

THE MALASPINA GLACIER REGION OF ALASKA

LAWRENCE MARTIN

Assistant Professor of Geology, University of Wisconsin

The Malaspina Glacier region of Alaska may be of especial interest to geologists at the present time for two reasons. The great earthquakes in Yakutat Bay, just to the east in 1899, involved faulting and changes of level of the land. The eastern portion of the Malaspina Glacier itself, with adjacent valley glaciers, is engaged in one of the greatest ice-advances of modern times, due indirectly to these earthquakes.¹

Different parts of this region have been described in some detail by the late Professor I. C. Russell, of the University of Michigan, Dr. G. K. Gilbert, of the U. S. Geological Survey and the Harriman Expedition, Professor R. S. Tarr, of Cornell University, and the writer, as well as others listed below.

The model or relief map here described (Fig. 1) includes the Malaspina Glacier, and the adjacent region near Mount St. Elias and Yakutat Bay, about 7,350 square miles in Alaska and Canada, near 60° N. Latitude, and 140° W. Longitude. On this model whose vertical and horizontal scales are the same (1:80,000), about one mile and one-quarter equals one inch. The model is about seven feet by four and two-thirds feet. Its cost of construction was provided by the Geological Department of the University of Wisconsin. It is based upon a brief general view of the whole region by the writer in 1904, upon several months' field-work in the eastern half of the area in 1905, both years in U. S. Geological Survey parties, but chiefly upon maps, photographs, and descriptions by I. C. Russell, and the Alaska Boundary Commissions, as well as the work of Lieutenant Schwatka's *New York Times* Expedition, H. W. Seton-Karr, William Libbey, the Topham Expedition, George Broke, the Canadian Boundary Commission, H. C. Brabazon, the Duke of the Abruzzi,

¹ This region was revisited in 1909 by the National Geographic Society's Alaskan expedition for the study of glaciers under the direction of R. S. Tarr and the writer. Important observations on the additional advance and recession of glaciers were made.

Vittorio Sella, H. C. Bryant, C. E. Hill, the Harriman Expedition, G. K. Gilbert, Henry Gannett, the U. S. Fish Commission, the U. S. Coast and Geodetic Survey, the U. S. Boundary Commission, Fremont Morse, the U. S. Geological Survey, A. G. Maddren, E. Blackwelder, R. S. Tarr, and others.

Over two months were required and about 625 different photographs and a number of maps and charts, including some unpublished

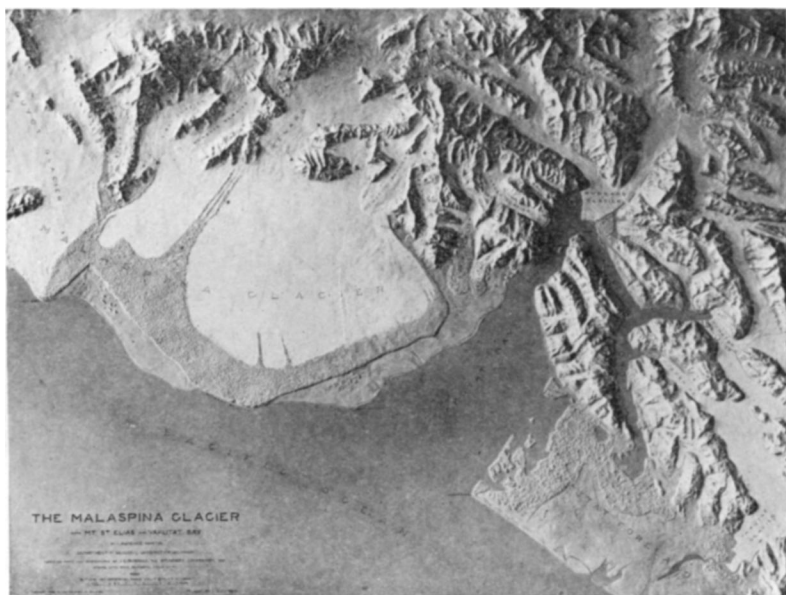


FIG. 1.—The model or relief map of the Malaspina Glacier, with Mt. St. Elias and adjacent mountains, and Yakutat Bay, Alaska.

materials, were used in making the original clay model from which the plaster-papier-maché reproductions are made. An expert mechanic, Mr. E. H. J. Lorenz, has done most of the modeling.

The model shows a portion of the lofty St. Elias range whose snow-fields cover everything above 2,500 to 3,000 feet, where slopes permit. From these snow-fields innumerable glaciers extend down the valleys, in several cases reaching the Pacific Ocean, Disenchantment Bay, or Russell Fiord, and discharging icebergs. One great group of these valley glaciers has united at the foot of the mountains

in a piedmont ice-sheet—the Malaspina Glacier—whose area exceeds 1,500 square miles. Most of this area is clear ice but where parts of the border are stagnant they have been covered by ablation moraine upon parts of which forests have grown. This is the largest glacier in the world outside the Arctic and Antarctic regions.

The east half of the model shows a series of fiords with cirques, hanging valleys, etc., produced by ice-erosion when the glaciers were more extensive, as well as the glacial coastal plain known as the Yakutat Foreland. Marginal lakes, medial, lateral, terminal, and recessional moraines, and outwash plains are shown.