

slightly below. In Central and Eastern Ontario, also in Quebec and the Maritime Provinces it was average or slightly above. The greatest departures reported were 3° above at Edmonton, 4° above at Chatham, N.B., and 4° below at White River.

*The Highest and Lowest Temperatures in each Province during December, 1897, were :*

|                         |                              |                               |
|-------------------------|------------------------------|-------------------------------|
| British Columbia,       | 65°0 on 28th at Vernon,      | —32°0 on 15th at Donald.      |
| North-west Territories, | 60°0 on 28th at Gategarth,   | —45°0 on 17th at Kneehill.    |
| Manitoba.               | 40°0 on 28th at Trehern, }   | —32°2 on 19th at Russell.     |
|                         | 40°0 on 29th at Elkhorn, }   |                               |
| Ontario,                | 62°0 on 10th at Stony Creek, | —43°0 on 17th at White River. |
| Quebec,                 | 51°0 on 11th at Brome,       | —28°6 on 24th at Richmond.    |
| New Brunswick,          | 55°0 on 16th at Sussex,      | —10°7 on 4th at Fredericton.  |
| Nova Scotia,            | 57°3 on 15th at Yarmouth,    | —11°7 on 29th at Truro.       |
| P. E. Island,           | 54°5 on 16th at Georgetown,  | 0°0 on 30th at Georgetown.    |

#### PRECIPITATION.

The precipitation in British Columbia varied considerably near the Coast, as whilst at River's Inlet it was 8·3 inches below average, at Kuper Island it was 3·7 inches above ; on the Mainland it appears on the whole to have been below rather than above the average. In the North-west Territories it was generally above the average in northern Alberta and Assiniboia, especially so at Prince Albert, where it was 1·5 inches above, whilst in the southern portions of these Territories it was slightly below. In Manitoba it was about average or slightly above ; along the north shore of Lake Superior, in the Lower St. Lawrence Valley, the Gulf and in the Maritime Provinces, it was below the average, and in the eastern and southern portions of these latter Provinces to a considerable extent, Yarmouth being 3·3 inches below, Halifax 1·8 inches below and Sydney 2·1 below ; over the greater part of Ontario and over the extreme western part of Quebec it was above average, Lakefield being as much as 3·0 inches above and Montreal 2·3 inches above. In southern Ontario generally it was nearly average, but locally in the south-eastern portion there appears to have been a small deficiency.

#### BRIGHT SUNSHINE.

Bright sunshine was below average in nearly all parts of the Dominion, Brandon, Man., alone reporting an amount in excess of the average. The lowest percentage of the possible amount was reported from Woodstock, Ont., where it amounted to but 0·09. The largest number of completely cloudy days occurred in British Columbia and the least number at Brandon, Man., and at Toronto, Ont.

#### DECEMBER GALES FROM LAKE SUPERIOR TO OUR ATLANTIC COAST DURING THE TWENTY-FIVE YEARS 1873 TO 1897 INCLUSIVE.

In tabulating the gales during the quarter of a century herein embraced the writer has divided the storms into three classes as follows :—The heavy gales of note, the gales that just reached the force of a fresh or strong gale and the moderate gales. It would appear that in the Lake Region 136 gales have occurred, 33 being of the first class, 33 of the second class and 70 of the third class. In the St. Lawrence Valley and the Gulf south to the Miramichi River 132 gales have occurred, 60 being first class, 18 second class and 54 third class. In the Maritime Provinces, embracing the country north to the Miramichi River, 127 gales have occurred, 58 being first class, 11 second class and 58 third class. The heavy gales being those that naturally cause the greatest destruction of property and interfere to a greater or lesser extent with traffic and commerce, it is these storms only that have been thoroughly considered with the intention of endeavouring to find some clue if possible, to the cause of the great atmospheric developments which from time to time occur, and further to see if these gales are more likely to form at one date or in one part of the month more than in another. It is a very common belief that a great gale or gales occur annually about a certain date or dates, and as a table has been prepared of the gales for each month for the last twenty-five years it is proposed to take each month up separately and to prove from actual facts whether or not any credence can be placed in these theories so universally acknowledged by so many to be facts. To return to December ; of the heavy gales that have occurred there has been a preponderance of them during the first half of the month and if we consider the gales by weeks there is a marked absence of heavy storms during the third week, or between the 17th and 23rd, the number being about half what it was during any other period. As to the directions from which the low areas travelled the larger number in all the districts moved from the North-west Territories or the North Pacific Coast, the next largest number were from the region of the Gulf of Mexico. These latter bring the heaviest gales, although those that sweep into the Maritime Provinces from the Atlantic Ocean cause as a rule in that particular portion of Canada the most severe gales of the series, but fortunately their number is not large, 11 only occurred during the term herein treated of. As to the cause of the development of these great storms, many first show two well defined foci comprised in a long trough of comparatively low pressure, others again are the outcome of the coalescing of separate areas, one for instance from the North-west Territories combines with another one from the Gulf of Mexico and so on. It would almost appear that there is no connection between the average low area movement for the month and the average temperature, for in 1876 when of the five low areas that were experienced in Ontario three moved from the North-westward, the temperature for that month in Toronto was 9° below average, whereas in 1891 when of the five Lows experienced three moved from the North-westward, the temperature was 7° above the average. In the Lake Region the years giving the largest number of heavy gales were 1872, 1882, 1884 and 1885. In the St. Lawrence Valley and Gulf 1876, 1883, 1884, 1885, 1888 and 1891. In the Maritime Provinces, 1876, 1882, 1884, 1885 and 1890.—B. C. WEBBER.