On the other hand certain types of fresh metallic fragments seemed to be more or less constant in amount at the two isolated northern winter posts, and in southern localities.

Spectrochemical analyses of the material collected at the southern stations gave positive evidence for the presence of nickel, as well as abundant iron, magnesium and silicon, from samples from the observatory and from Haliburton.

Summarizing, to date we apparently have a reasonably good method of collecting and isolating magnetic particles; the work stresses the great dilution of any possible meteoritic material by terrestrial dust; the occurrence of nickel in at least two samples suggests meteoritic origin of some of our particles; and the relative uniformity of abundance of some types of particles indicates that these may be meteoritic. The work is being greatly extended.

*David Dunlap Observatory,
Richmond Hill, Ontario, Canada.*

Petrie, R. M. and C. D. Maunsell. The absolute magnitudes of the early A-type stars from hydrogen line absorption.

The intensities of $H\gamma$ have been determined, by spectrophotometric measures, in the spectra of 165 stars of spectral types B8 to A3. The measures have been calibrated against absolute magnitudes derived from trigonometric, spectroscopic, dynamical, and cluster parallaxes. The equivalent width of $H\gamma$ is found to be capable of predicting the absolute magnitude of a normal star, white dwarfs being excepted. The mean residual from the trigonometric parallaxes is $+0.001 \pm 0.001$. Spectroscopic absolute magnitudes are given for 165 A stars.

*Dominion Astrophysical Observatory,
Victoria, B. C., Canada.*

Roach, F. E. and Daniel Barbier. Photometric studies of the light of the night sky.

An automatic recording photoelectric photometer for scanning the night sky has been in operation at Cactus Peak near Inyokern, California, for several months. Observations are made through interference filters which isolate either $[O\text{I}]$ 5577 or $Na\text{I}$ 5893. The general background of starlight and zodiacal light is recorded by use of a control filter which excludes the emission line. The heights in the upper atmosphere to the emitting layers are deduced from zenith to horizon observations making allowance for the unsymmetrical intensity of the

sky. We have found for $[O\text{I}]$ 5577 a height of about 100 km and for $Na\text{I}$ 5893 a height of about 300 km.

The sodium D emission has been followed in the late twilight (solar depression 18° to 45°). Interpreting the observations as a resonance phenomenon we have found that, in the 200 to 600 km region of the upper atmosphere, the distribution of sodium atoms corresponds to a scale height of 250 km as compared with about 10 km in the 70 to 100 km region.

A detailed report will appear in the *Transactions of the American Geophysical Union*. This work is supported by the Office of Naval Research.

Pasadena, Calif.

Sawyer, Helen B. The variable stars in the globular cluster Messier 28.

Not for fifty years has any new information been published on the variable stars in the bright globular cluster Messier 28 (NGC 6626) in Sagittarius. Nine variables were reported in this cluster by Prof. Bailey in 1898,¹ and the print and positions were published in 1902,² but no magnitudes for these variables have ever been published.

Because of this startling lack of information on a relatively bright cluster, it is advisable to summarize the material at this time, although plates are still too few for final conclusions. The writer began work on this cluster at the Steward Observatory in 1939, with a series of plates on 11 nights. To date 36 plates on 34 nights have been acquired with the 36-inch Steward, and the 74-inch and 19-inch Dunlap telescopes.

Preliminary magnitude values for Bailey's comparison stars were derived from two sequence plates taken in Arizona, exposed for 20 minutes on the cluster and on Kapteyn Area 134. By an extensive blinking of all suitable plates the writer has found seven new variable stars, several of which, however, are probably field variables.

The variables in this cluster are proving an unusually interesting group. Three of them, Nos. 4, 6, and a new variable, 10, are among the half dozen brightest stars at maximum, and their fluctuations are very noticeable. They are almost certainly slow variables. Two others, Nos. 2 and 3, are slightly fainter, and may also be slow variables.

The existing observations for No. 4 are well represented by the elements $\text{Max.} = \text{JD } 2432759.765 + 14.0$ days, but it should be stressed that ob-