

though Sir Wyville Thomson described a specimen with thirty arms.¹ The irregularity in the number of joints between successive axillaries is very striking, especially as compared with the very constant character of the ray-divisions in the Comatulæ. Taking for example the genus *Actinometra*, we find in *Pentacrinus decorus* the following series of distichals and palmars which are specially characteristic of different groups of the species of that genus.

A. Ten arms only; the first two brachials united bifascially, and the third brachial a syzygy as in <i>Pentacrinus naresianus</i>,	. . . . .	Group of <i>Actinometra meridionalis</i> .
B. Two distichals united by a syzygy,	. . . . .	„ <i>Actinometra jukesii</i> .
C. Two distichals, the axillary not a syzygy,	. . . . .	„ <i>Actinometra pulchella</i> .
D. Three distichals, the axillary a syzygy,	. . . . .	„ <i>Actinometra parvicirra</i> .
E. Two palmars united by a syzygy,	. . . . .	„ <i>Actinometra typica</i> .
F. Two palmars, the axillary not a syzygy,	. . . . .	„ <i>Actinometra stelligera</i> .
G. Two palmars, the axillary a syzygy,	. . . . .	„ <i>Actinometra multiradiata</i> .
H. Three palmars, the axillary a syzygy,	. . . . .	„ <i>Actinometra bennetti</i> .

In addition to these, *Pentacrinus decorus* may show numerous combinations of distichal and palmar series such as are characteristic of other groups of Comatulæ, and also certain conditions such as two distichals with the axillary a syzygy, which I have not as yet met with in any *Comatula* at all. These facts well illustrate what has been said above (*ante*, p. 55) respecting the difference between the arms of Pentacrinidæ and Comatulæ.

The rays of *Pentacrinus decorus* and their subdivisions are sometimes in pretty close contact, though rarely flattened laterally; while in other cases they are more or less separated by perisome (Pls. XXXV.–XXXVII.). This perisome is sometimes nearly bare and sometimes plated pretty continuously; and a similar variation is apparent on the upper surface of the disk. This is sometimes covered tolerably closely by rather large plates (Pl. XXXIV. fig. 2); but the plating is not quite so continuous as in *Pentacrinus wyville-thomsoni* and *Pentacrinus alternicirrus* (Pl. XVII. fig. 6; Pl. XXVI. figs. 1, 2). On the other hand, the gaps between the plates, though sometimes comparatively large, are not so extensive as in *Pentacrinus mülleri* (Pl. XVII. fig. 10). The plates sometimes bear small blunt spinelets which are possibly tactile in function, as they contain branches from the antiambulacral nerves which extend upwards on to the disk from the envelope of the chambered organ in the calyx (Pl. LIX. figs. 2–4, *ad*). The plates bordering the ambulacra of the disk are narrow and spine-like, often forming a kind of palisade, which is more distinct than in any other type of the Pentacrinidæ (Pl. XXXIV. fig. 2). They become somewhat irregular on the arm-bases (Pl. XXXIII. fig. 6); but further out (Pl. XXXIII. fig. 4) they begin to show signs of a more or less perfect differentiation into the side and covering plates of the pinnule-ambulacra (Pl. XXXVII. figs. 23, 24).

¹ Sea Lilies, *The Intellectual Observer*, August 1864, p. 7.