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PREDICTED STAR COUNTS IN SELECTED FIELDS AND PHOTOMETRIC BANDS: APPLICATIONS TO GALACTIC STRUCTURE, THE DISK LUMINOSITY FUNCTION, AND THE DETECTION OF A MASSIVE HALO

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ABSTRACT

We present tables of predicted star counts in 17 selected directions on the sky as a function of apparent B, V, R, and I magnitudes and absolute visual magnitudes that are calculated from the Bahcall-Soneira Galaxy model. Eight of the fields were selected ab initio for their usefulness in determining from star counts either parameters of galactic structure, the faint end of the disk luminosity function, or the detection of a massive stellar halo. The remaining nine fields are already being studied by different observers for a variety of purposes. The tabulated star counts can be transformed easily into any other band using the given visual absolute and apparent magnitudes; the distribution of star colors for any two bands can also be calculated simply. The method used to accomplish these transformations is illustrated. The importance of I band star counts is stressed.

Star counts in specified fields to $m_I = 19$ mag can reveal the faint end of the disk luminosity function down to the end of the hydrogen-burning main sequence. Star counts at high galactic latitudes to $m_I = 22$ mag *should reveal the stellar constituents of a massive halo if they are massive enough to be on the hydrogen-burning main sequence.*

The I band limits discussed above for faint hydrogen-burning stars in either the disk or the halo correspond to $(M/L_V) = 4000$ in solar units in the visual band. If the massive halo is made up of black dwarf stars that are not massive enough to reach the hydrogen-burning main sequence, then they would have $(M/L_V) > 10^9$ solar units.

Halo black dwarfs are not expected to be detectable by existing ground-based techniques, by the first configuration of instruments on the Space Telescope, by the *Infrared Astronomical Satellite*, or by the *Cosmic Background Explorer* satellite.

Subject headings: galaxies: Milky Way — galaxies: structure — stars: stellar statistics

I. INTRODUCTION

Star counts have been used for many decades to provide important information on the density dependence and luminosity functions of stars in the Galaxy (see, e.g., Seares *et al.* 1925; Bok 1937; Oort 1938). In a recent series of papers (Bahcall and Soneira 1980*a*, *b*, 1981; hereafter Papers I–III), we have made detailed models of the stellar content of the Galaxy and have used these models to derive improved values for various galactic parameters and to place limits on the numbers of stellar objects, such as QSOs, that appear at faint magnitudes. These models describe theoretically the stellar content per unit of volume everywhere in the accessible regions of the Galaxy, making use of data on luminosity functions and scale heights obtained in the vicinity of the Sun.

There have been also a number of recent important observational papers dealing with star counts which have shown that new detectors and automated counting techniques permit the rapid and accurate accumulation of data, making clear that star counts will be a valuable way of studying galactic structure and content over the next several years (see, e.g., Kron 1978, 1980*a*, *b*, *c*; Tyson and Jarvis 1979; Peterson *et al.* 1979; Brown 1979; Bohuski and Weedman 1979; Chiu 1980). Moreover, there are additional surveys underway by different observers to carry out deep star counts in certain selected areas, both in the northern and the southern galactic hemispheres (Young 1980; Morton and Tritton 1980; Tyson 1980).

The present paper is designed to facilitate these new observational programs by providing detailed predictions for comparison with the observations in special fields that are of unusual interest either because they are already being studied or because they are particularly useful in determining specific galactic parameters. We also describe the I band observations that are necessary in order to study the faint end of the disk luminosity function and to detect stellar components of a massive halo if they lie anywhere on the hydrogen-burning main sequence. Finally, we discuss the possibilities of detecting black dwarfs that are not massive enough to burn hydrogen but which might constitute the so far unobserved halo.

Our results are based on calculations made using a detailed three-dimensional model that specifies separately the luminosity functions and the spatial density functions for each of the known stellar components that make up the Galaxy (see papers I–III for descriptions of the model). This model successfully predicts at the north galactic pole (SA57) the observed star counts as a function of apparent visual magnitude over the five orders of magnitude variation between $m_V = 4$ and $m_V = 22$ mag, explains in fields SA57 and SA68 the measured bimodal distribution of star colors at $20 \leq m_V \leq 22$ mag as a separation into disk and spheroid components, and reproduces the observed gross longitudinal and latitudinal dependences of the star counts.

Most of the tables presented in the present paper give star counts expected on the basis of a Galaxy model that contains only disk and spheroid stars, since these are the only stars that have been observed so far. The predicted effect of a massive stellar halo on the star counts is described separately in § V.

Our standard two-component Galaxy model can be used to predict the star counts as a function of apparent visual magnitude and position on the sky or the distribution of absolute magnitudes in the visual band for stars of a given apparent magnitude, luminosity class, and position on the sky. The known distribution of luminosity classes and absolute magnitudes in the Galaxy model makes possible the transformation of the predictions into any band and also permits the calculation of the expected distribution of observed star colors from any two bands.

In § II of this paper we present tables of the predicted star counts in 17 selected directions in the B, V, R, and I bands (the effective wavelengths of these bands are, respectively, $\lambda_{\text{eff}} = 4400$, 5500, 7000, and 9000 Å). The coordinates of the individual fields and the purposes for which they were chosen are given in Table 1. Tables 2.1–2.17 list for each field the calculated differential star counts in both apparent visual magnitude and absolute visual magnitude, with separate entries for disk main-sequence, for disk non–main-sequence, and for spheroid stars. The predicted star counts in the B, R, and I bands are given in Table 3. The comparison of the calculations with observational data that can be obtained in the near future will be useful in determining parameters of galactic structure (such as the disk scale length), in testing the assumed geometry of the galaxy model (e.g., the three-dimensional shape of the spheroid), in improving estimates of stellar luminosity functions and scale heights (for example, the faint end of the disk luminosity function), in searching for a massive stellar halo, and in helping to recognize new phenomena (such as previously undiscovered stellar populations).

Section III illustrates the transformation of the predicted counts to other bands and the calculation of the distribution of star colors. Figure 1 shows the predicted distribution of colors in $B-V$ and $R-I$ for two illustrative fields.

The possibilities for detecting the faint end of the disk luminosity function, corresponding to stellar masses between 0.2 $M_\odot$ (down to which the disk luminosity function is reasonably well known) and the limit of the hydrogen-burning main sequence at ~ 0.085 $M_\odot$, are discussed in § IV. The great power of I band measurements for detecting faint disk stars is stressed. Table 4 shows the calculated star counts in the I band for each of our 17 selected fields and for three different assumed absolute magnitude cutoffs. Star counts to $m_I = 19$ mag in selected fields should reveal the disk luminosity function down to the end of the hydrogen-burning main sequence.

Finally, we derive in § V the limits on the stellar composition of a massive halo for the Galaxy that correspond to different I band limiting magnitudes. Star counts to $m_I = 22$ mag at the galactic poles should reveal the stars corresponding to a massive halo of the Galaxy if these stars are anywhere on the hydrogen-burning main sequence. The observational limits that will be obtainable for a massive galactic halo by I band star counts to $m_I = 22$ mag will correspond to $(M/L_V) \geq 4000$ in solar units in the visible band (if no detection is made).

Less massive stars ($M < 0.085$ $M_\odot$) in the halo will not be detectable by star counts in any of the familiar bands discussed in this paper (B, V, R, I) if conventional ideas (Stevenson 1978) regarding the cooling of such stars are correct. The possibilities for detecting halo black dwarfs using the Space Telescope, the *Infrared Astronomical Satellite*, and the *Cosmic Background Explorer* satellite are also discussed in § V.

The major conclusions of this paper are summarized in § VI.

II. THE FIELDS

Table 1 is a list of the 17 selected fields. Column (1) gives our designation of each field in terms of a number between 1 and 17; columns (2)–(5) give the 1950 celestial and galactic coordinates of the fields; and column (6) lists either current observers or principal scientific objectives. Column (6) identifies a few of the quantities that can be efficiently studied in the specified direction.

The reasons for selecting these fields are discussed extensively in Paper I, §§ III*d*, *e*, *f*, IV*d*. Of course, information about most of the parameters of galactic structure can be obtained from any set of one or two fields; e.g., Paper I mainly made use of data from SA57 and SA68. However, the counts are much more sensitive to certain parameters in particular directions than they are in other directions; § IV of Paper I contains a

TABLE 1

LIST OF SELECTED FIELDS

Field (1)	α(1950) (2)	δ(1950) (3)	l^{II}(1950) (4)	b^{II}(1950) (5)	Purpose[a] (6)
1	12^h48^m	+27°	...	+90°	galactic pole, (SA57), luminosity function, disk scale height, faint end of disk luminosity function, massive halo observations
2	15 00	+2.4	0°	+50	disk scale length, spheroid index ν
3	15 52	+28	45(315)	+50	spheroid density variation in longitude
4	15 24	+56	90(270)	+50	spheroid test of zero ellipticity
5	11 32	+66	135(225)	+50	disk scale length, spheroid density variation in longitude
6	09 44	+42	180	+50	disk scale length, spheroid index ν
7	17 56	+61	90(270)	+30	spheroid test of zero ellipticity
8	08 00	+40	180	+30	disk scale length, spheroid index ν
9	15 28	−4.3	0	+40	spheroid normalization and ellipticity (no colors)
10	10 36	+40	180	+60	spheroid ellipticity (no colors) massive halo observations (no colors)
11	00 14	+16	111	−46	(SA68, PUDS1) spheroid test of zero ellipticity
12	22 03	−19	37	−51	(MT) spheroid density variation in longitude
13	02 33	+03	167	−51	(PUDS2) disk scale length, spheroid index ν
14	09 40	+47	172	+48	(PUDS3, B2740) disk scale length, spheroid index ν
15	13 20	+13	331	+74	(PUDS4) same as galactic pole, $b^{II}=90°$, above
16	15 56	+42	67	+49	(PUDS5) spheroid density variation in longitude
17	21 50	+03	61	−37	(PUDS6) spheroid density variation in longitude

[a]Fields 5, 6, 8, 13, and 14 are particularly useful for measuring the faint end of the disk luminosity function when no colors are available.

detailed discussion of the sensitivity of the counts in various directions to variations in the model parameters.

The model was constructed assuming perfect north-south and east-west symmetry, i.e., identical counts for $(b^{II})'=-(b^{II})$ as well as for $(l^{II})'=(360°-l^{II})$. This assumption could be tested by comparing, e.g, star counts in the directions $b^{II}=\pm 90°$ and for $b^{II}=\pm 50°$ in the directions $l^{II}=90°, 270°$.

Patchy obscuration could cause errors in the interpretation of the results, especially for fields below ~40° in galactic latitude (fields 7, 8, 9, and 17). This problem can be investigated by using two or more nearly adjacent fields or by subdividing the results from a single wide-field Schmidt plate into several independent parts.

For those fields already being investigated, column (6) of Table 1 identifies the group of observers. SA57 and SA68 are being studied by Koo and Kron (1980) and by Tyson and Jarvis (1980). Young (1980) is also studying SA68 and four other fields as part of a Palomar Ultra-Deep Survey, indicated by PUDS numbers in Table 1. PUDS3 is also Tyson and Jarvis field 2740. Morton and Tritton (1980) are studying field 12, which is indicated in Table 1 by MT. (In general, we have ignored differences of a few degrees in identifying the positions of the fields already under study; for example, SA57 is actually at $b^{II}=+86°$.)

Tables 2.1–2.17 list the differential star counts (per sq. deg.) for unit magnitude intervals in both apparent visual magnitude and absolute visual magnitude for each of the fields. The first entry in apparent magnitude is for all stars brighter than $m_V=12$ mag. All of the entries in the columns for specified apparent magnitudes refer to numbers of stars per sq. deg. in the indicated magnitude range. The range of absolute magnitudes for each column of the table is equal to ±0.5 mag about the value listed in the heading. Separate entries are indicated for disk main-sequence stars, disk non–main-sequence stars (supergiants, giants, and subgiants), and spheroid (high-velocity) stars. Table entries less than 0.1% of the total density in a given apparent magnitude interval are not shown.

The total contribution of white dwarfs (over all the absolute magnitude intervals considered) is predicted to be <2% of the total number of stars for any apparent magnitude interval brighter than $m_V=24$ mag for all the fields of Table 1 except those fields near the direction of the galactic anticenter $l^{II}\geq 120°$, $b^{II}\leq 50°$ (numbers 5, 6, 8, 13, and 14), where the fraction rises to a value as large as 5%. (For work on the white dwarf luminosity function see Sion and Liebert 1977; Liebert *et al.* 1979; Liebert 1980; and Paper I.) For example, at $m_V=24$ mag, $b^{II}=30°$, $l^{II}=180°$, the white dwarf fraction rises to 5%, whereas at $m_V=24$ mag, $b^{II}=50°$, $l^{II}=0°$, it is only 1%. The expected fraction of white dwarfs is larger at lower galactic latitudes and at larger galactic longitudes where there are relatively more disk than spheroid stars; disk stars are, on the average, intrinsically fainter than spheroid stars that are observed at the same apparent magnitude and at moderate to large galactic latitudes. This effect exists because the scale heights of stars in the disk are much less than the effective scale height of the spheroid (for more detail on this point, see §§ IIIg, h of Paper I). Because of its smallness, the white dwarf contribution is not included explicitly within the tables.

At the galactic pole, the differential counts are dominated by the disk component for $m_V < 16$ mag and by the spheroidal component for $m_V > 19$ mag. For directions closer to the galactic center (see Table 2.9), the spheroid dominates the counts beginning 2 or 3 mag brighter. For directions further from the galactic center (see Table 2.8), the disk continues to dominate the counts for all apparent magnitudes considered here. If star colors are obtained, it is possible to separate rather cleanly the disk and spheroid stars (see Fig. 1 below, Papers I and II, and especially Fig. 8 of Paper I).

Table entries with apparent magnitudes $m_V > 22$ mag and absolute magnitudes $M_V \geq 13$ mag have not yet been verified with data from even one field and are therefore especially uncertain and interesting. These entries are included here for completeness and to make possible transformations to other bands that may re-

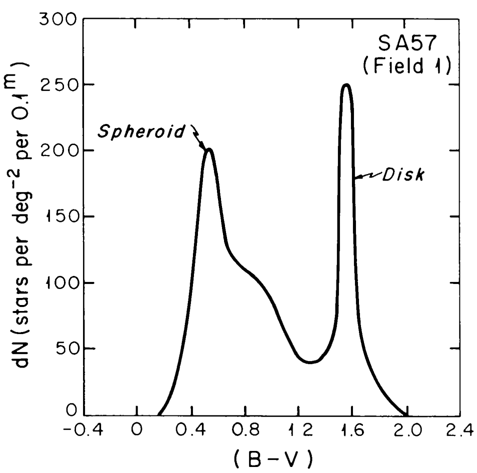

FIG. 1a

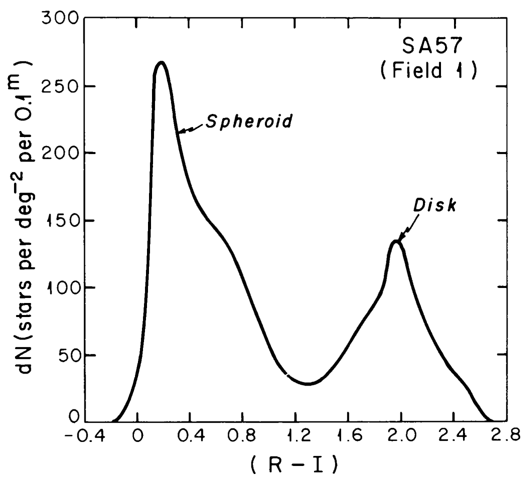

FIG. 1b

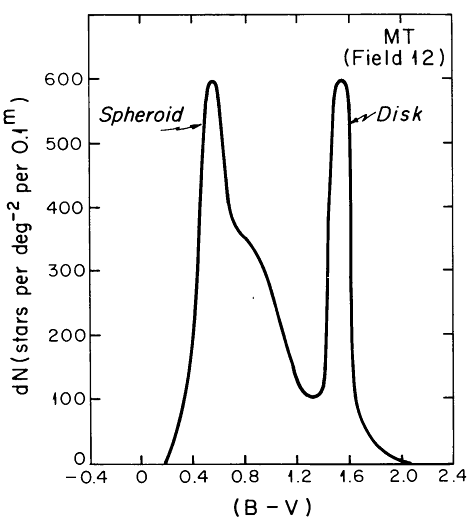

FIG. 1c

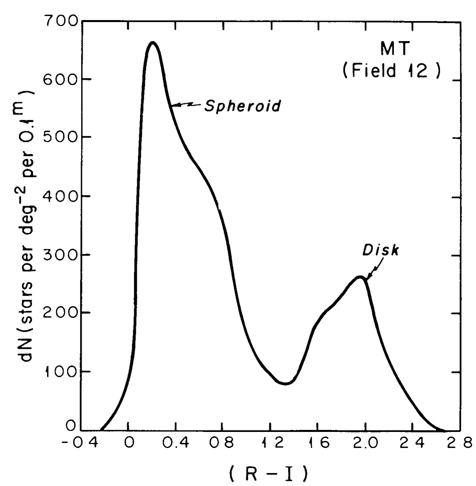

FIG. 1d

FIG. 1.—(a) The predicted distribution of $(B-V)$ colors in the direction of the galactic pole (field 1) for stars with $20 \leq m_V \leq 22$. The plotted scale is stars per 0.1 mag in $(B-V)$ per sq. deg. There are 1050 stars per sq. deg. with $(B-V) \leq 1.2$ and 490 stars per sq. deg. with $(B-V) > 1.2$. (b) The predicted distribution of $(R-I)$ colors in the direction of the galactic pole (field 1) for stars with $19 \leq m_I \leq 21$. The plotted scale is stars per 0.1 mag in $(R-I)$ per sq. deg. There are 1530 stars per sq. deg. with $(R-I) \leq 1.2$ and 840 stars per sq. deg. with $(R-I) > 1.2$. (c) The predicted distribution of $(B-V)$ colors in the direction of the Morton-Tritton field (field 12) for stars with $20 \leq m_V \leq 22$. The plotted scale is stars per 0.1 mag in $(B-V)$ per sq. deg. There are 2970 stars per sq. deg. with $(B-V) \leq 1.2$ and 1100 stars per sq. deg. with $(B-V) > 1.2$. (d) The predicted distribution of $(R-I)$ colors in the direction of the Morton-Tritton field (field 12) for stars with $19 \leq m_I \leq 21$. The plotted scale is stars per 0.1 mag in $(R-I)$ per sq. deg. There are 4400 stars per sq. deg. with $(R-I) \leq 1.2$ and 1930 stars per sq. deg. with $(R-I) > 1.2$.

TABLE 2.1

DISTRIBUTION OF ABSOLUTE MAGNITUDES OF VISIBLE STARS FOR $\alpha(1950)=12^h48^m$, δ

m_v	M_v	-2	-1	0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
	Total = 1.6(+1) per mag per sq. degree, all M_v; Total(<m_v) = 1.6(+1) per sq. degree,													
<12	Disk ms			2.7(-2)	8.3(-2)	2.5(-1)	1.9(+0)	4.1(+0)	2.9(+0)	1.3(+0)	4.9(-1)	1.5(-1)	4.2(-2)	
	Disk non-ms	4.2(-2)	1.5(-1)	4.6(-1)	1.0(+0)	1.4(+0)	8.5(-1)	2.5(-2)						
	Spheroid	1.5(-1)	2.0(-1)	1.9(-1)	1.5(-1)	8.9(-2)	4.6(-2)	1.9(-2)						
	Total = 1.8(+1) per mag per sq. degree, all M_v; Total(<m_v) = 3.4(+1) per sq. degree,													
12-13	Disk ms						6.4(-1)	4.4(+0)	5.3(+0)	2.8(+0)	1.1(+0)	4.4(-1)	1.3(-1)	3.1(-2
	Disk non-ms				6.2(-2)	3.6(-1)	5.1(-1)	2.4(-2)						
	Spheroid	2.0(-1)	4.0(-1)	4.8(-1)	4.0(-1)	2.6(-1)	1.3(-1)	5.8(-2)	2.0(-2)					
	Total = 3.6(+1) per mag per sq. degree, all M_v; Total(<m_v) = 7.0(+1) per sq. degree,													
13-14	Disk ms						2.5(-1)	5.2(+0)	1.1(+1)	7.6(+0)	3.5(+0)	1.4(+0)	5.1(-1)	1.4(-1
	Disk non-ms					1.0(-1)	3.1(-1)							
	Spheroid	3.2(-1)	7.8(-1)	1.4(+0)	1.3(+0)	9.6(-1)	5.1(-1)	2.2(-1)	8.6(-2)					
	Total = 6.8(+1) per mag per sq. degree, all M_v; Total(<m_v) = 1.4(+2) per sq. degree,													
14-15	Disk ms							3.5(+0)	1.7(+1)	1.7(+1)	9.5(+0)	4.2(+0)	1.6(+0)	5.8(-1)
	Disk non-ms						7.9(-2)							
	Spheroid	2.9(-1)	1.2(+0)	2.6(+0)	3.9(+0)	3.2(+0)	1.9(+0)	8.6(-1)	3.2(-1)	1.2(-1)				
	Total = 1.2(+2) per mag per sq. degree, all M_v; Total(<m_v) = 2.5(+2) per sq. degree,													
15-16	Disk ms							1.2(+0)	1.6(+1)	2.6(+1)	2.1(+1)	1.1(+1)	4.8(+0)	1.8(+0)
	Disk non-ms													
	Spheroid	2.2(-1)	1.1(+0)	4.1(+0)	7.4(+0)	9.1(+0)	6.3(+0)	3.2(+0)	1.3(+0)	4.4(-1)	1.4(-1)			
	Total = 1.8(+2) per mag per sq. degree, all M_v; Total(<m_v) = 4.3(+2) per sq. degree,													
16-17	Disk ms								7.4(+0)	2.4(+1)	3.2(+1)	2.5(+1)	1.3(+1)	5.5(+0)
	Disk non-ms													
	Spheroid		8.5(-1)	3.7(+0)	1.1(+1)	1.7(+1)	1.8(+1)	1.0(+1)	4.8(+0)	1.7(+0)	5.5(-1)			
	Total = 2.6(+2) per mag per sq. degree, all M_v; Total(<m_v) = 6.9(+2) per sq. degree,													
17-18	Disk ms								1.3(+0)	1.1(+1)	3.0(+1)	3.8(+1)	2.9(+1)	1.5(+1)
	Disk non-ms													
	Spheroid		4.2(-1)	2.8(+0)	1.0(+1)	2.7(+1)	3.4(+1)	3.0(+1)	1.5(+1)	6.4(+0)	2.1(+0)	6.5(-1)		
	Total = 3.8(+2) per mag per sq. degree, all M_v; Total(<m_v) = 1.1(+3) per sq. degree,													
18-19	Disk ms									2.0(+0)	1.4(+1)	3.6(+1)	4.4(+1)	3.2(+1)
	Disk non-ms													
	Spheroid			1.4(+0)	7.8(+0)	2.4(+1)	5.2(+1)	5.7(+1)	4.5(+1)	2.1(+1)	8.0(+0)	2.5(+0)	7.5(-1)	
	Total = 5.1(+2) per mag per sq. degree, all M_v; Total(<m_v) = 1.6(+3) per sq. degree,													
19-20	Disk ms										2.4(+0)	1.7(+1)	4.1(+1)	5.0(+1)
	Disk non-ms													
	Spheroid			6.1(-1)	3.9(+0)	1.8(+1)	4.7(+1)	8.6(+1)	8.3(+1)	6.0(+1)	2.6(+1)	9.5(+0)	2.9(+0)	8.6(-1)
	Total = 6.8(+2) per mag per sq. degree, all M_v; Total(<m_v) = 2.3(+3) per sq. degree,													
20-21	Disk ms											2.8(+0)	1.9(+1)	4.7(+1)
	Disk non-ms													
	Spheroid				1.7(+0)	8.9(+0)	3.4(+1)	7.7(+1)	1.3(+2)	1.1(+2)	7.4(+1)	3.1(+1)	1.1(+1)	3.3(+0)
	Total = 8.6(+2) per mag per sq. degree, all M_v; Total(<m_v) = 3.1(+3) per sq. degree,													
21-22	Disk ms												3.3(+0)	2.2(+1)
	Disk non-ms													
	Spheroid					3.9(+0)	1.7(+1)	5.7(+1)	1.1(+2)	1.7(+2)	1.4(+2)	8.9(+1)	3.6(+1)	1.3(+1)
	Total = 1.0(+3) per mag per sq. degree, all M_v; Total(<m_v) = 4.2(+3) per sq. degree,													
(22-23)	Disk ms													3.7(+0)
	Disk non-ms													
	Spheroid					1.2(+0)	7.4(+0)	2.8(+1)	8.2(+1)	1.5(+2)	2.1(+2)	1.6(+2)	1.0(+2)	4.0(+1)
	Total = 1.2(+3) per mag per sq. degree, all M_v; Total(<m_v) = 5.4(+3) per sq. degree,													
(23-24)	Disk ms													
	Disk non-ms													
	Spheroid						2.3(+0)	1.2(+1)	4.1(+1)	1.1(+2)	1.9(+2)	2.5(+2)	1.9(+2)	1.2(+2)
	Total = 1.4(+3) per mag per sq. degree, all M_v; Total(<m_v) = 6.8(+3) per sq. degree,													
(24-25)	Disk ms													
	Disk non-ms													
	Spheroid							3.8(+0)	1.7(+1)	5.5(+1)	1.4(+2)	2.2(+2)	2.9(+2)	2.2(+2)
	Total = 1.6(+3) per mag per sq. degree, all M_v; Total(<m_v) = 8.4(+3) per sq. degree,													
(25-26)	Disk ms													
	Disk non-ms													
	Spheroid								5.5(+0)	2.3(+1)	6.8(+1)	1.6(+2)	2.5(+2)	3.2(+2)

1950) = 27°, b^{II}(1950) = 90°[a]

	+11	+12	(+13)	(+14)	(+15)	(+16)	(+17)	(+18)	(+19)
all M_V									
all M_V									
all M_V									
all M_V									
	1.6(-1)								
all M_V									
	6.4(-1)	1.8(-1)							
all M_V									
	2.0(+0)	7.2(-1)	2.0(-1)						
all M_V									
	6.1(+0)	2.2(+0)	7.9(-1)						
all M_V									
	1.7(+1)	6.8(+0)	2.5(+0)	8.7(-1)					
all M_V									
	3.6(+1)	1.8(+1)	7.6(+0)	2.7(+0)	9.5(-1)				
all M_V									
	5.6(+1)	4.0(+1)	2.0(+1)	8.3(+0)	3.0(+0)	9.6(-1)			
	9.6(-1)								
all M_V									
	5.2(+1)	6.2(+1)	4.5(+1)	2.2(+1)	9.1(+0)	3.0(+0)	9.6(-1)		
	3.7(+0)	1.1(+0)							
all M_V									
	2.5(+1)	5.8(+1)	6.9(+1)	4.9(+1)	2.4(+1)	9.2(+0)	3.0(+0)		
	1.4(+1)	4.2(+0)	1.2(+0)						
all M_V									
	4.1(+0)	2.7(+1)	6.4(+1)	7.6(+1)	5.4(+1)	2.5(+1)	9.2(+0)	3.0(+0)	
	4.5(+1)	1.6(+1)	4.6(+0)	1.3(+0)					
all M_V									
		4.6(+0)	3.0(+1)	7.1(+1)	8.3(+1)	5.4(+1)	2.5(+1)	9.2(+0)	2.2(+0)
	1.3(+2)	5.0(+1)	1.7(+1)	5.1(+0)					
all M_V									
			5.1(+0)	3.3(+1)	7.7(+1)	8.4(+1)	5.4(+1)	2.5(+1)	6.8(+0)
	2.4(+2)	1.4(+2)	5.6(+1)	1.9(+1)	5.5(+0)				

[a]Standard Galaxy model including giants (see Papers I and III). For each apparent magnitude interval the number of stars per deg^2 that have absolute magnitudes in the range $M_v \pm \frac{1}{2}$ mag are indicated separately for the disk main sequence (first line), the disk non–main sequence, i.e., giants and subgiants (second line), and the spheroid (third line). Also given in a heading for each apparent magnitude interval are the total number of stars per deg^2 in that magnitude interval and the total number of stars per deg^2 brighter than the dimmer apparent magnitude of the interval. Table entries less than 0.1% of the total density in an apparent magnitude interval are not shown. Entries for apparent magnitudes $m_v > 22$ or absolute magnitudes $M_v > +12$ are uncertain.

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TA

DISTRIBUTION OF ABSOLUTE MAGNITUDES OF VISIBLE STARS F

m_V \ M_V		-2	-1	0	+1	+2	+3	+4	+5	+6	
			Total = 2.6(+1) per mag per sq. degree, all M_V							Total(< m_V	
<12	Disk ms			6.3(-2)	2.0(-1)	5.8(-1)	3.5(+0)	5.7(+0)	3.5(+0)	1.5(+0)	5.3
	Disk non-ms	1.1(-1)	4.1(-1)	1.2(+0)	2.4(+0)	2.8(+0)	1.4(+0)	3.5(-2)			
	Spheroid	5.8(-1)	5.0(-1)	3.5(-1)	2.1(-1)	1.1(-1)	5.3(-2)				
			Total = 3.2(+1) per mag per sq. degree, all M_V							Total(< m_V	
12-13	Disk ms						2.0(+0)	8.0(+0)	7.3(+0)	3.4(+0)	1.3
	Disk non-ms			4.1(-2)	4.5(-1)	1.4(+0)	1.3(+0)	4.7(-2)			
	Spheroid	1.1(+0)	1.8(+0)	1.3(+0)	7.9(-1)	3.9(-1)	1.7(-1)	6.8(-2)			
			Total = 7.1(+1) per mag per sq. degree, all M_V							Total(< m_V	
13-14	Disk ms						1.3(+0)	1.3(+1)	1.9(+1)	1.0(+1)	4.3
	Disk non-ms				9.4(-2)	7.5(-1)	1.3(+0)				
	Spheroid	1.6(+0)	4.4(+0)	6.0(+0)	3.8(+0)	1.9(+0)	7.7(-1)	2.8(-1)	1.0(-1)		
			Total = 1.5(+2) per mag per sq. degree, all M_V							Total(< m_V	
14-15	Disk ms						3.9(-1)	1.3(+1)	3.6(+1)	2.7(+1)	1.3
	Disk non-ms						6.3(-1)				
	Spheroid	1.0(+0)	6.2(+0)	1.5(+1)	1.7(+1)	9.0(+0)	3.7(+0)	1.3(+0)	4.2(-1)		
			Total = 3.1(+2) per mag per sq. degree, all M_V							Total(< m_V	
15-16	Disk ms							7.6(+0)	4.9(+1)	5.5(+1)	3.4
	Disk non-ms										
	Spheroid	5.4(-1)	3.9(+0)	2.1(+1)	4.2(+1)	4.1(+1)	1.8(+1)	6.3(+0)	1.9(+0)	5.6(-1)	
			Total = 5.5(+2) per mag per sq. degree, all M_V							Total(< m_V	
16-17	Disk ms							1.9(+0)	4.0(+1)	7.6(+1)	6.8
	Disk non-ms										
	Spheroid		2.0(+0)	1.3(+1)	5.8(+1)	9.9(+1)	8.1(+1)	3.0(+1)	9.4(+0)	2.6(+0)	7.1
			Total = 9.0(+2) per mag per sq. degree, all M_V							Total(< m_V	
17-18	Disk ms								1.5(+1)	6.3(+1)	9.4
	Disk non-ms										
	Spheroid			6.7(+0)	3.6(+1)	1.3(+2)	1.9(+2)	1.4(+2)	4.5(+1)	1.3(+1)	3.2
			Total = 1.4(+3) per mag per sq. degree, all M_V							Total(< m_V	
18-19	Disk ms								2.0(+0)	2.3(+1)	7.8
	Disk non-ms										
	Spheroid			2.5(+0)	1.9(+1)	8.2(+1)	2.6(+2)	3.2(+2)	2.0(+2)	6.0(+1)	1.6
			Total = 1.9(+3) per mag per sq. degree, all M_V							Total(< m_V	
19-20	Disk ms									2.9(+0)	2.9
	Disk non-ms										
	Spheroid				7.0(+0)	4.3(+1)	1.6(+2)	4.3(+2)	4.7(+2)	2.7(+2)	7.5
			Total = 2.6(+3) per mag per sq. degree, all M_V							Total(< m_V	
20-21	Disk ms										3.6
	Disk non-ms										
	Spheroid					1.6(+1)	8.2(+1)	2.6(+2)	6.2(+2)	6.3(+2)	3.4
			Total = 3.3(+3) per mag per sq. degree, all M_V							Total(< m_V	
21-22	Disk ms										
	Disk non-ms										
	Spheroid					5.8(+0)	3.1(+1)	1.3(+2)	3.8(+2)	8.2(+2)	7.9
			Total = 4.0(+3) per mag per sq. degree, all M_V							Total(< m_V	
(22-23)	Disk ms										
	Disk non-ms										
	Spheroid						1.1(+1)	5.1(+1)	1.9(+2)	5.0(+2)	1.0
			Total = 4.7(+3) per mag per sq. degree, all M_V							Total(< m_V	
(23-24)	Disk ms										
	Disk non-ms										
	Spheroid							1.8(+1)	7.4(+1)	2.6(+2)	6.2
			Total = 5.3(+3) per mag per sq. degree, all M_V							Total(< m_V	
(24-25)	Disk ms										
	Disk non-ms										
	Spheroid								2.6(+1)	9.7(+1)	3.2
			Total = 6.1(+3) per mag per sq. degree, all M_V							Total(< m_V	
(25-26)	Disk ms										
	Disk non-ms										
	Spheroid								7.2(+0)	3.4(+1)	1.2

[a] See footnote to Table 2.1.

ɜLE 2.2

ɔR $\alpha(1950)=15^h00^m$, $\delta(1950)=2\overset{\circ}{.}4$, $l^{II}(1950)=0°$, $b^{II}(1950)=50°$ [a]

7	+8	+9	+10	+11	+12	(+13)	(+14)	(+15)	(+16)	(+17)	(+18)	(+19)
= 2.6(+1) per sq. degree, all M_V												
-1)	1.5(-1)	4.3(-2)										
= 5.8(+1) per sq. degree, all M_V												
+0)	4.7(-1)	1.3(-1)	3.2(-2)									
= 1.3(+2) per sq. degree, all M_V												
+0)	1.6(+0)	5.5(-1)	1.5(-1)									
= 2.8(+2) per sq. degree, all M_V												
+1)	5.1(+0)	1.8(+0)	6.2(-1)	1.7(-1)								
= 5.9(+2) per sq. degree, all M_V												
+1)	1.5(+1)	5.9(+0)	2.0(+0)	7.0(-1)								
= 1.1(+3) per sq. degree, all M_V												
+1)	4.0(+1)	1.8(+1)	6.7(+0)	2.3(+0)	7.8(-1)							
-1)												
= 2.0(+3) per sq. degree, all M_V												
+1)	8.1(+1)	4.6(+1)	2.0(+1)	7.5(+0)	2.5(+0)							
+0)												
= 3.4(+3) per sq. degree, all M_V												
+1)	1.1(+2)	9.4(+1)	5.3(+1)	2.3(+1)	8.3(+0)	2.8(+0)						
+1)	3.8(+0)											
= 5.3(+3) per sq. degree, all M_V												
+1)	9.2(+1)	1.3(+2)	1.1(+2)	5.9(+1)	2.5(+1)	9.2(+0)	3.1(+0)					
+1)	1.9(+1)	4.5(+0)										
= 7.9(+3) per sq. degree, all M_V												
+0)	3.4(+1)	1.1(+2)	1.5(+2)	1.2(+2)	6.6(+1)	2.8(+1)	1.0(+1)	3.4(+0)				
+2)	8.9(+1)	2.2(+1)	5.1(+0)									
= 1.1(+4) per sq. degree, all M_V												
	4.2(+0)	4.0(+1)	1.2(+2)	1.6(+2)	1.3(+2)	7.2(+1)	3.1(+1)	1.1(+1)	3.4(+0)			
+2)	4.1(+2)	1.0(+2)	2.5(+1)	5.7(+0)								
= 1.5(+4) per sq. degree, all M_V												
		4.9(+0)	4.5(+1)	1.3(+2)	1.8(+2)	1.5(+2)	8.0(+1)	3.3(+1)	1.1(+1)			
+3)	9.4(+2)	4.7(+2)	1.2(+2)	2.8(+1)	6.3(+0)							
= 2.0(+4) per sq. degree, all M_V												
			5.5(+0)	5.0(+1)	1.5(+2)	2.0(+2)	1.6(+2)	8.7(+1)	3.4(+1)	1.1(+1)		
+2)	1.2(+3)	1.1(+3)	5.3(+2)	1.3(+2)	3.1(+1)	7.0(+0)						
= 2.5(+4) per sq. degree, all M_V												
				6.2(+0)	5.5(+1)	1.6(+2)	2.2(+2)	1.8(+2)	8.8(+1)	3.4(+1)	1.1(+1)	
+2)	7.4(+2)	1.4(+3)	1.2(+3)	6.0(+2)	1.5(+2)	3.4(+1)	7.7(+0)					
= 3.1(+4) per sq. degree, all M_V												
					6.8(+0)	6.1(+1)	1.8(+2)	2.4(+2)	1.8(+2)	8.8(+1)	3.4(+1)	8.5(+0)
+2)	3.8(+2)	8.5(+2)	1.6(+3)	1.4(+3)	6.6(+2)	1.6(+2)	3.8(+1)	8.4(+0)				

TABI

DISTRIBUTION OF ABSOLUTE MAGNITUDES OF VISIBLE STARS FOR

m_V \ M_V		-2	-1	0	+1	+2	+3	+4	+5	+6	+7
	Total = 2.5(+1) per mag per sq. degree, all M_V Total($<m_V$) =										
<12	Disk ms			6.2(-2)	1.9(-1)	5.7(-1)	3.5(+0)	5.6(+0)	3.5(+0)	1.5(+0)	5.2(-1)
	Disk non-ms	1.1(-1)	3.8(-1)	1.1(+0)	2.3(+0)	2.7(+0)	1.3(+0)	3.5(-2)			
	Spheroid	3.5(-1)	3.6(-1)	2.9(-1)	1.9(-1)	1.0(-1)	5.0(-2)				
	Total = 2.9(+1) per mag per sq. degree, all M_V Total($<m_V$) =										
12-13	Disk ms						1.9(+0)	7.8(+0)	7.2(+0)	3.4(+0)	1.3(+0)
	Disk non-ms			3.5(-2)	4.0(-1)	1.3(+0)	1.2(+0)	4.6(-2)			
	Spheroid	5.8(-1)	1.0(+0)	9.2(-1)	6.3(-1)	3.4(-1)	1.5(-1)	6.5(-2)			
	Total = 6.1(+1) per mag per sq. degree, all M_V Total($<m_V$) =										
13-14	Disk ms						1.2(+0)	1.2(+1)	1.8(+1)	1.0(+1)	4.2(+0)
	Disk non-ms				7.9(-2)	6.7(-1)	1.2(+0)	6.4(-2)			
	Spheroid	8.7(-1)	2.2(+0)	3.4(+0)	2.6(+0)	1.5(+0)	6.8(-1)	2.6(-1)	9.6(-2)		
	Total = 1.3(+2) per mag per sq. degree, all M_V Total($<m_V$) =										
14-15	Disk ms						3.5(-1)	1.2(+1)	3.5(+1)	2.6(+1)	1.3(+1)
	Disk non-ms					1.3(-1)	5.6(-1)				
	Spheroid	6.5(-1)	3.3(+0)	7.5(+0)	9.7(+0)	6.2(+0)	3.0(+0)	1.1(+0)	3.9(-1)	1.3(-1)	
	Total = 2.4(+2) per mag per sq. degree, all M_V Total($<m_V$) =										
15-16	Disk ms							6.8(+0)	4.5(+1)	5.2(+1)	3.3(+1)
	Disk non-ms										
	Spheroid	4.0(-1)	2.5(+0)	1.1(+1)	2.1(+1)	2.3(+1)	1.2(+1)	5.0(+0)	1.7(+0)	5.2(-1)	
	Total = 4.0(+2) per mag per sq. degree, all M_V Total($<m_V$) =										
16-17	Disk ms							1.6(+0)	3.5(+1)	7.0(+1)	6.5(+1)
	Disk non-ms										
	Spheroid		1.5(+0)	8.2(+0)	3.1(+1)	4.9(+1)	4.5(+1)	2.1(+1)	7.5(+0)	2.3(+0)	6.5(-1)
	Total = 6.3(+2) per mag per sq. degree, all M_V Total($<m_V$) =										
17-18	Disk ms								1.3(+1)	5.5(+1)	8.7(+1)
	Disk non-ms										
	Spheroid		6.3(-1)	5.0(+0)	2.3(+1)	7.2(+1)	9.7(+1)	7.6(+1)	3.0(+1)	1.0(+1)	2.8(+0)
	Total = 9.0(+2) per mag per sq. degree, all M_V Total($<m_V$) =										
18-19	Disk ms								1.5(+0)	1.9(+1)	6.9(+1)
	Disk non-ms										
	Spheroid			2.1(+0)	1.4(+1)	5.3(+1)	1.4(+2)	1.6(+2)	1.1(+2)	4.1(+1)	1.3(+1)
	Total = 1.3(+3) per mag per sq. degree, all M_V Total($<m_V$) =										
19-20	Disk ms									2.2(+0)	2.4(+1)
	Disk non-ms										
	Spheroid				5.8(+0)	3.2(+1)	1.0(+2)	2.3(+2)	2.4(+2)	1.5(+2)	5.1(+1)
	Total = 1.7(+3) per mag per sq. degree, all M_V Total($<m_V$) =										
20-21	Disk ms										2.7(+0)
	Disk non-ms										
	Spheroid				2.2(+0)	1.3(+1)	6.1(+1)	1.7(+2)	3.4(+2)	3.2(+2)	1.9(+2)
	Total = 2.1(+3) per mag per sq. degree, all M_V Total($<m_V$) =										
21-22	Disk ms										
	Disk non-ms										
	Spheroid					5.1(+0)	2.6(+1)	1.0(+2)	2.5(+2)	4.5(+2)	4.0(+2)
	Total = 2.5(+3) per mag per sq. degree, all M_V Total($<m_V$) =										
(22-23)	Disk ms										
	Disk non-ms										
	Spheroid						9.8(+0)	4.2(+1)	1.5(+2)	3.3(+2)	5.6(+2)
	Total = 2.9(+3) per mag per sq. degree, all M_V Total($<m_V$) =										
(23-24)	Disk ms										
	Disk non-ms										
	Spheroid							1.6(+1)	6.1(+1)	1.9(+2)	4.0(+2)
	Total = 3.4(+3) per mag per sq. degree, all M_V Total($<m_V$) =										
(24-25)	Disk ms										
	Disk non-ms										
	Spheroid							4.6(+0)	2.3(+1)	8.1(+1)	2.4(+2)
	Total = 3.8(+3) per mag per sq. degree, all M_V Total($<m_V$) =										
(25-26)	Disk ms										
	Disk non-ms										
	Spheroid								6.6(+0)	3.0(+1)	1.0(+2)

[a]See footnote to Table 2.1.

2.3

1950) = 15^h52^m, $\delta(1950) = 28°$, $l^{II}(1950) = 45°$, $b^{II}(1950) = 50°$ [a]

+8	+9	+10	+11	+12	(+13)	(+14)	(+15)	(+16)	(+17)	(+18)	(+19)
5(+1) per sq. degree, all M_V											
.5(-1)	4.3(-2)										
4(+1) per sq. degree, all M_V											
.7(-1)	1.3(-1)	3.2(-2)									
2(+2) per sq. degree, all M_V											
.5(+0)	5.5(-1)	1.5(-1)									
.4(+2) per sq. degree, all M_V											
.0(+0)	1.8(+0)	6.2(-1)	1.7(-1)								
.8(+2) per sq. degree, all M_V											
.5(+1)	5.8(+0)	2.0(+0)	6.9(-1)								
.8(+2) per sq. degree, all M_V											
.9(+1)	1.7(+1)	6.6(+0)	2.3(+0)	7.7(-1)							
5(+3) per sq. degree, all M_V											
.7(+1)	4.5(+1)	2.0(+1)	7.4(+0)	2.5(+0)	8.5(-1)						
.8(-1)											
.4(+3) per sq. degree, all M_V											
1.0(+2)	8.9(+1)	5.1(+1)	2.2(+1)	8.2(+0)	2.8(+0)	9.4(-1)					
3.4(+0)											
.7(+3) per sq. degree, all M_V											
8.2(+1)	1.2(+2)	1.0(+2)	5.7(+1)	2.5(+1)	9.1(+0)	3.1(+0)					
1.5(+1)	3.9(+0)										
.3(+3) per sq. degree, all M_V											
2.8(+1)	9.4(+1)	1.4(+2)	1.1(+2)	6.4(+1)	2.7(+1)	1.0(+1)	3.3(+0)				
6.1(+1)	1.7(+1)	4.4(+0)									
.4(+3) per sq. degree, all M_V											
3.1(+0)	3.3(+1)	1.1(+2)	1.5(+2)	1.3(+2)	7.0(+1)	3.0(+1)	1.1(+1)	3.4(+0)			
.2(+2)	7.0(+1)	2.0(+1)	5.0(+0)								
.9(+3) per sq. degree, all M_V											
	3.6(+0)	3.7(+1)	1.2(+2)	1.7(+2)	1.4(+2)	7.7(+1)	3.3(+1)	1.1(+1)	3.4(+0)		
4.7(+2)	2.6(+2)	8.0(+1)	2.2(+1)	5.5(+0)							
.3(+4) per sq. degree, all M_V											
		4.1(+0)	4.1(+1)	1.3(+2)	1.9(+2)	1.5(+2)	8.4(+1)	3.3(+1)	1.1(+1)	3.4(+0)	
6.6(+2)	5.4(+2)	3.0(+2)	8.9(+1)	2.5(+1)	6.1(+0)						
.6(+4) per sq. degree, all M_V											
			4.5(+0)	4.6(+1)	1.5(+2)	2.1(+2)	1.7(+2)	8.5(+1)	3.3(+1)	1.1(+1)	
4.8(+2)	7.6(+2)	6.2(+2)	3.3(+2)	9.9(+1)	2.7(+1)	6.7(+0)					
.0(+4) per sq. degree, all M_V											
				5.0(+0)	5.1(+1)	1.6(+2)	2.2(+2)	1.7(+2)	8.5(+1)	3.3(+1)	8.3(+0)
2.8(+2)	5.5(+2)	8.6(+2)	6.9(+2)	3.7(+2)	1.1(+2)	3.0(+1)	7.3(+0)				

TABL

DISTRIBUTION OF ABSOLUTE MAGNITUDES OF VISIBLE STARS FOR α

m_V \ M_V		-2	-1	0	+1	+2	+3	+4	+5	+6	+7
	Total = 2.3(+1) per mag per sq. degree, all M_V Total(<m_V)										
<12	Disk ms			5.9(-2)	1.8(-1)	5.4(-1)	3.3(+0)	5.4(+0)	3.4(+0)	1.4(+0)	5.2(-
	Disk non-ms	9.2(-2)	3.4(-1)	9.9(-1)	2.1(+0)	2.5(+0)	1.3(+0)	3.3(-2)			
	Spheroid	1.5(-1)	2.0(-1)	1.9(-1)	1.5(-1)	8.9(-2)	4.6(-2)				
	Total = 2.6(+1) per mag per sq. degree, all M_V Total(<m_V)										
12-13	Disk ms						1.7(+0)	7.3(+0)	6.9(+0)	3.3(+0)	1.3(+
	Disk non-ms				3.2(-1)	1.1(+0)	1.1(+0)	4.2(-2)			
	Spheroid	2.0(-1)	4.0(-1)	4.8(-1)	4.0(-1)	2.6(-1)	1.3(-1)	5.8(-2)			
	Total = 5.2(+1) per mag per sq. degree, all M_V Total(<m_V)										
13-14	Disk ms						1.0(+0)	1.1(+1)	1.7(+1)	9.7(+0)	4.1(+
	Disk non-ms				5.5(-2)	5.3(-1)	1.0(+0)	5.6(-2)			
	Spheroid	3.2(-1)	7.8(-1)	1.4(+0)	1.3(+0)	9.6(-1)	5.1(-1)	2.2(-1)	8.6(-2)		
	Total = 1.0(+2) per mag per sq. degree, all M_V Total(<m_V)										
14-15	Disk ms						2.8(-1)	1.0(+1)	3.1(+1)	2.4(+1)	1.2(+
	Disk non-ms						4.3(-1)				
	Spheroid	2.9(-1)	1.2(+0)	2.6(+0)	3.9(+0)	3.2(+0)	1.9(+0)	8.6(-1)	3.2(-1)	1.2(-1)	
	Total = 1.8(+2) per mag per sq. degree, all M_V Total(<m_V)										
15-16	Disk ms							5.4(+0)	3.8(+1)	4.7(+1)	3.0(+
	Disk non-ms										
	Spheroid	2.2(-1)	1.1(+0)	4.1(+0)	7.4(+0)	9.1(+0)	6.3(+0)	3.2(+0)	1.3(+0)	4.4(-1)	
	Total = 2.8(+2) per mag per sq. degree, all M_V Total(<m_V)										
16-17	Disk ms							1.1(+0)	2.8(+1)	5.9(+1)	5.8(+
	Disk non-ms										
	Spheroid		8.5(-1)	3.7(+0)	1.1(+1)	1.7(+1)	1.8(+1)	1.0(+1)	4.8(+0)	1.7(+0)	5.5(-
	Total = 4.0(+2) per mag per sq. degree, all M_V Total(<m_V)										
17-18	Disk ms								8.7(+0)	4.3(+1)	7.4(+
	Disk non-ms										
	Spheroid		4.2(-1)	2.8(+0)	1.0(+1)	2.7(+1)	3.4(+1)	3.0(+1)	1.5(+1)	6.4(+0)	2.1(+
	Total = 5.4(+2) per mag per sq. degree, all M_V Total(<m_V)										
18-19	Disk ms								8.5(-1)	1.3(+1)	5.3(+
	Disk non-ms										
	Spheroid			1.4(+0)	7.8(+0)	2.4(+1)	5.2(+1)	5.7(+1)	4.5(+1)	2.1(+1)	8.0(+
	Total = 7.0(+2) per mag per sq. degree, all M_V Total(<m_V)										
19-20	Disk ms									1.2(+0)	1.6(+
	Disk non-ms										
	Spheroid				3.9(+0)	1.8(+1)	4.7(+1)	8.6(+1)	8.3(+1)	6.0(+1)	2.6(+
	Total = 8.9(+2) per mag per sq. degree, all M_V Total(<m_V)										
20-21	Disk ms										1.5(+
	Disk non-ms										
	Spheroid				1.7(+0)	8.9(+0)	3.4(+1)	7.7(+1)	1.3(+2)	1.1(+2)	7.4(+
	Total = 1.1(+3) per mag per sq. degree, all M_V Total(<m_V)										
21-22	Disk ms										
	Disk non-ms										
	Spheroid					3.9(+0)	1.7(+1)	5.7(+1)	1.1(+2)	1.7(+2)	1.4(+
	Total = 1.3(+3) per mag per sq. degree, all M_V Total(<m_V)										
(22-23)	Disk ms										
	Disk non-ms										
	Spheroid						7.4(+0)	2.8(+1)	8.2(+1)	1.5(+2)	2.1(+
	Total = 1.5(+3) per mag per sq. degree, all M_V Total(<m_V)										
(23-24)	Disk ms										
	Disk non-ms										
	Spheroid						2.3(+0)	1.2(+1)	4.1(+1)	1.1(+2)	1.9(+
	Total = 1.7(+3) per mag per sq. degree, all M_V Total(<m_V)										
(24-25)	Disk ms										
	Disk non-ms										
	Spheroid							3.8(+0)	1.7(+1)	5.5(+1)	1.4(+
	Total = 1.9(+3) per mag per sq. degree, all M_V Total(<m_V)										
(25-26)	Disk ms										
	Disk non-ms										
	Spheroid								5.5(+0)	2.3(+1)	6.8(+

[a]See footnote to Table 2.1.

2.4

950) $= 15^h 24^m$, $\delta(1950) = 56°$, $l^{II}(1950) = 90°$, $b^{II}(1950) = 50°$ [a]

	+8	+9	+10	+11	+12	(+13)	(+14)	(+15)	(+16)	(+17)	(+18)	(+19)
2.3(+1) per sq. degree, all M_V												
)	1.5(-1)	4.3(-2)										
4.9(+1) per sq. degree, all M_V												
)	4.7(-1)	1.3(-1)	3.2(-2)									
1.0(+2) per sq. degree, all M_V												
)	1.5(+0)	5.4(-1)	1.5(-1)									
2.0(+2) per sq. degree, all M_V												
)	4.9(+0)	1.8(+0)	6.1(-1)	1.7(-1)								
3.8(+2) per sq. degree, all M_V												
)	1.4(+1)	5.7(+0)	2.0(+0)	6.9(-1)	1.9(-1)							
6.5(+2) per sq. degree, all M_V												
)	3.6(+1)	1.7(+1)	6.4(+0)	2.2(+0)	7.6(-1)							
)												
1.0(+3) per sq. degree, all M_V												
)	6.9(+1)	4.2(+1)	1.9(+1)	7.2(+0)	2.5(+0)	8.4(-1)						
)	6.5(-1)											
1.6(+3) per sq. degree, all M_V												
)	8.8(+1)	8.0(+1)	4.8(+1)	2.1(+1)	8.0(+0)	2.7(+0)	9.3(-1)					
)	2.5(+0)	7.5(-1)										
2.3(+3) per sq. degree, all M_V												
)	6.3(+1)	1.0(+2)	9.1(+1)	5.3(+1)	2.4(+1)	8.9(+0)	3.0(+0)	1.0(+0)				
)	9.5(+0)	2.9(+0)	8.6(-1)									
3.2(+3) per sq. degree, all M_V												
)	1.9(+1)	7.3(+1)	1.1(+2)	1.0(+2)	5.9(+1)	2.6(+1)	9.8(+0)	3.3(+0)	1.0(+0)			
)	3.1(+1)	1.1(+1)	3.3(+0)	9.6(-1)								
4.3(+3) per sq. degree, all M_V												
	1.8(+0)	2.2(+1)	8.2(+1)	1.3(+2)	1.1(+2)	6.5(+1)	2.9(+1)	1.1(+1)	3.3(+0)			
)	8.9(+1)	3.6(+1)	1.3(+1)	3.7(+0)	1.1(+0)							
5.6(+3) per sq. degree, all M_V												
		2.0(+0)	2.5(+1)	9.2(+1)	1.4(+2)	1.2(+2)	7.2(+1)	3.1(+1)	1.1(+1)	3.3(+0)		
)	1.6(+2)	1.0(+2)	4.0(+1)	1.4(+1)	4.2(+0)							
7.1(+3) per sq. degree, all M_V												
			2.3(+0)	2.8(+1)	1.0(+2)	1.6(+2)	1.4(+2)	7.9(+1)	3.2(+1)	1.1(+1)	3.3(+0)	
)	2.5(+2)	1.9(+2)	1.2(+2)	4.5(+1)	1.6(+1)	4.6(+0)						
8.8(+3) per sq. degree, all M_V												
				2.6(+0)	3.1(+1)	1.1(+2)	1.7(+2)	1.5(+2)	8.0(+1)	3.2(+1)	1.1(+1)	2.5(+0)
)	2.2(+2)	2.9(+2)	2.2(+2)	1.3(+2)	5.0(+1)	1.7(+1)	5.1(+0)					
1.1(+4) per sq. degree, all M_V												
					2.8(+0)	3.4(+1)	1.2(+2)	1.9(+2)	1.5(+2)	8.0(+1)	3.2(+1)	8.1(+0)
)	1.6(+2)	2.6(+2)	3.2(+2)	2.4(+2)	1.4(+2)	5.6(+1)	1.9(+1)	5.5(+0)				

TABLE 2

DISTRIBUTION OF ABSOLUTE MAGNITUDES OF VISIBLE STARS FOR α(19

m_V \ M_V		−2	−1	0	+1	+2	+3	+4	+5	+6	+7
	Total = 2.2(+1) per mag per sq. degree, all M_V; Total(<m_V) = 2										
<12	Disk ms			5.6(-2)	1.8(-1)	5.2(-1)	3.1(+0)	5.2(+0)	3.3(+0)	1.4(+0)	5.1(-1)
	Disk non-ms	8.2(-2)	3.0(-1)	8.8(-1)	1.9(+0)	2.3(+0)	1.2(+0)	3.2(-2)			
	Spheroid	9.0(-2)	1.3(-1)	1.4(-1)	1.2(-1)	7.7(-2)	4.2(-2)				
	Total = 2.4(+1) per mag per sq. degree, all M_V; Total(<m_V) = 4										
12-13	Disk ms						1.6(+0)	6.8(+0)	6.6(+0)	3.2(+0)	1.2(+0)
	Disk non-ms				2.5(-1)	9.6(-1)	1.0(+0)	3.9(-2)			
	Spheroid	1.0(-1)	2.2(-1)	2.9(-1)	2.8(-1)	2.1(-1)	1.1(-1)	5.3(-2)			
	Total = 4.7(+1) per mag per sq. degree, all M_V; Total(<m_V) = 9										
13-14	Disk ms						9.0(-1)	1.0(+1)	1.6(+1)	9.3(+0)	4.0(+0)
	Disk non-ms					4.2(-1)	8.5(-1)	5.0(-2)			
	Spheroid	1.6(-1)	4.0(-1)	7.4(-1)	8.3(-1)	6.7(-1)	4.0(-1)	1.9(-1)	7.8(-2)		
	Total = 8.9(+1) per mag per sq. degree, all M_V; Total(<m_V) = 1.										
14-15	Disk ms						2.3(-1)	9.1(+0)	2.8(+1)	2.3(+1)	1.2(+1)
	Disk non-ms						3.5(-1)				
	Spheroid	1.6(-1)	6.3(-1)	1.3(+0)	2.1(+0)	2.0(+0)	1.3(+0)	6.8(-1)	2.8(-1)	1.0(-1)	
	Total = 1.5(+2) per mag per sq. degree, all M_V; Total(<m_V) = 3.										
15-16	Disk ms							4.4(+0)	3.3(+1)	4.2(+1)	2.8(+1)
	Disk non-ms										
	Spheroid		6.3(-1)	2.1(+0)	3.7(+0)	4.9(+0)	3.8(+0)	2.2(+0)	1.0(+0)	3.7(-1)	
	Total = 2.2(+2) per mag per sq. degree, all M_V; Total(<m_V) = 5.										
16-17	Disk ms							8.2(-1)	2.2(+1)	5.1(+1)	5.2(+1)
	Disk non-ms										
	Spheroid		5.3(-1)	2.1(+0)	5.9(+0)	8.8(+0)	9.7(+0)	6.4(+0)	3.3(+0)	1.3(+0)	4.6(-1)
	Total = 3.0(+2) per mag per sq. degree, all M_V; Total(<m_V) = 8.										
17-18	Disk ms								6.3(+0)	3.4(+1)	6.3(+1)
	Disk non-ms										
	Spheroid			1.8(+0)	5.8(+0)	1.4(+1)	1.7(+1)	1.6(+1)	9.5(+0)	4.4(+0)	1.7(+0)
	Total = 4.0(+2) per mag per sq. degree, all M_V; Total(<m_V) = 1.										
18-19	Disk ms								5.4(-1)	9.5(+0)	4.2(+1)
	Disk non-ms										
	Spheroid			9.9(-1)	4.9(+0)	1.4(+1)	2.7(+1)	2.9(+1)	2.4(+1)	1.3(+1)	5.6(+0)
	Total = 5.0(+2) per mag per sq. degree, all M_V; Total(<m_V) = 1.										
19-20	Disk ms									7.7(-1)	1.2(+1)
	Disk non-ms										
	Spheroid				2.7(+0)	1.1(+1)	2.6(+1)	4.4(+1)	4.2(+1)	3.2(+1)	1.6(+1)
	Total = 6.2(+2) per mag per sq. degree, all M_V; Total(<m_V) = 2.										
20-21	Disk ms										9.5(-1)
	Disk non-ms										
	Spheroid				1.3(+0)	6.3(+0)	2.2(+1)	4.3(+1)	6.5(+1)	5.6(+1)	4.0(+1)
	Total = 7.5(+2) per mag per sq. degree, all M_V; Total(<m_V) = 3.										
21-22	Disk ms										
	Disk non-ms										
	Spheroid					3.0(+0)	1.2(+1)	3.6(+1)	6.4(+1)	8.6(+1)	7.0(+1)
	Total = 8.8(+2) per mag per sq. degree, all M_V; Total(<m_V) = 4.										
(22-23)	Disk ms										
	Disk non-ms										
	Spheroid					1.0(+0)	5.7(+0)	2.0(+1)	5.2(+1)	8.4(+1)	1.1(+2)
	Total = 1.0(+3) per mag per sq. degree, all M_V; Total(<m_V) = 5.										
(23-24)	Disk ms										
	Disk non-ms										
	Spheroid						1.9(+0)	9.4(+0)	2.9(+1)	6.9(+1)	1.1(+2)
	Total = 1.2(+3) per mag per sq. degree, all M_V; Total(<m_V) = 6.										
(24-25)	Disk ms										
	Disk non-ms										
	Spheroid							3.2(+0)	1.4(+1)	3.9(+1)	8.6(+1)
	Total = 1.3(+3) per mag per sq. degree, all M_V; Total(<m_V) = 7.										
(25-26)	Disk ms										
	Disk non-ms										
	Spheroid								4.6(+0)	1.8(+1)	4.8(+1)

[a]See footnote to Table 2.1.

5

50) = 11^h32^m, $\delta(1950)=66°$, $l^{II}(1950)=135°$, $b^{II}(1950)=50°$ [a]

+8	+9	+10	+11	+12	(+13)	(+14)	(+15)	(+16)	(+17)	(+18)	(+19)
2(+1) per sq. degree, all M_v											
.5(-1)	4.3(-2)										
5(+1) per sq. degree, all M_v											
.6(-1)	1.3(-1)	3.2(-2)									
3(+1) per sq. degree, all M_v											
.5(+0)	5.3(-1)	1.5(-1)									
8(+2) per sq. degree, all M_v											
.8(+0)	1.7(+0)	6.1(-1)	1.7(-1)								
3(+2) per sq. degree, all M_v											
.4(+1)	5.5(+0)	2.0(+0)	6.8(-1)	1.8(-1)							
5(+2) per sq. degree, all M_v											
.4(+1)	1.6(+1)	6.3(+0)	2.2(+0)	7.5(-1)							
6(+2) per sq. degree, all M_v											
.2(+1)	3.9(+1)	1.8(+1)	7.0(+0)	2.4(+0)	8.3(-1)						
.5(-1)											
3(+3) per sq. degree, all M_v											
.5(+1)	7.2(+1)	4.4(+1)	2.0(+1)	7.8(+0)	2.7(+0)	9.2(-1)					
.0(+0)	6.4(-1)										
8(+3) per sq. degree, all M_v											
.0(+1)	8.6(+1)	8.2(+1)	5.0(+1)	2.3(+1)	8.6(+0)	3.0(+0)	1.0(+0)				
.6(+0)	2.3(+0)	7.3(-1)									
4(+3) per sq. degree, all M_v											
.4(+1)	5.8(+1)	9.8(+1)	9.1(+1)	5.5(+1)	2.5(+1)	9.5(+0)	3.2(+0)	1.0(+0)			
.9(+1)	7.7(+0)	2.6(+0)	8.1(-1)								
1(+3) per sq. degree, all M_v											
.1(+0)	1.6(+1)	6.5(+1)	1.1(+2)	1.0(+2)	6.1(+1)	2.8(+1)	1.0(+1)	3.3(+0)	1.0(+0)		
.8(+1)	2.2(+1)	8.7(+0)	2.9(+0)	9.1(-1)							
0(+3) per sq. degree, all M_v											
	1.3(+0)	1.8(+1)	7.3(+1)	1.2(+2)	1.1(+2)	6.7(+1)	3.0(+1)	1.0(+1)	3.3(+0)	1.0(+0)	
.3(+1)	5.5(+1)	2.5(+1)	9.8(+0)	3.3(+0)	1.0(+0)						
0(+3) per sq. degree, all M_v											
		1.4(+0)	2.0(+1)	8.1(+1)	1.3(+2)	1.2(+2)	7.3(+1)	3.0(+1)	1.0(+1)	3.3(+0)	
.3(+2)	9.6(+1)	6.2(+1)	2.8(+1)	1.1(+1)	3.6(+0)	1.1(+0)					
2(+3) per sq. degree, all M_v											
			1.6(+0)	2.2(+1)	8.9(+1)	1.5(+2)	1.3(+2)	7.4(+1)	3.0(+1)	1.0(+1)	2.4(+0)
2(+2)	1.5(+2)	1.1(+2)	7.0(+1)	3.1(+1)	1.2(+1)	4.0(+0)	1.2(+0)				
5(+3) per sq. degree, all M_v											
				1.8(+0)	2.5(+1)	9.8(+1)	1.6(+2)	1.4(+2)	7.4(+1)	3.0(+1)	7.8(+0)
.0(+2)	1.4(+2)	1.7(+2)	1.2(+2)	7.8(+1)	3.4(+1)	1.3(+1)	4.3(+0)				

TA

DISTRIBUTION OF ABSOLUTE MAGNITUDES OF VISIBLE STARS F

m_v \ M_v		-2	-1	0	+1	+2	+3	+4	+5	+6	
	Total = 2.1(+1) per mag per sq. degree, all M_v										Total(<
<12	Disk ms			5.5(-2)	1.7(-1)	5.1(-1)	3.1(+0)	5.1(+0)	3.3(+0)	1.4(+0)	5
	Disk non-ms	7.8(-2)	2.8(-1)	8.5(-1)	1.8(+0)	2.2(+0)	1.2(+0)	3.1(-2)			
	Spheroid	7.5(-2)	1.1(-1)	1.3(-1)	1.1(-1)	7.3(-2)	4.0(-2)				
	Total = 2.3(+1) per mag per sq. degree, all M_v										Total(<
12-13	Disk ms						1.5(+0)	6.7(+0)	6.5(+0)	3.2(+0)	1
	Disk non-ms				2.3(-1)	9.0(-1)	9.6(-1)	3.8(-2)			
	Spheroid	8.1(-2)	1.8(-1)	2.5(-1)	2.5(-1)	1.9(-1)	1.0(-1)	5.1(-2)			
	Total = 4.5(+1) per mag per sq. degree, all M_v										Total(<
13-14	Disk ms						8.6(-1)	9.6(+0)	1.5(+1)	9.1(+0)	3
	Disk non-ms					3.9(-1)	8.0(-1)	4.7(-2)			
	Spheroid	1.3(-1)	3.2(-1)	6.0(-1)	7.0(-1)	5.9(-1)	3.7(-1)	1.8(-1)	7.5(-2)		
	Total = 8.4(+1) per mag per sq. degree, all M_v										Total(<
14-15	Disk ms						2.2(-1)	8.5(+0)	2.7(+1)	2.2(+1)	1
	Disk non-ms						3.2(-1)				
	Spheroid	1.3(-1)	5.0(-1)	1.1(+0)	1.7(+0)	1.6(+0)	1.2(+0)	6.2(-1)	2.6(-1)	1.0(-1)	
	Total = 1.4(+2) per mag per sq. degree, all M_v										Total(<
15-16	Disk ms							4.0(+0)	3.1(+1)	4.0(+1)	2
	Disk non-ms										
	Spheroid		5.1(-1)	1.7(+0)	3.0(+0)	4.0(+0)	3.2(+0)	2.0(+0)	9.1(-1)	3.5(-1)	
	Total = 2.1(+2) per mag per sq. degree, all M_v										Total(<
16-17	Disk ms							7.3(-1)	2.0(+1)	4.8(+1)	5
	Disk non-ms										
	Spheroid		4.5(-1)	1.7(+0)	4.7(+0)	7.0(+0)	7.9(+0)	5.4(+0)	2.9(+0)	1.2(+0)	4
	Total = 2.8(+2) per mag per sq. degree, all M_v										Total(<
17-18	Disk ms								5.6(+0)	3.1(+1)	5
	Disk non-ms										
	Spheroid			1.5(+0)	4.7(+0)	1.1(+1)	1.4(+1)	1.3(+1)	8.0(+0)	3.9(+0)	1
	Total = 3.6(+2) per mag per sq. degree, all M_v										Total(<
18-19	Disk ms								4.6(-1)	8.4(+0)	3
	Disk non-ms										
	Spheroid			8.7(-1)	4.1(+0)	1.1(+1)	2.1(+1)	2.3(+1)	1.9(+1)	1.1(+1)	4
	Total = 4.5(+2) per mag per sq. degree, all M_v										Total(<
19-20	Disk ms									6.5(-1)	1
	Disk non-ms										
	Spheroid				2.4(+0)	9.6(+0)	2.1(+1)	3.5(+1)	3.3(+1)	2.6(+1)	1
	Total = 5.5(+2) per mag per sq. degree, all M_v										Total(<
20-21	Disk ms										8
	Disk non-ms										
	Spheroid				1.2(+0)	5.6(+0)	1.8(+1)	3.6(+1)	5.2(+1)	4.5(+1)	3
	Total = 6.6(+2) per mag per sq. degree, all M_v										Total(<
21-22	Disk ms										
	Disk non-ms										
	Spheroid					2.7(+0)	1.1(+1)	3.0(+1)	5.2(+1)	6.9(+1)	5
	Total = 7.8(+2) per mag per sq. degree, all M_v										Total(<
(22-23)	Disk ms										
	Disk non-ms										
	Spheroid					9.3(-1)	5.2(+0)	1.8(+1)	4.4(+1)	6.9(+1)	8
	Total = 9.0(+2) per mag per sq. degree, all M_v										Total(<
(23-24)	Disk ms										
	Disk non-ms										
	Spheroid						1.8(+0)	8.5(+0)	2.6(+1)	5.9(+1)	8
	Total = 1.0(+3) per mag per sq. degree, all M_v										Total(<
(24-25)	Disk ms										
	Disk non-ms										
	Spheroid							2.9(+0)	1.2(+1)	3.4(+1)	7
	Total = 1.1(+3) per mag per sq. degree, all M_v										Total(<
(25-26)	Disk ms										
	Disk non-ms										
	Spheroid								4.3(+0)	1.6(+1)	4

[a]See footnote to Table 2.1.

BLE 2.6

)R $\alpha(1950)=9^h44^m$, $\delta(1950)=42°$, $l^{II}(1950)=180°$, $b^{II}(1950)=50°$ [a]

	+7	+8	+9	+10	+11	+12	(+13)	(+14)	(+15)	(+16)	(+17)	(+18)	(+19)
$_V$) = 2.1(+1) per sq. degree, all M_V													
	1(-1)	1.5(-1)	4.3(-2)										
$_V$) = 4.4(+1) per sq. degree, all M_V													
	2(+0)	4.6(-1)	1.3(-1)	3.2(-2)									
$_V$) = 8.9(+1) per sq. degree, all M_V													
	9(+0)	1.5(+0)	5.3(-1)	1.5(-1)									
$_V$) = 1.7(+2) per sq. degree, all M_V													
	1(+1)	4.7(+0)	1.7(+0)	6.0(-1)	1.7(-1)								
$_V$) = 3.1(+2) per sq. degree, all M_V													
	8(+1)	1.4(+1)	5.4(+0)	1.9(+0)	6.8(-1)	1.8(-1)							
$_V$) = 5.2(+2) per sq. degree, all M_V													
	0(+1)	3.3(+1)	1.6(+1)	6.2(+0)	2.2(+0)	7.5(-1)							
	4(-1)												
$_V$) = 8.0(+2) per sq. degree, all M_V													
	9(+1)	6.0(+1)	3.8(+1)	1.8(+1)	6.9(+0)	2.4(+0)	8.3(-1)						
	5(+0)	5.2(-1)											
$_V$) = 1.2(+3) per sq. degree, all M_V													
	9(+1)	7.0(+1)	6.9(+1)	4.3(+1)	2.0(+1)	7.7(+0)	2.7(+0)	9.1(-1)					
	9(+0)	1.8(+0)	6.0(-1)										
$_V$) = 1.6(+3) per sq. degree, all M_V													
	0(+1)	4.6(+1)	8.1(+1)	7.8(+1)	4.8(+1)	2.2(+1)	8.5(+0)	2.9(+0)	1.0(+0)				
	3(+1)	5.8(+0)	2.1(+0)	6.8(-1)									
$_V$) = 2.2(+3) per sq. degree, all M_V													
	0(-1)	1.2(+1)	5.3(+1)	9.2(+1)	8.8(+1)	5.4(+1)	2.5(+1)	9.4(+0)	3.2(+0)	1.0(+0)			
	2(+1)	1.6(+1)	6.7(+0)	2.4(+0)	7.6(-1)								
$_V$) = 2.8(+3) per sq. degree, all M_V													
		9.5(-1)	1.4(+1)	6.0(+1)	1.0(+2)	9.7(+1)	5.9(+1)	2.7(+1)	1.0(+1)	3.2(+0)	1.0(+0)		
	6(+1)	3.9(+1)	1.8(+1)	7.6(+0)	2.7(+0)	8.5(-1)							
$_V$) = 3.6(+3) per sq. degree, all M_V													
			1.1(+0)	1.6(+1)	6.7(+1)	1.1(+2)	1.1(+2)	6.6(+1)	2.9(+1)	1.0(+1)	3.2(+0)	1.0(+0)	
	6(+1)	6.6(+1)	4.5(+1)	2.1(+1)	8.6(+0)	3.0(+0)	9.4(-1)						
$_V$) = 4.5(+3) per sq. degree, all M_V													
				1.2(+0)	1.8(+1)	7.4(+1)	1.3(+2)	1.2(+2)	7.1(+1)	3.0(+1)	1.0(+1)	3.2(+0)	
	6(+1)	1.0(+2)	7.6(+1)	5.1(+1)	2.3(+1)	9.5(+0)	3.3(+0)	1.0(+0)					
$_V$) = 5.5(+3) per sq. degree, all M_V													
					1.4(+0)	2.0(+1)	8.2(+1)	1.4(+2)	1.3(+2)	7.2(+1)	3.0(+1)	1.0(+1)	2.4(+0)
	3(+1)	1.0(+2)	1.2(+2)	8.7(+1)	5.7(+1)	2.6(+1)	1.1(+1)	3.6(+0)	1.1(+0)				
$_V$) = 6.6(+3) per sq. degree, all M_V													
						1.5(+0)	2.2(+1)	9.0(+1)	1.5(+2)	1.3(+2)	7.2(+1)	3.0(+1)	7.8(+0)
	2(+1)	8.6(+1)	1.2(+2)	1.3(+2)	9.7(+1)	6.3(+1)	2.9(+1)	1.2(+1)	3.9(+0)				

TABL.

DISTRIBUTION OF ABSOLUTE MAGNITUDES OF VISIBLE STARS FOR c

m_V \ M_V		-2	-1	0	+1	+2	+3	+4	+5	+6	+7
	Total = 3.5(+1) per mag per sq. degree, all M_V Total($<m_V$) =										
<12	Disk ms		5.9(-2)	2.1(-1)	6.5(-1)	1.6(+0)	5.5(+0)	6.3(+0)	3.4(+0)	1.4(+0)	4.6(-1
	Disk non-ms	3.2(-1)	1.1(+0)	2.9(+0)	4.7(+0)	4.1(+0)	1.7(+0)	4.1(-2)			
	Spheroid	1.2(-1)	1.5(-1)	1.5(-1)	1.1(-1)	6.6(-2)	3.6(-2)				
	Total = 4.0(+1) per mag per sq. degree, all M_V Total($<m_V$) =										
12-13	Disk ms					2.7(-1)	5.4(+0)	1.1(+1)	7.6(+0)	3.2(+0)	1.3(+0
	Disk non-ms			5.2(-1)	2.4(+0)	4.0(+0)	2.4(+0)	6.8(-2)			
	Spheroid	1.9(-1)	3.3(-1)	3.7(-1)	3.1(-1)	2.0(-1)	9.6(-2)	4.5(-2)			
	Total = 8.3(+1) per mag per sq. degree, all M_V Total($<m_V$) =										
13-14	Disk ms						6.2(+0)	2.4(+1)	2.2(+1)	1.1(+1)	4.0(+0
	Disk non-ms			1.0(-1)	1.2(+0)	4.1(+0)	3.8(+0)	1.4(-1)			
	Spheroid	3.0(-1)	7.2(-1)	1.1(+0)	1.1(+0)	7.3(-1)	3.9(-1)	1.6(-1)			
	Total = 1.7(+2) per mag per sq. degree, all M_V Total($<m_V$) =										
14-15	Disk ms						4.1(+0)	3.8(+1)	5.4(+1)	3.1(+1)	1.3(+1
	Disk non-ms				2.3(-1)	2.0(+0)	3.7(+0)	1.9(-1)			
	Spheroid	3.0(-1)	1.2(+0)	2.4(+0)	3.2(+0)	2.5(+0)	1.5(+0)	6.5(-1)	2.4(-1)		
	Total = 3.1(+2) per mag per sq. degree, all M_V Total($<m_V$) =										
15-16	Disk ms						1.2(+0)	3.8(+1)	1.0(+2)	7.8(+1)	3.8(+1
	Disk non-ms					3.7(-1)	1.7(+0)				
	Spheroid		1.1(+0)	3.9(+0)	6.8(+0)	7.5(+0)	4.9(+0)	2.4(+0)	9.6(-1)	3.2(-1)	
	Total = 5.3(+2) per mag per sq. degree, all M_V Total($<m_V$) =										
16-17	Disk ms							2.1(+1)	1.3(+2)	1.5(+2)	9.7(+1
	Disk non-ms										
	Spheroid		9.4(-1)	3.8(+0)	1.1(+1)	1.6(+1)	1.5(+1)	8.2(+0)	3.6(+0)	1.3(+0)	
	Total = 8.2(+2) per mag per sq. degree, all M_V Total($<m_V$) =										
17-18	Disk ms							4.5(+0)	1.0(+2)	2.1(+2)	1.9(+2
	Disk non-ms										
	Spheroid			3.1(+0)	1.1(+1)	2.6(+1)	3.1(+1)	2.5(+1)	1.2(+1)	4.9(+0)	1.6(+0
	Total = 1.1(+3) per mag per sq. degree, all M_V Total($<m_V$) =										
18-19	Disk ms								3.3(+1)	1.5(+2)	2.6(+2
	Disk non-ms										
	Spheroid			1.6(+0)	8.7(+0)	2.5(+1)	5.0(+1)	5.2(+1)	3.7(+1)	1.6(+1)	6.1(+0
	Total = 1.4(+3) per mag per sq. degree, all M_V Total($<m_V$) =										
19-20	Disk ms								3.3(+0)	5.0(+1)	1.9(+2
	Disk non-ms										
	Spheroid				4.4(+0)	2.0(+1)	4.8(+1)	8.3(+1)	7.6(+1)	4.9(+1)	2.0(+1
	Total = 1.7(+3) per mag per sq. degree, all M_V Total($<m_V$) =										
20-21	Disk ms									4.6(+0)	6.1(+1
	Disk non-ms										
	Spheroid				2.1(+0)	1.0(+1)	3.9(+1)	7.9(+1)	1.2(+2)	1.0(+2)	6.1(+1
	Total = 2.0(+3) per mag per sq. degree, all M_V Total($<m_V$) =										
21-22	Disk ms										5.7(+0
	Disk non-ms										
	Spheroid					4.8(+0)	2.0(+1)	6.4(+1)	1.1(+2)	1.6(+2)	1.3(+2
	Total = 2.3(+3) per mag per sq. degree, all M_V Total($<m_V$) =										
(22-23)	Disk ms										
	Disk non-ms										
	Spheroid						9.2(+0)	3.2(+1)	9.2(+1)	1.5(+2)	2.0(+2
	Total = 2.6(+3) per mag per sq. degree, all M_V Total($<m_V$) =										
(23-24)	Disk ms										
	Disk non-ms										
	Spheroid						2.9(+0)	1.5(+1)	4.7(+1)	1.2(+2)	1.9(+2
	Total = 3.0(+3) per mag per sq. degree, all M_V Total($<m_V$) =										
(24-25)	Disk ms										
	Disk non-ms										
	Spheroid							4.8(+0)	2.2(+1)	6.2(+1)	1.5(+2
	Total = 3.3(+3) per mag per sq. degree, all M_V Total($<m_V$) =										
(25-26)	Disk ms										
	Disk non-ms										
	Spheroid								6.9(+0)	2.9(+1)	7.7(+1

[a]See footnote to Table 2.1.

2.7

(1950) = 17^h56^m, $\delta(1950) = 61°$, $l^{II}(1950) = 90°$, $b^{II}(1950) = 30°$ [a]

	+8	+9	+10	+11	+12	(+13)	(+14)	(+15)	(+16)	(+17)	(+18)	(+19)
3.5(+1) per sq. degree, all M_V												
)	1.6(-1)	4.4(-2)										
7.6(+1) per sq. degree, all M_V												
)	3.9(-1)	1.4(-1)										
1.6(+2) per sq. degree, all M_V												
)	1.5(+0)	4.6(-1)	1.6(-1)									
3.2(+2) per sq. degree, all M_V												
)	4.8(+0)	1.7(+0)	5.2(-1)	1.7(-1)								
6.3(+2) per sq. degree, all M_V												
)	1.6(+1)	5.6(+0)	2.0(+0)	5.8(-1)								
1.2(+3) per sq. degree, all M_V												
)	4.6(+1)	1.8(+1)	6.3(+0)	2.2(+0)	6.5(-1)							
2.0(+3) per sq. degree, all M_V												
)	1.2(+2)	5.3(+1)	2.1(+1)	7.1(+0)	2.4(+0)							
)												
3.1(+3) per sq. degree, all M_V												
)	2.3(+2)	1.3(+2)	6.0(+1)	2.3(+1)	7.9(+0)	2.7(+0)						
)	1.9(+0)											
4.5(+3) per sq. degree, all M_V												
)	3.0(+2)	2.6(+2)	1.5(+2)	6.7(+1)	2.6(+1)	8.7(+0)	3.0(+0)					
)	7.3(+0)	2.2(+0)										
6.1(+3) per sq. degree, all M_V												
)	2.3(+2)	3.5(+2)	3.0(+2)	1.7(+2)	7.5(+1)	2.8(+1)	9.6(+0)	3.3(+0)				
)	2.4(+1)	8.4(+0)	2.5(+0)									
8.1(+3) per sq. degree, all M_V												
)	7.3(+1)	2.6(+2)	4.0(+2)	3.4(+2)	1.9(+2)	8.3(+1)	3.1(+1)	1.0(+1)	3.3(+0)			
)	7.3(+1)	2.8(+1)	9.5(+0)	2.8(+0)								
1.0(+4) per sq. degree, all M_V												
	6.7(+0)	8.4(+1)	3.0(+2)	4.5(+2)	3.7(+2)	2.1(+2)	9.1(+1)	3.4(+1)	1.1(+1)	3.3(+0)		
)	1.5(+2)	8.5(+1)	3.2(+1)	1.1(+1)	3.1(+0)							
1.3(+4) per sq. degree, all M_V												
		7.7(+0)	9.5(+1)	3.3(+2)	4.9(+2)	4.1(+2)	2.3(+2)	9.9(+1)	3.4(+1)	1.1(+1)	3.3(+0)	
)	2.4(+2)	1.7(+2)	9.6(+1)	3.5(+1)	1.2(+1)	3.5(+0)						
1.6(+4) per sq. degree, all M_V												
			8.7(+0)	1.1(+2)	3.7(+2)	5.5(+2)	4.5(+2)	2.5(+2)	1.0(+2)	3.4(+1)	1.1(+1)	
)	2.3(+2)	2.8(+2)	2.0(+2)	1.1(+2)	3.9(+1)	1.3(+1)	3.8(+0)					
1.9(+4) per sq. degree, all M_V												
				9.7(+0)	1.2(+2)	4.1(+2)	6.0(+2)	4.9(+2)	2.5(+2)	1.0(+2)	3.4(+1)	7.8(+0)
)	1.8(+2)	2.6(+2)	3.1(+2)	2.2(+2)	1.2(+2)	4.4(+1)	1.4(+1)	4.2(+0)				

TABI

DISTRIBUTION OF ABSOLUTE MAGNITUDES OF VISIBLE STARS FOR

m_V \ M_V		-2	-1	0	+1	+2	+3	+4	+5	+6	+7
	Total = 3.1(+1) per mag per sq. degree, all M_V									Total(<m_V) =	
<12	Disk ms		5.2(-2)	1.9(-1)	5.7(-1)	1.5(+0)	5.1(+0)	5.9(+0)	3.2(+0)	1.3(+0)	4.5(-1
	Disk non-ms	2.4(-1)	8.4(-1)	2.3(+0)	3.8(+0)	3.6(+0)	1.5(+0)	3.8(-2)			
	Spheroid	5.1(-2)	7.7(-2)	8.8(-2)	7.8(-2)	5.2(-2)					
	Total = 3.4(+1) per mag per sq. degree, all M_V									Total(<m_V) =	
12-13	Disk ms					2.2(-1)	4.6(+0)	9.9(+0)	7.0(+0)	3.1(+0)	1.2(+0
	Disk non-ms			3.0(-1)	1.6(+0)	3.1(+0)	2.0(+0)	5.9(-2)			
	Spheroid	5.9(-2)	1.2(-1)	1.7(-1)	1.7(-1)	1.3(-1)	7.3(-2)	3.8(-2)			
	Total = 6.8(+1) per mag per sq. degree, all M_V									Total(<m_V) =	
13-14	Disk ms						4.9(+0)	2.0(+1)	1.9(+1)	9.7(+0)	3.8(+0
	Disk non-ms				7.0(-1)	2.7(+0)	2.9(+0)	1.1(-1)			
	Spheroid	9.6(-2)	2.3(-1)	4.1(-1)	4.8(-1)	4.1(-1)	2.6(-1)	1.2(-1)			
	Total = 1.3(+2) per mag per sq. degree, all M_V									Total(<m_V) =	
14-15	Disk ms						2.9(+0)	2.9(+1)	4.5(+1)	2.7(+1)	1.2(+1
	Disk non-ms					1.2(+0)	2.4(+0)	1.4(-1)			
	Spheroid		3.7(-1)	7.7(-1)	1.2(+0)	1.1(+0)	8.1(-1)	4.4(-1)	1.8(-1)		
	Total = 2.4(+2) per mag per sq. degree, all M_V									Total(<m_V) =	
15-16	Disk ms						7.3(-1)	2.6(+1)	7.9(+1)	6.5(+1)	3.4(+1
	Disk non-ms						9.5(-1)				
	Spheroid		4.0(-1)	1.2(+0)	2.2(+0)	2.7(+0)	2.2(+0)	1.4(+0)	6.4(-1)	2.4(-1)	
	Total = 3.9(+2) per mag per sq. degree, all M_V									Total(<m_V) =	
16-17	Disk ms							1.2(+1)	9.0(+1)	1.2(+2)	8.1(+1
	Disk non-ms										
	Spheroid		4.0(-1)	1.3(+0)	3.5(+0)	5.1(+0)	5.4(+0)	3.7(+0)	2.0(+0)	8.6(-1)	
	Total = 5.6(+2) per mag per sq. degree, all M_V									Total(<m_V) =	
17-18	Disk ms							2.2(+0)	5.7(+1)	1.4(+2)	1.5(+2
	Disk non-ms										
	Spheroid			1.3(+0)	3.8(+0)	8.1(+0)	9.9(+0)	9.0(+0)	5.4(+0)	2.7(+0)	1.1(+0
	Total = 7.1(+2) per mag per sq. degree, all M_V									Total(<m_V) =	
18-19	Disk ms								1.5(+1)	8.7(+1)	1.7(+2
	Disk non-ms										
	Spheroid			8.3(-1)	3.7(+0)	8.8(+0)	1.6(+1)	1.6(+1)	1.3(+1)	7.3(+0)	3.4(+0
	Total = 8.7(+2) per mag per sq. degree, all M_V									Total(<m_V) =	
19-20	Disk ms								1.2(+0)	2.3(+1)	1.1(+2
	Disk non-ms										
	Spheroid				2.3(+0)	8.5(+0)	1.7(+1)	2.6(+1)	2.4(+1)	1.8(+1)	9.1(+0
	Total = 1.0(+3) per mag per sq. degree, all M_V									Total(<m_V) =	
20-21	Disk ms									1.7(+0)	2.8(+1
	Disk non-ms										
	Spheroid				1.3(+0)	5.3(+0)	1.6(+1)	2.8(+1)	3.9(+1)	3.2(+1)	2.2(+1
	Total = 1.2(+3) per mag per sq. degree, all M_V									Total(<m_V) =	
21-22	Disk ms										2.0(+0
	Disk non-ms										
	Spheroid					2.9(+0)	1.0(+1)	2.7(+1)	4.1(+1)	5.2(+1)	4.0(+1
	Total = 1.4(+3) per mag per sq. degree, all M_V									Total(<m_V) =	
(22-23)	Disk ms										
	Disk non-ms										
	Spheroid						5.6(+0)	1.7(+1)	4.0(+1)	5.5(+1)	6.4(+1
	Total = 1.6(+3) per mag per sq. degree, all M_V									Total(<m_V) =	
(23-24)	Disk ms										
	Disk non-ms										
	Spheroid						2.0(+0)	9.2(+0)	2.5(+1)	5.3(+1)	6.8(+1
	Total = 1.7(+3) per mag per sq. degree, all M_V									Total(<m_V) =	
(24-25)	Disk ms										
	Disk non-ms										
	Spheroid							3.3(+0)	1.3(+1)	3.3(+1)	6.5(+1
	Total = 1.9(+3) per mag per sq. degree, all M_V									Total(<m_V) =	
(25-26)	Disk ms										
	Disk non-ms										
	Spheroid								4.8(+0)	1.8(+1)	4.0(+1

[a]See footnote to Table 2.1.

E 2.8

$\alpha(1950)=8^h00^m$, $\delta(1950)=40°$, $l^{II}(1950)=180°$, $b^{II}(1950)=30°$ [a]

+8	+9	+10	+11	+12	(+13)	(+14)	(+15)	(+16)	(+17)	(+18)	(+19)
3.1(+1) per sq. degree, all M_V											
1.5(-1)	4.4(-2)										
6.6(+1) per sq. degree, all M_V											
3.9(-1)	1.4(-1)	3.7(-2)									
1.3(+2) per sq. degree, all M_V											
1.4(+0)	4.5(-1)	1.5(-1)									
2.7(+2) per sq. degree, all M_V											
4.6(+0)	1.7(+0)	5.1(-1)	1.7(-1)								
5.0(+2) per sq. degree, all M_V											
1.4(+1)	5.3(+0)	1.9(+0)	5.7(-1)								
9.0(+2) per sq. degree, all M_V											
4.1(+1)	1.7(+1)	6.0(+0)	2.1(+0)	6.3(-1)							
1.5(+3) per sq. degree, all M_V											
9.6(+1)	4.7(+1)	1.9(+1)	6.7(+0)	2.4(+0)	7.0(-1)						
2.2(+3) per sq. degree, all M_V											
1.7(+2)	1.1(+2)	5.3(+1)	2.1(+1)	7.5(+0)	2.6(+0)	7.7(-1)					
1.3(+0)											
3.0(+3) per sq. degree, all M_V											
2.0(+2)	2.0(+2)	1.3(+2)	6.0(+1)	2.4(+1)	8.3(+0)	2.9(+0)					
4.0(+0)	1.5(+0)										
4.1(+3) per sq. degree, all M_V											
1.3(+2)	2.3(+2)	2.3(+2)	1.4(+2)	6.6(+1)	2.6(+1)	9.1(+0)	3.1(+0)				
1.1(+1)	4.7(+0)	1.7(+0)									
5.3(+3) per sq. degree, all M_V											
3.3(+1)	1.5(+2)	2.6(+2)	2.5(+2)	1.6(+2)	7.3(+1)	2.9(+1)	9.9(+0)	3.2(+0)			
2.6(+1)	1.3(+1)	5.3(+0)	1.9(+0)								
6.6(+3) per sq. degree, all M_V											
2.4(+0)	3.8(+1)	1.7(+2)	3.0(+2)	2.8(+2)	1.7(+2)	8.1(+1)	3.1(+1)	1.0(+1)	3.2(+0)		
4.8(+1)	3.1(+1)	1.4(+1)	5.9(+0)	2.1(+0)							
8.2(+3) per sq. degree, all M_V											
	2.7(+0)	4.3(+1)	1.9(+2)	3.3(+2)	3.1(+2)	1.9(+2)	8.8(+1)	3.2(+1)	1.0(+1)	3.2(+0)	
7.7(+1)	5.5(+1)	3.5(+1)	1.6(+1)	6.6(+0)	2.3(+0)						
9.9(+3) per sq. degree, all M_V											
		3.1(+0)	4.8(+1)	2.1(+2)	3.6(+2)	3.4(+2)	2.1(+2)	8.9(+1)	3.2(+1)	1.0(+1)	2.4(+0)
8.1(+1)	8.9(+1)	6.3(+1)	3.9(+1)	1.8(+1)	7.3(+0)	2.5(+0)					
1.2(+4) per sq. degree, all M_V											
			3.5(+0)	5.4(+1)	2.3(+2)	4.0(+2)	3.7(+2)	2.1(+2)	8.9(+1)	3.2(+1)	7.4(+0)
7.8(+1)	9.4(+1)	1.0(+2)	7.0(+1)	4.3(+1)	1.9(+1)	8.0(+0)	2.8(+0)				

TABL

DISTRIBUTION OF ABSOLUTE MAGNITUDES OF VISIBLE STARS FOR α(

m_v \ M_v		-2	-1	0	+1	+2	+3	+4	+5	+6	+7
	Total = 3.2(+1) per mag per sq. degree, all M_v; Total($<m_v$) = :										
<12	Disk ms			1.1(-1)	3.4(-1)	9.6(-1)	4.6(+0)	6.1(+0)	3.6(+0)	1.4(+0)	4.5(-1)
	Disk non-ms	2.1(-1)	7.4(-1)	2.0(+0)	3.6(+0)	3.6(+0)	1.6(+0)	4.0(-2)			
	Spheroid	7.9(-1)	5.6(-1)	3.4(-1)	2.0(-1)	9.9(-2)	4.8(-2)				
	Total = 4.1(+1) per mag per sq. degree, all M_v; Total($<m_v$) = 7										
12-13	Disk ms					6.6(-2)	3.5(+0)	1.0(+1)	7.6(+0)	3.6(+0)	1.3(+0)
	Disk non-ms			2.0(-1)	1.3(+0)	2.8(+0)	2.0(+0)	6.0(-2)			
	Spheroid	2.2(+0)	2.5(+0)	1.6(+0)	7.7(-1)	3.8(-1)	1.5(-1)	6.3(-2)			
	Total = 9.4(+1) per mag per sq. degree, all M_v; Total($<m_v$) = 1										
13-14	Disk ms						3.1(+0)	1.9(+1)	2.2(+1)	1.1(+1)	4.4(+0)
	Disk non-ms				4.6(-1)	2.1(+0)	2.6(+0)	1.1(-1)			
	Spheroid	2.8(+0)	8.5(+0)	8.6(+0)	4.5(+0)	1.8(+0)	7.5(-1)	2.5(-1)			
	Total = 2.1(+2) per mag per sq. degree, all M_v; Total($<m_v$) = 3										
14-15	Disk ms						1.4(+0)	2.5(+1)	4.9(+1)	3.1(+1)	1.3(+1)
	Disk non-ms					7.5(-1)	1.9(+0)				
	Spheroid	1.6(+0)	1.1(+1)	2.9(+1)	2.5(+1)	1.1(+1)	3.7(+0)	1.3(+0)	3.7(-1)		
	Total = 4.5(+2) per mag per sq. degree, all M_v; Total($<m_v$) = 8										
15-16	Disk ms							2.0(+1)	8.3(+1)	7.2(+1)	3.9(+1)
	Disk non-ms						6.0(-1)				
	Spheroid	7.0(-1)	6.2(+0)	3.6(+1)	8.1(+1)	5.9(+1)	2.1(+1)	6.2(+0)	1.9(+0)	5.0(-1)	
	Total = 8.7(+2) per mag per sq. degree, all M_v; Total($<m_v$) = 1										
16-17	Disk ms							8.2(+0)	9.0(+1)	1.3(+2)	9.0(+1)
	Disk non-ms										
	Spheroid		2.7(+0)	2.0(+1)	9.9(+1)	1.9(+2)	1.2(+2)	3.6(+1)	9.2(+0)	2.5(+0)	
	Total = 1.5(+3) per mag per sq. degree, all M_v; Total($<m_v$) = 3										
17-18	Disk ms								5.4(+1)	1.4(+2)	1.6(+2)
	Disk non-ms										
	Spheroid			8.8(+0)	5.6(+1)	2.3(+2)	3.7(+2)	2.0(+2)	5.3(+1)	1.2(+1)	3.1(+0)
	Total = 2.3(+3) per mag per sq. degree, all M_v; Total($<m_v$) = 5										
18-19	Disk ms								1.3(+1)	8.5(+1)	1.8(+2)
	Disk non-ms										
	Spheroid			3.1(+0)	2.4(+1)	1.3(+2)	4.5(+2)	6.2(+2)	3.0(+2)	7.1(+1)	1.6(+1)
	Total = 3.3(+3) per mag per sq. degree, all M_v; Total($<m_v$) = 8										
19-20	Disk ms									2.0(+1)	1.1(+2)
	Disk non-ms										
	Spheroid				8.6(+0)	5.6(+1)	2.5(+2)	7.4(+2)	9.0(+2)	4.0(+2)	8.8(+1)
	Total = 4.4(+3) per mag per sq. degree, all M_v; Total($<m_v$) = 1										
20-21	Disk ms										2.5(+1)
	Disk non-ms										
	Spheroid					2.0(+1)	1.1(+2)	4.1(+2)	1.1(+3)	1.2(+3)	5.0(+2)
	Total = 5.5(+3) per mag per sq. degree, all M_v; Total($<m_v$) = 1										
21-22	Disk ms										
	Disk non-ms										
	Spheroid					7.2(+0)	3.8(+1)	1.8(+2)	5.9(+2)	1.4(+3)	1.5(+3)
	Total = 6.7(+3) per mag per sq. degree, all M_v; Total($<m_v$) = 2										
(22-23)	Disk ms										
	Disk non-ms										
	Spheroid						1.4(+1)	6.2(+1)	2.6(+2)	7.8(+2)	1.8(+3)
	Total = 7.9(+3) per mag per sq. degree, all M_v; Total($<m_v$) = 3.										
(23-24)	Disk ms										
	Disk non-ms										
	Spheroid							2.3(+1)	8.9(+1)	3.4(+2)	9.6(+2)
	Total = 8.8(+3) per mag per sq. degree, all M_v; Total($<m_v$) = 4.										
(24-25)	Disk ms										
	Disk non-ms										
	Spheroid								3.3(+1)	1.2(+2)	4.2(+2)
	Total = 1.0(+4) per mag per sq. degree, all M_v; Total($<m_v$) = 5.										
(25-26)	Disk ms										
	Disk non-ms										
	Spheroid									4.3(+1)	1.5(+2)

[a] See footnote to Table 2.1.

.2.9

α(1950) = 15^h28^m, δ(1950) = $-4.3°$, l^{II}(1950) = 0°, b^{II}(1950) = 40° [a]

	+8	+9	+10	+11	+12	(+13)	(+14)	(+15)	(+16)	(+17)	(+18)	(+19)
.2(+1) per sq. degree, all M_V												
	1.6(-1)	4.4(-2)										
.2(+1) per sq. degree, all M_V												
	3.9(-1)	1.4(-1)										
.7(+2) per sq. degree, all M_V												
	1.5(+0)	4.5(-1)	1.5(-1)									
8(+2) per sq. degree, all M_V												
	5.3(+0)	1.8(+0)	5.1(-1)									
.3(+2) per sq. degree, all M_V												
	1.6(+1)	6.1(+0)	2.0(+0)	5.7(-1)								
.7(+3) per sq. degree, all M_V												
	4.6(+1)	1.8(+1)	7.0(+0)	2.2(+0)								
.2(+3) per sq. degree, all M_V												
	1.1(+2)	5.3(+1)	2.1(+1)	7.8(+0)	2.5(+0)							
.5(+3) per sq. degree, all M_V												
	1.9(+2)	1.2(+2)	6.0(+1)	2.3(+1)	8.7(+0)	2.7(+0)						
	3.8(+0)											
.8(+3) per sq. degree, all M_V												
	2.1(+2)	2.2(+2)	1.4(+2)	6.8(+1)	2.6(+1)	9.6(+0)						
	1.9(+1)	4.4(+0)										
.3(+4) per sq. degree, all M_V												
	1.2(+2)	2.4(+2)	2.4(+2)	1.6(+2)	7.5(+1)	2.9(+1)	1.1(+1)					
	1.1(+2)	2.2(+1)	4.9(+0)									
.9(+4) per sq. degree, all M_V												
	5.0(+1)	1.4(+2)	2.7(+2)	2.7(+2)	1.7(+2)	8.3(+1)	3.2(+1)	1.1(+1)				
	5.9(+2)	1.2(+2)	2.4(+1)	5.5(+0)								
.5(+4) per sq. degree, all M_V												
		3.4(+1)	1.6(+2)	3.1(+2)	3.0(+2)	1.9(+2)	9.1(+1)	3.5(+1)	1.2(+1)			
	.8(+3)	6.9(+2)	1.4(+2)	2.7(+1)								
.3(+4) per sq. degree, all M_V												
			3.9(+1)	1.8(+2)	3.4(+2)	3.4(+2)	2.1(+2)	1.0(+2)	3.5(+1)	1.2(+1)		
	.1(+3)	2.1(+3)	7.8(+2)	1.6(+2)	3.0(+1)							
2(+4) per sq. degree, all M_V												
				4.3(+1)	2.0(+2)	3.8(+2)	3.7(+2)	2.3(+2)	1.0(+2)	3.5(+1)	1.2(+1)	
	.1(+3)	2.4(+3)	2.3(+3)	8.7(+2)	1.7(+2)	3.4(+1)						
2(+4) per sq. degree, all M_V												
					4.8(+1)	2.2(+2)	4.2(+2)	4.0(+2)	2.3(+2)	1.0(+2)	3.5(+1)	
	.0(+2)	1.3(+3)	2.8(+3)	2.6(+3)	9.7(+2)	1.9(+2)	3.7(+1)					

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DISTRIBUTION OF ABSOLUTE MAGNITUDES OF VISIBLE STARS I

m_v \ M_v		-2	-1	0	+1	+2	+3	+4	+5	+6	
			Total = 1.9(+1) per mag per sq. degree, all M_v							Total(<	
<12	Disk ms			3.9(-2)	1.2(-1)	3.6(-1)	2.5(+0)	4.6(+0)	3.1(+0)	1.4(+0)	5
	Disk non-ms	5.7(-2)	2.1(-1)	6.2(-1)	1.4(+0)	1.8(+0)	1.0(+0)	2.8(-2)			
	Spheroid	8.6(-2)	1.2(-1)	1.4(-1)	1.2(-1)	7.6(-2)	4.1(-2)				
			Total = 2.0(+1) per mag per sq. degree, all M_v							Total(<	
12-13	Disk ms						1.0(+0)	5.5(+0)	5.9(+0)	3.0(+0)	1
	Disk non-ms				1.2(-1)	5.8(-1)	7.1(-1)	3.0(-2)			
	Spheroid	9.7(-2)	2.1(-1)	2.8(-1)	2.8(-1)	2.0(-1)	1.1(-1)	5.2(-2)			
			Total = 3.9(+1) per mag per sq. degree, all M_v							Total(<	
13-14	Disk ms						4.8(-1)	7.2(+0)	1.3(+1)	8.3(+0)	3.
	Disk non-ms					2.0(-1)	5.1(-1)				
	Spheroid	1.6(-1)	3.7(-1)	7.0(-1)	8.0(-1)	6.5(-1)	4.0(-1)	1.8(-1)	7.7(-2)		
			Total = 7.1(+1) per mag per sq. degree, all M_v							Total(<	
14-15	Disk ms						9.4(-2)	5.6(+0)	2.1(+1)	1.9(+1)	1.
	Disk non-ms						1.6(-1)				
	Spheroid	1.5(-1)	6.0(-1)	1.3(+0)	2.0(+0)	1.9(+0)	1.3(+0)	6.6(-1)	2.7(-1)	1.0(-1)	
			Total = 1.2(+2) per mag per sq. degree, all M_v							Total(<	
15-16	Disk ms							2.2(+0)	2.2(+1)	3.2(+1)	2.
	Disk non-ms										
	Spheroid	1.3(-1)	5.9(-1)	2.0(+0)	3.5(+0)	4.7(+0)	3.7(+0)	2.2(+0)	9.8(-1)	3.6(-1)	1.
			Total = 1.8(+2) per mag per sq. degree, all M_v							Total(<	
16-17	Disk ms							3.1(-1)	1.2(+1)	3.4(+1)	4.
	Disk non-ms										
	Spheroid		5.1(-1)	2.0(+0)	5.6(+0)	8.3(+0)	9.2(+0)	6.2(+0)	3.2(+0)	1.3(+0)	4.
			Total = 2.4(+2) per mag per sq. degree, all M_v							Total(<	
17-18	Disk ms								2.7(+0)	1.9(+1)	4.
	Disk non-ms										
	Spheroid		2.9(-1)	1.7(+0)	5.5(+0)	1.3(+1)	1.6(+1)	1.5(+1)	9.1(+0)	4.3(+0)	1.
			Total = 3.1(+2) per mag per sq. degree, all M_v							Total(<	
18-19	Disk ms									4.0(+0)	2.
	Disk non-ms										
	Spheroid			9.6(-1)	4.7(+0)	1.3(+1)	2.5(+1)	2.7(+1)	2.3(+1)	1.2(+1)	5.
			Total = 4.0(+2) per mag per sq. degree, all M_v							Total(<	
19-20	Disk ms										5.
	Disk non-ms										
	Spheroid			4.6(-1)	2.7(+0)	1.1(+1)	2.5(+1)	4.2(+1)	4.0(+1)	3.0(+1)	1.
			Total = 5.1(+2) per mag per sq. degree, all M_v							Total(<	
20-21	Disk ms										
	Disk non-ms										
	Spheroid				1.3(+0)	6.1(+0)	2.1(+1)	4.1(+1)	6.1(+1)	5.3(+1)	3.
			Total = 6.2(+2) per mag per sq. degree, all M_v							Total(<	
21-22	Disk ms										
	Disk non-ms										
	Spheroid					2.9(+0)	1.2(+1)	3.4(+1)	6.0(+1)	8.2(+1)	6.
			Total = 7.4(+2) per mag per sq. degree, all M_v							Total(<	
(22-23)	Disk ms										
	Disk non-ms										
	Spheroid					9.9(-1)	5.6(+0)	2.0(+1)	5.0(+1)	8.0(+1)	1.
			Total = 8.6(+2) per mag per sq. degree, all M_v							Total(<	
(23-24)	Disk ms										
	Disk non-ms										
	Spheroid						1.9(+0)	9.2(+0)	2.8(+1)	6.6(+1)	1.
			Total = 9.7(+2) per mag per sq. degree, all M_v							Total(<	
(24-25)	Disk ms										
	Disk non-ms										
	Spheroid							3.1(+0)	1.3(+1)	3.8(+1)	8.
			Total = 1.1(+3) per mag per sq. degree, all M_v							Total(<	
(25-26)	Disk ms										
	Disk non-ms										
	Spheroid								4.5(+0)	1.8(+1)	4.

[a]See footnote to Table 2.1.

BLE 2.10

R $\alpha(1950)=10^{h}36^{m}$, $\delta(1950)=40°$, $l^{II}(1950)=180°$, $b^{II}(1950)=60°$ [a]

	+7	+8	+9	+10	+11	+12	(+13)	(+14)	(+15)	(+16)	(+17)	(+18)	(+19)
,) = 1.9(+1) per sq. degree, all M_V													
	)(-1)	1.5(-1)	4.2(-2)										
,) = 3.9(+1) per sq. degree, all M_V													
	2(+0)	4.5(-1)	1.3(-1)	3.2(-2)									
,) = 7.7(+1) per sq. degree, all M_V													
	?(+0)	1.4(+0)	5.2(-1)	1.5(-1)									
,) = 1.5(+2) per sq. degree, all M_V													
	)(+1)	4.4(+0)	1.6(+0)	5.9(-1)	1.6(-1)								
,) = 2.7(+2) per sq. degree, all M_V													
	4(+1)	1.2(+1)	5.1(+0)	1.9(+0)	6.6(-1)	1.8(-1)							
	3(-1)												
,) = 4.4(+2) per sq. degree, all M_V													
	)(+1)	2.9(+1)	1.4(+1)	5.8(+0)	2.1(+0)	7.3(-1)	2.0(-1)						
	5(-1)												
,) = 6.8(+2) per sq. degree, all M_V													
	2(+1)	4.8(+1)	3.3(+1)	1.6(+1)	6.5(+0)	2.3(+0)	8.1(-1)						
	6(+0)	5.5(-1)											
,) = 9.9(+2) per sq. degree, all M_V													
	1(+1)	5.0(+1)	5.5(+1)	3.7(+1)	1.8(+1)	7.3(+0)	2.6(+0)	8.9(-1)					
	1(+0)	1.9(+0)	6.3(-1)										
,) = 1.4(+3) per sq. degree, all M_V													
	)(+0)	2.8(+1)	5.8(+1)	6.3(+1)	4.2(+1)	2.0(+1)	8.0(+0)	2.8(+0)	9.7(-1)				
	5(+1)	6.4(+0)	2.3(+0)	7.2(-1)									
,) = 1.9(+3) per sq. degree, all M_V													
		5.9(+0)	3.2(+1)	6.6(+1)	7.0(+1)	4.7(+1)	2.2(+1)	8.8(+0)	3.1(+0)	9.9(-1)			
	3(+1)	1.8(+1)	7.4(+0)	2.6(+0)	8.0(-1)								
,) = 2.5(+3) per sq. degree, all M_V													
			6.8(+0)	3.6(+1)	7.3(+1)	7.8(+1)	5.2(+1)	2.5(+1)	9.6(+0)	3.1(+0)	9.9(-1)		
	6(+1)	4.5(+1)	2.1(+1)	8.4(+0)	2.9(+0)	8.9(-1)							
,) = 3.3(+3) per sq. degree, all M_V													
				7.6(+0)	4.0(+1)	8.1(+1)	8.6(+1)	5.7(+1)	2.7(+1)	9.8(+0)	3.1(+0)	9.9(-1)	
	)(+2)	7.8(+1)	5.2(+1)	2.4(+1)	9.4(+0)	3.2(+0)	9.9(-1)						
,) = 4.1(+3) per sq. degree, all M_V													
					8.5(+0)	4.5(+1)	9.0(+1)	9.5(+1)	6.2(+1)	2.7(+1)	9.8(+0)	3.1(+0)	
	)(+2)	1.2(+2)	9.1(+1)	5.9(+1)	2.6(+1)	1.0(+1)	3.5(+0)	1.1(+0)					
,) = 5.1(+3) per sq. degree, all M_V													
						9.5(+0)	5.0(+1)	9.9(+1)	1.0(+2)	6.3(+1)	2.7(+1)	9.8(+0)	2.3(+0)
	2(+1)	1.2(+2)	1.4(+2)	1.0(+2)	6.6(+1)	2.9(+1)	1.2(+1)	3.9(+0)	1.2(+0)				
,) = 6.2(+3) per sq. degree, all M_V													
							1.0(+1)	5.5(+1)	1.1(+2)	1.0(+2)	6.3(+1)	2.7(+1)	7.3(+0)
	7(+1)	9.8(+1)	1.4(+2)	1.6(+2)	1.2(+2)	7.4(+1)	3.2(+1)	1.3(+1)	4.2(+0)	1.2(+0)			

TABL

DISTRIBUTION OF ABSOLUTE MAGNITUDES OF VISIBLE STARS FOR α(l

m_V \ M_V		-2	-1	0	+1	+2	+3	+4	+5	+6	+7
	Total = 2.4(+1) per mag per sq. degree, all M_V; Total(<m_V) =										
<12	Disk ms			6.9(-2)	2.2(-1)	6.3(-1)	3.6(+0)	5.6(+0)	3.5(+0)	1.4(+0)	5.2(-1
	Disk non-ms	1.0(-1)	3.8(-1)	1.1(+0)	2.3(+0)	2.6(+0)	1.3(+0)	3.5(-2)			
	Spheroid	1.1(-1)	1.5(-1)	1.6(-1)	1.3(-1)	8.2(-2)	4.3(-2)				
	Total = 2.7(+1) per mag per sq. degree, all M_V; Total(<m_V) =										
12-13	Disk ms						2.0(+0)	7.8(+0)	7.1(+0)	3.3(+0)	1.3(+C
	Disk non-ms			3.3(-2)	3.9(-1)	1.3(+0)	1.2(+0)	4.5(-2)			
	Spheroid	1.4(-1)	2.8(-1)	3.6(-1)	3.3(-1)	2.3(-1)	1.2(-1)	5.5(-2)			
	Total = 5.4(+1) per mag per sq. degree, all M_V; Total(<m_V) =										
13-14	Disk ms						1.3(+0)	1.2(+1)	1.8(+1)	1.0(+1)	4.2(+C
	Disk non-ms				7.5(-2)	6.5(-1)	1.2(+0)	6.3(-2)			
	Spheroid	2.2(-1)	5.2(-1)	9.5(-1)	1.0(+0)	7.8(-1)	4.5(-1)	2.0(-1)	8.1(-2)		
	Total = 1.0(+2) per mag per sq. degree, all M_V; Total(<m_V) =										
14-15	Disk ms						3.9(-1)	1.2(+1)	3.3(+1)	2.5(+1)	1.2(+1
	Disk non-ms					1.2(-1)	5.4(-1)				
	Spheroid	2.1(-1)	8.3(-1)	1.8(+0)	2.7(+0)	2.4(+0)	1.6(+0)	7.5(-1)	3.0(-1)	1.1(-1)	
	Total = 1.8(+2) per mag per sq. degree, all M_V; Total(<m_V)										
15-16	Disk ms							6.6(+0)	4.2(+1)	5.0(+1)	3.2(+1
	Disk non-ms										
	Spheroid		8.0(-1)	2.8(+0)	4.9(+0)	6.4(+0)	4.7(+0)	2.6(+0)	1.1(+0)	4.0(-1)	
	Total = 2.8(+2) per mag per sq. degree, all M_V; Total(<m_V)										
16-17	Disk ms							1.5(+0)	3.2(+1)	6.5(+1)	6.2(+1
	Disk non-ms										
	Spheroid		6.5(-1)	2.7(+0)	7.8(+0)	1.2(+1)	1.3(+1)	7.9(+0)	3.9(+0)	1.5(+0)	5.0(-
	Total = 3.8(+2) per mag per sq. degree, all M_V; Total(<m_V)										
17-18	Disk ms								1.1(+1)	4.9(+1)	8.1(+1
	Disk non-ms										
	Spheroid			2.1(+0)	7.4(+0)	1.8(+1)	2.3(+1)	2.1(+1)	1.2(+1)	5.2(+0)	1.9(+(
	Total = 5.0(+2) per mag per sq. degree, all M_V; Total(<m_V)										
18-19	Disk ms								1.1(+0)	1.6(+1)	6.1(+1
	Disk non-ms										
	Spheroid			1.2(+0)	6.0(+0)	1.7(+1)	3.5(+1)	3.8(+1)	3.1(+1)	1.6(+1)	6.5(+(
	Total = 6.3(+2) per mag per sq. degree, all M_V; Total(<m_V)										
19-20	Disk ms									1.7(+0)	2.0(+1
	Disk non-ms										
	Spheroid				3.2(+0)	1.4(+1)	3.3(+1)	5.8(+1)	5.6(+1)	4.1(+1)	1.9(+1
	Total = 7.9(+2) per mag per sq. degree, all M_V; Total(<m_V)										
20-21	Disk ms										2.0(+(
	Disk non-ms										
	Spheroid				1.5(+0)	7.4(+0)	2.7(+1)	5.5(+1)	8.5(+1)	7.4(+1)	5.2(+
	Total = 9.4(+2) per mag per sq. degree, all M_V; Total(<m_V)										
21-22	Disk ms										
	Disk non-ms										
	Spheroid					3.3(+0)	1.4(+1)	4.4(+1)	8.1(+1)	1.1(+2)	9.2(+
	Total = 1.1(+3) per mag per sq. degree, all M_V; Total(<m_V)										
(22-23)	Disk ms										
	Disk non-ms										
	Spheroid						6.4(+0)	2.3(+1)	6.3(+1)	1.1(+2)	1.4(+
	Total = 1.3(+3) per mag per sq. degree, all M_V; Total(<m_V)										
(23-24)	Disk ms										
	Disk non-ms										
	Spheroid						2.1(+0)	1.0(+1)	3.4(+1)	8.4(+1)	1.3(+
	Total = 1.5(+3) per mag per sq. degree, all M_V; Total(<m_V)										
(24-25)	Disk ms										
	Disk non-ms										
	Spheroid							3.4(+0)	1.5(+1)	4.5(+1)	1.0(+
	Total = 1.6(+3) per mag per sq. degree, all M_V; Total(<m_V)										
(25-26)	Disk ms										
	Disk non-ms										
	Spheroid								5.0(+0)	2.0(+1)	5.6(+

[a]See footnote to Table 2.1.

2.11

50)$=00^h14^m$, $\delta(1950)=+16°$, $l^{II}(1950)=111°$, $b^{II}(1950)=-46°$ [a]

	+8	+9	+10	+11	+12	(+13)	(+14)	(+15)	(+16)	(+17)	(+18)	(+19)
2.4(+1) per sq. degree, all M_V												
	1.5(-1)	4.3(-2)										
5.1(+1) per sq. degree, all M_V												
	4.7(-1)	1.3(-1)	3.2(-2)									
1.0(+2) per sq. degree, all M_V												
	1.5(+0)	5.4(-1)	1.5(-1)									
2.1(+2) per sq. degree, all M_V												
	5.0(+0)	1.8(+0)	6.2(-1)	1.7(-1)								
3.9(+2) per sq. degree, all M_V												
	1.5(+1)	5.8(+0)	2.0(+0)	6.9(-1)	1.9(-1)							
6.6(+2) per sq. degree, all M_V												
	3.8(+1)	1.7(+1)	6.5(+0)	2.2(+0)	7.7(-1)							
1.0(+3) per sq. degree, all M_V												
	7.4(+1)	4.4(+1)	1.9(+1)	7.3(+0)	2.5(+0)	8.5(-1)						
	5.9(-1)											
1.5(+3) per sq. degree, all M_V												
	9.6(+1)	8.5(+1)	5.0(+1)	2.2(+1)	8.1(+0)	2.8(+0)	9.4(-1)					
	2.2(+0)	6.9(-1)										
2.2(+3) per sq. degree, all M_V												
	7.2(+1)	1.1(+2)	9.6(+1)	5.5(+1)	2.4(+1)	9.0(+0)	3.0(+0)	1.0(+0)				
	7.7(+0)	2.6(+0)	7.8(-1)									
3.0(+3) per sq. degree, all M_V												
	2.4(+1)	8.3(+1)	1.3(+2)	1.1(+2)	6.2(+1)	2.7(+1)	9.9(+0)	3.3(+0)	1.0(+0)			
	2.3(+1)	9.0(+0)	2.9(+0)	8.8(-1)								
3.9(+3) per sq. degree, all M_V												
	2.4(+0)	2.7(+1)	9.4(+1)	1.4(+2)	1.2(+2)	6.8(+1)	2.9(+1)	1.1(+1)	3.4(+0)	1.0(+0)		
	6.2(+1)	2.7(+1)	1.0(+1)	3.3(+0)	9.7(-1)							
5.0(+3) per sq. degree, all M_V												
		2.8(+0)	3.1(+1)	1.1(+2)	1.6(+2)	1.3(+2)	7.5(+1)	3.2(+1)	1.1(+1)	3.4(+0)		
	1.1(+2)	7.1(+1)	3.0(+1)	1.1(+1)	3.6(+0)							
6.3(+3) per sq. degree, all M_V												
			3.1(+0)	3.4(+1)	1.2(+2)	1.7(+2)	1.5(+2)	8.2(+1)	3.3(+1)	1.1(+1)	3.4(+0)	
	1.7(+2)	1.3(+2)	8.1(+1)	3.4(+1)	1.3(+1)	4.0(+0)						
7.8(+3) per sq. degree, all M_V												
				3.5(+0)	3.8(+1)	1.3(+2)	1.9(+2)	1.6(+2)	8.3(+1)	3.3(+1)	1.1(+1)	2.5(+0)
	1.6(+2)	1.9(+2)	1.4(+2)	9.0(+1)	3.8(+1)	1.4(+1)	4.4(+0)					
9.4(+3) per sq. degree, all M_V												
					3.9(+0)	4.2(+1)	1.4(+2)	2.1(+2)	1.6(+2)	8.3(+1)	3.3(+1)	8.2(+0)
	1.2(+2)	1.8(+2)	2.2(+2)	1.6(+2)	1.0(+2)	4.2(+1)	1.5(+1)	4.8(+0)				

TAB

DISTRIBUTION OF ABSOLUTE MAGNITUDES OF VISIBLE STARS FOR α

m_V \ M_V		-2	-1	0	+1	+2	+3	+4	+5	+6	+
			Total = 2.5(+1) per mag per sq. degree, all M_V							Total(<m_V)	
<12	Disk ms			5.9(-2)	1.9(-1)	5.5(-1)	3.4(+0)	5.6(+0)	3.5(+0)	1.4(+0)	5.2(-
	Disk non-ms	1.0(-1)	3.7(-1)	1.1(+0)	2.2(+0)	2.6(+0)	1.3(+0)	3.4(-2)			
	Spheroid	3.9(-1)	3.9(-1)	3.0(-1)	1.9(-1)	1.1(-1)	5.1(-2)				
			Total = 2.9(+1) per mag per sq. degree, all M_V							Total(<m_V)	
12-13	Disk ms						1.8(+0)	7.7(+0)	7.1(+0)	3.4(+0)	1.3(+
	Disk non-ms			3.2(-2)	3.8(-1)	1.3(+0)	1.2(+0)	4.5(-2)			
	Spheroid	6.7(-1)	1.1(+0)	1.0(+0)	6.7(-1)	3.5(-1)	1.6(-1)	6.6(-2)			
			Total = 6.3(+1) per mag per sq. degree, all M_V							Total(<m_V)	
13-14	Disk ms						1.1(+0)	1.2(+1)	1.8(+1)	1.0(+1)	4.2(+
	Disk non-ms				7.4(-2)	6.4(-1)	1.1(+0)				
	Spheroid	1.0(+0)	2.6(+0)	3.9(+0)	2.9(+0)	1.6(+0)	7.0(-1)	2.7(-1)	9.7(-2)		
			Total = 1.3(+2) per mag per sq. degree, all M_V							Total(<m_V)	
14-15	Disk ms						3.3(-1)	1.2(+1)	3.4(+1)	2.6(+1)	1.3(+
	Disk non-ms						5.3(-1)				
	Spheroid	7.2(-1)	3.8(+0)	8.7(+0)	1.1(+1)	6.8(+0)	3.2(+0)	1.2(+0)	4.0(-1)	1.3(-1)	
			Total = 2.5(+2) per mag per sq. degree, all M_V							Total(<m_V)	
15-16	Disk ms							6.5(+0)	4.4(+1)	5.1(+1)	3.2(+
	Disk non-ms										
	Spheroid	4.3(-1)	2.8(+0)	1.3(+1)	2.5(+1)	2.6(+1)	1.3(+1)	5.3(+0)	1.7(+0)	5.3(-1)	
			Total = 4.2(+2) per mag per sq. degree, all M_V							Total(<m_V)	
16-17	Disk ms							1.5(+0)	3.4(+1)	6.9(+1)	6.4(+
	Disk non-ms										
	Spheroid		1.6(+0)	9.1(+0)	3.6(+1)	5.8(+1)	5.2(+1)	2.2(+1)	7.9(+0)	2.3(+0)	6.7(-
			Total = 6.6(+2) per mag per sq. degree, all M_V							Total(<m_V)	
17-18	Disk ms								1.2(+1)	5.4(+1)	8.5(+
	Disk non-ms										
	Spheroid			5.4(+0)	2.5(+1)	8.3(+1)	1.1(+2)	8.7(+1)	3.3(+1)	1.1(+1)	2.9(+
			Total = 9.8(+2) per mag per sq. degree, all M_V							Total(<m_V)	
18-19	Disk ms								1.4(+0)	1.9(+1)	6.6(+
	Disk non-ms										
	Spheroid			2.2(+0)	1.5(+1)	5.9(+1)	1.6(+2)	1.9(+2)	1.3(+2)	4.5(+1)	1.3(+
			Total = 1.4(+3) per mag per sq. degree, all M_V							Total(<m_V)	
19-20	Disk ms									2.0(+0)	2.3(+
	Disk non-ms										
	Spheroid				6.1(+0)	3.4(+1)	1.1(+2)	2.6(+2)	2.8(+2)	1.7(+2)	5.6(+
			Total = 1.8(+3) per mag per sq. degree, all M_V							Total(<m_V)	
20-21	Disk ms										2.5(+
	Disk non-ms										
	Spheroid				2.3(+0)	1.4(+1)	6.6(+1)	1.9(+2)	3.9(+2)	3.7(+2)	2.2(+
			Total = 2.3(+3) per mag per sq. degree, all M_V							Total(<m_V)	
21-22	Disk ms										
	Disk non-ms										
	Spheroid					5.3(+0)	2.7(+1)	1.1(+2)	2.7(+2)	5.1(+2)	4.6(+
			Total = 2.8(+3) per mag per sq. degree, all M_V							Total(<m_V)	
(22-23)	Disk ms										
	Disk non-ms										
	Spheroid						1.0(+1)	4.4(+1)	1.6(+2)	3.6(+2)	6.4(+
			Total = 3.2(+3) per mag per sq. degree, all M_V							Total(<m_V)	
(23-24)	Disk ms										
	Disk non-ms										
	Spheroid							1.6(+1)	6.4(+1)	2.1(+2)	4.5(+
			Total = 3.7(+3) per mag per sq. degree, all M_V							Total(<m_V)	
(24-25)	Disk ms										
	Disk non-ms										
	Spheroid							4.7(+0)	2.4(+1)	8.5(+1)	2.6(+
			Total = 4.2(+3) per mag per sq. degree, all M_V							Total(<m_V)	
(25-26)	Disk ms										
	Disk non-ms										
	Spheroid								6.8(+0)	3.1(+1)	1.0(+

[a]See footnote to Table 2.1.

: 2.12

950)=22^{h}03^{m}, δ(1950)=−19°, l^{II}(1950)=37°, b^{II}(1950)=−51° [a]

	+8	+9	+10	+11	+12	(+13)	(+14)	(+15)	(+16)	(+17)	(+18)	(+19)
2.5(+1) per sq. degree, all M_V												
)	1.5(-1)	4.3(-2)										
5.4(+1) per sq. degree, all M_V												
)	4.7(-1)	1.3(-1)	3.2(-2)									
1.2(+2) per sq. degree, all M_V												
)	1.5(+0)	5.5(-1)	1.5(-1)									
2.5(+2) per sq. degree, all M_V												
)	5.0(+0)	1.8(+0)	6.2(-1)	1.7(-1)								
4.9(+2) per sq. degree, all M_V												
)	1.5(+1)	5.8(+0)	2.0(+0)	6.9(-1)								
9.2(+2) per sq. degree, all M_V												
)	3.9(+1)	1.7(+1)	6.6(+0)	2.3(+0)	7.7(-1)							
)												
1.6(+3) per sq. degree, all M_V												
)	7.6(+1)	4.5(+1)	2.0(+1)	7.4(+0)	2.5(+0)	8.5(-1)						
)	7.9(-1)											
2.6(+3) per sq. degree, all M_V												
)	1.0(+2)	8.8(+1)	5.1(+1)	2.2(+1)	8.2(+0)	2.8(+0)						
)	3.5(+0)											
3.9(+3) per sq. degree, all M_V												
)	7.9(+1)	1.2(+2)	1.0(+2)	5.7(+1)	2.5(+1)	9.1(+0)	3.1(+0)					
)	1.6(+1)	4.0(+0)										
5.7(+3) per sq. degree, all M_V												
)	2.7(+1)	9.1(+1)	1.3(+2)	1.1(+2)	6.3(+1)	2.7(+1)	1.0(+1)	3.3(+0)				
)	6.6(+1)	1.8(+1)	4.6(+0)									
8.0(+3) per sq. degree, all M_V												
	2.9(+0)	3.1(+1)	1.0(+2)	1.5(+2)	1.2(+2)	7.0(+1)	3.0(+1)	1.1(+1)	3.4(+0)			
)	2.6(+2)	7.7(+1)	2.1(+1)	5.1(+0)								
1.1(+4) per sq. degree, all M_V												
		3.4(+0)	3.5(+1)	1.2(+2)	1.6(+2)	1.4(+2)	7.7(+1)	3.3(+1)	1.1(+1)	3.4(+0)		
)	5.5(+2)	3.0(+2)	8.7(+1)	2.3(+1)	5.7(+0)							
1.4(+4) per sq. degree, all M_V												
			3.8(+0)	3.9(+1)	1.3(+2)	1.8(+2)	1.5(+2)	8.3(+1)	3.3(+1)	1.1(+1)	3.4(+0)	
)	7.6(+2)	6.3(+2)	3.4(+2)	9.8(+1)	2.6(+1)	6.3(+0)						
1.8(+4) per sq. degree, all M_V												
				4.3(+0)	4.4(+1)	1.4(+2)	2.0(+2)	1.6(+2)	8.5(+1)	3.3(+1)	1.1(+1)	
:)	5.3(+2)	8.8(+2)	7.2(+2)	3.8(+2)	1.1(+2)	2.9(+1)	6.9(+0)					
2.2(+4) per sq. degree, all M_V												
					4.7(+0)	4.8(+1)	1.6(+2)	2.2(+2)	1.7(+2)	8.5(+1)	3.3(+1)	8.3(+0)
:)	3.0(+2)	6.1(+2)	9.9(+2)	8.0(+2)	4.2(+2)	1.2(+2)	3.2(+1)	7.6(+0)				

TABLE 2.

DISTRIBUTION OF ABSOLUTE MAGNITUDES OF VISIBLE STARS FOR α(1950

m_V \ M_V		-2	-1	0	+1	+2	+3	+4	+5	+6	+7	
			Total = 2.1(+1) per mag per sq. degree, all M_V							Total($<m_V$) = 2.		
<12	Disk ms			5.3(-2)	1.7(-1)	4.9(-1)	3.0(+0)	5.1(+0)	3.3(+0)	1.4(+0)	5.1(-1)	1
	Disk non-ms	7.6(-2)	2.8(-1)	8.2(-1)	1.7(+0)	2.2(+0)	1.2(+0)	3.1(-2)				
	Spheroid	7.7(-2)	1.1(-1)	1.3(-1)	1.1(-1)	7.4(-2)	4.0(-2)					
			Total = 2.3(+1) per mag per sq. degree, all M_V							Total($<m_V$) = 4.		
12-13	Disk ms						1.5(+0)	6.5(+0)	6.4(+0)	3.1(+0)	1.2(+0)	4
	Disk non-ms				2.2(-1)	8.6(-1)	9.3(-1)	3.7(-2)				
	Spheroid	8.4(-2)	1.8(-1)	2.5(-1)	2.5(-1)	1.9(-1)	1.1(-1)	5.1(-2)				
			Total = 4.5(+1) per mag per sq. degree, all M_V							Total($<m_V$) = 8.		
13-14	Disk ms						8.1(-1)	9.4(+0)	1.5(+1)	9.1(+0)	3.9(+0)	1
	Disk non-ms					3.6(-1)	7.6(-1)	4.6(-2)				
	Spheroid	1.4(-1)	3.3(-1)	6.2(-1)	7.2(-1)	6.0(-1)	3.7(-1)	1.8(-1)	7.5(-2)			
			Total = 8.3(+1) per mag per sq. degree, all M_V							Total($<m_V$) = 1.		
14-15	Disk ms						2.0(-1)	8.2(+0)	2.6(+1)	2.2(+1)	1.1(+1)	4
	Disk non-ms						3.0(-1)					
	Spheroid	1.4(-1)	5.2(-1)	1.1(+0)	1.8(+0)	1.7(+0)	1.2(+0)	6.3(-1)	2.6(-1)	1.0(-1)		
			Total = 1.4(+2) per mag per sq. degree, all M_V							Total($<m_V$) = 3.		
15-16	Disk ms							3.8(+0)	3.0(+1)	3.9(+1)	2.7(+1)	1
	Disk non-ms											
	Spheroid		5.3(-1)	1.7(+0)	3.1(+0)	4.1(+0)	3.3(+0)	2.0(+0)	9.3(-1)	3.5(-1)		
			Total = 2.1(+2) per mag per sq. degree, all M_V							Total($<m_V$) = 5.		
16-17	Disk ms							6.7(-1)	1.9(+1)	4.6(+1)	4.9(+1)	3
	Disk non-ms											
	Spheroid		4.6(-1)	1.7(+0)	4.9(+0)	7.2(+0)	8.1(+0)	5.6(+0)	3.0(+0)	1.2(+0)	4.4(-1)	
			Total = 2.8(+2) per mag per sq. degree, all M_V							Total($<m_V$) = 7.		
17-18	Disk ms								5.2(+0)	3.0(+1)	5.7(+1)	5
	Disk non-ms											
	Spheroid			1.5(+0)	4.9(+0)	1.1(+1)	1.4(+1)	1.4(+1)	8.2(+0)	4.0(+0)	1.5(+0)	5
			Total = 3.6(+2) per mag per sq. degree, all M_V							Total($<m_V$) = 1.		
18-19	Disk ms								4.1(-1)	7.8(+0)	3.7(+1)	6
	Disk non-ms											
	Spheroid			8.9(-1)	4.2(+0)	1.1(+1)	2.2(+1)	2.4(+1)	2.0(+1)	1.1(+1)	5.0(+0)	1
			Total = 4.5(+2) per mag per sq. degree, all M_V							Total($<m_V$) = 1.		
19-20	Disk ms									5.9(-1)	9.6(+0)	4
	Disk non-ms											
	Spheroid				2.5(+0)	9.8(+0)	2.2(+1)	3.7(+1)	3.5(+1)	2.7(+1)	1.4(+1)	5
			Total = 5.5(+2) per mag per sq. degree, all M_V							Total($<m_V$) = 2.		
20-21	Disk ms										7.2(-1)	1
	Disk non-ms											
	Spheroid				1.2(+0)	5.7(+0)	1.9(+1)	3.7(+1)	5.4(+1)	4.6(+1)	3.3(+1)	1
			Total = 6.6(+2) per mag per sq. degree, all M_V							Total($<m_V$) = 2.		
21-22	Disk ms											8
	Disk non-ms											
	Spheroid					2.8(+0)	1.1(+1)	3.1(+1)	5.4(+1)	7.1(+1)	5.7(+1)	4
			Total = 7.8(+2) per mag per sq. degree, all M_V							Total($<m_V$) = 3.		
(22-23)	Disk ms											
	Disk non-ms											
	Spheroid					9.4(-1)	5.3(+0)	1.8(+1)	4.5(+1)	7.1(+1)	8.9(+1)	6
			Total = 9.1(+2) per mag per sq. degree, all M_V							Total($<m_V$) = 4.		
(23-24)	Disk ms											
	Disk non-ms											
	Spheroid						1.8(+0)	8.6(+0)	2.6(+1)	6.0(+1)	8.9(+1)	1
			Total = 1.0(+3) per mag per sq. degree, all M_V							Total($<m_V$) = 5.		
(24-25)	Disk ms											
	Disk non-ms											
	Spheroid							3.0(+0)	1.3(+1)	3.5(+1)	7.5(+1)	1
			Total = 1.1(+3) per mag per sq. degree, all M_V							Total($<m_V$) = 6.		
(25-26)	Disk ms											
	Disk non-ms											
	Spheroid								4.3(+0)	1.7(+1)	4.3(+1)	8

[a]See footnote to Table 2.1.

3

$=02^h33^m, \delta(1950)=+03°, l^{II}(1950)=167°, b^{II}(1950)=-51°$ [a]

+8 +9 +10 +11 +12 (+13) (+14) (+15) (+16) (+17) (+18) (+19)

ı(+1) per sq. degree, all M_V
.5(-1) 4.3(-2)

ı(+1) per sq. degree, all M_V
.6(-1) 1.3(-1) 3.2(-2)

ı(+1) per sq. degree, all M_V
.5(+0) 5.3(-1) 1.5(-1)

ı(+2) per sq. degree, all M_V
.7(+0) 1.7(+0) 6.0(-1) 1.7(-1)

ı(+2) per sq. degree, all M_V
.3(+1) 5.4(+0) 1.9(+0) 6.7(-1) 1.8(-1)

ı(+2) per sq. degree, all M_V
.3(+1) 1.6(+1) 6.1(+0) 2.2(+0) 7.5(-1)

ı(+2) per sq. degree, all M_V
.8(+1) 3.8(+1) 1.8(+1) 6.9(+0) 2.4(+0) 8.3(-1)
.2(-1)

ı(+3) per sq. degree, all M_V
8(+1) 6.8(+1) 4.3(+1) 2.0(+1) 7.6(+0) 2.7(+0) 9.1(-1)
8(+0) 6.1(-1)

.(+3) per sq. degree, all M_V
3(+1) 7.8(+1) 7.7(+1) 4.8(+1) 2.2(+1) 8.5(+0) 2.9(+0) 1.0(+0)
9(+0) 2.1(+0) 6.9(-1)

.(+3) per sq. degree, all M_V
.1(+1) 5.0(+1) 8.9(+1) 8.6(+1) 5.3(+1) 2.4(+1) 9.3(+0) 3.2(+0) 1.0(+0)
.6(+1) 6.9(+0) 2.4(+0) 7.7(-1)

ı(+3) per sq. degree, all M_V
.5(-1) 1.3(+1) 5.7(+1) 9.9(+1) 9.5(+1) 5.9(+1) 2.7(+1) 1.0(+1) 3.2(+0) 1.0(+0)
.0(+1) 1.9(+1) 7.8(+0) 2.7(+0) 8.6(-1)

ı(+3) per sq. degree, all M_V
9.7(-1) 1.5(+1) 6.3(+1) 1.1(+2) 1.1(+2) 6.5(+1) 2.9(+1) 1.0(+1) 3.2(+0) 1.0(+0)
8(+1) 4.6(+1) 2.1(+1) 8.7(+0) 3.0(+0) 9.5(-1)

ı(+3) per sq. degree, all M_V
1.1(+0) 1.7(+1) 7.0(+1) 1.2(+2) 1.2(+2) 7.0(+1) 3.0(+1) 1.0(+1) 3.2(+0)
.1(+2) 7.9(+1) 5.2(+1) 2.4(+1) 9.7(+0) 3.3(+0) 1.0(+0)

ı(+3) per sq. degree, all M_V
1.2(+0) 1.8(+1) 7.8(+1) 1.3(+2) 1.3(+2) 7.1(+1) 3.0(+1) 1.0(+1) 2.4(+0)
1(+2) 1.2(+2) 9.0(+1) 5.9(+1) 2.7(+1) 1.1(+1) 3.7(+0) 1.1(+0)

ı(+3) per sq. degree, all M_V
1.4(+0) 2.0(+1) 8.6(+1) 1.5(+2) 1.3(+2) 7.1(+1) 3.0(+1) 7.7(+0)
9(+1) 1.2(+2) 1.4(+2) 1.0(+2) 6.5(+1) 2.9(+1) 1.2(+1) 4.0(+0) 1.2(+0)

T

DISTRIBUTION OF ABSOLUTE MAGNITUDES OF VISIBLE STARS F

m_V \ M_V		-2	-1	0	+1	+2	+3	+4	+5	+6	
	Total = 2.2(+1) per mag per sq. degree, all M_V										Total(<m
<12	Disk ms			6.0(-2)	1.9(-1)	5.5(-1)	3.2(+0)	5.3(+0)	3.3(+0)	1.4(+0)	5.
	Disk non-ms	8.5(-2)	3.1(-1)	9.1(-1)	1.9(+0)	2.3(+0)	1.2(+0)	3.2(-2)			
	Spheroid	7.3(-2)	1.1(-1)	1.3(-1)	1.1(-1)	7.2(-2)	4.0(-2)				
	Total = 2.4(+1) per mag per sq. degree, all M_V										Total(<m
12-13	Disk ms						1.7(+0)	7.0(+0)	6.6(+0)	3.2(+0)	1.
	Disk non-ms				2.7(-1)	1.0(+0)	1.0(+0)	4.0(-2)			
	Spheroid	8.0(-2)	1.7(-1)	2.4(-1)	2.5(-1)	1.9(-1)	1.0(-1)	5.0(-2)			
	Total = 4.7(+1) per mag per sq. degree, all M_V										Total(<m
13-14	Disk ms						9.8(-1)	1.0(+1)	1.6(+1)	9.3(+0)	4.
	Disk non-ms					4.5(-1)	8.9(-1)	5.2(-2)			
	Spheroid	1.3(-1)	3.1(-1)	5.9(-1)	6.9(-1)	5.8(-1)	3.7(-1)	1.7(-1)	7.4(-2)		
	Total = 8.9(+1) per mag per sq. degree, all M_V										Total(<m
14-15	Disk ms						2.6(-1)	9.5(+0)	2.9(+1)	2.3(+1)	1.
	Disk non-ms						3.7(-1)				
	Spheroid	1.3(-1)	4.9(-1)	1.0(+0)	1.7(+0)	1.6(+0)	1.2(+0)	6.1(-1)	2.6(-1)	1.0(-1)	
	Total = 1.5(+2) per mag per sq. degree, all M_V										Total(<m
15-16	Disk ms							4.7(+0)	3.4(+1)	4.2(+1)	2.
	Disk non-ms										
	Spheroid		5.0(-1)	1.6(+0)	2.9(+0)	3.9(+0)	3.2(+0)	1.9(+0)	9.0(-1)	3.5(-1)	
	Total = 2.2(+2) per mag per sq. degree, all M_V										Total(<m
16-17	Disk ms							9.0(-1)	2.3(+1)	5.2(+1)	5.
	Disk non-ms										
	Spheroid		4.4(-1)	1.7(+0)	4.6(+0)	6.8(+0)	7.7(+0)	5.3(+0)	2.9(+0)	1.2(+0)	4.
	Total = 2.9(+2) per mag per sq. degree, all M_V										Total(<m
17-18	Disk ms								6.7(+0)	3.5(+1)	6.
	Disk non-ms										
	Spheroid			1.5(+0)	4.7(+0)	1.1(+1)	1.3(+1)	1.3(+1)	7.8(+0)	3.8(+0)	1.
	Total = 3.7(+2) per mag per sq. degree, all M_V										Total(<m
18-19	Disk ms								5.9(-1)	1.0(+1)	4.
	Disk non-ms										
	Spheroid			8.6(-1)	4.1(+0)	1.1(+1)	2.1(+1)	2.2(+1)	1.9(+1)	1.0(+1)	4.
	Total = 4.7(+2) per mag per sq. degree, all M_V										Total(<m
19-20	Disk ms									8.5(-1)	1.
	Disk non-ms										
	Spheroid				2.4(+0)	9.4(+0)	2.1(+1)	3.5(+1)	3.3(+1)	2.5(+1)	1.
	Total = 5.7(+2) per mag per sq. degree, all M_V										Total(<m
20-21	Disk ms										1.
	Disk non-ms										
	Spheroid				1.2(+0)	5.5(+0)	1.8(+1)	3.5(+1)	5.1(+1)	4.4(+1)	3.
	Total = 6.8(+2) per mag per sq. degree, all M_V										Total(<m
21-22	Disk ms										
	Disk non-ms										
	Spheroid					2.7(+0)	1.1(+1)	3.0(+1)	5.1(+1)	6.7(+1)	5.
	Total = 8.0(+2) per mag per sq. degree, all M_V										Total(<m
(22-23)	Disk ms										
	Disk non-ms										
	Spheroid					9.3(-1)	5.1(+0)	1.7(+1)	4.3(+1)	6.8(+1)	8.
	Total = 9.3(+2) per mag per sq. degree, all M_V										Total(<m
(23-24)	Disk ms										
	Disk non-ms										
	Spheroid						1.8(+0)	8.4(+0)	2.5(+1)	5.8(+1)	8.
	Total = 1.0(+3) per mag per sq. degree, all M_V										Total(<m
(24-25)	Disk ms										
	Disk non-ms										
	Spheroid							2.9(+0)	1.2(+1)	3.4(+1)	7.
	Total = 1.1(+3) per mag per sq. degree, all M_V										Total(<m
(25-26)	Disk ms										
	Disk non-ms										
	Spheroid								4.2(+0)	1.6(+1)	4.

[a]See footnote to Table 2.1.

BLE 2.14

R $\alpha(1950)=09^h40^m$, $\delta(1950)=+47°$, $l^{II}(1950)=172°$, $b^{II}(1950)=48°$ [a]

+7 +8 +9 +10 +11 +12 (+13) (+14) (+15) (+16) (+17) (+18) (+19)

) = 2.2(+1) per sq. degree, all M_V
.(-1) 1.5(-1) 4.3(-2)

) = 4.6(+1) per sq. degree, all M_V
(+0) 4.6(-1) 1.3(-1) 3.2(-2)

) = 9.3(+1) per sq. degree, all M_V
)(+0) 1.5(+0) 5.3(-1) 1.5(-1)

) = 1.8(+2) per sq. degree, all M_V
(+1) 4.8(+0) 1.7(+0) 6.1(-1) 1.7(-1)

) = 3.3(+2) per sq. degree, all M_V
(+1) 1.4(+1) 5.5(+0) 2.0(+0) 6.8(-1) 1.8(-1)

) = 5.5(+2) per sq. degree, all M_V
(+1) 3.4(+1) 1.6(+1) 6.3(+0) 2.2(+0) 7.6(-1)
(-1)

) = 8.4(+2) per sq. degree, all M_V
(+1) 6.3(+1) 3.9(+1) 1.8(+1) 7.0(+0) 2.4(+0) 8.3(-1)
(+0) 5.2(-1)

) = 1.2(+3) per sq. degree, all M_V
(+1) 7.6(+1) 7.3(+1) 4.5(+1) 2.0(+1) 7.8(+0) 2.7(+0) 9.2(-1)
(+0) 1.8(+0) 6.0(-1)

) = 1.7(+3) per sq. degree, all M_V
(+1) 5.2(+1) 8.8(+1) 8.3(+1) 5.0(+1) 2.3(+1) 8.6(+0) 3.0(+0) 1.0(+0)
(+1) 5.7(+0) 2.1(+0) 6.8(-1)

) = 2.3(+3) per sq. degree, all M_V
)(+0) 1.5(+1) 5.9(+1) 1.0(+2) 9.2(+1) 5.6(+1) 2.5(+1) 9.5(+0) 3.2(+0) 1.0(+0)
(+1) 1.6(+1) 6.6(+0) 2.4(+0) 7.6(-1)

) = 2.9(+3) per sq. degree, all M_V
1.2(+0) 1.7(+1) 6.7(+1) 1.1(+2) 1.0(+2) 6.2(+1) 2.8(+1) 1.0(+1) 3.3(+0) 1.0(+0)
(+1) 3.8(+1) 1.8(+1) 7.5(+0) 2.6(+0) 8.4(-1)

) = 3.7(+3) per sq. degree, all M_V
1.4(+0) 1.9(+1) 7.5(+1) 1.2(+2) 1.1(+2) 6.8(+1) 3.0(+1) 1.1(+1) 3.3(+0) 1.0(+0)
(+1) 6.5(+1) 4.4(+1) 2.0(+1) 8.4(+0) 2.9(+0) 9.3(-1)

) = 4.7(+3) per sq. degree, all M_V
1.6(+0) 2.1(+1) 8.4(+1) 1.4(+2) 1.2(+2) 7.4(+1) 3.0(+1) 1.1(+1) 3.3(+0)
(+1) 1.0(+2) 7.5(+1) 5.0(+1) 2.3(+1) 9.4(+0) 3.3(+0) 1.0(+0)

) = 5.7(+3) per sq. degree, all M_V
1.8(+0) 2.4(+1) 9.2(+1) 1.5(+2) 1.4(+2) 7.5(+1) 3.0(+1) 1.1(+1) 2.4(+0)
.(+1) 1.0(+2) 1.2(+2) 8.5(+1) 5.6(+1) 2.5(+1) 1.0(+1) 3.6(+0) 1.1(+0)

) = 6.9(+3) per sq. degree, all M_V
2.0(+0) 2.6(+1) 1.0(+2) 1.6(+2) 1.4(+2) 7.5(+1) 3.0(+1) 7.9(+0)
(+1) 8.5(+1) 1.2(+2) 1.3(+2) 9.5(+1) 6.2(+1) 2.8(+1) 1.1(+1) 3.9(+0)

TABLE

DISTRIBUTION OF ABSOLUTE MAGNITUDES OF VISIBLE STARS FOR α(1

m_v \ M_v		-2	-1	0	+1	+2	+3	+4	+5	+6	+7
		Total = 1.8(+1) per mag per sq. degree, all M_v							Total(<m_v) =		
<12	Disk ms			3.0(-2)	9.5(-2)	2.8(-1)	2.2(+0)	4.4(+0)	3.1(+0)	1.3(+0)	5.0(-1)
	Disk non-ms	5.0(-2)	1.8(-1)	5.4(-1)	1.2(+0)	1.6(+0)	9.3(-1)	2.6(-2)			
	Spheroid	2.3(-1)	2.6(-1)	2.4(-1)	1.7(-1)	9.6(-2)	4.8(-2)	1.9(-2)			
		Total = 2.0(+1) per mag per sq. degree, all M_v							Total(<m_v) =		
12-13	Disk ms						7.9(-1)	4.9(+0)	5.7(+0)	2.9(+0)	1.2(+0)
	Disk non-ms				9.2(-2)	4.7(-1)	6.2(-1)	2.7(-2)			
	Spheroid	3.3(-1)	6.2(-1)	6.5(-1)	5.0(-1)	3.0(-1)	1.4(-1)	6.2(-2)	2.1(-2)		
		Total = 4.1(+1) per mag per sq. degree, all M_v							Total(<m_v) =		
13-14	Disk ms						3.4(-1)	6.2(+0)	1.2(+1)	8.1(+0)	3.7(+0)
	Disk non-ms					1.5(-1)	4.1(-1)				
	Spheroid	5.1(-1)	1.3(+0)	2.1(+0)	1.9(+0)	1.2(+0)	5.9(-1)	2.4(-1)	9.1(-2)		
		Total = 8.1(+1) per mag per sq. degree, all M_v							Total(<m_v) =		
14-15	Disk ms							4.6(+0)	2.0(+1)	1.8(+1)	1.0(+1)
	Disk non-ms						1.2(-1)				
	Spheroid	4.3(-1)	2.0(+0)	4.3(+0)	5.9(+0)	4.4(+0)	2.4(+0)	1.0(+0)	3.6(-1)	1.2(-1)	
		Total = 1.4(+2) per mag per sq. degree, all M_v							Total(<m_v) =		
15-16	Disk ms							1.7(+0)	2.0(+1)	3.0(+1)	2.3(+1)
	Disk non-ms										
	Spheroid	3.0(-1)	1.6(+0)	6.5(+0)	1.2(+1)	1.4(+1)	8.6(+0)	4.0(+0)	1.5(+0)	4.8(-1)	1.5(-1)
		Total = 2.3(+2) per mag per sq. degree, all M_v							Total(<m_v) =		
16-17	Disk ms								1.0(+1)	3.1(+1)	3.8(+1)
	Disk non-ms										
	Spheroid		1.1(+0)	5.4(+0)	1.8(+1)	2.8(+1)	2.8(+1)	1.5(+1)	5.9(+0)	2.0(+0)	6.0(-1)
		Total = 3.6(+2) per mag per sq. degree, all M_v							Total(<m_v) =		
17-18	Disk ms								2.2(+0)	1.6(+1)	3.8(+1)
	Disk non-ms										
	Spheroid		5.2(-1)	3.7(+0)	1.5(+1)	4.3(+1)	5.5(+1)	4.7(+1)	2.1(+1)	8.0(+0)	2.5(+0)
		Total = 5.2(+2) per mag per sq. degree, all M_v							Total(<m_v) =		
18-19	Disk ms									3.2(+0)	2.0(+1)
	Disk non-ms										
	Spheroid			1.7(+0)	1.0(+1)	3.5(+1)	8.3(+1)	9.2(+1)	6.9(+1)	2.9(+1)	1.0(+1)
		Total = 7.3(+2) per mag per sq. degree, all M_v							Total(<m_v) =		
19-20	Disk ms										4.0(+0)
	Disk non-ms										
	Spheroid				4.8(+0)	2.4(+1)	6.8(+1)	1.4(+2)	1.4(+2)	9.2(+1)	3.6(+1)
		Total = 9.6(+2) per mag per sq. degree, all M_v							Total(<m_v) =		
20-21	Disk ms										
	Disk non-ms										
	Spheroid				1.9(+0)	1.1(+1)	4.6(+1)	1.1(+2)	2.0(+2)	1.8(+2)	1.1(+2)
		Total = 1.2(+3) per mag per sq. degree, all M_v							Total(<m_v) =		
21-22	Disk ms										
	Disk non-ms										
	Spheroid					4.5(+0)	2.1(+1)	7.5(+1)	1.6(+2)	2.7(+2)	2.2(+2)
		Total = 1.5(+3) per mag per sq. degree, all M_v							Total(<m_v) =		
(22-23)	Disk ms										
	Disk non-ms										
	Spheroid						8.5(+0)	3.5(+1)	1.1(+2)	2.2(+2)	3.3(+2)
		Total = 1.8(+3) per mag per sq. degree, all M_v							Total(<m_v) =		
(23-24)	Disk ms										
	Disk non-ms										
	Spheroid						2.5(+0)	1.4(+1)	5.0(+1)	1.4(+2)	2.7(+2)
		Total = 2.0(+3) per mag per sq. degree, all M_v							Total(<m_v) =		
(24-25)	Disk ms										
	Disk non-ms										
	Spheroid							4.2(+0)	2.0(+1)	6.7(+1)	1.8(+2)
		Total = 2.3(+3) per mag per sq. degree, all M_v							Total(<m_v) =		
(25-26)	Disk ms										
	Disk non-ms										
	Spheroid								6.0(+0)	2.7(+1)	8.3(+1)

[a]See footnote to Table 2.1.

2.15

ι50) = $13^h 20^m$, $\delta(1950) = +13°$, $l^{II}(1950) = 331°$, $b^{II}(1950) = 74°$ [a]

	+8	+9	+10	+11	+12	(+13)	(+14)	(+15)	(+16)	(+17)	(+18)	(+19)
1.8(+1) per sq. degree, all M_V												
	1.5(-1)	4.2(-2)										
3.8(+1) per sq. degree, all M_V												
	4.5(-1)	1.3(-1)	3.2(-2)									
7.9(+1) per sq. degree, all M_V												
	1.4(+0)	5.2(-1)	1.4(-1)									
1.6(+2) per sq. degree, all M_V												
	4.4(+0)	1.6(+0)	5.8(-1)	1.6(-1)								
3.0(+2) per sq. degree, all M_V												
	1.2(+1)	5.0(+0)	1.8(+0)	6.5(-1)	1.8(-1)							
5.4(+2) per sq. degree, all M_V												
	2.7(+1)	1.4(+1)	5.7(+0)	2.1(+0)	7.3(-1)							
8.9(+2) per sq. degree, all M_V												
	4.5(+1)	3.2(+1)	1.6(+1)	6.4(+0)	2.3(+0)	8.0(-1)						
	7.1(-1)											
1.4(+3) per sq. degree, all M_V												
	4.5(+1)	5.2(+1)	3.6(+1)	1.8(+1)	7.1(+0)	2.5(+0)	8.9(-1)					
	2.9(+0)	8.3(-1)										
2.1(+3) per sq. degree, all M_V												
	2.4(+1)	5.2(+1)	5.9(+1)	4.0(+1)	2.0(+1)	7.9(+0)	2.8(+0)	9.7(-1)				
	1.2(+1)	3.4(+0)	9.4(-1)									
3.1(+3) per sq. degree, all M_V												
	4.7(+0)	2.7(+1)	5.9(+1)	6.6(+1)	4.5(+1)	2.2(+1)	8.7(+0)	3.0(+0)	9.8(-1)			
	4.3(+1)	1.4(+1)	3.9(+0)	1.1(+0)								
4.3(+3) per sq. degree, all M_V												
		5.4(+0)	3.1(+1)	6.6(+1)	7.3(+1)	4.9(+1)	2.4(+1)	9.5(+0)	3.1(+0)			
	1.4(+2)	4.9(+1)	1.6(+1)	4.3(+0)								
5.8(+3) per sq. degree, all M_V												
			6.1(+0)	3.5(+1)	7.4(+1)	8.1(+1)	5.4(+1)	2.6(+1)	9.6(+0)	3.1(+0)		
	2.7(+2)	1.6(+2)	5.6(+1)	1.8(+1)	4.8(+0)							
7.6(+3) per sq. degree, all M_V												
				6.8(+0)	3.8(+1)	8.1(+1)	8.9(+1)	5.9(+1)	2.6(+1)	9.6(+0)	3.1(+0)	
	3.9(+2)	3.1(+2)	1.8(+2)	6.3(+1)	2.0(+1)	5.3(+0)						
9.6(+3) per sq. degree, all M_V												
					7.6(+0)	4.3(+1)	9.0(+1)	9.6(+1)	6.0(+1)	2.6(+1)	9.6(+0)	2.3(+0)
	3.2(+2)	4.5(+2)	3.5(+2)	2.0(+2)	7.0(+1)	2.2(+1)	5.8(+0)					
1.2(+4) per sq. degree, all M_V												
						8.4(+0)	4.7(+1)	9.7(+1)	9.7(+1)	6.0(+1)	2.6(+1)	7.1(+0)
	2.1(+2)	3.7(+2)	5.1(+2)	3.9(+2)	2.2(+2)	7.7(+1)	2.4(+1)	6.4(+0)				

TABI

DISTRIBUTION OF ABSOLUTE MAGNITUDES OF VISIBLE STARS FOR (

m_V \ M_V		-2	-1	0	+1	+2	+3	+4	+5	+6	+7
			Total = 2.5(+1) per mag per sq. degree, all M_V							Total(<m_V)	
<12	Disk ms			6.3(-2)	2.0(-1)	5.8(-1)	3.5(+0)	5.6(+0)	3.5(+0)	1.4(+0)	5.2(-
	Disk non-ms	1.0(-1)	3.8(-1)	1.1(+0)	2.3(+0)	2.7(+0)	1.3(+0)	3.5(-2)			
	Spheroid	2.3(-1)	2.7(-1)	2.4(-1)	1.7(-1)	9.7(-2)	4.8(-2)				
			Total = 2.8(+1) per mag per sq. degree, all M_V							Total(<m_V)	
12-13	Disk ms						1.9(+0)	7.8(+0)	7.1(+0)	3.4(+0)	1.3(+
	Disk non-ms			3.3(-2)	3.9(-1)	1.3(+0)	1.2(+0)	4.5(-2)			
	Spheroid	3.4(-1)	6.4(-1)	6.7(-1)	5.1(-1)	3.0(-1)	1.4(-1)	6.2(-2)			
			Total = 5.8(+1) per mag per sq. degree, all M_V							Total(<m_V)	
13-14	Disk ms						1.2(+0)	1.2(+1)	1.8(+1)	1.0(+1)	4.2(+
	Disk non-ms				7.5(-2)	6.5(-1)	1.2(+0)	6.3(-2)			
	Spheroid	5.3(-1)	1.3(+0)	2.2(+0)	1.9(+0)	1.2(+0)	6.0(-1)	2.4(-1)	9.2(-2)		
			Total = 1.2(+2) per mag per sq. degree, all M_V							Total(<m_V)	
14-15	Disk ms						3.5(-1)	1.2(+1)	3.4(+1)	2.6(+1)	1.3(+
	Disk non-ms					1.2(-1)	5.4(-1)				
	Spheroid	4.4(-1)	2.0(+0)	4.4(+0)	6.1(+0)	4.5(+0)	2.4(+0)	1.0(+0)	3.6(-1)	1.2(-1)	
			Total = 2.1(+2) per mag per sq. degree, all M_V							Total(<m_V)	
15-16	Disk ms							6.6(+0)	4.4(+1)	5.1(+1)	3.2(+
	Disk non-ms										
	Spheroid	3.0(-1)	1.7(+0)	6.8(+0)	1.2(+1)	1.4(+1)	8.8(+0)	4.1(+0)	1.5(+0)	4.8(-1)	
			Total = 3.4(+2) per mag per sq. degree, all M_V							Total(<m_V)	
16-17	Disk ms							1.5(+0)	3.4(+1)	6.8(+1)	6.4(+
	Disk non-ms										
	Spheroid		1.2(+0)	5.6(+0)	1.9(+1)	2.9(+1)	2.9(+1)	1.5(+1)	6.0(+0)	2.0(+0)	6.0(-
			Total = 5.1(+2) per mag per sq. degree, all M_V							Total(<m_V)	
17-18	Disk ms								1.2(+1)	5.3(+1)	8.5(+
	Disk non-ms										
	Spheroid		5.3(-1)	3.8(+0)	1.6(+1)	4.4(+1)	5.7(+1)	4.8(+1)	2.2(+1)	8.1(+0)	2.5(+
			Total = 7.0(+2) per mag per sq. degree, all M_V							Total(<m_V)	
18-19	Disk ms								1.3(+0)	1.8(+1)	6.5(+
	Disk non-ms										
	Spheroid			1.7(+0)	1.1(+1)	3.6(+1)	8.5(+1)	9.5(+1)	7.1(+1)	2.9(+1)	1.0(+
			Total = 9.4(+2) per mag per sq. degree, all M_V							Total(<m_V)	
19-20	Disk ms									1.9(+0)	2.2(+
	Disk non-ms										
	Spheroid				4.8(+0)	2.4(+1)	7.0(+1)	1.4(+2)	1.4(+2)	9.5(+1)	3.7(+
			Total = 1.2(+3) per mag per sq. degree, all M_V							Total(<m_V)	
20-21	Disk ms										2.3(+
	Disk non-ms										
	Spheroid				2.0(+0)	1.1(+1)	4.7(+1)	1.2(+2)	2.1(+2)	1.9(+2)	1.2(+
			Total = 1.5(+3) per mag per sq. degree, all M_V							Total(<m_V)	
21-22	Disk ms										
	Disk non-ms										
	Spheroid					4.5(+0)	2.1(+1)	7.7(+1)	1.7(+2)	2.7(+2)	2.3(+
			Total = 1.8(+3) per mag per sq. degree, all M_V							Total(<m_V)	
(22-23)	Disk ms										
	Disk non-ms										
	Spheroid						8.6(+0)	3.5(+1)	1.1(+2)	2.2(+2)	3.4(+
			Total = 2.1(+3) per mag per sq. degree, all M_V							Total(<m_V)	
(23-24)	Disk ms										
	Disk non-ms										
	Spheroid						2.6(+0)	1.4(+1)	5.1(+1)	1.5(+2)	2.8(+
			Total = 2.4(+3) per mag per sq. degree, all M_V							Total(<m_V)	
(24-25)	Disk ms										
	Disk non-ms										
	Spheroid							4.2(+0)	2.0(+1)	6.8(+1)	1.8(+
			Total = 2.7(+3) per mag per sq. degree, all M_V							Total(<m_V)	
(25-26)	Disk ms										
	Disk non-ms										
	Spheroid								6.1(+0)	2.7(+1)	8.4(+

[a]See footnote to Table 2.1.

E 2.16

(1950) = 15^h56^m, δ(1950) = +42°, l^{II}(1950) = 67°, b^{II}(1950) = 49° [a]

	+8	+9	+10	+11	+12	(+13)	(+14)	(+15)	(+16)	(+17)	(+18)	(+19)
= 2.5(+1) per sq. degree, all M_V												
.)	1.5(-1)	4.3(-2)										
= 5.2(+1) per sq. degree, all M_V												
))	4.7(-1)	1.3(-1)	3.2(-2)									
= 1.1(+2) per sq. degree, all M_V												
))	1.5(+0)	5.5(-1)	1.5(-1)									
= 2.3(+2) per sq. degree, all M_V												
L)	5.0(+0)	1.8(+0)	6.2(-1)	1.7(-1)								
= 4.3(+2) per sq. degree, all M_V												
L)	1.5(+1)	5.8(+0)	2.0(+0)	6.9(-1)								
= 7.7(+2) per sq. degree, all M_V												
L)	3.9(+1)	1.7(+1)	6.6(+0)	2.3(+0)	7.7(-1)							
L)												
= 1.3(+3) per sq. degree, all M_V												
L)	7.6(+1)	4.5(+1)	2.0(+1)	7.4(+0)	2.5(+0)	8.5(-1)						
))	7.2(-1)											
= 2.0(+3) per sq. degree, all M_V												
L)	1.0(+2)	8.8(+1)	5.0(+1)	2.2(+1)	8.2(+0)	2.8(+0)	9.4(-1)					
L)	3.0(+0)	8.3(-1)										
= 2.9(+3) per sq. degree, all M_V												
L)	7.8(+1)	1.2(+2)	9.9(+1)	5.7(+1)	2.4(+1)	9.1(+0)	3.1(+0)	1.0(+0)				
L)	1.2(+1)	3.4(+0)										
= 4.1(+3) per sq. degree, all M_V												
))	2.6(+1)	8.9(+1)	1.3(+2)	1.1(+2)	6.3(+1)	2.7(+1)	1.0(+1)	3.3(+0)				
2)	4.4(+1)	1.4(+1)	3.9(+0)									
= 5.7(+3) per sq. degree, all M_V												
	2.7(+0)	3.0(+1)	1.0(+2)	1.5(+2)	1.2(+2)	6.9(+1)	3.0(+1)	1.1(+1)	3.4(+0)			
2)	1.4(+2)	5.1(+1)	1.6(+1)	4.4(+0)								
= 7.5(+3) per sq. degree, all M_V												
		3.1(+0)	3.4(+1)	1.1(+2)	1.6(+2)	1.4(+2)	7.7(+1)	3.2(+1)	1.1(+1)	3.4(+0)		
2)	2.8(+2)	1.6(+2)	5.7(+1)	1.8(+1)	4.8(+0)							
= 9.6(+3) per sq. degree, all M_V												
			3.6(+0)	3.8(+1)	1.3(+2)	1.8(+2)	1.5(+2)	8.3(+1)	3.3(+1)	1.1(+1)	3.4(+0)	
2)	4.1(+2)	3.2(+2)	1.9(+2)	6.4(+1)	2.0(+1)	5.4(+0)						
= 1.2(+4) per sq. degree, all M_V												
				4.0(+0)	4.2(+1)	1.4(+2)	2.0(+2)	1.6(+2)	8.4(+1)	3.3(+1)	1.1(+1)	2.5(+0)
2)	3.3(+2)	4.7(+2)	3.6(+2)	2.1(+2)	7.1(+1)	2.2(+1)	5.9(+0)					
= 1.5(+4) per sq. degree, all M_V												
					4.4(+0)	4.7(+1)	1.5(+2)	2.2(+2)	1.7(+2)	8.4(+1)	3.3(+1)	8.3(+0)
:)	2.2(+2)	3.8(+2)	5.3(+2)	4.1(+2)	2.3(+2)	7.9(+1)	2.4(+1)	6.4(+0)				

TABLE 2.

DISTRIBUTION OF ABSOLUTE MAGNITUDES OF VISIBLE STARS FOR α(1950

m_v \ M_v		-2	-1	0	+1	+2	+3	+4	+5	+6	+7	
	Total = 3.1(+1) per mag per sq. degree, all M_v Total(<m_v) = 3.1											
<12	Disk ms		3.5(-2)	1.3(-1)	4.0(-1)	1.1(+0)	4.7(+0)	6.1(+0)	3.4(+0)	1.4(+0)	4.6(-1)	1.
	Disk non-ms	2.2(-1)	7.8(-1)	2.1(+0)	3.7(+0)	3.7(+0)	1.6(+0)	3.9(-2)				
	Spheroid	2.6(-1)	2.6(-1)	2.3(-1)	1.5(-1)	8.7(-2)	4.1(-2)					
	Total = 3.6(+1) per mag per sq. degree, all M_v Total(<m_v) = 6.7											
12-13	Disk ms					9.4(-2)	3.8(+0)	1.0(+1)	7.5(+0)	3.3(+0)	1.3(+0)	3.
	Disk non-ms			2.2(-1)	1.4(+0)	2.9(+0)	2.0(+0)	6.1(-2)				
	Spheroid	4.5(-1)	7.5(-1)	6.6(-1)	5.1(-1)	2.6(-1)	1.3(-1)	5.3(-2)				
	Total = 7.6(+1) per mag per sq. degree, all M_v Total(<m_v) = 1.4											
13-14	Disk ms						3.6(+0)	2.0(+1)	2.1(+1)	1.1(+1)	4.2(+0)	1.
	Disk non-ms				5.2(-1)	2.3(+0)	2.7(+0)	1.1(-1)				
	Spheroid	7.1(-1)	1.7(+0)	2.5(+0)	1.9(+0)	1.2(+0)	5.2(-1)	2.2(-1)	7.8(-2)			
	Total = 1.6(+2) per mag per sq. degree, all M_v Total(<m_v) = 3.0											
14-15	Disk ms						1.8(+0)	2.7(+1)	4.8(+1)	3.0(+1)	1.3(+1)	5.
	Disk non-ms					8.5(-1)	2.1(+0)					
	Spheroid	5.9(-1)	2.7(+0)	5.8(+0)	7.2(+0)	4.5(+0)	2.4(+0)	8.7(-1)	3.3(-1)			
	Total = 3.0(+2) per mag per sq. degree, all M_v Total(<m_v) = 6.0											
15-16	Disk ms						3.5(-1)	2.2(+1)	8.3(+1)	7.1(+1)	3.7(+1)	1.
	Disk non-ms						6.8(-1)					
	Spheroid	3.8(-1)	2.3(+0)	9.0(+0)	1.6(+1)	1.7(+1)	8.9(+0)	4.1(+0)	1.3(+0)	4.4(-1)		
	Total = 5.2(+2) per mag per sq. degree, all M_v Total(<m_v) = 1.1											
16-17	Disk ms							9.1(+0)	9.2(+1)	1.3(+2)	8.9(+1)	4.
	Disk non-ms											
	Spheroid		1.5(+0)	7.6(+0)	2.5(+1)	3.9(+1)	3.3(+1)	1.5(+1)	6.0(+0)	1.7(+0)	5.5(-1)	
	Total = 8.0(+2) per mag per sq. degree, all M_v Total(<m_v) = 1.9											
17-18	Disk ms							1.3(+0)	5.4(+1)	1.4(+2)	1.6(+2)	1.
	Disk non-ms											
	Spheroid			4.8(+0)	2.1(+1)	5.9(+1)	7.6(+1)	5.6(+1)	2.2(+1)	8.1(+0)	2.2(+0)	
	Total = 1.1(+3) per mag per sq. degree, all M_v Total(<m_v) = 3.0											
18-19	Disk ms								1.3(+1)	8.5(+1)	1.8(+2)	1.
	Disk non-ms											
	Spheroid			2.2(+0)	1.3(+1)	4.9(+1)	1.1(+2)	1.3(+2)	8.3(+1)	3.0(+1)	1.0(+1)	2.
	Total = 1.5(+3) per mag per sq. degree, all M_v Total(<m_v) = 4.5											
19-20	Disk ms									1.9(+1)	1.0(+2)	2.
	Disk non-ms											
	Spheroid				6.1(+0)	3.1(+1)	9.5(+1)	1.9(+2)	1.9(+2)	1.1(+2)	3.7(+1)	1.
	Total = 1.9(+3) per mag per sq. degree, all M_v Total(<m_v) = 6.4											
20-21	Disk ms										2.4(+1)	1.
	Disk non-ms											
	Spheroid				2.4(+0)	1.4(+1)	5.9(+1)	1.6(+2)	2.7(+2)	2.5(+2)	1.4(+2)	4.
	Total = 2.3(+3) per mag per sq. degree, all M_v Total(<m_v) = 8.6											
21-22	Disk ms											2.
	Disk non-ms											
	Spheroid					5.4(+0)	2.7(+1)	9.7(+1)	2.3(+2)	3.7(+2)	3.1(+2)	1.
	Total = 2.7(+3) per mag per sq. degree, all M_v Total(<m_v) = 1.1											
(22-23)	Disk ms											
	Disk non-ms											
	Spheroid						1.0(+1)	4.5(+1)	1.4(+2)	3.0(+2)	4.5(+2)	3.
	Total = 3.2(+3) per mag per sq. degree, all M_v Total(<m_v) = 1.5											
(23-24)	Disk ms											
	Disk non-ms											
	Spheroid						3.3(+0)	1.7(+1)	6.5(+1)	1.9(+2)	3.8(+2)	5.
	Total = 3.6(+3) per mag per sq. degree, all M_v Total(<m_v) = 1.8											
(24-25)	Disk ms											
	Disk non-ms											
	Spheroid							5.4(+0)	2.4(+1)	8.6(+1)	2.3(+2)	4.
	Total = 4.0(+3) per mag per sq. degree, all M_v Total(<m_v) = 2.2											
(25-26)	Disk ms											
	Disk non-ms											
	Spheroid								7.7(+0)	3.2(+1)	1.1(+2)	2.

[a]See footnote to Table 2.1.

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=21^{h}50^m, δ(1950)= +03°, l^{II}(1950)=61°, b^{II}(1950)= −37° [a]

	+8	+9	+10	+11	+12	(+13)	(+14)	(+15)	(+16)	(+17)	(+18)	(+19)
(+1) per sq. degree, all M_V												
	5(-1)	4.4(-2)										
(+1) per sq. degree, all M_V												
	}(-1)	1.4(-1)	3.7(-2)									
(+2) per sq. degree, all M_V												
	5(+0)	4.5(-1)	1.5(-1)									
(+2) per sq. degree, all M_V												
	)(+0)	1.8(+0)	5.1(-1)	1.7(-1)								
(+2) per sq. degree, all M_V												
	5(+1)	5.8(+0)	2.0(+0)	5.7(-1)								
(+3) per sq. degree, all M_V												
	(+1)	1.8(+1)	6.6(+0)	2.2(+0)	6.3(-1)							
(+3) per sq. degree, all M_V												
	.(+2)	5.1(+1)	2.1(+1)	7.3(+0)	2.5(+0)							
(+3) per sq. degree, all M_V												
	(+2)	1.2(+2)	5.8(+1)	2.3(+1)	8.2(+0)	2.7(+0)						
	(+0)											
(+3) per sq. degree, all M_V												
	.(+2)	2.2(+2)	1.4(+2)	6.5(+1)	2.6(+1)	9.0(+0)	3.0(+0)					
	(+1)	3.0(+0)										
+3) per sq. degree, all M_V												
	(+2)	2.4(+2)	2.4(+2)	1.6(+2)	7.3(+1)	2.8(+1)	9.9(+0)	3.3(+0)				
	(+1)	1.4(+1)	3.4(+0)									
+3) per sq. degree, all M_V												
	(+1)	1.4(+2)	2.8(+2)	2.7(+2)	1.7(+2)	8.0(+1)	3.1(+1)	1.1(+1)	3.3(+0)			
	(+2)	5.1(+1)	1.6(+1)	3.8(+0)								
+4) per sq. degree, all M_V												
		3.3(+1)	1.6(+2)	3.1(+2)	3.0(+2)	1.9(+2)	8.8(+1)	3.4(+1)	1.1(+1)	3.3(+0)		
	(+2)	1.9(+2)	5.8(+1)	1.8(+1)	4.2(+0)							
+4) per sq. degree, all M_V												
			3.7(+1)	1.8(+2)	3.4(+2)	3.4(+2)	2.1(+2)	9.6(+1)	3.5(+1)	1.1(+1)	3.3(+0)	
	(+2)	4.3(+2)	2.2(+2)	6.5(+1)	2.0(+1)	4.7(+0)						
+4) per sq. degree, all M_V												
				4.1(+1)	2.0(+2)	3.8(+2)	3.7(+2)	2.3(+2)	9.8(+1)	3.5(+1)	1.1(+1)	
	(+2)	6.2(+2)	4.9(+2)	2.4(+2)	7.2(+1)	2.2(+1)	5.1(+0)					
+4) per sq. degree, all M_V												
					4.6(+1)	2.2(+2)	4.2(+2)	4.0(+2)	2.3(+2)	9.8(+1)	3.5(+1)	8.1(+0)
	(+2)	5.2(+2)	7.1(+2)	5.4(+2)	2.7(+2)	8.0(+1)	2.4(+1)	5.6(+0)				

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quire a few entries outside the range for which we believe the predictions to be reliable.

In Tables 3.1–3.3, we list the predicted differential star counts in the Johnson (1965) B, R, and I bands as a function of apparent magnitude (only) for each of the 17 fields. The counts in these standard bands were determined from transformed Galaxy models described in Papers I and II and in Mamon and Soneira (1981) (the latter paper contains details of the assumed R and I band luminosity functions). Each entry in the tables lists the number of stars per sq. deg. in the indicated magnitude range.

Figure 2 shows the differential star counts per mag per sq. deg. at the galactic pole in the four bands B, V, R, I.

III. TRANSFORMATIONS TO OTHER BANDS

The transformation of star counts from one band into another has been discussed in detail in Paper III, § III. Here we only outline the procedure.

The star distributions can be transformed into a given desired band, D, by first obtaining the $(D-V)$ color for each absolute visual magnitude and luminosity class. If the sensitivity function for the band is known, the $(D-V)$ color can be readily calculated using information in Paper III. If the colors are determined instead from the observation of standard stars, it is necessary to establish the spectral class of each standard star (and thereby its absolute visual magnitude) either directly or, indirectly, by measuring the color in some other band

TABLE 3.1

PREDICTED DIFFERENTIAL STAR COUNTS IN THE B BAND FOR EACH OF THE FIELDS[a]

m_B/field	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<12.......	10	16	15	14	13	13	20	18	19	11	14	15	12	13	11	15	18
12–13	10	20	17	15	14	13	23	20	25	12	15	18	13	14	12	16	21
13–14	21	43	37	31	27	26	47	39	56	23	30	37	26	27	24	34	44
14–15	40	91	75	59	51	49	93	75	124	42	58	76	48	50	48	67	88
15–16	72	186	144	107	90	85	175	136	265	73	104	149	84	88	89	125	171
16–17	118	349	257	177	143	134	311	229	528	114	170	269	132	139	152	214	309
17–18	178	594	416	265	205	189	503	350	945	162	250	440	187	197	238	333	506
18–19	256	921	617	366	273	248	724	478	1512	216	337	661	245	258	352	476	740
19–20	354	1323	861	484	349	314	942	598	2199	281	434	932	312	325	497	646	999
20–21	471	1785	1143	621	436	390	1163	717	2974	356	545	1244	388	402	667	843	1286
21–22	602	2282	1450	773	533	474	1399	846	3799	440	668	1584	473	488	856	1059	1598
22–23	741	2796	1772	934	639	566	1651	984	4648	532	800	1939	565	581	1056	1288	1928
23–24	885	3321	2104	1104	750	662	1919	1133	5511	628	939	2303	662	679	1261	1525	2272
24–25	1034	3860	2445	1279	866	764	2203	1293	6399	728	1085	2678	764	783	1473	1771	2629
25–26	1186	4421	2799	1461	985	868	2503	1462	7325	830	1236	3067	869	889	1690	2026	3004

[a]Stars per sq. deg. in the indicated magnitude range for each of the 17 fields of Table 1.

TABLE 3.2

PREDICTED DIFFERENTIAL STAR COUNTS IN THE R BAND FOR EACH OF THE FIELDS[a]

m_R/field	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<12.......	22	34	32	30	28	28	44	39	40	24	30	32	27	28	24	31	39
12–13......	27	46	42	38	35	34	55	47	57	30	38	42	34	35	30	40	51
13–14......	55	107	95	81	73	70	124	103	140	61	81	95	69	72	64	88	116
14–15......	101	229	192	155	135	129	261	208	322	109	155	195	127	133	121	174	245
15–16......	165	444	350	261	218	206	495	372	674	172	259	360	202	215	206	306	460
16–17......	249	779	573	390	313	291	814	576	1258	243	382	599	286	305	325	479	760
17–18......	363	1259	871	543	416	382	1164	781	2103	326	516	924	376	400	492	693	1119
18–19......	517	1901	1257	731	537	487	1515	975	3212	427	671	1353	482	508	718	963	1533
19–20......	709	2684	1729	956	679	610	1885	1175	4542	549	852	1877	606	633	1000	1289	2014
20–21......	930	3555	2260	1210	840	748	2284	1388	6004	689	1057	2466	745	773	1324	1658	2550
21–22......	1167	4461	2819	1482	1012	896	2705	1612	7511	839	1276	3085	894	924	1668	2050	3115
22–23......	1405	5365	3379	1756	1184	1044	3135	1839	9009	988	1495	3704	1043	1073	2014	2443	3687
23–24......	1627	6238	3915	2008	1336	1172	3550	2051	10472	1120	1698	4298	1173	1205	2341	2815	4241
24–25......	1816	7057	4397	2211	1442	1255	3901	2205	11868	1214	1847	4839	1258	1289	2631	3135	4722
25–26......	1956	7777	4776	2318	1462	1256	4077	2214	13137	1243	1895	5281	1263	1283	2865	3347	5060

[a]Stars per sq. deg. in the indicated magnitude range for each of the 17 fields of Table 1.

TABLE 3.3

PREDICTED DIFFERENTIAL STAR COUNTS IN THE I BAND FOR EACH OF THE FIELDS[a]

m_I/field	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<12	33	52	49	45	42	41	68	60	64	36	45	49	41	42	36	47	60
12–13	41	71	64	57	52	51	83	71	89	45	56	65	50	52	46	60	77
13–14	84	164	144	122	109	105	189	157	217	91	122	145	104	108	96	133	177
14–15	151	342	288	232	203	194	401	319	487	164	233	293	191	201	180	262	372
15–16	244	642	514	389	328	310	757	570	980	258	389	526	305	324	302	454	693
16–17	365	1092	825	581	473	442	1237	883	1762	368	575	856	434	464	469	702	1129
17–18	529	1741	1244	813	637	589	1778	1213	2895	496	785	1309	579	617	703	1016	1658
18–19	748	2644	1802	1097	827	755	2355	1550	4458	651	1029	1922	746	790	1023	1416	2294
19–20	1024	3815	2507	1434	1040	939	2975	1892	6477	828	1306	2705	930	979	1433	1906	3049
20–21	1342	5205	3328	1804	1259	1123	3617	2220	8872	1015	1600	3622	1116	1168	1916	2462	3892
21–22	1674	6706	4195	2163	1452	1277	4203	2478	11455	1183	1865	4599	1273	1324	2430	3030	4740
22–23	1972	8151	4985	2432	1552	1340	4593	2562	13976	1286	2021	5507	1342	1379	2911	3503	5445
23–24	2238	9411	5616	2573	1547	1305	4577	2343	16144	1329	2032	6259	1318	1333	3344	3434	5844
24–25	2519	10505	6139	2666	1524	1261	4061	1830	17859	1385	1987	6901	1288	1258	3774	4068	5896
25–26	2795	11499	6651	2823	1582	1299	3389	1335	19314	1493	2028	7513	1337	1279	4184	4351	5896

[a]Stars per sq. deg. in the indicated magnitude range for each of the 17 fields of Table 1.

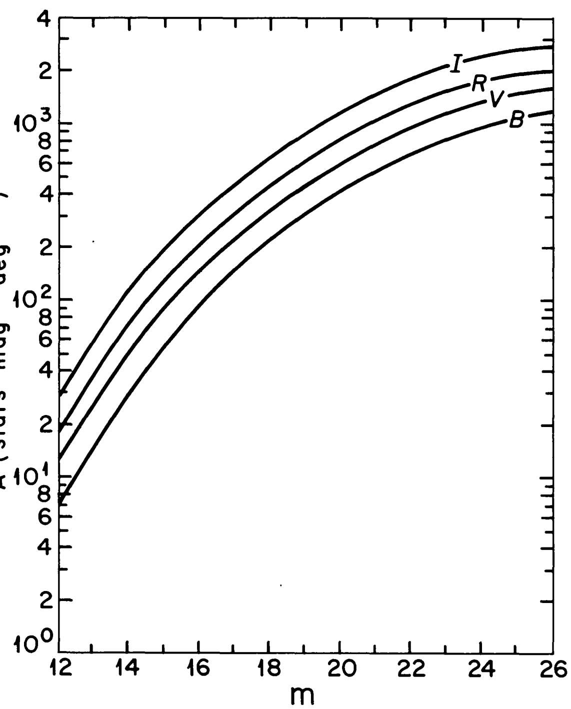

FIG. 2.—The differential star counts A per mag per sq. deg. predicted by the Bahcall-Soneira Galaxy model in the direction of the galactic pole for the B, V, R, and I bands.

for which the relation between color and spectral class is well known. Only a few values need be determined; the remainder can be obtained by interpolation.

The differential star density A (stars per mag per sq. deg.) in the D band for some given direction is then

$$A(m_D)=\sum_i \sum_j F_i(M_V^j, m_V),$$
$$m_V = m_D - C_D^i(M_V), \qquad (1)$$

where F_i is the star density listed in Table 2 for a given visual apparent and absolute magnitude interval and luminosity class i, j represents the discrete absolute magnitude value, and $C_D^i=(D-V)$ is the color term discussed above. The value of m_V required in equation (1) will, in general, not be one of the (round number) values listed in Table 2. The required values can be interpolated from successive entries. The transformation to the D band can be thought of as a distortion of Table 2 such that the rows are no longer precisely horizontal.

The distribution of (D_2-D_1) star colors in two arbitrary bands D_1 and D_2 for stars that have an apparent magnitude m_{D_1} can be obtained by proceeding independently as indicated in equation (1) for each band, D_1 and D_2. For each absolute visual magnitude and luminosity one determines $(D_2-D_1)=C_{D_2}(M_V)-C_{D_1}(M_V)$. This yields the variation for a given m_{D_1}. The intervals between successive entries will not be uniform so that it will be necessary to renormalize, or to interpolate between entries, in order to obtain a predicted variation that is linear in (D_2-D_1).

As an illustration, we show in Figure 1 the distribution of predicted $B-V$ and $R-I$ colors for SA57 (the galactic north pole, Table 2.1) and for the Morton and Tritton (1980) field (Table 2.12) in the apparent magnitude ranges $20 \le m_V \le 22$ and $19 \le m_I \le 21$ mag, respectively. Almost all (>85%) of the stars with $(B-V)>1.2$ or $(R-I)>1.2$ mag, are in the disk, and almost all (>99%) of the stars with $(B-V)<1.2$ or $(R-I)<1.2$ mag are in the spheroid (see Paper I). Note that the sharp peak due to disk stars centered on $(B-V)=1.5$ mag is significantly broadened in the $R-I$ color distribution as a result of the increased sensitivity and selectivity of the redder bands to the dimmer stars (see Paper I and Mamon and Soneira 1981). (Note that the height of each peak depends upon the color resolution of the plot, 0.1 mag per bin here, but 0.17 mag per bin in Paper I.) This peak can be further broadened by using $(V-I)$ or $(B-I)$ colors.

IV. THE FAINT END OF THE DISK LUMINOSITY FUNCTION

The behavior of the stellar luminosity function of the disk for $M_V \geq +13$ mag ($M_I \geq +9$ mag), corresponding to masses $M < 0.2\ M_\odot$, is of great interest but has not yet been conclusively determined (see van Rhijn 1936; McCuskey 1966; Luyten 1968; Wielen 1974; Paper I, Fig. 1 and §§ II, IV*a*). It is important to extend the observations of smaller masses down to the end of the hydrogen-burning main sequence limit of $\sim M_{\rm crit} = 0.085\ M_\odot$ (Grossman, Hays, and Graboske 1974), corresponding to absolute magnitudes $M_V = +16.5$ mag ($M_I = +11.5$ mag). Star counts in the I band are much more sensitive to the red stars at the faint end of the luminosity function than are counts in the (bluer) B, V, or R bands. Theoretical luminosity functions for red and black dwarfs have been discussed recently by Staller and de Jong (1979, 1980).

The relation between stellar mass and visual absolute magnitude used here (and in Paper I) is obtained from the observations summarized by Harris, Strand, and Worley (1963) and is shown in Figure 3. The corresponding I band magnitudes are obtained from Johnson (1966).

One must discriminate against spheroid stars if one wishes to study the faint end of the disk luminosity function. The separation of disk and spheroid stars is crucial because most ($>1/2$) of the stars that are fainter than apparent magnitude $m_I = +20$ mag ($>2/3$ at $m_I > 24$ mag) are spheroid stars (in all of the fields listed in Table 1 except those close in direction to the galactic anticenter; see below). In fact, practically all of the stars with absolute magnitudes dimmer than $M_I = +10$ mag that have apparent magnitudes $m_I < +24$ mag on the basis of our two-component (disk + spheroid) Galaxy model are from the disk; the apparently faint spheroid stars are nearly all more distant, brighter objects.

The selection of disk stars can be accomplished either by examining star colors (such as $B-V$ or $R-I$; see Fig. 1) or by observing in directions which minimize the number of spheroid stars ($l^{\rm II} \geq 120°$ and $b^{\rm II} \leq 50°$; see Papers I and II, and especially Paper I Fig. 8*d*). Fields 5, 6, 8, 13, and 14 are particularly useful for this purpose.

In Table 4, we list the predicted disk star counts in stars per sq. deg. in the I band for each of the 17 fields as a function of apparent magnitude to $m_I = 26$ mag. The first entry is for all stars brighter than $m_I = 12$ mag. Here we have chosen to parametrize the faint end of the disk luminosity function by specifying an absolute magnitude cutoff, $M_I^{\rm dim}$, such that $\phi \equiv 0$ for $M < M_I^{\rm dim}$. (Current observational data suggest that the luminosity function is approximately constant for $+11 \lesssim M_V \lesssim +16$ or $+8 \lesssim M_I \lesssim 11$. The form of the luminosity function we use is given by eq. [1] of Paper I.) In the table, the first row for a given apparent magnitude lists the counts computed with $M_I^{\rm dim} = +9$ mag ($M = 0.2\ M_\odot$); the second with $M_I^{\rm dim} = +11.5$ mag ($M = 0.085\ M_\odot$), and the third with $M_I^{\rm dim} = +16$ mag. The variation of the disk star counts with $M_I^{\rm dim}$ is more than 10 to 1 at $m_I = +24$ mag. This effect is strongest in the direction of the galactic pole and weakest at low galactic latitudes in the direction of the galactic center. The variation of *total* star counts with $M_I^{\rm dim}$ is much smaller ($\sim \pm 20\%$ at the galactic pole).

There is not at present sufficient observational information available to allow one to use Table 4 to determine well the faint end of the disk luminosity function. However, the observational situation could be improved dramatically with existing techniques.

Star counts to m_I of order 19 mag *without additional color information, should be sensitive enough to detect disk-population stars anywhere on the hydrogen-burning*

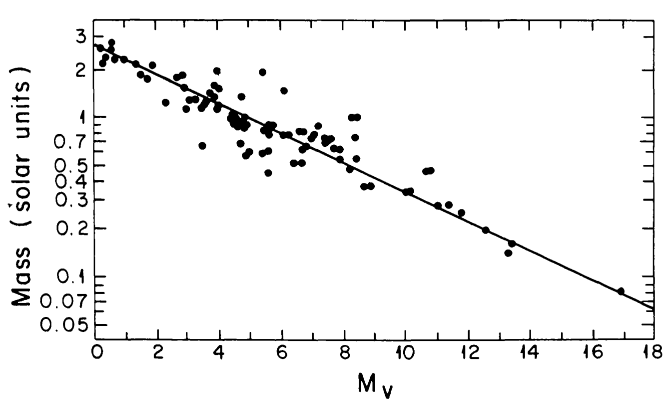

FIG. 3.—The relation between stellar mass and absolute magnitude from the observations summarized by Harris *et al.* (1963). Only main-sequence stars are plotted for $M_V \geq +4$. For $M_V < +4$, subgiants and giants are included in addition to the main-sequence stars.

TABLE 4

VARIATION IN DISK STAR COUNTS WITH M_I^{dim} [a,b]

m_I\field	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
≤18	862	1974	1857	1625	1442	1377	3925	2963	3100	1081	1737	1821	1344	1460	1006	1806	3101
	971	2118	1999	1761	1573	1506	4075	3102	3251	1200	1868	1962	1472	1588	1121	1943	3250
	980	2129	2009	1771	1583	1516	4085	3112	3261	1210	1877	1972	1481	1598	1131	1953	3260
18-19	174	600	548	449	377	353	1649	1124	1179	246	502	533	340	385	221	526	1169
	322	842	782	667	580	550	1953	1391	1468	417	727	764	534	590	384	758	1460
	345	870	810	694	607	576	1979	1415	1492	442	750	792	561	616	409	784	1484
19-20	93	445	396	309	249	229	1550	990	1029	145	356	383	218	260	126	382	1023
	329	932	861	726	625	590	2293	1604	1687	437	795	840	572	636	400	831	1679
	392	1013	941	803	699	663	2380	1685	1774	504	871	920	644	710	466	910	1763
20-21	25	206	175	126	95	85	1064	615	623	46	156	168	80	100	38	164	617
	281	918	839	693	586	549	2496	1701	1780	390	772	817	530	601	352	810	1767
	430	1141	1056	898	779	738	2753	1932	2031	557	977	1033	717	792	514	1022	2019
21-22	2	45	35	22	15	13	429	213	210	6	30	34	12	17	4	32	203
	174	734	659	524	428	397	2383	1549	1617	261	601	639	380	445	230	636	1598
	456	1242	1148	971	840	794	3079	2143	2251	595	1061	1122	771	855	548	1110	2237
22-23	0	3	2	1	1	1	73	30	28	0	2	2	0	1	0	2	25
	64	412	358	266	206	187	1814	1089	1111	108	317	344	177	215	92	336	1107
	464	1304	1203	1012	871	823	3332	2298	2412	611	1109	1174	798	888	560	1162	2396
23-24	0	0	0	0	0	0	3	1	1	0	0	0	0	0	0	0	1
	10	124	102	68	48	42	907	480	478	20	88	97	39	52	16	93	467
	444	1309	1203	1005	860	810	3475	2372	2485	593	1110	1173	785	878	542	1162	2468
24-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	14	10	6	4	3	225	100	96	1	8	10	3	4	1	9	89
	390	1239	1132	936	793	744	3458	2326	2429	533	1042	1103	720	813	484	1093	2413
25-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	18	6	6	0	0	0	0	0	0	0	5
	280	1043	943	762	633	589	3214	2109	2198	402	861	916	567	649	360	904	2177

[a]Stars per deg^2 in the indicated magnitude range for each of the 17 fields of Table 1.

[b]The first row for each apparent magnitude is the counts for $M_I^{\mathrm{dim}}=+9$, the second row for $M_I^{\mathrm{dim}}=+11.5$, and the third row for $M_I^{\mathrm{dim}}=+16$.

main sequence in the range of interest: 0.2 *to* 0.085 $M_\odot$, *provided the luminosity function*, $\phi(M_{\mathrm{abs}})$, *is approximately constant or slightly increasing with absolute magnitude* (*as suggested by some data, see Figs. 1 and 13a of Paper* I) *over this range in mass*. The above-cited value for m_I corresponds to a factor of 2 difference in Table 4 between the disk star counts expected for $M_I^{\mathrm{dim}}=+9$ mag ($M=0.2\ M_\odot$) and for $M_I^{\mathrm{dim}}=+11.5$ mag ($M=0.085\ M_\odot$). The corresponding magnitudes for equivalent effects in the R, V, and B bands are 21, 23, and 24 mag, respectively.

If $R-I$ colors are available, one can determine the faint end of the luminosity function by using the known relation between color and absolute magnitude. For example, main sequence stars with $(R-I)=1.6$ mag have $M_I=+9$ mag, and stars with $(R-I)=2.2$ mag have $M_I=11.5$ mag (see Harris 1963 and Johnson 1966). At the galactic pole our Galaxy model (with $M_I^{\mathrm{dim}}=+9$ mag) predicts 141 stars per sq. deg. with $m_I \leq 18$ and $(R-I)>1.6$ mag, and nine stars per sq. deg. with $m_I \leq 18$ and $(R-I)>2.2$ mag. Thus, if colors are available, the faint end of the hydrogen-burning main sequence can be studied using star counts that extend down to only $m_I=18$ mag.

If only total star counts to a fixed (I band) apparent magnitude are available, then one can infer less from the observations than if colors are available; i.e., one determines from the total counts only a value of the dim-end cutoff (assuming a functional form for the luminosity function).

V. LIMITS ON THE STELLAR COMPOSITION OF A MASSIVE HALO

a) *General Considerations*

Stars from a massive halo component of the Galaxy may contribute significantly to the star counts at faint apparent magnitudes. In Paper I we set a lower limit of $M_V = +14$ mag on the intrinsic luminosity of main-sequence–type stars that might constitute a massive halo. This limit corresponds to a stellar mass $\leq 0.14\ M_{\odot}$ or a visual mass-to-light ratio of 650 solar units. The above limit was based on data taken in bands that are not very different from the V band by Kron (1978), Tyson and Jarvis (1979), Peterson *et al.* (1979), and Brown (1979). If the halo stars are main-sequence stars, they must therefore be very red ($B-V>2$, $V-R>2$, $V-I>4$ mag). Hence, the I band is the best of the four traditional bands considered in this paper in which to search for halo stars.

The halo stars must be relatively nearby if they are to be observable in the apparent magnitude range that is reliably accessible with state-of-the-art techniques, i.e., $m_V \lesssim 24$, $m_I \lesssim 23$ mag. As long as the visible halo stars are closer than the distance of the Sun to the galactic center, the halo star counts will increase with apparent magnitude m approximately as $10^{0.6m}$ (see eq. [2], below). This rate of increase is much faster than that predicted for either the disk or the spheroid star counts, as well as the star counts in the published data (see Fig. 4 of Paper I). Thus, if the halo manifests itself in the star counts, there will be a rapid increase in the star counts beginning at some as of yet unknown apparent magnitude. The preferred direction for searching for the halo is the (north or south) galactic pole (field 1), provided color information is available to eliminate spheroid stars (see § IV above, Fig. 1, and Paper I). If color information is not available, then the preferred direction is field 10, which minimizes the total contribution of disk and spheroid stars (contamination is a problem only at the threshold of detection because the halo counts are predicted to increase rapidly).

The expression for the predicted halo star counts is given in equation (26) of Paper I for the illustrative case in which all stars have the same absolute magnitude (more general cases are also treated in Paper I).

b) *Detection of Stars on the Hydrogen-burning Main Sequence*

Table 5 gives, as a function of apparent I magnitude, the maximum absolute I magnitude (minimum luminosity) that the halo stars can have and still double the predicted differential star counts at the galactic pole. Column (2) refers to a comparison that is made using only the disk counts; column (3) is relevant for a comparison made using both the disk and the spheroid counts. For this calculation, we have assumed that all stars dimmer than $M_V = +16.5$ mag ($M_I = +11.5$ mag) have the same mass, $M_{\rm crit}$, as the minimum hydrogen-burning main sequence mass of $\sim 0.085\ M_{\odot}$. This approximation is numerically unimportant and is anyway conservative.

The apparent magnitudes required to detect a halo composed of stars of a specified absolute magnitude depend somewhat on the assumed local halo mass density, which is related to the asymptotic rotation velocity, V_∞, due to the halo. The value of V_∞ used in the calculations for Table 5 was $V_\infty = 195$ km s^{-1} (or equivalently a local halo density of $0.011\ M_{\odot}$ pc^{-3}) which is consistent with the observed rotation curve of the Galaxy and was adopted for our standard Galaxy model in Paper I, § VI. The differential star counts per sq. deg. due to a halo composed of stars of fixed mass M_0 and absolute magnitude $M_{\rm abs}$ are given by the following expression:

$$A_{\rm halo}(m) = 1.12\ 10^{-5} Z_{\rm max}^3 \left(V_\infty^2/GM_0 r_0^2\right)\left(1+a^2/r_0^2\right)^{-1}, \quad (2)$$

where $Z_{\rm max} = 10^{0.2(m-M_{\rm abs}+5)}$ pc, $r_0 \approx 8$ kpc, and a is the presently unknown core radius (see Paper I, § VI for a discussion of the range of allowed values. The above equation could equally well be written in terms of $\rho_{\rm halo}(r_0)$, allowing the elimination of V_∞ and a). The absolute magnitudes in Table 5 were calculated by solving for the value of M_I such that $A_{\rm halo}(m_I) = A_{\rm disk+spheroid}(m_I)$. Since $Z_{\rm max}^3$ is proportional to $10^{0.6m}$, the calculated absolute magnitudes are not very sensitive to the assumed asymptotic rotation velocity. Adopting the same extreme range of possible rotation velocities as in Paper I, $175 \leq V_\infty \leq 350$ km s^{-1}, or, equivalently, local halo densities between 0.0025 and $0.020\ M_{\odot}$ pc^{-3} (see Paper I), we find that the absolute magnitude limits might have to be decreased over those given in Table 5 by as much as 1.1 mag or increased by 0.4 mag.

Our main conclusion is that *an observation of the star counts in the I band to* m_I *of order* 22 mag *should detect the stellar components of a massive halo if the stars are anywhere on the hydrogen-burning main sequence*. This limit corresponds to $(M/L)_{\rm Merit;\ visual} = 4\times10^3$. Since stars less massive than $M_{\rm crit}$ are expected to be much less luminous today than stars that burn hydrogen, $m_I = 22$ mag is the crucial magnitude limit. If the halo is not detected to this magnitude limit, it will be extremely difficult, if not completely impractical, to detect it at all by star counts in bands with characteristic wavelengths less than $\sim 2\ \mu$m.

TABLE 5

DETECTABILITY OF STARS FROM A MASSIVE HALO

m_I (1)	Disk Only M_I (2)	Disk + Spheroid M_I (3)
20	+12	+11
22	+14	+13
24	+16	+15
26	+18	+17

c) *Black Dwarfs*

Finally, we consider the possibilities of detecting "black dwarfs," i.e., stars that are not massive enough to burn hydrogen on the main sequence. Such stars may spend a short time on the deuterium-burning main sequence, but will then rapidly cool down, losing their internal energy by radiation. Many authors have discussed aspects of the evolution of such stars and/or the possibility that they are the main constituents of massive galactic halos (see, e.g., Kumar 1963, 1972; Napier and Guthrie 1974; White 1977; Staller and de Jong 1979, 1980; and references quoted therein). However, relatively little work has been done on the physical characteristics of stars in the range we are considering ($0.01 < M < 0.09\ M_\odot$) or on their detailed evolution, especially their spectral energy distribution after 10^{10} yr. The paper of Stevenson (1978) is the only applicable semiquantitative discussion we have found that might be expected to be a valid over the range of masses we consider. Using Stevenson's results, we find a luminosity on the cooling track for black dwarfs of order

$$L = 7.7 \times 10^{-6}\left[\left(\frac{M}{0.1\ M_\odot}\right)\left(\frac{0.067\ R_\odot}{R}\right)\right]^{1.9} L_\odot, \quad (3)$$

where the radius R is a slowly varying function of stellar mass in the range of masses considered here. For a composition that might be appropriate to halo stars ($X=0.75$, $Y=0.25$), Zapolsky and Salpeter (1969) give $R(0.1\ M_\odot)=0.067\ R_\odot$ and $R(0.01\ M_\odot)=0.10\ R_\odot$. This corresponds to an absolute bolometric magnitude $M_{\rm bol}$ of order 17.5 mag and a $(M/L_{\rm bol})$ of 1.3×10^4 after 10^{10} yr. The effective temperature is only of order

$$T_e = 1.2\times10^3\left[\frac{M}{0.1}\right]^{0.48}\left[\frac{0.067\ R_\odot}{R}\right]^{0.97} \mathrm{K}, \quad (4)$$

which implies that only a small fraction of the energy is in the I band (or bluer bands). The peak in the luminosity should be redward of 2 μm. The absolute visual magnitude for a black dwarf with a mass slightly less than $M_{\rm crit}$ is, assuming a blackbody spectrum, of order 29 mag, implying an (M/L_V) of 10^9. The absolute magnitude in the I band is of order +22 mag at slightly less than $M_{\rm crit}$. Less massive black dwarfs will be even fainter in the visual and infrared bands with correspondingly larger mass-to-light ratios.

The number of halo black dwarfs that the Space Telescope might detect in the visible band is negligible according to the above calculations. We find that for $\rho_{\rm halo}=0.011\ M_\odot\ \mathrm{pc}^{-3}$ less than 10^{-2} black dwarfs per sq. deg. should be visible down to $m_V=28$ mag, even in the most optimistic case in which all the black dwarfs have masses just slightly less than $M_{\rm crit}$.

In the I band, the limiting magnitude of the wide field camera of the Space Telescope is expected to be $m_I \approx 28$ mag. To this limit, there should be ~100 visible halo black dwarf stars per sq. deg. in the direction of the galactic pole, which is much less than the number of observable main sequence stars ($\sim2.2\times10^4$ per sq. deg.). If $R-I$ colors are available, these halo black dwarfs may be easily separable from the main-sequence stars. However, there may also be larger numbers of disk and spheroid black dwarfs (Staller and de Jong 1980) which would obscure the contribution of the halo black dwarfs to the star counts. (It probably will not be possible to separate disk from halo black dwarfs by making use of the expected difference in the angular variation of the star counts because the characteristic distance to $m_I=28$ mag for black dwarfs is $\lesssim100$ pc, which is significantly less than the disk scale height.)

The most promising band for detecting halo black dwarfs with the *Infrared Astronomical Satellite*, *IRAS*, is the band centered on 11.8 μm, for which the minimum flux density is ~24 mJy with a signal-to-noise ratio of 3 (Clegg 1980). However, only 10^{-4} halo black dwarfs, or less, would be expected over the whole sky at this flux level.

We conclude that if the massive halo is to be detected by star counts with currently known techniques then it should be apparent by m_I of order 22 mag or not at all.

The diffuse radiation from the halo black dwarfs may contribute to the infrared flux that will be measured by the *Cosmic Background Explorer* satellite, *COBE*. The diffuse background experiment is the most suitable detector (see Mather and Kelsall 1980). The ultimate sensitivity of this experiment to diffuse sources with specified angular distributions will not be determined until in-orbit measurements are made, but a sensitivity of order 10^{-13} W cm^{-2} sr^{-1} appears possible (Mather and Kelsall 1980). The corresponding flux density expected at the galactic pole from halo black dwarfs radiating at frequency ν is

$$F = \nu S(\nu)\, n_{\rm H}(r_0)\, r_0/8, \quad (5)$$

where $S(\nu)$ is the flux density from a typical black dwarf, and $n_{\rm H}(r_0)$ is the density of halo stars in the vicinity of the Sun. For halo densities of order 0.1 stars pc^{-3}, the flux is $\sim10^{-15}$ W cm^{-2} sr^{-1}, significantly smaller than the contributions expected from other sources (Mather and Kelsall 1980).

VI. CONCLUSIONS

The major conclusions of this paper are listed below.

1. Star counts in the 17 fields listed in Table 1 (and their southern hemisphere equivalents) can be used to

determine important parameters of galactic structure. The expected star counts in each of these fields are given in Tables 3 and 4 for the B, V, R, and I bands.

2. The faint end of the disk luminosity function can be determined down to the limit of the hydrogen-burning main sequence by obtaining $R-I$ colors for all stars brighter than $m_I=18$ mag. Star counts in the I band alone to $m_I=19$ mag should be sufficient to detect disk stars anywhere on the hydrogen-burning main sequence.

3. If the massive halo is composed of stars that are on the hydrogen-burning main sequence, then star counts to $m_I=22$ mag should reveal the constituents of the halo.

4. A massive halo composed of stars less massive than the critical mass for hydrogen burning would not be detectable by star counts or by diffuse background measurements with the known techniques considered in this paper.

VII. AVAILABILITY OF COMPUTER PROGRAM

The authors will provide on request a copy of the (undocumented) Fortran computer program that reproduces our Galaxy model and which was used to calculate the star counts given in this paper for the B, V, R, and I bands. This program can be used to calculate star counts for different directions, magnitude intervals, color bands, or model parameters than those we have presented. The program was originally designed to run on an IBM VM/370 CMS computer system.

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