

as already observed, justly be regarded as appertaining to any one of the great primary regions of vegetation. The characteristic endemic shrubby Compositæ\* and Lobeliaceæ are most nearly related to American forms; *Perrottetia* is a Mexican and Colombian genus, and the pomaceous *Osteomeles anthyllidifolia* is a member of a genus all the other species of which are Andine. *Nama* is otherwise restricted to America; and Hillebrand regards the American *Lythrum maritimum*, *Daucus pusillus*, and *Aster divaricatus* (= *A. exilis*) as indigenous. Prominent among the Australian types and common in all the islands according to Hillebrand are:—*Metrosideros polymorpha*, an exceedingly variable tree or shrub scattered throughout Polynesia, eastward to Pitcairn Island, and *Acacia koa*, already alluded to. The Australian genera *Cyathodes* and *Exocarpus* are also represented†. *Cyrtandra*, of which there are thirty-two species endemic in the Sandwich Islands, is more Malayan in character, and many other such relationships exist, besides other more remote ones in the highest mountain flora, which includes such forms as *Luzula campestris*, *Rumex*, *Silene*, *Ranunculus*, *Drosera longifolia*, *Hydrocotyle interrupta*, *Fragaria chilensis*, *Vicia*, *Vaccinium*, *Aster*, and *Artemisia*.

Added to the foregoing elements is a sea-shore element consisting almost exclusively of species having a very wide range in the Old World; many of them from the eastern coast of Africa or the Mascarene Islands and India to N. Australia, the Marquesas Islands and Easter Island. Further, the vegetation of the small and remote coral islands is entirely of this character.

Besides the phyllodineous *Acacia* above alluded to, it has long been known that there were two or three other noteworthy outlying Australian types in Madagascar; but no important addition to these has been made by recent explorations. One or two species of *Hibbertia* (Dilleniaceæ), and two or three of *Rulingia* (Sterculiaceæ-Lasiopetalæ); and the genus *Adansonia* is represented by one endemic species in Madagascar, one in tropical Africa, and one in North Australia. These widely-sundered areas of distribution of closely-allied forms have given rise to much speculation, and it is very problematical whether satisfactory palæontological evidence will ever be forthcoming which will account for the existing distribution of plants.

#### BOTANICAL DIVISION OF THE EARTH INTO PRIMARY REGIONS.

From the data adduced in the preceding paragraphs, and numerous more familiar facts which it is unnecessary to repeat, it is clear that a system of botanical geography should be based upon a small number of primary regions, similar in many respects to Sclater and Wallace's zoological regions. It has been shown where the botanical regions do not even approximately coincide with the zoological regions, and to some

\* See Bentham in Journ. Linn. Soc. xiii. p. 555.

† The Madagascar plant, long supposed to be a species of *Exocarpus*, as only foliage was known, is *Neobaronia*, Baker, a new genus of Leguminosæ, of which flowering specimens of two species have been collected by Mr. Baron.