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HARVARD COLLEGE OBSERVATORY

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A Faint Star of Large Proper Motion. — During the proper motion survey of the northern hemisphere, on plates lent by the Harvard Observatory, the star B.D. +5° 1668 was found to possess the very large proper motion of 3″.7 annually.

The photographic magnitude is estimated at 11.5, and an objective prism plate taken for the purpose at Harvard indicates that the spectrum is of late type, probably M.

Five early plates made with the 16-inch Metcalf telescope were already available in the Harvard collection. Two more plates were taken with the same telescope at the time of opposition and three more at the next parallax epoch in March, 1935. Unfortunately a plate with badly trailed images, taken with the 24-inch Bruce telescope in 1894, could not be used. The star was also identified in the Toulouse Carte-du-Ciel.

Six comparison stars were used on each of the ten plates; one plate was chosen as standard, to which the preliminary reductions were made. Means were then taken of the ten values of x and y for each comparison star and final reductions were made, with these "mean stars" as hypothetical standards. The measures contained in the Toulouse Carte-du-Ciel (Vol. 6, plate 56) were likewise reduced to the same hypothetical standard plate.

The finally adopted values of x and y for the proper motion star, expressed in millimeters for the scale of the MC plates (the fourth decimal place is purely a result of calculation and reduction) are given in Table I, the third column of which gives the parallax factor. The focal length of the telescope was changed between the tak-

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ing of the first and second MC plates listed in Table I. From the internal discordances in the comparison stars, a mean error of 0″.0031 is calculated for each measured MC position.

TABLE I

Plate	t	f	x (1 unit = 98″.6)	y
A 222	1894.10		0.255	2.433
Tou	99.13	−0.72	.2705	2.2432
MC 2254	1912.92	+ .64	.3590	1.7169
6992	14.89	+ .71	.3798	1.6460
7041	14.90	+ .69	.3769	1.6470
14393	17.88	+ .75	.3909	1.5394
25866	32.11	− .65	.4741	1.0055
27587	35.01	+ .09	.4856	0.8942
27588	35.01	+ .09	.4851	0.8870
27679	35.23	− .90	.4881	0.8833
27686	35.23	− .90	.4841	0.8826
27691	35.23	− .90	.4855	0.8842

Several decades' experience of parallax observers has shown that little can be expected from material as heterogeneous as the present, but it seemed worthwhile to attempt the determination of the order of magnitude of the parallax.

A rigorous least squares solution was not applicable because of the unsatisfactory time-distribution of the plates. Parallax and proper motion, however, can be cal-

TABLE II

	″ MC only ″	″ MC + Tou ″	″ Adopted ″	
μ_a	+0.563 ± 0.007	+0.591 ± 0.005	+0.58 ± 0.01	or 3″.76 in 171°.0
μ_δ	−3.700 .007	−3.714 .005	−3.71 .01	
p	+0.35 .2	+0.70 .3	+0.4 .2	
	m = 11.5	M = 14.5:		

culated by taking suitable means, with and without the Toulouse measures; inclusion of the latter should strengthen the accuracy of the proper motion, but might well decrease the reliability of the parallax. The results of the calculation are shown in Table II, with the estimated mean errors. If, as is customary in parallax determinations, probable errors are used, the adopted value of 0″.4 ± 0″.15 appears

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too good to be true. In any case it seems justifiable to conclude that B.D. +5° 1668 is one of the nearest stars in space, and it is hoped that the real value of the parallax will be accurately determined in a few years.

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New Periods for Variable Stars in the Small Magellanic Cloud. — Because the brighter portion of the period-luminosity curve for the Small Magellanic Cloud depends on comparatively few points, and because there is a difference in slope between the preliminary period-luminosity curves for the Small and the Large Clouds (M.N., **94**, 802, 1934), it was considered advisable to obtain additional data on the periods of the brighter variables. Of the variable stars listed by Miss Leavitt (H.A., **60**, 90, 1908), all but seven of those with median magnitudes originally recorded as 14.0 or brighter, and with periods as yet undetermined (61 stars), were examined on over eighty plates taken with the 24-inch Bruce telescope during the interval 1923–1931. (The seven variables not studied were far afield or too close to the cluster 47 Tucanae.) The plate distribution yielded periods sufficiently accurate for our purpose. Periods were obtained for forty four (72 per cent); reasons for the non-determination of periods for the remaining seventeen stars are given in the notes in Table II. Investigation of recognized cluster type and long period variables was postponed, as they are not members of the Cloud. Ten additional stars with median magnitude 14.6 or brighter (H.A., **60**) were also studied, and periods found for nine. A period is indicated for the tenth star (Table II, H.V. 1596), but the uncertainties of the estimates make it of doubtful value. The magnitudes of the variables listed in the tables differ considerably from those previously published, because of the revision of the magnitude system in 1924 (H.C. 255).

The new periods given in Table I range from 1.9 to 209 days. The columns give successively the Harvard Variable number (H.A., **60**, 90, 1908), median magnitude, amplitude, and three quantities representing the period. Since for all the computations the reciprocals of the periods were used, it was thought proper to publish them;

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