

ROCPS/44MA-P01

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
ROCKY MOUNTAIN NATIONAL PARK
ESTES PARK, COLO.

ROCPS/44MA-P06

December 16, 1944

Mr. Francois E. Matthes,
Chairman, Committee on Glaciers,
U.S. Geological Survey,
Washington 25, D.C.

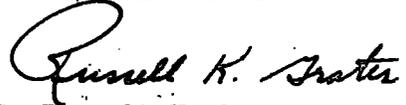
Dear Mr. Matthes:

I regret that I have been unable to answer your kind letter of November 1 earlier, but as perhaps you know, we have been involved here in an elk-deer reduction program, and I am just now beginning to catch my breath a bit. However, as time has permitted, I have attempted to make the changes on the 1944 Glacier Report that you suggested. It was very clear after going over your suggestions that they should, by all means, be incorporated in the report. Accordingly, the enclosed revision of this 1944 report includes the various suggestions as given. You will note that these revisions do not in any way alter the conclusions of the original report in any substantial manner but rather tend to strengthen them. Because I was unable to get complete weather reports prior to 1938, the principle data are based upon information obtained since that date. If any portion of this report is not clear or if additional information is needed, please let me know.

It has been several years since I had the pleasure of knowing you in Yosemite, but I have certainly been keenly interested in all the work you have been doing and I appreciate sincerely the interest that you have shown in the work that I am doing.

Very truly yours,

John E. Doerr,
Superintendent.



By Russell K. Grater,
Park Naturalist.

Enclosure: Revised Glacier Report
for 1944



UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
CHICAGO 54, ILL.



October 19, 1944.

ADDRESS ONLY
THE DIRECTOR, NATIONAL PARK SERVICE

Dr. Francois E. Matthes, Chairman,
Committee on Glaciers,
U. S. Geological Survey,
Washington, D. C.

Dear Dr. Matthes:

Enclosed is the 1944 Glacier Survey report for Rocky Mountain National Park, prepared by Park Naturalist Russell Grater.

Sincerely yours,

A handwritten signature in cursive script that reads "Ned J. Burns".

Ned J. Burns,
Chief, Museum Division.

Enclosure 968765.

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
ROCKY MOUNTAIN NATIONAL PARK
ESTES PARK, COLO.

November 25, 1944

GLACIER SURVEY
1944

General Information

On September 19, Park Naturalist Russell K. Grater and Fire Dispatcher Lyle Lynch visited both the Tyndall and Andrews Glaciers. By the time actual work was begun on measuring the glaciers, weather conditions made it impossible to obtain photographs of the work being accomplished. This visit constituted the first measurements of the glaciers since 1942. The attached sheets show the comparative data.

Data on the Tyndall Glacier

Difficulty was experienced in determining the actual tongue of the glacier. A large amount of rock debris was located directly in front of Station X¹. Underneath this rock debris, ice could be seen in a few places. Measurements were made to the nearest portion of the visible ice mass. (Note: some doubt is felt about this ice mass being a definite part of the glacier proper. It seems to be more "static" in nature.) From Station X¹ to the nearest visible ice was a distance of 56 feet 3 inches. Inasmuch as the 1942 measurements placed the ice front at zero distance from Station X¹, the apparent recession has been 56 feet 3 inches. No bergschrund was noted, although there were a few short crevasses along the edge of the glacier.

Data on the Andrews Glacier

Measurements on this glacier showed that a pronounced recession has taken place since 1942. Station X¹ was found to be a distance of 253 feet from the nearest ice exposure on the glacier, while the distance from Station X¹¹¹ to the glacier was 79 feet 2 inches. Comparing these figures with the 1942 measurements, it was found that the glacier had apparently receded a distance of 97 feet 4 inches from Station X¹, and a distance of 30 feet 1 inch from Station X¹¹¹.

The glacier has now receded to a point where only a narrow tongue of ice shows between the rock debris on either side. No signs of ice were noted under this debris. A pronounced silt delta is rapidly building out into the small lake in the basin at the front of the glacier, and will eventually fill in the basin. Either Station X¹ is settling or the small lake is rising, as water now almost completely covers the station.



Chart Analysis

Using the Longs Peak Weather Station as a gauge, a study of Charts 1 and 2 discloses some very interesting data. Starting in the winter of 1939-40, the first year complete snow records by the month are available, the charts show only 116.8 inches of snowfall, while the annual mean temperature for 1940 was 38.5.8. Here a confusing thing comes to light. With the snowfall light and the annual mean temperature rising over the previous year, the Andrews Glacier showed a sharp recession (as might be expected), but the Tyndal Glacier apparently advanced. An examination of the field notes of the survey party that year showed the group to be undecided as to just where the snout of the glacier really was. This may well account for the variance in the records of the two glaciers. In the winter of 1940-41 the snowfall continued light, but the annual mean temperature for 1941 dropped. Thus, instead of showing a sharp recession, the Andrews Glacier reflected the temperature and snowfall conditions by a mild recession. Unfortunately, no data were available for the Tyndall Glacier for that year. In the winter of 1941-42 the snowfall was extremely heavy, and both glaciers advanced—but definitely not a sharp advance. A glance at the annual mean temperature chart shows that the heavy snowfall was partially offset by warmer temperatures through 1942. No measurements were made on the glaciers in the fall of 1943, but the snowfall and annual mean records indicate that they should have shown a recession. That this probably took place is indicated by this year's measurements which show a marked recession from the 1942 figures. The winter of 1943-44 showed no appreciable change in the amount of snowfall, but the annual mean temperature for the first nine months of 1944 showed a high reading forecasting a probable high for the year of 39-40 degrees. Thus, a mild recession probably took place comparable to 1943.

The chart further indicates that we can expect the glaciers to advance when the snowfall is approximately 165 inches or more and with the annual mean temperature from 37-39 degrees, but a recession when the snowfall drops below approximately 165 inches and the annual mean temperature rises above 39 degrees. However, additional records covering a greater period of years will be necessary before such a premise can be definitely proven.

Plans for the Future

It is planned to change the present system of marking the stations. In the past, these were marked with paint, but snow blasting tends to quickly remove the marks. At this year's survey, only the presence of photographs depicting the original stations enabled us to obtain true measurements. It is planned to install metal caps, with station numbers inscribed, on each rock station. These will be permanent and will furnish accurate measuring points.

CLEARED FOR DISTRIBUTION

Julia S. Doer

 Superintendent

December 16, 1944

 Date

Russell K. Grater

 Russell K. Grater,
 Park Naturalist.

ROCPS/44MA-POS

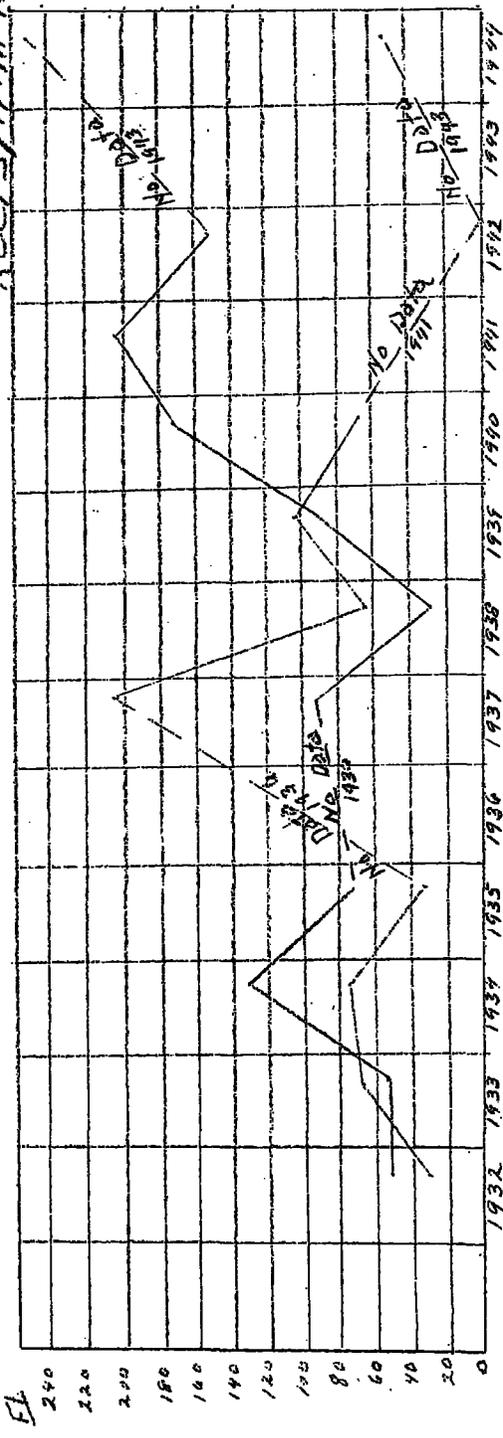
ROCPS/44MA-POS

Year	Grand Lake (El. 8380)			Longs Peak (El. 8956)*			Andrews Glacier Distance To Ice			Tyndall Glacier Distance To Ice		
	Snowfall	High	Low	Snowfall	High	Low	Date of Measurement	Station X'	Station X''	Date of Measurement	Station X'	Station X''
1932							Fall 1932	48' 7"		Fall 1932	30' 8"	
1933							Fall 1933	58' 10"		Fall 1933	63' 4"	
1934							Fall 1934	139'		Fall 1934	72' 5"	
1935							Fall 1935	66'		Fall 1935	38' 6"	
1936							Fall 1936	No Measurements		Fall 1936	No Measurements	
1937					79	-	Fall 1937	96' 10"		Fall 1937	201' 11"	
1938					81	-13	Fall 1938	32' 3"	48' 11"	Fall 1938	62' 4"	
1939					83	-17	Fall 1939	92'	23'	Fall 1939	105' 4"	
1940	Winter 39-40 82.1	87	-38	38.8	83	-24	Winter 39-40 116.8	179'	16' 9"	Fall 1940	56'	
1941	Winter 40-41 109.1	87	-24	37.2	78	-22	Winter 40-41 109.6	212' 15"	54' 3"	Fall 1941	No Measurements	
1942	Winter 41-42 158.8	88	-41	35.3	85	-23	Winter 41-42 202.4	155' 8"	49' 1"	Fall 1942	0'	
1943	Winter 42-43 No data	85	-36	-	81	-26	Winter 42-43 162.9	No Measurements		Fall 1943	No Measurements	
1944	Winter 43-44 113	Insufficient data for 1944			82 ¹	-13 ¹	Winter 43-44 160.2	253'	79' 2"	Fall 1944	56' 3"	

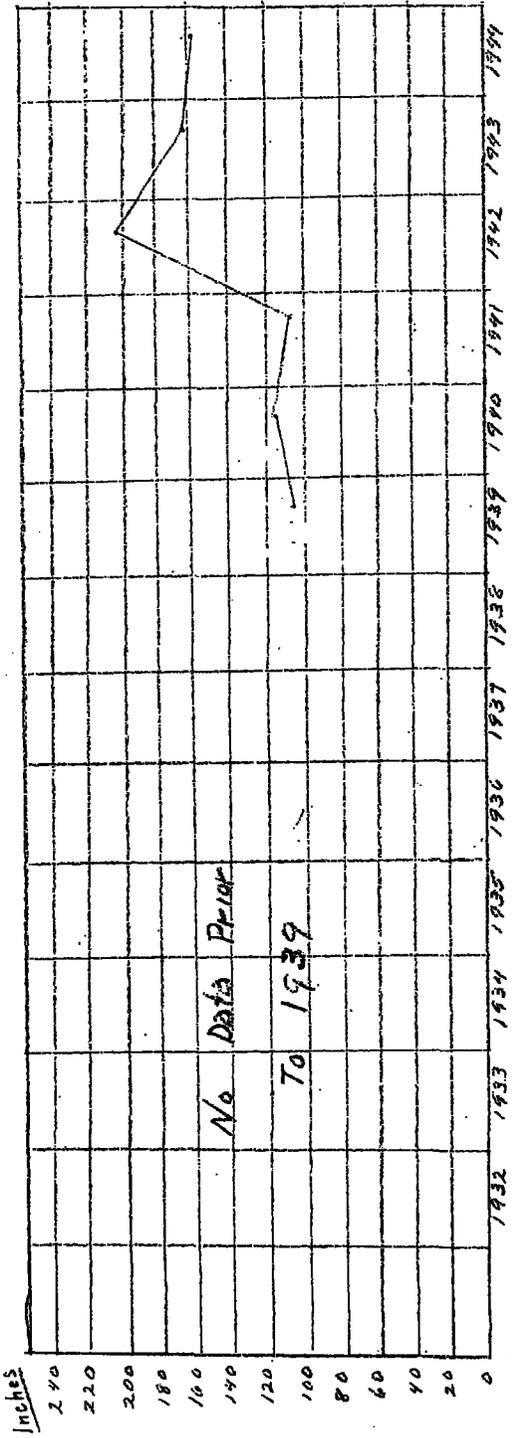
*Longs Peak Weather Station
(1) Data to and including September, 1944

Chart No. 1

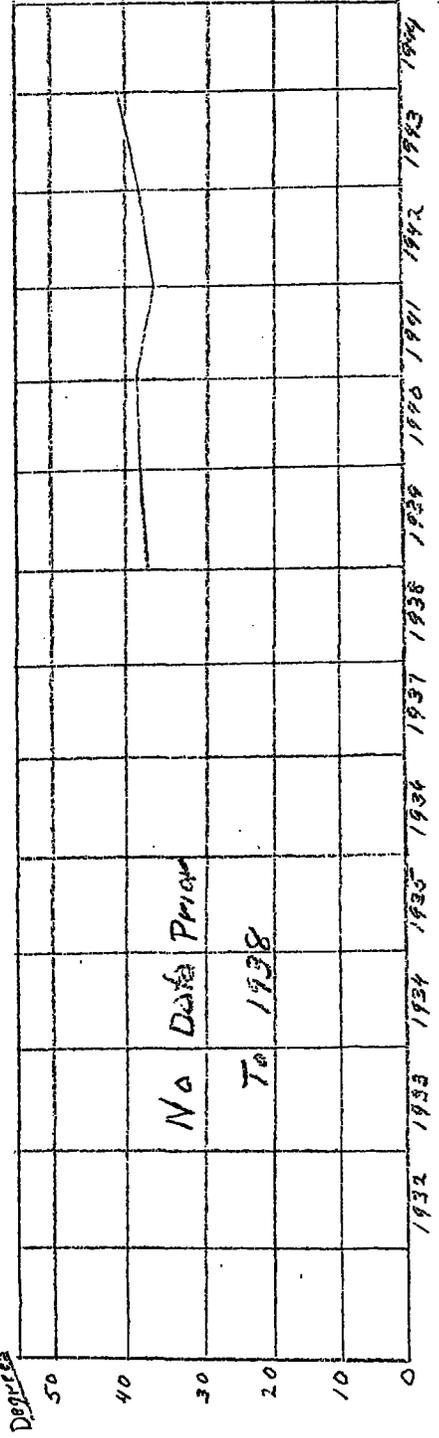
ROCPS/44MA-R25



Distance from ice to Station X' —
 Andrews Glacier —
 Tyndall Glacier —



Long's Peak Station
 Annual Snowfall



Long's Peak Station
 Annual Mean
 Temperature