appears that the wake and the shock front created by the interaction of the earth with the solar wind must extend at least as far as the moon, with the shock meeting the lunar orbit at about 120° from the earth-sun line.

Ultraviolet Spectrophotometry of Early Type Stars. II. THEODORE P. STECHER, *NASA/Goddard Space Flight Center*.—The observations obtained by two rockets on stars in the winter sky are reported. The instrumentation used was similar to that previously reported by the author. Considerable improvements in the quality of the data resulted from improved electronics and new calibration equipment. The observed stellar energy distributions have the same form as recent model atmospheres which suggests that the models can be used to obtain effective temperatures.

The extinction curve due to interstellar absorption is found from five pairs of stars with the same MK spectral type. The total absorption in the ultraviolet is larger than had been expected when the program began. The data on each star are corrected on the basis of this extinction curve and its $B-V$ color excess. These corrected data are compared with the grid of models constructed by Mihalas to obtain an effective temperature for each star.

The resulting temperature scale is somewhat lower than that of Harris. For α Canis Majoris the observed energy distribution is in good agreement with a model's physical flux determined by the absolute visible flux, parallax, and angular diameter measured by Brown and Twist. The other fundamental A star effective temperature used by Harris was β Aur. β Aur does not agree in the ultraviolet with a model assigned on the basis of Popper's temperature determination. Further confidence in the calibration is obtained from ζ Pup, O5f. When ζ Pup is corrected slightly for reddening, good agreement is found with high-temperature models which differ very little from one another over the observed wavelength interval. Finally, corrections are made to the fluxes previously published by Stecher and Milligan.

Astronomical Implications of New Holographic Imaging Methods. GEORGE W. STROKE, *The University of Michigan, Ann Arbor, Michigan*.—Considerable increases in luminosity, detection and resolution capabilities may result from extending to astronomical and spectroscopic instruments some of the new advances, recently made in the field of wavefront-reconstruction imaging (holography), first described by D. Gabor in 1948 [Gabor, D., *Nature*, **161**, 777, 1948; *Proc. Roy. Soc. (London)* **A197**, 454 (1949); **B64**, 449 (1951)]; For a recent review

of this field, see, e.g., Stroke, G. W., "Theoretical and Experimental Foundations of Optical Holography (Wavefront-Reconstruction Imaging)" in *Optical Information Processing*, edited by J. T. Tippet *et al.* (MIT Press, Cambridge, Massachusetts, 1965)].

The advances (Stroke, G. W., and Falconer, D. G., *Phys. Letters* **13**, 306, 1964; **15**, 238, 1965; Stroke, G. W., *Appl. Phys. Letters* **6**, 201, 1965; Stroke, G. W., Brumm, D., and Funkhouser, A., *J. Opt. Soc. Am.* **55**, 1372, 1965; and following references) which we have made, mostly in only the last six months, have already permitted us to obtain spectra in a holographic Fourier transform-arrangement, using *no* scanning in the interferometer, and displaying the spectra by optical Fourier-transform reconstruction, from the interferometric hologram (Stroke, G. W., and Funkhouser, A., *Phys. Letters* **16**, 272, 1965) rather than by digital computation. In another (still unpublished) work, we have been able to holographically compensate for the slit-spreading effect, in a coherent-light imaging system, and to retrieve the resolution by a correlation-reconstruction method [Stroke, G. W., Restrict, R., Funkhouser, A., and Brumm, D., *Phys. Letters* **18**, 274 (1965)]. "Erasing" of selected image-portions, by actually *adding* the (complex) amplitudes in two images, 180° out of phase, in a holographic arrangement has also been achieved by *successively* adding intensities in the latent holographic images, in a single hologram. (Gabor, D., Stroke, G. W., Restrict, R., Funkhouser, A., and Brumm, D., *Phys. Letters* **18**, 116, 1965), and may be used for increasing detection of selected image portions in astronomical and spectroscopic plates.

The Effect of Departures from LTE on Stellar Continuum Fluxes in the Spectral-Type B5-A0.

S. E. STROM AND W. KALKOFEN, *Harvard College Observatory and Smithsonian Astrophysical Observatory*.—A grid of stellar models has been calculated for the effective temperature range $9000^\circ < T_{\text{eff}} < 15\,000^\circ\text{K}$. In computing this grid we took into account departures from the LTE population of levels 2 and 3 for hydrogen by assuming detailed balancing for the hydrogen lines and considering no departures for levels higher than $n=3$. The equations of statistical equilibrium and radiative transfer were solved simultaneously to yield departure coefficients for each level at each optical depth. The departure coefficients converge to consistent values after 10 iterations. In all cases, level 2 is underpopulated whereas level 3 is overpopulated. The other sources of opacity included in these models, H^- , H_2^+ , He I , He II , electron and Rayleigh scattering were calculated under the assumption of *no* departures from LTE.