

# ARKIV FÖR ZOOLOGI

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Band 1 Nr 10

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OSKAR CARLGREN

Corallimorpharia, Actiniaria  
and Zoantharia from New South Wales  
and South Queensland

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**Corallimorpharia, Actinaria and Zoantharia from New South Wales and South Queensland**

By OSKAR CARLGREN

With 3 plates and 16 figures in the text

Our knowledge of the Seaanemones and Zoantharia living at the southeast coast of Australia is rather imperfect. The present paper is the result of an examination of two small collections sent from Sydney in 1937 and 1947 by Mr. MELBOURNE WARD and Professor DAKIN to Professor T. A. STEPHENSON, who has left them to me for determination. Later Professor DAKIN has sent me some more species, photos and coloured films of several species together with notes about the distribution of the species, which has facilitated the determination. As to the ecology of some forms I refer to the paper of DAKIN, BENNETT and POPE (1948).

The collection contains the following species:

<i>Corynactis australis</i> Hadd & Duer.	<i>Cnidopus verater</i> (Drayt.)
<i>Actinia tenebrosa</i> Farqh.	<i>Antheopsis australiensis</i> n. sp.
<i>Actinia australiensis</i> n. sp.	<i>Stoichactis Kenti</i> (Hadd. & Shackl.)
<i>Oulactis muscosa</i> (Drayt.)	<i>Anthothoë albocincta</i> (Hutt.)
<i>Phlyctenanthus australis</i> (n. gen.) n. sp.	<i>Calliactis miriam</i> (Hadd. & Shackl.)
<i>Phlyctenactis tuberculosa</i> (Quoy & Gaim.)	<i>Epiphellia australis</i> n. sp.
	<i>Palythoa australiensis</i> n. sp.

**Corallimorpharia**

*Corynactis australis* Hadd. & Duerd.

*Corynactis australis* n. sp. Haddon and Duerden 1896 p. 151 Pl. VII figs. 6-10, Pl. VIII figs. 9, 10, Farquhar 1898 p. 532, Stuckey 1909 p. 390.

As the anatomy is well described by HADDON and DUERDEN I give here only information about the nematocysts. The nematocysts of the column are partly 30-42.3 × 7-12 μ, common, holotrichs; partly 35.2-39.5 × 7.5-11.3 μ microbasic *p*-mastigophors, probably hoplotetic; partly 19.7-21 × 4.2-5.6 μ, microbasic *b*-mastigophors; those of the acrospheres partly 56.4-66.3 × 14-15.5 μ, holotrichs, partly 26.8-39.5 × 4.2-5.6 μ, scarce, partly 46.5-56.4 × 4.2-5 μ, very numerous, both microbasic *p*-mastigophors, partly 33.8-36.7 × about 3.5 μ, microbasic *b*-mastigophors; those of the tentacle-stem partly 62-67.7 × 15.5-16.9 μ, holotrichs, partly 28.2-35.2 × 4.2-6.3 μ, few, partly 46.5-63.4 × 5.6-6.3 μ very numerous, both microbasic *p*-mastigophors, partly 28.2-38.1 × 3.5-4.2 μ microbasic *b*-mastigophors; those of

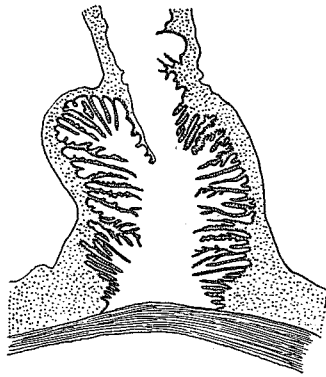


Fig. 14.

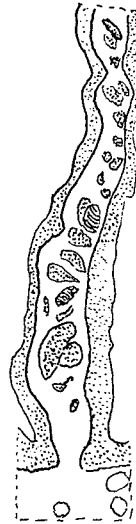


Fig. 15.



Fig. 16.

parietal muscle of same mesentery. Some of the oldest microcnemes are provided with filaments and acontia.

Size in preserved state: length 3.5 cm, largest breadth 0.8 cm, length of the inner tentacles 0.3 cm.

Occurrence: New South Wales, Port Jackson; MORTENSEN. 1 specimen.

I cannot identify the species with *Phellia browni* and *Phellia capitata* (WILLSMORE 1911 p. 46, 50), though they are probably related to each other.

### Zoantharia

#### *Palythoa australiensis* n. sp.

The polyps are elongate, very close set and hanging together with an inconsiderable coenenchyme. The column is very incrustated by sand occupying about half of the thickness of the mesogloea, its ectoderm is high, probably discontinuous and provided with holotrichs, microbasic *b*-mastigophors and numerous zooxanthellae. The mesogloea of the column is thick and has numerous larger and smaller cell-islets with zooxanthellae. Owing to the strongness of the incrustation of the scapulus it was difficult to get a good figure of the sphincter but it seems that the sphincter forms a single row of muscle meshes as usually in *Palythoa*. The scapular ridges are very strong but mostly not visible in contracted state of the column. The ecto-

derm of the tentacles is high and provided with microbasic *b*-mastigophors, numerous spirocysts and zooxanthellae. The actinopharynx is folded, its ectoderm high, the siphonoglyph ordinarily developed, aborally a little prolonged. The mesenteries are in larger polyps between 60 and 70 in number, of 3 examined specimens, one has 68, a second 34 mesenteries in the one half, and the third 64 mesenteries. The mesenterial muscles are very weak. The canal system of the mesenteries is very well developed, also in the upper part (fig. 15: section of a part of a macromesentery in the region of the actinopharynx) and contains holotrichs. There is in the middle part of the mesenteries a single large canal which at the base towards the column runs out into many lappets giving the canal system of the lowest part of the macromesenteries a rather compact appearance. Isolated canals occur between the lappets. The figure 16 shows the canal system in the lowest part of a macromesentery, the distribution of the holotrichs are not figured (several macromesenteries examined showing about same appearance). The nematocysts of the column are partly 41–46.5 × about 15–21 μ, holotrichs, rather common, partly 10–24 × 3.5–5 μ microbasic *b*-mastigophors (in the uppermost part of the column 10–17 × 3.5–4.2 μ in the scapus 17–24 × 3.5–5 μ); those of the tentacles partly 41–49 × 19.7–24 μ, holotrichs, (partly 28.2–4 μ, microbasic *b*-mastigophors, very rare); those of the actinopharynx 28.2–35.2 × 4.2–5 μ microbasic *b*-mastigophors; those of filaments partly 50–60.5 × 4.2–5.5 μ, microbasic *b*-mastigophors, numerous, partly 17–24 × 3.5–5 μ, microbasic *p*-mastigophors, rather common, partly 49.3–57.8 × 24–28 μ, holotrichs; those of the mesenterial canals 42.3–50.8 × 21–24 μ, holotrichs.

Colour in preserved state: light brown.

Size of the largest polyps: length up to 4–5 cm, breadth 0.6–0.9 cm.

Occurrence: New South Wales, Nambacca Heads about 300 miles north of Sydney; the species found only on this locality (DAKIN, BENNETT and POPE 1948 p. 182) 1 large and 1 small colony.

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## Actinaria and Zoantharia from South and West Australia

with comments upon some Actinaria  
from New Zealand

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By OSKAR CARLGREN

With 24 figures in the text

The present paper is based on three small collections, the one made at the coast of Eyre's Peninsula in South Australia by Mr. EDMONDS at the University of Adelaide, the others embracing also Zoantharia in West Australia by Mrs. MARSH at the Nedland University and Professor GISLÉN at the University of Lund. The Actinian fauna of Eyre's Peninsula is unknown and that of West Australia is described only by LAGER (1911) and a single species by GRAY (1861), and therefore our knowledge of the South and West Australian Actiniaria and Zoantharia may be partly completed by the present paper. Mr. EDMONDS and especially Mrs. MARSH have provided the specimens with notes of the colour and habitat of the animals. Some of the specimens are new to science. Unfortunately the species described by LAGER were probably lost during the war, only co-types of three species, *Saccactis mc murrichi* and *musculosa* and *Isactinia carlgreni* are kept in the Riksmuseum of Stockholm so that it is not easy to identify LAGER's species. At the end of this paper I shall comment upon some species from New Zealand.

The Australian species treated here are:

<i>Actinia tenebrosa</i> Farqh.	<i>Radianthus concinnata</i> (Lag.)
<i>Anemonia Carlgreni</i> (Lag.)	<i>Cricophorus nutrix</i> (Stuck.)
<i>Oulaetis mc murrichi</i> (Lag.)	<i>Actinothoë glandulosa</i> n. sp.
<i>Anthopleura aureo-radiata</i> (Stuck.)	<i>Anthothoë albocincta</i> (Hutt.)
<i>Isanemonia australis</i> Carlgr.	<i>Isaurus Cliftoni</i> (Gray)
<i>Cnidopus verater</i> (Drayt.)	<i>Zoanthus praelongus</i> n. sp.
<i>Epiactis australiensis</i> Carlgr.	<i>Zoanthus Marshi</i> n. sp.
<i>Bunodactis maculosa</i> n. sp.	<i>Palythoa densa</i> n. sp.
<i>Phlyctenactis tuberculosa</i> (Quoy & Gaim.)	<i>Palythoa heideri</i> n. n.
<i>Actinogeton Sesere</i> (Hadd & Shackl.)	

**Actiniaria**

*Actinia tenebrosa* Farqh.

Literature see CARLGREN 1924 p. 196, moreover CARLGREN 1950 p. 132, PARRY 1951 p. 100.

Occurrence: W. Australia Moderap rocks, Cottesloe; Rottnest and Garden Islands and on the coast of W. Australia as far north as Heron Isl. and at mouth of Murchison

*Anthothoë albocincta* (Hutt.)

Literature and synonyms see CARLGRÉN 1950a, moreover ? *Actinothoë albocincta* CARLGRÉN 1949 p. 103, PARRY 1951 p. 89.

I have earlier described this specimen (1950a). The cinclides are situated on distinct papillae irregularly arranged, especially in the middle of the body. The sphincter shows a similar appearance as that I have noted in 1950. Also the size of the nematocysts is about the same I have previously found.

Occurrence: S. Australia Eyre's Peninsula Lonth Bay—under rocks and in crevices.

Further distribution: New Zealand, New South Wales.

Size of the largest species in formalin: height about 1 cm, pedal disc 1.5–0.9 cm.

Colour not noted.

**Zoantharia**

*Isaurus cliftoni* (Gray)

*Pales cliftoni* Gray 1857 p. 235 fig. 1.

? *Isaurus cliftoni* Haddon and Shackleton 1891 p. 630, 1891a p. 683.

Body solitary or collected in clusters, with a broad base. Body elongated asymmetrical, since one side is somewhat longer than the other, distal end flat when retracted. Column smooth or often with low tubercles, usually on the longer side. Same number of tentacles and mesenteries. Mesenteries in two examined specimens 40 (22 + 18) and 46 (24 + 22). The ectoderm of the scapus is discontinuous and agrees with that in other species of *Isaurus*; the mesogloea very thick with cells, numerous cell-islets and thin sparse canals, probably not forming a continuous system and considerably weaker than in *Zoanthus*. Deep endodermal bays are present in the upper part of the body. The sphincter is rather strong, long, diminishing downwards and showing a tendency to be transversally stratified. In its uppermost part it occupies about  $\frac{3}{4}$  of the breadth of the mesogloea. The mesogloea of the actinopharynx is thick, but thinner in the directive plane. It contains cells and cell-islets which are, however, not so numerous as in the body-wall. The muscles of the mesenteries are very weak, but stronger at the insertions of the mesenteries at the column. At the base of the body the mesenteries grow together as in other species of the genus. A sectioned specimen was a female. Zooxanthellae are present in the ectoderm as well as in the endoderm. The nematocysts of the scapulus are 24–29.6 × 10–11.3  $\mu$ , holotrichs; those of the actinopharynx partly microbasic *p*-mastigophors about 18 × 4.2  $\mu$ , very rare, partly 11.3 × 14 × 5.5–6.3  $\mu$ , partly 22–28.2 × 7.5–10  $\mu$ , both holotrichs; those of the filaments partly 17–21 × 4.2–5.6  $\mu$ , *p*-mastigophors, partly 13–17 × 5–7.5  $\mu$ , partly 22.6–29.6 × 10–11  $\mu$ , both holotrichs, the former similar to the holotrichs in *Zoanthus*, the numerous larger ones to the smaller nematocysts in *Palythoa* (see also SEIFERT 1928 p. 459).

Occurrence: W. Australia, Rottneest Isl.

Further distribution: W. Australia (Gray) ? *I. asymmetricus*. Torres Straits, Mabuag. Murray Island (Hadd & Shackl.).

Size in preserved condition. Length up to 5.5 cm, breadth at the base up to 1.5 cm, at the top 0.8 cm.

Colour in formalin: dark brown.

Remarks: GRAY says that the species is solitary or clustered, each specimen having however a separate base. The latter note indicates that GRAY's *Pales cliftoni* is an



*Isaurus*, in spite of the fact that the bad figure does not give any assistance in identification. HADDON and SHACKLETON (1891, 1891a) have reached the same conclusion. GRAY does not note any tubercles, but since individuals with or without tubercles occur in a species, this is of no great importance (see HADDON's and SHACKLETON's figures 7 and 8 Pl. LXI 1891a). Besides, it is questionable if *I. asymmetricus* Hadd and Shackl. and *cliftoni* are not identical species. The identification of our species with *cliftoni* is, of course questionable. Possibly GRAY's species has been *Zoanthus praelongus* described below.

*Zoanthus praelongus* n. sp.

The long polyps are closely packed and hang together with very little coenenchyme. The scapus provided with a cuticle is thin-walled or, in other instances, more thickened. The thicker polyps occurring in small clumps (see colour, below) show in contracted and preserved condition a rougher texture than the other and there are irregular larger or smaller patches visible on the scapus. The rather thin extoderm of the scapus is discontinuous, the mesogloea provided with cells and cell-islets. In thin-walled samples the cell-islets are sparse or numerous but then always uniformly distributed (Fig. 14a); in the thick-walled samples (Fig. 14b) they are strongly accumulated in patches which are somewhat mauve-coloured also in preserved condition. A sample can, however, show a concentration of the cells in certain places, a more uniform distribution in others. The canal system (Fig. 15) of the mesogloea is well developed, the canals fine and forming at least two layers; some are in connection with the ectoderm. The lower sphincter is very strong, long and transversely stratified and more or less divided into large meshes. In Figure 16 I have drawn the

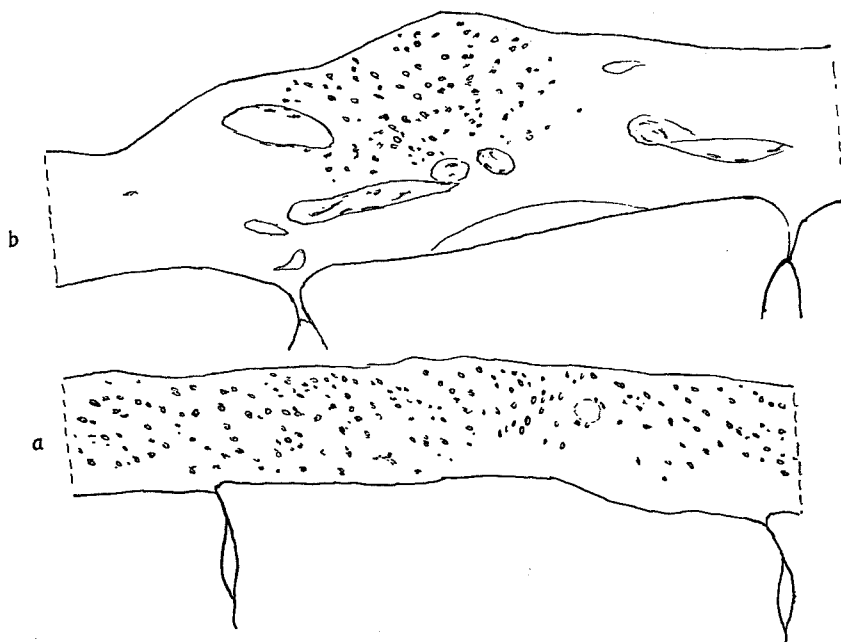


Fig. 14.

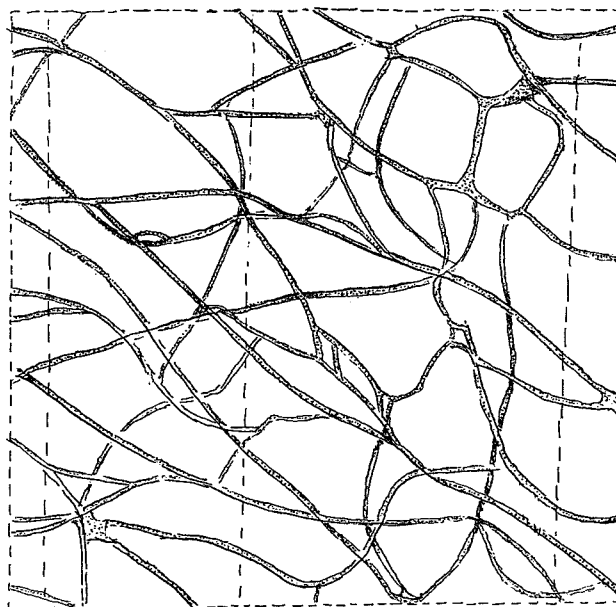


Fig. 15.

two sphincters of one specimen and the lower sphincter of another (Fig. 17). The siphonoglyph is weak. The mesenteries are thin, numbering between 42 and 46 (42, 42, 42, 44, 44, 46) in 7 specimens. In 2 specimens the *microdirectives* are lacking. The muscles of the mesenteries are very weak everywhere. I have examined 3 specimens as to the cnidae. The nematocysts of the scapulus were partly  $12.7-17 \times 5-5.6 \mu$ , holotrichs, partly  $19.7 \times 4.2-5.6 \mu$ , rare, microbasic *p*-mastigophors (only 1 specimen examined); those of the tentacles  $14-18.3 \times 4.2-6.3 \mu$ , holotrichs (in the endoderm, sometimes lacking); those of the actinopharynx partly  $19.7-24 (28.2) \times 3-4.2 \mu$ , microbasic *b*-mastigophors, partly  $13.4-18.3 \times 5-6.3 \mu$ , holotrichs; those of the filaments partly  $18.3-25 \times 3.5-4 \mu$ , *b*-mastigophors, partly  $17-25.4 \times 4.2-5.6 \mu$ , *p*-mastigophors, numerous, partly  $12-18 \times 3.5-5.6 \mu$  holotrichs. Spirocysts of the tentacles very numerous, up to  $35 \times 4.2-5.6 \mu$ .

Occurrence: West Australia, Pt. Peron Garden Isl., Rottnest Isl., MARSH; P. Peron, GISLÉN.

Size: According to Mrs. MARSH the polyps grow up to more than 6 cm (2.5'), but the usual size is about 3.5 cm (1.5'). The longest of the preserved specimens are 5.5-6 cm long. The polyps grow in clumps which may consist of a few individuals or many hundred forming a cushion 2-3 feet in diameter.

Colour: Specimens from large colonies are usually olive green, those in small clumps are frequently an emerald green with mauve blotches. When preserved the latter have a rougher texture with irregular white patches on them (MARSH). According to GISLÉN the thinner polyps were dark brown-green, the thicker light green with black patches.

Remarks: The species is closely related to *Z. coppingeri* Hadd & Shackl. from Torres Straits, but this species is considerably smaller and has more mesenteries,

51 (52?) in an examined sample, the proximal sphincter is comparatively weak and does not show any stratification, to judge from HADDON and SHACKLETON's figure 3 Pl. LXIV 1891. Besides, I cannot find that buds spring out from the bases of the polyps in our species, which is the case in *Z. coppingeri*. The polyps reach a size not previously noted, I think, among the species of the genus *Zoanthus*. In comparison with the size of the polyps the species has rather few mesenteries.

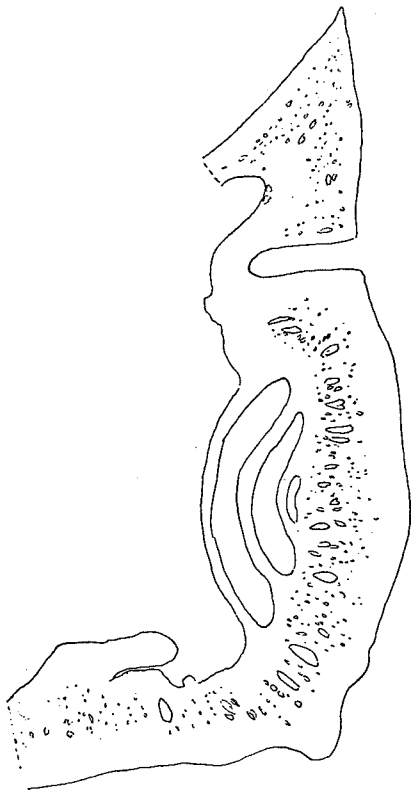


Fig. 16.

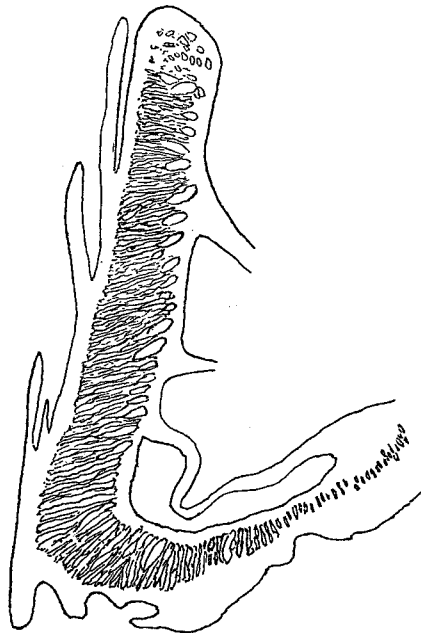


Fig. 17.

*Zoanthus Marshi* n. sp.

The polyps, cylindrical and closely arranged in preserved state, are connected with each other by a flat, rather thin coenenchyme. The individuals are of different size. In some colonies they are larger, in others smaller, but I cannot find any real difference between them as to their anatomy and therefore I refer them to a single species. The low ectoderm of the scapus is discontinuous and provided with a well-developed cuticle and holotrichs. The mesogloea of the scapus contains cells, sparse cell-islets and canals, the latter forming at least two layers, the outer situated near the ectoderm and sometimes in connection with it (Fig. 18). The figure shows a part of the canal system a little below the actinopharynx. The lower sphincter is strong, with a tendency to stratification, the upper sphincter weak. In Figure 19 I have drawn the sphincters from a smaller individual; the lower sphincter from a larger

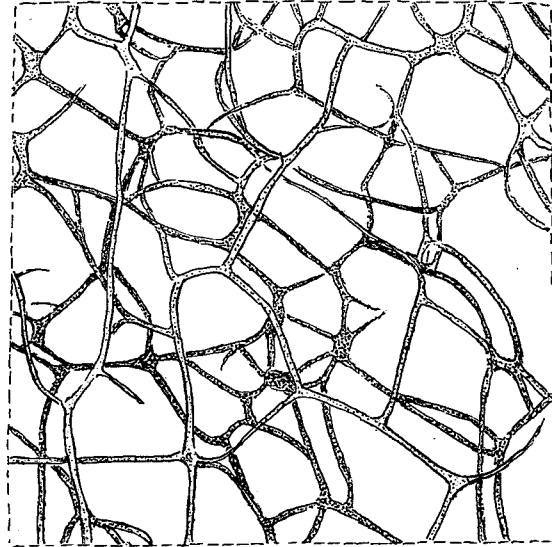


Fig. 18.

sample is weaker. The mesenteries of 4 examined polyps from the smaller colonies were 52-70 (52, 62, 66, 70), from the larger colonies 58 and 60. The nematocysts of the scapulus are  $11.3-18.5 \times 3.5-8 \mu$  holotrichs, those of the tentacles  $12.7-17 \times 5-8 \mu$  holotrichs; those of the actinopharynx partly  $17-24 \times 3-4.2 \mu$  microbasic *b*-mastigophors, partly  $12.7-14 \times 5-5.5 \mu$  holotrichs; those of the filaments partly  $11.3-17 \times 5-7.7 \mu$  holotrichs, partly  $18.3-24 \times 4-5.5 \mu$  microbasic *p*-mastigophors; partly  $24 \times 4.2 \mu$  *b*-mastigophors, very rare. Spirocysts of the tentacles practically absent. In many isolation preparations I have found only a few spirocysts.

Occurrence: West Australia, most common at Salmon Point, Rottneest Islands. Also found at the Murchison river mouth—on the sides of pools on the reef flat.

Size of the larger polyps in life up to 1" in length, of the smaller up to  $\frac{1}{2}$ " in length and  $\frac{1}{4}$ " in diameter. Colonies up to 1-2 ft. across.

Colour of all individuals: bluish green.

#### *Palythoa densa* n. sp.

The species forms colonies the polyps of which are close-set and in the contracted state do not reach much over the surface of the coenenchyme (Fig. 20). Polyps of various size, the largest up to about 1.2 cm in diameter. The coenenchyme, column and oral disc are strongly incrustated with calcareous grains. The ridges of the scapulus are about 20, more or less visible in the contracted polyps, in their oral part high and very strongly incrustated. The tentacles, about 40 in number, are very small, and their ectoderm is provided with numerous spirocysts. The siphonoglyph is very strong, its mesogloea thick, thicker than the other parts of the actinopharynx. The mesenteries are about 40, typically arranged.

The mesogloea of the coenenchyme and column contains cells, small and large, numerous cell-islets with holotrichs. The sphincter is not strong, forming a single

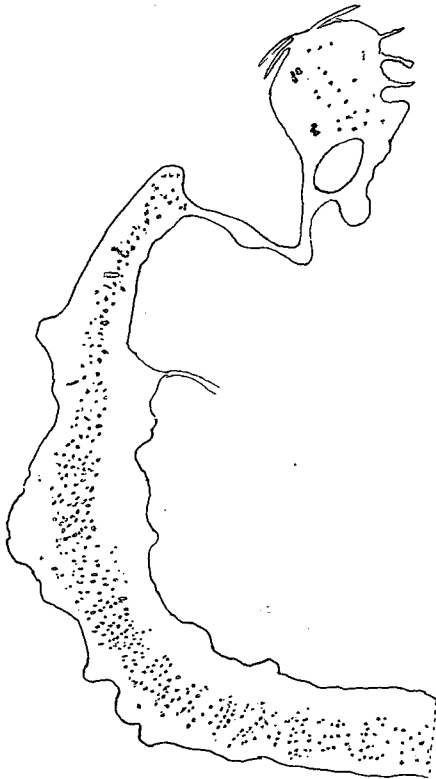


Fig. 19.

row of rather large muscle meshes transversely arranged. The mesenteries have usually only one canal in their upper part; at the base it is more or less branched with lobes usually towards the outside. In Figure 21 I have drawn the basal part of a mesentery. The numerous holotrichs in the canals are not figured. The nematocysts

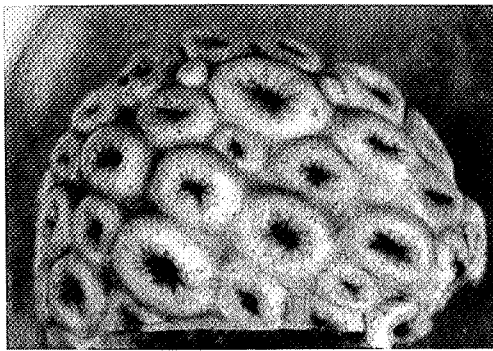


Fig. 20.

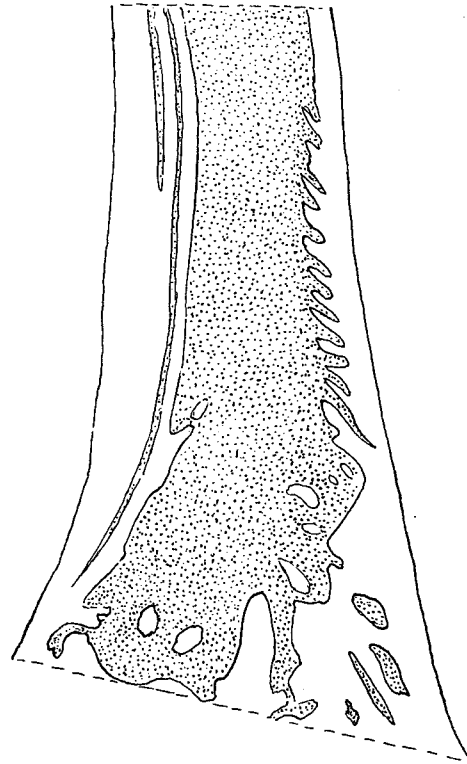


Fig. 21.

of the coenenchyme and column are partly  $31-43 \times 3.5-5.5 \mu$  ( $31-41 \times 4.2-5.5$ ;  $35.2-43 \times 3.5-4.2 \mu$ ), microbasic *b*-mastigophors, partly  $43.7-63 \times 22.6-31 \mu$ , holotrichs, partly  $35.2-43.7 \times 5.5 \mu$  ( $35.2-42.3$ ;  $36.7-43.7 \mu$ ), microbasic *p*-mastigophors, sparse; those of the tentacles  $24.7-29.6 \times 3-4.2 \mu$ , microbasic *b*-mastigophors, common; those of the actinopharynx partly  $38-48 \times 4.2-4.5 \mu$ , *b*-mastigophors, common, partly  $57.8-63.5 \times 24-25 \mu$ , holotrichs, few (possibly in the endoderm); those of the filaments partly  $63.5-69 \times 27-35 \mu$ , holotrichs, partly  $32.4-39.5 \times 4.5-5.6 \mu$ , *p*-mastigophors, numerous, partly  $45.2 \times 4.2$  (only 1 found) *b*-mastigophors; those of the mesenterial canals  $60.5-69 \times 27-29.5 \mu$ , common.

Occurrence: West Australia. The most extensive beds of the colonies were seen at Cape Vleming on Rottnest Island but also occur on other reefs on Rottnest and again 400 miles north of the mouth of the Murchison river. The species is not found on mainland reefs near Fremantle—on the reef flat usually near the outer edge. Spreads as a carpet over the rock, one colony encrusting many square yards of the reef where it is exposed at low tide.

Colour: Fawn or pale green.

Remarks: The species seems to be closely related to *P. stephensoni*, but the size of the nematocysts shows differences and therefore I think that the present species has not been previously described.

*Palythoa heideri?* n. n.

? *Gemmaria variabilis* v. Heider 1899 p. 130.

The species forms colonies of polyps hanging together with a rather thin coenenchyme. The encrusted polyps, which are of various size, are close-set, their shape cylindrical but thickened in the distal part as in *P. nelliae* and *variabilis*. The tentacles are small, numbering up to about 70, the oral disc is radially furrowed, the actinopharynx folded and the siphonoglyph well developed with a short hyposulcus. The ectoderm of the scapus is apparently continuous but mostly lost during the decalcification. The thick mesogloea is in its outer parts incrustated with sand grains. It contains numerous cells and large cell-islets, in which holotrichs occur. The sphincter is long, rather broad in its upper part and here distinctly transversely stratified,

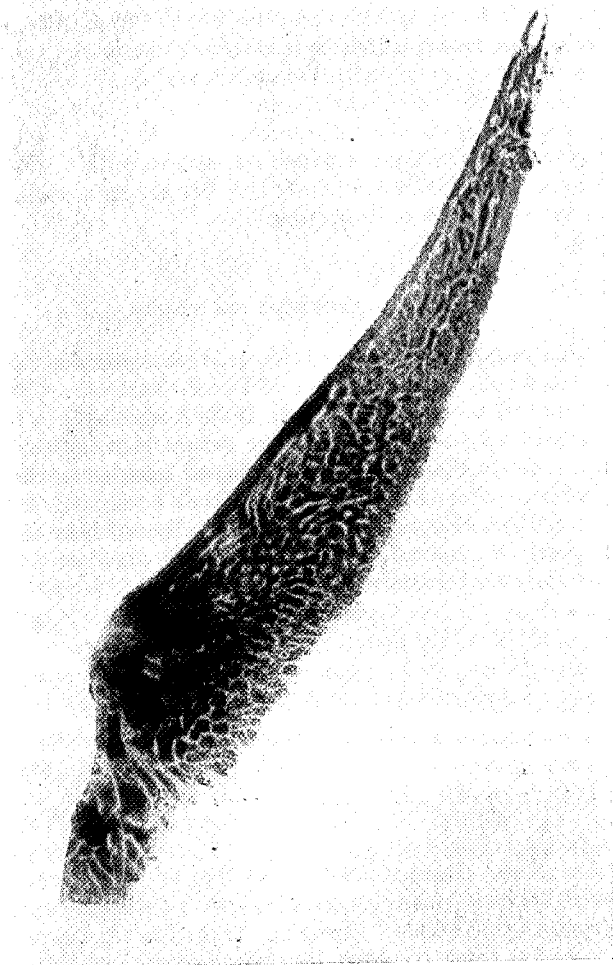


Fig. 22.

diminishing downwards. The mesenteries are numerous up to about 70 in larger specimens, the micromesenteries are rather well developed. The longitudinal muscles of the mesenteries are very weak. I have examined the canals in 7 mesenteries from 2 specimens; they show about same appearance as that shown in Figure 22. The nematocysts of the column are partly  $41-49.3 \times 16-21 \mu$ , holotrichs, partly  $17-26.8$  (usually  $18.3-19.7$ )  $\times 3.5-4.2 \mu$ , microbasic *b*-mastigophors, partly about  $37.4 \times 6.3 \mu$ , microbasic *p*-mastigophors, very rare; those of the tentacles partly  $23-29.2 \times 4.2 \mu$ , *b*-mastigophors, very numerous, partly  $33-38 \times 5-7 \mu$ , *p*-mastigophors, sparse; those of the actinopharynx partly  $32.4-42.3 \times 4-5 \mu$ , *b*-mastigophors, partly  $49.3-55 \times 23-25 \mu$ , holotrichs; those of the filaments partly  $48-56 \times 4-4.5 \mu$ , *b*-mastigophors, rather sparse, partly  $28.2-32.4 \times 4.2-5.6 \mu$ , *p*-mastigophors, very common (partly about  $52 \times 22.6 \mu$ , holotrichs, very rare); those of the mesenterial canals  $39.5-51 \times 21-24 \mu$ , holotrichs, sparse; tentacles with numerous spirocysts.

Occurrence: West Australia common on all reefs at Rottnest Isl. also at the Murchison River mouth, not found on mainland reefs near Fremantle—grows in clumps up to 2 ft. across on the reef flat and on the side of the pools just below tide level.

Size (one of the largest samples with expanded oral disc): height 2.5 cm, breadth of the base 1 cm, that of the oral disc 1.7 cm.

Colour: column sand-coloured, oral disc brown.

Remarks: I have with hesitation identified the species with v. HEIDER's *Gemmaria variabilis*, a species certainly not identical with DUERDEN's *variabilis*. The species examined by v. HEIDER was from Singapore.

#### Some zoogeographical results

The Actinian and Zoantharian fauna of South West Australia differs considerably from that of New Zealand, South Wales and South Australia. Comparing first the Actiniaria of these waters with those of South West Australia they have some species in common, but especially the presence of the genera *Actiniogeton* and *Radianthus* indicates that the fauna of South West Australia, at least as to the Actiniaria, is of a more subtropical character than that of the other countries. This appears to be even more evident for the Zoantharia. From the waters of New Zealand we do not know any subtropical or tropical Zoantharian, from northern New South Wales there is only one *Palythoa* described, and from South Australia one *Zoanthus*—probably accidentally grown (see CARLGREN 1950a p. 13). In South West Australia we meet one representative of the genus *Isaurus*, two of *Zoanthus* and two of *Palythoa*, the species of the two latter genera apparently common. Therefore I think that the south west side side of Australia, but not the south side, may be regarded as subtropical.

Finally, some remarks to PARRY's papers (1951, 1952) on the Actiniaria of New Zealand.

1) *Edwardsia leucomeles* (PARRY 1951 p. 95 fig. 4). This species cannot be an *Edwardsia* because it lacks nemathybomes. It seems to be closely related to *Drillactis* and may be referred to this genus if the inner tentacles are shorter than the outer ones in *Drillactis*. As far I can see from PARRY's description, the outer tentacles in *leucomeles* are longest. The nematocysts of the scapus were  $17-21 \times 2.5-2.8 \mu$ , basi-



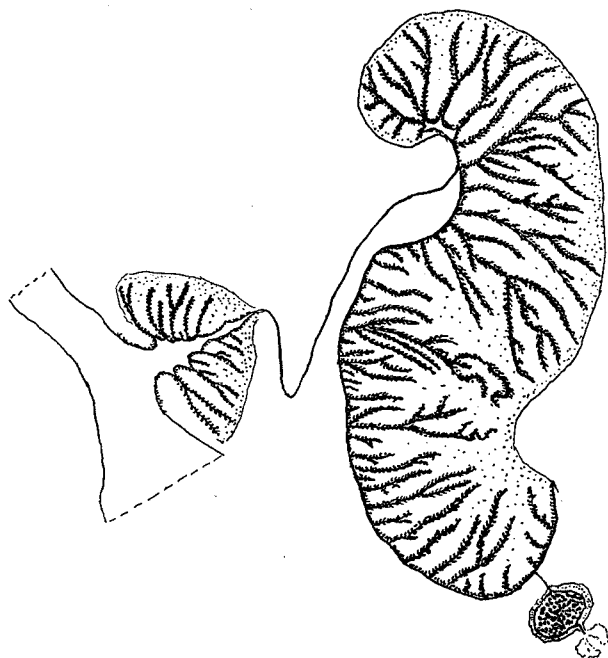


Fig. 23.

trichs; those of the tentacles  $15.3-19.7$  ( $21$ )  $\times 2.8$  ( $3.5$ )  $\mu$ , basitrichs; those of the filaments partly  $21-28.2 \times 3.5-4.2 \mu$ , partly  $15.5 \times 2.2 \mu$ , few, both basitrichs, partly about  $25.4 \times 4.2-5.6 \mu$ , microbasic *p*-mastigophors. Since in PARRY's paper there is no figure of the mesenteries, I have drawn figure 23 of a mesentery below the actinopharynx (the specimen is a male). Thus I think we may preliminarily refer *leucomeles* to *Drillactis*. Curiously enough, the pattern of the tentacles in *Drillactis pallida* and in PARRY's species agrees rather much as there are vertical rows of about 12 white spots in both species; but this likeness can, of course, be accidental.

2) *Isactinia olivacea* (Parry 1951 p. 108). PARRY indicates that she has referred two different species to *olivacea*. I think that there are at least three. I have examined two. The one labelled "bright green var. from Auckland" is undoubtedly *Cnidopus verater*. It has a circumscribed sphincter and very numerous atrichs at the base of the column. The size of the nematocysts and the colour agree well with this species. The other labelled "light coloured var. below rocks" has a weak, elongate, diffuse sphincter showing coarse folds (Fig. 24), smooth column, a deep fossa and about 100 tentacles. The nematocysts of the base of the column were only basitrichs  $14-17 \times 2.5 \mu$ ; those of the tentacles  $15.5-25.4 \times 3 \mu$ , basitrichs; those of the actinopharynx partly  $19.7-24 \times 3.5$  ( $4$ )  $\mu$ , basitrichs, partly  $17 \times 3.5 \mu$ , *p*-mastigophors (only one found); those of the filaments partly  $17-22.6 \times 3.5-4.5 \mu$ , *p*-mastigophors, partly  $19.7-22.6 \times 4.5 \mu$ , partly  $11.3-12.7 \times 4 \mu$ , both basitrichs. The sizes of the nematocysts do not agree well with those PARRY notes among others because there are no *p*-mastigophors in the tentacles of the light specimen. It is, however, ques-

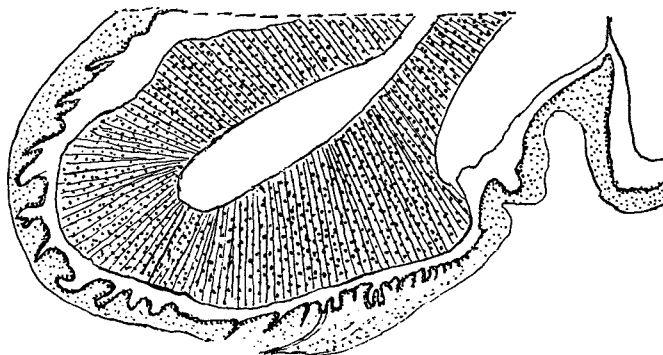


Fig. 24.

tionable if she has really seen *p*-mastigophors in the tentacles as she notes these in the tentacles of *Oulactis muscosa* which, as far as I can find, are not present there.

3) *Isocradactis magna* (PARRY 1951 p. 117). PARRY notes that there are usually marginal spherules with atrichs?  $40.5-54 \times 5.4 \mu$  in this species and refers it (p. 88) with a query to *Anthopleura*. This cannot be correct as her species has an endodermal diffuse sphincter and therefore may be an *Oulactis*. But it is possible that PARRY as well as STUCKEY may have partly confused *magna* with *mucosa*. I have examined one of PARRY's specimens. Unfortunately it was not well preserved and the upper part of the body drawn in. I cannot find any marginal spherules with atrichs but at the base of the column there are, apart from numerous basitrichs, also opaque nematocysts which may possibly be atrichs. The nematocysts of the lowest part of the column were partly  $14-18.3 \times 2.2-2.5 \mu$  basitrichs, numerous, partly  $19.7-22.6 \times 4 \mu$ , opaque, atrichs?, those of the "fronds"  $12.7-14 \times 2.2 \mu$ , basitrichs; those of the tentacles  $15.5-22.6 \times 3 \mu$ , basitrichs; those of the actinopharynx partly  $21-28.2 \times 5-6.3 \mu$ , microbasic *p*-mastigophors, partly  $21-32.4 \times 3.5-4.2 \mu$ , basitrichs. In the single, very large and well-preserved sample of the species I have identified with *magna* (in my paper of 1924, 15 specimens are noted instead of 1) there are no atrichs at the base of the column and no marginal spherules. As most of the size measurements of the nematocysts in PARRY's paper seem to be taken from my paper of 1947 (p. 16), it is only possible to compare my *magna* of 1947 with PARRY's specimen examined by me as to the types and sizes of the nematocysts. Undoubtedly further examinations are necessary in order to decide the position of *I. magna*. Possibly my *magna* is different from STUCKEY's species.

PARRY (1951 p. 124) has stated that STUCKEY's *Paractis ferax* is provided with acontia and identical with *Acaspedanthus ferax* Carlgr. This is correct. I have examined a specimen determined by PARRY as *ferax* and besides seen slides made by STUCKEY himself.

Miss PARRY has presented me some of the species mentioned in her papers, and I am therefore indebted to her.

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