of the first three plants, 13 July, and some of them still up on the grass, 2 November 1963.

Succinea pfeifferi Rossmässler—Pfeiffer's Amber Snail.

Blackwell.

Five on Flote-grass in muddy dub, September and October 1963, and June 1964.

Oukedale, Pennines, Westmorland.

Three in a calcareous flush, at 1300 feet, 2 May 1966. D.A.R.

Cochlicopa lubrica (Müller)—Slippery Snail.

Todhills Wood, Blackwell.

Among Reed-grass litter, March and July 1963.

Unthank and Gaitsgill and Swineshaw.

On old and varyingly overgrown, lime-mortared walls, 1963-64. Landsceugh, Nether Welton.

One under a rotten Birch log, 12 June 1966.

Hutton-in-the-Forest.

One under roadside litter, 29 June 1966.

Wetheral Woods and Middle Gelt Woods.

Two in the first of the woods, 29 September 1965, and one in the second, 7 October 1965. D.B. and E.B.

Cocklakes.

Two among leaf litter; 10 October 1965.

Lime Kiln Nook, Sebergham.

Six in long disused quarry, at 500 feet, 28 September 1965.

LAKELAND MOLLUSCS

Crossgates, Pennines.

Four about old lime workings, at 700 feet, 7 May 1966. Scarrowmanwick Fell, Pennines.

Seven about old lime workings, at 1100 feet, 14 May 1966. Hartside, Pennines.

One in old limestone quarry, at 1200 feet, 29 August 1965. Maryport.

Eight on the seaward side of the town, 28 October 1965. D.B. and E.B.

Cochlicopa lubricella (Porro)—Least Slippery Snail.

Four on overgrown, lime-mortared wall, 26 July 1964. Gaitsgill.

Cummersdale.

Two on overgrown stonework, 1 August 1964.

Blackwell.

One on overgrown cobblestone wall, 9 August 1964.

Lime Kiln Nook.

One in the old quarry, 28 September 1965.

Scarrowmanwick Fell.

Five about old lime workings, at 1100 feet, 14 May 1966. Maryport.

Six on rough ground at the seaward side of the town, 28 October 1965.

D.B. and E.B.

Columella edentula (Draparnaud)—Toothless Chrysalis Snail.

Todhills Wood, Blackwell.

Eleven among wet, dead leaves of Black Poplar and Alder, March 1966.

Pupilla muscorum (L.)—Moss Snail.

Grune Point, Solway.

One shell collected, 17 August 1966. D.B.

Lauria cylindracea (da Costa)—Chrysalis Snail.

Broadfield, Gaitsgill, Cummersdale, Unthank and Swineshaw.

On old, lime-mortared sandstone walls, July and August 1964.

Lime Kiln Nook.

Abundant in old quarry, at 500 feet, 28 September 1965.

Wetheral Woods.

Colony at Constantine's Cave, 29 September 1965. D.B. Low Gelt, Brampton.

Colony on lime-mortared, sandstone wall, 7 October 1965. D.B. and E.B.

Crossgates, Pennines.

Four about old workings, at 700 feet. 7 May 1966.

Talkin Fell, Pennines.

Two on a small crag, at 800 feet, 4 May 1966.

Scarrowmanwick Fell, Pennines.

Colony under a turf-bedded rock, at 1100 feet, 21 September 1963. P.S.B. and E.B. Found in abundance, 14 May 1966.

Hartside, Pennines.

Nine in old limestone quarry, at 1200 feet, 29 August 1965. D.B., A.T.B. and E.B.

Egremont.

In old limestone quarry, at 300 feet, 19 August 1956. Maryport.

Common about the old slag heaps, 28 October 1965. D.B. and E.B.

Abida secale (Draparnaud)—Large Chrysalis Snail.

Hartside, Pennines.

Four on the underside of one block in old limestone quarry, at 1200 feet, 29 August 1965. D.B. and E.B.

The farthest north locality known for the species in England.

Acanthinula aculeata (Müller)—Prickly Snail.

Todhills Wood, Blackwell.

Two among wet, dead leaves of Black Poplar and Alder, March 1966.

Ena obscura (Müller)—Lesser Bulin.

Gaitsgil.

Five on overgrown, lime-mortared sandstone wall, July and October, 1964. Cummersdale.

One on overgrown stonework of railway arch, 8 August 1964. Lime Kiln Nook.

Plentiful under loose blocks and on the rock face in old quarry, 28 September 1965.

Scarrowmanwick Fell.

Two on the limestone, at 1100 feet, 14 May 1966.

Marpessa laminata (Montagu)—Plaited Door Snail.

High Gelt Woods.

One sticking to the finder's jacket, 18 July 1964. W.R.L.

Clausilia bidentata (Ström)—Two-toothed Door Snail.

Ranges from the limestone and sandstone of the coast to the volcanic rock of the high fells.

Grange-over-Sands, North Lancashire.

One, August 1961. M. & J.B.

Meathop Marsh, Westmorland.

Four on low, coastal cliff, 1 September 1963.

St. Bees Head.

Two on the cliffs, at 100 feet, 1 May 1956. R.S.

Egremont.

Four on inland limestone, at 300 feet, 19 August 1956. A.T.B.

Gaitsgill.

Twelve on old, lime-mortared wall, July and October 1964.

Wetheral Woods.

One at Constantine's Cave, 29 September 1965. D.B.

Wasdale Screes.

Ten in the Devil's Sledgate, at 1250 feet, 13 September 1958.

Clausilia dubia Draparnaud—Craven Door Snail.

Localities from Bewcastle Fells along the Pennines into Westmorland : —

Bull Cleuch.

One on limestone, at 1200 feet, 8 December 1955. D.A.R.

Scarrowmanwick Fell.

Plentiful about the old lime workings, at 1100 feet, 11 March 1952 and 14 May 1966.

Haresceugh Fell.

One in Loo Gill, at 1200 feet, 29 April 1966. D.A.R.

Black Doors, Crossfell.

Frequent in crannies in the whinsill, at 2000 feet, 1 June 1931.

Highcup.

Again frequent on the whinsill, at 2200 feet, 4 June 1931.

Balea perversa (L.)—Tree Snail.

Cummersdale.

One on stonework of railway arch, 1 August 1964.

Lime Kiln Nook.

Three on rock face in old quarry, 28 September 1965.
Scarrowmanwick Fell.

One on the limestone, at 1100 feet, 14 May 1966.

Arianta arbustorum (L.)—Copse Snail.

Found from shore level to more than 2000 feet on the volcanic and limestone crags. Particularly common in the Pennine country. Shells collected from 500 to 2400 feet tend to show that the height of the spire increases with the altitude of habitat.

Grange-over-Sands, North Lancashire.

One collected, August 1961. M. & J.B.

St. Bees Head.

Four on the cliffs, May and June 1956. R.S.

Blackwell to Cummersdale.

Among rough vegetation, in litter under trees on damp ground and on stonework, at 150 feet, 1946 to 1964.

Middle Gelt.

Colony in a bed of Stinging Nettle—*Urtica dioica* L., at 180 feet, 20 May 1959, and another on a lime-mortared wall, 7 October 1965. D.B. and E.B. Gaitsgill.

Several on overgrown, lime-mortared wall, at 250 feet, February and July, 1964.

Egremont.

Two collected in old limestone quarry, at 300 feet, 19 August 1956.

Mockerkin.

Colony on lime-mortared sandstone wall thickly covered with ferns, at 380 feet, 6 July 1957.

Blencowe.

One collected in a limestone quarry, at 700 feet, 17 June 1956. Newsham.

Distributed along a grassy verge, at 1000 feet, 17 June 1956. Bull Cleuch,

Bewcastle Fells.

One on limestone, at 1200 feet, 8 December 1955. D.A.R.

Three localities in the Lake Fells:

Honister Crag, Buttermere.

Three, 11 July 1954, and one, 7 August 1955. E.B. One, 26 May 1957.

P.S.B. All at 1600 feet.

Link Cove, Fairfield, Westmorland.

Two on Scrubby Crag, at 2300 feet, 1 June 1953. Blea Water Crag,

Mardale, Westmorland.

One, at 2300 feet, 6 August 1955. D.A.R.

Localities southward along the Pennines and across to Asby Fells: –

Scarrowmanwick Fell.

Common about the old workings, at 1100 feet, 11 March 1952. Haresceugh Fell.

Many in Loo Gill, at 1250 feet, several being attached to the weathered skull of a sheep, 21 May 1959.

Garrigill Bank, Ousby.

Five under a dry wall, at 600 feet, 10 April 1966. D.B. Crossfell.

Plentiful in Ardale up to the whins of Black Doors, at 2000 feet, 1 June 1931.

Crowdundale.

Many beside the beck, at 1200 feet, 31 May 1959.

Greencastle, Dun Fell, Westmorland.

Extremely abundant on the limestone crags, remarkable at their altitude of 2400 feet, 2 June 1931.

Knock Fell, Westmorland.

Plentiful in Knockor Gill, at 1500 feet, and on a damp slope of the fell, at 2300 feet, 6 June 1959.

Highcup Dale, Westmorland.

Plentiful up to more than 1000 feet, 2 June 1933. Kirkby Stephen, Westmorland.

Colony on the outskirts of the town, at 500 feet, 17 June 1937. Grange Scar, Westmorland.

Two on limestone pavement, at 1200 feet, 25 August 1963.

D.A.R.

Cepaea hortensis (Müller)—Garden Snail.

Ranges from the coast to the fell country, favouring the rankest vegetation, particularly Stinging Nettle – *Urtica dioica* L. – in the low country.

St. Bees Head.

One bandless yellow var. *lutea* Picard, 22 June 1956. R.S.

Blackwell.

Numerous on railway embankment, var. *lutea* included, 23 August 1954.

Unthank, Daiston.

First one collected, 30 June 1963, C.L.B., and then others, including vars. *lutea* Picard, *arenicola* Macgillivray and *ludoviciana* Moquin-Tandon, in October and December 1963 and August 1964.

Intak, Wreay.

Typical specimens in Ivy—*Hedera helix* L.—on a bridge wall, 15 September 1963, and clustered on undersides of discarded pieces of plasterboard, 30 August 1964.

Macey Bank, Ivegill.

One in a disused nest of Greenfinch, 11 July 1964. Gaitsgil.

Several on old, overgrown wall, 17 July 1964. Hutton-in-the-Forest.

Numerous along a roadside verge, 29 June 1966. Cumwhitton.

Strong colony on the outskirts of this east fellside village with varieties, including *lilacina* Taylor, 28 June 1956.

Lime Kiln Nook.

Plentiful in old limestone quarry, 28 September 1965.

Newsham.

Plentiful in the limestone habitat of *Primula farznosa* L., at 1000 feet, 30 May 1964.

Castlerigg Fell.

One on the volcanic rock of Iron Crag, at 1200 feet, 20 August 1960.

Cepaea nemoralis (L.)—Brown-lipped Snail.

Mostly on the Marram-grown dunes and on the limestone, from the coast inland to some altitude in the Pennines.

Siloah.

Abundant and many single-banded, 25 June 1931. E.B. Only one specimen found in this trippers' resort, 2 August 1955. C.L.B.

Mawbray.

Constantly plentiful, 1956 to 1966. D.B., A.T.B., C.L.B. and E.B.

Maryport.

Common on the inner side of the sea banks, 28 October 1965. D.B. and E.B.

Drigg.

Specimens collected, 1 July 1964. D.B.

Gutterby.

One var. *rubella* Picard and one var. *libellula* Risso on coastal clay cliffs, 7 November 1964. M.G.

Meathop, Westmorland.

Along the coastal limestone, 1 September 1963.

Egremont.

Collected in disused quarry, at 300 feet, 19 August 1956.

Blencowe.

Many in disused quarry, at 750 feet, 17 June 1956.

Grange Scar, Westmorland.

Plentiful on the pavement, at 1000 feet, 25 August 1963.

Sarrowmanwick Fell.

Numerous about old workings, at 1100 feet, 1930, 1963 and 1966. D.B., P.S.B. and E.B.

Crossfell.

Colony on the scar on High Cap, at 1600 feet, 6 June 1953.

Hartside.

Plentiful on old spoil heaps, at 1700 feet, 21 May 1959.

Blackwell.

Collected on Blackhall Racecourse, 27 May 1964.

Burthwaite.

Many on overgrown walls around a long-disused red sandstone quarry and var. *libellula* Risso collected, 11 August 1964.

Helix aspersa Muller—Common Snail.

Favours the coastline and the Carboniferous Limestone but occurs in localities characterised by the Skiddaw Slates, Bannisdale Slates, Borrowdale Volcanics and New Red Sandstones.

Ten shells, preserved by R. S. Ferguson, were found in crevices in the sandstone walls during restorations to Carlisle Castle in 1913.

Meathop, Westmorland.

Along a low coastal cliff, 1 September 1963.

Seascale.

Common and several seen on Biting Stonecrop—*Sedum acre* L., 1 July 1964.

St. Bees.

Common on the North Head, 1 May 1956. R.S. Two on Tomlin, the South Head, 12 June 1964.

Maryport.

Abundant in rank vegetation, predominantly Wild Carrot—*Daucus*, Spear Thistle—*Cirsium* and Restharrow—*Ononis*, around the highly calcareous slag heaps of the old ironworks, 7 August 1953. Many of the snails tightly packed, one above another, in vertical crevices in massive masonry and a cluster found on the underside of a rusty oil drum, actually on the shore, 28 October 1965. D.B. and E.B.

Egremont.

Abundant, with hundreds of dead shells, in disused quarry, at 300 feet, 19 August 1956.

Blencowe.

One below a dry wall, at 600 feet, 9 June 1946. Loweswater.

One under a rock at Crabtree, head of the lake, 450 feet, 2 September 1956.

Little Langdale, Westmorland.

Numerous in the dale, at 400 feet. Four specimens collected, 24 May 1964. R.J.B.

Windermere, Westmorland.

Common over many years. M.G.

Penny Bridge, Furness.

About the gravestones of some of my forebears, 31 August 1956.

Hygromia subrulescens (Miller)—Brown Snail. Blackwell.

A fair colony on Reed-grass in the damp bottom of Todhills Wood, September to November 1963.

Hygromia striolata (C. Pfeiffer)—Strawberry Snail. Crossgates, Pennines.

Sixteen about old lime workings, at 700 feet, 7 May 1966.

Egremont.

Four in disused limestone quarry, 19 August 1956. Maryport.
Colony in a bed of Reed-grass intergrown with Bramble,
28 October 1965.

Meathop, Westmorland.

Two on coastal limestone scar, 1 September 1963.

Hygromia hispida (L.)—Hairy Snail.

Common in decaying leaf litter and on old, lime-mortared walls, often being among the crumbled mortar.

Blackwell to Durdar, 1955 to 1964.

Burthwaite to Swineshaw, Kingrigg and Intak, Wreay, 1963 and 1964.

Unthank and Buckabank, Dalston, to Gaitsgill, 1963 and 1964.

Middle Gelt Woods and Cocldakes, 1965.

Justicetown, Westlinton, 29 May 1966.

Landsceugh, Nether Welton and Hutton-in-the-Forest, June 1966.

Lime Kiln Nook, Sebergham, 31 March 1963.

Scarrowmanwick Fell.

Numerous on the limestone, at 1100 feet, 14 May 1966. Burgh Marsh, Solway.

Between turf and stonework all round the base of King Edward I Monument, 24 December 1964.

Maryport.

Everywhere about the old slag heaps, 28 October 1965. D.B. and E.B.
Meathop Marsh, Westmorland.

On coastal limestone, 1 September 1963.

Helicella caperata (Montagu)—Wrinkled Snail.

Distributed from south to north along the coast, especially on the Marram-grown dunes; again about disused workings in the limestone girdling the Central Fells and in the limestone of the Pennines.

Walney Island, North Lancashire.

Four at South End, 7 October 1963, and one 25 November 1964. Peg. B.
Meathop, Westmorland.

Three on coastal limestone, 1 September 1963.

Haverigg.

All live ones on lee side of dunes, while many dead shells on seaward side,
22 August 1963. M.G., D.B. and E.B.

Drigg.

Mostly dead shells on seaward side, 1 July 1964. M.G., D.B. and E.B.
One maximum size, 12 mm., with other dead shells in an eroded dune,
November 1964. M.G.

Maryport.

Abundant, from a lime-mortared sandstone wall in the town to the old
slag heaps and the outward slope of the sea wall, var. *ornata* Picard
being frequent, 28 October 1965. D.B. and E.B.

Mawbray.

Always found in abundance, 1956 to 1966. D.B., A.T.B. and E.B.

Grune Point, Solway.

Seven collected, 17 August 1966. D.B. and E.B.

Egremont.

Plentiful in disused quarry, 19 August 1956.

Faulds Brow, Caldbeck.

Plentiful around old quarry, at 1000 feet, 19 May 1957. D.B.

Lime Kiln Nook.

Five on old quarry face, 28 September 1965.

Kingrigg, Broadfield.

One on a verge in the plain of the county, 1 November 1964, and two
more, 27 September 1965.

Crossgates.

Seven about old workings, at 700 feet, 7 May 1966.

Scarrowmanwick Fell.

Abundant about a natural crag and old workings, 1930 to 1966. D.B.,
P.S.B. and E.B.

Newbiggin Fell.

Many about an old lime kiln, at 1200 feet, 15 May 1932.

Hartside.

Plentiful on old spoil heaps, at 1200 to 1700 feet, 1959 to 1965. D.B.,
A.T.B. and E.B.

Helicella virgata* (da Costa)—Banded Snail.*Maryport.**

Very abundant along a stretch of blown sand and clustered on Sea
Rocket – *Cakile maritima* Scopoli, 7 August 1953. The shells generally
mauve-banded, referable to var. *maritima* Draparnaud and some paling
to clear-banded white of var. *hyalozona* Taylor. Less numerous and the
ground thickly littered with dead shells, 10 August 1954. Again
abundant, at least on the seaward bank to the sea wall, 28 October
1965. D.B. and E.B.

Punctum pygmaeum* (Draparnaud)—Dwarf Snail.*High Pow Wood, Ratten Row.**

Eight sifted out of damp leaf mould, 2 August 1966.

Discus rotundatus (Müller)—Rounded Snail.

Common in the neighbourhood of Carlisle, usually in colonies under leaf litter, on old and more or less overgrown stonework and under pieces of rotten wood and once beneath a rusty oil drum.

Blackwell to Cummersdale, 1940 to 1964.

Fouldoors and Flosches, Durdar, 1963, one colony being under rotten wood sprouting Candle-snuff Fungus—*Xylaria*.

Ashbridge and Hilihouse Nook, Durdar.

Among Hair Moss—*Polytrichum*—and leaf litter in woods, 1965.
Burthwaite to Swineshaw and Kingrigg between Wreay and Broadfield, 1964.

Sprunston to Unthank and Buckabank near Dalston, 1963 and 1964.
Gaitsgill and nearby Thrangholm where found under Elm logs on an island in the River Roe, 1964.

Wetheral Woods and Corby Woods in the Eden valley and Middle Gelt Woods, 1965. D.B. and E.B.

Justicetown near Westlinton and Landsceugh near Nether Welton, 1966.

Lime Kiln Nook, Sebergham, 1963.

Crossgates, at 700 feet, Talkin Fell, at 800 feet and Scarrowmanwick Fell, at 1100 feet, all in the Pennines, 1966.

Falcon Crag, Derwentwater, at 600 feet, 1965.

St. Bees Head, 1956, R.S. and Maryport, 1965, D.B. and E.B., for different coastal habitats.

Arion subfuscus (Draparnaud)—Dusky Slug.

Burthwaite.

One with a colony of *Discus* under a rotten Birch log, 23 August 1964.

Middle Gelt Woods.

Common, especially in crevices in the butts of Beech trees, 7 October 1965. D.B. and E.B.

Corby Woods.

One on the butt of a Horse Chestnut, 14 October 1965. D.B. and RB.

Landsceugh.

Nine under rotten Birch and Willow logs, 12 June 1966.

Arion ater (L.)—Black Slug.

Common on the high fells as well as in the low country. One being eaten alive by a Violet Ground Beetle—*Carabus violaceus* L.—in Highcup Dale, at 2200 feet, Westmorland Pennines, 6 June 1928.

Euconulus fulvus (Müller)—Tawny Snail.

Blackwell.

One collected in Rose Cottage garden, 1960, and eight in Todhills Wood, March 1966.

Vitrea crystallina (Müller)—Crystal Snail.

Todhills Wood, Blackwell.

Plentiful among wet, dead leaves of Black Poplar and Alder, 6 March 1966.

Vitrea contracta (Westerlund)—Milky Crystal Snail.

Lime Kiln Nook, Sebergham.

One in disused quarry, 28 September 1965.

Cocklakes, Cotehill.

One among leaf litter, 10 October 1965.

Scarrowmanwick Fell.

Ten under turf-bedded blocks of limestone, at 1100 feet, 14 May 1966.

Maryport.

One on lime-mortared sandstone wall, 28 October 1965. D.B.

Oxychilus cellarius (Müller)—Cellar Snail.

On the coast at Grange-over-Sands, North Lancashire, 1961, M. & J. B., and at Maryport, 1965.

Over inland low country, including old quarries, woods and river valleys, at Egremont, 1956; Sebergham, 1963; Blackwell, Unthank near Daiston and Gaitsgill, 1963 and 1964; Wetheral Woods, Corby Woods and Middle Gelt Woods, 1965.

In the Lake Fells on Kirk Fell, Whinlatter, at 700 feet, and Armboth, Thirimere, at 600 feet, D.B., and Falcon Crag, Derwentwater, at 600 feet, 1965.

Along the Pennines at Crossgates, 700 feet, 1966; on Bishop Hill, at 750 feet, 1966, Scarrowmanwick Fell, at 1100 feet, 1966, Hartside, at 1200 feet, 1965, D.B. and High Cap, Crossfell, at 1600 feet, 1953.

Oxychilus afliarius (Müller)—Garlic Snail.

Blackwell.

Collected in Rose Cottage garden, 1960, and in Todhills Wood, March 1966.

Lime Kiln Nook, Sebergham.

In old quarry, at 500 feet, 31 March 1963.

Wetheral Woods and Corby Woods in the Eden valley and Cocklakes, Cotehill, 1965.

Justicetown and Broadfield and Landsceugh and Hutton-in-the-Forest, 1966.

Maryport.

In a bed of Reed-grass, 28 October 1965.

var. *viridula* Jeifreys.

Collected at Floshe, Durdar, 20 October 1963.

Retinella radiatula (Alder)—Rayed Snail.

Blackwell.

Three in litter under dead Reed-grass in Todhills Wood, 9 March 1963.

Durdar.

Several among Hair Moss and leaf litter in Ashbridge and Hill-house
Nook plantations, 1965.

Scarrowmanwick Fell.

One with a colony of *Lauria cylindracea*, at 1100 feet, 21 September
1963.

Hartside.

One in old quarry, at 1200 feet, 29 August 1965. D.B.

Wasdale.

One under a stone, head of Wastwater, 250 feet, 1 June 1966.

Retinella nitidula (Draparnaud)—Smooth Snail.

Blackwell.

In Rose Cottage garden, 1960 and 1964.

Unthank, Dalston.

On an old and overgrown wall, 1964.

Lime Kiln Nook.

About the floor of disused quarry, 1963 and 1965. Corby Woods.

Among moss and leaf litter, 1965.

Maryport.

In a bed of Reed-grass, 1965.

Zonitoides nitidus (Muller)—Shiny Snail.

Maryport.

One, with *Hygromia* and *Oxychilus* in a bed of Reed-grass, 28 October
1965.

Vitrina pellucida (Müller)—Peilucid Snail.

In decaying leaf litter, under stones and rotting wood and on overgrown walls.

Blackwell, Cummersdale, Durdar and Unthank, 1963 and 1964.

Kingrigg, Gaitsgill and on an island in the River Roe at Thrangholm, 1964.

Lime Kiln Nook, Wetheral Woods, Corby Woods and Cocklakes, 1965.

Bishop Hill, Pennines, at 750 feet, and Barrock Fell, at 730 feet, 1966.

Maryport.

Common on rough ground towards the sea, 1965. D.B. and E.B.
Walney Island, North Lancashire.

Three on Dandelion—*Taraxacum*—at South End, 1964. Peg. B.

Milax budapestensis (Hazay)—Budapest Slug.

Blackwell.

Numerous in Rose Cottage garden, attacking narcissus and tulip bulbs and carrots and parsnips, 1963 and 1964.

Limax maximus L.—Great Slug.

Brougham, Westmorland.

Congregated between asbestos roofing sheets stacked on the ground, 18 July 1965. A.T.B.

Carlisle.

Two in a heap of rubble in Currock, 9 August 1965. T.B. Justicetown.

One in litter between the claws of a Beech, 29 May 1966.

Agriolimax reticulatus (Muller)—Netted Slug.

Blackwell.

Rather heavily pigmented specimens found in association with *Mitax*, 26 January 1964.

Burgh Marsh, Solway.

Many, with *Hygromia hispida*, between the turf and stonework round the base of the King Edward I monument, 24 December 1964.

BIVALVIA

Margaritifera margaritifera (L.)—Pearl Mussel.

River Eden, at Rickerby, Carlisle.

The mussel discovered here by two Scottish pearl fishers who gave me a specimen, 28 May 1928

Shells found on the bank, 1963, W.R.L., and a complete shell containing a pearl of 11 mm., picked up in 1964 by Raymond Myers.

River Irt, at Holmrook.

Two freshly opened mussels collected, June, 1964. M.G.

Dubs Beck, near Windermere, Westmorland.

Dead shells collected, 1945-50. M.G.

Anodonta cygnea (L.)—Swan Mussel.

Netherby.

A specimen brought to me from one of the famous duck-rearing ponds, in 1932, by Tom L. Johnston, late of Carlisle.

Anodonta anatina (L.)—Duck Mussel.

Formerly described as rare in Cumberland.

River Petteril, at Upperby.

Many, which had been washed out of a sand bed by a flood, found to have been carried down to Harraby Bay, 19 June 1931.

Wampool, at Kirkbride.

Plentiful in the sandy bottom of the river, 25 June 1931.

Hundreds of shells, which had been attended to by birds, lying out on the bank after recent dredging operations, 16 January 1966. A.A.

Tindale Tarn, 700 feet. Pennines.

Plentiful at the west end of the tarn, 11 June 1932.

Hutton-in-the-Forest.

Numerous in a deep sow between ponds, 9 June 1946.

River Petteril, at Wreay.

Two collected, five miles upstream from the first locality, June 1964. W.K.

Martin Tarn, Oulton.

Shells fished out October-November and a complete one collected 14 November 1964. L.A.L. and R.J.L.

River Eden, at Linstock.

Many cast up by floodwater and the animals eaten, presumably by Carrion Crows or gulls patrolling the banks, 8 January 1965. Some of a number of empty shells in the Tindale shallows had holes picked in them to suggest the work of Herons or Coots. On an occasion a litter of shells lay out on the bank at Hutton, a Grey Heron – *Ardea cinerea* L. – was standing among the mussels in the sow and reluctant to leave. Andrew Blezard successfully induced his aquarium-kept Bitterling *Rhodeus amarus* (Bloch) – to breed in Duck Mussels brought home from Hutton in 1951.

Sphaerium corneum (L.)—Horny Orb Mussel. Monkhill Lough.

Plentiful at the more open, northerly end of the lough, 19 July 1930.

Cummersdale.

Collected in a pond in a former channel of the River Caldew, 18 October 1964.

Sphaerium lacustre (Müller)—Lake Orb Mussel. Blackwell.

In the water jump on Blackhall Racecourse, an artificial pond grown with *Cardamine*, *Callitriche*, *Glyceria* and *Juncus*, 8 December 1963 and 24 July 1966.

Longrigg, Broadfield.

In a small, muddy-bottomed field pond grown with Burr-reed—*Sparganium*, Duckweed and Flote-grass, 1 November 1964.

Pisidium personatum Maim—Red-crusted Pea Mussel.

Blackwell.

Among very wet, dead leaves of Black Poplar and Aider flooring.
Todhills Wood and in a meadow drainage ditch, March and May
1966.

Monk Castle, Broadfield.

On the mud of an almost dried-out dub, in rough pasture, 8 May, 1966.

Pisidium milium Held—Quadrangular Pea Mussel.

Pisidium subtruncatum Maim—Short-ended Pea Mussel.

Pisidium henslowanum (Sheppard)—Henslow's Pea Mussel.

Pisidium lilljeborgii Clessin—Lilljeborg's Pea Mussel.

Pisidium nitidum Jenyns—Shining Pea Mussel.

All found in the ponds at Cockiakes, Cotehiil, 10 October 1965
the last-named being again collected in the water jump on
Blackhall Racecourse, 24 July 1966.

ADVENTIVES

Helix (Otala) punctata Müller

Carlisle, May 1934. Hannah W. Blezard.

Origin Central Europe. Det. N. F. McM.

Pleurodonte (Thelidomus) aspera (Férussac)

Carlisle, October 1964. William Connor.

Origin Jamaica. Det. N. F. McM.

Pleurodonte (Caprinus) josephinae (Férussac)

Carlisle, August 1954. James Symes.

FOOD OF BIRDS

RAVEN – *Corvus corax* L.

Mull of Galloway, 23 April 1962.

(Pellets collected by Ralph Stokoe).

1. Fur and bones, including mandible with teeth, of a juvenile Brown Hare – *Lepus europaeus* Pallas; crushed shell of Common Snail—*Helix aspersa* Muller; shreds of grass.
2. Fur and bones of both adult and juvenile Brown Hare; broken shell of Dog Cockle—*Glycymeris glycymeris* (L.); Scarabaeid beetle—*Aphodius depressus* Kug.

JAY – *Garrulus glandarius* (L.)

♀ Keswick, 22 October 1962.

Three Common Earwigs—*Forficula auricularia* L., twenty-nine seeds of Bramble—*Rubus fruticosus* L., broken pieces of acorn—*Quercus*; fine to coarse grit.

STARLING – *Sturnus vulgaris* L.

♂ Carlisle, 4 March 1963.

Smooth Snail—*Retinella nitidula* (Draparnaud)—8 mm., bits of grain.

HOOPOE – *Upupa epops* L.

♂ Cotehill, 9 October 1965.

Eighteen Common Earwigs—*Forficula auricularia* L., thirty-four Crane-fly larvae (Tipulidae).

GOLDEN EAGLE – *Aquila chrysaëtus* (L.)

Lakeland eyrie, 5 March 1966.

(Pellets collected by R. J. Birkett).

1. Sheep wool with bits of dead Bracken, Mat-grass and moss.
2. Sheep wool with shreds of Woodrush.

HEN-HARRIER – *Circus cyaneus* (L.)

♂ Bowness-on-Solway, 28 April 1963.

A Carabid beetle – *Pterostichus* – the only morsel in the stomach.

MALLARD – *Anas platyrhynchos* L.

♂ River Eden, Grinsdale, 28 November 1962.

Two young Eels—*Anguilla vulgaris* Day—of 7.5 cm., a Dytiscid beetle larva; reduced plant remains and coarse grit.

♀ Finglandrigg, 15 October 1965.

Broken up Baltic Tellins—*Macoma bait hica* (L.)—in all colours; two pieces of waterworn grit.

♂ Eden estuary, Burgh Marsh, Solway, 7 November 1965.

Two achenes of Buttercup—*Ranunculus*; eleven achenes of Wild Rose—*Rosa*; one nutlet of *Polygonum persicaria* L., one nutlet of Burr-reed—*Sparganium*; shell fragments of Cockle—*Cardium*—and Mussel—*Mytilus*—with coarse sand.

♂ River Waver, Saitcotes, Solway, 26 November 1965. Twelve thousand nutlets of Common Persicaria—*Polygonum persicaria* L.—equal to 120 c.c. in volume; a few achenes of Buttercup – *Ranunculus*; Hydrophiid beetle – *Helephorus aquaticus* L., two Crane-fly larvae; fifty particles of grit in the stomach.

The bird crammed to the beak with the gullet greatly distended.

♂ Bowness-on-Solway, 29 January 1966.

Shell fragments of Baltic Tellins—*Macoma balthica* (L.)—and Common Mussels—*Mytilus edulis* (L.); grit, including eight pebbles up to 6 x 5 x 4 mm. in size.

GADWALL – *Anas strepera* L.

Holme Cultram, 23 October 1964.

♂ Scraps of Flote-grass—*Glyceria*; fine black and white sand. .

♂ Pieces of Stonewort—*Chara*; fine black and white sand.

TEAL – *Anas crecca* L.

Cardurnock, Solway, 20 October 1965.

♂ One hundred and sixty Layer Spire Snails—*Hydrobia ulvae* (Pennant); fine silt.

♂ Forty-six Layer Spire Snails; sand with tiny fragments of Tellin shell.

SHOVELER – *Spatula clypeata* (L.)

♂ Micklethwaite, 4 January 1964.

Five Jenkins' Spire Snails—*Potamopyrgus jenkinsi* (Smith); five White Ram's-horn Snails—*Planorbis albus* Miller; one Nautilus Ram's-horn Snail—*Planorbis crista* (L.); one seed of White Water Lily—*Nymphaea alba* L., fifteen nutlets of Beaked Sedge—*Carex rostrata* Stokes

SCAUP-DUCK – *Aythya mania* (L.)

♂ Bowness-on-Solway, 3 February 1963.

Common Mussels—*Mytilus edulis* (L.)—broken into pieces; eight waterworn pebbles, 4 x 3 x 3 to 16 x 9 x 5 mm.

LAKELAND MOLLUSCS

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GOLDENEYE —*Bucephala clangula* (L.)

♂ Eden estuary, Solway, 6 January 1963.

Small Common Mussels in fragments; one pebble 13 x 10 x 5 mm.

COMMON SCOTER —*Melanitta nigra* (L.)

♂ River Duddon, Ulpha, High Furness, 27 February 1964.

Two fragments of Tellin shell—*Macoma*.

GREAT CRESTED GREBE —*Podiceps cristatus* (L.)

♂ River Eden, Sandsfield, 22 January 1965.

Three Plaice—*Pleuronectes platessa* L.—of 4.5, 6.5 and 7.5 cm., Lamprey—*Petromyzon*—of 8.5 cm., thirty of bird's own body feathers.

WOODPIGEON —*Columba palumbus* L.

♂ Beaumont Marsh, 5 August 1949. (Crop).

Three Pfeiffer's Amber Snails—*Succinea pfeifferi* Rossmässler; four hundred and five grains of Wheat—*Triticum*.

STOCK-DOVE —*Columba oenas* L.

— Bowness-on-Solway, 3 March 1963.

(Stomach).

Cram of nutlets of Common Persicaria.—*Polygonum persicaria* L., fifteen particles of grit, all but two whitish quartz.

— Cardurnock, Solway, 28 June 1964.

(Crop).

Fifty achenes of Meadow Buttercup—*Ranunculus acris* L., one fruit and fourteen tips, 6 to 20 mm., of green spikes of Sea

Arrow-grass—*Triglochin maritima* L.

COLLARED DOVE —*Streptopelia decaocta* (Frivaldsky)

♂ Linstock, Carlisle, 27 November 1964.

(Crop).

One hundred and forty-eight Oak Spangle Galls of *Neurolerus*; four hundred and thirty-two grains of Wheat—*Triticum*. (Stomach).

Ground up Wheat and one hundred and twenty-six particles of coarse grit.

♀ Bowness-on-Solway, 15 May 1966. (Crop).

Five hundred grains of Italian Ryegrass—*Lolium multiflorum* Lam., one hundred grains of Timothy—*Phleum pratense* L., nine grains of Barley—*Hordeum*; two nutlets of Pale Persicaria —*Polygonum lapathifolium* L., three nutlets of White Goosefoot —*Chenopodium album* L., three particles of grit.

(Stomach).

Crushed grains of Ryegrass, Timothy and Barley and one nutlet of Persicaria with fifty-seven particles of coarse grit.

WOODCOCK —*Scolopax rusticola* L.

♂ Ennerdale, 11 March 1962. One Caddis larva and case.

♀ Braithwaite, Keswick, 6 November 1962.

Two Common Earwigs—*Forficula auricularia* L., finely reduced plant remains and grit.

GREY PHALAROPE —*Phalaropus fulicarius* (L.)

♂ Rockcliffe, Solway, 4 November 1962.

Mass of broken up Sandhoppers (Amphipoda); one Weevil—*Sithona*; five particles of grit.

KNOT —*Calidris canutus* (L.)

♀ Grune, Skinburness, Solway, 13 January 1963. Small Common Mussels—*Mytilus edulis* (L.)—in fragments; one waterworn piece of grit.

BRITISH REDSHANK —*Tringa totanus britannica* Mathews

♂ Longnewton Marsh, Solway, 27 January 1963.

Nine Grey Gurnard fry—*Trigla gurnardus* L.—2.5 to 3.5 cm., a Bristle Worm and a few grains of sand.

ICELAND REDSHANK —*Tringa totanus robusta* (Schiöler)

♀ Longnewton Marsh, Solway, 27 January 1963.

Nine small Rough Periwinkles—*Littorina saxatilis* (Olivi); one small Common Mussel—*Mytilus edulis* (L.); several Tellins—*Macoma*—in fragments; six waterworn pieces of coarse grit.

GREY PLOVER —*Squatarola squatarola* (L.)

♂ Longnewton Marsh, Solway, 23 January 1966.

Broken-up Baltic Tellins—*Macoma balthica* (L.); a wad of Green Seaweed—*Enteromorpha*; two pebbles, 9 x 7 x 3 and 6 x 5 x 3 mm.

COMMON GULL –*Larus canus* L.

♂ Blackwell, 31 August 1964.

Seventy Netted Slugs – *Agriolimax reticulatus* (Muller); eighteen earthworms; Carabid beetle—*Pterostichus*; five grains of Cultivated Oat—*Avena sativa* L., two shreds of grass and six particles of grit.

♂ Blackwell, 4 September 1964.

Fifty-four Netted Slugs; three hundred and forty-five grains of Wheat—*Triticum*; seven strands of grass.

♀ Blackwell, 4 September 1964.

Carabid beetle—*Anchomenus parumpunctatus* F., one hundred and ninety-four grains of Cultivated Oat.

♂ Blackwell, 30 July 1965.

Earthworms, including *Lumbricus*; Scarabaeid beetle—*Aphodius*; wad of grass holding leaflets of Clover—*Trifolium*— and a nutlet of Knotgrass---*Polygonum aviculare* L., fine sand.

WATER-RAIL –*Rallus aquaticus* L.

♀ River Eden, Linstock, 13 January 1963.

Many fragments of molluscan shell apparently *Lymnaea*.

WATERHEN –*Gallinula chloropus* (L.)

♂ Brunstock, Carlisle, 2 October 1964.

Eighteen Hairy Snails—*Hygromia his pida* (L.); ten Garden Snails—*Cepaea hortensis* (Muller); six Netted Slugs –*Agriolimax reticulatus* (Muller); three Harvestmen (Opiliones); three hundred and sixty-two seeds of Bramble—*Rubus fruticosus* L.; twenty-seven grains of Cultivated Oat—*Avena sativa* L.; five spikelets of *Poa annua* L., and one of *Bromus*; fine silt to coarse sand.

The bird completely crammed and having the gullet full of snails.

BLACK GROUSE –*Lyrurus tetrix* (L.)

♂ Midgeholme, Perniines, 15 May 1962.

Wolf Spider---*Trochosa terricola* Thorell; forty-one immature flower heads, with scraps of stem and leaf, of Common Cotton-grass – *Eriophorum angustifolium* Honck., ninety-three immature flower heads, with scraps of stem and leaf, of Carnation Sedge—*Carex flacca* Schreb., tip of Heather—*Calluna vulgaris* (L.) Hull., tip and five separate leaves of Bleaberry—*Vaccinium myrtillus* L., two leaves of Red Clover—*Trifolium*; four leaf whorls of Heath Bedstraw—*Galium hercynicum* Weigel; two

leaf tips of Sneezewort—*Achillea ptarmica* L., piece of leaf of Ribwort—*Plantago lanceolata* L., thirty-two bits of leaves, mostly tips, of Dandelion—*Taraxacum officinale* Weber; one hundred and thirty pieces of grit, mainly whitish quartz, 4 to 5 mm. in size.

The spider named by John R. Parker, Carlisle.

PHEASANT – *Phasianus colchicus* L.

♂ Blackwell, 3 November 1962. (Crop and stomach).

Three Chrysomelid beetles—*Chrysomela polita* L., one Common Earwig—*Forficula auricularia* L., one Button Gall and one Spangle Gall of *Neuroterus*; twenty-three acorns— *Quercus*; two berries and many seeds of Elder – *Sambucus nigra* L., five achenes of Buttercup—*Ranunculus*; coarse grit.

♀ Nibthwaite, High Furness, 26 February 1963. (Crop and stomach).

Seven Button Galls of *Neuroterus*; many leaves and seven achenes of Creeping Buttercup—*Ranunculus repens* L., twelve seeds of Bramble—*Rubus fruticosus* L., one haw stone— *Crataegus*; coarse waterworn grit.

QUAIL – *Coturnix coturnix* (L.)

♀ Lazonby, 18 July 1964.

Very small tips of blades with glumes of Meadow-grass—*Poa*; one hundred and fifteen particles of grit mostly whitish quartz.