

7. INTER-RELATIONSHIPS OF RECENT STALKED, NON-ISOCRINID CRINOIDEA

AILS A M. CLARK

British Museum (Natural History), London, England

SUMMARY

Outlines are given of the body form in the extant families of the stalked crinoid orders Millericrinida and Bourgueticrinida with particular notes on the few taxa exhibiting secondary arm branching.

The recent nominal species of the Bourgueticrinida are listed in a table, together with their distributions and an indication of the size range of the often limited known material. The wisdom of division of these taxa into more than the one family Bathyrcrinidae is questioned, in view of recent observations on ontogeny and variation, particularly with regard to the stalk attachment.

A new record of a particularly relevant species, *Porphyrocrinus thalassae* Roux, is included, with a photograph showing the secondary arm branching.

INTRODUCTION

Apart from the aberrant Holopodidae (order Cyrtocrinida), the remaining recent non-Isocrinid taxa of stalked Crinoidea are referable to two orders — the family Hyocrinidae to the Millericrinida and the remainder to the Bourgueticrinida. Most of these species are remarkable among recent crinoids for the conspicuous part the basal plates play in making up the calyx of the adult.

SYSTEMATIC ACCOUNT

The Hyocrinidae have thin-walled cup-shaped calyces, surmounted by the arms, which are more or less widely-spaced, approximately cylindrical in cross-section and unbranched in most genera, including *Hyocrinus*. However, *Calamocrinus diomedae* from near the Galapagos Islands, representative of a monotypic genus, has irregularly-branching arms, evidently formed by elaboration of up to five of the original pinnules on each side of a primary arm into secondary arms, themselves bearing pinnules. This kind of augmentation of arm number contrasts with the multiplication by what is called 'adolescent autotomy' at proximal syzygies followed by regeneration, with the first new ossicle becoming an axillary, found throughout the Comatulida. The single exception in this order is *Comatula rotalaria* Lamarck, from northern Australia, in which the second brachial of each of the ten primary arms of the post-pentacrinoid gradually transforms itself into a symmetrical axillary by modification of its appendage into an arm instead of a pinnule. Similar arm multiplication also occurs in some Isocrinida.

The species of the Bourgueticrinida differ from the Hyocrinidae in having the calyx more compact and thick-walled, bearing closely approximating arms lacking pinnules on usually the first six to ten brachials. The nominal species currently recognised are listed in Table 1. However, some of these names are very likely to prove to be synonymous since many are abyssal and many are only known from incomplete specimens often of a limited size range, so that inadequate allowance has often been made for very wide geographical distributions and for growth changes when naming supposedly new taxa.

The first five genera in Table 1 have been referred to the family Bathyrcrinidae, three of them: *Rhizocrinus*, *Conocrinus* and *Democrinus*, having five simple arms while *Bathyrcrinus* and