

Anareaster, a New Genus of Asteroidea from Antarctica

By H. BARRACLOUGH FELL and HELEN E. CLARK,

Zoology Department, Victoria University of Wellington

[Received by the Editor, July 1, 1959.]

Abstract

Anareaster ganymede n.g., n.sp., is described from Mawson Base, Antarctica. The actinal, abactinal and adambulacral structure indicate its systematic position in the family Korethrasteridae, but the remarkable transformation of the paxillar spines into cup-shaped structures precludes its inclusion in any of the genera previously referred to this family.

The Korethrasteridae, a family of Spinulose Asteroidea defined by Danielsen and Koren (1884), superficially resemble the Solasteridae, especially in the abactinal structure, but differ from them in lacking actinal intermediate plates, and in having oral plates of the Pterasterid type. Fisher (1911) regards the Korethrasteridae as intermediate between the Solasteridae and Pterasteridae. The only genera so far known are *Korethraster* Thompson, *Peribolaster* Sladen, and *Remaster* Perrier. To these may now be added a fourth genus, for which we propose the name *Anareaster*, in honour of the Australian National Antarctic Research Expedition by which it was discovered.

Family KORETHRATERIDAE

Genus *Anareaster* gen. nov.

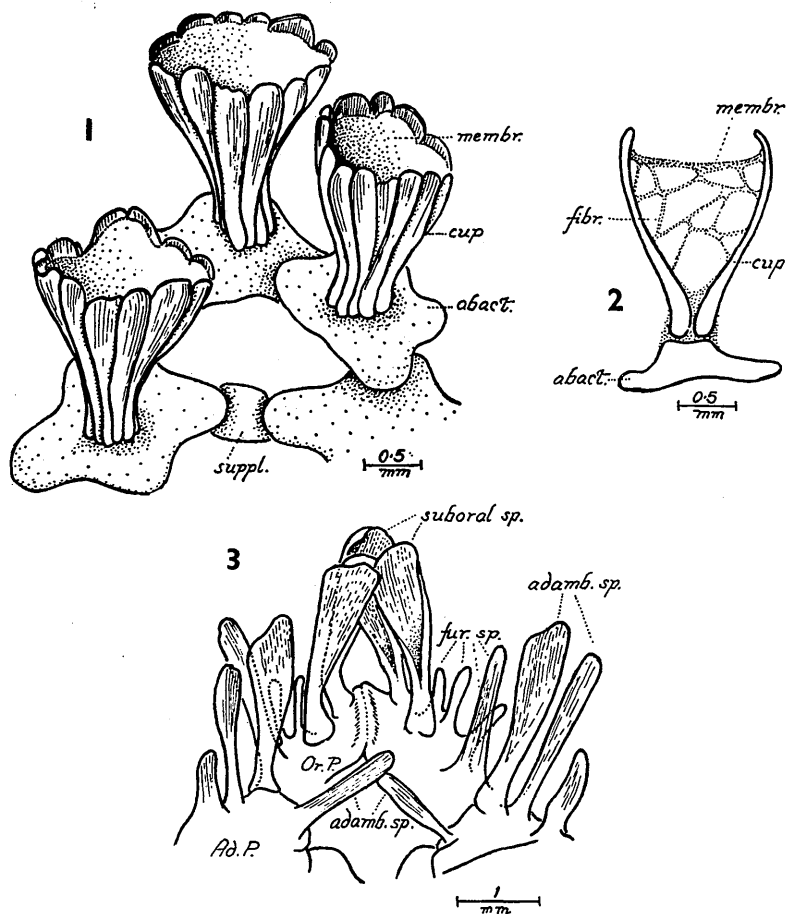
Abactinal surface bearing cruciform plates whose lobes overlap or are connected by intermediate supplementary plates, to form an open network with rounded meshes. At the centre of each primary abactinal plate is a boss which carries an erect, flaring cup formed from fused, spatulate paxillar spines, the lumen of the cup partly occupied by spongy fibrous tissue and roofed over by an elastic, flexible membrane.

Type species, *Anareaster ganymede* sp. nov. (so named in reference to *Ganymede*, cup-bearer to Zeus).

Anareaster ganymede sp. nov., Figs. 1-3, holotype.

DIAGNOSIS. Body pentagonal-stellate, arched above, concave below, the five arms tapering to a rounded tip. Abactinal plates obscured in life by skin but visible when dried, cruciform with short, blunt lobes; the lobes of adjacent plates overlap, usually directly, but occasionally there is a small intercalary plate which underlies and interconnects the corresponding lobes of adjacent plates. Each abactinal plate carries a paxilla comprising 11 to 13 distally flaring, spatulate spines which are fused together by their lateral margins to form a large, erect, conspicuous, flaring cup. The distal rim of the cup is bluntly and irregularly crenulated as a consequence of the incomplete fusion of the distal extremities of the spatulate spines. The lumen of the cup is partly filled by a delicate, spongy mesh of elastic fibrils; just below the margin of the cup the fibrils combine to form a horizontal, continuous sheet of tissue, forming a flexible roof over the lumen; the roof is depressed at its centre, so that the upper surface is concave. The paxillae are arranged in regular longitudinal rows and become smaller on the distal parts of the arms.

Inferomarginal plates each carry a single, flattened spatulate spine. No actinal intermediate plates. The adambulacral plates are each placed proximad to the corresponding inferomarginal, and each carries a transverse row of 4 spatulate spines, which decrease in size towards the furrow. Oral armature of 6 spines, of which 2 are suboral and 4 are furrow-spines; the 2 suboral spines are robust, markedly spatulate, with flaring blunt tips which are directed ventrad; the 4 furrow-spines comprise 3 small, subequal spines, placed in the furrow, and 1 larger distal spine placed nearer the margin of the furrow.



FIGS. 1-3.—*Anareaster ganymede* n.g., n.sp. 1—abactinal plates and paxillar cups. 2—diagrammatic vertical section of paxillar cup. 3—oral armature and adjacent adambulacral armature.

Abact., abactinal plate; Ad.P., adambulacral plate; adamb. sp., adambulacral spines; cup, paxillar cup formed from fused spines; fibr., fibril; fur. sp., furrow spines; membr., membrane roofing lumen of paxillar cup; Or.P., oral plate; suboral sp., cluster of suboral spines; suppl., supplementary abactinal plate.

Madreporite small (2 mm diam. in holotype), very tumid, with a few deeply excavate sinuous grooves. Anus guarded by 5 calcareous plates. Tube-feet biserial.

MATERIAL EXAMINED. A single specimen, the holotype, from the A.N.A.R.E. base at Mawson, Antarctica, collected by Mr. John Bunt, 20/1/1957 from West Arm, dredged from 100 m to surface. Colour in life, white; in spirit and dried, white.

HOLOTYPE. In the A.N.A.R.E. collection, Melbourne, Serial No. A/57/Ec/31. Dimensions, R 30 mm, r 17 mm, R/r 1.75; width of arm at base, 37 mm.

DISCUSSION

The distinctive characters of *Anareaster* and its relation to the other genera of Korethrasteridae may be illustrated by the following key, which is a logical extension of that already published by Fisher (1911, p. 341):

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| 1 (2) Abactinal plates polygonal or roundish in outline, the spines composing the paxilliform tufts naked and free | <i>Korethraster</i> |
| 2 (1) Abactinal plates cruciform, forming meshes; the spines composing the paxilliform tufts united together | |
| 3 (6) Paxillar spines enclosed in a sacculus enveloping the whole group. | |
| 4 (5) Paxillar spines simple, enveloped in membranous sheaths which are united together in the centre of the group | <i>Peribolaster</i> |
| 5 (4) Paxillar spines scoop-shaped and denticulate, forming hollow funnel-shaped fascicles | <i>Remaster</i> |
| 6 (3) Paxillar spines fused together by their lateral margins to form an erect flaring cup which is roofed over within by a fibrous membrane | <i>Anareaster</i> |

It may be suggested that *Anareaster* can be regarded as a still more specialised derivative of *Remaster* and the cup-shaped paxillae may be regarded as a development of funnel-shaped fascicles of that genus. Both genera share with *Korethraster* the spatulate character of the spines, and both are Antarctic.

A fuller account, with half-tone photographic illustrations, will be given in the official report of the Echinoderms of the Australian National Antarctic Research Expedition.

ACKNOWLEDGMENT

We wish to express our gratitude to the Director of the A.N.A.R.E., Melbourne, for the opportunity of studying this remarkable asteroid.

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H. BARRACLOUGH FELL, D.Sc., Ph.D.,
HELEN E. CLARK, B.Sc.,
Department of Zoology,
Victoria University of Wellington,
P.O. Box 196, Wellington.
July, 1959.