spectively. Regarding the relations between pressure and temperature it is found that over southwestern Europe the epochs of low pressure slightly precede, about 0.3 year, the epochs of low temperature over the United States and Europe, while on the other hand, at the same time the pressure is high over western North America. Correlation between the pressure in Spain and the pressure at St. Paul, Minn., during the period 1875–1918 gives −0.41, while with the temperature at St. Paul the correlation is +0.65. There is also apparent a lag, or time interval, between regions differing in longitude and latitude. For example, the epochs at Portland precede those at Toronto by about 0.75 year, and St. Paul precedes New Orleans by about 0.35 year.

Bigelow and Lockyer employed solar prominence data to show solar relations with terrestrial weather. The prominence data are, however, inadequate, owing to the necessary limitation of the observations to the solar limb. I have employed, therefore, the Greenwich measurements, half-yearly means, of the mean heliographic latitude of the entire spotted area since 1875. When an 11-year variation is eliminated and minor fluctuations smoothed out, there is disclosed a well-defined cycle, averaging 2⅓ years, during which period the excess of spots shifts from one hemisphere to the other and back again. When a curve of these solar variations in latitude is compared with a curve of temperature, as for example, St. Paul, it is apparent that each epoch of low temperature is preceded by a corresponding epoch of spot excess in the Northern Hemisphere, the average interval of time intervening being about 1.25 years. This time interval varies with the Brückner cycle, being about three-fourth year in 1880 and 1915 and 1¾ years in 1895. Correlating the solar and temperature data for the period 1875–1923 for simultaneous values and also for successive lags in the temperature data varying by half-yearly intervals, the following results are obtained. For simultaneous values the result is set opposite zero in the tabulation below; shifting the temperature curve to the left in successive half-year intervals the results are as shown. Values for the solar Northern Hemisphere are called +.

0	+0.40	6	−0.63
1	−.51	7	+.15
2	−.56	8	+.60
3	+.26	9	+.31
4	+.60	10	−.50
5	+.15	11	−.31

This table shows that the phases of the two curves come into approximate conjunction and opposition with each other as the temperature curve is successively shifted to the left, on an average of about every 2¼ years, since the maximum correlation coefficients of like sign occur about 4½ half-yearly intervals apart.

Wolfer's smoothed sunspot numbers since 1750 when plotted, and the primary 11-year variation graphically drawn thereon to smooth out the minor fluctuations, disclose secondary maxima averaging 2¼ years apart, with epochs corresponding to terrestrial temperature epochs at definite average time intervals therefrom. While owing to the nature of the early sunspot observations these epochs are not quite as satisfactory as the epochs since 1875, there is sufficient evidence to indicate that the cycle has persisted since 1750, and that its length has varied synchronously with that of the meteorological cycle.

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