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1. Papers on Meteorology and Climate.

METEOROLOGY OF TORONTO, FOR 1861.*

THE year 1861, with respect to its temperature, exhibited, as a whole, nothing extraordinary, the mean of the year differing from the average of twenty-two years to the extent of only 0°.10 in excess. The monthly means, moreover, did not differ in a marked degree from the means proper to the several months derived from twenty-two years, the average deviation, without regard to sign, being 2°.24; while the average deviation in the whole period of twenty-two years, and referred to the same standard, was 2°.44. If, however, the *signs* of the deviations be taken into account, it will be seen that the compensations by which the annual mean was maintained, were of the kind that may be styled *unseasonable*, being such as tended to weaken rather than to intensify the distinctive characters of the different parts of the year. Thus, from May to August—comprising the greater part of the year in which the temperature is *above* the yearly mean—the monthly means were relatively *low*; while in February and December, the monthly means were relatively *high*. The depression (3°.9) in the temperature of May, was never exceeded in any May of former years, and was nearly approached only in 1849 and 1851, when in both cases the cold of May was succeeded by unusual warmth in June and July. The abnormal warmth of April served only to aggravate

* By G. T. Kingston, Esq., M.A., Director of the Magnetical Observatory of Toronto, From the *Canadian Journal* for March, 1862.

the evil, by hastening the vegetation that was thrown back by the frosts that followed in May. The bad effects of a generally low summer temperature may perhaps be modified, as regards some plants, by occasional bursts of heat, though they be necessarily balanced by unusually low temperatures at other parts of the season. No such mitigating circumstances occurred in 1861, as the warmest day and the absolutely highest temperature of the year were both considerably below the twenty-two years' average of these quantities.

The hygrometric condition of the summer was not favourable; the mean relative humidity of May, June, and July, being 70 against 74, the twenty-one years' average for these months. But as the temperatures were low, the foregoing numbers do not present so strong a contrast as do the tensions of vapour, which for the same three months were .359 in 1861, and .393 on the average of twenty-one years. The contrast in this respect between 1860 and 1861, was very conspicuous in May, the tension of vapour for this month being more than 41 per cent. greater in 1860 than in 1861.

May and June were 8 per cent. and 16 per cent. less cloudy than is usual in those months; while later in the season, when a bright sun is more in request, clouds were more than 20 per cent. in excess.

The depth of rain, which on the whole year was three inches in defect, was deficient in June and July to the extent of more than an inch and a half. In May, when rain is a hindrance to gardening and agricultural operations, it was rather in excess; while, as before stated, there was a want of that moisture *in the air* whose presence is favourable to the development of young leaves.

In the following summary, the chief meteorological elements relative to the year 1861, are compared with the average results derived from a series of years, as well as with extreme values that have occurred during the same series:

TEMPERATURE.

	1861.	Average of 22 years.	Extremes in 22 years.	
Mean temperature of the year....	44°22	44°.12	46°.36 (in 1846)	42°.16 (in 1856.)
Warmest month.....	August.	July.	July 1854	Aug 1860
when mean temp. of month was	65°.48	66°.85	72°.47	64°.46
Coldest month.....	January.	February	Jan. 1857	Feb. 1848
when mean temp. of month was	19°.86	22°.98	12°.75	26°.60
Difference between the warmest and coldest months.....	45°.62	43°.87		