THE DISTRIBUTION OF THE *BD* M-TYPE STARS ALONG THE GALACTIC EQUATOR

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ABSTRACT

A catalogue is presented containing all *BD* stars with spectral type M2 or later in a zone 12° wide along the galactic equator While the stars of type M5 or later show a rather uniform distribution with galactic longitude, a maximum at $l \approx 30°$ and a minimum at $l \approx 120°$ is present in the distribution of the stars of type M2–M4, this distribution being similar to that of the Mira-type variables This indicates a concentration of these stars within the local spiral arm. The space density within 430 pc is found to be about 6×10^{-6} pc^{-3} for the group M2–M4 and about $0\,5 \times 10^{-6}$ pc^{-3} for the group M5 or later. The average ratio of early to late M's within 1000 pc is 7.

I. INTRODUCTION

This paper gives a catalogue of all *BD* stars of spectral type M2 or later which are located in a zone along the galactic equator between +6° and −6° latitude. This zone is covered completely by the *BD* charts from $l = 339°$ through 0° to $l = 199°$. The catalogue contains 1404 stars, of which only 1 star was found to be a dwarf. Since the number of supergiants is small compared with the giants, the statistical discussion given in this paper is based primarily on the M giants. The *BD* catalogue is almost complete to visual magnitude 10.5. Assuming a mean absolute visual magnitude of −0.4 and a mean visual absorption of 0.75 per kpc, this material gives the distribution of the M giants within the galactic plane to a distance of about 1 kpc.

In addition to the *BD* stars, a list is given of 66 red variables which are brighter than visual magnitude 10.5 at maximum brightness but are not in the *BD* catalogue. The majority of these stars are Mira type. The list was prepared from the *Catalogue of Variable Stars* (Kukarkin and Parenago 1948) and its supplements (Kukarkin *et al.* 1949–1954) and from the *Catalogue of Stars Suspected of Being Variables* (Kukarkin *et al.* 1951).

II. DATA

The survey is based on the existing infrared plates at the Warner and Swasey Observatory which were taken with the Burrell Schmidt-type telescope through the 4° objective prism. The spectral range covered was between λ 6800 and λ 8800 A and was secured by means of Eastman 1-N emulsion and a Wratten No. 89 filter. The exposure time for each plate was, in general, 10 minutes, with additional exposures of 3 and 1 minutes to permit the classification of the brighter stars.

The classification is based on the strength of the titanium and vanadium oxide bands in the near infrared as described by Nassau and van Albada (1949) and Cameron and Nassau (1955).

For the identification of the M stars, film copies of the *BD* charts with the scale of the plates were prepared. A superposition of plate on film permitted the classification and identification of the M stars.

III. ACCURACY OF THE CLASSIFICATION SYSTEM

The number of M stars found in the survey is 1404. Out of these, 369 stars were found independently on two or three different plates, since nearly a quarter of the surveyed

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area was covered twice by overlapping plates. The comparison of the independent spectral classifications made in the overlapping areas permitted an estimate of the internal accuracy in the survey. For 211 stars the spectral subclasses were the same on both plates; 138 stars showed a difference of one subclass; and only 20 stars differed by two subclasses. Some of these differences may be attributed to spectral variability or to the fact that some of the stars actually are of intermediate classes.

To make certain that the classification system did not change during the study, the first ten plates were reclassified at the end of the survey. The comparison of the results is shown in Figure 1.

Out of the 1404 stars, 116 are known to be variables or suspected variables. For 79 of these variables, spectral types based on the same plates as those used in this survey

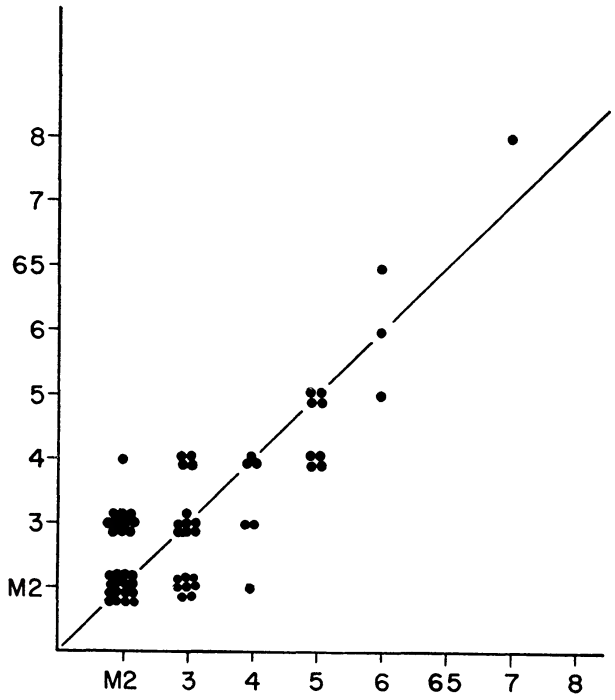

FIG 1.—The internal accuracy of the classification, showing observations made at beginning (*abscissa*) and end (*ordinate*) of the survey

were published by Cameron and Nassau (1956). The comparison between the present and the previous classifications for these 79 stars is given in Figure 2. It appears that the spectral classes given in this paper are about half a subclass earlier for stars later than M3 than in the earlier study. Since the differences are small and since in the statistical discussion the stars are divided into two spectral groups only, no corrections were applied to reduce the present classifications to the previous system.

IV. THE CATALOGUE

The catalogue (Table 1) gives the spectral subclasses of the observed M stars in the order found in the *BD* catalogue. For stars for which more than one plate were available and for which the classifications differed by two spectral subdivisions, the average subclass is given. These stars are marked as possible spectrum variables under "Remarks." Stars with one spectral subclass difference were assigned at random to the earlier and later subclasses in a ratio proportional to the number of stars in these subclasses. The third column gives the *BD* magnitudes corrected by means of the table given in the

Harvard Annals, Volume **72.** The fourth and fifth columns give the galactic co-ordinates to the nearest tenth of a degree, which is approximately the accuracy in this determination. The co-ordinates were obtained graphically by reducing the co-ordinates of the Lund Pole to the epoch of 1855.

The designations in the column of "Remarks" are as follows: (1) the name of the variables and the type of variability; (2) stars of doubtful identification by "d"; (3) suspected spectrum variables by "s"; (4) suspected binaries by "b"; (5) probable members of a cluster by "Cl"; (6) stars showing S-star characteristics by "p"; and (7) variables for which magnitudes are not available in the *BD* catalogue by "m." The magnitudes (at maximum light) given were obtained from the *Catalogue of Variable Stars*.

For completeness and uniformity of classification, all the late *BD* M stars already published in the two catalogues by Nassau and Blanco (1954) and Nassau, Blanco, and

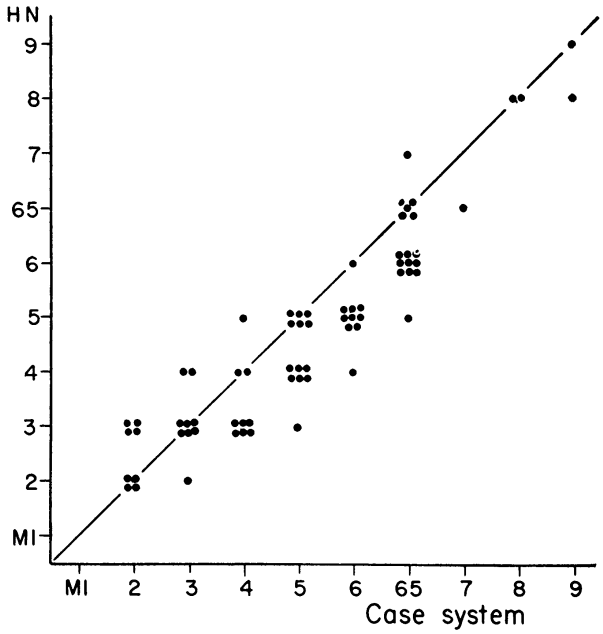

FIG. 2 —Comparison of our classification with the Case system

Cameron (1956) were reclassified and are also given in this catalogue. The earlier two catalogues were based on plates taken with the 2° objective prism, which were all secured 2–3 years before the 4° plates used in the present survey. In the 2° surveys no effort was made to secure short exposures such as were available for the present survey for the exact classification of the stars. As a result, the catalogues, which contain only the brighter stars, give spectral classes that were based on overexposed images. Also the criteria of classification in the earlier papers were different from those used at present. These considerations explain the differences in spectral classes between the two surveys. Table 2 gives the bright M-type variables which were not included in the *BD* catalogue.

V. THE DISTRIBUTION OF THE M STARS

For the statistical studies, all stars for which the corrected *BD* magnitudes are fainter than 10.5 were excluded in order to obtain a uniform limiting magnitude. According to Trumpler and Weaver (1953, p. 257), the *BD* catalogue is complete to this magnitude. The number of stars excluded for this reason is 125. Furthermore, 11 known Mira-type variables were excluded because their absolute magnitudes are different from those of the

TABLE 1

THE BD M-STARS ALONG THE GALACTIC EQUATOR

B.D.	Sp	m_V	l	b	Remarks
-23° 349	2	10.6	336.1	-4.5	
-22°4442	3	10.4	333.6	+0.4	
4461	3	10.4	334.7	-0.1	
4508	4	10.7	335.0	-1.5	
4562	2	8.7	335.9	-2.1	
4575	4	10.9	335.9	-2.5	VX Sgr; SR
4597	2	8.1	336.2	-3.0	
4616	2	9.1	335.9	-3.7	
4631	2	8.8	336.8	-3.7	
4642	2	10.6	336.6	-4.2	
4643	2	9.4	337.0	-4.1	
4644	3	10.3	336.8	-4.2	
4677	2	10.6	337.1	-5.1	
-21°4803	6	11.3	335.7	-0.4	
4828	5	10.7	335.7	-1.4	
4861	2	9.0	336.2	-2.3	
4866	2	6.9	336.7	-2.2	
4869	3	8.9	336.8	-2.2	
4872	3	10.6	336.4	-2.5	
4897	4	10.3	337.4	-2.7	
4916	3	6.2	337.1	-3.4	
4938	3	10.6	337.9	-4.0	
4940	5	10.7	337.6	-4.2	
4946	2	9.9	337.7	-4.3	
4955	3	10.6	338.2	-4.6	s
4961	3	9.7	338.2	-4.7	
-20°4921	2	9.5	335.9	+0.5	
4946	2	9.2	336.8	-0.3	
4974	4	10.7	336.9	-1.2	
4978	2	10.7	336.8	-1.3	
5002	3	10.2	337.2	-1.8	
5025	2	10.1	338.0	-2.3	
5034	2	10.1	337.9	-2.7	
5039	3	10.6	338.1	-2.7	
5056	3	11.0	338.1	-3.1	
5064	3	11.0	338.0	-3.3	
5067	4	10.6	338.6	-3.1	
5086	4	9.9	339.0	-3.7	
5118	3	8.1	339.1	-4.7	
5134	2	5.3	339.4	-5.2	
5138	2	10.8	339.3	-5.4	
5153	3	9.4	340.2	-5.7	
-19°1678	4	9.8	199.3	-4.6	
4708	2	8.6	336.0	+2.7	
4765	3	10.9	337.3	+1.4	C1;d
4839	4	11.1	337.9	-1.0	
4845	2	10.4	338.0	-1.2	
4850	2	10.8	338.1	-1.3	
4890	2	10.3	338.9	-1.8	
4907	3	10.6	339.1	-2.2	
4920	2	10.6	339.2	-2.4	
4932	3	9.7	338.8	-2.8	
4987	2	7.9	340.2	-4.4	
4992	3	8.1	340.0	-4.6	
5015	3	9.1	340.5	-5.5	
5033	5	10.6	341.0	-5.8	

B. D.	Sp	m_V	l	b	Remarks
-18°1604	3	10.7	197.7	-6.2	
1638	3	10.2	198.6	-5.2	SV CMa;I
1665	5	9.8	198.6	-4.4	
1696	3	8.5	199.4	-3.7	
1768	2	8.0	200.2	-1.8	
1772	3	10.4	200.2	-1.5	CS CMa;SR
1782	3	9.5	200.3	-1.3	
1983	2	9.6	202.8	+3.7	
4799	2	7.5	339.2	-0.8	
4817	2	11.0	339.8	-1.1	
4822	3	9.1	339.2	-1.5	
4856	3	8.9	339.7	-2.1	
4862	3	8.9	339.7	-2.4	
4895	2	8.3	340.4	-2.8	
4953	3	8.1	341.1	-4.2	
4968	2	9.7	341.6	-4.5	
4974	3	11.2	341.2	-5.0	
-17°1729	2	8.9	197.2	-4.5	
1792	5	8.7	198.2	-3.0	
1943	2	10.6	200.2	-0.2	
1998	4	8.7	200.5	+1.2	
2089	4	9.1	201.6	+3.6	
2133	3	8.9	202.4	+4.5	
4970	4	10.0	339.3	+2.0	
4996	4	9.5	339.8	+1.0	
5026	4	11.1	339.7	-0.3	
5030	2	10.7	340.2	-0.2	
5062	3	10.3	340.2	-1.0	
5066	4	9.4	340.7	-1.1	
5074	4	9.2	340.9	-1.2	
5078	2	10.6	340.6	-1.6	
5117	3	9.2	340.9	-2.3	
5160	3	11.0	341.8	-2.9	
5162	2	9.7	341.7	-3.2	
5185	2	9.9	342.3	-3.6	
5224	2	9.7	342.8	-5.0	
5238	3	9.1	342.9	-5.7	
-16°1709	2	10.3	196.9	-4.4	
1767	2	9.6	197.0	-3.0	
2051	2	10.5	200.5	+3.5	
2058	5	10.1	201.0	+3.6	EI Pup;I
2144	2	9.6	202.0	+6.0	
4602	2	9.2	338.3	+5.4	
4641	5	11.1	339.5	+3.7	
4697	6.5	10.2	340.2	+0.9	
4708	2	10.2	340.5	+0.3	
4754	2	8.7	341.4	-0.7	
4755	5	9.2	341.7	-0.6	
4776	2	9.9	342.0	-1.2	
4807	4	9.4	342.4	-1.9	
4833	3	10.3	342.2	-2.7	
4846	3	10.6	342.9	-2.6	
4854	3	10.6	343.1	-2.7	
4861	3	8.5	343.1	-3.1	
4892	3	10.7	343.1	-4.2	
4922	2	7.3	343.7	-4.9	

TABLE 1

THE BD M-STARS ALONG THE GALACTIC EQUATOR (Cont'd.)

B. D.	Sp	m_V	1	b	Remarks
-15°1662	3	9.1	196.5	-2.2	s
1686	4	9.3	197.2	-1.8	s
1767	2	10.0	197.9	+0.1	
1804	2	10.2	198.0	+1.3	
1834	4	9.7	199.1	+1.6	
1926	2	8.3	200.1	+3.4	
1953	2	10.5	200.2	+3.9	GG Pup;I
1989	2	8.9	200.9	+4.7	
1994	3	10.5	200.4	+5.0	
2015	2	8.7	200.6	+5.4	
2034	2	9.8	201.2	+5.6	
4644	3	10.4	338.5	+6.3	
4677	3	10.7	339.2	+5.3	
4711	3	10.4	340.4	+3.9	
4736	2	10.4	340.6	+3.0	
4766	3	11.1	341.0	+2.3	
4775	4	8.4	341.2	+2.2	
4805	3	9.5	341.4	+1.3	
4840	2	8.5	342.3	+0.5	S.V.101711
4865	2	9.4	342.2	-0.2	
4915	4	10.6	343.2	-1.3	s
4918	2	11.0	343.3	-1.3	
4927	2	5.6	343.0	-2.0	
4937	2	10.6	343.5	-1.8	
4938	2	7.2	343.6	-1.8	
4939	2	8.9	343.8	-1.7	
4943	2	10.1	343.6	-2.0	
4975	4	10.1	344.2	-3.4	
4976	5	11.0	344.0	-3.7	
-14°1658	2	9.4	194.3	-4.1	
1681	5	10.5	194.4	-3.3	RV CMa; I
1741	4	9.1	195.5	-1.4	
1776	5	8.3	196.1	-0.5	
1782	2	10.2	195.9	-0.3	
1841	2	9.5	197.3	+0.7	
1881	3	8.9	197.4	+1.6	
1971	2	5.6	198.3	+3.7	
1991	4	10.6	198.8	+4.2	d
2039	2	8.6	198.6	+4.6	
2064	2	9.4	199.2	+4.7	
2086	2	9.1	199.8	+4.9	
2165	2	10.7	199.8	+5.4	
2211	3	8.5	200.0	+6.5	
4748	2	9.3	339.8	+5.9	
4845	2	8.8	342.1	+2.9	
4894	2	9.0	342.8	+1.3	
4960	3	10.3	343.3	-0.7	
4982	3	10.1	343.8	-1.0	
5007	3	10.6	344.1	-1.5	
5012	3	10.6	344.8	-1.5	
5093	3	10.6	345.6	-3.5	
5099	2	5.6	345.2	-4.1	
5105	4	8.9	346.0	-3.9	s
5120	3	10.6	346.2	-4.3	
5152	2	8.5	346.6	-5.7	
-13°1670	2	9.1	192.3	-5.2	
1769	3	8.9	193.8	-3.1	
1901	2	8.7	195.6	+0.1	
-13°1920	3	8.9	196.0	+0.6	
1986	2	10.4	196.5	+2.0	
2098	2	9.2	197.5	+4.3	
4739	4	10.7	341.1	+6.7	
4741	3	8.2	340.5	+6.3	
4747	2	11.1	341.5	+6.4	
4759	2	9.8	341.5	+5.7	
4766	4	10.7	341.3	+5.2	
4789	3	10.4	341.7	+4.2	
4840	3	9.5	343.4	+2.7	
4843	2	10.4	343.2	+2.3	
4854	2	10.4	343.5	+1.9	
4858	3	10.7	343.4	+1.6	
4875	2	9.4	343.8	+0.8	
4896	4	10.1	344.8	+0.3	
4901	2	10.3	345.0	+0.2	
4931	2	8.3	344.8	-0.5	
4948	2	10.8	345.0	-1.0	
5028	3	10.7	346.8	-3.5	
5029	4	10.6	346.5	-3.8	
5031	2	8.5	346.9	-3.7	
5060	4	8.3	347.0	-5.0	
-12°1632	2	8.7	191.2	-5.2	
1740	3	8.1	193.3	-2.5	
1782	2	9.6	193.3	-1.1	
1870	3	10.6	195.0	+0.7	b
1919	2	10.6	195.8	+1.8	
1924	2	9.2	195.7	+2.2	
1936	4	9.7	196.0	+2.3	
4837	3	10.2	341.7	+6.4	
4902	3	7.6	344.0	+3.5	
4908	2	11.1	343.9	+3.0	
4957	2	11.2	345.5	+0.6	
4965	2	7.7	345.3	+0.1	
5006	4	11.2	346.0	-0.2	
5038	3	8.8	346.4	-1.4	
5055	4	9.4	346.7	-2.0	
5063	2	10.3	346.7	-2.5	
5091	2	10.1	347.7	-2.7	
5123	6	11.1	348.1	-4.2	
-11°1623	2	9.8	190.6	-5.3	
1797	3	9.0	193.1	-0.7	
1885	3	9.1	194.1	+2.1	
2058	3	9.1	196.6	+6.7	
4484	4	10.4	344.3	+5.4	
4493	3	10.2	344.5	+5.1	
4531	2	9.3	345.0	+3.1	
4543	5	10.8	345.2	+2.3	
4545	2	6.8	345.4	+2.2	
4642	2	9.4	348.0	-1.5	
4683	2	10.6	348.3	-3.3	
4687	2	10.1	348.4	-3.6	
-10°1667	2	9.4	189.0	-5.1	
1977	2	9.3	193.8	+2.2	
1983	5	9.0	193.6	+2.4	
2135	3	10.1	195.7	+6.4	
4735	3	11.0	349.9	-3.2	

TABLE 1

THE BD M-STARS ALONG THE GALACTIC EQUATOR (Cont'd.)

B. D.	Sp	m_v	l	b	Remarks
-10°4738	3	9.4	350.2	-3.2	
4774	2	10.8	350.3	-4.7	
4800	2	10.3	350.8	-5.3	
4821	2	10.6	351.2	-5.8	RT Sct;
-9°1557	2	8.5	187.4	-5.7	
1601	2	5.7	187.7	-4.9	
1611	2	10.1	188.4	-5.0	
1649	2	8.5	189.0	-4.0	
2007	2	8.9	193.3	+3.5	
2038	2	9.1	193.4	+4.3	
2060	5	9.7	193.3	+5.0	
4631	2	9.5	346.5	+5.8	
4875	3	10.3	352.9	-5.9	
-8°1558	2	5.1	188.2	-3.6	
1626	3	8.9	189.0	-1.8	
1641	4	7.9	189.3	-1.5	X Mon; L P
1650	5	7.5	189.4	-1.3	
1692	2	9.6	189.2	0.0	Cl
1727	3	10.1	189.5	+0.5	
1839	2	7.3	191.6	+3.5	
1913	6	10.0	192.5	+5.0	
1950	2	9.0	193.1	+5.8	
4591	2	10.6	349.7	+1.4	
4612	3	10.3	350.1	-0.2	
4635	2	10.3	351.1	-1.8	
4645	3	10.6	351.0	-2.2	
4697	3	10.1	352.4	-4.1	
4711	3	11.0	352.8	-4.6	
4715	2	10.6	352.8	-4.8	
4721	2	8.7	353.2	-4.8	
4723	2	9.2	353.1	-5.0	
-7°1619	2	9.2	187.9	-1.8	
1655	3	9.2	188.3	-0.8	
1699	4	9.6	188.8	+0.2	
1900	3	9.1	190.7	+4.4	
1946	5	10.4	191.5	+5.2	S.V. 1042; M
4560	3	10.7	348.7	+4.8	
4664	4	7.3	353.0	-2.8	
4669	2	9.4	353.0	-2.9	
4721	2	8.9	353.9	-4.1	
-6°1624	3	10.4	184.3	-4.9	
1664	3	7.1	184.9	-4.0	
1675	2	9.1	185.3	-3.9	
1682	2	8.5	184.9	-3.6	
1901	4	10.1	187.7	+0.8	
1925	2	9.1	188.2	+1.6	
1954	3	9.1	188.7	+2.3	s; AP Mon; I
1977	4	10.0	189.0	+2.7	
2111	2	10.0	191.0	+5.9	
2131	3	10.6	191.4	+6.3	
4729	2	8.9	350.3	+3.4	
4803	2	11.0	353.2	-0.9	
4809	2	8.5	353.3	-1.2	
4847	4	10.6	353.8	-2.5	
4938	2	9.9	355.4	-4.3	
-5°1669	2	8.9	183.1	-5.3	
1699	6.5	9.5	183.6	-4.5	GL Mon; SR
1737	2	10.3	184.4	-3.7	
1754	2	9.8	184.3	-3.1	
1787	4	10.5	184.9	-2.3	d; b
1926	2	5.0	186.9	+1.0	
2002	3	10.4	188.2	+2.7	
2046	2	9.7	188.3	+4.5	
4600	2	10.6	351.5	+4.3	
4606	3	10.3	351.2	+3.8	
4697	2	9.7	354.0	-0.5	
4741	3	10.1	355.3	-2.2	
4748	6	10.7	355.0	-2.7	
4754	3	10.6	355.7	-2.7	
4783	2	10.1	356.2	-3.7	
4792	4	9.4	356.0	-4.1	
4806	2	9.7	356.6	-4.6	
-4°1566	2	8.5	182.1	-5.5	
1604	2	9.1	183.3	-3.3	
1696	2	10.1	184.7	-0.7	
1829	2	9.7	187.1	+2.6	
4445	2	11.2	352.6	+3.1	
4474	2	9.9	353.9	+1.6	
4506	3	10.1	355.1	0.0	
4512	2	10.6	354.8	-0.4	
4525	2	9.7	355.3	-0.6	
4547	3	7.5	355.3	-1.1	
4555	3	10.8	355.9	-1.3	
4631	4	8.9	356.9	-4.6	
-3°1453	2	8.9	180.9	-4.8	
1635	2	10.3	183.7	+0.3	
1710	3	10.1	185.6	+2.3	
1750	2	8.3	185.5	+3.4	
1772	4	10.5	186.2	+3.8	
1800	5	9.1	186.7	+4.6	
1811	3	10.4	186.2	+5.1	
1866	3	9.5	187.2	+6.6	
4312	2	9.9	355.7	+0.6	
4324	4	10.7	355.7	-0.1	
4334	2	9.4	355.8	-0.3	
4356	2	11.0	356.2	-1.1	
4362	3	10.7	356.5	-1.3	
4397	3	7.2	357.4	-3.4	
4423	2	9.9	358.2	-4.2	
4438	2	10.6	358.6	-4.8	
4459	2	9.7	359.2	-5.3	
-2°1581	8	6.0	179.2	-5.9	m; V Mon; M
1596	5	9.3	180.1	-5.8	
1613	2	9.1	180.5	-5.3	
1728	4	9.4	181.6	-1.5	
1751	2	10.3	182.0	-1.0	
1853	3	10.1	184.0	+1.5	
2030	2	8.9	186.0	+5.9	
4578	2	7.9	354.0	+5.4	
4641	2	5.6	356.2	+2.4	
4655	2	9.4	356.8	+1.4	
4676	6.5	10.6	356.6	+0.4	CZ Ser; I

TABLE 1

THE BD M-STARS ALONG THE GALACTIC EQUATOR (Cont'd.)

B. D.	Sp	m_v	l	b	Remarks
-2°4706	3	11.2	357.4	-0.4	
4745	5	9.9	358.4	-1.6	AB Aql; I?
4786	3	11.0	358.8	-3.6	
4811	2	11.0	359.1	-4.4	
4865	3	9.3	0.3	-6.2	d
-1°1288	5	8.1	180.1	-2.8	
1309	6.5	10.3	180.5	-2.2	
1416	2	9.9	181.8	+0.9	
1504	4	8.9	183.6	+2.6	
1586	2	8.5	184.1	+5.2	
1598	7	10.4	184.7	+5.2	AH Mon; M
1633	2	10.4	185.2	+6.2	
3484	2	9.7	356.6	+3.9	
3551	3	7.4	358.3	-0.4	
3562	3	10.4	358.5	-1.4	
3584	2	10.4	359.1	-2.4	
3651	4	10.4	1.4	-5.3	
3657	4	7.4	1.5	-5.5	
-0°1337	3	10.3	179.4	-2.8	
1356	3	10.3	179.5	-2.3	
1551	2	8.7	182.1	+3.4	
1599	2	9.3	183.0	+4.5	
3639	2	8.1	1.9	-4.4	
+0°1424	2	9.6	177.1	-3.6	
1484	5	9.6	178.4	-2.2	
1486	2	9.3	178.7	-2.2	
1554	2	10.3	179.1	-0.2	
1650	3	8.8	180.6	+1.4	
1689	5	9.9	180.3	+2.4	
1694	2	10.3	181.0	+2.1	
1719	2	7.7	180.4	+2.9	
1814	3	10.0	182.5	+5.3	
1859	2	9.4	183.2	+6.4	
3918	3	7.8	357.6	+6.0	
3923	2	7.8	357.4	+5.1	
4030	3	10.4	1.2	-0.8	
4064	3	9.4	1.7	-2.6	UW Aql; I
4094	3	10.4	2.4	-4.2	
4103	2	9.7	3.1	-4.5	
4105	2	10.0	3.4	-4.4	
+1°1262	3	10.3	175.0	-5.9	d; b
1398	2	10.3	177.4	-1.6	
1449	2	9.3	178.3	-0.7	
1451	3	10.3	178.2	-0.5	
1506	5	8.9	178.7	+1.2	
3669	2	9.0	359.4	+5.2	
3671	2	9.2	359.1	+4.9	
3683	2	9.1	359.7	+4.6	
3721	2	10.4	0.5	+3.0	
3763	3	8.1	1.5	+0.9	s
3880	3	8.9	3.6	-3.7	
3890	2	10.4	4.0	-4.0	
3931	4	9.5	4.5	-5.5	
3959	3	10.5	5.5	-6.2	
+2°1196	5	7.5	174.8	-4.1	
1204	4	8.9	175.3	-4.0	
1253	2	6.5	175.7	-2.2	
1261	3	9.6	176.0	-2.1	
1307	2	9.6	177.0	-1.1	
3632	3	9.4	1.6	+2.7	
3691	3	9.1	2.5	+0.2	
3740	5	9.4	3.8	-1.6	
3776	3	8.9	4.8	-3.0	
3825	5	8.9	5.6	-5.2	V842 Aql; I
+3°1207	2	9.9	174.2	-3.7	
1219	2	8.8	174.1	-3.1	
1231	4	10.3	174.2	-2.8	
1233	6.5	8.7	174.2	-2.6	
1406	2	8.3	177.5	+2.0	
1452	5	9.3	178.3	+3.4	
1484	2	8.8	178.3	+4.5	
1523	2	8.9	179.3	+5.4	
3710	2	10.4	0.9	+5.8	
3713	5	8.1	1.2	+5.8	
3751	2	9.0	2.3	+4.0	
3767	3	10.0	2.7	+2.9	
3799	2	9.1	3.5	+1.3	
3928	2	8.5	5.8	-4.0	
+4°1476	6.5	7.6	176.4	+3.6	SX Mon; SR?
3761	2	10.0	2.4	+5.7	
3785	2	7.4	2.3	+4.7	
3809	3	10.4	3.2	+3.9	
3827	2	10.0	3.5	+3.4	
3918	2	8.9	5.1	-0.5	
3923	3	8.3	5.5	-0.5	
3952	4	10.4	6.1	-1.4	
4036	2	10.5	7.7	-4.3	
4080	3	10.1	8.3	-6.1	
+5°1113	5	9.9	171.0	-5.4	
1124	2	10.3	171.1	-5.0	
1198	2	8.1	172.0	-2.7	
1238	2	9.6	173.2	-1.8	
1306	5	7.7	174.2	+0.1	
1312	2	8.3	173.9	+0.5	
1342	2	9.9	174.5	+1.0	
1345	5	8.5	174.4	+1.1	
1379	2	10.3	174.7	+2.2	
1414	2	8.5	175.3	+3.3	
4006	3	10.0	6.9	-0.4	
+6°1160	2	6.7	170.8	-4.2	
1187	4	10.3	170.6	-2.7	
1201	2	10.3	171.3	-2.5	
1258	4	8.9	172.0	-0.4	
1377	5	9.6	174.2	+3.1	
1466	2	9.6	175.8	+5.9	
3849	4	10.4	4.9	+5.4	V851 Oph; SR
3898	2	9.1	5.6	+3.8	p; V679 Oph; I
3905	2	8.9	5.7	+3.5	
3984	3	10.0	7.3	+0.4	V840 Aql; SR
4025	5	9.7	8.7	-1.5	s; V844 Aql; LP

TABLE 1

THE BD M-STARS ALONG THE GALACTIC EQUATOR (Cont'd.)

B. D.	Sp	m_V	l	b	Remarks
+6°4051	3	9.5	9.1	-2.9	
4112	2	10.5	10.3	-5.1	
4120	3	10.5	10.5	-5.5	
4136	3	9.5	10.9	-6.1	
+7°1121	2	8.9	168.7	-5.2	
1234	2	8.9	170.2	-2.2	
1304	5	10.3	171.4	-0.1	
1316	2	9.3	171.9	-0.1	
1328	3	9.6	172.0	+0.2	
1330	4	10.3	172.1	+0.4	
1386	2	7.4	173.0	+1.8	
1409	2	7.0	172.9	+2.8	
1427	2	10.3	173.2	+3.1	
1496	2	9.1	174.0	+5.4	
3773	3	9.1	5.7	+5.2	
3784	2	9.1	6.1	+4.9	
3813	2	10.0	6.3	+4.1	
3867	2	8.7	7.7	+2.3	
3911	4	9.4	8.4	+0.8	
3934	2	8.3	8.7	-0.1	
3939	2	10.4	8.7	-0.3	
4087	2	8.5	12.1	-6.1	
4097	3	10.5	12.1	-6.3	
+8°1185	2	8.9	167.6	-4.4	
1312	7	10.3	169.9	-0.7	
1573	4	9.6	173.9	+6.2	
3773	2	9.4	6.5	+5.4	
3780	8	8.6	6.9	+5.4	X Oph; M
3812	4	10.4	7.1	+4.2	
3835	5	9.1	7.8	+3.7	T Aql; I?
3839	4	10.4	7.3	+3.5	
3860	6.5	10.4	8.0	+2.9	V477 Aql; I
3876	2	10.4	8.5	+2.5	
3953	5	9.1	9.4	0.0	
3970	9	5.2	9.7	-0.9	m; R Aql; M
4051	5	10.5	12.1	-3.5	
4130	3	10.5	13.3	-6.2	
+9°1262	2	9.3	170.1	+1.0	
1299	2	10.3	170.3	+2.5	
3805	2	10.4	8.1	+5.8	
3809	6	7.9	8.1	+5.6	S.V. 101752
3811	2	9.4	8.0	+5.5	
3866	3	7.7	8.5	+3.9	
3902	4	9.1	8.9	+2.6	
3911	3	7.5	9.5	+2.6	
3920	3	10.0	9.9	+2.4	
3958	2	9.4	10.2	+1.0	
4000	3	10.5	11.4	-0.9	
4071	2	9.1	12.3	-3.6	
4075	2	7.9	12.7	-3.4	
4088	4	9.8	13.1	-4.0	
4094	3	10.5	12.8	-4.4	
4114	3	8.0	13.5	-5.1	
4142	5	9.3	14.2	-5.8	
+10° 956	2	10.3	165.3	-5.2	
979	6.5	10.3	165.1	-4.4	DP Ori; I?
+10°1005	5	9.9	166.3	-3.8	
1085	3	9.3	167.7	-0.8	
3604	4	10.4	8.5	+6.1	
3674	2	10.4	9.6	+3.7	
3687	2	9.1	10.2	+3.7	
3721	4	7.9	10.5	+2.8	
3916	3	8.6	14.4	-4.7	
3951	2	10.5	14.9	-5.7	
3957	4	10.1	15.1	-5.8	
4002	4	8.7	15.9	-6.6	
+11° 963	2	10.3	163.6	-5.5	
974	3	8.3	164.4	-5.4	
1001	2	9.3	164.5	-3.9	
1028	4	9.1	164.9	-2.8	
1054	5	9.3	165.9	-2.1	
1096	4	8.7	166.3	-0.9	
1208	3	8.5	168.4	+2.2	
3331	5	10.4	10.7	+4.1	
3649	6.5	10.4	11.2	+3.7	VW Aql; I
3732	2	7.9	13.2	+1.1	
3735	3	9.4	12.7	+0.6	
3848	4	8.9	15.4	-3.9	
3868	3	9.3	15.5	-4.6	
3874	3	9.5	15.9	-4.7	
3901	2	7.9	16.3	-5.3	
+12° 962	3	10.3	163.6	-4.5	
974	2	9.3	163.7	-4.3	
995	2	9.1	164.1	-3.4	
1055	4	8.7	164.8	-1.5	
1305	6	9.1	169.5	+6.5	FK Gem; I
3645	7	10.4	11.4	+5.5	
3697	3	10.4	12.0	+4.1	
3703	2	9.4	12.4	+4.0	
3729	2	10.4	12.8	+3.4	
3762	5	9.7	13.1	+2.5	
3780	3	8.7	13.0	+1.6	
3838	4	10.5	14.2	+0.4	
3900	2	9.3	16.0	-2.6	
4003	3	10.5	17.5	-5.8	LS Aql; SR
+13°1021	2	10.3	162.2	-4.8	
1145	2	10.3	164.2	-1.4	
1212	3	10.3	164.7	+1.3	
1349	5	10.3	167.3	+4.9	
1370	2	8.9	167.3	+5.5	
3835	2	10.4	13.7	+3.3	
3837	2	10.4	13.9	+3.4	
3948	4	10.1	15.2	+0.3	
3988	2	6.9	16.1	-1.4	
+14°1072	2	10.3	160.9	-3.9	
1161	3	9.9	163.1	-1.4	b
1164	3	10.3	163.1	-1.2	
1238	5	10.3	164.1	+1.0	
1350	5	9.9	166.2	+4.5	DY Gem; SR
3764	2	10.4	15.1	+2.7	
3831	2	7.4	16.3	+0.6	
3844	3	8.7	16.5	+0.3	

TABLE 1

THE BD M-STARS ALONG THE GALACTIC EQUATOR (Cont'd.)

B. D.	Sp	m_v	l	b	Remarks
+14°3881	2	8.0	16.8	-1.0	
3917	2	9.1	18.1	-2.0	
3920	3	10.5	17.9	-2.3	
3938	2	9.1	18.3	-2.6	
+15° 964	3	10.3	159.9	-4.1	
1038	2	9.9	161.5	-1.9	
1200	3	9.9	163.7	+3.4	
1205	2	9.6	164.3	+3.4	
1236	6	8.9	164.5	+4.7	
1270	2	9.3	165.6	+5.8	
3631	3	10.4	15.5	+4.6	
3639	2	9.2	15.4	+4.2	
3645	2	10.4	15.6	+4.1	
3693	2	8.3	16.6	+2.7	
3761	5	9.3	17.7	-0.1	
3891	5	9.5	20.2	-4.2	LU Aql;SR
3904	2	9.8	20.8	-4.5	
3937	4	10.5	21.3	-5.6	V830 Aql;I
+16° 840	3	10.3	157.7	-5.9	DX Tau;I
900	2	8.9	159.3	-3.5	
1070	5	10.3	161.8	+1.6	
1112	2	10.3	162.8	+2.4	
1220	2	9.3	164.8	+5.6	
1230	3	9.9	164.8	+6.1	
3684	2	9.4	16.6	+4.9	
3696	5	10.4	16.8	+4.5	
3704	2	8.9	16.4	+4.0	
3837	3	9.8	19.1	-0.7	
3858	2	9.5	20.0	-1.1	
3893	3	9.0	20.6	-2.6	
3924	2	9.0	21.1	-3.5	
3945	2	9.5	20.8	-4.1	
+17° 964	3	10.4	156.1	-5.9	
979	2	7.7	156.9	-5.3	
1058	2	9.1	158.7	-2.3	
1187	5	8.9	160.7	+2.0	
1236	7	10.3	162.4	+3.6	GN Ori;M
1302	2	9.1	163.6	+5.7	
3773	2	9.7	16.4	+5.7	
3776	5	10.4	16.5	+5.7	d
3825	2	10.4	17.2	+4.4	
3940	6	10.5	19.9	+0.4	T Sge;I
3955	4	10.5	20.3	-0.1	
4020	3	9.5	21.3	-2.7	
4061	3	10.5	22.8	-3.8	
+18° 899	2	10.0	155.7	-5.5	
915	3	8.9	156.1	-4.7	DY Tau;I
926	2	9.9	156.6	-4.7	
948	2	9.9	156.6	-4.1	
984	4	9.9	156.8	-2.7	
997	4	8.7	157.0	-2.2	
1110	2	10.3	159.1	+1.4	
1259	2	10.3	162.2	+6.0	
3923	2	8.7	18.8	+5.0	
3972	3	10.5	19.5	+3.3	
3995	2	9.1	19.9	+2.5	
+18°4011	2	6.2	19.9	+2.1	
4137	2	6.9	22.5	-1.7	
4216	3	6.9	23.3	-3.9	
4240	2	4.1	23.5	-4.5	S.V. 101889
4275	2	10.1	24.0	-5.5	
+19°1105	2	9.6	156.7	-2.5	
1251	3	10.3	159.0	+1.8	
1376	2	9.3	161.0	+5.9	
1378	3	10.3	161.5	+5.8	
3839	2	9.7	18.1	+6.6	
3881	3	10.4	19.6	+5.6	
3892	3	9.4	20.0	+5.2	
3967	4	10.5	20.8	+2.3	
4103	3	10.5	24.1	-2.0	d
4168	3	10.5	24.8	-4.3	
4184	2	9.1	25.1	-4.7	
+20° 982	2	9.0	152.9	-5.3	
1017	2	10.7	153.5	-4.5	
1027	2	9.5	154.1	-4.4	
1068	2	9.8	154.3	-3.0	
1090	5	10.7	154.7	-2.6	
1276	2	9.4	157.5	+1.7	
1379	2	10.7	158.8	+4.4	
1416	2	9.8	159.7	+5.3	
4027	5	10.5	20.4	+5.6	
4028	3	9.8	20.1	+5.3	
4267	2	10.4	25.2	-3.1	
4332	2	10.4	26.6	-4.5	
4375	2	10.4	27.1	-5.9	
+21° 912	5	9.4	152.7	-3.7	
947	2	8.8	153.4	-2.7	
1012	5	9.4	154.9	-1.5	
1021	3	9.8	154.6	-0.9	
1052	2	10.0	155.2	-0.2	
1115	2	10.7	156.6	+1.7	
1185	5	10.7	158.0	+4.1	
1211	3	10.2	158.5	+5.1	
3864	3	8.6	25.7	-1.2	
3882	2	10.4	26.2	-1.8	
3894	3	9.9	26.1	-2.2	
3909	2	7.0	26.3	-2.8	
3927	2	9.9	26.3	-3.3	
3929	3	10.4	26.8	-3.0	
3966	4	9.5	27.0	-4.2	
3984	2	10.4	27.9	-4.4	
3992	2	9.9	28.0	-4.8	
4047	2	10.4	28.9	-6.2	
+22° 909	6	10.0	150.4	-5.2	
922	5	8.4	151.3	-4.8	
947	2	9.4	152.0	-4.2	
968	3	9.8	152.2	-3.4	
1109	6	8.2	154.1	+0.5	BQ Ori;SR
1199	3	10.7	155.4	+3.2	
1241	3	3.4	156.4	+4.0	η Gem;SR
1304	3	3.2	157.4	+5.7	
3659	6	9.7	24.3	+3.3	

TABLE 1

THE BD M-STARS ALONG THE GALACTIC EQUATOR (Cont'd.)

B. D.	Sp	m_v	l	b	Remarks
+22°3660	4	7.7	23.9	+3.1	s
3670	2	9.7	24.1	+2.8	
3712	2	7.3	25.1	+1.2	
3840	6.5	8.0	27.5	-3.4	
3871	3	9.5	28.5	-4.7	
+23°1008	2	10.7	152.0	-2.2	
1042	3	8.6	152.6	-1.2	
1132	2	7.8	153.5	+1.2	
1220	2	10.7	154.8	+3.2	
1243	2	7.3	155.4	+3.7	WY Gem;
1282	3	8.8	155.6	+5.3	
3708	2	10.4	26.7	+0.3	
3801	2	9.2	28.1	-2.6	
3848	5	9.9	29.6	-3.5	
+24° 815	6.5	10.7	148.0	-5.9	
857	3	10.7	149.5	-2.9	
898	7	10.7	150.1	-2.0	
981	6.5	10.7	151.6	+0.3	
1080	2	9.1	153.0	+3.0	
3674	3	9.2	25.1	+5.6	
3681	2	9.7	24.8	+5.3	
3704	2	9.2	25.2	+4.4	
3734	2	9.7	26.5	+3.5	
3750	2	8.2	26.6	+2.4	
3857	2	10.4	28.9	-0.5	
3902	2	9.5	29.4	-1.7	
3971	6.5	10.4	30.3	-4.1	
3979	3	8.4	30.9	-3.9	
4045	3	8.5	32.4	-6.1	S.V. 101959
4063	2	9.2	32.6	-6.5	
+25°1054	4	10.7	151.5	+2.2	
1073	2	9.4	151.9	+2.8	
1097	4	9.4	152.8	+3.0	
1112	5	10.0	152.4	+3.7	
1131	4	7.6	153.0	+4.2	
3793	2	9.9	26.9	+4.9	
3911	3	9.9	29.2	+1.0	
3978	2	9.2	29.9	-1.0	
4025	3	9.5	30.5	-2.4	
4035	4	10.4	30.8	-2.6	
4097	2	7.8	31.8	-4.5	
4126	5	9.8	32.8	-4.9	W Vul; LP
4137	2	10.0	32.4	-5.5	
+26° 873	2	10.0	148.5	-1.3	
911	3	10.0	149.4	-0.5	
1051	2	8.8	151.8	+3.6	
1095	2	10.7	152.0	+4.7	
1101	6.5	10.7	152.2	+4.7	
1131	4	10.7	152.7	+5.2	
3550	2	9.5	28.4	+4.1	
3641	2	9.2	30.3	+1.1	S.V. 101878
3645	2	9.2	29.9	+0.6	S.V. 101882
3750	2	10.4	32.0	-2.4	S.V. 101920
3767	3	9.5	32.4	-3.2	
3811	2	8.1	33.7	-4.3	
+27° 762	2	9.4	146.1	-3.9	
780	2	9.5	146.9	-2.1	
887	3	7.7	149.1	+1.8	
933	6	10.7	149.9	+3.2	
990	3	10.7	151.3	+4.7	
3392	3	9.7	29.3	+4.3	
3401	3	10.4	29.3	+3.8	
3414	3	9.2	29.7	+3.3	
3417	2	9.2	29.4	+3.1	
3435	2	8.6	29.9	+2.7	
3437	2	8.6	30.2	+2.6	
3448	2	9.7	30.9	+2.3	
3478	3	10.4	31.3	+1.4	
3612	2	7.8	33.8	-3.1	
3621	2	9.0	33.8	-3.7	
3631	3	8.2	34.4	-3.7	S.V. 101948
3642	3	8.8	34.1	-4.6	
+28° 847	7	10.7	147.7	+0.1	AB Tau; LP
906	2	9.8	148.5	+1.7	
961	2	10.0	149.5	+3.6	
987	2	10.7	149.8	+4.3	
3312	2	9.1	29.7	+5.3	
3356	3	9.7	30.4	+4.3	
3440	2	9.2	31.8	+1.7	
3494	2	9.7	32.5	+0.1	
3509	4	9.7	33.2	+0.2	
3560	4	10.4	33.4	-1.7	
+29° 810	2	10.2	142.7	-5.5	
833	2	6.5	142.9	-4.3	
842	2	8.6	143.0	-3.7	
845	2	9.1	143.7	-4.0	
888	2	8.5	144.9	-2.2	
891	3	9.8	144.7	-1.8	
1068	5	10.7	148.9	+4.2	BO Tau; SR
1088	2	9.8	149.2	+5.0	
3570	2	10.4	30.4	+6.1	DV Cyg; M
3581	2	10.4	30.6	+5.8	
3606	3	9.7	30.7	+4.7	
3633	2	9.2	31.7	+4.0	
3647	3	9.7	31.4	+3.6	
3674	4	10.4	32.6	+3.3	
3685	3	8.6	32.5	+2.9	
3730	4	8.4	33.4	+1.8	
3797	2	9.5	33.9	-0.1	
3855	2	8.6	34.9	-1.2	
3877	4	9.5	35.1	-1.8	
4041	2	9.0	38.2	-6.1	
+30° 775	2	8.6	141.5	-5.3	
786	4	9.4	141.5	-4.6	
903	4	10.7	144.0	-1.1	
960	4	10.7	145.0	+0.9	
1067	2	9.5	147.5	+4.3	
3564	4	9.2	31.8	+5.7	
3599	4	10.4	32.3	+5.1	
3603	3	7.5	32.1	+4.9	
3647	2	9.5	33.1	+4.2	
3714	2	10.4	34.0	+2.6	

TABLE 1

THE BD M-STARS ALONG THE GALACTIC EQUATOR (Cont'd.)

B. D.	Sp	m_v	l	b	Remarks
+30°3728	4	9.9	34.3	+2.3	
3737	2	10.4	34.0	+1.9	
3759	2	10.4	34.0	+1.3	
3761	2	9.7	34.6	+1.7	
3817	2	9.9	34.8	-0.1	
3882	3	10.4	35.9	-1.6	
3925	2	9.8	36.7	-2.4	
3965	8	10.0	37.5	-3.2	SX Cyg; M
3995	2	7.6	38.1	-4.3	
4015	2	8.0	38.6	-4.7	
4053	4	10.0	39.2	-5.5	
+31° 992	2	7.1	143.7	0.0	
1117	2	9.5	146.2	+3.5	
1177	4	10.2	147.2	+6.0	BB Aur; SR
3597	3	10.4	32.6	+6.0	
3603	2	9.2	32.9	+6.0	
3643	5	8.2	33.3	+5.3	
3681	2	9.2	33.8	+4.3	
3688	2	8.2	34.0	+4.1	
3718	2	8.5	34.6	+3.7	
3726	2	10.4	34.5	+3.3	
3767	2	9.5	35.0	+2.6	
3786	2	8.6	34.9	+2.0	
3821	2	9.9	35.8	+1.5	
3864	2	8.5	35.9	+0.1	
3879	3	8.1	36.3	+0.1	s
4002	2	9.0	38.3	-2.2	
4024	2	9.6	38.1	-3.3	
4071	5	10.5	39.5	-4.3	
4153	2	8.8	40.7	-6.4	
+32° 890	3	9.5	139.9	-3.3	
894	2	10.0	140.2	-3.4	
996	6.5	9.0	142.7	+0.2	
1020	3	10.2	143.3	+0.6	
1050	2	9.8	143.8	+1.5	
1105	2	10.0	145.0	+4.0	
1109	3	6.6	145.4	+4.1	
3463	2	9.7	34.1	+5.4	
3477	2	10.4	34.3	+5.4	
3502	3	9.5	35.1	+4.7	
3521	3	9.5	34.8	+3.8	
3593	8	2.3	36.2	+2.3	m; χ Cyg; M
3630	3	10.4	37.0	+1.6	
3655	3	9.9	36.8	+0.6	
3664	4	9.7	37.0	+0.4	
3706	5	10.5	38.3	-0.4	V487 Cyg; SR
3742	2	9.6	38.9	-1.5	
3783	2	10.5	39.2	-2.8	
3797	3	10.0	39.6	-3.3	
3815	2	9.8	40.3	-3.6	
3852	6	9.2	40.8	-5.2	AI Cyg; I
3873	2	8.2	41.7	-5.6	
+33°1029	4	10.7	141.2	-0.2	b
1069	3	10.7	142.1	+0.9	
1179	2	6.5	144.0	+5.1	
3507	4	7.5	35.3	+5.7	
3522	3	10.4	35.6	+5.2	
+33°3546	5	9.7	35.9	+4.8	
3559	3	10.4	36.0	+4.5	
3560	4	9.9	36.1	+4.5	
3578	5	9.9	36.4	+3.9	
3596	2	9.9	36.4	+3.0	
3630	3	10.4	36.9	+2.2	
3638	3	7.7	37.4	+2.3	s; V449 Cyg; I
3669	2	9.1	38.0	+1.6	
3690	5	8.7	38.2	+1.0	V485 Cyg; I
3719	2	9.7	38.5	+0.3	
3815	2	9.6	39.3	-1.5	
3846	5	7.8	40.2	-1.9	
3904	2	9.1	41.2	-3.4	
3922	3	8.8	41.4	-4.1	
3971	4	9.0	42.5	-5.3	
3999	2	10.5	43.2	-6.0	
+34° 922	2	10.0	137.2	-4.3	
946	5	8.1	138.2	-2.3	
947	4	10.0	138.4	-2.4	
1011	4	9.1	140.4	-0.1	
1090	2	10.7	141.9	+2.2	
1164	2	10.0	143.0	+4.1	
3612	3	10.4	36.4	+6.4	
3615	3	9.9	36.2	+6.1	
3648	2	8.0	36.7	+5.5	
3691	4	7.0	36.9	+4.2	S.V. 101884
3720	2	9.2	37.7	+3.8	
3759	4	9.7	37.8	+3.0	
3766	3	9.2	37.8	+2.7	
3830	2	8.5	39.2	+1.9	
3993	2	10.0	41.3	-2.3	
4004	3	10.0	42.0	-2.3	
4086	4	8.6	42.9	-4.1	
4138	2	10.5	44.2	-5.7	
4147	2	9.3	44.8	-5.6	
+35° 906	3	10.0	134.9	-4.8	
1054	3	7.5	139.0	+0.5	
1146	2	9.8	140.3	+2.2	
1176	3	10.7	141.1	+2.9	
1204	2	10.7	141.2	+4.2	
1225	4	8.8	141.8	+4.8	
3720	2	9.7	37.6	+6.1	
3770	2	8.8	38.3	+5.3	
3810	4	9.9	38.1	+4.0	
3985	2	8.0	40.8	+0.8	
3999	2	9.2	41.1	+0.7	
4077	3	10.5	41.9	-1.5	
4138	3	9.6	42.8	-2.9	
4211	4	10.5	44.8	-4.3	
4262	2	9.0	45.4	-5.2	
+36° 964	3	10.7	135.1	-2.6	d
974	2	10.7	135.7	-1.9	
1104	6	9.0	138.6	+1.3	
1263	3	10.0	141.6	+5.8	
3736	2	9.9	39.2	+5.1	
3812	5	9.2	40.8	+2.7	
3852	4	8.8	40.9	+1.9	AA Cyg; SR

TABLE 1

THE BD M-STARS ALONG THE GALACTIC EQUATOR (Cont'd.)

B. D.	Sp	m_v	l	b	Remarks
+36°3883	2	7.1	41.1	+1.3	
3892	2	8.4	41.2	+1.2	
3905	2	9.8	41.3	+0.9	
4025	4	10.5	43.0	-0.9	BI Cyg; I
4077	4	10.5	43.3	-2.0	p; V441 Cyg; L P
4211	4	9.2	45.6	-4.4	
4272	5	8.7	46.6	-5.2	
+37° 939	3	10.7	132.0	-5.4	
958	3	9.8	132.8	-4.2	
988	3	10.0	134.8	-2.6	
1115	2	8.8	137.1	+1.1	
1142	3	10.7	137.2	+1.6	
1300	4	10.7	139.8	+5.7	
1308	3	7.1	140.2	+5.8	
3591	2	9.9	39.9	+5.8	
3622	4	9.9	39.8	+4.9	
3636	3	7.0	40.4	+4.8	
3710	3	9.9	41.6	+3.6	s; QZ Cyg; I
3744	2	7.2	42.1	+2.8	
3831	5	10.5	42.7	+1.0	
3903	4	10.0	43.5	-0.5	BC Cyg; I
3946	4	8.5	44.4	-1.4	
3988	3	8.8	45.2	-2.7	
3998	2	10.0	46.0	-2.5	
4051	4	10.5	47.0	-3.8	
4101	4	9.1	48.1	-5.0	
4138	2	9.3	48.8	-6.0	
+38° 899	2	8.0	130.5	-5.5	
989	4	10.0	133.9	-0.9	
1001	3	10.0	134.4	-0.8	
1019	5	8.5	135.1	0.0	
1045	2	8.5	135.7	+0.3	
1111	2	10.0	136.2	+2.1	
1162	2	10.2	137.2	+3.5	
1168	6	10.7	137.2	+3.7	
3780	2	5.4	41.2	+5.3	
3948	5	9.1	43.7	+1.8	
3960	2	10.0	43.6	+1.5	
4218	5	10.5	47.6	-2.9	
4244	2	8.5	47.6	-4.1	
4323	4	8.7	49.4	-6.0	
4333	5	10.0	50.1	-5.9	d; b
+39° 998	5	10.2	129.6	-5.1	
1020	3	10.7	130.1	-4.3	
1046	6	10.7	130.9	-2.8	HO Per; I
1070	2	10.2	131.9	-2.1	
1081	4	10.0	132.6	-2.0	
1118	2	9.8	133.5	-0.9	
1225	5	9.0	134.9	+2.2	UZ Aur; I
1314	2	9.4	136.9	+4.0	
1360	2	10.0	137.3	+5.5	
3997	6.5	9.7	43.4	+4.4	AH Cyg; SR
4152	6	9.0	45.9	+1.1	V405 Cyg; I
4181	2	8.7	46.0	+0.3	
4208	4	9.6	46.3	-0.1	RW Cyg; L P
4223	5	9.6	46.5	-0.6	
4227	3	9.1	46.8	-0.7	
+39°4261	3	9.2	47.1	-1.7	
4302	5	9.0	48.5	-2.2	
4445	2	10.1	51.5	-5.5	
4457	4	9.4	51.6	-5.8	
4475	3	8.4	51.6	-6.2	S.V. 102067
+40° 933	6.5	9.8	127.7	-5.2	
954	2	9.4	128.4	-4.7	
1022	5	10.7	130.7	-2.6	
1085	3	8.4	132.1	-0.5	
1099	2	10.0	132.6	-0.5	
1160	2	10.2	133.4	+0.7	
1222	2	10.0	134.7	+2.4	
1236	2	9.1	134.7	+3.0	
1250	4	9.0	134.7	+3.3	
3924	3	10.4	43.5	+6.3	
4001	6.5	10.4	44.0	+4.0	GN Cyg; SR
4035	4	10.5	44.8	+3.4	
4048	2	9.0	45.0	+3.0	
4057	3	8.8	45.2	+3.0	
4065	5	10.0	45.3	+2.8	
4372	2	9.6	50.9	-3.4	
+41° 823	3	8.0	125.6	-5.8	
824	5	8.6	125.6	-5.6	SW Per; SR
871	4	10.2	128.1	-4.0	s
968	2	9.9	130.7	-0.7	
997	6	10.2	131.1	-0.2	d
1014	2	9.9	131.3	+0.7	
1017	2	9.5	131.5	+0.6	
1039	2	9.5	131.8	+1.5	FI Aur? I
1157	2	9.7	134.4	+3.6	
3542	2	9.3	44.5	+6.0	
3573	2	9.8	45.0	+5.2	
3583	2	9.8	45.3	+5.2	
3586	3	10.0	45.3	+5.1	V420 Cyg; I
3603	4	8.6	45.1	+4.4	
3622	2	9.5	45.5	+4.1	
3677	2	9.5	46.4	+3.0	
3991	4	8.3	52.4	-3.6	
4027	3	10.3	53.2	-4.4	
4116	2	10.3	54.8	-6.2	
+42° 895	4	8.9	124.6	-5.5	
898	6	9.7	125.0	-5.9	
935	4	9.7	126.1	-4.4	
1046	2	10.2	129.6	-0.4	
1149	3	10.2	131.4	+2.2	
1173	2	10.2	132.2	+2.3	
1180	5	8.9	132.1	+2.7	
1239	4	5.8	133.0	+4.1	
3563	2	7.9	46.0	+5.9	
3566	2	9.8	46.0	+5.7	
3583	4	10.3	46.4	+5.3	
3736	2	9.6	48.3	+2.3	
3899	3	9.3	51.3	-2.1	
3972	2	10.3	53.2	-3.4	
4080	2	10.0	55.2	-6.0	
4087	4	9.8	55.3	-6.1	

TABLE 1

THE BD M-STARS ALONG THE GALACTIC EQUATOR (Cont'd.)

B. D.	Sp	m_v	l	b	Remarks
+43° 859	4	9.5	122.5	-5.5	
1003	5	9.7	127.1	-1.7	
1115	2	9.5	129.9	+1.0	
1131	2	7.5	130.0	+1.4	
1150	3	9.4	130.0	+2.2	
1183	2	9.7	130.8	+3.1	
1265	2	8.4	133.4	+5.6	
3464	2	9.8	46.7	+6.1	
3490	4	10.0	47.1	+5.3	
3590	2	10.0	49.1	+3.3	
3642	2	10.3	49.8	+1.8	
3750	2	9.3	52.2	-1.0	
3790	4	10.3	53.6	-2.1	V354 Cyg; SR
3809	3	9.6	53.7	-3.3	
3827	6	10.3	54.5	-3.3	V579 Cyg; I
3887	2	9.5	55.9	-4.4	
+44° 794	3	10.2	120.4	-6.4	
806	7	10.2	121.2	-5.8	
896	3	9.7	124.2	-2.8	
935	2	10.2	125.4	-2.1	
994	4	8.7	126.6	-0.5	
1005	2	10.2	127.4	0.0	
1017	2	10.2	128.0	+0.7	
1028	3	10.2	128.5	+0.9	
1187	5	10.2	131.9	+5.9	
3502	3	10.3	50.4	+2.1	
3649	4	8.0	53.3	-1.2	
3679	3	6.9	53.9	-1.8	
3742	3	10.0	55.6	-2.8	
3877	5	6.8	58.6	-5.5	W Cyg; SR
3880	2	9.8	58.6	-5.5	
3895	5	9.6	59.0	-6.0	V539 Cyg; SR
+45° 901	2	10.2	123.4	-2.2	
940	4	7.8	125.2	-0.7	
984	2	7.3	127.2	+1.7	
1002	4	10.2	128.0	+2.9	
3094	3	9.8	49.1	+5.6	
3158	2	9.6	50.7	+4.5	
3275	2	7.1	52.8	+0.7	
3262	5	8.9	53.1	+1.4	
3349	2	8.2	54.6	-0.1	AZ Cyg; I
3379	4	10.0	55.1	-0.7	
3470	4	8.1	56.7	-2.3	
3483	5	10.0	56.5	-3.1	V590 Cyg; I
3485	2	10.0	56.8	-2.7	V591 Cyg; I
3513	2	10.3	57.6	-3.2	
3550	3	8.2	57.9	-4.2	
3583	5	10.3	58.9	-4.3	
3637	3	6.0	59.8	-5.8	S.V. 102121
3669	3	10.3	60.9	-5.9	
3700	6.5	10.0	61.5	-6.2	
+46° 948	2	9.9	128.3	+3.6	
2892	4	10.3	50.6	+5.9	
2895	2	10.3	50.4	+5.5	
2998	5	10.3	52.8	+2.7	
3066	2	9.6	54.2	+1.4	
3082	5	10.0	54.3	+0.8	
+46°3338	4	10.0	58.8	-3.5	
3404	2	10.3	60.1	-4.8	
3442	3	10.0	61.5	-5.3	
3485	3	9.8	62.6	-5.9	
3556	4	9.5	63.8	-1.0	
+47° 960	2	9.9	121.9	-1.0	
981	3	8.4	123.1	-0.4	
982	2	9.5	123.0	-0.3	
3094	2	10.3	52.1	+5.3	
3096	3	9.8	52.1	+5.2	
3176	4	10.3	54.0	+2.6	
3179	2	9.0	54.1	+2.4	
3321	4	7.9	57.0	-0.8	
3381	2	6.8	58.7	-1.8	
3436	4	8.0	59.5	-3.1	
3563	6	10.3	62.1	-4.8	s
3649	3	10.3	63.6	-6.2	
3658	5	10.0	64.2	-5.8	
+48° 928	6	10.2	115.7	-5.4	
974	2	9.7	117.1	-3.9	
986	5	10.2	117.6	-3.7	
1106	6	8.6	123.5	+1.6	s
1136	5	10.2	124.6	+3.0	
1171	3	9.9	125.7	+4.2	
3107	3	8.6	52.6	+5.9	
3108	2	8.2	52.9	+6.0	
3160	2	10.3	54.0	+4.7	
3200	3	10.0	55.3	+3.7	
3265	2	8.6	57.2	+1.6	
3299	3	10.3	58.0	+0.3	
3348	5	8.3	59.3	-0.8	
3418	2	10.0	60.5	-2.6	
3455	3	10.3	61.7	-2.7	
3470	2	9.0	61.9	-3.2	
3488	2	9.5	61.9	-3.8	
3582	5	10.0	64.4	-5.6	GY Cyg; I
3592	2	10.0	65.0	-5.3	
3606	3	9.9	65.1	-5.6	
3612	2	9.9	65.1	-6.0	
+49° 901	3	10.2	113.4	-5.2	
1130	4	10.2	120.6	-0.1	
1152	4	8.8	121.0	+0.6	S.V. 100378
1243	2	9.9	124.5	+4.0	
3386	2	6.9	56.5	+3.4	
3514	2	8.5	60.4	-0.3	
3523	2	8.9	60.4	-1.2	
3567	5	10.0	61.6	-2.2	s
3614	3	10.0	63.0	-2.9	
3616	3	9.5	62.9	-3.1	
3667	5	9.0	64.2	-3.8	
3769	2	10.2	66.4	-5.6	
3803	2	8.6	67.4	-5.5	
3818	2	9.2	67.8	-5.6	
3834	3	9.9	67.9	-6.5	

TABLE 1

THE BD M-STARS ALONG THE GALACTIC EQUATOR (Cont'd.)

B. D.	Sp	m_v	l	b	Remarks
+50° 745	3	9.7	113.2	-4.0	
804	2	8.8	115.9	-2.0	
829	5	9.2	116.9	-1.8	
856	4	10.2	117.9	-1.2	
3144	2	9.3	55.9	+5.6	
3186	4	10.3	56.7	+4.5	
3217	5	10.0	57.6	+3.8	
3311	6.5	10.3	60.2	+0.4	
3379	3	10.3	62.6	-1.0	
3392	2	8.7	62.7	-1.3	
3571	4	9.2	66.4	-4.3	
3587	4	9.5	66.8	-4.1	
3595	3	8.8	66.7	-4.6	
3680	3	8.5	68.4	-5.1	
+51° 629	5	8.6	108.1	-5.7	
850	2	9.2	118.1	+0.7	
980	3	8.7	122.7	+6.1	
2910	3	8.7	56.5	+5.9	
3001	3	9.5	59.7	+2.3	
3040	2	10.3	61.0	+1.3	
3117	5	10.3	63.3	-1.1	
3138	2	10.3	64.5	-1.1	
3188	4	9.8	65.7	-2.0	
3275	3	9.9	67.3	-3.9	
3283	4	8.9	67.6	-3.6	
+52° 708	2	8.7	114.6	-0.6	
790	2	9.4	118.4	+2.4	
843	2	7.0	120.4	+4.3	
2898	2	10.3	61.1	+2.1	
2972	2	10.3	63.3	+0.4	
3033	3	9.6	64.9	-0.7	
3036	2	9.8	64.8	-1.1	
3097	2	10.2	67.4	-2.2	
3131	2	9.9	68.0	-2.8	
3144	3	8.6	68.5	-2.6	
3179	3	9.0	69.2	-3.0	
3200	2	10.2	69.5	-3.8	
3211	2	10.2	70.1	-3.7	
3237	5	8.8	70.7	-4.3	
3240	3	10.2	71.0	-4.0	
3281	3	7.5	72.3	-5.0	
3361	3	9.9	75.0	-6.0	
+53° 516	2	10.2	104.1	-5.7	
535	2	9.9	105.1	-5.4	
553	2	10.2	106.5	-4.9	
580	5	9.0	108.0	-3.9	
698	4	8.0	114.6	+0.3	
748	3	8.2	117.9	+2.9	
2600	3	9.6	62.6	+2.9	
2619	3	10.3	62.8	+2.0	
2640	3	9.6	63.7	+1.7	
2652	2	9.8	64.2	+1.1	
2684	6	8.8	65.0	+0.9	RU Cyg; SR
2705	3	10.0	65.9	+0.4	
2748	4	9.5	67.2	-0.6	
2834	2	9.2	69.1	-2.5	
+53°2854	4	9.4	69.9	-2.5	
2908	3	10.2	71.3	-3.0	
+54° 444	2	7.9	101.1	-5.5	XX Per; I?
487	2	10.2	102.4	-4.9	
520	2	10.2	103.1	-4.5	
603	6.5	8.6	106.6	-3.1	
622	6	9.5	108.3	-3.0	ER Per; SR
655	2	9.7	110.3	-1.5	
700	3	10.2	113.4	+0.2	
739	2	10.2	116.2	+3.3	
771	2	8.6	118.5	+4.9	
790	3	9.7	119.4	+6.3	
2511	6	10.3	63.2	+3.8	
2517	4	7.3	63.5	+3.7	
2535	2	10.3	64.1	+3.3	
2603	6	9.5	64.8	+1.7	
2667	3	9.8	67.8	-0.5	
2670	3	10.0	67.8	-0.7	
2672	2	9.5	67.8	-0.8	DQ Cyg; M
2752	2	9.9	70.3	-1.9	
2768	2	9.9	70.5	-2.3	
2863	4	10.2	73.6	-3.5	U Lac; SR
2967	3	9.5	78.5	-5.0	
2986	4	9.7	79.0	-6.1	
+55° 224	5	9.4	92.1	-5.9	
242	2	10.2	93.0	-6.2	
249	2	9.7	93.3	-6.2	
278	2	8.7	94.3	-5.8	
290	6	8.9	94.7	-5.9	AA Cas; I
388	2	9.0	97.7	-5.1	
439	2	8.8	99.7	-5.2	
597	3	8.2	103.0	-3.4	SU Per; SR
749	4	8.0	109.4	-0.6	
778	3	10.2	110.6	+0.6	
2633	3	8.9	67.4	+1.8	
2737	2	7.2	71.0	-1.2	
2872	3	9.4	75.7	-3.0	
2886	2	7.7	76.2	-3.3	
2939	2	9.9	78.0	-4.6	S.V. 102249
2973	2	9.9	80.0	-4.4	
3011	2	8.7	81.7	-5.1	
3047	2	8.8	83.4	-5.3	C1
+56° 45	3	9.5	86.9	-4.8	
103	4	10.2	89.1	-5.2	
131	2	7.3	90.5	-5.4	
194	3	10.2	92.8	-4.8	
208	2	9.9	93.3	-5.2	
229	4	10.2	93.9	-4.9	s
269	2	8.7	95.3	-4.5	
335	3	10.2	97.8	-3.9	
512	3	9.2	102.2	-2.9	BU Per; SR
583	3	8.7	102.8	-2.9	C1; RS Per; I?
609	2	8.5	103.1	-2.5	
673	2	8.4	104.9	-2.0	YZ Per; I
724	5	9.9	106.3	-1.4	W Per; SR
838	2	9.0	112.6	+2.9	
2690	3	9.3	69.4	+1.2	

TABLE 1

THE BD M-STARS ALONG THE GALACTIC EQUATOR (Cont'd.)

B. D.	Sp	m_v	l	b	Remarks
+56°2692	3	9.8	69.6	+1.5	
2763	2	9.9	71.5	-0.1	
2783	3	9.2	72.4	-0.1	Dwarf!
2788	2	8.6	72.5	-0.2	
2793	2	8.5	72.2	-0.7	ST Cep; I
2821	4	5.8	73.2	-1.5	S.V. 102195
2837	2	9.5	73.6	-1.7	
2946	3	9.4	76.8	-2.4	
+57° 77	3	7.5	87.5	-4.5	
102	2	9.2	88.5	-4.3	
237	4	7.0	94.3	-4.4	
552	3	8.9	102.4	-1.5	s; S Per; SR
564	2	10.2	102.8	-1.6	
641	3	8.9	105.7	-0.6	
647	2	9.0	106.0	-0.6	
668	3	9.5	107.0	-0.3	
676	2	9.9	107.0	+0.3	
686	3	9.9	107.7	+0.6	
727	2	9.5	110.1	+2.6	
756	6	9.4	113.1	+4.0	
778	2	9.5	114.4	+5.4	
2396	2	7.6	68.1	+3.3	
2421	2	10.3	69.1	+3.0	
2487	5	9.4	71.0	+1.1	
2493	2	8.2	71.2	+1.0	
2537	3	10.2	72.7	+0.6	
2541	3	9.2	72.6	+0.3	
2568	2	7.3	73.7	0.0	W Cep; SR
2698	3	10.2	77.4	-1.8	
2743	2	9.9	79.7	-3.1	
2750	2	10.2	80.1	-3.1	
2760	2	10.2	80.8	-2.7	
2810	2	10.2	82.5	-3.8	
+58° 89	2	7.3	89.4	-3.1	
127	4	8.9	91.0	-2.8	
185	2	8.6	93.2	-2.8	
218	2	10.2	94.3	-3.2	
238	2	9.7	95.1	-3.1	
263	2	9.4	96.2	-2.5	
340	3	9.4	99.0	-1.6	
342	2	8.7	99.2	-2.0	
352	2	8.8	99.4	-1.7	
373	2	9.2	100.3	-2.0	
439	2	9.4	101.8	-1.3	T Per; I
501	3	10.2	104.0	+0.3	
707	3	10.2	113.4	+6.1	
2303	2	9.6	68.1	+5.1	
2316	2	3.6	68.1	+4.1	m; μ Cep; SR
2355	3	9.8	69.9	+3.5	
2390	2	9.9	70.7	+2.3	
2560	5	10.2	78.3	-0.7	V Cas; M
2583	2	8.9	79.5	-1.5	
2596	2	7.5	80.2	-1.7	
2602	3	8.5	80.5	-1.7	
2634	3	10.2	82.0	-2.1	
2703	2	9.4	85.2	-2.5	S.V. 100002
+59° 11	2	10.2	86.0	-1.8	
21	3	9.7	86.3	-2.2	
38	2	9.9	87.1	-2.5	
69	2	10.2	88.2	-2.6	
119	3	8.6	90.3	-2.2	
128	2	9.5	90.6	-2.4	
319	2	9.2	97.4	-1.3	
344	2	8.2	98.4	-1.2	S.V. 100140
480	3	10.2	102.1	-0.1	
490	2	9.9	102.5	-0.1	
636	2	9.9	108.3	+3.3	
2383	3	6.5	67.1	+6.2	
2501	3	9.9	72.5	+2.9	
2541	2	10.2	74.4	+2.0	
2627	3	10.2	77.2	-0.1	AS Cep; I
2678	2	9.4	79.0	+0.1	
2712	2	8.8	80.0	-0.4	
2768	3	9.4	82.8	-1.2	
2781	2	10.2	83.5	-1.5	
2806	4	9.2	84.6	-1.7	
2816	2	7.5	84.9	-1.5	
+60° 26	2	9.0	86.8	-1.4	
75	2	9.7	89.2	-0.9	
156	2	9.4	92.2	-1.2	
335	2	9.9	97.1	-0.7	C1
375	2	10.2	98.1	-0.3	WX Cas; I?
382	3	10.2	98.3	-0.4	
695	2	9.2	109.0	+4.6	
706	4	9.9	109.1	+5.1	
753	2	8.8	110.8	+5.8	
2392	2	10.2	73.7	+3.3	
2438	5	10.2	76.1	+2.0	
2446	2	9.9	76.6	+2.0	
2469	4	9.2	77.8	+1.5	
2481	3	10.2	78.2	+0.7	
2575	2	9.5	81.5	+0.1	
2585	3	10.2	81.6	-0.3	
2613	2	10.2	82.7	0.0	
2627	2	10.2	83.5	-0.7	
2634	3	9.2	83.7	-0.9	TZ Cas; I
2647	2	6.8	84.3	-1.0	
2660	3	10.2	85.0	-0.8	
2669	2	8.1	85.4	-1.1	
+61° 1	2	8.9	85.6	-0.3	
43	4	7.3	87.2	-0.5	
128	4	8.8	88.9	+0.2	
211	3	8.4	92.5	+0.2	
219	2	10.2	92.8	+0.1	S.V. 124; I
270	2	9.7	95.0	-0.3	
284	3	8.2	95.3	+0.2	IM Cas; SR
325	4	10.2	96.9	+0.8	BX Cas; SR?
355	6	9.7	98.0	+0.8	
366	3	7.3	98.7	+0.8	
382	3	10.2	99.5	+0.9	
384	2	10.2	99.3	+1.5	
588	3	10.2	108.0	+5.0	
589	2	8.9	108.1	+5.1	
2444	2	5.2	80.6	+1.2	

TABLE 1

THE BD M-STARS ALONG THE GALACTIC EQUATOR (Concl'd.)

B. D.	Sp	m_v	l	b	Remarks
+61°2514	3	10.2	83.1	+0.6	EH Cas; I
2541	3	10.2	83.8	+0.4	
2543	2	9.2	83.7	0.0	
2568	2	9.9	84.4	+0.2	
2595	4	10.2	85.7	+0.4	
+62° 161	6.5	9.9	90.6	+0.4	VY Cas; SR
180	2	9.9	91.7	+1.1	
190	5	10.2	92.0	+0.7	
206	3	10.2	92.5	+1.1	HS Cas; I?
281	2	9.4	95.8	+0.9	
332	2	9.2	98.1	+1.6	
461	6	9.9	103.2	+3.7	CQ Cas; I
2010	2	7.1	72.0	+6.1	
2048	2	6.5	73.7	+5.6	
2079	3	7.0	74.9	+4.9	
2209	2	8.6	80.2	+2.1	
2269	2	8.8	82.9	+2.0	
+63 3	5	8.8	86.1	+1.7	
173	4	9.5	93.7	+1.8	
239	4	10.2	96.5	+2.8	
255	3	9.7	97.2	+3.0	
270	4	10.2	98.0	+2.8	
312	5	10.2	99.8	+3.2	
333	2	8.9	100.8	+3.7	
392	2	10.2	105.0	+5.4	
1954	6	10.2	79.1	+3.8	
2038	2	5.8	83.3	+2.7	
2042	2	10.2	83.4	+2.5	

B. D.	Sp	m_v	l	b	Remarks
+64° 28	2	9.5	87.3	+2.7	
71	2	9.9	89.7	+3.1	
208	5	9.0	95.4	+3.5	
228	2	8.6	96.0	+3.6	
348	2	10.2	102.6	+5.4	
1710	5	10.2	77.8	+6.1	
1735	2	9.5	78.8	+5.2	
1842	2	9.9	83.6	+3.8	
1865	3	9.7	84.6	+3.6	
1893	2	6.9	85.7	+2.9	
+65° 24	2	8.7	87.0	+4.2	
116	2	9.2	91.4	+3.8	
179	5	8.9	95.0	+3.8	
237	2	10.2	98.6	+5.0	
267	3	9.9	100.4	+6.1	
1851	2	8.6	80.3	+5.4	
1898	2	9.0	82.4	+4.9	
1964	2	8.8	85.0	+4.4	
1993	3	6.4	85.9	+4.5	
+66° 43	2	7.3	89.2	+5.0	
66	2	9.0	90.5	+5.0	
75	2	8.9	91.2	+5.2	
187	2	10.2	98.9	+6.3	
1596	3	8.0	81.1	+6.2	
1640	2	10.2	84.4	+5.8	
+67° 26	3	9.2	87.8	+5.5	

TABLE 2

BRIGHT M-TYPE VARIABLES NOT INCLUDED IN THE BD CATALOGUE

Star		Sp	m_{max}	l	b	Type
RT	Aql	9p	6.7	16.5	-6.1	M
XY	"	8	9.5	7.1	-4.6	M
EM	"	7	9.9	9.5	-5.7	M
KQ	"	4	9.8	4.4	-5.3	SR
V338	"	3	9.5	18.0	+3.9	LP?
V446	"	2	9.8	21.4	-5.7	SR
V474	"	6.5	10.5	9.6	+4.4	M
U	Aur	7	7.4	144.6	+2.3	M
W	"	5	8.4	138.8	+2.2	M
RU	"	8	9.0	139.6	+4.8	M
SZ	"	8	9.5	138.7	+5.8	M
BS	"	9	10.5	150.0	+4.7	M
EZ	"	6.5	10.0	131.9	-0.8	I
SU	CMa	6.5	10.0	198.6	-5.2	M
Z	Cas	10	8.5	81.6	-4.9	M
TY	"	6	10.3	89.0	+0.7	M?
UW	"	9	9.7	88.8	-4.6	M
VX	Cep	8	10.4	77.8	+4.5	M
CU	"	4	10.5	70.2	+0.5	M
RZ	Cyg	7	9.0	54.6	+1.3	M
TY	"	6.5	8.5	30.5	+3.1	M
AU	"	7	8.9	40.5	-1.9	M
BG	"	8	9.4	31.2	+2.2	LP
BK	"	9	10.5	59.1	-3.2	M
BN	"	4	10.5	60.5	-5.6	M
BQ	"	7	10.4	65.0	-2.7	M
DR	"	7	8.2	46.5	-3.5	M
EV	"	6.5	10.3	33.7	+0.1	M
IZ	"	3	9.5	40.1	+3.6	M
KM	"	5	10.1	39.9	+2.2	M
V427	"	3	9.4	42.0	+1.7	SR
V717	"	2	10.1	35.6	-0.6	I
NN	Her	5	10.1	13.2	+4.9	I
ST	Mon	6.5	10.1	173.0	+4.2	M
SW	"	6	9.2	173.0	-1.4	SR
SY	"	7	8.5	180.2	-2.3	M
TT	"	7	7.3	189.8	+6.1	M
AF	"	7	10.4	188.1	+0.9	M
AK	"	5	10.2	185.7	+4.7	M
BR	"	5	10.4	183.6	+4.3	I
BU	"	3	10.5	177.2	+3.0	LP
DI	"	6	9.4	177.5	+2.5	I
FX	"	6.5	9.8	171.8	+4.2	M
BI	Oph	5	10.3	4.5	+6.3	M
V835	"	6	10.1	337.2	+7.1	I
U	Ori	9	5.2	156.2	-1.0	M
RR	"	8	9.0	160.5	-1.4	M
DR	"	6.5	10.5	167.5	-5.4	I
EN	"	5	10.5	168.8	-1.9	I
V337	"	5	9.9	156.7	-0.3	I
GO	Per	4	10.0	129.0	-5.9	I
UU	Pup	3	10.3	197.5	+4.7	M
UV	"	5	10.1	197.2	+5.4	SR
FV	"	6	10.1	196.2	+4.7	I
W	Sge	6.5	8.8	19.1	+0.7	M
VV	Sgr	8	10.5	337.1	+1.2	M
AK	"	9	10.5	343.0	-4.0	M
VW	Sct	4	9.0	349.6	-1.8	M
FR	"	2	10.1	346.1	-1.1	I
Z	Tau	7	9.2	159.7	-4.0	M
RU	"	6.5	9.7	159.6	-3.8	M
YZ	Vul	8	9.7	31.1	+0.9	M
CN	"	5	10.3	26.8	-1.7	M
S.V.601		7	9.9	138.9	+4.4	LP
712		6	9.8	169.7	-5.6	I?

M giants, whereas 22 irregular or semiregular variables which at maximum light are brighter than 10.5 but are not in the *BD* catalogue were included. The magnitudes at maximum light of these stars were taken from the *Catalogue of Variable Stars* and the spectral classes from the paper by Cameron and Nassau (1956).

With these modifications, the frequency distributions in spectral class are based upon 1290 stars and are shown separately in Figure 3 for three magnitude groups (*a:* $m \leq 8.1$; *b:* $8.2 \leq m \leq 9.6$; *c:* $9.7 \leq m \leq 10.5$). The spectral distributions of the three groups appear quite similar, although the ratio of the early M's (M2–M4) to the late M's (M5 and later) appears to decrease from about 12 (137:11) for the bright-star group to about 7 (475:66) for the intermediate group and about 6 (512:89) for the faint group. But the high value of the ratio for the brighter stars is rather uncertain because of the small number of the late M stars.

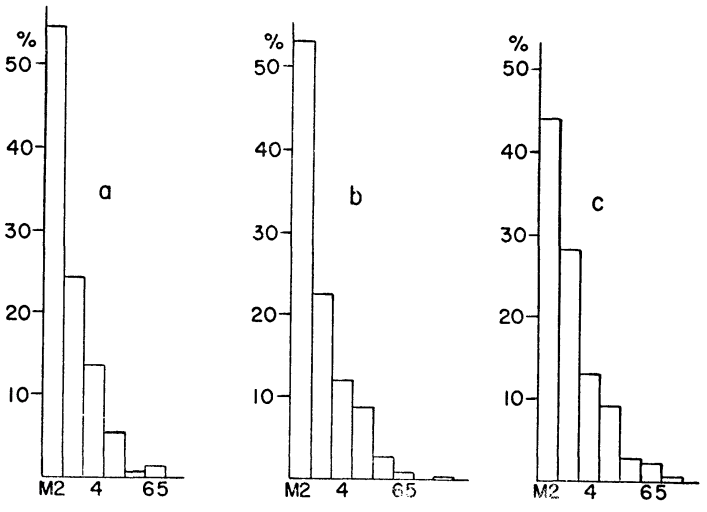

FIG. 3.—The frequency distribution in spectral subclass for three magnitude groups *a:* $m \leq 8.1$; *b:* $8.2 \leq m \leq 9.6$; *c:* $9.7 \leq m \leq 10.5$

The frequency distribution in spectral class of all the M stars follows closely an exponential curve, as is shown in Table 3 and Figure 4. The first column of this table gives the spectral subclasses, the second the number of stars observed, the third the corresponding computed number from $C = 648/2^n$, and the last column the corresponding value of n. It appears that, on the average, the number of stars decreases by a factor of 2 for each successive subclass.

The distribution in galactic longitude of all the M stars brighter than 10.5 is shown in Figure 5, *a*, for the two groups of early and late M's separately. For this study the galactic belt was divided into eleven regions, each 20° long. The first region begins at $l = 339°$, the last ends at $l = 199°$. The late M stars show a rather uniform distribution, although some fluctuations are present, which may be due mostly to random fluctuations and partly to the obscuring effects of interstellar absorption clouds. Since no appreciable systematic variation with longitude is observed, the late M stars may be assumed to have a rather uniform distribution in the galactic plane.

The distribution for the early M's is quite different. Here a pronounced maximum at $l \approx 30°$ is present and a minimum at $l \approx 120°$, while a second maximum at $l \approx 210°$ is indicated. For comparison, the distribution of all the Miras for the same region and brighter than 10.5 (visual) at maximum light is given in Figure 5, *b*. The early M stars and the Miras have the maxima and minima of their distribution at the same longitudes, and these are too well pronounced to be attributed to differences in interstellar absorption,

particularly when the late M stars do not show this effect. This suggests that the early M stars are concentrated in the local spiral arm, as was pointed out by Cameron and Nassau (1956) for the Miras. It is of interest to note that the same distribution was obtained in their paper for all Miras brighter than 15.0 (photographically) at maximum light.

Figure 6 shows the same distribution as Figure 5, but here the stars are divided into the three magnitude groups presented in Figure 3. Apparently the maximum at $l \approx 30°$ is more pronounced for the fainter stars and appears rather broad for the brighter stars, as may be expected under the assumption that the early M's are concentrated toward the local spiral arm.

Finally, Figure 7 gives the distribution in longitude for all stars brighter than 10.5, but for three galactic latitude zones separately ($b > +2°.0$; $-2°.0 \leq b \leq +2°.0$; $b < -2°.0$). The principal difference between these three diagrams is the fact that the pronounced maximum at $l \approx 30°$ appears only in the northern zone. This region ($l \approx 30°$, $b \approx +4°$) is located in the southwestern part of Cygnus and north of the Great Rift, where practi-

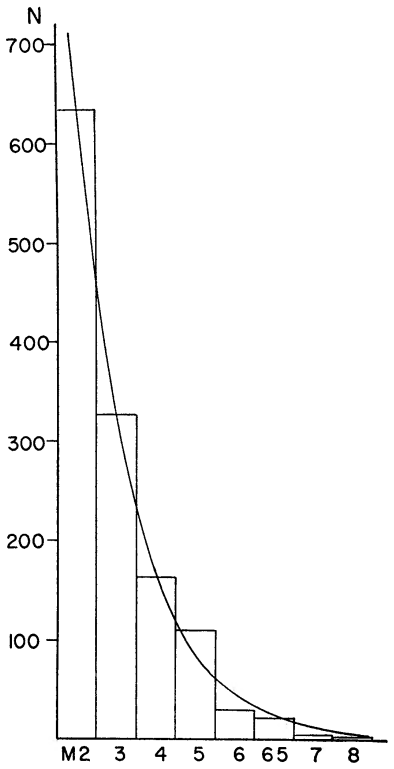

FIG 4.—The frequency distribution in spectral subclass for all stars brighter than 10 5 mag and its representation by an exponential curve

TABLE 3

FREQUENCY DISTRIBUTION IN SPECTRAL SUBCLASS

Sp	N	C	n	Sp	N	C	n
M2	634	648	0	M6	31	40	4
3	327	324	1	6 5	20	20	5
4	163	162	2	7	4	10	6
5	110	81	3	8	1	5	7

cally no absorption is observed, whereas the central and southern zones at this longitude are, for a large part, within the Great Rift. However, in the central and southern zones a concentration centered at $l \approx 30°$–$40°$ is present, although very broad in appearance. It may be assumed that the different features for the different galactic zones are caused by absorption clouds, but the distribution of the late M's does not show any correlation with the distribution of the early M's and appears to be practically uniform in all regions. An extension of the survey for the southern sky is probably necessary before final conclusions can be drawn.

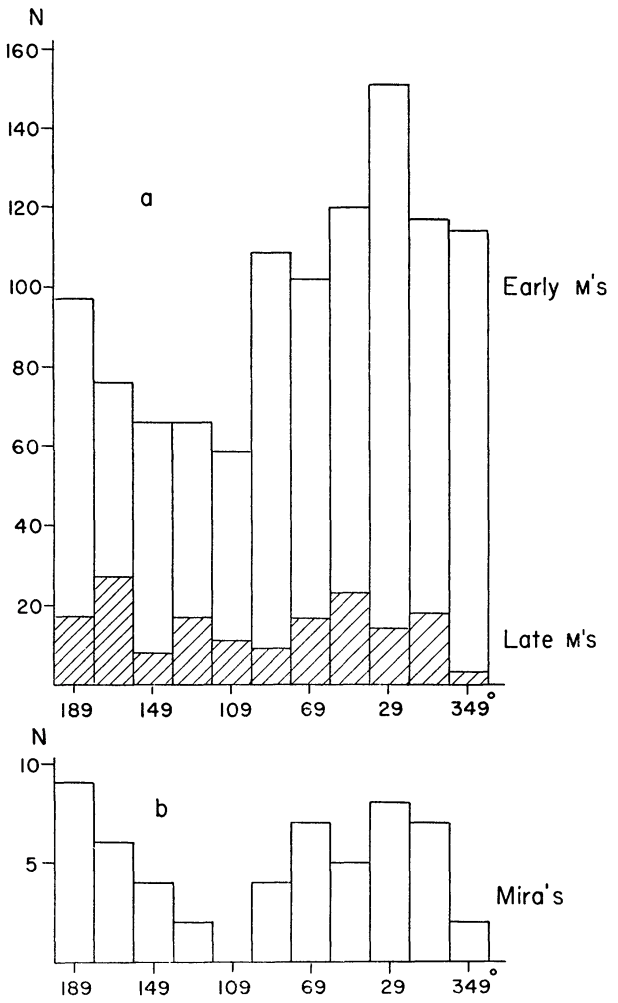

FIG 5.—The distribution in galactic longitude of all stars brighter than 10 5 mag *a:* for the early and ate M's; *b:* for the Miras

VI. THE SPACE DENSITY IN THE VICINITY OF THE SUN

From the data available it is possible to derive an approximate value for the space density of the M stars in the neighborhood of the sun, provided that the interstellar absorption and the absolute magnitudes are known As was pointed out, only one dwarf M star brighter than 10 5 mag. was found in the galactic belt by comparison with the catalogue of all known stars within 20 pc by Gliese (1957). Since the absolute magnitudes of the dwarf M stars are fainter than 10.2 visual, only the dwarfs within 10 pc have to be considered, and not many of them should have been missed in Gliese's catalogue. Also the

number of supergiant M stars is relatively small when compared to the giants and will not seriously influence the computed densities. The value of -0.4 was adopted for the mean absolute visual magnitude for both early and late M stars of a given apparent magnitude from the analysis of the Mount Wilson catalogue (Adams, Joy, and Humason 1926) by Nassau and van Albada (1949). This agrees also with the value given later by Keenan and Morgan (1951).

A mean visual absorption of 0.75 mag. per kpc was adopted, as given by Trumpler and Weaver (1953, p. 452). It was not possible to estimate separately the absorption for dif-

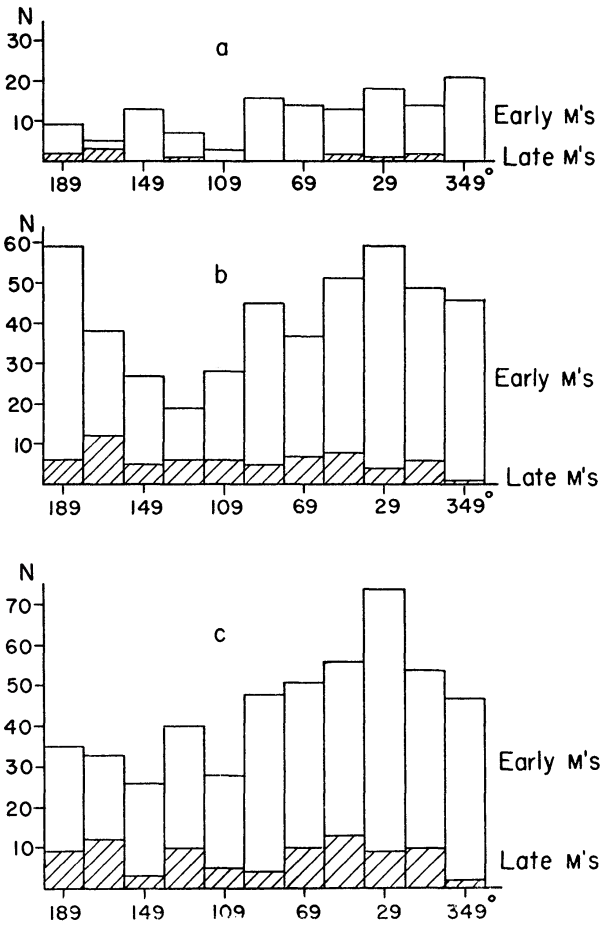

FIG 6.—The distribution in galactic longitude for three magnitude groups *a*: $m \leq 8.1$; *b*: $8.2 \leq m \leq 9.6$; *c*: $9.7 \leq m \leq 10.5$

ferent regions of the galactic belt. With these two adopted values, space densities were computed for the stars within the following distances from the sun: 430, 770, and 1050 pc, which correspond to the magnitudes 8.1, 9.6, and 10.5, respectively. Table 4 gives for the shells defined by these distances the number of observed stars and the corresponding densities.

The late M stars show a practically constant density for all regions, the density of the early M's shows a definite decrease with distance. Whether this effect is real or not is difficult to establish, but, at least for the central shell, the values should not be influenced too much by absorption. This is confirmed by computing the densities from the Mount

Wilson catalogue of M stars by Adams, Joy, and Humason (1926), which claims completeness for stars brighter than 6.0 mag. and north of $-30°$ declination. Using all stars brighter than 6.0 mag. and the same values for absolute magnitude and absorption, the value of 6.0×10^{-6} pc^{-3} is obtained for the density of the early M's and 0.82×10^{-6} pc^{-3} for the late M's. These values are in good agreement with those given in Table 4. Practically the same values were also obtained by considering all stars within 180 pc, using the parallaxes published in the Mount Wilson catalogue.

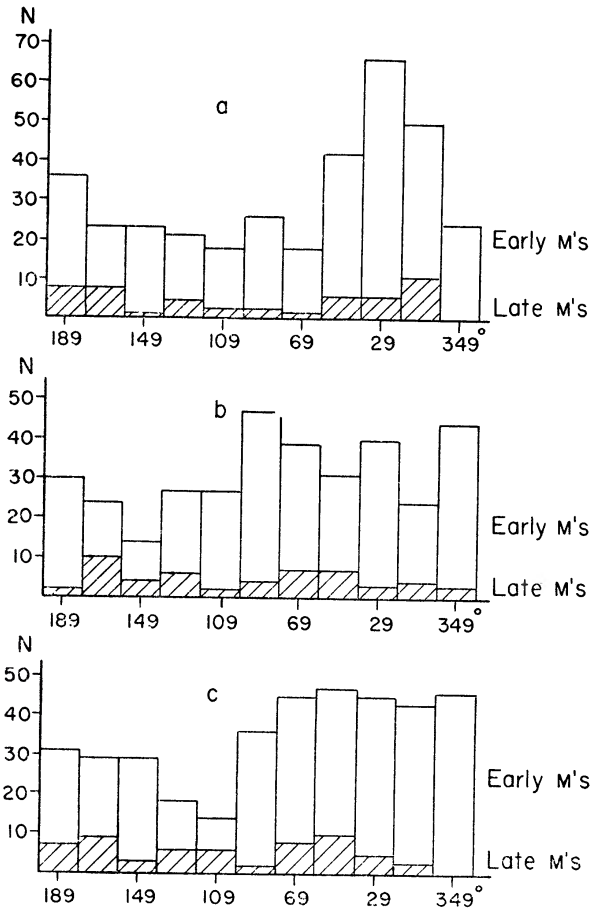

FIG. 7.—The distribution in galactic longitude for three galactic zones *a*: $+2°0 < b \leq +6°0$; *b*: $-2°0 \leq b \leq +2°0$; *c*: $-6°0 \leq b < -2°0$

TABLE 4

SPACE DENSITIES OF EARLY AND LATE M STARS

DISTANCE (pc)	*N*		DENSITY (10^{-6} pc^{-3})	
	Early	Late	Early	Late
0–430	133	11	6 2	0 51
430–770.	452	66	4 5	66
770–1050	492	87	2 6	0 45

VII. SUMMARY

The conclusions drawn by this paper may be summarized as follows: The late M stars show a rather uniform distribution in the galactic plane out to about 1000 pc. No systematic longitude effects are observed, and the mean density for these stars is of the order of 0.5×10^{-6} pc^{-3}. The distribution of the early M stars shows a pronounced maximum at $l \approx 30°$ and a minimum at $l \approx 120°$, very similar to the distribution of the Miras, indicating a probable concentration toward the local spiral arm. A subdivision into three galactic zones shows a rough correlation between the surface distribution of these stars and the general brightness and absorption features of the Milky Way. The density in the vicinity of the sun is about 6.0×10^{-6} pc^{-3}, but it seems to decrease with increasing distance, probably because of the inclusion of the increasing volume of space between spiral arms. The mean value of the ratio of early to late M stars within 1000 pc is about 7.

This is in good agreement with the results obtained by Nassau and van Albada (1949), Wehlau (1954), Sanduleak (1957), Albers (unpublished), and Westerlund (unpublished), which also indicate a concentration of the early M's toward the galactic plane, particularly within the spiral arms. For the late M stars, Nassau, Blanco, and Cameron (1956) and Sanduleak (1957) found a different distribution in galactic longitude, indicating a concentration toward the galactic center. These results are obviously due to the larger distances reached in their papers.

Combining these results, one may conclude that the ratio of early to late M's is between 5 and 10 (or even higher) in spiral arms, about 3 in interarm regions, and less than 1 in the galactic center. Similar results are indicated by Nassau (1958). Also the derived densities agree fairly well, if one considers that the mean infrared absolute magnitude is -3.0 for the early M's and about -4.0 for the late M's (Blanco, unpublished) and adjusts the densities in the different papers according to the different mean absolute magnitudes used to derive the densities. It should be pointed out, that Sanduleak used -2.0 and -3.5 mag. for early and late M's, respectively, and not -3.5 and -4.5 mag., as is quoted in his paper. For the late M stars it should also be emphasized that in this paper all the Miras were excluded.

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