

would have enabled him to separate types that are placed very near to one another in his scheme. Thus, for example, *Comatula palmata* and *Comatula macronema* are placed respectively next to *Comatula japonica* and *Comatula reynaudi*, though the distichal axillary is the second joint above the radials in the first pair, and the third (or, counting the syzygy, the fourth) joint in the second pair. It soon appeared to me to be a very general rule among Comatulæ that "the first and second segments beyond every axillary, whether radial or brachial, are nearly always united together in the same manner as the second and third (axillary) radials."

These observations rendered the classification of the Comatulæ which were then known (1879) a comparatively easy task; and during the next three years I described several species both of *Antedon* and of *Actinometra*, arranging the multibrachiate forms according as there were one or two joints between the successive axillaries of the arms, and by the presence or absence of syzygies in these axillaries. The most common arrangements of the arm-divisions are the following—two joints, the second axillary without a syzygy, and three joints, the second bearing a pinnule, but the third axillary with a syzygy. These of course would have been equally well distinguished in Müller's classification according to the presence or absence of syzygies in the axillaries. But in Müller's scheme there is no separation from the second of these types of species like *Actinometra sentosa* (Pl. LXVI. fig. 4) in which all the outer arm-divisions consist of two joints only, but the axillaries are syzygial joints just like those of *Actinometra japonica*, or *Antedon reynaudi*. In like manner Müller's classification provides no place for forms like *Actinometra paucicirra*, in which the axillary is not itself traversed by a syzygy, but is united to the preceding joint by syzygy instead of by an articulation (Pl. LIV. figs. 1, 2).

If these characters be taken into account, and especially the mode of union of the two outer radials, whether by articulation or by syzygy, the numerous multibrachiate species of *Antedon* and *Actinometra* may be readily separated into comparatively large groups, for the further subdivision of which a more detailed examination of anatomical characters becomes necessary.

In the year 1882 Professor F. J. Bell¹ attempted "to apply a method of formulation to the species of the Comatulidæ." He stated that the leading differences between the radial, distichal, and palmar series in different species of Comatulæ "are to be found in the varying arrangement of that mode of union to which Johannes Müller applied the term syzygial"; and he therefore inserted the letter R, D, or P into his formula "whenever the respective axillary is a syzygy," placing before this letter and the generic symbol the figure 1, 2, or 3, according as the first, second, or third brachial is a syzygial joint. Bell further devised a very convenient method of briefly indicating the number of joints in the cirri and also that of these organs themselves. I have been glad to adopt

¹ An attempt to apply a Method of Formulation to the Species of the Comatulidæ; with the Description of a New Species, *Proc. Zool. Soc. Lond.*, 1882, pp. 530-536.