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PART III
REPORT ON THE FORAMINIFERA AND
OSTRACODA

OUT OF MARINE MUDS FROM SOUNDINGS IN
THE ROSS SEA

SOUNDINGS TAKEN BY CAPTAIN J. K. DAVIS, S.Y. *NIMROD*

(*With Six Plates*)

BY

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CONTENTS

	PAGE
INTRODUCTION	55
SCHEDULE OF SOUNDINGS	55
DESCRIPTION OF THE FORAMINIFERA	57
DESCRIPTION OF THE OSTRACODA	71
SUMMARY OF RESULTS	75
BATHYMETRICAL DISTRIBUTION OF THE MICROZOA	76
EXPLANATION OF THE PLATES	78

INTRODUCTION

THE following report is based on muds collected by Captain J. K. Davis, S.Y. *Nimrod*, from soundings taken in the Ross Sea. The material was courteously placed in my hands by Professor T. W. Edgeworth David, C.M.G., D.Sc., F.R.S. These soundings have yielded most excellent results, not so much on account of the variety of specific forms they contain, as for the information afforded regarding the approximate depths and habitats of the Raised Beach material previously described, which occurred at heights of 20 and 160 feet above sea-level. They also furnish some further interesting data regarding the extension of Arctic species into Antarctic regions,* reference to which will be made in the summary.

Fifteen samples of soundings were examined, and from only two of these were calcareous organisms absent. The range of depth in the samples is from 110 to 655 fathoms. The general nature of the soundings suggests an old shore-line which is undergoing much wear and tear, for the material constituting the deposits is in the main terrigenous, consisting of gritty diatomaceous ooze, green muds, and volcanic sand. As a matter of convenience the soundings are here grouped in rotation according to depth, from above downwards.

SCHEDULE OF SOUNDINGS ARRANGED IN ORDER OF DEPTH
S.Y. NIMROD J. K. DAVIS, *Commander*

No.	Date	Latitude	Longitude	Depth in Fathoms	Nature of Sounding	General Contents
1	2.1.09	76° 56' S.	164° 51' E.	110	Green terrigenous mud and pebbles of (?) quartz felsite.	A few diatoms (<i>Coscinodiscus</i> , etc.). Foraminifera frequent. Sponge spicules abundant. Polyzoa. Ostracoda.
2	12.1.08	76° 55' S.	164° 55' E.	113	Black mud.	Foraminifera, as <i>Cassidulina</i> and <i>Uvigerina</i> , abundant. A few Radiolaria and Sponge spicules.
3	13.1.09	76° 55' S.	164° 45' E.	121	Green mud.	Diatomaceæ (<i>Coscinodiscus</i> , etc.). Arenaceous Foraminifera (<i>Saccammina</i> and <i>Pelosina</i> ; numerous hyaline forms in finer portion. Polyzoa.
4	12.2.09	McMurdo Sound, one mile from the outer end of Glacier Tongue, northern side.		153	Volcanic mud and stones.	Diatomaceæ (<i>Coscinodiscus</i> , etc.). Foraminifera common. Sponge spicules. Echinoid spines. Ostracoda.

* See also ante, "Report on the Foraminifera and Ostracoda from Elevated Deposits on the Shores of the Ross Sea."

REPORT ON FORAMINIFERA AND OSTRACODA

SCHEDULE OF SOUNDINGS ARRANGED IN ORDER OF DEPTH (continued)

No.	Date	Latitude	Longitude	Depth in Fathoms	Nature of Sounding	General Contents
5	11.1.09	77° 1' S.	165° 5' E.	171	Dark terrigenous mud.	Diatomaceæ (<i>Coscinodiscus</i> , etc.). Few Foraminifera. Sponge spicules. Ostracoda.
6	10.1.09	77° 12' S.	164° 36' E.	181	Black mud & sand, with pebbles of granitic rock.	Few diatomaceæ (<i>Coscinodiscus</i> , etc.). No Foraminifera. A few Radiolaria.
7	11.1.09	Information missing		225	Black terrigenous mud and sand.	Diatomaceæ (<i>Coscinodiscus</i> , etc.). Foraminifera. Sponge spicules. Ostracoda.
8	15.1.09	76° 49' S.	163° 24' E.	353	Green terrigenous mud.	Diatomaceæ (<i>Coscinodiscus</i> , etc.) abundant. Foraminifera numerous. Echinoid spines. Polyzoa (<i>Cellaria</i>). Pteropoda (<i>Vaginella</i>). Ostracoda.
9	15.1.09	76° 47' S.	163° 22' E.	360	Green terrigenous mud.	Diatomaceæ (<i>Coscinodiscus</i> , etc.) abundant. A few Arenaceous Foraminifera and Radiolaria.
10	15.1.09 (label torn)	76° 48' S.	163° 20' E.	372	Green terrigenous mud.	Diatomaceæ (<i>Coscinodiscus</i> , etc.). Radiolaria. Foraminifera excessively minute and undeveloped.
11	5.1.09	77° 25' S.	166° 5' E.	459	Dark, gritty, terrigenous mud.	Diatomaceæ (<i>Coscinodiscus</i> , etc.). Radiolaria. No Foraminifera.
12	5.1.09	77° 16½' S.	165° 55' E.	460	Green terrigenous mud.	Diatomaceæ (<i>Coscinodiscus</i> , etc.) abundant. Radiolaria common. Arenaceous Foraminifera. Sponge spicules.
13	14.1.09 6 A.M.	76° 46' S.	163° 26' E.	462	Green terrigenous mud.	Diatomaceæ (<i>Coscinodiscus</i> , etc.) abundant. Radiolaria frequent. Arenaceous Foraminifera. Sponge spicules common. Also a few gritty particles of quartz and volcanic débris.
14	4.1.09	Cape Bird (Ross Island) bearing N. 79° E. (true). Distance, 4½ miles.		472	Terrigenous mud with pebbles.	Diatomaceæ (<i>Coscinodiscus</i> , etc.) abundant. Radiolaria. Arenaceous Foraminifera.
15	5.2.09	Relief Harbour, N. Drygalski Glacier, about 20 miles off coast.		655	Green terrigenous mud.	Diatomaceæ (<i>Coscinodiscus</i> , etc.) abundant. Arenaceous Foraminifera rare.

DESCRIPTION OF THE FORAMINIFERA

Family—MILIOLIDÆ

Sub-family—MILIOLININÆ

Genus—*Biloculina*, d'Orbigny, 1826

Biloculina depressa, d'Orbigny (for references see previous Reports on Foraminifera of Elevated Deposits).

Occurrence.—Sample No. 2, 113 fathoms, very rare.

Biloculina elongata, d'Orbigny (for references see previous Reports on Foraminifera of Elevated Deposits).

Occurrence.—Sample No. 2, 113 fathoms, very rare ; No. 3, 121 fathoms, frequent, one of large size ; No. 4, 153 fathoms, rare ; No. 5, 171 fathoms, very rare.

Biloculina bradii, Schlumberger (Plate I, fig. 1).

Biloculina ringens, H. B. Brady (non Lamarck), 1884, *Rep. Chall.*, vol. ix, p. 142, pl. ii, fig. 7. *B. bradyi*, Schlumberger, 1891, *Mém. Soc. Zool. France*, vol. iv, p. 557, pl. x, figs. 63-71 ; woodcuts 15-19. *B. bradyi*, Schlumberger, Chapman, 1907, *Journ. Linn. Soc. Lond.*, Zool., vol. xxx, p. 13, pl. i, figs. 7, 8. *Idem*, 1909, *Sub-Antarctic Islands of New Zealand*, vol. i, art. xv, p. 314, pl. xiii, fig. 1.

The distribution of this species is wide, and does not yet seem to be fully worked out, on account of its having been confused with *B. ringens*, Lam. The localities include the Gulf of Gascony, and the sub-Antarctic islands of New Zealand (off the Snares, N. of Auckland Island, and N. of Enderby Island). It has also been recorded as a Tertiary (Oligocene) fossil from Grice's Creek, Port Phillip.

The only example found in the present soundings is a fine specimen measuring 3.75 mm. in length. A variety of this species, viz. *denticulata*, Brady, has been previously recorded from a raised beach at 160 feet, on the slopes of Mount Erebus, between Cape Royds and Cape Barne.

Occurrence.—Sample No. 1, 110 fathoms, one specimen.

Biloculina irregularis, d'Orbigny (for references see previous Reports on Foraminifera of Elevated Deposits).

Occurrence.—Sample No. 5, 171 fathoms, very rare ; No. 8, 353 fathoms, very rare.

Genus—*Spiroloculina*, d'Orbigny, 1826

Spiroloculina canaliculata, d'Orbigny (Plate I, fig. 2)

Spiroloculina canaliculata, d'Orbigny, 1846, *Foram. Foss. Vienne*, p. 269, pl. xvi, figs. 10-12. *S. limbata*, d'Orbigny (var.), H. B. Brady, 1884, *Rep. Chall.*, vol. ix, p. 150, pl. x, figs. 1, 2. *S. canaliculata*, d'Orbigny, Rupert Jones, 1895, *Foram. Crag.* (Pal. Soc. Mon.), pt. ii, p. 108, pl. iii, figs. 39, 40 ; woodcuts, figs. 3a, b ; Chapman, 1907, *Journ. Linn. Soc. Lond.*, Zool., vol. xxx, p. 16, pl. i, figs. 20, 21.

Dr. Brady's figured examples came from the coast of Papua. Rupert Jones states that it is "not uncommon in the Mediterranean, in shallow and moderately deep waters." As a fossil it occurs in the Oligocene of Port Phillip (Kackeraboite Creek); in the Miocene of the Vienna Basin and Malaga; and in the Pliocene of Sutton, Suffolk, England. Its present occurrence is therefore remarkable for its high latitude.

Occurrence.—Sample No. 8, 353 fathoms, very rare.

Genus—*Miliolina*, Williamson, 1858

Miliolina subrotunda, Montagu, sp., var. *striata*, var. nov. (Plate I, fig. 3)

Reference to type species.—*Miliolina subrotunda*, Montagu, sp., H. B. Brady, 1884, *Rep. Chall.*, vol. ix, p. 168, pl. v, figs. 10, 11.

The present example is a small, neat specimen ornamented with distinct striæ concentric with the curved outline of the shell. It calls to mind Brady's *M. circularis*, var. *sublineata*,* but the type of shell is that of *M. subrotunda*, both as to aperture and contour.

Occurrence.—Sample No. 8, 353 fathoms, one specimen.

Miliolina vulgaris, d'Orbigny, sp. (Plate I, fig. 4)

Quinqueloculina vulgaris, d'Orbigny, 1826, *Ann. Sci. Nat.*, vol. vii, p. 302, No. 33. *Miliolina auberiana*, d'Orbigny, sp., H. B. Brady, 1884, *Rep. Chall.*, vol. ix, p. 162, pl. v, figs. 8, 9. Chapman, 1909, *Sub-Antarctic Islands of New Zealand*, vol. i, art. xv, p. 320.

Of cosmopolitan distribution, this species is here extended farther south than any specimens hitherto recorded.

Occurrence.—Sample No. 8, 353 fathoms, one specimen.

Miliolina bicornis, Walker and Jacob, sp. (Plate I, fig. 5)

Serpula bicornis, Walker and Jacob, 1798, *Adams' Essays*, Kanmacher's ed., p. 633, pl. xiv, fig. 2. *Triloculina brongniartii*, d'Orbigny, 1826, *Ann. Sci. Nat.*, vol. vii, p. 300, No. 23. *Miliolina bicornis*, d'Orbigny, sp., H. B. Brady, 1884, vol. ix, p. 171, pl. vi, figs. 9, 11, 12.

A very small, but otherwise well-marked and typical specimen. It is of great interest to discover this species so far south, since it has been hitherto confined to temperate and tropical waters. Hence the small size of the present example. The depth is also a record, the *Challenger* finding it only as low as 120 fathoms.

Occurrence.—Sample No. 8, 353 fathoms, one specimen.

Miliolina agglutinans, d'Orbigny, sp. (Plate I, fig. 6)

Quinqueloculina agglutinans, d'Orbigny, 1839, *Foram. Cuba*, p. 168, pl. xii, figs. 11–13. *Miliolina agglutinans*, d'Orbigny, sp., H. B. Brady, 1884, *Rep. Chall.*, vol. ix, p. 180, pl. viii, figs. 6, 7. Chapman, 1907, *Journ. Linn. Soc. Lond.*, Zool., vol. xxx, p. 20, pl. ii, fig. 36.

As might be expected, the majority of the miliolines in the fine, terrigenous soundings of the Antarctic are mainly arenaceous forms, of which this is amongst the commonest. Its southern distribution includes Cape of Good Hope, 150 fathoms; Prince Edward

* *Rep. Chall.*, vol. ix, 1884, p. 169, pl. ix, figs. 7a–c.

Island, 1900 fathoms; and off Sydney, 410 fathoms. As a fossil this species has been noted from the post-tertiary clays of Norway and the west of Scotland; and it is fairly common in the Balcombian clays of Port Philip and Muddy Creek, but rarer in the Kalimnan of the latter locality. The present specimens are more neatly built than usual, and the contours are rounder.

Occurrence.—Sample No. 7, 225 fathoms, very rare; No. 9, 360 fathoms, common; No. 12, 460 fathoms, very common; No. 13, 462 fathoms, common; No. 14, 472 fathoms, frequent.

Miliolina oblonga, Montagu, sp., var. *arenacea*, var. nov. (Plate I, fig. 7)

Reference to type species.—*Vermiculum oblongum*, Montagu, 1803, *Test. Brit.*, p. 522, pl. xiv, fig. 9. *Miliolina oblonga*, Montagu, sp., H. B. Brady, 1884, *Rep. Chall.*, vol. ix, p. 160, pl. v, figs. 4a, b. Goës, 1894, *Kongl. Svenska Vet.-Akad. Handl.*, vol. xxv, p. 110, pl. xx, figs. 850–850f. Chapman, 1907, *Journ. Linn. Soc. Lond.*, Zool., vol. xxx, p. 17, pl. ii, fig. 26.

The type species, with a porcellanous shell, has been recorded from the sub-Antarctic islands of New Zealand, from 50–85 fathoms. The present variety differs in the finely arenaceous material of the test. It is quite a constant form, for no porcellanous shells of this species were found in these dredgings. The elongated outline readily serves to distinguish this particular variety from *Miliolina agglutinans*.

Occurrence.—Sample No. 10, 372 fathoms, very rare; No. 13, 462 fathoms, common; No. 14, 472 fathoms, rare; No. 15, 655 fathoms, frequent.

Miliolina tricarinata, d'Orbigny, sp. (for references see previous Reports on Foraminifera of Elevated Deposits.)

A species occurring in polar seas, both north and south. It is interesting to note the unusually small dimensions of the present specimens, one measuring only .346 mm. in length, as compared with a tropical example recorded by Dr. Brady,* measuring 4.45; the average size being rather less than midway between these two extremes.

Occurrence.—Sample No. 3, 121 fathoms, frequent; No. 8, 353 fathoms, very rare.

Sub-family—HAUERININÆ

Genus—*Planispirina*, Seguenza, 1880

Planispirina sphaera, d'Orbigny, sp. (Plate I, fig. 8)

Biloculina sphaera, d'Orbigny, 1839, *Foram. Amér. Mérid.*, p. 66, pl. viii, figs. 13–16. H. B. Brady, 1884, *Rep. Chall.*, vol. ix, p. 141, pl. ii, figs. 4a, b. *Planispirina sphaera*, d'Orbigny, sp., Schlumberger, 1891, *Mém. Soc. Zool. France*, vol. iv, p. 577, woodcuts 45, 46. Chapman, 1909, *Sub-Antarctic Islands of New Zealand*, vol. i, art. xv, p. 324.

This species occurs sparingly in southern waters. The aperture in our specimens is normal and clearly defined; the labyrinthic opening being confined to deep-water examples.

Occurrence.—Sample No. 3, 121 fathoms, one specimen, very small; No. 4, 153 fathoms, one specimen, typical (figured).

* *Rep. Chall.*, vol. ix, 1884, p. 166.

Planispirina bucculenta, Brady (for references see previous Reports on Foraminifera of Elevated Deposits)

Occurrence.—Sample No. 3, 121 fathoms, rare.

Sub-family—PENEROPLIDINÆ

Genus—*Cornuspira*, Schultze, 1854

Cornuspira involvens, Reuss, sp. (for references see previous Reports on Foraminifera of Elevated Deposits)

Occurrence.—Sample No. 3, 121 fathoms, rare ; No. 4, 153 fathoms, very rare.

Cornuspira foliacea, Philippi, sp. (Plate I, fig. 9)

Orbis foliaceus, Philippi, 1844, *Enum. Moll. Sicil.*, vol. ii, p. 147, pl. xxiv, fig. 26.
Cornuspira foliaceus, Philippi, sp., H. B. Brady, 1884, *Rep. Chall.*, vol. ix, p. 199, pl. xi, figs. 5–9. Chapman, 1907, *Journ. Linn. Soc. Lond. Zool.*, vol. xxx, p. 24, pl. iii, fig. 48.

This species does not seem to be a typically southern form, but it occurs as a fossil in the Australian tertiary strata. In the living state it is commonly found in the North Atlantic.

Occurrence.—Sample No. 3, 121 fathoms, very rare ; No. 8, 353 fathoms, rare.

Family—ASTRORHIZIDÆ

Sub-family—ASTRORHIZINÆ

Genus—*Pelosina*, H. B. Brady, 1879

Pelosina cylindrica, H. B. Brady (Plate II, fig. 10)

Pelosina cylindrica, H. B. Brady, 1884, *Rep. Chall.*, vol. ix, p. 236, pl. xxvi, figs. 1–6.

This species varies considerably in shape and texture, according to the material taken up in the construction of the test. It keeps, however, within the definition given by Dr. Brady, and always contains a large proportion of mud in its cylindrical tube. The foraminiferal shells built into the test are thin and small compared with those selected by genera such as *Rhizammina* and *Rhabdammina*. A few sponge spicules are sometimes included in the mud walls, but not to so great an extent as in *Technitella*. The examples found here vary from 28.5 mm. in length.

It is somewhat strange to meet with this species in such comparatively moderate depths, for it has been recognised as a peculiarly deep-water form. The *Challenger* records it from the Antarctic Ice Barrier at 1475 fathoms.

Occurrence.—Sample No. 3, 121 fathoms, rare ; No. 5, 171 fathoms, very rare ; No. 7, 225 fathoms, very rare ; No. 9, 360 fathoms, rare.

Pelosina rotundata, H. B. Brady (Plate II, fig. 11)

Pelosina rotundata, H. B. Brady, 1879, *Quart. Journ. Micr. Sci.*, vol. xix, N.S., p. 31, pl. iii, figs. 4, 5. *Idem*, 1884, *Rep. Chall.*, vol. ix, p. 236, pl. xxv, figs. 18–20. Millett, 1899, *Journ. Roy. Micr. Soc.*, p. 249, pl. iv, fig. 1.

This present specimen is subglobular, and suggests *Technitella* in the abundance

of sponge spicules used in the construction of its test ; but they are mainly concentrated at two points on the periphery, whilst the wall itself is composed of fine grey mud, with an occasional spicule.

The above species is rare, being sparsely scattered over a wide area. It does not appear to have been previously recorded from the Pacific.

Occurrence.—Sample No. 1, 110 fathoms, one specimen.

Sub-family—SACCAMMININÆ

Genus—*Saccamina*, M. Sars, 1868

Saccamina sphaerica, M. Sars (Plate II, fig. 12)

Saccamina sphaerica, M. Sars, H. B. Brady, 1884, *Rep. Chall.*, vol. ix, p. 253, pl. xviii, figs. 11–17. Flint, 1899, *Rep. U. S. Nat. Mus.* for 1897, p. 269, pl. ix, fig. 2.

The tests of the Antarctic specimens are coarsely arenaceous, and are distinguished from *Psammosphæra* by the small, inconspicuous, papillate aperture.* Sometimes two chambers are conjoined very firmly, after the manner of the Carboniferous species, *S. fusuliniformis*, McCoy, sp. (usually erroneously referred to as *S. carteri*).†

S. sphaerica is found living within the Arctic Circle, and was only twice recorded by the *Challenger*—once in deep water in the North Pacific, east of Japan, 2050 fathoms, and at the Antarctic Ice Barrier.‡ It has also been noted by Dr. Flint from the South Atlantic, off the Coast of Brazil, at 1019 fathoms. It will thus be seen that, whereas in the higher latitudes it is found in only moderately deep water, in low latitudes it is invariably found at abyssal depths. Its path through the inter-polar tracts, whether in the Atlantic or Pacific, has been along the deepest parts of those ocean basins.

Occurrence.—Sample No. 3, 121 fathoms, common ; No. 4, 153 fathoms, frequent ; No. 5, 171 fathoms, frequent.

Sub-family—RHABDAMMININÆ

Genus—*Hyperammia*, H. B. Brady, 1878

Hyperammia elongata, H. B. Brady (Plate II, fig. 13)

Hyperammia elongata, H. B. Brady, 1884, *Rep. Chall.*, vol. ix, p. 257, pl. xxiii, figs. 4, 7–10.

H. elongata is chiefly a N. Atlantic form, and has occurred as far north as Franz-Josef Land. It has been previously recorded from the Southern Ocean between the Cape of Good Hope and Kerguelen Island at 1570 fathoms.

Occurrence.—Sample No. 7, 225 fathoms, very rare ; No. 9, 360 fathoms, very rare.

Genus—*Marsipella*, Norman, 1878

Marsipella elongata, Norman (Plate II, fig. 14)

Marsipella elongata, Norman, 1878, *Ann. Mag. Nat. Hist.*, ser. 5, vol. i, p. 281, pl. xvi, fig. 7. H. B. Brady, 1884, *Rep. Chall.*, vol. ix, p. 264, pl. xxiv, figs. 10–19. Flint, 1899, *Rep. U. S. Nat. Mus.* for 1897, p. 270, pl. xii, fig. 1.

* Since this description was written, Messrs. Heron-Allen and Earland have published an exhaustive examination of the grounds of separation of *Psammosphæra fusca* and *Saccamina sphaerica*, and have dissipated the suggestion that the two forms are identical (see *Journ. R. Micr. Soc.* 1913, pp. 1–26, pl. i–iv).

† Chapman, *Ann. Mag. Nat. Hist.*, ser. 7, vol. i, 1895, p. 215, woodcut.

‡ Brady, *op. supra cit.*, p. 252.

It is of great interest to find this species in the Antarctic Sea, for it is otherwise almost exclusively a North Atlantic form. *M. elongata* has been recorded by Dr. Flint from the West Indian seas, and it has been met with once in the South Atlantic, and occasionally in the South Pacific.

The present examples are typical; the proportion of fine arenaceous mud preponderating, however, over the spicular material in the construction of the test.

Occurrence.—Sample No. 8, 353 fathoms, rare.

Marsipella cylindrica, H. B. Brady (Plate II, fig. 15)

Marsipella cylindrica, H. B. Brady, 1884, *Rep. Chall.*, vol. ix, p. 265, pl. xxiv, figs. 20–22.

The figured specimen of the present series is a regularly tapering and gently curved variety; whilst another example from the same sounding is enormously large compared with those already known, measuring as much as 13 mm. in breadth at the widest end.

The species is a typically delicate and slender form in the Faroe Channel dredgings at 530 and 542 fathoms. It has also been found in the South Atlantic and South Pacific, generally at great depths.

Occurrence.—Sample No. 14, 472 fathoms, two specimens.

Family—LITUOLIDÆ

Sub-family—LITUOLINÆ

Genus—*Reophax*, Montfort, 1808

Reophax spiculifera, H. B. Brady (Plate III, fig. 16)

Reophax spiculifera, H. B. Brady, 1879, *Quart. Journ. Micr. Sci.*, vol. xix, N.S., p. 54, pl. iv, figs. 10, 11. *Idem*, 1884, *Rep. Chall.*, vol. ix, p. 295, pl. xxxi, figs. 16, 17.

The tests of the Antarctic specimens are short, consisting of few segments, but they are otherwise typical. As an organism showing strong selective power in regard to the material from which it constructs its tests, it is most remarkable. The accompanying arenaceous genera here comprise forms like *Haplophragmium*, and the truly arenaceous species of *Reophax*, as *R. dentaliniformis*, together with arenaceous *Miliolinæ*, all of which employ siliceous sand grains for the walls of the test.*

This species has occurred at Sombrero Island, West Indies, 450 fathoms; Kerguelen Island, 20–120 fathoms; near the Sandwich Islands, 2350 fathoms; off Kandavu, 255 and 610 fathoms; and off Tahiti, 620 fathoms.

Occurrence.—Sample No. 12, 460 fathoms, very rare; No. 14, 472 fathoms, rare; No. 15, 655 fathoms, rare.

* The following note, written by Sir John Murray on the same subject, occurs in the *Challenger Report*, Summary of Results, pt. i, 1895, p. 511: "Among the arenaceous species from Sta. 157 there are many interesting illustrations of the mode in which these Rhizopods select and arrange the various particles in the deposit to form their tests. *Astrorhiza crassatina* here forms its test almost exclusively of the spherical Radiolarian *Cromyosphaera Antarctica*; *Storthosphaera* selects the finest mineral particles, with an occasional larger particle of quartz or palagonite; one form selects only the shells of the pelagic Foraminifera, and another only the smallest Diatomaceæ; *Reophax nodulosa* makes use of many large *Coscinodisci*, arranging them flat ways over the surface, and *Rhabdammina abyssorum* forms its tube of the larger angular fragments of quartz, felspar, magnetite, and other mineral particles."

See also Heron-Allen and Earland (*Journ. Quek. Micr. Club*, ser. 2, vol. x, 1909, pp. 403–412, pl. xxxii–xxxv) for an interesting account of the occurrence of a foraminifer, *Technitella thompsoni*, which constructs its test of the plates of *Holothuria* sp.

Reophax dentaliniformis, H. B. Brady (Plate III, fig. 17)

Reophax dentaliniformis, H. B. Brady, 1881, *Quart. Journ. Micr. Sci.*, vol. xxi, N.S., p. 49. *Idem*, 1884, *Rep. Chall.*, vol. ix, p. 293, pl. xxx, figs. 21, 22. Goës, 1894, *K. Svenska Vet.-Akad. Handl.*, vol. xxv, p. 25, pl. vi, figs. 172-175. Millett, 1899, *Journ. B. Micr. Soc.*, p. 254. Flint, 1899, *Rep. U.S. Nat. Mus. for 1897*, p. 274, pl. xviii, fig. 2.

Tests varying in composition from fine to coarse material in the same sounding, and consisting of angular quartz grains varied by occasional augite granites. The shallowing of deep-water species as they advance to the polar seas is strikingly brought to notice by such forms as the present, which typically inhabit great depths in inter-tropical regions. Dr. Brady, in the *Challenger Report*, notes only four out of twenty-one stations where it was found in less depths than 1000 fathoms. It is a widely distributed, but generally rare, form.

Occurrence.—Sample No. 4, 153 fathoms, rare; No. 5, 171 fathoms, common; No. 7, 225 fathoms, frequent; No. 9, 360 fathoms, frequent; No. 13, 462 fathoms, very rare; No. 14, 472 fathoms, rare; No. 15, 655 fathoms, rare.

Reophax longiscatiformis, sp. nov. (Plate III, fig. 18)

Description.—Test arenaceous, straight or very slightly curved, consisting of a series of long, ovoid, somewhat irregular segments with deeply incised transverse sutures. Length of test figured (fragmentary), 1.44 mm.; greatest width, .173 mm.

This species is rare in the Antarctic soundings, being represented by two examples. It is interesting as an isomorphous form, comparable with d'Orbigny's hyaline species, *Nodosaria longiscata*,* which is a well-known tertiary fossil.

Occurrence.—Sample No. 9, 360 fathoms; No. 13, 462 fathoms.

Reophax murrayana, sp. nov. (Plate III, fig. 19)

Description.—Test finely arenaceous and spiculose; slender, gently curved and gradually tapering to a blunt point; consisting of numerous segments slightly longer than wide, with sutures nearly at right angles to length of shell. Length of test 1.88 mm.; greatest width, .115 mm.

This figured specimen, which cannot be matched with already known types of *Reophax*, is isomorphous with a *Nodosaria (Dentalina)* of the type of *Nodosaria (Dentalina) consobrina*, d'Orbigny, var. *emaciata*, Reuss.† The sample of mud from which it was taken was very small, otherwise more examples might have been found.

Named in honour of Mr. James Murray, F.R.S.E., of the British Antarctic Expedition of 1907-9, who superintended the zoological work of the expedition.

Occurrence.—Sample No. 7, 225 fathoms.

Genus—*Haplophragmium*, Reuss, 1860*Haplophragmium canariense*, d'Orbigny, sp. (Plate III, fig. 20)

Nonionina canariensis, d'Orbigny, 1839, *Foram. Canaries*, p. 128, pl. ii, figs. 33, 34. *Haplophragmium canariense*, d'Orbigny, sp., H. B. Brady, 1884, *Rep.*

* *Foram. Foss. Vienne*, 1846, p. 32, pl. i, figs. 10-12. See also Sherborn and Chapman, *Journ. Roy. Micr. Soc.*, 1899, p. 486, pl. xi, figs. 17, 18.

† *Dentalina emaciata*, Reuss, *Zeitschr. d. deutsch. geol. Gesellsch.*, vol. iii, 1851, p. 63, pl. iii, fig. 9.

Chall., vol. ix, p. 310, pl. xxxv, figs. 1-5. Egger, 1893, *Abhandl. k. bayer. Akad. Wiss.*, Cl. II, vol. xviii, p. 261, pl. v, figs. 27-29. Millett, 1899, *Journ. Roy. Micr. Soc.*, p. 359. Chapman, 1907, *Journ. Quek. Micr. Club*, p. 126, pl. ix, fig. 3. *Idem*, 1909, *Sub-Antarctic Islands of N. Zealand*, vol. i, art. xv, p. 327, pl. xiv, fig. 6. *Idem*, 1901, *Journ. Linn. Soc. Lond.*, Zool., vol. xxx, p. 400.

Tests small, with very neatly finished walls, generally of a warm brown colour, and consisting of a moderately fine mosaic of sand grains.

A very widely distributed species, which has already occurred, amongst other places, round New Zealand and the sub-Antarctic islands, as well as at Kerguelen and Heard Islands.

Occurrence.—Sample No. 3, 121 fathoms, very common, some specimens excessively minute; No. 4, 153 fathoms, very common; No. 5, 171 fathoms, frequent; No. 7, 225 fathoms, very rare; No. 13, 462 fathoms, rare; No. 14, 472 fathoms, very rare.

Haplophragmium latidorsatum, Bornemann, sp. (Plate III, fig. 21)

Nonionina latidorsata, Bornemann, 1855, *Zeitschr. d. deutsch. Geol. Gesellsch.*, vol. vii, p. 339, pl. xvi, figs. 4a, b. *H. latidorsatum*, Bornemann, sp., H. B. Brady, 1884, *Rep. Chall.*, vol. ix, p. 307, pl. xxxiv, figs. 7-10, 14. Goës, 1894, *K. Svenska Vet.-Akad. Handl.*, vol. xxv, p. 21, pl. v, figs. 102-120.

This cosmopolitan species is, generally speaking, a deep-water form; but towards the polar regions affects more moderate depths. A sample of a dredging from the cold-water area of the Faroe Channel, sent me by my friend Mr. A. Earland, consists largely of the tests of the above species.

Occurrence.—Sample No. 9, 360 fathoms, frequent; No. 12, 460 fathoms, very rare; No. 14, 472 fathoms, very rare.

Haplophragmium scitulum, H. B. Brady (Plate III, fig. 22)

Haplophragmium scitulum, H. B. Brady, 1881, *Quart. Journ. Micr. Sci.*, vol. xxi, N.S., p. 50. *Idem*, 1884, *Rep. Chall.*, vol. ix, p. 308, pl. xxxiv, figs. 11-13. Flint, 1899, *Rep. U.S. Nat. Mus. for 1897*, p. 276, pl. xx, fig. 2.

The *Challenger* localities show this form to be widely distributed, although it is not a common species, ranging over the Atlantic and Pacific Ocean beds from north to south, the most southerly point being on the west coast of Patagonia at 400 fathoms. Dr. Flint records it also from the west coast of Cuba.

Occurrence.—Sample No. 13, 462 fathoms.

Family—TEXTULARIIDÆ

Sub-family—TEXTULARIINÆ

Genus—*Valvulina*, d'Orbigny, 1826

Valvulina fusca, Williamson, sp. (Plate III, figs. 23a, b)

Rotalina fusca, Williamson, 1858, *Rec. Foram. Gt. Brit.*, p. 55, pl. v, figs. 114, 115. *Valvulina fusca*, Williamson, sp., H. B. Brady, 1884, *Rep. Chall.*, vol. ix, p. 392, pl. xlix, figs. 13, 14.

Dr. Brady records this species as a common North Atlantic foraminifera. It has also occurred in the South Pacific, in the North Pacific, and in the West Indies.

Occurrence.—Sample No. 5, 171 fathoms.

Sub-family—BULIMININÆ

Genus—*Virgulina*, d'Orbigny, 1826*Virgulina schreibersiana*, Czjzek, p. (for references see previous Reports on Foraminifera of Elevated Deposits)*Occurrence*.—Sample No. 3, 121 fathoms, rare.Genus—*Bolivina*, d'Orbigny, 1839*Bolivina textilarioides*, Reuss (Plate III, fig. 24)*Bolivina textilarioides*, Reuss, 1862, *Sitzungsb. d. k. Akad. Wiss. Wien*, vol. xlvi, p. 81, pl. x, fig. 1. H. B. Brady, 1884, *Rep. Chall.*, vol. ix, p. 419, pl. lii, figs. 23–25; Chapman, 1907, *Journ. Linn. Soc. Lond., Zool.*, vol. xxx, p. 31, pl. iv, fig. 79.

This record appears to be new for the Southern Ocean. It is a fairly deep-water form and appears to have been of commoner occurrence in Cretaceous and Tertiary seas.

Occurrence.—Sample No. 3, 121 fathoms; one specimen, small but typical.

Sub-family—CASSIDULININÆ

Genus—*Cassidulina*, d'Orbigny, 1826*Cassidulina oblonga*, Reuss (for references see previous Reports on Foraminifera of Elevated Deposits)*Occurrence*.—Sample No. 1, 110 fathoms, very rare; No. 2, 113 fathoms, very common; No. 3, 121 fathoms, rare; No. 4, 153 fathoms, common; No. 5, 171 fathoms, very common.*Cassidulina parkeriana*, H. B. Brady (for references see previous Reports on Foraminifera of Elevated Deposits)*Occurrence*.—Sample No. 1, 110 fathoms, very rare; No. 2, 113 fathoms, common; No. 3, 121 fathoms, frequent; No. 4, 153 fathoms, common; No. 5, 171 fathoms, common.*Cassidulina subglobosa*, H. B. Brady (for references see previous Reports on Foraminifera of Elevated Deposits)*Occurrence*.—Sample No. 1, 110 fathoms, frequent; No. 2, 113 fathoms; No. 3, 121 fathoms, small specimens, frequent; No. 4, 153 fathoms, common; No. 5, 171 fathoms, small, frequent; No. 7, 225 fathoms, very rare; No. 8, 353 fathoms, very rare.Genus—*Ehrenbergina*, Reuss, 1849*Ehrenbergina serrata*, Reuss (for references see previous Reports on Foraminifera of Elevated Deposits)*Occurrence*.—Sample No. 3, 121 fathoms, rare; No. 4, 153 fathoms, very common; No. 5, 171 fathoms, very rare.

Family—LAGENIDÆ

Sub-family—LAGENINÆ

Genus—*Lagena*, Walker and Boys, 1784*Lagena globosa*, Montagu, sp. (Plate IV, fig. 25)

Vermiculum globosum, Montagu, 1803, *Test. Brit.*, p. 523. *Lagena globosa*, Montagu, sp., Reuss, 1863, *Sitzungsb. d. k. Akad. Wiss. Wien*, vol. xlvi, p. 318, pl. i, figs. 1–3. Egger, 1899, *Abhandl. k. bayer. Akad. Wiss.*, Cl. II, vol. xxi, p. 102, pl. v, fig. 3; Chapman, 1909, *Sub-Antarctic Islands of New Zealand*, vol. i, art. xv, p. 333.

A cosmopolitan species, not affected to any great extent by depth or latitude.

Occurrence.—Sample No. 3, 121 fathoms, rare; No. 8, 353 fathoms, very rare.

Lagena apiculata, Reuss, sp. (Plate IV, fig. 26)

Oolina apiculata, Reuss, 1851, *Haidinger's Naturw. Abhandl.*, vol. iv, Abth. i, p. 22, pl. 1, fig. 1. *Lagena apiculata*, Reuss, 1863, *Sitzungsb. d. k. Akad. Wiss. Wien*, vol. xlvi, p. 318, pl. i, figs. 1, 4–8, 10, 11. H. B. Brady, 1884, vol. ix, p. 453, pl. lvi, figs. 4, 15–18. Chapman, 1900, *Quart. Journ. Geol. Soc.*, vol. lvi, p. 258, pl. xv, fig. 3.

A widely distributed species.

Occurrence.—Sample No. 3, 121 fathoms, one specimen.

Lagena schlichti, A. Silvestri, sp. (Plate IV, fig. 27)

Lagena marginata, Walker and Boys, var., Millett, 1901, *Journ. Roy. Micr. Soc.*, p. 497, pl. viii, fig. 20. *Fissurina schlichti*, A. Silvestri, 1902, *Mem. d. Pont. Acc. Rom. d. Nuovi Lincei*, vol. xix, p. 14; woodcuts, figs. 9–11. *Lagena schlichti*, A. Silvestri, sp., Chapman, 1909, *Sub-Antarctic Islands of New Zealand*, vol. i, art. xv, p. 337, pl. xv, figs. 7a, b.

This species appears to be widely distributed, and was formerly confused with *L. marginata*, Walker and Boys. It has already occurred in soundings from the sub-Antarctic islands of New Zealand, at depths of 50–85 fathoms.

Occurrence.—Sample No. 3, 121 fathoms, common; No. 4, 153 fathoms, frequent; No. 5, 171 fathoms, very rare.

Lagena marginata, Walker and Boys (Plate IV, fig. 28)

Serpula (Lagena) marginata, Walker and Boys, 1784, *Test. Min.*, p. 2, pl. i, fig. 7. *Lagena marginata*, Walker and Boys, H. B. Brady, 1884, *Rep. Chall.*, vol. ix, p. 476, pl. lix, fig. 22. Chapman, 1909, *Sub-Antarctic Islands of New Zealand*, vol. i, art. xv, p. 335, pl. xv, fig. 6.

This species has a wide range, and is found in both polar seas. It has already been recorded from near the Antarctic Ice Barrier, and from the sub-Antarctic islands of New Zealand. The figured specimen closely approaches the form *L. lævigata*, Reuss.

Occurrence.—Sample No. 3, 121 fathoms, rare; No. 4, 153 fathoms, very rare.

Lagena orbignyana, Seguenza, sp. (Plate IV, fig. 29)

Fissurina orbignyana, Seguenza, 1862, *Foram. Monotal. Miocen. Messina*, p. 6, pl. ii, figs. 65, 66. *Lagena orbignyana*, Seguenza, sp., Flint, 1899, *Rep. U.S. Nat.*

Mus. for 1897, p. 308, pl. liv, fig. 4. Chapman, 1909, *Sub-Antarctic Islands of New Zealand*, vol. i, art. xv, p. 337, pl. xv, fig. 10.

This widely distributed species has been recorded off the Falkland Islands at 6 fathoms. It was also found at 60–85 fathoms around the sub-Antarctic islands of New Zealand.

Occurrence.—Sample No. 3, 121 fathoms, one specimen; No. 4, 153 fathoms, one specimen.

Sub-family—NODOSARIINÆ

Genus—*Nodosaria*, Lamarck, 1816

Sub-genus—*Glandulina*, d'Orbigny, 1826

Nodosaria (Glandulina) lævigata, d'Orbigny (for references see previous Reports on Foraminifera of Elevated Deposits)

Occurrence.—Sample No. 3, 121 fathoms, very common; No. 4, 153 fathoms, rare.

Nodosaria (Glandulina) rotundata, Reuss (for references see previous Reports on Foraminifera of Elevated Deposits)

Occurrence.—Sample No. 1, 110 fathoms, one specimen; No. 3, 121 fathoms, very common; No. 4, 153 fathoms, frequent.

Sub-genus—*Dentalina*, d'Orbigny, 1826

Nodosaria (Dentalina) communis, d'Orbigny (Plate IV, fig. 30)

Nodosaria (Dentalina) communis, d'Orbigny, 1826, *Ann. Sci. Nat.*, vol. vii, p. 254, No. 35. Flint, 1899, *Rep. U.S. Nat. Mus. for* 1897, p. 310, pl. lvi, fig. 2. Chapman, 1909, *Sub-Antarctic Islands of New Zealand*, vol. i, art. xv, p. 341, pl. xv, fig. 10.

This common species is another of those usually found in moderately shallow water in high latitudes.

Occurrence.—Sample No. 4, 153 fathoms.

Genus—*Cristellaria*, Lamarck, 1818

Cristellaria crepidula, Fichtel and Moll, sp. (for references see previous Reports on Foraminifera of Elevated Deposits)

Occurrence.—Sample No. 3, 121 fathoms, one specimen; No. 4, 153 fathoms, one specimen.

Cristellaria articulata, Reuss (for references see previous Reports on Foraminifera of Elevated Deposits)

Occurrence.—Sample No. 4, 153 fathoms, one specimen.

Sub-family—POLYMORPHININÆ

Genus—*Polymorphina*, d'Orbigny, 1826

Polymorphina oblonga, d'Orbigny (Plate IV, fig. 31)

Polymorphina oblonga, d'Orbigny, 1846, *Foram. Foss. Vienne*, p. 232, pl. xii, figs. 29–31. Egger, 1893, *Abhandl. d. k. bayer. Akad. Wiss.*, Cl. II, vol. xviii, p. 309, pl. xi, figs. 9, 10, 24.

As regards the distribution of this species, the records for the southern hemisphere include Table Bay, Mauritius, and West Australia. It was found by the *Challenger* at Tongatabu at 240 fathoms; and at Raine's Islet, Torres Strait, at 155 fathoms. *P. oblonga* is not uncommon in shore sands near Melbourne (Port Phillip); and typical fossil examples are found in the Balcombian deposits (Oligocene) of Victoria.

Occurrence.—Sample No. 5, 171 fathoms, one specimen.

Genus—*Uvigerina*, d'Orbigny, 1826

Uvigerina pygmæa, d'Orbigny (Plate IV, fig. 32)

Uvigerina pygmæa, d'Orbigny, 1826, *Ann. Sci. Nat.*, vol. vii, p. 269, pl. xii, figs. 8, 9; *modèle* No. 67. Flint, 1899, *Rep. U.S. Nat. Mus. for 1897*, p. 320, pl. lxviii, fig. 2. Chapman, 1905, *Journ. N. Zealand Inst.*, vol. xxxviii, p. 99.

The range of this generally well-known species is stated by Dr. H. B. Brady* to extend to about lat. 46° S. in the Southern Ocean; and to 79° N. at Smith's Sound and the shores of Franz-Josef Land. It has lately been obtained by the author from soundings off Great Barrier Island, New Zealand at 110 fathoms.

Occurrence.—Sample No. 8, 353 fathoms, one specimen.

Uvigerina angulosa, Williamson (for references see previous Reports on Foraminifera of Elevated Deposits)

Occurrence.—Sample No. 1, 110 fathoms, rare; No. 2, 113 fathoms, common; No. 3, 121 fathoms, very common; No. 4, 153 fathoms, very common; No. 5, 171 fathoms, frequent.

Family—GLOBIGERINIDÆ

Genus—*Globigerina*, d'Orbigny, 1826

Globigerina bulloides, d'Orbigny (Plate IV, fig. 33)

Globigerina bulloides, d'Orbigny, 1826, *Ann. Sci. Nat.*, vol. vii, p. 277, No. 1, *modèles* Nos. 17 and 76. Rhumbler, 1900, in K. Brandt's *Nordisches Plankton*, Heft 14, p. 21, figs. 24–26. Wright, 1900, *Geol. Mag.*, N.S., Dec. 4, vol. vii, p. 100, pl. v, fig. 18. Chapman, 1909, *Sub-Antarctic Islands of New Zealand*, vol. i, art. xv, p. 350.

The present examples are thin-shelled, but otherwise typical. It is somewhat common in the Southern Ocean; a few of the *Challenger* stations being Kerguelen Island, Heard Island, and south-west of Patagonia. It is also of frequent occurrence amongst the sub-Antarctic islands of New Zealand.

Occurrence.—Sample No. 3, 121 fathoms, frequent; No. 8, 353 fathoms, rare.

Globigerina triloba, Reuss (Plate IV, fig. 34)

Globigerina triloba, Reuss, 1849, *Denkschr. d. k. Akad. Wiss. Wien*, vol. i, p. 374, pl. xlvii, fig. 11. Chapman, 1909, *Sub-Antarctic Islands of New Zealand*, vol. i, art. xv, p. 350.

A characteristic specimen, having a thicker test than the examples of the preceding species. Previously recorded from the Southern Ocean.

Occurrence.—Sample No. 10, 372 fathoms, one specimen.

* *Challenger Rep.*, vol. ix, p. 575.

Globigerina inflata, d'Orbigny (Plate V, fig. 35)

Globigerina inflata, d'Orbigny, 1839, *Foram. Cuba*, p. 134, pl. ii, figs. 7-9. Rhumbler, 1900, in K. Brandt's *Nordisches Plankton*, Heft 14, p. 19, fig. 19.

The above form is here characteristic and abundant; but it occurs only in one sample. According to Dr. H. B. Brady it is not so common a form in the Arctic and Southern Oceans as in areas of lower latitudes, and that author also notes its southern limit at lat. 53° 55' S.

Occurrence.—Sample No. 8, 353 fathoms, very common.

Globigerina dutertrei, d'Orbigny (Plate V, fig. 36)

Globigerina dutertrei, d'Orbigny, 1839, *Foram. Cuba*, p. 95, pl. iv, figs. 19-21. H. B. Brady, 1884, *Rep. Chall.*, vol. ix, p. 601, pl. lxxxii, figs. 1a-c.

This species is recorded by Dr. H. B. Brady as a starved representative of *G. bulloides*, in the Antarctic Seas. It has been already recorded from the Antarctic Ice Barrier, both in the surface water and the bottom ooze. It is here very rare, as it was also in the sub-Antarctic island dredgings off New Zealand.

Occurrence.—Sample No. 3, 121 fathoms, one specimen; No. 4, 153 fathoms, one specimen.

Globigerina æquilateralis, H. B. Brady (Plate V, fig. 37)

Globigerina æquilateralis, H. B. Brady, 1879, *Quart. Journ. Micr. Sci.*, vol. xix, N.S., p. 71. *Idem*, 1884, *Rep. Chall.*, vol. ix, p. 605, pl. lxxx, figs. 18-21. Rhumbler, 1900, in K. Brandt's *Nordisches Plankton*, Heft 14, p. 20, figs. 21-23.

A fine typical example. Previously recorded by the *Challenger* as far south as the Cape of Good Hope. This species also occurred around the sub-Antarctic islands of New Zealand, and the present record pushes it still farther southward.

Occurrence.—Sample No. 8, 353 fathoms,

Genus—*Pullenia*, Parker and Jones, 1862

Pullenia quinqueloba, Reuss (for references see previous Reports on Foraminifera of Elevated Deposits)

Occurrence.—Sample No. 3, 121 fathoms, frequent; No. 4, 153 fathoms, common.

Family—ROTALIIDÆ

Sub-family—ROTALIINÆ

Genus—*Truncatulina*, d'Orbigny, 1826

Truncatulina refulgens, Montfort, sp. (for references see previous Reports on Foraminifera of Elevated Deposits)

Occurrence.—Sample No. 1, 110 fathoms, one specimen; No. 2, 113 fathoms, frequent; No. 3, 121 fathoms, common; No. 4, 153 fathoms, very common; No. 5, 171 fathoms, one specimen.

Truncatulina lobatula, Walker and Jacob, sp. (for references see previous Reports on Foraminifera of Elevated Deposits)

Occurrence.—Sample No. 2, 113 fathoms, one specimen; No. 3, 121 fathoms, frequent. No. 4, 153 fathoms, frequent; No. 5, 171 fathoms, frequent.

Truncatulina tenera, H. B. Brady (Plate V, fig. 38)

Truncatulina tenera, H. B. Brady, 1884, *Rep. Chall.*, vol. ix, p. 665, pl. xcv, figs. 11a-c. Flint, 1899, *Rep. U.S. Nat. Mus. for 1897*, p. 334, pl. lxxvii, fig. 4.

It is extremely interesting to meet with this rare form, which was found by Dr. Brady in soundings at the Canaries, North Atlantic, 620 fathoms; and at three stations near the coast of Chili and Patagonia at 166 to 1375 fathoms. Dr. Flint has since discovered it off the west coast of Patagonia at 194 fathoms.

Occurrence.—Sample No. 8, 353 fathoms.

Genus—*Anomalina*, d'Orbigny, 1826*Anomalina ammonoides*, Reuss, sp. (Plate V, fig. 39)

Rosalina ammonoides, Reuss, 1845, *Verst böhm. Kreid.* pt. i, p. 36, pl. xiii, fig. 66; pl. viii., fig. 53. *Anomalina ammonoides*, Reuss, sp., H. B. Brady, 1884, *Rep. Chall.*, vol. ix, p. 672, pl. xciv, figs. 2, 3. Flint, 1899, *Rep. U.S. Nat. Mus. for 1897*, p. 335, pl. lxxviii, fig. 4.

The farthest southerly record of this form appears to be that of Dr. Brady, from the west coast of New Zealand at 275 fathoms.

Occurrence.—Sample No. 3, 121 fathoms, one specimen; No. 8, 353 fathoms, one specimen.

Anomalina polymorpha, Costa (for references see previous Reports on Foraminifera of Elevated Deposits)

Occurrence.—Sample No. 8, 353 fathoms, rare.

Pulvinulina elegans, var. *partschiana*, d'Orbigny, var. (Plate V, fig. 40)

Rotalina partschiana, d'Orbigny, 1846, *Foram. Foss. Vienne*, p. 153, pl. vii, figs. 28-30; pl. viii, figs. 1-3; *Pulvinulina partschiana*, d'Orbigny, sp., H. B. Brady, 1884, *Rep. Chall.*, vol. ix, p. 699, pl. cv, figs. 3a-c, woodcut 21. Millett, 1904, *Journ. Roy. Micr. Soc.*, p. 502.

The present occurrence is apparently new for this part of the Southern Ocean; the *Challenger* having previously noted it off the Cape of Good Hope (Sta. 142).

Occurrence.—Sample No. 8, 353 fathoms, rare.

Family—NUMMULINIDÆ

Sub-family—POLYSTOMELLINÆ

Genus—*Nonionina*, d'Orbigny, 1826*Nonionina depressula*, Walker and Jacob, sp. (Plate V, fig. 41)

Nautilus depressulus, Walker and Jacob, 1798, *Adams' Essays*, Kanmacher's ed., p. 641, pl. xiv, fig. 33. *Nonionina depressula*, Walker and Jacob, sp., Wright, 1900, *Geol. Mag.* Dec. 4, vol. vii, p. 100, pl. v, fig. 23.

This widely distributed species is found in the Arctic Seas. It has been recorded by Dr. Haeusler from the Hauraki Gulf, New Zealand, and by the writer from the sub-Antarctic islands of New Zealand.

Occurrence.—Sample No. 3, 121 fathoms, frequent; No. 4, 153 fathoms, common.

Nonionina stelligera, d'Orbigny (for references see previous Reports on Foraminifera of Elevated Deposits)

Occurrence.—Sample No. 3, 121 fathoms, rare.

Nonionina scapha, Fichtel and Moll, sp., var. *bradii*, var. nov. (Plate V, fig. 42)

Nonionina (?) *scapha*, Fichtel and Moll, sp., H. B. Brady, 1884, *Rep. Chall.*, vol. ix, p. 730, pl. cix, fig. 16.

The specific form, *N. scapha*, has been recorded from, amongst other places, the Hauraki Gulf, New Zealand (Haeusler), and round the sub-Antarctic islands of New Zealand (Chapman).

The present variety was figured by Dr. Brady as a doubtful form of *N. scapha*; and our example exactly resembles it in having an evolute commencement. One of the specimens figured by Dr. Flint,* in his group of *N. scapha* is also comparable to the above variety.

Occurrence.—Sample No. 3, 121 fathoms, one specimen.

Genus—*Polystomella*, Lamarck, 1822

Polystomella crispa, Linné, sp. (Plate V, fig. 43)

Nautilus crispus, Linné, 1767, *Syst. Nat.*, 12th ed., p. 1162–275. *Polystomella crispa*, Linné, sp., Egger, 1893, *Abhandl. k. bayer. Akad. Wiss.*, Cl. II, vol. xviii, p. 432, pl. xx, figs. 20, 21. Flint, 1899, *Rep. U.S. Nat. Mus. for 1897*, p. 338, pl. lxxx, fig. 3.

This ubiquitous species has already been recorded as far south as the sub-Antarctic islands of New Zealand and Kerguelen Island.

Occurrence.—Sample No. 8, 353 fathoms, rare; shells complanate and thin.

DESCRIPTION OF THE OSTRACODA

Section—PODOCOPA

Family—CYPRIDÆ

Genus—*Aglaia*, G. S. Brady, 1867

(?) *Aglaia obtusata*, G. S. Brady (Plate VI, fig. 44)

(?) *Aglaia obtusata*, G. S. Brady, 1880, *Rep. Chall.*, Zool., pt. iii, p. 35, pl. xxx, figs. 8a–d. Chapman, 1910, *Journ. Linn. Soc. Lond.*, Zool., vol. xxx, p. 426.

This rare species has been found in only three localities, the earlier occurrences being Kerguelen Island, 20–50 fathoms (Brady); and Funafuti, 1050 fathoms (Chapman).

Occurrence.—Sample No. 3, 121 fathoms, one specimen (carapace).

Genus—*Pontocypris*, G. O. Sars, 1865

Pontocypris (?) *faba*, Reuss, sp. (Plate VI, figs. 45a, b)

Bairdia faba, Reuss, 1855, *Zeitschr. d. deutsch. Geol. Gesellsch.*, p. 278, pl. x, fig. 2. *Pontocypris faba*, G. S. Brady, 1878, *Trans. Zool. Soc.*, p. 382, pl. lxiii, figs. 6a–e. *Pontocypris* (?) *faba*, Reuss, sp., *idem*, 1880, *Rep. Chall.*, Zool., pt. iii, p. 37, pl. i,

* *Rep. U.S. Nat. Mus. for 1897* (1899), pl. lxxx, fig. i.

figs. 4a-d. *Pontocypris faba*, Reuss, sp., Egger, 1901, *Abhandl. k. bayer. Akad. Wiss.*, vol. xxi, Abth. ii, p. 420, pl. iv, figs. 44, 45. *Pontocypris (?) faba*, Reuss, sp., Chapman, 1910, *Journ. Linn. Soc. Lond., Zool.*, vol. xxx, p. 427.

Should the specific correlation of this form with Reuss's be correct, the species dates from Cretaceous times. It also occurs in the Pliocene (Antwerp Crag) of Europe. At the present day it is entirely restricted to the waters of the southern hemisphere, being recorded from Bass Strait and Honolulu in shallow water, from Funafuti at the great depth of 1050 fathoms, and from Mauritius in moderately deep water.

Occurrence.—Sample No. 1, 110 fathoms, one specimen (carapace) of an amber-brown colour, with the animal preserved within.

Family—CYTHERIDÆ

Genus—*Cythere*, Muller, 1785

Cythere foveolata, G. S. Brady (for references see previous Reports on Ostracoda of Elevated Deposits)

Occurrence.—Sample No. 4, 153 fathoms, one diminutive valve.

Cythere davisii, sp. nov. (Plate VI, figs. 46a-c)

Description.—Shell of the female, seen from the side, oblong, subrectangular, with rounded extremities; highest at the anterior hinge-joint, height more than half the length; anterior border obliquely rounded at the dorsal angle, strongly curved towards the ventral, with the anterior edge set with numerous short, sharp spines; posterior border rounded, and armed with some moderately long sharp spines; dorsal line slightly concave in the centre, and elevated towards the anterior border; ventral edge nearly straight, but for a broad depression coinciding with an excavated area on the median surface under the subcentral tubercle; surface tumid in the median area, and covered with fine, polygonal areolæ, each with a central papilla; the subcentral boss also areolated and pitted; submarginal flange well developed on the extremities and ventral border; a sharp salient ridge runs obliquely towards the posterior half of the submarginal flange, abruptly turning at right angles near the posterior margin, and finally thinning away at the post-dorsal angle; a conspicuous tubercle with fossa over the anterior hinge-joint. Edge view, from below, elongate subcordate, increasing in width from front to back up to the middle of the posterior third of the carapace; with rounded outline below, irregular above, interrupted by the median depression. End view short, subcordate, almost triangular, but with rounded faces. Carapace of the male more elongate and compressed.

Measurements.—Length of figured example, 1.423 mm.; greatest height, .73 mm.; thickness of carapace, .7 mm.

The above species was at first tentatively regarded as a variety of *C. wyville-thomsoni*, G. S. Brady,* to which it is related in general form. It differs essentially, however, in having a much thicker carapace, in its rounded posterior extremity, in having a median depression, and in the feeble polygonal surface ornamentation.

This species is named in honour of Capt. J. K. Davis, of the S.Y. *Nimrod*, who collected the present samples of soundings in the Antarctic.

Occurrence.—Sample No. 3, 121 fathoms, frequent; No. 7, 225 fathoms, one specimen. All the examples are complete carapaces.

* *Rep. Chall., Zool.*, pt. iii, 1880, p. 82, pl. xx, figs. 4a-f.

Cythere quadriaculeata, G. S. Brady (Plate VI, fig. 47)

Cythere quadriaculeata, G. S. Brady, 1880, *Rep. Chall.*, Zool., pt. iii, p. 86, pl. xxii, figs. 2a-d ; pl. xxv, figs. 4a-d ; Chapman, 1910, *Journ. Linn. Soc. Lond.*, Zool., vol. xxx, p. 432.

Dr. Brady gives two *Challenger* stations for this species, viz. the Inland Sea, Japan (15 fathoms), and off the reefs at Honolulu (40 fathoms). The Funafuti specimens occurred at the great depths of 1050 and 1215 fathoms.

Occurrence.—Sample No. 4, 153 fathoms, one valve of moderately strong build.

Cythere normani, G. S. Brady (for references see previous Reports on Ostracoda of Elevated Deposits)

Occurrence.—Sample No. 4, 153 fathoms, frequent ; all single valves.

Genus—*Xestoleberis*, G. O. Sars, 1865*Xestoleberis variegata*, G. S. Brady (Plate VI, fig. 48)

Xestoleberis variegata, G. S. Brady, 1880, *Rep. Chall.*, Zool., pt. iii, p. 129, pl. xxxi, figs. 8a-g ; Chapman, 1910, *Journ. Linn. Soc. Lond.*, Zool., vol. xxx, p. 435.

This species was found in both deep and shallow water round Funafuti ; and it often occurred in the atoll's lagoon. Dr. Brady's records for the species are Cape Verde, Tongatabu, Fiji, and Noumea.

Occurrence.—Sample No. 4, 153 fathoms, one valve ; No. 8, 353 fathoms, one valve.

Xestoleberis davidiana, Chapman (for description see previous Reports on Ostracoda of Elevated Deposits)

Occurrence.—Sample No. 3, 121 fathoms ; one carapace ; No. 4, 153 fathoms, one valve.

Xestoleberis setigera, G. S. Brady (Plate VI, fig. 49)

Xestoleberis setigera, G. S. Brady, 1880, *Rep. Chall.*, Zool., pt. iii, p. 125, pl. xxxi, figs. 2a-d ; figs. 3a-c ; Egger, 1901, *Abhandl. k. bayer. Akad. Wiss.*, vol. xxi, Abth. ii, p. 456, pl. iii, figs. 37-39.

This species appears to be almost restricted to the Southern Ocean. Brady records it from Kerguelen Island, 120 fathoms ; Heard Island, 75 fathoms ; and Prince Edward's Island, 50-150 fathoms. Egger's specimens came from the coast of Liberia, West Africa.

Occurrence.—Sample No. 3, 121 fathoms, one carapace ; No. 4, 153 fathoms, rare ; No. 5, 171 fathoms, one valve.

Genus—*Cytherura*, G. O. Sars, 1865*Cytherura obliqua*, G. S. Brady (Plate VI, fig. 50)

Cytherura obliqua, G. S. Brady, 1880, *Rep. Chall.*, Zool., pt. iii, p. 131, pl. xxxii, figs. 1a-d.

The only other locality for this species is that which furnished Dr. Brady with his described specimens, viz., Balfour Bay, Kerguelen Island, 20-50 fathoms. The single valve found in the present series is prominent on the ventral face, but otherwise typical.

Occurrence.—Sample No. 4, 153 fathoms, one valve.

Cytherura rudis, G. S. Brady (Plate VI, fig. 51)

Cytherura rudis, G. S. Brady, 1868, *Ann. Mag. Nat. Hist.*, ser. 4, vol. ii, p. 34, pl. v, figs. 15-17; *Cytherura* (?) *rudis*, G. S. Brady, 1880, *Rep. Chall.*, Zool., pt. iii, p. 132, pl. xxxii, figs. 3a-d. *Cytherura rudis*, G. S. Brady and Norman, 1889, *Trans. Roy. Dubl. Soc.*, ser. ii, vol. iv, p. 204, pl. xviii, figs. 10-12; pl. xix, fig. 21.

The present occurrence of the above species is most interesting from the point of view that it helps to dispel Dr. Brady's doubt regarding the identity of the *Challenger* specimens from the Straits of Magellan (55 fathoms) with the original examples obtained by Brady many years earlier from Davis's Straits. The present Antarctic specimen is nearer the Arctic form in outline; and the rough polygonal sculpturing is intermediate in character between the southern and northern examples recorded by Dr. Brady. The additional localities for this species given by Drs. Brady and Norman are—Godhavn Harbour, Greenland, 5-25 fathoms; Ginevra Bay, Spitzbergen; Smith's Sound, 210 fathoms. Also as a pleistocene fossil at Portland, Co. Maine, U.S.A., and in Scotland, at Loch Gilp.

Occurrence.—Sample No. 7, 225 fathoms, one valve.

SUMMARY OF RESULTS

IN the foregoing Report, 64 species and varieties of Foraminifera and 11 species of Ostracoda are described or recorded. Among the Foraminifera the following are new :

- Miliolina subrotunda*, Mont. sp., var. *striata* ;
- „ *oblonga*, Mont. sp., var. *arenacea* ;
- Reophax longiscatiformis* ;
- „ *murrayana* ; and
- Nonionina scapha*, F. and M. sp., var. *bradil*.

There is also a new species of the Ostracoda, viz. *Cythere davisi*.

A notable feature in the present foraminiferal fauna is the large number of species which are undoubtedly common to the cold areas of the north and south polar regions. Amongst these may be cited : *Saccammina sphaerica*, *Haplophragmium canariense*, *H. latidorsatum*, *Virgulina schreibersiana*, *Lagena apiculata*, *L. marginata*, *Polymorphina oblonga*, *Uvigerina pygmaea*, *Globigerina bulloides*, *G. inflata*, *Truncatulina lobatula*, *Nonionina depressula*, *N. stelligera*, and *Polystomella crispa*.

The Ostracoda here recorded are almost peculiarly a southern oceanic fauna ; a marked exception is *Cytherura rudis*, already known from Spitzbergen, Greenland, and other localities in the Far North. One or two species, however, have a somewhat extensive range, as will be seen on referring to the distributional notes with each species.

Of the bipolar species of Foraminifera, *Saccammina sphaerica* is perhaps the most interesting, since it has been almost exclusively obtained from stations in high latitudes, and only twice in low latitudes, in the North Pacific and South Atlantic, both in deep water. In this, as in other species of bipolar Foraminifera, the following fact is clearly brought out : that these tiny organisms, born and bred in the richer, shallow mud-zones of high latitudes, sink into deeper water areas when spreading out through the tropical and inter-tropical seas, and again graduate into shallower marine conditions as they approach the polar regions. The shallow-water foraminiferal fauna of warmer latitudes, on the other hand, show, broadly speaking, a restricted field. In the two recorded occurrences of *Saccammina sphaerica* in inter-tropical seas, it will be noticed that the stations are both situated in main axes of abyssal troughs trending north and south.

The existence of a selective instinct implanted in the Foraminifera is here given further proof in the case of *Reophax spiculifera* ; for, although living side by side with *R. dentaliniformis*, a form whose test is an agglutination of comparatively coarse, angular sand grains, it rejects this material in favour of short, siliceous sponge spicules, with which awkward material it constructs fairly neat, long, funnel-shaped chambers, resembling in shape the straw covers of wine bottles.

In the following Table of Bathymetrical Distribution, it will be seen how remarkable a feature is the segregation of many species of Foraminifera within a bathymetrical zone or series of depths within certain limits. This peculiarity of the fauna may, of course, be largely induced by the nature of the sea bottom in supplying suitable food and building material.

REPORT ON FORAMINIFERA AND OSTRACODA

LIST OF FORAMINIFERA AND OSTRACODA FROM THE ANTARCTIC SOUNDINGS (continued)

SPECIES	BATHYMETRICAL DISTRIBUTION IN FATHOMS													Page
	110	113	121	153	171	225	353	360	372	460	462	472	655	
FORAMINIFERA—cont.														
<i>Cristellaria crepidula</i> , F. & M. sp.			X	X										67
„ <i>articulata</i> , Rss.				X										67
<i>Polymorphina oblonga</i> , d'Orb.					X									67
<i>Uvigerina pygmæa</i> , d'Orb.							X							68
„ <i>angulosa</i> , Will.	X	X	X	X	X									68
<i>Globigerina bulloides</i> , d'Orb.			X				X							68
„ <i>triloba</i> , Rss.									X					68
„ <i>inflata</i> , d'Orb.							X							69
„ <i>dutertrei</i> , d'Orb.			X	X										69
„ <i>æquilateralis</i> , Brady							X							69
<i>Pullenia quinqueloba</i> , Rss.			X	X										69
<i>Truncatulina refulgens</i> , Mont.														
sp.	X	X	X	X	X									69
„ <i>lobatula</i> , W. & J.		X	X	X	X									69
sp.		X	X	X	X									69
„ <i>tenera</i> , Brady							X							70
<i>Anomalina ammonoides</i> , Rss. sp.			X				X							70
„ <i>polymorpha</i> , Costa							X							70
<i>Pulvinulina elegans</i> , var. <i>partschiana</i> , d'Orb. var.							X							70
<i>Nonionina depressula</i> , W. & J.														
sp.			X	X										70
„ <i>stelligera</i> , d'Orb.			X											71
„ <i>scapha</i> , F. & M. sp., var. <i>bradii</i> , var. n.			X											71
<i>Polystomella crispa</i> , L. sp.							X							71
OSTRACODA														
(?) <i>Aglaia obtusata</i> , G.S.B.			X											71
<i>Pontocypris</i> (?) <i>faba</i> , Rss. sp.	X													71
<i>Cythere foveolata</i> , G.S.B.				X										72
„ <i>davisi</i> , sp. nov.			X			X								72
„ <i>quadriaculeata</i> , G.S.B.				X										73
„ <i>normani</i> , G.S.B.				X										73
<i>Xestoleberis variegata</i> , G.S.B.				X			X							73
„ <i>dauidiana</i> , Chapm.			X	X										73
„ <i>setigera</i> , G.S.B.			X	X	X									73
<i>Cytherura obliqua</i> , G.S.B.				X										73
„ <i>rudis</i> , G.S.B.						X								74

EXPLANATION OF THE PLATES

PLATE I

- FIGURE 1.—*Biloculina bradii*, Schlumberger. Sample No. 1, 110 fathoms. × 13.
FIGURE 2.—*Spiroloculina canaliculata*, d'Orbigny. Sample No. 8, 353 fathoms. × 26.
FIGURE 3.—*Miliolina subrotunda*, Montagu, sp., var. *striata*, var. nov. Sample No. 8, 353 fathoms. × 52.
FIGURE 4.—*M. vulgaris*, d'Orbigny, sp. Sample No. 8, 353 fathoms. × 26.
FIGURE 5.—*M. bicornis*, Walker and Jacob, sp. Sample No. 8, 353 fathoms. × 52.
FIGURE 6.—*M. agglutinans*, d'Orbigny, sp. Sample No. 9, 360 fathoms. × 52.
FIGURE 7.—*M. oblonga*, Montagu, sp., var. *arenacea*, var. nov. Sample No. 13, 462 fathoms. × 52.
FIGURE 8.—*Planispirina sphæra*, d'Orbigny, sp. Sample No. 4, 153 fathoms. × 26.
FIGURE 9.—*Cornuspira foliacea*, Philippi, sp. Sample No. 3, 121 fathoms. × 26.

PLATE II

- FIGURE 10.—*Pelosina cylindrica*, Brady. Sample No. 3, 121 fathoms. × 10.
FIGURE 11.—*P. rotundata*, Brady. Sample No. 1, 110 fathoms. × 10.
FIGURE 12.—*Saccammmina sphærica*, M. Sars. Sample No. 3, 121 fathoms. × 20.
FIGURE 13.—*Hyperammmina elongata*, Brady. Sample No. 9, 360 fathoms. × 35.
FIGURE 14.—*Marsipella elongata*, Norman. Sample No. 8, 353 fathoms. × 26.
FIGURE 15.—*M. cylindrica*, Brady. Sample No. 14, 472 fathoms. × 20.

PLATE III

- FIGURE 16.—*Reophax spiculifera*, Brady. Sample No. 15, 655 fathoms. × 26.
FIGURE 17.—*R. dentaliniformis*, Brady. Sample No. 9, 360 fathoms. × 26.
FIGURE 18.—*R. longiscatiformis*, sp. nov. Sample No. 9, 360 fathoms. × 26.
FIGURE 19.—*R. murrayana*, sp. nov. Sample No. 7, 225 fathoms. × 26.
FIGURE 20.—*Haplophragmium canariense*, d'Orbigny, sp. Sample No. 3, 121 fathoms. × 26.

- FIGURE 21.—*H. latidorsatum*, Bornemann, sp. Sample No. 14, 472 fathoms. × 26.
FIGURE 22.—*H. scitulum*, Brady. Sample No. 13, 462 fathoms. × 26.
FIGURE 23.—*Valvulina fusca*, Williamson, sp. : *a*, side view ; *b*, oral aspect. Sample No. 5, 171 fathoms. × 26.
FIGURE 24.—*Bolivina textilarioides*, Reuss. Sample No. 3, 121 fathoms. × 56.

PLATE IV

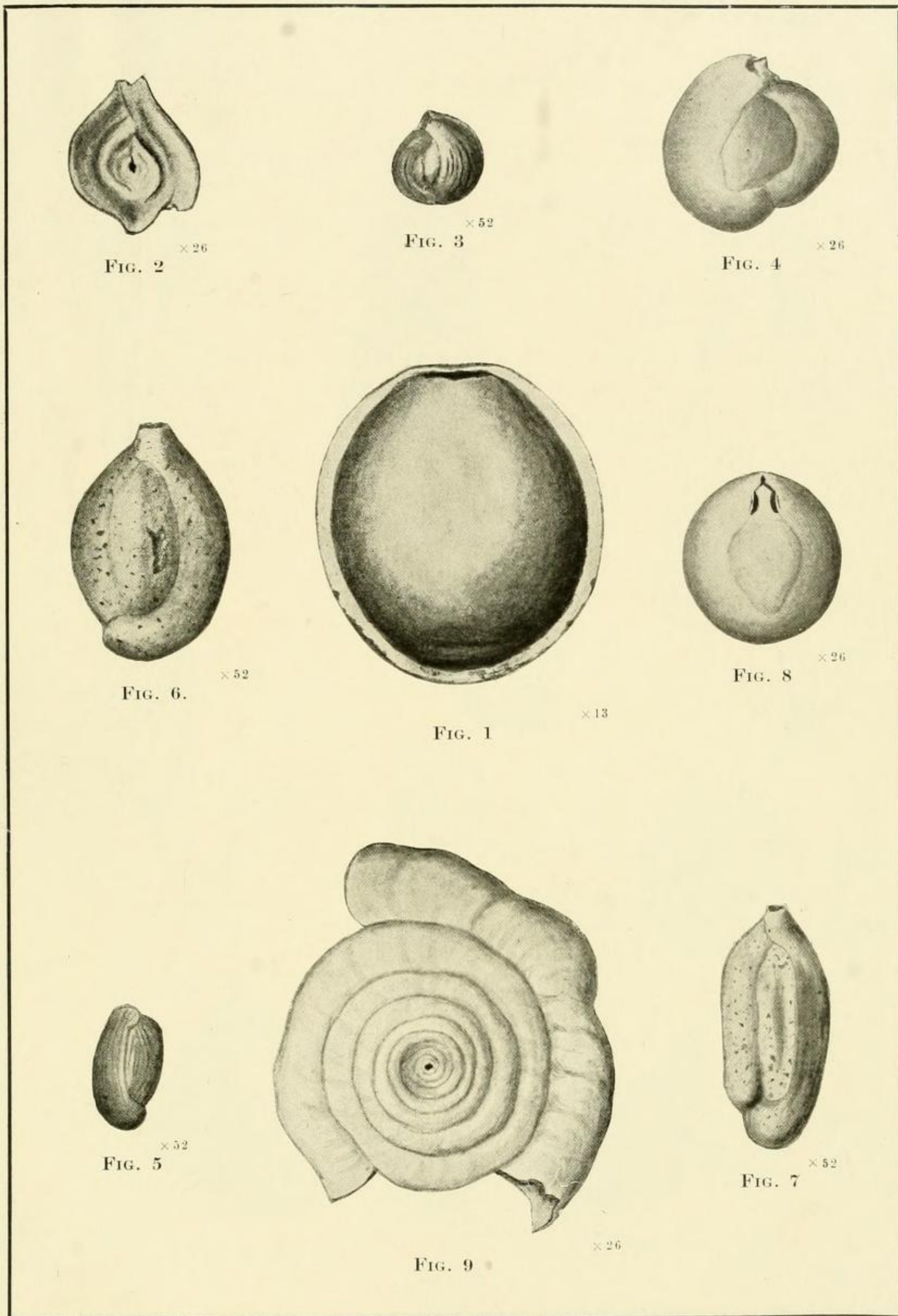
- FIGURE 25.—*Lagena globosa*, Montagu, sp. Sample No. 8, 353 fathoms. × 52.
FIGURE 26.—*L. apiculata*, Reuss, sp. Sample No. 3, 121 fathoms. × 52.
FIGURE 27.—*L. schlichti*, A. Silvestri. Sample No. 3, 121 fathoms. × 52.
FIGURE 28.—*L. marginata*, Walker and Boys. Sample No. 3, 121 fathoms. × 52.
FIGURE 29.—*L. orbignyana*, Seguenza, sp. Sample No. 4, 153 fathoms. × 52.
FIGURE 30.—*Nodosaria (Dentalina) communis*, d'Orbigny. Sample No. 4, 153 fathoms. × 52.
FIGURE 31.—*Polymorphina oblonga*, d'Orbigny. Sample No. 5, 171 fathoms. × 26.
FIGURE 32.—*Uvigerina pygmæa*, d'Orbigny. Sample No. 8, 353 fathoms. × 26.
FIGURE 33.—*Globerigina bulloides*, d'Orbigny. Sample No. 3, 121 fathoms. × 52.
FIGURE 34.—*G. triloba*, Reuss. Sample No. 10, 372 fathoms. × 52.

PLATE V

- FIGURE 35.—*Globigerina inflata*, d'Orbigny. Sample No. 8, 353 fathoms. × 52.
FIGURE 36.—*G. dutertrei*, d'Orbigny. Sample No. 3, 121 fathoms. × 52.
FIGURE 37.—*G. æquilateralis*, Brady. Sample No. 8, 353 fathoms. × 52.
FIGURE 38.—*Truncatulina tenera*, Brady. Sample No. 8, 353 fathoms. × 52.
FIGURE 39.—*Anomalina ammonoides*, Reuss, sp. Sample No. 3, 121 fathoms. × 52.
FIGURE 40.—*Pulvinulina elegans*, var. *partschiana*, d'Orbigny, var. Sample No. 8, 353 fathoms. × 52.
FIGURE 41.—*Nonionina depressula*, Walker and Jacob, sp. Sample No. 3, 121 fathoms. × 52.
FIGURE 42.—*N. scapha*, Fichtel and Moll., sp., var. *bradii*, var. nov. Sample No. 3, 121 fathoms. × 52.
FIGURE 43.—*Polystomella crispa*, Linné, sp. Sample No. 8, 353 fathoms. × 52.

PLATE VI

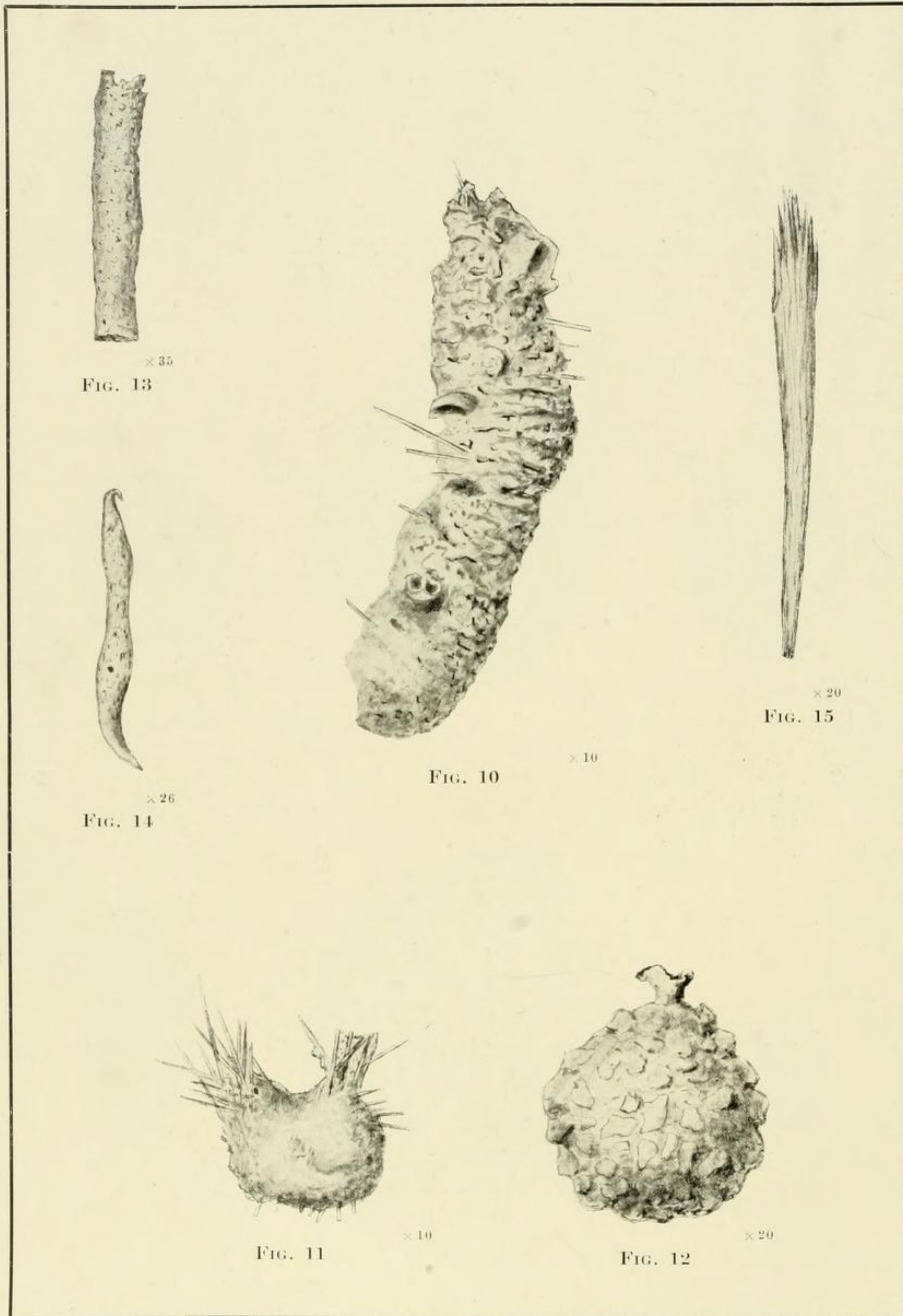
- FIGURE 44.—(?) *Aglaia obtusata*, G. S. Brady. Right valve. Sample No. 3, 121 fathoms. $\times 40$.
- FIGURE 45.—*Pontocypris* (?) *faba*, Reuss, sp.: *a*, right valve; *b*, ventral aspect. Sample No. 1, 110 fathoms. $\times 26$.
- FIGURE 46.—*C. davisii*, sp. nov.: *a*, left valve; *b*, ventral edge view; *c*, posterior end view. Sample No. 3, 121 fathoms. $\times 26$.
- FIGURE 47.—*Cythere quadriaculeata*, G. S. Brady. Left valve. Sample No. 4, 153 fathoms. $\times 52$.
- FIGURE 48.—*Xestoleberis variegata*, G. S. Brady. Left valve. Sample No. 4, 153 fathoms. $\times 52$.
- FIGURE 49.—*X. setigera*, G. S. Brady. Left valve. Sample No. 3, 121 fathoms. $\times 26$.
- FIGURE 50.—*Cytherura obliqua*, G. S. Brady. Left valve. Sample No. 4, 153 fathoms. $\times 42$.
- FIGURE 51.—*C. rudis*, G. S. Brady. Left valve. Sample No. 7, 225 fathoms. $\times 52$.



F.C. ad nat. del.

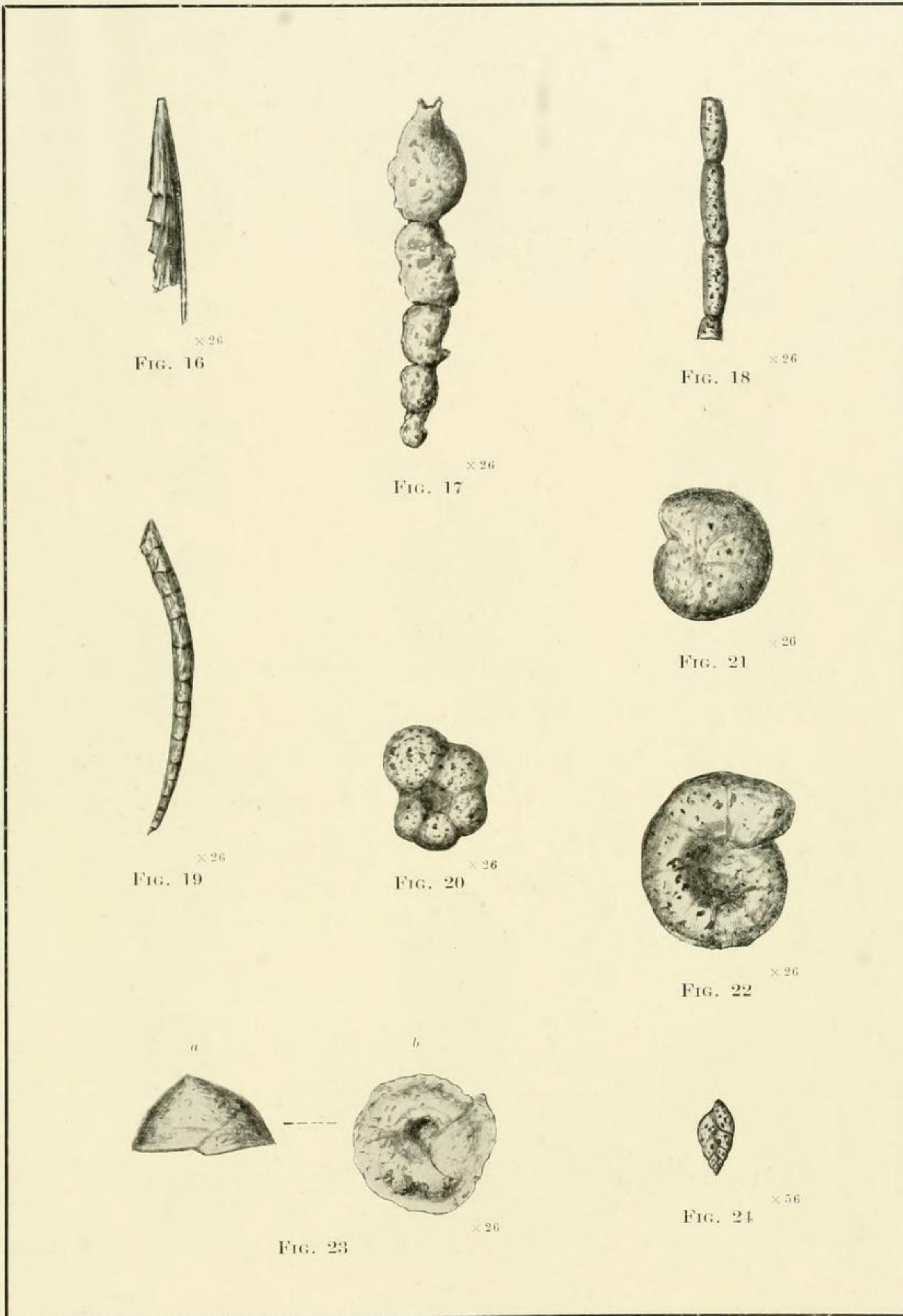
ANTARCTIC FORAMINIFERA.—S.Y. NIMROD, 1909

[To face p. 80



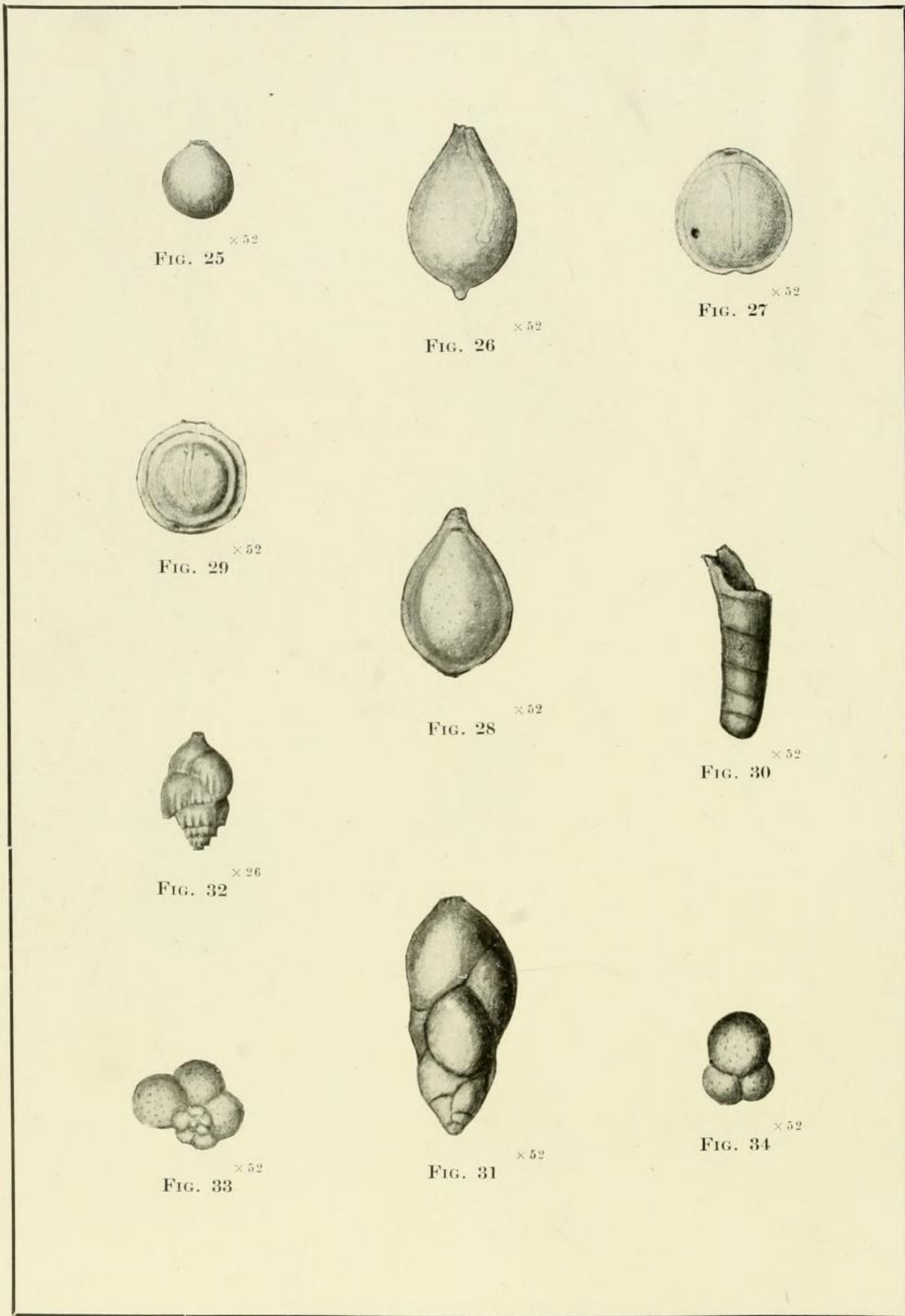
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ANTARCTIC FORAMINIFERA.—S.Y. NIMROD, 1909

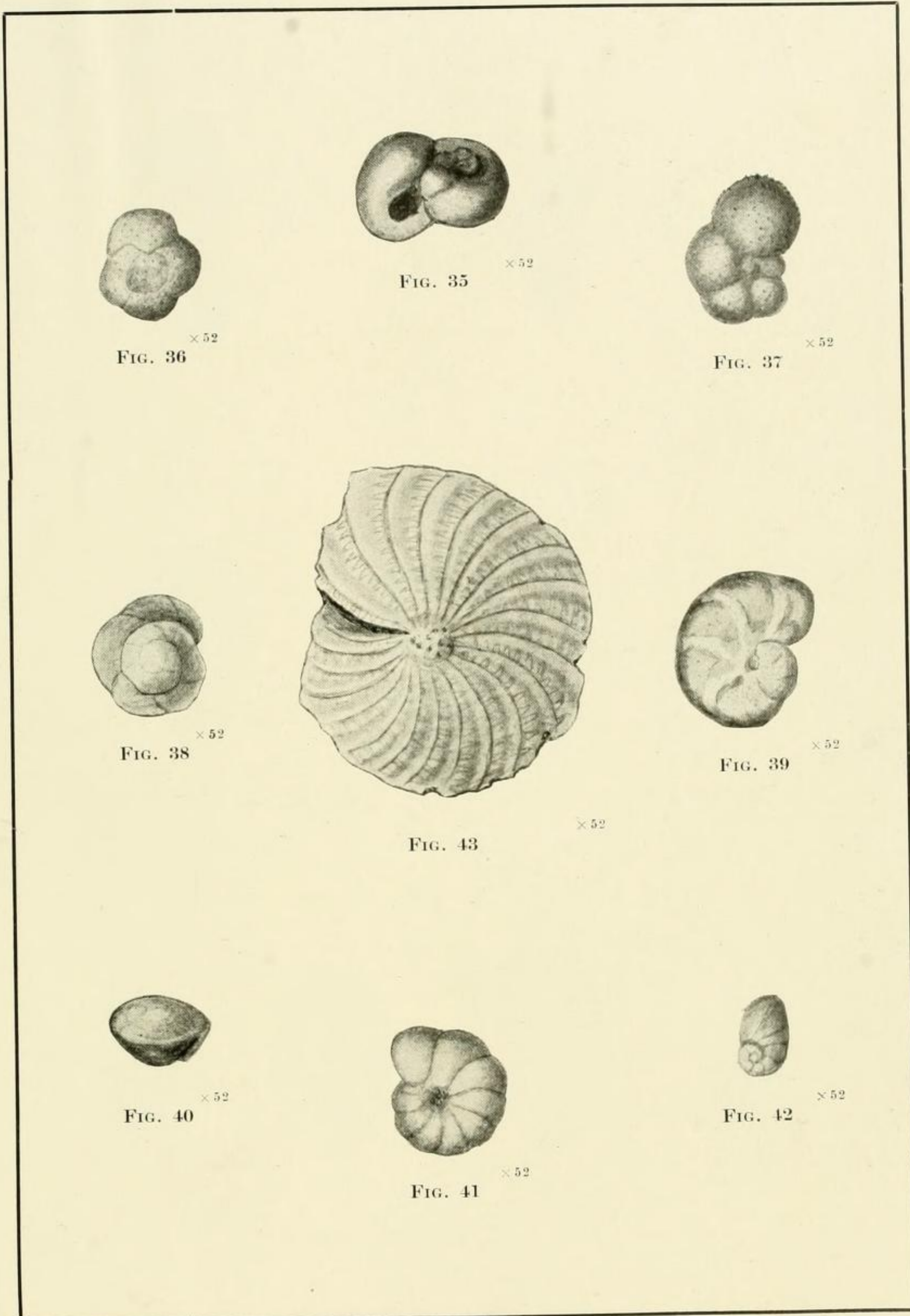


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ANTARCTIC FORAMINIFERA.—S.Y. NIMROD, 1909



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ANTARCTIC FORAMINIFERA.—S.Y. NIMROD, 1909



FIG. 44 $\times 40$

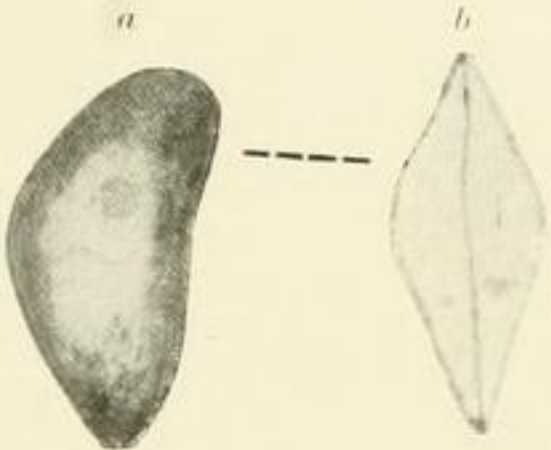


FIG. 45 $\times 26$



FIG. 47 $\times 52$

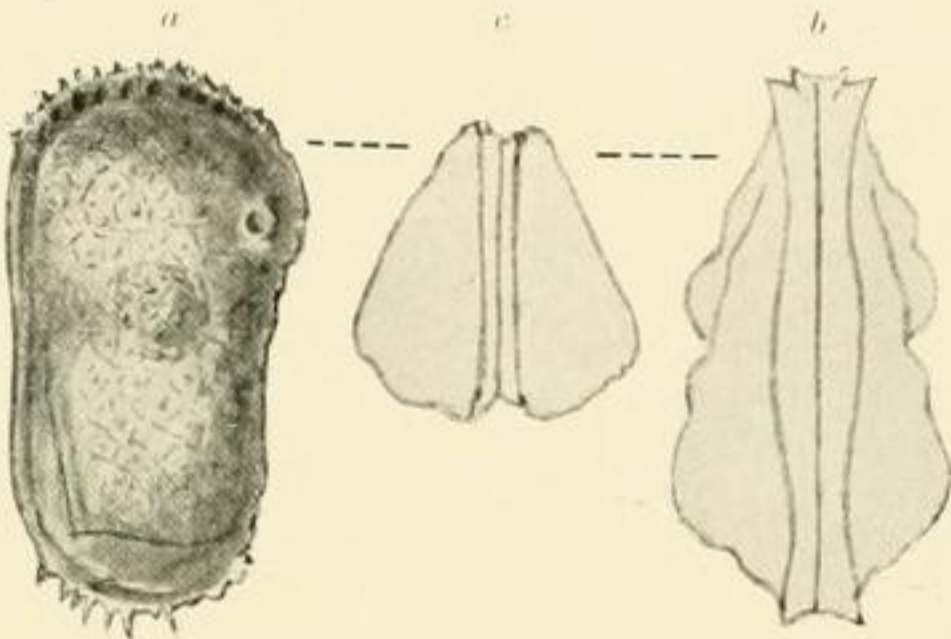


FIG. 46 $\times 26$



FIG. 48 $\times 52$



FIG. 50 $\times 42$



FIG. 51 $\times 52$



FIG. 49 $\times 26$

F.C. ad nat. del.

