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The Dental and Oral Plates of Ophiuroidea

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Abstract

THE anatomical features of the dental and oral plates are described and illustrated for representative genera of most known extant families of Ophiuroidea. On the basis of these data, the inferred relationships of the various taxa prove to be in essential agreement with the classification proposed by Matsumoto (1915). An alternative classification, adopted by Mortensen (1928), proves incompatible with data here presented, and is accordingly rejected. Matsumoto's concept of the relatively archetypal character of Ophiomyxidae is supported. The Ophiomyxidae, together with the Asteronychidae, Trichasteridae, Asteroschematidae and Gorgonocephalidae, are here regarded as related, together composing the order Phrynophiurida, as proposed by Matsumoto. A general discussion is given of the other orders and their content. An approximate inferred phylogeny is outlined.

I. INTRODUCTION

SINCE 1936 I have been engaged on research into the internal structures of ophiuroids in order, if possible, to clarify their systematic interrelationships. For this purpose, dissections were carried out upon as many forms as I could obtain, and special attention was paid to those whose inferred relationships seemed to be founded on insufficient study, besides also those species which had already been fully investigated by previous workers. My attention was first directed to the dental plate; this, though very simple in shape, offers, I believe, some important diagnostic characters. Further, I have also come to the conclusion that the oral plate exhibits some significant features too, its lateral margin being of especial importance. Thus I have directed my efforts mainly to the comparative study of these two plates. After a careful examination of a large number of forms I concluded that certain inferences are possible, as to the interrelationships of ophiuroids, and these are set out in the present paper.

Comparative research carried out hitherto upon the dental and oral plates of Ophiuroidea cannot be regarded as satisfactory. As early as 1854, J. Müller had already described and figured the dental plate of *Ophiocoma erinaceus,* and the oral plate of *Ophiolepis ciliata* (= *Ophiura ciliata*) in his elaborate paper on the structure of echinoderms. Th. Lyman also mentioned the dental and oral plates, when he commented on the homologies of the masticatory apparatus in the Ophiuroidea (1874). H. Simroth, who studied the internal structure of *Ophiactis*

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