Spectra have been obtained of P Cygni, the Wolf-Rayet carbon stars HD 192641 and 193793, and the Wolf-Rayet nitrogen stars 192163, 193007 and 193576.

A single emission line superposed on the continuous spectrum of P Cygni agrees within the estimated error of determination, with the *HeI* line at $\lambda 10830$. The spectra of the WC and WN stars differ completely in appearance. In the nitrogen stars, the characteristic emission features are two lines at $\lambda 10060$ and $\lambda 10760$. In the carbon stars one emission appears to be the *HeI* line $\lambda 10830$, and another lies at $\lambda 9700$. In addition, the appearance of the spectrum at this low dispersion suggests a continuum due to numerous weak emission lines extending from $\lambda 10050$ to $\lambda 10830$. At the present time, the zero-point of the wave lengths has an uncertainty of about 40 Å.

*University of Michigan Observatory,
Ann Arbor, Mich.*

Miller, William A. Some details of the solar disk revealed by high-resolution, white-light photography.

A brief description of the 6-inch *f*/80 horizontal telescope located at Rocky Point, N. Y., is given. Photographs with white light on orthochromatic emulsions are shown. Seeing conditions are such that for about 30 per cent of the days when the sun is visible the resolution is limited only by the aperture of the instrument.

All photographs taken with this instrument show, as do those of Janssen, dark regions scattered over the surface of the sun. Area-number curves show that the most probable area is of the order of 8 to 9×10^6 km². Most of these areas are somewhat elliptical with random orientation and most probable oblateness of 0.5. This allows us to estimate that the most probable major axis of these dark regions of average size is about 7".5. Rough estimates of the lifetimes of these regions give 3 to 4 minutes as the lifetime of those regions of area approximately equal to the most probable area.

It is not inconceivable that these features may be identified with the chromospheric spicules.

*R.C.A. Laboratories Division,
Rocky Point, L. I., N. Y.*

Newkirk, Gordon, Jr. Carbon monoxide in the solar atmosphere.

Twenty-three solar lines of the first overtone vibration-rotation spectrum of carbon monoxide have been examined as to their equivalent widths

and their increase from the center to the limb of the solar disk. After reduction to equivalent widths in wave numbers and application of the appropriate correction factors, the center to limb increase of the lines was compared to that predicted by the Aller-Pierce and by the de Jager model atmospheres as calculated by the method of weighting functions.

For lines produced by the mechanism of pure absorption, the center to limb increase of the equivalent widths predicted by the Aller-Pierce model agrees with that observed. The increase given by the de Jager model corresponds to that observed only when high dissociation temperatures, in excess of the temperatures quoted by de Jager by about 1000° K, are assumed in the layers above an optical depth of 0.05.

Carbon abundances have been derived for the two solar models studied and for two different values, 11.11 e.v. and 9.60 e.v., of the dissociation potential of carbon monoxide.

This work has been conducted at the University of Michigan with the support of the Office of Naval Research.

*Upper Air Research Observatory,
Sacramento Peak, N. Mex.*

Pearce, Joseph A. The spectrographic binary HD 37043, ι Orionis.

The following orbital elements of this massive O-type binary, of high eccentricity, were computed by a least-squares solution from 39 observations secured near the nodes when the lines of both components could be measured.

Orbital Elements

$T =$	J.D. 2,429,999.610	± 0.0478
$P =$	29.13507 days	
$e =$	0.758	± 0.011
$\omega_1 =$	116°85	$\pm 1^{\circ}55$
$\omega_2 =$	296°85	$\pm 1^{\circ}55$
$V_0 =$	+26.6	± 0.83 km/sec
$K_1 =$	115.2	± 2.57 km/sec
$K_2 =$	195.8	± 3.91 km/sec
$m_1 \sin^3 i =$	15.9 $\odot$	
$m_2 \sin^3 i =$	9.4 $\odot$	

Spectrophotometric measures of the line intensities of $\lambda 4471$ on three spectrograms gave $I = 0.16 \pm 0.03$, corresponding to $\Delta m = 1.99 \pm 0.20$. Absolute magnitudes -5.0 and -3.0 were found for the components from the measured equivalent width of *H γ* on three spectrograms at the V_0 axis. An orbital inclination of $i = 48^\circ$ was estimated from the mass-luminosity relationship. The relative velocity of the stars at periastron, 740 km/sec, is the largest observed in any binary system, and is only 50 km/sec below the ve-