

small glaciers—the Grindelwald and some others. The reason for the difference in length between the glaciers on the Rhone valley slopes and on the slopes outside is therefore chiefly topographical, though temperature shortens the small streams on the Italian side.

3. *Glacier Cascades*.—The Rhone glacier, east of the river Aar, at the source of the Rhone, is a *glacier-cataract* (Figs. 207, 208, p. 235), and the Glacier du Géant, of the Mont Blanc region, is another. The descent of the latter is 140 feet; it passes from the plateau of the Col du Géant over a vertical rock-wall of the Tacul.

4. *Glacier Lakes*.—Against the east side of the Aletsch Glacier lies Lake Merjelen, a glacier-lake. Glacier-ice constitutes the western side or confining barrier of the basin,—which is there 150 feet deep,—and a moraine its bottom. Shiftings in the Aletsch Glacier empty the lake once in one to four or five years, deluging part of the Rhone valley.

The most accessible of the large glaciers of western North America is the grand Muir Glacier, described first by Professor Muir of California (1879), and later by Professor G. F. Wright (1886) and others. It descends to Glacier Bay, at the head of Cross Sound, in latitude  $58^{\circ} 50'$ , and has a width at the sea level on Muir Inlet of about 5000 feet. Several streams are here united over a circ of 30 to 40 miles, the two principal coming from the northwest and north. In this direction is Mount Fairweather, 15,500 feet high, while Mount Crillon is to the south of west, 15,900 feet high.

The glacier had a front on the water in 1886 (Wright) 250 to 408 feet in height; but in 1890, of 250 feet as the maximum, there being evidence, according to H. P. Cushing, of some retreat as well as diminished height since 1886, the retreat on one side amounting to 3000 feet (1891). On either side of Muir Inlet are mountains under verdure; those on the west reach a height of 2900 feet, while on the east stands Mount Wright, 3150 to 5000 feet. Over the latter are “large areas of flowers in full bloom,” “blue-bells, daisies, buttercups, violets, the purple epilobium”; and, “on the north side of a slight elevation, great masses of snow were preserved in the very midst of these brilliant flower-gardens.” (Wright’s *Ice Age*.)

Other grand west-American glaciers are those of Mount St. Elias—an elevation over 18,000 feet high. The general features of the great Malaspina Glacier are shown on the accompanying map, from a paper by I. C. Russell. The glacier is named after Malaspina, who explored the coast in 1792. It is a great ice-plateau about 1500 square miles in area, and mostly 1500 feet above the sea level. The Seward Glacier, one of its feeders, is 50 miles long according to Russell, and the Agassiz and Guyot glaciers were given the same length by Schwatka (1886). From the point between the Seward and Agassiz glaciers, a high and broad medial moraine crosses the Malaspina Glacier to the moraine of the border—a large and in part forest-covered region of stones and earth. On the border of the Malaspina Glacier are many lakelets, like Merjelen, which crevasses occasionally discharge; and beneath it are drainage streams. (Russell, 1892.)