

formula—a.3.(3). This method, a determination of the characters present in the majority of cases, is the only one which can be safely relied on for fixing the characters of a species; and it is therefore apparent that the formulæ given by both Bell and myself for species of which we have only seen single individuals are necessarily liable to subsequent correction.

Bell has encountered this difficulty of irregular arm-divisions, and has met it by giving three formulæ for one species which he names *Actinometra variabilis*.¹ It seems to me that two would have been sufficient, as the characters indicated by the first, A'.3.2., are also expressed in the third, A'.3.(2).(2); while there must be a considerable mistake somewhere; for Bell's first and second formulæ do not provide for more than forty arms, though he gives the total number of arms as sixty to ninety. His second formula is A'.3.3., which of course represents a very different type from A'.3.(2).(2). So far as one may judge from his figured specimen, the last is much the most correct, for out of thirteen palmar series only two consist of three joints. On some part of every ray there are three divisions above the palmars, each, with but one exception, consisting of two simple joints. I find that a similar arrangement presents itself upon each of the other three specimens of this type, and I should therefore write its formula as—a.3.2.2.2.2, not using brackets for the last figure because a fifth post-radial axillary occurs in each of the four individuals examined. Neither of Bell's formulæ, however, allow for more than three post-radial axillaries, while his second one A'.3.3. would indicate by the absence of brackets a type with exactly forty arms, and regular distichal and palmar series of three joints each all round the cup, *i.e.*, such a form as *Actinometra parvicirra*, while in reality *Actinometra variabilis* only resembles that species in the constant presence of three distichals, its later arm-divisions being totally different from those of that type.

While therefore it is extremely desirable to be able to examine a good number of individuals before attempting to describe and give a formula for any new specific type of multibrachiate Comatulæ, I do not think that there is any serious objection to describing a species from one individual only. For so far as the characters of the arm-divisions are concerned, I have found it to be an almost invariable rule that the characters which present themselves most frequently in any one individual are those which distinguish the species. Thus, for example, bidistichate series only presented themselves in five out of twelve specimens of *Actinometra parvicirra*,² in which the number of distichals is typically three. Two of these individuals were certainly abnormal, the numbers of bidistichate and tridistichate series being exactly equal. But in the other three specimens the largest number of bidistichate series was three, and they never presented themselves at all in seven individuals. The same may be said, though with a somewhat less degree of certainty, respecting the palmar series, sixty-seven of the seventy-six present consisting of three joints. Palmars only occurred in eight of the twelve specimens examined, and were abnormal in but four of them, one species being unusual in having three two-jointed

¹ "Alert" Report, p. 155.

² *Trans. Linn. Soc. Lond. (Zool.)*, 1879, ser. 2, vol. ii. p. 44.