Furthermore $\tan B = \sin \theta \tan \beta$ where β is the observed heliographic latitude. For prominences within 30° of the limb, B differs from β by less than 5° , and in practical cases heliographic latitude can be considered as determined to this degree of accuracy by using the observed latitude β . The great uncertainty of disk position corresponding to limb observation lies in meridian distance and hence in heliographic longitude. For example, a prominence observed to be $.05R$ in height, at latitude 40° , may be located anywhere within a range of 60° of heliographic longitude depending on whether its true height is $.05R$ or as much as $.15R$.

The rate of change of H/R with θ , and hence with time, is different for different values of h/R , θ , and B , and this variation can be used to determine the true height and heliographic longitude of stable features of prominences provided the observations cover an adequate time interval. In practice it is possible to use the set of curves of Δ/R versus θ for $h/R = .10$ for all prominences for which $h/R < .15$, provided $\theta > 60^\circ$ and an error in height of not more than 2000 km is permitted.

In particular, this method has been applied successfully to prominences photographed on August 22–24, 1946, September 18–21, 1946, and July 1–3, 1947, with the tower telescope of the McMath-Hulbert Observatory. In each case it has been possible to identify the several features of a semi-active prominence with corresponding portions of a filament and to study the relationship of active and stable portions of the prominence to spots and faculose regions on the disk.

McMath-Hulbert Observatory,
University of Michigan,
Lake Angelus, Pontiac, Mich.

Gaposchkin, Sergei. New eclipsing variables with small ranges.

In the course of looking for new eclipsing variables among spectroscopic binaries of individual importance I have found three new eclipsing variables, which seem to be real.

1. The discovery of the double-lined spectroscopic binary BD +40°4115 has been kindly communicated to me by Dr. J. A. Pearce in 1946. My investigation of 458 plates revealed a small variation of brightness. The essential results are given below.

2. The discovery of the carbon Wolf-Rayet star HD 168206 as being a spectroscopic binary has been made by W. A. Hiltner.¹ My investiga-

tion of 686 plates revealed a small variation of brightness. The essential results are given below.

3. The discovery of the double-lined spectroscopic binary HD 218066 has been kindly communicated to me by Dr. R. Petrie this year.² My investigation of 995 plates revealed a conspicuous variation of brightness. The essential results are given below.

	BD 40°4115	HD 168206	HD 218066
P	1.87292 ¹	29.675 ²	2.72914 ³
Max	8.71	8.96	7.63
m_1	8.80	9.10	7.99
m_2	8.76	9.04	7.96
Spectra	B2, B2	WC7, B	B3, B3
Radii	7.2 $\odot$, 6.0 $\odot$	?	4.0 $\odot$, 4.5 $\odot$
Masses	11.1 $\odot$, 12.5 $\odot$	8.2 $\odot$, 24.8 $\odot$ ⁴	9.8 $\odot$, 10.0 $\odot$

1. after Pearce, 2. after Hiltner, 3. after Petrie, 4. minimum masses.

In similar fashion the spectroscopic binaries BD +57°28, +36°4028, +35°3970, +35°3994, and HD 186943 were found by the author as not being eclipsing on the basis of 1562, 830, 760, 740, and 640 observations.

1. *A. J.* 102, 492, 1945.

2. See *Pub. Dom. Astroph. Obs. Victoria* 7, 305, 1947.

Harvard College Observatory,
Cambridge, Mass.

Hall, J. S. Photoelectric observations of bright stars in full daylight.

The brightness of stars can be measured in full daylight with photoelectric cells. This has been done with an RCA 1P21 photomultiplier (with red filter) and also with an infrared-sensitive lead sulfide cell.

In the method used the light from the sky that strikes the photosensitive surface is maintained constant while the starlight is made to vary at a fixed frequency. The variable photocurrent caused by the star is then amplified by a tuned alternating current amplifier while the steady (but very much larger) photocurrent caused by the sky is rejected.

Such a device has been tried with the 18-inch refractor at Amherst. When a 1P21 photomultiplier was used with a Schott RG1 red filter Capella caused a signal 25 times the average random fluctuations. This result was obtained at local apparent noon when the star was 45° from the sun.

The brightness of a few very bright red stars has been measured in daylight with a lead sulfide cell. Preliminary results indicate that about equally good measures can be made in daylight or darkness.