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TAXONOMIC NOTES ON THE BATHYAL ZONE BENTHONIC
FORAMINIFERAL SPECIES OFF NORTHEAST NEWFOUNDLAND

by

F.E. Cole

Environmental Marine Geology
Atlantic Geoscience Centre
Dept. of Energy, Mines & Resources

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ABSTRACT

Three hundred and thirty-five species of benthonic foraminifera including both arenaceous and calcareous types were identified in sediments from the continental slope and rise (390-3210 m water depth) off northeast Newfoundland. The classification, synonymy and taxonomic peculiarities of these forms are detailed in the text and representative index specimens have been drawn or photographed using a scanning electron microscope. Geological Survey of Canada numbers have been assigned to the illustrated specimens, which are presently being held as part of a larger collection at the Atlantic Geoscience Centre.

Résumé

Dans des sédiments des talus et glacis continentaux (390-3210 m de profondeur) ont été identifiées 335 espèces de foraminifères benthiques, les unes de type arénacé, les autres de type calcaire. La classification, la synonymie et les particularités taxonomiques de ces formes sont indiquées en détail dans le texte, et les fossiles-guides représentatifs ont été dessinés, ou photographiés au moyen d'un microscope électronique à balayage. Des numéros ont été attribués par la Commission géologique du Canada aux spécimens illustrés, qui sont maintenant inclus dans une plus vaste collection, au Centre géoscientifique de l'Atlantique.

INTRODUCTION

During 1977 and 1979, samples were taken on the east Newfoundland continental slope and rise, between 49° and 51° north, 46° and 51° west, in water depths ranging from 390 to 3210m. The ecologic and environmental data obtained from these samples are published separately (Schafer et al., 1981; Carter et al., 1979; Schafer and Cole, 1981). This report deals specifically with the taxonomy of the species of foraminifera found off northeast Newfoundland.

Samples were taken by Van Veen Grabs (Cruise 77-034) or by box core (Cruise 79-017). Surface sediment to about 1 cm depth was scraped into a container and preserved with a mixture of 20 ml Formalin, 2 gm Calcium Chloride and 2 packets of 9.18 pH buffer in 1 l of sea water, the mixture being added in amounts equal to the amount of sediment and sea water being preserved.

In the laboratory the volume of the wet sediment was measured by placing the samples in graduated cylinders and allowing them to settle for twenty-four hours. The samples were then washed through a 0.063 mm mesh sieve with tap water to remove the silts, clays and excess preservative. The residues were placed in heated Sudan Black B stain solution and maintained at 40°C for 30 minutes (Walker et al., 1974). Subsequently, they were washed in alcohol to remove excess stain, placed in filter papers, and left to dry overnight at 50°C in an oven.

The benthonic foraminifera were picked out of the residue, or in many cases, from a small split of the residue, and were identified and counted. Many of the more common species were photographed using a Cambridge Stereoscan 180 Scanning Electron Microscope. Other species were figured as line drawings, using a camera obscura, because they were too

rare to mount as SEM specimens, or because they did not produce good photographic images on the SEM.

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FORAMINIFERA

Suborder ALLOGROMIINA Loeblich and Tappan, 1961

Superfamily LAGYNACEA Schultze 1854

Family ALLOGROMIIDAE Rhumbler, 1904

Genus Placopsilinella Earland, 1934

Placopsilinella aurantiaca Earland, 1934, Discovery Repts., vol. 10, p. 95, pl. 3, fig. 18.

Source: Ellis and Messina, Catalogue of Foraminifera

This is an attached species, found usually on large calcareous foraminiferal tests. It is small, chitinous and brightly colored red-brown. It tends to be rare, occurring scattered from 2938 to 3210m, and is occasionally preserved down-core as well. See pl. 16, fig. 1.

Suborder TEXTULARIINA Delage and Hérouard, 1896

Superfamily AMMODISCACEA Reuss, 1862

Family ASTORRHIZIDAE Brady, 1881

Subfamily ASTORRHIZINAE Brady, 1881

Genus Astrorhiza Sandahl, 1858

Astrorhiza arenaria Carpenter, 1876, Quart. J. Micr. Sci., p. 221, pl. 19, figs. 1-13.

Source: Barker, 1960, Soc. Econ. Paleontol. and Mineral, Spec. Publ. 9, p. 38, pl. 19, figs. 5-10.

This species is found at only a few stations from 390 to 2000m, in the greater than 1mm size range. It is quite often 4 or 5mm across and more than 1mm thick. See pl. 2, fig. 6.

Astrorhiza hancocki Cushman and McCulloch, 1939, Allen Hancock Exped., (Pacific), vol. 6, p. 31, pl. 1, fig. 1.

Source: Ellis and Messina, Catalogue of Foraminifera

A large and very rare species, found to date at only one station on the upper slope. See pl. 2, fig. 5.

Astrorhiza sp.

Only a few specimens of this form were found, all more than 1mm in size and all at 3210m depth. It is composed of Globigerina tests cemented together, with no organic lining present. The interior is smoother than the exterior surface, and the wall is only one layer thick and very fragile. It has been placed in Astrorhiza because it consists generally of a central, inflated chamber with several tapering, tubular arms extending out, all in one plane. See pl. 16, fig. 5.

Genus Astrammia Rhumbler, 1931

Astrammia sphaerica (Heron-Allen & Earland) var.

- Armurella sphaerica Heron-Allen & Earland, 1932, Roy. Micr. Soc. Jour., ser. 3, vol. 52, pt. 3, art. 10, p. 257, pl. 2, figs. 4-11.

- Astrammia sphaerica (Heron-Allen & Earland) Loeblich & Tappan, 1964, Treatise-Protista 2 (1) C184, fig. 103 (3, 4).

We were unable to identify this variety of A. sphaerica, which differs from the original species in its large number of tubular arms, radiating in all directions. It is found from 1400 to 3210m on the slope, never in large numbers, but occurring fairly frequently. See pl. 16, fig. 2.

Genus Rhabdammina M. Sars, 1869

Rhabdammina abyssorum Carpenter, 1869, Ann. Mag. Nat. Hist., ser. 4, vol. 4, p. 288.

Source: Barker, 1960, Soc. Econ. Paleontol. & Mineral., Spec. Publ. 9, p. 42, pl. 21, figs. 1-3.

The specimens found are large, mostly broken tubes, either single or branching. This species occurs from 390 to 3210m, with greater abundances from 800 to 2000m and again at 1600 to 2400m. See pl. 16, fig. 3.

Rhabdammina discreta Brady, 1881, Quart. Jour. Micr. Sci., vol. 21, p. 48.

Source: Barker, 1960, Soc. Econ. Paleontol. & Mineral., Spec. Publ. 9, p. 44, pl. 22, figs. 7-10.

A large species, found from 530 to 3000m, common but never abundant. See pl. 16, fig. 4.

Rhabdammina linearis Brady, 1879, Quart. Jour. Micr. Sci., n.s., vol. 19, p. 37, pl. 3, figs. 10, 11.

Source: LeRoy & Hodgkinson, 1975, Micropaleo. vol. 21, no. 4, p. 436, pl. 1, fig. 12.

A rare species, usually broken, ranging from 530 to 3210m. See pl. 1, fig. 1.

Rhabdammina sp. cf. R. scabra Höglund, 1947, Zool. Bidr. Uppsala, Bd. 26, p. 28, pl. 1, figs. 3, 4.

This is a very rare species on the Slope, occurring in deep water, from 2560 to 3210m, and is characterized by the layer of Globigerina tests agglutinated over its sand-walled test. See pl. 2, fig. 8.

Subfamily RHIZAMMININAE Rhumbler, 1895

Genus Rhizammina Brady, 1879

Rhizammina algaeformis Brady, 1879, Quart. Jour. Micr. Sci., n.s., vol. 19, p. 39, pl. 4, figs. 16, 17.

Source: Barker, 1960, Soc. Econ. Paleontol. & Mineral, Spec. Publ. 9, p. 58, pl. 28, figs. 1-11.

This species ranges from 390 to 3210m, but is never common. The arenaceous portion of the test is often very thin or absent entirely. See pl. 1, fig. 9.

Rhizammina indivisa (Brady)

- Rhabdammina indivisa Brady, 1884, Rept. Voy.

Challenger, Zool. (9), p. 277, pl. 29, figs. 5-7.

- Rhizammina indivisa (Brady) Barker, 1960, Soc.

Econ. Paleontol. Min., Spec. Publ. 9, p. 60, pl. 29, figs. 5-7.

Source: Barker, 1960, *ibid.*

Found scattered from 400 to 3000 m, this species is not common, but does show some increase in its numbers between 2000 and 2200 m.

Construction materials used vary with the area, those from the slope using flat sand grains and those from the upper rise using broken Globigerina tests, set in the same way, at right angles to the test axis, on edge. See pl. 2, fig. 16.

Genus Bathysiphon M. Sars, 1872

Bathysiphon alba (Heron-Allen & Earland)

- Hippocrepinella alba Heron-Allen & Earland, 1932,

Roy. Micr. Soc. Jour., ser. 3, vol. 52, pt. 3, art. 10, p. 259, pl. 1, figs. 16-18.

- Bathysiphon alba (Heron-Allen & Earland) Loeblich & Tappan, 1964, Treatise-Protista 2(1) C186.

Source: Höglund, 1947, Zool. Bidr. Uppsala, Bd. 26, pl. 1, figs. 11-13.

Not common on the slope, but fairly widespread in its distribution, it ranges from 390 to 2800 m, mostly from 1200 to 1400 m. See pl. 1, fig. 2.

Bathysiphon filiformis M. Sars, 1872, Vid. Selsk. Christiania, Forhandl., Norge, Aar 1871, p. 251, fig. 4.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 52, pl. 26, figs. 15-20.

A common species ranging from 500 to 3000 m, most abundant from 600 to 2000 m. It is a small, very elongate species. See pl. 1, fig. 3.

Bathysiphon hirudinea (Heron-Allen & Earland)

- Hippocrepinella hirudinea Heron-Allen & Earland, 1932, Roy. Micr. Soc. Jour., ser. 3, vol. 52, pt. 3, art. 10, p. 258, pl.1, figs. 7-15.

- Bathysiphon hirudinea (Heron-Allen & Earland) Loeblich & Tappan, 1964, Protista 2(1) C186.

Source: Ellis & Messina, Catalogue of Foraminifera

Extremely rare on the Slope; occurs at only one station at 1550 m.

Genus Marsipella Norman, 1878.

Marsipella cylindrica Brady, 1882, Proc. Roy. Soc. Edinburgh, vol. 11, p. 714.

Source: Barker, 1960, Soc. Econ. Paleontol. and Min., Spec. Publ. 9, p. 48, pl. 24, figs. 20-22.

A common species, found from 400 to 3210 m, numbers being highest between 1000 and 1600 m. Color varies from white to dark red brown. See pl. 2, fig. 15.

Marsipella elongata Norman, 1878, Ann. Mag. Nat. Hist., ser. 5, vol. 1, p.281, pl. 16, fig. 7.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 48, pl. 24, figs. 10-19.

Not as common as M. cylindrica, this species is found from 530 to 2800 m, being more abundant from 1590 to 2600 m. See pl. 1, fig. 4.

Subfamily HIPPOCREPININAE Rhumbler 1895

Genus Hippocrepina Parker, 1870

Hippocrepina indivisa Parker, 1870, in Dawson, Can. Nat., n.s., vol. 5, p. 176, fig. 2.

Source: Loeblich & Tappan, 1953, Smithsonian Misc. Coll., vol. 121, no. 7, p. 20, pl. 1, fig. 13.

Rare; only one specimen found at 1400 m. See pl. 16, fig. 6.

Hippocrepina oblonga Pearcey, 1900, Millport Mar. Biol. Stn., Commun. no. 1, p. 40, pl. 1, fig. 4.

Source: Ellis & Messina, Catalogue of Foraminifera

Only a few small, worn specimens were found, ranging from 600 to 1550 m. They might also be aberrant Bathysiphon alba or B. hirudinea. See pl. 16, fig. 7.

Genus Hyperammina Brady, 1878

Hyperammina bradyi Stschedrina, 1946, Trans. ASRINSRBDE "G. SADOV", vol. 3 (Biol.), pp.141 (Russ.), 146 (Engl.), pl. 3, fig. 12.

Source: Ellis & Messina, Catalogue of Foraminifera

A few specimens occur at 3 stations from 1200 to 2800 m. It differs from H. elongata in the width and shape of the proloculus and tubular chamber. See pl. 16, fig. 8.

Hyperammina cylindrica Parr, 1950, Brit.-Austr.-N. Zeal. Antarct. Res. Exp. Rep., ser. B, vol. 5, pt. 6, p. 254, pl. 3, fig. 5.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 46, pl. 23, figs. 4, 7.

A common Hyperammina species, ranging between 400 to 3210 m, more commonly from 500 to 2200 m. It is commonly found with the proloculus intact. Its test is one of the smoothest of the Hyperammina species found on the Slope. See pl. 2, fig. 4.

Hyperammina elongata Brady, 1878, Ann. Mag. Nat. Hist., ser. 5, vol. 1, p. 433, pl. 20, fig. 2a, b only.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 46, pl. 23, fig. 8.

Common from 390 to 3210 m, more abundant between 2000 and 2400 m. Proloculus is usually broken off; the wall is extremely rough textured. See pl. 2, fig. 2.

Hyperammina fragilis Höglund, 1947, Zool. Bidr. Uppsala, Bd. 26, p. 71; p. 69, tfs. 33-42.

Source: Höglund, 1947, *ibid.*

A very fine walled species with a distinctively tapered and curved tubular chamber, common from 390 to 2200 m, numbers highest between 500 and 1200 m. depth. See pl. 2, fig. 3.

Hyperammina friabilis Brady 1884, Rep. Voy. Challenger, Zool. (9), p. 258, pl. 23, figs. 1-3, 5, 6.

This rare species consists usually of only the proloculus. Only two specimens were found on the Slope, at 743 and 1550 m. The thin, fine grained wall structure distinguishes this species from H. subnodosa. See pl. 1, fig. 6.

Hyperammina laevigata Wright, 1891, Proc. Roy. Irish Acad., ser. 3, vol. 1, p. 466, pl. 20, fig. 1.

Source: LeRoy & Hodgkinson, 1975, *Micropaleo.*, vol. 21, no. 4, p. 434, pl. 1, fig. 9.

This is a common species found from 530 to 3000 m. It is usually found with proloculus attached, making it easily distinguishable from Bathysiphon rufus. See pl. 1, fig. 7.

Hyperammina subnodosa Brady, 1884, Rep. Voy. Challenger, Zool. (9), p. 259, pl. 23, figs. 11-14.

Source: Barker, 1960, Soc. Econ. Paleontol. & Mineral., Spec. Publ. 9, pl. 23, figs. 11-14.

The most abundant of the Hyperammina species as well as the largest, often reaching 5 mm or more in length. The proloculus is rarely found intact, but is very distinctive. H. subnodosa ranges from 390 to 3210 m, being more abundant above 1200 m. See pl. 2, fig. 1.

Genus Saccorhiza Eimer & Fickert, 1899

Saccorhiza ramosa (Brady)

- Hyperammina ramosa Brady, 1879, Quart. Jour. Micr. Sci., vol. 19, n.s., p. 33, pl. 3, figs. 14, 15.
- Saccorhiza ramosa (Brady) Eimer & Fickert, 1899, Zeitschr. Wiss. Zool., vol. 65 (4) p. 670.

Source: Barker, 1960, Soc. Econ. Paleontol. & Mineral., Spec. Publ. 9, p. 46, pl. 23, figs. 15-19.

A common species, found from 390 to 3210 m, being more abundant from 743 to 2400 m. The amount of spicular material is extremely variable from specimen to specimen. See pl. 1, fig. 5.

Saccorhiza sp. cf. S. ramosa (Brady) var.

This species most closely resembles Saccorhiza ramosa, and ranges from 800 to 3210 m, its numbers peaking at about 2200 m. It has a slender, angularly branching test, composed of a mixture of sand and sponge spicules, most of which are attached parallel to the test axis instead of at right angles. See pl. 2, fig. 7.

Subfamily BOTELLININAE Chapman & Parr, 1936

Genus Botellina Carpenter, Jeffreys & Thomson, 1870

Botellina labyrinthica Brady, 1881, Quart. Jour. Micr. Sci., n.s., vol. 21, p. 48

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 60, pl. 29, figs. 8-18.

Ranging from 400 to 3210 m, this common species is more abundant from 600 to 2000 m. The specimens are larger than the type, often reaching 5 mm in length. See pl. 3, fig. 7.

Subfamily DENDROPHRYINAE Haeckel, 1894

Genus Dendrophrya T.S. Wright, 1861

Dendrophrya arborescens (Norman)

- Psammatodendron arborescens Norman, 1881,
Norpod.-Exped. inder Jahren, 1872-74, vol. XIII, p.
98, no. 13.
- Dendrophrya arborescens (Norman) Cushman, 1917,
U.S. Nat. Mus. Proc., vol. 51, no. 2172, p. 652.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9,
p. 58, pl. 28, figs. 12, 13.

A species ranging from 400 to 3210 m, with its highest abundance between 500 and 2200 m. See pl. 1, fig. 10.

Family SACCAMMINIDAE Brady, 1884

Subfamily PSAMMOSPHAERINAE Haeckel, 1884

Genus Psammosphaera Schulze, 1875

Psammosphaera fusca Schulze, 1875, Rhiz.-Jahresb. Comm. wiss. Unters.
deutsch. Meere Kiel Jahre, 1872-1873, p. 113, pl. 2, fig. 8.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9,
p. 46, pl. 23, figs. 1, 5-8.

This species ranges from 400 to 3000 m, and is most abundant from 400 to 1380 m. Most of the specimens were found attached to sandgrains. See pl. 3, fig. 4.

Genus Sorosphaera Brady, 1879

Sorosphaera confusa Brady, 1879, Quart. Jour. Micr. Sci., n.s., vol. 19, p. 28, pl. 4, figs. 18, 19.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 36, pl. 18, figs. 9, 10.

This rare species occurs scattered between 1000 and 2600 m, and is usually more than 1 mm across. See pl. 3, fig. 12.

Sorosphaera sp. cf. S. confusa Brady var.

This is a very small and uncommon species, very similar to S. confusa, but always around 0.07 mm in size. It was found at 1530 m. See pl. 20, fig. 27.

Subfamily SACCAMMININAE Brady, 1884

Genus Saccamina M. Sars, 1869

Saccamina atlantica (Cushman)

- Proteonina atlantica Cushman, 1944, Cushman Lab. Foram. Res., Spec. Publ. 12, p. 5, pl. 1, fig. 4.
- Saccamina atlantica (Cushman) Todd & Bronnimann, 1957, Cushman Found. Foram. Res., Spec. Publ. 3, p. 22, pl. 1, fig. 14.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 62, pl. 30, fig. 5.

This species ranges from 390 to 3210 m, with slightly greater abundance between 390 and 1550 m. The specimens tend to be small for the species. See pl. 3, fig. 2.

Saccammina socialis Brady, 1884, Rep. Voy. Challenger, Zool. (9), p. 255, pl. 18, figs. 18, 19.

Source: Brady, 1884, *ibid.*

Rare; scattered from 390 to 1550 m. See pl. 1, fig. 8.

Saccammina sphaerica Brady, 1871, Ann. Mag. Nat. Hist., ser. 4, vol. 7, p. 183.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 46, pl. 23, figs. 11-15, 17.

A small, common species, ranging from 390 to 3210 m, most commonly between 1400 and 2600 m. The presence of an aperture makes this form easily distinguishable from P. fusca. See pl. 3, fig. 3.

Saccammina sphaerica Brady var. anglica Cushman, 1918, U.S. Nat. Mus., Bull., vol. 104(1), p. 45.

Source: Cushman, 1918, *ibid.*

Scattered from 800 to 3210 m. at 3 stations; characterized by the long spicule used as a support for the test. See pl. 16, no. 9.

Saccammina sphaerica Brady var. catenula Cushman, 1917, U.S. Nat. Mus., Proc., vol. 51, no. 2172, p. 652.

Source: Cushman, 1917, *ibid.*

This large species is rare, occurring from 2560 to 2938 m. The specimens are usually 1 to 5 mm long, and attached irregularly to large sand grains. See pl. 3, fig. 1.

Genus Pelosina Brady, 1879

Pelosina didera (Loeblich & Tappan)

- Pelosinella didera Loeblich & Tappan, 1953,

Smithson. Misc. Coll., vol. 121, no. 7, p. 16, pl. 1, fig. 2.

- Pelosina didera (Loeblich & Tappan), Loeblich & Tappan, 1964, Treatise-Protista 2(1) C200, C201.

Source: Loeblich & Tappan, 1953, *ibid.*

Most of the Slope specimens are around 0.5 mm in size, and often irregular in shape. The range is from 1590 to 3000 m, and the species is never common. See pl. 3, fig. 9.

Genus Thurammina Brady 1879

Thurammina compressa Brady, 1879, Quart. Jour. Micr. Sci., n.s., vol. 19, p. 46, pl. 5, fig. 9.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 76, pl. 37, fig. 1.

A large, rare species, scattered between 1600 and 3000 m. See pl. 16, figs. 10, 11.

Thurammina faerleensis Höglund, 1948, Cushman Lab. Foram. Res., Cont., vol. 24, p. 45.

- T. sphaerica Höglund, 1947, Zool. Bidr., Uppsala, Bd. 26, p. 54, pl. 4, figs. 22-26.

Source: Höglund, 1947, *ibid.*

This small species occurs from 400 to 2200 m. It often collapses when it dries out. See pl. 3, fig. 8.

Thurammina papillata Brady, 1879, Quart. Jour. Micr. Sci., vol. 19, p. 45, pl. 5, figs. 4-8.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., p. 74, pl. 36, figs. 7-18.

This is the most common Thuramina on the Slope, ranging from 1380 to 3210 m. It is large, and is not often found in colonial form. See pl. 1, fig. 11.

Thuramina sp.

This occurred at only one station at 2718 m., and may be an aberrant T. compressa. See pl. 1b, fig. 12.

Subfamily HEMISPHAERAMMININAE Loeblich & Tappan, 1961

Genus Hemisphaerammina Loeblich & Tappan, 1957

Hemisphaerammina batalleri Loeblich & Tappan, 1957, U.S. Nat. Mus., Bull. 215, p. 224, pl. 72, fig. 3.

Source: Ellis & Messina, Catalogue of Foraminifera

This very small species is common between 390 to 2938 m, being most abundant from 400 to 1600 m. It is coarse grained for its size, and is usually attached to small quartz sand grains. See pl. 3, fig. 11.

Genus Sagenina Chapman 1900

Sagenina frondescens (Brady)

- Sagenella frondescens Brady, 1879, Quart. Jour.

Micr. Sci., n.s., vol. 19, p. 41, pl. 5, fig. 1.

- Sagenina frondescens (Brady) Chapman, 1900, J. Linn

Soc., Zool., vol. 28, no. 179, p. 4.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 56, pl. 28, figs. 14, 15.

A very rare species on the Slope, found at one station at 2758 m.
See pl. 16, fig. 13.

Genus Tholosina Rhumbler, 1895

Tholosina bulla (Brady)

- Placopsilina bulla Brady, 1881, Quart. Jour. Micr. Sci., vol. 21, n.s., p. 51.
- Tholosina bulla (Brady) Cushman, 1910, U.S. Nat. Mus., Bull. 71, pt. 1, p. 49, tf. 55.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 72, pl. 35, figs. 16, 17.

This is a small attached species, uncommon, found from 743 to 3210 m, and is distinguished from Crithionina and Hemisphaerammina by its aperture. See pl. 16, fig. 14.

Tholosina vescicularis (Brady)

- Placopsilina vescicularis Brady, 1879, Quart. Jour. Micr. Sci., vol. 19, n.s., p. 51, pl. 5, fig. 2.
- Tholosina vescicularis (Brady) Rhumbler, 1895, K. Ges. Wiss. Göttingen, Math. Physik Kl., Nachr., Heftl, p. 82.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 72, pl. 35, figs. 18, 19.

This attached species is rare on the Slope, found at only 2 stations at 2200 and 2400 m.

Tholosina sp.

This is a thick walled, white form, very fine-grained, found attached to pebbles or large foraminifera, at depths below 1000 m.

Not illustrated.

Genus Colonammina Moreman, 1930Colonammina sp.

This is a small, attached species, forming chains of chambers on rock surfaces, or occurring in irregular colonies. The mamillate aperture on each chamber is typical of this genus. It is found from 2200 to 2938 m. See pl. 16, fig. 16.

Subfamily DIFFUSILININAE Loeblich & Tappan, 1964

Genus Crithionina Goës, 1894

Crithionina goesi Höglund, 1947, Zool. Bidr. Uppsala, Bd 26, p. 36, pl. 3, figs. 1-6; p. 32, tf. 8.

Source: Höglund, 1947, *ibid.*

A rare, attached species, ranging from 400 to 2400 m, usually above 1400 m. It seems to prefer Hyperammina and Rhabdammina species for attachment. It is large, and has a smooth surface, cream or tan in color. See pl. 16, fig. 17.

Crithionina pisum Goës, 1896, Bull. Mus. Comp. Zool., vol. 29, no. 1, p. 24, pl. 2, figs. 1, 2.

Source: Cushman, 1910, U.S. Nat. Mus. Bull. vol. 71, pt. 1, p. 55, 56.

Not common, C. pisum is an attached species usually, and is irregular in shape, with a sugary texture. It also prefers Hyperammina and Rhabdammina for attachment. See pl. 3, fig. 5.

Crithionina pisum Goës var. hispida Flint, 1897, Rept. U.S. Nat. Mus. (1899), p. 267, pl. 6, fig. 2.

Source: Cushman, 1910, U.S. Nat. Mus., Bull. 71 no. 1, p. 56, tf.

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This is the most common of the Crithionina species on the Slope. It ranges from 400 m down, and is free, or attached to Hyperammina or Rhabdammina species usually. Its radiating sponge spicules make it easily identifiable. See pl. 3, fig. 6.

Family AMMODISCIDAE Reuss, 1862

Subfamily AMMODISCINAE Reuss, 1862

Genus Ammodiscus Reuss, 1862

Ammodiscus planus Höglund, 1947, Zool. Bidr. Uppsala, pl. 8, figs. 2, 3; pl. 28, figs. 17, 18.

Source: Höglund, 1947, *ibid.*

This species is very rare, being found at only one station at 2718 m. All specimens were quite small. See pl. 16, figs. 18, 19.

Genus Glomospira Rzehak, 1885

Glomospira charoides (Jones & Parker)

- Trochammina squamata charoides Jones & Parker, 1860, Geol. Soc. London, Quart. Jour., vol. 16, p. 304.

- Ammodiscus charoides (Jones & Parker) Brady, 1884,
Rept. Voy. Challenger, Zool. (9), pl. 38, figs.
10-16.
- Glomospira charoides (Jones & Parker) Cushman, 1918,
U.S. Nat. Mus., Bull. 104 (1)

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9,
p. 78, pl. 38, figs. 10-16.

This species is common from 800 to 3210 m, and is most often found
from 1462 to 2000 m. See pl. 4, fig. 2.

Glomospira gordialis (Jones & Parker)

- Trochammina squamata gordialis Jones & Parker, 1860,
Quart. J. Geol. Soc. London, vol. 16, p. 304.
- Glomospira gordialis (Jones & Parker) F. Parker,
1952, Bull. Mus. Comp. Zool., vol. 106, pt. 9, p.
398, pl. 2, fig. 6.

Source: F. Parker, 1952, *ibid.*

This species was found scattered from 1200 to 2800 m. It is rare
on the slope. See pl. 4, fig. 1.

Subfamily TOLYPAMMININAE Cushman, 1928

Genus Tolypammina Rhumbler, 1895

Tolypammina vagans (Brady)

- Hyperammina vagans Brady, 1879, Quart. Jour. Micr.
Sci., vol. 19, n.s., p. 33, pl. 3, fig. 5.
- Tolypammina vagans (Brady) Rhumbler, 1895, Nachr.
K. Ges. Wiss. Göttingen, p. 83.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 48, pl. 24, figs. 1-9.

A common Slope species, ranging from 1590 to 3000 m, most often found between 2560 and 3000 m, it is attached to pebbles or large foraminifera, and sometimes attaches a series of sand grains together. See pl. 4, fig. 3.

Genus Ammolagena Eimer & Fickert, 1899

Ammolagena clavata (Parker & Jones)

- Trochammina irreguaris clavata Parker & Jones, 1860, Quart. Jour. Geol. Soc. London, vol. 16, p. 304.
- Ammolagena clavata (Parker & Jones) Eimer & Fickert, 1899, Zeitschr. wiss. Zool., vol. 65, p. 673.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 84, pl. 41, figs. 12-16.

An attached species ranging from 2500 to 3000 m, it prefers small pebbles and large sand grains as a substrate. The large prolocular chamber and lack of basal wall in the tubular chamber distinguish it from Tolypammina. See pl. 1, fig. 12.

Superfamily LITUOLACEA de Blainville, 1825

Family HORMOSINIDAE Haeckel, 1894

Subfamily ASCHEMONELLINAE Eimer & Fickert, 1899

Genus Aschemonella Brady, 1879

Aschemonella catenata (Norman)

- Astrorhiza catenata Norman, 1877, Roy. Soc. London, Proc., vol. 25, p. 213.

- Aschemonella catenata (Norman) Brady, 1884, Rep.
Voy. Challenger, Zool. (9)., pl. 27, figs. 1, 2.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9,
pl. 27, figs. 1, 2, 3 ?

Very rare on the Slope; only 2 specimens, at 2938 m. See pl. 3,
fig. 10.

Subfamily HORMOSININAE Haeckel, 1894

Genus Reophax de Montfort, 1808

Reophax adunca Brady, 1882, in Tizard & Murray, Roy. Soc. Edinburgh, Proc.,
vol. 11, p. 715.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9,
p. 64, pl. 31, figs. 23-26.

Very rare, occurring at only one station at 2758 m. See pl. 16,
fig. 20.

Reophax agglutinatus Cushman, 1913, U.S. Nat. Mus., Proc., vol. 44, no.
1973, p. 637, pl. 79, fig. 6.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9,
p. 62, pl. 30, fig. 13

One specimen, at 506 m, found on the slope, See pl. 16, fig. 21.

Reophax arctica Brady, 1881, K. Akad. Wiss. Wien, math-naturw. Cl.,
Denkschr., Wien, Osterreich, Bd. 43, Abth. 2, p. 99, pl. 2, fig. 2.

Source: Loeblich & Tappan, 1953, Smithson. Misc. Coll., vol. 121,
no. 7, p. 21, pl. 1, figs. 19, 20.

Rare; ranging from 500 to 530 m. See pl. 16, fig. 22.

Reophax bacillaris Brady, 1881, Quart-Jour. Micr. Sci., n.s. vol. 21, p.
49.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 62, pl. 30, figs. 23, 24.

This species is found below 2560m, and is never abundant. See pl. 2, fig. 12.

Reophax bilocularis Flint, 1899, U.S. Nat. Mus., Ann. Rept., 1897, pt. 1, p. 273, pl. 17, fig. 2.

Source: Cushman, 1910, U.S. Nat. Mus. Bull. 71, pt. 1, p. 90, tfs. 127 a, b.

Present from 2000 to 3210m, but never common, and seldom found with the apertural neck intact. See pl. 4, fig. 4.

Reophax catenata Høglund, 1947, Zool. Bidr. Uppsala, Bd 26, p. 98, tfs. 75, 76, p. 99.

Source: Ellis & Messina, Catalogue of Foraminifera

This small delicate species ranges from 390 to 1530m, but is most common between 500 and 600m. See pl. 2, fig. 18.

Reophax dentaliniformis Brady, 1881, Quart-Jour. Micr. Sci., vol. 21, n.s., p. 49.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 62, pl. 30, figs. 21, 22.

A rare species on the Slope, scattered from 800 to 3000m. See pl. 16, fig. 23.

Reophax difflugiformis Brady, 1879, Quart. Jour. Micr. Sci., n.s., vol. 19, p. 51, pl. 4, figs. 3 a, b.

Source: Brady, 1879, *ibid.*

A common and very variable species, ranging down from 390 to

3210m., and abundant from 1462 to 1590m. Probably a Saccamina rather than a Reophax. See pl. 4, fig. 6.

Reophax distans Brady, 1881, Quart. Jour. Micr. Sci., vol. 21, p. 50.

Source: Brady, 1881, *ibid.*

A rare but distinctive species, found from 1600 to 2400 m. See pl. 16, fig. 24.

Reophax fusiformis (Williamson)

- Proteonina fusiformis Williamson, 1858, Rec. Foram. Great Britain, p. 1, pl. 1, fig. 1.
- Reophax fusiformis (Williamson) Brady, 1884, Rep. Voy. Challenger, Zool. (9), p. 290, pl. 30, figs. 7-11.
- Reophax curtus Cushman, 1920, U.S. Nat. Mus., Bull. 104 (2) p. 8, pl. 2, figs. 2, 3.
- Reophax scorpiurus Balkwill & Wright, 1885, Trans. Roy. Irish Acad., vol. 28, Sci., p. 329, pl. 1B, fig. 5.
- Reophax subfusiformis Earland, 1933, Discovery Repts., vol. 7, p. 74, pl. 2, figs. 16-19.
- Reophax regularis Höglund, 1947, Zool. Bidr. Uppsala, Bd 26, p. 86, pl. 9, figs. 11, 12; pl. 26, figs. 37-43; pl. 27, figs. 24-27.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 62, pl. 30, figs. 7-12, 14-17.

Common, from 390-3210 m, and most abundant from 500 to 600 m. This is an extremely variable species with a large number of forms. See pl. 2, fig. 9.

Reophax gracilis (Kiaer)

- Nodulina gracilis Kiaer, 1900, Rep. Norwegian Fish Mar. Inv., vol. 1, no. 7, p. 24, 2 tfs.
- Reophax gracilis (Kiaer) Parker, 1952, Bull. Mus. Comp. Zool. Vol. 106(9), p. 397, pl. 2, fig. 1.

Source: F. Parker, 1952, *ibid.*

Very rare on the Slope; only one specimen at 743m.

Reophax guttifer (Brady)

- Lituola guttifer Brady, 1881, Quart. Jour. Micr. Sci., n.s., vol. 21, p. 49.
- Reophax guttifer (Brady) Brady, 1884, Rep. Voy. Challenger, Zool. (9), p. 295, pl. 31, figs. 10-15.

Source: Brady, 1884, *ibid.*

A common, but never abundant, species ranging below 1800m. See pl. 2, fig. 11.

Reophax hispidus Cushman, 1920, U.S. Nat. Mus., Bull. 104 (2) p. 24, pl. 5, fig. 7.

Source: Cushman, 1920, *ibid.*

Rare on the Slope, found only at one station at 1600m. See pl. 16, fig. 26.

Reophax nodulosa Brady, 1879, Quart. J. Micr. Sci., n.s., vol. 19, p. 52, pl. 4, figs. 7, 8.

Source: Brady 1879, *ibid.*

A rare Slope species, scattered from 506 to 3000m.

Reophax pilulifera Brady, 1884, Rep. Voy. Challenger, Zool. (9), p. 292, pl. 30, figs. 18-20.

Source: Brady, 1884, *ibid.*

Rare; scattered from 2200 to 2718m. See pl. 16, fig. 27.

Reophax rostrata Höglund, 1947, *Zool. Bidr. Uppsala*, Bd. 26, p. 87, pl. 9, fig. 8; pl. 26, figs. 44-51; pl. 27, figs. 20-23; p. 89, figs. 57-60.

Source: Höglund, 1947, *ibid.*

Rare on the Slope, found at 1200m. See pl. 4, fig. 5.

Reophax scottii Chaster, 1892, *Southport Soc. Nat. Sci., Rept., Append.*, p. 57, pl. 1, fig. 1.

Source: F. Parker, 1952, *Bull. Mus. Comp. Zool.*, vol. 106, no. 9, p. 397, pl. 2, fig. 2.

Ranging from 390 to 2758m, this species is never common, but is more often found above 600m. See pl. 2, fig. 17.

Reophax turbo group

- Reophax cylindrica Brady, 1884, *Rep. Voy. Challenger*, *Zool.* (9), p. 299, pl. 32, figs. 7-9.
- Reophax sabulosus Brady, 1882, *Roy. Soc. Edinburgh, Proc.*, Vol. 11, p. 715.
- Reophax turbo Goës, 1896, *Bull. Mus. Comp. Zool.*, vol. 29, no. 1, p. 29, pl. 1, figs. 2-3.

These species are put together in a group, without distinction, for several reasons. They are all rare and scattered in distribution below 800m. All are large, very similar in overall structure, and are possibly all subspecies of the same species. See pl. 2, fig. 19; pl. 16, fig. 28.

Reophax variants

Found at one 77034 station was a foraminifera resembling Reophax guttifera, but with a network of cemented sponge spicules resembling

scaffolding, supported away from the test by vertical spicules, and forming a second wall to each chamber.

This second wall structure is also seen in R. turbo, and is closely approached by R. sabulosus and R. cylindrica. These variants and R. turbo may represent another genus entirely because of this double wall.

Information on double walled arenaceous species is lacking in the available literature, so a new genus is not being considered at this time. See pl. 20, figs. 24, 25.

Genus Hormosina Brady 1879

Hormosina carpenteri (Brady)

- Trochammina (Hormosina) carpenteri Brady, 1881,
Quart. J. Micr. Sci., n.s., vol. 21, p. 51.
- Hormosina carpenteri (Brady) Brady, 1884, Rep. Voy.
Challenger, Zool. (9), pl. 39, figs. 14-18.

Source: Brady, 1884, *ibid.*

Ranging from 1600 to 3000m, this species is never abundant, occurring at only 5 stations. See pl. 16, fig. 29.

Hormosina globulifera Brady, 1879, Quar. J. Micr. Sci, n.s., vol. 19, p. 60, pl. 4, figs. 4, 5.

Source: Brady, 1879, *ibid.*

This is the most common Hormosina, usually greater than 1 mm in size, and ranging from 1200 to 3210m. See pl. 4, fig. 7.

Hormosina ovicula Brady var. mexicana Cushman, 1920, U.S. N. Mus. Bull. 104(2), p. 29, pl. 6, fig. 3.

Source: Cushman, 1920, *ibid.*

This is a fairly common, smaller Hormosina, ranging from 743 to 3000m, with greater abundance between 1600 and 2600m. See pl. 3, fig. 13.

Family RZEHAKINIDAE Cushman, 1933

Genus Silicosigmoilina Cushman & Church, 1929

Silicosigmoilina sp. cf. S. groenlandica (Cushman)

- Quinqueloculina fusca groenlandica Cushman, 1933, Smithson. Misc. Coll. Vol. 89, no. 9, p. 2, pl. 1, fig. 4.
- Silicosigmoilina groenlandica (Cushman) Loeblich & Tappan, 1953, Smithson, Misc. Coll., vol. 121, no. 7, p. 38, pl. 4, figs. 7-9.

This is a rare form found at 2 stations, 1200 to 3000m depth. It is identical to S. groenlandica except that it is soluble in Hydrochloric acid. See pl. 17, figs. 1, 2.

Family LITUOLIDAE de Blainville, 1825

Subfamily HAPLOPHRAGMOIDINAE May c, 1952

Genus Haplophragmoides Cushman, 1910

Haplophragmoides brady; (Robertson)

- Trochammina brady; Robertson, 1891, Ann. Mag. Nat. Hist. ser. 6, vol. 7, p. 388.
- Haplophragmoides brady; (Robertson) Phleger & Parker, 1951, G.S. Am. Mem. 46, pt. II, p., pl. 1, fig. 10.

Source: Phleger & Parker, 1951, *ibid.*

This small, smooth walled species occurs from 600 to 3000m. It is distinguished from Cribrostomoides wiesneri by its interiomarginal aperture. See pl. 4, fig. 10.

Haplophragmoides sp. cf. H. canariensis (d'Orbigny)

- Nonionina canariensis d'Orbigny, in Barker, Webb & Berthelot, 1839, *Hist. Nat. Iles Canaries*, vol. 2 (2) *Foram.*, p. 128, pl. 2 figs. 33, 34.
- Haplophragmoides canariensis (d'Orbigny) Cushman, 1910, *U.S. Nat. Mus. Bull.* 71 (1) p. 101.

Source: Cushman, 1910, *ibid.*

This species is very similar to H. canariensis, except that its chambers are more inflated. It ranges from 1400 to 3210m, and is more common below 2560m. See pl. 4, fig. 9.

Genus Adercotryma Loeblich & Tappan, 1952

Adercotryma glomerata (Brady)

- Lituola glomerata Brady, 1878, *Ann. Mag. Nat. Hist.*, serv. 5, vol. 1, p. 433, pl. 20, figs. 1 a-c
- Adercotryma glomerata (Brady) Loeblich & Tappan, 1952, *J. Washington Acad. Sci.*, Vol. 42, p. 141, figs. 1-4.

Source: Loeblich & Tappan, 1953, *Smithson, Misc. Coll.* vol. 121, no. 7, p. 26, pl. 8, figs. 1-4.

This is a common species ranging from 390 to 3210m. It is most abundant from 390 to 800m, and is a dominant species in this zone. The

specimens tend to be small for this species, particularly in deeper water.

See pl. 4, fig. 8.

Genus Cribrostomoides Cushman, 1910

Cribrostomoides jeffreysi (Williamson)

- Nonionina jeffreysi Williamson, 1858, Rec. Foram.
Great Britain, p. 34, figs. 72, 73.

Source: Vilks, 1969, Micropaleo. vol. 15, no. 1, p. 44, pl. 1,
fig. 17.

A medium sized, fairly common species, ranging from 390 to 2743m,
but found most commonly above 600m. See pl. 6, fig. 6.

Cribrostomoides ringens (Brady)

- Trochammina ringens Brady, 1879, Quart. J. Micr.
Sci., n.s., vol. 19, p. 57, pl. 5, fig. 12.
- Cribrostomoides ringens (Brady) Loeblich & Tappan,
1964, Treatise-Protista 2 (1) C225.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min, Spec. Publ. 9,
p. 82, pl. 40, figs. 17, 18.

A large, fragile species ranging from 1550 to 3000m, most specimens
found between 2600 and 3000m. See pl. 4, fig. 14.

Cribrostomoides scitulus (Brady)

- Lituola (Haplophragmium) scitulum Brady, 1881,
Quart. J. Micr. Sci., n.s., vol. 21, p. 50.
- Cribrostomoides scitulus (Brady) Loeblich & Tappan,
1964, Treatise-Protista 2 (1) c 225.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 70, pl. 34, figs. 11-13.

Common but not abundant, this large species ranges from 600-3210m. See pl. 4, fig. 12.

Cribrostomoides subglobosum (Sars)

- Lituola subglobosa G. Sars, 1871, Forh. Vid. Selsk. Christiania, p. 253.
- Cribrostomoides subglobosa (Sars) Loeblich & Tappan, 1964, Treatise-Protista 2 (1) C225.

Source: Loeblich & Tappan, 1964, *ibid.* fig. 136- 1, 2.

This large species is fairly common from 1550 to 3210m. Its coiling is sometimes irregular enough to make it difficult to distinguish from Recurvoides contortus. See pl. 4, fig. 13.

Cribrostomoides wiesneri (Parr)

- Labrospira wiesneri Parr, 1950, Brit.-Austr.-N. Zeal. Antarct. Res. Exp. 1929-31, Rep. ser. B (Zool.) vol. 5, pt. 6, p. 272, pl. 4, figs. 25, 26.
- Cribrostomoides wiesneri (Parr) Loeblich & Tappan, 1964, Treatise-Protista 2 (1) C225.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 42, pl. 40, figs. 14, 15.

Found from 530 to 2938m, this species is most common from 1400 to 1530m. See pl. 4, fig. 11.

Genus Recurvoides Earland, 1934

Recurvoides contortus Earland, 1934, Discovery Repts., vol. 10, p. 91, pl. 10, figs. 7-9.

Source: LeRoy & Hodgkinson, 1975, *Micropaleo.* vol. 21, no. 4, p. 436, pl. 3, fig. 20-21.

Never common, ranging from 390-3000m, usually greater than 1 mm in size. See pl. 5, fig. 1.

Recurvoides trochamminiforme Höglund, 1947, *Zool. Bidr. Uppsala*, Bd 26, p. 149, pl. 11, figs. 7, 8; pl. 30, fig. 23; p. 138, tf. 120.

Source: Höglund, 1947, *ibid.*

Rare, scattered between 506 and 2600 m. Good specimens are hard to find. See pl. 17, figs. 3, 4.

Recurvoides turbinatus (Brady)

- Haplophragmium turbinatum Brady, 1881, *Quart. J.*

Micr. Sci., n.s., vol. 21, p. 50.

- Recurvoides turbinatus (Brady) F. Parker, 1952,

Bull. Mus. Comp. Zool., Vol. 106 (9) p. 402, pl. 2, figs. 23, 24.

Source: F. Parker, 1952, *ibid.*

Not common on the Slope, found only in the 400 to 530 m range. See pl. 6, figs. 7, 8.

Subfamily CYCLAMMININAE Marie, 1941

Genus Cyclammina Brady, 1879

Cyclammina cancellata Brady, 1879, *Quart. J. Micr. Sci.*, n.s., vol. 19, p.

62

Source: Brady, 1879, *ibid.*

This large, rare species ranges from 1000 to 2400 m depth. See pl. 5, fig. 2.

Subfamily LITUOLINAE de Blainville, 1825

Genus Ammobaculites Cushman, 1910

Ammobaculites agglutinans (d'Orbigny)

- Spirolina agglutinans d'Orbigny, 1846, *Foram. Foss.*
Vienne, p. 137, pl. 7, figs. 10-12.
- Ammobaculites agglutinans (d'Orbigny) Lys, 1949,
Fichier Alcide d'Orbigny no. 871.

Source: Barker, 1960, *Soc. Econ. Paleontol. & Min., Spec. Publ. 9*,
p. 66, pl. 32, figs. 19-21, 24-26.

This species is fairly abundant 2500 to 3000m. It is large, and
often lacks the uniserial portion of the test. See pl. 5, fig. 3.

Ammobaculites exiguus Cushman & Bronnimann, 1948, *Contr. Cushman Lab.*
Foram. Res., vol. 24 (2), p. 38, pl. 7, figs. 7, 8.

Source: F. Parker, 1952, *Bull. Mus. Comp. Zool.*, vol. 106 (10),
p. 443, pl. 1, figs. 16, 17.

This uncommon species was found only at depths below 2400 m.
See pl. 17, fig. 5.

Genus Ammomarginulina Wiesner, 1931

Ammomarginulina foliacea (Brady)

- Haplophragmium foliaceum Brady, 1881, *Quart. J.*
Micr. Sci., n.s., vol. 21, p. 50
- Ammomarginulina foliacea (Brady) Cushman, 1933,
Cushman Lab. Foram. Res., Spec. Publ. 4, pl. 10,
figs. 6a, b.

Source: Barker, 1960, *Soc. Econ. Paleontol. & Min., Spec. Publ. 9*,
p. 68, pl. 33, figs. 20-25.

Found from 2500 to 3000 m , this fairly common species is very distinctive. See pl. 5, fig. 4.

Ammomarginulina tenuimargo (Brady)

- Haplophragmium tenuimargo Brady, 1882, Proc. Roy. Soc. Edinburgh, vol. 11, p. 715.
- Ammomarginulina tenuimargo (Brady) Cushman, 1910, U.S. Nat. Mus. Bull. 71 (1) p. 117, figs. 100-183.

Source: Cushman, 1910 *ibid.*

This large, fragile species is usually found damaged. It occurs from 1000 m to 3210, most commonly around 2000 m. See pl. 5, fig. 5.

Family TEXTULARIIDAE Ehrenberg, 1838

Subfamily SPIROPECTAMMININAE Cushman, 1927

Genus Spiropectammina Cushman, 1927

Spiropectammina biformis (Parker & Jones)

- Textularia agglutinans biformis Parker & Jones, 1865, Philos. Trans. Roy. Soc., vol. 155, p. 370, pl. 15, figs. 23, 24.
- Spiropectammina biformis (Parker & Jones) Lacroix, 1932, Bull. Inst. Ocean. Monaco, no. 591, p. 5, fig. 1.

Source: Loeblich & Tappan, 1953, Smithson. Misc. Coll., vol. 121, no. 7, p. 34, pl. 4, figs. 1-6.

An abundant species on the Slope, found from 390-3210 m, and most frequently from 390 to 530 m. Specimen size decreases slightly as depth increases. See pl. 6, fig. 3.

Subfamily TEXTULARIINAE Ehrenberg, 1838

Genus Textularia DeFrance in de Blainville, 1824.

Textularia agglutinans d'Orbigny, 1839, in de la Sagra, Hist. Phys. Pol. Nat. Cuba, Foram., p. 136, pl. 1, figs. 17, 18, 32-34.

Source: Cushman, 1911, U.S. Nat. Mus. Bull. 71, pt. 2, p. 9, tf. 10.

Only one specimen of this species was found, at 2800 m. See pl. 17, fig. 6.

Textularia aspera Brady, 1882, Roy. Soc. Edinburgh, Proc., vol. 11 (111) p. 715.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 90, pl. 44, figs. 9-13.

This very small, attached species was found at 3 stations from 2560 to 3000 m. See pl. 17, figs. 7, 8.

Textularia earlandi Phleger, 1952, Contr. Cushman Found. Foram. Res., vol. 3, p. 86, pl. 13, figs. 22, 23.

- Textularia tenuissima Earland, 1933, Discovery Repts. vol. 7, p. 95, pl. 3, figs. 21-30.

Source: Feyling-Hanssen, 1964, Norges Geol. Undersøkelse, NR225, p. 238, pl. 3, figs. 9-10.

A small elongate species, T. earlandi is sometimes difficult to distinguish from S. biformis. It ranges from 390-3210 m, being most abundant 1600 to 2400 m. See pl. 5, fig. 6.

Textularia flintii Cushman, 1911, U.S. Nat. Mus. Bull. 71 (2) p. 21, figs. 36 a, b.

Source: Cushman, 1911, ibid.

This large, robust species is rare, but distinctive. It is found from 2560 to 2938 m. See pl. 17, fig. 9.

Textularia kattagatensis Höglund, 1948, Cushman Lab. Foram. Res. Spec. Publ. vol. 24, p. 46.

- Textularia gracillima Höglund, 1947, Zod. Bidr. Uppsala, Bd 26, p. 180, pl. 13, fig. 2; p. 173, tf. 156.

Source: Ellis & Messina, Catalogue of Foraminifera

This rare species ranges from 500-2200 m. It is small and fragile. See pl. 17, fig. 10.

Textularia torquata F. Parker, 1952, Bull. Mus. Comp. Zool., vol. 106 (9), p. 403, pl. 3, figs. 9-11.

Source: F. Parker, 1952, *ibid.*

Common on the upper Slope from 390 to 1550 m, rarely occurring deeper. See pl. 6, fig. 4.

Subfamily PSEUDOBOLIVININAE Wiesner 1931

Genus Siphotextularia Finlay, 1939

Siphotextularia rolshauseni Phleger & Parker, 1951, Geol. Soc. Amer. Mem. 46 (2), p. 4, pl. 1, figs. 23, 24.

Source: Phleger & Parker, 1951, *ibid.*

A small, coarsely agglutinated species differing from Textularia in its apertural neck. Ranges from 2560 to 3000 m; never common. See pl. 5, fig. 7.

Family TROCHAMMINIDAE Schwager, 1877

Subfamily TROCHAMMININAE Schwager 1877

Genus Trochammina Parker & Jones, 1859

Trochammina advena Cushman, 1922, Carnegie Inst. Washington, publ. 311, p. 20, pl. 1, figs. 2-4.

Source: Schnitker, 1971, Tulane Studies in Geol. & Paleo., vol. 8 (4), pl. 1, figs. 16 a-c.

This is a rare species, found at 3 stations, 600 to 3000 m deep.
See pl. 8, fig. 3.

Trochammina bullata Takayanagi 1960, Tohoku Univ. Sci. Repts. ser. 2 (Geol.) vol. 32, no. 1, p. 85, pl. 4, figs. 1 a-c.

Source: Ellis & Messina, Catalogue of Foraminifera.

A common species, ranging 390 to 3210 m, more frequent at 1000 m and at 2743 m. It varies in size from quite small, around 0.06 mm, to more than 1 mm. See pl. 7, fig. 1.

Trochammina compacta Parker, 1952, Bull. Mus. Comp. Zool., vol. 106 (10) p. 458, pl. 2, figs. 13-15.

Source: Parker, 1952, *ibid.*

A tiny, compressed form, found at only one station at 3000 m.

See pl. 17, figs. 11, 12.

Trochammina globigeriniformis (Parker & Jones)

- Lituola nautiloidea globigeriniformis Parker & Jones, 1865, Trans. Roy. Soc. London, vol. 155, p. 407, pl. 15, figs. 46, 47.

- Trochammina globigeriniformis (Parker & Jones) Cushman, 1910, U.S.N.M. Bull. 71 (1) p. 124, ff. 193-195.

Source: Cushman, 1910, *ibid.*

A common species, from 390-3210, particularly high numbers from 600-1200 m, and again from 2400 to 3000 m. Usually the tests are quite small. See pl. 7, figs. 2, 3.

Trochammina sp.cf. T. inflata (Montagu)

- Nautilus inflatus Montagu, 1808, *Test. Brit.*, p. 81, pl. 18, fig. 3.
- Trochammina inflata (Montagu) Carpenter, Parker & Jones, 1862, *Intr. Foram.*, p. 141, pl. 11, fig. 5.

Source: Feyling-Hanssen et al., 1971, *Bull. Geol. Soc. Denmark*, Vol. 21 (2-3) p. 190, pl. 1, figs. 9-12.

Found from 390 to 2200 m, and particularly frequent between 500 and 1590 m, this form seems to be very similar to the inshore T. inflata.

See pl. 7, fig. 4.

Trochammina macrescens Brady, 1870, *Ann. Mag. Nat. Hist.*, ser. 4, vol. 6, p. 51, pl. 11, figs. 5 a-c.

Source: Phleger, Parker & Peirson, 1953, *Cushman Found. Foram. Res.*, Spec. Publ. 2, p. 15, pl. 3, figs. 7-8.

Only one specimen was found at 500 m; it was worn, and probably was transported in downslope. See pl. 17, figs. 13, 14.

Trochammina nana (Brady)

- Haplophragmium nana Brady, 1881, *Quart. J. Micr. Sci.*, vol. 21, p. 50.
- Trochammina nana (Brady) Cushman, 1920, *U.S.N.M. Bull.* 104(2) p. 80, pl. 17, fig. 1.

Source: Loeblich & Tappan, 1953, *Smithson. Misc. Coll.* 121 (7) p. 50, pl. 8, fig. 5.

This species ranges from 390 to 3000 m, and is frequently found between 390 and 1000 m. Specimens found between 100 and 150 m are small. See pl. 5, fig. 12.

Trochammina nitida Brady, 1881, *Quart. J. Micr. Sci.*, n.s., vol. 21, p.52.

Source: Barker, 1960, *Soc. Econ. Paleontol. & Min.*, Spec. Publ. 9, p. 84, pl. 41, figs. 5, 6.

Ranging from 500 to 3210 m, this species is not common except between 1408 and 2938 m. See pl. 8, fig. 5.

Trochammina quadriloba Höglund, 1948, *Contr. Cushman Lab. Foram. Res.* vol. 24, pt. 2, p. 46.

Source: Barker, 1960, *Soc. Econ. Paleontol. & Min.*, Spec. Publ. 9, p. 84, pl. 41, fig. 3.

A common species ranging from 390 to 3210 m, its numbers increase around 1000 to 1590 m. It can be difficult to distinguish from

T. globigeriniformis. See pl. 8, fig. 4.

Trochammina sp. cf. T. squamata Jones & Parker, 1860, *Quart. J. Geol. Soc.*, vol. 16, p. 304.

Source: Cushman, 1910, *U.S.N.M. Bull.* 71 (1), p. 120, tfs. 187 a, b.

This species is rare, scattered from 400 to 3000 m, most specimens being found between 400 and 600 m. See pl. 6, figs. 10, 11.

Genus Cystammina Neumayr, 1889

Cystammina pauciloculata (Brady)

- Trochammina pauciloculata Brady, 1879, Quart. J. Micr. Sci., vol.19, p. 58, pl. 5, figs. 13, 14.
- Cystammina pauciloculata (Brady) Galloway, 1933, Manual of Foraminifera, p. 106.

Source: Barker, 1960, Soc. Econ. Pal. & Min, Spec. Publ. 9, p. 84, pl. 41, figs. 1, 2.

This species is never abundant, ranging from 1462 to 3000 m, most common around 2400 m. Many specimens are greater than 1 mm in size, but some are as small as 0.10 mm. See pl. 5, fig. 8.

Genus Tiphotrocha Saunders, 1957

Tiphotrocha comprimata (Cushman & Bronnimann)

- Trochammina comprimata, Cushman & Bronnimann, 1948, Cushman Lab. Foram. Res., Contr., vol. 24 (2), p. 41, pl. 8, figs. 1-3.
- Tiphotrocha comprimata (Cushman & Bronnimann) Saunders, 1957, Smithson. Misc. Coll. 134 (5) p. 11, pl. 4, figs. 1-4.

Source: Parker et al., 1953, Cushman Found. Res., Spec. Publ. 2, p. 14, pl. 3, figs. 3, 4.

This rare species was found at 4 stations from 2400 to 3000 m in depth. See pl. 17, figs. 16, 17.

Genus Tritaxis Schubert, 1921

Tritaxis atlantica (F. Parker)

- Trochamminella atlantica Parker, 1952, Bull. Mus. Comp. Zool. Vol. 106 (9) p. 409, pl. 4, figs. 17-19.
- Tritaxis atlantica (Parker) Loeblich & Tappan, 1955, Smithson. Misc. Coll. 128(5) p. 19.

Source: Loeblich & Tappan, 1955, *ibid.*

This species was rare, found only at 3 stations, from 500 to 2800 m. See pl. 17, figs. 17, 18.

Tritaxis conica (Parker & Jones)

- Valvulina triangularis conica Parker & Jones, 1865, Philos. Trans. Roy. Soc. vol. 155, p. 406, pl. 15, fig. 27.
- Tritaxis conica (Parker & Jones) Barker, 1960, Soc. Econ. Paleontol. & Mineral., Spec. Publ. 9, p. 100, pl. 49, figs. 15, 16.

Source: Barker, 1960, *ibid.*

A rare species, scattered, from 2200 to 2800 m. See pl. 17, figs. 19, 20.

Tritaxis fusca (Williamson)

- Rotalina fusca Williamson, 1858, Rec. Foram. Great Britain, p. 55, pl. 5, figs. 114, 115.
- Tritaxis fusca (Williamson) Loeblich & Tappan, 1955, Smithson. Misc. Coll. 128 (5) p. 19.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, p. 100, pl. 49, figs. 13, 14.

This species is common from 2200 to 3210 m, being most abundant between 2560 and 2938 m. It is generally large, around 1 mm in size. See pl. 6, fig. 13.

Family ATAXOPHRAGMIIDAE Schwager, 1877

Subfamily VERNEUILININAE Cushman, 1911

Genus Verneuilinoides Loeblich & Tappan, 1949

Verneuilinoides europeum (Christiansen)

- Verneuilina europeum Christiansen, 1958, Nytt, Mag. Zool., Norway, vol. 6, p. 66.
- Verneuilinoides europeum (Christiansen)

Source: Ellis & Messina, Catalogue of Foraminifera.

This species does not fit the generic description of Verneuilina.

It lacks the sharp, triangular corners, and it is elongate and narrow rather than pyramidal. The roundness and shape are characteristic of Verneuilinoides to which genus Verneuilina europeum is herein assigned. (See also Loeblich & Tappan, 1964, Treatise - Protista 1 (1) C 268, C 273 for generic descriptions). See pl. 6, fig. 1.

Subfamily GLOBOTEXTULARIINAE Cushman, 1927

Genus Eggerella Cushman, 1933

Eggerella advena (Cushman)

- Verneuilina advena (Cushman, 1922, Contr. Can. Biol., no. 9, p. 141.
- Eggerella advena (Cushman) Cushman, 1937, Cushman Lab. Foram. Res., Spec. Publ. 8, p. 51, pl. 5, figs. 12-15.

Source: Loeblich & Tappan, 1953, Smithson. Misc. Coll. 121 (7) p. 36, pl. 3, figs. 8-10.

This species is not common on the slope, and is found only around

400 to 2000 m. It has been confused with Verneuilinoides europeum. See pl. 6, fig. 2.

Eggerella bradyi (Cushman)

- Verneuilina bradyi Cushman, 1911, U.S.N.M. Bull. 71 (2), p. 54, tf. 87 a-b; pl. 6, fig. 4.
- Eggerella bradyi (Cushman) Cushman, 1933, Cushman Lab. Foram. Res., Contr., vol. 9, p. 33.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Pub. 9, p. 96, pl. 47, fig. 4-7.

This species is not uncommon, from 1380 to 3210 m. Most specimens are usually in the 1 mm size range. See pl. 5, fig. 9.

Eggerella propinqua (Brady)

- Verneuilina propinqua Brady, 1884, Rep. Voy. Challenger, Zool. (9), p. 387, pl. 47, figs. 8-12 only.
- Eggerella propinqua (Brady) Cushman Lab. Foram. Res., Spec. Publ. 8, p. 50.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 96, pl. 47, figs. 8-12.

This rare species is in the 1 to 1.5 mm size range, and is found from 2200 to 2938 m. The apertural end is often distorted because of its habit of attachment to pebbles. See pl. 5, fig. 10.

Genus Karrerella Cushman, 1933

Karrerella apicularis (Cushman)

- Gaudryina apicularis Cushman, 1911, U.S.N.M. Bull.

71 (2) p. 69, 70, tf. 110.

- Karreriella apicularis (Cushman) Finlay, 1940,
Trans. Proc. Roy. Soc. New Zealand, vol. 49 (4), p.
450.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, p.
pl. 46, 94, figs. 17-19.

This small species is fairly common between 500 and 300 m, and is
most abundant between 1462 and 2200 m. Because of its size and shape, it
can be difficult to distinguish it from Verneuilina or Eggerella. See pl.
8, fig. 1.

Karreriella bradyi (Cushman)

- Gaudryina bradyi Cushman, 1911, U.S.N.M. Bull. 71
(2), p. 67, tf. 107.
- Karreriella bradyi (Cushman) Cushman, 1937, Cushman
Lab. Foram. Res., Spec. Publ. 8, p. 135.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9,
p. 94, pl. 46, figs. 1-4.

This species is commonly greater than 1 mm in size; from 1000 to
3000 m. See pl. 6, fig. 5.

Karreriella novangliae (Cushman)

- Gaudryina baccata novangliae (Cushman, 1922,
U.S.N.M. Bull. 104 (3) p. 76, pl. 13, fig. 4.
- Karreriella novangliae (Cushman), Cushman, 1937,
Cushman Lab. Foram. Res., Spec. Publ. 8, p. 136.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9,
p. 94, pl. 46, figs. 8-10.

A less common species than K. bradyi, found from 1400 to 3210 m. Usually more than 1 mm in size. See pl. 8, fig. 2.

Karrerella wrighti Cushman, 1936, Cushman Lab. Foram. Res., Spec. Publ. 6, p. 37, pl. 6, fig. 1.

Source: Ellis & Messina, Catalogue of Foraminifera.

Only one specimen was found at 2400 m. See pl. 17, fig. 21.

Subfamily VALVULININAE Berthelin, 1880

Genus Clavulina d'Orbigny, 1826

Clavulina humilis mexicana Cushman, 1922, U.S.N.M. Bull. 104 (3) p. 83, pl. 16, figs. 1-3.

Source: LeRoy & Hodgkinson, 1975, Micropaleo. 21 (4) p. 432, pl. 6, figs. 8, 9.

Only a few specimens were found, most of which may be R. bacillaris. It is distributed over the slope from 2600 to 3000 m. See pl. 17, fig. 22.

Clavulina nodosaria novangliae Cushman, 1922, U.S.N.M. Bull. 104 (3) p. 82, pl. 15, figs. 3-5.

Source: Ellis & Messina, Catalogue of Foraminifera

Very rare, only 1 specimen was found. See pl. 17, fig. 23.

Genus Martinottiella Cushman, 1933

Martinottiella communis ((d'Orbigny)

- Clavulina communis d'Orbigny, 1846, Gide et Comp., p. 196, pl. 12, figs. 1, 2.
- Martinottiella communis (d'Orbigny) Cushman, 1933,

Contr. Cushman Lab. Foram. Res., vol. 9, p. 37.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, p. 98, p. 48, figs. 3,4, 6-8.

A very rare species, found at 2938 m, it is small, about 0.07 mm long, and rather inconspicuous. See pl. 17, fig. 24.

Suborder MILIOLINA Delage & Hérouard, 1896

Superfamily MILIOLACEA Ehrenberg, 1839

Family FISCHERINIDAE Millett, 1898

Subfamily CYCLOGYRINAE Loeblich & Tappan, 1961

Genus Cyclogyra Wood, 1842

Cyclogyra foliacea (Philippi)

- Orbis foliaceus Philippi, 1844, Enum. Moll.
Siciliae...vol. 2, Halle, p. 147, pl. 24, fig. 26.
- Cyclogyra foliacea (Philippi) Loeblich & Tappan,
1961, J. Paleo., vol. 35, p. 290.

Source: Feyling-Hanssen, 1964, Norges Geol. Undersok., NR. 225., p. 245, pl. 4, fig. 8.

Ranging from 743 to 2000 m, this rare species is found only at a few stations down the slope. See pl. 17, figs. 27, 28.

Cyclogyra involvens (Reuss)

- Operculina involvens Reuss, 1850, Denkschr. Akad.
Wiss. Wien, vol. 2, p. 370, pl. 46, fig. 30.
- Cyclogyra involvens (Reuss) Loeblich & Tappan, 1961,
J. Paleo, vol. 35, p. 290.

Source: Loeblich & Tappan, 1953, Smithson. Misc. Coll. 121 (7) p. 49, pl. 7, figs. 4, 5.

This species ranges from 1000 to 2743 m, and is most common at 1590 m. It is small but distinctive. See pl. 8, fig. 6.

Cyclogyra sp. (Cornuspiroides sp.?)

These few specimens are fragments, found from 1000 to 1200 m, and could be portions of Cyclogyra foliacea. See pl. 17, fig. 30.

Cyclogyra planorbis (Schultze)

- Cornuspira planorbis Schultze, Überd. Org. d. Poly. (Foram) n. Bern. u.d. Rhiz., im Allgemeinen, 1854, p. 40, pl. 2, fig. 21.
- Cyclogyra planorbis (Schultze) Loeblich & Tappan, 1961, J. Paleo., vol. 35, p. 290.

Source: Schmitker, 1971, Tulane Studies Geol. & Pal. vol. 8 (4) p. 196, pl. 2, figs. 1 a, b.

A very small, not common species, found from 800 to 2200 m. See pl. 17, fig. 29.

Family NUBECULARIIDAE Jones, 1875

Subfamily OPHTHALMIDIINAE Wiesner, 1920

Genus Ophthalmidium Kübler & Zwingli, 1870

Ophthalmidium acutimargo (Brady)

- Spiroloculina acutimargo Brady, 1884, Rep. Voy. Challenger, Zool. (9), p. 154, pl. 10, figs. 12-15.
- Ophthalmidium acutimargo (Brady) Loeblich & Tappan, 1964, Protista 2 (1) C 448.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, p. 20, pl. 10, figs. 12-15.

This species is not common, but ranges from 2000 to 2938 m. It is medium in size, ranging from 0.07 to 0.25 mm long. The keel is distinctive. See pl. 17, figs. 31, 32.

Ophthalmidium pusillum (Earland)

- Spiroloculina pusilla Earland, 1934, Discovery Repts., vol. 10, p. 47
- Ophthalmidium pusillum (Earland) Loeblich & Tappan, 1964, Treatise, Protista 2 (1) C 448.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 20, pl. 10, figs. 9, 10.

This species is rarer than O. acutimargo, ranging only from 3000 to 3210m. It is small, fairly fragile; the neck of the aperture is often broken. See pl. 9, fig. 1.

Genus Cornuloculina Burbach, 1886

Cornuloculina inconstans (Brady)

- Hauerina inconstans Brady, 1879, Quart J. Micr. Sci., vol. 19, p. 54.
- Cornuloculina inconstans (Brady) Loeblich & Tappan, 1964 Treatise, Protista 2 (1) C 448.

Source: Brady, 1879, ibid.

This species is rare, ranging from 1380 to 2758 m. See pl. 9, fig. 2.

Subfamily SPIROLOCULININAE Wiesner, 1920

Genus Spiroloculina d'Orbigny, 1826

Spiroloculina sp.

This very rare species occurred in two core samples from deep water. See pl. 17, figs. 33, 34.

Subfamily DISCOSPIRININAE Wiesner, 1931

Genus Discospirina Munier-Chalmas, 1902

Discospirina italica (Costa)

- Pavonina italica Costa, 1856, Accad. Port. Napoli, Atti, 7 (2) p. 178.
- Discospirina italica (Costa) Munier-Chalmas, 1902, Bull. Soc. Geol. France, ser.4, vol. 2, p. 162.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, p. 30, pl. 15, figs. 6, 7.

Specimens range between complete specimens are not common; 5 and 10 mm across. Most specimens found were broken into sections of the outer annuli. The species ranges from 1400 to 2800 m. See pl. 13, fig. 1.

Family MILIOLIDAE Ehrenberg, 1839

Subfamily QUINQUELOCULININAE Cushman, 1917

Genus Quinqueloculina d'Orbigny, 1826

Quinqueloculina cultrata (Brady)

- Miliolina cultrata Brady, 1881, Quart. J. Micr. Sci., Vol. 21, p. 45.
- Quinqueloculina cultrata (Brady) Cushman, 1917, USNM. Bull. 71 (6) p. 54, 55, pl. 21, fig. 1.

Source: Cushman, 1917, *ibid.*

This species is rare in surface sediments, but is found from 1462 to 3210 m. It is more common in cores from these depths. Its small size and often make it difficult to see and identify. See pl. 17, figs. 35-37.

Quinqueloculina elongata Natland, 1938, *Scripps Inst. Oceanogr., Bull. Tech. Ser.*, vol. 4 (5), p. 141, pl. 4, fig. 5.

Source: Ellis & Messina, *Catalogue of Foraminifera*

A fairly common, small species, ranging from 1408 to 3210 m, with higher numbers from 2718 to 3210 m. See pl. 13, fig. 11.

Quinqueloculina seminulum (Linné)

- Serpula seminulum Linné, 1758, *Syst. Nat...* 10th ed.,
Lipsiae 1, p. 786, pl. 2, fig. 1.

- Quinqueloculina seminulum (Linné) Cushman, 1929,
U.S.N.M. Bull. 104 (6), p. 24, pl. 2, figs. 1-2.

Source: Barker, 1960, *Soc. Econ. Pal. & Min., Spec. Publ.* 9, p. 10,
pl. 5, fig. 6.

This species is rare on the slope; only three stations, scattered from 743 to 2758 m, had any specimens. See pl. 8, fig. 8.

Quinqueloculina vulgaris d'Orbigny, 1826, *Ann. Sci. Nat.*, vol. 7, p. 302,
no. 33.

Source: Cushman, 1917, *U.S.N.M. Bull.* 71 (6) p. 46, pl. 11, fig. 3a-c.

The most common species of Quinqueloculina, ranging from 506 to 3210 m, found mostly from 2560 to 3210 m. This species is never found in large numbers. It is variable in size, but tends to be large, 0.50 mm or larger. See pl. 8, fig. 7.

Genus Cruciloculina d'Orbigny, in de la Sagra, 1839

Cruciloculina ericsoni Loeblich & Tappan, 1957, U.S.N. M. Bull. 215, p. 234, pl. 74, figs. 3-7.

Source: Ellis & Messina, Catalogue of Foraminifera.

A rare species, found at only 4 stations, usually greater than 1 mm across. Depth range for the stations is 1200 to 1600 m. See pl. 17, fig. 30.

Genus Pateoris Loeblich & Tappan, 1953

Pateoris hauerinoides (Rhumbler)

- Quinqueloculina subrotunda hauerinoides Rhumbler, 1936, Kiel. Meeresforsch. vol. 1, pp. 206, 217, 226; tfigs. 167, 208, 212.
- Pateoris hauerinoides (Rhumbler) Loeblich & Tappan, 1953, Smithsonian Misc. Coll., 121 (7) p. 42, pl. 6, figs. 8-12.

Source: Loeblich & Tappan, 1953, *ibid.*

This porcelaneous species is rare on the slope, found only at 1530 m. See pl. 17, fig. 39.

Genus Pyrgo DeFrance, 1824

Pyrgo comata (Brady)

- Biloculina comata Brady, 1884, Rep. Voy. Challenger, Zool 9, p. 144, pl. 3, fig. 9.
- Pyrgo comata (Brady) Cushman, 1929, U.S.N.M. Bull. 104 (6) p. 73, pl. 19, fig. 8.

Source: Cushman, 1929, *ibid.*

A fairly common, large species characterized by the striations on the chamber surfaces; depths 2560 to 3000 m. See pl. 9, fig. 11.

Pyrgo depressa (d'Orbigny)

- Biloculina depressa d'Orbigny, 1826, *Ann. Sci. Nat.*, vol.7, p. 298, No. 7, Mod. no. 91.
- Pyrgo depressa (d'Orbigny) Cushman, 1929, *U.S.N.M. Bull.* 104 (6) p. 71.

Source: Barker, 1960, *Soc. Econ. Pal. & Min., Spec. Publ.* 9, p. 4, pl. 2, figs. 12, 16, 17.

A rare species, ranging from 1550 to 2938 m. See pl. 17, fig. 40.

Pyrgo lucernula (Schwager)

- Biloculina lucernula Schwager, 1866, *Novara-Exped., Geol. Theil.*, vol. 2, p. 202, pl. 4, figs. 14 a-c.
- Pyrgo lucernula (Schwager) Cushman, 1934, *B.P. Bishop Mus. Bull.* 119, p. 108.

Source: Barker, 1960, *Soc. Econ. Pal. & Min., Spec. Publ.* 9, p. 6, pl. 3, figs. 6, 14.

Found from 1400 to 3000 m, most common from 2918 to 3000 m, this is a large species, with its coating of sandgrains making it very distinctive. See pl. 9, fig. 8.

Pyrgo murrhyna (Schwager)

- Biloculina murrhyna Schwager, 1866, *Novara-Exped., Geol. Thiel.*, vol.2, p. 203, pl. 4, figs. 15 a-c.
- Pyrgo murrhyna (Schwager) Cushman, 1929, *U.S.N.M. Bull.* 104 (6), p. 71.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, p. 4, pl. 2, figs. 10, 11, 15.

This species is large, usually more than 1 mm across and ranges from 1462 to 3210 m, being found more often from 2800 to 3210 m. See pl. 8, fig. 9.

Pyrgo rotalaria Loeblich & Tappan, 1953, Smithson. Misc. Coll. 121 (7), p. 47, pl. 6, figs. 5, 6.

Source: Loeblich & Tappan, 1953, *ibid.*

This large Pyrgo is not particularly common, though it ranges from 1400 to 3210 m. It is more common from 2560 to 3210 m. See pl. 9, fig. 13.

Pyrgo serrata (Bailey)

- Biloculina serrata Bailey, 1862, Boston J. Nat. Hist. Vol. 7, p. 350, pl. 8, fig. E.
- Pyrgo serrata (Bailey) Cushman, 1929, U.S.N.M. Bull. 104 (6), p. 73.

Source: Barker, 1960, *ibid.* p. 6, pl. 3, fig. 3.

This species is the most commonly found Pyrgo, from 1400 to 3210 m deep, with greater concentration between 1462 and 1600 m. It is usually more than 1 mm. across. It is the only Pyrgo for which juvenile (prolocular) forms were found. See pl. 9, fig. 10.

Pyrgo subsphaerica (d'Orbigny)

- Biloculina subsphaerica d'Orbigny, 1939, *in* de la Sagra, Hist. Phys. Pol. Nat. Cuba, p. 162, pl. 8, figs. 25-27.
- Pyrgo subsphaerica (d'Orbigny) Parker, 1952, Bull.

Mus. Comp. Zool., vol. 106 (9), p. 405, pl. 3, fig. 17.

Source: Parker, 1952, *ibid.*

Common but never abundant, found from 1000 to 3210 m; usually more than 1 mm across. See pl. 9, fig. 9.

Pyrgo williamsoni (Silvestri)

- Biloculina williamsoni Silvestri, 1923, Atti Accad. Pont. Romana Nuovi Lincei, vol. 76, p. 73.
- Pyrgo williamsoni (Silvestri) Loeblich & Tappan, 1953, Smithson. Misc. Coll. 121 (7) p. 48, pl. 6, figs. 1-4.

Source: Loeblich and Tappan, 1953, *ibid.*

Scattered from 800 to 3000 m., never common, usually longer than 1 mm. See pl. 9, fig. 7.

Genus Pyrgoella Cushman & E. White, 1936.

Pyrgoella sphaerica (d'Orbigny)

- Biloculina sphaerica d'Orbigny, 1839, in de la Sagra, Hist. Phys. Pol. Nat. Cuba, Foram., p. 66.
- Pyrgoella sphaerica (d'Orbigny) Cushman & White, 1936, Contr. Cushman Lab. Foram. Res., vol. 12 (4) p. 90.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, p. 4, pl. 2, figs. 4 a, b.

A rare species, from 1530 to 3210 m deep in range, usually more than 1 mm across. See pl. 9, fig. 12.

Genus Sigmoilopsis Finlay, 1917Sigmoilopsis schlumbergeri (Silvestri)

- Sigmoilina schlumbergeri Silvestri, 1904, Accad. Pont. Romana Nuovi Lincei, Mem., vol. 22, pp. 267, 269.
- Sigmoilopsis schlumbergeri (Silvestri) Finlay, 1947, Roy. Soc. New Zealand, Trans., vol. 28, no.5 (B) p. 270.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, p. 16, pl. 8, figs. 1-4.

A fairly common species ranging 1800 to 3210 m, usually more common from 2560 to 3000 m. This siliceous species is generally large, more than 1 mm as an adult. See pl. 10, fig. 1.

Genus Triloculina d'Orbigny, 1826Triloculina oblonga (Montagu)

- Vermiculum oblongum Montagu, 1803, Test. Brit., pt. 2, p. 522, pl. 14, fig. 9.
- Triloculina oblonga (Montagu) d'Orbigny, 1826, Ann. Sci. Nat. Paris, ser. 1 vol. 7, p. 300, no. 16, mod. 95.

Source: Feyling-Hanssen, 1964, Norges Geol. Unders., NR. 225, p. 257, pl. 6, figs. 9, 10.

This small species is not uncommon from 1400 to 3000 m, and is difficult to distinguish from Q. elongata. See pl. 17, figs. 41, 42.

Triloculina tricarinata d'Orbigny, 1826, Ann. Sci. Nat. Paris, ser. 1, vol. 7, p. 299, no. 7, mod. 94.

Source: Feyling-Haunsen, 1964, Norges Geol. Unders., NR225, p. 258, pl. 6, figs. 7, 8.

This species ranges from 530 to 3210 m., but is more common from 2200 to 3000 m. Specimens are often in the over 1 mm size range, and are occasionally 2 or 3 mm long. See pl. 10, fig. 2.

Triloculina trihedra Loeblich & Tappan, 1953, Smithson. Misc. Coll. 121 (7) p. 45, pl. 4, fig. 10.

Source: Loeblich & Tappan, 1953, *ibid.*

Only 1 specimen of this species was found, at 1462 m. See pl. 17, figs. 43, 44.

Subfamily MILIOLINELLINAE Vella, 1957

Genus Miliolinella Wiesner, 1931

Miliolinella circularis (Bornemann)

- Triloculina circularis Bornemann, 1855, Deutsche Geol. Ges., Zeitschr., Bd. 7, Heft 2, p. 349, pl. 19, fig. 4.
- Miliolinella circularis (Bornemann) see genus descr. -Wiesner, 1931, Deutsche Sud Polar Exped., vol. 20 (Zool. vol. 12) p. 63.

Source: Ellis & Messina, Catalogue of Foraminifera.

This species is very rare, ranging from 2938 to 3210 m. See pl. 13, fig. 10.

Subfamily MILIOLINAE Ehrenberg, 1839.

Genus Involvohauerina Loeblich & Tappan, 1955

Involvoherina globularis Loeblich & Tappan, 1955, *Smithson. Misc. Coll.*
vol. 128 (5), p. 15, pl. 2, figs. 3-8.

Source: Loeblich & Tappan, 1955, *ibid.*

Rare; scattered from 800 to 1400 m. See pl. 17, fig. 45.

Suborder ROTALIINA Delage & Hérouard, 1896

Superfamily NODOSARIACEA Ehrenberg, 1838

Family NODOSARIIDAE Ehrenberg, 1838

Subfamily NODOSARIINAE Ehrenberg 1838

Genus Nodosaria Lamarck, 1812

Nodosaria calomorpha Reuss 1865, *Denkschr. Akad. Wiss. Wien*, vol. 25, p.
129, pl. 1, figs. 15-19.

Source: Barker, 1960, *Soc. Econ. Pal. & Min., Spec. Publ.* 9, p.
128, pl. 61, figs. 26-27.

Not common, ranging from 743 to 3000 m. See pl. 17, fig. 46.

Nodosaria flintii Cushman, 1923, *U.S.N.M. Bull.* 104 (4) p. 85, pl. 14,
fig. 1.

Source: Cushman, 1923, *ibid.*

This species is rare, and is scattered from 1000 to 3000 m. It is
a large species generally greater than 1 mm long. See pl. 7, fig. 11.

Genus Astacolus de Montfort, 1808

Astacolus crepidulus (Fichtel & Moll)

- Nautilus crepidula Fichtel & Moll, 1798, *Test.*

Micr. alia. min. gen. Argon. et Naut. ad nat. picta
et descr. (2nd ed, 1803), p. 107, pl. 19, figs. g -
i.

- Astacolus crepidulus (Fichtel & Moll) Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, p. 142, pl. 67, fig. 20; pl. 68, figs. 1, 2.

Source: Barker, 1960, *ibid.*

This species is not common, ranging from 1400 to 2800 m. See pl. 17, fig. 47.

Astacolus hyalacrulus Loeblich & Tappan, 1953, *Smithson. Misc. Coll.* 121 (7) p. 52, pl. 9, figs. 1-4.

Source: Loeblich & Tappan, 1953, *ibid.*

A rare species on the slope; found at only at 2 stations, 1400 and 2800 m deep. See pl. 17, fig. 48.

Astacolus reniformis (d'Orbigny)

- Cristellaria reniformis d'Orbigny, 1846, *Gide et Comp.*, Paris, 1846, p. 88, pl. 3, figs. 39, 40.
- Astacolus reniformis (d'Orbigny) Thalmann, 1932, *Eclog. geol. Helv.*, vol. 25 (2).

Source: Barker, 1960, *Soc. Econ. Pal. & Min.*, Spec. Publ. 9, p. 146, pl. 70, fig. 3.

Extremely rare; only one specimen found. See pl. 17, fig. 49.

Genus Dentalina Risso, 1826

Dentalina advena (Cushman)

- Nodosari advena Cushman, 1923, *U.S.N.M. Bull.* 104 (4) p. 79, pl. 14, fig. 12.
- Dentalina advena (Cushman) Feyling-Hanssen, 1964, *Norges Geol Unders.* Nr 225, p. 269, pl. 8, fig. 9.

Source: Feyling-Hanssen, 1964, *ibid.*

Rare; possibly D. baggi. Ranges from 1000 to 2400 m. See pl. 10, fig. 1.

Dentalina baggi Galloway & Wissler, 1927, *J. Paleo.* vol. 1, p. 49, pl. 8, figs. 14, 15.

Source: Loeblich & Tappan, 1953, *Smithson. Misc. Coll.* 121 (7) p. 54, pl. 9, figs. 10-15.

A species that is not uncommon, it ranges from 1000 to 2400 m. See pl. 10, fig. 2.

Dentalina communis d'Orbigny 1826, *Ann. Sci. Nat. Paris*, vol. 7, p. 254, no. 35.

Source: Barker, 1960, *Soc. Econ. Paleontol. & Min., Spec. Publ.* 9, p. 130, pl. 62, figs. 21, 22.

Rare; found at 1600 m; may be a slender D. frobisherensis.

Dentalina farcimen (Soldani). See pl. 10, fig. 3.

- Orthocerata farcimen Soldani, 1791, *Test. Microsc.*

II, p. 98, tab. 105, f. o.

- Dentalina farcimen (Soldani) Reuss, 1863, *Acad.*

Roy. Sci. Lettres, Bull. 2 (15) p. 146, pl. 1, fig.

18.

Source: Barker, 1960, *Soc. Econ. Paleontol., & Min., Spec. Publ.* 9, p. 130, pl. 62, figs. 17, 18.

Rare; found only at 1800 m.; may be D. filiformis or other related form. See pl. 18, fig. 4.

Dentalina filiformis (d'Orbigny)

- Nodosaria filiformis d'Orbigny, 1826, *Ann. Sci.*

Nat. vol. 7, p. 253.

- Dentalina filiformis (d'Orbigny) Cushman & McCulloch, 1950, Allan Hancock Pacific Exped. vol. 6 (6) p. 314, pl. 40, fig. 17.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 132, pl. 63, figs. 3-5.

Rare, from 1380 to 2200 m. See pl. 18, fig. 5.

Dentalina frobisherensis Loeblich & Tappan, 1953, Smithsonian Misc. Coll. 121 (7) p. 55, pl. 10, figs. 1-9.

Source: Loeblich & Tappan, 1953, *ibid.*

Not common, but fairly easily recognized; ranges from 530 to 2743 m. See pl. 18, fig. 6.

Dentalina inornata bradyensis (Dervieux)

- Nodosaria inornata bradyensis Dervieux, 1894, Boll. Soc. Geol. Ital., vol. 12, p. 610.
- Dentalina inornata bradyensis (Dervieux) Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, p. 130, pl. 62, figs. 19, 20.

Source: Barker, 1960, *ibid.*

This species is rare, ranging from 1380 to 3000 m ; it may belong to D. filiformis. See pl. 18, fig. 7.

Dentalina ittai Loeblich & Tappan, 1953, Smithsonian Misc. Coll. 121 (7) p. 56, pl. 10, figs. 10-12.

Source: Loeblich & Tappan, 1953, *ibid.*

Rare on the slope; may be part of another species. See pl. 18, fig. 8.

Dentalina pauperata d'Orbigny, 1846, "Foram. foss. bassin tert. Vienne" p. 46, pl. 1, figs. 57, 58.

Source: Loeblich & Tappan, 1953, *Smithson. Misc. Coll.* 121 (7) p. 57, pl. 9, figs. 7-9.

This species is rare, found only at 1600 m; it is quite large & distinctive. See pl. 18, fig. 9.

Dentalina subsoluta (Cushman)

- Nodosaria subsoluta Cushman, 1933, *Smithson. Misc. Coll.* 89 (9) p. 74, pl. 13, fig. 1.

- Dentalina subsoluta (Cushman) Todd & Low, 1967, *U.S.G.S. Prof. Paper* 573-A, Al. A46, p. 23, pl. 3, fig. 7.

Source: Feyling-Hanssen, 1971, *Bull. Geol. Soc. Denmark*, vol. 21, p. 201, 202, pl. 3, fig. 5.

The specimens found on the slope have well developed spines at the base of each chamber. It ranges from 1600 to 3000 m depth. See pl. 18, fig. 10.

Genus Frondicularia DeFrance, in d'Orbigny, 1826

Frondicularia bradii (Silvestri)

- Lingulonodosaria bradii Silvestri, 1903, *Atti Accad. Pont. Nuovi Lincei*, vol. 56, p. 48.

- Frondicularia bradii (Silvestri) Galloway, 1933, *Manual of Foraminifera* (not F. bradii Cushman).

Source: Barker, 1960, *Soc. Econ. Pal. & Min., Spec. Publ.* 9, p. 138, pl. 65, fig. 16.

A rare species, superficially resembling Dentalina, ranging from 800 to 1400 m. See pl. 18, fig. 11.

Genus Lagena Walker & Jacob in Kanmacher, 1798

Lagena acuticosta Reuss 1861, Sitz, Akad. Wiss. Wien, vol. 44 (1) p. 305, pl. 1, fig. 4.

Source: Cushman, 1923, U.S.N.M. Bull. 104 (4) p. 5, pl. 1, figs. 1-3.

There is some confusion in the literature over whether this is a Lagena or an Oolina, and whether the Recent form is the same as Reuss' species (see Barker, 1960, Soc. Econ. Pal. & Min. Spec. Publ. 9, p. 118, 119.) I have left it as a Lagena. It is rare, scattered from 1200 to 2800 m. See pl. 18, fig. 12.

Lagena apiopleura Loeblich & Tappan, 1953, Smithson. Misc. Coll. 121 (7) p. 59, pl. 10, figs. 14, 15.

Source: Loeblich & Tappan, 1953, *ibid.*

This species is rare on the slope, only one specimen was found, at 2758 m. See pl. 18, fig. 13.

Lagena distoma Parker & Jones, M.S., Brady, 1864, Trans. Lin. Soc. London, vol. 24, p. 487, pl. 48, fig. 6.

Source: Loeblich & Tappan, 1953, Smithson. Misc. Coll., vol. 121 (7), p. 63, pl. 11, fig. 26.

A common Lagena, found from 400 to 2938 m, usually quite large in size. See pl. 7, fig. 10.

Lagena elongata (Ehrenberg)

- Miliola elongata Ehrenberg, 1844, Bericht. preuss. Akad. Wiss. Berlin, p. 274 (1845), p. 371.

- Lagena elongata (Ehrenberg) Tate & Blake, 1876,
Yorkshire Lias, p. 454, pl. 18, figs. 9, 9a.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9,
p. 114, 115, pl. 56, figs. 27-29.

An uncommon species, scattered from 743 to 1600 m. It is very
similar to L. distoma, but lacks the longitudinal costae. See pl. 18,
fig. 14.

Lagena flatulenta Loeblich & Tappan, 1953, Smithson. Misc. Coll. 121 (7),
p. 60, l. 11, figs. 9, 10.

Source: Loeblich & Tappan, 1953, *ibid.*

This species is also rare on the slope, ranging from 800 to 3210 m.

See pl. 18, fig. 15.

Lagena gracillima (Seguenza)

- Amphorina gracillima Seguenza, 1862, Descr. dei
foram. monoth. Marn. mioc... Messina Diss. 2, p. 51,
pl. 1, fig. 37.

- Lagena gracillima (Seguenza) Brady, 1884, Rept.
Voy. Challenger, Zool. (9), p. 456, pl. 56, fig.
19-26.

Source: Brady, 1884, *ibid.*

A rare species, ranging from 506 to 1600 m. See pl. 18, fig. 16.

Lagena hertwigiana Brady var. undulata Sidebottom, 1912, Quekett Micr.
Club. Jour., ser. 2, vol. 11, no. 70, p. 397, pl. 16, figs. 26-28.

Source: Ellis & Messina, Catalogue of Foraminifera.

A rare Lagena, found at 2 stations, at 2560 and 2718 m ; difficult
to differentiate from L. meridionalis. See pl. 10, fig. 17.

Lagena hispidula Cushman, 1913, U.S.N.M. Bull. 71 (3) p. 114, pl. 56, figs. 2, 3.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, p.114, pl. 56, figs. 10, 11, 13.

This species ranges from 1000 to 3210 m, with a slightly higher concentration from 3000 to 3210 m. See pl. 7, fig. 8.

Lagena laevis (Montagu)

- Vermiculum laeve Montagu, 1803, Test. Brit., p. 524.

- Lagena laevis (Montagu) Cushman & Gray, 1946, Cushman Lab. Foram. Res., Spec. Publ. 19, p. 18, pl. 3, figs. 21-23.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 114, pl. 56, figs. 7-9.

This species is rare, scattered from 530 to 2938 m. See pl. 18, fig. 18.

Lagena meridionalis Wiesner 1931, Deutsche Sudpolar Exped. 1901-03, vol. 20 (Zool. 12) p. 117, pl. 18, fig. 211.

Source: Loeblich & Tappan, 1953, Smithson. Misc. Coll. 121 (7) p. 62, pl. 12, fig. 1.

A common species ranging from 506 to 3210 m, more frequently found between 2560 and 3210 m. See pl. 18, fig. 19.

Lagena mollis Cushman, 1944, Cushman Lab. Foram. Res. Spec. Publ. 12, p. 21, pl. 3, fig. 3.

Source: Loeblich & Tappan, 1953, Smithson Misc. Coll. vol. 121 (7), p. 63, pl. 11, figs. 25-27.

This species ranges from 400 to 3000 m, and is fairly common. It

is most abundant at 1200 m. See pl. 18, fig. 20.

Lagena nebulosa Cushman, 1923, U.S.N.M. Bull. 104 (4) p. 29, pl. , figs. 4,5.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 114, pl. 56, fig. 12.

A not uncommon species ranging from 1400 to 3000 m. See pl. 18, fig. 21.

Lagena plumigera Brady, 1881, Quart. J. Micr. Sci., n.s., vol. 21, p. 62.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, p. 120, pl. 58, figs. 25-27.

This species is rare on the slope, and was found only at 3210 m. See pl. 18, fig. 22.

Lagena semistriata Williamson, 1848, Ann. Mag. Nat. Hist., ser. 2, vol. 1, p. 14, pl. 1, figs. 9, 10.

Source: Cushman, 1932, USNM Bull. 104 (4) p. 50, pl. 9, fig. 15.

This is a common species from 506 to 3000 m. See pl. 18, fig. 23.

Lagena striata substriata Williamson

- Lagena substriata Williamson, 1848, Rec. Foram. Gt. Britain, p. 15, pl. 2, figs. 12.

- L. striata substriata Williamson, Feyling-Hanssen, 1964, Norges Geol. Unders. NR 225, p. 294, pl. 12, fig. 6.

Source: Feyling-Hanssen, 1964, *ibid.*

This species is not common, and is found scattered from 506 to 3000 m. See pl. 7, fig. 9.

Lagena striata typica Feyling-Hanssen, 1964, Norges Geol. Undersokelse NR 225, p. 293, pl. 12, figs. 4, 5.

This form is rare on the slope, found only at 2 stations, 530 and 2758 m. See pl. 18, fig. 24.

Lagena setigera Millett, 1901, Journ. Roy. Micr. Soc. London, pt. 11, p. 491, pl. 8, fig. 9.

Source: Ellis & Messina, Catalogue of Foraminifera.

This is a very rare form; only one specimen was found, at 1530 m. See pl. 18, fig. 25.

Lagena sulcata (Walker & Jacob)

- Serpula (Lagena) sulcata Walker & Jacob, in Kammacher, 1798, Essays on the Microscope, 2nd ed., p. 634, pl. 14, fig. 5.
- Lagena sulcata (Walker & Jacob) Flint, 1899, U.S.N.M. Rept. (1897) pt. 1, p. 307, pl. 53, fig. 7.

Source: Cushman, 1923, U.S.N.M. Bull. 104 (4) p. 57, pl. 11, fig. 1.

Found at only 3 stations from 1200 to 2600 m. See pl. 18, fig. 26.

Genus Lenticulina Lamarck, 1804

Lenticulina albatrossi (Cushman)

- Cristellaria albatrossi (Cushman, 1923, USNM Bull. 104, p. 120, pl. 19, figs. 4, 5.
- Lenticulina albatrossi (Cushman) Chapman & Parr, 1937, Austr. Antarctic Exped., 1911-14, Sci. Rep., ser. c., vol. 1 (2) p. 57.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, p. 140, pl. 66, figs. 24, 25.

This species ranges from 1200 to 3000 m, never very common, but is more common from 1000 to 1400 m. It is a large species, greater than 1 mm. See pl. 18, fig. 27.

Lenticulina angulata (Reuss)

- Robulina angulata Reuss, 1851, Zeitschr. Deutsch. Geol. Ges., vol. 3, p. 154, pl. 8, fig. 6.
- Lenticulina angulata (Reuss) Feyling-Hanssen, 1964, Norges Geol. Unders., NR 225, p. 277, pl. 9, figs. 9, 10.

Source: Feyling-Hanssen, 1964, *ibid.*

A fairly common small species, ranging from 500 to 3000 m, usually consisting of one whorl of chambers. See pl. 13, fig. 12.

Lenticulina gibba (d'Orbigny)

- Cristellaria gibba d'Orbigny, 1839, in de La Sagra, p. 40, of vol. 8; pl. 7, figs. 20, 21.
- Lenticulina gibba (d'Orbigny) Thalmann, 1932, Eclog. Geol. Helv., vol. 25 (2) p. 305.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, p. 144, pl. 69, figs. 8, 9.

Found at 3 stations, scattered from 1000 to 3000 m. See pl. 18, fig. 28.

Lenticulina pliocaenica (Silvestri)

- Polymorphina pliocaena Silvestri, 1898, Accad. Pont. Nuovi Lincei, Mem., vol. 15, p. 234, pl. 4, figs. 3a - c.

- Robulus pliocaenicus (Silvestri) Thalmann, 1932,
ibid., p. 252.
- Lenticulina pliocaenica (Silvestri) Bartenstein
1948, Senckenbergiana, vol. 29, pp. 41-65.

Source: Barker, 1960, Soc. Econ. Paleont. & Min., Spec. Publ.
9, p. 144, pl. 69, fig. 5.

A rare species, scattered from 1380 to 3000 m. See pl. 18, fig.
29.

Lenticulina rotulata (Lamarck)

- Lenticulites rotulata Lamarck 1804, Ann. Mus., vol.
5, p. 188, no. 3, vol. 8 (1806), pl. 62, fig. 11.
- Lenticulina rotulata (Lamarck) Loeblich & Tappan,
1964, Protista 2 (2) C 518-520.

Source: Cushman 1923, U.S.N.M. Bull. 104 (4) p. 108, pl. 22, fig.
2, pl. 28, figs. 1, 2.

This large form is not common, ranging from 1000 to 3000 m deep;
always in the larger than 1 mm size range. See pl. 13, fig. 13.

Genus Marginulina d'Orbigny, 1826

Marginulina obesa Cushman, 1923, U.S.Nat. Mus. Bull. 104 (4) p. 128, pl. 37,
fig. 1.

Source: Cushman, 1923, ibid.

Rare; specimens found are robust, usually opaque, scattered from
500 to 2938 m. See pl. 13, fig. 14.

Genus Marginulinopsis A. Silvestri, 1904

Marginulinopsis bradyi (Göts)

- Cristellaria bradyi Goës, 1894, Kongl. Sven. Vet. - Ak. Handl., vol. 25 (9), p. 64.
- Marginulinopsis densicostata Thalmann, 1937, Eclog. geol. Helv., vol. 30 (2), p. 341, 348.
- M. bradyi (Goës) Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, p. 136, pl. 65, figs. 10-13.

Source: Barker, 1960, *ibid.*

Found at only 2 stations; may be Nodosaria flintii instead. Ranges from 2600 to 3000 m. See pl. 18, fig. 30.

Genus Pseudonodosaria Boomgaard, 1949

Pseudonodosaria rotundata (Reuss)

- Glandulina rotundata Reuss, 1849, Denkschr. Akad. Wiss. Wien, vol. 1, p. 366, pl. 46, fig. 2.
- Nodosaria (Glandulina) rotundata (Reuss) Brady, 1884, Rep. Voy. Challenger, Zool. (9), p. 491, pl. 61, figs. 17-19.
- Pseudoglandulina rotundata (Reuss) Chapman & Parr, 1937, Australasian Antarctic Exped. 1911-14, ser. c, vol. 1, pt. 2, p. 62.
- Rectoglandulina rotundata (Reuss) Loeblich & Tappan, 1955, Smithson. Misc. Coll. 126 (3) p. 6.
- Pseudonodosaria rotundata (Reuss) Loeblich & Tappan, 1964, Protista 2 (2) C 522, 23.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, pl. 61., figs. 17-19.

A rare species, found randomly from 800 to 3000 m.

Pseudonodosaria torrida (Cushman)

- Nodosaria (Glandulina) laevigata var. torrida
Cushman, 1923, USNM Bull. 104, pt. 4, p. 65.
- Rectoglandulina torrida (Cushman) Loeblich & Tappan,
1955, Smithson, Misc. Coll. 126 (3) p. 6.
- Pseudonodosaria torrida (Cushman) Loeblich & Tappan,
1964, Protista 2 (2) C 522, 23.

Source: Cushman, 1923, USNM Bull. 104 (4) p. 65.

Rare; at only one locality at 2200 m. See pl. 18, fig. 32.

Genus Saracenaria DeFrance, in de Blainville, 1824

Saracenaria latifrons (Brady)

- Cristellaria latifrons Brady, 1884, Rep. Voy.
Challenger, Zool. (9), p. 544, pl. 68, fig. 19, pl.
113, fig. 11.
- Saracenaria latifrons (Brady) Thalmann, 1932,
Eclog. Geol. Helvet., vol. 25 (2).

Source: Barker, 1960, Soc. Econ. Paleontol. & Min, Spec. Publ. 9,
pl. 68, fig. 19; pl. 113, fig. 11.

Very rare; Only one specimen at 1200 m. See pl. 18, fig. 33.

Genus Vaginulinopsis Silvestri, 1904

Vaginulinopsis sublegumen Parr, 1950, Brit.-Austr.-N. Zeal. Antarct. Res.
Exped., 1929-31, Rep., Ser. B, Vol. 5, pt. 6, p. 325, pl. 11, fig. 18 a -
b.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 138, pl. 66, figs. 13, 14.

A rare species, very large, to 5 mm length, ranging in depth from 1200 to 2600 m. See pl. 18, fig. 34.

Subfamily PLECTOFRONDICULARIINAE Cushman, 1927

Genus Plectofrondicularia Liebus, 1902

Plectofrondicularia advena (Cushman)

- Frondicularia advena Cushman, 1923, USNM Bull. 104 (4) p. 141, pl. 20, figs. 1, 2.
- Parافرondicularia advena (Cushman) Boomgaard, 1949, Thesis, Univ. Utrecht, p. 85.
- Plectofrondicularia advena (Cushman) Loeblich & Tappan, 1964, Protista 2 (2) C 525.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, p. 138, pl. 66, figs. 8-12.

Found from 1400 to 2800 m, mostly between 1530 and 1600 m; never really abundant; usually broken. See pl. 9, fig. 3.

Subfamily LINGULININAE Loeblich & Tappan, 1961

Genus Lingulina d'Orbigny, 1826

Lingulina sp.

This is a rare species found at one station at 1530 m, and also in several cores. It is uniserial, slightly compressed, with a slitlike aperture in plane of compression, and with a short entosolenian tube.

Chambers are few, overlapping slightly. See pl. 18, figs. 35-37.

Family POLYMORPHINIDAE d'Orbigny, 1839

Subfamily POLYMORPHININAE d'Orbigny, 1839

Genus Guttulina d'Orbigny, in de la Sagra, 1839

Guttulina lactea (Walker & Jacob)

- Serpula lactea Walker & Jacob, 1798, in Adams' Essays on the Microscope, 2nd ed., p. 634, pl. 14, fig. 4.
- Guttulina lactea (Walker & Jacob) Cushman & Ozawa, 1930, U.S.Nat. Mus., Proc. 77 (6) p. 46, pl. 10, figs. 1-4.

Source: Cushman & Ozawa, 1930, *ibid.*

This is not a common species on the Slope. It is scattered from 600 to 3210 m. See pl. 9, fig. 4.

Genus Pseudopolymorphina Cushman & Ozawa, 1928

Pseudopolymorphina novangliae (Cushman)

- Polymorphina lactea novangliae Cushman, 1923, U.S.Nat. Mus. Bull. 104 (4) p. 146, pl. 39, figs. 6-8.
- Pseudopolymorphina novangliae (Cushman) Parker, 1952, Bull. Mus. Comp. Zool. Vol. 106 (9) p. 410, pl. 5, fig. 1.

Source: Parker, 1952, *ibid.*

Scattered from 530 to 3000 m, this is never abundant on the slope. It often has a fistulose final chamber. See pl. 18, figs. 38, 39.

Genus Pyrulina d'Orbigny, in de la Sagra, 1839

Pyrulina extensa (Cushman)

- Polymorphina extensa Cushman, 1923, U.S. Nat. Mus. Bull 104 pt. 4, p. 156, pl. 41, figs. 7, 8.
- Pyrulina extensa (Cushman) Cushman & Ozawa, 1930, U.S. Nat. Mus. Proc., vol. 77, Art. 6, p. 53, pl. 12, fig. 5.

Source: Cushman & Ozawa, 1930, *ibid.*

Rare; from 2758 to 2800 m. See pl. 19, fig. 1.

Family GLANDULINIDAE Reuss, 1860

Genus Glandulina d'Orbigny, in de la Sagra, 1839

Glandulina laevigata d'Orbigny

- Nodosaria (Glandulina) laevigata d'Orbigny, 1826, Ann. Sci. Nat. Paris, ser. 1 (7), p. 252, pl. 10, figs. 1-3.
- Glandulina laevigata d'Orbigny - Cushman & Ozawa, 1930, U.S. Nat. Mus. Proc. 77 (6) p. 143, pl. 40, fig. 1.

Source: Loeblich & Tappan, 1953, *Smithson. Misc. Coll.* 121 (7) p. 120, pl. 16, figs. 2-5.

Very rare on the slope. See pl. 19, fig. 2.

Genus Laryngosigma Loeblich & Tappan, 1953

Laryngosigma hyalascidia Loeblich & Tappan, 1953, *Smithson. Misc. Coll.*, vol. 121 (7), p. 83, 84, pl. 15, figs. 6-8.

Source: Loeblich & Tappan, 1953, *ibid.*

Not common; ranging from 1600 to 3000 m. Specimens are usually transparent. See pl. 19, fig. 3.

Laryngosigma williamsoni (Terquem)

- Polymorphina lactea oblonga - Williamson, 1858, Rec. Foram. Gt. Brit., p. 71, pl. 6, figs. 149, 149a.
- P. williamsoni Terquem, 1878, Mem. Soc. Geol. France, ser. 3 (1) p. 37.
- Sigmomorphina williamsoni (Terquem) Cushman & Ozawa, 1930, USNM Proc. 77 (6) p. 138, pl. 38, figs. 3, 4.
- Laryngosigma williamsoni (Terquem) Loeblich & Tappan, 1953, Smithson. Misc. Coll. 121 (7) p. 84, pl. 16, fig. 1.

Source: Loeblich & Tappan, 1953, *ibid.*

Rare, ranging from 1000 to 3210 m, usually very fresh, transparent specimens. See pl. 19, fig. 4.

Subfamily OOLININAE Loeblich & Tappan, 1961

Genus Oolina d'Orbigny, 1839

Oolina apiculata Reuss

- O. apiculata Reuss, in Haidinger's Nat. Abh., vol. 4, 1850, p. 22, pl. 1, fig. 1

Source: Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, p. 116, pl. 56, figs. 15, 16.

Rare; scattered from 1200 to 3000 m. See pl. 19, fig. 5.

Oolina borealis Loeblich & Tappan, 1954, Washington Acad. Sci. Jour., vol. 44 (12), p. 384, no. 12.

- Entosolenia costata Williamson, 1858, Rec. Foram. G. Brit., p. 9, pl. 1, fig. 18.
- Lagena costata (Williamson) Cushman, 1923, USNM Bull. 104 (4) p. 12, pl. 1, fig. 16; pl. 2, figs. 1, 2.
- Oolina costata (Williamson) Parker, 1952, Bull. Mus. Comp. Zool. 106 (9) p. 409, pl. 4, figs. 20, 21.

Source: Loeblich & Tappan, 1953, Smithson. Misc. Coll. 121 (7) p. 68, pl. 13, figs. 4 - 6.

Rare; 1380 to 2758 m ; difficult to distinguish from L. acuticosta.

See pl. 19, fig. 6.

Oolina caudigera (Wiesner)

- Lagena (Entosolenia) globosa var. caudigera Wiesner, 1931, Deutsche Sudpolar Exped., 1901-03, Vol. 20, p. 119, pl. 18, fig. 214.
- Oolina caudigera (Wiesner) Loeblich & Tappan, 1953, Smithson. Misc. Coll., vol. 121 (7), p. 67, pl. 13, figs. 1-3.

Source: Loeblich & Tappan, 1953, *ibid.*

Rare; 1380 to 2000 m. See pl. 19, fig. 7.

Oolina globosa (Montagu)

- Vermiculium globosum Montagu, 1803, Test. Brit., 2, p. 523.
- Lagena globosa Montagu - Madsen, 1895, Meddr. dansk geol. Foren. 2, p. 189.

- L. globosa (Montagu) Cushman, 1923, USNM Bull. 104 (4) p. 20, pl. 4, figs. 1, 2.
- Oolina globosa (Montagu) Parr, 1950, B.A.N.Z.A. Res. Exp., Rep. ser. B, vol. 5, no. 6, p. 302.

Source: Barker, 1960, Soc. Ec. Pal. & Min., Sp. Publ. 9, pl. 56, figs. 1-3.

A fairly common species ranging from 1200 to 3000 m; usually opaque. See pl. 19, fig. 8.

Oolina hexagona (Williamson)

- Entosolenia squamosa hexagona Williamson, 1848, Ann. Mag. Nat. Hist., ser. 2, vol. 1, p. 20, pl. 2, fig. 23.
- Lagena hexagona (Williamson) Brady, 1884, Rep. Voy. Challenger, Zool. 9, p. 472, pl. 58, figs. 32, 33.
- Oolina hexagona (Williamson) Loeblich & Tappan, 1953, Smithson. Misc. Coll. 121 (7) p. 69, pl. 14, figs. 1, 2.

Source: Loeblich & Tappan, 1953, *ibid.*

Rare; scattered from 1530 to 3000 m. See pl. 19, fig. 9.

Oolina lineata (Williamson)

- Entosolenia lineata Williamson, 1848, Ann. Mag. Nat. Hist., ser. 2, vol. 1, p. 18, pl. 2, fig. 18.
- Lagena lineata (Williamson) Brady, 1884, Rep. Voy. Challenger, Zool. (9), p. 461, pl. 57, fig. 13.
- Oolina lineata (Williamson) Loeblich & Tappan, 1953, Smiths. Misc. Coll. 121 (7), p. 70, pl. 13, figs. 11-13.

Source: Loeblich & Tappan, 1953, *ibid.*

Rare; 2743 to 2938 m, only 2 stns. See pl. 19, fig. 10.

Oolina lineato-punctata (Heron-Allen & Earland)

- Lagena globosa lineato-punctata Heron-Allen & Earland, 1922, Br. Ant. Exp., 1910, Nat. Hist. rep., Zool. vol. 6 (2) p. 142, pl. 5, figs. 12-14.

- Oolina lineato-punctata (Heron-Allen & Earland) Loeblich & Tappan, 1953, Smiths. Misc. Coll., 121 (7), p. 70, pl. 13, fig. 8.

Source: Loeblich & Tappan, 1953, *ibid.*

Rare; only 3 stations, 800 to 2743 m. See pl. 19, fig. 11.

Oolina melo d'Orbigny 1839, Voy. dans l'Amér. Mérid., Foram., vol. 5 (5), p. 20, pl. 5, fig. 9.

Source: Loeblich & Tappan, 1953, Smithson. Misc. Coll. 121 (7), p. 71, pl. 12, figs. 8-15.

Not common, scattered from 1530 to 3000 m. See pl. 19, fig. 12.

Oolina striatopunctata (Parker & Jones)

- Lagena sulcata striatopunctata Parker & Jones, 1865, Philos. Trans. Roy. Soc. London, vol. 155, p. 350, pl. 13, figs. 25-27.

- Entosolenia striatopunctata (Parker & Jones) Dawson, 1870, Can. Nat., n.s., vol. 5, p. 178, fig. 11.

- Lagena striatopunctata Parker & Jones - Brady, 1878, Ann. Mag. Nat. Hist., ser. 5, vol. 1, p. 434, pl. 20, fig. 3.

- Oolina striatopunctata (Parker Jones) Loeblich & Tappan, 1953, *Smithson. Misc. Coll.*, vol. 121 (7) pp. 74-75, pl. 12, figs. 2-5.

Source: Loeblich & Tappan, 1953, *ibid.*

Not common, from 2600 to 2800 m, very scattered. See pl. 19, fig.

13.

Oolina squamoso-sulcata (Heron-Allen & Earland)

- Lagena squamoso-sulcata Heron-Allen & Earland, 1922, *Brit. Antarct. Exped. 1910, Nat. Hist. Rep.*, Zool. vol. 6 (2), p. 151, pl. 5, figs. 15, 19.
- Oolina squamoso-sulcata (Heron-Allen & Earland) Loeblich & Tappan, 1953, *Smithson. Misc. Coll.* 121 (7) p. 74, pl. 12, figs. 6, 7.

Source: Loeblich & Tappan, 1953, *ibid.*

Rare; 1 station only, 2718 m. See pl. 19, fig. 14.

Genus Fissurina Reuss, 1850

Fissurina alveolata (Brady)

- Lagena alveolata Brady, 1884, *Rep. Voy. Challenger*, Zool. (9), p. 487, pl. 60, figs. 30, 32.
- Fissurina alveolata (Brady) Parr, 1950, *B.A.N.Z. Antarct. Res. Exped.*, Rep. ser. B, vol. 5, pt. 6, p. 307.

Source: Barker, 1960, *Soc. Econ. Pal. & Min. Spec. Publ.* 9, p. 127, pl. 60, figs. 30, 32.

Not common, 2560 to 3000 m. See pl. 19, figs. 15, 16.

Fissurina annectens (Burrows & Holland)

- Lagena annectens Burrows & Holland, 1895, in JONES, Paleontogr. Soc., p. 203, pl. 7, fig. 11.
- Fissurina annectens (Burrows & Holland) Loeblich & Tappan, 1964, Protista 2 (2) C540.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Sp. Publ. 9, p. 122, pl. 59, fig. 7.

Rare; from 1800 to 2800 m. See pl. 19, fig. 17.

Fissurina bradii Silvestri

- F. bradii - Silvestri, 1902, Accad. Pont. Romana Nuovi Lincei, Mem., vol. 19, p. 147.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Sp. Publ. 9, p. 122, pl. 59, fig. 24.

Rare; only at 1590 m, and in some core samples. See pl. 19, figs. 18, 19.

Fissurina crebra (Matthes)

- Lagena crebra - Matthes, 1939, Paleontogr., vol. 90, Abt. A, p. 72, pl. 5, figs. 66-70.
- Fissurina crebra (Matthes) Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, p. 122, pl. 59, fig. 6.

Source: Barker, 1960, *ibid.*

Found from 1000 to 3210 m, fairly common, particularly around 2758 m. See pl. 19, fig. 20.

Fissurina fimbriata (Brady)

- Lagena fimbriata Brady, 1881, Quart. J. Micr. Sci., n.s., vol. 21, p. 61. Brady, 1884, Kept. Voy.

Challenger, Zool. 9, pl. 60, figs. 26-28.

- Fissurina fimbriata (Brady) Parr, 1950, B.A.N.Z.

Antarct. Res. Exp., rep. ser. B, vol. 5 (6), p. 307.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, p. 126, pl. 60, figs. 26-28.

Rare, found from 2000 to 2400 m. See pl. 19, fig. 21.

Fissurina globosa (Montagu)

- Vermiculum globosum Montagu, 1803, Test. Brit., p. 523.

- Lagena globosa (Montagu) Brown, 1827, Illustr. Rec. Conch., Gr. Brit. & Irel., ed. 1, pl. 1, fig. 37.

- Entosolenia globosa (Montagu) Williamson, 1848, Ann. Mag. Nat. Hist., ser. 2 (1), p. 16, pl. 2, figs. 13, 14.

- Fissurina globosa (Montagu) Loeblich & Tappan, 1964, Treatise-Protista 2 (2) C540.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, pl. 54, fig. 2.

A not uncommon species, found at depths greater than 2500m. See pl. 19, figs. 22, 23.

Fissurina kerguelenensis Parr, 1950, Brit.-Austr.-N. Zeal. Antarct. Res. Exped., Rep. Ser. B, vol. 5 (6) p. 305, pl. 8, fig. 7.

Source: Barker, 1960, Soc. Econ. Paleontol. & Min., Spec. Publ. 9, p. 122, pl. 59, figs. 8-11.

Common, but never abundant; identical with Parafissurina arctica except for apertural location; found from 1200 to 3210 m. See pl. 19, fig. 24.

Fissurina laevigata Reuss, 1850, K. Akad. Wiss. Wien, Math. - naturw., Cl. Denkschr. 1, p. 366, pl. 46, fig. 1.

Source: Feyling-Hanssen, 1964, Norges Geol. Unders., Nr 225, p. 314, pl. 15, figs. 17, 18.

Rare; scattered from 400 to 3000 m. See pl. 7, fig. 5.

Fissurina lucida (Williamson)

- Entosolenia marginata var. lucida Williamson, 1848, Ann. Mag. Nat. Hist., ser. 2, vol. 1, p. 17, pl. 2, fig. 17.
- Entosolenia lucida (Williamson) Cushman & Gray, 1946, Cushman Lab. Foram. Res., Sp. Publ. 19, p. 30, pl. 5, figs. 16-18.
- Fissurina lucida (Williamson) Loeblich & Tappan, 1953, Smiths. Misc. Coll. 121 (7) p. 76, pl. 14, fig. 4.

Source: Loeblich & Tappan, 1953, *ibid.*

Not common; 1400 to 3000 m. See pl. 7, fig. 6.

Fissurina marginata (Montagu)

- Vermiculum marginatum Montagu, 1803, Test. Brit. p. 524.
- Lagena sulcata var. marginata (Montagu) Parker & Jones, 1865, Phil. Tr. Roy. Soc. Lond., vol. 155, p. 355, pl. 13, figs. 42, 43 only.
- Lagena marginata (Walker & Jacob) Brady, 1884, Rep. Voy. Challenger, Zool. 9, p. 476, pl. 59, fig. 22 only.

- Entosolenia marginata (Montagu?) Cushman, 1948,
Cushman Lab. Foram. Res., Sp. Publ. 23, p. 65, pl.
7, fig. 7.
- Fissurina marginata (Montagu) Loeblich & Tappan,
1953, Smith. Misc. Coll. 121 (7) p. 77, pl. 14,
figs. 6-9.

Source: Loeblich & Tappan, 1953.

Rare; from 1600 to 3000 m. See pl. 19, fig. 25.

Fissurina orbignyana Seguenza, 1862, Dei Terr. Terz. Messina, Pt. II Foram.
monoth. mioc. Messina, p. 66, pl. 2, fig. 25, 26.

Source: Ellis & Messina, Catalogue of Foraminifera.

Rare; from 1400 to 3000 m. See pl. 19, figs. 26, 27.

Fissurina quadrata (Williamson)

- Entosolenia marginata var. quadrata Williamson, 1858,
Rec. Foram. Gt. Brit., p. 11, pl. 1, figs. 27, 28.
- Lagena lucida var. quadrata (Williamson) - Reuss,
1862, Sitz. Akad. Wiss. Wien, vol. 46 (1) p. 324,
pl. 2, fig. 26.
- Lagena quadrata (Williamson) Brady, 1884, Rep. Voy.
Challenger, Zool. 9, p. 475, pl. 59, figs. 3, 16.
- Fissurina quadrata (Williamson) Barker, 1960,
Soc. Econ. Pal. & Min., Sp. Publ. 9, p. 122, pl. 59,
fig. 3.

Source: Barker, 1960, *ibid.*

Rare; 1 station at 2718 m. See pl. 19, fig. 28.

Fissurina seguenziana (Fornasini)

- Lagena seguenziana Fornasini, 1886, Soc. Geol. Ital., Boll. Vol. 5, p. 351, pl. 8, figs. 1-8.
- Fissurina seguenziana (Fornasini) Earland, 1934, Discovery Repts vol. 10, Foram., pt. III, p. 160.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, p. 122, pl. 59, fig. 1.

A very distinctive species, not abundant, scattered from 2560 to 3210 m. See pl. 19, figs. 29, 30.

Fissurina serrata (Schlumberger)

- Lagena serrata Schlumberger 1894, Mém. Soc. Zool. France, vol. 7, p. 258, pl. 3, fig. 7.
- Entosolenia serrata (Schlumberger) Cushman, 1948, Cushman Lab. Foram Res., Sp. Publ. 23, p. 63, pl. 7, fig. 3.
- Fissurina serrata (Schlumberger) Loeblich & Tappan, 1953, Smithson. Misc. Coll. 121 (7) p. 78, pl. 14, fig. 5.

Source: Loeblich & Tappan, 1953, *ibid.*

Very rare; one station at 3210 m. See pl. 19, fig. 31.

Fissurina submarginata (Boomgaard)

- Entosolenia submarginata Boomgaard, 1949, Utrecht Univ., doct. diss., p. 107, pl. 9, fig. 7.
- Fissurina submarginata (Boomgaard) Barker, 1960, Soc. Econ. Pal. & Min., Sp. Publ. 9, p. 122, pl. 59, figs. 21, 22.

Source: Barker, 1960, *ibid.*

Not common; 1530 to 3000 m. See pl.

Fissurina sulcata (Walker & Jacob)

- Serpula (Lagena) sulcata - Walker & Jacob, 1798, Adam's Essays, Kanmacher's Ed., p. 634, pl. 14, fig. 5.
- Lagena sulcata (Walker & Jacob) Parker & Jones, 1865, Philos. Trans. Roy. Soc., vol. 155.
- Fissurina sulcata (Walker & Jacob) Barker, 1960, Soc. Ec. Pal. & Min., Sp. Publ. 9, p. 127, pl. 60, figs. 35-37.

Source: Barker, 1960, *ibid.*

A fairly common species, ranging from 1000 to 3000 m. Very variable as to keel and as to costae height and numbers. See pl. 7, fig. 7.

Fissurina ventricosa (Wiesner)

- Lagena (Entosolenia) marginata var. ventricosa Wiesner, 1931, Deutsche Sudpolar Exped. 1901-03, vol. 20 (Zool. 12) p. 120, pl. 19, fig. 222.
- Fissurina ventricosa (Wiesner) Loeblich & Tappan, 1953, Smithsonian Misc. Coll. 121 (7) p. 79, pl. 14, fig. 15.

Source: Loeblich & Tappan, 1953, *ibid.*

A rare species, found from 1600 to 3000 m. See pl. 19, fig. 33.

Genus Parafissurina Parr, 1947

Parafissurina arctica Green, 1958 U.S.A.F. Cambridge Res. Center, Geophys. Res. Paper 63, vol. I, paper 6, pp. 76-78, pl. 1, figs. 2a, b.

Source: Green, 1958, *ibid.*

Rare; scattered from 2743 to 2748 m at 2 stations only. See pl. 19, fig. 34.

Parafissurina fusuliformis Loeblich & Tappan, 1953, *Smithson. Misc. Coll.* vol. 121 (7) p. 79, 80, pl. 14, figs. 18, 19.

Source: Loeblich & Tappan, 1953, *ibid.*

Not common, ranging from 500 to 3000 m. See pl. 19, fig. 35.

Parafissurina himatiostoma Loeblich & Tappan, 1953, *Smithson. Misc. Coll.*, vol. 121 (7), p. 80, pl. 14, figs. 12-14.

Source: Loeblich & Tappan, 1953, *ibid.*

Rare: at only two stations, 2560 and 3000 m. Not illustrated.

Parafissurina tectulostoma Loeblich & Tappan, 1953, *Smithson. Misc. Coll.*, Vol. 121(7) p. 81, pl. 14, fig. 17.

Source: Loeblich & Tappan, 1953, *ibid.*

Most common of the Parafissurina spp., but never abundant, ranging from 800 to 3210 m. See pl. 19, fig. 36.

Superfamily BULIMINACEA Jones, 1875

Family TURRILINIDAE Cushman, 1927

Subfamily TURRILININAE Cushman, 1927

Genus Buliminella Cushman, 1911

Buliminella elegantissima (d'Orbigny)

- Bulimina elegantissima -d'Orbigny, 1839, Voy. dans l'Amér Mérid: Foran., vol. 5 (5) p. 51, pl. 7, figs. 13, 14.
- Buliminella elegantissima (d'Orbigny) Cushman & Parker, 1931, Proc. USNM, vol. 80, p. 13, pl. 3, figs. 12, 13.

Source: Feyling-Hanssen, 1964, Norges Geol. Unders. NR225, p. 302, pl. 14, fig. 1.

Common from 400 to 3000 m, but most abundant 600 to 2600 m. Size usually very small. See pl. 10, fig. 6.

Buliminella sp.

This is a larger species than B. elegantissima, more angular in shape. Only one specimen was found, at 1550 m. See pl. 20, figs. 28, 29.

Genus Buliminoides Cushman, 1911

Buliminoides williamsonianus (Brady)

- Bulimina williamsonianus -Brady, 1881, Quart. J. Misc. Sci., vol. 21, p. 56.
- Buliminoides williamsonianus (Brady) Cushman, 1911, USNM Bull. 71 (2), p. 90.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Sp. Publ. 9, p. 104, pl. 51, figs. 16, 17.

Not as common as Buliminella elegantissima, but it is also very small, and difficult to distinguish from B. elegantissima. It ranges from about 1590 to 3210 m. See pl. 10, fig. 5.

Genus Tosaia Takayanagi, 1953

Tosaia hanzawai Takayanagi, 1953, Tohoku Univ. Inst. Geol. Pal. Short

Papers, no. 5, p. 30, pl. 40, fig. 7.

Source: Takayanagi, personal communication, May 17, 1980.

A fairly common species, ranging from 1462 to 3210 m, its numbers are highest from 2500 to 2758 m. It is very similar in shape, size and color to Eggerella bradyi and care must be taken to differentiate between them. E. bradyi shows small, dark mineral inclusions, whereas T. hanzawai does not. Also, T. hanzawai shows distinct opaque bands along the sutures, and the chamber walls are often translucent. This is a new record for this species, in the North Atlantic. See pl. 11, fig. 11.

Family BOLIVINITIDAE Cushman, 1927

Genus Bolivina d'Orbigny, 1839

Bolivina inflata Heron-Allen & Earland, 1913, Roy. Irish Acad., Proc. vol. 31 (3), p. 68, pl. 4, figs. 16-19.

Source: Ellis & Messina, Catalogue of Foraminifera

This is a rare species, found at a few stations from 1462 to 2758 m. It is very small. See pl. 11, fig. 14.

Bolivina pseudoplicata Heron-Allen & Earland, 1930, Roy. Micr. Soc. London, Jour. ser. 3, p. 81, pl. 3, figs. 36-40.

Source: Feyling-Hanssen et al. 1971, Bull. Soc. Denmark, vol. 21 (1), p. 243, pl. 7, fig. 16; pl. 18, fig. 11.

Common from 1400 to 3210 m, this species is abundant from 2000 to 3000 m. See pl. 10, fig. 3.

Bolivina pseudopunctata Höglund, 1947, Zool. Bidr. Uppsala, Bd. 26, p. 273, pl. 24, fig. 5; pl. 32, figs. 23, 24; tf. 280, 281, 287.

Source: Höglund, 1947, *ibid.*

Common, but never abundant, ranging over the whole slope. See pl. 11, fig. 12.

Bolivina pygmaea Brady, 1881, Denksch. r.d.k. Akad. Wiss. Wien, vol. 43, p. 27.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Sp. Publ. 9, pl. 53, figs. 5, 6.

Very rare; one specimen only. See pl. 19, fig. 37.

Bolivina striatula Cushman, 1922, Carnegie Inst. Washington, Publ. 311, p. 27, pl. 3, fig. 10.

Source: Höglund, 1947, Zool. Bidr. Uppsala, Bd. 26, pl. 24, fig. 4.

Rare; 4 stations from 500 to 2400 m. See pl. 19, fig. 38.

Bolivina subspinescens Cushman, 1922, U.S. Nat. Mus. Bull. 104 (3), p. 48, pl. 7, fig. 5.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, p. 108, pl. 52, figs. 24, 25.

Fairly common species, ranging from 530 to 2200 m, more abundant between 600 and 1200 m.

Family ISLANDIELLIDAE, Loeblich & Tappan, 1964

Genus Islandiella Nørvang 1958

Islandiella helenae Feyling-Haussen & Buzas, 1976, J. Foram. Res., vol. 6 (2), p. 155, 156, tfs. 1-4.

- Cassidulina teretis Tappan - Loeblich & Tappan, 1953, Smithsonian Misc. Coll. vol. 121 (7) p. 121, pl. 12, figs. 3, 4 (non C. teretis Tappan)

Source: Feyling-Haussen & Buzas, 1976, ibid.

This species is so similar to C. teretis, except for the aperture, that it is difficult to distinguish. A few specimens occurred in the upper slope area. See pl. 19, fig. 39.

Islandiella norcrossi (Cushman)

- Cassidulina norcrossi Cushman, 1933, Smiths. Misc. Coll. 89 (9) p. 7, pl. 2, fig. 7.
- Islandiella norcrossi (Cushman) Nørvang, 1958, Vid. Medd. Dansk. nat. Foren. 14, p. 32, pl. 7, figs. 8-13; pl. 8, fig. 14.

Source: Feyling-Hanssen et al. 1971, Bull. Geol. Soc. Denmark, vol. 21, pts. 2-3, p. 248, pl. 8, figs. 1, 2.

This is rare in the slope, scattered from 390 to 2800 m., at 7 stations. See pl. 19, figs. 40, 41.

Family BULIMINIDAE Jones, 1875

Subfamily BULIMININAE Jones, 1875

Genus Bulimina d'Orbigny, 1826

Bulimina alazanensis Cushman, 1927, J. Paleo., vol. 1 (2), p. 161, pl. 25, fig. 4.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, p. 104, pl. 51, figs. 18, 19.

Very rare; only one or two specimens, at 3000 m. See pl. 19, fig. 42.

Bulimina exilis Brady

- B. elegans var. exilis Brady, 1884, Rep. Voy. Challenger, Zool. 9, p. 399, pl. 50, figs. 5, 6.

- B. exilis Brady - Cushman & Parker, 1940, Contr.
Cushman Lab. Foram. Res., 16 (1) p. 11, pl. 2,
figs. 18-21.

Source: Loeblich & Tappan, 1953, Smiths. Misc. Coll. 121 (7) p.
110, pl. 20, figs. 4, 5.

Very uncommon, 1800 to 3210 m. See pl. 19, fig. 43.

Bulimina inflata Seguenza, 1862, Accad. Gioenia Sci. Nat. Catania, ser. 2
(18) p. 109, pl. 1, fig. 10.

Source: Cushman, 1910, U.S. Nat. Mus. Bull. 71 (2) p. 84, tf. 137
a, b.

This species was found at only one station at 2600 m. See pl. 10,
fig. 8.

Bulimina marginata d'Orbigny, 1826, Ann. Sci. Nat., ser. 1 (7), p. 269, pl.
12, figs. 10-12.

Source: Feyling-Hanssen, 1964, Norges Geol. Unders., NR225, p.
303, pl. 14, figs. 2-5.

Rare; found at 3 stations from 506 to 2800 m. See pl. 10, fig. 7.

Genus Globobulimina Cushman, 1927

Globobulimina auriculata (Bailey) gullmomensis Höglund, 1947, Zool. Bidr.
Uppsala, Bd 26, p. 252, pl. 20, fig. 6; pl. 21, fig. 5; pl. 22, fig. 6; tf.
258-265, 268, 269, 271.

Source: Höglund, 1947, *ibid.*

Not a common species on the Slope, ranging from 400 to 2560 m.

Genus Stainforthia Hofker, 1956

Stainforthia concava (Höglund)

- Virgulina concava Höglund, 1947, Zool. Bidr.
Uppsala, Bd 26, p. 257, pl. 23, figs. 3, 4; pl. 32,
figs. 4-7; tf. 273-275.
- Stainforthia concava (Höglund) Loeblich & Tappan,
1964, Treatise- Protista 2 (2) C 561.

A common slope species, ranging from 400 to 3210 m, but most abundant 1800 to 2600 m. See pl. 9, fig. 5.

Family UVIGERINIDAE Haeckel, 1894

Genus Uvigerina d'Orbigny, 1826

Uvigerina asperula Czjzek, 1848, Nat. Abh., Wien, Osterreich, Bd 2, Abth 1,
p. 146, pl. 13, figs. 14, 15.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Sp. Publ. 9, p. 156,
pl. 75, figs. 6-9.

Very rare in surface sediments, one station only at 2758 m. More common in cores. See pl. 11, fig. 7.

Uvigerina canariensis d'Orbigny, 1839, Foram. Canaries, p. 138, pl. 1,
figs. 25-27.

Source: Cushman, 1913, U.S. Nat. Mus. Bull. 71 (3), p. 92, pl. 42,
fig. 6.

Not present at all in surface sediments, this species is found in Cruise 79017 always in association with other Uvigerina spp. See pl. 19, fig. 44.

Uvigerina peregrina Cushman, 1923, U.S. Nat. Mus. Bull. 104 (4) p. 166, pl. 42, figs. 7-10.

Source: Ellis & Messina, Catalogue of Foraminifera.

Rare in the surface sediments, ranging from 1400 to 2600 m. It is common at certain levels in cores. See pl. 10, fig. 9.

Uvigerina spinicostata Cushman & Jarvis, 1929, Cushman Lab. Foram. Res., vol. 5 (1) no. 72, p. 12, pl. 3, figs. 9, 10.

Source: Ellis & Messina, Catalogue of Foraminifera.

Always found in association with U. peregrina, and only in core samples. See pl. 19, fig. 45.

Genus Trifarina Cushman 1923

Trifarina angulosa (Williamson)

- Uvigerina angulosa Williamson, 1858, Rec. Foram. Gt. Britain, p. 67, pl. 5, fig. 140.
- Angulogerina angulosa (Williamson) Höglund, 1947, Zool. Bidr. Uppsala, BD 26, p. 283, pl. 23, fig. 8; tf. 305-308.
- Trifarina angulosa (Williamson) Michelson, 1967, Meddr. Dansk geol. Foren. 17, p. 227, pl. 2, fig. 13.

Source: Cushman 1913, U.S. Nat. Mus. Bull. 71 (3) p. 98, pl. 44 fig. 4.

Rare; 1408 to 3210 m ; found at only 5 stations. See pl. 19, fig. 46.

Trifarina fluens (Todd)

- Angulogerina fluens Todd, in Cushman & McCulloch, 1940, S. Calif., Univ. Publ., Allan Hancock Exped. vol. 6 (5) p. 288, pl. 36, fig. 1.
- Trifarina fluens (Todd) Loeblich & Tappan, 1964, Protista 2 (2) C 571.

Source: Ellis & Messina, Catalogue of Foraminifera

Scattered from 400 to 2758 m, never abundant. See pl. 11, fig. 6.

Superfamily DISCORBACEA Ehrenberg, 1838

Family DISCORBIDAE Ehrenberg, 1838

Subfamily DISCORBINAE Ehrenberg, 1838

Genus Discorbis Lamarck, 1804

Discorbis sp. cf. D. squamata Parker, 1952, Bull. Mus. Comp. Zool., vol. 106 (9), p. 418, pl. 6, figs. 10, 11.

Source: F. Parker, 1952, *ibid.*

This species is small and very rare, ranging from 500 to 2758 m.

Discorbis translucens Earland, 1934, Discovery Repts., vol. 10, p. 181, pl. 8, figs. 20-22.

Source: Ellis & Messina, Catalogue of Foraminifera.

Not common, found from 1400 to 2600 m; it is very small species.

See pl. 19, figs. 49, 50.

Discorbis sp.

Very small and rare, somewhat like D. translucens. Not illustrated.

Genus Buccella Anderson, 1952Buccella frigida (Cushman)

- Pulvinulina frigida Cushman, 1922, Contr. Can. Biol., no. 9, p. 12 (144).
- Eponides frigida (Cushman) Cushman 1931, U.S. Nat. Mus. Bull. 104 (8), p. 45.
- Buccella frigida (Cushman) Anderson, 1952, Washington Acad. Sci., Jour. vol. 42 (5) p. 144, tfs. 4, 5, 6.

Source: Loeblich & Tappan, 1953, Smiths. Misc. Coll. 121 (7) p. 115, pl. 22, figs. 2, 3.

Common, 390 to 2800 m, abundant from 800 to 1600 m. Possibly several subspecies included here. See pl. 10, fig. 10.

Genus Eoeponidella Wickenden, 1949Eoeponidella pulchella (Parker)

- Pninanaella? pulchella F. Parker, 1952, Bull. Mus. Comp. Zool. 106 (9) p. 420, pl. 6, figs. 18-20.
- Asterigerina pulchella (Parker) Loeblich & Tappan, 1964, Protista 2 (2) C 592.
- Eoeponidella pulchella (Parker) Haman, 1973, Micropaleo. 19 (1) pp. 101-103.

Source: Haman, 1973, *ibid.*

Extremely rare; only 1 specimen found. See pl. 19, fig. 51.

Genus Epistominella Husezima & Maruhasi, 1944Epistominella exigua (Brady)

- Pulvinulina exigua Brady, 1884, Rep. Voy. Challenger, Zool. 9, p. 696, pl. 103, figs. 13, 14.
- Eponides exigua (Brady) Cushman, 1931, USNM Bull. 104 (8) p. 44, pl. 10, figs. 1, 2.
- Epistominella exigua (Brady) Parker, 1954, Bull. Mus. Comp. Zool. vol. 111 (10) p. 533, pl. 10, figs. 22, 23.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Sp. Publ. 9, p. 212, pl. 103, figs. 13, 14.

Common species, small in size; ranging in depth from 2560 to 3210 m, most common from 2938 to 3210 m. Very similar to E. vitrea. See pl. 11, fig. 2.

Epistominella vitrea Parker, 1953, Cushman Found, Foram. Res., Spec. Publ. 2, p. 9, pl. 4, figs. 34-36, 40, 41.

Source: Parker et al, 1953, *ibid.*

Common from 400 to 3210 m, and dominant from 2400 to 3210 m. See pl. 11, figs. 3,4.

Genus Gavelinopsis Hofker, 1951Gavelinopsis praegeri (Heron-Allen & Earland)

- Discorbina praegeri Heron-Allen & Earland, 1913, Proc. Roy. Irish Acad., vol. 31 (64) p. 122, pl. 10, figs. 8-10.

- Discorbis? praegeri (Heron-Allen & Earland) Cushman, 1931, USNM Bull. 104 (8) p. 30, pl. 6, fig. 4.
- Gavelinopsis praegeri (Heron-Allen & Earland) Hofker, 1951, Siboga Exped., mon 1Va, pt. III, p. 486, tf. 332-334.

Source: Todd 1965, U.S.Nat.Mus. Bull. 161 (4) p. 18, pl. 8,

fig. 1.

Rare; 1408 to 1550 m, and in core samples. See pl. 19, figs. 52, 53.

Genus Laticarinina Galloway & Wissler, 1927

Laticarinina halophora (Stache)

- Robulina halophora Stache 1864 (in Finlay, 1940, Trans. Roy. Soc. N. Zealand, vol. 69, pp. 467-468).
- Pulvinulina repanda var. menardii subvar. pauperata Parker & Jones 1865, Philos Trans. Roy. Soc. vol. 155, p. 395, pl. 16, figs. 50, 51.
- Pulvinulina pauperata (Parker & Jones) Brady, 1884, Challenger, Zool. 9, p. 696, pl. 104, figs. 3-11.
- Pellatispira pauperata (Parker & Jones) Cushman 1927, Scripps Inst. Oc. Bull., Tech. Ser. vol. 1, p. 176, pl. 6, fig. 13.
- Laticarinina pauperata (Parker & Jones) Cushman, 1931, USNM Bull. 104, pt. 8, p. 114, pl. 20, figs. 4a-c; pl. 21, figs. 1a-c.
- L. halophora (Stache) Finlay, 1940, *ibid.*

Source: Barker, 1960, Soc. Econ. Pal. & Min., Sp. Publ. 9, pl. 104, figs. 3-11.

Not common, ranging from 2560 to 3000 m; usually greater than 1 mm in size. See pl. 10, fig. 11.

Genus Rosalina d'Orbigny, 1826

Rosalina columbiensis (Cushman)

- Discorbis columbiensis Cushman, 1925, Cushman Lab. Foram. Res., Contr., vol. 1 (2) p. 43, pl. 6, fig. 13.

- Rosalina columbiensis (Cushman) Uchio, 1960, Cushman Found. Foram. Res., Sp. Publ. 5, p. 66, pl. 8, figs. 1-2.

Source: Ellis & Messina, Catalogue of Foraminifera.

Not common; ranging from 1200 to 3000 m. See pl. 19, figs. 54, 55.

Genus Stetsonia F. Parker, 1954

Stetsonia minuta F. Parker, 1954, Bull. Mus. Comp. Zool., vol. 111 (10), p. 534, pl. 10, figs. 27-29.

Source: Ellis & Messina, Catalogue of Foraminifera.

Only one specimen was found, at 2800 m. See pl. 19, figs. 56, 57.

Subfamily BAGGININAE Cushman, 1927

Genus Valvulineria Cushman, 1926

Valvulineria arctica Green, 1958, U.S.A.F. Cambridge Res. Center Geophys., Res. Paper 63, vol. 1, paper 6, p. 78, pl. 1, fig. 3.

Source: Green, 1958, *ibid.*

A common Slope species, from 506 to 3210 m, most abundant 1600 to 2400 m. Very small in size. See pl. 12, fig. 3.

Valvulineria laevigata Phleger & Parker, 1951, Geol. Soc. Amer. Mem. 46 (2) p. 25, pl. 13, figs. 11, 12.

Source: Phleger & Parker, 1951, *ibid.*

Very rare; ranging from 1550 to 3210 m. See pl. 11, fig. 1.

Family ASTERIGERINIDAE d'Orbigny, 1839

Genus Asterigerina d'Orbigny, *in* de la Sagra, 1839

Asterigerina carinata d'Orbigny, 1839, *in* de la Sagra, Hist. Phys. Pol. Nat. Cuba, Foram., p. 118, pl. 5, fig. 25; pl. 6, figs. 1, 2.

Source: Ellis & Messina, Catalogue of Foraminifera

One damaged specimen at 2560 m. See pl. 19, figs. 58, 59.

Superfamily SPIRILLINACEA Reuss, 1862

Family SPIRILLINIDAE Reuss, 1862

Subfamily SPIRILLININAE Reuss, 1862

Genus Turrispirillina Cushman, 1927

Turrispirillina arctica (Cushman)

- Spirillina arctica Cushman, 1933, *Smithson. Misc. Coll.* 89 (9) p. 6, pl. 2, fig. 1 only.
- Turrispirillina arctica (Cushman) Loeblich & Tappan, 1953, *Smiths. Misc. Coll.*, vol. 121 (7) p. 113-114, pl. 21, fig. 1.

Source: Loeblich & Tappan, 1953, *ibid.*

From 1462 to 3210 m, at 3 stations only. Very rare. See pl. 19, figs. 60, 61.

Subfamily PATELLININAE Rhumbler, 1906

Genus Patellina Williamson, 1858

Patellina corrugata Williamson, 1858, Rec. Foram. Great Britain, p. 46,
pl. 3, figs. 86-89.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Sp. Publ. 9, p. 178,
pl. 86, figs. 1-7.

A rare species on the slope, from 600 to 2800 m. See pl. 19, fig.
62, 63.

Superfamily ROTALIACEA Ehrenberg, 1839

Family ROTALIIDAE Ehrenberg, 1839

Subfamily RUPERTININAE Loeblich & Tappan, 1961

Genus Rupertina Loeblich & Tappan, 1961

Rupertina stabilis (Wallich)

- Rupertia stabilis Wallich, 1877, Ann. Mag. Nat.
Hist., ser. 4 (19) p. 502, pl. 20, figs. 1-13.
- Rupertina stabilis (Wallich) Loeblich & Tappan,
1961, J. Paleo., vol. 35, p. 312.

Source: Loeblich & Tappan, 1964, Treatise-Protista 2 (2) C627,
fig. 499 (1-3).

Rare; 1600 to 2800 m. See pl. 19, fig. 64.

Family ELPHIDIIDAE Galloway, 1933

Subfamily ELPHIDIINAE Galloway, 1933

Genus Elphidium de Montfort, 1808

Elphidium bartletti Cushman, 1933, *Smithson. Misc. Coll.* vol. 89 (9) p. 4, pl. 1, fig. 9.

Source: Loeblich & Tappan, 1953, *Smithson. Misc. Coll.* 121 (7) p. 96, pl. 18, figs. 10-14.

Only one specimen found, at 600 m. See pl. 20, fig. 1.

Elphidium excavatum (Terquem) group

- E. incertum incertum (Williamson) Brand, 1941, *Senckenbergiana*, vol. 23, p. 58.
- E. excavatum (Terquem) alba Feyling-Hanssen, 1972, *Micropaleo.* 18 (3) p. 340, pl. 3, figs. 1-9.
- E. incertum clavatum Cushman, 1931, *U.S. Nat. Mus. Bull.* 104 (7) p. 20, pl. 7, fig. 10.
- E. excavatum (Terquem) clavata Cushman, Feyling-Hanssen, 1972, *Micropaleo* 18 (3) p. 339, pl. 1, figs. 1-9, pl. 2, fig. 1-9.
- Polystomella excavata Terquem 1875, *Essai Class. Anim. Dunkerque*, pt. 1, p. 25, pl. 2, fig. 2a-f.
- E. excavatum (Terquem) Heron-Allen & Earland, 1932, *Discovery Rep.* vol. 4, p. 439, pl. 16, figs. 22, 23.

Source: Feyling-Hanssen, 1972, *Micropaleo.* 18 (3) p. 339, 340.

From 390 to 2800 m; very common 500 to 2560 m; dominant from 800 to 2200 m. Mostly clavata forms. See pl. 15, figs. 1-12.

Elphidium frigidum Cushman, 1933, *Smithson. Misc. Coll.* 89 (9) p. 5, pl. 1, fig. 8.

Source: Loeblich & Tappan, 1953, *Smithson. Misc. Coll.*, vol. 121 (7) p. 99, pl. 18, figs. 4-9.

Rare; a few specimens, 500 to 600 m. See pl. 20, fig. 2.

Elphidium oregonense Cushman & Grant, 1927, Trans. San Diego Soc. Nat.Hist., vol. 5, p. 79, pl. 8, fig. 3.

Source: Loeblich & Tappan, 1953, Smithson. Misc. Coll. 121 (7) p. 103, pl. 18, figs. 1-3.

Rare, usually as broken specimens, around 2600 m depth. See pl. 20, fig. 3.

Elphidium subarcticum Cushman, 1944, Cushman Lab. Foram. Res., Sp. Publ. 12, p. 27, pl. 3, figs. 34, 35.

Source: Loeblich & Tappan, 1953, Smithson. Misc. Coll. 121 (7) p. 105, pl. 19, figs. 5-7.

Very rare on slope. See pl. 20, fig. 4.

Genus Protelphidium Haynes, 1956

Protelphidium nanum Vilks, 1979, in Vilks et al., Geol. Surv. Can. Bull. 303, pp. 34, 35, pl. 1, figs. 1-4.

Source: Vilks et al., 1979, *ibid.*

From 390 to 2938 m, commonly from 500 to 1600 m; very small in size. See pl. 13, fig. 5.

Protelphidium orbiculare (Brady)

- Nonionina orbicularis Brady, 1881, Ann. Mag. Nat. Hist. Ser. 5, vol. 8, p. 415, pl. 21, fig. 5.

- Nonion orbiculare (Brady) Cushman, 1930, USNM Bull. 104 (7) p. 12, pl. 5, figs. 1-3.

- Elphidium orbiculare (Brady) Hessland, 1943, Bull. Geol. Inst. Uppsala, vol. 31, p. 262.

- Protelphidium orbiculare (Brady) Todd & Low, 1961,
Contr. Cushman Found. Foram. Res. 12 (1) p. 20, pl.
2, fig. 11.

Source: Loeblich & Tappan, 1953, Smithson. Misc. Coll. 121 (7)p.
102, pl. 19, figs. 1-4.

From 400 to 530 m; very rare. See pl. 20, fig. 5.

Superfamily ORBITOIDACEA Schwager, 1876

Family EPONIDIDAE Hofker, 1951

Genus Eponides de Montfort, 1808

Eponides bradyi; Earland, 1934, Discovery Repts., vol. 10, p. 187, pl. 8,
figs. 36-38.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, p.
196, pl. 95, figs. 9, 10.

Ranging from 1408 to 3210 m, this common species is most abundant
from 2560 to 2758 m. It is very small and compact. See pl. 11, fig. 5.

Eponides tumidulus (Brady)

- Truncatulina tumidula Brady, 1884, Rep. Voy.
Challenger, Zool. 9, p. 666, pl. 95, figs. 8 a-d.
- Eponides tumidulus (Brady) Cushman, 1931,
U.S. Nat. Mus., Bull. 104 (8) p. 55, pl. 11, fig. 6.

Source: Cushman, 1931, *ibid.*

Ranging from 1462 to 3210 m; very common from 2560 to 3210 m.

Often with distinctive pinkish brown tint to test. See pl. 12, figs. 1, 2.

Family CIBICIDIDAE Cushman, 1927

Subfamily PLANULININAE Bermudez, 1952

Genus Planulina d'Orbigny, 1826

Planulina wuellerstorfi (Schwager)

- Anomalina wuellerstorfi Schwager, 1866, Novara
Exped., Geol. Theil. vol. 2, p. 258, pl. 7, figs.
105, 107.
- Truncatulina wuellerstorfi (Schwager) Brady, 1884,
Rep. Voy. Challenger, Zool. 9, p. 662, pl. 93, fig.
9 only.
- Planulina wuellerstorfi (Schwager) Cushman, 1929,
Cushman Lab. Foram. Res., Contr. vol. 5, p. 104,
pl. 15, figs. 1, 2.

Source: Barker, 1960, S.E.P.M. Sp. Publ. 9, p. 192, pl. 93,
fig. 9.

Common from 1530 to 3210 m, particularly from 2560 to 3000 m;
usually larger than 1 mm in size, usually brown in colour, or transparent.
See pl. 12, fig. 9.

Subfamily CIBICIDINAE Cushman, 1927

Genus Cibicides de Montfort, 1808

Cibicides bertheloti (d'Orbigny)

- Rosalina bertheloti d'Orbigny, 1839, in de la Sagra,
Hist. Phys. pol. nat. Cuba, vol. 8, p. 135, pl. 1,
figs. 28-30.

- Discorbis bertheloti (d'Orbigny) Cushman, 1931, USNM Bull. 104 (8) p. 16, pl. 3, fig. 2.
- Discopulvinulina bertheloti (d'Orbigny) Barker, 1960, Soc. Econ. Pal. & Min., Spec. Publ. 9, p. 184, pl. 89, figs. 11, 12.
- Cibicides bertheloti (d'Orbigny) Feyling-Hanssen, 1964, Norges Geol. Unders. NR225, p. 338, pl. 18, figs. 21-24.

Source: Feyling-Hanssen, 1964, *ibid.*

Uncommon, usually opaque rather than translucent; very similar to P. wuellerstorfi, but never brown in colour. See pl. 12, fig. 7.

Cibicides lobatulus (Walker & Jacob)

- Nautilus lobatulus - Walker & Jacob, 1798, in Adam's Essays on the Microscope, p. 642, pl. 14, fig. 36.
- Cibicides lobatulus (Walker & Jacob) Cushman, 1931, USNM Bull. 104 (8) p. 118k, pl. 21, fig. 3.

Source: Cushman, 1931, *ibid.*

Usually found unattached in samples, from 390 to 3210 m, most commonly from 2560 to 2743 m, where sediments are coarser. See pl. 12, fig. 4.

Cibicides robertsonianus (Brady)

- Planorbulina (Truncatulina) robertsoniana Brady, 1881, Quart. J. Micr. Sci., n.s. vol. 21, p. 65.
- Cibicides robertsonianus (Brady) Cushman, 1931, USNM Bull. 104 (8) p. 121, pl. 23, fig. 6.

Source: Todd, 1965, USNM Bull. 161 (4), p. 54, pl. 22, fig. 4.

From 1400 to 3210 m, most common 2560 to 2800 m. Never abundant; usually greater than 1 mm in size. Pink colour is very distinctive. See pl. 12, fig. 5.

Cibicides rugosus Phleger & Parker, 1951, Geol. Soc. Amer., Mem. 46 (2), p. 31, pl. 17, fig. 5, 6.

Source: Ellis & Messina, Catalogue of Foraminifera.

Found from 600 to 3210 m, but mostly below 1800 m. It is usually more than 1 mm. across. See pl. 12, fig. 8.

Cibicides sp.

Possibly a C. lobatulus variant, it is a very irregular species, with chambers loosely attached, and the chamber periphery is flat and sharp. The test is medium sized or smaller. See pl. 11, figs. 9, 10.

Family ACERVULINIDAE Schultze, 1854

Genus Gypsina Carter, 1877

Gypsina spp.

Several variable forms were found that were tentatively placed in Gypsina. All are rare and very widely scattered on the Slope. See pl. 17, figs. 25, 26.

Superfamily CASSIDULINACEA d'Orbigny, 1839

Family CAUCASINIDAE N.K. Bykova, 1959

Superfamily FURSENKONININAE Loeblich & Tappan, 1961

Genus Fursenkoina Loeblich & Tappan, 1961

Fursenkoina fusiformis (Williamson)

- Bulimina pupoides fusiformis Williamson, 1858, Rec.

- Foram. Gt. Brit., p. 63, pl. 5, figs. 129, 130.
- B. fusiformis Williamson - Höglund, 1947, Zool. Bidr. Uppsala, Bd 26, p. 232, pl. 20, fig. 3, tf. 219-233.
 - Virgulina fusiformis (Williamson) Feyling-Hanssen, 1964, Norges Geol. Unders. Nr 225, p. 307, pl. 14, figs. 15-18.
 - Fusenkoina fusiformis (Williamson) Loeblich & Tappan, 1964, Treatise, Protista 2(2) C732, C733

Source: Feyling-Hanssen, 1964, *ibid.*

Ranging from 390 to 3210 m, it is most abundant from 500 to 1200 m. See pl. 14, fig. 1.

Family CASSIDULINIDAE d'Orbigny, 1839

Genus Cassidulina d'Orbigny, 1826

Cassidulina reniforme Nørvang

- C. crassa reniforme Nørvang, 1945, Zool. of Iceland, Foram. vol. 2 (2), p.41, tf. 6 e-h.
- C. islandica Nørvang - Loeblich & Tappan, 1953, Smithson. Misc. Coll. 12 (7), p. 118, pl. 24, fig. 1 (non Nørvang)
- C. crassa d'Orbigny-Nørvang 1958, Dansk nat. F. V. Medd. vol. 120, p. 36, pl. 9, figs. 24, 25 only
- C. crassa minima Boltovskvy, 1959, Rep. Argentina S. Mar., Serv. Hidr. nav., H1005, p. 100, pl. 13, fig. 12.
- C. bradshawi Uchio, 1960, Cushman Found. Foram,

Res., Sp. Publ. 5, p. 68, pl. 9, figs. 11, 12.

C. subacuta (Gudina) Feyling-Hanssen, 1976, Mar.

Sed., Sp. Publ. 1 (b), p. 354, pl. 2, figs. 14-19.

- Cassilaminella subacuta Gudina, 1966, A.V.S.S.R.,
Inst. Geol. Geophys., p. 67, pl. 7, fig. 4, 5; pl.
13, fig. 3.

- Cassidulina reniforme Nørvang; Rodriguez, Hooper &
Jones, 1980, J. Foram. Res. 10(1), p. 58; pl. 2,
figs. 2, 4, 6; pl. 3, figs. 3, 6, 9, 11, 12; pl. 5,
figs. 10-12.

Source: Rodriguez et al., 1980, ibid.

From 400 to 3210 m, most abundant below 1600 m. Very small.

See pl. 14, fig. 2.

Cassidulina teretis Tappan, 1951, Contr. Cushman Found. Foram. Res., vol.
2(1), p. 7, pl. 1, fig. 30.

Source: Rodriguez, Hooper & Jones, 1980, J. Foram. Res., vol.
10(1), p. 59, pl. 2, figs. 1, 3, 5; pl. 5, figs. 1, 4, 7; pl. 6, figs. 7,
10.

This is the common Cassidulina species on the slope, ranging from
506 to 3210 m, and found mostly between 506 and 2000 m. See pl. 11, fig.
13.

Family NONIONIDAE Schultze, 1854

Subfamily CHILOSTOMELLINAE Brady, 1881

Genus Chilostomella Reuss, in Czjzek, 1849

Chilostomella uolina Schwager, 1878, Uff. Geol. (R. Com. Geol. Ital.)

Boll. vol. 9, p. 257, pl. 1, fig. 16.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Sp. Publ. 9, p. 112, pl. 55, figs. 12 & 14, 17, 18.

Only a few specimens were found, all in core samples. See pl. 19, fig. 65.

Subfamily NONIONINAE Schultze, 1854

Genus Nonion de Montfort, 1808

Nonion depressulus (Walker & Jacob)

- Nautilus depressulus Walker & Jacob, 1798, in Addam's Essays on the Microscope, p. 641, pl. 14, fig. 33.
- Nonionina depressula (Walker & Jacob) Parker & Jones, 1859, Ann. Mag. Nat. Hist., ser. 3, vol. 4, p. 339, 341.
- Nonion depressulus (Walker & Jacob) MacFadyen, 1940, Geol. Mag., vol. 77, pp. 279-281.

Barker, 1960, Soc. Econ. Pal. & Min., Sp. Publ. 9, p. 224, pl. 109, figs. 6, 7.

From 400 to 3210 m, most common from 1600 to 3210 m. Often with brownish tint to test. See pl. 13, figs. 4, 7.

Nonion grateloupi (d'Orbigny)

- Nonionina grateloupi d'Orbigny, 1826, Ann. Sci. Nat. Paris, ser. 1, vol. 7, p. 294, no. 19.

- Nonion grateloupi (d'Orbigny) Schmitker, 1971,
Tulane Studies Geol. & Paleontol., 8 (4), p. 206,
pl. 10, fig. 6.

Source: Schmitker, 1971, *ibid.*

Common 400 to 2000 m, most abundant from 400 to 1550 m. See pl. 14, fig. 3.

Genus Astrononion Cushman & Edwards, 1937

Astrononion gallowayi Loeblich & Tappan, 1953, *Smithson. Misc. Coll.* vol. 121(7), p. 90, pl. 17, figs. 4-7.

Source: Loeblich & Tappan, 1953, *ibid.*

Not an abundant species scattered between 390 and 3000 m, numbers highest around 1500 m. See pl. 13, fig. 6.

Genus Nonionella Cushman, 1926

Nonionella atlantica Cushman, 1947, *Contr. Cushman Lab. Foram. Res.*, vol. 23(4), p. 90, pl. 20, figs. 4, 5.

Source: Parker, Phleger & Peirson, 1953, *Cushman Found. Foram. Res.*, Sp. Publ. 2, p. 11, pl. 3, figs. 30, 31.

Ranging from 390 to 3210 m, abundant between 500 and 2200 m. See pl. 14, fig. 4.

Nonionella turgida (Williamson)

- Rotalina turgida-Williamson, 1858, *Rec. Foram. Great Britain*, p. 50, pl. 4, figs. 95-97.
- Nonionina turgida (Williamson) Brady, 1884, *Rep. Voy. Challenger, Zool.* 9, p. 731, pl. 109, figs. 17-19.

- Nonionella turgida (Williamson) Cushman, 1930, USNM
Bull. 104(7), p. 15, pl. 6, figs. 1-4.

Source: Cushman, 1930, *ibid.*

From 500 to 1800 m., but very rare in surface sediments. More common in cores, but never abundant. See pl. 13, fig. 3.

Nonionella turgida (Williamson) digitata Norvang, 1945, Zool. Iceland, vol. 2(2), Foram., p. 29, tf. 4.

Source: Ellis & Messina, Catalogue of Foraminifera

Rare; found at only 1 surface station, at 530 m, and found also in the cores, always in association with N. turgida. See pl. 20, figs. 6,7.

Genus Nonionellina Voloshinova, 1958

Nonionellina labradorica (Dawson)

- Nonionina labradorica Dawson, 1860, Can. Nat., vol. 5, p. 191, fig. 4.
- Nonion labradorica (Dawson) Cushman, 1927, Bull. Scripps Inst. Oceanogr, techn. ser., vol. 1, p. 148, pl. 2, figs. 7, 8.
- Nonionellina labradorica (Dawson) Voloshinova, 1958, Mikrofauna SSR, Sb. 9, VNIGRI. Trudy, no. 115, p. 142.

Source: Loeblich & Tappan, 1953, Smith. Misc. Coll. 121(7), p. 86, pl. 17, figs. 1, 2.

Common, from 390 to 2800 m., most common 400 to 1400 m. See pl. 13, fig. 20.

Genus Pullenia Parker & Jones, 1862

Pullenia bulloides (d'Orbigny)

- Nonionina bulloides-d'Orbigny, 1826, Ann. Sci. Nat. Paris, ser. 1 vol. 7, p. 293, no. 2.
- Pullenia bulloides (d'Orbigny) Cushman & Todd, 1943, Contr. Cushman Lab. Foram. Res., vol. 19, p. 13, pl. 2, figs. 15-18.

Source: Barker, 1960, Soc. Econ. Pal. & Min., Sp. Publ. 9, p. 174, pl. 84, figs. 12, 13.

Common from 390 to 3210 m, abundant between 600 to 1380 m. Size varies considerably. See pl. 14, fig. 5.

Pullenia osloensis Feyling-Hanssen, 1954, Norsk geol. Tidsskr. 33, p. 194, pl. 1, figs. 33-35.

Source: Ellis & Messina, Catalogue of Foraminifera.

Found from 400 to 3000 m, scattered, and not common from 506 to 2000 m. A very small species, usually. See pl. 13, fig. 9.

Pullenia quinqueloba (Reuss)

- Nonionina quinqueloba Reuss, 1851, Zeitschr. deutsch. Geol.-Ges., vol. 3, p. 71, pl. 5, fig. 31.
- Pullenia quinqueloba (Reuss) Brady, 1882, Proc. Roy. Soc. Edinburgh, vol. 11, p. 712.
- Pullenia subcarinata (d'Orbigny) Heron-Allen & Earland, 1932, Discovery Rept. 4, Foram (1), p. 403.

Source: LeRoy & Hodgkinson, 1975, Micropaleo 21(4) p. 436, pl. 9, fig. 11.

Common from 506 to 3210 m, particularly between 2400 and 3210 m.

Size variable. See pl. 14, fig. 6.

Family ALABAMINIDAE Hofker, 1951

Genus Gyroidina d'Orbigny, 1826

Gyroidina orbicularis d'Orbigny

- Rotalia (Gyroidina) orbicularis - d'Orbigny, 1826, Ann. Sci. Nat., ser. 1, vol. 7, p. 278, no. 1, mod. no. 13.
- Rotalia orbicularis d'Orbigny-Brady, 1864, Trans. Linn. Soc. London, vol. 24, p. 470, pl. 48, fig. 16.
- Gyroidina orbicularis d'Orbigny-Barker, 1960, Soc. Ec. Pal. & Min., Sp. Publ. 9, p. 238, pl. 115, fig. 6.

Source: Cushman, 1915, U.S.N.Mus. Bull. 71(5), p. 68, pl. 29, fig. 3, tf, 62.

Uncommon, from 2938 to 3210 m; also in cores. See pl. 20, figs. 8, 9.

Gyroidina quinqueloba Uchio, 1960, Cushman Found. Foram. Res., Spec. Pub. 5, p. 66, pl. 8, figs. 22-27.

Source: Ellis & Messina, Catalogue of Foraminifera.

Rare; 2800 m; only one or two specimens. See pl. 20, figs. 10, 11.

Gyroidina soldanii d'Orbigny

- Rotalia (Gyroidina) soldanii d'Orbigny, 1826, Ann. Sci. Nat., vol. 7, p. 278, no. 5, mod. 36.

- Gyroidina neosoldanii Brotzen, 1936, Sweden, Sver. Geol. Unders. Avh., ser. C, no. 396, (Årsh 30, no. 3) p. 158.

Source: Todd, 1965, U.S.N.Mus. Bull. 161 (4) p. 19, pl. 6, fig. 4.

Common, 1000 to 3210 m, mostly from 2560 to 3000 m. See pl. 14, fig. 7.

Genus Oridorsalis Andersen, 1961

Oridorsalis umbonatus (Reuss)

- Rosalina umbonata-Reuss, 1857, Zeitschr. deutsch Geol. Ges., vol. 3, p. 75, pl. 5, fig. 35.
- Truncatulina tenera Brady, 1884, Rept. Voy. Challenger, Zool. 9, p. 665, pl. 95, fig. 11.
- Eponides umbonatus (Reuss) Parker, 1952, Bull. Mus. Comp. Zool. 106(9), p. 419, pl. 6, fig. 13.
- Eponides tener (Brady) Cushman, Todd & Post, 1954, USGS, Prof. Paper 260. H, p. 359.
- Pseudoeponides umbonatus (Reuss) Uchio, 1953, Jap. J. Geol. Geogr., vol. 23, p. 157, pl. 14, fig. 7.
- Oridorsalis umbonatus (Reuss) Todd, 1965, USNM Bull. 161(4) p. 23, pl. 6, fig. 2.

Source: Todd, 1965, U.S.N.M. Bull 161(4) p. 23, pl. 6, fig. 2.

Abundant from 2200 to 2930 m, this species is found everywhere below 506 m. Size varies considerably, as does the presence of an umbonal boss. The dorsal sutural apertures are not always visible, making small specimens difficult to distinguish from Eponides. See pl. 14, fig. 8.

Family OSANGULARIIDAE Loeblich & Tappan, 1964

Genus Osangularia Brotzen, 1940.

Osangularia rugosa (Phleger & Parker)

- Pseudoparrella (?) rugosa Phleger & Parker, 1951,
GSA Mem. 46(2) p. 28, pl. 15, figs. 8, 9.
- Osangularia rugosa (Phleger & Parker) Pflum &
Frerichs, 1976, Cushman Found. Foram. Res., Sp.
Publ. 14, pl. 7, figs. 2-4.

Source: Pflum & Frerichs, 1976, *ibid.*

Rare; around 2560 m and in a few core samples. See pl. 20, figs.
12, 13.

Family ANOMALINIDAE Cushman, 1927

Subfamily ANOMALININAE Cushman, 1927

Genus Melonis de Montfort, 1808

Melonis pompilioides (Fichtel & Moll)

- Nautilus pompilioides - Fichtel & Moll, 1798, Test.
Micr., p. 31, pl. 2, figs. a-c.
- Nonion pompilioides (Fichtel & Moll) Phleger &
Parker, 1951, GSA Mem 46(2) p. 11, pl. 5, figs. 19,
20.
- Nonionina pompilioides (Fichtel & Moll) Parker,
Jones & Brady, 1865, Ann Mag Nat Hist. ser. 3, vol.
16, p. 18, pl. 3, fig. 98.
- Melonis etruscus de Montfort, 1808, Conch. syst.
clas. meth. coq., tome 1, p. 66, 67, tf.

- Melonis pompilioides (Fichtel & Moll) Voloshinova, 1958, Mikrofauna SSSR, VNRGRI, Sbornik 9, no. 115, pp. 117-191.

Source: Phleger & Parker, 1951, GSA Mem. 46(2) p. 11, pl. 5, figs. 19, 20.

A rare species, found around 2800 m, at 2 stations only. See pl. 14, fig. 9.

Melonis sphaeroides Voloshinova

- Nonionina pompilioides (Fichtel & Moll) Brady, 1884, Rep. Voy. Challenger, Zool.(9) p. 727, pl. 109, figs. 10, 11.
- Melonis sphaeroides Voloshinova, 1958, Mikrofauna SSSR, Trudy, n.s., vol. 115, sb. 9, p. 153, pl. 3, figs. 8-9.

Barker, 1960, Soc. Econ. Pal. & Min., Sp. Publ. 9, p. 224, pl. 109, figs. 10, 11.

Not uncommon, from 2200 to 3000 m; fairly large in size.

Melonis zaandamae (van Voorthuysen)

- Nonion pompilioides (Fichtel & Moll) Cushman, 1930, USNM Bull. 104(7) p. 4, pl. 2, figs. 1, 2 only (non Fichtel & Moll)
- Nonion barleeanum (Williamson) Cushman & Henbest, 1940, USGS Prof Paper 196-A, p. 9, fig. 13.
- N. barleeanum var. inflatum van Voorthuysen, 1950, Medd. Geol. Sticht, n.s., no. 4, p. 41, tf. 7, pl. 3, fig. 6.

- Anomalinoides barleeaanum var. zaandamae van Voorthuysen, 1952, new name, Jour. Paleo., vol. 26, no. 4, p. 681.
- Noulon zaandamae (van Voorthuysen) Loeblich & Tappan, 1953, Smithson. Misc. Coll. 12(7), p. 87, pl. 16, figs. 11, 12.
- Melonis zaandamae (van Voorthuysen) Loeblich & Tappan, 1964, Treatise, Protista 2(2) C761-763.

Source: Loeblich & Tappan, 1953, Smithson. Misc. Coll. 12(7) p. 87, pl. 16, figs. 11, 12.

Common 390 to 3210 m, most abundant 500 to 1600 m. See pl. 13, fig. 8.

Superfamily ROBERTINACEA Reuss, 1850

Family CERATOBULIMINIDAE Cushman, 1927

Subfamily EPISTOMININAE Wedekind, 1937

Genus Hoeglundina Brotzen, 1948

Hoeglundina elegans (d'Orbigny)

- Rotalia (Turbinulina) elegans d'Orbigny, 1826, Ann. Sci. Nat. ser. 1, vol. 7, p. 276, no. 54.
- Pulvinulina elegans (d'Orbigny) Brady, 1884, Rep. Voy. Challenger, Zool. 9, p. 699, pl. 105, figs. 3-6.
- Epistomina elegans (d'Orbigny) Cushman, 1931, USNM Bull. 104(8) p. 65, pl. 13, fig. 6.

- Hoeglundina elegans (d'Orbigny) Parker, Mleger & Peirson, 1953, Cushman Found. Foram. Res. Spec. Publ. 2, p. 43, pl. 9, figs. 24, 25.

Source: Parker et al., 1953, *ibid.*

Common, 1800 to 3210 m, very abundant 2560 to 3000 m. See pl. 14, fig. 10.

Family ROBERTINIDAE Reuss, 1850

Genus Robertinoides Höglund, 1947

Robertinoides sp. cf. R. charlottensis (Cushman)

- Cassidulina charlottensis Cushman, 1925, Contr. Cushman Lab. Foram. Res. vol. 1(2) p. 41, pl. 6, figs. 6, 7.
- Robertina charlottensis (Cushman) Cushman & Parker, 1936, *ibid.*, vol. 12(4), p. 97, pl. 16, fig. 12.
- Robertinoides charlottensis (Cushman) Loeblich & Tappan 1953, Smiths. Misc. Coll., 121(7) p. 108, pl. 20, fig. 6, 7.

Source: Loeblich & Tappan, 1953, *ibid.*

Rare; 1000 to 2800 m range. This is similar to R. charlottensis, and also to Robertina arctica. See pl. 11, fig. 8.

INDETERMINATE SPECIMENS

These include all the rare, and often very aberrant specimens, none of which have any ecological significance as they usually occur only once or twice, as single specimens. See pl. 20, figs. 18-23, 26.

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APPENDIX I

77034 CRUISE

<u>STN.</u>	<u>LAT.</u>	<u>LONG.</u>	<u>DEPTH(M)</u>
1	49.75°N	50.13°W	390
2	"	50.08°W	500
3	"	50.03°W	600
4	"	49.88°W	800
5	"	49.75°W	1000
6	"	49.59°W	1200
7	"	49.44°W	1400
8	"	49.27°W	1600
9	"	49.05°W	1800
10	"	48.03°W	2000
11	"	48.50°W	2200
12	"	48.22°W	2400
13	"	47.88°W	2600
14	"	47.32°W	2800
15	"	46.67°W	3000
16	49.50°N	46.57°W	3000
17	"	47.08°W	2800
18	"	47.68°W	2600
19	"	48.12°W	2400
20	"	48.48°W	2200
21	"	48.80°W	2000
22	"	49.02°W	1800
23	"	49.23°W	1600
24	"	49.42°W	1400
25	"	49.42°W	1380
26	"	49.57°W	1200
27	"	49.72°W	1000
28	"	49.88°W	800
29	"	50.02°W	600
30	"	50.12°W	400
31	49.25°N	50.12°W	400
32	"	50.03°W	600
33	"	49.92°W	800
34	"	49.80°W	1000
35	"	49.68°W	1200
36	"	49.47°W	1400
37	"	49.25°W	1600
38	"	49.07°W	1800
39	"	48.80°W	2000
40	"	48.50°W	2200
41	"	47.95°W	2400
42	"	47.40°W	2600
43	"	46.95°W	2800

79017 CRUISE

<u>STN.</u>	<u>LAT.</u>	<u>LONG.</u>	<u>DEPTH(M)</u>
1 - I	49.22°N	50.07°W	500
1 - II	49.52°N	50.07°W	530
1 - III	49.52°N	50.07°W	506
2 - I	49.48°N	49.25°W	1530
2 - I _c	49.48°N	49.25°W	1530
2 - II	49.60°N	49.35°W	1550
2 - III	49.65°N	49.30°W	1462
2 - IV	49.62°N	49.27°W	1590
3 - I	49.53°N	47.07°W	2743
3 - II	49.50°N	47.13°W	2718
3 - III	49.47°N	47.07°W	2560
3 - IV	49.50°N	49.02°W	2758
4	49.50°N	46.47°W	3050
5	49.50°N	46.17°W	3210
7	50.50°N	47.22°W	2938
15	50.45°N	49.65°W	1408
18A	50.37°N	50.57°W	743
20	50.35°N	50.72°W	400

FORAMINIFERAL PLATES

GSC COLLECTION NUMBERS

PLATE 1

Fig.	1	GSC 54287
	2	GSC 54228
	3	GSC 54645
	4	GSC 54646
	5	GSC 54647
	6	GSC 54648
	7	GSC 54649
	8	GSC 54650
	9	GSC 54651
	10	GSC 54652
	11	GSC 54653
	12	GSC 54654

PLATE 3

Fig.	1	GSC 54863
	2	GSC 54864
	3	GSC 54865
	4	GSC 54866
	5	GSC 54867
	6	GSC 54868
	7	GSC 54869
	8	GSC 54870
	9	GSC 54871
	10	GSC 54872
	11	GSC 54873
	12	GSC 54874
	13	GSC 54875

PLATE 5

Fig.	1	GSC 54669
	2	GSC 54670
	3	GSC 54671
	4	GSC 54672
	5	GSC 54673
	6	GSC 54674
	7	GSC 54675
	8	GSC 54676
	9	GSC 54677
	10	GSC 54678

PLATE 2

Fig.	1	GSC 54730
	2	GSC 54731
	3	GSC 54732
	4	GSC 54733
	5	GSC 54734
	6	GSC 54735
	7	GSC 54736
	8	GSC 54737
	9	GSC 54738
	10	GSC 54739
	11	GSC 54740
	12	GSC 54741
	13	GSC 54742
	14	GSC 54743
	15	GSC 54744
	16	GSC 54745
	17	GSC 54746
	18	GSC 54747
	19	GSC 54748

PLATE 4

Fig.	1	GSC 54655
	2	GSC 54656
	3	GSC 54657
	4	GSC 54658
	5	GSC 54659
	6	GSC 54660
	7	GSC 54661
	8	GSC 54662
	9	GSC 54663
	10	GSC 54664
	11	GSC 54665
	12	GSC 54666
	13	GSC 54667
	14	GSC 54668

PLATE 6

Fig.	1	GSC 54876
	2	GSC 54877
	3	GSC 54878
	4	GSC 54879
	5	GSC 54880
	6	GSC 54881
	7	GSC 54882
	8	GSC 54883
	9	GSC 54884
	10	GSC 54885
	11	GSC 54886
	12	GSC 54887
	13	GSC 54888

PLATE 7

Fig.	1	GSC 54889
	2	GSC 54890
	3	GSC 54891
	4	GSC 54892
	5	GSC 54893
	6	GSC 54894
	7	GSC 54895
	8	GSC 54896
	9	GSC 54897
	10	GSC 54898
	11	GSC 54899

PLATE 8

Fig.	1	GSC 54679
	2	GSC 54680
	3	GSC 54681
	4	GSC 54682
	5	GSC 54683
	6	GSC 54684
	7	GSC 54685
	8	GSC 54686
	9	GSC 54687

PLATE 9

Fig.	1	GSC 54900
	2	GSC 54901
	3	GSC 54902
	4	GSC 54903
	5	GSC 54904
	6	GSC 54905
	7	GSC 54906
	8	GSC 54907
	9	GSC 54908
	10	GSC 54909
	11	GSC 54910
	12	GSC 54911
	13	GSC 54912

PLATE 10

Fig.	1	GSC 54688
	2	GSC 54689
	3	GSC 54690
	4	GSC 54691
	5	GSC 54692
	6	GSC 54693
	7	GSC 54694
	8	GSC 54695
	9	GSC 54696
	10	GSC 54697
	11	GSC 54698

PLATE 11

Fig.	1	GSC 54913
	2	GSC 54914
	3	GSC 54915
	4	GSC 54916
	5	GSC 54917
	6	GSC 54918
	7	GSC 54919
	8	GSC 54920
	9	GSC 54921
	10	GSC 54922
	11	GSC 54923
	12	GSC 54924
	13	GSC 54925
	14	GSC 54926

PLATE 12

Fig.	1	GSC 54699
	2	GSC 54700
	3	GSC 54701
	4	GSC 54702
	5	GSC 54703
	6	GSC 54704
	7	GSC 54705
	8	GSC 54706
	9	GSC 54707

PLATE 13

Fig.	1	GSC 54927
	2	GSC 54928
	3	GSC 54929
	4	GSC 54930
	5	GSC 54931
	6	GSC 54932
	7	GSC 54933
	8	GSC 54934
	9	GSC 54935
	10	GSC 54936
	11	GSC 54937
	12	GSC 54938
	13	GSC 54939
	14	GSC 54940

PLATE 14

Fig.	1	GSC 54708
	2	GSC 54709
	3	GSC 54710
	4	GSC 54711
	5	GSC 54712
	6	GSC 54713
	7	GSC 54714
	8	GSC 54715
	9	GSC 54716
	10	GSC 54717

PLATE 15

Fig.	1	GSC 54718
	2	GSC 54719
	3	GSC 54720
	4	GSC 54721
	5	GSC 54722
	6	GSC 54723
	7	GSC 54724
	8	GSC 54725
	9	GSC 54726
	10	GSC 54727
	11	GSC 54728
	12	GSC 54729

PLATE 16

Fig.	1	GSC 54941
	2	GSC 54942
	3	GSC 54943
	4	GSC 54944
	5	GSC 54945
	6	GSC 54946
	7	GSC 54947
	8	GSC 54948
	9	GSC 54949
10, 11		GSC 54950
	12	GSC 54951
	13	GSC 54952
	14	GSC 54953
	15	GSC 54954
	16	GSC 54955
	17	GSC 54956
18, 19		GSC 54957
	20	GSC 54958
	21	GSC 54959
	22	GSC 54960
	23	GSC 54961
	24	GSC 54962
	25	GSC 54963
	26	GSC 54964
	27	GSC 54965
	28	GSC 54966
	29	GSC 54967

PLATE 17

Fig.	1, 2	GSC 54968
	3, 4	GSC 54969
	5	GSC 54970
	6	GSC 54971
	7, 8	GSC 54972
	9	GSC 54973
	10	GSC 54974
	11, 12	GSC 54975
	13, 14	GSC 54976
	15, 16	GSC 54977
	17, 18	GSC 54978
	19, 20	GSC 54979
	21	GSC 54980
	22	GSC 54981
	23	GSC 54982
	24	GSC 54983
	25	GSC 54984
	26	GSC 54985
	27, 28	GSC 54986
	29	GSC 54987
	30	GSC 54988
	31, 32	GSC 54989
	33, 34	GSC 54990
	35-37	GSC 54991
	38	GSC 54992
	39	GSC 54993
	40	GSC 54994
	41, 42	GSC 54995
	43, 44	GSC 54996
	45	GSC 54997
	46	GSC 54998
	47	GSC 54999
	48	GSC 55000
	49	GSC 55001

PLATE 18

Fig.	1	GSC 55002
	2	GSC 55003
	3	GSC 55004
	4	GSC 55005
	5	GSC 55006
	6	GSC 55007
	7	GSC 55008
	8	GSC 55009
	9	GSC 55010
	10	GSC 55011
	11	GSC 55012
	12	GSC 55013
	13	GSC 55014
	14	GSC 55015
	15	GSC 55016
	16	GSC 55017
	17	GSC 55018
	18	GSC 55019
	19	GSC 55020
	20	GSC 55021
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	22	GSC 55023
	23	GSC 55024
	24	GSC 55025
	25	GSC 55026
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	27	GSC 55028
	28	GSC 55029
	29	GSC 55030
	30	GSC 55031
	31	GSC 55032
	32	GSC 55033
	33	GSC 55034
	34	GSC 55035
35-37		GSC 55036
	38	GSC 55037
	39	GSC 55038

PLATE 19

Fig.	1	GSC 55039
	2	GSC 54040
	3	GSC 54041
	4	GSC 54042
	5	GSC 54043
	6	GSC 54044
	7	GSC 54045
	8	GSC 54046
	9	GSC 54047
	10	GSC 54048
	11	GSC 54049
	12	GSC 54050
	13	GSC 54051
	14	GSC 54052
	15,16	GSC 54053
	17	GSC 54054
	18,19	GSC 54055
	20	GSC 54056
	21	GSC 54057
	22,23	GSC 54058
	24	GSC 54059
	25	GSC 54060
	26,27	GSC 54061
	28	GSC 54062
	29,30	GSC 54063
	31	GSC 54064
	32	GSC 54065
	33	GSC 54066
	34	GSC 54067
	35	GSC 54068
	36	GSC 54069
	37	GSC 54070
	38	GSC 54071
	39	GSC 54072
	40,41	GSC 54073
	42	GSC 54074
	43	GSC 54075
	44	GSC 54076
	45	GSC 54077
	46	GSC 54078
	47,48	GSC 54079
	49,50	GSC 54080
	51	GSC 54081
	52,53	GSC 54082
	54,55	GSC 54083
	56,57	GSC 54084
	58,59	GSC 54085
	60,61	GSC 54086
	62,63	GSC 54087
	64	GSC 54088
	65	GSC 54089

PLATE 20

Fig.	1	GSC 55090
	2	GSC 55091
	3	GSC 54092
	4	GSC 54093
	5	GSC 54094
	6,7	GSC 54095
	8,9	GSC 54096
	10,11	GSC 54097
	12,13	GSC 54098
	14,15	GSC 54099
	16,17	GSC 54100
	18	GSC 54101
	19	GSC 54102
	20	GSC 54103
	21	GSC 54104
	22	GSC 54105
	23	GSC 54106
	24,25	GSC 54107
	26	GSC 54108
	27	GSC 54109
	28,29	GSC 55110

PLATE 1

Fig. 1.	<u>Rhabdammina linearis</u>	77034-40	x 184
2.	<u>Bathysiphon alba</u> (Heron-Allen & Earland)	77034-7	x 45
3.	<u>Bathysiphon filiformis</u> G.O. Sars	77034-7	x 97
4.	<u>Marsipella elongata</u> Norman	77034-12	x 35
5.	<u>Saccorhiza ramosa</u> (Brady)	77034-1	x 6
6.	<u>Hyperammina friabilis</u> Brady	77034-36	x 61
7.	<u>Hyperammina laevigata</u> Wright	77034-21	x 62
8.	<u>Saccamina socialis</u> Brady	77034-16	x 6
9.	<u>Rhizammina algaeformis</u> Brady	77034-29	x 22
10.	<u>Dendrophyra arborescens</u> (Norman)	77034-9	x 36
11.	<u>Thuramina papillata</u> Brady	77034-15	x 62
12.	<u>Ammolagena clavata</u> (Parker & Jones)	77034-14	x 44

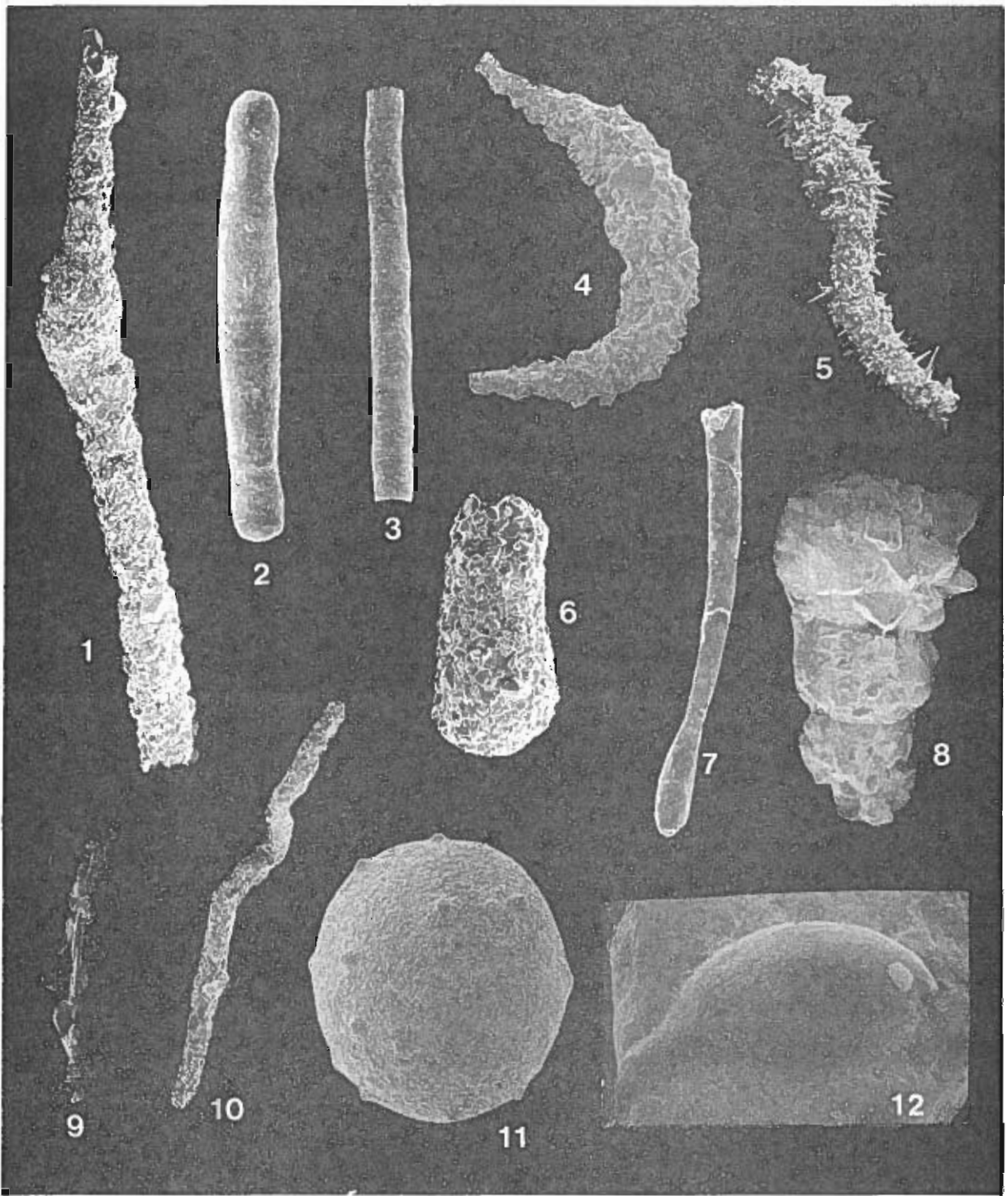


PLATE 2

Fig.	1.	<u>Hyperammina subnodosa</u> Brady	77034-31	x	10
	2.	<u>Hyperammina elongata</u> Brady	79017-3-II-A	x	16
	3.	<u>Hyperammina fragilis</u> Höglund	77034-6	x	17
	4.	<u>Hyperammina cylindrica</u> Parr	77034-3	x	15
	5.	<u>Astrorhiza hancocki</u> Cushman & McCulloch	79017-1-II-A	x	10
	6.	<u>Astrorhiza arenaria</u> Carpenter	79017-1-II-A	x	10
	7.	<u>Saccorhiza</u> cf. <u>S. ramosa</u> (Brady) var.	79017-5-I-C	x	29
	8.	<u>Rhabdammina scabra</u> Höglund	79017-5-I-C	x	18
	9.	<u>Reophax fusiformis</u> (Williamson)	79017-3-IV-G	x	40
	10.	<u>Reophax nodulosa</u> Brady	77034-15	x	12
	11.	<u>Reophax guttifera</u> (Brady)	77034-38	x	173
	12.	<u>Reophax bacillaris</u> Brady	77034-12	x	35
	13.	<u>Reophax turbo</u> group - <u>Reophax turbo</u> (Brady)	77034-12	x	30
	14.	<u>Bathysiphon hirudinea</u> (Heron-Allen & Earland)	79017-2-II-A	x	39
	15.	<u>Marsipella cylindrica</u> Brady	79017-3-IV-G	x	18
	16.	<u>Rhizammina indivisa</u> (Brady)	79017-7-I-I	x	31
	17.	<u>Reophax scottii</u> Chaster	77034-31	x	173
	18.	<u>Reophax catenata</u> Höglund	79017-1-II-A	x	93
	19.	<u>Reophax turbo</u> group - <u>Reophax cylindrica</u> Brady	77034-43	x	18

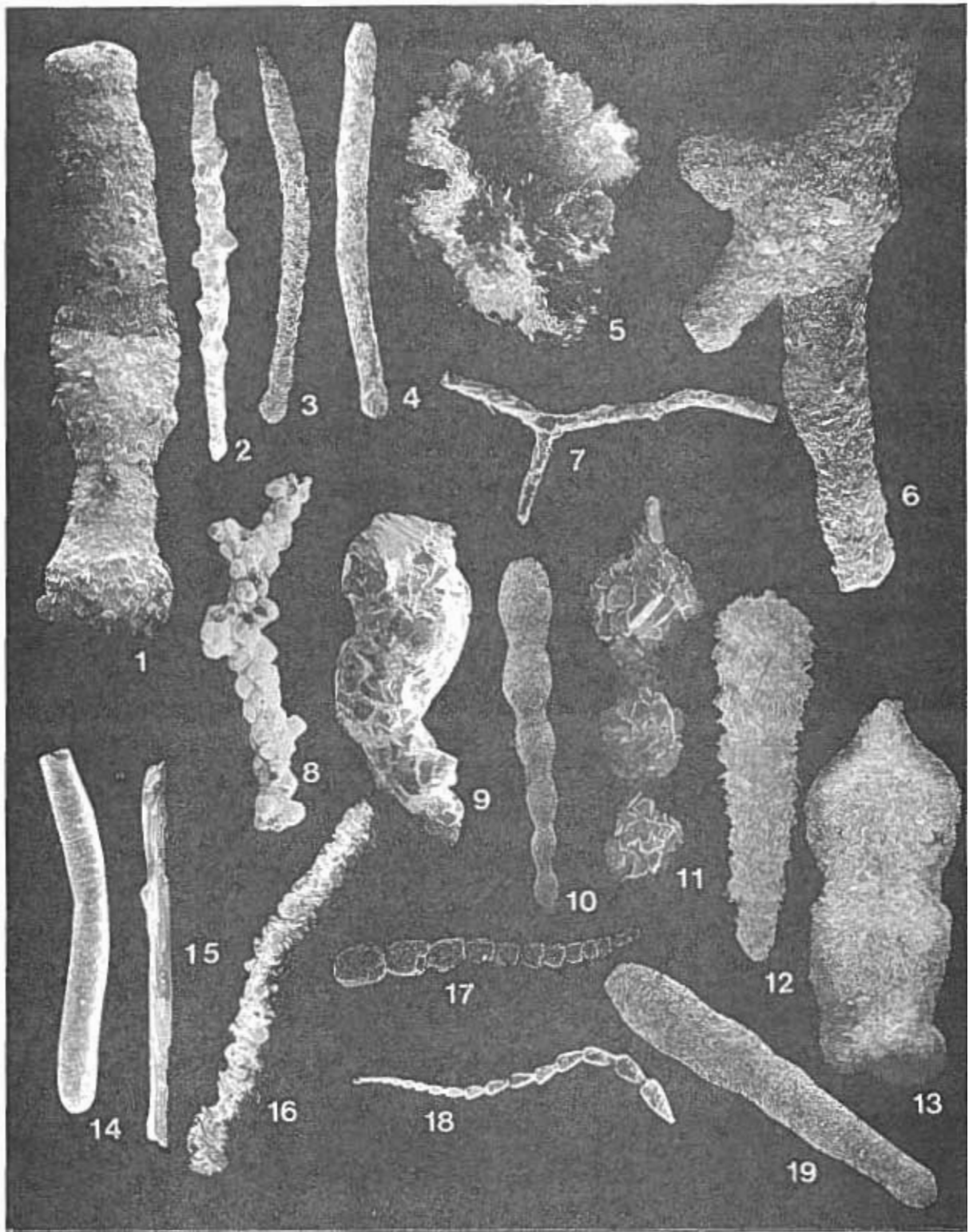


PLATE 3

Fig.	1.	<u>Saccamina sphaera</u> Brady <u>catenula</u> Cushman	79017-3-II-I x	12
	2.	<u>Saccamina atlantica</u> (Cushman)	79017-1-II-I x	57
	3.	<u>Saccamina sphaera</u> Brady	79017-3-II-A x	100
	4.	<u>Psammosphaera fusca</u> Schulze	79017-3-II-I x	27
	5.	<u>Crithionina pisum</u> Goës	79017-7-I-I x	32
	6.	<u>Crithionina pisum</u> Goës var. <u>hispidula</u> Flint	79017-3-II-A x	39
	7.	<u>Botellina labyrinthica</u> Brady	79017-2-II-G x	17
	8.	<u>Thuramina faerleensis</u> Höglund	79017-15 x	137
	9.	<u>Pelosina didera</u> (Loeblich & Tappan)	79017-3-IV-G x	57
	10.	<u>Aschemonella catenata</u> (Norman)	79017-7-I-I x	30
	11.	<u>Hemisphaerammina batalleri</u> Loeblich & Tappan	79017-2-I-1 x	504
	12.	<u>Sorosphaera confusa</u> Brady	77034-37 x	19
	13.	<u>Hormosina ovicula</u> Brady var. <u>mexicana</u> Cushman	77034-12 x	58

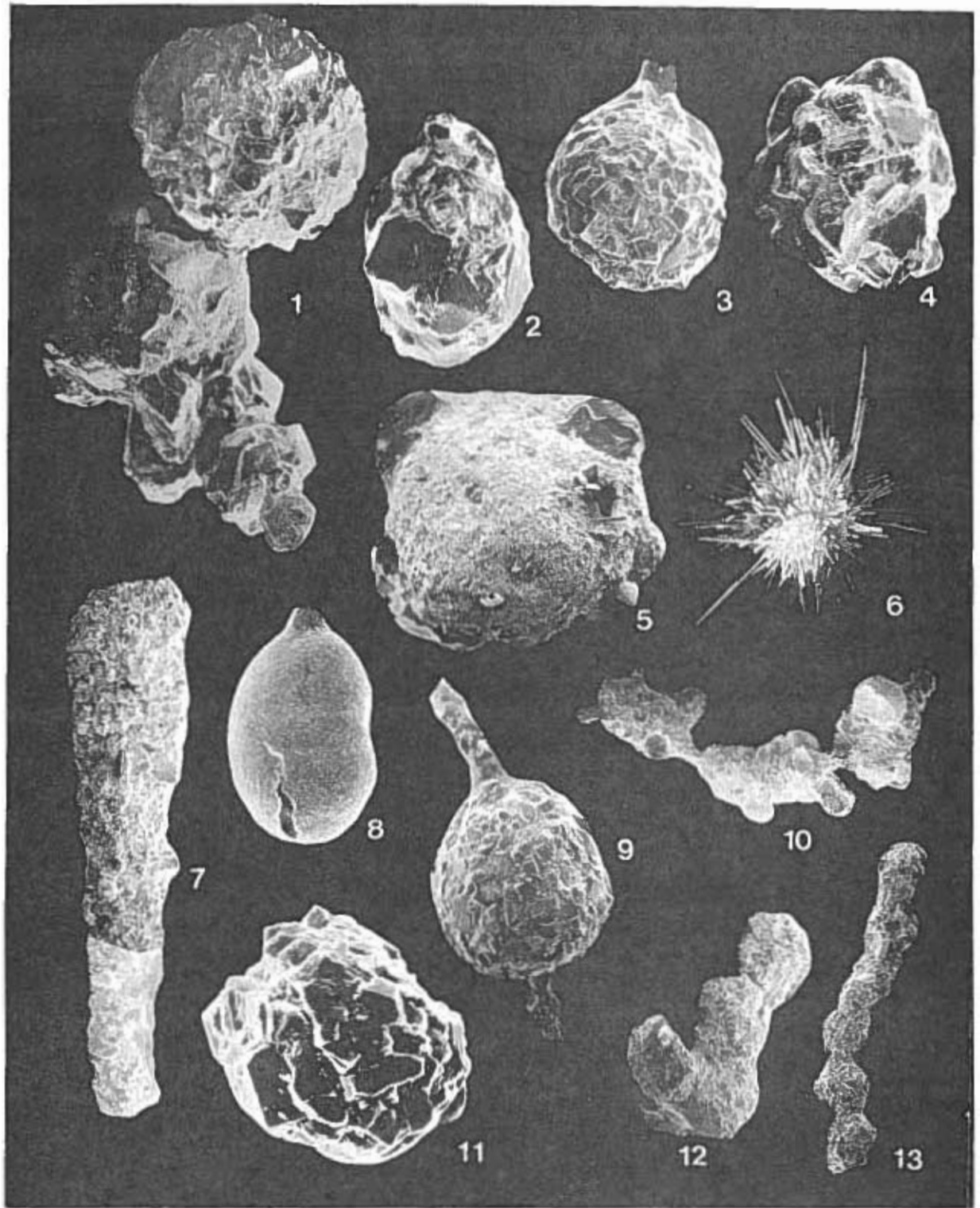


PLATE 4

Fig.	1.	<u>Glomospira gordialis</u> (Jones & Parker)	77034-8	x 153
	2.	<u>Glomospira charoides</u> (Jones & Parker)	77034-8	x 233
	3.	<u>Tolypamina vagans</u> (Brady)	77034-10	x 35
	4.	<u>Reophax bilocularis</u> Flint	77034-12	x 35
	5.	<u>Reophax rostrata</u> Hoeglund	77034-41	x 62
	6.	<u>Reophax difflungiformis</u> Brady	77034-4	x 122
	7.	<u>Hormosina globulifera</u> Brady	77034-12	x 43
	8.	<u>Adercotryma glomerata</u> (Brady)	77034-2	x 188
	9.	<u>Haplophragmoides</u> cf. <u>H. canariense</u> (d'Orbigny)	77034-13	x 56
	10.	<u>Haplophragmoides</u> cf. <u>H. bradyi</u> (Robertson)	77034-20	x 188
	11.	<u>Cribrostomoides wiesneri</u> (Parr)	77034-9	x 168
	12.	<u>Cribrostomoides scitulus</u> (Brady)	77034-6	x 61
	13.	<u>Cribrostomoides subglobosum</u> (Sars)	77034-13	x 31
	14.	<u>Cribrostomoides ringens</u> (Brady)	77034-14	x 63

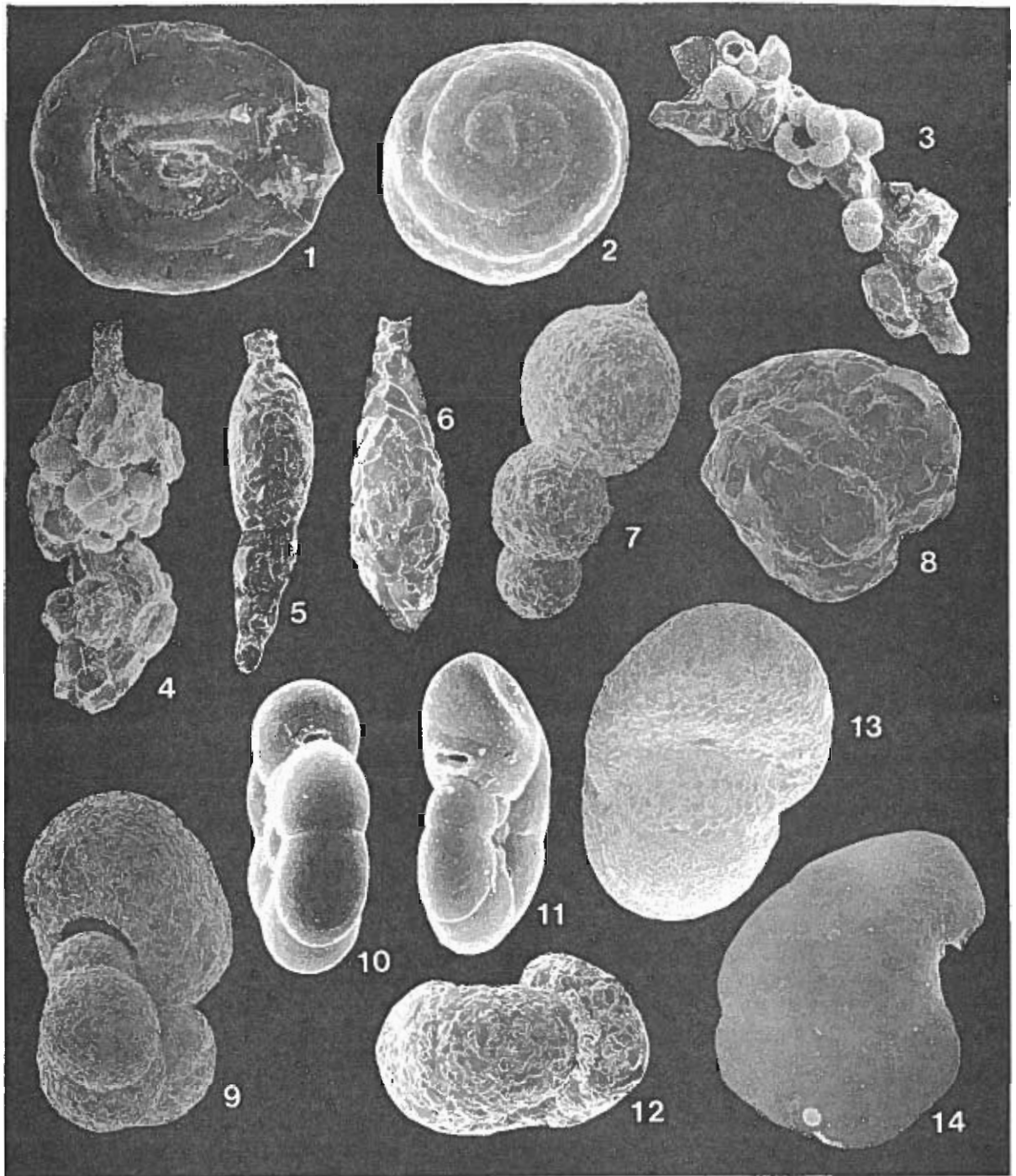


PLATE 5

Fig.	1.	<u>Recurvoides contortus</u> (Earland)	77034-9	x	45
	2.	<u>Cyclammina cancellata</u> Brady	77034-10	x	54
	3.	<u>Ammobaculites agglutinans</u> (d'Orbigny)	77034-12	x	62
	4.	<u>Ammobaculites foliacea</u> (Brady)	77034-14	x	44
	5.	<u>Ammomarginulina tenuimargo</u> (Brady)	77034-10	x	14
	6.	<u>Textularia earlandi</u> Phleger	77034-8	x	185
	7.	<u>Siphotextularia rolshauseni</u> Phleger & Parker	77034-17	x	186
	8.	<u>Cystammina pauciloculata</u> (Brady)	77034-10	x	94
	9.	<u>Eggerella bradyi</u> (Cushman)	77034-8	x	166
	10.	<u>Eggerella propinqua</u> (Brady)	77034-12	x	32

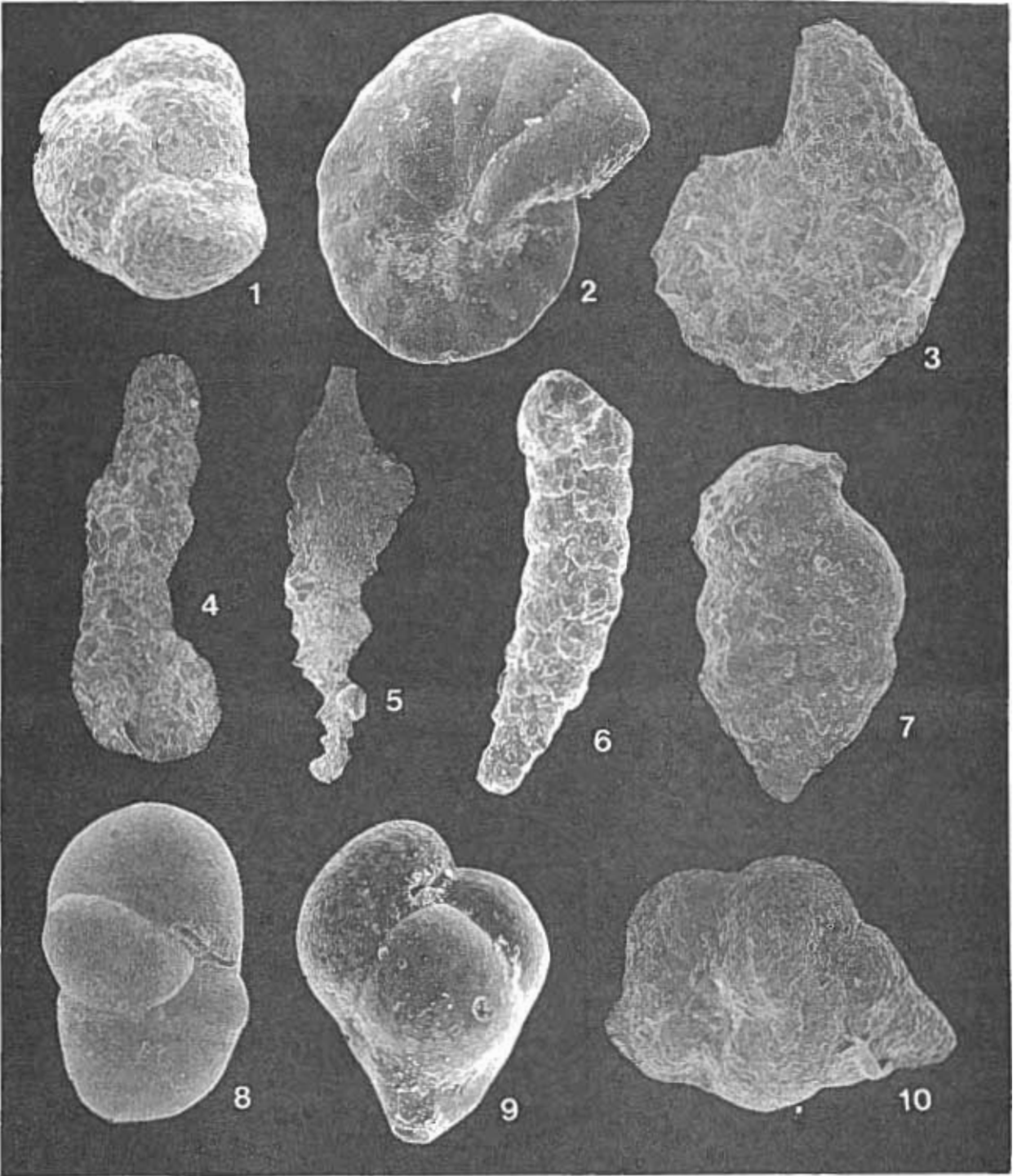


PLATE 6

Fig.	1.	<u>Verneullinoides europeum</u> (Christiansen)	79017-1-I-A	x 257
	2.	<u>Eggerella advena</u> (Cushman)	77034-2	x 116
	3.	<u>Spiroplectammina biformis</u> (Parker & Jones)	79017-1-II-A	x 180
	4.	<u>Textularia torquata</u> F. Parker	79017-2-III-I	x 238
	5.	<u>Karrerella bradyi</u> (Cushman)	77034-12	x 59
	6.	<u>Cribrostomoides jeffreysi</u> (Williamson)	79017-1-III-D	x 116
	7.	<u>Recurvoides turbinatus</u> (Brady)	79017-1-I-A	x 178
	8.	<u>Recurvoides turbinatus</u> (Brady)	79017-1-I-A	x 178
	9.	<u>Tritaxis</u> cf. <u>T. fusca</u> (Williamson)	79017-3-II-A	x 59
	10.	<u>Trochammina</u> cf. <u>T. squamata</u> (Jones & Parker)	79017-1-I-A	x 296
	11.	<u>Trochammina</u> cf. <u>T. squamata</u> (Jones & Parker)	79017-1-I-A	x 284
	12.	<u>Trochammina nana</u> (Brady)	77034-41	x 178
	13.	<u>Tritaxis</u> cf. <u>T. fusca</u> (Williamson)	79017-7-I-A	x 59

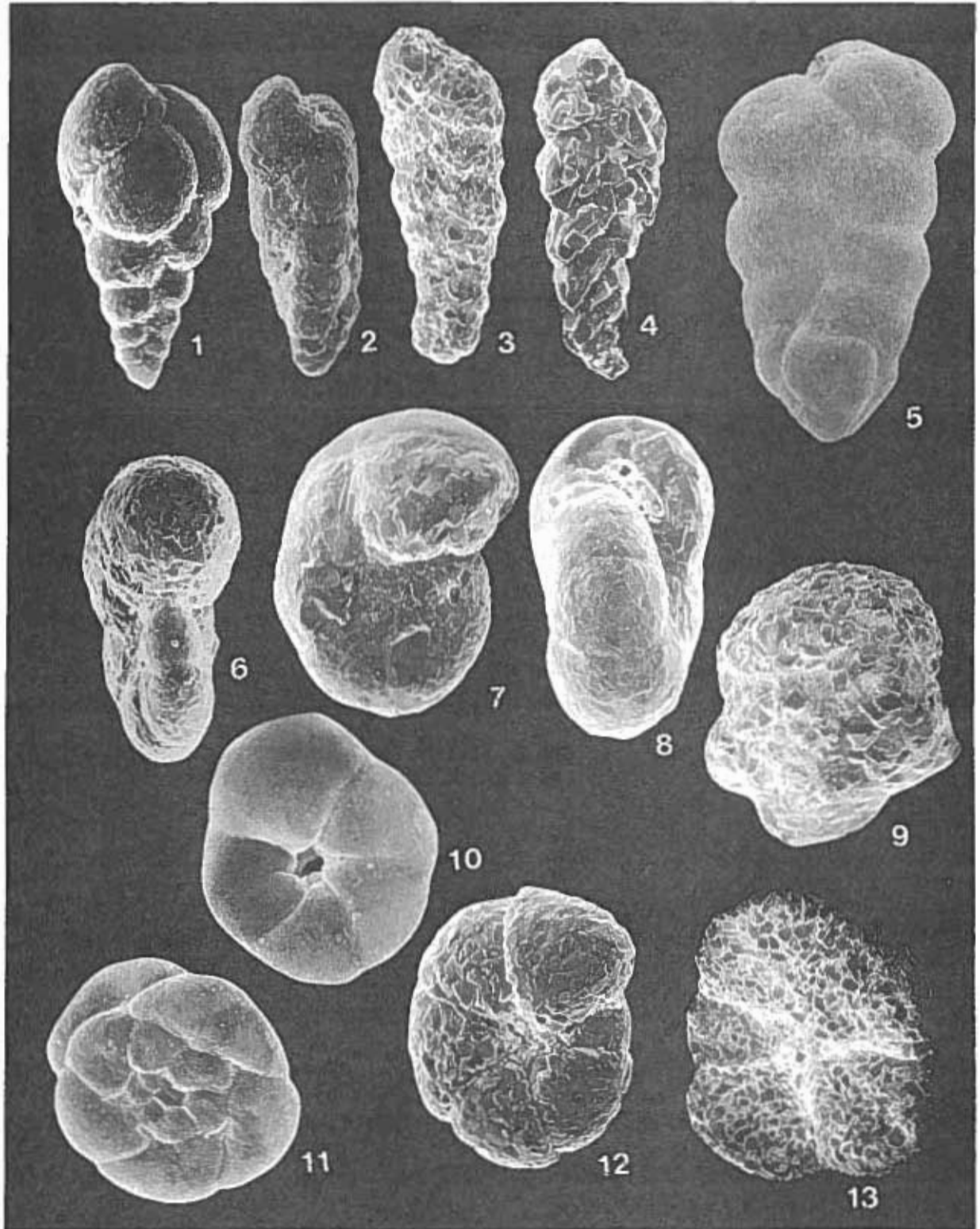


PLATE 7

Fig. 1.	<u>Trochammina bullata</u> Takayanagii	77034-12	x 91
2.	<u>Trochammina globigeriniformis</u> (Parker & Jones)	77034-8	x 76
3.	<u>Trochammina globigeriniformis</u> (Parker & Jones)	77034-8	x 76
4.	<u>Trochammina inflata</u> (Montagu)	77034-4	x 187
5.	<u>Fissurina laevigata</u> Reuss	79017-5-I-H	x 205
6.	<u>Fissurina lucida</u> (Williamson)	79017-3-I-A	x 342
7.	<u>Fissurina sulcata</u> (Walker & Jacob) var.	77034-14	x 187
8.	<u>Lagena hispidula</u> Cushman	77034-14	x 76
9.	<u>Lagena striata</u> (d'Orbigny) var. <u>substriata</u> Williamson	77034-43	x 129
10.	<u>Lagena distoma</u> Parker & Jones	77034-26	x 43
11.	<u>Nodosaria flintii</u> Cushman	77034-15	x 62

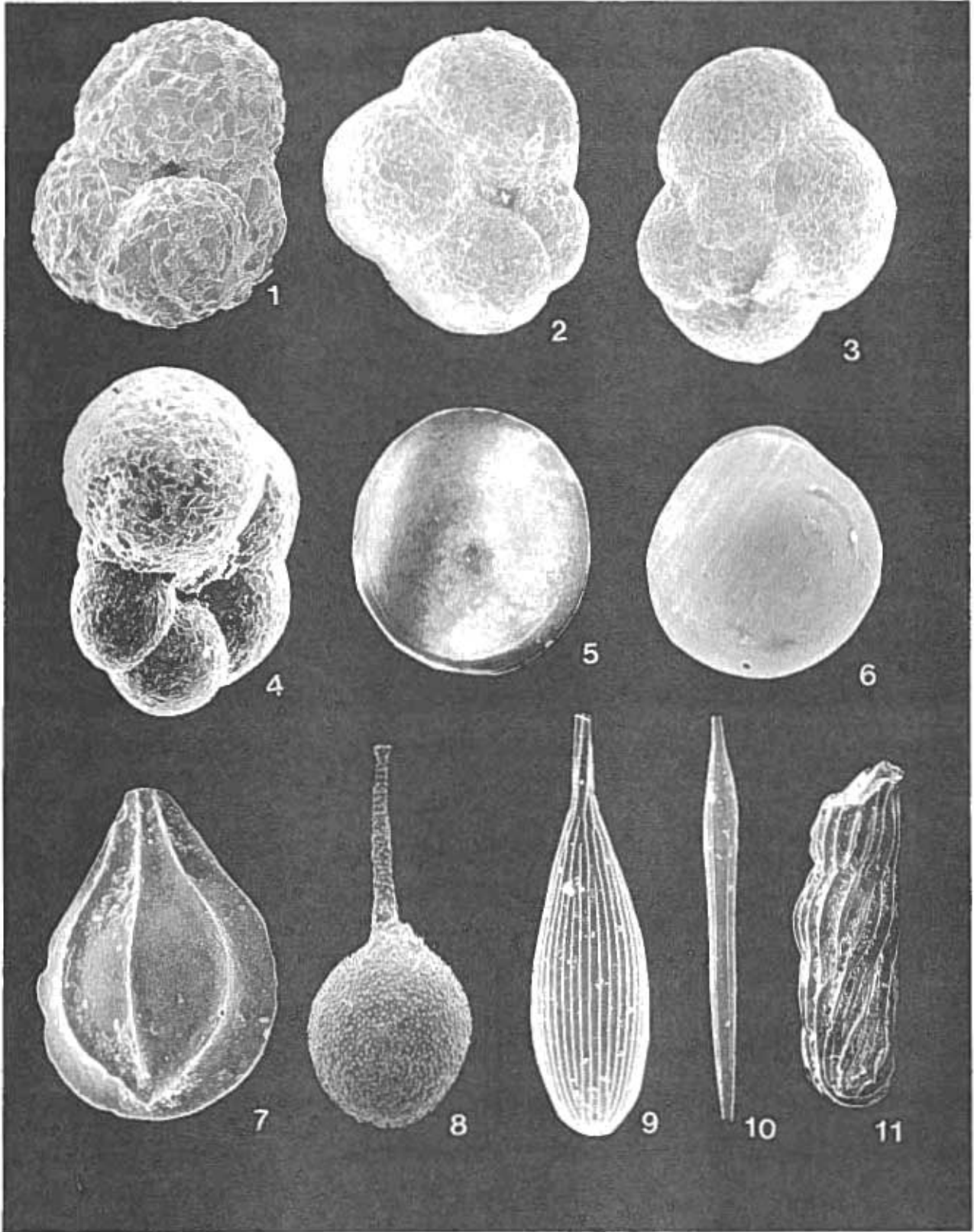
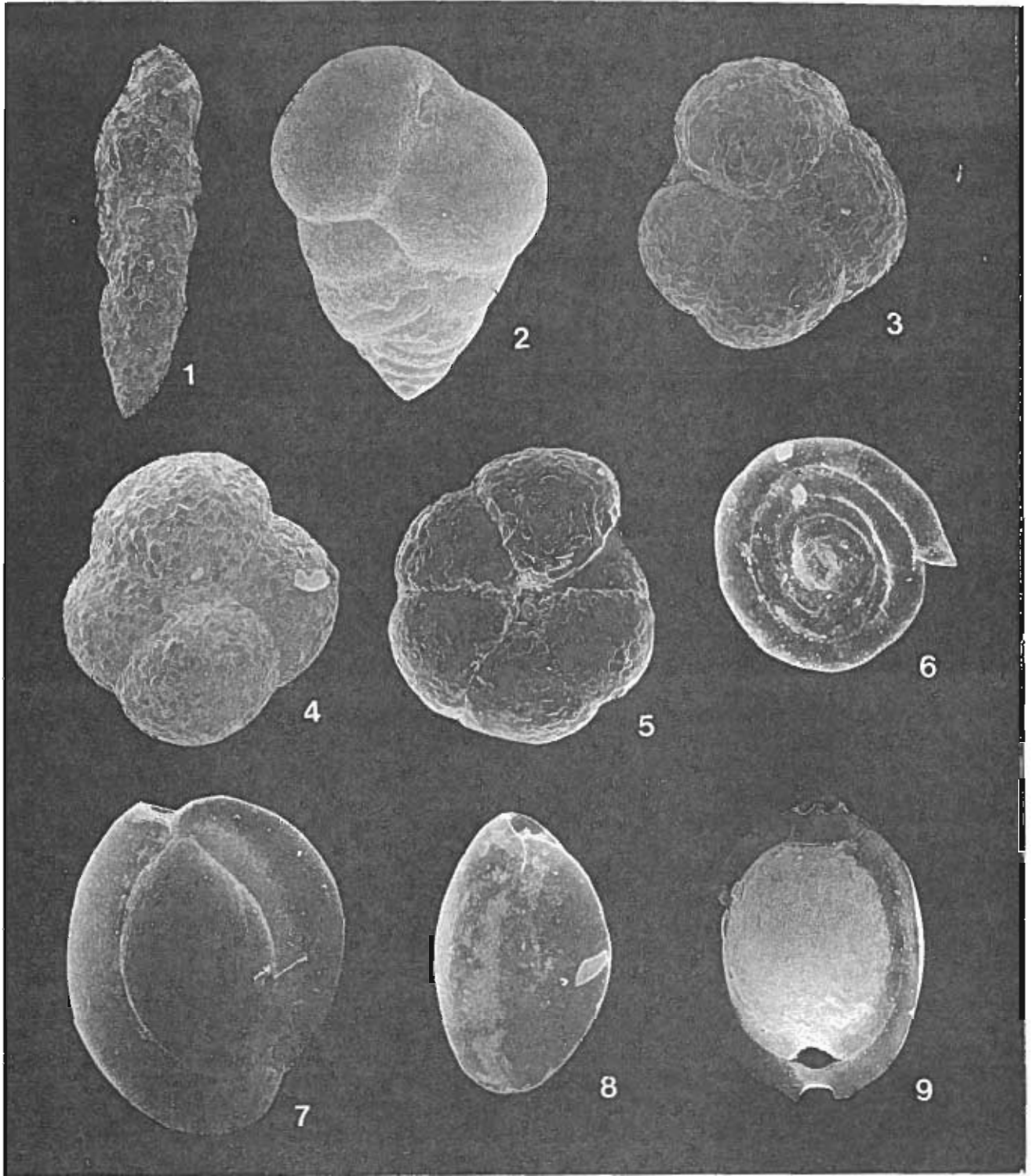


PLATE 8

Fig. 1.	<u>Karreriella apicularis</u> (Cushman)	77034-17	x 62
2.	<u>Karreriella novangliae</u> (Cushman)	77034-13	x 67
3.	<u>Trochammina advena</u> Cushman	77034-17	x 104
4.	<u>Trochammina quadriloba</u> Höglund	77034-15	x 62
5.	<u>Trochammina nitida</u> Brady	77034-12	x 166
6.	<u>Cyclogyra involvens</u> (Reuss)	77034-5	x 88
7.	<u>Quinqueloculina vulgaris</u> d'Orbigny	77034-13	x 57
8.	<u>Quinqueloculina seminulum</u> (Linne)	77034-7	x 80
9.	<u>Pyrgo murrhyna</u> (Schwager)	77034-5	x 44



2001.53

PLATE 9

Fig.	1.	<u>Ophthalmidium pusillum</u> (Earland)	79017-I-C	x 100
	2.	<u>Cornuloculina inconstans</u> (Brady)	77034-39-92 cm (core)	x 120
	3.	<u>Plectofrondicularia advena</u> (Cushman)	77034-23	x 70
	4.	<u>Guttulina lactea</u> (Walker & Jacob)	77034-12	x 91
	5.	<u>Stainforthia concava</u> (Höglund)	77034-7	x 161
	6.	<u>Globobulimina auriculata</u> (Bailey) var. <u>gullmarensis</u> Höglund	77034-13A-154 cm (core)	x 70
	7.	<u>Pyrgo williamsoni</u> (Silvestri)	77034-12	x 76
	8.	<u>Pyrgo lucernula</u> (Scheeger)	77034-5	x 60
	9.	<u>Pyrgo subsphaerica</u> (d'Orbigny)	77034-26	x 43
	10.	<u>Pyrgo serrata</u> (Bailey)	77034-10	x 43
	11.	<u>Pyrgo comata</u> (Brady)	77034-5	x 40
	12.	<u>Pyrgoella sphaerica</u> (d'Orbigny)	79017-7-I-A	x 68
	13.	<u>Pyrgo rotalaria</u> Loeblich & Tappan	77034-42	x 90

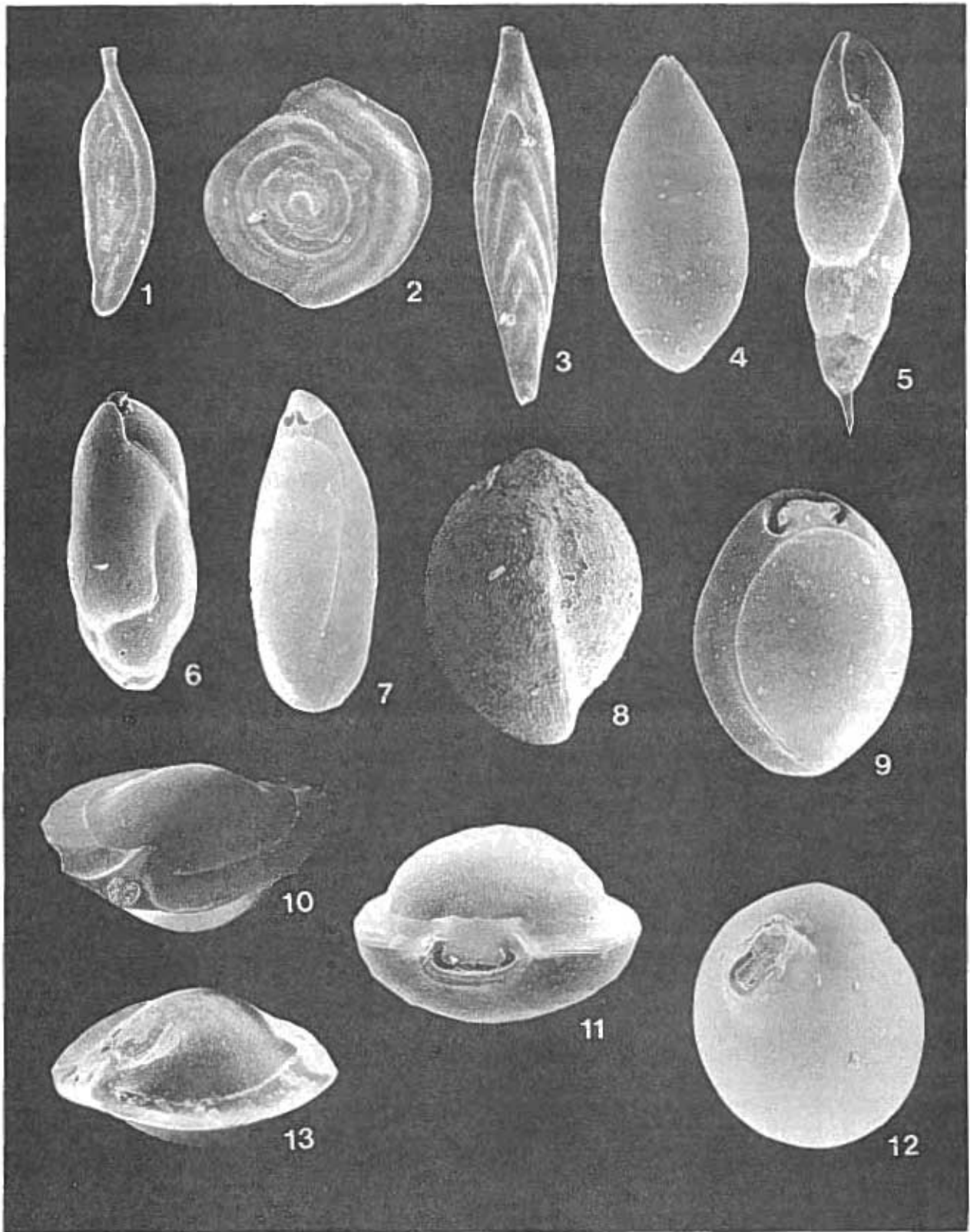


PLATE 10

Fig. 1.	<u>Sigmoilopsis schlumbergeri</u> (Silvestri)	77034-14	x 62
2.	<u>Triloculina tricarinata</u> d'Orbigny	77034-12	x 127
3.	<u>Bolivina pseudoplicata</u> Heron-Allen & Earland	77034-10	x 185
4.	<u>Bolivina subspinescens</u> Cushman	77034-6	x 185
5.	<u>Buliminoides williamsonianus</u> (Brady)	77034-7	x 284
6.	<u>Buliminella elegantissima</u> (d'Orbigny)	77034-2	x 242
7.	<u>Bulimina marginata</u> d'Orbigny group	77034-17	x 86
8.	<u>Bulimina inflata</u> Sequenza	77034-18	x 144
9.	<u>Uvigerina peregrina</u> Cushman	77034-10	x 82
10.	<u>Buccella frigida</u> (Cushman)	77034-7	x 74
11.	<u>Laticarinina halophora</u> (Stache)	77034-15	x 22

5.7 mm

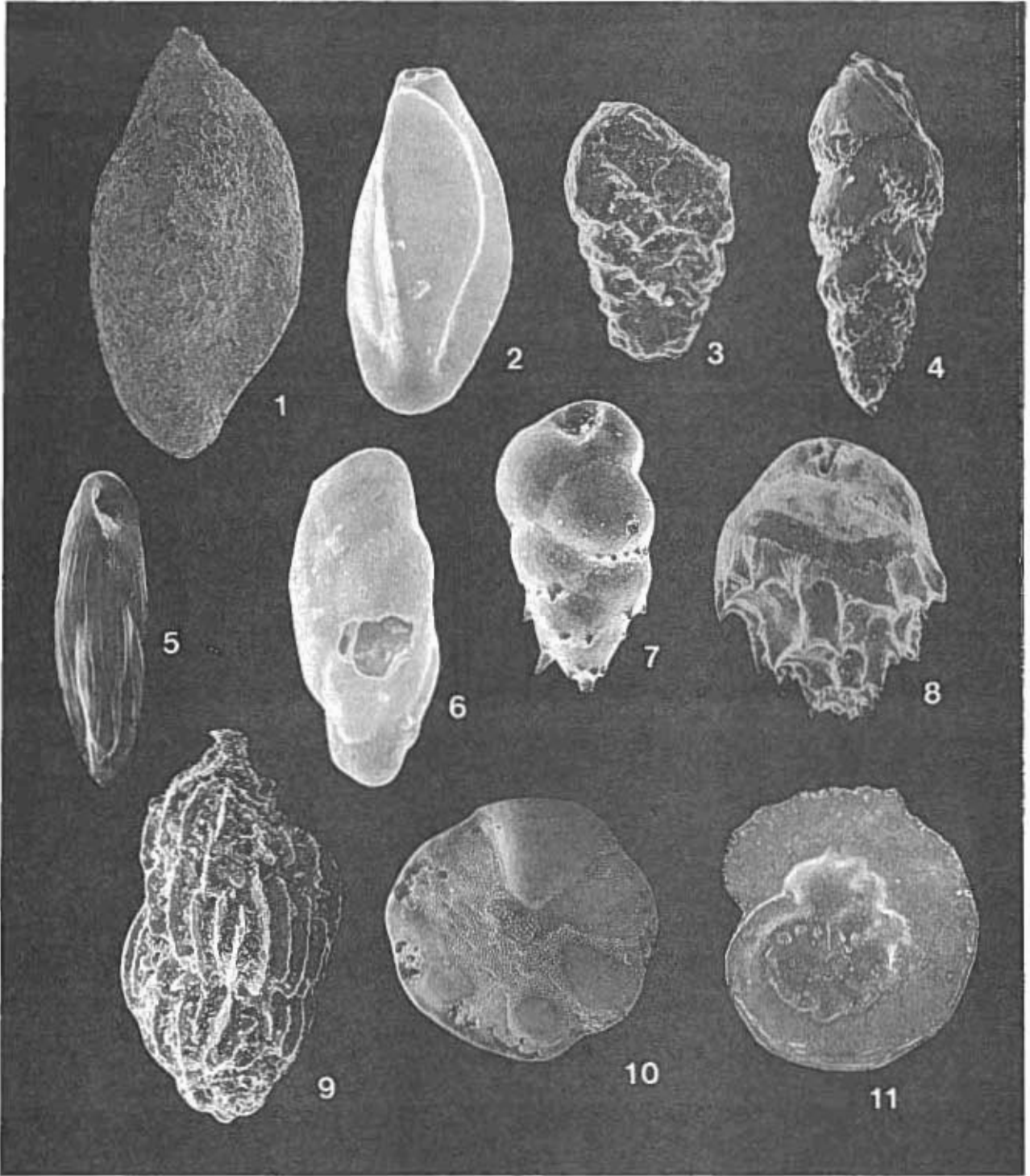


PLATE 11

Fig.	1.	<u>Valvulineria laevigata</u> Phleger & Parker	79017-2-IR-II	x 186
	2.	<u>Epistominella exigua</u> (Brady)	79017-7-1-1	x 132
	3.	<u>Epistominella vitrea</u> Parker	79017-3-1-A	x 239
	4.	<u>Epistominella vitrea</u> Parker	79017-7-1-1	x 175
	5.	<u>Eponides bradyi</u> Earland	79017-7-1-1	x 353
	6.	<u>Trifarina fluens</u> (Todd)	79017-1-1-C	x 251
	7.	<u>Uvigerina asperula</u> Czjzek	79017-3-1V-G	x 155
	8.	<u>Robertinoides</u> cf. <u>R. charlottensis</u> (Cushman)	79017-2-IR-F	x 234
	9.	<u>Cibicides</u> sp. cf. <u>C. lobatulus</u> (Walker & Jacob)	77034-12	x 58
	10.	<u>Cibicides</u> sp. cf. <u>C. lobatulus</u> (Walker & Jacob)	77034-14	x 58
	11.	<u>Tosafia hanzawai</u> Takayanagi	77034-5	x 119
	12.	<u>Bolivina pseudopunctata</u> Höglund	77034-9	x 174
	13.	<u>Cassidulina teretis</u> Tappan	77034-7	x 145
	14.	<u>Bolivina inflata</u> Heron-Allen & Earland	79017-2-111-1	x 299

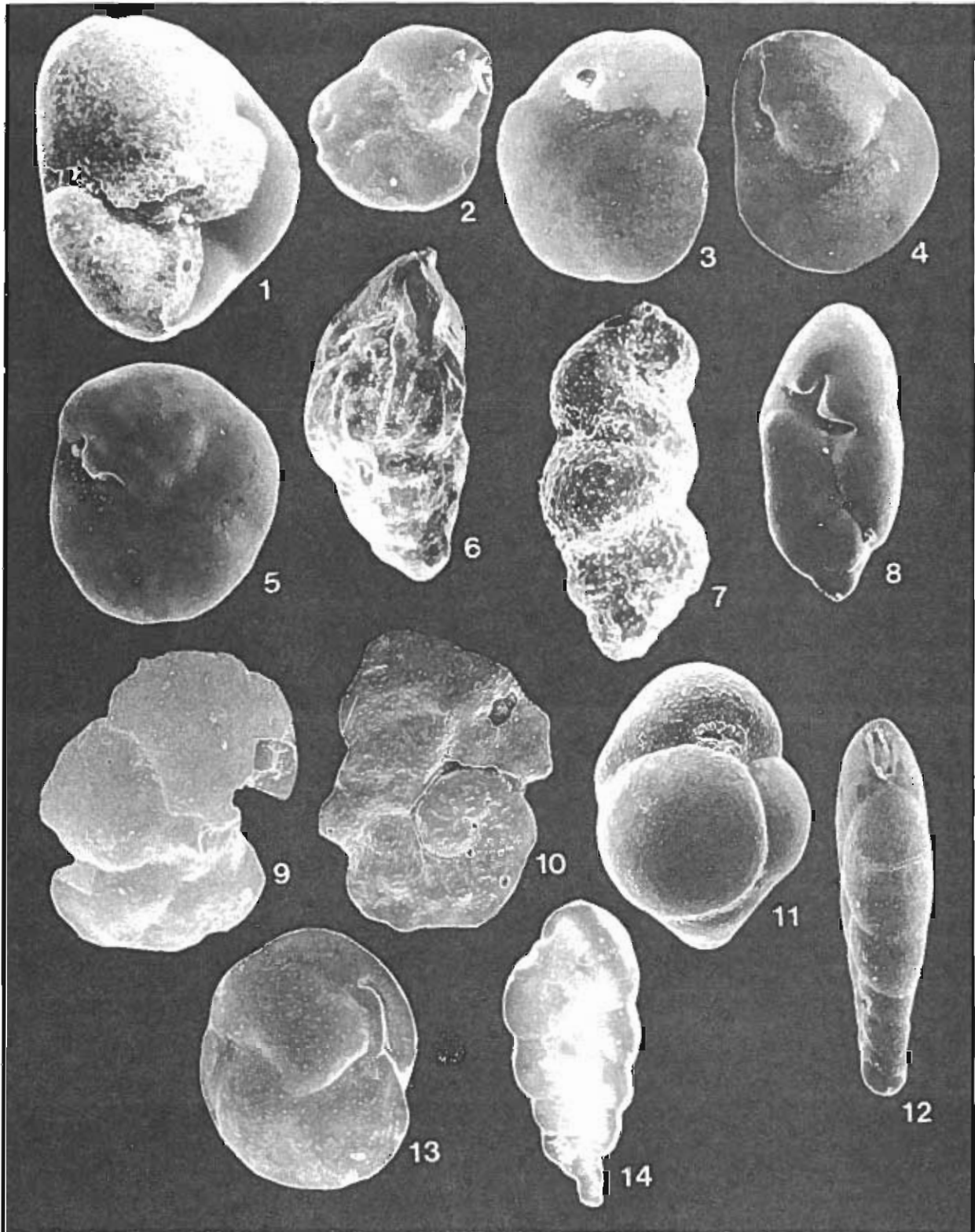


PLATE 12

Fig.	1.	<u>Eponides tumidulus</u> (Brady)	77034-5	x 258
	2.	<u>Eponides tumidulus</u> (Brady)	77034-5	x 261
	X 3.	<u>Valvulineria arctica</u> Green	77034-9	x 376
	4.	<u>Cibicides lobatulus</u> (Walker & Jacob)	77034-4	x 99
	5.	<u>Cibicides robertsonianus</u> (Brady)	77034-15	x 110
	6.	<u>Planulina wuellerstorfi</u> (Schwager)	77034-42	x 62
	7.	<u>Cibicides bertheloti</u> (d'Orbigny)	77034-15	x 135
	8.	<u>Cibicides rugosus</u> Phleger & Parker	77034-18	x 41
	9.	<u>Planulina wuellerstorfi</u> (Schwager)	77034-42	x 62

48mm
↙

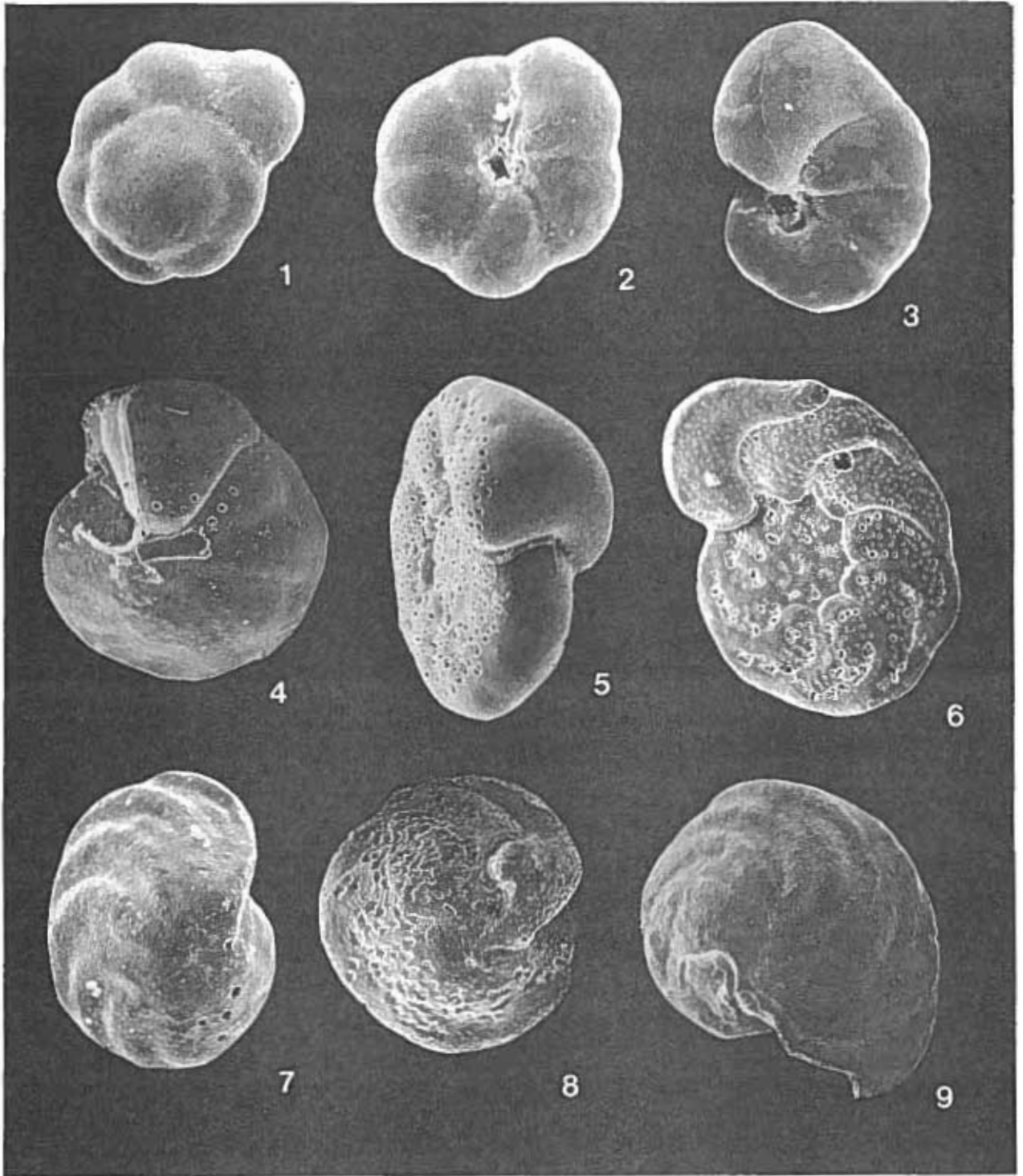


PLATE 13

Fig. 1.	<u>Discospirina italica</u> (Costa)	79017-3-IV-A	x 32
2.	<u>Nonionellina labradorica</u> (Dawson)	77034-7	x 96
3.	<u>Nonionella turgida</u> (Williamson)	77034-39-92 cm	
	(core)		x 180
4.	<u>Nonion</u> cf. <u>N. depressulus</u> (Walker & Jacob)	77034-37	x 118
5.	<u>Protelphidium nanum</u> Vilks	77034-39-92 cm	
	(core)		
6.	<u>Astrononion gallowayi</u> Loeblich & Tappan	77034-7	x 149
7.	<u>Nonion</u> cf. <u>N. depressulus</u> (Walker & Jacob)	79017-3-II-A	x 181
8.	<u>Melonis zaandamae</u> (Van Voorthuysen)	77034-7	x 151
9.	<u>Pullenia osloensis</u> Feyling-Hanssen	79017-2-I-2	x 336
10.	<u>Miliolinella circularis</u> (Bornemann)	79017-7-I-A	x 29
11.	<u>Quinqueloculina elongata</u> Natland	79017-7-I-I	x 181
12.	<u>Lenticulina angulata</u> (Reuss)	77034-10	x 330
13.	<u>Lenticulina rotulata</u> (Lamarck)	77034-11	x 68
14.	<u>Marginulina obesa</u> Cushman	79017-7-I-I	x 31

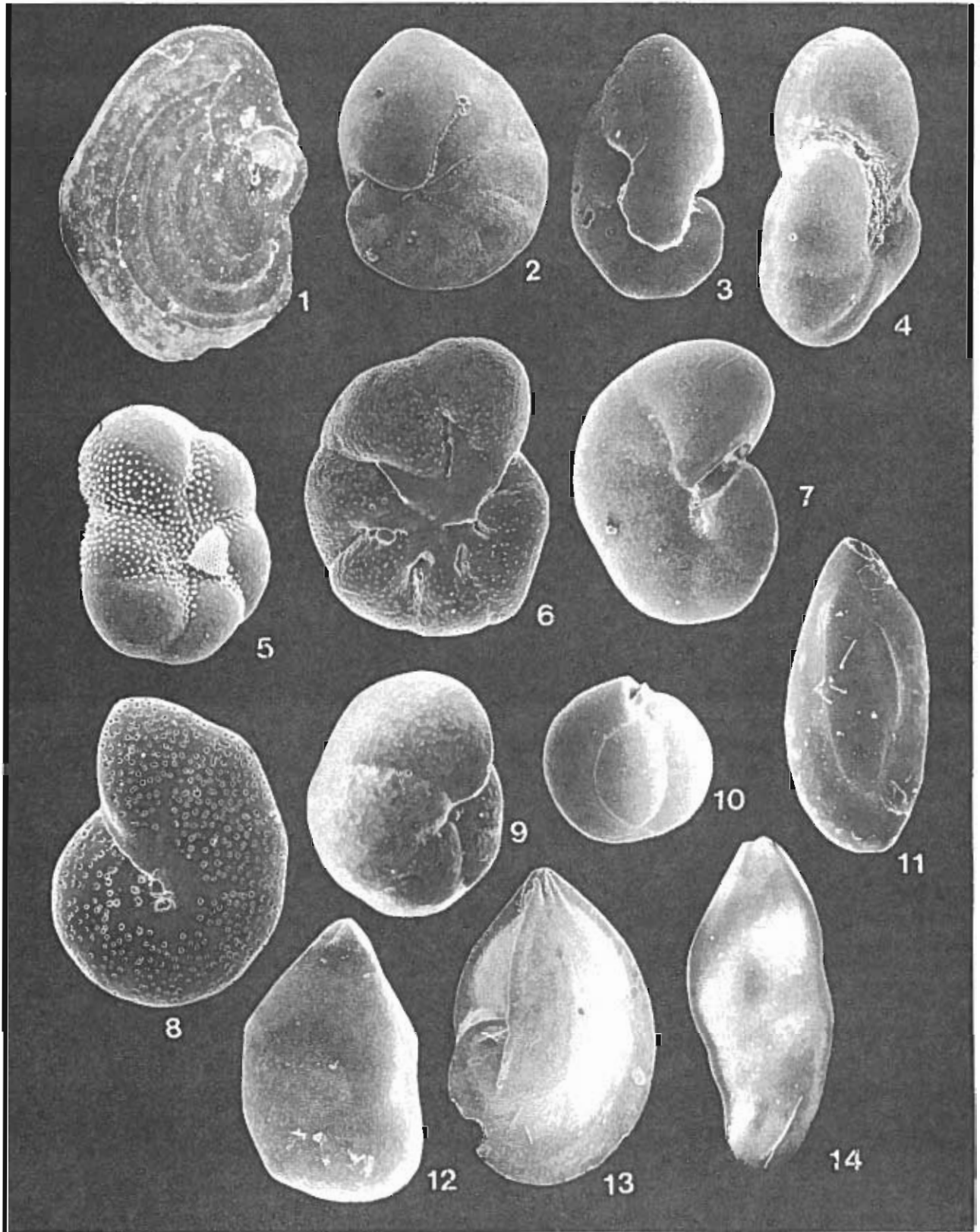
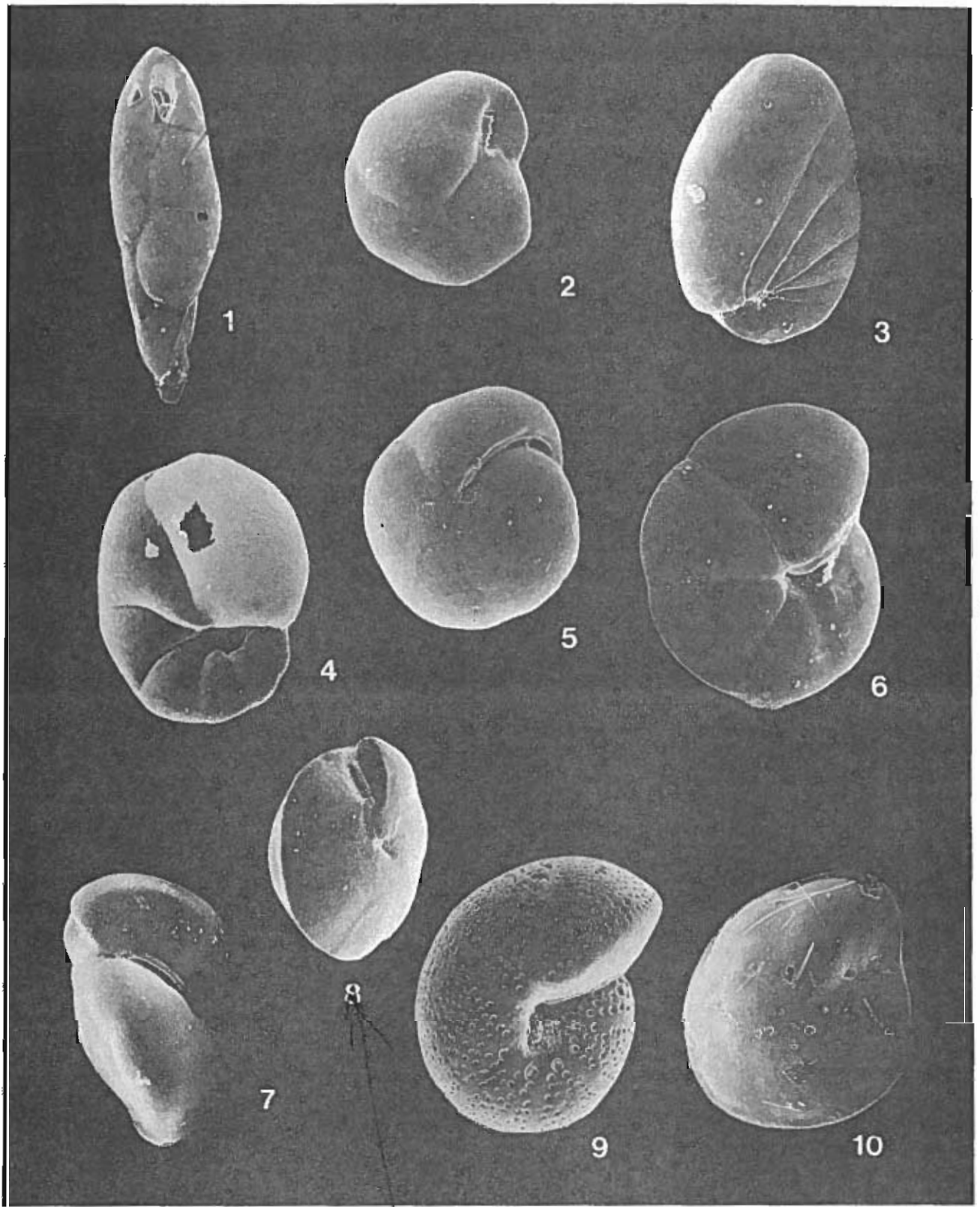


PLATE 14

Fig.	1.	<u>Fursenkoina fusiformis</u> (Williamson)	77034-7	x 184
	2.	<u>Cassidulina reniforme</u> Norvang	77034-7	x 247
	3.	<u>Nonion grateloupi</u> (d'Orbigny)	77034-7	x 119
	4.	<u>Nonionella atlantica</u> Cushman	77034-4	x 259
	5.	<u>Pullenia bulloides</u> (d'Orbigny)	77034-7	x 141
	6.	<u>Pullenia quinqueloba</u> (Reuss)	77034-8	x 184
	7.	<u>Gyroidina soldanii</u> d'Orbigny	77034-40	x 92
	8.	<u>Oridorsalis umbonatus</u> (Reuss)	77034-15	x 61
	9.	<u>Melonis pompilioides</u> (Fichtel & Moll)	77034-42	x 108
	10.	<u>Hoeglundina elegans</u> (d'Orbigny)	77034-11	x 61



54
✓

40 μm

PLATE 15

Fig.	1.	<u>Elphidium excavatum</u> (Terquem) living specimen	77034-2 54718	x 113
	2.	<u>Elphidium excavatum</u> (Terquem) living specimen	79017-2-III-G 54719	x 130
	3.	<u>Elphidium excavatum</u> (Terquem) living specimen	79017-2-II-I	x 121
	4.	<u>Elphidium excavatum</u> (Terquem) living specimen	79017-2-III-G 54721	x 149
	5.	<u>Elphidium excavatum</u> (Terquem) slight etching	79017-2-II-1 54722	x 132
	6.	<u>Elphidium excavatum</u> (Terquem) slight etching	79017-2-IV-C 54723	x 128
	7.	<u>Elphidium excavatum</u> (Terquem) predation	79017-2-IV-C 54724	x 156
	8.	<u>Elphidium excavatum</u> (Terquem) etched	79017-2-II-I 54725	x 148
	9.	<u>Elphidium excavatum</u> (Terquem) medium etching	77034-2 54726	x 98
	10.	<u>Elphidium excavatum</u> (Terquem) severe etching	79017-2-IV-C 54727	x 198
	11.	<u>Elphidium excavatum</u> (Terquem) severe etching	79017-2-III-G	x 93
	12.	<u>Elphidium excavatum</u> (Terquem) severe etching	79017-2-IV-C 54729	x 185

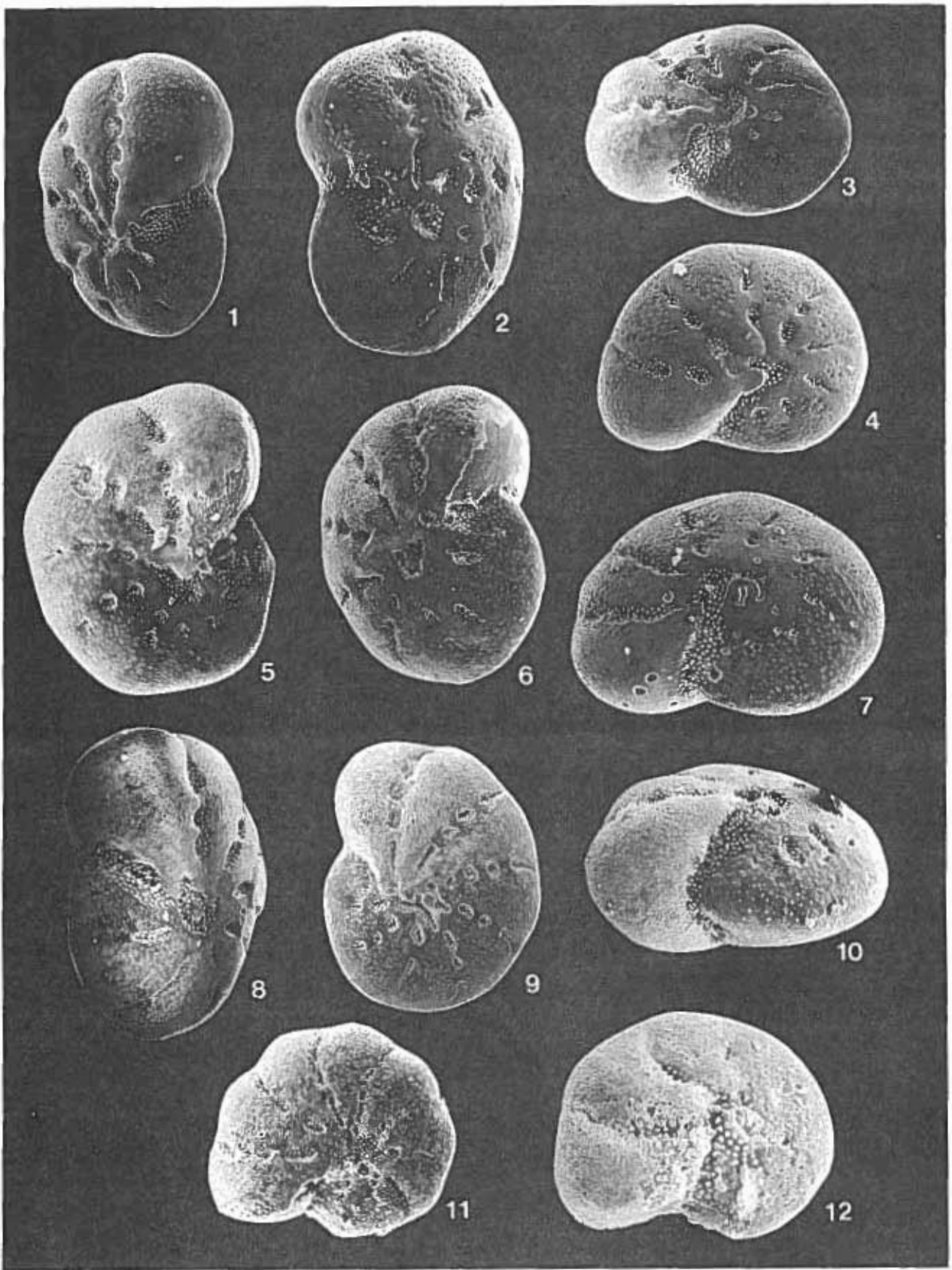


PLATE 16

Fig. 1.	<u>Placopsilinella aurantiaca</u> Earland	79017-5-C	x 25
2.	<u>Astrammina sphaerica</u> (Heron-Allen & Earland)	77034-40	x 25
3,4.	<u>Rhabdammina</u> spp. - 3 <u>R. abyssorum</u> Carpenter	77034-9	x 12
	- 4 <u>R. discreta</u> Brady	79017-18A	x 12
5.	<u>Astrorhiza</u> sp.	79017-5-H	x 12
6,7.	<u>Hippocrepina</u> spp. - 6 <u>H. indivisa</u> Parker	77034-36	x 25
	7 <u>H. oblonga</u> Percy	77034-27	x 50
8.	<u>Hyperammina bradyi</u> Stschedrina	77034-35	x 12
9.	<u>Saccammina sphaerica</u> Brady <u>anglica</u> Cushman	77034-33	x 12
10,11,12.	<u>Thurammina</u> spp. - 10,11 <u>T. compressa</u> Brady	77034-9	x 25
	12 <u>Thurammina</u> sp.	79017-3-II-A	x 25
13.	<u>Sagenina frondescens</u> (Brady)	79017-3-IV-G	x 25
14,15.	<u>Tholosina</u> spp. - 14 <u>T. bulla</u> (Brady)	79017-18A	x 25
	15 <u>T. vescicularis</u> (Brady)	77034-40	x 25
16.	<u>Colonnammina</u> sp.	79017-3-IV-G	x 25
17.	<u>Crithionina goesi</u> Hoglund	77034-32	x 25
18,19.	<u>Amodiscus planus</u> Hoglund	79017-3-IV-A	x100
20-28.	<u>Reophax</u> spp. - 20 <u>R. adunca</u> Brady	79017-3-IV-A	x 50
	21 <u>R. agglutinatus</u> Cushman	79017-1-III-D	x 50
	22 <u>R. arctica</u> Brady	79017-1-I-A	x 50
	23 <u>R. dentaliniformis</u> Brady	77034-34	x 25
	24 <u>R. distans</u> Brady	77034-38	x 25
	25 <u>R. gracilis</u> (Kiaer)	79017-18A	x100
	26 <u>R. hispidus</u> Cushman	77034-20	x 25
	27 <u>R. pilulifera</u> Brady	77034-20	x 25

Plate 16 - Cont'd.

28 R. turbo group -

R. sabulosus Brady

77034-26 x 12

29. Hormosina carpenteri (Brady)

77034-20 x 25

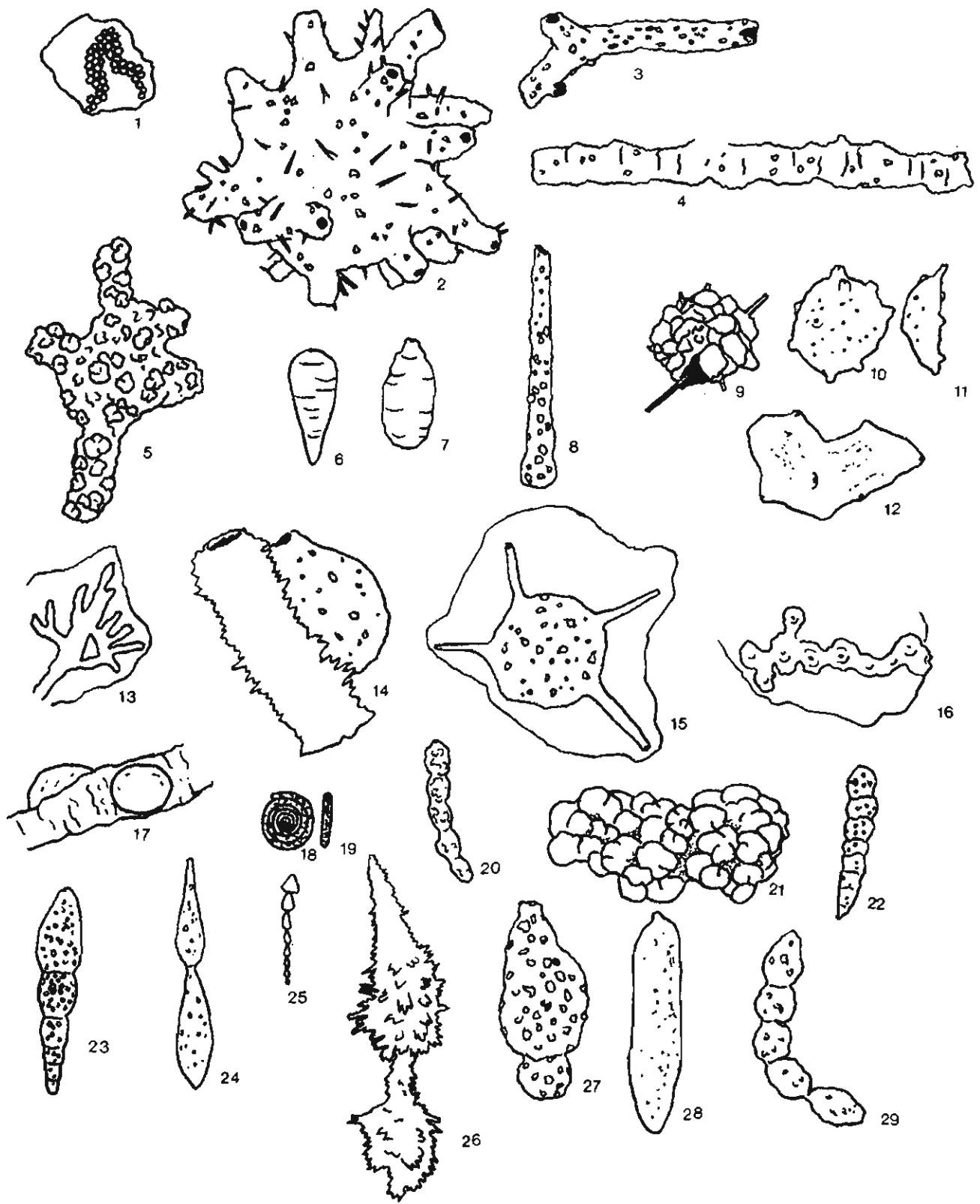


PLATE 17

Fig. 1,2.	<u>Silicosigmoilina</u> cf. <u>S. groenlandica</u> (Cushman)	77034-6	x 50
3,4.	<u>Recurvoides trochamminiforme</u> Höglund	79017-1-III-A	x 25
5.	<u>Ammobaculites exiguus</u> Cushman & Bronnimann	77034-12	x 50
6,10.	<u>Textularia</u> spp. 6 <u>T. agglutinans</u> d'Orbigny	77034-14	x 12
	7,8 <u>T. aspera</u> Brady	79017-3-III-A	x 50
	9 <u>T. flintii</u> Cushman	79017-3-III-1	x 12
	10 <u>T. kattagatensis</u> Höglund	79017-1-I-A	x 50
11,14.	<u>Trochammina</u> spp. 11,12 <u>T. compacta</u> F. Parker	77034-16	x100
	13,14 <u>T. macrescens</u> Brady	77034-2	x 50
15,16.	<u>Tiphotrocha comprimata</u> (Cushman & Bronnimann)	77034-43	x 12
17-20.	<u>Tritaxis</u> spp. 17,18 <u>T. atlantica</u> (F. Parker)	79017-1-I-A	x 50
	19,20 <u>T. conica</u> (Parker & Jones)	77034-20	x 50
21.	<u>Karrerella wrightii</u> Cushman	77034-19	x 25
22,23.	<u>Clavulina</u> spp. 22 <u>C. humilis</u> Brady		
	<u>mexicana</u> Cushman	77034-42	x 25
	23 <u>C. nodosaria</u> d'Orbigny		
	<u>novangliae</u> Cushman	77034-15	x 25
24.	<u>Martinottiella communis</u> d'Orbigny)	79017-7-A	x 25
25,26.	<u>Gypsina</u> spp. 25 <u>G. sp. a</u>	79017-2-Ir-F	x 25
	26 <u>G. sp. b</u>		x 25
27-30.	<u>Cyclogyra</u> spp. 27,28 <u>C. foliacea</u> (Philippi)	79017-18A	x 25
	29 <u>C. planorbis</u> (Schultze)	77034-4	x 25
	30 <u>C. sp.</u>	77034-35	x 25
31,32.	<u>Ophthalmidium acutimargo</u> (Brady)	77034-12	x 50
33,34.	<u>Spiroloculina</u> sp.	79017-5-(121-122 cm) core	x 25

PLATE 17 - Cont'd.

Fig. 35-37.	<u>Quinqueloculina cultrata</u> (Brady)	79017-5-C	x100
38.	<u>Cruciloculina ericsoni</u> Loeblich & Tappan	77034-8	x 25
39.	<u>Pateoris hauerinoides</u> (Rhumbler)	79017-2-1-1	x 50
40.	<u>Pyrgo depressa</u> (d'Orbigny)	77034-22	x 50
41-44.	<u>Triloculina</u> spp. 41,42 <u>T. oblonga</u> (Montagu)	77034-14	x 50
	43,44 <u>T. trihedra</u>		
	Loeblich & Tappan	77034-33	x 25
45.	<u>Involvohauerina globularis</u> Loeblich & Tappan	77034-33	x 50
46.	<u>Nodosaria calomorpha</u> Reuss	77034-28	x 50
47-49.	<u>Astacolus</u> spp.		
47	<u>A. crepidulus</u> (Fichtel & Moll)	77034-43	x 50
48	<u>A. hyalacrulus</u> Loeblich & Tappan	77034-24	x 50
49	<u>A. reniformis</u> (d'Orbigny)	79017-3-IV-1	x 25

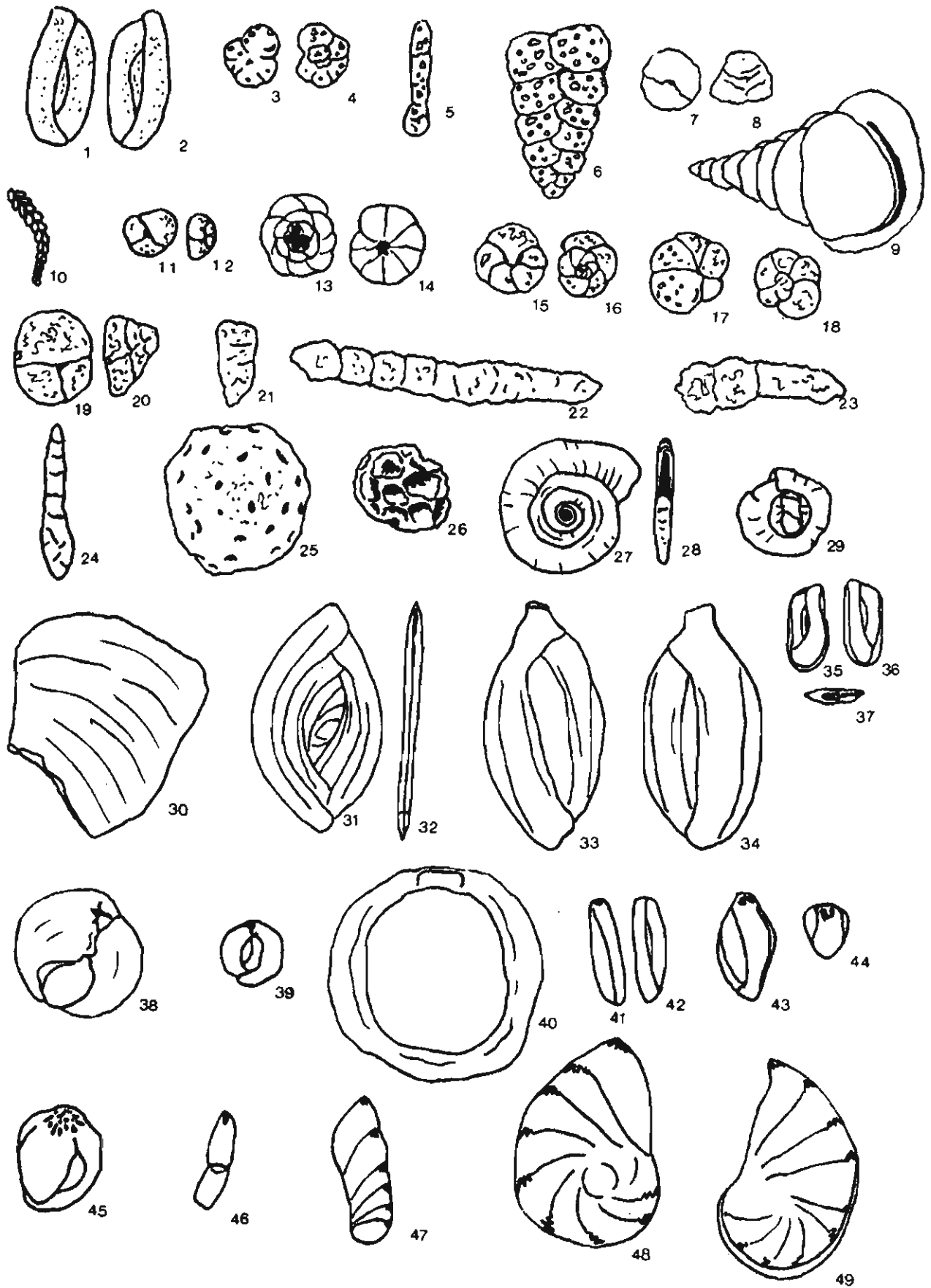


PLATE 18

- Fig. 1-10. Dentalina spp.
1. D. advena (Cushman) 77034-34 x 25
 2. D. baggi (Galloway & Wissler) 77034-26 x 25
 3. D. communis d'Orbigny 77034-9 x 25
 4. D. farcimen (Soldani) 77034-25 x 25
 5. D. filiformis (d'Orbigny) 77034-25 x 25
 6. D. frobisherensis
Loeblich & Tappan 79017-1-II-I x 25
 7. D. inornata d'Orbigny
bradyensis (Dervieux) 77034-25 x 25
 8. D. ittai Loeblich & Tappan 77034-9 x 25
 9. D. pauperata d'Orbigny 77034-37 x 25
 10. D. subsoluta (Cushman) 77034-20 x 12
 11. Frondicularia bradii (Silvestri) 77034-33 x 25
 - 12-26. Lagena spp.
 12. L. acuticosta Reuss 77034-6 x 50
 13. L. apiopleura Loeblich &
Tappan 79017-3-IV-G x 50
 14. L. elongata (Ehrenberg) 77034-5 x 25
 15. L. flatulenta Loeblich &
Tappan 77034-24 x 25
 16. L. gracillima (Seguenza) 77034-5 x 25
 17. L. hertwigiana Brady
undulata Sidebottom 79017-3-III-I x 50
 18. L. laevis (Montagu) 79017-18A x 50
 19. L. meridionalis (Wiesner) 79017-3-II-I x 50
 20. L. mollis Cushman 77034-29 x 50

PLATE 18 - Cont'd.

Fig. 12-26.	<u>Lagena</u> spp.	21. <u>L. nebulosa</u> Cushman	79017-2-III-G	x 50
		22. <u>L. plumigera</u> Brady	79017-5-C	x 50
		23. <u>L. semistriata</u> Williamson	77034-17	x 50
		24. <u>L. striata</u> (d'Orbigny) forma <u>typica</u> Feyling-Hanssen	79017-1-II-A	x 50
		25. <u>L. setigera</u> Millett	79017-2-I-2	x 50
		26. <u>L. sulcata</u> (Walker & Jacob)	77034-25	x 50
27-29.	<u>Lenticulina</u> spp.	27. <u>L. albatrossi</u> (Cushman)	77034-35	x 25
		28. <u>L. gibba</u> (d'Orbigny)	77034-15	x 25
		29. <u>L. pliocaenica</u> (Silvestri)	77034-25	x 25
		30. cf. <u>Marginulinopsis bradyi</u> (Goes)	77034-13	x 25
31.32.	<u>Pseudonodosaria</u> spp.	31. <u>P. rotundata</u> (Reuss)	77034-34	x 50
		32. <u>P. torrida</u> (Cushman)	77034-20	x 50
		33. <u>Saracenaria latifrons</u> (Brady)	77034-6	x 25
		34. <u>Vaginulinopsis sublegumen</u> Parr	77034-6	x 12
35-37.	<u>Lingulina</u> sp.		79017-2-I _r -F	x100
38,39.	<u>Pseudopolymorphina</u> spp.			
		38. <u>P. novangliae</u> (Cushman)	79017-1-II-A	x 25
		39. cf. <u>P. Novangliae</u> (Cushman)	79017-3-I-A	x 50

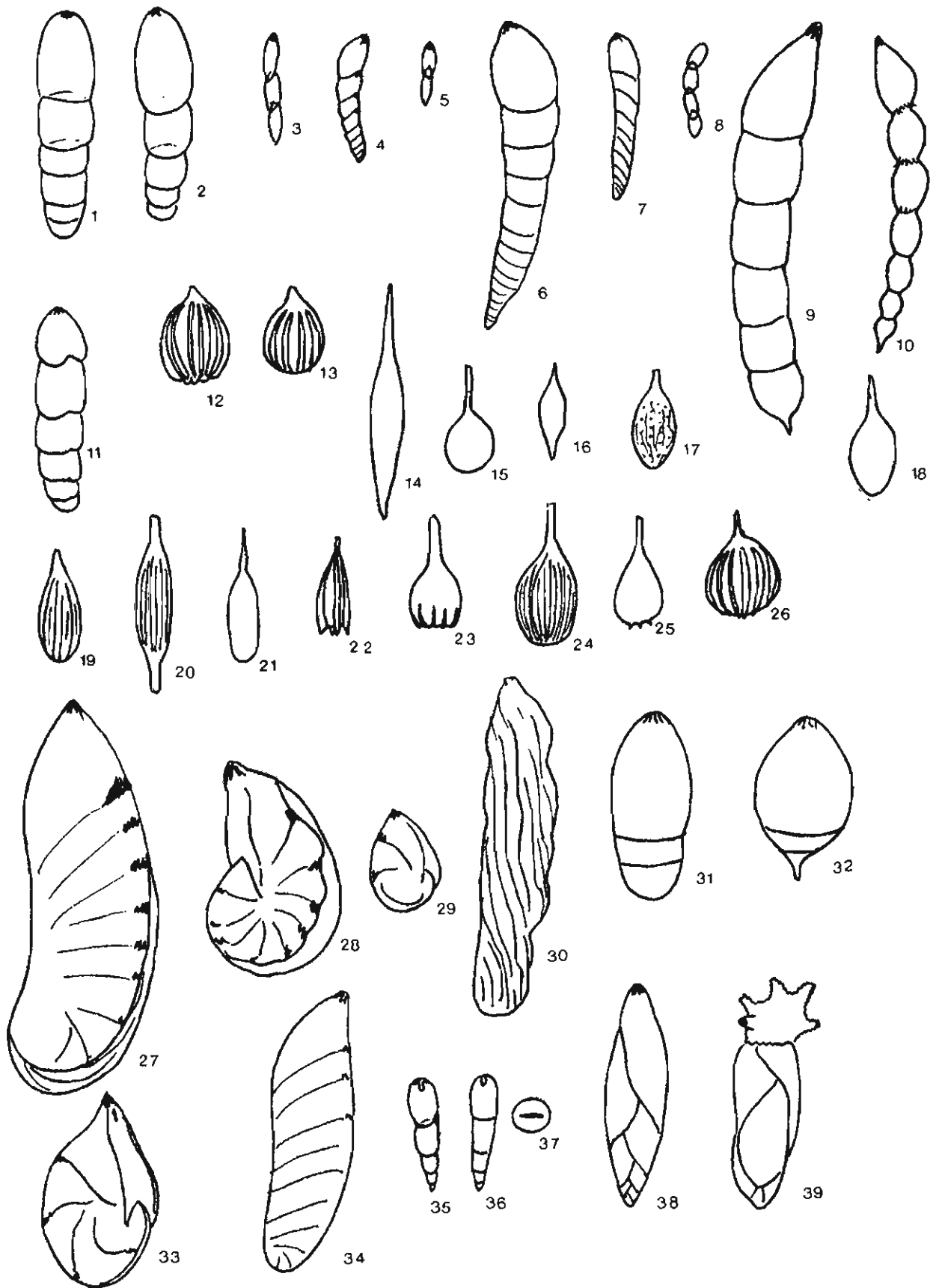


PLATE 19

Fig.	1. <u>Pyrulina</u> <u>extensa</u> (Cushman)	79017-3-IV-A	x 50
	2. <u>Glandulina</u> <u>laevigata</u> d'Orbigny	77034-21	x 50
		(220-222 cm) core	
	3,4. <u>Laryngosigma</u> spp. 3. <u>L. hyalascidia</u>		
	Loeblich & Tappan	77034-19	x 25
	4. <u>L. williamsoni</u>		
	(Terquem)	77034-16	x 25
5-14.	<u>Oolina</u> spp. 5. <u>O. apiculata</u> Reuss	77034-6	x 25
	6. <u>O. borealis</u> Loeblich & Tappan	77034-25	x100
	7. <u>O. caudigera</u> (Wiesner)	77034-25	x 25
	8. <u>O. globosa</u> (Montagu)	79017-3-II-A	x 50
	9. <u>O. hexagona</u> (Williamson)	79017-2-I-1	x 50
	10. <u>O. lineata</u> (Williamson)	79017-7-I	x 50
	11. <u>O. lineato-punctata</u>		
	(Heron-Allen & Earland)	77034-4	x 50
	12. <u>O. melo</u> d'Orbigny	79017-3-II-A	x 50
	13. <u>O. striatopunctata</u>		
	(Parker & Jones)	77034-13	x100
	14. <u>O. squamoso-sulcata</u>		
	(Heron-Allen & Earland)	79017-3-II-A	x 50
15-33.	<u>Fissurina</u> spp.		
	15,16. <u>F. alveolata</u> (Brady)	77034-13	x 50
	17. <u>F. annectens</u>		
	(Burrows & Holland)	77034-38	x 50
	18,19. <u>F. bradii</u> Silvestri	79017-2-IV-C	x 50

PLATE 19 - Cont'd.

Fig.	20. <u>F. crebra</u> (Matthes)	79017-3-IV-G	x 50
	21. <u>F. fimbriata</u> (Brady)	77034-12	x 50
	22,23. <u>F. globosa</u> (Montagu)	79017-5-C	x 50
	24. <u>F. kerguelenensis</u> Parr	77034-21	x 50
	25. <u>F. marginata</u> (Montagu)	77034-43	x 50
	26,27. <u>F. orbignyana</u> Seguenza	79017-7-A	x 50
	28. <u>F. quadrata</u> (Williamson)	79017-3-11-A	x 50
	29,30. <u>F. sequenziana</u> (Fornasini)	79017-3-1V-A	x 50
	31. <u>F. serrata</u> (Schlumberger)	79017-5-C	x 50
	32. <u>F. submarginata</u> (Boomgaard)	79017-3-IV-A	x 50
	33. <u>F. ventricosa</u> (Wiesner)	77034-15	x 50
34-36. <u>Parafissurina</u> spp.			
	34. <u>P. arctica</u> Green	79017-3-I-1	x 50
	35. <u>P. fusuliformis</u> Loeblich & Tappan	79017-1-I-A	x 50
	36. <u>P. tectulostoma</u> Loeblich & Tappan	77034-35	x 50
37,38. <u>Bolivina</u> spp.			
	37. <u>B. pygmaea</u> Brady	77034-13A-(13-14 cm) core	x100
	38. <u>B. striatula</u> Cushman	77034-2	x 50
39-41. <u>Islandiella</u> spp.			
	39. <u>I. helenae</u> Feyling-Hanssen & Buzas	79017-1-III-D	x 50
	40,41. <u>I. norcrossi</u> (Cushman)	79017-3-II-A	x 50
42,43. <u>Bulimina</u> spp.			
	42. <u>B. alazanensis</u> Cushman	77034-15	x 50
	43. <u>B. exilis</u> Brady	77034-18	x 50

PLATE 19 - Cont'd.

Fig. 44,45. Uvigerina spp.

- | | | | |
|--------|---|-----------------------------|------|
| 44. | <u>U. canariensis</u> d'Orbigny | 79017-5-(103-105 cm) core | x 25 |
| 45. | <u>U. spinicostata</u>
Cushman & Jarvis | 77034-13A-(113-114 cm) core | x 25 |
| 46. | <u>Trifarina angulosa</u> (Williamson) | 79017-15 | x100 |
| 47-50. | <u>Discorbis</u> spp. | | |
| 47,48 | cf. <u>D. squamata</u> F. Parker | 79017-1-1-C | x150 |
| 49,50 | <u>D. translucens</u> Earland | 77034-7 | x100 |
| 51. | <u>Eoeponidella pulchella</u>
(F. Parker) | 79017-4-(208-210 cm) core | x100 |
| 52,53. | <u>Gavelinopsis praegeri</u>
(Heron-Allen & Earland) | 79017-2-I _r -F | x 50 |
| 54,55. | <u>Rosalina columbiensis</u> (Cushman) | 77034-35 | x100 |
| 56,57. | <u>Stetsonia minuta</u> F. Parker | 77034-17 | x 50 |
| 58,59. | <u>Asterigerina carinata</u> d'Orbigny | 79017-3-III-I | x 25 |
| 60,61. | <u>Turrispirillina arctica</u> (Cushman) | 79017-2-III-I | x 50 |
| 62,63. | <u>Patellina corrugata</u> Williamson | 77034-3 | x100 |
| 64. | <u>Rupertina stabilis</u> (Wallich) | 77034-37 | x 25 |
| 65. | <u>Chilostomella oolina</u> Schwager | 77034-13A-(165-66 cm) core | x 50 |

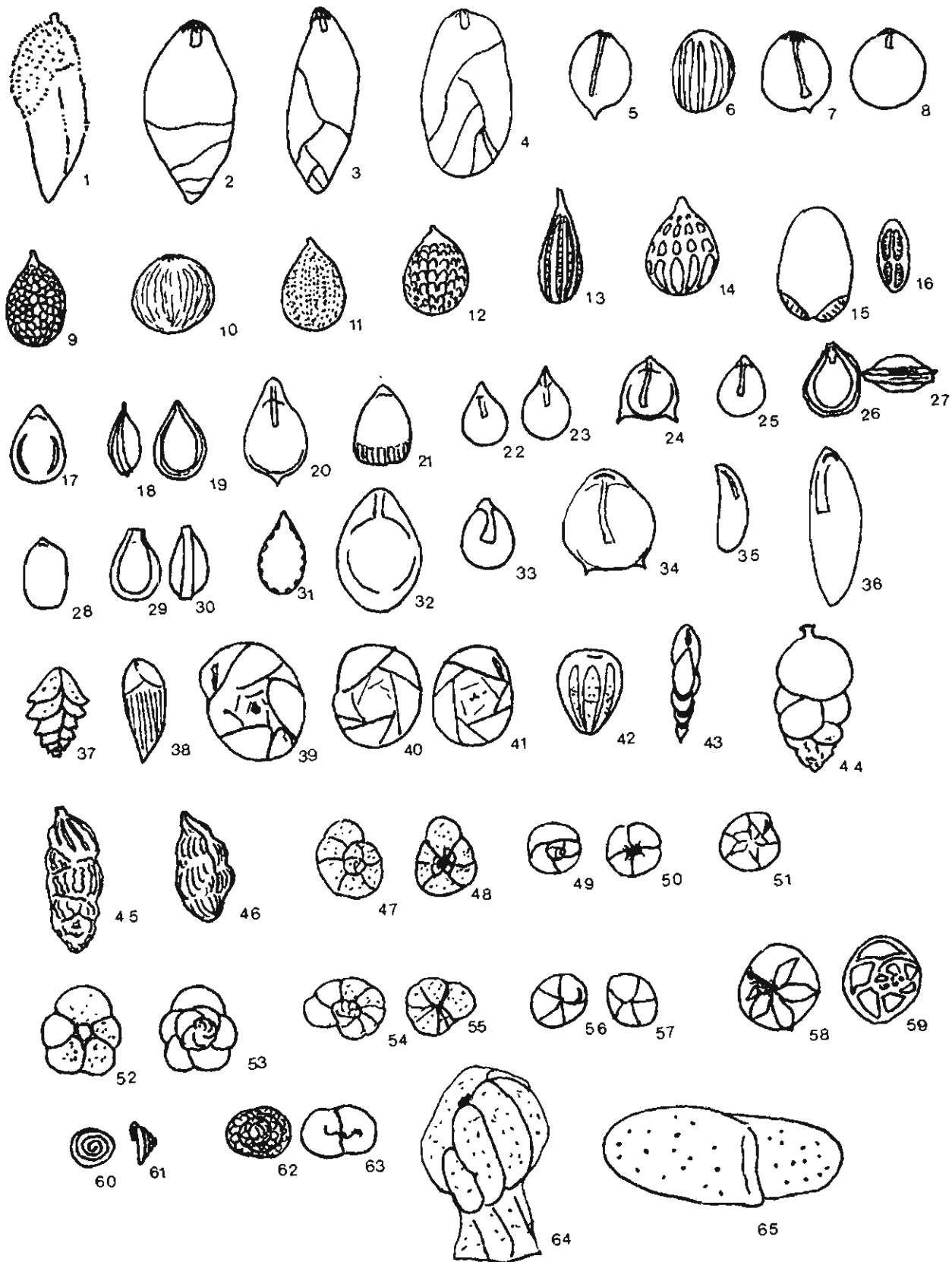


PLATE 20

Fig. 1-4.	<u>Elphidium</u> spp.		
1.	<u>E. bartletti</u> Cushman	77034-29	x 50
2.	<u>E. frigidum</u> Cushman	7907-1-I-C	x 50
3.	<u>E. oregonense</u> Cushman & Grant	77034-42	x 50
4.	<u>E. subarcticum</u> Cushman	77034-29	x 50
5.	<u>Protelphidium orbiculare</u> (Brady)	79017-1-III-D	x 50
6,7.	<u>Nonionella turgida</u> (Williamson) var. <u>digitata</u> Norvang	79017-1-III-D	x 50
8,10.	<u>Gyroidina</u> spp.		
8,9.	<u>G. orbicularis</u> d'Orbigny	79017-7-A	x100
10,11.	<u>G. quinqueloba</u> Uchio	77034-17	x 50
12,13.	<u>Osangularia rugosa</u> (Phleger & Parker)	79017-3-III-I	x 50
14,17.	<u>Melonis</u> spp.		
14,15.	<u>M. sphaeroides</u> Voloshinova	77034-42	x 50
16,17.	<u>M.</u> sp.	79017-3-IV-G	x 50
18.	INDET - arenaceous	79017-3-IV-G	x 50
19.	INDET - calcareous	79017-3-IV-A	x 50
20.	INDET - arenaceous	79017-3-IV-A	x 50
21.	INDET - calcareous	79017-3-I-A	x100
22.	sp. cf. <u>Haliphysema</u> sp.	77034-34	x 25
23.	sp. cf. <u>Psammosphaera</u> sp.	79017-7-I-A	x 25
24,25.	cf. <u>Reophax</u> sp.	77034-34	x 25
26.	INDET - arenaceous	79017-3-IV-A	x 25
27.	cf. <u>Sorosphaera</u> cf. <u>S. Confusa</u>	79017-2-I _r -F	x 50
28,29.	<u>Buliminella</u> sp.	79017-2-II-I	x 50

