of providing high quality lunar photographs for the Air Force, for use in the lunar mapping program.

This work was partially supported by the Aeronautical Chart and Information Center.

Observational and Predicted Contours of $H\gamma$.

FRANCIS M. STIENON AND STEPHEN E. STROM, *Smithsonian Astrophysical Observatory*.—We have calculated contours of $H\gamma$ by using the revised Kolb–Griem theory of Stark broadening for each of the detailed model atmospheres described by Strom (thesis, Harvard University, 1964). These contours have been compared with those observed in α Lyr, α CMa, τ Her, and ι Her. This comparison shows that surface gravities can be derived from line contours with a probable error of 0.2 in the logarithm.

We have derived a theoretical relation between the equivalent width of $H\gamma$ and the effective temperature and surface gravity of the star. By adopting the relation between spectral type and effective temperature deduced by Harris (*Stars and Stellar Systems*, Vol. 3, p. 268, 1963) we have compared the measured equivalent widths obtained by Stock (*Astrophys. J.* **123**, 253, 1956) with our theoretical values. In the spectral-type range B0–A2, the separation of luminosity classes III and V by surface gravity is not clear-cut, but the supergiants are clearly segregated.

If existing luminosity calibrations of the equivalent width are applied to the models, the resultant values of mass, radius, and luminosity do not agree with eclipsing binary data. There appears to be a discrepancy between the theoretical and observed equivalent widths of the order of 20%.

Stellar Effective Temperatures in the Spectral Range B6 to A0. STEPHEN E. STROM, *Smithsonian Astrophysical Observatory*.

—The Avrett–Krook iteration procedure was used in conjunction with an IBM 7090 computer to construct, under the assumption of radiative, hydrostatic, and local thermodynamic equilibrium, a grid of stellar atmosphere models. The effective temperatures for these atmospheres ranged between 10 000°K and 20 000°K, while surface gravities were varied between 10^3 and 10^4 . All known continuous opacity sources important in this temperature range were included in this grid. These models satisfy the condition of constant flux to within a few parts in 10^3 .

A photoelectric scanner, designed by W. Liller, was used to obtain a series of spectrophotometric observations for a group of B-type stars in the Pleiades. I compared the wavelength variation of

the emergent fluxes for my stellar atmospheres with these observations and deduced for each program star an effective temperature which carried an uncertainty of about 500°K. As a check on the validity of the procedure, the effective temperature, derived by matching the emergent flux for Vega with stellar models, was compared with the value obtained from the recent interferometric observations of the angular diameter of this star. The theoretical temperature of 9500°K corresponds remarkably well with the experimental value.

I combined with my observations the spectrophotometric data of Oke and Bless to establish a scale of effective temperatures in the spectral range B6 to A0. This scale was found to agree well except at A0 with that recently published by Harris [Harris, D. L., in Vol. III of *Stars and Stellar Systems*, edited by K. Aa. Strand (University of Chicago Press, Chicago, 1963)]. The values of T_{eff} were then correlated with $(U-B)_0$ as a first step toward calibrating cluster color-magnitude arrays in terms of luminosity and effective temperature.

Detailed Examination of a Non-Grey Stellar Atmosphere. S. E. STROM AND E. H. AVRETT, *Smithsonian Astrophysical Observatory*.

—Results of calculations for five model atmospheres, all with $T_{\text{eff}} = 10\,000^\circ\text{K}$ and $\log g = 4$, are presented. These results illustrate the detailed effects of individual opacity sources, scattering processes, the Lyman continuum, and the blended wings of the higher Balmer and Lyman lines. When electron scattering is included, it is found that the presence of frequencies in the Lyman continuum affects the temperature distribution for optical depths as large as $\tau = 10^{-4}$. However, the only observable features influenced by incorporating these frequencies are the cores of strong Balmer lines.

By means of the Kolb–Griem theory the blended opacity due to the higher members of the Balmer and Lyman series has been calculated. We exhibit the effect of the blended wings of these lines on the emergent flux for this standard model. We compare the calculated fluxes with those measured for Vega and find that the observed flux can be accurately reproduced even near the Balmer limit.

Finally, we exhibit the results for three model atmospheres (kindly calculated for us by Dr. Owen Gingerich), having $T_e = 9500^\circ\text{K}$ and $\log g = 4.3$, for which $\log [H/\text{metals}]$ has the values 2.0, 3.0, and 4.0. As the metal abundance is increased, the Balmer discontinuity decreases. It is speculated that the anomalous $(U-B)$ color for Sirius ($U-B = -0.08$) arises from a higher than normal metal abundance for that star.