Environment Canada Imaging Cover Page

Report N.: *CDS-04-70*

SKP Box Number: 672572447

CDS #4-70
C. C. I. W.
LIBRARY

RECORD BREAKING RAINFALLS IN NEWFOUNDLAND DURING AUGUST 1970

1. RECORD EVENTS

In August 1970 more rainfall was measured on the Burin and Avalon Peninsulas than ever before reported from any area of Newfoundland in any month of any year. The climatological station at Westbrook St. Lawrence, on the southeastern part of the Burin Peninsula, reported 18.24 inches, and Salmonier on St. Mary's Bay, Avalon Peninsula, reported 17.48 inches. The greatest monthly precipitation amount ever reported and authenticated in Newfoundland prior to August 1970 was 14.05 inches at St. John's in December 1909. In the St. John's area during August 1970, precipitation totals amounted to 12.90 at Torbay Airport, 12.53 inches in the city, and 11.77 inches at the Canada Department of Agriculture station.

2. TEMPERATURE AND HUMIDITY

August 1970 was relatively warm, wet and humid across the Island of Newfoundland. Mean temperatures ranged from 61°F (1-2 degrees above normal) in the north, to 64°F (3-4 degrees above normal) in the south. At St. John's Torbay Airport, where records have been kept for 29 years, record high daily minimum temperatures were set on 10 of the first 15 days of the month, and records for high daily maximum temperature were equalled or exceeded on 5 of the first 16 days. Humidity was generally higher than normal across the Island, with mean vapour pressures running between 15 and 17 mb., some 2½ mb. above normal. Stations south and west of Newfoundland in Nova Scotia and Quebec also reported vapour pressures 2 to 3 mb. above normal.

3. CIRCULATION

Study of the mean circulation maps over eastern North America revealed that the 300 mb. trough lay over Hudson Bay in August 1970 rather than over central Quebec as is normal. This westward displacement permitted an added influx of warm, moist air over Newfoundland. Mean surface pressures for the month varied from 1012 to 1013 mb., which were near normal on the northern side of the Island, but about 2 mb. below normal in the south. In August the surface low pressure trough, which normally extends southward over Labrador, was slightly deeper than usual with a mean secondary low centered north of Anticosti Island.

Environment Canada
Library, Downsview
NOV 2 1 2001
Environnement Canada
Bibliothèque (Downsview)

4. RAINFALL DISTRIBUTION

On the north side of the Island, Gander reported 5.21 inches of precipitation compared to the normal August amount of 3.78 inches. In the west Stephenville reported 5.03 inches, not abnormally in excess of the normal value of 3.32 inches. On the other hand, precipitation on the Burin and Avalon Peninsulas was generally more than three times the normal values of between 4 and 4.5 inches. At St. John's Torbay Airport where 12.90 inches fell, in contrast to a normal of 4 inches, daily amounts exceeded one inch on five occasions, and two inches twice. The most rainfall on a single climatological day was 2.89 inches on August 8, while over the two-day period August 18-19, precipitation amounted to 4.03 inches.

5. DAYS WITH RAIN

The weather during the first six days of the month was not unusual, although drizzle and/or showers occurred at most stations each day over the southeastern part of the province. Showers occurred on the 7th however, and the 8th was a day with heavy rain leaving climatological day totals as high as 4.41 inches at Westbrook St. Lawrence, and 3.20 inches at Colinet. Heavy rain showers occurred on the 10th, 11th and 12th, over most of southeastern Newfoundland which was followed by a five-day period that was generally free of rain. Rain from a tropical storm began falling over the area on the 18th, resulting in two-day totals for the 18-19th which exceeded three inches at some stations. Variable conditions existed for the next few days with general moderate to heavy rainfall occurring across the entire area of southeastern Newfoundland on the 24th. There was little or no precipitation reported on the 25th and 26th, but again most stations in the area reported precipitation on four of the last five days in the month.

6. OTHER MONTHS WITH HEAVY PRECIPITATION

Monthly precipitation totals in excess of 10 inches are not uncommon in Newfoundland, occurring in four out of every five years. November and December are the most common months for heavy precipitation, although such totals have been reported in every month of the year. The only prior occurrence of monthly precipitation exceeding 10 inches in August was in 1943 when Cape Race, also in southeastern Newfoundland, reported 12.26 inches.

Prior to August 1970, some exceedingly large monthly precipitation totals were reported from Belle Isle and Argentia, but, through lack of supporting data, these totals have not been considered official for the purpose of this report. In July 1884 at Belle Isle,

a monthly total of 22.49 inches was reported, and later in October 1892 a total of 17.17 inches was reported. Daily values are shown on the original report forms in both instances, but the observations are not considered acceptable. Another high total, 16.15 inches at Argentia in January 1951, is also not considered reliable, since the greatest precipitation on the island during that month at any other station was 7.13 inches at Colinet. The Belle Isle and Argentia figures may be authentic, but in view of the chronic difficulties in measuring precipitation at those stations, the 1884, 1892 and 1951 values are not considered official. Thus the largest authenticated total prior to 1970 is 14.05 inches at St. John's in December 1909. In recent decades heavy precipitation was also reported from southeastern Newfoundland in February 1962, when totals of 11.82 and 11.62 inches were reported from the two St. John's stations; in November 1959 when Petty Harbour reported 13.45 inches and Pierres Brook 12.63 inches, and in December 1963 when three St. John's stations reported 10.98, 10.83 and 10.61 inches.

7. PRECIPITATION INTENSITY

Despite the large monthly precipitation totals, there were no reports of extremely intense precipitation in southeastern Newfoundland during August 1970. Recording rain gauge data are available from St. Albans, St. Lawrence and St. John's Torbay. The maximum intensities at St. Lawrence are greater than those reported from the other stations. At St. Lawrence the maximum intensities for 5, 10 and 15 minutes were .19, .34 and .45 inches, all occurring on August 11th. These values are not unusual and have a return period of slightly less than two years. An amount of 0.55 inches was reported in 30 minutes on August 7th, while the greatest 60-minute rainfall was 1.03 inches on August 9th, indicating return periods of about two and five years respectively. The maximum amount of precipitation in 24 hours at St. Lawrence was 4.13 inches, which has a return period of ten years, but at Westbrook St. Lawrence the climatological day total of 4.41 inches has return period of about 15 years. It is thus apparent that the large precipitation totals for the month in southeastern Newfoundland were due to the occurrence of more rainstorms than normal, and not to any exceptionally intense falls.

M.K. Thomas.

Climatology Division,
Canadian Meteorological Service,
315 Bloor Street West,
Toronto 181, Ontario.

November 26, 1970.

AUGUST 1970 PRECIPITATION IN SOUTHEASTERN NEWFOUNDLAND

Station Name	Precipitation (inches) August 1970	Precipitation (inches) August Normal	Previous Monthly Maximum Amount (inches) Record Began	Previous Monthly Maximum Amount (inches) Amount	Previous Monthly Maximum Amount (inches) Month & Year	Greatest Climatological Day Totals (inches) One Day Amount	One Day Day	Two Days Amount	Two Days Days
Westbrook St. Lawrence	18.24	-	July 1957	11.99	Oct. 1964	4.41	8	7.26	7-8
Salmonier	17.48	-	Oct. 1967	7.81	Aug. 1969	2.98	18	4.55	7-8
St. Lawrence	15.71	-	Feb. 1966	8.15	Oct. 1969	2.90	8	4.71	8-9
Colinet	14.78	4.37	Aug. 1936	11.95	Dec. 1963	3.20	8	4.25	7-8
Tors Cove	14.32	-	Oct. 1955	11.03	Nov. 1959	3.00	7	5.01	7-8
Colinet Peat Bog CDA	13.99	-	Sep. 1957	10.01	Oct. 1964	3.11	18	3.59	11-12
Pierres Brook	13.91	-	Oct. 1955	12.63	Nov. 1959	3.45	11	4.62	11-12
Long Harbour	13.53	-	Nov. 1969	-	-	2.78	8	4.00	7-8
Avondale CDA	13.24	-	July 1955	8.84	Aug. 1969	2.95	8	4.19	7-8
Hearts Content	12.94	-	July 1961	7.80	Sep. 1969	3.20	8	4.14	7-8
Cape Broyle	12.93	-	Oct. 1955	11.56	Oct. 1955	2.65	18	3.37	7-8
St. John's Torbay A	12.90	4.00	Jan. 1942	12.59	Nov. 1955	2.89	8	3.03	18-19
New Chelsea	12.77	-	July 1961	9.47	Jan. 1963	2.40	8	3.65	8-9
St. John's	12.53	4.46	Jan. 1874	14.05	Dec. 1909	3.14	18	6.02	18-19
Seal Cove	12.40	-	July 1961	10.41	Dec. 1966	2.81	18	3.30	18-19
Holyrood Golden Eagle	12.35	-	Dec. 1961	8.94	Feb. 1962	2.50	11,18	3.60	11-12

TABLE 2

DAILY PRECIPITATION AT SELECTED STATIONS IN NEWFOUNDLAND - DURING AUGUST 1970

(Hundredths of Inches)

	Westbrook St. Lawrence	Salmonier	St. Lawrence	Colinet	Tors Cove	St. John's Torbay
1		06	T		T	T
2	19	08	07	15		T
3	21	80	25	34	54	25
4	101		84	22	04	04
5	17		14		08	T
6	06		04	20		T
7	285	180	173	105	300	23
8	441	275	290	320	201	289
9	08	77	181	25		101
10	137	175	T			T
11	198	98	282	301	231	116
12	123	115	88	95	115	39
13	06		T			72
14						02
15			T			
16			T			
17			T			
18	104	298	75	311	197	158
19	48	71	103	03	31	245
20		16			02	12
21	27	15	T		T	T
22		09	21	32	07	07
23		50			T	
24	93	206	71	83	29	99
25						
26						
27	30		14	65	135	12
28						23
29	88	39	60	32	30	
30	72	30	48	08	57	59
31			31	07	31	04
Total -	1824	1748	1571	1478	1432	1290
Time of observation	7 AM	9 AM	2:30 AM	8 AM	9 AM	2:30 AM

(NST) (Rainfall for day ending at 7:00 AM on August 2, credited to August 1)

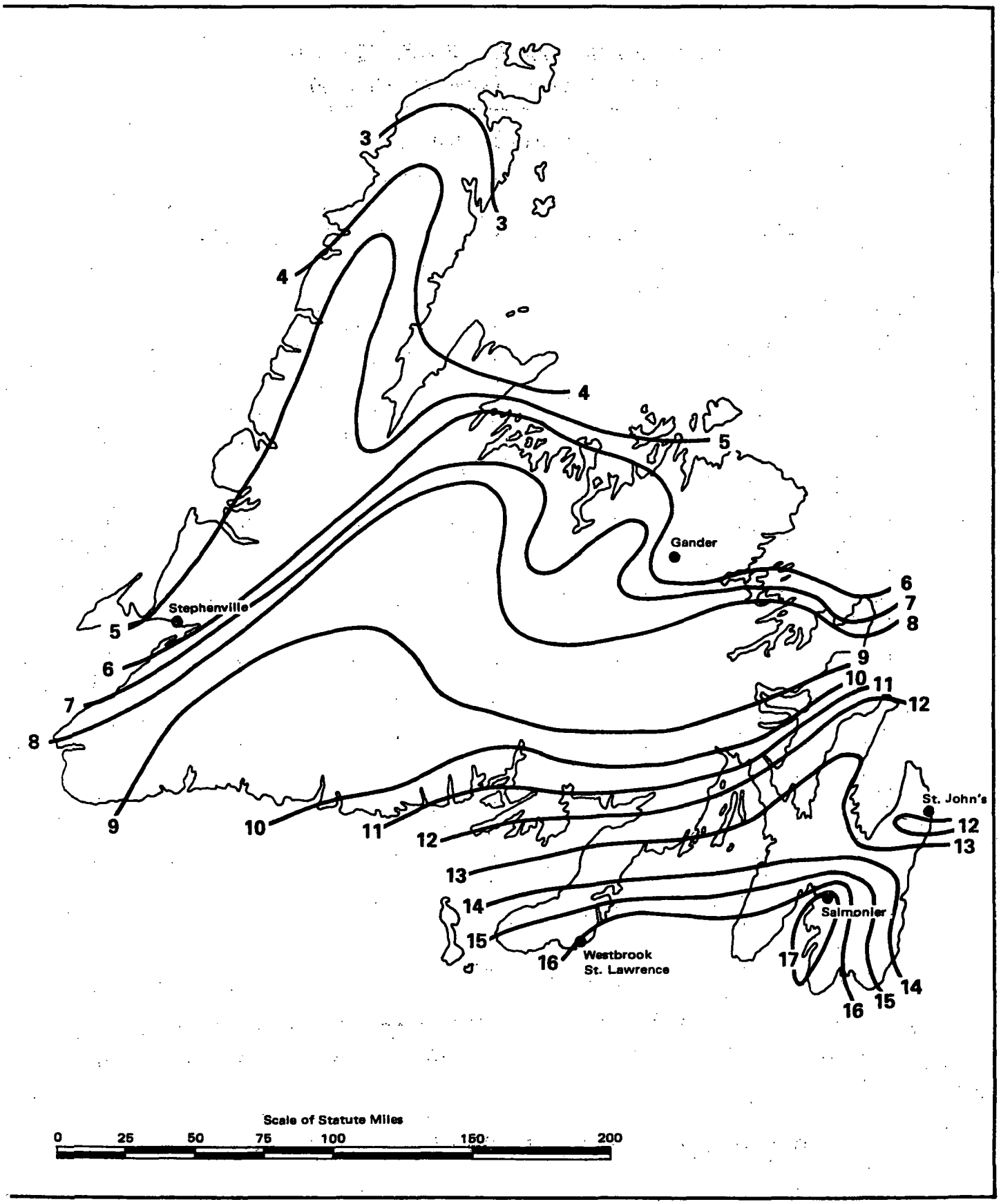

Fig. 1 - Total Precipitation on the Island of Newfoundland during August 1970. (inches)

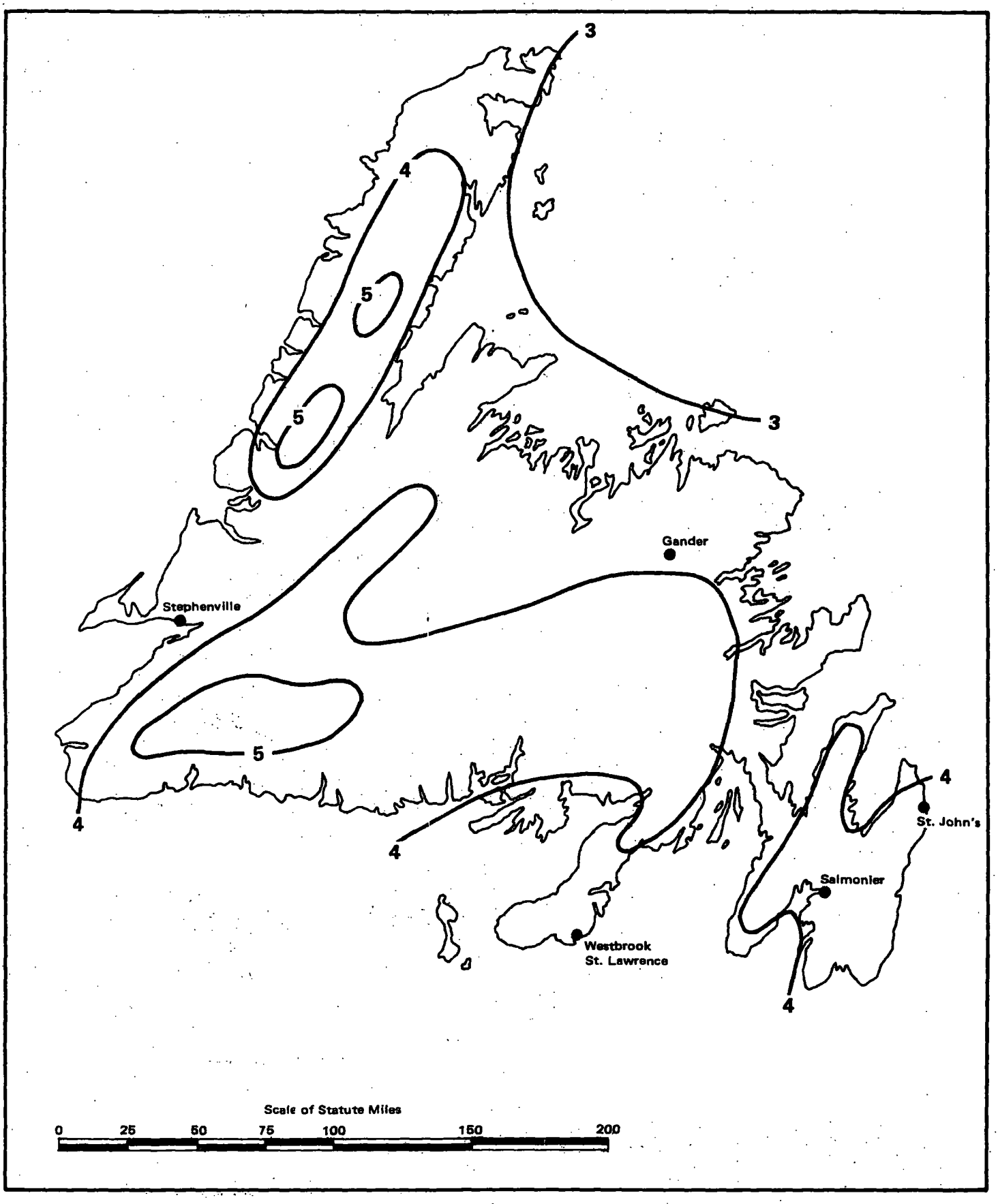

Fig. 2 - Normal Precipitation on the Island of Newfoundland during August 1931-60. (inches)

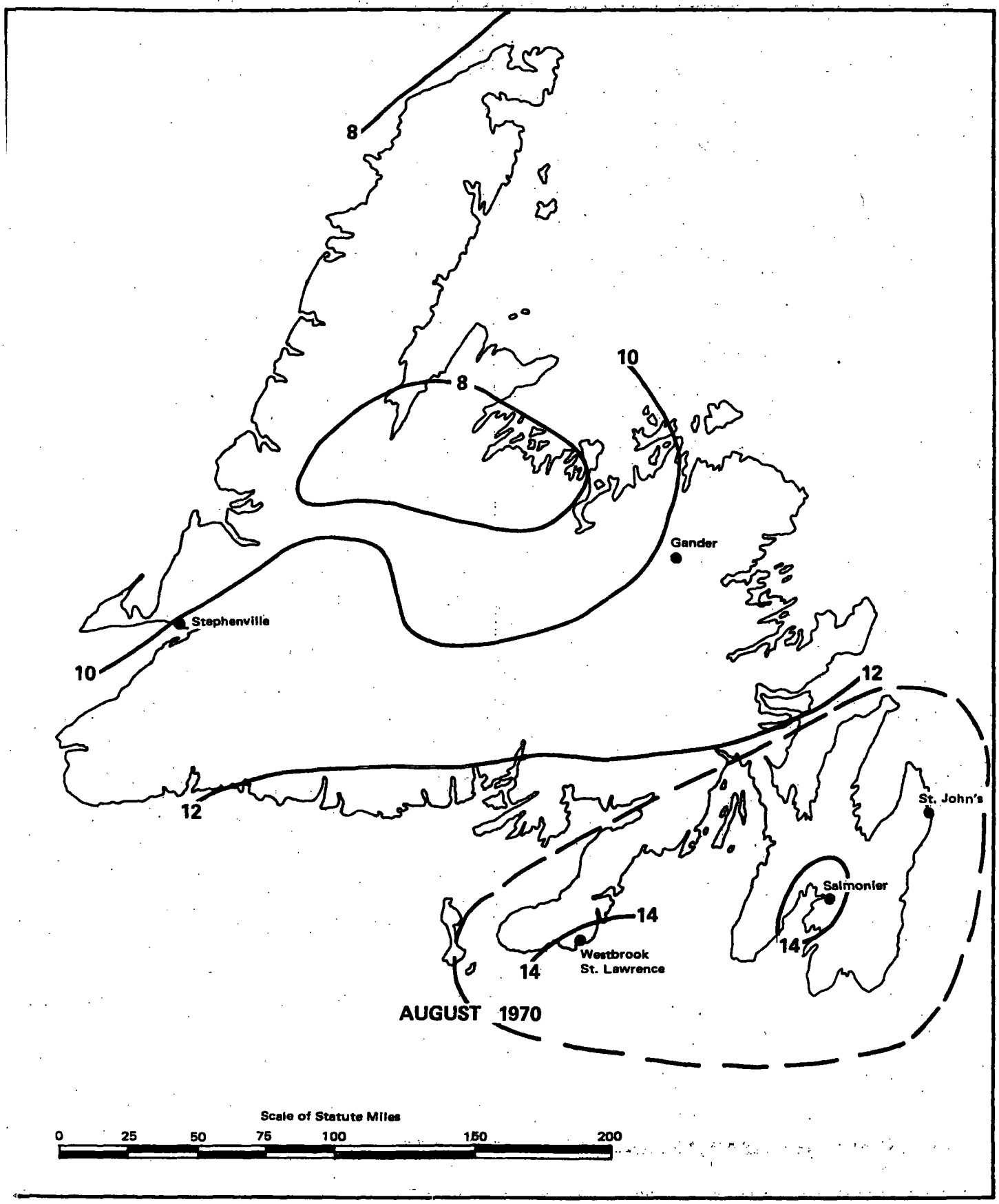

Fig. 3 - Most Precipitation in any Calendar Month on the Island of Newfoundland over the Period of Record (inches). August 1970 record amount area marked.

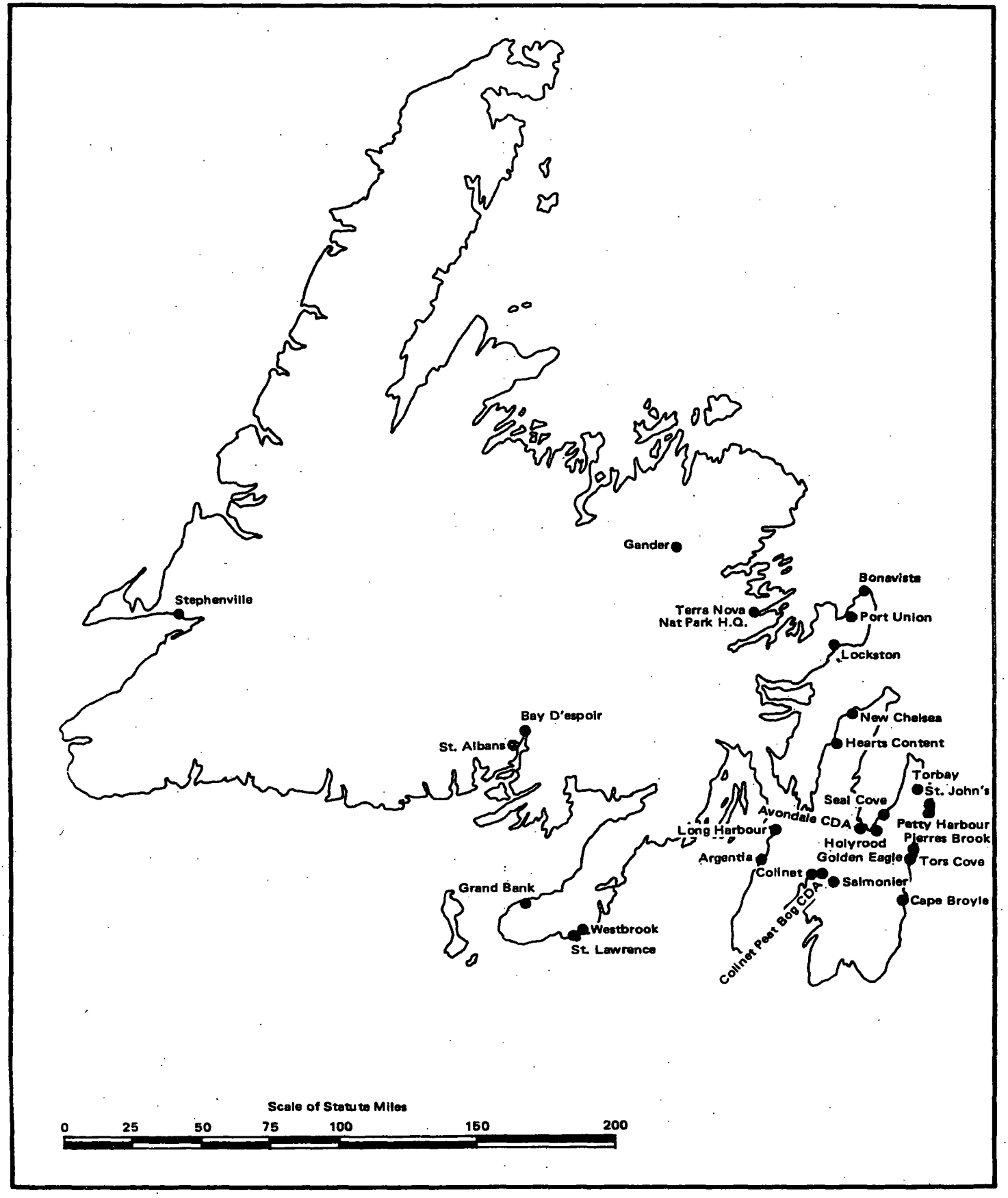

Fig. 4 - Station locations in Southeastern Newfoundland.