

and Malvaceæ of America and Europe are no less striking than is the comparative rarity in the former country of Cruciferae, Caryophylleæ, Geraniaceæ, Carduaceæ, Campanulaceæ, Lobeliaceæ, Primulaceæ, and Orchideæ, and the prevalence of Vitaceæ, Anacardiaceæ, Cratægi, Asclepiadeæ, Polemoniaceæ, Nyctagineæ, and Cyperaceæ.

Turning now to the Floras of the Asiatic and American continents, it is difficult to say which is the most striking phenomenon, the wonderful identity of certain isolated genera and species of the eastern shores and islands of the Old World with those of the eastern side of the New World (and which has been so admirably worked out and explained by Asa Gray), or the total dissimilarity of the Asiatic and American temperate Floras in other respects. I may select the Japan group in illustration of both phenomena, because geographically it is perfectly well suited for a comparison with the Pacific-coast Flora of America, and because it is the head-quarters in Asia of the representative genera and species of the Eastern American Flora. The Japanese Flora contains about 200 species common to North America, but nearly three fourths of these are species found all round the globe in the north temperate regions; the remainder are chiefly the Eastern American genera and species alluded to above. Of the North-American Flora proper there is not a trace in Japan; there is not one of its multitude (nearly 150) of peculiar genera to be found in Japan of Cruciferae, Capparideæ, Papaveraceæ, Rosaceæ, Saxifrageæ, Onagraceæ, Compositæ, Polemoniaceæ, Hydrophyllaceæ, Scrophularineæ, Nyctagineæ, Polygoneæ, and Liliaceæ, nor are there any endemic representatives of them. Further, the numerical proportions of the Japanese orders are European and Asiatic, not American. Leguminosæ, of which there are only 19 genera in California, is represented by 41 in Japan; though the total number of phanerogamous genera is 879 in California and only 839 in Japan. Of Orchideæ there are only 10 genera and 22 species in California against 34 genera and 67 species in Japan*, and the contrast might be carried much further by taking many other natural families. In short, the differences between the Palæarctic and Nearctic botanical areas are so many and various that I have no hesitation in regarding them as two botanical kingdoms.

II. *The tropical Kingdoms of the Old and New World.*—An analysis of the Floras of the Old and New World as a whole shows, as was to be anticipated, that the Old World Flora is by far the richest; it contains probably 6000 known genera of Flowering Plants, and the New World nearly 4000, there being only about 1200 genera common to both. It is a singular fact that the ratios of Monocotyledons to Dicotyledons is the same for the endemic genera of the Old World (1·48), for the endemic genera of the New World (1·46), and for the genera common to both (1·47). How far this holds

* The Californian genera of Orchids are, with one exception, European, and most of them Asiatic, which renders the absence of so many in Japan very anomalous.