

166 Contributions to the Climatology of British North America.

It may be seen that on the average of the year the warmest hour is between 2 P.M. and 3 P.M., and the coldest hour between 4 A.M. and 5 A.M.

The so-called pressure of Dry Air varies mostly in a direction opposite to that of temperature, while the march of the pressure of vapour is in the same direction, the pressure of vapour being greatest at or about the warmest hour and vice versa."

As the barometric pressure is occasioned by the joint pressures of the dry air and vapour, whose variations are in opposite directions, it is the numerical preponderance of the one or the other of these that determines the magnitudes and signs of the variations of the barometer. The regular diurnal variations of the barometer are consequently small, and are masked by the irregular movements, which amount on an average to nearly two-tenths of an inch. While the pressure of vapour increases with the temperature, the vapour necessary to saturate the air increases also, but with greater rapidity; hence the relative humidity, which is the ratio of the first of these to the second, diminishes as the temperature increases.

The following table gives the monthly and annual means of temperature and of other elements at Toronto, derived from 25 to 29 years. To save space the heights by which the barometer and the pressure of Dry Air and Vapour exceeds 29 inches, have been given instead of their actual heights.

TABLE V.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Temperature.....	22.94	22.95	29.85	40.99	51.41	61.53	67.38	66.09	57.93	45.86	36.96	25.93	44.14
Barometer.....	0.645	0.632	0.599	0.597	0.572	0.575	0.599	0.623	0.662	0.649	0.613	0.653	0.619
Pressure of Dry Air..	0.532	0.520	0.462	0.407	0.297	0.165	0.111	0.140	0.275	0.395	0.430	0.528	0.355
Pressure of Vapour..	0.113	0.112	0.137	0.190	0.275	0.410	0.488	0.483	0.387	0.254	0.183	0.125	0.263
Relative Humidity..	83	81	78	73	71	74	73	76	78	79	81	81	77
Sky Clouded.....	0.72	0.72	0.62	0.60	0.55	0.52	0.49	0.48	0.49	0.61	0.75	0.74	0.61
Depth rain in inches.	1.175	0.965	1.629	2.400	3.375	2.741	3.351	2.970	3.682	2.473	3.089	1.619	29.469
Depth snow in inches.	15.96	18.35	10.15	2.59	0.08	.....	.....	.....	0.88	2.97	14.35	65.33	65.33
Total Precipitation ..	2.771	2.800	2.644	2.659	3.383	2.741	3.351	2.970	3.682	2.561	3.866	3.054	36.002
Days of Rain.....	4.4	4.2	6.4	9.8	12.0	11.4	10.4	10.8	11.3	12.5	10.2	5.6	109.0
Days of Snow.....	13.6	12.1	9.7	3.7	0.4	0.1	.....	.....	.....	1.8	6.4	13.4	61.2
Days of Precipitation	18.0	16.3	16.1	13.5	12.4	11.5	10.4	10.8	11.3	14.3	16.6	19.0	170.2

Wind.	Jan.	Feb.	March.	April.	May.	June.	July.
Resultant Direction	N78°W	N69°W	N57°W	N17°W	N11°W	N61°W	N68°W
Resultant Velocity	3.06	3.10	3.31	2.02	1.66	0.77	0.68
Mean Velocity	8.14	8.53	8.80	8.12	6.77	5.15	4.96
Days of Thunder	0.0	0.1	0.6	1.8	3.6	5.9	6.7
Days of Lightning	0.0	0.3	0.8	1.7	3.2	6.0	8.6
No. of Auroras	1.7	3.2	5.9	5.0	4.6	3.1	4.3

Wind.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Resultant Direction	N68°W	N55°W	N57°W	N78°W	N75°W	N 61° W
Resultant Velocity	1.04	1.68	1.72	2.52	3.14	1.87
Mean Velocity	5.19	5.48	6.05	7.51	8.52	6.94
Days of Thunder	5.1	2.3	0.9	0.2	0.1	28.3
Days of Lightning	7.9	5.1	1.8	0.4	0.0	35.8
No. of Auroras	4.7	6.2	4.9	1.6	1.9	47.1

The monthly means of the annual variations of the principal elements at Toronto, or the differences of the monthly means in excess or defect from the annual means, are given below. They are derived from Table V.

TABLE VI.

MEAN Annual Variations of the principal Meteorological elements at Toronto:—

	January	February	March	April	May	June
Temperature	-21.20	-21.19	-14.29	-3.15	+7.27	+17.39
Barometer.....	+0.026	+0.013	-0.020	-0.022	-0.047	-0.044
Pressure of Dry Air.....	+0.176	+0.164	+0.106	+0.051	-0.059	-0.191
Pressure of Vapour.....	-0.150	-0.151	-0.126	-0.073	+0.012	+0.147
Relative Humidity.....	+6	+4	+1	-4	-6	-3
Sky Clouded.....	+0.11	+0.11	+0.01	-0.01	-0.06	-0.09