ena that now appear puzzling. It is hoped that the long series of images of the past years will greatly expedite the study and interpretation of the spectrum observations with rapid, high dispersion instruments. There are recurrences of identical or practically identical forms of the entire nebula with several such instances at intervals of years, but such changes cannot be called periodic. It may be possible to correlate spectral characteristics with certain forms of the nebula, and with the magnitude of the nucleus which has not undergone variations in brightness to exceed about two magnitudes.

Dr. Slipher's observations of the spectrum of this object in 1916 resulted in the interesting discovery that the outlying nebulosity was illuminated by the irregular variable star (R Monocerotis) at the apex of the nebulosity. The spectra of the star and nebulosity were identical and unusual, that of some novae in the early stages (Nova Aurigae 1892, and also a later one can now be added in Nova Herculis 1934). He reports the spectrum had retained this characteristic up to the time of his last observation in 1939.

It is expected that a memoir on NGC 2261, illustrated with an extensive series of 42-inch reflector photographs, will be published before long. It is thought that a series of images on films, showing more detail in the structure of the nebulosity, should be useful for students and investigators occupied with this object.

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McDonald, Jean K. The spectroscopic binary HD 193611.

The star HD 193611, magnitude 9.2, type Bo.5, was discovered to be a binary by Dr. J. A. Pearce from a spectrogram obtained on September 29, 1947. To date, radial velocity measures of 31 spectrograms appear to be satisfied almost equally well by either of two periods: 1.1814 days and 2.8815 days. The brighter component being determined by line intensity measures, the distribution of its velocities appears to favor the longer period, as do the radial velocity measures of the most recent plates obtained on June 4, 1948.

Orbital elements determined on the basis of the longer period are as follows:

$$\begin{array}{ll} P = 2.8815 \text{ days} & m_1 \sin^3 i = 14.2 \odot \\ T = \text{JD } 2432458.777 \pm 0.878 & m_2 \sin^3 i = 14.4 \odot \\ e = 0.006 \pm 0.010 & A \sin i = 18.1 \times 10^6 \text{ km.} \end{array}$$

$$\begin{array}{l} \omega = 195^\circ \pm 110^\circ \\ V_0 = -11.1 \text{ km./sec.} \pm 1.7 \\ K_1 = 230.2 \text{ km./sec.} \pm 3.2 \\ K_2 = 226.9 \text{ km./sec.} \pm 3.2 \end{array}$$

The distance of the system, deduced from the measured intensity of the K line is 1500 parsecs. From considerations of the absolute magnitudes and projected masses, the orbital inclination is predicted to be $i = 77^\circ$, and a small partial eclipse is definitely indicated. It is hoped that the star will be observed photometrically so that the absolute dimensions of this important system of large mass may be determined.

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McLaughlin, Dean B. The emission band structures of Nova Persei 1901 and Nova Geminorum 1912.

Abridged tabulations of velocities of maxima, minima, and edges of bands are given in Tables I and II.

Nova Persei (maximum, 1901, Feb. 23). The bands appeared less than a day after maximum. Increase of displacement of red edge p for two days is attributed to decreasing occultation by the star. The most prominent structures, maximum c and minimum d, were present Feb. 25. Most others appeared within two or three days and continued with only slight changes of position into the nebular stage. All were still present 18 months after maximum. In 1933-1937, maximum c was localized in the brightest part of the nebula.

Nova Geminorum (maximum, 1912, Mar. 14). An outer emission wing, edges a and y, shrank inward and joined the main band during the first week. Its interpretation is uncertain, but a second eruption, retarded either by gravitation or by collision with the principal shell, is suggested. The main band appeared a day after maximum light, and its edges, d and w, remained nearly fixed. The structure pattern required several days to become stable. Thereafter, during 10 months, only moderate changes of position occurred. Although more than one burst is a possibility, the principal shell was fully developed within four days after maximum. The maxima f and u were very strong in the nebular stage.

The minima in the bands of both novae were equally strong in hydrogen and nebular lines, and were therefore true emission minima, not absorption lines.