Figure of the Earth terms (the observed constant requires extended investigation for any increase in the accuracy of its determination), (4) the single-entry table in parallax, combining the constant of parallax with the elliptic terms. It is hoped that after the preliminary tables have been made, an extended comparison with Hansen's places, and thence with observation, may be undertaken. After the constants have been thus corrected there will probably remain residual errors, which will be analysed, if possible, into periodic and secular terms which are to be incorporated into tables, and which will form definite empirical corrections awaiting a theoretical explanation. The rapid and accurate methods of Cowell, as shown in his series of papers on the lunar theory, are available for the analysis, whilst Newcomb's forthcoming work on the occultations since the beginning of the seventeenth century will form a valuable basis for the long-period residuals as soon as the corrections to Hansen's places have been made.

New Haven, Conn.: 1909 November 2.

Celestial Photographs taken at Mount Wilson Solar Observatory, California. By Professor G. E. Hale, D.Sc.

[Extract from a letter to the President.]

I am sending you a few photographs recently taken here, which may possibly be of interest to the members of the Astronomical Society.

1. Enlargement of a prominence, 85,000 miles high, made by Mr. Ellerman, August 21, 1909, 6h 22m a.m. This was made with the Snow telescope and 5-foot spectroheliograph, using the \( H_a \) line. It is not especially remarkable, but interesting as one of our best prominence photographs.

2. Enlarged photographs of Mars,\(^*\) made by myself with the 60-inch reflector on October 5 and November 3, 1909. The instrument was arranged in the Cassegrain form, with equivalent focal length of 100 feet. A pneumatic shutter from a photographic lens was mounted in a wooden support immediately in front of the plate-holder. Between exposures, the telescope was displaced in right ascension or declination by the slow-motion electric motor, so that a series of images was obtained on the plate. A Seed “Process” plate was employed, sensitised for the red by Wallace's “Pan-iso” formula. In front of the plate was a Wallace red screen, transmitting light of wave-length greater than \( \lambda 5800 \). Such a screen is necessary to increase the contrast. The exposure was about two

\(^*\) These photographs are being issued in the Society's series of Reproductions of Celestial Photographs.
seconds. The glass positives sent to you are enlarged about six diameters from the original negatives.

3. As it seemed to be of interest to have some check on the quality of the Mars photographs, I made a few exposures on the Moon, with the same arrangement of the telescope, on the night of October 5. In this case a Seel No. 23 plate was employed without a red screen, and the exposure was about one second. In making the transparencies sent you, the degree of enlargement is the same as in the case of the Mars photographs.

I have devoted only a few evenings to this photographic work on Mars, and the results are not nearly equal to those that could be obtained with special apparatus. The aperture used for both the Moon and Mars was 44 inches, as it seemed best to cover the edge of the mirror, which is sometimes slightly turned up before midnight.

Visually, the performance of the 60-inch reflector, especially when used in the Cassegrain form, is all that could be desired. On November 3, when the seeing was very fine, a power of 800 was used on Mars to excellent advantage. With this power, small details, not visible with lower powers, were brought out clearly and distinctly. As for the appearance of the image, Barnard’s description of his observations with the 36-inch Lick refractor, *Monthly Notices*, volume lvi. page 166, fits the case perfectly.

*Pasadena, California:*
1909 November 6.

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**Terrestrial Reproduction of the Spectra of the Tails of Recent Comets.** By A. Fowler. (Plate 8.)

**Introductory.**

Spectroscopic observations of comets prior to those of Daniel’s Comet (d 1907) appear to have indicated the prolongation into the tail of the bands of carbon which have long been recognised as the chief characteristic of the majority of comets. In the case of Daniel’s Comet, however, Deslandres* announced that while the head showed the ordinary cometary spectrum, the tail exhibited a different spectrum, consisting of three lines or bands of unknown origin at approximate wave-lengths 402, 426, and 455. These new bands, as shown by photographs taken with a prismatic camera, were feeble in the head of the comet, but could be traced in the tail to a distance of three-quarters of a degree.

A similar result was obtained by Evershed † from photographs taken with a prismatic camera at Kodaikánal; the strong cyanogen band 3883 was almost restricted to the head, while three radiations,