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ALCYONACEANS (COELENTERATA: OCTOCORALLIA) FROM SOME MICRONESIAN ISLANDS

by

J. VERSEVELDT

Zalnéflat, Weteringpark 7-48, 8025 AM Zwolle, The Netherlands

With 3 plates and 3 text-figures

ABSTRACT

Three new species of alcyonacean octocorals, belonging to the family Alcyoniidae, are described, viz., *Sarcophyton birkelandi*, *Simularia frondosa*, and *Simularia gaweli*.

INTRODUCTION

In the present paper the results of the investigation of two collections of alcyonaceans are dealt with. One of the collections was obtained by Mr. Michael J. Gawel, The Marine Laboratory, University of Guam, during SCUBA dives in the waters round the islands of Guam, Yap and Ponape in the years 1973-1976. In the list mentioned below the names of the species are followed by Guam, Yap, or Ponape, in parentheses. The other material was collected by Dr. Charles Birkeland, Associate Professor, The Marine Laboratory, University of Guam, on three places in the Palau Islands on three different dates. These places and dates are indicated in the list by: Palau A: on the reef crest near Malakal Harbour, Koror Island, 9 Januari 1976; Palau B: at the reef front near Malakal Harbour, 10 January 1976; Palau C: on the west wall of Kayangel Atoll, depth 4.5 m, 14 January 1976.

The full list of species runs as follows: *Alcyonium utinomii* Verseveldt, 1971 (Guam); *Cladiella pachyclados* (Klunzinger, 1877) (Guam); *Lobophytum crassum* Von Marenzeller, 1886 (Palau A); *Lobophytum crebriplicatum* Von Marenzeller, 1886 (Guam); *Lobophytum denticulatum* Tixier-Durivault, 1956 (Palau A); *Lobophytum pauciflorum* (Ehrenberg, 1834) (Guam, Palau A and B); *Sarcophyton birkelandi* sp.n. (Palau B); *Sarcophyton glaucum* (Quoy & Gaimard, 1833) (Guam); *Sarcophyton trocheliophorum* Von Marenzeller, 1886 (Guam, Palau A); *Simularia arborea*

Verseveldt, 1971 (Guam); *Sinularia compressa* Tixier-Durivault, 1945 (Guam); *Sinularia cristata* Tixier-Durivault, 1970 (Guam); *Sinularia dura* (Pratt, 1903) (Yap, Palau A); *Sinularia frondosa* sp.n. (Ponape); *Sinularia gaweli* sp.n. (Guam); *Sinularia leptoclados* (Ehrenberg, 1834) (Guam); *Sinularia macropodia* (Hickson & Hiles, 1900) (Guam); *Sinularia maxima* Verseveldt, 1971 (Guam); *Sinularia notanda* Tixier-Durivault, 1966 (Guam); *Sinularia numerosa* Tixier-Durivault, 1970 (Guam); *Sinularia polydactyla* (Ehrenberg, 1834) (Guam, Palau B); *Sinularia querciformis* (Pratt, 1903) (Palau B); ? *Sinularia scabra* Tixier-Durivault, 1970 (Palau B); *Asterospicularia randalli* Gawel, 1976 (Guam); *Capnella imbricata* (Quoy & Gaimard, 1833) (Palau C); *Dendronephthya* (*Dendronephthya*) *mucronata* (Pütter, 1900) (Palau A); *Dendronephthya* (*Dendronephthya*) *roemeri* Kükenthal, 1911 (Palau A); *Dendronephthya* (*Roxasia*) *dichotoma* Henderson, 1909 (Guam); *Dendronephthya* (*Roxasia*) *mirabilis* Henderson, 1909 (Guam); *Lemnalina africana* (May, 1898) (Palau A and C); *Lemnalina philippinensis* (May, 1899) (Palau C); *Litophyton acutifolium* Kükenthal, 1913 (Palau B and C); *Nephthea albida* (Holm, 1894) (Palau C); *Nephthea gracillima* Thomson & Dean, 1931 (Guam); *Paralemnalia thyrsoides* (Ehrenberg, 1834) (Palau A); *Stereonephthya cordylophora* Verseveldt, 1973 (Guam); *Stereonephthya inordinata* Tixier-Durivault, 1970 (Palau B); *Stereonephthya ulicoides* Thomson & Dean, 1931 (Guam); *Stereonephthya unicolor* Gray, 1862 (Guam); *Siphonogorgia variabilis* (Hickson, 1903) (Guam).

From this list it appears that the collections contain three new species, viz., *Sarcophyton birkelandi*, *Sinularia frondosa* and *Sinularia gaweli*. They are described below.

All specimens, the holotypes as well, are kept in the Rijksmuseum van Natuurlijke Historie, Leiden, The Netherlands; the register numbers of the new species are preceded by the abbreviation RMNH.

I am indebted to Dr. Charles Birkeland and to Mr. Michael J. Gawel for placing the material at my disposal, to Mr. W. ter Spill for reading the English text, and to Mr. G. J. Vrijmoeth for making the photographs.

***Sarcophyton birkelandi* sp. nov. (fig. 1, pls. 1, 2)**

Material. — Malakal Harbour, Koror I., Palau Is., reef front, depth 4.5 m; 10 January 1976. C. Birkeland CB. 1.10.14, RMNH Coel. no. 12457; one colony, holotype.

Description. — This curious colony is strongly flattened laterally (pls. 1, 2). The lobes are erect, flat, the narrow edges curled outwards. The longest lobe measures 50 mm in height and 22 mm in width, the broadest is 40 mm

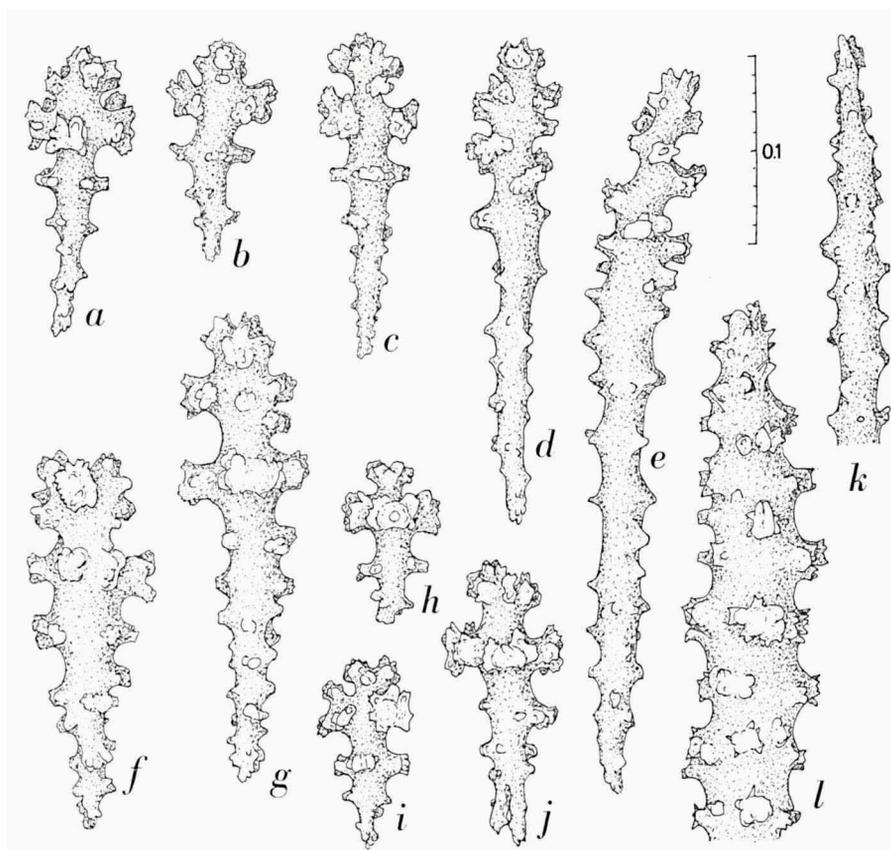


Fig. 1. *Sarcophyton birkelandi* sp. nov., holotype, RMNH Coel. no. 12457, *a-e*, sclerites from surface layer of the disc; *f-j*, sclerites from surface layer of the sterile stalk; *k, l*, sclerites from coenenchyme of the stalk. All enlargements are the same; scale 0.1 mm.

high and 25 mm wide. The disc is pressed together, forming a narrow cleft; the distance between the bottom of the disc and the summit of the longest lobe is 60 mm. The colony is stiff but slightly flexible; the maximum height is 115 mm.

The centres of the completely retracted autozooids are 0.80 to 1.20 mm apart; on the edges they are usually slightly closer-set. The diameter of the siphonozooids is almost as large as that of the autozooids, hence both types of zooids are difficult to distinguish. There are one or two, sometimes three siphonozooids between two autozooids, on the edges of the lobes there is not more than one.

In the surface layer of the disc lie clubs, strongly varying in length. A good many is 0.09 to 0.18 mm long; they have a central wart and, below this,

girdles of warts, and, in the pointed part of the handle, blunt spines (fig. 1*a-c*). But clubs up to 0.39 mm long are by no means rare (fig. 1*d, e*). Their heads bear warts, the long, slender handles have conical spines. Such long sclerites are intermediate between clubs and coenenchymal needles. These needles, up to 0.50 mm long, bear conical processes; they resemble those in the sterile stalk (fig. 1*k*).

The clubs in the surface layer of the sterile stalk are 0.09 to 0.27 mm long (fig. 1*f-j*). They are slightly stronger than those in the disc; the warts are bigger, and they are arranged in distinct girdles. But long, slender clubs like those in the surface layer of the disc are absent. In the coenenchyme of the sterile stalk there are the same pointed needles as those in the interior of the disc (fig. 1*k*), but, in addition, there are wider spindles with warts (fig. 1*l*); the length of these spicules is up to 0.53 mm.

Colour. — In alcohol the colony is greyish.

Remarks. — The colony is characterized by the remarkable shape of the flat, erect folds, and by the dimensions of the clubs and clavate needles in the surface layer of the disc.

I name this new species after Dr. C. Birkeland, Guam, collector of the specimen.

***Sinularia frondosa* sp. nov.** (fig. 2, pl. 3 fig. 1)

Material. — Ponape, Micronesia, on vertical cliff edge on north side of Takatik I., Ponape lagoon, depth 10 m, 3 January 1976; M. Gawel MG.76.1.3.1, RMNH Coel. no. 12452; one colony, holotype.

Description. — The stiff but soft colony has a total height and a maximum width of the polyparium of 40 mm (pl. 3 fig. 1). In a cross-section the sterile stalk measures 25 × 16 mm; the base of attachment has diameters of 8-14 × 23 mm. At a height of 12 to 15 mm the first, small lobes arise. More distally the lobes are flat leaves, transversely placed (fig. 2*a, b*), stiff but weak, sometimes partly bent downwards. Length and width of the leaves vary strongly, the largest are about 20 to 25 mm wide. The irregular crenated edge is 1 mm thick; at the base the leaves are swollen, up to about 5 mm thick.

The polyps are only found on the upper side of the lobes (fig. 2*a*). They are completely retracted forming tiny knobs; the centres are 0.80 to 1.60 mm apart.

The surface layer of the lobes contains thinly distributed clubs, 0.13 to 0.17 mm long, with spiny or warty heads, and pointed, weakly spined shafts (fig. 2*c-e*). In the sterile stalk the clubs are stouter, 0.15 to 0.22 mm long, with

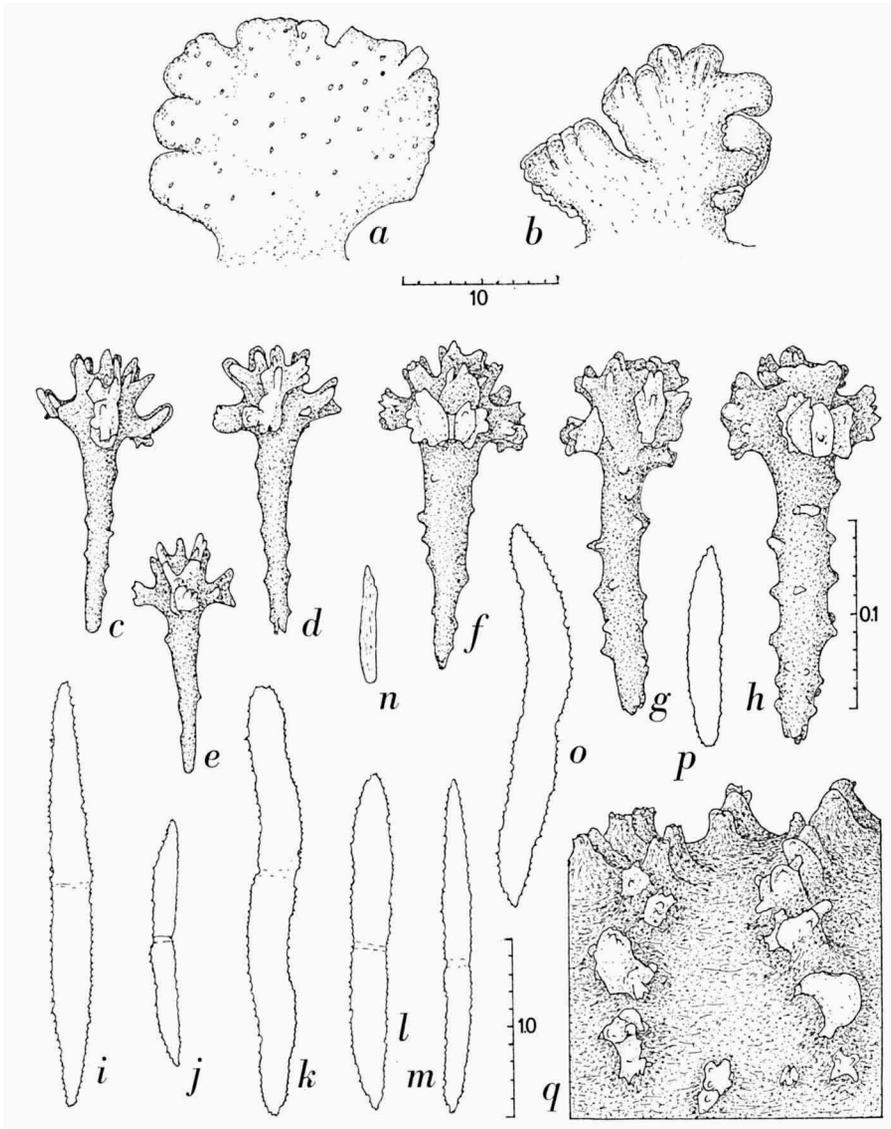


Fig. 2. *Simularia frondosa* sp. nov., holotype, RMNH Coel. no. 12452. *a, b*, leaflike lobes, *a* seen from above, *b* seen from below; *c-e*, sclerites from surface layer of a lobe; *f-h*, sclerites from surface layer of the sterile stalk; *i-m*, sclerites from interior of a lobe; *n-p*, sclerites from interior of the stalk; *q*, prominences on coenenchymal sclerite from the stalk. Enlargement of *a, b* indicated by 10 mm scale; that of *c-h* and *q* by 0.1 mm scale at *h*; that of *i-p* by 1.0 mm scale at *m*.

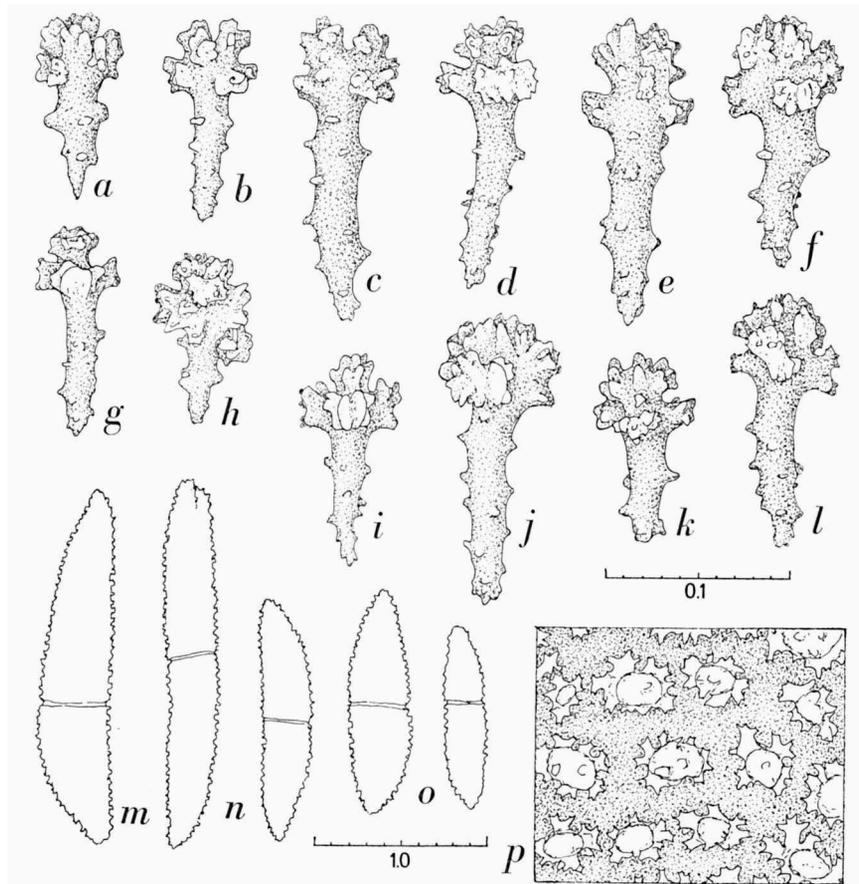


Fig. 3. *Simularia gaveli* sp. nov., holotype, RMNH Coel. no. 12445. *a-h*, sclerites from surface layer of a lobe; *i-l*, sclerites from surface layer of the sterile base; *m-o*, sclerites from coenenchyme of the sterile base; *p*, warts on coenenchymal sclerite from base. Enlargement of *a-l* and *p* indicated by 0.1 mm scale below *k*; that of *m-o* by 1.0 mm scale below *o*.

wider, warty heads and thicker handles (fig. 2*f-h*). In the coenenchyme of the lobes there are slender spindles and rods, up to 2.50 mm long and 0.26 mm wide (fig. 2*i-m*). They are pointed or blunt-ended; the surface has spines. They are few in number, and visible through the thin surface layer of the lobes. In the sterile stalk the same sclerites occur, but they are very scarce (fig. 2*n-p*). The blunt spines and small warts are not densely placed, and they are often arranged in transverse rows (fig. 2*q*).

Colour. — In alcohol the colony is creamy-white.

Remarks. — This new species differs from all other *Simularia* species in having weak, transversely placed, foliaceous lobes. In my opinion the speci-

men nevertheless belongs to the genus *Sinularia*, for the sclerites in the surface layer of lobes and stalks are typical *Sinularia*-clubs, and the coenenchymal sclerites are large, up to 2.50 mm.

The specific name *frondosa* (Latin *frondosus* = full of leaves) refers to the shape of the lobes.

Sinularia gaweli sp. nov. (fig. 3, pl. 3 fig. 2)

Material. — Double reef, leeward Guam, depth 16 m, 23 October 1974; M. Gawel MG.74.10.23.14, RMNH Coel. no. 12445; one colony, holotype. Field-note: "Live colour: lobes pinkish".

Description. — The colony is hard (pl. 3 fig. 2). The low, encrusting, sterile basal part (there is no question of a sterile "stalk") measures 70 mm in length, 30 mm in breadth, and 5 to 8 mm in height. From this base two kinds of lobes arise: a) simple round knobs, about 6 mm in diameter; some of them are larger, flattened laterally, up to 14 mm long, 6 mm wide, and 10 mm high; the lobes are not closely packed. — b) two bigger primary lobes, 35 mm high and 15 to 18 mm wide at the base, and bearing the same lobes as those on the base.

The polyps are completely retracted, leaving indistinct, shallow, tiny pits, the centres of which are about 0.80 mm apart.

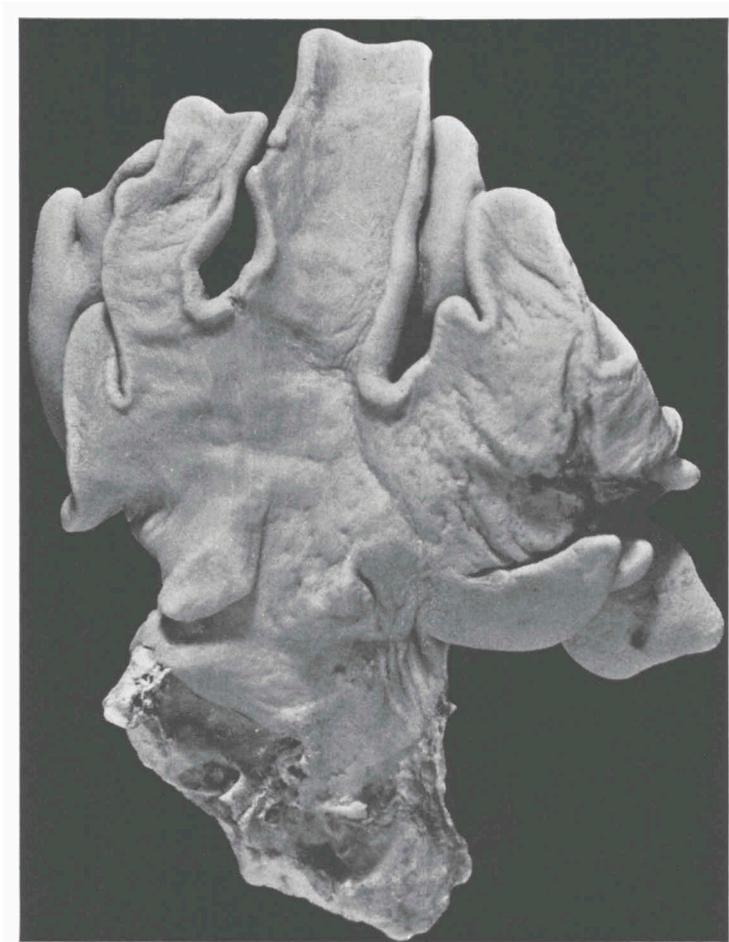
In the surface layer of the lobes and the basal crust there are clubs 0.10 to 0.17 mm long, with warty heads and stout, spiny, blunt-ended shafts; there is hardly any difference between those in the lobes (fig. 3*a-h*) and those in the base (fig. 3*i-l*).

The coenenchymal sclerites in the lobes and in the base are also the same. In the base they are up to 2.20 mm long and 0.42 mm (rarely 0.48 mm) wide (fig. 3*m-o*); those in the lobes may be shorter. They are blunt, sometimes pointed spindles with a weakly developed transverse median constriction, and an occasional bifurcation at one end. The prominences are small, irregularly arranged, and strongly crenellated with long, branched spines (fig. 3*p*).

Colour. — In alcohol the colony is creamy-white.

Remarks. — The species is mainly characterized by the shape of the lobes. The crenels on the prominences of the coenenchymal spicules are also typical.

I name this species after Mr. Michael J. Gawel, collector of the specimen.



Sarcophyton birkelandi sp. nov., holotype, RMNH Coel. no. 12457; \times 1.



Sarcophyton birkelandi sp. nov., the same colony as shown in pl. 1, but seen from the other side; X 1.

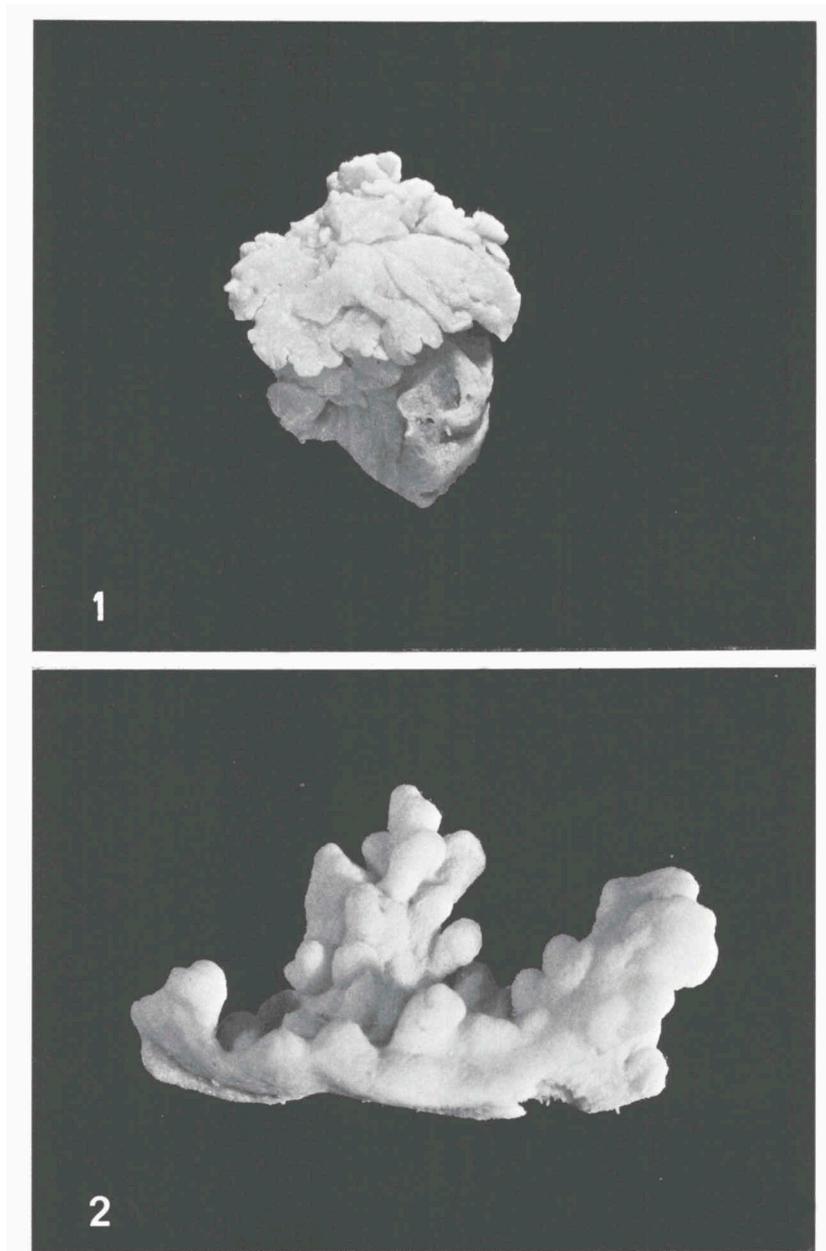


Fig. 1. *Simularia frondosa* sp. nov., holotype, RMNH Coel. no. 12452. Fig. 2. *Simularia gaweli* sp. nov., holotype, RMNH Coel. no. 12445. Both $\times 1$.