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AN ECHINOID FROM THE TERTIARY (JANJUKIAN) OF SOUTH AUSTRALIA

BROCHOPLEURUS AUSTRALIAE sp. nov.

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Plate I.

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Through the courtesy of the National Museum of Victoria, a collection of Australian Tertiary Echinoids was lent to me for comparison with similar material from New Zealand. The results of this will be published later, but, in the meantime, it is desirable to record an undescribed species included in the collection of the Museum which has been confused with *Paradoxechinus novus* Laube (1869). The species is referable to *Brochopleurus* Fourtau (1920), which genus differs from *Paradoxechinus* in a number of respects, the chief being that, in the former, the primary tubercles are each surrounded by a distinct radiating sculpture, whereas in the latter there is no such radiating sculpture, the primary tubercles being joined to their neighbours by straight lines of raised sculpturing, forming therefore a zig-zag line along each amb and interamb.

This appears to be the first record of the genus *Brochopleurus* from the Southern Hemisphere, Egypt and India being the two areas where it has hitherto been recognized—in both cases from strata regarded as Miocene. A very similar species occurs in the Waitakian stage (Middle Oligocene) of New Zealand, but further study will be required to determine if it is identical with the species from Australia.

As the genus *Brochopleurus* will be dealt with at greater length with other Tertiary Temnopleuridae in a later publication, no more need be given here than the brief diagnosis and a figure.

BROCHOPLEURUS Fourtau, 1920

Small forms of hemispherical shape. Pore-pairs in a nearly straight line. Primary tubercles non-crenulate, imperforate; a distinct radiating sculpture round the primary and partly also the secondary tubercles. Apical system (known in *B. sadeki* Fourtau) regularly dicyclic; gill-slits small, indistinct. Spines unknown. (Mortensen, 1943.)

Brochopleurus australiae sp. nov.

Fig. 1.

Height, 4·0 mm. Horizontal diameter, 9·0 mm. Peristome lost from holotype.

Apical system lost from the Australian specimens, but the New Zealand species, which is very similar, indicates the type of apical system normal for the genus, all the plates being exsert, to form the dicyclic arrangement.

Ambulacral plates, 10 (or 11?) in each series. Interambulacral plates, 9 (or 10?) in each series.

Interambulacral sculpture. — Each primary tubercle is surrounded by a radiating system of *ca.* 10 to 12 raised ridges, some of which anastomose with ridges from neighbouring primary tubercles. In general, 2 or 3 of the ridges link each tubercle with its immediate neighbour above as also below. The laterally placed ridges branch and end blindly. All the ridges are characterized by carrying several secondary tubercles, and the blind terminations of the ridges frequently carry secondary tubercles. Along the mid-zone of the interamb there is an irregular, sinuous ridge, broader and more flattened than the radiating ridges, and this too carries scattered secondary tubercles. Between the mesh-work formed by all these ridges, the intervening surface of the test is perfectly smooth.

Ambulacral sculpture. — Each pore-pair lies within a depressed oval area, with distinct horizontal ridges separating each depressed region from its neighbours above and below. The ambulacral mid-zone is traversed by more or less horizontal ridges, each carrying several secondary tubercles. Of these ridges, approximately every alternate one traverses the mid-zone from side to side, while the intervening ridges run only about half or two-thirds of the distance in each case. The primary tubercles form a vertical series on either side of the amb, between the mid-zone and the poriferous zone, and are situated on a well-marked sinuous vertical ridge. This ridge communicates on the outer side with the horizontal ridges separating the pore-pairs, and on the inner side with the horizontal ridges which cross the mid-zone. The test between the mesh-work of ridges is quite smooth.

Holotype. Specimen 4687 in the National Museum of Victoria.

Locality. Lower Murray cliffs, South Australia.

Horizon. This is stated to be Janjukian (i.e., Upper Oligocene or Lower Miocene).

Remarks

Brochopleurus australiae may be distinguished immediately from other species of the genus by the transverse sculpturing of the ambulacral mid-zone, which is absent in the Egyptian and Indian species. On the other hand, it is very closely related to the forms from the New Zealand Oligocene already mentioned, which share this feature.

A second specimen, No. 4688 of the National Museum of Victoria, from the same locality, is evidently referable to this species. Its dimensions are: height 4·5 mm., horizontal diameter 9·5 mm., peristome diameter, 3·3 mm.

References

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