

in which the polyps are directly sessile upon the stem, instead of being borne on lateral pinnules, as they are in the more complex forms. One of the most important conclusions to which Professor v. Kölliker has been led by the study of the Challenger collection, is that the simpler forms of Pennatulida more especially abound in great depths. There are altogether eight families in this lower group, of which seven are—with the exception of one or two species—invariably found in deep water. Of these the Umbellulidæ and Protoptilidæ are the most important, and have furnished the greatest number of new species, many of which have also a wide horizontal distribution. The eighth family, that of the Veretillidæ, seems, however, to be confined to shallow water. On the other hand, the members of the higher group, comprising the families Pteroeididæ, Pennatulidæ, Virgularidæ, and Renillidæ are nearly always found in depths less than 100 fathoms.

With regard to horizontal distribution, the general conclusion arrived at is:—Of the various families the Umbellulidæ are the most widely distributed; they occur in the North Polar Sea, in the Atlantic Ocean, in the South Polar Sea, in the Southern Ocean west of Kerguelen Island, and in the North and South Pacific. The Stachyptilidæ, Protocaulidæ, and Protoptilidæ have two centres, one in the Pacific Ocean on the coasts of New Zealand, New Guinea, and Japan, and the other in the North Atlantic and North Sea. In the Pacific, Atlantic, and Southern Oceans, far removed from land, the representatives of this order are exceedingly rare, but are more abundant as land and shallower water are approached. The Anthoptilidæ are only found on the east coast of America, but range from Halifax as far southward as Buenos Ayres and Tristan da Cunha. The Kophobelemnonidæ and Veretillidæ, on the other hand, appear to have a limited distribution, but very little has been added by the investigations of the Challenger to our knowledge of the distribution of these two families.

Among the more complex forms, the Virgularidæ and Pennatulidæ are the most widely distributed; the latter are found on the coasts of Europe, China, Japan, Australia, New Guinea, on the west coast of North America, and on the east coast of Africa. The Pteroeididæ have a well-defined centre in the southeast coasts of Asia, extending as far northward as Japan, and as far westward as the Red Sea and the west coast of Africa; one species indeed, *Pteroeides griseum*, inhabits the Mediterranean. There are altogether seven new genera and twenty-seven new species in the Challenger collection, and Professor v. Kölliker has, in consequence, found it necessary to form a new systematic arrangement of the suborder.

MADEIRA.

On the 2nd February the Madeira group was sighted, and the ship proceeded towards the south end of the Dezertas to obtain soundings for the Lisbon-Madeira submarine cable