warte in Heidelberg in May 1957 to compare the standard lamps used by Stebbins and himself with the standard lamps at this laboratory. The comparisons were accomplished satisfactorily but are discordant with the U. S. Bureau of Standards calibration, a discrepancy which is now in the process of being cleared up. An error of 10° in the starting point of 3000° means an error of 1000° when extrapolated to the temperatures of the hottest stars around 25,000°.

Kron, with the assistance of Svolopoulos and Balz, has been observing the magnitudes and colors of cluster-type variables with the 12-inch refractor, the Tauchmann reflector, and the Crossley reflector. Out of a program of 55 stars, 20 are finished and considerable work has been done on about 20 others.

A paper by Kron, S. C. B. Gascoigne, and Mr. Howard White on the red and infrared magnitudes covering about 5 years of observing has been finished and submitted for publication. The work by Kron and Mayall on the magnitudes, colors, and diameters of globular clusters, both in our own and other galaxies, has been continued during the year. Extra observing is necessitated by the discovery that the diameter data were weak, and this additional program is now approaching completion.

During the year Kron started a program of six-color photometry with the Tauchmann and Crossley reflectors to determine the intrinsic colors and color excesses of supergiant stars to be compared with similar information for Cepheid variables. The observing program is well advanced.

Much of the current photoelectric work is being done with Lallemand infrared-sensitive multipliers. It is Kron's experience that these multipliers are more satisfactory than any others that he has tried.

Extra-Galactic Nebulae

Mayall devoted considerable time to his program of the spectral classification of extra-galactic nebulae, in cooperation with W. W. Morgan. At the McDonald Observatory they observed 19 of these objects, mostly giant E's and Sb's. Mayall also observed 12 similar objects with the Crossley reflector and the nebular spectrograph at the Lick Observatory. Eleven spirals were observed for inclined lines as a measure of rotation and 4 nebulae in the Hydra cluster were measured for redshifts at the request of Dr. Zwicky. In addition, Mayall measured for redshifts 5 miscellaneous nebulae, including NGC 404, which may be a new member of the M31 group, and 7 discovered by Haro to have strong ultraviolet images. Of these, 4 are in the Coma cluster. He also observed the spectra of supernovae in NGC 2841 and NGC 4374.

Mayall took 18 plates of the Crab nebula with a narrow slit in order to obtain more reliable radial velocities of the filaments. As part of the cooperative program with Minkowski, he obtained 23 additional spectra of planetaries for radial velocity.

Shane and Wirtanen have now completed the counts of extra-galactic nebulae in 7 of the 9 areas comprising their survey to −20° declination. The eighth of these areas is well under way. The results for Area 5, $\alpha = 0^h$ to 6^h, $\delta = +20°$ to $+60°$, were published during the year. The reductions of four more areas have been largely completed with the help of Steinlin. The photography with the 20-inch astrograph was extended to zones −25° and −30° declination in order to provide a record of the distribution of extra-galactic nebulae and other objects in this portion of the sky. It is not intended, however, to count nebulae in these zones because of the large amount of atmospheric extinction. The plates may be used in connection with special problems. At an earlier time a set of photographs on plates 12 inches square was taken with the 10-inch telescope borrowed from the Mt. Wilson Observatory and the 5-inch Ross lens. The survey covers the entire northern sky to −39° declination. It is hoped to count extra-galactic nebulae on these plates in order to determine their distribution to a limiting photographic magnitude of about 15.5, but the actual counting has not yet started.

Miscellaneous

Katherine C. Gordon (Mrs. Kron) has been engaged in obtaining spectroscopic elements of ξ Tauri and the orbital elements of UX Herculis from photoelectric observations.

During the favorable opposition of Mars in the summer and fall of 1956, the planet was studied visually by Jeffers. He also obtained 3500 photographs in the yellow and blue regions of the spectrum.

The 10-inch Mt. Wilson telescope and 5-inch