microturbulence at all line strengths studied. The line broadening constant has comparatively small influence in all instances. The percentage effect of the various influences on the profile parameters tends to decrease as the line strength increases.

Calculations for the three lines at six disk positions were compared with the observed profiles. The predictions with Schmalberger's model had the closest correspondence to the observations. However, the use of the Schmalberger microturbulence distribution in the author's model also gave good correspondence.

Relativistic Stability of a Magnetoturbulent Massive Star. A. G. PACHOLCZYK, *Joint Institute for Laboratory Astrophysics*.—It is shown that a massive object of the Hoyle-Fowler type (*Monthly Notices Roy. Astron. Soc.* **125**, 169, 1963) which developed a magnetoturbulent field through the mechanism proposed by Layzer (*Astrophys. J.* **141**, 837, 1965) can achieve the hydrogen burning stage before it reaches the relativistic instability point if its mass is smaller than 2.5×10^9 solar masses. Such an object will not collapse until it passes through the hydrogen burning phase releasing up to 3×10^{51} ergs of energy in 10^6 yr. The quoted numbers correspond well to those required to explain the observed radiation of extragalactic radio sources.

Shock Tube Measurements of the Oscillator Strengths of the 1932 Å Al I Autoionized Doublet and the Absorption Cross Section of the Ionization Continuum. W. H. PARKINSON AND E. M. REEVES, *Harvard College Observatory*.—The absorption cross section of the ionization continuum of Al from the series limit to 1850 Å has been measured and the f value of the $3s^23p\ ^2P^o-3s3p^2\ ^2S_{\frac{1}{2}}$ doublet of Al I has been redetermined. These measurements were made by photographic photometry of the time-resolved absorption spectrum through shock-heated mixtures of argon and a volatile aluminum methyl.

Review Paper: Achievements of Planetary Radar Astronomy. GORDON H. PETTENGILL, *Are-cibo Ionospheric Observatory*.

An Anomalous Bluing Effect in the B-V Colors of Distant A Stars. A. G. DAVIS PHILIP, *University of New Mexico*.—UBV photometry in a region at $b^{\text{II}} = -29^\circ$, $l^{\text{II}} = 76^\circ$ in Pegasus (Philip, *Astron. J.* **70**, 146, 1965) shows, that for A stars with distance moduli greater than 10.5, the color excesses

decrease as fainter stars are reached. At a distance modulus of 12.0, the color excesses are 0.2 mag. less than those at a distance modulus of 10.5.

The stars were each classified on an average of nine different Schmidt spectral plates, taken on Kodak IIaO emulsion with the Schmidt telescope of the Warner and Swasey Observatory. The probable error of the mean classification was ± 0.3 classes on the Case 4° classification system. The UBV photometry was done at Kitt Peak National Observatory on the 36-in. telescope. The probable errors in V and $B-V$ were ± 0.01 and ± 0.02 , respectively.

Eleven regions are now being investigated along the Carina-Cygnus spiral arm at $l^{\text{II}} = 76^\circ$, spaced from the north to the south galactic poles. Spectral plates have been taken in each region with the Case Schmidt telescope. All A0-A3 stars that have been found are now in the process of being observed in the UBV system at Kitt Peak National Observatory. The bluing effect in the color excess noted in the Pegasus region for the fainter A stars has now been found in four additional regions, at $b^{\text{II}} = 90^\circ$, 60° , 45° , and 30° .

Possible explanations for the effect, discussed in the report are: a systematic error in the classification of faint stars; uneven absorption, an effect that would tend to make the more distant stars appear bluer than normal; and population differences as distances greater than 600 pc from the galactic plane are reached.

This work is supported by the National Science Foundation.

Limiting Eccentricities for Stable Trojan Librations. EUGENE RABE, *University of Cincinnati Observatory*.—None of the known Trojan planets has an orbital eccentricity e exceeding 0.15, in contrast to a corresponding limit of about 0.54 for "ordinary" minor planets. Since some numerical integrations of Trojan trajectories, in the rotating frame of the restricted problem of three bodies, also suggest the existence of certain stability limits for the magnitude of the free short-period terms and thus of the heliocentric eccentricities, a high-order stability analysis seemed desirable. The earlier first-order results from Hill's equation are valid only for very small oscillations about the basic reference librations of long period (Rabe, *Astron. J.* **66**, 500; **67**, 382).

If the third-order powers and products of the displacements from the periodic reference orbit are considered in the differential equations for these superimposed fluctuations, the characteristic exponent ic becomes a function of the arbitrary amplitude a of the principal short-period term and thus of the nearly proportional eccentricity e . Complex values of c and