perature of $205\,000^\circ \pm 20\%$ and has been identified with a small sunspot on the eastern limb. Two other active regions were deduced from a computer analysis and comparison with the Stanford 9-cm spectroheliograph results indicates that these have brightness temperatures of $7500^\circ \pm 50\%$ and $< 11\,000^\circ$ with mean sizes of $\sim 4'$ and $> 5'$. The latter extended region appears to be situated beyond the western limb.

An analysis of the data to derive the brightness distribution of the quiet background leads to the conclusion that equatorial limb brightening, if any, is less than 35% of the central disk temperature for the solar model considered. The radio disk in the equatorial region exceeds the optical by $(8 \pm 1)\%$. The analysis of the brightness distribution in the polar regions is less exact but indicates that there is strong limb darkening with a temperature at the optical limb of $2600^\circ \pm 50\%$.

Observations of the Galactic Center at 2.07 cm.

JAMES P. HOLLINGER, *E. O. Hulburt Center for Space Research, U. S. Naval Research Laboratory.*—The region of the galactic center has been mapped at 2.07-cm wavelength using the 60-ft reflector of the Department of Terrestrial Magnetism, Carnegie Institution of Washington. The observations cover a range of $\pm 0.8^\circ$ in declination and ± 6 min in right ascension around Sagittarius A. The beamwidth of the reflector was 5.9 ± 0.3 min of arc and the minimum detectable change in main-beam brightness temperature was $0.22 \pm 0.04^\circ\text{K}$. In addition, drift scans were made at four selected declinations with the same radiometer installed in the 85-ft reflector at the National Radio Astronomy Observatory. The beamwidth of this reflector at 2.07 cm was about 3.4 min of arc.

The map shows the same general features that were observed at 3.75 cm (Drake, F. D., *Astron. J.*, **64**, 329, 1959). These features are an intense source of small angular diameter near the galactic center position, a more extended oblong region about 10 min of arc north of this intense source and two regions symmetrically displaced by about 40 min of arc along the galactic equator on either side of the most intense source. These regions are referred to as sources A, B, C, and D, respectively.

Source A appears to be slightly elongated in declination with half-intensity widths of 4.5 ± 1 and 6.4 ± 1.5 min of arc. Its flux was determined to be $(140 \pm 40) \times 10^{-26} \text{ W m}^{-2} \text{ cps}^{-1}$ and its position as $-28^\circ 58.2' \pm 1'$, $17^h 42^m 26^s \pm 6^s$, epoch 1950.0. The data give a marginal indication that source B is composed of two source regions separated by approximately 7 min of arc along a direction roughly orthogonal to the galactic plane. Comparison of the main-beam brightness temperatures of

sources B, C, and D with those obtained by Drake at 3.75 cm and by Cooper and Prince at 10 cm (*Sky and Telescope*, November 1962) all with about the same resolution show them to be of thermal origin. A similar comparison for source A indicates a slope slightly steeper than a thermal spectrum, though the errors of measurement allow a thermal interpretation. The flux of 140 units obtained at 2.07 cm compared to 130 units at 3.75 cm (Howard, W. E., Rood, H. J., and Boyce, P. B., *Astrophys. J.* **136**, 133, 1962) and 150 units at both 3.2 and 9.4 cm (Pariiskii, Yu. N., *Dokl. Akad. Nauk SSSR* **129**, 1261, 1959) show it to be primarily thermal at centimeter wavelengths.

Determination of the Galactic Rotation Parameters from Cepheid Radial Velocities and their Variation with the Distance Scale. W. E. HOWARD III* AND J. G. KIRK, *The University of Michigan.*—

Using the data on 144 Population I Cepheids from Kraft and Schmidt (*Astrophys. J.* **137**, 249, 1963) we have solved for those sets of galactic-rotation parameters that were most consistent with various assumed distance-scales to the Cepheids. We assume circular rotation and investigated terms in the series expansion for the radial velocity out to ω_0''' using the University of Michigan IBM 7090 computer. The sum of the squares of the residual (observed minus peculiar) radial velocities $\sum (\Delta V)^2$ was minimized in the search for the optimum rotation parameters by varying the parameters one by one. The one combination of parameters that remained constant throughout the variation procedure was the Oort constant A , which, however, was found to depend on the distance scale factor F by which the Cepheid distances were multiplied prior to the analysis. Thus for a given factor F there corresponded a particular value of A that did not vary regardless of the variations taking place in the rest of the parameters. If we adopt an AR_0 product of 150 km/sec and the solar motion given by Kraft and Schmidt, we find the set of consistent parameters as a function of the distance scale that is given in the table:

	$F=1.0$	$F=1.1$	$F=1.2$
L_0 (adopted)	$58^\circ 4'$	$58^\circ 4'$	$58^\circ 4'$
B_0 (adopted)	$+21^\circ 5'$	$+21^\circ 5'$	$+21^\circ 5'$
V_0 (adopted)	16.4 km/sec	16.4 km/sec	16.4 km/sec
K (km/sec)	-2.4	-2.3	-2.2
R_0 (kpc)	10.3	11.3	12.2
ω_0' (km/sec/kpc ²)	-2.8	-2.3	-2.0
ω_0'' (km/sec/kpc ³)	+0.10	+0.03	0
ω_0''' (km/sec/kpc ⁴)	+0.40	+0.30	+0.24
A (km/sec/kpc)	14.4	13.0	12.2
$\Sigma(\Delta V)^2$ (km/sec) ²	17 870	17 850	17 835

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