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A NEW OPHIUROID FROM UPPER CRETACEOUS STRATA OF BATHURST ISLAND, NORTHERN TERRITORY

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ABSTRACT

A new ophiuroid, Ophiomicros bathursti gen. et sp.nov. is described from Cenomanian (Upper Cretaceous) strata of Bathurst Island, Northern Territory. The new genus may be allied to Ophiura Lamarck, 1816 and Amphiura Forbes, 1842, but is readily distinguishable from both these genera by unusually large oral plates and small adoral plates.

Only one other ophiuroid, Ophiacantha (Ophioglyphoida) fosteri Chapman, 1934, is known to have been described from the Australian Cretaceous beds.

INTRODUCTION

During systematic investigation of the Mesozoic strata of the Northern Territory the writer visited Bathurst Island, north of Darwin, where rich collections of Cretaceous fossils have been collected in the past. The fossil collections gathered by the writer consist almost exclusively of Mollusca, but at Mirindow Point on the southern coast of the island a wave-cut cliff yielded a single incomplete specimen of an ophiuroid. As far as can be ascertained this is only a second ophiuroid to be found in Australian Cretaceous strata. Its description appears below.

DESCRIPTION

Class Stelleroidea
Subclass Ophiuroidia
Order Ophiurae J. Muller
Family Ophiolepidae L. Jungman
Genus Ophiomicros gen. nov.

DIAGNOSIS: Oral shield rhomboidal in outline, abnormally large, not obviously pitted; adoral shield arrangement simple, shields unusually small; ventral arm plates pitted, of a complex outline, touching or out of contact with each other, broad proximally, narrower distally; lateral arm plates narrow in ventral view, armed with two spines; ambulacral pores conspicuous. Size small.

Type species: Ophiomicros bathursti gen. et sp.nov., from Cenomanian (Upper Cretaceous) strata of Northern Territory, Australia.

Although the nature of skeletal parts of ophiuroids lend themselves ideally to palaeontological investigation the arrangement of fossil species into genera is difficult because zoological classification is based on such features as mouth skeleton and teeth which are rarely preserved in fossil forms.

Bearing this in mind Rasmussen (1950) suggested that this difficulty can be at least partially overcome by concentrating on secondary features which, in some genera are so characteristic as to justify them being used as bases for generic differentiation.

This practice is followed in the present paper.

Ophiomicros gen.nov. shares with genus Amphiura Forbes, 1842 the rather complex outline of the ventral arm plate and large size of the oral shield, and resembles Ophiura Lamarck, 1816 in the narrowness of lateral arm plates and prominence and position of ambulacral pores. But the new genus can be readily distinguished from these two genera as well as from other ophiuroid genera known by its very small adoral shields and disproportionally large oral shields.

Ophiomicros bathursti gen.et sp.nov.

Pl. 1, f. 1 - 4a, b, c.

MATERIAL: Single oral impression of an almost complete specimen. Aboral aspect not available for examination. Specimen embedded in blueish clay of Cenomanian age; collected in a wave-cut cliff at Mirindow Point, southern coast of Bathurst Island, Northern Territory. Fossiliferous locality number, T.T.51. Holotype, C.P.C. 4642 fossil registration number, F22163; lodged at the Bureau of Mineral Resources, Geology and Geophysics, Canberra, A.C.T.

DESCRIPTION: Specimen about 16 mm. across; width across oral plates 3.3 mm.; diameter of the mouth, 0.7 mm.; length of each arm, 6.5 mm.; breadth of an arm within the limits of oral plates, 0.45 mm.; breadth of an arm just outside the limits of oral plates, 0.7 mm.; length of a spine, 0.45 mm.

Individual extremities of mouth rounded rather than pointed. Details of jaw not preserved. Adoral shield very small, consists of a thin curved plate concave to the periphery of an arm. Oral shield very large, rhomboidal, with smallest angle directed orally, at a higher plane than the plane of the arms.

Visible ventral surface of the ventral arm plates approaches heart-shape, with the base of the heart pointing orally. The proximal-most plates narrower - parallel to the length of the arm - than distal plates; progressive distal elongation accompanied by a diagonally ventral migration of ambulacral pores which perforate both lateral margins of each ventral arm plate; plate surface pitted; highest relief of plate along aboral edge; plates touching or out of contact with each other.

Shape of the inner and outer surface of the lateral arm plate not known; narrow in ventral view with a shape of a modified triangle with adoral and lateral margins concave, adoral margin convex, and all three corners attenuated; each lateral arm plate armed with two thin spines, both given off at the distal extremity of a plate; each spine about 0.45 mm. long.

REMARKS: The preservation of Ophiomicros bathursti gen. et sp.nov. does not allow description of its internal structures as well as its aboral aspect; even in the oral view not all structures are preserved. The nature of jaws and teeth are not known, and the portion of the disc peripheral to the oral plates is not preserved. The remaining structures, however, are sufficiently characteristic and generically and specifically diagnostic to cause little doubt as to the originality of the new form.

The only Cretaceous ophiuroid known to have been described from Australia is Ophiacantha (Ophioglyphoida) fosteri F. Chapman, 1934 from the Tambo(?) beds (Lower Cretaceous) at Cleeve, near Longreach, Queensland. The new species can be distinguished by its more rigid nature, lesser size, apparently smaller number of spines on each lateral arm plate, and by the shape of ventral arm plates which are rectangular in the Queensland form.

O. bathursti gen.et sp.nov. does not contribute to our knowledge of the age of the source strata, nor does it extend the time range of the ophiuroids in general. Its value lies in the increase of our knowledge of these rare fossils and of their distribution.

Photograph showing the complete specimen (pl. 1 f.1) in four-fold magnification is orientated so as to create an illusion of convex relief, since an attempt to obtain a latex mould of the fossil impression met with failure, the specimen itself being badly damaged.

The generic name of the new ophiuroid reflects its small size while specifically it has been named after Bathurst Island where it was found.

REFERENCES

CHAPMAN, F., 1934 - A Lower Cretaceous Brittle-star from Queensland. Proc. Royal Soc. Victoria 46 (N.S.) Part 2, 195-199, pl. 7.

RASMUSSEN, H.W., 1950 - Cretaceous Asteroidea and Ophiuroidea with special reference to the species found in Denmark. Danmarks geol. Undersogelse Ser. 2 No. 77, 1-134 pls. 1-18, figs. 1-8.

PLATE 1

Figs. 1-4c. Ophiomicros bathursti gen.et sp.nov.

1. Holotype, C.P.C. 4642, F22163. General view of the whole specimen, x4.

2, 3. More magnified view of the holotype, x11.

4.a. Proximal ventral arm plate with ambulacral pores, x33.

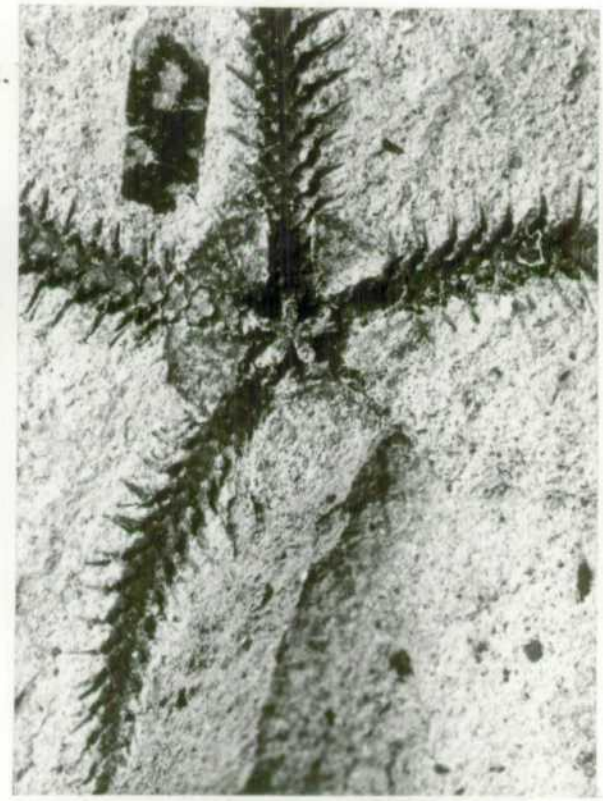
b. Distal ventral arm plate with ambulacral pores, x33.

c. Proximal lateral arm plate with spines and ambulacral pores, x33.

Locality T.T.51, Bathurst Island, Northern Territory. Cenomanian.

1.

2.



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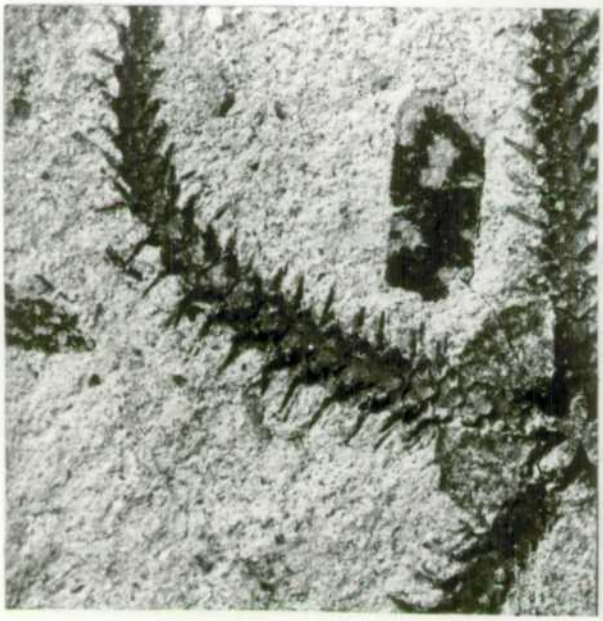

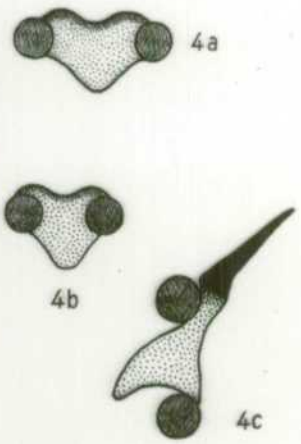

4.