

ZOOLOGY

NOTES ON THE CORAL REEFS NEAR SUVA IN THE FIJI ISLANDS

BY

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(Communicated at the meeting of February 25, 1950)

When in March 1949 I stayed for nineteen days in the Fiji Islands I had the opportunity to visit the coral reefs of Mbengga, Makuluva, Kandavu and neighbouring islands, Suva, and Tomberua. Of these the Suva reefs are the least flourishing as far as regards the abundance of living corals. As, however, these reefs possess some peculiarities of special interest, notably as far as concerns the distribution of two species of *Millepora*, some notes on these reefs may be given here as an introduction to further notes on Fijian corals. I am under great obligations to Mr and Mrs HAROLD GATY of Suva for their hospitality and for the assistance to enable me to visit the various reefs mentioned above. Moreover I want to express my thanks to the Public Relations Office at Suva for the photographs of the plates in the present paper, taken at my request by the official photographer Mr R. WRIGHT.

Of the Suva reefs I repeatedly visited the two reef flats bordering the entrance to Suva Harbour, indicated on fig. 1 with the numbers 1 and 2. The dot near the number 1 gives the position of the wreck marked on the Admiralty Charts. The northern parts of these reef flats have hardly any living corals, but towards the outer opening of the entrance to Suva Harbour the flats show a rather broad marginal belt of living corals, almost entirely consisting of the species *Acropora millepora* (Ehrenberg)¹). Plate I represents a photograph of this marginal area of the reef, taken at the locality near the number 2 in fig. 1, looking towards the southwest. Besides *Acropora millepora* in this region there are several stunted colonies of a knobby yellow *Porites* and some scattered colonies of *Astræids*, obviously living under rather unfavourable conditions. Moreover in the shallow pools in the *Acropora*-zone and next to this zone there are numerous colonies of an incrusting species of *Montipora* of a grayish or brownish or greenish colour, apparently also living under more or less adverse conditions.

Towards the edge of the reef (the region of the first line of breakers

¹) I owe this identification to Dr J. VERWEY, who added a note explaining that in literature this species is also known as *Acropora prostrata* (Dana) and *Acropora squamosa* (Brook).

in Plate I) the living corals become of a more luxuriant growth. A part of the edge of the reef is seen on Plate II. Among Madreporarian corals a species of *Pocillopora* is common here, consisting of fairly large colonies of normal appearance. Moreover Astraeid corals obtain here a rather

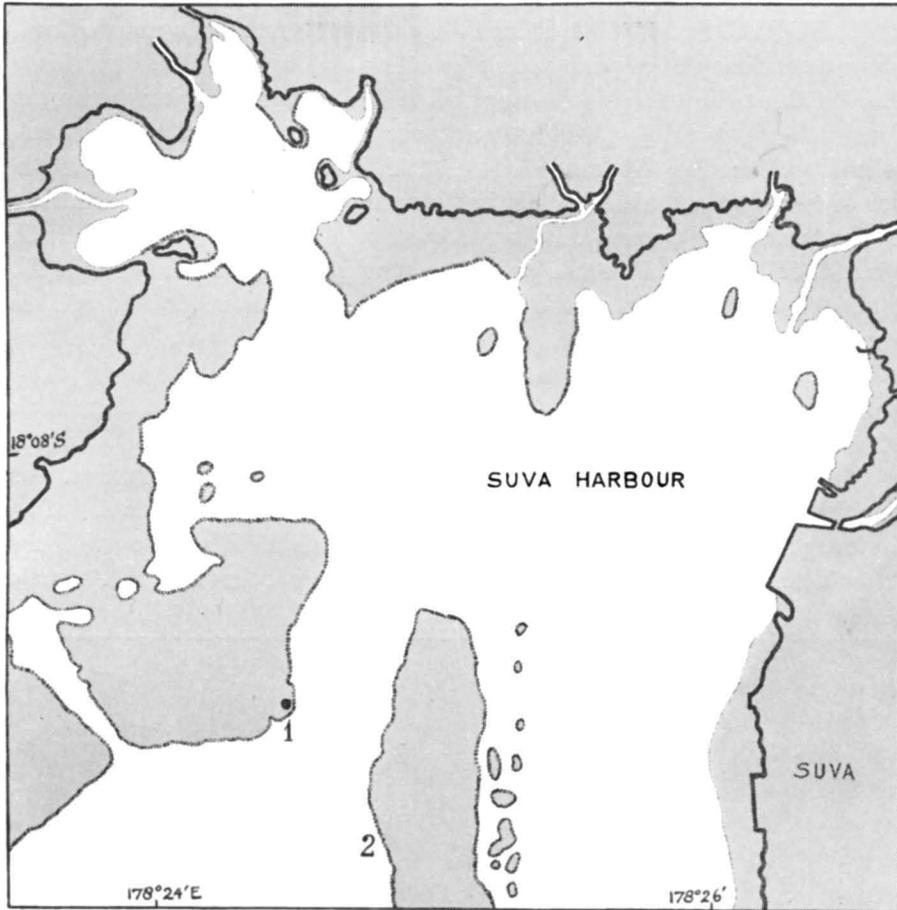


Fig. 1. Suva Harbour. Shaded parts: land and reefs or mud flats, dry at low ebb tide; heavy line: coast line. Scale 1 : 48.600. After British Admiralty Chart no. 1660.

luxuriant development. In many parts of the edge of the reef there are numerous colonies of *Millepora tenera*²⁾, which often grow out to a comparatively large size.

Plate II clearly shows that *Millepora tenera* on this part of the reef is living under favourable conditions. The colonies are fully exposed to the rather heavy surf, and, apparently as a result of the constant action

²⁾ In a revision of the genus *Millepora* (BOSCHMA, 1948) for this species I used the name *Millepora tenella* Ortmann. As this name proved to be preoccupied it was changed to *Millepora tenera* (cf. BOSCHMA, 1949).

of the waves, the colonies consist of rather broad more or less flabelliform plates which on their upper margins only are divided into a row of short branches. The colonies are of a brown colour with the exception of the tips of the branches which have a light yellow colour. The more or less plate-like larger branches of the colonies have a similar arrangement as those of previously described specimens of *Millepora tenera* (cf. BOSCHMA, 1948, Pl. XIII figs. 1 and 2, Pl. XIV fig. 1); the colonies do not distinctly show a tendency of exposing their broadest side towards the direction of the breakers (in the area photographed in Plate II the breakers come from the right side). This does not confirm ABE's (1937) statements, who found that in the Palao Islands "*Millepora alcicornis*" (judging by the figures the colonies must have been *M. tenera*) under the influence of the prevailing current develops a system of branches "vertical to the current direction". Here the only apparent result of the heavy surf is a tendency for strength of the branches, whilst as a whole the colonies grow out in a more or less semiglobular shape so as to offer the least possible resistance to the waves.

Millepora tenera is not the only species of the genus occurring on the edge of the Suva reefs. In this region also a few colonies of *Millepora platyphylla* Hemprich and Ehrenberg were found. Plate III, taken from the side of a small outlet on the edge of the reef, shows two colonies of the latter species. On a more reduced scale the corals of this plate are drawn in outline in fig. 2. In the central part there is a colony of an *Astraeid*,

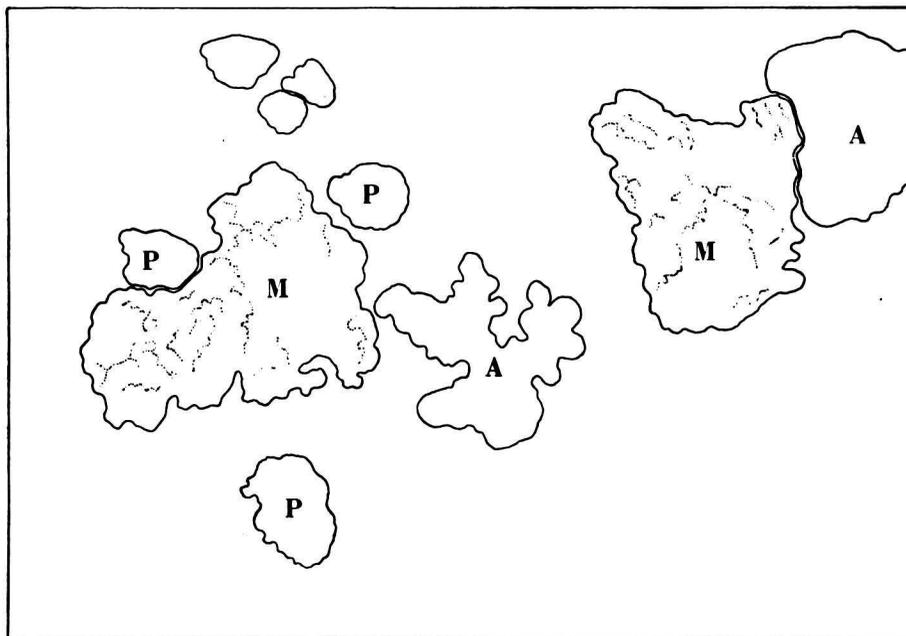


Fig. 2. The mutual position of the larger colonies of *Astraeids* (A), of *Pocillopora* (P), and of *Millepora* (M), as they are photographed on Plate III.

which at each side is flanked by an encrusting colony of *Millepora platyphylla*, one of which is surrounded by a number of small colonies of *Pocillopora*. On the encrusting bases of the colonies of *Millepora* there are numerous ridges of a slightly lighter colour than the flatter parts of the colonies; these ridges are the beginnings of what under more favourable conditions would grow out as more or less vertical upstanding plates.

In the region dealt with here *Millepora platyphylla* occurs in dwarfed condition only. This proves that the circumstances prevailing in this part of the reef are not favourable for a luxuriant development of the species. Several authors (DARWIN, 1842; FORBES, 1885; CROSSLAND, 1927, 1928; SEWELL, 1935, 1936) have commented upon the fact that *Millepora platyphylla* (often mentioned under another name, but easily recognizable as such) is common on the surf-swept edge of the reef; in agitated water it seems to find the conditions for a characteristic development into a honeycombed mass of upstanding plates. Another instance of luxuriant growth of *Millepora platyphylla*, on the edge of a reef in the Bikini group, is shown on Pl. I fig. 2 of the paper by TRACEY, LADD and HOFFMEISTER (1948). Now the locality indicated with 2 on fig. 1 of the present paper indeed is under the influence of the full surf from the south, but this locality and that indicated with 1 in fig. 1 are parts of the reef flanking the outlet of Suva Harbour. As shown in fig. 1 there are several small rivers discharging their water in the Suva Harbour region, and as this water is passing the outlet between the localities 1 and 2 it is not improbable that this causes distinctly unfavourable conditions for a vigorous development of *Millepora platyphylla*. In this connexion it may be noted that the reef surrounding Viti Levu, the main island of the Fiji group, clearly shows a wide passage in front of every river of any importance. GARDINER (1898) pointed to the fact that growth of the reefs everywhere seems greatest, where exposed to the heaviest seas, but this may be counteracted by other factors.

On the edge of the reef *Millepora platyphylla* is not confined to the outlets only, as it is also found in localities as the one represented on Plate II, among colonies of *Millepora tenera*. But whilst the latter species here appears to find ideal conditions for luxuriant growth, *M. platyphylla* always remains stunted.

The remarks noted above again point to the fact that in the genus *Millepora* there are distinct species, each with its own preference of habitat. In a locality in which *M. tenera* is flourishing, *M. platyphylla* may just find the means for existence without a possibility for normal development.

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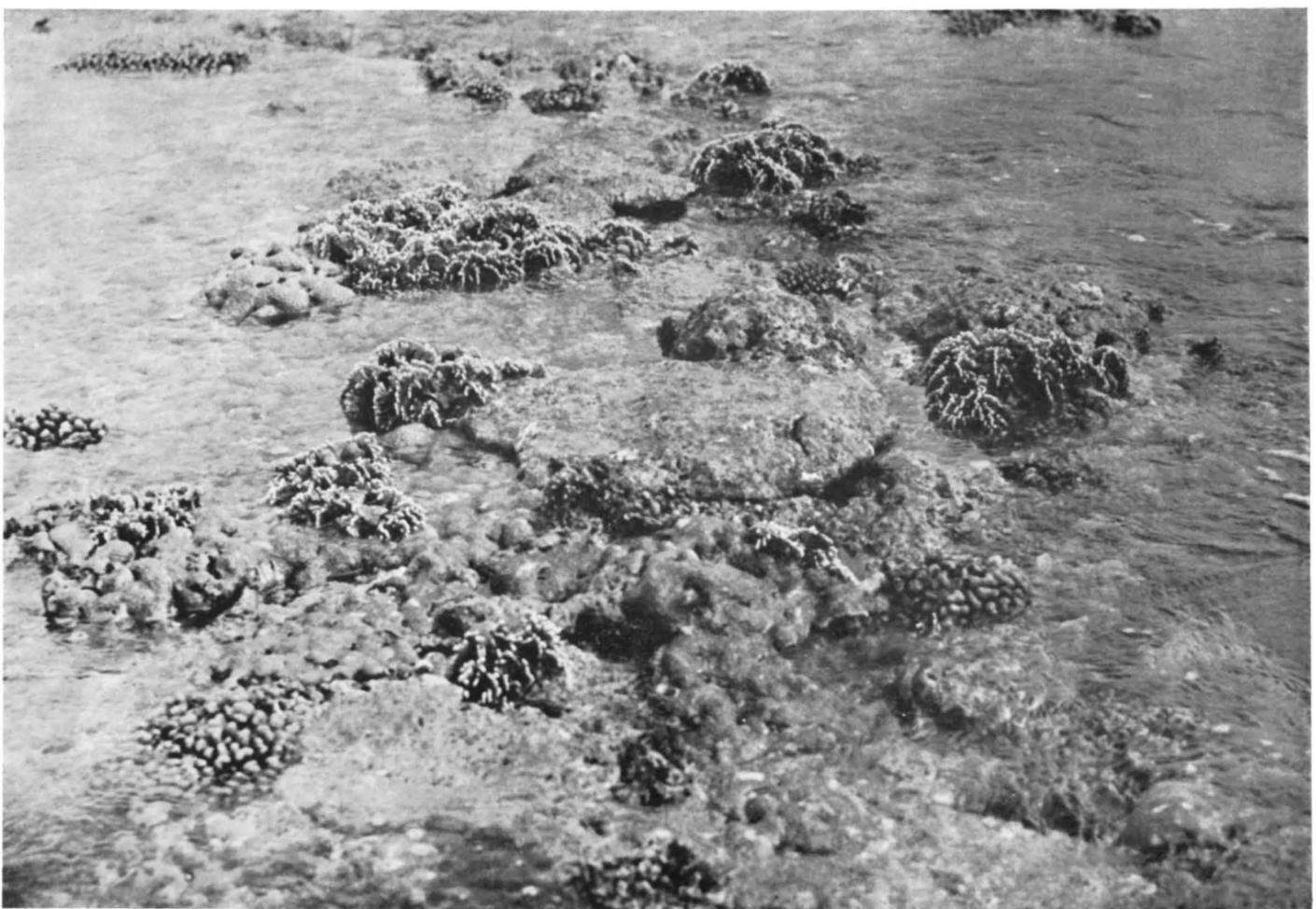
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EXPLANATION OF THE PLATES

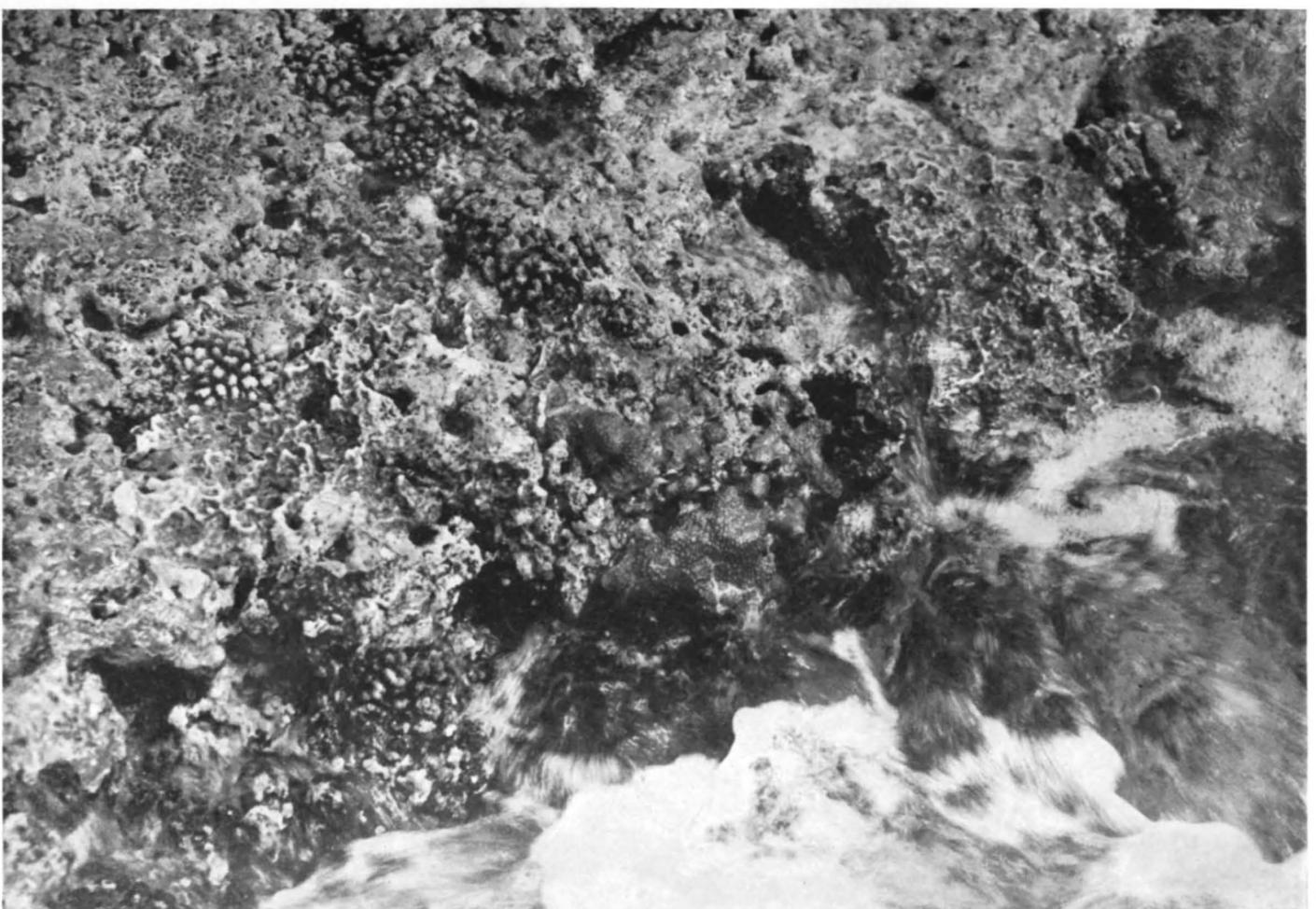
- Plate 1. Marginal zone of the reef, chiefly covered with *Acropora millepora* (Ehrenberg).
- Plate 2. Edge of the reef with colonies of *Astraeids*, of *Pocillopora*, and of *Millepora tenera* Boschma.
- Plate 3. Side of erosional outlet of the reef with colonies of *Astraeids*, of *Pocillopora*, and of *Millepora platyphylla* Hemprich & Ehrenberg. In the right hand lower corner a wave is rushing back to the sea.



Courtesy Public Relations Office, Suva, Fiji.



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