accuracy of the experiment, with both cosmic ray data and theory. Preliminary results from Mariner II have been consistent with computed values given here. The present result amends the provisional report of Coleman, Davis, and Sonett in 1960, in which the measured component appeared constant and an interplanetary field normal to the ecliptic was inferred.

Ultraviolet Measurements of Objects of Astronomical Interest. IRENE S. GULLEDGE AND D. M. PACKER, *U. S. Naval Research Laboratory*.—Two recent rocket flights from White Sands, New Mexico, provided ultraviolet data for early-type stars and the moon in wavelength intervals passed by interference filters.

One filter transmitted a 52 Å band at half-width, with a maximum at 2985 Å. The second filter covered a solar blind detector and transmitted a 160 Å band centered about 2100 Å. Absolute intensities of the radiations observed are presented.

Common Origin between the Quadrantids and the δ Aquarids Streams. SALAH E. HAMID AND FRED L. WHIPPLE, *Smithsonian Astrophysical Observatory*.—The Quadrantid and the δ Aquarid meteor streams are now similar only in their semimajor axes (≈ 3 a.u.) and longitude of perihelion ($\approx 100^\circ$). The Quadrantids occur in January, persist only for about a day, have high inclination ($i \approx 70^\circ$) and large perihelion distance ($q \approx 1$ a.u.) while the δ Aquarids occur in July–August, last some 72 weeks, have $i \approx 30^\circ$ and $q \approx 0.1$ a.u.

A calculation of secular perturbations for members of the two streams, however, shows that their orbital planes and perihelion distances were similar some 1300–1400 yr ago. The effects of Jupiter perturbations on i and q are quite remarkable. It is possible that the two streams were derived from a single comet, on which hypothesis a consistent sequence of dynamical events has been reconstructed. Also the physical characteristics of the meteoroids belonging to the two streams appear to be similar, as judged by their light curves.

These results suggest that meteors or streams with similar of nearly similar values of semimajor axes and longitude of perihelion should be studied critically to determine the possibility of common origin.

Photographic Detection of Solar Magnetic Fields with an $H\alpha$ Birefringent Filter. J. W. HARVEY (introduced by G. E. Moreton), *Lockheed Solar Observatory*.—Use of a Lyot type filter for detection of chromospheric magnetic fields was suggested by

R. G. Giovanelli (*Trans. IAU* 10, 197, 1958). A modification of his technique has been developed. A quarter-wave plate mounted in front of the entrance polarizer of a 0.5 Å bandpass birefringent $H\alpha$ filter renders it capable of detecting circularly polarized light. As a result of the presence of a longitudinal magnetic field, the wings of the $H\alpha$ line are partially circularly polarized. To detect the polarized light resulting from magnetic fields the filter is carefully tuned to the steepest part of the $H\alpha$ line profile and two photographs of the sun are taken. The quarter-wave plate is oriented so that left-hand circularly polarized light is blocked during the first photograph. Right-hand circularly polarized light is blocked during the second photograph. Densities of corresponding areas on the two photographs are identical except in areas where a longitudinal magnetic field is present. Photographic subtraction reveals the location and polarity of the magnetic fields. For features of average intensity and linewidths, the sensitivity of this technique is about 100 G. Preliminary observations show strong fields in the chromosphere above sunspots. With the possible exception of a disk surge, fields in other chromospheric features have not been positively detected.

Laboratory f Values for Infrared Lines of Manganese I. RAY HEFFERLIN, *Southern Missionary College*, AND JOEL GEARHART, *Wright-Patterson Air Force Base*.—Log gf for 14 infrared Mn I lines, previously measured at the U. S. National Bureau of Standards and converted into log gf values by Corliss and Bozmann (*Natl. Bur. Stds. Monograph* 53), have been obtained. The measurements were normalized to the same scale as the NBS measurements. The average probable errors of the two experiments were, respectively, 28% and 35%. Log gf for 17 other infrared Mn I lines have also been obtained. These data do *not* suffer errors from the following typical phenomena: lack of Boltzmann distribution or extrapolation to upper-level energy beyond that known to obey the Boltzmann distribution; radial arc distribution of temperature and density; unmixing of plasma constituents; self-absorption and self-reversal; admission of light from near the electrodes of the arc.

A Stability Criterion for Periodic Orbits in the Restricted Three-Body Problem. SU-SHU HUANG, *Goddard Space Flight Center*.—A new criterion is devised for deciding the stability of a periodic orbit in the restricted three-body problem. It depends upon the eigenvalues of a fourth-order matrix which is derived from the integration of the equations of