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THE RESULTS OF DEEP-SEA INVESTIGATION IN THE  
TASMAN SEA.

I.—THE EXPEDITION OF H.M.C.S. "MINER."

4. FORAMINIFERAL SAND DREDGED TWENTY-TWO MILES  
EAST OF SYDNEY AT A DEPTH OF EIGHTY FATHOMS.

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(Figs. 44-48).

The sand contains a good variety of forms. In the appended list the chief forms present are mentioned. This list is not a complete one, inasmuch as in the abundant material at hand additional forms must be present. It is intended to complete the list subsequently.

The material contains beautiful glauconite casts. This mineral (a hydrous silicate of potash and iron) is very noticeable as in-fillings in the species of *Lagena*, certain members of the Rotalidæ, and especially in the members of the Globigerinidæ. The restriction of the glauconite to these forms is very marked.

By far the most abundant forms present in the sand are members of the Globigerinidæ, the commonest species being *Globigerina bulloides*. There is a good representation of the genera and species of the family and corresponds closely with that in sand dredged off Wollongong at a depth of 100 fathoms.

The genus *Lagena* is very abundant and is represented by a fair number of species. Since such a great number of species of *Lagena* have been described and the naming of new species is objectionable unless some marked character of specific importance is detected, it has been deemed advisable not to name a few new forms whose characters fit in as variations or connecting links between named species.

*Lagena sulcata* is the most abundant form and shows great variation. Many forms—apiculate and winged—with slight and varied differences represent varieties of this species.

Quite a large number of *L. globosa* show an entosolenian tube.

The genus *Nodosaria* is remarkably scarce in the material.

Interesting non-spinous varieties of *Cristellaria calcar* are present. *Polymorphina alveoliniformis*, described by Jensen from

Byron Bay, at a depth of 111 fathoms, is well represented, the specimens being larger than those present in the Byron Bay material.

The Rotalidæ are well represented. A number of species of the Rotalinæ must subsequently be added to the list of those mentioned.

The most abundant member of the Nummulinidæ is *Polystomella macella*. This species shows great variation. Many specimens have the septal bridges very irregularly developed, approaching in that respect *Polystomella verriculata*.

The occurrence of *Allomorphina trigonula* in the sand is very interesting in connection with the distribution of that form.

The Nubecularidæ are represented chiefly by the genus *Planispirina*.

Although a good number of species of other members of the Miliolininæ have been detected, the individual species are remarkably poorly represented. Fairly common in the sand is a marine Diatom, *Amphora*, sp., allied to *Amphora polyzonata*.

The following is a general list of the species obtained so far as at present determined :—

*Family* NUBECULARIDÆ.

*Sub-family* MILIOLININÆ.

- Biloculina ringens*, Lamarck.
- Miliolina bicornis*, Walker and Jacob.
- „ *separans*, Brady.
- „ *trigonula*, Lamarck.
- „ *alveoliformis*, Brady.
- Planispirina exigua*, Brady.
- „ sp.
- Spiroloculina arenaria*, Brady.
- „ *teniseptata*, Brady.
- „ *limbata*, d'Orbigny.
- „ *impressa*, Terquem.
- „ *excavata*, d'Orbigny.
- „ *fragilissima*, Brady.
- „ sp.

*Sub-family* PENEROPLIDINÆ.

- Cornuspira involvens*, Reuss.
- Orbitolites complanata*, Lamarck.

*Sub-family* HAUERININÆ.

- Ophthalmidium inconstans*, Brady.  
 „ „ (variety oblong in shape).

*Family* ASTRORRHIZIDÆ.*Sub-family* ASTRORRHIZINÆ.

- Astrorhiza arenaria*, Norman.

*Sub-family* SACCAMMININÆ.

- Psammosphaera fusca*, Schulze.

*Sub-family* RHABDAMMININÆ.

- Hyperammia vagans*, Brady.

*Family* TEXTULARIIDÆ.*Sub-family* TEXTULARIINÆ.

- Textularia agglutinans*, d'Orbigny.  
 „ *sagittula*, DeFrance.  
 „ *trochus*, d'Orbigny.  
*Gaudryina subrotundata*, Schwager.

*Sub-family* BULMININÆ.

- Bolivina textularoides*, Reuss.  
 „ *pygmaea*, Brady.

*Family* CHILOSTOMELLIDÆ.

- Chilostomella ovoidea*, Reuss.  
*Allomorphina trigona*, Reuss.  
 „ sp.

*Family* LAGENIDÆ.*Sub-family* LAGENINÆ.

- Lagena sulcata*, Walter and Jacob.  
 „ *orbignyana*, Sequenza.  
 „ *sulcata* var. *annularis*, var. nov. (fig. 48)  
 „ *plumigera*, Brady.  
 „ *sulcata* (apiculate and winged varieties).<sup>1</sup>  
 „ *squamosa-marginata*, Parker and Jones.

<sup>1</sup> Brady—Chall. Rep., Zool., xlix, pl. lxii.

- Lagena striata*, d'Orbigny.  
 „ *hexagona* var. *lata*, var. nov. (fig. 44).  
 „ *globosa*, Montague.

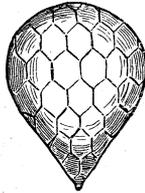


Fig. 44. x 150.

*Sub-family* NODOSARIINÆ.

- Nodosaria scalaris*, d'Orbigny.  
 „ *vertebralis*, Batsch.  
 „ sp.  
 „ *filiiformis*, d'Orbigny,  
*Cristellaria crepidula*, Fichtel and Moll (with young in  
 last chamber).  
 „ *calcar*, Linn.  
 „ „ (non spinous variety), (fig. 45).

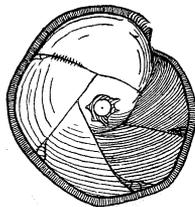


Fig. 45. x 75.

- „ *costata*, Fichtel and Moll.  
 „ *hasiwelli*, sp. nov. (figs. 46, 47).  
 „ *orbicularis*, d'Orbigny.  
*Prondicularia* sp.

*Sub-family* POLYMORPHININÆ.

- Polymorphina alveoliniformis*, Jensen, Proc. Linn. Soc.  
 N. S. Wales, xxix., 4, 1905, p. 821, Pl.  
 xxiii., figs. 8-12.

- Uvigerina pygmaea*, d'Orbigny.  
 „ sp. (forms intermediate between *U. pygmaea*  
 and *U. aculeata*).<sup>2</sup>  
*canariensis*, d'Orbigny

Family GLOBIGERINIDÆ.

- Globigerina bulloides*, d'Orbigny.  
 „ „ var. *triloba*, Reuss.  
 „ *cretacea*, d'Orbigny.  
 „ *linneana*, d'Orbigny.  
 „ *æquilateralis*, Brady.  
 „ sp. (small species with a textularoid arrange-  
 ment of chambers).  
*Orbulina universa*, d'Orbigny.  
 „ *porosa*, Terquem.  
*Hastigerina pelagica*, d'Orbigny.  
*Candeina nitida*, d'Orbigny.  
*Pullenia obliquiloculata*, Parker and Jones.  
 „ *quinquelobata*, Reuss.

Family ROTALIIDÆ

Sub-family SPIRILLININÆ.

- Spirillina limbata*, Brady.  
 „ „ var. *denticulata*, Brady.

Sub-family ROTALIINÆ.

- Truncatulina præcineta*, Karrer.  
 „ sp.  
 „ *lobata*, Walker and Jacob.  
 „ *wuellenstorffii*, Schwager.  
 „ *reticulata*, Czjzek.  
 „ *echinata*, Brady.  
*Planorbulina* sp.  
*Discorbina araucana*, d'Orbigny.  
 „ *biconcava*, Parker and Jones.  
 „ *vesicularis*, Lamarck.  
 „ sp.  
 „ *bertheloti*, d'Orbigny.  
 „ *parisiensis*, d'Orbigny.  
*Pulvinulina micheliniana*, d'Orbigny.  
 „ *menardii*, d'Orbigny.  
*Anomalina grosserugosa*, Gumbel.  
 „ *ariminensis*, d'Orbigny.

<sup>2</sup> Brady—Chall. Rep., Zool., xlix., pl. lxxiv., figs. 24-26.

*Rotalia* sp.  
 „ *calcar*, d'Orbigny.

*Sub-family* TINOPORINÆ.

*Polytrema miniaceum*, Linne.

*Family* NUMMULINIDÆ.

*Sub-family* POLYSTOMELLINÆ

*Polystomella macella*, Fichtel and Moll.

„ „ (variety approaching close to *P.*  
*crispa* and *P. subnudosa*).

„ *subnudosa*, Münster.

„ *crispa*, Linn.

*Sub-family* NUMMULITINÆ.

*Operculina ammonoides*, Gronovius.

*CRISTELLARIA HASWELLI*, *sp. nov.*

(Figs. 46, 47).

Only one specimen of this species has been seen.

The surface is quite smooth, and presents a glistening hyaline appearance.

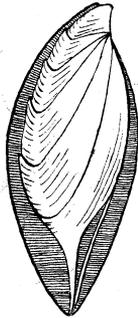


Fig. 46, x 100.



Fig. 47, x 100.

There is a well developed keel on either side. The general arrangement of the chambers resembles that seen in *Cristellaria lata*.

The septal lines are slightly limbate.

Length 3·4 mm. ; breadth 1·6 mm.

Fig. 46 represents the lateral view, and fig. 47 represents the front peripheral aspect.

LAGENA SULCATA, var. ANNULARIS, var. nov.

(Fig. 48).



This resembles *Lagenula sulcata* in general characters. The chamber is globular and is produced into an apical spine. The neck is smooth and devoid of any ornamentation. The ridges are fewer in number than in *Lagenula sulcata*. There is a well-developed annular ridging towards the aboral end of the test. On this account the variety might be termed

Fig. 48, x 150. *annularis*.