

## ON SOME TERTIARY AUSTRALIAN POLYZOA.

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THE following fossils were, with one exception, derived from the Mount Gambier polyzoan limestones, S. Australia. They correspond with the Middle Cainozoic, and while showing a tertiary facies are very distinct from the existing fauna, which is the more remarkable as polyzoa generally have a large chronological range.

The fossil polyzoa of Australia have scarcely attracted any attention from naturalists; the only description known to me being that of Professor Busk, in the Geological Society's Journal, 1859, and a paper by myself in the Proc. Royal Society, Victoria, for 1862. The field is therefore almost an untrodden one. The corals (*Alcyonaria*, &c.) have been more fortunate, and, thanks to the zeal and industry of the learned President of the Geological Society, Dr. Duncan, all the known Australian tertiary corals have been described.

ESCHARA CAVERNOSA, n.s. Fig. I.

Polyzoary, pedunculate, palmate; cells deeply immersed and concave, with a raised margin, aperture very large and round, sloping towards sides, giving a hood-like appearance in front, two large raised pores at base of each side of cell, others, however, when worn, have one large opening. Mount Gambier; rare.

ESCHARA PORRECTA, n.s. Fig. II, fig. III, single cell highly magnified.

Polyzoary, pedunculate, palmate; cells immersed, very long and slightly lozenge-shaped mouth raised towards summit, circular, slightly notched in front, with a sessile avicularium pore immediately below, another pore with a long channelled opening about the middle of the cell, the rest of the surface of which is irregularly reticulated with openings. Mount Gambier; rare.



ESCHARA CLARKEI, n.s. Figs. IV, V, VI, worn specimens, differently magnified, fig. VII, single cell, highly magnified.

Polyzoary pedunculate, palmate, or multiform; cells immersed, pyriform, rounded on the summit and raised round the margin, obtusely carinate in front; orifice rounded above, contracted below and slightly crescentic, with a raised margin; mouth sloping downwards so as to leave only half the orifice visible in front; a pore for the avicularium upon the summit. Surface, covered with distinct equal-sized rounded granules. The worn specimens of this fossil vary very much, the margin of the mouth narrowing like a funnel or spread out over the cell; slightly worn species have the mouth continuous into a kind of groove upwards. It is the prevailing form at Hamilton, and is generally found there in large expanded masses. At Mount Gambier it also occurs, but in short stems; the cells are quite visible to the naked eye, which makes the species one of the very few *Eschara* which is attractive in its ordinary appearance as a fossil, without being magnified. Muddy Creek, Hamilton, Victoria.

I have dedicated this species to the Reverend Vice-President of the Society.

ESCHARA VERRUCOSA, n.s. Fig. VIII.

Polyzoary expanded, cells arched with a raised spirally striated margin, surface covered with warty granules, the margin with pores, mouth crescentic and deeply immersed. Mount Gambier.

ESCHARA RUSTICA, n.s. Fig. IX.

Polyzoary branched, cells slightly raised, and marked on each side with three pores, gradually increasing in size and terminating in a large pore with a raised margin; mouth oval and raised, with a pore on each side of the margin for avicularia; the first pair of pores round and indistinct, somewhat closer than the other; second pair, round and deep; third pair much larger, oval and very deep; a sort of channel on each side of the raised terminal pore; the worn species have the mouth obliterated, and then look like rustic work in architecture. Mount Gambier; common.

ESCHARA ELEVATA, n.s. (*Monilifera*?). Fig. X.

Polyzoary branched, cells raised and marked on each side with a linear series of pores, meeting at the apex of the cell; six or eight in each series; mouth simple, oval, and produced. Mount Gambier; rare.

This may perhaps be a worn species of *E. monilifera*.—Busk.



ESCHARA LIVERSIDGEI, n.s. Fig. XI, nat. size; fig. XII, magnified; fig. XIII, highly magnified.

Polyzoary expanded, cells obscure, mouth rounded above, expanded below, underneath three large pores disposed in a triangle, or two above and one below; on each side of the lower one obscure pores may be traced; lower lip of orifice with a narrow sinus. Mount Gambier; not common.

I have dedicated this species to your Secretary, the learned Professor of Mineralogy.

ESCHARA OCULATA, n.s. Fig. XIV.

Polyzoary expanded or dichotomously branched, cells much raised, subtubular, and covered with irregularly-shaped pores of various sizes disposed unsymmetrically; mouth circular, simple. The irregularity on the pores of this species makes it difficult to recognize if it is at all worn. In the old specimens they coalesce and look like mouths, in the younger species it appears as if there were always three oval pores radiating symmetrically from the mouth. Mount Gambier; common.

ESCHARA TATEI, n.s. Fig. XV.

Polyzoary dichotomously marked with elongated cells surrounded by a raised margin, which is expanded above, and slightly concave about the mouth; two rows of pores with four or five in each; mouth round, with a raised margin, which is sinuated below.

*Observation.*—This fossil when worn and the mouth obliterated shows only the raised margin of the cell with the pores enlarged, so as to form a kind of net-work in front. The pores sometimes join to form one row at the base of the cell if it is narrow, which, as the cells are crowded and not regularly quincuncial, is frequently the case.

This species I have dedicated to Professor Tate, of the Adelaide University.

ESCHARA BUSKII, n.s. Fig. XVI highly magnified, fig. XVII nat. size.

Polyzoary expanded, branched; the branches lobate, cells quincuncially arranged; mammillated so as to make a rounded raised margin to the cells, which gives the frond a warty appearance, very porous, with three larger pores on the inferior lip triangularly disposed, orifice round and immersed. A very common fossil at Mount Gambier.

I have named this species after Professor G. Busk, F.R.S., &c., the greatest living authority on Polyzoa, and almost, we may say, the founder of its classification.



*PUSTULIPORA UNGULATA*, n.s.

Polyzoary cylindrical, dichotomously branched; cells very slightly projecting and disposed in circles at equal distances, longitudinal lines of cells of different circles spiral; transverse section shows six partitions rayed liked the spokes of a wheel. Common; Mount Gambier.

*TUBULIPORA GAMBIERENSIS*, n.s.

Polyzoary erect, adhering by a slender cylindrical root; cells dispersed on one side, but a few tubes sometimes opening behind near the margin; tubes simple, slightly recurved, long and crowded, distinctly traceable behind but faintly so in front; mouth simple, disposed in irregular spiral lines in front; when worn the mouths are very plain in lines almost encircling the cylindrical axis. Mount Gambier; not common.

*PUSTULIPORA CORRUGATA*, n.s.

Polyzoary cylindrical, branched or lobed in the thicker specimens; cells tubular, recurved, a very prominent irregularity disposed all round, and distant space between the cells corrugated or wrinkled. In what seems to be the older branches of this fossil the cells are much closer and more numerous, the corrugations on the interspace cannot be traced and the branches are terminated by congeries of sessile cells. Mount Gambier, limestone; very common.

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*Conclusion.*—The publication of these fossils may serve to identify the beds in other localities. The zone itself, whether met at Mount Gambier, Narracoorte, Cape Otway, Portland, or Table Cape, Tasmania, is pretty constant in character, being one immense mass of foraminifera, polyzoa, with few broken shells, echini, teeth, &c., all showing a very deep sea deposit. It indicates probably the lowest depths of subsidence in our tertiary seas—and a depth of over 300 fathoms.

[Plates.]



# TERTIARY AUSTRALIAN POLYZOA

Fig. I

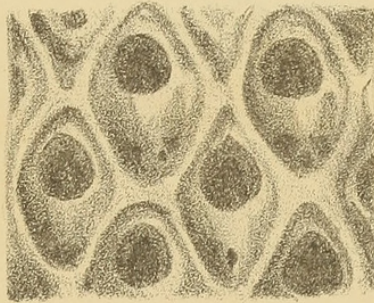


Fig. II

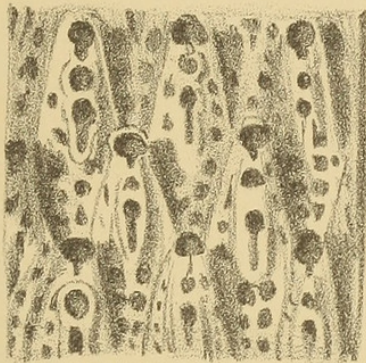


Fig. III



Fig. VI

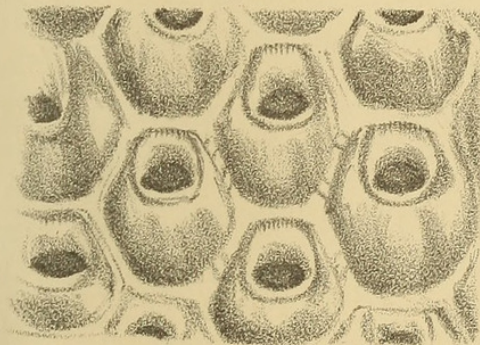


Fig. V

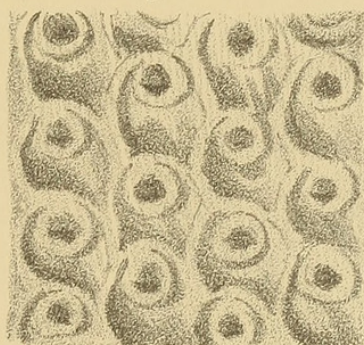


Fig. IV

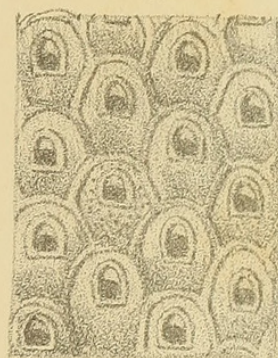


Fig. VII

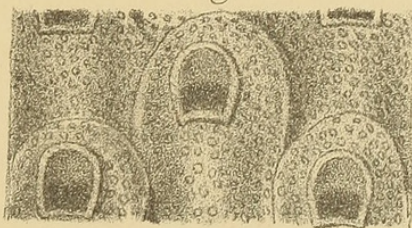


Fig. VIII

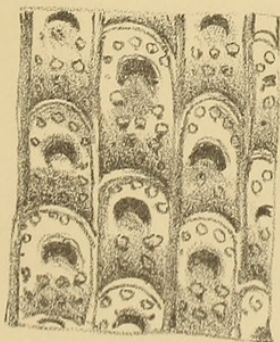
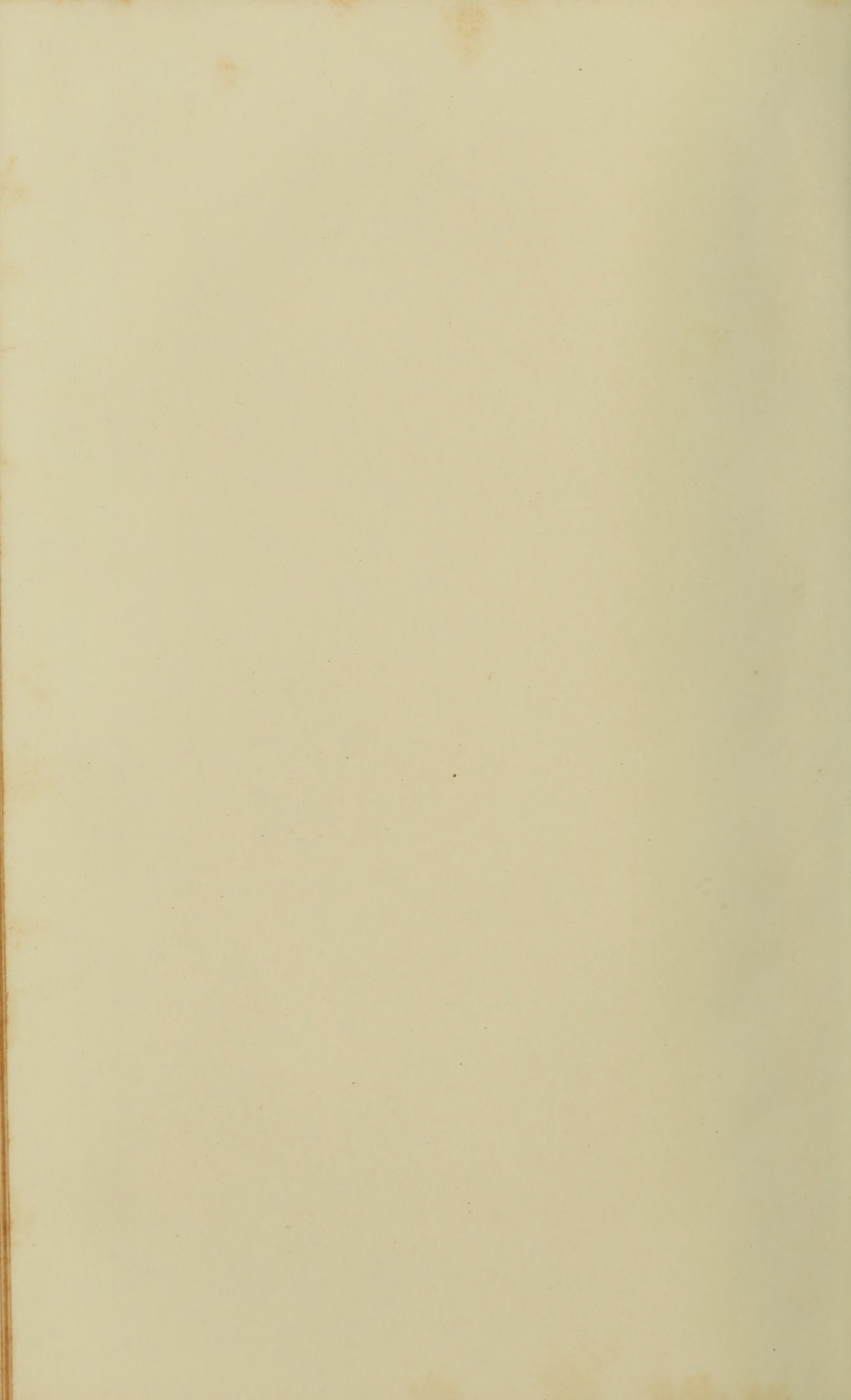


Fig. IX



I. *Eschara cavernosa*  
II & III. *Eschara porrecta*  
IV, V, VI & VII. *Eschara Clarkei*

VIII. *Eschara verrucosa*  
IX. *Eschara rustica*





# TERTIARY AUSTRALIAN POLYZOA

Fig. X

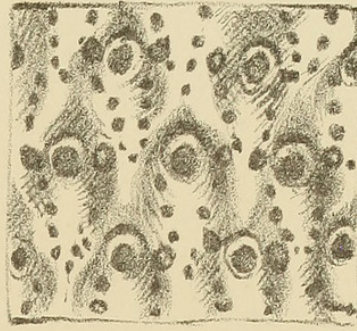


Fig. XII

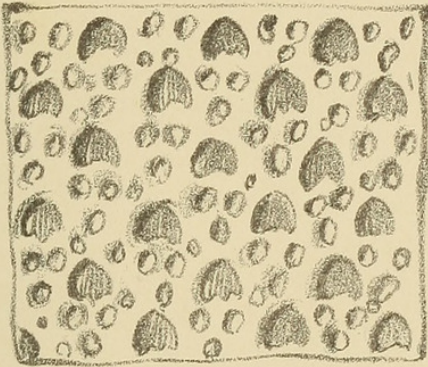


Fig XIII

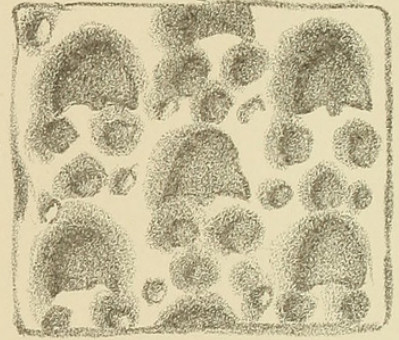


Fig. XI



Fig. XIV

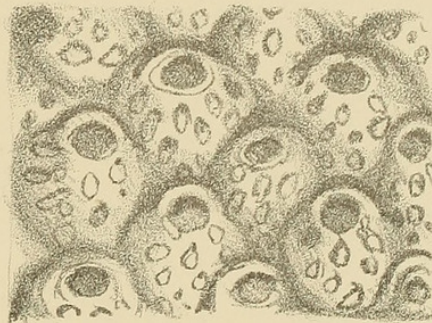


Fig. XV

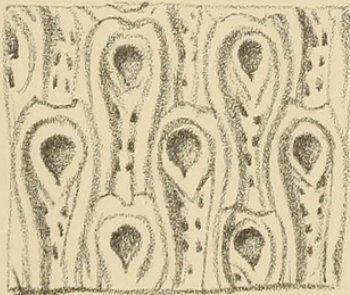


Fig. XVI

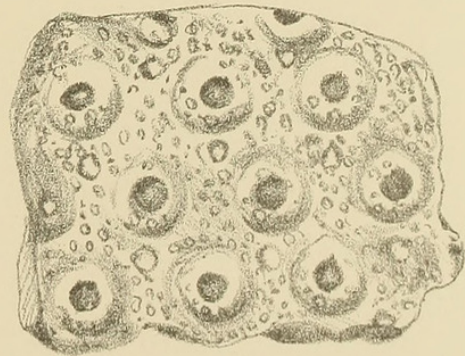


Fig. XVII



- X. *Eschara elevata* (monilifera?)  
 XI, XII & XIII. *Eschara Liversidgei*,  
 XIV. *Eschara oculata* n.s. Syn *E. oculata*? Busk Jour. Geo. Soc. 1859.  
 XV. *Eschara Tatei*  
 XVI & XVII. *Eschara Buskii*







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