Diurnal Distribution of Temperature.

The numbers given in Table IV. are not the true diurnal inequalities for 7 a.m., 1 p.m., and 9 p.m., since they are reckoned from a mean derived from three hours which are not suited to yield the true mean of the day. This is recognised in the heading by calling them *approximate*. They serve, however, to exhibit, in a rough way, the general character of the diurnal distribution as far as concerns those hours, and they measure truly the *partial* diurnal ranges between any pair of the hours, since these ranges will not be affected by an error in the mean from which the inequalities are reckoned.

The normal diurnal range between 7 a.m. and 1 p.m. on the average of the year and on the average of all the stations is 8°.8. In January it is 6°.8 and in July 10°.2. Comparing place with place, Peterboro has the greatest range all the year through, while in July its range for these hours is about equalled by Simcoe and Hamilton. At Goderich, where the range between 7 a.m. and 1 p.m. is least, it is 3°.2 in January, 4°.9 in July, and 4°.7 for the year.

TABLE V.

Monthly Means of Daily Maximum Temperatures.

Stations.	No. of Years.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
		°	°	°	°	°	°	°	°	°	°	°	°
Barrie	3	28.7	33.7	36.4	52.7	59.9	73.3	79.3	75.4	69.5	57.0	41.8	30.7
Belleville	4	26.0	29.7	34.8	51.2	60.6	73.0	80.1	75.9	67.8	54.6	41.9	29.4
Goderich	3	30.5	32.8	36.1	48.0	55.8	69.5	76.2	73.7	67.5	52.2	43.4	31.9
Hamilton	4	32.1	34.7	38.6	53.8	61.7	76.2	85.2	81.0	72.8	58.8	46.6	34.9
Pembroke	3	21.3	25.3	36.6	47.0	61.2	74.2	80.8	75.7	67.8	52.7	35.9	22.1
Peterborough	3	25.5	29.5	35.9	49.0	61.7	75.8	82.3	78.5	69.6	52.6	39.0	28.4
Simcoe	3	30.7	34.4	39.0	53.0	62.1	76.0	82.5	79.2	70.2	55.4	44.7	32.0
Stratford	5	25.0	28.7	35.2	50.6	59.1	72.3	77.5	73.6	67.0	52.0	40.8	28.9

Monthly Means of Daily Minimum Temperatures.

Barrie	3	8.5	11.2	13.9	28.9	37.5	51.0	57.9	53.6	47.9	38.2	27.4	14.5
Belleville	4	7.8	10.1	17.3	32.5	42.4	54.5	61.5	56.6	49.0	37.0	27.5	11.6
Goderich	4	17.0	15.8	17.9	29.9	40.1	51.4	59.2	56.9	50.0	38.7	30.8	19.9
Hamilton	4	10.0	10.3	15.2	28.9	37.8	48.4	57.8	53.3	46.6	34.8	26.0	14.6
Pembroke	3	—2.3	—3.5	7.0	23.0	37.5	49.8	55.6	52.7	43.9	30.7	19.3	—0.6
Peterborough	3	4.8	6.0	12.6	27.2	40.0	50.4	55.3	51.9	42.8	29.6	21.9	6.7
Stratford	5	10.8	12.5	17.9	31.8	39.8	52.1	56.8	52.6	47.5	35.8	23.9	15.9

Monthly Means of Daily Ranges.

Barrie	3	20.2	22.5	22.5	23.8	22.4	22.3	21.4	21.8	21.6	18.8	14.4	16.2
Belleville	4	18.2	19.6	17.5	18.7	18.2	18.5	18.6	19.3	18.8	17.6	14.4	17.5
Goderich	4	13.5	17.0	18.2	18.1	15.7	18.1	17.0	16.8	17.5	13.5	12.6	12.0
Hamilton	4	22.1	24.4	23.4	24.9	23.9	27.8	27.4	27.7	26.2	24.0	19.7	20.3
Pembroke	3	23.6	28.8	29.6	24.0	23.7	24.4	25.2	23.0	23.9	22.0	16.6	22.7
Peterborough	3	20.7	23.5	23.3	21.8	21.7	25.4	27.0	26.6	26.8	23.0	17.1	21.7
Stratford	5	14.2	16.2	17.3	18.8	19.3	20.2	20.7	21.0	19.5	16.2	11.9	13.0

In Table V. we have the monthly means of the daily maxima and minima of temperature, *without regard to the hours of their occurrence*, together with the mean daily ranges, or the differences between the mean daily maxima and mean daily minima. The ranges in this table, being reckoned each day between the highest and lowest temperatures without regarding the time of occurrence, must, of course, be greater than the range between any two *fixed* hours whatever, though these were on the whole the coldest and warmest hours of the day, which 7 a.m. and 1 p.m. are not; hence the ranges in table V. are vastly greater than the partial ranges from table IV.

Comparing stations we find, taking the year round, that the greatest diurnal range is at Hamilton, but that it is only a trifle less than at Pembroke. At Goderich the diurnal range is less on the whole than at all other stations, but in some months it is not so small as at Stratford. It seems, then, that at Goderich, the equability of temperature is as marked in the diurnal as it is in the annual period.

The number of years embraced in tables I.,—V is too small to justify our accepting as final the temperature relations which these tables express. Deductions drawn from them as to the comparative climatic character of different places can only be adopted provisionally, the more perfect exhibition of these relations being deferred till a few-more years have been added to the series.

On the height of Water on Lake Ontario.

This subject does not belong directly to meteorology; but as it is intimately connected with meteorological conditions, and is one with respect to which I would much desire communications from other places, I gladly avail myself of the materials placed at my disposal by the courtesy of the Deputy Harbour Master of Toronto, Mr. Smith, and have drawn up the accompanying table.

The monthly means are the averages of four measurements, made at intervals of a week, and reckoned upwards from a certain arbitrary mark. In some rare cases of great depression, the measurements were made downwards, the height being then accompanied by the negative sign (—).

Confining our attention at first to the column of yearly means, we encounter considerable irregularity in the rate of change from year to year. In 1855 there was a partial minimum; afterwards the water rose till 1858, when it reached the absolute maximum of the series. It then fell to the absolute minimum in 1863, meeting with two interruptions: one in 1860, when it was depressed below the height of both 1859 and 1861, and again in 1867, when it was raised 10 inches above the height of 1866. to fall 15 inches again in 1868,

The mean annual height for sixteen years was 20·3 inches, and the actual annual heights rose and fell with an average difference from the mean of 5·3 inches. The greatest mean annual elevation was 11·1 inches in 1858, and the greatest mean annual depression 15·7 inches in 1868.

If the series be divided into four groups of four years each, the second of these, 1858-61, shows