the denser areas. It is yet unknown whether the effect is real. It may well be due to (b).

High-Dispersion Search for Doppler Splitting of Spectral Lines in the Visual Binary $\Sigma 2173$.

FREDERICK R. WEST, *Ames Research Center*.—The visual binary $\Sigma 2173 = \text{ADS } 10\,598$ [$\alpha = 17^{\text{h}}\,27^{\text{m}}.8$, $\alpha = -1^{\circ}01'$ (1950)] consists of two stars of nearly equal brightness ($\Delta m_v = 0^{\text{m}}.1 - 0^{\text{m}}.2$), combined visual magnitude $V = 5^{\text{m}}.30$ (Eggen, O. J., *Astron. J.* **70**, 19, 1965) and spectral type G8IV-V (Harris, Strand, and Worley, *Basic Astronomical Data*, Vol. III, Chap. 15, 1963). The visual binary orbit has been determined by Duncombe and Ashbrook (*Astron. J.* **57**, 92, 1952). Recently Gray (*Astron. J.* **69**, 406, 1964) has studied this star astrometrically and has determined parallax, total and individual stellar masses, proper motion, and absolute magnitudes for the star. The Duncombe–Ashbrook orbit predicted the passage of the star through an orbital node near 1 January 1965. Therefore, two high-dispersion (8.9 Å/mm) spectrograms of $\Sigma 2173$ were obtained with the coude spectrograph on the 84-in. telescope at Kitt Peak on 13–14 and 15–16 June 1965. Measurement and microphotometer tracings of the spectrograms between $\lambda\lambda 4600\text{--}5400$ Å indicate no more than two stars in the system. Some line doubling appears. Preliminary analysis of 93 seemingly doubled isolated spectral lines gives a ratio of average Doppler splitting $\Delta\lambda_{AB}$ to zero velocity wavelength λ_0

$$\frac{\Delta\lambda_{AB}}{\lambda_0} = (4.16 \pm 0.05) \times 10^{-5},$$

$$(\Delta\lambda_{AB} = 0.208 \text{ Å at } \lambda_0 = 5000 \text{ Å}).$$

Hence a relative radial velocity

$$\Delta V_{AB} = 12.47 \pm 0.14 \text{ km/sec}$$

and with the Duncombe–Ashbrook orbit a parallax and total mass

$$\Pi = 0''.0607 \pm 0''.0007,$$

$$(m_A + m_B) = 2.24 \pm 0.08_{\odot}$$

with absolute visual magnitudes $4^{\text{m}}.9$ and $5^{\text{m}}.0$ for the components.

Nearly equal individual masses of about $1.1_{\odot}$ are much more in accord with the mass–luminosity law than Gray's masses of $1.9_{\odot}$ and $1.8_{\odot}$.

Comparison of radial velocity to tangential velocity shows $\Sigma 2173$ to be coming almost directly toward the sun and that it will be one of the sun's nearest neighbors in 200 000 yr.

Linear Polarization of the Emission from the OH Molecule. DAVID R. W. WILLIAMS, NANNIELOU H. DIETER, AND HAROLD WEAVER, *University of*

California, Berkeley.—The narrow OH emission features in the spectra of several, but not all, of the sources known to exhibit OH in emission have been found to be strongly linearly polarized. In contrast the OH absorption components in these and other sources do not show any significant polarization effects. In W3 the major component at 1665 Mc/sec is approximately 35% polarized, but it is found that the position angle and amplitude of the polarization curve varies extremely greatly from one 2 kc/sec component to the next. Also, for this source there appears to be a systematic change of position angle with the velocity of the component across the profile. At 1667 Mc/sec the major component shows a small amount of polarization. The OH source associated with NGC 6334 is also found to exhibit a large variation of phase and amplitude from one component to the next; at 1665 Mc/sec one component 75% plane polarized is found adjacent to one 90%, and having position angles different by 45° . The 1667 Mc/sec components are of the order of 50% plane polarized and greater especially at the edge of the profile, and the position angles show a random scatter.

Polarization sets for NGC 6334 were obtained on three occasions and it was found that the measured position angle agreed to within 10° over a period of five weeks and within 1° over a 10-day period. Evidently the phase stability of these source components and also the medium including the earth's ionosphere is of this order of magnitude and therefore cannot be invoked to explain the time variations.

The possibility that the observed polarized components are indeed the Zeeman component of the line has been considered but a comparison of the 1667 and 1665 Mc/sec spectra shows no correlation with the expected Zeeman pattern.

Metal-to-Hydrogen Ratios in the Magellanic Clouds.

JOHN A. WILLIAMS, *University of Michigan Observatory*.—Six long-period Cepheids in the SMC and five in the LMC have been compared to long-period, Population I Cepheids of the solar neighborhood using a four-color system of intermediate-band photometry similar to that of Strömberg. The observations were corrected for interstellar reddening using values of the color excess of the Clouds from the literature. The differences in line absorption are indicated by the differences in the metal indices, $\Delta m = m_{\text{SN}} - m_{\text{MC}}$, where SN is solar neighborhood and MC is Magellanic Cloud. For the SMC the average Δm is -0.03 ± 0.04 mag. For the LMC the average Δm is $+0.02 \pm 0.04$ mag. These values of Δm are in the sense that the SMC is metal rich and the LMC is metal poor. However, in view of the large probable errors, these values of Δm only indicate that the