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Art. XVII.—*On the Occurrence of a Fossil Hydractinia in Australia.*

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(With Plate VIII.)

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Whilst sorting and arranging the great amount of fossil material in the National Museum, I came across, many years ago, a unique specimen of *Hydractinia* from the Miocene of the Murray River Cliffs. This specimen was found, among other fossils from the same locality, in a collection made by the late J. B. Thatcher, an indefatigable collector who has enriched, not only the National Museum, but many others. To him I have dedicated this rare species.

Notes on the Genus.

The peculiar group of the Hydractiniidae is interesting to palaeontologists on account of their supposed affinity with the geologically important reef-building hydroids of the Palaeozoic rocks (Ordovician to Permo-Carboniferous). G. B. Twitchell (1929) has lately contended this point in favour of their being ancestral to the Demospongiae.

The genus *Hydractinia*, to which the present specimen belongs, is characterised as an encrusting hydroid, which forms a fibrous or reticulating perisarc or hydrophyton, with an echinate or papillate surface. The " horn cells," at the base of the attached organism, according to Nicholson, give rise to primitive radial pillars, united by the radiating, horizontal processes or fibres, and this basal lamina corresponds morphologically with the fundamental structure of the stromatoporoids.

The living species of *Hydractinia* are often found encrusting gasteropod shells occupied by living hermit crabs, in which case we can hardly suppose the association with the crabs to be accidental. In most of the living forms the hydractinian perisarc is chitinous, but in the fossil forms they are more often calcareous, as in the present example. H. J. Carter (1873, p. 3) has shown, in the case of *Hydractinia echinata*, how a shell that forms a surface of attachment may be dissolved or absorbed by the parasitic hydroid.

There are many supposedly related forms to the Hydractiniae. They include *Stoliczkaria* and *Heterastridium* from the Trias; *Sphaeractinia* and *Ellipsactinia* from the Upper Jurassic; the globular and verrucose *Parkeria* from the Gault (Lower Creta-

ceous); *Porosphaera* from the Upper Cretaceous; and *Loftusia* from the Eocene. The structural relations in these genera are discussed by Regny (1901, p. 152).

Description of the Specimen.

HYDRACTINIA THATCHERI, sp. nov.

(Plate VIII.)

Description.—Perisarc calcareous, of a dark cream colour, moderately thin; surface covered with a closely packed series of conical and apically rounded spines. These spines have smooth surfaces, and on and around the apices are as many as a dozen or more rounded apertures with the inner face of the foramen depressed; they probably represent the sunken and grooved orifices, the astrorhizae of the stromatoporoid organism. The hydrophyton encrusts what was in all probability a gasteropod shell, of the form and size of a *Nassarius*, although the actual shell was later dissolved and absorbed by the hydractinian, as is so frequently the case in living examples. The edges of the perisarc tend to curl away from the general surface of attachment, and to become thicker there than on the attached region. The surface between the papillate spines, although smooth when slightly magnified, shows under a high power a finely porous surface.

Dimensions.—Extent of hydrophyton, 18 mm. in longest diameter, corresponding to the length of the original gasteropod shell; greatest width, 11·5 mm. Average length of spines, 0·7 mm.; width near apex, 0·5 mm. Foramina on spines having a diameter, circ. 0·04 mm.

Occurrence.—In the shell-bearing polyzoal limestone of the River Cliffs of the Murray, South Australia.

Age.—Middle Miocene (Middle Murravian).

Collected by the late J. B. Thatcher. Holotype in the National Museum, Melbourne. (Reg. No. 3831.)

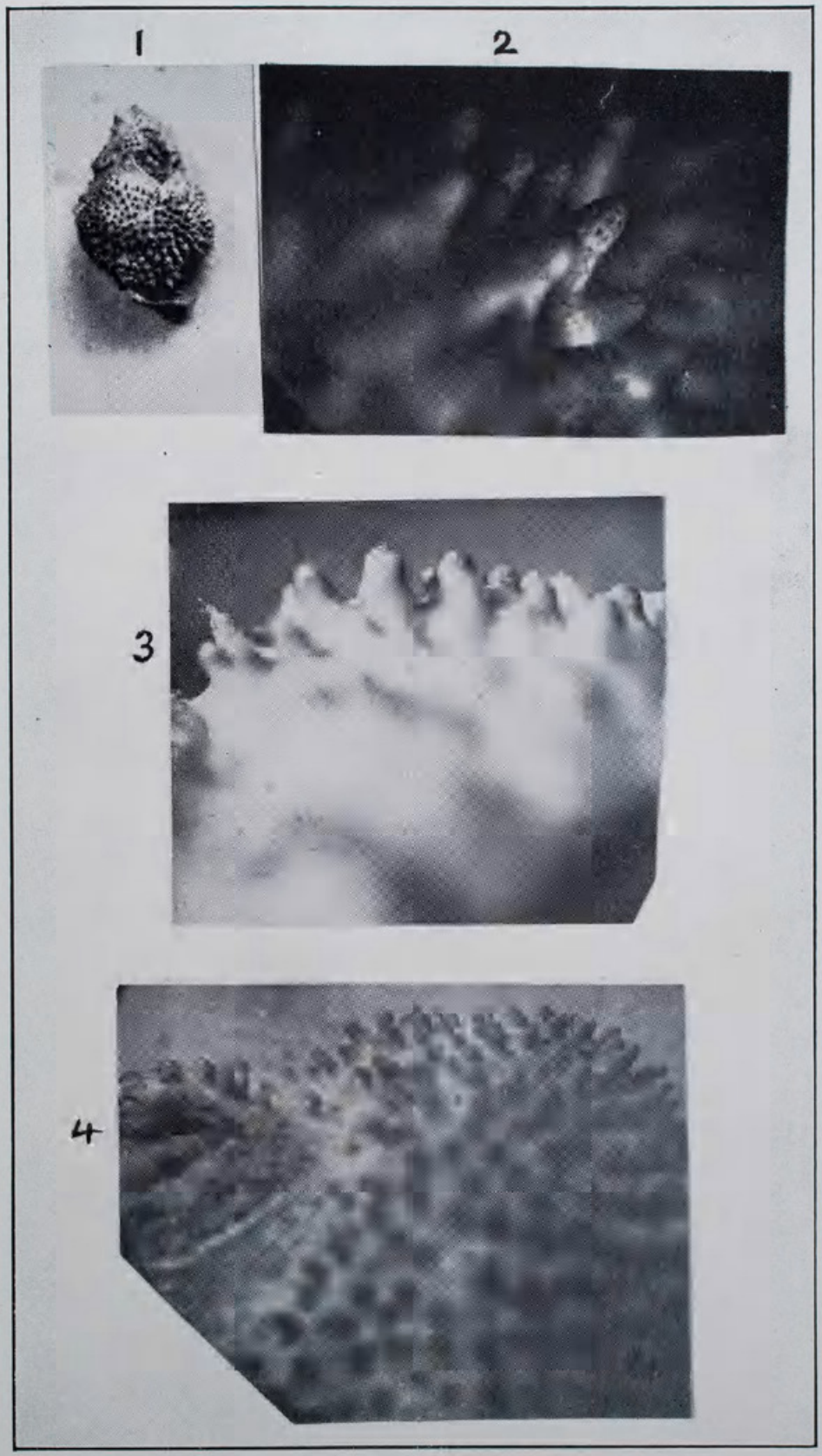
Previously Recorded Species of the Genus.

Recent Species.—

H. arborescens Carter (chitinous). Polynesia.
H. calcarea Carter (calcareous). Cape Palmas.
H. echinata (Fleming) (chitinous). North Sea and Mediterranean.
H. levispina Carter (chitinous). Mediterranean.
H. polyclina Agassiz. Mediterranean.

Fossil Forms.—

H. pliocaena Allman. Pliocene (English Crag).
H. michelini Fischer. Pliocene (Italy).
H. saccoi Regny, and vars. *longispina* and *bifida*. Pliocene (Italy).



F.C. photo.

Hydractinia thatcheri, sp. nov. Miocene: South Australia.