

combined, and with the aid of interpolating formulæ (*) constructed by himself, Mr. Macgregor has computed and tabulated the daily normal temperatures for each of the three hours of observation and the daily mean normals from the three hours taken together. He has also formed, for about every fifth day, a table giving the diurnal inequalities (using the term here and elsewhere for the sake of brevity) or amounts by which the normal at each hour deviates above or below the mean for the three hours on the same day. He has given these differences not as the true inequalities, inasmuch as they are taken from imperfect daily means, the hours 7 a.m., 1 p.m., 9 p.m. not being suited to give the true means with precision; but in order to show, approximately at least, the general character of the distribution of temperature through the day.

From Mr. Macgregor's tables and those of Toronto, for nearly the same years, the daily mean normals for the 5th, 15th, and 25th of each month, for Stratford and Toronto, have been placed together in the first of the two following tables. In the second table the diurnal inequalities for Stratford alone are given for the same days.

Normal Daily Means of Temperature at Stratford and Toronto, on the 5th, 15th, and 25th of each month, derived from nine and ten years. Stratford, 1861-69; Toronto, 1859-68.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Stratford, 5th....	20.3	21.3	23.8	36.4	48.3	58.3	66.7	65.7	60.1	48.8	38.2	28.3
Toronto, 5th....	21.2	22.8	26.5	37.1	48.3	58.8	67.1	67.8	61.4	49.5	41.2	28.6
Stratford, 15th...	19.9	21.9	26.5	41.3	51.1	62.1	67.1	64.4	56.8	44.9	35.1	24.8
Toronto, 15th...	21.5	23.5	29.4	40.9	51.8	62.0	68.2	66.4	57.6	46.3	37.8	24.5
Stratford, 25th...	20.4	22.6	30.8	45.2	54.5	65.1	66.6	62.6	52.9	41.3	31.8	22.0
Toronto, 25th...	22.1	24.8	32.9	44.7	55.2	64.9	68.4	64.4	53.4	43.8	33.4	22.0

Diurnal Inequalities of Temperature at Stratford, on the 5th, 15th, and 25th of each month.

	January.			February.			March.			April.		
	5th.	15th.	25th.	5th.	15th.	25th.	5th.	15th.	25th.	5th.	15th.	25th.
7 A.M.....	-2.1	-2.2	-2.4	-2.3	-3.1	-3.4	-3.6	-3.8	-3.8	-3.9	-4.0	-4.0
1 P.M.....	+2.6	+2.7	+2.8	+2.9	+3.0	+3.3	+3.6	+4.0	+4.5	+4.9	+5.1	+5.2
9 P.M.....	-0.5	-0.4	-0.3	-0.1	+0.1	+0.2	0.0	-0.3	-0.6	-0.9	-1.1	-1.2
	May.			June.			July.			August.		
	5th.	15th.	25th.	5th.	15th.	25th.	5th.	15th.	25th.	5th.	15th.	25th.
7 A.M.....	-4.1	-4.2	-4.2	-4.2	-4.1	-4.0	-4.0	-4.0	-4.2	-4.4	-4.5	-4.5
1 P.M.....	+5.3	+5.5	+5.8	+6.1	+6.3	+6.3	+6.2	+6.1	+6.2	+6.4	+6.6	+6.6
9 P.M.....	-1.2	-1.4	-1.7	-2.0	-2.2	-2.2	-2.2	-2.0	-2.0	-2.0	-2.1	-2.1
	September.			October.			November.			December.		
	5th.	15th.	25th.	5th.	15th.	25th.	5th.	15th.	25th.	5th.	15th.	25th.
7 A.M.....	-4.4	-4.3	-4.2	-4.1	-3.8	-3.3	-2.8	-2.2	-1.9	-1.8	-1.8	-2.0
1 P.M.....	+6.4	+6.1	+5.8	+5.4	+5.0	+4.3	+3.6	+3.0	+2.5	+2.4	+2.4	+2.4
9 P.M.....	-2.0	-1.8	-1.6	-1.3	-1.2	-1.0	-0.9	-0.8	-0.6	-0.5	-0.5	-0.5

In the preceding table the Diurnal variations or inequalities of temperature at Stratford are given for certain specified days; in the following table their average values are shown for each month. The mean annual variations for Stratford and Toronto are also given, those for Stratford being derived from the years 1861-69, and those for Toronto from 1859-68.

Mean Diurnal Variations.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
7 A.M. ...	-2.2	-3.2	-3.8	-4.0	-4.1	-4.1	-4.0	-4.5	-4.3	-3.8	-2.2	-1.9	-3.5
1 P.M. ...	+2.7	+3.0	+4.0	+5.0	+5.6	+6.2	+6.1	+6.6	+6.1	+4.9	+3.0	+2.3	+4.7
9 P.M. ...	-0.5	+0.1	-0.2	-1.2	-1.4	-2.3	-2.0	-2.1	-1.9	-1.2	-0.7	-0.5	-1.1

Mean Annual Variation.

Stratford ..	-23.1	-21.2	-16.2	-1.7	+8.1	+19.2	+24.1	+21.5	+13.8	+1.9	-7.9	-18.2
Toronto ..	-22.5	-20.5	-14.2	-3.1	+7.5	+17.9	+23.9	+21.8	+13.1	+2.1	-6.9	-19.3

The annual means for the series of years under consideration are 43° 02' for Stratford and 44° 16' for Toronto; so that on the average of the year Stratford is colder than Toronto by 1° 14'. On examining the table of normal daily means in order to see how this difference is made up, we find that the temperatures at the two places differ very little in May, June, and July, and that towards the middle and end of June Stratford is a trifle warmer than Toronto. The temperatures reach equality

(*) The formulae are those commonly called Bessel's, and are made up of a series of terms of the form $T_r \sin(r x + C_r)$ where x is proportional to the time elapsed since some fixed epoch.