

NOTE ON THE SPECTRUM OF NOVA AQUILÆ No. 3

The following note contains a brief description of the character of the spectrum on four dates in 1919 and one in 1920, and includes also a more definite determination of the position of the $H\beta$ emission band in 1918.

The new plates were taken at this observatory with the single prism camera in general use, using Seed 30 plates. They are as follows:

Plate No.	Date G. M. T.	Exposure	Mag.	Remarks
2087	1919, June 3-927	20 ^m	7 $\pm$	image very blue
2155	June 18-878	60 ^m		
2473	July 21-818	40 ^m	7.0	
2925	Sept. 12-696	60 ^m	7.5	image "electric" blue
4149	1920, April 23-986	60 ^m		

Since the autumn of 1918 the spectrum of the nova has undergone slight modifications in the region covered by our plates, namely from $\lambda 3900$ to $\lambda 5100$. These changes may be summed up by stating that the hydrogen emissions have vanished—disappearing first from the violet end of the spectrum—and the nebular emissions are more complicated by reason of numerous absorption lines crossing the bands. The emission band, which extended roughly from $\lambda 4600$ to $\lambda 4700$, was very faint in 1919 relative to the other emission bands, and barely a trace of it is seen on the 1920 plate, although all plates could with profit stand more exposure. The continuous spectrum, which at the close of 1918 was almost a negligible quantity, was fairly strong on the plates of June, 1919, but became very weak on the remaining plates. Whether this variation was co-incident with variations in its light similar to that of July, 1918, cannot be stated, as definite determinations of its brightness were not made here. The magnitudes quoted in the table above are very rough estimations, probably within 0.5 m., but it will probably be found when the definite light curve for that year is published that there is such a connection between the two phenomena.

The main portions of the N_1 and N_2 emission bands are well defined, about 12 angstroms in width, with centres at 5007.3 and 4959.5 respectively. The 4363 band is about 55 angstroms wide and its centre is approximately 4364. A noticeable feature of the spectrum is the presence of narrow, apparently isolated, emission strips about 27 angstroms to the violet of the normal position of the bands. Interpreted as velocity displacements they represent an approach of 1750 km. per sec. and thus are identical in position with the least displaced set of absorption lines when they reached their maximum displacement about the end of June, 1918. The impression one gets from a casual inspection of these bands is that these isolated strips are really the violet edges of bands approximately 55 angstroms in width, which have been "eaten out" by absorption, leaving only these strips and the central section of 12 angstroms width.