

on the fourth and following brachials is considerably stouter and often much longer than its predecessors, very much as in the *Milberti*-group of the ten-armed series.

This is very well shown in *Antedon occulta* and in Smith's figure of *Antedon indica*;<sup>1</sup> and the distinctions between the different species of the *Palmata*-group depend very largely upon the number and position of these large pinnules, as shown in the key on p. 225.

Taking the Bidistichate Series as a whole, we find that its distribution, as at present known, is of a somewhat limited character. Unless the bidistichate example of *Antedon lusitanica*, which was dredged by the "Porcupine" from 740 fathoms in the East Atlantic, is anything more than a mere individual variation, there is no certain evidence of the Series being represented below 269 fathoms. The Challenger may have obtained *Antedon similis* from 610 fathoms at Station 174, but I think it more probable that the depth for this species and for the two associated with it was either 210 or 255 fathoms; for the only other Challenger station which yielded bidistichate species from below 100 fathoms was No. 192 (140 fathoms); though they range down to 269 fathoms in the Caribbean Sea, where they occur in considerable quantity. They are excessively abundant between the meridians of 100° and 180° E. (Sumatra to Fiji), and one species occurs at Rodriguez. But with the exception of the doubtful *Antedon lusitanica*, none have been found in the open Atlantic, nor are they known anywhere outside the fortieth parallels of latitude.

The Caribbean Sea and the Eastern Archipelago, therefore, are their two principal localities; and it may be broadly stated that the species with plated ambulacra (*Spinifera*-group) predominate in the former, while those with unprotected ambulacra and large stiff pinnules on the fourth and following brachials (*Palmata*-group) are mostly confined to the Eastern Seas. These are the only bidistichate species which belong to the strictly littoral fauna, *i.e.*, which have been found at depths of 20 fathoms or less. Three of them (*Antedon occulta*, *Antedon similis*, and *Antedon tuberculata*) were dredged by the Challenger at Station 174B,C, or D (255, 610 and 210 fathoms). The depth was probably one of the two lesser ones; but either of them is considerably below the usual range of the *Palmata*-group.

With the exception of the aberrant *Antedon macronema* from South-eastern Australia, no members of the *Spinifera*-group have been met with above 80 fathoms either in the Caribbean Sea or in the Eastern Archipelago. The "Blake" dredged them at some twenty stations in the Caribbean Sea between 80 and 270 fathoms; but all the five typical species of the Challenger collection were obtained from 140 fathoms in the Arafura Sea (Station 192), though one of them also occurred at Station 201 among the Philippine Islands (82 fathoms). The remaining species are *Antedon lusitanica*, dredged by the "Porcupine" from 740 fathoms in the East Atlantic, and *Antedon macronema* from 30 fathoms or less in King George's Sound, Port Jackson, and Port Stephens. The latter, however, is an abnormal species in many respects. The lateral flattening of its rays is very variable in its extent, and never specially distinct; while the

<sup>1</sup> Zoology of Rodriguez; Echinodermata, *Phil. Trans.*, 1879, vol. clxviii. pl. li. fig. 3b.