The Solar Rotation.

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General.

1. A paper published by the authors in last year's Transactions bearing a similar title gave a brief historical summary of the previous work in the determination of the Solar Rotation by the Doppler displacement of the spectral lines at opposite limbs of the sun. It described the instruments and methods employed in obtaining the spectra, the difficulties encountered, and the precautions required for accurate work. It also gave some preliminary measures of the velocity at the solar equator, but refrained from discussing, except very slightly, these results. The present paper contains the results of the measures of the three series of rotation plates made during the year 1911, and a discussion of the various points of interest and value arising from these results. It has not been thought necessary to again describe the instruments and methods as reference can be made to the previous paper.* It may, however, be well to state here that, although the determination of the rotation of the sun by the spectrographic method was, as early as 1905, planned as one of the investigations to be undertaken at the Dominion Observatory, delays in the construction of the shelter for the coelestat telescope and especially the long delay in obtaining a suitable grating prevented much work being done until last year.

2. The whole plan was placed upon a much more definite basis at the Mount Wilson meeting of the International Union for Co-operation in Solar Research in 1910, where the regions of spectrum to be investigated were allotted to the different members of the Rotation Committee, a general region to be observed by all was selected (centre at $\lambda 4250$) and the various questions to be determined were laid down. It may be useful to summarize here the principal points.

(*A*) The region to be observed at the Dominion Observatory is in the yellow green, $\lambda 5500$—$\lambda 5700$.

(*B*) The general region to be observed by all is from $\lambda 4220$ to $\lambda 4280$ in the violet.

* Transactions Royal Society of Canada, 1911, Sec. III, p. 107.