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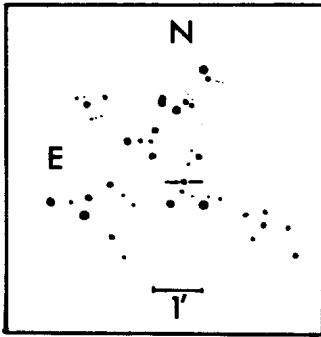
TWO NEW PROBABLE SYMBIOTIC STARS WITH VARIABLE SPECTRA

Sanduleak and Stephenson (1972) have recently reported five stellarlike peculiar emission-line objects having very strong [OIII] $\lambda 4363$ emission. A comparison of their blue objective-prism spectrum of one of these, Henize 38 (Henize 1967), with a description by Webster (1966) based on narrow-band photoelectric photometry led them to conclude that the spectrum may be variable and that the object may be a symbiotic star with exceptionally strong $\lambda 4363$ emission. Webster had classified this object as a probable planetary nebula, and it is listed as 280-2⁰1 in the Catalogue of Galactic Planetary Nebulae (Perek and Kohutek 1967). We have available two IIA-0 objective-prism plates of Henize 38 taken nearly four years apart with the University of Michigan's Curtis Schmidt-type telescope at the Cerro Tololo Inter-American Observatory, and they confirm the variable nature of the spectrum mentioned by Sanduleak and Stephenson. The first of these was taken in May 1967, and four emission lines are present: H β , $\lambda 4686$, $\lambda 4363$ and H γ . If the density of $\lambda 4363$ is taken as 1.0, then H γ = $\lambda 4686 \approx 1.2$, and H β ≈ 2.5 ; the excitation class on the Aller system (1956) is 7. The second blue plate was taken in February 1971, and the emission lines present are: $\lambda 5007$, H β , $\lambda 4363$, and H γ . Taking the density of H γ as 1.0, then H β $\approx \lambda 5007 \approx 2.0$, and $\lambda 4363 \approx 3.0$; the Aller excitation class is 2 or 3. On neither plate is there evidence of a continuum.

We also have available a red (O98-02 + RG 1; taken April 1972) and two low-dispersion near-infrared (I-N + W 89B; taken March 1970 and April 1972) plates of Henize 38. On the red plate there may be a faint continuum present and there are four faint emission lines in addition to the strong emission at H α ; Henize (1967) made no mention of emission lines other

than $H\alpha$, and Sanduleak and Stephenson mention the presence of $\lambda 6300$ of [OI] which is one of those we see. The other line that can be identified with certainty is $\lambda 6678$ of He I. Measures of the remaining two emission lines on the plate (420 A/mm at $H\alpha$) place them near $\lambda 6080$ and $\lambda 6850$. The dispersion curve for this spectral region was determined from measures and a line list of Eta Carinae (Gaviola 1953). A suggested identification for the shortward line is a blend of [Fe VII] and [Ca V] at $\lambda 6085.5$ and $\lambda 6085.9$, respectively. According to Merrill (1950) the forbidden iron line is present in spectra of the symbiotic stars CI Cygni and Z Andromedae; we have a northern red objective-prism plate of the latter star and, indeed, the wavelength coincidence is exact for the line near $\lambda 6080$ in Z And and Henize 38. We have no suggested identification for the line near $\lambda 6850$ in Henize 38. The near-infrared plates (3500 A/mm at A-band) of this object show a very strong continuum, particularly beyond $\lambda 8000$, however no TiO bands are evident.

The other object we wish to report as a probable symbiotic star is uncatalogued. It was found on a IIa-O objective-prism plate (taken in July 1969) and has $\lambda 5007$ and $\lambda 4363$ emission with perhaps a trace of $\lambda 4959$ and $H\gamma$ emission and no continuum; if the density of $\lambda 4363 = 1.0$, then $\lambda 5007 \approx 1.2$. The approximate position for 1900 is: $17^{\text{h}}38^{\text{m}}9, -2^{\circ}04'$. We have no red or infrared plates of this object. Sanduleak (1972) has examined the object on two low-dispersion blue objective-prism plates taken with the Burrell Schmidt telescope of Case Western Reserve University and reports that the emission lines are absent on the plate of June 2/3 1959, but that on June 25/26 1959 there were three emission features present: if the density of $H\beta = 1.0$, then $\lambda 5007 \approx 1.5$, and $\lambda 4363 + H\gamma \approx 3$. The densities on the latter plate indicate a substantial change from those mentioned above. Sanduleak also has a red objective-prism plate showing sharp $H\alpha$ emission with no continuum.



The finding chart for this object was drawn by hand from the red print of the Palomar Sky Survey; the object is 153.5 mm W of the E edge and 62.8 mm N of the S edge of the red print at $0^{\circ} 17^{\text{h}} 36^{\text{m}}$. Examination of the object on the blue and red Palomar prints shows that it is brighter in the red and that there is some faint nebulosity associated with it.

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