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ON SOME NEW CORALS FROM THE AUSTRALIAN TERTIARIES.

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of Lin. Soc., N.S.W.; Hon. Member.

[Read July 6, 1880.]

I propose to describe in this paper three new fossil corals. The first two were sent to me by Professor Tate, and are those referred to by him in his paper on the "Natural History of the Country around the Head of the Great Australian Bight" (Trans. Phil. Soc., Adelaide, 1879), at p. 107, in the following terms:—"Mr. J. Clark, telegraph-master at Eucla, has presented to me a few fossils and stones picked up by him on the surface [of the Bunda Plateau] at Fairlie's last camp, 80 miles N.N.E. from Eucla. The fossils* are undoubtedly older Tertiary, and though their tests are calcified and deeply stained with oxide of iron, yet as the matrix is a yellow crystalline limestone, I would refer them to the horizon of the upper bed of the Bunda Cliffs." This deposit he correlates with the upper set of fossiliferous beds of the R. Murray Cliffs, and with the Muddy Creek Miocene strata.

It will be seen from the following remarks that both the species are decidedly tropical in aspect. One belongs to a genus which is only known in the tropics; and whilst the other has representatives in the temperate seas of Australia, yet none of the existing species are of such a large size, and none of the forms peculiar to the temperate seas are in any way similar. These fossils form another link in the chain of evidence as to the semi-tropical character of the fauna of our Tertiary seas. They are certainly to be ranked as amongst the most interesting discoveries made, though the whole of our radiate Tertiary fauna is replete with features of interest and novelty.

In the section of tabular Madreporaria there are four families—two with great development of coenenchyma (Milleporidæ and Seriatoporidæ) and two with little or none (Favositidæ and Thecidæ). The Milleporidæ have a tabular foliaceous or massive coenenchyma, and the Seriatoporidæ have the same structure compact; there are four genera in the latter:—

* The species are—*Cerithium Nullarboricum*, Tate; *Plesiastrea*, sp., and *Seriatopora*, sp.

DENDROPORA—Cœnenchyma smooth, calices scattered.

TRACHYPORA—Cœnenchyma vermiculate.

RHABDOPORA—Cœnenchyma finely hispid, calices serial, septa very distinct.

SERIATOPORA—Septa scarcely visible.

The genus *Seriatopora* is thus defined—*Corallum* aborescent; *cœnenchyma* finely hispid; *calices* disposed in an ascending series; *columella* large, compact, and placed in the direction of the axis of the branches; *visceral chambers* obliterated completely in the course of growth.

It is doubtful whether there are ten species in all of this genus, but it is one of the most common on all the barrier reefs of Australia; and probably *Seriatopora subulata* is the most extensively distributed throughout the Pacific and Australian seas. There are no fossil forms known to me, unless those which may occur in the raised beaches on the coast of Java. The discovery of the present fossil (herein described as *Seriatopora antiqua*) in the Australian Tertiaries is a fact of great interest, especially as it has been found in a latitude far outside where any reef-building corals exist now.

Seriatopora antiqua, spec. nov.

The fragment is evidently a portion of a broad, compressed, and coalescent branch, resulting from the union of smaller ones, as in *S. subulata*. The branches are hollow. The *cœnenchyma* is very hard and compact, and shows no traces of structure where broken; it is much worn, but here and there exhibits traces of its hispid character in numerous worn granules. *Calices* about one millimetre in diameter, very close, surrounded by a raised ring, rather deep. *Columella* of the form of a large rounded tubercle, much higher than the septa, which are six in number, visible, but not conspicuously so.

The fragment is 25 millimetres long, ten thick, and fifteen wide; but there are also projections like the terminations of branches.

In the size of the calices and the distinctness of the septa, the species resembles *Seriatopora spinosa*, Ehrenberg, which is found in the Red Sea.

Plesiastrea grandis, spec. nov.

Corallum a much-worn fragment, about 65 millimetres high, 75 wide, and from 20 to 25 thick. The fragment is broken, so as to expose the plan of the calices and every kind of section. *Corallites* evidently radiating in a convex manner from a central disc; they are long, closely packed, and united by a

very abundant exotheca. *Calices* circular; *septa* in four cycles, three of which are of equal length. There are no calices sufficiently perfect to show the pali; but in section the septa are all much thickened close to the columella, which seems to have been compact. *Endotheca* very abundant, curved upwards from the columella, and showing eight or ten transverse partitions to each of the loculi. *Costæ* continuous with the septa, those belonging to the first cycle being very long, and showing no break at the wall, but passing through it into the septa. Sometimes, though rarely, the costæ are confluent with the costæ of the neighbouring calice, but in this case there is always a thin lamina of epitheca, which forms in section a secondary wall. The internal edges of the septa appear to have been dentate. The endotheca and exotheca are about equally abundant, and the fourth cycle of septa is rudimentary in some of the systems, and very small in all.

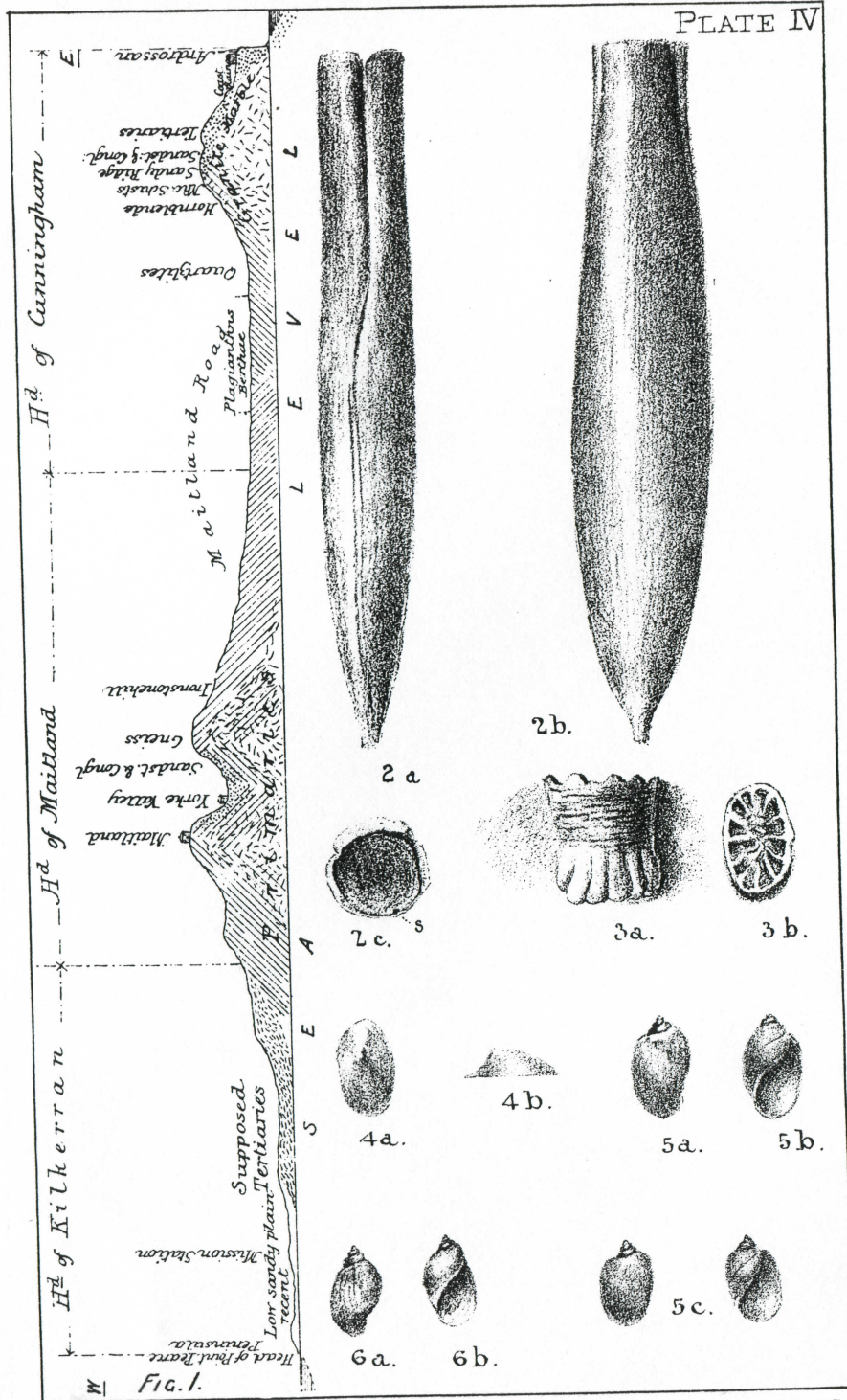
Diameter of calices, seven to eight millimetres.

I have already described one fossil species of *Plesiastrea*, *P. St. Vincenti* (Trans. Phil. Soc., Adelaide, 1878, p. 116), but it is much smaller than this species. The genus may be said to be almost an Australian one, and the discovery of two fossil species entitle it still more to this character. The present species is quite tropical in aspect, and would form reefs. It is unusually hard and compact in texture, and, like the fossil previously described, it is very ferruginous, which is not the case with *P. St. Vincenti*. The details are not very satisfactorily seen, but other specimens will doubtless be discovered in the course of time.

Microtrochus minutus, spec. nov.; Pl. iv., figs. 3a—3b.

The third species of coral here to be noticed is a minute fossil adhering to the base of a *Lunulite* from the Miocene beds of Muddy Creek. It probably belongs to the second or epithecated division of Trochosmiliaceæ, but being in a young state not anything very definite about its position can be stated, though I do not think it belongs to any described.

Corallum minute, not a millimetre in height, attached by one side to the base of *Lunulites cupola*, mihi; rather higher than broad. Side with six distinct costæ, which are larger towards the end. About half way up they are concealed by concentric layers of rugose epitheca, through which the costæ are faintly visible. *Calice* nearly circular, uneven at the edge. *Septa* twelve in number, undulating, sparsely spinous, finely granular, with toothed uneven edges. *Columella* represented by three or four twisted processes, which are joined to the septa. *Endotheca* doubtful, but apparently existing between some of the lower septa.



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