tions. Their publication has been delayed in the hope that, with the aid of certain special apparatus, the factors of photographic action, personal interpretation and characters of the spectra blended, could be thoroughly investigated; however, since the results already obtained are quite definite and seem important, they are herewith published.

The method of taking the plates was to expose for a number of seconds, l, on the limbs, using the 23 foot spectrograph with the equipment for observing the rate of the solar rotation by photographing spectra of two opposite limbs simultaneously,* then to move the sun's image so that the centre of the disc fell on the two limb windows in turn, exposing for the same time, c seconds, through each. These times are given in the following Table of Observational Data, for exposures (1) to (10). Exposure (1) is of the limbs alone: exposure (10) consists of a centre strip of spectrum from the centre of the disc, and two outside strips from the receding limb of the sun. In the first column of the table are given the numbers of the plates; in the second the position angle of the limb observations, *i. e.*, the angle between the equatorial diameter of the disc and the diameter joining the limb windows; in the third the ratio of distance of limb window from centre to radius of disc. From exposures L915 (10) and L917 (10) it is deduced that equal densities of continuous spectrum are obtained by exposures of 50 seconds from a point 0·97 of radius from centre and 21 seconds at centre; and from Abbot's "The Sun," p. 107, it follows that the intensities of these two points for λ5600 are in the ratio 1 : 1·8. Consequently, Density = Intensity × time$^{0.7}$ for the Cramer's Iso. Process plates used. Hence, in an exposure of l seconds, limb, followed by an exposure of c seconds, centre, the ratio of density of the *continuous spectrum* from the limb exposure to the total density of the exposure, is,

$$R = c_1^{0.7} : (c_1 + c)^{0.7}, \text{ where } 1{\cdot}8\, c_1^{0.7} = l^{0.7}$$
$$= l^{0.7} : (l + l_1)^{0.7}, \text{ where } l_1^{0.7} = 1{\cdot}8\, c^{0.7}.$$

* Report of the Chief Astronomer, 1910 and 1911.