

THE SPECTRUM OF RS OPHIUCHI DURING THE 1958 MAXIMUM

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L. GRATTON and J. LANDI-DESSY

The recurrent Nova RS Oph brightened to the 6th magnitude between July 13 and 14 1958. This is the third observed outburst of this variable; the other two occurred in 1898 and 1933 (Cecchini and Gratton 1941).

The news of the outburst reached Córdoba the 15th of July and a dozen of spectroscopic plates were obtained by the Authors from July 15.9 to July 25.0 at Bosque Alegre with the standard equipment (60" Reflector, grating spectrograph with a dispersion of 42 Å/mm). During the time of the observations, apparently, the star reached a maximum (around July 18) and began to fade slowly.

Most unfortunately the weather was not very favourable and due to the fact that the plates received were a little too thick, many of them were found broken in the plate-holder.

However, the observations enable us to form a good picture of the spectrum of RS Oph at the 1958 maximum. During the time of our observations, the spectrum did not show very great changes.

Two very diffuse displaced absorption systems were observed at about - 2200 km/sec and 4200 km/sec, accompanied by a very broad emission line, as it is usual in Novae. The more displaced system could be measured from H_{α} to H_{δ} and for $\lambda 4471 H_{\delta} I$; the less displaced system could be followed also to H_{β} and H_{γ} .

The Ca II interstellar lines (λ and κ) were rather sharp and strong, giving a velocity of around - 35 km/sec.

But the most striking feature of the spectrum (which as far as we know was never seen in other Novae) was a system of sharp absorption

and emission lines, which were better observed for H_{α} , but could be measured also for H_{β} and H_{γ} . The whole system consisted of a narrow absorption line corresponding to a velocity of -73 km/sec flanked at both sides by two sharp emission components; the violet emission, rather faint, showed a velocity of -162 km/sec, while the red component, which was very strong, had a velocity of -3 km/sec.

During the observations the sharp absorption and emission lines grew fainter; the emission was last seen on July 18th and the absorption one day later. At the same time the broad emission took an aspect practically identical with that observed in 1933 (Mc Laughlin 1933).

While the general model of expanding shells can evidently represent the broad absorption and emission features, the sharp components present a difficult problem. Clearly these are produced in a shell which lays outside those producing the broad emission, since they are seen superimposed upon them. We must, then, assume that this shell existed before the 1958 outburst. On this connection one must remember that in 1933 the H-lines showed two sharp absorption components at -50 and -200 , while the FeII-lines had one single component at -170 .

The general profile (a central absorption with two emission wings) strongly suggests a rotating shell or ring. In this case the absorption velocity of -72 km/sec would correspond to the velocity of the star. But, in this case, the velocity of rotation would come out as high as 70 km/sec, which seems much too high for a stable rotating ring rather far from the star surface.

On this connection one may recall that in 1941 Swings and Struve (1941) found a symbiotic spectrum consisting of an M (or late K) component and a system of rather sharp emission lines analogous to that observed in stars like Z And, the main difference being that of the degree of excitation. The radial velocity from absorption and emission lines in the period between the 1933 and 1958 outburst was practically the same (R.E. Wilson 1953) about -40 km/sec; no variations are recorded.

B I B L I O G R A P H Y

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