29.19.05 Extension of Line Identifications in Arcturus Shortward to 22500A. K.G. CARPENTER, Ohio State U., R.E. STENCHILL, J.I.I.A., and R.F. WING, Ohio State U. We have obtained 22500-29300A line identifications for Arcturus. The 6K ground-based echellegram shows a strong line-blanketed photospheric continuum, interrupted occasionally by bright chromospheric emission lines, from 2250A to about 2500A. Below 2500A, the spectrum consists almost solely of chromospheric emission lines of Fe II. The long-wavelength end of this spectrum is compared with balloon (Stencel and van der Hucht, Ap. J. Suppl. 38, 29, 1978) and ground-based (Griffin, Ap. J. Suppl. 41, 631, 1979) UV spectra. Line identifications have been made for the region 2250-2930A with the help of overlays of predicted line strengths, generated with Saha-Boltzmann populations and semi-empirical gf-values. Moore’s UMv was used to check the validity of these identifications. One of the strongest emission lines, the Al II (II) line at 2669A, has an asymmetric profile very similar to those of the core emission in Mg I (II) 2852A, the Mg II h & k lines near 2800A, and, possibly, the Fe II lines. Canfield and Crum (Ap. J. 216, 654, 1977) have shown that the existence of Mg I core emission in the solar spectrum is strong evidence for the importance of partial redistribution effects in the formation of that line. Furthermore, it is responsible for many of the photospheric absorption lines, and has been noted by the presence of the UV multiplet 44 (humped by Mg II 2795A) commonly seen in late-type giants above the supergiant transition locus of Mullan (Ap. J. 226, 251, 1978). In addition to line identifications of all strong features, we present measurements of residual intensities and half-widths for selected strong absorption lines and absolute fluxes on the OAO-2 scale for each IUE order.

29.19.10 Dynamical Models of the Gas Flow in the Barred Spiral Galaxy NGC 1300. J. N. HUNTLEY, UIUC - A velocity map of the excited gas in NGC 1300 by Charles Peterson (U. Missouri) is compared with two numerical, gas-dynamical models. The first of these models represents the steady-state response of an isothermal, self-gravitating disk of gas to a bar (R. H. Miller and B. F. Smith, 1979, Ap. J., 227, 407). The second model represents the gas response to the previous n-body stellar bar. The diameter of this sphere is about 10% of the major axis of the bar while its mass is about 5% of the total stellar mass. It is found that the addition of this sphere provides a better fit to the steep gradient in the line-of-sight velocities observed across the central regions of NGC 1300. The addition of this sphere also produces offset shocks along the bar in nearly the same locations as the prominent dust lanes in NGC 1300.

29.19.06 Hot Companions of G Supergiants Observed with Skylab and IUE. S.B. PARSONS, U. Tex. Austin. Preliminary results of analysis of the far ultraviolet fluxes measured for several binaries containing G supergiants will be presented. These systems include HR 2859 (8B-I11 + B3), HR 2786 (G0 I1), and HR 4511 (B0 Ia), all of which show strong UV continua from a hot object within 3 arc sec (the IUE small aperture). The latter two stars were suspected but not proven to have hot companions from the Celeste and Skylab UV surveys (Parsons and Peytremann, 1972, Astrophys. J. 180, 71; Parsons et al., 1976, Astrophys. J. 203, 435). Böhm-Vitense and Dettmann (1980, Astrophys. J. 236, 360) have commented on IUE spectra of HR 4511, while HR 2786 and 2859 were observed with IUE by the author. Measurements of UV flux from Skylab S-019, TD-1, TD-6/8, and IUE experiments are collected and combined with available ground-based photometry to show the overall energy distributions. Intrinsic UV colors for cool giants and supergiants have been determined from TD-1 and ANS observations, and input into a program which plots composite energy distributions for any combination of spectral types, visual magnitudes, and interstellar reddening. This work is supported in part by NASA grant NSG 5328 and in part by the McDonald Observatory.

29.20.03 High Resolution Solar Flare X-ray Spectra. U. FELDMAN, G.R. DORCHEK, AND R.W. KREPLIN, NRL - High resolution X-ray spectra of solar flares have been recorded by four Bragg crystal spectrometers (SOLFLEX) on the spacecraft (SOL) launched 28 February 1979 by the Air Force. The spectrometers cover the narrow wavelength bands 1.82-1.97 Å, 2.98-3.07 Å, 3.14-3.24 Å, and 8.26-8.53 Å. These bands are centered on diagnostic important flare emission lines of Fe XX-Fe XXV, Ca XVII-Ca XX, and Mg XII. Wavelengths and identifications of the most important lines are given. Electron temperatures and nonthermal mass motions are derived at different times during the flares from line intensity ratios and spectral line widths, and implications of their behavior with time are discussed. Mass ejections with line-of-sight velocities between 200 and 600 km s⁻¹ have been observed during the rise phase of two class M flares. The electron temperatures...