

trum, is 49.9, and the mean of the last seven, exposed for the emission spectrum, is 44.2. This difference may be due to two causes, either an actual change in the position of the centre of intensity of the bright $H\gamma$, or an apparent change due an unsymmetrical broadening of the line on the plate, caused by the over exposure of a bright line whose curve of intensity is not similar on each side of the centre. In the case of the first six plates, in which the emission lines are over exposed, the velocity obtained is greater, indicating that the setting of the microscope wire had been further to the red than in the case of the last seven. Mr. Harper, to whom I am indebted for the measurement of these plates, tells me that in each case he set the wire as nearly as possible on the centre of the broad black line and no attention was paid to the tips. This would indicate that the emission line was slightly asymmetric towards the red, thus shifting the setting towards the red with increased exposure, and the displacement is not likely due to an actual change in the position of $H\gamma$ itself.

There is a remarkable agreement between the mean velocity 44.2 kms. obtained from the last 7 plates, and the mean velocity 44.4 kms. found by Prof. Campbell from 6 plates made by him in November 1898, when, as he says, the lines appeared nearly monochromatic, with a faint broadening or companion to the red side, practically of the same character as observed here. This would tend to show that the conditions in the star under which the bright $H\gamma$ lines are produced, tend to repeat themselves at different maxima, so far, at any rate, as the displacement is concerned, although the relative intensity of the different members of the H series is widely different.

No trace can be found, however, in these spectra of the bright Fe lines at 4308.081 and 4376.107, recorded by Profs. Campbell and Stebbins, but there are no fewer than 8 lines between $H\delta$ and λ 4235 which have every appearance of emission lines. They stand out as isolated narrow bright lines in a fairly uniform strip of absorption spectrum, with an intensity at least twice as great as the back ground of spectrum in which