of small mass which several investigators have suggested has arisen from the effects of equipartition of energy among the member stars and from the disruption of clusters due to encounters with passing stars and interstellar clouds and to the tidal force of the galaxy. The faint limiting magnitude of this program aids detection of such coronae, and preference is being given to those clusters most likely to possess them.

Provisional mean error estimates yield the approximate interval of time between first and second epoch plates necessary for a reliable separation of cluster members from field stars. This interval is on the order of 10–15 yr for most clusters on this program. For a few nearby clusters the mean error of a single proper motion determination approaches in size the root-mean-square velocity of the member stars in about 30 yr or less. For these it may be possible in this length of time to observe directly the differential motions among different types of stars in the cluster.

Flare Model Derived from Radio Burst Observations. J. P. HAGEN AND W. M. BARNEY, *The Pennsylvania State University*.—The solar flare of 5 June 1965 was observed at three frequencies on a set of radiometers recording data on a multichannel chart recorder with precise time marks. The burst was complex. Excess radiation first appeared at 1806.6 UT at 10 700 Mc/sec, the highest frequency, then later at 2700 Mc/sec and last at 320 Mc/sec. Subsequent to the onset, a burst occurred at 1808.8 and was seen only on the two highest frequencies. Following this at 1811.4 a second burst occurred and was seen at all three frequencies. Nine minutes later a third large burst occurred with maximum flux at the lowest frequency, moderate flux at 2700 Mc/sec, and a very small increase at 10 700 Mc/sec. The flare was observed at other lower frequencies elsewhere with most of the lower frequency (36, 108, and 223 Mc/sec) bursts occurring at 1812 ± 1 min followed by a large burst at 1820.

A model of the flare capable of explaining the radio events is shown to consist of a mass of material rising through the chromosphere at a velocity, which can be obtained from the radio data, in excess of 70 km/sec. As this mass rises energetic events occur and are recognized as the radio bursts. Three such events occurred at heights of 20 000, 30 000, and on the order of 40 000 km.

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A Preliminary Report on Absolute Sky Radiance Measurements in the 1.5–3.2- μ Region. FREE-

MAN F. HALL, JR., *ITT Federal Laboratories*.—The purpose of this investigation is to measure the absolute radiance distribution of the night sky in the spectral region from 1.5–3.2 μ . A 61-cm aperture Newtonian radiometer with an $\frac{1}{2}f$ cast-aluminum mirror directs radiation to a 30 element PbS linear array. Individual solid state amplifiers are used for each detector, and total field chopping with electronic zero suppression provides detection for both point and diffuse sources. Each detector subtends a 1×1 minute of arc field of view. Measurements of the Crab Nebula confirm radiance values previously published by Moroz. The results of scans across other known diffuse sources are also reported. In addition, several bright infrared stars have been found which do not correspond in position to known late stars and which may be similar to objects previously reported by Neugebauer, Martz, and Leighton. Atmospheric and instrumental fluctuations usually limit minimum detectable radiance rather than the detector imposed limits of 1.2×10^{-9} W cm⁻² sr⁻¹ μ ⁻¹.

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An Improved Theoretical Lunar Photometric Function. BRUCE HAPKE, *Cornell-Sydney University Astronomy Center*.—The theoretical photometric function for the lunar surface previously proposed by the author (*J. Geophys. Res.* **68**, 4571, 1963), which successfully predicted variations of brightness for areas between selenographic longitudes of $\pm 60^\circ$, has been improved so that it better agrees with observations in the limb regions. The modification consists of wrinkling the porous, open surface of the previous model into a series of steep-sided depressions. For formal mathematical reasons, the depressions used are cylindrical troughs whose axes are parallel to lines of luminance longitude. However, the primary requirement is that the surface must be densely covered ($\sim 90\%$) with features whose walls make steep angles ($\gtrsim 45^\circ$) with the local horizontal and that these walls must be partly visible even at glancing angles. This model is consistent with radar-reflection data which indicate that the moon is smooth on a scale of meters but is rough on a sub-centimeter scale. Hence the size of these depressions is inferred to be centimeters and millimeters. These features are probably primary and secondary impact craters and ejecta debris, which saturate the lunar surface on this scale. The preceding conclusions were contained in a paper submitted to the *Astronomical Journal* in December 1965. The remarkable pictures of the lunar surface transmitted by Luna 9 appear to corroborate these predictions concerning the small-scale morphology of the lunar surface.