

ON TWO OLD AND FOURTEEN NEW SPECIES OF ALCYONACEA (COELENTERATA, OCTOCORALLIA) FROM THE RED SEA

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With 16 text-figures and 7 plates

ABSTRACT

Twelve new species of *Sinularia*, one of *Sarcophyton* and one of *Lobophytum* are described. One species of *Sinularia* and one of *Sarcophyton* are commented upon. They were collected along the coral reefs of the Sinai peninsula and off Port Sudan.

INTRODUCTION

The material discussed in this paper consists of two collections, brought together by Israeli and by German researchers. The Israeli collection was for the greater part gathered during SCUBA dives by the junior author (Y.B.) in the northern Red Sea, the Gulf of Aqaba (Gulf of Eilat) and the Gulf of Suez. Additional specimens have been collected by Prof. L. Fishelson, Prof. Y. Loya, Dr. B. Rinkevich and Dr. Ch. Lewinsohn (†), all of the Department of Zoology, Tel-Aviv University, and by Mrs. N. Gunderman of the Steinitz Marine Biology Laboratory, Eilat.

During the last few years a large number of alcyonacean corals have been collected at the coral reefs around the Sinai peninsula. A great variety of habitats was studied, and octocorals were collected from the reef flats, in shallow lagoons and from reef sites to a depth of 40 m. It was found that in the shallow reefs (1–6 m) the most abundant soft corals are species of the genera *Sinularia*, *Sarcophyton*, *Lobophytum* and *Litophyton*. They often form monospecific carpets. No wonder that the two collections mentioned above consist mainly of species belonging to these genera. Especially the great number of *Sinularia* species is noteworthy.

The German collection was obtained by an expedition of the Ruhr-Universität Bochum to the Sudanese Red Sea during February and March 1980. The samples were taken during studies of the composition of the cnidarian community. For this purpose squares of 25 m² were randomly selected at a depth of 10 m: one at the coastal fringing reef close to the lighthouse at the southern entrance of Port Sudan harbour, one at the southwestern edge of the Wingate Reef (a barrier reef some 8 km off the coast) and four squares on the outer and inner slopes of the Sanganeb Atoll, more than 20 km off the coast. Unlike the coastal reefs, the Sanganeb Atoll rises from a depth of more than 800 m. This situation results in a rather oceanic environment. The formation of the Sanganeb Atoll has not been studied very well yet. Most probably it is a horst, which remained from the dislocation fractures when the Red Sea fault trough was formed.

The two collections comprise sixty-five species, of which fourteen are new; they are listed below. Of the remaining fifty-one species some are now reported for the first time from the Red Sea. They are (with the localities added in parentheses): *Cladiella madagascarensis* Tixier-Durivault, 1948 (Dahab, Gulf of Aqaba, depth 2 m); *Dendronephthya (Morchellana) grandiflora* Henderson, 1909 (Sha'ab Mahmud, Red Sea, depth 20 m); *Litophyton sanderi* (May, 1900) (Eilat, Gulf of Aqaba, depth 40–45 m, leg. Ch. Lewinsohn); *Lobophytum venustum* Tixier-Durivault, 1957 (Sanganeb Atoll, near Port Sudan, lagoon); *Sarcophyton crassocaule* Moser, 1919 (Sharem el Muya', Red Sea, reef flat); *Sarcophyton elegans* Moser, 1919 (Sanganeb Atoll, near Port Sudan, southwest part, outer reef, depth 10 m; item, northeast part, inner reef, depth 10 m; item, southwest part, inner reef, depth 10 m); *Sarcophyton serenei* Tixier-Durivault, 1958 (Et-Tur, Gulf of Suez, depth 3 m); *Sarcophyton turschi* Verseveldt, 1976 (see the description below); *Sinularia brassica* May, 1898 (Sharem esh Sheikh, Red Sea, reef flat); *Sinularia cruciata* Tixier-Durivault, 1970 (Ras Muhammad, Red Sea, reef flat); *Sinularia dura* (Pratt, 1903) (Ras el Kanissa, Gulf of Suez, depth 10 m, leg. N. Gunderman); *Sinularia hirta* (Pratt, 1903) (Ras Muhammad, Red Sea, depth 3 m and reef flat); *Sinularia inelegans* Tixier-Durivault, 1970 (Ras Nasrani, Strait of Tiran, Red Sea, depth 4 m; Et-Tur, Gulf of Suez, depth 1 m); *Sinularia marezellieri* (Wright & Studer, 1889) (Marsa Hadamia, southern point of the Sinai peninsula, reef flat); *Sinularia mollis* Kolonko, 1926 (Taba, Gulf of Aqaba, depth 30 m); *Sinularia notanda* Tixier-Durivault, 1966 (Sanganeb Atoll, northeast part, inner reef, depth 10 m); *Sinularia rigida* (Dana, 1846) (Ras Nasrani, Strait of Tiran, Red Sea, depth 9 m); *Sinularia whiteleggei* Lüttschwager, 1914 (Ras Nasrani, Strait of Tiran, Red Sea, depth 5 m); *Stereonephthya acaulis* Verseveldt, 1968 (Ras

Garra, Gulf of Suez, depth 8 m); *Xenia mayi* Roxas, 1933 (Ras Za'anteer, southern point of the Sinai peninsula, depth 20 m).

In the following list of new species we add behind the names of the *Sinularia* species the numbers II, III or IV, which refer to a division of the *Sinularia* species into groups by the senior author in his Revision of the genus *Sinularia* (Verseveldt, 1980: 7). To Group II belong those species in which the clubs in the surface layer of the lobes have a central wart. Group III includes the species in which most clubs (not being *leptocladus* clubs) are 0.06 to 0.12 mm long. The clubs in the species of Group IV are 0.12 mm long or more.

The new species are: *Sinularia barcaformis* sp.n., III; *Sinularia crustaformis* sp.n., III; *Sinularia incompleta* sp.n., III; *Sinularia recurvata* sp.n., III; *Sinularia candidula* sp.n., III/IV; *Sinularia anomala* sp.n., IV; *Sinularia dactyloclados* sp.n., IV; *Sinularia flabelliclavata* sp.n., IV; *Sinularia licroclados* sp.n., IV; *Sinularia loyai* sp.n., IV; *Sinularia muqebblae* sp.n., II/IV; *Sinularia schuhmacheri* sp.n., IV; *Sarcophyton globoverrucatum* sp.n.; *Lobophytum prostratum* sp.n.

In addition to these, two old species, *Sinularia gardineri* (Pratt) (Group III/IV) and *Sarcophyton turschi* Verseveldt, are more or less fully redescribed.

The specimens are kept in the Zoological Museum, Department of Zoology, Tel-Aviv University, Tel-Aviv, Israel (ZMTA) and in the Rijksmuseum van Natuurlijke Historie, Leiden, The Netherlands (RMNH).

The authors are indebted to Mr. W. ter Spill for revising the English text and to Mr. G. J. Vrijmoeth for making the photographs (except the photos pl. 4 fig. 2 and pl. 5 fig. 2).

DESCRIPTIONS

***Sinularia barcaformis* sp. nov.**

(fig. 1, pl. 1 fig. 1)

Material. — Dahab, southern oasis, Gulf of Aqaba, depth 8 m, 4 November 1981; leg. Y. Benayahu, coll. no. 1048, ZMTA Co 19217; one colony, the holotype.

Description. — The colony has the shape of a laterally compressed, small boat, with a length of 100 mm (pl. 1 fig. 1). The wall of the boat is 2 to 3 mm thick, the edge is wavy.

The polyps on the inside of the wall are usually not completely retracted: the incurved tentacles protrude above the surface. The diameter of such pol-

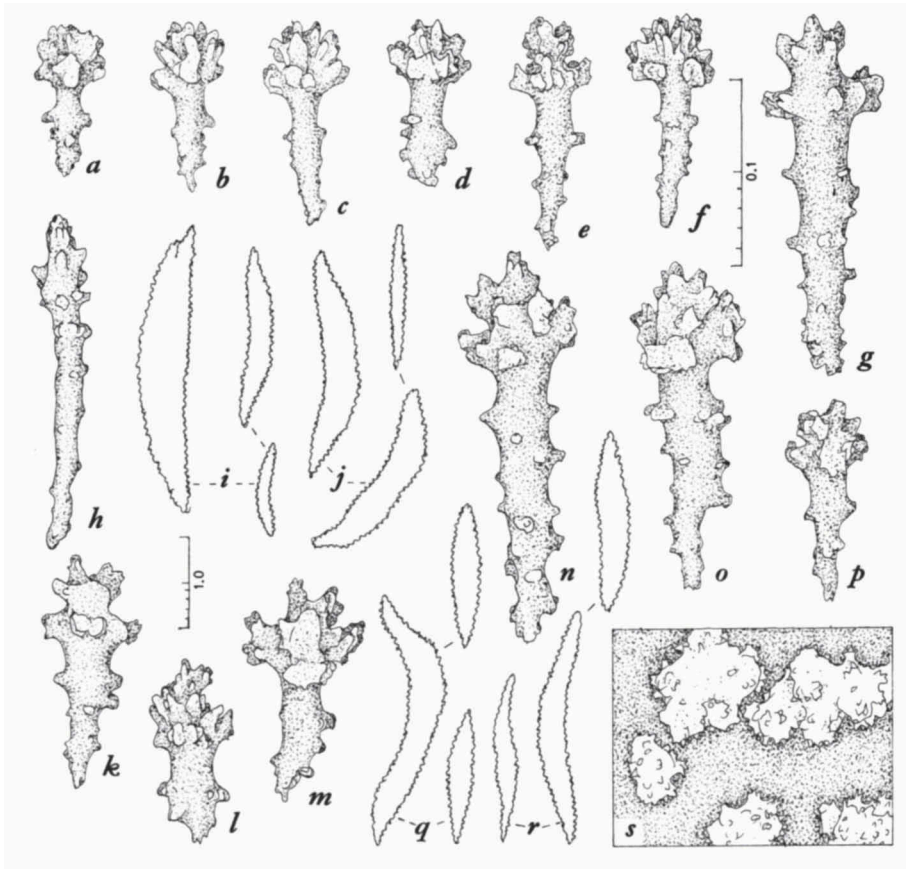


Fig. 1. *Sinularia barcaformis* sp. nov., holotype, ZMTA Co 19217. a-h, sclerites from surface layer of disc; i, j, sclerites from interior of disc; k-p, sclerites from outside of the colony; q-r, sclerites from interior of the base; s, warts on spicule from interior of the base. Enlargement of a-h, k-p and s indicated by 0.1 mm scale at f; that of i, j, q, r by 1.0 mm scale below i.

yps is 0.60 mm; the centres are 0.80 to 1.60 mm apart. In some cases the tentacles are more expanded.

The surface layer of the inside of the "bark" has clubs, usually 0.08 to 0.12 mm long; some measure up to 0.20 mm in length (fig. 1 a-h). The heads are warty, the handles are rather pointed. The interior of the wall contains unbranched, sometimes slightly bifurcated spindles, up to 3.20 mm long (fig. 1 i, j).

The outer surface of the "bark" is filled with clubs, which are slightly longer than those in the inner surface. Their length is usually 0.10 to 0.15 mm, but

lengths of 0.22 and 0.26 mm are not rare (fig. 1 k-p). The spindles in the base of the colony do not differ from those in the raised wall (fig. 1 q, r). The medium-sized warts on these spindles vary from 0.04 to 0.06 mm in diameter; they are not densely placed (fig. 1 s).

Colour. — In alcohol the colony is light brown.

Remark. — The specific name *barcaformis* speaks for itself. The laterally compressed form cannot be the natural one: in the very narrow cleft between the raised walls the polyps had no opportunity to expand. So the compression must be due to the process of fixation.

***Sinularia crustaformis* sp. nov.**

(fig. 2, pl. 1 fig. 2)

Material. — Coral Island, Gulf of Aqaba, depth 6 m, 18 June 1979; leg. Y. Benayahu, coll. no. I, ZMTA Co 19233; one colony, holotype.
Ras um Sid, Red Sea, depth 12 m, 31 November 1981; leg. Y. Benayahu, coll. no. 1123, ZMTA Co 19226; one colony, paratype.

Description of the holotype. — The colony is low, encrusting; the over-all height is 25 mm, the maximum diameter is 52 mm (pl.1 fig. 2). The stalk is 10 mm high and 30 mm wide at the base. The capitulum consists of a number of fairly crowded primary lobes, averagely 15 mm high, which redivide into secondary lobules. The latter are up to 6 mm long and 3 to 4 mm wide. The polyps are entirely retracted and invisible.

The sclerites in the surface layer of the lobes include clubs and all kinds of derivatives of clubs (fig. 2 a-k). The majority have a length of 0.07 to 0.10 mm; others are 0.12 to 0.14 mm, rarely 0.18 mm long. In the interior there are straight or curved spindles, up to 4 mm long.

The surface layer of the stalk contains clubs and irregular, more or less rod-like or dumbbell-like bodies. Most of them are 0.08 to 0.12 mm long, but clubs reaching a length of 0.25 mm are by no means scarce (fig. 2 l-r). The sclerites in the interior of the stalk are spindles, up to 4.60 mm long, and rarely branched (fig. 2 s-u). The big warts protrude above the surface of the spindles for a distance of up to 0.05 mm. Their diameter is up to 0.09 mm, their surface hardly crenellated, but covered with tiny spines (fig. 2 v). Larger spindles often bear compound warts.

Colour. — In alcohol the colour is light creamy.

Variability. — The paratype is higher, up to 32 mm, and laterally flattened. The colour is brownish.

Remark. — The specific name *crustaformis* refers to the encrusting form of the holotype.

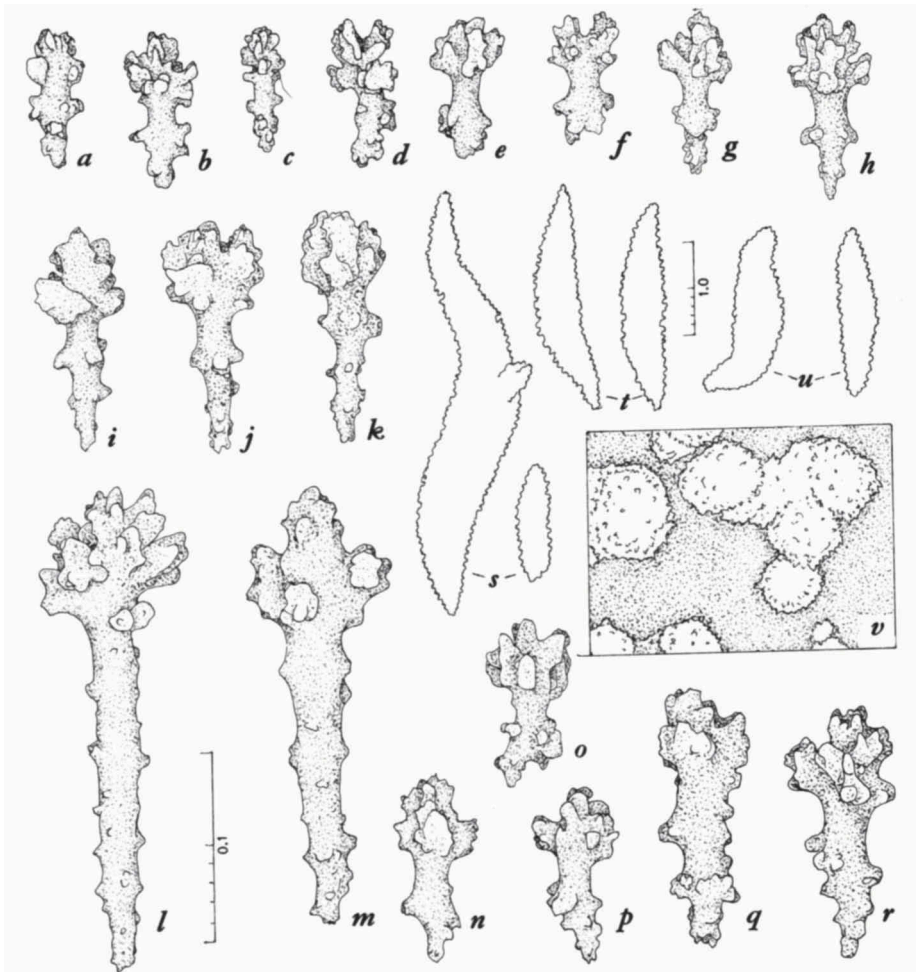


Fig. 2. *Sinularia crustaformis* sp. nov., holotype, ZMTA Co 19233. a-k, sclerites from surface layer of a lobe; l-r, sclerites from surface layer of the base of the colony; s-u, sclerites from interior of the base; v, warts on internal sclerite from the base. Enlargement of a-r and v indicated by 0.1 mm scale at l; that of s-u by 1.0 mm scale below g.

***Sinularia incompleta* sp. nov.**

(fig. 3, pl. 1 fig. 3)

Material. — El-Guz, Gulf of Aqaba, depth 3 m, 8 November 1981; leg. Y. Benayahu, coll. no. 1082 I, ZMTA Co 19222; one colony, the holotype.

Description. — The specimen is a fragment of a bigger colony (pl. 1 fig. 3). It has apparently grown on the sloping side of a stone. At the back the stalk becomes thinner, at the front it is 35 to 45 mm high. The capitulum consists of

crowded, crest-like primary lobes, up to 40 mm high and 6 to 7 mm thick. Along the edge they are subdivided in a cockscomb-like manner; the secondary lobes are up to 15 mm high, cone-shaped, and terminally rounded.

The retracted polyps are clearly visible as round, brown spots, measuring 0.40 mm in diameter; the centres are averagely 0.80 mm apart.

The colony is stiff, the lobules are slightly flexible.

The surface layer of the lobes contains small clubs, 0.06 to 0.10, sometimes 0.12 mm long (fig. 3 a, c-f), and some, more irregularly shaped bodies (fig. 3 b, g). In the interior of the lobes sclerites are absent.

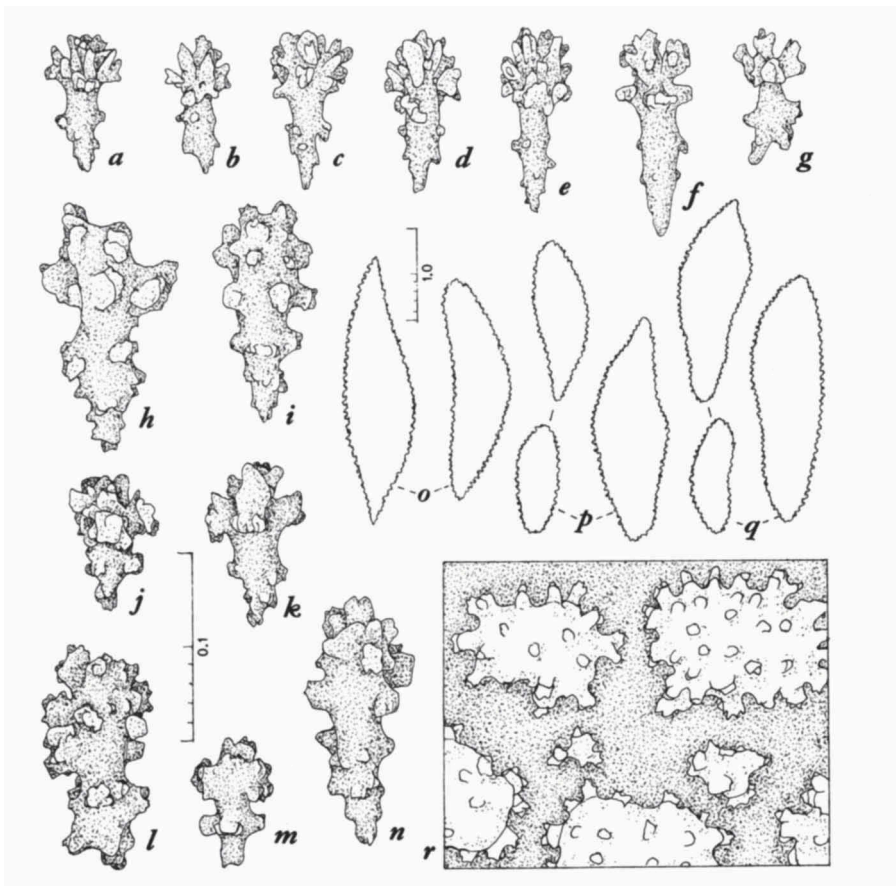


Fig. 3. *Simularia incompleta* sp. nov., holotype, ZMTA Co 19222. a-g, sclerites from surface layer of a lobe; h-n, sclerites from surface layer of the stalk; o-q, sclerites from interior of the stalk; r, warts on internal sclerite from the stalk. Enlargement of a-n and r indicated by 0.1 mm scale at j; that of o-q by 1.0 mm scale below d.

In the surface layer of the stalk the clubs are wider and slightly longer, they measure 0.07 to 0.11, sometimes 0.14 mm in length (fig. 3 h-k, m, n). Here, too, there are irregular bodies, often derivable from clubs (fig. 3l). The interior of the stalk is filled with thick, unbranched, irregularly shaped spindles, up to 2.80 mm long and 0.80 mm wide (fig. 3 o-q). The warts are large; the diameter is 0.06 to 0.08, sometimes 0.10 mm. They bear high, truncated crenelles (fig. 3 r).

Colour. — In alcohol the colour is brown.

Remark. — This is the first *Sinularia* species, in which there are sclerites in the surface layer of the lobes, but not in the interior. The specific name *incompleta* refers to this.

***Sinularia recurvata* sp. nov.**

(fig. 4, pl. 2 fig. 1)

Material. — Dahab, southern oasis, Gulf of Aqaba, depth 8 m, 4 November 1981; leg. Y. Benayahu, coll. no. 1048 h, ZMTA Co 19218; one colony, the holotype.

Description. — The colony is compressed laterally, possibly owing to the fixation (pl. 2 fig. 1). The maximum diameter is 70 mm, the over-all height is 50 mm. The stalk is 20 to 30 mm high. The concave central part of the capitulum is compressed into a narrow cleft, 15 to 20 mm deep. The margin of the disk is occupied by flat lobes, bent outwards and downwards.

The polyps are not completely retracted. Their diameter is 0.40 to 0.60 mm, the mutual distance of their centres is 1.00 to 1.20 mm.

The surface layer of the lobes is provided with clubs, usually 0.09 to 0.13 mm long, a few reach a length of 0.20 mm (fig. 4 a-g). They are slender, with narrow heads. The interior of the lobes has spindles, up to 2.60 mm long; most of them are slender (fig. 4 h, i).

The surface layer of the stalk contains clubs, 0.10 to 0.24 mm long, but most of them are not longer than 0.14 mm (fig. 4 j-p). They are slightly larger than those in the lobes. The interior of the stalk is filled with curved, rarely branched spindles, up to 2.80 mm long (fig. 4 q-s). They are covered with high, often fantastically shaped, compound warts, up to about 0.08 mm in diameter, and provided with numerous crenelles (fig. 4 t).

Colour. — In alcohol the colony is beige-light brown.

Remark. — The colony is characterized by the presence of recurvate, flat lobes, which arise from the margin of the capitulum.

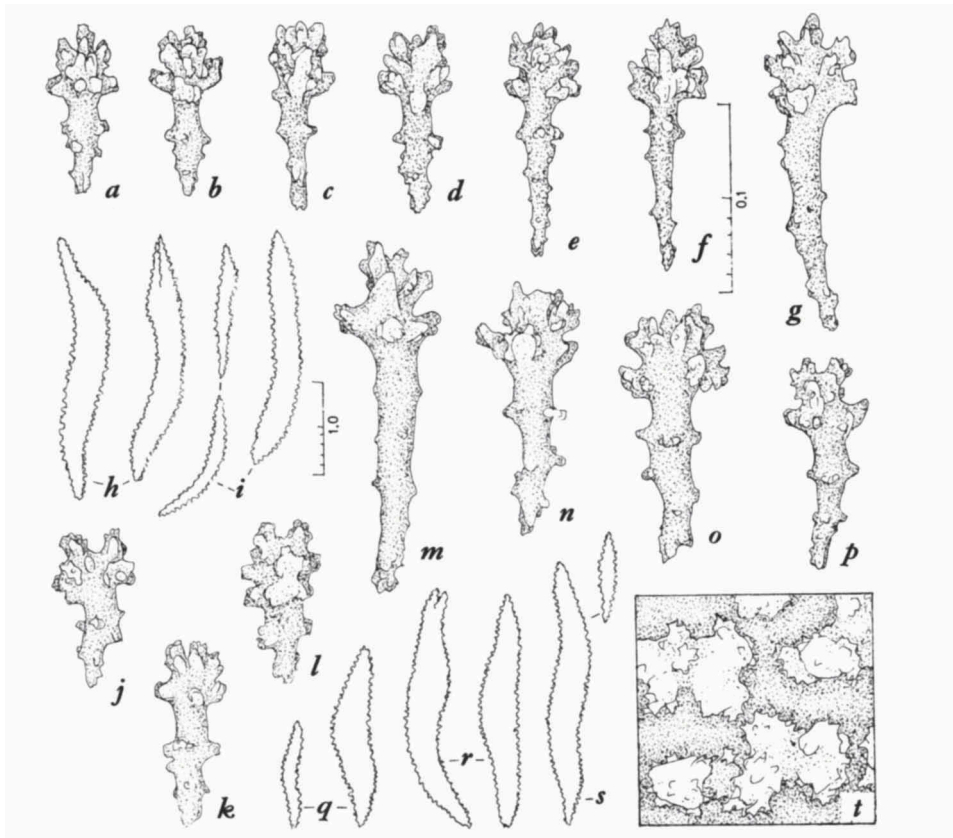


Fig. 4. *Sinularia recurvata* sp. nov., holotype, ZMTA Co 19218. a-g, sclerites from surface layer of a lobe; h, i, sclerites from interior of a lobe; j-p, sclerites from surface layer of the stalk; q-s, sclerites from interior of the stalk; t, warts on internal sclerite from the stalk. Enlargement of a-g, j-p and t indicated by 0.1 mm scale at f; that of h, i and q-s by 1.0 mm scale at i.

***Sinularia candidula* sp. nov.**

(fig. 5, pl. 2 figs. 2, 3, pl. 4 fig. 2)

Material. — Sanganeb Atoll, near Port Sudan, southwest part, outer reef slope, depth 10 m, 21 February 1980; leg. H. Schuhmacher, coll. no. III/17; one colony, holotype, RMNH Coel. no. 15304.

Muqebala', Gulf of Aqaba, reef flat, 24 August 1977; leg. Y. Benayahu, coll. no. 293; one colony ZMTA Co 25062, one colony RMNH Coel. no. 15305.

Km 207 on the road to Sharem esh Sheikh, Gulf of Aqaba, depth 12 m, 23 February 1978; leg. Y. Loya, coll. no. 363, ZMTA Co 19207; one colony.

Marsa Bareika, southern point of the Sinai peninsula, depth 20 m, 8 November 1979; leg. Y. Benayahu, coll. no. 874, ZMTA Co 19209; one colony.

The same locality, depth, date and legator; coll. no. 876, ZMTA Co 19210; one small colony.

El-Guz, Gulf of Aqaba, depth 5 m, 8 November 1981; leg. Y. Benayahu, coll. no. 1082e, ZMTA Co 19225.

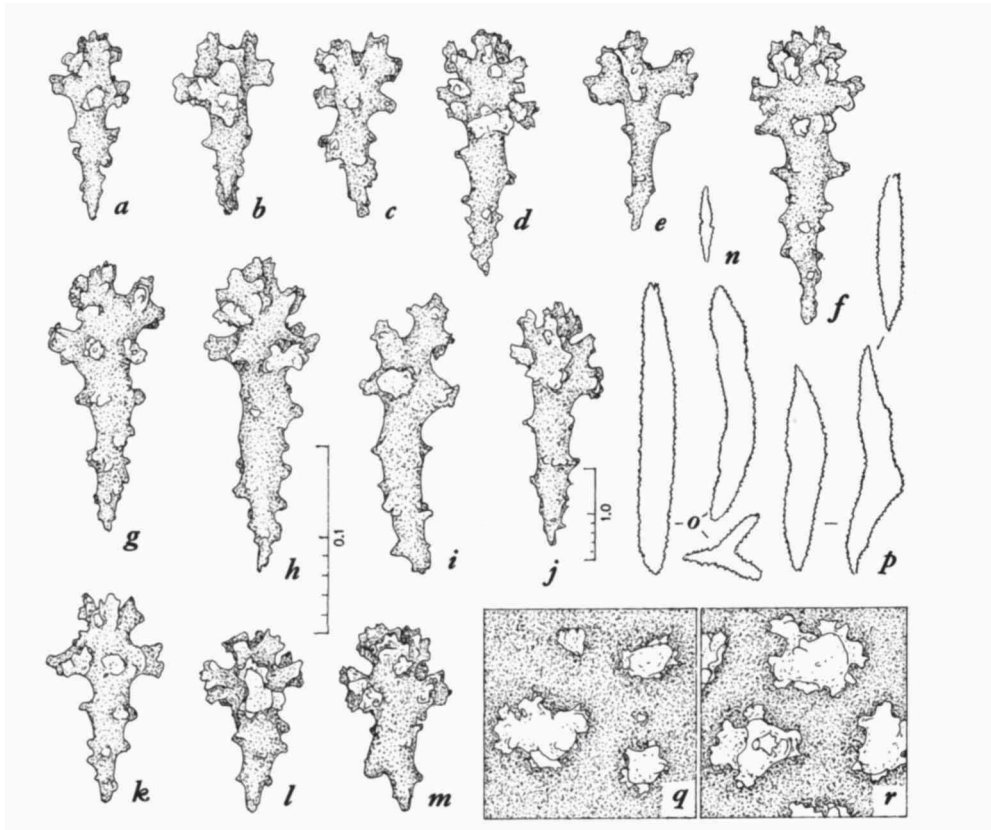


Fig. 5. *Sinularia candidula* sp. nov., holotype, RMNH Coel. no. 15304. a-h, sclerites from surface layer of a lobe; i-m, sclerites from surface layer of the stalk; n-p, sclerites from interior of the stalk; q, r, warts on internal sclerites from the stalk. Enlargement of a-m, q and r indicated by 0.1 mm scale at h; that of n-p by 1.0 mm scale at j.

Description of the holotype. — The holotype is represented in pl. 2 fig. 2 at natural size. The stiff colony is low, encrusting, 20 to 45 mm in total height; the maximum diameter is 100 mm. The capitulum consists of numerous lobes and lobules. The lobes, up to 20 mm high, are irregularly shaped. The smaller ones bear few, the larger ones bear many lobules, which are cone-shaped or short and digitiform, up to 5 mm high and 2 to 4 mm wide. The collector, Dr. H. Schuhmacher, made an under water photo of the holotype (pl. 4 fig. 2).

The polyps are retracted into small pits; the centres of these are averagely 0.80 mm apart.

The surface layer of the lobes contains clubs, 0.10 to 0.15, sometimes up to 0.18 mm long, usually with wide, fantastically-shaped heads and tuberculate,

pointed handles (fig. 5 a-h). In the interior of the lobes there are pointed or blunt-ended, rarely branched spindles, rods and cylinders, usually rather slender, up to 2.40 mm long.

The clubs in the surface layer of the stalk resemble those in the lobes, but they are shorter and wider. The length varies from 0.08 to 0.12 mm, sometimes they are slightly longer (fig. 5 i-m). The sclerites in the interior of the base are slender rods and spindles, up to 3.20 mm long (fig. 5 n-p). They are covered (but not densely) with small, crenellate warts, usually 0.04 to 0.05 mm in diameter (fig. 5 q, r).

Colour. — In alcohol the colour is greyish; living colonies are grey-brown.

Variability. — The other colonies hardly differ from the holotype, except in size. Sometimes the lobules are slightly narrower. Pl. 2 fig. 3 shows a colony from Muqebala' (RMNH Coel. no. 15305); the lobules are erect, like small candles, hence the specific name *candidula* (feminine diminutive of Latin *candela*).

***Sinularia gardineri* (Pratt, 1903)**

(figs. 6, 7, pl. 3 figs. 1--3)

For description and synonymy see: Verseveldt, J., 1980: 59–61, fig. 26, pl. 16 fig. 2.

Material. — Coral Island, Gulf of Aqaba, upper fore-reef, depth 3 m, 26 April 1976; leg. Y. Benayahu, coll. no. 15, ZMTA Co 19204; one colony.

The same locality, reef flat, 18 June 1979; leg. Y. Benayahu, coll. no. H, ZMTA Co 19232 and RMNH Coel. no. 15310, each a few small colonies.

Sharem el Muya', Red Sea, depth 29 m, 7 September 1976; leg. Y. Benayahu, coll. no. 131, ZMTA Co 19205; one colony.

Marsa Bareika, southern point of Sinai peninsula, depth 18 m, 10 August 1977; leg. Y. Benayahu, coll. no. 311, ZMTA Co 19206; one colony.

The same locality, depth 25 m, 1 July 1978; leg. Y. Benayahu, coll. no. 538, ZMTA Co 19208, two colonies; RMNH Coel. no. 15311, one colony.

The same locality, date and legator, depth 20 m; coll. no. 573, ZMTA NS 17736; one colony.

The same locality, date and legator, depth 3 m; coll. no. 755, ZMTA NS 17988, one colony; coll. no. 754, RMNH Coel. no. 15312, two fragments.

The same locality, depth 8 m, 8 November 1979; leg. Y. Benayahu, coll. no. 887, ZMTA Co 25058; one colony.

Wadi Kabila, Gulf of Aqaba, depth 12 m, 10 April 1980; leg. B. Rinkevich, ZMTA Co 19211, one colony; RMNH Coel. no. 15313, one colony.

The same locality, depth, date and legator, ZMTA Co 19213; one colony.

Ras Tanaka, Gulf of Suez, depth 3 m, 25 September 1974; leg. L. Fishelson, ZMTA Co 19214, one colony; RMNH Coel. no. 15315, two fragments.

Sharem esh Sheikh, Red Sea, depth 18 m, 7 November 1981; leg. Y. Benayahu, coll. no. 1075a, RMNH Coel. no. 15314; one colony.

El-Guz, Gulf of Aqaba, depth 3 m, 8 November 1981; leg. Y. Benayahu, coll. no. 1082, ZMTA Co 19221; one colony.

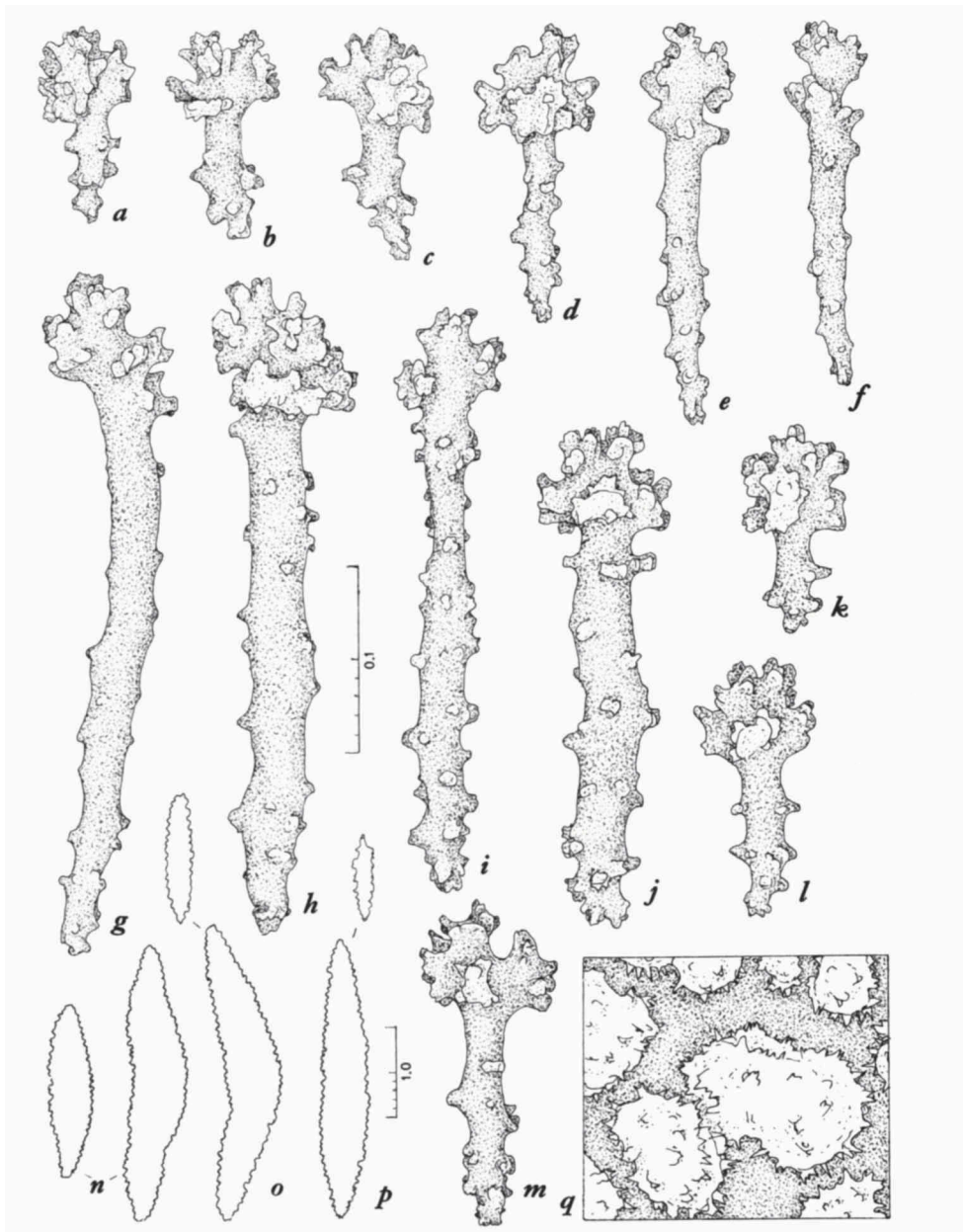


Fig. 6. *Sinularia gardineri* (Pratt), ZMTA Co 19223. a-h, sclerites from surface layer of a lobe; i-m, sclerites from surface layer of the stalk; n-p, sclerites from interior of the stalk; q, warts on internal sclerite from the stalk. Enlargement of a-m and q indicated by 0.1 mm scale at h; that of n-p by 1.0 mm scale at p.

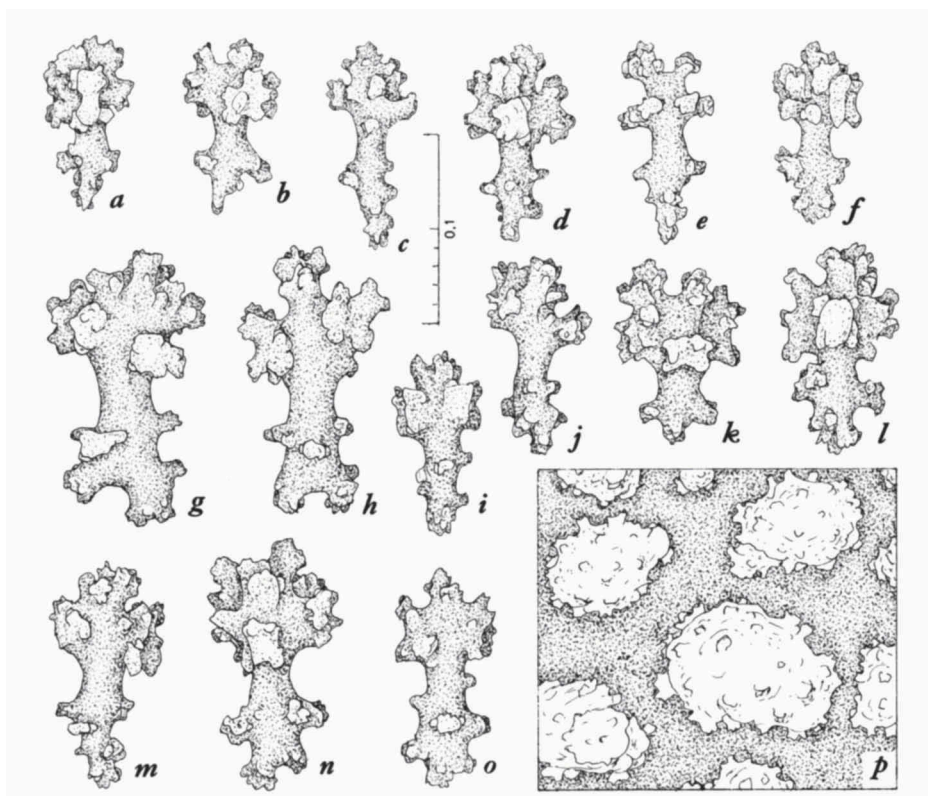


Fig. 7. *Sinularia gardineri* (Pratt), ZMTA Co 19221. a-f, normal and "double headed" clubs from surface layer of a lobe; g-o, sclerites from surface layer of the stalk, most of which are "double headed" clubs; p, warts on internal sclerite from the stalk. All enlargements are the same; scale 0.1 mm.

The same locality, date and legator, depth 5 m; coll. no. 1082 II, ZMTA Co 19223; one colony.

The same locality, depth, date and legator; coll. no. 1082 III, ZMTA Co 19224; one colony.

Muqebila', Gulf of Aqaba, depth 3 m, date not recorded; leg. Y. Benayahu, coll. no. C, ZMTA Co 19229; one colony.

Sanganeb Atoll, near Port Sudan, southwest part, outer reef, depth 10 m, March 1980; leg. H. Schuhmacher, coll. no. III/63; one colony.

The identification of the above-mentioned colonies is facilitated by the investigation of the holotype (Verseveldt, 1980: 59). In particular the shapes of the sclerites in the surface layer of the lobes and of the stalk are important in trying to recognise the species, and it is precisely these shapes that were not described or figured by Pratt (1903).

A few remarks may be made.

1. The surface layer of the lobes and the stalk contains two main types of clubs.

(a) Clubs, 0.09 to 0.15 mm long, with a wide, warty head and a handle, which may be more or less pointed (Verseveldt, 1980, fig. 26 a, c; this paper, fig. 6 a, c, d, fig. 7 c, i) or they widen by an accumulation of tubercles and warts (Verseveldt, 1980, fig. 26 f, g; this paper, fig. 6 b, k, fig. 7 a, b, d-h, j-o). Sometimes these "double-headed" clubs are numerous as in specimen Co 19221 (fig. 7), in other colonies they are scarcer. In the surface layer of the stalk the clubs are larger and wider (fig. 7 g-o).

(b) Clubs, 0.25 to 0.35, sometimes more than 0.40 mm long, with a warty head and a straight or slightly curved, rod-shaped, tuberculate handle (Verseveldt, 1980, fig. 26 d, e, h, i; this paper fig. 6 g-j).

The "double-headed" clubs mentioned sub a and the long clubs mentioned sub b seem to be characteristic of *S. gardineri*.

2. The sclerites in the interior of lobes and stalk are spindles, rarely longer than 4 mm. They are usually unbranched, and covered with warts. The latter are rounded tubercles, 0.06 to 0.08 mm in diameter, with blunt or pointed crenelles (Verseveldt, 1980, fig. 26 o, this paper fig. 6 q, fig. 7 p).

3. The shape of the colonies is something of a problem. In some colonies the lobes are long, digitiform and branched (pl. 3 fig. 3), in others they are short and stumpy, not or scarcely branched (pl. 3 fig. 1). Between these types there are all kinds of intermediate forms. We refer them all to one species.

Geographical distribution. — Maldives, Red Sea.

***Sinularia anomala* sp. nov.**

(fig. 8, pl. 4 fig. 1)

Material. — Ras Muhammad, Red Sea, reef flat, 21 April 1979; leg. Y. Benayahu, coll. no. 841, ZMTA NS 17964; one colony, the holotype.

Description. — The colony consists of two higher parts connected by a thinner part, only 4 to 10 mm thick (pl. 4 fig. 1). The thicker parts are 30 and 35 mm high. The outside of these parts is grooved longitudinally, which may be caused by contraction during fixation. Whether the remarkable shape of the whole colony has also been caused by contraction is an open question. In view of the hardness of the colony I consider this improbable but not impossible.

The surface of the capitulum consists of numerous small, low, sinuous, compactly disposed crests. The polyps are invisible.

The surface layer of the lobes is filled with clubs, 0.11 to 0.16 mm long (fig. 8 a-f); they do not have a typical shape. In the interior there are spindles, sometimes bifurcated at one end; the length is up to 1.60 mm (fig. 8 g).

In the surface layer of the stalk most clubs are shorter (0.09 to 0.14 mm) and wider (fig. 8 i, j, l, o). In addition to the clubs there are irregularly shaped

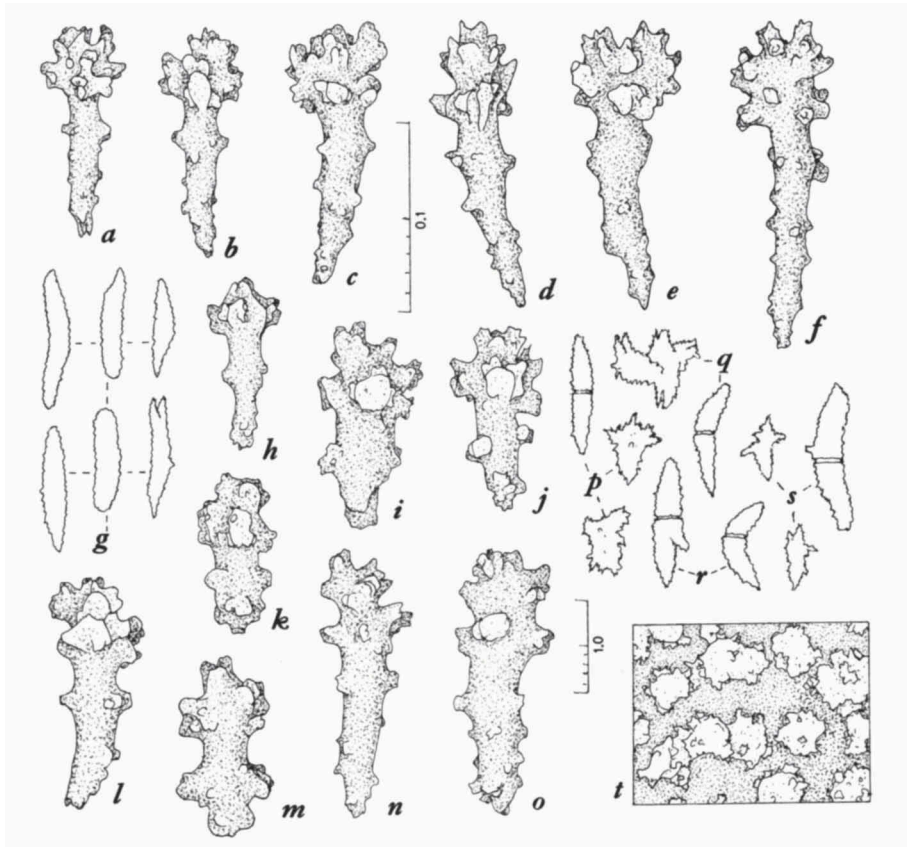


Fig. 8. *Sinularia anomala* sp. nov., holotype, ZMTA NS 17964. a-f, sclerites from surface layer of a lobe; g, sclerites from interior of a lobe; h-o, sclerites from surface layer of the stalk; p-s, sclerites from interior of the stalk; t, warts on internal sclerite from the stalk. Enlargement of a-f, h-o and t indicated by 0.1 mm scale at c; that of p-s by 1.0 mm scale below p.

bodies (fig. 8 k, m). The interior of the stalk contains (1) normal spindles, usually with a distinct median constriction and up to 1.60 mm long, and (2) irregular and fantastically-shaped bodies (fig. 8 p-s). The crenellate warts are small, usually 0.03 to 0.04 mm in diameter (fig. 8 t).

Colour. — In alcohol the colour is light beige.

The specific name *anomala* (Gr. *anomalos* = abnormal, unusual) refers to the deviating form of the colony. It is, however, questionable whether this abnormal form is typical of the species. The shape of the lobes and the characters of the sclerites are, of course, more important.

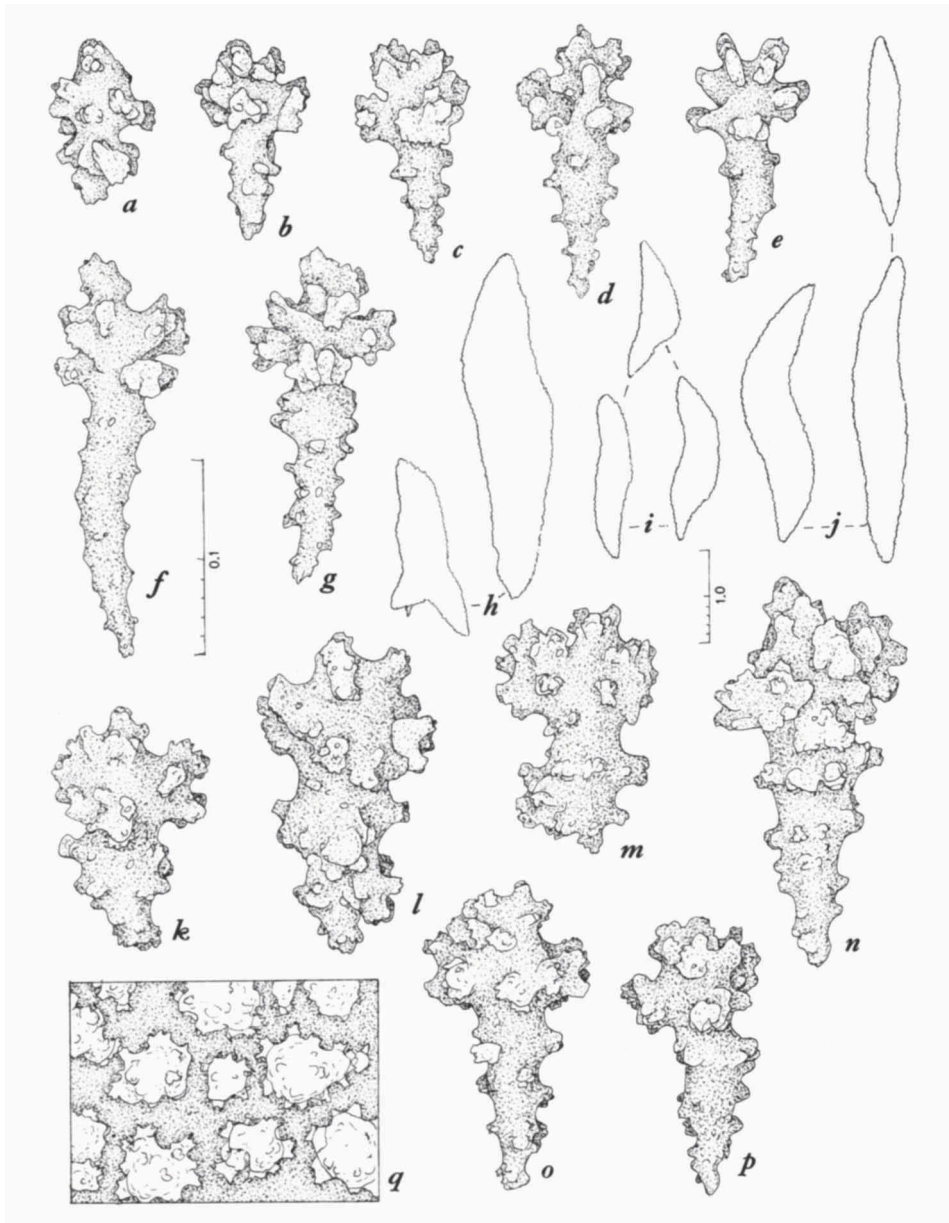


Fig. 9. *Sinularia dactyloclados* sp. nov., holotype, RMNH Coel. no. 14800. a-g, sclerites from surface layer of a lobe; h-j, sclerites from interior of a lobe; k-p, sclerites from surface layer of the stalk; q, warts on internal sclerite from the stalk. Enlargement of a-g and k-q indicated by 0.1 mm scale at f; that of h-j by 1.0 mm scale below i.

***Sinularia dactyloclados* sp. nov.**

(fig. 9, pl. 6 fig. 4)

Material. — Sanganeb Atoll, near Port Sudan, northeast part, inner reef slope, depth 10 m, 10 March 1980; leg. H. Schuhmacher, coll. no. IV/39, RMNH Coel. no. 14800; one colony, the holotype.

Description. — The colony is laterally flattened. The over-all height is 50 mm, the diameters are 63 and 28 mm (pl. 6 fig. 4). The stalk is 10 to 15 mm high. The primary lobes are up to 40 mm high. They bear secondary lobes, which vary in shape from small, rounded knobs to finger-like branches up to 15 mm long and 3 to 8 mm wide at the base.

The completely retracted polyps are usually visible through the transparent surface layer as white spots; their mutual distance is about 0.80 mm.

The surface layer of the lobes has clubs, 0.12 to 0.20 mm long; a few measure up to 0.28 mm in length (fig. 9 b-g). The heads are wide (up to 0.08 mm) and warty; the pointed handles are tuberculate or slightly thorny. In addition there are some small, irregular bodies (fig. 9 a). The interior of the lobes contains curved, occasionally branched, thick spindles, up to 3.70 mm long and 0.80 mm wide (fig. 9 h-j).

In the surface layer of the stalk there are clubs, 0.15 to 0.25 mm long (fig. 9 k, l, n-p). They are longer and wider than those in the lobes. The heads are up to 0.12 mm wide, the handles are blunt or pointed, and covered with smaller warts and blunt thorns. In the stalk surface there are also irregular, often more or less dumbbell-shaped bodies, 0.10 to 0.13 mm long, with two warty heads (fig. 9 m). The stalk interior is filled with spindles, which closely resemble those in the lobes. The surface of these sclerites is densely covered with medium-sized, transversely arranged, crenellate warts (fig. 9 q).

Colour. — In alcohol the colour is creamy. Living colonies are light brown.

Remark. — The specific name *dactyloclados*, a combination of the Greek words *daktylos* = finger and *klados* = branch, alludes to the finger-like shape of the lobules.

***Sinularia flabelliclavata* sp. nov.**

(fig. 10, pl. 5 figs. 1–3)

Material. — Sanganeb Atoll, near Port Sudan, southwest part, inner reef slope, depth 10 m, 6 March 1980; leg. H. Schuhmacher, coll. no. V/63; RMNH Coel. no. 15301, the holotype. The same locality, depth, date and legator, coll. no. V/52 & V/63, RMNH Coel. no. 15302, paratypes.

Description of the holotype. — The colony is slightly flattened laterally (pl. 5 fig. 1). The polypary has a maximum diameter of 60 mm. At a height of 15 mm the stalk, about 15 mm wide, divides into two main branches. The latter redivide more than once and bear terminal twigs, up to 9 mm long and 2.50 to 3.00 mm wide. The whole colony has a tree-like shape.

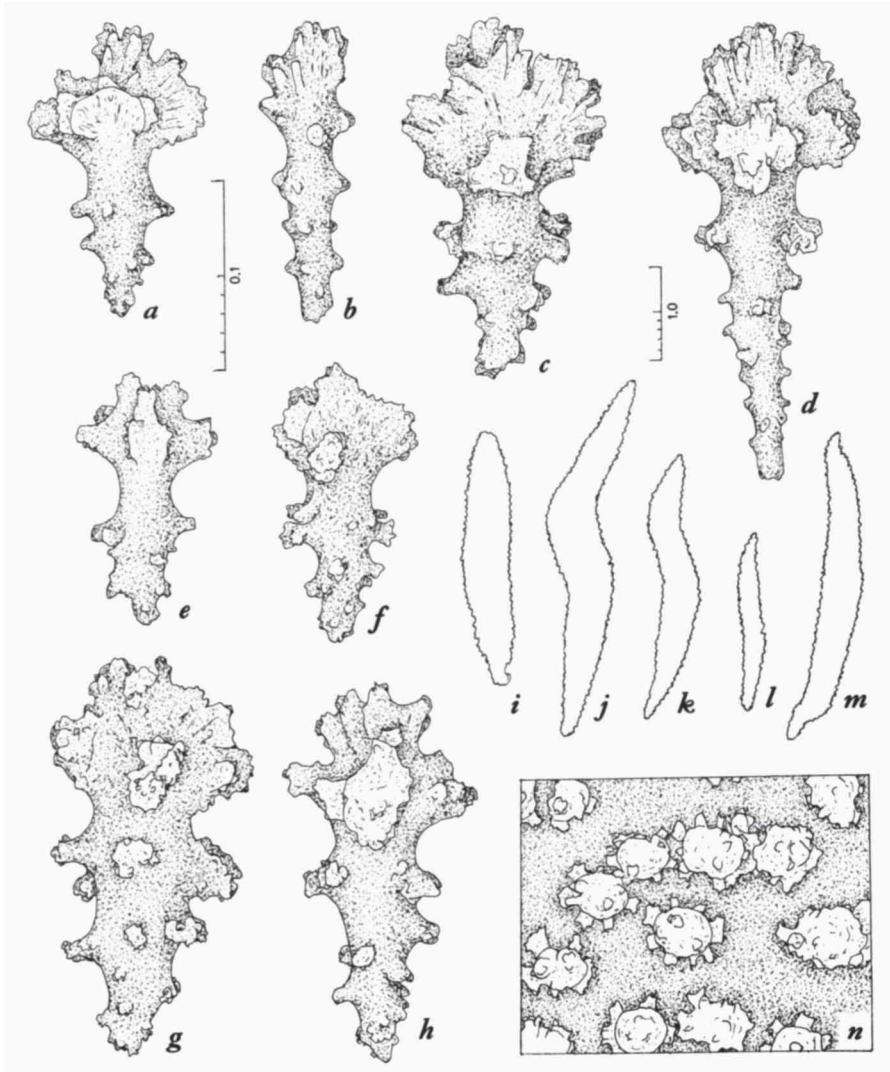


Fig. 10. *Sinularia flabelliclavata* sp. nov., holotype, RMNH Coel. no. 15301. a-d, sclerites from surface layer of a lobe; e-h, sclerites from surface layer of the stalk; i-m, sclerites from interior of the stalk; n, warts on internal sclerite from the stalk. Enlargement of a-h and n indicated by 0.1 mm scale at a; that of i-m by 1.0 mm scale to the right of c.

The polyps are almost exclusively to be found on the twigs. They are retracted, leaving small hillocks on the surface. The centres are 0.60 to 1.00 mm apart.

The surface layer of the lobes contains clubs, 0.15 to 0.25 mm, sometimes up to 0.31 mm long (fig. 10 a-d). The heads consist of a few flat, fan-like prominences, often with a thickened, wart-like margin; the width of the heads is up to 0.11 mm. The handles bear small warts and blunt thorns. In the stalk surface the clubs are shorter, 0.13 to 0.21 mm long, and hardly wider (fig. 10 e-h).

The interior of lobes and stalk is filled with curved spindles, up to 4 mm long (fig. 10 i-m). The crenellate warts are small, up to 0.05 mm in diameter; they are rather distant and usually arranged in transverse rows (fig. 10 n).

Colour. — In alcohol the colony is white. Living colonies are creamy-greyish.

Variability. — The paratypes are smaller; they are strongly flattened laterally (pl. 5 fig. 2). Pl. 5 fig. 3 shows an under water photo of a colony of *S. flabelliclavata*.

Remark. — The specific name *flabelliclavata*, from the Latin words *flabellum* = fan and *clava* = club, refers to the typical fan-like prominences composing the heads of the clubs in the surface layers.

***Sinularia licroclados* sp. nov.**

(fig. 11, pl. 6 figs. 2, 3)

Material. — Marsa Bareika, southern point of the Sinai peninsula, reef flat, 1 July 1978; leg. Y. Benayahu, coll. no. 758, ZMTA NS 17731; one colony, the holotype; a small colony, RMNH Coel. no. 15306, paratype. Wadi Kabila, Gulf of Aqaba, depth 12 m, 10 April 1980; leg. B. Rinkevich, ZMTA Co 19212; one colony, paratype.

Description of the holotype. — The maximum height of the colony is 40 mm, of which 20 to 30 mm go to the stalk. The concave capitulum measures 50 mm in maximum diameter (pl. 6 fig. 2). Most of the flattened primary lobes arise from the margin. The secondary lobes take their rise from the edges of the primary ones; they are curved, digitiform, usually 3 to 5 mm wide.

The polyps are not entirely retracted: the incurved tentacles protrude above the surface of disk and lobes. Their diameter is 0.60 to 0.70 mm, the distance between the centres is 0.80 to 1.20 mm. The anthocodial armature consists of a crown, about seven rows deep, and eight points. The crown sclerites are curved, tuberculate spindles, 0.20 to 0.50 mm long. The point spicules are clubs,

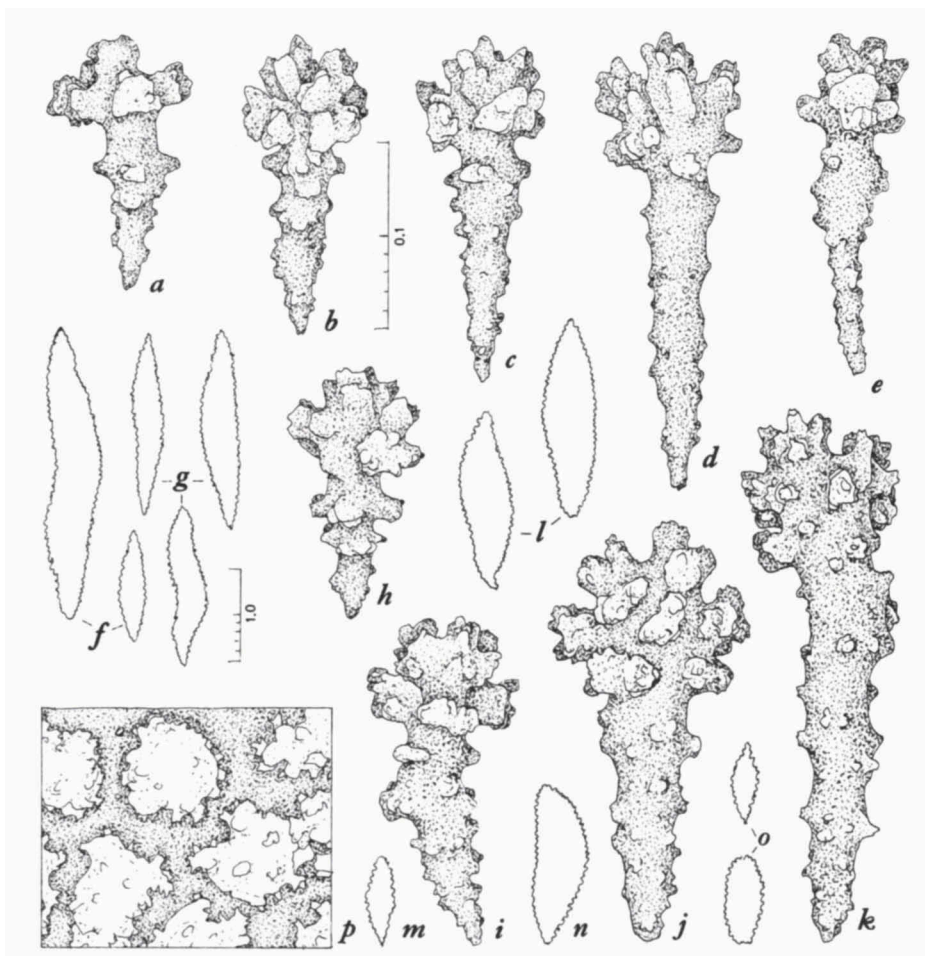


Fig. 11. *Sinularia licroclados* sp. nov., holotype, ZMTA NS 17731. a-e, clubs from surface layer of a lobe; f, g, spicules from interior of a lobe; h-k, sclerites from surface layer of the stalk; l-o, sclerites from interior of the stalk; p, warts on internal sclerite from the stalk. Enlargement of a-e, h-k and p indicated by 0.1 mm scale at b; that of f, g, l-o by 1.0 mm scale at g.

up to 0.25 mm long; their narrow, tuberculate heads pass into pointed handles. More distally, probably in the basal part of the tentacles, there are small spindles and shuttles, 0.08 to 0.10 mm long.

The surface layer of the lobes contains clubs, usually 0.12 to 0.27 mm long, sometimes up to 0.32 mm (fig. 11 a-e). In the interior there are spindles, usually shorter than 2 mm, but a few measure 3 mm in length (fig. 11 f, g).

The surface layer of the stalk has clubs, 0.14 to 0.31 mm long, with wide, warty heads (up to 0.11 mm wide), and thick, tuberculate handles (fig. 11 h-

k). The interior of the stalk is filled with stout spindles, up to 2 mm long and 0.55 mm wide (fig. 11 l-o); occasionally a spindle is bifurcated at one end. The spindles are covered with crowded, crenellate warts, about 0.06 mm in diameter (fig. 11 p).

Colour. — In alcohol the colour is creamy.

Variability. — The paratype from Marsa Bareika is smaller, but it has the same creamy colour. The specimen from Wadi Kabila is nearly of the same size as the holotype, the colour is light brown (pl. 6 fig. 3).

Remark. — The specific name *licroclados* is a combination of the Greek words *likros* = antler and *klados* = branch, referring to the antler-like form of the colonial lobes.

***Sinularia loyai* sp. nov.**

(fig. 12, pl. 6 fig. 1)

Material. — Coral Island, Gulf of Aqaba, reef flat, 18 June 1979; leg. Y. Benayahu, coll. no. E, ZMTA Co 19231; one colony, holotype.

Muqebba', Gulf of Aqaba, depth 4 m, 25 June 1976; leg. Y. Benayahu, coll. no. 207, RMNH Coel. no. 15308; one colony, paratype.

Description of the holotype. — The erect colony measures 65 mm in total height (pl. 6 fig. 1). The stalk is 15 to 30 mm high. The capitulum consists of tightly packed primary lobes, up to 45 mm high, which bear erect digitiform branches, 6 to 8 mm wide at the base and slightly tapering distally.

The polyps are entirely, or for the greater part, retracted. The centres are 1.10 to 1.60 mm apart. The anthocodial armature consists of a crown, about four rows deep, and some more or less radially arranged point sclerites. The crown sclerites are curved spindles, up to 0.50 mm long, with higher tubercles on the convex side. The point sclerites are spindle-shaped "clubs", 0.15 to 0.28 mm long, with a slightly wider head, covered with numerous tubercles and a narrower, pointed handle (fig. 12 g). Such clubs also occur in the crown.

The surface layer of the lobes contains clubs, varying in shape and in length. The following types can be distinguished:

1. Clubs with a wide, warty head and a wide, more or less triangular handle, separated from the head by a distinct constriction (fig. 12 a, b, d).

2. Clubs with a more normal handle; below the constriction there is one girdle of higher prominences (fig. 12 c, e).

The length of these clubs (1) and (2) varies from 0.09 to 0.21 mm, but most of them are 0.13 to 0.15 mm long.

3. Clubs, up to 0.29 mm long, with narrower, warty heads and tuberculate handles (fig. 12 f, g).

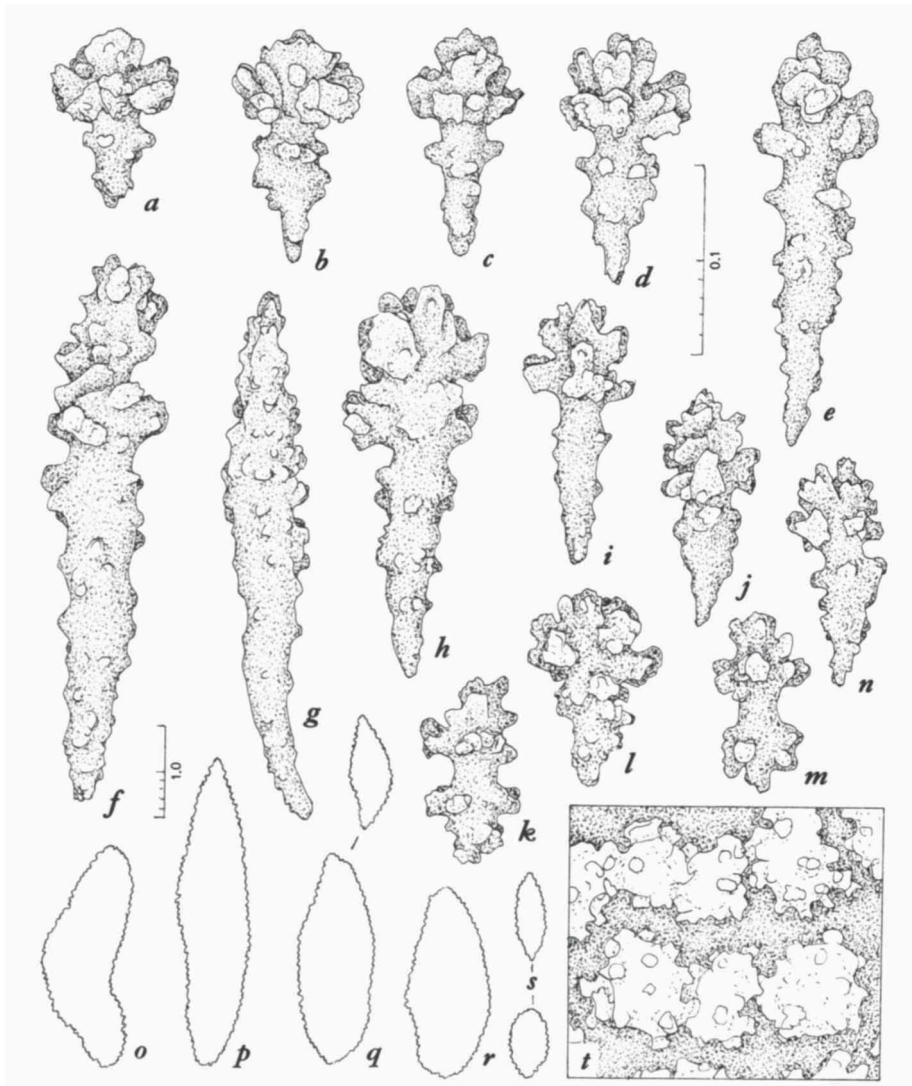


Fig. 12. *Sinularia loyai* sp. nov.: holotype. ZMTA Co 19231. a-g, sclerites from surface layer of a lobe; h-n, sclerites from surface layer of the stalk; o-s, sclerites from interior of the stalk; t, warts on internal sclerite from the stalk. Enlargement of a-n and t indicated by 0.1 mm scale at d; that of o-s by 1.0 mm scale at f.

Between these types there are all kinds of transitional forms.

The interior of the lobes has few spindles; the length is up to 2.85 mm.

The clubs in the stalk surface hardly differ from those in the lobes (fig. 12 h-j, l, n); there are also some capstan-like sclerites (fig. 12 k, m). Most of the sclerites are 0.09 to 0.17 mm long; a few are longer, up to 0.24 mm. The inte-

rior of the stalk is filled with unbranched, strikingly wide, blunt or pointed sclerites, up to 3.30 mm long (fig. 12 o-s). The crenellate warts are up to 0.07 mm in diameter (fig. 12 t).

Colour. — The colony is whitish-creamy.

Variability. — The paratype is lower and wider, the colour is greyish.

Remark. — The species is named after Prof. Y. Loya, Department of Zoology, Tel-Aviv University, Tel-Aviv, Israel, as a token of gratitude for his fruitful cooperation with Dr. Y. Benayahu.

***Sinalaria muqebalae* sp. nov.**

(fig. 13, pl. 7 fig. 1)

Material. — Muqebal', Gulf of Aqaba, reef flat, June 1979; leg. Y. Benayahu, coll. no. D, ZMTA Co 19230; one colony, the holotype.

Description. — The photograph of the colony (pl. 7 fig. 1) shows that the colony has the form of a trapezium. The bare base is 55 mm long, the height (= the distance between base and upper side) is 50 mm. The colony has, however, not the same thickness throughout: near the base it is thinner than at the top. The colony gives the impression of having grown on the side of a stone.

In general the crowded lobes are directed upwards. The smaller ones are 3 to 7 mm wide and up to 10 mm high. The larger ones bear a number of lobules; the smallest of these are merely tiny knobs. The polyps are so completely retracted as to be invisible.

In the surface layer of the lobes the sclerites include clubs, usually 0.10 to 0.16 mm long (fig. 13 a-g). The heads are warty, sometimes there is a central wart (fig. 13 d). In addition to these sclerites there are many longer clubs, 0.26 and 0.32 mm long (fig. 13 h). The surface layer of the stalk has clubs, which are irregular in shape (fig. 13 n, p, r); the length varies from 0.10 to 0.32 mm, just as in the lobes. But the majority of the sclerites are irregular, often more or less rod- or cylinder-shaped (fig. 13 l, m, o, q).

The interior of the lobes and of the stalk contains straight or curved, rarely branched spindles, up to 2.30 mm long (fig. 13 i-k, s-u). The warts are simple or compound. When simple, the diameter of the, usually spherical wart is 0.03 to 0.05 mm. It is provided with tiny crenelles and rises above the surface of the sclerite on a relatively high, volcano-shaped elevation. When compound, the warts are united into larger, complex knobs, giving the sclerite a rugged appearance (fig. 13 u, v).

Colour. — In alcohol the colour is greyish-light beige.

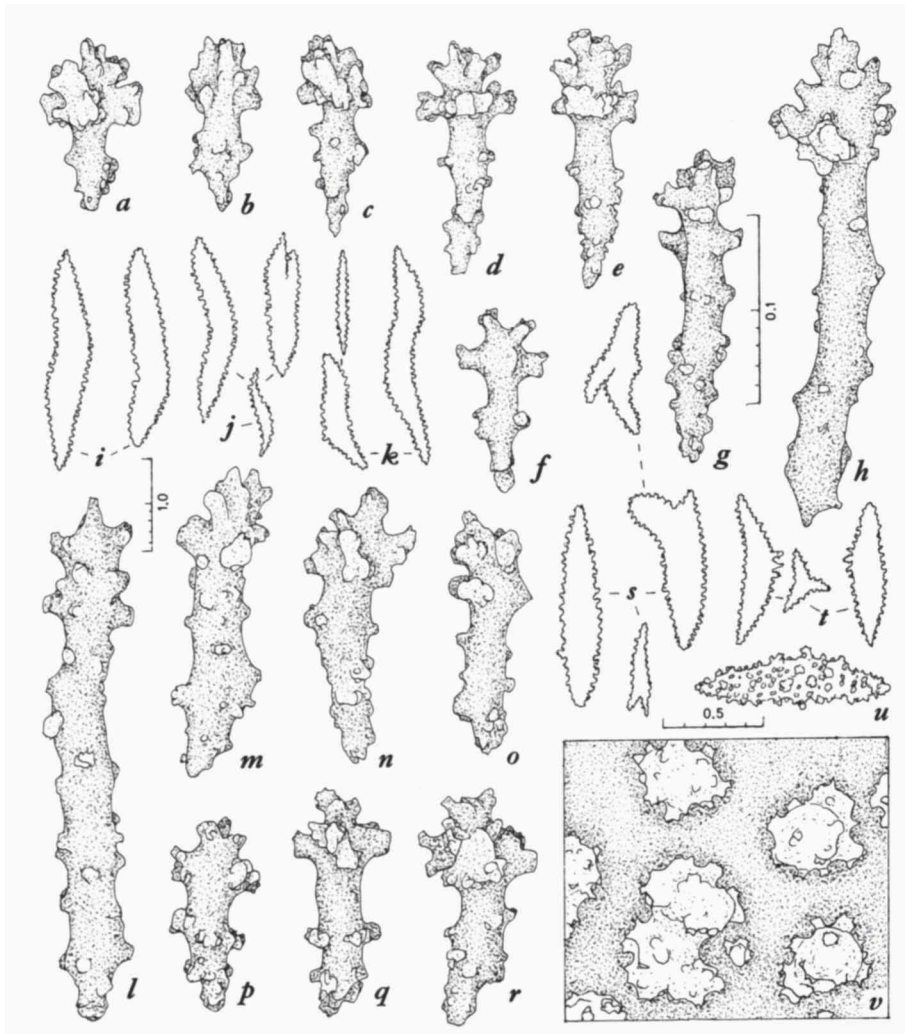


Fig. 13. *Sinularia muqebiae*, sp. nov., holotype, ZMTA Co 19230. a-h, sclerites from surface layer of a lobe; i-k, sclerites from interior of a lobe; l-r, sclerites from surface of the stalk; s-u, sclerites from interior of the stalk; v, warts on internal sclerite from the stalk. Enlargement of a-h, l-r and v indicated by 0.1 mm scale at g; that of i-k, s and t by 1.0 mm scale at i; that of u by 0.5 mm scale at u.

Remark. — The colony shows a close resemblance to *S. candidula*, although in the latter species the lobes are usually thinner and smaller. But in *S. candidula* the sclerites are quite different: (1) in this species clubs with a length of up to 0.32 mm are absent; (2) the sclerites in the surface layer of the stalk are clubs, whereas in *S. muqebiae* irregular rods and cylinders are common; (3) in *S. candidula* the spindles in the interior are not rough.

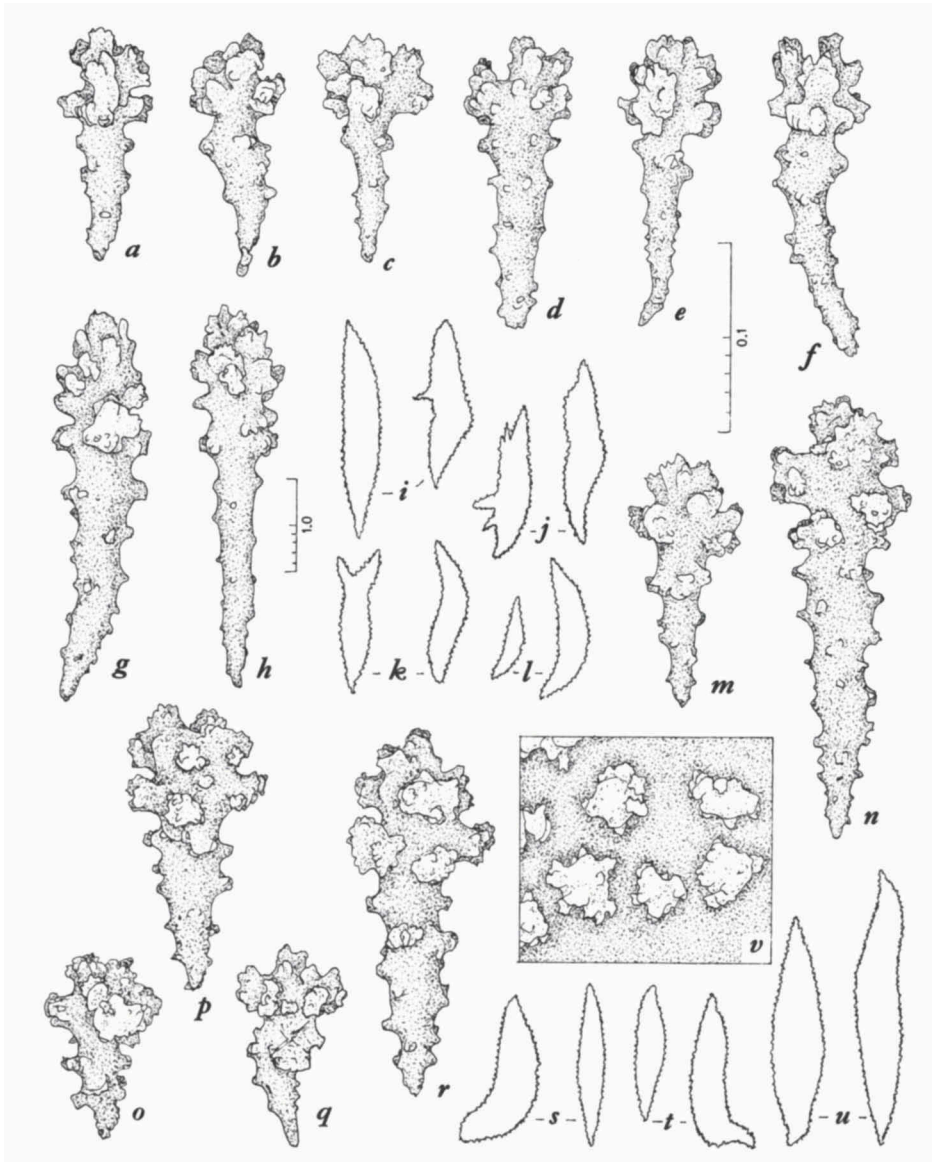


Fig. 14. *Sinularia schuhmacheri* sp. nov., holotype, RMNH Coel. no. 15303. a-h, clubs from surface layer of a lobe; i-l, sclerites from interior of a lobe; v, warts on internal sclerite from the stalk; m-r, clubs from surface layer of the stalk; s-u, sclerites from interior of the stalk; v, warts on internal sclerite from the stalk. Enlargement of a-h, m-r and v indicated by 0.1 mm scale at e; that of i-l and s-u by 0.1 mm scale at h.

***Sinularia schuhmacheri* sp. nov.**

(fig. 14, pl. 7 fig. 2)

Material. — Sanganeb Atoll, near Port Sudan, southwest part, outer reef, depth 10 m, 22 February 1980; leg. H. Schuhmacher, coll. no. III/77, RMNH Coel. no. 15303; one colony, the holotype.

Description. — The colony is attached to a small *Fungia* specimen (pl. 7 fig. 2). The total height of the colony is 40 mm. The stalk measures 15 to 20 mm in height and 20 to 23 mm in width; it is strongly flattened laterally.

The primary lobes are up to 20 mm high. They bear secondary lobules, short, digitiform or knob-like, 3 to 5 mm wide. The surface of the lobes and lobules is not smooth, but bumpy, probably owing to contraction of the colony.

Sometimes the polyps are not completely retracted. In this case the incurved tentacles protrude above the surface. The diameter is 0.60 mm, the centres are 0.80 to 1.20 mm apart. The anthocodial armature consists of crown and points. The crown, six to eight rows deep, consists of curved spindles, up to 0.40 mm long. The points are composed of a number of clavate sclerites.

The clubs in the surface layer of the lobes are 0.12 to 0.20 mm long; a few are shorter (0.10 mm), others are up to 0.30 mm long (fig. 14a-h). The interior of the lobes contains pointed spindles, up to 2.50 mm long (fig. 14i-l). They are straight or curved, unbranched or branched.

In the surface layer of the stalk there are clubs, 0.11 to 0.24 mm long (fig. 14m-r). The warty heads are up to 0.09 mm wide. The sclerites in the stalk interior are pointed, straight or curved spindles, sometimes with a median constriction (fig. 14s-u). The crenellate warts are small, 0.03 to 0.04 mm in diameter; they are not crowded, and placed in distinct transverse rows (fig. 14v).

Colour. — In alcohol the colony is light creamy.

Remark. — The species is named after Prof. Helmut Schuhmacher, who collected so many octocorals during his reef studies in the northern and central Red Sea.

***Sarcophyton globoverrucatum* sp. nov.**

(fig. 15, pl. 7 fig. 3)

Material. — KM 207 on the road to Sharem esh Sheikh, Gulf of Aqaba, lagoon, 1 April 1973; leg. Y. Benayahu, coll. no. B, ZMTA Co 19228; one colony, the holotype.

Description. — The colony has grown on the side of a coral stone; the base is oblique (pl. 7 fig. 3). The total height is almost 50 mm. The base of the stalk

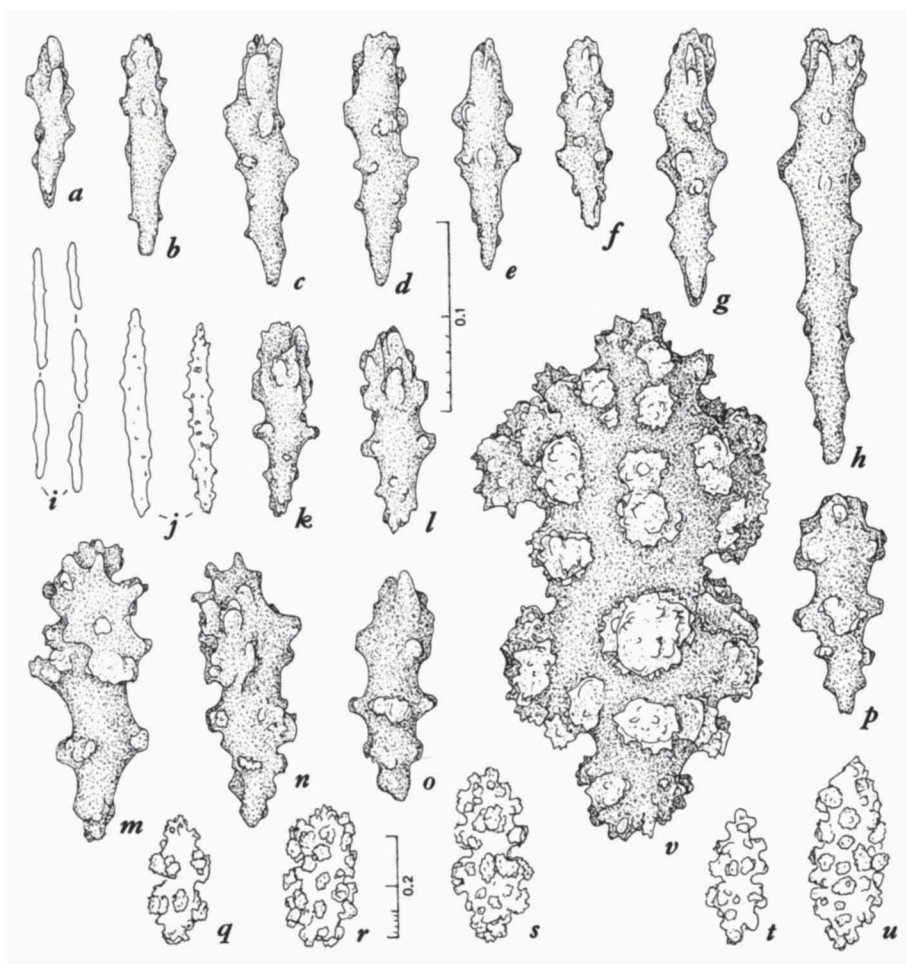


Fig. 15. *Sarcophyton globoverrucatum* sp. nov., holotype, ZMTA Co 19228. a-h, sclerites from surface layer of a lobe; i, j, sclerites from interior of a lobe; k-p, sclerites from outside of the base; q-v, sclerites from interior of the base. Enlargement of a-h, k-p and v indicated by 0.1 mm scale at d; that of i, j, q-u by 0.2 mm scale at r.

spreads over the stone and near its margin it forms one young, mushroom-like colony with a capitulum, which measures 13 mm in diameter. The capitulum of the main specimen has a diameter of 50 mm; it is convex, the margin is distinctly folded.

The autozooids stand neatly in rows; they are retracted, the pits left by them are about 0.40 mm wide. In each row the centres are 0.80 to 1.40 mm apart; the distance between the rows is 1.10 to 1.70 mm. There are usually three to four siphonozooids between two autozooids.

The surface layer of the disk contains clubs, 0.09 to 0.27 mm long. The heads are narrow and bear a few blunt thorns; the handles are pointed and have also very few prominences (fig. 15 a-h). In addition there are larger clubs, 0.17 to 0.34 mm long, with an accumulation of tubercles on one end. The interior of the disk is filled with two kinds of rods: (1) smooth rods, 0.08 to 0.27 mm long and 0.02 to 0.03 mm wide (fig. 15 i) and (2) thorny rods, up to 0.43 mm long and 0.035 to 0.040 mm wide (without prominences; fig. 15 j).

The sclerites in the surface layer of the stalk include clubs, usually 0.10 to 0.17 mm long (fig. 15 k-p); they are more warty than those in the disk. The interior of the stalk has sclerites, which are rather different among themselves. A few are capstans with two rows of warts and terminal clusters; their length is 0.22 to 0.26 mm (fig. 15 q). The majority, up to 0.40 mm long, are covered with irregularly distributed, globular warts, and the shape varies from short cylinders and oblong bodies to double cones and irregular derivatives of all these (fig. 15 r-v). Most of them have a median constriction.

Colour. — In alcohol the colour is light beige.

Remarks. — As the internal sclerites in the stalk are up to 0.40 mm long, the species belongs to Group I (Key I) in Verseveldt's (1982) Revision of the genus *Sarcophyton*. But none of the species mentioned in this Key is conspecific with the specimen described above.

The specific name *globoverrucatum*, from the Latin words *globus* = ball and *verruca* = wart, refers to the spherical shape of the prominences, which cover the sclerites in the interior of the stalk.

***Sarcophyton turschi* Verseveldt, 1976**

Sarcophyton turschi Verseveldt, 1976: 501–503, fig. 2, plate fig. 1.

Material. — Tiran Island, Red Sea, depth 4 m, 4 March 1981; leg. Y. Benayahu, coll. no. 1037, ZMTA Co 19216; one colony.

Remarks. — The colony agrees in so many respects with the holotype described by Verseveldt (1976) that we can confine ourselves to a few remarks, mainly concerning points of difference with that holotype.

The disk is saddle-shaped, the diameter is 50 mm, the margin is unfolded. Most autozooids are retracted; only those on the margin may be expanded; the length is up to 5 mm. The tentacles are pointed, up to 1.30 mm long; they bear about 13 pinnules on either side. In anthocodiae and tentacles sclerites are absent. The siphonozooids are rather clearly visible with the naked eye.

In the interior of the disk the needles are up to 0.67 mm long, the width is 0.020 to 0.026 mm. Sometimes they are bifurcated or irregularly branched at

one end. The wider spindles reach a length of 0.45 mm.

In the surface layer of the stalk the majority of the clubs are 0.11 to 0.18 mm long; those with a length of 0.30 mm are scarce.

In the interior of the stalk the wider spindles are up to 0.48 mm long; slender spindles are up to 0.64 mm long. In the middle of the first-mentioned spindles the warts are sometimes more densely placed, but accumulations as represented in Verseveldt's (1976) fig. 2 m, n, are absent.

Geographical distribution. — The species has been recorded from I. La Digue, Seychelles.

***Lobophytum prostratum* sp. nov.**

(fig. 16, pl. 7 fig. 4)

Material. — Sharem el Muya', Red Sea, reef flat, 6 November 1981; leg. Y. Benayahu, coll. no. 1072, ZMTA Co 19219; one colony, the holotype.

Description. — The colony is low, encrusting. The maximum height is 35 mm, the diameters of the oval capitulum are 80 and 55 mm (pl. 7 fig. 4). The base of attachment has diameters of 37 and 20 mm. From this base the colony expands nearly horizontally or with its bare margin sloping upwards. The disk is covered with numerous erect, digitate or crest-like lobes, up to 20 mm high. The finger-like lobes are unbranched, and 3 to 5 mm wide. The sinuous crest-like ones are about 3 to 5 mm thick, the length is rarely more than 15 mm. They bear two or more lobules. The centres of the retracted autozooids are 1.00 to 1.50 mm apart. Between them there are two to four distinct siphonozooids.

In the surface layer of the lobes there are clubs and spindles. The proportionally few clubs are 0.12 to 0.16 mm long; a few reach a length of 0.24 mm (fig. 16 b-e, g). The spindles, up to 0.27 mm long, are in the majority; they are blunt-ended, sometimes more cylindrical in shape, in their middle they usually bear two to four girdles of warts (fig. 16 a, f). The interior of the lobes contains blunt or pointed cylinders and spindles, varying in length from 0.17 to 0.41 mm (fig. 16 h-l). They are ornamented with zoned or irregularly distributed warts.

The surface layer of the bare outside of the colony (a real stalk is absent) has small clubs and cylinders, 0.10 to 0.14 mm long (fig. 16 m-u). The warty clubs usually have ill-defined heads. The cylinders have an accumulation of prominences at both ends, separated by a long waist (fig. 16 p, r, u). The interior of the base is filled with capstans, cylinders, short, blunt spindles and long, pointed spindles (fig. 16 v-y); They measure 0.17 to 0.41 mm in length,

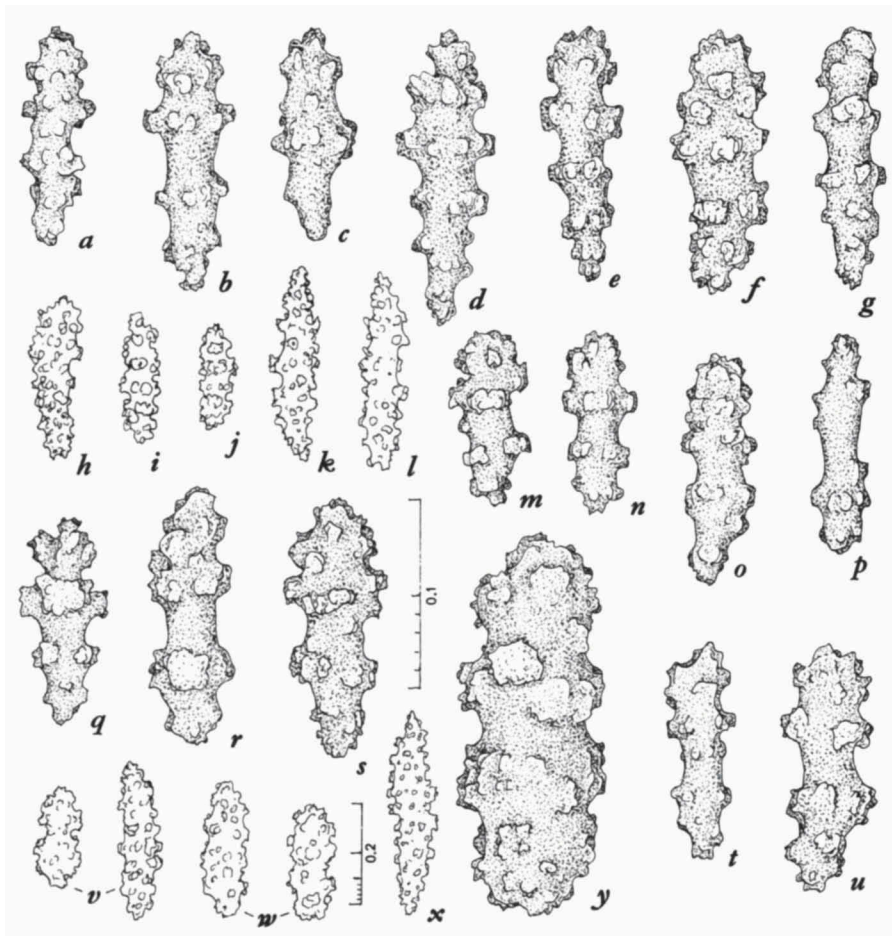


Fig. 16. *Lobophyllum prostratum* sp. nov., holotype, ZMTA Co 19219. a-g, sclerites from surface layer of a lobe; h-l, sclerites from interior of a lobe; m-u, sclerites from surface layer of the stalk; v-y, sclerites from interior of the stalk. Enlargement of a-g, m-u and y indicated by 0.1 mm scale below 1; that of h-l and v-x by 0.2 mm scale below s.

just as the sclerites in the interior of the lobes. Rather striking are the low, flat warts, usually arranged in zones (fig. 16 y).

Colour. — In alcohol the colour is light brown.

Remarks. — At first sight the specimen with its erect lobes looks like a colony of *Lobophyllum pauciflorum* (Ehrenberg), but the lobes are smaller, often crest-like and branched; the sclerites are also different.

There is also some resemblance to *L. strictum* Tixier-Durivault, but in this species the long spindles are absent, the sclerites in the interior of disk and stalk are not longer than 0.25 mm and their warts are higher and coarser.

The specific name *prostratum* refers to the low shape of the colony, which tends to expand horizontally.

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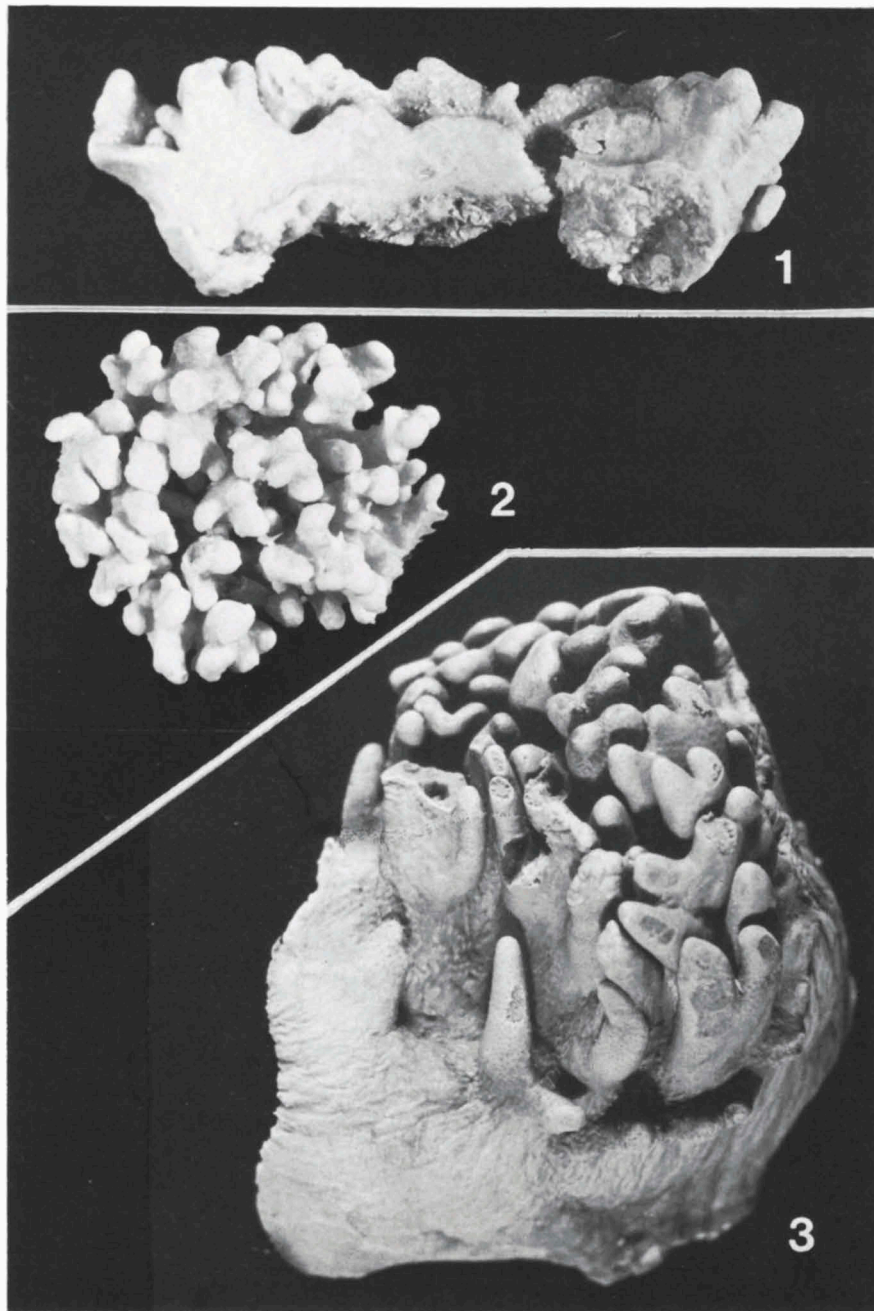


Fig. 1. *Sinularia barcaformis* sp. nov., holotype, ZMTA Co 19217; X 1. Fig. 2. *Sinularia crustaformis* sp. nov., holotype, ZMTA Co 19233; X 1. Fig. 3. *Sinularia incompleta* sp. nov., holotype, ZMTA Co 19222; X 1.

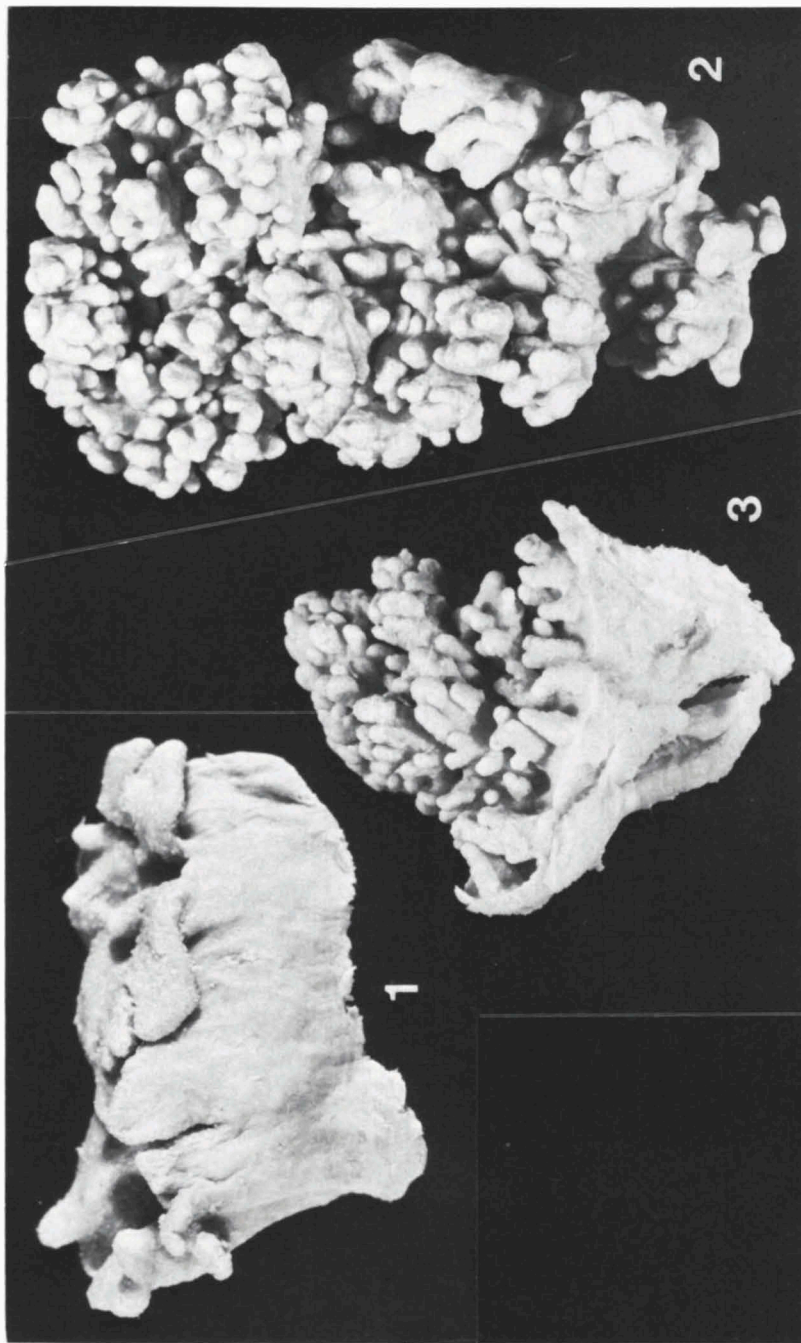


Fig. 1. *Sinularia recurvata* sp. nov., holotype, ZMTA Co 19218; X 1. Fig. 2. *Sinularia candidula* sp. nov., holotype, RMNH Coel. no. 15304; X 1. Fig. 3. *Sinularia candidula* sp. nov., RMNH Coel. no. 15305; X 1.

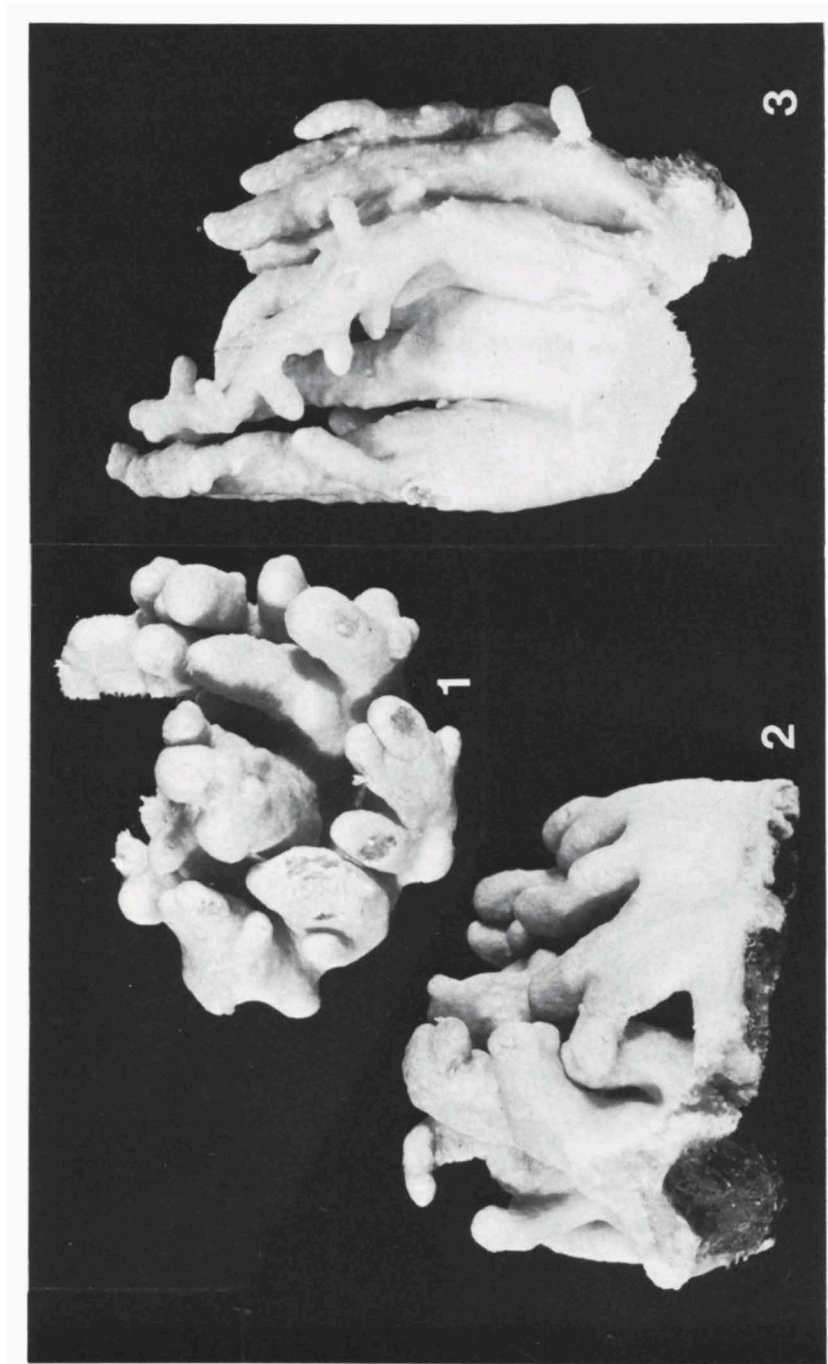


Fig. 1. *Sinularia gardineri* (Pratt), RMNH Coel. no. 15313; X 1. Fig. 2. *Sinularia gardineri* (Pratt), ZMTA Co 19223; X 1. Fig. 3. *Sinularia gardineri* (Pratt), RMNH Coel. no. 15311; X 1.

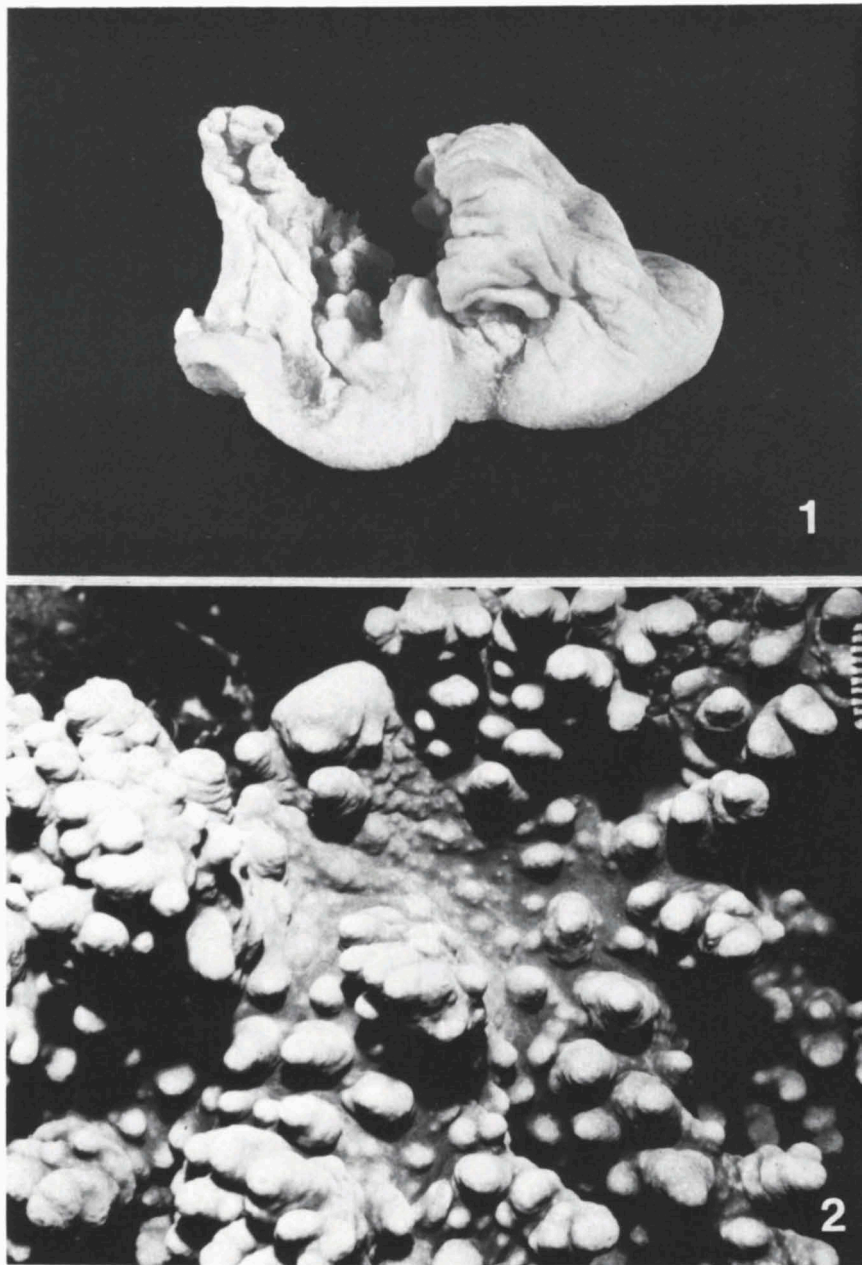


Fig. 1. *Sinularia anomala* sp. nov., holotype, ZMTA NS 17964; X 1. Fig. 2. *Sinularia candidula* sp. nov., under water photo made by Dr. H. Schuhmacher; X 1.25.

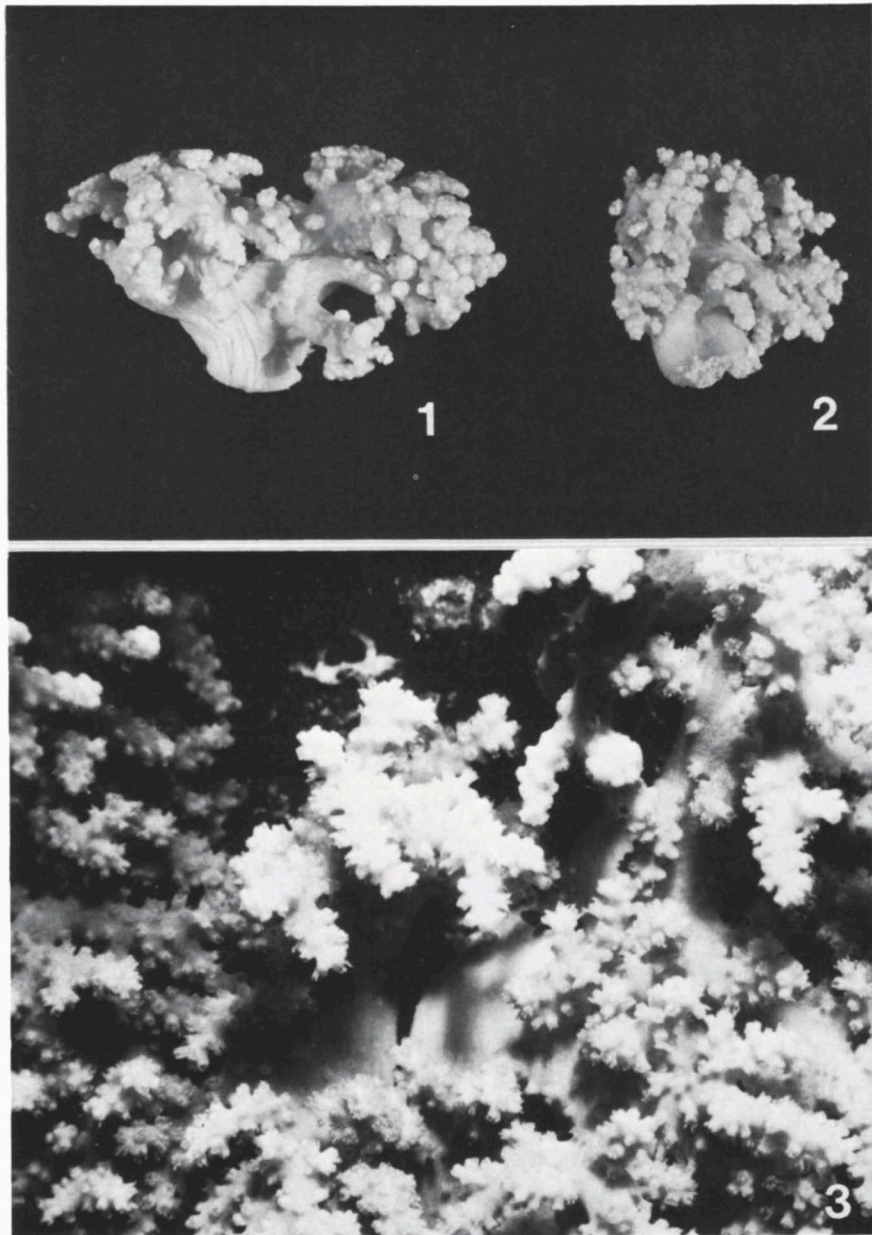


Fig. 1. *Sinularia flabelliclavata* sp. nov., holotype, RMNH Coel. no. 15301; X 1. Fig. 2. *Sinularia flabelliclavata* sp. nov., paratype, RMNH Coel. no. 15302; X 1. Fig. 3. *Sinularia flabelliclavata* sp. nov., under water photo of the holotype, made by Dr. H. Schuhmacher; X 1.25.

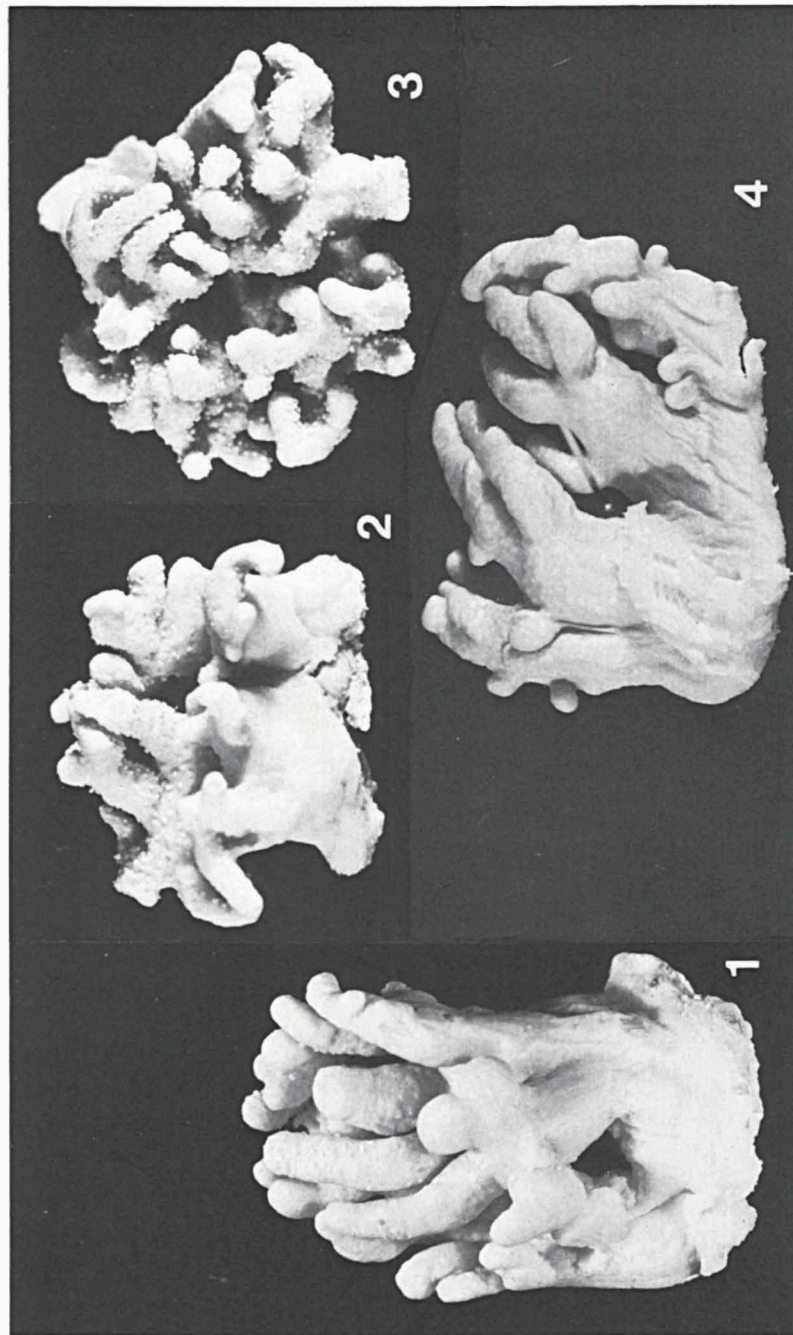


Fig. 1. *Sinularia loyai* sp. nov., holotype, ZMTA Co 19231; X 1. Fig. 2. *Sinularia licroclados* sp. nov., holotype, ZMTA NS 17731; X 1. Fig. 3. *Sinularia licroclados* sp. nov., ZMTA Co 19212; X 1. Fig. 4. *Sinularia dactyloclados* sp. nov., holotype, RMNH Coel. no. 14800; X 1.

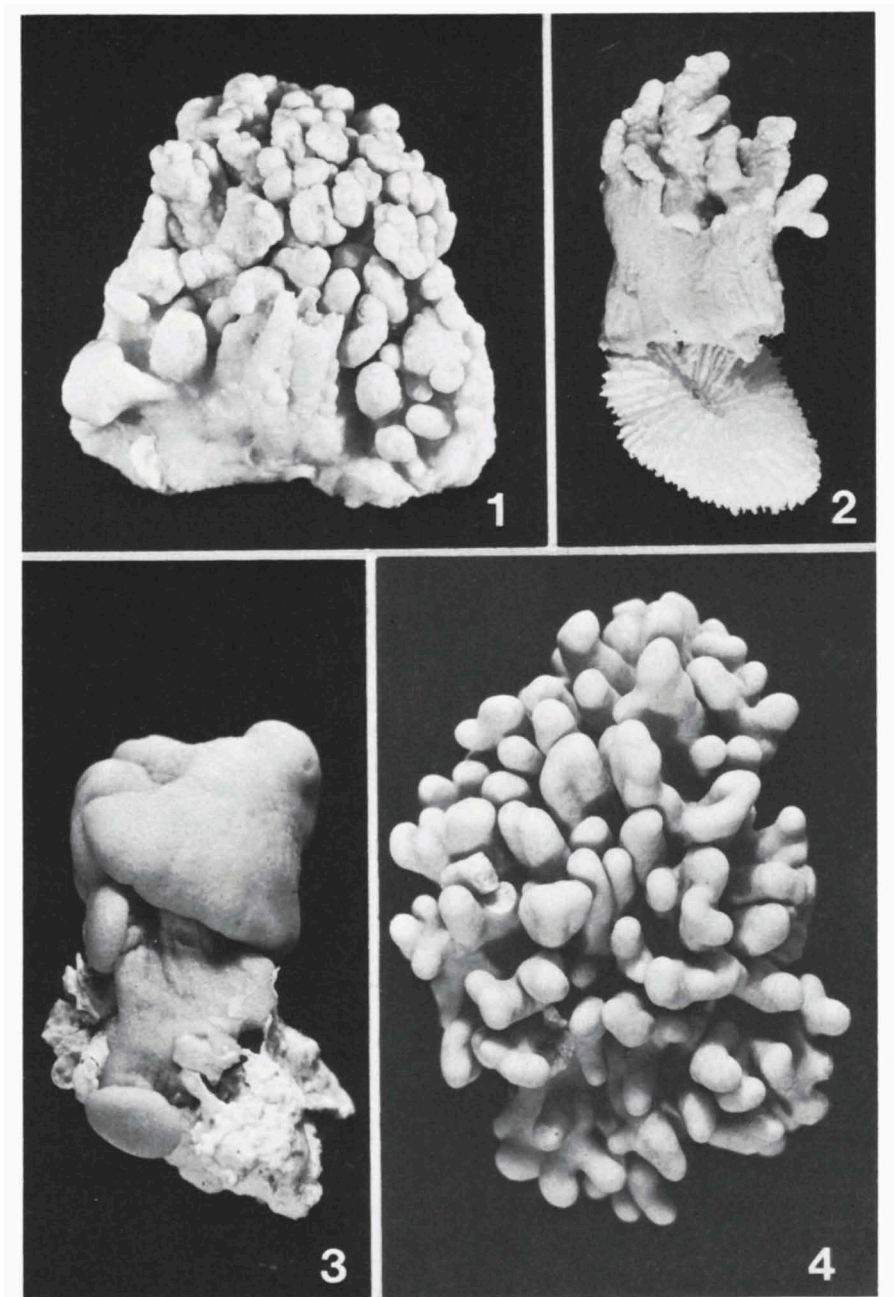


Fig. 1. *Sinularia muqeblae* sp. nov., holotype, ZMTA Co 19230; X 1. Fig. 2. *Sinularia schuhmacheri* sp. nov., holotype, RMNH Coel. no. 15303; X 1. Fig. 3. *Sarcophyton globoverrucatum* sp. nov., holotype, ZMTA Co 19228; X 1. Fig. 4. *Lobophytum prostratum* sp. nov., holotype, ZMTA Co 19219; X 1.