The structure of $H\alpha$ changes markedly during eclipse. A year or more outside of eclipse the line shows a central absorption with an emission peak on each side. A broad absorption appears at the long wave-length side of the line before mid-eclipse and shifts to the short wave-length side after mid-eclipse. Plates taken in May 1958 show that the line has not yet returned to normal.

The physical interpretation of these changes in spectrum during eclipse is not yet completely clear although Struve's (1956) model, involving nebulosity surrounding the stars and stream motion between them, seems to fit many of the observations.

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**Schwarzschild, M., Rogerson, J. B., Jr. and
Evans, J. W. Solar photographs from 80,000
feet.***

During the summer of 1957 three unmanned balloon flights have been carried out with the aim of obtaining direct solar photographs with high definition, undisturbed by atmospheric seeing. The first flight had the purpose of testing the pointing mechanism and carried only a dummy telescope. The full telescope, constructed by Perkin-Elmer Co., carried on the second and third flights, consisted of a parabolic mirror of 12-inch aperture, $f/8$, an enlarging lens which produced an effective focal length of 200 feet, and a 35-mm movie camera taking an exposure each second with exposure time 0.001. The focus was scanned over a range of 10 to 20 times the focus tolerance. In the pointing control which was constructed by the Research Service Laboratories of the University of Colorado, photodiodes were employed to find the sun and center on it. Motor-driven magnetic clutches were used to move the telescope with the motion in azimuth being accomplished by rotating against a heavy flywheel carrying the batteries. In the execution of the flights, carried out by General Mills, Inc., no serious difficulties were encountered in the launching, tracking and recovering of the equipment. The cost of repairs for launching damage averaged for each of the three flights about 5 per cent of the construction cost.

* Presented at the 99th A.A.S. meeting, Indianapolis, Ind., December 27-30, 1957.

Several exposures of very high definition were obtained, both of the center of the solar disk and of the limb. These exposures show that the solar granulation has a cellular though highly irregular character. The bright cells appear separated from each other by dark, often very sharp lines. The sizes of the elements seem to range from 2" down to 0".3.

This project was sponsored by the Office of Naval Research and the Geophysics Research Directorate of the Air Force.

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TITLE OF ADDITIONAL PAPERS PRESENTED AT THE MEETING IN MADISON, WISCONSIN

Baum, W. A. Population inferences from star counts, surface brightnesses and colors.

Code, A. D. Energy distribution curves of galaxies.

Morgan, W. W. The spectra of galaxies.

Munch, Guido. The mass-luminosity ratio in external galaxies.

Aller, L. H., Boury, A. and Jugaku, Jun. Composition of B stars.

Bahng, J. D. Lifetime of pores found on solar photographs taken from the stratosphere.

Bell, Barbara and Meltzer, Alan S. The doppler widths of solar line profiles.

Bless, R. C. Photoelectric spectrophotometry of A stars.

Boggess, A., III, Kupperian, J. E., Jr. and Milligan, J. E. Ultraviolet nebulae in Virgo and Orion.

Campbell, Leon, Jr. and Spitz, Armand N. Report on MOONWATCH program.

Code, A. D. and Houck, T. E. The structure and evolution of superluminous stars.

Grant, Gordon S., Burhans, R. W. and Fay, P. S. Earth satellite orbital characteristics from single-station radio observations.

Helfer, H. L. and Wallerstein, G. Abundance in Population II K giants.

Hemenway, Curtis L. and Fullam, Ernest F. Identification of micrometeorites.

Henize, Karl G., Hynek, J. A. and Whipple, Fred L. Report on the IGY photographic program of satellite tracking.

Herbig, G. H. The spectrum of the nebulosity at AE Aurigae.

Herget, Paul. Problems of artificial satellites.

Hiltner, W. A., Pesch, P. and Miller, R. H. A six-cell pulse photoelectric photometer.

Johns, R. K. C. Analysis of lunar methods in geodetic astronomy.

Kupperian, J. E., Jr. and Friedman, Herbert. Rocket astronomy in the far ultraviolet.

MacRae, Donald A. Exact expressions for the effect of atmospheric resistance on an artificial satellite during one revolution.

Odgers, G. J. and Kushwaha, R. S. Interpretation of the radial-velocity variations of R Hydrae.

Petrie, R. M. Apsidal motion in H.R. 8800.

Struve, Otto. Evolutionary changes in spectroscopic binaries of early type (see this issue, p. 346).

Thompson, Robert; Tomlinson, Richard; Hobbs, Robert; Socash, Richard and Grant, Gordon. Physical and dynamical studies of orbiting earth satellites.

Whipple, Fred. L. On the lunar dust layer.

Williams, A. D. and Blanco, Victor M. Distant dwarf M stars in the direction of the north galactic pole.