

chosen, Edmonton, Calgary, Medicine Hat, Swift Current, Battleford, Prince Albert, Qu'Appelle, Minnedosa and Winnipeg, are each in the approximate centre of a district of fairly distinct rainfall and temperature characteristics. In the diagram they have been arranged in related groups of threes. In the first diagram for the Alberta group the weighted "Q" informs us strikingly that:—

(1) At Edmonton the variation throughout the period has remained within narrower amplitudes than at Calgary or Medicine Hat.

(2) The Calgary climate can be, agriculturally, much better or much worse than the Edmonton climate.

(3) Medicine Hat, although subject to violent variations, is always at a lower level than the other two districts.

(4) Despite all these peculiarities there have been major pulsations which are recognizably prominent in all three. From the late '80's the general average of soil moisture (if this interpretation of Qw is sound) gradually improved to reach a peak shortly after 1900; in 1901 at Edmonton and Medicine Hat and in 1902 at Calgary.

(5) From 1902 the general average slips downward, steadily at Medicine Hat but with occasional slight recoveries at Edmonton and Calgary. The bottom was reached in 1910 at Edmonton and Calgary but Medicine Hat had already bottomed in 1905 and stayed down till Edmonton and Calgary reached the lowest point.

(6) Thereafter some force seems to have rapidly pulled values upwards to a peak, in three years at Calgary, five at Edmonton, and six at Medicine Hat. Thence the trend is downwards to 1919. After irregular fluctuations there is a peak in 1927 followed by a plunge downward to the very poor annual values of recent date. The curve in 1932, although upward, may indicate only that we are starting a period of irregular fluctuations. The assumption that the values will be gradually mounting on the average is by no means certain but would appear probable.

If there are uniformly recurring periodicities in western weather, the smooth values given by the progressive method which produced Qw should make these periodicities very evident. We have seen that there have been long period pulsations affecting Alberta. Pulsations are periodic if they recur at regular intervals. If the intervals are irregular, there is no periodicity. This does not, however, preclude the possibility that the pulsations are due to the beats or interactions caused by simultaneous forces whose periods are mutually incommensurable. This latter possibility is, of course, beyond inquiry at the present time. All that our correspondents had in mind was simply a period such as the sun-spot period. Examining the curve we may take the intervals between peaks and between valleys.

The peak at Edmonton in 1893 appears anomalous but there is a common peak in 1888, one in 1901 or 1902, one in 1913, 1915 or 1916 and another in 1927 or 1928. Intervals are 13 or 14 years, then 11 or 14 or 15 according to the station considered, while the last interval is 11, 12 or 14. The average for the three stations is slightly more than thirteen years. The valleys are not certain at the beginning of the record but we recognize major ones in 1910, 1919 and 1930 or 1931. These give intervals of 9 and 11 or 12 years. If we consider the early one as having occurred in 1889 or 1890, we have another interval of 10 or 11 years. Medicine Hat and Edmonton, however, started with a valley in 1885 or 1886 so that the first interval is doubtful. All these intervals are so sufficiently close to the sun-spot intervals that one may say that a force going through approximately the same cycle as the sun-spot frequency affects prairie weather. This, however, becomes apparent only when the weather values are thoroughly smooth. Reference to Table 9 shows