stars at distances larger than 1 kpc will differ significantly from Milne's local solar motion. Only the component of the solar motion in the direction of galactic rotation is affected by this.

Q_1 may be expressed in terms of the linear velocity or the angular velocity of galactic rotation and their derivatives, or in terms of the Oort A and an associated second-order quantity:

$$\begin{aligned} Q_1 &= \frac{1}{8} \left[\left(\frac{d^2 V}{dR^2} \right)_0 + \frac{1}{R_0} \left(\frac{dV}{dR} \right)_0 - \frac{V_0}{R_0^2} \right] \\ &= \frac{1}{8} [3\omega_0' + R_0\omega_0''] \\ &= \frac{1}{4} \left[-3 \frac{A_1}{R_0} - A_2 \right], \end{aligned}$$

where $A_1 = -\frac{1}{2}R_0\omega_0'$ and $A_2 = -\frac{1}{2}R_0\omega_0''$.

Table I gives values of Q_1 computed from the

TABLE I. Q FROM DIFFERENT SOURCES

Source	R_0	A_1	A_2	Q_1
21 cm (Leiden)	8.2	18.4	-3.12	-0.9
Cepheids (Weaver)	8.2	11	+5.1	-2.3
McCormick $\bar{\pi}$, $\Delta m = 0^m 0/kpc$				-2.7
				-3.6
				-4.5

Dutch 21 cm results (Kwee *et al.* 1954), Weaver's Cepheid results (1955), and an analysis of McCormick mean parallaxes (Edmondson 1939). But according to Vyssotsky these parallaxes are diminished when reduced to the FK3 system, reducing Q_1 given in Table I perhaps by a factor of two.

If we adopt the Cepheid value of Q_1 the value of the Y component of the solar motion relative to stars at a distance of 1.5 kpc will be 5 km/sec larger than the local value. Table II gives the

TABLE II. SOLAR MOTION FOR DIFFERENT STAR GROUPS

$327^\circ 8$ X_0	$57^\circ 8$ Y_0	$+90^\circ$ Z_0	Source
+10.2	+10.1	+5.9	Basic Solar Motion.
11.6	14.4	7.6	Ca ⁺ . Blaauw, <i>B. A. N.</i> No. 436, 1952.
12.5	14.6	(6.8)	Cepheids. Weaver, <i>A. J.</i> 60, 202, 1955.
10.5	15.4	7.3	Standard Solar Motion.
10.6	17.3	(6.6)	O5-B7. Blaauw, <i>B. A. N.</i> No. 363, 1944.
8.4	18.9	(7.3)	Cepheids. Raimond, <i>B. A. N.</i> No. 450, 1954.

galactic rectangular components of the solar motion relative to several different groups of stars. Inspection of this table shows that only the Y component varies in a systematic manner, and that it increases with increasing distance of the material to which it is referred.

Table 3 gives the expected values of the Y

TABLE III. Y COMPONENT AS FUNCTION OF r AND Q_1

$\frac{Y}{r}$	-0.9	-2.3	-2.7	-3.6	-4.5
0.0	10.1	10.1	10.1	10.1	10.1
0.5	10.3	10.7	10.8	11.0	11.2
1.0	11.0	12.4	12.8	13.7	14.6
1.5	12.1	15.3	16.2	18.2	20.2
2.0	13.7	19.3	20.9	24.5	28.1

component as a function of the distance of the reference stars from the sun corresponding to the different values of Q_1 listed in Table I.

These results indicate that the basic solar motion of Vyssotsky and Janssen (1951) is the correct reduction to the local standard of rest in the sense of Milne's local solar motion, and that the other values in Table II differ from this owing to the effect of a galactic rotation term which increases with distance from the sun.

It follows that one should not derive the solar motion from a group of stars when using the exact formula for galactic rotation to analyze their residual velocities. If the stars are so far away as to require use of the exact formula, they cannot possibly define the Milne local solar motion. The basic solar motion should also be employed when the intermediate approximation is used (Weaver 1955, equation 14). It is only when the Oort double-wave approximation is used that the correction to the Y component of the solar motion can correctly be included in the solution as an unknown.

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Emmons, Richard H. The North Canton Planetarium.

In the light of the A. A. S. Council resolution which recognized a definite need for the dissemination to the public at large of accurate astronomical information, the writer describes an experiment in astronomy education conducted at his home, in the village of North Canton, Ohio. In what appears to be his private garage, he has installed a 14 ft. diameter dome and a specially-built planetarium projector. Together with auxiliary equipment, these enable the giving of planetarium demonstrations for groups up to 36. Last fall, more than 1000 persons attended the programs on The Autumn Constellations and The Christmas Star. Most groups were comprised of