

Exchanges of clock signals with the Toronto Observatory were made on 18 nights. After correcting for known errors and for personal equation, the average of the differences obtained between the mean-time clocks of the two observatories is $0^{\circ}.29$, and the greatest difference on any one night was $0^{\circ}.72$. The comparisons for the year show that the probable error of the time as given by one observatory at any time, as compared with that given by the other is $0^{\circ}.12$. The exchanges on seven nights were found to be favourable to the measurement of "wave time," and give a mean result of $0^{\circ}.027 \pm 0^{\circ}.002$ for about 335 miles of No. 10 iron wire, under the conditions of an ordinary telegraph line.

Sunspots.—The alterations of the photoheliograph for the production of 4 in. images—as explained in last year's report—were completed in August, but little work has been done with the instrument owing to the present period being one of minimum spots. All the spots visible on the sun during the year, were observed by projection on a screen attached to the Blackman telescope. "Thompson's discs" were employed for the purpose, and the latitude and longitude of each spot read off with approximate accuracy. A summary of the results of these observations is presented herewith.

Soil Temperatures.—The apparatus for the observation of the temperatures of the soil at various depths has been in operation since October. The following is a brief description of the method:—Couples of copper and iron are placed in the ground at the required depths. A wire passes from each couple to a switch-board in the observing room, and there is a return wire common to all the couples, which, in the observing room passes through a delicate galvanometer and a couple similar to those in the ground, to make connection with the other wires at the switch-board. The galvanometer is made to read zero on the circle when the circuit is open. If now the circuit be closed at the switch-board the needle will be found to deflect, but may be brought back by bringing the inside couple to the same temperature as that in the ground. For this purpose the inside couple is immersed in water, or in winter, in a mixture of snow and water. When the balance is established, the temperature of the water is the same as that of