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Walraven, T.; Muller, A.B.; Oosterhoff, P.T.

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COMMUNICATION FROM THE OBSERVATORY AT LEIDEN

PHOTO-ELECTRIC MAGNITUDES AND COLOURS AT MAXIMUM BRIGHTNESS FOR 184 CEPHEIDS

BY TH. WALRAVEN, A. B. MULLER AND P. TH. OOSTERHOFF

Photo-electric magnitudes in blue and yellow and colour-indices were observed for a large number of southern Cepheids with the Rockefeller astrograph of the Leiden station at Johannesburg. The observations were made through a Corning glass filter 5551 and a Schott GG 11 filter. As comparison stars one star in each of the 9 *E*-regions were used. Data about them are given in Tables 2, 3 and 4. The relation between the magnitudes derived in this paper and the Cape 1953 *S* system is given in section 5. The Cepheids were observed near phase of maximum brightness, but for some of them complete light- and colour curves were obtained. The programme is nearly complete down to the 12th magnitude and contains also some Cepheids in the northern hemisphere.

The individual observations are given in Table 6. In the remarks to this table improved ephemerides are given. The observations are shown graphically in Figures 2, 3, 4, 5 and 6. Table 7 contains the observations of the Cepheids which were insufficiently observed to derive magnitudes and colours at maximum brightness. Sections 8 and 9 show comparisons of the new magnitudes and colours with those derived by other authors and with other photometric systems. In section 10 relations are derived between light-, colour-, radial-velocity amplitudes and periods. The relation between the range of the light-curves and the periods shows a large scatter and does not confirm EGGEN's classification of *A*, *B* and *C* type Cepheids. In section 11 the intrinsic colours of Cepheids are discussed. Figure 11 shows a plot of the observed colours at maximum against the logarithm of the periods. The relation adopted for the normal colours, expressed in the Cape *S* system, is:

$$SCI_{max.} = + .01 + .10 \log P.$$

The conversion of colour excess to total photographic absorption is discussed in section 12 and the period-luminosity relation in section 13.

Table 13 contains all the data required to study the spatial distribution for 184 Cepheids. This distribution is discussed in the last section 14. The z co-ordinates were computed relative to the galactic plane as derived by WESTERHOUT. On the basis of the light- and colour curves and the z co-ordinates 22 Cepheids were classified with more or less certainty as population II objects. They have been listed on page 123. The mean z co-ordinate for the Cepheids of population I was found to be $-$ 23.9 pc ± 5.5 (m.e.) and the mean dispersion around this value ±65 pc. Using the radial velocities by STIBBS we derived a value of + 17.4 km/sec/kpc ± 2.1 (m.e.) for OORT's constant *A*.

A remarkable difference was found in the relation between colour excess and distance for the Carina and Sagittarius regions. Figure 12 shows the projection on the galactic plane of the Cepheids of population I. This figure clearly shows indications of spiral structure. The most interesting feature is an accumulation of Cepheids in the general direction of the galactic centre at a distance of about 600 pc. This group seems to be a continuation of the Carina spiral arm and is definitely distinct from the Sagittarius arm, in which also many Cepheids occur, and which was derived by radio observations and from O associations.

In the years 1953, 1954, 1955 and 1956 photo-electric observations were made of a large number of southern Cepheids at the Leiden station in Johannesburg. The programme has in its main phases been a co-operative enterprise of the three authors. Dr WALRAVEN designed and constructed a special photometer and made the observations, together with Dr MULLER, in the year 1953 and also together they made some provisional reductions of these measurements. Dr MULLER has been responsible for the observations in the years 1954 and 1955 and together with the third author he completed the observations in 1956. The more extensive reductions were made in Leiden under the supervision of the third author; in the absence of the other authors he prepared the discussions in the later sections as well as the text of the paper.

1. *The programme*

Cepheid variables are stars of high intrinsic luminosity and even as apparently faint stars they can easily be identified by the characteristics of their light-variation. The absolute magnitude is related to the period according to the period-luminosity relation. The majority of the known Cepheids belongs to BAADE's population I and they are strongly concentrated towards the galactic plane. These properties make them a very suitable group of stars for an investigation of interstellar absorption near the galactic plane and of spiral structure in the neighbourhood of the sun up to distances of some kiloparsecs. The combination of photometric data with radial velocities and proper motions will provide valuable information concerning the dynamical properties of the galactic system in a wide region around the Sun. Therefore it has been generally recognized for several years that accurate photometry of Cepheids is of fundamental importance.

Although for some individual Cepheids accurate and even multi-colour photometry has been performed, relatively little has been done so far in the line of a general photometry of galactic Cepheids. The most extensive investigations were published by EGGEN (1951) on photo-electric magnitudes and colours for 32 classical Cepheids and by BADALYAN (1956) on photographic magnitudes and colour-indices for 167 Cepheids. Both these investigations will be discussed later, but it should be remarked here that neither of them contains Cepheids in the southern parts of the Milky Way.

Therefore we decided to observe photo-electric magnitudes in blue and yellow for all the Cepheids in the southern hemisphere which are bright enough for the available equipment. We have considered the possibility to make measures in a third colour, namely in the ultraviolet. But as most of the Cepheids are considerably reddened by interstellar absorption, the response of the photometer in the ultraviolet would be much smaller than in the blue and the yellow, and therefore such measures could only be made successfully for the brighter Cepheids. Therefore we abandoned this idea, the more so, as the observations had to be made with a refractor and measures in three colours would therefore imply measures at three different settings of the focus.

The programme was restricted in one more respect. To obtain photometric data for about 200 Cepheids well distributed over all phases of the light-curves would be a tremendous task, even in the good climate of South Africa. Now it is a well known fact that the dispersion in the spectral types of Cepheids of different periods is smallest at the phase of maximum brightness (CODE, 1947) and as one of the main aims of the present investigation was the determination of colour-excesses, we decided to derive the magnitudes and colours for these Cepheids at maximum brightness. Due to the fact that several of the ephemerides proved to be out of phase, we obtained complete light-curves and colour curves for a number of stars.

A number of Cepheids in the northern hemisphere were put on the programme in order to facilitate a comparison of our results with investigations carried out in the north.

2. *The equipment*

The observations were made with one of the 40-cm Zeiss objectives of the Rockefeller Astrograph of the Leiden Southern Station. The telescope was equipped with a photometer specially designed and constructed by Dr WALRAVEN for this Cepheid programme. As several of the Cepheids are situated in dense regions of the Milky Way the use of a very small diaphragm was indicated in order to avoid disturbing influence of faint stars on the measures of the variables. A small diaphragm has the further advantage that the influence of sky brightness is reduced, which is important when faint stars have to be measured. However, it also causes a difficulty when the observations are made with a refractor on account of the secondary spectrum of the objective. The diameter of the diaphragm was 30 seconds of arc or about half a millimetre. For the measures in blue light a Corning glass filter 5551 was used. The focal setting of the telescope was made in such a way that the best focus for the blue image lay in the plane of the diaphragm. According to the data of Table 1 and Figure 1 in OOSTERHOFF's article on "Photo-electric colours of southern early-type stars" (1951) the effective wavelength of these blue measures is estimated to be about .424 μ. For the measures in yellow light a Schott GG 11 filter of 2 mm thickness was used [1]). This filter was combined with a doublet lens, the main function of which consists in the flattening of the secondary spectrum in the yellow region of the spectrum and which reduces the focal length in yellow light to that for blue light, so that the focal setting of the telescope could remain unchanged during the observations. As the transmission curve of the Schott GG 11 filter is practically the same as that of the Corning 3385 filter, the effective wavelength of the yellow measures is about .537 μ.

By means of a Fabry lens an image of the objective was formed on the kathode of an RCA photomultiplier of the type 1 P 21. As stars from the 4th to the 13th magnitude had to be measured it was necessary to make it possible to adjust the output of the amplifier over a wide range in order to obtain a reasonable deflection on the Brown recorder for faint and bright stars. A large difference in sensitivity could be obtained by the use of two different input resistances of 10 and 100 MΩ. Smaller steps in sensitivity were made possible by five different feed-back resistances, numbered from 1 to 5. For the very bright stars the voltage on the photomultiplier could be diminished in nine fixed steps. The differences in sensitivity obtained by various combinations of input- and feed-back resistances and of photo-multiplier voltages were determined from the star measures. As each observation consisted of two measures in blue and in yellow with two different sensitivities of the photo-

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[1]) In *B.A.N.* **12**, 271 (No. 460), 1955, OOSTERHOFF erroneously stated that a Corning filter 3385 had been used for the measures in yellow light.

meter, the sensitivity ratios could be derived from a very large number of measures.

The ten logarithms of these ratios, all relative to the combination: 10 MΩ, feed-back resistance 5 and high voltage *h* 9, to which all measures were reduced later, were found to be:

TABLE 1

10 − 1	+.732	*h* 9	.000
10 − 2	+.553	*h* 6	+ .510
10 − 3	+.363	*h* 5	+ .718
10 − 4	+.154	*h* 4	+ .933
10 − 5	.000	*h* 3	+1.143
100 − 1	−.259	*h* 2	+1.379
100 − 2	−.438	*h* 1	+1.652
100 − 3	−.628		
100 − 4	−.836	*NF*	+ .997
100 − 5	−.991		

The last entry in this table gives the logarithm of the absorption by a neutral filter, which was used in 1953 and 1954 to reduce the recorder deflections for the brightest Cepheids. However it soon became clear that the filter used was not sufficiently neutral and that its absorption depends on the colour of the star, when used in combination with the blue filter. No such effect could be found when it was used in combination with the yellow filter. Consequently we have not used the blue measures made with this neutral filter. The values given in Table 1 were derived from the observations of all four years. When the reduction of the observations of the years 1953 and 1954 was made, slightly different values were used, but the differences were so small that it did not seem worthwhile to repeat the reduction with these improved values.

3. *The observations*

For each Cepheid an identification chart had been prepared and a list of times of maximum brightness, computed with the elements from the *General Catalogue of Variable Stars* and its supplements. One observation of a Cepheid consisted of two pairs of settings in blue and yellow light with different sensitivity of the amplifier. Only for the faintest stars the two pairs of settings were made both with the strongest amplification. Each of the four settings was preceded and followed by a measure of the sky brightness in the direct neighbourhood of the variable.

If accurate light- and colour curves of a variable star have to be determined the best results can be obtained by using a comparison star very near the variable and by making alternately measures of the variable and of this comparison star. In this way the influence of fluctuations in extinction can be considerably reduced. However half of the total observing time is then used for the comparison star.

In our programme the internal accuracy of the observations on light- and colour curves is not of primary importance. It is much more important that the observations of magnitudes and colours and the colour excesses derived below for stars in different parts of the southern hemisphere will be free of systematic errors depending on the position in the sky, the apparent brightness or the time at which the observations were made.

We decided not to use any comparison stars at all near the individual Cepheids. Instead we selected nine stars, one in each *E*-region at declination −45°, which have served as the only comparison stars for this programme.

The nine stars were the following:

TABLE 2

E-region	number	*Sp.*	SP_g	SP_v	*SCI*
1	21	G5	7.61	6.90	+ .71
2	10	F5	8.25	8.04	+ .21
3	38	K5	9.33	7.90:	+1.43:
4	24	F8	8.76	(8.53)	(+ .23)
5	33	K5	9.66	(7.96)	(+1.70)
6	22	F8	8.46	8.15	+ .31
7	40	K2	9.31	(7.84)	(+1.47)
8	21	F8	9.18	8.85	+ .33
9	31	K0	8.58:	7.16:	+1.42:

The numbers, spectral types, magnitudes and colours have been taken from *Cape Mimeogram* No. 3, 1953. During the nights when Cepheid observations were made two or three of these comparison stars were measured in rapid succession in intervals of two or three hours. During each such set of observations one of the comparison stars had a low and the other or the two others a high altitude.

4. *The magnitudes of the comparison stars*

If the brightness of the comparison stars in blue and yellow light in the system of the equipment used for the observations and without the influence of atmospheric extinction were known, each observation of a comparison star would yield a value of this atmospheric extinction at the time of the observation. As several measures of comparison stars during the course of a night were made, these would provide a fair information about the extinction and its variations, although interpolation is necessary for the intervals between the different sets of measures of the comparison stars.

Therefore the first problem was to derive the brightness in blue and yellow light of the comparison stars outside the Earth's atmosphere. During the whole reduction we have not used magnitudes or differences in magnitude, but we have worked with the logarithm of the deflections on the Brown recorder records. Unless stated otherwise, all values given in this paper are therefore expressed in terms of $\log I_B$ and $\log I_Y$, which can be converted into magnitudes by multiplying with the factor — 2.5. It should be kept in mind that large positive values correspond with great brightness and that positive values of ($\log I_B - \log I_Y$) correspond with a blue colour.

From the observations of the comparison stars, made practically simultaneously at about the same altitude, the differences in brightness in blue and yellow light could be derived. After a little smoothing the following values were found:

TABLE 3

Comparison stars in *E*-regions	$\Delta \log I_B$	$\Delta \log I_Y$
1 — 2	+.272	+.422
2 — 3	+.422	−.046
3 — 4	−.235	+.228
4 — 5	+.367	−.183
5 — 6	−.481	+.035
6 — 7	+.336	−.097
7 — 8	−.072	+.370
8 — 9	−.222	−.632
9 — 1	−.387	−.097

These differences having been derived, we next used the observations of pairs of comparison stars, made practically simultaneously but with widely different altitudes. For these observations we have the equations:

$$k_B = \frac{\Delta(\log I_B) - \Delta(\log I_B)\text{ obs.}}{\Delta \sec z} \quad \text{and}$$

$$k_Y = \frac{\Delta(\log I_Y) - \Delta(\log I_Y)\text{ obs.}}{\Delta \sec z}$$

in which k represents the zenithal extinction coefficient, $\Delta(\log I)$ the difference in brightness outside the atmosphere, for which the values given in the table can be used, and $\Delta(\log I)$ obs. the difference in brightness as actually observed. For all the pairs of observations of comparison stars, taken in quick succession after each other and with a sufficiently large value of $\Delta \sec z$, the values of k for blue and yellow light were computed. With the aid of these k-values all $\log I_B$ and $\log I_Y$ values of the comparison stars were then reduced to "no atmosphere". These reduced values show a considerable dispersion, as could be expected from observations made in the city of Johannesburg, where the sky is often, especially in the winter season, spoilt by smoke and dust. The values of k, derived from two observations only, are easily affected by irregularities in the extinction and the errors in k, multiplied by a factor larger than one, are found back in the values of $\log I_B$ and $\log I_Y$ for "no atmosphere".

A superficial inspection of these reduced values made it clear that the brightness of the comparison stars, reduced to "no atmosphere", varies with time. A further investigation showed that this variation was practically the same for the blue and yellow measures. This effect is due to changes in the instrumental equipment, such as the accumulation of dust on the objective, the filters and other optical parts of the photometer, variations in the voltage of dry batteries and the like. During the four years in which the observations were made the optical parts have been cleaned and batteries have been changed a couple of times and each time the brightness of the comparison stars shows a discontinuity in such a sense that the deflections on the Brown recorder become larger after such an operation. For each comparison star average values of $\log I$ were computed for time intervals varying from one week to one month and these were smoothed in such a way that the differences between the comparison stars agreed with the values given in Table 3. The values of $\log I_B$ and $\log I_Y$ reduced to "no atmosphere" for 10 May 1953 were found to be:

TABLE 4

Comparison star in *E*-region	$\log I_B$	$\log I_Y$	$(O-C)_B$	$(O-C)_Y$
1	1.632	1.450	−.006	−.037
2	1.360	1.028	−.026	−.012
3	.938	1.074	−.010	−.003:
4	1.173	.846	−.009	(+.002)
5	.806	1.029	−.009	(−.019)
6	1.287	.994	−.015	.000
7	.951	1.091	−.005	(−.009)
8	1.023	.721	+.009	+.007
9	1.245	1.353	−.003:	−.019:

The zeropoint of these values depends on the unit in which the deflections on the Brown recorder have been expressed and is therefore arbitrary, but the same zeropoint has been used throughout for comparison stars and Cepheids.

For any other date a certain constant has to be added to or subtracted from all the values of Table 4 in order to obtain the brightness of the comparison stars reduced to "no atmosphere". The values of these constants are given in Table 5 for a number of dates. For other dates values can be derived by interpolation.

These figures are a direct measure of the sensitivity of the combination of objective, photometer and Brown recorder. In the further reduction all measures have been reduced to 10 May 1953. In other words all values of $\log I$ for the Cepheids given below are directly comparable with the values of Table 4 for the comparison stars, which define the photometric system of this paper.

In this connection it should be emphasized that the

TABLE 5

1953 10 May	.000	1955 24 Febr.	+.054
1953 2 July	−.100	1955 27 March	+.051
1953 23 July	−.131	1955 26 April	+.047
1953 13 Sept.	−.131	1955 25 May	+.040
		1955 16 June	+.030
1954 10 Febr.	−.133	1955 7 July	+ 010
1954 1 April	−.133	1955 8 Aug.	−.010
discontinuity		1955 21 Sept.	−.037
1954 2 April	−.001	1956 1 Febr.	−.072
1954 3 May	−.014	1956 2 March	−.077
1954 22 May	−.024	1956 4 April	−.085
1954 11 June	−.040	1956 1 May	−.094
1954 1 July	−.058	1956 5 June	−.125
1954 23 July	−.080	1956 5 July	−.160
1954 6 Aug.	−.090	discontinuity	
1954 3 Sept.	−.103	1956 6 July	+.074
discontinuity		1956 13 July	+.039
		1956 26 July	.000
		1956 6 Aug.	−.024

comparison stars in the *E*-regions 1, 2 and 9 have been used a few times only and consequently the values of log I_B and log I_Y for these three stars are much less accurate than those for the remaining six comparison stars. The residuals $(O-C)$ in Table 4 will be explained in the next section.

5. *The photometric system*

Although the photometric system of the measures in this paper has been defined, it will be useful to investigate its relation to other photometric systems in order to make possible a comparison of our results with those by other authors. The most accurate photometry of stars in the *E*-regions has been published in *Cape Mimeogram* No. 3 in 1953. As a number of six stars is too small to derive the relation between two photometric systems, observations on a larger number of stars in the *E*-regions 8 and 9 were made in 1953 in exactly the same way as for the Cepheids. A comparison between our measures of these stars with those from the Cape has been published already in *B.A.N.* **12**, 271 (No. 260), 1955. The following relations were derived:

$$\begin{aligned}\log I_B &= +\,4.6790 - .4046\,SPg + .0056\,SPv, \\ &\ \pm \quad 75 \quad \pm\ 24 \qquad \pm\ 23 \quad \text{(m.e.)}\end{aligned} \tag{1}$$

$$\begin{aligned}\log I_Y &= +\,4.2551 - .0157\,SPg - .3838\,SPv. \\ &\ \pm \quad 92 \quad \pm\ 30 \qquad \pm\ 28 \quad \text{(m.e.)}\end{aligned} \tag{2}$$

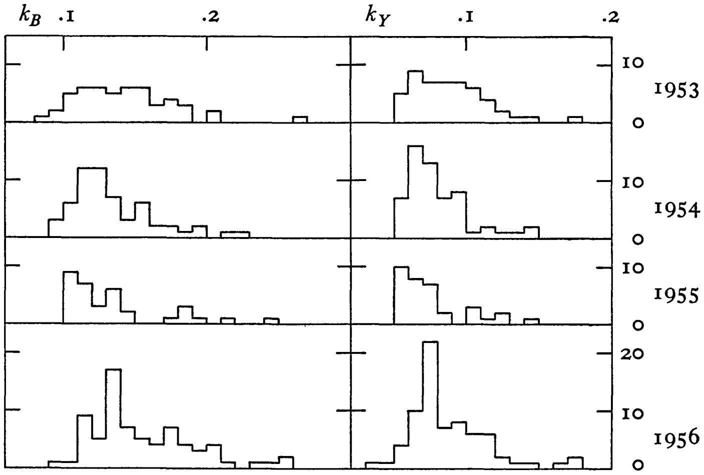
If we apply these formulae to the values of *SPg* and *SPv* of Table 2 and if we compute the differences between the observed values of log I_B and log I_Y, given in Table 4, and the values computed with the formulae, the residuals $(O-C)$ are obtained, which are given in the fourth and fifth columns of Table 4. The residuals for the stars in regions 3 to 8 are satisfactorily small.

Comparisons with other photometric systems will be made in a later paragraph.

6. *The coefficient of extinction*

The extinction coefficient per unit air mass for blue and yellow light has been derived for each measure of a comparison star. For each night of observing we have therefore two or three determinations of the extinction at intervals of two or three hours. As has been said before, the sky at the Leiden Southern Station in Johannesburg is often very poor for photometric work and quite often work at the telescope had to be discontinued for some hours on account of smoke. It happened very often that the extinction was large in the beginning of the night and that it decreased in one or two hours time to normal values. This effect is mainly caused by smoke and it is clear that under such conditions the interpolated values of the extinction are rather uncertain. Frequency curves of the night averages of the extinction coefficients for blue and yellow light are shown in Figure 1. During the very best nights the values of these coefficients are about .1 and .055 or .25 and .14 magnitudes respectively. During some very poor nights these values were as high as .24 and .16 or .6 and .4 magnitudes. The average values over all four years are .143 and .084 or .36 and .21 magnitudes.

FIGURE 1



Frequency distribution of the coefficient of atmospheric extinction in blue and yellow

7. *The reduction of the measures of Cepheids*

The measures of the Cepheids were first reduced to input resistance 10 MΩ, to feed-back resistance 5 and to high voltage *h* 9 with the aid of the data of Table 1. Then they were reduced to "no atmosphere" with the extinction coefficients derived by interpolation for the time of observation. As each observation of a Cepheid consisted of two measures in blue and of two in yellow made with different amplification of the photometer, mean values were formed for the two measures in blue and for those in yellow light. Finally the resulting values of log I_B and log I_Y were reduced to 10 May 1953 with the aid of Table 5. The individual observations have been listed in Tables 6 and 7.

TABLE 6

Name of Cepheid	J.D. hel. −2430000	phase	log I_Y	Δ log I	log I_B
	d				
T Ant *	4562.210	.345	+ .358	+.156	+ .514
d^{-1}	75.194	.546	+ .691:	+.314	+1.005:
.169511	79.217	.228	+ .332:	+.110:	+ .442:
	4833.393	.313	+ .357	+.127	+ .484
	4906.324	.676	+ .616	+.235	+ .851
	17.275	.532	+ .684	+.312	+ .996
	5194.487	.523	+ .681	+.321	+1.002
	5224.389	.591	+ .675	+.311	+ .986
	5532.515	.822	+ .491	+.205	+ .696
	35.449	.319	+ .357	+.137	+ .494
	55.474	.714	+ .608	+.246	+ .854
	68.423	.909	+ .508	+.186	+ .694
	73.448	.761	+ .564	+.228	+ .792
	74.337	.911	+ .507	+.178	+ .685
	80.362	.933	+ .495	+.182	+ .677
	95.350	.473	+ .591	+.241	+ .832
	5608.308	.670	+ .626	+.265	+ .891
	09.335	.844	+ .523	+.197	+ .720
	11.324	.181	+ .368	+.137	+ .505
	12.292	.345	+ .365	+.161	+ .526
	16.294	.024	+ .472	+.168	+ .640
	19.274	.529	+ .694:	+.311:	+1.005:
	20.265	.697	+ .612	+.261	+ .873
	22.228	.029	+ .473	+.163	+ .636
	23.310	.213	+ .372	+.143	+ .515
	24.217	.367	+ .393	+.170	+ .563
	26.229	.708	+ .599	+.246	+ .845
	27.220	.876	+ .522	+.186	+ .708
	29.240	.218	+ .362	+.132	+ .494
	30.280	.394	+ .438	+.201	+ .639
	31.262	.561	+ .682	+.311	+ .993
	32.210	.722	+ .596	+.242	+ .838
	34.200	.059	+ .438	+.154	+ .592
	36.205	.399	+ .454	+.204	+ .658
	37.254	.577	+ .670	+.301	+ .971
	38.235	.743	+ .610	+.230	+ .840
	39.192	.905	+ .480	+.172	+ .652
	40.207	.077	+ .431	+.151	+ .582
	41.200	.245	+ .378	+.124	+ .502
	42.194	.414	+ .370?	+.188?	+ .558?
	43.270	.596	+ .653	+.302	+ .955
	44.214	.756	+ .579	+.225	+ .804
	47.195	.262	+ .358	+.134	+ .492
U Aql	4572.568	.006	+1.624	+.088	+1.712
d^{-1}	74.578	.292	+1.604	+.019	+1.623
.142372	4907.496	.690	+1.680	+.091	+1.771
	22.559	.835	+1.825	+.163	+1.988
	5302.500	.928	+1.779	+.119	+1.898
	15.484	.776	+1.824	+.155	+1.979
	70.320	.583	+1.554	+.018	+1.572
SZ Aql	4980.408	.607	+1.086	+.081	+1.167
d^{-1}	5358.343	.659	+1.023	+.026	+1.049
.058350	5646.526	.475	+ .687	−.150	+ .537
	47.398	.526	+ .712	−.125	+ .587
	65.397	.576	+1.037	+.057	+1.094
	81.375	.508	+ .700	−.124	+ .576
TT Aql	4980.416	.091	+1.641	+.116	+1.757
d^{-1}	5364.284	.000	+1.342	−.041	+1.301
.072703	65.316	.075	+1.617	+.114	+1.731
	5643.401	.292	+1.488	−.026	+1.462
	54.333	.087	+1.648	+.118	+1.766
	55.478	.170	+1.572	+.048	+1.620
	68.464	.114	+1.632	+.100	+1.732
	69.442	.185	+1.562	+.050	+1.612
	83.410	.201	+1.570	+.038	+1.608
FF Aql *	5358.304	.476	+2.128	+.204	+2.332
d^{-1}	65.293	.039	+2.103	+.201	+2.304
.223667	70.308	.161	+2.161	+.225	+2.386
	5612.521	.336	+2.172	+.232	+2.404
	21.469	.337	+2.170	+.226	+2.396
	25.557	.251	+2.181:	+.246:	+2.427:
	26.482	.458	+2.136	+.212	+2.348
	29.555	.146	+2.144	+.230	+2.374
FM Aql	5328.402	.487	+ .990	−.002	+ .988
d^{-1}	59.255	.533	+1.060	+.030	+1.090
.163555	64.292	.357	+ .822	−.094	+ .728
	72.260	.660	+1.066	+.014	+1.080
	5646.536	.519	+1.033	+.008	+1.041
	47.422	.664	+1.066	+.018	+1.084
	52.377	.475	+ .990	−.018	+ .972
	65.405	.605	+1.095	+.041	+1.136
	78.434	.736	+1.044	−.016	+1.028
	5683.416	.551	+1.096	+.043	+1.139
	89.344	.521	+1.058	+.028	+1.086
FN Aql	4907.484	.671	+ .964	+.047	+1.011
d^{-1}	5315.463	.707	+1.003	+.045	+1.048
.105486	63.304	.753	+1.019:	+.055:	+1.074:
	64.300	.859	+ .994	+.025	+1.019
	5647.432	.725	+1.003	+.055	+1.058
	54.341	.454	+ .868	−.016	+ .852
	55.487	.575	+ .918	+.014	+ .932
	65.430	.624	+ .939	+.025	+ .964
	68.473	.945	+ .970	+.006	+ .976
	85.406	.731	+ .995	+.042	+1.037
V336 Aql	4989.343	.136	+ .183	−.147	+ .036
d^{-1}	5328.392	.558	+ .446	+.016	+ .462
.136919	63.395	.351	+ .312:	−.058:	+ .254:
	64.277	.471	+ .468	+.035	+ .503
	5612.533	.462	+ .454	+.026	+ .480
	26.494	.374	+ .334	−.028	+ .306
	27.496	.511	+ .456	+.024	+ .480
V493 Aql *	5612.438	.886	− .210	−.062	− .272
d^{-1}	.545	.922	− .218	−.072	− .290
.334950	23.462	.579	− .063	+.030	− .033
	24.596	.958	− .230	−.078	− .308
	25.548	.277	− .270	−.040	− .310
	26.441	.576	− .068	+.040	− .028
	27.487	.927	− .214	−.066	− .280
	28.461	.253	− .268	−.042	− .310
	29.565	.623	− .084	+.027	− .057
	30.516	.941	− .213	−.069	− .282
	31.462	.258	− .264	−.061	− .325
	36.494	.944	− .219	−.075	− .294
	37.461	.268	− .258	−.042	− .300
	38.482	.610	− .071	+.034	− .037
	39.517	.956	− .237	−.051	− .288
	40.556	.304	− .225	−.036	− .261
	41.483	.615	− .076	+.032	− .044
	42.543	.970	− .234	−.066	− .300
	43.363	.244	− .272	−.048	− .320
	46.486	.290	− .244	−.100	− .344
	52.366	.260	− .246	−.052	− .298
	54.310	.911	− .203:	−.049:	− .252:
	55.440	.290	− .254	−.041	− .295
	.554	.328	− .190	−.029	− .219
	60.571	.008	− .246	−.057	− .303
	61.420	.293	− .268:	−.068:	− .336:
	65.385	.621	− .076	+.022	− .054
	68.448	.647	− .066	+.012	− .054
	69.422	.973	− .230	−.060	− .290
	72.430	.980	− .238	−.044	− .282
	81.363	.973	− .214	−.068	− .282
	82.336	.298	− .265	−.033	− .298
	83.393	.652	− .064	+.024	− .040
	85.396	.323	− .220	−.044	− .264
	86.396	.658	− .084	+.013	− .071
	87.422	.002	− .228	−.066	− .294
	88.299	.296	− .222:	−.019:	− .241:
	89.335	.643	− .066	+.018	− .048
	91.298	.300	− .242	−.062	− .304
	92.343	.650	− .080	+.016	− .064
V496 Aql	4989.355	.986	+1.216	+.073	+1.289
d^{-1}	5302.491	.989	+1.223	+.063	+1.286
.146910	15.452	.893	+1.204	+.053	+1.257
	5643.393	.071	+1.203	+.051	+1.254
	47.412	.661	+1.077	−.015	+1.062
	54.324	.677	+1.074	−.003	+1.071
	55.469	.845	+1.180	+.042	+1.222
	69.431	.896	+1.198	+.068	+1.266
	78.386	.212	+1.180	+.014	+1.194
	83.404	.949	+1.238	+.074	+1.312
V600 Aql *	4989.366	.992	+ .133	−.210	− .077
d^{-1}	5315.474	.024	+ .114	−.211	− .097
.138092	59.264	.071	+ .105	−.194	− .089
	5643.413	.310	+ .355	−.058	+ .297
	52.387	.549	+ .304	−.120	+ .184
	54.350	.821	+ .200	−.170	+ .030
	55.497	.979	+ .138	−.202	− .064
	60.584	.681	+ .252	−.113	+ .139
	65.441	.352	+ .381	−.058	+ .323
	69.454	.906	+ .146	−.196	− .050
	85.417	.111	+ .124	−.168	− .044
	86.409	.248	+ .292	−.088	+ .204
	87.434	.389	+ .354	−.060	+ .294
	88.312	.510	+ .344	−.106	+ .238

TABLE 6 (*continued*)

Name of Cepheid	J.D. hel. −2430000	phase	log I_Y	Δ log I	log I_B
	d				
η Aql	5302.531	.855	+2.861	+.265	+3.126
d^{-1}	15.495	.661	+2.674	+.164	+2.838
.139340	31.442	.883	+2.855	+.263	+3.118
	48.329	.236	+2.682	+.137	+2.819
	5652 406	.606	+2.598	+.131	+2.729
	54.379	.881	+2.849	+.264	+3.113
	60.596	.747	+2.806	+.238	+3.044
	61.443	.865	+2.838	+.258	+3.096
	68.489	.847	+2.860	+.281	+3.141
	81.384	.644	+2.632	+.167	+2.799
	82.349	.779	+3.131?	+.272?	+3.403?
RY CMa *	5187.357	.823	+1.095	+.181	+1.276
d^{-1}	94.349	.318	+ .889	+.080	+ .969
.213755	5223.241	.494	+ .941	+.140	+1.081
	24.279	.716	+1.141	+.222	+1.363
	5532.419	.582	+1.116	+.212	+1.328
	55.366	.487	+ .892	+.139	+1.031
	5612.214	.639	+1.167	+.247	+1.414
RZ CMa *	5187.373	.131	+ .353:	+.058:	+ .411:
d^{-1}	94.360	.773	+ .486	+.131	+ .617
.235019	5223.255	.564	+ .337	+.080	+ .417
	24.291	.808	+ .474	+.125	+ .599
	5535.373	.918	+ .428	+.088	+ .516
	47.412	.747	+ .500	+.142	+ .642
	55.379	.620	+ .432	+.119	+ .551
	68.340	.666	+ .479	+.145	+ .624
	73.330	.838	+ .454	+.116	+ .570
TV CMa *	4811.378	.097	+ .118:	+.051:	+ .169:
d^{-1}	5187.348	.590	− .088	−.067	− .155
.214096	94.337	.087	+ .123	+.035	+ .158
	5224.265	.494	− .066	−.065	− .131
	5535.363	.099	+ .122	+.030	+ .152
	55.356	.379	− .017	−.053	− .070
	67.308	.938	+ .194	+.076	+ .270
	73.316	.225	+ .062:	−.002:	+ .060:
	80.284	.716	− .102	−.055	− .157
TW CMa *	5532.429	.927	+ .468	+.140	+ .608
d^{-1}	35.383	.349	+ .454	+.082	+ .536
.142962	47.421	.070	+ .542	+.166	+ .708
	55.393	.210	+ .472:	+.094:	+ .566:
	73.335	.775	+ .305	+.044	+ .349
	95.268	.911	+ .436	+.126	+ .562
	5627.193	.475	+ .402	+.052	+ .454
TW Cap *	5643.437	.616	+ .111	+.268	+ .379
d^{-1}	55.541	.040	− .160	+.192	+ .032
.035017	60.620	.218	− .230	+.246	+ .016
	61.454	.247	− .169	+.271	+ .102
	65.453	.387	+ .264	+.398	+ .662
	68.506	.494	+ .140:	+.300:	+ .440:
	69.494	.529	+ .108	+.293	+ .401
	86.436	.122	− .223	+.206	− .017
	87.466	.158	− .236	+.231	− .005
	88.348	.189	− .190	+.228	+ .038
	89.355	.224	− .180	+.269	+ .089
	91.309	.293	+ .044	+.357	+ .401
	92.354	.329	+ .215	+.395	+ .610
U Car *	4512.370	.428	+1.650	−.103	+1.547
d^{-1}	13.364	.454	+1.611	−.121	+1.490
.025802	17.407	.558	+1.546	−.135	+1.411
	19.417	.610	+1.494	−.124	+1.370
	20.350	.634	+1.485	−.125	+1.360
	30.397	.893	+1.938	+.142	+2.080
	32.394	.945	+1.892	+.101	+1.993
	61.306	.691	+1.499	−.128	+1.371
	68.200	869	+1.934:	+.163:	+2.097:
	73.296	.000	+1.839	+.055	+1.894
	75.244	.050	+1.806	+.007	+1.813
	78.244	.128	+1.766	−.037	+1.729
	80.230	.179	+1.774:	−.036:	+1.738:
	86.255	.335	+1.661	−.125	+1.536
	88.206	.385	+1.647	−.120	+1.527
	4834.418	.738	+1.629:	−.005:	+1.624:
	35.481	.765	+1.756	+.073	+1.829
	39.296	.864	+1.951		
	4913.257	.772	+1.801	+.079	+1.880
	14.322	.799	+1.899	+.146	+2.045
	17.351	.877	+1.919	+.146	+2.065
V Car *	4869.348	.159	+1.402	+.209	+1.611
d^{-1}	90.284	.286	+1.345	+.185	+1.530
.149334	4917.212	.307	+1.325:	+.166:	+1.491:
	5611.298	.958	+1.261	+.163	+1.424
	12.269	.103	+1.416	+.227	+1.643
	19.261	.147	+1.418	+.216	+1.634
	37.247	.833	+1.180	+.074	+1.254
	38.225	.979	+1.338	+.142	+1.480
	d				
Y Car *	4517.307	.098	+ .985	+.261	+1.246
d^{-1}	2 .260	.185	+ .888	+.224	+1.112
.274743	36.311	.320	+ .906	+.212	+1.118
	78.219	.834	+1.071	+.310	+1.381
	85.211	.755	+1.016	+.279	+1.295
	88.195	.574	+ .973	+.262	+1.235
	4812.455	.188	+ .936	+.232	+1.168
	47.306	.763	+1.152	+.352	+1.504
	65.442	.746	+1.149	+.349	+1.498
	95.369	.968	+ .969	+.256	+1.225
	4906.377	.993	+1.021	+.255	+1.276
	20.315	.822	+1.014	+.249	+1.263
	5251.355	.773	+1.142	+.333	+1.475
	5309.230	.674	+1.035	+.301	+1.336
SX Car	4520.392	.120	+ .768	+.223	+ .991
d^{-1}	34.323	.987	+ .666	+.190	+ .856
.205761	69.240	.171	+ .708	+.187	+ .895
	4865.449	.120	+ .759	+.225	+ .984
	5224.430	.984	+ .664	+.179	+ .843
	5535.507	.991	+ .680	+.188	+ .868
	55.485	.102	+ .782	+.222	+1.004
	74.365	.987	+ .672	+.182	+ .854
	5628.309	.086	+ .764	+.226	+ .990
UW Car *	4517.299	.024	+ .640	+.196	+ .836
d^{-1}	22.265	.953	+ .513	+.145	+ .658
.187064	65.289	.001	+ .591	+.169	+ .760
	4839.271	.253	+ .546	+.119	+ .665
	65.402	.142	+ .598	+.162	+ .760
	86.332	.057	+ .642	+.188	+ .830
	4924.260	.152	+ .609:	+.124:	+ .733:
UX Car *	4520.298	.591	+1.080	+.342	+1.422
d^{-1}	31.340	.590	+1.111	+.338	+1.449
.271573	35.339	.676	+1.035	+.301	+1.336
	64.260	.530	+1.135:	+.293:	+1.428:
	4835.474	.184	+ .798	+.187	+ .985
	47.289	.393	+ .857	+.224	+1.081
	67.364	.845	+ .933	+.228	+1.161
	85.394	.741	+ .982	+.266	+1.248
	96.331	.711	+ .989	+.276	+1.265
	5223.389	.531	+1.105	+.344	+1.449
	82.222	.509	+1.047:	+.321:	+1.368:
	85.227	.325	+ .788	+.183	+ .971
UY Car *	4513.312	.129	+ .767	+.245	+1.012
d^{-1}	19.378	.223	+ .813	+.247	+1.060
.180384	29.356	.023	+ .591	+.151	+ .742
	31.348	.383	+ .749	+.193	+ .942
	36.302	.276	+ .787	+.231	+1.018
	4890.392	.148	+ .792	+.230	+1.022
	96.339	.221	+ .799	+.246	+1.045
	4907.273	.194	+ .812	+.245	+1.057
	29.299	.167	+ .809	+.253	+1.062
UZ Car *	4519.393	.338	+ .566	+.214	+ .780
d^{-1}	20.308	.514	+ .621	+.203	+ .824
.192136	35.348	.404	+ .644	+.231	+ .875
	4931.207	.462	+ .633:	+.210:	+ .843:
	36.207	.423	+ .641:	+.227:	+ .868:
VY Car *	4512.358	.307	+1.443	+.110	+1.553
d^{-1}	13.322	.358	+1.395	+.070	+1.465
.052812	29.367	.205	+1.503	+.165	+1.668
	30.372	.258	+1.476	+.144	+1.620
	65.298	.103	+1.187	+.037	+1.224
	4869.440	.165	+1.468	+.164	+1.632
	90.399	.272	+1.464	+.109	+1.573
	4908.237	.214	+1.491:	+.156:	+1.647:
WW Car *	4513.334	.046	+ .478	+.222	+ .700
d^{-1}	19.403	.343	+ .393	+.143	+ .536
.213821	32.387	.120	+ .505	+.217	+ .722
	4865.456	.337	+ .382	+.139	+ .521
	4906.390	.089	+ .486	+.200	+ .686
	25.238	.119	+ .522:	+.221:	+ .743:
	30.236	.188	+ .479	+.193	+ .672
	5223.447	.883	+ .223	+.083	+ .306
	24.455	.098	+ .516	+.222	+ .738
	5303.236	.943	+ .254	+.100	+ .354
WZ Car *	4529.378	.865	+ .587:	+.015:	+ .602:
d^{-1}	30.381	.908	+ .614	−.020	+ .594
.043464	72.236	.728	+ .716	+.120	+ .836
	74.243	.815	+ .681	+.048	+ .729
	4847.314	.684	+ .745	+.169	+ .914
	67.375	.556	+ .477	+.043	+ .520
	69.455	.646	+ .769	+.186	+ .955
	85.415	.340	+ .332	−.129	+ .203
	86.403	.383	+ .328	−.105	+ .223
	95.405	.774	+ .686	+.072	+ .758
	96.350	.815	+ .647	+.041	+ .688
	4907.284	.290	+ .354	−.146	+ .208

TABLE 6 (*continued*)

Name of Cepheid	J.D. hel. − 2430000	phase	log I_Y	Δ log I	log I_B
	d				
	4914.315	.596	+ .754	+.175	+ .929
	17.332	.727	+ .703	+.096	+ .799
	20.342	.858	+ .633	+.002	+ .635
	34.194	.460	+ .314	−.092	+ .222
XX Car *	4566.204	.538	− .123:	−.031:	− .154:
d^{-1}	72.276	.925	+ .694	+.170	+ .864
.063628	73.288	.989	+ .656	+.123	+ .779
	86.218	.812	+ .513	+.087	+ .600
	4886.413	.913	+ .733	+.192	+ .925
	4917.343	.881	+ .770	+.213	+ .983
	18.302	.942	+ .695	+.152	+ .847
	34.211	.954	+ .685	+.153	+ .838
XY Car *	4513.385	.962	+ .614	+.020	+ .634
d^{-1}	76.248	.017	+ .575	−.012	+ .563
.080419	78.261	.179	+ .465	−.092	+ .373
	87.188	.897	+ .633	+.048	+ .681
	4834.430	.780	+ .723:	+.135:	+ .858:
	35.490	.865	+ .681	+.085	+ .766
	47.323	.817	+ .691	+.101	+ .792
	85.424	.881	+ .654	+.074	+ .728
	86.420	.961	+ .620	+.032	+ .652
	5194.543	.740	+ .634	+.077	+ .711
	5567.453	.729	+ .611	+.074	+ .685
	5616.350	.661	+ .500	+.013	+ .513
	28.318	.624	+ .498	+.006	+ .504
	40.235	.582	+ .496	−.008	+ .488
	41.226	.662	+ .525	+.011	+ .536
YZ Car *	4561.281	.130	+ .898	+.110	+1.008
d^{-1}	64.268	.295	+ .916:	+.047:	+ .963:
.055057	73.264	.790	+ .600	−.059	+ .541
	75.228	.898	+ .615	−.038	+ .577
	76.221	.953	+ .640	−.013	+ .627
	78.205	.062	+ .722	+.029	+ .751
	4834.410	.168	+ .942:	+.159:	+1.101:
	35.467	.226	+ .913	+.147	+1.060
	90.384	.250	+ .908	+.104	+1.012
	4907.265	.179	+ .939	+.137	+1.076
	43.244	.160	+ .924	+.141	+1.065
AQ Car *	4510.351	.702	+ .735	+.117	+ .852
d^{-1}	19.369	.625	+ .767	+.146	+ .913
.102365	29.347	.647	+ .760	+.122	+ .882
	67.212	.523	+ .820:	+.169:	+ .999:
	4930.207	.681	+ .731:	+.108:	+ .839:
	5308.228	.377	+ .744	+.170	+ .914
	09.210	.477	+ .825	+.179	+1.004
	10.215	.580	+ .747	+.130	+ .877
	5535.478	.639	+ .766	+.126	+ .892
	73.484	.530	+ .792	+.163	+ .955
	5611.341	.405	+ .771	+.181	+ .952
	20.299	.322	+ .752	+.171	+ .923
CC Car *	4534.352	.667	− .445	+.102	− .343
d^{-1}	35.371	.881	− .502	+.037	− .465
.210100	62.299	.539	− .654	−.013	− .667
	67.267	.583	− .722?	+.028?	− .694?
	4925.252	.795	− .209?	−.075?	− .284?
	53.229	.673	− .293?	+.457?	+ .164?
	5224.480	.663	− .440	+.065	− .375
	53.276	.713	− .418	+.075	− .343
	81.300	.601	− .478	+.021	− .457
	82.234	.797	− .505:	+.029:	− .476:
	5535.539	.017	− .548	+.002	− .546
	55.500	.211	− .620	−.045	− .665
	67.439	.719	− .418	+.060	− .358
	80.375	.437	− .638	−.058	− .696
	95.385	.590	− .544	+.017	− .527
	5609.390	.533	− .616	−.012	− .628
	23.323	.460	− .631	−.032	− .663
	24.242	.653	− .451	+.067	− .384
	27.230	.281	− .620	−.038	− .658
	39.210	.798	− .477	+.023	− .454
	40.224	.011	− .549	−.002	− .551
	41.215	.219	− .594	−.052	− .646
CN Car *	4510.337	.390	+ .144	+.136	+ .280
d^{-1}	35.289	.448	+ .090	+.117	+ .207
.202732	36.287	.651	− .015	+.027	+ .012
	64.251	.320	+ .095:	+.060:	+ .155:
	4885.375	.422	+ .096	+.122	+ .218
	4929.253	.317	+ .098	+.112	+ .210
CR Car	4920 302	.041	− .286	+.010	− .276
d^{-1}	21.307	.144	− .338:	−.004:	− .342:
.102441	30.224	.057	− .272:	−.014:	− .286:
	5281.249	.016	− .225:	+.026:	− .199:
	5308.239	.781	− .395	−.030	− .425
	09.219	.882	− .324	.000	− .324
	5535.492	.061	− .264	+.012	− .252
	73.500	.955	− .316	−.029	− .345
	5611.369	.834	− .330	+.002	− .328
	24.231	.152	− .316	−.024	− .340
	d				
CT Car	4517.318	.178	− .434	+.067	− .367
d^{-1}	33.338	.065	− .693	−.151	− .844
.055382	34.311	.119	− .655	−.013	− .668
	35.362	.177	− .408	+.033	− .375
	74.215	.329	− .517:	+.002:	− .515:
	5275.284	.156	− .486:	−.065:	− .551:
	96.239	.316	− .544	−.004	− .548
	5567.408	.334	− .490	−.046	− .536
	5636.221	.145	− .636:	−.008:	− .644:
	37.270	.203	− .486:	+.068:	− .418:
	38.252	.258	− .454	−.016	− .470
CY Car *	4522.287	.096	+ .277	+.099	+ .376
d^{-1}	4890.410	.390	+ .447	+.161	+ .608
.234416	4914.333	.998	+ .259	+.069	+ .328
	5282.249	.244	+ .385:	+.173:	+ .558:
	5303.249	.166	+ .318	+.119	+ .437
	08.251	.339	+ .429	+.184	+ .613
	5535.556	.623	+ .345	+.105	+ .450
	68.449	.334	+ .470	+.190	+ .660
	73.522	.523	+ .376	+.130	+ .506
	5611.400	.402	+ .414	+.163	+ .577
DY Car *	4513.343	.476	− .297	+.108	− .189
d^{-1}	46.276	.521	− .181	+.186	+ .005
.213916	79.235	.572	− .127	+.182	+ .055
	4953.213	.572	− .165	+.156	− .009
	5224.468	.597	− .140	+.193	+ .053
	5253.263	.757	− .213	+.116	− .097
ER Car *	4519.424	.514	+1.600	+.236	+1.836
d^{-1}	33.364	.320	+1.451	+.139	+1.590
.129555	34.384	.452	+1.576	+.224	+1.800
	4834.438	.326	+1.465:	+.153:	+1.618:
	35.498	.463	+1.594	+.218	+1.812
	90.419	.578	+1.616	+.208	+1.824
	4943.268	.425	+1.535	+.193	+1.728
	5253.303	.592	+1.618	+.216	+1.834
	5555.534	.747	+1.566	+.166	+1.732
	5608.340	.588	+1.613	+.213	+1.826
	16.359	.627	+1.562	+.194	+1.756
	23.333	.531	+1.628	+.238	+1.866
	24.253	.650	+1.581	+.192	+1.773
EY Car *	4517.330	.689	+ .096	+.093	+ .189
d^{-1}	20.317	.728	+ .206	+.205	+ .411
.347703	32.368	.918	+ .221	+.204	+ .425
	66.213	.686	+ .032:	+.138:	+ .170:
	72.212	.772	+ .161	+.184	+ .345
	4917.322	.768	+ .200	+.181	+ .381
	20.325	.812	+ .168	+.188	+ .356
	5256.310	.635	+ .080	+.159	+ .239
	85.260	.701	+ .149	+.177	+ .326
	5567.421	.809	+ .246	+.210	+ .456
	68.437	.162	+ .090	+.145	+ .235
	73.511	.926	+ .207	+.183	+ .390
	5608.330	.033	+ .154	+.168	+ .322
FI Car	4569.252	.614	− .270	−.089	− .359
d^{-1}	70.286	.691	− .341	−.129	− .470
.074326	5194.526	.088	− .504	−.270	− .774
	5223.400	.234	− .434	−.225	− .659
	24.442	.312	− .479	−.184	− .663
	81.287	.537	− .284	−.082	− .366
	85.282	.834	− .356	−.163	− .519
	5535.520	.433	− .413	−.151	− .564
	74.374	.321	− .470:	−.196:	− .666:
	5629.258	.400	− .425	−.123	− .548
	30.291	.477	− .401	−.125	− .526
FN Car *	4513.375	.232	− .398	+.054	− .344
d^{-1}	46.290	.409	− .231	+.122	− .109
.218070	74.257	.508	− .280	+.070	− .210
	4839.303	.307	− .269	+.065	− .204
	67.383	.430	− .237	+.114	− .123
	4917.365	.330	− .275	+.112	− .163
FO Car	4529.405	.373	+ .053	−.002	+ .051
d^{-1}	75.253	.800	− .155	−.091	− .246
.096563	78.251	.090	− .074	−.023	− .097
	80.237	.281	+ .068:	+.056:	+ .124:
	4943.256	.336	+ .076	+.047	+ .123
	5253.290	.273	+ .046	+.045	+ .091
	5308.262	.582	− .054	−.046	− .100
FR Car	4520.378	.783	+ .410	+.080	+ .490
d^{-1}	21.326	.871	+ .510	+.131	+ .641
.093307	33.377	.996	+ .512	+.089	+ .601
	4865.468	.982	+ .508	+.090	+ .598
	4918.312	.913	+ .509	+.109	+ .618
	29.310	.939	+ .510	+.104	+ .614
	5251.384	.991	+ .515	+.089	+ .604
	82.270	.873	+ .453	+.104	+ .557
	5315.219	.947	+ .493	+.090	+ .583

TABLE 6 (*continued*)

Name of Cepheid	J.D. hel. −2430000	phase	log I_Y	Δ log I	log I_B
	d				
GH Car *	4520.357	.503	+ .632	+.141	+ .773
d^{-1}	21.277	.664	+ .607	+.131	+ .738
.174655	88.219	.355	+ .632	+.132	+ .764
	4834.445	.360	+ .648:	+.162:	+ .810:
	35.505	.545	+ .640	+.155	+ .795
	4921.346	.538	+ .634	+.140	+ .774
	5555.545	.304	+ .605	+.130	+ .735
	67.498	.391	+ .644	+.148	+ .792
	68.460	.559	+ .639	+.135	+ .774
	80.388	.643	+ .614	+.119	+ .733
	5608.351	.527	+ .636	+.142	+ .778
	09.405	.711	+ .586	+.115	+ .701
	11.412	.061	+ .511	+.087	+ .598
GI Car *	4512.382	.458	+ .991	+.269	+1.260
d^{-1}	20.368	.261	+ .906	+.215	+1.121
.225703	21.286	.468	+ .984	+.262	+1.246
	30.405	.526	+ .998	+.248	+1.246
	4835.513	.390	+ .960	+.243	+1.203
	67.395	.586	+ .973	+.257	+1.230
	5253.313	.689	+ .948	+.225	+1.173
	5310.226	.534	+ .962	+.242	+1.204
	28.216	.594	+ .963	+.239	+1.202
GX Car *	4522.252	.399	+ .526	+.096	+ .622
d^{-1}	23.270	.540	+ .664	+.161	+ .825
.138957	31.328	.660	+ .612	+.102	+ .714
	45.232	.592	+ .636	+.141	+ .777
	4839.261	.449	+ .610	+.129	+ .739
GZ Car *	4513.286	.224	+ .182	+.111	+ .293
d^{-1}	17.288	.186	+ .218	+.138	+ .356
.240451	21.249	.139	+ .169	+.109	+ .278
	29.339	.084	+ .218	+.127	+ .345
	61.214	.748	+ .179	+.093	+ .272
	4812.445	.157	+ .182	+.112	+ .294
	69.403	.853	+ .188	+.127	+ .315
	86.321	.921	+ .213	+.143	+ .356
	95.331	.087	+ .268:	+.130:	+ .398:
	4917.294	.368	+ .123	+.057	+ .180
	19.306	.852	+ .173	+.121	+ .294
	24.250	.041	+ .233:	+.146:	+ .379:
	31.196	.711	+ .113:	+.080:	+ .193:
	43.210	.600	+ .122:	+.083:	+ .205:
HK Car *	4529.412	.463	+ .239	+.119	+ .358
d^{-1}	35.374	.354	+ .268	+.133	+ .401
.149349	68.211	.258	+ .217:	+.111:	+ .328:
	4917.373	.405	+ .259	+.102	+ .361
	24.314	.441	+ .243:	+.108:	+ .351:
IT Car *	4546.300	.308	+ .986	+.096	+1.082
d^{-1}	4847.333	.256	+ .983	+.072	+1.055
.132703	4907.294	.213	+ .994	+.082	+1.076
	08.246	.339	+ .958	+.055	+1.013
	14.344	.148	+1.012	+.105	+1.117
	16.278	.405	+ .929	+.060	+ .989
	24.324	.473	+ .915	+.048	+ .963
	30.292	.265	+ .990	+.068	+1.058
	5251.372	.873	+1.070	+.141	+1.211
	82.260	.972	+ .998	+.102	+1.100
	5328.208	.069	+1.005	+.107	+1.112
	5567.506	.825	+1.072	+.144	+1.216
	73.532	.624	+ .994	+.109	+1.103
	74.383	.737	+1.062:	+.130:	+1.192:
	5611.421	.652	+ .996	+.108	+1.104
	20.309	.832	+1.072	+.151	+1.223
	21.394	.976	+1.042	+.117	+1.159
l Car *	4544.273	.858	+2.631	−.080	+2.551
d^{-1}	45.222	.884	+2.641	−.069	+2.572
.028136	46.229	.913	+2.661	−.041	+2.620
	4833.404	.993	+2.762		
	34.371	.020	+2.809		
	35.456	.050	+2.860		
	65.391	.893	+2.617		
	67.353	.948	+2.674		
	69.392	.005	+2.782		
	4907.252	.070	+2.872		
	08.228	.098	+2.986:		
	13.241	.239	+2.892		
	5302.216	.183	+2.905	+.034	+2.939
	.224	.183	+2.911	+.041	+2.952
	03.216	.211	+2.863	+.015	+2.878
	5616.305	.020	+2.845	+.051	+2.896
	19.269	.104	+2.938	+.086	+3.024
	20.275	.132	+2.931	+.091	+3.022
	22.256	.188	+2.914:	+.048:	+2.962:
	56.238	.144	+2.930	+.079	+3.009
	57.191	.171	+2.939	+.065	+3.004
	d				
V Cen *	4513.442	.528	+1.595	+.178	+1.773
d^{-1}	19.457	.623	+1.540	+.148	+1.688
.182018	29.470	.445	+1.658	+.229	+1.887
	78.300	.333	+1.666	+.247	+1.913
	4847.437	.321	+1.661:	+.224:	+1.885:
	69.497	.336	+1.665	+.238	+1.903
	86.528	.436	+1.628	+.243	+1.871
	5281.360	.303	+1.652	+.223	+1.875
	86.315	.204	+1.447	+.126	+1.573
	5302.252	.105	+1.365	+.053	+1.418
TX Cen *	4562.327	.901	− .086	−.357	− .443
d^{-1}	64.349	.019	− .174:	−.374:	− .548:
.058501	68.305	.250	− .024	−.270	− .294
	69.379	.313	+ .017	−.213	− .196
	70.361	.371	+ .300	−.076	+ .224
	72.336	.486	+ .223	−.145	+ .078
	4929.414	.376	+ .287	−.078	+ .209
	30.358	.431	+ .266	−.118	+ .148
	5251.485	.217	− .072	−.294	− .366
	81.402	.967	− .133	−.367	− .500
	85.340	.198	− .092	−.305	− .397
	86.325	.255	− .056	−.265	− .321
	5308.347	.544	+ .194	−.175	+ .019
	58.228	.462	+ .239	−.121	+ .118
UZ Cen *	4517.415	.804	+ .837	+.256	+1.093
d^{-1}	74.269	.855	+ .843	+.247	+1.090
.299907	4834.477	.893	+ .909	+.274	+1.183
	47.375	.762	+ .781	+.227	+1.008
	4907.331	.743	+ .896	+.281	+1.177
	17.392	.760	+ .841	+.253	+1.094
	21.367	.952	+ .881	+.259	+1.140
	5567.517	.737	+ .818	+.250	+1.068
	73.552	.547	+ .604	+.132	+ .736
	74.391	.799	+ .899:	+.275:	+1.174:
	80.397	.600	+ .610	+.124	+ .734
	5608.400	.998	+ .784	+.217	+1.001
	09.419	.304	+ .678	+.167	+ .845
	11.440	.910	+ .891	+.279	+1.170
	16.370	.389	+ .628	+.148	+ .776
VW Cen *	4561.346	.357	+ .009	−.193	− .184
d^{-1}	63.398	.493	+ .048	−.117	− .069
.066506	67.318	.754	+ .344	+.049	+ .393
	70.319	.954	+ .212	−.094	+ .118
	80.313	.618	+ .189	−.010	+ .179
	4867.472	.716	+ .366	+.063	+ .429
	69.485	.850	+ .267	−.031	+ .236
	98.442	.776	+ .286	−.018	+ .268
	5302.242	.631	+ .244	+.023	+ .267
	03.302	.701	+ .350:	+.062:	+ .412:
XX Cen *	4517.476	.337	+1.227	+.144	+1.371
d^{-1}	29.460	.431	+1.188	+.106	+1.294
.091276	4847.426	.454	+1.170:	+.074:	+1.244:
	89.440	.289	+1.289	+.190	+1.479
	98.424	.109	+1.274?	+.188?	+1.462?
	4901.603	.399	+1.207	+.101	+1.308
	22.364	.294	+1.274	+.199	+1.473
	.446	.301	+1.277	+.177	+1.454
	5282.336	.151	+1.187	+.150	+1.337
	5349.230	.256	+1.317	+.210	+1.527
	59.224	.169	+1.220	+.164	+1.384
	5567.541	.183	+1.234	+.179	+1.413
	5621.416	.100	+1.156:	+.124:	+1.280:
	43.282	.096	+1.155	+.141	+1.296
	44.227	.182	+1.250	+.174	+1.424
AY Cen *	4520.390	.339	+ .769	+.102	+ .871
d^{-1}	46.307	.220	+ .820	+.150	+ .970
.188333	80.247	.612	+ .635:	+.066:	+ .701:
	88.251	.119	+ .825	+.157	+ .982
	4834.456	.488	+ .719:	+.068:	+ .787:
	65.478	.330	+ .766	+.107	+ .873
	4917.384	.106	+ .810	+.157	+ .967
	5224.494	.945	+ .674	+.075	+ .749
	5309.240	.905	+ .626	+.041	+ .667
	15.230	.033	+ .757	+.128	+ .885
AZ Cen *	4521.337	.352	+ .737	+.219	+ .956
d^{-1}	33.387	.103	+ .820	+.245	+1.065
.311269	78.272	.074	+ .812	+.235	+1.047
	4835.522	.148	+ .804	+.241	+1.045
	90.429	.239	+ .768	+.201	+ .969
	4925.299	.093	+ .800	+.226	+1.026
	5188.545	.033	+ .831	+.261	+1.092
	94.566	.907	+ .857	+.267	+1.124
	5223.462	.902	+ .867	+.271	+1.138
	5573.542	.871	+ .865	+.264	+1.129
	5608.389	.718	+ .828	+.256	+1.084
	11.430	.664	+ .788	+.243	+1.031
	30.322	.545	+ .750:	+.202:	+ .952:

TABLE 6 (*continued*)

Name of Cepheid	J.D. hel. − 2430000	phase	log I_Y	Δ log I	log I_B
	d				
IU Cen *	4569.357	.619	− .744	+.194	− .550
d^{-1}	72.324	.513	− .692	+.248	− .444
.301272	75.376	.433	− .828	+.329	− .499
	4867.487	.438	− .769	+.299	− .470
	4947.283	.478	− .711	+.246	− .465
	50.257	.374	− .967	+.285	− .682
KK Cen *	4512.392	.467	− .105	+.088	− .017
d^{-1}	13.393	.550	− .179	+.031	− .148
.082100	4865.497	.457	− .150	+.075	− .075
	90.440	.505	− .108	+.048	− .060
	5194.580	.475	− .143	+.082	− .061
	5223.488	.848	− .381	−.112	− .493
	51.409	.141	− .499	−.126	− .625
	81.314	.596	− .205	+.009	− .196
	86.260	.002	− .499	−.161	− .660
	5303.262	.398	− .308	−.028	− .336
KN Cen *	4561.366	.081	+ .162	−.246	− .084
d^{-1}	67.331	.257	+ .268	−.160	+ .108
.029395	69.341	.316	+ .490	−.076	+ .414
	73.347	.434	+ .464	−.109	+ .355
	4947.260	.425	+ .501	−.099	+ .402
	5251.473	.367	+ .537	−.068	+ .469
	53.326	.422	+ .512	−.101	+ .411
	86.293	.391	+ .522	−.089	+ .433
MY Cen *	4568.284	.494	− .378	−.160	− .538
d^{-1}	72.295	.572	− .435	−.188	− .623
.268918	75.356	.396	− .431	−.167	− .598
	76.314	.653	− .522:	−.207:	− .729:
	4869.473	.489	− .406	−.130	− .536
	4929.371	.597	− .448	−.194	− .542
	5281.345	.249	− .624	−.266	− .890
	85.320	.318	− .568	−.240	− .808
	5303.288	.150	− .703:	−.294:	− .997:
OO Cen *	4530.467	.732	− .393	−.175	− .568
d^{-1}	4916.364	.692	− .381:	−.218:	− .599:
.077637	50.275	.325	− .622	−.355	− .977
	52.281	.480	− .545	−.341	− .886
	53.263	.556	− .438	−.272	− .710
	5328.237	.668	− .384	−.197	− .581
	5573.568	.715	− .402	−.244	− .646
	74.423	.781	− .410:	−.361:	− .771:
	5611.503	.660	− .326	−.212	− .538
	23.344	.580	− .401	−.225	− .626
V339 Cen *	4562.317	.908	+ .663	−.081	+ .582
d^{-1}	63.412	.024	+ .613	−.074	+ .539
.105628	67.373	.442	+ .859	+.057	+ .916
	68.296	.540	+ .864	+.025	+ .889
	69.370	.653	+ .802	−.003	+ .799
	76.325	.388	+ .822	+.043	+ .865
	4889.449	.463	+ .876	+.067	+ .943
	4917.455	.421	+ .867	+.051	+ .918
V378 Cen *	4521.393	.984	+ .802	+.071	+ .873
d^{-1}	22.356	.133	+ .924	+.130	+1.054
.154816	29.453	.232	+ .948	+.127	+1.075
	72.305	.866	+ .799	+.037	+ .836
	88.305	.343	+ .905	+.111	+1.016
	4916.356	.131	+ .912	+.121	+1.033
	30.346	.296	+ .927	+.115	+1.042
	36.273	.214	+ .933	+.124	+1.057
V381 Cen *	4520.456	.069	+1.264	+.249	+1.513
d^{-1}	21.411	.257	+1.267	+.237	+1.504
.196898	46.333	.164	+1.314	+.270	+1.584
	4886.520	.146	+1.318	+.273	+1.591
	4932.291	.158	+1.312	+.261	+1.573
V419 Cen *	4585.243	.882	+ .918	+.161	+1.079
d^{-1}	86.268	.068	+1.008	+.206	+1.214
.181426	87.206	.238	+1.017	+.220	+1.237
	88.259	.429	+ .971	+.187	+1.158
	4865.487	.726	+ .919	+.172	+1.091
	95.415	.156	+1.039	+.224	+1.263
	4906.408	.150	+1.003	+.205	+1.208
	34.220	.196	+1.031	+.226	+1.257
V420 Cen *	4565.315	.845	+ .229	+.178	+ .407
d^{-1}	85.247	.652	+ .361	+.195	+ .556
.040489	87.213	.732	+ .319	+.192	+ .511
	88.269	.774	+ .308	+.180	+ .488
	4834.468	.743	+ .337:	+.204:	+ .541:
	35.533	.786	+ .317	+.188	+ .505
	86.437	.847	+ .256	+.163	+ .419
	95.424	.211	+ .088	+.188	+ .276
	96.382	.250	+ .111	+.222	+ .333
	4914.355	.977	+ .179	+.137	+ .316
	16.288	.056	+ .103	+.149	+ .252
	18.324	.138	+ .094	+.158	+ .252
	19.369	.180	+ .083	+.178	+ .261

Name of Cepheid	J.D. hel. − 2430000	phase	log I_Y	Δ log I	log I_B
	d				
	4920.354	.220	+ .095	+.193	+ .288
	21.356	.261	+ .130	+.223	+ .353
	24.336	.381	+ .442	+.313	+ .755
	5223.473	.493	+ .417	+.270	+ .687
	24.507	.535	+ .390	+.242	+ .632
V496 Cen *	4513.434	.185	+ .384	+.098	+ .482
d^{-1}	17.465	.096	+ .400	+.089	+ .489
.226033	22.345	.199	+ .380	+.070	+ .450
	30.457	.033	+ .340	+.054	+ .394
	4867.459	.206	+ .356	+.067	+ .423
	4929.358	.198	+ .378	+.064	+ .442
AL CrA *	4563.554	.538	− .369	+.101	− .268
d^{-1}	78.514	.415	− .320	+.154	− .166
.058625	79.470	.471	− .319	+.132	− .187
	5308.484	.210	− .474	+.247	− .227
	09.357	.261	− .440	+.264	− .176
	10.353	.319	− .389	+.193	− .196
	28.308	.372	− .345	+.190	− .155
	5612.410	.028	− .674	+.117	− .557
	24.573	.741	− .751:	+.035:	− .716
	26.554	.857	− .729	−.015	− .744
	27.418	.907	− .748:	−.022:	− .760
	28.541	.973	− .714	+.088	− .626
	29.487	.029	− .659	+.151	− .508
	30.476	.087	− .617	+.196	− .421
	31.381	.140	− .548	+.218	− .330
	34.465	.321	− .317	+.152	− .165
	36.440	.436	− .334	+.126	− .208
	37.434	.495	− .361	+.115	− .246
	38.466	.555	− .408	+.087	− .321
	39.485	.615	− .462	+.042	− .420
	42.531	.793	− .772	−.022	− .794
	52.351	.369	− .343	+.163	− .180
	57.461	.669	− .577	+.075	− .502
	67.498	.257	− .416	+.238	− .178
	68.436	.312	− .354	+.218	− .136
KQ CrA *	4562.546	.826	− .677	+.071	− .606
d^{-1}	64.535	.891	− .559	+.230	− .329
.032400	73.422	.179	− .511	+.071	− .440
	74.425	.211	− .518	+.091	− .427
	76.445	.277	− .566	+.015	− .551
	77.475	.310	− .617	+.084	− .533
	78.485	.343	− .600	+.045	− .555
	5281.472	.120	− .513	+.132	− .381
	5308.441	.993	− .507	+.187	− .320
	09.341	.023	− .617	+.185	− .432
	10.288	.053	− .545	+.140	− .405
	5567.571	.389	− .629	+.091	− .538
	5623.444	.200	− .568:	+.099:	− .469:
	24.504	.234	− .566:	+.107:	− .459:
	26.532	.300	− .544	+.090	− .454
	27.393	.328	− .534	+.044	− .490
	28.497	.363	− .708:	+.152:	− .556:
	29.463	.395	− .759:	+.035:	− .724:
	30.366	.424	− .664:	+.016:	− .648:
	31.356	.456	− .605	+.009	− .596
	34.444	.556	− .858	+.060	− .798
	36.417	.620	− .749	−.085	− .834
	38.437	.685	−1.013	+.031	− .982
	39.462	.719	− .914:	+.050:	− .864:
	52.328	.135	− .540:	+.163:	− .377:
	55.427	.236	− .584:	+.184:	− .400:
	64.227	.521	− .487:	+.031:	− .456:
	68.424	.657	− .718:	+.015:	− .703:
V347 CrA *	4563.541	.319	− .655	+.184	− .471
d^{-1}	64.572	.386	− .752	+.207	− .545
.065151	75.527	.100	− .749	+.202	− .547
	4930.472	.225	− .653:	+.192:	− .461:
	5328.291	.143	− .643	+.215	−. 428
	43.235	.117	− .658:	+.225:	− .433:
	5624.546	.445	− .775:	+.133:	− .642:
R Cru *	4520.444	.943	+1.683	+.269	+1.952
d^{-1}	32.415	.998	+1.661	+.262	+1.923
.171652	4847.392	.065	+1.653	+.238	+1.891
	86.467	.772	+1.457	+.167	+1.624
	4916.338	.899	+1.674	+.281	+1.955
	22.312	.925	+1.689	+.280	+1.969
S Cru	4587.270	.093	+1.486	+.115	+1.601
d^{-1}	88.297	.312	+1.560	+.182	+1.742
.213219	4847.418	.562	+1.730	+.242	+1.972
	4907.362	.343	+1.652	+.228	+1.880
	08.262	.535	+1.744	+.261	+2.005
	31.291	.445	+1.768	+.283	+2.051
	5282.325	.292	+1.541	+.169	+1.710
	5348.237	.346	+1.633	+.237	+1.870
	58.200	.470	+1.745	+.285	+2.030

Table 6 (*continued*)

Name of Cepheid	J.D. hel. − 2430000	phase	log I_Y	Δ log I	log I_B
	d				
T Cru *	4513.410	.318	+1.636	+.151	+1.787
d^{-1}	20.433	.361	+1.673	+.184	+1.857
.148517	21.386	.503	+1.698	+.192	+1.890
	34.412	.437	+1.718	+.205	+1.923
	4925.352	.499	+1.717	+.189	+1.906
	31.231	.372	+1.682:	+.173:	+1.855:
	5188.557	.589	+1.676	+.162	+1.838
	94.592	.485	+1.705	+.184	+1.889
	5296.269	.586	+1.673	+.151	+1.824
X Cru *	4563.363	.661	+ .809	+.037	+ .846
d^{-1}	64.312	.814	+ .793:	+.050:	+ .843:
.160772	65.331	.977	+ .851	+.097	+ .948
	4901.451	.016	+ .897	+.109	+1.006
	06.436	.818	+ .773	+.030	+ .803
	07.355	.965	+ .879	+.098	+ .977
	14.376	.094	+ .979	+.142	+1.121
	25.363	.860	+ .794	+.042	+ .836
	5188.568	.176	+ .999	+.167	+1.166
	5281.329	.090	+ .993	+.150	+1.143
	82.311	.248	+ .944	+.130	+1.074
	5308.316	.429	+ .897	+.078	+ .975
SU Cru *	4512.422	.224	+ .400	−.210	+ .190
d^{-1}	30.429	.626	+ .274	−.378	− .104
.077835	32.408	.780	+ .257	−.346	− .089
	34.407	.936	+ .328	−.255	+ .073
	87.252	.049	+ .481	−.087	+ .394
	4834.561	.298	+ .377	−.247	+ .130
	95.452	.038	+ .492	−.093	+ .399
	96.394	.111	+ .433	−.157	+ .276
	4921.387	.056	+ .492	−.090	+ .402
	22.306	.128	+ .436	−.158	+ .278
	34.235	.056	+ .494	−.094	+ .400
	5331.231	.956	+ .331	−.248	+ .083
	5626.247	.919	+ .276	−.288	− .012
	27.250	.997	+ .372	−.206	+ .166
	39.226	.929	+ .310:	−.291:	+ .019:
	40.247	.009	+ .405	−.181	+ .224
	41.237	.086	+ .465	−.147	+ .318
SV Cru	4512.403	.236	− .441	−.013	− .454
d^{-1}	46.321	.078	− .563	−.065	− .628
.142770	75.267	.211	− .469	−.004	− .473
	76.289	.357	− .537	−.078	− .615
	4834.496	.221	− .453:	−.044:	− .497:
	4919.388	.341	− .527:	−.053:	− .580:
	25.313	.187	− .464	−.011	− .475
TY Cru *	4567.300	.566	− .723	−.035	− .758
d^{-1}	76.297	.369	− .855	−.112	− .967
.200461	77.307	.572	− .770:	−.051:	− .821:
	4916.323	.531	− .772	−.065	− .837
	5555.559	.673	− .807:	−.127:	− .934:
	74.402	.450	− .744:	−.082:	− .826:
	5629.274	.450	− .814:	−.064:	− .878:
VW Cru *	4512.430	.086	+ .467	+.011	+ .478
d^{-1}	13.425	.275	+ .476	−.020	+ .456
.189939	45.260	.322	+ .459	−.026	+ .433
	85.258	.919	+ .281	−.101	+ .180
	4929.345	.275	+ .477	−.018	+ .459
	34.286	.213	+ .494	+.004	+ .498
VX Cru *	4512.441	.492	− .628	−.249	− .877
d^{-1}	17.445	.902	− .434	−.125	− .559
.081883	.454	.903	− .404	−.132	− .536
	30.444	.966	− .290	−.083	− .373
	69.324	.150	− .474	−.151	− .625
	80.294	.048	− .364:	−.141:	− .505:
	4896.405	.932	− .390	−.105	− .495
	5251.422	.002	− .325	−.094	− .419
AD Cru *	4521.377	.637	− .031	+.060	+ .029
d^{-1}	34.398	.672	− .017	+.048	+ .031
.156288	35.409	.830	− .085	−.017	− .102
	4834.551	.582	− .042	+.023	− .019
	67.447	.724	− .055	+.011	− .044
	4924.353	.617	− .076:	−.020:	− .096:
	25.342	.772	− .073	+.004	− .069
	31.276	.699	− .023	+.010	− .013
	5224.521	.530	− .132	−.015	− .147
	82.285	.558	− .130	+.009	− .121
	5308.276	.620	− .038	+.040	+ .002
AG Cru *	4563.328	.194	+1.132	+.299	+1.431
d^{-1}	75.303	.315	+1.065	+.256	+1.321
.260598	4847.399	.222	+1.155	+.295	+1.450
	85.451	.139	+1.064	+.271	+1.335
	4901.435	.304	+1.080	+.246	+1.326
	16.347	.190	+1.127	+.301	+1.428
	20.394	.245	+1.119	+.283	+1.402
	d				
SU Cyg	5348.308	.795	+1.374	+.233	+1.607
d^{-1}	49.271	.046	+1.667	+.360	+2.027
.260044	64.310	.957	+1.547	+.295	+1.842
	65.324	.220	+1.567	+.306	+1.873
TX Del *	5343.358	.506	+ .607	+.240	+ .847
d^{-1}	5643.447	.170	+ .497	+.119	+ .616
.162165	54.460	.956	+ .614	+.202	+ .816
	65.464	.740	+ .686	+.274	+ .960
	68.513	.234	+ .465	+.107	+ .572
	81.412	.326	+ .458	+.108	+ .566
	82.448	.494	+ .610	+.236	+ .846
	83.442	.655	+ .713	+.295	+1.008
	88.373	.455	+ .534	+.186	+ .720
	89.366	.616	+ .658	+.309	+ .967
β Dor *	5547.232	.593	+2.650	+.152	+2.802
d^{-1}	48.249	.697	+2.732	+.184	+2.916
.101599	55.228	.406	+2.652	+.100	+2.752
	68.229	.726	+2.753	+.203	+2.956
	69.228	.828	+2.802	+.231	+3.033
	73.236	.235	+2.767	+.161	+2.928
	80.218	.945	+2.879	+.263	+3.142
	5608.204	.788	+2.804	+.225	+3.029
	12.185	.192	+2.798	+.184	+2.982
W Gem	4785.314	.624	+1.486	+.152	+1.638
d^{-1}	5535.304	.386	+1.314	+.020	+1.334
.126350	55.319	.915	+1.520:	+.142:	+1.662:
	68.289	.553	+1.392	+.110	+1.502
	73.281	.184	+1.417	+.054	+1.471
	80.255	.065	+1.500	+.112	+1.612
	95.219	.956	+1.572:	+.168:	+1.740:
AP Her *	5315.435	.670	+ .092	+.242	+ .334
d^{-1}	58.296	.788	+ .019	+.197	+ .216
.096073	5626.455	.550	+ .022	+.261	+ .283
	27.478	.649	+ .102	+.260	+ .362
	36.483	.514	− .030	+.236	+ .206
	37.447	.606	+ .086	+.281	+ .367
	46.460	.472	− .118	+.212	+ .094
	87.410	.407	+ .524?	+.095?	+ .619?
	88.281	.490	− .022	+.221	+ .199
BB Her *	5328.380	.719	+ .272	+.114	+ .386
d^{-1}	59.246	.830	+ .340	+.136	+ .476
.133196	64.266	.499	+ .080	−.017	+. 063
	65.284	.634	+ .182	+.060	+ .242
	5629.527	.830	+ .328	+.142	+ .470
	30.527	.964	+ .282	+.094	+ .376
	36.476	.756	+ .320	+.133	+ .453
RX Lib *	4562.374	.892	− .574	−.046	− .620
d^{-1}	4929.444	.607	− .425	+.157	− .268
.040087	30.403	.645	− .422	+.156	− .266
	31.309	.681	− .403	+.122	− .281
	32.313	.722	− .416	+.120	− .296
	5251.503	.517	− .478	+.219	− .259
	5302.267	.552	− .487	+.178	− .309
	5555.601	.707	− .444	+.094	− .350
	73.610	.429	− .586	+.188	− .398
	5608.440	.826	− .503	+.068	− .435
	09.449	.866	− .520	+.025	− .495
	11.524	.949	− .606	−.006	− .612
	12.386	.984	− .676	−.012	− .688
	22.352	.383	− .722:	+.140:	− .582:
	23.389	.425	− .665:	+.189:	− .476:
	24.278	.460	− .580:	+.200:	− .380:
	26.338	.543	− .484	+.176	− .308
	27.278	.581	− .457	+.173	− .284
	28.355	.624	− .423	+.167	− .256
	29.449	.668	− .415	+.117	− .298
	30.350	.704	− .461:	+.118:	− .343:
	31.343	.744	− .429	+.115	− .314
	34.236	.860	− .482	+.082	− .400
	37.316	.983	− .592	+.059	− .533
	38.335	.024	− .677:	+.028:	− .649:
	39.243	.060	− .676:	+.026:	− .650:
	40.281	.102	− .706:	+.148:	− .558:
	41.278	.142	− .755:	+.021:	− .734:
	42.500	.191	− .736:	+.034:	− .702:
	57.225	.781	− .479	+.059	− .420
	60.293	.904	− .558	−.017	− .575
T Mon	4784.328	.078	+1.958	+.144	+2.002
d^{-1}	85.304	.114	+1.996:	+.148:	+2.144:
.037012	5532.381	.764	+1.662	−.093	+1.569
	35.296	.872	+1.628	−.078	+1.550
	47.265	.315	+1.829?	+.120?	+1.949?
	55.258	.611	+1.704	−.096	+1.608
	67.266	.056	+1.888	+.084	+1.972
	68.254	.092	+1.988	+.146	+2.134
	75.234	.351	+1.870	+ 008	+1.878

TABLE 6 (*continued*)

Name of Cepheid	J.D. hel. − 2430000	phase	log I_Y	Δ log I	log I_B
	d				
SV Mon *	4784.307	.099	+ .855	−.050	+ .805
d^{-1}	85.285	.164	+ .786:	−.069:	+ .717:
.065652	5164.335	.049	+ .894	−.040	+ .854
	87.313	.557	+1.110	+.191	+1.301
	5532.360	.210	+ .716	−.041	+ .675
	35.276	.402	+ .836	+.016	+ .852
	48.290	.256	+ .713:	−.091:	+ .622:
	55.249	.713	+1.094	+.135	+1.229
	67.248	.501	+ .874	+.046	+ .920
	68.246	.566	+1.140	+.208	+1.348
	73.254	.895	+ .998	+.027	+1.025
	80.238	.354	+ .794	−.018	+ .776
	5612.201	.452	+ .872	+.076	+ .948
TX Mon *	4812.305	.982	− .028	+.074	+ .046
d^{-1}	5547.360	.447	− .252	−.059	− .311
.114910	67.294	.738	− .056:	+.083:	+ .027:
	68.302	.854	− .083:	+.061:	− .022:
	74.255	.538	− .242	−.002	− .244
	95.252	.950	− .018	+.070	+ .052
	5609.215	.555	− .224	+.002	− .222
AC Mon	5532.409	.113	+ .110	−.066	+ .044
d^{-1}	35.328	.477	+ .352	+.081	+ .433
.124740	47.402	.983	+ .188	−.030	+ .158
	68.322	.592	+ .299	+.042	+ .341
	73.304	.214	+ .086	−.072	+ .014
	74.269	.334	+ .192	+.006	+ .198
	5609.231	.695	+ .351	+.047	+ .398
	16.211	.566	+ .321:	−.076:	+ .245:
R Mus *	4573.312	.973	+1.630	+.125	+1.755
d^{-1}	75.315	.240	+1.556	+.120	+1.676
.133158	80.306	.904	+1.651:	+.147:	+1.798:
	87.262	.831	+1.736	+.190	+1.926
	4847.407	.471	+1.888	+.300	+2.188
	85.460	.538	+1.854	+.286	+2.140
	86.474	.673	+1.782	+.225	+2.007
	4907.342	.452	+1.881	+.295	+2.176
	08.256	.574	+1.839	+.265	+2.104
	5251.439	.271	+1.593	+.136	+1.729
	82.299	.380	+1.692	+.213	+1.905
	5349.211	.290	+1.597	+.156	+1.753
S Mus *	4563.316	.458	+1.863	+.213	+2.076
d^{-1}	75.286	.698	+1.744	+.125	+1.869
.103534	77.327	.909	+1.673	+.119	+1.792
	80.275	.214	+1.873	+.215	+2.088
	88.286	.044	+1.734	+.159	+1.893
	4834.505	.536	+1.829:	+.184:	+2.013:
	90.456	.328	+1.863	+.202	+2.065
	4929.334	.354	+1.868	+.203	+2.071
RT Mus *	4587.225	.426	+ .750	+.221	+ .971
d^{-1}	4834.486	.548	+ .791	+.230	+1.021
.324036	47.382	.726	+ .697	+.167	+ .864
	96.372	.601	+ .739	+.204	+ .943
	4905.425	.534	+ .809	+.230	+1.039
	20.369	.377	+ .628	+.168	+ .796
	21.377	.703	+ .697	+.166	+ .863
	5223.501	.602	+ .753	+.205	+ .958
	5309.251	.388	+ .653	+.173	+ .826
	28.225	.537	+ .773	+.241	+1.014
TZ Mus	4519.427	.959	− .415	+.028	− .387
d^{-1}	35.394	.188	− .196?	−.221?	− .417?
.202229	69.308	.047	− .307	+.040	− .267
	78.283	.862	− .386?	−.067?	− .453?
	4867.435	.337	− .421	−.038	− .459
	86.456	.183	− .337	+.003	− .334
	95.438	.000	− .315	−.004	− 319
	4916.304	.219	− .358	−.045	− .403
	20.380	.044	− .298	+.014	− .284
	5285.300	.841	− .549	−.098	− .647
	5315.243	.896	− .505	−.035	− .540
UU Mus *	4519.442	.401	+ .320	+.054	+ .374
d^{-1}	20.421	.485	+ .504	+.148	+ .652
.085940	21.351	.565	+ .524	+.142	+ .666
	4835.543	.567	+ .535	+.136	+ .671
	4905.443	.574	+ .527	+.108	+ .635
	06.421	.658	+ .422	+.053	+ .475
	29.324	.626	+ .459	+.066	+ .525
S Nor *	4561.469	.642	+1.605	+.033	+1.638
d^{-1}	63.484	.848	+1.634	+.075	+1.709
.102520	64.408	.943	+1.688	+.129	+1.817
	67.434	.253	+1.789	+.185	+1.974
	69.440	.459	+1.683	+.094	+1.777
	72.393	.762	+1.550	+.043	+1.593
	74.357	.963	+1.679	+.138	+1.817
	77.452	.280	+1.766	+.161	+1.927
	78.344	.372	+1.738	+.123	+1.861
	79.326	.473	+1.667	+.088	+1.755
	80.352	.578	+1.617	+.047	+1.664
	d				
	4585.276	.082	+1.742	+.165	+1.907
	86.314	.189	+1.795	+.178	+1.973
	4867.573	.024	+1.729	+.167	+1.896
	85.513	.863	+1.615	+.097	+1.712
	86.554	.970	+1.688	+.142	+1.830
	4917.498	.142	+1.760	+.167	+1.927
U Nor *	4562.357	.910	+ .620	−.176	+ .444
d^{-1}	63.434	.995	+ .547	−.235	+ .312
.079106	72.348	.700	+ .789	−.066	+ .723
	73.361	.780	+ .712	−.117	+ .595
	74.304	.855	+ .661	−.169	+ .492
	78.309	.172	+ .452	−.283	+ .169
	4885.505	.473	+ .490	−.217	+ .273
	86.539	.555	+ .562	−.168	+ .394
	4922.462	.396	+ .437	−.252	+ .185
	25.415	.630	+ .644	−.131	+ .513
RS Nor	4562.449	.101	+ .108	−.130	− .022
d^{-1}	63.471	.266	+ .241	−.046	+ .195
.161339	64.400	.416	+ .343	+.038	+ .381
	65.440	.584	+ .326	−.021	+ .305
	4905.554	.457	+ .386	+.031	+ .417
	17.469	.380	+ .413	+.039	+ .452
	30.435	.471	+ .391	+.034	+ .425
	43.289	.545	+ .350	+.006	+ .356
	5308.360	.445	+ .412	+.043	+ .455
	63.262	.303	+ .285:	−.022:	+ .263:
SY Nor *	4562.395	.808	+ .322	−.111	+ .211
d^{-1}	63.444	.891	+ .386	−.091	+ .295
.079083	65.404	.046	+ .497	−.030	+ .467
	67.386	.203	+ .597	−.016	+ .581
	68.316	.276	+ .572	−.059	+ .513
	4906.529	.023	+ .461	−.038	+ .423
	07.386	.091	+ .615	+.010	+ .625
	19.444	.044	+ .490	−.036	+ .454
	20.465	.125	+ .656	+.026	+ .682
	21.431	.202	+ .609	−.023	+ .586
TW Nor *	4563.462	.987	− .433	−.359	− .792
d^{-1}	65.429	.170	− .329	−.295	− .624
.092690	75.398	.094	− .360	−.313	− .673
	76.360	.183	− .353	−.300	− .653
	77.384	.278	− .198:	−.244:	− .442:
	4889.464	.204	− .314:	−.279:	− .593:
	5302.298	.470	− .363	−.337	− .700
	10.247	.207	− .284	−.298	− .582
	65.223	.303	− .237	−.309	− .546
UX Nor *	4567.452	.457	−1.099	+.377	− .722
d^{-1}	69.452	.295	−1.522?	+.360?	−1.162?
.419152	74.372	.357	−1.069	+.397	− .672
	75.422	.797	−1.236	+.194	−1.042
	4916.415	.725	−1.178:	+.190:	− .988:
	20.494	.435	−1.062	+.338	− .724
	21.447	.834	−1.348:	+.310:	−1.038:
	31.350	.985	−1.407:	+.049:	−1.358:
	5285.388	.381	−1.051	+.405	− .646
GU Nor *	4574.350	.819	+ .016	−.088	− .072
d^{-1}	75.410	.126	+ .204	+.018	+ .222
.289619	78.351	.977	+ .155	+.006	+ .161
	4914.412	.307	+ .118	−.050	+ .068
	17.490	.199	+ .173	−.003	+ .170
	20.474	.063	+ .223	+.023	+ .246
Y Oph *	4564.524	.628	+1.840	−.051	+1.789
d^{-1}	73.401	.146	+1.734	−.118	+1.616
.058413	79.416	.497	+1.917:	−.012:	+1.905:
	85.351	.844	+1.777	−.114	+1.663
	86.377	.904	+1.753	−.123	+1.630
	87.363	.962	+1.727	−.137	+1.590
	4901.628	.319	+1.792:	−.042:	+1.750:
	21.489	.479	+1.907	−.013	+1.894
	53.341	.340	+1.813	−.054	+1.759
	89.228	.436	+1.891	−.018	+1.873
BF Oph *	4585.322	.219	+1.244	+.090	+.1344
d^{-1}	86.324	.465	+1.215	+.110	+1.325
.245832	87.306	.707	+1.443	+.239	+1.682
	4901.560	.960	+1.307	+.150	+1.457
	05.612	.956	+1.329	+.141	+1.470
	16.431	.616	+1.422	+.224	+1.646
	17.509	.881	+1.362	+.160	+1.522
	41.204	.706	+1.446	+.226	+1.672
RS Ori *	4784.318	.257	+ .983	+.173	+1.156
d^{-1}	85.297	.387	+1.009:	+.163:	+1.172:
.132152	5532.373	.114	+ .780	+.052	+ .832
	35.284	.499	+ .944	+.129	+1.073
	67.254	.724	+ .871	+.046	+ .917
	73.262	.518	+ .957	+.131	+1.088
	74.230	.646	+ .934	+.104	+1.038
	80.246	.441	+1.004	+.154	+1.158

TABLE 6 (*continued*)

Name of Cepheid	J.D. hel. − 2430000	phase	log I_Y	Δ log I	log I_B
	d				
κ Pav *	5302.460	.026	+2.611	+.262	+2.873
d^{-1}	48.370	.091	+2.569	+.235	+2.804
.110331	49.258	.189	+2.475	+.176	+2.651
	65.301	.959	+2.665	+.316	+2.981
	70.291	.510	+2.380	+.210	+2.590
	72.268	.728	+2.582	+.323	+2.905
	5626.470	.774	+2.640	+.353	+2.993
	27.503	.888	+2.677	+.337	+3.014
	28.480	.996	+2.636	+.280	+2.916
	29.548	.114	+2.538	+.220	+2.758
	36.505	.881	+2.694	+.342	+3.036
X Pup *	4833.297	.193	+ .900	−.064	+ .836
d^{-1}	34.260	.230	+ .878	−.079	+ .799
.038523	35.237	.268	+ .845	−.097	+ .748
	65.262	.424	+ .737	−.154	+ .583
	67.241	.501	+ .696	.166	+ .530
	69.249	.578	+ .681	−.141	+ .540
	4905.226	.964	+1.052:	+.105:	+1.157:
	06.212	.002	+ .986:	+.096:	+1.082:
	07.215	.041	+ .950	+.030:	+ .980:
	5187.390	.834	+ .915	+.086:	+1.001:
	88.374	.872	+1.097	+.155	+1.252
RS Pup *	4529.260	.436	+1.413	−.069	+1.344
d^{-1}	30.239	.460	+1.492	−.018	+1.474
.024162	31.205	.483	+1.560	+.012	+1.572
	32.214	.507	+1.628	+.040	+1.668
	33.215	.532	+1.635	+.052	+1.687
	34.197	.555	+1.637	+.038	+1.675
	35.194	.579	+1.649	+.037	+1.686
	36.213	.604	+1.611	+.004	+1.615
	4866.271	.579	+1.666	+.040	+1.706
	67.298	.604	+1.647	+.012	+1.659
	69.340	.653	+1.595	−.037	+1.558
	4907.230	.568	+1.616	+.022	+1.638
	08.216	.592	+1.621:	+.019:	+1.640:
	13.216	.713	+1.616:	−.065:	+1.551:
ST Pup *	5532.394	.929	+ .288	+.201	+ .489
d^{-1}	35.316	.084	+ .112	+.144	+ .256
.052948	47.349	.721	+ .322	+.248	+ .570
	74.244	.145	+ .017	+.142	+ .159
	80.269	.464	+ .500	+.389	+ .889
	95.237	.257	− .032	+.205	+ .173
	5616.194	.366	+ .345:	+.379:	+ .724:
	17.196	.419	+ .509:	+.389:	+ .898:
VW Pup *	4833.286	.905	− .417	+.008	− .409
d^{-1}	85.227	.026	− .461:	+.013:	− .448:
.233362	5223.270	.913	− .392	−.015	− .407
	5555.402	.420	− .188	+.105	− .083
	67.320	.201	− .252	+.050	− .202
	73.346	.607	− .302	+.034	− .268
	74.292	.828	− .369	−.005	− .374
	95.281	.726	− .364	+.024	− .340
	5609.242	984	− .404	−.025	− .429
	22.215	.011	− .391:	+.006:	− .385:
	24.193	.473	− .230	+.076	− .154
	27.205	.176	− .312	+.030	− .282
VZ Pup *	4517.213	.008	+ .647	+.191	+ .838
d^{-1}	19.232	.095	+ .616	+.156	+ .772
.043170	20.183	.136	+ .532:	+.106:	+ .638:
	4865.274	.034	+ .648	+.178	+ .826
	86.210	.938	+ .228	−.032	+ .196
	5188.386	.983	+ .504	+.109	+ .613
	5256.231	.911	+ .196	−.070	+ .126
WW Pup	4835.246	.475	+ .149	+.215	+ .364
d^{-1}	69.259	.641	+ .165	+.195	+ .360
.181268	85.237	.537	+ .191	+.246	+ .437
	5194.376	.574	+ .195	+.225	+ .420
	5547.450	.575	+ .186	+.229	+ .415
	5555.411	.018	− .033	+.087	+ .054
	67.338	.180	− .127	+.045	− .082
	68.352	.364	− .120	+.084	− .036
	73.375	.275	− .160	+.058	− .102
	74.304	.443	+ .048	+.167	+ .215
	5624.203	.488	+ .186	+.216	+ .402
	29.214	.396	− .060	+.124	+ .064
WX Pup *	4513.205	.915	+ .575	+.104	+ .679
d^{-1}	22.181	.919	+ .607	+.110	+ .717
.111875	23.184	.031	+ .702	+.176	+ .878
	33.202	.152	+ .708	+.151	+ .859
	4835.335	.953	+ .635:	+.088:	+ .723:
	5256.240	.042	+ .744:	+.167:	+ .911:
	5568.385	.844	+ .637	+.133	+ .770
	5632.196	.102	− .661?	−.053?	− .714?
WY Pup *	4513.214	.528	− .092	+.144	+ .052
d^{-1}	23.199	.430	− .148	+.098	− .050
.190447	29.203	.573	+ .013	+.201	+ .214
	d				
	4530.213	.765	+ .144	+.249	+ .393
	31.192	.952	+ .031	+.168	+ .199
	4834.268	.672	+ .172	+.281	+ .453
	35.345	.877	+ .087	+.199	+ .286
	39.228	.616	+ .080	+.237	+ .317
	40.236	.808	+ .108	+.235	+ .343
	61.310	.822	+ .105	+.222	+ .327
	65.282	.578	+ .010	+.200	+ .210
	66.248	.762	+ .154	+.260	+ .414
	67.251	.953	+ .041	+.170	+ .211
WZ Pup *	4513.225	.710	+ .186	+.221	+ .407
d^{-1}	19.255	.908	+ .107	+.164	+ .271
.198685	23.214	.695	+ .177	+.227	+ .404
	32.198	.480	+ .242	+.263	+ .505
	4835.360	.714	+ .172	+.175	+ .347
	65.290	.660	+ .195	+.195	+ .390
	67.272	.054	+ .027	+.110	+ .137
	69.280	.453	+ .300	+.276	+ .576
	93.228	.211	− .044	+.106	+ .062
	5256.248	.338	+ .267	+.268	+ .535
AD Pup *	4519.244	.445	+ .532	+.210	+ .742
d^{-1}	20.195	.515	+ .374:	+.199:	+ .573:
.073562	.253	.519	+ .456:	+.159:	+ .615:
	31.184	.323	+ .244	+.065	+ .309
	32.178	.396	+ .474	+.199	+ .673
	4833.304	.548	+ .434	+.132	+ .566
	47.227	.572	+ .424	+.109	+ .533
AP Pup *	4847.256	.387	+1.408	+.248	+1.656
d^{-1}	67.262	.322	+1.354	+.211	+1.565
.196686	93.215	.427	+1.393	+.255	+1.648
	5188.430	.492	+1.380	+.219	+1.599
	5223.323	.355	+1.381	+.233	+1.614
	5532.444	.154	+1.182	+.094	+1.276
	35.392	.734	+1.306	+.149	+1.455
	5626.216	.598	+1.362	+.184	+1.546
	29.224	.190	+1.192	+.119	+1.311
	40.190	.346	+1.378	+.199	+1.577
AT Pup	5535.422	.540	+1.128	+.235	+1.363
d^{-1}	47.474	.349	+ .881	+.081	+ .962
.150041	73.401	.239	+ .914	+.086	+1.000
	74.316	.376	+ .882	+.088	+ .970
	80.324	.277	+ .898	+.076	+ .974
	95.318	.527	+1.098	+.224	+1.322
	5608.295	.474	+ .990	+.164	+1.154
	09.278	.622	+1.244	+.290	+1.534
	12.236	.066	+1.007	+.125	+1.132
	16.231	.665	+1.212	+.266	+1.478
	22.234	.566	+1.210	+.273	+1.483
	29.231	.615	+1.234	+.292	+1.526
	36.191	.660	+1.211	+.267	+1.478
	40.197	.261	+ .902	+.075	+ .977
	41.192	.410	+ .928	+.107	+1.035
	44.206	.862	+1.096	+.182	+1.278
EK Pup *	4517.227	.174	− .002	+.178	+ .176
d^{-1}	33.190	.252	+ .011	+.176	+ .187
.380803	4812.389	.572	+ .026	+.181	+ .207
	35.257	.280	+ .052	+.194	+ .246
	69.269	.232	+ .040	+.184	+ .224
	85.246	.316	+ .030:	+.224:	+ .254:
	95.226	.117	− .031	+.151	+ .120
	5223.291	.045	− .072	+.139	+ .067
	5547.462	.490	+ .060	+.182	+ .242
	73.388	.363	+ .072	+.203	+ .275
	5612.224	.152	− .015	+.171	+ .156
S Sge	5302.541	.598	+2.151	+.265	+2.416
d^{-1}	03.419	.703	+2.092	+.217	+2.309
.119301	28.412	.685	+2.113	+.239	+2.352
	48.343	.063	+1.956	+.115	+2.071
	49.280	.174	+1.891	+.094	+1.985
	58.353	.257	+1.864	+.085	+1.949
	63.313	.849	+2.127:	+.223:	+2.350:
	64.319	.969	+2.000	+.150	+2.150
	5652.414	.339	+1.878	+.100	+1.978
	54.422	.578	+2.150	+.281	+2.431
	61.435	.415	+1.899	+.144	+2.043
	69.468	.373	+1.868	+.123	+1.991
	78.440	.444	+1.950	+.149	+1.099
	87.442	.518	+2.046	+.230	+2.276
	88.321	.622	+2.197	+.283	+2.480
U Sgr *	4585.408	.800	+1.607	+.043	+1.650
d^{-1}	86.424	.951	+1.525	+.003	+1.528
.148253	87.404	.096	+1.461	−.029	+1.432
	4901.680	.689	+1.608:	+.086:	+1.694:
	06.648	.425	+1.661	+.121	+1.782
	07.474	.548	+1.695	+.125	+1.820
	14.455	.583	+1.680	+.099	+1.779
	47.439	.473	+1.729	+.149	+1.878
	53.492	.370	+1.580	+.072	+1.652

TABLE 6 (*continued*)

Name of Cepheid	J.D. hel. −2430000	phase	log I_Y	Δ log I	log I_B
	d				
W Sgr *	4564.547	.018	+2.501	+.288	+2.789
d^{-1}	65.521	.147	+2.473	+.248	+2.721
.131671	67.535	.412	+2.356	+.171	+2.527
	68.447	.532	+2.307	+.154	+2.461
	73.433	.188	+2.457	+.238	+2.695
	75.475	.457	+2.335	+.161	+2.496
	77.484	.722	+2.219	+.116	+2.335
	79.450	.981	+2.527	+.290	+2.817
	85.361	.759	+2.234	+.122	+2.356
	86.389	.894	+2.372	+.226	+2.598
	87.370	.024	+2.528	+.315	+2.843
	4914.435	.089	+2.488		
	21.497	.018	+2.532		
	29.458	.067	+2.517		
	61.278	.256	+2.424		
	89.238	.938	+2.420		
X Sgr *	4564.469	.930	+2.523	+.259	+2.782
d^{-1}	86.364	.052	+2.465	+.213	+2.678
142608	87.352	.193	+2.400	+.192	+2.592
	4885.531	.716	+2.501		
	86.586	.866	+2.524		
	4989.218	.502	+2.303		
	5251.608	.921	+2.543	+.251	+2.794
	85.421	.743	+2.546	+.272	+2.818
	5573.639	.846	+2.555	+.264	+2.819
	5628.440	.661	+2.425	+.225	+2.650
	43.353	.787	+2.561	+.278	+2.839
	44.240	.914	+2.540	+.244	+2.784
Y Sgr	4579.494	.214	+2.099	+.229	+2.328
d^{-1}	85.398	.237	+2.075	+.215	+2.290
.173210	86.415	.413	+1.989	+.154	+2.143
	87.389	.582	+1.917	+.112	+2.029
	4907.466	.022	+1.952		
	14.444	.231	+2.054		
	25.527	.151	+2.095		
	47.431	.945	+1.884	+.130	+2.014
	5358.245	.102	+2.105	+.244	+2.349
	63.275	.973	+1.922:	+.145:	+2.067:
	64.242	.140	+2.119	+.251	+2.370
VY Sgr *	4567.557	.912	− .077	−.210	− .287
d^{-1}	68.455	.978	− .131	−.250	− .381
.073762	5623.510	.801	− .400	−.366	− .766
	24.559	.879	− .247:	−.297:	− .544:
	36.454	.756	− .406	−.350	− .756
	37.418	.827	− .382	−.326	− .708
WZ Sgr *	4563.567	.856	+ .730?	−.134?	+ .596?
d^{-1}	65.549	.947	+1.117	−.010	+1.107
.045766	68.477	.081	+1.185:	+.076:	+1.261:
	72.514	.266	+1.105	−.106	+ .999
	73.488	.310	+1.087	−.133	+ .954
	75.539	.404	+1.008	−.177	+ .831
	79.480	.584	+ .890	−.215	+ .675
	85.385	.855	+ .944	−.134	+ .810
	86.405	.901	+ .954	−.117	+ .837
	4901.653	.329	+1.062:	−.122:	+ .940:
	41.218	.140	+1.202	−.031	+1.171
	43.417	.240	+1.128	−.097	+1.031
	61.353	.061	+1.252	+.049	+1.301
	5309.376	.989	+1.243	+.047	+1.290
	10.366	.034	+1.252:	+.061:	+1.313:
YZ Sgr	4585.445	.977	+1.379	+.131	+1.510
d^{-1}	86.447	.082	+1.388	+.137	+1.525
.104674	87.432	.185	+1.439	+.155	+1.494
	4914.474	.418	+1.316	+.041	+1.357
	22.551	.263	+1.406	+.118	+1.524
	31.467	.196	+1.449	+.152	+1.601
	61.404	.330	+1.362	+.094	+1.456
	80.398	.318	+1.364	+.096	+1.460
	88.353	.151	+1.416	+.144	+1.560
	5331.432	.062	+1.391	+.139	+1.530
	70.274	.128	+1.405	+.133	+1.538
AP Sgr *	4565.541	.671	+1.433	+.131	+1.564
d^{-1}	73.481	.241	+1.617	+.276	+1.893
.197714	85.375	.593	+1.477	+.152	+1.629
	86.397	.795	+1.401	+.113	+1.514
	87.380	.989	+1.319	+.092	+1.411
	4907.458	.273	+1.627	+.275	+1.902
	43.318	.363	+1.595	+.250	+1.845
	47.420	.174	+1.506	+.218	+1.724
	53.484	.373	+1.590	+.237	+1.827
AY Sgr	4573.511	.162	+ .214	−.045	+ .169
d^{-1}	79.503	.074	+ .154	−.071	+ .083
.152216	4922.528	.288	+ .141	−.095	+ .046
	29.486	.347	+ .106	−.122	− .016
	61.391	.203	+ .189	−.044	+ .145
	5302.401	.110	+ .212	−.045	+ .167
	08.499	.038	+ .085	−.097	− .012
	09.387	.174	+ .198	−.057	+ .141
BB Sgr *	4585.455	.895	+1.446	+.092	+1.538
d^{-1}	86.455	.046	+1.587	+.179	+1.766
.150671	87.442	.194	+1.555	+.138	+1.693
	4925.546	.137	+1.574	+.159	+1.733
	31.474	.030	+1.573	+.163	+1.736
	5303.410	.070	+1.582	+.160	+1.742
	49.320	.987	+1.533	+.148	+1.681
	50.229	.124	+1.572:	+.163:	+1.735:
	70.282	.146	+1.589	+.154	+1.743
V350 Sgr *	4585.432	.643	+1.412	+.212	+1.624
d^{-1}	86.441	.838	+1.315	+.140	+1.455
.194015	87.424	.029	+1.218	+.090	+1.308
	4914.466	.480	+1.256	+.139	+1.395
	25.535	.628	+1.406	+.221	+1.627
	31.460	.777	+1.337	+.156	+1.493
	88.344	.814	+1.315	+.148	+1.463
	5302.480	.761	+1.346	+.156	+1.502
	58.263	.583	+1.414	+.220	+1.634
	59.236	.772	+1.332	+.156	+1.488
V626 Sgr *	4562.535	.593	− .538	+.191	− .347
d^{-1}	64.562	.669	− .631	+.138	− .493
.037390	73.444	.001	− .879	+.276	− .603
	74.438	.038	− .716	+.285	− .431
	75.483	.077	− .598	+.324	− .274
	76.460	.114	− .488	+.341	− .147
	77.496	.153	− .431	+.353	− .078
	4929.470	.313	− .518	+.234	− .284
	31.434	.386	− .485:	+.209:	− .276
	53.446	.209	− .402	+.284	− .118
	79.371	.179	− .419	+.332	− .087
	88.299	.512	− .522	+.202	− .320
	5611.539	.815	− .843	+.137	− .706
	23.476	.262	− .472	+.259	− .213
	24.517	.301	− .459	+.241	− .218
	26.543	.376	− .474	+.244	− .230
	27.403	.409	− .522	+.256	− .266
	28.510	.450	− .480	+.210	− .270
	29.476	.486	− .530	+.220	− .310
	30.465	.523	− .553	+.227	− .326
	31.368	.557	− .554	+.196	− .358
	34.456	.672	− .622	+.146	− .476
	36.430	.746	− .740	+.186	− .554
	37.403	.782	− .717:	+.162:	− .555:
	38.451	.822	− .757	+.159	− .598
	39.474	.860	− .804	+.172	− .632
	40.524	.899	− .820	+.192	− .628
	41.452	.934	− .822	+.217	− .605
	42.518	.974	− .826:	+.232:	− .594:
	52.339	.341	− .505	+.206	− .299
	60.555	.648	− .640:	+.138:	− .502:
	72.419	.092	− .606	+.273	− .333
V741 Sgr *	4572.529	.695	− .247	−.243	− .490
d^{-1}	73.500	.760	− .248	−.251	− .499
.065980	4950.457	.631	− .159:	−.198:	− .357:
	80.373	.605	− .219	−.215	− .434
	5331.300	.759	− .225	−.252	− .477
	43.254	.548	− .250	−.245	− .495
RV Sco *	4564.437	.041	+1.417	+.065	+1.482
d^{-1}	79.342	.500	+1.462	+.144	+1.606
.164980	80.383	.672	+1.566	+.171	+1.737
	4901.548	.657	+1.580	+.184	+1.764
	25.461	.603	+1.606	+.205	+1.811
	32.328	.735	+1.529	+.143	+1.672
	5331.248	.549	+1.566	+.189	+1.755
	43.222	.525	+1.511	+.157	+1.668
CQ Sco *	4565.483	.871	− .642	+.137	− .505
d^{-1}	67.522	.938	− .647	+.130	− .517
.032827	68.434	.968	− .636	+.124	− .512
	70.439	.034	− .649	+.112	− .537
	4961.283	.864	− .703:	+.199:	− .504:
	5251.637	.395	− .978	−.079	−1.057
	81.454	.374	− .994	−.019	−1.013
KQ Sco *	4561.488	.995	+ .346	−.313	+ .033
d^{-1}	64.428	.098	+ .538	−.208	+ .330
.034856	65.469	.134	+ .213?	+.350?	+ .563?
	67.480	.204	+ .465	−.267	+ .198
	72.410	.376	+ .367	−.373	− .006
	87.296	.895	+ .192	−.397	− .205
	5251.585	.049	+ .465	−.230	+ .235
	81.438	.090	+ .523	−.223	+ .300
	85.405	.228	+ .449	−.289	+ .160
	5308.372	.029	+ .409	−.262	+ .147
	09.284	.060	+ .486	−.232	+ .254
	10.262	.094	+ .516	−.216	+ .300
V446 Sco *	4576.429	.905	−1.046:	+.034:	−1.012:
d^{-1}	78.438	.975	− .966:	+.232:	− .734:
.034941	79.435	.010	− .749	+.191	− .558
	4953.395	.077	− .843:	+.193:	− .650:
	80.316	.017	− .731:	+.199:	− .542:

TABLE 6 (*continued*)

Name of Cepheid	J.D. hel. − 2430000	phase	log I_Y	Δ log I	log I_B
	d				
V470 Sco *	4563.517	.633	− .056	−.467	− .523
d^{-1}	64.448	.691	− .070	−.463	− .533
.061495	75.440	.367	− .059	−.397	− .456
	76.403	.426	+ .071	−.351	− .280
	77.462	.491	+ .035	−.365	− .330
	78.400	.549	+ .005	−.396	− .391
	4950.345	.421	+ .062	−.342	− .280
	5308.386	.439	+ .077	−.343	− .266
	72.246	.366	− .056	−.427	− .483
V482 Sco *	4579.396	.396	+1.123:	+.110:	+1.233:
d^{-1}	85.340	.709	+1.006	+.044	+1.050
.220858	86.333	.928	+ .953	+.040	+ .993
	87.341	.151	+1.185	+.174	+1.359
	4886.580	.240	+1.195	+.176	+1.371
	4905.622	.446	+1.108	+.107	+1.215
	31.365	.131	+1.157	+.160	+1.317
	50.435	.343	+1.154	+.138	+1.292
V500 Sco *	4562.477	.713	+ .905	+.030	+ .935
d^{-1}	63.527	.826	+ .805	−.041	+ .764
.107335	64.476	.928	+ .766	−.074	+ .692
	67.512	.254	+ .628	−.109	+ .519
	70.423	.566	+ .838	+.009	+ .847
	72.448	.784	+ .821	−.026	+ .795
	4906.597	.650	+ .876	+.030	+ .906
	07.418	.738	+ .867	+.005	+ .872
	25.472	.676	+ .901	+.030	+ .931
	43.305	.590	+ .832	+.009	+ .841
V542 Sco *	4570.410	.887	−1.039	+.226	− .813
d^{-1}	72.433	.020	− .765	+.197	− .568
.065615	73.386	.083	− .820	+.118	− .702
	4952.322	.947	− .839	+.258	− .581
	53.324	.012	− .864:	+.241:	− .623:
	5302.350	.914	− .899	+.250	− .649
	03.367	.980	− .798	+.244	− .554
V636 Sco *	4561.521	.146	+1.643	+.130	+1.773
d^{-1}	64.458	.578	+1.499	+.071	+1.570
.147132	79.386	.774	+1.593	+.144	+1.737
	85.330	.649	+1.507	+.081	+1.588
	87.314	.941	+1.694	+.193	+1.887
	4885.522	.817	+1.635	+.163	+1.798
	86.570	.971	+1.683	+.179	+1.862
	4901.666	.192	+1.595:	+.135:	+1.730:
	06.543	.909	+1.699	+.193	+1.892
	07.407	.037	+1.659	+.157	+1.816
X Sct	4565.563	.540	+ .451	+.099	+ .550
d^{-1}	73.521	.436	+ .308	+.046	+ .354
.238205	74.467	.661	+ .377	+.077	+ .454
	4905.646	.549	+ .448	+.113	+ .561
	22.541	.574	+ .441	+.104	+ .545
	5308.512	.514	+ .448	+.132	+ .580
	58.255	.363	+ .163	−.025	+ .138
	63.284	.561	+ .451:	+.110:	+ .561:
Y Sct *	4565.574	.482	+ .517	−.125	+ .392
d^{-1}	73.532	.251	+ .452	−.121	+ .331
.096698	74.479	.343	+ .539	−.073	+ .466
	4905.660	.368	+ .582	−.040	+ .542
	06.617	.460	+ .520	−.114	+ .406
	47.452	.409	+ .567	−.071	+ .496
	88.313	.360	+ .558	−.063	+ .495
Z Sct *	4570.504	.264	+ .573	+.018	+ .591
d^{-1}	4906.628	.318	+ .558	−.005	+ .553
.077511	31.449	.242	+ .598	+.035	+ .633
	43.431	.170	+ .574	+.053	+ .627
	5302.414	.995	+ .370	−.079	+ .291
	03.401	.072	+ .405	−.056	+ .349
RU Sct *	5309.401	.516	+ .322	−.275	+ .047
d^{-1}	10.379	.565	+ .402	−.225	+ .177
.050762	28.346	.477	+ .319	−.288	+ .031
	31.395	.632	+ .717	−.066	+ .651
	5626.432	.609	+ .607	−.109	+ .498
	27.465	.661	+ .711	−.079	+ .632
	28.567	.717	+ .650	−.116	+ .534
	29.519	.766	+ .612	−.137	+ .475
	30.507	.816	+ .594	−.179	+ .415
SS Sct *	4585.419	.022	+1.052	+.161	+1.213
d^{-1}	86.432	.298	+ .942	+.089	+1.031
.272390	87.415	.566	+ .882	+.071	+ .953
	4988.336	.773	+ .933	+.135	+1.068
	89.332	.044	+1.037	+.148	+1.185
	5315.420	.867	+1.063	+.166	+1.229
	5624.585	.081	+1.020	+.143	+1.163
	27.470	.867	+1.050	+.168	+1.218
	31.450	.951	+1.057	+.163	+1.220
	d				
UZ Sct *	4567.573	.732	− .053	−.159	− .212
d^{-1}	68.522	.796	− .059	−.193	− .252
.067811	79.520	.542	− .291	−.260	− .551
	4950.477	.697	− .125	−.211	− .336
	80.387	.725	− .073	−.172	− .245
	5364.253	.755	− .050	−.182	− .232
	65.241	.822	− .063	−.215	− .278
	5612.482	.588	− .278	−.286	− .564
	27.446	.603	− .271	−.273	− .544
	28.556	.678	− .202	−.236	− .438
	29.500	.742	− .076	−.194	− .270
	30.489	.809	− .062	−.204	− .266
	31.409	.871	− .123	−.244	− .367
CK Sct *	4574.493	.907	+ .103	−.107	− .004
d^{-1}	4989.307	.848	+ .121	−.105	+ .016
.134858	5315.317	.813	+ .106	−.116	− .010
	31.383	.980	+ .095	−.137	− .042
	5623.554	.381	− .032	−.225	− .257
	27.457	.908	+ .099	−.118	− .019
	28.588	.060	+ .071	−.163	− .092
	29.511	.185	+ .029	−.174	− .145
	30.499	.318	− .006	−.200	− .206
	31.419	.442	− .072	−.214	− .286
	36.466	.123	+ .054	−.180	− .126
	39.496	.531	− .080	−.219	− .299
	40.536	.671	− .014	−.162	− .176
	41.474	.798	+ .088	−.126	− .038
CM Sct *	4578.529	.894	− .046	−.008	− .054
d^{-1}	79.534	.150	− .155	−.086	− .241
.255299	4950.495	.856	− .064	−.020	− .084
	5315.383	.012	− .088	−.033	− .121
	31.420	.106	− .112	−.064	− .176
	43.283	.135	− .155	−.065	− .220
	5612.509	.868	− .071	−.029	− .100
	23.525	.680	− .274:	−.106:	− .380:
	28.577	.970	− .074	−.024	− .098
	39.506	.760	− .190	−.078	− .268
	40.547	.026	− .101	−.035	− .136
CR Ser *	4565.530	.191	− .030	−.144	− .174
d^{-1}	75.498	.072	− .218	−.241	− .459
.188629	4925.490	.090	− .192	−.223	− .415
	89.296	.126	− .135	−.203	− .338
	5302.383	.183	− .037	−.155	− .192
	03.386	.372	+ .024	−.141	− .117
	08.455	.329	+ .040	−.107	− .067
	5625.534	.139	− .124	−.180	− .304
	26.421	.306	+ .046	−.116	− .070
	31.396	.245	+ .048	−.096	− .048
	41.463	.144	− .118	−.190:	− .308:
ST Tau	4784.273	.921	+ .893	+.103	+ .996
d^{-1}	5164.314	.125	+ .842	+.072	+ .914
.247879	87.257	.812	+ .978	+.124	+1.102
	5548.261	.297	+ .828	+.084	+ .912
	69.238	.497	+1.122	+.236	+1.358
	74.220	.732	+1.024	+.170	+1.194
SZ Tau *	5505.279	.190	+1.560	+.138	+1.698
d^{-1}	32.291	.768	+1.674	+.211	+1.885
.317548	35.247	.707	+1.692	+.214	+1.906
	42.241	.928	+1.687:	+.193:	+1.880:
	48.238	.832	+1.684	+.184	+1.868
	74.208	.079	+1.624	+.174	+1.798
R TrA *	4562.344	.106	+1.570	+.200	+1.770
d^{-1}	63.422	.424	+1.459	+.148	+1.607
.295047	65.395	.006	+1.609	+.230	+1.839
	77.341	.531	+1.499	+.184	+1.683
	79.291	.106	+1.589:	+.212:	+1.801:
	85.284	.874	+1.687	+.264	+1.951
	86.294	.172	+1.551	+.179	+1.730
	87.283	.464	+1.488	+.161	+1.649
	88.320	.770	+1.695	+.289	+1.984
	4634.236	.317	+1.492	+.164	+1.656
	4907.374	.906	+1.679	+.264	+1.943
	20.444	.762	+1.698	+.290	+1.988
	61.244	.800	+1.668	+.276	+1.944
	88.281	.777	+1.686	+.294	+1.980
	5188.610	.884	+1.673	+.273	+1.946
	5282.378	.550	+1.491	+.179	+1.670
	86.345	.720	+1.669	+.267	+1.936
	96.431	.696	+1.640	+.263	+1.903
S TrA *	4562.431	.512	+1.807	+.291	+2.098
d^{-1}	63.451	.673	+1.787	+.252	+2.039
.158142	64.390	.822	+1.723	+.197	+1.920
	65.415	.984	+1.654	+.166	+1.820
	67.397	.297	+1.535	+.127	+1.662
	68.326	.444	+1.714	+.226	+1.940
	69.416	.617	+1.812	+.288	+2.100
	72.356	.082	+1.608	+.134	+1.742

TABLE 6 (*continued*)

Name of Cepheid	J.D. hel. − 2430000	phase	log I_Y	Δ log I	log I_B
	d				
	4574.312	.391	+1.612	+.191	+1.803
	75.389	.561	+1.841	+.299	+2.140
	76.337	.711	+1.773	+.244	+2.017
	77.354	.872	+1.707	+.188	+1.895
	78.319	.025	+1.637	+.155	+1.792
	79.310	.181	+1.585	+.121	+1.706
	80.327	.342	+1.561	+.144	+1.705
U TrA * d^{-1} .389343	4562.459	.361	+1.048	+.266	+1.314
	65.448	.525	+1.128	+.302	+1.430
	74.340	.987	+1.016	+.225	+1.241
	79.319	.926	+1.033	+.220	+1.253
	80.343	.324	+1.047	+.261	+1.308
	85.293	.252	+1.056	+.264	+1.320
	86.307	.647	+1.107	+.270	+1.377
	4907.398	.661	+1.098	+.257	+1.355
	17.479	.586	+1.150	+.288	+1.438
	22.472	.530	+1.260	+.349	+1.609
	30.444	.634	+1.112	+.268	+1.380
	5251.540	.650	+1.115	+.256	+1.371
	5282.390	.662	+1.112	+.267	+1.379
	5302.309	.417	+1.253	+.355	+1.608
	15.284	.469	+1.191	+.321	+1.512
	48.256	.306	+1.097	+.287	+1.384
	49.244	.691	+1.102	+.274	+1.376
	5567.552	.687	+1.070	+.238	+1.308
	73.622	.051	+ .956	+.190	+1.146
	80.413	.695	+1.062	+.229	+1.291
	95.370	.518	+1.160	+.306	+1.466
	5608.452	.612	+1.168	+.308	+1.476
	09.377	.972	+ .993	+.213	+1.206
	.464	.006	+ .980	+.202	+1.182
	11.384	.753	+1.038	+.225	+1.263
	.454	.780	+1.024	+.216	+1.240
	12.336	.124	+ .931	+.204	+1.135
	.450	.168	+ .979	+.221	+1.200
	.556	.209	+1.010	+.247	+1.257
	16.322	.676	+1.123	+.271	+1.394
	.395	.704	+1.082	+.253	+1.335
	21.426	.663	+1.150	+.294	+1.444
	.457	.675	+1.141:	+.269:	+1.410
	22.322	.012	+ .978	+.200	+1.178
	.416	.048	+ .974	+.203	+1.177
	23.397	.430	+1.275	+.366	+1.641
	.485	.465	+1.239	+.348	+1.587
	24.302	.783	+1.016	+.214	+1.230
	.487	.855	+1.000	+.216	+1.216
	25.520	.257	+1.050	+.269	+1.319
	26.346	.578	+1.104	+.284	+1.388
	.395	.598	+1.107	+.282	+1.389
	.502	.639	+1.118	+.282	+1.400
	27.305	.952	+1.017	+.225	+1.242
	.353	.970	+1.018	+.222	+1.240
	28.368	.366	+1.110	+.292	+1.402
	.408	.381	+1.176	+.321	+1.497
	29.309	.732	+1.081	+.246	+1.327
	30.377	.148	+ .942	+.194	+1.136
	31.291	.504	+1.132	+.289	+1.421
	.472	.574	+1.099	+.269	+1.368
	34.257	.659	+1.161	+.297	+1.458
	36.236	.429	+1.263	+.359	+1.622
	.306	.456	+1.236	+.346	+1.580
	37.326	.853	+1.000:	+.209:	+1.209:
	.371	.871	+1.000	+.206	+1.206
	.473	.911	+ .990	+.213	+1.203
	38.347	.251	+1.022:	+.248:	+1.270:
	39.255	.604	+1.115	+.289	+1.404
	.278	.613	+1.128	+.296	+1.425
	40.293	.009	+1.012	+.225	+1.237
	.381	.043	+ .992	+.210	+1.202
	41.288	.396	+1.242	+.349	+1.591
	.394	.437	+1.311	+.372	+1.683
	42.211	.755	+1.066	+.232	+1.298
	.425	.839	+1.008	+.217	+1.225
	43.295	.177	+ .959	+.211	+1.170
	.472	.246	+1.040	+.268	+1.308
	44.352	.589	+1.092	+.267	+1.359
	46.442	.403	+1.111	+.293	+1.404
	47.213	.703	+1.124	+.276	+1.400
	.238	.713	+1.128	+.274	+1.402
	52.264	.669	+1.119	+.289	+1.408
	54.282	.455	+1.292	+.372	+1.664
	55.411	.895	+ .979	+.193	+1.172
	56.255	.223	+1.016	+.246	+1.262
	56.407	.282	+1.095	+.261	+1.356
	57.236	.605	+1.080	+.250	+1.330
	.350	.650	+1.078	+.254	+1.332
	60.304	.800	+1.056	+.241	+1.297
	.341	.814	+1.042	+.222	+1.264
	61.408	.230	+ .956	+.220	+1.176
	64.209	.320	+1.099:	+.265:	+1.364:
	65.360	.768	+1.094	+.266	+1.360
	67.212	.489	+1.051	+.246	+1.297
	68.363	.937	+ .976	+.203	+1.179
	d				
	5669.205	.265	+1.056	+.273	+1.329
	72.319	.478	+1.258	+.364	+1.622
	77.212	.383	+1.064	+.277	+1.341
	78.408	.848	+1.045	+.237	+1.282
	81.222	.944	+ .963	+.191	+1.154
	82.204	.326	+1.081	+.295	+1.376
	83.202	.715	+1.070	+.243	+1.313
	85.202	.494	+1.256	+.352	+1.608
	86.218	.889	+ .990	+.202	+1.192
	87.398	.349	+1.196	+.356	+1.552
	88.202	.662	+1.054	+.244	+1.298
	89.208	.053	+ .990	+.216	+1.206
	91.207	.832	+1.058	+.228	+1.286
	.261	.853	+1.056	+.230	+1.286
	92.332	.270	+ .960	+.230	+1.190
T Vel * d^{-1} .215528	4510.245	.084	+1.131	+.189	+1.320
	19.298	.035	+1.175	+.220	+1.395
	65.220	.933	+1.113:	+.244:	+1.357:
	4834.326	.933	+1.115:	+.193:	+1.308:
	39.244	.993	+1.178	+.204	+1.382
	40.289	.218	+1.096	+.139	+1.235
	67.336	.047	+1.148	+.206	+1.354
	86.251	.124	+1.107	+.165	+1.272
	90.293	.995	+1.169	+.209	+1.378
	95.244	.062	+1.155	+.191	+1.346
V Vel * d^{-1} .228781	4521.228	.371	+1.299	+.237	+1.536
	29.283	.214	+1.360	+.274	+1.634
	33.299	.133	+1.226	+.224	+1.450
	4885.333	.671	+1.154	+.152	+1.306
	86.286	.889	+1.102	+.126	+1.228
	90.342	.817	+1.139	+.124	+1.263
	93.290	.492	+1.249	+.191	+1.440
	95.269	.945	+1.084	+.122	+1.206
	4901.319	.329	+1.318	+.240	+1.558
	13.231	.054	+1.147	+.145	+1.292
	17.238	.971	+1.088:	+.133:	+1.121:
	18.265	.206	+1.349:	+.271:	+1.620:
	20.263	.663	+1.191:	+.143:	+1.334:
RY Vel * d^{-1} .035555	4510.345	.365	+1.071	+.028	+1.099
	12.351	.437	+1.034	−.010	+1.024
	34.303	.217	+1.013	+.023	+1.036
	35.329	.254	+1.081	+.064	+1.145
	36.294	.288	+1.090	+.048	+1.138
	4847.283	.345	+1.071	+.017	+1.088
	4929.290	.261	+1.090	+.051	+1.141
	32.278	.367	+1.045	−.003	+1.042
RZ Vel * d^{-1} .049028	4517.244	.471	+1.254	−.023	+1.231
	19.290	.572	+1.677	+.217	+1.894
	62.198	.675	+1.596:	+.147:	+1.743:
	4865.348	.538	+1.649	+.196	+1.845
	66.281	.584	+1.689	+.203	+1.892
	86.243	.563	+1.668	+.207	+1.875
	4906.285	.545	+1.658	+.302:	+1.960:
	07.239	.592	+1.619	+.155	+1.774
ST Vel * d^{-1} .170704	4834.344	.242	+ .422	+.045	+ .467
	69.369	.221	+ .444	+.036	+ .480
	86.260	.104	+ .484	+.081	+ .565
	5547.484	.978	+ .406	+.014	+ .420
	95.331	.145	+ .498	+.062	+ .560
	5612.280	.039	+ .492	+.067	+ .559
	30.271	.110	+ .495	+.083	+ .578
SV Vel * d^{-1} .070937	4517.395	.450	+1.092	+.200	+1.292
	32.377	.513	+ .995	+.150	+1.145
	72.222	.340	+ .741	+.027	+ .768
	4869.447	.424	+1.017	+.175	+1.192
SW Vel * d^{-1} .042600	4519.308	.523	+ .839	−.007	+ .832
	20.265	.563	+1.120	+.161	+1.281
	21.195	.603	+1.234	+.201	+1.435
	44.213	.583	+1.208	+.190	+1.398
	46.217	.669	+1.224	+.182	+1.406
	4922.196	.686	+1.221:	+.145:	+1.366:
SX Vel d^{-1} .104713	4510.253	.282	+1.054	+.204	+1.258
	19.314	.231	+1.059	+.218	+1.277
	20.283	.332	+1.027	+.200	+1.227
	29.269	.273	+1.070	+.211	+1.281
	4834.334	.218	+1.030:	+.211:	+1.241:
	4921.189	.312	+1.024:	+.175:	+1.199:
	30.185	.254	+1.051:	+.204	+1.255:
	5568.410	.085	+1.048	+.206	+1.254
	5626.223	.139	+1.040	+.194	+1.234
	36.198	.183	+1.058	+.186	+1.244

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TABLE 6 (*continued*)

Name of Cepheid	J.D. hel. −2430000	phase	log I_Y	Δ log I	log I_B
	d				
XX Vel *	4532.357	.911	+ .154	+.109	+ .263
d^{-1}	33.326	.050	+ .084	+.061	+ .145
.143173	73.275	.770	− .136	−.041	− .177
	4839.279	.854	+ .046	+.062	+ .108
	95.378	.886	+ .111	+.093	+ .204
	4917.306	.025	+ .094	+.084	+ .178
	24.299	.027	+ .114	+.075	+ .189
AE Vel *	4522.242	.937	+ .203	+.021	+ .224
d^{-1}	29.304	.927	+ .182	+.009	+ .191
.140182	31.316	.209	+ .250	−.009	+ .241
	73.215	.082	+ .309:	+.066:	+ .375:
	4865.381	.039	+ .306	+.070	+ .376
	86.308	.972	+ .266	+.050	+ .316
	95.319	.236	+ .189	−.005	+ .184
	4922.270	.014	+ .305	+.059	+ .364
AH Vel	4519.277	.103	+2.018	+.317	+2.335
d^{-1}	23.258	.045	+1.991	+.307	+2.298
.236565	32.209	.162	+2.046	+.327	+2.373
	36.208	.108	+1.991	+.317	+2.308
	45.203	.236	+2.038	+.320	+2.358
	4833.330	.397	+1.985	+.284	+2.269
	34.285	.623	+1.910	+.261	+2.171
	35.394	.885	+1.953	+.260	+2.213
	47.244	.688	+1.923	+.245	+2.168
	65.326	.966	+1.941	+.271	+2.212
	66.259	.187	+2.052	+.328	+2.380
	67.291	.431	+1.985	+.283	+2.268
	69.295	.905	+1.922	+.265	+2.187
	85.270	.684	+1.900	+.246	+2.146
	93.238	.569	+1.934	+.262	+2.196
	95.232	.041	+1.979	+.285	+2.264
	4908.208	.110	+1.994	+.312	+2.306
	13.208	.293	+2.053:	+.297:	+2.350:
	18.218	.478	+1.906:	+.260:	+2.166:
AM Vel *	4533.236	.562	−1.153	−.070	−1.223
d^{-1}	34.209	.692	− .950:	+.045:	− .905:
.132921	35.205	.824	− .911	+.141	− .770
	4834.315	.582	−1.120:	+.041:	−1.079:
	65.339	.706	− .949	+.116	− .833
	5535.434	.775	− .913	+.181	− .732
	73.429	.826	− .910	+.130	− .780
	5609.318	.596	−1.180	−.084	−1.264
AP Vel *	4522.209	.180	+ .459	+.190	+ .649
d^{-1}	31.225	.063	+ .350	+.140	+ .490
.319795	35.221	.341	+ .389	+.146	+ .535
	4869.357	.196	+ .383	+.151	+ .534
	85.280	.288	+ .398	+.161	+ .559
	4919.255	.153	+ .277:	+.076:	+ .353:
	5194.435	.154	+ .227	+.079	+ .306
	5223.339	.398	+ .264	+.095	+ .359
	56.282	.933	+ .092	−.005	+ .087
AX Vel *	4519.268	.259	+ .921	+.208	+1.129
d^{-1}	22.197	.388	+ .891	+.229	+1.120
.385518	29.229	.099	+ .911	+.199	+1.110
	4833.323	.333	+ .901	+.185	+1.086
	34.278	.701	+ .976	+.247	+1.223
	35.384	.128	+ .969	+.221	+1.190
	39.238	.613	+1.077	+.290	+1.367
	47.237	.697	+1.059	+.270	+1.329
	61.322	.127	+ .938:	+.205:	+1.143:
	67.284	.426	+ .897	+.196	+1.093
	69.291	.199	+ .922	+.196	+1.118
	85.263	.357	+ .856	+.182	+1.038
	89.270	.902	+ .930	+.234	+1.164
	4907.224	.823	+ .933	+.215	+1.148
	14.226	.523	+ .940:	+.218:	+1.158:
	17.204	.671	+1.010:	+.269:	+1.279:
	5194.424	.544	+ .949	+.229	+1.178
	5256.260	.383	+ .875	+.190	+1.065
BG Vel *	4510.260	.435	+1.092?	+.068?	+1.160?
d^{-1}	17.266	.447	+1.286	+.078	+1.364
.144434	29.275	.181	+1.116	−.010	+1.106
	30.266	.324	+1.225	+.052	+1.277
	32.260	.612	+1.259	+.038	+1.297
	4833.382	.105	+1.115	−.044	+1.071
	34.362	.246	+1.156:	+.026:	+1.182:
	39.252	.953	+1.162	−.025	+1.137
	47.269	.110	+1.093	−.043	+1.050
	65.356	.723	+1.207	+.011	+1.218
	67.344	.010	+1.126	−.034	+1.092
	69.378	.304	+1.208	+.031	+1.239
	85.302	.604	+1.238	+.041	+1.279
	90.317	.328	+1.226	+.039	+1.265
	95.252	.041	+1.114	−.038	+1.076
	4901.306	.915	+1.156	−.026	+1.130
	06.307	.638	+1.237	+.022	+1.259
	18.241	.361	+1.242:	+.049:	+1.291:
	19.265	.509	+1.281	+.048	+1.329
	21.227	.793	+1.187:	−.009:	+1.178:
	d				
CX Vel *	4521.206	.810	− .187	−.040	− .227
d^{-1}	33.272	.739	− .275	−.068	− .343
.159871	34.221	.890	− .163	−.032	− .195
	35.236	.053	− .241	−.091	− .332
	4885.293	.017	− .223	−.081	− .304
	90.307	.818	− .162:	−.042:	− .204:
	4921.216	.760	− .264:	−.098:	− .362:
	22.208	.918	− .158:	−.077:	− .235:
DD Vel	4532.281	.488	− .708	−.131	− .839
d^{-1}	33.290	.564	− .664	−.172	− .836
.075787	34.281	.640	− .609	−.074	− .683
	35.257	.714	− .602	−.129	− .731
	4890.331	.624	− .655:	−.068:	− .723:
	93.251	.845	− .659:	−.209:	− .868:
	4918.251	.739	− .629:	−.167:	− .796:
	20.237	.890	− .662:	−.183:	− .845:
	29.196	.569	− .691:	−.130:	− .821:
DP Vel *	4510.295	.389	− .402	+.002	− .400
d^{-1}	31.297	.219	− .582	−.168	− .750
.182336	32.309	.403	− .337	−.044	− .381
	44.249	.580	− .383	−.046	− .429
	4895.281	.586	− .391	−.041	− .432
	4921.257	.322	− .496:	−.028:	− .524:
	22.241	.502	− .382:	+.004:	− .378:
	29.213	.773	− .522:	−.135:	− .657:
	5223.356	.406	− .360	−.012	− .372
	51.293	.500	− .335	−.015	− .350
DR Vel *	4536.280	026	+ .433	−.124	+ .309
d^{-1}	61.203	.252	+ .546:	−.074:	+ .472:
.089286	4865.366	.409	+ .501	−.150	+ .351
	86.296	.278	+ .566	−.069	+ .497
	95.292	.081	+ .440	−.121	+ .319
	4917.248	.041	+ .445:	−.121:	+ .324:
	29.225	.111	+ .454:	−.111:	+ .343:
	30.195	.197	+ .570:	−.057:	+ .513:
	5223.376	.374	+ .529	−.129	+ .400
	24.377	.464	+ .471	−.168	+ .303
	56.295	.314	+ .567	−.090	+ .477
	85.216	.896	+ .342	−.190	+ .152
	86.220	.985	+ .413	−.157	+ .256
EX Vel *	4510.281	.788	− .235	−.088	− .323
d^{-1}	36.247	.750	− .277	−.081	− .358
.075558	65.233	.940	− .359	−.117	− .476
	73.201	.542	− .550:	−.137:	− .687:
	4893.273	.726	− .317	−.107	− .424
	95.260	.876	− .240	−.125	− .365
	4920.251	.764	− .215:	−.104:	− .319:
	21.238	.839	− .259:	−.102:	− .361:
	22.226	.914	− .261:	−.185:	− .446:
	5224.362	.742	− .287	−.097	− .384
	85.203	.339	− .546	−.238	− .784
EZ Vel *	4531.279	.208	− .561	−.136	− .697
d^{-1}	32.292	.237	− .500	−.110	− .610
.028956	33.309	.266	− .493	−.122	− .615
	34.289	.295	− .518	−.103	− .621
	35.270	.323	− .523	−.157	− .680
FG Vel *	4517.277	.006	− .379	−.095	− .474
d^{-1}	29.294	.868	− .384	−.074	− .458
.154962	31.305	.180	− .416	−.167	− .583
	32.319	.337	− .488	−.203	− .691
	4895.308	.587	− .562	−.240	− .802
	4922.256	.763	− .530:	−.113:	− .643:
	24.237	.070	− .446:	−.067:	− .513:
	29.235	.844	− .397:	−.125:	− .522:
	5253.244	.053	− .382	−.120	− .502
	5303.206	.795	− .466	−.137	− .603
	10.194	.878	− .385:	−.086:	− .471:
W Vir *	5188.597	.352	+ .161	+.285	+ .446
d^{-1}	5308.331	.283	+ .016	+.197	+ .213
.057887	09.261	.337	+ .069	+.221	+ .290
	5555.582	.596	+ .380	+.246	+ .626
	67.532	.288	+ .078	+.239	+ .317
	5608.420	.655	+ .582?	+.062?	+ .644?
	09.435	.713	+ .404	+.211	+ .615
	11.488	.832	+ .325	+.168	+ .493
	12.350	.882	+ .287	+.146	+ .433
	21.406	.406	+ .262	+.284	+ .546
	22.333	.460	+ .424	+.325	+ .749
	23.358	.519	+ .638?	−.124?	+ .514?
	24.262	.572	+ .419	+.277	+ .696
	26.318	.691	+ .420	+.242	+ .662
	27.262	.745	+ .420	+.231	+ .651
	28.333	.807	+ .393	+.219	+ .612

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TABLE 6 (*continued*)

Name of Cepheid	J.D. hel. − 2430000	phase	log I_Y	Δ log I	log I_B	Name of Cepheid	J.D. hel. − 2430000	phase	log I_Y	Δ log I	log I_B
	d						d				
	5629.298	.863	+ .338	+.198	+ .536	U Vul *	5302.515	.589	+1.534	+.033	+1.567
	30.335	.923	+ .268	+.169	+ .437	d^{-1}	43.337	.697	+1.488	+.034	+1.522
	31.280	.978	+ .192	+.138	+ .330	.125146	5647.442	.755	+1.494	.000	+1.494
	32.302	.037	+ .160:	+.018:	+ .178		52.396	.375	+1.307	−.087	+1.220
	34.218	.148	+ .029	+.165	+ .194		54.429	.629	+1.562	+.047	+1.609
	37.284	.325	+ .157	+.283	+ .440		55.509	.764	+1.526	.000	+1.526
	41.249	.555	+ .392	+.290	+ .682		61.428	.505	+1.420	−.013	+1.407
	52.251	.192	− .044	+.143	+ .099		68.480	.388	+1.308	−.074	+1.234
	67.199	.057	+ .037	+.111	+ .148		69.462	.510	+1.432	−.004	+1.428

REMARKS

T Ant Elements of max.: 2435619.31 + 5.8993 *E*. The counting of periods between HOFFMEISTER's epoch (*K.V.B.B.* Nr 27, 15) and the new epoch is slightly uncertain.

FF Aql Elements of max.: 2435625.60 + 4.47093 *E*. The counting of periods between SELIVANOV's epoch (*Variable Stars* **5**, 21) and the new epoch is uncertain.

V 493 Aql This variable was discovered by OOSTERHOFF and published in *B.A.N.* **9**, 385, star 16, 1943. No period could be derived from the few observations at that time, although it seemed rather certain that the decimal fraction of the reciprocal period was .33 and that the variable was an RR Lyrae-type star or a Cepheid. For a period of nearly three months in 1956 the star was observed at least once every clear night. These observations prove that the star is a Cepheid and that its period is very close to three days. A first trial yielded the reciprocal period d^{-1}.33394. The observations are clustered in three narrow groups in the light-curve: one group shortly after maximum, the second on the descending branch and the third at the bottom of the ascending branch. The provisional period was improved with the aid of the observations in the last group. The best elements for maximum brightness are now: 2435626.18 + 2.98553 *E*. The epoch of maximum is uncertain as no observations were made near maximum.

V 600 Aql The elements of maximum, derived from KUROCHKIN's epoch (*Variable Stars* **6**, 307) and the new epoch are: 2435665.44 + 7.24154 *E*. The counting of the number of periods elapsed between the two epochs is uncertain.

RY CMa Combining the epoch given by SOLOVYEV (*General Catalogue of Variable Stars*, 1948) with the new epoch we derived the following elements of max.: 2435612.17 + 4.67825 *E*.

RZ CMa Improved elements of max.: 2435547.30 + 4.25498 *E*.

TV CMa Elements of max.: 2435567.16 + 4.6708 *E*. The number of periods elapsed between FLORYA's epoch (*Gen. Cat. Var. Stars*) and the new epoch could not be determined.

TW CMa Elements of max.: 2435547.00 + 6.99485 *E*.

TW Cap Cepheid of population II. Elements of max: 2435664.8 + 28.5578 *E*.

U Car Elements of max.: 2434528.2 + 38.7560 *E*. The epoch given by GAPOSCHKIN (*H.A.* **115**, No. 5, 1946) does not fit these elements, but the still older observations by ROBERTS and by HERTZSPRUNG are in full agreement.

V Car Improved elements of max.: 2435612.16 + 6.69638 *E*.

Y Car The observations show a large dispersion and the light-curve is probably variable. Improved elements of max.: 2434847.28 + 3.639760 *E*.

UW Car Elements of max.: 2434886.33 + 5.345773 *E*.

UX Car Elements of max.: 2434531.22 + 3.682246 *E*.

UY Car Elements of max.: 2434907.28 + 5.543726 *E*.

UZ Car Elements of max.: 2434936.24 + 5.20466 *E*.

VY Car According to GAPOSCHKIN (*H.A.* **115**, No. 5) the period is variable and has steadily shortened. If we combine GAPOSCHKIN's epoch with those from SOHON (*B.A.N.* **3**, 204), from the *General Catalogue of Variable Stars* and from the present observations, we obtain the following solution:

max.	*E*	*O−C*
d		d
2410009.50	0	−.08
2423937.66	734	+.58
2429508.48	1028	−.88
2434907.99	1313	+.35

and the elements:

$$\text{max.} = 2410009.58 + 18.990\,E - .000021\,E^2$$
$$\pm\ 4 \qquad \pm\ 3 \text{ (m.e.)}$$

This ephemeris is in good accord with the Harvard observations. The best linear elements for the present time are: max. = 2434907.99 + 18.9349 *E*.

WW Car Elements of max.: 2434925.15 + 4.67681 *E*.

WZ Car The period seems to be increasing. The best representation of all observations is given by the following elements of maximum: 2434914.86 + 23.0075 E + .000025 E^2.

XX Car According to GAPOSCHKIN the period is variable. The best elements of maximum are at present: 2434917.03 + 15.71624 E − .0000034 E^2.

XY Car ROBINSON's epoch (*H.A.* **90**, 47, 1933) combined with the present observations yields the elements of maximum: 2434834.49 + 12.43483 *E*. However the epoch of maximum 2423074.034 given by GAPOSCHKIN (*H.A.* **115**, No. 5) does not fit these elements.

YZ Car According to Mrs PAYNE GAPOSCHKIN (*H.A.* **115**, No. 6) the period is variable. Combination of the present observations with the old epochs from Miss LEAVITT (*H.C.* No. 170, 1912) and from SOHON (*B.A.N.* **3**, 204, 1926) yields the following elements of maximum: 2434907.04 + 18.1631 E + .0000022 E^2.

AQ Car Elements of maximum: 2435309.17 + 9.76896 *E*.

CC Car Elements of maximum: 2435253.18 + 4.75965 *E*.

CN Car Elements of maximum: $2434510.24 + 4.93261E$.

CY Car The epoch given in the *Gen. Cat. Var. Stars* corresponds with a point on the ascending branch and not with maximum. Elements of max.: $2435568.49 + 4.26593E$.

DY Car Elements of max.: $2435224.36 + 4.67473E$.

ER Car Elements of max.: $2435623.31 + 7.7187E$.

EY Car Dispersion of the observations is larger than normal. The light-curve may be variable. Elements of max.: $2435567.52 + 2.87601E$.

FN Car Elements of max.: $2434546.20 + 4.58569E$.

GH Car Elements of max.: $2435567.82 + 5.72557E$.

GI Car Elements of max.: $2434521.40 + 4.43061E$.

GX Car Elements of max.: $2434523.02 + 7.19646E$.

GZ Car Elements of max.: $2434924.27 + 4.15885E$. The observations show a considerable dispersion. The light-curve is probably variable.

HK Car Elements of max.: $2434535.35 + 6.69574E$.

IT Car Elements of max.: $2435567.45 + 7.5356E$. The number of periods elapsed between Hertzsprung's epoch 2424214.92 (*B.A.N.* **9**, 63, star *w*) and the present epoch may be 1506 or 1507. It remains uncertain which of the two solutions is the correct one.

l Car Elements of max.: $2435619.7 + 35.5412E$.

V Cen Elements of max.: $2434869.61 + 5.49397E$.

TX Cen Elements of max.: $2434570.31 + 17.0936E$.

UZ Cen The observations show an abnormal dispersion. The light-curve is probably variable. Elements of max.: $2435574.54 + 3.334369E$.

VW Cen Elements of max.: $2434867.11 + 15.03618E$.

XX Cen Elements of max.: $2435349.23 + 10.9558E$.

AY Cen Elements of max.: $2434545.96 + 5.30975E$.

AZ Cen Elements of max.: $2435223.36 + 3.21266E$. The counting of periods between this new epoch and the old ones published by Hertzsprung (*B.A.N.* **3**, 111, star *u*) and de Jager (*B.A.N.* **10**, 248) remains uncertain.

IU Cen The phase-shift between light-curve and colour curve indicates that this Cepheid probably belongs to population II. Elements of max.: $2434572.29 + 3.31926E$.

KK Cen Elements of max.: $2434889.98 + 12.1803E$.

KN Cen Elements of max.: $2435247.63 + 34.019E$.

MY Cen Elements of max.: $2434869.40 + 3.71861E$.

OO Cen Elements of max.: $2435611.13 + 12.8805E$.

V 339 Cen Elements of max.: $2434890.45 + 9.4672E$.

V 378 Cen Elements of max.: $2434936.27 + 6.45930E$.

V 381 Cen Elements of max.: $2434932.29 + 5.07878E$.

V 419 Cen Elements of max.: $2434906.43 + 5.5119E$. The counting of periods between O'Connell's epoch (*A.N.* **264**, 141, 1937) and the new epoch is very uncertain.

V 420 Cen This is a Cepheid of population II. The observations by Mergentaler (*Lwow Contr.* No. 10, 14, 1939) and the present observations cannot be represented by a linear ephemeris. A satisfactory ephemeris seems to be:

$$\text{max.} = \underset{\pm\,54}{2425350.67} + \underset{\pm\,14}{24.7678}E - .000090E^2 \quad \text{(m.e.)}$$

V 496 Cen Elements of max.: $2434517.60 + 4.42413E$.

AL CrA Cepheid of population II.

KQ CrA Cepheid of population II. Elements of max.: $2435650.1 + 30.864E$. The counting of periods between this epoch and Miss Swope's epoch (*H.A.* **109**, No. 10, 1943) is somewhat uncertain.

V 347 CrA This Cepheid probably belongs to population II. Elements of max.: $2435329.1 + 15.3489E$.

R Cru Elements of max.: $2434922.31 + 5.82575$ E.

T Cru Elements of max.: $2434534.47 + 6.73322E$.

X Cru Elements of max.: $2435188.29 + 6.21997E$.

SU Cru Elements of max.: $2434934.12 + 12.8476E$. The range of the colour curve is larger than the range of the light-curve in yellow light.

TY Cru Elements of max.: $2434916.28 + 4.98851E$.

VW Cru Elements of max.: $2434902.45 + 5.26485E$.

VX Cru Elements of max.: $2434530.31 + 12.2126E$.

AD Cru Elements of max.: $2434931.01 + 6.39844E$.

AG Cru Elements of max.: $2434847.37 + 3.83733E$.

TX Del Elements of max.: $2435683.44 + 6.16654E$. This Cepheid probably belongs to population II.

β Dor Elements of max.: $2435580.7 + 9.842603E$. The epoch of maximum is not very well determined.

AP Her Elements of max.: $2435637.68 + 10.4088E$. The star may belong to population II.

BB Her Elements of max.: $2435636.81 + 7.50774E$.

RX Lib Elements of max.: $2435628.0 + 24.9459E$. The star belongs to population II.

SV Mon Elements of max.: $2435568.7 + 15.2318E$.

TX Mon Elements of max.: $2435595.42 + 8.7001E$. The present light-curve shows two maxima of which the second in phase is slightly brighter than the first. The epoch given above corresponds with this highest maximum. The epochs given by Dubyago (*A.N.* **239**, 15, 1930), Oosterhoff (*H.B.* No. 900) and van Bueren (*Leiden Ann.* **20**, stuk 5) probably correspond with another phase and therefore the period derived by Kukarkin and Parenago (*Gen. Cat. Var. Stars*) has been retained here.

R Mus Elements of max.: $2434847.38 + 7.50990E$.

S Mus The light-curve shows two equally high maxima, about $^{\mathrm{P}}.15$ apart. The elements for the first maximum are: $2434580.62 + 9.65869E$.

RT Mus Elements of max.: $2434905.30 + 3.08608E$.

UU Mus Elements of max.: $2434835.12 + 11.63596E$.

S Nor Elements of max.: $2434586.39 + 9.75418E$.

U Nor Elements of max.: $2434572.38 + 12.64133E$.

SY Nor Elements of max.: $2434920.46 + 12.6449E$.

TW Nor The period is probably slightly variable. Elements of max.:

$$2425441.58 + \underset{\pm\,9}{10.7837}E + \underset{\pm\,10}{.0000028}E^2. \quad \text{(m.e.)}$$

UX Nor Elements of max.: $2434920.38 + 2.38577E$. The range in blue light is large for a Cepheid of so short a period, namely about $1^{\mathrm{m}}.6$. The variable probably belongs to population II. It also is remarkably blue.

GU Nor Elements of max.: $2434920.47 + 3.45281E$.

Y Oph Elements of max.: $2434921.5 + 17.11946E$.

BF Oph Elements of max.: $2434941.08 + 4.06782E$.

RS Ori Elements of max.: $2435579.45 + 7.56704E$.

ϰ Pav The period is strongly variable (see: Parenago, *Variable Stars* **6**, 57, 1946). The best elements of maximum for the years 1955 and 1956 are: $2435636.17 + 9.0636E$.

X Pup Elements of max.: $2435188.76 + 25.9583E$.

RS Pup Elements of max.: $2434533.4 + 41.3876E$.

ST Pup Belongs probably to population II, as the colour curve is shifted relative to the light-curve. Elements of max.: $2435617.45 + 18.8864E$.

VW Pup Elements of max.: $2435554.86 + 4.28519E$.

VZ Pup Elements of max.: $2434864.90 + 23.1640E$.

WX Pup Elements of max.: $2435256.71 + 8.9385E$.

WY Pup Elements of max.: $2434834.39 + 5.25080E$.

WZ Pup	The epochs of maximum given by van Houten (*Leiden Ann.* **20**, stuk 10, 287) and the epoch derived from our observations are not represented satisfactorily by a linear ephemeris. The most probable quadratic elements are: max. = 2434869.27 + 5.03308 *E* + .00000177 E^2. ± 15 ± 7 (m.e.)
AD Pup	Elements of max.: 2434532.67 + 13.5940 *E*.
EK Pup	Elements of max.: 2435573.46 + 2.62603 *E*.
U Sgr	Elements of max.: 2434947.51 + 6.74523 *E*.
W Sgr	Elements of max.: 2434587.26 + 7.594710 *E*.
X Sgr	Elements of max.: 2435643.31 + 7.01225 *E*.
VY Sgr	Elements of max.: 2434567.8 + 13.5572 *E*.
WZ Sgr	Elements of max.: 2434960.6 + 21.8502 *E*.
AP Sgr	Elements of max.: 2434907.39 + 5.057813 *E*.
BB Sgr	Elements of max.: 2435303.49 + 6.63699 *E*.
V 350 Sgr	Elements of max.: 2435358.43 + 5.15424 *E*.
V 626 Sgr	This Cepheid belongs to population II. Elements of max.: 2434979.3 + 26.745 *E*. The counting of periods between the epochs given by van Houten (*Leiden Ann.* **20**, stuk 10) and the new epoch could not be determined.
V 741 Sgr	The star may belong to population II.
RV Sco	Elements of max.: 2434925.38 + 6.06133 *E*.
CQ Sco	Probably population II.
KQ Sco	Elements of max.: 2435281.4 + 28.6896 *E*.
V 446 Sco	Elements of max.: 2434980.1 + 28.6195 *E*. Probably population II.
V 470 Sco	Elements of max.: 2435308.32 + 16.2615 *E*.
V 482 Sco	Elements of max.: 2434931.70 + 4.52780 *E*. Counting of periods somewhat uncertain.
V 500 Sco	Elements of max.: 2434925.64 + 9.31665 *E*.
V 542 Sco	Elements of max.: 2435303.3 + 15.2405 *E*. The star may belong to population II.
V 636 Sco	Elements of max.: 2434906.47 + 6.79663 *E*.
Y Sct	Elements of max.: 2434947.20 + 10.341504 *E*.
Z Sct	Elements of max.: 2434930.96 + 12.9014 *E*.
RU Sct	Elements of max.: 2435331.6 + 19.6997 *E*.
SS Sct	Elements of max.: 2435315.61 + 3.671213 *E*.
UZ Sct	Elements of max.: 2435629.5 + 14.7468 *E*.
CK Sct	Elements of max.: 2434989.31 + 7.41522 *E*.
CM Sct	Elements of max.: 2434578.53 + 3.91697 *E*.
CR Ser	Elements of max.: 2435631.53 + 5.30141 *E*.
SZ Tau	The star may belong to population II.
R TrA	Elements of max.: 2434920.49 + 3.389287 *E*.
S TrA	Elements of max.: 2434575.42 + 6.32344 *E*.
U TrA	Elements of max.: 2435641.42 + 2.56843 *E*. The light-curve is variable. An analysis of the variations in the light-curve has been published by Oosterhoff in *B.A.N.* **13**, 317 (No. 479), 1957.
T Vel	Elements of max.: 2434890.37 + 4.639779 *E*.
V Vel	Elements of max.: 2434918.41 + 4.370991 *E*.
RY Vel	Elements of max.: 2434929.6 + 28.12507 *E*.
RZ Vel	Elements of max.: 2434906.7 + 20.39652 *E*. The quadratic term published by Oosterhoff in *B.A.N.* **8**, 29, 1936 appears not to be real.
ST Vel	Elements of max.: 2435630.09 + 5.85809 *E*.
SV Vel	Elements of max.: 2434869.9 + 14.09707 *E*.
SW Vel	The period is strongly variable. Elements of max.: 2434521.4 + 23.4744 *E* − .0000381 E^2. ± 8 ± 8 (m.e.)
XX Vel	Elements of max.: 2434895.73 + 6.98457 *E*.
AE Vel	Elements of max.: 2434922.42 + 7.13357 *E*.
AM Vel	Elements of max.: 2435535.43 + 7.52326 *E*.
AP Vel	Elements of max.: 2434522.37 + 3.127 *E*. The dispersion of the observations is very large. The light-curve is probably variable. We have not tried to connect the present observations with the old ones.
AX Vel	The light-curve has a small range and is probably variable, as the dispersion of the observations is abnormally large. All existing observations cannot be represented by linear elements. The following provisional ephemeris for maximum was derived: 2434839.36 + 2.59391 *E* + .000000106 E^2. ± 5 ± 8 (m.e.)
BG Vel	Elements of max.: 2434918.80 + 6.92357 *E*.
CX Vel	Elements of max.: 2434921.87 + 6.25505 *E*.
DP Vel	Elements of max.: 2435250.94 + 5.48438 *E*.
DR Vel	Elements of max.: 2434930.70 + 11.2000 *E*.
EX Vel	Elements of max.: 2434894.43 + 13.2341 *E*.
EZ Vel	Elements of max.: 2434532.6 + 34.524 *E*.
FG Vel	Elements of max.: 2435252.44 + 6.45320 *E*.
W Vir	Belongs to population II. Elements of max.: 2435622.8 + 17.2751 *E*. The light-curve may be slightly variable.
U Vul	Elements of max.: 2435654.47 + 7.990698 *E*.

TABLE 7

Name of Cepheid	J.D. hel. −2430000	phase	log I_Y	Δ log I	log I_B
	d				
V572 Aql	5364.340	.613	− .241	+.220	− .021
d^{-1}	72.294	.690	− .193	+.219	+ .026
.261097	5643.426	.482	− .232	+.212	− .020
	54.441	.358	− .240	+.206	− .034
	55.523	.640	− .108	+.266	+ .158
	60.605	.967	− .266	+.182	− .084
	69.481	.284	− .262	+.201	− .061
	81.399	.396	− .178	+.248	+ .070
	82.436	.667	− .171	+.245	+ .074
	83.429	.926	− .274:	+.167:	− .107:
	85.432	.449	− .155	+.250	+ .095
	86.421	.707	− .196	+.202	+ .006
	87.452	.977	− .286	+.162	− .124
	88.334	.207	− .223	+.212	− .011
YZ CMa	4811.356	.204	− .849:	+.311:	− .538:
d^{-1}	12.349	.518	− .740	+.270	− .470
.316793					
XZ Car	4522.294	.609	+ .818	+.038	+ .856
d^{-1}	87.197	.507	+ .691	−.058	+ .633
.060060					
	d				
FZ Car	4533.354	.004	− .502	+.033	− .469
d^{-1}	61.295	.814	− .480	+.010	− .470
.279485	76.233	.988	− .504	+.018	− .486
	80.221	.103	− .490:	−.027:	− .517:
GS Car	4534.338	.168	− .715	+.032	− .683
d^{-1}	46.263	.108	− .746	+.024	− .722
.246600	62.283	.059	− .727	+.106	− .621
	67.226	.278	− .778:	+.054:	− .724:
	4886.354	.975	− .647	+.119	− .528
	95.390	.203	− .729:	+.048:	− .681:
	4931.219	.039	− .748:	+.063:	− .685:
HS Car	4569.223	.318	− .576	−.026	− .602
d^{-1}	4925.222	.230	− .598:	−.021:	− .619:
.196383					
IM Car	4569.268	.272	− .447	+.040	− .407
d^{-1}	74.230	.202	− .405:	+.016:	− .389:
.187398	4953.245	.228	− .409:	+.029:	− .380:

TABLE 7 (*continued*)

Name of Cepheid	J.D. hel. −2430000	phase	log I_Y	Δ log I	log I_B
	d				
IO Car d^{-1} .073497	4513.355	.718	− .205	−.053	− .258
	29.393	.897	− .226	−.046	− .272
	30.392	.970	− .198	+.009	− .189
	72.247	.046	− .150	−.048	− .198
BB Cen d^{-1} .250165	4513.403	.095	+ .234	+.121	+ .355
	17.436	.104	+ .253	+.135	+ .388
	21.363	.087	+ .231	+.129	+ .360
	30.420	.353	+ .302	+.142	+ 444
	4885.436	.165	+ .267	+.137	+ .404
IZ Cen d^{-1} .169699	4567.283	.063	− .775:	−.195:	− .970:
	68.266	.230	− .808:	−.221:	−1.029:
LV Cen d^{-1} .201011	4568.250	.269	− .678	−.163	− .841
BE CrA d^{-1} .299715	4574.532	.056	−1.077	+.420	− .657
EZ Cyg d^{-1} .085763	4989.382	.904	− .029:	−.026:	− .055:
GH Gyg d^{-1} .127912	5363.323	.033	+ .420:	+.054:	+ .474:
	64.329	.162	+ .389	+.027	+ .416
QT CrA d^{-1} .012635	4567.542	.711	− .650	+.046	− .604
	72.467	.773	− .646	+.040	− .606
	77.508	.837	− .639	+.030	− .609
	4919.610	.159	− .680	+.019:	− .661:
	52.403	.574	− .669	+.071	− .598
	79.383	.915	− .639:	+.045:	− .594:
	89.258	.039	− .683:	+.042:	− .641:
	5328.276	.323	− .644	+.067	− .577
	31.285	.361	− .639	+.065	− .574
EK Del d^{-1} .488590	5343.372	.718	− .513	+.407	− .106
DX Gem d^{-1} .318891	4812.293	.597	− .099	+.062	− .037
	5555.309	.538	− .056	+.070	+ .014
	67.279	.355	− .002:	+.105:	+ .103:
	68.279	.674	− .110	+.090	− .020
AL Lyr d^{-1} .077021	5343.297	.546	− .446:	+.052:	− .394:
CN Lyr d^{-1} .428090	5310.393	.326	− .317:	+.305:	− .012:
	15.365	.455	− .225	+.348	+ .123
	65.253	.811	− .314	+.296	− .018
RV Mon d^{-1} .030944	4574.328	.548	− .645	−.187	− .832
	76.348	.611	− .659	−.203	− .862
	77.369	.642	− .637	−.235	− .872
	78.331	.672	− .618:	−.244:	− .862:
	4867.560	.622	− .707:	−.204:	− .911:
	4930.420	.567	− .638	−.149	− .787
	5251.528	.503	− .575	−.154	− .729
	81.421	.428	− .608	−.128	− .736
TZ Mon d^{-1} .134622	4811.335	.712	−1.105:	+.336:	− .769:
	12.337	.846	−1.204:	+.409:	− .795:
BV Mon d^{-1} .331750	4812.321	.487	− .244	+.050	− .194
	5547.384	.345	− .171	+.101	− .070
	55.339	.984	− .396	+.016	− .380
CS Mon d^{-1} .149684	4812.279	.321	− .097	+.004	− .093
	5547.274	.338	− .130	−.058	− .188
	55.273	.535	− .240	−.052	− .292
	68.266	.480	− .204	−.038	− .242
EK Mon d^{-1} .252670	5547.371	.654	− .206	−.061	− .267
	68.312	.945	− .248	−.046	− .294
	73.293	.204	− .048	+.050	+ .002
GR Nor d^{-1} .510215	4567.422	.367	− .693:	−.019:	− .712:
	69.428	.391	− .657	−.029	− .686
	77.443	.480	− .715:	+.017:	− .698:
	4922.485	.526	− .685	+.003	− .682
	79.335	.531	− .692	+.016	− .676
GZ Nor d^{-1} .027823	4565.463	.025	− .891	+.033	− .858
	67.465	.081	− .965:	+.038:	− .927:
	68.345	.105	− .996:	+.002:	− .994:
	4921.472	.930	− .892:	+.018:	− .874:
	25.442	.041	− .958:	−.021:	− .979:
AU Peg d^{-1} .417049	5348.370	.532	+ .607	+.168	+ .775
	64.352	.198	+ .597	+.214	+ .811
	5643.458	.599	+ .490	+.158	+ .648
	54.469	.191	+ .578	+.150	+ .728
	61.464	.108	+ .603	+.155	+ .758
	68.521	.051	+ .610	+.161	+ .771
	d				
	5681.422	.431	+ .475	+.131	+ .606
	82.457	.863	+ .630	+.216	+ .846
	83.452	.278	+ .544	+.125	+ .669
	86.451	.529	+ .492	+.140	+ .632
	87.477	.957	+ .613	+.181	+ .794
	88.382	.334	+ .504	+.128	+ .632
	89.372	.747	+ .616	+.224	+ .840
BN Pup d^{-1} .073132	4835.373	.620	− .321:	+.494:	+ .173:
	86.230	.340	− .365	+.506	+ .141
	4914.213	.386	− .368:	+.514:	+ .146:
CO Pup d^{-1} .062438	4510.232	.610	− .151	+.157	+ .006
	13.235	.797	+ .025	+.209	+ .234
	30.248	.860	+ .061	+.151	+ .212
	44.201	.731	+ .013	+.215	+ .228
	4833.344	.784	+ .069	+.187	+ .256
	34.295	.844	+ .021:	+.207:	+ .228:
	35.417	.914	+ .078	+.128	+ .206
	5535.405	.620	+ .027	+.201	+ .228
	55.444	.871	+ .071	+.089	+ .160
	68.398	.680	+ .056	+.194	+ .250
	73.414	.993	− .046	+.039	− .007
	74.325	.050	− .110	+.004	− .106
	80.349	.426	− .208	+.138	− .070
V383 Sgr d^{-1} .060790	4572.544	.965	− .659	+.264	− .395
	73.546	.026	− .613	+.232	− .381
	74.512	.085	− .637	+.244	− .393
	75.552	.148	− .656	+.206	− .450
V532 Sgr d^{-1} .029254	4578.468	.939	−1.034	+.029	−1.005
	4980.336	.695	− .897:	−.095:	− .992:
	5302.367	.115	− .865	+.021	− .844
	5331.268	.961	−1.002:	−.022:	−1.024:
V738 Sgr d^{-1} .023047	4574.450	.427	− .430	−.083	− .513
	75.513	.452	− .473	−.079	− .552
	77.519	.498	− .484:	−.102:	− .586:
	78.499	.521	− .494	−.089	− .583
	4953.461	.162	− .440	−.110	− .550
	61.336	.344	− .609:	−.162:	− .771:
	5308.469	.344	− .494	−.117	− .611
	10.336	.387	− .518	−.160	− .678
V1077 Sgr d^{-1} .074467	4568.555	.207	− .759	+.322	− .437
V507 Sco d^{-1} .084754	4568.413	.191	− .999	+.150	− .849
	69.475	.281	− .995	+.203	− .792
	70.382	.358	− .923	+.099	− .824
V549 Sco d^{-1} .060423	4578.418	.642	−1.274	+.258	−1.016
	5308.399	.749	−1.227	+.197	−1.030
	09.323	.805	−1.150	+.165	− .985
	10.274	.863	−1.125	+.102	−1.023
TY Sct d^{-1} .090473	4568.536	.329	− .378	+.230	− .148
	70.490	.506	− .372	+.220	− .152
	4988.324	.309	− .410:	+.244:	− .166:
	89.321	.399	− .394:	+.244:	− .150:
	5331.408	.348	− .376	+.230	− .146
	43.270	.422	− .388	+.233	− .155
CO Vel d^{-1} .233891	4532.247	.052	− .870	−.159	−1.029
	46.203	.316	− .642	−.140	− .782
	4812.408	.579	− .779	−.333	−1.112
	4914.241	.397	− .728:	−.223:	− .951:
	18.229	.329	− .674:	−.236:	− .910:
	5555.455	.371	− .678	−.248	− .926
	67.375	.159	− .602	−.178	− .780
	5609.293	.963	− .904	−.262	−1.166
CP Vel d^{-1} .101617	4517.258	.030	− .789	−.196	− .985
	36.232	.958	− .874	−.087	− .961
	4812.429	.025	− .815:	−.118:	− .933:
	4920.222	.978	− .766:	−.169:	− .935:
	21.198	.077	− .809:	−.142:	− .951:
CY Vel d^{-1} .051207	4513.267	.111	− .780	+.048	− .732
	31.234	.031	− .913	+.031	− .882
	32.268	.084	− .797	+.039	− .758
	33.281	.136	− .771	+.093	− .678
	34.259	.186	− .672	+.017	− .655
	4885.318	.162	− .844	+.105	− .739
	86.274	.211	− .777	+.072	− .705
	4925.203	.205	− .698:	+.013:	− .685:
	5275.262	.130	− .775:	−.124:	− .899:
T Vul d^{-1} .225450	5349.290	.997	+2.071	+.323	+2.394
	70.331	.741	+1.846	+.215	+2.061
X Vul d^{-1} .158243	4905.528	.265	+ .707?	+.431?	+1.138?
	5348.356	.340	+ .853	−.035	+ .818
	72.280	.126	+ .667	−.121	+ .546
SV Vul d^{-1} .022151	5343.343	.360	+1.551	+.013	+1.564
	48.317	.471	+1.496	−.066	+1.430

In the first column the name of the Cepheid is given and the value of the reciprocal period which has been used in the computation of the phases, given in the third column. The heliocentric Julian Day is given in the second column. The phases have been computed with the formula:

$$\text{phase} = P^{-1}\,(\text{J.D. hel.} - 2430000).$$

The reciprocal period used in this equation corresponds with a value of the period which was derived from the present observations in combination with old epochs. We did not try to determine the best value of the period from all available observations, but only to derive a period which can be safely used for extrapolation for a number of years. In the last three columns $\log I_Y$, $(\log I_B - \log I_Y)$ and $\log I_B$ are given. Figures marked with a colon are uncertain on account of a poor sky, a varying extinction, smoke and the like. Some figures followed by a question mark should probably be discarded altogether, as they do not agree at all with the other measures of the same variable. In some cases the wrong star may have been measured. It also has happened that a mistake was made in noting down the amplification of the photometer, which could not be overtaken. The faintest variables in Table 6 could often hardly be seen visually through the guiding telescope and it was difficult to keep these stars centred in the diaphragm. Discordant measures for these faint Cepheids are probably due therefore to inaccurate settings. At the end of Table 6 remarks are to be found about individual Cepheids marked with an asterisk behind their name.

In Table 7 the individual measures of those Cepheids have been tabulated for which the number of observations is too small to derive magnitudes and colour at the phase of maximum brightness. For some of the variables in this Table 7, like QT CrA, very little variation is found in the magnitudes and colour and it seems probable that the identification of these variables has not been correct. Table 7 has been given for the sake of completeness, but no use has been made in this paper of any of the measures from this table.

The colour curves and the yellow light-curves are shown for each variable in the Figures 2, 3, 4, 5 and 6. Uncertain observations have been indicated by open circles. For each variable the colour curve is at the top of the figure. The value of $\Delta \log I$ is indicated on the left-hand side of each figure, whereas the values of $\log I_Y$ are given on the right-hand side. In the abscissa tenths of phase have been indicated, zero phase with a long line and phase .5 with a somewhat shorter line.

8. *A comparison with the magnitudes and colours derived by other authors*

A. Comparison with EGGEN's magnitudes and colours of classical Cepheid variable stars (1951).

For fourteen Cepheids from EGGEN's article we derived $\log I_B$ and $\log I_Y$ values at maximum brightness and for two of these variables we have also values for minimum brightness. The data used for two least-squares solutions and the residuals $(O-C)$ have been collected in Table 8. The resulting equations are:

$$\begin{array}{ll} Pg_p = 11.317 - \underset{\pm .033}{1.157}\,(\log I_B + \log I_Y) - \underset{\pm .26}{1.11}\,(\log I_B - \log I_Y), & \text{(m.e.)} \end{array} \tag{3}$$

$$\begin{array}{ll} Pv_p = 10.337 - \underset{\pm .024}{1.180}\,(\log I_B + \log I_Y) + \underset{\pm .19}{.95}\,(\log I_B - \log I_Y). & \text{(m.e.)} \end{array} \tag{4}$$

This comparison is rather unsatisfactory in two respects.

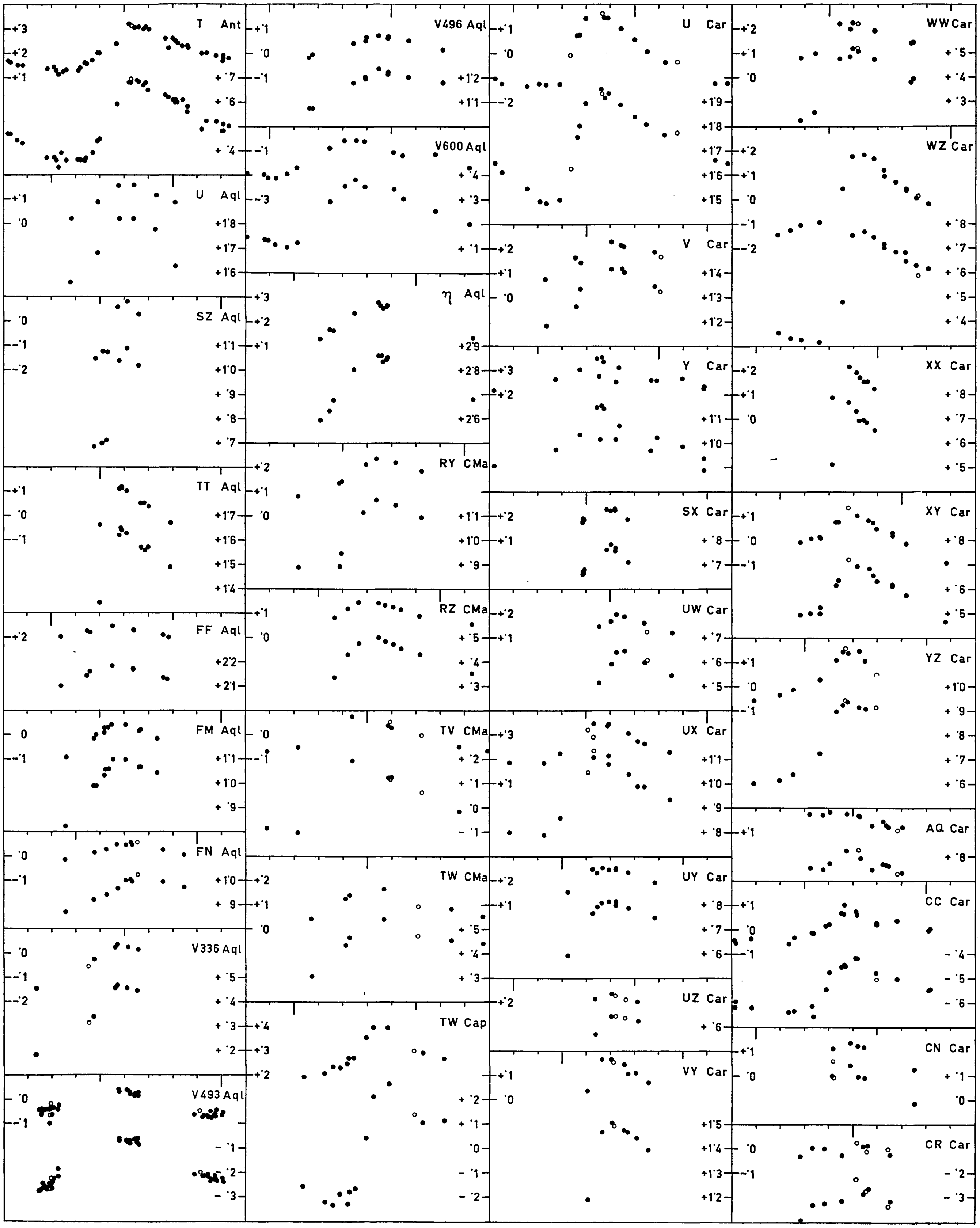
TABLE 8

Var.	Pg_p	Pv_p	$\log I_B$	$\log I_Y$	$(O-C)_b$	$(O-C)_y$
	m	m			m	m
U Aql	6.68	5.99	2.000	1.835	−.02	+.02
SZ Aql	8.70	7.82	1.171	1.088	+.09	+.07
TT Aql	7.15	6.32	1.764	1.646	−.09	−.10
FM Aql	8.73	7.81	1.143	1.100	+.05	+.08
η Aql	3.94	3.44	3.161	2.878	−.08	−.04
SU Cyg	6.68	6.36	2.027	1.667	+.04	+.04
Y Oph	6.90	5.84	1.898	1.910	−.03	+.01
min.	7.70	6.34	1.572	1.715	+.03	+.02
S Sgr	5.79	5.23	2.464	2.182	+.16	+.11
min.	7.04	6.03	1.948	1.863	+.22	+.11
U Sgr	6.88	6.14	1.883	1.733	−.09	−.07
Y Sgr	5.82	5.27	2.364	2.113	−.04	−.02
WZ Sgr	8.03	7.18	1.332	1.262	−.21	−.16
V 350 Sgr	7.48	6.87	1.640	1.417	−.05	−.07
SS Sct	8.50	7.82	1.234	1.064	+.03	+.03
SZ Tau	6.93	6.30	1.897	1.687	−.01	−.01

In the first place the residuals are rather large, the mean error of one equation of condition being $\pm .^{m}111$ for the blue and $\pm {}^{m}.082$ for the yellow magnitudes. It should be kept in mind, however, that for EGGEN's as well as for our own measures the values at maximum and at minimum light depend on interpolation between observations at neighbouring phases. In this respect it is interesting to notice that there exists a strong correlation between the residuals in blue and yellow light for the same star.

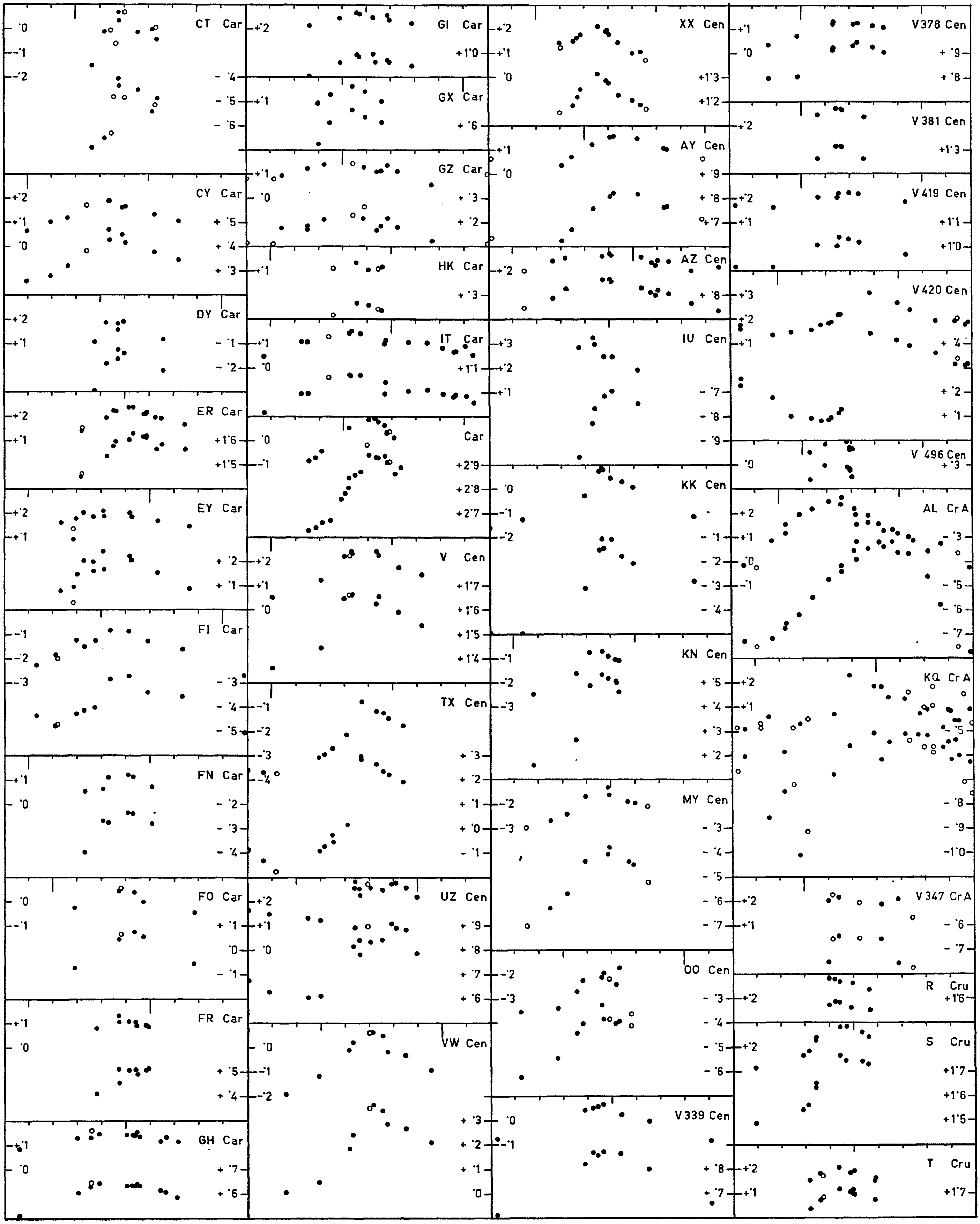
A far more serious matter is the discordance in the photometric scales. If the scales were the same, the coefficient of the second term in the above formulae would be − 1.25. Consequently EGGEN's scale differs by a factor .925 ± .026 in the blue and by a factor .944 ± .019 in the yellow from our scale. It is difficult to understand how such a large scale difference of nearly 6.5 percent can exist between two series of photo-electric measures. As our scale is in full agree-

FIGURE 2



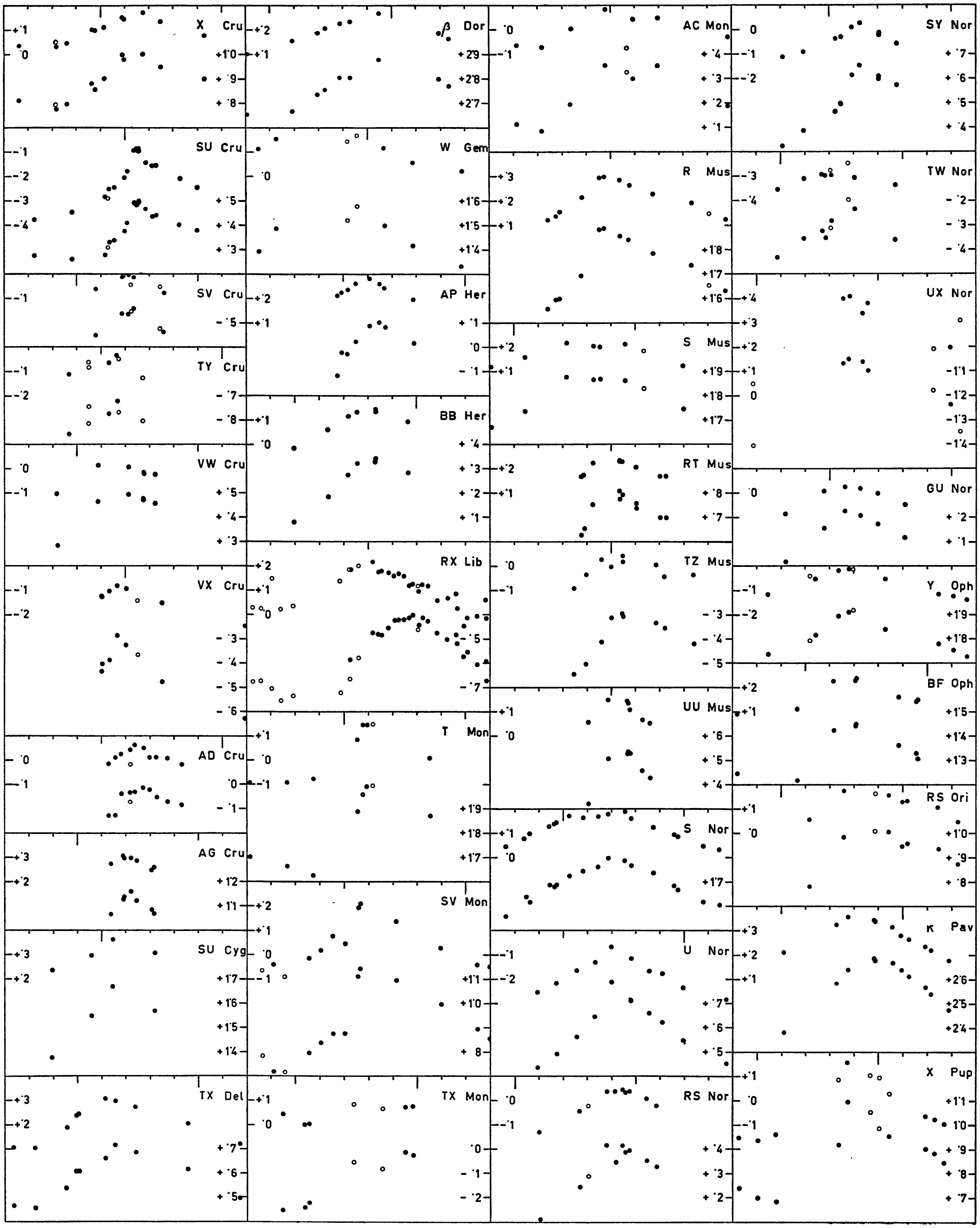
Colour curves and yellow light-curves of individual Cepheids

FIGURE 3



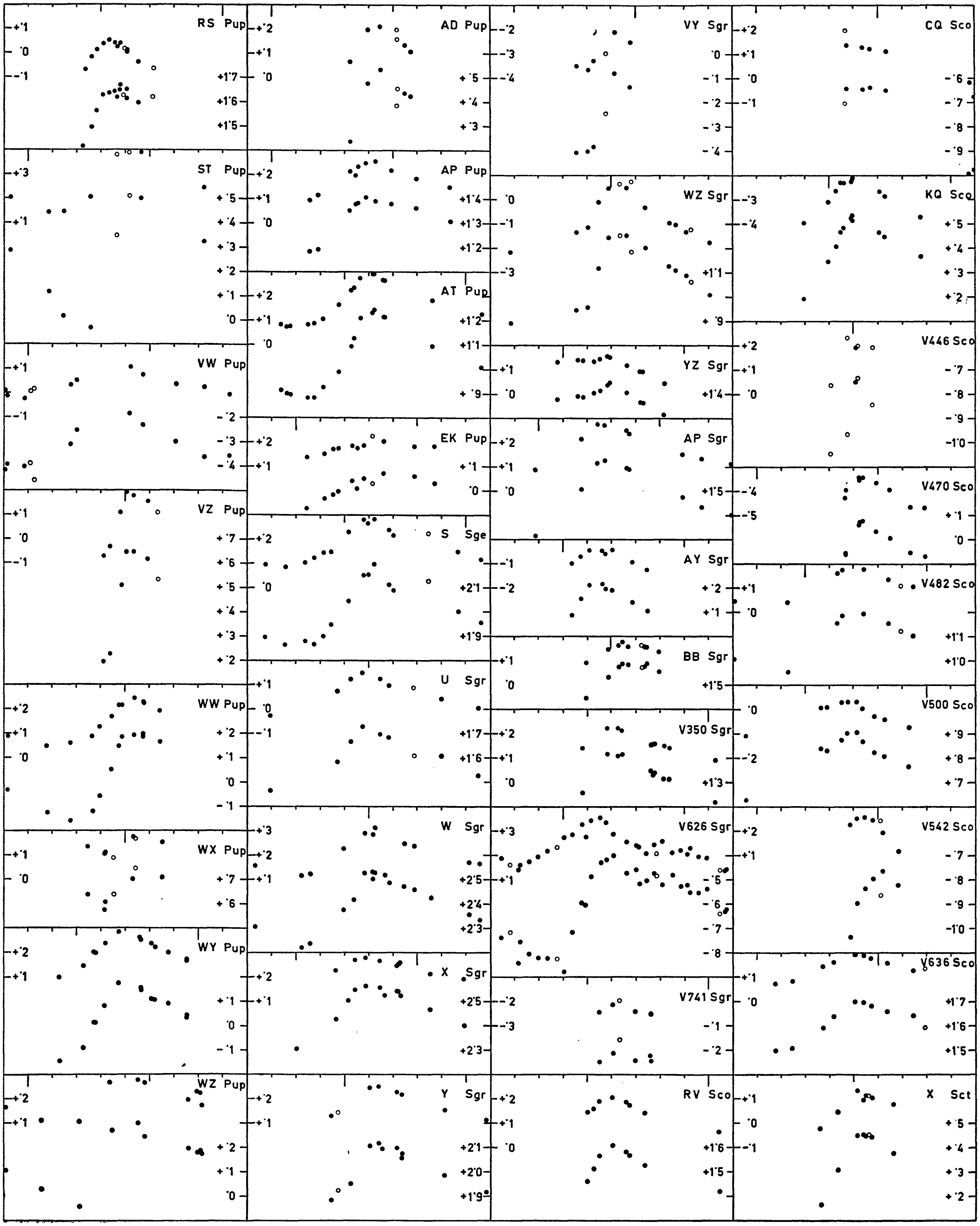
Colour curves and yellow light-curves of individual Cepheids

FIGURE 4



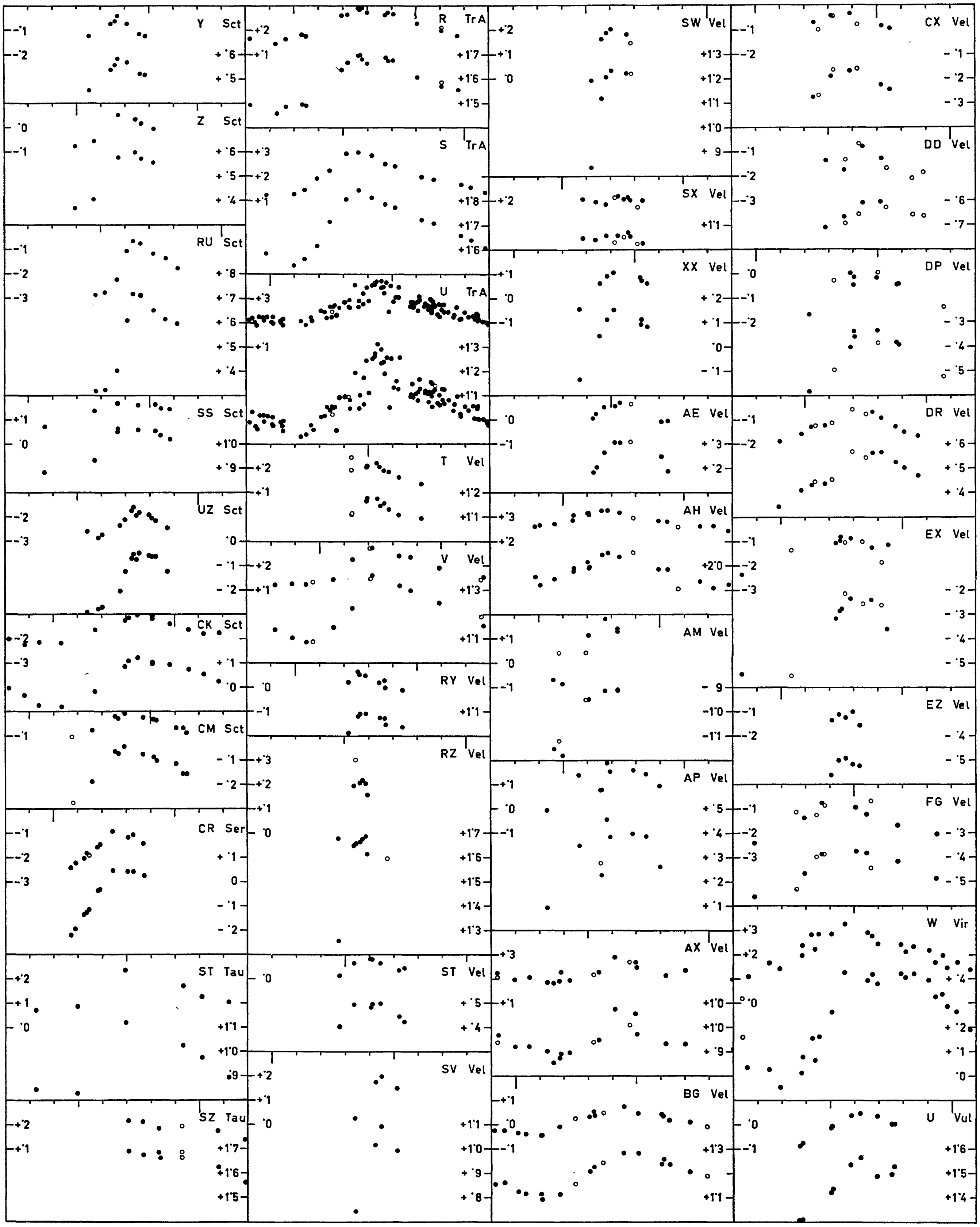
Colour curves and yellow light-curves of individual Cepheids

FIGURE 5



Colour curves and yellow light-curves of individual Cepheids

FIGURE 6



Colour curves and yellow light-curves of individual Cepheids

ment with that of the Cape 1953 *S* system and also with the scale of GASCOIGNE and EGGEN discussed in the next paragraph, we conclude that the scale factor derived here for EGGEN's observations is probably not correct.

B. Comparison with the magnitudes and colours derived by EGGEN, GASCOIGNE and BURR, published in the *Monthly Notices* (1957).

Dr GASCOIGNE has been so kind to provide me with a copy of part of the typescript of this paper on magnitudes and colours of Cepheids in advance of publication. Disregarding some stars with uncertain measures we find in their list 33 Cepheids in common with ours and for 5 of these we have not only the photometric data for the phase of maximum, but also for minimum brightness. For a comparison between the two photometric systems we therefore have 38 equations of condition. The data used in the least-squares solutions have been collected in Table 9.

TABLE 9

Star	P_E	V_E	log I_B	log I_Y	$(O-C)_P$	$(O-C)_V$
	m	m			m	m
U Aql	6.73	6.05	2.000	1.835	.00	+.04
SZ Aql	8.72	7.84	1.171	1.088	.00	.00
TT Aql	7.19	6.38	1.764	1.646	−.10	−.10
FF Aql	5.74	5.17	2.424	2.182	+.02	+.01
FM Aql	8.78	7.82	1.143	1.100	+.01	+.01
FN Aql	8.86	7.95	1.067	1.013	−.10	−.08
V 496 Aql	8.57	7.59	1.300	1.228	+.17	+.09
l Car	4.17	3.28	3.024	2.936	−.04	−.03
VY Car	7.54	6.87	1.674	1.501	+.02	+.04
R Cru	6.84	6.40	1.966	1.687	−.01	+.02
T Cru	7.03	6.36	1.924	1.720	+.10	+.06
SU Cyg	6.75	6.45	2.027	1.667	+.02	+.02
β Dor	3.85	3.39	3.157	2.890	−.10	−.04
BB Her	10.41	9.72	.487	.342	+.01	+.05
T Mon	6.39	5.60	2.144	1.996	+.02	−.02
R Mus	6.36	5.94	2.186	1.886	+.04	+.05
S Mus	6.49	5.90	2.098	1.879	−.02	−.01
min.	7.26	6.42	1.786	1.672	+.03	+.01
Y Oph	6.98	5.91	1.898	1.910	+.06	+.09
min.	7.74	6.38	1.572	1.715	+.07	+.08
ϰ Pav	4.28	3.96	3.040	2.687	+.02	+.03
S Sge	5.76	5.25	2.464	2.182	+.12	+.09
min.	6.96	6.03	1.948	1.863	+.13	+.09
U Sgr	7.00	6.25	1.883	1.733	−.01	−.01
W Sgr	4.67	4.22	2.827	2.523	−.09	−.11
min.	5.90	5.00	2.335	2.219	.00	−.07
Y Sgr	5.90	5.37	2.364	2.113	+.03	+.04
WZ Sgr	8.12	7.26	1.332	1.262	−.20	−.16
YZ Sgr	7.57	6.83	1.599	1.444	−.13	−.14
V 350 Sgr	7.50	6.90	1.640	1.417	−.12	−.14
SS Sct	8.48	7.82	1.234	1.064	−.11	−.08
SZ Tau	6.96	6.34	1.897	1.687	−.04	−.04
T Vel	8.29	7.68	1.391	1.178	+.06	+.06
V Vel	7.77	7.26	1.647	1.369	+.14	+.10
min.	8.57	7.80	1.206	1.084	−.08	−.05
RZ Vel	7.02	6.44	1.891	1.677	+.01	+.04
SW Vel	8.21	7.55	1.437	1.237	+.10	+.07
AH Vel	5.86	5.47	2.374	2.046	−.01	−.03

The resulting equations are:

$$P_E = +\ 11.537 - \underset{\pm .013}{1.216}\ (\log I_B + \log I_Y) - \underset{\pm .14}{.88}\ (\log I_B - \log I_Y), \qquad \text{(m.e.)} \qquad (5)$$

$$V_E = +\ 10.510 - \underset{\pm .012}{1.227}\ (\log I_B + \log I_Y) + \underset{\pm .12}{1.25}\ (\log I_B - \log I_Y). \qquad \text{(m.e.)} \qquad (6)$$

The coefficients of the second terms are larger than those found in the last paragraph in the comparison with EGGEN's magnitudes. But still they seem to be significantly smaller than the value 1.25 for equal scales. We now find the scale factors .972 ± .010 for the blue and .981 ± .010 for the yellow. We cannot decide here how this scale difference of about 2 percent has been caused. We understood that EGGEN has changed the photometric system of the magnitudes of the more northern Cepheids, published in *Ap.J.* **113**, 367, 1951, before they were added to the list of Cepheids in the publication by EGGEN, GASCOIGNE and BURR. However we do not know how this change in photometric system has been brought about, although the $(P, V)_E$ system has been described in detail by EGGEN (1955).

The mean error of one equation of condition was found to be $\pm^{m}.084$ for the blue and $\pm^{m}.073$ for the yellow. As was remarked in the former paragraph, a part of these errors will be due to the uncertainty in the reading of maximum and minimum values.

Also in this case there exists a strong correlation between the residuals $(O-C)_P$ and $(O-C)_V$ in Table 9. This means that the errors in the colours are considerably smaller than the errors in the magnitudes. This could be expected as colour determinations are more differential in character than magnitude determinations for stars all over the sky.

As linear relation between $(P-V)_E$ and $(\log I_B - \log I_Y)$ we derived:

$$(P-V)_E = +\ 1.059 - \underset{\pm\ \ 51}{2.086}\ (\log I_B - \log I_Y), \qquad (7)$$

the mean error of one equation of condition being $\pm^{m}.033$.

C. Comparison with the photographic magnitudes and colours by BADALYAN (1956).

BADALYAN has published median magnitudes and median colours for a large number of Cepheids. We have only 9 stars in common with his list, for which we have derived the photometric data for maximum and for minimum brightness from which median values can be computed. The data used in the least-squares solution have been collected in Table 10.

TABLE 10

Star	m_{pg}	CI	log I_B	log I_Y	$(O-C)$
	m	m			m
SV Mon	9.35	1.27	1.023	.944	+.18
AC Mon	10.21	.80	.222	.219	−.62
Y Oph	7.55	1.10	1.735	1.812	−.01
VW Pup	11.82	.97	− .197	− .260	+.07
WW Pup	11.12	.79	.173	.020	+.10
S Sge	6.57	.81	2.206	2.022	−.15
AP Sgr	8.25	1.13	1.654	1.468	+.36
V 482 Sco	8.63	.70	1.187	1.076	−.21
CK Sct	11.79	1.25	− .144	.020	+.29

The resulting equation is:

$$m_{pg} = +\,11.30 - \underset{\pm .075}{1.063}\,(\log I_B + \log I_Y) - \underset{\pm 1.09}{.45}\,(\log I_B - \log I_Y). \quad \text{(m.e.)} \tag{8}$$

The mean error of one equation of condition is $\pm^{m}.34$. The scale factor deviates considerably from unity and is found to be: .85 ± .06. Although these results are based on observations of 9 Cepheids only, they no doubt prove that BADALYAN's observations are inferior to the photo-electric observations. As BADALYAN has only three or four observations per Cepheid, his values for the median magnitudes and colours must be quite inaccurate.

We derived the following linear relation between his colour indices and our colours:

$$CI_{Bad} = +\,1.03 - \underset{\pm .60}{.83}\,(\log I_B - \log I_Y). \tag{9}$$

The mean error of the coefficient of the second term is so large that this equation has no practical meaning.

A comparison was also made between our measures and colour indices for maximum brightness by VASHAKIDZE (1953). For 35 Cepheids, common to both lists, the following relation was found:

$$CI_{Vash} = \underset{\pm .13}{+\,.17} + \underset{\pm .15}{.92}\,SCI, \quad \text{(m.e.)}$$

SCI representing our colour indices expressed in the Cape system. The mean error of one equation is $\pm^{m}.30$.

9. *The relations with other photometric systems*

In section 5 we have given the relations between log I_B and log I_Y and the blue and yellow magnitudes SPg and SPv of the Cape S system of 1953.

In order to obtain a relation with the photometric system of JOHNSON and MORGAN (1953) we have observed five stars from their list, namely:

Star	Sp.	B	V	U	$(O-C)_B$	$(O-C)_V$
		m	m	m	m	m
109 Vir	A0 V	3.74	3.75	3.71	−.014	.000
λ Ser	G0 V	5.03	4.43	5.14	+.005	−.012
CC 1017	K5 V	8.90	7.74	9.95	+.002	+.004
1 Peg A	K1 III	5.19	4.09	6.24	+.036	+.024
55 Peg	M2 III	6.06	4.50	7.87	−.027	−.014

We observed the following values of log I_B and log I_Y:

	log I_B	log I_Y		log I_B	log I_Y
λ Ser	2.760	2.486	1 Peg A	2.705	2.642
	2.772	2.489		2.710	2.652
	2.753	2.484	mean	2.708	2.647
mean	2.762	2.486			
			55 Peg	2.326	2.475
				2.330	2.481
CC 1017	1.181	1.173	mean	2.328	2.478
	1.194	1.182			
	1.192	1.181			
mean	1.189	1.179	109 Vir	3.280	2.751

Least-squares solutions between the B and V values of JOHNSON and MORGAN against our own measures yield the equations:

$$B = +\,11.829 - \underset{\pm .014}{1.233}\,(\log I_B + \log I_Y) - \underset{\pm .078}{1.212}\,(\log I_B - \log I_Y), \quad \text{(m.e.)} \tag{10}$$

$$V = +\,10.681 - \underset{\pm .009}{1.248}\,(\log I_B + \log I_Y) + \underset{\pm .050}{1.127}\,(\log I_B - \log I_Y). \quad \text{(m.e.)} \tag{11}$$

The scale factors are satisfactory, namely .986 ± .011 for the blue and .998 ± .007 for the yellow. The residuals $(O-C)$ are shown in the little table above. The colours in the two photometric systems are related by the following equation:

$$B - V = \underset{\pm .014}{+\,1.215} - \underset{\pm .05}{2.29}\,(\log I_B - \log I_Y). \quad \text{(m.e.)} \tag{12}$$

The equations (10), (11) and (12) are based on five stars only and although the mean errors are quite small, an independent confirmation of these relations would be helpful.

STOY (1956) has derived the relationship between the Cape S system and the B and V magnitudes by JOHNSON and MORGAN. He gives the relations:

$$B = SPg - .07\,SCI + .20, \tag{13}$$

$$V = SPv + .08\,SCI - .06, \tag{14}$$

$$B - V = .85\,SCI + .26. \tag{15}$$

We can derive these equations independently from a combination of our equations (1), (2), (10), (11) and (12). We then find:

$$B = .985\,SPg + .00\,SCI + .30, \tag{13'}$$

$$V = .996\,SPv + .09\,SCI - .01, \tag{14'}$$

$$B - V = .89\,SCI + .24. \tag{15'}$$

The agreement between the two sets of equations is not unsatisfactory, if one keeps in mind that we observed only five stars from JOHNSON and MORGAN and a small number of stars in the E-regions at widely separated times. The difference in the constant in the equation for B is due to the small difference in scale. There are no serious inconsistencies between the two sets of equations and our photometric system seems to be reasonably well defined by the equations (1) and (2) relative to the Cape S system and by (10), (11) and (12) relative to the photometric system by JOHNSON and MORGAN.

However there remains one serious discrepancy. Eliminating ($\log I_B - \log I_Y$) from the equations (7) and (12) we obtain the relation between the colours in the system of EGGEN and the colours from JOHNSON and MORGAN. The result is:

$$(P - V)_E = +.91\,(B - V) - .048. \tag{16}$$

The mean error of the scale factor should be about ±.03. In *A.J.* **60**, 65, 1955, EGGEN derived the relation:

$$(P - V)_E = +1.0376\,(B - V) - .125 \qquad (16')$$
$$\pm \quad 12 \text{ (p.e.)}$$

with a scale factor much larger than in equation (16). However the relation between $(P - V)_E$ and $(B - V)$ is more complicated than is indicated by formula (16′). For the dwarfs, with $(B - V)$ between $+1.0$ and $+1.5$, EGGEN derived the equation:

$$(P - V)_E = +.84\,(B - V) + .08. \qquad (16'')$$
$$\pm \; 1 \text{ (p.e.)}$$

The question therefore arises what this relation would be for F-type supergiant stars, which are considerably reddened by interstellar absorption, as equation (7) between $(P - V)_E$ and ($\log I_B - \log I_Y$) was derived for Cepheids only. As we have no other stars, but Cepheids, in common with EGGEN's $(P, V)_E$ system, this relation cannot be determined in any more detail.

10. *Some relations between the photometric data and the periods*

In Table 11 we have collected the Cepheids for which we made photometric observations at maximum as well as at minimum brightness. The values of $\log I$ have first been converted into magnitudes by means of the equations (1) and (2). From these magnitudes in the Cape S system the amplitudes of the light-curves in blue and yellow were derived and also the range of the colour curves. These amplitudes have been given in Table 11 under the headings A_{pg}, A_{pv} and A_{CI}. In the case of population I Cepheids the range in colour practically equals the difference between the range in blue and the range in yellow. For the Cepheids of population II this is not necessarily so, as these variables often show a considerable shift in phase between the blue and yellow light-curves.

Omitting uncertain measures, indicated by a colon, and also the Cepheids of population II, we derived the relations between the blue range and the yellow range and between the blue range and the range in colour. The following relations were found:

$$A_{pv} = .615\,A_{pg} \quad \text{and} \quad A_{CI} = .396\,A_{pg}.$$
$$\pm\, 23 \qquad\qquad\qquad \pm\, 35 \qquad \text{(m.e.)}$$

The residuals from these two equations are shown in Table 11 under $(O - C)_1$ and $(O - C)_2$. The two relations are shown graphically in Figures 7 and 8. Stars with uncertain data have been indicated by small dots, Cepheids of population II by circles. In Figure 7 the circles lie systematically above the line representing the equation. In other words for these stars the range in yellow is larger than for ordinary Cepheids with the same range in blue. In Figure 8 the circles do not deviate systematically from the line representing the equation, but their dispersion seems to be larger than for ordinary Cepheids.

Next we have computed the relations between the logarithm of the period and the range in blue light, in yellow light and in colour. Using the same 28 Cepheids of population I as before, we found the relations:

$$\Delta SPg = A_{pg} = +\ .32 + \ .91 \log P,$$
$$\pm .20 \ \ \pm .22 \qquad \text{(m.e.)}$$

$$\Delta SPv = A_{pv} = +\ .25 + \ .50 \log P,$$
$$\pm .13 \ \ \pm .14 \qquad \text{(m.e.)}$$

$$\Delta SCI = A_{CI} = +\ .05 + \ .44 \log P.$$
$$\pm .08 \ \ \pm .09 \qquad \text{(m.e.)}$$

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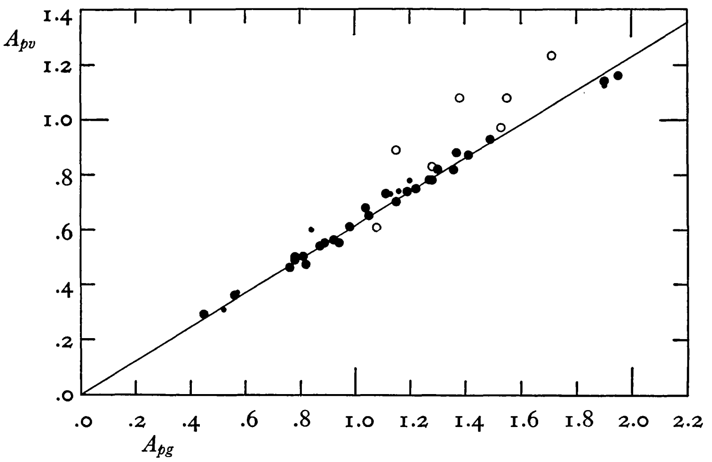
TABLE 11

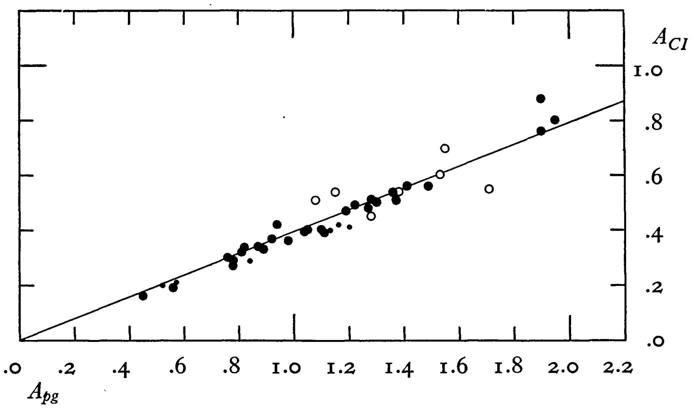
Var.	Pop. type	log P	A_{pg}	A_{pv}	A_{CI}	$(O-C)_1$	$(O-C)_2$	$(O-C)_{pg}$	$(O-C)_{pv}$	$(O-C)_{CI}$
			m	m	m	m	m	m	m	m
T Ant	I	.771	1.30	.82	.50	+.02	−.01	+.28	+.18	+.11
V 493 Aql	I	.475	.84:	.60:	.29:					
V 600 Aql	I	.860	1.04	.68	.39	+.04	−.02	−.06	.00	−.04
TW Cap	II	1.456	1.71	1.23	.55					
U Car	I	1.588	1.95	1.16	.80	−.04	+.03	+.19	+.11	+.05
WZ Car	I	1.362	1.90	1.14	.88	−.03	+.13	+.34	+.21	+.23
YZ Car	I	1.259	1.36	.82	.54	−.02	.00	−.10	−.06	−.06
CC Car	I	.678	.87	.54	.34	.00	.00	−.07	−.05	−.01
GZ Car	I	.619	.52:	.31:	.20:					
TX Cen	I	1.233	1.90	1.14	.76	−.03	+.01	+.46	+.27	+.17
UZ Cen	I	.523	1.11	.73	.39	+.05	−.05	+.31	+.22	+.11
AZ Cen	I	.507	.56	.36	.19	+.02	−.03	−.22	−.15	−.09
V 419 Cen	I	.741	.45	.29	.16	+.01	−.02	−.54	−.33	−.22
V 420 Cen	II	1.394	1.28	.83	.45					
AL CrA	II	1.232	1.55	1.08	.70					
X Cru	I	.794	.89	.55	.33	.00	−.02	−.15	−.10	−.07
TX Del	II	.780	1.08	.61	.51					
RX Lib	II	1.397	1.15:	.89:	.54:					
SV Mon	I	1.183	1.90:	1.13:	.76:					
AC Mon	I	.904	1.05	.65	.40	.00	−.02	−.09	−.05	−.05
S Mus	I	.985	.78	.50	.27	+.02	−.04	−.44	−.24	−.21
S Nor	I	.989	.94	.55	.42	−.03	+.05	−.28	−.20	−.07
U Nor	I	1.102	1.49	.93	.56	+.01	−.03	+.17	+.13	+.02
Y Oph	I	1.234	.82	.47	.34	−.03	+.02	−.62	−.40	−.25
VW Pup	I	.632	1.13:	.73:	.40:					
WW Pup	I	.742	1.37	.88	.51	+.04	−.03	+.38	+.26	+.13
AT Pup	I	.825	1.41	.87	.56	.00	.00	+.34	+.21	+.15
S Sge	I	.923	1.28	.78	.51	−.01	.00	+.12	+.07	+.05
W Sgr	I	.881	1.22	.75	.49	.00	+.01	+.10	+.06	+.05
AP Sgr	I	.704	1.27	.78	.48	.00	−.02	+.31	+.18	+.12
V 626 Sgr	II	1.427	1.38	1.08	.54					
V 482 Sco	I	.656	.98	.61	.36	+.01	−.03	+.06	+.03	+.02
V 636 Sco	I	.832	.81	.50	.32	.00	.00	−.27	−.17	−.10
CK Sct	I	.870	.78	.49	.29	+.01	−.02	−.33	−.20	−.14
ST Tau	I	.606	1.16:	.74:	.42:					
R TrA	I	.530	.92	.56	.37	−.01	+.01	+.12	+.04	+.08
S TrA	I	.801	1.19	.74	.47	+.01	.00	+.14	+.09	+.07
U TrA	I	.410	1.20:	.78:	.41:					
V Vel	I	.641	1.10	.70	.40	+.02	−.04	+.20	+.13	+.07
AX Vel	I	.414	.57:	.37:	.21:					
BG Vel	I	.840	.76	.46	.30	−.01	.00	−.32	−.21	−.12
W Vir	II	1.237	1.53:	.97:	.60:					

FIGURE 7



Relation between blue and yellow amplitudes of the light-curves. Open circles represent population II Cepheids

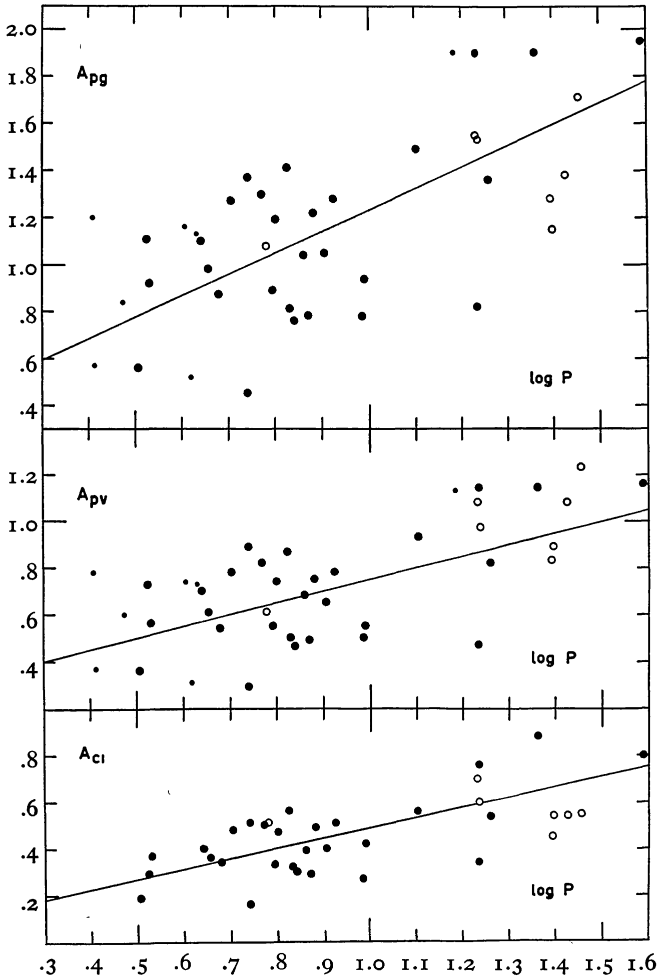
FIGURE 8



Relation between the amplitudes of the light-curves and of the colour curves. Open circles represent population II Cepheids

The mean error per star for these three equations was found to be $\pm{}^{m}.30$, $\pm{}^{m}.19$ and $\pm{}^{m}.12$ respectively. The three relations are shown in Figure 9. As before, Cepheids of population II have been indicated by circles and stars with uncertain measures by small dots. The residuals from the equations have been given in the last three columns of Table 11.

FIGURE 9



The relations between the amplitudes of the light-curves and of the colour curves and the logarithm of the periods. Open circles represent population II Cepheids

Although the range of the light-curves and of the colour curves increases systematically with increasing period, the scatter of the points in the three diagrams of Figure 9 is large. The upper diagram is comparable with the combination of Figures 25 and 36 of EGGEN's paper in *Ap. J.* **113**, 367, 1951. On the basis of these two figures EGGEN divided the Cepheids of population I in three types, *A*, *B* and *C*. According to EGGEN the *A*- and *B*-type Cepheids fall in his Figure 25 on two lines with equal slope and shifted vertically over about $^{m}.14$. According to him the *C*-type Cepheids probably fall on two other lines, which again have the same slope. The star Y Oph was considered anomalous by EGGEN and not plotted in his figures. The position of Y Oph in our diagrams is also quite extreme, although V 419 Cen with a much shorter period shows a deviation of the same size.

It is clear from the three diagrams of Figure 9, that it would be extremely difficult and very artificial to represent the observations by three or more parallel lines. The only stars in common between EGGEN and us are S Sge and Y Oph, which are both considered as anomalous by EGGEN and therefore we can only guess at the reason why our diagrams do not confirm EGGEN's results. Although for some of the stars we observed, the magnitudes at maximum and minimum phase are not very certain on account of the small number of observations, it seems unlikely that the errors in our determination of the range of the light-curves could explain the observed dispersion in Figure 9. More observations will be required to settle this matter.

We further derived the relation between the range of the light-curves in blue and the range of the radial-velocity curves, indicated by A_{rad}. For the latter quantity we used the values published by JOY (1937) and by STIBBS (1955*b*), assigning a larger weight to the observations by STIBBS, as his radial-velocity curves have been more completely observed than those by JOY. The data used have been collected in

TABLE 12

Star	A_{pg}	A_{rad}	$(O-C)$
	m		
T Ant	1.30	45	+ 3
U Car	1.95	52	− 8
UZ Cen	1.11	38	+ 1
AZ Cen	.56	19	− 2
V 419 Cen	.45	17	− 1
X Cru	.89	25	− 6
RX Lib	1.15:	29	− 9
SV Mon	1.90	66	+ 7
S Mus	.78	36	+ 9
S Nor	.94	35	+ 3
Y Oph	.82	19	−10
VW Pup	1.13:	41	+ 4
WW Pup	1.37	34	−10
S Sge	1.28	41	0
W Sgr	1.22	43	+ 3
AP Sgr	1.27	21	−20
V 482 Sco	.98	32	− 1
V 636 Sco	.81	29	+ 1
ST Tau	1.16:	38	0
R TrA	.92	34	+ 3
S TrA	1.19	41	+ 2
U TrA	1.20:	41	+ 2
V Vel	1.10	39	+ 3
AX Vel	.57:	27	+ 5
BG Vel	.76	30	+ 3
W Vir	1.53	67	+19

Table 12. A solution from all the stars of Table 12 yields the equation:

$$A_{rad} = +\ 5.7 +\ 27.9\,A_{pg}.$$
$$\pm 4.8 \quad \pm\ 4.2 \quad \text{(m.e.)}$$

Omitting the two population II Cepheids RX Lib and W Vir we find:

$$A_{rad} = +\ 8.0 +\ 25.3\,A_{pg}.$$
$$\pm 4.1 \quad \pm\ 3.7 \quad \text{(m.e.)}$$

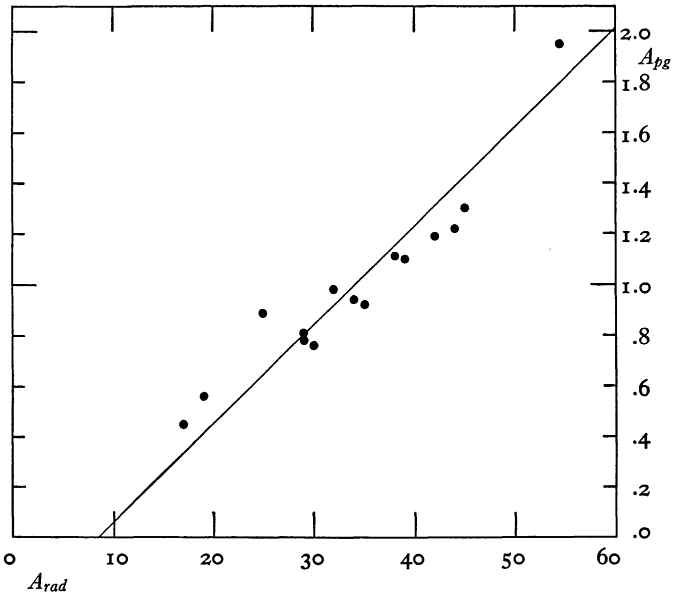
If we use only the 15 stars for which STIBBS gave values of the radial-velocity range and for which the light-range is not uncertain, we derive:

$$A_{rad} = +\ 8.5 +\ 25.6\,A_{pg}.$$
$$\pm 2.8 \quad \pm\ 2.6 \quad \text{(m.e.)}$$

This last relation is shown in Figure 10.

Our coefficient is somewhat smaller than that derived by EGGEN for 9 stars, viz + 31.7 ± 1.8 (m.e.). The difference 6.1 ± 3.2 is twice its mean error. It is also smaller than the value derived by PARENAGO (1954), who gives 35.3. The difference however is caused mainly by the fact that in his formula, as in the formula by EGGEN, no constant term has been used.

FIGURE 10



Relation between the amplitudes of the light-curves and of the radial-velocity curves

11. *The colours of the Cepheids at maximum brightness*

From the measures given in Table 5 and with the aid of the Figures 2, 3, 4, 5 and 6 we derived the extreme values of log I_B, log I_Y and (log I_B — log I_Y) for all the Cepheids. For most of them only values at maximum could be determined. The results have been given in Table 13. In this table the name of the variable is followed by the logarithm of the period

TABLE 13

Name	log P	l	b	log I_B	log I_Y	C	SPg	SPv	SCI	Δm_{pg}	E	r	z
		°	°				m	m	m				
T Ant	.771	232.5	+ 11.8	1.006	.690	.316	9.20	8.91	.29	1.30*	.20	3.15	+ 640
				.487	.356	.123	10.50	9.73	.79				
U Aql	.847	358.7	— 13.1	2.000	1.835	.165	6.71	6.03	.68	1.15*	.59	.55	— 110
SZ ,,	1.234	3.4	— 3.9	1.171	1.088	.083	8.78	7.89	.89	1.87*	.76	1.79	— 84
TT ,,	1.138	3.7	— 4.5	1.764	1.646	.118	7.29	6.50	.80	1.77*	.68	.91	— 56
FF ,,	.650	16.9	+ 5.0	2.424	2.182	.242	5.65	5.17	.48	.48*	.40	.33	+ 34
FM ,,	.786	12.0	— .5	1.143	1.100	.043	8.85	7.86	.99	1.05*	.90	.82	+ 7
FN ,,	.977	6.2	— 4.6	1.067	1.013	.054	9.04	8.08	.97	1.03*	.86	1.11	— 68
V 336 ,,	.864	1.9	— 3.5	.496	.464	.032	10.47	9.45	1.02	1.20	.92	1.81	— 78
V 493 ,,	.475	.7	— 3.0	.018:	— .030:	.048:	11.67:	10.69:	.98:	.84*	.92:	2.20	— 76
				— .320:	— .273:	— .065:	12.51:	11.29:	1.27:				
V 496 ,,	.833	356.1	— 8.6	1.300	1.228	.072	8.46	7.54	.92	.48*	.83	.70	— 90
V 600 ,,	.860	11.6	— 3.9	.324	.380	— .056	10.90	9.65	1.25	1.04*	1.15	1.50	— 80
				— .094	.105	— .210	11.94	10.33	1.64				
η ,,	.856	8.7	— 14.4	3.161:	2.878:	.283:	3.80:	3.43:	.38:	1.20*	.28:	.24	— 56
RY CMa	.670	193.8	+ 1.6	1.418	1.170	.248	8.17	7.70	.47	1.42	.39	1.23	+ 15
RZ ,,	.629	198.9	+ .2	.651	.504	.147	10.09	9.36	.73	1.00	.66	1.85	— 20
TV ,,	.669	194.9	— 1.1	.290:	.210:	.080:	10.99:	10.09:	.90:	.88	.82:	2.23	— 74
TW ,,	.845	196.8	+ 1.3	.760:	.570:	.190:	9.81:	9.20:	.62:	1.50	.53:	2.46	+ 25
TW Cap	1.456	357.2	— 26.0	.675	.273	.402	10.03	9.97	.07	1.71*	— .09	6.43	— 2700
				— .011	— .228	.190	11.74	11.20	.62				

TABLE 13 (*continued*)

Name	log P	l	b	log I_B	log I_Y	C	SPg	SPv	SCI	Δm_{pg}	E	r	z
		°	°				m	m	m				
U Car	1.588	256.8	+ .1	2.135	1.955	.180	6.37	5.73	.64	1.95*	.47	1.34	+ 15
				1.350	1.480	− .130	8.32	6.89	1.44				
V „	.826	242.7	− 11.9	1.653	1.425	.228	7.58	7.06	.52	.68	.59	.79	− 160
Y „	.561	253.4	− .2	1.409:	1.090:	.319:	8.19:	7.91:	.28:	.46	.21:	1.48	+ 8
SX „	.687	254.4	+ 1.4	1.024	.790	.234	9.15	8.65	.50	.84	.42	1.85	+ 63
UW „	.728	253.2	− 1.7	.838	.642	.196	9.62	9.02	.60	.71	.52	2.04	− 40
UX „	.566	252.5	+ .3	1.453	1.108	.345	8.08	7.87	.22	1.08	.15	1.56	+ 21
UY „	.744	254.8	− 3.2	1.060	.810	.250	9.06	8.61	.46	.99	.38	2.01	− 92
UZ „	.716	254.9	− 2.3	.874	.644	.230	9.53	9.02	.51	.91	.43	2.25	− 66
VY „	1.278	254.3	+ 1.3	1.674	1.501	.173	7.52	6.87	.66	1.59*	.54	1.39	+ 45
WW „	.670	255.9	+ .1	.733	.514	.219	9.88	9.34	.54	1.09	.46	2.40	+ 26
WZ „	1.362	256.9	− 1.1	.971	.775	.196	9.29	8.69	.60	1.90*	.45	4.21	− 42
				.208	.309	− .146	11.19	9.83	1.48				
XX „	1.196	258.8	− 4.8	.998	.780	.218	9.22	8.68	.54	2.22	.41	3.31	− 250
XY „	1.095	259.0	− 3.9	.846	.723	.123	9.60	8.81	.79	1.35	.67	2.32	− 130
YZ „	1.259	253.2	− 1.3	1.085	.935	.150	9.00	8.28	.72	1.36*	.58	2.40	− 32
				.540	.600	− .060	10.36	9.10	1.26				
AQ „	.990	253.4	− 3.1	1.007	.820	.187	9.19	8.57	.62	.51	.51	2.21	− 100
CC „	.678	256.9	− 1.4	− .337	− .420	.083	12.56	11.67	.89	.87*	.81	4.66	− 45
				− .687	− .640	− .050	13.43	12.21	1.23				
CN „	.693	251.2	− 1.1	.272	.133	.139	11.04	10.29	.75	.79	.67	2.99	− 35
CR „	.990	253.3	− .3	− .258	− .270	.012	12.36	11.29	1.07	.50	.96	4.59	+ 20
CT „	1.257	255.3	− 2.7	− .378:	− .430:	.052:	12.66:	11.69:	.97:	.54	.83:	8.87	− 330
CY „	.630	257.2	− .8	.640	.450	.190	10.11	9.50	.62	.70	.55	2.23	− 10
DY „	.670	256.5	− .9	.047	− .138	.185	11.60	10.97	.63	.83	.55	4.59	− 27
ER „	.887	257.8	+ 1.4	1.856	1.620	.236	7.07	6.58	.50	.44	.40	.90	+ 33
EY „	.459	255.7	− 2.1	.443:	.235:	.208:	10.61:	10.04:	.57:	.40	.51:	2.51	− 64
FI „	1.129	255.5	+ .8	− .340:	− .260:	− .080:	12.56:	11.25:	1.31:	1.30	1.19:	2.30	+ 53
FN „	.661	257.3	− .1	− .100	− .225	.125	11.97	11.18	.78	.90	.70	4.23	+ 36
FO „	1.015	258.2	− 2.1	.128	.078	.050	11.39	10.42	.98	.60	.87	3.50	− 91
FR „	1.030	258.8	+ .6	.615:	.515:	.110:	10.17:	9.33:	.82:	.70	.71:	2.63	+ 54
GH „	.758	258.6	− .3	.800	.650	.150	9.71	9.00	.72	.38	.63	1.84	+ 12
GI „	.646	258.0	+ 2.6	1.252	.991	.261	8.58	8.15	.43	.45	.36	1.51	+ 83
GX „	.857	249.2	− 2.8	.842	.674	.168	9.61	8.94	.67	1.50	.57	2.13	− 90
GZ „	.619	252.4	− 1.8	.369:	.230:	.139:	10.79:	10.05:	.75:	.52*	.68:	2.24	− 52
				.163:	.103:	.060:	11.31:	10.36:	.95:				
HK „	.826	257.8	− .5	.398:	.268:	.130:	10.72:	9.95:	.77:	.50	.68:	2.90	+ 7
IT „	.877	259.2	− 1.1	1.217	1.072	.145	8.67	7.94	.73	.40	.63	1.28	− 11
l „	1.551	250.7	− 6.8	3.024	2.936	.090	4.14	3.27	.87	1.21*	.70	.27	− 30
V Cen	.740	284.2	+ 2.8	1.920	1.668	.252	6.91	6.46	.46	1.09	.38	.74	+ 49
TX „	1.233	282.9	− 1.2	.218	.295	− .077	11.16	9.86	1.30	1.90*	1.17	2.77	− 7
				− .542	− .170	− .372	13.06	11.00	2.06				
UZ „	.523	262.6	− 1.1	1.178	.900	.278	8.77	8.38	.39	1.11*	.33	1.65	− 9
				.731	.605	.126	9.88	9.11	.78				
VW „	1.177	275.2	− 2.0	.438	.369	.069	10.62	9.69	.93	.99	.80	3.31	− 60
XX „	1.040	277.3	+ 4.1	1.527	1.317	.210	7.89	7.33	.56	1.09	.45	1.41	+ 130
AY „	.725	260.3	+ .3	.997	.834	.163	9.22	8.54	.69	1.00	.61	1.47	+ 26
AZ „	.507	260.5	− .3	1.137	.867	.270	8.87	8.47	.41	.56*	.35	1.46	+ 10
				.915	.720	.195	9.43	8.83	.60				
IU „	.521	281.1	+ 4.1	− .450	− .690	.305	12.85	12.36	.32	1.30	.26	5.65	+ 500
KK „	1.086	262.0	+ 2.5	− .040	− .120	− .080	11.82	10.92	.90	1.00	.78	5.35	+ 310
KN „	1.532	275.4	− 2.6	.479	.541	− .062	10.51	9.25	1.26	1.30	1.10	2.92	− 81
MY „	.570	273.0	+ .8	− .527	− .385	− .142	13.03	11.56	1.47	1.30	1.40	2.04	+ 60
OO „	1.110	274.6	− 1.0	− .506:	− .333:	− .173:	12.97:	11.42:	1.55:	1.90	1.43:	3.30	− 2
V 339 „	.976	281.1	− 1.1	.937	.875	.062	9.37	8.42	.94	1.02	.83	1.41	− 1
V 378 „	.800	273.8	− .1	1.069	.941	.128	9.04	8.27	.78	.26	.69	1.27	+ 19
V 381 „	.706	278.6	+ 3.8	1.583	1.315	.268	7.75	7.34	.42	.76	.34	1.13	+ 96
V 419 „	.741	259.8	+ 4.2	1.252	1.031	.221	8.58	8.05	.54	.45*	.46	1.24	+ 110
				1.072	.913	.159	9.03	8.34	.70				
V 420 „	1.394	258.8	+ 13.2	.762	.444	.318	9.81	9.53	29	1.28*	.14	3.96	+ 945
				.252	.084	.142	11.09	10.36	.74				
V 496 „	.646	272.1	+ 1.6	.505	.405	.100	10.45	9.60	.85	1.00	.78	1.82	+ 80

TABLE 13 (*continued*)

Name	log P	l	b	log I_B	log I_Y	C	SPg	SPv	SCI	Δm_{pg}	E	r	z
		°	°				m	m	m				
AL CrA	1.232	323.5	− 10.8	− .162	− .325	.250	12.13	11.44	.46	1.55*	.33	7.76	− 1260
				− .785	− .765	− .020	13.68	12.52	1.16				
KQ ,,	1.480	319.9	− 9.1	− .340:	− .510:	.220:	12.57:	11.89:	.54:	1.50	.38:	11.32	− 1520
V 347 ,,	1.186	321.3	− 11.2	− .428:	− .640:	.218:	12.79:	12.23:	.54:	1.40	.41:	8.51	− 1440
R Cru	.765	267.3	+ .8	1.966	1.687	.279	6.79	6.41	.39	1.26*	.30	.87	+ 25
S ,,	.671	271.1	+ 4.1	2.046	1.762	.284	6.59	6.23	.37	.71	.29	.70	+ 61
T ,,	.828	267.2	+ .2	1.924	1.720	.204	6.90	6.32	.58	.70*	.49	.62	+ 10
X ,,	.794	270.1	+ 3.5	1.167	1.004	.163	8.79	8.11	.69	.89*	.60	1.25	+ 94
				.811	.778	.033	9.68	8.66	1.02				
SU ,,	1.109	266.9	− .9	.401	.492	− .091	10.70	9.37	1.34	1.40	1.22	1.61	− 2
SV ,,	.845	264.5	− .6	− .457	− .452	− .005	12.86	11.74	1.12	1.70	1.03	4.49	+ 14
TY ,,	.698	265.5	− .4	− .776:	− .736:	− .040:	13.66:	12.45:	1.21	.70	1.13	4.76	+ 33
VW ,,	.721	268.6	− 1.0	.525	.502	.023	10.40	9.35	1.04	1.00	.96	1.43	− 3
VX ,,	1.087	268.6	+ 1.3	− .373	− .290	− .083	12.64	11.33	1.32	1.50	1.20	3.96	+ 150
AD ,,	.806	266.2	+ .3	.027	− .021	.048	11.65	10.66	.98	.80	.89	3.09	+ 55
AG ,,	.584	269.4	+ 2.8	1.442	1.141	.301	8.11	7.78	.33	.85	.26	1.35	+ 85
SU Cyg	.585	32.4	+ 1.4	2.027	1.667	.360	6.64	6.47	.18	.86*	.11	.87	+ 29
TX Del	.790	19.1	− 25.5	1.010	.712	.305	9.19	8.86	.32	1.08*	.23	1.45	− 610
				.575	.460	.106	10.27	9.47	.83				
β Dor	.993	238.5	− 32.3	3.157	2.890	.267	3.81	3.40	.42	1.07*	.31	.25	− 130
W Gem	.898	165.1	+ 4.9	1.755:	1.575:	.180:	7.32:	6.68:	.64:	1.00	.54:	.81	+ 50
AP Her	1.017	14.7	+ 6.1	.368	.100	.280	10.80	10.38	.38	1.17	.27	3.52	+ 430
BB ,,	.875	11.0	+ 5.4	.487	.342	.145	10.50	9.77	.73	1.10*	.63	2.97	+ 330
RX Lib	1.397	316.2	+ 25.5	− .268	− .412	.204	12.39	11.65	.58	1.15*	.43	7.94	+ 3590
				− .730:	− .770:	− .005:	13.54:	12.54:	1.12:				
T Mon	1.432	171.3	− 1.1	2.144	1.996	.148	6.34	5.63	.72	1.42*	.57	.86	− 35
SV ,,	1.183	171.5	− 2.2	1.403:	1.175:	.228:	8.20:	7.69:	.52:	1.90*	.39:	2.39	− 140
				.643	.713	− .070	10.10	8.82	1.28				
TX ,,	.940	181.9	+ .7	.068:	− .014:	.082:	11.54:	10.65:	.89:	.70	.79:	3.96	− 31
AC ,,	.904	189.4	− .4	.433	.352	.081	10.63	9.74	.90	1.05*	.80	2.41	− 61
				.011	.086	− .075	11.68	10.39	1.30				
R Mus	.876	269.6	− 6.9	2.186	1.886	.300	6.24	5.92	.33	1.25*	.23	.82	− 86
S ,,	.985	267.1	− 7.8	2.098	1.879	.219	6.46	5.93	.54	.78*	.43	.64	− 78
				1.786	1.672	.114	7.24	6.43	.81				
RT ,,	.489	264.1	− 5.4	1.053	.807	.246	9.08	8.61	.47	.98	.41	1.50	− 120
TZ ,,	.694	264.2	− 3.2	− .265	− .298	.033	12.38	11.36	1.02	.90	.94	3.60	− 150
UU ,,	1.066	264.4	− 3.4	.710	.547	.163	9.94	9.26	.69	1.26	.57	3.09	− 140
S Nor	.989	295.3	− 6.3	1.970	1.788	.182	6.78	6.15	.64	.94*	.53	.66	− 58
				1.593	1.563	.018	7.72	6.70	1.06				
U ,,	1.102	293.3	− 1.0	.720	.788	− .068	9.91	8.63	1.28	1.49*	1.16	1.27	+ 5
				.120	.408	− .288	11.40	9.56	1.84				
RS ,,	.792	296.7	− 2.1	.448	.405	.043	10.59	9.60	.99	1.30	.90	1.84	− 27
SY ,,	1.102	295.2	− 1.6	.682	.656	.026	10.00	8.97	1.04	1.80	.92	1.88	− 10
TW ,,	1.033	298.1	− .6	− .517	− .237	− .280	13.00	11.17	1.82	1.60	1.71	1.94	+ 22
UX ,,	.378	296.9	− 6.5	− .665:	− 1.060:	.395:	13.39:	13.30:	.09:	1.40	.04:	8.95	− 800
GU ,,	.538	298.2	− 2.6	.246	.222	.024	11.10	10.05	1.04	.50	.98	1.59	− 39
Y Oph	1.234	348.3	+ 8.6	1.898	1.910	− .012	6.95	5.83	1.13	.82*	1.00	.41	+ 71
				1.572	1.715	− .143	7.77	6.30	1.47				
BF ,,	.609	324.8	+ 7.2	1.690	1.450	.240	7.48	7.00	.49	1.14	.42	.80	+ 120
RS Ori	.879	164.2	+ 1.8	1.230:	1.035:	.195:	8.64:	8.04:	.60:	1.33	.50:	1.56	+ 14
ϰ Pav	.957	295.4	− 26.3	3.040	2.687	.361	4.11	3.92	.18	1.25*	.07	.42	− 180

TABLE 13 (*continued*)

Name		log P	l	b	log I_B	log I_Y	C	SPg	SPv	SCI	Δm_{pg}	E	r	z
			°	°				m	m	m				
X	Pup	1.414	203.8	+ .4	1.263	1.104	.159	8.55	7.86	.70	2.00	.55	2.51	− 11
RS	,,	1.617	220.2	+ .7	1.705	1.655	.050	7.44	6.47	.98	1.76*	.81	1.24	+ 9
ST	,,	1.276	214.2	− 15.5	.903	.512	.391	9.46	9.37	.10	1.40	− .04	3.96	− 1090
VW	,,	.632	203.1	+ .6	.030:	− .110:	.140:	11.64:	10.90:	.74:	1.13*	.67:	3.91	− 7
					− .424	− .410	− .014	12.77	11.63	1.14				
VZ	,,	1.365	211.1	− 3.0	.844	.654	.190	9.60	8.99	.62	2.17	.47	4.39	− 210
WW	,,	.742	205.1	+ 2.1	.448	.200	.248	10.60	10.13	.47	1.37*	.39	4.39	+ 120
					− .102	− .160	.048	11.97	11.01	.98				
WX	,,	.951	209.2	− .3	.909:	.726:	.183:	9.44:	8.81:	.63:	1.00	.52:	2.34	− 33
WY	,,	.720	209.5	+ 3.8	.460	.175	.285	10.57	10.20	.37	1.20	.29	4.55	+ 260
WZ	,,	.701	209.6	+ 4.5	.575	.300	.275	10.28	9.88	.40	.90	.32	3.73	+ 250
AD	,,	1.133	209.6	+ 1.1	.750	.534	.216	9.84	9.29	.55	2.00	.43	4.00	+ 36
AP	,,	.706	223.1	− 4.9	1.652	1.401	.251	7.58	7.13	.46	1.10	.38	.98	− 87
AT	,,	.825	222.0	− .8	1.530	1.235	.295	7.89	7.55	.35	1.41*	.26	1.67	− 29
					.962	.879	.074	9.30	8.42	.91				
EK	,,	.419	208.5	+ .2	.269	.066	.203	11.05	10.46	.58	.50	.53	2.86	− 21
S	Sge	.923	22.6	− 7.4	2.464	2.182	.282	5.55	5.17	.38	1.28*	.28	.58	− 67
					1.948	1.863	.085	6.83	5.95	.89				
U	Sgr	.829	341.4	− 5.9	1.883	1.733	.150	7.00	6.29	.72	1.07*	.63	.57	− 46
W	,,	.881	328.5	− 5.4	2.827	2.523	.304	4.64	4.32	.32	1.22*	.22	.40	− 28
					2.335	2.219	.116	5.86	5.07	.81				
X	,,	.846	328.9	− 1.2	2.838	2.560	.278	4.61	4.23	.39	1.04*	.30	.32	+ 1
Y	,,	.761	340.5	− 3.6	2.364	2.113	.251	5.80	5.34	.46	1.11*	.37	.47	− 18
VY	,,	1.132	337.8	− 2.5	− .258	− .065	− .193	12.35	10.75	1.60	2.10	1.48	2.33	− 48
WZ	,,	1.339	339.8	− 2.9	1.332	1.262	.070	8.38	7.46	.92	1.76*	.78	1.54	− 39
YZ	,,	.980	345.4	− 8.6	1.599	1.444	.155	7.71	7.01	.71	1.10*	.60	.93	− 120
AP	,,	.704	335.8	− 3.9	1.907	1.628	.279	6.94	6.56	.39	1.27*	.31	.88	− 38
					1.400	1.308	.092	8.21	7.34	.87				
AY	,,	.818	340.9	− 3.9	.180	.220	− .040	11.26	10.05	1.21	1.50	1.12	1.80	− 79
BB	,,	.822	342.3	− 10.5	1.761	1.589	.172	7.30	6.65	.66	.80	.57	.71	− 110
V 350	,,	.712	341.4	− 9.4	1.640	1.417	.223	7.61	7.08	.53	1.09*	.45	.92	− 130
V 626	,,	1.427	324.8	− 8.6	− .078	− .410	.350	11.92	11.66	.20	1.38*	.05	12.76	− 1590
					− .632	− .840	.140	13.30	12.74	.74				
V 741	,,	1.181	330.6	− 8.5	− .388	− .182	− .206	12.68	11.04	1.63	1.10	1.50	1.39	− 170
RV	Sco	.783	318.1	+ 4.3	1.818	1.608	.210	7.16	6.60	.56	1.10	.47	.76	+ 77
CQ	,,	1.484	318.2	− 8.0	− .508:	− .640:	.132:	12.99:	12.22:	.76:	1.50	.60:	9.73	− 1100
KQ	,,	1.458	308.1	− 1.9	.316	.528	− .212	10.91	9.26	1.65	1.70	1.49	1.71	− 15
V 446	,,	1.457	322.7	− 7.4	− .550	− .740	.200	13.10	12.48	.59	1.80	.43	13.06	− 1350
V 470	,,	1.201	317.5	− 1.0	− .267	.076	− .343	12.37	10.38	1.99	1.90	1.86	1.38	+ 11
V 482	,,	.656	322.9	− 1.2	1.385	1.203	.182	8.25	7.62	.64	.98*	.56	.96	+ 4
					.989	.950	.039	9.23	8.23	1.00				
V 500	,,	.969	326.7	− 2.8	.939	.905	.034	9.36	8.35	1.02	.70	.91	1.23	− 28
V 542	,,	1.183	317.0	− 8.1	− .554	− .775	.258	13.11	12.57	.44	1.80	.31	11.64	− 1360
V 636	,,	.832	311.1	− 6.4	1.896	1.700	.196	6.97	6.37	.60	.81*	.51	.64	− 56
					1.568	1.498	.070	7.78	6.87	.92				
X	Sct	.623	346.7	− 3.1	.574	.455	.119	10.28	9.48	.80	1.20	.73	1.78	− 55
Y	,,	1.015	351.6	− 2.4	.527	.578	− .051	10.39	9.16	1.24	1.20	1.13	1.45	− 28
Z	,,	1.116	354.5	− 2.3	.664	.604	.060	10.05	9.10	.95	1.50	.83	2.27	− 41
RU	,,	1.294	355.9	− 1.2	.660	.724	− .064	10.06	8.79	1.27	1.70	1.13	1.71	− 1
SS	,,	.565	352.9	− 3.2	1.234	1.064	.170	8.63	7.96	.67	.74*	.60	.95	− 34
UZ	,,	1.169	346.9	− 3.0	− .229	− .052	− .170	12.28	10.72	1.54	1.00	1.41	2.63	− 77
CK	,,	.870	354.0	− 1.9	.013	.120	− .107	11.68	10.30	1.38	.78*	1.28	1.66	− 21
					− .300	− .080	− .220	12.46	10.79	1.67				
CM	,,	.593	354.8	− 1.9	− .056	− .047	− .009	11.85	10.72	1.13	1.10	1.06	2.10	− 26
CR	Ser	.724	343.9	+ 1.3	− .045	.051	− .096	11.82	10.48	1.35	1.80	1.27	1.69	+ 78
ST	Tau	.606	160.9	− 6.6	1.358:	1.122:	.236:	8.32:	7.82:	.50:	1.16*	.43:	1.24	− 170
					.893	.823	.070	9.48	8.56	.92				
SZ	,,	.498	147.4	− 17.3	1.897	1.687	.210	6.96	6.41	.56	.52*	.50	2.34	− 750

TABLE 13 (*continued*)

Name		log P	l	b	log I_B	log I_Y	C	SPg	SPv	SCI	Δm_{pg}	E	r	z
			°	°				m	m	m				
R	TrA	.530	284.5	− 8.4	1.984	1.692	.292	6.75	6.40	.35	.92*	.29	.67	− 85
					1.614	1.464	.150	7.67	6.96	.72				
S	,,	.801	289.6	− 9.0	2.139	1.839	.300	6.36	6.04	.33	1.19*	.24	.80	− 110
					1.662	1.535	.119	7.55	6.78	.80				
U	,,	.410	290.7	− 8.9	1.630:	1.270:	.360:	7.64:	7.47	.18:	1.20*	.13:	1.27	− 170
					1.150:	.950:	.200:	8.84:	8.25:	.59:				
T	Vel	.667	233.2	− 3.2	1.391	1.178	.213	8.23	7.68	.56	.93*	.48	1.08	− 59
V	,,	.641	244.2	− 3.8	1.647	1.369	.278	7.59	7.21	.39	1.10*	.32	1.07	− 66
					1.206	1.084	.122	8.69	7.91	.79				
RY	,,	1.449	250.3	+ 1.7	1.153	1.095	.058	8.82	7.87	.95	1.21	.80	1.98	+ 73
RZ	,,	1.310	230.5	− 1.2	1.891	1.677	.214	6.98	6.43	.55	2.00*	.41	1.51	− 34
ST	,,	.768	236.4	− 4.2	.594	.504	.090	10.23	9.36	.87	.95	.78	1.85	− 130
SV	,,	1.149	253.8	+ 2.5	1.296	1.096	.200	8.47	7.88	.59	2.02	.47	2.03	+ 110
SW	,,	1.371	233.8	− 2.3	1.437	1.237	.200	8.12	7.53	.59	2.00*	.44	2.58	− 110
SX	,,	.980	233.2	− 1.6	1.277	1.062	.215	8.52	7.97	.55	.90	.44	1.80	− 48
XX	,,	.844	252.6	+ 2.1	.280	.163	.117	11.01	10.21	.80	.98	.71	3.21	+ 150
AE	,,	.853	243.8	− .2	.378	.308	.070	10.77	9.84	.92	1.10	.82	2.42	+ 1
AH	,,	.626	230.0	− 6.3	2.374	2.046	.328	5.77	5.52	.26	.48*	.19	.49	− 54
AM	,,	.876	233.2	− 3.6	− .732:	− .907:	.175:	13.55:	12.90:	.65:	1.00	.55:	13.81	− 870
AP	,,	.495	230.6	− .7	.560:	.400:	.160:	10.31:	9.62:	.69:	1.00	.63:	1.88	− 24
AX	,,	.414	230.8	− 7.0	1.285:	1.020:	.265:	8.50:	8.08:	.42:	.57*	.37:	1.11	− 140
					1.055:	.870:	.185:	9.07:	8.45:	.63:				
BG	,,	.840	239.5	− 2.1	1.364	1.288	.076	8.30	7.39	.91	.76*	.82	.71	− 24
					1.059	1.102	− .043	9.06	7.85	1.21				
CX	,,	.796	240.0	− 2.9	− .171	− .147	− .024	12.14	10.97	1.17	.90	1.08	1.65	− 78
DD	,,	1.122	239.2	− .9	− .685	− .600	− .080	13.43	12.10	1.31	1.00	1.19	6.05	− 78
DP	,,	.739	243.1	− 1.0	− .344	− .340	− .004	12.57	11.46	1.11	1.20	1.03	3.55	− 41
DR	,,	1.049	240.9	+ 1.8	.517	.581	− .064	10.41	9.15	1.27	.70	1.16	1.45	+ 50
EX	,,	1.122	241.7	− 1.8	− .311	− .228	− .083	12.49	11.17	1.32	1.10	1.20	3.86	− 110
EZ	,,	1.538	242.6	− 1.9	− .592	− .490	− .102	13.19	11.82	1.37	1.80	1.21	8.43	− 190
FG	,,	.810	243.1	− .4	− .449	− .374	− .075	12.83	11.54	1.30	.70	1.21	3.19	− 7
W	Vir	1.237	289.4	+ 57.6	.747:	.432:	.313:	9.85:	9.56:	.30:	1.53*	.17:	3.50	+ 2990
					.135:	− .035:	.080:	11.38:	10.53:	.90:				
U	Vul	.903	23.8	− 1.5	1.609	1.562	.047	7.68	6.70	.98	1.10	.88	.56	− 8

The next two columns give the galactic co-ordinates according to OHLSSON's Tables (1932). In column 5 and 6 the extreme values of log I_B and log I_Y have been tabulated. Values for minimum brightness have been entered on the line below those for maximum. Uncertain values have been marked by a colon. The colour C in the 7th column is the extreme value of (log I_B — log I_Y). In the case that the blue and yellow light-curves are shifted in phase relative to each other, the value of C does not equal the difference between the extreme values of log I_B and log I_Y. In columns 8, 9 and 10 magnitudes and colour index in the Cape S system are given, as derived with the formulae (1) and (2) from the values of columns 5, 6 and 7. The remaining columns will be explained below.

The colours at maximum brightness have been plotted in Figure 11 against the logarithm of the period.

Cepheids of population I have been indicated by dots, large dots for stars with SPg at maximum brighter than 8, medium dots for stars with SPg at maximum between 8 and 10 and small dots for the fainter Cepheids. The Cepheids of population II have been indicated in a similar way by circles.

As could be expected there is an evident increase in reddening with decreasing apparent brightness. Fur-

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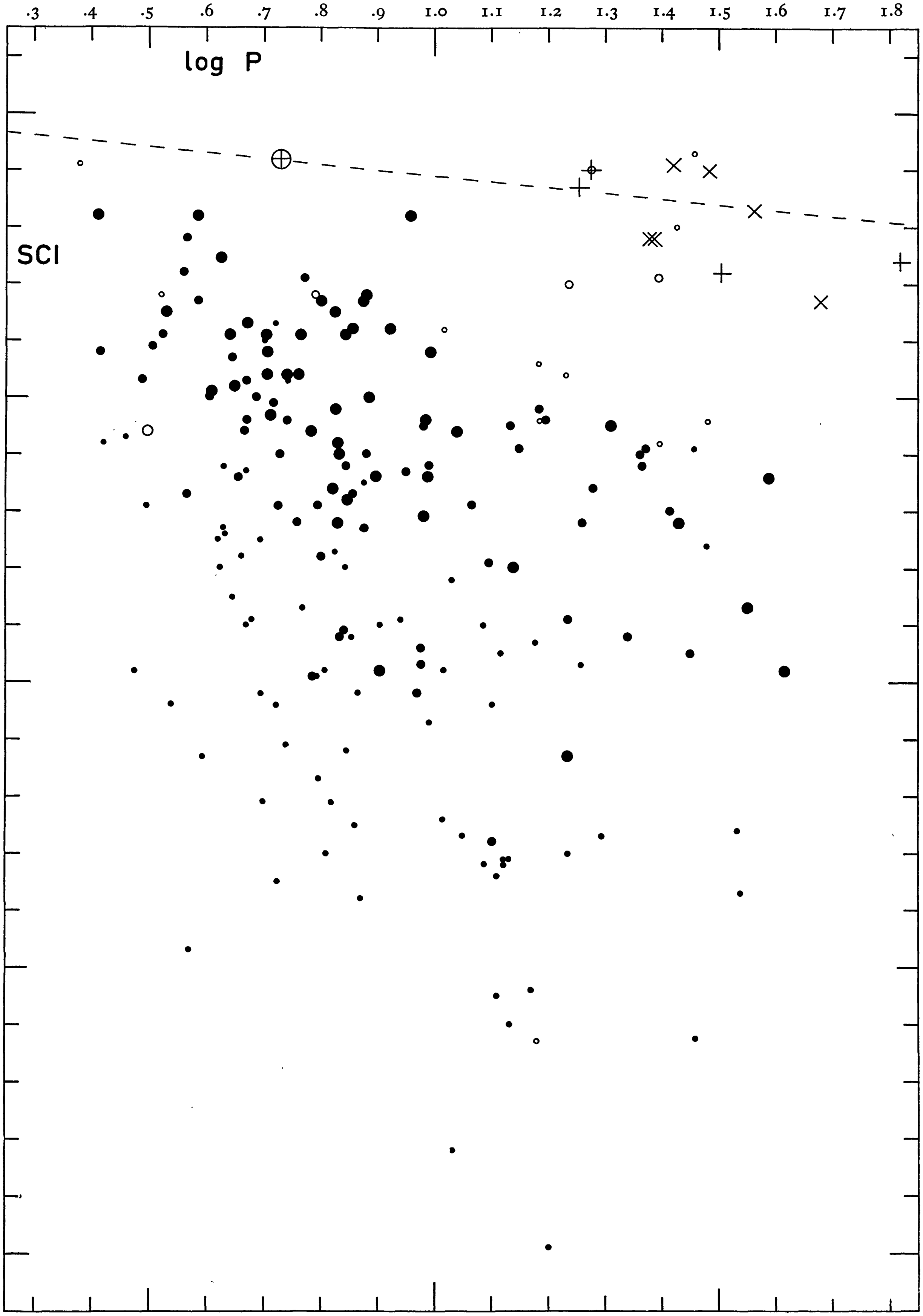
Legend to Figure 11.

large dot	: Pop. I Cepheid	Spg max. < 8.0
medium dot	: Pop. I Cepheid	$8.0 < Spg$ max. < 10.0
small dot	: Pop. I Cepheid	Spg max. > 10.0
large circle	: Pop. II Cepheid	Spg max. < 8.0
medium circle	: Pop. II Cepheid	$8.0 < Spg$ max. < 10.0
small circle	: Pop. II Cepheid	Spg max. > 10.0
vertical cross	: Cepheid in Small Magellanic Cloud	
oblique cross	: Cepheid in Large Magellanic Cloud	
circle with cross	: δ Cephei	

FIGURE 11



Plot of the observed colour index at maximum against the logarithm of the period ther it is clear that at least for the stars of population I the Cepheids with short periods are on the average whiter than those with longer periods. The stars of different periods with the smallest values of the colour index fall approximately on a line which runs from $SCI = .05$ at $\log P = .3$ to $SCI = .75$ at $\log P = 1.85$. This effect is at least partially due to the fact that the average distance of the variables with long periods is larger than that for the Cepheids with short periods, as their absolute brightness is so much greater than for the stars in the left-hand side of the figure. It is a very important and difficult question which part of this phenomenon is due to systematic differences in interstellar reddening and which part is due to a real difference in the intrinsic colours of Cepheids of short and long periods.

In this respect the position of the Cepheids of population II in Figure 11 is most interesting. The majority of these stars has a colour index smaller than that of the Cepheids of population I with equal period. Some of these population II Cepheids are very white, although they are nearly all fainter than the 10th magnitude at maximum. The whitest stars among them are:

Name	$\log P$	SPg(max)	SCI(max)
TW Cap	1.456	10.03	.07
UX Nor	.538	11.10	.09
V 626 Sgr	1.427	11.92	.20
ST Pup	1.276	9.46	.10
κ Pav	.957	4.11	.18

These data suggest that the intrinsic colour of the population II Cepheids at maximum cannot be much larger than $SCI = .10$, as one even would expect some reddening for Cepheids as faint as the 10th magnitude. For the five stars listed above we do not find any systematic change in colour with period. It should be kept in mind however that the classification of UX Nor as a population II object is based only on the large range of the light-variation.

By the courtesy of Dr Gascoigne we obtained the colours of 10 Cepheids in the Magellanic Clouds expressed in the $(P, V)_E$ system. These data have been tabulated below.

	$\log P$	CI_E max.	SCI max.
S.M.C.	1.254	.28	.13
	1.276	.26	.10
	1.504	.40	.28
	1.818	.39	.26
L.M.C.	1.379	.35	.22
	1.387	.35	.22
	1.421	.25	.09
	1.483	.26	.10
	1.563	.31	.17
	1.680	.44	.33

In order to transfer these colours into the Cape S system we need the relation between CI_E or $(P - V)_E$ and SCI. Equation (7) of section 8 gives the relation between $(P - V)_E$ and $(\log I_B - \log I_Y)$. The difference between the relations (1) and (2) of section 5 yields:

$$\log I_B - \log I_Y = + .424 - .389\, SCI.$$

Eliminating $(\log I_B - \log I_Y)$ from this last equation and equation (7) we find:

$$SCI = - .216 + 1.233\ (P - V)_E.$$

This formula gives the colours in the Cape system as shown in the last column of the small table given above. These values have been plotted in Figure 11 and have been indicated by crosses. The average colour index at maximum for these ten stars is $+ .19$.

This value of the colour index can be considered as the intrinsic colour of the galactic Cepheids of similar periods if the two following conditions are fulfilled: *a*) the Cepheids in the Magellanic Clouds have the same properties as the galactic Cepheids, *b*) the Cepheids in the Magellanic Clouds are not reddened by interstellar absorption. As to *a*) there is little observational evidence for systematic differences between galactic and Magellanic Cloud Cepheids, although according to Shapley and McKibben Nail (1952) the frequency curve of the periods in the Small Magellanic Cloud differs significantly from that in the galactic system. But since the discovery by Thackeray and Wesselink (1953) of RR Lyrae-type variables in some globular clusters of the Magellanic Clouds it seems practically certain that the Magellanic Cloud Cepheids have the same absolute magnitudes as the galactic Cepheids and that they belong to population I. We shall assume here that there exists no difference in the intrinsic colours. Item *b*) is more difficult to decide. For the Small Magellanic Cloud, with a galactic latitude of − 45°, it may well be true that reddening is negligeable. But for the Large Cloud with a galactic latitude of − 33° this assumption is not so certain, as was pointed out by Dr Gascoigne. Dr Gascoigne drew attention to the fact that the bright galactic Cepheid β Dor, which has the same galactic latitude as the Large Cloud and which is only six degrees distant from the centre of the Cloud, is redder than any of the Cepheids in the Cloud. However, he mentions that Mr Rodgers found some evidence that this variable may be anomalous. We conclude that the average colour index of $SCI = + .19$ for the ten Cepheids in the Magellanic Clouds must be considered as a maximum value for the intrinsic colours of Cepheids of similar periods.

The five Cepheids of population II with the smallest colour index which have been listed above give a mean colour index of $SCI = + .13$. But in this case we have no certainty at all that the intrinsic colours are the same as for the Cepheids of population I. Some years ago GASCOIGNE and KRON (1953) have already noticed that the colours of some population II Cepheids are very nearly the same as for the Cepheids in the Small Magellanic Cloud. And ARP (1955) has proved that the Cepheids in globular clusters are very blue and that the colour of these stars depends very little on the period. Finally we have plotted δ Cephei in Figure 11 by a cross and circle. In his first article on Cepheids EGGEN considered δ Cephei as unreddened. Since the revision of the luminosities of Cepheids this assumption has become very doubtful. So HARRIS (1956) derived a total visual absorption for δ Cephei of about .4 magnitude. From a typescript of a paper by CODE on the normal colours of galactic Cepheids we learned that CODE derived a colour-excess of $^{m}.06$ in the (P, V) system for this bright variable by means of a study of the absorption for neighbouring B-type stars. GASCOIGNE and EGGEN (1957) derived a colour-index of $+.34$ for δ Cephei in their latest paper. They assume the colour-index $+.24$ as the most probable value after correction for absorption. This corresponds with a value of $+.08$ in the SCI system.

If we would have to determine the intrinsic colours of Cepheids at maximum from Figure 11 alone, we could adopt a value of $SCI = +.10$ for all periods. But from the work of CODE we know that there seems to be a slight progress in spectral type with period. CODE determined the spectral type of some galactic Cepheids (1947). Later FEAST (1956) derived spectral types at maximum for a number of Cepheids in the Magellanic Clouds. From the combined results it is evident that the spectral type varies with log P from F5 to early G for the stars with very long periods. Consequently we have adopted the following relation between intrinsic colour and period:

$$SCI_{max} = +.01 + .10 \log P,$$

which has been represented in Figure 11 by a broken line. This equation differs very little from the one adopted by GASCOIGNE and EGGEN, viz.: $(P - V)_E = +.10 + .13 \log P$. Using the relation between $(P - V)_E$ and SCI this last equation can be written as: $SCI = -.09 + .16 \log P$. For the short periods our relation gives a slightly larger colour index than that used by GASCOIGNE and EGGEN, but the difference is certainly well within the uncertainty of the various assumptions made. STIBBS (1955*a*) has derived the relation:

$$\mathbf{P} - \mathbf{V} = +.17 + .18 \log P.$$

STIBBS computed the reddening of the Cepheids by means of a model of the reddening medium, which gives the colour excesses of B stars as a function of distance and galactic co-ordinates. According to his Figure 2 this relation yields colours for the Cepheids with long periods which are about $^{m}.15$ redder than those observed for the Cepheids in the Small Magellanic Cloud. If we reduce the $(\mathbf{P} - \mathbf{V})$ values to SCI with the same formula used for $(P - V)_E$, STIBBS' relation becomes: $SCI = -.01 + .22 \log P$, which gives somewhat larger colour indices for stars with long periods than our formula.

Our formula yields intrinsic colours at maximum brightness varying from $+.04$ to $+.18$ in the Cape S system. One may ask whether these values are reasonable for stars with spectral types from F5Ib to F8Ib.

In section 9 we discussed the measures of five bright stars. In connection with U TrA we measured two other bright stars, namely ι^2 and $\varkappa$ Nor. The results of these measures are:

	ι^2 Nor, Sp. A0		
	$\log I_B$	$\log I_Y$	$\Delta \log I$
	2.568	2.020	+.548
	2.565	2.010	+.555
	2.568	2.015	+.553
mean	2.567	2.015	+.552

$\varkappa$ Nor, Sp. K0		
$\log I_B$	$\log I_Y$	$\Delta \log I$
2.372	2.289	+0.83
2.346	2.270	+.076
2.366	2.286	+.080
2.361	2.282	+.080

Using also the measures of Table 1 from OOSTERHOFF's note in *B.A.N.* **12**, 271 (No. 460), 1955 we have measures for 7 A0 and for 12 F-type stars. The magnitudes and colours in the Cape S system of these 19 stars are as follows:

		SPg	SPv	SCI
	109 Vir	3.49	3.78	−.29
	ι^2 Nor	5.27	5.62	−.35
	E8 1	7.51	7.88	−.37
Sp. A0	E8 2	7.61	8.04	−.43
	E8 3	8.50	8.81	−.31
	E8 45	5.30	5.63	−.33
	E9 1	7.82	8.09	−.27
		mean		−.34
	E8 11	7.67	7.74	−.07
Sp. F0	E9 6	8.91	8.94	−.03
		mean		−.05
	E8 13	7.84	7.69	+.15
Sp. F2	E9 7	7.63	7.56	+.07
		mean		+.11
	E8 15	8.26	8.09	+.17
	E8 17	9.32	9.17	+.15
Sp. F5	E8 18	9.48	9.35	+.13
	E8 19	9.72	9.50	+.22
	E9 11	8.34	8.17	+.17
		mean		+.17
	E6 22	8.45	8.15	+.30
Sp. F8	E8 21	9.12	8.84	+.28
	E9 16	10.61	10.46	+.15
		mean		+.24

As the galactic latitudes of the E-regions 8 and 9 are $-33°$ and $-45°$ respectively we cannot expect any serious reddening for the stars in this table. We conclude that the intrinsic colours adopted for the Cepheids are not inconsistent with the colours derived for other F-type stars.

With the aid of the adopted intrinsic colours we have computed the colour excess, E, for all the Cepheids of Table 13. The values of E are given in the 11th column of that table. We have made no distinction between Cepheids of the two populations, although for some Cepheids of population II the observed colour indices are so small that the intrinsic colour probably deviates from the colour predicted by our formula.

12. *The conversion of colour excess to total absorption*

Before we can apply the photographic period-luminosity relation to derive the distances of the individual Cepheids, we have to know the ratio between the colour excesses which were derived above and the total photographic absorption. This ratio has been studied by many authors. Some of these determinations we shall discuss here shortly and we shall try to adapt them to the photometric system of the colour excesses used in this paper.

OORT (1938) discussed several methods and adopted the value $A_{pg}/E_1 = 9$, in which the colour excess is expressed in the colour system of STEBBINS and HUFFER (1934). STEBBINS, HUFFER and WHITFORD (1943) derived the same ratio from multicolour photometry of B-type stars. According to MORGAN, HARRIS and JOHNSON (1953) the colours C_1 from STEBBINS and HUFFER are related to the colours in the (B, V) system from JOHNSON and MORGAN by the equation: $C_1 = -.144 + .483\ (B - V)$. The ratio between the colours $(B - V)$ and the colours in the Cape S system, SCI, is .85 according to STOY (1956) and .89 according to our formula (15′). If we adopt the value .87, the ratio between the total photographic absorption and the colour excess in the SCI system becomes:

$$A_{pg}/E_{SCI} = 3.8.$$

GREENSTEIN and HENYEY (1941) derived a somewhat smaller value, namely $A_{pg}/E_1 = 8.1$. This value corresponds with:

$$A_{pg}/E_{SCI} = 3.4.$$

From a study of the absorption in the Andromeda nebula STEBBINS (1950) derived the relation $A_{pg}/E_{int.} = 4.0$. The relation between the colours in the international system and the Cape colours has been given by STOY (*l.c.*). Applying this relation we find:

$$A_{pg}/E_{SCI} = 3.7.$$

MORGAN, HARRIS and JOHNSON (1953), HILTNER and JOHNSON (1956) and BLANCO (1956) have all adopted the ratio $A_v/E_{(B-V)} = 3.0$. Reduced to the SCI colour-system the ratio becomes $A_v/E_{SCI} = 2.6$, and from this we find for the total photographic absorption:

$$A_{pg}/E_{SCI} = 3.4.$$

Finally we may mention that GASCOIGNE and EGGEN in their article on "Cepheid variables and Galactic Absorption" have adopted the ratio $A_{pg}/E_{(P-V)} = 4.0$. In this case however we have the difficulty that the coefficient in the relation between the $(P - V)$ colours and the $(B - V)$ colours in our equation (16) differs so much from the coefficient given by EGGEN in equation (16′). The two different values of this coefficient yield the following two values of the ratio required:

$$A_{pg}/E_{SCI} = 3.2 \text{ and } A_{pg}/E_{SCI} = 3.6, \text{ respectively.}$$

For this article we shall use the ratio:

$$A_{pg}/E_{SCI} = 3.5,$$

which seems to be a fair compromise between the values discussed above.

13. *The period-luminosity relation*

For the slope of this relation we have used the co-ordinates given by SHAPLEY (1940). His relation can be represented accurately by two linear formulae for values of $\log P$ smaller and larger than 1.0 respectively. These formulae are:

$$\dot{M}_{pg} = -.34 - 1.68 \log P \quad (P < 10^d) \quad \text{and}$$
$$\dot{M}_{pg} = +.03 - 2.05 \log P \quad (P > 10^d).$$

According to BLAAUW and MORGAN (1954) the zero-point of SHAPLEY's relation needs a correction of -1.4 magnitude. The authors estimate the part of the probable error of $\pm .3$ of this correction which is due to the uncertainty in the adopted absorption alone to be $\pm .2$. For 9 of the 18 Cepheids used they based the adopted colour excess on measures by EGGEN. But it has now been proved that the intrinsic colours used by EGGEN are too red and consequently the absorption derived is too small. In their article on "Cepheid Variables and Galactic Absorption" GASCOIGNE and EGGEN have shown that recent photoelectric determinations of the colour excess of 17 out of the 18 Cepheids used by BLAAUW and MORGAN yield a considerably larger absorption and consequently a larger correction to the zeropoint of SHAPLEY's period-luminosity relation. For this paper we shall adopt a zeropoint correction of — 1.7 and we shall use the following period-luminosity relation:

$$\dot{M}_{pg} = -2.04 - 1.68 \log P \quad (P < 10^d) \text{ and}$$
$$\dot{M}_{pg} = -1.67 - 2.05 \log P \quad (P > 10^d).$$

The absolute median photographic magnitudes derived from these equations differ very little from those adopted by GASCOIGNE and EGGEN.

This relation is only valid for galactic Cepheids of population I. For the Cepheids of population II the absolute magnitudes are probably even more uncertain. From the work by ARP (1955) and others it seems to be beyond doubt that the population II Cepheids are less luminous than the ordinary galactic Cepheids. In the present paper we shall adopt absolute median magnitudes for the population II Cepheids which are 1.5 magnitude fainter than for the galactic Cepheids with the same period.

With the colour excess derived in section 11, the ratio between colour excess and total photographic absorption discussed in section 12, and with the period-luminosity relation given above, the distances of the individual Cepheids could be determined, if the median photographic magnitudes were known. However this quantity can be derived from the photometric data of Table 13 for those Cepheids only for which the magnitude has been measured at maximum as well as at minimum brightness, but the number of variables for which this information is available is small.

If the relation between the range of the light-curve in blue light and log P which we derived in section 10, namely: $\Delta SPg = + .32 + .91 \log P$, were strict, we could transfer the period-luminosity relation derived above into a relation between the period and the photographic magnitude at maximum. But we have shown in section 10 that the mean deviation from the period-range relation is as large as ± .30 magnitude and therefore we would introduce considerable accidental errors in the distances if the relation between range and period would be applied as it stands. The reduction from maximum magnitude to median magnitude equals half the range and by applying our formula we would therefore introduce a dispersion of ± .15 magnitude, which would produce a dispersion in the distances of about 7 per cent. In this connection it should be emphasized that little is known about the true deviations from the period-luminosity relation. It seems most unlikely that the dispersion in this relation as shown in Figure 1 of SHAPLEY's paper quoted above is due to observational errors alone or to the combined effect of observational errors and differences in space absorption. Also we do not know of any theoretical arguments which would make us expect that the intrinsic median magnitudes of Cepheids with the same period but with different ranges of the light-curve would show no dispersion. The dispersion in SHAPLEY's figure may be estimated to be of the order of ± .25 magnitude, which would produce a dispersion in the distances of about 11 per cent. This last dispersion we cannot avoid, but we have tried to reduce the dispersion caused by the differences in range. We have therefore investigated the question whether the determination of the median magnitudes for the Cepheids for which we have only a magnitude at maximum could be improved by making use of the ranges published in the *General Catalogue of Variable Stars*.

For 71 Cepheids of our main table we can use photo-electrical ranges, determined in this paper or by EGGEN, GASCOIGNE and BURR. We have compared these accurate determinations with the values of the range as given in the *General Catalogue*. The comparison is rather unsatisfactory, as we find a mean error of ± .30 magnitude for the range as published in the *General Catalogue*. This mean error, due to observational errors, therefore is as large as the dispersion from the relation we derived above between range and period. Consequently we cannot improve the determination of the median magnitudes by making use of the ranges given in the *General Catalogue* and we decided to compute the median magnitude with the aid of our relation:

$$\Delta SPg = + .32 + .91 \log P.$$

Only for the Cepheids for which photo-electric measures of the range have been observed did we use the actually observed median magnitudes. In Table 13 the light-range has been given in column 11. Photo-electric observations have been indicated by an asterisk, the other values were taken from the *General Catalogue of Variable Stars*. Values from this catalogue which were given for visual light have been multiplied with the factor 1.67.

In deriving the median magnitudes we have made no distinction between the Cepheids of the two populations. The distances of the individual Cepheids expressed in kiloparsecs have been given in the 13th column of Table 13. For the few stars with negative colour excess, we have adopted a colour excess of zero. For the two Cepheids CQ Sco and V 446 Sco distances of 19.4 and 26.1 kpc are found, if we assume these variables to belong to population I. As the galactic latitudes are — 8°.0 and — 7°.4 respectively, it seems practically certain that we should consider them as variables of population II. The distances given in Table 13 are based on this assumption.

14. *The spatial distribution of the Cepheids*

For all the Cepheids in Table 13 we have first computed the distance z from the galactic plane. We did not use the values of the galactic latitude given in the fourth column of Table 13, which were computed with OHLSSON's tables, but we have adopted the new galactic pole derived by WESTERHOUT (1957, page 219) from the collected Dutch measures of the interstellar hydrogen emission at 21 cm. The co-ordinates of this pole in OHLSSON's system are:

$$l_p = 322^\circ \quad \text{and} \quad b_p = 88^\circ.56.$$

The values of the z co-ordinate have been given in the fourteenth column of Table 13. Practically without exception all the Cepheids which we have classified so far as belonging to population II have very large values of this co-ordinate. But there are a few more stars at rather great distances from the galactic plane, which probably have not yet been recognized as members of population II. It may be useful to list here all the Cepheids of our catalogue which belong or may belong to this population[1]) (see table in facing column).

Star	log P	SPg (max)	E	r	z
		m	m	kpc	pc
T Ant	.771	9.20	.20	3.15*	+ 640*
TW Cap	1.456	10.03	− .09	6.43	−2700
CT Car?	1.257	12.66:	.83:	8.87*	− 330*
IU Cen	.521	12.85	.26	5.65	+ 500
KK Cen?	1.086	11.82	.78	5.35*	+ 310*
V 420 Cen	1.394	9.81	.14	3.96	+ 945
AL CrA	1.232	12.13	.33	7.76	−1260
KQ CrA	1.480	12.57:	.38:	11.32	−1520
V 347 CrA	1.186	12.79:	.41:	8.51	−1440
TX Del	.790	9.19	.23	1.45	− 610
AP Her	1.017	10.80	.27	3.52	+ 430
BB Her	.875	10.50	.63	2.97*	+ 330*
RX Lib	1.397	12.39	.43	7.94	+3590
UX Nor	.378	13.39:	.04:	8.95	− 800
ST Pup	1.276	9.46	− .04	3.96	−1090
V 626 Sgr	1.427	11.92	.05	12.76	−1590
V 741 Sgr?	1.181	12.68	1.50	1.39	− 170
CQ Sco	1.484	12.99:	.60:	9.73	−1100
V 446 Sco	1.457	13.10	.43	13.06	−1350
V 542 Sco	1.183	13.11	.31	11.64	−1360
SZ Tau	.498	6.96	.50	2.34	− 750
AM Vel	.876	13.55:	.55:	13.81*	− 870*
W Vir	1.237	9.85:	.17:	3.50	+2990

For the stars marked by an asterisk in the last two columns the computation of the distance r and of the z co-ordinate was made on the assumption that these variables belong to population I. If they belong to population II the values of both r and z would have to be halved. The evidence that the variables CT Car, KK Cen, BB Her and V 741 Sgr should belong to population II is weak. For a more definite classification accurate light-curves and spectroscopic information would be required. However in the following discussion of the Cepheids of population I we shall omit the stars from this table.

We have grouped the Cepheids of population I of our Table 13 according to distance and for each group we have computed the dispersion in the z co-ordinates and the mean value $\bar{z}$. The results are as follows:

	$r < 1.0$	$1.0 < r < 2.0$	$2.0 < r < 3.0$	$3.0 < r < 4.0$	$4.0 < r < 5.0$
number	43	58	33	15	11
$\bar{r}$	.67	1.52	2.40	3.50	4.44
$\bar{z}$	−37	−10	−36	− 19	+ 18
σ_z	±68	±67	±57	±130	±115

Up to a distance of 4 kpc there is no systematic change in z. The result from the last group has very little weight as it contains eleven stars only and furthermore the dispersion in the last two groups is considerably larger than in the first three groups. The average value of $\bar{z}$ computed with weights proportional to the number of stars in each distance group is − 21.1 pc. We shall try to derive the true dispersion in the z co-ordinate, not affected by the errors of observation, and the best value of $\bar{z}$.

If the accidental photometric errors, viz. the errors of observation, the errors involved in the derivation of the median magnitude and in the period-luminosity relation, etc. are assumed to be independent of the distance of the variables, the mean errors of the distances derived are proportional to these distances. Therefore we can write: $\mu_r = \alpha r$. We can make only a rough estimate of this constant α, which depends directly on the photometric errors. The largest errors are probably due to the period-luminosity relation and to the reduction of the magnitude at maximum to median magnitude. If we adopt mean errors of $\pm^m.25$ and $\pm^m.15$ respectively for these two types of errors, we find $\alpha = .15$. From the relation $z = r \sin b$ it is easily derived that $\mu_z = \alpha z$. Therefore the mean error of the z co-ordinate is proportional to z itself and is independent from the distance r. The fact that we derived above larger dispersions for distances over 3 kpc can therefore not be explained by the errors of observation. However this increase in dispersion with increasing distance can be understood as follows. In the first place it has been proved by WESTERHOUT (1957, Figure 7) and by KERR, HINDMAN and STAHR CARPENTER[2]) that the layer of interstellar atomic hydrogen is not really flat and that spiral arms, especially in the outer parts of the galactic system, may deviate considerably from the mean galactic plane.

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[1]) EGGEN, GASCOIGNE and BURR conclude that κ Pavonis also may belong to population II.

[2]) To be published in *Nature*.

Further, Cepheids at a distance of several kiloparsecs suffer so much interstellar absorption that their apparent magnitude can easily be too faint to be included in our observing programme, which did not include many Cepheids fainter than 12^{m}. For stars at some distance from the galactic plane the interstellar absorption will be less and therefore the fainter stars from our programme will have systematically larger values of z than the brighter Cepheids.

In the computation of $\bar{z}$ the value of the dispersion should therefore be taken into account. The mean value of z computed from the five groups with weights proportional to n/σ^2 is:

$$\bar{z} = -23.9 \text{ pc.} \quad \pm 5.5 \quad \text{(m.e.)}$$

This value differs very little from the result derived by WESTERHOUT (1957, page 219), who found a value of $+26 \pm 7$ pc for the distance of the sun from the galactic plane. It certainly is interesting that the observations of Cepheids in the southern hemisphere so completely confirm the position of the galactic equator derived from the interstellar gas in the northern hemisphere.

As the value of the dispersion in the first three distance groups is about the same we shall consider the value derived from these groups combined as the best value of the observed dispersion. We find:

$$\sigma_z \,(\text{observed}) = \pm 65 \text{ pc.}$$

The true dispersion must be smaller as our value is still affected by the errors of observation. We have found above that the observational mean error in z is proportional to z. If we adopt a Gaussian partition function with dispersion σ for the true z-values and a similar function for the errors of observation with a dispersion αz, the partition function of the observed z-values is:

$$\frac{1}{2\pi\sigma}\, dz \int_{-\infty}^{+\infty} e^{-\frac{z'^2}{2\sigma^2}} \cdot e^{-\frac{(z-z')^2}{2\alpha^2 z'^2}} \frac{dz'}{\alpha z'} \,.$$

Computing the second moment of this function we find:

$$\overline{z^2} = \sigma^2 \,(\text{observed}) = \sigma^2 \,(1 + \alpha^2) \,.$$

We adopted the value .15 for α and consequently the reduction of the observed dispersion to the true dispersion is negligeable. From the dispersion given above it follows that only about 12 percent of the Cepheids have distances from the galactic plane larger than 100 pc.

Next we have investigated the total photographic absorption per kiloparsec. Dividing the Cepheids in groups according to distance we find:

	$r < 1$	$1 < r < 2$	$2 < r < 3$	$3 < r < 5$
n	42	58	33	26
$\frac{\Sigma 3.5\, E}{\Sigma r}$	$\overset{\mathrm{m}}{2}$.46	1.68	1.08	.70
$\overline{\frac{3.5\, E}{r}}$	2.76	1.68	1.09	.72

The decrease of the total absorption with distance is very strong. It is difficult to say whether this can be fully explained by the influence of selection described above, especially as the decrease sets in very clearly at a distance of only one kiloparsec. An ordinary Cepheid with $M = -3.5$ and at a distance of 1000 parsecs has an apparent magnitude of 6.5 if there is no absorption. With an absorption of $2^{\mathrm{m}}.5$ as derived from the nearest Cepheids the apparent magnitude would be $9^{\mathrm{m}}.0$. Stars of this brightness have certainly not been missed in our programme. The effect of the selection becomes serious at a distance of about 2 kpc. A Cepheid at this distance with $M = -3.5$ and with an absorption of 4^{m} would have an apparent magnitude of 12^{m} and beyond this magnitude our programme is certainly not complete. But there exists a discrepancy in the value of the dispersion in z for distances between 2 and 3 kpc, which is not larger than that for the nearer Cepheids, and the total absorption per kiloparsec, which for distances between these limits is considerably smaller than for the Cepheids at smaller distances. We shall see below that the spatial distribution of the Cepheids is far from uniform and that Cepheids at a certain distance occur at special longitudes only, especially when the distance is large. Consequently the influence of transparent and obscured regions of the Milky Way may differ considerably for the four distance groups of our table.

In her article on southern early-type stars Miss HOFFLEIT (1956) remarks in point 7 of the summary: "In Sagittarius both the colour excess and the intensity of the K-line are found to increase with distance. In Carina and the H II regions no correlation between distance and colour excess is indicated. All three types of regions show some correlation between distance and the K-line intensity, but the relation is not the same in all three". It is interesting to see that the colours of the Cepheids lead to the same conclusion. The galactic Cepheids in the constellation Carina and those with longitudes between 320° and 0° were arranged according to distance and divided into four groups. The mean values of distance and colour-excess for these groups are as follows (see table on following page).

It is seen that in the Carina region the colour excess is practically constant up to a distance of 4 kpc. In

Carina			320° < l < 0°		
n	$\bar{r}$	$\bar{E}$	n	$\bar{r}$	$\bar{E}$
9	1.17	.45	7	.48	.52
8	2.07	.53	8	.83	.53
8	2.46	.65	8	1.45	1.12
8	4.01	.68	7	2.09	1.16

Sagittarius however the colour excess is about proportional to the distance. As we shall see below, we probably are looking along a spiral arm in Carina, whereas in Sagittarius the line of sight passes two spiral arms more or less at right angles.

We can make a check on our distances by computing Oort's constant A for the differential galactic rotation. We have limited this investigation to the radial velocities determined by Stibbs (1955*b*), who gave velocities for 52 of the Cepheids of our list. His radial velocities have first been corrected for standard solar motion: $V_\odot = 20$ km/sec, $A_\odot = 270°$ and $D_\odot = +30°$. These corrected velocities are given as V_r' in the seventh column of Table 14 on page 127. In the fifth column of the same table we have given the value of $r \cos^2 b \sin 2 (l - l_0)$, in which r was taken from Table 13, while l_0 was assumed to be 327°. The value of A was then solved from the equation:

$$V_r' = A \, r \cos^2 b \sin 2 \, (l - l_0).$$

Using all the 52 stars we derived the value

$$\begin{aligned} A &= +\ 17.0 \text{ km/sec/kpc.} \\ &\pm\ \ 2.3 \text{ (m.e.)} \end{aligned}$$

The dispersion in the radial velocities was found to be ± 13 km/sec. Two stars give very large residuals, namely ϰ Pavonis and V Velorum. The first of these two Cepheids is rather anomalous. We have seen above that Eggen, Gascoigne and Burr believe that it belongs to population II. V Vel seems to be a very normal Cepheid and we find no reasons to omit this variable from the solution. A solution without ϰ Pav yields the results:

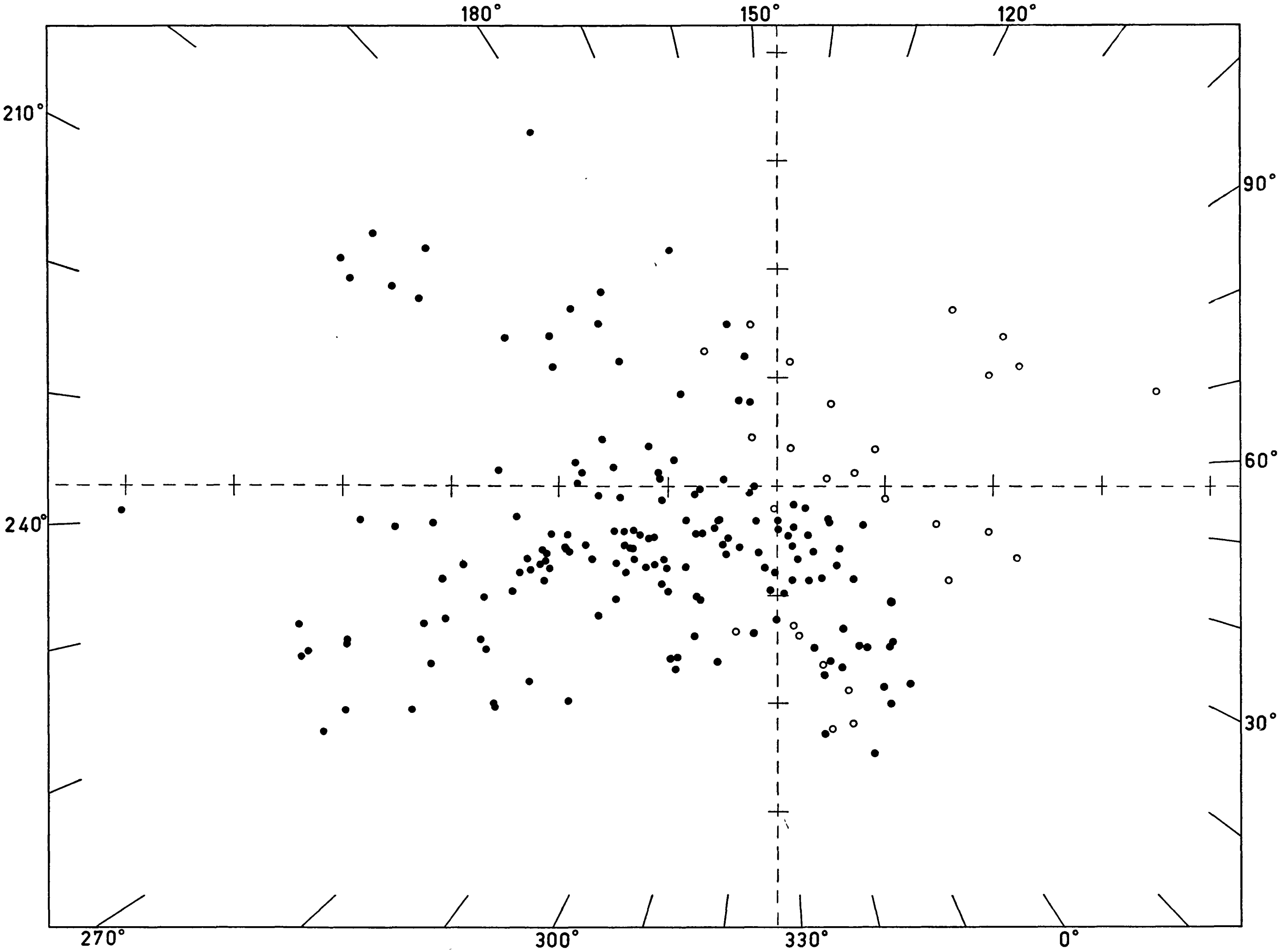
$$\begin{aligned} A &= +\ 17.4 \text{ km/sec/kpc} \quad \text{and} \quad \sigma = \pm\ 11.9 \text{ km/sec.} \\ &\pm\ \ 2.1 \quad \text{(m.e.)} \end{aligned}$$

The residuals $(O - C)$ are given in the last column of Table 14. This value of A agrees reasonably well with other determinations. According to Morgan and Oort (1951) the best value of A as derived from proper motions is + 20 km/sec/kpc ± 2 (m.e.), whereas the average value derived from radial velocities in combination with secular parallaxes for stars with strong galactic concentration is + 19 km/sec/kps ± 2 (m.e.) according to these authors. Our value does not deviate significantly from the other determinations, which may be considered as an indication that our system of distances is about correct, at least to a distance of about 2 kpc.

We shall now discuss the spatial distribution of the galactic Cepheids in more detail. The projection of the galactic Cepheids on the galactic plane is shown in Figure 12. The aggregates of high-luminosity stars of classes O — A, investigated by Morgan, Whitford and Code (1953) have been indicated in the figure by open circles. The markers on the two lines through the sun indicate distances of one kiloparsec. The clearest feature of this diagram is the concentration of Cepheids in the direction $l = 250° - 270°$. Many of these Cepheids belong to the constellation of Carina. That many Cepheids of very different apparent magnitudes are present in this interval of longitude is explained by the fact that the line of sight from the sun follows the Carina spiral arm for three or four thousand parsecs. At a distance of four kiloparsec the number of Cepheids decreases rapidly on account of the magnitude limit of our programme and it becomes difficult to trace this spiral arm any further. But when we follow this spiral arm to the neighbourhood of the sun, the situation becomes rather interesting. Although at longitudes from 250° to 320° no Cepheids are found at a distance from the sun of about one kiloparsec, it seems clear that the Carina spiral arm passes along the sun between longitudes from 260° to 20° at a distance of only .6 or .7 kpc. Many of the Cepheids in this region belong to the constellation of Sagittarius, but this rich group of Cepheids does not belong to the spiral arm to which Schmidt (1957) has given the name Sagittarius arm. We shall discuss this arm below.

It has been proved by many investigations that the sun is situated just outside or on the border of the Orion arm, which at a longitude of 150° passes the sun at a distance of about 600 pc. Therefore if the Cepheids are concentrated in the spiral arms, which seems almost certain, the sun seems to be situated more or less in between the Orion and the Carina arms. As we have no Cepheids in our catalogue with longitudes beyond 20° it is difficult to say what happens to this arm at higher longitudes. The four associations I Vul and I, II and III Cyg seem to form a continuation of this arm, but according to Plate B by Schmidt (1957) the arm seems then to come to an end somewhere in between the Orion and the Sagittarius arm. In the article on southern early-type stars mentioned already above, Miss Hoffleit draws attention to the fact that the early-type stars of high luminosity in the direction of Carina seem to show concentrations at distances of 1.2 and 2 kpc with less well defined concentrations at still larger distances. This effect is clearly shown in her Figure 5. Although the distances do not agree exactly we find similar con-

Figure 12



Projection of the galactic Cepheids on the galactic plane. Open circles represent aggregates of high-luminosity stars of classes O — A, investigated by Morgan, Whitford and Code

centrations of Cepheids in this direction. Such regions rich in Cepheids are found at distances of .7, 1.4 and 2.2 kpc. Miss Hoffleit considers the possibility that these concentrations of early-type stars in the direction of $l = 260°$ do not belong to one and the same spiral arm, but that each of these concentrations would indicate the intersection of the line of sight with a spiral arm running more or less parallel with the Orion and Perseus arms. In her Figure 5 she has drawn three such arms. The arm nearest to the sun passes through the concentration at 1.2 kpc and through the Sagittarius arm, in which several associations were found by Morgan and co-workers. Our plot of the Cepheids does not confirm this suggestion by Miss Hoffleit, which would result in inner spiral arms making large angles with the circles around the galactic centre. The concentrations of early-type stars and Cepheids in the Carina spiral arm seem to be well established. But it has been suspected for many years that spiral arms are not very regular structures and therefore such concentrations and irregularities are in no way surprising.

Between the longitudes 290° and 10° we find a second concentration of Cepheids at a distance of 1.5 or 2 kpc. This group of Cepheids probably forms a continuation of Schmidt's Sagittarius arm. It is interesting to see that seven associations practically co-incide with this group of Cepheids. On the other hand it is quite remarkable that of the eight associations between $l = 310° - 350°$ seven are situated in this continuation of the Sagittarius arm, while only one, II Sco, is situated in the nearer arm, which we have considered as a continuation of the Carina arm, though both concentrations of Cepheids are nearly equally rich.

Following some suggestions made during the last symposium on "Co-ordination of Galactic Research", which was held in Saltsjöbaden in June 1957, we have investigated the distribution of the Cepheids of population I in the region between longitudes 320°

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and 20° in some more detail. The nearly complete absence of O associations in the continuation of the Carina spiral arm in this region and the presence of seven associations in the Sagittarius arm could imply that the Cepheids in these two arms are on the average of different age, which probably would result in a different frequency distribution of periods in these two accumulations of Cepheids. In the following table we derived some mean values for these two groups of Cepheids:

	Continuation of Carina arm	Sagittarius arm
	$0 < r < 1.2$ kpc	$1.3 < r < 3.0$ kpc
number of stars	19	16
mean latitude	− 4°.1	− 2°.6
dispersion in latitude	± 5°.7	± 1°.3
mean distance	.68 kpc	1.84 kpc
mean log period	.826	.943
mean max. magnitude	$7^m.04$	$10^m.72$

It is clear that the dispersion in latitude is much smaller for the more distant group of Cepheids than for the Cepheids in the continuation of the Carina arm, even more so than could be expected from the ratio of the mean distances of these two groups. Although young stars can be expected to show a smaller dispersion in the z co-ordinate than old stars, the values of ± 68 pc and ± 42 pc, which result from the figures in the table, are not sufficiently accurate to guarantee that this difference is real. In this connection it should be mentioned that most of the Cepheids of population I in the general direction of the galactic centre are situated to the south of WESTERHOUT's new galactic equator. This fact may be partly due to heavy obscuration to the north of this equator and this would cause an apparent reduction in the dispersion in latitude and in z co-ordinate.

It is also clear from the table that the periods of the Cepheids in the Sagittarius arm are on the average longer than for the Cepheids in the nearer accumulation in the Carina arm. Of the 19 variables in this last group only 2 have periods larger than 10 days, while in the more distant group of 16 stars 7 variables have periods over 10 days. This could be an indication that the Cepheids in the Sagittarius arm, in which several associations occur, are relatively young, but we have to be careful with such a conclusion. The mean photographic magnitude at maximum brightness is 7.04 and 10.72 for the nearer and for the more distant group respectively. As we have not observed many variables fainter than 12.0 at maximum, a number of Cepheids with short periods and consequently with low absolute magnitude in the Sagittarius arm may not have been included in our programme and therefore the difference in the frequency distribution of the periods in the two groups may be at least partly explained by selection.

Nevertheless the differences found here between the Cepheids in the continuation of the Carina arm and in the Sagittarius arm are sufficiently interesting to ask for more observations of faint Cepheids in this part of the sky. If the programme were complete down to magnitude 14, the questions raised here could be answered definitely.

In the direction of Canis Major and Puppis we find two rather isolated groups of Cepheids, at $l = 200°$, $r = 2.4$ kpc and at $l = 209°$, $r = 4.1$ kpc. Both groups may have an extension towards smaller values of the longitude, but our programme is not complete any more in that region. These groups practically coincide with an arm which is clearly shown on Plates A and B of *B.A.N.* No. 475.

The Carina spiral arm is one of the main features of Figure 1 in the article by KERR, HINDMAN and STAHR CARPENTER. But in this figure we find no indication of any arms in the direction of $l = 236°$ up to a distance of 4 or 5 kpc from the sun. However, in our diagram about one dozen Cepheids is found in this direction with distances from .5 to 2 kpc. It could well be that this group of Cepheids is situated in an extension of the Orion arm.

Finally we may remark that in the longitudes from 300° to 340° only one Cepheid occurs with a distance slightly larger than 2 kpc, while at other longitudes we found distances of 5 kpc and even more. This fact is probably due to a strong increase in the interstellar absorption in the direction of the galactic centre.

The present investigation has shown that the Cepheids are very suitable objects for an exploration of the detailed structure of our galactic system. But it is as clear that this programme should be extended to much fainter Cepheids. It is to be expected that the discovery of such faint Cepheids is far from complete at this moment and consequently the search for faint Cepheids should be encouraged. The work involved could be considerably reduced by limiting this search to a small strip along the galactic equator. At a distance of 4 kpc nearly all Cepheids should be situated within 2° from this equator. But above all a similar investigation of the Cepheids in the northern hemisphere is badly needed.

TABLE 14

Star	l	b	r	V_r	V'_r	$(O-C)$	$r\cos^2 b.$ $\sin 2\,(l-l_\circ)$
	°	°					
T Ant	232.5	+11.8	3.15	+29.5	+15.2	+ 7.0	+ .471
V 496 Aql	356.1	− 8.6	.70	+ 5.2	+14.1	+ 4.0	+ .582
l Car	250.7	− 6.8	.27	+ 1.4	−11.9	− 9.8	− .122
U Car	256.8	+ .1	1.34	+ .4	−10.5	+ 4.4	− .854
V Car	242.7	−11.9	.79	+16.1	+ .6	+ 3.2	− .150
Y Car	253.4	− .2	1.48	− 5.8	−17.6	− 3.6	− .802
ER Car	257.8	+ 1.4	.90	−18.1	−28.6	−18.4	− .597
GI Car	258.0	+ 2.6	1.51	−21.4	−31.7	−14.2	−1.008
IT Car	259.2	− 1.1	1.28	−14.0	−24.4	− 8.9	− .889
UX Car	252.5	+ .3	1.56	+10.4	− 1.6	+12.4	− .803
VY Car	254.3	+ 1.3	1.39	− 1.2	−12.6	+ 1.1	− .790
V Cen	284.2	+ 2.8	.74	−22.3	−24.8	−12.0	− .736
AZ Cen	260.5	− .3	1.46	−12.3	−22.3	− 3.7	−1.067
UZ Cen	262.6	− 1.1	1.65	− 5.1	−14.6	+ 7.8	−1.285
XX Cen	277.3	+ 4.1	1.41	−15.7	−20.2	+ 3.9	−1.385
V 339 Cen	281.1	− 1.1	1.41	−24.3	−28.3	− 3.8	−1.410
V 378 Cen	273.8	− .1	1.27	−17.7	−23.8	− 2.6	−1.218
V 381 Cen	278.6	+ 3.8	1.13	−30.8	−34.9	−15.4	−1.118
V 419 Cen	259.8	+ 4.2	1.24	−17.2	−26.8	−11.5	− .881
R Cru	267.3	+ .8	.87	−13.5	−21.4	− 8.2	− .758
S Cru	271.1	+ 4.1	.70	− 6.6	−15.8	− 4.6	− .646
T Cru	267.2	+ .2	.62	− 6.0	−14.0	− 4.6	− .539
X Cru	270.1	+ 3.5	1.25	−25.0	−31.7	−11.9	−1.139
AG Cru	269.4	+ 2.8	1.35	− 4.5	−11.5	+ 9.7	−1.219
β Dor	238.5	−32.3	.25	+ 8.1	− 8.6	− 8.4	− .009
R Mus	269.6	− 6.9	.82	+ 3.8	− 4.4	+ 8.4	− .734
S Mus	267.1	− 7.8	.64	+11.8	+ 2.8	+12.3	− .546
RT Mus	264.1	− 5.4	1.50	− 1.8	−11.4	+ 9.6	−1.206
S Nor	295.3	− 6.3	.66	+ 3.3	+ 3.2	+13.3	− .582
BF Oph	324.8	+ 7.2	.80	−31.4	−20.8	−19.7	− .061
ϰ Pav	295.4	−26.3	.42	+37.6	+35.0	(+40.2)	− .301
AP Pup	223.1	− 4.9	.98	+17.9	− .1	− 8.0	+ .453
AT Pup	222.0	− .8	1.67	+28.8	−11.2	−25.7	+ .835
WX Pup	209.2	− .3	2.34	+53.4	+34.9	+ 1.3	+1.930
U Sgr	341.4	− 5.9	.57	+ 3.9	+16.9	+12.2	+ .272
W Sgr	328.5	− 5.4	.40	−26.4	−16.4	−16.8	+ .021
X Sgr	328.9	− 1.2	.32	−13.7	− 3.0	− 3.4	+ .021
RV Sco	318.1	+ 4.3	.76	−18.3	− 9.9	− 5.9	− .231
V 482 Sco	322.9	− 1.2	.96	+11.1	+20.2	+22.6	− .137
V 500 Sco	326.7	− 2.8	1.23	−13.8	− 3.9	− 3.7	− .012
V 636 Sco	311.1	− 6.4	.64	+ .8	+ 5.7	+11.5	− .333
R TrA	284.5	− 8.4	.67	− 9.1	−12.9	− 1.5	− .653
S TrA	289.6	− 9.0	.80	+ 6.6	+ 4.4	+17.5	− .753
U TrA	290.7	− 8.9	1.27	−13.7	−15.6	+ 5.0	−1.183
T Vel	233.2	− 3.2	1.08	+ 8.0	− 8.4	−10.9	+ .142
V Vel	244.2	− 3.8	1.07	−28.7	−43.1	−38.5	− .265
AH Vel	230.0	− 6.3	.49	+26.0	+ 8.8	+ 6.8	+ .117
AX Vel	230.8	− 7.0	1.11	+24.2	+ 7.0	+ 2.9	+ .235
BG Vel	233.8	− 2.3	.71	+10.9	− 4.6	− 6.0	+ .079
RZ Vel	230.5	− 1.2	1.51	+25.5	+ 8.9	+ 3.0	+ .340
SV Vel	253.8	+ 2.5	2.03	+ 4.5	− 6.9	+12.6	−1.120
SX Vel	233.2	− 1.6	1.80	+30.9	+14.7	+10.6	+ .237

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