While all data have not been analyzed, some tentative comments concerning certain of these stars are warranted.

EM Cygni: This object is doubtless an eclipsing binary with a period of about 4.89 h. The eclipses are probably partial, but the shapes and depths seem variable.

U Geminorum: Two eclipses of this system were observed on the same night. The second primary minimum, which is significantly redder than the first, apparently occurred near the time that a major outburst began.

Z Camelopardalis: This system appears to exhibit rather shallow partial eclipses. A preliminary value for the period is 0.2878 days, in agreement with R. Kraft's spectroscopic determination (unpublished).

SU Ursae Majoris: The fluctuations of this variable at minimum light are extremely large, averaging some 0.3 to 0.4 mag. in about 5 minutes, and are apparently superposed on longer cycle of similar amplitude.

The National Science Foundation is providing financial support for this project.

Nebular Absorption of He I $\lambda 3889$. G. MÜNCH AND O. C. WILSON, *Mount Wilson and Palomar Observatories*.—The presence of an absorption line arising from the 2^3S metastable level of neutral helium in the spectra of the stars imbedded in the Orion Nebula was noticed long ago by O. C. Wilson. Lately it has been shown by G. Münch and O. C. Wilson (*Z. Astrophys.* **56**, 127, 1962) how the strength of this nebular absorption line may be related to the surface brightness of a homogeneous emission nebula. The lack of agreement between the surface brightness thus computed for the Orion Nebula with the observed value, has been interpreted in terms of density inhomogeneities in the nebula, independently postulated by Osterbrock on other grounds. Because this interpretation has been criticized by K. Wurm (*Z. Astrophys.* **52**, 149, 1961), new observational evidence related to the line in question is being obtained. In this communication, besides new data for the Orion stars, the results of the search for the absorption line in other emission nebulae are presented. So far the line has been detected in a number of stars in the complex M8–M20, in BD +66°1675, exciting NGC 6822, in BD +60°2522 exciting NGC 7635, and in HD 64315, exciting star of NGC 2467. The stars imbedded in 20 other *H II* regions do not have detectable He I nebular absorption. Although a complete discussion of the data requires surface brightness determinations (corrected for interstellar and internebulary extinction) not available yet, it is shown how the recent observations fully support the interpretation advanced earlier by Wilson and Münch.

Surface Temperature Variations During the Lunar Nighttime. BRUCE C. MURRAY AND ROBERT L. WILDEY, *California Institute of Technology*.—Geographic and temporal variations in 8–14 μ brightness temperature of the unilluminated lunar surface have been observed recently. A new photometer, incorporating a mercury-doped germanium detector cooled to 20°K, was used with a 19-inch telescope located at a special high-altitude site. The minimum detectable lunar brightness temperature is $105^\circ \pm 5^\circ\text{K}$ for radiation emanating from a circular area on the moon of 50-km diameter.

The variation in 8–14 μ brightness temperature in selenodetic longitude, corresponding to surface areas progressively located later into the lunar evening, is characterized initially by a very rapid drop adjacent to the terminator followed by a rather abrupt change to a more gentle gradient of surface temperature until, after 5–6 days of lunar nighttime, the brightness temperature falls below the minimum-detectable temperature of our system. These data do not agree with published lunation cooling curves based on hypothetical lunar surface models.

Local "hot" anomalies were observed in the vicinity of Tycho and Copernicus and also in two mare regions. These anomalies are possibly generated by extensive exposures of bare rock.

Abundances of Lithium, Beryllium, and Lead in the Solar Atmosphere. J. P. MUTSCHLECHNER, *Los Alamos Scientific Laboratory*.—A redetermination has been made of the abundances of the elements lithium, beryllium, and lead in the solar atmosphere. The observational material consisted of numerous spectral scans obtained with the vacuum spectrograph of the McMath-Hulbert Observatory. Exact curves of growth were computed for each line using digital-computer programs. Features of the theoretical calculations include (1) the use of a newly derived semiempirical solar model atmosphere, (2) the inclusion of an empirically determined component of the continuous absorption coefficient in those regions where it was required, (3) an analysis of the influence of various uncertainties on the curve of growth and hence on the derived abundances.

The resulting abundances on the silicon scale (i.e., number of atoms per million Si atoms) are: $N(\text{Li}) = 1.1$, $N(\text{Be}) = 6.9$, $N(\text{Pb}) = 1.4$. An analysis of the source of errors shows that basic uncertainties in the solar model probably produce the largest abundance uncertainties. The upper limit to the combined error due to all sources is about 100% for lithium and lead and about 30% for beryllium. The beryllium and lead values are in good accord with meteoritic determinations while the solar lithium value is as little as 2% of meteoritic abund-