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THE

TRANSACTIONS

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THE LINNEAN SOCIETY OF LONDON.

THE FORAMINIFERA OF THE WEST OF SCOTLAND. COLLECTED BY PROF. W. A. HERDMAN, F.R.S., ON THE CRUISE OF THE S.Y. 'RUNA,' JULY–SEPT. 1913. BEING A CONTRIBUTION TO 'SPOLIA RUNIANA'.

BY

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AND

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XIII. *The Foraminifera of the West of Scotland. Collected by* Prof. W. A. Herdman, *F.R.S., on the Cruise of the S.Y. 'Runa,' July–Sept.* 1913. *Being a Contribution to 'Spolia Runiana.'* *By* Edward Heron-Allen, *F.L.S., F.Z.S., F.R.M.S., and* Arthur Earland, *F.R.M.S.*

(Plates **39–43** and Map.)

Read 4th November, 1915.

Introduction.

THE cruise of Professor Herdman's Steam Yacht 'Runa' for the year 1913 provided us with twenty-five bags of Foraminiferous material, both dredgings and shore-sands, collected by Miss Catherine Herdman between the 10th of July and the 3rd of September. In addition, there were a few small samples of mud washed from Invertebrata which had been preserved in alcohol.

The original intention of the Collectors was to supply us with a series of samples linking up in some measure our Clare Island (W. of Ireland) material and the dredgings of the International Fisheries Commission (Scotland) Cruiser 'Goldseeker,' for the purposes of the 'Monograph of the British Recent Foraminifera' upon which we are engaged. The examination of the first four samples in Register (not Geographical) order, however, made it clear to us that we were confronted with an extremely valuable series of gatherings, which would add many important records to the list of hitherto-identified British species, and we consequently laid our other work aside and devoted the period from October 1913 to November 1914 to the examination of the material with a view to the production of this Monograph, regarding it as an important contribution to our larger work.

The results have amply justified our anticipations, for, though we only record one (? two) species and one (? two) varieties new to Science, no less than twenty-seven species are now recorded for the first time from the British Area *, whilst a very considerable number make their appearance for the second time only, in a British List. The total number of species and varieties identified in the gatherings is 324. The material consisted, with the exception of the small samples in spirit, of dried fine sands and muds, without, as a rule, any notable admixture of shells or stones. Had these been present in any quantity we have no doubt that the list of normally adherent arenaceous and other forms might have been considerably extended. The dredgings, again, were made in comparatively shallow waters, the greatest depth being 60 fathoms (at Stns. 16 and 21), which accounts for the absence of many deeper-water forms which might have been expected from the area.

The bags were filled with great discretion by Miss Herdman, whenever the material

* See note on p. 204.

looked promising, both on the outward and homeward journeys, with the result that the Registered order is in no sense Geographical. We have therefore drawn up a geographical list from north to south which runs as follows:—

'*Runa*' (1913) *Stns. from North to South.*

No. 11. Loch Shell, Island of Lewis. Dredging, 25 fms.
,, 10. Shiant, East Bank. Dredging, 30 fms.
,, 20. Between Ru Ruag and Carr Point, Ross. Dredging, 20 fms.
,, 12. Loch Dunvegan, Skye. Dredging, 50 fms.
,, 13. Off Neist Point, Skye. Dredging, 50 fms.
,, 19. Off Croulin Beg, Ross. Dredging, 20–30 fms.
,, 14. Off mouth of Loch Ainneart, Skye. Dredging, 30 fms.
,, 26. (Various localities round Skye (ex alcohol), 30–50 fms.)
,, 21. Loch Hourn, Inverness. Dredging, 60 fms.
,, 8. Sandy Island, Canna. Shore-sand.
,, 17. Loch Scresort, Rhum. Dredging, 3 fms.
,, 16. Between Rhum and Eigg. Dredging, low water to 60 fms.
,, 18. Off S. of Eigg. Dredging, 30 fms.
,, 3. Off Ardnamurchan, Inverness. Dredging (shell-bank), 30 fms.
,, 9. Laga Bay, Loch Sunart. Dredging, 5–12 fms.
,, 4. Loch Sunart. Dredging, 12 fms.
,, 15. Tobermory Bay, south entrance. Coralline sand. Dredging, low water to 1 fm.
,, 2. Sound of Mull. Dredging, 20 fms.
,, 7. Gott Bay, Tiree. Shore-sand.
,, 5. Soriby Bay, Loch Tuadh, Ulva. Dredging, 18 fms.
,, 6. Iona, Atlantic shore. Shore-sand.
,, 22. Oronsay, S.E. Shore-sand.
,, 25. Eilean Gartmeal, Oronsay. Shore-sand.
,, 1. Lowlandman's Bay, Jura. Anchorage, 5 fms.
,, 23. Near Port Erin, Isle of Man. Dredging, off Bradda Head, 20 fms.

Stations 1, 2, 3, and 4 were examined first, and 259 species and varieties were provisionally noted from them, and a list published in the 'Annual Report of the Liverpool Marine Biology Committee for 1913' (pp. 26–32). The list suffers from the drawbacks inseparable from such hasty work; a few species have been abandoned in the light of a larger series of specimens since to hand, and other specific names have taken their places in the present Monograph *. *Sagrina nodosa*, P. & J., was a *lapsus calami* for *Sagrina dimorpha*, P. & J. In the Annual Report for 1914 we gave

* The determinations which have been abandoned, or other determinations substituted for them, are:—*Saccammina sphærica*, *Reophax findens*, *Verneuilina pygmæa*, *Bolivina beyrichi* var. *alata*, *Bolivina porrecta*, *Lagena auriculata*, *chasteri*, *schlichti*, and *stewartii*, *Nodosaria vertebralis*, *Uvigerina canariensis*, *Sagrina nodosa*, *Spirillina limbata* and *margaritifera*, *Discorbina vilardeboana* and *wrightii*.

Prof. Herdman a list of 112 species and varieties from Stn. 23, "Off Bradda Head, near Port Erin, 20 fms.," as being of special local interest.

The subjoined list of Stations, and descriptions of the material examined, is arranged in Geographical order, proceeding from the northernmost gathering to the southernmost:—

No. 11. (*Label*) "Loch Shell, Island of Lewis. Dredging, 25 fms. 5 Aug. 1913."

A block of dried grey mud, 2 lbs. 10 oz., with molluscan fragments and débris. 10½ oz. of grey granite and quartz-pebbles and a few shells removed on 1/10 inch sieve. Washed on 250-mesh silk. Residue, 150 cc. Floatings, 4·5 cc. Elutriated material, 9 cc. 122 spp. and vars.

Noteworthy forms: *Nodosaria proxima*, *Vaginulina linearis*.

No. 10. (*Label*) "Shiant, East Bank. Dredging, 30 fms. 4 Aug. 1913."

(*a*) 2 lbs. 6 oz. of muddy shell-débris. Shells removed on 1/10 inch sieve, 1 lb. 6 oz. Residue, 1 lb. (420 cc.). Washed on 250 mesh silk. Residue, 370 cc. Floatings, 8 cc.

(*b*) Muddy débris washed from Invertebrata preserved in alcohol. (Label) "Shiant Bank. 13 Aug. 1913." Residue after washing, 8·5 cc. Floatings, ·25 cc. (very rich).

A considerable quantity of the shell-débris examined and many adherent arenaceous forms found. 170 spp. and vars.

Noteworthy forms: *Miliolina suborbicularis*, *Planispirina sigmoidea*, *Pelosina variabilis*, *Hyperammina vagans*, *Bulimina minutissima*, *Orbulina universa*.

No. 20. (*Label*) "Between Ru Ruag and Carr Point (off Gairloch), Ross. Dredging, 20 fms. 16 Aug. 1913."

Grey sandy mud, 7¼ lbs. (3 lbs. examined). Shells removed on 1/10 sieve, 9½ oz. Residue after washing, 760 cc. Floatings, 15 cc. (very rich). Fine specimens of *Jaculella obtusa*, Br., *Jaculella acuta*, Br., *Cornuspira foliacea* (Philippi), and *Botellina labyrinthica*, Br., common in the coarse siftings. Also fine fistulose Polymorphinæ and *Biloculina sphæra*, d'Orbigny. 164 spp. and vars.

Noteworthy forms: *Miliolina bucculenta*, *Psammosphæra bowmanni*, *Lagena pulchella* var. *hexagona*, nov., *Truncatulina tenera*.

No. 12. (*Label*) "Loch Dunvegan, Skye. Dredging, 50 fms. 7 Aug. 1913."

Dredge refuse: 3½ lbs. of shells, whole and in fragments; sponges, corals, and matted Polyzoa. Many small grey rolled granite-pebbles with adherent Foraminifera and other organisms. Sticky, difficult material. Washed several times on 1/10 sieve in water and hot soda. Residue, light stuff full of Polyzoa 60 cc., heavier 145 cc. Floatings, principally from heavier residue, 7·5 cc. 142 spp. and vars.

Noteworthy forms: *Miliolina labiosa*, *Haliphysema tumanowiczii*, *Trochammina inflata* and *nitida*, *Nodosaria pauperata*.

No. 13. (*Label*) "Off Neist Point, Skye. Dredging, 50 fms. 8 Aug. 1913."

Black coarse gravel, 2830 cc., with much yellow-brown worn shell-débris (very like an Eocene fossil clay washing). A small echinoderm (*Echinocyamus pusillus*) very common. Siftings through 1/10 sieve, 1350 cc. Fine material only 20 cc., 645 cc. of coarse and all the fine material floated. Floatings (poor), 22 cc. 87 spp. and vars.

Noteworthy forms: *Bulimina minutissima*, *Discorbina chasteri* var. *bispinosa*.

No. 19. (*Label*) "Off Croulin Beg, Ross. Dredging, 20–30 fms. 13 Aug. 1913."

(*a*) Coarse shell-detritus and stones, $2\frac{1}{4}$ lbs. Shells and stones removed on 1/10 sieve, 1 lb. $7\frac{1}{2}$ oz. Residue after washing, 300 cc. Floatings (very rich), 11·5 cc. (95 % Buliminæ).

(*b*) A small sample of mud and shell-detritus washed from Invertebrata preserved in spirit. Same label and date. Residue after washing, 1 cc.

(*c*) Same as (*b*), 14–15 Aug. 1913, 5 cc. Residue after washing, 4 cc.

141 spp. and vars.

Noteworthy form: *Bulimina ovata*.

No. 14. (*Label*) "Off mouth of Loch Ainneart, Skye. Dredging, 30 fms. 9 Aug. 1913."

Dark grey sandy mud, 250 cc. with shells, whole and in fragments. *Turritella*, *Trochus*, and various Lamellibranchs removed on 1/10 sieve, 50 cc. Residue, 115 cc. Floatings (poor) and Elutriation (richer) mixed together, 7 cc. 136 spp. and vars.

Noteworthy forms: *Psammosphæra bowmanni*, *Textularia fusiformis* and *concava* var. *heterostoma*, *Lagena cymbula*, *Sphæroidina* sp. nov., *Nonionina orbicularis*.

No. 26. (*Label*) "General. From several localities round Skye. 30–50 fms. No date."

About 7–8 cc. of light grey sand-material, principally fragments of Polyzoa (*Sertularia* etc.) with adherent Foraminifera. Washings from Invertebrata preserved in alcohol.

Many fine adherent forms. 94 spp. and vars.

Noteworthy forms: *Placopsilina vesicularis*, *Frondicularia tenera*.

No. 21. (*Label*) "Loch Hourn, Inverness. Dredging, 60 fms. 20 Aug. 1913."

A solid block of hard grey sandy mud with molluscan fragments and whole shells, $3\frac{1}{4}$ lbs. Shell-débris removed on 1/10 sieve, $6\frac{1}{2}$ oz. Very fine and sticky material. After soaking in hot soda and washing, dry residue, 365 cc. Floatings (very rich), 8 cc. (Buliminæ, 98 %.) Elutriation (very rich), 12 cc. 94 spp. and vars.

No. 8. (*Label*) "Sandy Island, Canna. Shore-scraping. Low water. 24 July, 1913."

Fine grey-white sand with finely pounded molluscan débris. Floatings, 9 cc. (pure Foraminifera). 66 spp. and vars.

Noteworthy form: *Discorbina parisiensis*.

No. 17. (*Label*) "Loch Scresort, Rhum. Dredging, 3 fms. 13 Aug. 1913."

Grey sandy mud with shells; stones with adherent forms and molluscan débris. Residue after washing, 350 cc. Floatings (very rich), 15·5 cc. Elutriation from 120 cc. of washed material (very rich), 9 cc. Fine siftings through 150-mesh silk (very rich), 1·2 cc. 109 spp. and vars.

Noteworthy forms: *Haplophragmium runianum*, nov., *Lagena aspera* and *reniformis*, *Lingulina carinata*, *Cristellaria variabilis*.

No. 16. (*Label*) "Off East Coast of Rhum, between Rhum and Eigg. Dredging, low water to 60 fms. 12 Aug. 1913."

A nut-brown detrital shell-sand (very like No. 3, *post*), 3 lbs. Coarse material removed on 1/10 sieve, 750 cc. Residue, 1080 cc. A few grey granite-pebbles with adherent forms. Floatings (poor), ·5 cc. Elutriation (fair), 6·5 cc. 107 spp. and vars.

Fine fistulose Polymorphinæ in the coarse siftings.

Noteworthy forms: *Textularia sagittula* var. *jugosa*, *Truncatulina akneriana*, *Pulvinulina brongniartii*.

No. 18. (*Label*) "Off South of Eigg. Dredging, 30 fms. 13 Aug. 1913."

Loose grey sandy mud with shells and molluscan fragments, 3¾ lbs. Much algal detritus and small stones. Whole bulk, 1300 cc. Shell-débris and stones removed on 1/10 sieve, 150 cc. Residue after washing, 175 cc. Floatings (pure Foraminifera), 5 cc. Elutriation (very rich), 13 cc. 169 spp. and vars.

Noteworthy forms: *Storthosphæra albida*, *Lagena semilineata* and *formosa*, *Globigerina dubia*.

No. 3. (*Label*) "Off Ardnamurchan, Inverness. Shell-bank. Dredging, 30 fms. 14 July, 1913."

A nut-brown shell and coral detritus, 2335 cc. Very clean and coarse. Very like No. 16 (*ante*). Coarsest material retained on 1/10 sieve, 1100 cc. Floatings from residue (very rich), 13 cc. 123 spp. and vars.

(See Rep. Liverpool Marine Biol. Com. 1913, p. 27, figs. 12, 13.)

The coarse siftings very rich in gigantic forms of *Polymorphina* (fistulose), *Gypsina*, *Miliolina*, *Pulvinulina*, etc.

Noteworthy forms: *Spiroplecta fusca*, *Lagena marginata* var. *semimarginata*, *Pulvinulina elegans*.

No. 9. (*Label*) "Laga Bay, Loch Sunart. Dredging, 5–12 fms. 26 July, 1913."

(*a*) A small sample of grey-black muddy dredge-débris, with large shells (*Pecten*, *Venus*, *Donax*, etc.). Sponge and algal refuse and masses of cilia of a crinoid (*Antedon bifida*, Penn.). Bulk of the whole (by displacement), 30 cc. Residue after washing and removing shells etc. on 1/10 sieve, 18 cc. Floatings (very rich), 10·5 cc. (accounted for by *Antedon* and Polyzoa).

(*b*) A small sample of washings from Invertebrata preserved in alcohol. Same label and date, "5–10 fms." Residue after washing, 3–4 cc. Very few Foraminifera. 113 spp. and vars.

Noteworthy form : *Lagena semilineata*.

No. 4. (*Label*) "Loch Sunart. Dredging, 12 fms. 15 July, 1913."

(*a*) A solid lump ($3\frac{1}{2}$ lbs.) of light grey sandy mud, with fragments of mollusca. Bulk, 1000 cc. Very sticky, difficult material. First residue after washing, 525 cc. Floatings (rich), 9 cc. Soaked for ten days. Second residue after washing, 348 cc. Floatings (very rich), 11 cc. The finest and richest of the 'Runa' 1913 dredgings. 203 spp. and vars.

(See Rep. Liverpool Marine Biol. Com. 1913, p. 27.)

(*b*) A small sample of mud washed from Invertebrata preserved in alcohol. Residue after washing (matted with byssus and algal refuse), 2·5 cc., fairly rich.

Noteworthy forms: *Spiroloculina acutimargo* var. *concava*, *Valvulina conica*, *Bulimina echinata*, *Bolivina tortuosa*, *Lagena aspera*, *striato-punctata*, *falcata*, and *reniformis*, *Nodosaria calomorpha* and *proxima*, *Lingulina carinata* var. *bicarinata* and var. *seminuda*, *Frondicularia spathulata*.

No. 15. (*Label*) "Coralline sand. South entrance to Tobermory Bay, Mull. Low water to 1 fm. 10 Aug. 1913."

A large bag of very light dredge-débris, $5\frac{1}{2}$ lbs., sponges, calcareous algæ, molluscan fragments, and small black worn pebbles with adherent Foraminifera. Principally calcareous algæ. Finer material, through 1/10 sieve, 1260 cc. ($2\frac{1}{2}$ lbs.). Floatings (poor), 16 cc. (a mass of dried Copepods and Isopods). 71 spp. and vars.

Noteworthy forms: *Ammodiscus shoneanus*, *Lagena orbignyana* var. *walleriana*, *Discorbina orbicularis*.

No. 2. (*Label*) "Sound of Mull. Dredging, 20 fms. 12 July, 1913."

A solid block of dried black mud with molluscan fragments. Bulk (by displacement), 254 cc. When wetted, a sticky plastic clay. Soaked ten days in water and boiled in soda. Residue after washing shells and small stones 5 cc.; fine material (rich) 5 cc. 102 spp. and vars.

Notable for abundance of *Ammodiscus charoides* (J. & P.).

(See Rep. Liverpool Marine Biol. Com. 1913, p. 26, fig. 10.)

Noteworthy forms: *Cornuspira angigyra*, *Lagena spumosa*.

No. 7. (*Label*) "Gott Bay, Tiree. Shore-scraping. Low water. 23 July, 1913."

A light grey, highly molluscan, fine sand, 1680 cc. Floatings, 21 cc. (pure Foraminifera). Elutriation, 30 cc. (almost pure Foraminifera). Coarse siftings, almost pure *Massilina secans* (d'Orb.) and *Truncatulina lobatula* (d'Orb.). 66 spp. and vars.

Noteworthy form : *Globigerina inflata*.

No. 5. (*Label*) "Soriby Bay, Loch Tuadh, Ulva. Dredging, 18 fms. 18 July, 1913."

Hard and "harsh" pale grey mud, with much fine algal débris and molluscan fragments. *Turritella* and various Lamellibranchs, 800 cc. Residue after first washing, 270 cc. Shell-fragments removed on 1/10 sieve, 15 cc. Residue after second washing, 215 cc. Floatings (fair), 3 cc. 88 spp. and vars.

Noteworthy forms: *Nubecularia lucifuga, Nodosaria mucronata.*

No. 6. (*Label*) "Atlantic Shore. Iona. Shore-scraping. Low water. 18 July, 1913."

Brilliantly white quartz-sand, of high sp. gr., 2075 cc. Very "obstinate" material. First floatings, almost entirely molluscan fragments, raised by surface-tension. Final floatings (poor), 1·5 cc. Elutriation (poor), 9·5 cc. 72 spp. and vars.

Noteworthy forms: *Bolivina tortuosa, Rotalia schroeteriana.*

No. 22. (*Label*) "Oronsay. Shore-scraping. Low water. 27 Aug. 1913."

Pale grey shore-sand, 5 lbs. Bulk, 1720 cc. Floatings (fair), 2·5 cc. 77 spp. and vars.

Noteworthy forms: *Rhabdammina abyssorum, Polymorphina cylindroides, Globigerina pachyderma* and *linnæana, Orbulina universa.*

No. 25. (*Label*) "Eilean Gartmeal. Oronsay. Shore-sand. 11 July, 1913."

A small sample (40 cc.) of highly molluscan grey sand. Floatings (very poor), 1·5 cc. 42 spp. and vars.

No. 1. (*Label*) "Lowlandman's Bay, Jura. Anchorage, dredging, 5 fms. 10 July, 1913."

A dark grey sandy mud, with shells and molluscan fragments, 500 cc. Shells of *Turritella, Trochus*, and various Lamellibranchs, removed on 1/10 sieve, 50 cc. Residue after washing, 115 cc. Floatings (fair), 1 cc. Elutriation (better), 3·5 cc. (mixed together). 90 spp. and vars.

(See Rep. Liverpool Marine Biol. Com. 1913, p. 26, fig. 11.)

Noteworthy forms: *Hyperammina ramosa, Bulimina echinata.*

No. 24. (*Label*) "Port Erin, Isle of Man. Shore-scraping. Low-water. 3 Sept. 1913."

Rather dark and dirty grey sand, 1450 cc. Washed, dried, and floated three times. Practically no Foraminifera. A few Polystomellidæ and *Miliolina seminulum* (d'Orb.) only. No type-slide or list made.

No. 23. (*Label*) "Port Erin, Isle of Man. Dredging off Bradda Head, 20 fms. 2 Sept. 1913."

Muddy shell and algal débris, 1 lb. 10 oz., with large shells (*Pecten, Cardium, Donax*, etc.). Shells removed on 1/10 sieve, 1 lb. Residue after washing, 100 cc.,

(full of fragments of minute crustaceans). Floatings (fair), 6·5 cc. 112 spp. and vars.

(See Rep. Liverpool Marine Biol. Com. 1914, p. 21.)

Noteworthy forms: *Polymorphina amygdaloides* and *cylindroides*.

The most cursory glance at the above catalogue of material makes it immediately plain that the Collectors have assembled a series of samples of the most diverse possible kind and under the most diverse possible conditions, and a series which has consequently amply repaid the amount of labour that has been devoted to it. Bearing in mind therefore what has been said as to deep-water and attached arenaceous and other forms, the subjoined list of species may properly lay claim to being practically exhaustive for the area under examination.

Species and Varieties recorded as New to Britain *.

Spiroloculina acutimargo, *var.* concava, *Wiesner*.
„ dorsata, *Reuss* *.
„ grata, *Terquem*.
Miliolina anconensis (*Schulze*) *.
Planispirina sigmoidea, *Brady*.
Cornuspira angigyra (*Reuss*).
Rhizammina algæformis, *Brady*.
Haplophragmium canariense, *var.* pauperata, *Chapman*.
Textularia candeiana, *d'Orbigny* *.
„ concava, *var.* heterostoma (*Karrer*).
„ sagittula, *var.* jugosa (*Brady*).
Bulimina echinata, *d'Orbigny*.
Bolivina beyrichi, *Reuss*.
Lagena annectens, *Burrows & Holland*.
„ lacunata, *Burrows & Holland*.
„ marginata, *var.* semimarginata, *Reuss*.
„ spumosa, *Millett*.
Nodosaria proxima, *Silvestri*.
„ roemeri, *Neugeboren*.
Frondicularia tenera, *Bornemann*.
Polymorphina amygdaloides (*Reuss*) *.
Globigerina dubia, *Egger*.
Truncatulina akneriana (*d'Orbigny*).
„ tenera, *Brady*.
Rotalia schroeteriana, *Parker & Jones*.
Polystomella decipiens, *Costa* *.
„ faba, *Fichtel & Moll* *.

* These species have, no doubt, been frequently included under other specific names in British lists.

(*See* NOTE *on the Synonymies*, p. 291.)

Family MILIOLIDÆ.

Subfamily NUBECULARIINÆ.

NUBECULARIA, Defrance.

1. **Nubecularia lucifuga,** Defrance.

Nubecularia lucifuga, Defrance, 1825, Dict. Sci. Nat. (Strasb. 1816–1830) vol. xxxv. p. 210;
Atlas Zooph. pl. xliv. fig. 3.
,, ,, Brady, 1884, FC. p. 134, pl. i. figs. 9–16.

1 *Station.*

One specimen only from Stn. 5 which has evidently been adherent, the under surface being flattened. It shows the spiral arrangement of the earlier chambers remarkably well.

Subfamily MILIOLININÆ.

BILOCULINA, d'Orbigny.

2. **Biloculina ringens** (Lamarck).

Miliolites ringens, Lamarck, 1804, AM. vol. v. p. 351. No. 1; vol. ix. pl. xvii. fig. 1.
Biloculina ringens, Brady, 1884, FC. p. 142, pl. ii. figs. 7, 8.

3 *Stations.*

Very rare, but large and fine examples at Stn. 20 and almost equally good ones at Stn. 19.

3. **Biloculina bulloides,** d'Orbigny.

Biloculina bulloides, d'Orbigny, 1826, TMC. p. 297. No. 1, pl. xvi. figs. 1–4, Modèle No. 90.
,, ,, Brady, 1884, FC. p. 142, pl. ii. figs. 5, 6.

11 *Stations.*

Rare on the whole in the dredgings, but common at Stns. 12 and 14.

4. **Biloculina elongata,** d'Orbigny.

Biloculina elongata, d'Orbigny, 1826, TMC. p. 298. No. 4.
,, ,, Brady, 1884, FC. p. 144, pl. ii. fig. 9.

14 *Stations.*

Generally distributed, often abundant. There is very little variation, except in the occurrence of a long narrow type at Stns. 4, 18, 20, and 21.

5. **Biloculina depressa,** d'Orbigny.

Biloculina depressa, d'Orbigny, 1826, TMC. p. 298. No. 7, Modèle No. 91.
,, ,, Brady, 1884, FC. p. 145, pl. ii. figs. 12, 15–17, pl. iii. figs. 1, 2.

15 *Stations.*

Fairly generally distributed; common at some Stns., the best at Stns. 2, 14, 18, and 19. Specimens with the tail-plate as figured by us (H.-A. & E. 1913, CI. pl. i. fig. 6) occur at several Stns.

6. **Biloculina inflata,** Wright.

Biloculina ringens, Lamarck, var. nov., Balkwill & Wright, 1885, DIS. p. 322, pl. xii. figs. 6, 7.
,, *inflata,* Wright, 1902, GFL. p. 183, pl. xiii. figs. 1–4.

2 *Stations.*

A few specimens at Stn. 19 and many at Stn. 18. The specimens at Stn. 18, which are the best, are rather more compressed than is indicated in Wright's figure—nearer, in fact, to the specimens figured by Millett as biloculine forms of *Miliolina valvularis* (Reuss) (M. 1898, etc., FM. 1898, p. 501, pl. xi. fig. 6). Wright, in first publishing this little form, placed it with *B. ringens*, but it appears to us to be more closely related to *B. irregularis*, the aperture in the young forms of that species being similar but much smaller.

7. **Biloculina irregularis,** d'Orbigny.

Biloculina irregularis, d'Orbigny, 1839, FAM. p. 67, pl. viii. figs. 20, 21.
,, ,, Brady, 1884, FC. p. 140, pl. i. figs. 17, 18.

11 *Stations.*

Generally distributed, common at several Stns. The specimens are subject to great variation. D'Orbigny's original figure represents a shell laterally compressed (as contrasted with facial compression such as reaches its limit in *B. depressa*); Brady's examples show this compression in a less marked degree. The 'Runa' specimens are perhaps even more globular than Brady's figures, although at many Stns. specimens occur of a compressed habit; some of these show distinct traces of a third chamber indicated externally, thus constituting a passage-form into *Miliolina.* The young specimens have, as a rule, characteristically small apertures with a slightly projecting lip.

8. **Biloculina sphæra,** d'Orbigny.

Biloculina sphæra, d'Orbigny, 1839, FAM. p. 66, pl. viii. figs. 13–16.
,, ,, Brady, 1884, FC. p. 141 (fig.), pl. ii. fig. 4 *a, b.*

3 *Stations.*

Occurs at only three Stns., but is abundant at Stns. 2 and 20, where the specimens are fully developed, and extremely typical and of all sizes.

The species was transferred by Schlumberger (S. 1891, BGF. p. 190, figs. 45, 46) to the genus *Planispirina* on the ground of its internal structure, but in the present state of our knowledge of the Miliolidæ the transference does not appear to us to be desirable.

SPIROLOCULINA, d'Orbigny.

9. **Spiroloculina nitida,** d'Orbigny.

Spiroloculina nitida, d'Orbigny, 1826, TMC. p. 298. No. 4.
„ „ Brady, 1884, FC. p. 149, pl. ix. figs. 9, 10.

3 *Stations.*

Extremely rare. The specimens poor and tending towards *S. planulata.* As a recent British form, it has only been recorded by us from Selsey Bill and Clare Island (H.-A. & E. 1908, etc., SB. 1911, p. 302; and 1913, CI. p. 24).

10. **Spiroloculina grata,** Terquem. (New to Britain.)

Spiroloculina grata, Terquem, 1878, FIR. p. 55, pl. v. figs. 14 *a*–15 *b*.
„ „ Brady, 1884, FC. p. 155, pl. x. figs. 16, 17, 22, 23.

2 *Stations.*

Extremely rare, but one comparatively large and typical specimen occurred at Stn. 20. We have recorded it as an Eocene fossil from Selsey Bill (H.-A. & E. 1908, etc., SB. 1909, p. 311).

11. **Spiroloculina excavata,** d'Orbigny.

Spiroloculina excavata, d'Orbigny, 1846, FFV. p. 271, pl. xvi. figs. 19–27.
„ „ Brady, 1884, FC. p. 151, pl. ix. figs. 5, 6.

21 *Stations.*

Widely distributed and common at many Stns., attaining extremely fine development at Stns. 10, 18, 19, and 20.

12. **Spiroloculina planulata** (Lamarck).

Miliolites planulata, Lamarck, 1804, AM. vol. v. p. 352. No. 4; 1816, etc., Animaux sans vertèbres, Paris, 1822, vol. vii. p. 613. No. 4.
Spiroloculina planulata, Brady, 1884, FC. p. 148, pl. ix. fig. 11 *a*, *b*.

14 *Stations.*

Fairly widely distributed, but not so abundant as *S. excavata.* A very fine series at Stns. 10 and 18; there is, as usual, a tendency to run into *S. dorsata* on the one hand and *S. excavata* on the other. At Stn. 15 a series of specimens running entirely into *S. excavata.*

13. **Spiroloculina dorsata,** Reuss. (New to Britain.)

Spiroloculina dorsata, Reuss, 1870, FSP. p. 464; Schlicht, 1870, FSP. pl. xxxvii. figs. 24–32.
„ „ Jones, Parker, & Brady, 1866, etc., MFC. 1895, p. 110, figs. 4, 8.
„ „ Heron-Allen & Earland, 1914, etc., FKA. 1915, p. 554.

5 *Stations.*

Very rare. The best specimens at Stn. 20. All the specimens are of an excavate type. The species is recorded as new to Britain, but no doubt the numerous British records of *S. limbata* (d'Orbigny) refer entirely or principally to this species. We have discriminated between the two forms in our Kerimba Monograph, *ut supra*.

14. **Spiroloculina acutimargo,** Brady.

Spiroloculina acutimargo, Brady, 1884, FC. p. 154, pl. x. figs. 12–15.
„ „ Heron-Allen & Earland, 1913, CI. p. 24, pl. i. fig. 8.

5 *Stations.*

Very rare. The best specimens at Stns. 10 and 12. They all show a tendency of the later chambers to enfold and envelop the earlier ones.

15. **Spiroloculina acutimargo,** var. **concava,** Wiesner. (Plate 39. figs. 1–3.)

(New to Britain.)

Spiroloculina acutimargo, var. *concava*, Wiesner, 1913, FAR. p. 521, No. 22.

1 *Station.* A single specimen only.

Wiesner in his paper (*ut supra*) records this beautiful little variety, and, so far as we are aware, it has not been figured or described in print. He was good enough to send us specimens of his variety from the Adriatic Sea, and its occurrence in these dredgings is very noteworthy. As will be seen from our figure, the variety is very striking and distinctive, being strongly convex on the one side and correspondingly concave on the other. The whole test is exceedingly thin and delicate in structure. The line of curvature is in the direction of the short axis of the shell. Wiesner regards his specimens as a variety of *S. acutimargo*, Brady; from the curvature of the chambers it might equally be regarded as allied to *S. tenuis*. The reason for the curvature of the chambers is entirely obscure; it may possibly be due to the specimens growing adherent to algæ in the earlier stages of growth.

16. **Spiroloculina tenuis** (Czjzek).

Quinqueloculina tenuis, Czjzek, 1848, FWB. p. 149, pl. xiii. figs. 31–34.
Spiroloculina tenuis, Brady, 1884, FC. p. 152, pl. x. figs. 7–11.

2 *Stations.*

Truly typical examples are very rare, but they occur at two Stns., the best at Stn. 14.

Miliolina, Williamson.

17. **Miliolina bucculenta,** Brady. (Plate 39. figs. 4–6.)

Miliolina bucculenta, Brady, 1884, FC. p. 170, pl. cxiv. fig. 3 *a*, *b*.
„ „ Goës, 1894, ASF. p. 118, pl. xxiii. figs. 890–903.

1 *Station.*

One specimen assigned with some hesitation to this species, the aperture being much wider than is the case in any of the deep-water specimens we have seen. This may be

due to the breaking away of the shelly plate attached to the penultimate chamber which normally restricts the aperture in this species. It is extremely abundant and attains a very large size in the deep water of the Faroe Channel, from which locality Brady's is the only previous British record.

18. **Miliolina circularis** (Bornemann).

Triloculina circularis, Bornemann, 1855, FSH. p. 349, pl. xix. fig. 4.
Miliolina circularis, Brady, 1884, FC. p. 169, pl. iv. fig. 3; pl. v. figs. 13, 14 (?).

19 *Stations.*

Almost universally distributed, often common, but not attaining any very large or robust growth. The best specimens at Stns. 4, 12, 14, and 18. Wild-growing or Nubecularine individuals, probably referable to this species, were found at Stns. 3 and 15.

19. **Miliolina labiosa** (d'Orbigny).

Triloculina labiosa, d'Orbigny, 1839, FC. p. 178, pl. x. figs. 12–14.
Miliolina labiosa, Brady, 1884, FC. p. 170, pl. vi. figs. 3–5.

1 *Station.*

One good specimen.

20. **Miliolina subrotunda** (Montagu).

Vermiculum subrotundum, Montagu, 1803–8, TB. pt. 2, p. 521.
Miliolina subrotunda, Brady, 1884, FC. p. 168, pl. v. figs. 10, 11.

21 *Stations.*

Almost universally distributed, often abundant, and as usual very variable in character. At some of the Stns., especially Stns. 6, 7, 8, 11, and 15, the specimens are very large. At Stns. 7, 12, and 15 they run wild, and at Stn. 12 this leads to the formation of articuline forms, which also occur at Stn. 20. Similar articuline forms first attracted the attention of Ehrenberg, who separated them under the name *Ceratospirulina spratti* (Monatsb. K. Ak. Wiss. Berlin, 1858, p. 19, and Abh. K. Ak. Wiss. Berlin, 1872), and of Seguenza, who named them *Quinqueloculina tubulosa* (S. 1862, RPC. p. 35, pl. ii. fig. 8). Subsequently Silvestri figured such forms under Ehrenberg's name (Att. Pont. Acc. Nuovi Lincei, Ann. 57, 1904, p. 139, fig. 1 *a–c*). They are of fairly frequent occurrence in dredgings in which the genus *Miliolina* is prominent.

21. **Miliolina seminuda** (Reuss).

Quinqueloculina seminuda, Reuss, 1865–6, FABS. p. 125, pl. i. fig. 11.
Miliolina seminuda, Heron-Allen & Earland, 1913, CI. p. 27.

5 *Stations.*

Very rare, but a good many specimens at Stns. 7 and 10. The finest and most strongly marked, however, were at Stn. 23.

22. **Miliolina suborbicularis** (d'Orbigny). (Plate 39. figs. 7–9.)

Triloculina suborbicularis, d'Orbigny, 1839, FC. p. 176, pl. x. figs. 9–11.
Miliolina suborbicularis, Heron-Allen & Earland, 1908, etc., SB. 1911, p. 304.

1 *Station.*

A single specimen, which we figure, from Stn. 10. Its occurrence serves to clear up any doubt which we implied in recording the species as recent from Selsey Bill, which was the first British record.

23. **Miliolina trigonula** (Lamarck).

Miliolites trigonula, Lamarck, 1804, AM. vol. v. p. 351. No. 3.
Miliolina trigonula, Brady, 1884, FC. p. 164, pl. iii. figs. 14–16.

15 *Stations.*

Generally distributed and very abundant and finely developed at Stns. 10, 14, and 19. Throughout the dredgings the specimens are remarkably consistent in character, agreeing perfectly with d'Orbigny's figure and Modèle No. 94 (d'O. 1826, TMC. p. 299. No. 7).

24. **Miliolina tricarinata** (d'Orbigny).

Triloculina tricarinata, d'Orbigny, 1826, TMC. p. 299. No. 7, Modèle No. 94.
Miliolina tricarinata, Brady, 1884, FC. p. 165, pl. iii. fig. 17.

13 *Stations.*

Fairly generally distributed. All the specimens are of the regular sharp-edged type, except at Stn. 18, where the species is most abundant and reaches good dimensions. At this Stn. also, and at Stn. 6, some of the individuals show a tendency to depart from the usual regularity of construction and to approach *M.* (*Triloculina*) *plicata* of Terquem (T. 1878, FIR. p. 61, pl. vi. fig. 3), recently figured by us from East Africa (H.-A. & E. 1914, etc., FKA. 1915, p. 562, pl. xli. figs. 17–22).

25. **Miliolina bosciana** (d'Orbigny).

Quinqueloculina bosciana, d'Orbigny, 1839, FC. p. 191, pl. xi. figs. 22–24.
Miliolina bosciana, Millett, 1898, etc., FM. 1898, p. 267, pl. vi. fig. 1.

8 *Stations.*

Much less abundant or widely distributed than the allied species *M. oblonga*, but good and typical examples occur at many Stns., especially Stn. 4. A thin-shelled opalescent type occurs at Stn. 12, and more rarely at Stn. 18, similar to the hyaline specimens of *M. oblonga* referred to under that species. Previously recorded as British only by Mills from the Humber (Trans. Hull Sci. etc. Soc. vol. i. p. 144, pl. x. fig. 17) and by us from Clare Island (H.-A. & E. 1913, CI. p. 25), but has no doubt been included by many authors under *M. oblonga.*

26. **Miliolina oblonga** (Montagu).

Vermiculum oblongum, Montagu, 1803–8, TB. p. 522, pl. xiv. fig. 9.
Miliolina oblonga, Brady, 1884, FC. p. 160, pl. v. fig. 4 *a*, *b*.

15 *Stations.*

Generally distributed, but not common, except at Stn. 18. At practically all the Stns., except Stn. 18, the majority of the specimens are typical, *i. e.* they are of the square-edged type foreshadowed in Montagu's poor figure and represented by d'Orbigny's Modèle No. 95. At Stns. 7, 10, and 18 the curious "lidded" type figured by Williamson (W. 1858, RFGB. pl. vii. figs. 186, 187) and referred to by us (H.-A. & E. 1913, CI. p. 25) occurs. At Stn. 18 great numbers occur of a very thin-walled opalescent form, in company with the other types, but in greater number than either of them. In this the aperture is flush with the ends, somewhat rounded and constricted, sutures flush, and the whole shell practically cylindrical in section. The calcareous matter must form a very small constituent of the test in this variety as they are practically transparent, and apt to fall to pieces at the sutural lines when wetted or handled. This same type occurs in many of the deeper 'Goldseeker' dredgings off the west of Scotland and elsewhere.

27. **Miliolina pygmæa** (Reuss). (Plate 39. figs. 10–18.)

Quinqueloculina pygmæa, Reuss, 1849–50, FOT. p. 384, pl. xlvi. (i.) fig. 3.
Miliolina pygmæa, Brady, 1884, FC. p. 163, pl. cxiii. fig. 16.

16 *Stations.*

Generally distributed and often common. The best specimens at Stn. 20, where a complete range from typically quinqueloculine to spiroloculine specimens was obtained. At all the other Stns. the specimens were milioline, though occasional compressed individuals approaching the spiroloculine form were obtained. The spiroloculine forms appear to be practically inseparable from *Quinqueloculina tenuis* (Czjzek), under which name they have been recorded (cf. *Spiroloculina tenuis*, ante) for purposes of reference. There can be no doubt that the two species are closely related. The species has hitherto only been recorded as British by us from Clare Island (H.-A. & E. 1913, CI. p. 29).

28. **Miliolina rotunda** (d'Orbigny).

Triloculina rotunda, d'Orbigny, 1826, TMC. p. 299. No. 4.
Miliolina rotunda, Millett, 1898, etc., FM. 1898, p. 267, pl. v. figs. 15, 16.

2 *Stations.*

Very rare, one or two typical examples only. The species has been recorded as British only by us from Selsey Bill and Clare Island (H.-A. & E. 1908, etc., SB. p. 303; and 1913, CI. p. 25), but has possibly been included by other authors under *M. seminulum* or *M. circularis*.

29. **Miliolina anconensis** (Schultze). (New to Britain.)

Miliolina anconensis, Schultze, 1854, OP. p. 58, pl. ii. figs. 12, 13.
„ „ Heron-Allen & Earland, 1914, etc., FKA. 1915, p. 568.

5 *Stations.*

The species occurs in company with its allied species, *M. seminulum*, at several Stns., but it is not generally distributed.

Though now recorded for the first time as British, this species must often have occurred, and has no doubt been included (with other varieties) under records of *M. seminulum* (Linné).

30. **Miliolina vulgaris** (d'Orbigny).

Quinqueloculina vulgaris, d'Orbigny, 1826, TMC. p. 302. No. 33.
" " Schlumberger, 1893, MGM. p. 65, pl. ii. figs. 65, 66, and woodcut figs. 13, 14.
Miliolina vulgaris, Heron-Allen & Earland, 1913, CI. p. 28.

4 *Stations.*

A few doubtful specimens of this doubtful species, which was first recorded by us as British (*ut supra*).

31. **Miliolina seminulum** (Linné).

Serpula seminulum, Linné, 1788, SN. p. 3739. No. 2.
Miliolina seminulum, Brady, 1884, FC. p. 157, pl. v. fig. 6.

25 *Stations.*

Universally distributed, often abundant, and attaining very fine proportions, the best perhaps at Stn. 1. Very good and variable at Stn. 17, both round-edged and angular forms occurring.

32. **Miliolina candeiana** (d'Orbigny). (Plate 39. figs. 19–27.)

Quinqueloculina candeiana, d'Orbigny, 1839, FC. p. 199, pl. xii. figs. 24–26.
Miliolina candeiana, Heron-Allen & Earland, 1913, CI. p. 29, pl. ii. figs. 1–4.

10 *Stations.*

The little form, which in the Clare Island report we assigned with some reservations to d'Orbigny's species, occurs at a good many Stns., most abundantly at Stns. 10 and 18. We still feel some uncertainty as to the affinities of the form, but we see no reason to vary the views we then expressed (*ut supra*). If anything, the 'Runa' specimens have a greater tendency to a spiroloculine form than the Irish shells, but the specimens are so variable (while preserving a superficial similarity of general characteristics) that we prefer to retain the species. We are not at all satisfied with the Clare Island figures, which fail to reproduce the opalescent character of the shell, and we take this opportunity of figuring the species again.

We have failed to trace Brady's type-specimens, on which the species was added to the British list; they are not to be found either on the Brackish-water and Tidal River slides (or, indeed, on any of the slides) at Cambridge, nor does the species occur on the Brady type-slides in the British Museum. He quotes it as recorded by Siddall from the River Dee, but we have searched the Siddall collection (which is now in our hands) also in vain for the specimens on which the records rest.

33. **Miliolina auberiana** (d'Orbigny).

Quinqueloculina auberiana, d'Orbigny, 1839, FC. p. 193, pl. xii. figs. 1–3.
Miliolina auberiana, Brady, 1884, FC. p. 162, pl. v. figs. 8, 9.

15 *Stations.*

Generally distributed, but very rare. The best at Stn. 11, where a single, very large, and typical specimen was found. Other good ones at Stns. 6 and 17. As a rule, they are small and obscure.

34. **Miliolina undosa** (Karrer).

Quinqueloculina undosa, Karrer, 1867, FO. p. 361, pl. iii. fig. 3.
Miliolina undosa, Brady, 1884, FC. p. 176, pl. vi. figs. 6–8.

2 *Stations.*

A few small specimens at Stns. 8 and 12. They are faintly striate at the edges, agreeing in this respect with the specimens recorded by Sidebottom from Delos (S. 1904, etc., RFD. 1905, p. 13). It has previously been recorded by us as British from Selsey Bill (H.-A. & E. 1908, etc., SB. 1911, p. 304).

35. **Miliolina agglutinans** (d'Orbigny).

Quinqueloculina agglutinans, d'Orbigny, 1839, FC. p. 195, pl. xii. figs. 11–13.
Miliolina agglutinans, Brady, 1884, FC. p. 180, pl. viii. figs. 6, 7.

4 *Stations.*

Very rare, but a few good examples at Stn. 22.

36. **Miliolina fusca** (Brady).

Quinqueloculina fusca, Brady, 1870, FTR. p. 286, pl. xi. fig. 2.
Miliolina fusca, Heron-Allen & Earland, 1913, CI. p. 31.

8 *Stations.*

Very rare. A few good examples at Stns. 8, 17, and 22.

37. **Miliolina contorta** (d'Orbigny).

Quinqueloculina contorta, d'Orbigny, 1846, FFV. p. 298, pl. xx. figs. 4–6.
Miliolina contorta, Goës, 1894, ASF. p. 111, pl. xx. figs. 851, 852.

6 *Stations.*

Scantily represented, but good specimens at several Stns. The square-edged type occurs at all the Stns. except at Stn. 17, where the round-edged form occurs alone. Both types occur at Stn. 18.

38. **Miliolina sclerotica** (Karrer).

Quinqueloculina sclerotica, Karrer, 1868, MFKB. p. 152, pl. iii. fig. 5.
Miliolina sclerotica, Balkwill & Millett, 1884, FG. p. 24, pl. i. fig. 2.

10 *Stations.*

Fairly widely distributed, but never common, the best at Stn. 18. At most of the

Stns. the round-edged form occurs alone, the square-edged only at Stns. 7, 11, and 23. Both forms occur together at Stns. 1, 18, and 22.

39. **Miliolina ferussacii** (d'Orbigny). (Plate 40. figs. 1–9.)

Quinqueloculina ferussacii, d'Orbigny, 1826, TMC. p. 301. No. 18, Modèle No. 32.
Miliolina ferussacii, Brady, 1884, FC. p. 175, pl. cxiii. fig. 17.

5 *Stations.*

Scantily represented, but at some Stns. reaching quite exceptional size and development. D'Orbigny's "Modèle" is not very satisfactory from the point of view of recent records, as it exhibits an aperture situated on a produced neck, and with few and very strongly marked costæ. Recent specimens, however, have, as a rule, but a very slightly produced neck and numerous but not prominent costal ridges. The species is abundant in many British dredgings, and round the Shetland shores especially attains a larger size than any other Miliolid. The first British record of this species was by Williamson under the name *Miliolina bicornis*, var. *angulata* (W. 1858, RFGB. p. 88, pl. vii. fig. 196).

40. **Miliolina pulchella** (d'Orbigny).

Quinqueloculina pulchella, d'Orbigny, 1826, TMC, p. 303. No. 42.
Miliolina pulchella, Brady, 1884, FC. p. 174, pl. vi. figs. 13, 14, pl. iii. figs. 10–13.

4 *Stations.*

Very rare, but large and excellent individuals at Stn. 1.

41. **Miliolina brongniartii** (d'Orbigny).

Triloculina brongniartii, d'Orbigny, 1826, TMC. p. 300, No. 23.
Quinqueloculina brongniartii, syn. of *M. bicornis*, Brady, 1884, FC. p. 172, pl. vi. fig. 9.
Miliolina brongniartii, Heron-Allen & Earland, 1913, CI. p. 33.

21 *Stations.*

Much more widely distributed in these dredgings than its ally *M. bicornis.* Common at many Stns., the best at Stn. 15.

42. **Miliolina bicornis** (Walker & Jacob).

Serpula bicornis, Walker & Jacob, 1798, AEM. p. 633, pl. xiv. fig. 2.
Miliolina bicornis, Brady, 1884, FC. p. 171, pl. vi. figs. 11, 12.

12 *Stations.*

Widely distributed, but specimens are rare and seldom strongly developed. The best at Stns. 18 and 23. Adelosine examples at Stns. 1, 10, 18, 20, and 23.

43. **Miliolina lævigata** (d'Orbigny).

Adelosina lævigata, d'Orbigny, 1826, TMC. p. 304. No. 1.
„ „ d'Orbigny, 1846, FFV. p. 302, pl. xx. figs. 22–24.
„ „ Terquem, 1875, etc., APD. 1876, p. 86, pl. xii. figs. 11 *a*, *b*.
Miliolina lævigata, Heron-Allen & Earland, 1913, CI. p. 32, pl. i. figs. 12, 13.

8 *Stations.*

This little form, which appears to be nothing more than a smooth type of *M. bicornis*, is very sparingly represented in the dredgings, but good specimens and also adelosine examples occur occasionally, the best at Stn. 18.

It should be noted that the synonymy of this species as given by us in our Clare Island Report requires correction, the *Quinqueloculina lævigata* of d'Orbigny having been confounded with his *Adelosina lævigata* when the references were compiled. The first two references to d'Orbigny, 1826, TMC. (ASN.), and 1839, FIC., should be removed and the above synonymy substituted.

An examination of the d'Orbigny types in Paris shows that his species *Triloculina dubia* (d'O. 1826, TMC. p. 300. No. 24) is identical with this form.

44. **Miliolina stelligera** (Schlumberger). (Plate 39. figs. 28–31.)

Quinqueloculina stelligera, Schlumberger, 1893, MGM. p. 68, pl. ii. figs. 58, 59.
Miliolina stelligera, Heron-Allen & Earland, 1913, CI. p. 31, pl. i. figs. 14, 15.

6 *Stations.*

Very rare, the only Stn. where more than one or two specimens were observed being Stn. 18. The 'Runa' specimens are more strongly carinate and more deeply sunk in the sutural lines than is shown in Schlumberger's figure, and we take this opportunity of figuring the form, as the 'Runa' specimens are much stronger than those which we figured from Clare Island. The surface of the tests is uniformly dull and unpolished.

Subgenus Massilina, Schlumberger.

45. **Massilina secans** (d'Orbigny).

Quinqueloculina secans, d'Orbigny, 1826, TMC. p. 303, No. 43, Modèle No. 96.
Miliolina secans, Brady, 1884, FC. p. 167, pl. vi. figs. 1, 2.
Massilina secans, Schlumberger, 1893, MGM. p. 76 (woodcuts figs. 31–34), pl. iv. figs. 82, 83.

8 *Stations.*

Very rare, except at Stns. 7 and 8, where, however, the individuals were small and weak compared to those of the other Stns. where only one or two specimens were obtained, but these large and typical. The extraordinary rarity of this form down the West of Scotland is very noticeable, considering its abundance on the western English and Irish coasts. It is equally dominant in the shore-sands of Scapa, Orkney—the gaps in the distribution of the form are inexplicable.

Subfamily Hauerininæ.

Opthalmidium, Kübler.

46. **Opthalmidium carinatum,** Balkwill & Wright.

Opthalmidium carinatum, Balkwill & Wright, 1885, DIS. p. 326, pl. xii. figs. 13–16.
,, ,, Heron-Allen & Earland, 1913, CI. p. 34.

15 *Stations.*

Generally distributed, often common, the best specimens at Stns. 4 and 10. All the specimens are very true to the type of Balkwill and Wright's figure. Hardly any variation, except at Stn. 12, where the final chamber becomes very inflated.

PLANISPIRINA, Seguenza.

47. **Planispirina celata** (Costa).

Spiroloculina celata, Costa, 1855, FFMV. p. 126, pl. i. fig. 14; 1853, etc., PRN. 1856, pl. xxvi. fig. 5.

Planispirina celata, Brady, 1884, FC. p. 197, pl. viii. figs. 1–4.

10 *Stations.*

Sparingly distributed and rare, except at Stn. 18, where it is frequent, and at Stn. 2, where a good many specimens occur. The specimens are all small except at Stn. 18 where it attains normal size, and they are all of the type figured by Brady, which has been separated by Silvestri under the name *Sigmoilina schlumbergeri* on the grounds that the recent specimens differ structurally from the fossils originally described by Costa (S. 1904, TB. p. 267). As we have not had any opportunity of examining the fossil specimens, and the species is more generally known from the 'Challenger' figures, we see no present advantage in adopting Silvestri's name.

48. **Planispirina sigmoidea,** Brady. (Plate 39. figs. 32-34.) (New to Britain.)

Planispirina sigmoidea, Brady, 1884, FC. p. 197, pl. ii. figs. 1–3, and p. 194, fig. 5 *c*.
" " Brady, Parker, & Jones, 1888, AB. p. 216, pl. xl. fig. 16.
" " Schlumberger, 1887, Bull. Soc. Zool. France, vol. xii. pp. 478–483, figs. 1–5.

1 *Station.*

Two small but typical specimens of this rare species, which we take this opportunity of figuring.

Subfamily PENEROPLIDINÆ.

CORNUSPIRA, Schultze.

49. **Cornuspira foliacea** (Philippi).

Orbis foliaceus, Philippi, 1844, EMS. p. 147, pl. xxiv. fig. 25 (error for 26).

Cornuspira foliacea, Brady, 1884, FC. p. 199, pl. xi. figs. 5–9.

5 *Stations.*

Occurs at very few Stns., but at Stn. 20 large and typical examples of Philippi's original form, in which the width of the tube increases gradually and slowly. This Philippi type is everywhere predominant, but at Stns. 4 and 12 the form figured by Williamson, in which there is a rapid increase in the breadth of the last convolution, also occurs.

50. **Cornuspira diffusa,** Heron-Allen & Earland.

Cornuspira diffusa, Heron-Allen & Earland, 1912, etc., NSG. 1913, pp. 272–276, pl. xii.; 1913, CI. p. 37.

1 *Station.*

Two fragments, distinctly referable to this species.

51. **Cornuspira carinata** (Costa).

Operculina carinata, Costa, 1853, etc., PRN. 1856, p. 209, pl. xvii. fig. 1 A, B (error for 15).
Cornuspira carinata, Brady, 1884, FC. p. 201, pl. xi. fig. 4 *a*, *b*.

6 *Stations.*

Occurs very rarely, but fairly large individuals at Stns. 2 and 8. Only at the latter Stn. were the specimens at all strongly marked in the specific feature of the produced edge.

52. **Cornuspira selseyensis,** Heron-Allen & Earland.

Cornuspira ——? Earland, 1905, FBS. p. 199, pl. xiii. figs. 2–4.
Cornuspira selseyensis, Heron-Allen & Earland, 1908, etc., SB. 1909, p. 319, pl. xv. figs. 9–11.

12 *Stations.*

Less widely distributed than *C. involvens,* and except at Stns. 12 and 20 far from numerous. Megalospheric individuals are exclusively found at all Stns., except 10, 12, 20, and 26.

53. **Cornuspira involvens** (Reuss).

Operculina involvens, Reuss, 1849–50, FOT. p. 370, pl. xlvi. (i.) fig. 30 (error for 20).
Cornuspira involvens, Brady, 1884, FC. p. 200, pl. xi. figs. 1–3.

15 *Stations.*

Generally distributed, the specimens all very small except at Stn. 14, and especially at Stn. 20. At these two Stns., and also at Stns. 10, 17, and 19, both megalospheric and microspheric forms occur. The proportions vary: at Stn. 10 the megalospheric, and at Stn. 20 the microspheric predominate. At all the other Stns., except Stns. 2 and 23, where single small microspheric individuals occur, the specimens are all megalospheric.

54. **Cornuspira angigyra** (Reuss). (Plate 40. figs. 10, 11.) (New to Britain.)

Operculina angigyra, Reuss, 1849–50, FOT. p. 370, pl. xlvi. (i.) fig. 19.
„ „ Quenstedt, 1885, Handb. Petref. Edn. 3, Abth. 5, p. 1052, pl. lxxxvi. fig. 21.

1 *Station.*

A single specimen from Stn. 2, which we figure, which in the flatness and regularity of its chambers and their even diameter and square sections appears to be referable to Reuss's species.

Family ASTRORHIZIDÆ.

Subfamily ASTRORHIZINÆ.

IRIDIA, Heron-Allen & Earland.

55. **Iridia diaphana,** Heron-Allen & Earland.

Iridia diaphana, Heron-Allen & Earland, 1914, FKA. p. 371 (*q. v.* for earlier references).

5 *Stations.*

The primordial dome-shaped chambers occur attached at Stn. 19, detached at Stn. 16. Full-grown specimens, both attached and free, at Stn. 15 exhibiting the chitinous pellicle, and attached at Stn. 22.

PELOSINA, Brady.

56. **Pelosina variabilis,** Brady.

Pelosina variabilis, Brady, 1879, etc., RRC. 1879, p. 30, pl. iii. figs. 1–3.
„ „ Brady, 1884, FC. p. 235, pl. xxvi. figs. 7–9.

1 *Station.*

A single specimen at Stn. 10.

STORTHOSPHÆRA, Schulze.

57. **Storthosphæra albida,** Schulze.

Storthosphæra albida, Schulze, 1874, R. p. 113, pl. ii. fig. 9 *a–d.*
„ „ Brady, 1884, FC. p. 241, pl. xxv. figs. 15–17.

1 *Station.*

A good many specimens at Stn. 18, rather small and thinner-walled and less corrugated externally than in deep-water individuals.

Subfamily PILULININÆ.

BATHYSIPHON, Sars.

58. **Bathysiphon argenteus,** Heron-Allen & Earland.

Bathysiphon argenteus, Heron-Allen & Earland, 1913, CI. p. 38, pl. iii. figs. 1–3.

5 *Stations.*

Fragments of this very easily recognized organism occur in the dredgings, the largest being at Stns. 14 and 21. The peculiar metallic iridescence of the external surface renders the identification of this species possible even when only a minute fragment of the fragile test is forthcoming.

Subfamily SACCAMMININÆ.

PSAMMOSPHÆRA, Schulze.

59. **Psammosphæra fusca,** Schulze.

Psammosphæra fusca, Schulze, 1874, R. p. 113, pl. ii. fig. 8.
„ „ Brady, 1884, FC. p. 249, pl. xviii. figs. 1–8.

4 *Stations.*

Extremely rare, but an occasional specimen, both free and adherent.

60. **Psammosphæra bowmanni,** Heron-Allen & Earland.

Psammosphæra bowmanni, Heron-Allen & Earland, 1912, etc., NSG. 1912, p. 385, pl. v. figs. 5, 6, pl. vi. fig. 5; 1913, CI. p. 39.

2 *Stations.*

One typical example at each Stn.

CRITHIONINA, Goës.

61. **Crithionina mamilla,** Goës.

Crithionina mamilla, Goës, 1894, ASF. p. 15, pl. iii. figs. 34–36.
„ „ Heron-Allen & Earland, 1912, etc., NSG. 1913, p. 9, pl. iii.

6 *Stations.*

Occasional specimens, free or attached. Very rare, except at Stn. 4, where the specimens were numerous. As found by us they are nearly all detached, but have evidently been sessile when living. They are large, rather thick-walled, consisting of extremely fine and very friable white sandy material, the central cavity large and filled with dried protoplasm. At Stn. 4 hardly any sponge-spicules or shell-fragments are incorporated in the shell-wall, but at the other Stns. small foraminifera and sponge-spicules form, as usual, a large proportion of the bulk of the test.

The question of the validity of Goës's genus *Crithionina* as distinct from Schulze's earlier genus *Storthosphæra* seems somewhat doubtful. *Storthosphæra* is distinguished by thick shell-walls, built up of fine sand-grains and without visible aperture, the central cavity being large and undivided; *Crithionina*, on the other hand, is defined by Goës as having the central cavity either labyrinthic or undivided. As the character of the shell-wall is the same in the two genera, it would seem desirable that the species of *Crithionina* with undivided cavity should be transferred to *Storthosphæra.*

As a recent British species this has only been recorded by us from Clare Island and the North Sea (*ut supra*), but we have numerous records of it from 'Goldseeker' dredgings.

Subfamily RHABDAMMININÆ.

JACULELLA, Brady.

62. **Jaculella acuta,** Brady.

Jaculella acuta, Brady, 1879, etc., RRC. 1879, p. 35, pl. iii. figs. 12, 13.
„ „ Brady, 1884, FC. p. 255, pl. xxii. figs. 14–18.

3 *Stations.*

Remarkably fine and perfect specimens of this species ranging up to nearly half an inch in length occur at Stn. 20. Fragments of more delicate specimens, which owing to their width are more probably referable to this species than to *J. obtusa*, occur at several other stations.

63. **Jaculella obtusa**, Brady.

Jaculella obtusa, Brady, 1882, BKE. p. 714.
„ „ Brady, 1884, FC. p. 256, pl. xxii. figs. 19–22.

6 *Stations.*

Recognizable fragments, but no perfect specimens, except at Stn. 20, where it was common in company with *J. acuta*.

Hyperammina, Brady.

64. **Hyperammina friabilis**, Brady.

Hyperammina friabilis, Brady, 1884, FC. p. 258, pl. xxiii. figs. 1–3, 5, 6.
„ „ Pearcey, 1890, FC. p. 172.

5 *Stations.*

Small and imperfect specimens at Stn. 20 and fragments of larger individuals at the other Stns. The occurrence of this species in such shallow waters is noteworthy, the only previous records being by Pearcey (*ut supra*) and by Brady from the Faroe Channel (*ut supra*).

65. **Hyperammina elongata**, Brady.

Hyperammina elongata, Brady, 1878, RRNP. p. 433, pl. xx. fig. 2 *a*, *b*.
„ „ Brady, 1884, FC. p. 257, pl. xxiii. figs. 4, 7–10.

2 *Stations.*

A few small specimens of no great length, but showing the initial portions well.

66. **Hyperammina ramosa**, Brady.

Hyperammina ramosa, Brady, 1879, etc., RRC. 1879, p. 33, pl. iii. figs. 14, 15.
„ „ Brady, 1884, FC. p. 261, pl. xxiii. figs. 15–19.

1 *Station.*

One recognizable fragment only.

67. **Hyperammina arborescens** (Norman).

Psammatodendron arborescens (Norman MS.), Brady, 1881, HNPE. p. 98. No. 13.
Hyperammina arborescens, Brady, 1884, FC. p. 262, pl. xxviii. figs. 12, 13 (fig. 10, p. 263).

6 *Stations.*

Recognizable fragments of this very distinctive organism occur at several Stns. and good and typical examples at Stn. 14. The character of the material submitted to us rendered the finding of more fragments unlikely; it is probably very widely distributed

down the West coast of Scotland. Large branching colonies are common under stones between tide-marks at Millport.

68. **Hyperammina vagans,** Brady.

Hyperammina vagans, Brady, 1879, etc., RRC. 1879, p. 33, pl. v. fig. 3.
„ „ Brady, 1884, FC. p. 260, pl. xxiv. figs. 1–9.

2 *Stations.*

Attached to shell-fragments at Stns. 10 and 26.

RHABDAMMINA, Brady.

69. **Rhabdammina abyssorum,** M. Sars.

Rhabdammina abyssorum, M. Sars, 1868, LUHD. p. 248.
„ „ Brady, 1884, FC. p. 266, pl. xxi. figs. 1–13.

1 *Station.*

One recognizable fragment only from the shore-sand at Oronsay—no doubt, washed in from deep water.

RHIZAMMINA, M. Sars.

70. **Rhizammina algæformis,** Brady. (New to Britain.)

Rhizammina algæformis, Brady, 1879, etc., RRC. 1879, p. 39, pl. iv. figs. 16, 17.
„ „ Brady, 1884, FC. p. 274, pl. xxviii. figs. 1–11.

2 *Stations.*

Single specimens from the two Stns. The species has not been previously recorded from British waters, but is common in deep water off the Irish and West Scottish coasts.

BOTELLINA, Carpenter.

71. **Botellina labyrinthica,** Brady.

Botellina labyrinthica, Brady, 1878, etc., RRC. 1881, p. 48.
„ „ Brady, 1884, FC. p. 279, pl. xxix. figs. 8–18.

3 *Stations.*

Fragments of this remarkable organism occur at Stns. 10 and 21. As this rare species, when present, usually occurs in abundance, it is possible that the fragments may have been derived from deeper water in the neighbourhood. At Stn. 20, however, the specimens were very numerous and large, and justify the assumption that a colony of the form occurred.

Apart from the 'Porcupine' record (Stn. No. 51) there are very few records of this curious form; we may mention that it occurs in enormous profusion in the 'Goldseeker' Dredging Haul 7791, two miles S. by E. off Burghead in the Moray Firth (55 metres), forming the bulk of the coarse material dredged at that Stn. It is apparently confined to this single locality in the whole area of the Moray Firth.

HALIPHYSEMA, Bowerbank.

72. **Haliphysema tumanowiczii,** Bowerbank.

Haliphysema tumanowiczii, Bowerbank, 1862, Phil. Trans. Roy. Soc. Lond. p. 1105, pl. lxxiii. fig. 3 ; 1864, Monogr. Brit. Sponges, vol. i. p. 179, pl. xxx. fig. 359 ; 1866, vol. ii. p. 76.

1 *Station.*

A single broken and detached specimen was found at Stn. 12, but was unfortunately lost later. No doubt, the species would be found if searched for in suitable material all down the West Coast. We had no undamaged polyzoan material for examination.

Family LITUOLIDÆ.

Subfamily LITUOLINÆ.

REOPHAX, Montfort.

73. **Reophax difflugiformis,** Brady.

Reophax difflugiformis, Brady, 1879, etc., RRC. 1879, p. 51, pl. iv. fig. 3.
" " Brady, 1884, FC. p. 289, pl. xxx. figs. 1–5.

3 *Stations.*

Extremely rare, one specimen at each Stn.

74. **Reophax fusiformis** (Williamson).

Proteonina fusiformis, Williamson, 1858, RFGB. p. 1, pl. i. fig. 1.
Reophax fusiformis, Brady, 1884, FC. p. 290, pl. xxx. figs. 7–11.

6 *Stations.*

Very rare, most frequent and the best specimens at Stns. 14 and 18. At one or two Stns., notably Stn. 4, the organism utilizes mica exclusively in the formation of its test.

75. **Reophax scorpiurus,** Montfort.

Reophax scorpiurus, Montfort, 1808, CS. vol. i. p. 330, 83e genre.
" " Brady, 1884, FC. p. 291, pl. xxx. figs. 12–17.

7 *Stations.*

Sparingly represented, and never common. The best at Stn. 18, the specimens are of a very neat and regular type.

76. **Reophax scottii,** Chaster.

Reophax nodulosa (?), Scott, 1890, 8th Ann. Rep. Fisheries Board Scotland, pt. iii. p. 314.
" *scottii,* Chaster, 1892, FS. p. 57, pl. i. fig. 1.
" " Millett, 1898, etc., FM. 1899, p. 255, pl. iv. fig. 13.

5 *Stations.*

Considering the muddy character of many of the dredgings, this species is singularly rare. Only an occasional specimen at any Stn., the best at Stn. 11.

77. **Reophax moniliforme,** Siddall.

Reophax (?) sp., Balkwill & Wright, 1885, DIS. p. 328, pl. xiii. figs. 9, 22–24.
„ *moniliforme,* Siddall, 1886, LMBC. p. 54, pl. i. fig. 2.
„ „ Heron-Allen & Earland, 1913, CI. p. 43, pl. ii. fig. 12.

3 *Stations.*

A single specimen at each Stn., all, as usual, imperfect. Both the oral and the bulbous aboral portions, however, are represented.

Haplophragmium, Reuss.

78. **Haplophragmium pseudospirale** (Williamson). (Plate 40. fig. 14.)

Proteonina pseudospiralis, Williamson, 1858, RFGB. p. 2, pl. i. figs. 2, 3.
Haplophragmium pseudospirale, Brady, 1884, FC. p. 302, pl. xxxiii. figs. 1–4.

15 *Stations.*

Generally distributed and fairly abundant at many of the Stns. There is considerable variety of form. At the majority of Stns. the specimens are all of the involute form represented by Goës's figs. (G. 1894, ASF. pl. v. figs. 142–3). This is practically isomorphous with *Haplophragmium canariense*, differing only in the rough texture of the wall and the absence or obscurity of the septation. The umbilical part is usually strongly depressed. This may possibly represent the early stages of the test, but the entire absence of the elongate crozier-form at many Stns. where the circular form occurs is noticeable. The crozier-form occurs large and well developed at Stns. 2, 4, 9, 14, 18, and 26. At Stns. 4 and 26 another form occurs in which the circular portion is followed by a single sharply-pointed chamber; we figure this variety, which we have already met with in anchor-mud from Paranagua, Brazil. It appears to be isomorphous with *Cristellaria variabilis*, Reuss.

79. **Haplophragmium canariense** (d'Orbigny). (Plate 40. figs. 12, 13.)

Nonionina canariensis, d'Orbigny, 1839, FIC. p. 128, pl. ii. figs. 33, 34.
Haplophragmium canariense, Brady, 1884, FC. p. 310, pl. xxxv. figs. 1–5.

22 *Stations.*

Almost universally distributed, often very common. The specimens are almost without exception of a thin evolute type. At some Stns., however, they were very small and starved. At Stns. 10 and 16 these small specimens are almost entirely built up of small mica-plates as in *Reophax scottii*, Chaster. At Stns. 10, 18, and 20, where the species was abundant, abnormal specimens, one of which we figure, in which the initial spiral growth is succeeded by a series of irregularly Lituoline chambers, occurred; these may be compared in appearance and construction with *Truncatulina variabilis*, d'Orb. (Having found this again off the coast of Cornwall, we are naming it in our forthcoming paper.) The general colour throughout the dredgings is normally ferruginous, but occasional grey individuals occur at most Stns., and at Stns. 5 and 17 they largely predominate.

80. **Haplophragmium canariense,** var. **pauperata,** Chapman. (New to Britain.)

Haplophragmium canariense, var. *pauperata,* Chapman, 1913, EHH. p. 556, woodcuts figs. 1–4.

2 *Stations.*

A few specimens at Stns. 4 and 21, in which each chamber was deflated and collapsed. These specimens were constructed mainly of mica-flakes, in itself perhaps a sign of depauperation. Probably the micaceous examples of *H. canariensis* previously referred to would be liable to similar distortion in most instances when removed from water. Chapman's record was from the Eocene of Hengistbury Head. It seems a useful varietal name, as such depauperated individuals are widely distributed.

81. **Haplophragmium runianum,** sp. nov. (Plate 40. figs. 15–18.)

1 *Station.*

Test free, nautiloid, more or less depressed at the umbilicus, constructed of rather coarse sand-grains and grey cement. As a rule, no septation visible externally. In large specimens an occasional constriction indicates the presence of a suture. Marginal edge thick and rounded. Aperture simple, ranging between a fissure and a constricted terminal opening of irregular form. Viewed as an object in balsam the multilocular character of the test becomes apparent; it is then seen to consist of three to four convolutions divided into numerous chambers (thirteen or fourteen in the last convolution) by septal walls that are usually very thin in comparison with the thick outer wall of the test. The chambers are almost square in section.

This curious and obscure form occurs in some numbers at Stn. 17. It might easily be overlooked, and regarded as a thick-walled and obscure variety of *H. canariense* (d'Orb.), but the number and shape of the chambers when viewed in balsam removes it from any close relationship to that species. It bears considerable resemblance to the *Lituola nautiloidea*, var. (*Haplophragmium*) *depressa* of Rupert Jones in the paper on "The Deep Boring at Richmond" (Q. J. G. S. vol. xl. 1884, p. 765, pl. xxxiv. fig. 2), but differs in the fact that the sutural lines are visible in the later stages of the rather poor figure illustrating that variety, whereas in *H. runianum* they are only visible externally under exceptional conditions. The nearest affinities of both *H. runianum* and *H. nautiloidea* var. *depressa* are probably with *H. rotulatum*, Brady, as marked by the concavity of the shell on both sides in the umbilical region, the thick marginal edge and the obscurity of the septation, and numerous chambers.

Diameter ·5–·7 mm.; width of final convolution ·1; breadth of each chamber in final convolution ·1.

82. **Haplophragmium globigeriniforme** (Parker & Jones).

Lituola nautiloidea, var. *globigeriniformis*, Parker & Jones, 1865, NAAF. p. 407, pl. xv. figs. 46, 47, pl. xvii. figs. 96–98.

Haplophragmium globigeriniforme, Brady, FC. 1884, p. 312, pl. xxxv. figs. 10, 11.

15 *Stations.*

Generally distributed and fairly frequent at some Stns., notably Stns. 3 and 10.

Strongly marked isomorphs of *Globigerina bulloides* are rare, the majority of specimens being rather small and obscure, and comparatively flat on the superior face. Isomorphs of *Globigerina inflata* occur at Stns. 3 and 11. At Stn. 11 the best isomorph of *G. bulloides* occurs. The general facies of the specimens is that of figs. 131–133, pl. v. in Goës's memoir (G. 1894, ASF.).

83. **Haplophragmium glomeratum,** Brady.

Lituola glomerata, Brady, 1878, RRNP. p. 433, pl. xx. fig. 1.
Haplophragmium glomeratum, Brady, 1884, FC. p. 309, pl. xxxiv. figs. 15–18.

17 *Stations.*

Very generally distributed, often common. This little species appears to be one of the most fixed in its characteristics of the genus. Practically no variation is observable in the whole of these dredgings except in its relative abundance and its development as regards size; the number of chambers and their proportions are practically constant.

Placopsilina, d'Orbigny.

84. **Placopsilina vesicularis,** Brady.

Placopsilina vesicularis, Brady, 1879, etc., RRC. 1879, p. 51, pl. v. fig. 2.
„ „ Brady, 1884, FC. p. 316, pl. xxxv. figs. 18, 19.

1 *Station.*

A few very small specimens attached to shell-fragments at Stn. 26.

Subfamily Trochamminiæ.

Thurammina, Brady.

85. **Thurammina papillata,** Brady.

Thurammina papillata, Brady, 1879, etc., RRC. 1879, p. 45, pl. v. figs. 4–8.
„ „ Brady, 1884, FC. p. 321, pl. xxxvi. figs. 7–18.

4 *Stations.*

Very rare, but small typical specimens of the minutely arenaceous type occur at the Stns. At Stn. 4 a single chitinous specimen, dark brown in colour.

Ammodiscus, Reuss.

86. **Ammodiscus incertus** (d'Orbigny).

Operculina incerta, d'Orbigny, 1839, FC. p. 49, pl. vi. figs. 16, 17.
Ammodiscus incertus, Brady, 1884, FC. p. 330, pl. xxxviii. figs. 1–3.

13 *Stations.*

Generally distributed, often very common, the best at Stns. 12, 14, 19. The colour varies at different Stns.: at some, notably Stn. 3, only light grey individuals; at others,

notably Stns. 9 and 20, only ferruginous examples. At the other Stns. both types occur, either of them preponderating. The specimens are on the whole irregular in shape, with a tendency to concavity on one side at the expense of the other. At one or two Stns., *e. g.* No. 19, they were adherent to shell-fragments. Specimens once adherent, but now detached, occur frequently. These adherent individuals are more irregular in growth than the free ones, some being hardly separable from *A. gordialis*. The bulk of the specimens are noticeably microspheric, but megalospheric specimens referable to Brady's *A. tenuis* were noticed at Stns. 4, 12, and 19. The megalospheric individuals are, as a rule, very small in size and composed of only one or two convolutions. At Stn. 18 one individual with a semi-chitinous shell was observed.

87. **Ammodiscus gordialis** (Jones & Parker).

Trochammina squamata gordialis, Jones & Parker, 1860, RFM. p. 304.
Ammodiscus gordialis, Brady, 1884, FC. p. 333, pl. xxxviii. figs. 7–9.

15 *Stations.*

Generally distributed, but not abundant, except at Stns. 3, 12, and 19. At Stn. 3 the specimens were small; at Stn. 19 they were large, often irregular, and some of them nearly spherical, being formed of an intricate convolution of tubes. Both pale and ferruginous individuals at most Stns., but the ferruginous preponderate in numbers. The general form was, as is always the case when the species occurs in any abundance, protean.

88. **Ammodiscus charoides** (Jones & Parker).

Trochammina squamata charoides, Jones & Parker, 1860, RFM. p. 304.
Ammodiscus charoides, Brady, 1884, FC. p. 334, pl. xxxviii. figs. 10–16.

7 *Stations.*

Extremely common at Stn. 2, where the species occurs in all stages of development. The specimens are, on the whole, very regular and typical in the arrangement of the primary spiral, but at least one instance was seen at this Stn. in which the secondary spiral was suddenly diverted at a right angle before it had completely enveloped the central initial spiral, thus giving the test the appearance of a globe divided into four sections. A few specimens approached *A. gordialis* in the irregular disposition of the later convolutions. At Stn. 3 it was very rare and small. At Stn. 10 a single small specimen approaching *A. gordialis*. At Stn. 19 numerous specimens, many worn as if washed from some distance. At this particular Stn. the final convolutions in the large specimens were irregularly disposed. The comparison to *A. gordialis* must be considered as referring to the disposition of the chambers only; the constitution of the shell is quite dissimilar, *A. gordialis* being built up of fine sand-grains with an almost invisible proportion of cement, whereas in *A. charoides* the test is almost entirely constructed of cement, sand-grains never being observable, even when the convolutions are irregularly disposed.

89. **Ammodiscus shoneanus** (Siddall).

Trochammina shoneanus, Siddall, 1878, FRD. p. 46, figs. 1, 2.
Ammodiscus shoneanus, Brady, 1884, FC. p. 335, pl. xxxviii. figs. 17–19.

1 *Station.*

One typical individual of this minute but interesting species at Stn. 15, light grey in colour.

TROCHAMMINA, Parker & Jones.

90. **Trochammina inflata** (Montagu).

Nautilus inflatus, Montagu, 1803–8, TB. Suppl. p. 81, pl. xviii. fig. 3.
Trochammina inflata, Brady, 1884, FC. p. 338, pl. xli. fig. 4.

1 *Station.*

Very rare, and the specimens are rather weak, tending to collapse.

91. **Trochammina inflata,** var. **macrescens,** Brady.

Trochammina inflata, var. *macrescens*, Brady, 1870, FTR. p. 290, pl. xi. fig. 5.
„ „ „ Heron-Allen & Earland, 1913, CI. p. 52.

3 *Stations.*

Also very rare, the best and most typical specimens at Stn. 21.

92. **Trochammina ochracea** (Williamson).

Rotalina ochracea, Williamson, 1858, RFGB. p. 55, pl. iv. fig. 112, pl. v. fig. 113.
Trochammina ochracea, Balkwill & Millett, 1884, FG. p. 25, pl. i. fig. 7.

16 *Stations.*

Generally distributed, often common. The species varies greatly in the extent of its development. The thin and scale-like form (the original type of Williamson) is less widely distributed and less common than the thicker form intermediate between this species and *T. squamata*, to which we have referred in our Clare Island paper (H.-A. & E. 1913, CI. p. 51). A double or "budding" specimen was found at Stn. 15, and an attached specimen at Stn. 19.

93. **Trochammina plicata** (Terquem).

Patellina plicata, Terquem, 1875, etc., APD. 1876 (fasc. ii.), p. 72, pl. viii. fig. 9.
Trochammina plicata, Balkwill & Millett, 1884, FG. p. 26, pl. i. fig. 8.

6 *Stations.*

Very rare, but large and very fine specimens at several Stns., especially Stns. 3 and 20. Specimens which had evidently been sessile and had become detached, preserving the carinate periphery figured by us in the species *T. ochracea* from Kerimba (H.-A. & E. 1915, FKA. p. 619, pl. xlvi. figs. 27, 28), were found at Stn. 13. In these individuals the base was quite flat, the intervals between the wrinkled sutures being bridged with a thin chitinous pellicle.

94. **Trochammina squamata,** Jones & Parker.

Trochammina squamata, Jones & Parker, 1860, RFM. p. 304, table.
„ „ Brady, 1884, FC. p. 337, pl. xli. fig. 3 *a*, *b*, *c*.

17 *Stations.*

Almost universally distributed, often fairly common. There is a considerable amount of variation observable at different Stns. At the majority the specimens were rather small and were grey in colour. Large darkly ferruginous specimens occur at several Stns., notably at Stns. 3 and 10. A double specimen was found at Stn. 3.

95. **Trochammina rotaliformis,** Wright.

Trochammina inflata (Montagu), var. (Wright, MS.), Balkwill & Wright, 1885, DIS. p. 331, pl. xiii. figs. 11, 12.
„ *rotaliformis,* Heron-Allen & Earland, 1913, CI. p. 52, pl. iii. figs. 11–13.

10 *Stations.*

Fairly widely distributed and often not uncommon. There is a considerable amount of variation, especially in the texture of the shell, some being quite coarsely arenaceous, whilst others, notably at Stn. 3, are almost entirely composed of polished ferruginous cement giving a very smooth and regular outline to the shell.

96. **Trochammina nitida,** Brady. (Plate 40. figs. 19–21.)

Trochammina nitida, Brady, 1881, HNPE. p. 100. No. 25.
„ „ Brady, 1879, etc., RRC. 1881, p. 52.
„ „ Brady, 1884, FC. p. 339, pl. xli. figs. 5, 6.

1 *Station.*

A single specimen of this rare type, which we figure, from Stn. 12. It differs slightly from Brady's type in the greater number of chambers in the final convolution—ten, as against nine in the type. The central spire is somewhat depressed on the superior side. Colour dark brown, texture very finely arenaceous. *T. nitida,* according to Brady, is typically an arctic species, but Millett records it from shallow water in the Malay Archipelago (M. 1898, etc., FM. 1899, p. 363).

97. **Trochammina robertsoni,** Brady.

Trochammina robertsoni, Brady, 1887, SBRF. p. 893.
„ „ Wright, 1891, SWI. p. 469, pl. xx. fig. 4.

15 *Stations.*

Fairly widely distributed, often common, the only variation being in the size. This is one of the most typical West of Scotland species.

Family TEXTULARIIDÆ.

Subfamily TEXTULARIINÆ.

TEXTULARIA, Defrance.

98. **Textularia fusiformis,** Chaster.

Textularia fusiformis, Chaster, 1892, FS. p. 58, pl. i. fig. 3.
„ „ Heron-Allen & Earland, 1914, etc., FKA. 1915, p. 623.

1 *Station.*

One large and very typical example of this rare species at Stn. 14. Since Chaster's original record, this species has only been recorded by Wright from Post-tertiary deposits on the River Lune (W. 1902, GFL. p. 190).

99. **Textularia concava,** var. **heterostoma,** Fornasini. (Plate 40. figs. 22, 23.)
(New to Britain.)

Sagraina affinis, Fornasini, 1883, FPS. p. 189, pl. ii. fig. 10.
„ „ Fornasini, 1888, TP. p. 45, pl. iii. fig. 1 *a–c*.
Textularia heterostoma, Fornasini, 1896, TC. p. 4, pl. O. figs. 6, 12, 13.
„ *concava*, var. *heterostoma*, Millett, 1898, etc., FM. 1899, p. 560, pl. vii. figs. 6, 7.

1 *Station.*

Two characteristic examples, which we figure, at Stn. 14. They appear to be intermediate between the original figures of Fornasini and the somewhat depauperate examples figured by Millett from the Malay Peninsula. Both the 'Runa' specimens exhibit the tendency to a spiral twist of the axis which is observable in Millett's figures.

100. **Textularia sagittula,** Defrance.

Textularia sagittula, Defrance, 1824, Dict. Sci. Nat. vol. xxxii. p. 177, vol. liii. p. 344; Atlas Conch. pl. xiii. fig. 5.
„ „ Balkwill & Wright, 1885, DIS. p. 332, pl. xiii. figs. 15–17 (*pars*).

8 *Stations.*

Not common, but excellent and typical examples of this acutely pointed original type of Defrance occur at many Stns. At Stn. 10 many specimens of this species and also of *Spiroplecta wrightii* were found firmly adherent by their orifices to fragments of the chitinous tubes of a Campanularian.

101. **Textularia sagittula,** var. **jugosa,** Brady.

Textularia jugosa, Brady, 1884, FC. p. 358, pl. xlii. fig. 7 *a*, *b*.
„ „ Egger, 1893, FG. p. 273, pl. vi. figs. 19–21.
„ *sagittula*, var. *jugosa,* Jones, Parker, & Brady, 1866, etc., MFC. 1895, p. 145, pl. v. fig. 19.
„ „ „ Millett, 1898, etc., FM. 1899, p. 561, pl. vii. fig. 8.

1 *Station.*

One specimen at Stn. 16.

102. **Textularia agglutinans,** d'Orbigny.

Textularia agglutinans, d'Orbigny, 1839, FC. p. 144, pl. i. figs. 17, 18, 32–34.
„ „ Brady, 1884, FC. p. 363, pl. xliii. figs. 1–3.

7 *Stations.*

Rare, but good and large specimens at several Stns., the best at Stn. 19.

103. **Textularia candeiana,** d'Orbigny. (Plate 41. figs. 1, 2.) (New to Britain.)

Textularia candeiana, d'Orbigny, 1839, FC. p. 143, pl. i. figs. 25–27.
„ *sagittula*, var. *candeiana*, Millett, 1898, etc., FM. 1899, p. 562, pl. vii. fig. 12.

5 *Stations.*

Though reluctant to add to the ever-increasing list of British Foraminifera, it seems impossible to avoid separating, under d'Orbigny's name, those specimens of *T. agglutinans* in which there is a sudden and abnormal increase in the depth of the later chambers. Typical specimens, which we figure, of this form were found at Stns. 19 and 20.

104. **Textularia gramen,** d'Orbigny.

Textularia gramen, d'Orbigny, 1846, FFV. p. 248, pl. xv. figs. 4–6.
„ „ Brady, 1884, FC. p. 365, pl. xliii. figs. 9, 10.

22 *Stations.*

Universally distributed, often very common, and presenting every type of variation between *T. conica* and *T. agglutinans*. Specimens indistinguishable from d'Orbigny's species, *T. hauerii*, appear at several Stns., but, in view of the wide range of variations distributed throughout the dredgings, we have not followed the lines of our Kerimba Monograph in separating them (*cf.* d'O. 1846, FFV. p. 250, pl. xv. figs. 13–15, and H.-A. & E. 1914, etc., FKA. 1915, p. 628, pl. xlvii. figs. 21–23).

105. **Textularia conica,** d'Orbigny.

Textularia conica, d'Orbigny, 1839, FC. p. 143, pl. i. figs. 19, 20.
„ „ Brady, 1884, p. 365, pl. xliii. figs. 13, 14, pl. cxiii. fig. 1.

23 *Stations.*

Universally distributed, generally abundant, sometimes reaching considerable size, and of quite typical development.

106. **Textularia trochus,** d'Orbigny.

Textularia trochus, d'Orbigny, 1840, CBP. p. 45, pl. iv. figs. 25, 26.
„ „ Brady, 1884, FC. p. 366, pl. xliii. figs. 15–19, pl. xliv. figs. 1–3.

2 *Stations.*

Very good and typical specimens at both Stns.

107. **Textularia turris,** d'Orbigny.

Textularia turris, d'Orbigny, 1840, CBP. p. 46, pl. iv. figs. 27, 28.
„ „ Brady, 1884, FC. p. 366, pl. xliv. figs. 4, 5.

3 *Stations.*

Good and typical specimens at each Stn.

VERNEUILINA, d'Orbigny.

108. **Verneuilina polystropha** (Reuss).

Bulimina polystropha, Reuss, 1845, VBK. pt. ii. p. 109, pl. xxiv. fig. 53.
Verneuilina polystropha, Brady, 1884, FC. p. 386, pl. xlvii. figs. 15–17.
„ „ Heron-Allen & Earland, 1913, CI. p. 55, pl. iv. figs. 1–5.

21 *Stations.*

Almost universally distributed, and frequently common. The general type at most of the Stns. is a large, long, regularly constructed test, sometimes entirely grey at a particular Stn., sometimes ferruginous, and occasionally both tints together. The short broad form, with usually a much more roughly constructed test, occurs at comparatively few Stns., but is sometimes the sole representative of the species, as at Stns. 10, 12, 25, and 26. The little types figured by us from Clare Island (*ut supra*) occur at five Stns. only—2, 12, 14, 19, and 20.

BIGENERINA, d'Orbigny.

109. **Bigenerina digitata,** d'Orbigny.

Bigenerina (*Gemmulina*) *digitata*, d'Orbigny, 1826, TMC. p. 262. No. 4, Modèle No. 58.
„ *digitata*, Brady, 1884, FC. p. 370, pl. xliv. figs. 19–24.

6 *Stations.*

Sparingly distributed, but frequent at Stns. 14 and 19. All the individuals are strongly ferruginous except at Stn. 21, where the few specimens found were light grey.

SPIROPLECTA, Ehrenberg.

110. **Spiroplecta biformis** (Parker & Jones).

Textularia agglutinans, var. *biformis*, Parker & Jones, 1865, NAAF. p. 370, pl. xv. figs. 23, 24.
Spiroplecta biformis, Brady, 1884, FC. p. 376, pl. xlv. figs. 25–27.

4 *Stations.*

Very rare, the best and most typical specimens at Stn. 18.

111. **Spiroplecta wrightii,** Silvestri.

Spiroplecta sagittula, Wright, 1891, SWI. p. 471; 1902, FRI. p. 211, pl. iii.
Spiroplecta wrightii, Silvestri, 1903, S. pp. 59–64 (woodcuts).
„ „ Heron-Allen & Earland, 1913, CI. p. 56.

18 *Stations.*

Almost universally distributed and often very common, presenting all the well-known variations in the size and development of the spiroplectine commencement.

112. **Spiroplecta fusca,** Earland.

Spiroplecta fusca, Earland, 1905, FBS. p. 204, pl. xii. figs. 1–3.
„ „ Heron-Allen & Earland, 1908, etc., SB. 1909, p. 331.

1 *Station.*

One good specimen at Stn. 3, presenting the characteristic lobulate outline of the species, but lighter in colour than the original type.

GAUDRYINA, d'Orbigny.

113. **Gaudryina filiformis,** Berthelin.

Gaudryina filiformis, Berthelin, 1880, EAM. p. 25, pl. xxiv. (i.) fig. 8.
„ „ Brady, 1884, FC. p. 380, pl. xlvi. fig. 12.

8 *Stations.*

Neither widely distributed nor abundant. Numerous excellent specimens at several Stns., notably Stn. 17. Two distinct forms are noticeable, one being much shorter and broader than the other, possibly representing the megalospheric and microspheric stages. They are all grey in colour, the ferruginous tint being confined to the early part of the test.

Cushman (C. 1910, etc., FNP. 1911, p. 70, fig. 111) has separated the specimens figured by Brady from Berthelin's original type under the name *G. pseudo-filiformis,* apparently on the ground that the texture of the shell in Brady's specimens and in those dredged by the 'Albatross' are smoothly arenaceous. This appears to be entirely insufficient; the character of the chambers is practically identical with that shown in Berthelin's original figure, and the difference in the shell-texture of the 'Challenger' specimens with their increased proportion of cement is probably due to the greater depth from which the specimens were obtained.

The species has been adequately figured by Wright (W. 1880–81, SD. p. 180, pl. viii. fig. 3 *a*-*b*) and by ourselves (H.-A. & E. 1913, CI. p. 57, pl. iv. figs. 7, 8).

114. **Gaudryina rudis,** Wright.

Gaudryina rudis, Wright, 1900, DBC. p. 53, pl. ii. fig. 1.
„ „ Heron-Allen & Earland, 1913, CI. p. 58, pl. iii. figs. 14–17.

14 *Stations.*

Widely, but not universally, distributed, and, except at a few Stns., few in number and small. Remarkably large individuals occurred at Stns. 16, 19, and 26. The species is also remarkably abundant at Stn. 3. The species has only been recorded *ut supra,* but we have found it in shore-gatherings and soundings all round the British coasts.

VALVULINA, d'Orbigny.

115. **Valvulina fusca** (Williamson).

Rotalina fusca, Williamson, 1858, RFGB. p. 55, pl. v. figs. 114, 115.
Valvulina fusca, Brady, 1884, FC. p. 392, pl. xlix. figs. 13, 14.

11 *Stations.*

Generally distributed and often very common. All free except at Stns. 20 and 25, where attached individuals were found with the characteristic extension of white cement ramifying from the test.

116. **Valvulina conica,** Parker & Jones.

Valvulina triangularis, var. *conica,* Parker & Jones, 1865, NAAF. p. 406, pl. xv. fig. 37.
Valvulina conica, Brady, 1884, FC. p. 392, pl. xlix. figs. 15, 16.

1 *Station.*

One small free specimen at Stn. 4.

Clavulina, d'Orbigny.

117. **Clavulina obscura,** Chaster.

Verneuilina polystropha (Reuss), "dimorphous form," Wright, 1885–6, BLP. p. 320, pl. xxvi. fig. 2.
Clavulina obscura, Chaster, 1892, FS. p. 58, pl. i. fig. 4.
„ „ Heron-Allen & Earland, 1913, CI. p. 59, pl. iv. fig. 6.

4 *Stations.*

Occasional specimens of this rare little form at the Stns.

Subfamily Buliminiæ.

Bulimina, d'Orbigny.

118. **Bulimina pupoides,** d'Orbigny.

Bulimina pupoides, d'Orbigny, 1846, FFV. p. 185, pl. xi. figs. 11, 12.
„ „ Brady, 1884, FC. p. 400, pl. l. fig. 15.

19 *Stations.*

Almost universally distributed, but less abundant than *B. marginata* or *B. elegans.* Typical specimens are common, the best at Stns. 7, 22, 23, but intermediate forms linking this with *B. elegans* and *B. gibba,* Fornasini, also occur at most Stns.

119. **Bulimina elegans,** d'Orbigny.

Bulimina elegans, d'Orbigny, 1826, TMC. p. 270. No. 10, Modèle No. 9.
„ „ Brady, 1884, FC. p. 398, pl. l. figs. 1–4.

20 *Stations.*

If anyone wishes to realise the absolute impossibility of classifying Foraminifera on the strictly rigid specific lines aimed at by zoologists working at higher groups, they need only refer to the beautiful series of illustrations to Fornasini's paper on the Adriatic Buliminæ (MASIB. ser. 5, vol. ix. pp. 371–381). After studying this plate and working out such a series of dredgings as those under consideration, or, indeed, any series taken

under similar conditions on a muddy bottom round the British Islands, the student will come to the conclusion that it would be just as easy to name and figure twice as many so-called "species." There are no definite and fixed features which can be laid hold of as marking definite lines of separation.

Bulimina elegans is, however, a good starting-point around which to attempt some classification of these protean forms.

The typical *B. elegans* is represented by a long and regularly tapering shell with three definite series of smooth inflated chambers. Such individuals occur but rarely, although present in limited numbers at most of the Stns. With a shortening of the spire and increased inflation of the chambers we arrive at a somewhat broad and stumpy form extremely common, and figured by Fornasini (*loc. cit.* pl. O. figs. 32, 34) under the name *B. gibba*. If the aboral margins of the inflated chambers become salient, we obtain a passage-form between *B. elegans* and *B. marginata*, to which Fornasini has given the name *B. gibba*, var. *marginata* (figs. 22, 26, 35, 42, *loc. cit.*).

More than one Stn. of the 'Runa' gatherings, notably Stns. 19 and 21, consisted almost of pure gatherings of Buliminæ. We took the trouble to count a certain section of the material from the latter Stn., and found the Buliminæ to represent 98 per cent. of the Foraminifera. Probably not 5 per cent. of the specimens could have been assigned definitely to any specific type.

120. **Bulimina elegans,** var. **exilis,** Brady. (Plate 41. figs. 4–9.)

Bulimina elegans, var. *exilis*, Brady, 1884, FC. p. 399, pl. l. figs. 5, 6.
„ „ „ Wright, 1889, SWI. p. 448.

6 *Stations.*

The variety *exilis* is characterized by an extremely elongated test of the regular triserial *B. elegans* type. Good and typical specimens occur at several Stns., the best at Stns. 11 and 17. They are, however, all small, compared with the development attained by the variety in deeper and colder waters. The best specimens we have seen were from comparatively shallow water in the estuary of the St. Lawrence River. The species has been recorded by Wright from S.W. Ireland, by Worth from Plymouth, and by Pearcey from the Faroe Channel; but, as it has not been figured as a British species, we take this opportunity of doing so (Wright, AMNH. ser. 6, vol. iv. p. 448; Worth, J. Mar. Biol. Ass. Plymouth, NS. vol. vii. 1904, p. 178; Pearcey, 1890, FC. p. 176).

121. **Bulimina elongata,** d'Orbigny.

Bulimina elongata, d'Orbigny, 1826, TMC. p. 269. No. 9.
„ „ Brady, 1884, FC. p. 401, pl. li. figs. 1, 2 (?).

5 *Stations.*

Typical specimens of this elongate and parallel-sided form of *B. pupoides* occur at Stns. 4 and 19. At other Stns. the individuals, while probably referable to *B. elongata*, show weak marginate spines at the aboral end, indicating their affinity to *B. marginata*.

122. **Bulimina fusiformis,** Williamson.

Bulimina pupoides, var. *fusiformis,* Williamson, 1858, RFGB. p. 63, pl. v. figs. 129, 130.
Bulimina fusiformis, Millett, 1898, etc., FM. 1900, p. 275, pl. ii. fig. 2.

23 *Stations.*

Universally distributed, generally abundant. The typical *B. fusiformis* of Williamson, with an elongate test and a somewhat virguline aperture, though occurring at nearly every Stn., is far less abundant than a short and somewhat inflated type with terminal aperture. This short type appears to represent a passage-form into *B. ovata.*

123. **Bulimina ovata,** d'Orbigny.

Bulimina ovata, d'Orbigny, 1846, FFV. p. 185, pl. xi. figs. 13, 14.
„ „ Brady, 1884, FC. p. 400, pl. l. fig. 13 *a*, *b*.

3 *Stations.*

A single very large specimen at Stn. 17 and one or two small specimens at Stns. 19 and 20. The extraordinary rarity of this species in these gatherings is noticeable.

124. **Bulimina elegantissima,** d'Orbigny.

Bulimina elegantissima, d'Orbigny, 1839, FAM. p. 51, pl. vii. figs. 13, 14.
„ „ Brady, 1884, FC. p. 402, pl. l. figs. 20–22.

12 *Stations.*

This pretty little species, which appears to be more fixed in its characteristics than most of the Buliminæ, occurs at a good many Stns., but never very abundantly. The best were at Stns. 4 and 11. It is subject to very little variation, except in the comparative length and breadth of the shell. At Stn. 4 one abnormally long and attenuated individual was observed.

125. **Bulimina marginata,** d'Orbigny.

Bulimina marginata, d'Orbigny, 1826, TMC. p. 269. No. 4, pl. xii. figs. 10–12.
„ „ Brady, 1884, FC. p. 405, pl. li. figs. 3–5.

24 *Stations.*

Universally distributed and as abundant as *B. elegans*, subject to the same lines of variation—*i. e.*, apart from typical specimens resembling d'Orbigny's figure, we find marginate specimens which in the arrangement of their chambers are closer to *B. elegans*, d'Orbigny, and *B. gibba*, Fornasini. Abnormal specimens occur at Stns. 18, 20, and 21. At Stns. 18 and 20 they consisted of pairs of individuals fused by their aboral extremities. At Stn. 21 were several instances of individuals having double and treble apertures. Such deformities may generally be found in any dredging where Buliminæ preponderate.

126. **Bulimina echinata,** d'Orbigny. (Plate 41. fig. 3.) (New to Britain.)

Bulimina echinata, d'Orbigny, 1826, TMC. p. 269. No. 5.
„ „ Fornasini, 1901, BCI. p. 176, fig. 2.

2 *Stations.*

D'Orbigny's species, as reproduced (*ut supra*) from the "Planches inédites" by Fornasini, represents a *Bulimina* of the *B. affinis* type, in which the aboral half of the shell is covered with a dense growth of short blunt spines, the remainder of the shell being smooth. D'Orbigny's original finished "Planche inédite," which we have carefully examined, entirely justifies Fornasini's figure, but d'Orbigny's type-specimens, which we have also examined in Paris, are so disguised in gum as to render their identification with the "Planche" very difficult *.

127. **Bulimina aculeata,** d'Orbigny.

Bulimina aculeata, d'Orbigny, 1826, TMC. p. 269. No. 7.
„ „ Brady, 1884, FC. p. 406, pl. li. figs. 7–9.

12 *Stations.*

Really typical individuals characterized by long projecting spines are somewhat rare in the dredgings, but good specimens occur at Stns. 2 and 4, and weaker ones at several other Stns. The semi-aculeate forms, inseparable from either this species or its ally *B. marginata*, occur at practically all Stns. where either species occurs.

128. **Bulimina subteres,** Brady.

Bulimina subteres, Brady, 1884, FC. p. 403, pl. l. figs. 17, 18.
„ „ Heron-Allen & Earland, 1913, CI. p. 62, pl. iv. figs. 13, 14.

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* The relationship of Dr Carlo Fornasini's "Specie Orbignyane" to the "Planches inédites" requires to be explained. D'Orbigny was an indefatigable and accomplished draughtsman, and left behind him not only the "Planches inédites" of the Foraminifera, but vast collections of similar drawings of fossils, all of which are now preserved in the Director's Cabinet at the Musée de Paléontologie in Paris. As early as 1819 we find his father writing to M. Fleuriau de Bellevue that his son was making drawings of the "céphalopodes microscopiques" which they had discovered in the sands near La Rochelle (*Journal de Physique*, 1819, vol. lxxxviii. p. 187). Later, when he began to receive material from all over the world, he made a practice of first drawing the outline of all species as he separated them, often roughly in pen and ink, under the microscope, indicating any surface-markings partially upon his sketch, and making notes on the rough slips containing the sketches. These sketches he subsequently elaborated in sepia or Indian ink, making fairly finished drawings, which he in turn copied, drawing most delicately and beautifully in pencil and water-colour on sheets intended, when complete, to illustrate all the species enumerated in the 'Tableau Méthodique.' These constitute the "Planches inédites," which since 1826 have remained to a great extent an unexplored and practically unavailable store of priceless information. We have made it our duty to examine these "Planches" in detail. Roughly speaking, there are 70 plates (7 unfinished) and materials for finishing 79 more plates. We hope before long to arrange for the completion and publication of these plates; when it is done the names in the TMC. 1826 will no longer be for the most part *nomina nuda*.

The outlines published by Dr. Fornasini, scattered through some twenty-three memoirs and papers published by him between 1898 and 1903, represent tracings made from the first rough working sketches (made by d'Orbigny under the microscope) by M. Berthelin, and bequeathed by him to Dr. Fornasini under circumstances which the latter has recorded (Rend. Sess. R. Acc. Sci. Ist. Bologna, 1897–8, vol. ii. p. 11, footnote). M. Berthelin appears to have selected about 320 outlines for tracing, and these tracings Dr. Fornasini has carefully reproduced on a fairly uniform scale. They cannot be said to compare for accuracy and beauty with the "Planches inédites," but they afford a most valuable indication of what was in d'Orbigny's mind when he founded his multitudinous and often unidentifiable species.

9 *Stations.*

This very beautiful species occurs in some numbers at Stns. 4, 10, and 12, and less abundantly at the other Stns. At Stns. 10 and 12 many individuals had been dredged in the living condition, and the protoplasmic body of the animal, which is of a bright orange-colour without metaplastic enclosures, has in nearly all instances dried in clots underneath the patches of clear shell-substance which mark the central portions of each chamber. This probably indicates that the pseudopodial foramina are more or less confined to these portions of the shell. *B. subteres* is, as a rule, very rare in British dredgings, but, judging from the examination of 'Goldseeker' material, it increases in frequency in the northern area.

129. **Bulimina minutissima,** Wright.

Bulimina minutissima, Wright, 1902, GFL. p. 190, pl. xiii. figs. 9–12.
,, ,, Heron-Allen & Earland, 1913, CI. p. 62, pl. iv. figs. 11, 12.

2 *Stations.*

A single individual at Stns. 10 and 13. Our experience goes to show that this species is widely distributed, but is never otherwise than very rare.

130. **Bulimina squammigera,** d'Orbigny.

Bulimina squammigera, d'Orbigny, 1839, FIC. p. 137, pl. i. figs. 22–24.
,, ,, Heron-Allen & Earland, 1914, etc., FKA. 1915, p. 642, pl. xlviii. figs. 31–35.

9 *Stations.*

Widely distributed, but never common. Numerous and excellent examples at Stns. 4, 17, and 18. All the specimens are large, well-grown, and typical. The species is, on the whole, much more abundant in these gatherings than is usually the case in British dredgings.

131. **Virgulina schreibersiana,** Czjzek.

Virgulina schreibersiana, Czjzek, 1848, FWB. p. 147, pl. xiii. figs. 18–21.
,, ,, Brady, 1884, FC. p. 414, pl. lii. figs. 1–3.

14 *Stations.*

The best specimens at Stns. 4 and 11; at the latter Stn. an abnormal individual with a double terminal chamber was observed.

Bolivina, d'Orbigny.

132. **Bolivina punctata,** d'Orbigny.

Bolivina punctata, d'Orbigny, 1839, FAM. p. 63, pl. viii. figs. 10–12.
,, ,, Brady, 1884, FC. p. 417, pl. lii. figs. 18, 19.

16 *Stations.*

Very generally distributed, often fairly common, the best at Stns. 4, 11, and 18. There is, as usual, much variation, most noticeable, perhaps, being the occurrence of

an extra long variety at Stns. 4, 19, and 20. Weakly striate examples connecting this species with *B. nobilis* occur at many Stns.

133. **Bolivina nobilis,** Hantken.

Bolivina nobilis, Hantken, 1875, CSS. p. 65, pl. xv. fig. 4.
„ „ Brady, 1884, FC. p. 424, pl. liii. figs. 14, 15.

10 *Stations.*

Sparingly distributed, and not abundant except at Stn. 4, where the best individuals are found; but at nearly all the Stns. where it occurs the specimens are more strongly marked than is usual in British gatherings.

134. **Bolivina textilarioides,** Reuss. (Plate 41. figs. 10–14.)

Bolivina textilaroides, Reuss, 1862, NHG. p. 81, pl. x. fig. 1.
„ „ Brady, 1884, FC. p. 419, pl. lii. figs. 23–25.

17 *Stations.*

Generally distributed, never very common; very few strictly typical examples, the best being found at Stn. 11. At many of the Stns. a very strongly-marked variety, which we figure, occurs, characterized by a thickening of the shell-substance, accompanied in some instances by limbation of the sutures and coarse punctation. These features combined often render the septal lines very indistinct. The best individuals of this rough form occur at Stns. 4, 9, 14, and 18. Intermediate specimens, leading from typical *B. variabilis* to this rough variety, occurred at the same Stns. and also at many others.

135. **Bolivina lævigata** (Williamson).

Textularia variabilis, var. *lævigata*, Williamson, 1858, RFGB. p. 77, pl. vi. fig. 168.
Bolivina lævigata, Brady, 1887, SBRF. p. 900.

7 *Stations.*

Only an occasional specimen, except at Stn. 20, where many good individuals were observed.

136. **Bolivina dilatata,** Reuss.

Bolivina dilatata, Reuss, 1849–50, FOT. p. 381, pl. xlviii. (iii.) fig. 15.
„ „ Brady, 1884, FC. p. 418, pl. lii. figs. 20, 21.

19 *Stations.*

Almost universally distributed. This is one of the commonest and most typical Bolivinæ of the dredgings, as, indeed, of most dredgings round the British coast. Two very distinctive forms occur, nearly always in company: (i.) a long narrow form not far removed from *B. ænariensis*, and (ii.) a much shorter form which varies in two directions—a thinner carinate form often having a denticulate margin and approaching *B. difformis*, and a thick non-carinate type closely allied to *B. robusta*. The best individuals at Stns. 11 and 12.

137. **Bolivina difformis** (Williamson).

Textularia variabilis, var. *difformis*, Williamson, 1858, RFGB. p. 77, pl. vi. figs. 166, 167.
Bolivina difformis, Brady, 1887, SBRF. p. 899.
„ „ Heron-Allen & Earland, 1913, CI. p. 65.

14 *Stations.*

Fairly generally distributed, but not generally abundant, the best individuals at Stns. 3, 10, and 19. There is very little differentiation, but the specimens generally represent one or other of two types: (i.) a thin flat form closely allied to *B. dilatata*, and (ii.) a stouter form with limbate sutures often tending to obscurity of the surface.

138. **Bolivina gramen** (d'Orbigny).

Vulvulina gramen, d'Orbigny, 1839, FC. p. 148, pl i. figs. 30, 31.
Bolivina gramen, Heron-Allen & Earland, 1913, CI. p. 69, pl. v. figs. 4, 5.

5 *Stations.*

Very rare, only an occasional specimen being found, except at Stn. 4, where it is fairly frequent and typical. This species has been recorded from Britain by ourselves (*ut supra*), and this appears to be the only record since it was first described by d'Orbigny (*ut supra*) from Cuba.

139. **Bolivina beyrichi**, Reuss. (Plate 41. fig. 15.) (New to Britain.)

Bolivina beyrichi, Reuss, 1851, FSUB. p. 83, pl. vi. fig. 51.
„ „ Brady, 1884, FC. p. 422, pl. liii. fig. 1.

2 *Stations.*

Several fine and typical specimens at Stn. 4, characterized by the marginal processes and bands of clear shell-substance at the base of each chamber which mark this species. As a recent form, this is the first British record, but Wright records it from Post-tertiary deposits at Derry and Shellag (J. Isle of Man Nat. Hist. Soc. 1902, vol. iii. p. 628; and Proc. Belfast Nat. Field C. 1900–1, p. 604). The species is widely distributed all over the world, but, as a recent species, has not been recorded farther north than the coast of Portugal.

140. **Bolivina ænariensis** (Costa).

Brizalina ænariensis, Costa, 1853, etc., PRN. 1856, p. 297, pl. xv. figs. 1, 2.
Bolivina ænariensis, Brady, 1884, FC. p. 423, pl. liii. figs. 10, 11.

12 *Stations.*

Generally distributed, but not very abundant except at Stns. 2, 18, and 20. None of the individuals exhibit the parallel longitudinal costæ which mark the typical *B. ænariensis.* These costate specimens, however, appear generally to be confined to deeper water than any of these dredgings. The specimens run gradually into *B. dilatata*, Reuss. At several Stns. there is a tendency to form either a marginal keel or serrate processes at the extremities of the chambers; this is especially noticeable at Stn. 2. At this Stn., and also at Stn. 4, many individuals twisted along the long axis occur.

141. **Bolivina tortuosa,** Brady.

Bolivina tortuosa, Brady, 1879, etc., RRC. 1881, p. 57.
„ „ Brady, 1884, FC. p. 420, pl. lii. figs. 31–34.

2 *Stations.*

A single specimen, referable to Brady's species, at Stns. 4 and 6. The question of the specific value of this so-called species is very doubtful. Tortuose specimens clearly referable to other species, such as *B. dilatata* and *B. ænariensis*, occur in the dredgings. This species has only been recorded as a recent British form by ourselves (H.-A. & E. 1908, etc., SB. 1911, p. 317; and 1913, CI. p. 66, pl. v. fig. 1).

142. **Bolivina plicata,** d'Orbigny.

Bolivina plicata, d'Orbigny, 1839, FAM. p. 62, pl. viii. figs. 4–7.
„ „ Goës, 1894, ASF. p. 51, pl. ix. figs. 487, 488.

23 *Stations.*

Almost universally distributed, generally common. Good typical specimens at most Stns., the best at 4, 9, 10, 16, and 20. There are, as usual, at most Stns. a number of specimens intermediate between this species and *B. variabilis.*

143. **Bolivina variabilis** (Williamson).

Textularia variabilis (*typica*), Williamson, 1858, RFGB. p. 73, pl. vi. figs. 162, 163 (not 161 & 162).
Bolivina variabilis, Heron-Allen & Earland, 1913, CI. p. 68.

20 *Stations.*

Generally distributed, often abundant. This not very satisfactory species is, as usual, subject to great variation, the specimens running in a more or less complete series between *B. plicata* and *B. punctata.*

144. **Bolivina inflata,** Heron-Allen & Earland.

Bolivina inflata, Heron-Allen & Earland, 1913, CI. p. 68, pl. iv. figs. 16–19; 1915, FKA. p. 648.

9 *Stations.*

Poorly represented, the specimens being few and not very typical, the best at Stns. 11 and 18. This species, first recorded by us *ut supra*, is probably widely distributed.

Subfamily Cassidulininæ.

Cassidulina, d'Orbigny.

145. **Cassidulina lævigata,** d'Orbigny.

Cassidulina lævigata, d'Orbigny, 1826, TMC. p. 282. No. 1, pl. xv. figs. 4, 5, Modèle No. 41.
„ „ Brady, 1884, FC. p. 428, pl. liv. figs. 1–3.

21 *Stations.*

Almost universally distributed. At all the Stns. but four where the species was

recorded, the specimens belong to the familiar carinate type, differing only in the degree of development of the carina, but at Stns. 2, 3, and 4 a smaller form, entirely devoid of carina and with somewhat rounded marginal edge, occurs in company with the carinate specimens, though usually in smaller numbers. At Stn. 13 this type only was recorded. The carinate specimens everywhere are large as compared with the round-edged variety.

146. **Cassidulina crassa,** d'Orbigny.

Cassidulina crassa, d'Orbigny, 1839, FAM. p. 56, pl. vii. figs. 18–20.
„ „ Brady, 1884, FC. p. 429, pl. liv. figs. 4, 5.

22 *Stations.*

Almost universally distributed, never very abundant, the best at Stns. 4, 10, 16, and 20. There is a considerable range in form, depending primarily on the degree of inflation of the chambers. A very flat complanate form, exhibiting both series of chambers distinctly, was prominent at Stns. 10 and 16. At Stn. 3 and some others a very turgid type, closely approaching *C. subglobosa*, occurs. These inflated varieties are always much smaller than the compressed. At Stn. 4 the species exhibited a complete range between the two types.

147. **Cassidulina subglobosa,** Brady.

Cassidulina subglobosa, Brady, 1879, etc., RRC. 1881, p. 60.
„ „ Brady, 1884, FC. p. 430, pl. liv. fig. 17.

17 *Stations.*

Less widely distributed and less abundant than *C. crassa* or *C. lævigata*, but fairly numerous at many Stns. The specimens, as a whole, seem rather small and with a compressed tendency, linking them with *C. crassa*, but large and typical examples occur at Stns. 10 and 20, and, less frequently, at many others.

148. **Cassidulina bradyi,** Norman.

Cassidulina bradyi (Norman MS.), Wright, 1880, NEI. p. 152.
„ „ Brady, 1884, FC. p. 431, pl. liv. figs. 6–10.

5 *Stations.*

Only a few rather small and poor specimens, the best at Stn. 4.

149. **Cassidulina nitidula** (Chaster).

Pulvinulina nitidula, Chaster, 1892, FS. p. 66, pl. i. fig. 17.
Cassidulina nitidula, Heron-Allen & Earland, 1913, CI. p. 70, pl. v. figs. 6–9.

5 *Stations.*

An occasional excellent specimen, but the species is extremely rare in the dredgings. This species appears, from our experience, to be widely distributed, though never common. There are many records from Post-tertiary deposits, but it has only been recorded by us as a recent British form (*ut supra*) since Chaster's original record.

Family LAGENIDÆ.

Sub-family LAGENINÆ.

LAGENA, Walker & Boys.

150. **Lagena globosa** (Montagu).

Serpula (Lagena) lævis globosa, Walker & Boys, 1784, TMR. p. 3, pl. i. fig. 8.
Vermiculum globosum, Montagu, 1803–8, TB. p. 523.
Lagena globosa, Brady, 1884, FC. p. 452, pl. lvi. figs. 1–3.

20 *Stations.*

Almost universally distributed, and very variable in size and globularity of test, the finest specimens at Stns. 3, 7, and 22. At many Stns., notably Stns. 7, 18, and 22, abnormal individuals with two or more apertures in different parts of the shell occur, including some ento-ecto-solenian specimens. At Stn. 4 two double individuals were found, one having a pair of tests side by side, with a single aperture, the other a pair of tests joined by their bases. At Stn. 7 an individual with a fistulose crown round the aperture was found.

151. **Lagena ovum** (Ehrenberg).

Miliola ovum, Ehrenberg, 1843, MMO. p. 166; and 1854, M. pl. xxiii. fig. 2, pl. xxix. fig. 45, pl. xxxi. fig. 4.
Lagena ovum, Brady, 1884, FC. p. 454, pl. lvi. fig. 5.

2 *Stations.*

A single typical specimen at each Stn.

152. **Lagena apiculata** (Reuss).

Oolina apiculata, Reuss, 1851, FKL. p. 22, pl. i. fig. 1.
Lagena apiculata, Brady, 1884, FC. p. 453, pl. lvi. figs. 4, 15–18.

5 *Stations.*

This pointed variety of *L. globosa* is very rare in the dredgings, only an occasional specimen at the few Stns. where it occurs.

153. **Lagena botelliformis**, Brady.

Lagena botelliformis, Brady, 1879, etc., RRC. 1881, p. 60.
„ „ Brady, 1884, FC. p. 454, pl. lvi. fig. 6.

2 *Stations.*

Typical examples at the two Stns. Most of the records of this pretty little form are from deep water. It is common in the Faroe Channel.

154. **Lagena aspera,** Reuss.

Lagena aspera, Reuss, 1861, SAWW. vol. xliv. p. 305, pl. i. fig. 5.
„ „ Brady, 1884, FC. p. 457, pl. lvii. figs. 7–10.

2 *Stations.*

One small and nearly globular specimen at Stn. 4 and one normal oval specimen at Stn. 17.

155. **Lagena hispida,** Reuss. (Plate 41. fig. 16.)

Lagena hispida, Reuss, 1858, FP. p. 434.
„ „ Brady, 1884, FC. p. 459, pl. lvii. figs. 1–4, pl. lix. figs. 2–5.

9 *Stations.*

Very scantily represented, but a few excellent specimens at Stns. 2 and 20. From the examination of a long series of specimens at other localities, we have little doubt that *L. hispida* is one of those species of *Lagena* with compound shell-structure—*i. e.*, the shell-structure can be separated into distinctive layers. The internal layer is normally clothed with a dense "pile" of most delicate needles of equal length, and their points coalesce to form a rough or "mat" surface. The spirally ornamented neck is free from all exogenous growth. The "mat" outer surface is very easily destroyed; the spines then fall off, and only their bases are left, giving a faintly hispid surface to the test—this is the stage in which British specimens are usually found. A still further stage of attrition leaves practically no trace of the original spines, and a globular test with a dull surface remains. We figure a specimen from the North Sea, which illustrates the real nature of the test better than any of the 'Runa' examples, which are all in a more or less advanced stage of denudation of the outer layers.

156. **Lagena lineata** (Williamson).

Entosolenia lineata, Williamson, 1848, BSGL. p. 18, pl. ii. fig. 18.
Lagena lineata, Brady, 1884, FC. p. 461, pl. lvii. fig. 13.

16 *Stations.*

Generally distributed, but rather rare, the best at Stns. 7, 12, and 19. On the whole, the specimens are very feebly marked, but strong and typical individuals were found at Stns. 7 and 19. At Stn. 10 a double shell, the two individuals somewhat distorted and joined at their bases, and at the same Stn. was found a specimen rough or feebly hispid all over.

157. **Lagena costata** (Williamson). (Plate 41. figs. 17, 18.)

Entosolenia costata, Williamson, 1858, RFGB. p. 9, pl. i. fig. 18.
Lagena costata, Balkwill & Wright, 1885, DIS. p. 338, pl. xiv. figs. 3–5.

18 *Stations.*

Widely distributed and abundant at some Stns., notably Stns. 3, 7, and 10; at other Stns. the individuals are large and typical. At some of the other Stns. a small weak

form occurs in which the aperture is broad, furnished with a thickened lip, and but slightly produced, contrasting with the short but stoutly built produced neck of the type. The number of costæ vary considerably. At Stn. 20 individuals with few and very weakly developed costæ occur in company with normal specimens.

158. **Lagena hexagona** (Williamson).

Entosolenia squamosa, var. *hexagona*, Williamson, 1848, BSGL. p. 20, pl. ii. fig. 23.
Lagena hexagona, Brady, 1884, FC. p. 472, pl. lviii. figs. 32, 33.

21 *Stations.*

Almost universally distributed and common at some Stns., the best at Stns. 10, 18, and 20. There is, as usual, great variation in the size and regularity of marking—very regularly hexagonal specimens at Stn. 10, coarser types at Stns. 2 and 4. Distorted and compressed individuals suggesting the same conditions of growth as have been separated in the allied species *L. squamosa* under the varietal name *montagui* (Alcock) occur in considerable numbers at Stns. 11 and 12, where the species is abundant and varied in form, and occasionally at other Stns.

159. **Lagena reticulata** (MacGillivray).

Lagenula reticulata, MacGillivray, 1843, HMAA. p. 38.
Lagena reticulata, Reuss, 1882, FFL. p. 333, pl. v. figs. 67, 68.

4 *Stations.*

Scantily represented, the best specimens at Stn. 10.

160. **Lagena squamosa** (Montagu).

Vermiculum squamosum, Montagu, 1803–8, TB. p. 526, pl. xiv. fig. 2.
Lagena squamosa, Brady, 1884, FC. p. 471, pl. lviii. figs. 28–31.

21 *Stations.*

Almost universally distributed, common at many Stns., the best at Stns. 7 and 8. There is, of course, great variation in the character and prominence of the markings. At many Stns. the specimens are very weak, but at Stns. 6 and 20 strongly costate forms occur. At Stn. 16 a specimen was found nearly approaching *L. melo* (d'Orbigny). Abnormal and distorted shells at Stn. 12, and a very curious abnormality at Stn. 10, the oral half of the shell being almost flat with a projecting tubular aperture.

161. **Lagena squamosa,** var. **montagui** (Alcock).

Entosolenia montagui, Alcock, 1865, NHC. p. 206.
Lagena squamosa, var. *montagui*, Wright, 1900, DBC. p. 54, pl. ii. fig. 2.
„ „ „ Heron-Allen & Earland, 1913, CI. p. 76, pl. vii. figs. 11, 12.

5 *Stations.*

Sparingly distributed; the specimens are, however, quite typical in their absolute dissimilarity from the normal contour of *L. squamosa*.

162. **Lagena spumosa,** Millett. (Plate 41. figs. 19, 20.) (New to Britain.)

Lagena spumosa, Millett, 1898, etc., FM. 1901, p. 9, pl. i. fig. 9.
„ „ Heron-Allen & Earland, 1914, etc., FKA. 1915, p. 657.

1 *Station.*

Two excellent specimens at Stn. 2. This curious little double-shelled *Lagena*, originally described from the Malay Archipelago, is probably widely distributed. It occurs in considerable numbers in the deep water of the Faroe Channel ('Goldseeker,' Stn. 15 A, 1280 metres), and less abundantly in Hilte Fjord, Norway (260 metres, 'Goldseeker,' Haul 141). We have also records of it from Palermo, and from Vavau (Friendly Islands), Pacific, 16 fms. It is now recorded as British for the first time.

163. **Lagena lævis** (Montagu).

Serpula (*Lagena*) *lævis ovalis*, Walker & Boys, 1784, TMR. p. 3, pl. i. fig. 9.
Vermiculum læve, Montagu, 1803–8, TB. p. 524.
Lagena lævis, Brady, 1884, FC. p. 455, pl. lvi. figs. 7–14, 30.

19 *Stations.*

Almost universally distributed, very common at some Stns., the best at Stns. 12 and 17. There is the usual great range of variation, from true flask-shaped specimens with a produced neck to long tapering tests running into *L. clavata.* Abnormal and distorted shells are frequent at many Stns. The most constant abnormality is of the type which we figured in the Clare Island Report (H.-A. & E. 1913, CI. pl. vi. fig. 5), in which one-half of the shell is developed to a greater degree than the other, resulting in an arcuate test. At Stn. 11 a double specimen, consisting of two shells of different sizes fused into one neck, was found, and at the same Stn. a specimen of the curious abnormal type frequently found in the Lagenidæ in which the oral half of the shell was of greater diameter than the basal portion.

164. **Lagena lævis,** var. **distoma,** Silvestri.

Lagena distoma (*lævis* Montagu), Silvestri, 1900, FPNT. p. 245, pl. iv. fig. 43, pl. vi. figs. 74, 75.
„ *lævis*, var. *distoma*, Millett, 1898, etc., FM. 1901, p. 10, pl. i. fig. 10.
„ „ „ Heron-Allen & Earland, 1913, CI. p. 77, pl. vi. fig. 6.

3 *Stations.*

A few individuals of this rare variety at the three Stns.

165. **Lagena semistriata,** Williamson.

Lagena striata, var. *semistriata,* Williamson, 1848, BSGL. p. 14, pl. i. figs. 9, 10.
„ *semistriata,* Brady, 1884, FC. p. 465, pl. lvii. figs. 14, 16, 17 (? 18, 20).

14 *Stations.*

Generally distributed and often frequent, but, as a general rule, the specimens are very weakly marked. Excellent examples of the strongly costate type originally figured

by Williamson (fig. 9) occur at Stn. 22 (a shore-sand). At Stn. 11 distorted individuals of the curved type occur.

166. **Lagena semilineata,** Wright. (Plate 41. figs. 21, 22.)

Lagena semilineata, Wright, 1885–6, BLP. p. 320, pl. xxvi. fig. 7.

2 *Stations.*

One weak specimen at Stn. 18 and a remarkably fine and typical example at Stn. 9, which we figure. The markings are gouged-out grooves, a feature which separates it from *L. semistriata*, under which name it may have been recorded elsewhere. This type is extremely rare, whereas *L. semistriata* is everywhere a common species.

167. **Lagena perlucida** (Montagu).

Lagena vulgaris, var. *perlucida*, Williamson, 1858, RFGB. p. 5, pl. i. figs. 7, 8.
„ *perlucida*, Heron-Allen & Earland, 1908, etc., SB. 1911, p. 320, pl. x. fig. 13.

4 *Stations.*

Feebly represented, only an occasional specimen, the best at Stn. 4.

168. **Lagena striata** (d'Orbigny).

Oolina striata, d'Orbigny, 1839, FAM. p. 21, pl. v. fig. 12.
Lagena striata Brady, 1884, FC. p. 460, pl. lvii. figs. 22, 24, 28, 29.

15 *Stations.*

Generally distributed, but not abundant except at Stns. 4 and 18. There are two very distinctly recognizable types—one in which the flask is very swollen and rotund and the other in which it is long, with more or less parallel sides. The two occur together at Stn. 4 and at one or two others, but, as a rule, the narrow form predominates. At Stn. 4 a specimen of the rotund type with a hispid base occurred. At this Stn. and also at Stn. 19 specimens were found in which there was a change in the diameter of the shell at about mid-growth.

169. **Lagena sulcata** (Walker & Jacob).

Serpula (*Lagena*) *striata sulcata rotunda,* Walker & Boys, 1784, TMR. p. 2, pl. i. fig. 6.
Lagena sulcata, Brady, 1884, FC. p. 462, pl. lvii. figs. 23, 26, 33, 34, pl. lviii. figs. 4, 17, 18.

20 *Stations.*

Almost universally distributed and often very common, the best at Stn. 7. Very variable both as to size and prominence and regularity of markings. The var. *interrupta* of Williamson occurs at many Stns. (W. 1848, BSGL. p. 14, pl. i. fig. 7), principally in the shallower dredgings and shore-sands. At Stn. 2 a distorted specimen, with the neck set almost at right angles to the body and with curved costæ suggesting *L. curvilineata*, Balkwill & Wright, was found; a somewhat similar specimen was found at Stn. 10. At Stn. 19 a specimen in which the costæ formed hexagonal reticulations over the base. At Stn. 20 (and some others) a very small but strongly marked type occurs, with an almost globular body and costæ extending in sharp edges, and then coalescing into a produced ornamental neck.

170. **Lagena lyellii** (Seguenza).

Amphorina lyellii, Seguenza, 1862, FMMM. p. 52, pl. i. fig. 40.
„ *costata*, Seguenza, ibid. fig. 41.
Lagena lyellii, Heron-Allen & Earland, 1913, CI. p. 79, pl. vi. fig. 8.

7 *Stations.*

Occurs at few Stns., but plentifully at Stns. 2, 4, and 18. The majority of the specimens at all the Stns. are of the oval form represented by Seguenza's species *L. costata* (*ut supra*) rather than the spherical *L. lyellii.*

171. **Lagena williamsoni** (Alcock).

Entosolenia williamsoni, Alcock, 1865, NHC. p. 195.
Lagena williamsoni, Balkwill & Wright, 1885, DIS. p. 339, pl. xiv. figs. 6–8.

22 *Stations.*

Almost universally distributed, often very common, the best specimens at Stns. 7 and 8. At many other Stns. the specimens are rather small, obscure in their reticulate neck-markings, and sometimes distorted.

172. **Lagena acuticosta,** Reuss.

Lagena acuticosta, Reuss, 1862, FFL. p. 331, pl. v. fig. 63.
„ „ Brady, 1884, FC. p. 464, pl. lvii. figs. 31, 32, pl. lviii. figs. 20, 21.

8 *Stations.*

Less widely distributed and less abundant than *L. williamsoni*, except at a few Stns. None of the specimens present the very salient ridges found in deep-water examples, but at the same time the specimens as a whole are well and strongly marked, though varying, especially at Stn. 10, in the prominence of the costæ. *L. acuticosta* and *L. williamsoni* must be extremely closely allied, for practically the only recognizable distinction between the two forms lies in the fact that the neck in *L. acuticosta* is a solid cone of shell-substance, while in *L. williamsoni* this cone is more or less covered with hexagonal pits. Why the test with a solid neck should be more or less confined to deep water, while the reticulate type has its habitat in shore-sands, is one of those puzzling problems of distribution which baffle the student.

173. **Lagena striato-punctata,** Parker & Jones.

Lagena sulcata, var. *striato-punctata*, Parker & Jones, 1865, NAAF. p. 350, pl. xiii. figs. 25–27.
„ *striato-punctata*, Brady, 1884, FC. p. 468, pl. lviii. figs. 37, 40.

1 *Station.*

A single specimen at Stn. 4, chiefly noteworthy because it is not of the feeble type with few costæ such as is usually found in British gatherings, but of a strong multicostate type such as is usually confined to tropical waters. Messrs. Balkwill and Wright, however (B. & W. 1885, DIS. p. 339, pl. xiv. fig. 20), figure a similar specimen from the Irish Sea.

174. **Lagena clavata** (d'Orbigny).

Oolina clavata, d'Orbigny, 1846, FFV. p. 24, pl. i. figs. 2, 3.
Lagena clavata, Goës, 1894, ASF. p. 75, pl. xiii. figs. 725–727.

17 *Stations*.

Almost universally distributed, and fairly frequent at some Stns. The individuals are large, and on the whole well-grown and typical. At Stn. 2 a few individuals with a ring of small cusps round the base were found, comparable with Millett's var. *setigera* (M. 1898, etc., FM. 1901, p. 491, pl. viii. fig. 9), but the processes are extremely minute as compared with the long spines shown in the Malay figure. At Stn. 20 an abnormal example with the basal half of the shell expanded decanter fashion was found.

175. **Lagena gracillima** (Seguenza).

Amphorina gracillima, Seguenza, 1862, FMMM. p. 51, pl. i. fig. 37.
Lagena gracillima, Brady, 1884, FC. p. 456, pl. lvi. figs. 19–28.

13 *Stations*.

Fairly generally distributed, never very common, the best at Stns. 2, 5, and 20. There is, as usual, a considerable range of form, specimens passing imperceptibly into *L. clavata*, on the one hand, and into *L. elongata* (Ehrenberg), on the other. This latter form occurs at Stns. 9 and 14, very long and tubular, the sides practically parallel for the greater part of their length, but constricted at the extremities much more than in Ehrenberg's original figure of *Miliola elongata* (E. 1854, M. pl. xxv. fig. 1), which probably represents a broken test. Fornasini's note on this subject printed and issued in 1895, which unfortunately was not published in any scientific journal, discusses the affinities of this form.

176. **Lagena gracilis**, Williamson.

Lagena gracilis, Williamson, 1848, BSGL. p. 13, pl. i. fig. 5.
„ „ Brady, 1884, FC. p. 464, pl. lviii. figs. 2, 3, 7–10, 19, 22–24.

12 *Stations*.

Occurs at many Stns. in two very distinctive forms: a long, regularly tapering, finely striate shell like Brady's fig. 8 (*supra*) and a short costate type (Brady's fig. 2). Practically every stage between these two is represented, and often at the same Stn. The long form passes imperceptibly into *L. distoma* and the short into *L. sulcata*.

177. **Lagena distoma**, Parker & Jones MS.

Lagena distoma, Brady, 1864, RFS. p. 467, pl. xlviii. fig. 6.
„ „ Brady, 1884, FC. p. 461, pl. lviii. figs. 11–15.

7 *Stations*.

Very sparingly distributed, only an occasional specimen, and these comparatively small when compared with those from the 'Goldseeker' dredgings in the North Sea, where it attains quite a gigantic size (see our note on *L. gracilis*).

178. **Lagena lævigata** (Reuss). (Plate 41. figs. 23, 24.)

Fissurina lævigata, Reuss, 1849–50, FOT. p. 366, pl. xlvi. (i.) fig. 1.
Lagena lævigata, Brady, 1884, FC. p. 473, pl. cxiv. fig. 8, *a*, *b*.

23 *Stations.*

This ubiquitous species occurs at nearly every Stn. and in its usual profusion of forms. The best and most typical examples occur at Stns. 4, 10, and 20, where the species attains exceptionally large dimensions. Stn. 4 is also noteworthy for the presence of a coarsely punctate form, which also occurs in lesser profusion at Stns. 14, 19, 20, and 23. This punctate form is very handsome, the shell-wall being usually exceptionally hyaline. Trigonal specimens were recorded at Stns. 2, 5, 6, and 17, and a polygonal example at Stn. 4. At Stn. 4, also, a specimen occurred with a large lipped mouth opening on one side of the shell (compare the apertures in Sidebottom's *L. lævigata* (var.), S. 1912, etc., LSP. 1912, pl. xvii. fig. 7). Specimens with similar prominently lipped apertures occur in several of the 'Goldseeker' dredgings from the North of Scotland.

179. **Lagena acuta** (Reuss).

Fissurina acuta, Reuss, 1858, FP. p. 434; and 1862, FFL. p. 340, pl. vii. figs. 90, 91.
Lagena acuta, Brady, 1884, FC. p. 474, pl. lix. fig. 6.

16 *Stations.*

This pointed form of *L. lævigata* is widely distributed in the dredgings and very abundant at some Stns. Few of the specimens present terminal spines of any size, in the majority the base is merely ornamented with one or more blunted points. Two forms occur—the commonest is a broad inflated test with a thick opaline shell, the other narrow, long, and hyaline. A trigonal specimen occurred at Stn. 4.

180. **Lagena falcata**, Chaster. (Plate 41. fig. 25.)

Lagena falcata, Chaster, 1892, FS. p. 61, pl. i. fig. 7.
,, ,, Heron-Allen & Earland, 1913, CI. p. 82, pl. vi. figs. 12, 13.

1 *Station.*

Two specimens at Stn. 4, one representing Chaster's original elongate type and the other the short broad form as figured by us (*ut supra*). Previously only recorded *ut supra* and by Wright from post-Tertiary deposits at Altcar (Proc. Liverpool Geol. Soc. vol. ix. 1904, p. 364).

181. **Lagena lucida** (Williamson).

Entosolenia marginata, var. *lucida*, Williamson, 1858, RFGB. p. 10, pl. i. figs. 22, 23.
Lagena lucida, Balkwill & Millett, 1884, FG. p. 80, pl. ii. fig. 7, pl. iii. figs. 4, 5.

18 *Stations.*

Almost universally distributed, abundant at some Stns. There is considerable variation in the relative breadth of the shells. Trigonal specimens occur at Stns. 1, 2,

and 22, and frequently at Stn. 17, which was the best Stn. for the species. A double specimen was found at this Stn.

182. **Lagena fasciata** (Egger).

Oolina fasciata, Egger, 1857, MSO. p. 270, pl. v. (i.) figs. 12–15.
Lagena fasciata, Reuss, 1862, FFL. p. 323, pl. ii. fig. 24.

10 *Stations.*

More widely distributed than *L. annectens* and much more abundant, but very few of the specimens are strongly marked. They run imperceptibly into the variety *faba*. Typical examples should possess curving raised bands of shell-substance near the marginal edge. Only one strongly-marked individual was found, at Stn. 21, and this was decorated with rudimentary costæ between the bands on the inferior portion of the shell. Pedunculate specimens occur at Stns. 3 and 4. The species has only been recorded by us as a recent British form (H.-A. & E. 1913, CI. p. 83; and 1913, NSH. p. 134), but it appears in Wright's list from Post-tertiary deposits at Magheramore (W. 1910–11, ECM. p. 15) and elsewhere. It has no doubt been included in the numerous records of *L. quadricostulata*, Reuss.

183. **Lagena fasciata,** var. **faba,** Balkwill & Millett.

Lagena faba, Balkwill & Millett, 1884, FG. p. 31, pl. ii. fig. 10.
Lagena fasciata, var. *faba*, Heron-Allen & Earland, 1913, CI. p. 84.

15 *Stations.*

This is the most widely distributed and abundant type of its group in the dredgings, occurring at most Stns. and often in considerable numbers. It differs from *L. fasciata* in the reduced prominence of the marginal costæ, which are but very slightly raised, and are of a milky texture as in *L. annectens*, thus occupying a position midway between *L. annectens* and *L. fasciata*, but its most permanent characteristic appears to be the surface-texture, which was compared by its author to orange-peel, and appears to be a constant feature.

184. **Lagena annectens,** Burrows & Holland. (New to Britain.)

Lagena annectens, Burrows & Holland in Jones, Parker, & Brady, 1866, etc., MFC. 1895, p. 203, pl. vii. fig. 11.
,, ,, Heron-Allen & Earland, 1914, etc., FKA. 1915, p. 662.

14 *Stations.*

This rather unsatisfactory little species, in which the marginal faces of the shell are decorated with curved bands of denser shell-substance, forming, as it were, a horseshoe-marking on the face of the shell, is scantily represented in the dredgings, and is often hardly separable from *L. fasciata* and its variety *faba*. The best specimens at Stn. 4, where trigonal examples were observed.

185. **Lagena quadrata** (Williamson).

Entosolenia marginata, var. *quadrata*, Williamson, 1858, RFGB. p. 11, pl. i. figs. 27, 28.
Lagena quadrata, Brady, 1884, FC. p. 475, pl. lix. figs. 3, 16, pl. lx. fig. 5.

9 *Stations.*

Sparingly distributed. Two distinct types occur, generally together—an oblong form similar to Williamson's original figure, and a shorter type which more decidedly deserves the specific name, the specimens being practically square in plan.

186. **Lagena malcomsonii**, Wright.

Lagena lævigata, var. *malcomsonii*, Wright, 1910–11, BCNI. p. 4, pl. i. figs. 1, 2.
Lagena malcomsonii, Heron-Allen & Earland, 1913, CI. p. 84, pl. vi fig. 9.

7 *Stations.*

Very few records, and very rare at those Stns. The best single specimen at Stn. 10, the other specimens being very short.

187. **Lagena marginata** (Walker & Boys). (Plate 41. fig. 26.)

Serpula (*Lagena*) *marginata*, Walker & Boys, 1784, TMR. p. 2, pl. i. fig. 7.
Lagena marginata, Brady, 1884, FC. p. 476, pl. lix. figs. 21–23.

20 *Stations.*

Almost universally distributed, most abundant at Stn. 3. There is a considerable range in the development of the keel, from keel-less specimens comparable with Silvestri's *Fissurina schlichti* (S. 1902, LMT. p. 142, figs. 9–11) up to quite broad-keeled individuals, though these are comparatively rare. At Stn. 12, where the keel-less individuals predominate, and at Stn. 20 nearly all had the aperture on one side of the oral extremity, as in *F. schlichti*. At Stn. 11, two trigonal individuals were found, but no normal specimens, and at Stn. 3 a broad-keeled shell, which we figure, in which the posterior half of the keel was broken up into a fimbriate frill.

188. **Lagena marginata**, var. **inæquilateralis**, Wright.

Lagena marginata, var. *inæquilateralis*, Wright, 1886, BLP. p. 321, pl. xxvi. fig. 10.
" " " Heron-Allen & Earland, 1913, CI. p. 85.

4 *Stations.*

Very rare, and the few individuals found show marked variation in the very distinctive aperture which distinguishes this variety. In Wright's figure the aperture is situated inside a little hood on the flat, or less convex, side of the test, but the 'Runa' specimens also furnish instances of a similar aperture on the convex side of the test and also a specimen without a hood, in which the aperture is normal.

189. **Lagena marginata**, var. **semimarginata**, Reuss. (New to Britain.)

Lagena marginata, var. *semimarginata*, Reuss, 1870, FSP. p. 468; Schlicht, 1870, FSP. p. 11, pl. iv. figs. 4–6, 10–12.
" " " Brady, 1884, FC. p. 477, pl. lix. figs. 17–19.

1 *Station.*

A single specimen, rather small, which, unfortunately, has since been lost.

190. **Lagena marginato-perforata,** Seguenza.

Lagena marginato-perforata, Seguenza, 1879–80, FTR. p. 332, pl. xvii. fig. 34.
„ „ „ Heron-Allen & Earland, 1913, CI. p. 86, pl. vii. figs. 5, 6.

1 *Station.*

Two specimens at Stn. 4, differing from one another in that one has no keel. Neither agrees with the little variety figured in our Clare Island report, the costate markings at the aperture and base lacking in the 'Runa' specimens. The species has previously been recorded as British only by us (*ut supra*) and from the North Sea (H.-A. & E. 1913, NSH. p. 135), and by Wright as a rare recent form among his Post-pliocene records from the North of Ireland (W. 1910–11, ECM. p. 12).

191. **Lagena formosa,** Schwager.

Lagena formosa, Schwager, 1866, FKN. p. 206, pl. iv. figs. 19, *a–d*, pl. vii. fig. 1.
„ „ Brady, 1884, FC. p. 480, pl. lx. figs. 10, 18–20, 8?, 17?.

1 *Station.*

One well-marked example of the little British variety of this handsome species. It was first recorded by us as a recent British form from Clare Island (H.-A. & E. 1913, CI. p. 88).

192. **Lagena lagenoides** (Williamson).

Entosolenia marginata, var. *lagenoides,* Williamson, RFGB. p. 11, pl. i. figs. 25, 26.
Lagena lagenoides, Brady, 1884, FC. p. 479, pl. lx. figs. 6, 7, 9, 12–14.

9 *Stations.*

Scantily distributed, and rare excepting at Stn. 20, where many specimens occurred. The best individuals were at Stn. 16. Except at Stns. 4, 12, and 20, where an occasional test of the long-necked ovate form representing Williamson's figure 25 occurs, all the shells are of the broad short-necked type of Williamson's fig. 26.

193. **Lagena lagenoides,** var. **tenuistriata,** Brady.

Lagena tubulifera, var. *tenuistriata,* Brady, 1879, etc., RRC. 1881, p. 61.
„ *lagenoides,* var. *tenuistriata,* Brady, 1884, FC. p. 479, pl. lx. figs. 11, 15, 16.

3 *Stations.*

Very rare, except at Stn. 4, where it is more abundant than the type. All the specimens are of the long-necked variety, the other form not appearing to be subject to the striate variation.

194. **Lagena ornata** (Williamson).

Entosolenia marginata, var. *ornata,* Williamson, 1858, RFGB. p. 11, pl. i. fig. 24.
Lagena ornata, Heron-Allen & Earland, 1913, CI. p. 88, pl. vii. fig. 8.

7 *Stations.*

Scantily represented and very rare, except at Stn. 4.

195. **Lagena rizzæ** (Seguenza).

Fissurina rizzæ, Seguenza, 1862, FMMM. p. 72, pl. ii. fig. 50.
Lagena rizzæ, Heron-Allen & Earland, 1913, CI. p. 89, pl. vii. fig. 9.

4 *Stations.*

Several good and typical specimens at Stn. 4 and a few at Stn. 12.

196. **Lagena bicarinata** (Terquem).

Fissurina bicarinata, Terquem, 1882, FEP. p. 31, pl. i. (ix.) fig. 24.
Lagena bicarinata, Balkwill & Millett, 1884, FG. p. 82, pl. ii. fig. 4, pl. iii. fig. 9.

6 *Stations.*

Scantily represented, only an occasional specimen at each Stn. The best at Stn. 20.

197. **Lagena orbignyana** (Seguenza).

Fissurina orbignyana, Seguenza, 1862, FMMM. p. 66, pl. ii. figs. 25, 26.
Lagena orbignyana, Brady, 1884, FC. p. 484, pl. lix. figs. 1, 18, 24–26.

23 *Stations.*

Universally distributed. This is by far the most abundant *Lagena* in British dredgings, and occurs plentifully at most Stns., notably at Stns. 3, 10, and 12. There is great variety in the development of the middle keel, the tests being exceptionally broad-keeled at Stn. 3. Two forms varying in the convexity of the test are especially noticeable—a biconvex type, which is the commonest, and a flat-faced type, occurring principally at Stns. 3 and 10. This flat variety appears to be subject to more abundant keel-growth than the convex form. Many trigonal specimens at Stn. 10 and a few at Stn. 12. At Stns. 10, 14, and 19 many specimens with strongly punctate surface, suggesting a passage-form into *L. lacunata*.

198. **Lagena orbignyana,** var. **walleriana,** Wright.

Lagena orbignyana, var. *walleriana*, Wright, 1886, SWI. p. 611; and 1891, SWI. p. 481, pl. xx. fig. 8.
" " " Millett, 1898, etc., FM. 1901, p. 627, pl. xiv. fig. 19.

1 *Station.*

One typical specimen. Previously only recorded as British by Wright (*ut supra*).

199. **Lagena pulchella,** Brady.

Lagena pulchella, Brady, 1870, FTR. p. 294, pl. xii. fig. 1, *a*, *b*.
" " Balkwill & Wright, 1885, DIS. p. 342, pl. xii. fig. 19.

7 *Stations.*

The original diagnosis of this species is confusing. Brady described it as having "characters as in *L. marginata*, W. & J., to which it is closely allied, but differing in having a number of delicate parallel costæ springing from the base and extending into the upper half of the shell, in some specimens nearly to the aperture," but gives no figure [Brady, Brit. Assoc. 1866 (Hebrides, 1867), p. 70]. Later (*ut supra*) he repeats this

description without amplification, but figures a trigonal test of the group of *L. orbignyana* (not *L. marginata*) with sinuous and branching costæ. Balkwill and Millett in 1884 (B. & M. 1884, FG. p. 32, pl. ii. fig. 13) set the matter right by figuring a specimen similar to Brady's, and describing it as "a variety of *L. orbignyana*, the surface marked with branching costæ." This was followed by Balkwill and Wright, *ut supra*.

L. pulchella occurs abundantly in some of the 'Runa' dredgings, although the records are confined to a limited number of Stns. At Stn. 20 it was excessively common. Nearly all the specimens are extremely strongly marked, contrasting markedly with the allied species *L. clathrata*, which is almost invariably a feeble type in the dredgings.

200. **Lagena pulchella**, var. **hexagona**, var. nov. (Plate 41. fig. 27.)

1 *Station.*

A single specimen from Stn. 20, which we figure. In this very distinctive variety the costæ radiating from the oral end of the shell coalesce and form a hexagonal reticulation over the basal half of the faces of the test.

201. **Lagena clathrata**, Brady.

Lagena clathrata, Brady, 1884, FC. p. 485, pl. lx. fig. 4.
„ „ Heron-Allen & Earland, 1913, CI. p. 90, pl. vii. fig. 10.

9 *Stations.*

This species was instituted by Brady (*ut supra*) for the varieties of *L. orbignyana* in which the faces are marked with parallel longitudinal costæ as contrasted with his earlier species, *L. pulchella*, in which the costæ are sinuous or branching. It is more widely distributed in these dredgings than *L. pulchella*, but the specimens are fewer in number and almost invariably of a weak hyaline type, with feeble costæ seldom extending over the whole face of the shell. It reaches its maximum development, like *L. pulchella*, at Stn. 20. The species has only been recorded as recent by Balkwill and Millett from Galway (B. & M. 1884, FG. p. 82, pl. ii. fig. 14), and by Wright from Dog's Bay (W. 1900, DBC. p. 54), and ourselves (*ut supra*), but it has probably been frequently included under *L. pulchella*, of which there are many British records.

202. **Lagena lacunata**, Burrows & Holland. (Plate 41. figs. 28, 29.) (New to Britain.)

Lagena lacunata, Burrows & Holland in Jones, Parker, & Brady, 1866, etc., MFC. 1895, p. 205, pl. vii. fig. 12.
„ *orbignyana*, var. *lacunata*, Sidebottom, 1912, etc., LSP. 1912, p. 416, pl. xix. figs. 16–18.

2 *Stations.*

A few individuals only. The faces of the tests, which we figure, are regularly pitted, but the markings have neither the regularity nor the uniformity of shape characteristic of normal typical specimens. They may be due to algal or fungoid perforations, and the species is therefore recorded with some reservation.

203. **Lagena reniformis,** Sidebottom. (Plate 41. figs. 30–34.)

Lagena reniformis, Sidebottom, 1912, etc., LSP. 1913, p. 204, pl. xviii. fig. 15.

2 *Stations.*

Two specimens, one of which we figure from Stn. 4 and another from Stn. 17, are, we think, attributable to Sidebottom's species, although broader in proportion to their depth than his figures. The species is probably subject to very great variation—indeed, Sidebottom refers to this in his description. We figure, for purposes of comparison, a few specimens from Noss Head, Moray Firth ('Goldseeker,' Haul 138, 70 metres), where the species occurs in some profusion, and is extremely variable in the breadth of the shell as compared with the depth.

204. **Lagena fimbriata,** Brady.

Lagena fimbriata, Brady, 1879, etc., RRC. 1881, p. 61.
„ „ Brady, 1884, FC. p. 486, pl. lx. figs. 26–28.

6 *Stations.*

A few individuals only, and not very strongly marked or characteristic. The majority of them have the basal processes closed, thus coming under Sidebottom's variety *occlusa* (S. 1912, etc. LSP. p. 423, pl. xx. figs. 27, 28).

205. **Lagena cymbula,** Heron-Allen & Earland.

Lagena cymbula, Heron-Allen & Earland, 1913, CI. p. 90, pl. vii. figs. 16–18.
„ „ Heron-Allen & Earland, 1915, NSH. p. 129, pl. x. figs. 10–12.

1 *Station.*

One typical individual.

Subfamily NODOSARINÆ.

NODOSARIA, Lamarck.

206. **Nodosaria rotundata** (Reuss).

Glandulina rotundata, Reuss, 1849–50, FOT. p. 366, pl. xlvi. (i.) fig. 2.
Nodosaria (*G.*) *rotundata*, Brady, 1884, FC. p. 491, pl. lxi. figs. 17–19.

2 *Stations.*

Very rare, but large and typical examples at Stn. 20.

207. **Nodosaria lævigata,** d'Orbigny.

Nodosaria (*G.*) *lævigata*, d'Orbigny, 1826, TMC. p. 252. No. 1, pl. x. figs. 1–3.
„ „ Brady, 1884, FC. pp. 490, 493, pl. lxi. figs. 17–22, 32.

2 *Stations.*

Very rare, but excellent and typical examples at the two Stns. At Stn. 2, where the specimens are smaller, the aboral extremity varies from blunt to spinous and bi-spinous.

208. **Nodosaria calomorpha,** Reuss.

Nodosaria calomorpha, Reuss, 1865–6, FABS. p. 129, pl. i. figs. 15–19.
„ „ Brady, 1884, FC. p. 497, pl. lxi. figs. 23–27.

1 *Station.*

Two quite typical small specimens.

209. **Nodosaria pyrula,** d'Orbigny.

Nodosaria pyrula; d'Orbigny, 1826, TMC. p. 253. No. 13.
„ „ Brady, 1884, FC. p. 497, pl. lxii. figs. 10–12.

17 *Stations.*

Widely distributed and abundant at some Stns., the best at Stns. 2, 4, 10, 14, and 18. Typical *N. pyrula* occurs nearly everywhere, but the longer-chambered form with short stolon-tubes [=*N.* (*Dentalina*) *guttifera*, d'Orbigny, 1846, FFV. p. 49, pl. ii. figs. 11–13, *not* 14] is the only representative at Stns. 11 and 17. Both forms occur together at several other Stns.

210. **Nodosaria filiformis,** d'Orbigny.

Nodosaria filiformis, d'Orbigny, 1826, TMC. p. 253. No. 14.
„ „ Brady, 1884, FC. p. 500, pl. lxiii. figs. 3–5.

8 *Stations.*

Scantily distributed, often represented only by fragments, the best at Stn. 4. Many of the specimens are distorted, a very common feature in this species.

211. **Nodosaria consobrina,** d'Orbigny.

Nodosaria (*D.*) *consobrina,* d'Orbigny, 1846, FFV. p. 46, pl. ii. figs. 1–3.
„ „ Brady, 1884, FC. p. 501, pl. lxii. figs. 23, 24.

3 *Stations.*

Very sparingly represented, good and typical at Stn. 18.

212. **Nodosaria communis,** d'Orbigny. (Plate 42. figs. 1, 2.)

Nodosaria (*D.*) *communis,* d'Orbigny, 1826, TMC. p. 254. No. 35.
„ „ Brady, 1884, FC. p. 504, pl. lxii. figs. 19–22.

17 *Stations.*

Generally distributed, but never very common, the specimens usually small, thin-shelled, and weak, but large and fairly typical specimens at Stns. 3 and 20. Two distinct forms occur, sometimes together, but often isolated—the normal round-in-section *N. communis* and a compressed or vaginuline form. The latter often develops in its later chambers into the normal round type. The best examples of the vaginuline type were at Stns. 4, 18, 20, and 21. Monstrous or double or distorted specimens, showing double or distorted primordial chambers, occur at several Stns., notably at Stn. 18, and are referable to both forms. The vaginuline or compressed form is very common in

many British dredgings, and entirely supersedes the normal type in some of the North Sea ('Goldseeker') dredgings.

213. **Nodosaria pauperata**, d'Orbigny.

Dentalina pauperata, d'Orbigny, 1846, FFV. p. 46, pl. i. figs. 57, 58.
Nodosaria (*D.*) *pauperata*, Brady, 1884, FC. p. 500 (woodcuts, figs. 14, *a*, *b*, *c*).

1 *Station.*

One large and typical but damaged specimen.

214. **Nodosaria roemeri** (Neugeboren). (Plate 41. fig. 35.) (New to Britain.)

Dentalina roemeri, Neugeboren, 1856, OLS. p. 82, pl. ii. figs. 13–17.
Nodosaria (*D.*) *roemeri*, Brady, 1884, FC. p. 505, pl. lxiii. fig. 1.

3 *Stations.*

Very rare, but the few specimens which occur are large and typical, and much better developed than is usual in the 'Runa' Nodosariæ. Previously recorded with some doubt as British, only by Pearcey from the Faroe Channel (P. 1890, FC. p. 177).

215. **Nodosaria mucronata** (Neugeboren).

Dentalina mucronata, Neugeboren, 1856, OLS. p. 83, pl. iii. figs. 8–11.
Nodosaria (*D.*) *mucronata*, Brady, 1884, FC. p. 506, pl. lxii. figs. 27–31.

1 *Station.*

One rather doubtful specimen only. The species has only been recorded previously as British from South-west Ireland by Wright (W. 1891, SWI. p. 483).

216. **Nodosaria scalaris** (Batsch).

Nautilus (*Orthoceras*) *scalaris*, Batsch, 1791, CS. p. 2, pl. ii. fig. 4.
Nodosaria scalaris, Brady, 1884, FC. p. 510, pl. lxiii. figs. 28–31, pl. lxiv. figs. 16–19.

19 *Stations.*

Almost universally distributed and by far the commonest *Nodosaria* in the dredgings, but not equally abundant at all the Stns. The finest series at Stns. 4, 10, 14, and 18. The typical form of Batsch, with chambers regularly increasing in size and coarsely sulcate, is not particularly abundant, but Stn. 18 yields an exceptionally fine and large example, with no less than seven regularly increasing chambers; other good examples at (*inter alia*) Stn. 14. From this typical form practically every degree of depauperation exists down to almost smooth examples. These latter occur at Stn. 4. The weakly marked variety named by Silvestri *Lagenonodosaria pseudoscalaris* (Atti Pont. Acc. Rom. Nuovo Lincei, Anno lvii. 1904, p. 144, fig. 4), characterized by few and feeble costæ and a more or less distorted shell, occurs nearly everywhere. A variety with practically parallel sides, *i. e.*, showing no increasing diameter in the chambers, occurs at Stns. 4, 14, 20, and 23. Inæquilateral types, in which one side of the shell is developed at the expense of the other, giving an *Amphicoryne* appearance to the test,

occur at Stns. 5, 12, and 21. At Stn. 14, a single example of the Batsch type was found, in which the produced neck was exceptionally thick and studded with spines, a form of growth usually found in deeper water. Bicamerate specimens are widely distributed at many Stns., and at Stns. 6, 16, and 19 were the sole representatives of the species. In many instances, these bicamerate individuals were of large proportions, indicating that they were not young shells, but a distinct local variety in which growth was normally arrested at this stage.

217. **Nodosaria scalaris,** var. **separans,** Brady.

Nodosaria scalaris, var. *separans*, Brady, 1884, FC. p. 511, pl. lxiv. figs. 16–19.
„ „ „ Millett, 1898, etc., FM. 1902, p. 520, pl. xi. figs. 11, 12.

2 *Stations.*

No perfect examples were found, but an isolated final chamber at Stn. 4, and at Stn. 20 two final chambers connected, which had evidently been attached to the earlier portion of the shell by a stolon-tube.

218. **Nodosaria proxima,** Silvestri. (New to Britain.)

Nodosaria proxima, O. Silvestri, 1872, NFVI. p. 63, pl. vi. figs. 138–147.
„ „ Brady, 1884, FC. p. 511, pl. lxiv. fig. 15.
„ „ Fornasini, 1888, TP. p. 149, pl. iii. figs. 10, 11.

2 *Stations.*

Bilocular Nodosariæ referable to Silvestri's species (inasmuch as the initial chamber is larger than the succeeding one) occur rarely at the two Stns. In dredgings like these, where *N. scalaris* abounds, the question of their separate identity is open to question.

219. **Nodosaria raphanistrum** (Linné).

Nautilus raphanistrum, Linné, 1788, SN. p. 3372. No. 15.
Nodosaria raphanistrum, Jones, Parker, & Brady, 1866, etc., MFC. 1866, p. 50, pl. i. figs. 6–8.

1 *Station.*

Two small specimens, one pyritised, probably derived fossils from Gault or Lias, though their occurrence in Loch Sunart is hard to explain.

220. **Nodosaria obliqua** (Linné).

Nautilus obliquus, Linné, 1767, SN. p. 1163. No. 281 ; 1788, SN. p. 3372. No. 14.
Nodosaria obliqua, Brady, 1884, FC. p. 513, pl. lxiv. figs. 20–22.

6 *Stations.*

Very rare ; the specimens small and weakly sulcate, often distorted, the best at Stn. 20. At Stn. 23 the individual was sulcate on the initial chamber only.

LINGULINA, d'Orbigny.

221. **Lingulina biloculi,** Wright.

Lingulina carinata, var. *biloculi*, Wright, 1910–11, ECM. p. 13, pl. ii. fig. 10.
„ *biloculi*, Heron-Allen & Earland, 1913, CI. p. 94, pl. viii. figs. 5–7.

5 *Stations.*

Frequent and finely developed at Stn. 11, rare at the other Stns. All the protean forms assumed by this species occur in the dredgings.

222. **Lingulina carinata,** d'Orbigny.

Lingulina carinata, d'Orbigny, 1826, TMC. p. 257. No. 1, Modèle No. 26.
„ „ Brady, 1884, FC. p. 517, pl. lxv. figs. 16, 17.

1 *Station.*

One specimen of the same type as that figured in our Clare Island Report (H.-A. & E. 1913, CI. pl. viii. fig. 9) at Stn. 17.

223. **Lingulina carinata,** var. **bicarinata,** Sidebottom. (Plate 42. figs. 3–5.)

Lingulina carinata, var. *bicarinata*, Sidebottom, 1904, etc., RFD. 1907, p. 3, pl. i. fig. 20.
„ „ „ Heron-Allen & Earland, 1913, CI. p. 94, pl. viii. figs. 3, 4.

1 *Station.*

A few specimens at Stn. 4. They differ from our Clare Island specimens, and from the type, by the presence of a strong rib running down the middle of the face of the first chamber. One of the specimens has also three chambers, a fact not previously observed in the variety. It has only been previously recorded by us as British (*ut supra*).

224. **Lingulina carinata,** var. **seminuda,** Hantken. (Plate 42. figs. 6, 7.) (New to Britain.)

Lingulina costata, var. *seminuda*, Hantken, 1875, CSS. p. 41, pl. iv. fig. 8 *a*, *b*.
„ *carinata*, var. *seminuda*, Brady, 1884, FC. p. 518, pl. lxv. figs. 14, 15.

1 *Station.*

At Stn. 4 a few little specimens, which we figure and which we think should be attributed to this form, although, owing to their extreme minuteness and hyaline character, they differ considerably from the large deep-water specimens figured by Brady from the Atlantic. The test is bilocular, the last chamber forming quite three-fourths of the total bulk of the shell, and furnished with a long curving entosolenian tube, which runs diagonally to the lower outer edge of the chamber. The margin of the entire shell is thickened and slightly constricted on its inner edge, so as to form a fine groove running round inside the edge of the shell. These markings we consider homologous with the sulci of the deep-water form.

FRONDICULARIA, Defrance.

225. **Frondicularia spathulata**, Brady.

Frondicularia spathulata, Brady, 1879, etc., RRC. 1879, p. 270, pl. viii. fig. 5.
„ „ Brady, 1884, FC. p. 519, pl. lxv. fig. 18.

1 *Station.*

Several specimens of this little form at Stn. 4. They resemble the individuals figured by us from Clare Island (H.-A. & E. 1913, CI. pl. viii. fig. 12). Such specimens are of fairly frequent occurrence in muddy dredgings round the British coasts, but have only been recorded and figured by us (*loc. cit.*).

226. **Frondicularia tenera** (Bornemann). (Plate 42. figs. 8–10.) (New to Britain.)

Lingulina tenera, Bornemann, 1854, LG. p. 38, pl. iii. fig. 24 *a–c*.
„ „ Tate & Blake, 1876, YL. p. 455, pl. xviii. figs. 15, 15 *a*.
Frondicularia pupa, Terquem & Berthelin, 1875, LME. p. 36, pl. iii. (xiii.) fig. 1 *a–c*.
„ *millettii*, Brady, 1884, FC. p. 524, woodcut fig. 16 *a*, *b*.

1 *Station.*

At Stn. 26 (a tube of material labelled "from various localities round Skye") we have found the specimen which we figure under the above name. As to the origin of the specimen there must be considerable doubt. Bornemann's species in one or other of its innumerable forms is apparently a common and widely-distributed Liassic fossil, but there appears to be no Lias within a great distance of Skye. The specimen, although somewhat infiltrated, cannot be distinctly recognized as fossil—it might be merely a dead recent shell. It consists of a large primordial chamber followed by six chambers, regularly increasing in breadth and but slightly arched, although we think the arching sufficient for its allocation to *Frondicularia* rather than to *Lingulina*. The surface of the shell is concave down the median line, and each edge is furnished with four strong costæ, extending the entire length of the shell. The aperture is broad and slit-like. Brady's recent species *F. millettii*, founded on specimens from coral-sand (Raine Island), appears to differ from *F. tenera* only in the greater number of chambers and the character of the terminal aperture on a produced neck, and the large number of marginal costæ. The range of varieties illustrated by Terquem's *F. pupa* (*ut supra*) more than covers these points. His figure 1 *c* appears closely to resemble both our specimen and Brady's species in all but minor details. As a fossil the form has been recorded under the name of *Lingulina tenera* from the estuarine clay of Limavady Station and from the Lias of N.E. Ireland (W. 1880, NEI. p. 150; and Wright, Irish Liassic Foraminifera, Belfast Nat. Field Club, 1871, App. ii. p. 26).

Marginulina, d'Orbigny.

227. **Marginulina glabra,** d'Orbigny.

Marginulina glabra, d'Orbigny, 1826, TMC. p. 259. No. 6, Modèle No. 55.
„ „ Brady, 1884, FC. p. 527, pl. lxv. figs. 5, 6.

2 *Stations.*

Very rare. The specimens are small and weak in character.

228. **Marginulina costata** (Batsch).

Nautilus (*Orthoceras*) *costatus*, Batsch, 1791, CS. p. 2, pl. i. fig. 1 *a–g*.
Marginulina costata, Brady, 1884, FC. p. 528, pl. lxv. figs. 10–13.

4 *Stations.*

Very rare, but exceptionally large and fine at Stn. 19, and almost equally good at Stn. 14. At Stn. 20 the specimens are small and very complanate and regularly Cristellarian in their initial portion.

Vaginulina, d'Orbigny.

229. **Vaginulina legumen** (Linné).

Nautilus legumen, Linné, 1788, SN. p. 3373. No. 22.
Vaginulina legumen, Brady, 1884, FC. p. 530, pl. lxvi. figs. 13–15.

6 *Stations.*

Rare, but some extremely fine specimens were found, the best at Stn. 3. At many of the Stns. thin-shelled slender forms, vaginuline in aperture and oval in section, are of frequent occurrence. Their affinities, however, appear to lie with *Nodosaria communis* (q. v.), with which they are linked by many intermediate varieties. We have dealt with them when considering that species.

230. **Vaginulina linearis** (Montagu).

Nautilus linearis, Montagu, 1803–8, TB. Suppl. p. 87, pl. xxx. fig. 9.
Vaginulina lineuris, Brady, 1884, FC. p. 532, pl. lxvii. figs. 10, 12.

1 *Station.*

A single specimen (damaged) from Stn. 11.

Cristellaria, Lamarck.

231. **Cristellaria crepidula** (Fichtel & Moll).

Nautilus crepidula, Fichtel & Moll, 1798, TM. p. 107, pl. xix. figs. *g–i*.
Cristellaria crepidula, Brady, 1884, FC. p. 542, pl. lxvii. figs. 17, 19, 20, pl. lxviii. figs. 1, 2.

13 *Stations.*

Generally distributed, sometimes fairly frequent. There is, as usual, an immense

range of variation in the specimens which have to be referred to this species. At many Stns., notably Stns. 2, 4, and 20, the specimens in their regularity of growth approach *C. cymboides*, d'Orb., and *C. acutauricularis*. At Stns. 3, 12, and 20 large individuals of the compressed type of *C. arcuata*, d'Orb., occur. The majority at all Stns. are megalospheric, but microspheric specimens occur at Stns. 17 and 18. The size of the primordial chamber influences the later growth of the shell in the genus *Cristellaria* perhaps more than in any other.

232. **Cristellaria acutauricularis** (Fichtel & Moll).

Nautilus acutauricularis, Fichtel & Moll, 1798, TM. p. 102, pl. xviii. figs. *g–i*.
Cristellaria acutauricularis, Brady, 1884, FC. p. 543, pl. cxiv. figs. 17 *a*, *b*.

5 *Stations*.

Occurs at very few Stns. and nowhere typical. All the individuals are of a narrower type, as viewed across the face of the terminal chamber, than in Fichtel & Moll's original plates. They thus approach *C. cymboides*, d'Orbigny. At Stns. 4 and 20 some of the specimens were almost typical *C. cymboides*. This species has only been recorded as a recent British form by us from Clare Island and the North Sea (H.-A. & E. 1913, CI. p. 99, pl. viii. fig. 15), but Wright has recorded it from Post-tertiary deposits in the North of Ireland (W. 1910–11, ECM. p. 15). It has probably been included by many authors under *C. crepidula*, which, as Burrows and Holland have observed (Proc. Geol. Assoc. vol. xv. 1897, p. 40), has been made to include a very wide series of varieties.

233. **Cristellaria convergens,** Bornemann. (Plate 42. figs. 11–14.)

Cristellaria convergens, Bornemann, 1855, FSH. p. 327, pl. xiii. figs. 16, 17.
„ „ Brady, 1884, FC. p. 546, pl. lxix. figs. 6, 7.

2 *Stations*.

At Stn. 4 two minute and thin-walled specimens of a *Cristellaria* were found, which we are inclined to refer to Bornemann's species, and a single one at Stn. 20. Bornemann's figures are in themselves unsatisfactory, fig. 16 representing a rotulate form with no visible septation; whereas fig. 17 represents a form evidently allied to *C. gibba* and having marked septal lines. His fig. 18 (on same plate), *C. elliptica*, illustrates a form linking figs. 16 and 17, and *C. elliptica* is properly regarded as a synonym of *C. convergens*.

The two 'Runa' specimens represent the two types figured by Bornemann in his figs. 16 and 17, but, as might be expected in such shallow water, the specimens are small and the shell-texture thin and extremely hyaline, so that the septation is distinct in both individuals.

C. convergens is normally a deep-water type. Brady's records range between 16 and 2710 fms., the majority being in the neighbourhood of the 2000-fm. line. As a recent British species it has only been recorded by Pearcey from the Firth of Forth (Trans. Nat. Hist. Soc. Glasgow, NS. vol. v. 1900–1, p. 242).

234. **Cristellaria gibba,** d'Orbigny.

Cristellaria gibba, d'Orbigny, 1839, FC. p. 40, pl. vii. figs. 20, 21.
„ „ Brady, 1884, FC. p. 546, pl. lxix. figs. 8, 9.

7 *Stations.*

A few specimens, all small and somewhat starved except at Stn. 23, where a fair-sized typical individual was found.

235. **Cristellaria rotulata** (Lamarck).

Lenticulites rotulata, Lamarck, 1804, AM. vol. v. p. 188. No. 3; vol. viii. (1806) pl. lxii. fig. 11.
Cristellaria rotulata, Brady, 1884, FC. p. 547, pl. lxix. fig. 13 *a, b.*

19 *Stations.*

Generally distributed and often frequent, but all the specimens are small except at Stns. 2, 10, 20, and 23.

236. **Cristellaria cultrata** (Montfort).

Robulus cultratus, Montfort, 1808–10, CS. vol. i. p. 214, 54e genre.
Cristellaria cultrata, Brady, 1884, FC. p. 550, pl. lxx. figs. 4–8.

7 *Stations.*

Sparingly distributed and never very frequent, excepting at Stns. 2 and 20. At these Stns. well-grown individuals occur, but the marginal carina is everywhere very narrow.

237. **Cristellaria variabilis,** Reuss.

Cristellaria variabilis, Reuss, 1849-50, FOT. p. 369, pl. xlvi. (i.) figs. 15, 16.
„ „ Brady, 1884, FC. p. 541, pl. lxviii. figs. 11–16.

1 *Station.*

One small, but typical, specimen.

Subfamily POLYMORPHININÆ.

POLYMORPHINA, d'Orbigny.

238. **Polymorphina amygdaloides** (Reuss). (New to Britain.)

Globulina amygdaloides, Reuss, 1851, FSUB. p. 82, pl. vi. fig. 47.
Polymorphina amygdaloides, Reuss, 1855, TNMD. p. 250, pl. viii. fig. 84.
„ „ Brady, 1884, FC. p. 560, pl. lxxi. fig. 13.

1 *Station.*

One specimen resembling Reuss's earlier (1851) figure, which is less compressed than his later (1855) figure. The question of the advisability of separating this form from *P. lactea* is very doubtful. It has probably been often recorded under that name.

239. **Polymorphina lactea** (Walker & Jacob).

Serpula lactea, Walker & Jacob, 1798, AEM. p. 634, pl. xiv. fig. 4.
Polymorphina lactea, Brady, 1884, FC. p. 559, pl. lxxx. typical, fig. 11; var. fig. 14.

19 *Stations.*

Widely distributed, sometimes common, but the specimens as a whole run small, the only Stns. where a good series showing all stages of growth occurs being Stns. 7 and 22. No fistulose specimens.

240. **Polymorphina oblonga** (Williamson), H.-A. & E.

Polymorphina lactea, var. *oblonga*, Williamson, 1858, RFGB. p. 71, pl. vi. fig. 149.
„ *oblonga*, Heron-Allen & Earland, 1913, CI. p. 100, pl. viii. fig. 17.

7 *Stations.*

Very rare and, except at Stn. 3, nearly always very small. Many of the specimens have an entosolenian tube, which we take to be a sign of depauperation.

241. **Polymorphina concava** (Williamson), H.-A. & E.

Polymorphina lactea, var. *concava*, Williamson, 1858, RFGB. p. 72, pl. vi. figs. 151, 152.
„ *concava*, Heron-Allen & Earland, 1908, etc., SB. 1909, p. 431, pl. xvii. fig. 6.

2 *Stations.*

Very rare. A few good specimens at each Stn., all detached.

242. **Polymorphina sororia**, Reuss.

Polymorphina (*Guttulina*) *sororia*, Reuss, 1863, FCA. p. 151, pl. ii. figs. 25–29.
„ *sororia* Brady, 1884, FC. p. 562, pl. lxxi. figs. 15, 16.

16 *Stations.*

Widely distributed, but never very abundant. Taking *P. sororia* as the type of the pyriform Polymorphinæ, Reuss's species should properly be confined to the compressed forms, and d'Orbigny's earlier species, *P. gutta* (d'O. 1826, TMC. p. 267. No. 28, pl. xii. figs. 5, 6, Modèle No. 30) and *P.* (*Pyrulina*) *acuminata* (d'O. 1840, CBP. p. 43, pl. iv. figs. 18, 19) being used for the round and aborally pointed varieties respectively. The differences are, in our opinion, too trivial for consideration, and the compressed type being by far the most abundant we prefer to separate all such forms under Reuss's name *P. sororia.*

Typical *P. sororia* occurs practically at every Stn. Round (=*P. gutta*) forms at Stns. 2, 4, 12, 18, and 20, the best at Stn. 20. Pointed (=*P. acuminata*) forms are rarer, occurring only at Stns. 4, 13, and 21, the best at Stn. 21.

243. **Polymorphina rotundata** (Bornemann).

Guttulina rotundata, Bornemann, 1855, FSH. p. 346, pl. xviii. fig. 3.
Polymorphina rotundata, Brady, 1884, FC. p. 570, pl. lxxiii. figs. 5–8.

13 *Stations.*

Generally distributed and fairly common at some Stns. The short cylindrical form,

the true *P. rotundata*, is the most widely distributed; the long form [=*P.* (*Guttulina*) *cylindrica*, Bornemann, 1855, FSH. p. 347, pl. xviii. figs. 4–6] occurs in company with it at several Stns. and by itself at Stn. 11. Both forms occur in the fistulose condition, but this is only recorded at four Stns.

244. **Polymorphina gibba,** d'Orbigny.

Polymorphina (*Globulina*) *gibba*, d'Orbigny, 1826, TMC. p. 266. No. 20. Modèle No. 63.
Polymorphina gibba, Brady, 1884, FC. p. 561, pl. lxxi. fig. 12 *a*, *b*; fistulose, pl. lxxiii. fig. 16.

14 *Stations.*

Generally distributed, often common and attaining very large size. This species exhibits the fistulose habit at the majority of the Stns. at which it occurs, both globular and compressed forms occurring in this condition.

245. **Polymorphina communis,** d'Orbigny.

Polymorphina (*Guttulina*) *communis* and *problema*, d'Orbigny, 1826, TMC. p. 266. Nos. 14, 15, pl. xii. figs. 1–4, Modèles Nos. 61, 62.
„ *communis*, Brady, 1884, FC. p. 568, pl. lxxii. fig. 19.

3 *Stations.*

A few specimens only, all closely resembling d'Orbigny's Modèle No. 62.

246. **Polymorphina compressa,** d'Orbigny.

Polymorphina compressa, d'Orbigny, 1846, FFV. p. 233, pl. xii. figs. 32–34.
„ „ Brady, 1884, FC. p. 565, pl. lxxii. figs. 9–11; fistulose, pl. lxxiii. fig. 17.

16 *Stations.*

Generally distributed and abundant at the Stns., notably at Stns. 3, 8, 10, and 20. At the two latter Stns. excellent series of all stages and sizes, and including fistulose individuals.

247. **Polymorphina cylindroides,** Roemer. (Plate 42. figs. 15, 16.)

Polymorphina cylindroides, Roemer, 1838, NTM. p. 385, pl. iii. fig. 26.
„ *lactea*, var. *acuminata*, Williamson, 1858, RFGB. p. 71, pl. vi. fig. 148.
„ *cylindroides*, Brady, Parker, & Jones, 1870, GP. p. 221, pl. xxxix. fig. 6 *a–c*.

2 *Stations.*

Very rare. A good many specimens at Stn. 22 and a single one at Stn. 23. The only previous British record is from Mr. Barlee's material from Skye, recorded by Williamson (*ut supra*).

248. **Polymorphina myristiformis,** Williamson.

Polymorphina myristiformis, Williamson, 1858, RFGB. p. 73, pl. vi. figs. 156, 157.
„ „ Brady, 1884, FC. p. 571, pl. lxxiii. figs. 9, 10.

4 *Stations.*

Remarkably rare, the only Stn. where more than a single specimen occurs being Stn. 20, where they attained their best development.

UVIGERINA, d'Orbigny.

249. **Uvigerina pygmæa,** d'Orbigny.

Uvigerina pygmæa, d'Orbigny, 1826, TMC. p. 269, pl. xii. figs. 8, 9, Modèle No. 67.
„ „ Brady, 1884, FC. p. 575, pl. lxxiv. figs. 11–14.

8 *Stations.*

Rare, but widely distributed. Not many specimens at any Stn. except Stns. 18, 19, and 21, where several large and typical specimens occurred.

250. **Uvigerina angulosa,** Williamson.

Uvigerina angulosa, Williamson, 1858, RFGB. p. 67, pl. v. fig. 140.
„ „ Brady, 1884, FC. p. 576, pl. lxxiv. figs. 15–18.

21 *Stations.*

Almost universally distributed and often common, but very variable as regards the proportionate length and breadth of the shell. Very long and narrow forms at some Stns., but the general average gives rather a short stout type. At Stn. 2 the specimens were small, but very regular and delicately striate.

SAGRINA, Parker & Jones.

251. **Sagrina dimorpha** (Parker & Jones). (Plate 42. figs. 17, 18.)

Uvigerina (*Sagrina*) *dimorpha*, Parker & Jones, 1865, NAAF. p. 364, pl. xviii. fig. 18.
Sagrina dimorpha, Brady, 1884, FC. p. 582, pl. lxxvi. figs. 1–3.

3 *Stations.*

Very rare, but many excellent specimens at Stn. 2. We take this opportunity of figuring this species, of which the British records are confined to Brady's 'Synopsis' (B. 1887, SBRF. p. 915) and our Selsey Bill record (H.-A. & E. 1908, etc., SB. 1911, p. 326). It also occurs in several 'Goldseeker' dredgings in the North Sea. This species was by an oversight recorded in the preliminary list (Rep. Marine Biol. Stn. Port Erin, 1913, p. 31) as *Sagrina nodosa*, P. & J.

Family GLOBIGERINIDÆ.

GLOBIGERINA, d'Orbigny.

252. **Globigerina bulloides,** d'Orbigny.

Globigerina bulloides, d'Orbigny, 1826, TMC. p. 277. No. 1 ; Modèles Nos. 17 & 76.
„ „ Brady, 1884, FC. p. 593, pl. lxxvii., pl. lxxix. figs. 3–7.

21 *Stations.*

Almost universally distributed, but in very variable frequencies. The best and largest

at Stns. 7 and 18. At many Stns. only minute and starved individuals occur, notably at Stn. 4. At this Stn. a specimen infiltrated with glauconite occurred.

253. **Globigerina dubia,** Egger. (New to Britain.)

Globigerina dubia, Egger, 1857, MSO. p. 281, pl. ix. (v.) figs. 7–9.
„ „ Brady, 1884, FC. p. 595, pl. lxxix. fig. 17 *a, b, c.*

1 *Station.*

One specimen at Stn. 18.

254. **Globigerina pachyderma** (Ehrenberg).

Aristerospira pachyderma, Ehrenberg, 1861, DSI. p. 303.
Globigerina pachyderma, Brady, 1884, FC. p. 600, pl. cxiv. figs. 19, 20.

1 *Station.*

The specimens are doubtless derived from northerly drift.

255. **Globigerina inflata,** d'Orbigny.

Globigerina inflata, d'Orbigny, 1839, FIC. p. 134, pl. ii. figs. 7–9.
„ „ Brady, 1884, FC. p. 601, pl. lxxix. figs. 8–10.

3 *Stations.*

A single specimen at each Stn.

256. **Globigerina rubra,** d'Orbigny.

Globigerina rubra, d'Orbigny, 1839, FC. p. 82, pl. iv. figs. 12–14.
„ „ Brady, 1884, FC. p. 602, pl. lxxix. figs. 11–16.
„ „ Heron-Allen & Earland, 1913, NSH. p. 131, pl. x. figs. 13–15.

12 *Stations.*

Widely distributed, but common only at Stn. 17. Good specimens also at Stns. 15 and 16. All the individuals belong to the minute type common in muddy dredgings in Northern seas, as figured by us (*ut supra*).

257. **Globigerina linnæana** (d'Orbigny).

Rosalina linneiana, d'Orbigny, 1839, FC. p. 101, pl. v. figs. 10–12.
Globigerina linnæana, Brady, 1884, FC. p. 598, pl. cxiv. fig. 21 *a–c*; Cretaceous, pl. lxxxii. figs. 12 *a–b*.

1 *Station.*

One perfectly preserved chalk-fossil. The source of origin of this specimen is entirely obscure. Unless derived from submarine denudation, it must have drifted from the North of Ireland. See also observations on *Frondicularia tenera* (No. 226).

ORBULINA, d'Orbigny.

258. **Orbulina universa,** d'Orbigny.

Orbulina universa, d'Orbigny, 1839, FC. p. 3, pl. i. fig. 1.
„ „ Brady, 1884, FC. p. 608, pl. lxxviii., pl. lxxxi. figs. 8–26, *et seq.*

2 *Stations.*

Two specimens only, one at each Stn., small and thick-shelled. The rarity of this species in the gathering is remarkable considering its abundance in the Atlantic Ocean to the immediate westward.

SPHÆROIDINA, d'Orbigny.

259. **? Sphæroidina** sp. (Plate 42. figs. 19, 20.)

1 *Station.*

We figure a single specimen from Stn. 14 of an organism which from the character of its aperture seems to present some affinity to *Sphæroidina*.

It consists of two chambers only, opposed to each other, in the manner of *Biloculina bulloides*, with a little arched aperture on either face at the line of junction. The shell in the neighbourhood of the two apertures is smooth and hyaline, but the rest of the shell, which forms a slightly compressed sphere, is coarsely aculeate. It may be an abnormal individual of *S. bulloides*, in which the early chambers have been absorbed and the outer surface is decorated with blunt spines.

We record and figure this single specimen for purposes of future reference, without naming it.

Family ROTALIIDÆ.

Subfamily SPIRILLININÆ.

SPIRILLINA, Ehrenberg.

260. **Spirillina vivipara,** Ehrenberg. (Plate 42. figs. 21–25.)

Spirillina vivipara, Ehrenberg, 1841, SNA. p. 442, pl. iii. fig. 41.
„ „ Brady, 1884, FC. p. 630, pl. lxxxv. figs. 1–5.

13 *Stations.*

Widely distributed and extremely variable. Attached specimens occur at Stns. 15, 19, and 20. At Stn. 3 the tests were all of a peculiar sub-chitinous character, very thin, and brownish in colour, and many had evidently been attached, being irregular in form. At this Stn. and in this condition associated pairs were found. Specimens exhibiting a transition-form between *S. vivipara* and *S. margaritifera*, which we figure, occur at several Stns. They agree with the Type *S. vivipara* in the section of the tube and general aspect of the shell; but the underside of the shell is distinctive, the shell-substance being deposited in thick layers on the outer edges of the convolution and coming down

into cusps between the lines of perforations, thus giving a pseudo-beaded (or margaritiferous) appearance to the inferior surface. In some cases this is accompanied by a radial constriction of the upper surface of the tube corresponding to the thickening of the under surface, giving a superficial aspect similar to Sidebottom's species *S. vivipara*, var. (S. 1904, etc., RFD. 1908, pl. i. fig. 14), though in his figure this constriction marks the underside of the shell.

261. **Spirillina obconica,** var. **carinata,** Halkyard.

Spirillina vivipara, var. *carinata*, Halkyard, 1889, RFJ. p. 69, pl. ii. fig. 6.
„ *obconica*, var. *carinata*, Heron-Allen & Earland, 1913, CI. p. 108, pl. ix. figs. 6, 7.

2 *Stations.*

Two good specimens at Stn. 3, and also at Stn. 12.

Subfamily Rotaliinæ.

Patellina, Williamson.

262. **Patellina corrugata,** Williamson.

Patellina corrugata, Williamson, 1858, RFGB. p. 46, pl. iii. figs. 86–89.
„ „ Brady, 1884, FC. p. 634, pl. lxxxvi. figs. 1–7.

21 *Stations.*

Almost universally distributed, often very abundant. There is remarkably little variation, nearly all the specimens being of the circular type. The oval form figured by us from Clare Island (H.-A. & E. 1913, CI. p. 109, pl. ix. fig. 11) occurs at several Stns. There is also a tendency to excessive carination in a few instances.

Discorbina, Parker & Jones.

263. **Discorbina nitida** (Williamson). (Plate 42. figs. 26–30.)

Rotalina nitida, Williamson, 1858, RFGB. p. 54, pl. iv. figs. 106–108.
Discorbina nitida, Sidebottom, 1904, etc., RFD. 1908, p. 13, pl. iv. fig. 6.

19 *Stations.*

Almost universally distributed and often very common. This is one of the commonest Discorbinæ of the 'Runa' gatherings, and, as such, presents endless variations. Exceptionally large individuals at Stns. 3 and 10. Specimens running into *D. praegeri* owing to the presence of a central umbilical stud, and into *D. rosacea* through the presence of small asterigine chamberlets, occur at many Stns. At Stns. 10 and 20 a few individuals of a type with somewhat inflated and enclosing chambers, which we figure (figs. 29, 30): this variety is characterized by a lobulate periphery instead of the sharp peripheral keel typical of the species. At Stn. 20 a few individuals were observed of a very curious type, which we also figure (figs. 26–28), having a comparatively high dome with a prominent megalospheric primordial chamber and a broad carinate periphery.

264. **Discorbina millettii,** Wright.

Discorbina millettii, Wright, 1910–11, ECM. p. 13, pl. ii. figs. 14–17.
„ „ Heron-Allen & Earland, 1913, CI. p. 121, pl. x. figs. 5–7.

4 *Stations.*

Extremely rare, the best individuals occurring at Stn. 3. The species has only been recorded by us *ut supra*, and by Wright from post-Tertiary deposits. It has probably been included in some of the British records of *D. nitida*, the characteristic beading of the under surface requiring careful diagnosis to separate it from that form.

265. **Discorbina praegeri,** Heron-Allen & Earland.

Discorbina praegeri, Heron-Allen & Earland, 1913, CI. p. 122, pl. x. figs. 8–10.
„ „ Heron-Allen & Earland, 1914, etc., FKA. 1915, p. 692.

19 *Stations.*

Almost universally distributed. The usual variations occur, connecting the species on the one side with *D. rosacea* and on the other with *D. nitida.*

266. **Discorbina peruviana** (d'Orbigny).

Rosalina peruviana, d'Orbigny, 1839, FAM. p. 41, pl. i. figs. 12–14.
Discorbina peruviana, Heron-Allen & Earland, 1913, CI. p. 122, pl. xi. figs. 1–3.

3 *Stations.*

Very sparingly distributed compared with *D. rosacea*, but often running into that form. This is one of the d'Orbignyan species revived by us for taxonomic purposes, having probably been frequently included under *D. rosacea.*

267. **Discorbina rosacea** (d'Orbigny).

Rotalia rosacea, d'Orbigny, 1826, TMC. p. 273. No. 15, Modèle No. 39.
Discorbina rosacea, Brady, 1884, FC. p. 644, pl. lxxxvii. figs. 1, 4.
„ „ Heron-Allen & Earland, 1913, CI. p. 124, pl. xi. figs. 7–9.

21 *Stations.*

Almost universally distributed and generally extremely common. The best individuals at Stns. 10, 18, and 20. There is an immense range of variation, specimens linking the type with *D. praegeri*, *D. peruviana*, and *D. turbo* occurring at many Stns.

268. **Discorbina planorbis** (d'Orbigny).

Asterigerina planorbis, d'Orbigny, 1846, FFV. p. 205, pl. xi. figs. 1–3.
Discorbina planorbis, Heron-Allen & Earland, 1913, CI. p. 124, pl. xi. figs. 10–12.

8 *Stations.*

Very unevenly distributed. Very common at some of the Stns. at which it occurs. Intermediate forms linking the species with *D. mamilla* are abundant. This species, revived by us *ut supra*, has probably been recorded by British authors under *D. turbo.*

269. **Discorbina baccata,** Heron-Allen & Earland.

Discorbina baccata, Heron-Allen & Earland, 1913, CI. p. 124, pl. xii. figs. 1–3.

4 *Stations.*

Very rare. An occasional specimen only, the most typical being at Stn. 7. Since the description of our species was published, we have come across a figure of Terquem (T. 1875, etc., APD. 1881, p. 125, pl. xvi. fig. 1 *a–c*) of *Rotalina tuberculata* which suggests our species, but both figure and description differ in essential points from our type. Terquem describes his form as smooth, and the figures show no markings except a rosette of beads at the umbilicus and lines radiating from them. *D. baccata*, on the other hand, has, in perfect specimens, a characteristic rough or "shagreened" (or beaded) surface all over. Of course, Terquem's figure and description may have been based on dead and water-worn shells, and, as his specific name has been appropriated and used for thirty years for a very distinctive type of Balkwill and Wright (B. & W. 1885, DIS. p. 350, pl. xiii. figs. 28–30), it would seem very inadvisable to disturb the nomenclature of the species at this date. Terquem's name (if, indeed, it refers to the same form as our *D. baccata*) should lapse because of incorrect and insufficient diagnosis.

270. **Discorbina turbo** (d'Orbigny).

Rotalia (*Trochulina*) *turbo*, d'Orbigny, 1826, TMC. p. 274. No. 39, Modèle No. 73.

Discorbina turbo, Brady, 1884, FC. p. 642, pl. lxxxvii. fig. 8 *a*, *b*, *c*.

14 *Stations.*

Generally distributed, but never very abundant.

271. **Discorbina orbicularis** (Terquem).

Rosalina orbicularis, Terquem, 1875, etc., APD. 1876, p. 75, pl. ix. fig. 4.

Discorbina orbicularis, Brady, 1884, FC. p. 647, pl. lxxxviii. figs. 4–8.

1 *Station.*

Confined to Stn. 15, where it occurred in the free and sessile conditions.

272. **Discorbina mamilla** (Williamson).

Rotalina mamilla, Williamson, 1858, RFGB. p. 54, pl. iv. figs. 109–111.

Discorbina mamilla, Heron-Allen & Earland, 1913, CI. p. 123, pl. xi. figs. 4–6.

20 *Stations.*

Almost universally distributed, often very abundant, the best at Stns. 11 and 17. There is hardly any variation in this well-marked form, except in the height of the spire. This is one of the species revived by us for taxonomical purposes (*ut supra*); it has, no doubt, been included by other authors since Williamson's time under the heading of *D. rosacea*, as it is of frequent occurrence all round the coasts of Britain.

273. **Discorbina mediterranensis** (d'Orbigny).

Rosalina mediterranensis, d'Orbigny, 1826, TMC. p. 271. No. 2.
Discorbina mediterranensis, Fornasini, 1898, RFI. p. 264 (fig.).
„ „ Heron-Allen & Earland, 1913, CI. p. 118, pl. ix. figs. 12–14, and pl. x. fig. 1.

6 *Stations*.

Very sparingly distributed, but good and typical specimens at Stns. 6 and 15. This species is also one of those revived for taxonomical purposes (*ut supra*). It has probably been included by other authors under *D. globularis* and *D. rosacea*.

274. **Discorbina globularis** (d'Orbigny).

Rosalina globularis, d'Orbigny, 1826, TMC. p. 271. No. 1, pl. xiii. figs. 1–4, Modèle No. 69.
Discorbina globularis, Brady, 1884, FC. p. 643, pl. lxxxvi. figs. 8, 13.

25 *Stations*.

Universally distributed, often very abundant. There is, as usual, a great variation in the height of the shell and the character of the inferior surface. Free-growing specimens are, as a rule, smaller and more inflated than those of sessile origin, many of which are very flat and regular, and have the base almost plane. The sessile specimens are also, as a rule, more coarsely perforate than the small free type.

275. **Discorbina obtusa** (d'Orbigny).

Rosalina obtusa, d'Orbigny, 1846, FFV. p. 179, pl. xi. figs. 4–6.
Discorbina obtusa, Brady, 1884, FC. p. 644, pl. xci. fig. 9 *a*, *b*, *c* (?).

10 *Stations*.

Fairly widely distributed and moderately frequent. The specimens are usually very small, but large and typical examples occurred at Stns. 7, 22, and 23.

276. **Discorbina polyrraphes** (Reuss).

Rotalina polyrraphes, Reuss, 1845–6, VBK. pt. i. p. 35, pl. xii. fig. 18.
Discorbina polyrraphes, Heron-Allen & Earland, 1913, CI. p. 128, pl. xii. figs. 10–13 (not 14).

5 *Stations*.

Occasional specimens at a few Stns. only. The best at Stns. 4 and 18. Its minute size has probably caused it to be overlooked in many British gatherings.

277. **Discorbina chasteri,** Heron-Allen & Earland.

Discorbina minutissima, Chaster, 1892, FS. p. 65, pl. i. fig. 15.
„ *chasteri*, Heron-Allen & Earland, 1913, CI. p. 128, pl. xiii. figs. 1–3.

11 *Stations*

Widely distributed, but never more than an occasional specimen, except at Stns. 4 and 13, where it was fairly frequent. All the specimens are of the original circular type. Prior to our records from Clare Island (*ut supra*) and from the North Sea (H.-A. & E. 1913, NSH. p. 136) this species had only been recorded by Gough from

Larne Lough [Fisheries, Ireland, Sci. Invest. 1905, iii. (1906) p. 7] since it was originally recorded from Southport.

278. **Discorbina chasteri,** var. **bispinosa,** Heron-Allen & Earland.

Discorbina chasteri, var. *bispinosa*, Heron-Allen & Earland, 1913, CI. p. 129, pl. xiii. fig. 4.

1 *Station.*

A single well-marked individual at Stn. 13.

279. **Discorbina bertheloti** (d'Orbigny).

Rosalina bertheloti, d'Orbigny, 1839, FIC. p. 135, pl. i. figs. 28–30.
Discorbina bertheloti, Brady, 1884, FC. p. 650, pl. lxxxix. figs. 10–12.

2 *Stations.*

A few good specimens at Stns. 6 and 16.

280. **Discorbina pustulata,** Heron-Allen & Earland.

Discorbina pustulata, Heron-Allen & Earland, 1913, CI. p. 129, pl. xii. figs. 5–7; 1914, etc., FKA. 1915, p. 701, pl. lii. figs. 24–26.

1 *Station.*

A single typical example at Stn. 16.

281. **Discorbina parisiensis** (d'Orbigny).

Rosalina parisiensis, d'Orbigny, 1826, TMC. p. 271. No. 1, Modèle No. 38.
Discorbina parisiensis, Brady, 1884, FC. p. 648, pl. xc. figs. 5, 6, 9–12.

1 *Station.*

Two good and typical examples.

282. **Discorbina vesicularis** (Lamarck).

Discorbites vesicularis, Lamarck, 1804, AM. vol. v. p. 183; vol. viii. (1806) pl. lxii. fig. 7.
Discorbina vesicularis, Brady, 1884, FC. p. 651, pl. lxxxvii. fig. 2 *a*, *b*, *c*.
„ „ Earland, 1905, FBS. p. 224, pl. xii. figs. 9, 10, pl. xiv. fig. 6.

3 *Stations.*

Extremely rare. The specimens are all of the thin-walled type such as are usually found in British shore-gatherings.

PLANORBULINA, d'Orbigny.

283. **Planorbulina mediterranensis,** d'Orbigny.

Planorbulina mediterranensis, d'Orbigny, 1826, TMC. p. 280, No. 2. pl. xiv. figs. 4–6, Modèle No. 79.
„ „ Brady, 1884, FC. p. 656, pl. xcii. figs. 1–3.

22 *Stations.*

Almost universally distributed in all stages of growth, and often attaining a very large size.

TRUNCATULINA, d'Orbigny.

284. **Truncatulina refulgens** (Montfort).

Cibicides refulgens, Montfort, 1808–10, CS. vol. i. p. 122, 31me genre.
Truncatulina refulgens, Brady, 1884, FC. p. 659, pl. xcii. figs. 7–9.

20 *Stations.*

Widely distributed, often common and of immense size, especially at Stns. 10 and 12.

285. **Truncatulina lobatula** (Walker & Jacob).

Nautilus lobatulus, Walker & Jacob, 1798, AEM. p. 642, pl. xiv. fig. 36.
Truncatulina lobatula, Brady, 1884, FC. p. 660, pl. xcii. fig. 10, pl. xciii. figs. 1, 4, 5, pl. cxv. figs. 4, 5.

25 *Stations.*

Universally distributed, and exhibiting every diversity of form.

286. **Truncatulina tenuimargo,** Brady.

Truncatulina tenuimargo, Brady, 1884, FC. p. 662, pl. xciii. figs. 2, 3.
" " Heron-Allen & Earland, 1908, etc., SB. 1909, p. 680, pl. xx. fig. 2.

1 *Station.*

Many specimens of *T. lobatula* showed a marked tendency to the carinate edge which characterizes this species. The nearest approach to the type (which we regard as having no zoological importance) was found at Stn. 8. It has been recorded by us from Selsey Bill (*ut supra*) and from Clare Island (H.-A. & E. 1913, CI. p. 133).

287. **Truncatulina variabilis,** d'Orbigny.

Truncatulina variabilis, d'Orbigny, 1826, TMC. p. 279. No. 8.
" " Brady, 1884, FC. p. 661, pl. xciii. figs. 6, 7.

9 *Stations.*

Very generally occurring in company with the type, and exhibiting all the diversities of this protean form. Excellent specimens of the long rectilinear form figured by Brady occur at more than one Stn.

288. **Truncatulina haidingerii** (d'Orbigny).

Rotalina haidingerii, d'Orbigny, 1846, FFV. p. 154, pl. viii. figs. 7–9.
Truncatulina haidingerii, Brady, 1884, FC. p. 663, pl. xcv. fig. 7.

2 *Stations.*

Very rare, but large and excellent specimens occurred at Stn. 13.

289. **Truncatulina ungeriana** (d'Orbigny).

Rotalina ungeriana, d'Orbigny, 1846, FFV. p. 157, pl. viii. figs. 16–18.
Truncatulina ungeriana, Brady, 1884, FC. p. 664, pl. xciv. fig. 9 *a–d*.

4 *Stations.*

Rare, but several good specimens at the Stns.

290. **Truncatulina akneriana** (d'Orbigny). (New to Britain.)

Rotalina akneriana, d'Orbigny, 1846, FFV. p. 156, pl. viii. figs. 13–15.
Truncatulina akneriana, Brady, 1884, FC. p. 663, pl. xciv. fig. 8 *a, b, c.*

1 *Station.*

A single typical specimen at Stn. 16.

291. **Truncatulina tenera,** Brady. (Plate 42. figs. 31–33.) (New to Britain.)

Truncatulina tenera, Brady, 1884, FC. p. 665, pl. xcv. fig. 11 *a–c.*

1 *Station.*

This rather noteworthy addition to the British Fauna is represented by one well-developed example from Stn. 20. It is quite characteristic, but slightly more compressed than Brady's figure. It is apparently a rather deep-water species, the few records lying between 166 and 1375 fms.

PULVINULINA, Parker & Jones.

292. **Pulvinulina repanda** (Fichtel & Moll).

Nautilus repandus, Fichtel & Moll, 1798, TM. p. 35, pl. iii. figs. *a–d.*
Pulvinulina repanda, Brady, 1884, FC. p. 684, pl. civ. fig. 18 *a, b, c.*

8 *Stations.*

Rare, never attaining such large dimensions as its variety *concamerata.*

293. **Pulvinulina repanda,** var. **concamerata** (Montagu).

Serpula concamerata, Montagu, 1803–8, TB. Suppl. p. 160 (*fide* Williamson).
Pulvinulina repanda, var. *concamerata*, Brady, 1884, FC. p. 685, pl. civ. fig. 19 *a, b, c.*

10 *Stations.*

This variety of *P. repanda*, characterized by a less convex (to flat or even concave) inferior side, is more widely distributed than the type, and often attains very fine proportions. The finest and most numerous specimens were at Stn. 3.

294. **Pulvinulina punctulata** (d'Orbigny).

Rotalia punctulata, d'Orbigny, 1826, TMC. p. 273. No. 25, Modèle No. 12.
Pulvinulina punctulata, Brady, 1884, FC. p. 685, pl. civ. fig. 17 *a, b, c.*

4 *Stations.*

Very rare, and only a few specimens at the Stns.—very small, but quite typical. It is a widely distributed form, but appears to have been recorded only by us as a recent British form from Clare Island (H.-A. & E. 1913, CI. p. 136, pl. xii. figs. 8, 9).

295. **Pulvinulina auricula** (Fichtel & Moll).

Nautilus auricula, var. *α*, Fichtel & Moll, 1798, TM. p. 108, pl. xx. figs. *a*, *b*, *c*.
Pulvinulina auricula, Brady, 1884, FC. p. 688, pl. cvi. fig. 5 *a*, *b*, *c*.

12 *Stations*.

Fairly widely distributed and sometimes common; the only noticeable feature is the fact that at Stn. 11 all the specimens were extremely small, those at the other Stns. showing normal to large.

296. **Pulvinulina oblonga** (Williamson).

Nautilus auricula, var. *β*, Fichtel & Moll, 1798, TM. p. 108, pl. xx. figs. *d*, *e*, *f*.
Rotalina oblonga, Williamson, 1858, RFGB. p. 51, pl. iv. figs. 98–100.
Pulvinulina oblonga, Brady, 1884, FC. p. 688, pl. cvi. fig. 4 *a*, *b*, *c*.

10 *Stations*.

The distribution is practically the same as that of its close ally *P. auricula*, from which, in our opinion, it ought not to be separated. The same curious feature occurs in this species at Stn. 11 as in the case of *P. auricula*, all the specimens being exceedingly minute.

297. **Pulvinulina brongniartii** (d'Orbigny).

Rotalia brongniartii, d'Orbigny, 1826, TMC. p. 273. No. 27.
Pulvinulina brongniartii, Heron-Allen & Earland, 1913, CI. p. 136, pl. xii. figs. 8, 9.

1 *Station*.

A few very compressed and rather doubtful specimens. First recorded as British by us from Clare Island, *ut supra*.

298. **Pulvinulina haliotidea**, Heron-Allen & Earland.

Pulvinulina haliotidea, Heron-Allen & Earland, 1908, etc., SB. 1911, p. 338, pl. xi. figs. 6–11; 1913, CI. p. 136.

14 *Stations*.

Widely distributed and often frequent, but, as a rule, very small, the best at Stns. 3 and 23.

299. **Pulvinulina karsteni** (Reuss). (Plate 42. figs. 34–37.)

Rotalia karsteni, Reuss, 1855, KKM. p. 273, pl. ix. fig. 6.
Pulvinulina karsteni, Brady, 1884, FC. p. 698, pl. cv. figs. 8, 9.

13 *Stations*.

Generally distributed, often abundant. All the individuals are of the small pauperate hyaline type widely distributed in shallow waters round the British coast. We now figure this variety for the first time, for, although there are many British records, no attempt to reproduce this pauperate form has been made.

The earliest British record of the species is in Brady's 'Fauna of the Shetlands'—

"three or four small starved specimens" (B. 1864, RFS. p. 470, pl. xlviii. fig. 15). Instead of figuring these specimens as should have been done, Brady reproduced Reuss's original figure (*ut supra*) from the chalk of Mecklenberg. These fossils are of the robust type, with strong marginal edge and deep sutural lines on the base, such as are commonly found in deep water. Brady's original Shetland specimens appear to have been lost; we cannot find any trace of them at Cambridge, Newcastle, or the British Museum, but there can be little doubt that they were similar to the little form which we figure, and which is quite common in the Shetland area. A slide in the Cambridge collection among the N. Polar 1875 Expedition slides contains small specimens, which, but for the rather strong sutural lines, are identical with the familiar British type.

300. **Pulvinulina elegans** (d'Orbigny).

Rotalia (*Turbinulina*) *elegans*, d'Orbigny, 1826, TMC. p. 276. No. 54.
Pulvinulina elegans, Brady, 1884, FC. p. 699, pl. cv. figs. 4–6.

1 *Station.*

One small and hyaline specimen.

Rotalia, Lamarck.

301. **Rotalia beccarii** (Linné).

Nautilus beccarii, Linné, 1767, SN. p. 1162. No. 276; 1788, p. 3370. No. 4.
Rotalia beccarii, Brady, 1884, FC. p. 704, pl. cvii. figs. 2, 3.

16 *Stations.*

Almost universally distributed, reaching its maximum in size and numbers at Stn. 1, where it forms 95 per cent. of the coarse siftings. At this Stn. the specimens are very strongly marked with secondary growths.

302. **Rotalia orbicularis** (d'Orbigny).

Gyroidina orbicularis, d'Orbigny, 1826, TMC. p. 278. No. 1, Modèle No. 13.
Rotalia orbicularis, Brady, 1884, FC. p. 706, pl. cvii. fig. 5, pl. cxv. fig. 6

16 *Stations.*

Widely distributed and of the typical neatly rounded form.

303. **Rotalia perlucida,** Heron-Allen & Earland.

Rotalia beecarii (pars), Balkwill & Wright, 1885, DIS. p. 351.
„ *perlucida*, Heron-Allen & Earland, 1913, CI. p. 139, pl. xiii. figs. 7–9; 1914, etc., FKA. 1915, p. 718.

4 *Stations.*

Rare, but excellent and typical specimens at Stns. 4 and 5.

304. **Rotalia schroeteriana,** Parker & Jones. (Plate 43. figs. 1–3.) (New to Britain.)

Faujasina sp., Williamson, 1853, Trans. R. Micr. Soc. (Lond.), ser. 2, vol. i. p. 87, pl. x.
Rotalia schroeteriana, Carpenter, Parker, & Jones, 1862, IF. p. 213, pl. iv. fig. 3, pl. xiii. figs. 7–9.
„ „ Brady, 1884, FC. p. 707, pl. cxv. fig. 7 *a–c*.

1 *Station.*

A single specimen which we figure from Stn. 6 presents the essential characteristics of this species in its flat superior face, conical inferior face, and strongly limbate sutural lines, but it has only seven chambers in the final whorl, each chamber being considerably longer than is the case in the large tropical specimens on which the species was founded. The occurrence of a specimen in a British gathering is very startling, the records of the species being confined to tropical shallow water, where it attains a very large size. It may, of course, be nothing more than a local "sport" from *R. beccarii*; but, if so, its assimilation of the characteristics of another typical species is equally remarkable.

Parker and Jones's species appears to be merely a compressed and broadened form of the *Gyroidina conoides* of d'Orbigny (d'O. 1826, TMC. p. 278. No. 9), of which we have examined the type-specimens both at Paris and at La Rochelle.

Subfamily TINOPORINÆ.

GYPSINA, Carter.

305. **Gypsina inhærens** (Schultze).

Acervulina inhærens, Schultze, 1854, OP. p. 68, pl. vi. fig. 12.
Gypsina inhærens, Brady, 1884, FC. p. 718, pl. cii. figs. 1–6.

20 *Stations.*

Almost universally distributed and varying greatly in abundance. Commonest at Stns. 8, 12, and 16. At Stns. 17 and 23 a very thin scale-like form, with fine perforations; both free and attached. At Stn. 4 one large double specimen, resulting from the fusion of two individuals at a comparatively advanced stage of growth.

306. **Gypsina vesicularis** (Parker & Jones).

Orbitolina vesicularis, Parker & Jones, 1859, etc., NF. 1860, p. 31. No. 5.
Gypsina vesicularis, Brady, 1884, FC. p. 718, pl. ci. figs. 9–12.

5 *Stations.*

Only an occasional specimen, except at Stn. 3, where many of all sizes were found, including a number of hollow specimens such as we figured from Clare Island (H.-A. & E. 1913, CI. pl. xiii. fig. 11).

307. **Gypsina globulus** (Reuss).

Ceriopora globulus, Reuss, 1847, Haidinger's Naturw. Abh. Wien, vol. ii. p. 33, pl. v. fig. 7.
Gypsina globulus, Brady, 1884, FC. p. 717, pl. ci. fig. 8.

3 *Stations.*

Very rare. The specimens are quite typical, both large and small.

Family NUMMULINIDÆ.

Subfamily POLYSTOMELLINÆ.

NONIONINA, d'Orbigny.

308. **Nonionina depressula** (Walker & Jacob). (Plate 43. figs. 4–7.)

Nautilus depressulus, Walker & Jacob, 1798, AEM. p. 641, pl. xiv. fig. 33.
Nonionina depressula, Brady, 1884, FC. p. 725, pl. cix. figs. 6, 7.

23 *Stations.*

Almost universally distributed, abundant at many Stns., and, as usual, subject to excessive variation, due primarily to the character of the sutural lines, which are sometimes depressed and sometimes limbate. The best examples of typical *N. depressula* occur at Stns. 5 and 22.

Among the most noticeable and constant varieties is one which we figure, and which forms the principal feature of Stn. 17, characterized by deeply excised sutural lines; in some cases the marginal edge is scolloped as a result of this feature. The umbilical portion of the shell is filled in, sometimes a stud of solid shell-matter appearing in the centre. This appears to be the *Nautilus spiralis* of Walker and Boys (W. & B. 1784, TM. p. 19, pl. iii. fig. 68). It occurs in smaller numbers at many other Stns. Another widely distributed variety is characterized by a biconvex hyaline and strongly punctate shell with limbate sutures. This is the form to which we have referred in our Kerimba Mongraph (H.-A. & E. 1914, etc., FKA. 1915, p. 730). Monstrous specimens due to fusion of two and sometimes more individuals occur at Stns. 5 and 17.

309. **Nonionina umbilicatula** (Montagu).

Nautilus umbilicatulus, Montagu, 1803–8, TB. p. 191, Suppl. p. 78, pl. xviii. fig. 1.
Nonionina umbilicatula, Brady, 1884, FC. p. 726, pl. cix. figs. 8, 9.

20 *Stations.*

Almost universally distributed and often very common. There is a certain amount of variation due (i.) to the degree of turgidity in the growth of shell, and (ii.) to the degree of envelopment of the chambers of the final whorl. In young specimens there is no depression at the umbilicus. With increase in size, if the shell continues of the non-turgid type, the whorls are almost entirely embracing, so that the umbilical region remains either almost flush or very slightly depressed. If the chambers are of the turgid type approaching *N. pompilioides* (F. & M.) each successive convolution becomes less enveloping, so that the umbilicus becomes deep; and at some Stns. the successive later whorls are undercut, exhibiting two entire convolutions in the centre of the shell. Distorted specimens occur at Stn. 18.

310. **Nonionina orbicularis,** Brady.

Nonionina orbicularis, Brady, 1881, HNPE. p. 105, pl. ii. fig. 5 *a*, *b*.
„ „ Brady, 1884, FC. p. 727, pl. cix. figs. 20, 21.

1 *Station.*

One specimen, characterized by a deposit of granular shell-matter over the earlier chambers of the last convolution in the neighbourhood of the aperture.

311. **Nonionina asterizans** (Fichtel & Moll).

Nautilus asterizans, Fichtel & Moll, 1798, TM. p. 37, pl. iii. figs. *e–h*.
Nonionina asterizans, Heron-Allen & Earland, 1913, CI. p. 143, pl. xiii. figs. 12, 13.

8 *Stations.*

Scantily distributed, frequent at some Stns., notably at Stn. 4, where the best examples occur. Very little variation except in the depth of the sutural lines.

312. **Nonionina stelligera,** d'Orbigny. (Plate 43. figs. 8–10.)

Nonionina stelligera, d'Orbigny, 1839, FIC. p. 128, pl. iii. figs. 1, 2.
„ „ Brady, 1884, FC. p. 728, pl. cix. figs. 3–5.

3 *Stations.*

Very rare, the best and most typical specimens at Stn. 10.

N. stelligera is a very distinctive form of the *N. depressula* group, characterized by inflated chambers due to the depressed sutural lines. The umbilical portion is clearly marked out by a stellate process radiating down each sutural depression, sometimes almost to the marginal edge. This stellate process is in its highest development almost a secondary series of chambers, due to the partial overlapping of its predecessor by each successive chamber in the convolution. Occasionally this overlapping "star," instead of being a hollow chamberlet, is a solid mass of shell-substance, in which case we get a solid radiating stud or a stellate limbation.

Far commoner than the true *N. stelligera* is a form which closely resembles it in superficial appearance, *i. e.* with swollen chambers and sunken sutural lines, with radiating stellate ornament, but the ornament in this case is merely superficial and masks rudimentary retral processes. We have separated this form under *Polystomella faba* (F. & M.).

313. **Nonionina boueana,** d'Orbigny.

Nonionina boueana, d'Orbigny, 1846, FFV. p. 108, pl. v. figs. 11, 12.
„ „ Brady, 1884, FC. p. 729, pl. cix. figs. 12, 13.

7 *Stations.*

Very rare and far from typical; the only really good examples at Stn. 6.

314. **Nonionina scapha** (Fichtel & Moll).

Nautilus scapha, Fichtel & Moll, 1798, TM. p. 105, pl. xix. figs. *d–f*.
Nonionina scapha, Brady, 1884, FC. p. 730, pl. cix. figs. 14, 15, 16 (?).

6 *Stations.*

Extremely rare, only an occasional small specimen at the Stns. where it occurs—all of them of the compressed elongated type represented by *N. sloanii*, d'Orbigny (d'O. 1839, FC. p. 46, pl. vi. figs. 18 & 18 *bis*).

315. **Nonionina turgida** (Williamson).

Rotalina turgida, Williamson, 1858, RFGB. p. 50, pl. iv. figs. 95–97.
Nonionina turgida, Brady, 1884, FC. p. 731, pl. cix. figs. 17–19.

20 *Stations.*

Almost universally distributed with practically no variation, except in the degree of turgidity of the overlapping chambers.

316. **Nonionina pauperata,** Balkwill & Wright.

Nonionina pauperata, Balkwill & Wright, 1885, DIS. p. 353, pl. xiii. figs. 25, 26.
„ „ Heron-Allen & Earland, 1908, etc., SB. 1911, p. 342, pl. xi. figs. 16, 17.

12 *Stations.*

Widely distributed, but always rare. All the specimens are rather small, the best being found at Stns. 4 and 25.

POLYSTOMELLA, Lamarck.

317. **Polystomella faba** (Fichtel & Moll). (Plate 43. figs. 11–19.) (New to Britain.)

Nautilus faba, Fichtel & Moll, 1798, TM. p. 103, pl. xix. figs. *a–c*.
Polystomella faba, Parker & Jones, 1859, etc., NF. 1860, vol. v. pp. 102, 103, & vol. vi. p. 139.
„ „ Jones, Parker, & Brady, 1866, etc., MFC. p. 349 (woodcut).
„ „ Fornasini, 1899, PFI. p. 647.

9 *Stations.*

Fichtel and Moll's description indicates a pauperate form intermediate between *Nonionina* and *Polystomella*, but referable to the latter genus on account of its retral processes. Their figure, however (of which we possess Moll's original water-colour drawing), gives no indication of the Polystomelline affinities, such as are plainly referred to in their text, and are shown in Parker and Jones's woodcut (*ut supra*), which is reproduced from their previous work (P. & J. 1865, NAAF. p. 402, pl. xiv. fig. 36). Two distinctive types occur in these dredgings, both of which, we think, should be placed under Fichtel and Moll's species, although differing in certain respects. The first or compressed type, which is nearest to *P. faba*, has somewhat inflated chambers of an involute type, six or seven visible in the final convolutions; sutural lines curving and strongly depressed, filled with fine granular matter radiating from the umbilicus down the sutures, and giving a stellate appearance to the test, owing to the whitish granulations contrasting strongly with the hyaline surface of the chambers. It closely resembles *Nonionina stelligera* superficially, and is probably responsible for many British records of that species, as it is widely distributed round the British coast, whereas true *N. stelligera* is rare. The retral processes, which are few in number, are

masked by the secondary shell-matter, but become visible when wetted. The second or turgid type, which occurs abundantly at Stn. 22 and elsewhere, is much larger, the chambers being less inflated and more numerous, ranging up to eight or nine in the final embracing convolution; sutural lines depressed, but less so than in the compressed type, and filled with the same granular matter radiating from the depressed umbilicus, but to a lesser degree. The retral processes are much more numerous than in the compressed type, and, although rarely visible in the dry shell, come out strongly when wetted.

The compressed type is evidently to some extent isomorphous with *N. scapha* (as observed by Fornasini) and the turgid with *N. depressula*. Both forms represent connecting-links between the two species and *P. striato-punctata*, as also does *P. decipiens*, though on a different line of development.

318. **Polystomella decipiens,** Costa. (Plate 43. figs. 20–22.) (New to Britain.)

Polystomella decipiens, Costa, 1853, etc., PRN. 1856, p. 220, pl. xix. fig. 13 *a, b.*
„ „ Fornasini, 1897, FIC. p. 17, pl. ii. fig. 12.
„ „ Fornasini, 1899, PFI. p. 646.

5 *Stations.*

This specific name of Costa's, though of no zoological value, has a taxonomical use for recording those extremely pauperate specimens of *P. striato-punctata* in which the septation and fossettes are so obscure that specimens are with difficulty separated from *Nonionina depressula*. It occurs at a few Stns., the best at Stns. 5 and 17. It has, no doubt, been included in many lists under *P. striato-punctata*.

319. **Polystomella striato-punctata** (Fichtel & Moll).

Nautilus striato-punctatus, Fichtel & Moll, 1798, TM. p. 61, pl. ix. figs. *a, b, c.*
Polystomella striato-punctata, Brady, 1884, FC. p. 733, pl. cix. figs. 22, 23.

25 *Stations.*

Universally distributed, generally very abundant and constant in type, practically the only variation being in the thickness of the shell. The very thick typical form is most general, occurring practically everywhere; the thinner form (cf. *P. poeyana*, d'O. 1839, FC. p. 55, pl. vi. figs. 25, 26) occurs in lesser numbers at nearly all the Stns. At Stn. 17 a good many distorted and abnormal individuals were found, including one in which the initial spiral was followed by five chambers arranged in a straight line, forming a long crozier-shaped shell.

320. **Polystomella striato-punctata,** var. **selseyensis,** Heron-Allen & Earland.

Polystomella striato-punctata, var. *selseyensis*, Heron-Allen & Earland, 1908, etc., SB. 1909, p. 695, pl. xxi. fig. 2, 1911, p. 448 (table); 1914, etc., FKA. 1915, p. 733.

7 *Stations.*

Widely distributed in company with the type, never very abundant, the best at Stns. 4 and 5.

321. **Polystomella arctica,** Parker & Jones.

Polystomella arctica, Parker & Jones, MS.; Brady, 1864, RFS. p. 471, pl. xlviii. fig. 18.
„ „ Brady, 1884, FC. p. 735, pl. cx. figs. 2–5.

8 *Stations.*

Rare, and the specimens few in number, rather small, and generally worn. The best specimens were at Stn. 22.

322. **Polystomella macella** (Fichtel & Moll).

Nautilus macellus, Fichtel & Moll, 1798, TM. p. 66, pl. x. figs. *e–g*.
Polystomella macella, Brady, 1884, FC. p. 737, pl. cx. figs. 8, 9, 11, & ? 10.

18 *Stations.*

Widely distributed, but never very abundant, the best at Stns. 3, 4, and 17. The chief variation lies in the relative depression of the septal lines, which in some cases are so depressed as to give a turgid character to the chambers. These turgid specimens are, as a rule, characterized by a granular deposit over the shell-substance. At Stns. 6 and 8 the specimens were intermediate between *P. macella* and *P. crispa.*

323. **Polystomella crispa** (Linné).

Nautilus crispus, Linné, 1767, SN. p. 1162. No. 275.
Polystomella crispa, Brady, 1884, FC. p. 736, pl. cx. figs. 6, 7.

21 *Stations.*

Almost universally distributed, but never common. The specimens are, as a rule, large and handsome and of the compressed type. At several Stns., notably at Stns. 4 and 17, the marginal spines persist to an advanced or even mature stage (see H.-A. & E. 1913, CI. p. 146, pl. xiii. fig. 14). Distorted specimens occur at Stns. 5, 11, and notably Stn. 15, usually due to fission of the protoplasm separating into two distinct shells at about half the growth, the subsequent growth being continued on two distinct planes.

Subfamily NUMMULITINÆ.

OPERCULINA, d'Orbigny.

324. **Operculina ammonoides** (Gronovius).

Nautilus ammonoides, Gronovius, 1781, ZG. p. 282. No. 1220, pl. xix. (fasc. iii. tab. 2) figs. 5, 6.
Operculina ammonoides, Brady, 1884, FC. p. 745, pl. cxii. figs. 1, 2.

20 *Stations.*

Almost universally distributed, often very common, the best specimens at Stns. 4, 11, and 14. Variation is almost entirely dependent on the degree of limbation of the sutures, which at some Stns. is very marked and striking. Distorted or wild-growing forms occur at Stns. 19, 20, and 21. At Stn. 19 there is a tendency to an inflation of the later chambers.

No.	Page	SPECIES.	Lowlandman's Bay, Jura. Stn. 1.	Sound of Mull. Stn. 2.	Off Ardnamurchan. Stn. 3.	Loch Sunart. Stn. 4.	Soriby Bay, Ulva. Stn. 5.	Atlantic Shore, Iona. Stn. 6.	Gott Bay, Tiree. Stn. 7.	Sandy Island, Canna. Stn. 8.	Laga Bay, Loch Sunart. Stn. 9.	Shiant East Bank. Stn. 10.	Loch Shell, Lewis. Stn. 11.	Loch Dunvegan, Skye. Stn. 12.	Off Neist Point, Skye. Stn. 13.	Loch Ainneart, Skye. Stn. 14.	Tobermory Bay, S. Stn. 15.	Between Rhum and Eigg. Stn. 16.	Scresort Bay, Rhum. Stn. 17.	Off S. of Eigg. Stn. 18.	Croulin Beg. Stn. 19.	Between Ru Ruag and Carr Point. Stn. 20.	Loch Hourn. Stn. 21.	Oronsay. Stn. 22.	Off Bradda Head, Port Erin. Stn. 23.	Eilean Gartmael, Oronsay. Stn. 25.	Skye (var. loc.). Stn. 26.
1.	205	*Nubecularia lucifuga*, Def.	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2.	205	*Biloculina ringens* (Lam.)	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	VR	F	...	...	...	...	...
3.	205	„ *bulloides*, d'O.	1	1	1	...	...	...	...	...	...	VR	...	VC	...	C	...	R	...	F	C	...	...	VR	VR	F	...
4.	205	„ *elongata*, d'O.	...	C	R	R	...	...	...	...	VR	C	R	VR	...	F	...	1	...	C	C	C	VR	...	F	C	...
5.	205	„ *depressa*, d'O.	...	F	VR	R	...	...	...	...	VR	F	VR	VR	1	F	...	...	...	F	C	C	VR	...	...	...	VR
6.	206	„ *inflata*, Wright	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	R	VR	...	...	...	...	...	...
7.	206	„ *irregularis*, d'O.	...	...	...	VR	...	...	...	...	F	VC	VR	...	VR	...	...	F	...	C	C	VC	VR	...	...	...	F
8.	206	„ *sphæra*, d'O.	...	F	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	R	VVC	...	...	...	...	...
9.	207	*Spiroloculina nitida*, d'O.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	VR	...	...	1	...	1
10.	207	„ *grata*, Terq.	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	VR	...	...	...	...	...
11.	207	„ *excavata*, d'O.	1	VR	F	VR	VR	VR	1	R	...	F	F	R	VR	F	R	...	...	C	C	C	VR	...	F	VR	VR
12.	207	„ *planulata* (Lam.)	1	VR	VR	VR	...	...	1	...	...	F	VR	...	...	F	VR	...	...	C	F	1	...	...	R	...	1
13.	207	„ *dorsata*, Rss.	...	...	...	VR	...	...	...	...	...	VR	...	...	...	F	...	...	...	F	...	VR	...	...	...	...	...
14.	208	„ *acutimargo*, Br.	...	...	VR	...	...	...	...	...	...	1	VR	VR	...	1	...	...	...	...	...	...	...	...	...	...	...
15.	208	„ „ var. *concava*, Wiesner.	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16.	208	„ *tenuis* (Cz.)	...	...	...	C	...	...	...	...	...	...	...	...	...	VR	...	...	...	...	...	...	...	...	...	...	...
17.	208	*Miliolina bucculenta*, Br.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
18.	209	„ *circularis* (Born.)	VR	...	F	R	...	C	VC	C	F	F	...	C	F	F	F	1	...	F	R	...	...	VR	F	VR	F
19.	209	„ *labiosa* (d'O.)	...	...	...	...	...	...	...	...	...	...	...	R	...	...	...	...	...	...	...	...	...	...	...	...	...
20.	209	„ *subrotunda* (Mont.)	VR	VR	VR	R	...	R	C	F	VR	F	VR	F	VR	...	C	R	...	R	R	R	...	R	VR	VR	C
21.	209	„ *seminuda* (Rss.)	...	...	1	...	...	...	VR	1	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	VR	...	...
22.	210	„ *suborbicularis* (d'O.)	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23.	210	„ *trigonula* (Lam.)	...	...	VR	VC	...	...	...	...	VR	F	...	VR	...	F	VR	VR	1	C	C	F	VR	VR	C	...	...
24.	210	„ *tricarinata* (d'O.)	1	VR	...	VR	...	R	...	...	VR	VR	...	1	...	R	...	...	...	F	VR	F	...	...	VR	VR	...
25.	210	„ *bosciana* (d'O.)	...	...	...	F	1	...	...	...	...	...	VR	VR	...	VR	...	...	VR	R	...	...	...	...	VR	...	...
26.	210	„ *oblonga* (Mont.)	...	F	F	VR	...	VR	VR	VR	1	R	...	VR	R	VR	...	...	...	C	...	R	...	...	VR	...	VR
27.	211	„ *pygmæa* (Rss.)	...	F	1	C	R	...	...	...	VC	F	C	F	...	VC	...	...	...	F	VC	C	C	1	VR	...	VR
28.	211	„ *rotunda* (d'O.)	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
29.	211	„ *anconensis* (Schultze)	...	...	...	R	VR	...	...	...	...	...	R	...	...	...	R	...	F	...	...	...	...	...	...	...	...
30.	212	„ *vulgaris* (d'O.)	...	R	...	F	...	...	...	VR	...	...	...	...	...	...	C	...	...	...	...	...	...	...	...	...	...
31.	212	„ *seminulum* (Linné)	C	F	R	F	VR	VR	F	VVC	F	F	F	VR	1	C	VC	F	VC	F	C	F	VR	F	F	VR	VR
32.	212	„ *candeiana* (d'O.)	...	...	...	...	...	...	1	1	...	F	...	F	VR	R	...	1	...	F	VR	...	...	...	VR	...	...
33.	213	„ *auberiana* (d'O.)	R	...	VR	VR	...	VR	VR	VR	1	...	VR	...	...	VR	...	...	VR	F	1	...	VR	...	...	VR	R
34.	213	„ *undosa* (Karr.)	...	...	...	...	...	...	...	VR	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
35.	213	„ *agglutinans* (d'O.)	...	R	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	VR	...	...	F	...	...	...
36.	213	„ *fusca* (Br.)	...	...	...	...	VR	...	...	VR	...	...	...	...	...	...	...	...	VR	1	VR	...	VR	F	1	...	...
37.	213	„ *contorta* (d'O.)	...	...	...	...	...	...	1	...	...	...	...	...	...	...	R	...	F	R	...	...	...	R	...	VR	...
38.	213	„ *sclerotica* (Karr.)	C	...	...	...	...	...	VR	...	1	VR	VR	...	...	R	...	...	VR	F	...	...	...	R	R	...	...
39.	214	„ *ferussacii* (d'O.)	...	...	F	...	...	...	...	...	...	F	...	VR	...	...	...	1	...	...	...	F	...	...	...	...	...
40.	214	„ *pulchella* (d'O.)	R	...	...	VR	...	...	...	...	1	...	...	...	...	...	...	...	...	VR	...	...	...	...	...	...	...
41.	214	„ *brongniartii* (d'O.)	R	...	F	VR	VR	VR	R	F	VR	F	R	VR	VR	C	C	VR	VR	C	F	F	...	...	VR	VR	...
42.	214	„ *bicornis* (W. & J.)	F	VR	...	R	...	...	...	1	VR	VR	...	...	...	...	R	...	...	R	F	VR	...	...	VR	...	1
43.	214	„ *lævigata* (d'O.)	1	VR	...	1	...	...	...	...	...	...	...	...	...	VR	VR	...	...	F	R	...	...	...	R	...	...
44.	215	„ *stelligera* (Schl.)	...	...	...	VR	...	...	...	...	...	VR	...	...	...	R	...	...	...	R	...	R	VR	...	...	...	...

45.	215	*Massilina secans* (d'O.)	1	...	...	VR	...	...	VVC	VVC	1	...	...	...	...	...	...	...	1	...	...	...	...	VR	...	VR	...
46.	215	*Opthalmidium carinatum*, B. & W.	...	...	VR	F	...	...	...	...	VR	F	...	F	VR	F	VR	VR	...	VR	VR	VR	...	...	VR	VR	1
47.	216	*Planispirina celata* (Costa)	...	F	...	1	...	...	...	...	VR	VR	...	1	...	1	...	...	...	C	1	...	...	...	1	...	VR
48.	216	„ *sigmoidea*, Br.	...	...	...	...	...	...	...	...	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
49.	216	*Cornuspira foliacea* (Phil.)	...	...	...	VR	...	...	...	...	...	...	...	1	...	R	...	...	...	...	F	C	...	...	...	...	...
50.	217	„ *diffusa*, H.-A. & E.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	VR	...	...	...	...	...	...	...
51.	217	„ *carinata* (Costa)	...	VR	...	...	...	...	...	R	...	...	...	...	...	VR	...	...	...	VR	1	VR	...	...	...	...	...
52.	217	„ *selseyensis*, H.-A. & E.	...	...	1	VR	...	1	...	...	VR	VR	...	F	1	...	...	...	...	VR	VR	C	...	...	VR	...	VR
53.	217	„ *involvens* (Rss.)	...	VR	VR	...	...	...	1	...	VR	VR	...	VR	VR	F	F	VR	VR	VR	1	VR	...	...	VR	...	...
54.	217	„ *angigyra* (Rss.)	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
55.	218	*Iridia diaphana*, H.-A. & E.	...	...	...	...	...	...	...	...	...	VR	...	...	...	...	VR	1	...	...	F	...	...	VR	...	...	...
56.	218	*Pelosina variabilis*, Br.	...	...	...	...	...	...	...	...	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
57.	218	*Storthosphæra albida*, Schulze	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	VR	...	...	...	...	...	...	...
58.	218	*Bathysiphon argenteus*, H.-A. & E.	...	...	...	VR	...	...	...	...	...	...	VR	...	...	VR	...	...	...	...	...	...	R	...	VR	...	...
59.	219	*Psammosphæra fusca*, Schulze	...	...	...	1	...	...	...	...	...	R	...	...	...	...	...	...	...	...	VR	...	...	...	...	...	R
60.	219	„ *bowmanni*, H.-A. & E.	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...
61.	219	*Crithionina mamilla*, Goës	...	...	VR	VC	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	VR	...	...	...	...	R
62.	219	*Jaculella acuta*, Br.	...	...	...	VR	...	...	...	...	...	...	...	VR	...	...	...	...	...	...	...	VC	...	...	...	...	...
63.	220	„ *obtusa*, Br.	...	1	...	...	...	...	...	...	VR	1	VR	...	...	...	...	...	...	...	1	F	...	...	...	...	...
64.	220	*Hyperammina friabilis*, Br.	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	R	1	VR	...	...	...	...	...
65.	220	„ *elongata*, Br.	...	...	...	...	...	...	...	...	...	...	...	...	...	VR	...	...	...	...	...	F	...	...	...	...	...
66.	220	„ *ramosa*, Br.	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
67.	220	„ *arborescens* (Norm.)	...	...	...	VR	...	...	...	...	1	...	...	R	...	C	...	...	...	1	...	...	...	...	...	...	VR
68.	221	„ *vagans*, Br.	...	...	...	...	...	...	...	...	...	F	...	...	...	...	...	...	...	...	...	...	...	1	...	...	R
69.	221	*Rhabdammina abyssorum*, M. Sars	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	C
70.	221	*Rhizammina algæformis*, Br.	...	...	...	...	...	...	...	...	...	...	...	...	...	VR	...	...	...	...	...	C	1	...	...	...	...
71.	221	*Botellina labyrinthica*, Br.	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
72.	222	*Haliphysema tumanowiczii*, Bow.	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
73.	222	*Reophax difflugiformis*, Br.	...	...	...	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
74.	222	„ *fusiformis* (Will.)	...	...	...	VR	...	...	...	...	...	VR	...	1	...	C	...	...	...	F	...	...	F	...	...	...	...
75.	222	„ *scorpiurus*, Montf.	...	...	VR	VR	...	...	...	...	...	...	1	...	...	...	...	...	...	VR	R	R	1	...	...	...	...
76.	222	„ *scottii*, Chaster	...	...	...	1	VR	...	...	...	...	...	VR	...	...	...	...	...	...	VR	...	1	...	...	...	...	...
77.	223	„ *moniliforme*, Sidd.	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...
78.	223	*Haplophragmium pseudospirale* (Will.)	1	F	VR	VC	VR	...	..	...	F	F	VR	...	...	R	...	...	1	R	F	...	VR	...	VR	...	VR
79.	223	„ *canariense* (d'O.)	...	1	C	F	R	1	..	VR	F	C	VR	C	F	C	VR	C	VR	R	VC	F	VR	1	R	VR	F
80.	224	„ „ var. *pauperata*, Chap.	...	...	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	VR	...	...	...	...
81.	224	„ *runianum*, sp. nov.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	F	...	...	...	...	...	...	...	...
82.	224	„ *globigeriniforme* (P. & J.)	...	VC	C	F	...	...	...	...	F	C	F	F	VR	C	...	F	...	C	R	F	F	...	...	...	VR
83.	225	„ *glomeratum*, Br.	...	C	VR	R	1	...	...	...	F	F	VR	F	...	VC	1	1	...	C	F	F	VR	1	...	...	VR
84.	225	*Placopsilina vesicularis*, Br.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	R
85.	225	*Thurammina papillata*, Br.	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	VR	...	...	...	...	...	VR
86.	225	*Ammodiscus incertus* (d'O.)	...	...	C	VR	...	...	...	...	VR	C	...	C	1	C	...	VR	...	VC	F	VC	R	...	...	...	VR
87.	226	„ *gordialis* (J. & P.)	...	VR	F	VR	...	...	...	...	1	C	VR	VC	VR	...	...	VR	...	VR	C	C	VR	...	VR	...	F
88.	226	„ *charoides* (J. & P.)	...	VC	VR	...	...	...	...	...	...	VR	...	...	...	VR	...	...	...	...	R	VR	...	...	...	...	1
89.	227	„ *shoneanus* (Sidd.)	...	...	...	...	..	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
90.	227	*Trochammina inflata* (Mont.)	...	...	...	...	...	...	...	...	...	...	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	...
91.	227	„ „ var. *macrescens*, Br.	...	...	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	VR	...	...	...	...
92.	227	„ *ochracea* (Will.)	...	...	F	R	VR	..	...	...	...	VR	VR	F	F	VR	F	F	...	VR	VR	VR	VR	...	...	VR	1
93.	227	„ *plicata* (Terq.)	...	...	F	VR	...	...	...	...	...	VR	...	...	R	...	...	R	...	...	...	F	...	...	...	...	...
94.	228	„ *squamata*, J. & P.	1	...	VR	F	F	VR	...	...	...	F	C	F	F	...	F	F	VR	VR	VR	R	...	...	1	VR	...
95.	228	„ *rotaliformis*, Wr.	...	1	R	1	...	...	...	...	VR	F	...	VR	...	VR	...	F	...	VR	...	VR	...	...	...	...	...
96.	228	„ *nitida*, Br.	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
97.	228	„ *robertsoni*, Br.	...	VC	VR	VR	...	...	...	...	F	F	F	F	VR	VC	VR	...	...	C	C	F	R	...	...	...	F
98.	229	*Textularia fusiformis*, Chast.	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
99.	229	„ *concava*, var. *heterostoma*, Forn.	...	...	...	...	...	...	...	...	...	...	...	...	...	VR	...	...	...	...	...	...	...	...	...	...	...
100.	229	„ *sagittula*, Def.	...	...	...	1	...	...	...	VR	C	F	...	VR	...	...	...	VR	...	C	R	...	...	...	...	...	...
101.	229	„ „ var. *jugosa*, Br.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
102.	230	„ *agglutinans*, d'O.	...	...	C	...	...	...	...	...	...	F	...	...	...	C	...	R	...	...	R	...	VR	...	...	VR	...

No.	Page	SPECIES.	Lowlandman's Bay, Jura. Stn. 1.	Sound of Mull. Stn. 2.	Off Ardnamurchan. Stn. 3.	Loch Sunart. Stn. 4.	Soriby Bay, Ulva. Stn. 5.	Atlantic Shore, Iona. Stn. 6.	Gott Bay, Tiree. Stn. 7.	Sandy Island, Canna. Stn. 8.	Laga Bay, Loch Sunart. Stn. 9.	Shiant East Bank. Stn. 10.	Loch Shell, Lewis. Stn. 11.	Loch Dunvegan, Skye. Stn. 12.	Off Neist Point, Skye. Stn. 13.	Loch Ainneart, Skye. Stn. 14.	Tobermory Bay, S. Stn. 15.	Between Rhum and Eigg. Stn. 16.	Scresort Bay, Rhum. Stn. 17.	Off S. of Eigg. Stn. 18.	Croulin Beg. Stn. 19.	Between Ru Ruag and Carr Point. Stn. 20.	Loch Hourn. Stn. 2 .	Oronsay. Stn. 22.	Off Bradda Head, Port Erin. Stn. 23.	Eilean Gartmael, Oronsay. Stn. 25.	Skye (var. loc.). Stn. 26.
103.	230	*Textularia candeiana*, d'O.	...	...	...	...	...	...	...	...	1	C	...	...	...	...	...	...	...	VC	C	C	...	...	...	...	...
104.	230	,, *gramen*, d'O.	F	VC	VC	F	1	VR	1	F	C	F	R	C	C	VC	VR	C	...	VC	C	C	F	...	VR	...	VR
105.	230	,, *conica*, d'O.	...	R	C	C	VR	R	F	C	VR	VC	F	C	C	VC	...	C	VR	VC	C	VC	C	VR	R	VR	F
106.	230	,, *trochus*, d'O.	...	...	...	...	...	...	...	...	...	...	...	VR	...	...	...	...	...	VC	...	...	...	...	...	...	...
107.	231	,, *turris*, d'O.	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	VR	...	...	...	...	...	...
108.	231	*Verneuilina polystropha* (Rss.)	C	F	...	F	F	VR	...	...	F	F	F	R	VR	C	VR	1	VVC	C	C	F	F	...	VR	VR	R
109.	231	*Bigenerina digitata*, d'O.	...	...	...	...	...	...	...	...	1	...	VR	...	...	R	...	...	...	VR	F	...	VR	...	...	...	...
110.	231	*Spiroplecta biformis* (P. & J.)	...	...	...	...	...	...	...	...	VR	VR	...	...	...	...	...	...	...	F	...	...	...	...	VR	...	...
111.	231	,, *wrightii*, Silv.	...	...	R	C	...	...	1	VR	VC	C	VR	F	VR	VC	VR	1	...	VC	C	C	VR	...	VR	...	F
112.	232	,, *fusca*, Earland	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
113.	232	*Gaudryina filiformis*, Berth.	...	...	...	F	1	...	...	...	...	...	R	...	...	VR	...	...	F	VR	1	...	...	...	...	...	VR
114.	232	,, *rudis*, Wr.	...	...	VC	F	...	1	1	VR	VR	C	...	VR	1	VR	...	F	...	F	C	...	...	...	...	...	VR
115.	232	*Valvulina fusca* (Will.)	...	...	...	...	...	...	...	...	...	C	...	C	VR	C	...	1	...	F	VC	C	VR	...	...	VR	C
116.	233	,, *conica*, P. & J.	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	R	...	...	VR	...	...	...	...
117.	233	*Clavulina obscura*, Chast.	1	...	...	1	...	...	...	...	...	VR	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
118.	233	*Bulimina pupoides*, d'O.	F	VR	R	C	C	...	VR	...	C	R	C	...	...	...	...	F	VVC	C	R	F	VVC	VR	C	VR	VR
119.	233	,, *elegans*, d'O.	C	VR	...	VC	VC	C	...	VR	C	R	C	R	...	VC	VR	VR	VC	VC	VC	C	VVC	F	C	...	...
120.	234	,, ,, var. *exilis*, Br.	...	...	...	R	...	...	...	...	VR	...	R	...	...	...	...	...	1	R	...	...	VR	...	...	...	...
121.	234	,, *elongata*, d'O.	...	...	...	VC	...	...	...	...	...	...	...	...	...	VC	...	...	...	VC	F	...	R	...	...	...	...
122.	235	,, *fusiformis*, Will.	VR	F	VR	C	VC	VR	...	...	C	VC	C	C	VR	VC	R	R	VVC	VC	VC	VC	VVC	VR	VR	VR	F
123.	235	,, *ovata*, d'O.	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	1	...	VR	VR	...	...	...	...	...
124.	235	,, *elegantissima*, d'O.	VR	...	...	C	VC	C	...	...	VR	...	VR	1	...	1	...	VR	C	...	...	1	...	...	VR	...	...
125.	235	,, *marginata*, d'O.	C	VVC	C	VVC	C	C	...	VR	F	VVC	VC	F	1	VVC	VR	R	VVC	VC	VVC	VC	VVC	C	C	VR	C
126.	235	,, *echinata*, d'O.	1	...	...	R	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
127.	236	,, *aculeata*, d'O.	VR	VVC	F	VC	...	...	...	...	C	VC	C	...	...	F	...	...	...	...	C	C	VC	...	...	...	VR
128.	236	,, *subteres*, Br.	VR	...	...	F	...	...	...	...	1	VR	...	F	...	VR	...	...	1	R	...	VR	...	...	...	...	...
129.	237	,, *minutissima*, Wr.	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
130.	237	,, *squammigera*, d'O.	VR	...	...	C	R	...	...	...	VR	...	F	...	...	...	...	...	F	F	...	R	...	...	VR	...	...
131.	237	*Virgulina schreibersiana*, Cz.	VR	VR	...	C	VR	VR	...	...	VR	...	VC	VR	...	C	...	1	R	VR	F	...	1	...	...	...	...
132.	237	*Bolivina punctata*, d'O.	VR	F	F	C	F	1	...	...	VR	...	C	R	VR	...	...	VR	R	C	F	VR	...	...	VR	...	...
133.	238	,, *nobilis*, Hantk.	...	...	...	F	VR	...	...	...	...	...	F	1	...	R	...	...	...	F	F	VR	F	...	...	...	VR
134.	238	,, *textilarioides*, Rss.	...	...	...	F	F	C	VR	1	R	F	C	R	VR	R	...	VR	C	VC	F	..	F	...	VR	...	...
135.	238	,, *lævigata* (Will.)	...	1	...	VR	...	...	...	...	...	1	1	...	...	...	...	...	VR	VR	...	R	...	...	...	...	...
136.	238	,, *dilatata*, Rss.	VR	F	VR	F	R	VR	...	...	C	VR	C	R	1	...	...	VR	VR	F	F	VR	F	...	R	...	1
137.	239	,, *difformis* (Will.)	VR	...	F	VR	VR	...	...	...	...	F	VR	R	VR	VR	...	R	1	F	VR	...	...	...	...	...	VR
138.	239	,, *gramen* (d'O.)	...	...	...	R	VR	...	...	...	1	...	VR	...	...	...	...	...	...	...	VR	...	...	...	...	...	...
139.	239	,, *beyrichi*, Rss.	...	...	...	F	...	...	...	...	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
140.	239	,, *ænariensis* (Costa)	...	C	...	F	...	...	...	...	...	VR	F	1	...	R	...	VR	VR	VC	1	C	R	...	...	...	...
141.	240	,, *tortuosa*, Br.	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
142.	240	,, *plicata*, d'O.	F	VR	F	C	F	VR	R	...	F	F	C	R	VR	R	F	VR	VC	VR	C	F	R	VR	F	VR	...
143.	240	,, *variabilis* (Will.)	F	...	...	C	F	...	VR	...	R	VR	C	F	VR	R	F	F	F	F	F	F	VR	R	R	...	VR
144.	240	,, *inflata*, H.-A. & E.	VR	...	...	F	...	...	...	...	...	VR	F	1	...	...	...	...	...	VR	...	VR	VR	...	...	VR	...
145.	240	*Cassidulina lævigata*, d'O.	...	VR	VR	R	...	VR	1	1	F	F	VR	VR	VR	R	VR	VR	VR	F	VR	VR	VR	VR	VR	...	...
146.	241	,, *crassa*, d'O.	VR	F	F	C	R	1	...	...	VR	C	R	F	R	VR	...	F	VR	F	VR	F	F	VR	VR	VR	1
147.	241	,, *subglobosa*, Br.	F	C	C	F	VR	VR	...	...	VR	R	...	F	F	VR	...	VR	...	VR	VR	C	F	...	F	...	...

148.	241	„ *bradyi*, Norm.	...	...	...	F	...	...	...	...	...	...	1	...	...	1	...	...	1	...	...	1	...	...	...	...	...
149.	241	„ *nitidula* (Chast.)	...	...	1	...	...	...	...	...	...	...	...	...	1	1	1	1	...	...	...	...	...	...	...	...	...
150.	242	*Lagena globosa* (Mont.)	R	R	F	C	VR	R	F	1	1	F	R	VR	1	VR	...	...	R	F	R	VR	...	VR	VR	...	...
151.	242	„ *ovum* (Ehr.)	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
152.	242	„ *apiculata* (Rss.)	VC	...	...	...	...	...	...	...	...	F	VR	...	...	...	...	1	...	...	...	VC	...	...	...	...	...
153.	242	„ *botelliformis*, Br.	...	...	...	VR	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
154.	243	„ *aspera*, Rss.	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
155.	243	„ *hispida*, Rss.	...	F	1	1	...	...	...	...	...	VR	...	...	...	VR	...	...	1	VR	VR	VR	...	...	...	...	...
156.	243	„ *lineata* (Will.)	R	...	...	VR	...	...	VR	...	1	VR	VR	R	...	VR	VR	...	VR	VR	R	VR	...	...	VR	VR	VR
157.	243	„ *costata* (Will.)	1	VR	C	VR	VR	R	VC	R	...	F	...	...	1	...	F	...	...	VR	VR	C	1	R	F	VR	...
158.	244	„ *hexagona* (Will.)	C	1	...	F	F	VR	1	...	VR	C	F	F	1	F	...	...	1	F	F	VC	VR	VR	F	VR	VR
159.	244	„ *reticulata* (Macg.)	R	...	...	VR	...	...	...	...	1	VR	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
160.	244	„ *squamosa* (Mont.)	C	VR	...	F	F	R	R	F	VR	C	...	F	...	F	F	VR	R	R	F	R	VR	F	F	...	VR
161.	244	„ „ var. *montagui* (Alcock)	...	...	...	...	...	...	1	...	...	VR	...	...	...	...	...	...	...	VR	...	VR	...	VR	...	...	...
162.	245	„ *spumosa*, Mill.	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
163.	245	„ *lævis* (Mont.)	R	VR	...	C	R	R	1	...	VR	VR	F	R	...	...	VR	VR	C	VR	R	VR	VR	VR	...	...	VR
164.	245	„ „ var. *distoma*, Silv.	...	1	...	VR	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
165.	245	„ *semistriata*, Will.	...	...	...	C	R	VR	...	...	VR	F	F	R	...	...	...	...	VC	1	...	VR	R	VR	VR	...	1
166.	246	„ *semilineata*, Wr.	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
167.	246	„ *perlucida* (Mont.)	F	...	...	F	...	...	...	...	...	...	...	...	...	...	VR	...	C	...	...	...	...	...	...	...	...
168.	246	„ *striata* (d'O.)		C	VR	C	F	...	...	...	...	F	F		...	F	...	...	C	VC	VR	C	F	...	VR	...	...
169.	246	„ *sulcata* (W. & J.)	F	VR	1	R	VR	...	R	V	VR	C	VR	R	...	F	R	...	F	VC	R	R	VR	VR	VR	...	...
170.	247	„ *lyellii* (Seg.)	...	C	1	F	...	1	..	...	...	...	...	...	...	VR	...	...	...	F	...	...	VR	...	...	...	...
171.	247	„ *williamsoni* (Alcock)	C	...	...	F	F	R	VVC	C	R	VC	VC	C	VR	F	F	R	VR	C	VC	VC	VR	VC	C	...	VR
172.	247	„ *acuticosta*, Rss.	...	1	...	VR	...	...	...	...	...	F	...	...	VR	R	...	...	...	F	C	C	...	...	...	...	...
173.	247	„ *striatopunctata*, P. & J.	...	...	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
174.	248	„ *clavata* (d'O.)	R	F	...	F	R		...	1	...	F	C	1	...	R	...	...		F	...	F	VR	R	F	...	VR
175.	248	„ *gracillima* (Seg.)	R	F	VR	VR	VC	...	...	...	1	VR	R	1	...	R	...	...		...	F	R	...	...	...	...	...
176.	248	„ *gracilis*, Will.	...	VR	...	F		...	...	...	...	VR	F	1	..	R	...	...	F	VR	VR	..	VR	...	...	...	...
177.	248	„ *distoma*, P. & J.	...	VR	...	...	...	...	...	...	...	1	R	...	...	1	...	...	R	...	VR	VR	...	...	...	...	...
178.	249	„ *lævigata* (Rss.)	R	F	R	VC	R	F	...	...	F	VC	C	C	F	F	F	F	VVC	F	C	VR	VC	F	R	VR	F
179.	249	„ *acuta* (Rss.)	VC	F	VR	C	...	...	...	...	F	VR	VR	R	...	VR	...	...	...	F	F	VR	R	VR	C	...	VR
180.	249	„ *falcata*, Chast.	...	...	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
181.	249	„ *lucida* (Will.)	F	R	V.	C	VR	1	...	VR	1	R	R	F	1	R	...	...	VVC	VR	C	...	...	F	F	...	...
182.	250	„ *fasciata* (Eg.)	VC	...	V.	C	...	...	...	...	1	R	...	C	...	...	...	VR	...	...	...	R	VR	...	...	...	R
183.	250	„ „ var. *faba*, B. & M.	...	...	...	...	...	VR	F	VR	...	C	...	F	F	R	R	VR	VR	R	VR	VR	...	...	...	VR	VR
184.	250	„ *annectens*, B. & H.	...	VR	1	F	V.	...	...	...	1	C	VR	F	R	...	...	...	C	F	...	C	VR	...	...	...	VR
185.	251	„ *quadrata* (Will.)	...	...	VR	...	...	...	...	...	1	VR	1	R	...	...	1	VR	VR	VR	...	...	...	...	...	...	...
186.	251	„ *malcomsonii*, Wr.	...	...	...	VR	...	...	...	...	1	1	1	1	...	...	...	1	VR	...	...	...	...	...	...	...	...
187.	251	„ *marginata* (W. & B.)	F	VR	VC	F	VR	...	...	1	VR	F	VR	F	R	R	VR	VR	R	R	C	F	...	...	VR	...	1
188.	251	„ „ var. *inæquilateralis*, Wr.	...	...	1	V.	...	...	...	...	...	1	...	...	...	...	...	...	...	VR	...	...	...	...	...	...	...
189.	251	„ „ var. *semimarginata*, Rss.	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
190.	252	„ *marginato-perforata*, Seg.	...	...	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
191.	252	„ *formosa*, Schw.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
192.	252	„ *lagenoides* (Will.)	1	....	...	VR	...	...	...	...	...	...	...	VR	VR	1	...	VR	R	VR	...	F	...	...	...	...	...
193.	252	„ „ var. *tenuistriata*, Br.	...	...	...	F	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	VR	...	...	...	...	...
194.	252	„ *ornata* (Will.)	...	...	1	R	...	...	...	...	...	...	...	1	...	...	...	1	VR	1	...	...	...	...	1	...	...
195.	253	„ *rizzæ* (Seg.)	...	...	...	VR	...	...	...	...	...	VR	...	VR	...	...	...	...	R	...	...	...	...	...	...	...	...
196.	253	„ *bicarinata* (Terq.)	...	...	VR	VR	...	...	...	...	...	VR	...	...	...	...	...	...	VR	...	...	VR	...	...	VR	...	...
197.	253	„ *orbignyana* (Seg.)	C	F	C	C	R	VR	R	R	1	VVC	VR	F	VR	F	...	R	C	C	VR	VC	VR	C	VR	...	VR
198.	253	„ „ var. *walleriana*, Wr.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
199.	253	„ *pulchella*, Br.	...	...	...	...	...	...	...	1	...	C	...	R	...	1	...	...	...	VR	C	VC	...	...	...	...	...
200.	254	„ „ var. *hexagona*, var. nov.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
201.	254	„ *clathrata*, Br.	...	...	...	...	...	...	...	...	...	VC	...	VR	...	VR	1	...	...	F	R	VC	VR	...	...	...	VR
202.	254	„ *lacunata*, B. & H.	...	...	...	...	...	...	...	...	...	...	...	R	...	...	...	...	...	...	...	R	...	...	...	...	...
203.	255	„ *reniformis*, Sideb.	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
204.	255	„ *fimbriata*, Br.	...	...	...	VR	1	...	...	...	1	1	...	...	...	...	...	...	VR	...	...	...	...	...	...	...	1
205.	255	„ *cymbula*, H.-A. & E.	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
206.	255	*Nodosaria rotundata* (Rss.)	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	F	...	...	...	...	...

No.	Page	SPECIES.	Lowlandman's Bay, Jura. Stn. 1.	Sound of Mull. Stn. 2.	Off Ardnamurchan. Stn. 3.	Loch Sunart. Stn. 4.	Scriby Bay, Ulva. Stn. 5.	Atlantic Shore, Iona. Stn. 6.	Gott Bay, Tiree. Stn. 7.	Sandy Island, Canna. Stn. 8.	Laga Bay, Loch Sunart. Stn. 9.	Shiant East Bank. Stn 10.	Loch Shell, Lewis. Stn. 11.	Loch Dunvegan, Skye. Stn. 12.	Off Neist Point, Skye. Stn. 13.	Loch Ainneart, Skye. Stn. 14.	Tobermory Bay, S. Stn. 15.	Between Rhum and Eigg. Stn. 16.	Scresort Bay, Rhum. Stn. 17.	Off S. of Eigg. Stn. 18.	Croulin Beg. Stn. 19.	Between Ru Rnag and Carr Point. Stn. 20.	Loch Hourn. Stn. 21.	Oronsay. Stn. 22.	Off Bradda Head, Port Erin. Stn. 23.	Eilean Cartmael, Oronsay. Stn. 25.	Skye (var. loc.). Stn. 26.
207.	255	*Nodosaria lævigata*, d'O.	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	F	...	...	...	...	...
208.	256	„ *calomorpha*, Rss.	...	...	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
209.	256	„ *pyrula*, d'O.	VR	F	1	F	VR	...	...	...	VR	R	1	VR	...	F	...	...	VR	R	1	F	VR	VR	VR	...	...
210.	256	„ *filiformis*, d'O.	...	R	1	F	VR	...	...	...	...	VR	...	...	F	...	...	...	...	1	...	...	R	...	...	...	...
211.	256	„ *consobrina*, d'O.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	F	1	...	...	...	...	...
212.	256	„ *communis*, d'O.	VR	C	1	F	VR	...	...	...	1	VR	...	1	F	F	...	...	1	VR	VR	C	F	...	VR	...	1
213.	257	„ *pauperata*, d'O.	...	...	...	...	...	...	...	...	...	...	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	...
214.	257	„ *roemeri* (Neugeb.)	...	VR	...	...	...	...	...	...	...	...	...	...	VR	...	...	...	...	...	...	VR	...	...	...	...	...
215.	257	„ *mucronata* (Neugeb.)	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
216.	257	„ *scalaris* (Batsch)	VR	C	...	VC	VR	1	...	...	1	C	VR	1	...	F	...	1	F	VC	F	C	F	VR	VR	...	1
217.	258	„ „ var. *separans*, Br.	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	VR	...	...	...	...	...
218.	258	„ *proxima*, Silv.	...	...	...	F	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
219.	258	„ *raphanistrum* (Linn.)	...	...	...	VR	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
220.	258	„ *obliqua* (Linn.)	...	VR	...	VR	...	...	...	...	...	VR	...	...	...	VR	...	...	...	...	...	VR	...	...	1	...	...
221.	259	*Lingulina biloculi*, Wr.	...	...	...	VR	...	...	...	...	...	VR	F	VR	...	...	...	...	VR	...	...	...	...	...	...	...	...
222.	259	„ *carinata*, d'O.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
223.	259	„ „ var. *bicarinata*, Sideb.	...	...	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
224.	259	„ „ var. *seminuda*, Hantk.	...	...	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
225.	260	*Frondicularia spathulata*, Br.	...	...	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
226.	260	„ *tenera* (Born.)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
227.	261	*Marginulina glabra*, d'O.	...	...	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
228.	261	„ *costata* (Batsch)	...	1	...	...	...	...	...	...	...	...	...	...	...	R	...	...	..	...	VR	VR	...	...	...	...	...
229.	261	*Vaginulina legumen* (Linn.)	...	...	R	VR	1	...	VR	...	...	...	...	1	...	...	...	...	...	...	...	VR	...	...	...	...	...
230.	261	„ *linearis* (Mont.)	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
231.	261	*Cristellaria crepidula* (F. & M.)	...	VR	VR	VR	...	...	1	...	...	R	1	R	...	...	...	1	VR	1	1	R	...	...	1	...	...
232.	262	„ *acutauricularis* (F. & M.)	...	...	...	VR	...	...	...	...	...	...	...	...	...	VR	...	...	1	1	...	R	...	...	...	...	...
233.	262	„ *convergens*, Born.	...	...	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
234.	263	„ *gibba*, d'O.	...	...	1	VR	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	VR	1	...	VR	...	...
235.	263	„ *rotulata* (Lam.)	1	F	1	R	VR	VR	1	VR	1	1	R	1	...	VR	...	...	...	VR	VR	VR	...	VR	VR	VR	...
236.	263	„ *cultrata* (Montf.)	1	R	...	VR	...	1	...	...	...	VR	...	...	...	...	...	...	...	VR	...	R	...	...	...	...	...
237.	263	„ *variabilis*, Rss.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	VR	...	...	...	...	...	...	...	...
238.	263	*Polymorphina amygdaloides* (Rss.)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	VR	...	...
239.	264	„ *lactea* (W. & J.)	...	...	1	R	VR	C	C	F	1	VR	VR	F	VR	R	VR	VR	VR	F	...	VR	...	R	F	...	...
240.	264	„ *oblonga*, Will.	...	...	VR	1	...	...	...	1	...	1	...	...	VR	...	...	F	1	...	...	...	...	...	...	...	...
241.	264	„ *concava*, Will.	...	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	VR	...	...	...	...	...	...	...	...	...
242.	264	„ *sororia*, Rss.	...	VR	C	VR	...	1	...	...	...	C	1	R	VR	...	...	VR	VR	VR	...	VR	1	VR	F	...	1
243.	264	„ *rotundata* (Born.)	...	...	F	VR	...	...	VR	1	...	R	VR	R	VR	...	...	VR	VR	...	R	VR	...	...	C	...	...
244.	265	„ *gibba*, d'O.	1	...	C	...	...	...	F	VR	...	R	...	F	1	VR	1	C	...	...	R	C	...	VR	VR	...	...
245.	265	„ *communis*, d'O.	...	...	...	VR	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	R	...	...	...	...	...
246.	265	„ *compressa*, d'O.	...	1	F	VR	...	...	VR	F	...	C	VR	R	1	R	...	...	...	VR	R	VC	...	R	R	...	VR
247.	265	„ *cylindroides*, Roemer	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	R	1	...	...
248.	265	„ *myristiformis*, Will.	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	1	...	VR	...	...	...	...	...
249.	266	*Uvigerina pygmæa*, d'O.	...	...	...	...	...	...	...	...	...	VR	VR	1	...	VR	...	1	...	F	R	...	F	...	...	...	...
250.	266	„ *angulosa*, Will.	R	VR	VR	C	R	VR	...	...	VR	F	VR	R	VR	F	VR	...	VR	R	R	R	VR	R	VR	...	1
251.	266	*Sagrina dimorpha*, P. & J.	...	F	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...

252.	266	*Globigerina bulloides*, d'O.	R	...	VR	F	...	R	R	VR	...	VC	R	F	...	C	VR	VR	F	F	F	F	R	C	VR	VR	VR
253.	267	„ *dubia*, Eg.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	VR	...	...	...	...	...	...	...
254.	267	„ *pachyderma* (Ehr.)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	VR	...	...	...
255.	267	„ *inflata*, d'O.	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...
256.	267	„ *rubra*, d'O.	...	VR	VR	R	VR	...	...	...	VR	VR	VR	...	...	VR	VR	VR	VC	R	...	...	...	...	...	...	...
257.	267	„ *linnæana* (d'O.)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
258.	268	*Orbulina universa*, d'O.	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
259.	268	? *Sphæroidina* sp.	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
260.	268	*Spirillina vivipara*, Ehr.	...	...	F	VR	...	...	...	1	VR	F	...	F	R	...	F	VR	...	...	VR	VR	...	...	VR	...	VR
261.	269	„ *obconica*, var. *carinata*, Halk.	...	...	VR	...	...	...	...	...	...	...	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	...
262.	269	*Patellina corrugata*, Will.	...	VR	F	F	VR	VR	...	...	VR	VR	F	F	VR	C	F	VR	VR	VR	F	F	VR	VR	F	...	VR
263.	269	*Discorbina nitida* (Will.)	VR	...	F	VR	1	...	1	1	1	F	...	F	F	F	F	F	1	F	F	R	...	...	R	...	VR
264.	270	„ *millettii*, Wr.	1	...	VR	...	...	...	...	...	...	VR	...	...	VR	...	...	...	...	...	...	...	...	...	...	...	...
265.	270	„ *praegeri*, H.-A. & E.	VR	VR	F	F	...	...	...	...	F	F	R	F	F	C	R	F	...	F	F	R	...	C	C	VR	F
266.	270	„ *peruviana* (d'O.)	...	...	R	F	...	...	...	...	...	...	...	...	...	...	...	...	...	...	F	...	...	...	...	...	...
267.	270	„ *rosacea* (d'O.)	F	...	R	C	R	1	...	...	1	C	VC	R	R	C	R	F	R	C	F	VC	VR	VR	C	...	R
268.	270	„ *planorbis* (d'O.)	C	...	VR	C	1	...	VR	...	...	1	1	...	...	...	...	...	...	...	...	...	...	VR	...	...	...
269.	271	„ *baccata*, H.-A. & E.	...	...	...	VR	...	...	1	...	1	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	...	...
270.	271	„ *turbo*, d'O.	F	...	...	VR	F	...	...	1	F	VR	VVC	VR	...	...	...	1	VC	VR	...	...	...	VR	F	...	1
271.	271	„ *orbicularis* (Terq.)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	R	...	...	...	...	...	...	...	...	...	...
272.	271	„ *mamilla* (Will.)	F	...	VR	C	VR	VR	F	F	F	C	VC	VR	...	...	...	VR	C	VR	F	VR	VR	VR	C	...	F
273.	272	„ *mediterranensis* (d'O.)	VR	...	...	VR	...	VR	...	...	...	...	...	...	...	...	VC	...	...	VR	...	...	...	VR	...	...	...
274.	272	„ *globularis* (d'O.)	R	F	VC	F	VR	VC	C	VVC	F	VC	R	VC	F	C	C	R	VR	VC	C	F	R	VR	F	VR	F
275.	272	„ *obtusa* (d'O.)	1	...	VR	VR	F	R	R	...	...	...	...	...	...	...	...	VR	...	VR	...	...	...	1	C	...	...
276.	272	„ *polyrraphes* (Rss.)	1	...	...	VR	...	...	...	...	...	...	...	...	1	...	...	...	1	VR	...	...	...	...	...	...	...
277.	272	„ *chasteri*, H.-A. & E.	...	1	1	R	...	...	1	...	1	...	1	...	R	VR	VR	VR	VR	...	...	...	...	...	...	...	...
278.	273	„ „ var. *bispinosa*, H.-A. & E.	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
279.	273	„ *bertheloti* (d'O.)	...	...	...	...	...	VR	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
280.	273	„ *pustulata*, H.-A. & E.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
281.	273	„ *parisiensis* (d'O.)	...	...	...	...	...	...	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
282.	273	„ *vesicularis* (Lam.)	...	VR	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	VR	...	...	...
283.	273	*Planorbulina mediterranensis* (d'O.)	R	...	C	R	VR	R	R	VR	VR	VC	F	R	VR	VR	1	F	...	C	F	F	VR	VR	C	...	C
284.	274	*Truncatulina refulgens* (Montf.)	1	...	R	VR	...	F	VR	C	F	C	VR	C	R	VR	...	R	R	VR	VC	R	VR	VC	...	...	R
285.	274	„ *lobatula* (W. & J.)	C	R	VC	C	C	VVC	VVC	VVC	C	VVC	C	VC	F	VC	VC	C	C	VC	VVC	VC	VR	C	R	VR	C
286.	274	„ *tenuimargo*, Br.	...	...	...	...	...	...	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
287.	274	„ *variabilis*, d'O.	R	...	R	...	VR	VR	VR	F	...	F	VR	F	R	C	C	VR	...	R	...	C	...	VR	VR	VR	VR
288.	274	„ *haidingerii* (d'O.)	...	1	...	...	...	...	...	...	...	...	...	...	VR	...	...	...	...	...	...	...	...	...	...	...	...
289.	274	„ *ungeriana* (d'O.)	...	...	1	...	...	...	...	...	...	VR	...	1	...	...	...	...	...	...	...	...	...	...	VR	...	...
290.	275	„ *akneriana* (d'O.)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	VR	...	...	...	...	...	...	...	...	...
291.	275	„ *tenera*, Br.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	VR	...	...	...	...	...
292.	275	*Pulvinulina repanda* (F. & M.)	...	...	C	1	...	...	...	...	...	C	...	VR	...	...	...	...	...	1	VR	...	...	...	VR	...	VR
293.	275	„ „ var. *concamerata* (Mont.)	...	...	F	...	...	VR	...	...	1	F	...	VR	1	...	...	1	...	...	VR	R	...	...	...	...	1
294.	275	„ *punctulata* (d'O.)	...	...	VR	...	1	...	...	...	...	...	...	...	VR	...	...	VR	...	...	...	...	...	...	...	...	...
295.	276	„ *auricula* (F. & M.)	...	...	VR	VR	...	...	...	1	...	F	VR	VR	VR	VR	...	...	...	VR	C	R	F	...	...	...	...
296.	276	„ *oblonga* (Will.)	...	...	...	...	...	...	R	...	...	VR	VR	...	...	...	...	...	VR	VR	C	C	...	R	1	...	VR
297.	276	„ *brongniartii* (d'O.)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	VR	...	...	...	...	...	...	...	...	...
298.	276	„ *haliotidea*, H.-A. & E.	1	...	R	F	...	...	...	...	...	VR	...	F	VR	VR	...	VR	VR	VR	C	VR	VR	...	VR	...	...
299.	276	„ *karsteni* (Rss.)	...	...	...	C	...	...	...	...	VR	F	VC	F	...	VC	R	...	VVC	VC	C	C	C	...	...	...	F
300.	277	„ *elegans* (d'O.)	...	...	F	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
301.	277	*Rotalia beccarii* (Linn.)	VVC	...	...	F	R	VR	C	VR	C	...	C	VR	...	...	R	VR	VVC	VC	...	R	...	C	VR	...	...
302.	277	„ *orbicularis* (d'O.)	...	C	VR	C	VR	...	...	...	C	C	C	VR	...	C	...	VR	...	VC	VC	VC	VC	...	C	...	VR
303.	277	„ *perlucida*, H.-A. & E.	...	...	...	F	F	...	...	...	R	...	...	...	...	...	...	...	...	...	...	...	...	VR	...	...
304.	278	„ *schroeteriana*, P. & J.	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
305.	278	*Gypsina inhærens* (Schultze)	...	...	F	VR	VR	R	F	VC	VR	R	VR	C	R	...	R	C	VR	R	...	VR	...	VR	VR	VR	C
306.	278	„ *vesicularis* (P. & J.)	...	...	R	...	...	...	1	1	...	...	1	...	...	...	...	...	...	VR	...	...	...	...	...	...	...
307.	278	„ *globulus* (Rss.)	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	VR	...	...	...	...	...	...	...
308.	279	*Nonionina depressula* (W. & J.)	C	C	R	VC	VC	F	...	VR	C	F	F	...	VR	VC	C	F	VVC	VC	VC	VC	C	VVC	C	VR	R
309.	279	„ *umbilicatula* (Mont.)	...	F	F	VC	VR	...	...	VR	C	C	F	F	VR	VVC	...	VR	...	VC	VVC	VVC	VVC	R	VR	VR	F
310.	280	„ *orbicularis*, Br.	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...

No.	Page	SPECIES.	Lowlandman's Bay, Jura. Stn. 1	Sound of Mull. Stn. 2.	Off Ardnamurchan. Stn. 3.	Loch Sunart. Stn. 4.	Soriby Bay, Ulva. Stn 5.	Atlantic Shore, Iona. Stn. 6.	Gott Bay, Tiree. Stn. 7.	Sandy Island, Canna. Stn. 8.	Laga Bay, Loch Sunart. Stn. 9.	Shiant East Bank. Stn. 10.	Loch Shell, Lewis. Stn. 11.	Loch Dunvegan, Skye. Stn. 12.	Off Neist Point, Skye. Stn. 13.	Loch Ainneart, Skye. Stn. 14.	Tobermory Bay, S. Stn 15.	Between Rhum and Eigg. Stn. 16.	Scresort Bay, Rhum. Stn. 17.	Off S. of Eigg. Stn. 18.	Croulin Beg. Stn. 19.	Between Ru Ruag and Carr Point. Stn. 20.	Loch Hourn. Stn. 21.	Oronsay. Stn. 22.	Off Bradda Head, Port Erin. Stn. 23.	Eilean Gartmael, Oronsay. Stn. 25.	Skye (var. loc.). St. 26.
311.	280	*Nonionina asterizans* (F. & M.)	...	...	...	C	C	R	VR	...	...	...	VR	...	...	...	C	...	VVC	...	...	...	...	...	1	...	...
312.	230	„ *stelligera*, d'O.	...	...	...	VR	...	...	...	...	...	VR	...	VR	...	...	...	...	...	...	...	...	...	...	...	...	...
313.	230	„ *boueana*, d'O.	...	...	...	VR	...	VR	...	...	...	...	...	...	...	VR	...	...	1	R	VR	R	...	...	...	...	...
314.	280	„ *scapha* (F. & M.)	...	1	...	VR	...	...	...	...	1	...	...	1	...	...	...	VR	VR	...	...	...	...	...	...	...	...
315.	281	„ *turgida* (Will.)	VR	C	...	VC	F	VR	...	...	C	VC	VC	F	1	VC	VR	VR	VVC	VC	C	VC	C	VR	...	...	R
316.	281	„ *pauperata*, B. & W.	...	...	...	R	...	1	...	...	1	VR	...	R	...	...	VR	VR	...	VR	...	R	F	...	F	VR	...
317.	281	*Polystomella faba* (F. & M.)	...	VR	...	R	F	...	...	...	...	VR	...	VR	...	...	...	VR	...	C	...	...	...	VC	VR	...	...
318.	282	„ *decipiens*, Costa	...	F	VR	...	C	...	...	...	...	...	F	...	...	...	...	...	C	...	...	...	...	...	...	...	...
319.	282	„ *striato-punctata* (F. & M.)	VC	R	R	VC	VC	C	C	R	VR	R	C	F	R	C	R	R	C	C	VC	R	R	C	F	VR	VR
320.	282	„ „ var. *selseyensis*, H.-A. & E.	...	...	...	VC	1	F	...	...	...	R	F	...	...	...	...	F	VC	...	...	...	...	...	...	...	...
321.	283	„ *arctica*, P. & J.	...	...	VR	VR	...	...	...	...	...	VR	...	F	...	VR	...	1	...	...	...	VR	...	C	...	...	...
322.	283	„ *macella* (F. & M.)	VR	...	VR	F	VR	F	F	F	...	VR	VR	...	...	...	F	...	C	VR	VR	VR	VR	VC	F	VR	...
323.	283	„ *crispa* (Linn.)	F	VR	VR	F	R	F	F	F	VR	...	VVC	...	...	...	VVC	VR	VC	VR	VR	VC	VR	VC	VR	VR	VR
324.	283	*Operculina ammonoides* (Gron.)	1	F	...	VC	...	1	...	VR	C	VC	C	F	VR	VC	...	VR	...	C	C	VC	VVC	C	VR	VR	F
		TOTALS	90.	102.	123.	203.	88.	72.	66.	66.	113.	170.	122.	142.	87.	136.	71.	107.	109.	169.	141.	164.	94.	77.	112.	42.	94.

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An effort has been made to reduce the synonymies prefixed to the three hundred and twenty-four species and varieties described in this Report to a minimum of space. The principle first adopted by us in the Clare Island Monograph (H.-A. & E. 1913, CI.) has therefore been followed here, and with very few exceptions the original reference to the author of a species has been given with one later and well-illustrated record. In all cases where the species is illustrated in Brady's 'Challenger' Report (B. 1884, FC.) that reference has *alone* been given in addition to the original. Where the species has not been included in, or has been diagnosed subsequently to, Brady, 1884, FC., one later reference—if possible, British—has been given.

Names of authors, titles of articles, and full bibliographical references to the Transactions and Proceedings in which they are to be found are given once and for all in this Bibliography, some lengthy titles being shortened as follows :—

QJGS.=Quarterly Journal of the Geological Society, London.
JRMS.=Journal of the Royal Microscopical Society, London.
JQMC.=Journal of the Quekett Microscopical Club, London.
MASIB.=Memorie della Reale Accademia delle Scienze dell' Instituto di Bologna.
SAWW.=Sitzungsberichte der Kaiserliche Akademie der Wissenschaften Wien. (D=Denkschrift.)
AMNH.=Annals and Magazine of Natural History.

The titles of all papers and books are indicated by initials only, after the date of publication, and the first letter of the author's name :—thus, C. 1892, PCT.=F. Chapman, 'Microzoa from the Phosphatic Chalk of Taplow,' the page, etc., only being given, and all further details being found under that initial and date in the Bibliography. In the case of long or short series of papers, the date of the first is given and the initials are followed by the year in which the paper referred to appeared : thus, M. 1898, etc., FM. 1900 = the papers of Millett's series, beginning in 1898, which were published in JRMS. in 1900.

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EXPLANATION OF THE PLATES.

PLATE 39.

Figs. 1–3. *Spiroloculina acutimargo*, Brady, var. *concava*, Wiesner. Fig. 1. Superior or convex surface. Fig. 2. Inferior or concave surface. Fig. 3. Edge view. × 113.

Figs. 4–6. *Miliolina bucculenta*, Brady. Fig. 4. Front view. Fig. 5. Dorsal view. Fig. 6. Oral view. × 48.

Figs. 7–9. *Miliolina suborbicularis* (d'Orbigny). Fig. 7. Front view. Fig. 8. Dorsal view. Fig. 9. Edge or oral view. × 64.

Figs. 10–18. *Miliolina pygmæa* (Reuss). (i.) Milioline type. Fig. 10. Young specimen. Figs. 11–15. Various stages, side views. Fig. 16. Oral view. (ii.) Spiroloculine type. Fig. 17. Side view. Fig. 18. Oral view. × 113.

Figs. 19–27. *Miliolina candeiana* (d'Orbigny). Figs. 19, 20. Young or Spiroloculine form. Fig. 21. Transition from Spiroloculine to Milioline form. Fig. 22. Oral view of young Milioline form. Fig. 23. Ditto. Edge view. Fig. 24. Adult Milioline form. Front view. Fig. 25. Ditto. Dorsal view. Fig. 26. Ditto. Edge view. Fig. 27. Ditto. Oral view. × 113.

Figs. 28–31. *Miliolina stelligera* (Schlumberger). Fig. 28. Dorsal view. Fig. 29. Edge view. Fig. 30. Front view. Fig. 30. Oral (or apical) view. × 113.

Figs. 32–34. *Planispirina sigmoidea*, Brady. Figs. 32, 33. Side views. Fig. 34. Oral (or apical) view. × 113.

PLATE 40.

Figs. 1–9. *Miliolina ferussacii* (d'Orbigny). Figs. 1–3. Front views, various stages of growth. Figs. 4–6. Dorsal view, ditto. Figs. 7–8. Edge views. Fig. 9. Oral view. Figs. 1, 2, 6, 9, × 48. Figs. 4, 7, × 64. Figs. 3, 5, 8, × 30.

Figs. 10, 11. *Cornuspira angigyra* (Reuss). Fig. 10. Side view. Fig. 11. Edge view. × 113.

Figs. 12, 13. *Haplophragmium canariense* (d'Orbigny). Abnormal specimen. × 64.

Fig. 14. *Haplophragmium pseudospirale* (Williamson). × 113.

Figs. 15–18. *Haplophragmium runianum*, sp. nov. Fig. 15. Side view. Fig. 16. Ditto, showing traces of septation. Fig. 17. Edge view. Fig. 18. Optical section; Balsam mount, showing septa of varying thicknesses. Figs. 15, 16, 17, × 113. Fig. 18, × 150.

Figs. 19–21. *Trochammina nitida*, Brady. Fig. 19. Superior view. Fig. 20. Inferior view. Fig. 21. Edge (oral) view. × 113.

Figs. 22, 23. *Textularia concava*, var. *heterostoma*, Fornasini. Fig. 22. Side view. Fig. 23. Edge (oral) view. × 64.

PLATE 41.

Figs. 1, 2. *Textularia candeiana*, d'Orbigny. Fig. 1. Side view. Fig. 2. Edge (oral) view. × 64.

Fig. 3. *Bulimina echinata*, d'Orbigny. × 113.

Figs. 4–9. *Bulimina elegans*, var. *exilis*, Brady. Figs. 4, 5, 9, showing aperture. × 113.

Figs. 10–14. *Bolivina textilarioides*, Reuss. Figs. 10–12. Side views. Fig. 13. Side view of strongly limbate specimen. Fig. 14. Edge view. × 113.

Fig. 15. *Bolivina beyrichi*, Reuss. × 150.

Fig. 16. *Lagena hispida*, Reuss. × 170.

Figs. 17, 18. *Lagena costata* (Williamson). Fig. 17. Side view. Fig. 18. Oral view. × 150.

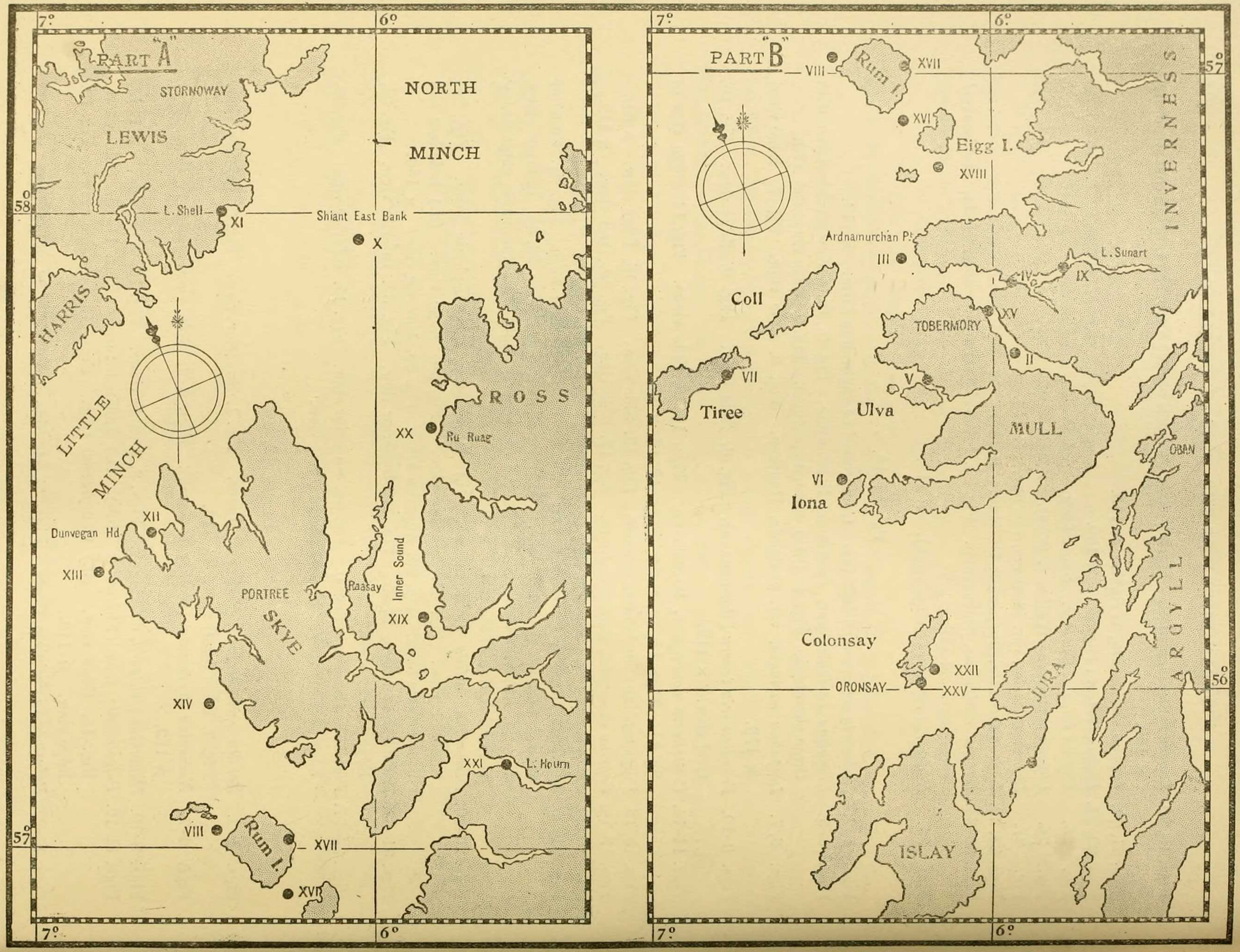
Figs. 19, 20. *Lagena spumosa,* Millett. Fig. 20. External shell broken away, showing internal structure. × 150.
Figs. 21, 22. *Lagena semilineata,* Wright. × 113.
Figs. 23, 24. *Lagena lævigata* (Reuss). × 150.
Fig. 25. *Lagena falcata,* Chaster. Short form. × 160.
Fig. 26. *Lagena marginata* (Walker & Boys). × 113.
Fig. 27. *Lagena pulchella,* var. *hexagona,* var. nov. × 113.
Figs. 28, 29. *Lagena lacunata,* Burrows & Holland. × 113.
Figs. 30–34. *Lagena reniformis,* Sidebottom. Fig. 30. 'Runa' specimen. Figs. 31–34. 'Goldseeker' specimens. × 113.
Fig. 35. *Nodosaria roemeri* (Neugeboren). × 113.

Plate 42.

Figs. 1, 2. *Nodosaria communis,* d'Orbigny. Compressed or vaginuline form. × 113.
Figs. 3–5. *Lingulina carinata,* var. *bicarinata,* Sidebottom. Fig. 3. Side view of specimen with three chambers. Fig. 4. Ditto, normal specimen. Fig. 5. Edge view. × 176.
Figs. 6, 7. *Lingulina carinata,* var. *seminuda,* Hantken. Fig. 6. Side view. Fig. 7. Edge view. × 176.
Figs. 8–10. *Frondicularia tenera* (Bornemann). Fig. 8. Side view. Fig. 9. Edge view. Fig. 10. Oral view. × 113.
Figs. 11–14. *Cristellaria convergens,* Bornemann. Figs. 11–13. Side views. Fig. 14. Edge view of fig. 11. Figs. 11, 14, × 64. Figs. 12, 13, × 113.
Figs. 15, 16. *Polymorphina cylindroides,* Roemer. Fig. 15. Side view. Fig. 16. Edge view. × 64.
Figs. 17–18. *Sagrina dimorpha,* Parker & Jones. Fig. 17. Side view. Fig. 18. Oral view. × 113.
Figs. 19, 20. *Sphæroidina* ? sp. Fig. 19. Side (oral) view. Fig. 20. Edge view. × 150.
Figs. 21–25. *Spirillina vivipara,* Ehrenberg, var. (i.) Coarsely perforate form. Fig. 21. Superior view. Fig. 22. Inferior view. (ii.) Papillate form. Figs. 23, 24. Inferior views. Fig. 25. Superior view. In fig. 25 the drawing is slightly diagrammatic, emphasising the crenelation of the test. × 113.
Figs. 26–30. *Discorbina nitida* (Williamson). (i.) High-domed megalospheric form. Fig. 26. Superior view. Fig. 27. Inferior view. Fig. 28. Edge view. (ii.) Lobulate and non-carinate form. Fig. 29. Superior view. Fig. 30. Inferior view. × 150.
Figs. 31–33. *Truncatulina tenera,* Brady. Fig. 31. Superior view. Fig. 32. Inferior view. Fig. 33. Edge view. × 64.
Figs. 34–37. *Pulvinulina karsteni* (Reuss). Fig. 34. Superior view. Fig. 35. Inferior view. Fig. 36. Edge (dorsal) view. Fig. 37. Edge (oral) view.

Plate 43.

Figs. 1–3. *Rotalia schroeteriana,* Parker & Jones. Fig. 1. Superior view. Fig. 2. Inferior view. Fig. 3. Edge (oral) view. × 113.
Figs. 4–7. *Nonionina depressula* (Walker & Jacob). Figs. 4–6. Side view. Fig. 7. Edge view. × 113.
Figs. 8–10. *Nonionina stelligera,* d'Orbigny. Figs. 8, 9. Side views. Fig. 10. Edge view. × 113.
Figs. 11–19. *Polystomella faba* (Fichtel & Moll). (i.) Inflated form. Figs. 11–13. Side views. Fig. 14. Edge view. (ii.) Compressed type. Figs. 15–18. Side views. Fig. 19. Edge view. × 113.
Figs. 20–22. *Polystomella decipiens,* Costa. Figs. 20, 21. Side views. Fig. 22. Edge view. × 64.



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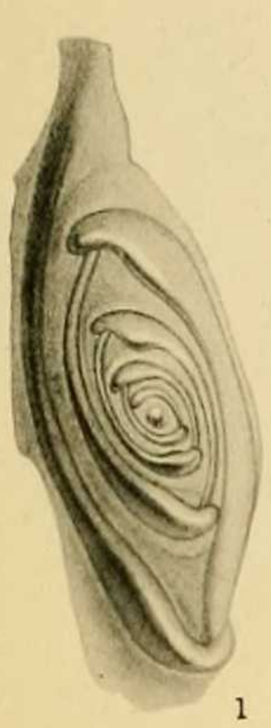

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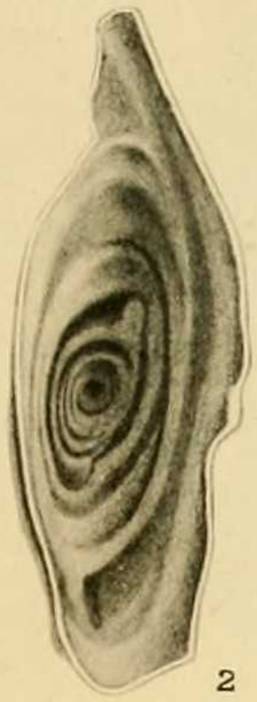

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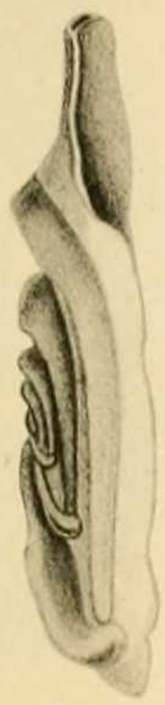

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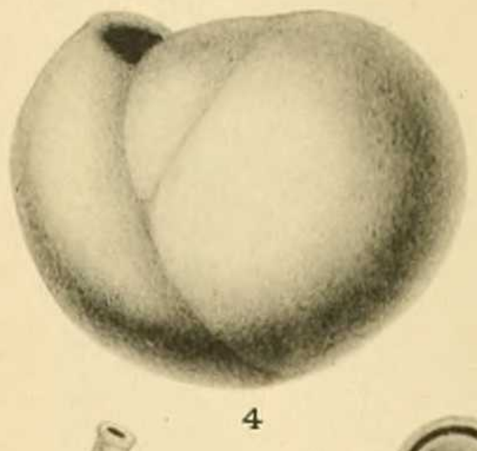

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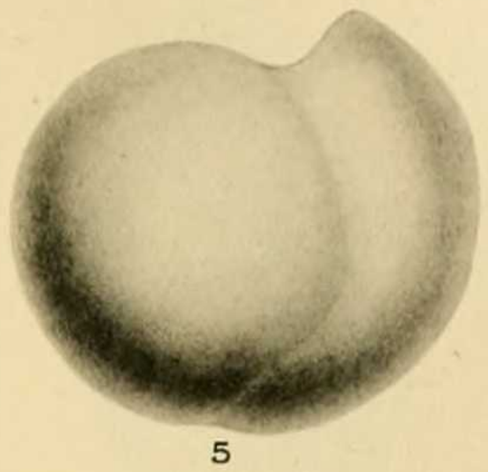

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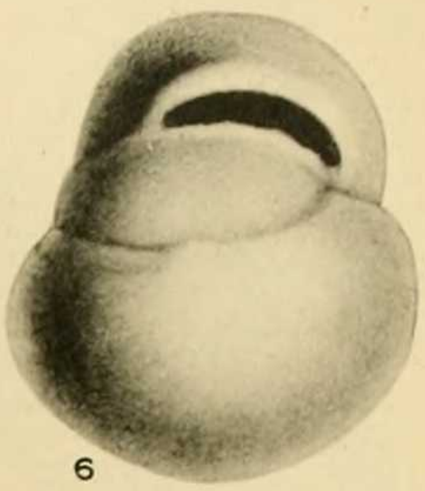

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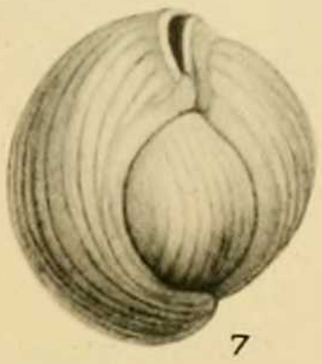

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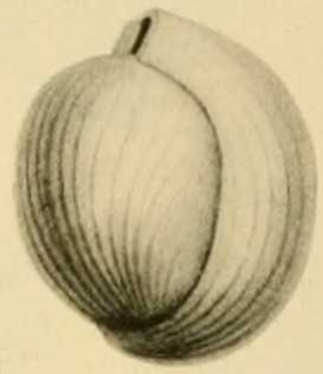

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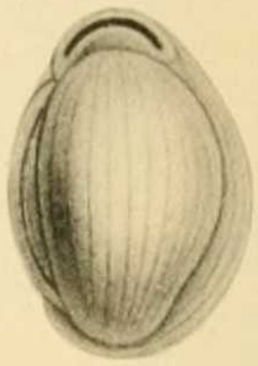

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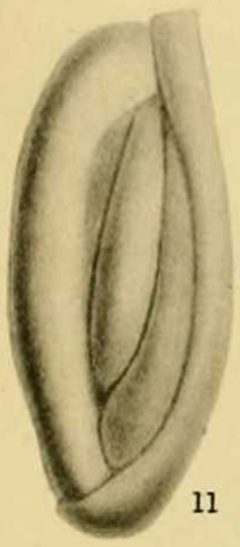

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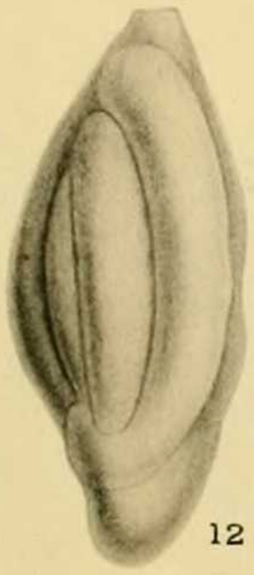

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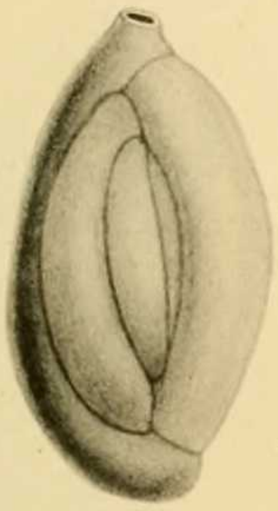

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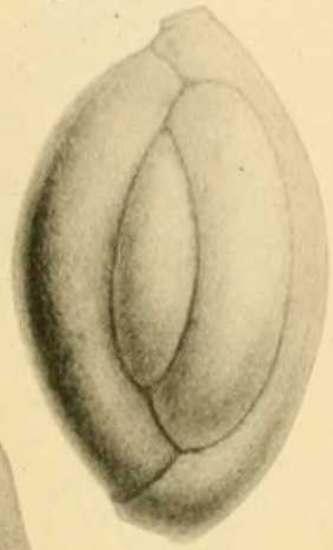

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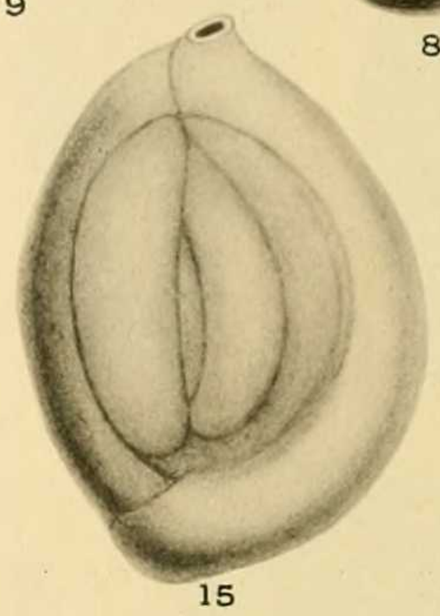

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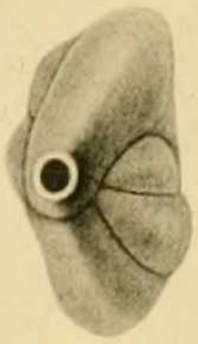

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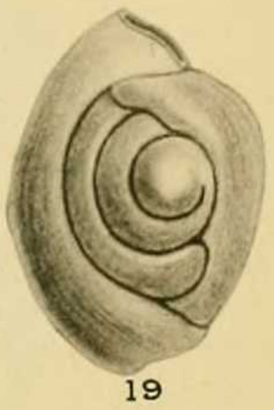

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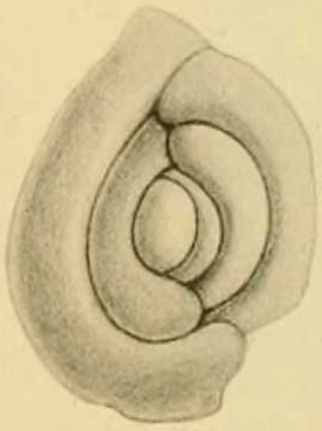

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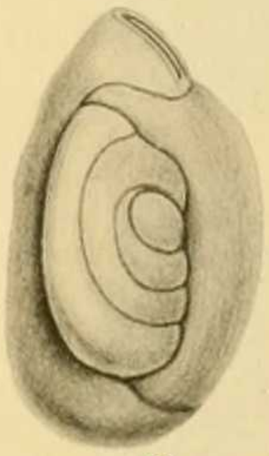

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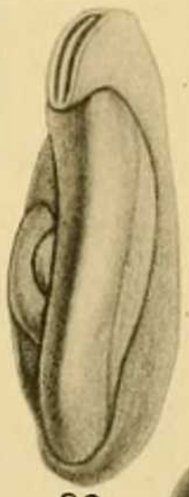

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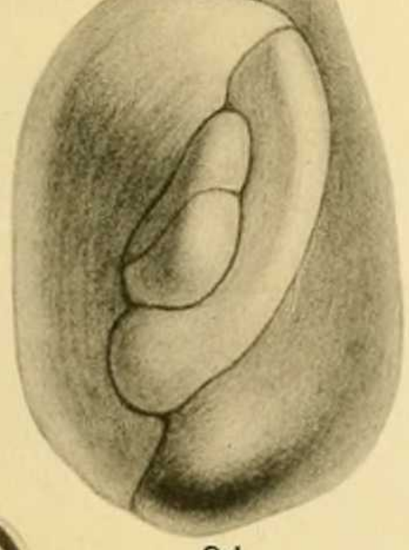

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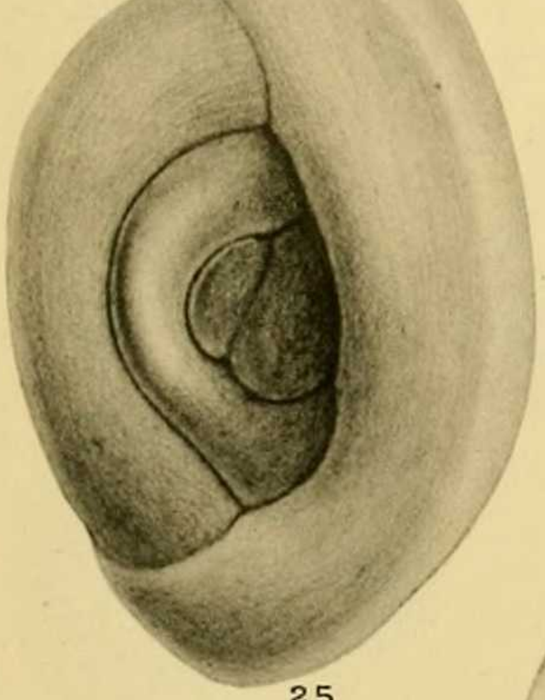

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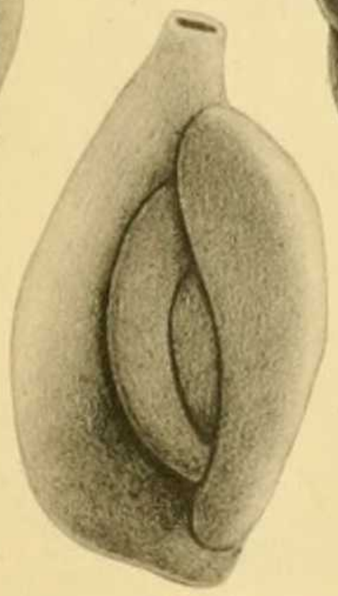

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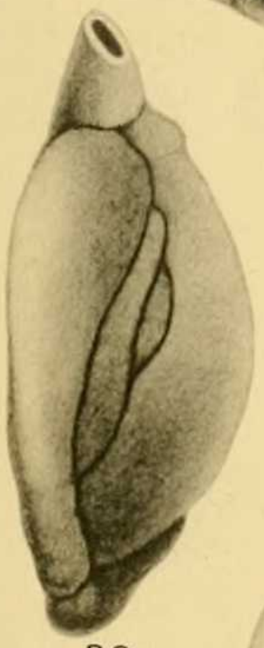

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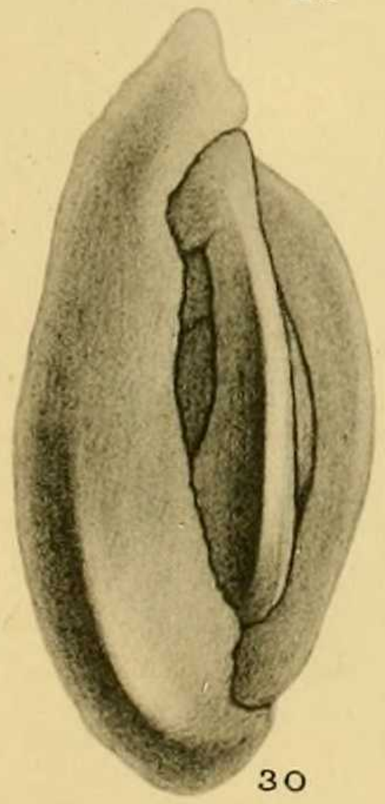

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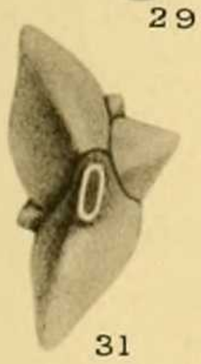

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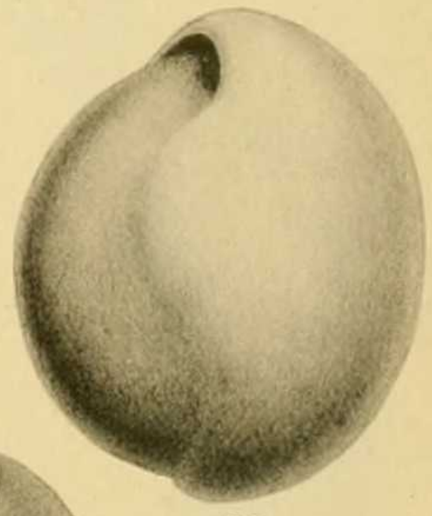

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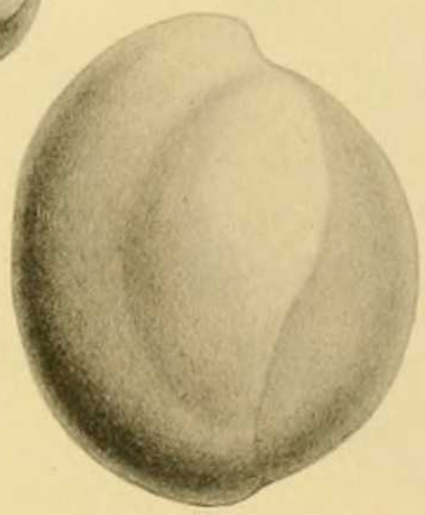

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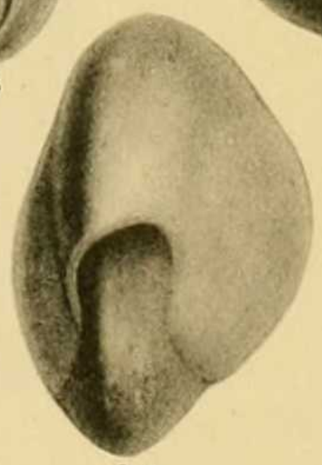

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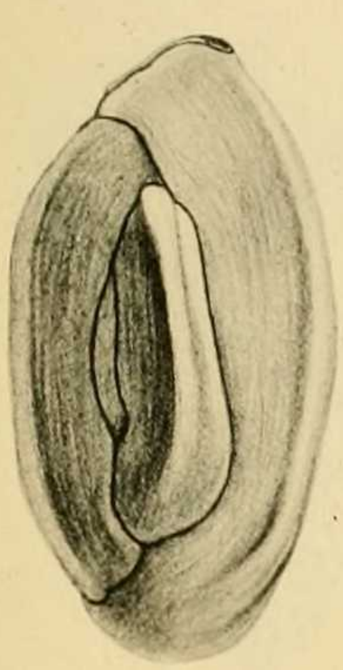
FORAMINIFERA FROM THE WEST OF SCOTLAND, (S.Y. "RUNA") 1913.



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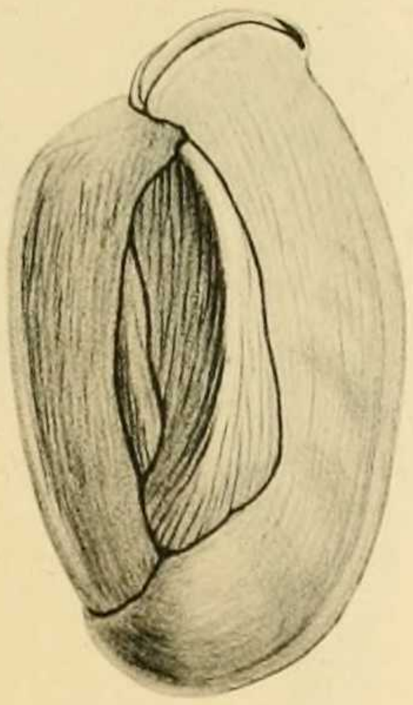

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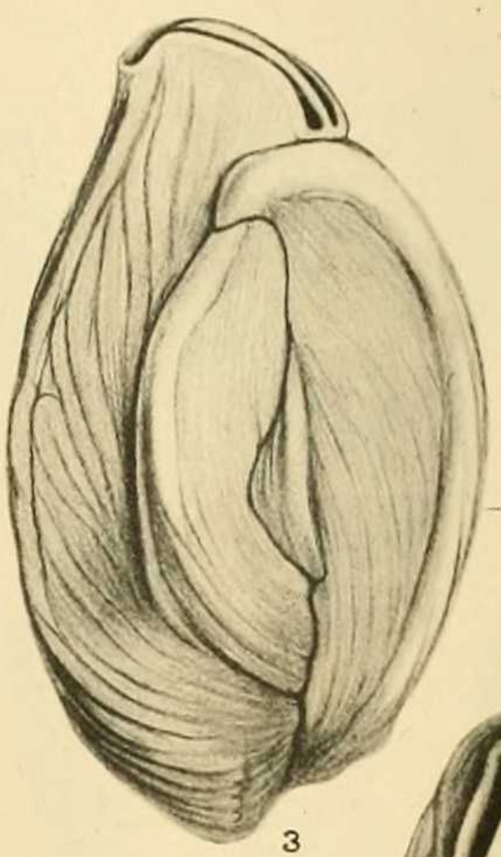

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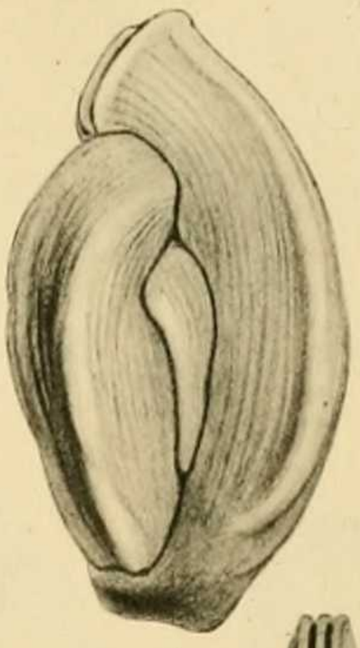

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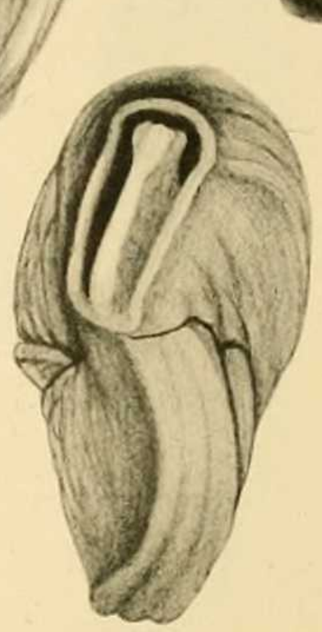

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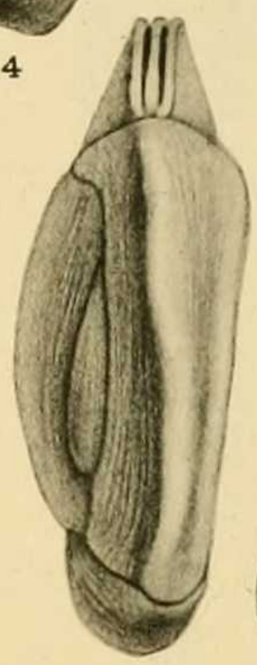

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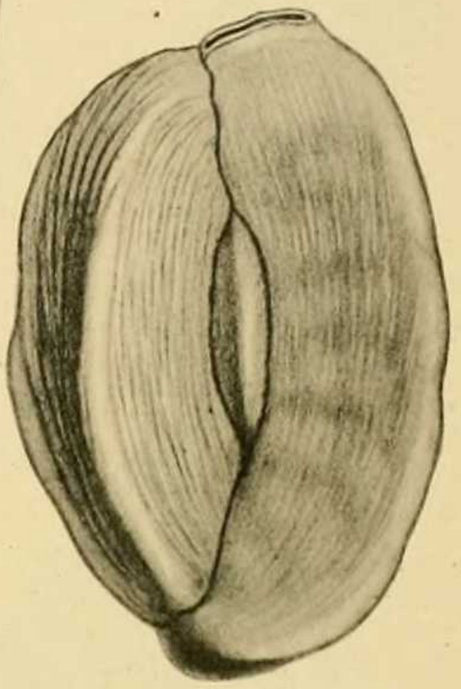

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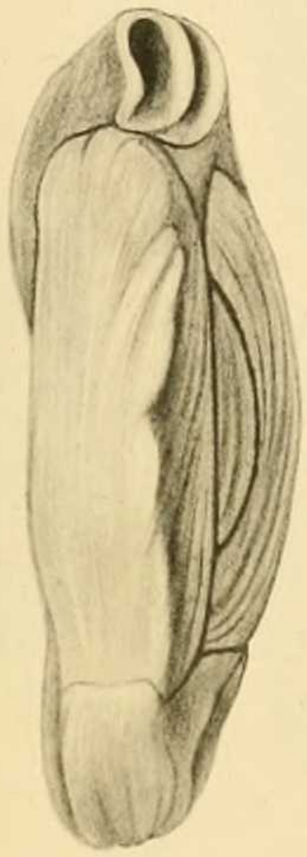

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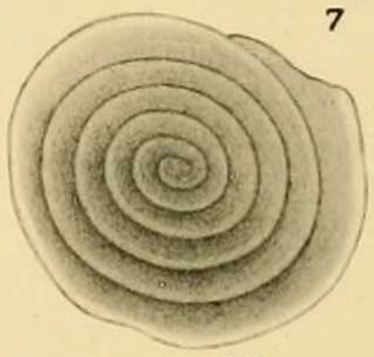

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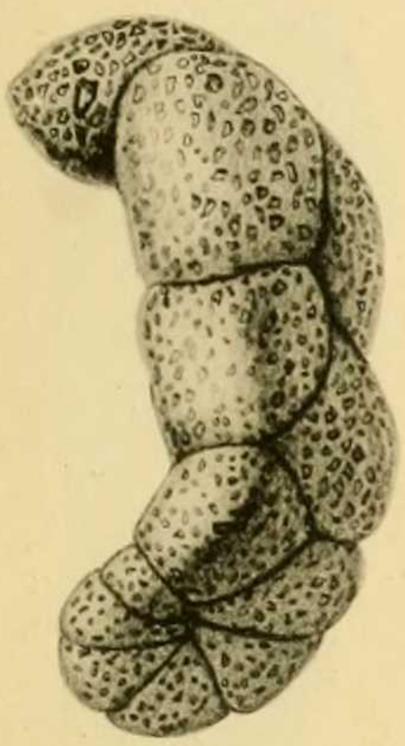

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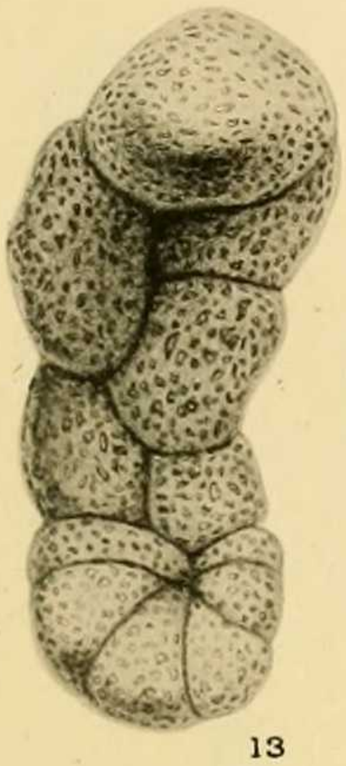

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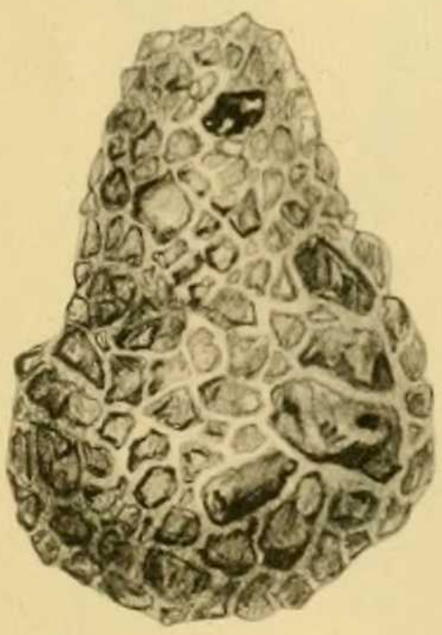

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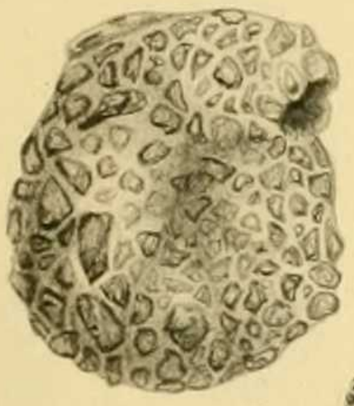

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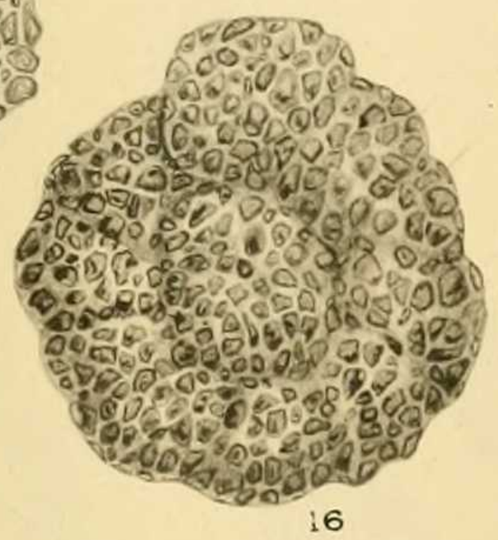

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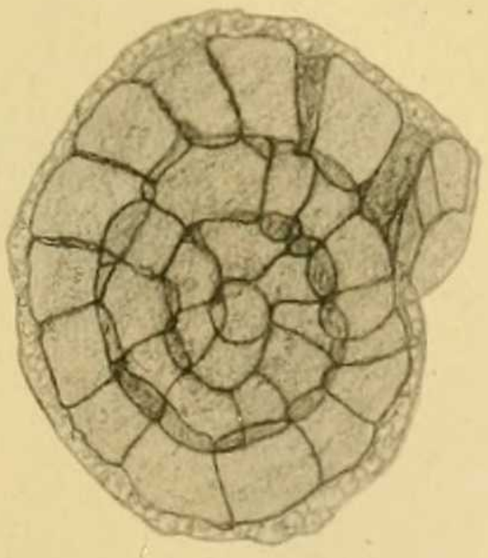

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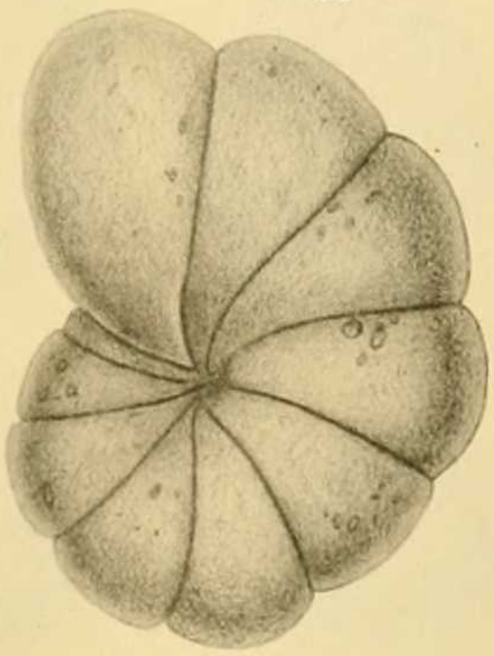

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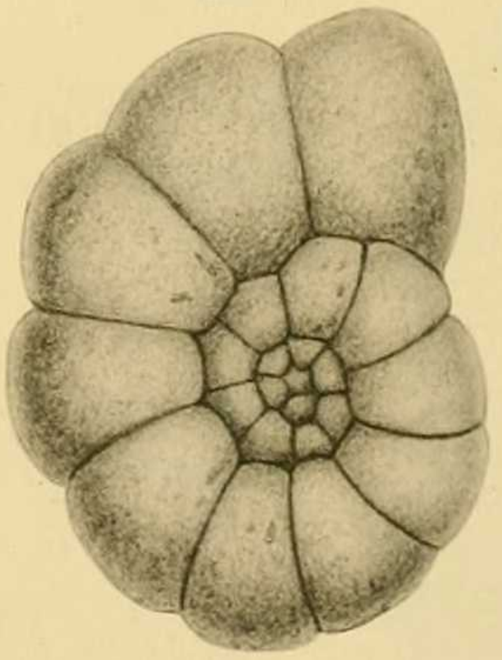

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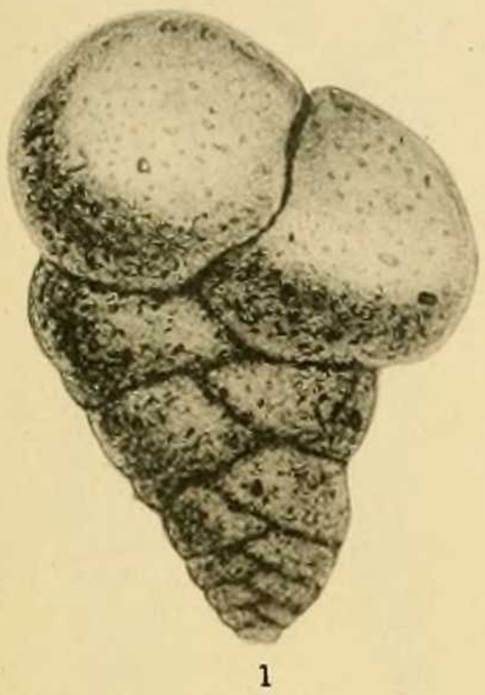
FORAMINIFERA FROM THE WEST OF SCOTLAND, (S.Y. "RUNA") 1913.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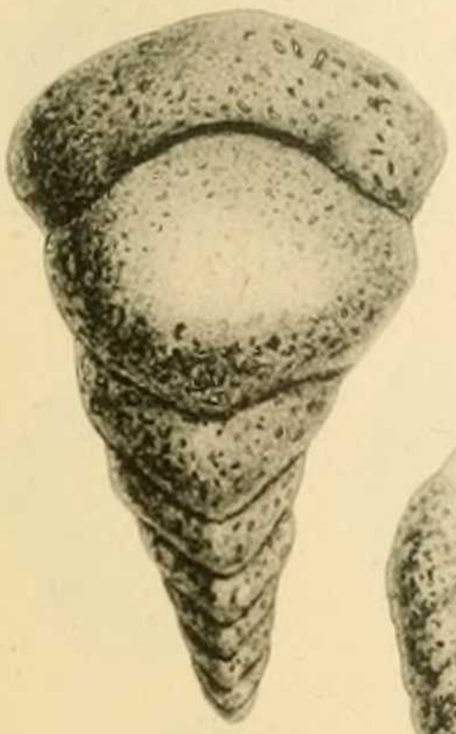
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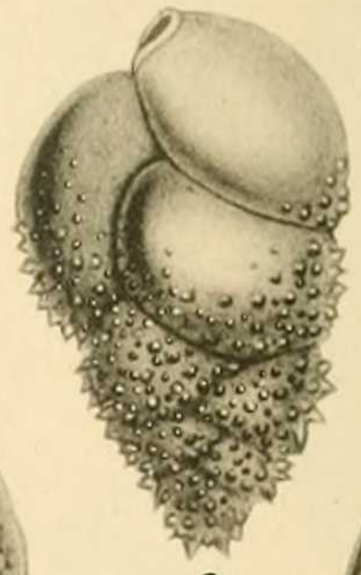
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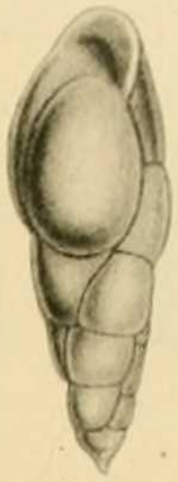
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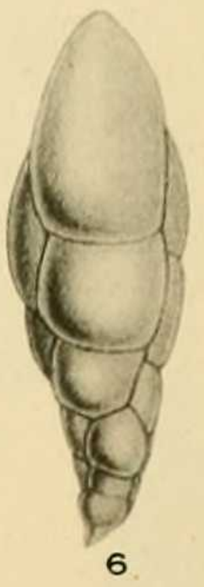
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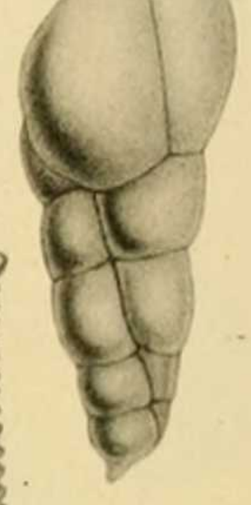
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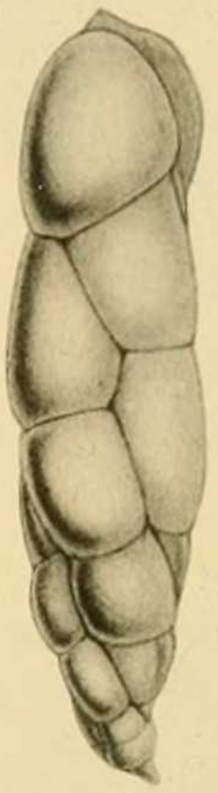
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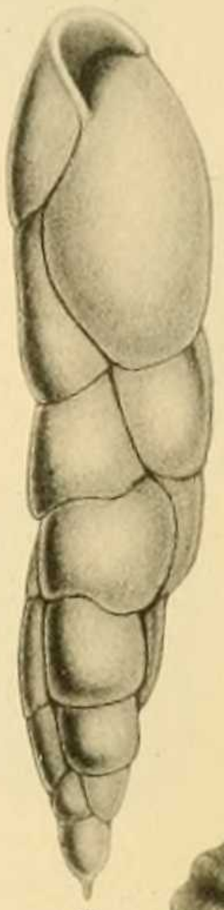
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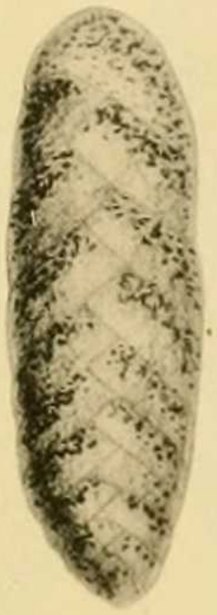
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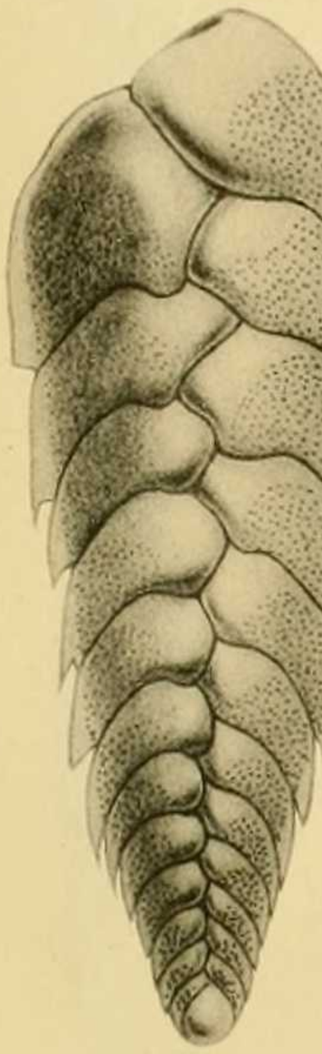
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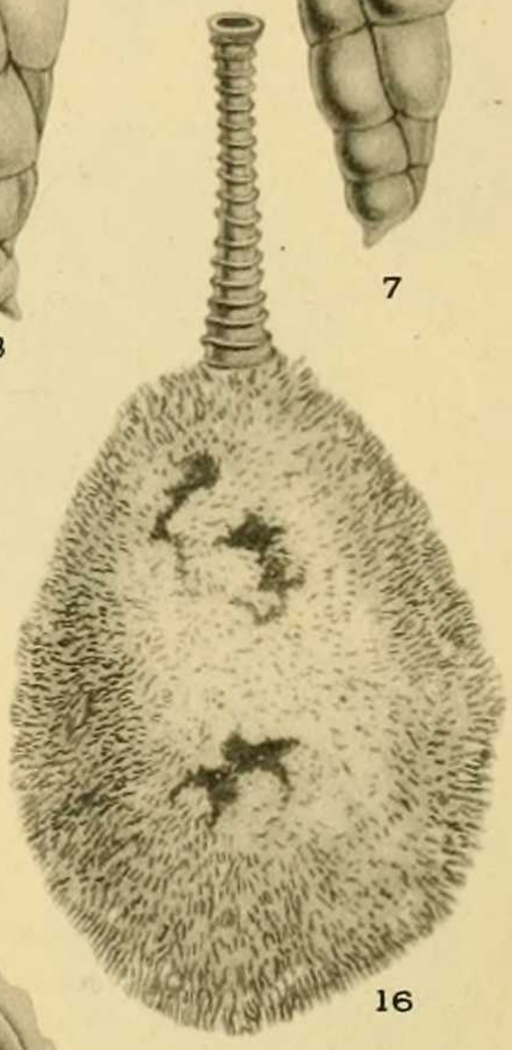
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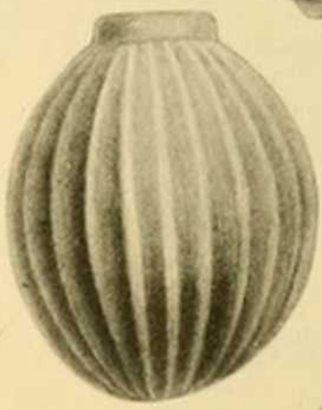
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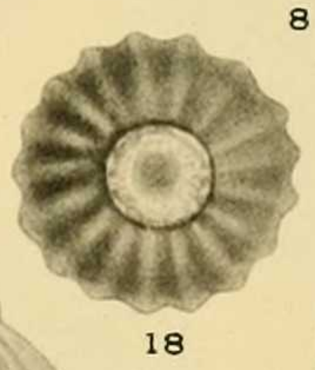
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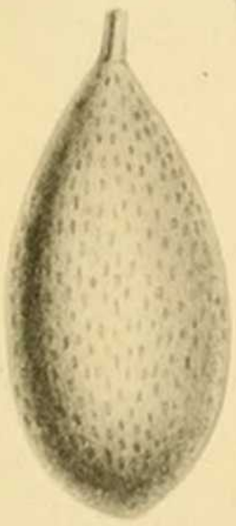
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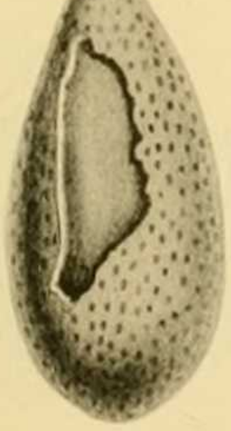
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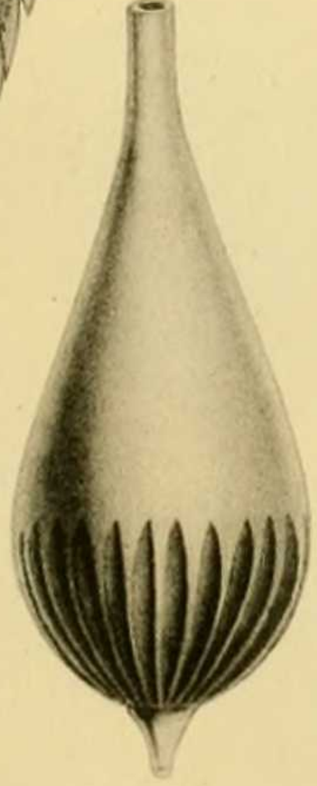
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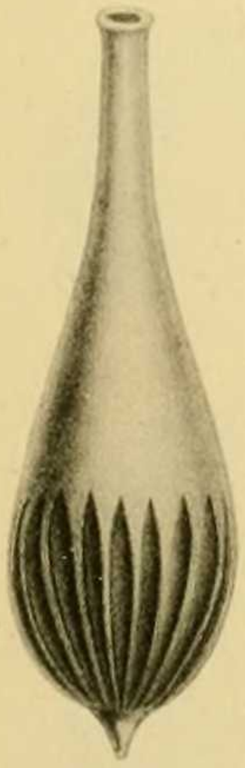
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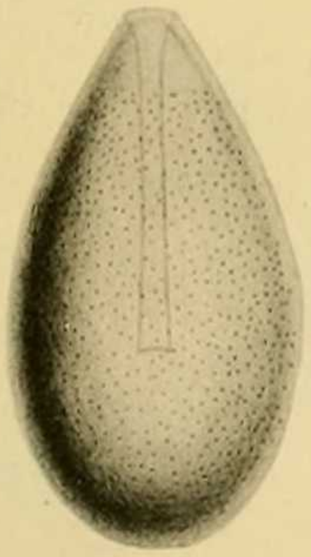
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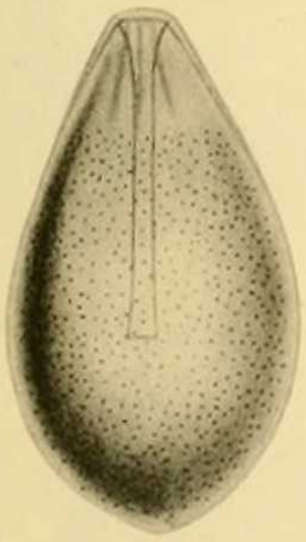
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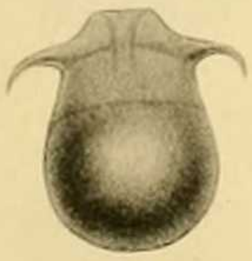
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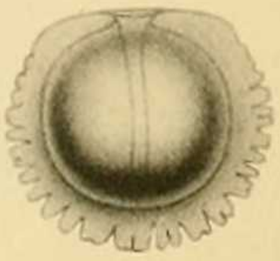
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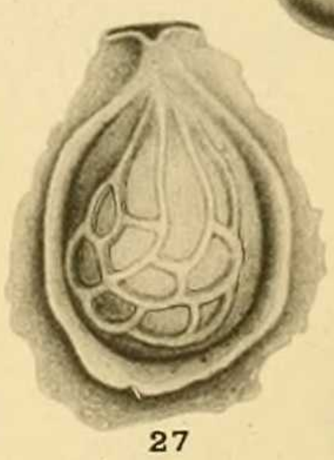
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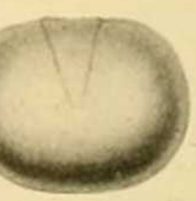
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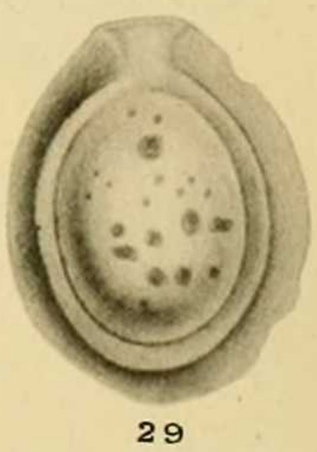
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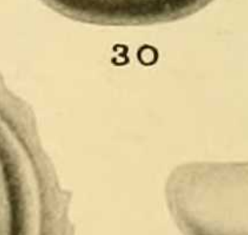
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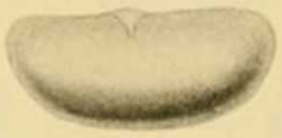
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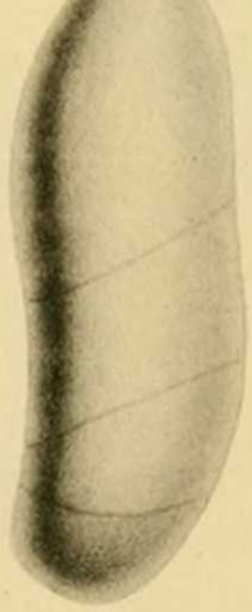
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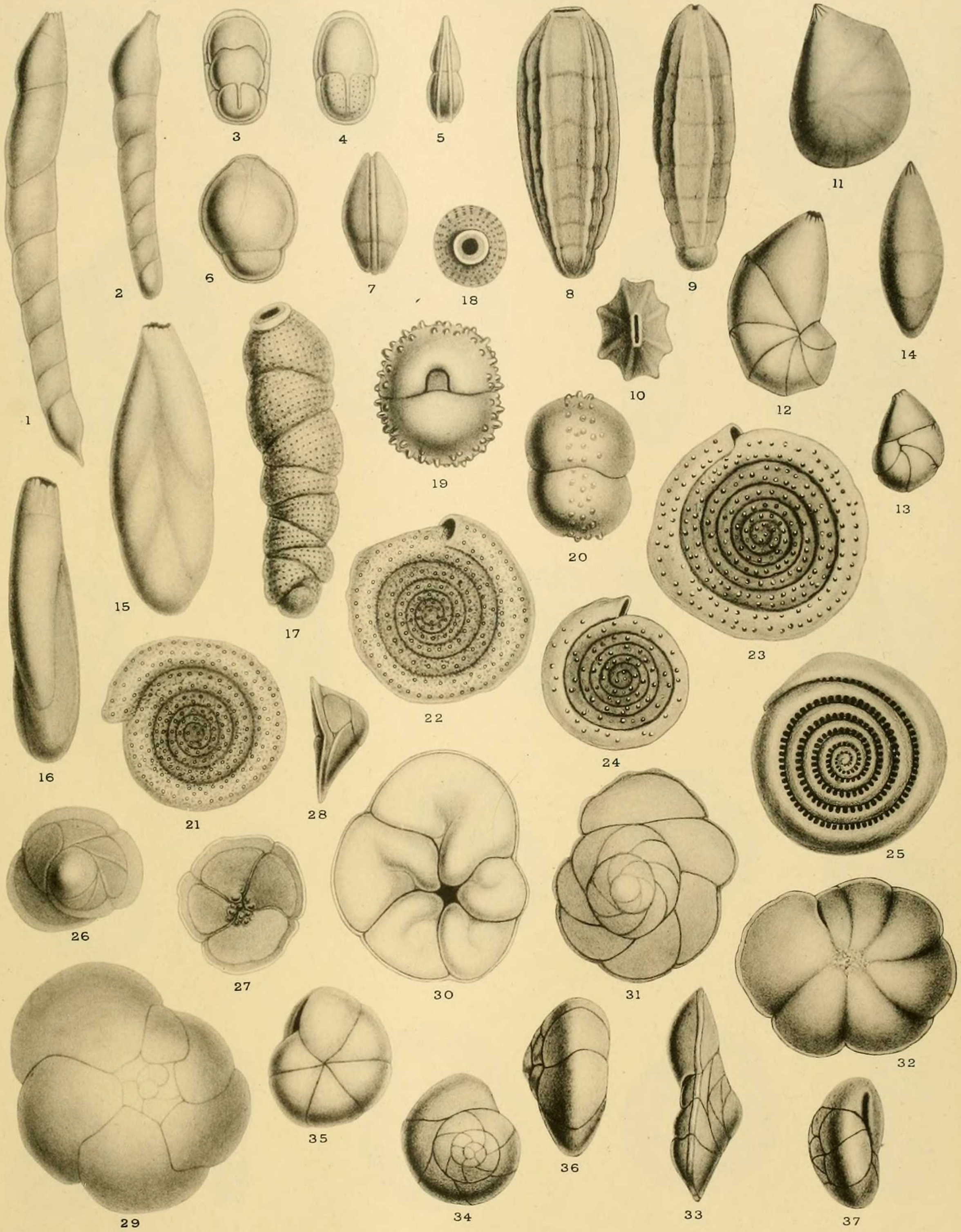

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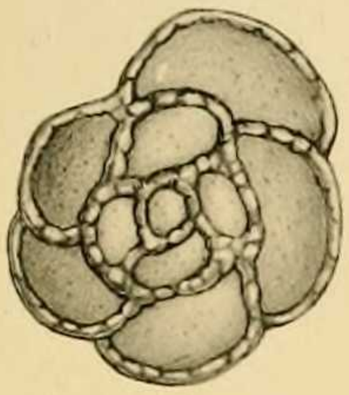

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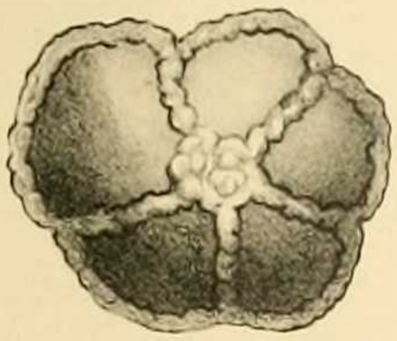

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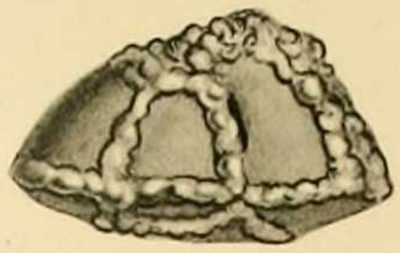

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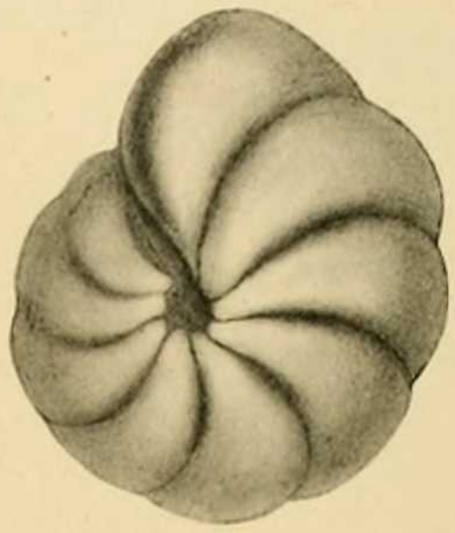

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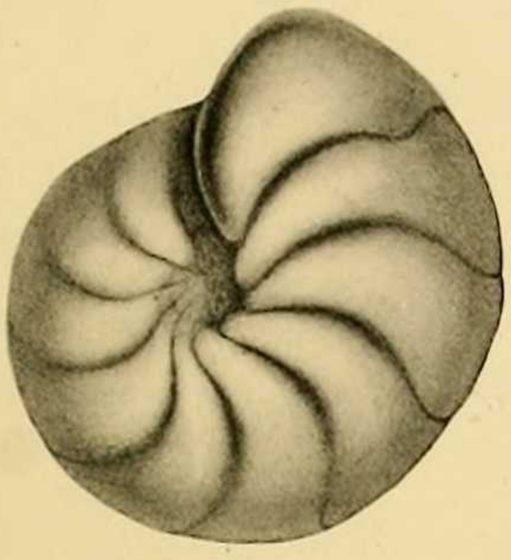

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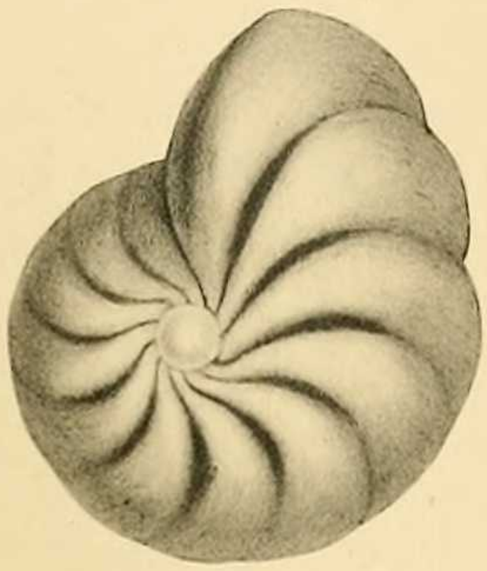

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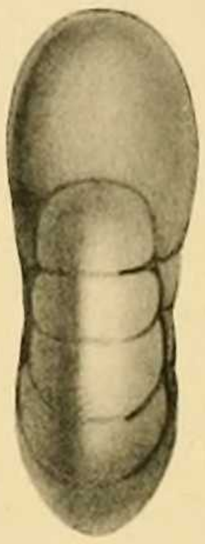

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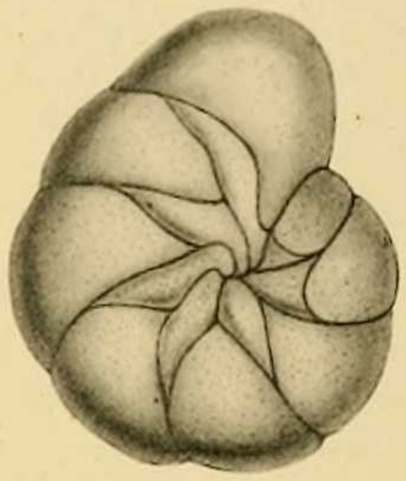

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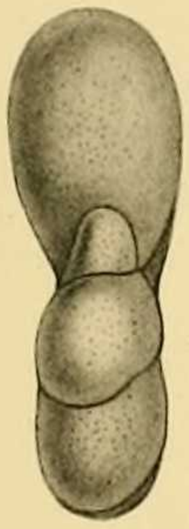

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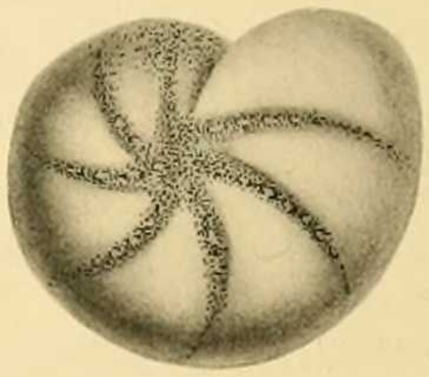

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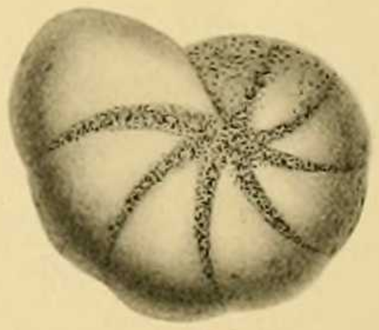

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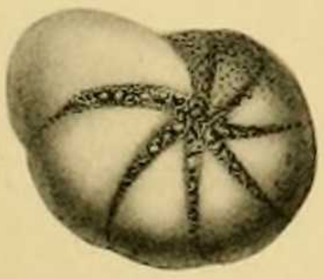

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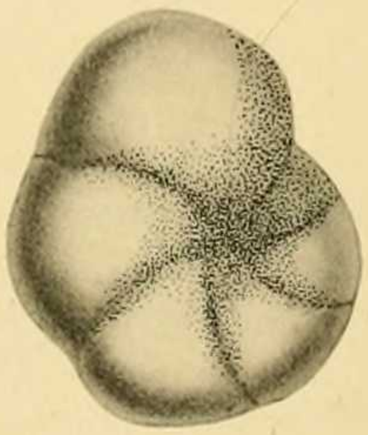

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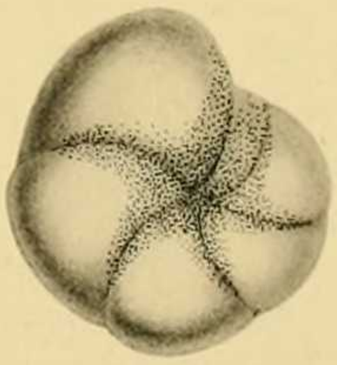

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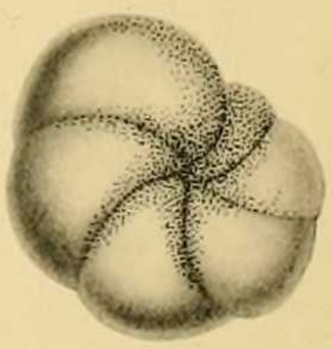

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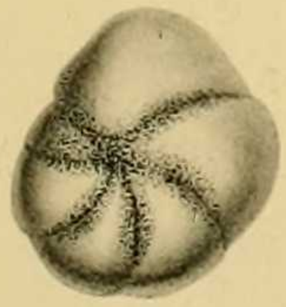

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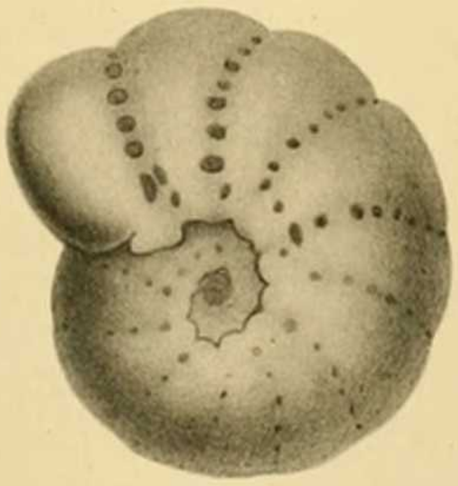

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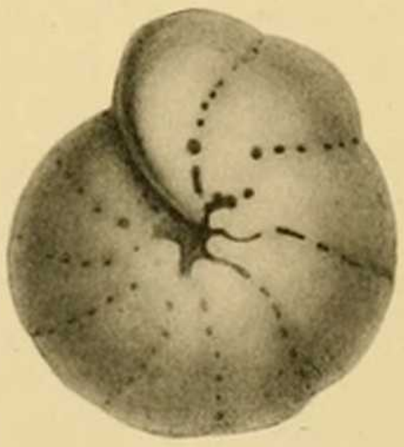

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FORAMINIFERA FROM THE WEST OF SCOTLAND, (S.Y. "RUNA") 1913.