blending by physical causes of these components. The line $\lambda 5696$ in carbon stars, identified as due to CIII, has been observed to have a short wavelength component, $\lambda 5681$, which has been tentatively identified with the $3s^3P^0-3p^3D$ transition of NII. If such an identification is correct, one would expect the transition $3s^3P^0-3p^3P$, $\lambda 4630$, to be observable and of medium intensity. The observation of this line is difficult because of the violet-absorption edge of $\lambda 4650$ due to CIII. Nevertheless, the line has been detected in BD 35°4013.

The occurrence of central reversals in Wolf-Rayet stars is a rare phenomenon. The spectrograms of BD 35°4001 reveal a deep core for $\lambda 4686$ HeII, and a faint one for $\lambda 5411$ HeII. These might be central reversals or they may possibly be due to a non-uniform distribution of the emission on the stellar surface.

Intrinsic variations of the spectral lines, as has been shown by Struve¹ to exist in HD 151932, have been found in two stars of the nitrogen sequence, BD 37°3821 and BD 35°4001. The emission line $\lambda 4603$ Nv and its violet-edge experience changes in intensity. The line $\lambda 4640$ of NIII, and the NIII lines blended with $\lambda 4542$ HeII as well as $\lambda 4471$ HeI also show marked fluctuations.

In the case of the eclipsing variable CQ Cephei, the profile of $\lambda 4686$ HeII has been determined at different phases. While changes in form and intensity are immediately apparent, no marked asymmetry, as has been found by Beals² for $H\alpha$ in V444 Cygni, has been found here. The intensities of the band $\lambda 4640$ have a curve of variation with phase, similar to the $\lambda 4686$ light curve derived recently by Hiltner.³ The line $\lambda 4058$ NIV has marked violet absorption edges at both primary and secondary minima. The changes in intensity of $\lambda 4542$ and $\lambda 4471$ are similar to those found by Münch⁴ in V444 Cygni.

1. *Ap. J.* **100**, 198, 1944.

2. *M. N.* **104**, 205, 1944.

3. *Ap. J.* **112**, 477, 1950.

4. *Ap. J.* **112**, 266, 1950.

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Blanco, Víctor M. Mean distances in single line binaries.

The distribution of mean distances is obtained statistically for a group of single-line spectroscopic binaries whose primaries are approximately constant in mass and in the spectral class group B8-A5. The study is based on mass func-

tions, masses of the primaries from the mass-luminosity relationship, and the assumption of random orbital inclinations. A marked increase in the number of cases is found for mean distances greater than 7×10^6 km. The possibility of a correlation between the mass ratios and the mean distances is investigated and an expected slight correlation observed.

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Blitzstein, William, Frank Bradshaw Wood and Bernard T. Svihel. Attempts to detect high-frequency light oscillations in stellar atmospheres.

A little-used property of the multiplier photocell is its ability to detect very high-frequency light intensity oscillations. The response is linear up to approximately 100 megacycles per second where transit time effects become appreciable.

If the output of the photocell is connected directly to the antenna terminals of a communications receiver, we have a simple means of detecting light oscillations at a given frequency. A multiplier cell exposed to a steady source will generate wide band noise. If the source is modulated at a given frequency, the output of a receiver tuned to that frequency will consist of response to the wide band noise plus response to the modulation. If the modulation is sharply peaked at any given frequency, the receiver response at that frequency will be quite sensitive to such modulation. Thus if a steady source is compared to one modulated at certain frequencies, a plot of receiver output as a function of frequency will show marked differences in the two cases.

Because such apparatus could be easily assembled, it seemed worthwhile to attempt to detect high-frequency light oscillations in stellar atmospheres. The tests consisted in obtaining plots of receiver output versus frequency for various objects and comparing them to that obtained for a steady light. Objects tested included high and low velocity dwarfs, shell stars, magnetic and spectrum variables, supposedly normal stars, and one galactic nebula. Tests were also made on small areas of the solar disk at various distances from the center and on members of the recent large spot group. The frequency range tested was from 500 kilocycles to 30 megacycles per second.

In all cases the results showed no detectable modulation. We compute that in the case of a 2nd magnitude star, a one per cent modulation would have been detectable; by suitable modi-