ASTROPHYS. J., 396) to be a VV Cephei star. From 1980 it has been monitored photoelectrically by one of us (HF) and has shown a number of peculiar features. As this is two to three times the amplitude of most VV Cep stars we obtained IUE spectra to elucidate any characteristics of SD463+0003 which might account for this. Low dispersion spectra in both short and long wavelength regions were taken at a variety of phases. Analysis of the spectra indicates: 1) the hot component is a B2.5 star; 2) the spectra are very similar to IUE spectra of other VV Cep stars which show strong Fe II emission; 3) spectra at high maximum and minimum are essentially the same; 4) a short wavelength spectrum taken on the rising branch, just before maximum light, shows increased emission filling in absorption from 11800-1900 and a very strong emission feature at 14450 attributed to Fe II. Unlike the strong 11786 (Fe II) line which is caused by the B star's illumination of the M star's atmosphere, the 14450 feature may be caused by the shock wave of the M star's pulsating line of ionized metals.

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32.05 Period Determinations for 22 Southern Hemisphere Red Variables
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As part of a search for binaries among long-period, red variables in the southern hemisphere, we have determined the periods for 22 such objects based on observations made within the last decade. The magnitude data were derived primarily from plates in the Harvard College Observatory Damon series on the basis of eye-estimates made with respect to nearby comparison stars. The brightnesses of the latter were determined from image diameters measured on either POSS prints or ESO/ESO J-survey films using the calibrations of King and Raff (1977, Pub. A.S.P. 89, 120) or King et al. (1981, Pub. A.S.P. 93, 385), respectively. Standard UBV photometry was also carried out for these stars as an aid in assessing the accuracy of the photographic data. For the 7 stars for which periods were given previously by Kukarkin et al. (1986, General Catalogue of Variable Stars, 3rd ed.), we find agreement between the newly derived periods and the published values to within &lt; 17 days in all cases. Preliminary results for the remaining 4 stars having no prior periods are as follows: FU Hya - 381 days; E1 Tra - 274 days; V1161 Sgr - 176 days; and RX Mic - 239 days. Finding charts and light-curves for the less-well studied of these variables will be presented, and the uncertainties in the results will be discussed.

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32.06 The Effect of Dust on the Chromospheres of Cool, Luminous Stars
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IUE observations of 13 late-type, O-rich giant and supergiant stars have been used to study the effect of various amounts of dust on the chromospheric Ca II emission. Previous work has indicated an inverse correlation between the presence of chromospheric Ca II emission and (1) the amount of dust (showing and Doppler width of 1.27); (2) the dust/gas index of Hagen, Stencel, and Dickinson (1983, Ap. J., 274, 286) which is based on 9.7 micron emission and optical C II gas absorption features of the same stars (117). After interpreting this inverse relation as an indication that the chromospheres of the dustier stars might be completely "quenched" by the presence of the dust grains, however, our observations of the UV (2300-3000 A region) emission line chromospheric indicators of Mg II, Al II, and Fe II in spectra of these stars show that the chromospheric temperature rise is not completely quenched, even in the dustiest stars in our sample, but that significant alteration in the relative radiative loss patterns do occur. We present IUE data showing that the flux in these UV chromospheric emission lines, normalized by the stellar bolometric flux, is substantially smaller (-10^4) in those stars with a high dust/gas index, than in the less dusty stars. The data also suggest that the Mg II fluxes are more severely weakened than the A1 II and Fe II line fluxes. These observations are interpreted in terms of an instability that converts warm chromospheric gas into near-surface dust grains and cool gas capable of supporting molecular masling. This supports the dust-driven mass loss scenario for red giants and supergiants. This work was supported by NASA grant NAGS-62 to the University of Colorado.

32.07 Ultraviolet Observations of Metal Deficient Field Giants
A.K. Dupree, L. Hartmann (Harvard-Smithsonian CFA), G. Smith (DAO and Harvard-Smithsonian CFA)

Six metal deficient field giant stars (HD 6833, HD 110281, HD 135148, HD 165195, HD 230708, HD 178271) have been observed in the ultraviolet spectral region using IUE. Long wavelength (A2400-3000) spectra in the low dispersion mode were obtained for all objects; high dispersion spectra were acquired for two of the brightest stars (HD 6833 and HD 165195). In the coolest objects, emission in the Mg II (A2800) transition is clearly visible at low dispersion indicating the presence of magnetic activity and a stellar chromosphere. At high dispersion, the hotter stars HD 6833 and HD 165195 have detectable emission and line asymmetries indicative of mass outflow. While uncertainties in the reddening correction can be substantial, the derived Mg II surface fluxes are not notably different from those of luminous Population I stars. The atmospheric structure must adjust to produce similar Mg II fluxes in spite of the low metal abundances in these field giants.

32.08 A Survey of Hα Emission Among Metal-Deficient Giants
G.H. Smith (DAO), A.K. Dupree (CFA)

Echelle spectra of the Hα line have been obtained with the Mount Hopkins Observatory 1.5m reflector for a sample of some 50 stars from Bond's (1980, Ap.J., 245, 317) catalog of extremely metal-deficient red giants. The main results of this survey are:

1) Only giants brighter than Mv = -1.7 are found to exhibit Hα emission, in accord with a similar luminosity cut-off found by Cacciari and Freeman (1983, Ap.J., 268, 185) among globular cluster giants.
2) The emission profile varies from star to star. Some giants e.g. HD 230708, show emission in both the violet (V) and red (R) wings of the emission line, although one component is generally stronger than the other. A few stars e.g. HD 30 2611, exhibit emission in one wing only.
3) Both the emission strength and the sense of the V/R asymmetry may change on a timescale of months. In some cases e.g. HD 165 195, the emission may almost disappear.
4) The Hα absorption core may be asymmetric. Velocity shifts of the core are &gt; 7 km s⁻¹ among stars showing emission. More than 30% of these core shifts are &gt; 10 km s⁻¹, the likely measurement uncertainty.

Dupree, Hartmann, and Avrett (1984, Ap.J.Lett., 281, L37) suggest that the Hα emission arises in the chromosphere, particularly among stars with T &lt; 8500K. The variability of the emission might result from fluctuations in the amount of mass found in these layers, possibly as the result of stellar pulsation. The V/R emission asymmetries also imply the presence of mass motions in the line forming regions. In this regard, it is interesting to note that the Hα emission giants occupy a similar luminosity regime in the color, magnitude diagram to the short period, semi-regular yellow variables.

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