The 1175 Å to 1900 Å Ultraviolet Spectrum of Solar Flares. G. E. BRUECKNER, J. D. BOHLIN, O. K. MOE, K. R. NICOLAS, R. D. FURGELL, V. E. SCHEERER, N. R. SHELEY, JR., R. B. FARKAS. Research Laboratory spectra obtained from the NRL spectrograph on board Skylab are characterized by the following features: (a) a slight enhancement of the continuum between 1520 and 1700 Å; (b) a strong enhancement of the continuum below 1520 Å; (c) a strong enhancement of all neutral spectral lines; (d) a very strong enhancement of ionized spectral lines; (e) no remarkable change of the intensity of coronal forbidden lines; (f) a change of the line profiles of ionized lines (with the exception of Fe II) from Doppler Type to Voigt profiles, connected with the development of wide wings and very large half-widths of these lines; (g) strong shifts of the ionized line wings predominantly to the red. The line profiles and shifts of the ionized lines suggest that the broadening may be caused by Stark Effect. As a consequence they must originate in a high density plasma.

Theoretical Hydrogen Spectra of Chromospheric Flares. RICHARD C. CANFIELD, Sacramento Peak Observatory, Air Force Cambridge Research Laboratories. We obtain simultaneous solutions of the equations of radiative transfer and statistical equilibrium for hydrogen excitation and ionization. The model atom includes Lyman-a, Lyman-b, Balmer-a, and Balmer-b continua. We used two types of model atmospheres: (1) shocked atmospheres showing some of the properties expected for the planar impact, viz., the models of Nakagawa, Wu and Han (Solar Physics, 30, 111, 1973) and (2) atmospheres heated by non-thermal electrons, viz., the models of Brown (Solar Physics, in press). The models of Nakagawa et al. adequately predict the total intensity of Balmer-a, its wing broadening, the presence of a red-shifted wing, the maximum electron density, the total line-of-sight second-level population and the narrowness in height of the Balmer-a emitting region. Brown's models characterize a flame of strength markedly less than a typical large flare, but within the range observed. In both cases the Balmer-a profiles are strongly self-reversed and would require very great inhomogeneity in the emitting region in order to resemble observed profiles.

Both Nakagawa et al. and Brown seriously overestimate the radiative losses in Balmer-a emitting region, which will have a considerable effect on their models. Until the problem can be meaningfully compared the computed profiles to observations.

Preliminary Results of X-Ray Observations from an ASM Support Rocket. H.C. CAUCOLA, L.W. ADAMS and W.F. ZARMER, Lockheed Palo Alto Research Laboratory. X-ray lines in the range from 13.4 to 22.6Å and continuum line emission at shorter wavelengths were observed by rocket-borne instruments collimated to have a common circular field-of-view of 1 arc minute FWHM. Eight point raster scans were performed over two Active Regions on 13 June 1973 near 1835 UT in observations made simultaneously with ASM. The temperature distribution and emission measures derived from these data for each point of the raster scans will be presented. The energy balance within these active regions will be discussed. This work has been supported by Contract NAS8-6752 and the Lockheed Independent Research Program.

Preliminary Results Using a Mg II 8-Line Filter to Photograph the Photospheric Network. C. CHAPMAN, San Fernando Observatory, Space Physics Laboratory. A Solar Filter Corp., El Segundo, Calif. - Preliminary results obtained with a moderately narrow bandwidth filter, operated in the Mg II lines, are presented. Operated at a bandpass of about 0.6Å, the filter shows the photospheric network (filigree?) with an angular resolution of about 1/2 arc sec. Time-lapse observations show considerable change in the appearance of the network with time. The characteristics will be demonstrated by slides and a time-lapse movie.

Preliminary measurements of the full width of the 304Å profile at half peak density give 0.107Å, and for the 584Å profile, 0.125Å. There is no evidence of marked solar reversal in either line, but profiles differ between the quiet and active areas.

Observations of Solar X-Ray Bursts in the Energy Range 0.2-15 keV. D. DARLOWE and R. HUGGINS, University of California, San Diego. Bursts of solar X-ray in the range 5-75 keV are associated with flares and are due to thermal emission from a hot coronal plasma. In this paper we discuss the results of a study of 30 such events associated with flares and a few class II flares. The observations were made by a proportional counter on SDA satellite OGO-7 from October 1971 to June 1972. In most cases the evolution of the temperature characterizing the X-ray spectrum rises impulsively at the onset of the burst and