

X.—RAINFALL NOTES, NOVA SCOTIA.—*By F. W. W. DOANE,
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(*Read May 13th, 1901.*)

If officials in charge of water works, water power and sewer systems are inclined to profit by knowledge acquired in the school of experience, the lessons presented to them during the year just closed have been severe and extraordinary ones. The long drought of 1900 will be remembered and referred to by meteorologists and others for many years to come. One of the severest ever recorded, occurred between the months of May and November. This condition was far-reaching, and extended throughout the whole of New England and New Brunswick, but does not seem to have reached Nova Scotia. The scarcity of water in public supplies as a result of the unusually dry season, was one of the most unpleasant features of the year. Water supplies, heretofore considered inexhaustible, failed. The fields and forests became thoroughly wilted and parched. The rural population suffered not only from the failure of wells, but more from the failure of their crops; and added to this, was the devastation and damage caused by numerous forest fires which covered large areas of country.

There were many superintendents of water works who, in the spring, contemplated with satisfaction the overflowing reservoirs and the abundant sources of supply which fed them, and who thought, no matter how much their fellow citizens consumed and wasted, nature had provided, and would continue to provide, sufficient water for all purposes. Before the summer had far advanced, the fast receding water lines on the reservoir embankments and the steady decrease of the "meadow stream and mountain torrent" warned them of the approaching short supply,

and not until late fall, and not even then in many localities, did the dreaded water famine come to an end.

With this condition all around us, Nova Scotia is to be congratulated. Precipitation reports from Yarmouth, Halifax, Truro and Sydney, show that the rainfall during the summer was about the average.

In St. John, New Brunswick, Mr. Murdoch, the engineer in charge of sewers and water works, states that the whole rainfall during the months of July, August and September, amounted to only 4.65 inches, or an average of 1.55 inches per month, which was the lowest in six years.

During the same months in Halifax, the rainfall was 10.908 inches, or very little below the average. Truro had a rainfall of 11.11 inches, Sydney, 8.76, and Yarmouth, 11.09, inches, while the total rainfall in Nova Scotia was above the average. The total precipitation at Sydney was the highest on record.

The last paper read before you on this subject (*Trans.*, vol. ix, p. 279,) gave the maximum storms to December 31, 1896. Since that date new records have been made for minimum as well as maximum rainfall. In August, 1899, the rainfall at Halifax was 1.542 inches, the lowest on record for that month. In October, 1897, the rainfall was 0.746 inches, the lowest record for any month. In November, 1898, the highest rainfall for that month, viz., 10.248 inches, was recorded.

On the 18th of June, 1897, a heavy storm occurred at Halifax. It was reported by Mr. Augustus Allison, Dominion Government Meteorological Agent, as 0.577 inches, and 4.2 hours in duration. Mr. R. Cogswell gave the precipitation as 0.5 for the heaviest part of the storm. It is to be regretted that the actual time of the heaviest downpour was not noted. Several observers give the time as about 15 minutes, which would make the rate of fall two inches per hour.

Mr. James Little, meteorological observer at Truro, reports a thunderstorm of great severity, accompanied by heavy rain, on

August 1st, 1900. Rain began to fall at 11.30 a. m., and in 25 minutes measured 0.765 inches, a rate of 1.83 inches per hour. On the same day a second heavy rain and thunderstorm lasted from 3.15 p. m. to 4.30 p. m., the measurement being 0.85 inches, a rate of 0.68 inches per hour. No heavy rain was observed elsewhere in Nova Scotia on that date.

The tables appended show further details of the rainfall at Halifax, Truro, Sydney and Yarmouth during 1900:—

PRECIPITATION AT HALIFAX, N. S., 1900.

TABLE COMPILED FROM RETURNS OF MR. AUGUSTUS ALLISON, MET. AGENT,
SHOWING DEPTH OF RAINFALL AND MELTED SNOW IN INCHES AND
DURATION OF EACH STORM.

Day of Month.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE		
	Hours.	Inches.	Hours.	Inches.	Hours.	Inches.	Hours.	Inches.	Hours.	Inches.	Hours.	Inches.	
1	8.9	.800	1.0	.120	2.0	.020	4.0	.060	.....	.....	3.4	.208
2	1.2	.020	.....	.....	17.3	.692	.....	.....	.....	.....	6.2	.357
3	2.1	.140	.....	.....	2.0	.015	6.5	.310	5.0	.409	2.5	.162
4	.....	2.0	.020	.....	.....	.....	1.2	.048	5.0	.124	.....	.....
5	.....	14.5	1.340	2.5	.060	.....	.....	.....	1.3	.016	.....	.....
6	3.5	.060	3.7	.058	5.0	.030	7.0	.160	0.4	T.	.....	.....
7	.....	4.0	.050	9.8	.620	13.7	.599	4.7	.142	.....	.....	.....
8	4.6	.213	.....	.....	.....	.....	15.0	.330	4.0	.200	.....	.....
9	.....	.....	.....	.....	.....	.....	4.5	.060	7.5	.498	1.5	.110
10	4.0	.167	.....	.020	7.1	.634	0.9	.010	.....	.....	.....	.....
11	.....	.....	.....	3.1	.030	1.0	.018	.....	.....	.....	.....	.....
12	15.7	2.364	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13	3.4	.178	0.2	T.	10.2	.190	17.5	.528	5.0	.112	.....	.....
14	.....	9.6	.842	21.5	1.502	7.5	.460	.....	.....	.....	3.5	.284
15	.....	.....	.....	2.5	.110	.....	.....	2.0	.040	4.0	.....	.590
16	6.9	.262	3.6	.170	1.0	T.	.....	.....	2.9	.320	.....	.....
17	.....	.....	.....	5.6	6.44	.....	.....	.....	.....	.....	.....	.....
18	4.5	.010	7.5	.387	0.4	T.	9.5	.236	10.3	.370	.....	.....
19	6.3	.246	1.0	.020	2.0	.032	10.1	.440	17.8	.960	.....	.....
20	7.8	.567	.....	.....	15.1	1.332	3.0	.010	14.5	.966	.....	.....
21	13.5	1.212	.....	.....	1.0	T.	.....	.....	.....	.....	.....	.....
22	.....	.....	.....	.....	.....	.....	.....	2.8	.077	2.6	.....	.052
23	.....	10.3	1.830	0.7	.019	8.0	.300	2.0	.020	3.5	.....	.340
24	.....	.....	.....	0.5	T.	2.0	.028	.....	.....	1.0	T.	.....
25	1.7	.058	2.5	.400	.....	4.0	.072	.....	.....	1.5	.....	.060
26	11.6	1.272	2.0	.020	.....	1.5	.058	.....	.....	.....	.....	.....
27	1.0	T.	.....	.....	6.5	.125	.....	.....	.....	.....	.....	.....
28	.....	.....	.....	.....	.....	T.	10.1	.100	.....	.....	1.5	.060
29	8.0	.630	.....	.....	0.5	T.	.....	.112	.....	.....	1.2	.053
30	.....	.....	.....	.....	.....	.....	2.0	.010	.....	.....	3.0	.380
31	6.0	.333	.....	.....	10.1	.522	.....	.....	.....	.....	.....	.....
	8.532	5.277	6.577	3.949	4.254	2.656

PRECIPITATION AT HALIFAX, N. S., 1900.

TABLE COMPILED FROM RETURNS OF MR. AUGUSTUS ALLISON, MET. AGENT,
SHOWING DEPTH OF RAINFALL AND MELTED SNOW IN INCHES, AND
DURATION OF EACH STORM.

Day of Month.	JULY.		AUGUST.		SEPT.		OCTOBER.		NOVEMBER.		DECEMBER.	
	Hours.	Inches.	Hours.	Inches.	Hours.	Inches.	Hours.	Inches.	Hours.	Inches.	Hours.	Inches.
1	2.0	.030	2.0	.038	.....	.....	0.5	T.	.....	.....	.....	.....
2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4	6.1	.099	1.5	.030	.....	.....	.....	.....	2.0	T.	1.0	T.
5	.....	.....	.....	.....	.....	.....	2.8	.166	6.4	.556	21.1	1.730
6	.....	0.2	T.	.....	.....	.....	5.7	.264	.....	.....	1.0	.010
7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
8	.....	.....	.....	.....	.....	.....	4.0	.160	3.5	.380	1.0	T.
9	.....	T.	4.4	.560	.....	.....	12.4	1.420	10.6	.970	1.5	.050
10	.....	0.1	T.	1.0	.010	.....	12.5	1.354	3.0	.142	.....	.....
11	.....	5.0	.440	.....	.....	.....	10.5	.926	.....	.....	.....	.....
12	.....	.....	.....	7.5	.658	6.4	.....	.560	9.0	.958	2.5	.020
13	2.5	.160	.....	.....	.....	.....	.....	.....	2.0	.070	3.6	.104
14	.....	T.	9.5	.923	.....	.....	10.1	.937	2.6	.119	2.4	.166
15	.....	2.5	.020	.....	.....	.....	9.5	.518	2.5	.140	.....	.....
16	.....	6.7	.320	6.0	1.880	0.5	.....	.010	4.1	.100	2.0	T.
17	3.5	.062	9.7	.650	4.1	.410	4.7	.642	.....	.....	.....	.....
18	5.3	.113	.....	.....	7.0	.890	.....	.....	4.0	.133	.....	.....
19	1.3	.016	.....	.....	.....	.....	1.5	.010	4.0	.184	4.0	.058
20	.....	.....	6.0	.502	.....	.....	.....	.....	8.7	.410	.....	.....
21	.....	.....	0.7	.012	7.5	.156	1.7	.072	6.5	.430	.....	.....
22	.....	.....	1.3	.040	12.5	.879	.....	.....	1.5	.090	.....	.....
23	.....	.....	.....	.....	5.0	.130	.....	.....	2.9	.109	.....	.....
24	.....	.....	.....	.....	.....	.....	2.5	.186	.....	.....	4.1	.278
25	3.9	.214	2.0	.130	.....	.....	0.9	.040	9.0	.331	2.0	T.
26	3.4	.878	.....	0.7	.010	.....	.....	.....	20.8	.679	2.1	.065
27	2.5	.300	1.0	.120	.....	.....	.....	.....	23.0	1.027	.....	.....
28	.....	1.6	.080	.....	T.	.....	.....	.....	1.5	.030	7.0	.150
29	.....	2.0	.128	0.1	T.	1.3	.012	.....	.....	4.0	.120	.....
30	.....	.....	.....	1.0	.020	3.8	.018	.....	.....	.....	.....	.....
31	.....	.....	.....	.....	.....	.....	.....	.....	.....	15.0	.570	.....
	.....	1.872	.....	3.993	.....	5.043	.....	7.165	.....	6.858	.....	3.321

PRECIPITATION AT HALIFAX, N. S.

TABLE SHOWING THE NUMBER OF TIMES THAT THE TOTAL PRECIPITATION, EACH DAY FROM 1894 TO 1900, INCLUSIVE,
HAS BEEN THE NEAREST TO A SERIES OF AMOUNTS RANGING FROM ONE-HUNDREDTHIRTY-FOUR INCHES
AND A HALF INCHES.

YEARS.	AMOUNT IN INCHES.														Total Rainfall for the Year.	YEARS.												
	1 $\frac{1}{2}$	2 $\frac{1}{2}$	3 $\frac{1}{2}$	4 $\frac{1}{2}$	5 $\frac{1}{2}$	6 $\frac{1}{2}$	7 $\frac{1}{2}$	8 $\frac{1}{2}$	9 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{4}$	1 $\frac{1}{3}$	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$	3	3 $\frac{1}{4}$	3 $\frac{1}{2}$	3 $\frac{3}{4}$	4	4 $\frac{1}{4}$	4 $\frac{1}{2}$					
1894.....	50	42	13	16	9	7	5	5	6	2	2	2	2	2	2	2	2	3	3	3 $\frac{1}{4}$	3 $\frac{1}{2}$	3 $\frac{3}{4}$	4	4 $\frac{1}{4}$	4 $\frac{1}{2}$	45.808	1894	
1895.....	33	31	23	14	10	6	4	10	7	1	8	5	3	2	2	2	2	1	1	1	1	1	1	1	1	62.152	1895	
1896.....	45	30	19	12	10	8	5	7	6	3	2	3	6	1	1	1	1	1	1	1	1	1	1	1	1	1	69.362	1896
1897.....	48	54	15	16	7	11	6	4	2	5	3	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	51.522	1897
1898.....	46	34	20	17	14	9	6	6	6	4	3	8	2	2	2	2	2	1	1	1	1	1	1	1	1	60.480	1898	
1899.....	49	23	16	7	5	7	5	8	5	3	5	3	1	1	1	1	1	1	1	1	1	1	1	1	1	53.013	1899	
1900.....	38	47	18	13	12	6	4	2	6	5	5	2	2	1	1	1	1	1	1	1	1	1	1	1	1	59.697	1900	
Totals ...	309	261	124	95	67	54	41	36	30	26	32	19	7	1	5	1	2	1	1	1	1	1	1	1	1	402.534	Totals.	
Means ...	44.1	37.3	17.7	13.6	9.6	7.7	6.4	5.9	5.1	4.3	3.7	4.6	2.7	1.0	.1	.7	.1	.3	.1	.1	.1	.1	.1	.1	57.505	Means.		

PRECIPITATION AT HALIFAX, N. S.

TABLE SHOWING, IN INCHES, MONTHLY RAINFALL DURING 1900, IN COMPARISON
WITH MAXIMUM, MINIMUM AND AVERAGE MONTHLY PRECIPITATION,
FROM 1869 TO 1900.

Month.	Year.	Maximum.	Minimum.	Average, 1869-1900.	Rainfall, 1900.
January	1895	10.131	.....	5.757	8.532
"	1896	.....	1.72	.....	.....
February	1870	10.34	.....	4.892	5.277
"	1873	.....	1.61	.....	.....
March	1878	10.274	.....	5.449	6.577
"	1889	.....	2.046	.....	.....
April	1889	7.403	.....	4.075	3.949
"	1886	.....	0.82	.....	.....
May	1886	8.82	.....	4.170	4.254
"	1894	.....	1.769	.....	.....
June	1874	7.92	.....	3.675	2.656
"	1879	.....	1.191	.....	.....
July	1896	8.729	.....	3.918	1.872
"	1894	.....	1.059	.....	.....
August	1887	8.351	.....	4.272	3.993
"	1899	.....	1.542	.....	.....
September	1896	12.092	.....	3.613	5.043
"	1878	.....	0.800	.....	.....
October	1896	15.039	.....	5.688	7.365
"	1897	.....	0.746	.....	.....
November	1898	10.248	.....	5.753	6.858
"	1882	.....	1.392	.....	.....
December	1893	10.167	.....	5.136	3.321
"	1875	.....	1.61	.....	.....
Totals	1896	69.862	.....	56.332	59.697
"	1894	.....	45.808	.....	.....

PRECIPITATION AT HALIFAX, N. S.

TABLE SHOWING THE MONTHLY AND ANNUAL DEPTH OF RAIN AND MELTED SNOW, EXPRESSED IN INCHES; ALSO THE AMOUNT THAT HAS FALLEN FROM JANUARY 1ST TO THE END OF EACH MONTH, INCLUSIVE, DURING EACH YEAR.

Compiled from Observations and Records made by the Meteorological Agent of the Dominion Government.

YEAR.	January.	February.	January to February inclusive.	March.	January to March inclusive.	April.	January to April inclusive.	May.	January to May inclusive.	June.	January to June inclusive.
	January.	February.	January to February inclusive.	March.	January to March inclusive.	April.	January to April inclusive.	May.	January to May inclusive.	June.	January to June inclusive.
1869	4.53	4.38	8.91	7.95	16.86	2.57	19.43	5.57	25.00	3.92	28.92
1870	7.11	10.34	17.45	3.02	20.47	3.91	24.38	3.19	27.57	1.69	29.26
1871	3.73	5.88	9.61	6.16	15.77	4.88	20.65	2.59	23.24	2.96	26.20
1872	3.88	4.49	8.37	5.37	13.74	2.85	16.59	4.44	21.03	4.23	25.26
1873	7.83	1.61	9.44	4.09	13.53	2.86	16.39	2.34	18.73	2.96	21.69
1874	5.42	5.31	10.73	3.98	14.71	4.55	19.26	4.77	24.03	7.92	31.95
1875	3.48	5.90	9.380	2.11	11.49	3.38	14.87	3.96	18.83	4.07	22.90
1876	3.576	6.401	9.977	6.329	16.306	3.208	19.514	5.662	25.176	3.376	28.552
1877	4.200	1.809	6.009	8.666	14.675	3.801	18.476	4.024	22.500	3.841	26.341
1878	7.534	2.697	10.231	10.274	20.505	3.452	23.957	5.769	29.726	4.477	34.203
1879	4.400	3.001	7.401	6.044	13.445	3.481	16.926	4.687	21.613	1.191	22.804
1880	7.738	5.122	12.860	3.365	16.223	4.797	21.022	4.088	25.110	1.343	26.453
1881	3.607	5.329	8.936	6.556	15.492	3.498	18.990	2.460	21.450	5.308	26.751
1882	6.840	5.949	12.789	7.068	19.857	4.824	24.681	4.677	29.358	5.507	34.865
1883	4.930	3.860	8.790	4.941	13.731	3.703	17.434	8.613	26.047	3.322	29.369
1884	4.406	6.161	10.567	7.034	17.601	7.213	24.814	3.629	28.443	3.773	32.216
1885	6.388	5.090	11.478	3.889	15.367	3.520	18.887	3.282	22.169	2.749	24.918
1886	8.67	3.84	12.51	4.03	16.54	0.82	17.36	8.82	26.18	2.71	28.89
1887	7.656	6.735	14.391	4.629	19.020	6.386	25.406	2.126	27.532	2.121	29.653
1888	5.442	6.284	11.726	4.310	16.036	3.675	19.711	2.877	22.588	4.939	27.527
1889	4.391	6.181	10.572	2.046	12.618	7.403	20.021	3.871	23.892	3.755	27.647
1890	3.963	4.645	8.608	9.889	18.497	2.958	21.455	3.970	25.425	3.440	28.865
1891	8.383	8.740	17.123	2.685	19.808	4.010	23.818	4.195	28.013	4.131	32.144
1892	6.321	2.605	8.926	5.986	14.912	2.653	17.565	5.459	23.024	3.638	26.662
1893	4.781	5.979	10.760	2.303	13.063	4.209	17.272	5.054	22.326	1.753	24.079
1894	7.122	3.571	10.693	3.623	14.316	5.648	19.964	1.769	21.733	3.803	25.536
1895	10.131	4.605	14.736	5.931	20.667	3.956	24.623	4.089	28.712	1.827	30.539
1896	1.720	4.199	5.919	8.786	14.705	1.413	16.118	2.532	18.650	4.671	23.321
1897	5.896	2.898	8.794	5.470	14.264	6.211	20.475	4.613	25.088	6.070	31.158
1898	4.060	4.422	8.482	4.068	12.550	7.346	19.896	2.366	22.262	5.598	27.860
1899	5.083	3.613	8.696	7.178	15.874	3.278	19.152	3.677	22.829	3.875	26.704
1900	8.532	5.277	13.809	6.577	20.386	3.949	24.335	4.254	28.589	2.656	31.245

PRECIPITATION AT HALIFAX, N. S.

TABLE SHOWING THE MONTHLY AND ANNUAL DEPTH OF RAIN AND MELTED SNOW, EXPRESSED IN INCHES; ALSO THE AMOUNT THAT HAS FALLEN FROM JANUARY 1ST TO THE END OF EACH MONTH, INCLUSIVE, DURING EACH YEAR.

Compiled from Observations and Records made by the Meteorological Agent of the Dominion Government.

YEAR.	July.	January to July inclusive.	August.	January to August inclusive.	September.	January to September inclusive.	October.	January to October inclusive.	November.	January to November inclusive.	December.	For the Year.
1869	2.92	31.84	2.58	34.42	1.57	35.99	7.30	43.29	5.47	48.76	5.77	54.53
1870	3.21	32.47	2.20	34.67	3.33	38.00	6.85	44.85	6.28	51.13	6.06	57.19
1871	3.38	29.58	3.69	33.27	4.81	38.08	4.49	42.57	4.18	46.75	4.39	51.14
1872	2.88	28.14	6.82	34.96	1.41	36.37	4.88	41.25	6.65	47.90	6.16	54.06
1873	3.90	25.59	4.45	30.04	4.48	34.52	8.63	43.15	7.98	51.13	4.31	55.44
1874	2.29	32.44	3.37	37.61	5.04	42.65	2.46	45.11	3.58	48.69	5.49	54.18
1875	5.61	28.51	3.56	32.07	2.06	34.13	9.98	44.11	5.54	49.65	1.61	51.26
1876	3.914	32.446	1.909	34.375	6.094	40.469	4.076	44.545	7.397	51.942	3.164	55.106
1877	4.468	30.809	3.539	34.348	3.164	37.512	6.857	44.369	8.678	53.047	4.493	57.540
1878	1.483	35.686	3.127	38.813	.800	39.613	5.060	44.673	6.909	51.582	5.120	56.702
1879	3.843	26.647	4.827	31.474	2.600	34.074	4.760	38.834	4.837	43.671	4.029	47.700
1880	3.086	29.539	3.920	33.459	5.702	39.161	4.590	43.751	4.710	48.461	4.291	52.752
1881	3.177	29.935	3.062	32.990	3.105	36.095	4.206	40.301	4.420	44.721	7.034	51.755
1882	5.071	39.936	3.925	43.861	5.914	49.775	7.403	57.178	1.392	58.570	3.452	62.022
1883	3.540	32.909	5.342	38.251	3.864	42.115	5.841	47.956	3.478	51.434	6.678	58.112
1884	8.294	40.510	2.771	43.281	1.788	45.069	3.093	48.162	5.992	54.154	9.124	63.278
1885	5.817	30.735	3.001	33.736	2.497	36.233	6.280	42.513	5.423	47.936	8.693	56.629
1886	6.53	35.42	4.53	39.95	4.46	44.41	2.13	46.54	5.28	51.82	5.47	57.29
1887	2.045	31.698	8.351	40.049	3.308	43.357	3.058	46.415	6.718	53.133	4.120	57.253
1888	5.001	32.528	7.000	39.528	5.331	44.859	6.859	51.718	6.802	58.520	7.774	66.294
1889	2.668	30.315	2.633	32.948	1.399	34.347	4.179	38.526	7.145	45.671	2.988	48.659
1890	2.141	31.006	7.042	38.048	4.534	42.582	6.603	49.185	3.716	52.901	7.202	60.103
1891	4.003	36.147	3.385	39.532	3.052	42.584	9.621	52.205	2.388	54.593	4.076	58.669
1892	2.710	29.372	6.809	36.181	1.744	37.925	3.472	41.397	9.240	50.637	3.053	53.690
1893	4.757	28.836	5.954	34.790	4.391	39.181	5.640	44.821	3.760	48.581	10.167	58.748
1894	1.059	26.595	3.993	30.588	1.010	31.598	3.863	35.461	5.785	41.246	4.562	45.808
1895	3.924	34.463	5.502	39.965	2.491	42.456	5.627	48.083	8.223	56.306	5.846	62.152
1896	8.729	32.050	3.037	35.087	12.092	47.179	15.039	62.218	4.396	66.614	3.248	69.862
1897	3.661	34.819	5.185	40.004	1.169	41.173	0.746	41.919	6.051	47.970	3.552	51.522
1898	3.652	31.512	5.651	37.163	4.158	41.321	4.845	46.166	10.248	56.414	4.066	60.480
1899	5.747	32.451	1.542	33.993	3.201	37.194	6.191	43.385	4.590	47.975	5.038	53.013
1900	1.872	33.117	3.993	37.110	5.043	42.153	7.365	49.518	6.858	56.376	3.321	59.697

PRECIPITATION AT SYDNEY, N. S.

TABLE COMPILED FROM RETURNS OF MR. R. L. LAFFIN, MET. AGENT.

MONTH (1900).	Precipitation. (1900.)	Year.	Total.
January.....	7.72	1893	33.49
February	5.60	1894	35.88
March.....	7.12	1895	38.81
April.....	6.66	1896	38.61
May.....	3.28	1897	29.23
June.....	3.44	1898	37.47
July.....	2.14	1899	39.58
August.....	2.54	1900	53.18
September.....	4.08	.....	.....
October.....	2.36	.....	.....
November.....	7.40	.....	.....
December.....	.84	.....	.....
Totals.....	53.18	Average.	38.28

PRECIPITATION AT TRURO, N. S., 1900.

TABLE COMPILED FROM RETURNS OF MR. JAMES LITTLE, MET. AGENT.

MONTH.	Rainfall.	Snow.	Melted Snow.	Total.
January.....	4.37	16.7	1.30	5.67
February	2.66	20.0	1.52	4.18
March.....	3.55	18.7	1.44	4.99
April.....	3.23	15.2	1.17	4.40
May.....	3.60	.....	.....	3.60
June.....	4.55	.....	.....	4.55
July.....	2.51	.....	.....	2.51
August.....	6.06	.....	.....	6.06
September.....	2.54	.....	.....	2.54
October.....	6.22	0.5	0.04	6.26
November.....	4.97	8.1	0.63	5.60
December.....	0.89	25.5	1.96	2.85
Totals.....	45.15	104.7	8.06	53.21

PRECIPITATATION AT YARMOUTH, N. S., 1900.

FROM RETURNS OF MR. J. E. MURPHY, MET. AGENT.

MONTH.	Precipitation.
July	2.65
August	3.28
September	5.16
October.....	11.38
Total for year	60.32