encamped at the mouth of Muir Glacier, Alaska, for the purpose of studying and exploring the glacier.

The mouth of Muir Glacier is situated in latitude 58° 50′ N., and longitude about 136° W. of Greenwich. It lies among the mountains near the southern end of the great St. Elias range, and drains an area of about a thousand square miles. The snow which falls on this area is compressed into ice, and moves down like a river into an inlet of Glacier Bay. Here the glacier ends in a great ice wall a mile and a half broad, and in places rising up more than two hundred feet vertically from the water's edge. From this ice-front great masses of ice continually break off with a loud report and float away as icebergs. We saw some, three or four hundred feet long, standing seventy or eighty feet out of the water, though usually, in the act of falling, the larger masses break up into smaller pieces.

Captain Carroll, of the steamship *Queen*, has sounded a depth of seven hundred and twenty feet just in front of this ice-wall; the ice, which undoubtedly reaches to the bottom, must therefore be nearly a thousand feet thick in the middle.

Our first work was to make a survey of the glacier in order to determine its size, the breadth and height of the ice front, the distance and height of the surrounding mountains, etc. Our instruments were supplied by the U. S. Coast and Geodetic Survey. We measured off a base line nearly two-thirds of a mile long on the west side of the inlet, and by triangulation established the positions of a number of prominent points. To these points we carried our plane table and mapped in the neighbouring mountains; fixing, at the same time, the positions of more distant points, to which the plane-table was then taken and the work continued. The mountains in the immediate neighbourhood of Muir Glacier are not very high (only from six to seven thousand feet), but on account of their high latitude, and the large annual snowfall, they have all the appearance and characteristics of mountains of twice their altitude in the Swiss Alps. About fifty miles to the west tower the Fairweather group with at least two peaks over fifteen thousand feet high.

The motion of the ice interested us particularly. An expedition, which visited this glacier four years ago, reported that the motion was from sixty to seventy feet a day. The glacier, near its front, is broken up by deep crevasses into innumerable ridges and pinnacles of ice. It was by observing the positions of certain pinnacles, at intervals of several days, that the above result was obtained. All observations on other glaciers have shown motions much slower than this. The Mer de Glace, in Switzerland, moves but three feet a day. Fearing that an error might have arisen by mistaking one pinnacle for another, we determined to make strenuous efforts to force a way across the glacier and plant in the ice a set of black and red flags, whose positions could be accurately determined by our two transits, one placed on each side of the glacier. We were provided with ice-axes, such as are used by climbers in the Alps; and wherever there was any danger of an accident we were fastened together by a rope, so that if one slipped the others could hold him. We made trial after trial, now from the east side, now from the west side, of the glacier; and finally succeeded in setting out a satisfactory row of flags, though a short distance in the middle of the glacier defied all our efforts to cross it. The observations on the flags showed a motion of from eight to ten feet a day in the most rapidly