and inclined to the plane of the eclipsing orbit. Such a ring may well be semi-transparent; and an eclipse by it should be capable of producing a perfectly flat minimum. Moreover, if the particles constituting it are large in comparison with the wave length of visible light, an extinction caused by them should indeed be non-selective. On any plausible assumption as to the probable size of such particles and their composition, the mass of a ring adequate for producing the observed minima should be between 10^{27} and 10^{28} g. As to the secondary component itself, we seem to know virtually nothing about it save that its mass must be comparable with that of the principal component (and, therefore, probably quite large), and that its effective temperature must be low enough—probably less than a few hundred degrees K—to enable it to escape detection by lead-sulphide cells.

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McDonald, Jean K. Electronic computing machine methods applied to the problem of model stellar atmospheres.

Making use of the Ferranti electronic computing machine of the McLennan Laboratory of the University of Toronto (FERUT), it has been possible to undertake an improved method of constructing a model of a non-grey stellar atmosphere, that employs the variational method for solving the integral equation for the source function. The monochromatic source function is represented by an expansion in terms of the exponential integral functions, and the integration with respect to frequency of the equation representing the monochromatic flux in terms of these functions provides for each value of optical depth in the atmosphere an equation that expresses the constancy of flux as a minimum condition. This set of equations, combined with the equations representing the radiation at any optical depth, may be solved by least-squares procedure to provide an improved temperature-depth distribution that may be expected upon repetition of the process to converge to a distribution that ensures a constant flux.

In the course of the investigation of early-type models at present under way, tables have been prepared for publication, of the Planck function and of the absorption coefficient for a pure hydrogen atmosphere, for sixty-four values of frequency in the range 100 Å to 25,000 Å and of one hundred

and four values of temperature in the range 15,000° to 50,000°K.

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McLaughlin, Dean B. The Orion absorption spectra of two novae.

Orion spectra have not been reported previously for the two novae discussed here.

Nova V 528 Aquilae (1945). This nova reached magnitude 6.9 at maximum on August 26 and declined 3 mag. in 35 days. Secondary oscillations though small were probably real. Observations beginning August 31 showed a normal and smooth spectral development. Velocities of principal and diffuse enhanced systems are given in Table I.

TABLE I. NOVA AQUILAE 1945: ABSORPTION VELOCITIES (KM/SEC)

Date, UT	Principal		Diffuse enhanced	
	II ₁	II ₂	III ₁	III ₂
Aug. 31	—1135		—2040	
Sept. 5	—1180	—1370	—2085	—2280
12	—1210	—1460	—2215	—2520
20	—1270	—1555		—2635
Oct. 2	—1250	—1630		

Weak Orion lines first appeared Sept. 4. By Sept. 12 several lines were present, but on Sept. 21 the Orion system suddenly developed maximum strength which lasted, with variations, until Sept. 30, then rapidly weakened. Numerous lines of HeI, OII, and NII were present, but NIII was not surely recorded and no "nitrogen flaring" was observed. Velocity was about —2500 km/sec with slight changes until Sept. 17, but individual lines were discordant. Oscillations then set in, as shown in Table II. Such oscillations characterize Orion spectra of novae that have large secondary light variations, but it is remarkable to find them associated with a fairly smooth decline. Nevertheless, the changes, Sept. 24–27, anticipated by a few days a small but definite brightening. Similar correlations have been noted in other novae. CP Lacertae 1936, with a smooth decline, also had an Orion spectrum that oscillated strongly.

TABLE II. NOVA AQUILAE 1945: ORION VELOCITIES (KM/SEC)

Date, UT	Velocity	Date, UT	Velocity
Sept. 17	—2485	Sept. 25	—2505
18	—2675	26	—2295
19	—2600	27	—2160
20	—2570	30	—2285
21	—2460	Oct. 2	—2280
24	—2745		

Nova V 450 Cygni (1942). This star of Nova Herculis type was discovered nearly 3 months