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THE RR LYRAE STARS IN MESSIER 3

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by

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INTRODUCTION AND SUMMARY

In 1937 Dr. Detre has started a study of the period-changes of variables in globular clusters. In course of this programme several hundred plates have been taken of the clusters M3, M5, M15, M56 and M92 with the 24-inch Newtonian telescope of the Konkoly Observatory by Dr. Julia Balázs, Dr. Detre, Dr. Kulin, M. Lovas, Dr. Ozsváth and the writer. This work is a survey of all the measurable RR Lyrae stars in the globular cluster M3.

A number of investigations have been already published dealing with the secular period changes of RR Lyrae stars in different clusters (M3: Martin 1942, Belserene 1952; M4: Wilkens 1964; M5: Oosterhoff 1941; M15: Izsák 1956, Mannino 1956, Grubissich 1956, Nobili 1957, Notni and Oleak 1958, Bronkalla 1960, Fritze 1962; M53: Wachmann 1964; ω Cen: Martin 1938, Belserene 1964 and in the general field: Detre 1955). The authors have generally treated the variables as if their periods vary linearly with time.

It was a great help for me that a considerable part of the plate material obtained for M3 at Budapest up to the year 1956 has been already discussed by Dr. Ozsváth. He has constructed mean light curves and O—C diagrams for about 60 variables. On the Colloquium on Variable stars held in summer 1956 at Budapest he has given a condensed account of his results (Ozsváth, 1957). In the years 1958—1963 the author has taken further plates, measured them and rediscussed the whole material consisting of 214 plates obtained at Budapest and 17 plates supplied by the Hamburg Observatory (Table 1). On the majority of the plates 117 RR Lyrae stars were measurable (Table 8). The standard errors of the measurements are given in Table 2. Normal points have been formed for constructing the light curves for 111 variables (Table 7, Figures 15—27). Table 3 contains the data for 113 variables.

The crowding effect distorting the photometric measures inside 2′.5 of the centre has been fully considered (Fig. 1). O—C diagrams could be constructed for 112 variables (Figures 28—64) using the whole material available, beginning with Bailey's observations. With the exception of 7 variables all the others show period changes. A quadratic form suggesting a period change according to the simple relation: $P = P_0 + \beta t$, fits the O—C diagrams for 47 variables, indicating period lengthening in 22, period shortening in 25 cases. For the mean value of the coefficient in the quadratic term of the O—C values I get

$$10^{10}\,\beta = -0.63 \pm 1.05.$$

The dependence of β on the period is shown in Figure 4, their frequency-distribution in Figure 3 compared with that of the variables in M5 and in ω Centauri.

It is a general rule that variables having complicated O—C diagrams exhibit strong light curve changes. The O—C diagrams of RRc stars and irregular RRab stars consist of cycles of different length and amplitude (Fig. 5 and 6).

In the period-amplitude relation for regular stars lying more than 2′.5 outside of the centre (Fig. 7) the separation of the RRab stars into a short- and long-period sequence (Belserene 1954) is clearly shown. The same separation is apparent for different parameters of the light curve (Fig. 8: m^{max} versus period; Fig. 9: $\overline{B-V}$ versus period; Fig. 10: $\varepsilon = M - m$ versus period). RRab stars of the long period sequence show the same characteristics as stars of the short period sequence having periods shorter by $0^d.1$.

Of the 112 variables investigated so far, 36 (32%) show well pronounced light curve changes. The frequency distribution of the periods for these irregular stars is given in Table 5 and represented also in Fig. 13. They have the highest relative abundance in the period interval $0^d.47-0^d.56$. In the period-amplitude relation their greatest amplitudes fit the relation valid for regular RR Lyrae stars (Fig. 12). This has been already noted by Preston (1964, p. 43) who writes: "Curiously the period versus amplitude relation for simply periodic variables appears to be the upper envelope of the amplitude variations for multiply periodic variables. This suggests that multiple periodicity is associated with a mechanism that acts to suppress the normal pulsation properties of the variables." Their characteristics show no correlation with distance from the centre.

The RRab stars in ω Cen and M5 exhibit the same separation into two sequences like in M3 (Belserene 1954). In these three clusters a strong correlation seems to hold between the number of stars on the long period RRab-sequence and on the RRc-sequence respectively (see Table 6). The two branches of RRab stars occupy the same place in the period-amplitude relation for all the three clusters, the short-period branch being considerably steeper. The β values are quite different on the two branches (Table 7). In M3, M5 and ω Cen we have 48 easily measurable variables on the short-period sequence having parabolic O—C diagrams with

$$10^{10}\,\beta = +0.01 \pm 1.10$$

and 36 variables on the long-period sequence, with

$$10^{10}\,\beta = +4.78 \pm 1.98.$$

The long-period sequence shows a strong tendency for period lengthening.

The amplitude versus period relation for field RR Lyrae stars with different spectral index, ΔS (Preston 1959), suggests (Fig. 7) that the long-period RRab sequence in globular clusters contains RR Lyrae stars of low metal content, while stars of the short-period sequence have a higher metal/H value. The two distinct RRab-groups are probably the continuations of the two sequences of red stars on the horizontal branch in the HRD (Arp, 1955). They may represent stars advancing in opposite directions along the horizontal branch in course of their evolution (Woolf 1964).

The author is indebted to Dr. L. Detre, Director of the Konkoly Observatory, for suggesting the investigation and for many valuable discussions; to Dr. I. Ozsváth, for handing over his material and for sending the plates taken by him at the Hamburg Observatory; to Dr. Julia Balázs-Detre for following with attention this work and for many helpful remarks; to Mrs. K. Barlai and M. Lovas for aid in preparing the manuscript.

MATERIAL

M3 (NGC 5272) is the globular cluster richest in variables. Its equatorial and galactic coordinates are:

$$\alpha = 13^h\,39^m\!.9 \qquad \text{(1950)} \qquad l^{II} = 42^\circ$$
$$\delta = +28^\circ\,38' \qquad\qquad\qquad b^{II} = +79^\circ$$

The first systematic investigation of the variables in the cluster was made by S. I. Bailey (B; 1913), and most of the variables were discovered by him. Between 1895 and 1900 (J. D.2413664—14842) the plates were taken partly at Arequipa with the 24″ Bruce Telescope using exposures of 30 to 75 minutes partly with the 13″ Boyden refractor (J. D. 241 3372—14807; exposures 70 to 183 minutes) and the 36″ Crossley Reflector at Mt. Hamilton (J. D. 2415160—15161; exposures 10 minutes with one exception of 60 minutes). The Lick plates are of the best quality. The plates of long exposure provide only inaccurate epochs. Bailey gives the brightness data for 132 variables from 90 plates.

In 1912 and 1915 (J. D. 2419479—19534 and J. D. 2420625—20656) 36 plates were taken with the 60″ telescope of Mt. Wilson Observatory with exposures 2 to 20 minutes. For 11 pairs of the plates the mean value was considered. In this way the exposure time may amount to 40 minutes. The time interval between two exposures may be also considerable. Finally J. H. Hett (H) gives brightness values for 48 variables at 25 moments (1942).

In 1920 (J. D. 2422455) one and in 1921 (J. D. 2422729—22840) 135 plates were taken with the 1 meter telescope of the Hamburg-Bergedorf Observatory. The exposure times were 20 and 10—13 minutes respectively. J. Larink (L) measured not more than 129 variables per plate (1922).

1 + 91 plates were taken in 1924 (J. D. 2423858) and in 1925 (J. D. 2424283—24317) respectively, with the 1.22 m reflector of the Babelsberg Observatory, 16 plates with one hour and the others with 15 minutes exposure time. Th. Müller (M) published observations for 159 variables (1933).

In 1926 (J. D. 2424564—24642) J. Schilt took a series of 97 plates with 8 minutes exposure time utilizing the 60″ Mt. Wilson reflector for a study of RV CVn. P. Slavenas (S) could measure only 47 variables because the cluster was on the edge of the plates (1929).

In the same year (J. D. 2424647—24684) further 75 plates were taken with the 60″ Mt. Wilson reflector by J. L. Greenstein (G) with the same exposure time. He published magnitudes for 117 variables using these plates (1935). In 1938 (J. D. 2428964—28983) 4 pairs of plates were taken with the 61″

reflector of the Oak Ridge Station with 8—10 minutes exposure time. M. Schwarzschild (Sch) has taken the mean values of magnitudes for these pairs of plates (1940).

In 1939 (J. D. 2429367—29431) 44 plates with 9—15 minutes exposure length were taken at the Perkins Observatory with the telescope diaphragmed to 60″. J. H. Hett published observations for 48 variables (1942).

In 1940 (J. D. 2429670—29834) 106 double photographs of 30—40 minutes exposure time were obtained with the Rockefeller double astrograph at Johannesbourg. W. Chr. Martin (Ma) measured the magnitudes for 132 variables but published epochs only for 121 of them (1942).

In the years 1946 (J. D. 2431965—31995) and 1948 (J. D. 2432682—32700) 28 and 10 photographs were taken, respectively, with the 60″ Mt. Wilson reflector. The exposure time was 5—7 minutes. E. P. Belserene published magnitudes for 52 easily measurable variable stars (1952).

In 1953 (J. D. 2434447—34508) 25 plates were taken with the 100″ Mt. Wilson reflector diaphragmed to 58″. The exposure time was 15 minutes in the average. M. Roberts and A. Sandage (RS) published magnitudes for 78 variables (1955).

Between 1949 and 1960, 177 plates were obtained with the 40/40 cm Schmidt-telescope at Burakan (J. D. 2435577—35615) and with the 40 cm GAIS astrograph (J. D. 2433034—37130), respectively. On these plates a great number of variables were estimated. B. V. Kukarkin and N. P. Kukarkina (K) published their observations on 3 variables, (1961 b).

In Budapest (Bp) 214 plates were taken from 1938 till 1962 (J. D. 2428963—37791) using the 24″ reflector of the Konkoly Observatory (f = 3600 mm, 1 mm equals 57.″3 on the plates). Kodak Eastman 40, Agfa Astro Spezial and Kodak 103 aO plates were used with exposures 10 to 17 minutes. In 1957 (J. D. 2435920; 35933) 17 further photographs were obtained by I. Ozsváth in Hamburg on Kodak OaO plates with 12—16 minutes exposure time. Generally 117 variables of RR Lyrae type were measurable on the majority of these 231 plates. The limiting magnitude of the plates is about $17^{m}0$. A detailed enumeration of the plates obtained in Budapest and in Hamburg is given in Table 1. Plates of high quality are marked by the number 5; those of mediocre quality by 3, plates of inferior quality by 1.

Generally the observational material covers the time interval of observations rather evenly, however, it is rather incomplete in the case of several variables exhibiting strong variations in their light curve and in their period. Unfortunately even these interesting variables deserving the greatest attention have been often neglected by several authors. It would be of great value to measure all the variables on all the plates available.

Since 1950 the observational material can be considered as continuous.

Table 1

LIST OF PLATES

Plate	J. D. 2 400 000 +	Exp. time in minutes	Kind of plate	Quality of plate	Observer
R 1681	28 963.487	15	Guilleminot Superfulgur	5	Kulin
R 1717	28 991.403	15	,,	4	,,
R 1718	.416	15	,,	4	,,
R 1719	.430	15	,,	5	,,
R 1723	.522	15	,,	5	,,
R 1724	.542	15	,,	5	,,
R 2133	29 346.376	15	,,	3	,,
R 2134	.392	15	,,	3	,,
R 2368	29 719.549	12	,,	4	,,
R 2369	.560	12	,,	3	,,
R 2376	29 720.546	12	,,	4	,,
R 2377	.558	12	,,	4	,,
R 2413	29 774.405	12	,,	3	,,
R 2414	.417	12	,,	2	,,
R 2416	29 775.403	12	,,	4	,,
R 2417	.415	12	,,	4	,,
R 2418	.426	12	,,	2	,,
R 2419	.437	12	,,	3	,,
R 2420	.447	12	,,	2	,,
R 2612	30 052.462	12	,,	3	,,
R 2613	.474	12	,,	3	,,
R 2614	.489	12	,,	3	,,
R 2615	.501	12	,,	3	,,
R 2622	30 078.418	12	,,	4	,,
R 2623	.434	12	,,	4	,,
R 2624	.470	12	,,	4	,,
R 2625	.483	12	,,	4	,,
R 2626	.498	12	,,	4	,,
R 2627	.509	12	,,	3	,,
R 2628	.521	12	,,	4	,,
R 2629	.536	12	,,	3	,,
R 2630	.548	12	,,	4	,,
R 3163	33 390.497	10	Eastman 40	3	Balázs. Detre
R 3164	.534	10	,,	4	,,
R 3165	.545	10	,,	4	,,
R 3166	.558	10	,,	3	,,
R 3167	.570	10	,,	3	,,
R 3168	.586	11	,,	4	,,
R 3173	33 420.424	10	,,	4	,,
R 3174	.438	10	,,	4	,,
R 3175	.450	10	,,	4	,,
R 3176	.476	10	,,	4	,,
R 3177	.487	10	,,	4	,,
R 3178	.498	10	,,	4	,,
R 3179	.510	11	,,	3	,,
R 3180	.523	13	,,	2	,,
R 3181	33 421.385	10	,,	4	,,
R 3182	.442	10	,,	4	,,
R 3183	.454	10	,,	3	,,
R 3184	.465	10	,,	3	,,
R 3185	.475	10	,,	2	,,
R 3186	.486	10	,,	3	,,
R 3187	.497	10	,,	3	,,

Table 1 (continued)

Plate	J. D. 2 400 000 +	Exp. time in minutes	Kind of plate	Quality of plate	Observer
R 3188	33 421.535	10	Eastman 40	2	Balázs, Detre
R 3189	.548	10	,,	3	,,
R 3190	33 422.398	10	,,	4	,,
R 3191	.431	10	,,	4	,,
R 3192	.442	10	,,	4	,,
R 3193	.452	11.5	,,	5	,,
R 3194	.462	10	,,	4	,,
R 3195	.472	10	,,	5	,,
R 3196	.483	10	,,	5	,,
R 3197	.493	10	,,	5	,,
R 3198	.508	10	,,	5	,,
R 3199	.520	10	,,	4	,,
R 3218	33 763.406	10	Guilleminot Superfulgur	5	Detre
R 3219	.420	10.5	,,	4	,,
R 3220	.442	10	,,	5	,,
R 3221	.455	10	,,	4	,,
R 3222	.464	10	,,	5	,,
R 3223	.483	10	,,	5	,,
R 3224	.494	10	,,	5	,,
R 3225	.504	10	,,	5	,,
R 3226	.514	10	,,	5	,,
R 3227	.525	10	,,	4	,,
R 3479	34 118.355	15	,,	1	Lovas
R 3480	.372	15	,,	1	,,
R 3481	.388	15	Agfa Astro Spezial	2	,,
R 3482	.428	15	Guilleminot Superfulgur	3	,,
R 3483	.443	15	,,	4	,,
R 3484	.470	17	,,	3	,,
R 3485	.485	15	,,	4	,,
R 3486	.499	15	,,	4	,,
R 3487	.513	15	,,	4	,,
R 3488	.526	15	,,	2	,,
R 3489	.540	16	,,	3	,,
R 3496	34 120.471	15	,,	2	,,
R 3497	.484	15	,,	3	,,
R 3498	.497	15	,,	3	,,
R 3499	.510	14	,,	3	,,
R 3500	.523	15	,,	3	,,
R 3501	.536	15	,,	3	,,
R 3502	.551	15	,,	4	,,
R 3503	.564	15	,,	4	,,
R 3504	.579	15	,,	3	,,
R 3511	34 121.401	10	,,	2	,,
R 3512	.412	10	,,	2	,,
R 3513	.422	10	,,	3	,,
R 3514	.431	10	,,	2	,,
R 3515	.441	10	,,	3	,,
R 3516	.484	12	,,	4	,,
R 3517	.495	12	,,	4	,,
R 3518	.505	12	,,	4	,,
R 3519	.517	13	,,	3	,,
R 3520	.528	12	,,	4	,,
R 3521	.539	12	,,	4	,,
R 3522	.552	12	,,	4	,,
R 3523	.562	12	,,	2	,,

Table 1 (continued)

Plate	J. D. 2 400 000 +	Exp. time in minutes	Kind of plate	Quality of plate	Observer
R 3526	34 121.594	12	Guilleminot Superfulgur	3	Lovas
R 3527	.605	12	..	1	..
R 3535	34 122.404	12	..	2	..
R 3536	.416	12	..	3	..
R 3537	.431	13	..	3	..
R 3565	34 126.433	13	..	4	..
R 3589	34 131.415	12	..	2	..
R 3828	34 487.347	12	..	2	..
R 3829	.367	12	..	3	..
R 3830	.385	12	..	3	..
R 3831	.397	12	..	2	..
R 3832	.410	12	..	3	..
R 3833	.428	12	..	3	..
R 3834	.438	12	..	4	..
R 3835	.449	12	..	3	..
R 3836	.460	12	..	3	..
R 3837	.474	12	..	3	..
R 3838	.483	12	..	3	..
R 3839	.494	12	..	3	..
R 3840	.508	12	..	2	..
R 3841	.518	12	..	3	..
R 3850	34 488.530	12	..	3	..
R 3851	.540	12	..	4	..
R 3927	34 567.388	15	..	4	..
R 4287	35 223.415	15	..	4	Ozsváth
R 4288	.428	15	..	3	..
R 4289	.441	15	..	4	..
R 4291	.467	15	..	4	..
R 4292	.490	15	..	3	..
R 4293	.503	15	..	3	Lovas
R 4294	.517	15	..	4	..
R 4296	.530	15	..	3	Ozsváth
R 4297	.546	15	..	3	..
R 4299	.573	15	..	4	..
R 4301	35 224.454	15	..	4	..
R 4302	.472	15	..	4	Lovas
R 4303	.485	15	..	4	Ozsváth
R 4304	.499	15	..	3	Lovas
R 4305	.512	15	..	4	Ozsváth
R 4306	.524	15	..	3	..
R 4307	.542	15	..	3	Lovas
R 4308	.556	15	..	3	Ozsváth
R 4309	.569	15	..	3	Lovas
R 4310	.583	15	..	3	Ozsváth
R 4311	35 227.534	15	..	3	Lovas
R 4312	.547	15	..	2	..
R 4313	.560	15	..	3	..
R 4314	.573	15	..	3	..
R 4315	.586	15	..	3	..
R 4492	35 598.507	15	..	4	..
R 4493	.524	15	..	4	..
R 4494	.537	15	..	3	..
R 4505	35 600.363	15	..	3	..
R 4506	.378	15	..	3	..
R 4507	.391	15	..	3	..
R 4508	.405	15	..	3	..

Table 1 (continued)

Plate	J. D. 2 400 000 +	exp. time in minutes	Kind of plate	Quality of plate	Observer
R 4509	35 600.421	15	Guilleminot Superfulgur	3	Lovas
R 4510	.434	15	,,	3	,,
R 4511	.446	15	,,	3	,,
R 4513	.501	15	,,	2	,,
R 4515	.525	15	,,	3	,,
R 4519	35 603.369	15	,,	3	,,
R 4520	.381	15	,,	4	,,
R 4521	.397	15	,,	3	,,
R 4522	.408	15	,,	3	,,
R 4523	.419	15	,,	3	Ozsváth
R 4524	.431	15	,,	3	Lovas
R 4525	.446	15	,,	4	,,
R 4526	.457	15	,,	3	,,
R 4527	.468	15	,,	4	,,
R 4529	.491	16	,,	3	,,
R 4530	.507	16	,,	3	,,
DR 1571	35 920.444	15	Kodak OaO	4	Ozsváth
DR 1572	.467	15.5	,,	3	,,
DR 1573	.487	16	,,	3	,,
DR 1574	.504	15	,,	4	,,
DR 1575	.547	15	,,	4	,,
DR 1576	.562	14.5	,,	4	,,
DR 1577	.585	15	,,	4	,,
DR 1578	35 933.415	12	,,	4	,,
DR 1579	.443	12	,,	3	,,
DR 1582	.479	12	,,	4	,,
DR 1583	.503	12	,,	2	,,
DR 1584	.515	12	,,	2	,,
DR 1585	.530	12	,,	2	,,
DR 1586	.543	12	,,	1	,,
DR 1587	.573	12	,,	1	,,
DR 1588	.588	12	,,	1	,,
DR 1589	.602	12	,,	1	,,
R 4683	36 991.457	15	Agfa Astro Spezial	1	Lovas
R 4684	.470	15	Guilleminot Superfulgur	2	,,
R 4685	.485	14	Agfa Astro Spezial	2	,,
R 4686	37 018.470	15	,,	2	,,
R 4687	.483	15	,,	2	,,
R 4688	.496	15	,,	2	,,
R 4689	.510	16	,,	3	,,
R 4690	.523	16	,,	3	,,
R 4691	.537	15	,,	2	,,
R 4692	.550	15	,,	2	,,
R 4693	.563	15	,,	1	,,
R 4694	.577	15	,,	2	,,
R 4695	.609	15	,,	3	,,
R 4696	.623	15	,,	2	,,
R 4697	.637	15	,,	1	,,
R 4701	37 057.539	15	,,	4	,,
R 4702	.552	15	,,	3	,,
R 4703	.578	15	,,	3	,,
R 4704	37 058.529	15	,,	4	,,
R 4706	.580	15	,,	2	,,
R 4796	37 757.598	15	,,	1	Szeidl
R 4798	37 791.365	14	Kodak 103aO	4	,,
R 4799	.380	14	,,	4	,,

Table 1 (continued)

Plate	J. D. 2 400 000 +	exp. time in minutes	Kind of plate	Quality of plate	Observer
R 4800	37 791.394	14	Kodak 103aO	4	Szeidl
R 4801	.424	14	,,	3	,,
R 4802	.439	15	,,	5	,,
R 4803	.454	14	,,	3	,,
R 4804	.469	15	,,	5	,,
R 4805	.483	14	,,	4	,,
R 4806	.497	14	,,	5	,,
R 4807	.519	14	,,	5	,,
R 4808	.533	14	,,	4	,,
R 4809	.549	14	,,	5	,,
R 4810	.563	14	,,	5	,,

THE MEASUREMENTS OF THE VARIABLES

32 stars, covering an interval of nearly 3 magnitudes (14.00–17.05), were selected as comparison stars from Sandage's primary photoelectric and secondary photographic sequence (1953). They are situated at distances of 3′ to 13′ from the centre of the cluster, where photographic background and crowding effects may be considered as insignificant.

Generally it was possible to measure 117 variables of the RR Lyrae-type using the Rosenberg microphotometer of the Konkoly Observatory. The plates obtained in 1960 were measured with the Becker iris-photometer of the observatory. The errors of measurements near the centre of the cluster were considerably higher for the latter plates. Evidently a constant diaphragm is more suitable for measurements in case of great photographic density. About 60% of the plates were measured by Dr. Ozsváth. The resulting magnitudes are given in Table 9.

The mean error of the measures varies strongly with the quality of the plates and with the brightness of the stars. The data in Table 2 were determined from 15 plates, selected randomly from plates of different quality. The average error of one magnitude determination is $\pm 0^m095$.

Table 2.

MEAN ERROR OF ONE MEASUREMENT

Quality of plates / magnitude	5	4	3	2	1
14^m5—15^m5	±0.06	±0.07	±0.08	±0.09	±0.12
15^m5—16^m5	±0.07	±0.10	±0.12	±0.13	±0.15

DETERMINATION OF EPOCHS

Using the periods given in Sawyer's catalogue (1955) provisional phases were computed for every observation. The light curves were constructed for every year separately, and from these averages O—C values were obtained. which served for improving the periods. With the new period a new O—C diagram was constructed and that was used to plot the whole Budapest material according to phase. The mean light curves obtained in this way enabled the determination of accurate epochs even from a section of the descending branch.

The observations were divided into groups according to phase. For RRc and long period RRab stars the period was divided into 20 equal intervals, whereas for RRab stars of period about $0^d\!.5$ with steep rise the intervals were shorter on the ascending branch and around the maximum. For each group the average phase and magnitude have been calculated. The resulting normal points are given in Figures 15—27 and in Table 7. Care has been taken that the groups contained nearly linear parts of the light curves without larger gaps and that especially the brightness of the maxima and minima should not be distorted. Therefore not all normal points contain the same number of observations, accordingly they have different weights. Normal points containing four or less observations are denoted by circles.

Since the Hamburg observations of 1957 deviated systematically from the Budapest material, they were neglected in constructing the normal points. In case of variables exhibiting strong variations of the light curve the observed lowest and highest maxima were plotted, whereas in the minimum and on the descending branch mean values were taken.

The characteristics of the light curves obtained from our material are listed in Table 3. The consecutive columns contain the designation of the variable, the period, the magnitude in maximum, the magnitude in minimum, the median magnitude (mean of max. and min.), the amplitude, ε: the time interval between minimum and maximum in fraction of the period.

When the period P changes linearly with the time t, we may put $P = P_0 + \beta (t - t_0)$. If P_0 and t are expressed in days, then β is equal to the period change during one day. β is given in column 8 of Table 3. In the following columns c_1, c_2 and $c = c_1 + c_2$ are indices illustrating the complexity of the O—C diagrams. They will be explained later. In column 12 the letter i denotes definite light curve changes, the same letter with an interrogation mark indicates possible changes in the light curve. In the last column r gives the distance from the centre of the cluster in minutes of arc.

Table 3.

Var	Period	M	m	m_{med}	A	ε	$\beta \cdot 10^{10}$	c_1	c_2	c	B_{eff}	r
1	0^{d}.5206250	14^{m}.68	15^{m}.92	15^{m}.30	1^{m}.24	0^{m}.13	−11.3	2	0	2		2′.1
5	.5058940	14.71 15.43	16.15	15.61	1.44 0.72	—	—	5	3	8	i	4.4
6	.5143228	14.87	16.21	15.54	1.34	0.13	4.1	1	0	1		2.3
9	.5415641	14.95	16.28	15.61	1.33	0.13	− 5.3	1	0	1		6.0
10	.5695185	15.06	16.15	15.60	1.09	0.16	−11.4	2	0	2	i	3.5
11	.5078918	14.75	16.17	15.46	1.42	0.14	0.0	0	0	0		4.3
12	.3178890	15.23	15.83	15.53	0.60	0.35		3	3	6	i	2.4
13	.4830490	14.79	15.96	15.37	1.17	0.15	9.4	2	0	2	i?	2.3
14	.6359019	14.95	16.19	15.57	1.24	0.15	1.0	0	0	0	i	2.5
15	.5300794	14.87	16.26	15.56	1.39	0.11	4.1	1	0	1		4.8
16	.5115075	14.93	16.31	15.62	1.38	0.12	− 4.9	1	0	1		5.2
17	.5761367	15.20 15.60	16.20	15.80	1.00 0.60	—	6.0	2	2	4	i	7.7
18	.5163623	14.86 15.22	16.30	15.67	1.44 1.08	0.11 0.16	—	3	2	5	i	5.2
19	.6319796	15.56	16.15	15.85	0.59	0.21	2.3	1	0	1		7.1
20	.4912570	14.85	16.25	15.55	1.41	—	—	2	1	3	i	7.2
21	.5157286	14.92	16.42	15.67	1.50	0.12	16.5	2	0	2		5.8
22	.4814221	14.98	16.20	15.59	1.22	—	—	5	2	7	i	3.2
23	.5953756	15.07	15.80	15.43	0.73	0.18		1	1	2	i?	5.1
24	.6633494	15.06	16.07	15.56	1.01	0.17	0.0	0	0	0		2.5
25	.4800510	14.66	16.07	15.36	1.41	0.10	− 6.3	5	0	5	i?	2.2
26	.5977452	14.88	16.04	15.46	1.16	0.14	− 1.0	0	0	0		3.1
27	.5790912	15.07	16.11	15.59	1.04	0.15	—	2	0	2		2.5
28	.4706364	14.92	15.88	15.40	0.96	0.23	—	2	4	6	i	1.8
31	.5807216	14.43	15.65	15.04	1.22	0.14	1.9	1	0	1		1.3
32	.4953518	14.58	15.68	15.13	1.10	0.11	− 1.4	1	0	1		1.0
33	.5252237	14.78 15.24	15.90	15.45	1.12 0.66	—	2.9	1	0	1	i	1.9
34	.5591012	15.08 15.44	16.16	15.71	1.08 0.72	—		3	3	6	i	3.6
35	.5306059	15.04 15.50	16.10	15.69	1.06 0.60	0.14 0.22		5	1	6	i	4.9
36	.5455855	14.78	16.26	15.52	1.48	0.12	2.2	1	1	2		3.0
37	.3266390	15.41	16.03	15.72	0.62	0.37	0.9	1	0	1		4.8
38	.5580276	14.74 15.34	16.16	15.60	1.42 0.82	—	7.1	2	0	2	i	4.0
39	.5870766	15.14 15.56	16.23	15.79	1.09 0.67	—	—	1	2	3	i	4.6
40	.5515411	15.09	16.32	15.70	1.23	0.13	0.0	0	0	0		4.9
41	.4850462	15.22	16.23	15.72	1.01	—	—	3	1	4	i?	1.8
42	.5901852	14.40	15.68	15.04	1.28	0.16	−36.5	4	0	4	i?	1.5
43	.5404790	14.40 15.04	15.80	15.26	1.40 0.76	—	—	5	3	8	i	1.7
44	.5063961	14.84 15.36	16.04	15.57	1.20 0.68	—		4	2	6	i	3.3
45	.5368966	14.94	16.23	15.58	1.29	0.13	2.0	1	0	1	i?	4.6
46	.6133669	15.32	15.96	15.64	0.64	0.23	5.2	1	0	1		2.3
47	.5409923	14.74 15.40	15.97	15.52	1.23 0.57	—	—	1	3	4	i	2.3
48	.6278128	15.23	15.92	15.57	0.69	0.22	4.5	1	0	1	i?	2.7
49	.5482196	14.71 15.39	16.11	15.58	1.40 0.72	0.12 0.22	− 5.6	1	0	1	i	2.9
50	.5130879	14.57 15.21	16.09	15.49	1.52 0.88	—	—	2	3	5	i	3.9
51	.5839818	15.16	16.18	15.67	1.02	0.15	− 5.8	1	0	1		3.8

Table 3 (continued)

Var	Period	M	m	m_{med}	A	ε	$\beta \cdot 10^{10}$	c_1	c_2	c	B_{eff}	r
52	0ᵈ5162250	14ᵐ92 15.23	16ᵐ06	15ᵐ57	1ᵐ14 0.83	—	—	3	2	5	i	2'9
53	.5048878	14.68	15.93	15.30	1.27	0ᵖ13	— 2.5	1	0	1		2.0
54	.5063150	14.92	15.94	15.43	1.02	0.17	—	5	3	8	i	1.9
55	.5298132	14.95	16.29	15.62	1.34	0.13	+ 3.6	1	0	1		6.4
56	.3295986	15.38	16.02	15.70	0.64	0.34	—	0	2	2		6.5
57	.5122223	14.84	16.23	15.53	1.39	0.15	—14.2	2	0	2		2.6
58	.5170617	14.58	15.91	15.24	1.33	0.12	—	5	1	6	i?	1.6
59	.5888053	15.23	16.20	15.71	0.97	0.16	+ 5.9	1	0	1	i	4.2
60	.7077228	15.24	16.15	15.69	0.91	0.19	+ 2.3	1	0	1		7.2
61	.5209312	14.96 15.42	16.21	15.70	1.25 0.79	—	—	2	3	5	i	6.8
62	.6524077	15.42	16.16	15.79	0.74	0.21	+ 2.9	1	0	1	i	7.2
63	.5704164	14.96 15.36	16.22	15.69	1.26 0.86	0.14 0.18	— 6.5	1	0	1	i	5.7
64	.6054588	15.39	16.24	15.81	0.85	0.21	0.0	0	0	0		5.8
65	.6683397	15.10	16.21	15.65	1.11	0.18	—	1	1	2		5.9
66	.6201827	15.20	15.93	15.56	0.73	0.17	—	2	4	6	i	2.6
67	.5683609	14.95 15.44	16.07	15.64	1.12 0.63	—	—14.2	2	0	2	i	3.0
68	.3559732	15.0 15.7	16.0	15.8	1.0 0.3		—	—	—	—	i	2.9
69	.5665878	15.15	16.05	15.60	0.90	0.18	+12.2	2	0	2		2.7
70	.486:	15.22	15.75	15.48	0.53	—	—	—	—	—		2.6
71	.5490517	15.07	16.04	15.55	0.97	0.15	—	1	1	2		2.7
72	.4560739	14.80	16.30	15.55	1.50	0.13	+ 2.0	1	0	1		7.4
74	.4921441	14.80	16.20	15.50	1.40	0.14	—	1	1	2		2.9
75	.3140790	15.38	15.98	15.68	0.60	0.36	—	1	1	2		2.8
76	.5017544	14.90	16.46	15.68	1.56	0.13	—	1	1	2		1.5
77	.4593425	14.63	16.07	15.35	1.44	0.13	+ 1.7	1	1	2		1.7
78	.6119254	14.92	15.70	15.31	0.78	0.19	—	1	0	1		1.4
79	.4833275	14.72 15.19	16.31	15.63	1.59 1.12	0.11 0.17	—	4:	3:	7	i	5.8
80	.5384827	14.80 15.50	16.17	15.66	1.37 0.67	—	—	5	3	8	i	8.3
81	.5291105	15.00	16.28	15.64	1.28	0.15	—	1	1	2		8.2
82	.5245061	14.96	16.31	15.63	1.35	0.12	+ 8.6	2	0	2		10.1
83	.5012408	14.87	16.32	15.59	1.45	0.12	+ 9.6	2	0	2		7.6
84	.5957289	15.26	16.12	15.69	0.86	0.18	— 1.2	0	0	0		3.0
85	.3558189	15.32	15.92	15.62	0.60	0.38	—	1	4	5		6.4
86	.2926601	15.42	16.06	15.74	0.64	0.41	—	1	2	3		8.8
87	.3574814	15.13	15.68	15.40	0.55	0.34	—	1	1	2	i	2.1
88	.2985092	15.08	15.67	15.37	0.59	0.36	—	2	1	3		1.3
89	.5484779	14.85	15.93	15.39	1.08	0.13	—	0	1	1		1.9
90	.5170334	14.92	16.25	15.58	1.33	0.14	—	0	1	1		3.5
91	.5301630	14.95	16.26	15.60	1.31	0.15	—14.1	2	0	2	i?	9.2
92	.5035553	14.94	16.30	15.62	1.36	0.15	—	1	1	2	i	6.8
93	.6022991	15.24	16.25	15.74	1.01	0.21	—	1	1	2		8.5
94	.5236937	14.94:	16.34	15.64	1.40:	0.13:	0.0	0	0	0		8.9
96	.4994467	14.74	16.10	15.42	1.36	0.14	—12.6	2	0	2		4.7
97	.3349289	15.53	16.04	15.78	0.51	0.39	+ 1.6	1	0	1		4.0
100	.6188126	15.31	15.96	15.63	0.65	0.21	— 1.2	0	0	0		2.0
101	.6438975	15.29	15.78	15.53	0.49	0.22	— 3.3	1	0	1		1.6
104	.5699231	14.73	15.99	15.36	1.26	0.14	— 1.4	0	0	0		2.4
105	.2877427	15.33	15.72	15.52	0.39	0.37	—	1	2	3		3.2
106	.5471593	15.18	16.04	15.61	0.86	0.17	—	1	2	3	i	2.9
107	.3090351	15.40	16.04	15.72	0.64	0.34	—	1	4	5		5.7

Table 3 (continued)

Var	Period	M	m	m_{med}	A	ε	$\beta \cdot 10^{10}$	c_1	c_2	c	B_{eff}	r
108	$0^d.5196049$	$15^m.07$	$16^m.34$	$15^m.70$	$1^m.27$	$0^P.17$	—	1	1	2		6′.3
109	.5339239	14.56	15.64	15.10	1.08	0.15	—	1	1	2		1.5
110	.5353569	15.02	15.88	15.45	0.86	—	—	5	2	7	i	1.7
113	.5130066	14.90	16.25	15.57	1.35	0.11	—	1	1	2		12.0
114	.5977270	15.18	16.24	15.71	1.06	0.16	0.0	0	0	0		10.4
115	.5133529	14.98	16.34	15.66	1.36	0.12	− 0.8	0	0	0		13.4
116	.5148088	14.89	16.32	15.60	1.43	0.13	—	1	1	2		11.3
117	.6005164	15.22	16.22	15.72	1.00	0.20	—	1	1	2	i	7.9
118	.4993807	14.90	16.36	15.63	1.46	0.12	− 1.4	0	0	0		5.5
119	.5177404	14.87	16.23	15.55	1.36	0.16	—	1	2	3		4.6
120	.6401387	15.56	16.07	15.81	0.51	0.27	0.0	0	0	0		6.3
121	.5351882	14.84	15.54	15.19	0.70	—	—	1	1	2	i	1.1
123	.5454472	14.92	16.31	15.61	1.39	0.14	—	2	1	3		17.0
124	.7524328	15.50	15.96	15.73	0.46	0.30	—	1	1	2		3.6
125	.3498206	15.48	16.00	15.74	0.52	0.41	− 2.9	1	0	1		3.8
126	.3484043	15.42	15.96	15.69	0.54	0.36	—	0	2	2		2.4
131	.2976919	15.04	15.56	15.30	0.52	0.40	—	1	1	2		1.3
140	.3331304	15.07	15.51	15.29	0.44	0.36	0.0	—	—	—		1.8
142	.5686256	14.79	15.72	15.25	0.93	0.19	0.0	—	—	—		1.1

In Figure 1 the median magnitude of the variables (m_{med}) and $A - \bar{A}$ have been plotted against the distance from the centre of the cluster, where A is the amplitude of the light curve and $\bar{A}$ is the mean amplitude in the P – A relation for the period in question. For small distances the median magnitudes are systematically too bright, the amplitudes too small, because due to photographic effects the measurements give too high values for the brightness of the stars near the centre of the cluster, and this effect is greater for faint stars than for bright ones. W. Chr. Martin has investigated the same photographic effects in ω Centauri (1938) with similar results.

These photographic effects are especially pronounced for $r < 2'.5$. For variables at distances smaller than $2'.5$ from the centre the characteristics of the light curves may be strongly distorted. Accurate photometry is out of question near the centre. Therefore in the further discussions about the characteristics of the light curves variables with $r < 2'.5$ were left out of consideration.

The epochs used for the construction of the O – C diagrams are listed in tables following the remarks on every individual variable. To make the material as homogeneous as possible it was necessary to determine every epoch anew. The necessity of this procedure is especially evident for stars with variable light curve. But to homogenize the materials obtained by different observers is a difficult problem. The observations have been obtained with different instruments using different kinds of photographic plates and exposure times. Long exposure time may distort the light curve considerably. Colour equations (Kukarkin and Kukarkina, 1961 a) cannot be applied in most cases because the colour indices of several variables, especially of those having variable light curves, are unknown. For stars exhibiting regular light curve the median magnitude on the ascending branch can be simply used for determination of the epochs. Mean epochs have been obtained from a year's material plotted against phase. When the rising branch was actually observed, the mean error of one epoch is about $0^d.001 - 0^d.003$, depending on the amplitude and the steepness

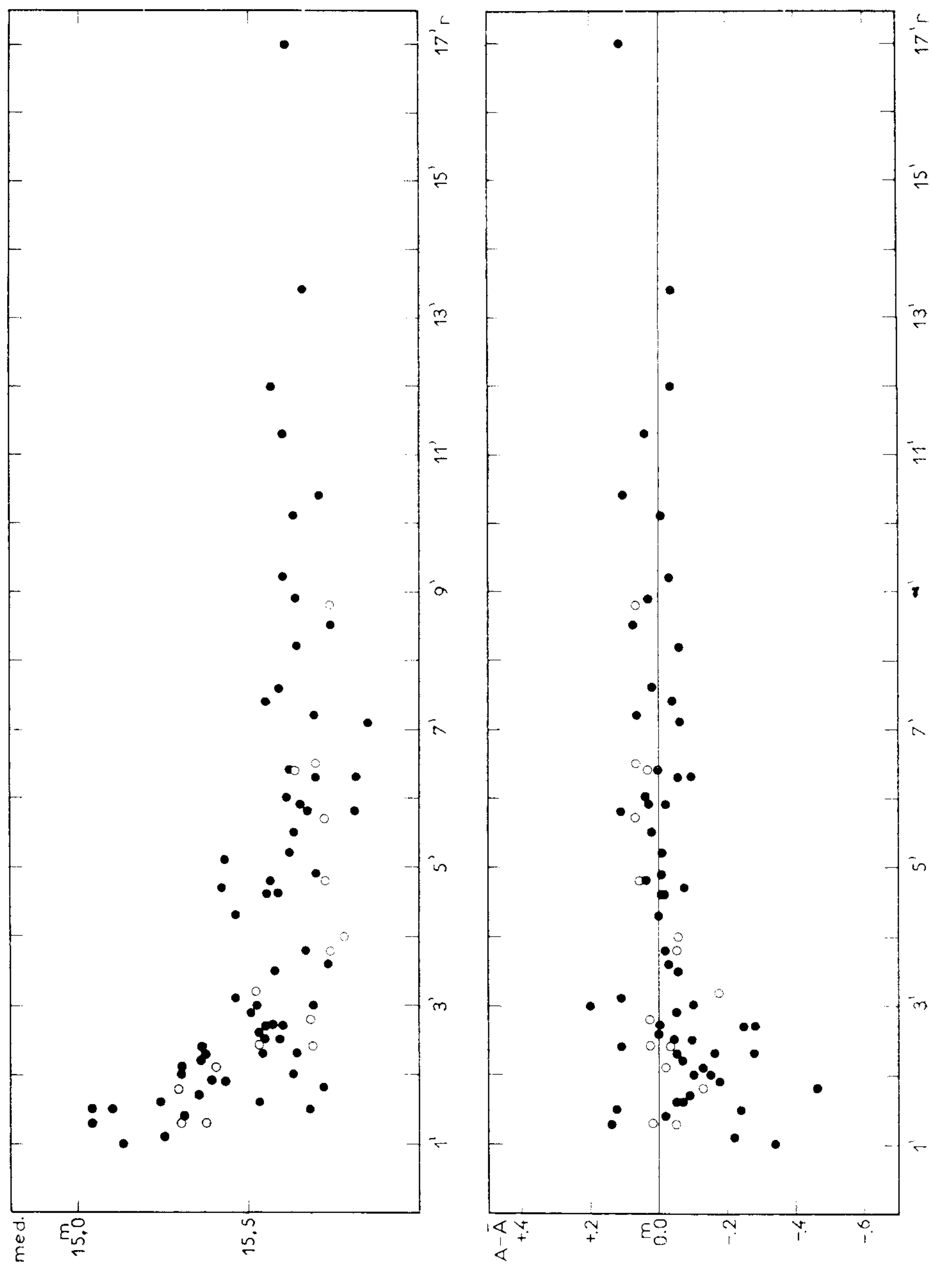


Figure 1.

of the rising branch. When the rising branch has not been observed, the descending branches have been fitted to a mean light curve based on all of the observations available for the star. The error of epochs determined in this way may amount to $\pm 0\overset{d}{.}01$.

For stars with variable light curve the determination of "the middle of the rising branch" is very problematic. E.g. $\frac{1}{2}(M_{max} + m_{min})$ may be sometimes fainter than M_{min}. Considering the Budapest material, the arithmetic mean of the average maximum and minimum was taken as median magnitude for stars exhibiting light curve changes:

$$m_{med} = 1/4\,(M_{max} + M_{min} + m_{max} + m_{min}).$$

This definition proved to be satisfactory with the exception of Var. 68, where the median magnitude defined in this way is fainter than M_{min}. Therefore the epochs for this star belong to the magnitude $m_{Bp} = 15.8$ on the rising branch.

We should like to make it perfectly clear that the M_{max} and M_{min} values in Table 3 are the highest and lowest maxima observed in Budapest and they may differ from the real extreme values of the maxima, as in most cases the cycle of the light curve changes is not fully covered. Besides M_{max} and M_{min} may change from year to year as in the case of field stars showing the Blashko-effect. The variations in the brightness of the minima are rather small, therefore we have used for every star an average value of the minimum. In order to get consistent epochs we had to determine equivalent points on the rising branches obtained by different observers. For this purpose the following procedure has been used. The half amplitudes of the variables having stable light curves and situated at $r > 2'.5$ have been compared with the Budapest data. The diagrams 2a—i obtained in this way enable us to transform the Budapest magnitude intervals into the corresponding data obtained by other observers. In principle the curves should pass the origo, but in the range of $0^m.2$ – $0^m.8$ the following linear approximations seem to be satisfactory:

a) Bailey 1895–1900, $n = 57$

$$\Delta m_B = \underset{\pm .065}{1.220}\,\Delta m_{Bp} \underset{\pm .036}{+0.320}$$

b) Hett 1912, 1915 $n = 21$

$$\Delta m_H = \underset{\pm .049}{0.837}\,\Delta m_{Bp} \underset{\pm .025}{+0.108}$$

c) Larink 1921 $n = 54$

$$\Delta m_L = \underset{\pm .040}{0.952}\,\Delta m_{Bp} \underset{\pm 0.022}{+0.101}$$

d) Müller 1925 $n = 54$

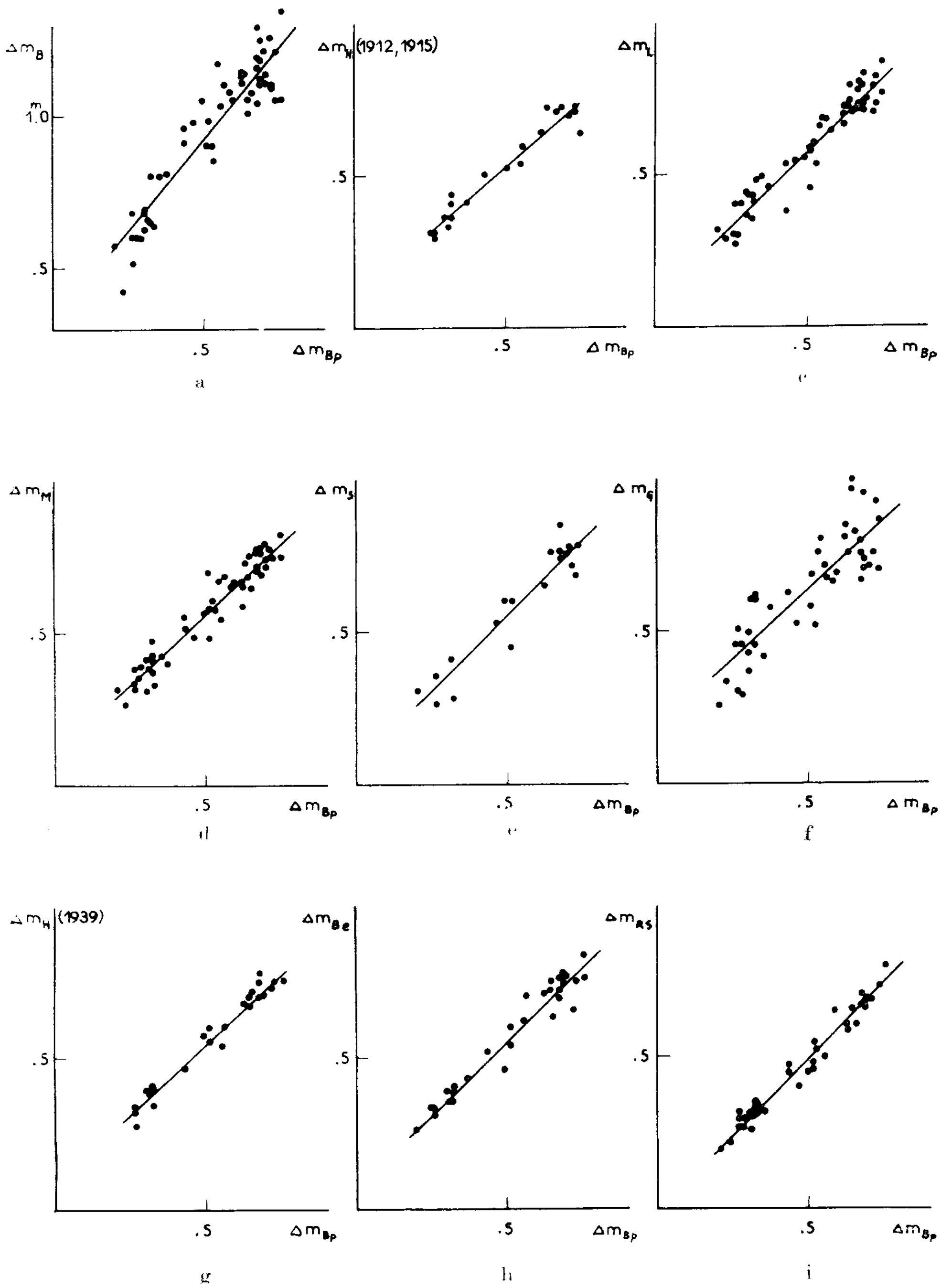
$$\Delta m_M = \underset{\pm .037}{0.921}\,\Delta m_{Bp} \underset{\pm .020}{+0.104}$$

e) Slavenas 1926 $n = 19$

$$\Delta m_S = \underset{\pm .084}{0.997}\,\Delta m_{Bp} \underset{\pm .047}{+0.061}$$

f) Greenstein 1926 $n = 45$

$$\Delta m_G = \underset{\pm .088}{0.919}\,\Delta m_{Bp} \underset{\pm .046}{+0.181}$$



Δm_B
1.0
.5
.5
Δm_Bp
a
Δm_H (1912, 1915)
.5
.5
Δm_Bp
Δm_L
.5
.5
Δm_Bp
c
Δm_M
.5
.5
Δm_Bp
d
Δm_S
.5
.5
Δm_Bp
e
Δm_G
.5
.5
Δm_Bp
f
Δm_H (1939)
.5
.5
Δm_Bp
g
Δm_Be
.5
.5
Δm_Bp
h
Δm_RS
.5
.5
Δm_Bp
i

Figure 2.

g) Hett 1939 n = 28

$\Delta m_H = 0.919 \; \Delta m_{Bp} + 0.094$

$\pm .034 \qquad \pm .018$

h) Belserene 1946, 1948 n = 30

$\Delta m_{Be} = 0.967 \; \Delta m_{Bp} + 0.076$

$\pm .043 \qquad \pm .024$

i) Roberts, Sandage 1953 n = 39

$\Delta m_{RS} = 0.994 \; \Delta m_{Bp} + 0.000$

$\pm .029 \qquad \pm .015$

As the minimum does not change significantly in course of the light curve changes, its average value is well determined. Therefore, the median magnitude for an observer *x* can be defined through the relation:

$$(\text{med})_x = (\text{min})_x - m_x$$

where $m_x = (\text{min} - \text{med})_x$ can be determined from the relation $\Delta m_x = f(\Delta m_{Bp})$. The errors of $(\text{med})_x$ amount to about $0^m03 - 0^m06$ or 0^d01.

It is not possible to construct O−C diagrams using individual maxima or minima, because the number of well observed epochs would be insufficient.

O – C DIAGRAMS AND PERIOD CHANGES

The periods in Helen B. Sawyer's catalogue (1955) have been corrected. The greatest correction, amounting to $-0^{d}000178 \approx +15^{s}$, was applied to var. 54. For 17 variables (var. 18, 22, 28, 41, 42, 43, 44, 47, 52, 54, 58, 66, 79, 80, 88, 110, 119) corrections exceeding $0^{d}00001 \approx 1^{s}$ were necessary. The periods given in Table 3 refer generally to J. D. 2425000, and are average values taken over more than 60 years. The O – C diagrams were constructed by using these periods, and if possible, they were approximated by a straight line or a quadratic parabola. Considering only the variables observed since Bailey's discoveries the O – C diagrams are represented by a straight line for 7 variables, by a positive parabola for 22, by a negative parabola for 25 variables. There is no systematic trend in period lenghtening or shortening.

In Figure 3 the frequency distribution of the values of $10^{10}\,\beta$ is shown, for the RRab variables. Apart from some deviations the distribution is Gaussian for M3 and M5. For M3 the mean values and their errors are compiled in the following table:

	n	$10^{10}\,\bar{\beta}$	$10^{10}\,\delta\beta$
RRc stars	4	+0.90	±0.71
RRab stars	53	−0.74	1.12
all	57	−0.63	1.05

The distributions of the β and $\delta\beta$ values according to the period are shown in Fig. 4 and given below

P	0.32		0.35		0.44		0.47		0.50		0.53		0.56		0.59		0.62		0.65		0.68		0.71
n		4				2		5		13		8		10		7		5		2		1	
$10^{10}\beta$		+0.90				−1.85		−3.14		+0.45		2.97		−0.67		−4.99		−0.02		+1.45		+2.3	
$10^{10}\delta\beta$		±0.85						±3.41		±2.31		±2.17		±2.63		±5.32		+1.37					

The irregularities in the O – C diagrams can not be generally identified with changes of the true period; they represent only statistical fluctuations around

$$\bar{P} = \int_{0}^{\infty} P\, f(P, E)\, dP,$$

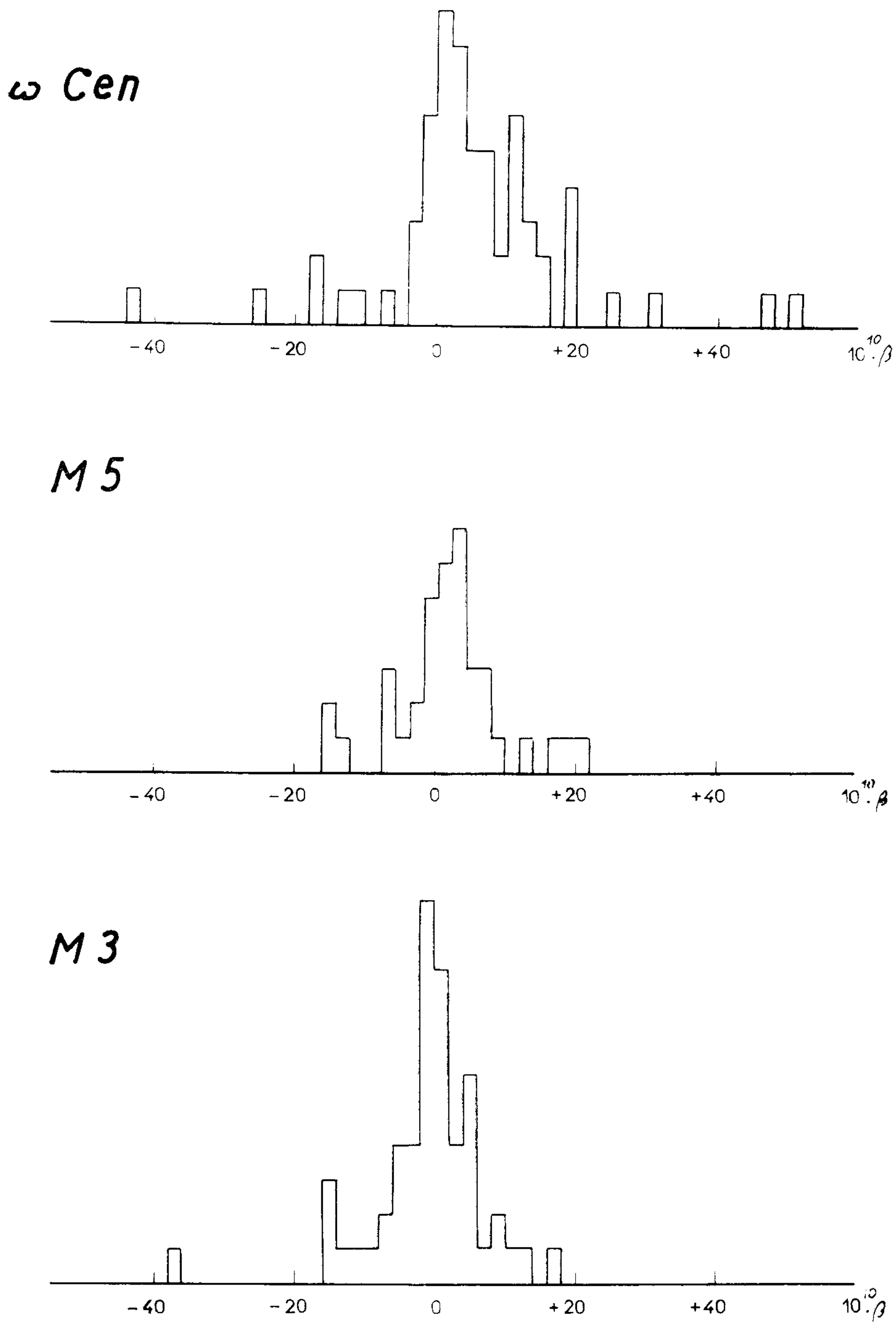

ω Cen
-40
-20
0
+20
+40
$10^{10}\cdot\beta$
M 5
-40
-20
0
+20
+40
$10^{10}\cdot\beta$
M 3
-40
-20
0
+20
+40
$10^{10}\cdot\beta$

Figure 3.

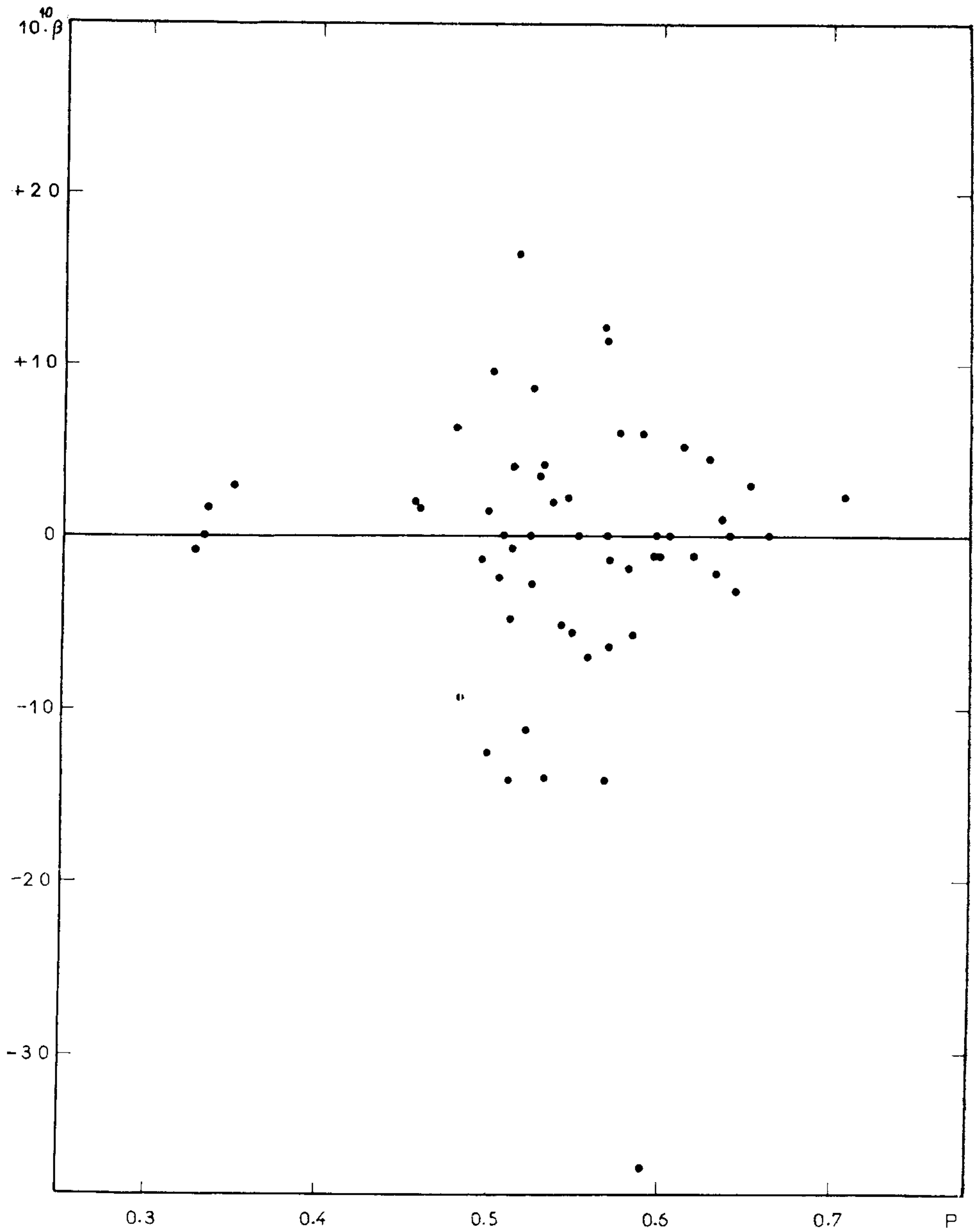


Figure 4.

the expectable value of the period. Strictly taken, the change of the period is given by the dependence of the density function f (P, E) on E (Sterne, 1934).

In M3 the O—C diagrams could be approximated by quadratic forms only for 57 variables, whereas for the majority of the variables more complicated O—C diagrams have been obtained. Especially difficult was the construc-

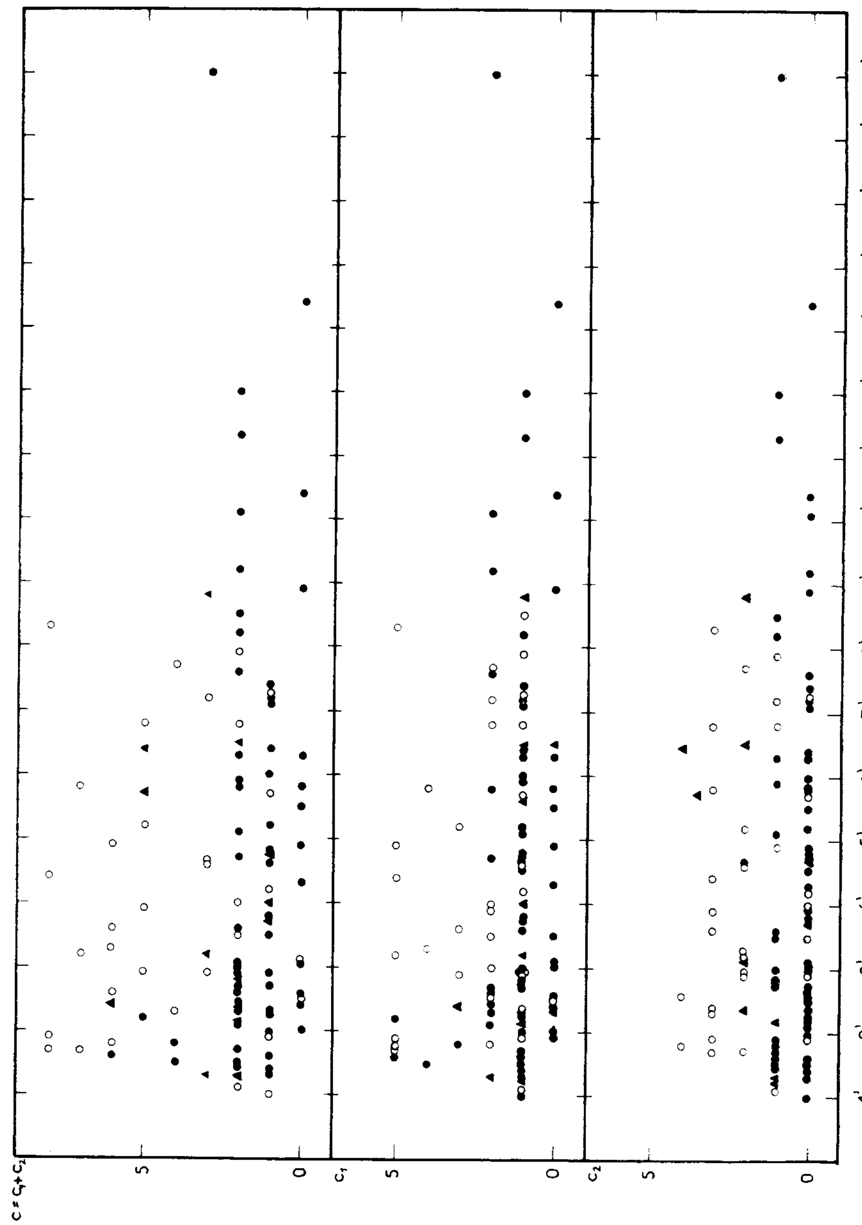


Figure 5.

tion of O—C diagrams for stars with changing light curves, because the secondary periods causing phase shifts amounting sometimes to $0^{d}.1$, were not known. Therefore these phase shifts could not be eliminated and they appeared as scatter in the O—C diagrams. We have for variables in M3 the same rule as for field RR Lyrae stars (Julia Balázs, L. Detre): RR Lyrae stars with secondary periods have very complicated O—C diagrams.

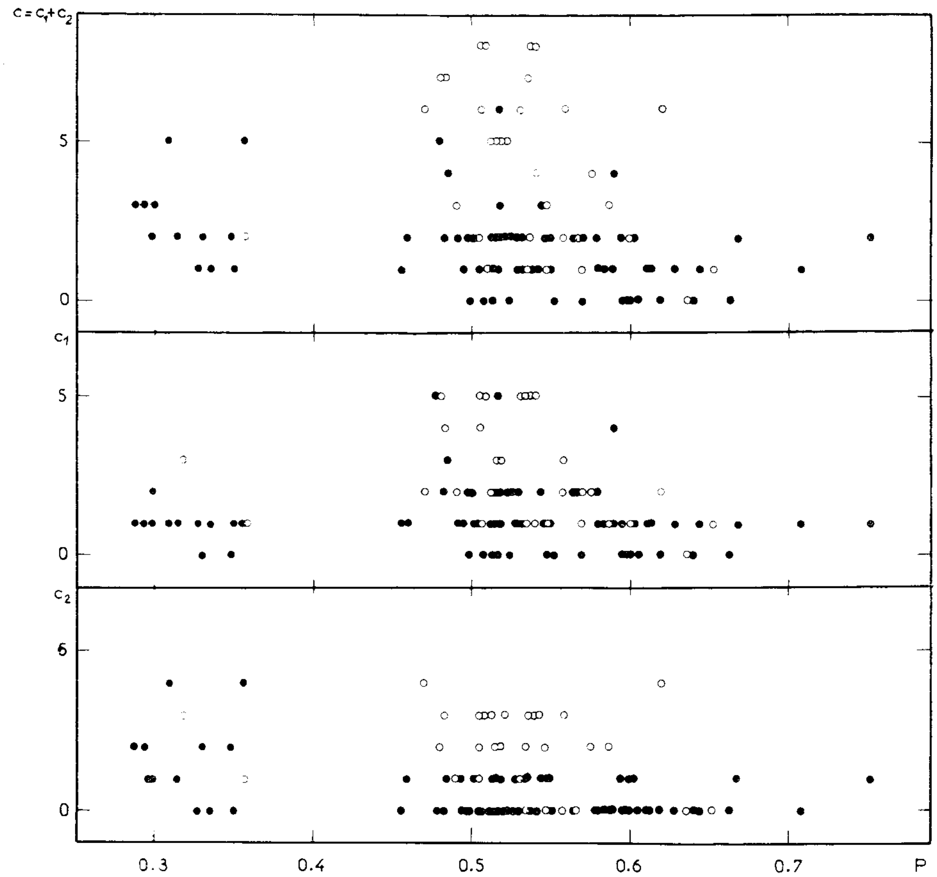


Figure 6.

The author has attempted to characterize these intricate O—C diagrams through three indices (c_1, c_2, c; Table 3). c_1 describes the extent of the O—C diagram, i.e. the amplitude of the fluctuations of the O—C values. Its dependence on the period was eliminated by using the average period over 60 years.

$c_1 = 0$	if the fluctuations of O—C are smaller than		$0^{d}02$
$c_1 = 1$	.. .. between	$0^{d}02$ and	$0^{d}10$
$c_1 = 2$	.. ..	$0^{d}01$ ..	$0^{d}25$
$c_1 = 3$	.. ..	$0^{d}25$ ..	$0^{d}40$
$c_1 = 4$	.. ..	$0^{d}40$ ..	$0^{d}55$
$c_1 = 5$	.. .. greater than		$0^{d}55$

c_2 gives the number of cycles in the O—C diagram having amplitudes greater than $0^{d}01$.

$c_2 = 0$	if the number of inflexion points is	0
$c_2 = 1$	.. ..	1
$c_2 = 2$	.. ..	2
$c_2 = 3$	.. ..	3
$c_2 = 4$	.. ..	4 or more.

As a very compact index, characterizing the complexity of the O—C diagrams, the sum

$$c = c_1 + c_2$$

can be used. In Figure 5 the indices c_1, c_2 and c are plotted against the distance from the centre. RRc stars are denoted by triangles, RRab stars having variable light curves by circles. It is obvious that RRab stars with variable light curves have generally O—C diagrams of great complexity. In the vicinity of the centre several stars occur qualified as regular (var. 25, 42, 48) nevertheless having complicated O—C diagrams. No doubt these stars are effected by the Blashko-effect, but the considerable errors of measurement make the effect indistinct near the centre. After all we can state as a rule in accordance with results obtained by Detre for field RR Lyrae stars: RRab stars having complex O—C diagrams exhibit always Blashko-effect of considerable amplitude.

Figure 6 represents the relations c_1, c_2, c versus period. Open circles are again used for stars having variable light curves. For RRc and irregular RRab stars the index c_2 is generally large, i.e. they exhibit cyclic oscillations in their O—C diagrams.

THE CHARACTERISTICS OF THE LIGHT CURVES

The caracteristics of the light curves are summarized in Table 3.

The relation with period of the amplitudes for 50 variables with a distance from the centre greater than 2'.5 is shown in the middle of Fig. 7. Sandage and Roberts' (1955) two variables of very small amplitude are also plotted in the diagram.

The break between c- and ab-type variables is evident and the figure illustrates for ab-variables the well-known decrease in amplitude with increasing period. But the points for RRab stars appear to be distributed in two sequences, as was already pointed out for cluster variables by Belserene (1954), and for field RR Lyrae stars by Detre (1955). The one on the shortperiod side (RRab I stars) is considerably steeper than the long-period sequence (RRab II stars). Also other characteristics of the light curves (ε, $\overline{B-V}$, median magnitude, m_{max} etc.) indicate a separation of RRab stars into two distinct sequences. RRab II stars behave like RRab I stars of the same amplitude having periods shorter by $0^d.1$. The separation is especially well marked in the relations m_{max} versus P (Fig. 8) and $\overline{B-V}$ versus P (Fig. 9). Constructing Fig. 9 the mean colour indices $\overline{(B-V)}$ obtained by Sandage (1959) have been used.

In M3 the variables 14, 24, 26, 60, 65 and 124 belong definitely to the RRab II sequence. Table 4 summarizes the dependence of the median magnitude on period for stars with $r > 2'.5$.

Table 4

Type		n	$\bar{P}$	$m_{med.}$
RRab I	$0^d.45 < P \leq 0^d.50$	5	$0^d.485$	$15^m.538$
	$0.50 < P \leq 0.55$	24	0.524	15.597
	$0.55 < P \leq 0.60$	9	0.581	15.633
	$0.60 < P$	8	0.623	15.731
RRab II		4	0.681	15.632
RRab all		50	0.559	15.622
RRc		9	0.322	15.691
RR all		59	0.523	15.633

Figure 10 illustrates the relation of $\varepsilon = M - m$ to the period for variables having stable light curves. RRc stars are indicated by open circles, RRab II stars by triangles. Plotting ε against the amplitude (A), instead of P (Fig. 11), the separation of RRab stars into two sequences is not apparent and the scatter

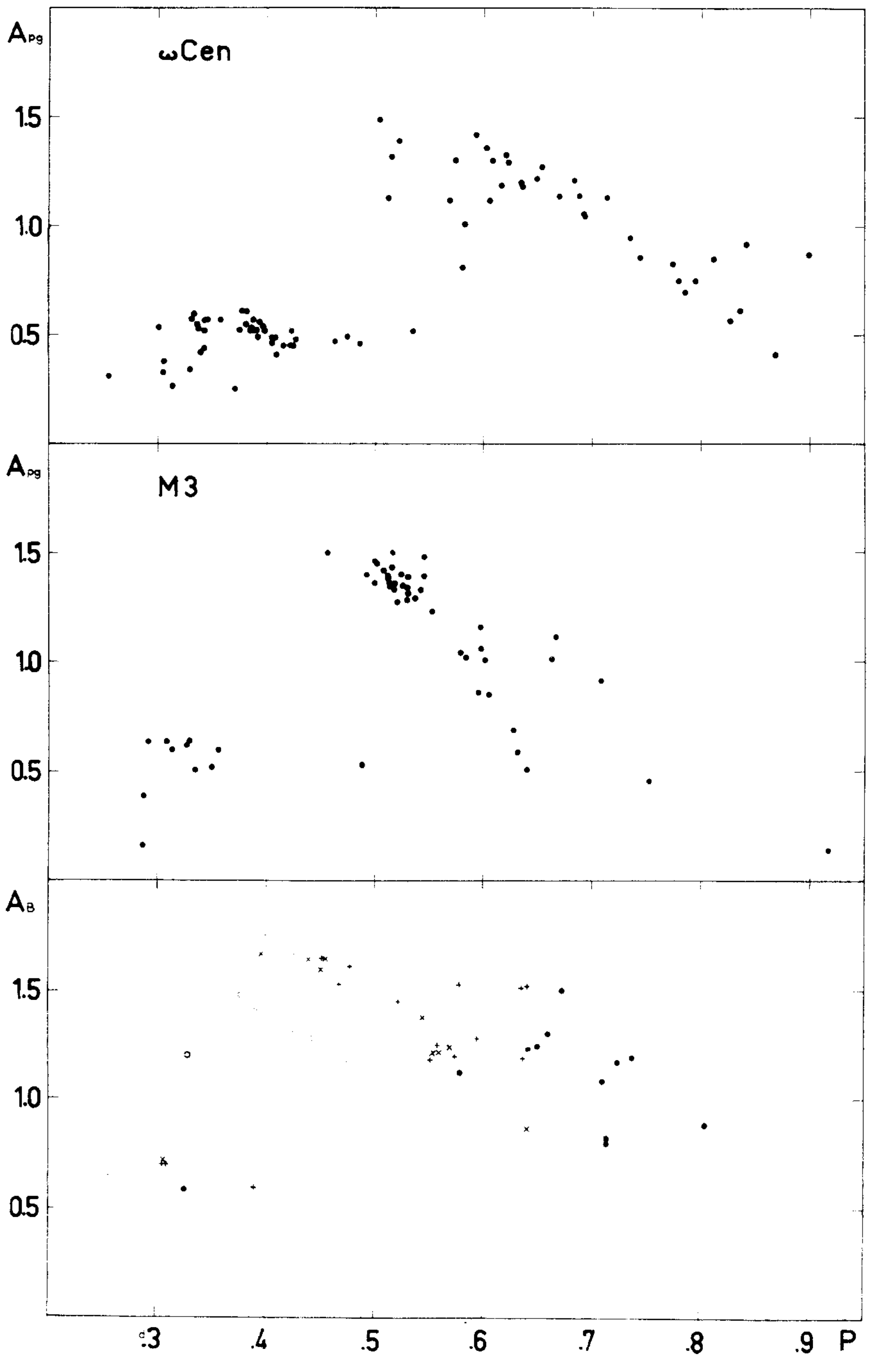


Figure 7.

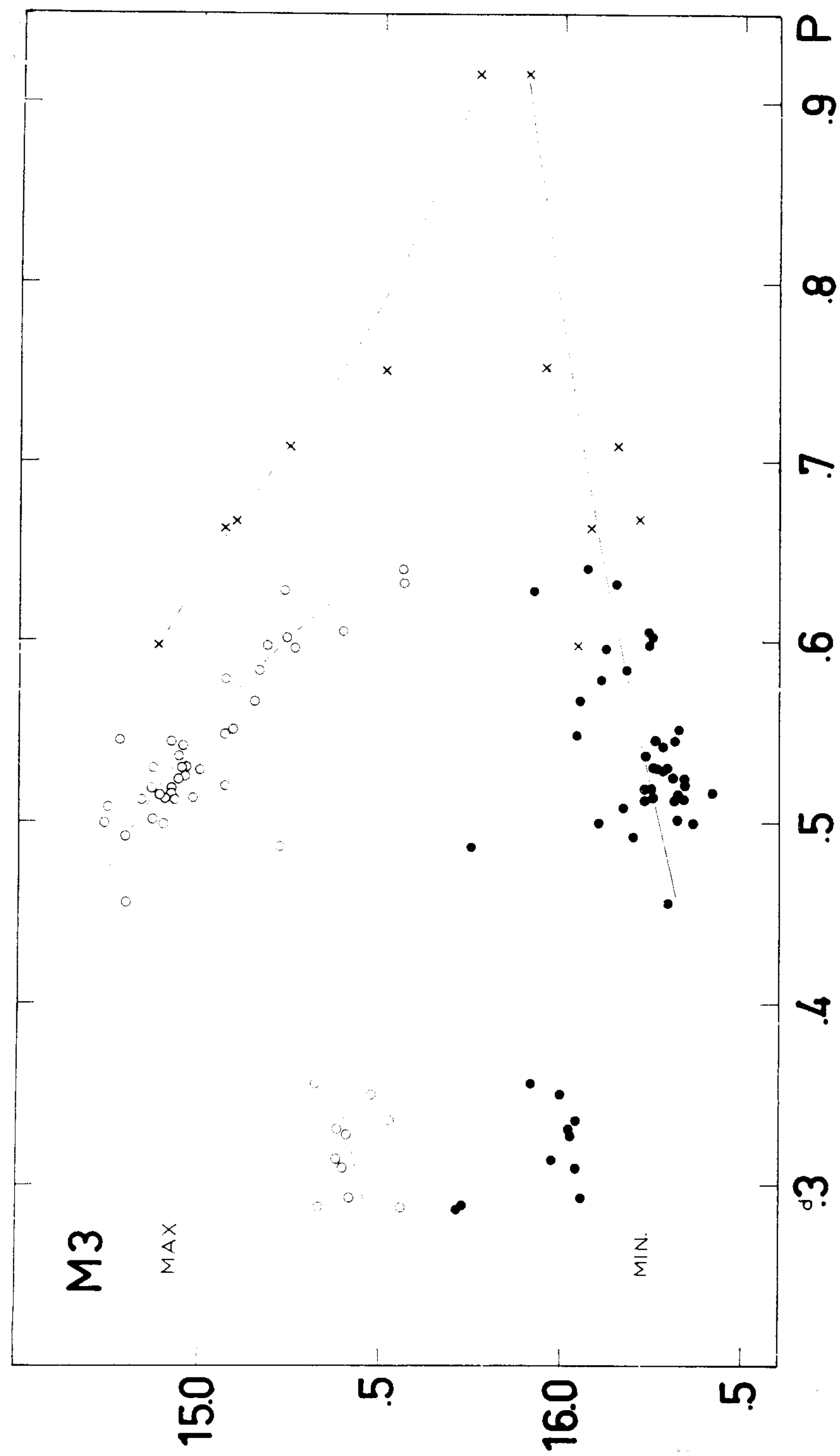


Figure 8.

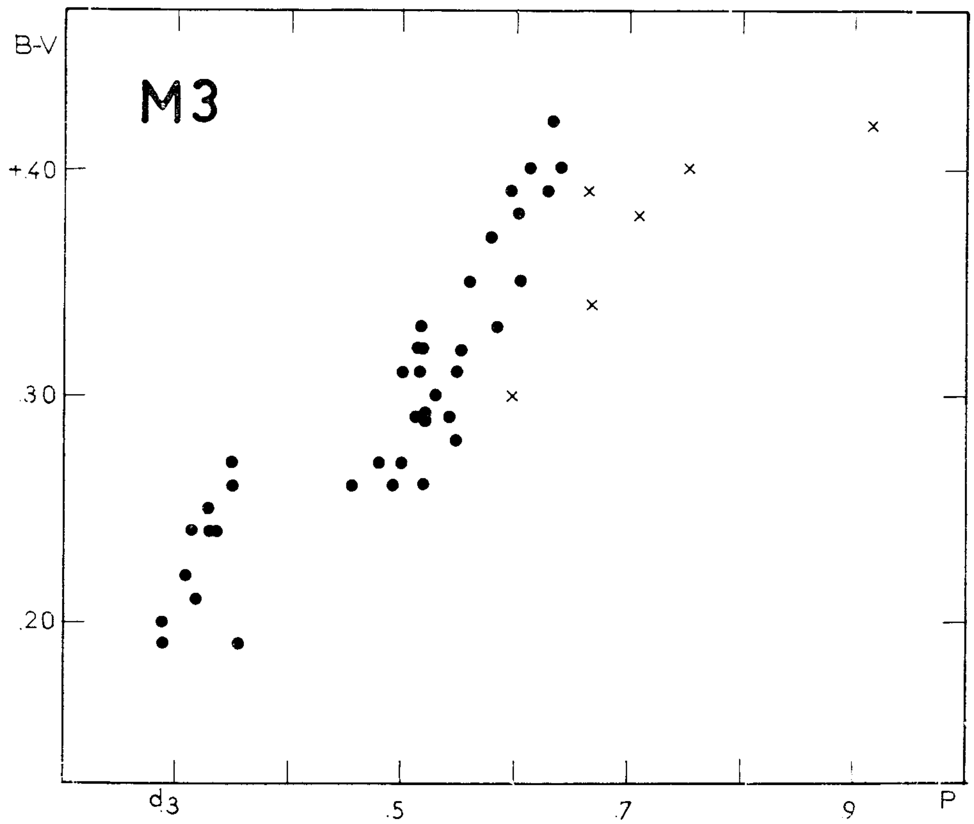


Figure 9.

becomes smaller than in Fig. 10. I. e. there exists a closer correlation between ε and A, than between ε and P. In Table 3 the observed brightest and faintest maxima are given for variables exhibiting light curve changes.

Presumably these observed data do not differ substantially from the true extreme maxima. With the observed extreme maxima Fig. 12 was constructed showing the period-amplitude relation for stars with variable light curves. The amplitudes for stars exhibiting only minute light curve changes are denoted by triangles, the greatest amplitudes by +, the smallest ones by ×. Apart from the uncertain var. 68, Fig 12 shows, that for stars having variable light curves the greatest amplitudes fit the P–A relation valid for RR Lyrae stars with stable light curves. This was already noted by Preston (1964) for field variables. In this connection it is worthy to mention that according to results obtained by Balázs and Detre for RW Dra and RR Lyrae the greatest amplitude does not show variations with time, while the smallest amplitude may vary considerably. For some variables (var. 35, 44, 52) the observed greatest amplitude is considerably below expectation, probably because only smaller amplitudes have been observed at Budapest.

It is interesting to consider the variations of ε in course of a cycle of light curve changes. In Fig. 11 the extreme values are connected by a straight line.

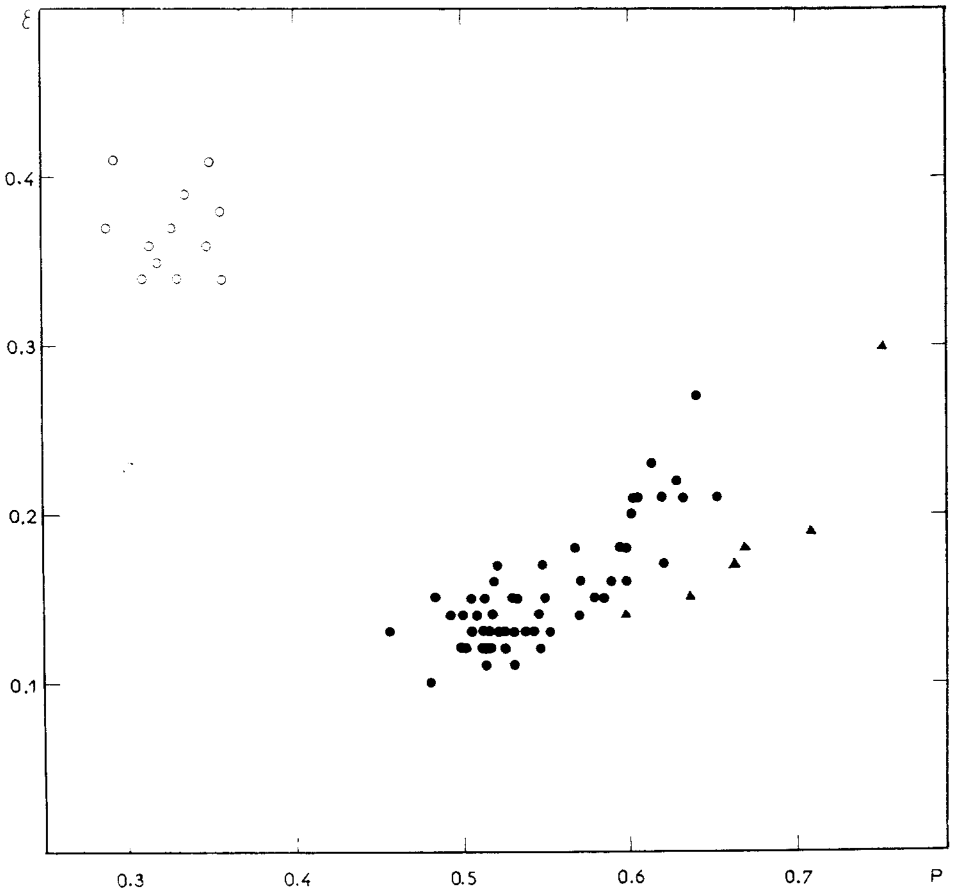


Figure 10.

Table 5

$P \pm 0^{\rm d}.015$	n (all)	n_B (with Blasko-effect)	n_B/n
$0^{\rm d}.29$	4	0	0.00
0.32	7	1	0.14
0.35	5	2	0.40
0.47	8	3	0.37
0.50	21	6	0.29
0.53	26	10	0.38
0.56	13	7	0.54
0.59	14	4	0.29
0.62	7	2	0.29
0.65	4	1	0.25
0.68	1	0	0.00
0.71	1	0	0.00
0.74	1	0	0.00
	112	36	

The ε-values change inside the region occupied by regular variables. This phenomenon strengthens the result obtained above that ε has a closer dependence on A than on P.

Among the 112 variables in M3 investigated in detail 36 (32%) show all the characteristics of the Blashko-effect as enumerated by Detre (1962). In Table 5 and in Fig. 13 the period-frequency is given for these stars. They have in M3 the highest frequency at P = $0^{d}47$ and $0^{d}56$, in good agreement with field RR Lyrae stars.

The period frequency distribution remains the same if we include also the 9 variables for which the presence of the Blashko-effect is not quite certain. No such statistics can be made for RRc stars.

The frequency of variables with Blashko-effect does not depend on the distance from the centre.

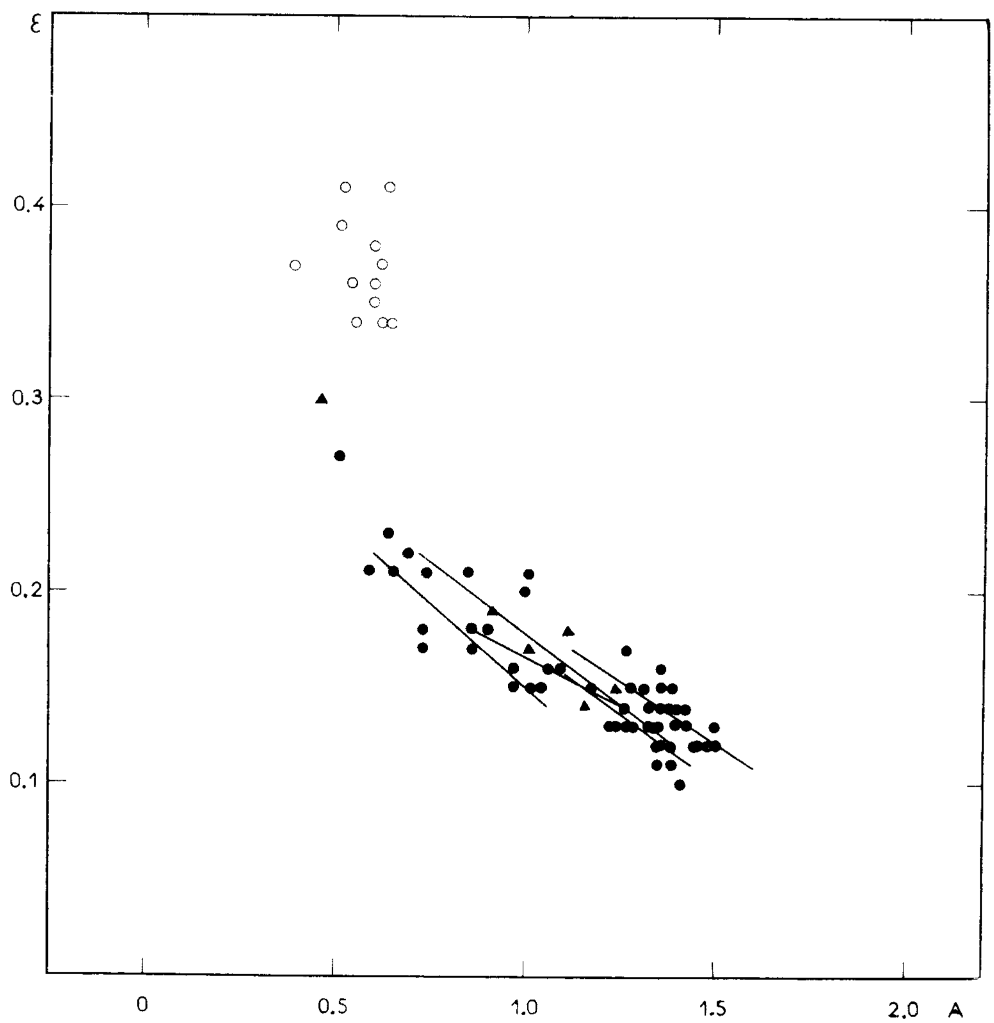


Figure 11.

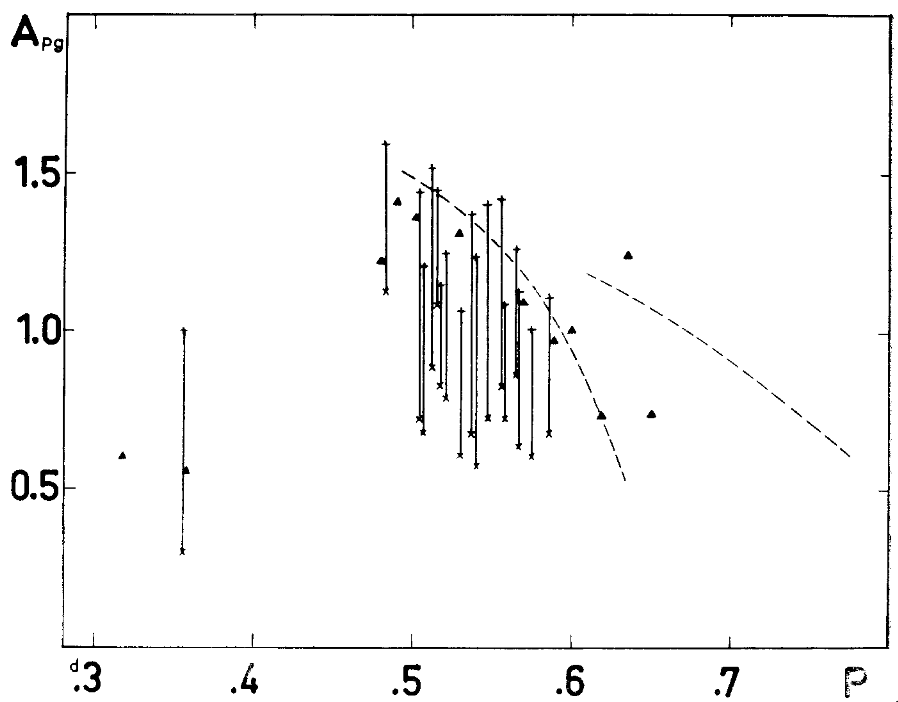


Figure 12.

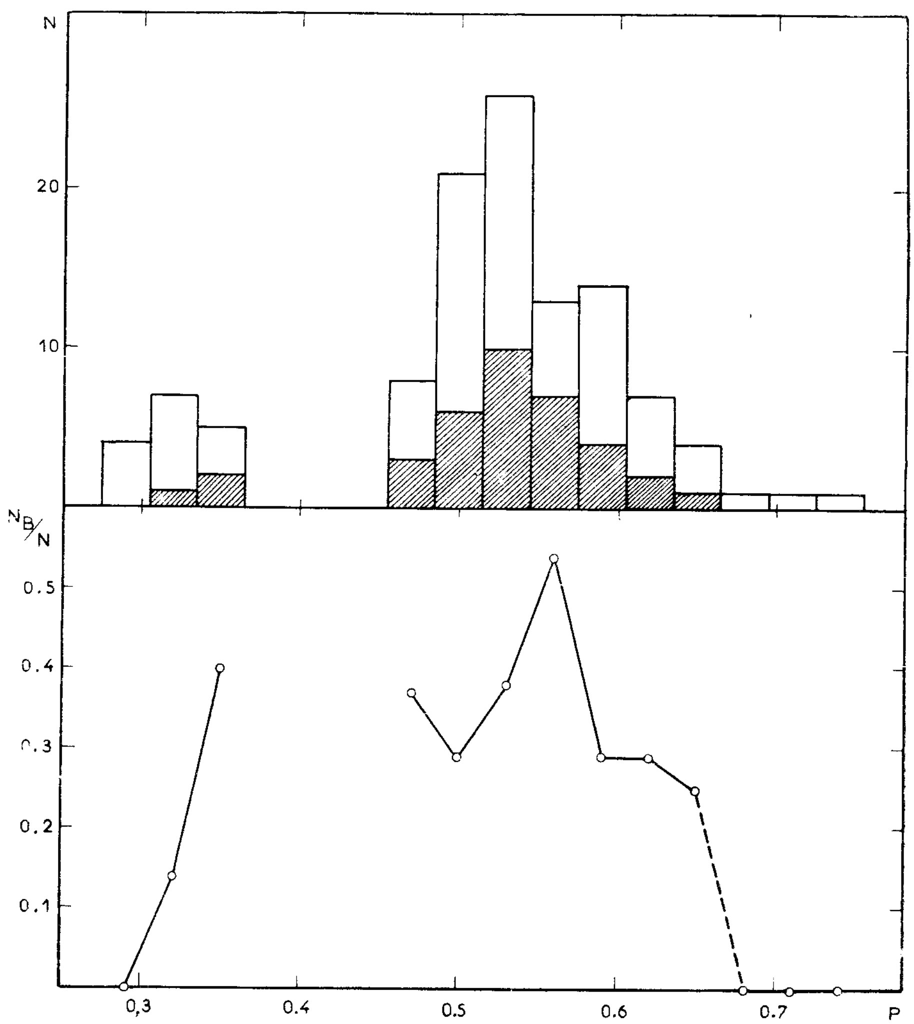


Figure 13.

COMPARISON WITH OTHER GLOBULAR CLUSTERS

Figure 7 shows the period-amplitude relation for ω Cen (Martin 1938) and M3. It contains only variables having stable light curves and situated at a distance 4′ or more from the centre in ω Cen and at 2′5 or more in M3, respectively.

The separation of RRab stars in two sequences, mentioned above for M3, can be well seen also for ω Cen (Belserene, 1954). The same phenomenon appears also for M5 (Oosterhoff, 1941) considering only regular stars having distances from the centre $r > 2'5$. The frequency distribution of the variables in both sequences is given in Table 6 (I: short period sequence; II: long period sequence).

Table 6.

Cluster	RRc	RRab I	RRab II	RR
M3	10 (20%)	35 (70%)	5 (10%)	50
M5	9 (29%)	16 (32%)	6 (19%)	31
ω Cen	43 (54%)	7 (9%)	30 (37%)	80

The relative population of the sequences differs markedly from cluster to cluster and seems to be correlated with the percentage of RRc stars. This statement is supported by NGC 320 (the data are taken from Sawyer's catalogue, 1955). In this cluster there is only one RRc star, while all the RRab stars with $r > 2'5$ belong to the short period sequence. The globular clusters can be apparently divided into two groups according to the population of the RRab sequences I and II. Between the two groups there is however no continuous transition (van Agt and Oosterhoff, 1959).

The short-period sequence I of the RRab stars in ω Cen as well as in M3, is perceptibly steeper than the long-period sequence II. In this way Detre's notes (1955) on the period-amplitude diagrams of globular clusters may be explained: the frequency of RRc stars increases with that of RRab stars, at the same time the average period of RRab stars becomes longer and the steepness of the combined I and II sequences decreases in the P—A diagram.

Another difference between the two sequences is in the average rate of change of the period (Belserene, 1954), i.e. in the average value of the coefficient β. The values of $10^{10}\ \beta$ for the clusters ω Cen, M5 and M3 are given in Table 7 (with their probable errors), further the number of variables used in the tabulation (in parentheses) and the number of stars with positive and negative

β-s, marked by + and − respectively. Table 7 contains for ω Cen the variables at distance 4′ or more from the centre, for M3 and M5 those situated at 2′.5 or more from the centre.

Table 7

Cluster	$10^{10} \cdot \beta$ for RRab I stars	$10^{10} \cdot \bar{\beta}$ for RRab II stars: $P < 0^d.7$	$10^{10} \cdot \bar{\beta}$ for RRab II stars: $P \geqq 0^d.7$	all
Cen	-3.86 ± 4.37 (7) 3 + and 4 −	$+1.34 \pm 3.60$ (15) 10 + and 5 −	$+10.94 \pm 3.04$ (11) 9 + and 1 −	$+5.40 \pm 2.58$ (26) 19 + and 6 −
M5	$+1.47 \pm 1.45$ (15) 9 + and 5 −	$+1.94 \pm 1.04$ (5) 4 + and 1 −	+19.8 (1) 1 + and 0 −	$+4.92 \pm 3.10$ (6) 5 + and 1 −
M3	$+0.21 \pm 1.42$ (26) 11 + and 9 −	0.00 ± 0.57 (3) 1 + and 1 −	+2.3 (1) 1 + and 0 −	$+0.58 \pm 0.70$ (4) 2 + and 1 −
The three clusters	$+0.01 \pm 1.10$ (48) 23 + and 18 −	$+1.30 \pm 2.48$ (23) 15 + and 7 −	$+10.96 \pm 2.75$ (13) 11 + and 1 −	$+4.78 \pm 1.98$ (36) 26 + and 8 −

Among the 13 RRab II stars with $P \geq 0^d.7$ only one (var. 85 in ω Cen) has a negative β, with a small absolute value of $0.6 \cdot 10^{-10}$. On the long-period RRab sequence of M3 we have one star, var. 26, with a negative β. It has a period of 0.598, therefore, it cannot be clearly separated from sequence I, only its colour index B−V indicates its belonging to sequence II.

After all we can make the following statement: There is a pronounced period lengthening on the long period RRab branch, actually β increases with increasing period. On the short period branch positive and negative β values have the same frequency and we get $\beta = 0.0 \times 10^{-10}$. In this way it is understandable, that where sequence II is predominant (ω Cen), period lengthenings are prevailing, while positive and negative β values have the same frequency ($\beta \sim 0$) in clusters with predominant RRab I sequences (M3).

It is very probable, that the separation of the RRab stars into two sequences depends on chemical composition. That is suggested by Figure 7, where in addition to the P−A relation for ω Cen and M3 the same relation is shown for 50 field RR Lyrae stars. In this diagram open circles represent stars with $\Delta S = 0-2$ (normal metal content), solid circles stars with $\Delta S = 9-11$ (extremely low metal content). ΔS being Preston's index (Preston, 1959). The photoelectric B magnitudes were mainly taken from Kinman's paper (1961) and from unpublished Budapest observations. Apparently, stars with extremely low metal content occupy the long-period sequence II, whereas sequence I is the locus of stars with medium metal content. That is supported by the fact that the metal rich globular cluster NGC 6171 has a well populated sequence I (Kukarkin, 1961). It is worthy to note, that while M3 and ω Cen represent two extreme types of globular clusters with respect to the statistical properties of their RR Lyrae variables, both (even M5) belong to Morgan's class II containing clusters with weak metal lines. On the other hand NGC 6171 is of type VII−VIII, a cluster with strong metal lines (Sandage, Katem, 1964). We are led to the conclusion that RR Lyrae stars do not represent a chemically homogeneous group even within one and the same cluster. It is probable, that the two RRab sequences represent in the HRD the continuations of the two different branches of red stars on the horizontal branch (Arp, 1955). Perhaps the two branches represent stars evolving in opposite directions along the horizontal section of the HRD (Woolf, 1964).

REMARKS ABOUT INDIVIDUAL VARIABLES

Var 1 The O−C diagram can be well approximated by a negative parabolic curve. The star lies near the centre, therefore the brightness values are systematically higher. The O−C residuals have been computed with the ephemeris:

$$C = 242\,5000.260 + 0^{d}\!.5206250\ E.$$

Observer	Year	$t_{(med)hel.}$	E	O−C
B	1895	J. D. 2413 384.442:	−22311	−^{d}154:
	1896	13 691.627:	−21721	−.137:
	1900	15 160.870:	−18899	−.098:
L	1921	22 761.567	− 4300	−.005
M	1925	24 298.457	− 1348	−.000
G	1926	24 647.795	− 677	−.002
Ma	1940	29 770.197	+ 9162	−.029
Bp	1940	29 775.399	+ 9172	−.034:
	1941	30 078.401:	+ 9754	−.035:
	1950	33 390.572	+16116	−.081
	1952	34 121.516	+17520	−.094
	1953	34 487.510	+18223	−.099
RS	1953	34 507.815	+18262	−.099
Bp	1956	35 598.503	+20356	−.121
	1962	37 791.332:	+24569	−.164:

Var 5 Strongly changing light curve. There is an oscillation of about $0^{m}\!.7$ in the height of maxima. The depth of minima shows a variation of about $0^{m}\!.3$ amplitude as well. The periodic oscillations in the O−C residuals may exceed 2^{h}. In Larink and Martin's material no strong variations of the light curve are apparent. The O−C diagram drawn in the figure seems to be the most probable although it can not be determined unambiguously. The O−C residuals have been computed with the formula:

$$C = 2425000.326 + 0^{d}\!.5058940\ E.$$

Observer	Year	$t_{med\,hel.}$	E	O−C
B	1900	J. D. 2415 161.836	−19448	+^{d}137
H	1912	19 534.841	−10804	+.194
	1915	20 625.818:	− 8647	−.043:

Observer	Year	t (med) hel.	E	O—C
H	1915	J. D. 2420 654.771	− 8590	+^{d}.074
L	1921	22 760.458	− 4427	—.275
M	1925	24 309.500	− 1365	—.281
Sch	1938	28 966.781:	+ 7840	+.246:
Bp	1938	28 991.527	+ 7889	+.203
H	1939	29 430.736	+ 8757	+.296
Ma	1940	29 780.250	+ 9448	+.237
		29 781.260	+ 9450	+.236
Bp	1941	30 052.468	+ 9986	+.285
Be	1946	31 968.754	+13774	+.244
	1948	32 700.767:	+15221	+.228:
K	1952	34 131.313	+18049	+.107
RS	1953	34 483.905	+18746	+.090
Bp	1953	34 487.449	+18753	+.093
	1955	35 223.493	+20208	+.061
		35 224.473	+20210	+.029
K	1956	35 578.484	+20910	—.086
		35 614.496	+20981	+.008
Bp	1957	35 920.524	+21586	—.030
K	1959	36 668.553	+23065	—.218
		36 692.423	+23112	—.125
	1960	37 047.474	+23814	—.212

Var 6 The variable is of RRab type. The O—C diagram can be represented by a positive parabolic curve. It was computed with the ephemeris:

$$C = 2425000.271 + 0^d\!.5143228\ E.$$

Observer	Year	t (med) hel.	E	O—C
B	18[illegible]	J. D. 2413 390.519	—22573	+^{d}.057
	1897	14 077.628:	−21237	+.030:
	1900	15 160.802	—19131	+.040
L	1921	22 760.407	— 4355	+.012
M	1925	24 289.479	— 1382	+.002
S	1926	24 621.730	— 736	+.001
Bp	1938	28 991.415	+ 7760	—.001
Ma	1940	29 770.106	+ 9274	+.005
Bp	1941	30 052.470:	+ 9823	+.006:
	1950	33 390.431:	+16313	+.012:
	1952	34 126.445	+17744	+.030
RS	1953	34 447.894:	+18369	+.027:
Bp	1953	34 488.532	+18448	+.034
	1955	35 223.505	+19877	+.040
	1956	35 600.511:	+20610	+.047:
	1960	37 018.513	+23367	+.061
	1962	37 791.545	+24870	+.066

Var 9 The cyclic oscillations superposed on the negative parabolic O—C curve may have some reality. The Budapest material is rather poor. The O—C residuals have been constructed using the formula:

$$C = 2425000.521 + 0^d\!.5415641\ E.$$

Observer	Year	t_{max} hel.	E	O–C
B	1895	J. D. 2413 372.533:	−21471	$-0^d\!.065$:
	1896	13 691.528:	−20882	−.051:
	1897	14 140.508:	−20053	−.028:
	1900	15 160.804	−18169	−.039
H	1915	20 625.762	− 8078	−.004
L	1921	22 760.631	− 4136	+.019
M	1925	24 290.538	− 1311	+.008
S	1926	24 620.883	− 701	−.002
G	1926	24 683.707	− 585	+.001
H	1939	29 400.722	+ 8125	−.007
Ma	1940	29 770.070	+ 8807	−.006
Bp	1940	29 774.398:	+ 8815	−.011:
Be	1946	31 993.721	+12913	−.017
	1948	32 684.759	+14189	−.015
Bp	1950	33 422.349:	+15551	−.035:
	1951	33 763.542:	+16181	−.028:
	1952	34 121.507	+16842	−.037
RS	1953	34 483.809	+17511	−.041
Bp	1955	35 223.580	+18877	−.047
	1956	35 600.505	+19573	−.050
	1957	35 920.568	+20164	−.052
	1960	37 018.313:	+22191	−.057:
	1962	37 791.112:	+23618	−.070:

Var 10 There is an oscillation in the height of the light maxima amounting to $0^m\!.2$ – $0^m\!.3$, connected with variations in the slope of the rising branch. A positive parabola fits the O – C values well. The large scatter is probably an effect of the light curve changes. The residuals have been computed with the formula:

$$C = 2425000.247 + 0^d\!.5695185\ E.$$

Observer	Year	t_{max} hel.	E	O–C
B	1895	J. D. 2413 372.528:	−20417	$+0^d\!.140$:
	1896	13 721.626:	−19804	+.123:
	1900	15 160.770	−17277	+.094
H	1912	19 479.939	− 9693	+.035
	1915	20 625.791	− 7681	+.016
L	1921	22 761.474	− 3931	+.004
M	1925	24 309.430	− 1213	+.009
G	1926	24 647.716	− 619	+.001
Bp	1938	28 991.449	+ 7008	+.016
H	1939	29 431.689	+ 7781	+.019
Ma	1940	29 770.559	+ 8376	+.025
Bp	1941	30 052.486	+ 8871	+.040
Be	1946	31 995.695	+12283	+.052
	1948	32 684.819:	+13493	+.059:
Bp	1951	33 763.500	+15387	+.072
	1952	34 118.323	+16010	+.085
	1953	34 487.374	+16658	+.088
RS	1953	34 507.864:	+16694	+.075:
Bp	1955	35 224.348:	+17952	+.105:

Observer	Year	t(med)hel.	E	O—C
Bp	1956	J. D. 2435 598.532	+18609	+^{d}.115
	1957	35 933.413	+19197	+.119
	1960	37 018.370:	+21102	+.144:
	1962	37 791.227:	+22459	+.164:

Var 11 In the interval covered by observations the period may be considered as constant. An extremely small decrease of the period is probable. The O—C values have been obtained with the formula:

$$C = 2425000.167 + 0^d\!.5078918 \ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1898	J. D. 2414 438.558:	—20795	+^{d}.001:
	1900	15 161.792	—19371	—.003
H	1912	19 479.891:	—10869	.000:
	1915	20 625.696	— 8613	+.001
L	1921	22 733.447:	— 4463	+.001:
M	1925	24 309.436	— 1360	+.002
S	1926	24 620.773	— 747	+.001
G	1926	24 683.753	— 623	+.003
H	1939	29 408.668	+ 8680	.000
Ma	1940	29 770.287:	+ 9392	.000:
Bp	1940	29 775.363:	+ 9402	—.003:
Be	1948	32 684.568:	+15130	—.002:
Bp	1950	33 420.506	+16579	+.001
	1951	33 763.334:	+17254	+.002:
	1952	34 122.410	+17961	—.002
RS	1953	34 507.899:	+18720	+.002:
Bp	1955	35 224.535	+20131	.002
	1956	35 600.377	+20871	.000
	1957	35 933.551	+21527	+.003
	1960	37 018.413	+23663	+.002
	1962	37 791.423	+25185	+.001

Var 12 The star is of RRc type. The variation of the light curve can be clearly seen from differences in the shape and height of the maximum. The maxima are generally double (e.g. on J. D. 242 2761 and 243 5603). Missing strongly Martin and Belserene's material, the O—C diagram is rather uncertain. The residuals have been computed with the formula:

$$C = 2425000.063 + 0^d\!.3178890 \ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1985	J. D. 2413 372.508	—36577	—^{d}.129
	1896	13 691.636	—35573	—.162
	1897	14 077.479	—34359	—.236

Observer	Year	t(med)hel.	E	O−C
B	1898	J. D. 24 14 456.402:	−33167	$-^{d}.237$:
	1900	15 161.801	−30948	−.233
L	1921	22 761.576	− 7042	+.087
M	1925	24 288.401	− 2239	+.091
S	1926	24 642.838	− 1124	+.082
G	1926	24 647.933	− 1108	+.092
Bp	1938	28 991.384:	+12556	−.093:
Ma	1940	29 770.262	+15006	−.043
Bp	1940	29 774.377:	+15019	−.061:
	1941	30 078.330:	+15975	−.010:
	1950	33 420.511	+26488	+.204
	1951	33 763.521	+27567	+.212
	1952	34 120.527	+28690	+.229
	1953	34 487.370	+29844	+.228
RS	1953	34 507.700	+29908	+.213
Bp	1955	35 223.506	+32160	+.133
	1956	35 603.393	+33355	+.142
	1957	35 920.575:	+34353	+.071:
	1960	37 018.512:	+37807	+.020:
	1962	37 791.477	+40239	−.121

Var 13 It is an object very difficult to measure, lying in a very dense region near the centre. The star probably has a varying light curve. The cyclic oscillations superposed on the negative parabolic O−C curve may be real. The residuals have been computed with the formula:

$$C = 2425000.187 + 0^{d}.4830490\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1895	J. D. 2413 383.665:	−24048	$-^{d}.160$:
	1898	14 456.588:	−21827	−.088:
	1899	14 841.583:	−21030	−.083:
	1900	15 161.856	−20367	−.072
L	1921	22 756.426:	− 4645	+.002:
M	1925	24 309.423	− 1430	.004
G	1926	24 683.781	− 655	−.009
Bp	1940	29 719.565	+ 9770	−.010
Ma	1940	29 770.292	+ 9875	−.004
Bp	1941	30 078.464	+10513	−.017
	1952	34 121.536	+18883	−.065
RS	1953	34 483.815:	+19633	−.073:
Bp	1953	34 487.200:	+19640	−.069:
	1955	35 224.315:	+21166	−.087:
	1956	35 603.473	+21951	−.122
	1957	35 933.393:	+22634	−.125:
	1960	37 018.295:	+24880	−.151:

Var 14 The Budapest material does not show the great variations of the light curve suggested by Roberts and Sandage's measurements. The characteristics of the light curve are similar to those of RRab stars having periods

shorter by 0ᵈ.1 (The star belongs to the long period sequence). The O − C diagram has been constructed using the formula:

$$C = 2425000.315 + 0^d6359019\ E.$$

Observer	Year	t_{med} hel.	E	O − C
B	1896	J. D. 2413 694.631:	−17779	+.016:
	1897	14 073.622:	−17183	+.009:
	1899	14 840.513:	−15977	+.003:
L	1921	22 760.661	− 3522	−.008
M	1925	24 285.559	− 1124	−.002
Bp	1938	28 991.259:	+ 6276	+.024:
Ma	1940	29 770.224	+ 7501	+.009
Bp	1940	29 775.314:	+ 7509	+.012:
	1950	33 390.410:	+13194	+.005:
	1952	34 118.517	+14339	+.005
	1953	34 487.348	+14919	+.013
RS	1953	34 507.694:	+14951	+.010:
Bp	1955	35 227.540	+16083	+.015
	1956	35 603.357:	+16674	+.014:
	1957	35 933.391	+17193	+.015
	1962	37 791.485	+20115	+.003

Var 15 The period increases but the residuals O − C can not be satisfactorily approximated by a parabola. The O − C values were computed with the formula:

$$C = 2425000.510 + 0^d5300794\ E.$$

Observer	Year	t_{med} hel.	E	O − C
B	1895	J. D. 2413 377.510:	−21927	+.051:
	1899	14 840.512:	−19167	+.034:
	1900	15 161.744	−18561	+.038
L	1921	22 729.654	− 4284	+.004
M	1925	24 287.552	− 1345	−.001
S	1926	24 642.701	− 675	−.005
Bp	1938	28 991.492:	+ 7529	+.014:
Ma	1940	29 770.180	+ 8998	+.016
Bp	1940	29 774.417:	+ 9006	+.012:
	1950	33 422.444	+15888	+.032
	1952	34 120.561	+17205	+.035
	1953	34 487.377	+17897	+.036
	1956	35 598.432:	+19993	+.045:
	1957	35 933.444	+20625	+.046
	1960	37 018.517	+22672	+.047
	1962	37 791.382	+24130	+.056

Var 16 The star is a variable of type RRab. In the O − C diagram an abrupt change occurs at J. D. 242 9000. From J. D. 242 0000 to J. D. 242 9000 and from J. D. 242 9000 to J. D. 243 8000 the period can be considered as constant. The residuals have been computed utilizing the data:

$$C = 2425000.488 + 0^d\!.5115075\ E.$$

Observer	Year	t(med)hel.	E	O – C
B	1896	J. D. 2413 691.491:	−22109	−0ᵈ.078:
	1897	14 067.457:	−21374	−.070:
H	1912	19 479.783:	−10793	−.005:
	1915	20 654.719	− 8496	−.001
L	1921	22 761.621	− 4377	−.001
M	1925	24 290.518	− 1388	−.002
S	1926	24 620.946	− 742	−.003
Bp	1938	28 991.268:	+ 7802	−.002:
H	1939	29 431.673	+ 8663	−.004
Ma	1940	29 770.288	+ 9325	−.007
Bp	1940	29 775.400	+ 9335	−.011
Be	1946	31 968.727	+13623	−.028
	1948	32 700.689	+15054	−.033
Bp	1950	33 422.424	+16465	−.035
RS	1953	34 482.768	+18538	−.046
Bp	1953	34 487.375	+18547	−.043
	1955	35 223.428	+19986	−.049
	1956	35 600.407	+20723	−.051
	1957	35 933.392	+21374	−.057
	1962	37 791.178:	+25006	−.067:

Var 17 The height of maximum-light oscillates between $15^m\!.2$–$15^m\!.6$ This is connected with a strong variation of the whole light curve. (Variations of the same amplitude have been found by all other observers.) The residuals O – C belonging to the maxima do not show considerable oscillations, while Belserene found for the median point of the rising branch differences amounting to 1^h. The oscillations of the minima are even much greater. The large scatter in the O – C diagram is due to the Blashko-effect. The parabola drawn in the figure represents a rough approximation only. The residuals have been obtained with the formula:

$$C = 2425000.441 + 0^d\!.5761367\ E.$$

Observer	Year	t(med)hel.	E	O – C
B	1867	J. D. 2413 721.498	−19577	+0ᵈ.085
	1897	14 077.531:	−18959	+.066:
	1899	14 841.461:	−17633	+.038:
	1900	15 161.801	−17077	+.046
H	1912	19 479.901	− 9582	+.002
	1915	20 654.651	− 7543	+.009
L	1921	22 761.599	− 3886	+.025
M	1925	24 289.491	− 1234	+.003
G	1926	24 647.846	− 612	+.001
		24 684.735	− 548	+.017
Sch	1938	28 964.850:	+ 6881	+.012:
Bp	1938	28 991.366:	+ 6927	+.026:
Ma	1940	29 770.302	+ 8279	+.025
Bp	1941	30 078.507	+ 8814	−.003
Be	1946	31 971.747	+12100	+.052
		31 994.743	+12140	+.002
	1948	32 683.812:	+13336	+.012:
Bp	1950	33 422.417	+14618	+.010
	1951	33 763.516	+15210	+.036

Observer	Year	t(med)hel.	E	O−C
Bp	1952	J. D. 2434 118.388	+15826	+^{d}.008
		34 122.436:	+15833	+.023:
	1955	35 223.459	+17744	+.048
	1956	35 598.531	+18395	+.055
	1957	35 920.606:	+18954	+.070:
	1960	37 058.540:	+20929	+.134:
	1962	37 791.361	+22201	+.109

Var 18 The variation of the light curve is well pronounced. The residuals O−C for the minima are constant while the median point of the rising branch shows cyclic oscillations amounting to $0^{h}.5$. The height of the maxima varies with an amplitude of about $0^{m}.35$. The period is strongly variable. The section of the O−C diagram preceding Larink's observations is uncertain. The (O−C)-s were computed by the formula:

$$C = 2425000.066 + 0^{d}.5163623\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1896	J. D. 2413 692.597:	−21899	+^{d}.349:
	1899	14 841.431:	−19674	+.277:
L	1921	22 756.490	− 4345	+.018
M	1925	24 288.524	− 1378	−.005
G	1926	24 647.907	− 682	.000
Sch	1938	28 966.752:	+ 7682	−.009
Bp	1938	28 991.532	+ 7730	−.015
H	1939	29 408.747	+ 8538	−.020
Ma	1940	29 770.186	+ 9238	−.035
Bp	1940	29 775.346:	+ 9248	−.039:
	1941	30 078.432	+ 9835	−.057
Be	1946	31 968.742	+13496	−.150
	1948	32 683.871	+14881	−.182
Bp	1952	34 121.375	+17665	−.231
RS	1953	34 447.723	+18297	−.224
Bp	1953	34 487.486	+18347	−.222
	1956	35 603.409	+20535	−.157
	1957	35 920.480	+21149	−.132
	1960	37 018.406:	+23275	+.007:
	1962	37 791.499	+24772	+.106

Var 19 The cyclic variation superposed on the negative parabola can be considered as real. The (O−C)-s were computed using the formula:

$$C = 2425000.319 + 0^{d}.6319796\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1895	J. D. 2413 372.520:	−18399	−^{d}.006:
	1896	13 693.552:	−17891	−.020:
	1900	15 161.628:	−15568	−.033:

Observer	Year	t(med)hel.	E	O−C
L	1921	J. D. 2422 760.585	− 3544	+^{d}.002
M	1925	24 287.438	− 1128	−.008
G	1926	24 647.663:	− 558	−.011:
Bp	1938	28 991.276:	+ 6315	+.006:
	1940	29 720.562:	+ 7469	−.013:
Ma	1940	29 770.512	+ 7548	+.011
Bp	1941	30 052.361:	+ 7994	−.003:
	1950	33 421.442	+13325	−.005
	1951	33 763.342:	+13866	−.006:
	1952	34 118.493	+14428	−.028
RS	1953	34 507.782	+15044	−.038
Bp	1955	35 224.459	+16178	−.026
	1956	35 600.511	+16773	−.002
	1957	35 933.561	+17300	−.005
	1960	37 018.628:	+19017	−.047:
	1962	37 791.554	+20240	−.032

Var 20 The variations of the light curve are conspicuous. The variations in the slope of the rising branch can be well seen on serial exposures taken by Martin on consecutive nights. This is supported by observations obtained at Budapest. Great variations in the height of maxima are very probable. According to Belserene the residuals O−C oscillate with an amplitude of about 1^h. The residuals have been calculated with the formula:

$$C = 2425000.248 + 0\overset{d}{.}4912570\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1897	J. D. 2414 078.534	−22232	−^{d}.108
	1899	14 841.448:	−20679	−.096:
	1900	15 161.781	−20027	−.063
H	1912	19 479.934	−11237	−.059
L	1921	22 761.559	− 4557	−.031
M	1925	24 289.396	− 1447	−.003
		24 311.491	− 1402	−.015
G	1926	24 684.836	− 642	−.025
Ma	1940	29 770.374	+ 9710	+.021
Bp	1941	30 078.409:	+10337	+.037:
Be	1946	31 968.763	+14185	+.034
		31 995.747	+14240	−.001
	1948	32 700.715:	+15675	+.014:
Bp	1950	33 421.372:	+17142	−.003:
	1952	34 121.424	+18567	+.007
RS	1953	34 482.991	+19303	+.009
Bp	1953	34 487.414	+19312	+.011
	1956	35 603.480	+21584	−.059
	1957	35 933.603:	+22256	−.061:
	1960	37 058.621:	+24546	−.021:
	1962	37 791.550	+26038	−.048

Var 21 The O−C diagram deviates from a parabola, the rate of period increase is diminishing. The O−C curve was computed with the formula:

$$C = 2425000.268 + 0^{d}.5157286\ E.$$

Observer	Year	t(med)hel.	E	O − C
B	1897	J. D. 2414 067.561:	−21199	+^{d}.224:
H	1912	19 479.960	−10704	+.051
	1915	20 654.781	− 8426	+.042
L	1921	22 761.504	− 4341	+.014
M	1925	24 286.500	− 1384	.000
Sch	1938	28 966.769:	+ 7691	+.032:
Bp	1938	28 991.522	+ 7739	+.030
H	1939	29 408.754	+ 8548	+.038
Ma	1940	29 770.288	+ 9249	+.046
Bp	1940	29 775.444	+ 9259	+.045
Be	1946	31 965.782	+13506	+.084
	1948	32 683.694	+14898	+.101
Bp	1950	33 422.236:	+16330	+.120:
	1952	34 120.549	+17684	+.136
	1953	34 487.244:	+18395	+.148:
RS	1953	34 507.871	+18435	+.146
Bp	1956	35 603.311	+20559	+.179
	1957	35 920.488	+21174	+.183
	1960	37 018.516	+23303	+.224
	1962	37 757.578:	+24736	+.247:

Var 22 The light curve varies with certainty, differences of $0^{m}1$ – $0^{m}2$ can be revealed in the heights of maxima. The residuals O – C were computed with the formula:

$$C = 2425000.344 + 0^{d}.4814221\ E.$$

Observer	Year	t(med)hel	E	O − C
B	1895	J. D. 2413 377.494:	−24142	−^{d}.358:
	1897	14 077.520:	−22688	−.319:
	1899	14 841.562:	−21101	−.294:
	1900	15 161.746	−20436	−.256
H	1912	19 479.726:	−11468	+.331:
	1915	20 656.835:	− 9023	+.363:
L	1921	22 761.563	− 4651	+.313
M	1925	24 313.496	− 1427	+.141
G	1926	24 683.630:	− 658	+.062:
H	1939	29 400.715	+ 9141	−.308
Ma	1940	29 770.440	+ 9909	−.316
Bp	1940	29 774.291:	+ 9917	−.316:
	1941	30 078.542:	+10549	−.324:
Be	1946	31 974.835:	+14488	−.352:
	1948	32 700.815:	+15996	−.357:
Bp	1950	33 422.466	+17495	−.358
	1951	33 763.289:	+18203	−.381:
	1952	34 121.494	+18947	−.355
RS	1953	34 447.876	+19625	−.377
Bp	1953	34 487.363	+19707	−.366
	1955	35 223.473	+21236	−.351
	1956	35 600.409	+22019	−.368
	1957	35 933.545	+22711	−.376
	1962	37 791.328	+26570	−.401

Var 23 I found variatons of the light curve with an oscillation of about $0^m1 - 0^m2$ in maximum(maxima on J.D. 243 4487 and J.D. 243 5224). The O – C diagram may be represented by a positive parabola as well. The high brightness values obtained for the variable suggest a close companion, but it can not be seen on Budapest plates. The (O – C)-s were computed using the formula:

$$C = 2425000.134 + 0^d5953756 \;\; E.$$

Observer	Year	t(med)hel.	E	O – C
B	1897	J. D. 2414 140.492	–18240	$+^d009$
H	1915	20 656.849:	– 7295	–.020:
L	1921	22 761.526	– 3760	+.004
M	1925	24 312.469	– 1155	–.006
S	1926	24 620.882	– 637	+.002
G	1926	24 647.675:	– 592	+.003:
Bp	1938	28 991.544	+ 6704	+.012
	1939	29 346.375	+ 7300	–.001
H	1939	29 407.707	+ 7403	+.007
Ma	1940	29 770.317	+ 8012	+.034
Bp	1941	30 052.511	+ 8486	+.020
Be	1948	32 684.665	+12907	+.018
Bp	1950	33 422.348:	+14146	+.031:
	1951	33 763.498	+14719	+.031
	1952	34 118.345	+15315	+.034
	1953	34 487.462	+15935	+.018
	1955	35 224.548	+17173	+.029
	1956	35 600.239:	+17804	+.038:
	1957	35 920.541:	+18342	+.028:
	1960	37 018.417:	+20186	+.031:
	1962	37 791.222:	+21484	+.039:

Var 24 No hump can be seen on the rising branch. The variable has similar behaviour like RRab stars having shorter periods by about 0^d1 (on the long period sequence). Although the residuals O – C are represented by a straight line, smaller oscillations may be real. The (O – C)-s were computed with the formula:

$$C = 2425000.295 + 0^d6633494 \;\; E.$$

Observer	Year	t(med)hel.	E	O – C
B	1896	J. D. 2413 691.522:	–17048	$+^d008$:
	1897	14 071.617:	–16475	+.003:
	1900	15 160.833	–14833	.000
L	1921	22 729.654	– 3423	+.004
M	1925	24 290.515	– 1070	+.004
S	1926	24 642.740	– 539	–.010
Ma	1940	29 770.450	+ 7191	+.009
Bp	1950	33 421.512	+12695	–.004
	1952	34 121.342:	+13750	–.007:
	1953	34 487.507	+14302	–.011
RS	1953	34 508.735	+14334	–.010
Bp	1955	35 224.493	+15413	–.006
	1956	35 603.275:	+15984	+.003:

Var 25 The O − C diagram suggests a varying light curve while the differences in the amplitudes obtained by different observers considering the $\Delta m_x - \Delta m_{Bp}$ relations may be negligible. Belserene's observations are well satisfied with the period $0\overset{d}{.}4799021$, while since Larink's observations the period $0\overset{d}{.}4800510$ can be considered as correct. Hence no doubt exists about an increase of the period by more than $0\overset{d}{.}0001 \approx 7$ between 1900 and 1921. The measuring of Mt. Wilson plates between 1912 to 1915 would be of prime importance. The star is a typical RRab variable, a rapid increase of brightness is followed by a slow decrease. The residuals were computed with the formula:

$$C = 2425000.336 + 0\overset{d}{.}4800510\ E.$$

Note: Between 1895 and 1900 the following ephemeris was used:

$$C = 2415160.729 + 0\overset{d}{.}4799021\ E.$$

Observer	Year	Gmedhel.	E	O − C
B	1895	J. D. 2413 399.469:	−3670	−.019:
	1896	13 721.508:	−2999	+.005:
	1897	14 079.515:	−2253	+.005:
	1898	14 437.522:	−1507	+.005:
	1900	15 160.729	0	.000
L	1921	22 760.428	−4666	+.010
M	1925	24 311.465	−1435	+.002
S	1926	24 642.700	−745	+.002
Ma	1940	29 770.119	+9936	−.004
Bp	1940	29 775.396	+9947	−.007
	1941	30 052.394:	+10524	+.001:
	1950	33 420.447	+17540	+.016
	1952	34 118.442	+18994	+.017
RS	1953	34 483.762	+19755	+.018
Bp	1955	35 224.489	+21298	+.027
	1956	35 600.372	+22081	+.030
	1957	35 920.568	+22748	+.032
	1960	37 018.460	+25035	+.047

Var 26 A hump can be suggested in the rising branch. In the O − C diagram a negative parabola was drawn but it can not be considered as real with certainty. In spite of its long period the star has a rather large amplitude. According to the (B − V)-period relation (Figure 9) the star belongs to the long period sequence. The (O − C)-s were computed with the data:

$$C = 2425000.571 + 0\overset{d}{.}5977452\ E.$$

Observer	Year	Gmedhel.	E	O − C
B	1895	J. D. 2413 384.549:	−19433	−.040:
	1897	14 078.564	−18272	−.007:
	1899	14 839.472:	−16999	−.028:
L	1921	22 761.412	−3746	−.005

Observer	Year	t(med)hel.	E	O−C
M	1925	J. D. 2424 290.450	−1188	0.000
G	1926	24 683.767	530	.001
Ma	1940	29 770.586	+7980	.008
Bp	1941	30 078.415	+8495	.001
	1950	33 390.517	+14036	.006
	1951	33 763.504	+14660	−.012
	1952	34 121.561	+15259	.004
RS	1953	34 483.783	+15865	.016
Bp	1953	34 487.375	+15871	.010
	1955	35 224.395:	+17104	−.010:
	1956	35 600.374	+17733	.013

Var 27 Larink's observations suggest varying light curve. Strong variations in the ascending branch and not very large differences in the height of maxima can be detected, but the oscillations in the residuals O−C for the maxima may be considerable (J. D. 242 2730; 756; 760; 840). Budapest observations in 1941 seem to confirm variations of the same character (J. D. 243 0052; 078). The material of other observers is unfortunately insufficient to decide this question with certainty. The negative parabola seems to be a good fitting of the residuals O−C for the interval following J. D. 2426000. The residuals were computed utilizing the formula:

$$C = 2425000.502 + 0^d5790912\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1896	J. D. 2413 664.671:	19575	−.121:
	1900	15 161.695:	16990	−.048:
L	1921	22 756.535	−3875	−.011
M	1925	24 290.540	−1226	−.004
S	1926	24 565.027	752	−.002
G	1926	24 683.739	547	.000
Bp	1940	29 719.515:	+8149	−.001:
Ma	1940	29 770.471	+8237	−.005
Bp	1941	30 078.547	+8769	−.006
	1950	33 420.451	+14530	−.037
	1951	33 763.268:	+15132	−.042:
	1952	34 120.563	+15749	−.046
RS	1953	34 447.741	+16314	−.055
Bp	1955	35 224.307:	+17655	−.050:
	1962	37 791.350	+22088	−.118

Var 28 The observational material indicates a strongly varying light curve. This is shown also by our material, although the scatter is considerable, as the star is close to the centre. Because of the large scatter a mean curve is published. The observations of the year 1962 have been omitted. Larink's observations show a large scatter, but in spite of that, differences of about 0^m6 can be found in the height of maximum light. Larink's epoch is quite uncertain. Larink and Martin's material shows clearly oscillations in O−C caused by the variations of the light curve. The O−C diagram has cycles of great amplitude.

The interval before Larink can not be fitted by a curve. The Mt. Wilson material of 1912 and 1915 is extremely needed. The O—C values have been calculated by the formula:

$$C = 2425000.411 + 0^d.4706364\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1895	J. D. 2413 377.482:	—24696	—^{d}.092:
	1900	15 160.750	—20907	—.066
L	1921	22 730.475:	— 4823	—.057:
M	1925	24 287.466	— 1515	+.069
G	1926	24 684.710	— 671	+.096
Bp	1938	28 991.365:	+ 8480	—.043:
Ma	1940	29 770.241	+10135	—.070
Bp	1940	29 775.420	+10146	—.068
	1941	30 078.475	+10790	—.103
	1950	33 390.536	+17827	+.090
	1952	34 121.417	+19380	+.073
	1953	34 488.527	+20160	+.086
RS	1953	34 508.759	+20203	+.081
Bp	1955	35 224.572	+21724	+.056
	1956	35 603.406	+22529	+.028
	1957	35 920.586	+23203	—.001
	1960	37 018.602	+25536	+.020
	1962	37 791.342	+27178	—.025

Var 31 The star is a difficult object lying close to the centre. This fact gives rise to errors exceeding the average. The O—C values were computed with the formula:

$$C = 2425000.034 + 0^d.5807216\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1896	J. D. 2413 691.617:	—19473	—^{d}.025:
	1897	14 079.550:	—18805	—.014:
	1900	15 160.859:	—16943	—.009:
L	1921	22 733.476	— 3903	—.002
M	1925	24 312.451	— 1184	—.009
G	1926	24 684.701	— 543	—.001
Bp	1940	29 719.545	+ 8127	—.013
Ma	1940	29 770.073	+ 8214	—.008
Bp	1941	30 078.433	+ 8745	—.011
	1950	33 420.486	+14500	—.011
	1952	34 121.407	+15707	—.021
	1953	34 487.260:	+16337	—.023:
	1956	35 603.405	+18259	—.025
	1957	35 920.488:	+18805	—.016:
	1960	37 018.630	+20696	—.018
	1962	37 791.574	+22027	—.015

Var 32 The star lies in a dense region near the centre, therefore the errors exceed the average and the brightness data are systematically higher. Variations of the light curve are possible, but because of the large scatter their reality

cannot be assured. The uncertainty of epochs is considerable as well. This uncertainty can be also responsible for the large scatter in the O−C diagram. The (O−C)-s were computed using the formula:

$$C = 2425000.450 - 0^{d}.4953518 \ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1895	J. D. 2413 377.506:	−23464	−^{d}.009:
	1896	13 691.530:	−22830	−.038:
	1898	14 437.551:	−21324	−.017:
	1900	15 161.759	−19862	−.014
L	1921	22 760.477	− 4522	.008
M	1925	24 309.432	− 1395	−.002
G	1926	24 647.751	− 712	−.009
Ma	1940	29 770.180	+ 9629	−.012
Bp	1941	30 078.303:	+10251	.002:
	1950	33 421.418	+17000	−.013
	1952	34 118.380:	+18407	−.011:
	1953	34 487.418	+19152	−.010
	1955	35 223.502	+20638	−.018
	1956	35 603.438	+21405	−.017
	1957	35 920.472:	+22045	−.008:
	1960	36 991.397:	+24207	−.034:
	1962	37 791.412:	+25822	−.012:

Var 33 The variation of the light curve is clearly seen from the differences in the slope of the ascending branch and in the height of the maximum. The material is insufficient to decide the reality of the oscillations in the O−C diagram. The scatter in the O−C diagram is probable the consequence of the Blashko-effect. The residuals were computed with the formula:

$$C = 2425000.440 + 0^{d}.5252237 \ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1895	J. D. 2413 383.503:	−22118	−^{d}.039:
	1897	14 080.483:	−20791	−.031:
	1898	14 456.544:	−20075	−.030:
	1899	14 841.529:	−19342	−.034:
L	1921	22 761.445	− 4263	.034
M	1925	24 292.456	− 1348	+.018
G	1926	24 683.701	− 603	−.029
Bp	1940	29 719.553	+ 8985	−.022
Ma	1940	29 770.503	9082	−.019
Bp	1950	33 422.413	+16035	.011
	1952	34 121.451	+17366	−.024
	1953	34 487.514	+18063	−.042
	1955	35 227.574	+19472	−.022
	1956	35 600.473	+20182	−.032
	1957	35 933.460	+20816	−.037
	1960	37 018.560	+22882	−.049
	1962	37 757.580:	+24289	−.018:

Var 34 The light curve varies. The differences in the height of maximum amounts — according to Budapest observations — to $0^{\mathrm{m}}4$. The time oscillation of the maximum amounts in Greenstein's material at least to $0^{\mathrm{h}}7$. The O—C diagram is rather complicated. The residuals were computed by the formula:

$$C = 2425000.498 + 0^{\mathrm{d}}5591012\ E.$$

Observer	Year	t max hel.	E	O—C
B	1895	J. D. 2413 383.495:	—20778	$+^{\mathrm{d}}$002:
	1896	13 691.557:	—20227	—.001:
	1897	14 079.574	—19533	.000
	1899	14 840.501:	—18172	—.010:
	1900	15 160.893	—17599	+.017
L	1921	22 733.491	— 4055	+.148
M	1925	24 313.496	— 1229	+.133
G	1926	24 647.774	— 631	+.069
		24 684.704	— 565	+.098
Bp	1938	28 991.390	+ 7138	+.028
	1939	29 346.375	+ 7773	—.017
Ma	1940	29 770.192:	+ 8531	+.002:
Bp	1950	33 421.524	+15062	—.156
	1952	34 121.529	+16314	—.146
RS	1953	34 483.773	+16962	—.200
Bp	1955	35 223.563	+18285	—.100
	1956	35 600.507	+18959	+.007
	1960	37 057.513:	+21565	—.002:
	1962	37 757.552:	+22817	+.042:

Var 35 The light curve varies considerably. The differences in the height of maximum exceed $0^{\mathrm{m}}5$ and in the O—C values 2^{h}, respectively. The O—C of the maxima show the smallest oscillation — about 1^{h} — according to Kukarkin's observations. It can be expected — also on the ground of the period-amplitude diagram — that the brightness of highest maximum exceeds $15^{\mathrm{m}}04$, observed in Budapest. The pronounced decrease of the period lasted till J. D. 2430000. As the secondary period can not be determined, the time-oscillations arising from the beat phenomena can not be eliminated in the O—C diagram. Therefore the large scatter in the O—C values. The residuals were calculated by the formula:

$$C = 2425000.038 + 0^{\mathrm{d}}5306059\ E.$$

Observer	Year	t max hel.	E	O—C
B	1895	J. D. 2413 378.471:	—21901	$-^{\mathrm{d}}$767:
	1896	13 691.585:	—21311	—.711:
	1897	14 071.601	—20595	—.608
	1898	14 456.359:	—19870	—.540:
	1899	14 839.481	—19148	—.515
	1900	15 161.612:	—18541	—.462:
H	1915	20 654.817	— 8189	—.089
L	1921	22 756.615	— 4228	—.021
M	1925	24 289.550	— 1339	—.007

Observer	Year	Time of max.	E	O−C
S	1926	J. D. 2424 621.703	−713	$-{}^{d}013$
G	1926	24 647.716	−664	.000
H	1939	29 400.714	+8294	−.169
		29 408.706	+8309	−.136
Ma	1940	29 770.01:	+8990	−.175:
Be	1946	31 971.780	+13140	−.420
	1948	32 683.828	+14482	−.445
		32 700.719	+14514	−.533
Bp	1950	33 390.545	+15814	−.495
		33 422.438	+15874	−.438
	1952	34 121.555	+17192	−.660
K	1953	34 455.368	+17821	−.598
RS	1953	34 482.999	+17873	−.558
Bp	1956	35 600.370	+19979	−.643
K	1956	35 601.399	+19981	−.675
Bp	1957	35 933.543	+20607	−.691
K	1959	36 661.460	+21979	−.765
		36 692.306	+22037	−.694
Bp	1960	36 991.449	+22601	−.813
		37 018.584	+22652	−.739
K	1960	37 024.376	+22663	−.784
Bp	1962	37 791.542	+24109	−.874

Var 36 The variable has in relation to its period an unusually great amplitude and steep ascending branch. The large cycles superposed on the positive parabola are real. The (O−C)-s were computed by the formula:

$$C = 2425000.018 + 0^{d}5455855\ E.$$

Observer	Year	Time of max.	E	O−C
B	1895	J. D. 2413 372.520	21312	$+{}^{d}020$
H	1912	19 534.900	10017	+.012
	1915	20 625.527:	−8018	+.014:
L	1921	22 761.494	−4103	+.013
M	1925	24 311.497	−1262	+.008
G	1926	24 684.679:	−578	+.009:
Bp	1938	28 991.511	+7316	−.011
H	1939	29 430.704	+8121	−.014
Ma	1940	29 770.063	+8743	−.009
Bp	1940	29 774.427:	+8751	.010:
	1941	30 078.318:	+9308	−.010:
Be	1946	31 968.783	+12773	+.001
	1948	32 684.585	+14085	−.005:
Bp	1950	33 390.587	+15379	+.010
	1952	34 120.589	+16717	+.018
	1955	35 227.591	+18746	+.027
	1956	35 603.501	+19435	+.029
	1957	35 933.582	+20040	+.031
	1960	36 991.486	+21979	+.044
	1962	37 791.322:	+23445	+.052:

Var 37 The star is a variable of RRc type. The negative parabola represents a rather good approximation for the residuals O—C, but different oscillations may be present around it. The residuals were computed with the formula:

$$C = 2425000.015 + 0^{d}.3266390 \ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1897	J. D. 2414 077.515:	−33439	$-^{d}.018$:
	1899	14 841.516:	−31100	−.026:
H	1912	19 479.806:	−16900	−.010:
	1915	20 625.655	−13392	−.011
L	1921	22 761.553	− 6853	−.005
M	1925	24 311.460	− 2108	.000
S	1926	24 620.787	− 1161	.000
G	1926	24 683.828	− 968	.000
Bp	1938	28 991.534:	+12220	−.010:
	1939	29 408.645	+13497	−.017
Ma	1940	29 770.244	+14604	−.007
Bp	1941	30 052.465	+15468	−.002
Be	1946	31 969.821	+21338	−.017
	1948	32 683.853	+23524	−.018
Bp	1950	33 421.400	+25782	−.022
	1951	33 763.394	+26829	−.019
	1952	34 118.440	+27916	−.029
RS	1953	34 482.966	+29032	−.032
Bp	1953	34 488.519	+29049	−.032
	1955	35 223.452	+31299	−.037
	1956	35 600.413	+32453	−.017
	1957	35 933.579:	+33473	−.023:
	1960	37 057.539	+36914	−.028
	1962	37 791.493	+39161	−.032

Var 38 There is a strong variation in the light curve of the star. The differences in the height of the maxima may exceed $0^{m}.6$. Also variations in the brightness of the minima are probable. Unfortunately no well observed minimum is available. Kukarkin's observations show oscillations of the O—C values amounting to $0^{h}.8$, while Müller's observations give not less than $1^{h}.3$ for the amplitude of the time shift of the maxima. Considerable variations can be observed also in the slope of the rising branch.

$$C = 2425000.093 + 0^{d}.5580276 \ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1896	J. D. 2413 691.581:	−20265	$-^{d}.083$:
	1899	14 839.459:	−18208	−.067:
H	1915	20 625.693	− 7839	−.022
		20 626.806	− 7837	−.025
		20 654.736	− 7787	+.004
M	1925	24 287.465	− 1277	−.027
		24 311.515	− 1234	+.028
S	1926	24 621.750	− 678	.000
G	1926	24 647.948	− 631	−.030

Observer	Year	t(med)hel.	E	O−C
G	1926	J. D. 2424 683.683	− 567	$-^{d}.008$
		24 684.808	− 565	+.001
Sch	1938	28 964.843:	+ 7104	−.036:
H	1939	29 367.764:	+ 7827	−.011:
Ma	1940	29 770.093:	+ 8548	−.020:
Bp	1941	30 052.466	+ 9054	−.009
Be	1946	31 968.696	+12488	−.046
Bp	1950	33 390.575	+15036	−.021
	1952	34 121.546	+16346	−.066
RS	1953	34 483.698	+16995	−.074
		34 507.730	+17038	−.037
K	1955	35 226.456:	+18326	−.051:
Bp	1955	35 227.570	+18328	−.053
K	1956	35 601.446	+18998	−.055
		35 606.465	+19007	−.059
		35 614.293	+19021	−.043
		35 615.406	+19023	−.046
Bp	1957	35 933.459	+19593	−.069
K	1959	36 658.331	+20892	−.075
		36 669.480	+20912	−.086
		36 687.313	+20944	−.110
		36 692.361	+20953	−.084
Bp	1960	36 991.431:	+21489	−.117:
K	1960	37 024.386	+21548	−.086

Var 39 The star has a considerably varying light curve, with differences in the height of maxima amounting to at least $0^{m}.4$. The oscillations in the O−C values exceed $0^{h}.4$ (Belserene J. D. 2431968;995). The differences in the depth of the minimum are blurred by the scatter, but apparently low minima are followed by high maxima. The low maxima seem to be double, or the brightness remains constant for a time interval (J. D. 2415160; J. D. 2422761; J. D. 2433763; J. D. 2434121; J. D. 2435223). The scatter resulting from the variations of the light curve is not eliminated in the O−C diagram. The period is approximately constant. The O−C diagram was constructed using the formula:

$$C = 2425000.106 + 0^{d}.5870766\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1895	J. D. 2413 372.492:	−19806	$+^{d}.025$:
	1987	14 077.576:	−18605	+.025:
	1900	15 160.733	−16760	+.031
H	1912	19 479.862:	− 9403	+.037:
	1915	20 625.843:	− 7451	+.045:
L	1921	22 761.564	− 3813	−.019
M	1925	24 311.459	− 1173	−.006
S	1926	24 620.848	− 646	−.007
G	1926	24 684.823	− 537	−.023
Ma	1940	29 770.160	+ 8125	+.057
Bp	1940	29 775.422	+ 8134	+.035
	1941	30 052.512:	+ 8606	+.025:

Observer	Year	t(med)hel.	E	O−C
Be	1946	J. D. 2431 968.704	+11870	−0^d001
		31 995.726	+11916	+.015
	1948	32 683.800	+13088	+.035
Bp	1951	33 763.437	+14927	+.039
	1952	34 121.527	+15537	+.012
RS	1953	34 483.781	+16154	+.040
Bp	1955	35 223.466	+17414	+.008
	1956	35 600.352:	+18056	−.009:
	1960	37 057.532:	+20538	+.047:
	1962	37 791.333:	+21788	+.002:

Var 40 The hump in the ascending branch is well pronounced. The period is nearly constant. The residuals were computed with the ephemeris:

$$C = 2425000.091 + 0^d5515411\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1895	J. D. 2413 383.525:	−21062	−0^d007:
	1897	14 074.612	−19809	−.001
	1900	15 161.702:	−17838	+.001:
H	1915	20 625.814	− 7931	−.005
L	1921	22 730.498	− 4115	−.001
M	1925	24 292.464	− 1283	.000
S	1926	24 642.692	− 648	.000
G	1926	24 647.659:	− 639	+.003:
Bp	1938	28 963.467:	+ 7186	+.002:
H	1939	29 431.726	+ 8035	+.002
Ma	1940	29 770.374	+ 8649	+.004
Bp	1940	29 775.338:	+ 8658	+.004:
Be	1946	31 978.195	+12652	+.006
	1948	32 687.475	+13938	+.004
Bp	1950	33 420.471	+15267	+.002
	1951	33 763.527	+15889	−.001
	1952	34 121.480	+16538	+.002
RS	1953	34 482.735	+17193	−.002
Bp	1955	35 224.560	+18538	.000
	1956	35 603.466	+19225	−.003
	1962	37 791.432	+23192	.000

Var 41 The star lies in a dense region near the centre, therefore the scatter is considerable, the mean curve distorted and the brightness data are uncertain. Bailey's observations are rather uncertain and the epochs derived are very inaccurate. Missing the Mt. Wilson material of 1912 and 1915, the O−C diagram before Larink's observations is not reliable at all. The light curve probably varies, as suggested especially by Larink's maxima, by Müller's flat ascending branches and the complexity of the O−C diagram. Because of the large scatter it is impossible to establish the variation of the light curve with certainty. The residuals have been calculated with the formula:

$$C = 2425000.391 + 0^{d}4850462\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1895	J. D. 2413 383.504:	−23950	+^{d}031:
	1897	14 077.548:	−22519	−.088:
	1899	14 841.565:	−20944	.018:
L	1921	22 761.518	−4616	−.100
M	1925	24 287.409	−1470	+.036
G	1926	24 647.793	−727	−.031
Ma	1940	29 770.198	+9834	−.137
Bp	1952	34 118.687:	+18799	−.088:
	1953	34 487.332:	+19559	−.078:
	1955	35 227.516	+21085	−.074
	1956	35 603.434	+21860	.067
	1960	37 018.361:	+24777	−.020:
	1962	37 791.555	+26371	−.011

Var 42 The star is a difficult object lying near the centre. Therefore, the scatter is considerable and the brightness data systematically higher. In consequence of the considerable observational errors the light curve variation can not be established with certainty, although the complexity of the O—C diagram shows the existence of such variations. The period shows an unusually strong decrease. The residuals were calculated with the formula:

$$C = 2425000.055 + 0^{d}5901852\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1895	J. D. 2413 389.525:	−19672	−^{d}406:
	1899	14 841.460:	−17212	−.327:
	1900	15 160.763	−16671	−.315
L	1921	22 761.476	−3793	−.006
M	1925	24 312.486	−1165	.003
S	1926	24 621.746	−641	.000
G	1926	24 647.715	−597	−.001
Bp	1938	28 991.411	+6763	.067
Ma	1940	29 770.443	+8083	−.079
Bp	1941	30 078.504	+8605	−.095
	1950	33 390.497:	+14217	−.221:
	1951	33 763.484	+14849	−.231
	1952	34 120.525	+15454	−.252
	1955	35 223.516	+17323	−.317
	1957	35 933.467	+18526	−.359
	1962	37 791.245:	+21674	−.484:

Var 43 The star is near the centre and has a close companion, therefore the scatter is considerable. The light curve is strongly variable, the maxima indicate differences amounting to $0^{m}6$ – $0^{m}7$. Before J. D. 2433000 the observations are satisfied by the period $0^{d}5405$, afterwards by $0^{d}5403$. The author had the opportunity to estimate the brightness of the star on Moscow plates. Basing on these estimates the following O—C values have been obtained: for 1953

O—C = $+0^d.320$, for 1959 O—C = $-0^d.07$, for 1960 the O—C lies within the interval ($-0^d.45$; $-0^d.36$) or within ($-0^d.09$; $-0^d.18$). Budapest material provides the O—C interval ($-0^d.172$; $-0^d.372$) for 1960. The O—C diagram is of complicated structure. The curve drawn in Fig. 40 seems to be the most probable one, but the point for 1962 should be perhaps shifted by 1P downwards. The (O—C)-s were computed with the formula:

$$C = 2425000.441 + 0^d.5404790\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1895	J. D. 2413 384.502:	−21491	$-0^d.505$:
	1896	13 692.561:	−20921	−.519:
	1897	14 079.583:	−20205	−.480:
	1900	15 161.695:	−18203	−.407:
L	1921	22 760.639	− 4144	−.057
M	1925	24 292.404	− 1310	−.010
G	1926	24 683.715	− 586	−.005
Bp	1938	28 991.502:	+ 7384	+.164:
Ma	1940	29 770.382	+ 8825	+.214
Bp	1941	30 078.469	+ 9395	+.228
	1950	33 421.445	+15580	+.341
	1952	34 122.427	+16877	+.322
	1956	35 600.497	+19612	+.182
	1962	37 791.561	+23667	−.396

Var 44 The star has a varying light curve, the maxima indicating differences of $0^m.6$. The O—C shows a complex structure with sudden variations. It is difficult to decide wether the scatter in the diagram is the consequence of accidental variations in the period or that of the variations of the light curve. The O—C diagram was constructed using the ephemeris:

$$C = 2425000.080 + 0^d.5063961\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1895	J. D. 2413 372.501:	−22962	$-0^d.288$:
	1896	13 664.683:	−22385	−.280:
	1899	14 841.554	−20061	−.286
H	1912	19 479.966	−10901	−.110
	1915	20 625.754	− 8638	−.076
L	1921	22 756.566	− 4430	−.179
M	1925	24 284.525	− 1413	−.017
Bp	1938	28 991.535	+ 7882	−.041
H	1939	29 400.716	+ 8690	−.054
		29 431.622	+ 8751	−.070
Bp	1940	29 775.443	+ 9430	−.048
	1941	30 052.442:	+ 9977	−.048:
Be	1946	31 973.700	+13771	−.039
	1948	32 683.697	+15173	−.069
Bp	1950	33 420.521	+16628	−.087
	1952	34 118.358	+18006	−.110
RS	1953	34 482.934	+18726	−.081
Bp	1953	34 487.485:	+18735	−.074:
	1960	37 018.447:	+23733	+.068:

Var 45 The Budapest material is rather poor. According to Larink's (J. D. 2422729; 756) and Belserene's observations light curve variation may occur. The residuals were computed with the formula:

$$C = 2425000.110 + 0^{d}.5368966\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1895	J. D. 2413 372.573:	—21657	+^{d}.033:
	1896	13 692.543:	—21061	+.012:
	1897	14 071.597	—20355	+.017
	1898	14 456.553	—19638	+.018
	1899	14 841.469:	—18921	—.020:
H	1912	19 479.224:	—10283	+.022:
	1915	20 656.594:	— 8090	—.023:
L	1921	22 729.553	— 4229	—.021
M	1925	24 291.402	— 1320	—.004
G	1926	24 647.905	— 656	—.001
H	1939	29 431.648	+ 8254	—.007
Ma	1940	29 770.427	+ 8885	—.009
Bp	1940	29 775.257:	+ 8894	—.011:
	1941	30 052.295:	+ 9410	—.012:
Be	1946	31 993.719	+13026	—.006
	1948	32 684.705:	+14313	—.006:
Bp	1950	33 422.414	+15687	+.007
	1951	33 763.337:	+16322	+.001:
	1952	34 121.454	+16989	+.008
RS	1953	34 482.767	+17662	—.011
Bp	1955	35 227.461:	+19049	+.008:
	1956	35 603.286:	+19749	+.006:
	1957	35 933.476	+20364	+.004
	1960	37 018.544	+22385	+.004

Var 46 The star is near the centre, therefore the brightness data are systematically higher. Unfortunately no observations were obtained since 1955 in the ascending branch or maximum. The (O—C)-s were calculated with the formula:

$$C = 2425000.434 + 0^{d}.6133669\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1897	J. D. 2414 077.636:	—17808	+^{d}.040:
	1899	14 839.464:	—16566	+.066:
	1900	15 160.834:	—16042	+.032:
L	1921	22 761.024	— 3651	—.007
M	1925	24 286.496	— 1164	+.021
		24 291.381	— 1156	—.001
G	1926	24 647.746	— 575	—.002
Ma	1940	29 770.608	+ 7777	+.020
Bp	1941	30 078.504	+ 8279	+.005
	1950	33 421.377	+13729	+.029
	1952	34 121.235:	+14870	+.035:
RS	1953	34 483.743	+15461	+.043
Bp	1953	34 487.426	+15467	+.046
	1955	35 223.463	+16667	+.043

Var 47 The light curve is subjected to strong variations, the maxima indicate differences amounting to $0\overset{m}{.}7$. Unfortunately the star was not measured by Hett, Belserene, Roberts and Sandage, therefore, the O—C diagram is rather uncertain. As the star lies in a dense region, the brightness values measured in the minima are systematically too high. The normal points do not give the true shape of the maxima. The residuals were computed with the formula:

$$C = 2425000.456 + 0\overset{d}{.}5409923\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1896	J. D. 2413 691.501:	—20904	—$\overset{d}{.}$052:
	1897	14 067.536:	—20209	—.007:
	1898	14 456.532:	—19490	+.016:
L	1921	22 756.394:	— 4148	—.026:
M	1925	24 287.395	— 1318	—.033
S	1926	24 621.722	— 700	—.039
G	1926	24 647.696	— 652	—.033
Bp	1938	28 991.381:	+ 7377	+.025:
Ma	1940	29 770.435	+ 8817	+.050
Bp	1950	33 420.462	+15564	+.002
	1951	33 763.429	+16198	—.020
	1952	34 121.538	+16860	—.048
	1955	35 223.547	+18897	—.040
	1960	37 018.558	+22215	—.042
	1962	37 757.586:	+23581	—.009:

Var 48 Light curve changes are possible, e.g. the slopes of the ascending branches on J. D. 2434118 and J. D. 2435223 respectively, are different. This may be the cause of the scatter around the positive parabola in the O—C diagram. The diagram was constructed using the ephemeris:

$$C = 2425000.095 + 0\overset{d}{.}6278128\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1897	J. D. 2414 080.595:	—17393	+$\overset{d}{.}$048:
L	1921	22 730.544:	— 3615	—.008:
M	1925	24 287.535	— 1135	+.008
G	1926	24 647.875	— 561	—.017
Bp	1938	28 963.492:	+ 6313	+.015:
Ma	1940	29 770.247	+ 7598	+.030
Bp	1940	29 775.251:	+ 7606	+.012:
	1941	30 078.491	+ 8089	+.018
	1950	33 420.346:	+13412	+.026:
	1952	34 118.472	+14524	+.024
RS	1953	34 507.722	+15144	+.030
Bp	1955	35 223.431	+16284	+.032
	1956	35 603.261:	+16889	+.036:
	1957	35 933.500:	+17415	+.045:
	1960	37 058.548:	+19207	+.053:
	1962	37 791.222:	+20374	+.069:

Var 49 The light curve is subjected to strong variations amounting to $0^m.7$ in the maxima. Larink obtained low, while Müller high maxima. The amplitude of the O—C oscillations amounts to $0^h.25$. The residuals were computed with the formula:

$$C = 242\,5000.508 + 0^d.5482196\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1898	J. D. 2414 456.546:	—19233	—^{d}054:
L	1921	22 761.591	— 4084	+.012
M	1925	24 284.533	— 1306	.000
		24 289.454	— 1297	—.013
G	1926	24 684.731	— 576	—.003
Ma	1940	29 770.007	+ 8700	—.012
Bp	1940	29 774.392	+ 8708	—.012
	1952	34 118.457	+16632	—.039
	1953	34 487.404	+17305	—.044
	1957	35 933.586	+19943	—.065
	1960	37 018.507	+21922	—.071
	1962	37 791.482	+23332	—.086

Var 50 The light curve is subjected to strong variations. The differences in the height of maxima amount to $0^m.65$ at least. Variations in the depth of minima amounting to several decimals of the magnitude may be considered as certain as well. The amplitude of the O—C variations during the secondary period amounts to 1^h at least. The O—C diagram of the star is of a very complex structure, the period shows several strong sudden changes. The residuals were calculated with the formula:

$$C = 2425000.357 + 0^d.5130879\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1895	J. D. 2413 384.522	—22639	—^{d}038
	1896	13 664.687:	—22093	—.019:
	1897	14 073.619:	—21296	—.018:
H	1915	20 625.789	— 8526	+.019
L	1921	22 733.462	— 4418	—.073
		22 756.584	— 4373	—.040
M	1925	24 298.518:	— 1368	+.065:
G	1926	24 684.807	— 615	—.001
Bp	1938	28 963.480:	+ 7724	+.032:
H	1939	29 400.666:	+ 8576	+.067:
Ma	1940	29 770.040	+ 9296	+.018
Bp	1941	30 078.418	+ 9897	+.030
Be	1946	31 971.737	+13587	+.055
	1948	32 683.833:	+14975	—.015:
Bp	1952	34 121.493	+17777	—.028
RS	1953	34 483.699	+18483	—.062
Bp	1957	35 920.430:	+21283	+.023:
	1960	37 018.444:	+23423	+.029:

Var 51 The rate of the decrease of the period is diminishing. On the rising branch a hump is indicated (mainly by Belserene's and Roberts and Sandage's observations). The (O—C)-s were calculated using the formula:

$$C = 2425000.571 + 0^d\!.5839818\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1895	J. D. 2413 377.520:	—19903	—^{d}061:
	1899	14 841.567:	—17396	—.057:
L	1921	22 760.419	— 3836	+.002
M	1925	24 290.443	— 1216	—.006
G	1926	24 647.848	— 604	+.002
H	1939	29 423.633	+ 7574	—.016
Ma	1940	29 770.517	+ 8168	—.017
Bp	1941	30 078.275:	+ 8695	—.018:
Be	1946	31 993.723	+11976	—.030
	1948	32 682.817	+13155	—.035
Bp	1950	33 421.553:	+14420	—.036:
	1952	34 120.575	+15617	—.040
RS	1953	34 483.799	+16239	—.052
Bp	1953	34 487.310:	+16245	—.045:
	1956	35 600.371	+18151	—.054
	1960	36 991.408:	+20533	—.061:
	1962	37 791.448	+21903	—.076

Var 52 The light curve is variable. In the Budapest material the maxima do not indicate great differences in height (only about$0^m\!.3$) but the differences are much greater according to other observers (Müller's maxima are very high). The minima show variations of about $0^m\!.1$. The oscillations in O—C produced by the variations of the light curve are insignificant. The O—C diagram is very complicated and its course is quite uncertain before Larink's observations. A shift of 1P is possible between Baker's and Larink's material. Hett, Belserene and Roberts and Sandage's observations and especially the Mt. Wilson material are badly lacking. The O—C diagram was constructed using the formula:

$$C = 2425000.073 + 0^d\!.5162250\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1895	J. D. 2413 384.528	—22501	+^{d}036
	1897	14 071.614	—21170	+.024
	1900	15 160.835	—19060	+.010
L	1921	22 756.625:	— 4346	+.066:
M	1925	24 313.497	— 1330	+.003
S	1926	24 642.853	— 692	+.008
G	1926	24 684.661:	— 611	+.001:
Bp	1938	28 991.453	+ 7732	—.072
Ma	1940	29 770.319:	+ 9241	—.189:
Bp	1941	30 078.502	+ 9838	—.193
	1951	33 763.495	+16976	—.014
	1952	34 126.425:	+17679	+.010:
	1955	35 227.571	+19812	+.048
	1956	35 603.428	+20540	+.093

Var 53 The star is situated rather close to the centre, the magnitudes obtained are systematically high. The positive parabola represents a good approximation for the O—C values. The diagram was constructed using the formula:

$$C = 2425000.118 + 0^{d}.5048878\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1895	J. D. 2413 372.514:	—23030	—^{d}.038:
	1896	13 694.642:	—22392	—.028:
	1900	15 161.846	—19486	—.028
L	1921	22 760.431	— 4436	—.005
M	1925	24 309.431	— 1368	.000
G	1926	24 647.705	— 698	—.001
Ma	1940	29 770.294	+ 9448	—.005
Bp	1940	29 775.330:	+ 9458	—.018:
	1941	30 078.273:	+10058	—.007:
	1951	33 763.437	+17357	—.020
	1952	34 118.369	+18060	—.024
	1953	34 487.443	+18791	—.023
	1955	35 224.577	+20251	—.025
	1956	35 603.240:	+21001	—.028:
	1957	35 933.432	+21655	—.032
	1960	37 018.433:	+23804	—.035:
	1962	37 791.412	+25335	—.039

Var 54 The star lies near the centre in a rather dense region. Therefore the scatter is considerably higher than usually. In spite of this fact the variation of the light curve can be established with certainty. The differences in the heights of maxima amount only to about $0^{m}2$, hence normal points were formed along the entire light curve. The differences in the residuals O—C arising from light curve variations have an amplitude of about $0^{h}25$, but if Müller's plates taken on J. D. 2424289 are correctly estimated, these differences may amount to $1^{h}.5$ as well. The period is subjected to rather strong variations, and the period given by the author seems to fit the observations to the best. The O—C diagram, especially before Larink's observations is, rather uncertain. The different groups of points may be shifted upwards or downwards by a multiple of the period. The measurement of Mt. Wilson plates of 1912, 1915, 1946 and 1948 would be of great importance. Using the Budapest material the following limits can be fixed for the O—C values: in 1939 ($-0^{d}.039$; $+0^{d}.011$); in 1950 ($-0^{d}.074$; -0.027), in 1953 ($+0^{d}.078$; $+0^{d}.234$) and in 1957 ($+0^{d}.359$; $+0^{d}.429$). The residuals were computed with the formula:

$$C = 2425000.125 + 0^{d}.5063150\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1895	J. D. 2413 372.498	—22966	+^{d}.403
	1896	13 694.472:	—22330	+.361:
	1897	14 071.635	—21585	+.319
	1898	14 456.367:	—20825	+.252:
	1900	15 161.543:	—19432	+.131:

Observer	Year	t(med)hel.	E	O−C
L	1921	J. D. 2422 761.486	− 4421	−^{d}.220
M	1925	24 284.527	− 1413	−.175
S	1926	24 621.855	− 747	−.053
G	1926	24 647.679	− 696	−.051
Bp	1938	28 991.409:	+ 7883	+.003:
	1940	29 775.178:	+ 9431	−.003:
Ma	1940	29 780.245	+ 9441	.000
		29 781.270	+ 9443	+.012
Bp	1941	30 078.478	+10030	+.014
	1951	33 763.360:	+17308	−.065:
	1952	34 121.405	+18015	+.015
	1955	35 223.419	+20191	+.288
	1956	35 603.242	+20941	+.375
	1960	36 991.510:	+23683	+.327:
	1962	37 791.400:	+25263	+.239:

Var 55 The star is a well measurable RRab variable. The O−C diagram can be represented by a positive parabola. The residuals were calculated by the formula:

$$C = 2425000.122 + 0^d.5298132\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1895	J. D. 2413 383.486:	−21926	+^{d}.048:
	1897	14 078.593	−20614	+.040
L	1921	22 760.605	− 4227	+.003
M	1925	24 313.484	− 1296	.000
S	1926	24 620.776	− 716	.000
G	1926	24 647.796	− 665	.000
H	1939	29 408.707	+ 8321	+.009
Ma	1940	29 770.040	+ 9003	+.010
Bp	1940	29 775.340:	+ 9013	+.012:
	1941	30 078.396:	+ 9585	+.014:
Be	1946	31 968.778	+13153	+.023
Bp	1950	33 420.470	+15893	+.027
	1951	33 763.267:	+16540	+.035:
	1952	34 121.419	+17216	+.033
RS	1953	34 482.749	+17898	+.030
Bp	1953	34 487.517	+17907	+.030
	1955	35 224.494	+19298	+.037
	1956	35 603.312:	+20013	+.038:
	1957	35 933.387:	+20636	+.040:
	1960	37 018.453:	+22684	+.048:
	1962	37 791.458	+24143	+.056

Var 56 The star is an RRc variable. In the O−C diagram several oscillations can be established with certainty although the period seems to be rather stable. The normal points do not give a smooth light curve at the maximum. This can arise from the inaccuracy of the measurements, but a double maximum is also possible. The O−C values were calculated with the formula:

$$C = 2425000.211 + 0^{d}.3295986\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1895	J. D. 2413 383.497:	−35245	−^{d}.011:
	1897	14 077.633:	−33139	−.010:
H	1915	20 625.769	−13272	−.009
L	1921	22 761.582	− 6792	+.005
M	1925	24 309.385:	− 2096	+.013:
S	1926	24 620.843	− 1151	.000
G	1926	24 683.800	− 960	+.004
Sch	1938	28 983.745:	+12086	+.005:
H	1939	29 431.671	+13445	+.007
Ma	1940	29 770.153	+14472	−.009
Bp	1940	29 775.429:	+14488	−.007:
Be	1946	31 974.842	+21161	−.005
	1948	32 682.820:	+23309	−.005:
Bp	1950	33 422.444	+25553	.000
	1952	34 120.523	+27671	−.011
RS	1953	34 447.812	+28664	−.013
Bp	1953	34 487.360:	+28784	−.017:
	1955	35 223.360:	+31017	−.011:
	1956	35 600.422	+32161	−.010
	1957	35 920.458	+33132	−.014
	1960	37 057.572:	+36582	−.015:
	1962	37 791.588:	+38809	−.015:

Var 57 Unfortunately the Budapest material contains only a few ascending branches, therefore difficulties arise in constructing a reliable mean curve. The poor material does not enable us to reveal variations of the light curve, but Greenstein's ascending branches show obviously different slopes. The decrease of the period is very pronounced. The O—C diagram was constructed with the formula:

$$C = 2425000.328 + 0^{d}.5122223\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1896	J. D. 2413 664.669:	−22130	−^{d}.180:
	1897	14 077.532	−21324	−.168
L	1921	22 729.641	− 4433	−.006
M	1925	24 292.433	− 1382	−.003
G	1926	24 683.774	− 618	−.001
Bp	1938	28 991.534	+ 7792	−.030
Ma	1940	29 770.117	+ 9312	−.025
Bp	1940	29 775.237:	+ 9322	−.027:
	1941	30 078.460	+ 9914	−.040
	1950	33 390.432:	+16380	−.097:
	1951	33 763.323:	+17108	−.104:
	1952	34 122.380:	+17809	−.115:
RS	1953	34 482.975	+18513	−.124
Bp	1956	35 603.184:	+20700	−.146:
	1957	35 933.542:	+21345	−.171:
	1960	37 018.380:	+23463	−.220:
	1962	37 791.309:	+24972	−.234:

Var 58 Although Baker's observations are rather poor, they suggest definitely a period of about $0^d.5167$. The O—C diagram is discontinuous between Baker's and Larink's material. The Mt. Wilson plates of 1912 and 1915 would be of great importance. After J. D. 2422700 the decrease of the period is slowing down. It is not possible to approximate the O—C diagram with a parabola for the 40 year interval from J. D. 2422700 to J. D. 2437800. The star is situated in a dense region with close neighbours, in the inner part of the cluster. Variations of the light curve, indicated by the complexity of the O—C diagram, could not be observed. The O—C diagram was constructed with the formula:

$$C = 2425000.179 + 0^d.5170617\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1895	J. D. 2413 399.511:	—22437	+^{d}.645:
	1896	13 694.524:	—21866	+.416:
	1897	14 036.592:	—21204	+.189:
	1898	14 437.537:	—20428	—.106:
	1899	14 840.543:	—19648	—.408:
L	1921	22 761.644	— 4329	—.175
M	1925	24 313.472	— 1328	—.049
S	1926	24 642.862	— 691	—.027
G	1926	24 683.709	— 612	—.028
Ma	1940	29 770.333	+ 9225	+.260
Bp	1941	30 078.510	+ 9821	+.268
	1950	33 422.460	+16288	+.380
	1951	33 763.734:	+16948	+.393:
	1952	34 121.542	+17640	+.395
	1953	34 488.667	+18350	+.406
	1955	35 227.562	+19779	+.420
	1956	35 603.470	+20506	+.424
	1960	37 058.503:	+23320	+.445:
	1962	37 757.571:	+24672	+.446:

Var 59 Larink's observations suggest variations in the light curve. There are conspicuous differences in the height of maxima and in the O—C residuals of the median point on the rising branch. The other observations contain only few rising branches and maxima. The rate of period increase gets higher. The residuals were computed with the formula:

$$C = 2425000.325 + 0^d.5888053\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1896	J. D. 2413 693.545:	—19203	+^{d}.048:
	1899	14 840.532:	—17255	+.042:
	1900	15 160.855	—16711	+.055
H	1915	20 656.726:	— 7377	+.018:
L	1921	22 730.502	— 3855	+.021
		22 760.518	— 3804	+.008
M	1925	24 298.471	— 1192	+.002
S	1926	24 621.724	— 643	+.001
G	1926	24 684.725	— 536	.000

Observer	Year	t(med)hel.	E	O—C
H	1939	J. D. 2429 431.678	+ 7526	+^{d}004
Ma	1940	29 770.242	+ 8101	+.005
Bp	1941	30 052.293:	+ 8580	+.019:
Be	1946	31 994.764	+11879	+.021
	1948	32 684.847	+13051	+.024
Bp	1950	33 421.457	+14302	+.039
	1952	34 121.546	+15491	+.038
RS	1953	34 507.803	+16147	+.039
Bp	1955	35 224.406:	+17364	+.066:
	1957	35 920.374:	+18546	+.066:
	1960	37 018.509	+20411	+.079
	1962	37 757.459:	+21666	+.078:

Var 60 This variable has flat, badly defined ascending branches and this gives rise to scatter in the O—C diagram. The characteristics of the light curve are like those of RRab stars with a period shorter by about $0^{d}1$. (The star belongs to the long period sequence.) The O—C values were computed using the formula:

$$C = 2425000.211 + 0^{d}7077228 \; E.$$

Observer	Year	t(med)hel.	E	O—C
B	1896	J. D. 2413 691.544:	—15979	+^{d}036:
	1899	14 841.570:	—14354	+.012:
	1900	15 160.759:	—13903	+.018:
L	1921	22 730.546	— 3207	+.002
M	1925	24 309.478	— 976	+.004
S	1926	24 620.872	— 536	.000
G	1926	24 647.754	— 498	—.011
Bp	1938	28 963.454:	+ 5600	—.005:
Ma	1940	29 770.276	+ 6740	+.013
Bp	1950	33 421.418	+11899	+.013
	1952	34 118.522	+12884	+.010
RS	1953	34 482.982	+13399	—.007
Bp	1953	34 487.251:	+13405	+.016:
	1955	35 227.540:	+14451	+.027:
	1956	35 600.503:	+14978	+.020:

Var 61 The light curve varies with certainty, the height of maximum indicates differences amounting to $0^{m}5$ at least. Larink's material shows phase shifts amounting to $0^{h}5$ for the middle of the ascending branch, while the minimum remains fixed. Müller's material shows even stronger phase shifts. The O—C diagram is rather complicated, being a superposition of waves of different size. The diagram was constructed with the formula:

$$C = 2425000.025 + 0^{d}5209312 \; E.$$

Observer	Year	t(med)hel.	E	O—C
B	1895	J. D. 2413 378.507:	—22309	—^{d}064:
	1896	13 692.640:	—21706	—.052:
	1897	14 077.606:	—20967	—.055:

Observer	Year	t(med)hel	E	O−C
B	1898	J. D. 2414 437.566:	−20276	−^{d}058:
	1900	15 161.631:	−18886	−.087:
H	1912	19 534.928	−10491	−.008
	1915	20 625.755	− 8397	−.011
L	1921	22 760.575	− 4299	+.033
M	1925	24 289.529	− 1364	+.054
G	1926	24 647.943	− 676	+.067
Sch	1938	28 964.827:	+ 7611	−.005:
H	1939	29 408.653	+ 8463	−.013
Ma	1940	29 770.194	+ 9157	+.002
Bp	1940	29 775.397	+ 9167	−.004
Be	1946	31 973.682:	+13387	−.049:
	1948	32 683.705	+14750	−.055
Bp	1950	33 422.410	+16168	−.031
	1952	34 121.490	+17510	−.040
	1953	34 567.383:	+18366	−.064:
	1956	35 600.425	+20349	−.029
	1962	37 791.424	+24555	−.067

Var 62 Variations may occur in the light curve. A long constant phase seems to be present on the ascending branch (e.g. an interval of about 1^h observed in Budapest on J. D. 2435603). The residuals were calculated by the formula:

$$C = 2425000.440 + 0\overset{d}{.}6524077\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1900	J. D. 2415 160.855:	−15082	+^{d}028:
H	1915	20 654.751	− 6661	−.001
L	1921	22 761.386:	− 3432	+.009:
M	1925	24 311.495	− 1056	−.002
G	1926	24 684.691	− 484	+.016
Bp	1938	28 991.213:	+ 6117	−.005:
H	1939	29 408.759	+ 6757	.000
Ma	1940	29 770.196	+ 7311	+.003
Bp	1940	29 775.416	+ 7319	+.004
Be	1946	31 970.771	+10684	+.007
	1948	32 683.856	+11777	+.011
Bp	1950	33 420.445:	+12906	+.031:
	1952	34 120.469	+13979	+.022
RS	1953	34 508.647:	+14574	+.017:
Bp	1956	35 603.393	+16252	+.023
	1957	35 933.510:	+16758	+.022:
	1960	37 018.475	+18421	+.033

Var 63 The variable has a varying light curve with differences of about $0\overset{m}{.}4$ at maximum. The (O−C)-s do not exhibit large differences from epoch to epoch and therefore the scatter in the O−C diagram is not considerable. Müller's material shows phase-shifts of $0\overset{h}{.}5$ at most in the course of the secondary period. The negative parabola is a relatively suitable fitting for the O−C diagram, which was constructed using the formula:

$$C = 2425000.547 + 0^{d}.5704164\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1895	J. D. 2413 384.515	−20364	−^{d}072
	1900	15 160.806	−17250	−.058
H	1912	19 534.801:	− 9582	−.016:
	1915	20 656.816:	− 7615	−.010:
L	1921	22 760.519	− 3927	−.003
M	1925	24 287.519	− 1250	−.008
		24 311.492	− 1208	+.008
Sch	1938	28 983.766:	+ 6983	+.001:
H	1939	29 408.712	+ 7728	−.013
Ma	1940	29 770.356	+ 8362	−.013
Be	1946	31 968.719	+12216	−.035
	1948	32 682.872:	+13468	−.043:
Bp	1950	33 420.429	+14761	−.034
	1952	34 121.462	+15990	−.043
RS	1953	34 507.608	+16667	−.069
Bp	1955	35 223.495	+17922	−.055
	1956	35 603.386	+18588	−.061
	1957	35 920.525	+19144	−.074
	1960	37 018.571	+21069	−.079
	1962	37 791.472	+22424	−.092

Var 64 From the Budapest material and Belserene's and Roberts and Sandage's observations the existence of a constant phase on the ascending branch is clearly established. The period is rather stable, the O−C diagram is a straight line. The O−C values have been obtained with the formula:

$$C = 2425000.447 + 0^{d}.6054588\ E.$$

Observer	Year	t(med)hel	E	O−C
B	1895	J. D. 2413 383.502:	−19187	−^{d}.007:
	1900	15 161.748	−16250	+.006
H	1912	19 479.868	− 9118	−.006
L	1921	22 761.466	− 3698	+.006
M	1925	24 311.436	− 1138	+.001
G	1926	24 683.788	− 523	−.004
Sch	1938	28 983.761:	+ 6579	+.001:
H	1939	29 367.628:	+ 7213	+.007:
Ma	1940	29 770.269	+ 7878	+.018
Bp	1941	30 078.424	+ 8387	−.006
Be	1946	31 968.673	+11509	+.001
	1948	32 700.677	+12718	+.005
Bp	1950	33 422.378	+13910	−.001
	1952	34 120.478	+15063	+.005
RS	1953	34 483.742	+15663	−.006
Bp	1953	34 487.378	+15669	−.003
	1957	35 920.497	+18036	−.005
	1960	37 057.562	+19914	+.008
	1962	37 791.368	+21126	−.002

Var 65 Apparently there are differences in the slopes of the ascending branches. The characteristics of the light curve are similar to those of RRab stars with periods shorter by about $0^d_.1$. (The star belongs to the long period sequence.) The residuals O—C were computed with the formula:

$$C = 2425000.438 + 0^d_.6683397\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1900	J. D. 2415 161.815	—14721	$+^d$006
H	1912	19 479.977	— 8260	+.025
	1915	20 626.830:	— 6544	+.007:
L	1921	22 761.507	— 3350	+.007
M	1925	24 309.381:	— 1034	+.006:
G	1926	24 683.642:	— 474	—.003:
Sch	1938	28 983.737:	+ 5960	—.006:
H	1939	29 400.777	+ 6584	—.010
Ma	1940	29 770.378	+ 7137	.000
Bp	1940	29 774.390	+ 7143	+.002
	1941	30 078.476	+ 7598	—.007
Be	1946	31 994.605:	+10465	—.008:
	1948	32 683.669:	+11496	—.002:
Bp	1950	33 421.514	+12600	—.004
	1952	34 121.266:	+13647	—.004:
	1953	34 487.516	+14195	—.004:
RS	1953	34 508.902:	+14227	—.005:
Bp	1955	35 223.361:	+15296	—.001:
	1956	35 600.309:	+15860	+.003:
	1957	35 920.442	+16339	+.002
	1960	37 018.531	+17982	+.009
	1962	37 791.136:	+19138	+.013:

Var 66 The star has a varying light curve with differences of $0^m_.3$ in the height of the maximum. The O—C diagram exhibits abrupt variations and great cycles. Prior to Larink's observations it is quite uncertain. Baker's values may be shifted by 1P or 2P downwards. The unmeasured Mt. Wilson plates of 1912 and 1915 represent a considerable want. The (O—C)-s were constructed by the formula:

$$C = 2425000.050 + 0^d_.6201827\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1895	J. D. 2413 384.481:	—18729	$-^d_.167$:
	1897	14 078.500:	—17610	—.133:
	1899	14 839.531:	—16383	—.066:
	1900	15 160.843	—15865	—.008
L	1921	22 760.548	— 3611	—.022
M	1925	24 287.483	— 1149	+.023
S	1926	24 621.761	— 610	+.022
G	1926	24 683.784	— 510	+.027
Ma	1940	29 770.514	+ 7692	+.019
Bp	1940	29 775.465:	+ 7700	+.008:
	1950	33 421.468	+13579	—.043
	1951	33 763.178:	+14130	—.054:

Observer	Year	t(med)hel.	E	O−C
Bp	1952	J. D. 2434 118.535	+14703	−^{d}.061
RS	1953	34 483.878	+15292	−.006
Bp	1955	35 224.441	+16486	+.059
	1956	35 603.368	+17097	+.054
	1960	37 018.674:	+19379	+.103:
	1962	37 791.401	+20625	+.083

Var 67 The star has a strongly variable light curve. The differences in the height of maximum amount to $0^m.5$ at least, those of the minimum to about $0^m.1 - 0^m.2$. The medium point of the ascending branch shows little phase-shifts in the course of the light curve variations. Therefore, in spite of the considerable variations of the light curve, the scatter in the O−C diagram is very small. The diagram was constructed with the formula:

$$C = 2425000.199 + 0^d.5683609\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1896	J. D. 2413 664.642:	−19944	−^{d}.167:
	1897	14 079.559:	−19214	−.154:
	1900	15 161.750	−17310	−.122
L	1921	22 761.417	− 3939	−.008
M	1925	24 312.483	− 1210	+.001
S	1926	24 642.698	− 629	−.002
G	1926	24 647.814	− 620	−.001
Ma	1940	29 770.433	+ 8393	−.019
Bp	1940	29 744.399	+ 8400	−.032
	1941	30 078.469	+ 8935	−.035
Be	1946	31 968.813	+12261	−.059
	1948	32 683.804	+13519	−.066
Bp	1950	33 421.515	+14817	−.087
	1952	34 120.581	+16047	−.105
RS	1953	34 483.756	+16686	−.113
Bp	1956	35 603.398	+18656	−.142
	1957	35 920.522	+19214	−.163
	1960	37 018.575	+21146	−.184
	1962	37 791.522	+22506	−.207

Var 68 The star is one of the most interesting variables in M3. It is probably of RRc type with such extremely strong light curve variations, that it has no sense to construct normal points even for a limited part of the light curve. The height of maximum varies with an amplitude of $0^m.7$ at least, while differences of the brightness of minimum amount to several decimals of a magnitude. Martin's period seems to be correct, however, it provides large residuals amounting to $0^d.12 = 3^h$, i.e. the 1/3 of the period for the median point of the ascending branch. Using Martin's period, a secondary period of $10^d.9$ can be deduced from Müller's well observed ascending branches (Figure 14). In this way the shortest beat period of RR Lyrae variables has been assigned to this star. The shortness of this secondary period gives account of the rapid changes in the light curve. No connection between the observations obtained in different years is possible for improving the secondary period. In the O−C

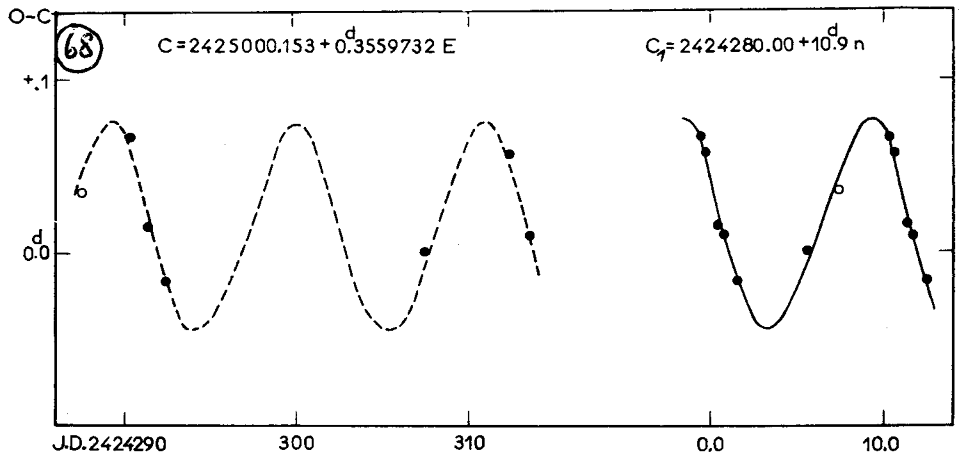


Fig. 14.

diagram the weighted means of the residuals obtained from our observations are shown. Of course both the fundamental and the secondary period are yet questionable, the observational material being too poor for a final decision. The O—C diagram was computed with the formula:

$$C = 2425000.153 + 0^d.3559732\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1895	J. D. 2413 386.507:	—32625	—.ᵈ020:
	1900	15 161.714:	—27638	—.052:
L	1921	22 730.510	— 6376	+.042
		22 756.448	— 6303	—.006
		22 761.408:	— 6289	—.030:
M	1925	24 287.531:	— 2002	+.036:
		24 290.409	— 1994	+.067
		24 291.426	— 1991	+.016
		24 292.462	— 1988	—.016
		24 307.430	— 1946	+.001
		24 312.470	— 1932	+.057
		24 313.491	— 1929	+.010
G	1926	24 647.765:	— 990	+.025:
		24 684.772	— 886	+.011
Bp	1941	30 078.483	+14266	+.016
	1950	33 421.382	+23657	—.029
		33 422.419	+23660	—.060
	1951	33 763.490	+24618	—.011
	1952	34 118.440	+25615	+.033
		34 120.503	+25621	—.039
RS	1953	34 447.695:	+26540	+.013:
		34 507.840	+26709	—.001
Bp	1955	35 227.596	+28731	—.023
	1956	35 598.545:	+29773	+.002:
		35 600.367	+29778	+.044
	1957	35 933.505	+30714	—.009
	1960	36 991.480	+33686	+.014
		37 018.500	+33762	—.020
	1962	37 791.300:	+35933	—.038:

Var 69 The star has a close companion, therefore the measures are uncertain and the scatter is considerable. The light curve outlined by the normal points is probably heavily distorted and the brightness data are not real. The residuals were computed with the formula:

$$C = 2425000.106 + 0\overset{d}{.}5665878\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1900	J. D. 2415 160.847	−17366	+ᵈ.105
L	1921	22 756.431	− 3960	+.013
M	1925	24 309.435	− 1219	.000
G	1926	24 647.688	− 622	.000
Ma	1940	29 770.229	+ 8419	+.020
Bp	1941	30 078.457	+ 8963	+.025
	1950	33 422.511	+14865	+.077
	1952	34 120.565:	+16097	+.095:
	1956	35 600.520	+18709	+.123
	1962	37 791.575:	+22576	+.183:

Var 70 The period is very probably about $0\overset{d}{.}486$, however its strong variations in both directions make the construction of the O−C diagram and of the mean light curve impossible. The star is probably of RRc type.

Var 71 The star lies near var 54. On plates of poor quality they are blurred together providing a considerable scatter. Larink's observations on J.D. 2422760 show peculiar scatter. The O−C diagram consists of several small cycles. It was calculated with the formula:

$$C = 2425000.139 + 0\overset{d}{.}5490517\ E$$

Observer	Year	t(med)hel.	E	O−C
B	1897	J. D. 2414 079.540:	−19890	+ᵈ.039:
	1900	15 161.698:	−17919	+.016:
L	1921	22 760.565	− 4079	+.008
M	1925	24 309.437	− 1258	+.005
G	1926	24 647.647:	− 642	−.001:
Ma	1940	29 770.335	+ 8688	+.035
Bp	1941	30 078.358:	+ 9249	+.040:
	1950	33 421.523	+15338	+.029
	1952	34 121.564	+16613	+.029
RS	1953	34 447.702	+17207	+.030
Bp	1953	34 567.393:	+17425	+.028:
	1955	35 223.511	+18620	+.029
	1956	35 603.455	+19312	+.030
	1960	36 991.461	+21840	+.033
	1962	37 791.430	+23297	+.034

Var 72 The star is of RRab type having a large amplitude and a steep ascending branch. The residuals were computed with the formula:

$$C = 2425000.166 + 0^d\!.4560739\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1895	J. D. 2413 378.519:	−25482	$+0^d\!.028$:
	1899	14 841.593:	−22274	+.017:
	1900	15 161.763	−21572	+.023
H	1915	20 654.695:	− 9528	+.001:
L	1921	22 733.483	− 4970	+.004
M	1925	24 311.491	− 1510	−.003
Sch	1938	28 964.824:	+ 8693	+.008:
H	1939	29 423.633	+ 9699	+.006
Bp	1940	29 720.543	+10350	+.012
Ma	1940	29 770.250	+10459	+.007
Bp	1941	30 078.561:	+11135	+.012:
Be	1946	31 971.726	+15286	+.014
	1948	32 682.746	+16845	+.015
Bp	1950	33 422.499	+18467	+.016
	1952	34 118.468	+19993	+.017
RS	1953	34 483.780	+20794	+.013
Bp	1953	34 487.434	+20802	+.019
	1955	35 223.542	+22416	+.023
	1956	35 603.453	+23249	+.025
	1960	37 057.424:	+26437	+.032:
	1962	37 791.248:	+28046	+.033:

Var 73 The star is a variable of small range, the period is longer than half a day.

Var 74 The section of the O−C diagram preceding Müller's observations is uncertain, the Mt. Wilson material of 1912 and 1915 would be of great importance. The O−C diagram was calculated using the formula:

$$C = 2425000.082 + 0^d\!.4921441\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1895	J. D. 2413 386.514:	−23598	$+0^d\!.048$:
	1896	13 691.629:	−22978	+.034:
M	1925	24 290.412	− 1442	+.002
G	1926	24 647.708	− 716	+.001
Ma	1940	29 770.448	+ 9693	+.013
Bp	1941	30 078.532	+ 10319	+.015
	1950	33 421.191:	+17111	+.031:
	1952	34 120.527	+18532	+.031
RS	1953	34 483.728	+19270	+.029
Bp	1953	34 567.397:	+19440	+.034:
	1955	35 223.426	+20773	+.035
	1956	35 600.410	+21539	+.036
	1960	37 018.282:	+24420	+.041:
	1962	37 791.447	+25991	+.048

Var 75 According to Larink's observations the star is of RRc type with varying light curve. There is a difference of $0^m\!.37$ between the maxima of J. D. 2422729.60 and J. D. 2422761.63 although the scatter is considerable. The faint-

ness of the last maximum is very strange, as the maximum on the preceding day, J. D. 2422760.7 seems to be high. The O—C diagram was constructed with the ephemeris:

$$C = 2425000.032 + 0^{d}.3140790 \text{ E.}$$

Observer	Year	t(med)hel.	E	O—C
B	1897	J. D. 2414 077.600:	—34776	—^{d}.021:
	1900	15 161.807:	—31324	—.014:
L	1921	22 760.647	— 7130	—.002
M	1925	24 290.535	— 2259	+.007
G	1926	24 684.695	— 1004	—.002
Ma	1940	29 770.268	+15188	+.004
Bp	1940	29 775.296:	+15204	+.007:
	1941	30 078.380:	+16169	+.005:
	1950	33 420.500	+26810	+.010
	1951	33 763.471	+27902	+.007
	1952	34 121.520	+29042	+.006
	1953	34 487.419	+30207	+.003
RS	1953	34 508.776	+30275	+.002
Bp	1955	35 224.554	+32554	—.006
	1956	35 600.497	+33751	—.015
	1957	35 920.540	+34770	—.019
	1960	37 018.551:	+38266	—.028:
	1962	37 791.491	+40727	—.036

Var 76 The star is close to the centre, the observations are very uncertain. In spite of that, the errors of the O—C values do not exceed the average, due to the large amplitude and steep rising branch of the light curve. The descending branch is unusually steep. The residuals O—C were computed using the formula:

$$C = 2425000.148 + 0^{d}.5017544 \text{ E.}$$

Observer	Year	t(med)hel	E	O—C
B	1895	J. D. 2413 372.519:	—23174	+.027:
	1896	13 691.637:	—22538	+.030:
	1900	15 161.768	—19608	+.020
G	1926	24 647.916	— 702	.000
Ma	1940	29 770.340	+ 9507	+.013
Bp	1941	30 078.414	+10121	+.010
	1950	33 390.502	+16722	+.017
	1952	34 120.554	+18177	+.016
	1953	34 487.338:	+18908	+.018:
	1955	35 223.409	+20375	+.015
	1957	35 933.397:	+21790	+.021:
	1962	37 791.420	+25493	+.047

Var 77 The star lies near the centre, the scatter is considerable and the observations are systematically too bright. The O—C diagram was constructed with the formula:

$$C = 2425000.162 + 0^d.4593425 \text{ E.}$$

Observer	Year	t(med)hel.	E	O–C
B	1896	J. D. 2413 692.543:	−24617	+^{d}.015:
	1898	14 438.521:	−22993	+.021:
L	1921	22 730.561	− 4941	+.010
M	1925	24 291.399	− 1543	+.002
S	1926	24 642.796	− 778	+.002
G	1926	24 683.675	− 689	.000
Bp	1938	28 991.391:	+ 8689	+.002:
Ma	1940	29 770.441	+10385	+.007
Bp	1941	30 052.480	+10999	+.010
	1950	33 390.529	+18266	+.017
	1951	33 763.517	+19078	+.019
	1952	34 120.436:	+19855	+.029:
	1953	34 487.443	+20654	+.021
	1956	35 600.428	+23077	+.019
	1957	35 933.455:	+23802	+.023:
	1960	37 018.429:	+26164	+.030:
	1962	37 791.507	+27847	+.034

Var 78 The star is close to the centre, the scatter is significant, and the observations are systematycally higher. The flat slope of the ascending branches and the small range increase the uncertainty in determining the epochs. Martin's epoch deviates conspicuously from our O—C diagram. The rate of the period-increase shows a growing tendency during the last 60 years. The O—C diagram was constructed with the formula:

$$C = 2425000.440 + 0^d.6119254 \text{ E.}$$

Observer	Year	t(med)hel.	E	O–C
B	1900	J. D. 2415 160.701:	−16080	+^{d}.021:
L	1921	22 756.508	− 3667	−.002
M	1925	24 292.454	− 1157	+.012
G	1926	24 684.686	− 516	.000
Bp	1938	28 991.412	+ 6522	−.005
Ma	1940	29 770.460:	+ 7795	+.062:
Bp	1950	33 390.560	+13711	+.011
	1953	34 567.304:	+15634	+.022:
	1955	35 227.574	+16713	+.025
	1962	37 791.573	+20903	+.056

Var 79 The light curve varies with an amplitude of $0^m.5$ in the maximum light and of about $0^h.5$ in the O—C residuals. No period was found which would have satisfied Baker's observations. The O—C diagram has a discontinuity between J. D. 2424700 and 2429000. The intermediate observations are lacking very much. The O—C diagram computed with the formula:

$$C = 2425000.077 + 0^d.4833275\ E$$

is rather complicated.

Observer	Year	t(med)hel.	E	O−C
B	1895	J. D. 2413 372.554:	−24057	−^{d}.113:
	1896	13 724.645:	−23329	+.115:
	1897	14 078.541:	−22597	+.216:
	1898	14 437.530:	−21854	+.092:
	1899	14 841.592:	−21018	+.092:
H	1912	19 534.801	−11308	+.191
	1915	20 625.642:	− 9051	+.162:
L	1921	22 730.528	− 4696	+.157
		22 760.478	− 4634	+.141
M	1925	24 309.473	− 1429	+.071
G	1926	24 647.731	− 729	.000
Bp	1938	28 991.520	+ 8258	+.125
H	1939	29 408.663	+ 9121	+.156
Ma	1940	29 770.202	+ 9869	+.166
Bp	1941	30 052.476	+10453	+.177
Be	1946	31 974.682	+14430	+.189
	1948	32 682.749	+15895	+.181
Bp	1951	33 763.442	+18131	+.154
	1952	34 121.586	+18872	+.152
	1953	34 487.470	+19629	+.158
RS	1953	34 508.733	+19673	+.154
Bp	1955	35 224.534	+21154	+.147
	1956	35 603.468	+21938	+.152
	1957	35 933.573	+22621	+.145
	1960	37 018.644	+24866	+.145
	1962	37 791.450	+26465	+.111

Var 80 The star has a considerably varying light curve, differences of at least $0^m.7$ can be taken certain in the height of maximum, while the phase-shifts are unsignificant. There is an abrupt change in the course of the O−C diagram at about J. D. 2429500. Before this abrupt change in the period some variations of the light curve can be detected (Larink, Müller, Greenstein), the phenomenon is however not very significant. The residuals were computed with the formula:

$$C = 2425000.073 + 0^d.5384827\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1895	J. D. 2413 380.522:	−21577	−^{d}.710:
	1897	14 079.525	−20279	−.657
	1898	14 456.494:	−19579	−.626:
	1899	14 841.565:	−18864	−.570:
H	1912	19 479.791:	−10251	−.296:
	1915	20 625.775	− 8123	−.203
L	1921	22 760.441	− 4159	−.082
M	1925	24 313.488	− 1275	−.020
G	1926	24 647.887	− 654	−.018
Bp	1938	28 991.468	+ 7412	+.161
H	1939	29 400.744	+ 8172	+.190
Bp	1940	29 774.410	+ 8866	+.149

Observer	Year	t(med)hel.	E	O−C
Ma	1940	J. D. 2429 780.325	+ 8877	+^{d}141
		29 781.400	+ 8879	+.139
Bp	1941	30 078.564:	+ 9431	+.061:
Be	1946	31 994.748	+12990	−.215
	1948	32 700.716:	+14301	−.198:
Bp	1950	33 390.470:	+15582	−.240:
	1952	34 118.483	+16934	−.256
	1955	35 224.514	+18988	−.269
	1956	35 600.326:	+19686	−.317:
	1957	35 920.531	+20281	−.510
	1960	36 991.404:	+22270	−.679:
	1962	37 791.559	+23756	−.709

Var 81 The period seems to be rather constant, the O−C diagram contains only little waves. The diagram was constructed with the formula:

$$C = 2425000.316 + 0^{d}.5291105\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1895	J. D. 2413 380.543:	−21961	+^{d}023:
	1896	13 691.660:	−21373	+.023:
H	1915	20 654.730	− 8213	−.001
L	1921	22 760.592	− 4223	+.001
M	1925	24 284.428	− 1353	−.001
G	1926	24 647.929	− 666	+.001
Bp	1938	28 991.407	+ 7543	+.010
H	1939	29 431.629	+ 8375	+.013
Bp	1940	29 720.527:	+ 8921	+.016:
Ma	1940	29 770.261	+ 9015	+.014
Be	1946	31 995.700	+13221	+.014
Bp	1951	33 763.460	+16562	+.016
	1952	34 126.431	+17248	+.017
RS	1953	34 507.918:	+17969	+.015:
Bp	1955	35 227.514:	+19329	+.021:
	1956	35 603.182:	+20039	+.021:
	1960	37 018.562	+22714	+.030

Var 82 The star is a typical RRab variable with steep ascending branch and large amplitude. The residuals O−C calculated by the formula:

$$C = 2425000.171 + 0^{d}.5245061\ E$$

outline a positive parabola.

Observer	Year	t(med)hel.	E	O−C
B	1895	J. D. 2413 372.512:	−22169	+^{d}117:
	1897	14 079.527:	−20821	+.098:
L	1921	22 761.589	− 4268	+.010
M	1925	24 289.466	− 1355	+.001
G	1926	24 647.703	− 672	.000

Observer	Year	t(med)hel.	E	O−C
Bp	1938	J. D. 2428 963.344:	+ 7556	+$^{d}_{.}$005:
Ma	1940	29 770.045	+ 9094	+.016
Bp	1941	30 078.453	+ 9682	+.014
	1952	34 121.391	+17390	+.059
	1953	34 487.510	+18088	+.073
	1955	35 224.451	+19493	+.083
	1956	35 600.526	+20210	+.087
	1957	35 920.486	+20820	+.098
	1960	37 018.303:	+22913	+.124:
	1962	37 791.437	+24387	+.136

Var 83 The star has a large amplitude and a steep rising branch. A positive parabola fits the residuals well which are calculated using the formula:

$$C = 2425000.113 + 0^{d}_{.}5012408\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1895	J. D. 2413 383.500:	−23176	+$^{d}_{.}$144:
	1900	15 161.850	−19628	+.091
H	1912	19 479.975:	−11013	+.027:
	1915	20 625.801	− 8727	+.016
L	1921	22 761.579	− 4466	+.007
M	1925	24 309.406:	− 1378	+.003:
S	1926	24 642.728	− 713	.000
G	1926	24 684.833	− 629	.000
Bp	1938	28 991.510:	+ 7963	+.017:
	1939	29 346.386:	+ 8671	+.014:
Ma	1940	29 770.441	+ 9517	+.019
Bp	1940	29 775.452:	+ 9527	+.018:
Be	1948	32 683.690	+15329	+.057
Bp	1950	33 421.529	+16801	+.069
	1951	33 763.378	+17483	+.072
RS	1953	34 508.734	+18970	+.083
Bp	1953	34 567.386:	+19087	+.090:
	1955	35 223.520	+20396	+.100
	1956	35 600.460	+21148	+.107
	1960	37 018.500	+23977	+.136
	1962	37 791.432	+25519	+.155

Var 84 A hump can be suspected in the ascending branch. The O−C diagram is probably a negative parabola but a sinusoidal wave represents it equally well. The residuals were calculated by the formula:

$$C = 2425000.256 + 0^{d}_{.}5957289\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1895	J. D. 2413 383.536:	−19500	−$^{d}_{.}$006:
	1897	14 071.596:	−18345	−.013:
	1900	15 161.783	−16515	−.010
L	1921	22 730.528	− 3810	−.001

Observer	Year	t(med)hel.	E	O—C
M	1925	J. D. 2424 298.486	— 1178	$-^{d}.001$
Ma	1940	29 770.260	+ 8007	+.003
Bp	1940	29 774.430:	+ 8014	+.003:
	1941	30 078.254:	+ 8524	+.005:
	1950	33 421.470	+14136	—.010
	1951	33 763.422	+14710	—.006
	1952	34 118.474	+15306	—.009
RS	1953	34 447.903	+15859	—.018
Bp	1953	34 487.234:	+15925	—.005:
	1955	35 223.550	+17161	—.010
	1957	35 920.551	+18331	—.011
	1960	37 018.484:	+20174	—.007:

Var 85 The star is of RRc type. Baker's observations are of poor quality. Small differences are probable from epoch to epoch. The O—C diagram consists of small and large cycles separated by abrupt changes. On basis of this evidence variations of the light curve can be expected. Most of the maxima seem to be double. The O—C diagram was constructed with the formula:

$$C = 2425000.158 + 0^{d}.3558189\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1900	J. D. 2415 161.735	—27650	$-^{d}.030$
H	1912	19 479.931	—15514	—.053
	1915	20 654.832	—12212	—.066
L	1921	22 760.582:	— 6294	—.052:
M	1925	24 292.417	— 1989	—.017
G	1926	24 647.892	— 990	—.005
H	1939	29 408.737	+12390	—.017
Ma	1940	29 770.247	+13406	—.019
Bp	1941	30 078.390:	+14272	—.015:
Be	1946	31 971.746	+19593	+.028
	1948	32 683.749:	+21594	+.038:
Bp	1950	33 422.419	+23670	+.028
	1951	33 763.274:	+24628	—.008:
	1952	34 120.486	+25632	—.022
RS	1953	34 482.714	+26650	—.018
Bp	1953	34 487.349	+26663	—.008
	1955	35 223.516	+28732	—.031
	1956	35 600.330	+29791	—.029
	1960	37 018.625	+33777	—.028
	1962	37 791.443	+35949	—.049

Var 86 The star is of RRc type. Belserene's and Roberts and Sandage's observations suggest irregularities, but the Budapest material does not prove this conclusion. The normal points do not outline the exact shape of the light curve. The residuals were calculated using the formula:

$$C = 242\ 5000.233 + 0\overset{d}{.}2926601\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1895	J. D. 2413 386.523:	−39683	−$\overset{d}{.}$079:
	1897	14 079.545:	−37315	−.076:
	1899	14 841.636:	−34711	−.072:
	1900	15 161.817	−33617	−.061
H	1912	19 534.756	−18675	−.050
	1915	20 625.798	−14947	−.044
L	1921	22 760.487	− 7653	−.018
M	1925	24 310.429	− 2357	−.004
G	1926	24 684.744	− 1078	−.001
Sch	1938	28 965.750:	+13550	−.027:
Bp	1938	28 991.508:	+13638	−.023:
H	1939	29 431.672	+15142	−.020
Bp	1940	29 720.523:	+16129	−.025:
Ma	1940	29 770.272	+16299	−.028
Bp	1941	30 078.431	+17352	−.040
Be	1946	31 970.763	+23818	−.048
	1948	32 683.677	+26254	−.054
Bp	1950	33 421.460	+28775	−.067
	1951	33 763.594	+29944	−.053
	1952	34 121.515	+31167	−.055
	1953	34 487.325:	+32417	−.070:
RS	1953	34 508.696	+32490	−.064
Bp	1955	35 224.535	+34936	−.071
	1956	35 600.315	+36220	−.067
	1957	35 920.478:	+37314	−.074:
	1960	37 018.525	+41066	−.088
	1962	37 791.426	+43707	−.102

Var 87 The star is of RRc type, close to the centre, therefore the scatter is considerable and the observations are systematically too high. The small range increases the uncertainty in determining the epochs. Bakers's observations are of poor quality. Larink's maximum at J. D. 2422756.55 is extremely low. The differences in Müller's maxima and ascending branches suggest variations of the light curve. Because of the considerable scatter in our observations we can make no conclusions about eventual light curve changes. The O−C values preceding Larink are uncertain. The (O−C)-s were calculated with the formula:

$$C = 2425000.037 + 0\overset{d}{.}3574814\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1900	J. D. 2415 161.796:	−27521	+$\overset{d}{.}$005:
L	1921	22 761.526	− 6262	+.036
M	1925	24 290.454	− 1985	+.018
G	1926	24 683.674	− 885	+.008
Bp	1940	29 720.562:	+13205	−.017:
Ma	1940	29 770.283:	+13344	+.014:
Bp	1941	30 078.411	+14206	−.007
	1950	33 420.506	+23555	−.005
	1952	34 121.526	+25516	−.006
RS	1953	34 482.955	+26527	+.009
Bp	1955	35 224.387:	+28601	+.024:
	1956	35 600.444	+29653	+.011
	1960	36 991.481:	+33544	+.088:
	1962	37 791.453	+35782	+.017

Var 88 The star is of the RRc type. It is situated very near the centre. The observations therefore exhibit considerable errors and the observations are systematically brighter. Martin's epoch deviates considerably from our O—C diagram. We are in need of the Mt. Wilson material of 1912 and 1915. The O—C diagram covering an interval longer than 60 years can be represented by a single large sinusoidal wave. The residuals were computed with the formula:

$$C = 2425000.125 + 0\overset{d}{.}2985092\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1897	J. D. 2414 078.524:	—36587	—ᵈ045:
	1900	15 161.780	—32958	—.079
L	1921	22 761.550	— 7499	—.055
M	1925	24 288.466	— 2384	—.013
G	1926	24 683.708	— 1060	+.003
Bp	1940	29 720.558:	+15813	+.107:
Ma	1940	29 770.158:	+15979	+.154:
Bp	1941	30 078.458	+17012	+.094
	1950	33 421.453	+28211	+.085
	1951	33 763.543:	+29357	+.083:
	1952	34 121.431	+30556	+.059
	1953	34 487.408	+31782	+.064
	1955	35 223.502	+34248	+.034
	1956	35 603.511	+35521	+.041
	1957	35 920.487:	+36583	.000:
	1960	37 018.390	+40261	—.014
	1962	37 791.499	+42851	—.044

Var 89 The hump in the ascending branch is well pronounced. The O—C diagram represents a part of a long sinusoidal wave. The star is close to the centre, therefore the brightness data are systematically higher. The O—C diagram is constructed with the formula:

$$C = 2425000.487 + 0\overset{d}{.}5484779\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1900	J. D. 2415 160.779	—17940	—ᵈ014
L	1921	22 761.597	— 4082	—.003
M	1925	24 292.402	— 1291	.000
G	1926	24 647.815	— 643	—.001
Ma	1940	29 770.064	+ 8696	+.013
Bp	1941	30 078.309:	+ 9258	+.014:
	1950	33 390.562	+15297	+.009
	1951	33 763.529	+15977	+.011
	1952	34 118.388	+16624	+.004
	1953	34 487.518	+17297	+.009
	1955	35 223.570	+18639	+.003
	1956	35 600.374	+19326	+.003
	1962	37 791.538	+23321	—.002

Var 90 The scatter in minimum is considerable. The residuals O—C outline a sinusoidal wave of small range. The residuals are computed with the formula:

$$C = 2425000.182 + 0^d.5170334\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1895	J. D. 2413 384.501:	−22466	−^{d}.009:
	1896	13 691.619:	−21872	−.008:
	1899	14 841.496:	−19648	−.014:
H	1912	19 479.827:	−10677	+.011:
	1915	20 625.573:	− 8461	+.011:
L	1921	22 761.437	− 4330	+.010
M	1925	24 309.434	− 1336	+.009
G	1926	24 683.761	− 612	+.003
Sch	1938	28 965.826:	+ 7670	−.002:
H	1939	29 431.669	+ 8571	−.006
Ma	1940	29 770.329	+ 9226	−.003
Bp	1941	30 078.479	+ 9822	−.005
Be	1946	31 968.751	+13478	−.007
	1948	32 683.804:	+14861	−.011:
Bp	1950	33 390.595:	+16228	−.005:
	1951	33 763.373:	+16949	−.008:
	1952	34 118.576:	+17636	−.007:
RS	1953	34 447.918	+18273	−.015
Bp	1955	35 223.473	+19773	−.010
	1956	35 600.392	+20502	−.009
	1957	35 920.433:	+21121	−.011:
	1960	37 018.621:	+23245	−.002:
	1962	37 791.584:	+24740	−.004:

Var 91 Small variations of the light curve are probable. The Budapest material contains no maxima, only a few rising branches. A positive parabola represents a good approximation to the O−C diagram. The diagram is constructed using the formula:

$$C = 2425000.100 + 0^d.5301630\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1895	J. D. 2413 383.490:	−21911	−^{d}.209:
	1896	13 692.629:	−21328	−.155:
	1897	14 079.630:	−20598	−.173:
	1898	14 437.517:	−19923	−.146:
	1899	14 841.513	−19161	−.134
	1900	15 161.731	−18557	−.134
L	1921	22 756.447	− 4232	−.003
M	1925	24 312.462	− 1297	−.016
Ma	1940	29 770.473	+ 8998	−.034
Bp	1940	29 775.264:	+ 9007	−.014:
	1941	30 078.525	+ 9579	−.006
	1950	33 390.372:	+15826	−.088:
	1952	34 121.431	+17205	−.123
	1953	34 487.244:	+17895	−.123:
	1955	35 227.338:	+19291	−.136:
	1956	35 603.221:	+20000	−.139:
	1957	35 933.487	+20623	−.165
	1960	37 058.474:	+22745	−.183:
	1962	37 791.144:	+24127	−.199:

Var 92 Small variations of the light curve can be established with certainty. Larink's rising branch of J. D. 2422730.5 is extremely steep, while Müller obtained rising branches with small slope. Similarly Belserene's rising branches of 1946 have slighter slopes than those of 1948. The phase shift of the maxima has an amplitude of about $0^h.15$ according to Budapest material. The scatter in the O—C diagram is caused by the light curve variations. The diagram is constructed using the formula:

$$C = 2425000.050 + 0^d.5035553\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1896	J. D. 2413 691.670:	—22457	—^{d}.039:
	1897	14 036.595:	—21772	—.049:
	1898	14 456.576:	—20938	—.043:
H	1915	20 625.669	— 8687	+.004
L	1921	22 730.517	— 4507	—.009
M	1925	24 290.539	— 1409	—.002
S	1926	24 621.880	— 751	.000
G	1926	24 684.828	— 626	+.004
Bp	1938	28 991.209:	+ 7926	—.020:
H	1939	29 404.646	+ 8747	—.002
Ma	1940	29 770.205	+ 9473	—.024
Bp	1941	30 078.403:	+10085	—.002:
Be	1946	31 971.745	+13845	—.028
	1948	32 684.777	+15261	—.030
Bp	1950	33 421.487	+16724	—.022
	1951	33 763.385	+17403	—.038
	1952	34 121.432	+18114	—.019
	1953	34 487.495	+18841	—.040
	1956	35 603.371	+21057	—.043
	1960	37 018.378:	+23867	—.026:
	1962	37 791.335:	+25402	—.027:

Var 93 The hump in the ascending branch is well pronounced and lasts about $0^h.5$. The diagram is computed with the ephemeris:

$$C = 2425000.093 + 0^d.6022991\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1897	J. D. 2414 078.534:	—18133	—^{d}.069:
	1899	14 841.610:	—16866	—.106:
	1900	15 160.850	—16336	—.085
H	1912	19 479.946	— 9165	—.076
	1915	20 626.749:	— 7261	—.050:
L	1921	22 756.530	— 3725	+.001
M	1925	24 298.419	— 1165	+.004
S	1926	24 621.851	— 628	+.002
G	1926	24 647.745	— 585	—.003
Sch	1938	28 983.693:	+ 6614	—.006:
Bp	1938	28 991.527	+ 6627	—.002
H	1939	29 407.724	+ 7318	+.006
Ma	1940	29 770.305	+ 7920	+.003
Be	1946	31 971.703	+11575	—.002

Observer	Year	t(med) hel.	E	O—C
Be	1948	J. D. 2432 683.622:	+12757	—^{d}001:
Bp	1950	33 421.443	+13982	+.004
	1952	34 118.297:	+15139	—.002:
RS	1953	34 482.681	+15744	—.009
Bp	1953	34 487.507	+15752	—.001
	1955	35 223.516	+16974	—.002
	1960	37 057.523	+20019	+.004
	1962	37 791.121:	+21237	+.002:

Var 94 Unfortunately, the Budapest material does not contain maxima and well observed rising branches. Therefore the light curve is uncertain. After all, the variable is a simple one, having a straight line for its O—C diagram. The diagram is constructed with the formula:

$$C = 2425000.049 + 0^{d}.5236937\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1895	J. D. 2413 383.480:	—22182	+^{d}007:
	1897	14 080.510:	—20851	—.002:
H	1912	19 534.778:	—10436	—.004:
	1915	20 625.620:	— 8353	—.016:
L	1921	22 756.544	— 4284	—.001
M	1925	24 289.401	— 1357	+.004
S	1926	24 620.894	— 724	—.001
G	1926	24 683.738	— 604	.000
Bp	1938	28 963.369:	+ 7568	+.006:
Sch	1938	28 983.780:	+ 7607	—.007:
H	1939	29 367.654	+ 8340	.000
Bp	1940	29 719.568	+ 9012	—.009
Ma	1940	29 770.373	+ 9109	—.002
Bp	1941	30 078.307:	+ 9697	.000:
Be	1946	31 966.749	+13303	+.003
	1948	32 683.682	+14672	—.001
Bp	1950	33 420.528	+16079	+.008
	1952	34 122.271:	+17419	+.001:
	1953	34 487.284:	+18116	.000:
RS	1953	34 508.755	+18157	—.001
Bp	1956	35 603.275:	+20247	.000:
	1960	37 057.573	+23024	.000
	1962	37 791.272:	+24425	+.004:

Var 96 The period is nearly half a day, therefore, in some years the observations do not contain rising branches. The period decreases rather rapidly. The residuals are calculated with the formula:

$$C = 2425000.059 + 0^{d}.4994467\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1900	J. D. 2415 161.835	—19698	—^{d}123
L	1921	22 761.537	— 4482	—.002
G	1926	24 647.946	— 705	—.003

Observer	Year	t(med)hel.	E	O−C
Ma	1940	J. D. 2429 770.243	+ 9551	−^{d}031
Bp	1940	29 774.244:	+ 9559	−.026:
	1941	30 078.401:	+10168	−.032:
Be	1946	31 968.775	+13953	−.064
Bp	1951	33 763.252:	+17546	−.099:
	1952	34 118.347	+18257	−.110
RS	1953	34 482.932	+18987	−.121
Bp	1953	34 487.431	+18996	−.118
	1955	35 227.593	+20478	−.136
	1960	37 018.564	+24064	−.180
	1962	37 791.179:	+25611	−.209:

Var 97 The star is of RRc-type. Small irregularities are possible, a slow increase of the period is certain. The residuals O−C are calculated with the formula:

$$C = 2425000.266 + 0^d\!.3349289\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1900	J. D. 2415 161.759	−29375	+^{d}025
H	1912	19 479.963	−16482	−.005
	1915	20 625.760	−13061	.000
L	1921	22 760.601	− 6687	+.005
M	1925	24 287.533	− 2128	−.004
S	1926	24 620.803	− 1133	+.011
G	1926	24 683.761	− 945	+.003
Sch	1938	28 964.832:	+11837	+.013:
Bp	1938	28 991.635:	+11917	+.021:
H	1939	29 431.723	+13231	+.013
Ma	1940	29 770.320	+14242	−.003
Bp	1940	29 775.353:	+14257	+.006:
	1941	30 078.464	+15162	+.006
Be	1946	31 969.811	+20809	+.010
	1948	32 683.884:	+22941	+.014:
Bp	1950	33 422.405	+25146	+.017
	1951	33 763.358:	+26164	+.012:
	1952	34 118.382	+27224	+.012
RS	1953	34 483.796	+28315	+.018
Bp	1953	34 487.485	+28326	+.023
	1955	35 224.344:	+30526	+.038:
	1956	35 600.459	+31649	+.028
	1957	35 933.393:	+32643	+.043:
	1960	37 018.553	+35883	+.033
	1962	37 791.577	+38191	+.041

Var 99 The period is probably about half a day, its variation is certain.

Var 100 The star is close to the centre, therefore, the observations are systematically high and their scatter is large. The errors of the epochs are increased by the fact that the ascending branch is flat, the amplitude small. The scatter in the O−C diagram arises from these circumstances. The (O−C)-s are computed with the formula:

$$C = 2425000.074 + 0^d.6188126\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1895	J. D. 2413 390.520:	—18761	—^{d}.011:
	1898	14 437.549:	—17069	—.013:
L	1921	22 760.602	— 3619	+.011
M	1925	24 309.479	— 1116	.000
G	1926	24 647.958:	— 569	—.012:
Ma	1940	29 770.501	+ 7709	+.001
Bp	1940	29 775.450	+ 7717	—.001
	1950	33 421.481	+13609	—.014
	1952	34 118.271:	+14735	—.007:
	1955	35 223.464	+16521	—.013
	1956	35 603.414	+17135	—.014
	1960	36 991.426:	+19378	+.001:
	1962	37 791.540	+20671	—.009

Var 101 The star is very close to the centre, the scatter is very significant. Furthermore the amplitude is very small and the ascending branch flat. The epochs may contain errors amounting to $0^d.01$. The brightness data exceed the average values. The residuals O—C are computed with the formula:

$$C = 2425000.204 + 0^d.6438975\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1900	J. D. 2415 160.777	—15281	—^{d}.029
L	1921	22 730.500:	— 3525	+.035:
M	1925	24 287.420	— 1107	+.011
G	1926	24 684.677	— 490	—.017
Bp	1940	29 720.575:	+ 7331	—.042:
Ma	1940	29 770.19 :	+ 7408	—.007:
Bp	1950	33 420.459	+13077	+.007
	1952	34 118.397	+14161	—.039
	1953	34 487.353	+14734	—.037
	1955	35 223.357:	+15877	—.008:
	1956	35 603.232:	+16467	—.032:
	1960	37 018.528:	+18665	—.023:

Var 102 If the star is variable at all, only variations within the limits of the scatter are possible. The amplitude cannot exceed $0^m.1$. The brightness of the star is about $15^m.8$. Perhaps colour measurements could decide the question of variability.

Var 104 The star lies near the centre and has close companions. Hence the errors of the observations are considerable. On many plates the object was unmeasurable. The large deviation for the 1950 (O—C) value in Fig. 58 is real. Perhaps the O—C diagram should have been approximated by cycles and not by a parabola. The diagram was constructed using the formula:

$$C = 2425000.043 + 0^d\!.5699231\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1897	J. D. 2414 078.585:	—19163	—^{d}.022:
	1900	15 160.887:	—17264	—.004:
L	1921	22 733.460	— 3977	+.001
M	1925	24 298.462	— 1231	—.006
G	1926	24 683.739	— 555	+.003
Ma	1940	29 770.294	+ 8370	—.005
Bp	1940	29 775.431	+ 8379	+.002
	1941	30 052.406:	+ 8865	—.005:
	1950	33 422.381	+14778	+.014
	1952	34 120.514:	+16003	—.008:
	1955	35 224.446	+17940	—.017
	1956	35 603.446	+18605	—.016
	1957	35 933.434	+19184	—.014
	1960	37 018.566	+21088	—.015
	1962	37 791.384	+22444	—.013

Var 105 The star is of RRc-type. The Budapest mean light curve suggests a double maximum, while Belserene's and Roberts and Sandage's observations do not show this phenomenon. The variable is of very small range and has a short period. The part of the O—C diagram preceding Larink's observations is uncertain, the Mt. Wilson material of 1912 and 1915 would be of great importance. The O—C diagram is a superposition of waves with different amplitudes and lengths, which seems to be a characteristic feature of the RRc variables. The residuals O—C were computed with the formula:

$$C = 2425000.220 + 0^d\!.2877427\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1899	J. D. 2414 841.444:	—35305	—^{d}.020:
L	1921	22 730.525	— 7888	+.019
M	1925	24 298.431	— 2439	+.015
S	1926	24 642.860	— 1242	+.016
G	1926	24 647.746	— 1225	+.011
Sch	1938	28 966.738:	+13785	—.015:
Ma	1940	29 770.124	+16577	—.007
Bp	1940	29 774.436:	+16592	—.011:
Be	1946	31 974.831	+24239	+.016
	1948	32 684.697:	+26706	+.020:
Bp	1950	33 422.468	+29270	+.019
	1951	33 763.437	+30455	+.013
	1952	34 118.513	+31689	+.015
	1953	34 487.406	+32971	+.021
RS	1953	34 508.689	+33045	+.013
Bp	1955	35 223.442	+35529	+.012
	1956	35 600.392	+36839	+.019
	1957	35 933.602:	+37997	+.023:
	1960	37 057.529	+41903	+.027
	1962	37 791.563	+44454	+.029

Var 106 The light curve is varying, but only in a small extent, hence normal points can be constructed along the entire light curve. The maximum on J. D. 2434121 is lower than the other ones and the ascending branch preced-

ing this maximum has the least slope in the material. The maximum on J. D. 2437791 is probably high. The height of the maximum oscillates with an amplitude of about $0^m.25$. The part of the O—C diagram preceding Larink's observations is uncertain, the Mt. Wilson magnitudes of 1912 and 1915 would be very important. The residuals O—C are computed with the formula:

$$C = 2425000.437 + 0^d.5471593 \text{ E.}$$

Observer	Year	t(med)hel.	E	O—C
B	1896	J. D. 2413 691.647:	—20668	—^{d}.102:
	1897	14 067.560	—19981	—.087
	1898	14 456.591:	—19270	—.086:
	1900	15 160.793	—17983	—.078
L	1921	22 761.445	— 4092	—.016
M	1925	24 292.408	— 1294	—.005
S	1926	24 621.803	— 692	.000
G	1926	24 684.724	— 577	—.002
B	1938	28 963.468:	+ 7243	—.044:
Ma	1940	29 770.522	+ 8718	—.050
Bp	1940	29 775.456:	+ 8727	—.040:
	1950	33 390.526	+15334	—.052
	1951	33 763.133:	+16015	—.060:
	1952	34 121.520	+16670	—.063
	1955	35 223.485	+18684	—.076
	1956	35 600.463:	+19373	—.091:
	1957	35 920.554	+19958	—.088
	1960	37 057.540	+22036	—.099

Var 107 The star is of RRc-type. The O—C diagram consists of several cycles with nearly equal length and amplitude. The (O—C)-s are calculated with the formula:

$$C = 2425000.122 + 0^d.3090351 \text{ E.}$$

Observer	Year	t(med)hel.	E	O—C
B	1895	J. D. 2413 383.488:	—37590	—^{d}.005:
	1896	13 664.709:	—36680	—.006:
	1897	14 077.579:	—35344	—.006:
	1899	14 841.505:	—32872	—.015:
	1900	15 160.742:	—31839	—.011:
H	1912	19 534.849:	—17685	+.013:
	1915	20 654.787	—14061	+.008
L	1921	22 730.568	— 7344	.000
M	1925	24 286.551	— 2309	—.009
S	1926	24 621.856	— 1224	—.007
G	1926	24 647.813	— 1140	—.009
Bp	1938	28 963.486:	+12825	—.011:
Sch	1938	28 983.874:	+12891	—.019:
H	1939	29 367.704	+14133	—.011
Ma	1940	29 770.054	+15435	—.025
Bp	1940	29 774.385:	+15449	—.020:
	1941	30 078.475	+16433	—.021
Be	1946	31 965.761	+22540	—.012
	1948	32 684.886:	+24867	—.012:

Observer	Year	t(med)hel.	E	O—C
Bp	1950	J. D. 2433 420.403:	+27247	+.ᵈ002:
	1951	33 763.430	+28357	.000
	1952	34 121.599	+29516	—.003
RS	1953	34 483.782	+30688	—.009
Bp	1953	34 487.491	+30700	—.009
	1955	35 224.541	+33085	—.007
	1956	35 603.415	+34311	—.010
	1957	35 920.483	+35337	—.012
	1960	37 018.485	+38890	—.012
	1962	37 791.390	+41391	—.004

Var 108 The Budapest material contains only a few median points on the ascending branch and only two maxima. The residuals O—C are calculated with the formula:

$$C = 2425000.037 + 0^d.5196049\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1897	J. D. 2414 079.520:	—21017	+.ᵈ019:
	1900	15 160.827	—18936	+.028
H	1912	19 534.842	—10518	+.009
L	1921	22 761.581	— 4308	+.002
M	1925	24 309.481	— 1329	—.001
S	1926	24 621.763	— 728	—.002
G	1926	24 647.747	— 678	+.002
Sch	1938	28 966.715:	+ 7634	+.014:
H	1939	29 430.727	+ 8527	+.019
Ma	1940	29 770.030	+ 9180	+.020
Be	1946	31 973.680	+13421	+.026
	1948	32 700.607:	+14820	+.025:
Bp	1950	33 422.337:	+16209	+.024:
	1952	34 121.209:	+17554	+.028:
	1953	34 487.522:	+18259	+.019:
RS	1953	34 507.793	+18298	+.026
Bp	1955	35 227.455:	+19683	+.035:
	1956	35 600.525	+20401	+.028
	1957	35 933.594	+21042	+.031
	1960	37 018.534	+23130	+.036
	1962	37 791.201:	+24617	+.050:

Var 109 The star is very close to the centre. The brightness data are systematically higher, the scatter is very considerable. The O—C diagram consists of small cycles. Its course preceding Larink's observations is uncertain. The (O—C)-s are calculated with the formula:

$$C = 2425000.062 + 0^d.5339239\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1895	J. D. 2413 384.534:	—21755	—.ᵈ014:
	1897	14 078.624:	—20455	—.025:
L	1921	22 756.533:	— 4202	+.019:

Observer	Year	t(med)hel.	E	O−C
M	1925	J. D. 2424 289.409	— 1331	^{d}000
G	1926	24 647.673	— 660	+.001
Ma	1940	29 770.143	+ 8934	+.005
Bp	1940	29 774.415	+ 8942	+.005
	1951	33 763.335:	+16413	—.020:
	1952	34 120.534	+17082	—.016
	1953	34 487.337	+17769	—.019
	1956	35 598.438:	+19850	—.013:
	1960	36 991.450:	+22459	—.009:

Var 110 The differences in the height of maximum amounting to $0^m_.4$ are real. The star is very close to the centre, therefore, the scatter is very large. Normal points are constructed along the entire light curve. The O—C diagram is extremely complicated, the curve drawn in the figure, however, seems very probable. The Mt. Wilson material of 1912 and 1915, further of 1946 and 1948 would be of great importance. The O—C diagram is constructed with the ephemeris:

$$C = 2425000.440 + 0^d_.5353569\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1895	J. D. 2413 383.523:	—21700	+^{d}328:
	1896	13 724.495:	—21063	+.277:
	1897	14 074.573:	—20409	+.232:
	1898	14 437.550:	—19731	+.237:
	1900	15 160.767	—18380	+.187
L	1921	22 761.412:	— 4182	—.165:
M	1925	24 313.462	— 1283	—.115
S	1926	24 642.769	— 668	—.053
Bp	1938	28 991.404	+ 7454	+.414
	1939	29 346.392:	+ 8117	+.460:
Ma	1940	29 770.462	+ 8909	+.527
Bp	1941	30 078.341:	+ 9484	+.576:
	1950	33 422.491	+15731	+.352
	1951	33 763.500:	+16368	+.338:
	1952	34 120.528	+17035	+.283
	1955	35 227.513:	+19103	+.150:
	1956	35 603.260:	+19805	+.077:
	1957	35 933.497	+20422	—.002
	1960	37 018.589:	+22449	—.078:
	1962	37 791.558	+23893	—.164

Var 113 The Budapest material contains only a few badly defined rising branches, most of the observations having been obtained on the descending branch. Very steep ascending and descending branches are characteristic for the light curve.

The O—C values have been computed by the formula:

$$C = 2425000.187 + 0^d.5130066\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1897	J. D. 2414 071.635:	−21303	+^{d}.028:
	1900	15 161.770	−19178	+.024
L	1921	22 729.603	− 4426	−.017
M	1925	24 286.570	− 1391	−.025
G	1926	24 647.724	− 687	−.027
Ma	1940	29 770.106	+ 9298	−.016
Bp	1941	30 078.425	+ 9899	−.014
	1950	33 390.422	+16355	+.012
	1951	33 763.379:	+17082	+.013:
	1952	34 121.458:	+17780	+.014:
	1955	35 223.399:	+19928	+.016:
	1956	35 600.463:	+20663	+.021:
	1957	35 920.580	+21287	+.022
	1960	37 018.424:	+23427	+.031:
	1962	37 791.522	+24934	+.028

Var 114 The Budapest material contains only a few rising branches of poor quality. The O—C diagram is a straight line, but small oscillations may be superposed. The residuals are computed with the formula:

$$C = 2425000.513 + 0^d.5977270\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1897	J. D. 2414 077.671:	−18274	+^{d}.021:
	1898	14 437.502:	−17672	+.021:
	1899	14 841.546	−16996	+.001
	1900	15 160.724:	−16462	−.007:
L	1921	22 761.436	− 3746	+.008
M	1925	24 290.411	− 1188	−.002
G	1926	24 683.713	− 530	−.005
Bp	1938	28 991.530:	+ 6677	−.006:
Ma	1940	29 770.374	+ 7980	.000
Bp	1941	30 052.502	+ 8452	.000
	1950	33 422.484	+14090	−.002
	1952	34 122.428	+15261	+.003
	1955	35 223.439	+17103	+.001
	1957	35 920.395:	+18269	+.007:
	1960	37 018.411	+20106	−.001
	1962	37 791.282:	+21399	+.009:

Var 115 The star is very far from the centre of the cluster. The O—C diagram is a parabola with a slight negative curvature on which the scatter or real oscillations are superposed. The residuals are computed with the formula:

$$C = 2425000.347 + 0^d.5133529\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1895	J. D. 2413 377.518	−22641	−^{d}.006
	1897	14 073.617:	−21285	−.014:
	1898	14 456.589:	−20539	−.003:

Observer	Year	t(med)hel.	E	O—C
B	1899	J. D. 2414 841.592	—19789	—^{d}.014
L	1921	22 760.593	— 4363	+.005
M	1925	24 291.401	— 1381	—.006
G	1926	24 647.677	— 687	+.003
Bp	1939	29 346.387	+ 8466	—.006
	1940	29 719.601:	+ 9193	+.001:
Ma	1940	29 770.419	+ 9292	—.003
Bp	1941	30 078.427	+ 9892	—.007
	1950	33 390.581	+16344	—.006
	1951	33 763.268:	+17070	—.013:
	1952	34 120.569	+17766	—.006
	1955	35 223.252:	+19914	—.005:
	1956	35 598.510	+20645	—.008
	1960	37 018.431:	+23411	—.021:
	1962	37 791.545	+24917	—.016

Var 116 The light curve and the O—C diagram are similar to those of var **113**. Also the periods are nearly equal. Both variables are situated at nearly equal distances from the centre but approximately in opposite directions. The (O—C)-s are calculated with the formula:

$$C = 2425000.491 + 0^{d}.5148088\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1895	J. D. 2413 389.532:	—22554	+^{d}.039:
	1897	14 067.534:	—21237	+.037:
L	1921	22 756.452	— 4359	+.013
M	1925	24 288.512	— 1383	+.002
S	1926	24 642.701	— 695	+.002
Bp	1938	28 963.495:	+ 7698	+.006:
Ma	1940	29 770.195	+ 9265	.000
Bp	1940	29 775.340:	+ 9275	—.003:
	1941	30 052.312:	+ 9813	+.002:
	1950	33 390.353:	+16297	+.023:
	1952	34 121.381	+17717	+.022
	1953	34 487.412	+18428	+.024
	1956	35 600.435	+20590	+.031
	1957	35 933.513	+21237	+.028
	1960	36.991.449	+23292	+.031
	1962	37 791.467	+24846	+.037

Var 117 The light curve exhibits strong variations with differences in the height of maximum of $0^{m}.45$ at least. Unfortunately, the Budapest material does not contain maxima well covered with observations, therefore only normal points are given along the entire light curve. The amplitude of the oscillations of the median point on the rising branch can be put at $0^{h}.3$. The O—C residuals are calculated with the formula:

$$C = 2425000.250 + 0\overset{d}{.}6005164\ E.$$

Observer	Year	t(med)hel.	E	O–C
B	1895	J. D. 2413 372.531:	−19363	+ᵈ080:
	1897	14 080.525	−18184	+.065
	1900	15 160.864:	−16385	+.075:
H	1915	20 656.730:	− 7233	+.015:
L	1921	22 761.527	− 3728	+.002
M	1925	24 290.439	− 1182	−.001
		24 311.470	− 1147	+.012
G	1926	24 647.742	− 575	−.005
Sch	1938	28 964.877:	+ 6602	+.018:
H	1939	29 408.666	+ 7341	+.025
Ma	1940	29 770.185	+ 7943	+.033
Bp	1940	29 774.384:	+ 7950	+.029:
	1941	30 052.448:	+ 8413	+.054:
Be	1946	31 968.693	+11604	+.051
	1948	32 700.749	+12823	+.077
Bp	1950	33 421.361:	+14023	+.070:
	1952	34 121.552	+15189	+.058
RS	1953	34 507.694	+15832	+.068
Bp	1955	35 223.518	+17024	+.077
	1960	37 018.469:	+20013	+.084:

Var 118 The period is about $0\overset{d}{.}5$, but by lucky chance a lot of well observed ascending branches are obtained. As O—C diagram a parabola is drawn, but perhaps a sinusoidal wave would fit the observations better. The residuals are computed with the formula:

$$C = 2425000.355 + 0\overset{d}{.}4993807\ E.$$

Observer	Year	t(med)hel.	E	O–C
B	1899	J. D. 2414 841.475	−20343	+ᵈ022
H	1915	20 625.777	− 8760	−.003
L	1921	22 760.635	− 4485	+.002
G	1926	24 647.795	− 706	+.003
Bp	1938	28 991.406	+ 7992	.000
Ma	1940	29 770.443	+ 9552	+.004
Bp	1940	29 775.439	+ 9562	+.006
Be	1946	31 971.717	+13960	+.007
	1948	32 682.837:	+15384	+.009:
Bp	1950	33 421.420	+16863	+.008
	1951	33 763.495	+17548	+.007
	1952	34 120.554	+18263	+.009
	1960	37 018.467	+24066	+.016
	1962	37 791.519	+25614	+.027

Var 119 The O—C diagram is composed of waves of different length and amplitude. Perhaps the residuals obtained from Baker's observations have to be shifted by 1P downwards. The (O—C)-s are calculated with the data:

$$C = 2425000.333 + 0^d.5177404 \text{ E.}$$

Observer	Year	t(med)hel.	E	O−C
B	1895	J. D. 2413 390.522:	−22424	^{d}.000:
	1897	14 078.610:	−21095	+.011:
	1898	14 456.566:	−20365	+.016:
	1899	14 807.604:	−19687	+.026:
	1900	15 161.755	−19003	+.043
H	1915	20 654.877:	− 8393	−.061:
L	1921	22 730.514	− 4384	−.045
M	1925	24 288.430	− 1375	−.010
G	1926	24 647.747	− 681	−.005
H	1939	29 431.684	+ 8559	+.011
Ma	1940	29 770.287	+ 9213	+.012
Bp	1941	30 052.451	+ 9758	+.007
Be	1946	31 974.821	+13471	+.007
	1948	32 700.692	+14873	+.006
Bp	1950	33 422.429	+16267	+.013
	1952	34 122.417	+17619	+.016
RS	1953	35 482.766	+18315	+.018
Bp	1953	34 487.431	+18324	+.023
	1956	35 598.493	+20470	+.014
	1957	35 933.464	+21117	+.007
	1960	37 018.644:	+23213	+.003:

Var 120 The star has a very flat ascending branch, therefor the scatter obtained in the O−C diagram exceeds the average. The diagram is a straight line, although different oscillations may be superposed. It is constructed with the formula:

$$C = 2425000.350 + 0^d.6401387 \text{ E.}$$

Observer	Year	t(med)hel.	E	O−C
B	1896	J. D. 2413 691.657:	−17666	−^{d}.003:
	1900	15 160.791	−15371	+.013
H	1915	20 625.652:	− 6834	+.010:
L	1921	22 760.491	− 3499	−.014
M	1925	24 290.443	− 1109	+.007
S	1926	24 565.033	− 680	−.023
G	1926	24 684.741:	− 493	−.021:
Bp	1938	28 963.459:	+ 6191	+.010:
H	1939	29 400.669	+ 6874	+.006
Ma	1940	29 770.043	+ 7451	+.020
Be	1946	31 974.668	+10895	+.007
Bp	1950	33 421.366	+13155	−.009
	1952	34 118.486	+14244	.000
	1953	34 487.207:	+14820	+.001:
RS	1953	34 507.684	+14852	−.006
Bp	1955	35 223.366	+15970	+.001
	1956	35 600.415	+16559	+.008
	1957	35 920.467:	+17059	−.009:
	1960	37 018.312:	+18774	−.002:

Var 121 The light curve is strongly variable, with phase-shifts exceeding $0^h.8$! The variable is very close to the centre, therefore, the scatter is very large

and the magnitude scale in the light curve is distorted. The (O—C)-s are calculated with the formula:

$$C = 2425000.289 + 0^{d}.5351882\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1897	J. D. 2414 077.647:	−20409	+^{d}.014:
	1900	15 160.879:	−18385	+.025:
L	1921	22 730.559	− 4241	+.003
		22 760.508	− 4185	−.018
M	1925	24 311.500	− 1287	−.002
S	1926	24 621.900	− 707	−.011
Ma	1940	29 770.43 :	+ 8913	+.009:
Bp	1941	30 052.508:	+ 9440	+.042:
	1950	33 421.464	+15735	−.011
	1951	33 763.501	+16374	+.040
	1952	34 121.479	+17043	−.022
	1955	35 223.470	+19102	+.016
	1956	35 603.444	+19812	+.006
	1960	37 018.465:	+22456	−.010:
	1962	37 791.287:	+23900	.000:

Var 123 This variable has in our material the greatest distance from the centre of the cluster. The residuals preceding Larink's observations provide an uncertain section of the O—C diagram. The diagram is constructed with the formula:

$$C = 2425000.210 + 0^{d}.5454472\ E.$$

Observer	Year	t(med)hel.	E	O−C
B	1896	J. D. 2413 691.553:	−20733	+^{d}.100:
L	1921	22 760.629	− 4106	+.025
M	1925	24 289.508	− 1303	+.016
G	1926	24 647.854	− 646	+.003
Bp	1938	28 991.211:	+ 7317	−.036:
Ma	1940	29 770.115	+ 8745	−.031
Bp	1941	30 078.314:	+ 9310	−.009:
	1950	33 422.510	+15441	+.050
	1951	33 763.419	+16066	+.054
	1952	34 118.510	+16717	+.059
	1955	35 227.411:	+18750	+.066:
	1956	35 600.509	+19434	+.078
	1960	37 057.413:	+22105	+.093:
	1962	37 791.575:	+23451	+.083:

Var 124 All observers got considerable scatter for this variable. The star has a flat ascending branch, therefore, the errors of the O—C values exceed the average. The diagram consists of a large sinusoidal wave. According to the characteristics of its light curve, the star behaves similar to RRab stars having periods shorter by about $0^{d}.1$. (The star belongs to the long period sequence.) The O—C values are calculated using the formula:

$$C = 2425000.712 + 0^d.7524328\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1896	J. D. 2413 691.648:	—15030	+^{d}.001:
	1897	14 077.649:	—14517	+.004:
L	1921	22 761.445	— 2976	—.027
M	1925	24 290.421	— 944	+.004
G	1926	24 647.816	— 469	—.005
Ma	1940	29 770.421	+ 6339	+.037
Bp	1940	29 774.187:	+ 6344	+.041:
	1941	30 078.176:	+ 6748	+.047:
	1950	33 420.461	+11190	+.026
	1952	34 120.243:	+12120	+.045:
	1953	34 487.413	+12608	+.028
RS	1953	34 507.719	+12635	+.019
Bp	1955	35 223.270	+13586	+.006
	1957	35 933.565:	+14530	+.004:
	1960	37 018.549:	+15973	—.020:
	1962	37 791.310:	+16999	—.007:

Var 125 The star is of RRc type. Phase-oscillations from epoch to epoch amounting to several minutes can be clearly seen in the material of almost every observer. The (O—C)-s are calculated using the formula:

$$C = 2425000.295 + 0^d.3498206\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1897	J. D. 2414 077.547	—31224	+^{d}.050
H	1915	20 654.835	—12422	+.011
L	1921	22 756.540	— 6414	—.006
M	1925	24 290.515	— 2029	+.006
G	1926	24 684.750	— 902	—.007
Sch	1938	28 966.556:	+11338	—.005:
Bp	1938	28 991.397:	+11409	—.001:
H	1939	29 408.743	+12602	+.009
Ma	1940	29 770.117	+13635	+.018
Bp	1941	30 078.295:	+14516	+.004:
Be	1946	31 968.744	+19920	+.023
	1948	32 683.807:	+21964	+.052:
Bp	1950	33 420.516	+24070	+.039
	1951	33 763.340:	+25050	+.039:
	1952	34 120.509	+26071	+.041
	1953	34 487.465:	+27120	+.035:
RS	1953	34 507.753	+27178	+.034
Bp	1955	35 224.540	+29227	+.038
	1956	35 603.410	+30310	+.053
	1960	37 018.436	+34355	+.054
	1962	37 791.545	+36565	+.060

Var 126 The star is of RRc-type. Larink's observations show differences in the height of maximum amounting to $0^m.5$. There is a low, flat maximum on J. D. 2422756.5, while the maxima on J. D. 2422729.6 and J. D. 2422761.4 are high. (The maximum on J. D. 2422840 may be even higher.) Müller's material shows the same phenomena. The heights of the maxima on J. D. 2424289.5, J. D. 2424290.5 and J. D. 2424298.5 are different. Furthermore, phase-shifts

of several minutes can be detected from epoch to epoch. On the other hand Greenstein's and Roberts--Sandage's observations and the Budapest material do not show any light curve variations. The O—C diagram consists of waves of nearly equal length and amplitude, its section preceding Larink's observations is uncertain. The Mt. Wilson material of 1912 and 1915 would be of great importance. The O—C diagram is constructed with the formula:

$$C = 2425000.164 + 0^d\!.3484043\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1895	J. D. 2413 372.523:	—33374	+ᵈ.004:
L	1921	22 760.633:	— 6428	+.012:
M	1925	24 290.465	— 2037	+.001
G	1926	24 683.817	— 908	+.004
Ma	1940	29 770.165	+13691	—.002
Bp	1941	30 078.496	+14576	—.009
	1950	33 421.460	+24171	+.016
	1951	33 763.240:	+25152	+.011:
	1952	34 121.400	+26180	+.011
RS	1953	34 483.738	+27220	+.009
Bp	1955	35 224.451	+29346	+.014
	1956	35 603.507	+30434	+.007
	1960	37 018.370:	+34495	.000:
	1962	37 791.467	+36714	—.012

Var 131 The star is an RRc-variable, very close to the centre. Therefore the scatter is considerable. On Budapest plates of 1960 the star was not measurable at all. Larink obtained maxima of different heights, the differences amount to $0^m\!.4$. In the material of other observers such variations are not apparent. The (O—C)-s are calculated with the formula:

$$C = 2425000.158 + 0^d\!.2976919\ E.$$

Observer	Year	t(med)hel.	E	O—C
B	1897	J. D. 2414 077.594	—36691	+ᵈ.050
	1898	14 456.561:	—35418	+.055:
	1900	15 161.777	—33049	+.039
L	1921	22 730.550	— 7624	—.005
M	1925	24 290.465	— 2384	+.004
S	1926	24 621.781:	— 1271	—.011:
G	1926	24 683.714	— 1063	+.002
Ma	1940	29 770.088	+16023	+.013
Bp	1940	29 775.470:	+16041	+.036:
	1941	30 078.520	+17059	+.036
	1950	33 422.518	+28292	+.061
	1951	33 763.356:	+29437	+.042:
	1952	34 121.498	+30640	+.060
	1953	34 487.363:	+31869	+.062:
	1955	35 223.536	+34342	+.043
	1956	35 603.411	+35618	+.063
	1962	37 791.446	+42968	+.062

Var 140 The star is of RRc-type. It is situated near the centre, therefore the scatter in the observations is considerable. The Budapest magnitudes obtained in the year 1962 deviate conspicuously from the averege, therefore they are omitted in constructing the normal points. Larink's material shows large irregularities, not corroborated by other observers. The O—C diagram shows considerable scatter indicating variation of the light curve. The residuals are calculated with the formula:

$$C = 2425000.123 + 0^d_.3331304\ E$$

Observer	Year	t(med)hel.	E	C—O
L	1921	J. D. 2422 761.493	— 6720	+$^d_.$006
M	1925	24 286.545	— 2142	—.013
G	1926	24 647.670	— 1058	—.001
Bp	1938	28 991.36 :	+11981	+.002:
Ma	1940	29 770.230	+14319	+.013
Bp	1940	29 775.207:	+14334	—.007:
	1941	30 052.401:	+15166	+.022:
	1950	33 421.343:	+25279	+.017:
	1951	33 763.466	+26306	+.015
	1952	34 121.539	+27381	—.027
RS	1953	34 483.676	+28468	—.003
Bp	1953	34 487.367:	+28479	+.023:
	1955	35 223.518	+30689	—.044
	1956	35 603.328:	+31829	—.003:
	1957	35 933.474:	+32820	+.011:
	1960	37 018.483	+36077	+.015
	1962	37 791.385:	+38397	+.054:

Var 142 The star is near the centre, the scatter of the observations is considerable. The O—C diagram can be constructed beginning with Müller's observations only, the straight line represents a good approximation. The O—C)-s are calculated with the formula:

$$C = 2425000.004 + 0^d_.5686256\ E$$

Observer	Year	t(med)hel.	E	C—O
M	1925	J. D. 2424 287.520	— 1253	+$^d_.$004
G	1926	24 683.843:	— 556	—.005:
Ma	1940	29 770.210	+ 8389	+.006
Bp	1941	30 078.401	+ 8931	+.002
	1950	33 422.473	+14812	—.013
	1952	34 118.484	+16036	.000
	1955	35 224.460	+17981	—.001
	1956	35 600.329:	+18642	+.007:
	1960	37 018.485	+21136	+.010
	1962	37 791.229:	+22495	—.008:

Var 202 The star is probably an RRc variable with long period.

Var 204 The variable is of very small range. Baker's corrected period (1956) satisfies the observations for every year separately, but the material of different years can not be connected. When in a year the majority of plates is of inferior quality, the whole year's material is rejected.

Table 8

Phase		m−10	n	Phase		m−10	n
V 1.				V 5.			
^{d}.011	^{p}.021	4.94	10	—	—	—	—
.030	.058	4.69	8	—	—	—	—
.050	.096	4.76	10	—	—	—	—
.074	.142	4.94	9	—	—	—	—
.093	.179	5.07	11	—	—	—	—
.113	.217	5.24	12	—	—	—	—
.134	.257	5.31	8	—	—	—	—
.155	.298	5.40	9	^{d}.192	^{p}.380	5.86	10
.179	.344	5.53	8	.216	.427	5.91	11
.197	.378	5.60	6	.240	.474	5.93	6
.223	.428	5.66	7	.269	.532	5.96	8
.250	.480	5.77	11	.290	.573	6.01	11
.279	.536	5.78	6	.315	.623	6.07	12
.313	.601	5.84	12	.341	.674	6.07	21
.351	.675	5.81	12	.368	.727	6.00	15
.397	.762	5.82	16	.391	.773	6.00	16
.437	.840	5.83	8	.418	.826	6.01	10
.472	.907	5.92	5	.443	.876	6.02	11
.495	.951	5.84	7	—	—	—	—
.514	.987	5.48	10	—	—	—	—
V 6.				V 9.			
^{d}.009	^{p}.018	5.21	12	^{d}.009	^{p}.017	5.39	2
.030	.058	4.88	5	.019	.035	5.15	3
.063	.122	5.08	12	.032	.059	4.95	1
.089	.173	5.30	10	.053	.098	5.02	7
.114	.222	5.44	11	.093	.172	5.31	10
.137	.266	5.58	12	.124	.229	5.50	11
.163	.317	5.68	13	.155	.286	5.66	13
.188	.366	5.73	15	.183	.338	5.80	17
.215	.418	5.89	12	.215	.397	5.90	14
.241	.468	5.95	11	.245	.452	6.03	17
.279	.542	5.99	7	.279	.515	6.06	20
.308	.599	6.00	7	.315	.582	6.13	13
.336	.653	6.03	11	.346	.639	6.17	11
.365	.710	6.04	8	.380	.702	6.21	15
.399	.776	5.99	9	.410	.757	6.16	13
.429	.834	5.95	13	.442	.816	6.13	15
.457	.889	6.15	14	.469	.866	6.11	18
.484	.941	6.19	9	.500	.923	6.28	8
.500	.972	5.93	8	.520	.960	6.17	3
.511	.994	5.60	4	.533	.984	5.92	6

Table 8 (continued)

V 10.

Phase		m−10	n
^{d}.010	^{P}.018	5.44	5
.024	.042	5.25	4
.035	.061	5.14	4
.062	.109	5.13	4
.085	.149	5.32	11
.114	.200	5.48	21
.144	.253	5.61	15
.178	.313	5.69	16
.217	.381	5.83	10
.256	.450	5.95	20
.292	.513	6.05	14
.326	.572	6.05	16
.366	.643	6.10	15
.401	.704	6.07	9
.436	.766	6.02	10
.463	.813	6.08	5
.495	.869	6.13	6
.526	.924	6.15	7
.548	.962	6.02	6
.567	.996	5.77	4

V 11.

Phase		m−10	n
^{d}.006	^{P}.012	5.22	10
.019	.037	4.85	11
.035	.069	4.75	17
.058	.114	4.90	19
.087	.171	5.16	13
.116	.228	5.37	10
.140	.276	5.51	12
.164	.323	5.66	12
.194	.382	5.75	12
.220	.433	5.86	3
.244	.480	5.93	3
.297	.585	6.02	3
.317	.624	6.12	4
.344	.677	6.16	5
.372	.732	6.14	7
.410	.807	6.16	9
.437	.860	6.12	17
.463	.912	6.16	19
.485	.955	6.13	16
.501	.986	5.84	9

V 12.

Phase		m−10	n
^{d}.008	^{P}.025	5.44	16
.024	.075	5.29	14
.039	.123	5.30	13
.055	.173	5.29	10
.071	.223	5.25	13
.087	.274	5.23	13
.104	.327	5.31	8
.118	.371	5.34	8
.133	.418	5.41	6
.149	.469	5.52	5
.169	.532	5.52	3
.185	.582	5.68	6
.200	.629	5.73	9
.216	.679	5.77	12
.231	.727	5.80	15
.245	.771	5.85	11
.263	.827	5.81	10
.278	875	5.81	11
.294	.925	5.75	13
.309	.972	3.66	14

V 13.

Phase		m−10	n
^{d}.008	^{P}.017	5.23	4
.022	.046	4.89	5
.038	.079	4.83	2
.062	.128	5.00	5
.082	.170	5.21	5
.105	.217	5.28	2
.127	.263	5.48	4
.155	.321	5.63	6
.188	.389	5.71	4
.212	.439	5.76	8
.242	.501	5.86	7
.277	.573	5.91	15
.308	.638	5.94	14
.338	.700	5.93	18
.366	.758	5.92	26
.395	.818	5.91	16
.419	.867	5.95	9
.438	.907	5.94	8
.460	.952	5.80	6
.477	.987	5.63	4

Table 8 (continued)

Phase		m−10	n	Phase		m−10	n
V 14.				V 15.			
d.012	P.019	5.25	7	d.000	P.000	5.51	7
.031	.049	5.01	5	.008	.015	5.19	4
.048	.075	4.96	6	.018	.034	4.91	4
.070	.110	5.03	7	.031	.058	4.91	5
.096	.151	5.17	15	.045	.085	4.99	6
.127	.200	5.29	11	.060	.113	5.09	8
.156	.245	5.41	14	.090	.170	5.32	23
.192	.302	5.57	15	.125	.236	5.54	12
.232	.365	5.74	11	.168	.317	5.77	16
.272	.428	5.80	14	.209	.394	5.88	12
.310	.487	5.91	7	.258	.487	6.02	12
.352	.554	5.98	12	.289	.545	6.13	17
.389	.612	6.03	8	.332	.626	6.14	15
.429	.675	6.03	12	.371	.700	6.17	13
.470	.739	5.99	16	.409	.772	6.12	10
.514	.808	6.07	9	.451	.851	6.08	16
.543	.854	6.08	13	.478	.902	6.15	7
.564	.887	6.17	6	.492	.928	6.26	6
.596	.937	6.14	6	.506	.955	6.20	5
.626	.984	5.74	6	.518	.977	5.99	8
V 16.				V 17.			
d.010	P.020	5.17	7	—	—	—	—
.021	.041	4.93	8	—	—	—	—
.037	.072	5.00	13	—	—	—	—
.052	.102	5.12	12	—	—	—	—
.074	.145	5.32	16	—	—	—	—
.105	.205	5.54	12	d.159	P.276	5.70	13
.136	.266	5.73	15	.187	.325	5.82	8
.171	.334	5.84	5	.215	.373	5.87	9
.193	.377	5.92	5	.243	.422	5.92	13
.222	.434	6.00	6	.274	.476	6.03	11
.257	.502	6.10	11	.302	.524	6.07	11
.286	.559	6.20	15	.330	.573	6.05	11
.315	.616	6.24	9	.358	.621	6.14	10
.346	.676	6.23	14	.391	.679	6.14	10
.375	.733	6.22	18	.419	.727	6.19	9
.405	.792	6.21	15	.445	.772	6.19	6
.433	.847	6.26	11	.474	.823	6.07	8
.459	.897	6.29	5	.504	.875	6.14	7
.486	.950	6.23	8	.534	.927	6.19	11
.507	.991	5.64	7	.560	.972	6.06	22

Table 8 (continued)

V 18.

Phase		m−10	n
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
$^{d}.115$	$^{P}.223$	5.58	17
.142	.275	5.68	13
.168	.325	5.78	12
.192	.372	5.96	12
.218	.422	6.10	15
.246	.476	6.10	9
.269	.521	6.31	8
.297	.575	6.30	5
.322	.624	6.34	4
.346	.670	6.26	5
.376	.728	6.24	8
.401	.777	6.24	11
.420	.813	6.28	6
.451	.873	6.25	8
.476	.922	6.30	9
.504	.976	5.98	12

V 19.

Phase		m−10	n
$^{d}.015$	$^{P}.024$	5.70	12
.048	.076	5.58	7
.078	.123	5.61	8
.110	.174	5.71	18
.142	.225	5.74	9
.169	.267	5.82	7
.200	.316	5.93	6
.238	.377	6.01	7
.269	.426	6.03	4
.305	.483	6.09	4
.333	.527	6.13	8
.361	.571	6.14	11
.391	.619	6.16	9
.427	.676	6.16	9
.465	.736	6.12	12
.492	.779	6.11	13
.520	.823	6.16	11
.554	.877	6.13	15
.583	.922	6.12	9
.618	.978	5.94	9

V 20.

Phase		m−10	n
$^{d}.016$	$^{P}.033$	5.14	13
.038	.077	4.86	5
.058	.118	4.98	6
.075	.153	5.16	7
.100	.204	5.31	15
.128	.261	5.58	16
.155	.316	5.83	13
.176	.358	5.82	8
.206	.419	5.98	8
.234	.476	6.03	9
.264	.537	6.10	8
.287	.584	6.17	7
.311	.633	6.29	6
.337	.686	6.31	5
.370	.753	6.33	8
.395	.804	6.31	13
.425	.865	6.13	6
.446	.908	6.12	8
.466	.949	6.06	9
.485	.987	5.70	8

V 21.

Phase		m−10	n
$^{d}.015$	$^{P}.029$	5.10	7
.029	.056	4.93	5
.054	.105	5.12	4
.076	.147	5.35	4
.103	.200	5.54	8
.138	.268	5.69	5
.166	.322	5.79	8
.199	.386	5.94	13
.228	.442	6.03	15
.256	.496	6.18	18
.283	.549	6.21	18
.315	.611	6.30	23
.346	.671	6.30	19
.375	.727	6.24	11
.406	.787	6.21	7
.439	.851	6.20	6
.466	.904	6.32	9
.486	.942	6.39	6
.498	.966	6.22	3
.514	.997	5.62	7

Table 8 (continued)

Phase		m—10	n	Phase		m—10	n
V 22.				**V 23.**			
^{d}.011	^{p}.023	5.32	12	^{d}.012	^{p}.020	5.28	11
.030	.062	5.05	13	.043	.072	5.08	11
.051	.106	4.99	16	.076	.111	5.13	10
.070	.145	5.13	8	.104	.175	5.23	11
.091	.189	5.27	9	.137	.230	5.34	15
.114	.237	5.46	17	.167	.280	5.44	14
.143	.297	5.72	13	.194	.326	5.51	12
.167	.347	5.75	7	.222	.373	5.54	13
.194	.403	5.97	12	.252	.423	5.57	6
.218	.453	5.96	.5	.280	.470	5.64	10
.252	.523	6.01	5	.310	.521	5.74	9
.263	.546	6.20	1	.343	.576	5.73	11
.300	.623	6.18	5	.372	.625	5.76	10
.331	.688	6.16	4	.399	.670	5.80	8
.357	.742	6.13	8	.434	.729	5.77	8
.379	.787	6.17	12	.463	.778	5.73	12
.410	.852	6.19	16	.494	.830	5.71	7
.432	.897	6.13	13	.522	.877	5.76	10
.452	.939	6.07	16	.554	.931	5.74	13
.471	.978	5.76	13	.582	.978	5.57	12

Phase		m—10	n	Phase		m—10	n
V 24.				**V 25.**			
^{d}.006	^{p}.009	5.41	5	^{d}.007	^{p}.015	5.05	9
.034	.051	5.18	3	.022	0.46	4.66	8
.057	.086	5.06	3	.037	.077	4.75	11
.077	.116	5.11	4	.052	.108	4.89	9
.109	.164	5.28	8	.075	.156	5.09	22
.147	.222	5.38	8	.103	.215	5.25	19
.183	.276	5.49	8	.132	.275	5.43	17
.216	.326	5.57	10	.161	.335	5.63	17
.252	.380	5.64	16	.190	.396	5.80	15
.289	.436	5.76	15	.216	.450	5.83	15
.325	.490	5.79	19	.246	.512	5.89	8
.358	.540	5.85	16	.275	.573	6.00	5
.398	.600	5.91	15	.307	.640	5.98	7
.433	.653	5.87	13	.332	.692	6.05	7
.469	.707	5.89	14	.361	.752	5.99	9
.505	.761	5.79	16	.388	.808	5.98	7
.539	.813	5.87	14	.418	.871	5.88	5
.575	.867	6.06	9	.446	.928	6.07	5
.613	.924	6.02	8	.459	.956	5.96	6
.643	.969	5.74	8	.471	.981	5.74	5

Table 8 (continued)

Phase		m−10	n	Phase		m−10	n
V 26.				V 27.			
d.012	p.020	5.18	10	d.002	p.003	5.54	4
.032	.054	4.91	8	.027	.047	5.19	4
.052	.087	4.95	12	.049	.085	5.08	3
.074	.124	5.07	15	.074	.128	5.26	2
.105	.176	5.21	15	.117	.202	5.44	6
.135	.226	5.35	11	.148	.256	5.60	6
.167	.279	5.49	11	.186	.321	5.70	9
.202	.338	5.59	9	.214	.370	5.81	12
.241	.403	5.63	8	.244	.421	5.87	20
.273	.457	5.76	14	.274	.473	5.92	21
.308	.515	5.83	11	.304	.525	5.96	14
.342	.572	5.86	10	.338	.584	6.02	14
.381	.637	5.86	10	.371	.640	6.04	18
.410	.686	5.89	6	.401	.692	6.06	16
.454	.760	5.93	10	.434	.749	6.02	9
.481	.805	5.92	8	.462	.798	6.02	9
.517	.865	5.97	7	.497	.858	6.04	7
.544	.910	6.04	10	.519	.896	6.07	6
.572	.957	5.91	7	.546	.943	6.08	5
.590	.987	5.59	6	.565	.976	5.89	4
V 28.				V 31.			
d.011	p.023	5.30	18	d.009	p.015	4.82	7
.032	.068	5.00	10	.029	.050	4.47	11
.059	.125	5.00	9	.058	.100	4.53	4
.080	.170	4.92	8	.086	.148	4.67	9
.102	.217	5.07	6	.114	.196	4.86	13
.126	.268	5.28	4	.142	.245	5.10	8
.152	.323	5.37	8	.176	.303	5.18	7
.178	.378	5.48	6	.213	.367	5.29	9
.195	.414	5.60	5	.244	.420	5.30	9
.221	.470	5.63	4	.271	.467	5.34	12
.247	.525	5.72	5	.305	.525	5.42	11
.268	.569	5.74	10	.342	.589	5.60	6
.296	.629	5.84	9	.371	.639	5.57	8
.320	.680	5.82	10	.400	.689	5.56	12
.342	.727	5.86	14	.433	.746	5.47	13
.368	.782	5.89	13	.467	.804	5.59	14
.389	.827	5.82	13	.493	.849	5.46	10
.412	.875	5.88	14	.522	.899	5.61	8
.433	.920	5.84	10	.549	.945	5.62	6
.458	.973	5.70	9	.572	.985	5.28	10

Table 8 (continued)

Phase		m−10	n	Phase		m−10	n
V 32.				**V 33.**			
^{d}.014	^{p}.028	4.66	8	—	—	—	—
.029	.059	4.62	13	—	—	—	—
.500	.101	4.78	18	—	—	—	—
.070	.141	4.93	19	—	—	—	—
.091	.184	5.03	10	—	—	—	—
.111	.224	5.24	10	^{d}.144	^{p}.267	5.49	15
.133	.268	5.31	8	.172	.327	5.53	15
.150	.303	5.39	6	.197	.375	5.61	17
.170	.343	5.47	7	.225	.428	5.73	13
.199	.402	5.42	5	.252	.480	5.73	10
.239	.482	5.67	10	.274	.522	5.81	5
.280	.565	5.61	8	.302	.575	5.72	4
.316	.638	5.65	5	.333	.634	5.81	5
.362	.731	5.66	7	.356	.678	5.84	6
.396	.799	5.51	10	.378	.720	5.86	4
.425	.858	5.54	10	.406	.773	5.84	4
.450	.908	5.64	8	.433	.824	5.82	7
.469	.947	5.68	8	.458	.872	5.89	11
.483	.975	5.45	5	.485	.923	5.86	14
.495	.999	5.02	5	.511	.973	5.64	11
V 34.				**V 35.**			
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
^{d}.154	^{p}.275	5.57	9	—	—	—	—
.184	.329	5.71	8	—	—	—	—
.210	.376	5.82	7	—	—	—	—
.240	.429	5.92	12	^{d}.224	^{p}.422	5.78	10
.264	.472	5.99	13	.250	.471	5.90	8
.296	.529	6.04	14	.280	.528	5.92	15
.322	.576	6.08	12	.303	.571	5.93	10
.347	.621	6.05	16	.332	.626	5.99	8
.376	.673	6.09	11	.360	.678	5.96	8
.408	.730	6.06	10	.385	.726	5.96	10
.435	.778	6.11	12	.413	.778	6.04	11
.461	.825	6.07	9	.439	.827	6.00	11
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—

Table 8 (continued)

V 36.

Phase		m−10	n
^{d}.010	^{p}.018	5.16	2
.033	.060	4.83	4
.054	.099	4.97	4
.083	.152	5.22	5
.113	.207	5.38	7
.143	.262	5.54	11
.174	.319	5.67	14
.206	.378	5.79	20
.233	.427	5.92	19
.266	.488	6.04	17
.296	.543	6.05	15
.325	.596	6.06	7
.353	.647	6.09	10
.386	.707	6.19	9
.416	.762	6.13	8
.444	.814	6.08	14
.473	.867	6.10	14
.499	.915	6.22	9
.522	.957	6.16	11
.540	.990	5.79	7

V 37.

Phase		m−10	n
^{d}.008	^{p}.024	5.59	12
.024	.073	5.50	12
.041	.126	5.44	14
.057	.175	5.41	16
.074	.227	5.43	16
.090	.276	5.43	13
.107	.328	5.51	9
.122	.374	5.55	10
.138	.422	5.64	13
.154	.471	5.72	9
.173	.530	5.80	9
.190	.582	5.86	3
.203	.621	5.93	7
.220	.674	5.99	9
.237	.726	6.02	5
.253	.775	6.02	9
.269	.824	6.02	8
.285	.873	6.00	9
.302	.925	5.93	9
.316	.967	5.84	6

V 38.

Phase		m−10	n
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
^{d}.115	^{p}.206	5.60	9
.142	.254	5.72	6
.175	.314	5.80	8
.196	.351	5.86	6
.229	.410	5.92	8
.264	.473	6.00	11
.290	.520	6.04	21
.319	.572	6.07	17
.347	.622	6.10	18
.376	.674	6.06	15
.407	.729	6.05	14
.433	.776	6.09	17
.460	.824	6.10	5
.491	.880	6.15	5
.525	.941	6.05	11
.551	.987	5.71	8

V 39.

Phase		m−10	n
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
^{d}.136	^{p}.232	5.67	15
.165	.281	5.72	16
.195	.332	5.82	10
.217	.370	5.88	6
.261	.445	6.01	4
.287	.489	6.07	8
.313	.533	6.07	11
.349	.594	6.08	6
.380	.647	6.11	4
416	.709	6.16	7
.437	.744	6.19	8
.468	.797	6.08	10
.494	.841	6.18	15
.526	.896	6.20	13
.556	.947	6.03	10
.578	.985	5.81	7

Table 8 (continued)

Phase		m−10	n	Phase		m−10	n
V 40.				**V 41.**			
d.005	p.009	5.55	7	d.013	p.027	5.44	6
.018	.033	5.32	5	.032	.066	5.24	4
.025	.045	5.16	5	.058	.120	5.25	6
.041	.074	5.10	9	.083	.171	5.53	2
.062	.112	5.17	4	.111	.229	5.48	6
.080	.145	5.30	6	.131	.270	5.70	4
.105	.190	5.45	11	.153	.315	5.67	4
.141	.256	5.66	7	.181	.373	5.74	5
.183	.332	5.83	6	.208	.429	5.99	6
.217	.393	5.96	13	.230	.474	5.96	8
.262	.475	6.06	16	.259	.534	6.11	10
.300	.544	6.14	15	.280	.577	6.26	17
.340	.616	6.21	20	.304	.627	6.17	18
.378	.685	6.18	21	.326	.672	6.23	19
.422	.765	6.27	10	.352	.726	6.23	16
.461	.836	6.20	19	.375	.773	6.21	16
.490	.888	6.26	10	.399	.823	6.19	19
.511	.926	6.32	13	.424	.874	6.09	11
.531	.963	6.17	8	.450	.928	5.99	7
.545	.988	5.76	5	.473	.975	5.80	7
V 42.				**V 43.**			
d.004	p.007	4.90	5	—	—	—	—
.014	.024	4.61	5	—	—	—	—
.030	.051	4.45	7	—	—	—	—
.049	.083	4.41	5	—	—	—	—
.071	.120	4.60	3	—	—	—	—
.107	.181	4.79	6	d.149	p.276	5.33	12
.136	.230	4.91	8	.174	.322	5.45	16
.191	.324	5.34	3	.203	.376	5.47	13
.231	.391	5.32	2	.228	.422	5.51	10
.256	.434	5.35	17	.256	.474	5.60	12
.299	.507	5.30	10	.283	.524	5.63	11
.344	.583	5.45	13	.310	.574	5.74	8
.380	.644	5.68	11	.337	.624	5.81	4
.420	.712	5.61	15	.367	.679	5.75	5
.463	.784	5.68	18	.395	.731	5.84	4
.500	.847	5.62	15	.418	.773	5.75	13
.526	.891	5.72	4	.446	.825	5.79	16
.549	.930	5.65	5	.473	.875	5.70	13
.569	.964	5.61	6	.497	.920	5.76	15
.588	.996	5.12	3	.526	.973	5.51	9

Table 8 (continued)

V 44.

Phase		m−10	n
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
^{d}.140	^{p}.276	5.55	14
.166	.328	5.67	15
.190	.375	5.76	10
.213	.421	5.76	9
.241	.476	5.88	6
.263	.519	5.94	7
.291	.575	5.95	7
.313	.618	5.99	8
.345	.681	6.04	13
.367	.725	6.03	9
.391	.772	6.05	16
.418	.825	6.01	14
.444	.877	6.02	8
.463	.914	6.03	8
.494	.976	5.73	9

V 45.

Phase		m−10	n
^{d}.013	^{p}.024	5.24	5
.036	.067	4.97	5
.053	.099	5.13	7
.074	.138	5.28	11
.095	.177	5.37	12
.121	.225	5.54	17
.151	.281	5.65	20
.179	.333	5.84	12
.210	.391	5.94	13
.242	.451	6.07	9
.272	.507	6.10	9
.304	.566	6.17	14
.335	.624	6.21	14
.367	.684	6.22	16
.393	.732	6.16	3
.429	.799	6.16	8
.458	.853	6.15	4
.492	.916	6.20	4
.510	.950	6.20	4
.526	.980	5.98	3

V 46.

Phase		m−10	n
^{d}.013	^{p}.021	5.55	7
.043	.070	5.44	7
.078	.127	5.32	9
.105	.171	5.39	7
.135	.220	5.56	3
.168	.274	5.65	4
.197	.321	5.67	5
.232	.378	5.70	5
.261	.426	5.74	13
.292	.476	5.79	19
.325	.546	5.84	16
.354	.577	5.81	13
.381	.621	5.87	14
.415	.677	5.92	14
.443	.722	5.95	16
.476	.776	5.91	19
.506	.825	5.88	13
.536	.874	5.92	10
.568	.926	5.90	10
.595	.970	5.77	6

V 47.

Phase		m−10	n
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
^{d}.120	^{p}.222	5.43	8
.149	.275	5.49	10
.178	.329	5.49	7
.204	.377	5.56	12
.233	.431	5.64	8
.256	.473	5.73	9
.282	.521	5.80	5
.312	.577	5.83	5
.338	.625	5.81	8
.367	.678	5.87	10
.396	.732	5.93	11
.422	.780	5.90	14
.446	.824	5.86	9
.472	.872	5.95	8
.499	.922	5.92	14
.525	.969	5.74	12

Table 8 (continued)

Phase		m−10	n	Phase		m−10	n
V 48.				V 49.			
^{d}.018	^{P}.029	5.46	7	—	—	—	—
.048	.076	5.33	6	—	—	—	—
.076	.121	5.23	5	—	—	—	—
.111	.177	5.29	10	—	—	—	—
.143	.228	5.40	13	^{d}.123	^{P}.224	5.48	12
.173	.276	5.49	17	.150	.274	5.60	9
.201	.320	5.55	11	.170	.310	5.76	2
.234	.373	5.60	9	.207	.378	5.81	6
.267	.425	5.69	15	.233	.425	5.85	9
.294	.468	5.70	15	.259	.472	5.91	8
.330	.526	5.81	11	.290	.529	5.96	9
.359	.572	5.81	11	.313	.571	5.98	11
.390	.621	5.88	14	.341	.622	5.99	11
.425	.677	5.85	10	.369	.673	6.03	13
.454	.723	5.79	8	.399	.728	6.06	15
.487	.776	5.79	8	.427	.779	5.98	17
.517	.823	5.80	12	.453	.826	6.03	14
.550	.876	5.86	9	.480	.876	6.04	12
.575	.916	5.92	5	—	—	—	—
.619	.986	5.69	9	—	—	—	—
V 50.				V 51.			
—	—	—	—	^{d}.014	^{P}.024	5.44	7
—	—	—	—	.035	.060	5.19	5
—	—	—	—	.052	.089	5.18	8
—	—	—	—	.071	.122	5.30	10
—	—	—	—	.095	.163	5.44	11
^{d}.140	^{P}.273	5.57	13	.126	.216	5.53	12
.166	.324	5.74	11	.155	.265	5.69	12
.193	.376	5.78	9	.191	.327	5.81	12
.220	.429	5.94	13	.223	.382	5.87	15
.242	.472	6.00	13	.257	.440	5.94	21
.268	.522	5.95	9	.292	.500	6.06	15
.296	.577	6.05	7	.327	.560	6.15	13
.321	.626	6.09	12	.357	.611	6.16	14
.345	.672	6.03	16	.389	.666	6.17	9
.369	.719	6.05	11	.423	.724	6.14	8
.397	.774	6.08	10	.466	.798	6.03	4
.421	.821	6.10	9	.494	.846	6.13	14
.450	.877	6.06	8	.523	.896	6.16	10
.474	.924	6.06	4	.552	.945	6.16	6
.500	.974	5.97	2	.574	.983	5.92	6

Table 8 (continued)

V 52.

Phase		m−10	n
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
^{d}.112	^{P}.217	5.42	10
.141	.273	5.58	11
.168	.325	5.72	9
.193	.374	5.82	10
.218	.422	5.87	14
.245	.475	5.88	17
.270	.523	5.96	13
.297	.575	6.04	14
.324	.628	6.04	17
.348	.674	6.06	9
.375	.726	5.95	1
.396	.767	6.11	3
.428	.829	6.07	5
.450	.872	6.01	8
.479	.928	6.04	13
—	—	—	—

V 53.

Phase		m−10	n
^{d}.011	^{P}.022	5.00	12
.027	.053	4.69	6
.050	.099	4.78	7
.072	.143	4.96	12
.094	.186	5.14	16
.123	.244	5.25	11
.150	.297	5.39	15
.175	.347	5.46	14
.203	.402	5.61	12
.232	.460	5.67	12
.258	.511	5.65	9
.289	.572	5.84	4
.315	.624	5.86	9
.342	.677	5.86	10
.371	735	5.79	9
.398	.788	5.75	6
.424	.840	5.80	8
.452	.895	5.85	10
.474	.939	5.90	8
.493	.976	5.63	11

V 54.

Phase		m−10	n
^{d}.013	^{P}.026	5.23	11
.039	.077	4.92	10
.062	.122	4.95	12
.086	.170	5.03	17
.115	.227	5.15	12
.139	.275	5.35	15
.164	.324	5.43	9
.191	.377	5.55	5
.217	.429	5.64	7
.240	.474	5.73	10
.265	.523	5.82	10
.286	.565	5.73	4
.315	.622	5.89	10
.340	.672	5.88	12
.364	.719	5.81	9
.390	.770	5.85	9
.418	.826	5.75	4
.439	.867	5.90	3
.469	.926	5.94	6
.496	.980	5.58	6

V 55.

Phase		m−10	n
^{d}.011	^{P}.021	5.31	11
.031	.059	4.97	13
.050	.094	5.03	9
.070	.132	5.23	13
.091	.172	5.38	13
.115	.217	5.55	16
.145	.274	5.69	16
.181	.342	5.82	11
.202	.381	5.88	9
.236	.445	6.07	10
.265	.500	6.12	8
.297	.561	6.21	8
.325	.613	6.23	6
.364	.687	6.27	5
.388	.732	6.24	10
.414	.781	6.18	10
.447	.844	6.21	12
.475	.897	6.25	11
.502	.948	6.27	9
.521	.983	5.89	9

Table 8 (continued)

Phase		m−10	n	Phase		m−10	n
V 56.				V 57.			
d.009	p.027	5.59	12	d.017	p.033	5.08	3
.025	.076	5.45	14	.042	.082	4.87	5
.043	.130	5.47	9	.066	.129	5.13	10
.060	.182	5.39	8	.091	.178	5.31	9
.076	.231	5.40	13	.119	.232	5.45	12
.090	.273	5.38	10	.143	.279	5.63	15
.107	.325	5.45	8	.165	.322	5.72	14
.125	.379	5.54	7	.192	.375	5.79	16
.141	.428	5.63	12	.215	.420	5.88	14
.159	.482	5.70	12	.242	.472	6.02	12
.174	.528	5.76	10	.268	.523	6.09	8
.189	.573	5.86	9	.293	.572	6.14	12
.208	.631	5.92	12	.319	.623	6.18	17
.224	.680	5.98	9	.344	.672	6.18	9
.238	.722	6.02	7	.373	.728	6.05	11
.256	.777	6.02	11	.398	.777	6.02	9
.273	.828	6.01	7	.424	.828	6.13	5
.290	.880	6.02	14	.453	.884	6.31	1
.307	.931	5.95	14	.474	.925	6.20	5
.322	.977	5.79	12	.492	.961	5.85	1
V 58.				V 59.			
d.009	p.017	4.93	14	d.014	p.024	5.45	7
.029	.056	4.61	16	.046	.078	5.26	11
.049	.095	4.66	17	.073	.124	5.37	4
.070	.135	4.83	9	.101	.172	5.48	10
.094	.182	4.98	14	.134	.228	5.59	8
.125	.242	5.23	9	.162	.275	5.69	13
.149	.288	5.28	4	.189	.321	5.81	14
.182	.352	5.48	4	.219	.372	5.89	14
.208	.402	5.55	6	.246	.418	5.91	8
.235	.454	5.62	8	.281	.477	5.98	13
.266	.514	5.71	6	.312	.530	6.02	12
.293	.567	5.81	6	.338	.574	6.09	10
.322	.623	5.77	12	.365	.620	6.06	10
.349	.675	5.79	8	.397	.674	6.12	9
.378	.731	5.71	13	.427	.725	6.18	10
.403	.779	5.78	8	.456	.774	6.14	18
.431	.834	5.76	7	.488	.829	6.20	13
.462	.894	5.80	14	.518	.880	6.18	9
.487	.942	5.91	9	.546	.927	6.16	10
.508	.982	5.49	12	.575	.977	5.86	8

Table 8 (continued)

Phase		m−10	n	Phase		m−10	n
V 60.				**V 61.**			
d.022	p.031	5.46	10	—	—	—	—
.053	.075	5.25	12	—	—	—	—
.089	.125	5.36	7	—	—	—	—
.125	.176	5.43	14	—	—	—	—
.160	.226	5.56	17	—	—	—	—
.198	.280	5.63	13	d.144	p.276	5.69	12
.231	.326	5.68	13	.170	.326	5.77	15
.254	.359	5.82	13	.192	.369	5.88	11
.292	.413	5.82	7	.220	.422	5.97	9
.340	.480	5.84	10	.249	.478	6.07	9
.373	.527	5.87	8	.271	.520	6.21	5
.407	.575	5.91	6	.298	.572	6.19	4
.446	.630	5.99	8	.323	.620	6.19	6
.479	.677	6.01	10	.352	.676	6.20	7
.516	.729	6.03	12	.374	.718	6.22	6
.548	.774	6.04	19	.401	.770	6.17	9
.582	.822	6.07	11	.430	.825	6.21	14
.616	.870	6.14	11	.458	.879	6.20	11
.653	.923	6.10	6	.479	.920	6.19	8
.695	.982	5.74	5	.513	.985	5.83	8

Phase		m−10	n	Phase		m−10	n
V 62.				**V 63.**			
d.017	p.026	5.67	16	—	—	—	—
.048	.074	5.52	13	—	—	—	—
.080	.123	5.44	15	—	—	—	—
.112	.172	5.53	12	—	—	—	—
.147	.225	5.65	6	d.129	p.226	5.67	5
.176	.270	5.68	4	.161	.282	5.74	5
.211	.323	5.79	6	.187	.328	5.84	6
.246	.377	5.88	8	.215	.377	5.86	5
.276	.423	5.88	11	.246	.431	5.94	6
.308	.472	5.96	14	.269	.472	6.00	12
.343	.526	6.00	10	.298	.522	6.14	9
.376	.576	6.03	17	.327	.573	6.19	10
.407	.624	6.10	12	.356	.624	6.19	11
.444	.681	6.09	9	.386	.677	6.17	12
.471	.722	6.11	8	.411	.721	6.17	12
.504	.773	6.09	8	.441	.773	6.11	7
.535	.820	6.12	6	.472	.827	6.16	15
.573	.878	6.15	8	.500	.877	6.14	13
.600	.921	6.12	11	.528	.926	6.21	13
.637	.976	5.88	15	.559	.980	5.94	11

Table 8 (continued)

V 64.

Phase		m−10	n
^{d}.016	^{p}.026	5.60	11
.049	.081	5.42	9
.078	.129	5.41	14
.105	.173	5.54	15
.135	.223	5.65	16
.166	.274	5.71	9
.198	.327	5.81	10
.226	.373	5.89	8
.258	.426	5.96	12
.287	.474	6.04	13
.317	.524	6.03	19
.348	.575	6.12	10
.374	.618	6.16	6
.406	.671	6.13	9
.437	.722	6.15	8
.469	.775	6.09	8
.500	.826	6.17	10
.529	.874	6.24	9
.557	.920	6.22	8
.593	.979	5.93	6

V 65.

Phase		m−10	n
^{d}.019	^{p}.028	5.37	9
.052	.078	5.12	10
.084	.126	5.13	9
.117	.175	5.25	6
.149	.223	5.34	8
.181	.271	5.46	6
.216	.323	5.61	10
.250	.374	5.77	12
.285	.426	5.79	11
.319	.477	5.88	13
.348	.521	5.90	11
.386	.578	5.95	10
.418	.625	6.02	13
.453	.678	6.05	15
.483	.723	6.05	15
.516	.772	6.04	7
.550	.823	6.04	12
.588	.880	6.20	9
.621	.929	6.19	15
.653	.977	5.97	11

V 66.

Phase		m−10	n
^{d}.017	^{p}.027	5.29	12
.045	.073	5.22	9
.078	.126	5.31	18
.108	.174	5.41	14
.137	.221	5.51	13
.169	.273	5.64	8
.206	.332	5.70	3
.230	.371	5.72	8
.267	.431	5.80	9
.295	.476	5.78	8
.322	.519	5.92	8
.356	.574	5.92	8
.384	.619	5.91	12
.420	.677	5.95	18
.454	.732	5.90	11
.479	.772	5.85	11
.511	.824	5.86	10
.536	.864	5.91	5
.573	.924	5.88	12
.605	.976	5.71	9

V 67.

Phase		m−10	n
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
^{d}.130	^{p}.229	5.47	11
.159	.280	5.60	10
.185	.325	5.69	10
.215	.378	5.75	11
.241	.424	5.84	10
.269	.473	5.90	10
.299	.526	5.91	12
.328	.577	6.00	11
.355	.625	6.04	12
.384	.676	6.06	12
.410	.721	6.05	11
.438	.771	5.94	13
.470	.827	6.03	8
.500	.880	6.17	7
.525	.924	6.08	12
.556	.978	5.82	10

Table 8 (continued)

V 69.

Phase		m−10	n
^{d}.010	^{P}.018	5.45	6
.039	.069	5.25	3
.073	.129	5.16	10
.097	.171	5.31	12
.125	.221	5.40	5
.155	.274	5.55	6
.189	.334	5.71	8
.211	.372	8.77	9
.243	.429	5.74	13
.272	.480	5.85	10
.300	.529	5.89	7
.326	.575	5.89	9
.357	.630	5.80	9
.379	.669	5.81	8
.411	.725	6.00	8
.440	.777	6.02	7
.467	.824	5.94	9
.493	.870	6.03	7
.524	.925	6.02	8
.552	.974	5.88	8

V 71.

Phase		m−10	n
^{d}.010	^{P}.018	5.30	11
.029	.053	5.08	9
.052	.095	5.16	7
.078	.142	5.22	10
.108	.197	5.40	11
.137	.250	5.51	10
.167	.304	5.64	12
.195	.355	5.72	14
.224	.408	5.78	12
.256	.466	5.88	10
.284	.517	5.72	8
.318	.579	5.89	6
.348	.634	6.13	4
.376	.685	5.98	8
.407	.741	5.97	11
.436	.794	6.03	8
.468	.852	5.95	17
.497	.905	6.03	12
.519	.945	5.93	6
.541	.985	5.63	9

V 72.

Phase		m−10	n
^{d}.009	^{P}.020	5.18	13
.030	.066	4.81	7
.048	.105	4.94	8
.068	.149	5.18	6
.094	.206	5.43	6
.121	.265	5.64	9
.143	.314	5.80	6
.168	.368	5.90	11
.191	.419	6.03	10
.217	.476	6.15	11
.242	.531	6.19	10
.270	.592	6.26	14
.293	.642	6.35	9
.317	.695	6.32	13
.341	.748	6.24	12
.365	.800	6.23	14
.385	.844	6.27	12
.405	.888	6.28	12
.425	.932	6.26	15
.446	.978	6.01	8

V 74.

Phase		m−10	n
^{d}.009	^{P}.018	5.15	12
.030	.061	4.80	15
.050	.102	4.91	10
.070	.142	5.11	10
.093	.189	5.26	13
.118	.240	5.45	7
.150	.305	5.60	8
.176	.358	5.81	7
202	410	5.97	9
.230	.467	6.04	11
.260	.528	6.10	13
.282	.573	6.17	15
.309	.628	6.19	13
.340	.691	6.16	7
.367	.746	6.23	10
.388	.788	6.18	9
.417	.847	6.06	10
.440	.894	6.18	8
.465	.945	6.09	7
.481	.977	5.88	11

Table 8 (continued)

V 75.

Phase		m−10	n
^{d}.008	^{p}.025	5.50	12
.025	.080	5.43	12
.040	.127	5.39	11
.054	.172	5.38	12
.069	.220	5.39	11
.087	.277	5.42	13
.102	.325	5.47	7
.118	.376	5.47	8
.133	.423	5.57	9
.149	.474	5.61	8
.165	.525	5.71	8
.179	.570	5.80	9
.196	.624	5.85	12
.212	.675	5.90	11
.229	.729	5.98	13
.245	.780	5.97	11
.260	.828	5.94	11
.274	.872	5.90	8
.289	.920	5.88	10
.306	.974	5.75	14

V 76.

Phase		m−10	n
^{d}.002	^{p}.004	5.45	9
.029	.058	4.91	10
.053	.106	5.08	12
.074	.147	5.25	13
.100	.199	5.48	13
.128	.255	5.62	13
.153	.305	5.86	11
.178	.355	5.93	10
.210	.419	6.19	8
—	—	—	—
.272	.542	6.28	10
—	—	—	—
.316	.630	6.28	12
—	—	—	—
.348	.694	6.10	9
.376	.749	6.17	8
.408	.813	6.15	11
—	—	—	—
.459	.915	6.46	6
—	—	—	—

V 77.

Phase		m−10	n
^{d}.011	^{p}.024	4.91	11
.029	.063	4.65	8
.048	.104	4.83	10
.069	.150	5.00	7
.090	.196	5.24	11
.113	.246	5.31	10
.138	.300	5.59	9
.164	.357	5.63	8
.185	.403	5.60	7
.216	.470	5.94	8
.240	.522	5.95	7
.265	.577	6.08	5
.288	.627	5.91	8
.311	.677	6.06	8
.340	.740	5.99	6
.367	.799	5.94	8
.388	.845	5.92	9
.407	.886	6.04	8
.428	.932	6.05	8
.449	.977	5.71	8

V 78.

Phase		m−10	n
^{d}.009	^{p}.015	5.29	11
.050	.082	4.92	7
.082	.134	5.04	6
.109	.178	5.06	7
.134	.219	5.19	12
.166	.271	5.25	11
.202	.330	5.30	10
.228	.373	5.33	14
.264	.431	5.42	8
.291	.476	5.39	15
.323	.528	5.47	14
.346	.565	5.49	9
.381	.623	5.62	7
—	—	—	—
—	—	—	—
.483	.789	5.77	4
.509	.832	5.69	5
.538	.879	5.69	6
.566	.925	5.68	13
.596	.974	5.52	14

Table 8 (continued)

Phase		m−10	n	Phase		m−10	n
V 79.				V 80.			
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
$^{d}.105$	$^{P}.217$	5.50	5	—	—	—	—
.134	.277	5.68	6	$^{d}.150$	$^{P}.279$	5.72	8
.158	.327	5.90	6	.176	.327	5.82	6
.182	.377	5.98	6	.202	.375	5.93	7
.210	.434	6.06	6	.228	.423	5.94	7
.231	.478	6.19	12	.251	.466	6.02	6
.252	.521	6.27	6	.284	.527	6.10	7
.276	.571	6.23	6	.312	.579	6.14	7
.301	.623	6.33	11	.336	.624	6.15	11
.329	.681	6.23	13	.364	.676	6.16	19
.353	.730	6.29	15	.392	.728	6.22	13
.377	.780	6.21	15	.416	.773	6.15	15
.397	.821	6.24	16	.444	.825	6.16	14
.421	.871	6.27	20	.473	.878	6.07	14
.446	.923	6.27	14	.498	.925	6.07	12
.471	.974	6.00	16	—	—	—	—
V 81.				V 82.			
$^{d}.014$	$^{P}.026$	5.21	10	$^{d}.010$	$^{P}.019$	5.29	9
.040	.076	5.02	8	.030	.057	4.96	7
.064	.121	5.14	8	.049	.093	5.03	8
.095	.180	5.42	6	.072	.137	5.22	8
.119	.225	5.47	9	.103	.196	5.44	14
.146	.276	5.64	10	.133	.254	5.60	17
.172	.325	5.76	6	.161	.307	5.71	11
.198	.374	5.88	13	.188	.358	5.80	9
.224	.423	6.01	16	.218	.416	5.96	11
.253	.478	6.08	9	.246	.469	6.08	15
.277	.524	6.21	11	.272	.519	6.17	16
.304	.575	6.21	11	.302	.576	6.25	13
.330	.624	6.25	8	.329	.627	6.29	15
.356	.673	6.22	13	.360	.686	6.33	11
.385	.728	6.20	12	.382	.728	6.25	10
.411	.777	6.24	18	.414	.789	6.22	6
.435	.822	6.27	12	.443	.845	6.19	9
.463	.875	6.28	12	.470	.896	6.22	6
.487	.920	6.26	8	.497	.948	6.29	7
.520	.983	5.94	7	.514	.980	6.07	5

Table 8 (continued)

V 83.

Phase		m−10	n
d.009	p.018	5.25	13
.031	.062	4.87	14
.049	.098	5.04	11
.073	.146	5.24	12
.103	.205	5.45	8
.128	.255	5.57	13
.155	.309	5.74	8
.178	.355	5.78	3
.211	.421	5.97	8
.236	.471	6.05	14
.265	.529	6.14	10
.290	.579	6.23	8
.320	.638	6.29	8
.351	.700	6.26	6
.369	.736	6.24	1
.405	.808	6.23	9
.427	.852	6.23	15
.450	.898	6.28	15
.469	.936	6.32	16
.488	.974	6.06	15

V 84.

Phase		m−10	n
d.016	p.027	5.46	11
.043	.072	5.27	10
.072	.121	5.31	14
.103	.173	5.45	8
.135	.227	5.59	7
.162	.272	5.68	7
.199	.334	5.74	7
.225	.378	5.77	11
.253	.425	5.84	11
.282	.473	5.90	11
.315	.529	5.95	10
.340	.571	6.00	13
.376	.614	6.05	20
.402	.675	6.05	16
.429	.720	6.06	14
.461	.774	5.96	10
.489	.821	5.95	3
.518	.870	6.09	6
.554	.930	6.11	8
.582	.977	5.87	13

V 85.

Phase		m−10	n
d.009	p.025	5.51	8
.028	.079	5.40	10
.045	.126	5.35	8
.061	.171	5.33	13
.081	.228	5.33	10
.096	.270	5.33	11
.116	.326	5.34	13
.133	.374	5.41	17
.154	.433	5.52	9
.169	.475	5.60	11
.188	.528	5.71	12
.205	.576	5.82	7
.222	.624	5.84	12
.240	.675	5.86	10
.258	.725	5.90	10
.275	.773	5.90	9
.294	.826	5.92	7
.310	.871	5.88	7
.329	.925	5.81	9
.347	.975	5.66	13

V 86.

Phase		m−10	n
d.006	p.020	5.58	9
.023	.079	5.46	10
.036	.123	5.46	10
.048	.164	5.50	12
.066	.226	5.41	13
.081	.277	5.45	11
.095	.325	5.58	15
.109	.372	5.58	9
.124	.424	5.69	14
.138	.472	5.77	11
.154	.526	5.84	12
.168	.574	5.89	11
.184	.629	6.01	11
.198	.677	6.03	14
.210	.718	6.04	10
.224	.765	6.06	6
.240	.820	6.03	7
.255	.871	6.02	7
.269	.919	5.95	10
.285	.974	5.80	5

Table 8 (continued)

Phase		m−10	n	Phase		m−10	n
V 87.				V 88.			
d.008	P.022	5.32	9	d.008	P.027	5.32	9
.027	.076	5.19	5	.023	.077	5.15	10
.041	.115	5.14	2	.040	.134	5.08	8
.063	.176	5.17	16	.053	.178	5.09	10
.080	.224	5.13	10	.063	.211	5.11	8
.097	.271	5.14	14	.083	.278	5.14	13
.114	.319	5.23	15	.097	.325	5.13	10
.133	.372	5.34	12	.111	.372	5.15	7
.153	.428	5.36	10	.129	.432	5.24	9
.169	.473	5.41	15	.143	.479	5.27	7
.187	.523	5.53	16	.158	.529	5.38	8
.206	.576	5.61	11	.172	.576	5.42	10
.224	.627	5.59	14	.187	.626	5.50	12
.240	.671	5.58	8	.202	.677	5.55	6
.258	.722	5.62	8	.219	.734	5.60	9
.276	.772	5.66	8	.231	.774	5.62	13
.294	.822	5.67	7	.245	.821	5.64	12
.314	.878	5.67	7	.263	.881	5.66	10
.331	.926	5.63	12	.279	.935	5.67	9
.349	.976	5.49	9	.292	.978	5.50	14
V 89.				V 90.			
d.006	P.011	5.30	5	d.013	P.025	5.18	10
.024	.044	4.99	4	.033	.064	4.92	7
.035	.064	4.85	2	.051	.099	4.98	8
.062	.113	5.00	7	.072	.139	5.19	5
.097	.177	5.18	8	.098	.190	5.36	6
.127	.232	5.33	10	.128	.248	5.61	7
.159	.290	5.53	11	.150	.290	5.73	6
.190	.346	5.53	12	.179	.346	5.84	4
.224	.408	5.72	6	.213	.412	5.89	5
.262	.478	5.81	8	.242	.468	6.02	9
.294	.536	5.79	12	.267	.516	6.10	10
.322	.587	5.84	12	.297	.574	6.14	7
.354	.645	5.88	13	.328	.634	6.21	7
.388	.707	5.85	16	.358	.692	6.17	16
.421	.768	5.85	22	.384	.743	6.17	23
.456	.831	5.87	16	.415	.803	6.14	14
.488	.890	5.94	17	.443	.857	6.17	22
.511	.932	5.91	9	.467	.903	6.23	16
.527	.961	5.90	7	.489	.946	6.24	8
.544	.992	5.58	8	.510	.986	5.88	9

Table 8 (continued)

Phase		m−10	n	Phase		m−10	n
V 91.				V 92.			
d.025	P.047	4.92	2	d.015	P.030	5.16	14
.051	.096	5.19	3	.036	.071	4.98	11
.077	.145	5.29	5	.056	.111	5.02	11
.104	.196	5.45	9	.077	.153	5.22	12
.132	.249	5.57	10	.101	.201	5.39	13
.157	.296	5.67	9	.129	.256	5.58	15
.181	.341	5.77	13	.159	.316	5.70	8
.209	.394	5.80	13	.181	.359	5.80	6
.235	.443	6.00	13	.208	.413	5.91	4
.265	.500	6.01	9	.240	.477	6.04	6
.289	.545	6.05	11	.271	.538	6.11	6
.313	.590	6.18	8	.298	.592	6.14	7
.341	.643	6.16	15	.323	.641	6.19	8
.369	.696	6.22	14	.351	.697	6.21	7
.395	.745	6.20	14	.382	.759	6.30	8
.423	.798	6.19	16	.412	.818	6.30	4
.447	.843	6.25	20	.440	.874	6.22	8
.475	.896	6.20	9	.461	.915	6.30	7
.499	.941	6.13	6	.479	.951	6.18	9
.529	.998	5.64	6	.499	.991	5.71	11
V 93.				V 94.			
d.015	P.025	5.53	8	d.007	P.013	5.45	1
.047	0.78	5.31	6	—	—	—	—
.082	.136	5.29	4	.065	.124	5.11	1
.105	.174	5.52	8	.097	.185	5.47	5
.134	.222	5.64	5	.125	.239	5.61	10
.170	.282	5.75	5	.153	.292	5.74	7
.194	.322	5.78	12	.177	.338	5.83	11
.227	.377	5.86	11	.201	.384	5.95	14
.255	.423	5.93	8	.225	.430	6.01	12
.287	.477	5.97	9	.253	.483	6.12	9
.318	.528	6.00	8	.281	.537	6.14	10
.353	.586	6.12	9	.306	.584	6.22	15
.380	.631	6.09	10	.336	.642	6.28	13
.407	.676	6.10	20	.359	.686	6.25	16
.437	.726	6.15	26	.386	.737	6.27	15
.467	.775	6.12	17	.412	.787	6.22	17
.495	.822	6.12	14	.440	.840	6.25	18
.526	.873	6.24	8	.464	.886	6.30	10
.557	.925	6.20	7	.492	.939	6.29	15
.589	.978	5.91	8	.511	.976	6.11	7

Table 8 (continued)

A 96.

Phase		m−10	n
^{d}.013	^{P}.026	4.98	6
.031	.062	4.75	6
.051	.102	4.85	10
.072	.144	5.08	10
.091	.182	5.17	10
.119	.238	5.35	5
.151	.302	5.58	13
.176	.352	5.67	14
.202	.404	5.82	14
.232	.465	5.86	11
.257	.515	5.97	15
.290	.581	6.04	10
.316	.633	6.09	13
.342	.685	6.10	16
.369	.739	6.07	15
.397	.795	6.03	11
.424	.849	6.00	11
.451	.903	6.06	7
.471	.943	6.00	6
.490	.981	5.80	7

V 97.

Phase		m−10	n
^{d}.006	^{P}.018	5.72	12
.026	.078	5.63	10
.043	.128	5.56	15
.059	.176	5.56	16
.077	.230	5.54	13
.091	.272	5.54	13
.110	.328	5.55	13
.125	.373	5.61	16
.140	.418	5.65	12
.158	.472	5.79	13
.178	.531	5.88	7
.194	.579	5.89	8
.210	.627	5.95	4
.226	.675	5.94	7
.243	.726	6.05	11
.259	.773	6.00	6
.277	.827	6.03	6
.293	.875	6.03	10
.308	.920	5.98	9
.325	.970	5.86	10

V 100.

Phase		m−10	n
^{d}.018	^{P}.029	5.47	9
.046	.074	5.37	16
.075	.121	5.31	12
.112	.181	5.39	7
.145	.234	5.56	4
.171	.276	5.58	7
.200	.323	5.63	8
.232	.375	5.75	6
.263	.425	5.76	7
.293	.473	5.92	3
.326	.527	5.90	4
.357	.577	5.87	14
.389	.629	5.89	17
.418	.675	5.89	17
.446	.721	5.90	17
.479	.774	5.91	9
.508	.821	5.88	7
.543	.877	5.93	4
.574	.928	5.95	13
.606	.979	5.73	16

V 101.

Phase		m−10	n
^{d}.015	^{P}.023	5.47	8
.051	.079	5.30	13
.083	.129	5.38	11
.112	.174	5.29	11
.142	.221	5.36	12
.177	.275	5.38	10
.209	.325	5.41	9
.240	.373	5.57	11
.275	.427	5.63	6
.303	.471	5.66	2
.344	.534	5.69	7
.373	.579	5.66	11
.400	.621	5.77	9
.434	.674	5.74	9
.464	.721	5.87	11
.498	.773	5.73	7
.534	.829	5.75	15
.563	.874	5.74	7
.595	.924	5.77	7
.629	.977	5.69	9

Table 8 (continued)

V 104.

Phase		m−10	n
^{d}.011	^{P}.019	4.95	6
.031	.054	4.74	5
.051	.089	4.83	9
.070	.123	4.94	13
.097	.170	5.14	15
.130	.228	5.27	10
.161	.282	5.53	4
.197	.346	5.60	6
.224	.393	5.62	9
.257	.451	5.67	12
.286	.502	5.98	4
.322	.565	5.79	7
.353	.619	6.05	6
.385	.676	5.92	7
.417	.732	6.00	6
.446	.783	5.85	4
.482	.846	5.92	4
.514	.904	5.92	3
.544	.955	5.88	5
.562	.986	5.61	6

V 105.

Phase		m−10	n
^{d}.007	^{P}.024	5.47	9
.021	.073	5.34	14
.036	.125	5.34	8
.050	.174	5.36	11
.065	.226	5.35	11
.079	.275	5.33	7
.093	.323	5.38	10
.108	.375	5.41	13
.121	.421	5.46	9
.137	.476	5.52	15
.151	.525	5.61	11
.166	.577	5.67	7
.179	.622	5.63	7
.195	.678	5.70	9
.209	.726	5.67	10
.223	.775	5.71	8
.238	.827	5.71	9
.253	.879	5.70	10
.266	.925	5.66	13
.280	.973	5.55	14

V 106.

Phase		m−10	n
^{d}.011	^{P}.020	5.44	10
.038	.069	5.18	13
.063	.115	5.26	9
.096	.175	5.41	3
.124	.227	5.52	6
.149	.272	5.54	9
.181	.331	5.65	9
.208	.380	5.73	8
.236	.431	5.79	11
.261	.477	5.83	12
.287	.525	5.87	8
.316	.578	5.95	8
.345	.631	5.93	7
.369	.674	5.98	14
.398	.727	5.99	8
.424	.775	5.99	10
.449	.821	6.05	17
.476	.870	6.02	14
.504	.921	5.97	11
.532	.972	5.81	13

V 107.

Phase		m−10	n
^{d}.007	^{P}.023	5.57	11
.023	.074	5.49	10
.038	.123	5.46	12
.055	.178	5.40	10
.072	.233	5.42	11
.087	.282	5.49	6
.101	.327	5.52	10
.116	.375	5.59	14
.130	.421	5.65	13
.147	.476	5.75	10
.161	.521	5.81	8
.176	.570	5.91	11
.194	.628	5.98	12
.210	.680	6.03	11
.226	.731	5.99	10
.241	.780	6.05	9
.254	.822	6.01	9
.268	.867	6.04	10
.287	.929	6.00	9
.301	.974	5.80	13

Table 8 (continued)

V 108.

Phase		m−10	n
$^{d}.006$	$^{p}.012$	5.49	3
.031	.060	5.05	5
.049	.094	5.11	3
.072	.139	5.16	4
.090	.173	5.36	5
.115	.221	5.56	9
.147	.283	5.73	11
.177	.341	5.87	17
.206	.396	5.96	14
.236	.454	6.06	18
.265	.510	6.15	13
.294	.566	6.23	17
.326	.627	6.25	17
.354	.681	6.21	16
.384	.739	6.28	16
.413	.795	6.29	14
.445	.856	6.19	10
.466	.897	6.33	5
.490	.943	6.18	8
.507	.976	6.10	3

V. 109

Phase		m−10	n
$^{d}.013$	$^{p}.024$	4.83	5
.038	.071	4.57	6
.067	.125	4.81	8
.097	.182	4.90	10
.123	.230	5.07	10
.146	.273	5.18	10
.176	.330	5.38	8
.203	.380	5.45	6
.226	.423	5.53	6
.255	.478	5.55	10
.284	.532	5.52	8
.311	.582	5.48	6
.336	.629	5.60	11
.361	.676	5.59	12
.387	.725	5.50	13
.413	.774	5.65	13
.439	.822	5.56	13
.463	.867	5.68	10
.492	.921	5.65	7
.521	.976	5.47	3

V 110.

Phase		m−10	n
$^{d}.011$	$^{p}.021$	5.25	11
.040	.075	5.03	9
.071	.133	5.12	9
.092	.172	5.25	7
.123	.230	5.24	11
.148	.276	5.40	11
.172	.321	5.50	11
.201	.375	5.52	15
.225	.420	5.56	7
.252	.471	5.71	7
.284	.530	5.70	5
.306	.572	5.79	5
.334	.624	5.87	6
.366	.684	5.87	6
.391	.730	5.94	8
.418	.781	5.86	5
.439	.820	5.79	10
.474	.885	5.88	6
.495	.925	5.76	11
.520	.971	5.57	14

V 113.

Phase		m−10	n
$^{d}.011$	$^{p}.021$	5.02	5
.033	.064	4.95	9
.049	.096	5.04	15
.071	.138	5.19	15
.094	.183	5.42	20
.124	.242	5.60	23
.150	.292	5.74	17
.179	.349	5.86	10
.207	.404	6.00	16
.238	.464	6.14	14
.267	.520	6.21	10
.290	.565	6.22	5
.336	.655	6.18	2
.351	.688	6.19	6
.380	.741	6.23	5
.412	.803	6.22	4
.438	.854	6.18	9
.462	.901	6.24	7
.483	.942	6.23	7
.502	.979	5.99	4

Table 8 (continued)

Phase		m−10	n	Phase		m−10	n
V 114.				**V 115.**			
d.013	p.022	5.59	7	d.007	p.014	5.31	10
.048	.080	5.19	4	.028	.055	4.98	6
.074	.124	5.36	5	.051	.099	5.09	7
.103	.172	5.50	8	.069	.134	5.27	8
.133	.223	5.66	7	.091	.177	5.45	13
.166	.278	5.76	9	.121	.236	5.63	9
.195	.326	5.80	10	.156	.304	5.79	8
.223	.373	5.91	11	.181	.353	5.88	9
.257	.430	5.98	15	.211	.411	6.07	11
.286	.478	6.06	16	.240	.468	6.12	16
.312	.522	6.05	13	.267	.520	6.17	9
.345	.577	6.07	12	.294	.573	6.26	10
.378	.632	6.09	12	.325	.633	6.27	13
.405	.678	6.09	16	.354	.690	6.26	9
.437	.731	6.12	11	.381	.742	6.24	15
.464	.776	6.14	12	.410	.799	6.30	12
.493	.825	6.11	9	.441	.859	6.29	13
.521	.872	6.19	9	.467	.910	6.33	5
.550	.920	6.22	9	.484	.943	6.33	8
.584	.977	5.90	12	.503	.980	6.04	11
V 116.				**V 117.**			
d.010	p.019	5.24	7	d.016	p.027	5.32	10
.028	.054	4.90	7	.045	.075	5.26	14
.048	.093	5.07	6	.076	.127	5.43	9
.074	.144	5.25	11	.106	.177	5.52	8
.101	.196	5.48	14	.134	.223	5.65	9
.132	.256	5.68	9	.167	.278	5.70	14
.156	.303	5.81	15	.192	.320	5.76	6
.187	.363	5.90	13	.226	.376	5.88	6
.216	.420	6.08	17	.256	.426	5.94	10
.244	.474	6.16	13	.289	.481	5.96	6
.268	.521	6.26	5	.321	.535	6.08	3
.297	.577	6.31	8	.344	.573	6.15	10
.330	.641	6.36	8	.374	.623	6.09	11
.358	.695	6.40	10	.407	.678	6.13	18
.384	.746	6.24	11	.436	.726	6.10	18
.412	.800	6.24	15	.464	.773	6.12	16
.441	.857	6.29	15	.491	.818	6.19	6
.467	.907	6.28	9	.524	.873	6.20	11
.485	.942	6.31	5	.557	.928	6.08	8
.504	.979	5.97	10	.589	.981	5.81	8

Table 8 (continued)

V 118.

Phase		m−10	n
^{d}.010	^{P}.020	5.24	15
.031	.062	4.92	14
.048	.096	5.01	12
.074	.148	5.25	9
.102	.204	5.45	10
.128	.256	5.63	7
.156	.312	5.85	7
.178	.356	5.98	5
.206	.413	5.94	4
.233	.467	6.07	6
.261	.523	6.22	5
.291	.583	6.31	12
.319	.639	6.26	9
.349	.699	6.32	11
.373	.747	6.24	17
.398	.797	6.20	13
.425	.851	6.19	12
.448	.897	6.28	12
.469	.939	6.34	14
.489	.979	5.94	12

V 119.

Phase		m−10	n
^{d}.011	^{P}.021	5.25	10
.032	.062	4.89	9
.054	.104	4.94	11
.072	.139	5.09	10
.095	.183	5.25	13
.126	.243	5.54	9
.153	.296	5.57	15
.185	.357	5.79	7
.213	.411	5.87	12
.242	.467	5.96	10
.270	.521	6.19	11
.301	.581	6.13	13
.331	.639	6.13	13
.357	.690	6.23	12
.388	.749	6.17	14
.419	.809	6.11	9
.447	.863	6.22	6
.477	.921	6.15	6
.493	.952	6.10	7
.510	.985	5.67	6

V 120.

Phase		m−10	n
^{d}.018	^{P}.028	5.70	11
.048	.075	5.60	9
.082	.128	5.56	12
.114	.178	5.59	12
.146	.228	5.70	11
.176	.275	5.69	12
.210	.328	5.83	8
.241	.376	5.81	9
.271	.423	5.88	9
.302	.472	5.92	9
.338	.528	5.92	5
.366	.572	5.93	6
.398	.622	5.97	10
.432	.675	6.01	15
.464	.725	6.04	14
.496	.775	6.07	15
.529	.826	6.05	17
.561	.876	6.06	13
.593	.926	5.99	9
.623	.973	5.91	3

V 121.

Phase		m−10	n
^{d}.015	^{P}.028	4.84	13
.043	.080	4.87	12
.067	.125	4.96	8
.093	.174	4.92	12
.121	.226	4.97	9
.149	.278	5.07	10
.175	.327	5.24	10
.201	.376	5.25	8
.227	.424	5.25	6
.256	.478	5.32	5
.283	.529	5.54	7
.308	.575	5.60	6
.332	.620	5.56	7
.364	.680	5.51	3
.396	.740	5.60	4
.418	.781	5.50	10
.441	.824	5.45	13
.470	.878	5.46	15
.495	.925	5.35	17
.525	.981	5.12	16

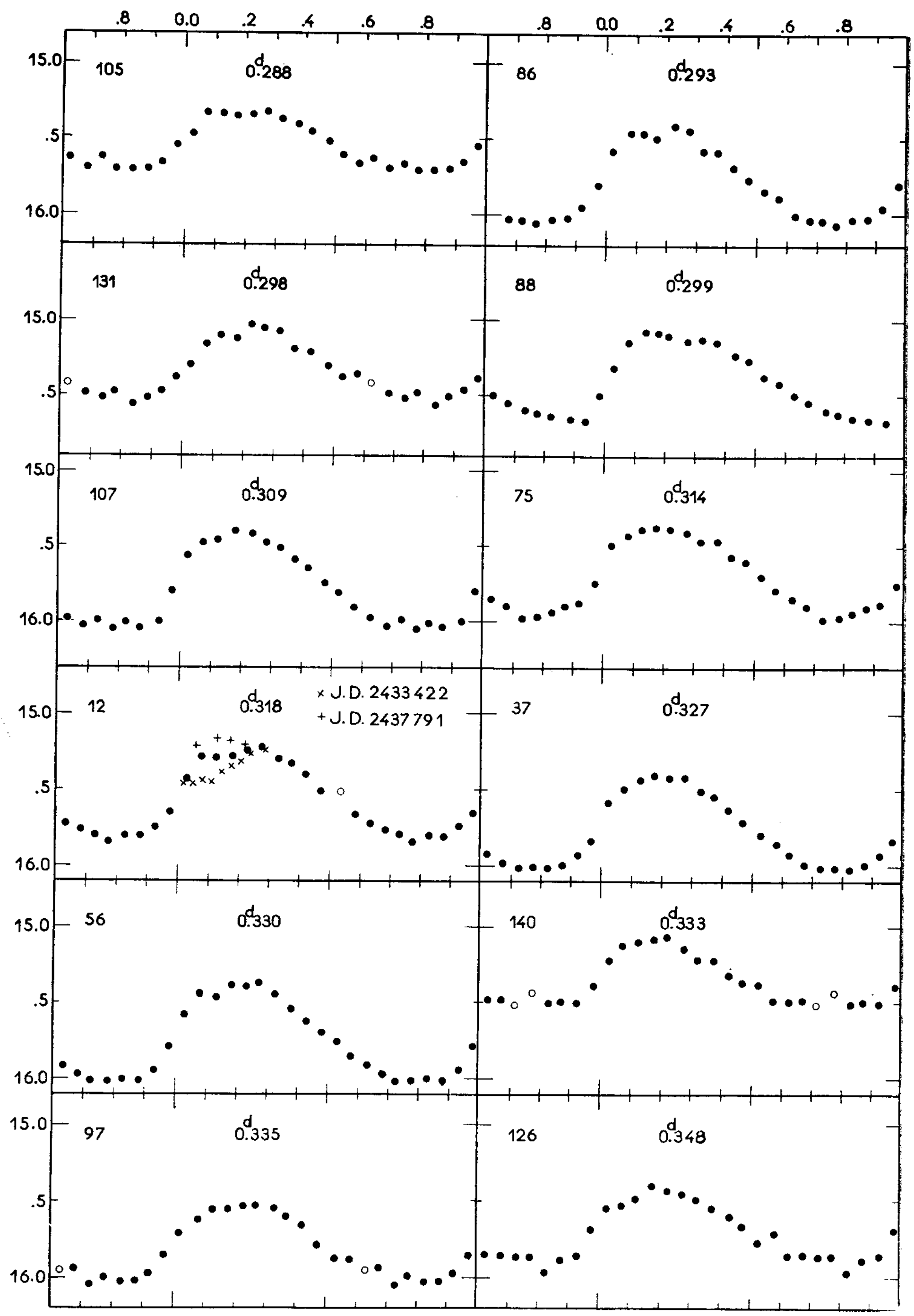
Table 8 (continued)

Phase		m−10	n	Phase		m−10	n
V 123.				**V 124.**			
^{d}.009	^{p}.017	5.37	6	^{d}.016	^{p}.021	5.65	7
.032	.059	4.93	6	.054	.072	5.60	10
.059	.108	5.21	6	.095	.126	5.54	7
.086	.158	5.44	11	.132	.175	5.50	13
.115	.211	5.61	10	.170	.226	5.52	15
.141	.259	5.79	11	.208	.276	5.62	13
.173	.317	5.91	19	.245	.326	5.65	15
.204	.374	5.98	13	.279	.371	5.71	9
.230	.422	6.09	9	.320	.425	5.72	10
.260	.477	6.17	7	.360	.478	5.79	7
.294	.539	6.22	3	.395	.525	5.76	4
.319	.585	6.28	5	.433	.575	5.83	8
.350	.642	6.25	10	.470	.625	5.88	11
.384	.704	6.23	10	.508	.675	5.89	19
.412	.755	6.24	11	.541	.719	5.87	16
.436	.799	6.32	9	.578	.768	5.93	3
.472	.865	6.29	11	.621	.825	5.86	8
.494	.906	6.22	4	.655	.871	5.96	9
.516	.946	6.28	7	.695	.924	5.87	12
.535	.981	5.94	5	.732	.973	5.76	10
V 125.				**V 126.**			
^{d}.010	^{p}.029	5.63	12	^{d}.009	^{p}.026	5.55	13
.026	.074	5.59	12	.027	.077	5.53	15
.043	.123	5.50	12	.043	.123	5.49	7
.063	.180	5.50	13	.061	.175	5.40	8
.080	.229	5.50	8	.078	.224	5.44	11
.098	.280	5.47	7	.096	.276	5.46	14
.115	.329	5.52	10	.113	.324	5.49	9
.132	.377	5.56	9	.130	.373	5.55	13
.150	.429	5.71	8	.151	.433	5.61	8
.167	.477	5.77	9	.165	.474	5.67	9
.185	.529	5.79	13	.183	.525	5.77	6
.203	.580	5.81	7	.202	.583	5.72	8
.219	.626	5.90	8	.217	.623	5.86	9
.237	.677	5.93	11	.236	.677	5.86	9
.256	.732	5.99	8	.253	.726	5.87	12
.272	.778	6.00	13	.269	.772	5.87	15
.290	.829	5.94	9	.287	.824	5.97	9
.310	.886	5.94	11	.305	.875	5.89	6
.324	.926	5.90	13	.324	.930	5.86	8
.342	.978	5.75	14	.340	.976	5.69	11

Table 8 (continued)

Phase		m−10	n
V 131.			
d.007	P.024	5.30	9
.021	.071	5.16	10
.036	.121	5.10	9
.052	.175	5.13	7
.067	.225	5.04	7
.080	.269	5.06	7
.095	.319	5.08	7
.109	.366	5.20	5
.125	.420	5.22	8
.142	.477	5.31	10
.157	.527	5.38	6
.171	.574	5.36	11
.185	.621	5.42	4
.202	.679	5.49	8
.219	.736	5.52	8
.231	.776	5.48	6
.249	.836	5.56	12
.263	.883	5.51	7
.277	.930	5.47	9
.291	.978	5.39	14
V 142.			
d.013	P.023	5.04	9
.039	.069	4.78	11
.073	.128	4.98	11
.100	.176	5.07	17
.127	.223	5.20	13
.155	.273	5.31	8
.186	.327	5.40	10
.218	.383	5.38	10
.242	.426	5.53	14
.272	.478	5.56	8
.300	.528	5.50	8
.325	.572	5.60	6
.359	.631	5.69	5
.385	.677	5.47	6
.416	.732	5.68	4
.441	.776	5.71	7
.472	.830	5.59	6
.500	.879	5.73	7
.524	.922	5.64	7
.558	.981	5.31	8

Phase		m−10	n
V 140.			
d.010	P.030	5.22	10
.025	.075	5.13	10
.042	.126	5.10	12
.058	.174	5.09	13
.074	.222	5.07	14
.093	.279	5.15	14
.108	.324	5.22	9
.125	.375	5.22	14
.142	.426	5.32	7
.157	.471	5.37	12
.175	.525	5.38	12
.191	.573	5.49	9
.208	.624	5.49	6
.224	.672	5.48	8
.238	.714	5.52	4
.258	.774	5.44	3
.276	.829	5.51	7
.290	.871	5.50	12
.308	.925	5.51	9
.326	.979	5.39	10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× J.D. 2433422
+ J.D. 2437791
37
0.327 d
56
0.330 d
140
0.333 d
97
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126
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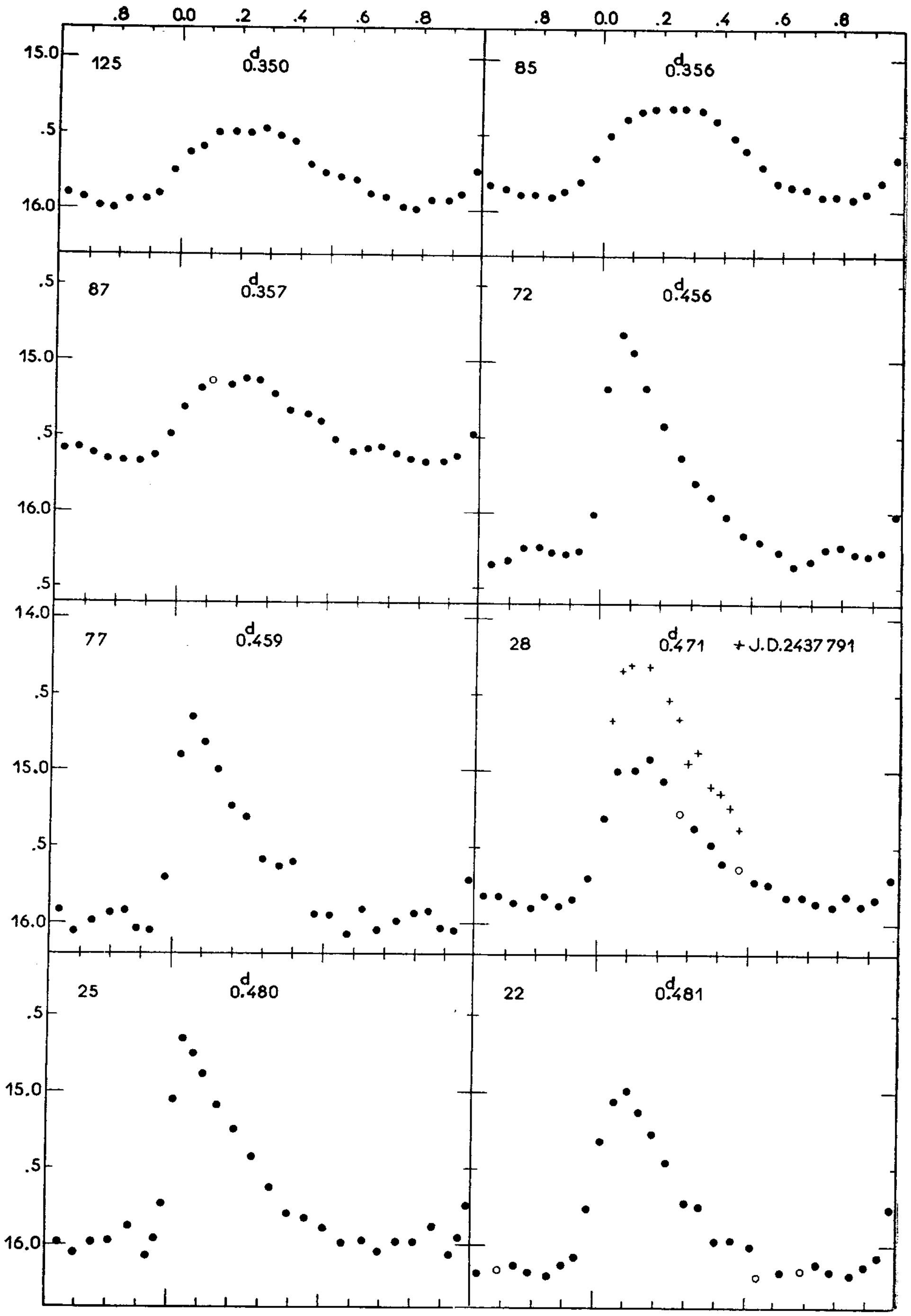
.4
.6
.8

Figure 15.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72
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Figure 16.

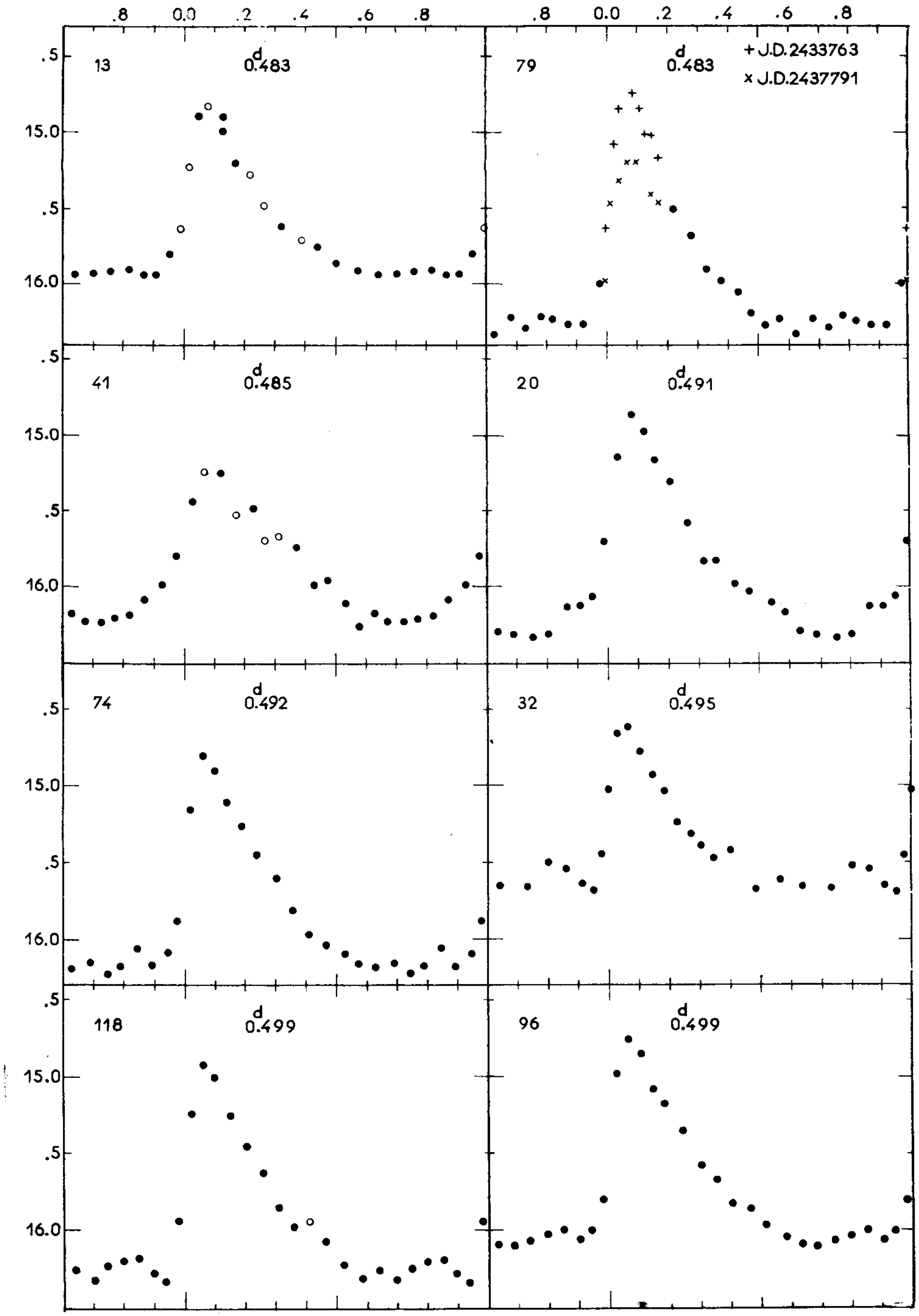
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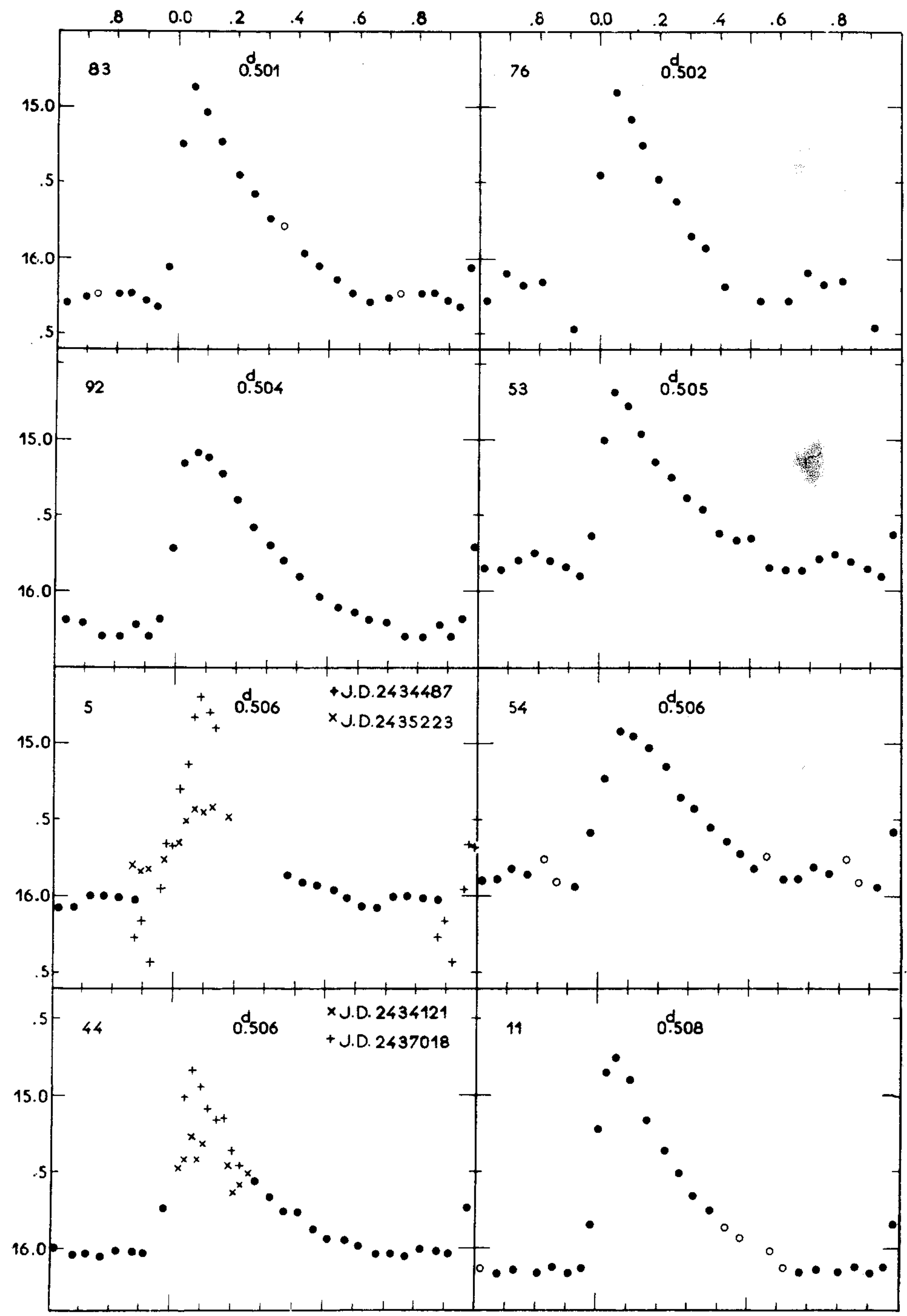
Figure 17.



.8 0.0 .2 .4 .6 .8
.8 0.0 .2 .4 .6 .8
83 0.501
76 0.502
92 0.504
53 0.505
5 0.506
+J.D.2434487
×J.D.2435223
54 0.506
44 0.506
×J.D. 2434121
+J.D. 2437018
11 0.508
15.0
.5
16.0
.5

Figure 18.

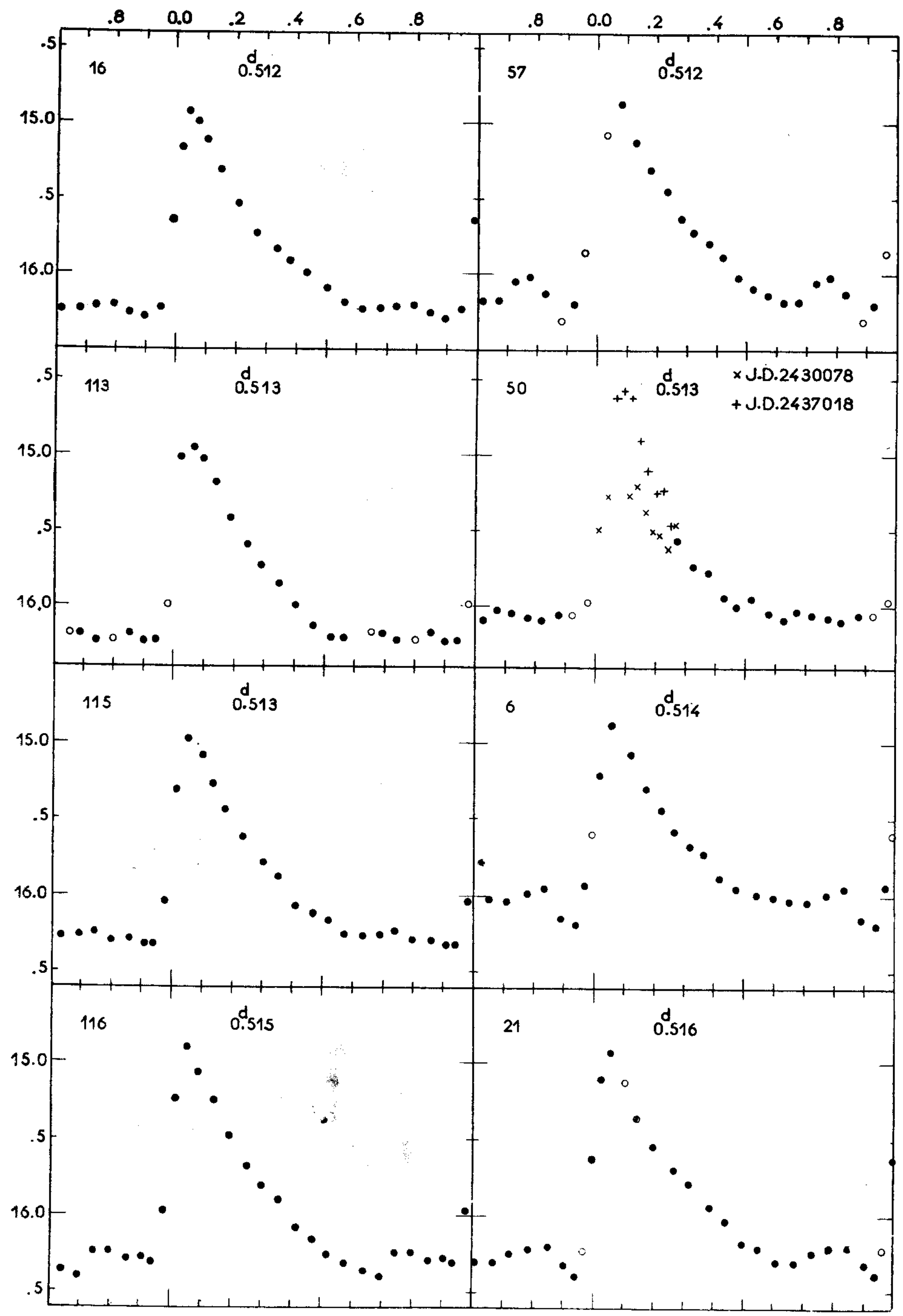

.8
0.0
.2
.4
.6
.8
16
0.512
57
0.512
113
0.513
50
0.513
× J.D.2430078
+ J.D.2437018
115
0.513
6
0.514
116
0.515
21
0.516
15.0
.5
16.0

Figure 19.

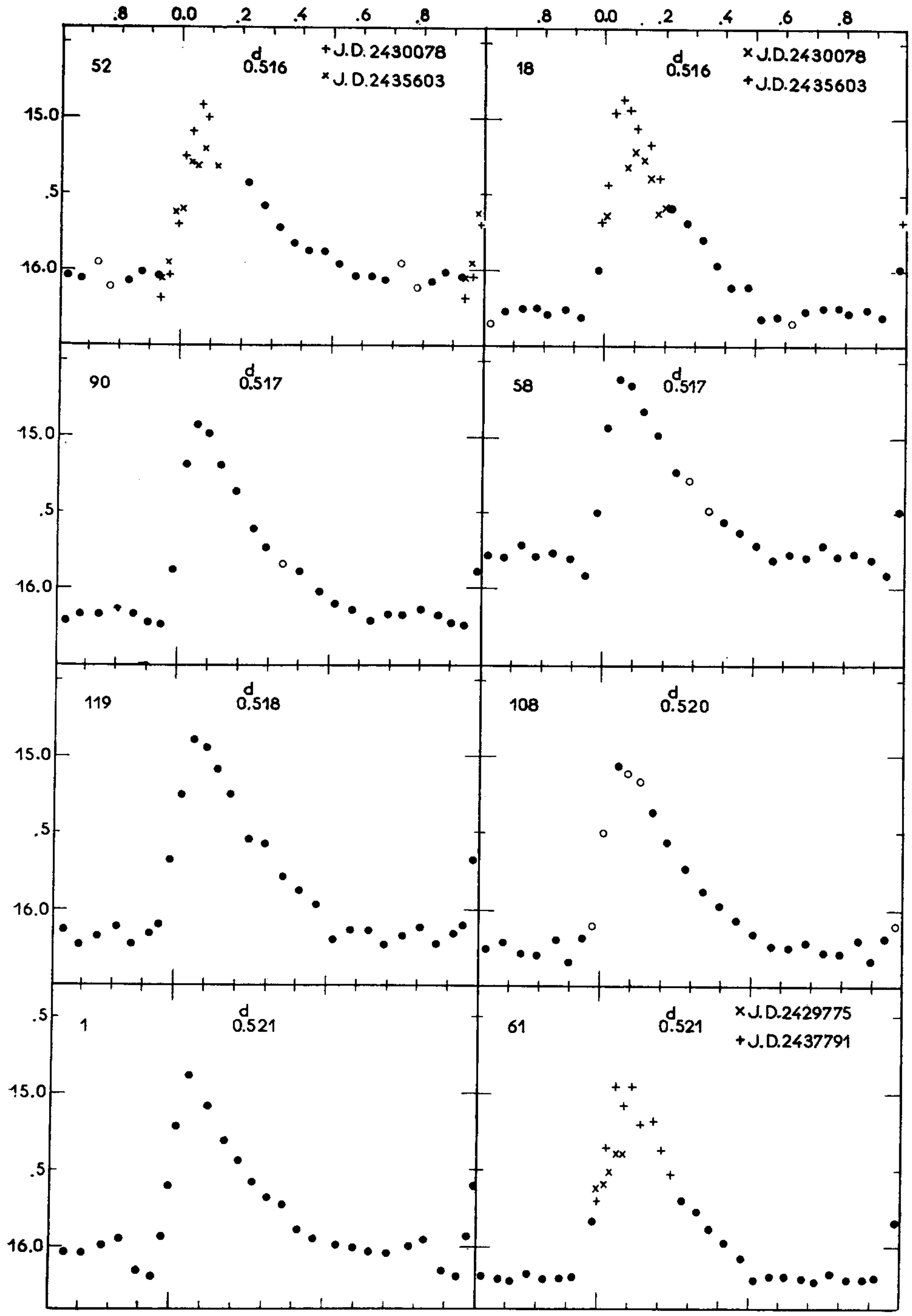
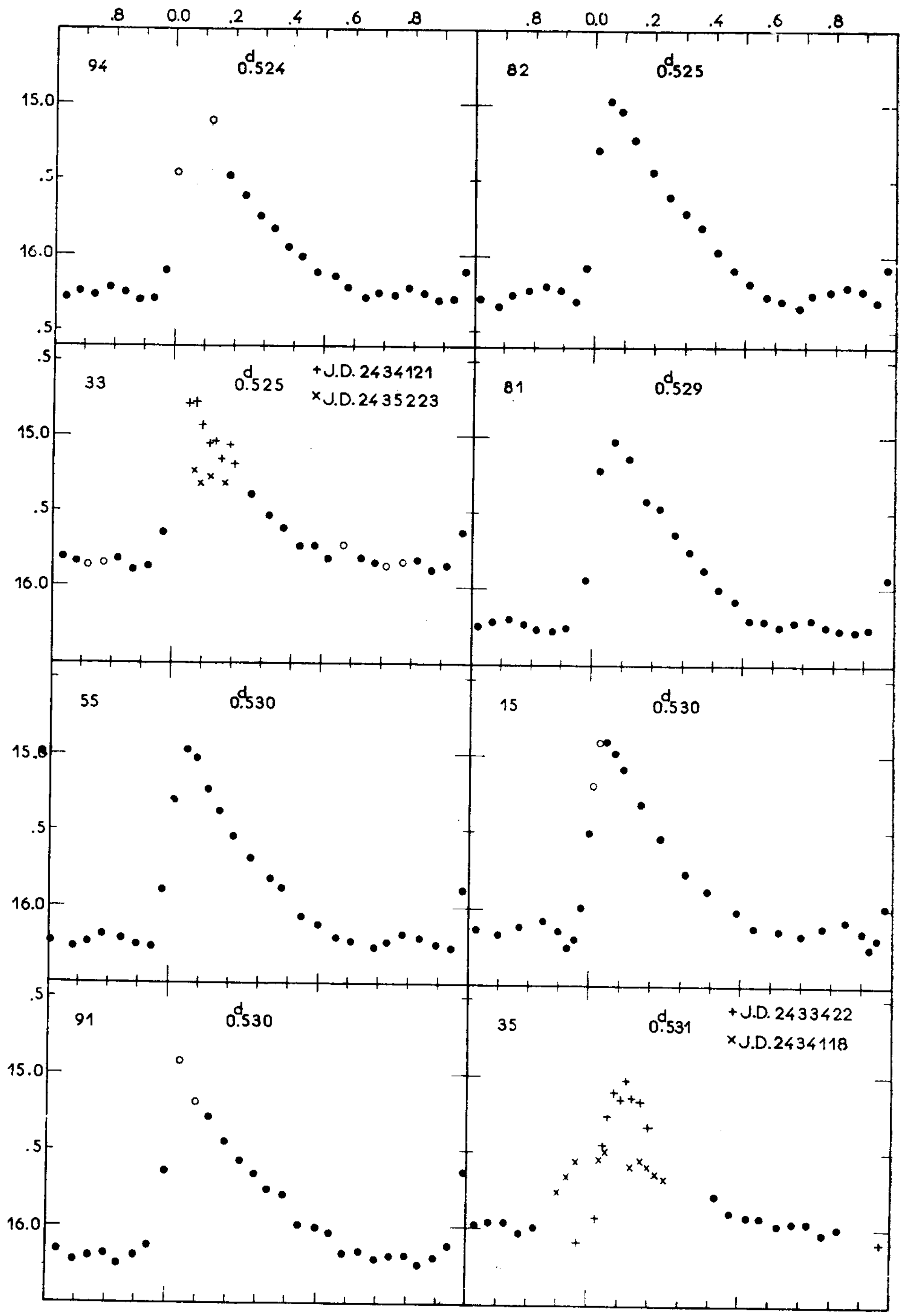

.8 0.0 .2 .4 .6 .8
52
0.516 d
+ J.D. 2430078
× J.D. 2435603
18
× J.D. 2430078
+ J.D. 2435603
90
0.517 d
58
119
0.518 d
108
0.520 d
1
0.521 d
61
× J.D. 2429775
+ J.D. 2437791
15.0
.5
16.0

Figure 20.



.8
0.0
.2
.4
.6
.8
94
0.d524
82
0.d525
15.0
.5
16.0
33
0.d525
+J.D. 2434121
×J.D. 2435223
81
0.d529
55
0.d530
15
0.d530
91
0.d530
35
0.d531
+J.D. 2433422
×J.D. 2434118

Figure 21.

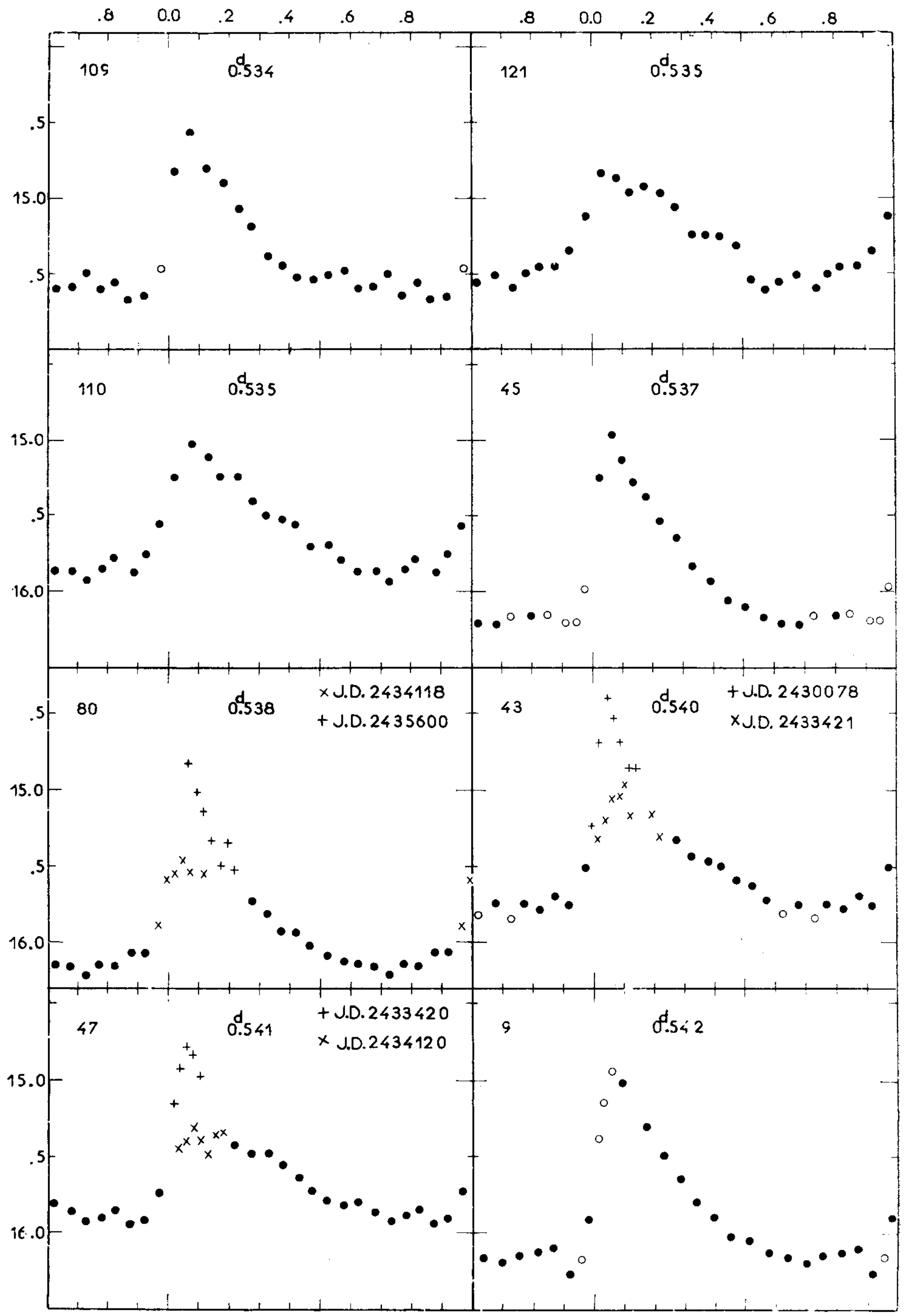
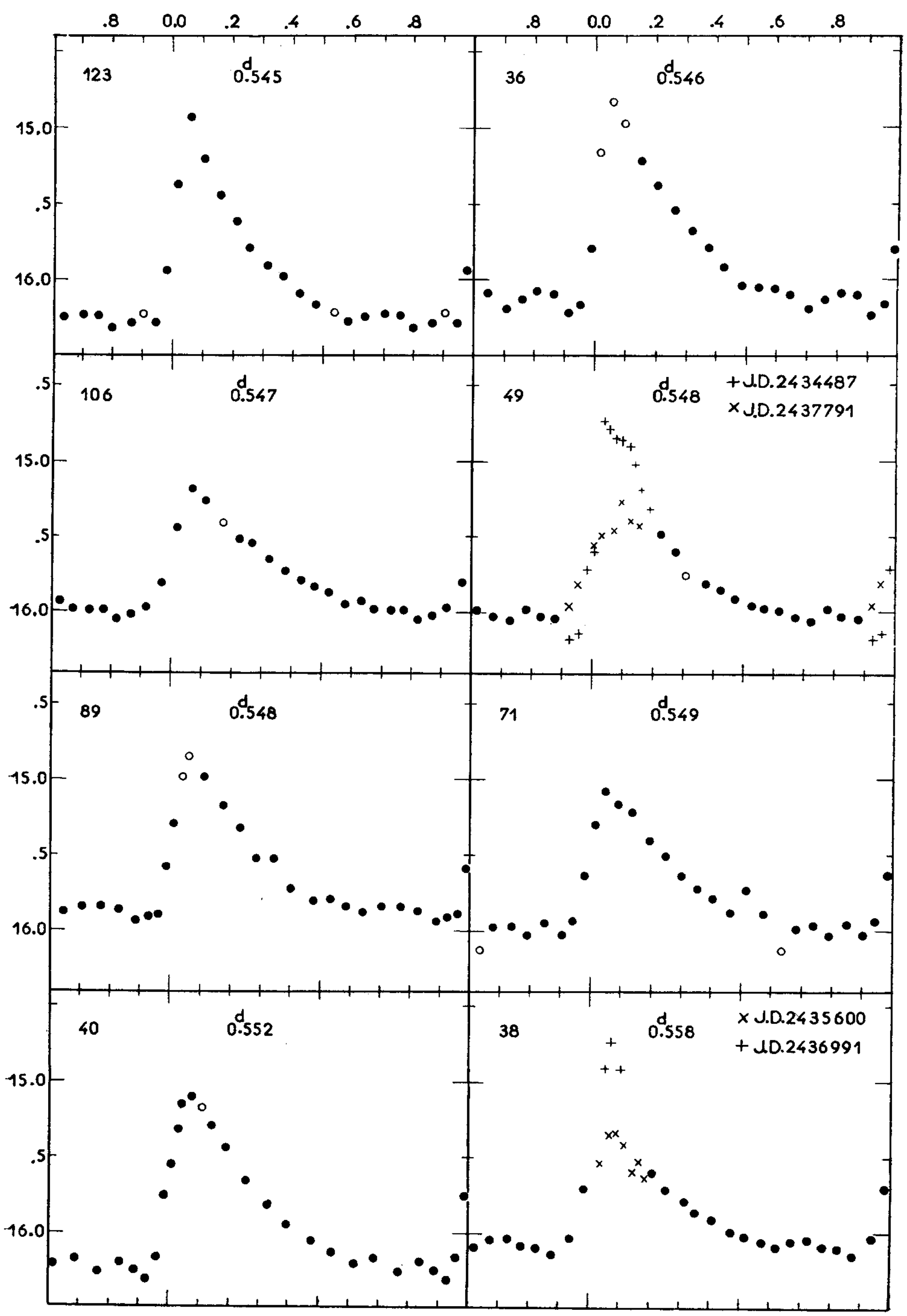

109
0.534
121
0.535
110
0.535
45
0.537
80
0.538
× J.D. 2434118
+ J.D. 2435600
43
0.540
+ J.D. 2430078
× J.D. 2433421
47
0.541
+ J.D. 2433420
× J.D. 2434120
9
0.542

Figure 22.



.8
0.0
.2
.4
.6
.8
15.0
.5
16.0
123
0ᵈ.545
36
0ᵈ.546
106
0ᵈ.547
49
0ᵈ.548
+ J.D.2434487
× J.D.2437791
89
0ᵈ.548
71
0ᵈ.549
40
0ᵈ.552
38
0ᵈ.558
× J.D.2435600
+ J.D.2436991

Figure 23.

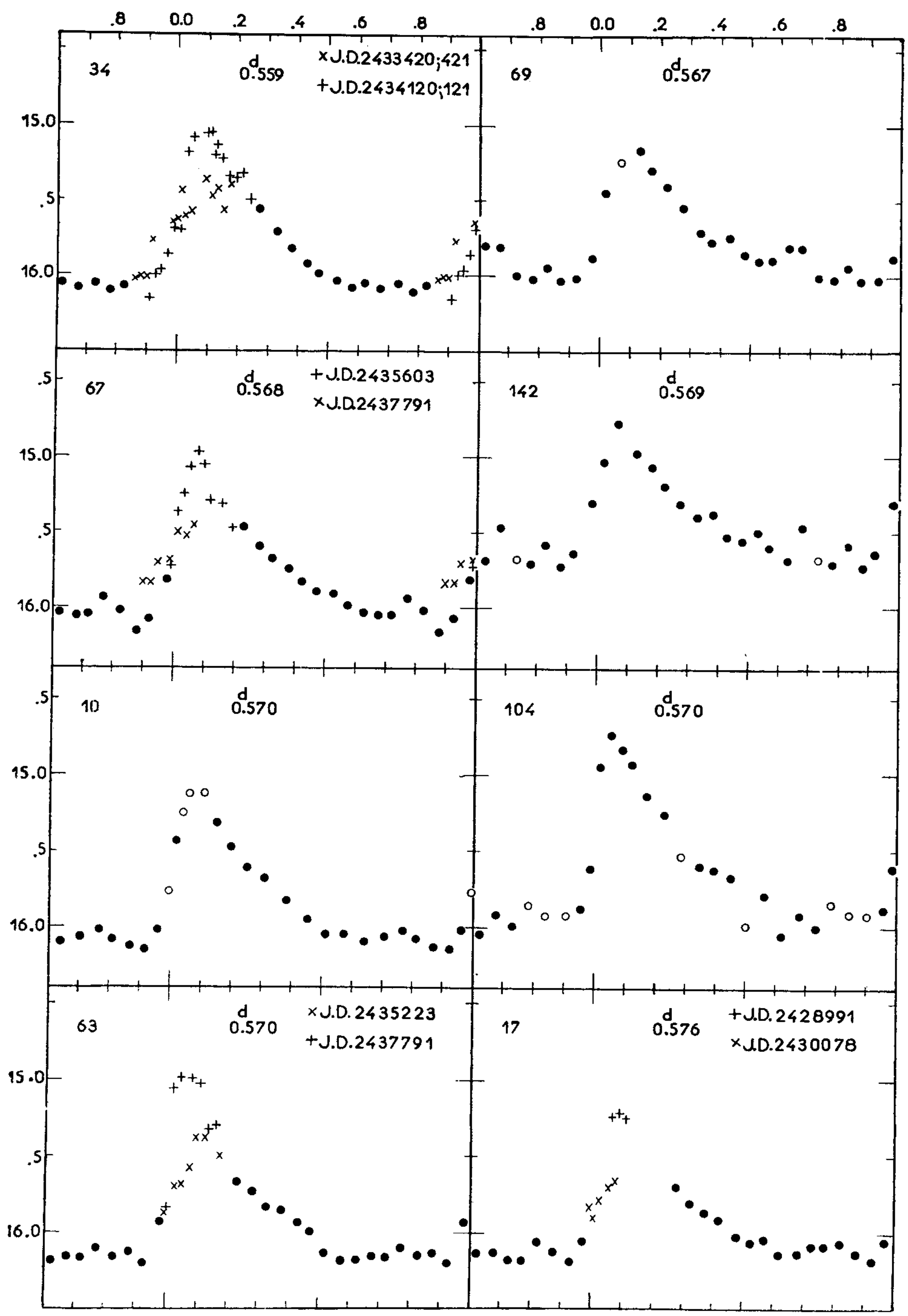

.8
0.0
.2
.4
.6
.8
34
d 0.559
×J.D.2433420;421
+J.D.2434120;121
69
d 0.567
15.0
.5
16.0
67
d 0.568
+J.D.2435603
×J.D.2437791
142
d 0.569
10
d 0.570
104
d 0.570
63
d 0.570
×J.D.2435223
+J.D.2437791
17
d 0.576
+J.D.2428991
×J.D.2430078

Figure 24.

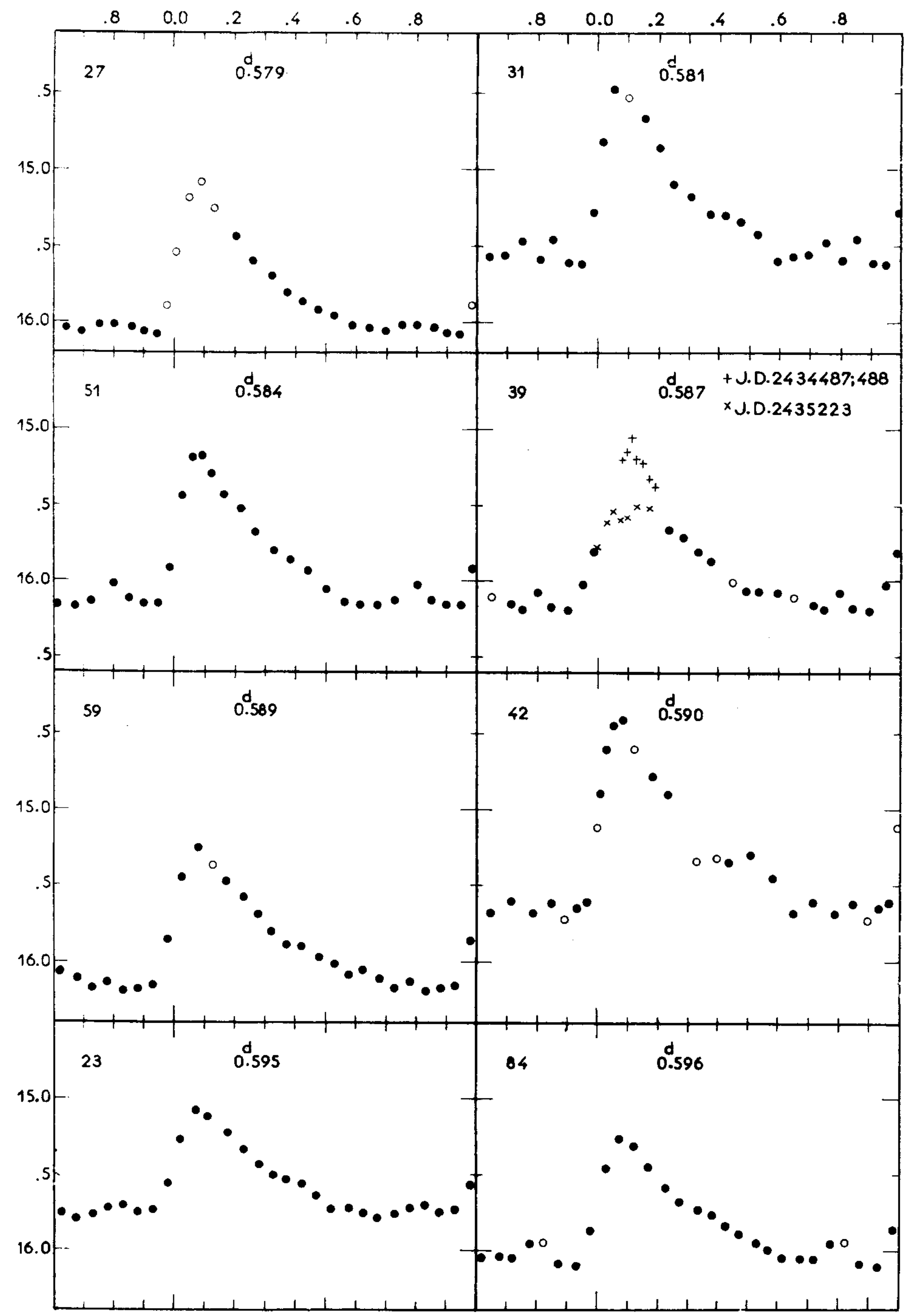

.8
0.0
.2
.4
.6
.8
27
$0^d.579$
31
$0^d.581$
.5
15.0
16.0
51
$0^d.584$
39
$0^d.587$
+J.D.2434487;488
×J.D.2435223
59
$0^d.589$
42
$0^d.590$
23
$0^d.595$
84
$0^d.596$

Figure 25.

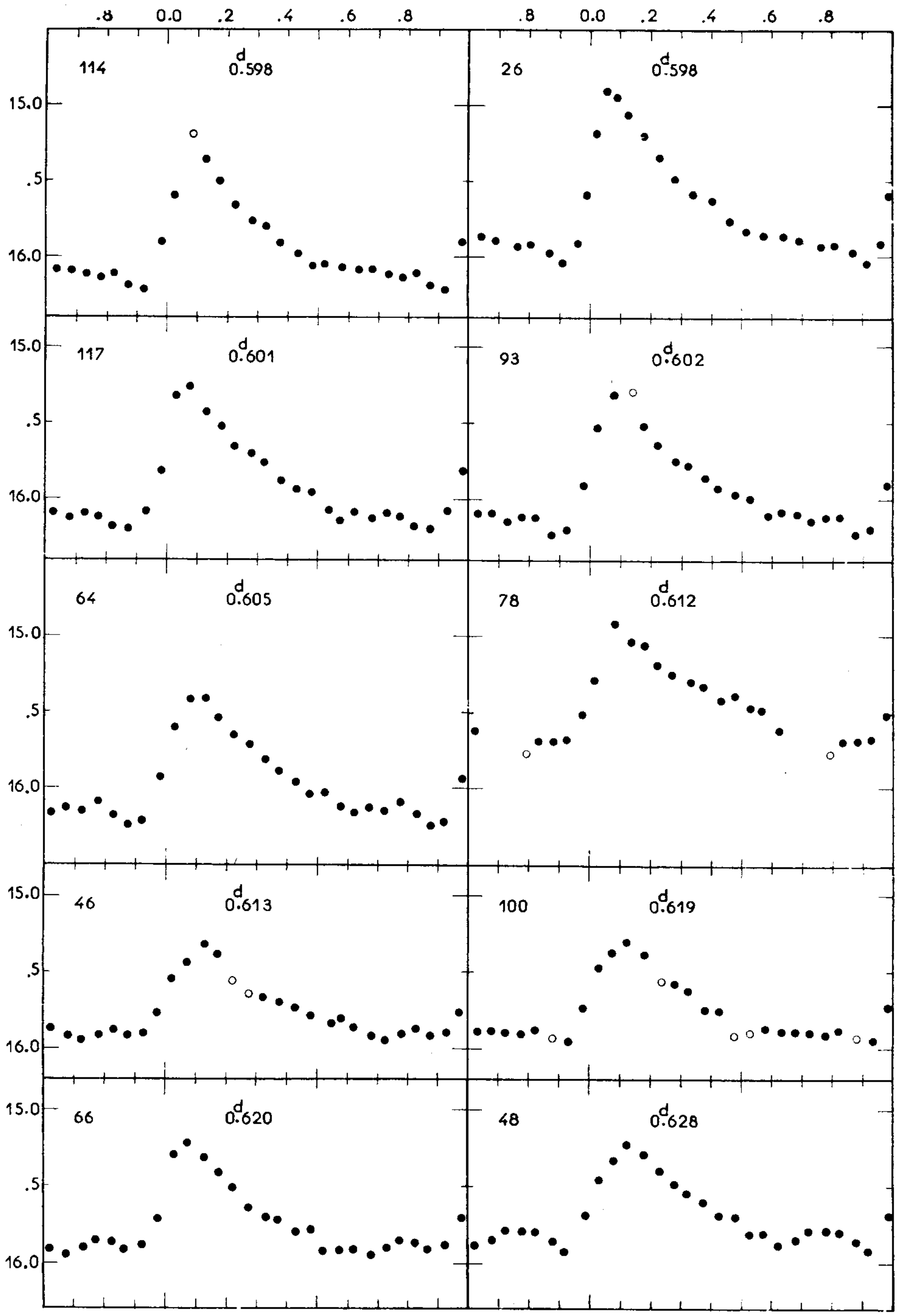
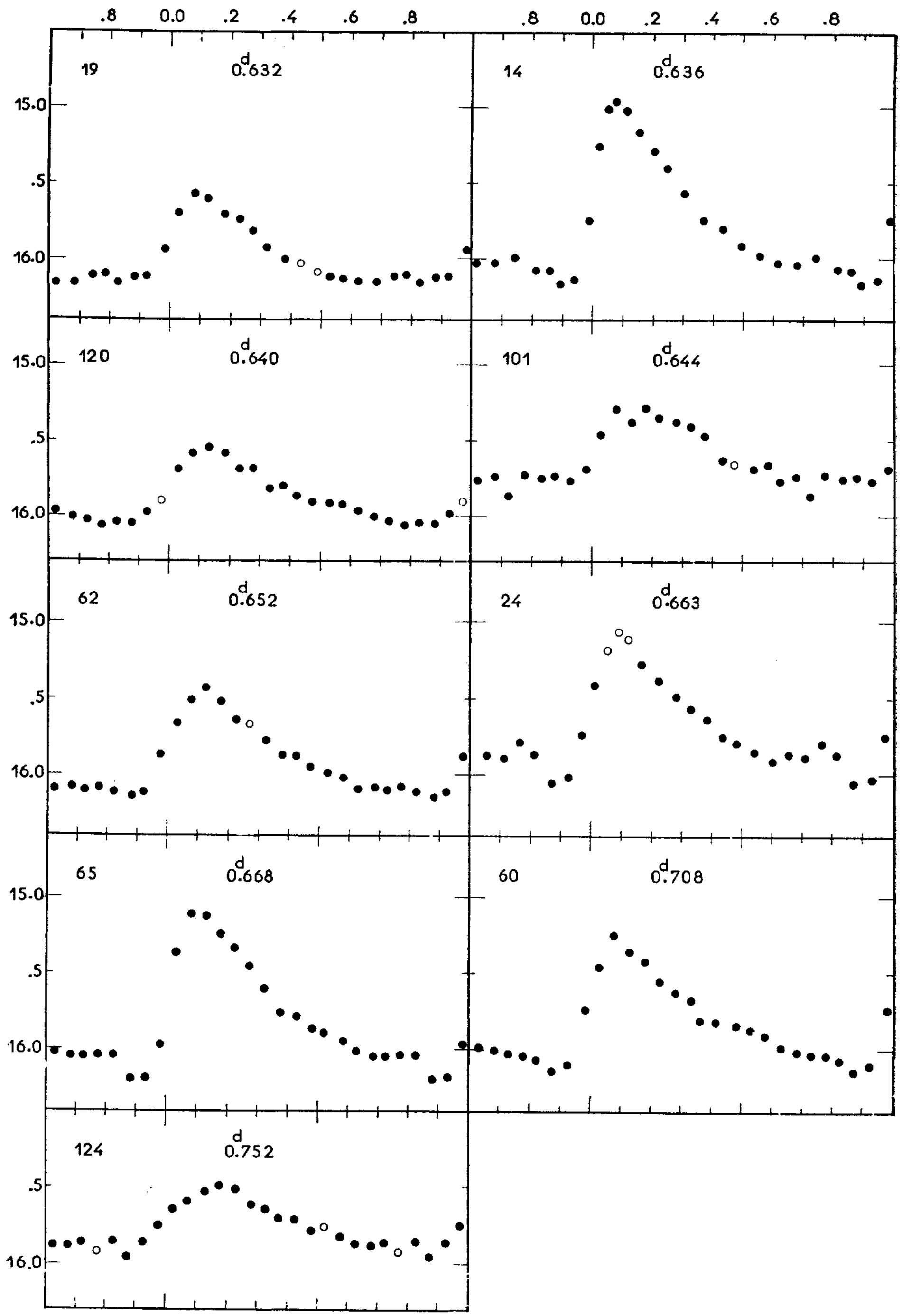

.8 0.0 .2 .4 .6 .8
.8 0.0 .2 .4 .6 .8
114 0.598
26 0.598
117 0.601
93 0.602
64 0.605
78 0.612
46 0.613
100 0.619
66 0.620
48 0.628
15.0
.5
16.0

Figure 26.



.8
0.0
.2
.4
.6
.8
15.0
.5
16.0
19
0.632
14
0.636
120
0.640
101
0.644
62
0.652
24
0.663
65
0.668
60
0.708
124
0.752

Figure 27.

Table 9
OBSERVATIONS OF THE VARIABLES. (m—10)

J.D. 2 400 000 +	1	5	6	9	10	11	12
28 963.487	5.67	5.90	5.90	6.27	6.20	5.98	5.22
28 991.403	4.60	5.96	5.96	5.30	6.27	6.01	5.27
.416	4.85	6.06	5.46	5.58	6.06	5.81	5.21
.430	4.77	5.96	5.03	5.51	5.91	6.00	5.25
.522	4.90	5.75	5.13	6.05	5.19	6.12	5.04
.542	5.20	5.22	5.13	6.01	5.18	6.00	5.27
29 346.376	5.77	5.27	4.90	6.24	5.27	5.66	5.63
.392	5.81	5.69	5.23	6.26	5.44	5.77	5.85
29 719.549	5.70	6.16	5.97	6.07	5.97	4.83	5.44
.560	5.75	6.18	5.98	6.18	6.00	4.91	5.50
29 720.546	5.80	6.16	5.94	6.04	5.51	4.57	5.75
.558	5.72	6.07	6.09	6.07	5.47	4.66	5.69
29 774.405	4.73	5.90	5.68	5.36	6.13	4.73	5.30
.417	4.74	6.06	5.76	5.21	6.06	5.12	5.27
29 775.403	5.23	5.84	5.61	6.16	6.04	4.76	5.34
.415	4.84	5.97	5.65	6.17	6.15	4.77	5.20
.426	4.78	5.83	5.51	—	6.17	4.94	5.25
.437	4.80	5.88	5.69	6.34	6.10	5.11	5.33
.447	4.79	6.04	5.71	6.28	6.16	5.09	5.24
30 052.462	5.01	5.53	5.79	6.00	6.26	5.97	5.74
.474	5.20	5.26	5.26	6.00	5.79	6.15	5.83
.489	5.29	5.17	5.17	6.07	5.57	6.07	5.80
.501	5.32	5.13	4.95	6.12	5.38	6.24	6.08
30 078.418	4.81	5.46	6.03	5.88	6.14	6.22	5.23
.434	4.61	5.71	5.79	5.91	5.96	6.13	5.33
.470	5.08	5.97	5.97	6.00	6.00	6.02	5.49
.483	4.99	5.92	6.04	6.12	6.08	6.02	5.41
.498	5.03	5.87	5.98	5.94	6.07	5.98	5.47
.509	5.20	5.93	5.95	6.09	6.09	6.11	5.66
.521	5.36	5.99	5.97	6.07	6.13	6.13	5.79
.536	5.25	6.08	6.10	6.27	5.89	6.00	5.89
.548	5.26	5.96	6.07	6.07	5.94	5.98	5.82
33 390.497	5.90	6.14	5.05	5.38	5.13	6.34	5.66
.534	5.92	6.30	5.33	5.50	5.32	5.65	5.72
.545	5.95	6.00	5.33	5.69	5.25	5.25	5.75
.558	5.59	6.11	5.33	5.69	5.31	4.80	5.77
.570	5.33	6.17	5.62	5.69	5.62	4.81	5.69
.586	5.00	6.29	5.76	5.97	5.55	4.88	5.97
33 420.424	5.55	6.23	5.66	6.00	6.35	6.00	5.78
.438	5.70	6.26	5.78	5.95	6.15	6.24	6.12
.450	5.68	6.12	5.78	5.95	6.18	6.21	5.87
.476	5.62	5.98	5.64	6.01	5.98	6.09	5.93
.487	5.76	6.05	5.90	6.05	6.38	6.15	5.74
.498	5.75	5.77	5.75	5.96	6.12	5.96	5.73
.510	5.88	5.94	5.99	6.22	6.01	5.21	5.57
.523	5.78	—	—	5.99	5.94	4.77	5.16

Table 9 (continued)

J. D. 2 400 000 +	1	5	6	9	10	11	12
33 421.385	5.07	5.92	5.22	5.50	5.64	6.20	5.76
.442	5.42	5.97	5.46	5.85	5.92	6.04	5.87
.454	5.49	6.15	5.51	5.86	5.77	6.13	5.62
.465	5.42	6.05	5.66	5.84	5.80	6.11	5.48
.475	5.52	5.96	5.69	5.90	6.01	6.24	5.29
.486	5.65	6.05	5.82	5.89	6.02	6.22	5.19
.497	5.75	6.04	5.91	6.04	5.87	6.07	5.26
.535	5.79	6.16	5.98	5.98	6.18	5.03	5.29
.548	5.70	5.99	6.00	6.12	5.88	4.90	518
33 422.398	5.02	5.99	5.27	5.00	5.38	6.12	5.79
.431	5.22	6.13	5.36	5.32	5.44	6.33	5.47
.442	5.32	6.18	5.32	5.51	5.48	6.05	5.45
.452	5.33	6.16	5.46	5.37	5.46	5.95	5.46
.462	5.22	6.28	5.46	5.50	5.68	6.13	5.40
.472	5.57	6.09	5.66	5.55	5.60	6.43	5.36
.483	5.46	6.27	5.60	5.64	5.43	6.27	5.33
.493	5.42	6.00	5.59	5.54	5.72	6.31	5.27
.508	5.46	6.03	5.66	5.54	5.54	6.06	5.25
.520	5.50	5.89	5.72	5.61	5.50	6.08	5.30
33763.406	4.90	5.98	5.12	6.08	6.04	4.99	5.80
.420	5.03	5.94	5.23	6.13	5.99	5.18	5.75
.442	5.12	5.95	5.45	6.19	6.02	5.33	5.72
.455	5.27	6.07	5.49	6.07	6.23	5.41	5.89
.464	5.35	6.03	5.60	6.09	6.13	5.52	5.78
.483	5.35	6.15	5.60	6.25	6.05	5.58	5.85
.494	5.40	5.96	5.66	6.24	5.52	5.61	5.70
.504	5.48	6.14	5.72	6.20	5.50	5.67	5.64
.514	5.49	6.04	5.80	6.25	5.26	5.78	5.63
.525	5.65	5.91	5.84	6.07	5.19	5.77	5.56
34 118.355	—	5.88	5.63	5.19	5.11	5.06	5.22
.372	5.70	5.68	—	5.30	5.02	4.73	5.15
.388	5.36	5.91	5.59	5.31	5.00	4.45	5.04
.428	4.66	5.82	5.79	5.82	5.41	5.15	5.41
.443	4.80	6.04	5.88	5.79	5.60	5.30	5.46
.470	5.06	6.06	6.08	5.79	5.69	5.36	5.58
.485	5.06	5.92	5.98	6.02	5.59	5.52	5.59
.499	5.09	6.09	6.01	5.93	5.73	5.55	5.82
.513	5.19	5.98	—	6.10	5.80	5.60	5.67
.526	5.16	5.98	—	5.82	6.08	5.45	5.78
.540	5.33	6.06	5.99	6.35	5.86	5.95	5.95
34 120.471	5.45	5.93	5.76	5.03	6.04	5.22	5.79
. 484	5.01	6.07	5.83	5.03	6.30	5.27	5.81
.497	4.73	6.07	5.87	5.23	6.03	5.45	5.84
.510	4.73	6.19	5.80	5.26	6.26	5.40	5.76
.523	4.72	6.02	6.07	5.33	6.09	5.62	5.49
.536	4.88	6.00	5.98	5.48	6.13	5.60	5.39

Table 9 (continued)

J. D. 2 400 000 +	1	5	6	9	10	11	12
34 120.551	4.85	6.00	5.96	5.47	6.15	5.66	5.23
.564	5.04	6.13	6.09	5.69	6.11	5.71	5.31
.579	5.16	6.10	5.94	5.63	6.00	5.83	5.28
34 121.401	5.76	5.87	5.35	6.30	5.84	5.10	5.87
.412	5.79	5.98	5.20	6.17	5.98	4.77	5.74
.422	5.72	6.04	5.50	5.95	6.00	4.74	5.69
.431	5.85	5.81	5.42	5.92	5.99	4.75	5.61
.441	5.79	5.88	5.57	6.14	5.92	4.83	5.83
.484	5.86	5.93	5.64	6.13	5.99	5.23	5.59
.495	5.88	5.98	5.74	5.94	5.94	5.22	5.44
.505	5.69	5.96	5.73	5.69	6.06	5.35	5.32
.517	5.31	6.02	5.92	5.41	6.09	5.41	5.24
.528	4.94	5.92	5.83	5.10	6.01	5.57	5.40
.539	4.64	5.98	5.92	4.95	6.05	5.56	5.26
.552	4.68	6.14	5.97	4.99	6.17	5.70	5.27
.562	4.80	6.08	—	5.03	—	5.61	5.17
.594	4.92	5.97	5.92	5.25	6.08	5.66	5.12
.605	5.02	—	—	5.46	—	—	5.27
34 122.404	5.61	5.88	5.10	6.08	5.44	5.80	5.64
.416	5.87	5.78	5.13	6.13	5.47	5.16	5.58
.431	5.96	5.86	5.22	6.28	5.42	4.87	5.56
34 126.433	5.63	5.76	5.92	4.94	5.52	6.04	5.58
34 131.415	5.06	5.62	6.00	5.60	5.74	6.26	5.27
34 487.347	5.74	6.14	6.06	5.97	5.97	5.99	5.74
.367	5.89	6.10	5.91	6.16	5.76	6.10	5.57
.385	5.84	6.27	6.08	6.16	5.42	6.14	5.42
.397	5.66	6.16	5.86	6.09	5.14	6.12	5.17
.410	—	6.43	5.96	6.14	5.24	6.12	—
.428	—	5.95	5.96	6.15	5.07	6.11	—
.438	5.84	5.66	6.14	6.19	5.25	5.93	5.30
.449	6.03	5.67	6.13	6.19	5.39	6.19	5.35
.460	6.10	5.30	6.18	6.26	5.33	6.06	5.37
.474	5.80	5.14	6.26	6.35	5.29	6.33	5.19
.483	5.89	4.83	6.16	—	5.46	6.04	5.29
.494	—	4.69	5.92	—	5.53	6.39	5.38
.508	5.34	4.80	5.32	6.24	5.53	6.20	5.45
.518	5.07	4.90	5.07	6.09	5.72	6.10	5.60
34 488.530	5.79	5.00	5.59	5.97	5.30	6.21	5.81
.540	5.71	5.00	5.34	5.92	5.06	6.01	5.78
34 567.388	5.70	5.52	5.80	5.78	6.02	5.07	5.82
35 223.415	5.67	5.79	5.95	6.43	5.77	6.27	5.77
.428	5.75	5.84	6.00	6.22	5.92	6.13	5.81
.441	5.94	5.83	6.07	6.05	6.01	6.00	5.79
.467	5.80	5.76	6.10	6.19	5.97	6.04	5.78
.490	5.85	5.66	6.07	6.12	6.08	6.14	5.88
.503	5.81	5.50	5.65	6.07	6.09	6.11	5.54

Table 9 (continued)

J. D. 2 400 000 +	1	5	6	9	10	11	12
35 223.517	5.79	5.43	5.26	6.33	6.02	5.60	5.41
.530	5.81	5.45	4.89	6.30	6.01	4.96	5.24
.546	5.85	5.42	4.89	6.33	6.13	4.76	5.28
.573	5.83	5.48	5.07	5.83	6.22	4.82	5.18
35 224.454	5.88	5.72	6.02	6.21	5.44	6.13	5.63
.472	5.78	5.60	6.04	6.42	5.50	6.11	5.36
.485	5.77	5.53	6.10	6.24	5.59	6.16	5.26
.499	5.82	5.62	6.18	6.12	5.62	6.12	5.24
.512	5.84	5.42	6.32	6.30	5.63	6.14	5.21
.524	5.85	5.36	5.80	6.06	5.66	5.80	5.09
.542	5.86	5.41	5.22	6.14	5.79	5.04	5.22
.556	5.70	5.30	4.88	5.88	5.83	4.80	5.27
.569	5.82	5.48	4.80	5.99	5.74	4.73	5.34
.583	—	5.40	5.00	6.26	5.84	4.80	5.49
35 227.534	5.75	5.49	6.09	5.67	6.04	6.50	5.86
.547	—	5.48	6.12	5.78	6.22	6.26	5.80
.560	5.87	5.18	6.17	5.72	6.00	6.42	5.87
.573	5.71	5.16	6.23	5.82	6.04	6.23	6.04
.586	5.86	5.32	—	6.00	5.98	5.29	6.10
35 598.507	5.11	5.92	5.03	5.60	6.14	5.76	5.58
.524	4.82	5.86	5.18	5.74	5.79	5.63	5.92
.537	4.60	5.89	5.27	5.90	5.46	5.74	5.75
35 600.363	—	5.72	6.36	6.12	5.45	6.03	5.63
.378	5.80	5.66	6.15	6.06	5.45	5.40	5.50
.391	5.87	5.73	6.16	6.07	5.85	4.92	5.76
.405	5.86	5.66	5.82	6.02	5.70	4.66	5.71
.421	5.86	5.62	5.93	6.02	5.68	4.80	5.68
.434	5.86	5.71	5.86	6.06	5.79	4.90	5.82
.446	5.96	5.73	6.00	6.12	5.74	4.98	5.77
.501	5.93	5.71	6.00	5.85	6.04	5.44	5.78
.525	5.77	5.92	5.02	5.15	6.16	5.66	5.63
35 603.369	5.42	5.56	6.00	5.74	5.92	6.01	5.68
.381	5.66	5.66	5.98	5.84	6.25	6.27	5.84
.397	5.47	5.63	6.10	5.78	6.03	6.22	5.47
.408	5.59	5.52	6.02	5.75	6.04	5.95	5.30
.419	5.71	5.60	6.06	5.98	6.44	5.71	5.28
.431	5.68	5.60	6.26	5.94	6.06	5.28	5.43
.446	5.58	5.72	6.02	6.02	6.08	4.70	5.35
.457	—	5.73	6.24	6.06	6.19	4.70	5.32
.468	5.65	5.79	6.12	6.25	6.11	4.87	5.17
.491	5.73	5.75	6.14	6.02	6.04	4.96	5.23
.507	5.72	5.70	6.06	6.14	6.02	5.04	5.24
35 920.444	5.37	5.87	4.67	6.43	5.51	5.08	5.54
.467	5.53	6.20	4.91	6.11	5.60	5.40	5.47
.487	5.87	5.93	4.96	6.14	5.56	5.49	5.76
.504	5.50	5.91	5.08	6.09	5.76	5.54	5.66

Table 9 (continued)

J. D. 2 400 000 +	1	5	6	9	10	11	12
35 920.547	5.73	5.06	5.20	6.13	5.73	5.70	5.84
.562	—	4.82	5.38	5.80	5.88	5.73	5.62
.585	—	4.88	5.40	5.05	5.78	5.89	5.35
35 933.415	5.18	5.69	5.43	6.12	5.52	6.30	5.08
.443	5.54	5.90	5.74	6.13	4.88	5.98	5.30
.479	5.43	6.00	5.64	6.30	5.15	6.02	5.47
.503	5.50	6.08	5.80	6.23	5.06	6.08	5.41
.515	5.57	6.40	5.89	6.35	5.39	6.09	5.68
.530	5.69	6.33	5.86	6.22	5.43	6.03	5.55
.543	—	5.98	5.60	6.15	5.40	5.90	5.27
.573	5.81	5.98	6.05	5.41	5.53	4.78	5.68
.588	—	5.88	5.68	4.88	5.88	4.72	5.42
.602	—	5.73	5.76	4.80	—	4.80	5.41
36 991.457	6.15	5.06	5.87	5.93	—	5.93	5.79
.470	6.19	5.29	6.11	6.19	—	6.19	5.85
.485	6.01	5.22	6.32	5.93	6.04	6.03	5.83
37 018.470	5.83	5.98	6.20	5.69	5.47	4.99	5.70
.483	5.88	6.18	6.10	5.88	5.51	4.98	—
.496	5.78	5.90	5.94	5.69	5.30	5.30	5.78
.510	5.95	6.01	5.61	5.85	5.57	5.27	5.51
.523	5.96	5.99	5.20	5.89	5.64	5.51	5.22
.537	5.99	5.80	5.02	5.69	5.58	5.41	5.46
.550	5.78	—	5.02	6.00	5.69	5.46	5.29
.563	—	5.80	4.83	5.91	5.90	5.47	5.31
.577	5.84	6.12	5.18	6.06	5.84	5.76	5.35
.609	5.90	6.38	5.54	6.12	5.92	5.80	5.41
.623	5.84	6.24	5.63	6.42	6.14	5.87	5.46
.637	—	6.14	5.42	6.03	6.14	5.71	5.48
37 057.539	6.07	6.08	6.40	6.05	6.11	4.87	5.95
.552	6.16	5.92	6.27	6.04	5.98	4.80	5.85
.578	—	5.78	6.34	6.09	6.20	4.91	5.89
37 058.529	5.97	6.12	5.97	5.65	5.93	5.81	5.85
.580	—	5.79	6.40	6.26	—	4.89	5.64
37 757.598	5.15	6.22	5.54	5.11	6.05	5.95	5.33
37 791.365	4.43	5.92	6.03	6.18	5.49	6.14	5.49
.380	4.62	5.98	5.93	6.03	5.67	6.07	5.76
.394	4.89	5.97	5.96	6.08	5.68	6.19	5.67
.424	4.92	6.03	5.79	6.19	5.88	5.37	5.60
.439	—	6.06	5.97	6.08	5.82	4.90	5.78
.454	5.11	5.99	5.76	6.25	5.78	4.80	5.81
.469	5.35	5.61	5.71	6.10	5.85	5.00	5.62
.483	5.31	5.90	6.02	6.33	5.84	4.99	5.47
.497	5.30	5.82	5.93	6.27	5.80	5.11	5.22
.519	5.60	6.07	6.09	6.16	5.98	5.22	5.18
.533	5.47	5.90	6.04	6.38	6.12	5.44	5.19
.549	5.66	5.98	5.46	5.95	6.10	5.38	5.22
.563	5.73	5.89	5.12	6.23	6.16	5.46	5.33

Table 9 (continued)

J. D. 2 400 000 +	13	14	15	16	17	18	19
28 963.487	5.90	5.71	5.30	6.31	6.30	6.20	5.57
28 991.403	5.81	5.27	6.18	5.63	5.24	6.35	5.54
.416	5.78	5.64	—	5.78	5.22	6.20	5.72
.430	5.78	5.47	6.14	5.78	5.25	6.14	5.63
.522	5.58	5.75	4.72	6.12	5.46	5.96	6.06
.542	5.70	5.72	4.98	6.10	5.70	5.45	5.87
29 346.376	5.81	5.93	5.97	5.60	5.14	5.55	5.97
.392	5.81	5.91	6.12	5.73	5.71	5.81	6.36
29 719.549	5.70	5.60	6.02	6.39	6.24	6.51	6.02
.560	5.41	5.61	6.04	6.10	6.10	6.25	6.06
29 720.546	5.00	6.20	5.87	6.20	6.26	6.32	6.24
.558	4.78	6.03	5.88	6.29	6.29	6.29	5.86
29 774.405	5.74	6.10	5.86	4.90	5.22	5.24	5.80
.417	6.00	6.24	5.54	4.93	5.45	5.45	5.85
29 775.403	5.95	4.97	6.02	5.53	6.14	5.11	6.16
.514	6.00	5.13	6.17	5.20	6.17	5.13	6.23
.426	5.92	5.28	6.15	4.97	6.15	5.35	6.04
.437	5.90	5.26	6.15	5.08	6.29	5.39	6.12
.447	5.90	5.36	—	4.95	5.90	5.47	6.08
30 052.462	5.28	6.00	6.03	6.31	5.97	6.26	5.80
.474	5.23	5.95	6.15	6.33	6.19	6.35	5.65
.489	5.32	6.18	6.11	6.20	5.93	5.99	5.71
.501	5.48	6.22	6.26	6.22	6.15	6.69	6.01
30 078.418	5.90	6.05	5.99	5.97	6.03	6.03	5.86
.434	5.76	6.13	6.06	6.01	6.18	5.63	5.68
.470	5.24	6.00	6.00	5.97	6.13	5.32	5.91
.483	4.89	5.92	6.02	6.14	6.02	5.22	5.98
.498	4.87	5.92	6.12	5.92	5.83	5.27	6.00
.509	4.92	6.11	6.09	6.19	5.90	5.39	5.95
.521	5.06	6.03	6.16	6.24	5.79	5.62	5.99
.536	5.11	6.06	6.12	6.29	5.70	5.58	6.02
.548	5.03	6.18	6.07	6.14	5.66	5.60	6.02
33 390.497	5.92	5.07	6.14	6.34	6.14	6.47	5.87
.534	6.12	5.33	6.08	6.30	6.05	6.24	5.55
.545	5.98	5.29	6.20	6.37	6.22	6.37	5.64
.558	5.95	5.33	6.11	6.22	6.41	6.27	5.57
.570	5.87	5.60	6.05	6.17	6.05	6.17	5.69
.586	5.97	5.53	6.24	6.37	6.37	6.40	—
33 420.424	5.95	5.25	5.28	5.03	6.13	6.13	6.00
.438	6.12	5.37	5.52	5.16	6.05	6.26	—
.450	5.99	5.55	5.53	5.33	5.97	6.21	6.09
.476	5.93	5.45	5.66	5.45	6.13	6.31	6.07
.487	5.93	5.61	5.84	5.57	6.05	6.18	6.05
.498	5.73	5.50	5.92	5.56	6.31	6.31	6.08
.510	5.94	5.83	5.66	5.79	6.08	6.39	6.10
.523	5.80	5 62	5.86	5.76	—	6.15	6.17

Table 9 (continued)

J. D. 2 400 000 +	13	14	15	16	17	18	19
33 421.385	5.76	5.94	5.43	6.12	5.62	5.76	6.05
.442	6.07	6.10	5.03	5.01	5.73	6.15	5.85
.454	5.99	5.95	5.22	5.15	5.68	6.00	5.70
.465	5.82	6.15	5.38	5.21	5.88	5.97	5.59
.475	5.89	6.12	5.37	5.29	5.83	6.13	5.70
.486	6.05	6.26	5.41	5.39	5.85	6.29	5.59
.497	6.07	6.13	5.53	5.50	5.75	6.40	5.51
.535	6.31	6.27	5.79	5.63	6.24	6.41	5.72
.548	5.88	—	5.86	5.70	6.22	6.40	5.66
33 422.398	6.12	5.71	6.34	6.37	6.10	5.74	6.14
.431	6.08	5.80	6.03	5.44	5.59	5.65	6.11
.442	5.99	5.76	5.63	5.05	5.57	6.10	6.22
.452	5.99	5.76	5.26	4.96	5.46	6.20	6.23
.462	6.09	5.78	4.95	5.01	5.22	6.05	6.09
.472	6.06	5.77	—	5.09	5.60	6.32	6.06
.483	5.98	5.95	4.95	5.08	5.49	6.24	—
.493	6.08	5.90	4.99	5.27	5.59	6.21	6.17
.508	5.99	5.69	5.11	5.30	5.43	6.27	6.25
.520	5.78	5.89	5.24	5.50	5.61	6.60	6.12
33 763.406	6.00	5.91	5.48	6.26	6.18	6.24	5.72
.420	5.99	5.94	5.60	6.22	6.08	6.20	5.60
.442	6.02	6.02	5.64	6.17	6.06	6.20	5.68
.455	6.10	5.98	5.85	6.32	6.39	6.12	5.66
.464	6.09	5.99	5.78	6.21	6.28	6.38	5.76
.483	5.96	6.05	5.80	6.29	6.23	6.17	5.87
.494	5.88	6.08	5.81	6.15	6.11	6.31	5.79
.504	6.02	6.02	5.83	6.16	6.25	6.41	5.81
.514	6.02	6.02	5.85	6.19	5.85	6.38	5.88
.525	6.13	6.15	5.98	6.40	5.61	6.23	5.98
34 118.355	5.76	5.88	5.97	6.12	6.16	5.00	5.96
.372	5.68	5.83	5.98	6.41	6.11	5.20	5.90
.388	5.87	6.00	6.10	6.22	5.80	5.22	—
.428	5.99	6.18	6.18	6.31	5.41	5.55	5.99
.443	5.88	6.14	5.43	6.17	5.43	5.80	6.14
.470	—	6.01	4.82	6.16	5.32	5.94	—
.485	5.92	6.14	5.10	6.21	5.59	5.92	5.86
.499	5.93	5.93	4.99	6.21	5.45	5.99	5.82
.513	5.82	5.64	5.22	6.26	5.67	6.12	5.67
.526	5.86	5.22	5.16	6.04	5.62	5.98	5.80
.540	5.99	5.22	5.37	6.47	5.77	6.35	5.71
34 120.471	5.95	4.96	6.11	6.17	6.11	5.67	5.56
.484	5.81	4.95	6.12	6.14	6.07	5.75	5.60
.497	5.96	5.03	6.03	6.33	6.14	5.78	5.73
.510	6.04	5.06	6.20	6.26	6.06	5.76	5.70
.523	5.94	5.28	6.26	6.23	6.09	5.82	5.77
.536	5.95	5.19	6.28	6.18	6.09	5.97	5.57

Table 9 (continued)

J. D. 2 400 000 +	13	14	15	16	17	18	19
34 120.551	5.68	5.25	5.94	6.24	6.15	6.00	5.66
.564	5.63	5.34	5.40	6.33	6.13	6.05	5.75
.579	5.04	5.28	4.88	6.24	6.16	6.12	5.92
34 121.401	5.84	5.78	6.12	6.30	5.44	5.02	6.31
.412	5.91	5.95	—	—	5.61	4.91	6.10
.422	5.95	5.95	6.04	6.30	5.66	5.02	6.20
.431	6.00	5.92	6.10	6.16	5.59	5.09	6.12
.441	5.92	6.02	6.16	6.26	5.76	5.18	6.14
.484	6.02	5.95	6.06	6.11	5.75	5.46	6.02
.495	5.98	5.96	6.11	6.15	5.92	5.58	6.05
.505	5.88	5.97	6.07	5.96	5.96	5.66	6.12
.517	6.00	6.14	6.12	6.19	5.94	5.63	6.14
.528	5.73	5.94	6.12	6.04	5.92	5.74	6.07
.539	5.22	6.11	6.05	6.14	5.90	5.70	6.33
.552	4.83	5.97	6.06	6.26	6.02	5.79	6.20
.562	4.63	—	—	6.08	6.08	5.73	6.12
.594	4.86	6.06	6.14	6.10	6.06	5.94	6.16
.605	5.11	—	—	—	6.00	5.83	—
34 122.404	—	5.00	5.92	5.94	6.06	—	5.74
.416	5.74	5.08	6.29	5.94	5.96	5.43	5 65
.431	6.04	5.22	6.17	6.15	5.88	5.04	5.68
34 126.433	5.07	5.68	5.94	5.86	6.00	6.16	6.06
34 131.415	5.80	5.56	5.96	4.94	6.17	6.26	6.34
34 487.347	5.58	5.58	6.14	6.20	5.97	5.97	6.22
.367	5.69	5.36	5.94	5.82	6.12	6.38	6.12
.385	5.99	4.96	5.26	5.32	6.06	6.30	6.12
.397	5.82	4.90	4.92	4.98	—	—	6.01
.410	6.10	5.04	4.90	5.01	6.10	6.20	6.27
.428	—	4.90	4.95	5.01	6.12	6.20	6.02
.438	5.93	5.12	5.06	5.12	5.93	6.20	6.00
.449	5.93	5.24	5.19	5.32	6.28	6.15	6.36
.460	6.02	5.23	5.33	5.37	6.32	6.14	6.25
.474	5.90	5.31	5.29	5.45	—	5.93	6.24
.483	5.87	5.25	5.44	5.56	—	5.72	6.03
.494	—	5.40	5.48	5.61	—	5.48	—
.508	6.04	5.55	5.47	5.78	—	5.34	—
.518	6.04	5.59	5.61	5.82	—	5.37	—
34 488.530	5.91	6.09	5.30	5.71	5.93	5.56	6.11
.540	5.90	6.12	5.48	5.66	5.97	5.46	6.13
34 567.388	5.32	—	6.41	6.00	5.80	6.08	5.91
35 223.415	5.26	5.99	—	6.05	6.16	5.31	5.90
.428	5.25	5.92	6.13	5.56	6.05	5.32	6.03
.441	5.37	6.05	6.21	5.32	6.00	5.43	6.00
.467	5.32	5.97	6.17	4.95	5.64	5.55	5.99
.490	5.64	6.04	6.19	5.22	5.57	5.72	6.10
.503	5.62	6.07	6.20	5.33	5.33	5.77	6.11

Table 9 (continued)

J. D. 2 400 000 +	13	14	15	16	17	18	19
35 223.517	5.77	6.06	6.20	5.45	5.34	5.89	6.08
.530	5.97	6.07	6.24	5.49	5.47	5.93	6.26
.546	5.79	6.04	6.11	5.69	5.45	5.98	6.11
.573	5.67	5.95	6.14	5.75	5.45	5.89	6.05
35 224.454	5.49	5.12	6.00	5.54	6.10	5.29	5.90
.472	5.54	5.16	6.23	4.92	6.30	5.35	5.66
.485	5.59	5.19	6.14	4.95	6.10	5.44	5.70
.499	5.62	5.27	6.15	5.02	6.08	5.62	5.73
.512	5.60	5.32	6.32	5.18	6.12	5.64	5.58
.524	5.52	5.26	6.14	5.21	6.13	5.52	5.50
.542	5.77	5.39	6.01	5.39	6.20	5.70	5.65
.556	5.70	5.56	6.12	5.53	6.16	5.79	5.48
.569	5.85	5.67	6.12	5.56	6.24	6.12	5.85
.583	5.94	5.84	6.20	5.64	6.06	6.10	5.64
35 227.534	6.45	5.75	5.64	5.15	5.35	5.29	5.94
.547	6.24	5.38	5.85	4.99	5.40	—	6.14
.560	6.27	5.18	5.86	5.02	5.36	5.45	6.14
.573	5.76	4.82	—	5.16	5.56	5.67	5.98
.586	6.08	4.89	6.03	5.10	5.68	5.55	6.00
35 598.507	5.76	5.62	5.20	5.78	6.16	6.09	—
.524	5.88	5.77	5.34	5.81	5.98	6.26	6.19
.537	5.89	5.90	5.40	5.96	5.58	6.38	6.32
35 600.363	6.03	5.64	6.21	6.13	5.52	5.04	6.38
.378	5.72	5.52	6.45	6.17	5.55	5.11	6.07
.391	5.93	5.58	6.16	6.28	5.78	5.34	6.28
.405	5.80	5.55	6.28	5.66	5.84	5.32	—
.421	5.95	5.66	5.93	5.09	5.66	5.52	6.27
.434	5.71	5.77	6.23	4.92	5.69	5.58	6.19
.446	5.87	5.68	6.05	4.98	5.83	5.66	6.07
.501	5.74	6.05	6.07	5.36	6.09	6.10	5.90
.525	6.03	6.14	6.16	5.54	5.97	6.07	5.75
35 603.369	5.80	5.18	5.86	6.35	5.96	6.38	6.15
.381	5.80	5.17	5.86	6.20	5.80	6.70	6.31
.397	5.80	4.92	5.86	6.28	5.91	6.33	6.22
.408	5.73	4.98	5.86	6.15	5.95	5.67	6.02
.419	5.82	5.11	5.90	6.40	6.01	5.43	6.26
.431	5.90	5.05	6.00	6.24	6.02	4.95	6.04
.446	5.72	5.08	6.06	6.27	6.02	4.87	6.18
.457	5.78	5.20	6.02	6.37	6.22	4.94	6.24
.468	5.46	5.22	6.09	5.92	5.98	5.06	6.04
.491	5.08	5.35	5.91	5.08	5.82	5.17	6.10
.507	4.94	5.34	6.30	4.94	6.04	5.39	6.14
35 920.444	4.96	5.87	6.05	6.23	6.22	5.99	5.65
.467	5.36	5.97	5.97	6.11	6.22	6.05	5.67
.487	5.67	—	5.77	5.92	6.04	5.51	5.72
.504	5.42	5.97	6.08	6.12	6.02	5.38	5.86

Table 9 (continued)

J. D. 2 400 000 +	13	14	15	16	17	18	19
35 920.547	5.56	5.87	6.13	6.26	6.26	5.20	5.97
.562	5.38	5.83	6.19	6.42	6.19	5.25	5.92
.585	5.55	6.00	6.02	6.16	6.05	5.43	5.95
35 933.415	4.69	5.04	6.21	4.82	5.69	5.08	6.04
.443	4.88	5.08	5.59	4.93	5.86	4.90	6.24
.479	5.00	5.00	4.97	5.36	5.95	5.33	5.98
.503	5.11	5.11	4.89	5.44	5.67	4.89	5.90
.515	5.50	—	5.39	5.68	5.99	5.47	6.13
.530	5.46	5.24	5.24	5.72	5.69	5.63	6.08
.543	5.19	5.36	5.39	5.94	5.96	5.94	6.07
.573	5.53	5.48	5.41	5.95	5.95	5.93	—
.588	5.30	5.67	5.44	5.87	6.05	—	5.96
.602	—	—	5.46	—	—	—	5.41
36 991.457	6.05	6.31	6.07	6.05	6.16	6.16	5.72
.470	6.16	—	6.09	6.16	6.43	6.84	5.66
.485	6.08	6.08	5.53	6.03	6.32	5.96	5.88
37 018.470	5.72	5.85	6.13	5.78	5.93	5.21	6.24
.483	5.86	5.78	6.27	6.05	5.92	5.15	6.06
.496	5.82	5.66	6.27	—	6.09	5.34	6.14
.510	5.68	5.92	5.86	6.08	6.05	5.58	6.24
.523	5.70	5.99	5.15	6.00	6.12	5.58	6.18
.537	5.70	5.90	4.90	5.96	6.02	5.73	6.18
.550	5.77	5.92	4.96	5.91	5.71	5.64	6.19
.563	5.50	—	5.03	6.42	6.16	5.78	6.12
.577	5.95	5.81	5.24	6.08	6.24	5.67	6.12
.609	5.86	6.00	5.31	6.32	6.17	6.00	5.86
.623	6.22	6.04	5.40	—	6.12	5.94	6.06
.637	6.00	6.14	5.48	6.06	6.29	6.35	5.90
37 057.539	5.57	6.15	6.15	6.36	5.57	6.27	6.11
.552	5.53	6.22	6.31	6.33	5.71	6.27	6.10
.578	5.78	6.45	6.25	6.19	6.12	6.25	6.12
37 058.529	5.78	5.69	6.01	6.26	6.05	6.33	5.65
.580	6.06	—	6.40	6.20	5.14	6.45	5.83
37 757.598	—	5.98	5.63	5.74	5.63	5.86	5.92
37 791.365	5.49	5.96	6.14	5.89	5.73	6.25	6.25
.380	5.72	5.91	5.61	5.93	5.56	6.33	6.13
.394	5.71	5.93	5.08	5.98	5.42	6.21	6.04
.424	5.86	5.94	4.88	6.15	5.37	6.20	6.03
.439	5.84	6.05	5.11	6.16	5.42	6.38	6.20
.454	5.64	6.19	5.20	6.19	5.47	6.29	6.06
.469	5.73	5.96	5.32	6.30	5.54	6.34	6.20
.483	5.65	5.60	5.28	6.35	5.65	6.11	6.02
.497	5.60	5.33	5.52	6.27	5.69	5.75	6.10
.519	5.77	5.13	5.60	6.21	5.70	5.00	6.16
.533	5.74	5.03	5.64	6.20	5.77	4.92	6.15
.549	5.72	4.99	5.66	6.26	5.81	5.07	5.86
.563	5.76	5.12	5.80	6.26	5.86	5.12	5.73

Table 9 (continued)

J. D. 2 400 000 +	20	21	22	23	24	25	26
28 963.487	5.84	6.22	6.13	5.78	5.75	5.98	5.71
28 991.403	5.57	6.12	6.12	5.57	5.83	5.83	5.72
.416	5.91	6.15	6.19	5.64	5.75	5.75	5.81
.430	5.75	6.14	6.04	5.60	5.78	5.60	5.63
.522	6.10	5.76	5.04	5.54	5.84	4.47	5.64
.542	6.04	5.14	4.83	5.47	5.80	4.58	5.61
29 346.376	5.97	4.81	4.84	5.42	5.86	5.42	5.33
.392	6.40	5.18	5.21	5.26	5.91	5.66	5.61
29 719.549	6.21	6.33	5.70	5.70	5.38	6.09	5.90
.560	6.21	6.18	5.85	5.72	5.58	5.93	5.89
29 720.546	6.22	6.32	5.92	5.54	5.92	5.94	5.30
.558	6.19	6.29	5.85	5.62	5.86	5.88	5.34
29 774.405	5.22	5.96	5.41	5.80	5.74	6.03	5.38
.417	5.42	5.80	5.54	5.70	5.41	5.91	5.51
29 775.403	5.23	6.59	5.72	5.63	5.84	5.05	4.78
.415	5.25	6.41	5.59	5.76	5.83	4.71	4.84
.426	5.51	6.10	5.81	5.65	5.72	4.68	4.94
.437	5.61	5.73	5.95	5.71	5.90	4.60	5.00
.447	5.64	5.60	5.97	5.83	5.97	4.89	4.95
30 052.462	5.01	5.28	6.00	5.77	5.28	5.01	5.87
.474	5.06	5.46	6.00	5.79	5.31	5.20	5.80
.489	5.29	5.48	6.18	5.71	5.43	5.17	5.82
.501	5.45	5.66	6.10	5.45	5.42	5.32	6.01
30 078.418	5.38	6.20	6.20	5.79	5.59	5.32	5.41
.434	5.09	6.04	6.11	5.65	5.49	5.39	5.01
.470	5.27	6.24	6.07	5.64	5.59	5.54	5.00
.483	5.29	6.14	6.12	5.88	5.62	5.62	4.95
.498	5.30	6.18	6.06	5.70	5.69	5.66	5.07
.509	5.51	6.53	5.95	5.60	5.69	5.69	5.11
.521	5.70	6.21	6.01	5.79	5.79	5.91	5.16
.536	5.79	6.20	5.66	5.58	5.70	5.79	5.20
.548	5.80	6.27	5.60	5.69	5.80	5.89	5.16
33 390.497	5.02	—	6.16	5.62	5.40	—	5.94
.534	5.25	5.92	6.12	5.85	5.60	6.12	5.16
.545	5.39	6.22	6.15	5.69	5.54	6.12	4.99
.558	5.43	6.20	6.11	5.66	5.48	6.07	4.85
.570	5.47	6.17	6.17	5.69	5.71	6.05	4.98
.586	5.74	6.24	6.26	5.81	5.55	5.97	5.18
33 420.424	4.97	6.23	6.72	5.66	5.66	6.16	5.06
.438	5.21	6.26	6.32	5.81	5.81	5.75	4.97
.450	5.29	6.16	6.19	5.83	5.68	5.19	4.91
.476	5.24	6.18	6.18	5.74	5.80	4.75	5.04
.487	5.48	6.35	6.09	5.74	5.74	4.90	5.31
.498	5.30	6.52	6.30	5.75	5.81	4.81	5.30
.510	5.45	6.35	6.22	5.90	5.85	5.05	5.26
.523	5.78	—	5.78	5.76	6.00	5.14	5.25

Table 9 (continued)

J. D. 2 400 000 +	20	21	22	23	24	25	26
33 421.385	5.24	5.89	6.00	5.50	5.89	5.96	5.92
.442	5.35	6.02	6.26	5.68	6.00	4.78	5.95
.454	5.30	6.21	5.99	5.68	6.00	4.86	5.90
.465	5.27	6.13	5.92	5.66	6.05	4.94	5.92
.475	5.34	6.20	6.01	5.72	6.12	5.05	5.94
.486	5.57	6.41	5.99	5.80	5.89	5.01	5.89
.497	5.47	6.30	5.67	5.67	5.75	5.28	6.00
.535	5.70	6.51	5.05	5.79	5.32	5.52	6.10
.548	5.88	6.40	4.90	6.00	5.18	5.60	6.24
33 422.398	5.24	5.89	6.46	5.03	5.71	4.79	5.69
.431	5.20	5.95	6.11	5.25	5.65	5.10	5.80
.442	5.54	6.05	6.08	5.29	5.70	5.25	5.60
.452	5.43	5.95	5.95	5.26	5.73	5.20	5.95
.462	5.37	5.87	5.60	5.31	5.78	5.22	5.78
.472	5.45	5.93	5.12	5.28	5.77	5.39	5.80
.483	5.54	6.30	5.29	5.22	5.78	5.26	5.92
.493	5.72	6.26	5.14	5.54	5.73	5.38	5.85
.508	5.69	6.41	4.95	5.41	5.92	5.46	5.83
.520	5.76	5.91	5.00	5.43	5.78	5.64	5.91
33 763.406	5.65	6.29	5.45	5.65	5.65	5.78	5.80
.420	5.69	6.10	5.57	5.77	5.80	5.77	5.97
.442	5.73	—	5.73	5.75	5.75	5.88	5.99
.455	5.92	6.35	5.94	5.71	5.81	5.98	6.03
.464	5.89	6.23	5.84	5.52	5.80	6.01	5.99
.483	6.06	6.25	5.94	5.51	5.87	6.06	5.87
.494	5.91	6.22	5.88	5.40	5.83	5.96	5.66
.504	5.99	6.23	6.02	5.40	5.87	5.99	5.40
.514	6.04	6.38	6.10	5.42	5.85	6.02	5.26
.525	5.98	6.17	6.02	5.24	5.91	6.05	5.22
34 118.355	6.12	6.22	5.97	5.34	5.88	5.97	5.78
.372	5.98	6.25	5.90	5.20	5.77	5.94	—
.388	6.18	6.20	6.20	4.90	5.91	6.03	5.95
.428	6.02	6.22	6.20	4.98	5.79	5.79	5.95
.443	6.14	6.40	6.14	5.24	5.95	5.53	5.92
.470	5.50	6.34	6.34	5.36	5.94	4.64	—
.485	5.44	5.59	6.04	5.21	5.89	4.68	6.02
.499	4.95	5.20	6.28	5.45	5.93	4.82	5.87
.513	4.80	4.98	6.18	5.47	5.84	5.00	5.99
.526	4.92	4.92	—	5.68	5.57	4.92	—
.540	4.88	5.08	6.22	5.48	6.06	5.15	5.95
34 120.471	4.87	5.89	6.17	5.67	5.79	5.18	5.09
.484	4.89	6.24	6.12	5.87	5.96	5.45	5.27
.497	4.90	6.33	6.07	5.84	5.73	5.41	5.45
.510	5.06	6.38	5.98	5.86	5.82	5.55	5.38
.523	5.19	6.36	5.61	5.86	5.80	5.52	5.36
.536	5.19	6.08	5.39	5.80	5.72	5.75	5.57

Table 9 (continued)

J. D. 2 400 000 +	20	21	22	23	24	25	26
34 120.551	5.20	5.59	5.25	5.77	5.94	5.66	5.50
.564	5.50	5.15	5.18	5.86	6.02	5.78	5.52
.579	5.55	4.90	5.00	5.83	6.00	5.83	5.83
34 121.401	5.87	6.30	—	5.14	5.04	5.07	—
.412	5.79	—	6.40	5.18	5.09	5.09	6.08
.422	5.53	6.56	6.28	5.18	5.14	5.27	5.92
.431	5.32	6.16	6.15	5.24	5.03	5.24	5.96
.441	5.10	6.14	6.16	5.38	5.18	5.46	5.85
.484	4.95	6.26	5.80	5.46	5.34	5.65	5.86
.495	5.10	6.52	5.67	5.51	5.26	5.64	5.98
.505	5.28	6.21	5.48	5.59	5.44	5.67	5.96
.517	5.32	6.18	5.24	5.54	5.45	5.86	—
.528	5.30	6.22	5.14	5.54	5.42	5.74	5.92
.539	5.59	6.25	5.06	5.48	5.59	5.75	5.92
.552	5.44	6.39	5.08	5.59	5.44	5.87	5.70
.562	5.63	—	5.12	5.50	5.46	5.78	—
.594	5.80	5.22	5.12	5.69	5.49	5.80	—
.605	5.71	5.02	5.22	5.66	—	—	4.83
34 122.404	5.76	6.12	5.95	5.72	5.84	5.48	—
.416	5.20	6.46	6.42	5.76	5.70	5.31	—
.431	4.87	6.17	6.08	5.76	5.76	5.50	5.71
34 126.433	5.45	5.85	5.47	5.78	5.84	6.00	5.08
34 131.415	5.98	5.06	6.22	5.85	5.30	4.86	—
34 487.347	6.14	5.41	5.84	5.74	5.88	5.92	5.99
.367	6.18	5.62	5.57	5.78	5.64	5.94	5.67
.385	6.03	5.74	5.26	5.79	5.91	5.99	5.30
.397	5.72	5.68	5.02	5.66	5.66	6.07	5.02
.410	6.03	5.90	5.13	5.80	6.01	6.09	4.98
.428	5.18	5.86	5.12	5.78	6.00	5.86	4.88
.438	4.79	5.93	5.30	5.64	5.93	5.95	5.02
.449	4.89	6.09	5.32	5.60	6.20	6.05	5.10
.460	4.86	6.12	5.37	5.37	6.02	6.10	5.10
.474	4.97	6.06	5.41	5.42	5.90	5.90	5.19
.483	5.02	6.01	5.61	5.24	5.83	6.09	5.23
.494	5.19	—	5.64	5.21	5.78	5.92	5.38
.508	5.33	6.37	5.78	5.14	5.50	5.87	5.26
.518	5.50	6.13	5.85	5.22	5.43	6.04	5.41
34 488.530	5.68	6.14	6.04	5.75	5.89	6.08	6.01
.540	5.78	6.18	5.92	5.77	5.76	5.82	5.78
34 567.388	5.98	5.93	5.45	5.39	5.74	5.20	5.89
35 223.415	5.77	6.12	6.16	5.09	5.67	5.93	5.50
.428	5.92	6.20	6.14	5.09	5.62	5.92	5.64
.441	5.81	6.10	6.20	5.17	5.59	5.94	5.59
.467	6.02	6.14	5.69	5.22	5.71	5.86	5.60
.490	6.06	6.35	5.27	5.29	5.80	6.04	5.79
.503	6.18	6.13	5.07	5.40	5.69	6.02	5.79

Table 9 (continued)

J. D. 2 400 000 +	20	21	22	23	24	25	26
35 223.517	5.89	6.14	4.93	—	5.79	5.85	5.94
.530	6.19	6.28	5.01	5.38	5.75	5.24	5.81
.546	6.13	6.26	5.08	5.51	5.83	4.73	5.77
.573	6.17	6.36	5.20	5.50	5.83	4.77	5.87
35 224.454	5.93	5.86	5.24	5.60	5.98	6.12	4.93
.472	6.01	6.09	4.86	5.70	5.83	5.88	5.00
.485	6.06	6.04	4.81	5.85	5.59	5.44	5.14
.499	6.06	6.18	4.90	5.84	5.50	5.02	5.22
.512	6.03	6.14	5.05	5.72	5.40	4.71	5.30
.524	5.98	5.90	5.09	5.76	5.21	4.70	5.23
.542	6.33	6.16	5.24	5.56	5.14	4.85	5.37
.556	6.34	6.43	5.46	5.30	5.04	4.98	5.43
.569	6.39	6.39	5.56	5.23	5.10	5.15	5.51
.583	6.36	6.22	5.59	5.06	5.17	5.32	—
35 227.534	6.45	5.88	6.26	5.18	6.21	6.04	5.62
.547	6.28	6.44	5.90	5.12	6.12	5.70	5.51
.560	6.60	5.87	6.42	5.05	6.06	6.06	5.67
.573	6.04	6.28	5.94	4.97	5.78	5.78	5.51
.586	6.03	5.90	5.88	4.85	6.21	5.84	5.76
35 598..507	6.26	6.45	5.14	5.14	6.06	4.94	6.06
.524	6.26	6.27	5.07	5.27	5.99	5.15	6.16
.537	6.10	6.00	5.04	5.14	6.20	5.32	6.20
35 600.363	6.34	5.71	6.31	5.24	6.01	5.88	5.72
.378	6.20	5.64	5.75	5.04	5.84	5.02	5.38
.391	6.28	5.87	5.93	5.36	5.78	4.73	5.10
.405	6.62	5.88	5.68	5.42	5.92	4.73	4.78
.421	6.08	5.90	5.46	5.46	5.93	4.86	4.93
.434	5.88	5.66	5.10	5.32	5.73	5.05	5.10
.446	6.07	5.87	4.95	5.57	5.87	5.17	5.04
.501	6.07	6.10	5.23	5.47	5.88	5.41	5.26
.525	5.75	6.47	5.52	5.75	5.90	5.41	5.52
35 603.369	6.38	5.15	5.01	5.42	5.16	5.20	5.20
.381	6.50	5.33	5.00	5.66	5.25	5.55	5.14
.397	6.46	5.34	5.24	5.57	5.32	5.47	4.89
.408	6.15	5.39	5.27	5.41	5.30	5.50	4.92
.419	6.21	5.67	5.56	5.54	5.38	5.54	5.11
.431	6.06	5.65	5.52	5.58	5.49	5.82	5.05
.446	6.06	5.72	5.53	5.47	5.32	5.84	5.08
.457	5.91	5.78	5.59	5.57	5.47	5.94	5.15
.468	5.60	5.67	5.79	5.57	5.46	5.92	5.20
.491	5.37	5.71	5.87	5.58	5.42	5.87	5.37
.507	5.18	5.94	5.94	5.77	5.51	5.77	5.48
35 920.444	4.91	6.17	6.11	5.80	4.86	5.79	5.39
.467	5.24	6.22	6.00	5.76	5.15	5.87	5.67
.487	5.46	5.62	—	5.62	5.34	5.70	5.85
.504	5.66	5.26	5.91	5.42	5.08	5.66	5.73

Table 9 (continued)

J. D. 2 400 000 +	20	21	22	23	24	25	26
35 920.547	5.80	4.96	5.40	5.37	5.29	5.77	5.53
.562	5.98	5.13	5.00	5.20	5.13	5.38	5.62
.585	5.95	5.12	4.64	5.12	5.21	4.47	5.66
35 933.415	5.93	4.79	5.84	5.66	5.82	5.84	5.22
.443	6.18	4.93	5.99	5.71	5.83	6.01	5.14
.479	6.10	5.43	5.95	5.67	5.74	5.84	5.47
.503	5.86	5.30	5.83	5.56	6.00	5.88	5.27
.515	6.16	5.80	5.89	5.68	5.99	5.85	5.41
.530	6.29	5.66	5.74	5.86	6.08	5.30	5.49
.543	—	5.81	5.40	5.90	—	4.52	5.36
.573	5.88	5.95	4.97	5.85	5.98	4.64	5.62
.588	5.61	6.01	5.03	5.62	5.72	4.88	—
.602	5.68	6.17	4.88	5.96	5.66	4.80	—
36 991.457	5.84	6.30	5.63	5.72	6.13	6.13	—
.470	6.09	6.61	6.32	5.91	6.16	6.43	5.61
.485	5.96	6.16	—	5.83	5.93	6.17	5.60
37 018.470	5.70	6.20	6.13	5.04	5.82	5.01	5.61
.483	5.82	6.30	6.21	5.04	5.81	4.66	5.86
.496	6.02	6.49	—	5.11	5.75	4.74	5.78
.510	5.97	5.84	6.22	5.14	5.76	5.02	5.86
.523	6.01	5.38	6.04	5.29	5.70	5.04	5.80
.537	5.75	5.03	6.03	5.16	5.57	5.32	5.62
.550	6.13	5.08	6.11	5.36	5.92	5.20	5.68
.563	5.90	5.06	—	5.52	6.08	5.31	5.74
.577	6.10	5.20	6.16	5.47	6.02	5.62	5.95
.609	6.20	5.48	5.92	5.48	5.98	5.60	5.88
.623	6.27	5.61	6.06	5.72	5.84	5.94	5.99
.637	6.03	5.82	5.77	5.58	6.00	6.00	5.96
37 057.539	6.21	6.41	6.33	5.95	5.47	6.05	5.97
.552	6.16	6.39	6.06	5.65	5.57	5.75	6.01
.578	5.98	6.40	6.25	5.84	5.34	6.29	6.09
37 058.529	6.05	6.29	6.19	5.55	6.01	5.93	5.78
.580	6.15	6.29	6.36	5.73	6.36	6.40	6.15
37 757.598	—	5.00	6.11	5.88	5.88	5.70	—
37 791.365	6.25	6.21	4.86	5.25	5.60	4.49	5.69
.380	6.26	6.16	5.11	5.46	5.81	4.45	5.67
.394	6.25	6.11	5.27	5.41	5.85	4.77	5.68
.424	6.27	6.23	5.38	5.48	5.60	4.71	5.80
.439	6.58	6.24	5.54	5.60	5.91	5.07	5.87
.454	6.22	6.29	5.47	5.60	5.60	4.95	6.06
.469	6.24	6.34	5.63	5.66	5.93	5.19	6.02
.483	6.02	6.30	5.60	5.65	5.69	5.34	5.74
.497	6.22	6.28	5.60	5.55	5.75	5.40	5.81
.519	6.27	6.21	5.98	5.85	5.90	5.64	5.90
.533	6.28	6.23	5.82	5.71	5.90	5.68	5.90
.549	5.62	6.20	5.98	5.66	5.92	5.77	5.86
.563	5.02	6.34	6.03	5.86	6.18	5.82	6.09

Table 9 (continued)

J. D. 2 400 000 +	27	28	31	32	33	34	35
28 963.487	5.90	5.75	4.30	5.80	5.60	5.10	6.07
28 991.403	5.96	4.88	4.60,	5.44	5.67	5.54	6.18
.416	5.96	4.90	4.40	5.28	5.64	5.34	6.06
.430	6.06	4.80	4.53	5.29	5.71	5.22	6.17
.522	5.97	4.81	—	—	5.45	5.26	6.03
.542	6.12	5.06	—	4.15	5.53	5.45	6.05
29 346.376	5.97	5.45	5.09	4.96	5.52	5.69	5.97
•392	6.09	5.66	5.15	—	5.85	5.57	6.14
29 719.549	5.11	5.24	4.91	5.67	5.55	5.88	6.21
.560	5.01	5.30	4.75	5.72	5.30	5.79	6.04
29 720.546	6.04	5.39	5.21	5.51	5.85	5.21	6.07
.558	5.88	5.26	5.26	5.36	5.79	5.41	5.97
29 774.405	6.13	5.55	5.33	5.61	5.58	6.28	5.38
.417	6.06	5.60	5.45	5.85	5.60	6.22	5.76
29 775.403	5.98	5.63	4.87	5.48	5.43	5.63	5.11
.415	5.94	5.47	4.90	5.49	5.49	5.76	5.20
.426	5.94	5.28	5.13	5.65	4.51	5.81	5.19
.437	6.10	5.17	5.14	5.71	5.61	5.82	5.39
.447	5.97	4.98	5.07	—	5.64	5.83	5.36
30 052.462	6.52	5.83	5.23	5.53	5.92	6.13	5.79
.474	6.00	5.85	5.26	5.88	5.83	6.14	5.92
.489	5.60	5.87	5.14	5.65	5.99	6.35	5.71
.501	5.48	5.71	5.16	5.59	5.87	6.06	5.97
30 078.418	6.01	5.88	5.41	5.17	5.32	5.79	5.72
.434	5.94	5.79	5.05	5.30	5.39	5.81	5.71
.470	5.97	5.52	4.38	5.49	5.59	5.91	5.64
.483	6.08	5.25	4.44	5.39	5.50	5.94	5.76
.498	5.98	5.03	4.54	5.36	5.64	6.11	5.78
.509	6.20	4.95	4.73	5.66	5.74	5.95	5.77
.521	6.09	5.02	4.78	5.68	5.85	6.05	5.91
.536	5.73	4.98	4.79	5.50	5.98	6.08	5.89
.548	5.49	4.90	4.97	5.69	5.75	6.16	5.84
33 390.497	5.84	5.92	5.33	5.49	5.38	5.98	6.07
.534	5.65	5.40	5.37	5.79	5.59	6.00	5.74
.545	5.80	5.25	5.29	5.61	5.64	6.02	5.69
.558	5.79	4.99	5.35	5.52	5.55	6.07	5.59
.570	5.87	5.07	5.36	5.76	5.69	6.03	5.69
.586	5.97	5.15	5.44	5.88	5.81	6.15	5.48
33 420.424	6.03	5.52	6.15	5.00	5.40	5.63	5.34
.438	5.95	5.93	5.73	4.75	5.49	5.61	5.61
.450	5.58	5.80	5.62	4.59	5.60	5.58	5.50
.476	5.26	5.96	5.26	4.63	5.59	5.37	5.48
.487	5.19	5.93	5.07	4.80	5.48	5.48	5.74
.498	5.07	5.77	4.69	4.79	5.55	5.43	5.66
.510	5.16	5.90	4.64	4.94	5.81	5.57	5.85
.523	5.25	5.76	4.46	4.81	5.74	5.40	5.86

Table 9 (continued)

J. D. 2 400 000 +	27	28	31	32	33	34	35
33 421.385	5.92	5.50	5.62	5.62	4.82	5.92	5.36
.442	6.19	5.73	5.64	4.60	5.16	6.00	5.21
.454	6.00	5.77	5.49	4.53	5.17	5.88	5.37
.465	6.07	5.76	5.38	4.60	5.10	6.03	5.34
.475	6.08	5.84	5.37	4.62	5.20	6.01	5.29
.486	6.00	5.99	5.05	4.66	5.36	6.02	5.45
.497	6.04	5.96	5.35	4.81	5.35	5.77	5.53
.535	6.12	6.12	5.66	5.27	5.74	5.65	5.63
.548	6.03	5.88	5.53	5.18	5.70	5.44	5.82
33 422.398	5.79	5.79	5.36	5.46	5.92	6.18	6.09
.431	6.01	6.08	5.36	4.77	4.90	6.03	5.93
.442	5.99	5.93	5.51	4.67	4.85	6.01	5.45
.452	5.95	5.92	5.40	4.51	4.86	6.23	5.26
.462	6.09	6.09	5.34	4.76	4.92	6.02	5.10
.472	5.91	6.15	5.42	4.88	5.12	6.02	5.15
.483	6.27	5.90	5.49	4.85	5.02	6.27	5.02
.493	5.92	5.76	5.51	4.99	5.21	6.20	5.14
.508	5.85	5.80	5.30	4.95	5.19	6.08	5.16
.520	6.12	5.86	5.50	5.06	5.19	5.86	5.33
33 763.406	5.48	5.12	5.63	5.23	5.48	5.82	5.92
.420	5.53	5.23	5.45	—	5.57	5.85	6.04
.442	5.70	5.33	5.72	5.52	5.60	5.90	5.95
.455	5.77	5.39	5.71	5.71	5.75	5.98	6.07
.464	5.80	5.55	5.71	5.87	5.71	6.05	6.18
.483	5.78	5.55	5.58	5.62	5.71	6.05	6.19
.494	5.81	5.55	5.62	5.59	5.68	5.94	6.24
.504	5.87	5.76	5.50	5.59	5.83	6.08	6.00
.514	5.88	5.68	5.57	5.95	5.85	6.12	6.16
.525	5.96	5.72	5.51	—	5.84	6.02	6.07
34 118.355	5.37	—	—	—	—	5.72	5.76
.372	5.68	—	—	—	—	5.66	5.66
.388	5.36	5.93	—	—	4.92	5.59	5.56
.428	5.69	6.02	5.08	4.66	5.15	5.85	5.55
.443	5.88	5.80	5.43	4.85	5.49	5.97	5.49
.470	5.90	—	5.76	5.03	—	—	5.32
.485	5.81	5.69	5.32	5.13	5.59	5.92	5.59
.499	5.87	5.82	5.06	5.33	5.49	6.16	5.55
.513	5.84	5.67	4.76	5.11	5.43	6.23	5.60
.526	—	5.62	4.41	5.34	5.60	—	5.65
.540	6.09	5.80	4.34	5.55	5.66	6.09	5.68
34 120.471	5.95	5.18	5.14	5.34	4.96	5.06	—
.484	6.10	4.89	—	—	5.12	5.21	5.81
.497	6.14	4.83	5.26	5.22	5.07	5.23	5.80
.510	6.14	4.91	5.29	5.42	5.35	5.35	5.59
.523	6.09	4.85	5.33	5.36	5.36	5.36	5.49
.536	6.00	4.94	5.19	5.24	5.39	5.33	5.54

Table 9 (continued)

J. D. 2 400 000 +	27	28	31	32	33	34	35
34 120.551	5.87	4.89	5.46	5.46	5.43	5.50	5.47
.564	5.61	4.97	5.18	—	5.55	5.69	5.61
.579	5.22	5.04	—	—	5.66	5.55	5.55
34 121.401	5.93	5.60	5.20	4.81	5.84	6.02	5.95
.412	5.95	5.50	5.00	5.09	5.84	6.28	5.98
.422	5.95	5.32	4.78	5.08	5.86	6.12	6.04
.431	5.92	5.16	4.64	5.03	5.86	6.22	5.86
.441	5.88	4.83	4.53	5.14	5.65	6.43	5.97
.484	6.02	4.95	4.61	5.59	4.79	6.16	5.89
.495	5.96	4.98	4.60	5.40	4.77	6.00	6.05
.505	5.97	5.18	4.77	5.35	4.93	5.97	5.97
.517	6.06	5.21	4.77	5.65	5.05	5.86	6.04
.528	5.95	5.18	4.77	5.57	5.04	5.69	5.89
.539	6.02	5.35	—	—	5.16	5.70	5.89
.552	6.03	5.34	—	—	5.06	5.19	5.70
.562	—	5.37	—	—	5.19	5.09	5.67
.594	—	5.33	—	—	5.19	5.06	5.49
.605	—	—	—	—	—	5.14	5.46
34 122.404	5.40	—	—	—	5.77	—	5.88
.416	5.33	4.92	5.36	5.00	5.74	5.94	6.15
.431	5.52	5.00	5.35	5.16	5.93	6.08	5.88
34 126.433	5.28	5.88	5.47	5.22	5.80	6.08	5.58
34 131.415	5.98	5.49	4.86	5.41	5.68	6.08	5.98
34 487.347	5.78	5.76	4.77	5.94	5.90	5.90	5.36
.367	5.92	5.80	4.94	5.57	5.91	6.08	5.36
.385	6.06	5.44	5.02	5.89	5.91	5.91	5.50
.397	5.94	5.86	5.04	5.59	5.66	6.02	5.40
.410	6.14	6.00	5.22	5.38	6.18	6.12	5.62
.428	5.86	—	—	4.83	—	5.93	5.72
.438	5.93	5.82	5.12	4.80	5.82	6.19	5.64
.449	6.12	5.85	5.27	4.79	6.00	6.12	5.85
.460	6.16	5.97	5.27	4.72	5.87	5.91	5.83
.474	—	5.76	5.25	4.93	5.64	5.70	5.81
.483	5.98	6.01	5.22	4.90	5.59	5.86	5.87
.494	6.00	5.84	5.30	4.95	5.73	—	5.84
.508	6.06	—	5.30	4.97	5.45	6.18	6.06
.518	5.94	6.02	5.39	5.04	5.43	5.92	5.97
34 488.530	5.89	5.35	4.82	—	5.75	6.09	5.91
.540	5.80	5.11	4.88	5.44	5.71	5.92	5.82
34 567.388	5.96	5.89	5.54	5.70	5.20	5.85	5.43
35 223.415	5.82	5.65	5.43	5.51	5.23	5.95	5.90
.428	5.90	5.72	5.20	5.40	5.32	6.02	6.07
.441	6.00	5.81	5.63	5.50	5.28	6.07	5.94
.467	5.84	5.71	5.32	5.53	5.32	6.10	6.02
.490	6.02	5.94	5.43	5.49	5.57	6.04	5.96
.503	6.02	5.78	5.37	5.02	5.54	6.24	5.95

Table 9 (continued)

J. D. 2 400 000 +	27	28	31	32	33	34	35
35 223.517	6.06	5.83	5.29	4.63	5.55	6.08	6.06
.530	6.07	5.75	5.38	4.52	5.53	6.32	5.93
.546	6.11	5.79	5.42	4.68	5.51	6.05	5.91
.573	5.87	5.83	5.55	4.88	5.65	5.50	6.05
35 224.454	5.60	5.88	5.19	5.56	5.26	6.02	5.81
.472	5.57	5.66	5.30	5.57	5.18	6.11	5.75
.485	5.64	5.74	5.34	5.31	5.19	6.32	5.88
.499	5.87	5.84	5.38	4.93	5.36	6.12	5.89
.512	5.72	5.82	5.45	4.45	5.24	6.10	5.96
.524	5.72	5.72	5.33	4.56	5.26	6.14	5.72
.542	5.77	5.74	5.37	5.02	5.41	6.24	5.92
.556	5.81	5.53	5.39	4.85	5.34	6.08	5.88
.569	5.90	5.48	5.46	4.98	5.56	6.45	5.94
.583	5.84	5.27	5.59	—	5.54	6.00	6.06
35 227.534	6.09	5.40	5.40	4.87	6.12	5.26	5.40
.547	6.08	5.40	5.90	4.82	5.92	5.26	5.35
.560	6.06	5.78	5.54	5.11	5.78	5.36	5.60
.573	6.09	5.63	5.51	5.08	5.23	5.28	5.65
.586	6.32	5.71	5.55	5.48	5.34	5.37	5.58
35 598.507	5.44	5.76	5.86	4.48	5.30	5.80	5.88
.524	5.75	5.81	5.61	4.58	5.61	6.02	5.96
.537	5.90	5.88	5.58	4.60	5.39	6.18	5.82
35 600.363	5.88	5.97	5.82	5.52	5.72	6.12	5.74
.378	5.68	5.72	5.47	5.40	5.66	5.84	5.57
.391	5.93	5.76	5.49	5.58	6.07	5.95	5.67
.405	6.08	5.66	5.36	5.50	5.90	6.00	5.80
.421	6.08	5.75	5.62	5.64	5.93	5.86	5.50
.434	5.88	5.58	5.73	5.58	5.86	6.25	5.62
.446	6.07	5.87	5.64	5.62	5.80	6.25	5.59
.501	6.29	5.88	5.10	4.55	5.16	5.93	5.74
.525	6.03	5.88	4.50	4.88	5.10	5.02	5.88
35 603.369	6.03	5.78	—	—	5.72	5.01	6.08
.381	6.14	5.69	—	—	5.90	5.20	6.08
.397	5.95	5.49	5.26	5.66	5.66	5.24	5.84
.408	5.95	5.32	4.92	—	5.80	5.22	6.04
.419	6.03	5.33	4.66	5.60	5.85	5.52	6.06
.431	6.22	5.28	4.60	5.38	5.90	5.46	6.00
.446	6.02	5.19	4.74	4.73	5.82	5.45	5.96
.457	6.04	5.12	4.55	4.61	5.87	5.59	6.06
.468	6.00	4.93	4.59	4.76	5.83	5.67	6.01
.491	6.08	5.00	4.75	4.74	5.91	5.64	5.81
.507	6.12	5.04	4.74	4.88	5.80	5.86	5.94
35 920.444	5.07	5.38	5.95	6.00	5.13	5.03	5.64
.467	5.28	5.53	5.70	5.53	5.20	5.36	5.70
.487	5.23	5.86	5.08	4.29	5.36	5.62	5.72
.504	5.26	5.53	—	—	5.30	5.50	5.66

Table 9 (continued)

J. D. 2 400 000 +	27	28	31	32	33	34	35
35 920.547	5.49	5.56	4.87	5.20	5.48	5.56	5.94
.562	5.51	5.38	4.94	5.20	5.38	5.62	5.92
.585	5.60	5.05	5.05	5.60	5.30	5.60	6.18
35 933.415	5.82	4.72	5.22	5.12	5.77	5.91	6.04
.443	5.88	5.03	5.45	5.27	5.82	5.67	6.11
.479	5.95	5.22	5.33	5.50	4.62	5.93	5.95
.503	5.67	5.17	—	5.24	4.56	5.93	5.88
.515	5.80	5.29	—	5.50	4.48	5.85	5.95
.530	5.78	5.32	5.35	5.60	4.57	6.08	6.06
.543	—	—	—	—	4.57	5.96	5.63
.573	5.78	—	5.37	5.35	4.97	5.79	5.41
.588	—	—	—	5.59	5.00	5.65	5.42
.602	—	—	—	—	—	6.08	5.34
36 991.457	5.86	5.69	5.20	4.80	5.54	6.13	5.56
.470	6.19	6.09	5.36	5.09	5.96	6.11	5.53
.485	6.08	5.68	5.03	5.22	5.93	6.08	5.33
37 018.470	5.57	6.08	5.75	5.47	5.78	5.19	5.91
.483	5.82	5.84	5.46	5.69	5.92	5.28	5.98
.496	5.66	5.93	—	—	5.78	5.21	6.10
.510	5.70	6.09	5.80	5.31	5.95	5.29	6.04
.523	5.95	5.99	5.64	5.57	6.06	5.44	6.00
.537	5.67	—	5.21	5.89	5.88	5.40	5.88
.550	5.74	5.90	5.53	5.27	5.57	5.57	5.80
.563	5.91	6.08	5.36	—	5.56	5.62	5.98
.577	5.84	5.76	5.51	5.47	4.93	5.81	5.79
.609	6.05	5.31	5.48	5.51	4.86	5.84	5.44
.623	5.97	—	5.32	—	5.07	5.89	5.46
.637	6.08	5.58	4.88	—	5.24	5.92	5.55
37 057.539	6.05	6.20	4.73	—	5.34	5.31	6.01
.552	6.39	—	4.14	—	5.31	5.22	6.10
.578	6.09	—	4.41	—	5.69	5.28	6.09
37 058.529	6.05	6.12	5.78	—	4.78	6.05	5.85
.580	—	5.79	5.79	—	5.26	6.48	6.02
37 757.598	—	5.23	—	—	4.98	5.20	6.08
37 791.365	5.31	4.66	5.74	5.96	5.20	5.89	6.21
.380	5.18	4.34	5.91	—	5.46	5.93	5.93
.394	5.12	4.30	5.75	5.63	5.60	5.97	6.03
.424	5.25	4.31	5.59	4.95	5.54	6.02	5.86
.439	5.42	4.20	5.72	—	5.77	6.20	6.05
.454	5.15	4.54	5.53	5.11	5.57	5.99	6.32
.469	5.43	4.66	5.67	—	5.70	6.07	6.02
.483	5.24	4.95	5.47	5.06	5.86	6.13	6.09
.497	5.34	4.87	5.68	5.11	5.56	6.00	5.95
.519	5.53	5.10	5.87	5.45	5.90	6.19	5.90
.533	5.64	5.15	5.60	5.44	5.77	6.07	5.74
.549	5.66	5.24	5.57	5.25	5.92	6.16	5.60
.563	5.86	5.38	5.33	5.54	5.86	6.23	5.60

Table 9 (continued)

J. D. 2 400 000 +	36	37	38	39	40	41	42
28 963.487	6.07	5.49	6.22	5.84	5.30	5.75	5.34
28 991.403	6.02	5.89	6.07	6.10	6.23	5.69	5.78
.416	6.04	5.98	5.89	5.96	6.06	6.19	4.81
.430	5.78	5.99	5.99	6.00	6.37	6.06	4.30
.522	5.16	5.94	6.15	6.04	6.31	6.20	—
.542	4.82	5.54	5.92	6.08	6.45	6.31	4.60
29 346.376	5.77	5.57	6.24	5.39	5.69	5.79	5.09
.392	5.99	5.54	6.07	5.49	5.69	5.75	5.49
29 719.549	5.97	6.09	5.94	6.02	6.16	6.56	5.70
.560	5.95	6.04	5.93	6.14	6.14	6.20	5.55
29 720.546	5.57	6.02	5.67	6.04	6.38	6.22	5.15
.558	5.60	5.97	5.76	6.05	6.24	6.21	5.06
29 774.405	6.19	6.00	6.16	5.64	5.74	6.24	5.39
.417	5.85	6.06	6.06	5.64	5.88	6.65	5.24
29 775.403	6.16	5.98	5.98	5.98	5.21	6.20	5.05
.415	6.09	6.00	6.00	5.80	5.44	6.21	5.13
.426	6.04	6.04	5.97	5.74	5.19	6.39	5.16
.437	5.88	6.05	6.12	5.71	5.39	6.70	5.37
.447	6.08	5.92	6.00	5.56	5.60	6.65	5.33
30 052.462	6.10	5.79	5.66	6.29	6.03	6.57	5.71
.474	6.00	5.46	5.49	6.23	6.21	6.46	5.79
.489	6.09	5.57	5.22	6.30	6.07	6.30	5.57
.501	6.22	5.59	5.13	5.82	6.15	6.17	5.84
30 078.418	5.32	5.67	6.03	5.29	6.01	6.18	5.67
.434	5.44	5.76	5.98	5.27	6.08	6.04	5.49
.470	5.64	5.91	6.13	5.49	6.17	6.11	5.40
.483	5.62	6.00	6.02	5.55	6.39	6.39	5.58
.498	5.69	5.85	6.00	5.49	6.07	6.27	5.25
.509	5.69	6.11	6.22	5.66	6.09	6.19	4.85
.521	5.81	6.01	6.24	5.68	6.07	6.24	4.66
.536	5.89	6.04	6.18	5.63	6.22	6.10	4.29
.548	5.84	5.96	6.04	5.78	6.36	6.58	4.43
33 390.497	6.07	5.59	6.04	6.30	6.07	6.02	5.01
.534	6.27	5.76	5.90	6.27	6.12	6.15	4.35
.545	6.22	5.93	5.98	6.22	6.51	6.66	4.56
.558	6.22	5.81	5.74	6.20	6.24	5.98	4.61
.570	6.17	5.87	5.64	6.39	6.39	6.13	4.49
.586	5.55	6.05	5.53	6.24	6.24	—	4.94
33 420.424	6.23	5.66	6.00	6.23	6.55	5.89	5.92
.438	6.26	5.68	6.10	6.15	6.36	5.97	5.70
.450	6.18	5.50	6.16	6.19	6.16	5.97	5.70
.476	6.07	5.45	6.41	6.31	5.62	6.55	5.66
.487	6.05	5.68	6.18	6.11	5.36	6.30	5.59
.498	6.12	5.50	6.46	6.37	5.18	6.10	5.52
.510	6.22	5.45	6.34	6.14	5.19	6.39	6.05
.523	6.09	5.45	—	6.31	5.00	—	—

Table 9 (continued)

J. D. 2 400 000 +	36	37	38	39	40	41	42
33 421.385	5.89	5.76	5.43	5.89	6.14	5.90	5.31
.442	6.07	5.56	5.73	5.92	6.09	6.05	5.46
.454	6.00	5.47	5.77	5.99	6.30	6.28	5.62
.465	6.05	5.42	5.82	6.11	6.27	6.30	5.34
.475	6.10	5.52	5.90	6.10	6.13	6.01	5.37
.486	6.26	5.39	5.97	6.15	6.17	6.02	5.45
.497	6.21	5.37	6.04	6.15	6.13	6.32	5.37
.535	6.35	5.63	6.18	6.13	6.35	7.01	5.66
.548	6.20	5.63	5.98	6.10	6.20	—	5.60
33 422.398	5.74	5.57	5.03	5.27	5.99	6.18	4.67
.431	6.01	5.42	5.17	5.47	6.08	6.27	5.04
.442	5.76	5.54	5.32	5.63	6.25	6.25	4.70
.452	5.95	5.46	5.23	5.54	6.29	6.29	4.76
.462	5.81	5.35	5.22	5.60	6.53	6.15	4.89
.472	5.96	5.39	5.19	5.72	6.25	6.30	4.75
.483	6.27	5.46	5.54	5.78	6.29	6.42	4.75
.493	5.98	5.63	5.51	5.73	6.17	6.15	4.96
.508	6.11	5.51	5.41	5.74	6.34	6.36	4.90
.520	6.03	5.56	5.50	5.72	6.32	5.91	4.93
33 763.406	5.75	5.65	5.53	6.04	6.12	5.94	5.58
.420	5.72	5.48	5.50	5.99	6.13	6.14	5.82
.442	5.79	5.43	5.60	5.72	6.12	6.04	5.64
.455	5.94	5.41	5.69	5.55	6.21	6.40	5.66
.464	5.84	5.49	5.71	5.38	6.21	6.23	5.78
.483	5.98	5.44	5.71	5.23	6.30	6.45	5.06
.494	5.96	5.47	5.76	5.26	6.35	6.30	4.79
.504	6.12	5.50	5.72	5.27	6.21	6.02	4.52
.514	6.12	5.55	5.80	5.23	6.10	6.28	4.59
.525	6.05	5.56	5.77	5.30	5.70	6.61	4.79
34 118.355	6.36	6.01	5.76	6.12	5.82	—	—
.372	5.99	6.02	5.90	6.20	5.84	—	—
.388	6.24	5.99	5.84	6.20	5.84	—	—
.428	4.84	5.88	5.85	6.22	6.02	5.79	5.01
.443	4.88	5.68	5.98	6.06	6.04	5.90	5.43
.470	5.08	5.36	6.01	5.94	6.20	6.20	—
.485	5.10	5.36	6.02	5.92	6.16	6.34	5.59
.499	5.20	5.40	6.06	6.28	6.32	6.06	—
.513	5.30	5.43	6.21	6.18	6.18	6.23	5.73
.526	5.32	5.45	6.12	6.44	5.98	—	—
.540	5.51	5.51	5.95	6.17	6.37	6.42	5.40
34 120.471	6.23	5.36	5.22	5.53	5.36	6.16	—
.484	6.14	5.57	5.33	5.55	5.47	—	—
.497	6.09	5.45	5.41	5.73	5.54	—	—
.510	6.19	5.51	5.38	5.76	5.59	6.19	5.60
.523	6.07	5.52	5.55	5.82	5.67	6.02	5.06
.536	6.13	5.70	5.64	5.72	5.72	6.19	4.66

Table 9 (continued)

J. D. 2 400 000 +	36	37	38	39	40	41	42
34 120.551	6.27	5.75	5.62	5.75	5.80	6.36	4.40
.564	6.27	5.84	5.78	5.81	5.86	5.99	4.22
.579	5.86	5.88	5.96	5.98	5.96	6.12	4.46
34 121.401	5.93	5.48	6.05	5.95	6.31	6.00	—
.412	6.17	5.48	6.10	5.98	6.22	6.32	—
.422	5.95	5.40	6.24	6.14	6.16	6.14	—
.431	5.96	5.37	5.99	5.99	6.30	6.04	—
.441	6.06	5.35	6.14	6.10	6.22	6.10	—
.484	6.06	5.46	6.19	6.06	5.59	6.09	—
.495	6.10	5.58	6.05	6.05	5.40	6.17	—
.505	6.16	5.59	5.97	5.98	5.10	5.76	—
.517	6.12	5.68	6.06	5.94	5.14	6.12	—
.528	6.04	5.66	5.89	5.78	5.14	6.02	—
.539	6.08	5.70	5.82	5.61	5.19	—	—
.552	6.16	5.81	5.44	5.32	5.19	—	—
.562	6.01	5.70	5.30	5.30	5.24	—	—
.594	6.12	5.99	5.33	5.33	5.49	—	4.62
.605	—	6.00	5.27	5.30	5.47	—	—
34 122.404	5.80	5.42	—	6.01	—	—	—
.416	5.62	5.33	6.00	5.84	5.96	—	4.76
.431	5.71	5.29	6.00	5.98	6.15	6.10	4.87
34 126.433	6.13	—	5.94	5.78	5.84	5.82	4.84
34 131.415	6.60	—	6.10	6.10	5.52	5.41	—
34 487.347	5.47	5.65	5.97	5.20	5.90	5.44	5.62
.367	5.69	5.64	6.07	5.20	6.14	5.36	5.76
.385	5.79	5.71	5.91	5.22	5.96	5.30	5.99
.397	5.68	5.66	5.88	5.33	5.88	5.20	5.80
.410	—	5.92	5.92	5.38	5.92	5.32	5.76
.428	5.89	5.95	5.98	5.61	6.11	5.74	—
.438	5.82	5.93	5.93	5.46	6.11	5.25	5.78
.449	5.93	6.05	6.13	5.60	6.11	5.67	5.77
.460	6.06	5.97	6.02	5.66	6.40	5.73	5.89
.474	6.06	6.07	—	5.60	6.04	5.64	5.72
.483	5.83	6.01	6.06	5.74	6.08	5.54	5.70
.494	6.03	6.14	6.43	5.85	6.20	5.60	—
.508	6.00	5.94	6.08	6.12	6.17	5.57	5.47
.518	6.05	5.95	6.00	5.73	6.12	5.85	6.02
34 488.530	5.97	5.59	6.17	5.15	6.34	6.08	5.23
.540	5.82	5.54	5.88	5.06	6.01	5.85	5.59
34 567.388	6.12	5.70	6.10	5.89	6.19	5.29	4.86
35 223.415	5.74	5.93	6.07	6.18	6.18	5.95	5.23
.428	5.72	5.92	6.13	6.13	6.26	6.37	5.49
.441	5.81	5.89	6.10	6.00	6.15	6.19	5.50
.467	5.97	5.51	6.16	5.80	5.46	6.30	5.78
.490	6.01	5.43	5.92	5.62	5.02	6.30	5.51
.503	6.02	5.47	6.02	5.54	5.07	6.38	5.54

Table 9 (continued)

J. D. 2 400 000 +	36	37	38	39	40	41	42
35 223.517	5.96	5.41	6.07	5.60	5.14	6.14	5.01
.530	6.01	5.38	6.19	5.58	5.24	6.34	4.64
.546	6.08	5.38	6.03	5.51	5.36	6.08	4.33
.573	6.07	5.48	6.07	5.52	5.52	6.15	4.40
35 224.454	5.46	5.51	5.79	6.00	6.08	6.10	5.51
.472	5.50	5.45	6.06	6.16	6.32	6.09	5.38
.485	5.64	5.36	5.88	6.04	6.18	6.10	5.44
.499	5.62	5.41	6.04	6.26	6.26	6.01	5.60
.512	5.75	5.40	6.23	6.16	6.26	6.19	5.42
.524	5.82	5.33	5.96	6.06	6.49	6.30	5.52
.542	5.86	5.39	5.94	6.20	6.12	6.28	5.62
.556	5.95	5.53	5.88	6.03	5.81	6.12	5.88
.569	6.10	5.69	5.99	6.43	5.54	—	—
.583	5.99	5.78	6.26	6.00	5.15	6.06	5.59
35 227.534	6.45	—	6.04	5.96	5.83	5.46	5.91
.547	6.52	5.73	5.85	6.04	6.16	5.32	—
.560	—	5.80	5.80	6.06	5.95	5.14	5.95
.573	6.23	5.80	5.54	5.78	6.11	5.25	—
.586	5.71	5.71	5.40	5.71	5.79	5.32	—
35 598.507	6.04	5.32	6.02	6.11	5.58	6.44	5.47
.524	6.04	5.52	6.04	6.06	5.30	6.33	5.52
.537	6.00	5.54	5.98	6.22	5.09	6.00	5.60
35 600.363	5.69	5.82	5.54	5.64	6.03	6.09	5.50
.378	5.43	6.06	5.35	5.35	5.82	6.09	5.52
.391	5.78	5.87	5.34	5.50	5.93	6.08	5.46
.405	5.60	5.80	5.42	5.42	5.86	6.42	5.82
.421	5.62	5.64	5.60	5.52	6.08	6.02	5.75
.434	5.69	5.62	5.53	5.51	6.10	6.01	5.83
.446	5.87	5.39	5.64	5.52	6.07	6.25	5.70
.501	5.88	5.46	5.76	5.87	6.27	6.00	5.64
.525	6.16	5.70	5.97	5.92	6.30	5.45	5.70
35 603.369	6.02	5.48	5.86	5.44	6.22	—	—
.381	5.98	5.33	6.12	5.62	6.20	—	—
.397	6.10	5.34	5.94	5.73	6.05	6.08	5.73
.408	5.90	5.40	5.99	5.55	6.20	5.94	5.41
.419	6.04	5.45	6.10	5.69	6.36	5.98	5.69
.431	6.12	5.52	6.12	5.91	6.37	5.87	5.65
.446	6.13	5.47	6.02	5.60	6.08	5.53	5.67
.457	6.25	5.61	6.25	5.94	6.31	5.23	5.31
.468	6.09	5.49	6.14	5.76	5.62	5.14	5.70
.491	5.91	5.64	6.08	5.81	5.17	5.08	5.55
.507	5.24	5.77	6.12	6.02	5.08	5.38	5.80
35 920.444	6.16	6.00	6.17	5.08	6.29	6.32	5.39
.467	6.11	6.00	6.11	5.28	6.38	6.42	5.50
.487	5.90	—	5.87	5.22	5.91	5.84	4.63
.504	4.94	5.73	5.97	5.47	6.09	6.22	—

Table 9 (continued)

J. D. 2 400 000 +	36	37	38	39	40	41	42
35 920.547	4.87	5.49	6.13	5.70	6.29	6.32	4.83
.562	4.86	5.38	6.32	5.73	6.32	6.25	—
.585	5.08	5.74	6.14	5.87	6.22	6.30	4.40
35 933.415	5.77	5.69	6.19	5.52	5.52	5.77	5.69
.443	6.04	5.81	5.91	5.65	5.71	5.88	5.51
.479	5.93	5.95	5.15	5.72	5.72	5.95	4.71
.503	6.19	6.00	4.89	5.88	5.90	5.90	4.31
.515	6.03	6.22	5.04	5.85	5.99	5.99	4.30
.530	6.56	6.08	5.08	5.98	5.98	6.06	4.43
.543	—	6.07	5.19	5.98	5.89	6.10	4.29
.573	5.78	5.85	5.58	6.05	6.26	6.14	4.64
.588	5.18	5.56	5.74	5.96	6.01	5.88	4.48
.602	4.70	5.61	5.71	6.20	6.10	—	—
36 991.457	5.92	5.74	4.91	5.97	6.26	6.00	5.72
.470	6.19	6.06	4.74	6.16	6.14	6.14	—
.485	5.56	5.87	4.92	6.04	5.97	6.07	5.69
37 018.470	6.08	5.62	5.85	6.26	6.05	5.34	5.03
.483	6.20	5.67	5.88	6.21	6.12	5.45	5.12
.496	6.10	5.69	5.85	6.16	6.20	5.70	5.24
.510	5.97	5.87	5.98	6.05	6.12	5.74	5.12
.523	6.12	5.86	5.96	6.14	6.30	5.80	6.06
.537	5.92	5.90	5.92	5.90	5.90	5.66	—
.550	6.20	6.05	6.11	6.11	6.20	5.92	5.24
.563	6.08	6.12	6.41	—	6.30	5.89	—
.577	—	5.82	6.09	6.14	6.10	5.88	5.72
.609	6.22	6.05	5.96	6.24	6.40	6.05	5.48
.623	—	—	5.97	6.09	6.40	6.09	—
.637	6.35	5.98	6.11	6.32	6.03	6.52	5.58
37 057.539	4.94	5.69	6.05	5.72	5.95	6.19	—
.552	5.14	5.65	6.13	5.43	6.04	6.36	6.10
.578	5.28	5.50	—	5.28	6.36	6.12	—
37 058.529	6.29	5.60	5.73	6.16	5.35	6.29	5.56
.580	6.06	5.59	6.06	6.48	5.97	5.97	—
37 757.598	5.33	5.36	5.96	6.07	—	5.90	—
37 791.365	4.65	5.92	6.00	5.49	6.35	6.00	4.75
.380	5.02	5.93	5.93	5.40	6.23	5.89	4.89
.394	5.21	6.09	5.94	5.50	6.25	6.07	5.12
.424	5.31	6.09	6.03	5.43	5.85	6.36	5.27
.439	5.46	5.98	5.97	5.50	5.55	5.77	5.42
.454	5.31	6.03	5.95	5.47	5.36	—	—
.469	5.59	5.97	5.96	5.69	5.16	5.96	5.41
.483	5.47	5.86	6.06	—	5.12	5.86	5.24
.497	5.51	5.60	6.00	5.67	5.13	5.88	5.42
.519	5.85	5.53	6.16	5.77	5.32	5.66	5.27
.533	5.77	5.47	6.18	5.77	5.47	5.88	5.26
.549	6.01	5.44	6.06	5.77	5.60	5.66	5.30
.563	5.89	5.36	6.23	5.92	5.76	5.67	5.36

Table 9 (continued)

J. D. 2 400 000 +	43	44	54	46	47	48	49
28 963.487	4.70	5.87	5.42	5.22	5.57	5.60	5.93
28 991.403	5.38	6.04	5.35	5.72	4.74	5.48	6.01
.416	5.46	6.06	5.30	5.86	4.73	5.75	5.96
.430	5.33	5.96	5.33	5.94	4.65	5.47	5.91
.522	4.35	5.70	5.72	—	5.02	5.60	5.25
.542	4.23	5.58	5.73	5.82	5.09	5.45	5.32
29 346.376	5.33	5.97	5.35	5.57	5.11	5.74	5.24
.392	5.75	6.10	5.49	5.79	5.36	5.95	5.69
29 719.549	5.76	6.16	5.67	5.97	5.76	5.53	6.02
.560	5.66	6.60	5.55	5.77	5.77	5.66	5.77
29 720.546	5.62	5.89	5.18	5.87	5.98	5.96	5.98
.558	5.57	5.90	4.80	5.69	5.85	5.76	5.88
29 774.405	5.55	6.16	6.00	5.49	5.41	5.84	5.34
.417	5.60	5.98	5.88	5.54	5.39	6.06	5.06
29 775.403	5.46	6.04	5.56	6.08	5.26	5.48	6.10
.415	5.49	6.02	5.70	5.94	5.23	5.36	6.02
.426	5.55	5.97	5.59	5.81	5.33	5.53	6.04
.437	5.57	5.64	5.90	6.19	5.39	5.57	6.02
.447	5.50	5.53	5.92	6.00	5.50	5.58	6.04
30 052.462	5.90	5.17	5.83	5.80	5.55	5.79	5.66
.474	5.88	5.06	5.88	5.79	5.49	5.83	5.60
.489	5.65	5.14	5.87	5.75	5.56	5.87	5.62
.501	5.64	5.23	5.91	5.85	5.69	5.91	5.91
30 078.418	5.96	5.56	6.20	5.99	5.59	5.96	5.99
.434	5.76	5.49	6.30	5.94	5.57	5.94	5.88
.470	5.24	5.62	6.09	5.75	5.64	5.83	—
.483	4.69	5.57	6.10	5.72	5.65	5.62	5.96
.498	4.40	5.58	5.92	5.66	5.66	5.49	5.90
.509	4.53	5.71	6.19	5.69	5.77	5.41	5.88
.521	4.69	5.89	6.09	5.53	5.91	5.45	5.97
.536	4.86	5.83	6.32	5.45	5.84	5.36	6.00
.548	4.86	5.78	6.20	5.32	5.94	5.31	6.07
33 390.497	5.69	6.07	6.47	6.14	5.94	5.84	5.05
.534	5.68	6.03	6.12	5.92	5.95	5.83	5.33
.545	5.67	6.02	6.22	6.02	6.00	5.82	5.33
.558	5.57	5.95	6.47	6.07	5.91	5.74	5.38
.570	5.80	5.96	6.17	5.87	5.87	5.78	5.52
.586	5.55	5.97	6.37	5.97	5.97	5.84	5.63
33 420.424	5.34	6.00	5.60	5.66	5.98	5.19	6.41
.438	5.21	6.07	5.68	5.95	5.90	5.40	6.24
.450	5.33	5.98	5.86	5.87	5.87	5.41	5.95
.476	5.26	5.93	5.98	5.80	5.16	5.34	6.09
.487	5.48	6.05	5.90	5.90	4.93	5.41	6.05
.498	5.56	5.94	6.18	6.00	4.79	5.35	6.14
.510	5.38	5.92	6.03	6.08	4.84	5.30	6.03
.523	5.34	5.49	—	6.02	4.98	5.49	6.09

Table 9 (continued)

J. D. 2 400 000 +	43	44	45	46	47	48	49
33 421.385	5.50	6.00	5.07	5.58	5.92	5.76	5.90
.442	5.33	5.90	5.40	5.39	6.09	5.92	6.04
.454	5.20	5.84	5.51	5.34	5.95	5.80	6.15
.465	5.06	6.05	5.54	5.27	5.90	5.80	6.25
.475	5.05	5.83	5.71	5.29	6.10	5.80	6.10
.486	4.97	5.99	5.78	5.41	6.03	5.89	6.22
.497	5.17	5.96	5.62	5.43	6.17	5.70	6.07
.535	5.16	5.70	5.90	5.72	5.79	5.98	6.35
.548	5.31	5.58	5.86	5.66	5.39	5.96	6.12
33 422.398	5.79	6.24	6.07	6.07	5.99	5.57	5.94
.431	6.03	6.18	5.07	5.99	6.08	5.62	5.93
.442	5.83	6.08	5.18	5.76	5.76	5.67	6.03
.452	5.76	5.99	4.96	5.95	5.95	5.64	5.70
.462	5.60	5.89	5.04	5.89	5.83	5.50	6.02
.472	5.57	5.77	5.24	5.91	6.06	5.57	6.00
.483	5.57	6.09	5.29	5.92	6.01	5.87	6.27
.493	5.63	6.13	5.30	5.76	5.92	5.76	5.92
.508	5.39	6.06	5.33	5.94	6.03	5.66	5.97
.520	5.30	5.72	5.78	5.86	5.86	5.59	6.00
33 763.406	5.92	5.43	5.26	5.92	5.75	5.65	5.72
.420	5.75	5.38	5.35	5.94	5.63	5.60	5.80
.442	5.82	5.45	5.50	6.02	5.35	5.73	5.81
.455	5.98	5.62	5.55	5.98	5.27	5.77	5.89
.464	5.91	5.55	5.58	5.95	5.24	5.67	5.89
.483	5.98	5.53	5.50	5.87	5.23	5.82	5.85
.494	5.81	5.61	5.66	5.94	5.21	5.70	5.88
.504	6.00	5.61	5.67	5.97	5.35	5.79	5.93
.514	6.02	5.65	5.85	5.90	5.44	5.73	5.95
.525	6.05	5.65	5.82	5.98	5.45	5.82	5.98
34 118.355	5.82	5.68	5.37	5.74	5.37	5.89	6.08
.372	5.66	5.23	5.50	5.50	5.26	5.60	5.79
.388	5.84	5.04	5.50	5.59	5.28	5.87	6.16
.428	5.61	5.19	5.85	5.82	5.41	5.85	5.72
.443	5.86	5.46	5.88	5.74	5.57	5.78	5.83
.470	5.94	5.68	6.18	5.87	5.66	5.60	5.36
.485	5.78	5.55	6.16	5.71	5.55	5.44	5.10
.499	5.82	5.55	6.09	5.90	5.55	5.42	5.09
.513	5.84	5.76	6.23	5.76	5.46	5.27	5.16
.526	—	5.75	5.84	5.72	—	5.37	5.22
.540	5.48	5.77	6.30	5.99	5.77	5.30	5.33
34 120.471	5.18	5.36	5.31	5.79	5.45	5.31	5.95
.484	5.21	5.52	5.40	5.81	5.40	5.49	5.98
.497	5.60	5.45	5.60	5.96	5.32	5.41	6.01
.510	5.45	5.55	5.55	5.85	5.40	5.40	5.96
.523	5.44	5.67	5.59	5.69	5.49	5.39	5.94
.536	5.62	5.62	5.72	5.88	5.36	5.41	5.90

Table 9 (continued)

J. D. 2 400 000 +	43	44	45	46	47	48	49
34 120.551	5.66	5.77	5.75	5.91	5.35	5.47	6.15
.564	5.73	5.86	5.90	5.95	5.50	5.50	5.98
.579	5.52	5.88	5.88	6.00	5.61	5.63	6.00
34 121.401	4.78	5.48	6.20	5.58	5.78	5.82	5.62
.412	4.70	5.42	—	5.66	5.93	5.84	5.76
.422	4.84	5.27	6.38	5.69	5.69	5.82	5.82
.431	4.85	5.42	6.12	5.70	5.74	5.81	5.76
.441	4.87	5.32	6.00	5.74	5.70	5.79	5.92
.484	5.20	5.46	4.87	5.68	5.78	5.80	5.93
.495	5.22	5.64	4.89	5.70	5.83	5.83	6.03
.505	5.39	5.59	5.06	5.73	5.67	5.80	5.96
.517	5.51	5.51	5.18	5.80	5.71	5.92	6.02
.528	5.69	5.69	5.22	5.74	5.66	5.83	5.89
.539	5.66	5.66	5.32	5.75	5.48	5.76	6.02
.552	5.70	5.70	5.39	5.87	5.44	5.87	5.98
.562	—	—	5.32	5.84	5.37	—	—
.594	5.66	5.66	5.53	5.71	5.36	5.69	5.99
.605	—	—	5.73	—	5.35	5.67	—
34 122.404	5.54	5.54	6.08	5.77	5.69	5.42	5.54
.416	5.29	5.29	6.32	5.74	5.65	5.38	5.40
.431	5.27	5.27	6.28	5.91	5.80	5.54	5.50
34 126.433	5.78	5.78	5.74	5.58	5.42	5.66	5.89
34 131.415	6.22	6.22	6.04	5.85	5.47	5.98	5.90
34 487.347	4.92	6.08	5.88	5.92	5.41	5.80	5.97
.367	5.18	6.00	5.92	5.96	5.38	5.86	6.18
.385	5.26	6.24	6.14	6.12	5.26	5.84	6.14
.397	5.17	6.14	5.70	5.84	5.17	5.61	5.72
.410	5.24	6.42	6.26	5.84	5.40	6.09	5.60
.428	5.36	5.92	6.12	5.56	5.36	5.89	4.73
.438	5.33	6.14	5.93	5.46	5.42	5.84	4.79
.449	5.63	5.60	6.23	5.56	5.60	5.90	4.85
.460	5.37	5.54	6.33	5.52	5.52	5.66	4.86
.474	5.36	5.64	6.35	5.33	5.48	5.70	4.90
.483	5.54	5.80	—	5.37	5.70	5.76	5.02
.494	5.26	5.57	—	5.23	5.53	5.73	5.19
.508	5.84	5.39	6.20	5.47	5.64	5.62	5.32
.518	5.91	4.95	6.10	5.41	5.63	6.05	5.53
34 488.530	5.63	4.88	6.21	5.87	5.42	5.81	4.68
.540	5.25	4.82	6.04	5.82	5.44	5.71	4.80
34 567.388	5.10	6.00	6.28	5.91	4.92	5.34	6.17
35 223.415	4.90	5.01	6.10	5.82	5.82	5.70	5.98
.428	5.00	5.09	6.26	5.92	5.92	5.62	5.92
.441	5.30	5.30	6.20	5.63	5.89	5.52	5.96
.467	5.14	5.42	6.14	5.55	5.84	5.24	5.99
.490	5.43	5.70	6.17	5.49	5.88	5.20	6.06
.503	5.30	5.65	6.27	5.54	5.89	5.25	6.02

Table 9 (continued)

J. D. 2 400 000 +	43	44	45	46	47	48	49
35 223.517	5.45	5.75	6.08	5.36	5.91	5.19	5.91
.530	5.34	5.77	6.28	5.36	5.75	5.24	5.94
.546	5.71	5.85	6.25	5.28	5.51	5.24	5.94
.573	—	6.07	—	5.40	4.77	5.32	5.97
35 224.454	4.79	5.19	5.88	5.68	5.98	5.83	5.74
.472	4.80	5.30	6.01	5.78	5.86	5.70	5.70
.485	5.00	5.44	6.08	5.90	5.92	5.85	5.99
.499	5.10	5.50	6.08	5.94	5.99	5.80	6.06
.512	5.08	5.60	6.23	5.94	5.98	5.75	5.94
.524	5.02	5.62	5.98	5.90	5.88	5.79	5.88
.542	5.50	5.79	6.03	5.90	5.83	5.77	5.92
.556	5.51	5.83	6.14	6.03	5.86	5.83	6.05
.569	5.42	6.07	6.20	5.79	5.90	5.82	5.94
.583	5.59	6.12	6.31	5.92	6.06	5.84	6.10
35 227.534	6.14	5.83	5.26	6.09	5.88	6.00	5.43
.547	6.24	5.64	5.30	5.98	6.08	5.92	5.40
.560	6.06	5.78	5.40	5.97	6.00	6.24	5.57
.573	—	5.91	5.54	5.94	6.13	5.92	5.58
.586	6.10	5.58	5.58	6.03	5.76	6.03	5.68
35 598.507	5.40	6.13	5.20	5.74	5.30	5.68	6.02
.524	5.54	6.04	5.48	5.88	5.52	5.81	6.17
.537	5.40	6.02	5.34	5.96	5.52	5.66	6.36
35 600.363	5.82	6.05	6.30	5.82	6.03	5.69	5.19
.378	5.75	6.27	5.98	5.74	5.96	5.55	5.16
.391	5.89	6.13	6.16	5.93	5.97	5.69	5.46
.405	5.82	6.16	6.30	5.84	5.84	5.71	5.42
.421	5.73	6.02	6.12	5.73	5.88	5.88	5.53
.434	5.58	6.08	6.21	5.79	5.64	5.83	5.69
.446	5.74	6.00	6.27	5.74	5.80	5.87	5.59
.501	5.18	6.12	6.27	5.93	5.90	6.02	5.80
.525	4.72	6.16	—	6.05	5.75	6.12	5.92
35 603.369	5.37	5.92	5.22	5.66	5.32	5.23	5.94
.381	5.55	5.94	5.41	5.78	5.44	5.37	6.16
.397	5.57	6.01	5.50	5.66	5.37	5.40	6.16
.408	5.20	5.84	5.41	5.54	5.30	5.32	6.02
.419	5.52	6.14	5.56	5.80	5.45	5.58	6.14
.431	5.74	6.00	5.72	5.96	5.46	5.60	5.90
.446	5.66	6.02	5.70	5.84	5.58	5.55	6.13
.457	5.68	6.15	5.95	5.89	5.50	5.52	5.98
.468	5.76	6.25	5.70	5.95	5.46	5.46	6.11
.491	5.60	6.00	6.00	5.78	5.66	5.58	6.02
.507	5.64	6.12	6.08	5.96	5.68	5.54	6.02
35 920.444	—	5.85	6.22	5.39	4.71	5.14	4.91
.467	—	6.00	6.11	5.60	5.07	5.32	4.74
.487	—	5.92	5.99	5.36	5.00	5.42	4.74
.504	—	5.99	6.03	5.42	5.08	5.30	4.94

Table 9 (continued)

J. D. 2 400 000 +	43	44	45	46	47	48	49
35 920.547	—	6.13	6.20	5.33	5.20	5.60	5.37
.562	—	6.00	5.95	5.38	5.20	—	5.20
.585	—	5.89	5.60	5.43	5.17	—	5.26
35 933.415	—	5.24	6.47	5.52	5.18	5.69	5.80
.443	—	5.24	6.08	—	5.25	5.86	5.99
.479	—	5.50	5.67	5.74	5.22	5.67	5.84
.503	—	5.56	4.87	5.69	5.27	5.19	5.80
.515	—	5.80	4.92	5.65	5.52	5.21	5.91
.530	—	5.69	5.02	5.55	5.24	5.24	6.08
.543	—	5.79	5.16	—	5.06	4.85	5.96
.573	—	5.67	5.58	5.64	5.41	4.93	5.81
.588	—	5.74	5.36	5.48	5.34	5.10	5.42
.602	—	5.51	5.51	—	5.03	5.08	5.21
36 991.457	5.40	5.98	6.26	5.90	5.92	5.14	5.84
.470	5.80	6.16	6.09	5.87	5.82	5.21	5.96
.485	5.88	6.16	6.32	5.87	5.93	5.37	6.19
37 018.470	5.55	5.01	6.18	5.69	5.84	5.31	—
.483	5.45	4.84	6.14	5.78	6.16	5.46	6.20
.496	5.63	4.95	6.27	5.69	5.79	—	5.98
.510	5.85	5.09	6.19	5.95	6.02	5.38	5.50
.523	5.80	5.16	6.12	5.96	6.20	5.54	4.95
.537	5.55	5.15	5.85	5.76	5.86	—	4.88
.550	—	5.37	5.30	5.86	5.69	5.57	4.80
.563	5.69	5.46	5.06	5.94	5.36	—	4.94
.577	5.88	5.53	4.96	5.87	4.93	5.70	5.06
.609	5.84	5.74	5.24	5.97	4.94	5.84	5.20
.623	5.70	5.94	5.43	6.09	4.98	5.63	5.55
.637	—	5.96	5.34	6.22	5.48	5.77	5.58
37 057.539	5.69	5.20	6.15	5.43	5.38	5.69	5.31
.552	5.87	5.27	6.24	5.38	5.05	5.75	5.38
.578	6.20	5.34	6.12	5.66	5.39	5.89	5.55
37 058.529	5.78	5.35	6.05	5.89	5.89	5.73	5.45
.580	—	5.53	6.36	—	6.48	—	5.20
37 757.598	4.59	5.92	6.01	5.58	5.26	5.52	5.52
37 791.365	—	5.74	6.03	5.69	5.49	5.46	5.85
.380	5.72	5.85	5.93	5.61	5.40	5.52	5.93
.394	5.51	5.86	5.98	5.73	5.73	5.51	5.82
.424	5.39	5.95	5.99	5.57	5.47	5.47	5.83
.439	5.72	5.97	6.12	5.82	5.74	5.63	5.96
.454	5.64	5.95	6.32	5.64	5.72	5.44	5.81
.469	5.56	5.82	6.07	5.66	5.86	5.62	5.72
.483	5.40	5.90	6.20	5.86	5.81	5.56	5.56
.497	5.42	5.85	6.26	5.66	5.73	5.64	5.49
.519	5.81	5.85	6.14	5.90	5.96	5.87	5.45
.533	—	5.88	6.38	5.82	5.82	5.74	5.26
.549	5.46	5.77	6.12	5.86	5.90	5.81	5.40
.563	5.23	5.73	6.39	5.95	5.98	5.76	5.43

Table 9 (continued)

J. D. 2 400 000 +	50	51	52	53	54	55	56
28 963.487	5.35	5.30	5.96	4.97	5.60	6.34	5.84
28 991.403	6.04	6.12	5.83	5.35	5.72	5.83	5.48
.416	6.02	5.91	5.91	5.21	5.18	5.84	5.28
.430	6.00	6.09	5.91	5.33	5.13	5.99	5.47
.522	6.25	5.16	5.02	5.30	4.80	6.25	6.03
.542	6.26	5.10	5.20	5.39	4.75	6.24	5.92
29 346.376	5.42	6.06	5.95	5.30	4.99	5.97	5.42
.392	5.71	6.20	5.95	5.49	4.95	5.73	5.36
29 719.549	6.09	6.21	5.90	5.60	5.00	6.11	5.78
.560	6.16	6.14	6.00	5.55	4.98	6.18	5.82
29 720.546	6.00	6.06	5.89	5.54	4.80	6.16	5.67
.558	6.07	6.13	5.85	5.44	4.97	6.21	5.80
29 774.405	5.86	6.28	6.03	5.12	5.71	5.61	6.30
.417	5.98	6.11	5.91	5.15	5.82	5.85	5.91
29 775.403	5.93	5.77	6.14	4.87	5.61	5.21	5.99
.415	6.02	5.91	5.97	5.10	5.76	5.29	6.04
.426	6.00	5.86	5.92	5.16	5.72	5.41	5.81
.437	6.02	5.95	5.93	5.26	5.88	5.44	5.69
.447	5.95	5.95	5.85	5.18	5.83	5.39	5.64
30 052.462	6.03	6.24	6.10	5.99	5.85	5.08	5.72
.474	6.04	6.22	6.27	5.67	5.92	4.97	5.67
.489	5.99	5.99	6.25	5.96	5.84	5.17	5.87
.501	6.15	6.15	6.24	5.80	5.97	5.18	5.69
30 078.418	5.49	5.69	6.14	5.38	5.86	5.06	5.49
.434	5.27	5.60	6.08	5.39	5.71	4.82	5.39
.470	5.27	5.75	6.19	5.54	5.59	5.32	5.73
.483	5.20	5.82	6.04	5.72	5.45	5.39	5.67
.498	5.38	5.83	5.70	5.88	5.15	5.49	5.76
.509	5.51	6.07	5.26	5.63	4.80	5.44	5.71
.521	5.53	5.93	5.09	5.70	4.88	5.62	5.91
.536	5.63	6.00	4.92	5.66	4.92	5.56	5.89
.548	5.46	6.00	5.00	5.82	4.94	5.66	5.84
33 390.497	5.57	6.11	5.98	5.53	5.90	6.07	5.40
.534	5.74	6.30	6.12	5.65	5.90	5.92	5.36
.545	5.69	6.22	6.02	5.54	5.98	6.22	5.42
.558	5.77	6.24	6.09	5.74	5.95	6.22	5.40
.570	5.80	6.17	6.17	5.64	5.80	6.17	5.40
.586	6.18	6.24	6.24	5.79	5.76	6.40	5.48
33 420.424	6.13	5.19	5.92	5.75	6.09	6.47	6.23
.438	6.24	5.37	6.00	5.93	5.83	6.70	6.12
.450	6.12	5.33	6.21	5.87	5.89	6.19	5.89
.476	6.18	5.42	6.09	5.87	5.91	5.45	5.74
.487	6.46	5.50	6.13	5.80	5.74	5.21	5.70
.498	6.55	5.43	5.96	5.73	—	5.10	5.33
.510	6.05	5.45	5.94	5.66	6.08	5.05	5.45
.523	—	5.56	5.94	—	—	4.94	5.42

Table 9 (continued)

J. D. 2 400 000 +	50	51	52	53	54	55	56
33 421.385	5.74	6.12	5.64	5.66	5.86	6.33	6.00
.442	6.15	6.15	6.02	5.90	5.70	6.09	5.87
.454	6.13	5.99	5.88	5.79	5.79	6.40	5.73
.465	6.09	6.23	5.92	5.80	5.60	6.30	5.48
.475	6.10	6.37	5.84	5.72	5.77	6.22	5.52
.486	6.26	6.47	5.99	5.76	—	6.34	5.44
.497	6.28	6.13	5.89	5.77	5.87	6.30	5.43
.535	6.12	6.08	6.12	5.74	—	5.44	5.50
.548	6.27	5.60	6.18	5.58	—	5.18	5.39
33 422.398	5.92	5.99	5.71	5.81	6.07	6.12	5.79
.431	5.95	6.11	5.93	5.91	6.05	6.44	5.83
.442	5.99	6.22	6.03	5.76	5.83	6.03	5.76
.452	6.16	6.23	5.95	5.76	5.99	6.20	5.58
.462	6.13	6.15	6.09	6.13	6.05	6.15	5.37
.472	5.91	6.15	5.91	5.80	5.93	6.15	5.42
.483	6.24	6.19	5.87	5.95	5.87	6.12	5.46
.493	6.21	6.21	5.90	5.73	5.90	6.33	5.47
.508	6.20	6.20	5.88	5.80	5.80	6.44	5.43
.520	6.18	6.05	5.81	5.72	5.83	6.29	5.33
33 763.406	5.18	5.84	5.93	5.80	4.75	5.61	5.65
.420	5.23	5.87	5.87	5.78	4.77	5.71	5.80
.442	5.47	5.90	5.96	5.12	4.90	5.81	5.79
.455	5.46	5.98	6.18	4.77	5.17	5.94	5.89
.464	5.62	6.01	6.18	4.72	5.14	5.93	5.95
.483	5.65	6.06	6.00	4.82	5.23	6.05	6.00
.494	5.75	6.09	5.55	4.90	5.26	5.94	5.94
.504	5.87	6.12	5.30	4.92	5.37	6.04	5.99
.514	5.85	6.14	4.99	5.02	5.39	6.14	6.04
.525	5.93	6.17	4.99	5.17	5.42	6.15	6.02
34 118.355	5.97	5.37	5.88	5.96	—	5.82	5.88
.372	6.04	5.41	5.84	5.20	—	5.66	5.75
.388	6.12	5.68	5.99	4.80	4.90	5.68	5.73
.428	5.02	5.85	6.08	4.72	4.72	5.88	5.99
.443	4.88	5.88	6.02	4.92	4.92	5.86	5.95
.470	4.82	5.87	6.10	5.27	—	6.25	6.26
.485	5.00	5.84	6.02	5.14	5.25	6.04	5.92
.499	5.13	5.90	6.06	5.33	5.23	6.32	5.99
.513	5.27	5.96	6.02	5.43	5.46	6.26	6.02
.526	5.29	5.80	6.02	5.45	—	5.98	5.80
.540	5.58	6.33	5.95	5.37	5.33	6.22	5.66
34 120.471	5.22	6.06	5.83	4.99	4.87	5.56	5.99
.484	4.95	6.19	5.87	5.24	5.03	5.62	6.00
.497	4.83	6.07	5.96	5.13	5.13	5.73	6.00
.510	4.86	6.12	5.96	5.29	5.19	5.73	5.76
.523	4.85	6.11	6.16	5.30	5.28	5.80	5.88
.536	4.98	6.20	6.09	5.36	5.24	5.84	5.54

Table 9 (continued)

J. D. 2 400 000 +	50	51	52	53	54	55	56
34 120.551	5.03	6.18	6.03	5.40	5.38	5.82	5.32
.564	5.25	5.88	6.07	5.66	5.50	5.95	5.61
.579	5.46	5.55	6.02	5.78	5.55	5.96	5.46
34 121.401	6.22	5.78	5.78	5.16	—	6.12	5.97
.412	6.14	5.86	5.66	4.94	5.37	5.91	6.17
.422	6.29	5.90	5.72	4.70	5.18	5.50	6.30
.431	5.96	5.88	5.76	4.64	4.85	5.21	5.96
.441	6.16	6.08	5.81	4.72	4.87	4.95	5.92
.484	5.82	6.09	5.93	5.04	4.91	5.20	6.02
.495	5.38	6.11	5.92	5.06	4.93	5.26	5.94
.505	5.17	6.04	5.96	5.21	5.21	5.39	5.85
.517	4.87	6.10	6.00	5.34	5.24	5.38	5.75
.528	4.82	5.94	5.89	5.22	5.30	5.46	5.54
.539	4.83	6.19	6.02	5.43	5.40	5.54	5.46
.552	4.83	6.24	6.02	5.32	5.39	5.63	5.44
.562	5.02	6.20	—	5.32	—	5.73	5.32
.594	5.30	6.01	6.01	5.53	5.60	5.84	5.42
.605	5.25	—	—	—	—	5.71	5.46
34 122.404	—	5.40	5.50	5.46	—	—	5.78
.416	6.42	5.38	5.45	5.05	—	6.15	6.20
.431	6.26	5.56	5.56	4.75	—	6.24	6.02
34 126.433	6.21	5.42	5.34	5.66	5.84	6.00	5.89
34 131.415	5.83	6.26	6.27	5.90	5.78	6.35	5.60
34 487.347	5.17	5.25	5.36	5.90	5.66	6.20	6.10
.367	5.43	5.23	5.40	5.76	—	6.12	5.64
.385	5.63	5.26	5.53	5.79	5.68	6.12	5.44
.397	5.57	5.33	5.40	5.72	—	5.94	5.40
.410	5.67	5.49	5.88	6.16	5.88	6.09	5.57
.428	5.63	5.63	5.63	5.72	5.81	6.02	5.40
.438	5.83	5.56	5.64	5.42	5.66	6.20	5.38
.449	5.83	5.60	5.77	5.16	5.67	6.12	5.39
.460	5.66	5.60	5.83	4.86	5.66	6.18	5.40
.474	5.82	5.55	5.60	4.69	6.19	6.09	5.40
.483	5.98	5.66	5.72	4.74	6.08	—	5.50
.494	6.07	5.78	5.78	4.79	—	6.18	5.50
.508	6.02	5.86	5.66	4.87	5.86	5.84	5.53
.518	6.00	5.91	5.92	4.98	5.60	5.60	5.59
34 488.530	6.02	5.05	5.95	5.00	—	6.35	5.81
.540	6.01	5.34	5.77	5.12	—	6.25	5.82
34 567.388	5.63	5.45	5.23	5.50	—	6.21	6.00
35 223.415	5.90	5.95	6.01	5.77	5.33	6.27	5.39
.428	5.84	6.13	5.77	5.77	5.27	5.79	5.32
.441	5.81	6.07	5.63	5.85	5.28	5.37	5.43
.467	5.84	6.19	5.02	5.78	5.17	4.98	5.30
.490	5.97	6.10	5.04	5.72	5.04	5.07	5.49
.503	5.95	6.13	5.21	5.79	4.91	5.25	5.62

Table 9 (continued)

J. D. 2 400 000 +	50	51	52	53	54	55	56
35 223.517	6.08	6.16	5.19	5.72	5.01	5.24	5.65
.530	6.17	6.19	5.34	5.82	5.04	5.45	5.70
.546	5.91	6.15	5.40	5.69	5.06	5.53	5.96
.573	5.89	5.87	5.32	5.05	5.40	5.78	6.05
35 224.454	5.68	5.79	5.76	5.72	5.12	6.21	5.46
.472	5.80	5.75	5.54	5.70	4.98	6.25	5.45
.485	5.88	5.70	5.26	5.72	5.02	6.06	5.54
.499	5.80	5.84	5.02	5.92	4.83	5.50	5.73
.512	5.78	5.80	4.98	5.80	4.95	5.08	5.72
.524	5.74	5.67	5.09	5.88	4.94	4.94	5.80
.542	5.88	5.98	5.19	5.85	5.00	5.00	5.94
.556	5.86	5.88	5.30	5.68	5.04	5.14	6.14
.569	6.14	6.03	5.36	5.54	5.26	5.20	6.12
.583	6.14	6.08	5.59	5.20	5.27	5.46	5.89
35 227.534	5.88	6.36	6.40	6.07	5.11	6.25	5.80
.547	5.80	6.14	6.14	6.16	5.15	6.12	6.00
.560	5.90	6.42	5.84	5.92	5.05	6.58	6.20
.573	5.74	5.82	5.51	6.12	—	6.04	5.94
.586	6.03	6.14	5.10	—	—	6.00	5.74
35 598.507	6.14	5.86	5.80	5.80	5.88	6.26	5.40
.524	6.44	6.14	6.02	6.02	5.98	6.04	5.36
.537	6.32	6.00	5.86	5.79	5.98	5.90	5.36
35 600.363	5.43	5.88	5.24	5.30	5.43	6.03	6.12
.378	5.38	5.40	5.06	5.38	5.35	6.29	5.92
.391	5.48	5.34	5.34	5.52	5.57	5.87	5.92
.405	5.78	5.16	5.29	5.50	5.68	6.05	5.77
.421	5.91	5.25	5.46	5.53	5.66	6.00	5.78
.434	5.64	5.21	5.27	5.53	5.56	6.57	5.51
.446	5.89	5.29	5.30	5.60	5.77	6.07	5.53
.501	5.97	5.59	5.66	5.85	5.85	6.29	5.28
.525	5.92	5.79	5.82	5.79	5.88	6.59	5.66
35 603.369	4.87	5.27	6.12	5.25	5.32	5.16	5.94
.381	4.97	5.44	6.04	5.37	—	5.22	5.86
.397	5.10	5.47	6.05	5.49	—	5.37	5.59
.408	5.07	5.50	5.95	5.50	—	5.41	5.52
.419	5.35	5.56	5.62	5.56	—	5.50	5.43
.431	5.40	5.82	5.60	5.54	—	5.58	5.52
.446	5.37	5.63	5.29	5.60	5.58	5.47	5.24
.457	5.62	5.80	5.32	5.56	5.57	5.82	5.40
.468	5.57	5.87	5.20	5.67	5.59	5.73	5.39
.491	5.71	5.82	5.32	5.62	5.71	5.81	5.42
.507	5.80	5.86	5.56	5.74	5.60	5.82	5.59
35 920.444	4.95	5.04	4.71	4.99	5.36	6.39	5.86
.467	4.78	5.32	4.99	5.43	5.32	6.16	5.50
.487	4.84	5.16	—	5.56	5.76	5.89	5.54
.504	5.26	5.50	5.18	5.38	5.42	6.14	5.42

Table 9 (continued)

J. D. 2 400 000 +	50	51	52	53	54	55	56
35 920.547	5.40	5.69	5.29	—	5.40	6.27	5.40
.562	5.51	5.62	5.35	5.38	5.51	6.25	5.38
.585	5.66	5.78	5.43	5.48	5.30	6.18	5.66
35 933.415	5.58	5.52	5.40	5.69	4.86	4.82	5.48
.443	5.86	5.83	5.20	4.70	4.75	4.93	5.59
.479	5.95	5.84	5.77	4.66	4.75	5.36	5.67
.503	6.10	5.77	5.53	4.76	4.68	5.50	5.88
.515	6.03	5.99	5.57	4.88	5.21	5.70	5.82
.530	6.35	5.98	5.63	5.02	5.24	5.86	6.16
.543	—	5.87	5.44	4.97	5.19	—	5.96
.573	5.98	5.84	5.64	5.12	5.54	6.04	6.05
.588	6.35	5.96	5.42	5.10	5.12	5.78	5.94
.602	5.84	5.87	5.26	5.19	—	5.84	5.96
36 991.457	5.92	5.06	6.07	5.79	6.47	4.87	5.61
.470	6.40	5.27	6.61	5.98	—	4.87	5.55
.485	6.20	5.45	6.15	6.08	5.83	5.03	5.74
37 018.470	4.62	6.00	5.04	—	5.67	5.15	5.55
.483	4.57	5.99	5.28	4.78	5.50	4.92	5.63
.496	4.62	5.93	5.15	4.80	5.20	4.97	5.70
.510	4.90	6.00	5.42	5.08	5.61	—	5.75
.523	5.10	5.96	5.53	5.07	5.56	5.34	5.77
.537	5.25	5.89	5.26	5.26	5.79	5.27	5.69
.550	5.23	5.85	5.52	5.24	5.66	5.45	5.71
.563	5.46	6.36	5.50	5.48	5.86	5.48	6.07
.577	5.60	6.00	5.48	5.51	5.53	5.73	5.82
.609	5.84	6.27	5.86	5.51	5.78	5.72	5.94
.623	5.72	6.33	5.72	5.77	5.64	5.77	5.96
.637	6.00	6.26	6.03	5.74	6.03	5.77	6.06
37 057.539	5.31	5.84	6.15	5.92	6.02	6.40	6.11
.552	5.50	5.68	6.10	5.75	5.79	6.21	5.92
.578	5.67	5.84	6.19	—	5.92	6.20	5.45
37 058.529	5.29	6.12	6.12	5.69	5.50	6.29	6.01
.580	5.53	5.59	6.40	—	6.26	6.40	—
37 757.598	6.21	5.33	5.98	4.92	5.20	5.00	5.98
37 791.365	5.92	6.25	5.49	—	5.69	6.25	5.43
.380	5.89	6.07	5.52	5.72	5.40	6.16	5.61
.394	5.90	6.23	5.51	5.62	5.54	6.23	5.51
.424	5.89	6.02	5.70	5.01	5.38	6.27	5.69
.439	5.98	5.86	5.78	4.67	5.15	6.11	5.85
.454	5.91	5.53	5.57	—	4.95	5.64	5.85
.469	6.03	5.50	5.71	4.72	—	5.36	5.99
.483	5.90	5.12	5.69	4.81	5.34	5.02	6.09
.497	5.96	5.20	5.75	4.91	5.12	4.98	6.00
.519	6.14	5.22	5.90	5.05	5.36	5.13	6.07
.533	6.04	5.37	5.77	5.11	5.34	5.19	6.04
549	6.04	5.46	5.84	5.30	5.53	5.33	5.92
.563	6.12	5.46	5.98	5.40	5.70	5.43	6.00

Table 9 (continued)

J. D. 2 400 000 +	57	58	59	60	61	62	63
28 963.487	5.19	5.50	6.13	5.42	5.93	5.98	5.93
28 991.403	6.04	6.07	5.75	5.69	5.44	5.78	5.89
.416	6.20	5.75	5.60	5.84	5.34	5.75	5.93
.430	5.91	5.60	5.78	5.94	5.43	5.75	5.96
.522	5.96	5.55	5.99	5.89	5.61	5.87	6.12
.542	5.43	5.92	6.05	6.03	5.65	5.91	6.17
29 346.376	6.06	4.60	5.33	5.27	5.91	5.93	6.37
.392	6.24	4.95	5.54	5.38	5.85	5.77	6.09
29 719.549	5.70	6.09	6.49	5.70	6.31	6.02	6.21
.560	5.93	5.72	6.18	5.69	6.24	5.95	6.14
29 720.546	5.42	5.82	5.98	6.02	6.26	6.18	6.11
.558	5.41	5.76	6.07	5.97	6.17	6.09	6.15
29 774.405	5.84	5.52	5.19	5.84	5.49	6.00	5.27
.417	5.80	6.02	5.15	6.32	5.45	6.13	5.35
29 775.403	5.69	5.84	6.04	5.56	5.61	5.95	6.10
.415	5.83	5.85	6.07	5.56	5.59	5.76	6.21
.426	5.76	5.86	6.13	5.51	5.51	5.70	6.05
.437	5.85	5.91	6.10	5.90	5.39	5.66	6.10
.447	5.80	6.06	6.20	5.56	5.39	5.66	6.28
30 052.462	5.55	5.74	5.66	6.10	6.24	6.13	6.36
.474	5.67	6.13	5.76	6.09	6.21	6.17	6.25
.489	5.82	5.91	5.84	5.84	6.42	6.35	6.44
.501	5.80	6.12	5.89	6.24	6.12	6.32	6.24
30 078.418	6.14	5.79	5.88	5.79	6.22	5.92	5.29
.344	6.40	5.71	5.91	5.81	5.98	5.84	5.39
.470	5.27	5.81	5.85	5.73	6.11	5.93	5.66
.483	4.99	5.82	5.92	5.90	6.31	6.14	5.57
.498	4.80	5.72	5.80	5.83	6.16	6.02	5.60
.509	4.95	5.11	6.14	5.95	6.29	6.11	5.66
.521	5.23	5.02	6.16	5.91	6.16	6.07	5.79
.536	5.31	4.57	6.00	6.00	6.00	6.15	5.73
.548	5.29	4.59	6.20	5.94	5.89	6.18	5.64
33 390.397	5.07	5.01	6.07	5.57	6.45	5.40	6.00
.534	5.40	5.25	5.95	5.72	6.30	5.62	6.12
.545	5.51	5.38	6.02	5.88	6.22	5.71	6.09
.558	5.40	5.23	6.11	5.95	6.22	5.55	6.09
.570	5.69	5.31	6.03	5.76	6.17	5.78	6.05
.586	5.81	5.70	6.21	5.79	6.37	5.60	6.15
33 420.424	6.41	4.70	5.40	5.98	5.43	6.13	5.80
.438	6.07	4.79	5.75	6.12	5.65	5.90	5.52
.450	6.21	4.71	5.70	—	5.58	5.70	5.19
.476	6.09	4.92	5.77	6.07	5.56	5.72	5.04
.487	6.15	5.16	5.76	6.05	5.76	5.33	5.28
.498	6.10	5.13	5.75	5.84	5.79	5.35	5.25
.510	6.12	5.23	5.83	5.99	5.83	5.45	5.16
.523	—	5.27	—	6.42	5.61	5.34	5.21

Table 9 (continued)

J. D. 2 400 000 +	57	58	59	60	61	62	63
33 421.385	5.86	5.90	6.34	5.94	5.29	5.76	6.20
.442	5.94	4.81	5.92	5.51	5.21	5.97	6.26
.454	5.99	4.62	5.77	5.45	5.34	6.13	6.17
.465	5.92	4.62	5.54	5.34	5.19	6.05	6.23
.475	6.26	4.72	5.41	5.37	5.39	6.12	6.06
.486	—	4.66	5.29	5.27	5.39	6.17	6.10
.497	6.28	4.79	5.19	5.30	5.43	6.09	6.26
.535	6.47	5.11	5.50	5.56	5.54	5.96	6.43
.548	—	5.21	5.36	5.60	5.88	5.98	6.22
33 422.398	5.97	5.76	6.04	5.81	5.99	5.71	6.12
.431	6.11	5.95	6.31	5.91	5.25	5.59	6.41
.442	6.03	5.93	6.01	5.83	5.29	5.65	6.05
.452	6.29	5.50	6.41	5.89	5.23	5.46	6.20
.462	6.02	5.20	6.33	5.87	5.20	5.37	6.13
.472	6.15	4.81	6.35	5.91	5.09	5.42	6.12
.483	6.37	4.61	6.24	5.78	5.22	5.49	—
.493	6.17	4.65	6.15	5.90	5.41	5.72	6.20
.508	6.27	4.63	6.17	5.80	5.27	5.51	6.27
.520	6.12	4.66	6.50	5.72	5.43	5.43	6.15
33 763.406	5.21	5.51	6.08	5.43	6.21	6.06	5.72
.420	5.30	5.50	6.00	5.48	6.05	5.99	5.75
.442	5.50	5.52	6.08	5.54	6.12	5.88	5.85
.455	5.58	5.66	6.18	5.66	6.21	6.12	5.81
.464	5.71	5.65	6.18	5.62	6.28	6.05	5.87
.483	5.74	5.85	6.06	5.62	6.22	6.22	6.00
.494	5.73	5.72	6.26	5.68	6.17	6.01	5.94
.504	5.79	5.76	6.12	5.79	6.30	6.27	6.00
.514	5.85	5.92	6.25	5.78	6.32	6.23	6.02
.525	5.77	6.07	6.15	5.84	6.26	6.13	5.98
34 118.355	5.08	—	6.01	5.72	6.01	6.26	6.16
.372	5.15	—	5.90	5.99	5.68	6.02	6.20
.388	5.34	—	5.94	5.99	5.34	6.18	6.14
.428	5.58	5.47	6.15	6.22	5.12	6.22	6.22
.443	5.71	5.08	5.98	6.06	5.24	6.27	6.17
.470	—	4.52	5.94	5.92	5.60	6.38	—
.485	5.78	4.59	6.02	6.21	5.55	5.92	6.02
.499	5.76	4.61	6.09	5.87	5.82	5.99	6.16
.513	5.99	4.72	6.10	5.76	5.76	5.84	6.31
.526	—	4.88	6.00	5.68	5.60	5.32	5.78
.540	5.99	4.98	6.35	5.62	5.77	5.48	6.06
34 120.471	5.48	5.85	5.48	6.04	5.36	5.74	5.79
.484	5.62	—	5.57	6.05	5.35	5.75	5.81
.497	5.84	—	5.60	6.07	5.26	5.69	5.84
.510	5.76	5.26	5.66	6.02	5.29	5.53	5.96
.523	5.77	4.85	5.55	6.02	5.36	5.53	5.84
.536	5.64	4.53	5.64	6.13	5.33	5.48	5.75

Table 9 (continued)

J. D. 2 400 000 +	57	58	59	60	61	62	63
34 120.551	5.94	4.63	5.91	6.08	5.53	5.38	5.77
.564	5.98	4.61	5.98	6.29	5.63	5.59	6.13
.579	6.00	4.74	5.83	6.06	5.66	5.55	6.00
34 121.401	4.81	5.72	6.10	5.10	6.26	5.89	6.22
.412	5.00	5.81	6.20	5.20	6.26	6.02	6.17
.422	5.08	5.56	6.10	5.18	6.24	5.82	6.30
.431	5.21	5.70	6.04	5.21	6.00	5.90	6.04
.441	5.29	5.81	6.08	5.32	6.16	5.88	—
.484	5.68	5.91	6.09	5.30	5.73	6.06	5.34
.495	5.77	5.92	6.13	5.51	5.61	6.03	5.34
.505	5.67	5.78	5.98	5.51	5.59	6.12	5.25
.517	5.68	5.94	6.12	5.48	5.24	5.98	5.21
.528	5.66	5.71	5.92	5.60	5.30	5.97	5.27
.539	5.75	—	5.78	5.61	5.32	6.13	5.40
.552	5.88	4.83	5.61	5.68	5.27	6.03	5.30
.562	—	4.65	5.47	5.58	5.32	—	5.32
.594	5.77	—	5.31	5.63	5.66	6.20	5.72
.605	—	—	5.49	5.71	5.52	—	—
34 122.404	4.97	—	5.92	5.77	5.96	5.80	—
.416	4.89	—	5.87	6.04	6.00	5.92	6.20
.431	4.90	5.63	6.06	5.76	6.19	5.58	6.22
34 126.433	6.00	5.55	5.78	5.28	6.06	5.55	6.23
34 131.415	—	4.67	6.48	5.62	5.41	6.60	6.04
34 487.347	6.12	5.62	5.80	5.23	5.65	5.78	5.88
.367	6.22	5.74	5.72	5.36	5.76	5.92	5.96
.385	6.40	5.99	5.74	5.30	5.96	5.79	6.16
.397	6.14	5.52	5.72	5.40	5.84	6.07	6.02
.410	6.42	5.74	5.90	5.60	5.96	5.90	6.26
.428	—	—	5.99	5.59	6.02	5.78	6.15
.438	6.06	5.56	5.82	5.49	6.16	5.90	6.23
.449	6.09	5.70	5.98	5.67	6.29	6.03	6.33
.460	6.02	5.83	5.97	5.62	6.32	5.80	5.95
.474	5.88	5.87	5.92	5.68	6.01	6.05	6.24
.483	6.03	5.72	6.26	5.80	6.14	6.04	6.33
.494	—	—	—	5.73	5.81	5.88	6.29
.508	6.22	5.62	6.20	5.87	6.20	5.92	6.14
.518	—	5.82	6.12	5.84	6.04	6.00	6.10
34 488.530	6.08	5.56	5.59	6.02	6.34	5.52	6.11
.540	—	5.46	5.78	5.92	6.09	5.66	6.19
34 567.388	5.91	5.19	5.58	5.58	5.65	5.83	6.08
35 223.415	6.18	5.46	5.90	5.53	5.79	5.95	6.22
.428	5.97	5.18	5.86	5.56	5.86	6.05	6.13
.441	6.29	4.79	5.89	5.43	5.96	6.01	6.23
.467	6.02	4.67	5.90	5.55	5.95	6.10	5.88
.490	6.01	4.81	6.02	5.72	6.06	6.14	5.70
.503	6.02	4.91	5.93	5.69	6.02	6.11	5.69

Table 9 (continued)

J. D. 2 400 000 +	57	58	59	60	61	62	63
35 223.517	6.04	4.96	6.08	5.77	6.20	6.04	5.58
.530	—	4.96	6.01	5.73	6.26	5.97	5.38
.546	6.06	5.08	6.11	5.85	6.28	6.11	5.38
.573	—	5.18	6.07	5.87	6.26	6.22	5.50
35 224.454	6.08	5.42	5.29	6.02	5.72	5.51	6.08
.472	6.09	4.75	5.30	5.99	5.88	5.50	6.06
.485	6.18	4.58	5.28	6.10	5.97	5.59	6.14
.499	6.21	4.50	5.38	6.01	5.97	5.73	6.19
.512	5.94	4.62	5.42	5.96	6.03	5.68	5.94
.524	6.06	4.70	5.38	5.90	6.14	5.62	6.06
.542	5.94	4.92	5.53	5.94	6.23	5.65	6.24
.556	6.14	5.04	5.60	6.12	6.12	5.77	6.16
.569	—	—	5.71	6.29	6.35	6.03	6.20
.583	—	5.22	5.87	6.18	6.58	5.96	6.47
35 227.534	6.24	6.14	5.86	5.80	5.62	5.91	5.18
.547	6.12	5.82	5.85	5.56	5.70	6.14	5.46
.560	6.42	5.36	5.90	5.63	5.63	5.95	5.54
.573	—	4.97	6.15	5.25	5.58	—	5.46
.586	6.14	4.74	5.88	5.29	5.79	5.76	5.51
35 598.507	6.31	5.42	5.78	5.38	5.86	6.00	5.98
.524	6.24	5.54	6.04	5.46	5.88	6.02	5.99
.537	6.22	5.60	5.77	5.48	5.96	6.18	6.36
35 600.363	6.12	5.40	6.14	6.34	6.15	5.84	6.12
.378	5.75	4.83	5.75	6.05	6.05	5.66	6.16
.391	6.15	4.55	6.04	6.07	6.18	5.93	6.14
.405	6.05	4.69	6.07	5.84	6.16	5.82	6.16
.421	6.12	4.60	6.25	6.25	5.80	5.93	6.08
.434	6.12	4.92	5.95	6.19	5.42	5.99	6.25
.446	6.02	4.89	5.96	6.29	4.92	5.82	6.19
.501	6.04	5.21	6.27	5.61	5.18	5.92	—
.525	6.16	5.33	6.22	5.63	5.23	6.03	5.84
35 603.369	5.78	—	6.01	5.30	6.22	6.05	5.96
.381	—	—	6.08	5.28	6.34	5.94	5.80
.397	—	5.59	6.10	5.24	6.20	5.66	5.39
.408	5.88	5.52	6.21	5.17	6.26	5.59	5.15
.419	5.98	5.69	6.16	5.30	6.23	5.54	4.99
.431	6.08	5.96	6.22	5.43	6.20	5.54	5.08
.446	6.14	5.86	6.14	5.47	6.10	5.55	5.11
.457	6.13	5.57	6.10	5.42	6.25	5.37	5.18
.468	6.00	5.30	6.20	5.40	5.98	5.35	5.25
.491	6.10	4.68	6.32	5.52	6.18	5.45	5.42
.507	6.18	4.64	6.18	5.67	6.26	5.57	5.59
35 920.444	5.80	4.89	5.31	5.19	5.80	5.93	6.15
.467	5.85	4.82	5.40	5.11	5.90	5.67	6.22
.487	6.05	4.40	5.60	5.23	5.82	5.49	5.94
.504	5.81	4.69	5.62	5.26	6.01	5.53	6.05

Table 9 (continued)

J. D. 2 400 000 +	57	58	59	60	61	62	63
35 920.547	5.87	5.06	5.70	5.52	6.00	5.45	5.20
.562	6.00	5.00	5.83	5.58	6.32	5.51	5.17
.585	6.08	5.08	5.84	5.66	6.12	5.51	5.12
35 933.415	5.88	4.82	5.52	5.91	5.69	6.12	6.02
.443	5.90	4.84	5.52	5.86	5.79	6.03	6.00
.479	5.84	5.08	5.84	5.95	5.84	6.06	6.00
.503	6.23	5.03	5.88	5.59	6.25	5.72	5.98
.515	5.97	4.97	5.93	6.03	5.87	5.68	6.05
.530	—	5.43	5.74	5.81	6.14	5.49	6.08
.543	—	4.83	5.76	5.71	5.94	5.39	—
.573	4.64	5.02	5.74	5.93	6.28	5.64	6.45
.588	—	5.36	5.92	5.97	6.13	5.56	6.05
.602	4.83	—	5.91	5.61	6.15	5.89	6.02
36 991.457	5.97	5.40	5.12	5.66	5.87	5.93	6.05
.470	6.11	5.72	5.18	5.80	5.66	6.00	6.00
.485	—	5.53	5.29	5.87	6.08	6.28	5.97
37 018.470	5.24	5.67	6.08	5.84	5.51	5.78	6.00
.483	5.36	5.72	6.10	5.86	5.67	5.67	6.16
.496	5.55	5.49	5.70	5.93	5.73	5.75	6.10
.510	5.58	5.76	5.67	5.97	5.89	5.59	6.11
.523	5.45	5.72	5.54	6.00	5.84	5.59	5.96
.537	5.56	5.96	5.32	5.90	5.73	5.17	5.81
.550	5.77	5.62	5.26	5.86	5.83	5.37	6.07
.563	5.80	6.00	5.39	6.05	6.00	5.44	6.00
.577	5.90	5.79	5.35	6.05	5.95	5.35	5.38
.609	5.98	5.78	5.54	5.86	6.10	5.44	4.90
.623	—	—	5.63	6.04	—	5.77	5.40
.637	6.26	—	5.71	—	6.03	5.65	5.21
37 057.539	6.01	4.69	5.84	5.95	5.51	6.19	5.81
.552	5.95	4.85	5.79	6.13	5.57	6.06	5.81
.578	6.42	5.40	5.89	6.04	5.45	6.16	6.01
37 058.529	5.81	4.71	5.97	5.50	5.24	5.81	5.56
.580	—	5.08	5.59	5.73	5.26	6.26	5.31
37 757.598	5.36	4.61	5.61	6.20	5.00	6.07	—
37 791.365	5.03	5.49	6.18	6.07	6.43	6.11	6.25
.380	5.11	5.61	6.07	5.96	6.26	5.98	6.07
.394	5.17	5.69	6.08	5.97	6.14	6.09	6.04
.424	5.14	5.82	5.99	5.95	5.70	6.17	6.26
.439	5.63	5.46	6.08	6.03	5.35	6.07	6.15
.454	5.40	6.06	6.19	6.06	4.95	5.99	6.22
.469	5.59	5.69	6.12	6.04	5.08	6.03	5.85
.483	5.40	5.63	6.26	6.15	4.95	6.13	5.06
.497	5.64	5.70	6.04	6.10	5.20	6.10	4.99
.519	5.77	5.77	6.21	6.14	5.18	6.24	5.00
.533	5.74	5.80	6.38	6.23	5.37	6.15	5.03
.549	6.04	5.60	6.18	6.06	5.53	5.95	5.33
.563	6.00	5.63	6.20	6.06	5.73	6.06	5.30

Table 9 (continued)

J. D. 2 400 000 +	64	65	66	67	68	69	70
28 963.487	5.98	6.07	5.87	5.49	5.96	4.86	5.15
28 991.403	6.04	5.72	5.81	5.72	5.04	5.42	5.44
.416	6.15	5.81	5.78	5.67	5.14	5.78	5.78
.430	6.00	5.81	5.91	5.71	5.13	5.71	5.56
.522	5.85	6.13	5.45	5.66	5.40	5.52	5.22
.542	6.29	5.85	5.10	5.95	5.90	5.78	5.58
29 346.376	6.28	6.16	5.11	6.14	5.69	5.86	5.14
.392	6.12	5.90	5.26	6.01	5.75	5.73	5.26
29 719.549	5.80	6.16	5.85	5.94	5.97	5.97	5.47
.560	5.91	6.10	5.93	5.91	5.91	5.93	5.30
29 720.546	6.14	5.92	5.94	5.48	5.78	5.60	5.36
.558	6.17	5.88	5.80	5.64	5.80	5.57	5.32
29 774.405	6.36	5.41	5.71	5.49	5.80	5.93	5.55
.417	6.57	5.27	5.60	5.27	6.08	5.73	5.64
29 775.403	6.04	5.98	6.10	5.98	5.84	5.21	5.48
.415	6.09	6.02	5.97	6.04	5.91	5.33	5.47
.426	6.05	6.00	5.90	5.90	6.01	5.31	5.51
.437	6.10	5.90	5.80	6.10	6.02	5.42	5.44
.447	6.18	6.12	5.85	5.97	6.04	5.60	5.32
30 052.462	5.55	5.23	5.90	5.28	5.87	5.47	5.41
.474	5.46	5.11	6.04	5.46	5.85	5.06	5.34
.489	5.71	5.29	5.80	5.60	5.87	5.54	5.40
.501	5.51	5.18	6.01	5.64	5.97	5.73	5.38
30 078.418	5.90	6.22	5.92	6.18	6.05	6.03	5.43
.434	5.68	6.08	5.84	5.96	5.86	—	5.46
.470	5.43	5.75	5.88	5.62	6.03	5.35	5.62
.483	5.41	5.52	5.90	5.41	5.80	5.36	5.60
.498	5.38	5.30	5.74	5.12	5.49	5.27	5.64
.509	5.32	5.17	5.93	5.11	5.44	5.11	5.69
.521	5.53	5.12	5.99	5.06	5.36	5.32	5.74
.536	5.45	5.14	5.91	5.25	5.31	5.25	5.83
.548	5.51	5.13	5.89	5.23	5.38	5.29	5.75
33 390.497	5.87	5.87	5.49	6.50	5.49	6.07	5.59
.534	6.03	6.05	5.36	5.95	5.65	5.95	5.74
.545	5.95	5.95	5.54	6.00	5.69	5.75	5.69
.558	6.05	6.09	5.43	5.95	5.69	5.81	5.74
.570	5.83	5.89	5.40	5.87	5.69	5.80	5.69
.586	6.03	6.24	5.55	5.97	5.79	5.95	5.74
33 420.424	6.19	5.68	5.60	5.03	5.21	5.75	5.31
.438	6.26	5.98	5.95	5.16	5.34	5.85	5.46
.450	6.08	5.81	5.68	5.21	5.36	5.50	5.36
.476	6.30	5.64	5.56	5.26	5.26	5.74	5.26
.487	6.18	5.84	5.82	5.50	5.36	5.84	5.36
.498	6.14	5.68	5.75	5.43	5.39	5.79	5.28
.510	6.32	5.83	5.85	5.42	5.40	5.94	5.23
.523	6.27	5.94	5.54	5.54	5.31	5.76	5.16

Table 9 (continued)

J. D. 2 400 000 +	64	65	66	67	68	69	70
33 421.385	5.74	6.02	6.00	5.96	5.76	5.43	5.24
.442	5.90	6.16	5.88	6.07	5.03	5.01	5.16
.454	6.02	6.20	5.79	6.17	5.05	5.02	5.20
.465	5.86	6.13	5.48	6.15	4.99	5.10	5.27
.475	6.24	6.30	5.37	6.12	5.05	5.07	5.25
.486	5.91	6.15	5.29	6.05	5.16	5.41	5.19
.497	6.04	6.09	5.08	6.26	5.23	5.39	5.41
.535	6.12	5.16	5.19	5.08	5.54	5.61	5.47
.548	6.12	5.06	5.23	4.96	5.53	5.60	5.60
33 422.398	5.57	5.71	—	6.12	6.02	5.94	5.27
.431	5.39	5.75	6.08	6.23	5.65	6.11	5.47
.442	—	5.76	5.76	6.07	5.54	5.86	5.54
.452	5.33	5.73	5.89	6.02	5.46	6.33	5.40
.462	5.50	5.87	6.05	6.15	5.40	6.09	5.40
.472	5.45	5.74	5.91	6.12	5.42	6.27	5.39
.483	5.54	5.78	5.95	6.19	5.43	6.04	5.29
.493	5.72	5.98	5.90	6.00	5.63	6.19	5.51
.508	5.51	5.97	6.08	6.36	5.39	5.71	5.46
.520	5.50	5.69	6.20	5.86	5.33	5.27	5.46
33 763.406	5.72	5.98	5.76	6.04	5.98	5.91	5.56
.420	5.72	5.93	5.69	5.99	6.04	—	5.45
.442	5.73	5.95	5.75	6.04	5.95	5.95	5.39
.455	5.79	6.03	5.81	6.01	5.94	6.21	5.44
.464	5.89	6.01	5.80	6.05	6.01	6.18	5.49
.483	5.96	6.08	5.83	6.00	5.92	6.12	5.27
.494	5.94	6.11	5.83	6.09	5.75	6.01	5.40
.504	5.93	6.04	5.99	6.02	5.56	5.93	5.35
.514	6.02	6.02	5.97	6.12	5.36	6.02	5.29
.525	5.98	5.98	5.96	5.98	5.19	5.91	5.30
34 118.355	6.18	5.89	6.06	5.37	6.46	—	5.48
.372	5.99	6.20	6.19	5.43	5.90	—	5.33
.388	6.18	6.10	5.91	5.20	5.99	5.00	5.17
.428	6.20	5.99	5.85	5.44	5.79	5.19	—
.443	6.27	6.20	5.95	5.53	5.80	5.49	5.30
.470	6.36	6.12	—	5.77	5.89	—	5.22
.485	6.19	6.19	5.69	5.55	5.55	5.69	5.21
.499	6.16	6.26	5.82	5.63	5.52	6.09	5.20
.513	6.23	6.26	5.82	5.88	5.50	5.88	5.50
.526	5.82	5.82	5.51	5.93	5.42	—	5.40
.540	5.95	5.99	5.62	5.68	5.44	5.80	5.33
34 120.471	5.83	5.95	5.45	5.83	5.83	—	5.36
.484	5.72	6.12	5.52	5.93	6.00	—	5.45
.497	5.67	6.16	5.51	5.96	5.82	—	5.45
.510	5.42	6.43	5.51	6.06	5.70	—	5.53
.523	5.41	6.41	5.55	6.35	5.59	—	5.59
.536	5.33	6.18	5.57	6.13	5.24	—	5.64

Table 9 (continued)

J. D. 2 400 000 +	64	65	66	67	68	69	70
34 120.551	5.23	6.20	5.52	5.96	5.07	5.66	5.66
.564	5.50	6.38	5.63	6.02	5.19	5.78	5.73
.579	5.40	6.18	5.78	5.66	5.19	—	5.52
34 121.401	6.05	5.27	5.76	5.95	5.56	—	5.16
.412	6.18	5.28	5.93	5.84	5.59	—	5.20
.422	6.08	5.38	5.82	5.98	5.69	—	5.23
.431	6.14	5.47	5.90	5.86	5.62	—	5.27
.441	6.08	5.46	5.88	5.90	5.54	6.00	5.50
.484	6.24	5.64	5.80	5.95	5.75	—	5.56
.495	6.23	5.72	5.88	6.01	5.74	—	5.58
.505	6.10	5.76	5.85	5.88	5.81	—	5.63
.517	6.12	5.80	5.88	5.98	5.80	—	5.68
.528	6.08	5.71	5.76	5.91	5.71	—	5.60
.539	6.07	5.84	5.82	5.90	5.75	—	5.72
.552	6.03	5.79	5.74	6.03	5.74	—	5.68
.562	6.08	5.75	—	—	5.76	—	5.67
.594	6.20	5.94	6.01	5.97	5.55	—	5.74
.605	—	—	—	—	—	—	—
34 122.404	5.54	6.14	5.54	5.48	5.12	—	5.46
.416	5.65	5.96	5.47	5.40	5.13	—	5.47
.431	5.71	6.08	5.61	5.52	5.07	—	5.35
34 126.433	6.08	5.99	5.78	5.58	5.66	5.76	5.68
34 131.415	5.54	5.34	5.95	5.06	5.98	—	5.41
34 487.347	6.16	5.90	5.90	5.60	5.88	5.72	5.22
.367	5.94	6.00	5.92	5.76	5.84	5.84	5.36
.385	5.68	6.14	6.00	5.96	5.89	5.84	5.26
.397	5.66	5.82	5.96	5.70	5.70	5.68	5.12
.410	5.40	6.01	5.92	5.88	6.20	6.01	5.27
.428	5.40	6.00	5.82	5.89	5.81	5.89	5.34
.438	5.38	6.16	5.86	5.84	5.90	5.88	5.30
.449	5.41	6.41	6.00	5.93	5.87	5.85	5.35
.460	5.35	6.06	5.84	5.89	6.02	5.80	5.33
.474	5.50	6.25	5.68	5.91	5.85	5.85	5.25
.483	5.44	6.06	5.83	6.08	5.86	5.83	5.40
.494	5.40	6.20	—	—	—	—	5.44
.508	5.45	5.82	5.62	5.89	5.84	—	5.47
.518	5.72	5.53	5.92	6.04	5.64	6.05	5.50
34 488.530	6.21	5.81	5.81	5.75	5.93	5.59	5.51
.540	6.16	6.01	5.78	5.76	5.82	—	5.68
34 567.388	5.54	5.91	5.89	5.13	5.36	5.70	5.74
35 223.415	6.03	5.04	5.56	5.91	5.26	5.82	5.16
.428	6.07	4.98	5.66	5.88	5.22	5.45	5.22
.441	6.09	5.09	5.74	5.89	5.22	5.70	5.25
.467	6.14	5.19	5.69	5.84	5.37	5.82	5.27
.490	6.16	5.24	5.78	5.87	5.45	—	5.47
.503	6.11	5.30	5.81	5.95	5.47	5.89	5.56

Table 9 (continued)

J. D. 2 400 000 +	64	65	66	67	68	69	70
35 223.517	6.26	5.39	6.02	6.00	5.48	5.77	5.56
.530	6.26	5.45	5.82	6.01	5.51	5.65	5.61
.546	6.28	5.51	5.91	6.10	5.55	5.87	5.58
.573	6.26	5.62	6.05	6.05	5.78	—	5.58
35 224.454	5.86	6.08	5.34	5.60	5.04	5.35	5.46
.472	5.86	6.13	5.05	5.57	5.02	—	5.40
.485	5.88	6.02	5.02	5.64	5.13	5.59	5.56
.499	6.01	6.08	5.05	5.62	5.14	5.62	5.62
.512	5.91	5.94	5.08	5.78	5.27	5.63	5.56
.524	6.14	6.09	5.09	5.74	5.36	5.47	5.52
.542	6.24	6.01	5.14	5.65	5.77	5.72	5.74
.556	6.12	6.05	5.27	5.88	5.51	—	5.66
.569	6.03	5.91	5.36	5.79	5.61	—	5.71
.583	6.24	6.12	5.54	5.84	5.64	—	5.72
35 227.534	6.07	5.40	6.04	6.23	6.16	6.23	5.86
.547	5.95	5.40	5.43	6.30	6.08	—	5.76
.560	5.97	5.40	5.40	6.09	6.27	5.97	5.87
.573	5.91	5.56	5.16	6.12	6.09	—	5.54
.586	5.81	5.51	5.20	5.88	5.90	—	5.66
35 598.507	5.56	5.60	5.30	5.62	6.11	6.06	5.38
.524	5.81	5.61	5.54	5.67	6.04	5.92	5.49
.537	5.64	5.86	5.48	6.00	5.94	6.04	5.27
35 600.363	5.52	5.04	5.27	6.01	5.88	5.88	6.09
.378	5.66	5.04	5.40	5.82	5.55	5.70	5.38
.391	5.55	5.02	5.48	6.14	5.67	5.87	5.26
.405	5.77	5.03	5.42	5.86	5.58	6.03	5.29
.421	5.68	5.12	5.50	5.91	5.53	5.90	5.36
.434	5.86	5.32	5.56	5.88	5.51	5.79	5.25
.446	5.73	5.24	5.66	6.07	5.57	—	5.24
.501	6.27	5.56	5.88	6.04	5.88	5.95	5.20
.525	5.99	5.52	5.82	6.30	5.70	5.50	5.15
35 603.369	5.70	5.96	5.56	6.02	5.70	—	5.37
.381	5.69	5.94	5.37	5.92	5.78	—	5.37
.397	5.84	6.08	5.26	5.73	5.78	—	5.32
.408	5.73	6.04	5.20	5.37	5.75	—	5.27
.419	5.67	6.03	5.22	5.25	5.78	5.17	5.25
.431	5.77	6.12	5.35	5.07	5.84	5.28	5.25
.446	5.86	6.02	5.27	4.97	5.75	5.27	5.19
.457	5.94	6.15	5.40	5.06	5.94	5.32	5.26
.468	6.00	6.14	5.38	5.30	5.59	5.38	5.25
.491	5.89	6.00	5.50	5.32	5.68	5.45	5.29
.507	6.06	6.02	5.54	5.48	5.56	5.51	5.38
35 920.444	6.28	5.51	5.43	5.88	5.51	5.88	4.92
.467	5.97	5.24	5.60	5.94	5.60	5.80	5.36
.487	5.84	5.07	5.75	6.14	5.60	6.09	5.42
.504	5.57	4.94	5.50	5.81	5.66	6.01	5.26

Table 9 (continued)

J. D. 2 400 000 +	64	65	66	67	68	69	70
35 920.547	5.20	5.07	5.52	5.20	5.52	5.97	5.33
.562	5.20	5.00	5.62	5.09	5.74	6.38	5.41
.585	5.26	5.17	5.60	4.96	5.63	5.95	5.30
35 993.415	5.72	5.82	5.24	5.69	5.80	5.82	5.30
.443	5.91	5.65	5.33	5.99	5.80	5.78	5.30
.479	5.89	5.72	5.36	5.77	5.80	5.77	5.11
.503	5.98	5.93	5.50	5.93	5.69	5.72	5.03
.515	5.99	5.85	5.57	6.01	5.65	5.68	5.21
.530	6.08	6.08	5.39	6.00	5.24	6.00	5.13
.543	5.98	5.98	5.44	—	5.14	—	4.94
.573	6.28	6.18	5.84	5.97	4.97	5.91	5.12
.588	—	—	5.28	5.62	5.00	—	5.12
.602	—	—	5.66	5.46	5.19	—	5.19
36 991.457	6.30	5.87	5.28	5.50	5.87	—	5.43
.470	6.16	5.81	5.46	5.55	5.83	5.66	5.41
.485	5.97	6.13	—	5.56	5.81	5.93	5.53
37 018.470	5.93	—	6.13	6.20	5.93	—	5.57
.483	6.14	6.24	5.99	6.14	5.81	6.24	5.44
.496	6.06	6.00	6.10	6.44	5.78	—	5.44
.510	6.12	5.90	5.88	6.05	5.88	5.68	5.46
.523	6.01	5.99	5.89	6.18	5.84	5.60	5.36
.537	5.84	5.54	5.66	5.88	5.66	5.42	5.31
.550	6.07	5.38	5.78	6.01	5.62	5.57	5.41
.563	—	5.39	6.10	5.98	5.98	5.91	—
.577	6.18	5.08	5.90	5.55	5.73	6.06	5.43
.609	6.12	5.16	6.00	4.86	5.82	5.90	5.20
.623	—	5.27	6.06	5.07	5.94	5.67	5.35
.637	6.32	5.30	5.98	5.20	5.71	5.90	5.40
37 057.539	6.19	5.69	5.84	6.11	5.81	6.01	—
.552	5.87	5.75	5.81	6.13	5.95	5.92	5.30
.578	5.67	5.92	5.92	6.04	6.14	5.61	5.50
37 058.529	6.12	6.01	5.60	5.65	5.45	5.73	5.45
.580	6.06	6.51	5.79	6.06	5.64	5.88	5.59
37 757.598	5.88	5.98	5.68	5.72	5.00	—	5.12
37 791.365	5.85	5.60	5.74	5.85	5.60	6.25	—
.380	5.56	5.72	5.72	5.85	5.72	6.35	5.72
.394	5.55	5.77	5.67	5.95	5.67	6.08	5.57
.424	5.45	5.77	5.37	5.93	5.70	6.21	5.58
.439	5.42	5.82	5.40	5.98	5.68	—	5.48
.454	5.31	5.81	5.15	5.81	5.64	6.32	5.31
.469	5.52	5.84	5.32	5.84	5.61	5.88	5.39
.483	5.56	5.86	5.28	5.84	5.69	6.11	5.24
.497	5.64	5.93	5.33	5.71	5.55	6.01	5.24
.519	5.64	5.96	5.50	5.69	5.85	6.14	5.27
.533	5.60	5.98	5.37	5.50	5.74	6.20	5.19
.549	5.77	5.90	5.53	5.53	5.72	6.20	5.25
.563	5.76	6.20	5.60	5.46	5.89	5.63	5.23

Table 9 (continued)

J. D. 2 400 000 +	71	72	73	74	75	76	77
28 963.487	5.75	4.65	5.81	5.57	5.26	6.39	5.26
28 991.403	5.63	5.63	5.81	4.74	5.14	6.27	4.85
.416	5.64	5.81	5.93	4.77	5.28	6.23	4.64
.430	5.75	5.73	5.84	4.80	5.25	6.42	4.50
.522	5.59	6.20	5.68	5.35	5.50	6.30	5.28
.542	5.58	6.38	5.47	5.54	5.57	6.26	—
29 346.376	5.86	6.18	5.74	5.72	5.35	4.51	5.81
.392	6.10	6.60	5.90	5.73	5.49	4.85	5.97
29 719.549	5.80	6.42	5.80	6.11	5.85	5.99	5.28
.560	5.77	6.37	5.82	6.06	5.79	6.00	5.16
29 720.546	5.51	5.54	6.04	6.09	5.89	6.22	5.67
.558	5.54	4.88	5.97	5.97	5.85	5.74	5.69
29 774.405	5.78	5.06	5.90	4.93	5.47	5.16	6.10
.417	5.82	5.24	5.88	4.90	5.35	5.54	5.82
29 775.403	5.56	5.79	5.86	4.84	5.48	5.43	5.91
.415	5.49	5.76	5.76	4.84	5.47	5.17	5.91
.426	5.59	5.88	5.74	5.00	5.74	5.38	5.74
.437	5.64	5.78	5.78	5.14	5.51	5.57	5.80
.447	5.83	6.00	5.80	5.09	5.60	5.83	5.69
30 052.462	5.90	6.20	5.80	5.08	5.55	—	5.90
.474	5.83	6.38	5.80	4.80	5.76	5.90	5.73
.489	6.09	6.21	6.09	4.94	5.84	5.80	4.89
.501	6.01	6.35	6.04	4.98	5.99	6.50	4.62
30 078.418	5.17	6.32	5.99	6.16	5.46	5.43	5.94
.434	5.16	6.23	5.94	6.01	5.33	4.98	5.96
.470	5.43	6.17	5.81	5.97	5.43	5.04	5.85
.483	5.45	6.22	5.92	6.20	5.43	4.98	5.90
.498	5.51	6.20	5.89	6.10	5.56	5.12	5.89
.509	5.44	6.17	5.90	6.11	5.57	5.68	6.12
.521	5.65	6.29	5.68	5.91	5.62	5.99	5.99
.536	5.56	6.20	5.73	5.28	5.63	5.56	5.93
.548	5.66	6.07	5.62	4.90	5.64	5.43	5.84
33 390.497	5.92	6.21	5.94	6.34	5.75	5.84	6.13
.534	6.08	6.41	6.10	6.30	5.90	4.80	5.21
.545	6.02	6.22	6.00	6.22	5.85	4.85	4.73
.558	6.07	6.11	5.89	6.22	6.07	4.88	4.65
.570	6.03	5.78	6.01	6.17	6.03	5.07	4.92
.586	6.24	5.03	6.05	6.24	5.97	5.12	5.00
33 420.424	5.52	6.03	5.78	6.00	5.95	6.35	4.82
.438	5.31	6.26	5.85	6.05	5.98	6.36	5.03
.450	5.03	6.13	5.78	6.19	6.06	6.23	5.18
.476	5.10	6.35	5.74	6.09	5.96	6.31	5.19
.487	5.19	6.18	5.90	6.18	5.86	6.10	5.30
.498	5.10	6.16	5.79	6.52	5.73	6.22	5.48
.510	5.32	6.26	5.88	6.34	5.57	6.37	5.25
.523	5.27	—	5.88	—	5.25	—	5.59

Table 9 (continued)

J. D. 2 400 000 +	71	72	73	74	75	76	77
33 421.385	5.90	6.16	5.99	5.86	5.89	6.34	5.10
.442	5.94	6.48	5.92	6.03	5.66	—	5.64
.454	6.02	6.28	5.97	6.00	5.47	—	5.59
.465	5.92	6.17	6.05	6.09	5.42	5.90	5.38
.475	6.01	6.31	6.04	6.06	5.25	—	5.52
.486	—	6.30	6.20	6.17	5.27	—	5.73
.497	6.07	6.26	5.98	6.40	5.28	—	—
.535	5.08	6.27	5.92	6.29	5.44	—	
.548	4.97	6.27	6.00	6.31	5.36	—	—
33 422.398	6.02	6.34	5.71	6.20	5.40	6.34	6.07
.431	6.13	6.49	5.75	6.11	5.62	6.13	6.23
.442	6.08	6.30	5.79	6.20	5.54	6.18	5.96
.452	6.20	6.44	5.70	6.20	5.46	6.36	6.16
.462	5.99	6.36	5.60	6.56	5.37	6.50	6.13
.472	6.12	6.29	5.66	6.17	5.39	6.11	6.14
.483	6.24	6.29	5.64	6.42	5.43	5.98	—
.493	6.08	5.66	5.98	6.10	5.57	6.07	6.17
.508	6.03	5.25	5.94	6.25	5.51	5.85	5.88
.520	6.12	4.79	5.61	6.03	5.50	6.18	5.75
33 763.406	5.98	6.21	5.98	5.89	5.92	5.09	6.04
.420	5.89	6.11	5.89	5.91	5.97	5.30	5.86
.442	5.88	6.20	5.88	5.88	5.81	5.52	5.82
4.55	6.03	6.27	6.00	6.01	5.81	5.82	5.98
.464	6.03	6.38	6.05	6.01	5.76	5.93	6.10
.483	6.00	6.27	6.08	6.20	5.44	5.85	5.90
.494	5.88	6.35	5.96	6.09	5.40	5.85	5.85
.504	6.02	6.32	6.00	6.21	5.37	5.89	5.91
.514	6.10	6.23	6.02	6.19	5.36	—	5.47
.525	6.15	6.30	5.91	6.09	5.45	6.15	5.05
34 118.355	5.32	6.30	6.96	6.32	6.08	—	—
.372	5.33	6.25	6.00	6.19	5.60	—	—
.388	5.48	6.36	6.08	6.18	5.34	—	—
.428	5.41	6.28	5.69	6.25	5.26	6.58	5.78
.443	5.68	6.27	6.06	6.10	5.43	6.54	—
.470	—	5.44	6.10	—	5.64	—	5.89
.485	5.78	4.82	5.92	5.98	5.48	6.36	6.01
.499	5.76	4.72	5.90	6.16	5.52	6.36	5.84
.513	5.82	4.84	6.10	6.36	5.76	6.63	5.90
.526	—	4.95	6.37	—	5.57	—	—
.540	5.92	5.11	6.09	5.99	5.48	—	6.17
34 120.471	5.36	5.95	5.95	6.02	5.89	—	4.61
.484	5.35	6.19	6.14	6.22	6.00	—	4.83
.497	5.16	6.07	6.00	6.03	6.09	—	4.93
.510	5.26	6.19	6.04	6.12	6.06	—	5.29
.523	5.15	6.26	6.02	5.69	5.94	—	5.19
.536	5.16	6.09	6.00	5.06	5.86	—	5.21

Table 9 (continued)

J. D. 2 400 000 +	71	72	73	74	75	76	77
34 120.551	5.25	6.31	6.03	4.70	5.82	5.77	5.25
.564	5.28	6.13	6.18	4.74	5.86	5.37	5.34
.579	5.40	6.47	6.10	4.90	5.63	4.85	5.66
34 121.401	5.62	5.99	5.84	6.12	5.87	—	4.72
.412	5.79	6.11	5.86	6.26	5.98	—	4.88
.422	5.90	6.16	5.92	6.22	5.86	—	5.06
.431	5.66	6.16	5.78	6.10	5.86	—	5.12
.441	5.92	6.37	5.76	6.06	5.94	—	5.29
.484	5.91	6.20	5.70	6.26	5.86	—	5.43
.495	6.05	6.23	5.70	6.05	5.90	6.05	5.74
.505	5.98	6.30	5.76	5.83	5.83	—	5.56
.517	6.04	6.27	5.68	5.32	5.75	—	5.68
.528	5.97	6.24	5.71	4.87	5.57	—	5.60
.539	5.96	6.18	5.75	4.76	5.54	—	—
.552	5.72	6.18	5.79	4.86	5.44	—	—
.562	—	—	5.63	4.90	5.32	—	—
.594	5.12	6.06	5.77	5.25	5.33	4.95	—
.605	5.11	—	5.83	5.35	5.30	—	—
34 122.404	—	—	—	—	5.86	—	—
.416	5.65	6.29	5.84	6.00	5.94	—	—
.431	5.58	6.60	6.02	6.13	5.91	—	—
34 126.433	5.94	6.02	5.89	5.47	5.92	6.36	4.62
34 131.415	—	6.04	6.14	5.06	6.10	—	—
34 487.347	5.38	6.18	5.78	5.78	5.97	5.38	5.92
.367	5.52	6.46	5.92	5.78	5.96	5.07	—
.385	5.54	6.30	5.91	5.91	5.91	5.16	6.14
.397	5.54	6.16	5.72	5.82	5.72	5.04	5.84
.410	5.96	—	5.90	6.18	5.92	5.19	6.01
.428	—	6.05	5.99	5.96	5.52	5.34	5.95
.438	5.82	5.33	5.91	6.14	5.40	5.25	5.46
.449	5.60	5.11	6.09	6.23	5.41	5.49	5.16
.460	5.66	4.86	5.89	6.22	5.37	5.42	4.70
.474	5.68	4.84	5.82	6.06	5.29	5.55	4.72
.483	5.82	4.93	5.94	6.09	5.29	5.72	4.83
.494	—	5.04	—	—	5.44	5.57	4.83
.508	5.81	5.26	5.86	6.02	5.37	5.57	4.82
.518	5.78	5.30	5.95	6.05	5.55	5.90	5.10
34 488.530	5.70	6.06	5.75	6.28	5.87	5.77	—
.540	5.66	5.97	5.88	6.14	5.85	—	5.48
34 567.388	5.63	5.80	5.96	5.85	5.87	6.21	4.74
35 223.415	5.95	6.10	5.90	5.82	5.46	5.46	5.07
.428	5.97	6.30	5.90	5.39	5.45	5.09	5.25
.441	6.05	6.23	5.81	5.07	5.63	4.72	5.50
.467	6.02	6.24	5.86	4.79	5.76	4.90	5.53
.490	5.90	6.17	5.84	5.04	5.88	5.10	5.66
.503	5.73	6.31	5.95	5.19	5.89	5.35	5.50

Table 9 (continued)

J. D. 2 400 000 +	71	72	73	74	75	76	77
35 223.517	5.36	6.25	5.89	5.26	5.85	5.45	5.81
.530	5.11	6.19	5.87	5.26	5.97	5.38	5.63
.546	5.04	5.38	5.91	5.53	5.94	5.69	—
.573	5.07	4.79	6.03	5.60	5.85	—	—
35 224.454	6.02	5.49	5.95	4.88	5.98	4.99	5.54
.472	6.04	4.80	5.80	4.98	5.90	4.86	5.78
.485	6.04	4.88	6.08	5.13	6.08	5.08	6.04
.499	6.15	4.83	5.92	5.22	5.97	5.08	—
.512	5.96	5.02	5.84	5.27	6.05	5.24	5.84
.524	5.74	5.14	5.67	5.40	5.90	5.28	5.85
.542	5.94	5.39	5.77	5.74	5.90	5.79	6.01
.556	6.12	5.36	5.88	5.72	5.53	5.79	—
.569	—	5.48	5.85	5.68	5.48	5.74	—
.583	—	5.70	5.80	5.80	5.57	6.14	—
35 227.534	5.83	6.21	5.72	5.86	5.62	5.46	5.33
.547	5.85	6.49	5.80	5.80	5.64	—	5.59
.560	—	6.06	5.97	6.09	6.06	—	5.54
.573	—	6.09	6.21	6.23	6.04	—	5.53
.586	5.68	6.46	5.96	6.03	5.81	—	5.96
35 598.507	5.60	5.30	5.86	5.00	5.78	6.50	6.11
.524	5.49	5.52	5.86	5.36	5.99	6.17	5.96
.537	5.09	5.39	5.62	5.32	5.98	6.42	5.98
35 600.363	5.84	5.61	5.88	6.15	5.82	5.52	5.92
.378	5.75	5.50	5.72	5.92	5.72	5.80	6.09
.391	5.93	5.71	5.71	6.16	5.87	6.09	6.13
.405	5.80	6.09	5.88	5.68	5.82	5.78	6.07
.421	5.93	5.93	5.80	5.17	6.06	5.73	5.60
.434	6.10	6.01	5.77	4.90	5.83	6.19	5.05
.446	5.75	5.89	5.62	4.80	5.87	—	4.77
.501	6.12	6.27	5.64	5.31	5.61	6.50	5.05
.525	6.16	6.05	5.72	5.38	5.54	6.28	5.10
35 603.369	5.96	6.07	5.88	5.18	5.32	—	—
.381	—	6.34	5.94	4.90	5.37	5.92	5.55
.397	—	6.16	5.99	4.73	5.34	—	5.73
.408	5.97	6.31	6.02	4.86	5.41	5.97	6.12
.419	6.14	6.42	6.01	5.05	5.33	—	5.94
.431	5.87	6.26	6.00	5.08	5.46	6.06	6.20
.446	5.68	5.94	5.82	5.17	5.43	5.79	6.17
.457	5.59	5.29	5.89	5.29	5.50	6.40	6.17
.468	5.28	4.96	6.09	5.30	5.51	6.40	6.14
.491	5.08	4.96	5.94	5.48	5.60	6.34	6.18
.507	5.31	5.01	5.94	5.67	5.84	6.24	6.12
35 920.444	5.42	4.54	5.56	5.27	5.80	—	6.08
.467	5.50	4.64	5.64	5.60	5.94	5.85	6.14
.487	5.93	5.20	5.91	5.75	5,84	5.65	6.06
.504	5.91	5.26	5.84	5.73	5.81	6.24	6.12

Table 9 (continued)

J. D. 2 400 000 +	71	72	73	74	75	76	77
35 920.547	6.13	5.49	5.91	5.69	5.37	6.39	5.93
.562	5.83	5.62	5.98	5.74	5.27	6.56	5.92
.585	6.12	5.89	5.89	5.80	5.17	6.62	5.70
35 933.415	5.84	6.19	5.88	6.30	5.77	5.08	6.19
.443	5.70	6.30	5.96	5.97	5.30	5.06	5.54
.479	4.97	6.23	5.84	5.93	5.22	5.26	4.58
.503	4.94	5.95	5.86	6.05	5.27	5.83	4.56
.515	5.39	6.37	6.16	6.01	5.18	5.91	4.70
.530	—	6.22	5.98	5.98	5.30	5.89	4.70
.543	—	—	5.68	—	5.44	—	—
.573	5.06	—	6.12	5.84	5.64	5.81	5.27
.588	—	—	5.83	—	5.62	—	—
.602	4.80	—	6.00	—	5.68	—	—
36 991.457	5.61	5.70	5.75	6.15	6.13	5.92	5.50
.470	5.39	5.80	5.80	6.29	—	6.19	5.39
.485	—	6.03	5.71	6.04	5.97	—	5.71
37 018.470	5.46	—	6.05	5.84	5.98	—	4.74
.483	5.56	6.34	5.98	5.94	6.10	6.14	4.85
.496	5.54	6.39	6.00	6.10	5.98	5.93	4.62
.510	5.40	6.22	5.89	5.96	5.96	—	5.12
.523	5.59	6.31	5.98	5.99	—	6.14	5.11
.537	—	6.38	5.80	6.16	5.59	6.38	5.20
.550	5.64	6.03	5.95	6.00	5.77	5.76	5.55
.563	5.58	6.07	5.94	6.20	5.39	5.91	5.54
.577	5.88	6.18	5.78	6.20	5.55	5.89	5.74
.609	5.92	6.12	5.94	6.22	5.54	5.79	5.84
.623	5.82	6.06	5.96	6.24	5.52	—	5.82
.637	5.66	6.17	6.17	6.22	5.71	—	5.74
37 057.539	5.88	5.69	6.13	6.21	5.47	—	5.10
.552	5.79	5.65	5.87	6.31	5.47	6.07	5.01
.578	6.04	5.89	6.16	6.25	5.44	—	5.44
37 058.529	5.45	6.12	5.73	6.25	5.45	6.29	5.56
.580	—	6.11	5.36	6.35	—	6.63	—
37 757.598	—	5.74	5.74	5.20	5.36	—	5.30
37 791.365	—	5.60	5.78	5.92	5.69	6.58	6.35
.380	5.96	5.81	5.81	5.89	5.79	6.42	6.19
.394	5.83	5.77	5.69	5.97	5.81	6.52	6.04
.424	5.59	6.03	5.86	6.03	5.89	5.56	6.05
.439	5.45	5.98	5.87	5.88	5.88	5.12	6.10
.454	5.00	5.97	5.78	5.11	5.78	5.06	6.19
.469	5.25	6.16	5.94	4.73	5.84	5.08	6.25
.483	5.02	6.13	5.81	4.81	5.69	5.20	6.06
.497	5.04	6.28	5.92	4.77	5.61	5.44	5.79
.519	5.27	6.42	5.98	5.05	5.58	5.53	4.81
.533	5.23	6.28	6.04	5.11	5.26	5.71	4.61
.549	5.50	6.37	5.92	5.30	5.40	5.66	4.68
.563	5.50	6.39	5.98	5.40	5.43	5.86	4.83

Table 9 (continued)

J. D. 2 400 000 +	78	79	80	81	82	83	84
28 963.487	5.15	6.10	5.30	5.53	5.64	5.10	5.93
28 991.403	5.44	6.18	6.12	5.83	5.99	6.27	6.04
.416	5.25	6.02	6.20	5.34	6.24	6.13	5.91
.430	4.80	6.17	6.09	4.87	6.09	6.30	5.91
.522	4.44	5.47	4.97	5.47	6.23	5.22	6.00
.542	4.44	5.21	4.98	5.60	6.11	4.98	5.94
29 346.376	4.76	5.42	5.45	6.33	5.35	6.16	5.79
.392	4.77	5.49	5.57	6.28	5.93	5.21	5.85
29 719.549	5.58	5.55	5.14	5.44	6.16	5.99	6.09
.560	5.61	5.58	5.23	5.50	6.14	6.09	6.04
29 720.546	5.30	5.75	6.16	5.09	6.40	5.98	5.98
.558	5.26	5.85	6.11	5.06	6.21	6.03	5.88
29 774.405	5.49	6.50	5.68	6.53	5.49	6.47	6.03
.417	5.54	6.27	5.54	6.43	5.73	6.24	5.88
29 775.403	4.94	6.29	6.38	6.16	5.48	6.19	6.27
.415	4.97	6.21	6.21	6.21	5.42	6.30	6.19
.426	5.25	6.21	6.17	6.44	5.48	6.13	6.17
.437	5.20	6.32	5.98	6.05	5.75	6.10	6.07
.447	4.79	6.38	6.14	6.38	5.69	5.83	6.10
30 052.462	5.90	6.24	6.03	5.79	5.90	6.44	5.92
.474	5.57	5.67	6.02	5.90	6.07	6.38	6.09
.489	5.71	5.11	6.35	6.15	6.21	6.34	6.09
.501	5.80	4.95	6.35	6.10	6.15	6.29	6.01
30 078.418	5.26	6.59	6.37	6.03	6.29	6.09	5.79
.434	5.36	6.42	6.25	5.94	6.15	5.94	5.63
.470	5.26	6.43	6.19	6.05	5.08	6.09	5.73
.483	5.39	6.43	6.12	6.33	4.92	6.14	5.80
.498	5.39	6.09	6.13	6.13	4.93	6.13	5.81
.509	5.63	6.27	5.86	6.14	5.01	6.14	5.80
.521	5.53	6.26	6.03	6.12	5.16	6.18	5.99
.536	5.36	6.32	5.94	6.12	5.34	6.18	5.91
.548	5.43	6.49	5.91	6.18	5.49	6.14	5.98
33 390.497	5.67	5.84	5.38	5.13	6.07	4.90	5.59
.534	5.53	6.00	5.47	5.42	6.12	5.31	5.25
.545	5.42	6.00	5.39	5.45	6.22	5.39	5.23
.558	5.35	6.07	5.40	5.48	6.45	5.48	5.33
.570	5.25	6.03	5.47	5.69	6.05	5.50	5.40
.586	5.18	6.21	5.74	5.84	6.40	5.55	5.51
33 420.424	6.10	5.55	6.13	6.23	6.13	6.41	5.52
.438	5.83	5.90	6.15	6.36	6.36	6.15	5.73
.450	5.60	5.95	6.18	6.34	6.27	6.16	5.75
.476	5.77	6.15	6.09	6.18	6.31	6.56	5.87
.487	5.78	6.07	6.48	6.37	6.18	6.18	5.74
.498	5.79	5.96	6.00	6.08	6.55	6.55	5.71
.510	5.64	6.05	6.12	6.12	6.30	6.22	5.74
.523	—	6.15	5.99	6.23	—	—	5.83

Table 9 (continued)

J. D. 2 400 000 +	78	79	80	81	82	83	84
33 421.385	5.55	5.50	5.89	6.06	6.06	6.34	6.14
.442	5.56	5.97	6.05	6.27	6.20	6.24	6.13
.454	5.45	5.99	5.97	6.16	6.40	6.15	5.97
.465	5.40	6.05	6.00	6.23	6.29	6.13	5.82
.475	5.41	6.24	6.10	6.26	6.28	6.26	5.54
.486	5.03	6.27	6.22	6.22	6.22	6.34	5.41
.497	5.54	6.38	6.07	6.17	6.30	6.30	5.37
.535	5.90	6.12	6.35	6.45	6.60	5.35	5.14
.548	5.72	6.18	5.98	6.12	6.27	4.99	5.20
33 422.398	5.40	5.94	5.81	6.12	5.79	6.24	6.12
.431	5.00	6.29	5.91	6.08	6.05	6.20	6.08
.442	5.05	6.05	5.88	5.91	6.01	6.03	5.96
.452	5.09	6.41	6.02	6.06	6.29	6.20	6.16
.462	4.85	6.15	5.83	6.13	5.99	6.33	5.87
.472	4.96	6.12	5.83	5.93	6.49	6.32	6.06
.483	4.91	6.61	6.19	6.27	6.40	6.42	6.06
.493	5.11	6.35	6.05	6.35	6.46	6.29	6.23
.508	4.95	6.27	6.27	6.44	6.17	6.44	5.97
.520	5.08	5.91	5.83	6.05	6.61	6.08	5.89
33 763.406	5.29	6.29	6.20	6.29	6.00	4.81	5.92
.420	5.21	6.37	6.10	6.19	6.17	4.93	5.71
.442	5.36	5.63	6.14	6.14	6.02	5.12	5.37
.455	5.42	5.08	6.12	5.85	6.39	5.23	5.37
.464	5.49	4.85	6.15	5.44	6.20	5.32	5.29
.483	5.51	4.74	6.22	5.03	6.20	5.40	5.27
.494	5.36	4.85	6.26	4.90	6.13	5.55	5.31
.504	5.34	5.01	6.27	5.04	6.41	5.61	5.40
.514	5.49	5.02	6.36	5.05	6.42	5.68	5.36
.525	5.51	5.17	6.30	5.17	6.15	5.77	5.45
34 118.355	—	6.01	6.13	6.32	5.37	5.42	6.26
.372	—	5.84	6.10	6.12	5.81	5.53	6.02
.388	—	6.14	6.18	6.24	5.48	5.48	6.12
.428	5.08	6.15	5.82	6.22	5.82	5.85	6.08
.443	5.27	6.27	5.97	6.27	5.83	5.71	6.06
.470	5.58	—	5.89	—	5.69	6.06	5.64
.485	5.40	6.21	5.59	5.95	6.02	5.92	5.55
.499	5.29	6.49	5.55	5.42	6.03	6.16	5.40
.513	5.46	6.60	5.46	5.08	6.10	6.23	5.33
.526	5.48	5.82	5.54	5.16	5.86	5.95	5.19
.540	5.58	6.22	5.55	4.94	6.22	6.17	5.08
34 120.471	5.48	6.39	5.99	6.23	5.58	6.09	5.81
.484	—	6.44	6.00	6.32	5.66	5.98	5.77
.497	5.54	6.20	6.04	6.21	5.73	6.09	5.73
.510	5.58	6.48	6.19	6.28	5.63	6.12	5.98
.523	5.62	6.20	6.02	6.16	5.85	6.20	5.82
.536	5.51	6.15	6.00	6.02	5.84	6.20	5.72

Table 9 (continued)

J. D. 2 400 000 +	78	79	80	81	82	83	84
34 120.551	5.49	6.27	5.96	6.29	5.82	6.18	5.84
.564	5.55	6.48	6.07	6.27	6.07	6.27	6.11
.579	—	6.65	5.96	6.22	6.00	6.45	5.96
34 121.401	4.99	6.56	5.95	6.12	5.32	5.56	5.95
.412	5.18	6.37	5.98	6.36	5.09	5.66	6.37
.422	5.18	6.39	5.97	6.38	5.02	5.74	6.10
.431	5.32	6.15	5.96	6.15	5.00	5.78	5.99
.441	5.41	6.37	5.88	6.31	5.00	5.94	5.88
.484	5.30	6.24	5.95	6.09	5.26	5.89	5.37
.495	5.40	6.36	6.05	6.21	5.51	6.00	5.26
.505	5.32	6.20	6.07	6.13	5.56	5.97	5.35
.517	5.44	6.20	5.98	6.22	5.58	6.16	5.24
.528	5.42	6.22	5.97	6.16	5.69	5.99	5.27
.539	—	6.25	6.11	6.16	5.75	6.14	5.46
.552	—	6.22	6.10	6.25	5.78	6.20	5.39
.562	—	—	6.04	6.18	5.65	—	5.46
.594	—	5.28	6.18	6.20	5.71	6.32	5.53
.605	—	4.90	5.88	—	6.00	—	5.56
34 122.404	—	—	5.76	5.97	6.38	5.64	—
.416	5.54	6.30	5.87	6.00	6.25	5.68	5.91
.431	5.61	6.35	5.80	5.98	6.02	5.71	6.08
34 126.433	5.58	5.13	6.04	5.52	6.21	5.55	5.78
34 131.415	5.83	5.92	5.83	—	5.24	5.50	5.96
34 487.347	5.32	5.97	4.93	5.08	6.34	5.84	5.52
.367	5.36	6.18	5.07	5.40	—	5.69	5.60
.385	5.54	6.16	5.19	5.44	6.30	5.91	5.57
.397	5.50	5.94	5.17	5.48	6.12	5.84	5.56
.410	5.46	6.36	5.40	5.60	6.19	5.96	6.00
.428	—	6.11	5.45	5.74	6.15	6.42	5.72
.438	5.54	6.16	5.46	5.64	6.10	6.13	5.66
.449	5.70	6.23	5.53	5.91	6.36	6.35	5.93
.460	5.64	5.84	5.52	5.66	—	6.24	5.84
.474	5.70	5.48	5.58	5.70	—	6.38	5.83
.483	5.42	5.37	5.54	5.72	—	6.30	5.66
.494	5.84	5.07	5.71	5.84	—	6.18	5.84
.508	5.62	5.02	5.86	6.04	5.71	6.20	5.97
.518	5.60	5.04	5.75	5.90	5.30	—	5.95
34 488.530	5.10	5.49	5.68	5.91	6.28	6.28	5.42
.540	5.37	5.51	5.68	5.92	6.24	6.18	5.51
34 567.388	5.04	5.83	5.96	6.00	5.58	5.54	5.87
35 223.415	5.09	6.39	5.92	5.62	5.16	6.31	5.95
.428	5.11	6.26	5.84	5.79	4.93	6.22	5.92
.441	5.30	6.34	5.77	5.81	5.04	6.21	5.94
.467	5.17	6.39	5.19	5.84	5.14	6.22	6.04
.490	5.24	6.21	5.29	6.04	5.47	6.28	6.08
.503	5.17	6.32	5.33	5.97	5.45	6.11	6.11

Table 9 (continued)

J. D. 2 400 000 +	78	79	80	81	82	83	84
35 223.517	5.31	6.26	5.32	6.02	5.58	5.72	6.04
.530	5.26	6.11	5.45	6.13	5.60	5.16	5.97
.546	5.31	6.13	5.51	6.26	5.69	4.91	5.77
.573	5.32	5.45	5.69	—	5.75	5.10	5.43
35 224.454	5.44	6.28	6.02	5.42	5.37	6.41	5.88
.472	5.52	6.38	6.01	5.52	4.88	6.25	5.86
.485	5.56	6.26	5.83	5.62	4.95	6.24	6.10
.499	5.27	6.26	5.80	5.70	5.00	6.58	5.97
.512	5.24	6.14	5.70	5.70	5.08	6.03	6.02
.524	5.24	5.90	5.42	5.79	5.11	5.60	6.09
.542	5.02	5.32	5.22	6.03	5.24	5.02	5.86
.556	4.98	5.14	5.30	5.95	5.34	4.88	6.05
.569	4.89	5.10	5.36	5.94	5.61	5.04	5.96
.583	5.09	5.22	5.38	6.16	5.70	5.25	6.12
35 227.534	5.80	5.29	6.45	5.09	6.28	5.35	6.36
.547	5.67	5.56	5.95	5.04	6.24	4.99	5.88
.560	5.60	5.67	6.09	4.93	—	4.90	6.24
.573	5.28	5.74	6.02	5.05	6.30	5.00	6.45
.586	5.18	5.81	6.03	5.37	6.30	5.07	6.05
35 598.507	5.35	6.40	6.47	5.30	5.30	5.04	5.72
.524	5.20	6.26	6.27	5.54	5.52	5.10	6.02
.537	5.14	6.34	6.24	5.36	5.29	5.22	5.96
35 600.363	5.38	6.19	4.83	6.23	6.30	—	6.11
.378	5.20	6.41	5.02	—	6.32	6.27	5.99
.391	5.24	6.16	5.15	5.99	6.26	6.01	6.05
.405	5.27	6.01	5.34	6.50	6.16	6.07	5.96
.421	5.36	6.08	5.50	6.00	6.10	6.27	6.06
.434	5.43	6.60	5.35	6.46	6.31	6.35	6.15
.446	5.48	6.00	5.53	6.05	6.22	6.05	5.89
.501	5.51	6.38	5.90	6.39	6.38	4.94	6.10
.525	5.48	6.16	6.01	6.07	5.66	5.20	5.86
35 603.369	—	6.15	6.32	5.86	6.13	6.32	6.02
.381	5.19	6.25	6.18	5.98	6.00	6.20	6.00
.397	5.10	6.35	6.57	5.95	6.22	6.28	5.96
.408	5.01	6.28	6.29	5.95	6.02	6.25	6.04
.419	5.15	6.36	6.19	6.11	6.25	6.23	6.11
.431	5.52	6.40	6.24	6.10	6.10	6.31	6.02
.446	5.63	6.12	6.20	6.17	6.27	6.17	6.02
.457	5.37	6.15	6.22	6.22	6.23	6.24	6.15
.468	5.28	5.40	6.22	6.41	6.27	5.43	6.18
.491	5.29	4.96	5.96	6.12	6.38	4.96	5.98
.507	5.50	4.91	6.12	6.24	6.16	4.88	6.00
35 920.444	5.57	6.22	5.97	6.06	6.62	6.06	5.89
.467	5.70	6.38	6.22	6.22	6.33	5.97	5.97
.487	5.62	5.92	5.93	5.80	5.58	5.92	5.91
.504	5.91	6.14	6.01	6.14	5.02	6.03	5.93

Table 9 (continued)

J. D. 2 400 000 +	78	79	80	81	82	83	84
35 920.547	5.69	4.66	5.53	6.13	5.10	6.29	5.65
.562	5.77	4.69	5.34	6.12	5.17	6.38	5.38
.585	5.86	4.84	5.30	6.16	5.40	6.12	5.26
35 933.415	5.64	6.41	5.93	5.15	6.21	5.48	5.88
.443	5.90	6.15	5.71	5.22	6.41	5.86	5.78
.479	5.56	6.10	5.50	5.56	6.23	5.84	5.82
.503	—	6.32	5.24	5.56	5.93	5.93	5.98
.515	—	6.05	5.29	5.57	6.22	6.03	6.05
.530	5.58	6.08	5.27	5.98	5.89	6.29	6.03
.543	—	—	5.22	6.30	—	6.15	5.60
.573	6.00	5.60	5.53	6.10	6.18	6.26	6.28
.588	—	4.88	5.58	5.68	5.94	—	5.92
.602	—	4.68	5.57	6.17	5.08	—	5.80
36 991.457	5.03	6.16	5.10	6.21	6.20	4.76	5.98
.470	5.81	6.09	5.12	6.19	6.46	4.67	6.29
.485	5.51	6.08	5.35	—	—	4.99	6.01
37 018.470	5.93	6.21	5.50	6.48	5.80	6.34	6.26
.483	5.44	6.09	5.99	6.18	5.81	6.24	5.51
.496	5.68	5.93	5.86	6.18	5.83	5.72	5.55
.510	5.56	6.29	5.79	6.50	5.87	5.18	5.50
.523	5.42	6.18	6.12	6.06	5.93	4.90	5.29
.537	5.37	5.96	5.80	—	6.05	4.87	5.16
.550	5.62	6.26	6.11	5.94	6.03	5.13	5.32
.563	5.56	6.41	6.00	5.80	5.93	5.20	5.43
.577	5.84	6.22	6.09	5.22	6.14	5.36	5.50
.609	5.74	6.17	6.13	5.09	6.32	5.34	5.60
.623	5.82	6.04	—	5.07	6.42	5.46	5.60
.637	5.58	5.87	—	5.20	6.26	5.58	5.71
37 057.539	5.47	6.40	6.15	6.33	6.13	6.15	6.11
.552	5.67	6.19	6.10	6.19	6.10	6.34	6.01
.578	5.67	6.31	6.25	6.27	6.09	6.23	6.07
37 058.529	4.78	6.33	6.19	6.16	6.43	6.29	5.60
.580	5.64	6.54	—	6.51	6.48	6.20	5.79
37 757.598	—	—	6.25	—	6.17	6.08	5.88
37 791.365	6.14	6.32	6.21	6.25	6.03	6.25	5.64
.380	6.10	6.19	6.19	6.19	6.16	6.23	5.79
.394	6.02	6.21	6.34	6.29	6.21	6.37	5.73
.424	5.74	6.10	6.33	6.30	6.14	5.96	5.95
.439	5.77	5.98	6.29	6.10	5.55	5.28	5.97
.454	5.68	5.47	6.25	6.22	5.00	4.85	5.81
.469	5.81	5.32	6.25	6.23	4.99	4.95	5.91
.483	5.56	5.20	6.19	6.35	4.92	5.09	5.90
.497	5.83	5.20	6.00	6.12	5.13	5.20	5.90
.519	5.96	5.41	6.19	6.27	5.36	5.36	6.04
.533	5.80	5.47	6.18	6.32	5.40	5.47	6.02
.549	5.60	5.62	5.90	6.34	5.50	5.50	6.04
.563	5.43	5.70	5.57	6.41	5.46	5.63	6.16

Table 9 (continued)

J. D. 2 400 000 +	85	86	87	88	89	90	91
28 963.487	5.67	5.26	5.15	5.78	5.64	5.96	6.22
28 991.403	5.38	5.78	5.10	5.04	5.35	5.86	5.81
.416	5.42	6.06	5.08	4.93	5.30	5.98	6.02
.430	5.25	5.87	5.00	5.00	5.36	6.10	5.94
.522	5.34	5.50	4.98	5.08	5.32	6.02	6.12
.542	5.30	5.22	5.14	5.33	5.84	6.14	6.29
29 346.376	5.91	5.74	4.99	4.96	5.72	4.87	4.90
.392	5.90	6.10	5.23	5.38	5.81	4.99	5.23
29 719.549	5.76	—	5.18	5.47	5.97	6.02	6.28
.560	5.64	—	5.19	5.64	5.77	6.24	6.14
29 720.546	5.42	5.51	5.51	5.73	5.87	6.20	6.18
.558	5.32	5.44	5.44	5.34	5.76	6.00	6.21
29 774.405	5.93	5.38	5.38	5.38	5.84	6.19	5.68
.417	6.00	5.51	5.54	5.45	5.98	6.00	5.88
29 775.403	5.95	5.63	5.29	5.43	5.93	6.10	5.61
.415	5.73	5.94	5.25	5.62	6.02	6.19	5.68
.426	5.81	5.76	5.38	5.51	5.83	6.15	5.70
.437	5.76	5.93	5.51	5.85	5.98	6.29	5.93
.447	5.78	6.04	5.60	6.16	5.69	6.16	5.75
30 052.462	5.41	5.53	5.39	—	6.09	6.15	6.24
.474	5.49	5.37	5.26	5.40	6.02	6.11	6.25
.489	5.45	5.60	5.48	5.42	6.11	6.25	6.07
.501	5.45	5.75	5.64	5.40	5.85	6.15	6.17
30 078.418	5.41	5.95	5.35	5.76	5.35	6.20	6.16
.434	5.33	5.79	5.20	5.79	5.23	6.06	6.18
.470	5.32	5.52	5.29	5.18	5.54	5.81	6.24
.483	5.45	5.48	5.25	4.98	5.45	5.45	6.08
.498	5.38	5.47	5.27	5.12	5.51	5.07	5.97
.509	5.23	5.41	5.32	5.29	5.71	4.80	5.95
.521	5.45	5.62	5.42	—	5.72	4.91	5.91
.536	5.56	5.53	5.38	5.22	5.76	5.11	5.31
.548	5.49	5.64	5.31	5.10	5.80	5.13	4.94
33 390.497	5.31	5.36	5.66	5.22	5.90	6.34	5.57
.534	5.45	5.47	5.33	—	5.90	6.30	5.62
.545	5.51	5.51	5.25	5.22	5.98	6.22	5.85
.558	5.45	5.48	5.21	5.31	5.45	6.22	5.77
.570	5.69	5.60	5.24	5.28	5.24	6.17	5.71
.586	5.79	5.88	5.28	5.34	5.00	5.97	5.97
33 420.424	5.43	5.68	5.66	5.37	5.80	6.29	6.00
.438	5.83	5.90	5.58	5.46	5.98	6.32	6.24
.450	5.80	5.81	5.65	5.44	5.89	6.28	6.27
.476	5.74	5.82	5.62	5.69	5.74	6.09	6.27
.487	5.84	6.15	5.68	5.55	5.84	6.11	6.05
.498	5.79	5.81	5.48	5.56	5.96	6.34	6.12
.510	5.83	5.99	5.38	5.66	6.05	6.22	6.14
.523	5.94	—	5.16	5.27	5.78	—	—

Table 9 (continued)

J. D. 2 400 000 +	85	86	87	88	89	90	91
33 421.385	5.31	6.00	5.26	5.60	5.26	6.02	6.06
.442	5.35	5.97	5.56	5.38	5.59	6.11	5.99
.454	5.27	5.80	5.47	5.38	5.47	6.04	—
.465	5.27	5.68	5.48	5.23	5.42	6.25	6.29
.475	5.34	5.58	5.54	5.10	5.54	6.13	6.28
.486	5.34	5.44	5.59	5.07	5.65	6.34	6.12
.497	5.53	5.21	5.56	5.10	5.75	6.32	6.30
.535	5.61	5.44	5.82	5.06	5.92	6.58	6.24
.548	5.63	5.39	5.41	—	5.86	6.24	6.18
33 422.398	5.79	5.57	5.24	5.03	5.00	6.32	5.99
.431	5.44	—	5.42	5.00	5.07	6.41	6.08
.442	5.65	5.73	5.32	5.15	5.15	6.03	5.96
.452	5.46	5.73	5.36	5.03	5.06	6.41	6.16
.462	5.35	5.65	5.25	—	5.22	6.30	5.89
.472	5.28	5.88	5.39	5.09	5.19	6.29	6.29
.483	5.29	5.64	5.46	5.02	5.29	6.24	6.12
.493	5.47	5.82	5.51	5.08	5.41	6.20	6.46
.508	5.36	6.03	5.39	5.13	5.25	6.06	6.17
.520	5.30	5.89	5.46	5.27	5.43	6.55	6.12
33 763.406	5.45	5.63	5.27	5.26	5.84	4.93	6.29
.420	5.45	5.66	5.27	5.42	5.78	4.95	6.25
.442	5.60	5.70	5.28	5.63	5.81	5.07	6.19
.455	5.62	5.77	5.34	5.71	6.05	5.27	6.18
.464	5.76	5.84	5.44	5.77	5.91	5.35	6.20
.483	5.80	6.00	5.37	5.62	6.05	5.62	6.23
.494	5.81	5.96	5.40	5.50	5.88	5.52	6.31
.504	5.91	6.08	5.42	5.67	5.89	5.64	6.34
.514	5.97	6.16	5.55	5.66	5.85	5.63	6.12
.525	5.91	6.09	5.61	5.74	5.53	5.61	6.17
34 118.355	5.82	5.34	5.48	—	—	—	5.54
.372	5.43	5.26	5.36	—	—	—	—
.388	5.24	5.48	5.20	—	5.34	6.20	5.50
.428	5.12	5.58	5.12	5.76	4.84	6.31	5.72
.443	5.30	5.80	5.60	5.62	4.88	6.12	5.80
.470	—	—	5.49	5.06	5.19	6.26	5.69
.485	5.25	5.98	5.36	5.13	5.00	6.04	6.09
.499	5.33	6.16	5.40	5.12	5.20	6.16	5.99
.513	5.46	5.99	5.60	5.19	5.16	6.29	6.07
.526	5.32	—	5.60	5.22	5.22	6.28	6.00
.540	5.58	6.09	5.51	5.51	5.37	6.22	6.22
34 120.471	5.74	5.79	5.22	5.58	5.87	6.20	5.56
.484	5.66	5.77	5.30	—	5.66	6.20	5.57
.497	5.48	5.87	5.23	5.71	5.87	6.09	5.60
.510	5.48	5.86	5.26	5.50	5.89	6.12	5.59
.513	5.44	6.04	5.10	5.55	5.79	6.11	5.64
.536	5.36	5.97	5.00	5.33	6.00	6.15	5.72

Table 9 (continued)

J. D. 2 400 000 +	85	86	87	88	89	90	91
34 120.551	5.32	6.08	5.00	5.32	5.96	6.10	5.71
.564	5.40	6.02	5.25	5.15	5.88	6.20	5.86
.579	5.28	6.08	5.19	5.14	5.55	6.22	5.88
34 121.401	5.78	5.91	5.51	5.60	5.74	6.05	6.12
.412	5.81	6.10	5.59	5.50	5.74	6.12	6.02
.422	5.92	6.02	5.59	5.44	5.69	6.10	5.69
.431	5.90	5.99	5.66	5.40	5.85	5.97	5.54
.441	5.81	6.00	5.65	5.21	5.83	6.14	5.46
.484	5.86	6.02	5.72	5.15	5.97	6.16	5.20
.495	5.94	5.90	5.70	5.22	5.81	6.20	5.40
.505	5.96	5.85	5.59	5.25	5.90	6.16	5.35
.517	5.96	5.75	5.48	5.31	5.86	6.22	5.41
.528	5.81	5.54	5.40	5.24	5.86	6.09	5.60
.539	5.75	5.54	5.35	—	5.92	6.13	5.48
.552	5.65	5.44	5.27	—	5.98	6.15	5.52
.562	5.47	5.43	5.02	—	5.70	—	5.65
.594	5.36	5.33	5.00	5.53	5.74	5.97	5.60
.605	5.59	5.46	5.16	—	—	—	5.73
34 122.404	5.38	5.60	5.33	5.16	5.61	5.90	6.25
.416	5.40	5.45	5.36	5.16	5.47	6.00	6.29
.431	5.52	5.52	5.35	5.37	5.68	6.13	6.28
34 126.433	5.85	5.97	5.47	5.63	5.84	5.38	6.06
34 131.415	5.98	—	5.62	5.49	5.83	6.10	6.10
34 487.347	5.65	5.50	5.20	5.76	5.88	5.60	5.23
.367	5.43	5.55	5.36	5.98	5.89	5.84	5.50
.385	5.54	5.47	5.42	5.79	5.91	5.74	5.57
.397	5.33	5.36	5.30	5.43	5.74	5.74	5.72
.410	5.35	5.57	5.57	5.40	6.09	6.22	5.82
.428	5.20	5.63	5.45	5.18	—	5.92	5.74
.438	5.25	5.58	5.60	5.04	6.06	5.93	5.58
.449	5.41	5.83	5.60	5.21	6.12	6.03	5.85
.460	5.28	5.60	5.60	5.07	6.06	6.33	5.99
.474	5.29	6.68	5.55	5.04	5.85	5.90	5.90
.483	5.44	5.96	5.50	5.23	5.86	6.28	5.87
.494	5.44	6.07	5.50	5.12	5.85	—	—
.508	5.47	5.99	5.78	5.08	5.69	—	—
.518	5.59	6.05	5.73	5.30	5.43	6.13	—
34 488.530	5.30	5.42	5.75	5.66	5.97	6.21	5.89
.540	5.37	5.44	5.71	5.83	—	6.03	5.99
34 567.388	5.78	5.85	5.10	5.63	6.14	5.04	5.20
35 223.415	5.99	5.51	5.20	5.53	5.90	6.18	6.27
.428	5.92	5.47	5.22	5.60	5.79	6.18	6.21
.441	5.81	5.48	5.40	5.59	5.87	6.25	6.20
.467	5.88	5.55	5.30	5.51	5.73	5.84	6.37
.490	5.92	5.72	5.52	5.43	5.85	5.12	6.26
.503	5.73	5.73	5.54	5.44	5.89	4.86	6.20

Table 9 (continued)

J. D. 2 400 000 +	85	86	87	88	89	90	91
35 223.517	5.60	5.93	5.63	5.09	5.93	4.90	6.17
.530	5.38	5.84	5.61	5.04	5.81	5.04	6.28
.546	5.42	5.89	5.60	5.04	5.98	5.18	6.13
.573	5.32	6.05	5.60	5.05	5.32	5.32	6.29
35 224.454	5.72	6.00	5.06	5.04	5.95	6.19	5.95
.472	5.86	6.04	5.02	4.94	5.78	6.34	6.09
.485	5.88	6.04	5.24	5.13	5.97	6.12	6.12
.499	6.01	6.06	5.22	5.05	5.86	6.15	6.10
.512	5.86	5.91	5.30	5.16	5.78	5.35	6.34
.524	5.82	5.88	5.28	5.21	5.72	4.98	6.22
.542	5.92	5.65	5.34	5.30	5.86	4.88	6.14
.556	5.86	5.43	5.30	5.53	5.88	4.96	6.10
.569	5.76	5.36	5.61	5.65	5.85	5.18	6.12
.583	5.56	5.54	5.59	5.62	5.94	5.38	6.34
35 227.534	5.40	5.40	5.88	5.29	5.59	6.12	5.72
.547	5.26	5.46	5.62	5.40	5.48	6.56	5.73
.560	5.24	5.42	5.70	5.52	5.63	6.50	6.20
.573	5.38	—	5.94	5.74	5.44	—	6.02
.586	5.40	5.51	5.74	5.48	5.96	6.23	5.88
35 598.507	5.86	5.94	5.51	5.06	6.09	5.78	5.04
.524	5.96	6.22	5.63	5.05	5.88	6.04	5.24
.537	5.70	5.98	5.75	5.22	5.77	5.66	5.17
35 600.363	5.42	5.52	5.66	5.40	5.72	6.60	6.30
.378	5.38	5.33	5.52	5.48	5.28	5.98	5.98
.391	5.24	5.44	5.69	5.72	5.08	5.55	6.18
.405	5.39	5.55	5.80	5.34	4.85	5.03	6.20
.421	5.25	5.50	5.53	5.46	4.90	4.97	6.10
.434	5.35	5.58	5.51	5.53	5.03	5.03	6.44
.446	5.29	5.70	5.36	5.60	5.08	4.99	6.30
.501	5.49	5.90	5.10	5.69	5.46	5.44	—
.525	5.61	5.99	5.18	5.38	5.50	5.66	6.44
35 603.369	5.59	5.70	5.03	—	5.59	6.17	5.63
.381	5.78	5.76	5.03	5.60	5.71	6.25	5.73
.397	5.91	6.01	5.01	5.59	5.73	6.18	5.76
.408	5.69	5.84	5.06	5.62	5.64	6.10	5.75
.419	5.93	6.06	5.20	5.76	5.88	6.33	6.06
.431	5.94	6.20	5.14	5.63	5.74	6.28	6.02
.446	5.86	6.02	5.19	5.53	5.75	6.29	5.96
.457	5.95	6.10	5.47	5.68	5.91	6.56	6.04
.468	5.86	6.22	5.33	5.73	5.98	6.40	6.18
.491	5.82	5.94	5.42	5.62	5.73	5.78	6.10
.507	5.86	6.02	5.60	5.44	5.86	5.20	6.16
35 920.444	5.70	5.71	4.92	5.73	5.49	5.01	6.02
.467	5.80	5.76	5.03	5.70	5.53	4.82	5.97
.487	5.70	5.49	5.23	5.77	5.84	5.14	6.20
.504	5.93	5.42	4.94	5.24	5.50	5.03	5.99

Table 9 (continued)

J. D. 2 400 000 +	85	86	87	88	89	90	91
35 920.547	5.60	5.25	5.10	5.30	5.77	5.52	6.17
.562	5.30	5.30	5.09	5.20	5.55	5.51	6.19
.585	5.30	5.43	5.08	5.23	5.60	5.51	6.16
35 933.415	5.22	5.34	5.30	5.62	5.04	4.82	6.24
.443	5.22	5.52	5.30	5.94	5.33	5.33	6.08
.479	5.29	5.74	5.29	5.75	5.36	5.29	5.72
.503	5.14	5.50	5.30	5.79	5.27	5.44	5.11
.515	5.39	5.85	5.50	5.69	5.39	5.57	5.33
.530	5.52	5.86	—	5.82	5.41	5.84	5.13
.543	5.76	6.00	5.14	—	—	5.83	5.19
.573	5.60	5.81	5.48	5.70	5.30	5.74	5.41
.588	5.77	5.74	5.28	—	5.42	5.68	5.38
.602	5.66	—	4.90	—	5.84	6.02	5.26
36 991.457	5.63	5.82	5.74	5.56	5.42	5.74	6.40
.470	5.81	6.06	5.55	5.52	5.81	6.11	—
.485	5.71	—	5.33	5.45	5.68	6.07	6.39
37 018.470	—	6.03	5.62	5.06	5.95	6.39	6.01
.483	5.98	6.03	5.62	5.06	5.94	6.18	6.12
.496	5.85	6.10	5.73	4.90	5.51	6.27	6.02
.510	5.88	5.96	5.90	4.96	5.85	6.09	6.06
.523	5.94	5.79	5.71	5.02	5.70	5.99	6.12
.537	5.70	5.40	5.73	5.34	5.85	6.02	6.38
.550	5.85	5.48	5.70	5.42	5.83	6.11	6.19
.563	5.98	5.64	5.79	5.40	5.91	6.41	6.16
.577	5.90	5.63	—	5.41	6.05	6.32	6.18
.609	5.74	5.58	5.51	5.34	5.88	5.66	6.27
.623	5.72	5.67	5.67	5.44	6.56	5.61	6.56
.637	5.46	5.60	5.71	5.58	6.22	5.13	6.60
37 057.539	5.44	5.57	5.81	4.90	6.02	5.77	5.60
.552	5.53	5.67	5.95	4.87	5.86	5.53	5.60
.578	5.85	6.04	5.45	5.27	6.12	6.09	5.75
37 058.529	5.35	6.05	5.81	5.22	5.73	5.50	5.13
.580	5.42	—	—	5.47	6.35	6.02	5.69
37 757.598	5.88	5.63	4.94	—	4.90	5.81	5.98
37 791.365	5.96	6.03	—	5.37	5.54	6.03	5.85
.380	5.85	5.98	5.46	5.72	5.81	6.23	6.07
.394	5.97	5.98	5.51	5.93	5.72	6.18	5.90
.424	5.69	5.76	5.44	5.78	5.69	6.04	6.18
.439	5.68	5.55	5.61	5.77	5.85	6.17	6.14
.454	5.40	5.44	5.25	5.44	5.72	6.06	6.29
.469	5.52	5.51	5.30	5.84	5.74	6.12	6.22
.483	5.40	5.20	5.16	5.53	5.74	6.00	6.04
.497	5.29	5.44	5.05	5.43	5.62	5.95	6.26
.519	5.27	5.53	5.13	5.05	5.92	6.21	6.09
.533	5.19	5.50	4.92	5.23	5.47	6.12	6.28
.549	5.33	5.66	5.16	5.07	5.22	6.24	6.24
.563	5.46	5.73	5.15	5.12	4.90	6.16	6.18

Table 9 (continued)

J. D. 2 400 000 +	92	93	94	96	97	99	100
28 963.487	6.13	6.01	5.57	5.93	5.87	5.71	5.78
28 991.403	5.89	6.27	6.20	6.01	5.38	5.67	5.44
.416	5.93	6.06	6.06	5.84	5.60	5.93	5.46
.430	5.94	6.11	6.28	5.99	5.71	5.81	5.25
.522	6.23	5.82	6.12	5.97	6.03	5.77	4.86
.542	6.26	5.58	6.17	5.92	6.11	5.64	5.12
29 346.376	5.45	5.30	6.12	5.45	5.55	5.05	5.74
.392	5.81	5.57	5.95	5.71	5.59	5.44	5.87
29 719.549	5.97	6.07	6.16	5.97	5.64	5.85	5.97
.560	.600	6.04	5.93	5.89	5.69	5.85	5.82
29 720.546	5.98	5.85	6.18	5.96	5.57	5.62	5.60
.558	5.88	5.85	6.29	5.83	5.54	5.57	5.57
29 774.405	5.49	5.84	—	5.61	5.52	5.68	5.58
.417	5.70	6.00	6.19	5.64	5.54	5.73	5.60
29 775.403	5.72	5.93	6.19	5.56	5.53	5.43	5.98
.415	5.76	6.07	6.48	5.76	5.36	5.33	5.94
.426	5.88	6.00	6.33	5.48	5.48	5.38	5.83
.437	5.85	5.98	6.29	6.10	5.42	5.33	5.78
.447	5.85	5.88	6.16	5.66	5.47	5.53	5.66
30 052.462	5.85	5.80	6.08	4.81	5.53	5.20	5.87
.474	6.09	6.07	6.33	4.80	5.70	5.34	5.85
.489	6.02	5.75	6.07	4.94	5.71	5.51	6.09
.501	6.22	6.01	6.26	5.15	5.94	5.61	6.20
30 078.418	5.23	6.01	5.56	4.81	6.03	5.41	5.79
.434	4.87	6.11	5.63	4.69	5.98	5.30	5.76
.470	5.27	6.05	5.79	5.08	5.75	5.27	5.79
.483	5.20	5.94	5.92	5.05	5.65	5.29	5.94
.498	5.44	5.89	5.78	5.20	5.58	5.27	5.89
.509	5.44	6.11	5.93	5.27	5.53	5.44	5.86
.521	5.50	6.20	6.03	5.42	5.68	5.68	5.99
.536	5.56	6.06	6.12	5.53	5.50	5.60	5.81
.548	5.69	5.94	6.02	5.62	5.51	5.60	5.94
33 390.497	6.14	6.07	6.18	6.34	6.14	5.46	5.94
.534	6.05	6.12	6.15	6.05	5.95	5.60	5.74
.545	6.28	6.35	6.37	6.02	6.07	5.67	5.51
.558	6.17	6.11	6.45	5.59	6.07	5.69	5.45
.570	6.03	6.03	6.17	6.01	5.87	5.71	5.52
.586	6.21	6.24	6.21	6.05	5.81	5.86	5.41
33 420.424	6.13	5.78	6.47	6.00	5.60	5.68	5.52
.438	6.52	5.93	6.26	6.15	5.73	5.90	5.81
.450	6.18	5.95	6.33	6.08	5.70	5.98	5.78
.476	5.45	5.89	6.31	6.09	5.45	5.74	5.72
.487	5.33	5.90	6.44	6.11	5.50	6.03	5.76
.498	5.13	5.96	6.55	6.08	5.64	6.00	5.71
.510	5.05	6.10	6.14	6.24	5.57	6.03	5.74
.523	4.85	—	5.82	6.35	5.69	6.09	5.88

Table 9 (continued)

J. D. 2 400 000 +	92	93	94	96	97	99	100
33 421.385	6.24	6.02	6.40	5.90	5.92	5.46	5.76
.442	6.24	5.70	6.15	6.00	5.54	5.94	5.99
.454	6.62	5.60	6.26	5.97	5.62	5.77	5.88
.465	6.38	5.52	6.30	6.29	5.48	5.78	5.82
.475	5.92	5.52	6.22	6.24	5.69	5.96	5.62
.486	5.60	5.39	6.24	6.00	5.66	5.87	5.62
.497	5.19	5.30	6.28	6.11	5.67	6.04	5.35
.535	4.84	5.47	6.41	—	5.68	5.86	5.32
.548	5.04	—	6.43	6.00	5.66	5.88	5.18
33 422.398	6.32	6.18	6.24	5.97	5.79	5.79	6.02
.431	6.26	6.08	6.47	6.08	5.59	5.78	6.03
.442	6.25	6.25	6.22	6.03	5.65	5.88	—
.452	6.44	6.29	6.39	6.06	5.60	5.95	5.99
.462	6.18	6.28	6.56	6.15	5.37	5.65	5.93
.472	6.46	6.23	6.57	6.15	5.66	5.88	5.91
.483	5.98	6.27	6.35	6.29	5.49	5.95	5.87
.493	5.59	6.10	6.20	6.20	5.47	5.88	6.05
.508	5.30	5.99	6.27	6.17	5.46	5.80	5.85
.520	5.16	6.12	6.65	6.18	5.46	5.89	5.86
33 763.406	5.12	6.03	6.26	5.58	5.53	5.38	5.84
.420	5.00	5.96	6.20	5.66	5.50	5.50	5.84
.442	5.07	6.02	5.90	5.75	5.50	5.54	5.88
.455	5.17	6.20	6.27	5.77	5.58	5.71	5.85
.464	5.32	6.11	6.23	5.80	5.55	5.73	5.95
.483	5.40	6.25	6.25	5.89	5.53	5.87	6.06
.494	5.40	6.13	6.35	5.87	5.61	5.79	5.83
.504	5.59	6.17	6.23	5.99	5.64	5.93	5.87
.514	5.57	6.16	6.23	5.95	5.80	6.12	5.97
.525	5.72	6.13	6.13	5.98	5.82	6.07	5.86
34 118.355	6.30	5.17	5.96	5.06	5.86	5.66	5.26
.372	6.19	5.30	6.40	4.73	5.84	5.36	5.33
.388	5.99	5.17	6.18	4.56	5.71	5.45	5.31
.428	5.19	5.61	6.46	5.15	5.55	5.22	5.41
.443	4.88	5.65	5.98	5.20	5.53	5.46	5.27
.470	4.98	5.69	—	5.36	5.60	5.36	—
.485	5.21	5.89	6.21	5.55	5.59	5.52	5.55
.499	5.16	5.73	6.16	5.52	5.52	5.52	5.79
.513	5.40	5.88	6.26	5.64	5.50	5.60	5.88
.526	5.32	6.00	6.28	5.54	5.45	5.80	5.72
.540	5.62	5.99	6.33	5.90	5.74	5.68	5.58
34 120.471	4.87	6.11	6.30	5.36	5.53	5.65	5.76
.484	5.03	6.00	6.17	5.49	5.49	5.64	5.79
.497	5.07	6.14	6.22	5.51	5.47	5.62	5.48
.510	5.26	6.12	6.28	5.61	5.63	5.70	5.93
.523	5.33	6.02	6.02	5.77	5.67	5.57	5.94
.536	5.39	6.02	6.20	5.72	5.72	5.48	5.72

Table 9 (continued)

J. D. 2 400 000 +	92	93	94	96	97	99	100
34 120.551	5.47	6.18	6.29	5.82	5.82	5.52	5.82
.564	5.63	6.22	6.29	5.86	5.81	5.69	6.05
.579	5.63	6.08	6.12	5.81	5.96	5.52	5.98
34 121.401	6.12	5.39	5.78	4.96	5.65	5.51	5.30
.412	6.04	5.42	5.84	4.98	5.64	5.74	5.40
.422	5.92	5.46	5.92	5.08	5.69	5.82	5.27
.431	5.64	5.52	5.85	5.24	5.54	5.76	5.32
.441	5.38	5.62	6.00	5.26	5.54	5.81	5.29
.484	4.95	5.73	6.20	5.60	5.53	5.86	5.56
.495	5.06	5.77	6.21	5.69	5.55	5.83	5.47
.505	5.21	5.76	6.01	5.56	5.61	5.94	5.56
.517	5.18	5.88	6.18	5.65	5.59	5.88	5.51
.528	5.40	5.80	6.07	5.73	5.64	5.86	5.57
.539	5.40	5.82	—	5.66	5.63	5.82	5.63
.552	5.44	5.72	5.26	5.79	5.59	5.72	5.56
.562	j5.43	5.90	6.27	5.93	5.67	5.63	—
.594	5.66	5.84	5.99	5.81	5.77	5.47	5.55
.605	5.69	6.00	—	—	—	—	—
34 122.404	—	6.08	5.64	5.00	5.77	5.54	—
.416	6.06	6.20	5.74	5.05	5.68	5.52	5.72
.431	5.74	6.20	5.76	5.16	5.80	5.54	5.84
34 126.433	6.08	5.94	6.11	4.94	5.68	5.52	5.42
34 131.415	6.48	—	6.08	5.08	6.14	5.54	5.72
34 487.347	6.30	5.99	5.11	5.99	5.99	5.74	5.74
.367	6.20	6.23	5.36	6.10	5.94	5.62	5.76
.385	6.40	6.40	5.53	6.14	6.00	5.71	5.99
.397	—	—	5.54	6.17	6.14	5.66	5.70
.410	6.09	6.09	5.82	6.05	6.03	5.96	6.03
.428	6.02	—	5.74	5.61	5.96	5.80	5.72
.438	6.20	6.27	5.81	5.12	5.86	5.91	5.84
.449	6.38	6.41	5.93	4.81	5.98	5.83	5.93
.460	—	—	5.95	4.77	5.91	5.60	5.89
.474	—	—	6.02	4.81	5.88	5.60	5.70
.483	—	6.14	6.12	4.90	5.76	5.61	5.83
.494	5.64	6.12	6.18	5.04	5.90	5.53	5.98
.508	5.11	5.75	6.14	5.14	5.64	5.62	5.86
.518	4.98	5.59	5.94	5.12	5.63	5.72	5.92
34 488.530	5.05	6.02	5.79	5.18	5.61	5.79	5.66
.540	5.03	—	5.82	5.34	5.66	5.82	5.80
34 567.388	6.21	—	6.12	4.99	6.00	5.76	5.93
35 223.415	5.99	6.27	6.35	6.12	5.48	5.56	5.87
.428	6.00	6.22	6.34	6.21	5.49	5.58	5.81
.441	6.03	6.12	6.25	6.10	5.54	5.66	6.00
.467	6.04	6.28	6.16	6.02	5.64	5.80	5.46
.490	6.26	6.17	6.19	5.87	5.64	5.76	5.57
.503	6.20	5.95	6.11	5.95	5.93	5.81	5.40

Table 9 (continued)

J. D. 2 400 000 +	92	93	94	96	97	99	100
35 223.517	6.22	5.63	6.35	6.02	6.00	5.83	5.26
.530	6.28	5.60	6.24	6.17	5.94	5.81	5.34
.546	6.17	5.45	6.11	5.98	6.00	5.91	5.24
.573	6.10	5.22	6.26	6.05	6.05	5.85	5.37
35 224.454	6.13	6.13	6.48	6.02	5.61	5.37	5.76
.472	6.18	6.18	6.44	5.75	5.50	5.45	5.70
.485	6.18	6.16	6.32	6.02	5.69	5.72	5.94
.499	6.10	6.19	6.32	6.10	5.73	5.60	5.89
.512	6.39	6.14	6.36	5.70	5.86	5.75	5.78
.524	6.06	5.98	6.32	5.88	5.66	5.54	6.06
.542	6.23	6.23	6.20	5.98	5.92	5.77	5.96
.556	6.16	6.22	6.28	5.90	5.88	5.72	6.05
.569	6.50	6.03	6.18	5.96	5.87	5.85	5.79
.583	6.22	6.26	6.12	5.89	6.00	5.99	5.84
35 227.534	6.07	6.12	6.40	6.09	6.15	6.12	5.88
.547	6.12	6.08	6.12	6.26	5.85	6.14	6.12
.560	6.11	6.32	6.09	6.06	5.90	6.17	5.90
.573	6.23	5.89	—	6.09	6.44	5.78	6.21
.586	6.32	6.38	6.49	5.68	6.12	5.68	5.88
35 598.507	5.76	6.00	6.65	6.11	5.60	5.72	5.40
.524	5.94	6.16	5.99	6.04	5.59	5.67	5.49
.537	5.96	5.92	6.36	5.96	5.43	5.54	5.27
35 600.363	5.04	6.13	6.05	5.71	6.03	5.66	5.50
.378	4.91	5.75	6.05	5.75	6.14	5.33	5.28
.391	5.05	6.16	6.44	6.05	5.93	5.39	5.44
.405	5.00	6.02	6.11	5.94	6.02	5.22	5.16
.421	5.23	6.10	6.23	5.75	6.04	5.36	5.46
.434	5.23	6.06	6.31	5.79	5.86	5.21	5.35
.446	5.55	6.25	6.55	6.25	5.89	5.27	5.50
.501	5.74	—	6.31	6.27	5.44	5.64	5.76
.525	5.79	6.47	6.30	6.07	5.61	5.94	5.50
35 603.369	5.68	6.13	5.54	5.78	5.94	5.44	6.00
.381	5.38	6.27	5.49	5.84	5.96	5.49	6.06
.397	5.05	6.18	5.57	5.97	5.99	5.63	5.91
.408	5.06	6.13	5.73	5.81	5.95	5.60	5.64
.419	5.05	6.20	5.67	5.92	6.04	5.85	5.50
.431	5.16	6.10	5.74	5.91	6.20	5.74	5.49
.446	5.29	6.02	5.70	6.02	5.96	5.63	5.45
.457	5.32	6.17	5.91	6.17	6.04	5.88	5.54
.468	5.51	6.09	5.95	5.95	5.95	5.83	5.43
.491	5.50	6.25	5.96	6.00	5.55	—	5.32
.507	5.67	6.35	6.12	5.98	5.64	5.98	5.38
35 920.444	6.49	5.40	6.48	5.31	5.51	—	5.22
.467	6.50	5.32	6.38	5.40	5.70	5.73	5.32
.487	—	5.74	—	5.75	5.62	5.49	5.82
.504	6.20	5.53	6.09	5.66	5.80	—	5.53

Table 9 (continued)

J. D. 2 400 000 +	92	93	94	96	97	99	100
35 920.547	6.38	5.80	6.23	5.80	6.04	5.56	5.37
.562	6.25	5.80	6.32	5.80	6.13	5.70	5.41
.585	6.22	5.80	6.36	5.92	6.02	5.55	5.40
35 933.415	5.66	6.14	6.14	5.38	5.64	5.60	5.40
.443	6.09	6.15	5.98	5.56	5.59	5.48	5.33
.479	6.23	6.17	6.04	5.74	5.64	5.47	5.43
.503	6.19	5.88	6.29	5.44	5.50	5.27	5.50
.515	6.16	6.13	6.37	6.03	5.62	5.65	5.14
.530	6.22	6.31	6.35	5.63	5.58	5.58	5.78
.543	6.48	6.12	6.37	5.79	5.85	5.36	—
.573	—	5.91	6.29	5.74	5.81	5.56	5.07
.588	—	—	5.81	5.68	5.94	5.59	5.85
.602	—	5.93	—	5.61	5.68	5.59	—
36 991.457	—	5.52	6.07	5.89	5.56	5.53	5.40
.470	6.19	5.85	6.04	6.02	5.43	5.61	5.29
.485	6.03	5.87	—	5.89	5.60	5.90	5.35
37 018.470	5.24	5.47	5.64	6.10	5.89	5.38	6.01
.483	5.37	5.46	5.86	6.01	6.03	5.52	5.82
.496	5.67	5.80	5.93	5.88	6.09	5.44	6.05
.510	5.65	5.70	5.79	5.95	5.90	5.78	5.98
.523	5.70	5.62	5.96	6.02	6.05	5.88	6.04
.537	5.72	5.83	5.95	5.87	—	5.76	5.89
.550	5.69	5.73	5.98	5.85	5.78	5.73	5.94
.563	5.78	5.58	5.81	5.45	5.86	5.80	—
.577	5.85	5.78	6.28	4.87	5.66	5.92	6.08
.609	5.86	5.78	—	4.80	5.63	5.92	5.92
.623	6.06	5.94	6.14	5.05	5.72	—	6.27
.637	5.98	5.98	5.90	5.24	5.60	6.17	5.98
37 057.539	6 40	5.57	6.31	4.74	5.60	5.77	6.05
.552	6.31	5.38	6.19	4.77	5.71	5.57	—
.578	6.25	5.28	5.45	4.95	6.12	5.89	6.12
37 058.529	6.29	6.08	6.19	5.22	5.69	5.40	5.93
.580	6.36	6.40	6.67	5.07	5.97	5.83	6.29
37 757.598	5.66	5.81	—	6.31	5.72	5.85	5.26
37 791.365	4.86	5.74	5.43	5.74	5.64	5.74	5.49
.380	5.02	5.93	5.56	5.76	5.72	5.89	5.72
.394	5.10	5.90	5.51	5.84	5.73	5.79	5.70
.424	5.30	5.99	5.71	5.73	5.71	5.80	5.83
.439	5.42	6.09	5.79	5.98	5.92	5.73	5.86
.454	5.57	6.13	5.85	6.22	5.99	5.72	5.78
.469	5.61	6.10	5.87	6.06	5.98	5.61	5.75
.483	5.71	6.22	5.98	6.19	6.06	5.44	5.90
.497	5.71	6.10	6.01	6.09	6.06	5.51	5.75
.519	5.90	6.19	6.09	6.16	6.07	5.58	5.96
.533	5.82	6.09	6.32	5.96	6.23	5.40	5.68
.549	—	6.18	6.20	6.06	6.04	5.38	5.60
.563	6.12	6.06	6.36	6.12	5.89	5.23	5.43

Table 9 (continued)

J. D. 2 400 000 +	101	102	104	105	106	107	108
28 963.487	4.91	5.60	5.35	5.67	5.30	5.67	6.34
28 991.403	5.48	5.67	5.27	5.63	4.97	5.54	6.15
.416	5.34	5.64	5.58	5.72	5.08	5.58	6.13
.430	5.36	5.71	5.60	5.60	5.00	5.56	6.17
.522	5.33	—	5.69	5.26	4.95	6.12	6.36
.542	5.18	—	5.89	5.19	5.32	6.05	6.28
29 346.376	5.64	5.74	—	5.21	5.93	5.74	6.37
.392	5.64	5.81	—	5.41	6.04	5.41	6.04
29 719.549	5.58	5.85	5.92	5.41	6.16	5.80	6.26
.560	5.59	5.77	5.66	5.30	5.91	6.04	6.24
29 720.546	5.70	5.65	5.96	5.87	5.96	6.02	6.32
.558	5.66	5.60	—	5.60	5.97	5.97	6.07
29 774.405	5.58	5.84	5.16	5.55	5.06	5.58	6.13
.417	5.91	5.76	5.27	5.60	5.06	5.54	6.11
29 775.403	5.15	5.82	5.95	5.43	5.98	5.48	5.95
.415	5.13	5.83	5.78	5.49	5.97	5.59	5.97
.426	5.35	5.92	5.62	5.48	5.92	5.65	5.88
.437	5.40	5.66	5.05	5.51	5.95	5.69	6.10
.447	5.39	5.71	—	5.56	5.66	5.69	6.14
30 052.462	5.97	5.80	4.81	5.50	5.53	6.26	6.31
.474	5.73	5.73	4.97	5.46	5.73	6.27	6.38
.489	5.68	5.84	5.11	5.43	5.71	6.07	6.42
.501	5.71	5.91	5.10	5.45	5.69	6.04	6.22
30 078.418	5.72	5.76	5.99	5.49	6.01	6.05	6.34
.434	5.74	5.63	5.86	5.39	6.01	5.91	6.20
.470	5.64	5.81	5.86	5.62	6.05	5.73	6.17
.483	5.70	5.76	6.02	5.57	6.00	5.62	6.24
.498	5.74	5.70	5.83	5.58	5.98	5.44	5.14
.509	5.93	5.83	5.83	5.63	6.09	5.35	6.22
.521	5.85	5.83	5.89	5.85	5.97	5.62	6.16
.536	5.70	5.83	6.10	5.70	5.94	5.36	6.22
.548	5.62	5.78	5.82	5.80	5.96	5.43	6.34
33 390.497	5.82	5.84	4.66	5.59	5.92	5.38	6.34
.534	5.79	5.83	4.89	5.59	5.59	5.55	6.30
.545	5.88	5.69	4.87	5.39	5.25	5.64	6.22
.558	5.66	5.77	5.11	5.29	5.14	5.66	6.24
.570	5.80	5.78	5.10	5.40	5.13	5.71	6.17
.586	5.92	5.95	5.28	5.39	5.24	5.84	6.34
33 420.424	5.83	5.98	5.92	5.66	5.98	5.49	5.78
.438	5.68	5.90	5.83	5.70	6.07	5.58	5.95
.450	5.60	5.95	6.08	5.53	6.13	5.50	5.89
.476	5.34	5.74	5.91	5.24	6.09	5.45	5.96
.487	5.36	5.76	6.01	5.43	6.05	5.70	6.05
.498	5.25	5.79	5.81	5.41	6.14	5.45	6.10
.510	5.35	5.74	5.92	5.38	6.08	5.45	6.08
.523	5.07	—	5.99	5.18	5.88	5.54	—

Table 9 (continued)

J. D. 2 400 000 +	101	102	104	105	106	107	108
33 421.385	5.89	5.74	5.26	5.26	5.76	5.29	5.31
.442	5.81	5.74	5.56	5.44	5.90	5.49	5.73
.454	5.64	5.70	5.79	5.49	5.80	5.54	5.73
.465	5.48	5.68	—	5.60	5.84	5.52	5.82
.475	5.64	5.77	—	5.52	6.08	5.79	5.83
.486	5.70	5.76	—	5.76	6.00	5.80	5.89
.497	5.72	6.04	5.51	5.65	6.21	5.96	5.98
.535	5.59	5.90	—	5.63	5.98	6.04	5.90
.548	5.56	5.91	5.60	—	5.98	5.86	5.99
33 422.398	5.62	5.97	4.88	5.69	5.57	5.69	5.15
.431	5.55	5.99	4.75	5.85	5.85	5.83	5.47
.442	5.54	5.73	5.05	5.54	5.70	5.99	5.54
.452	5.46	6.02	5.06	5.54	5.70	6.02	5.60
.462	5.34	5.74	5.20	5.57	5.71	6.13	5.62
.472	5.45	5.83	5.28	5.39	5.77	5.91	5.60
.483	5.25	5.95	5.08	5.43	5.80	5.87	5.60
.493	5.47	5.92	5.42	5.30	5.85	6.05	5.88
.508	5.44	5.82	5.16	5.33	5.85	6.03	5.80
.520	5.46	5.76	5.33	5.27	5.76	5.91	5.89
33 763.406	5.76	5.84	5.72	5.75	5.84	5.98	5.92
.420	5.72	5.75	—	5.63	5.91	5.84	5.93
.442	6.04	5.85	6.01	5.45	5.95	5.54	6.04
.455	5.92	5.81	5.96	5.44	6.03	5.44	6.14
.464	5.99	5.84	5.95	5.39	6.03	5.44	6.15
.483	5.90	5.80	6.03	5.30	6.17	5.46	—
.494	5.72	5.81	5.66	5.31	6.02	5.33	6.19
.504	5.76	5.79	5.87	5.35	6.08	5.40	6.18
.514	5.90	5.85	6.27	5.33	6.02	5.44	6.38
.525	5.80	5.70	5.91	5.39	6.02	5.36	6.28
34 118.355	—	5.84	—	5.66	5.58	5.88	6.24
.372	—	—	—	5.77	5.53	5.98	6.10
.388	—	5.93	5.36	5.56	5.80	5.93	6.38
.428	5.01	5.69	5.55	5.61	5.61	5.99	6.18
.443	5.27	5.80	5.68	5.76	5.74	6.14	6.27
.470	5.36	—	5.66	5.69	5.90	6.18	6.34
.485	5.21	5.69	5.74	5.59	5.71	5.98	6.24
.499	5.09	—	—	5.52	5.85	6.01	6.45
.513	5.33	6.10	5.99	5.50	5.96	5.67	6.42
.526	5.26	—	—	5.42	5.91	5.68	5.95
.540	5.43	5.68	5.62	5.22	5.80	5.33	6.17
34 120.471	5.39	—	—	5.67	5.31	5.48	6.17
.484	5.35	—	—	5.66	5.33	5.62	6.24
.497	5.51	5.67	—	5.84	5.39	5.73	6.18
.510	5.47	5.82	—	5.76	5.42	5.73	6.06
.523	5.46	5.77	—	5.55	5.52	5.90	6.41
.536	5.35	—	4.64	5.48	5.39	5.95	6.13

Table 9 (continued)

J. D. 2 400 000 +	101	102	104	105	106	107	108
34 120.551	5.38	5.66	4.60	5.23	5.47	6.03	6.27
.564	5.49	6.00	4.74	5.43	5.73	6.11	6.29
.579	—	5.75	5.19	5.34	5.73	6.22	6.43
34 121.401	5.56	—	—	5.44	5.87	5.68	5.84
.412	5.79	—	—	5.34	6.04	5.64	6.14
.422	5.72	—	6.08	5.30	6.10	5.72	5.90
.431	5.83	5.78	—	5.30	5.92	5.78	5.96
.441	5.70	6.02	6.00	5.38	6.14	5.76	6.00
.484	5.70	—	6.19	5.40	5.82	5.95	6.09
.495	5.79	—	6.01	5.30	5.83	5.96	6.13
.505	5.69	—	5.83	5.48	5.80	5.97	6.07
.517	5.80	5.80	—	5.51	5.68	6.00	6.22
.528	5.76	—	—	5.42	5.54	5.94	6.16
.539	—	—	—	5.63	5.38	6.14	6.07
.552	—	—	—	5.63	5.32	6.03	6.09
.562	—	—	—	5.58	5.24	5.92	—
.594	—	—	—	5.72	5.30	5.77	6.53
.605	—	—	—	—	—	5.71	—
34 122.404	—	—	—	5.64	—	5.92	5.76
.416	5.38	—	—	5.56	5.78	5.96	5.92
.431	5.52	—	—	5.61	5.84	6.19	5.91
34 126.433	5.63	—	5.55	5.50	5.68	6.08	4.94
34 131.415	5.36	—	4.96	5.68	5.06	5.96	6.42
34 487.347	5.58	5.78	—	5.80	5.78	5.78	6.22
.367	5.20	5.84	—	5.76	5.82	5.96	6.16
.385	5.41	5.86	—	5.74	6.14	5.86	6.14
.397	5.33	5.66	—	5.56	5.86	5.79	6.12
.410	5.38	6.09	—	5.70	6.26	5.96	6.35
.428	—	5.76	—	5.39	5.95	5.90	6.20
.438	5.18	5.82	—	5.30	5.84	5.93	6.27
449	5.19	5.85	—	5.32	6.09	6.15	6.23
.460	5.20	5.89	—	5.37	6.28	—	6.16
.474	5.37	5.68	—	5.32	5.88	6.08	6.38
.483	5.18	5.70	—	5.25	5.98	5.76	—
494	5.33	5.84	—	5.44	—	5.73	6.26
.508	5.34	5.84	—	5.27	—	5.50	5.89
.518	5.30	5.92	—	5.49	5.98	5.41	6.00
34 488.530	—	5.75	—	5.75	6.12	5.59	6.44
.540	5.82	5.71	—	5.56	—	5.61	6.19
34 567.388	5.56	5.80	4.74	5.65	5.89	5.89	6.21
35 223.415	5.16	5.62	5.16	5.67	5.95	5.51	5.60
.428	5.07	5.64	—	5.60	5.97	5.56	5.77
.441	5.45	5.89	5.37	5.52	6.25	5.74	5.70
.467	5.27	5.78	5.34	5.32	5.84	5.78	5.78
.490	5.34	5.80	—	5.32	5.57	5.94	5.84
.503	5.44	5.87	5.87	5.35	5.37	5.95	5.97

Table 9 (continued)

J. D. 2 400 000 +	101	102	104	105	106	107	108
35 223.517	5.39	5.83	5.58	5.31	5.29	—	6.16
.530	5.29	5.82	5.34	5.34	5.26	5.97	5.99
.546	5.40	5.77	—	5.38	5.26	6.10	6.06
.573	5.40	—	5.69	5.43	5.32	6.05	6.35
35 224.454	5.42	5.60	5.06	5.51	5.88	5.95	5.46
.472	5.68	5.66	4.72	5.54	5.93	6.06	5.95
.485	5.74	5.82	4.62	5.69	6.04	6.10	5.78
.499	5.76	5.77	4.69	5.70	6.04	6.08	5.84
.512	5.75	5.82	4.76	5.70	6.10	5.88	5.91
.524	5.74	5.79	4.98	5.74	6.16	5.86	5.74
.542	5.67	5.79	5.30	5.72	—	5.72	6.16
.556	5.66	5.83	5.04	5.68	5.90	5.43	6.10
.569	5.65	5.79	—	5.71	5.65	5.56	5.82
.583	5.72	5.89	5.35	5.59	5.57	5.54	6.12
35 227.534	5.69	6.42	5.75	5.32	5.70	5.88	5.26
.547	5.78	6.12	5.70	5.26	6.16	6.30	5.59
.560	5.90	5.90	6.22	5.54	5.72	5.90	5.52
.573	5.94	5.80	—	5.35	5.78	5.80	5.58
.586	6.16	—	—	5.32	5.68	5.98	5.51
35 598.507	5.92	5.72	5.51	5.44	5.64	5.51	5.11
.524	5.92	6.02	5.52	5.81	5.92	5.36	5.25
.537	5.77	5.96	5.77	5.71	5.89	5.43	5.39
35 600.363	5.94	5.80	—	5.88	6.30	5.38	6.41
.378	5.52	5.75	—	5.50	6.24	5.38	6.27
.391	5.69	5.89	5.99	5.67	5.93	5.46	6.15
.405	5.62	5.90	—	5.39	5.82	5.48	6.05
.421	6.00	5.86	5.88	5.33	6.00	5.46	6.27
.434	6.01	5.60	—	5.44	5.93	5.56	6.21
.446	5.98	5.70	—	5.36	5.83	5.64	6.12
.501	5.69	5.76	—	—	5.53	5.83	6.07
.525	5.73	5.92	—	5.45	5.36	6.03	5.70
35 603.369	—	5.59	—	5.32	5.61	5.88	5.86
.381	5.46	5.90	—	5.52	6.10	6.00	6.10
.397	5.54	5.82	—	5.44	5.71	5.91	6.18
.408	5.22	5.73	—	5.52	5.71	5.82	6.10
.419	5.28	5.93	—	5.56	5.71	5.56	6.29
.431	5.46	5.87	—	5.73	5.73	5.65	6.24
.446	5.86	5.86	5.37	5.75	5.75	5.37	6.27
.457	5.54	5.59	4.76	5.80	5.75	5.42	6.24
.468	5.57	5.70	4.77	5.59	5.78	5.43	6.43
.491	5.55	5.62	4.96	5.71	5.75	5.35	6.02
.507	5.50	5.84	4.88	5.70	5.87	5.51	6.14
35 920.444	6.18	—	5.07	5.11	5.80	5.98	6.40
.467	6.14	—	4.95	5.28	5.80	5.90	6.20
.487	5.96	—	5.49	5.49	5.92	5.67	5.95
.504	6.12	—	5.11	5.50	5.93	5.42	6.14

Table 9 (continued)

J. D. 2 400 000 +	101	102	104	105	106	107	108
35 920.547	6.10	—	5.48	5.52	5.52	5.29	6.27
.562	6.40	—	5.66	5.58	5.38	5.25	6.56
.585	6.28	—	5.55	5.55	5.05	5.43	6.38
35 933.415	5.96	—	6.16	5.34	5.77	6.12	6.14
.443	6.01	—	4.94	5.20	5.70	6.01	6.37
.479	5.84	—	4.58	5.36	5.84	5.39	6.06
.503	—	—	4.70	5.44	6.14	5.36	6.10
.515	—	—	4.72	5.57	6.01	5.44	6.03
.530	5.66	—	4.96	5.78	6.00	5.49	6.57
.543	—	—	—	5.68	5.60	5.30	—
.573	5.58	—	5.18	5.64	6.10	5.64	6.17
.588	—	—	—	5.36	5.96	5.58	5.87
.602	—	—	—	5.49	5.49	5.68	5.49
36 991.457	5.66	—	5.30	5.30	5.56	—	6.07
.470	5.81	—	5.66	5.39	5.36	5.69	6.52
.485	5.43	—	6.03	5.71	5.35	5.93	6.28
37 018.470	5.93	—	5.81	5.39	5.90	6.03	6.39
.483	5.98	—	5.94	5.46	5.82	5.74	6.32
.496	5.48	—	5.72	5.40	5.76	5.42	6.09
.510	5.82	—	6.10	5.54	5.76	5.52	6.19
.523	5.20	—	5.93	5.45	6.04	5.42	6.22
.537	5.73	—	5.80	5.49	5.69	5.41	5.39
.550	5.27	—	5.98	5.69	5.90	5.35	5.37
.563	5.20	—	5.51	—	6.00	5.52	5.06
.577	5.42	—	4.84	5.58	5.87	5.43	5.08
.609	5.69	—	—	5.74	6.22	5.66	5.20
.623	5.49	—	4.95	5.82	6.06	5.89	5.35
.637	5.74	—	5.00	5.71	6.14	5.71	5.52
37 057.539	6.23	—	5.44	5.37	5.69	5.57	5.10
.552	6.04	—	5.71	5.50	5.14	5.71	5.09
.578	6.29	—	5.55	5.44	5.00	5.78	5.07
37 058.529	5.69	—	5.20	5.50	6.01	5.93	6.08
.580	5.97	—	5.26	5.73	—	6.06	5.14
37 757.598	—	—	—	5.52	5.78	6.07	5.85
37 791.365	6.14	—	6.03	5.20	4.80	6.03	5.81
.380	6.16	5.76	5.40	5.40	5.02	5.87	5.89
.394	5.89	5.68	5.09	5.41	5.27	5.56	5.84
.424	5.79	5.81	4.89	5.66	5.38	5.45	6.02
.439	5.78	5.72	5.10	5.74	5.53	5.42	6.20
.454	5.87	5.60	4.69	5.57	5.44	5.25	6.06
.469	5.90	5.75	5.04	5.62	5.58	5.53	6.12
.483	5.77	5.86	5.16	5.65	5.69	5.40	6.31
.497	5.88	5.66	5.05	5.63	5.63	5.57	6.30
.519	6.04	5.87	5.32	5.74	5.85	5.64	6.28
.533	5.93	5.71	5.60	5.68	5.90	5.71	6.20
.549	6.01	5.81	5.81	5.60	5.95	5.66	6.16
.563	5.89	5.92	5.57	5.57	6.03	5.92	6.36

Table 9 (continued)

J. D. 2 400 000 +	109	110	113	114	115	116	117
28 963.487	4.86	5.80	6.13	5.22	4.89	5.84	6.20
28 991.403	5.27	5.42	4.71	6.04	6.06	5.51	5.78
.416	5.00	5.39	5.08	6.02	6.24	5.72	6.11
.430	5.18	5.13	4.92	6.09	6.08	5.63	6.14
.522	—	—	5.66	5.72	6.20	6.24	—
.542	—	—	5.76	5.66	6.25	6.12	5.56
29 346.376	4.76	5.58	4.72	6.41	6.30	—	5.35
.392	5.41	5.54	5.15	6.01	5.29	5.95	5.69
29 719.549	5.04	5.90	6.14	5.92	6.37	6.24	6.11
.560	5.19	5.84	6.00	5.82	6.27	6.18	6.14
29 720.546	4.69	5.89	6.11	6.09	6.20	6.34	6.26
.558	4.63	5.78	6.07	6.13	6.11	6.42	6.21
29 774.405	5.33	5.52	5.90	6.21	6.27	5.49	5.30
.417	5.06	5.35	5.98	6.38	6.06	5.54	5.18
29 775.403	5.56	5.21	5.77	5.95	6.06	5.15	5.95
.415	5.47	5.13	5.89	6.04	6.01	5.33	6.17
.426	—	5.28	5.92	5.94	6.30	5.25	6.15
.437	5.59	5.30	5.98	6.00	6.03	5.42	6.07
.447	5.58	5.42	5.83	6.10	6.27	5.66	6.16
30 052.462	5.53	5.85	5.90	6.31	6.16	5.77	5.47
.474	5.88	5.79	5.97	6.09	6.14	5.85	5.23
.489	5.94	6.09	5.87	6.07	6.15	6.02	5.20
.501	5.62	5.91	6.10	5.69	6.29	5.87	5.32
30 078.418	5.38	5.06	5.83	5.90	6.04	6.45	5.74
.434	5.49	5.11	5.11	5.94	5.30	6.28	5.68
.470	5.26	5.35	4.96	5.97	4.96	6.03	5.79
.483	5.48	5.31	4.99	6.12	5.22	6.27	5.74
.498	5.41	5.41	5.20	6.10	5.30	6.12	5.92
.509	5.57	5.54	5.23	6.01	5.33	6.29	5.90
.521	5.36	5.53	5.45	6.11	5.44	6.28	6.03
.536	5.36	5.56	5.46	6.04	5.60	6.20	5.98
.548	5.49	5.65	5.69	6.07	5.65	6.20	5.94
33 390.497	5.77	5.28	5.24	5.72	6.29	5.69	6.07
.534	5.68	5.47	5.53	6.12	6.48	5.92	6.05
.545	5.48	5.48	5.54	—	6.39	6.04	6.22
.558	5.48	5.38	5.66	6.11	6.35	6.11	6.20
.570	5.55	5.69	5.69	6.08	6.02	6.10	5.87
.586	5.64	5.66	5.81	6.21	5.39	6.21	6.21
33 420.424	5.63	5.12	5.98	6.03	5.20	6.16	5.95
.438	5.73	5.31	6.24	6.07	5.30	6.34	5.95
.450	5.86	5.52	6.18	6.34	5.44	5.99	5.95
.476	5.56	5.36	6.30	6.07	5.43	6.31	6.09
.487	5.66	5.39	—	6.05	5.65	6.40	6.05
.498	5.86	5.39	6.57	6.10	5.70	6.34	6.10
.510	5.59	5.40	6.22	6.14	5.90	6.34	6.12
.523	5.61	5.54	—	—	5.84	—	—

Table 9 (continued)

J. D. 2 400 000 +	109	110	113	114	115	116	117
33 421.385	5.62	5.78	5.76	5.36	5.54	5.74	5.22
.442	5.46	4.94	6.18	5.66	5.17	5.92	5.31
.454	5.51	4.89	6.24	5.77	5.18	6.06	5.37
.465	5.36	4.73	6.23	5.76	5.29	6.13	5.40
.475	5.23	4.87	6.23	5.69	5.37	6.12	5.52
.486	5.14	4.83	6.22	5.76	5.46	6.02	5.41
.497	5.50	5.21	6.09	5.80	5.49	6.15	5.60
.535	5.56	5.21	6.13	5.80	5.72	6.41	5.72
.548	—	5.23	6.15	5.91	5.68	6.37	5.70
33 422.398	5.62	5.89	—	6.34	6.13	5.69	6.12
.431	5.59	6.05	5.99	6.05	5.12	5.88	6.20
.442	5.63	6.10	5.91	6.08	5.04	5.86	6.18
.452	5.43	5.90	5.99	6.16	5.00	5.80	6.29
.462	5.62	5.87	6.25	5.89	—	5.93	6.15
.472	5.57	5.63	6.35	5.74	5.06	5.91	6.38
.483	5.83	5.83	6.24	5.74	5.16	6.27	6.27
.493	5.30	5.51	6.35	5.82	5.52	6.10	6.20
.508	5.46	5.00	6.27	5.33	5.49	6.20	6.27
.520	5.20	4.93	6.62	5.16	5.50	6.12	6.45
33 763.406	4.78	5.80	4.87	5.88	5.75	6.20	6.00
.420	4.89	—	5.00	5.94	5.78	6.28	6.05
.442	5.05	—	5.12	5.95	5.86	6.20	5.88
.455	5.22	5.85	5.25	6.01	5.97	6.27	5.98
.464	5.26	5.71	5.41	5.99	5.88	6.23	6.03
.483	5.16	5.44	5.49	6.06	6.03	6.22	6.08
.494	5.24	5.45	5.55	6.02	6.12	6.35	5.96
.504	5.30	5.53	5.81	6.02	6.10	6.23	6.18
.514	5.39	5.44	5.63	6.12	6.24	6.30	6.04
.525	—	5.51	5.80	5.96	6.16	6.40	6.09
34 118.355	—	—	6.13	5.66	—	5.29	5.96
.372	—	—	5.98	5.60	6.06	5.36	6.02
.388	—	—	4.83	5.71	6.35	5.48	5.99
.428	4.40	4.98	4.98	5.61	6.22	5.58	6.08
.443	4.72	—	5.12	5.88	6.33	5.74	6.04
.470	4.66	5.08	5.24	6.12	—	5.94	6.06
.485	4.82	5.21	5.55	5.69	6.27	5.84	6.21
.499	4.92	5.16	5.55	6.09	6.18	6.09	6.28
.513	4.80	5.19	5.67	5.96	5.66	6.42	6.02
.526	5.07	5.60	6.06	—	5.19	6.14	5.78
.540	5.08	5.68	5.99	5.86	4.70	6.14	5.80
34 120.471	—	—	4.99	6.05	6.30	5.70	5.58
.484	—	—	5.16	6.26	6.23	5.62	5.60
.497	—	5.51	5.16	6.14	6.53	5.78	5.69
.510	5.65	5.70	5.35	6.28	6.40	5.85	5.63
.523	5.44	5.46	5.44	6.31	6.28	5.96	5.69
.536	4.84	5.19	5.54	6.18	6.44	5.98	5.62

Table 9 (continued)

J. D. 2 400 000 +	109	110	113	114	115	116	117
34 120.551	4.74	5.20	5.47	6.27	6.25	5.84	5.80
.564	4.49	5.15	5.75	6.27	5.89	6.13	5.78
.579	4.52	4.88	5.55	6.38	5.27	6.00	6.02
34 121.401	—	—	6.20	5.65	6.15	4.92	6.03
.412	—	—	6.40	5.91	6.27	4.88	6.08
.422	—	—	6.22	5.95	6.32	5.02	6.04
.431	5.76	—	6.15	5.92	6.32	5.09	6.10
.441	5.70	5.79	6.22	5.79	6.12	5.14	6.08
.484	5.59	5.59	—	5.59	6.38	5.53	6.02
.495	5.47	5.83	5.10	5.98	6.50	5.61	6.15
.505	5.51	5.63	5.13	6.04	6.30	5.67	5.98
.517	5.51	—	5.14	6.12	6.20	5.88	6.02
.528	5.71	—	5.30	6.08	6.32	5.80	5.89
.539	—	—	5.22	6.11	6.33	5.75	5.82
.552	—	—	5.44	6.19	6.26	5.90	5.72
.562	—	—	5.58	—	6.16	5.86	5.63
.594	—	—	5.44	6.20	5.86	6.04	5.28
.605	—	—	5.59	—	5.45	—	4.96
34 122.404	—	—	6.30	6.00	—	5.78	5.97
.416	—	—	6.29	5.80	6.37	5.56	5.86
.431	—	—	6.20	5.68	6.27	4.90	5.98
34 126.433	4.65	5.42	6.47	6.80	6.10	6.08	5.52
34 131.415	—	5.44	6.10	5.60	5.48	6.26	5.96
34 487.347	4.89	5.69	5.65	5.97	6.00	6.40	5.60
.367	—	—	5.78	5.92	6.16	6.08	5.64
.385	4.89	5.66	5.78	5.89	6.21	6.27	5.53
.397	4.98	5.80	5.79	5.96	6.18	6.01	—
.410	4.93	5.67	6.05	6.07	6.40	5.62	5.84
.428	4.90	5.72	6.06	6.40	6.20	5.10	—
.438	5.06	5.80	5.82	5.93	—	4.97	5.66
.449	5.19	6.00	6.13	5.83	6.40	4.98	5.85
.460	5.13	5.84	6.22	6.10	6.25	4.96	5.84
.474	5.23	5.78	6.15	5.85	6.30	5.14	—
.483	5.16	5.83	6.18	6.06	6.27	5.14	—
.494	—	5.84	—	6.21	6.32	5.23	—
.508	5.27	5.75	6.24	5.96	—	5.37	—
.518	5.43	5.85	—	5.95	—	5.54	—
34 488.530	5.13	—	6.11	6.12	6.33	5.42	5.39
.540	5.06	5.98	6.20	6.04	6.27	5.44	5.48
34 567.388	5.70	—	5.74	6.00	6.21	5.86	5.93
35 223.415	5.39	5.43	5.04	6.10	5.85	6.50	6.35
.428	5.36	5.56	4.93	6.13	5.93	6.47	6.48
.441	5.59	5.52	5.04	5.60	5.93	6.40	6.21
.467	5.46	5.57	5.19	5.24	6.07	6.22	6.22
.490	5.51	—	5.43	5.17	6.15	6.33	6.01
.503	5.45	5.52	5.60	5.23	6.22	6.24	5.95

Table 9 (continued)

J. D. 2 400 000 +	109	110	113	114	115	116	117
35 223.517	5.43	5.72	5.63	5.43	6.21	6.54	5.83
.530	—	—	5.65	5.47	6.25	6.11	5.45
.546	—	—	5.71	5.51	6.34	6.36	5.22
.573	—	—	5.78	5.69	6.40	6.31	5.03
35 224.454	5.12	5.24	4.90	6.05	5.92	6.30	6.10
.472	5.30	5.36	4.97	6.36	5.90	6.53	6.06
.485	5.62	5.56	5.21	6.22	6.02	6.35	6.26
.499	—	5.38	5.14	6.26	6.05	6.46	5.92
.512	5.45	5.59	5.32	6.14	6.00	6.32	6.26
.524	5.60	5.52	5.30	6.06	6.07	6.39	6.00
.542	—	5.50	5.39	6.19	6.04	6.24	6.30
.556	—	5.46	5.66	6.05	6.20	6.48	6.24
.569	—	5.90	5.79	6.22	6.28	—	6.12
.583	—	5.96	5.82	6.34	6.14	6.44	6.22
35 227.534	5.54	5.24	4.97	5.88	5.68	6.57	6.07
.547	5.61	5.12	5.07	5.95	5.87	6.56	6.24
.560	5.70	5.24	5.21	6.06	—	—	6.55
.573	5.58	5.18	5.41	6.13	5.86	6.07	5.89
.586	5.81	5.24	5.58	6.51	5.99	6.25	6.21
35 598.507	4.92	4.98	5.49	6.09	5.87	5.60	5.88
.524	4.90	5.13	5.48	5.86	5.12	5.86	6.02
.537	4.84	5.24	5.39	6.00	4.92	5.92	5.92
35 600.363	5.57	5.61	6.30	6.01	6.30	6.24	6.11
.378	5.72	5.94	6.27	6.14	6.37	6.41	6.27
.391	5.60	5.82	6.16	5.93	6.09	6.18	6.32
.405	5.66	6.16	6.03	6.03	6.16	6.16	6.02
.421	5.62	5.88	6.38	6.04	6.30	6.10	6.25
.434	5.39	5.75	6.23	6.21	6.32	5t64	6.08
.446	5.60	5.72	6.08	5.89	6.07	5.19	6.38
.501	5.69	5.95	4.89	6.38	6.33	5.20	6.19
.525	5.52	5.66	5.28	6.36	6.33	5.36	6.09
35 603.369	—	—	6.24	6.12	6.14	6.27	6.05
.381	4.97	5.17	6.18	6.16	6.20	6.18	6.32
.397	5.26	5.24	6.10	6.05	6.19	5.92	6.20
.408	5.37	5.37	6.11	6.21	6.20	6.08	6.02
.419	5.28	5.41	6.44	6.00	6.39	6.26	6.08
.431	5.46	5.58	6.30	6.33	6.18	6.28	6.04
.446	5.35	5.55	6.20	6.20	6.24	6.27	6.24
.457	5.29	5.54	6.16	5.95	6.32	6.29	6.35
.468	5.26	5.57	6.09	6.11	6.37	6.18	6.09
.491	5.55	5.52	6.14	5.91	6.44	6.58	5.98
.507	5.72	5.84	6.24	6.18	6.24	6.04	6.20
35 920.444	4.80	5.82	6.28	5.20	4.87	6.29	6.12
.467	4.82	5.46	6.30	5.32	5.28	6.22	6.16
.487	4.52	5.46	6.14	5.53	5.62	—	—
.504	4.84	5.50	6.03	5.47	5.62	6.18	6.02

Table 9 (continued)

J. D. 2 400 000 +	109	110	113	114	115	116	117
35 920.547	5.06	6.04	6.23	5.49	5.56	6.32	6.13
.562	4.20	5.74	6.19	5.76	5.76	6.32	6.16
.585	4.80	6.00	5.12	5.92	5.95	6.32	5.95
35 933.415	5.38	6.19	5.22	6.24	5.88	6.24	5.52
.443	5.14	5.82	5.03	6.03	5.86	6.18	5.86
.479	5.29	5.67	5.36	6.32	6.15	6.16	5.77
.503	—	—	5.27	6.23	6.08	6.29	5.64
.515	—	—	5.60	5.91	5.91	5.50	6.03
.530	4.92	4.82	5.49	5.81	6.33	5.08	5.78
.543	—	—	5.96	5.87	—	4.88	5.85
.573	5.20	4.97	5.76	5.48	6.05	5.08	5.89
.588	—	—	5.72	5.10	—	5.28	—
.602	—	—	5.91	5.29	—	5.36	—
36 991.457	4.76	5.22	6.16	6.00	6.23	5.31	5.08
.470	4.90	5.47	6.36	5.81	5.96	4.91	5.18
.485	4.61	—	6.04	6.09	6.10	4.84	5.20
37 018.470	5.88	5.77	5.01	5.20	5.15	6.05	5.70
.483	6.02	5.64	5.00	5.33	5.07	6.16	5.34
.496	5.58	—	5.16	5.40	5.20	6.29	5.67
.510	5.97	—	5.28	5.43	5.47	6.16	5.38
.523	5.34	5.80	5.45	5.66	5.62	6.07	5.25
.537	5.36	5.90	5.67	5.53	—	6.46	5.37
.550	5.40	5.74	5.59	5.64	5.56	6.11	5.38
.563	5.66	5.58	5.59	5.88	—	6.60	5.69
.577	5.51	5.56	5.72	5.68	5.83	6.52	5.59
.609	5.69	5.38	5.80	5.84	5.81	6.38	5.66
.623	5.59	—	5.99	5.99	—	6.19	5.80
.637	5.96	5.37	6.22	5.71	5.97	6.56	5.87
37 057.539	6.05	5.88	5.69	6.19	5.37	5.84	5.20
.552	5.68	—	5.67	6.34	5.50	6.06	5.27
.578	5.95	—	6.04	6.23	5.78	6.01	5.28
37 058.529	6.01	5.81	5.50	5.40	5.09	5.69	6.12
.580	5.97	6.11	—	5.73	5.50	5.83	6.06
37 757.598	—	—	6.05	6.21	—	5.44	5.98
37 791.365	4.75	6.32	5.96	5.06	6.21	6.35	5.37
.380	4.62	6.07	6.42	5.52	6.23	6.13	5.52
.394	5.27	5.75	6.08	5.41	6.25	6.24	5.42
.424	5.40	6.06	6.09	5.70	6.24	6.29	5.48
.439	5.78	5.89	6.16	5.74	6.40	6.34	5.71
.454	5.64	6.10	6.19	5.81	6.56	6.13	5.72
.469	5.59	6.06	6.33	5.71	6.23	5.45	5.71
.483	5.40	—	6.35	5.86	6.31	5.16	5.76
.497	5.62	5.79	6.28	5.91	6.60	4.84	5.76
.519	5.81	5.85	5.67	5.98	6.37	5.05	5.85
.533	5.50	5.68	5.11	6.04	6.18	5.19	5.90
.549	5.62	5.53	4.89	5.95	5.40	5.25	5.90
.563	5.70	5.43	4.98	6.12	5.12	5.33	5.92

Table 9 (continued)

J. D. 2 400 000 +	118	119	120	121	123	124	125
28 963.487	4.80	6.10	5.67	4.81	5.49	5.67	5.42
28 991.403	5.81	6.07	5.81	5.27	6.07	5.81	5.67
.416	5.28	6.15	5.91	4.96	6.02	5.78	5.60
.430	4.77	6.06	6.04	4.77	5.99	5.84	5.51
.522	5.50	6.05	6.13	—	6.29	5.75	5.40
.542	5.43	6.28	6.15	—	6.28	5.82	5.41
29 346.376	6.18	5.33	5.55	5.21	—	5.63	5.91
.392	6.36	5.64	5.54	5.39	5.69	5.85	6.01
29 719.549	5.11	5.31	5.52	5.56	5.58	5.70	5.83
.560	5.16	5.13	5.50	5.26	5.91	5.77	5.95
29 720.546	4.96	6.09	6.02	5.18	5.42	5.85	5.57
.558	5.00	6.07	5.97	5.21	5.39	5.83	5.57
29 774.405	6.47	6.13	6.03	5.19	6.36	5.61	5.49
.417	6.40	5.98	6.27	5.35	6.10	5.60	5.60
29 775.403	6.38	6.14	5.81	5.23	6.16	5.95	5.53
.415	6.39	6.26	5.83	5.13	6.21	5.94	5.47
.426	5.99	6.08	5.88	5.35	6.24	5.81	5.57
.437	5.71	6.02	5.88	5.45	6.34	5.93	5.54
.447	5.39	6.18	5.90	5.18	6.14	5.90	5.47
30 052.462	6.66	5.26	5.72	5.64	6.29	5.83	5.55
.474	6.21	5.18	5.65	5.43	6.09	5.97	5.46
.489	6.11	4.92	5.71	5.32	—	5.74	5.48
.501	6.43	4.98	5.80	5.38	6.35	6.08	5.51
30 078.418	6.47	5.26	6.12	5.49	5.69	5.61	5.43
.434	6.06	5.27	5.96	5.30	5.55	5.68	5.46
.470	6.13	5.75	5.91	5.46	5.73	5.75	5.73
.483	6.08	5.31	5.96	5.52	5.94	5.67	5.76
.498	6.02	5.70	6.01	5.49	5.87	5.74	5.79
.509	6.39	5.77	6.11	—	6.01	5.74	5.88
.521	6.26	5.83	6.01	5.64	5.91	5.81	5.93
.536	6.22	5.86	5.95	5.31	6.00	5.65	5.98
.548	6.20	5.91	5.96	5.41	6.09	5.82	5.89
33 390.497	4.95	5.57	6.07	5.05	5.72	5.49	5.53
.534	5.25	5.92	6.05	4.60	5.92	5.63	5.47
.545	5.33	5.95	6.12	4.77	6.04	5.61	5.51
.558	5.40	5.89	5.95	4.83	6.20	5.55	5.48
.570	5.60	6.01	6.08	4.85	5.89	5.69	5.64
.586	5.63	6.21	6.05	5.21	6.37	5.76	5.81
33 420.424	5.37	5.03	6.00	4.94	5.49	5.98	6.23
.438	5.19	5.40	5.98	4.89	5.46	5.85	6.05
.450	4.83	5.29	6.01	4.94	5.62	5.70	6.01
.476	5.02	5.37	5.96	5.24	5.80	5.51	6.01
.487	5.19	5.70	6.05	5.13	5.82	5.64	5.86
.498	5.28	5.59	5.81	5.07	6.06	5.73	5.81
.510	5.38	5.59	6.16	5.16	6.22	5.59	5.79
.523	5.36	5.61	6.15	5.07	—	5.61	5.54

Table 9 (continued)

J. D. 2 400 000 +	118	119	120	121	123	124	125
33 421.385	6.34	5.69	5.66	5.39	6.24	5.50	5.62
.442	5.01	4.89	5.66	5.40	5.08	5.83	5.87
.454	4.97	4.97	5.49	5.30	5.05	5.75	6.00
.465	4.92	5.01	5.48	5.10	5.21	5.78	5.88
.475	5.07	5.16	5.64	5.05	5.34	5.72	5.96
.486	5.19	5.24	—	5.03	5.27	5.78	6.20
.497	5.17	5.30	5.53	5.01	5.47	5.60	5.98
.535	5.59	5.44	5.63	5.06	5.56	5.80	6.10
.548	5.58	5.31	5.66	4.83	5.66	5.66	5.88
33 422.398	6.34	6.07	5.99	5.54	6.34	6.02	5.79
.431	5.17	5.47	5.88	5.64	6.29	5.85	5.91
.442	4.96	5.32	5.88	5.60	6.30	5.81	5.88
.452	5.00	5.06	5.99	5.23	6.23	5.92	5.95
.462	5.10	4.82	5.99	5.50	6.15	5.89	5.65
.472	5.16	4.94	5.96	5.66	6.54	5.93	5.69
.483	5.19	5.02	6.27	5.32	6.21	5.87	5.95
.493	5.27	5.05	6.13	5.47	5.98	5.90	5.76
.508	5.33	5.11	6.06	5.21	5.66	5.94	5.74
.520	5.69	5.08	6.05	5.24	5.36	5.89	6.00
33 763.406	6.26	6.12	5.65	5.61	5.82	5.91	5.48
.420	6.22	6.04	5.72	5.72	5.66	5.91	5.48
.442	6.19	6.10	5.75	5.50	4.87	5.88	5.43
.455	6.30	6.10	5.81	5.66	4.89	5.81	5.49
.464	6.40	6.20	5.80	5.65	5.09	6.01	5.52
.483	6.17	6.25	5.89	5.37	5.11	5.96	5.62
.494	5.57	6.09	5.81	5.29	5.33	5.96	5.61
.504	5.27	6.10	5.89	5.13	5.42	5.91	5.72
.514	4.93	6.30	5.97	5.10	5.47	5.85	5.73
.525	4.99	6.15	5.91	5.17	5.56	5.91	5.86
34 118.355	5.14	5.08	6.18	—	6.10	5.68	6.08
.372	6.14	5.15	6.00	—	6.28	5.81	5.79
.388	6.12	5.24	6.10	—	6.10	5.82	5.91
.428	6.22	5.38	6.05	4.86	6.31	5.92	5.65
.443	6.25	5.68	5.92	5.12	6.08	5.86	5.65
.470	5.94	5.94	5.90	5.24	—	5.84	5.39
.485	6.09	—	5.81	5.48	6.21	5.89	5.40
.499	6.24	5.85	5.73	5.23	5.99	5.82	5.42
.513	6.42	5.99	5.70	5.19	5.43	5.84	5.36
.526	6.46	6.02	5.60	—	5.07	5.57	5.60
.540	6.17	6.17	5.55	5.37	4.77	5.99	5.48
34 120.471	6.17	5.48	5.45	4.80	6.30	5.65	6.07
.484	6.24	5.57	5.57	4.79	—	5.57	6.00
.497	6.22	5.62	5.73	5.07	6.20	5.69	5.76
.510	6.19	5.76	5.70	5.06	—	5.66	5.80
.523	6.40	5.77	5.55	5.06	6.22	5.67	5.64
.536	6.09	5.72	5.70	4.90	6.20	5.72	5.54

Table 9 (continued)

J. D. 2 400 000 +	118	119	120	121	123	124	125
34 120.551	5.77	5.84	5.59	5.17	6.33	5.71	5.43
.564	5.15	5.95	5.78	5.03	6.18	5.78	5.55
.579	4.77	5.90	5.73	4.94	6.43	5.88	5.46
34 121.401	6.38	5.07	5.89	5.44	5.78	5.78	5.76
.412	6.17	5.03	6.17	5.50	5.91	5.74	5.86
.422	6.28	4.87	5.90	5.40	5.90	5.82	5.82
.431	6.12	4.85	5.86	5.54	5.99	5.90	5.88
.441	6.22	4.87	5.98	5.54	6.02	5.85	6.00
.484	6.17	5.30	6.06	5.15	6.06	5.86	6.06
.495	6.17	5.38	5.94	4.89	6.38	5.94	5.90
.505	6.33	5.56	6.00	4.98	6.04	5.83	5.88
.517	6.31	5.51	6.06	4.77	6.18	5.96	6.00
.528	6.18	5.57	5.89	4.86	6.28	5.87	5.94
.539	6.14	5.63	6.02	—	6.19	5.89	5.82
.552	5.63	5.61	6.03	—	6.25	5.84	5.78
.562	5.24	5.63	5.93	—	—	—	—
.594	4.80	5.92	6.10	—	6.14	5.74	5.49
.605	4.87	—	—	—	—	—	5.30
34 122.404	—	5.76	5.54	—	5.74	—	5.66
.416	6.32	5.54	5.58	—	5.58	5.74	5.65
.431	6.22	5.35	5.50	—	5.58	5.88	5.74
34 126.433	6.06	6.14	5.94	4.94	6.42	5.52	5.78
34 131.415	6.26	5.79	5.62	5.62	—	6.10	5.62
34 487.347	5.97	5.97	5.84	5.60	5.80	5.90	5.80
.367	6.38	6.12	5.62	5.84	5.94	5.92	6.07
.385	6.27	5.89	5.57	5.71	5.96	5.91	6.12
.397	*6.17*	*6.09*	*5.68*	*5.52*	*6.09*	*5.66*	*5.66*
.410	6.35	6.22	5.82	5.46	6.32	5.86	—
.428	6.15	5.72	5.78	5.76	5.95	5.63	5.83
.483	6.34	5.33	5.84	5.38	—	5.62	5.91
.449	6.36	5.11	5.93	5.70	—	5.65	5.93
.460	—	4.80	5.84	5.54	6.28	5.57	5.66
.474	5.93	4.84	6.01	5.44	—	5.48	5.62
.483	6.26	4.90	5.83	5.52	—	5.50	—
.494	—	4.95	5.83	—	—	5.50	5.48
.508	—	5.11	5.97	5.55	—	5.45	5.62
.518	6.10	5.17	—	5.50	—	5.59	5.60
34 488.530	6.29	5.05	5.59	5.54	5.97	5.81	5.77
.540	6.24	5.06	5.61	—	5.97	5.82	5.66
34 567.388	6.39	5.93	—	4.99	6.30	5.63	5.78
35 223.415	5.93	6.01	5.56	5.23	6.55	5.53	5.95
.428	6.28	6.20	5.58	5.32	6.13	5.54	6.02
.441	6.13	6.15	5.54	5.40	6.32	5.50	5.94
.467	6.37	6.12	5.57	5.19	6.19	5.60	5.88
.490	6.19	6.21	5.62	5.07	6.39	5.49	5.78
.503	6.31	6.20	5.54	4.83	6.27	5.65	5.65

Table 9 (continued)

J. D. 2 400 000 +	118	119	120	121	123	124	125
35 223.517	6.20	6.28	5.77	4.60	6.39	5.70	5.65
.530	6.39	6.28	5.65	4.58	—	5.65	5.58
.546	6.35	6.15	5.77	4.66	6.11	5.69	5.45
.573	6.14	6.05	6.03	4.82	5.95	5.60	5.45
35 224.454	6.21	6.15	6.08	5.29	6.21	5.74	5.86
.472	6.32	6.16	6.09	5.26	6.28	5.83	5.88
.485	6.18	6.12	6.04	5.41	6.32	5.85	5.90
.499	6.32	6.32	6.08	5.33	6.19	5.89	5.97
.512	6.38	6.26	6.28	5.42	—	5.79	5.86
.524	6.09	6.40	6.06	5.21	—	5.47	5.74
.542	6.42	6.26	6.04	5.20	—	5.77	5.65
.556	6.14	6.31	6.16	4.98	6.29	5.81	5.58
.569	6.35	6.22	6.01	4.86	—	5.80	5.65
.583	6.18	6.10	6.06	4.74	6.29	5.94	5.54
35 227.534	6.60	6.49	6.02	5.75	5.62	5.91	5.62
.547	6.32	6.30	5.88	5.67	5.70	6.12	5.85
.560	6.42	6.42	5.72	5.70	5.70	6.11	5.97
.573	6.23	6.19	5.82	5.56	6.04	—	5.82
.586	5.96	6.19	5.81	6.00	5.81	5.71	5.88
35 598.507	6.42	5.28	5.74	5.62	5.84	5.92	5.82
.524	6.44	4.84	5.54	5.52	5.81	6.14	5.57
.537	6.36	4.81	5.54	5.54	—	5.94	5.58
35 600.363	5.88	6.12	6.13	4.83	—	5.66	5.79
.378	5.70	6.03	5.90	4.91	—	5.40	5.53
.391	6.07	6.16	6.03	5.02	6.42	5.48	5.58
.405	6.03	6.48	5.80	5.05	—	5.44	5.90
.421	5.90	6.29	5.80	5.14	—	5.41	5.68
.434	5.83	6.10	5.84	5.23	6.19	5.64	5.69
.446	5.98	6.13	5.66	5.22	6.43	5.64	5.75
.501	6.39	6.29	5.64	5.39	5.92	5.61	6.09
.525	6.58	6.28	5.52	5.36	5.02	5.92	6.16
35 603.369	5.78	5.80	6.10	—	5.68	5.53	5.97
.381	5.86	5.88	6.06	—	5.84	5.57	5.78
.397	5.89	5.86	6.14	5.47	5.99	5.61	5.59
.408	5.90	6.02	6.08	5.06	5.78	5.50	5.54
.419	6.14	6.04	5.94	5.45	5.98	5.50	5.74
.431	5.90	6.28	6.04	5.25	5.91	5.65	5.70
.446	6.02	6.14	6.02	5.35	6.17	5.66	5.53
.457	6.25	6.17	6.16	4.97	6.16	5.66	5.54
.468	6.14	6.25	6.16	4.87	6.35	5.57	5.46
.491	6.23	6.10	6.10	4.68	6.10	5.60	5.52
.507	6.20	6.12	6.02	4.72	6.12	5.72	5.51
35 920.444	5.41	5.95	6.11	5.01	6.59	5.51	5.25
.467	5.64	6.05	5.80	5.15	6.38	5.56	5.53
.487	5.67	5.67	5.49	5.07	—	5.58	5.76
.504	5.91	5.62	5.66	—	6.18	5.73	5.76

Table 9 (continued)

J. D. 2 400 000 +	118	119	120	121	123	124	125
35 920.547	6.10	4.92	5.52	5.15	6.50	5.56	5.97
.562	6.12	4.82	5.50	4.90	6.56	5.77	5.92
.585	6.14	4.84	5.63	5.00	6.22	5.66	5.89
35 933.415	5.52	6.04	5.60	—	6.04	5.69	5.38
.443	5.89	5.86	5.52	5.43	6.21	5.86	5.78
.479	5.80	5.43	5.72	5.08	6.10	5.84	5.74
.503	5.72	4.81	5.69	—	6.03	5.72	5.72
.515	6.09	4.55	5.75	—	6.35	5.99	6.13
.530	6.08	4.87	5.98	5.10	6.08	5.74	5.92
.543	6.08	4.94	6.18	—	—	5.71	5.81
.573	6.18	5.27	6.04	5.15	6.02	5.62	5.95
.588	—	5.68	6.09	—	—	5.56	5.58
.602	—	5.39	6.06	—	—	—	5.87
36 991.457	5.98	6.00	5.56	5.79	—	5.71	5.92
.470	—	6.27	5.69	5.72	5.06	—	5.96
.485	6.04	6.27	5.71	5.74	5.35	5.69	5.83
37 018.470	5.51	6.15	5.73	4.96	—	6.10	5.46
.483	5.16	6.22	5.66	4.70	—	6.05	5.44
.496	4.91	6.39	5.74	4.63	—	5.69	5.55
.510	4.96	6.16	5.71	4.88	—	5.78	5.65
.523	5.14	6.23	6.00	4.88	—	5.82	5.59
.537	5.24	5.87	5.58	4.92	—	5.64	5.80
.550	5.30	—	5.82	5.05	—	5.80	5.54
.563	5.34	6.26	5.68	5.00	6.48	5.62	5.70
.577	5.50	6.16	5.82	5.12	—	5.72	5.68
.609	5.84	6.12	5.94	5.38	—	5.54	5.86
.623	5.89	5.99	5.82	4.92	—	5.70	5.84
.637	6.00	5.30	6.11	5.49	—	5.77	5.92
37 057.539	5.57	4.96	5.81	5.47	5.69	5.95	6.15
.552	5.79	5.14	5.75	—	5.75	6.01	6.01
.578	5.89	5.28	6.04	4.96	5.94	5.84	5.94
37 058.529	5.50	5.45	6.05	5.50	4.89	5.50	6.01
.580	5.97	5.08	5.93	5.59	5.36	5.53	6.11
37 757.598	4.90	—	—	—	6.17	5.44	5.81
37 791.365	6.21	5.85	6.03	4.75	6.11	5.60	5.60
.380	6.23	5.98	5.93	4.74	6.33	—	5.89
.394	6.29	5.94	5.97	5.05	6.42	5.56	5.83
.424	6.27	6.17	6.02	5.11	6.31	5.51	5.95
.439	6.20	6.06	6.02	5.06	6.25	5.50	5.96
.454	6.36	5.99	5.97	5.53	6.39	5.47	5.81
.469	6.35	6.09	5.97	5.11	6.10	5.51	5.96
.483	6.22	6.13	6.09	5.28	6.30	5.34	5.74
.479	6.27	6.13	5.96	5.22	6.42	5.34	5.96
.519	5.70	6.19	6.09	5.36	6.37	5.53	5.85
.533	5.07	6.07	6.15	5.03	6.32	5.50	5.68
.549	4.99	6.04	5.98	5.25	6.12	5.57	5.66
.563	5.02	6.30	6.00	—	5.98	5.63	5.60

Table 9 (continued)

J. D. 2 400 000 +	126	131	140	142	202	203
28 963.487	5.84	5.15	5.00	5.46	5.67	—
28 991.403	5.72	5.21	4.88	5.35	5.78	—
.416	5.72	4.93	5.00	5.11	5.72	—
.430	5.78	4.80	4.87	5.03	5.81	—
.522	5.27	4.70	—	—	5.64	—
.542	5.12	5.17	4.98	4.90	5.92	—
29 346.376	5.72	5.27	5.30	5.14	5.81	—
.392	5.87	5.41	5.54	—	5.61	—
29 719.549	5.80	5.21	5.38	5.53	5.70	—
.560	5.79	4.98	5.41	5.46	5.87	—
29 720.546	5.67	5.30	5.42	5.45	5.78	—
.558	5.62	5.34	5.32	5.39	5.80	—
29 774.405	5.39	5.13	5.33	5.49	5.80	—
.417	5.45	5.39	5.42	5.54	5.80	—
29 775.403	5.48	5.46	5.48	5.08	5.79	—
.415	5.59	5.44	5.53	5.10	5.89	—
.426	5.53	5.62	5.48	5.25	5.83	—
.437	5.44	5.54	5.54	5.54	5.90	—
.447	5.24	5.47	5.47	5.51	5.80	—
30 052.462	5.55	5.41	5.01	—	5.83	5.60
.474	5.57	5.54	5.09	5.92	6.02	5.66
.489	5.45	5.25	5.29	5.66	5.80	5.59
.501	5.51	5.89	5.35	5.80	5.94	5.66
30 078.418	5.92	5.64	5.02	5.11	5.72	5.58
.434	5.84	5.39	4.91	4.76	5.71	5.61
.470	5.83	5.40	5.08	4.96	5.75	—
.483	5.76	5.60	5.08	4.85	5.76	—
.498	5.58	5.49	5.10	5.03	5.74	5.56
.509	5.60	5.38	5.08	5.11	5.83	5.56
.521	5.62	5.32	5.23	5.09	5.83	5.52
.536	5.53	5.17	5.25	5.28	5.79	5.60
.548	5.43	5.13	5.31	5.13	5.75	5.56
33 390.497	5.57	5.13	5.24	5.53	5.72	5.67
.534	5.47	5.37	5.40	5.62	5.65	—
.545	5.48	5.67	5.51	5.51	5.80	5.56
.558	5.43	5.50	5.48	5.59	5.87	5.51
.570	5.52	5.57	5.50	5.38	5.76	5.45
.586	5.63	5.72	5.53	5.55	5.63	5.64
33 420.424	5.46	5.37	5.09	5.40	5.98	5.45
.438	5.73	5.37	5.19	5.59	5.90	5.61
.450	5.58	5.06	5.23	5.46	5.83	5.68
.476	5.45	5.24	5.32	5.45	5.93	5.64
.487	5.48	5.13	5.33	5.45	5.76	5.69
.498	5.35	5.02	5.35	5.56	6.16	5.70
.510	5.55	5.23	5.32	5.48	5.90	5.58
.523	5.42	4.98	5.31	5.68	5.90	5.69

Table 9 (continued)

J. D. 2 400 000 +	126	131	140	142	202	203
33 421.385	5.76	5.14	5.01	4.82	5.76	—
.442	5.81	5.40	5.03	4.94	5.73	5.78
.454	5.51	5.30	5.24	5.05	5.75	5.75
.465	5.54	5.27	5.17	4.88	5.82	5.66
.475	5.39	5.25	5.18	5.02	5.87	5.68
.486	5.41	5.29	5.27	5.14	5.80	5.59
.497	5.47	5.37	5.32	5.26	5.77	5.64
.535	5.47	5.63	5.54	5.44	5.70	5.57
.548	5.44	5.44	5.58	—	5.66	5.51
33 422.398	6.24	5.51	5.18	5.62	5.54	5.52
.431	6.05	5.95	5.25	5.50	5.65	5.58
.442	5.86	5.73	5.32	5.65	5.73	5.40
.452	5.92	—	5.33	5.50	5.76	5.49
.462	5.89	5.57	5.37	—	5.74	—
.472	5.96	5.60	5.36	5.27	5.83	5.71
.483	5.95	5.64	5.40	4.91	5.78	5.66
.493	5.88	5.44	5.42	4.99	5.76	5.67
.508	5.46	5.33	5.51	4.92	5.94	5.61
.520	5.64	5.33	5.36	4.70	5.69	5.68
33 763.406	5.70	5.12	5.56	5.51	5.78	—
.420	5.63	5.23	5.57	5.63	5.71	5.67
.442	5.75	5.12	5.45	5.79	5.75	5.72
.455	5.85	5.20	5.37	5.92	—	—
.464	5.99	5.21	5.41	5.89	5.65	5.66
.483	5.98	5.25	5.23	—	5.73	5.60
.494	5.83	5.24	5.19	5.72	5.64	5.63
.504	5.93	5.23	5.18	5.74	5.64	5.53
.514	5.88	5.47	5.20	5.76	5.65	5.48
.525	5.86	5.58	5.13	6.09	5.65	5.53
34 118.355	5.44	—	5.29	—	5.88	5.67
.372	5.30	—	5.20	—	5.84	5.56
.388	5.36	—	5.31	—	5.94	5.60
.428	5.72	5.30	5.44	5.99	5.82	5.62
.443	5.74	5.30	5.53	5.98	5.76	5.71
.470	5.69	5.50	5.60	—	5.89	5.63
.485	5.86	5.66	5.52	5.24	5.71	5.66
.499	5.90	5.45	5.45	5.06	5.73	5.48
.513	5.82	5.33	5.60	4.68	5.60	5.60
.526	5.62	5.15	5.45	4.73	5.91	—
.540	6.03	5.11	5.19	5.11	5.55	5.44
34 120.471	5.48	—	5.48	—	5.76	5.55
.484	5.42	—	5.49	—	5.81	5.60
.497	5.60	—	—	5.57	5.87	5.52
.510	5.59	5.47	5.48	5.58	5.89	5.45
.523	5.59	5.52	5.41	5.71	5.84	5.42
.536	5.82	5.45	5.41	—	5.84	5.35

Table 9 (continued)

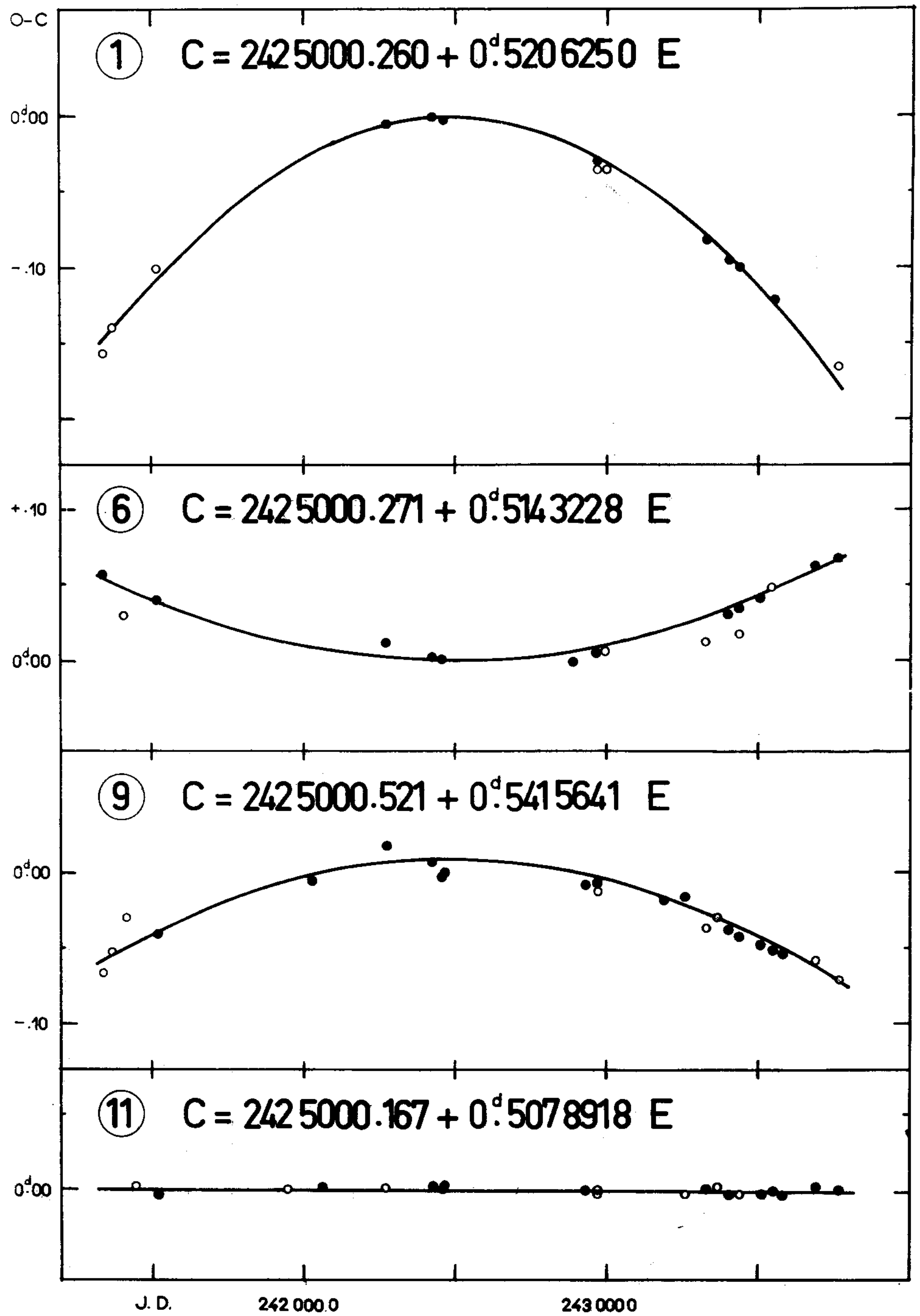
J. D. 2 400 000 +	126	131	140	142	202	203
34 120.551	5.80	5.65	5.13	5.71	5.91	5.51
.564	5.78	5.34	5.21	5.50	5.84	5.64
.579	5.88	5.43	5.10	5.40	6.00	5.57
34 121.401	5.48	5.48	5.35	5.07	5.89	5.48
.412	5.64	5.53	5.42	5.09	6.10	5.49
.442	5.50	5.56	5.53	5.14	5.82	5.60
.431	5.51	5.56	5.49	5.12	5.83	5.48
.441	5.50	5.60	5.62	5.14	5.88	5.60
.484	5.43	5.46	5.56	5.34	5.84	5.57
.495	5.51	5.38	5.58	5.15	5.81	5.60
.505	5.51	5.35	5.54	5.35	5.76	5.63
.517	5.54	5.18	5.44	5.51	5.94	5.72
.528	5.49	5.10	5.33	5.40	5.81	5.76
.539	5.51	—	5.32	—	5.84	5.66
.552	5.59	—	5.08	—	5.78	5.69
.562	5.56	5.00	5.12	—	5.73	5.62
.594	5.68	5.03	5.00	5.66	5.66	5.66
.605	—	—	5.11	—	5.83	5.67
34 122.404	5.85	—	5.46	—	5.66	—
.416	—	4.97	5.47	—	5.65	5.72
.431	5.82	5.01	5.50	—	5.74	5.67
34 126.433	5.58	5.38	5.50	5.50	5.63	5.69
34 131.415	5.78	5.11	5.54	5.68	5.88	—
34 487.347	5.62	5.36	5.38	5.38	5.80	—
.367	5.69	5.45	5.36	—	5.91	—
.385	5.89	5.33	5.22	5.91	5.86	—
.397	5.66	5.10	5.04	5.56	5.82	—
.410	5.90	5.24	—	5.49	5.84	—
.428	—	4.95	5.01	—	5.72	—
.438	5.81	5.04	5.06	5.60	5.84	—
.449	6.03	5.19	5.04	5.90	5.87	—
.460	5.91	5.18	5.18	5.87	5.66	—
.474	5.82	5.27	5.14	5.74	5.68	—
.483	5.83	5.18	5.23	5.59	5.72	—
.494	5.90	5.19	5.26	—	5.73	—
.508	6.00	5.09	5.27	5.39	5.62	—
.518	5.95	5.37	5.43	5.50	5.73	—
34 488.530	5.91	5.37	5.44	5.66	5.79	—
.540	5.82	5.42	5.46	5.63	5.74	—
34 567.388	5.56	5.76	5.16	5.52	5.76	—
35 223.415	5.53	5.13	5.33	4.90	5.72	—
.428	5.54	5.34	5.40	4.93	5.79	—
.441	5.50	5.37	5.43	5.04	5.79	—
.467	5.32	5.44	5.46	5.09	5.71	—
.490	5.49	5.68	5.49	5.24	5.76	—
.503	5.44	5.45	5.40	5.28	5.81	—

Table 9 (continued)

J. D. 2 400 000 +	126	131	140	142	202	203
35 223.517	5.51	5.31	5.24	5.29	5.85	—
.530	5.47	5.40	5.24	5.14	5.81	—
.546	5.51	5.20	5.08	5.36	5.71	—
.573	5.69	5.10	5.10	—	5.71	—
35 224.454	5.60	5.14	5.54	5.21	5.76	—
.472	5.42	4.92	5.62	5.08	5.96	—
.485	5.41	5.08	5.47	4.90	5.85	—
.499	5.38	5.08	5.50	4.96	5.94	—
.512	5.40	4.90	5.40	4.71	5.86	—
.524	5.26	4.98	5.23	4.81	5.82	—
.542	5.30	5.04	5.24	4.90	5.74	—
.556	5.46	5.09	5.06	—	5.81	—
.569	5.54	5.29	5.10	5.07	5.79	—
.583	5.49	5.25	5.06	5.15	5.85	—
35 227.534	6.15	5.33	5.35	5.49	5.75	—
.547	5.98	5.35	—	5.70	5.83	—
.560	6.17	5.54	5.24	5.75	5.63	—
.573	5.82	5.40	5.23	—	5.56	—
.586	5.86	5.24	5.10	5.60	6.00	—
35 598.507	5.88	5.35	5.30	5.60	5.64	5.73
.524	5.98	5.48	5.42	5.61	5.67	5.58
.537	5.94	5.43	5.73	5.94	5.75	5.60
35 600.363	5.99	5.50	5.00	4.70	5.88	5.74
.378	5.48	5.40	5.04	4.85	5.94	5.56
.391	5.67	5.46	5.12	5.02	5.71	5.67
.405	5.55	5.66	5.27	4.94	5.77	5.80
.421	5.60	5.38	5.11	4.93	5.88	5.65
.434	5.49	5.32	5.16	4.95	5.77	5.65
.446	5.53	5.29	5.08	5.24	5.80	5.66
.501	5.54	5.07	5.39	5.26	5.90	—
.525	5.58	5.10	5.56	5.50	6.01	5.67
35 603.369	5.70	—	5.03	—	6.00	5.70
.381	5.80	—	5.14	5.60	5.80	5.75
.397	5.61	5.37	5.10	5.32	5.92	5.48
.408	5.80	5.19	4.98	5.27	6.21	5.58
.419	5.94	5.28	5.15	5.56	5.92	5.57
.431	5.96	5.14	5.22	5.54	5.85	5.62
.446	6.00	5.11	5.24	5.60	5.84	5.47
.457	5.91	4.97	5.29	5.57	5.82	5.56
.468	5.98	4.90	5.12	5.40	5.90	5.47
.491	5.68	4.96	5.45	5.58	5.87	5.58
.507	5.64	5.14	5.38	5.56	5.86	5.45
35 920.444	5.28	5.35	5.02	5.99	5.89	—
.467	5.80	5.50	5.07	—	5.80	—
.487	5.99	5.79	.488	4.70	5.67	—
.504	5.66	5.30	4.64	—	5.80	—

Table 9 (continued)

J. D. 2 400 000 +	126	131	140	142	202	203
35 920.547	5.65	4.96	4.66	5.10	5.80	—
.562	5.20	4.73	4.64	—	5.80	—
.585	5.17	4.84	4.68	—	5.87	—
35 933.415	5.58	5.30	5.30	5.43	5.64	—
.443	5.67	5.45	5.33	5.86	5.68	—
.479	5.39	5.26	5.11	5.39	5.80	—
.503	5.27	5.19	4.89	—	5.86	—
.515	5.33	5.21	4.97	—	5.91	—
.530	5.49	5.21	4.84	5.49	5.74	—
.543	4.94	—	4.62	—	5.76	—
.573	—	4.90	4.78	—	5.79	—
.588	5.28	—	4.88	—	5.58	—
.602	5.26	—	4.78	—	5.66	—
36 991.457	5.71	—	5.60	—	5.70	—
.470	6.11	—	5.69	5.61	5.75	—
.485	6.15	—	5.43	—	5.74	—
37 018.470	5.44	—	5.52	5.49	5.84	—
.483	—	—	5.37	5.43	5.92	—
.496	5.62	—	5.04	4.48	5.96	—
.510	5.71	—	5.15	4.85	5.84	—
.523	5.55	—	5.07	4.35	5.96	—
.537	5.69	—	4.93	—	—	—
.550	5.54	—	5.23	4.90	5.90	—
.563	5.60	—	5.11	5.20	5.81	—
.577	5.72	—	5.18	5.03	5.70	—
.609	5.78	—	5.16	5.12	5.74	—
.623	6.14	—	5.49	5.35	5.72	—
.637	—	—	5.62	5.40	5.87	—
37 057.539	5.57	—	4.95	—	5.69	—
.552	5.65	—	5.31	—	5.79	—
.578	5.89	—	5.34	—	5.89	—
37 058.529	5.45	—	5.18	—	5.81	—
.580	—	—	—	—	5.83	—
37 757.598	5.72	—	5.15	—	5.94	5.74
37 791.365	5.54	5.54	4.80	5.31	5.81	5.64
.380	5.83	5.34	5.02	5.22	5.79	5.56
.394	5.71	5.56	5.16	5.54	5.72	5.56
.424	5.67	5.49	5.04	5.53	5.78	5.51
.439	5.90	5.31	5.03	5.43	5.77	5.67
.454	5.60	5.60	—	—	5.64	5.64
.469	5.72	5.14	4.82	5.53	5.66	5.67
.483	5.56	4.92	4.88	5.31	5.65	5.65
.497	5.50	4.88	4.85	5.37	5.60	5.66
.519	—	4.96	5.10	—	5.67	5.70
.533	5.40	4.82	5.07	5.37	5.71	5.74
.549	5.46	4.89	5.30	5.40	5.66	5.62
.563	5.46	4.98	5.19	5.54	5.70	5.70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J. D.
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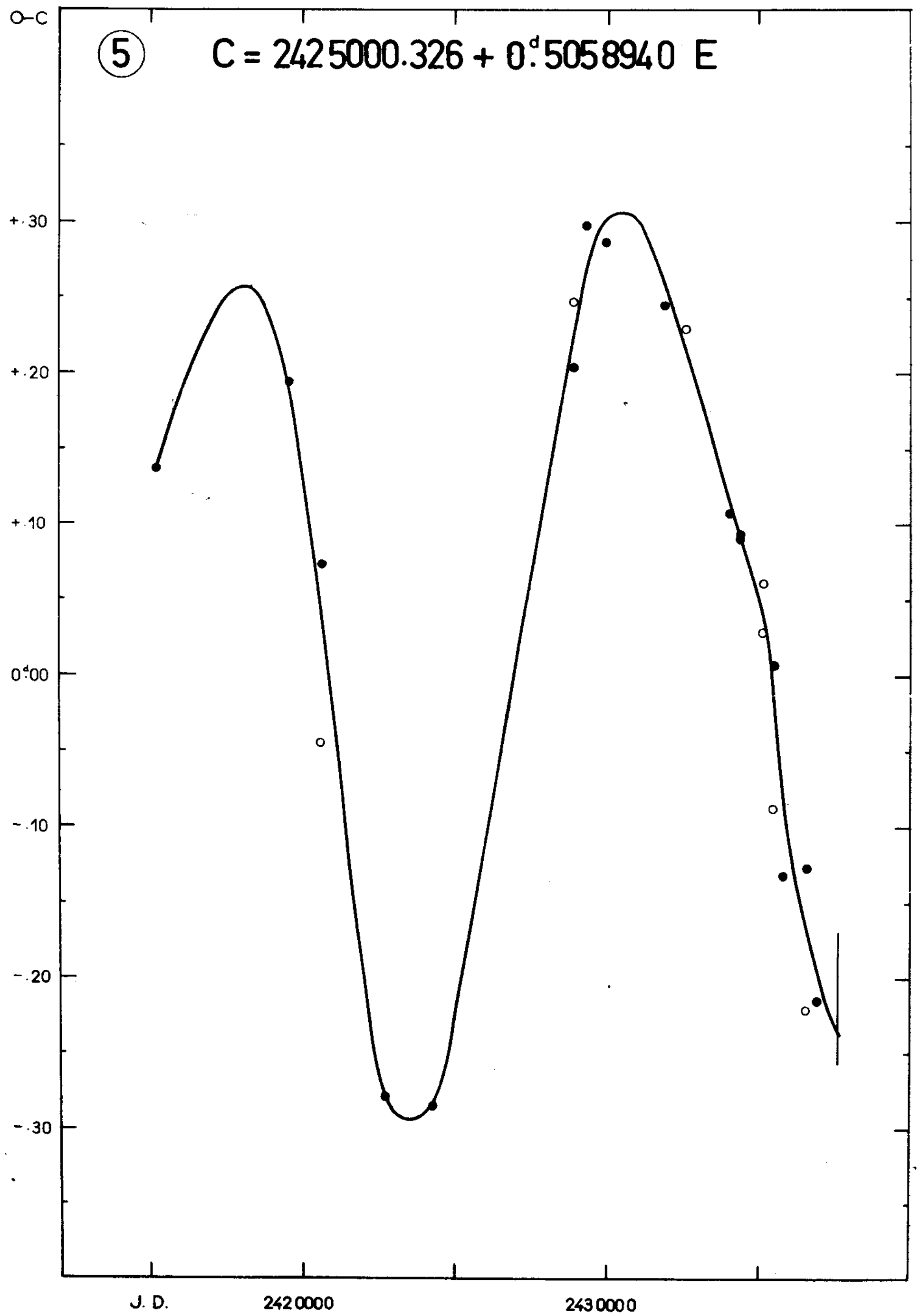
243 000.0

Fig. 28.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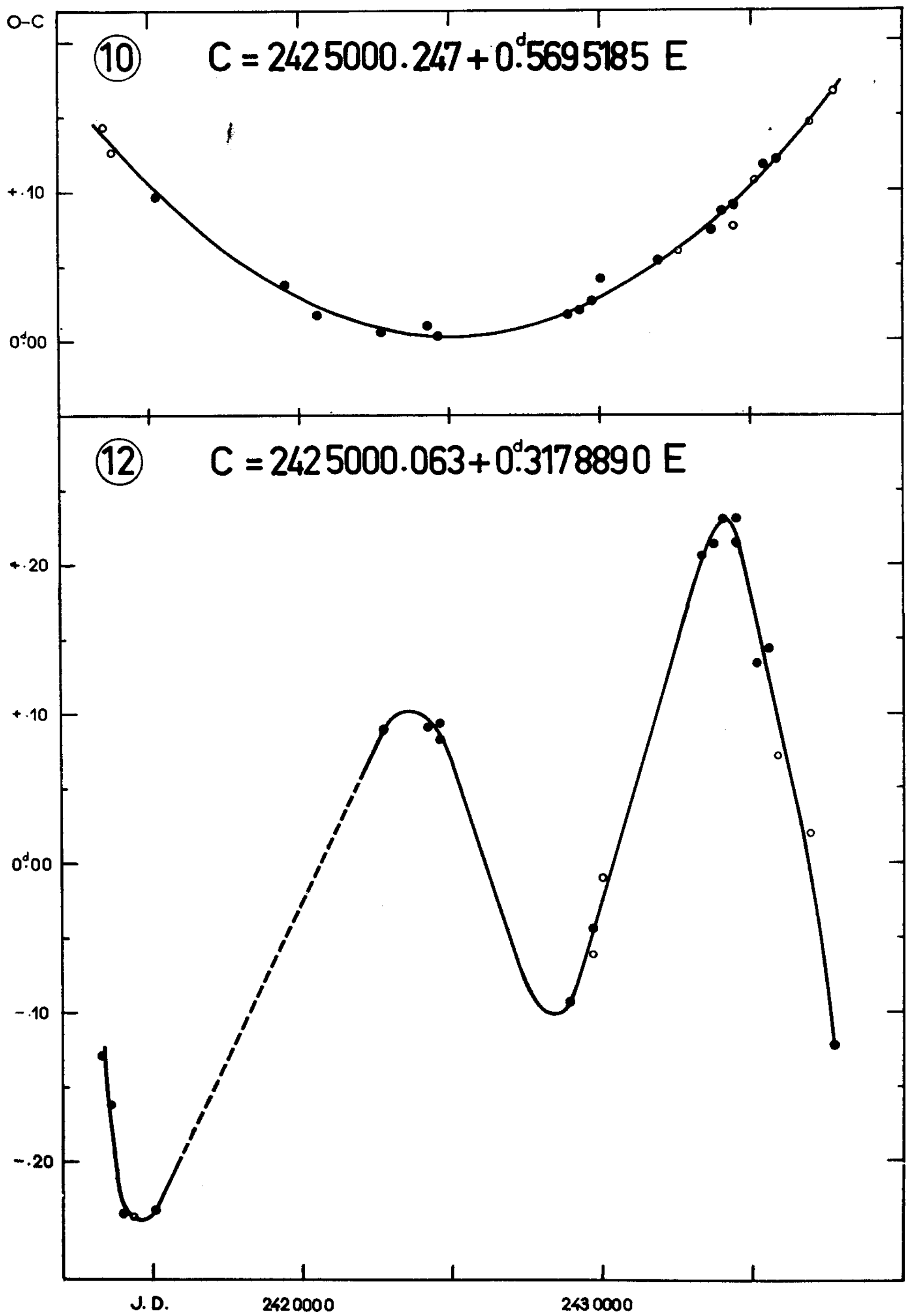
J. D.
2420000
2430000

Fig. 29.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⑫ C = 2425000.063 + 0ᵈ.3178890 E
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+ .10
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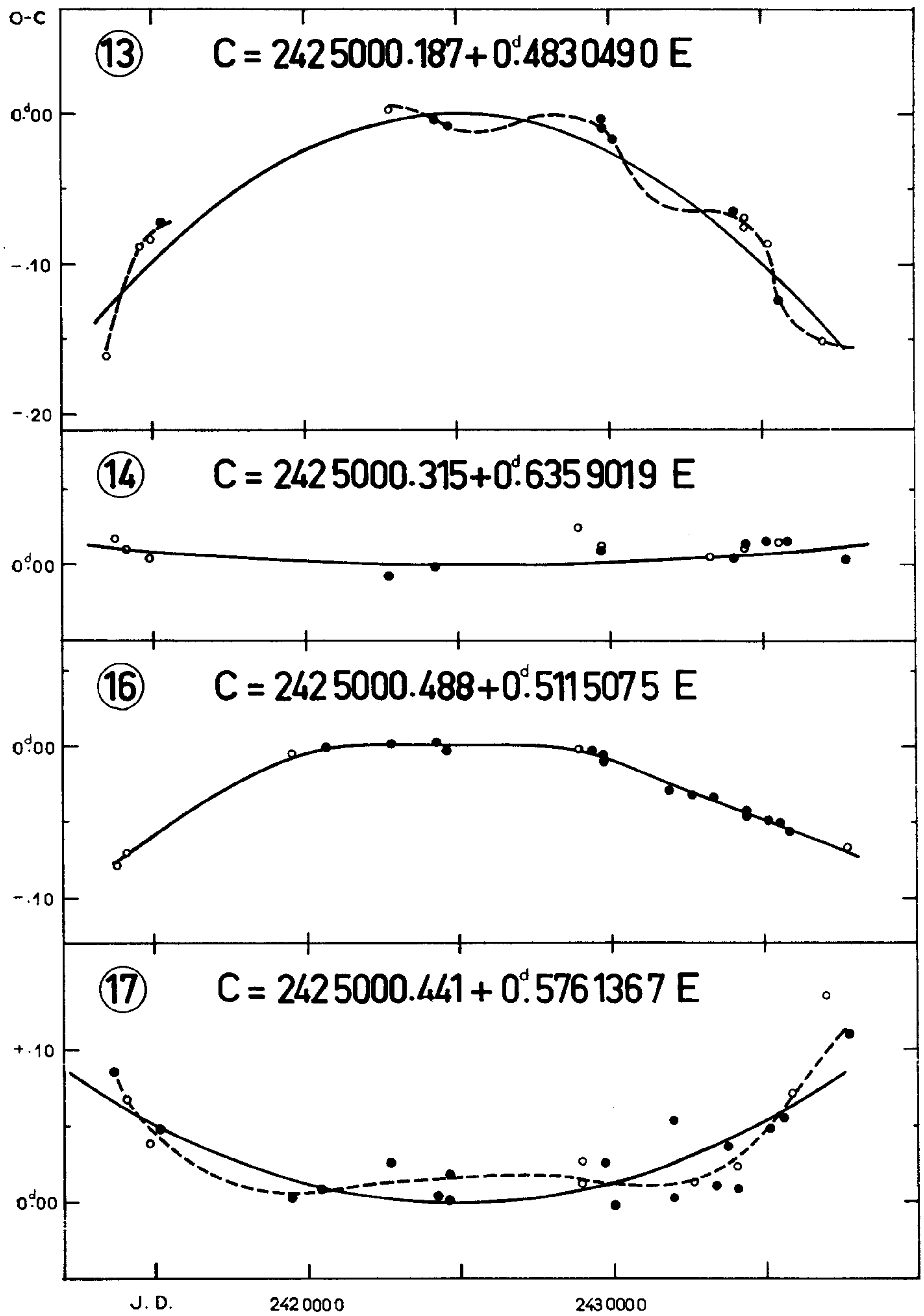
− .10
− .20
J. D.
2420000
2430000

Fig. 30.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16 C = 2425000.488+0ᵈ.5115075 E
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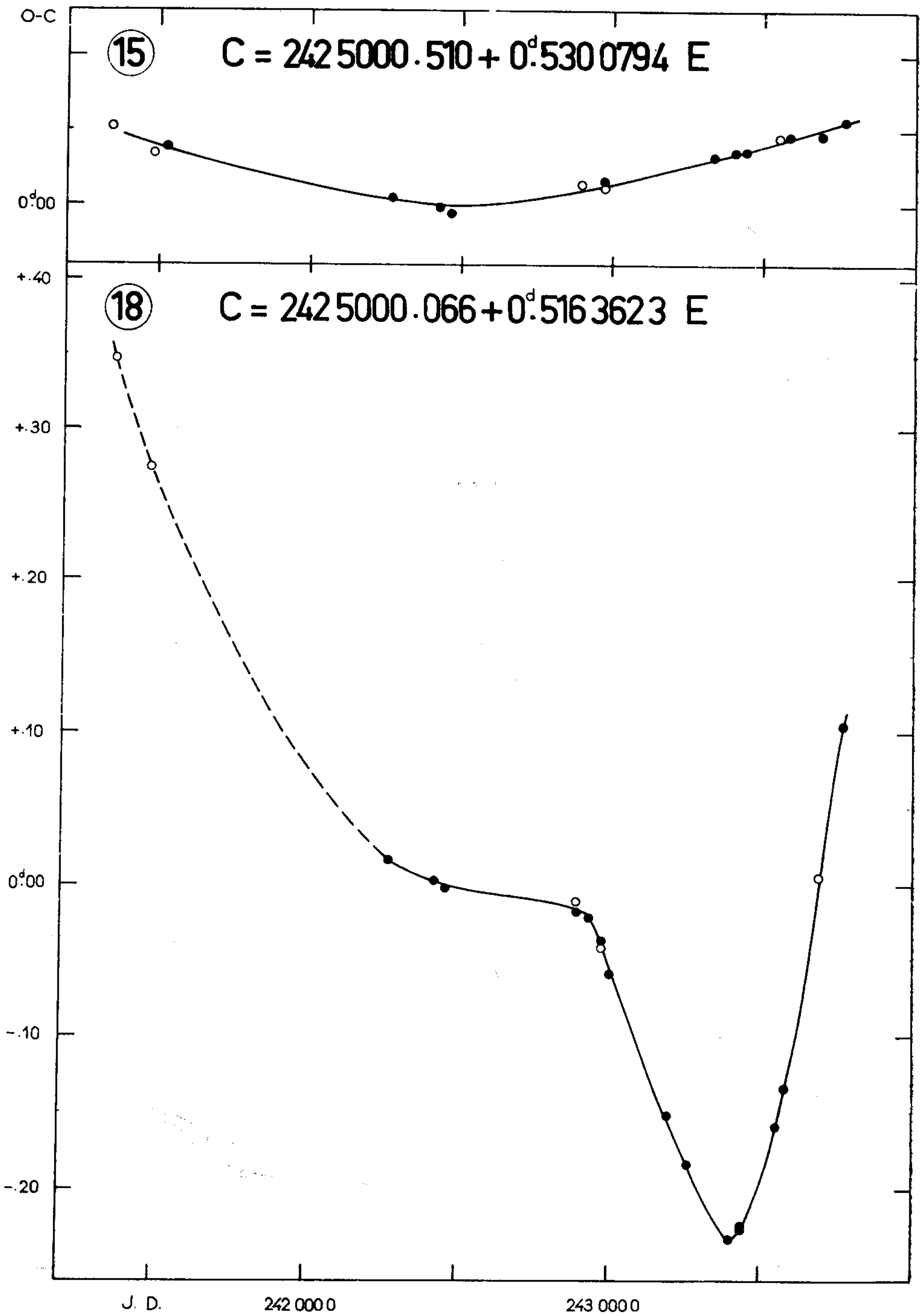
J. D.
2420000
2430000

Fig. 31.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+.20
+.10
0ᵈ.00
−.10
−.20
J. D.
242 0000
243 0000

Fig. 32.

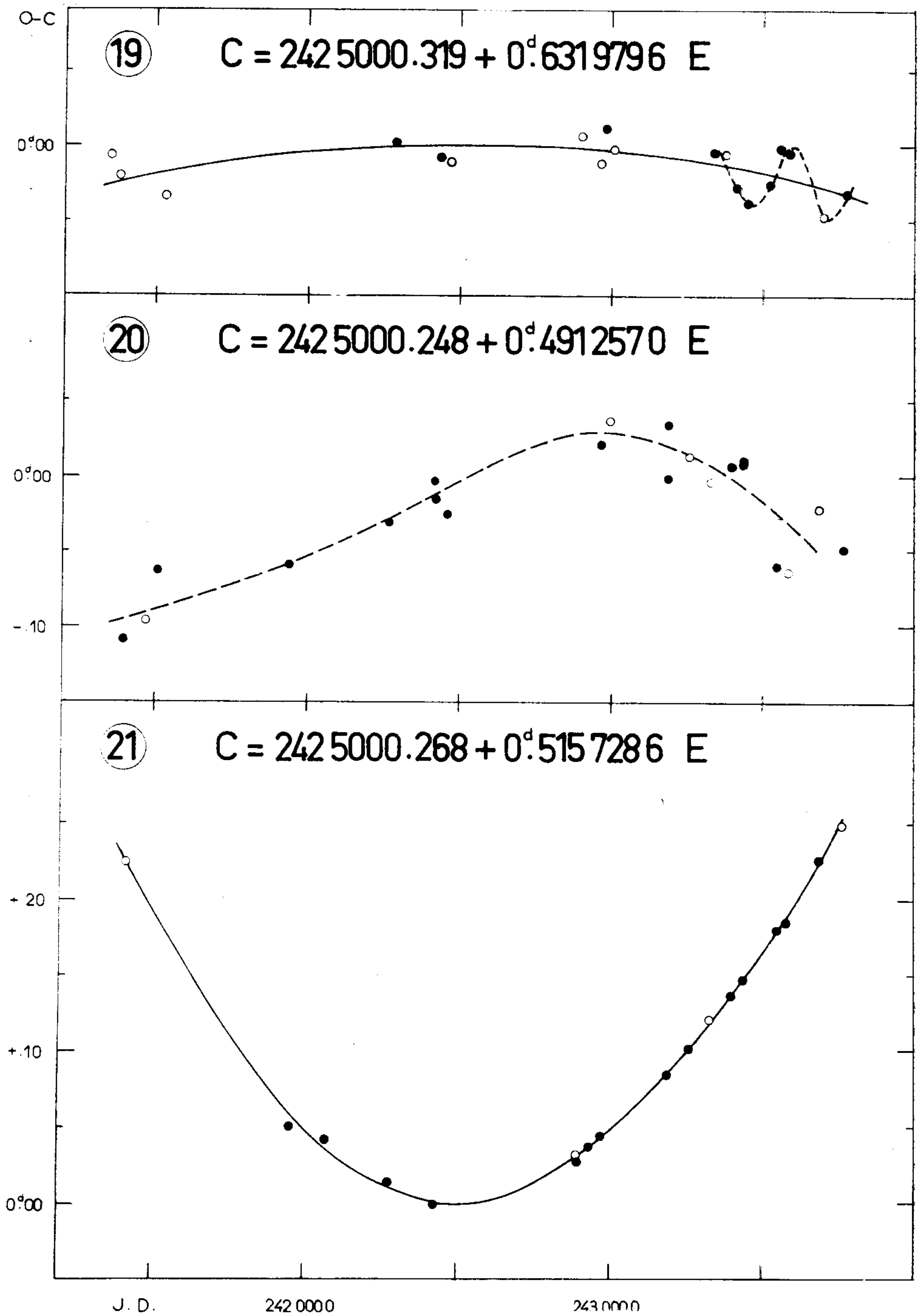
O–C
19
C = 2425000.319 + 0ᵈ.6319796 E
0ᵈ.00
20
C = 2425000.248 + 0ᵈ.4912570 E
0ᵈ.00
–.10
21
C = 2425000.268 + 0ᵈ.5157286 E
+.20
+.10
0ᵈ.00
J. D.
242 0000
243 0000

Fig. 33.

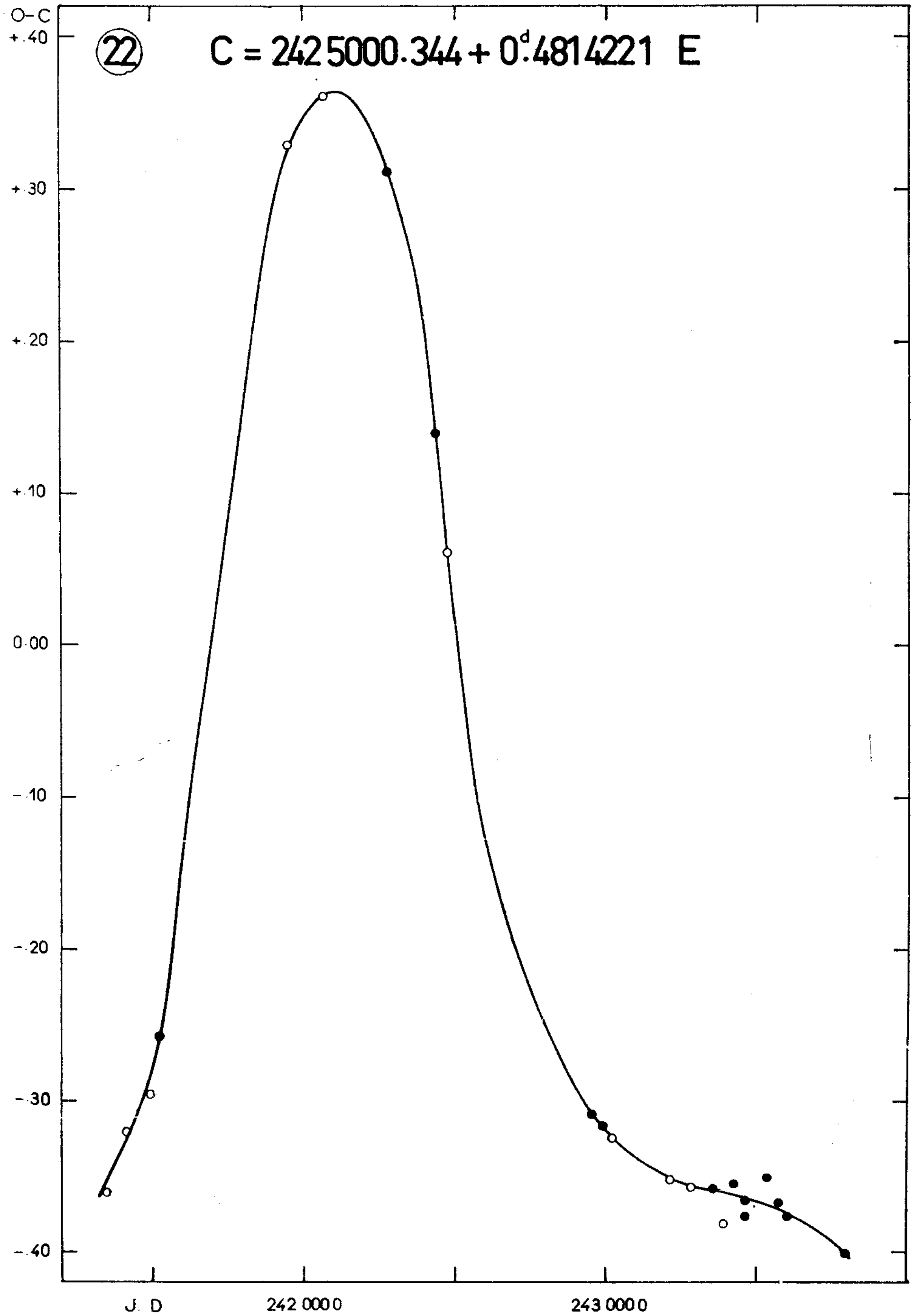
O–C
+.40
+.30
+.20
+.10
0.00
−.10
−.20
−.30
−.40
22
C = 2425000.344 + 0ᵈ.4814221 E
J. D
2420000
2430000

Fig. 34.

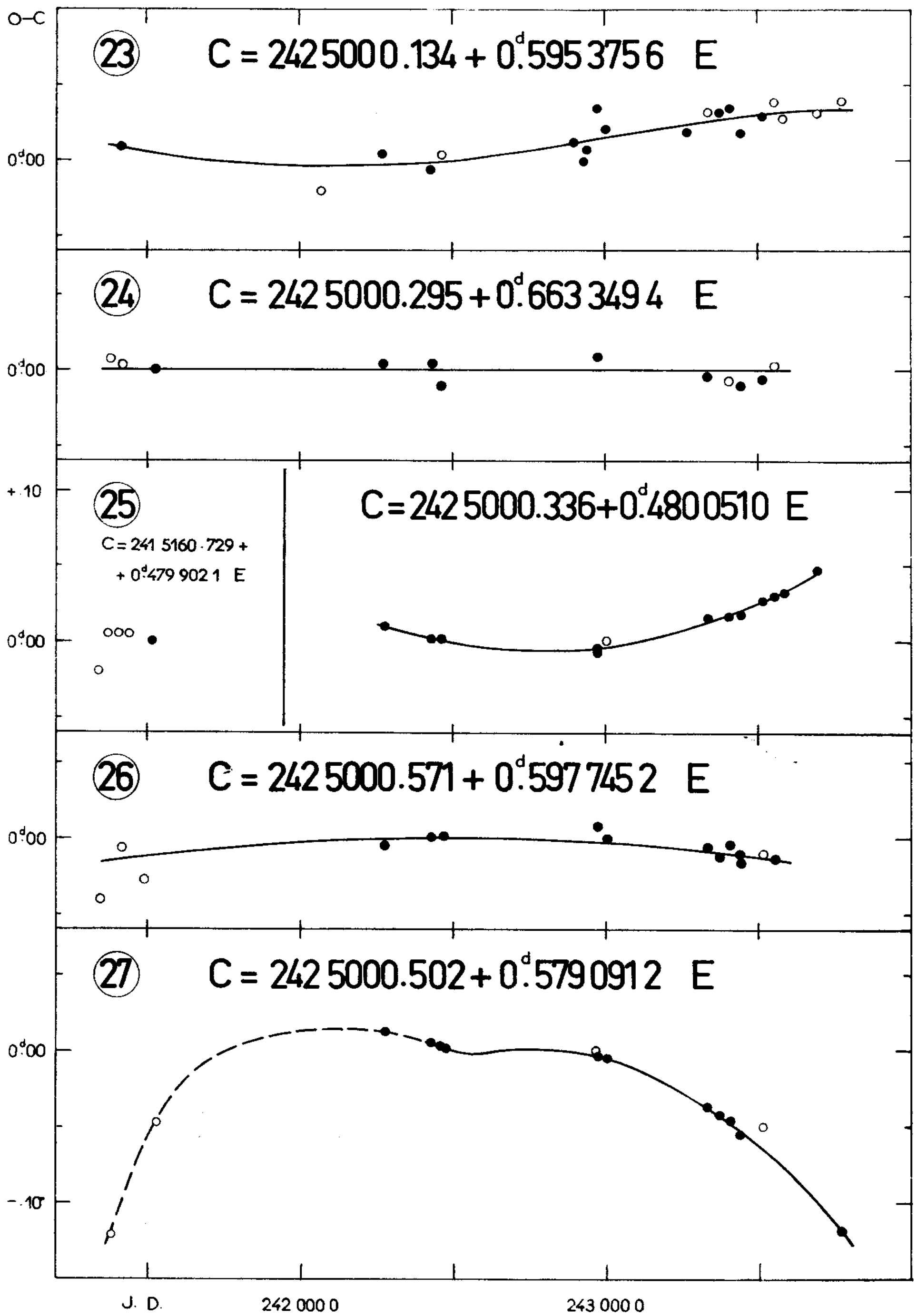
O–C
23
C = 242 5000.134 + 0.d595 375 6 E
0.d00
24
C = 242 5000.295 + 0.d663 349 4 E
0.d00
+.10
25
C = 241 5160.729 +
+ 0.d479 902 1 E
C = 242 5000.336 + 0.d480 0510 E
0.d00
26
C = 242 5000.571 + 0.d597 745 2 E
0.d00
27
C = 242 5000.502 + 0.d579 091 2 E
0.d00
–.10
J. D.
242 000 0
243 000 0

Fig. 35.

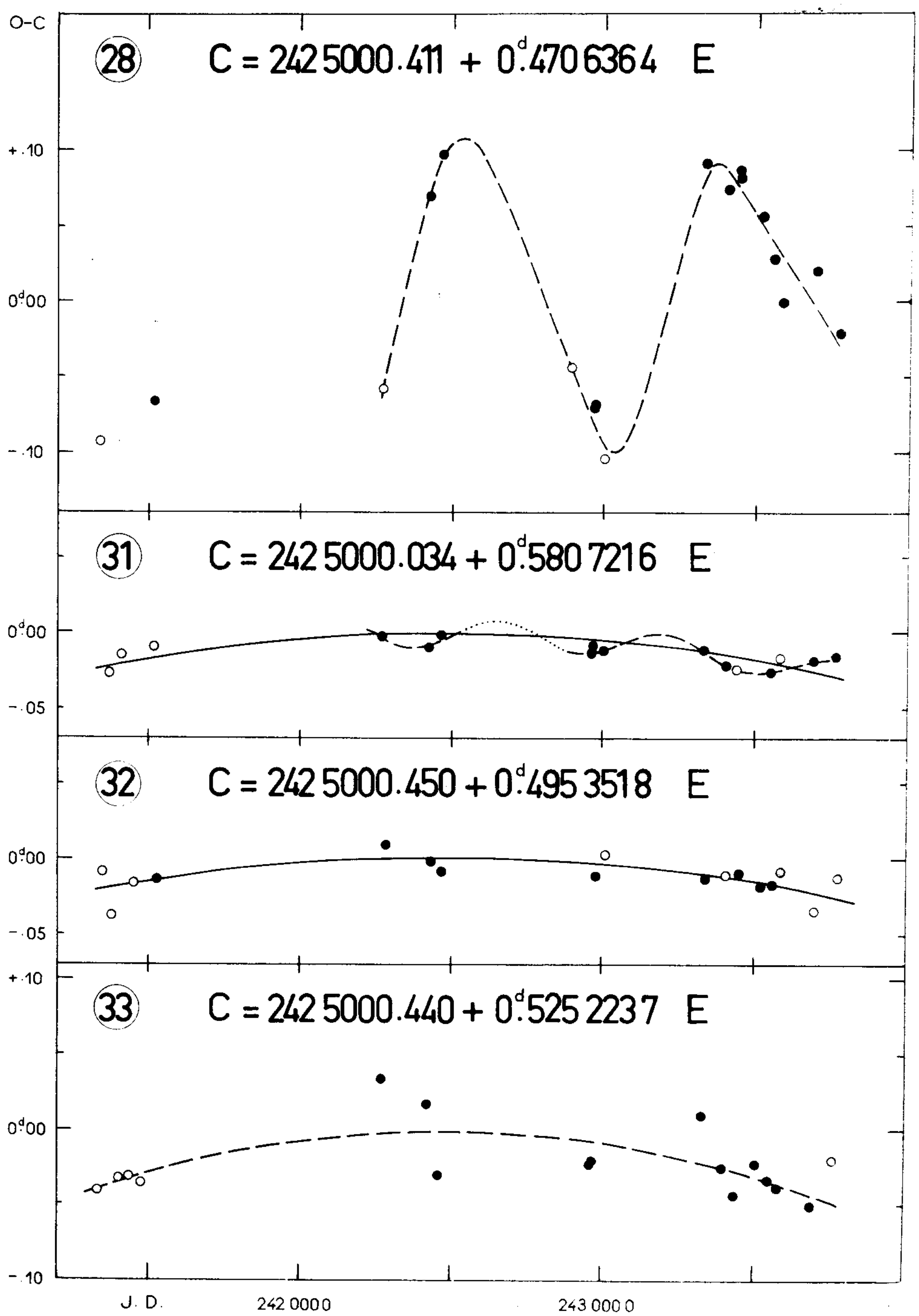
O–C
28
C = 2425000.411 + 0ᵈ.4706364 E
+.10
0ᵈ00
–.10
31
C = 2425000.034 + 0ᵈ.5807216 E
0ᵈ00
–.05
32
C = 2425000.450 + 0ᵈ.4953518 E
0ᵈ00
–.05
+.10
33
C = 2425000.440 + 0ᵈ.5252237 E
0ᵈ00
–.10
J. D.
2420000
2430000

Fig. 36.

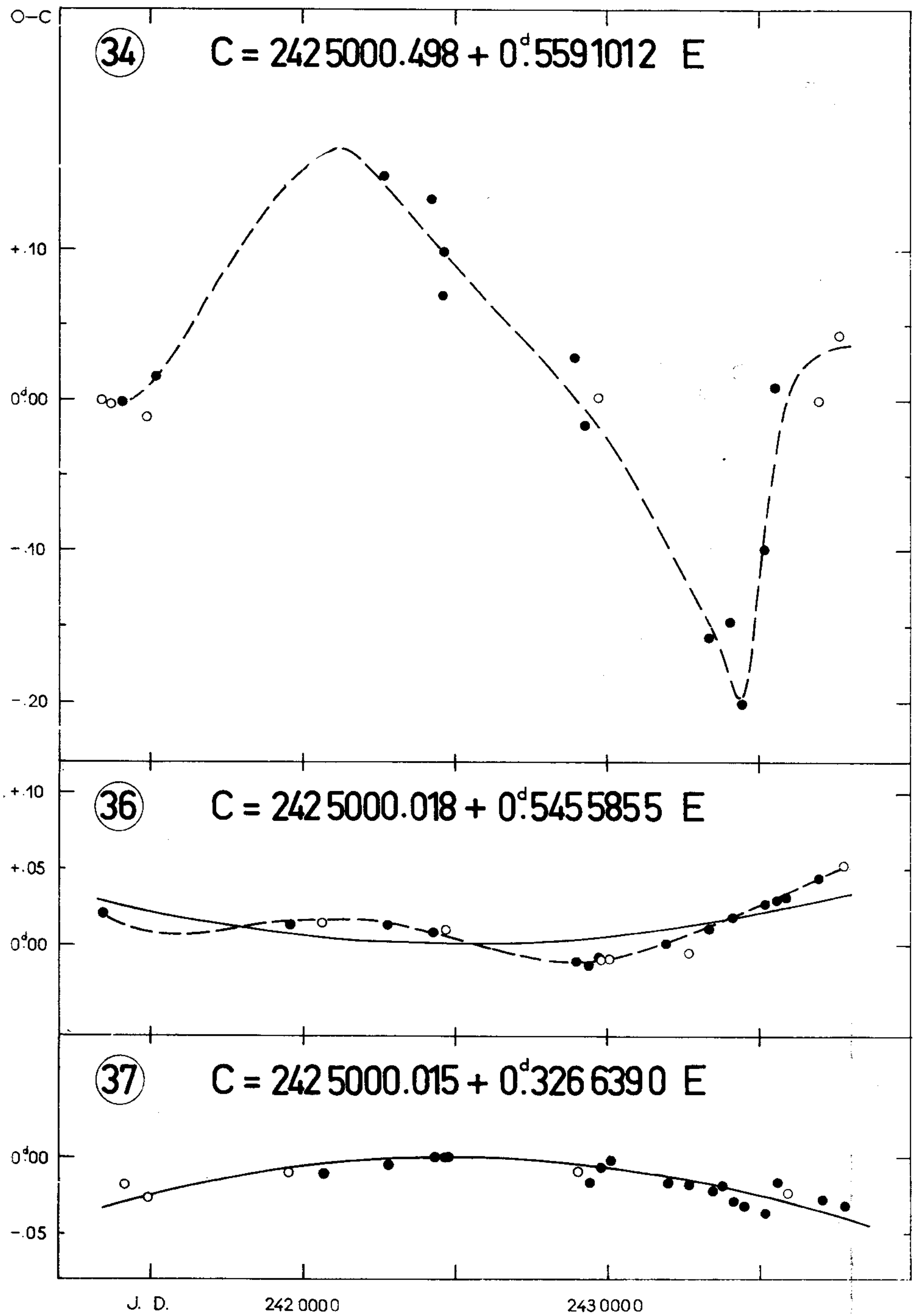
O–C
34
C = 242 5000.498 + 0ᵈ.559 1012 E
+.10
0ᵈ.00
–.10
–.20
36
C = 242 5000.018 + 0ᵈ.545 5855 E
+.10
+.05
0ᵈ.00
37
C = 242 5000.015 + 0ᵈ.326 6390 E
0ᵈ.00
–.05
J. D.
242 0000
243 0000

Fig. 37.

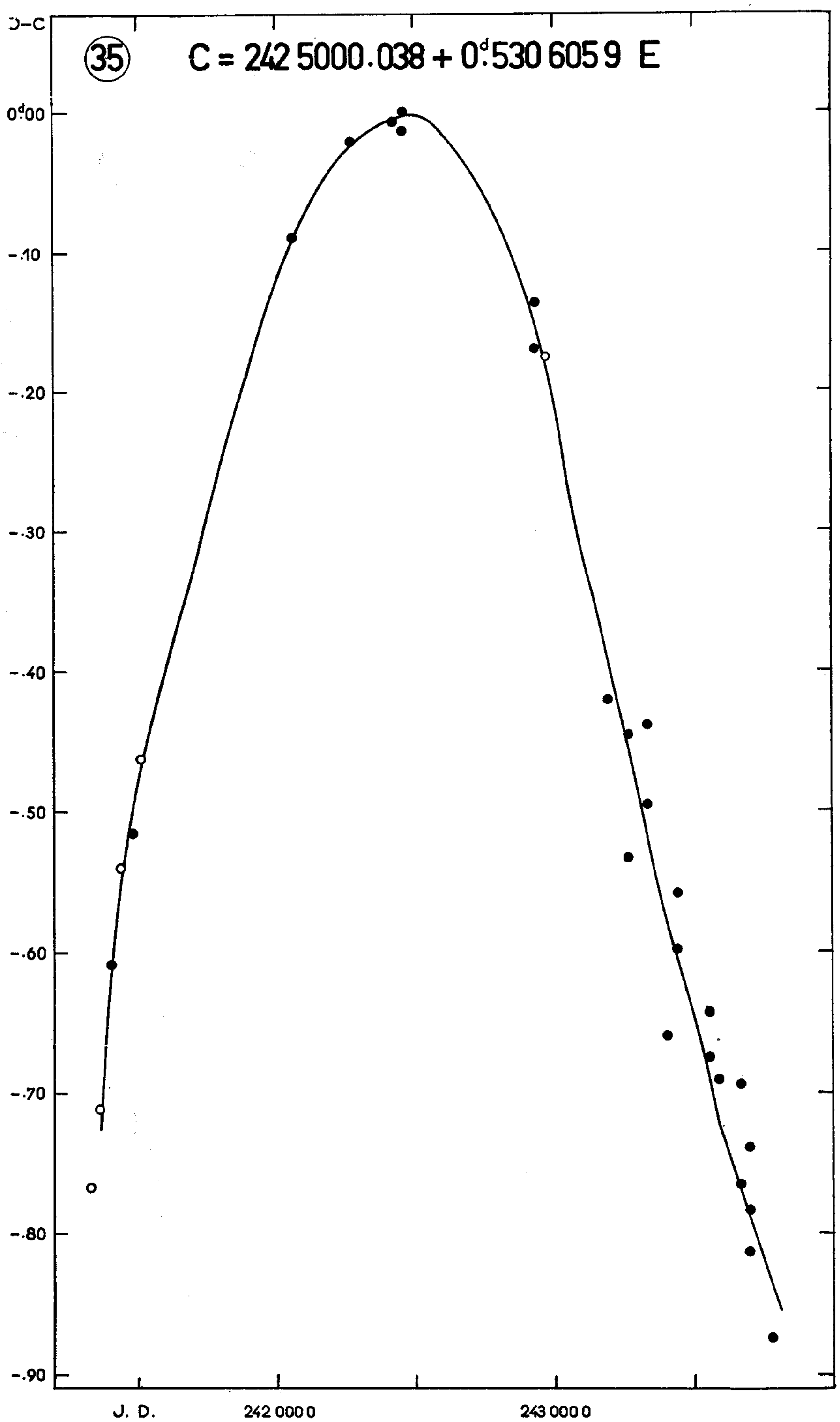
O–C
35
C = 242 5000.038 + 0ᵈ.530 605 9 E
0ᵈ00
–.10
–.20
–.30
–.40
–.50
–.60
–.70
–.80
–.90
J. D.
242 000 0
243 000 0

Fig. 38.

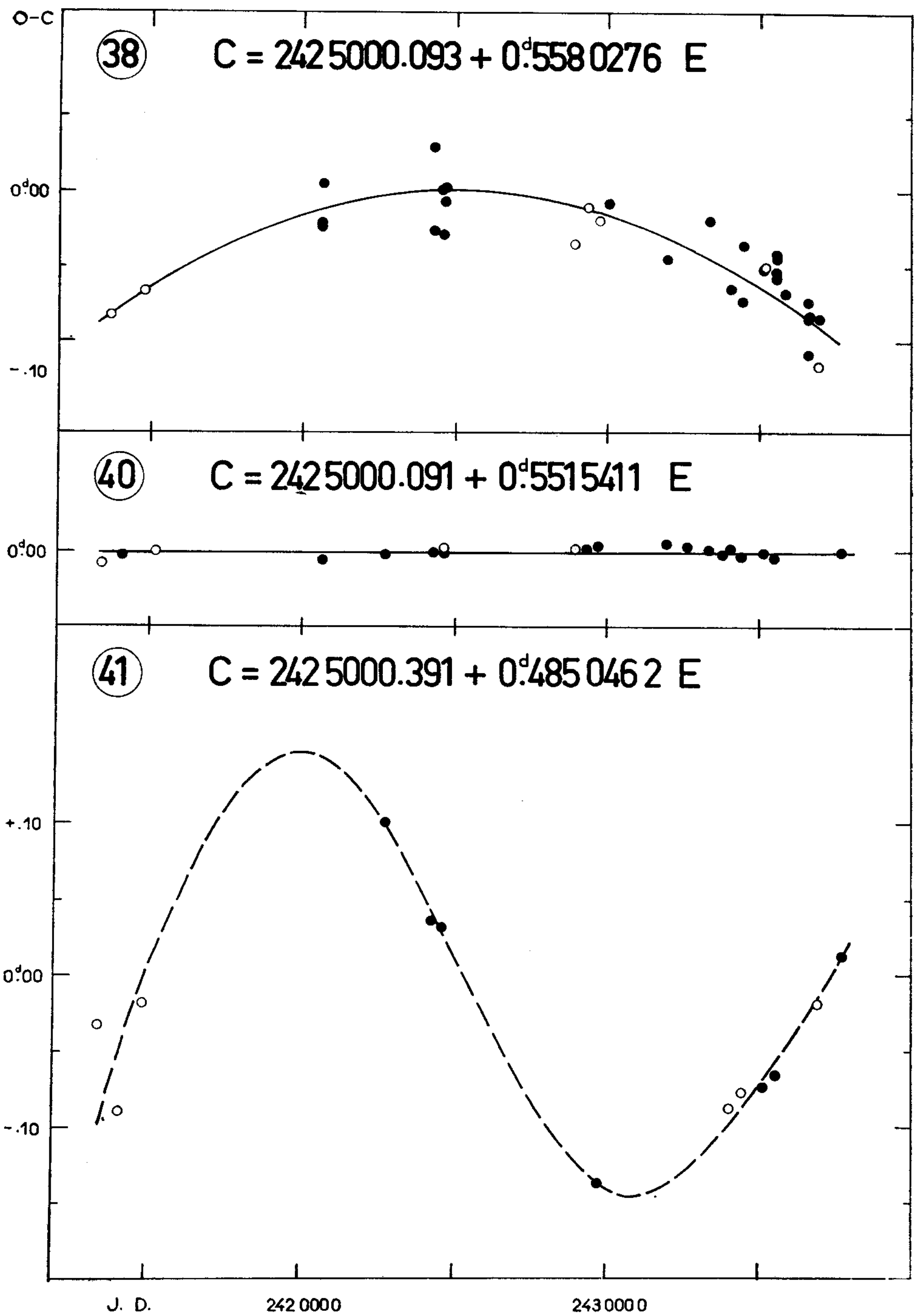
O–C
38
C = 2425000.093 + 0.ᵈ5580276 E
0.ᵈ00
–.10
40
C = 2425000.091 + 0.ᵈ5515411 E
0.ᵈ00
41
C = 2425000.391 + 0.ᵈ4850462 E
+.10
0.ᵈ00
–.10
J. D.
2420000
2430000

Fig. 39.

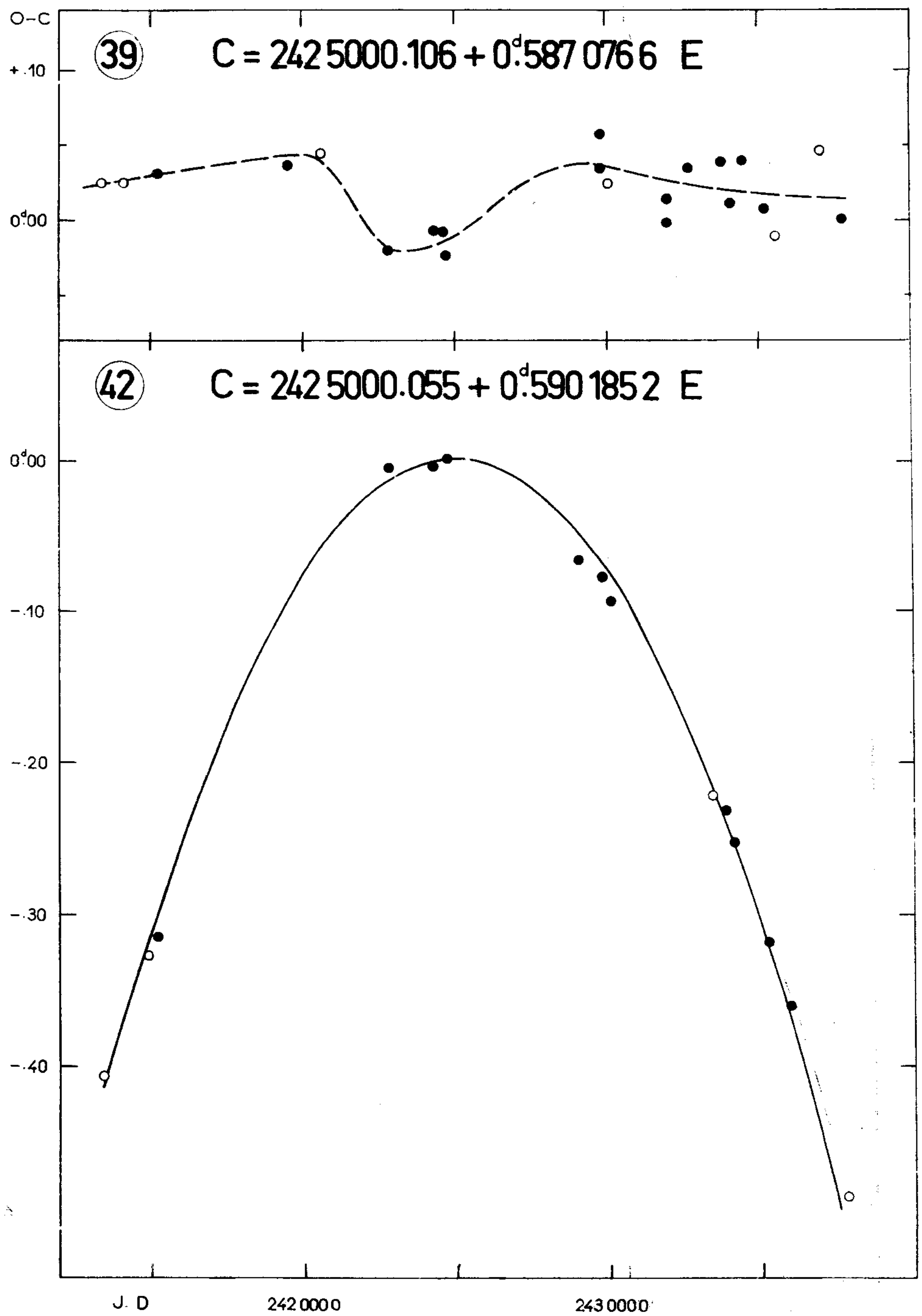
O–C
39
C = 242 5000.106 + 0ᵈ587 0766 E
+ .10
0ᵈ00
42
C = 242 5000.055 + 0ᵈ590 1852 E
0ᵈ00
–.10
–.20
–.30
–.40
J. D
242 0000
243 0000

Fig. 40.

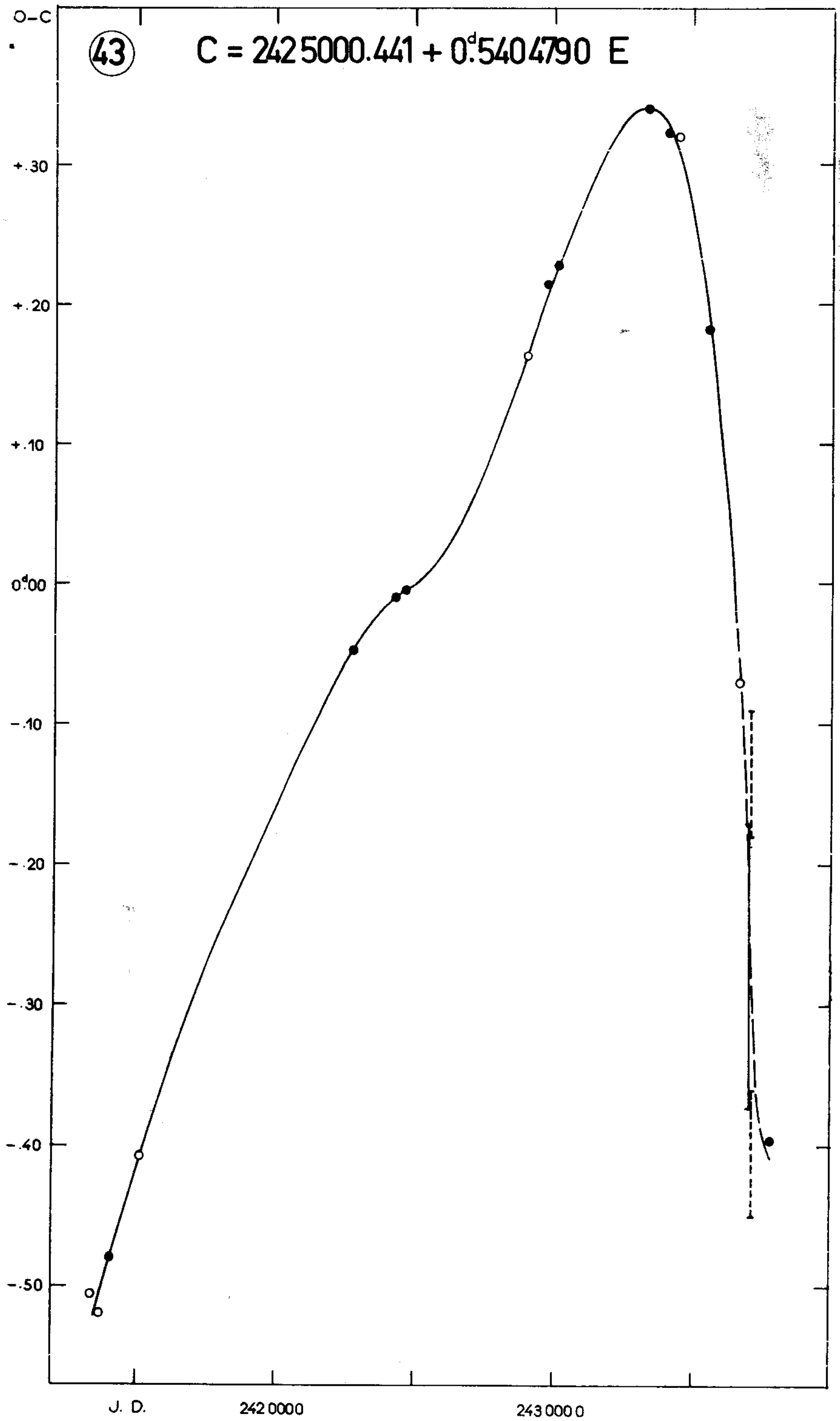
O–C
43
C = 2425000.441 + 0ᵈ.5404790 E
+.30
+.20
+.10
0ᵈ.00
–.10
–.20
–.30
–.40
–.50
J. D.
2420000
2430000

Fig. 41.

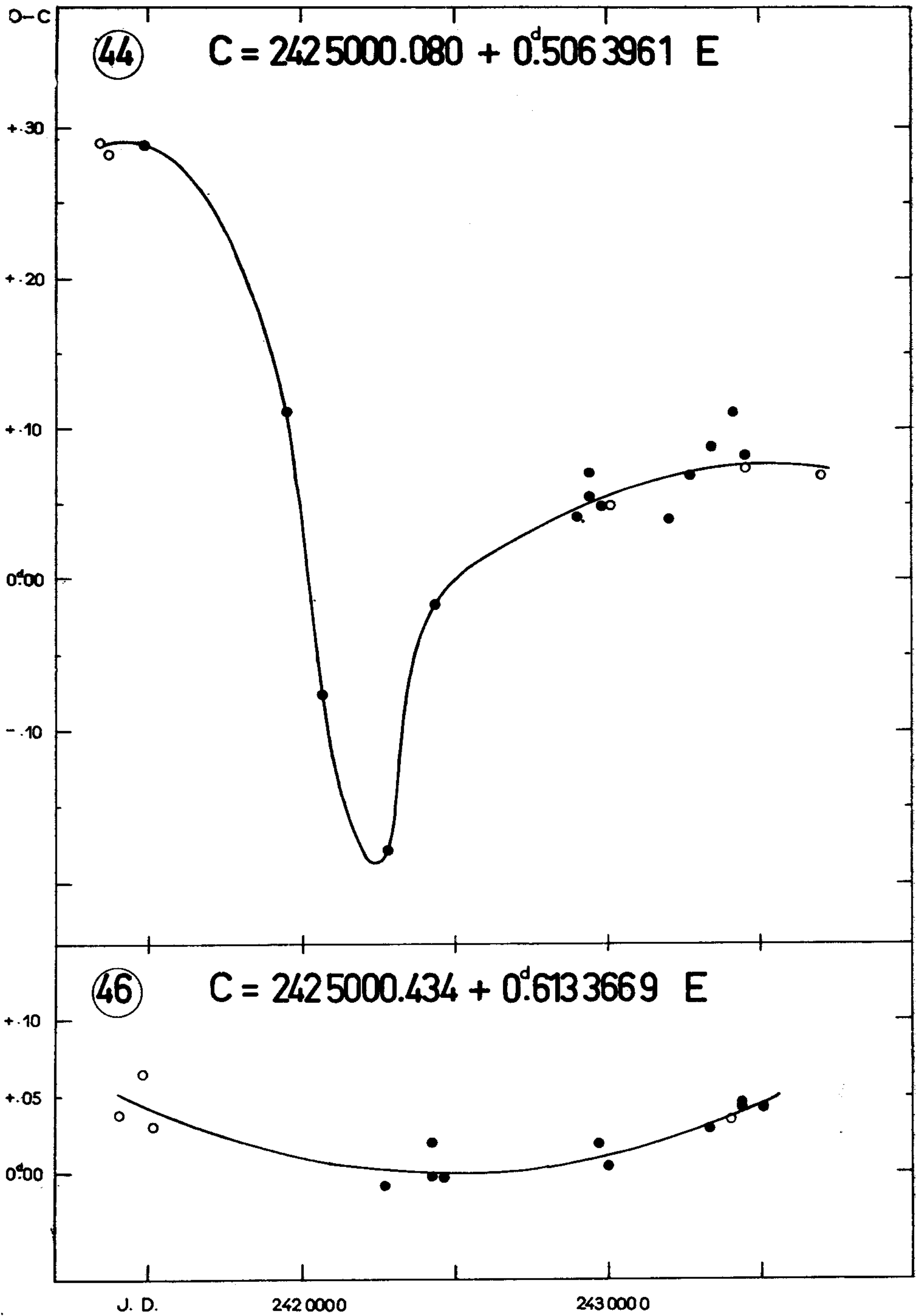
O–C
(44) C = 2425000.080 + 0ᵈ.5063961 E
+.30
+.20
+.10
0ᵈ.00
−.10
(46) C = 2425000.434 + 0ᵈ.6133669 E
+.10
+.05
0ᵈ.00
J. D.
2420000
2430000

Fig. 42.

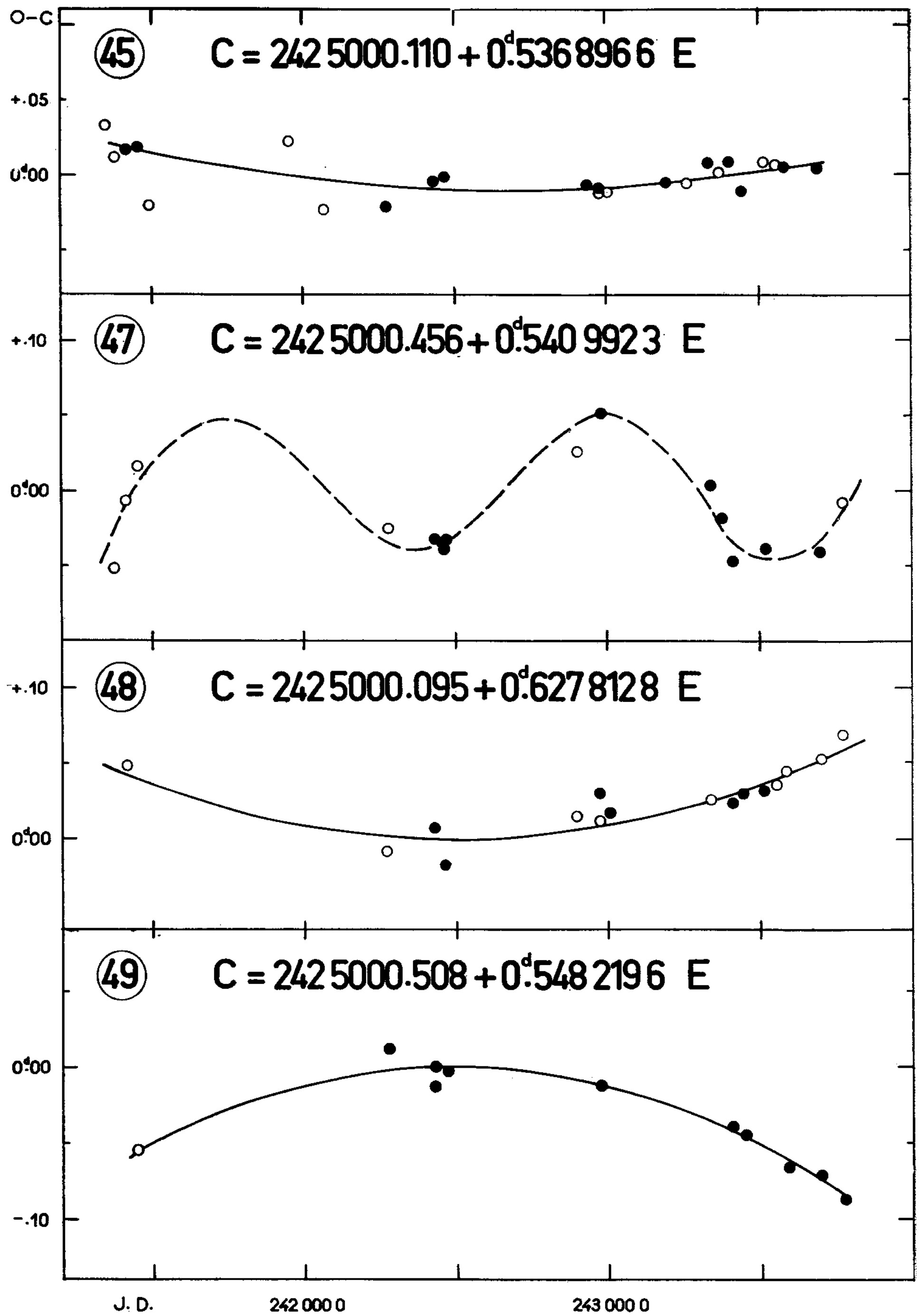
O–C
45
C = 2425000.110 + 0ᵈ.5368966 E
+.05
0ᵈ.00
47
C = 2425000.456 + 0ᵈ.5409923 E
+.10
0ᵈ.00
48
C = 2425000.095 + 0ᵈ.6278128 E
+.10
0ᵈ.00
49
C = 2425000.508 + 0ᵈ.5482196 E
0ᵈ.00
–.10
J. D.
2420000
2430000

Fig. 43.

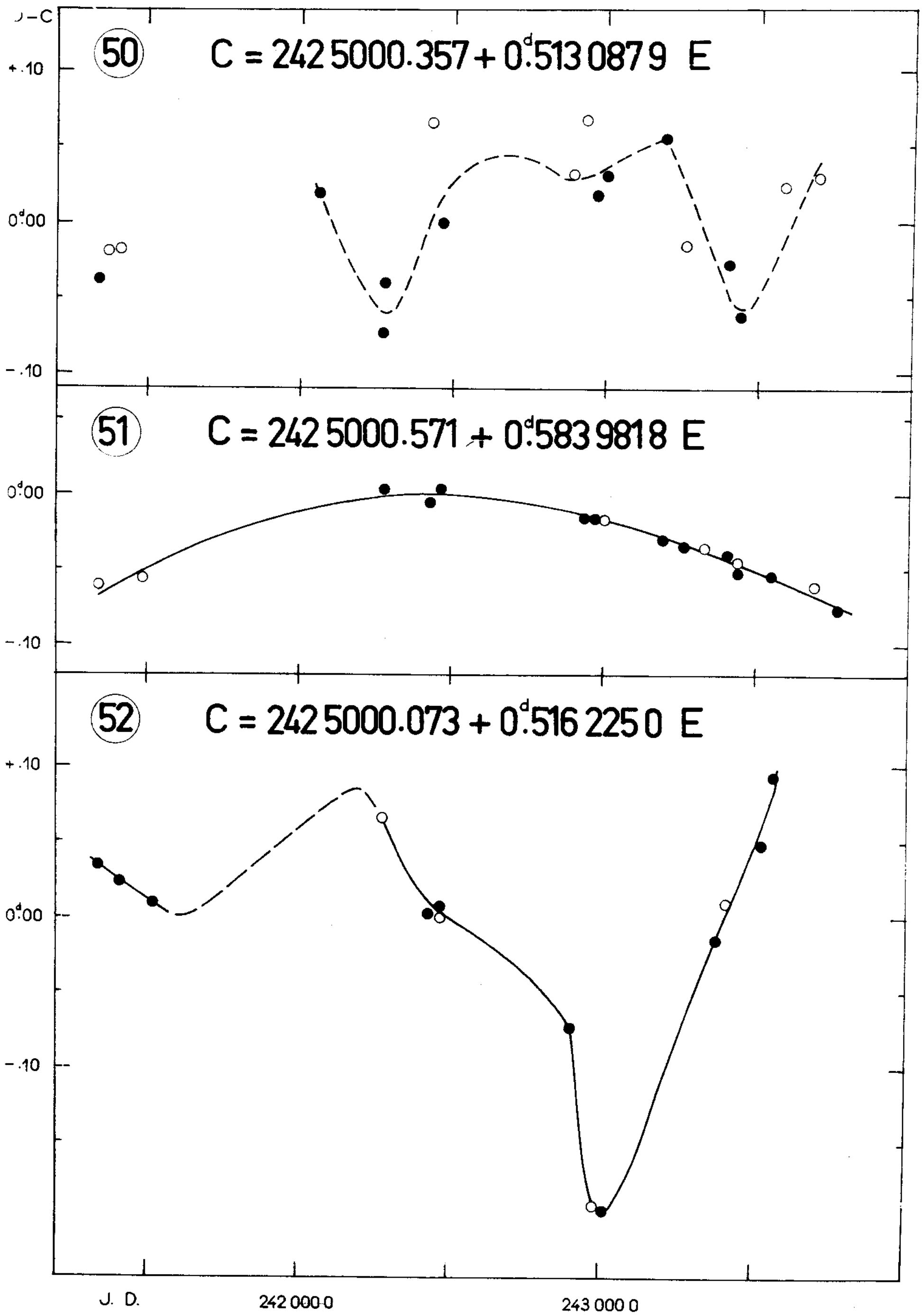
O–C
50
C = 242 5000.357 + 0ᵈ.513 087 9 E
+.10
0ᵈ.00
–.10
51
C = 242 5000.571 + 0ᵈ.583 981 8 E
0ᵈ.00
–.10
52
C = 242 5000.073 + 0ᵈ.516 225 0 E
+.10
0ᵈ.00
–.10
J. D.
242 000 0
243 000 0

Fig. 44.

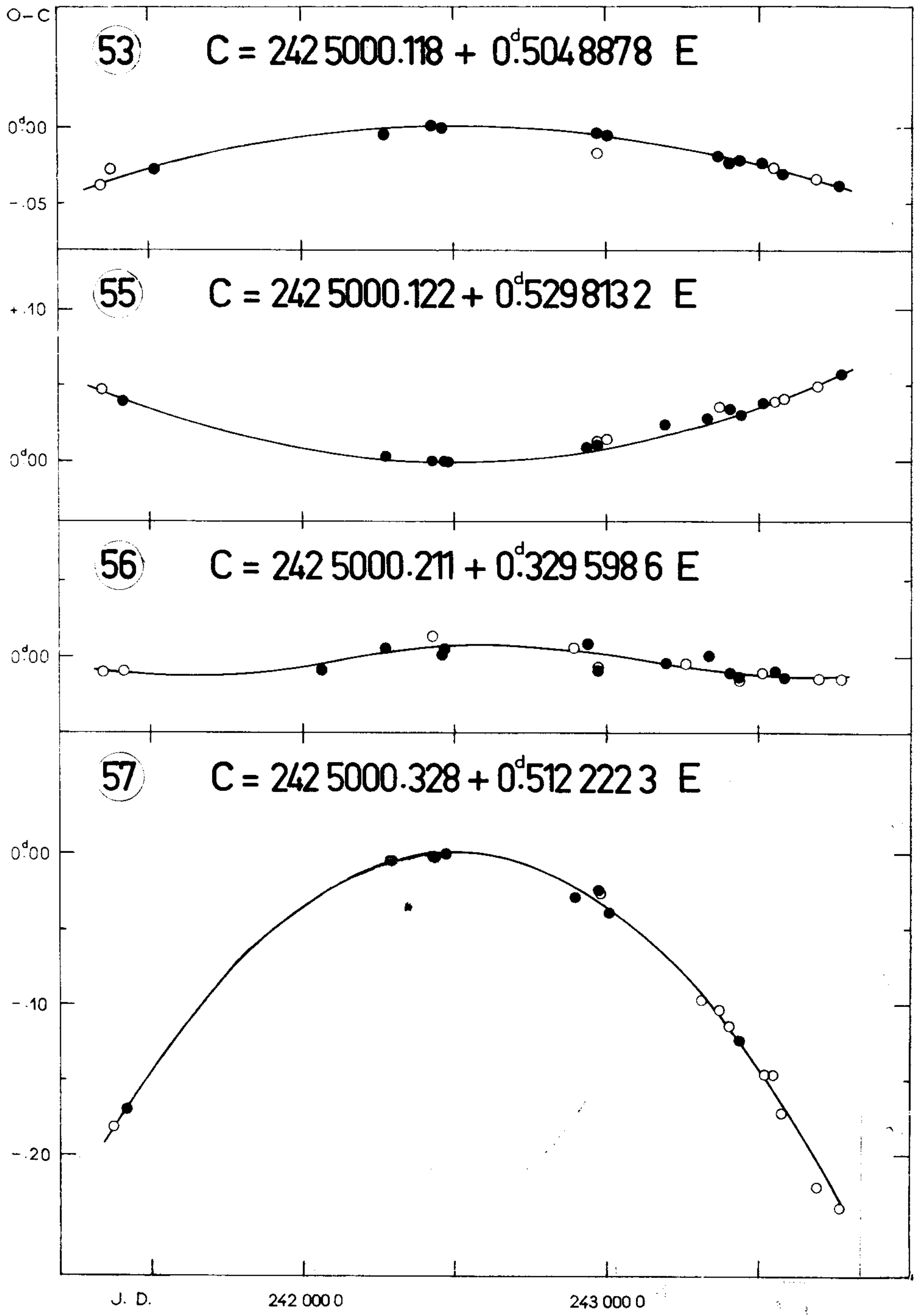
O−C
53
C = 242 5000.118 + 0.ᵈ504 8878 E
0.ᵈ00
−.05
55
C = 242 5000.122 + 0.ᵈ529 813 2 E
+.10
0.ᵈ00
56
C = 242 5000.211 + 0.ᵈ329 598 6 E
0.ᵈ00
57
C = 242 5000.328 + 0.ᵈ512 222 3 E
0.ᵈ00
−.10
−.20
J. D.
242 000 0
243 000 0

Fig. 45.

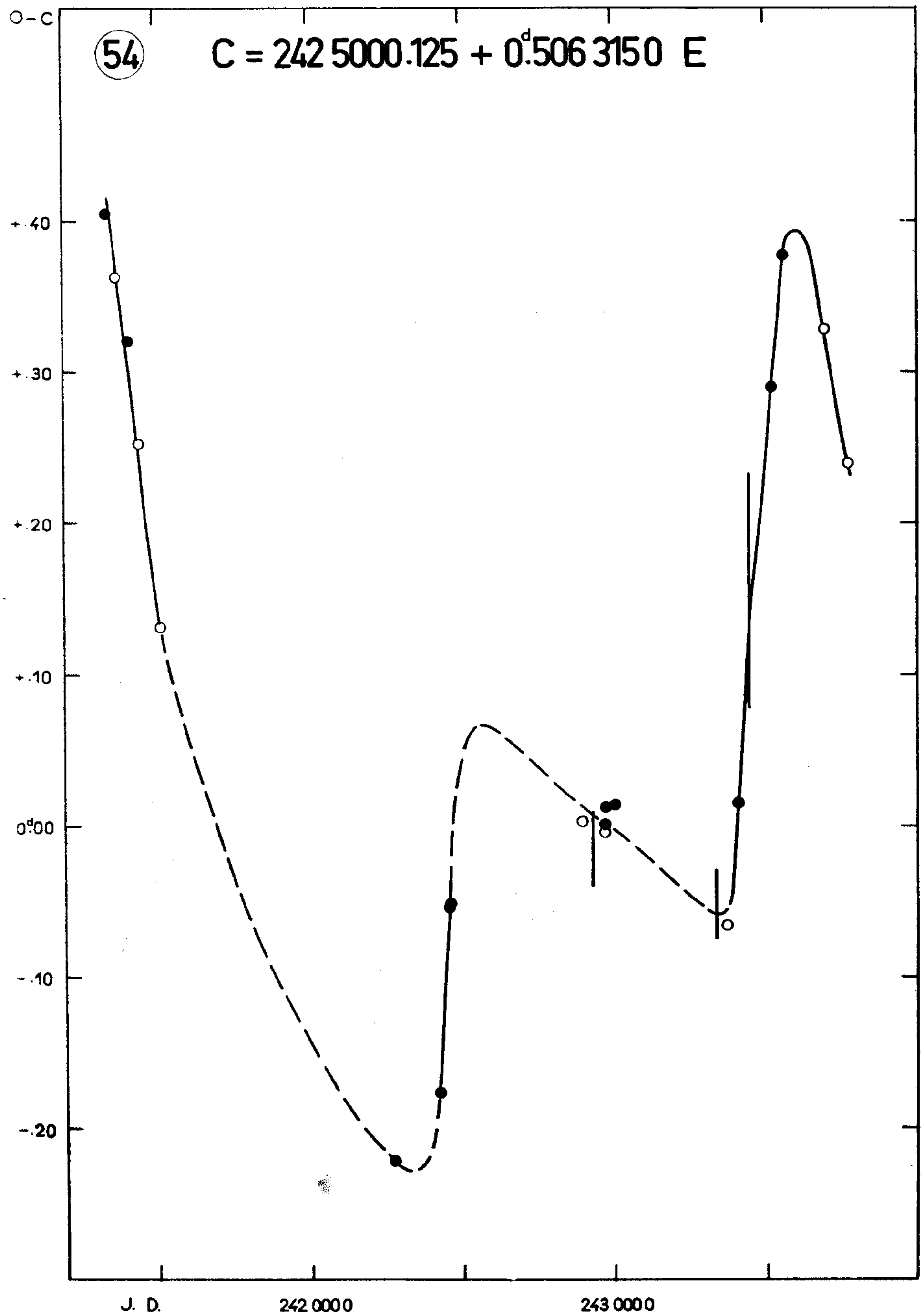
O−C
54
C = 242 5000.125 + 0ᵈ.506 3150 E
+.40
+.30
+.20
+.10
0ᵈ.00
−.10
−.20
J. D.
242 0000
243 0000

Fig. 46.

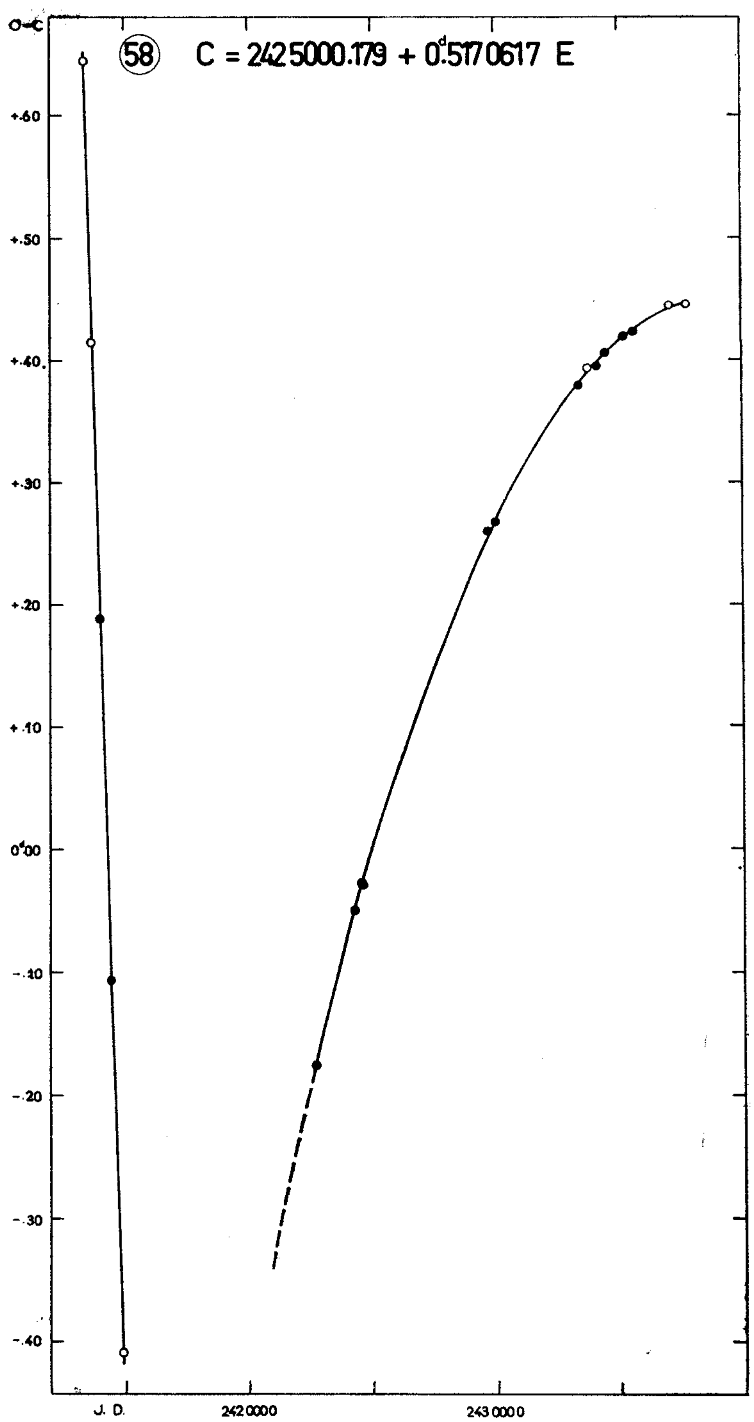
O–C
58
C = 2425000.179 + 0ᵈ.5170617 E
+.60
+.50
+.40
+.30
+.20
+.10
0ᵈ.00
–.10
–.20
–.30
–.40
J. D.
2420000
2430000

Fig. 47.

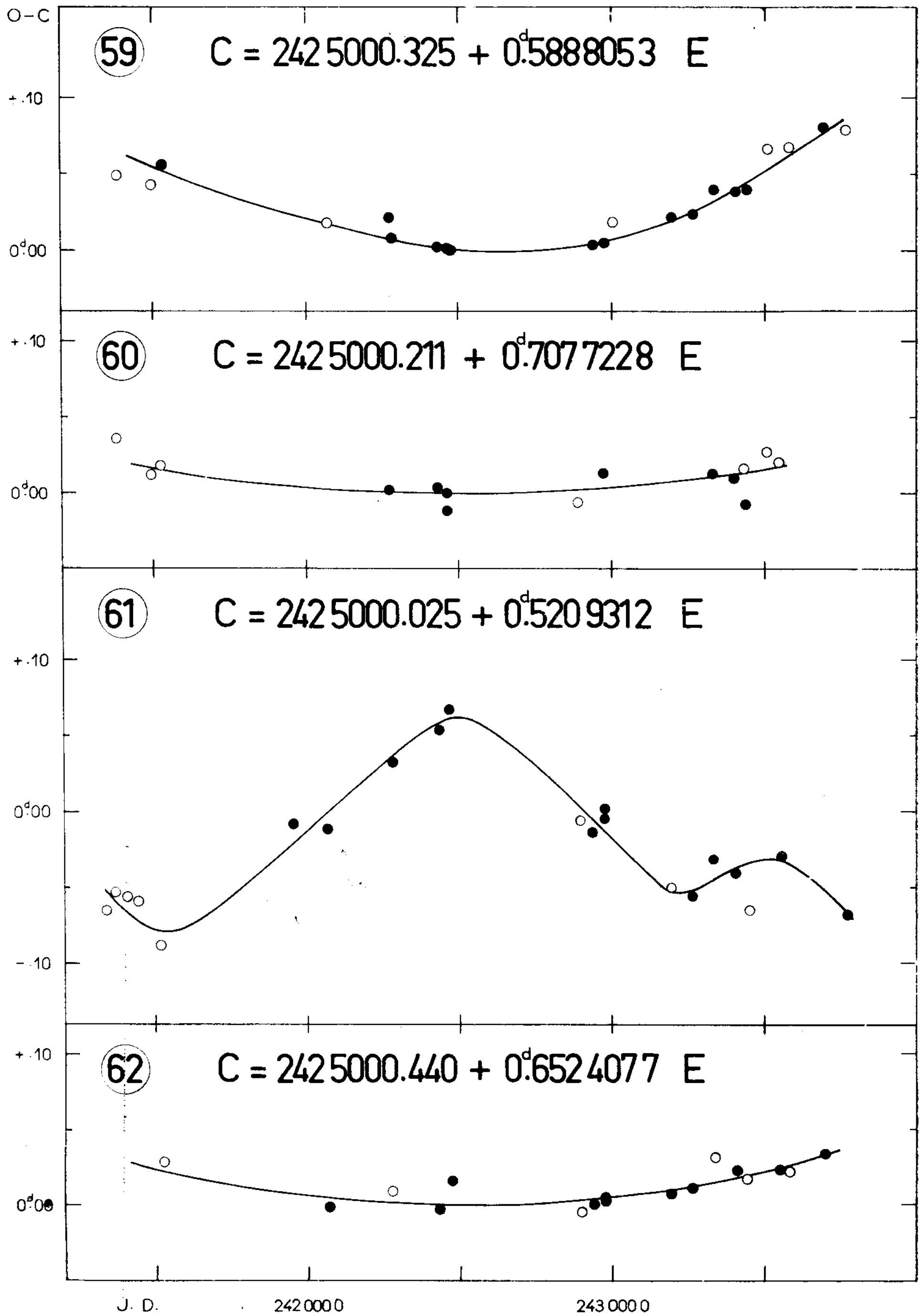
O–C
59
C = 242 5000.325 + 0.ᵈ5888053 E
+ .10
0ᵈ.00
60
C = 242 5000.211 + 0.ᵈ7077228 E
+ .10
0ᵈ.00
61
C = 242 5000.025 + 0.ᵈ5209312 E
+ .10
0ᵈ.00
– .10
62
C = 242 5000.440 + 0.ᵈ6524077 E
+ .10
0ᵈ.00
J. D.
242 0000
243 0000

Fig. 48.

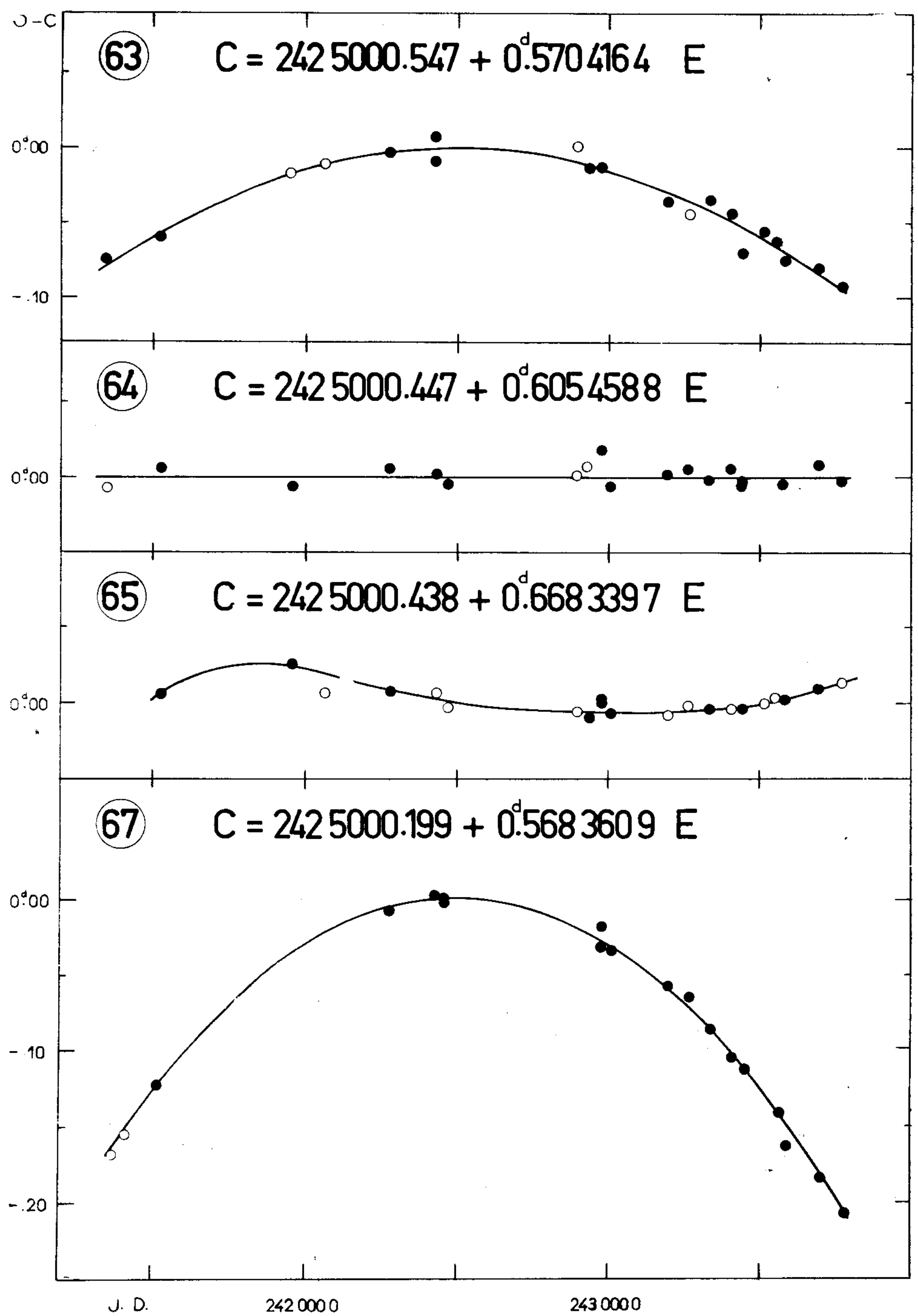
O – C
63
C = 242 5000.547 + 0ᵈ.570 416 4 E
0ᵈ.00
–.10
64
C = 242 5000.447 + 0ᵈ.605 458 8 E
0ᵈ.00
65
C = 242 5000.438 + 0ᵈ.668 339 7 E
0ᵈ.00
67
C = 242 5000.199 + 0ᵈ.568 360 9 E
0ᵈ.00
–.10
–.20
J. D.
242 000 0
243 000 0

Fig. 49.

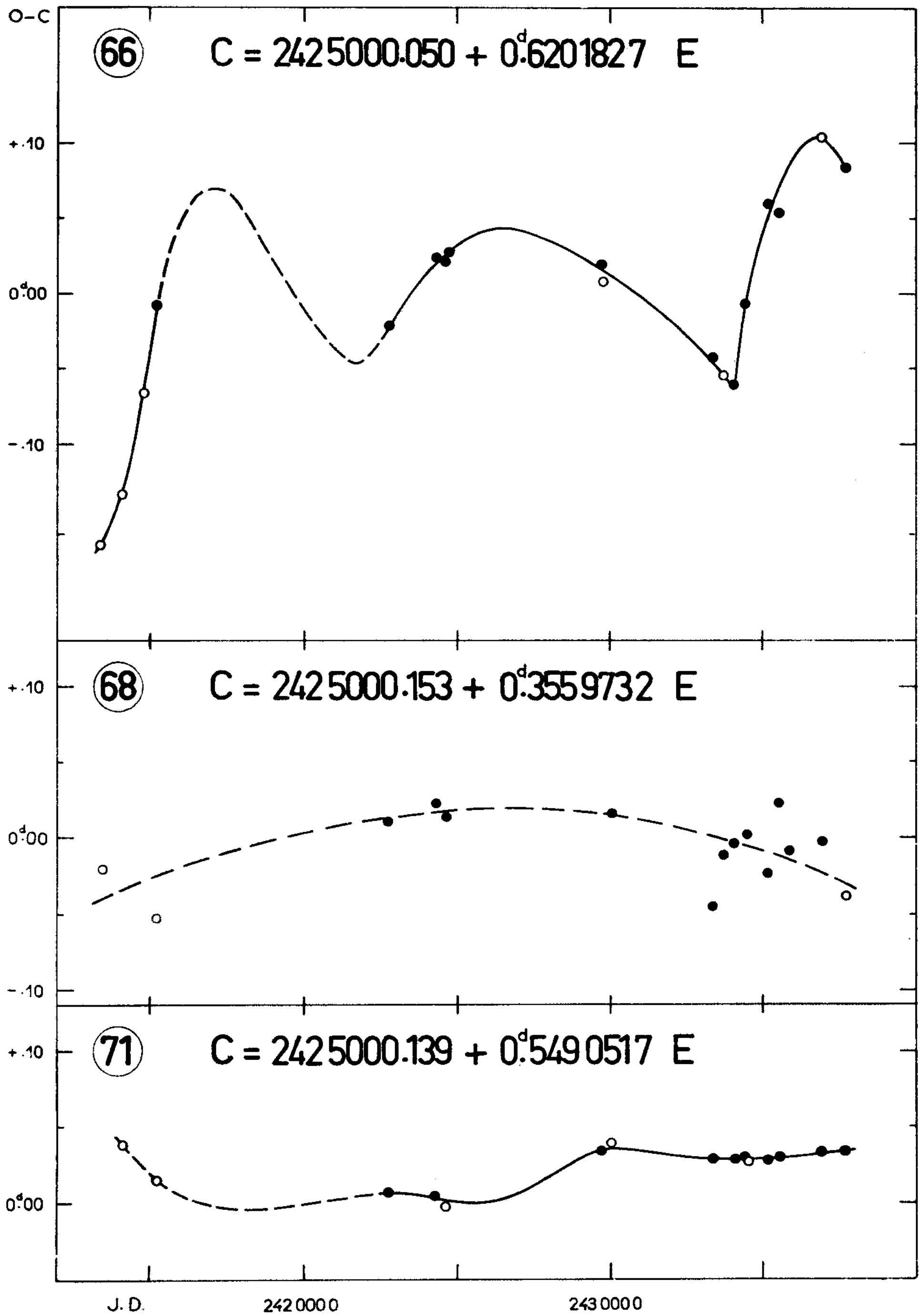
O–C
66
C = 2425000.050 + 0.d6201827 E
+.10
0.d00
–.10
68
C = 2425000.153 + 0.d3559732 E
+.10
0.d00
–.10
71
C = 2425000.139 + 0.d5490517 E
+.10
0.d00
J. D.
2420000
2430000

Fig. 50.

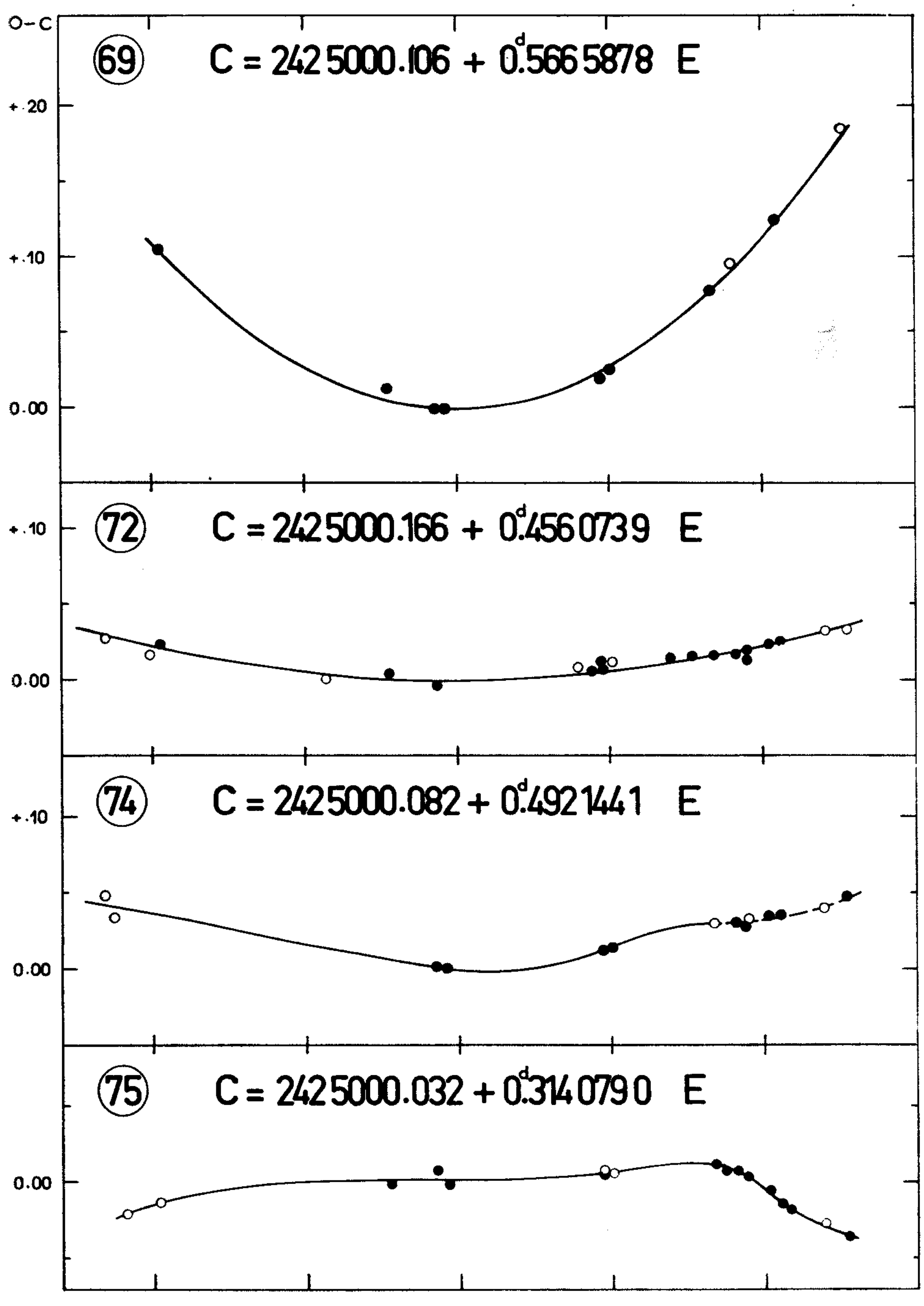
O–C
69
C = 2425000.106 + 0ᵈ.5665878 E
+.20
+.10
0.00
72
C = 2425000.166 + 0ᵈ.4560739 E
+.10
0.00
74
C = 2425000.082 + 0ᵈ.4921441 E
+.10
0.00
75
C = 2425000.032 + 0ᵈ.3140790 E
0.00
J. D
2420000
2430000

Fig. 51.

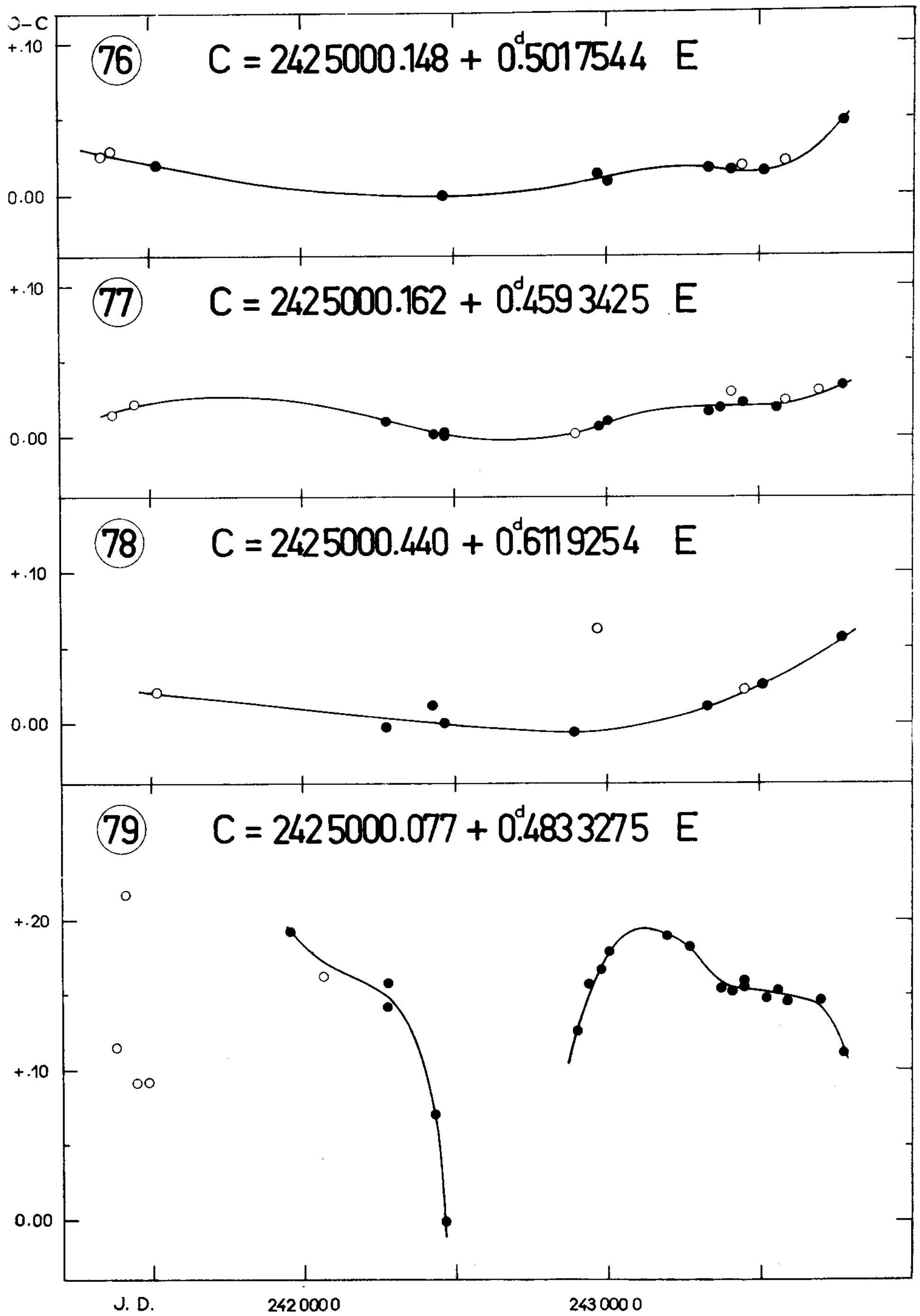
O–C
76
C = 2425000.148 + 0.ᵈ5017544 E
77
C = 2425000.162 + 0.ᵈ4593425 E
78
C = 2425000.440 + 0.ᵈ6119254 E
79
C = 2425000.077 + 0.ᵈ4833275 E
+.20
+.10
0.00
J. D.
242 000 0
243 000 0

Fig. 52.

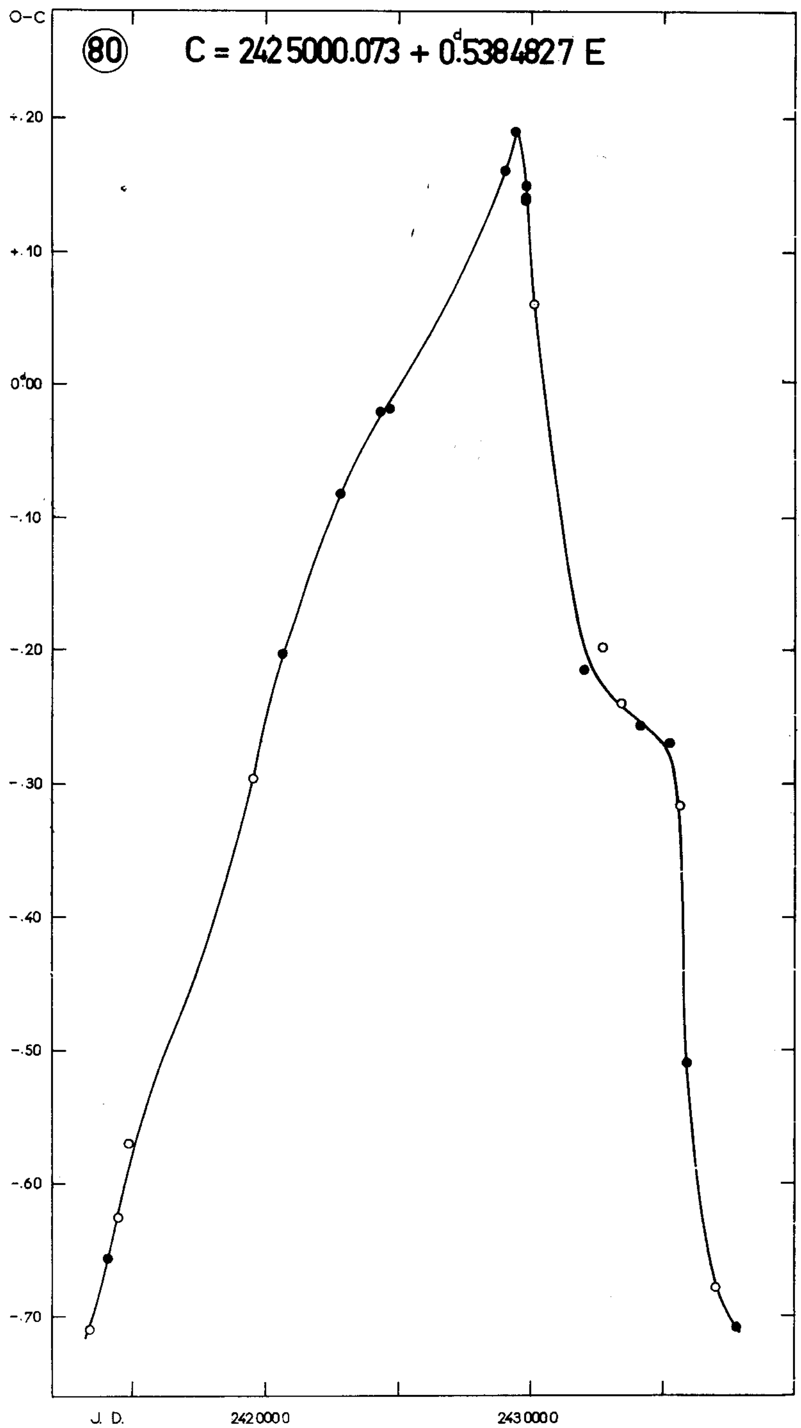
O–C
80
C = 2425000.073 + 0.ᵈ5384827 E
+.20
+.10
0.ᵈ00
−.10
−.20
−.30
−.40
−.50
−.60
−.70
J. D.
2420000
2430000

Fig. 53.

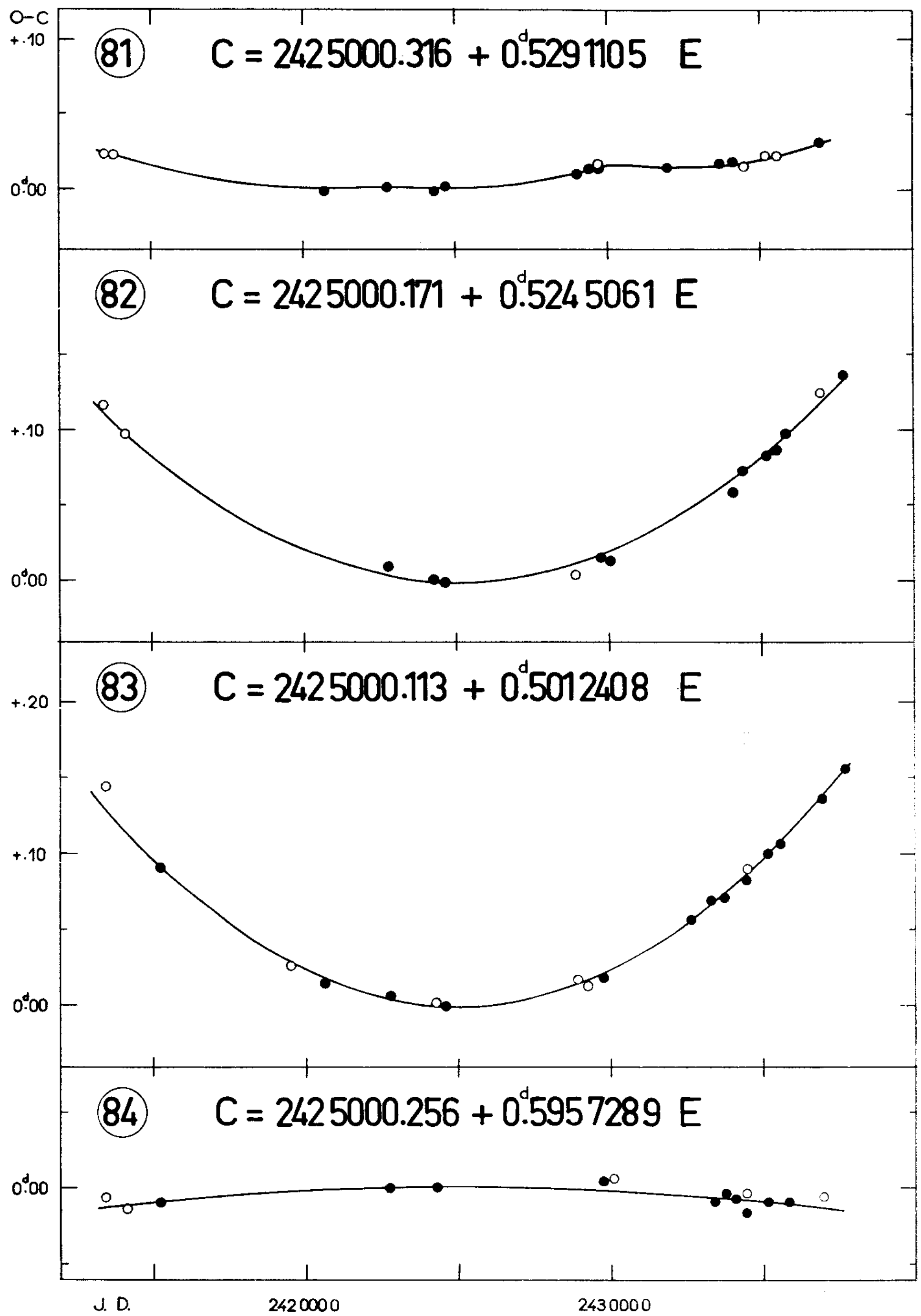
O–C
+.10
0.00
81
C = 2425000.316 + 0.5291105 E
82
C = 2425000.171 + 0.5245061 E
+.10
0.00
83
C = 2425000.113 + 0.5012408 E
+.20
+.10
0.00
84
C = 2425000.256 + 0.5957289 E
0.00
J. D.
2420000
2430000

Fig. 54.

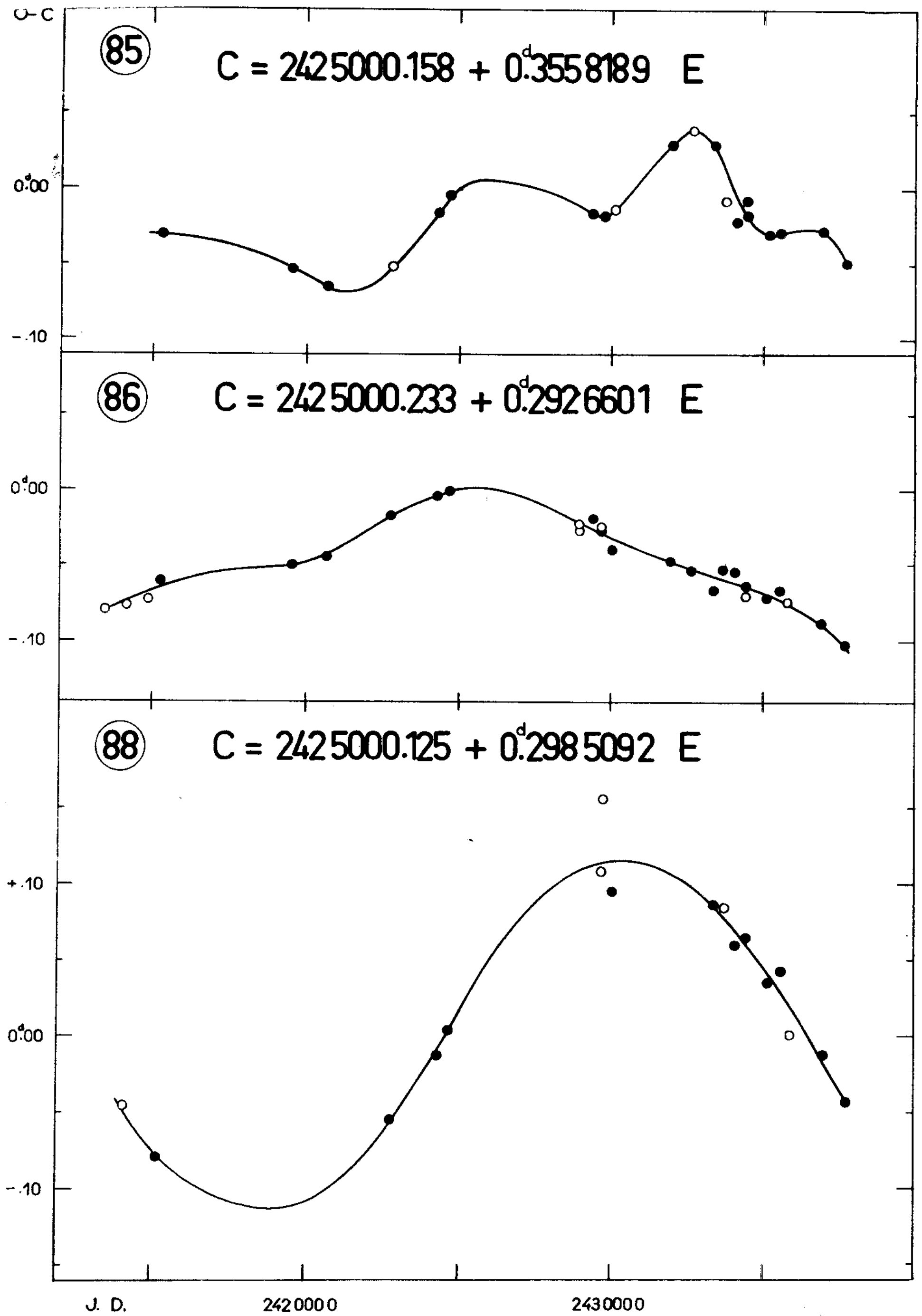
O−C
85
C = 2425000.158 + 0.3558189 E
0.00
−.10
86
C = 2425000.233 + 0.2926601 E
0.00
−.10
88
C = 2425000.125 + 0.2985092 E
+.10
0.00
−.10
J. D.
2420000
2430000

Fig. 55.

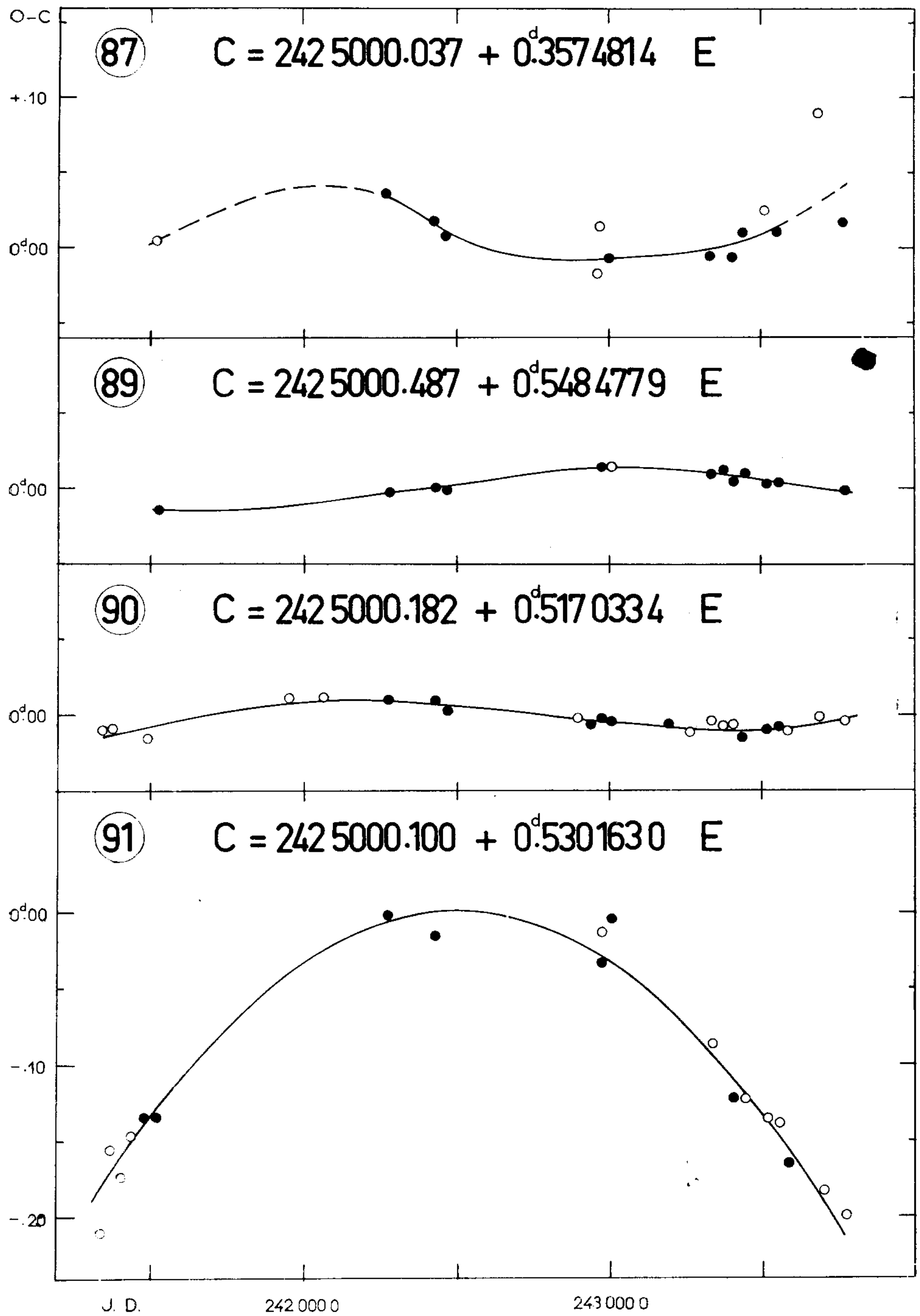
O–C
87
C = 242 5000.037 + 0ᵈ.357 4814 E
+.10
0ᵈ00
89
C = 242 5000.487 + 0ᵈ.548 4779 E
0ᵈ00
90
C = 242 5000.182 + 0ᵈ.517 0334 E
0ᵈ00
91
C = 242 5000.100 + 0ᵈ.530 1630 E
0ᵈ00
–.10
–.20
J. D.
242 000 0
243 000 0

Fig. 56.

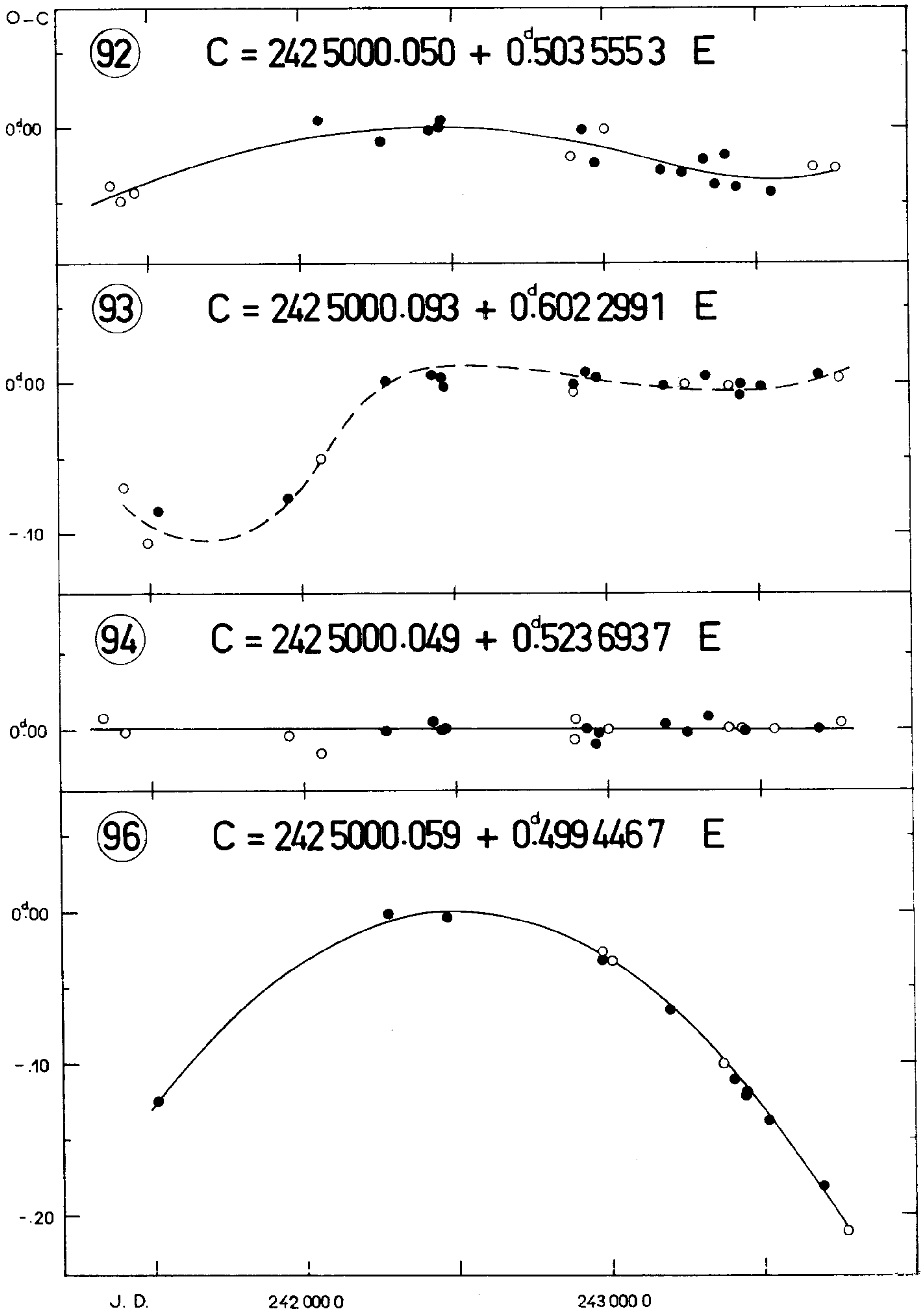
O−C
92
C = 242 5000.050 + 0ᵈ.503 555 3 E
0ᵈ.00
93
C = 242 5000.093 + 0ᵈ.602 2991 E
0ᵈ.00
−.10
94
C = 242 5000.049 + 0ᵈ.523 693 7 E
0ᵈ.00
96
C = 242 5000.059 + 0ᵈ.499 446 7 E
0ᵈ.00
−.10
−.20
J. D.
242 000 0
243 000 0

Fig. 57.

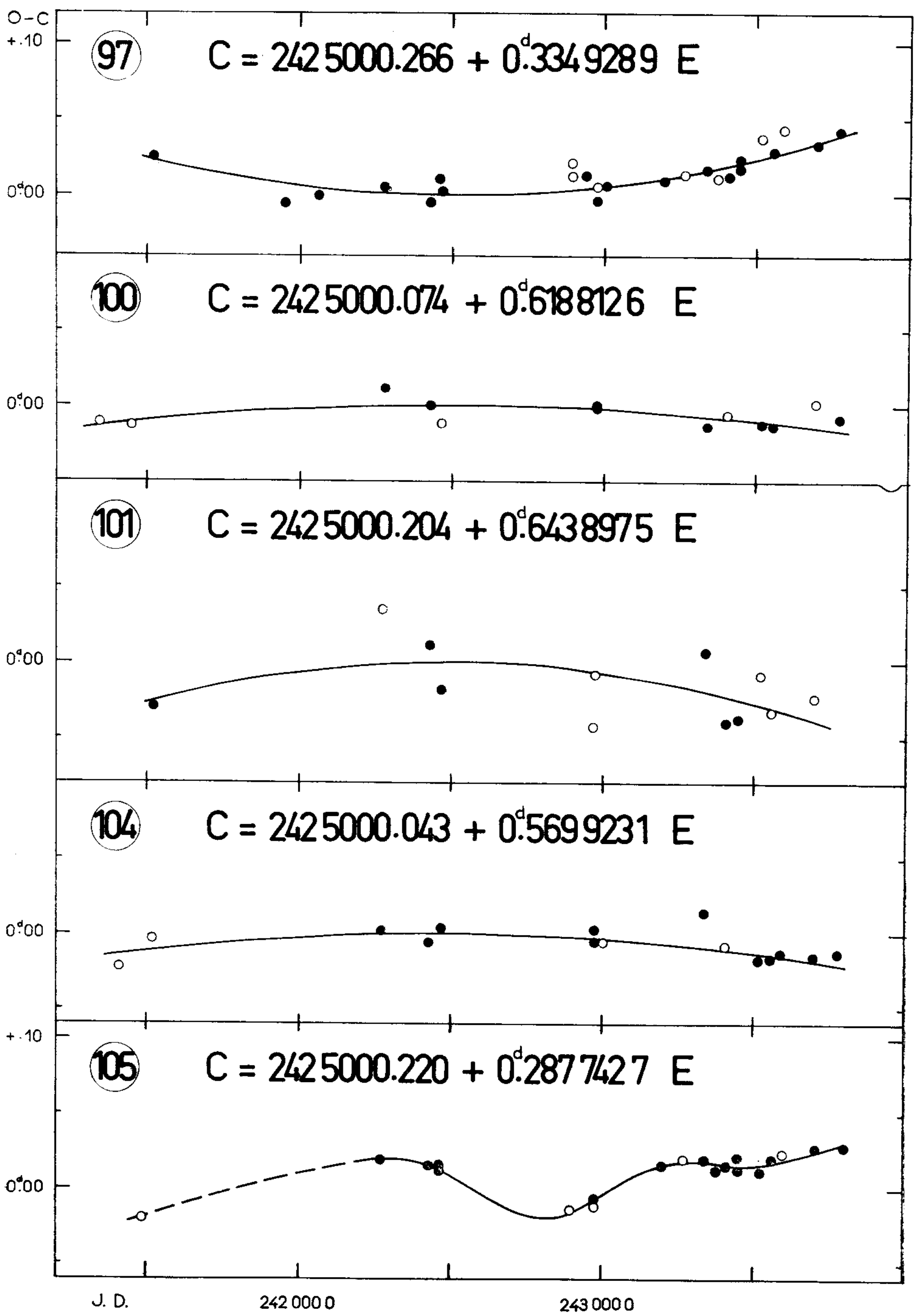
O–C
+.10
97
C = 2425000.266 + 0ᵈ.3349289 E
0ᵈ.00
100
C = 2425000.074 + 0ᵈ.6188126 E
0ᵈ.00
101
C = 2425000.204 + 0ᵈ.6438975 E
0ᵈ.00
104
C = 2425000.043 + 0ᵈ.5699231 E
0ᵈ.00
+.10
105
C = 2425000.220 + 0ᵈ.2877427 E
0ᵈ.00
J. D.
242 0000
243 0000

Fig. 58.

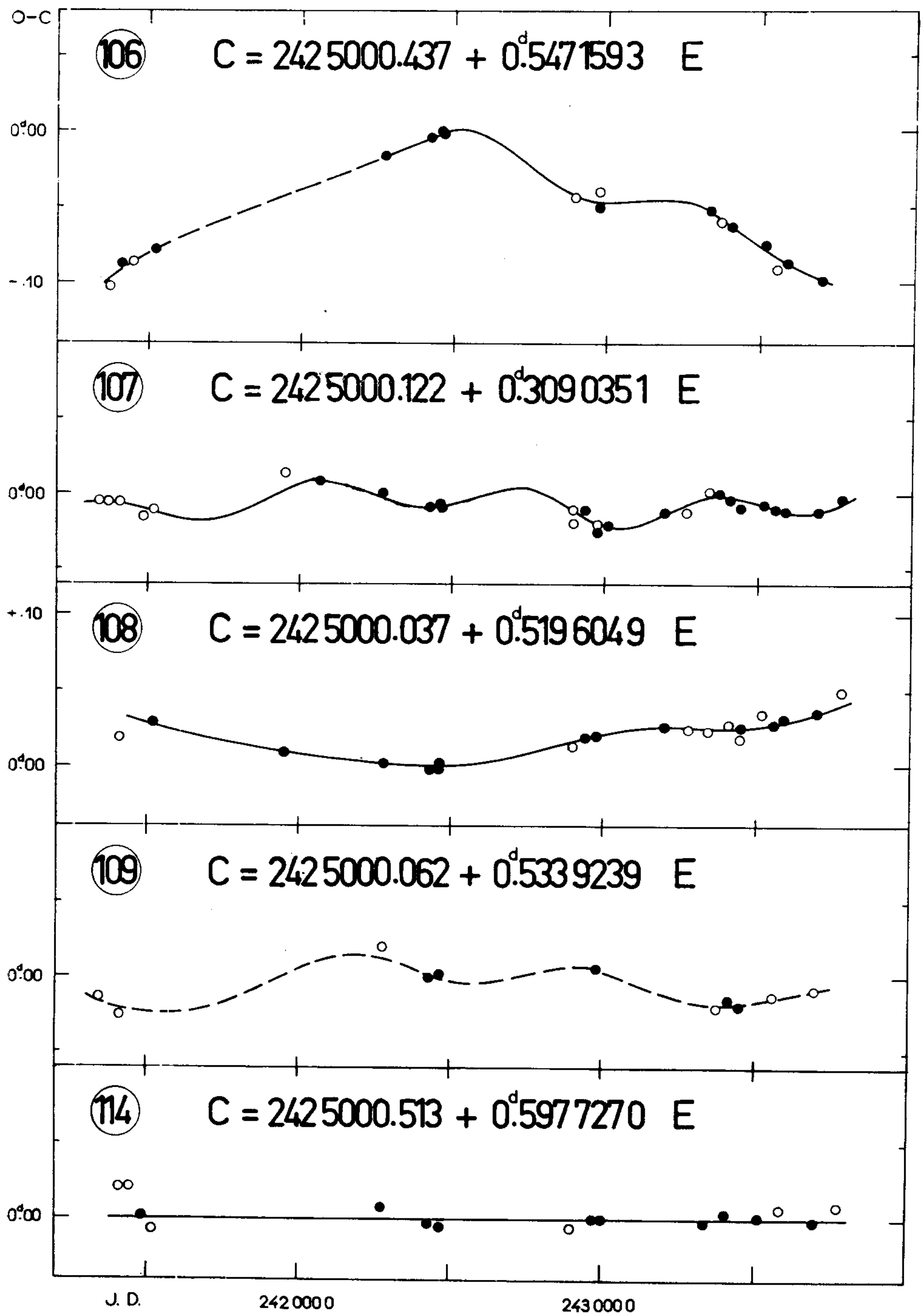
O–C
106
C = 2425000.437 + 0.d5471593 E
0.d00
−.10
107
C = 2425000.122 + 0.d3090351 E
0.d00
+.10
108
C = 2425000.037 + 0.d5196049 E
0.d00
109
C = 2425000.062 + 0.d5339239 E
0.d00
114
C = 2425000.513 + 0.d5977270 E
0.d00
J. D.
2420000
2430000

Fig. 59.

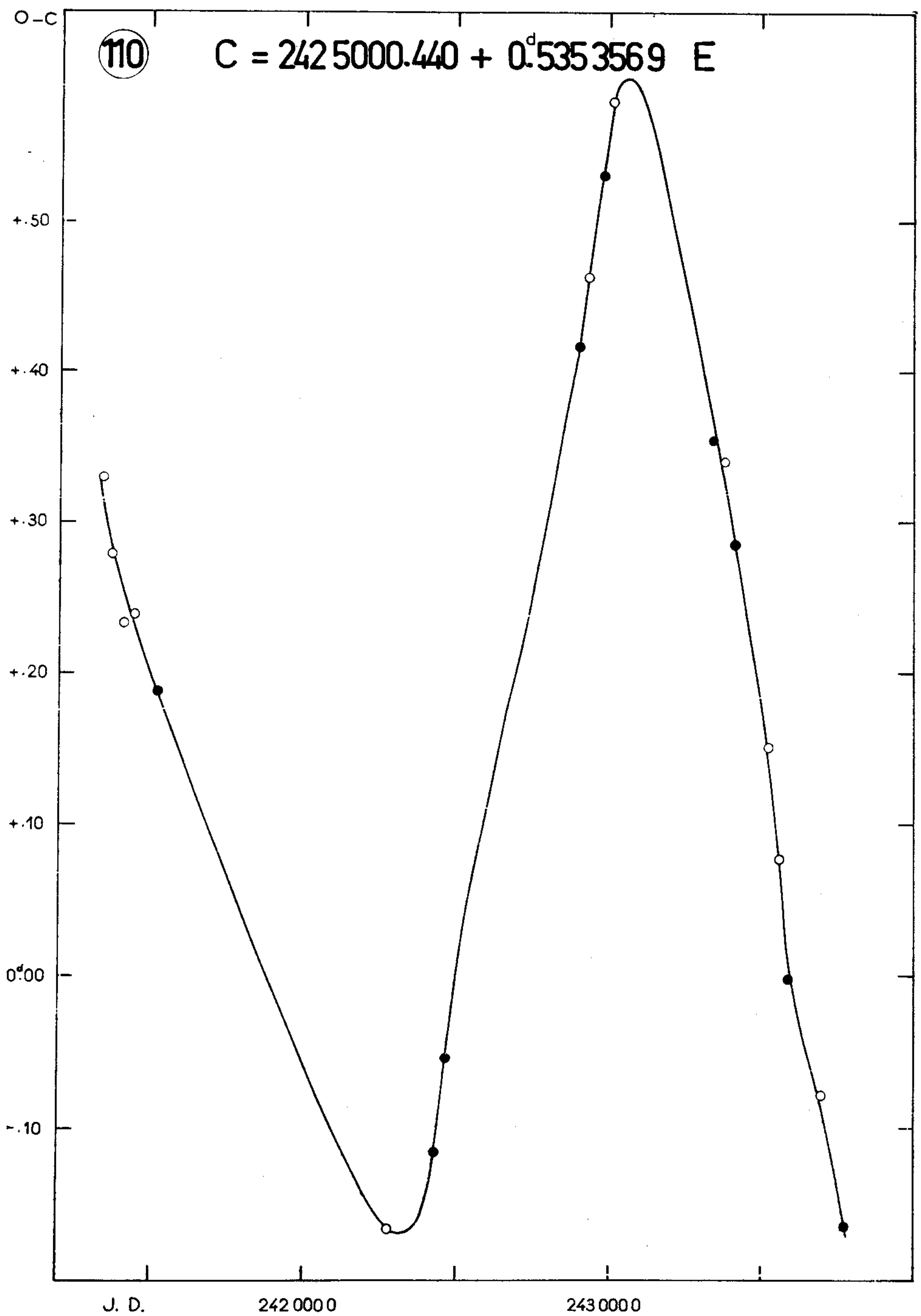
O–C
110
C = 242 5000.440 + 0.ᵈ535 3569 E
+.50
+.40
+.30
+.20
+.10
0.ᵈ00
-.10
J. D.
242 0000
243 0000

Fig. 60.

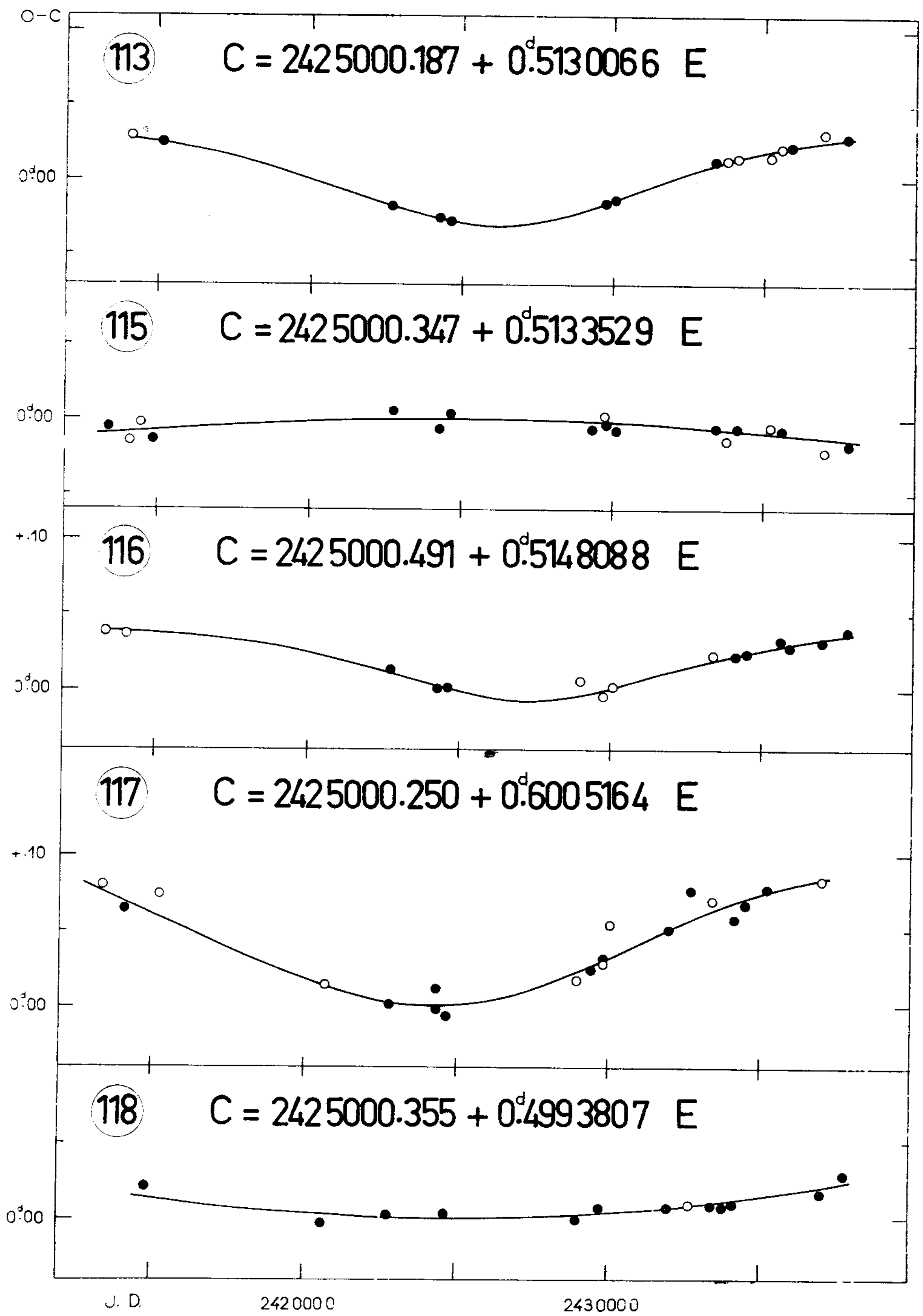
O−C
113
C = 2425000.187 + 0ᵈ.5130066 E
0ᵈ00
115
C = 2425000.347 + 0ᵈ.5133529 E
0ᵈ00
+.10
116
C = 2425000.491 + 0ᵈ.5148088 E
0ᵈ00
117
C = 2425000.250 + 0ᵈ.6005164 E
+.10
0ᵈ00
118
C = 2425000.355 + 0ᵈ.4993807 E
0ᵈ00
J. D.
2420000
2430000

Fig. 61.

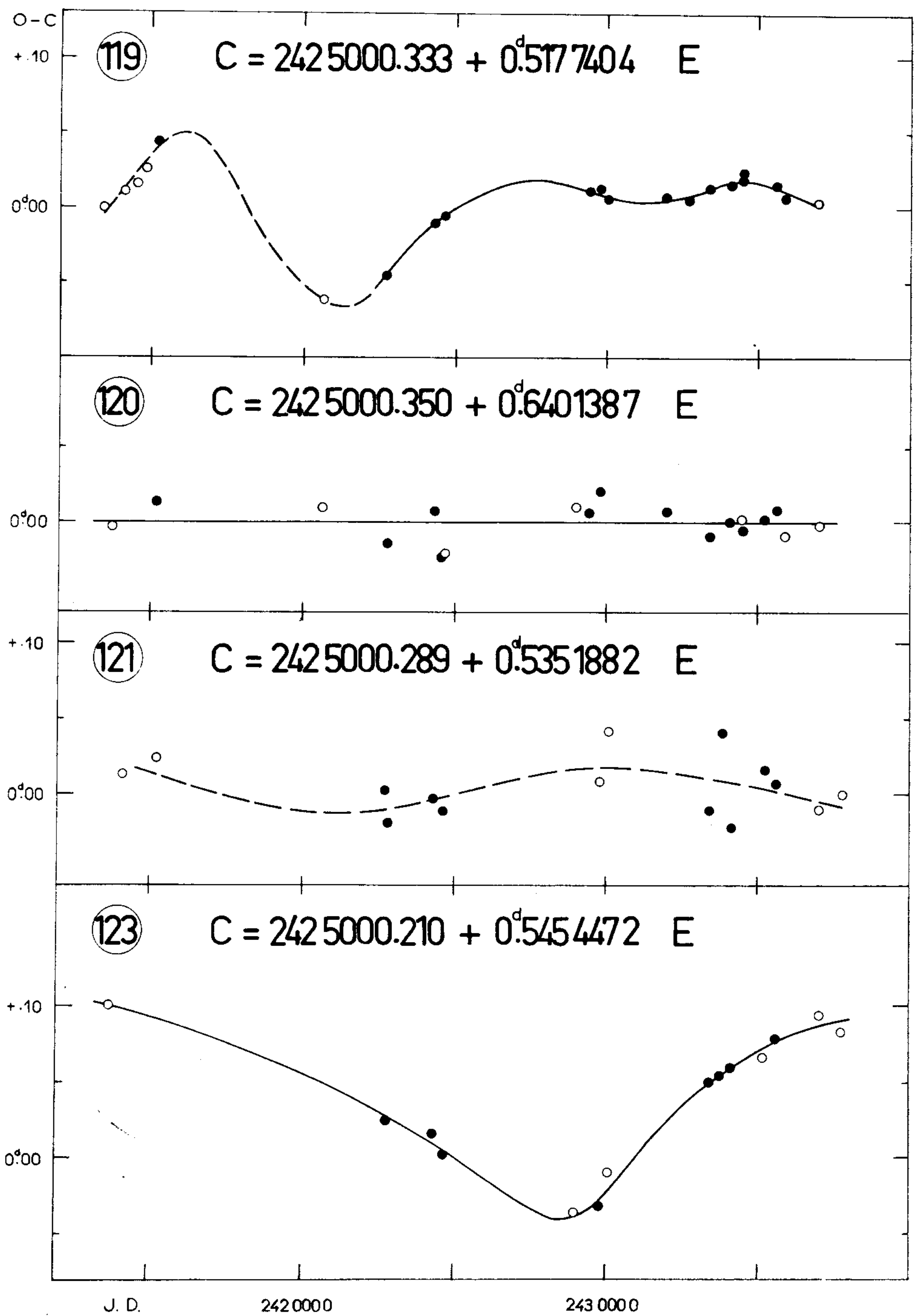
O – C
+ .10
0ᵈ00
119
C = 242 5000.333 + 0ᵈ5177404 E
120
C = 242 5000.350 + 0ᵈ6401387 E
121
C = 242 5000.289 + 0ᵈ5351882 E
123
C = 242 5000.210 + 0ᵈ5454472 E
J. D.
242 0000
243 0000

Fig. 62.

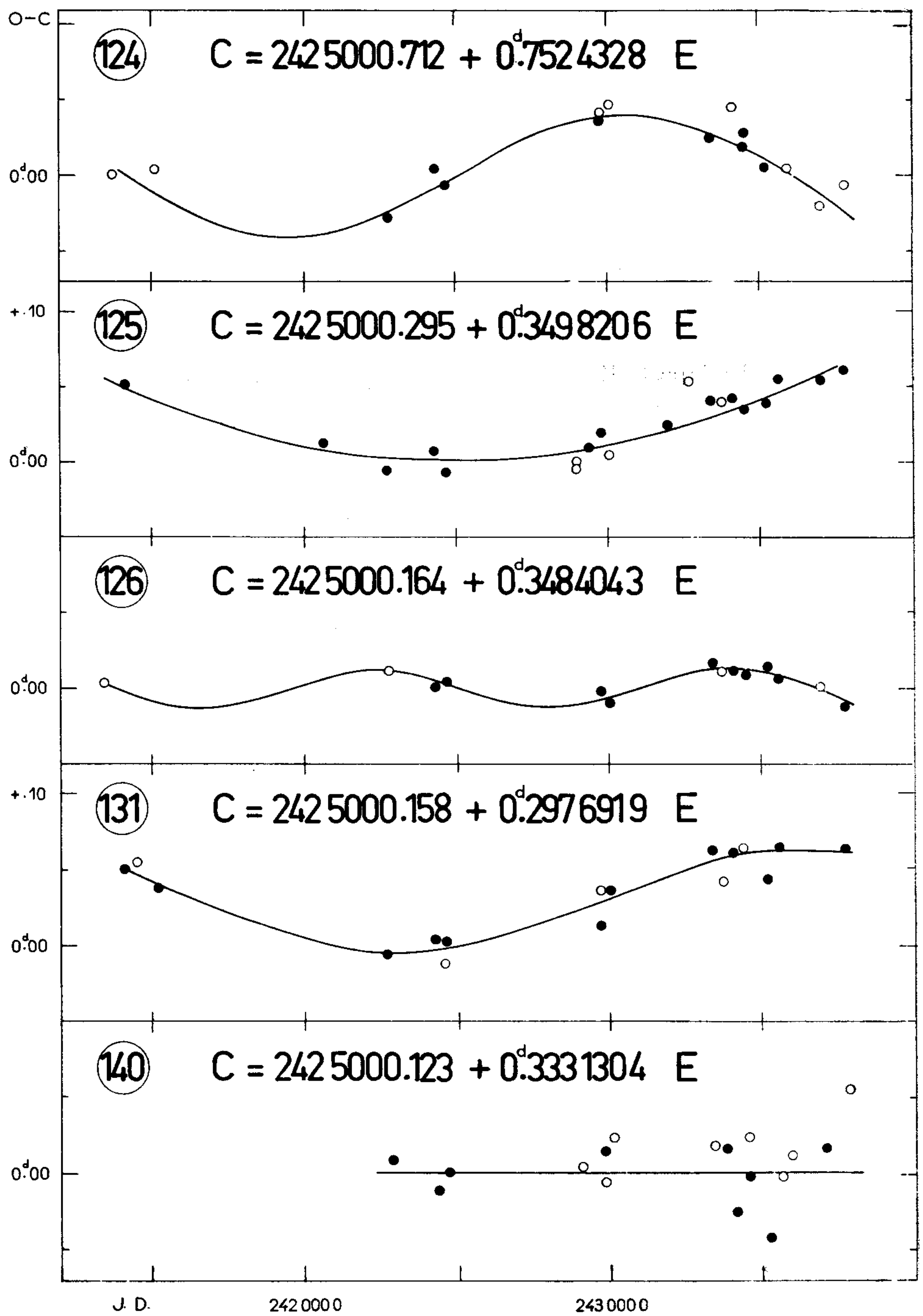
O–C
124
C = 2425000.712 + 0ᵈ.7524328 E
0ᵈ.00
+.10
125
C = 2425000.295 + 0ᵈ.3498206 E
0ᵈ.00
126
C = 2425000.164 + 0ᵈ.3484043 E
0ᵈ.00
+.10
131
C = 2425000.158 + 0ᵈ.2976919 E
0ᵈ.00
140
C = 2425000.123 + 0ᵈ.3331304 E
0ᵈ.00
J. D.
2420000
2430000

Fig. 63.

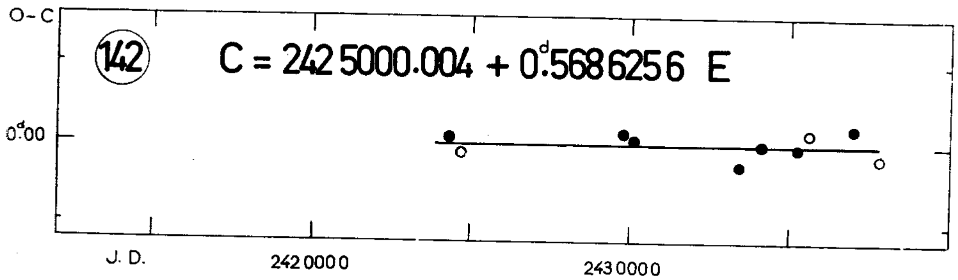

Fig. 64.

Budapest, Konkoly Observatory, 1964 August

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