

FIGURE 3.—About 130 years ago Emmons Glacier occupied the foreground here where a trail which leads up along the north side of Emmons Glacier moraine crosses Inter Fork about three-quarters of a mile west of White River Campground. The 1835-50 moraine is exposed in the bank beyond the bridge and can be seen from a point within the woods shown at the top of the photograph. A small stream, which crosses the trail a few feet west of the trail bridge and in the area shown in the left of the photograph, flows along the outer side of the moraine. Sept. 24, 1967.

FIGURE 2.—The oldest tree on this moraine, just upslope and to the north of the one shown in figure 1, was 2 feet tall in A.D. 1842 (Area 31). Sept. 8, 1967.

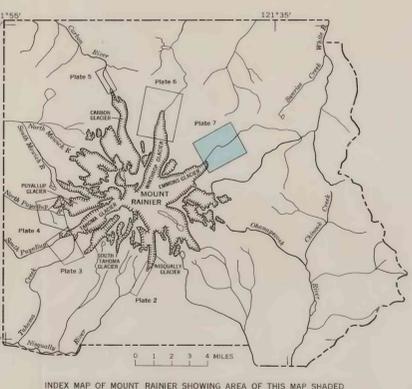
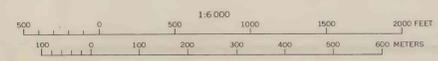
FIGURE 1.—Man in this photograph is standing on Glacier Basin Trail looking at the truncated end of the moraine from which Emmons Glacier started to recede about 1835, where it is cut by Inter Fork about one-half mile west of White River Campground. The prominent ridge form of the moraine can be seen at this site by climbing up the bank 15 feet to right in the trees. (See fig. 2, this plate). Sept. 8, 1967.



FIGURE 4.—This channel (area 53) through 1900 moraine was cut by melt water flowing northeastward toward Inter Fork when Emmons Glacier terminus stood close behind the viewer. Water flowed through here until 1900. View is northeast from a point near area 52. Sept. 12, 1967.



Compiled by photogrammetric methods from aerial photographs taken July 6, 1960. Field checked 1968.  
Discrepancies in apparent locations of lines and sample areas on map(s) and corresponding photographs are the result of distortion in the photographic image. Photographs are not orthographically correct, whereas map(s) is (are).



EXPLANATION

- | GEOHYDROLOGIC   | TOPOGRAPHIC   |
|---|---|
| Sample area<br>1550-1600  | Contour line<br>Altitude, in feet, above mean sea level |
| Moraines<br>1655  | Depression contour                                      |
| Dashed where inferred. Approximate A.D. dates indicate start of recession | Stream or channel bottom                                |
| Outer moraine limit<br>1745   | Timber edge   |
| 1835-50   | Trees on tick side of line                              |
| 1900  | Ridge   |
| Moraine ridges<br>1865-71   | Undated moraine crest                                   |
| post 1900   | Dated moraine crest                                     |
| 1917-20   | 1900  |
| Melt-water channels   | Glacier terminus<br>July 6, 1960                        |
| Dashed where inferred. Arrowheads indicate end of flow                    | Glacial crevasses                                       |
| 1963 rock avalanche deposit   | Talus and alluvial cones                                |
| Area covered by photographs<br>Figure 3                                   | Rock slides   |
| Photographic site and direction of view                                   | Escarpment or cliff                                     |
| Section line<br>Sections shown in text figure 9                           | Trail   |
|   | Gravel road   |

FOR EFFECTIVE DIMENSIONAL RELIEF, VIEW PHOTO FROM THIS SIDE

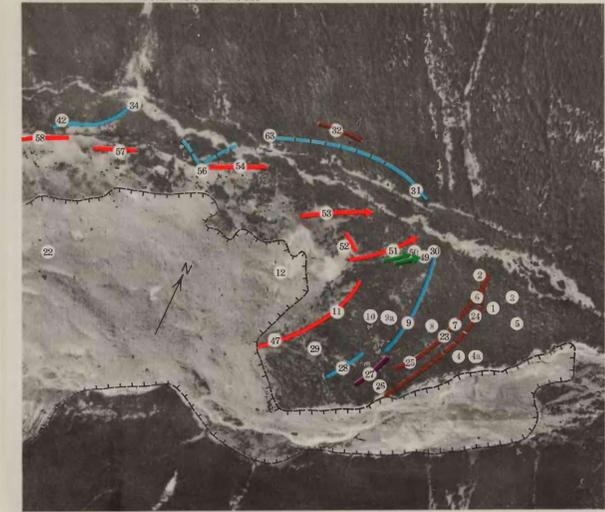


FIGURE 9.—Vertical photograph of Emmons Glacier terminal moraine about one-half mile west of White River Campground shows sample areas, moraines, and melt-water channels. Dashed brown line represents the maximum known downvalley limit of Emmons Glacier within the last 10,000 years. It had receded an unknown distance by A.D. 1655. The solid brown line represents a moraine crest upon which the oldest trees were 2 feet tall in A.D. 1745. The blue and red lines represent moraine crests successively younger, and the red line is at the approximate position of the glacier when mapped in 1910-13 as part of the Mount Rainier National Park topographic quadrangle. Photograph taken Aug. 16, 1967.

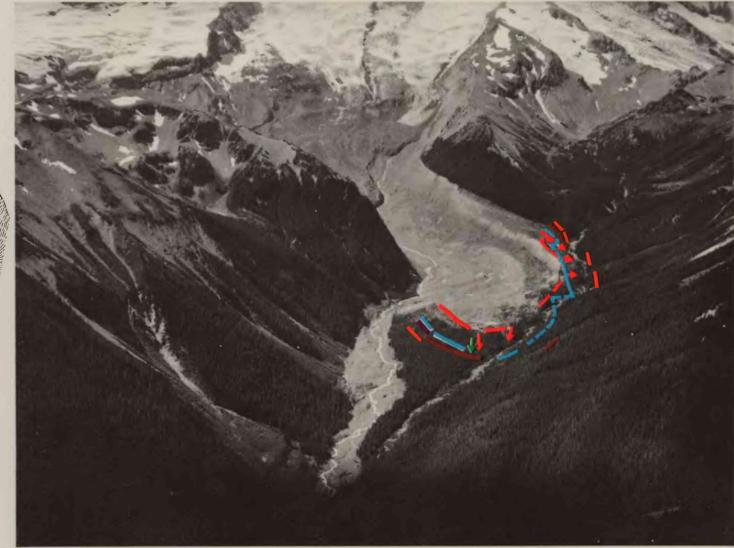


FIGURE 8.—Oblique view of Emmons Glacier strikingly shows the active terminus covered with 1963 avalanche debris. The glacier was extended as far as the purple line across the forested valley bottom perhaps as early as A.D. 1655. When I. C. Russell and his party saw the glacier in 1896, it occupied the valley now filled with bare gravel and boulders to about the red line. Inter Fork flows from the closed basin on the viewer's right of the valley, and White River flows from the terminus down the viewer's left of the valley. Aug. 29, 1968.

FOR EFFECTIVE DIMENSIONAL RELIEF, VIEW PHOTO FROM THIS SIDE

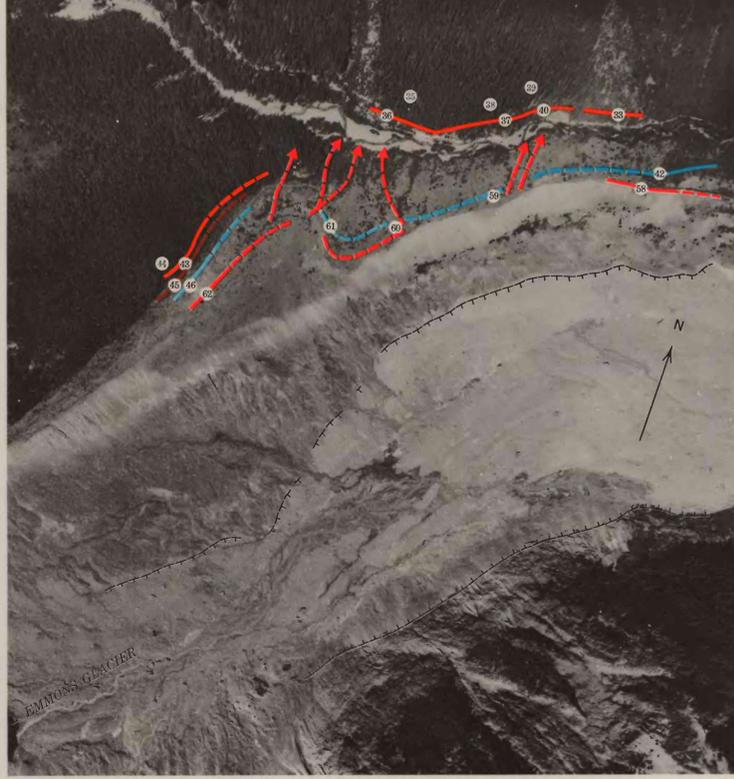


FIGURE 7.—Vertical aerial photograph of a part of Inter Fork and White River valleys showing positions of Emmons Glacier lateral moraines and sample areas. The A.D. 1550-1600 moraine, shown in black, marks the maximum known extent of Emmons Glacier in 10,000 years. The stream across the top third of the picture is Inter Fork, and paralleling it on the north side is Glacier Basin Trail, Aug. 16, 1967.

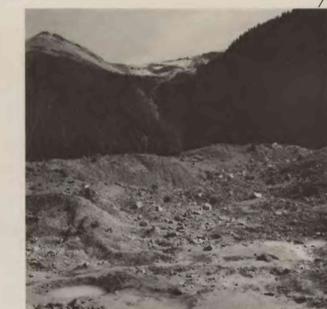


FIGURE 5.—Emmons Glacier started to recede about 1900 from the nearly bare ridge in middle distance, view is southeast from the trail about 100 feet south of the trail bridge across Inter Fork. A few small scattered trees here (areas 11 and 47, map and fig. 9, this plate) were less than a foot high in 1902. Debris at the right and in the foreground was deposited by rock avalanches in December 1963. Sept. 13, 1967.



FIGURE 6.—This Englemann spruce tree is on the edge of a moraine (area 56) that is in line with a ridge formed about 1900. The tree, however, was 18 inches tall in 1886; therefore, Emmons Glacier could not have been beyond this point at that time. Roots below the pick ax have been exposed by wind erosion and slumping. Sept. 15, 1967.

MAP AND PHOTOGRAPHS OF WHITE RIVER AND INTER FORK VALLEYS  
NEAR EMMONS GLACIER TERMINUS, MOUNT RAINIER, WASHINGTON