macroturbulence, not rotation, even for stars of types as early as A and F; and (4) among classical Cepheids, rotation and pulsation are observationally incompatible phenomena because Cepheids are descendants of nonvariables of very slow rotation.

A Lunar Occultation of the Crab Nebula at 1420 Mc/sec. T. KRISHNAN AND S. H. ZISK (present address: Research Laboratory of Electronics, MIT), *Stanford Radio Astronomy Institute*, AND D. D. CUDABACK, *Radio Astronomy Laboratory of the University of California, Berkeley*.—A lunar occultation of the Crab Nebula at 1420 Mc/sec has been observed with the 85-ft paraboloid at the University of California's Hat Creek Station in July 1964. Strip brightness distributions at position angles 115° and 241° are derived from Scheuer's restoration technique and close correspondence, in detail, with Woltjer's optical continuum isophotes is demonstrated. Deductions regarding the electron distribution in the supernova envelope are made.

The precise position of the 50% point of the occultation curve is derived as (1950.0 coordinates)

R.A: $05^{\text{h}}31^{\text{m}}30^{\text{s}}5 \pm 0^{\text{s}}1$

Dec: $+21^\circ59'01''.0 \pm 3''.0$.

Eclipse Observations of the Wolf-Rayet Binary, V444 Cygni. LEONARD V. KUHI, *Berkeley Astronomy Department*.—The intensities of emission lines from 3200 to 11 000 Å produced in the Wolf-Rayet atmosphere have been measured photoelectrically as a function of phase using the Mt. Wilson spectrum scanner as a narrow-band photometer. The eclipse of the WR component by the O-star indicates that the lines of He I, He II, N III and N IV do not share in the eclipse (0.2 mag. in the continuum) but vary irregularly by about 10% both in and out of eclipse. Only N IV 3483, C IV 5808 and N V 4609 seem to actually undergo any definite eclipse. On the other hand, during the eclipse of the O star by the WR component nearly all the lines decrease in intensity with the lines N IV 3483, N V 4609, and C IV 5808 showing the largest effect. The simplest interpretation implies that a geometrically smaller region is eclipsed for the lines of highest ionization, i.e., that the temperature decreases outwards from the star. The lack of eclipse effects for the lower ionization lines indicates that the emitting volume is extremely large. The decrease in intensity during the eclipse of the O star can only be interpreted as a reflection effect.

The depth of the continuum eclipse varies as a function of wavelength for the WR star but shows no wavelength dependence for the eclipse of the O

star. The latter confirms the previous work indicating that the WR envelope is primarily an electron scattering one. However, the former indicates that the opacity of the WR photosphere must decrease with increasing wavelength and hence that there is an additional source of opacity present.

In general the present observations do not permit a simple stratified model with uniform radial ejection or with equatorial ejection.

Velocity Dependent Non-LTE Line Source Function. JOHN L. KULANDER, *General Electric Company*.—The non-LTE line source function is obtained in a plane-parallel semi-infinite atmosphere in which there is an ordered macroscopic motion in the direction of the normal to the surface which is a discontinuous function of depth. A two-layer model atmosphere containing different uniform ordered velocities in each layer is considered. A constant temperature and a two-level atomic model are assumed. The depth and magnitude of the velocity discontinuity are varied along with the photon diffusion length and the amount of continuous opacity. Solutions for the emergent line intensity are compared with those obtained by using various limiting forms of the static two-layer atmosphere source function.

Assuming a Gaussian absorption profile a significant change in the source function is obtained in many cases for a velocity discontinuity of one-half Doppler half-width or less. If the velocity discontinuity occurs at a depth which is less than a photon diffusion length at the line center beneath the surface, the source function is raised in many cases above the static atmosphere value at all depths. On the other hand, when the discontinuity occurs at depths greater than a diffusion length at the line center, the source function may lie below the static atmosphere value at all depths.

Ionization Fronts for H II Regions with Magnetic Fields. BARRY M. LASKER, *Princeton University Observatory* (present address: Mount Wilson and Palomar Observatories).—Under simplifying thermodynamical assumptions the steady-state ionization fronts expected about H II regions having weak-to-moderate magnetic fields in their initial H I clouds are considered in the magnetohydrodynamic approximation. For R type ionization fronts, the supersonic ones expected to propagate directly into the undisturbed neutral gas bounding young H II regions, such fields have only small effects.

Larger effects occur for D type ionization fronts, the ones expected to drive strong shocks in older nebulae. If the shock is adiabatic, magnetic pressure in the H I shell between it and the ionization front