

Notes on Alcyonacea (Octocorallia) from Tanzania

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For the first time Alcyonacea from Tanzania are recorded, including two new species: *Cladiella daphnae* and *Sinularia platylobata*. Both these species are described and figured, while descriptions are also given of specimens of *Lobophytum crassum* von Marenzeller, 1886, *L. rotundum* Tixier-Durivault, 1957, and *L. venustum*, Tixier-Durivault, 1957. In addition, *Sinularia compactum* Tixier-Durivault, 1970 and *Sinularia "conferta"* (Dana, 1846) are discussed.

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Introduction

This publication deals with a collection of Alcyonacea from the coast of Tanzania, collected by Mr J.N. Nyanda, University of Dar es Salaam, Tanzania. All material was collected in shallow water, down to 8 m deep. Most of the specimens are preserved in 70% alcohol. The material is deposited in the Nationaal Natuurhistorisch Museum, Leiden, The Netherlands (formerly Rijksmuseum van Natuurlijke Historie: RMNH) and the Zoological Museum of the Tel Aviv University (ZMTAU), Israel.

Until now no alcyonaceans have been recorded from Tanzania. In this publication 46 species are listed, two of which are new.

List of the species

Family Alcyoniidae Lamouroux, 1812

Genus *Alcyonium* Linnaeus, 1758

A. flaccidum Tixier-Durivault, 1966: RMNH Coel. 18901, 18902; ZMTAU Co 26264

Genus *Cladiella* Gray, 1869

C. australis (Macfadyen, 1936): RMNH Coel. 18904, 18905; ZMTAU Co 26266, 26267; (partly dry)

C. daphnae spec. nov.: ZMTAU Co 26269

C. digitulata (Klunzinger, 1877): RMNH Coel. 18906; (dry)

C. krempfi (Hickson, 1919): RMNH Coel. 18907

C. laciniosa (Tixier-Durivault, 1944): ZMTAU Co 26268

Genus *Lobophytum* von Marenzeller, 1886

L. crassum von Marenzeller, 1886: RMNH Coel. 18917-18920; ZMTAU Co 26258, 26276-26280

L. pauciflorum (Ehrenberg, 1834): RMNH Coel. 18921; ZMTAU Co 26281

L. rotundum Tixier-Durivault, 1957: RMNH Coel. 18922

L. venustum Tixier-Durivault, 1957: ZMTAU Co 26282

Genus *Sarcophyton* Lesson, 1834

S. cherbonnieri Tixier-Durivault, 1958: RMNH Coel. 18923, 18924

S. cornispiculatum Verseveldt, 1971: RMNH Coel. 18925

S. crassicaule Moser, 1919: ZMTAU Co 26284, 26285

- S. crassum* Tixier-Durivault, 1946: RMNH Coel. 18926-18928; ZMTAU Co 26286-26288
S. elegans Moser, 1919: RMNH Coel. 18929-18932; ZMTAU Co 26289-26293
S. glaucum (Quoy & Gaimard, 1833): ZMTAU Co 26295
S. infundibuliforme Tixier-Durivault, 1958: RMNH Coel.: 18933, 18934; ZMTAU Co 26296, 26297
S. subviride Tixier-Durivault, 1958: RMNH Coel. 18935, 18936; ZMTAU Co 26294, 26298, 26299
S. trocheliophorum von Marenzeller, 1886: RMNH Coel. 18937-18939; ZMTAU Co 26300-26306, 26328
- Genus *Sinularia* May, 1898
S. abhishiktae Van Ofwegen & Vennam, 1991: RMNH Coel. 18941; (dry)
S. compacta Tixier-Durivault, 1970: RMNH Coel. 18942, 18943; ZMTAU Co 26327
S. "conferta" (Dana, 1846): RMNH Coel. 18940
S. fishelsoni Verseveldt, 1970: RMNH Coel. 18944-18948; ZMTAU Co 26307
S. gardineri (Pratt, 1903): RMNH Coel. 18949; ZMTAU Co 26308, 26309
S. gibberosa Tixier-Durivault, 1970: RMNH Coel. 18950-18952; ZMTAU Co 26310-26313
S. leptocladus (Ehrenberg, 1834): RMNH Coel. 18953-18955; ZMTAU Co 26314-26316
S. macrodactyla Kolonko, 1926: RMNH Coel. 18956; ZMTAU Co 26317
S. marenzelleri (Wright & Studer, 1889): ZMTAU Co 26318
S. maxima Verseveldt, 1971: RMNH Coel. 18957; ZMTAU Co 26319
S. notanda Tixier-Durivault, 1966: ZMTAU Co 26320
S. peculiaris Tixier-Durivault, 1970: RMNH Coel. 18958-18961; ZMTAU Co 26321
S. platylobata spec. nov.: RMNH Coel. 18962.
S. polydactyla (Ehrenberg, 1834): RMNH Coel. 18963-18967; ZMTAU Co 26322, 26323
S. portieri Verseveldt, 1980: RMNH Coel. 18969
S. querciformis (Pratt, 1903): ZMTAU Co 26324, 26325
S. rigida (Dana, 1846): RMNH Coel. 18970
S. rotundata Tixier-Durivault, 1970: ZMTAU Co 26326
S. terspilli Verseveldt, 1971: RMNH Coel. 18971-18975
- Family Nephtheidae Gray, 1862
 Genus *Lemnalina* Gray, 1868
L. africana (May, 1898): RMNH Coel. 18912
L. cervicornis (May, 1898): RMNH Coel. 18913; ZMTAU Co 26273, 26274
L. flava (May, 1898): RMNH Coel. 18914
L. tenuis Verseveldt, 1969: RMNH Coel. 18915
 Genus *Litophyton* Forskål, 1775
L. viridis (May, 1898): RMNH Coel. 18916; ZMTAU Co 26275
- Family Xenidiidae Ehrenberg, 1828
 Genus *Cespitularia* Milne Edwards & Haime, 1850
C. erecta Macfadyen, 1936: RMNH Coel. 18903; ZMTAU Co 26265
 Genus *Heteroxenia* Kölliker, 1874
H. fuscescens (Ehrenberg, 1834): RMNH Coel. 18908, 18909; ZMTAU 26270, 26271
H. ghardaquensis Gohar, 1940: RMNH Coel. 18910, 18911; ZMTAU Co 26272

Descriptive part

Cladiella daphnae spec. nov. (figs. 1-3)

Material.— Holotype (ZMTAU Co 26269), Tanzania, 1989.

Description.— The specimen (fig. 1) has an encrusting growth form with a maximum cross-section of 10 x 6.5 cm. The sterile stalk is 5-8 mm high. The lobes are flabby. The majority of them are placed horizontally over the capitulum. They are digitiform, up to 2.5 cm long; some are flattened laterally. The knob-like lobules are up to 8 mm high. The polyps are expanded and spread all over the lobes and lobules.

The polyps, and the surface and interior of the lobes contain platelets, which are

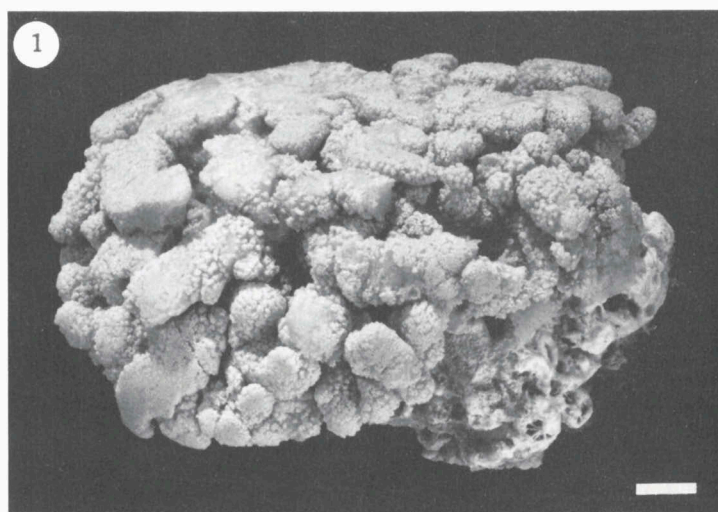


Fig. 1. *Cladiella daphnae* spec. nov., holotype (ZMTAU Co 26269). Scale 1 cm.

0.027-0.036 mm long (figs. 2a-h). Many of them show a distinct waist and two pits on their flat surface. When the two pits are distinctly set apart, the sclerite resembles the digit 8 (fig. 2a). In other sclerites the pits are fused into a median slit-like opening (figs. 2g-h). Some sclerites of the polyps and the surface layer of the lobes are minute rods, 0.030-0.039 mm long (fig. 2d). Most anthocodial sclerites occur concentrated on the aboral side of the tentacles and pinnules.

The surface layer of the stalk contains elongate dumb-bells, 0.040-0.078 mm long, with foliate crenulate heads and mostly with a distinct waist (figs. 2i-n, 3c-d). Some have a pit on the middle part (figs. 2j-k). In addition, there are dumb-bells up to 0.080 mm long with heads that bear blunt processes (figs. 3a-b). The latter are intermediate forms to the larger coenenchymal dumb-bells, 0.08-0.125 mm long, that bear some blunt cone-shaped processes (figs. 3e-l).

Colour.— The specimen is light green with cream-coloured polyps.

Discussion.— The flabby lobes and the sclerites of the lobes are both characteristic of this species. They are not known from any other *Cladiella* species.

Etymology.— The species is named after Daphna, the wife of the second author.

***Sinularia platylobata* spec. nov.**
(figs. 4-5)

Material.— Holotype, part of a colony (RMNH Coel. no 18962), Tanzania, Pangavinne Island (6°50'S 39°17'E), leeward slope, 8 m.

Description.— The specimen is an encrusting fragment of a colony, 7 cm high and with a maximum cross-section of 11 x 13 cm (fig. 4). The capitulum consists of a number of closely set, stout primary lobes, which give rise to flattened secondary and tertiary lobes. The polyps are exerted. They contain flat rods up to 0.21 mm long (fig. 5i).

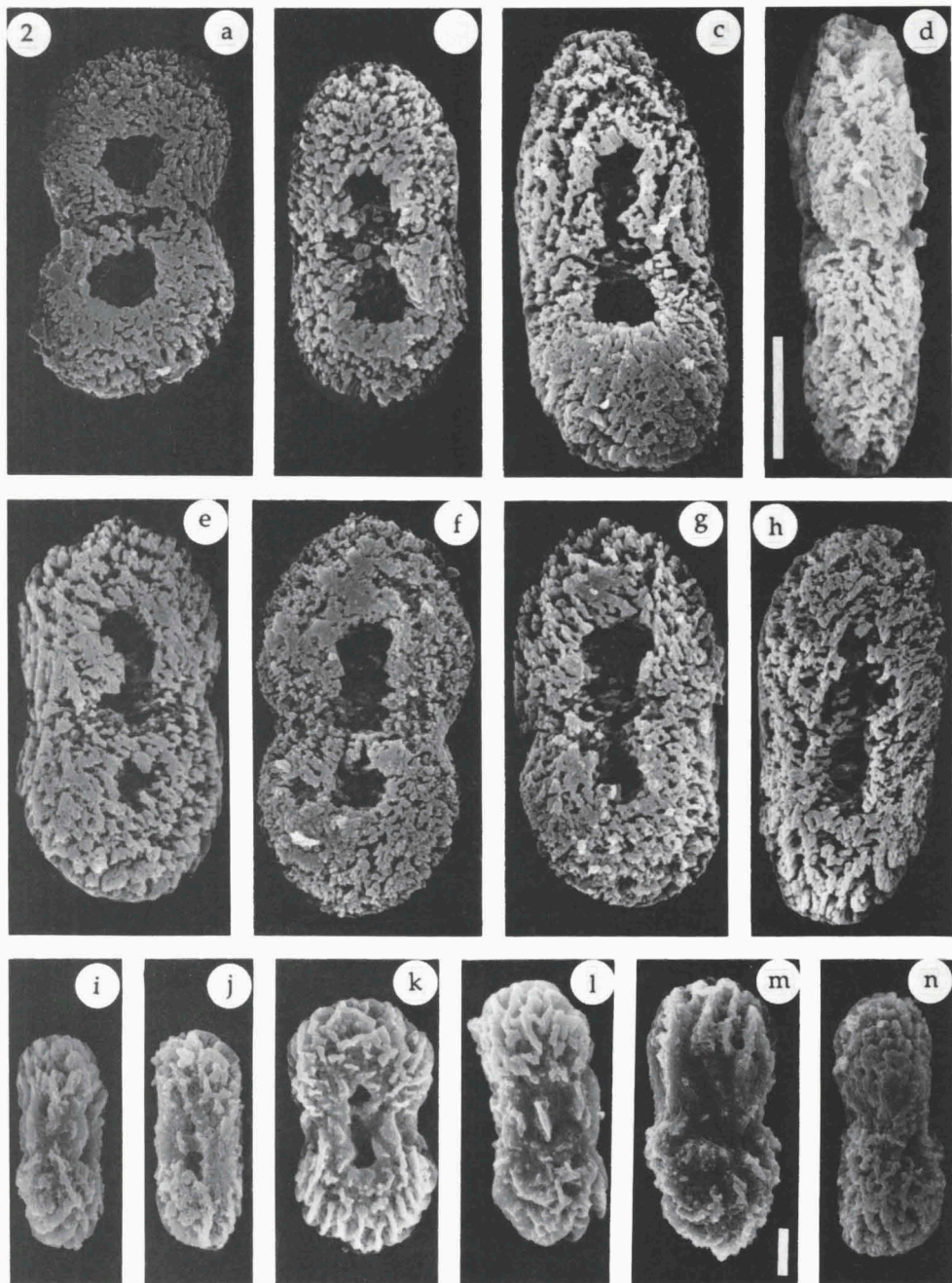


Fig. 2. *Cladiella daphnae* spec. nov., holotype (ZMTAU Co 26269); a-h, sclerites of lobe; i-n, sclerites of surface layer stalk. Scales 0.01 mm. Scale at 2d applies to 2a-h; scale at 2m to 2i-n.

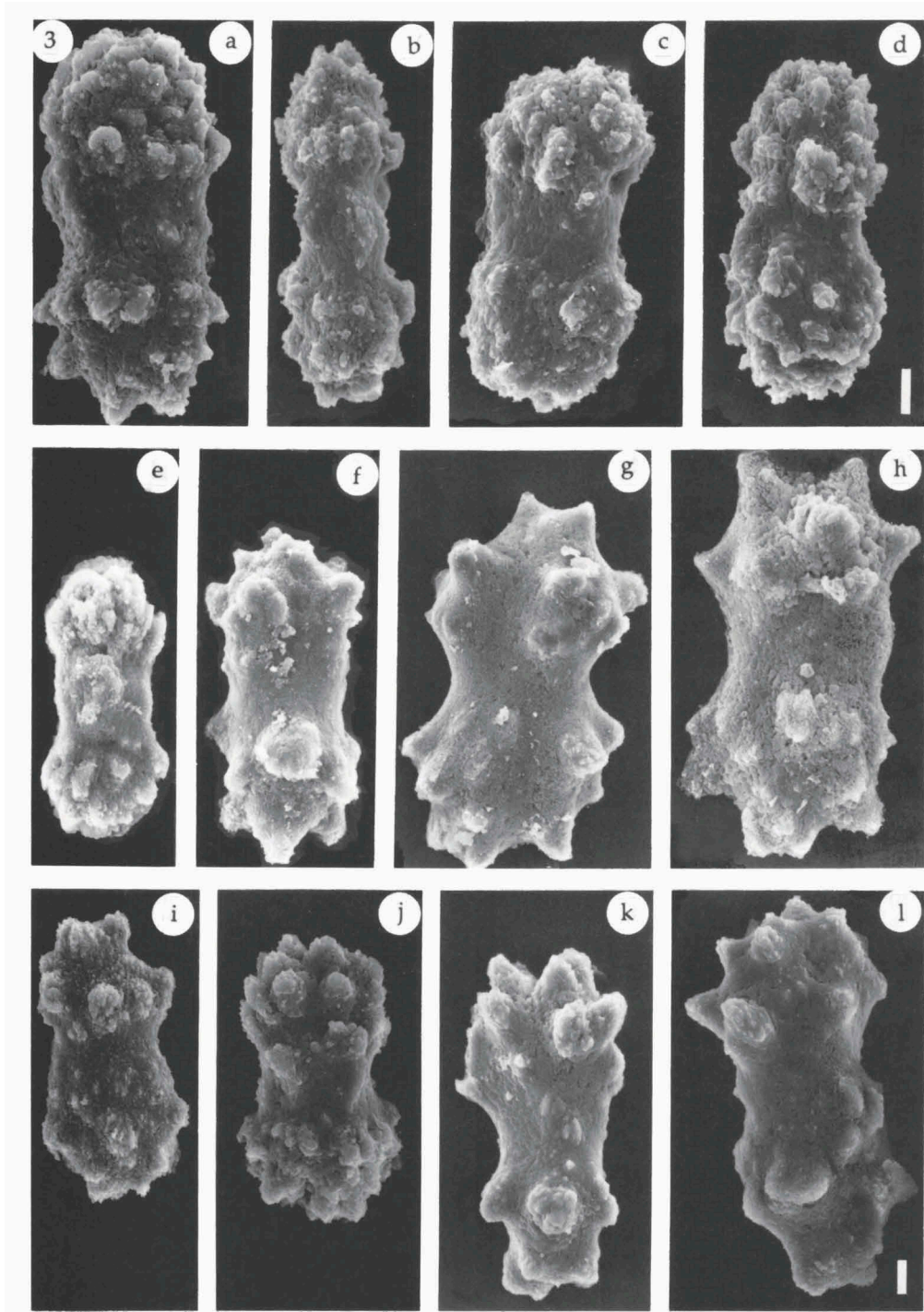


Fig. 3. *Cladiella daphnae* spec. nov., holotype (ZMTAU Co 26269); a-d, sclerites of surface layer stalk; e-l, sclerites of interior stalk. Scales 0.01 mm. Scale at 3d applies to 3a-d; scale at 3l to 3e-l.

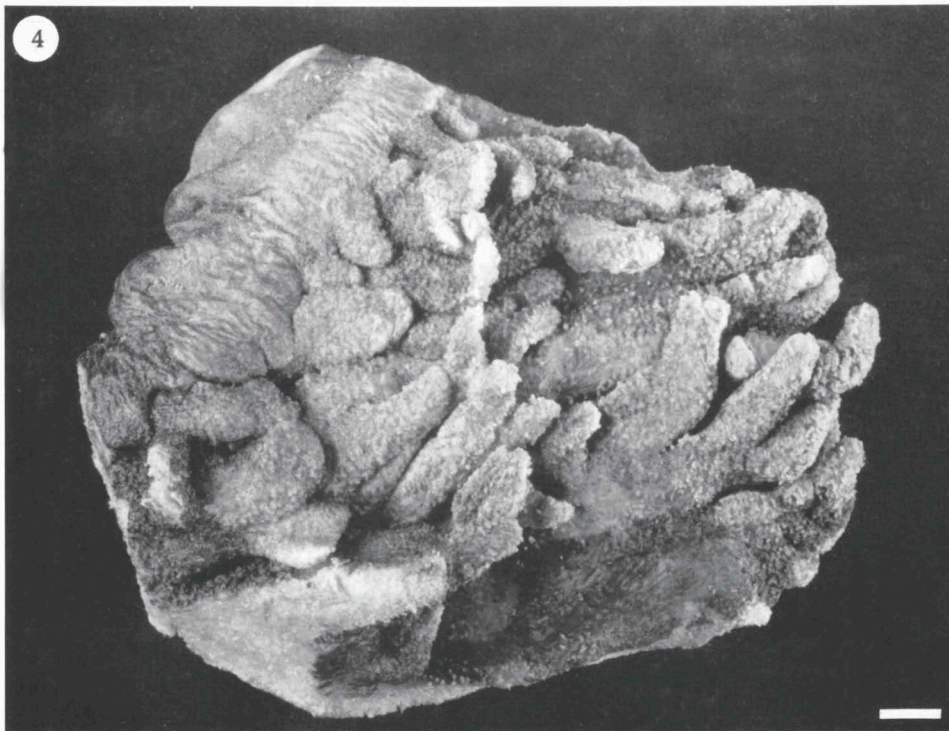


Fig. 4. *Sinularia platylobata* spec. nov., holotype (RMNH Coel. 18962). Scale 1 cm.

The surface layer of the lobes contains clubs with a central wart, which are 0.06-0.15 mm long (figs. 5a-h), and some rods (fig. 5r). The interior of the lobes contains a few spindles up to 2.50 mm long (fig. 5p).

The clubs in the surface layer of the base are 0.07-0.16 mm long. They are much wider than those of the lobes (figs. 5j-o). Many have a central wart, but clubs without a central wart are also common. Furthermore, some rods are present. The interior of the base contains spindles up to 2.20 mm long, with simple or complex tubercles (fig. 5q, s).

Colour.— The base is dark brown. The lobes and lobules are light brown.

Remarks.— As most of the clubs of the surface layer of the lobes are less than 0.10 mm long, we have compared the specimen with the seven other *Sinularia* species hitherto described that contain small clubs with a central wart, viz.: *S. ceramensis* Verseveldt, 1977, *S. cruciata* Tixier-Durivault, 1970, *S. depressa* Tixier-Durivault, 1970, *S. gibberosa* Tixier-Durivault, 1970, *S. grandilobata* Verseveldt, 1980, *S. microclavata* Tixier-Durivault, 1970, and *S. mira* Tixier-Durivault, 1970. Of these, only *S. ceramensis* and *S. grandilobata* have sclerites like *S. platylobata*. All the other species have longer clubs (0.20 mm long or more) in addition to the small clubs. *S. ceramensis* has a completely different growth form. *S. grandilobata* is the species that most clearly resembles *S. platylobata*, but it differs in the following characters: (1) there are no flattened lobes, (2) the surface layer of the lobes and stalk contains clubs with more spiny heads and (3) the lobes contain many rods and spindles.

Etymology.— [Greek] *platus* = flat and *lobos* = lobe, which refers to the flat lobes.

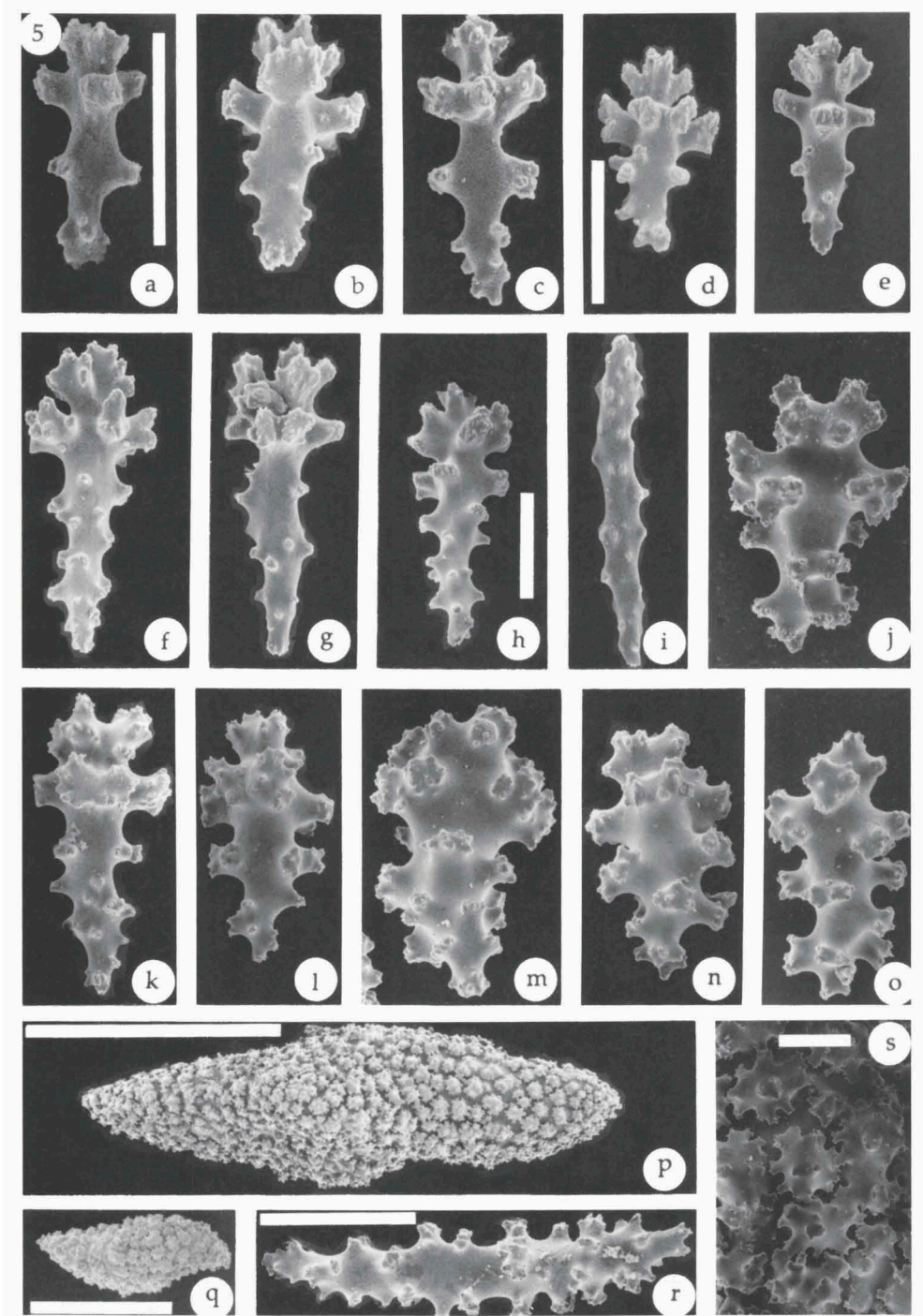


Fig. 5. *Simularia platylobata* spec. nov., holotype (RMNH Coel. 18962); a-h, p, r, sclerites of lobe; i, rod of polyp; j-o, q sclerites of stalk; s, surface ornamentation of spindle. Scales for p-q 1 mm, others 0.05 mm. Scale at 5a applies to 5a-c; scale at 5d to 5d-g, j; scale at 5h to 5h-i, k-o.



Fig. 6. *Lobophytum crassum* von Marenzeller, 1886 (RMNH Coel. 18917); colony from Mkandya Reef. Scale 1 cm.

***Lobophytum crassum* von Marenzeller, 1886**
(figs. 6-8)

For synonymy see Verseveldt, 1983: 25

Material.— Tanzania, Mkandya Reef, 06°50'S 39°17'E, leeward slope, 1-6 m, (RMNH Coel. 18917-18920, ZMTAU Co 26276-26280); Tanzania, Mbudya island, 06°50'S 39°17'E, leeward slope, 5 m, (ZMTAU Co 26258).

Description of RMNH Coel 18917.— The encrusting colony is 4.5 cm high and is in cross-section 14.5 × 9 cm (fig. 6). Only about half of the colony is present. The capitulum is dish-shaped; around the margin there are radially directed crests with finger-like lobules. The crests are about 0.4 cm wide and up to 4.5 cm long. The central part of the disc is without crests.

The polyps contain flat rods up to 0.20 mm long.

The surface layer of the lobules contains clubs with indistinct heads, 0.10-0.20 mm long (figs. 7b-g). The interior of the lobules has spindles, which are up to 0.34 mm long (fig. 7h-j), and some capstans (fig. 7m) and oblong sclerites (fig. 7n) up to 0.20 mm long. In addition, some crosses are present (fig. 7k).

The surface layer of the base contains wart clubs, which are 0.09-0.15 mm long (figs. 8a-e). The interior of the base has capstans and oblong sclerites, 0.15-0.20 mm long (figs. 8f-m).

In all parts of the colony shuttles are found. The longest, up to 0.20 mm long, occur in the top of the colony (figs. 7a, l).

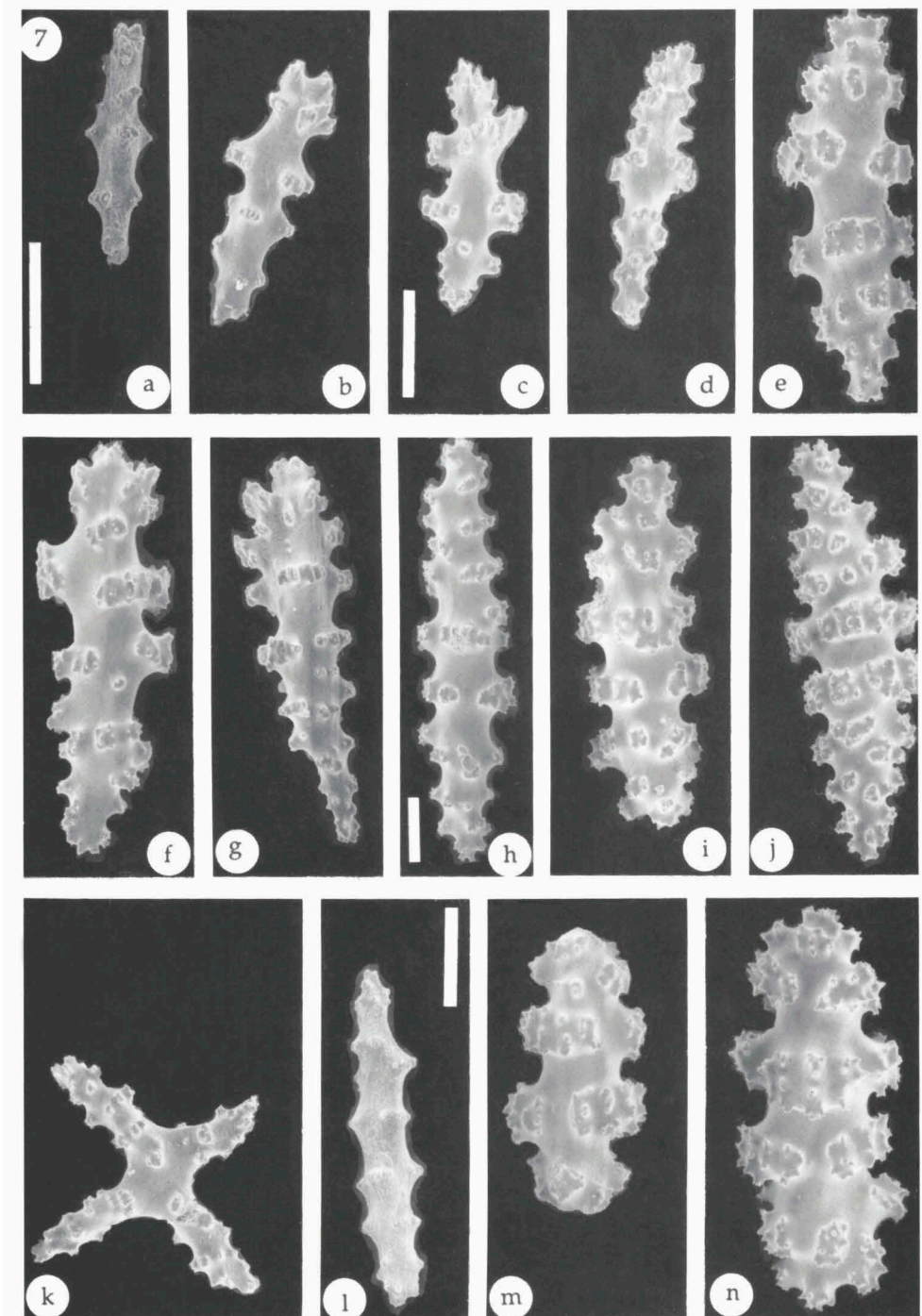


Fig. 7. *Lobophytum crassum* von Marenzeller, 1886 (RMNH Coel. 18917); a-g, sclerites of surface layer lobe; h-n, sclerites of interior lobe. Scales 0.05 mm. Scale at 7a applies to 7a-b; scale at 7c to 7c-g; scale at 7h to 7h-k; scale at 7l to 7l-n.

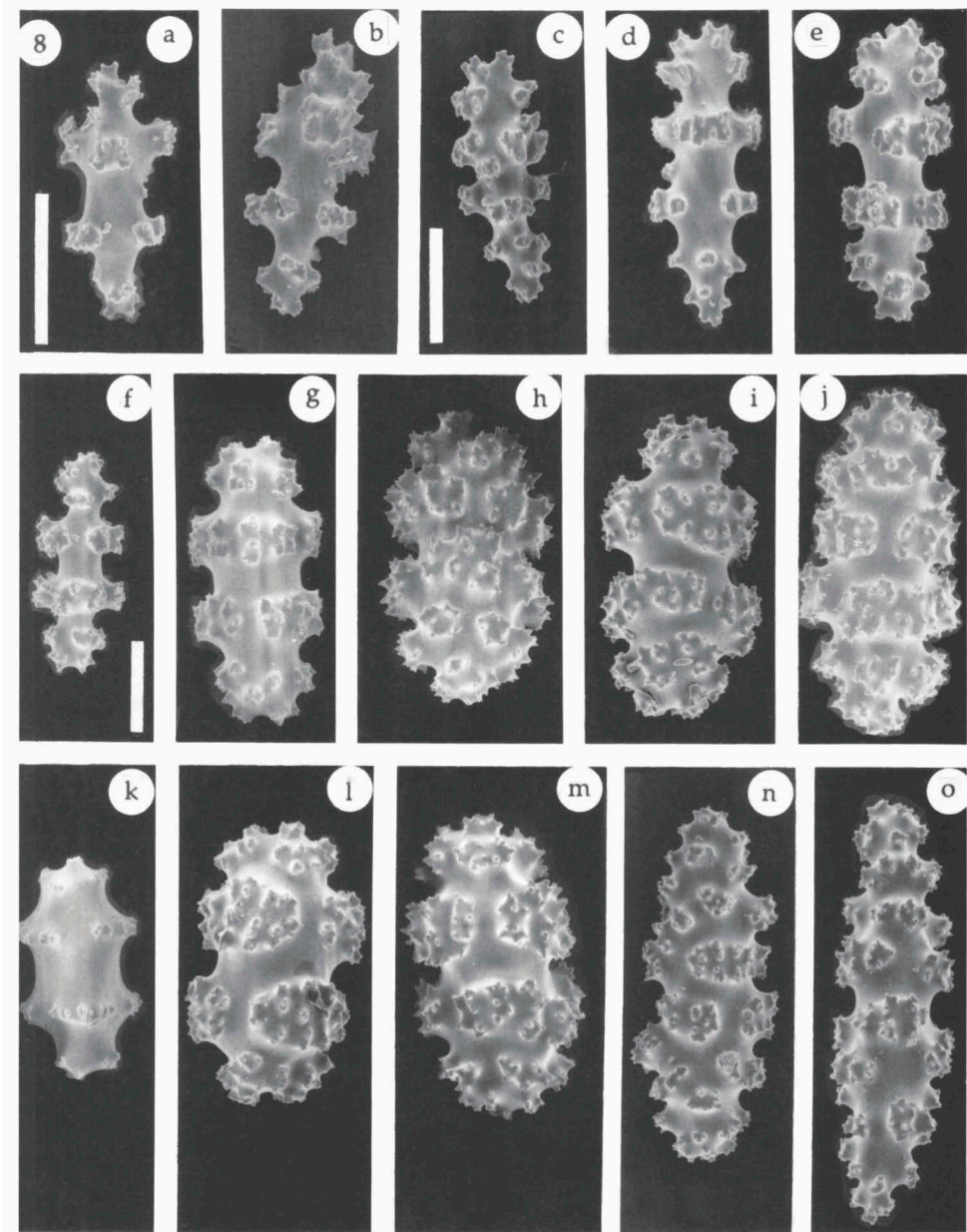


Fig. 8. *Lobophytum crassum* von Marenzeller, 1886 (RMNH Coel. 18917); a-e, sclerites of surface layer stalk; f-j sclerites of interior stalk; k-o, sclerites of underside disc. Scales 0.05 mm. Scale at 8a applies to 8a-b; scale at 8c to 8c-e; scale at 8f to 8f-o.

Colour.— The specimen is cream-coloured.

Remarks.— Although the colony form with its central part without crests is quite different from those previously described for *L. crassum*, the sclerites fit in with their range in that species. Spindles were not found in the interior of the base, where they were reported to be scarce by Verseveldt (1983: 29), but the underside of the dish

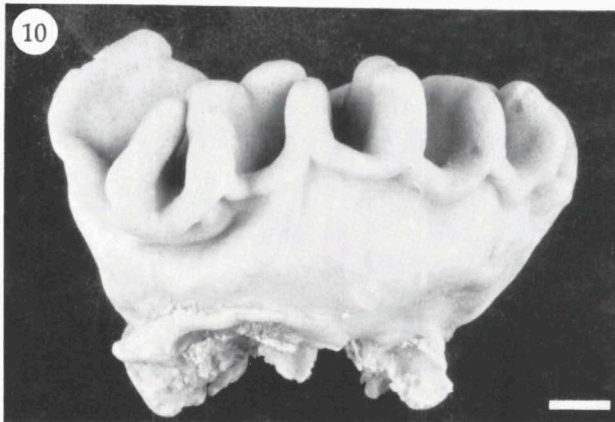
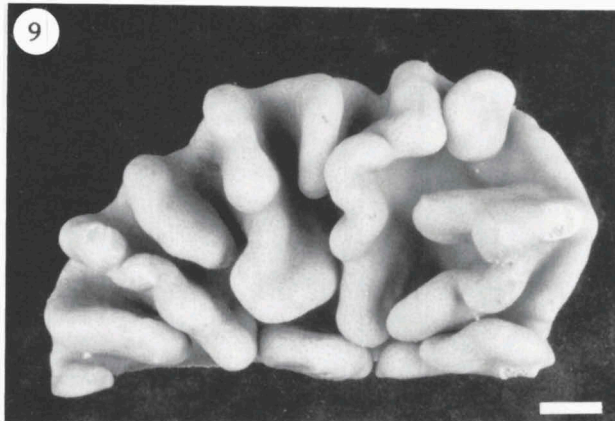
appeared to contain some (figs. 8n-o). The only apparent difference in spiculation between the above described specimen and the other specimens examined, is the presence of many rods in the polyps of the first. Since little is known about the variability in spiculation of polyps of *Lobophytum* in general and as the growth form of *L. crassum* is quite variable, there is no sound basis to exclude the specimen from *L. crassum*.

The specimen from Mbudya island has a similar growth form and spiculation as the described colony, but the central part without crests is smaller.

***Lobophytum rotundum* Tixier-Durivault, 1957**
(figs. 9-12)

Lobophytum rotundum Tixier-Durivault, 1957: 108; 1958: 134-136, figs. 149-151; Verseveldt, 1983: 85.

Material.— Part of a colony (RMNH Coel. 18922), Tanzania, Mkandya Reef, 06°50'S 39°17'E, leeward slope, 2 m.



Figs. 9-10. *Lobophytum rotundum* Tixier-Durivault, 1957 (RMNH Coel. 18922); colony from Mkandya reef. Fig. 9. View from above. Fig. 10. Side-view. Scales 1 cm.

Description.— The colony (figs. 9-10) is 6 cm high, with a maximum cross-section of 9 x 5 cm. Only about half of the colony is present. The capitulum is cup-shaped with radially directed crests, which are about 0.5 cm wide and up to 2.5 cm high.

No sclerites are present in the polyps.

The surface layer of the crests contains clubs, which are 0.10-0.25 mm long. The heads of the clubs are indistinct, (figs. 11a-e). In the interior of the crests spindles up to 0.35 mm long occur (figs. 11h-j).

The surface layer of the base contains wart clubs, which are 0.10-0.15 mm long (figs. 12a-e). The interior of the base has oval sclerites, 0.15-0.20 mm long, without or with a small median waist and covered with closely set warts (figs. 12f-i). In addition, spindles up to 0.35 mm long are present (fig. 12j).

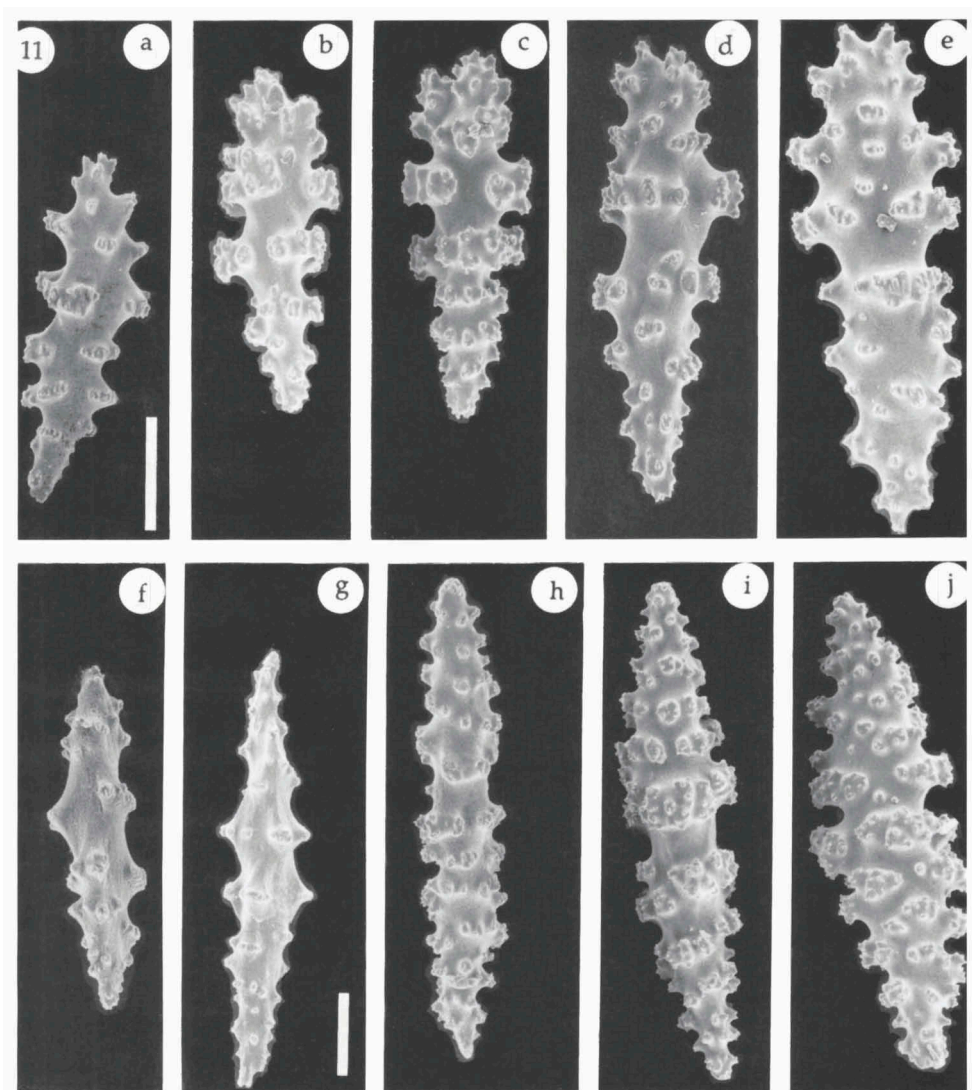


Fig. 11. *Lobophytum rotundum* Tixier-Durivault, 1957 (RMNH Coel. 18922); a-f, sclerites of surface layer crest; g-j, sclerites of interior crest. Scales 0.05 mm. Scale at 11a applies to 11a-f; scale at 11g to 11g-j.

In all parts of the colony shuttles are present, although more numerous and longer ones, up to 0.30 mm long, in the top of the colony (figs. 11f-g).

Colour.— The specimen is cream-coloured.

Remarks.— Because Verseveldt (1983: 85) did not succeed in tracing the type material, he did not redescribe this species in his revision of the genus *Lobophytum*. Therefore, we describe and figure a specimen in the present study. We only found a few minor differences with the description of the holotype by Tixier-Durivault (1957: 108; 1958: 134). The crests in the present specimen are slightly thicker and the spindles are not as long (up to 0.35 mm long vs up to 0.42 mm long).

This is one of the two species of *Lobophytum* that contains ovals with very dense-

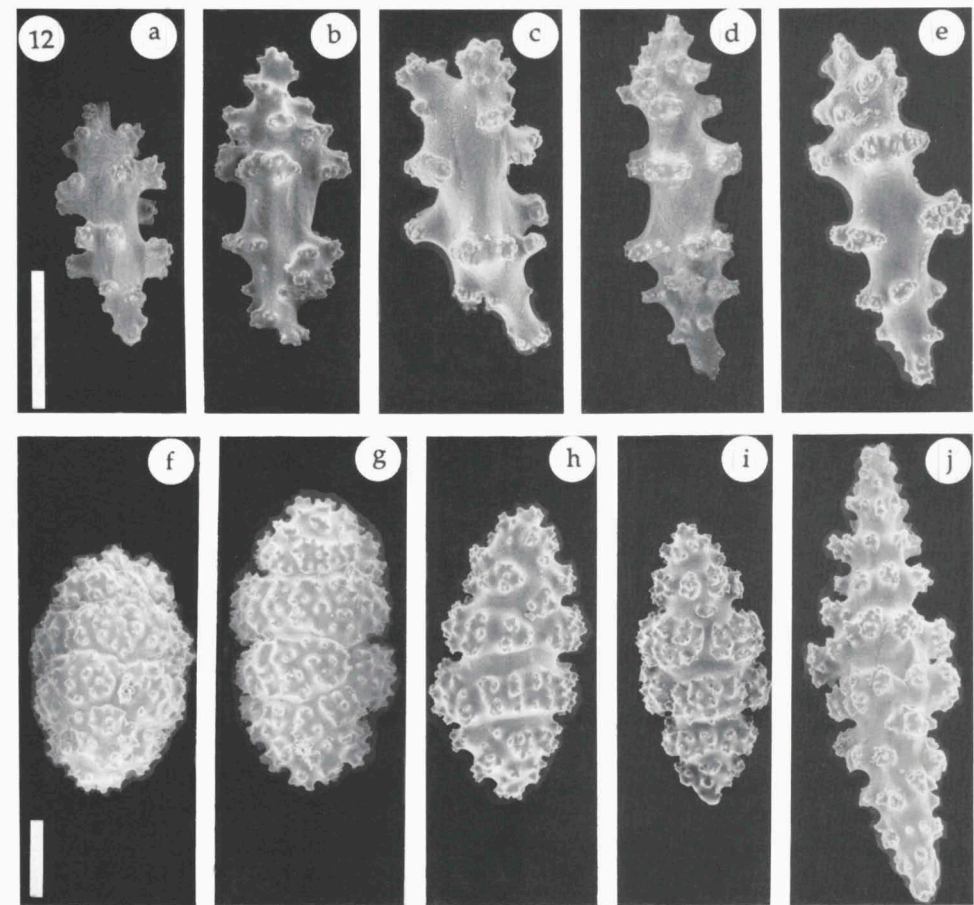


Fig 12. *Lobophytum rotundum* Tixier-Durivault, 1957 (RMNH Coel. 18922); a-e, sclerites of surface layer base; f-j, sclerites of interior base. Scales 0.05 mm. Scale at 12a applies to 12a-e; scale at 12f to 12f-j.

ly set warts. *Lobophytum borbonicum* von Marenzeller, 1886, is the other. The main difference between the two species is the absence of spindles in *L. borbonicum*.

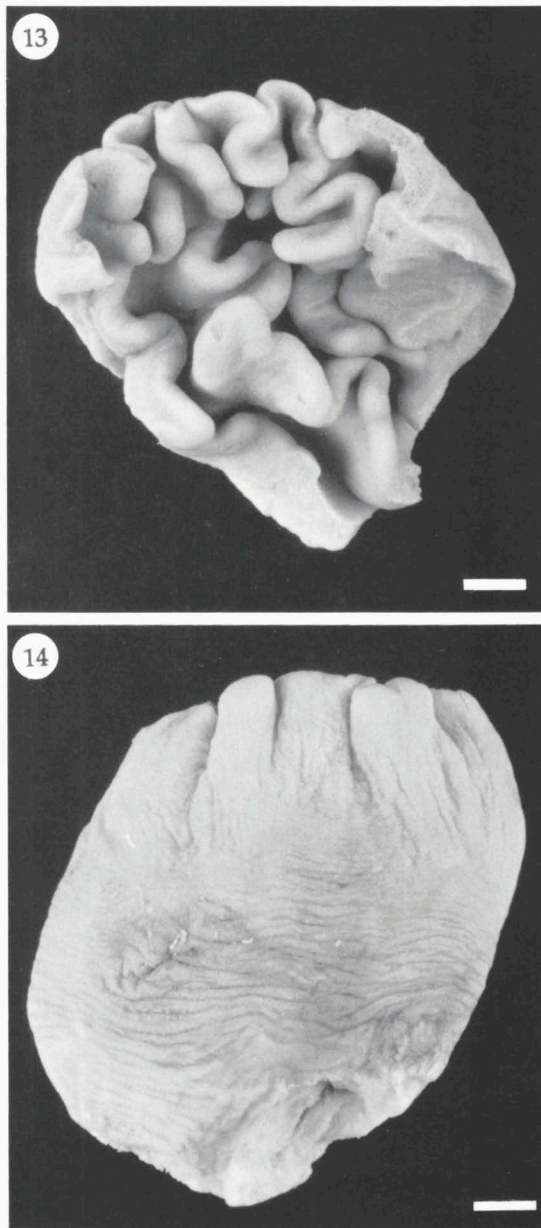
Distribution.— New Guinea, Tanzania.

***Lobophytum venustum* Tixier-Durivault, 1957**
(figs. 13-15)

Lobophytum venustum Tixier-Durivault, 1957:111; 1958: 147, figs. 164, 168, 169; 1966: 85-87, figs. 70-72; Verseveldt, 1983: 98, fig. 50, pl. 31.

Material.— Part of colony (ZMTAU Co 26282), Tanzania, 1989.

Description.— The colony fragment is 8.5 cm high and has a maximum cross-section of 6.5 × 8 cm (figs. 13-14). It is cup-shaped with radially directed sinuous crests, which are up to 3 cm high and about 4 mm wide.



Figs. 13-14. *Lobophytum venustum* Tixier-Durivault, 1957 (ZMTAU Co 26282). Fig. 13. View from above. Fig. 14. Side view. Scales 1 cm.

Polyyps without sclerites.

The surface layer of the crests contains clubs with a central wart, which are 0.06-0.17 mm long (figs. 15a-e). The clubs in the surface layer of the base are somewhat wider than those of the crests. They are 0.08-0.17 mm long (figs. 15j-k).

The interior of the crests and of the base contains capstans up to about 0.20 mm long (figs. 15l-m) and spindles up to 0.35 mm long (fig. 15f-i, n).

In all parts of the colony shuttles up to 0.20 mm long are present.

Colour.— The specimen is cream-coloured.

Remarks.— The above described specimen differs in several respects from the holotype. The crests are more closely set and the sclerites in the interior are more slender and have spiny tubercles. As some variation in the spindles was reported in several species of *Lobophytum* (e.g. Verseveldt, 1983 figs. 8-9; two specimens of *L. crassum* von Marenzeller, 1886, one with slender spindles and the other with stout ones) we identified the present specimen as *L. venustum* Tixier-Durivault, 1957.

Distribution.— Aldabra I. and Tanzania.

***Sinularia compacta* Tixier-Durivault, 1970**

For synonymy see Verseveldt, 1980: 28

Discussion.— *S. intacta* Tixier-Durivault, 1970 (not represented in the present material from Tanzania), and *S. rotundata* Tixier-Durivault, 1970, have similar sclerites as *S. compacta*. According to Verseveldt (1980) the difference between the short stalked species *S. compacta* and *S. rotundata* can be found in the size of the clubs, which are up to 0.32 mm long in the former and only up to 0.22 mm in the latter. As we found

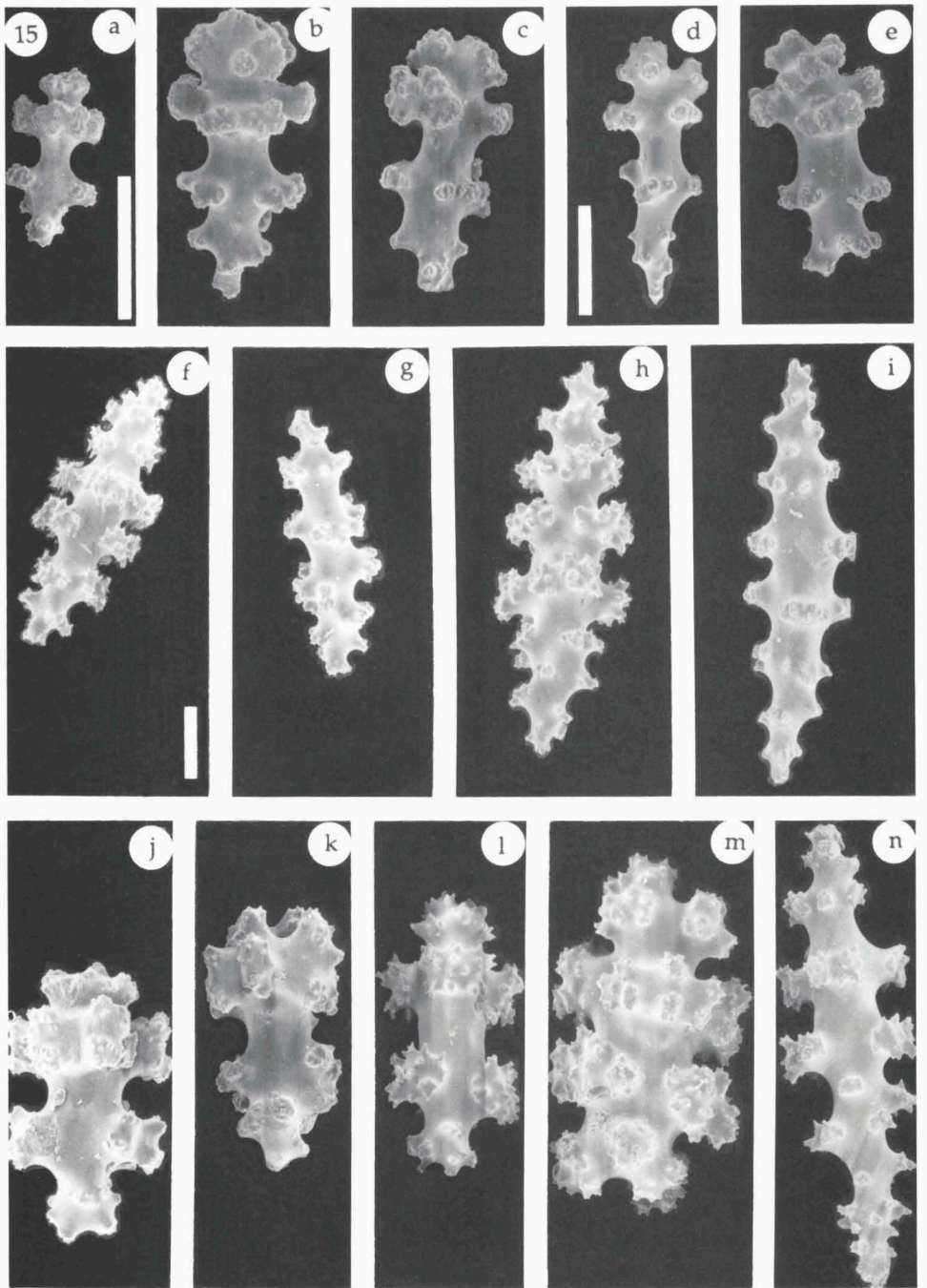


Fig. 15. *Lobophytum venustum* Tixier-Durivault, 1957 (ZMTAU Co 26282); a-e, sclerites of surface layer crest; f-i, sclerites of interior crest; j-k, sclerites of surface layer base; l-n, sclerites of interior base. Scales 0.05 mm. Scale at 15a applies to 15a-c; scale at 15d to 15d-e, j-k; scale at 15f to 15f-i, l-n.

the same difference in the Tanzania material we have identified them on that ground, although the colony forms are very similar indeed. *S. intacta* differs from *S. compacta* and *S. rotundata* in having a long stalk and clubs up to 0.25 mm long. With clubs of intermediate length, this species only can be separated from the others by its long stalk. As more material is required to decide how many closely related species there are (one, two or three), we treat them as different, like Verseveldt (1980).

Sinularia "conferta" (Dana, 1846)

For synonymy and discussion see Verseveldt, 1980: 31.

Remarks.— For a discussion of the different species described as *S. conferta* Dana, 1846, see Verseveldt (1980: 31). The sclerites of the present specimen, especially those from the base, resemble those of the specimens described by Tixier-Durivault (1945: 61; 1951: 45) as *S. conferta*, but the colour of the colony (black) is different from that of the specimens described by Tixier-Durivault (gray yellowish).

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References

- Tixier-Durivault, A., 1945. Les Alcyonaires du Muséum. I. Famille des Alcyoniidae. 2. Genre *Sinularia*.— Bull. Mus. nat. Hist. nat. Paris (2) 17 (1): 55-63.
- Tixier-Durivault, A., 1951. Révision de la famille des Alcyoniidae. Le genre *Sinularia* May, 1898.— Mém. Inst. roy. Sci. nat. Belgique (2) 40: 1-146, figs. 1-194.
- Tixier-Durivault, A., 1956/57. Les Alcyonaires du Muséum. I. Famille des Alcyoniidae. 4. Genre *Lobophytum*.— Bull. Mus. nat. Hist. nat. Paris (2) 28 (4): 401-405, (5): 476-482, (6): 541-546, 29(1): 106-111.
- Tixier-Durivault, A., 1958. Révision de la famille des Alcyoniidae: Les genres *Sarcophytum* et *Lobophytum*.— Zool. Verh. Leiden 36: 1-180, figs. 1-214.
- Tixier-Durivault, A., 1970. Les octocoralliaires de Nouvelle-Calédonie.— L'Expédition française sur les récifs coralliens de la Nouvelle-Calédonie organisée sous l'égide de la fondation Singer-Polignac 1960-1963, 4: 171-350, figs. 1-173.
- Verseveldt, J., 1980. A revision of the genus *Sinularia* May (Octocorallia, Alcyonacea).— Zool. Verh. Leiden 179: 1-128, figs. 1-68, pls. 1-38.
- Verseveldt, J., 1982. A revision of the genus *Sarcophyton* Lesson (Octocorallia, Alcyonacea).— Zool. Verh. Leiden 192: 1-91, figs. 1-39, pls. 1-24.
- Verseveldt, J., 1983. A revision of the genus *Lobophytum* von Marenzeller (Octocorallia, Alcyonacea).— Zool. Verh. Leiden 200: 1-103, figs. 1-51, pls. 1-31.

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