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DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
Rocky Mtn. NATIONAL PARK

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Rocky Mountain National Park
Naturalist Office

GLACIER MEASUREMENT REPORT FOR 1952

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ARNO B. CAMMERER,
Director.

1952 GLACIER REPORT

The annual traditional glacier observation trip was made on August 30, 1952 by members of the naturalist staff. The trip was combined with a visitor tour. The party was under the direction of Seasonal Park Naturalist J. Herbert Heger, aided by Ranger Naturalists Thomas Horabain and Richard Beidleman. Twenty-five visitors made the trip successfully. The usual route was taken over Flattop Mountain, with descent to Tyndall Glacier being made in the Hitching Post Draw. The ledge route was blocked by snow and no pictures were made at Station P-3 therefore. The day began with fog, cold, and strong winds; as the day progressed the weather turned fair, although the strong wind continued.

Andrews Glacier. Measurements were made from points X' and X'' as had been customary. The distance from the presumed nearest glacier ice to X' was 142 feet (in 1951 this distance was 165 feet). The distance from X'' to the nearest presumed glacier ice was 81 feet, (in 1951 this distance was 65 feet). The figures suggest an apparent advance of the ice, and certainly the "snout" now covers slightly more territory, as indicated in the photographs. The body of Andrews Glacier has a more marked "hog's back" aspect than in some previous years. The volume of ice definitely has increased.

Tyndall Glacier. Tyndall presented more than the usual problems of measurement. The gorge was filled with fog when reached.

This delayed the progress of the trip considerably. Measurements from the snout to Station X were 54', while to Station X' the distance was 50'. In 1951 measurement from Station X was 3", and to X' about 10'. If we have accurately selected a true snout both years, it would appear that Tyndall Glacier has receded since 1951. In addition it was noticed that there were many more crevasses at the head of Tyndall Glacier and also that the ice itself did not reach the rim of the canyon.

Conclusions. Few conclusions can be made for the simple reason that it is always confusing to select a true snout. In the case of Andrews Glacier, from the measurements and the photographs it would appear that the glacier has advanced. For Tyndall Glacier our 1952 measurements, as contrasted with those of 1951, would indicate that it has receded. However, at the base of Tyndall there is a great deal of morainal debris on top of the ice that might suggest that the true snout is underlying the rocks where Station X and X' are located.

From the photographs it appears that Tyndall Glacier has lost some volume of ice from the 1951 to 1952 season. It is possible that the moisture-laden air coming from the two new lakes on the western slope moving across the mountains is affecting the climate which, over a period of years, may in turn affect the size of the glaciers.

TABLE I

WEATHER STATISTICS

July 1951 through June 1952

Month	<u>TEMPERATURES</u>		No. of Days 32° or Less	<u>PRECIPITATION</u>
	Mean Maximum	Mean Minimum		Total
<u>Estes Park</u>				
July 1951	79.6	46.7	0	2.04
August 1951	73.9	44.1	0	3.44
September 1951	70.3	36.9	9	.72
October 1951	56.7	29.6	22	1.69
November 1951	44.6	20.1	24	.16
December 1951	34.6	19.1	29	2.63
January 1952	36.6	18.7	28	.41
February 1952	39.6	18.3	26	.06
March 1952	38.2	16.4	30	1.07
April 1952	52.9	25.4	30	2.00
May 1952	61.8	33.6	19	1.54
June 1952	77.2	42.5	29	1.65
<hr/>				
Aver. Means 1951-52--55.5		39.3	Total-246 days	17.41"

<u>Grand Lake</u>				
July 1951	77.25	34.45	0	1.66
August 1951	72.8	34.7	12	2.51
September 1951	68.2	28.3	27	.77
October 1951	52.0	24.7	29	1.92
November 1951	37.2	6.5	30	1.14
December 1951	27.3	4.3	31	4.80
January 1952	27.2	-2.0	31	1.42
February 1952	29.7	-3.0	29	1.10
March 1952	34.3	3.2	31	2.40
April 1952	49.4	18.6	29	7.30
May 1952	58.9	26.7	26	1.10
June 1952	73.5	35.0	11	1.44
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Aver. Means 1951-52---50.65		17.79	Total-286 days	27.63"

TABLE II

Andrews Glacier

<u>Year</u>	<u>X' to "Glacier Front"</u>	<u>X'' to "Glacier Front"</u>
1932	43' 7"	
1933	53' 10"	
1934	139' 0"	
1935	66' 0"	(Station established in 1938)
1936	No measurements	
1937	96' 10"	
1938	32' 3"	48' 11"
1939	92' 0"	23' 0"
1940	170' (est.)	16' 9"
1941	212' 5"	54' 3"
1942	156' 8"	49' 1"
1943	No measurements	No measurements
1944	253' 0"	79' 2"
1945	210' 6"	65' 7"
1946	224' 9"	60' 8"
1947	201' 9"	66' 0"
1948	210' 0"	56' 0"
1949	164' 0"	64' 0"
1950	194' 0"	63' 0"
1951	165' 0"	63' 0"
1952	142' 0"	61' 0"

Remarks: Judgment of the field party as to "nearest glacier ice" varies; this doubtless explains the erratic figures.

TABLE III

Tyndall Glacier

<u>Year</u>	<u>Station X' to "ice"</u>
1932	30' 8"
1933	63' 4"
1934	72' 5"
1935	38' 6"
1936	No measurements
1937	196' 9"
1938	62' 4"
1939	105' 4"
1940	56' 0"
1941	No measurements
1942	At ice
1943	No measurements
1944	56' 3"
1945	54' 4"
1946	112' 11"
1947	5' to ice
	180' to possible "glacier ice"
1948	260' to "foot of glacier" (adjusted from an erroneous measurement from Station X, not X')
1949	106'

Remarks: (1) Station X, used in 1948, was 300' from "nearest glacier ice". In 1949 a line from this station measured but 126'. (2) It is apparent from above table that measurements at Tyndall Glacier are highly erratic, with much variation in observer's judgment of actual glacier terminus.

	Station X (Same as 1948)	Station X'
1950	94'	110'
1951	10 feet	about 3 inches
1952	54'	50'

TABLE IV

SNOW DEPTHS AND WATER CONTENT FOR PARK

Dates	<u>1952</u>		<u>1951</u>		<u>1950</u>		Mean		Mean No. of Years
	Snow D.	H ₂ O	Snow D.	H ₂ O	Snow D.	H ₂ O	Snow D.	H ₂ O	
#116 Copeland Lake (Alt. 8,800')									
Jan. 31	23.60	6.80	30.30	6.40	15.00	3.80	22.45	5.88	4
Feb. 28	24.27	7.73	24.20	7.50	15.10	3.64	20.76	6.16	4
Mar. 31	--	--	24.70	7.82	9.18	3.23	22.12	7.03	4
Apr. 30	30.3	9.8	13.55	4.91	1.55	0.73	6.82	2.78	4
#41 Wild Basin (Alt. 10,000')									
Jan. 31	48.00	16.25	54.30	15.70	33.80	8.40	32.63	8.56	14
Feb. 28	53.46	19.12	54.12	18.25	39.00	11.04	40.07	11.53	15
Mar. 31	--	--	61.34	21.62	43.58	13.71	46.97	14.53	15
Apr. 30	66.1	24.5	59.33	22.42	39.00	14.46	40.80	14.08	15
#115 Deer Ridge (Alt. 9,050')									
Jan. 31	23.10	6.50	23.80	4.30	17.40	3.00	22.75	5.33	4
Feb. 28	22.2	6.50	27.20	7.30	18.00	4.00	23.32	6.45	4
Mar. 31	28.9	8.50	30.86	8.90	15.84	4.20	26.99	7.37	4
Apr. 30	14.4	5.00	23.20	7.40	7.70	0.85	12.35	3.88	4
#95 Hidden Valley (Alt. 9,550')									
Jan. 31	43.20	12.30	40.30	9.00	34.70	7.20	31.42	7.15	12
Feb. 28	45.2	13.6	45.60	12.50	37.40	8.67	38.18	9.37	12
Mar. 31	55.2	17.0	51.50	15.57	38.00	11.50	44.13	12.54	12
Apr. 30	52.6	17.7	55.50	18.30	44.90	12.50	45.34	13.70	12
#127 Grand Lake (Alt. 8,600')									
Jan. 31	42.95	10.91	35.91	6.83	23.91	3.91	35.04	7.60	4
Feb. 28	46.56	13.00	36.41	8.87	23.83	5.16	35.75	9.23	4
Mar. 31	52.25	16.06	37.25	10.45	25.95	6.04	39.71	10.99	4
Apr. 30	21.38	9.17	22.25	5.83	--	--	18.71	6.46	3
#64 North Inlet (Alt. 9,000')									
Jan. 31	--	--	21.10	6.70	18.70	3.80	24.52	5.80	14
Feb. 28	44.00	12.40	34.85	9.40	25.42	5.72	30.86	7.61	15
Mar. 31	53.10	17.35	38.50	11.25	27.45	7.60	33.83	9.89	15
Apr. 30	35.20	14.25	27.80	7.70	21.15	5.82	23.30	7.06	15
#12 Phantom Valley (Alt. 9,038')									
Jan. 31	42.53	11.93	35.56	9.37	28.40	5.40	26.34	6.30	16
Feb. 28	50.25	14.73	42.75	12.82	26.71	6.71	33.61	8.64	16
Mar. 31	57.50	19.03	43.68	16.00	31.21	9.90	32.26	10.38	16
Apr. 30	27.75	11.72	31.87	11.21	18.96	6.46	10.94	7.00	15
#55 Lake Irene (Alt. 10,600')									
Jan. 31	71.78	26.50	57.21	17.77	41.35	10.71	49.16	13.36	14
Feb. 28	72.28	20.07	70.35	23.14	54.78	17.07	59.78	18.16	15
Mar. 31	82.42	30.72	79.92	30.21	61.35	20.85	66.74	22.21	15
Apr. 30	62.07	26.25	64.31	34.80	66.64	21.00	65.05	24.60	14

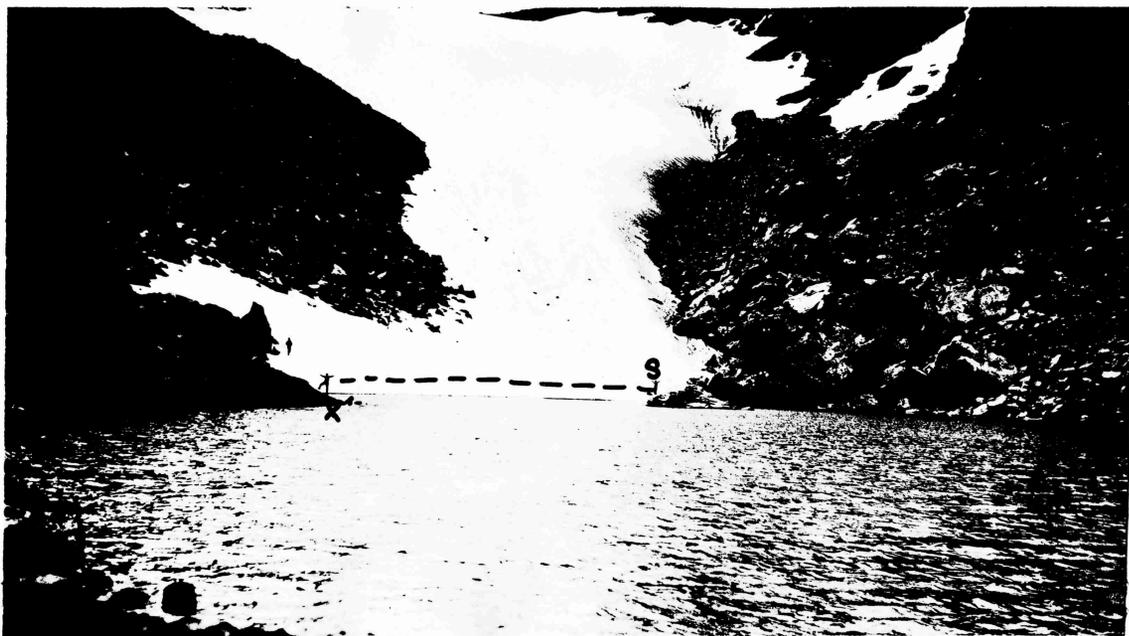


Andrews Glacier. General view, looking west across lake.
August 28, 1951

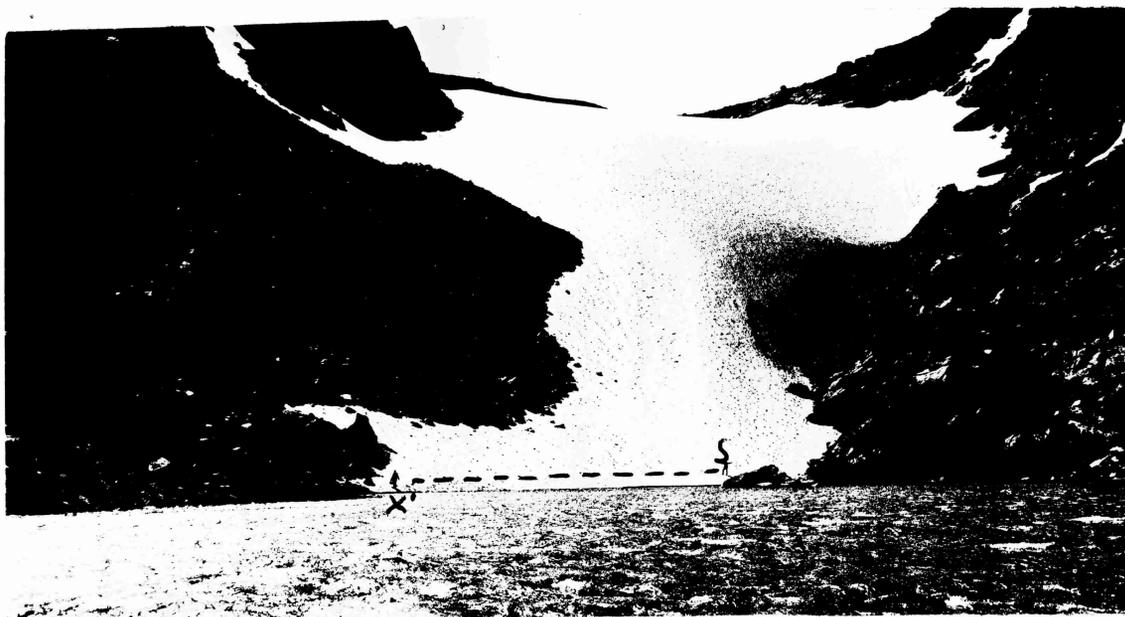


Andrews Glacier. General view, as in figure above.
August 30, 1952

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Andrews Glacier. August 28, 1951, showing men on points X' and the presumed "nearest glacier ice" in snout.



Andrews Glacier. Same view as above. August 30, 1952
Figure S stands for snout.

Plate 2. Andrews Glacier



Andrews Glacier Snout. Taken from
 Northeast across lake showing
 snout and point X'''.
 August 28, 1951



Andrews Glacier. Same view as above, August 30, 1952



Andrews Glacier. Looking up glacier "snout" from delta. August 28, 1951



Andrews Glacier. Same view as above. August 30, 1952



Andrews Glacier. View south, showing delta, lake shore, and presumed snout of the glacier. August 28, 1951



Andrews Glacier. Approximately same view as above. August 30, 1952



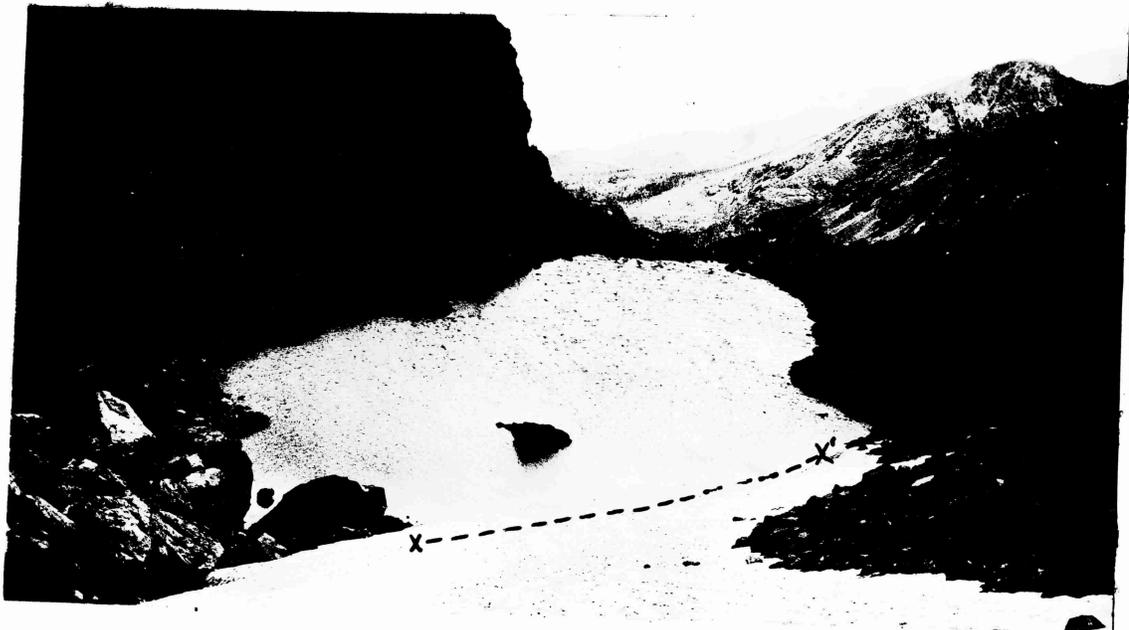
Andrews Glacier. View along line of measurement from point X'. Man in foreground is standing on X'.
August 28, 1951



Andrews Glacier. Same view as above. August 30, 1952



Andrews Glacier. View down the glacier toward delta and across the glacial pool. August 28, 1951



Andrews Glacier. Same view as above. August 30, 1952



Thorn Point P-3
Tyndall Glacier. Bergschrund area at head of the glacier,
from Flattop Mountain. August 28, 1951



Same view as above. August 30, 1952



1951--from Point P-1, Tyndall
Glacier. General view of the
glacier from the north.



1952--Same view as above.

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Tyndall Glacier. Recessional moraine, base of Tyndall Glacier, showing base points X and X'. There is some reason to suspect that actual "nearest glacier ice" really lies beneath the morainal debris.
August 28, 1951



Tyndall Glacier. Same view as above. August 30, 1952



General view of glacier front.
 Man is at point X, with snout
 ten feet beyond in the water.
 August 28, 1951

View similar to that above.
 August 30, 1952



Plate 11.
 Tyndall Glacier



View along line from Point X--
to "nearest glacier ice". Ice
was about 10 feet from X, deep
within glacial pool.

August 28, 1951



Similar view from Point X.
August 30, 1952





Added picture from P-1 showing
glacial ice (dotted line) and
the two base points X and X'.
August 28, 1951



Similar view from P-1.
August 30, 1952

Plate 13. Tyndall Glacier