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Melocrinites from the Godavari Series of the Kathmandu Valley, Nepal

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Abstract

The present paper describes the occurrence of *Melocrinites* sp. from the Lower Devonian rocks of the Phulchauki Hill, near Kathmandu, Nepal.

Introduction

The Lower Palaeozoic succession exposed in the area south of the Kathmandu Valley constitutes one of the most important stratigraphic successions in the Lesser Himalayan Zone of Nepal. These rocks form part of the Phulchauki-Chandragiri range and good sections are exposed in the Phulchauki Hill.

The crinoid specimen forming the subject matter of the present paper was collected from the upper units of the Godavari Series exposed at a locality 5.5 km from Godavari School on the Godavari (27°36′ : 85°22′) and Phulchauki (27°34 : 85°25) road. Lithologically, the rocks constituting the upper part of the Godavari Series consists of greenish grey to bluish calcareous and cherty shales and siltstones which at places are intercalated with thin lenses of limestones. The entire succession is full of crinoid stems and joints and poorly preserved brachiopods and trilobites. The fauna from the lower part of the Godavari Series is suggestive of Upper Silurian age. The occurrence of *Melocrinites* from the upper units of the Godavari Series indicates Lower Devonian age.

Phylum: ECHINODERMATA
Subphylum: CRINOZOA MATSUMOTO, 1929
Class: CRINOIDEA J. S. Miller, 1821
Order: MONOBATHRIDA Moore and Landon, 1943
Family: MELOCRINITIDAE Bassler, 1938
Genus: *Melocrinites* Goldfuss, 1826
Melocrinites sp.
Text Fig. 1

Description

Partial crown 31 mm long; calyx oval, 19 × 21 mm, longest in A-CD axis, expanding distally to secundibrachs then tapers inward to tegmen, pentagonal outline in basal view with rays forming apices of pentagon. Basals, 4, forming a low disc with slightly convex lateral sides projecting beyond heteromorphic proximal columnals. Radials, 5, septagonal, gently convex transversely and longitudinally, expanding distally. Primibrachials, covex transversely and longitudinally 2 per ray; IBr_1 hexagonal expanding distally; IBr_2 septagonal, expanding in proximal half, vertical to slightly incurved distally; IBr_2 slightly smaller than IBr_1 which is slightly smaller than

subjacent radial. Interradials hexagonal or pentagonal, in series of 1-2-2-2-2-? except posterior which is 1-3-3-3-? Secundibrachials small 4 per ray, 2 in each half ray; $IIBr_1$ largest, septagonal nearly equidimensional; $IIBr_2$ axillary giving rise to first armlet. Intersecundibrachinals small, hexagonal, one per ray except D ray which has 2. Tertibrachials of two central arms much wider than high, moderately convex transversely, forming interlocking series of opposed plates giving rise to armlets on outer sides on every 3rd brachial proximally and every other brachial distally.

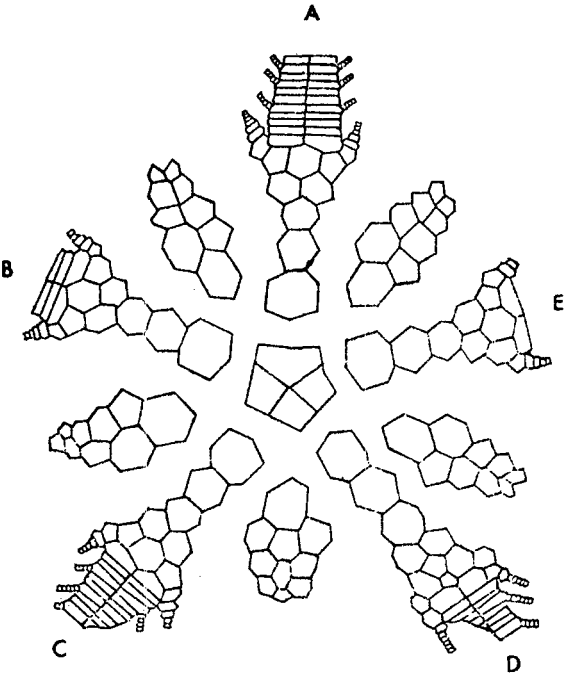

Figure 1. *Melocrinites* sp. Plate diagram of partial crown PUGD. Pinnules (one each side) branching off of armlets not shown. Diagrammatic in part.

Proximal two tertibrachials of two outer arms pentagonal or hexagonal nearly equidimensional forming basal part of first armlet, distal tertibrachs of the basal armlets indistinguishable from brachials of higher armlets given off of two central arms. Armlets composed of series of small brachials transversely convex with pinnules given off both sides of each brachial. All calyx plates highest in center with ridges or ribs extending to meet corresponding ribs on adjacent plates, giving an interlocking stellate pattern to the calyx surface. Column round, heteromorphic, alternating nodal and internodals.

Remarks

This specimen belongs to the group of *Melocrinites* species which have intersecundibrachial plates, proximal tertibrachials of the first armlet in the calyx and a stellate rib ornamentation, such as *Melocrinites typus* and *M. stellifer*. Until a

complete study of all species of *Melocrinites* can be made no specific assignment is proposed. Forms of this type are common in the Lower Devonian of Europe.

Material

One partial crown lacking distal parts of arms and retaining less than 2 cm of proximal part of stem. Specimen deposited in the Museum of the Geology Department, Panjab University, Chandigarh, bearing catalogue number, CASG F. 451.

Locality

5.5 km from Godavari School on the Godavari-Phulchauki road.

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The VLF method of prospecting; a study from Uttar Pradesh, India

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Abstract

The application of VLF has acquired an important role in the search for sulphide ores, groundwater and the detection of geologic faults, in the western countries during the past one decade. This method has now been tried for the first time in India over anomalies known from other type of EM measurement and the results indicate a good correlation. The advantage of the VLF method is that it requires only one operator and is, therefore, considerably cheaper and faster than any other EM method.

Introduction

Since 1964, the VLF EM-method has come to extensive use in the developed countries as a prospecting tool for sulphide ores and groundwater bearing basement fractures (Paterson & Ronka, 1969). In Sweden, for example, this method now constitutes the standard AEM* system using the Rugby 16 kHz/GBR transmitter. The method is extremely handy also in ground surveys as it just involves one semi-skilled operator and a small radio receiver of only 3 lb of weight.

The VLF method of prospecting is based on the distortion and damping, radio waves undergo in the vicinity of an electrically conducting zone. These geologically significant phenomena are not readily noticed in 'ordinary' radio waves but in the case of VLF waves, (very low frequency waves), 3 to 30 kHz, a better ground penetration is reached and a response obtained at the ground surface (Al'pert & Fliegel' 1970). Such radio waves are transmitted by certain 'strategic' transmitters that keep

* AEM: Airborne Electromagnetic