

group, of the north Pacific; in the west central part of the south Pacific, at Tanna and Ambrym of the New Hebrides, Tofua, Lette and Amargura of the Friendly Islands, and Tinacoro in the Santa Cruz group; and in the western north Pacific, among the Ladrões.

2. *Borders of the Pacific.* — Volcanoes range from Fuegia northward at intervals along the line of the Andes; 32 of them in Chile, — that of Aconcagua, 23,000' high; 7 or 8 in Bolivia and southern Peru, — Arequipa, 18,877'; 19 or 20 about Quito, nearly all over 14,000'; and among them Chimborazo, 20,498'; Antisana, 18,880'; Cotopaxi, 19,660 (by barometer, Dr. Reiss, 19,613' Whympfer); Pichincha, which has a crater 2500' deep and 1500' wide at bottom. Farther north, in Central America, there are 39, about west-southwest in course, and beyond is another line of 7 large cones in Mexico.

In California, from Lassens Peak in the northern extremity of the Sierra Nevada, or rather the southern of the Cascade Range, a grand north and north-northwest line begins, containing cones 10,000' to 15,000' in height, consisting, as described in 1833 by Hague and Iddings, of andesyte, dacyte, and basalt lavas, but chiefly of the former. Lassens Peak consists mostly of dacyte (quartz-andesyte), but with some quartz-basalt, as described by Diller, and is 10,437' high. Mount Shasta, in northern California, has a height of 14,350'; in the view from the westward, there are two summits, the southern the principal one. In Oregon, 75 miles north of Shasta, stands Mount Pitt, a cone 9718' high; 150 miles beyond, Mount Jefferson; approaching the Columbia River, Mount Hood, 11,225'; and north of the river, Mount St. Helens, about 12,000', Mount Adams, 9570', Mount Tacoma (or Rainier), 14,444', and Mount Baker, 10,755', in Washington. Of these, Mount Baker was in action in 1843. At the eastern foot of the Sierra Nevada, near Lake Mono, are cones, and others occur on the plateau region of Oregon, Washington, and beyond.

The summit of the Rocky Mountains has also its volcanic peaks, and among them, in the Yellowstone Park, there is the extinct volcano, Mount Washburn, to the north, 9000' high, and Mount Sheridan, to the south, 10,200'. The rocks and volcanoes of the Park have been described by Hague and Iddings. The Spanish Peaks in southeastern Colorado, according to R. C. Hills, are laccolithic cones, instead of volcanic.

Between North America and Asia there is a festoon of 21 islands with volcanoes, in the Aleutian Islands. Along the Asiatic coast to the East India Islands, there are 15 to 20 in Kamchatka; 13 in the Kuriles; 25 to 30 in the Japan group; 15 to 20 in the Philippines; several along the north coast of New Guinea; and a number in New Zealand. Far south, on Antarctic lands, in 77° 46' S., 176° 45' E., Mount Erebus, 12,400' high, which, in 1842, when discovered by Captain Ross, sent up dense, lighted vapors and cinders in successive jets, 200' to 300' in diameter, to a height above the crater of 1500' to 2000'; and, standing near it, the extinct Mount Terror, 10,900' high. South of Cape Horn there are the volcanoes of Deception Island, with its hot lake, and Bridgeman's, near 62½° S., in the South Shetlands.

3. *In the Indian Ocean.* — A few volcanoes exist in Madagascar; also others, on the Isle of Bourbon, Mauritius, and the Comoro Islands, and, to the south, on Kerguelen Land, etc.

4. *On the western border of the Indian Ocean.* — The lofty peak, Kilima-Njaro, 18,500', near 3° S., and 37½° E. is volcanic; also Ruwenzori, 12,000' to 13,000', in 3° N., and 30½° E.; and Mount Gordon-Bennett, just south, 16,000'.

5. *Over the seas that divide the northern and southern continents from one another, and the regions in their vicinity.* — Volcanoes occur in (a) the West Indies, where 10 islands are volcanic; (b) the Mediterranean and on its borders, as in Sicily and the islands north, Vesuvius, and other parts of Italy; Spain, Germany, etc., in Europe; the Grecian Archipelago, which contains 5 volcanic islands, — Santorin, Milo, Cimolos, Polenos, and Minyros; in Asia Minor, where are the Catacecaumene and other volcanic regions; and, more to the eastward, toward the Caspian, Mount Ararat, 16,950' high; Little Ararat, 12,800'; Demavend, on the south shore of the Caspian, 21,776'; (c) the Red Sea, along its southern borders, where there are a number of lofty volcanic summits; (d) the East