paring the observed line intensities of selected multiplets an attempt has been made to determine the optical thickness of the lines. Strong saturation effects determine the line strength at the ionized elements Fe II, C II, Si II, while all the other lines are less saturated or optically thin. For optically thin lines the line width, if interpreted the observational broadenings, should be roughly equal to the non-thermal velocities of 12 km/sec to 25 km/sec in layers where Si III, Si IV, C IV, N V, e.g., are formed.

*NASA funded project.

Absolute Intensity of the Continuum in the Ultraviolet Spectrum of the Sun between 1650-1800A. C. BRUCKNER, O. MOR, and E. PITZ, E. O. Hulbert Center for Space Research, Naval Research Laboratory. - The photographic spectra of the August 13, 1970 flight have been calibrated absolute using a deuterium lamp in the spectral range 1665 to 1784A, calibrated by Dr. E. Pitz against the German Electron Synchrotron. The lamp calibration was cross-checked with a diode of known quantum efficiency, measured by R. Canfield at the National Bureau of Standards. A satisfactory agreement between both calibrations was found. Calibration spectra were taken prior to and after flight with the flight instrument in its flight condition. No change in the overall efficiency of the instrument could be observed within a calibration r.m.s. error of 26%. Because of the presence of straylight in the flight spectra, the comparison of the flight and the calibration spectra was difficult and leads to some uncertainties. The obtained absolute intensities of the solar spectrum represent a lower limit, because the effective film sensitivity dropped due to straylight. A preliminary correction factor is being determined to account for this systematic error. The high spatial resolution of the spectra allow an accurate determination of the center-to-limb variation. The intensity in the continuum at 24 and 40 arc sec limb distance drops to approximately 0.6 ± 0.1 from its value at 5 arc min limb distance.

*NASA funded project.

Theory of Formation of Solar Rare-Earth Lines. RICHARD C. CANFIELD, Sacramento Peak Observatory, APM. - It is suggested that the observed appearance of rare-earth lines in emission over the solar disk inside H and K and near the solar limb outside H and K is due to deviations from LTE. These deviations are normal in weak spectra of atoms whose atomic structure permits strong interlocking via radiative excitations (Canfield, 1970, paper presented to Boulder AAS meeting).

Fraunhofer-line Weaknesses in Solar Faculae. G. A. CHAPMAN, The Aerospace Corporation. - Weaknesses of a limited number of Fraunhofer lines, observed in the photospheric network (faculae) by Dr. N. Sheeley at Kitt Peak, are compared to weaknesses computed, assuming LTE, for several widely different models of faculae. The computed weaknesses, for that fuller model that satisfies continuum observations, generally exceed the observed weaknesses by factors of from 1.5-4 for neutral lines and by factors of 6 or more for ionized lines. For the neutral lines the computed weaknesses exceed the observed weaknesses even for the most conservative fuller model used. The most likely explanation for the discrepancies between observation and theory is the inadequacy of LTE in describing the formation of Fraunhofer lines.

Inhomogeneous Convection and the Equatorial Acceleration of the Sun. B. R. DUNNEN, National Center for Atmospheric Research, and I. W. ROXBURGH, Queen Mary College, London. - The interaction of rotation and turbulent convection gives rise to an inhomogeneous latitude dependent turbulent energy transport. Energy balance then requires a slow meridional circulation in the outer convective zone of the sun. The angular momentum transported by this circulation is balanced in a steady state by turbulent viscous transport down an angular velocity gradient. A detailed model is constructed allowing for the transition from convective transport to radiative transport at the boundary of the convective zone, although we assume a narrow convective zone for computational convenience. The resulting solution gives equatorial acceleration and a hotter equator than pole, assuming that convection is preferentially stabilized at the equator. For agreement with the solar differential rotation, the model would predict an equatorial temperature excess of 70K.

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