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On the Foraminifera and Ostracoda from Soundings (chiefly Deep-water) collected round Funafuti by H.M.S. 'Penguin.'

By FREDERICK CHAPMAN, A.L.S., F.R.M.S., of the National Museum, Melbourne.

(PLATES 54–57.)

[Read 7th April, 1910.]

Introduction.—The following Report deals with the Microzoa obtained from the deep-sea soundings collected round Funafuti in 1896 by H.M.S. 'Penguin,' Captain A. M. Field, R.N., commanding.

I have previously published four reports on the Foraminifera and Ostracoda of the various dredgings made by the Funafuti Expeditions between 1896 and 1898 *; and the present report is practically final as regards the recent material. For the privilege of examining the present very interesting series of soundings I am indebted to Prof. J. W. Judd, C.B., LL.D., F.R.S., and the Coral Reef Committee of the Royal Society. The samples were sent on to Melbourne, and reached me in January 1904.

Condition of Material.—The collection of soundings made by H.M.S. 'Penguin' consists of 23 samples of dry Globigerina ooze and shell or "coral sands," and 37 samples of soundings in grease, taken by the sounding-lead. The former, and a few of the latter, were contained in glass bottles and tubes, whilst the remainder of the samples in tallow were in paper envelopes. After spending some time in cleaning the tallow samples, which, by the way, were of an especially refractory nature, and examining them microscopically, it was seen that the result did not justify the trouble, since the cleaned material often yielded only a few specimens of the commonest and most ubiquitous types of Foraminifera, chiefly of pelagic forms. The present work is therefore mainly based on the results from the dry soundings, although some of the more interesting of the tallow samples are included.

Two of the dried soundings in this collection, viz. Nos. 3 and 19, were partially examined by me when working in the Geological Laboratory at the Royal College of Science, London; and the results of a search for the Ostracoda were embodied in my paper published in 1902, entitled "Some Ostracoda from Funafuti." Those samples were then only partially worked over and none of the Foraminifera noted, so that they have now been examined more exhaustively, and the entire results herein included.

* Chapman, F. ('00, '01, '02[1], '02[2]).

General Details of Soundings by H.M.S. 'Penguin' round Funafuti.

Station 2.—May 20th, 1896. Latitude 11° 5′ 0″ S., longitude 178° 40′ 0″ E. Depth, 1489 fathoms. Globigerina Ooze. Dry, of a pale fawn-colour; wet, pale reddish brown; somewhat incoherent. A few valves of Ostracoda present, belonging to the genera *Argillœcia*, *Bairdia*, and *Krithe*. Also some Radiolaria of the following genera :—*Rhopalastrum* and *Hymeniastrum*. With the exception of a solitary specimen of *Biloculina depressa*, a *Textularia*, and a few hyaline forms, the bulk of this sample is composed of pelagic Foraminifera, chiefly of the following species :—*Globigerina conglobata*, *G. sacculifera*, *G. rubra*, *Pullenia obliquiloculata*, and *Pulvinulina menardii*.

Station 3.—May 21st, 1896. Lat. 10° 12′ 53″ S., long. 178° 52′ 0″ E. Depth, 2715 fathoms. Globigerina Ooze. Dry, pale fawn; wet, slightly darker; incoherent. Ostracoda rare; the genera are represented by *Argillœcia*, *Cythere*, *Krithe*, and *Xestoleberis*. Also some Radiolaria of the following genera :—*Cenosphœra*, *Rhopalastrum*, *Hymeniastrum*, and Echinoid spines.

The foraminiferal fauna is exceptionally rich in species. Of the porcellanous forms the deep-water species *Biloculina depressa* and its variety *murrhyna*, and also *Miliolina venusta*, are conspicuous. The textularids are fairly well represented, and the rare *Ehrenbergina hystrix* occurs here. The family Lagenidæ is represented by twelve species of the type-genus *Lagena*; whilst the subfamily Polymorphininæ appears in the genera *Polymorphina* and *Uvigerina*. Besides a few rotaline forms, the bulk of the material is composed of pelagic Foraminifera, as *Orbulina universa*, *Globigerina conglobata*, *G. æquilateralis*, *Pullenia obliquiloculata*, and *Pulvinulina menardii*.

Station 4.—May 21st, 1896. Lat. 8° 52′ 0″ S., long. 179° 11′ 30″ E. Depth, 2728 fathoms. Globigerina Ooze. Dry, pale yellowish brown; wet, reddish brown; a sticky calcareous mud. No Ostracoda were noted in this sample. Radiolaria (*Hymeniastrum*) and Alcyonarian spicules occur. Echinoid spines are fairly numerous, also Fish-teeth. Foraminifera other than pelagic not common, the most interesting being the curious deep-water species *Pulvinulina favus*. The most abundant species are *Globigerina bulloides*, *G. dutertrei*, *G. triloba*, *G. subcretacea*, *Pullenia obliquiloculata*, *Truncatulina pygmœa*, *Pulvinulina tumida*, and *P. exigua*.

Station 10.—June 25th, 1896. Lat. 15° 31′ 6″ S., long. 177° 31′ 2″ E. Depth, 1485 fathoms. Globigerina Ooze. Dry, pale fawn; wet, pale reddish brown; coherent. Ostracoda frequent, generically represented by *Pontocypris*, *Bairdia*, *Cythere* (with a new sp., *C. sweeti*), and *Krithe*. Radiolaria (*Rhopalastrum*) also occur. Of the Foraminifera, besides the pelagic forms, the commonest genera are *Lagena* and *Truncatulina*. The

pelagic Foraminifera are chiefly represented by *Orbulina universa*, *Globigerina conglobata*, *G. triloba*, *G. sacculifera*, *Pullenia obliquiloculata*, *Pulvinulina menardii*, *P. tumida*, *P. crassa*, *P. canariensis*, and *P. patagonica*.

Station 11.—July 2nd, 1896. Lat. 16° 20′ 0″ S., long. 176° 50′ 5″ E. Depth, 1417 fathoms. Globigerina Ooze. Dry, pale fawn; wet, pale reddish brown; coherent. Ostracoda are moderately common, represented by *Argillœcia*, (?) *Bythocypris* (with a new sp. *heterodoxa*), *Bairdia*, *Cythere* (with a new sp. *sweeti*), *Krithe*, *Cytherura* (with a new sp. *tenuicosta*), and *Cytheropteron*. Radiolaria of the genus *Rhopalastrum*. Teeth and otoliths of Fishes.

Of the Foraminifera the families Miliolidæ, Astrorhizidæ, Textulariidæ, Lagenidæ, Rotaliidæ, and Nummulinidæ are sparingly represented. The rare *Rotalia broeckhiana* occurs here. The pelagic Foraminifera form the bulk of the material, the chief of which are *Orbulina universa*, *Globigerina subcretacea*, *G. sacculifera*, *G. æquilateralis*, *G. conglobata*, *Pullenia obliquiloculata*, *Sphæroidina dehiscens*, *Candeina nitida*, *Pulvinulina patagonica*, and *P. truncatulinoides*.

In this sample a piece of pumice of whitish appearance, measuring about 3 × 2 cm., occurred.

Station 13.—July 2nd, 1896. Lat. 15° 39′ 5″ S., long. 177° 3′ 0″ E. Depth, 1050 fathoms. Globigerina Ooze. Dry, pale fawn; wet, pale reddish brown; incoherent. Ostracoda numerous; the following genera occur:—*Aglaia*, *Pontocypris* (with a new sp. *davidiana*), *Argillœcia* (with a new sp. *gracilior*), *Bythocypris* (and the new spp. *sollasi* and *heterodoxa*), *Bairdia*, *Cythere* (and the new sp. *sweeti*), *Krithe*, *Loxoconcha*, *Xestoleberis*, *Cytheropteron* (and a new var. *C. assimile* var. *funafutiensis*), *Bythocythere* (and the new sp. *retiolata*), and *Pseudocythere* (with the new sp. *funafutiensis*). Hexactinellid Sponge-spicules, Echinoid spines, Pteropods (*Styliola*), and Fish-otoliths.

This sample is very rich in Foraminifera, miliolid and rotaline forms being especially well represented. The abundant pelagic fauna is chiefly composed of *Orbulina universa*, *Globigerina rubra*, *G. bulloides*, *G. sacculifera*, *G. conglobata*, *G. triloba*, *Sphæroidina dehiscens*, *Pullenia obliquiloculata*, and *Pulvinulina menardii*. A noteworthy species occurring in this sample is the beautifully ornate *Lagena juddiana*.

Station 19.—July 4th, 1896. Lat. 15° 26′ 2″ S., long. 177° 17′ 0″ E. Depth, 1995 fathoms. Globigerina Ooze. Dry, pale fawn; wet, reddish brown; coherent. Ostracoda rare, only the usual deep-water form *Krithe tumida* occurring here.

The Foraminifera are not numerous as regards species, but the non-pelagic

forms are of especial interest, and include *Rhizammina algæformis*, *Haplophragmium canariense*, *H. latidorsatum*, and *Ammodiscus gordialis*. The chief pelagic species are *Globigerina conglobata*, *G. æquilateralis*, *G. sacculifera*, *G. rubra*, *Sphæroidina dehiscens*, *Pullenia obliquiloculata*, *Pulvinulina menardii*, *P. haueri*, and *P. crassa*.

Station 20.—July 4th, 1896. Lat. 13° 22′ 0″ S., long. 178° 8′ 5″ E. Depth, 1215 fathoms. Globigerina Ooze. Dry, whitish or cream-colour; wet, pale yellowish brown; coherent. An abundant Ostracodal fauna; genera present:—*Aglaia*, *Pontocypris*, *Argillœcia* (with the new sp. *gracilior*), *Bythocypris* (with the new sp. *heterodoxa*), *Bairdia*, *Cythere* (with the new sp. *sweeti* and the new var. *C. curvicostata* var. *funafutiensis*), *Krithe*, *Loxoconcha*, *Cytherura* (with new sp. *tenuicosta*), *Bythocythere* (with new sp. *tuberculata*), and *Pseudocythere*.

The Foraminifera are represented by a fair number of deep-water miliolids, 8 spp. of *Lagena*, and other interesting forms, as *Reophax adunca* and *Bulimina subteres*. The pelagic Foraminifera form the greater bulk of the material, chief among which are *Orbulina universa*, *Globigerina conglobata*, *G. sacculifera*, *G. subcretacea*, *G. æquilateralis*, *G. digitata*, *G. bulloides*, *G. rubra*, and *Pulvinulina menardii*.

Station 21.—July 4th, 1896. Lat. 12° 41′ 5″ S., long. 178° 19′ 2″ E. Depth, 2195 fathoms. Globigerina Ooze. Dry, pale pinkish yellow; wet, reddish brown; coherent. Ostracoda not common; referable to *Cythere* and *Krithe*. Also small Fish-teeth.

Pelagic Foraminifera comprise *Orbulina universa*, *Globigerina conglobata*, *G. sacculifera*, *G. rubra*, *G. bulloides*, *G. subcretacea*, *Sphæroidina dehiscens*, *Pullenia obliquiloculata*, *Pulvinulina menardii*, *P. tumida*, and *P. patagonica*. Of especial interest are *Hyperammina ramosa* and *H. elongata*, *Polymorphina longicollis* and *Rotalia broeckhiana*.

Station 23.—July 5th, 1896. Lat. 11° 39′ 5″ S., long. 178° 38′ 0″ E. Depth, 735 fathoms. Globigerina Ooze (sample in tallow). Only Foraminifera noticed. The genera *Sigmoïlina*, *Cassidulina*, *Truncatulina*, and *Amphistegina* are present, together with the commoner pelagic forms of *Globigerina* and *Pulvinulina*.

Station 24.—July 13th, 1896. Lat. 8° 35′ 6″ S., long. 179° 9′ 5″ E. Depth, 987 fathoms. "Coral Sand" (sample in tallow). Foraminifera of two genera only, viz. *Globigerina* and *Amphistegina*. Other organisms present are Echinoid spines and Alcyonarian spicules.

Station 28.—July 13th, 1896. Lat. 8° 42′ 3″ S., long. 179° 7′ 6″ E. Depth, 1505 fathoms. Globigerina Ooze (sample in tallow). Genera present: *Globigerina*, *Sphæroidina*, *Pulvinulina*, and *Amphistegina*.

Station 29.—July 14th, 1896. Lat. 8° 35′ 7″ S., long. 179° 7′ 8″ E. Depth, 475 fathoms. "Coral Sand" (sample in tallow). Foraminifera represented by *Spirillina obconica*, *Pulvinulina*, and *Amphistegina*. Alcyonarian spicules abundant.

Station 31.—July 14th, 1896. Lat. 8° 37′ 9″ S., long. 179° 9′ 3″ E. Depth, 1158 fathoms. Volcanic Sand with Foraminifera. The latter chiefly comprise the pelagic genus *Globigerina*; *Amphistegina* is also present.

Station 45.—July 15th, 1896. Lat. 8° 39′ 0″ S., long. 179° 16′ 6″ E. Depth, 2107 fathoms. Globigerina Ooze. Dry, white, almost chalky in appearance; wet, pale yellowish brown; coherent. Ostracoda very rare, the genera *Cythere* and *Krithe* present. Other organic remains are fragments of the mesh of Siliceous Sponges and Echinoid spines. The usual pelagic Foraminifera are abundant: chiefly *Globigerina conglobata*, *G. sacculifera*, *G. æquilateralis*, *G. subcretacea*, *Pullenia obliquiloculata*, *Pulvinulina menardii*, and *P. tumida*. Other noteworthy species are *Lagena alveolata*, *Bulimina buchiana*, *Cassidulina parkeriana*, *Ehrenbergina serrata*, and *Truncatulina culter*.

Station 48.—July 16th, 1896. Lat. 8° 35′ 5″ S., long. 179° 17′ 5″ E. Depth, 2298 fathoms. Globigerina Ooze. Dry, whitish or chalky; wet, pale yellowish brown; incoherent. Ostracoda very rare, represented by only one genus, *Krithe*. This sample is very rich in species of the Foraminifera, the more interesting being *Spiroloculina tenuis*, *Sigmoïlina schlumbergeri*, *Tritaxia lepida*, *Bulimina rostrata*, *Bolivina reticulata*, *Virgulina texturata*, *Ehrenbergina serrata*, *Lagena formosa*, *L. quadrata*, *L. quinquelatera*, *L. staphyllearia*, *L. spumosa*, *Rhabdogonium minutum*, *Polymorphina seguenzana*, and *Patellina corrugata*. The most abundant species are *Globigerina sacculifera*, *G. digitata*, *Sphæroidina dehiscens*, *Pullenia obliquiloculata*, *Truncatulina pygmæa*, *Pulvinulina menardii*, and *P. truncatulinoides*.

Station 55.—July 16th, 1896. Lat. 8° 29′ 37″ S., long. 179° 13′ 0″ E. Depth, 507 fathoms. "Coral Sand." The remains of *Halimeda* are abundant. Other organisms are Corals, Pelecypods, Gasteropods, and Ostracodes, the latter comprising 3 spp. of *Bairdia*. The Foraminifera form a small but interesting series, showing an admixture of pelagic with bottom-living moderately shallow-water species, amongst which latter kind may be noticed: *Miliolina alveoliniformis*, *Spirillina decorata* var. *unilatera*, *Tinoporus baculatus*, *Polytrema miniaceum*, *Heterostegina depressa*, *Cycloclypeus carpenteri*, and *Amphistegina lessoni*.

Station 60.—July 10th, 1896. Lat. 8° 25′ 0″ S., long. 179° 5′ 0″ E. Depth, 451 fathoms. "Coral Sand." This material consists largely of coral rock and débris, with *Halimeda*, Corals, Pteropods (*Styliola*), and Bivalves (*Arca*). The Foraminifera are very rare, there being only two genera present, *Pulvinulina* and *Amphistegina*.

Station 68.—July 7th, 1896. Lat. 8° 22′ 0″ S., long. 179° 56′ 2″ E. Depth, 1143 fathoms. Foraminiferal Sand. Ostracoda not common, represented by *Krithe* and *Loxoconcha*. The Foraminifera are mainly pelagic, as *Globigerina*, *Pullenia*, *Candeina*, and *Pulvinulina*.

Station 78.—July 20th, 1896. Lat. 8° 21′ 0″ S., long. 179° 2′ 0″ E. Depth, 1570 fathoms. "Coral Sand." This sample contains a curious admixture of comparatively shallow-water Foraminifera with a good series of pelagic forms. There is strong reason for supposing that we have here an accidental meeting of two samples, one of quite shallow-water habitat, the other normally deep, since *Tinoporus baculatus* and *Orbitolites complanata* are limited to soundings of 155 and 450 fathoms respectively, but usually occur at much less depths.

Station 83.—July 21st, 1896. Lat. 8° 29′ 5″ S., long. 179° 14′ 9″ E. Depth, 1340 fathoms. Globigerina Ooze. Foraminifera of the pelagic types, together with a few examples of *Sagraina raphanus* and *Amphistegina lessoni*. Coral fragments occur in this sample.

Station 84.—July 21st, 1896. Lat. 8° 29′ 4″ S., long. 179° 13′ 5″ E. Depth, 913 fathoms. ? Globigerina Ooze. A single example of *Globigerina conglobata* occurred in this material.

Station 86.—July 21st, 1896. Lat. 8° 31′ 8″ S., long. 179° 13′ 6″ E. Depth, 513 fathoms. Volcanic Sand with Foraminifera. Some pelagic Foraminifera, with *Amphistegina lessoni*.

Station 88.—July 21st, 1896. Lat. 8° 31′ 1″ S., long. 179° 13′ 6″ E. Depth, 731 fathoms. Volcanic Sand with Foraminifera. The latter are all pelagic forms. Pumice occurs in this sample.

Station 90.—July 15th, 1896. Lat. 8° 34′ 5″ S., long. 179° 57′ 20″ E. Depth, 590 fathoms. Halimeda Sand. Contains *Globigerina digitata* and *Sphæroidina dehiscens*. Abundant *Halimeda* fragments and remains of Echinoids.

Station 96.—July 22nd, 1896. Lat. 8° 26′ 0″ S., long. 179° 15′ 0″ E. Depth, 1245 fathoms. "Coral Sand" with volcanic particles and Foraminifera. The latter are rare; besides pelagic forms, *Bulimina contraria* and *Amphistegina lessoni* occur here. There are also present Alcyonarian spicules and fragments of Corals.

Station 105.—July 23rd, 1896. Lat. 8° 26′ 5″ S., long. 178° 55′ 4″ E. Depth, 2400 fathoms. Globigerina Ooze. Dry, pale and chalky; wet, cream-colour. Ostracoda rare, viz. *Cythere* and *Krithe*. This sample is rich in Foraminifera, and contains, besides the pelagic forms of *Orbulina*, *Globigerina*, *Candeina*, *Sphæroidina*, *Pullenia*, and *Pulvinulina*, the following

noteworthy species among others :—*Haplophragmium latidorsatum*, *Cyclammina cancellata*, *Bulimina buchiana*, *Cassidulina calabra*, *Lagena alveolata*, *L. wrightiana*, *Nodosaria filiformis*, *Cristellaria gibba*, *Sagraina bifrons*, *Truncatulina dutemplei*, *Pulvinulina favus*, *Rotalia soldanii*, and *Polystomella crispa*.

Station 109.—July 23rd, 1896. Lat. 8° 30′ 9″ S., long. 179° 0′ 7″ E. Depth, 604 fathoms. Globigerina Ooze. Ostracoda rare, one genus only, viz. *Loxoconcha*. Also Echinoid spines and Pteropods (*Styliola*). Foraminifera chiefly pelagic. Among other species the following are worth noting :—*Verneuilina spinulosa*, *Anomalina ammonoides*, *Planorbulina mediterranensis*, and *Truncatulina akneriana*.

Station 138.—July 27th, 1896. Lat. 7° 20′ 0″ S., long. 177° 28′ 5″ E. Depth, 2688 fathoms. Globigerina Ooze. Dry, reddish brown ; wet, dark purple-brown ; coherent. This sample yielded only a small series of pelagic Foraminifera, in which *Globigerina* is conspicuously absent. Species present are *Cassidulina subglobosa*, *Pullenia quinqueloba*, *Truncatulina haidingeri*, *Nonionina umbilicatula*, and *N. pompilioides*. Other organic remains are fragments of the mesh of a hexactinellid Sponge and numerous small Fish-teeth. Amongst the inorganic particles are crystals of Phillipsite and an ovoid chondre of meteoritic origin, showing characteristic curved, radial, and plumose markings.

Station 140.—July 28th, 1896. Lat. 8° 16′ 0″ S., long. 178° 16′ 0″ E. Depth, 2476 fathoms. Globigerina Ooze. Dry, pale pinkish brown ; wet, dark brown ; coherent. The Foraminifera comprise a small but interesting series of pelagic and bottom-living forms, the latter including *Biloculina depressa* var. *murrhyna*, *Cassidulina subglobosa*, *Lagena lævis*, *L. marginata*, *L. fimbriata*, *Truncatulina pygmæa*, *T. ungeriana*, *T. haidingeri*, *Anomalina grosserugosa*, and *Nonionina depressula*. Other organic remains include Fish-teeth and some ovoid pellets either of Fishes or Echinoderms.

Station 141.—August 1st, 1896. Lat. 8° 55′ 30″ S., long. 179° 26′ 45″ E. Depth, 2741 fathoms. Globigerina Ooze. Dry, brown mottled with white particles ; incoherent. Alcyonarian spicules present. Foraminifera chiefly pelagic, and also the following :—*Hyperammina elongata*, *Cassidulina subglobosa*, *Nodosaria consobrina*, and *Amphistegina lessoni*.

Station 142.—August 1st, 1896. Lat. 9° 10′ 0″ S., long. 179° 48′ 5″ E. Depth, 2435 fathoms. Globigerina Ooze. Dry, pale creamy brown ; coherent. A small series of Foraminifera, including, besides pelagic forms, the following :—*Biloculina depressa* var. *murrhyna*, *Verneuilina pygmæa*, *Cassidulina subglobosa*, *Lagena globosa*, *Discorbina araucana*, and *Truncatulina ungeriana*.

Station 148.—August 5th, 1896. Lat. 9° 54′ 0″ S., long. 179° 28′ 0″ E. Depth, 2620 fathoms. Globigerina Ooze. Dry, pale cream-colour; wet, pinkish brown; coherent. Fish-teeth and otoliths. The Foraminifera are chiefly pelagic, and comprise five species of *Globigerina*, together with other forms, and a few bottom-living examples of the genera *Biloculina*, *Lagena*, *Truncatulina*, and *Nonionina*.

Station 149.—August 5th, 1896. Lat. 10° 24′ 0″ S., long. 179° 7′ 30″ E. Depth, 2250 fathoms. Globigerina Ooze. Dry, nearly white; wet, pale brown; coherent. Foraminifera chiefly pelagic. Other genera represented :—*Miliolina*, *Cassidulina*, *Truncatulina*, and *Nonionina*.

Station 150.—August 5th, 1896. Lat. 10° 37′ 0″ S., long. 179° 6′ 0″ E. Depth, 2438 fathoms. Globigerina Ooze. Dry, white with scattered brown particles; coherent. Fish-teeth; also Ostracoda (*Cythere*). Foraminifera chiefly pelagic, as *Orbulina universa*, *Globigerina dubia*, *G. digitata*, *G. bulloides*, *G. sacculifera*, *G. conglobata*, *G. æquilateralis*, *G. subcretacea*, *Sphæroidina dehiscens*, *Pullenia obliquiloculata*, *Pulvinulina menardii*, and *P. tumida*. The more interesting of the bottom-living forms are *Gaudryina rugosa*, *G. pupoides*, *Bulimina pupoides*, *Ehrenbergina serrata*, *E. hystrix*, *Lagena formosa*, *L. botelliformis*, and *Polymorphina angusta*.

The Foraminifera, with Notes on the New or Remarkable Species.

Family MILIOLIDÆ.

Genus Biloculina, *Orb.*

Biloculina depressa, *Orb.*

Occurrence.—Sta. 2, 1489 fms.; 3, 2715 fms.; 10, 1485 fms.; 13, 1050 fms.; 20, 1215 fms.; 21, 2195 fms.; 105, 2400 fms.

Biloculina depressa, *Orb.*, var. murrhyna, *Schwager.*

This bicaudate variety is more abundant in the Funafuti soundings than the specific form, and is apparently more at home in the greatest depths. The variety *murrhyna* shows a strong tendency, in an extensive series of specimens, to become elongated, whereas the species keeps remarkably constant to the discoid shape. The 'Challenger' recorded this variety from the S. Pacific at one station only.

Occurrence.—Sta. 3, 2715 fms.; 10, 1485 fms.; 13, 1050 fms.; 20, 1215 fms.; 21, 2195 fms.; 45, 2107 fms.; 48, 2298 fms.; 140, 2476 fms.; 142, 2435 fms.; 148, 2620 fms.

BILOCULINA DEPRESSA, *Orb.*, var. SERRATA, *Brady*.

Occurrence.—Sta. 11, 1417 fms.

BILOCULINA TUBULOSA, *Costa*.

This is a species usually found in moderately shallow water. The present occurrence constitutes a record for great depths. It is represented in the soundings by a few examples of a small elongate variety.

Occurrence.—Sta. 10, 1485 fms. ; 20, 1215 fms. ; 48, 2298 fms.

BILOCULINA LUCERNULA, *Schwager*.

Biloculina lucernula, Schwager ('66), p. 202, pl. 4. figs. 17 *a*, *b*.
B. bulloides, Brady (non d'Orbigny), ('84) p. 142, pl. 2. figs. 5, 6.

The above species must not be confused with d'Orbigny's *B. bulloides*, which has a rounder peripheral border, without the prolonged neck, and with a distinct T-shaped valve. *B. lucernula* has been previously met with in the Pacific, but it is always rare.

Occurrence.—Sta. 13, 1050 fms.

BILOCULINA LUCERNULA, *Schwager*, var. STRIATA, nov. (Plate **54**. fig. 1.)

This variety is distinguished by the surface of the test being ornamented with moderately fine longitudinal striæ. The shape of the test is comparable with the type-form.

Occurrence.—Sta. 20, 1215 fms.

Genus SPIROLOCULINA, *Orb.*

SPIROLOCULINA EXCAVATA, *Orb.*

Occurrence.—Sta. 55, 507 fms.

SPIROLOCULINA DORSATA, *Reuss.*

Occurrence.—Sta. 13, 1050 fms.

SPIROLOCULINA ACUTIMARGO, *Brady.*

Occurrence.—Sta. 11, 1417 fms. ; 13, 1050 fms. ; 20, 1215 fms.

SPIROLOCULINA TENUIS, *Czjzek.*

Occurrence.—Sta. 4, 2728 fms. ; 48, 2298 fms. ; 105, 2400 fms.

SPIROLOCULINA ROBUSTA, *Brady*.

Spiroloculina robusta, Brady ; Flint ('99), p. 296, pl. 42. fig. 1.

This species was originally found at Culebra Island in the West Indies, at 390 fathoms. Dr. Flint, who regards this as a transitional form near *Biloculina depressa*, records it from the Gulf of Mexico at 200 to 1200 fathoms. Since then it has occurred at Funafuti, off Tutanga, at a depth of 200 fathoms.

The present occurrence in deep water, close to Funafuti, is from a still greater depth than that given by Dr. Flint.

The only example found is of moderate size, and otherwise typical.

Occurrence.—Sta. 10, 1485 fms.

Genus Miliolina, *Williamson*.

Miliolina oblonga, *Montagu*, sp.

The examples in the present series are less than the average size, as usual with those from deep water.

Occurrence.—Sta. 48, 2298 fms. ; 149, 2550 fms.

Miliolina bosciana, *Orb.*, sp.

Miliolina bosciana, Orb., sp. ; Millett ('98), p. 267, pl. 6. fig. 1.

This species has been admirably illustrated by Mr. Millett, who records three varieties besides the smooth type-form. The latter only is found in the deep-water soundings at Funafuti.

Occurrence.—Sta. 20, 1215 fms. ; 21, 2195 fms.

Miliolina circularis, *Bornemann*, sp.

Occurrence.—Sta. 3, 2715 fms.

Miliolina subrotunda, *Montagu*, sp.

Occurrence.—Sta. 13, 1050 fms. ; 68, 1143 fms.

Miliolina tricarinata, *Orb.*, sp.

Occurrence.—Sta. 10, 1485 fms. ; 11, 1417 fms. ; 13, 1050 fms. ; 20, 1215 fms. ; 48, 2298 fms. (specimens small).

Miliolina trigonula, *Lamarck*, sp.

Occurrence.—Sta. 13, 1050 fms.

Miliolina seminulum, *Linné*, sp.

Occurrence.—Sta. 48, 2298 fms.

Miliolina vulgaris, *Orb.*, sp.

Quinqueloculina vulgaris, Orb. ('26), p. 302. no. 33.
Q. auberiana, Orb. ('39), p. 167, pl. 12. figs. 1–3.

Although typically a shallow-water form, this species has been recorded by Dr. Brady from the great depth of 2435 fathoms in the N. Atlantic, and one of the present occurrences is from a still greater depth, viz. 2715 fathoms.

Occurrence.—Sta. 3, 2715 fms. ; 48, 2298 fms.

MILIOLINA VENUSTA, *Karrer*, sp.

This is by far the commonest miliolid in the present series; and this is only to be expected from its well-known preference for deep water. It was this species, among others, which gave the aspect of a fairly deep-water deposit to the Upper Gault of Folkestone (see Chapman, '91, p. 9).

Occurrence.—Sta. 3, 2715 fms.; 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 19, 1995 fms.; 48, 2298 fms.

MILIOLINA FERUSSACII, *Orb.*, sp.

Occurrence.—Sta. 3, 2715 fms.

MILIOLINA ALVEOLINIFORMIS, *Brady*.

This form is nearly always found in the neighbourhood of coral reefs; but Millett records it from the Malay Archipelago, from anchor mud. The deepest habitat previously noted was 420 fathoms.

Occurrence.—Sta. 55, 507 fms.

Genus SIGMOÏLINA, *Schlumberger*.

SIGMOÏLINA SCHLUMBERGERI, *Silvestri*.

Sigmoïlina schlumbergeri, Silvestri ('04), p. 267; Chapman ('07), p. 21, pl. 2. fig. 42.

Our specimens represent the smooth, non-agglutinate variety. The sand-encrusted form was described by Brady as *Planispirina celata*, Costa, from which it differs in having a more even contour and inconspicuous sutures. The above species has not been recorded from so great a depth as the present, the maximum limit of the 'Challenger' examples being 1630 fathoms.

Occurrence.—Sta. 48, 2298 fms.

SIGMOÏLINA SIGMOIDEA, *Brady*, sp.

Dr. H. B. Brady has given the bathymetrical range of this species as 300–900 fathoms, so that the present series shows it to be of exceptionally deep-water habitat in this area. Dr. Flint has recorded its deepest limit, from the W. Indies, as 1170 fathoms.

Occurrence.—Sta. 3, 2715 fms.; 11, 1417 fms.; 13, 1050 fms.; 20, 1215 fms.; 21, 2195 fms.; 23, 735 fms.; 45, 2107 fms.

Genus OPHTHALMIDIUM, *Kübler*.

OPHTHALMIDIUM INCONSTANS, *Brady*.

Two typical specimens occur in the sample recorded below.

Occurrence.—Sta. 13, 1050 fms.

Genus PLANISPIRINA, *Sequenza*.

PLANISPIRINA SPHÆRA, *Orb.*, sp.

This species occurs only at one depth in this area, and the shells are all of small size. Dr. Brady states that it is rare at depths greater than 1000 fathoms.

Occurrence.—Sta. 13, 1050 fms.

Genus CORNUSPIRA, *Schultze*.

CORNUSPIRA CRASSISEPTA, *Brady*.

Cornuspira crassisepta, Brady ('84), p. 202, pl. 113. fig. 20; Chapman ('07), p. 22, pl. 2. fig. 45.

It is extremely interesting to note the occurrence of an example of this species from Funafuti, since it has been found previously only in one locality, viz. the Færoe Channel, in the "warm area," at a depth of 530 fathoms. This species, by the way, is the commonest of the *Cornuspiræ* in the Australian Tertiary deposits in the neighbourhood of Melbourne and elsewhere in Victoria.

Occurrence.—Sta. 13, 1050 fms.

Genus ORBITOLITES, *Lamarck*.

ORBITOLITES COMPLANATA, *Lam.*, sp.

A fragment only, somewhat worn and iron-stained, occurs here.
Occurrence.—Sta. 78, 1570 fms.

ORBITOLITES MARGINALIS, *Lam.*

A fragment of a test, somewhat iron-stained, and having the appearance of being derived. This and the previous species are usually of moderately shallow-water habitat, and the present occurrence looks open to the suspicion that some accidental mixing of samples has taken place. The utmost care has been exercised, however, during the present examination.

Occurrence.—Sta. 78, 1570 fms.

Family ASTRORHIZIDÆ.

Genus HYPERAMMINA, *Brady*.

HYPERAMMINA ELONGATA, *Brady*.

Occurrence.—Sta. 21, 2195 fms.; 48, 2298 fms.; 141, 2741 fms.

HYPERAMMINA RAMOSA, *Brady*.

Occurrence.—Sta. 19, 1995 fms. ; 21, 2195 fms. ; 48, 2298 fms.

HYPERAMMINA FRIABILIS, *Brady*.

This species has a restricted geographical range, and does not appear to have been previously recorded from the Pacific.

Occurrence.—Sta. 13, 1050 fms.

Genus RHIZAMMINA, *Brady*.

RHIZAMMINA ALGÆFORMIS, *Brady*.

Fragments of this slender tubular form are not uncommon, and can be distinguished from *Hyperammina elongata* by their slightly contorted shape.

Occurrence.—Sta. 11, 1417 fms. ; 19, 1995 fms. ; 20, 1215 fms.

Family LITUOLIDÆ.

Genus REOPHAX, *Montfort*.

REOPHAX DIFFLUGIFORMIS, *Brady*, var. LAGENARIUM, *Berthelin*.

Haplophragmium lagenarium, Berthelin ('80), p. 21, pl. 24. fig. 2.

Reophax difflugiformis, Brady, var. *lagenarium*, Berthelin ; Millett ('99), Rep. Malay Foram. p. 253, pl. 4. fig. 8.

A typical specimen of this variety was found ; and, as in the case of the Malay specimens described by Mr. Millett, the test is rather rougher or looser in structure than that of the specific form.

Occurrence.—Sta. 68, 1143 fms.

REOPHAX NODULOSA, *Brady*.

Occurrence.—Sta. 21, 2195 fms.

REOPHAX DENTALINIFORMIS, *Brady*.

Occurrence.—Sta. 3, 2715 fms.

REOPHAX ADUNCA, *Brady*.

Occurrence.—Sta. 20, 1215 fms.

Genus HAPLOPHRAGMIUM, *Reuss*.

HAPLOPHRAGMIUM CANARIENSE, *Orb*., sp.

Occurrence.—Sta. 19, 1995 fms. ; 20, 1215 fms. ; ?48, 2298 fms.

HAPLOPHRAGMIUM LATIDORSATUM, *Bornemann*, sp.

Occurrence.—Sta. 19, 1995 fms.; 105, 2400 fms.

HAPLOPHRAGMIUM SPHÆROIDINIFORME, *Brady*.

Haplophragmium sphæroidiniforme, Brady ('84), p. 313.
H. sphæroidiniformis, Brady; Howchin ('89), p. 6.
H. sphæroidiniforme, Brady; Chapman ('07), p. 24, pl. 3. figs. 50, 51.

This distinct species has already been recorded from recent dredgings, although from less depths, viz. 70–120 fathoms, in the Mediterranean. It frequently occurs in the shallow-water deposits of L. Miocene or Oligocene (Balcombian) age, at Muddy Creek, Hailton, Victoria.

Occurrence.—Sta. 20, 1215 fms.

HAPLOPHRAGMIUM FONTINENSE, *Terquem*.

Occurrence.—Sta. 3, 2715 fms.

Genus AMMODISCUS, *Reuss*.

AMMODISCUS *cf.* TENUIS, *Brady*.

A single example was found, somewhat imperfect, which represents a laterally compressed or subdiscoidal form, the component tube being hardly so thin and flat as in a typical shell of the above species.

Occurrence.—Sta. 19, 1995 fms.

Family TEXTULARIIDÆ.

Genus TEXTULARIA, *Defrance*.

TEXTULARIA CONCAVA, *Karrer*, sp.

Occurrence.—Sta. 48, 2298 fms.

TEXTULARIA CONCAVA, var. HETEROSTOMA, *Fornasini*.

Textularia heterostoma, Fornasini ('96), p. 4, pl. 1. figs. 6, 12, 13.
T. concava, Karrer, sp., var. *heterostoma*, Fornasini; Millett ('99), Rep. Malay Foram. p. 560, pl. 7. figs. 6, 7.

In this variety the siphonate aperture is placed usually upon the summit of the last chamber. In our specimens the segments are inclined to be swollen and the aboral end of the test is always sharply pointed as in the type fossil form of the species, figured by Karrer.

Occurrence.—Sta. 2, 1489 fms.; 48, 2298 fms.

TEXTULARIA GRAMEN, *Orb.*

These are all small specimens.
Occurrence.—Sta. 3, 2715 fms.; 11, 1427 fms.

TEXTULARIA GIBBOSA, *Orb.*

It is curious to note this species, hitherto confined to shore-sands, in water of so great a depth as recorded below. As a fossil species also, it occurs, perhaps without exception, in undoubted shallow-water deposits.
Occurrence.—Sta. 11, 1417 fms.

Genus VERNEUILINA, *Orb.*

VERNEUILINA SPINULOSA, *Reuss.*

Occurrence.—Sta. 55, 507 fms.; 109, 604 fms.

VERNEUILINA PYGMÆA, *Egger.*

Occurrence.—Sta. 3, 2715 fms.; 48, 2298 fms.; 105, 2400 fms.; 142, 2435 fms.

VERNEUILINA PROPINQUA, *Brady.*

Two examples of this handsome form were found. It has hitherto been recorded from the S. Pacific from one locality only, at 610 fathoms.
Occurrence.—Sta. 13, 1050 fms.

Genus TRITAXIA, *Reuss.*

TRITAXIA LEPIDA, *Brady.*

A single typical example of this rare form occurs here. Dr. Brady notes it from one locality only, off the coast of N. America, at 1240 fathoms, and Mr. Millett states that he found several specimens in the Torres Strait material from 155 fathoms, and a single example from the Malay Archipelago.
Occurrence.—Sta. 48, 2298 fms.

Genus SPIROPLECTA, *Ehrenberg.*

SPIROPLECTA AMERICANA, *Ehrenberg.*

This species has hitherto been known in the living condition from Raines Islet, Torres Strait.
Occurrence.—Sta. 3, 2715 fms.

SPIROPLECTA SAGITTULA, *Defrance*, sp.

A very minute hyaline variety occurs in some abundance.
Occurrence.—Sta. 2, 1489 fms.

Genus Gaudryina, *Orb.*

Gaudryina rugosa, *Orb.*

Occurrence.—Sta. 150, 2438 fms.

Gaudryina pupoides, *Orb.*

Occurrence.—Sta. 3, 2715 fms.; 13, 1050 fms.; 21, 2195 fms.; 48, 2298 fms.; 150, 2438 fms.

Genus Bulimina, *Orb.*

Bulimina pupoides, *Orb.*

Occurrence.—Sta. 150, 2438 fms.

Bulimina buchiana, *Orb.*

Occurrence.—Sta. 3, 2715 fms.; 45, 2107 fms.; 48, 2298 fms.; 105, 2400 fms.

Bulimina rostrata, *Brady.*

Occurrence.—Sta. 48, 2298 fms.

Bulimina subteres, *Brady.*

Occurrence.—Sta. 20, 1215 fms.

Bulimina contraria, *Reuss.*

Occurrence.—Sta. 13, 1050 fms.; 96, 1245 fms.

Genus Virgulina, *Orb.*

Virgulina subsquamosa, *Egger.*

Occurrence.—Sta. 2, 1489 fms.; 48, 2298 fms.; 105, 2400 fms.; 150, 2438 fms.

Virgulina subdepressa, *Brady.*

Occurrence.—Sta. 3, 2715 fms.; 48, 2298 fms.

Virgulina texturata, *Brady.*

Occurrence.—Sta. 48, 2298 fms.

Virgulina pertusa, *Reuss.* (Plate 54. fig. 2.)

Virgulina pertusa, Reuss ('60), p. 362, pl. 2. fig. 16.

This species was described from an Antwerp Crag specimen by Reuss, and its present occurrence is especially interesting from the fact that it does not appear to have been previously noticed in recent dredgings. It is

distinguished from the nearly related *V. texturata* in having considerably fewer chambers proportionately to its size.

Occurrence.—Sta. 3, 2715 fms.

Genus Bifarina, *Parker & Jones*.

Bifarina porrecta, *Brady*, sp.

Bolivina porrecta, Brady ('84), p. 418, pl. 52. fig. 22.

Bifarina porrecta, Brady, sp.; Millett ('00), Rep. Malay Foram. p. 540, pl. 4. fig. 3.

This species is usually restricted to depths of less than 500 fathoms, and is more frequent in moderately shallow water. A single, slightly damaged specimen was found.

Occurrence.—Sta. 11, 1417 fms.

Genus Bolivina, *Orb*.

Bolivina punctata, *Orb*.

Occurrence.—Sta. 3, 2715 fms.; 45, 2107 fms.; 48, 2298 fms.; 105, 2400 fms.

Bolivina textilarioides, *Reuss*.

Occurrence.—Sta. 3, 2715 fms.; 48, 2298 fms.; 55, 507 fms.; 109, 604 fms.

Bolivina limbata, *Brady*.

Occurrence.—Sta. 105, 2400 fms.

Bolivina lobata, *Brady*.

Occurrence.—Sta. 48, 2298 fms.

Bolivina obsoleta, *Eley*.

Occurrence.—Sta. 3, 2715 fms.; 11, 1417 fms.

Bolivina robusta, *Brady*.

The S. Pacific records of this species hitherto extended only to a depth of 800 fathoms.

Occurrence.—Sta. 105, 2400 fms.

Bolivina karreriana, *Brady*.

It is quite exceptional to find this species in such deep water, the previous records attaining only to a little over 700 fathoms.

Occurrence.—Sta. 48, 2298 fms.

BOLIVINA NOBILIS, *Hantken*.

This species has already been noted from the S. Pacific, the Malay Archipelago, and off the W. Coast of Africa.

Occurrence.—Sta. 11, 1417 fms.

BOLIVINA RETICULATA, *Brady*.

Occurrence.—Sta. 48, 2298 fms.

Genus PLEUROSTOMELLA, *Reuss*.

PLEUROSTOMELLA SUBNODOSA, *Reuss*.

Occurrence.—Sta. 13, 1050 fms.; 48, 2298 fms.

PLEUROSTOMELLA ALTERNANS, *Schwager*.

Occurrence.—Sta. 48, 2298 fms.

Genus CASSIDULINA, *Orb*.

CASSIDULINA LÆVIGATA, *Orb*.

Occurrence.—Sta. 4, 2728 fms.; 13, 1050 fms.; 47, 2107 fms.; 48 2298 fms.; 105, 2400 fms.

CASSIDULINA CRASSA, *Orb*.

Occurrence.—Sta. 3, 2715 fms.; 13, 1050 fms.; 20, 1215 fms.; 55, 507 fms

CASSIDULINA SUBGLOBOSA, *Brady*. (Plate **54**. fig. 3.)

This is by far the commonest *Cassidulina* of these deep-sea oozes, and the present records are the deepest known for this species. The 'Challenger' noted it from one station in the Pacific, from 1450 fathoms. The example here figured has fewer chambers than usual.

Occurrence.—Sta. 3, 2715 fms.; 4, 2728 fms.; 11, 1417 fms.; 13, 1050 fms.; 20, 1215 fms.; 23, 735 fms.; 45, 2107 fms.; 48, 2298 fms.; 68, 1143 fms.; 105, 2400 fms. 138, 2688 fms.; 140, 2476 fms.; 141, 2741 fms.; 142, 2435 fms.; 149, 2550 fms.

CASSIDULINA OBLONGA, *Reuss*.

Cassidulina oblonga, Reuss ('50), p. 376, pl. 48. figs. 5, 6.

C. oblonga, Reuss; Egger ('93), p. 303, pl. 7. figs. 33, 34.

Distinguished from *C. crassa* by its oblong contour in both aspects, and also by the smooth shell-surface, which is only very finely punctate. Dr. Egger, who pointed out the confusion of the two species mentioned, has recorded *C. oblonga* from the south-west of Timor at a depth of 5523 metres and also from other soundings at less depths.

Occurrence.—Sta. 3, 2715 fms.; 48, 2298 fms.; 105, 2400 fms.

CASSIDULINA CALABRA, *Seguenza*, sp.

Occurrence.—Sta. 105, 2400 fms.

CASSIDULINA BRADII, *Norman*.

The present records are from unusually deep water, since the 'Challenger' gives its deepest limit, in the S. Pacific, at 1450 fathoms. The examples are typical and show all stages of growth.

Occurrence.—Sta. 3, 2715 fms. ; 45, 2107 fms. ; 105, 2400 fms.

CASSIDULINA BRADII, var. ATTENUATA, nov. (Plate **54**. fig. 4.)

Test smooth, almost cylindrical in section, elongate ; coiled commencement inconspicuous, followed by a long, reflexly curved series. Aperture resembling that of the specific form, but longer. Length 1 mm. ; greatest breadth, near middle of upper third, ·212 mm.

Occurrence.—Sta. 105, 2400 fms.

Genus EHRENBERGINA, *Reuss*.

EHRENBERGINA PUPA, *Orb*.

Occurrence.—Sta. 13, 1050 fms.

EHRENBERGINA SERRATA, *Reuss*.

Some of our specimens, from great depths, are furnished with very delicate spines.

Occurrence.—Sta. 2, 1489 fms. ; 3, 2715 fms. ; 13, 1050 fms. ; 20, 1215 fms. ; 45, 2107 fms. ; 48, 2298 fms. ; 105, 2400 fms. ; 150, 2438 fms.

EHRENBERGINA HYSTRIX, *Brady*.

This rare and handsome species appears to be restricted to the S. Pacific, in deep water.

Occurrence.—Sta. 3, 2715 fms. ; 150, 2438 fms.

Family CHEILOSTOMELLIDÆ.

Genus SEABROOKIA, *Brady*.

SEABROOKIA PELLUCIDA, *Brady*.

Seabrookia pellucida, Brady ('90), p. 570, fig. 60, 1 *a–c*, 2.
S. pellucida, Brady ; Wright ('91), p. 476, pl. 20. fig. 5.
S. pellucida, Brady ; Millett ('01), Rep. Malay Foram. p. 3, pl. 1. fig. 4.

As hitherto recorded, the bathymetrical range of this species was not great, the deepest dredgings being 435 fathoms off Bermudas.

Occurrence.—Sta. 20, 1215 fms.

Family LAGENIDÆ.

Genus LAGENA, *Walker & Boys*.

LAGENA GLOBOSA, *Montfort*, sp.

Occurrence.—Sta. 10, 1485 fms.; 13, 1050 fms.; 20, 1215 fms.; 45, 2107 fms.; 48, 2298 fms.; 142, 2435 fms.

LAGENA STELLIGERA, *Brady*.

Occurrence.—Sta. 10, 1485 fms.; 45, 2107 fms.

LAGENA LONGISPINA, *Brady*.

Of this rare form only one example was found, which is of the globose variety.

Occurrence.—Sta. 21, 2195 fms.

LAGENA APICULATA, *Reuss*.

The examples found are of the elongate and slightly curved type, as figured by Dr. Brady in the 'Challenger' Report.

Occurrence.—Sta. 48, 2298 fms.; 105, 2400 fms.

LAGENA BOTELLIFORMIS, *Brady*. (Plate **54**. fig. 5.)

Lagena botelliformis, Brady ('84), p. 454, pl. 56. fig. 6.

Our example nearly agrees with Brady's figured specimen, but that the oral extremity in the former is slightly tapered. The orifice is carried internally by an entosolenian tube directed towards the convex side.

Occurrence.—Sta. 150, 2438 fms.

LAGENA ELONGATA, *Ehrenberg*, sp.

Occurrence.—Sta. 48, 2298 fms.

LAGENA HISPIDA, *Reuss*.

The examples are typical, having a finely hispid surface. From Sta. 48 there is a compressed variety, as figured by Dr. H. B. Brady.

Occurrence.—Sta. 10, 1485 fms.; 13, 1050 fms.; 48, 2298 fms.; 105, 2400 fms.

LAGENA ASPERA, *Reuss*.

Occurrence.—Sta. 3, 2715 fms.; 20, 1215 fms.; 45, 2107 fms.

LAGENA ACUTICOSTA, *Reuss*.

Occurrence.—Sta. 3, 2715 fms.; 20, 1215 fms.; 48, 2298 fms.

LAGENA SPUMOSA, *Millett*. (Plate **54**. fig. 6.)

Lagena spumosa, Millett ('01), Foram. Malay Arch. p. 9, pl. 1. fig. 9.

Only a single example of this interesting species was found. It was also rare in Mr. Millett's Malay Archipelago dredgings.

Occurrence.—Sta. 48, 2298 fms.

LAGENA LÆVIS, *Montagu*, sp.

Occurrence.—Sta. 3, 2715 fms.; 10, 1485 fms.; 13, 1050 fms.; 140, 2476 fms.

LAGENA LÆVIS, *Montagu*, sp., var. DISTOMA, *Silvestri*.

Lagena lævis, Mont., sp., var. *distoma*, Silvestri ('00), p. 244, pl. 6. figs. 74, 75; Millett ('01), Rep. Malay Foram. p. 10, pl. 1. fig. 10.

One example was found which agrees exactly with the specimen figured by Mr. Millett.

Occurrence.—Sta. 48, 2298 fms.

LAGENA STRIATA, *Orb*., sp.

Besides several typical examples, a compressed variety was found at Sta. 3.

Occurrence.—Sta. 3, 2715 fms.; 13, 1050 fms.; 48, 2298 fms.

LAGENA SULCATA, *Walker & Jacob*.

Occurrence.—Sta. 3, 2715 fms.; 13, 1050 fms.; 20, 1215 fms.; 48, 2298 fms.

LAGENA HEXAGONA, *Williamson*, sp.

Occurrence.—Sta. 48, 2298 fms.

LAGENA JUDDIANA, sp. nov. (Plate **54**. fig. 7.)

Description.—This species is allied to *Lagena striatopunctata*, Parker and Jones *, but is more elaborate in the surface-ornament. The perforations on the riblets are triangular, each being partially closed by a pointed or cusp-like valve. Beneath each perforated area there is a depression or excavation. The intercostal area is a moderately deep groove. Length of figured specimen ·725 mm.; greatest width ·5 mm.

I have much pleasure in naming this interesting species after Professor J. W. Judd, C.B., to whom I am especially indebted for the privilege of working out portions of the material from Funafuti.

Occurrence.—Sta. 13, 1050 fms. Two examples.

* *L. sulcata*, var. *striatopunctata*, Parker & Jones, Phil. Trans. vol. clv. 1865, p. 350, pl. 13. figs. 25–27.

LAGENA FOVEOLATA, *Reuss*. (Plate **55**. fig. 11.)

Lagena foveolata, Reuss ('63), p. 332, pl. 5. fig. 65; Millett ('01), Rep. Malay Foram. p. 11, pl. 1. fig. 15.

As a recent species this beautiful little *Lagena* has only lately been recorded for the first time by Mr. Millett from the Malay Archipelago. Our example also, like the former, is more closely ornamented than Reuss's figured specimen from the Septarienthon (Oligocene).

Occurrence.—Sta. 15, 1050 fms.

LAGENA FEILDENIANA, *Brady*.

Occurrence.—Sta. 48, 2298 fms.

LAGENA GRACILIS, *Williamson*.

Occurrence.—Sta. 2, 1489 fms.; 48, 2298 fms.; 105, 2400 fms.

LAGENA QUINQUELATERA, *Brady*.

Occurrence.—Sta. 10, 1485 fms.; 48, 2298 fms.

LAGENA LÆVIGATA, *Reuss*, sp.

Occurrence.—Sta. 3, 2715 fms.; 48, 2298 fms.

LAGENA LÆVIGATA, var. ACUTA, *Reuss*.

Occurrence.—Sta. 10, 1485 fms.; 48, 2298 fms.

LAGENA LUCIDA, *Williamson*, sp. (Plate **54**. fig. 8.)

Entosolenia marginata, var. *lucida*, Williamson ('48), p. 17, pl. 2. fig. 17.
Lagena lucida, Williamson, sp.; Millett ('01), Rep. Malay Foram. p. 494.

This neat little species is suboval or pyriform in shape. In our example it has a slightly concave base; the middle of the test is clear, and a marginal band commences from near the aperture. The surface of this specimen is finely granulate. Mr. Millett remarks that it is a form apparently overlooked by many writers on the subject.

Occurrence.—Sta. 13, 1050 fms.

LAGENA FASCIATA, *Egger*, sp.

Oolina fasciata, Egger ('57), p. 270, pl. 5. figs. 12–15.
Lagena quadricostulata, Reuss, Brady ('84), p. 486, pl. 59. fig. 15.
Lagena fasciata, Egger, sp.; Millett ('01), Rep. Malay Foram. p. 495, pl. 8. fig. 19.

Occurrence.—Sta. 10, 1485 fms.; 20, 1215 fms.; 21, 2195 fms.

LAGENA QUADRATA, *Williamson*.

Occurrence.—Sta. 10, 1485; 48, 2298 fms.

LAGENA MARGINATA, *Walker & Boys.*

Occurrence.—Sta. 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 19, 1995 fms.; 20, 1215 fms.; 21, 2195 fms.; 45, 2107 fms.; 48, 2298 fms.; 105, 2400 fms.; 140, 2476 fms.; 148, 2620 fms.

LAGENA MARGINATA, *Walker & Boys*, var. SEMIMARGINATA, *Reuss.*

Occurrence.—Sta. 3, 2715 fms.; 10, 1485 fms.

LAGENA MARGINATA, *Walker & Boys*, var. SEMINIFORMIS, *Schwager.*

Lagena seminiformis, Schwager ('66), p. 208, pl. 5. fig. 21.

L. marginata, Walker & Boys, var. *seminiformis*, Schwager; Millett ('01), Rep. Malay Foram. p. 620, pl. 14. fig. 3.

Although regarded as an essentially deep-water species by Brady, Millett obtained it from shallow-water dredgings in the Malay Archipelago.

Occurrence.—Sta. 21, 2195 fms.

LAGENA VENTRICOSA, *Silvestri.* (Plate **54.** fig. 9.)

Lagena ventricosa, Silvestri ('03), p. 10, woodcuts figs. 6 *a–e.*

Our examples exactly agree with Silvestri's figures of *L. ventricosa*, from the Miocene of Piedmont. Dr. Silvestri points out, in his description, the probable alliance of this form with Brady's so-called *Lagena apiculata* ('84, pl. 56. figs. 17, 18), a species which is normally subcylindrical and elongate, whilst *L. ventricosa* is depressed and subovate.

Occurrence.—Sta. 11, 1417 fms.; 48, 2298 fms.; 148, 2620 fms.

LAGENA STAPHYLLEARIA, *Schwager*, sp.

Occurrence.—Sta. 3, 2715 fms.; 10, 1485 fms.; 20, 1215 fms.; 48, 2298 fms.

LAGENA TRIGONO-MARGINATA, *Parker & Jones.*

Occurrence.—Sta. 105, 2400 fms.

LAGENA WRIGHTIANA, *Brady.*

Our specimen is rounder in outline than Brady's figured example, and has a rather sharp marginal keel.

Occurrence.—Sta. 105, 2400 fms.

LAGENA LAGENOIDES, *Williamson*, sp.

Occurrence.—Sta. 105, 2728 fms.; 19, 1485 fms.

LAGENA QUADRALATA, *Brady.* (Plate **55.** fig. 10.)

Lagena quadralata, Brady ('94), p. 464, pl. 61. figs. 3 *a*, *b.*

This rare species has been found only in two localities previously, viz., south of Australia and in the S. Atlantic; both in deep water.

Only one example occurs here, and is a three-winged variety; in all other characters it agrees with Brady's figured example.

Occurrence.—Sta. 3, 2715 fms.

LAGENA FORMOSA, *Schwager*.

Our specimens are good, well-formed examples of this truly beautiful species.

Occurrence.—Sta. 3, 2715 fms.; 10, 1485 fms.; 21, 2195 fms.; 48, 2298 fms.; 150, 2438 fms.

LAGENA AURICULATA, *Brady*.

Occurrence.—Sta. 11, 1417 fms.

LAGENA FIMBRIATA, *Brady*.

This is a rare form and almost essentially of deep-water habitat.

Occurrence.—Sta. 4, 2728 fms.; 11, 1417 fms.; 48, 2298 fms.; 105, 2400 fms.; 140, 2476 fms.

LAGENA ALVEOLATA, *Brady*.

This essentially deep-water form is here moderately frequent. Some very fine examples are present.

Occurrence.—Sta. 21, 2195 fms.; 45, 2107 fms.; 48, 2298 fms.; 105, 2400 fms.

LAGENA ALVEOLATA, var. SUBSTRIATA, *Brady*.

Occurrence.—Sta. 45, 2107 fms.

LAGENA ORBIGNYANA, *Seguenza*, sp.

Occurrence.—Sta. 2, 1489 fms.; 3, 2715 fms.; 20, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 20, 1215 fms.; 48, 2298 fms.; 105, 2400 fms.

LAGENA ORBIGNYANA, *Seg.*, sp., var. CASTRENSIS, *Schwager*.

Occurrence.—Sta. 48, 2298 fms.

LAGENA ORBIGNYANA, *Seg.*, sp., var. LACUNOSA, *Burrows & Holland*.

Occurrence.—Sta. 48, 2298 fms.

Genus NODOSARIA, *Lamarck*.

NODOSARIA CALOMORPHA, *Reuss*.

Occurrence.—Sta. 48, 2298 fms.

NODOSARIA (DENTALINA) COMMUNIS, *Orb.*

Occurrence.—Sta. 3, 2715 fms.; 10, 1485 fms.; 11, 1417 fms.; 21, 2195 fms.; 48, 2298 fms.; 55, 507 fms.; 205, 2400 fms.

NODOSARIA (DENTALINA) CONSOBRINA, *Orb.*

Occurrence.—Sta. 2, 1489 fms.; 3, 2715 fms.; 45, 2107 fms.; 141, 2741 fms.

NODOSARIA (DENTALINA) FILIFORMIS, *Orb.*

Occurrence.—Sta. 3, 2715 fms.; 105, 2400 fms.

NODOSARIA (DENTALINA) MUCRONATA, *Neugeboren*, sp.

Occurrence.—Sta. 11, 1417 fms.; 45, 2107 fms.

Genus RHABDOGONIUM, *Reuss.*

RHABDOGONIUM MINUTUM, *Reuss.*

The only example found consists of two chambers, the globular primordial segment having a costate surface. This species is recorded only from one locality by the 'Challenger,' off Ki (Kei) Islands, 129 fathoms.

Occurrence.—Sta. 48, 2298 fms.

Genus VAGINULINA, *Orb.*

VAGINULINA LEGUMEN, *Linné*, sp.

Occurrence.—Sta. 13, 1050 fms.; 150, 2438 fms.

Genus CRISTELLARIA, *Lam.*

CRISTELLARIA ROTULATA, *Lam.*, sp.

Occurrence.—Sta. 4, 2728 fms.; 13, 1050 fms.; 48, 2298 fms.

CRISTELLARIA RENIFORMIS, *Orb.*

Occurrence.—Sta. 20, 1215 fms.; 105, 2400 fms.

CRISTELLARIA ORBICULARIS, *Orb.*, sp.

It is unusual to find this species at great depths.

Occurrence.—Sta. 68, 1143 fms.

CRISTELLARIA CONVERGENS, *Bornemann.*

Occurrence.—Sta. 4, 2728 fms.; 11, 1417 fms.

CRISTELLARIA VARIABILIS, *Reuss*.

Occurrence.—Sta. 48, 2298 fms.

CRISTELLARIA ARTICULATA, *Reuss*.

Occurrence.—Sta. 48, 2298 fms.

CRISTELLARIA TENUIS, *Bornemann*, sp.

Occurrence.—Sta. 48, 2298 fms.

Genus POLYMORPHINA, *Orb*.

POLYMORPHINA LACTEA, *Walker & Jacob*, sp.

Occurrence.—Sta. 10, 1485 fms. ; 48, 2298 fms.

POLYMORPHINA LACTEA, *Walker & Jacob*, sp., var. OBLONGA, *Williamson*. (Plate **55**. fig. 12.)

All previous occurrences of this interesting variety have been noted from moderately shallow water, and from higher latitudes than the present, excepting Millett's locality in the Malay Archipelago.

Occurrence.—Sta. 20, 1215 fms.

POLYMORPHINA ANGUSTA, *Egger*.

A typically deep-water species.

Occurrence.—Sta. 19, 1995 fms. ; 21, 2195 fms. ; 48, 2298 fms. ; 150, 2438 fms.

POLYMORPHINA LANCEOLATA, *Reuss*.

The greatest depth previously given for this species, by Dr. Brady, is 1825 fathoms.

Occurrence.—Sta. 13, 1050 fms. ; 21, 2195 fms. ; 45, 2107 fms. ; 48, 2298 fms.

POLYMORPHINA SORORIA, *Reuss*.

Occurrence.—Sta. 13, 1050 fms. ; 45, 2107 fms. ; 48, 2298 fms.

POLYMORPHINA OVATA, *Orb*.

The 'Challenger' obtained this species from one locality only, viz., off Culebra Isl., W. Indies, 390 fathoms.

Occurrence.—Sta. 11, 1417 fms.

POLYMORPHINA SEGUENZANA, *Brady*.

Polymorphina seguenzana, Brady ; Egger ('93), p. 309, pl. 9. figs. 22, 23.

This is a very rare form. Besides the two localities given by Brady, all in shallow water, Egger records it from New Amsterdam at 1485 metres.

Occurrence.—Sta. 48, 2298 fms.

POLYMORPHINA LONGICOLLIS, *Brady*.

Polymorphina longicollis, Brady ('84), p. 572, pl. 73. figs. 18, 19; Egger ('93), p. 310, pl. 9. fig. 12.

Dr. Brady states that no examples in the 'Challenger' collection were found at a less depth than 1100 fathoms. Dr. Egger records this species from the Mauritius at 411 metres.

Occurrence.—Sta. 3, 2715 fms.; 21, 2195 fms.

Genus DIMORPHINA, *Orb*.

DIMORPHINA (?) LINGULINOIDES, *Millett*.

Dimorphina lingulinoides, Millett ('03), Rep. Malay Foram. p. 266, pl. 5. fig. 6.

Our example has lost the terminal portion of the test, but sufficient remains to refer it to the above species. Millett described it from the anchor-muds of the Malay Archipelago.

Occurrence.—Sta. 13, 1050 fms.

Genus UVIGERINA, *Orb*.

UVIGERINA CANARIENSIS, *Orb*.

This is a species usually inhabiting water of moderate depths, although Brady records it from 1900 fathoms E. of Buenos Ayres.

Occurrence.—Sta. 3, 2715 fms.

UVIGERINA PYGMÆA, *Orb*.

Occurrence.—Sta. 3, 2715 fms.; 4, 2728 fms.

UVIGERINA ANGULOSA, *Williamson*.

Occurrence.—Sta. 48, 2298 fms.

UVIGERINA PORRECTA, *Brady*.

This form is recognised as almost peculiar to the coral-reef fauna. It is interesting to note the great depth from whence it was obtained in this area. The deepest sounding hitherto yielding this species was 1850 fathoms. It is not uncommon in the present samples.

Occurrence.—Sta. 13, 1050 fms.; 45, 2107 fms.; 48, 2298 fms.; 105, 2400 fms.; 109, 604 fms.

UVIGERINA ACULEATA, *Orb*.

This roughly spinous form is rarer than the succeeding, hispid, type. The 'Challenger' obtained the deepest specimens from 1900 fathoms.

Occurrence.—Sta. 3, 2715 fms.; 48, 2298 fms.

UVIGERINA ASPERULA, *Czjzek*.

The greatest depths of the earlier records of this common and widely distributed species fall somewhat short of the present deepest limit, Brady having obtained it from the Southern Ocean at 2600 fathoms.

Occurrence.—Sta. 3, 2715 fms.; 4, 2728 fms.; 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 20, 1215 fms.; 45, 2107 fms.; 48, 2298 fms.; 105, 2400 fms.

UVIGERINA ASPERULA, *Czjzek*, var. AMPULLACEA, *Brady*.

It is remarkable that this variety has never before been recorded from very deep water. Brady gives the limits of depth as 350 to 725 fathoms. Dr. Egger found it off the Mauritius at 411 metres, and off Western Australia at 1187 metres.

Occurrence.—Sta. 2, 1489 fms.; 4, 2728 fms.; 13, 1050 fms.; 20, 1215 fms.; 45, 2107 fms.; 48, 2298 fms.; 105, 2400 fms.

UVIGERINA INTERRUPTA, *Brady*.

The above species is usually observed at moderate depths, the only deep-water occurrence noted by Brady was N. of Juan Fernandez at 1375 fathoms.

Occurrence.—Sta. 3, 2715 fms.

Genus SAGRAINA, *Orb., emend. Parker & Jones*.

SAGRAINA BIFRONS, *Brady*.

For this rare form only four localities are known, viz.: S. of Japan, 345 fathoms; off Western Australia, 560 fathoms; the Malay Archipelago from shallow water; and the present occurrence W. of Funafuti.

Occurrence.—Sta. 105, 2400 fms.

SAGRAINA VIRGULA, *Brady*.

Occurrence.—Sta. 10, 1485 fms.; 13, 1050 fms.; 48, 2298 fms.

SAGRAINA RAPHANUS, *Parker & Jones*.

Our specimens are typical in every respect. It is remarkable that the present occurrences are mainly from much greater depths than previously known, the maximum of which was 260 fathoms.

Occurrence.—Sta. 3, 2715 fms.; 4, 2728 fms.; 45, 2107 fms.; 48, 2298 fms.; 68, 1143 fms.; 83, 1340 fms.; 105, 2400 fms.; 109, 604 fms.

Family GLOBIGERINIDÆ.

Genus GLOBIGERINA, *Orb.*

GLOBIGERINA BULLOIDES, *d'Orbigny.*

Occurrence.—Sta. 2, 1489 fms.; 3, 2715 fms.; 4, 2728 fms.; 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 19, 1995 fms.; 20, 1215 fms.; 21, 2195 fms.; 23, 735 fms.; 24, 987 fms.; 31, 1158 fms.; 45, 2107 fms.; 48, 2298 fms.; 55, 507 fms.; 68, 1143 fms.; 83, 1340 fms.; 88, 731 fms.; 105, 2400 fms.; 109, 604 fms.; 141, 2741 fms.; 142, 2435 fms.; 150, 2438 fms.

GLOBIGERINA TRILOBA, *Reuss.*

Occurrence.—Sta. 2, 1489 fms.; 3, 2715 fms.; 4, 2728 fms.; 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 19, 1995 fms.; 20, 1215 fms.; 21, 2195 fms.; 23, 735 fms.; 31, 1158 fms.; 45, 2107 fms.; 48, 2298 fms.; 55, 507 fms.; 68, 1143 fms.; 78, 1570 fms.; 83, 1340 fms.; 88, 731 fms.; 96, 1245 fms.; 105, 2400 fms.; 109, 604 fms.; 148, 2620 fms.; 149, 2550 fms.

GLOBIGERINA RUBRA, *Orb.*

Occurrence.—Sta. 2, 1489 fms.; 3, 2715 fms.; 4, 2728 fms.; 10, 1485 fms.; 13, 1050 fms.; 19, 1995 fms.; 20, 1215 fms.; 21, 2195 fms.; 23, 735 fms.; 24, 987 fms.; 31, 1158 fms.; 48, 2298 fms.; 105, 2400 fms.; 109, 604 fms.

GLOBIGERINA TROCHOIDES, *Reuss.* (Plate **55.** fig. 13.)

Globigerina trochoides, Reuss ('45), p. 36, pl. 12. fig. 22; id. ('51), p. 37, pl. 3. fig. 5; Egger ('93), p. 367, pl. 13. figs. 39–41.

This species is distinguished from the nearly related *G. rubra* by the more acuminately grouped series of chambers and their lesser inflation, as well as by the absence of colour. Some of the tests found here are quite pointed at the apex. Dr. Egger recorded this species from the Fiji Islands at 3200 metres.

Occurrence.—Sta. 4, 2728 fms.; 11, 1417 fms.; 45, 2107 fms.

GLOBIGERINA CONGLOBATA, *Brady.*

Occurrence.—Sta. 2, 1489 fms.; 3, 2715 fms.; 4, 2728 fms.; 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 19, 1995 fms.; 20, 1215 fms.; 21, 2195 fms.; 23, 735 fms.; 28, 1505 fms.; 31, 1158 fms.; 45, 2107 fms.; 48, 2298 fms.; 55, 507 fms.; 68, 1143 fms.; 78, 1570 fms.; 83, 1340 fms.; 84, 913 fms.; 86, 513 fms.; 88, 731 fms.; 96, 1245 fms.; 105, 2400 fms.; 109, 604 fms.; 140, 2476 fms.; 141, 2741 fms.; 148, 2620 fms.; 149, 2550 fms.; 150, 2438 fms.

GLOBIGERINA ÆQUILATERALIS, *Brady*.

Occurrence.—Sta. 2, 1489 fms.; 3, 2715 fms.; 4, 2728 fms.; 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 19, 1995 fms.; 20, 1215 fms.; 21, 2195 fms.; 45, 2107 fms.; 48, 2298 fms.; 68, 1143 fms.; 78, 1570 fms.; 83, 1340 fms.; 86, 513 fms.; 88, 731 fms.; 105, 2400 fms.; 109, 604 fms.; 142, 2435 fms.; 148, 2620 fms.; 150, 2438 fms.

GLOBIGERINA DUBIA, *Egger*.

Occurrence.—Sta. 2, 1489 fms.; 3, 2715 fms.; 13, 1050 fms.; 32, 735 fms.; 105, 2400 fms.; 141, 2741 fms.; 150, 2438 fms.

GLOBIGERINA DUTERTREI, *Orb*.

Occurrence.—Sta. 3, 2715 fms.; 4, 2728 fms.; 10, 1485 fms.; 13, 1050 fms.; 19, 1995 fms.; 20, 1215 fms.; 96, 1245 fms.; 105, 2400 fms.; 109, 604 fms.; 140, 2476 fms.

GLOBIGERINA SUBCRETACEA, *Chapman*.

The examples found here are quite comparable with Brady's figured specimens, and are easily distinguished from the Cretaceous fossils by the depressed spire and more heavily built test.

Occurrence.—Sta. 2, 1489 fms.; 3, 2715 fms.; 4, 2728 fms.; 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 19, 1995 fms.; 20, 1215 fms.; 21, 2195 fms.; 23, 735 fms.; 45, 2107 fms.; 48, 2298 fms.; 68, 1143 fms.; 88, 731 fms.; 105, 2400 fms.; 109, 604 fms.; 142, 2435 fms.; 148, 2620 fms.; 149, 2550 fms.; 150, 2438 fms.

GLOBIGERINA INFLATA, *Orb*.

Occurrence.—Sta. 11, 1417 fms.

GLOBIGERINA SACCULIFERA, *Brady*.

Occurrence.—Sta. 2, 1489 fms.; 3, 2715 fms.; 4, 2728 fms.; 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 19, 1995 fms.; 20, 1215 fms.; 21, 2195 fms.; 23, 735 fms.; 45, 2107 fms.; 48, 2298 fms.; 68, 1143 fms.; 78, 1570 fms.; 83, 1340 fms.; 105, 2400 fms.; 109, 604 fms.; 141, 2741 fms.; 150, 2438 fms.

GLOBIGERINA DIGITATA, *Brady*.

Occurrence.—Sta. 2, 1489 fms.; 3, 2715 fms.; 13, 1050 fms.; 20, 1215 fms.; 21, 2195 fms.; 45, 2107 fms.; 48, 2298 fms.; 90, 590 fms.; 150, 2438 fms.

Genus Orbulina, *Orb.*

Orbulina universa, *Orb.*

Occasional aberrant forms are found here, having two chambers.

Occurrence.—Sta. 2, 1489 fms.; 3, 2715 fms.; 4, 2728 fms.; 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 19, 1995 fms.; 20, 1215 fms.; 21, 2195 fms.; 23, 735 fms.; 45, 2107 fms.; 48, 2298 fms.; 55, 507 fms.; 105, 2400 fms.; 141, 2741 fms.; 150, 2438 fms.

Genus Hastigerina, *Wyville Thomson.*

Hastigerina pelagica, *Orb.*, sp.

A few specimens of this fragile foraminifer were found, more or less broken, in these bottom-dredgings.

Occurrence.—Sta. 13, 1050 fms.; 20, 1215 fms.

Genus Pullenia, *Parker & Jones.*

Pullenia obliquiloculata, *Parker & Jones.*

Occurrence.—Sta. 2, 1489 fms.; 3, 2715 fms.; 4, 2728 fms.; 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 19, 1995 fms.; 20, 1215 fms.; 21, 2195 fms.; 23, 735 fms.; 45, 2107 fms.; 48, 2298 fms.; 55, 507 fms.; 68, 1143 fms.; 78. 1570 fms.; 83, 1340 fms.; 88, 731 fms.; 105, 2400 fms.; 109, 604 fms.; 138, 2688 fms.; 140, 2476 fms.; 141, 2741 fms.; 142, 2435 fms.; 148, 2620 fms.; 149, 2550 fms.; 150, 2438 fms.

Pullenia quinqueloba, *Reuss.*

Occurrence.—Sta. 2, 1489 fms.; 3, 2715 fms.; 4, 2728 fms.; 10, 1485 fms.; 13, 1050 fms.; 21, 2195 fms.; 48, 2298 fms.; 105, 2400 fms.; 138, 2688 fms.; 142, 2435 fms.

Pullenia sphæroides, *Orb.*, sp.

Occurrence.—Sta. 4, 2728 fms.; 11, 1417 fms.; 13, 1050 fms.; 19, 1995 fms.; 140, 2476 fms.

Genus Sphæroidina, *Orb.*

Sphæroidina bulloides, *Orb.*

Occurrence.—Sta. 48, 2298 fms.

Sphæroidina dehiscens, *Parker & Jones.*

Occurrence.—Sta. 2, 1489 fms.; 3, 2715 fms.; 4, 2728 fms.; 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 19, 1995 fms.; 20, 1215 fms.; 21, 2195 fms.; 23, 735 fms.; 28, 1505 fms.; 47, 2107 fms.; 48, 2298 fms.; 78, 1570 fms.; 88, 731 fms.; 90, 590 fms.; 105, 2400 fms.; 109, 604 fms.; 141, 2741 fms.; 142, 2435 fms.; 148, 2620 fms.; 149, 2550 fms.; 150, 2438 fms.

Genus CANDEINA, *Orb.*

CANDEINA NITIDA, *Orb.*

Occurrence.—Sta. 2, 1489 fms.; 3, 2715 fms.; 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 19, 1995 fms.; 20, 1215 fms.; 45, 2107 fms.; 48, 2298 fms.; 68, 1143 fms.; 96, 1245 fms.; 105, 2400 fms.

Family ROTALIIDÆ.

Genus SPIRILLINA, *Ehrenberg.*

SPIRILLINA OBCONICA, *Brady.*

Only once before does this species appear to have been recorded from the Pacific, at the Admiralty Islands, 17 fathoms ('Challenger').

Occurrence.—Sta. 29, 475 fms.

SPIRILLINA DECORATA, *Brady*, var. UNILATERA, *Chapman.*

Spirillina decorata, Brady, var. *unilatera*, Chapman ('02), p. 410, pl. 36. figs. 17 *a*, *b*.

This variety has been previously described from the dredgings at 200 fathoms off Tutanga, Funafuti Atoll.

Occurrence.—Sta. 55, 507 fms.

Genus PATELLINA, *Williamson.*

PATELLINA CORRUGATA, *Williamson.*

The subjoined record is by far the deepest sounding which has yielded the above-named typically shallow to moderately-shallow water foraminifer. The greatest depths at which the 'Gazelle' obtained it were, at the Mauritius, 411 metres, and off Western Australia at 1187 metres. It was previously noticed from Funafuti (off Tutanga) at 200 fathoms.

Occurrence.—Sta. 48, 2298 fms.

Genus DISCORBINA, *Parker & Jones.*

DISCORBINA GLOBULARIS, *Orb.*, sp. (Plate **55.** figs. 14 *a*, *b*.)

The deepest sounding hitherto yielding this species is that recorded by the 'Challenger' at 450 fathoms.

Occurrence.—Sta. 45, 2107 fms.; 48, 2298 fms.

Genus PLANORBULINA, *Orb.*

PLANORBULINA MEDITERRANENSIS, *Orb.*

Occurrence.—Sta. 109, 604 fms.

Genus TRUNCATULINA, *Orb.*

TRUNCATULINA LOBATULA, *Walker & Jacob*, sp.

Occurrence.—Sta. 109, 604 fms.

TRUNCATULINA VARIABILIS, *Orb.*, sp.

Occurrence.—Sta. 10, 1485 fms.

TRUNCATULINA REFULGENS, *Montfort*, sp.

The range in depth of this species is very great, and previous records extend down to 2400 fathoms.

Occurrence.—Sta. 4, 2728 fms. ; 109, 604 fms.

TRUNCATULINA AKNERIANA, *Orb.*, sp.

Dr. Egger records this species from the 'Gazelle' soundings at depths from 347–951 metres.

Occurrence.—Sta. 20, 1215 fms. ; 21, 2195 fms.; 23, 735 fms.; 109, 604 fms.

TRUNCATULINA UNGERIANA, *Orb.*, sp.

This and the following species are by far the commonest of the present genus in the Funafuti deep-sea deposits. The 'Challenger' obtained the deepest examples of *T. ungeriana* from 2600 fathoms.

Occurrence.—Sta. 4, 2728 fms. ; 11, 1417 fms. ; 13, 1050 fms. ; 19, 1995 fms. ; 20, 1215 fms. ; 21, 2195 fms. ; 45, 2107 fms. ; 48, 2298 fms. ; 140, 2476 fms. ; 142, 2435 fms. ; 148, 2620 fms. ; 149, 2550 fms.

TRUNCATULINA WUELLERSTORFI, *Schwager*, sp.

The deepest examples hitherto recorded were from 2435 fathoms, by the 'Challenger.'

Occurrence.—Sta. 2, 1489 fms. ; 3, 2715 fms. ; 4, 2728 fms. ; 10, 1485 fms. ; 11, 1417 fms. ; 13, 1050 fms. ; 20, 1215 fms. ; 21, 2195 fms. ; 48, 2298 fms. ; 105, 2400 fms. ; 148, 2620 fms.

TRUNCATULINA HAIDINGERI, *Orb.*, sp.

Occurrence.—Sta. 11, 1417 fms. ; 68, 1143 fms. ; 138, 2688 fms.

TRUNCATULINA HUMILIS, *Brady*.

This is a deep-water form, first found in the 'Challenger' soundings from the North Atlantic and North Pacific.

Occurrence.—Sta. 3, 2715 fms. ; 140, 2476 fms.

TRUNCATULINA TENERA, *Brady*.

A small but otherwise typical specimen.

Occurrence.—Sta. 45, 2107 fms.

TRUNCATULINA DUTEMPLEI, *Orb*., sp.

Occurrence.—Sta. 4, 2728 fms. ; 105, 2400 fms.

TRUNCATULINA CULTER, *Parker & Jones*, sp.

The examples here recorded from 2107 fathoms are from the deepest habitat known for this species.

Occurrence.—Sta. 13, 1050 fms. ; 20, 1215 fms. ; 45, 2107 fms.

TRUNCATULINA PYGMÆA, *Hantken*.

Occurrence.—Sta. 3, 2715 fms. ; 4, 2728 fms. ; 11, 1417 fms. ; 13, 1050 fms. ; 20, 1215 fms. ; 45, 2107 fms. ; 48, 2298 fms. ; 68, 1143 fms. ; 105, 2400 fms. ; 138, 2688 fms. ; 140, 2476 fms. ; 148, 2620 fms. ; 149, 2550 fms. ; 150, 2438 fms.

TRUNCATULINA RETICULATA, *Czjzek*, sp.

Occurrence.—Sta. 4, 2728 fms. ; 109, 604 fms.

Genus ANOMALINA, *Parker & Jones*.

ANOMALINA AMMONOIDES, *Reuss*, sp.

Occurrence.—Sta. 109, 604 fms.

ANOMALINA GROSSERUGOSA, *Gümbel*, sp.

Occurrence.—Sta. 10, 1485 fms. ; 13, 1050 fms. ; 20, 1215 fms. ; 45, 2107 fms. ; 140, 2476 fms. ; 150, 2438 fms.

ANOMALINA POLYMORPHA, *Costa*.

Two examples only occur in the Funafuti deep-sea soundings. The previous records of the species show no very great depth of habitat, the maximum being 450 fathoms off Sombrero Isl. by the 'Challenger' (*Brady*) and 677 metres off West Africa by the 'Gazelle' (*Egger*).

Occurrence.—Sta. 4, 2728 fms. ; 13, 1050 fms.

Genus PULVINULINA, *Parker & Jones*.

PULVINULINA ELEGANS, *Orb*., sp.

These are generally well-formed examples with the high, stout test of the deeper-water variety.

Occurrence.—Sta. 3, 2715 fms. ; 4, 2728 fms. ; 11, 1417 fms. ; 13, 1050 fms. ; 19, 1995 fms. ; 20, 1215 fms. ; 21, 2195 fms. ; 48, 2298 fms. ; 105, 2400 fms. ; 140, 2476 fms. ; 148, 2620 fms.

PULVINULINA REPANDA, *Fichtel & Moll*, sp.

Occurrence.—Sta. 11, 1417 fms.; 13, 1050 fms.

PULVINULINA EXIGUA, *Brady*.

Common in most of the soundings at great depths.

Occurrence.—Sta. 4, 2728 fms.; 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 45, 2107 fms.; 48, 2298 fms.; 105, 2400 fms.; 140, 2476 fms.; 148, 2620 fms.; 150, 2438 fms.

PULVINULINA MENARDII, *Orb*., sp.

Excessively abundant in nearly all the samples.

Occurrence.—Sta. 2, 1489 fms.; 3, 2715 fms.; 4, 2728 fms.; 10, 1485 fms.; 11, 1417 fms.; 19, 1995 fms.; 20, 1215 fms.; 21, 2195 fms.; 23, 735 fms.; 28, 1505 fms.; 29, 475 fms.; 45, 2107 fms.; 48, 2298 fms.; 78, 1570 fms.; 88, 731 fms.; 105, 2400 fms.; 109, 604 fms.; 141, 2741 fms.; 142, 2435 fms.; 148, 2620 fms.; 149, 2550 fms.; 150, 2438 fms.

PULVINULINA MENARDII, *Orb*., sp., var. FIMBRIATA, *Brady*.

A single example only, with a very finely spinose margin.

Occurrence.—Sta. 45, 2107 fms.

PULVINULINA TUMIDA, *Brady*.

This form is almost as common in these soundings as the related *P. menardii*.

Occurrence.—Sta. 2, 1489 fms.; 3, 2715 fms.; 4, 2728 fms.; 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 19, 1995 fms.; 20, 1215 fms.; 21, 2195 fms.; 23, 735 fms.; 45, 2107 fms.; 48, 2298 fms.; 60, 451 fms.; 68, 1143 fms.; 78, 1570 fms.; 83, 1340 fms.; 88, 731 fms.; 105, 2400 fms.; 109, 604 fms.; 138, 2688 fms.; 140, 2476 fms.; 141, 2741 fms.; 142, 2435 fms.; 148, 2620 fms.; 149, 2550 fms.; 150, 2438 fms.

PULVINULINA PATAGONICA, *Orb*., sp.

Occurrence.—Sta. 2, 1489 fms.; 3, 2715 fms.; 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 21, 2195 fms.; 23, 735 fms.; 48, 2298 fms.; 68, 1143 fms.; 105, 2400 fms.

PULVINULINA CANARIENSIS, *Orb*., sp.

Occurrence.—Sta. 4, 2728 fms.; 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 21, 2195 fms.; 45, 2107 fms.; 48, 2298 fms.; 105, 2400 fms.

PULVINULINA CRASSA, *Orb*., sp.

Occurrence.—Sta. 2, 1489 fms.; 4, 2728 fms.; 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 19, 1995 fms.; 20, 1215 fms.; 45, 2107 fms.; 105, 2400 fms.; 141, 2741 fms.; 150, 2438 fms.

PULVINULINA TRUNCATULINOIDES, *Orb.*, sp.

Occurrence.—Sta. 2, 1489 fms.; 3, 2715 fms.; 4, 2728 fms.; 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 19, 1995 fms.; 20, 1215 fms.; 21, 2195 fms.; 28, 735 fms.; 45, 2107 fms.; 48, 2298 fms.; 68, 1143 fms.; 86, 513 fms.

PULVINULINA HAUERII, *Orb.*, sp.

Occurrence.—Sta. 11, 1417 fms.; 13, 1050 fms.; 19, 1995 fms.; 20, 1215 fms.; 48, 2298 fms.; 68, 1143 fms.; 88, 731 fms.; 105, 2400 fms.; 109, 604 fms.; 142, 2435 fms.; 150, 2438 fms.

PULVINULINA PAUPERATA, *Parker & Jones.*

Examples rather small.

Occurrence.—Sta. 2, 1489 fms.; 10, 1485 fms.; 13, 1050 fms.; 20, 1215 fms.; 23, 735 fms.; 45, 2107 fms.; 48, 2298 fms.

PULVINULINA FAVUS, *Brady.* (Plate **55**. fig. 15.)

This peculiar little species is fairly common in these soundings. Dr. Brady remarks that it is almost entirely confined to the Pacific, and appears to be an almost essentially deep-water form. The surfaces of young examples are very distinctly honeycombed, and show a tendency to become spinous on the margin. Dr. Egger notes this species off Cape Town and the Mauritius in moderately deep water.

Occurrence.—Sta. 3, 2715 fms.; 4, 2728 fms.; 10, 1485 fms.; 13, 1050 fms.; 20, 1215 fms.; 21, 2195 fms.; 45, 2107 fms.; 48, 2298 fms.; 105, 2400 fms.; 138, 2688 fms.; 150, 2438 fms.

Genus ROTALIA, *Lamarck.*

ROTALIA BROECKHIANA, *Karrer.*

Rotalia broeckhiana, Karrer; Egger ('93), p. 421, pl. 19. figs. 19–21; Millett ('04), Rep. Malay Foram. p. 503.

The examples found here are characteristic in form, but small. The present occurrences constitute a record for deep water. It has been previously noticed off the Ki Islands at 580 fathoms, off Western Australia at 196 fathoms, and in anchor-mud in the Malay Archipelago.

Occurrence.—Sta. 11, 1417 fms.; 13, 1050 fms.; 21, 2195 fms.; 48, 2298 fms.

ROTALIA SOLDANII, *Orb.*

This species is here typical and fairly common. It appears to be most at home in deep-water habitats.

Occurrence.—Sta. 2, 1489 fms.; 3, 2715 fms.; 20, 1215 fms.; 21, 2195 fms.; 48, 2298 fms.; 105, 2400 fms.

ROTALIA ORBICULARIS, *Orb.*

Occurrence.—Sta. 4, 2728 fms.; 13, 1050 fms.; 19, 1995 fms.

ROTALIA *cf.* DENTATA, *Parker & Jones.* (Plate **55**. fig. 16.)

Rotalia dentata, Parker & Jones ('65), p. 387, pl. 19. figs. 13 *a–c*.

A somewhat obscure rotaline form, with reticulate secondary growth on the shell-surface and with a few short spines on the periphery, may be provisionally referred to this species.

Occurrence.—Sta. 11, 1417 fms.

Genus CALCARINA, *Orb.*

CALCARINA SPENGLERI, *J. F. Gmel.*, sp.

The specimens found here are more or less abraded, and resemble those from a detrital and shallow-water deposit. Nevertheless the species has been once recorded from deep water, off Amboyna at 1425 fathoms.

Occurrence.—Sta. 78, 1570 fms.

Genus TINOPORUS, *Montfort.*

TINOPORUS BACULATUS, *Montfort.*

This species is usually found in moderately shallow water. The examples from Funafuti are all somewhat abraded.

Occurrence.—Sta. 55, 507 fms.; 78, 1570 fms.

Genus POLYTREMA, *Risso.*

POLYTREMA MINIACEUM, *Pallas*, sp.

The sounding recorded below represents a moderately shallow-water fauna, whose limit has been reached at this depth. The tests of *P. miniaceum* are here quite typical and have the characteristic rose-pink colour of specimens from less depths.

Occurrence.—Sta. 55, 507 fms.

Family NUMMULINIDÆ.

Genus NONIONINA, *Orb.*

NONIONINA DEPRESSULA, *Walker & Jacob*, sp.

It is remarkable to find this almost essentially shallow-water species so common at the great depths recorded below. The specimens are quite typical.

Occurrence.—Sta. 3, 2715 fms.; 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 48, 2298 fms.; 109, 604 fms.; 140, 2476 fms.; 148, 2620 fms.; 149, 2550 fms.; 150, 2438 fms.

NONIONINA UMBILICATULA, *Montagu*, sp.

This form is less restricted to shallow water than *N. depressula*, and has been recorded from depths as great as 3125 fathoms.

Occurrence.—Sta. 3, 2715 fms.; 11, 1417 fms.; 13, 1050 fms.; 20, 1215 fms.; 21, 2195 fms.; 45, 2107 fms.; 48, 2298 fms.; 105, 2400 fms.; 138, 2688 fms.; 148, 2620 fms.; 150, 2438 fms.

NONIONINA POMPILIOIDES, *Fichtel & Moll*, sp.

The above species is more typical of deep water than even the preceding form, and it is therefore the more curious to find it comparatively rare in these deeper soundings.

Occurrence.—Sta. 20, 1215 fms.; 21, 2195 fms.; 138, 2688 fms.

Genus POLYSTOMELLA, *Lam*.

POLYSTOMELLA STRIATOPUNCTATA, *Fichtel & Moll*, sp.

Occurrence.—Sta. 11, 1417 fms.

POLYSTOMELLA CRISPA, *Linné*, sp.

The previously recorded depths for this species range down to 355 fathoms only.

Occurrence.—Sta. 3, 2715 fms.; 105, 2400 fms.

Genus AMPHISTEGINA, *Orb*.

AMPHISTEGINA LESSONII, *Orb*.

Although this species has occasionally been recorded from deep-sea soundings, it had not been noticed from any greater depth than 1750 fathoms.

Occurrence.—Sta. 23, 735 fms.; 24, 987 fms.; 28, 1505 fms.; 29, 475 fms.; 31, 1158 fms.; 55, 507 fms.; 60, 451 fms.; 68, 1143 fms.; 78, 1570 fms.; 83, 1340 fms.; 86, 513 fms.; 96, 1245 fms.; 109, 604 fms.; 141, 2741 fms.

Genus HETEROSTEGINA, *Orb*.

HETEROSTEGINA DEPRESSA, *Orb*.

Occurrence.—Sta. 55, 507 fms.

Genus CYCLOCLYPEUS, *Carpenter*.

CYCLOCLYPEUS CARPENTERI, *Brady*.

All the examples found were of the megalospheric type (= *C. guembelianus* of the 'Challenger' report).

Occurrence.—Sta. 55, 507 fms.

The Ostracoda of the Funafuti Deep-Sea Deposits.

Section **Podocopa.**

Family CYPRIDÆ.

Genus AGLAIA, *G. S. Brady.*

AGLAIA CLAVATA, *G. S. Brady.*

Aglaia clavata, G. S. Brady ('80), p. 34, pl. 6. figs. 4 *a–d.*

This rare form has been only once previously recorded, from Wellington Harbour, New Zealand, where a few specimens were taken from the tow-net at trawl.

Occurrence.— Sta. 13, 1050 fms. One valve.

(?) AGLAIA OBTUSATA, *G. S. Brady.*

(?) *Aglaia obtusata*, G. S. Brady ('80), p. 35, pl. 30. figs. 8 *a–d.*

"Dredged in Balfour Bay, Kerguelen Island, in a depth of 20 to 50 fathoms." (*G. S. Brady.*)

One valve of this rare form was found in the present series.

Occurrence.—Sta. 13, 1050 fms.

(?) AGLAIA *cf.* MERIDIONALIS, *G. S. Brady.*

(?) *Aglaia meridionalis*, G. S. Brady ('80), p. 34, pl. 30. figs. 7 *a–d.*

Brady's original specimen was from anchor-mud at a depth of 6 fathoms in Stanley Harbour, Falkland Islands.

One valve in the present collection, agreeing in lateral outline with Brady's figured specimen, but with a more swollen posterior extremity seen in edge view.

Occurrence.—Sta. 20, 1215 fms.

Genus PONTOCYPRIS, *G. O. Sars.*

PONTOCYPRIS TRIGONELLA, *G. O. Sars.*

Pontocypris trigonella, G. O. Sars ('65), p. 16; G. S. Brady ('68[2]), p. 387, pl. 25. figs. 31–34, pl. 28. fig. 3; Brady, Crosskey, & Robertson ('74), p. 137, pl. 16. figs. 26–28; G. S. Brady ('80), p. 36, pl. 15. figs. 4 *a–d*; Brady & Norman ('89), p. 109, pl. 22. figs. 18–25, pl. 23. fig. 6; Egger ('01), p. 422, pl. 1. figs. 16, 17.

This species has a very wide geographical range, being found in Northern Europe, the Mediterranean, and the N. Atlantic. It is found fossil in the Post-tertiary deposits of Scotland. The present occurrence appears to be in exceptionally deep water for this species, as the British examples only affect depths down to 30 fathoms. In the 'Challenger' dredgings this species

occurred off Bermudas at 435 fathoms. Egger records it from several localities in the S. Atlantic and the Indian Ocean.

Occurrence.—Sta. 10, 1485 fms. One typical specimen.

PONTOCYPRIS ATTENUATA, *G. S. Brady*.

Pontocypris attenuata, G. S. Brady ('68[1]), p. 179, pl. 4. figs. 11–14; id. ('80), p. 38, pl. 15. figs. 2 *a–d*; id. ('90), p. 49, pl. 1. figs. 3, 4; Chapman ('02[2]), p. 419.

This was formerly known as a typically shallow-water species until specimens were obtained round Funafuti at 150 and 200 fathoms.

Occurrence.—Sta. 20, 1215 fms. One example, having an acuminate posterior.

PONTOCYPRIS GRACILIS, *G. S. Brady*.

Pontocypris gracilis, G. S. Brady ('90), p. 491, pl. 1. figs. 5, 6.

Prof. Stewardson Brady's localities for the original species are Levuka, and Rambé Island, S. Seas, between tide-marks.

The present specimens are in nearly all particulars similar to Brady's described examples.

Occurrence.—Sta. 20, 1215 fms.

PONTOCYPRIS (?) FABA, *Reuss*, sp.

Bairdia faba, Reuss ('55), p. 178, pl. 10. fig. 2.
Pontocypris faba, Reuss, sp.; G. S. Brady ('78), p. 382, pl. 63. figs. 6 *a–e*.
P. (?) *faba*, Reuss, sp., id. ('80), p. 37, pl. 1. figs. 4 *a–d*.
P. faba, Reuss, sp.; Egger ('01), p. 420, pl. 4. figs. 44, 45.

Previously found by Dr. Brady only in shallow water in the Southern Ocean and the South Pacific.

Occurrence.—Sta. 13, 1050 fms. Two left valves.

PONTOCYPRIS DAVIDIANA, sp. nov. (Plate **56**. figs. 17 *a*, *b*.)

Description.—Carapace somewhat compressed, siliquose. Seen from the side, elongate, subtriangular and strongly curved; highest in front, sharply attenuated behind; dorsal margin evenly curved, ventral margin nearly straight from a little in front of the middle to the posterior angle; anterior border boldly rounded. In edge view thickest in the middle. Surface smooth. Length ·875 mm.; greatest height ·354 mm.

This is a very distinct and elegant form. It differs from *P. gracilis* in the strong curvature and broad anterior extremity, and from *P. sicula* in the gradually increasing width from point to head. I have much pleasure in naming this species in honour of Prof. David, F.R.S., who carried out the boring at Funafuti to so successful an issue.

Occurrence.—Sta. 13, 1050 fms.

Genus Argillœcia, *G. O. Sars.*

Argillœcia eburnea, *G. S. Brady.*

Argillœcia eburnea, G. S. Brady ('80), Rep. Chall. Zool. pt. iii. p. 40, pl. 4. figs. 1–15; Egger ('01), p. 422, pl. 4. figs. 49–51.

This species has previously occurred in the S. Atlantic and the S. Indian Oceans. It appears to be a new record for the S. Pacific.

Occurrence.—Sta. 11, 1417 fms.; 13, 1050 fms.; 20, 1215 fms.

Argillœcia affinis, *Chapman.*

Argillœcia affinis, Chapman ('02[2]), p. 419, pl. 37. figs. 1 *a–c*.

A. affinis was described in a former paper from a single sounding of the present series, viz. Sta. 2, 1489 fathoms. It is now recorded from three other soundings, and in three out of the four it is accompanied by *A. eburnea*.

Occurrence.—Sta. 2, 1489 fms.; 3, 2715 fms.; 11, 1417 fms.; 13, 1050 fms.

Argillœcia gracilior, sp. nov. (Plate **56**. figs. 18 *a*, *b*.)

Description.—Carapace elongate, compressed; seen from the side, sub-pyriform; height about one-third the length. Dorsal border gently arched, sometimes flattened in the middle; antero-ventral border rounded; near the middle of the ventral margin there is a well-marked sinus, followed by a wide convexity curving to meet the posterior extremity at an acute angle. In edge view the posterior extremity is seen to be much more compressed than in *A. eburnea*. Length ·7 mm.; height ·27 mm.; thickness of carapace ·27 mm.

Affinities.—Related to *A. eburnea*, but having a much larger and proportionately narrower carapace, as well as the greater posterior compression previously noticed. From *A. cylindrica*, G. O. Sars, it differs chiefly in the sharp posterior angle.

Occurrence.—Sta. 13, 1050 fms.; 20, 1215 fms. A moderately frequent species.

Genus Bythocypris, *G. S. Brady.*

Bythocypris elongata, *G. S. Brady.*

Bythocypris elongata, G. S. Brady ('80), p. 47, pl. 6. figs. 1 *a–c*; Egger ('01), p. 424, pl. 1. figs. 48–50.

Brady's specimens were found N. of Tristan d'Acunha, at a depth of 1425 fathoms; Egger's came from near Kerguelen Island, 104 metres.

Occurrence.—Sta. 13, 1050 fms.

Bythocypris sollasi, sp. nov. (Plate **56**. figs. 19 *a–c*.)

Description.—Carapace subreniform, compressed. Seen from the side the anterior extremity is broadly rounded; dorsal margin of left valve strongly

arched, of the right valve nearly straight in the middle; on the right side showing a conspicuous overlapping of the left valve; the lower posterior third of the dorsal margin slopes rapidly inwards, curving to the tapering posterior angle, at which it meets the gently sinuous ventral border, giving an almost pyriform outline to the carapace. Anterior of left valve, the middle of the dorsal line, and the whole length of the ventral line showing a marked overlap. Edge view ovate, compressed, and sharp at both extremities; left valve slightly more tumid than the right. Lucid spots about ten in number, of irregular shape, forming a distinct group in the median area. Length 1·1 mm.; height ·625 mm.; thickness of carapace ·312 mm.

This species cannot be referred to *Bythocypris bosquetiana*, G. S. Brady, sp.*, on account of the remarkable attenuate extremity. In most other particulars it agrees with the form just mentioned, but another striking point of difference is the fewer lucid spots in *B. bosquetiana*. The species is named in honour of Prof. W. J. Sollas, LL.D., D.Sc., F.R.S., who inaugurated the work of boring at Funafuti.

Occurrence.—Sta. 13, 1050 fms.

(?) Bythocypris heterodoxa, sp. nov. (Plate **56**. figs. 20 *a*, *b*.)

Description.—Left valve subovate in lateral aspect; anterior extremity broadly rounded; ventral border nearly straight; dorsal line strongly arched and sloping rapidly to meet the ventral line at a rather sharp angle. Surface faintly pitted; bearing a sharp spine in the middle of the valve close to the dorsal margin, which curves outwards and downwards. Edge view elongately subovate, compressed at the extremities.

Length ·687 mm.; height ·54 mm.

Occurrence.—Sta. 11, 1417 fms.; 13, 1050 fms.; 20, 1215 fms.

Genus Bairdia, *McCoy*.

Bairdia foveolata, *G. S. Brady*.

Bairdia foveolata, G. S. Brady ('80), p. 55, pl. 8. figs. 1 *a–f*, 2 *a–f*; id. ('90), p. 493; Egger ('01), p. 426, pl. 2. figs. 1–4; Chapman ('02²), p. 423.

This is one of the commonest species of *Bairdia* found round Funafuti, but mainly restricted to shallow water.

Occurrence.—Sta. 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.

* *Bairdia bosquetiana*, G. S. Brady, Trans. Zool. Soc. vol. v. 1865, p. 364, pl. 57. figs. 5 *a–c*.
Bythocypris reniformis, G. S. Brady, 1880, Rep. Chall. Zool. pt. iii. p. 46, pl. 5. figs. 1 *a–l*.
Bythocypris bosquetiana, G. S. Brady, sp., Brady & Norman, 1889, Trans. R. Dubl. Soc. ser. 2, vol. iv. no. ii. p. 120, pl. 14. figs. 34, 35.

BAIRDIA FORMOSA, *G. S. Brady.* (Plate **56**. fig. 21.)

Bairdia formosa, G. S. Brady ('68[1]), p. 221, pl. 14. figs. 5–7; id. ('80), p. 52, pl. 10. figs. 1 *a–e.*

Two valves were found in the present soundings, both of which represent young individuals. One of these is more elongate than usual, but in this it resembles the forms found by Brady in the Mediterranean; and instead of the numerous spines at the extremities, there is only one stout spine at each end. The other valve is more typical in outline, and bears a few minute spines at the posterior end along with a stronger terminal spine.

Occurrence.—Sta. 13, 1050 fms.

BAIRDIA MILNE-EDWARDSI, *G. S. Brady.*

Bairdia milne-edwardsi, G. S. Brady ('67), vol. i. p. 139, pl. 17. figs. 3, 4; id. ('80), p. 56, pl. 10. figs. 4 *a–g*; id. ('90), p. 494; Chapman ('02[2]), p. 422.

The examples previously recorded from Funafuti were mainly from shallow depths, with one from 200 fathoms. Dr. Brady obtained this species from only one locality, viz. off St. Vincent, Cape Verde, 1070–1150 fathoms.

Occurrence.—Sta. 13, 1050 fms.; 55, 507 fms.

BAIRDIA VICTRIX, *G. S. Brady.*

Bairdia victrix, G. S. Brady ('80), p. 56, pl. 10. figs. 5 *a–d.*

Occurrence.—Sta. 13, 1059 fms. One separate valve.

BAIRDIA WOODWARDIANA, *G. S. Brady.*

Bairdia woodwardiana, G. S. Brady ('80), p. 57, pl. 11. figs. 1 *a–e*; id. ('90), p. 494; Chapman ('02[2]), p. 421.

The 'Challenger' dredgings yielded this species from one locality only, viz., Tongatabu, 18 fathoms; and Dr. Brady has since found it at Taviuni, S. Seas.

Occurrence.—Sta. 2, 1489 fms.; 13, 1059 fms.; 55, 507 fms.

BAIRDIA CROSSKEIANA, *G. S. Brady.*

Bairdia crosskeiana, G. S. Brady ('66), p. 366, pl. 57. figs. 10 *a–d*; id. ('80), p. 58, pl. 9. figs. 3 *a–c*; Brady & Norman ('89), p. 115, pl. 10. figs. 3, 4; Chapman ('02[2]), p. 421.

A single valve, comparable in edge view with that figured by Brady and Norman. The posterior extremity terminates in a short spine.

Occurrence.—Sta. 55, 507 fms.

BAIRDIA EXPANSA, *G. S. Brady.*

Bairdia expansa, G. S. Brady ('80), p. 58, pl. 11. figs. 2 *a–e*; id. ('90), p. 495.

In edge view this species is very broad and tumid. In our specimens the anterior border is more evenly rounded. The expanded and denticulate margin is similar to Brady's specimen, found off Honolulu at 40 fathoms.

That author also records it from the South Sea Islands and from Noumea, in quite shallow water.

Occurrence.—Sta. 13, 1050 fms. ; 20, 1215 fms.

BAIRDIA MINIMA, *G. S. Brady.*

Bairdia minima, G. S. Brady ('80), p. 53, pl. 7. figs. 6 *a–g*.

Previously recorded from Port Jackson, N. S. Wales, 6 fathoms, and from the Pacific, 'Challenger' Sta. 246, 2050 fathoms.

Occurrence.—Sta. 20, 1215 fms.

Family CYTHERIDÆ.

Genus CYTHERE, *Müller.*

CYTHERE MOSELEYI, *G. S. Brady.*

Cythere moseleyi, G. S. Brady ('80), p. 64, pl. 12. figs. 5 *a–f*.

A fine carapace of a male specimen, having the approximately tapering posterior extremity, occurs in this series.

The species was originally described from examples found in shallow water off the Falkland Islands.

Occurrence.—Sta. 13, 1050 fms.

CYTHERE PARALLELOGRAMMA, *G. S. Brady.*

Cythere parallelogramma, G. S. Brady ('80), p. 82, pl. 15. figs. 1 *a–e*; Egger ('01), p. 442, pl. 6. figs. 15, 16.

Previously recorded from Prince Edward's Island.

Occurrence.—Sta. 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 21, 2195 fms.

CYTHERE RASTROMARGINATA, *G. S. Brady.*

Cythere rastromarginata, G. S. Brady ('80), p. 83, pl. 14. figs. 1 *a–d*, 2 *a–d*; Egger ('01), p. 442, pl. 6. figs. 5–9.

Recorded from the South Pacific and the Southern Ocean, in shallow to moderately shallow waters.

Occurrence.—Sta. 11, 1417 fms. ; 13, 1050 fms.

CYTHERE TORTICOLLIS, *G. S. Brady.*

Cythere torticollis, G. S. Brady ('90), p. 500, pl. 3. figs. 1, 2.

The original specimens of Dr. Brady's came from Noumea, New Caledonia, from shore-sand and from 2–6 fathoms.

Occurrence.—Sta. 13, 1050 fms. One left valve.

CYTHERE DASYDERMA, *G. S. Brady.*

Cythere dasyderma, G. S. Brady ('80), p. 105, pl. 17. figs. 4 *a–f*.

This species is characteristic of deep-water habitats.

Occurrence.—Sta. 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 20, 1215 fms.

CYTHERE QUADRIACULEATA, *G. S. Brady.*

Cythere quadriaculeata, G. S. Brady ('80), p. 86, pl. 22. figs. 2 *a–d*, pl. 25. figs. 4 *a–d*.

The deep-water specimens found in the present series have thinner carapaces than those from shallower depths.

Brady records the species from Japan, 15 fathoms; and off the reefs at Honolulu at 40 fathoms.

Occurrence.—Sta. 13, 1050 fms.; 20, 1215 fms.

CYTHERE CURVICOSTATA, *G. S. Brady*, var. PHYLLOIDES, *Chapman.*

Cythere phylloides, Chapman ('02[2]), p. 424, pl. 37. figs. 3 *a–c*.

Further examples of this form prove it to be a sparsely costate variety of the above species, with impressed punctæ in the place of regularly defined pits arranged in rows between the riblets.

Occurrence.—Sta. 3, 2715 fms.; 20, 1215 fms.

CYTHERE CURVICOSTATA, *G. S. Brady*, var. FUNAFUTIENSIS, nov. (Plate **57**. fig. 22.)

This beautiful variety differs from the specific form as defined by Dr. Brady in the following particulars:—The anterior border is devoid of the armature of small teeth, being quite smooth. The surface sculpture is more numerously costate, and the ribs are clear and sharp.

Occurrence.—Sta. 20, 1215 fms.

CYTHERE SWEETI, sp. nov. (Plate **57**. figs. 23 *a*, *b*.)

Description.—Valves, seen laterally, nearly oblong, higher in front and narrowing posteriorly. Height a little more than half the length. Anterior border broad, rounded, and with a deep sulcus behind. Surface of valves rising prominently towards the middle and ventral side; the highest point in the postventral area terminating with a short, sharp spine. Dorsal margin straight, with a sudden sinuous turn to the posterior angle. Ventral margin sinuous, and curving round to meet the posterior acumination. Surface of valves finely sculptured with a polygonal network, the areolæ tending to run into straight lines parallel with the dorsal and ventral borders. Edge view subovate, compressed anteriorly. Length ·7 mm.; height ·375 mm.; thickness of carapace ·34 mm.

This species is distinct from *C. dictyon*, which it most resembles, in having a rounded ridge-swelling on the ventral margin, instead of a sharp, angulated ridge, as well as in the finer sculpturing of the valve-surface.

This species is named in honour of my friend Mr. G. Sweet, who so ably assisted Professor David in the work of boring in the Funafuti Atoll.

Occurrence.—Sta. 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 20, 1215 fms.

CYTHERE VIMINEA, *G. S. Brady*.

Cythere viminea, G. S. Brady ('80), p. 94, pl. 18. figs. 3 *a–c*.

A right valve occurs in the present collection, which agrees with Brady's species in almost all essential characters, but is slightly larger, and the surface-sculpturing of polygonal fossæ is rather more minute.

The 'Challenger' specimen was found at a depth of 1375 fathoms in the Southern Ocean.

Occurrence.—Sta. 10, 1485 fms.

CYTHERE DICTYON, *G. S. Brady*.

Cythere dictyon, G. S. Brady ('80), p. 99, pl. 24. figs. 1 *a–y*; Egger ('01), p. 442, pl. 6. figs. 41-43.

This is one of the most widely distributed of the deep-sea Ostracoda. The 'Challenger' specimens were found mainly between 1000 and 2000 fathoms, the least depth recorded being 120 fathoms. The sculpture on the valves of a few of the Funafuti examples is much finer and neater than in typical specimens, and the anterior rim is more strongly defined.

Occurrence.—Sta. 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 20, 1215 fms.; 45, 2107 fms.; 105, 2400 fms.

CYTHERE VELIVOLA, *G. S. Brady*.

Cythere velivola, G. S. Brady ('80), p. 111, pl. 23. figs. 4 *a–c*.

This peculiarly ornamented little species was found in the 'Challenger' dredgings from S.W. of New Guinea, 28 fathoms.

The only example found in the present series is a right valve, which differs from the figured specimens of Dr. Brady's in its sharply pointed posterior extremity.

Occurrence.—Sta. 10, 1485 fms.

(?) CYTHERE SERRATULA, *G. S. Brady*.

(?) *Cythere serratula*, G. S. Brady ('80), p. 77, pl. 43. figs. 7 *a–d*.

Previously recorded off Culebra Isl., West Indies, 390 fathoms; off Canaries, 1125 fathoms; and N. of Tristan d'Acunha, 1425 fms.

Occurrence.—Sta. 13, 1050 fms.

Genus KRITHE, *Brady, Crosskey, & Robertson.*

KRITHE PRODUCTA, *G. S. Brady.*

Krithe producta, G. S. Brady ('80), p. 114, pl. 27. figs. 1 *a–j*; Brady & Norman ('89) p. 180, pl. 17. figs. 5–7; Egger ('01), p. 451, pl. 4. figs. 17, 18; Chapman ('02²), p. 427.

This species has a wide distribution, ranging from the N. Atlantic to the Southern Ocean. It does not appear to have been recorded from any typical S. Pacific areas before it was noted from Funafuti (*vide supra*). Egger notes it from near Australia and Kerguelen Island. It is most at home in some of the deepest parts of the ocean.

Occurrence.—Sta. 2, 1489 fms.; 3, 2715 fms.; 10, 1485 fms.; 11, 1417 fms.; 13, 1050 fms.; 19, 1995 fms.; 20, 1215 fms.; 21, 2195 fms.; 45, 2107 fms.; 48, 2298 fms.; 68, 1143 fms.; 105, 2400 fms.

KRITHE TUMIDA, *G. S. Brady.*

Krithe tumida, G. S. Brady ('80), p. 115, pl. 27. figs. 4 *a–d*; Egger ('01), p. 451, pl. 4. figs. 19–21.

Dr. Brady records this species from one locality only, in the S. Atlantic, at a depth of 1900 fathoms. Egger obtained it in the 'Gazelle' dredgings off the W. coast of Australia at 357 metres.

A few typical valves occur in the present series.

Occurrence.—Sta. 19, 1995 fms.; 20, 1215 fms.

KRITHE HYALINA, *G. S. Brady.*

Krithe hyalina, G. S. Brady ('80), p. 115, pl. 27. figs. 3 *a–d*.

This species occurred in only one sample of the 'Challenger' dredgings, in the Inland Sea of Japan, 15 fathoms.

Occurrence.—Sta. 3, 2715 fms. (one valve); 20, 1215 fms. (two valves).

KRITHE ANGUSTA, *Brady & Norman.*

Krithe angusta, Brady & Norman ('89), p. 181, pl. 17. figs. 10–13.
K. prælonga, Egger ('01), p. 450, pl. 4. figs. 11, 12.

It is of great interest to note the occurrence of the above species in relative abundance at Funafuti, since Canon Norman states that "It has only as yet been found in the Norwegian Seas." Dr. Egger obtained his examples of *K. prælonga*, which are without much doubt identical with the above species, off Mauritius at 411 metres.

Occurrence.—Sta. 3, 2715 fms.; 13, 1050 fms.; 20, 1215 fms.

Genus Loxoconcha, *G. O. Sars.*

Loxoconcha alata, *G. S. Brady.*

Loxoconcha alata, G. S. Brady ('68[1]), p. 223, pl. 14. figs. 8–13; id. ('80), p. 122, pl. 27. figs. 6 *a–j*.

Previously found only in shallow water at Funafuti; also at Honolulu, 40 fathoms.

Occurrence.—Sta. 68, 1143 fms.; 109, 604 fms.

Loxoconcha latissima, *G. S. Brady.*

Loxoconcha latissima, G. S. Brady ('78), p. 399, pl. 58. figs. 1 *a–h*.

This is its first occurrence as a recent form. The species was originally described by Dr. Brady from the Antwerp Crag. By the shortness of the valves and their tumidy both the present examples appear to belong to female specimens.

The carapace differs from that of *L. australis*, to which it is in some points allied, in the subparallel sides, the distinct flanging of the extremities, and the small, impressed surface-punctures.

Occurrence.—Sta. 13, 1050 fms.; 20, 1215 fms.

Genus Xestoleberis, *G. O. Sars.*

Xestoleberis margaritea, *G. S. Brady*, sp.

(?) *Cytheridea margaritea*, G. S. Brady ('66), p. 370, pl. 58. figs. 6 *a–d*.
Xestoleberis margaritea, G. S. Brady ('80), p. 127, pl. 30. figs. 2 *a–g*; Egger ('01), p. 456, pl. 3. figs. 27–30.

This is a common form in the shallower waters of Funafuti, being found in the lagoon as well as on the outer slopes of the reef. Brady's localities for this species are the Mediterranean, Booby Island, and the Mauritius. Egger obtained it in 'Gazelle' dredgings from the Australian Coast, Kerguelen Island, and Table Bay.

Occurrence.—Sta. 3, 2715 fms.

Xestoleberis variegata, *G. S. Brady.*

Xestoleberis variegata, G. S. Brady ('80), p. 129, pl. 31. figs. 8 *a–g*.

This species has already been recorded from dredgings off St. Vincent, Cape Verde, at 107–1150 fathoms; off Tongatabu, 18 fathoms; at Fiji, Samoa, and Noumea in shallow water. It was of frequent occurrence in the lagoon at Funafuti, and was often found off Funamanu at 50 fathoms.

Occurrence.—Sta. 2, 1489 fms.; a single valve.

XESTOLEBERIS ACUMINALIS, *Chapman*.

Xestoleberis acuminalis, Chapman ('02[2]), p. 429, pl. 37. figs. 4 *a–c*.

Previously found in dredgings from the lagoon at Funafuti.
Occurrence.—Sta. 13, 1050 fms. ; one valve.

Genus CYTHERURA, *G. O. Sars*.

CYTHERURA TENUICOSTA, sp. nov. (Plate **57**. figs. 24 *a*, *b*.)

Description.—Carapace elongate, narrow-ovate, compressed ; seen from the side, ventral and dorsal margins nearly parallel ; dorsal margin with a gentle median sinuosity and excavated posteriorly ; middle of dorsal margin straight and curving towards both extremities to meet the evenly rounded anterior border and the rather sharply pointed posterior prolongation. Carapace thickest towards the ventral border, the surface sloping convexly to the ventral, and with a transverse median depression ; surface-ornament consisting of about seven fine, sharp, parallel, longitudinal costæ, which become confluent at the extremities of the valve ; the interspaces crossed by faint striæ.

Length ·625 mm. ; height ·23 mm. ; approximate thickness of carapace ·21 mm.

Affinities.—In general shape, although more elongate, this species resembles *Cytherura clavata*, G. S. Brady *. The ornament of the valve-surface in that species, however, consists of numerous, delicate, anastomosing ridges, whilst in the present species they are parallel and extend nearly the whole length of the valve.

Occurrence.—Sta. 11, 1417 fms. ; 20, 1215 fms.

Genus CYTHEROPTERON, *G. O. Sars*.

CYTHEROPTERON WELLINGTONIENSE, *G. S. Brady*.

Cytheropteron wellingtoniense, G. S. Brady ('80), p. 36, pl. 34. figs. 4 *a–d*.

Previously described from Wellington Harbour, New Zealand. The anterior margin in our example is more evenly rounded than in the figure given by Brady.

Occurrence.—Sta. 13, 1050 fms.

CYTHEROPTERON ASSIMILE, *G. S. Brady*, var. FUNAFUTIENSIS, nov. (Plate **57**. fig. 25.)

Ref. to type form : G. S. Brady ('80), p. 138, pl. 34. figs. 3 *a–d*.

The type species was recorded from Kerguelen Island, 120 fathoms, and off Heard Island, 75 fathoms.

* G. S. Brady ('80), p. 133, pl. 29. figs. 7 *a–d*.

The valves found in the present dredgings are generally typical, but the alar beak is sharply pointed and prolonged instead of obtusely rounded as in Brady's 'Challenger' specimen.

Occurrence.—Sta. 10, 1485 fms.; 13, 1050 fms.

CYTHEROPTERON ABYSSORUM, *G. S. Brady*.

Cytheropteron abyssorum, G. S. Brady ('80), p. 138, pl. 34. figs. 3 *a–d*.

Described by Brady from one locality only, in the Southern Ocean, S.W. of Tasmania, 2600 fathoms.

Occurrence.—Sta. 11, 1417 fms.; 13, 1050 fms. Separate valves not uncommon.

Genus BYTHOCYTHERE, *G. O. Sars*.

BYTHOCYTHERE RETIOLATA, sp. nov. (Plate **57**. figs. 26 *a*, *b*.)

Description.—Carapace elongate; seen from the side compressed, subovate; of nearly equal width throughout, height less than one-half the length; anterior extremity strongly arched, dorsal line nearly straight and excavate posteriorly, ventral border concave in the upper third, then widely convex and curving backwards to meet the posterior prolongation; median area of valve tumid, highest towards the ventral region and posterior, sloping away to the anterior border; a deep, curved sulcus parallel with and just within the anterior margin. Median area deeply excavated by a transverse fold or sulcus, extending, a third away from the ventral, to the dorsal margin. Surface-ornament consisting of a distinct raised polygonal network. Edge view subovate, compressed at the extremities.

Length ·833 mm.; height ·312 mm.; approximate thickness of carapace ·3 mm.

Occurrence.—Sta. 13, 1050 fms.

BYTHOCYTHERE TUBERCULATA, sp. nov. (Plate **57**. figs. 27 *a*, *b*.).

Description.—Carapace subovate, compressed at the extremities; highest at the anterior, attenuated posteriorly. Seen from the side, elongate, subquadrangular, dorsal edge straight, and meeting the evenly rounded anterior margin at a sharp angle; antero-ventral angle rounded and widely curved along the ventral line; posterior extremity produced to a broad point. Surface of valve with a rounded prominence a little in front of the median area on the dorsal margin, behind which is a curved transverse depression; there is also a subventral ridge which carries a strong stout spine projecting outwards and downwards. Surface coarsely punctate and covered with strong prickles. Anterior margin denticulate. A narrow flange exists along the greater part of the ventral border.

Length 1·04 mm.; height ·458 mm.; thickness of carapace, including the spines, ·75 mm.

Affinities.—This species somewhat resembles *B. armata*, Chapman *, but there is no dorsal tubercle in the latter, whilst *B. armata* shows a costation of the ventral area which *B. tuberculata* does not.

Occurrence.—Sta. 20, 1215 fms.

Genus Pseudocythere, *G. O. Sars.*

Pseudocythere caudata, *G. O. Sars.*

Pseudocythere caudata, G. O. Sars ('65), p. 88; G. S. Brady ('68²), p. 453, pl. 34. figs. 49–52, pl. 41. fig. 6; Brady, Crosskey, & Robertson ('74), p. 210, pl. 2. fig. 9; G. S. Brady ('80), p. 144, pl. 1. figs. 6 *a–d*; Brady & Norman ('89), p. 225; Egger ('01), p. 463, pl. 8. figs. 33, 34.

This species is very variable, as pointed out by Dr. Brady, who regards all the Northern and Southern forms as belonging to one type. The distribution is very wide, extending round the shores of the British Islands, the N. Atlantic, the Mediterranean, the S. Atlantic, and the Southern Oceans. The Funafuti examples are comparable with the 'Challenger' specimens, and are not uncommon in the deep dredgings named below. Egger obtained it off the Australian Coast at 357 metres.

Occurrence.—Sta. 13, 1050 fms.; 20, 1215 fms.

Pseudocythere funafutiensis, sp. nov. (Plate 57. fig. 28.)

Description.—Carapace compressed, elongate; seen from the side, narrow, subelliptical, higher in the posterior half, height less than one-third of the length; anterior extremity pointed and truncately rounded towards the ventral angle; dorsal line slightly curved; ventral margin nearly straight in the middle, but truncated and excavated towards the posterior prolongation which lies close to the postero-dorsal angle. Surface finely lineate longitudinally over the whole length of the shell. Edge view narrow-elliptical, strongly compressed at the extremities.

Length 1·02 mm.; height ·3 mm.

Affinities.—The surface-ornament of this species is similar to that of *P. fuegiensis*, Brady †, but in the latter it is confined to the extremities of the valve. The narrow form and peculiar outline of our example show it to be distinct from that species.

Occurrence.—Sta. 13, 1050 fms.

* ('02), p. 432, pl. 37. figs. 6 *a*, *b*.

† ('80), p. 145, pl. 1. figs. 7 *a–d*.

SUMMARY OF RESULTS.

The foregoing report deals with 231 species and varieties of Foraminifera and 52 species and varieties of Ostracoda.

The following new species and varieties are herein described :—

Foraminifera.

Biloculina lucernula, Schwager, var. *striata*, nov.
Cassidulina bradii, Norman, var. *attenuata*, nov.
Lagena juddiana, sp. nov.

Ostracoda.

Pontocypris davidiana, sp. nov.
Argillœcia gracilior, sp. nov.
Bythocypris sollasi, sp. nov.
(?) ,, *heterodoxa*, sp. nov.
Cythere curvicostata, G. S. Brady, var. *funafutiensis*, nov.
,, *sweeti*, sp. nov.
Cytherura tenuicosta, sp. nov.
Cytheropteron assimile, G. S. Brady, var. *funafutiensis*, nov.
Bythocythere retiolata, sp. nov.
,, *tuberculata*, sp. nov.
Pseudocythere funafutiensis, sp. nov.

Some fossil species of Foraminifera and Ostracoda are here noted as recent for the first time. They are :—

Virgulina pertusa, Reuss (Pliocene ; Antwerp).
Lagena ventricosa, Silvestri (Miocene ; Piedmont) ; but that author compares them with Brady's recorded "*L. apiculata*."
Loxoconcha latissima, G. S. Brady (Pliocene ; Antwerp).

In relation to the question of the influence of light on the coloration of organisms in the ocean depths, it is interesting to note the occurrence of deeply coloured tests of *Polytrema miniaceum* at a depth of 507 fathoms.

A special interest attaches to some of the species found in these samples, on account of the great depth at which they were obtained. Particularly would we notice the forms occurring at depths from 2000 to 2728 fathoms, or from $2\frac{1}{4}$ to over 3 miles.

Abyssal Foraminifera (2000–2728 fms.).

Biloculina depressa, Orb.
„ „ var. *murrhyna*, Schw.
„ *tubulosa*, Costa.
Spiroloculina tenuis, Czjzek.
Miliolina oblonga, Mont., sp.
„ *bosciana*, Orb., sp.
„ *circularis*, Born, sp.
„ *tricarinata*, Orb., sp.
„ *seminulum*, Linn., sp.
„ *vulgaris*, Orb., sp.
„ *venusta*, Karrer, sp.
„ *ferussacii*, Orb., sp.
Sigmoïlina schlumbergeri, Silv.
„ *sigmoidea*, Brady, sp.
Hyperammina elongata, Brady.
„ *ramosa*, Brady.
Reophax nodulosa, Brady.
„ *dentaliniformis*, Brady.
(?) *Haplophragmium canariense*, Orb., sp.
Haplophragmium latidorsatum, Born, sp.
„ *fontinense*, Terq.
Textularia concava, Karrer, sp.
„ „ var. *heterostoma*, Forn.
„ *gramen*, Orb.
Verneuilina pygmæa, Egger.
Tritaxia lepida, Brady.
Spiroplecta americana, Ehr.
Gaudryina rugosa, Orb.
„ *pupoides*, Orb.
Bulimina pupoides, Orb.
„ *buchiana*, Orb.
„ *rostrata*, Brady.
Virgulina subsquamosa, Egger.
„ *subdepressa*, Brady.
„ *texturata*, Brady.
„ *pertusa*, Reuss.
Bolivina punctata, Orb.
„ *textilarioides*, Reuss.
„ *limbata*, Brady.
„ *lobata*, Brady.
„ *obsoleta*, Eley.
„ *robusta*, Brady.
„ *karreriana*, Brady.
„ *reticulata*, Brady.
Pleurostomella subnodosa, Reuss.
„ *alternans*, Schw.
Cassidulina lævigata, Orb.
„ *crassa*, Orb.
„ *subglobosa*, Brady.
Cassidulina oblonga, Reuss.
„ *calabra*, Seg., sp.
„ *bradii*, Norm.
„ „ var. *attenuata*, nov.
Ehrenbergina serrata, Reuss.
„ *hystrix*, Brady.
Lagena globosa, Mont., sp.
„ *stelligera*, Brady.
„ *longispina*, Brady.
„ *apiculata*, Reuss.
„ *botelliformis*, Brady.
„ *elongata*, Ehr., sp.
„ *hispida*, Reuss.
„ *aspera*, Reuss.
„ *acuticostata*, Reuss.
„ *spumosa*, Millett.
„ *lævis*, Mont., sp.
„ „ var. *distoma*, Silv.
„ *striata*, Orb., sp.
„ *sulcata*, Walker & Jacob.
„ *hexagona*, Will., sp.
„ *feildeniana*, Brady.
„ *gracilis*, Will.
„ *quinquelatera*, Brady.
„ *lævigata*, Reuss, sp.
„ „ var. *acuta*, Reuss.
„ *fasciata*, Egger, sp.
„ *quadrata*, Will.
„ *marginata*, Walker & Boys.
„ „ var. *semimarginata*, Reuss.
„ „ var. *seminiformis*, Schw.
„ *ventricosa*, Silv.
„ *staphyllearia*, Schw., sp.
„ *trigono-marginata*, Parker & Jones.
„ *wrightiana*, Brady.
„ *lagenoides*, Will., sp.
„ *quadralata*, Brady.
„ *formosa*, Schw.
„ *fimbriata*, Brady.
„ *alveolata*, Brady.
„ „ var. *substriata*, Brady.
„ *orbignyana*, Seg., sp.
„ „ var. *castrensis*, Schw.
„ „ var. *lacunosa*, Burr. & Holl.
Nodosaria calomorpha, Reuss.
„ (*Dentalina*) *communis*, Orb.
„ „ *consobrina*, Orb.

Nodosaria (*Dentalina*) *filiformis*, Orb.
„ „ *mucronata*, Neug., sp.
Rhabdogonium minutum, Reuss.
Vaginulina legumen, Linn., sp.
Cristellaria rotulata, Lam., sp.
„ *reniformis*, Orb.
„ *convergens*, Born.
„ *variabilis*, Reuss.
„ *articulata*, Reuss.
„ *tenuis*, Born, sp.
Polymorphina lactea, Walker & Jacob, sp.
„ *angusta*, Egger.
„ *lanceolata*, Reuss.
„ *sororia*, Reuss.
„ *seguenzana*, Brady.
„ *longicollis*, Brady.
Uvigerina canariensis, Orb.
„ *pygmæa*, Orb.
„ *angulosa*, Will.
„ *porrecta*, Brady.
„ *aculeata*, Orb.
„ *asperula*, Czjzek.
„ „ var. *ampullacea*, Brady.
„ *interrupta*, Brady.
Sagraina bifrons, Brady.
„ *virgula*, Brady.
„ *raphanus*, Parker & Jones.
Globigerina bulloides, Orb.
„ *triloba*, Reuss.
„ *rubra*, Orb.
„ *trochoides*, Reuss.
„ *conglobata*, Brady.
„ *æquilateralis*, Brady.
„ *dubia*, Egger.
„ *dutertrei*, Orb.
„ *subcretacea*, Chapm.
„ *sacculifera*, Brady.
„ *digitata*, Brady.
Orbulina universa, Orb.
Pullenia obliquiloculata, Parker & Jones.
Pullenia quinqueloba, Reuss.
„ *sphæroides*, Orb., sp.
Sphæroidina bulloides, Orb.
„ *dehiscens*, Parker & Jones.
Candeina nitida, Orb.
Patellina corrugata, Will.
Discorbina globularis, Orb., sp.
Truncatulina refulgens, Montf., sp.
„ *akneriana*, Orb., sp.
„ *ungeriana*, Orb., sp.
„ *wuellerstorfi*, Schw., sp.
„ *haidingeri*, Orb., sp.
„ *humilis*, Brady.
„ *tenera*, Brady.
„ *dutemplei*, Orb., sp.
„ *pygmæa*, Hantk.
„ *reticulata*, Czjzek, sp.
Anomalina grosserugosa, Gümbel, sp.
„ *polymorpha*, Costa.
Pulvinulina elegans, Orb., sp.
„ *exigua*, Brady.
„ *menardii*, Orb., sp.
„ „ var. *fimbriata*, Brady.
„ *tumida*, Brady.
„ *patagonica*, Orb., sp.
„ *canariensis*, Orb., sp.
„ *crassa*, Orb., sp.
„ *truncatulinoides*, Orb., sp.
„ *hauerii*, Orb., sp.
„ *pauperata*, Parker & Jones.
„ *favus*, Brady.
Rotalia broeckhiana, Karr.
„ *soldanii*, Orb.
„ *orbicularis*, Orb.
Nonionina depressula, Walker & Jacob, sp.
„ *umbilicatula*, Mont., sp.
„ *pompilioides*, Fichtel & Moll, sp.
Polystomella crispa, L., sp.
Amphistegina lessonii, Orb.

Abyssal Ostracoda (2000–2728 fms.).

Argillœcia affinis, Chapm.
Cythere parallelogramma, G. S. Brady.
„ *curvicostata*, G. S. Brady, var. *phylloides*, Chapm.
„ *dictyon*, G. S. Brady.
Krithe producta, G. S. Brady.
„ *hyalina*, G. S. Brady.
„ *angusta*, Brady & Norman.
Xestoleberis margaritea, G. S. Brady.

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EXPLANATION OF THE PLATES.

PLATE 54.

Fig. 1. *Biloculina lucernula*, Schwager, var. *striata*, nov. Sta. 20, 1215 fms. ×40.
2. *Virgulina pertusa*, Reuss. Sta. 3, 2715 fms. ×40.
3. *Cassidulina subglobosa*, Brady. Sta. 11, 1417 fms. ×40.

Fig. 4. *Cassidulina bradii*, Norman, var. *attenuata*, nov. Sta. 105, 2400 fms. ×80.
5. *Lagena botelliformis*, Brady. Sta. 150, 2438 fms. ×80.
6. ,, *spumosa*, Millett. Sta. 48, 2298 fms. ×80.
7. ,, *juddiana*, sp. nov. Sta. 13, 1050 fms. ×40.
8. ,, *lucida*, Williamson. Sta. 13, 1050 fms. ×40.
9. ,, *ventricosa*, A. Silvestri. Sta. 11, 1417 fms. ×40.

Plate 55.

Fig. 10. *Lagena quadralata*, Brady. Sta. 3, 2715 fms. ×80.
11. ,, *foveolata*, Reuss. Sta. 13, 1050 fms. ×80.
12. *Polymorphina lactea*, Walker & Jacob, sp., var. *oblonga*, Will. Sta. 20, 1215 fms. ×80.
13. *Globigerina trochoides*, Reuss. Sta. 11, 1417 fms. ×80.
14. *Discorbina globularis*, Orb., sp.: *a*, superior aspect; *b*, inferior aspect. Sta. 48, 2298 fms. ×80.
15. *Pulvinulina favus*, Brady. Sta. 3, 2715 fms. ×40.
16. *Rotalia cf. dentata*, Parker & Jones. Sta. 11, 1417 fms. ×80.

Plate 56.

Fig. 17. *Pontocypris davidiana*, sp. nov.: *a*, left valve; *b*, edge view. Sta. 13, 1050 fms. ×48.
18. *Argillœcia gracilior*, sp. nov.: *a*, left valve; *b*, edge view. Sta. 13, 1050 fms. ×48.
19. *Bythocypris sollasi*, sp. nov.: *a*, carapace seen from the right side; *b*, dorsal edge view; *c*, end view. Sta. 13, 1050 fms. ×48.
20. (?) *Bythocypris heterodoxa*, sp. nov.: *a*, left valve; *b*, edge view. Sta. 11, 1417 fms. ×48.
21. *Bairdia formosa*, G. S. Brady. Young specimen; left valve. Sta. 13, 1050 fms. ×48.

Plate 57.

Fig. 22. *Cythere curvicostata*, G. S. Brady, var. *funafutiensis*, nov. Right valve. Sta. 20, 1215 fms. ×48.
23. *Cythere sweeti*, sp. nov.: *a*, right valve; *b*, edge view. Sta. 19, 1485 fms.
24. *Cytherura tenuicosta*, sp. nov.: *a*, right valve; *b*, edge view. Sta. 11, 1417 fms. ×48.
25. *Cytheropteron assimilis*, G. S. Brady, var. *funafutiensis*, nov. Left valve. Sta. 10, 1485 fms. ×48.
26. *Bythocythere retiolata*, sp. nov.: *a*, right valve; *b*, edge view. Sta. 13, 1050 fms. ×48.
27. *Bythocythere tuberculata*, sp. nov.: *a*, right valve; *b*, edge view. Sta. 20, 1215 fms. ×48.
28. *Pseudocythere funafutiensis*, sp. nov. Left valve. Sta. 13, 1050 fms. ×48.

[N.B.—The new species and figured specimens will be placed in the Natural History Collection of the British Museum.]

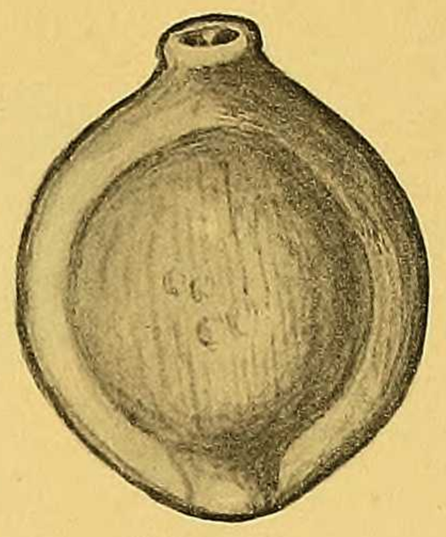
ERRATA IN JOURNAL, ZOOLOGY, NO. 202.

(Mr. CHAPMAN'S Paper.)

Page 444, 9th line from bottom, for *assimilis* read *assimile.*

PLATE **57.** The numbers 24 and 25 should be transposed.

2



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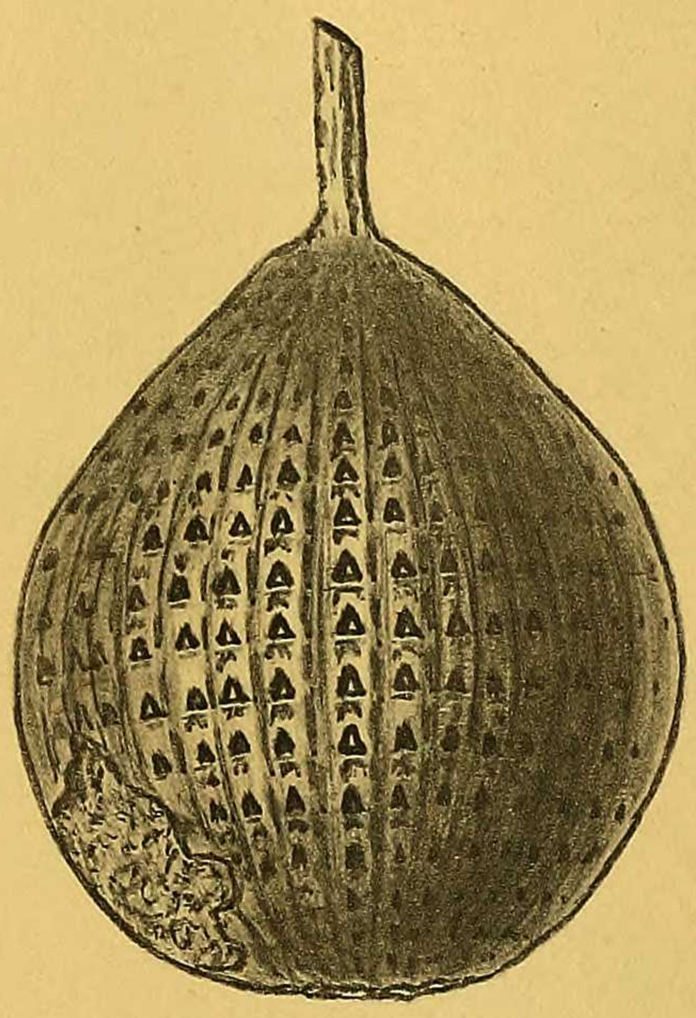

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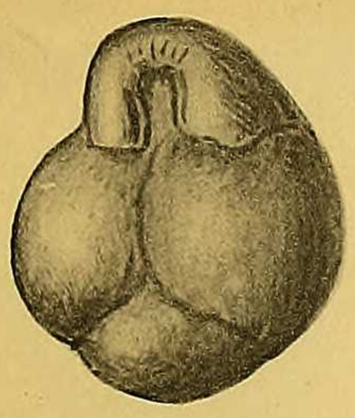

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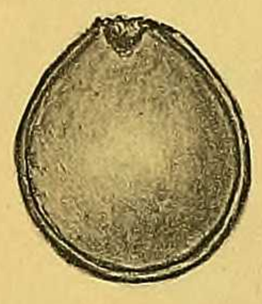

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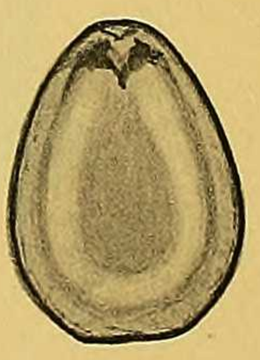

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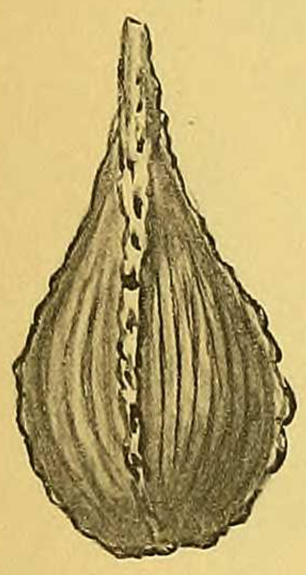

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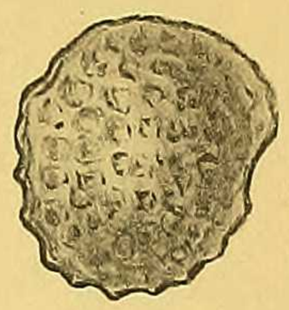

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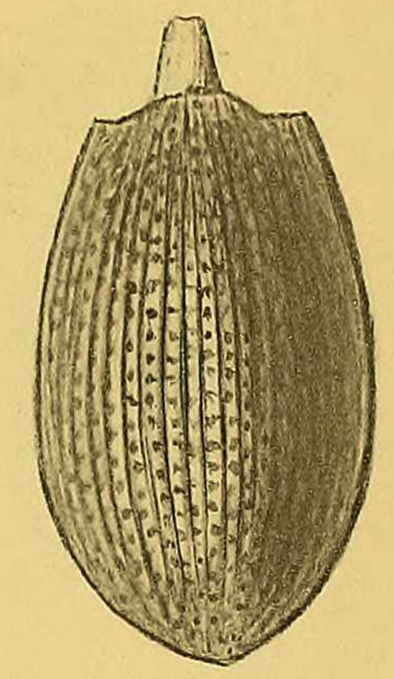

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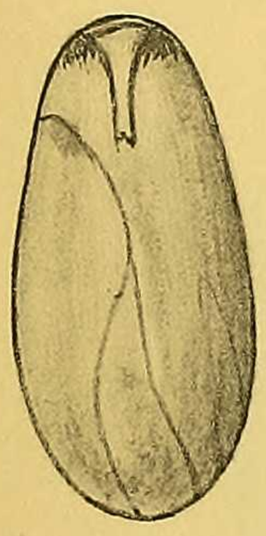

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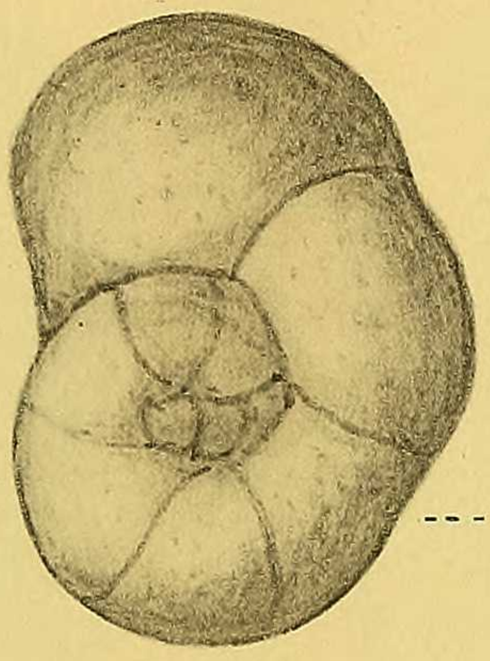

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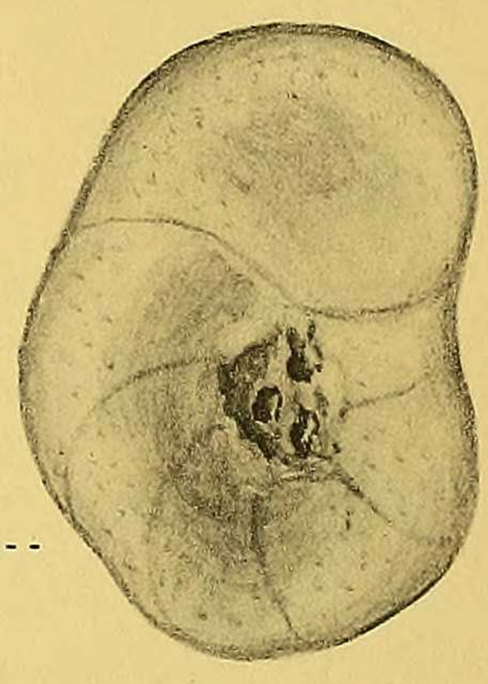

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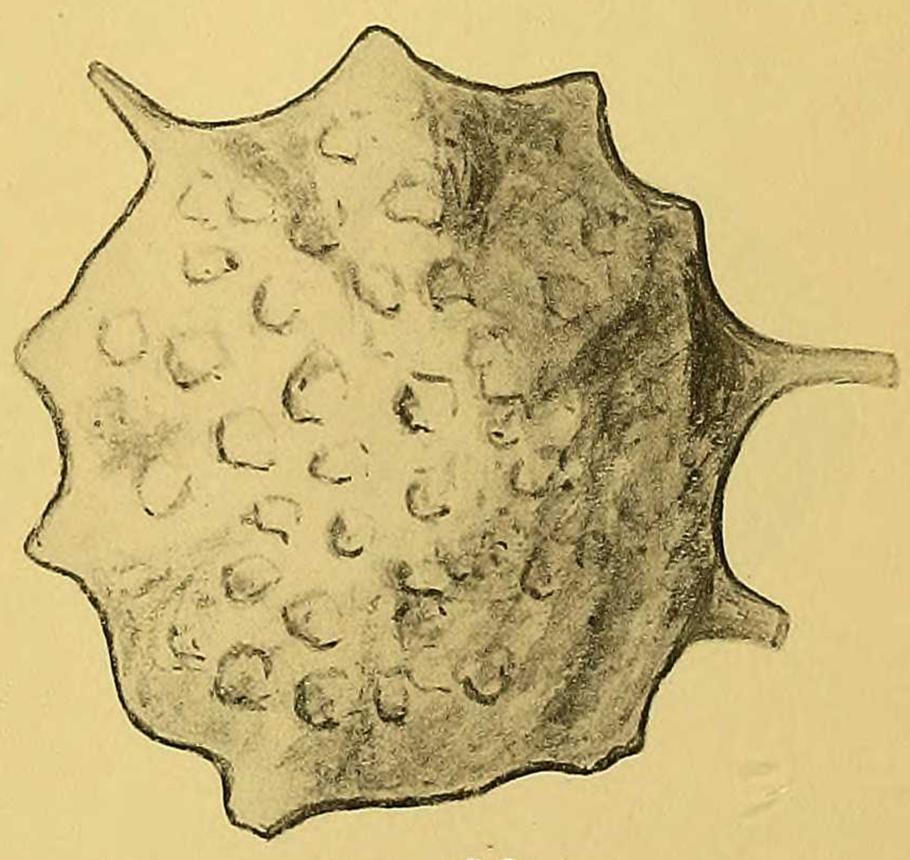

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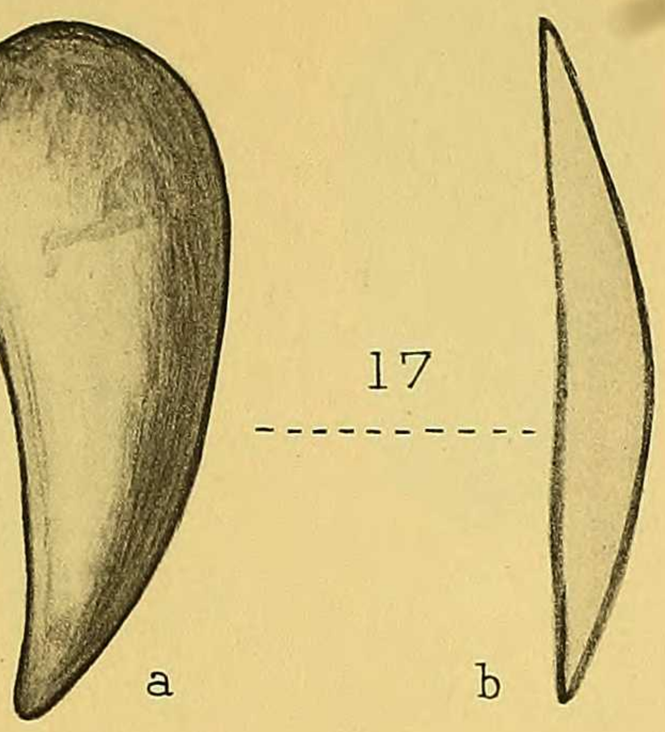

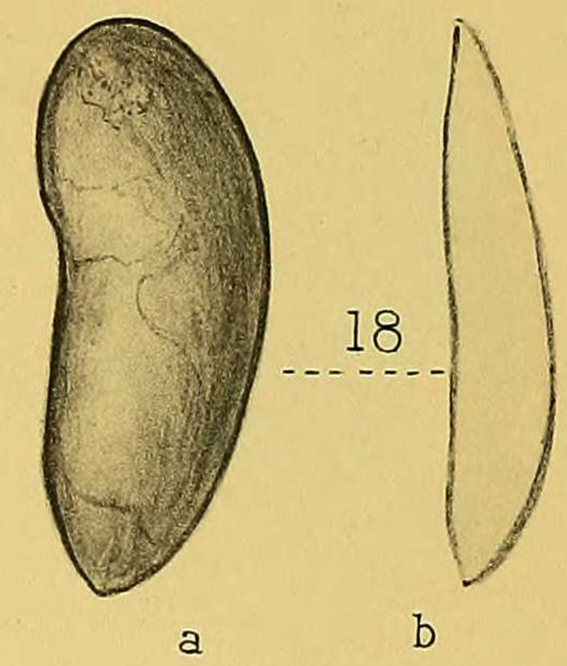

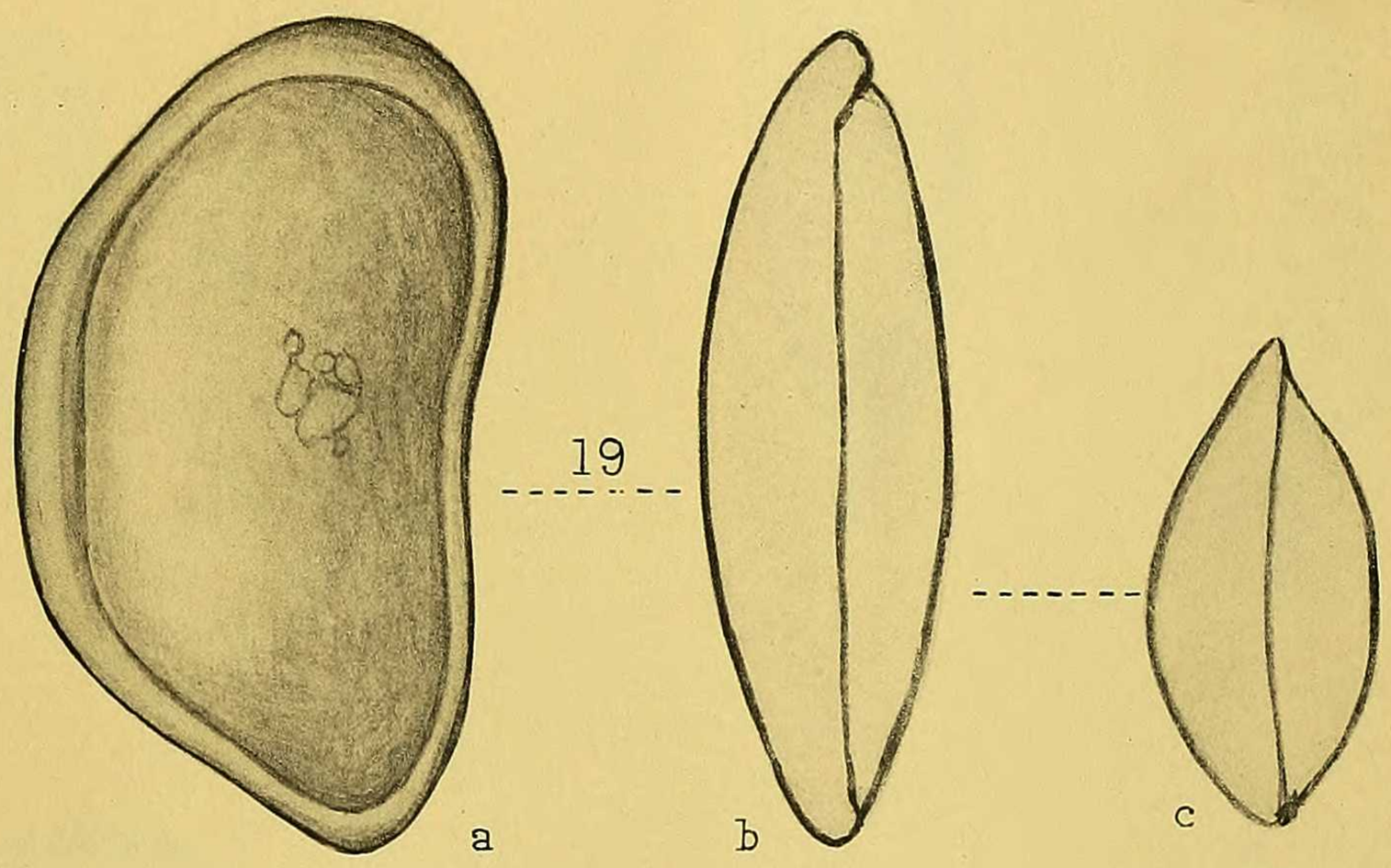

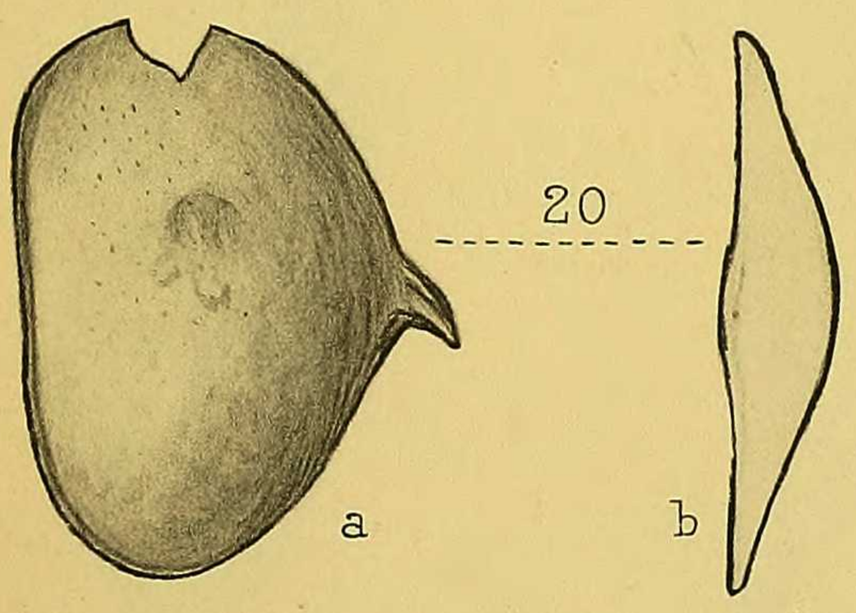

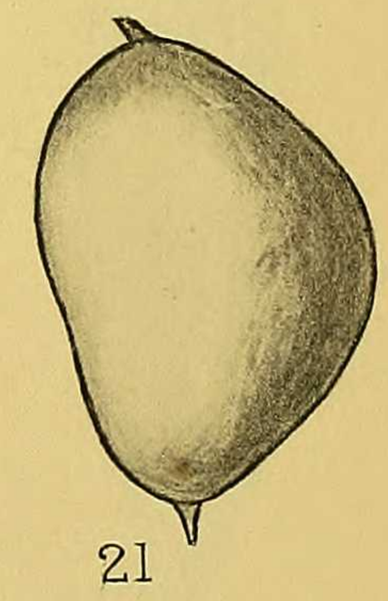

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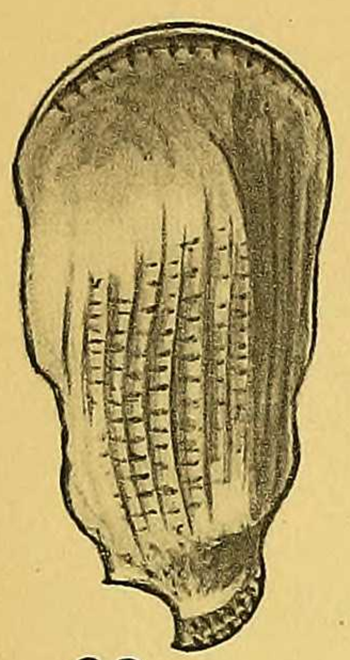

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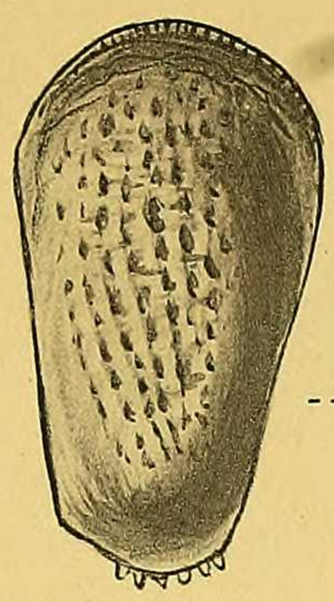

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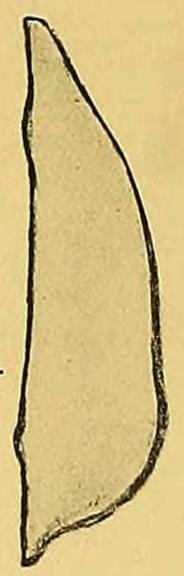

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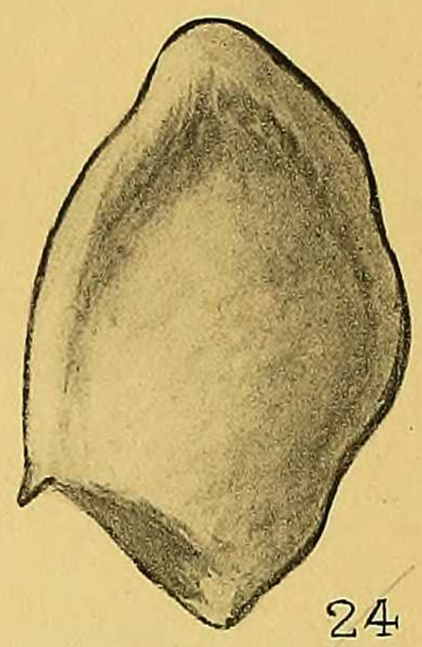

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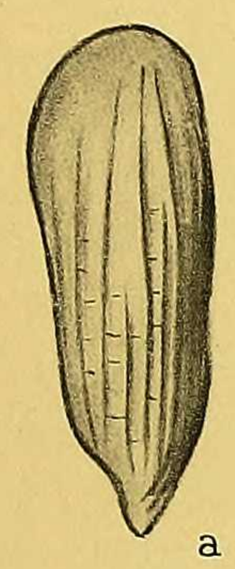

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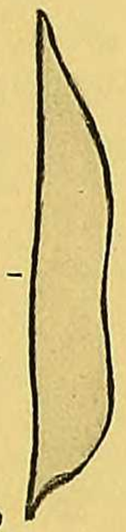

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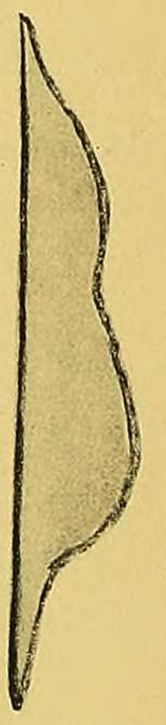

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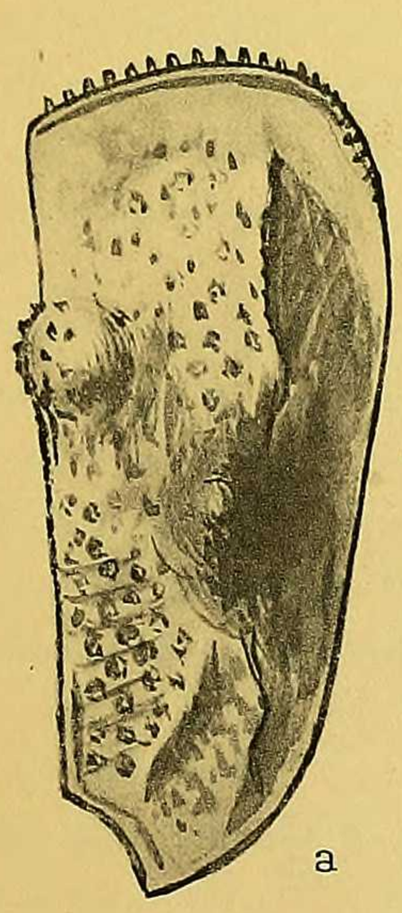

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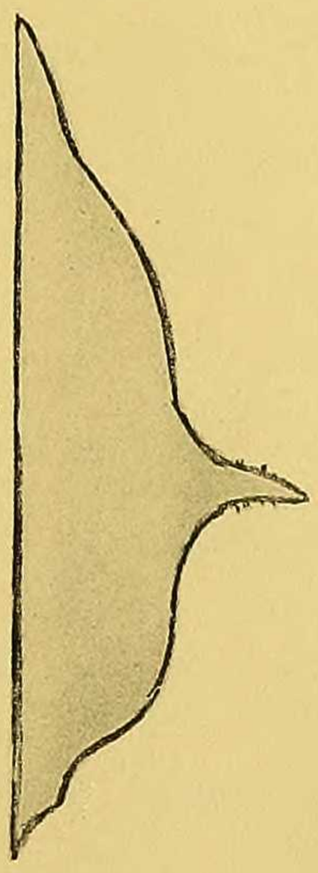

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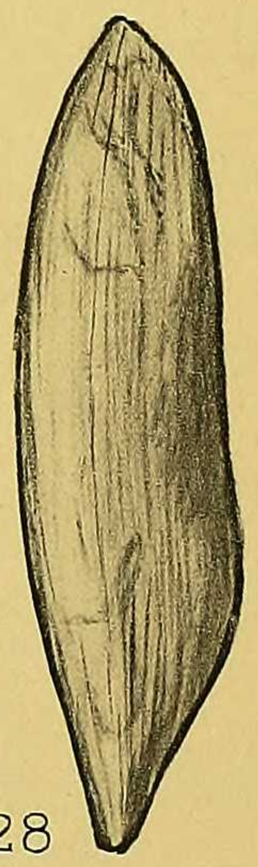

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