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THE COLONIAL SEA-ANEMONES OF JAMAICA

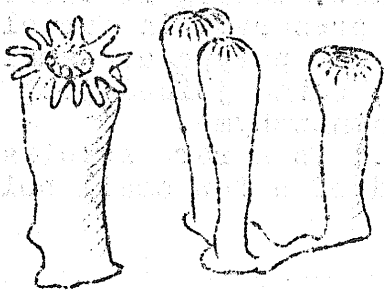
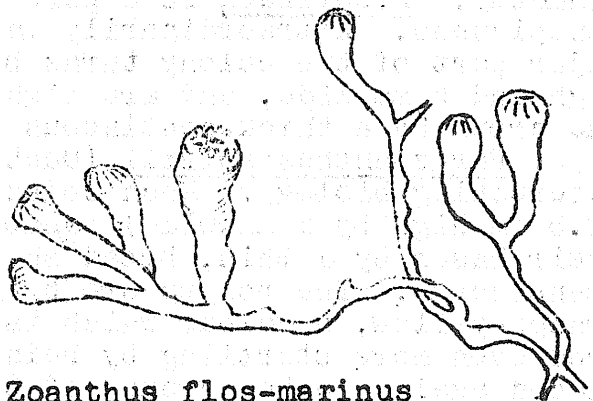
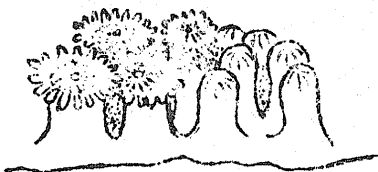
by A. Fontaine.

The Zoanthidea, an order of colonial sea-anemones, form a prominent element of the Jamaican reef fauna. While sea-anemone polyps live as solitary individuals, the zoanthids typically form colonies of polyps interconnected by a common tissue, the coenenchyme which varies in form from thin stolons to a communal outer flesh in which the polyps are massed together, shoulder to shoulder. That the Zoanthidea cannot be classified in the same group as the solitary anemones is shown by the structure and arrangement of their internal septa, which follow a pattern completely unlike that of other living coelenterates. This septal architecture is closely similar to that of the Tetracorals, an extinct group ancestral to the modern stony corals. The zoanthids seem to occupy an intermediate position in the evolutionary sequence leading to the formation of corals from anemone-like coelenterates without a stony skeleton.

The classification and anatomy of the Jamaican zoanthids was thoroughly studied in 1898 by J.E. Duerden, then curator of the Museum of the Institute of Jamaica whose publication still remains the standard source of information on West Indian Zoanthids. Duerden lists 10 species found in the reefs and shallow coastal waters of Jamaica. In a later work (1900), he describes three additional species belonging to the genus Parazoanthus; these were dredged from the deep waters off the Pedro Cays and will not be discussed here. My own collecting produced only seven of Duerden's ten littoral species.

Zoanthus solanderi Lesueur is one of the three green zoanthids commonly found associated with reefs. Clusters of solanderi polyps usually lie buried in coral or Halimeda sand with only the crowns of the polyps emerging, while the bases are attached to stones or coral rocks. The column of a solanderi polyp is bluish, blue-green, or slate-coloured, while the crown is usually greenish. The largest polyps are each about 25 mm high and 5 mm wide.

Zoanthus flos-marinus Duch. and Mich. is another common green species. In this zoanthid, both the column and crown are green, though sometimes tinged with blue. Like solanderi, flos-marinus is often embedded in coral or Halimeda sand, and frequently intermingles with the Halimeda plants themselves. The two species may be easily distinguished, however, since flos-marinus polyps are connected in bunches of threes or fours by long stolons, while solanderi polyps are connected in large masses by thin, often flattened, bands of coenenchyme. Flos-marinus polyps are also a little smaller, about 15 mm high and 5 mm wide.

Zoanthus solanderiZoanthus flos-marinusZoanthus pulchellus

Zoanthus pulchellus (Duch. and Mich.) is a third common green zoanthid. This species has a brilliant green crown with some buff on the basal part of the column. The polyps are somewhat smaller than those of the other two species, each measuring about 12 mm high and 8 mm wide. Pulchellus

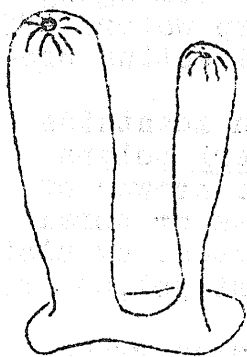
usually encrusts coral rocks, forming sheets of large size, in which the closely packed polyps are interconnected by a thick basal layer of coenenchyme. The polyps are seldom buried in sand.

Although the above three species are all found on most reefs, their relative abundance varies in different places. Z. solanderi is invariably less abundant than the others. On well-developed reefs such as at Ocho Rios and the Pelican Cays, pulchellus appears in great strength,

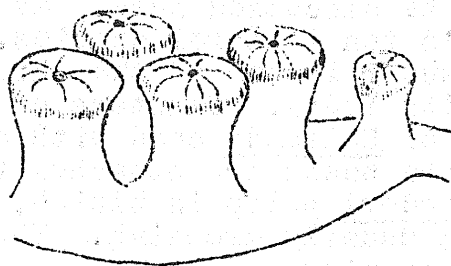
encrusting vast areas of dead or dying coral well behind the surf-point. Under such conditions flos-marinus forms but a small part of the total zoanthid population. The picture is quite reversed on the poorly-developed reefs of the Port Royal Cays and Port Antonio, where flos-marinus is the dominant species and pulchellus is restricted to small patches in the zone of most active coral growth.

Gemmaria fusca Duerden is an uncommon brown or buff-coloured zoanthid found amongst coral debris in shallow water. I have usually found it embedded in sand, or underneath coral rocks. Often there are only a few polyps together in a cluster interconnected by an encrusting coenenchyme to which may adhere particles of sand, etc. The polyps are large, about 40 mm high and 12 mm in diameter. Duerden records it from coral rocks at Drunkenman's Cay, but I have found it also at Don Christopher's Cove, Ocho Rios, Port Antonio, Holland Bay, and the Pelican Cays. It is widespread, though not common.

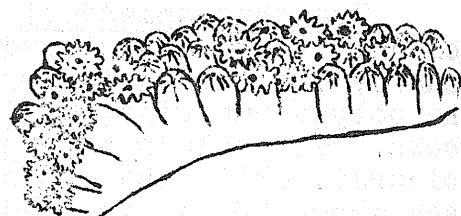
Gemmaria variabilis Duerden differs from its congener above in forming large encrusting colonies. The individual polyps are joined together by a coenenchyme which is thick at the base of each polyp and may be thin or lacking between polyps. Like G. fusca it is brown in colour, but the polyps are somewhat smaller. Duerden records it from Port Henderson where it formed colonies 2-3 feet across, encrusting stones. I have found it also at the Pelican Cays and at Don Christopher's Cove.



Gemmaria fusca



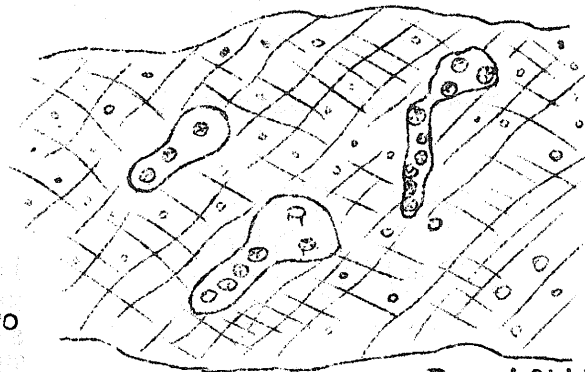
Gemmaria variabilis



Parazoanthus swiftii

Palythoa caribaea Duch. and Mich. is the most striking, if not the most common of the encrusting species. It is found in small patches all about the island in shallow water where there is some coral growth. On reefs it sometimes forms patches a yard or more in diameter. P. caribaea is a pale canary yellow, making it extremely conspicuous. Extraordinarily enough, when preserved in formalin, the major part of the colony turns brick red. The polyps are small, 8 mm high and 5 mm wide, and are tightly packed, being joined just below the crown by a thick continuous sheet of coenenchyme.

Parazoanthus swiftii (Duch. and Mich.) is a rare species with an interesting biology. Each colony is formed of a few small polyps (2.5 mm high by 2 mm wide) connected at their bases by a thin, broad sheet of coenenchyme. The polyps are bright orange-yellow, a colour which is rendered even more startling by being placed against a background of black sponge. P. swiftii apparently enjoys a commensal relationship with a common black sponge, for Duerden found several small colonies on a "large, erect, branching, blackish-green sponge" in two fathoms of water at Rackham's Cay, and another colony living on the same species of sponge from shallower water southwest of Lime Cay. I found a colony in the very same area at Lime Cay in about six feet of water. Not only was this zoanthid encrusting a black sponge, identified as Oligoceras hemorrhages, but the sponge was itself encrusting the stalk of an immense sea-fan.



P. swiftii

O. hemorrhages is sometimes called the "bleeding sponge", because a red, blood-like liquid escapes from it when it is cut open. It is one of the common West Indian sponges.

In addition to the above seven species in the Museum collection, Duerden lists another three also found in shallow water.

Isaurus duchassain (Andres) is recorded from Drunkenman's Cay where 7 specimens were found under stones. The polyps were dark brown, mottled with green and black, and appear to live solitarily or in clusters of only 2 or 3.

Palythoe mammillosa (Ellis and Solander) is practically indistinguishable externally from its close relative, P. caribaea, but there are marked internal differences. There is also a distinction in habitats, since mammillosa is found only at the surf-point, thriving in the strongest breakers, while caribaea is restricted to the more sheltered part of the reef. While caribaea turns brick red in formalin, mammillosa does not and this curious artificial character serves to tell them apart without recourse to section-cutting. Duerden records mammillosa from the Port Royal Cays.

Epizoanthus minutus Duerden is described from a single colony found growing on a valve of a living Pinna (a pelecypod mollusk) found in shallow water in Kingston Harbour. The polyps were dirty brown in colour. So far as I can tell, there are no other records of this species.

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Sci. Trans. Roy. Soc. Dublin, 6:329.
_____ (1900), Part II. Stichodactylinae and Zoantheae.
ibid., 7:133.

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PUBLICATIONS ON JAMAICA NATURAL HISTORY
FOR SALE AT THE MUSEUM

- Sea Pests - Poisonous or Harmful Sea-life of Florida and the West Indies - by Craig Phillips and Winfield H. Brady.
A special publication of the Marine Laboratory University of Miami. 1953. 5/-
- Some Ornamental Shrubs for the Tropics - by Edward P. Hume.
A publication of the Federal Experiment Station in Puerto Rico of the U.S. Department of Agriculture 152 pp. 1951.
(This well illustrated book covers nearly every Horticultural shrub to be found in Jamaica, giving its origin and best method of propagation as well as many other facts about the plants). 5/-
- Geology and Physiography of the Kingston District, Jamaica -
by C.A. Matley. 141 pages, 18 plates, 2 maps (in pocket) 1951. 21/-
- The Geology and Mineral Resources of Jamaica -
by H.R. Hose 1951 2/-
- Bauxite Resources of Jamaica and their Development -
by V.A. Zans, Senior Geologist,
Geol. Survey, Ja. 1953 3/6
- Field Guide of Birds of the West Indies - by James Bond 1934 28/-
- A Preliminary Checklist of Jamaican Pteridophytes -
by George R. Proctor 1953 6/-
- Glimpses of Jamaican Natural History, Vol. I (2nd. Ed. 1949)
Vol. II (1946) 2/6ea.
- Every member should have copies of these books. Orders will be filled post free. Please send your order to the Curator, Science Museum, with remittance.