over the limited declination range from -9° to -16.5° using a 1° beamwidth are presented. The antenna is a uniformly illuminated square array, 48 wavelengths on a side. Records have been taken with a servo diode balanced radiometer measuring total power over a 2 Mc/sec bandwidth. The strongest radio source observable is Hydra A, and about 30 other much weaker sources can be easily resolved. Antenna pattern calculations have been carried out (with due allowance for bandwidth) for most of the required declination settings to permit flux density determinations. Because of the simple geometry involved, these calculations are quite straightforward and good agreement has been obtained with experiment.

In addition to the discrete sources, synchrotron emission from energetic electrons is observed in three general forms: (1) The galactic halo is seen as a background of about 5000° K in directions well away from the galactic equator. (2) A high in sky brightness temperature of $45\,000^\circ$ K is observed when crossing the galactic equator at about 18^h R.A., and a smaller peak of $10\,000^\circ$ K is seen at 07^h R.A. in the direction away from the galactic center. (3) An elliptically polarized component due to the radiation belt created by the Starfish nuclear explosion is still detectable. The brightness measured in July 1964 was equivalent to 230° K.

In the vicinity of the $45\,000^\circ$ K peak in sky brightness, decreases on the order of 2000° K are observed at some declinations. These have been identified with particularly dense H II regions, one example being the Omega nebula (M17). Some of the more tenuous H II regions observed by the Australian surveys at 18.3 and 19.7 Mc/sec have not been detected at 50 Mc/sec.

Photoelectric Measurements of Comet Ikeya (1964 f). NATALIE SATUNAS KOVAR, *Dynamic Science Corporation*, AND ROBERT PAUL KOVAR, *Mt. Wilson and Palomar Observatories*.—The nuclear region of Comet Ikeya (1964 f) was observed photoelectrically on July 29.5 and July 30.5. Spectral scans of the blue region, with a resolution of $25\text{ \AA}$, were obtained using a circular diaphragm with an equivalent width of 52 sec of arc. This corresponds to a projected radius of 3000 km at the comet. Flux measurements were obtained in the following lines: $\lambda 3883$ and $\lambda 4216$ of CN, $\lambda 4050$ of C_3 , $\lambda 4313$ of CH, and $\lambda 4383$ and $\lambda 4737$ of C_2 . Approximate calculations of the number of molecules within a cylinder of radius 3000 km centered on the nucleus were carried out. It was found that the ratio of the number of C_3 molecules to the number of CN molecules was about 0.3 and the ratio of the numbers of CH molecules to CN molecules was also about 0.3 in this region.

Population Discriminant for Late-Type Dwarfs.

ROBERT PAUL KOVAR, *Mt. Wilson and Palomar Observatories*.—At present the only way of separating dwarfs in the later spectral classes into population types is by direct spectral analysis. A more rapid method would enable a larger number of late-type dwarfs to be broadly classified into the two population types. An attempt was made to find such a method utilizing the known metal deficiency in the Population II dwarfs and its ultimate effects on the strengths of various molecular bands. Photoelectric measurements were obtained in three selected spectral regions—in the $\lambda 6383$ CaH band, the $\lambda 7050$ TiO band, and a reference continuum—for a number of dwarfs later than K5. A plot of the color indices formed from these measurements resulted in a separation of the stars into groups. Determination of the U, V, W velocities for each star was carried out and these values compared to the position of the star in the diagram. Agreement between the kinematical classification of the stars and their photoelectric classification was found to be fairly consistent.

Determination of Macroscopic Velocities from Line Profile Asymmetries.

JOHN L. KULANDER, *General Electric Company* AND JOHN T. JEFFRIES, *University of Hawaii*.—Synthetic line profiles are generated for model atmospheres containing linear and quadratic velocity fields and various temperature distributions. LTE and non-LTE source functions and both weak and strong lines are considered. Comparison of the assumed velocity structures with those inferred from the bisector shifts of the asymmetrical profiles show qualitative correlation only in the line cores and in general only for velocities small compared with the thermal velocity. A constant asymptotic velocity is inferred in the semi-infinite atmospheres below certain limiting depths for both strong and weak lines. Approximate expressions relating observed profile parameters to atmospheric velocity parameters for small linear velocities are obtained and tested for the constant temperature case. The observed rms displacements in the solar H_α line are used to infer the amplitude of the oscillatory velocity field in that region of the solar chromosphere where the core is formed.

Method of Correction for Instrumental Broadening to Determine the Solar Ultraviolet Limb Darkening.

ANDREW A. LACIS AND SATOSHI MATSUSHIMA, *The University of Iowa Observatory*.—A series of solar spectra taken from a rocket by Tousey and his associates (*Astrophys. J.* 127, 80, 1958) has been analyzed to investigate the possibility of determining the solar limb darkening in the far-