$$\tan \frac{\varphi}{2} = \frac{t}{2d}.$$

The angular extent of the gas was measured in the velocity range -40 to $+40$ km/sec. By assuming a thickness of 240 pc for the galaxy a relation has been found between random velocity and distance. These measurements indicate that the random velocity of the gas probably increases rather rapidly beyond about 2 kpc from the sun.

The absorption effect for source 17S2A (Sagittarius A) occurs roughly within the velocity range -10 to $+15$ km/sec corresponding to a distance of 3 or 4 kpc. A study of the uncertainties involved in the measurements places extreme limits on the distance of from 2 to 6 kpc with the most probable distance being between 3 and 4 kpc. Using an independent method, Williams and Davies (1955) have found a distance of about 3 kpc, in good agreement with the present result. A consideration of the measurements reported herein leads to the conclusion that the radio source responsible for the intense emission peak at $l = 327.8$ and $b = -1.4$ is probably not associated with the galactic center but rather is superimposed on the broad central galactic background. It is interesting to note that Haddock and McCullough (1955) have suggested that this source is thermal and possibly associated with an HII region in the group of OB stars studied by Hiltner (1954).

Haddock, F. T. and McCullough T. P., 1955, *A. J.* **60**, 161.
 Hagen, J. P. and McClain, E. F. 1954, *Ap. J.* **120**, 364.
 Hagen, J. P., Lilley, A. E. and McClain, E. F. 1955, *Ap. J.* **122**, 361.
 Hiltner, W. A. 1954, *Ap. J.* **120**, 41.
 Williams, D. R. W. and Davies, R. D. 1954, *Nature* **173**, 1182.
 —. 1955, *Ibid.* **175**, 1079.

*Naval Research Laboratory,
 Washington, D. C.*

McCuskey, S. W. The stellar luminosity function.

Analyses, during the past ten years, of statistical data on spectral types, photographic magnitudes and colors in nine selected regions of the Milky Way have been summarized. The local galactic structure within 1000 parsecs of the sun has been shown by equidensity contours for stars in the spectral groups B8-A0, A2-A5, F0-F5 and G8-K3. Also for the B5 and the B8-A0 groups similar contour charts present the galactic structure to a distance of 3000 parsecs. Fluctuations in the general luminosity function amounting to at most ± 0.5 in $\log \varphi(M)$ were found. The average

function for longitudes 12° to 182° and within 500 parsecs of the sun agrees well with the standard function published by van Rhijn.

*Case Institute of Technology,
 Warner and Swasey Observatory,
 Cleveland, Ohio*

MacRae, Donald A. Photoelectric photometry in the zone from $+25^\circ$ to $+30^\circ$.

Magnitudes and colors of 155 stars in the Yale $+25^\circ$ to $+30^\circ$ zone have been determined photoelectrically with the 19-inch telescope of the David Dunlap Observatory. These stars will be used to establish scale and zero-point for the photographic magnitudes mentioned by Heard in a preceding abstract.

The stars, of magnitude six to nine, are uniformly distributed along the declination zone, with an average of six stars at every hour of right ascension. The observations have been reduced to the (B, V) system.

*David Dunlap Observatory,
 Richmond Hill, Ont., Canada*

Menon, T. K. A 21-cm investigation of NGC 2244 and NGC 2264.

The object of this investigation is to study possible effects of the galactic clusters NGC 2244 and NGC 2264 on the distribution of interstellar neutral hydrogen in and near them. The inclusion of NGC 2264 in this program was suggested by Dr. George Herbig of Lick Observatory. Profiles of the 21-cm line have been obtained for the position of each cluster and the immediate vicinity.

The profiles for NGC 2244 and surroundings show essentially three peaks at $+10$ km, $+19$ km and $+38$ km. But at the position of the cluster and at all positions at the same latitude between longitudes 168° and 200° there is also a deep minimum between the second and third peaks. A value of 1300 pc for the distance of the cluster places it within the second peak. The interesting point about the profile on the cluster is that, almost exactly at the longitude and latitude of the cluster, the separate branch of the spiral arm that contains the cluster originates and becomes distinct. It thus appears as if the clear separation of the condensation is in some way connected with the formation of the cluster. Hence, since the cluster and the condensation may have been formed at about the same time, the observation may be of some significance to the theories of formation of spiral arms.