

frequent absence of the ambulacral groove and its associated tentacular apparatus on more or fewer of the arms. This is well shown both in *Actinometra belli* and in *Actinometra regalis* (Pl. LXIV. fig. 2; Pl. LXVIII. fig. 1), and also in *Actinometra magnifica* (Part I., pl. lvi. fig. 7). The number of arms is very great in the last-named species, and there are some without grooves on every ray, a condition which also occurs in *Actinometra nobilis*. But as a general rule the ungrooved arms are those which come off from the posterior part of the disk. Thus, for example, some or all of the four posterior arms are very frequently ungrooved in the ten-armed types, *Actinometra solaris* and *Actinometra pectinata*; while in other individuals of the same species all the arms are provided with grooves, just as in *Antedon*. The same is the case in the multibrachiate forms. I have seen one individual of *Actinometra parvicirra* in which nineteen out of thirty-one arms were entirely devoid of an ambulacral groove and tentacular apparatus, while in other specimens there is a groove on every arm.

It is then the potential, rather than the constant presence of ungrooved arms which must be regarded as one of the distinguishing characters of *Actinometra*; and the same may be said of another peculiarity which is frequently associated with it, viz., the difference in length of the anterior and posterior arms. This is less apparent in the ten-armed than in the multibrachiate species, in which, however, it is sometimes very distinct, e.g., *Actinometra belli*, *Actinometra nobilis*, and *Actinometra regalis*. The anterior arms are much longer, taper more slowly, and contain far more joints than the posterior arms, though these often have their genital glands better developed than the anterior arms. In *Actinometra simplex* the tentaculiferous anterior arms have one hundred joints, while there are only forty-five in the hinder arms, which have no ambulacral groove nor tentacles. The two characters are not always associated, however, for in the single specimen of *Actinometra elongata* all the arms are grooved and tentaculiferous, but the posterior ones have only fifty-five joints and reach but 4.5 cm. long, while the anterior arms with one hundred and twenty joints reach 11 cm.

This species is also remarkable for the presence in the later pinnules of the posterior arms of those curious brown cellular bodies that I have supposed to be sense-organs (Pl. LVII. fig. 4). I found them first in some specimens of *Actinometra parvicirra* from the Philippines,¹ and have since detected them in an example of this species from Banda, in *Actinometra elongata* from the same locality, and in *Actinometra simplex* from the Admiralty Islands; while they also occur in examples of *Actinometra meridionalis* from two localities on the American coast. They are not always present in either species and are generally confined to the pinnules of the hinder arms, sometimes to one or two arms only; but in one case I found them on all the arms except the two immediately adjoining the mouth. I know not what these brown "ovoid bodies"

¹ *Trans. Linn. Soc. Lond. (Zool.)*, ser. 2, 1879, vol. ii. p. 40, pl. ii. fig. 6, a, b.