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BIOLOGICAL RESULTS OF THE SNELLIUS EXPEDITION. XXV FAVIIDAE COLLECTED BY THE SNELLIUS EXPEDITION. I. THE GENUS *FAVIA*

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With 4 plates

INTRODUCTION

The expedition of H.M. "Willebrord Snellius" in the eastern Indonesian seas (1929-1930) brought home a large collection of corals. The biologist on board, Dr. H. Boschma, as well as the geologist Dr. Ph. H. Kuenen collected these specimens during low tide on the reefs or by way of dredging and diving. The greater part of the material comes from shallow waters (depths of 0.5 to 5 m). The use of diving apparatus allowed collecting at a depth of 2 to 15 m. Sometimes corals were dredged from depths of 30 m or more. The total coral material consists of more than 10.000 samples, about half of which are specimens of the genus *Acropora*. Although the material was sorted out and generally identified as to the genus, so far no study was made of any special group. Boschma (1936) published a paper on the biological data of the Snellius expedition. All field data in the present paper stem from that report as well as from personal communications of Dr. Boschma himself.

Presently the genus *Favia* (Faviidae sensu Wells, 1956) is dealt with. The same species concept is applied as in my former paper on the Faviinae of New Caledonia (Wijsman-Best, 1972). Both regions lay centrally in the Indo Pacific area, and they have most of their species in common. Faviinae from eastern Indonesia are only occasionally mentioned in the literature (Quelch, 1886; Thiel, 1932; Umbgrove, 1939, 1940; Verwey, 1931). Specimens from this area collected by the Siboga expedition have been mentioned by Wijsman-Best, 1972. Explanation of the localities as mentioned by Boschma, 1936 (see map fig. 1):

1. Suvadiva atoll, Maldives Islands (3-4 May 1929). Collecting on the reefs and dredging in the lagoon.
2. Emmahaven near Padang, Sumatra (14 May 1929).

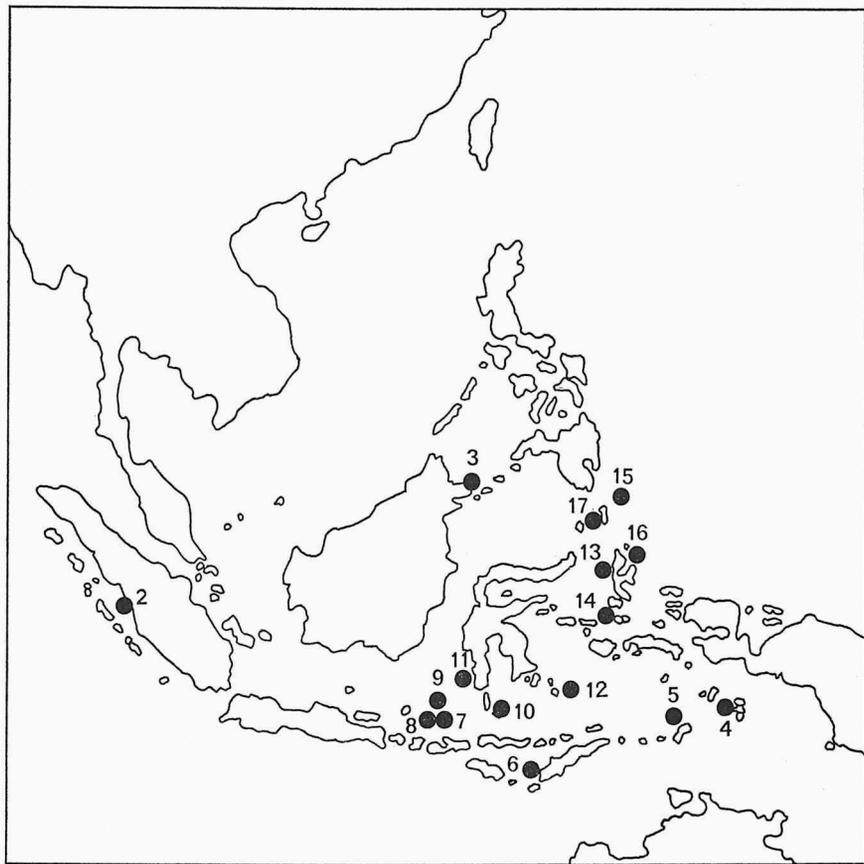


Fig. 1. Map of the Indonesian Archipelago. The numbers indicate the localities where the material has been collected (see p. 249).

3. Sipankot, a small island near Sibutu, North Borneo (10-14 September 1929). Collecting on the shore and the reefs, and diving. The greater part of the reef of Sipankot in deeper water is covered by very fine sand or silt, therefore diving was not met with success. On the east side of the island, however, there is a fairly strong current and here diving at the steep slope of the island yielded interesting results.

4. Manoembai, Aroe Islands (10-14 October 1929). Manoembai, at the mouth of Soengei Manoembai, one of the large rivers or estuaries which

traverse the island group. In these soengeis which have rather dirty water, some corals (*Goniopora*, *Mussa*, *Tridacophyllia*, *Montipora*) were found.

5. Wotap, Tanimber Islands, Lesser Sunda Islands (20-23 October 1929). Some material was collected on the shore and the reef of Wotap, a great deal more on the little island west of Wotap. The reef of this island is a large flat of mostly dead coral limestone, on which scattered living colonies of coral are found. To the south of this small island between Wotap and the latter, there is a well-developed reef. Especially by diving to 4-5 m coral material was collected here.

6. Kera, north of Koepang, Timor (11-23 November 1929). A fairly large collection of corals and other animals was made at the island Kera, about north of Koepang, especially a great number of species of *Acropora* was collected. The reef of Kera is developed at the south side of the island, the west side does not show many living corals.

7. Sapoeka Besar, Postiljon Islands (21-23 December 1929). Corals were taken from the reef of Sapoeka Besar, especially from the north west point of the island. The bottom consists of rather fine sand; near the coast a species of *Porites* is a common form, a branched *Montipora* occurs in large quantities further off shore.

8. Sailoes Besar, Paternoster Islands (9-10 February 1930). No comments.

9. Aloang, Paternoster Islands (7-8 February 1930). Material was collected on the shore and on the comparatively poor reef of Aloang.

10. Tanah Djampea, N. of Flores (21-23 February 1930). Some collecting was done on the shore of the island, and especially coral material was obtained by diving at a depth of 2-3 m.

11. Bone Tamboeng, Makassar (2 March 1930). On March 2 Bone Tamboeng was visited to collect animals, especially corals, on the reefs and by diving from a depth of 6-7 m.

12. Binongko, Toekang Besi Islands (7-10 March 1930). The tides were not favourable for collecting on the shores and in the shallow water; consequently a great deal of collecting was done by diving. Off the coast there is a ridge which partially projects above the surface during low tide. On this ridge at the seaward and the landward side material was collected by diving, from 2-3 to 12 m depth.

13. Ternate, Halmahera (27 March-3 April 1930). No comments.

14. Poeloe Toesa, Obi Latoe, North of Obi Major (23-27 April 1930). Most of the collecting was done on the reef of the small island Poeloe Toesa at the east side of Obi Latoe. This is a highly varied reef with a great number of species of corals. A peculiar phenomenon observed here was the occurrence of multitudes of small brown flatworms on colonies of *Merulina* and *Montipora*, which covered the greater part of the surface of these corals.

15. Karaton, Nenoesa Islands (20-21 May 1930). Material was collected on the shores and on the reefs, and by diving to 8 m depth.

16. Ake Selaka, Kaoe Bay, Halmahera (28 May 1930). At a short distance of Ake Selaka there is a very small island, on the shore and the reef of this island some collecting was done. A few specimens were obtained with a dredge at the anchorage off Ake Selaka from a depth of about 30 m.

17. Beo, Reinis, Karakelong, Talaud Islands (14-21 June 1930). The greater part of the material was collected from the shore and the reef in the neighbourhood of Beo, on the island Karakelong. Especially on the reef to the west of Beo specimens were obtained. By diving at depths of 5-10 m at localities to the north west and west of Beo especially corals were collected. On one of his trips across the island Dr. Kuenen collected some corals at Reinis, at the east side of Karakelong.

Of the genus *Favia* the following species have been collected:

- Favia fava* (Forskål, 1775)
- F. speciosa* (Dana, 1846)
- F. pallida* (Dana, 1846)
- F. matthai* Vaughan, 1918
- F. rotumana* (Gardiner, 1899)
- F. amicorum* (H. Milne Edwards & Haime, 1848)
- F. valenciennesi* (H. Milne Edwards & Haime, 1857)
- F. stelligera* (Dana, 1846)
- F. laxa* (Klunzinger, 1879)
- F. helianthoides* (Wells, 1954)
- F. rotulosa* (Ellis & Solander, 1786)

A full synonymy of each species is given by Wijsman-Best, 1972; unless changes or additions are indicated, the same list is valid. The same holds true for the general description of each species.

SYSTEMATIC PART

Favia fava (Forskål, 1775) (pl. 1 figs. 1, 2)

Material: 15 colonies. Coel.: 8764 Emmahaven; 8767 (2 ×) Sapoeka besar; 8759 Tanah Djampea; 8765 Bone Tamboeng; 8766 Binongko; 8760 Ternate; 8761 (2 ×) Karaton; 8762 (5 ×) Beo, Reinis; 8763 Ake Selaka.

In this series of 15 specimens there is some variation to be observed due to the fact that collecting was carried out in ecologically different biotopes. The normal sheltered reef ecotype, e.g., Coel. 8767, 8759, 8765, 8766, 8761 show large rounded not compact colonies with closely set, rather deep calices with a diameter up to 12 mm; the septa (average number 30) are regular,

the paliform lobes well developed; there is not much dentation. The more extreme growth forms are Coel. 8760 having a stronger structure and more teeth formation so probably coming from a more exposed habitat, Coel. 8764 is small and not well developed, probably coming from dirty water; the specimens from Beo have a more delicate structure (colonies flat and regular, very regularly built corallites, septa thin and not numerous), the same counts for Coel. 8763, probably all coming from deeper water or from a very sheltered niche.

No specimens have been found falling outside the range of variability found for New Caledonian *Favia* by Wijsman-Best, 1972. Coel. 8760 for instance, can be regarded as var. *crassidens* and Coel. 8763 as the very typical bay-form. However, since the publication of my article, a paper by Chevalier has appeared, describing several "variétés". Some of the specimens mentioned correspond with these, e.g. Coel. 8767 may be called var. *affinis*, Coel. 8760 var. *robusta*, Coel. 8761 var. *glabra* and Coel. 8762 var. *fragilis*.

Favia speciosa (Dana, 1846) (pl. 1 fig. 3)

Material: 12 colonies. Coel.: 8772 Sipankot; 8769 Manoembai; 8775 Sapoeka besar; 8774 Aloang; 8771 (2 X) Tanah Djampea; 8770 (2 X) Bone Tamboeng; 8773 Poeloe Toesa; 8768 Karaton; 8776 Ake Selaka.

This common and adaptive species is not so well represented in this region as was expected on the basis of the multitude of specimens reported from other localities in the Indo Pacific region. The variability is rather large. The growth form of a sheltered reef biotope, e.g., Coel. 8775, Coel. 8771 and Coel. 8773 show best the conservative characters of the species, having a light round colony with a regular structure. Coel. 8776 (especially the larger specimen of the two), however, show small irregular corallites, deep calices and more exsert septa. Coel. 8774 and Coel. 8769 have small corallites and thin septa corresponding with specimens from a sandy biotope in New Caledonia. Another extreme growth form is shown by the specimens of Coel. 8770, 8772 and 8768, having larger (average diameter up to 10 mm) corallites, that are not closely set. No specimens have been found falling outside the range of variability already known. Coel. 8775, e.g., can be considered as var. *pandanus*; Coel. 8772 as var. *puteolina*. Corresponding with varieties described by Chevalier are Coel. 8769 with *favosa*, Coel. 8774 with *subtilis*, Coel. 8770 with *okeni* and Coel. 8776 with *irregularis*.

Favia pallida (Dana, 1846) (pl. 1 fig. 4)

Synonyms: *Favia paucisepta* Chevalier, 1972.

Material: 30 colonies. Coel.: 8778 Emmahaven; 8784 (6 X) Wotap; 8782 Tanah Djampea; 8777 Binongko; 8781 (3 X) Poeloe Toesa; 8780 (3 X) Karaton; 8783 (6 X) Ake Selaka; 8779 (9 X) Beo, Reinis.

It is remarkable that *Favia pallida* is the best represented species of *Favia* in the present collection. It has been collected in different biotopes and shows a rather wide range of variability. Coel. 8778 has a light structure and the corallites are not closely set, the corallum is encrusted by other sea animals. The colony apparently has grown in a quiet and unfavorable habitat. The specimens from Beo and Reinis (Coel. 8779) coming from a depth of 6-10 m show some resemblance to the latter, the ones from shallow water have smaller, deeper and more closely set corallites. The series of six specimens from Kaoe Bay, Ake Selaka (Coel. 8783) show much interresemblance (coralla capricious, corallites large shallow and not closely set). Another series from one locality, Wotap (Coel. 8784), also shows more or less one ecotype (rounded heavy coralla with small, closely set and deep corallites).

Coel. 8782 resembles Chevalier's var. *intermedia*; Coel. 8777 resembles Chevalier's var. *doreyensis*. The three specimens from Poeloe Toesa show some differences. Probably they have been collected at different sites. The last observation corresponds to the description by Boschma of this biotope as "highly varied reef". The present species shows a high degree of adaptation of its external appearance to a different environment. Many growth forms are known. In my opinion the type and only specimen of Chevalier's new species *Favia paucisepta* falls within the range of variation of the present species. Specimens corresponding to the type and the description of *F. paucisepta* are present in my New Caledonian collection from biotope 7 (Wijsman-Best, 1972) as well as in the Snellius collection, e.g., Coel. 8779a (Beo). In both cases, the specimens come from quiet water, as has been mentioned for Chevalier's type. The three most important differences between the two species as mentioned by Chevalier (diameter and depth of calices, number of septa) can easily be interpreted as the result of growth under different ecological conditions.

***Favia matthai* Vaughan, 1918 (pl. 2 figs. 1, 2)**

Synonyms: *Favia rugosa* Chevalier, 1972.

Material: 5 colonies. Coel.: 8867 Sipankot; 8869 Wotap; 8870 Bone Tamboeng; 8868 (2 X) Beo.

Five specimens of this only seldomly mentioned species are present. All colonies come from a reef biotope. The degree of dentation and the width of coenosteum varies only slightly. Coel. 8867 shows the characters very regularly (the rounded corallites with the numerous septa, all evenly exsert, the paliform lobes forming a clear, often double crown). Extratentacular budding is sometimes present. The corallites of the colony (Coel. 8868a) have a tendency to grow upwards.

The type and only specimen of *Favia rugosa* Chevalier comes very close to the characteristics of the present species. One specimen of the New Caledonian collection (ZMA Coel. 5683) is nearly identical with the holotype of *Favia rugosa* (viz., the closely set corallites and the strongly built septa). Chevalier (1972) also mentions the resemblance to *Favia matthai*; the differences (*F. rugosa* having smaller and less protruding corallites with fewer septa) are not convincing.

Favia rotumana (Gardiner, 1899) (pl. 2 figs. 3, 4)

Material: 8 colonies. Coel.: 8862 Sipankot; 8866 (2 X) Wotap; 8865 Kera; 8863 Binongka; 8861 Poeloe Toesa; 8864 (2 X) Ternate.

The eight specimens representing this species do not show much variation. The irregularity of thecae and septa, the feature that is most characteristic is very clear in all specimens. Coel. 8862 is a small, not so well developed colony with rather small and dispersed corallites. Coel. 8861 and the two colonies of Coel. 8866 are typical shallow reef forms (the round, strongly built colony with closely set, deep corallites). The two specimens of Ternate (Coel. 8864) have the habit of growth forms of more quiet water with larger, shallower calices and more space in between the corallites. The primary septa are very exsert. The species is easy to recognize; the range of variability is small, and also Chevalier does not mention any "variétés". Together this supports the notion that the species is stenotypic, with a preference for a shallow reef biotope (see Chevalier, 1972: 133).

Favia amicorum (H. Milne Edwards & Haime, 1850)
(pl. 3 figs. 1, 2)

Material: 13 colonies. Coel.: 8872 Ternate; 8871 (2 X) Karaton; 8873 (10 X) Beo, Reinis.

The fact that most specimens come from the quiet bay biotope of Beo, supports the statement in Wijsman-Best (1972: 21), that the species is stenotopic, preferring such a sheltered site. Some specimens, e.g., 8873a, 8873b and 8873c, show the tendency of the corallites to grow upwards (ecotype *laddi*). Other specimens do not show this feature so clearly. The conservative characters, as described by Wijsman-Best (1972: 21), hold true in the presently discussed collection. The species is rather easily recognized (rounded corallites, the numerous equally built septa; the many paliform lobes forming a "horizontal plateau" and the continual costal ridges) and in general does not show much variation. The two specimens from Karaton (Coel. 8871) are from 8 m and correspond to the ecotype *mirabilis*. Chevalier (1972: 147) does not recognize this species and considers *amicorum* a syno-

nym of *Favia favaus*. In my opinion the specimen from Tongatabu that he takes for the type is not the colony as described by Quoy & Gaimard as *Astraea ananas* (invalid) and therefore not the holotype.

Favia valenciennesi (H. Milne Edwards & Haime, 1850)
(pl. 3 figs. 3, 4)

Material: 23 colonies. Coel.: 8880 Sipankot; 8878 Sailoes besar; 8875 (4 ×) Bone Tamboeng; 8881 Binongko; 8876, 8879 Ternate; 8877 (4 ×) Poeloe Toesa; 8874 (2 ×) Karaton; 8882 (3 ×) Ake Selaka; 8883 (5 ×) Beo, Reinis.

This species seems common in the Indo Pacific area, being also well represented in the Snellius collection from many different stations. *F. valenciennesi* is easy to recognize because of the deep groove between the corallites. Most specimens correspond with the general description as given by Wijsman-Best (1972: 23). Coel. 8880 resembles closely the holotype of H. Milne Edwards & Haime (figured by Chevalier 1972: pl. 18 fig. 6). Some specimens, e.g., Coel. 8878, 8881, 8879 and 8875a show the very regular rounded corallites, somewhat protruding as figured by Yabe & Sugiyama (1941: pl. 24 fig. 5). The specimen Coel. 8875b is a hillocky colony grown on a branching corallum, the corallites are further apart and could be called ecotype *eridani*. The same could be applied to some specimens from Karakelong (Coel. 8883a, 8883b, 8883c). Some colonies have rather thick thecae and are well dentated (Coel. 8874, 8879), probably coming from a site with much water turbulence. In cases where the colony is rather hillocky and the grooves in between the corallites are deep, budding at the side of the theca (that can be seen as extratentacular building) is visible, as, e.g., in Coel. 8882.

Favia stelligera (Dana, 1846) (pl. 4 fig. 1)

Material: 1 colony. Coel.: 8889 Binongko.

Of this species one fragment of a rather large corallum has been collected. It shows the characteristics of a *stelligera* growth form of a sheltered reef biotope (see Wijsman-Best, 1972).

Favia laxa (Klunzinger, 1879) (pl. 4 fig. 2)

Material: 2 colonies. Coel.: 8885 Suvadiva atoll; 8884 Kera.

This rare species is represented in the Snellius collection by two specimens of more or less the same habit, both coming from a shallow sheltered reef site. The colony is round and heavy, the corallites are circular (average diameter up to 7 mm) with costae and intercostal ridges; a thin theca and all septa ending in one or two paliform lobes forming a crown inside the corallite. Budding is practically always intratentacular, but extratentacular budding is present.

Wijsman-Best (1972: 25) mentions this species, but her New Caledonian specimen (ZMA Coel. 5797) belongs in fact to *F. helianthoides*. Wijsman-Best (1972) considered *F. helianthoides* synonymous with *F. laxa* on the basis of the study of a small number of specimens in several musea. Because *F. helianthoides* (next species) as well as *F. laxa* are better represented in the Snellius collection, a diagnosis of both can be given, giving them the status of separate species.

Favia helianthoides (Wells, 1954) (pl. 4 fig. 3)

Material: 6 colonies. Coel.: 8886 (4 X) Karaton; 8887 (2 X) Beo.

The four specimens from Karaton correspond to the holotype of Wells (USNM no 44980): the heavy corallum has small (diameter up to 4 mm) corallites, the many septa (average 25) are regularly dentated and each of these has a paliform rod. Budding is mostly intratentacular, but extratentacular budding does occur. The two specimens from Beo, however, from another biotope (more quiet and deeper water), have a less solidly built corallum, with larger corallites which are further apart. This growth form shows more clearly the characters of the closely allied species *F. laxa*. In Wijsman-Best (1972) these two species were considered synonyms, but the additional material of the Snellius collection makes clear that the two species retain their conservative characters in the same biotope. In the cited article the rules for the relation between a coral's external morphology and its habitat were extrapolated from the one specimen, with good field data, found to form a concept of the species' habit under other conditions. Such an extrapolation is always a hazardous procedure and the implication that *F. helianthoides* was a growth form of *F. laxa* proved to be incorrect. The main differences between the two species affect the height of the theca and the number and regularity of the septa. In the present species the corallites are more protuberant, have generally more and regular septa and have often a hillocky appearance. The *F. laxa* sensu Wijsman-Best has to be called *F. helianthoides* after the separation of these two species. In my opinion the new species of Chevalier *Favia irregularis* is closely related to *F. helianthoides*, and may be synonymous. The holotype of *F. irregularis* Chevalier (1972: 175) corresponds to the specimens of Coel. 8886. However, there are several differences between *F. helianthoides* and *F. irregularis* as Chevalier (1972: 177) states, e.g., the more compact structure, the more numerous septa and the dentation which is better developed. Because *F. irregularis* is based on just one colony, I think it should be provisionally included in the present species, until more material of this form reveals its proper taxonomic status.

Favia rotulosa (Ellis & Solander, 1786) (pl. 4 fig. 4)

Synonyms: *Favia hululensis* Gardiner, 1904.

Material: 1 colony. Coel.: 8888 Poeloe Toesa.

The only colony present resembles the holotype of Ellis & Solander (Glasgow) in the main characters: thecae hardly protruding and very thin, septa not numerous (ca. 18-25) and thin, paliform lobes hardly developed, columella consisting of some twisted trabeculae, the thin costae continue on the coenosteum, mostly connecting with each other. One side of the colony shows a strong dentation, which is normally indicative of a shallow exposed reef site. The latter observation strengthens my opinion of dealing with a valid species and not with a growth form of *F. pallida*, as suggested by Wells (1954). *F. pallida* of such a biotope, however, would show a much more solid growth because of more calcium deposit. This rare species still lacks an established position in the literature. Wijsman-Best (1972: 19) mentions the species, although not present in her New Caledonian collection, as a valid species synonymous with *F. hululensis*. Chevalier (1972) describes four specimens from New Caledonia under the name *F. hululensis*, belonging to the present species.

ECOLOGICAL COMMENTS

It was possible to identify the present collection of reef corals only because of my field experience with this group of animals. The only help I had as to the ecological conditions of the locality where the coral had grown were the few facts Boschma gave for each station where coral collecting had been done. These are also rather general because one station can include several different biotopes, e.g., Sipankot (Sibutu, North of Borneo). More specific details for each specimen are not known, although some stations include only one biotope, e.g., Wotap and Beo. In the latter case specimens of different species but of the same locality show more or less the same morphological adaptation, due to the influence of the environmental factors on the skeleton features.

The species found in Wotap are: six colonies of *Favia pallida* (Coel. 8784), one colony of *Favia matthai* (Coel. 8869) and two colonies of *Favia rotumana* (Coel. 8866), all showing the growth form of a shallow exposed reef site, which gives them a remarkable resemblance.

Another rather homogenous growth form of different species is visible in the material from Beo. The species found in this area are five colonies of *Favia fava* (Coel. 8762), nine colonies of *Favia pallida* (Coel. 8779), two colonies of *Favia matthai* (Coel. 8868), ten colonies of the stenotopic species *Favia amicorum* (Coel. 8873), five colonies of *Favia valenciennesi*

(Coel. 8883), two colonies of *Favia helianthoides* (Coel. 8887), most of them (see text) showing the deep and quiet water ecotype, e.g. ecotype *eridani* of *Favia valenciennesi* (Wijsman-Best, 1972: 24), ecotype *laddi* of *Favia amicorum* (Wijsman-Best, 1972: 22) variety *fragilis* of *Favia favaus* (Chevalier, 1972: 141). At Sipankot, on the contrary, collecting must have taken place at various localities in deeper and shallow water, in and outside the reef and also by diving, which is reflected in the variation in growth form of the different species collected and corresponds to the few remarks given by Boschma about this station.

In my first study of this group of corals I learned to recognize growth forms corresponding to a certain known biotope, in the present study I used this knowledge to extrapolate the ecological data of the biotope on basis of the morphology of the specimens collected. Of course this last is not of much importance, but proves the range of variation as recognized in the first study to have a more general validity. An old museum collection of stony corals therefore is not unidentifiable because of the fact it has no ecological data. That one has to be careful with this extrapolation shows the necessity of the separation of the species *F. laxa* in *F. laxa* ss. and *F. helianthoides* now that more material is consulted.

The number of specimens of one biotope within one species is nearly always too small to see a general resemblance. A few exceptions however are e.g. *F. pallida*, the six specimens from Wotap (Coel. 8784) and of Ake Selaka (Coel. 8783) show more or less one growth form; the nine specimens from Beo (Coel. 8779) can be divided in two groups: one from shallow water and one from a depth of 6 to 10 m, as indicated on the labels. Another case is *F. amicorum*, of which 10 specimens from Beo are also divided in two groups: one, the *laddi* ecotype and another one probably from shallower water in which the tendency to grow upwards is not shown so clearly (in this case depth was not indicated on the labels). Some new points as a result of the study of this collection are:

Favia pallida is best represented of the common *Favia* species (*pallida*, *speciosa*, *favaus*). This in contrast with the New Caledonian collection.

Favia laxa does not include *F. helianthodes* as an ecotype; *F. helianthoides* is a separate species.

F. paucisepta Chevalier is regarded an ecotype of *F. pallida*.

F. rugosa Chevalier is considered an ecotype of *F. matthai*.

F. rotumana is probably a stenotopic species, restricted to a shallow reef site. The rare species *F. rotulosa* is represented in this collection, as is not the case in my collection from New Caledonia; Chevalier has, however, already mentioned the species from New Caledonia under the name of *Favia hululensis*.

In general one can say that the range of variation in each species is by far not so large as I have seen in the series of my New Caledonian species of *Favia*. This is due to the fact that collecting has mostly been done in biotopes of more or less uniform ecological conditions: in shallow water at the sheltered fringing reefs. In extreme biotopes, e.g., agitated water outside the reef, in deep water or on muddy substrate, quite understandable, hardly any collecting has been done. The identification of the collection was not a difficult task, because all specimens with a few exceptions fell within the known range of variability of each species. Therefore normally the names of the ecotypes as used by Wijsman-Best 1972, as well as the "variétés" mentioned by Chevalier in 1972, can be given to growth forms of certain localities. Most of the good examples are discussed under each species. It can be concluded that as far as one can be certain about their provenance, these growth forms have developed in a defined environment. The ecology of the New Caledonian "variétés" of Chevalier is only seldom specified, only in extreme cases as for, e.g., *F. favaus* var. *robusta* from agitated water or var. *fragilis* from quiet water. Other varieties of *F. favaus* like *affinis* and *danae* are based on resemblance to synonyms or on phenotypical characters like *magniflora*. But because the present study affirms the opinion that growth forms in corals allow a better explanation than is usually thought, it is advisable not to use the taxonomic unit variety, which has genetic implications but rather to denote these growth forms with the purely phenotypical term "ecotype".

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EXPLANATION OF THE PLATES

Plate 1

1, 2, *Favia fava* (Forskål): 1, from Karaton, RMNH Coel. 8761; 2, from Ternate, RMNH Coel. 8760. 3, *Favia speciosa* (Dana) from Tanah Djampea, RMNH Coel. 8771. 4, *Favia pallida* (Dana) from Beo, RMNH Coel. 8779a. $\times 2$.

Plate 2

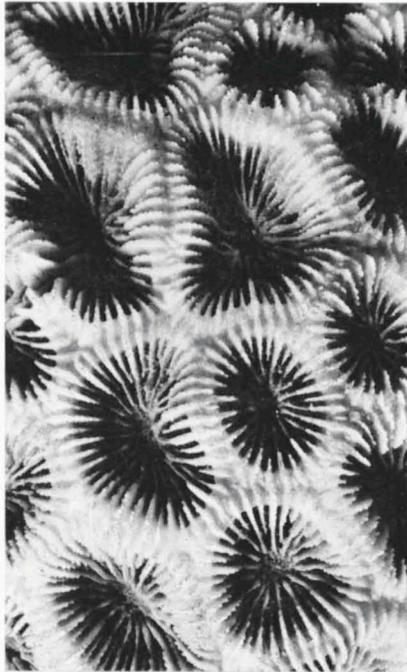
1, 2, *Favia matthai* Vaughan: 1, from Wotap, RMNH Coel. 8967; 2, from Beo, RMNH Coel. 8868a. 3, 4, *Favia rotumana* (Gardiner): 3, from Poeloe Toesa, RMNH Coel. 8861; 4, from Ternate, RMNH Coel. 8864. $\times 2$.

Plate 3

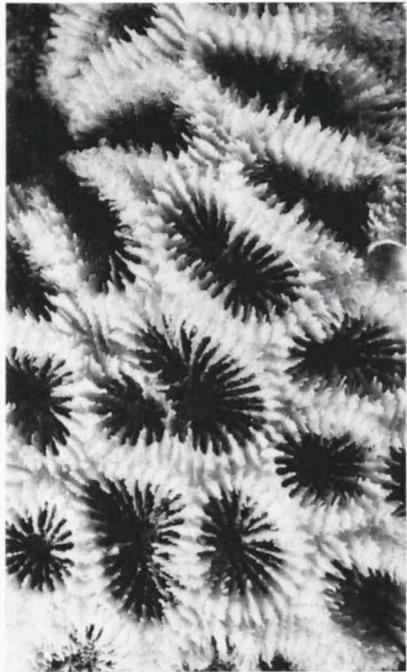
1, 2, *Favia amicorum* (H. Milne Edwards & Haime): 1, from Beo, RMNH Coel. 8873c; 2, from Karaton, RMNH Coel. 8871. 3, 4, *Favia valenciennesi* (H. Milne Edwards & Haime): 3, from Karaton, RMNH Coel. 8874a; 4, from Bone Tamboeng, RMNH Coel. 8875a. $\times 2$.

Plate 4

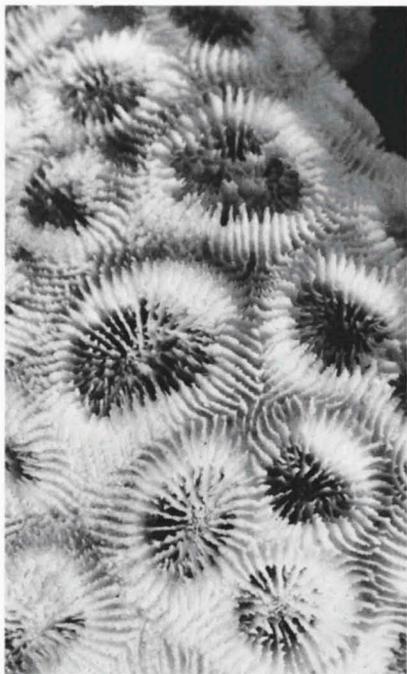
1, *Favia stelligera* (Dana) from Binongko, RMNH Coel. 8889. 2, *Favia laxa* (Klunzinger) from Suvadiva Atoll, RMNH Coel. 8885. 3, *Favia helianthoides* (Wells) from Karaton, RMNH Coel. 8886. 4, *Favia rotulosa* (Ellis & Solander) from Poeloe Toesa, RMNH Coel. 8888. $\times 2$.



1



2



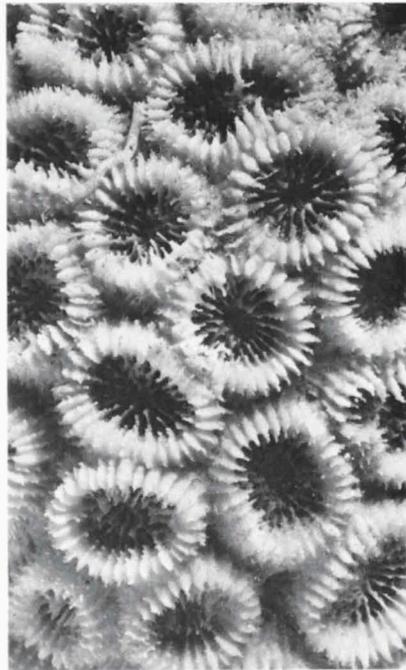
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4



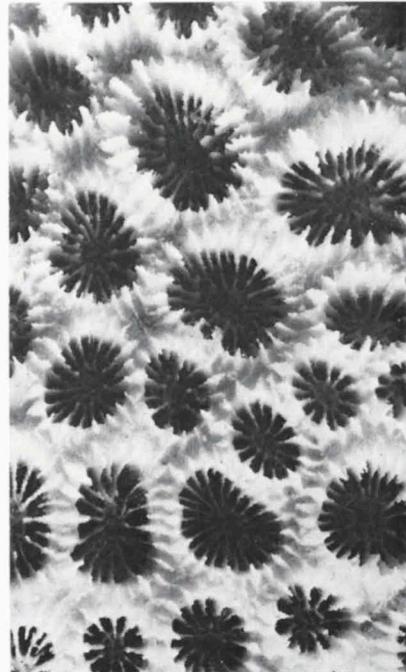
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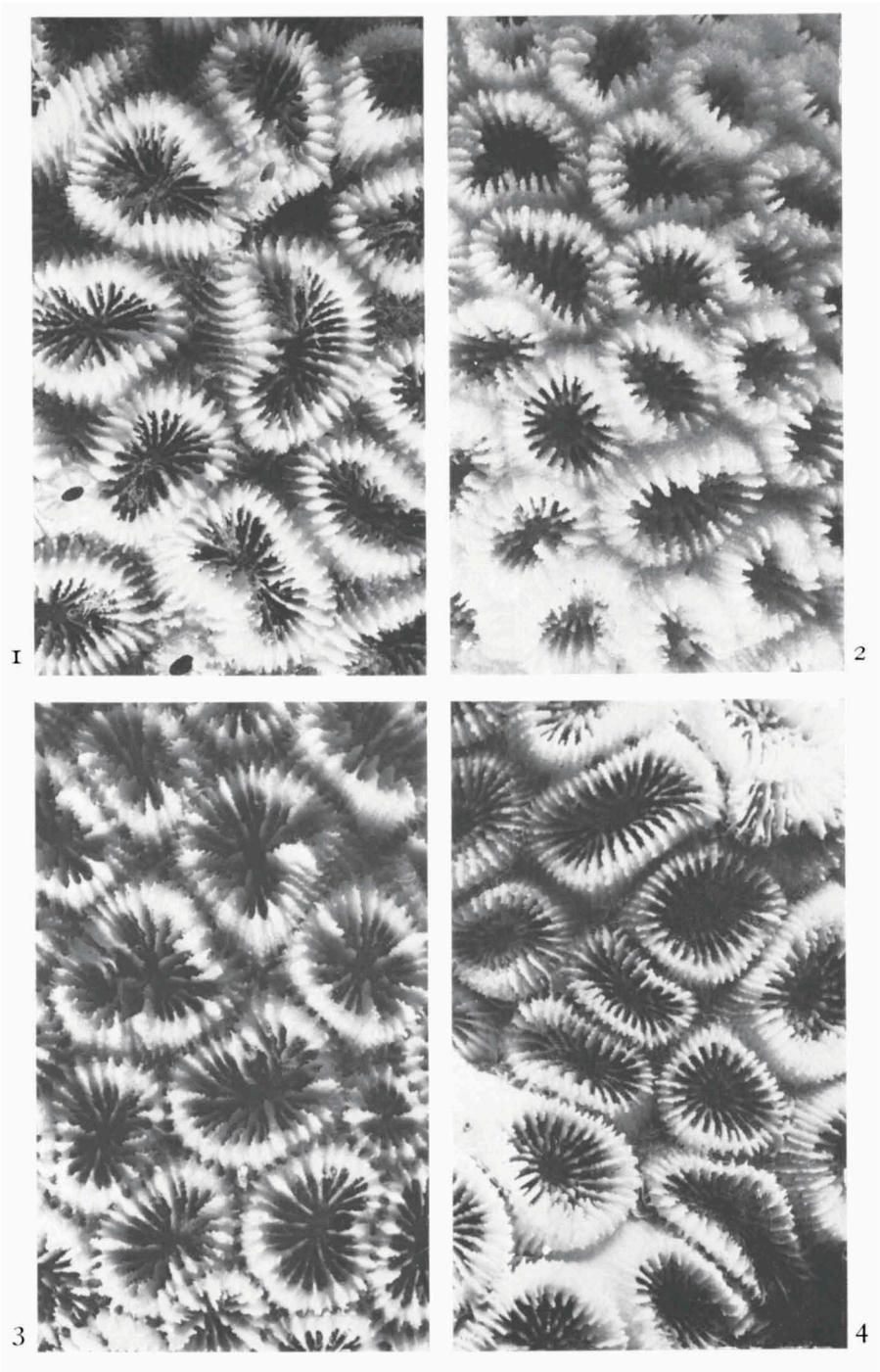
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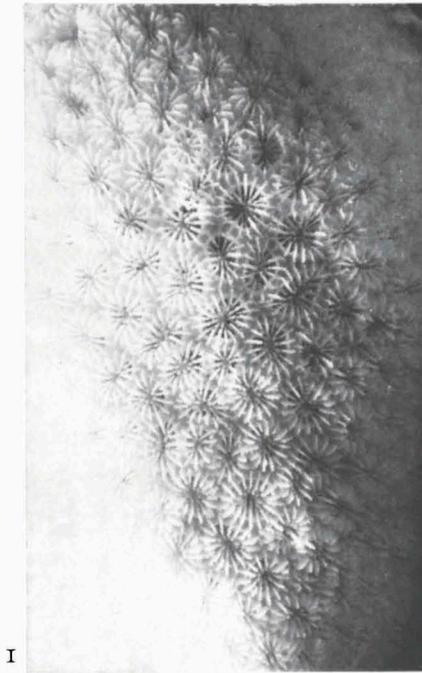


3



4

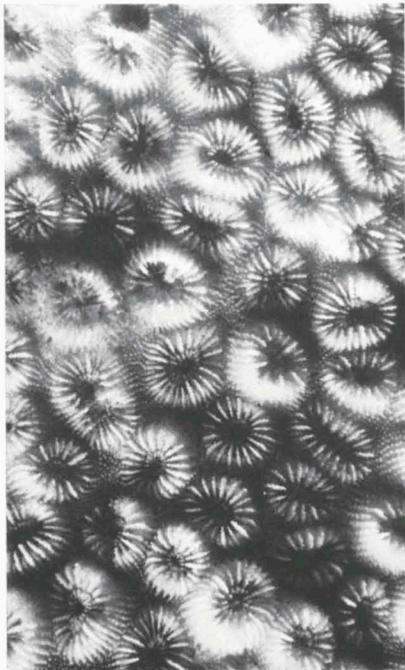




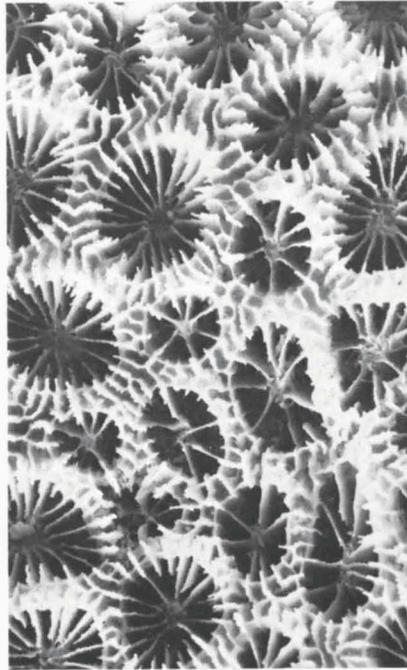
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2



3



4