

## *Primnoisis Spicata* (Hickson) (Order Gorgonacea Lmx. Family Isididae Lmx.) From the Antarctic Sea

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### ABSTRACT

*Primnoisis spicata* (Hickson), collected from the Antarctic sea (69°54'S and 12°49'E) during the Third Indian Antarctic Research Expedition is described and illustrated. This species was first recorded from Mc Murdo Bay and is here reported from another locality, which considerably widens its distribution in the Antarctic Ocean.

### INTRODUCTION

During the Third Indian Antarctic Research Expedition (December, 1983 to March, 1984) the second author had the opportunity to collect a few specimens of gorgonids from the Antarctic Sea. These specimens were accidentally caught in a plankton net (Indian Ocean Standard Net) during a vertical haul from a depth of 200 m on 1st January, 1984 at 1900 hrs in the area 69°54'S and 12°49' E. It was later ascertained from a bathymetric survey that the area where the plankton net was lowered was in a well-like formation and the scraping by the rim of the net across the lateral wall of the well-like depression while hauling has resulted in the accidental inclusion of a wide variety of sedentary organisms growing luxuriantly along its vertical surface. The material collected had a total weight of 6.1 kg (wet weight) and was composed mainly of bits of shells, sponge spicules etc. harbouring a rich assemblage of both epi and infauna. The various groups of animals represented were sorted out and it was found from their numerical abundance that bryozoans enjoyed wide distribution along such vertical surfaces. The other groups which shared this habitat to their advantage included sponges, gorgonids, tubicolous polychaetes and echinoderms. One species of cephalopod was also included in the collection.

### MATERIAL AND METHODS

Many bits of gorgonids were present in the sample, but on examination all the bits were found to belong to the same species – *Primnoisis spicata* (Hickson). The cortical zone of the specimens was not preserved in any of the bits examined but a careful study revealed the presence of a small bit with a few polyps preserved intact. This bit was used in the extraction of spicules. Microscopic examination revealed that the spicules were eroded to the maximum, obviously due to the effect of strong formalin used in the preservation.

The axial skeleton in the family Isididae to which this species belongs, is very peculiar in that it contains both calcareous and horny regions (internode and node respectively) and hence the axial skeleton is liable to break off easily at the horny nodes when even minimum pressure is exerted. Coupled

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with this inherent character of the family, strong formalin might have accelerated the process of erosion, both at the nodal and internodal regions. However, the structure of the axial skeleton of two larger bits measuring 30 mm and 25 mm in height is illustrated in the text of this paper, as it indicated the general pattern of branching so characteristic and is essential in identifying the various species of the genus *Primnoisis* Studer.

#### Classification

- Order Gorgonacea Lmx.  
 Family Isididae Lmx.  
 Subfamily Mopseinae Gray  
 Genus *Primnoisis* Studer

#### Generic characters

Colonies often divide in a bottle brush-like pattern, axis devoid of spicules and divisible into calcareous internodes and horny nodes; internodes shorter in the older part of the specimen; branches originate from internodes and have both nodes and internodes as in the main axis. Polyps cylindrical or club-shaped and arranged vertically on all sides or at an angle to the axis. Polyps with plate-like spicules in eight longitudinal rows alternating with slender spicules; tentacles with two to three transverse rows of small plates which converge to the tips. Cortex thin and armoured with closely packed plates crosses etc.

Type specimen: *Isis antarctica* Studer.

*Primnoisis spicata* (Hickson)  
 (Fig. 1: a-h)

*Primnoisis spicata* Kukenthal, 1919, p. 613 (synonymy)  
 Kukenthal, 1924, p. 433 (synonymy)

**Material:** Several bits; probably parts of one or two complete specimens. Biggest of the lot has a height of 30 mm.

**Description:** General morphology of the specimen could not be studied as no specimen was preserved intact and hence, the present description is based on a few bits examined. Internodes are white in colour and are striated longitudinally; nodes dark brown and constricted, often situated at an interval of 6–18 mm; diameter of internode of main branch about 1 mm while that in branches a little less. Branches arise from the internode just at or near its middle portion and are set roughly at right angle to the main axis. Branches arise in all directions and seldom divide.

Polyps cylindrical, 1–2 mm long and placed at right angle to the axis; scattered irregularly at a distance of 1.2 mm and are armoured distally with three transverse rows of long spicules so characteristic to this species. These spicules have conical dagger-shaped median spine bearing 2–4 branched basal processes. This spicule resembles very much the *Echinomuricea* type of spicule in general appearance. The median spine is circular in cross section and may be microscopically spiny, tuberculate or even serrate, with a length of 0.4 mm and diameter of 0.037 mm at the base. The number of basal process is normally two, but each in turn may divide dichotomously resulting in four such processes. These processes may be flattened distally and ornamented in the same pattern as in the median spine; but when in their early stage of development they may possess striae running lengthwise. These processes may measure between 0.18 and 0.28 mm in length when well developed. The total length of this spicule when well formed, may come upto 0.66 mm. Other spicules include spindles of two types –

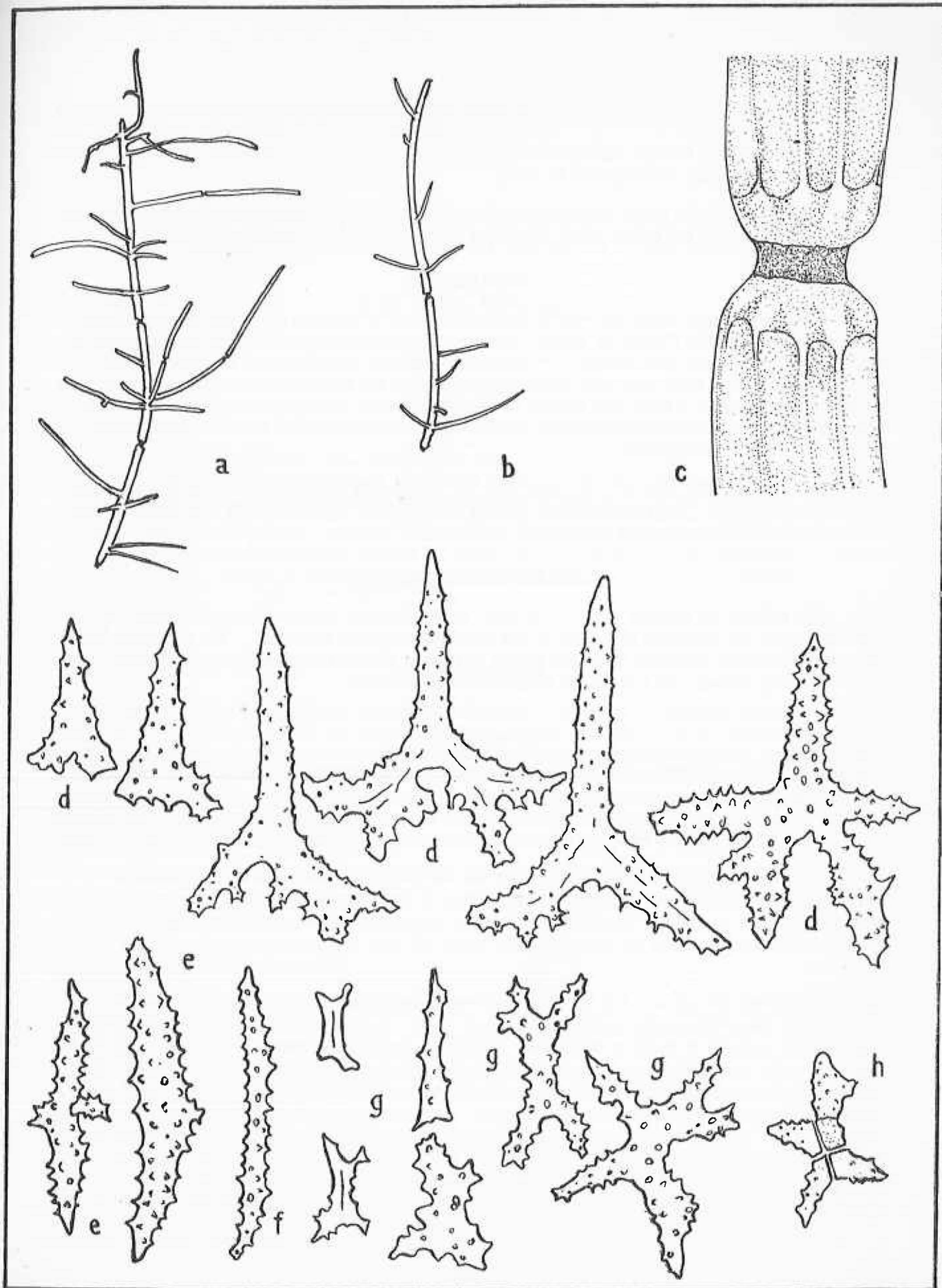


Fig. 1. *Primnois spicata*: (a) axial skeleton showing the nodes, internodes and branching pattern of a branch measuring 30 mm (b) same of another branch measuring 25 mm, (c) structure of a node and the surface of internode enlarged to show the surface ornamentation, (d) spiny spicules; different stages of growth, (e) spindle - robust, (f) spindle - narrow, (g) multiradiate and (h) cross.

narrow with a size of 0.470 x 0.027 mm and robust measuring 0.410 x 0.040 mm, multiradiate (size upto 0.47 mm) and cross (size upto 0.11 mm).

*Colour:* Polyps have light brown colour in formalin. Spicules are colourless generally but the characteristic spiny spicules of the polyp margin may have brownish tinge when well developed.

### DISCUSSION

Of a total of eight certain and four uncertain species so far reported under this genus (Kukenthal, 1924) only two, namely, *Primnoisis spicata* (Hickson) and *P.armata* Kukenthal are known to possess peculiar spiny spicules on their polyps. *P.spicata* can easily be identified from the other in that it has spiny spicules in three transverse rows while in *P.armata* they are arranged in one transverse row. The branching pattern noted in these two species, is also quite distinct; in *P.spicata* branches arise from the internode in all directions (bottle brush-like arrangement) while in *P.armata* they are given out in one plane (fan-shaped arrangement).

This species was originally recorded from Mc Murdo Bay (Antarctica) in depths varying between 175 and 220 m. It is now recorded from off Queen Maud Land (69°54'S and 12°49'E) which is almost symmetrically opposite to the type locality.

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