SMITHSONIAN CONTRIBUTIONS to ASTROPHYSICS

Volume 9 [Whole Volume]

Variable Stars in the Small Magellanic Cloud

by Cecilia Payne-Gaposchkin
and Sergei Gaposchkin

Smithsonian Institution
Astrophysical Observatory

Washington, D.C.

Smithsonian

Contributions to Astrophysics

VOLUME 9 [Whole Volume]

VARIABLE STARS IN THE SMALL MAGELLANIC CLOUD

by CECILIA PAYNE-GAPOSCHKIN AND SERGEI GAPOSCHKIN

SMITHSONIAN INSTITUTION

Washington, D.C.

1966

Publications of the Astrophysical Observatory

This series, *Smithsonian Contributions to Astrophysics*, was inaugurated in 1956 to provide a proper communication for the results of research conducted at the Astrophysical Observatory of the Smithsonian Institution. Its purpose is the "increase and diffusion of knowledge" in the field of astrophysics, with particular emphasis on problems of the sun, the earth, and the solar system. Its pages are open to a limited number of papers by other investigators with whom we have common interests.

Another series, *Annals of the Astrophysical Observatory*, was started in 1900 by the Observatory's first director, Samuel P. Langley, and was published about every 10 years. These quarto volumes, some of which are still available, record the history of the Observatory's researches and activities. The last volume (vol. 7) appeared in 1954.

Many technical papers and volumes emanating from the Astrophysical Observatory have appeared in the *Smithsonian Miscellaneous Collections*. Among these are *Smithsonian Physical Tables*, *Smithsonian Meteorological Tables*, and *World Weather Records*.

Additional information concerning these publications may be secured from the Smithsonian Press, Smithsonian Institution, Washington, D.C.

FRED L. WHIPPLE, *Director*,
Astrophysical Observatory,
Smithsonian Institution.

Cambridge, Mass.

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington D. C. 20402 - Price $1.50

Contents

	Page
Introduction	1
The Cepheid variables	2
Periods and light curves	2
Frequency of periods	3
Frequency of apparent magnitudes	3
The period-luminosity relation	4
Test for constancy of period	5
Stars with constant periods	6
Stars with irregular changes of period	6
Secular changes of period	7
Stars with periods less than one day	7
Relation between period and light curve	8
The *W* Virginis stars	9
The long-period variables	9
The irregular variables	10
General discussion	10
Acknowledgments	17
References	18
Abstract	20
Figures	21
Tables	130

Variable Stars in the Small Magellanic Cloud

Variable Stars in the Small Magellanic Cloud[1]

Cecilia Payne-Gaposchkin[2] and Sergei Gaposchkin[3]

Introduction

Sixty years ago Miss Leavitt (1906) noted that the region of the Small Magellanic Cloud is exceedingly rich in variable stars, and published a list of coordinates and magnitudes for almost a thousand. Later studies of the region by Shapley and his collaborators brought the number of published variables up to 1566. The present paper contains the results of a systematic study of these stars on the available Harvard plates. Some proved to be duplicates, and 46 more variables were added in the course of the work. Table 1 enumerates the variables studied.

Table 2 is a list of the published Harvard variables in the region, and of the newly discovered variables, arranged in order of HV number. Successive columns give the HV number, the x and y coordinates (seconds of arc on Miss Leavitt's system), a coded list of references, and a coded summary of results (see end of table 2). Further notes are given for a few stars. Underlined entries under "Results" are taken from the published references.

For HV 809 to 2234 and for HV 11212 to 12184 the first reference is to announcement of discovery without discussion. The other references cover determinations of periods and magnitudes, but no attempt is made to cover all later mention of the stars. Most of the variables from HV 12082 on were discovered on plates made with the 60-inch reflector, and many of these are too faint, or otherwise unsuitable, for study on the Bruce plates. Periods could be derived for about half of these stars, and variability verified for about half of the remainder. Most of the others are not observed to vary appreciably on the Bruce plates, and should be studied with larger scale; too few 60-inch plates are available for effective discussion. The stars noted as "not measured" are: the four novae, some stars that lie outside the main body of the Cloud and therefore outside the field studied, a few close doubles, and a few that could not be successfully identified.

The photographic material comprises over 500 plates taken with the 24-inch Bruce refractor between 1898 and 1950, and about 30 plates taken with the ADH Baker-Schmidt telescope between 1952 and 1962. A few plates taken with the 8-inch Bache refractor from 1888 onward could be used for the brightest stars.

Comparison stars were chosen in the vicinity of each variable, and the brightness was estimated in arbitrary steps relative to them. The comparison stars were selected and the step values assigned by Sergei Gaposchkin, who also made a large number of the estimates. The rest of the estimates were made under his direction.

The periods were determined by C. Payne-Gaposchkin with the assistance of Barbara Russey. Previously published periods were examined and (as seen from table 3) many were slightly corrected, but only a few were found to be grossly in error. When the period had been determined, the phases and mean light

[1] This work was carried out under a National Science Foundation Contract NSF–G22496.

[2] Professor of Astronomy, Harvard College Observatory, Cambridge, Mass.

[3] Astronomer, Harvard College Observatory, Cambridge, Mass.

curves were determined for all the measures by means of a program written by E. M. Gaposchkin for the IBM 7094 computer. Means were formed for each set of ten successive phases. The brightness, which up to this point had been expressed in steps, was then converted into magnitudes. The magnitudes were based on the standards used by Arp (1958a, 1958b, 1959a, 1959b, 1960a) in his study of the Small Cloud.

Table 3 summarizes the results. Successive columns give the HV number, the x and y coordinates, the previously published period (if any), the period found from the present material, Julian Day of normal maximum, observed maximum (M), minimum (m), and integrated mean magnitudes ($\overline{m}$), range (A), mean magnitude reduced to mean intensity ($<m>$), and the number of positive observations. The number of estimates used was 557,624 but about 750,000 were made, since "not visible" observations do not enter the means, and observations for stars for which no results were obtained are not tabulated.

A preliminary study of the period-luminosity relation for the Cepheids showed that all stars in some regions (notably at the ends of the main axis) are systematically faint. Whether the effect is a result of absorption within the Cloud or of background effect on the estimates, it must be eliminated in a study of the true dispersion of the period-luminosity relation.

In order to estimate the systematic effect, the field was divided into areas of $10' \times 10'$. The slope of 2.25 log P derived by Arp (1960a) for the B period-luminosity curve was adopted, and the quantity $<m> + 2.25 \log P$ was computed for each Cepheid. The mean values of this quantity within the areas were then used to derive a grid of corrections to the magnitudes. The resulting corrections are given in the last column of table 4.

Background effects may play a part in the magnitude deviations thus derived, but absorption within the Small Cloud is probably the major factor. The deviations are negligible in the peripheral regions, and are greatest at the southern end of the axis, and again in a much smaller area at the northern end. They are not largest only in the areas of greatest star density, and indeed suggest that a region of apparently low star density on the southern side of the main axis is actually produced by absorption. If the deviations are the result of local absorption, the corrections here derived will reduce the systematic errors, but considerable accidental errors will occur in regions where the correction is large, and will increase the apparent dispersion of the period-luminosity relation. We shall return to the question in the general discussion.

Shapley and Nail (1955, p. 835) noted a similar effect and stated that "on the average, the median magnitudes of the ten long-period Cepheids in the wing lie above the mean period-magnitude curve for the Small Cloud . . ., the median magnitudes of the similar variables in the Cloud's nucleus lies below the curve. Perhaps we have here an indication of more than average dust in the main body of the Cloud. . . . But . . . a 'background' effect may contribute uncertainty to the photometry."

The Cepheid variables

PERIODS AND LIGHT CURVES.—Results for the Cepheid variables, arranged in order of period, are summarized in table 4. Successive columns give the HV number, the adopted period in days, its logarithm, maximal magnitude corrected for absorption (M_0), minimal magnitude corrected for absorption (m_0), amplitude in magnitudes (A), integrated mean magnitude at mean intensity corrected for absorption ($<m>_0$), x_0 in magnitudes, interval from minimum to maximum in terms of period (M-m), the skewness (s), A_1 and A_2 in magnitudes, and the adopted correction for absorption (dm), (except for foreground stars). The parameters used for describing the light curve are illustrated in figure 2: A_1 and A_2 are the amplitudes of the two schematic triangles into which the light curves have been divided; x_0 is the integrated mean magnitude at mean intensity of the triangle whose amplitude is A_1, corrected for absorption; and s is the skewness as defined in the caption to figure 2. We note that the quantities (M-m) and s are independent of amplitude; A_1 and A_2 depend on both amplitude and skewness. The tabulated values of period are those that were used in computing the mean light curves; most of them are given to six figures, but only for the shortest periods

are they significant to six figures. The actual precision of the periods is discussed in connection with table 10.

The mean light curves of the intrinsic periodic variables, arranged in order of period, are shown in figure 7. The magnitudes are those of table 3, uncorrected for absorption. Intrinsic variables with periods less than a day are included in table 4 and in the figures, although many, as discussed below, are foreground stars. The curves that are drawn were the basis of the parameters given in table 4. The error of a plotted point is about $\pm 0^m.05$, and is largest at the faintest magnitudes. Humps in the light curves were drawn with special attention to the uncertainties of the plotted points.

FREQUENCY OF PERIODS.—The frequencies of period and of logarithm of period for 1144 Cepheids and 11 stars with periods less than a day are shown in tables 5 and 6, and the data of table 6 are displayed in figure 1.

The well-known preponderance of short periods is enhanced by the results of our work, which has almost doubled the number of known Cepheids in the Small Cloud. More Cepheids are in fact now known in that system than in any other galaxy, including our own.

The general features of the distribution—the high proportion of short periods and the pronounced double maximum—are probably representative of the Cepheid population of the Small Cloud. Two systematic effects, however, may be present: (1) the shortest periods may be under-represented, and (2) there may be discrimination against certain periods. No period was found for 125 stars that were observed to vary (see table 1); most of them are faint and vary rapidly. If these stars include the same proportion of Cepheids as the material in table 3, about 114 should be Cepheids. They would probably increase the number of very short periods, and many are likely to belong to the small-range group with $(M\text{-}m)>0.3$. Secondly, periods very near to an integral number of days are difficult to establish, and Cepheids or eclipsing stars with periods near a day (or half a day) may well have been missed. Possibly the deficiency of four-day periods may be a similar spurious effect. The first of these systematic tendencies has probably raised the median period slightly above its true value. The deviations from the period-luminosity relations for the shortest periods (see below) lead to a similar conclusion; namely, the faintest Cepheids are probably under-represented in our results, and these also tend to be the Cepheids of shortest period.

The observed median periods for Cepheids with $(M\text{-}m)$ less than and greater than 0.3 are 3.1 and 1.8 days, respectively; median values of $\log P$ for the same two groups are 0.49 and 0.26. More than half the Cepheids have periods less than three days, in sharp contrast to the galactic sample, as discussed later.

The increased prominence of short periods shown by our results is illustrated by a comparison with the data, based on 670 Cepheids in the Small Cloud, and tabulated by Shapley and Nail (1955). The percentages given by Shapley and Nail have been converted to numbers of stars, and allowances made for six stars not covered by our measures (numbers indicated by asterisks have been diminished by 1, 2, and 3, respectively). We have excluded the 11 stars with periods under a day, since Shapley and Nail tabulated no such stars.

We have more than doubled the known Cepheids with periods under two days; the proportional increase becomes small for the longest periods. Some Cepheids of short period probably remain to be discovered, whereas the lists are more nearly complete for periods over ten days. Of the variables discovered during the present study, over 30 percent have periods under two days, even greater than the 28 percent in table 7, again suggesting that further discoveries will enhance the contribution of shorter periods.

FREQUENCY OF APPARENT MAGNITUDES.—The frequency of $<m>_0$ is given in table 8 for 1151 Cepheids (mean magnitude could not be determined for the other four stars). The greatest number are in the magnitude interval 16.4 to 17.2. The decline for fainter magnitudes is real, but would probably be less abrupt if the material for short periods were more complete. Like the period frequency, the magnitude frequency has a double maximum. Our solution for the period-luminosity relation with

the corresponding material would lead to magnitudes 17.15 and 16.62 for the two maxima in the frequency of log P (table 6). Table 8 shows maxima near these magnitudes, which suggests that the double feature is real in both cases.

THE PERIOD-LUMINOSITY RELATION.—Figure 6 shows the relation of logarithm of period to $<m>_0$ and x_0. Stars with $(M\text{-}m)$ greater than 0.3 are shown by circles. The choice of stars with periods less than a day in these diagrams is discussed below.

Least-squares solutions for the period-luminosity relation are summarized in table 9. Only stars with periods over a day were included in the solutions, and the three W Virginis stars were omitted.

Solution 1 represents all the material, except for a few stars whose periods were determined after it had been made; these stars would not change the results appreciably. It is the most general solution. However, we know that the group of Cepheids with "symmetrical" or "sinusoidal" light curves are systematically brighter than the rest, as discussed by Payne-Gaposchkin and Gaposchkin (1964). These stars are confined to the shorter periods, and their effect is to raise the zero point and decrease the slope. Again, we consider that the data on the fainter Cepheids are incomplete. If there are more undiscovered faint Cepheids at shorter rather than at longer periods, the effect will again be to raise the zero point and decrease the slope.

Solution 2 omits the stars with $(M\text{-}m)$ greater than 0.3. Unless the effect of the systematic omission of faint Cepheids is large, this is probably the most representative solution for the stars of the Small Cloud. Solution 3 represents the stars with $(M\text{-}m)$ >0.3 that were omitted from solution 2. The zero point is brighter by $0^m.51$ in $<m>_0$, by $0^m.48$ in x_0. The difference in slope between solutions 2 and 3 may not be significant.

Figure 6 provides graphical evidence that the period-luminosity relation is not linear, and this effect is not produced by the group of stars with symmetrical light curves. In order to illustrate the departure from linearity, solutions 4 to 7 on table 9 were carried out for different ranges of period. Stars with values of $(M\text{-}m)$ >0.3 were not included in these solutions. Solution 4, for periods less than eight days, shows a brighter zero point and a smaller slope than solution 1 (all the material) or solution 2 (all the material except that for "symmetrical" light curves). It is perhaps affected by incompleteness for faint stars of short period. Solution 5, which excludes periods less than three and greater than eight days, gives a fainter zero point and a greater slope than solution 4.

Solutions 6 and 7, which represent stars with periods longer than 8 and 16 days, respectively, show progressively fainter zero points and progressively greater slopes. Comparison of solutions 4, 5, 6, and 7 suggests that the zero point is fainter and the slope greater, when the period is longer. The implications of these differences will be discussed later.

Solution 8 represents all stars with amplitudes greater than $1^m.25$; its results are close to those for solution 2.

Arp (1960a) has determined period-luminosity curves that are strictly comparable to ours, since they are referred to the same photographic standards:

Solution	*Zero point*	*Scale*
Arp (69 stars)	17.70 ± 0.10	-2.23 ± 0.10
Solution 2 ($<m>_0$)	17.63 ± 0.01	-2.13 ± 0.02
Arp, large A (24 stars)	17.45 ± 0.10	-2.25 ± 0.10
Solution 8 ($<m>_0$)	17.58 ± 0.03	-2.12 ± 0.04

The larger value for the scale and the fainter zero point obtained by Arp in each case are to be understood by the fact that his stars were chosen to be uniformly distributed in period, whereas the shorter periods preponderate in our material and dominate our solutions. Actually our solution 6 is the closest to that obtained by Arp. The value ± 0.10 given by Arp are "estimated uncertainties," whereas we have tabulated the probable errors derived from our least-squares solutions.

The distribution of the residuals for the least-squares solutions can now be used to examine the dispersion of the period-luminosity relation. Table 10 assembles the data for solution 2 ($<m>_0$ and x_0), solution 5 ($<m>_0$), and solu-

tion 8 ($<m>_0$). Columns 2 through 5 give the number of residuals in intervals of a tenth of a magnitude expressed as percentages for comparison. The last four columns give the numbers of residuals algebraically greater than values with increments of a tenth of a magnitude, again reduced to percentages for comparison.

The distribution of all four sets of residuals is approximately Gaussian. The semi-interquartile ranges for all four sets are $\pm 0^m.22$, and they do not differ sensibly; we may therefore regard this value as representative for the dispersion of the magnitude residuals from the period-luminosity curve.

Possible contributors to the dispersion are (1) intrinsic spread of magnitude at a given period; (2) accidental error of magnitudes; (3) dispersion of absorption in the line of sight (we assume that our corrections for absorption have removed *systematic* effects due to this cause); (4) effect of undetected companions (probably minor); and (5) erroneous periods (probably not numerous). Of these contributors, no. (2) may be expected to show a Gaussian distribution. No. (4) would have a systematic effect, which, if large, would produce a skew distribution which is not observed; the fact that the residuals from solution 8 (large amplitudes), which can scarcely be affected by unseen companions, show a similar distribution to the others indicates that this factor is not important. No. (3) is the most serious obstacle to deriving the true dispersion, for there is no reason to expect it to have a Gaussian distribution, and if our *average* absorption corrections are of the right order, it may produce some very large residuals. There is no reason to expect that no. (1), the intrinsic spread of magnitude at a given period will be Gaussian, or indeed to predict any form for it. The only statement that can be made at the present stage is that the observed frequency of the residuals is not compatible with a uniformly filled square distribution. We shall return to this question in the section devoted to discussion.

TEST FOR CONSTANCY OF PERIOD.—The material for many stars extends over more than 60 years, and provides a long baseline for the study of possible changes of period. Arp (1960a) has suggested, from a comparison between periods derived by him for 69 stars and the periods previously published for these stars at Harvard, that appreciable secular changes can be detected. An investigation of possible changes of period was therefore undertaken.

Times of maximum were discussed for each star chosen; the average interval between first and last maximum was 16,000 days, and about 25 maxima were used for each star. Phases of these maxima were calculated with the period that had been derived, and were expressed in the form:

$$\varphi = \text{Decimal part of (Observed J.D.-2,400,000)}/P,$$

where φ is the phase of maximum and P the period in days. If the adopted period is correct, φ will show no progression with time; if the period is too short, φ will increase steadily, and if the period is too long, it will decrease. If the period is undergoing secular change, a plot of φ against time will be a parabola, concave upward if the period is shortening, downward if it is lengthening. Accordingly, two least-squares solutions were made for the slope of the line defined by φ as a function of time. The first was of the form:

$$\varphi = Ex_1 + \text{constant},$$

where φ is the phase as defined above and E is the number of elapsed periods counted from an arbitrary zero. If x_1 is significant, the period requires correction. The second solution was of the form:

$$\varphi = Ex_2 + E^2y + \text{constant},$$

which fits the points to a parabola. If y is significant, there is a secular change in the period.

The solution was programmed for the IBM 1620 computer by Barbara Russey and William Russey. All the stars contained in Arp's paper were included, and also most of those with periods over 20 days. The results are summarized in table 11. The probable errors are entered under all the values in the table, except those for Arp's periods, which are his "estimated errors."

Table 11 contains data for 86 stars. The periods of 38 of them agree with those derived by Arp within his estimated error, and there is no evidence of change of period; these will not

be discussed further. For 21 stars the difference between our period and Arp's is greater than his estimated error. We show below that 20 of these stars have sensibly constant periods, and one shows secular change. For 24 stars not on Arp's list the periods are found to be sensibly constant. Three stars in the table (HV 817, 1967, and 837) have irregular variations of period; below we add the data for the similar star HV 1553. Three stars (HV 1695, 834, and 829) show secular changes of period, two increasing and one decreasing.

Stars with constant periods.—Arp (1960a, p. 443) considered that "about 30% of the Cepheids [with log P less than about 1.2] show period changes which are large compared to their errors of determination. . . . Most of the significant period changes are negative." He concluded that a star has a changing period if the period derived by him from his observations (covering two observing seasons) differed from the previously published Harvard period by more than his own estimated uncertainty. The evidence for changing periods of these stars will now be examined in detail. We note that our improved periods have removed the discrepancy for HV 1981, 1898, 1793, 1966, 1934, and 1903, but that our periods for HV 2046, 2000, 1994, 11193, and 847 now differ from Arp's by more than his estimated uncertainty.

The tabulations that follow (tables 12 through 31) give the observed times of maximum (single observations) for each of 20 stars; HV 1695 was found to display a secular change of period (see below). Succeeding columns give the number of epochs elapsed since the first normal maximum, so adjusted that the sum of the residuals is zero and that the epoch number for this maximum is zero. The first such column is calculated with our adopted period. If table 11 indicated a sensible correction to this period, a second column gives the same quantity calculated with a corrected period P'. The last column gives the number of periods elapsed since the first normal maximum, calculated with Arp's period. If the period used is correct and constant, the number of elapsed epochs should be sensibly integral.

The tabulations show that the epoch counts for P and P' are sensibly integral, and that P' (when used) gives a slightly better representation of the maxima. The elapsed epochs calculated with Arp's period are in no case uniformly integral.

The last entries for each star are the maxima taken from Arp's paper (marked with asterisks). These maxima were not used by us in deriving the periods of the stars, and the fact that in every case they too lead to sensibly integral epoch counts shows that our period represents these later maxima as well as those used in deriving it. There is no question of an abrupt change of period between the Harvard observations and Arp's. For HV 848 it is probable that Arp made no observations exactly at maximum, as may be seen by comparing our light curve with his. We therefore conclude that the existing data furnish no evidence for sensible changes in the periods of these 20 stars. The other 38 stars, which show no sensible difference between the derived periods, give similar data which we need not reproduce.

Arp determined his periods over a short time interval, and it would not be expected that they would represent the maxima accurately over a much longer interval. His estimated errors permit us to calculate the limits within which his periods would be valid. The possible difference in epoch count is equal to the product of the number of epochs and the estimated error, divided by the period. The comparison with observation is given in table 32. Successive columns give the name of the star, Arp's period, his estimated error, the number of epochs covered by the observations, the difference between the epoch counts with our period and his, and the limiting difference as defined above. We conclude that Arp overestimated the accuracy of his periods, on the average, by a factor of about 2.2.

Stars with irregular changes of period.—When the observations could not be represented by a constant period (as judged both by the results in table 11 and by graphical methods), they were combined to obtain normal maxima for intervals of about a thousand days. Tables 33 and 35 give the data for HV 1553 and HV 817, whose periods appear to change abruptly, remaining constant before and after the change. Successive columns give the normal maximum,

the epoch count referred to the first date, and the residuals (O–C) calculated with the periods at the heads of the columns. The first period given is an adopted average. The other periods are those found to represent the maxima over a certain range of epochs; the corresponding residuals are underlined. Two periods are given for HV 1553, four for HV 817. For HV 1553 the period was sensibly constant for nearly 900 epochs; for HV 817 the interval is nearer to 200 epochs.

The behavior of these stars recalls that of HV 853, in the Large Magellanic Cloud, which has been shown by Janes (1964) to change period erratically, swinging back and forth between values that differ by about ten percent, but the proportional changes are much smaller.

Tables 34 and 36 give the data for HV 837 and HV 1967, whose periods appear to vary erratically. Three trial periods are given to obtain the residuals for HV 837, but none of them is valid for an appreciable interval; there is a sharp break between epochs 183 and 265, suggesting a shortened period for a very short time. For HV 1967 the adopted period is chosen to give 918 epochs between the first and last normal maximum. Here again it is not possible to represent any interval satisfactorily by a constant period. The number of epochs, counted from the first normal maximum with Arp's period, is given for comparison. It would strain the data too far to represent the maxima in terms of two successive, and different, secular changes of period, both of which would represent decreases.

Secular changes of period.—Three stars whose maxima suggest secular changes of period are shown in tables 37 to 39. The one common to our investigation and Arp's is HV 1695, for which he gave a period of $14^d50 \pm .05$. The average period for the last tabulated interval is 14^d5914, outside the limits of Arp's estimated error; the period is decreasing, as he thought it was. The period of HV 834 is increasing, that of HV 829 decreasing. We note that the values of the parabolic terms for these stars are not the same as those given in table 11. The stars that seemed to have appreciable parabolic terms were chosen for intensified study; additional maxima were obtained for early dates, and normal maxima were derived, instead of the individual observations at maximum used to derive the results of table 11.

The distribution of changing periods among the stars investigated is as follows:

log P	*stars studied*	*irregular change*	*secular change*
<1.0	42	0	0
$>1.0<1.4$	20	2	1
$>1.4<1.8$	21	2	0
$>1.8<2.2$	5	0	2
>2.2	1	0	0

It is difficult to discern a pattern in these results. Observable changes are evidently confined to the longer periods, although equally large proportional changes would be more easily detected for stars of shorter period, since the change in phase of maximum is proportional to the square of the number of elapsed epochs.

In the section devoted to discussion we conclude that the duration of the Cepheid stage is of the order of 10^6 years (3.6×10^6 epochs) for stars with period 100 days. It seems outside the bounds of possibility that the deduced secular changes of period could persist for this interval.

The sporadic occurrence of sensible changes of period among the stars investigated suggests that changes of period may be an evanescent phenomenon, may operate in either direction, and perhaps become progressively more probable the longer the period.

STARS WITH PERIODS LESS THAN ONE DAY.—Table 3 includes 42 stars with periods under a day. Some of these are certainly RR Lyrae stars of the foreground, but some may be Cloud members. In particular, it seems likely that some stars with large values of (M-m), nearly symmetrical light curves, and small ranges, belong to the similar group that has been shown to lie about half a magnitude above the period-luminosity curve defined by the rest of the Cepheids.

On the basis of solutions 2 and 3 of table 9 we select the stars whose magnitudes show small deviations from the corresponding period-luminosity relation. On this basis the 11 stars of table 40 may be members of the Small Cloud.

Dartayet and Dessy (1952) published a list of faint variables in the Small Cloud, of which three had periods less than a day, and expressed the opinion that these stars are true members of the system. In a later publication, Dessy (1959) tabulates 11 such stars, two Harvard variables and nine new discoveries. Most of these stars are too faint for effective study on our plates, but they were examined on some of the best plates for comparison with the Cordoba results. The data are given in table 41, which includes four Cordoba variables of longer period.

The five stars CV 240, CV 270, CV 216, CV 152, and CV 233 are definitely members of the group of Cepheids with periods under a day; we may include CV 101 and CV 206 which, while variable, could not be analyzed by us because of close companions. We are unable to verify the periods published by Dartayet and Dessy (1952) for CV 277, HV 11174, HV 12089, and CV 106; periods greater than a day are given for HV 11174 and HV 12089 in tables 3 and 4. Shapley (1953) stated that he had not verified the periods given by the Cordoba workers for CV 106, CV 233, and CV 270; we have, however, verified the two latter. The periods for all the stars with periods over a day were verified.

When considered in the same way as the group of stars in table 40, six of the short-period Cepheids may be regarded as members of the Cloud; the seventh (CV 152) would, on this criterion, be a foreground star.

Thirty-one stars in table 4 and one in table 41 are to be considered as foreground RR Lyrae stars. The two variables HV 810 and HV 814 are known to be associated with the globular cluster 47 Tucanae; HV 809, of similar brightness but further from the cluster, may also be associated with it. Variable no. 12 of NGC 362 is a known member of that cluster. There remain 28 possible field RR Lyrae stars. Their distribution in apparent magnitude ($<m>$, since absorption should not affect foreground stars) is as follows: [15^m]16^m, 5; [16^m]17^m, 19; [17^m, 4.

The area covered by our plates is about 43 square degrees; the galactic latitude is about 45°. A rough comparison may be made with the diagram given by Kinman and Wirtanen (1963) for the logarithm of the number of RR Lyrae stars per unit magnitude in 80 square degrees, reduced to the galactic pole. Our numbers correspond to 52 stars brighter than magnitude 15 in 80 square degrees; Kinman and Wirtanen's diagram implies about 35 RR Lyrae stars brighter than magnitude 17 toward the galactic pole. The numbers are not incompatible. Seventeen of the variables of table 3 have asymmetric light curves; ten have symmetrical light curves; some of the latter may belong to the disk population.

The tentative separation of members and nonmembers must be examined by a comparison of colors, proper motions, and, if available, radial velocities. The distribution of the stars of table 11 and the relevant stars of table 12 over the face of the Small Cloud conforms closely to that of stars with periods between one and two days. Some of the brighter stars with periods less than a day also fall within the obvious limits of the Cloud surface, although many are outside them.

RELATION BETWEEN PERIOD AND LIGHT CURVE.—The relation between form of light curve and period has been discussed elsewhere by Payne-Gaposchkin and Gaposchkin (1964), and we confine ourselves to a summary.

Hertzsprung (1926) pointed out that galactic Cepheids display a progression of form of light curve with period. We find a similar progression among the Cepheids of the Small Cloud.

The parameters used to describe the light curve have already been defined (fig. 2). The symmetrical light curves of small range are separated from the rest on the basis of the bimodal distribution of $(M\text{-}m)$. Stars with $(M\text{-}m)$ greater than 0.30 are assigned to the former group; the zero point of their period-luminosity relation is brighter by about half a magnitude than that for the remainder of the stars (table 9).

In the paper just cited it is shown that the parameters A, $(M\text{-}m)$, s, A_1, A_2, the rate of brightening (magnitudes per day), and Arp's "rate of rise" (phase interval for a rise of one magnitude) change systematically with period. The changes are reflected in progressive changes

in the form of the light curve, similar to those described by Hertzsprung for galactic Cepheids.

The parameters of the light curve are also related to deviations from the mean period-luminosity curve. For periods less than ten days, the faintest stars of given period have the smallest amplitudes, as already noted by Arp (1960a). For stars with log P less than 0.6, skewness and $(M\text{-}m)$ are not sensibly related to luminosity at a given period. For log P between 0.6 and 0.9, the least luminous stars of given period have the smallest skewness and the largest $(M\text{-}m)$. Therefore, the lines of constant skewness (which define light curves of similar shape) make an angle with the average period-luminosity curve (fig. 3). Thus the least luminous stars of given period have light curves that resemble those of more luminous stars of shorter period. Attention has already been called by Payne-Gaposchkin (1959, 1961) to the slant of the domains of similar light curves in the period-luminosity plane.

THE *W* VIRGINIS STARS.—Three stars in table 4 are marked as *W* Virginis stars. They fall far below the period-luminosity relation, their light curves are characteristic of the class, and they show unusually great scatter of the magnitudes about the mean curve. Data are summarized in table 42. The column headed *dm* gives the deviation from solution 7 for the period-luminosity curve. The mean of the three values places the stars $2^{m}.01$ from the curve for the other Cepheids. We note that Baade and Swope (1963) find that four "population II" variables in Messier 31 fall photographically 2.00 magnitudes below the period-luminosity relation.

The period of $1^{d}.166$ quoted for HV 12901 in table 3 was an unpublished Harvard estimate. No period has previously been published for HV 1828. Although HV 206 is very close to the globular cluster NGC 362, it is regarded by Sawyer (1955) as probably a member of the Small Cloud, together with the nearby HV 212 and HV 214. Sawyer (1931, p. 6) noted "it is impossible to tell on the basis of the infrequent early observations [of HV 206] whether the period is changing or whether it actually has more irregularities than the later series show." This remark, and the form of the light curve, are in harmony with the behavior of a "population II" variable.

The star discussed by Tifft (1963) as a population II variable near NGC 121 in the halo of the Small Cloud has a period of 1.430 days; Tifft places its $<B>$ magnitude $1^{m}.2$ below the period-luminosity curve; the deviation from the line defined by our solution 2 (table 9) is $+1^{m}.1$. It certainly lies outside the domain of the normal Cepheids.

The long-period variables

Table 43 gives data for 24 long-period variables, of which 23 are probably members of the Cloud. In the foreground is HV 833 (and also HV 860 and HV 864, outside our field and not measured). Eleven (marked with asterisks) were listed as long-period variables and members of the Cloud by Shapley and Nail (1951b); five (marked with two asterisks) were described by them as irregular or semiregular. The stars HV 1644, HV 1963, and HV 11401, though listed here with the long-period variables, are less regular in behavior than the rest, and should perhaps be put with the semiregular variables of the next section.

The median period is over 400 days, and there is a marked relation between period and brightness. For a period of 700 days the maximal magnitude is nearly as bright as 13, and at under 300 days it falls almost to magnitude 17. The progression of brightness with period is borne out by three variables (not studied by us) discovered and measured by Dartayet and Dessy (1952). Maximal magnitudes for CV 7, CV 12, and CV 37 (periods 279, 200:, and 245 days, respectively) are given as 17.5, 17.5, and 17.1 on the "revised" Harvard scale; on the scale used by us they would be at least half a magnitude fainter. Three stars, all with periods under 300 days, are thus much fainter at maximum than the 17th magnitude.

Galactic long-period variables are not known to display a period-luminosity relation; the faintest long-period variables in the Small Cloud seem to be comparable to the brightest galactic specimens.

The Irregular Variables

Table 44 gives the data for 61 irregular variables, of which 21 (marked with asterisks) were designated as irregular or semiregular by Shapley and Nail (1951b). All are probably members of the Small Cloud. The distribution of apparent magnitude at maximum is as follows: [12]13, 4; [13]14, 9; [14]15, 14; [15, 14; [15]16, 12; [16]17, 21; [17, 1.

General Discussion

The period-luminosity curve was first established by studies of the Magellanic Clouds, and the Small Cloud still remains the major source of data for this important relationship. There is a growing conviction that real differences of slope occur in different systems. We have expressed the belief that the relationship in the Small Cloud is not linear. It is clearly important to examine the assumptions that underlie the specification of a period-luminosity relation, and to define such a relation without ambiguity.

If differences of slope exist, it is meaningless to express the zero point as the magnitude at which an extrapolated linear relation reaches zero in log P, corresponding to a period of 1.00 day. No known stellar system contains many Cepheids at this period, and their scarcity in our own galaxy is notorious. To specifiy the relation it would be better to define the zero point by the magnitude attained by log P in the middle of the range of periods used—perhaps at the median value. The period-luminosity law would then have the form:

$$m=m_0-x \log (P/P_{\text{med}}).$$

The same procedure could be used when, as in table 10, the relation is found to differ over different ranges of period.

Theoretical or semitheoretical period-luminosity curves as given, for example, by Cox and Whitney (1958) and by Cox (1959) suggest that both zero point and slope can be expected to differ for stars that differ in composition. On the other hand, stars of different ages may very well differ considerably in composition, especially in systems where star production has been active or intermittent. There is no reason to assume that all systems have been alike in history.

The periods of the Cepheids in the Small Cloud range from about a day to over 200 days, and their brightness from fainter than the 17th to brighter than the 12th magnitude. The bright Cepheids of longest period must be very young compared to the faintest, even though the mass-luminosity relation may differ with possible differences of composition. Cepheids of the same age can occupy only a very limited section of the period-luminosity curve.

If the stellar system in which they occur has been an "active" one, so that the youngest stars have undergone appreciable enrichment by heavy elements, the Cepheids of longest period will differ physically from the older, fainter Cepheids. The sections of the period-luminosity curve that the two groups of stars define will not necessarily be comparable. If there are local differences of composition, even Cepheids of the same period may not be physically identical, though they may be coeval. It would not therefore be surprising if systems that have evidently had different histories (e.g., Messier 31, the Large Cloud, the Small Cloud, and IC 1613) displayed period-luminosity curves that differed in zero point, slope, dispersion, and linearity. In fact, the idea of *a* period-luminosity curve must be abandoned.

On the basis of the known Cepheids in galactic clusters, an adopted mass-luminosity relation for classical Cepheids, and an age of 75 million years for a five-day Cepheid, Young (1961) has derived the following formula for the age of a Cepheid, T, in millions of years:

$$\log T = -0.714 \log P + 2.57,$$

where T is the interval since the star first reached the main sequence. Young considers that the age may be uncertain by a factor of two (or log T by ± 0.3). On this basis the ages of the Cepheids of the Small Cloud range from about 4×10^8 years to about ten million years.

The method used by Young assumes that the age of a Cepheid is a constant fraction of the age of the parent main sequence star, that the evolutionary tracks do not cross, and that the change in bolometric magnitude between the main sequence and the Cepheid region is the same for all stars (i.e., that the evolutionary

tracks have the same slope in the bolometric *HR* plane).

A very rough test of the first assumption may be made by comparing the observed distribution of the luminosities of Cepheids (table 8) with the counts of stars in the Small Cloud published by de Vaucouleurs (1955). He estimates that there are 10,000 stars in the system brighter than $16^m.0$ (old Harvard scale), and about 500 brighter than $14^m.3$. An approximate reduction to the scale used in the present paper changes the fainter limit to $16^m.45$; the brighter limit was verified photoelectrically by de Vaucouleurs. Our tables show 464 Cepheids brighter than $16^m.45$ and 22 brighter than $14^m.3$, or 4.6 percent and 4.4 percent, respectively, of the total counts.

From Young's formula and the period-luminosity relation, the Cepheids brighter than $14^m.3$ and $16^m.45$ were formed, respectively, less than 3.5×10^7 and less than 1.61×10^8 years ago. If all stars spend the same *interval* as Cepheids, the observed percentages should be nearly in the ratio of these times. If, on the other hand, all stars spend the same *fraction of their lives* as Cepheids, the percentages should be nearly equal, which they are. We conclude that the data are consistent with the second supposition, the one adopted by Young. The difference between the two percentages does not exceed the uncertainty introduced by the approximate correction applied to the scale of magnitudes.

The true value of the percentage must be somewhat greater than 4.6, since our list of Cepheids down to $16^m.45$ is certainly not complete. If we estimate that the number should be increased by ten percent, it would follow that of the stars brighter than a given magnitude in the Small Cloud about five percent are Cepheids.

The counts of stars by de Vaucouleurs do not, however, represent the luminosity function of the main sequence stars that can become Cepheids; they include stars of all colors and stages of evolution. Unless the existing color-magnitude diagrams are freed of foreground stars, it is difficult to estimate the correction that should be made to our percentages in order to obtain a figure for the actual duration of the Cepheid stage.

The composite color-magnitude diagram given by Arp (1961) shows stars brighter than the 16th magnitude distributed rather uniformly in $(B\text{-}V)$ from -0.4 to $+1.6$. If these diagrams were taken as representative of the population of the Cloud as a whole, if the Cepheid gap has a width in $(B\text{-}V)$ of $0^m.3$ as suggested by Arp (1960a), and if a star moved uniformly and horizontally in the color-luminosity plane, the correcting factor would be about $2.0/0.3\approx6.7$. However, this factor is certainly too large, even if a star moves uniformly across the plane. Westerlund (1964) has shown that, at least in the wing, there are few stars of intermediate color, and while the true color-magnitude arrays probably differ in different regions it is likely that when they have been cleared of foreground stars, as was done by Woolley (1963) for the Large Cloud, many stars of intermediate color could be eliminated. A rough estimate suggests that the correcting factor should be about three, i.e., that about half the stars enumerated by de Vaucouleurs (1955) (after statistical correction for foreground) are still on the main sequence side of the Cepheid gap.

From the above rough estimate we expect that the Cepheid stage occupies about 15 percent of the previous lifetime of a star that becomes a Cepheid. The duration thus estimated ranges from 5.5×10^7 years for a period of a day through 1.1×10^7 years at ten days, and 2.1×10^6 years at 100 days.

An attempt was made by Jaschek and Ringuelet (1959) to estimate the duration of the Cepheid stage for galactic Cepheids. By comparing an estimated number of Cepheids in the Galaxy with an estimated number of parent main-sequence stars, they arrived, on roughly similar lines to the preceding, at an estimate of 2.5×10^6 years for the mean life of a Cepheid. They recognized that the lifetime of a Cepheid will be dependent on its brightness, but made no allowance for the factor. From their estimated numbers, the mean life of a Cepheid

$=\{(\text{No. of Cepheids})/(\text{No. of } B \text{ stars})\}$
$\times(\text{Mean life of a } B \text{ star})$
$=\{(3\times10^4)/(1.8\times10^6)\}\times(1.5\times10^8)=2.5\times10^6$

years. All the data used are estimates and refer to large groups of stars, and it is difficult

to find a basis of comparison with our data. We may perhaps consider that the "mean lifetime" refers to a galactic Cepheid of median period, i.e., about five days. The duration of the Cepheid stage for such a star in the Small Cloud would be 1.8×10^7 years, differing by an order of magnitude from the result of Jaschek and Ringuelet. The difference is simply the result of a difference in the ratio of the adopted number of Cepheids to the adopted number of parent B stars: 1.7 percent for the Galaxy, 15 percent for the Small Cloud.

In the Small Cloud we are on surer ground; the deduced ratio may be too large, but it can scarcely be smaller than five percent, which still differs sensibly from the number obtained for the Galaxy. The number of galactic Cepheids may be greater than 10^4, as estimated by Parenago (1953), but it is not likely to be as great as 10^5. Both the numbers of Cepheids and of B stars in the Galaxy certainly differ with location, and perhaps it is not possible to choose a significant average figure. There remains the possibility that the lifetime of a Small Cloud Cepheid is a greater fraction of its age than that of a galactic Cepheid. In his discussion of the luminosity function of the Small Cloud, Arp (1961, p. 818) suggests that "it may . . . be that the evolution of the initial main sequence is slower and that the evolutionary depletion of the initial main sequence is less in the Cloud." If this were so, the formula given by Young (1961) would be inapplicable to the Cepheids of the Small Cloud, and all the ages would be multiplied by a factor. However, unless the relative rates of development from the main sequence and across the Cepheid gap were also different from one another, the fraction of its lifetime occupied by a star's Cepheid stage would not be affected, and the discrepancy would still remain.

A group of strictly coeval Cepheids would show some dispersion in period because of the duration of the Cepheid stage. An idea of this dispersion can be obtained from the group of Cepheids in NGC 1866 of the Large Cloud, described by Shapley and Nail (1951a). Excluding the 12-day Cepheid HV 12186, the ratio of the largest to smallest period is $5.08/2.63=1.93$; for stars within 10′ of the cluster center it is $3.52/2.50=1.41$. If we assume that the Cepheids of shortest period in the cluster have just begun to vary, while those of longest period are at the end of their careers, and that all are strictly coeval, we can use Young's formula to find the duration of the Cepheid stage from the difference in their ages. For period 5^d08 the interval is 8×10^7 years, or 52 percent of the total age; for period 3^d52 (stars within 10′ of the center) the corresponding figures are 4×10^7 years and 26 percent.

But even within NGC 1866 the stars may not be strictly coeval. Herbig (1962) has pointed out the possibility that the members of some star clusters may have a considerable "spread-in-ages." But with our present data it is difficult to know whether the necessary conditions exist in NGC 1866. If they do, both percentages obtained above are too large; the second is probably nearer to the truth, as it applies to the central region of the cluster.

It should be noted that a group of coeval Cepheids will not have the same mean period-luminosity relation as a group of Cepheids with a variety of ages. The brightness probably declines as the star crosses the Cepheid gap as illustrated, for example, by Arp (1960b). Therefore the younger, longer-period stars will at any one time have moved further into the gap than those that have just begun to vary, and will therefore be systematically faint. The result will be to diminish the slope of the period-luminosity curve appreciably for a group of strictly coeval stars. The extreme range in log P represented by the stars used above in considering NGC 1866 is about 0.3; over this interval the slope could be reduced by x log $(P_1/P_2)-dm$, where x is the slope of the mean period-luminosity curve, P_1 and P_2 the largest and smallest periods represented, and dm the width of the period-luminosity domain in magnitudes. Adopting $x=2.13$ from table 9, $(P_1/P_2)=1.93$ for NGC 1866, and $dm=0^m.62$, we find, for the difference in magnitude over this period interval, $0^m.61-0^m.62=-0^m.01$; the slope has disappeared, and the period-luminosity curve is horizontal. The overall period-luminosity relation for a system in which star production has been steady could accordingly differ from that for a system in which star

production has proceeded in short bursts of limited duration.

We have concluded that the available data are not inconsistent with the assumption that a star spends roughly a constant fraction of its time as a Cepheid. On this assumption the ratio of the number of Cepheids of a given age to that age will give a measure of the past rate of production of stars that are now Cepheids. The data are given in table 45; values of N are deduced from table 8.

The values of N/T suggest that from 5×10^8 to 3×10^8 years ago the production was small and roughly uniform, that it began to increase thereafter, and rose until about 1.6×10^7 years ago, since when it has again been roughly uniform and much greater than before. These conclusions are similar to those reached by Arp (1960b, p. 114) from a study of color-magnitude arrays for Small Cloud clusters: "Initial star formation in the Small Cloud was very, very small and . . . recently it has come up to a very large amount." Arp's "initial star formation" refers, of course, to the genesis of the globular clusters, much earlier than the earliest date in table 45. None of the stars now investigated belongs to this early epoch, about 10^9 years ago, but the faint globular clusters and the field RR Lyrae stars studied by Thackeray and Wesselink (1953) and by Thackeray (1958) attest to it.

The rates of star formation within different time intervals given in table 45 refer, of course, to stars that differ in average luminosity, mass, and probably composition. Unless the time-dependence of the luminosity function (or mass function) and of the composition is known, these data can at best suggest past trends in star production.

We now explore the relationship of Cepheids of different periods, and hence different ages, to other features of the system. Such features are the bright blue supergiants and the associated H II regions, the emission-line stars, the globular clusters, the blue or "open" clusters, the H I regions, and the variable stars of other types.

A list of the brighter stars in the Small Cloud is given by Feast et al. (1960); their data are supplemented by Buscombe and Kennedy (1962). Emission-line stars have been tabulated by Henize (1956) and by Lindsay (1956). A special table of supergiant stars in the "wing" region is given by Westerlund et al. (1963). The distribution of these stars is shown in figure 4.

Emission nebulosities are included in figure 4 on the basis of the tabulation of Westerlund and Henize (1963), based on Henize (1956) and Lindsay (1961). Compare also the list of Nail et al. (1953) and one outlying nebulosity noted by Westerlund and Henize (1963). These nebulosities define the regions of gas, which are clearly concentrated in the main axis and wing region. The distribution is even more strikingly shown by the direct picture of the H II regions obtained by Rodgers (1959), the composite photograph reproduced by Johnson (1961), and the picture obtained by Courtes (1964) in the region of 6570A with a pass band of 10A.

Another structural picture can be obtained from the clusters of the Small Cloud. We make use of the catalog given by Kron (1956) because it is the most uniform and permits a separation of the globular from the "open" clusters. The latter are shown in figure 4, since they represent a similar (though not necessarily identical) population. Three categories of "open" clusters are shown; those with bright blue stars, designated ++ by Kron, those with blue stars, designated +, and those simply designated as B (blue). Many of these clusters, in all three categories, are noted as associated with emission. Figure 4 shows the distribution over the face of the Cloud of clusters designated as "globular," or "globular?" by Kron. A few of the clusters in his catalog were not included in figure 4 for lack of the relevant data. Most of these clusters have been tabulated by Shapley and Wilson (1925), and many of them also by Lindsay (1958); it is difficult to assign the additional clusters of these three papers to one or another of the curves in figure 4.

A rather similar structural picture emerges from the star counts made by de Vaucouleurs (1955) down to $14^m.3$ and $16^m.0$ photographic (contemporary Harvard scale, checked photoelectrically above $14^m.5$). His equidensity contours to the brighter limit resemble the distribution shown in figure 6. Those to the fainter limit, while still showing the same distribution

as a central core, tend toward a smoother elliptical distribution at the edges, which is more nearly like the "elliptical shape" shown in the infrared photograph reproduced by Johnson (1961).

These equidensity contours based on counts of stars may be compared with the results of photoelectric surface photometry obtained by Elsässer (1958). His isophotes show the same inner structure, which is reflected in his equal-color contours. Especially notable is the similarity of Elsässer's isophotes to the equigradient contours of de Vaucouleurs (1955); both show an isolated "bright" area near 0^h20^m, $-74°40'$. A strong similarity with both is displayed by the isophotes for the 21-cm line given by Hindman (1964), extending even to the isolated area just mentioned.

These data have a direct bearing on the question of absorption within the Small Cloud. Shapley (1951, p. 137) regarded the Cloud as "essentially transparent," although he stated that "interstellar absorption in the inner section of the Cloud of two- or three-tenths of a magnitude is not out of the question." Wesselink (1961a) on the other hand concluded from galaxy counts that the Small Cloud has a "normal dust content" and that local absorptions up to more than a magnitude may be present; he further concluded (1961b) that such a dust content is not incompatible with other evidence, such as the relatively small color excesses found by Feast et al. (1960). Walker's study (1963) of the interstellar feature at λ 4430 in stars of the Small Cloud may be similarly interpreted. Feast (1964) shows that the Radcliffe spectroscopic results give clear indications of reddening in both Clouds, corresponding to total absorptions of about one-third of a magnitude, and points out that the interstellar lines found in the spectra of members of both Clouds show both galactic and Cloud components. Kron and Mayall (1960) concluded that some Cloud objects are locally reddened and obscured.

The most convincing suggestion that sensible absorptions must be allowed for comes, however, from Hindman's (1964) 21-cm contours. By analogy with our own Galaxy we should expect that there would be an association of dust with hydrogen gas, and that regions of greatest absorption would be in the same locations as regions of greatest gas density. A comparison of our derived absorptions (which were determined empirically before the appearance of Hindman's paper) with his contours shows a striking general similarity, our greatest absorption corrections coinciding with the areas of greatest hydrogen intensity. The immediate conclusion might be that the deduced absorptions are real, and not a systematic observational effect. However, it is still possible that the magnitudes are systematically affected in regions of the highest star density, which (as a comparison with Elsässer's (1958) isophotes shows) also agree in a striking fashion with the 21-cm contours. The problem could be resolved by determination of accurate color excesses, but we have no material for an attack on this extremely difficult problem. We therefore present our absorption corrections as empirical and provisional, but express the belief that they are real, at least to a large extent.

The bright B and A stars, the emission-line stars, the "open" clusters, the bright nebulosities, the star counts, the surface photometry, and the neutral hydrogen all concur in marking out a region similar to the "Population I arm" sketched by Johnson (1961). We may conclude that this limited portion of the Cloud contains most of the potential star-building material at the present time, and has been the scene of the formation of the youngest members of the system. The smooth elliptical distribution seen on all long-exposure photographs, and emphasized in Johnson's infrared photograph, may be regarded as the volume within which the older stars of the system were formed; it also contains the globular clusters, the oldest observable members of all.

The wing region is of special interest. It was pointed out by Shapley (1940) that this extension points in the direction of the Large Cloud. Shapley and Nail (1955) called attention to the fact that many long-period Cepheids are found in the region, but none of short period, and suggested that the "wing" may be a "special entity." The exceptional character of the wing was emphasized by Westerlund (1961), who found the region of NGC 456, 460,

and 465 to consist of a population of young blue stars and H II regions superimposed on a weak Population II. This finding was extended by Westerlund (1963) and by Westerlund et al. (1963) to include the whole wing, regarded as having a common evolutionary history; they assigned an age of less than 10^7 years on the basis of eight blue supergiants. A color-magnitude diagram for the region of NGC 602 is given by Westerlund (1964), who suggests that the region contains a mass of $H=2\times10^5\odot$, the stars a mass of $10^4\odot$. De Vaucouleurs (1954) has attributed the wing to the tidal action of the Large Cloud.

Figure 4 shows the distribution over the face of the Cloud for Cepheids within 11 intervals in log P. The intervals of age, derived from Young's formula, are given in the legend. The following points should be noted.

1. The distribution for stars of longest period conforms most closely to the distribution of the bright stars, emission stars, nebulosity, "open" clusters, and neutral hydrogen.

2. The area covered by the variable stars grows progressively larger for shorter periods and finally approaches the elliptical distribution shown in the infrared photograph.

3. The Cepheids with period less than a day that we consider (on the basis of luminosity) to be members of the Cloud occupy an area similar to that for stars with periods between one and two days. Many of the brighter "nonmembers" lie outside these boundaries.

4. The three W Virginis stars lie within the elliptical area, but they are not concentrated as are the normal Cepheids of similar period.

5. The Cepheids in the wing area are all of period greater than about seven days (corresponding to an age of less than 10^8 years) and most of them have periods greater than 15 days (age less than 5.5×10^7 years). None, however, has a period over 35 days (corresponding to an age of 3×10^7 years). Thus on the basis of the Cepheids we deduce an age at least three times as great as that assigned by Westerlund et al. (1963) to the wing. This is not far outside the uncertainty assigned by Young to his formula. Probably, however, the wing was in process of formation for an interval of about 5×10^7 years, and the Cepheids are rather older than the blue supergiants.

Ishida (1961) has called attention to some of the same tendencies on the basis of the data previously published at Harvard for the Cepheids then known. Arp (1959b, p. 258) stated that "the region of star formation has been displaced nonconcentrically" on the basis of his studies of clusters of the Small Cloud; our analysis of the distribution of Cepheids of different periods substantiates his conclusion. His result, that the ages of star clusters in the Cloud span a large interval of time, is also in harmony with our conclusions from the distribution of the Cepheids.

Rodgers (1959, p. 49) described the Small Cloud as "a highly distorted one-arm spiral structure," and Johnson (1961) suggested that the second arm is viewed lengthwise. There is in fact little evidence of a second arm distinct from the main axis, but we note that HV 817, a long-period Cepheid that is both bright and exceptionally blue, lies in the direction in which a second arm might be expected, if it were symmetrically situated.

If the Large Cloud has played a part in the production of the wing, the Small Cloud does not seem to have had a recognizable reciprocal effect; no evidence now exists of a similar wing extending from the Large Cloud in the direction of the Small, though a wing extending from the Large Cloud toward the Galaxy has been suggested by de Vaucouleurs (1954). Our present knowledge (admittedly incomplete) does not indicate that the period frequency in the Large Cloud is at all like that in the Small Cloud. Shapley and McKibben (1940) found a median period of $4^d.42$ for all known Cepheids in the Large Cloud, as against $3^d.75$ and $2^d.70$ for the body of the Small Cloud and its "border" regions, respectively. The data given by Shapley and Nail (1955) lead to median periods of $3^d.25$ and $4^d.35$ respectively, for the Small and Large Clouds, and the median period from our own data for the Small Cloud is less than three days. The median period for galactic Cepheids brighter than the 10th apparent magnitude, as deduced by Shapley and McKibben from contemporary material, is over six days. Although the last figure is obviously

subject to observational selection, it would be difficult to reconcile the observed differences, and we regard them as real, though quantitatively uncertain; the Cepheid population of the Large Cloud is intermediate between those of the Small Cloud and the Galaxy.

Reasoning similar to that used for the Small Cloud would bring us to the conclusion that active star formation, leading to the formation of the contemporary Cepheids, began more recently in the Large Cloud than in the Small. We note that Hodge (1959) concluded from his study of the star clusters in the Large Cloud that there have been two main epochs of star formation in that system, one about 10^9 years ago, another about 2×10^7 years ago. The median period $4^d.35$ given above would correspond, on Young's formula, to an age of 1.3×10^8 years. The interval 2×10^7 years would correspond to Cepheids with periods of 60 days; actually the known periods for the Large Cloud show a secondary maximum between 20 and 50 days. Speculation about the history of Cepheid formation in the Large Cloud must clearly await a more complete study of all the variable stars in that system, of their distribution across its face, and of their relationship to its structural features.

We now examine the bearing of our data on the history of a Cepheid as it passes through the variability domain. We regard the following as having been established.

1. A relation exists between logarithm of period and luminosity, not necessarily linear.

2. The period-luminosity relation has an appreciable dispersion in luminosity at any one period, and in log P at any one luminosity. Arp (1960a) obtained standard deviations of $\pm0^m.28$ and $\pm0^m.15$ for all 69 stars and for stars of large amplitude, respectively, at any one period. We obtain a standard deviation of $\pm0^m.31$ from solution 2, table 9. When converted into log P by means of the relevant slopes of the period-luminosity relation, we find standard deviations of ±0.63 and ±0.34 in log P for Arp's two samples, and ±0.66 from our own.

3. Does a Cepheid develop with constant period across the gap? This conclusion was drawn by Arp (1960a) from his studies of clusters in the Small Cloud. We note, however, that even if the duration of the Cepheid stage is 15 percent of the total age of the Cepheid, and if the Cepheid developed during this interval at constant brightness and increased its period by a factor of four, the corresponding secular change of period would still be too small to be detected from existing material, and therefore our failure to establish secular changes of period neither strengthens nor weakens Arp's conclusion.

4. The width of the Cepheid gap in $(B-V)$ is about $0^m.3$, as deduced by Arp (1960a); the star develops with increasing $(B-V)$. It should accordingly grow progressively fainter even in V, and more so in B, and hence photographically (since constant period implies constant size unless there is mass loss, for which we have no evidence). Thus the stars at the upper edge of the period-luminosity domain should be the youngest of a given period, those at the lower edge the oldest, if the period remains constant.

The changing properties of a star between the upper and lower limits of the period-luminosity domain therefore mirror the changes that take place as a Cepheid develops. Arp (1960b, p. 101) has argued that "the Cepheids with the smaller amplitudes [come] from the edges of the gap where their luminosity for that period is either much higher or much lower than for the same period in the center of the gap." The data derived by Payne-Gaposchkin and Gaposchkin (1964) from the present material are in harmony with this statement; the mean amplitude is somewhat smaller at the upper edge of the period-luminosity domain than near the middle of it, and considerably smaller at the lower edge. Furthermore, the skewness, s, reaches its highest value near the middle of the domain, and is smallest at the lower edge.

The skewness of the light curve is presumably a measure of the extent to which the pulsation is "driven," and shows how this factor affects the behavior of the star as it crosses the gap.

We might expect that the rate of progress of the star across the gap would be indicated by the frequency distribution of the amplitudes. Table 46 presents the data for all stars; those with sinusoidal curves are tabulated separately. As maximum amplitude varies with period, the data for a limited range of period (2^d to 3^d) are

added for comparison. We note that the amplitudes are well determined, since systematic errors in the magnitudes and uncertainties in the absorption corrections can scarcely affect them. If anything, the number of small amplitudes would be increased by the presence of unresolved companions.

Median amplitude for all the stars with $(M\text{-}m) < 0.3$ is about $1^m.1$, and this is true also for the sample with periods between two and three days; for the sinusoidal curves it is about $0^m.6$. All three distributions are approximately symmetrical about the median; very large and very small amplitudes are equally uncommon.

Small amplitudes must be depleted by observational selection, and it is difficult to evaluate the corrections that should be made to allow for this effect. From our experience with the material we should have estimated that all stars with amplitudes over about $0^m.75$ would have an equal chance of discovery, and this is certainly true for amplitudes of $1^m.0$, where the numbers have already begun to fall off.

If stars crossed the gap at a uniform rate and if their amplitudes changed steadily, we should expect a large excess of small amplitudes, but it is difficult to avoid the impression that there is, on the contrary, a deficiency of amplitudes between $1^m.0$ and $0^m.75$. We might conclude that (contrary to our belief) observational selection has cut down the numbers of discovered stars with amplitudes less than $1^m.1$. In that case there would be more undiscovered Cepheids below this limit than are at present known. However, we maintain that our data are correct in showing a maximum frequency at an intermediate amplitude. In that case the amplitude does not change steadily as the star crosses the gap, and/or maximal amplitude is not the same for all stars (not even for all stars of the same period).

If the dying away of amplitude is a damping phenomenon, the amplitude itself, which is a logarithmic quantity, is the correct measure of the decay of the pulsation. If on the other hand we transform the amplitudes into intensity ratios, we encounter the same problem, though in less exaggerated form. The deficiency of low-intensity ratios might be referred to incompleteness (it sets in at about $I/I_0=2.25$, corresponding to an amplitude of about $0^m.8$). However, the number of large-intensity ratios now seems excessive. We should again suspect that maximal amplitude differs from star to star.

We note that the median amplitude for the sinusoidal stars is $0^m.6$, and if selection has already become a serious factor in discovery at $0^m.8$, these stars must be extremely numerous; perhaps as numerous as the "normal" Cepheids.

The discussion in the present paper is limited to empirical considerations. Comparison with current theoretical work is postponed to a later communication.

Acknowledgments

The measurements were made under the supervision of Sergei Gaposchkin, by Alison S. Brooks, Karena Brooks, Raymond Craig Chester, Judd S. Conway, Amy T. Doherty, Louise A. Doherty, Elizabeth D. Dole, Jay A. Frogel, Judith H. Haller, Kristel Fox Heinemann, Kenneth Janes, Adriane Aldrich Kalnajs, Steven Kilston, Mary C. Kopko, Beatrice Koretsky, Barbara Russey, Ruth Ann Spivak, and Pamela G. Webb.

The program for the study of period changes was written by Barbara Russey and William Russey; that for the least-squares solutions, by Barbara Russey and Peter Gaposchkin.

The diagrams of the light curves have been drawn by John and Katherine Haramundanis.

We are greatly indebted to E. M. Gaposchkin, who wrote the program for the reduction of the observations.

Especial thanks are due to Barbara Russey, who coordinated the work, supervised the reductions, assisted in the preparation of the manuscript, and typed the main tables.

References

ARP, H. C.

1958a. Southern hemisphere photometry, II: Photoelectric measures of bright stars. Astron. Journ., vol. 63, pp. 118–127.

1958b. Southern hemisphere photometry, III: The color-magnitude diagram of NGC 419 and the adjoining field in the Small Magellanic Cloud. Astron. Journ., vol. 63, pp. 273–282.

1959a. Southern hemisphere photometry, VI: The color-magnitude diagram of NGC 458 and the adjoining region of the Small Magellanic Cloud. Astron. Journ., vol. 64, pp. 175–182.

1959b. Southern hemisphere photometry, VII: The color-magnitude diagram of NGC 330 and the adjoining region of the Small Magellanic Cloud. Astron. Journ., vol. 64. pp. 254–258.

1960a. Southern hemisphere photometry, VIII: Cepheids in the Small Magellanic Cloud. Astron. Journ., vol. 65, pp. 404–444.

1960b. Intrinsic variables and stellar evolution. Symp. on Stellar Evolution, La Plata Obs., Argentina, pp. 87–117.

1961. Stellar content of galaxies. Science, vol. 134, pp. 810–819.

BAADE, W., and SWOPE, H. H.

1963. Variable star field 96′ south preceding the nucleus of the Andromeda galaxy. Astron. Journ., vol. 68, pp. 435–470.

BUSCOMBE, W., and KENNEDY, P. M.

1962. Supergiant B stars in the Small Magellanic Cloud. Journ. Roy. Astron. Soc. Canada, vol. 56, pp. 113–123.

COURTES, G.

1964. Regions H II dans les nuages de Magellan et les galaxies proches. *In* The Galaxy and the Magellanic Clouds, IAU–URSI Symp., no. 20, Australian Acad. Sci., Canberra, pp. 278–283.

COX, J. P.

1959. Stellar pulsation, V: A semitheoretical period-luminosity relation for Cepheids with radiative envelopes. Astrophys. Journ., vol. 130, pp. 296–307.

COX, J. P. and WHITNEY, C.

1958. Stellar pulsation, IV: A semitheoretical period-luminosity relation for classical Cepheids. Astrophys. Journ., vol. 127, pp. 561–572.

DARTAYET, M. and DESSY, J. L.

1952. Studies of variables in the Magellanic Clouds, I: Twenty new faint variables in a region in the Small Cloud. Astrophys. Journ., vol. 115, pp. 279–283.

DESSY, J. L.

1959. Estudios sobre las variables de las nubes de Magallanes, III: Posición y color de trescientos veinticinco nuevas variables en la region "a" de la Nube Menor con un estudio estadístico sobre las mismas. Bol. del Instituto Matematica, Astronomia y Fisica, Univ. Nacional de Cordoba, Argentina, vol. 1, pp. 1–10.

ELSÄSSER, H.

1958. Lichtelektrische Flächenphotometrie der Magellanschen Wolken: Die kleine Magellansche Wolke. Z. Astrophys., vol. 45, pp. 24–34.

FEAST, M. W.

1964. Spectroscopic work in the Magellanic Clouds: NGC 330 in the SMC. *In* The Galaxy and the Magellanic Clouds, IAU–URSI Symp., no. 20, Australian Acad. Sci., Canberra, pp. 330–334.

FEAST, M. W.; THACKERAY, A. D.; and WESSELINK, A. J.

1960. The brightest stars in the Magellanic Clouds. Monthly Notices Roy. Astron. Soc., vol. 121, pp. 337–385.

HENIZE, K. G.

1956. Catalogues of Hα-emission stars and nebulae in the Magellanic Clouds. Astrophys. Journ. Suppl., vol. 2, no. 22, pp. 315–344.

HERBIG, G. H.

1962. Spectral classification of faint members of the Hyades and Pleiades and the dating problem in galactic clusters. Astrophys. Journ., vol. 135, pp. 736–747.

HERTZSPRUNG, E.

1926. On the relation between period and form of the lightcurve of variable stars of the δ Cephei type. Bull. Astron. Inst. Netherlands, vol. 3, pp. 115–120.

HINDMAN, J. V.

1964. Notes on the structure of the SMC as observed in 21-cm line radiation from neutral hydrogen. *In* The Galaxy and the Magellanic Clouds, IAU–URSI Symp., no. 20, Australian Acad. Sci., Canberra, pp. 255–261.

HODGE, P. W.

1959. Studies of the Large Magellanic Cloud. Doctoral thesis, Harvard Univ., 137 pp.

ISHIDA, K.

1961. The distribution of interstellar matter and stars, II: The Small Magellanic Cloud. Publ. Astron. Soc. Japan, vol. 13, pp. 87–93.

JANES, K. A.

1964. Period changes of the Cepheid variable HV 953. Astron. Journ., vol. 69, pp. 131–132.

JASCHEK, C. O. R., and RINGUELET, A.
1959. Note on the evolution of the Cepheids. Z. Astrophys., vol. 48, pp. 22–27.

JOHNSON, H. M.
1961. The structure of the Small Magellanic Cloud. Publ. Astron. Soc. Pacific, vol. 73, pp. 20–29.

KINMAN, T. D., and WIRTANEN, C. A.
1963. Preliminary results of an RR Lyrae star survey with the Lick 20-inch astrograph. Astrophys. Journ., vol. 137, pp. 698–699.

KRON, G. E.
1956. Star clusters in the Small Magellanic Cloud, I: Identification of 69 clusters. Publ. Astron. Soc. Pacific, vol. 68, pp. 125–130.

KRON, G. E., and MAYALL, N. U.
1960. Photoelectric photometry of galactic and extragalactic star clusters. Astron. Journ., vol. 65, pp. 581–620.

LEAVITT, H. S.
1906. 1777 variables in the Magellanic Clouds. Ann. Harvard Coll. Obs., vol. 60, pp. 87–108.

LINDSAY, E. M.
1956. A catalogue of stellar-like emission objects in the Small Magellanic Cloud. Monthly Notices Roy. Astron. Soc., vol. 116, pp. 649–658.
1958. The cluster system of the Small Magellanic Cloud. Monthly Notices Roy. Astron. Soc., vol. 118, pp. 172–182.
1961. A new catalogue of emission-line stars and planetary nebulae in the Small Magellanic Cloud. Astron. Journ., vol. 66, pp. 169–185.

NAIL, V. McK.; WHITNEY, C. A.; and WADE, C. M.
1953. Magellanic Clouds, IX: The nebulosities of the Small Cloud. Proc. Nat. Acad. Sci., vol. 39, pp. 1168–1176.

PARENAGO, P. P.
1953. Der Bau der Galaxis. Abh. Sowjet. Astron. Astrophys., vol. 3, pp. 1–113.

PAYNE-GAPOSCHKIN, C.
1959. Cepheid variables and the period-luminosity relation. Journ. Washington Acad. Sci., vol. 49, pp. 333–350. Also Harvard Reprint Series I, no. 536.
1961. On the dispersion in the period luminosity relation. Vistas in Astron., vol. 4, pp. 184–189.

PAYNE-GAPOSCHKIN, C., and GAPOSCHKIN, S.
1966. Relation of light curve to period for Cepheids in the Small Magellanic Cloud. Vistas in Astron. [in press.]

RODGERS, A. W.
1959. The large scale distribution of hydrogen emission in the Small Magellanic Cloud. Observatory, vol. 79, pp. 49–51.

SAWYER, H. B.
1931. Periods and light curves of thirty-two variable stars in the globular clusters NGC 362, 6121, and 6397. Circ. Harvard Coll. Obs., no. 366, 36 pp.
1955. A second catalogue of variable stars in globular clusters comprising 1,421 entries. Publ. David Dunlap Obs., Univ. Toronto Press, vol. 2, pp. 35–93.

SHAPLEY, H.
1940. An extension of the Small Magellanic Cloud. Bull. Harvard Coll. Obs., no. 914, pp. 8–9.
1951. Magellanic Clouds, I: Transparency. Proc. Nat. Acad. Sci., vol. 37, pp. 133–138.
1953. Magellanic Clouds, VIII: On the population characteristics of the two Clouds. Proc. Nat. Acad. Sci., vol. 39, pp. 1161–1168.

SHAPLEY, H., and MCKIBBEN, V.
1940. Galactic and extragalactic studies, V: The period frequency of classical Cepheids in the Magellanic Clouds. Proc. Nat. Acad. Sci., vol. 26, pp. 105–115.

SHAPLEY, H., and NAIL, V. McK.
1951a. NGC 1866 and the Magellanic Cloud variables. Astron. Journ., vol. 55, pp. 249–251.
1951b. Magellanic Clouds, II: Supergiant red variable stars in the Small Cloud. Proc. Nat. Acad. Sci., vol. 37, pp. 138–145.
1955. Magellanic Clouds, XVII: Seven notes on the Cepheid variables. Proc. Nat. Acad. Sci., vol. 41, pp. 829–836.

SHAPLEY, H., and WILSON, H. H.
1925. The Magellanic Clouds, V: The absolute magnitudes and linear diameters of 108 diffuse nebulae. Circ. Harvard Coll. Obs., no. 275, 5 pp. Also the Magellanic Clouds, VI: Positions and descriptions of 170 nebulae in the Small Cloud. Circ. Harvard Coll. Obs., no. 276, 4 pp.

THACKERAY, A. D.
1958. Periods and light-curves of variable stars in NGC 121. Monthly Notices Roy. Astron. Soc., vol. 118, pp. 117–124.

THACKERAY, A. D. and WESSELINK, A. J.
1953. Distances of the Magellanic Clouds. Nature, vol. 171, p. 693.

TIFFT, W. G.
1963. Magellanic Cloud investigations, I: The region of NGC 121. Monthly Notices Roy. Astron. Soc., vol. 125, pp. 199–260.

VAUCOULEURS, G. DE
1954. The Magellanic Clouds and the galaxy, II. Observatory, vol. 74, pp. 158–164.
1955. Studies of Magellanic Clouds, II: Dimensions and structure of the Small Cloud. Astron. Journ., vol. 60, pp. 219–230.

WALKER, G. A. H.
1963. Photoelectric measures of the 4430 A diffuse interstellar band. Monthly Notices Roy. Astron. Soc., vol. 125, pp. 141–167.

WESSELINK, A. J.
1961a. The dust content of the Small Magellanic Cloud from counts of nebulae. Monthly Notices Roy. Astron. Soc., vol. 122, pp. 503–507.
1961b. Absorption and reddening in the Magellanic Clouds. Monthly Notices Roy. Astron. Soc., vol. 122, pp. 509–512.

WESTERLUND, B. E.
1961. The distribution of stars in an outlying part of the Small Magellanic Cloud. Ann. Uppsala Obs., vol. 5, no. 2, 17 pp.
1963. The distribution of stars in the wing of the Small Magellanic Cloud, the region of NGC 602. Monthly Notices Roy. Astron. Soc., vol. 127, pp. 429–448.
1964. The wing of the Small Magellanic Cloud. *In* The Galaxy and the Magellanic Clouds, IAU–URSI Symp., no. 20, Australian Acad. Sci., Canberra, pp. 342–346.

WESTERLUND, B. E.; DANZIGER, I. J., and GRAHAM, J.
1963. Supergiant stars in the wing of the Small Magellanic Cloud. Observatory, vol. 83, pp. 74–79.

WESTERLUND, B. E., and HENIZE, K. G.
1963. A small emission nebula in the wing of the Small Magellanic Cloud. Publ. Astron. Soc. Pacific, vol. 75, pp. 332–335.

WOOLLEY, R. v. d. R.
1963. Studies in the Magellanic Clouds, VI: Magnitudes and proper motions in variable field I, LMC. Bull. Roy. Obs., no. 66, pp. 265–297.

YOUNG, A. T.
1961. Stellar kinematics and spiral arms. Doctoral thesis, Harvard Univ., 93 pp.

Abstract

The variable stars discovered at Harvard in the Small Magellanic Cloud are studied on Harvard plates. Results have been obtained for about 1300 stars. The overwhelming majority (91 percent) are Cepheids.

Cepheid variables—periods range from about a day to over 200 days. The well-known preponderance of short periods is found to be even greater than previously supposed. Least-squares solutions for the period-luminosity relation show a departure from linearity. Stars with symmetrical light curves of small range show a relation parallel to that for asymmetric curves, about half a magnitude brighter. The intrinsic dispersion of the period-luminosity relation is found to be $\pm 0^m.3$(p.e.). The parameters that describe the light curves (amplitude, skewness, rate of rise) are related to period, and to deviation from the mean period-luminosity curve. Detailed study of the periods of 96 Cepheids shows no significant secular change of period for any star of period less than 12 days. Six stars of greater period have variable periods. A few of the intrinsic variables with period less than a day in the region of the Cloud are probably members of the system; the remainder are foreground RR Lyrae stars. The distribution of Cepheids over the face of the Cloud changes with period. Three *W* Virginis stars are members of the system.

The distribution of absorption within the Cloud, inferred from systematic departures from the period-luminosity relation, is similar to that of the H I regions observed by radio techniques.

Long-period variables—all but one of the 24 long-period variables are Cloud members. They show a period-luminosity relation. Their distribution is similar to that of Cepheids of period about ten days.

Sixty-two irregular variables are probably all members of the Cloud. Of the 34 eclipsing stars, all but one are members of the Cloud. They will be discussed by one of us in another publication.

It is inferred that all stars spend about the same fraction of their life as Cepheids. The duration of the Cepheid stage is estimated. The amplitude frequency leads to the conclusion that the pulsations are "driven" within the Cepheid gap, and are small outside it. Maximal amplitude is probably not the same for all Cepheids.

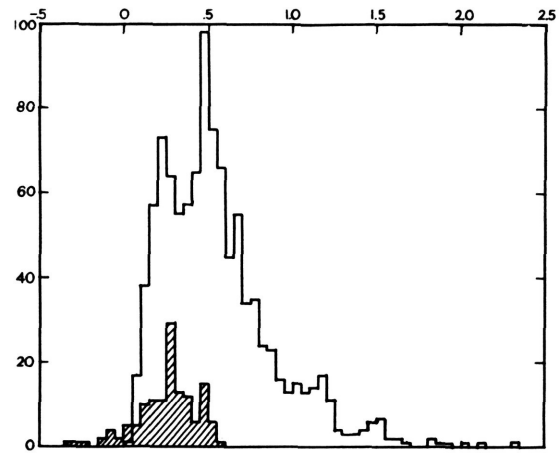

FIGURE 1.—Frequency of log P in intervals of 0.05. The cross-hatched area refers to stars with $(M\text{-}m)>0.3$.

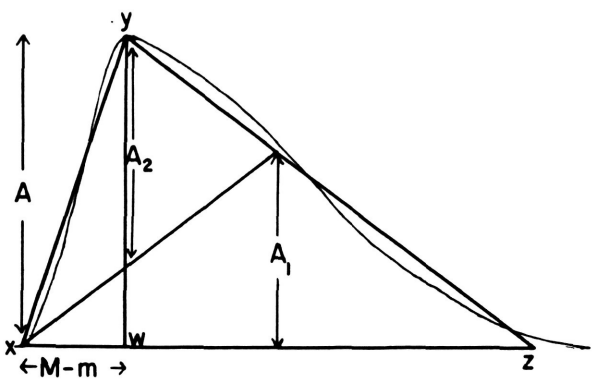

FIGURE 2.—Parameters of the light curve. The parameters A, A_1, A_2, and $(M\text{-}m)$ are labeled. A, A_1, and A_2 are expressed in magnitudes, $(M\text{-}m)$ in percentage of the period. The skewness, s, is the ratio of the triangles wyz/wxy, or xw/xz. The rate of brightening is $A/P(M\text{-}m)$ where P is the period in days. The rate of rise is $(M\text{-}m)/A$.

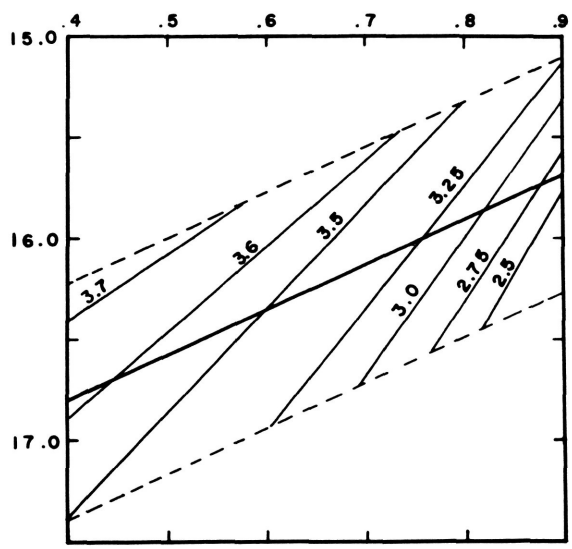

FIGURE 3.—Lines of constant skewness, s, for log P between 0.6 and 0.9. The mean period-luminosity curve is shown by a heavy line; broken lines define a dispersion of $\pm 0^m.6$. The lines of constant s are labeled and define domains in which the light curves have similar shapes. Note that the slope of the lines increases with period. Ordinate and abscissa are photographic magnitude and logarithm of period.

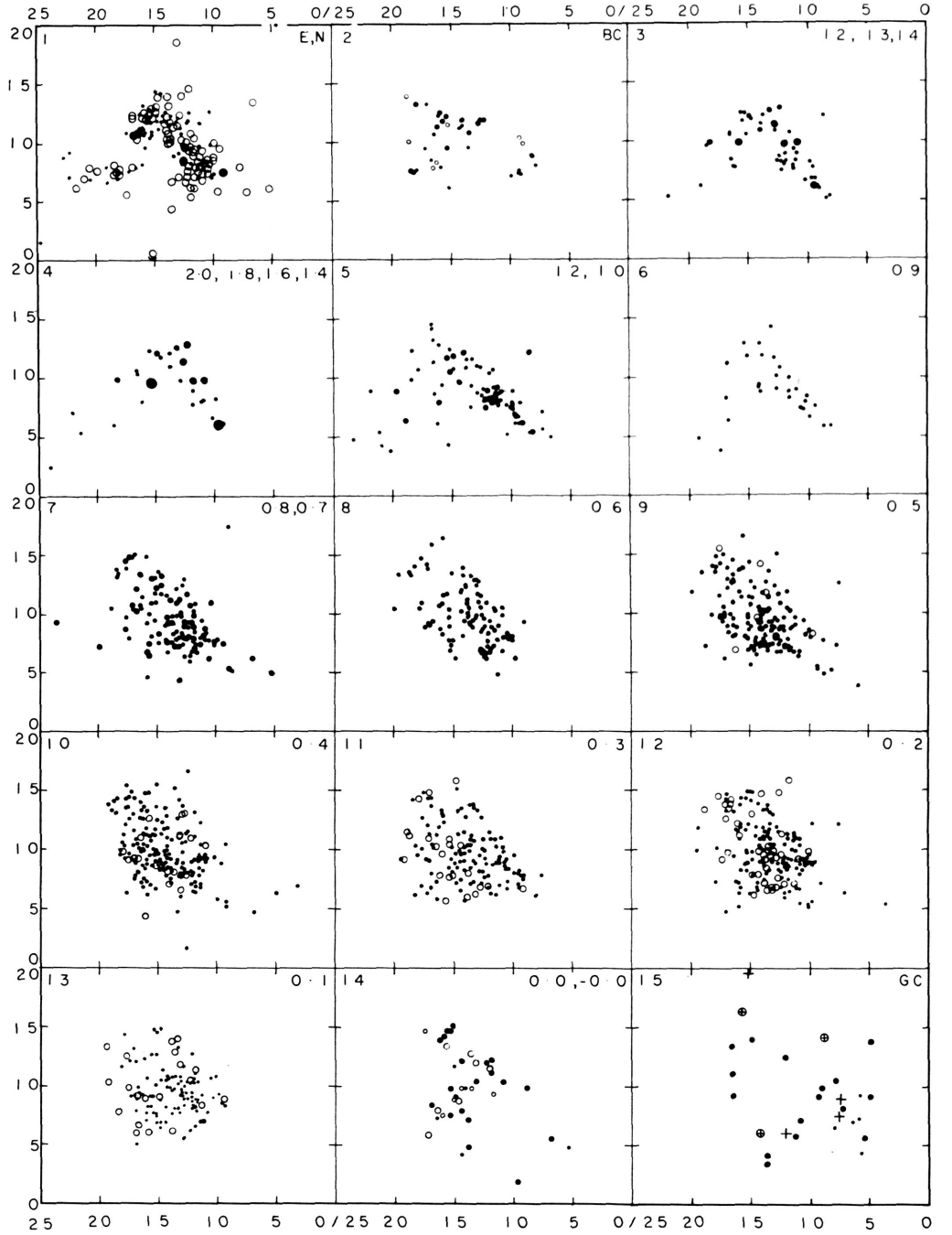

FIGURE 4.—Distribution over the face of the Small Cloud of blue stars, nebulosities, star clusters, and Cepheid variables. The coordinate system, in units of 100″, is that of Miss Leavitt, and is the same for each section of the diagram. (See following page for explanation.)

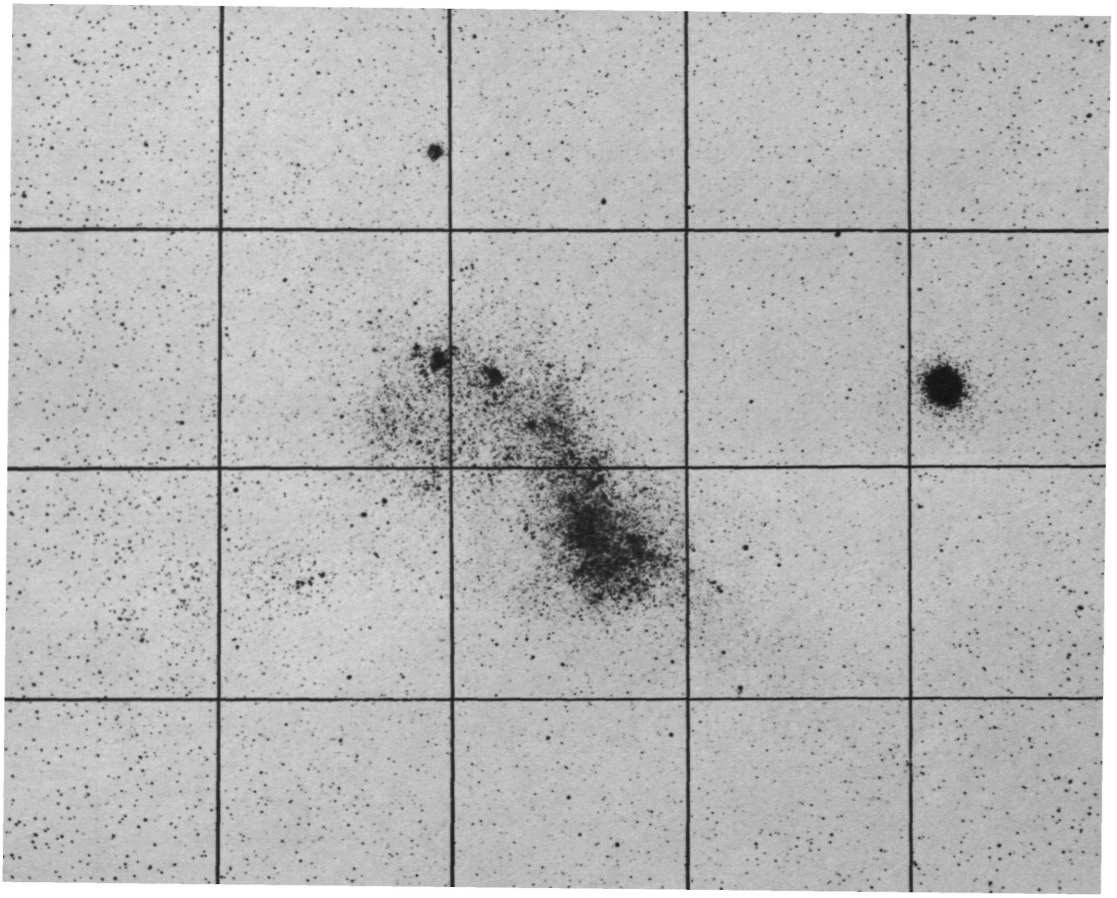

FIGURE 5.—The Small Magellanic Cloud. The coordinate grid is the same as that for figure 4. The two globular clusters, 47 Tucanae and NGC 362, are foreground objects.

FIGURE 4—Legend—Continued

1. Emission line stars (small dots), blue supergiants (large dots) and bright nebulae (circles).
2. Blue clusters from the catalog of Kron (1956). Clusters designated ++ by Kron (large dots); + (small dots); *B* (circles).
3. The brightest Cepheids: $<m>_0 = 12^m$ to 13^m (large dots); 13^m to 14^m (medium dots); 14^m to 15^m (small dots).
4. Cepheids with log $P > 2.0$ (largest dots); 1.8 to 2.0; 1.6 to 1.8; 1.4 to 1.6 (dots of progressively smaller size).
5. Cepheids with log $P = 1.2$ to 1.4 (large dots); 1.0 to 1.2 (small dots).
6. Cepheids with log $P = 0.9$ to 1.0.
7. Cepheids with log $P = 0.8$ to 0.9 (large dots); 0.7 to 0.8 (small dots).
8. Cepheids with log $P = 0.6$ to 0.7.
9. Cepheids with log $P = 0.5$ to 0.6. (In this diagram and through no. 14, circles denote stars with $(M\text{-}m) > 0.3$.)
10. Cepheids with log $P = 0.4$ to 0.5.
11. Cepheids with log $P = 0.3$ to 0.4.
12. Cepheids with log $P = 0.2$ to 0.3.
13. Cepheids with log $P = 0.1$ to 0.2.
14. Cepheids with log $P = 0.0$ to 0.1 (large dots, circles); <0.0 (small dots, circles).
15. Clusters designated "globular" and "globular?" by Kron (large and small dots). Circled crosses, *W* Virginis stars; crosses, novae.

Values of the age, *T*, calculated from Young's formula for various groups of Cepheids, are:

log *P*	*T* (years)	log *P*	*T* (years)	log *P*	*T* (years)
>2.0	$<1.4\times10^7$	1.0	7.2×10^7	0.4	1.9×10^8
2.0	1.4×10^7	0.9	8.5×10^7	0.3	2.3×10^8
1.8	2.0×10^7	0.8	10^8	0.2	2.7×10^8
1.6	2.7×10^7	0.7	1.2×10^8	0.1	3.2×10^8
1.4	3.7×10^7	0.6	1.4×10^8	0.0	3.7×10^8
1.2	5.2×10^7	0.5	1.6×10^8	<0.0	$>3.7\times10^8$

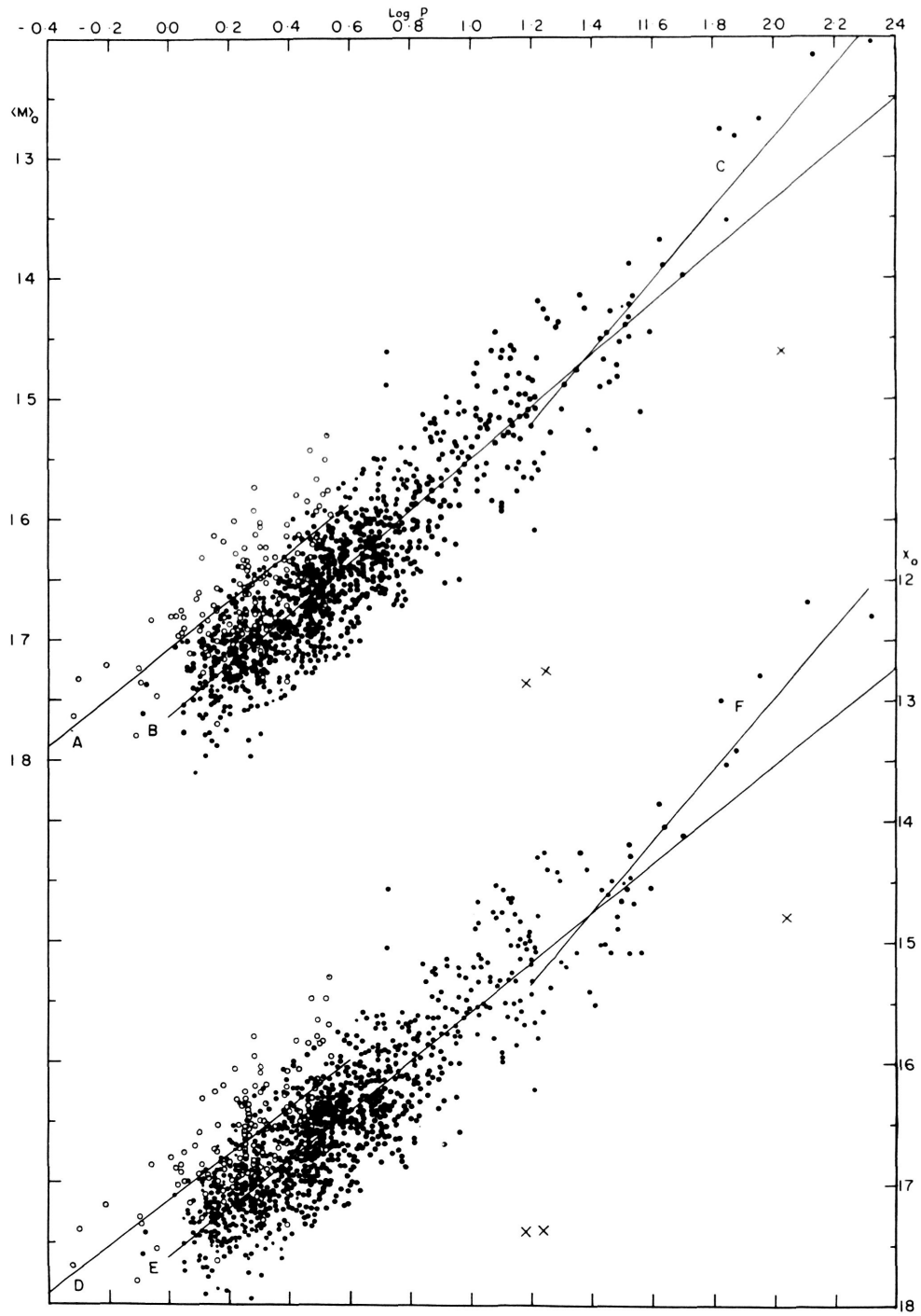

FIGURE 6.—Period-luminosity relation. Ordinates, $<m>_0$ (above, scale to left); x_0 (below, scale to the right). Abscissae, log P. The lines labeled A, B, C represent Solutions 2, 3 and 7 of Table 9 for $<m>_0$; D, E, F represent Solutions 2, 3, and 7 for x_0. Crosses denote W Virginis stars.

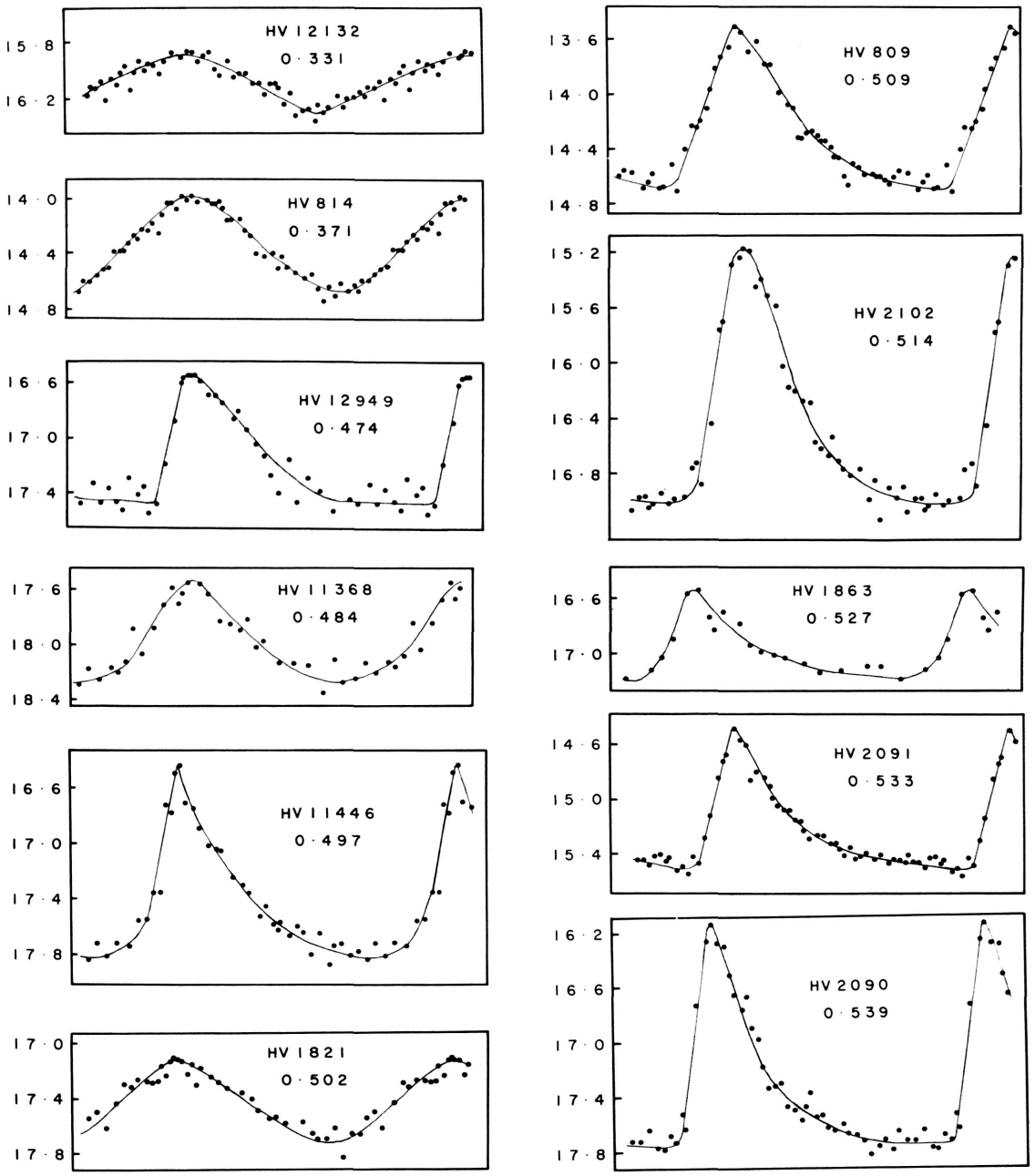

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.

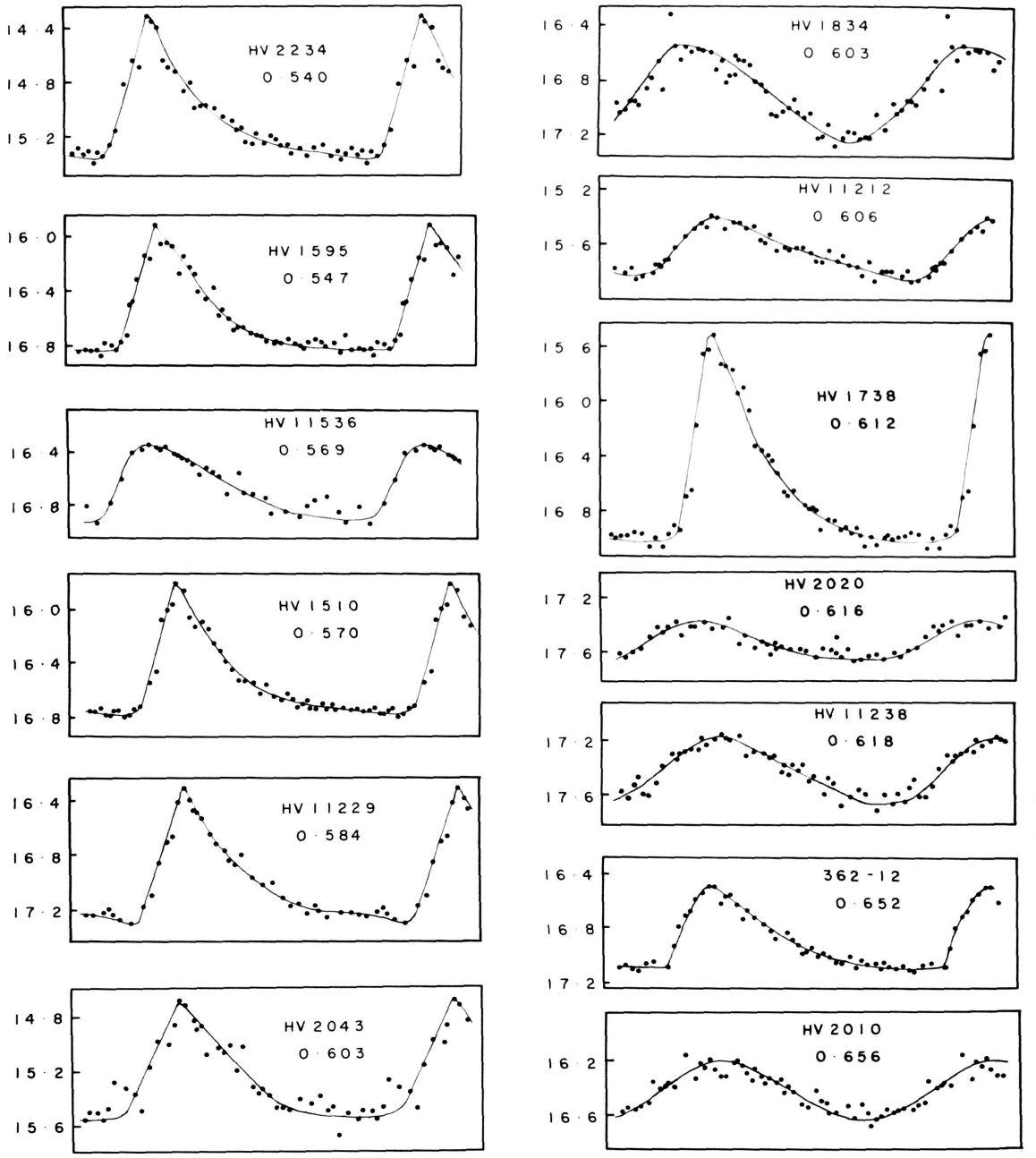

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

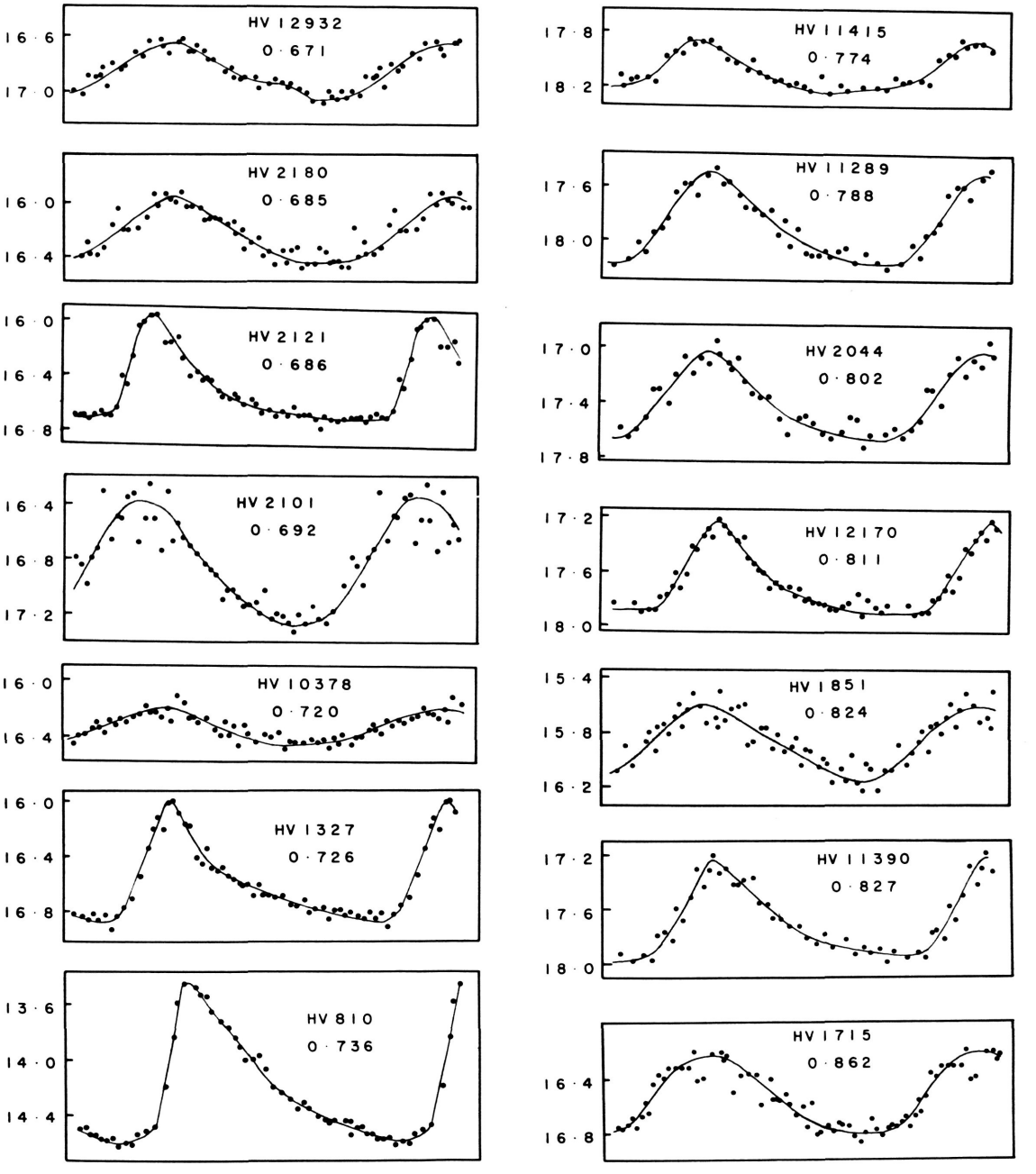

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

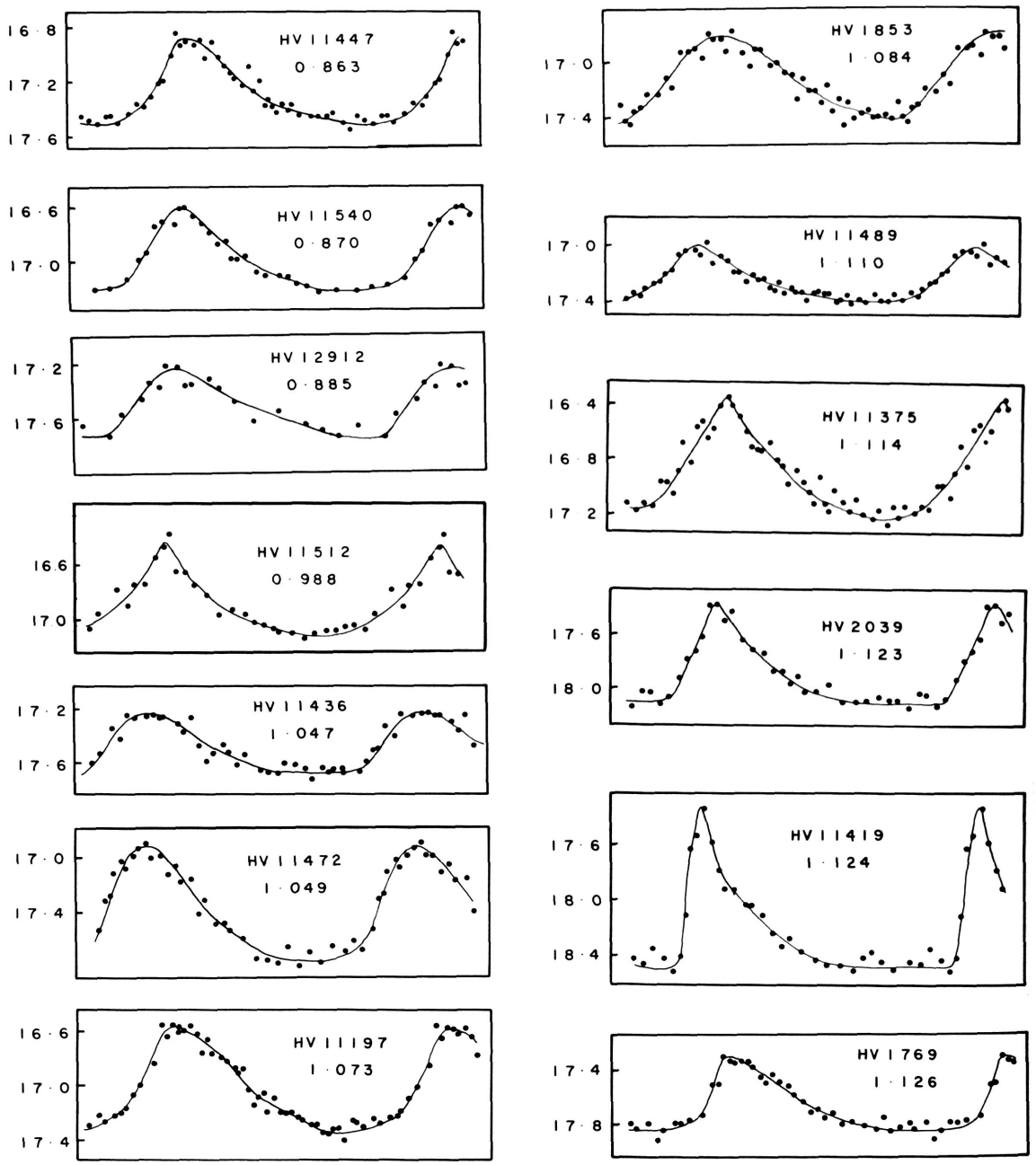

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

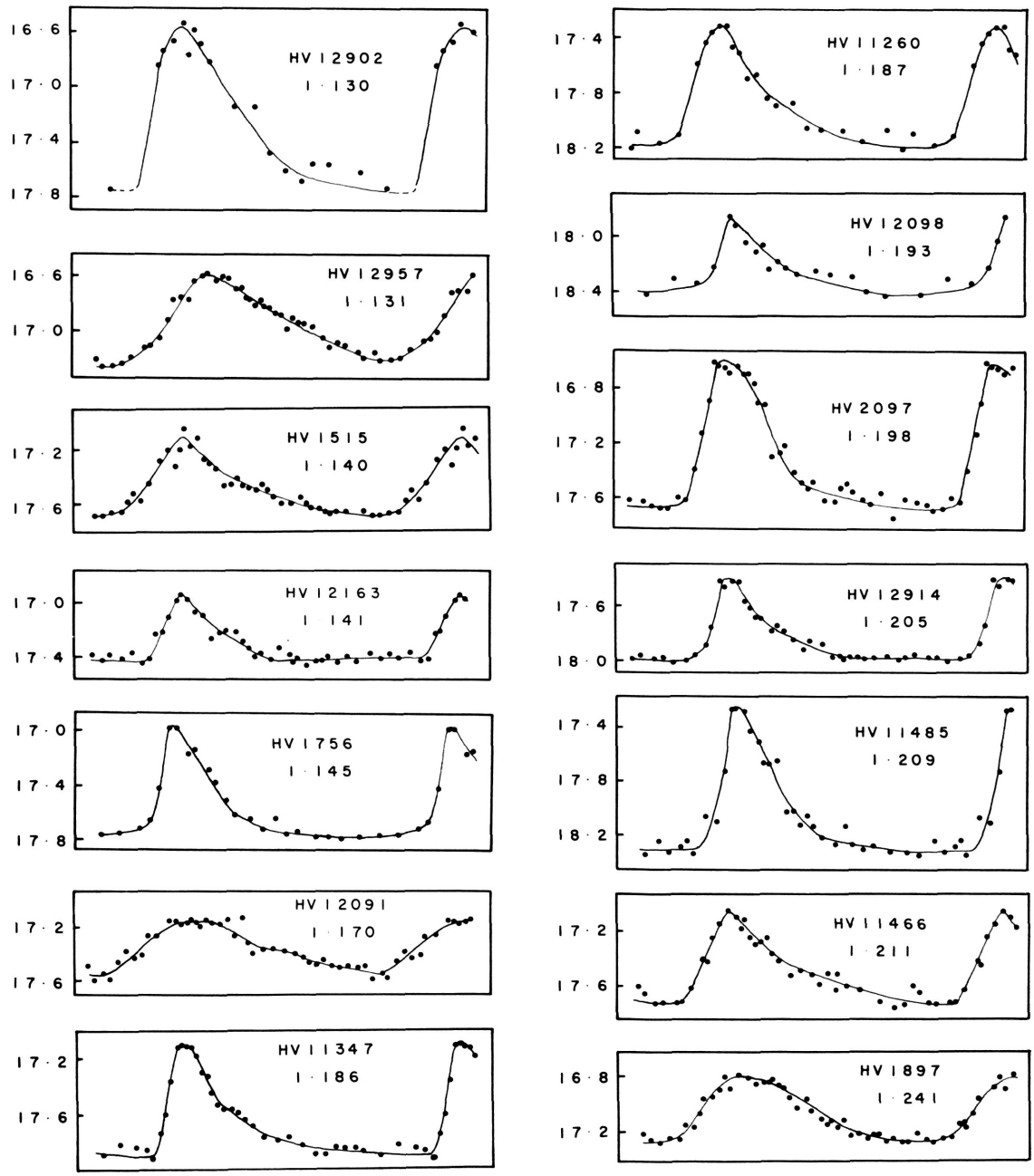

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

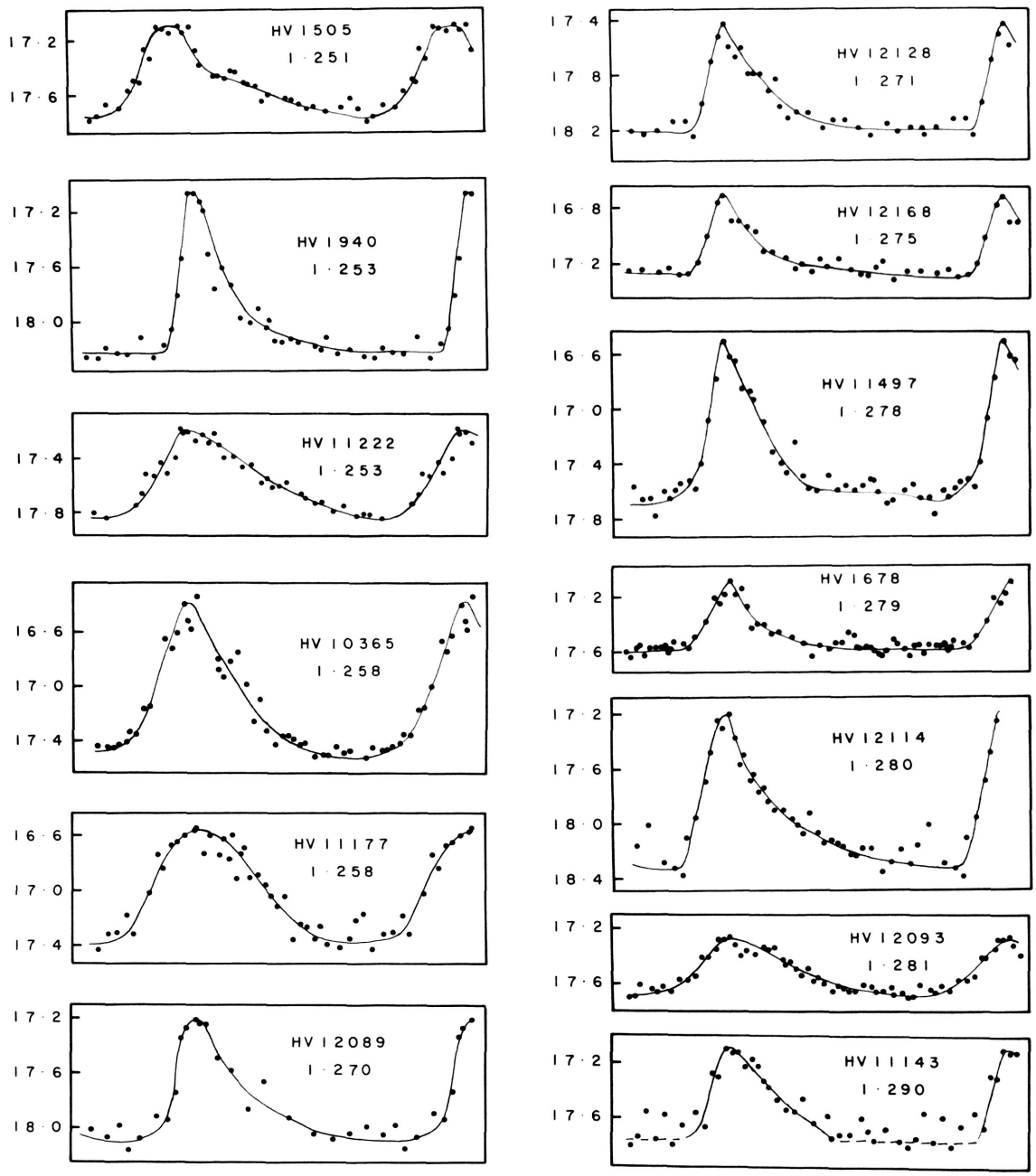

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

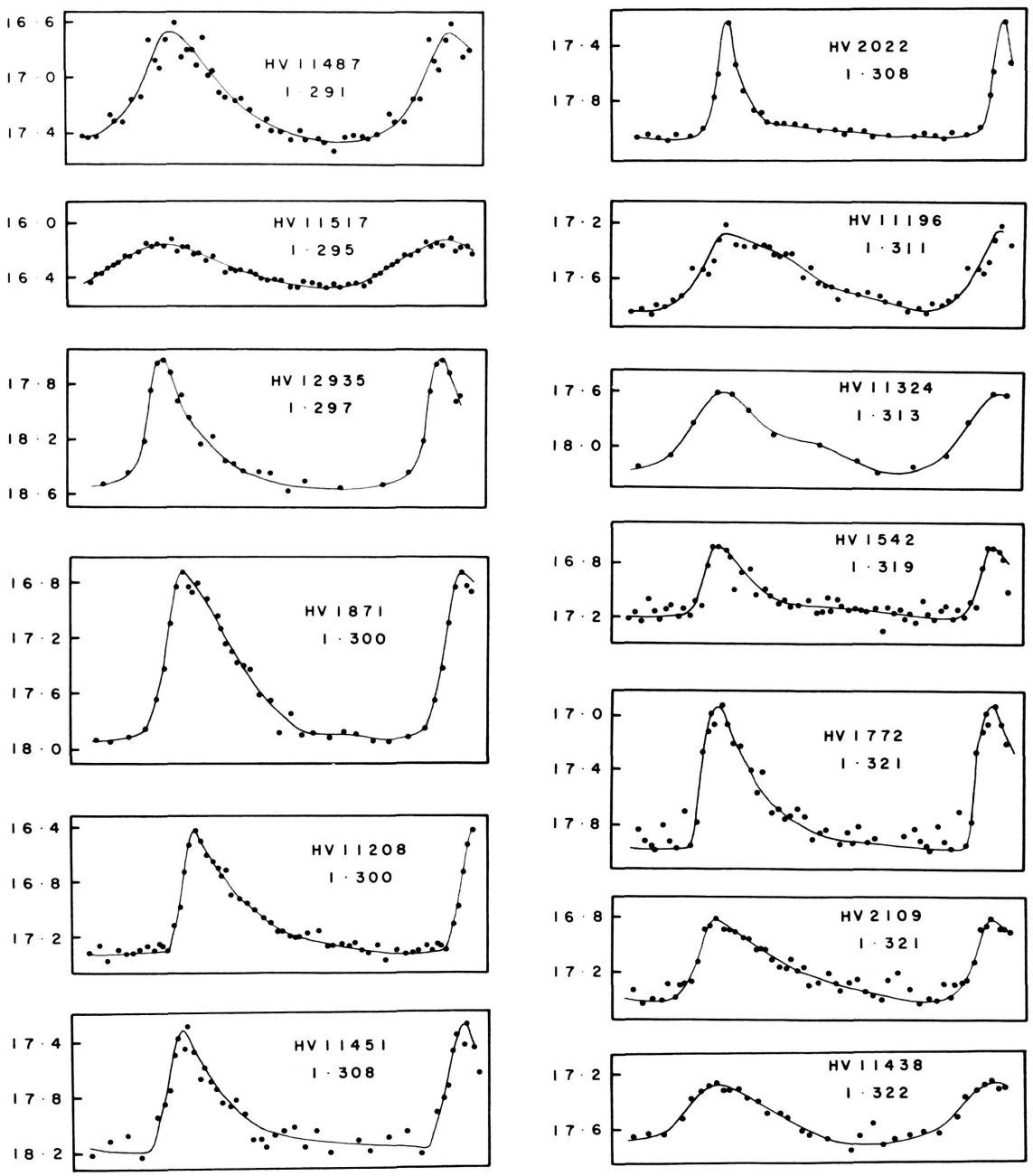

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

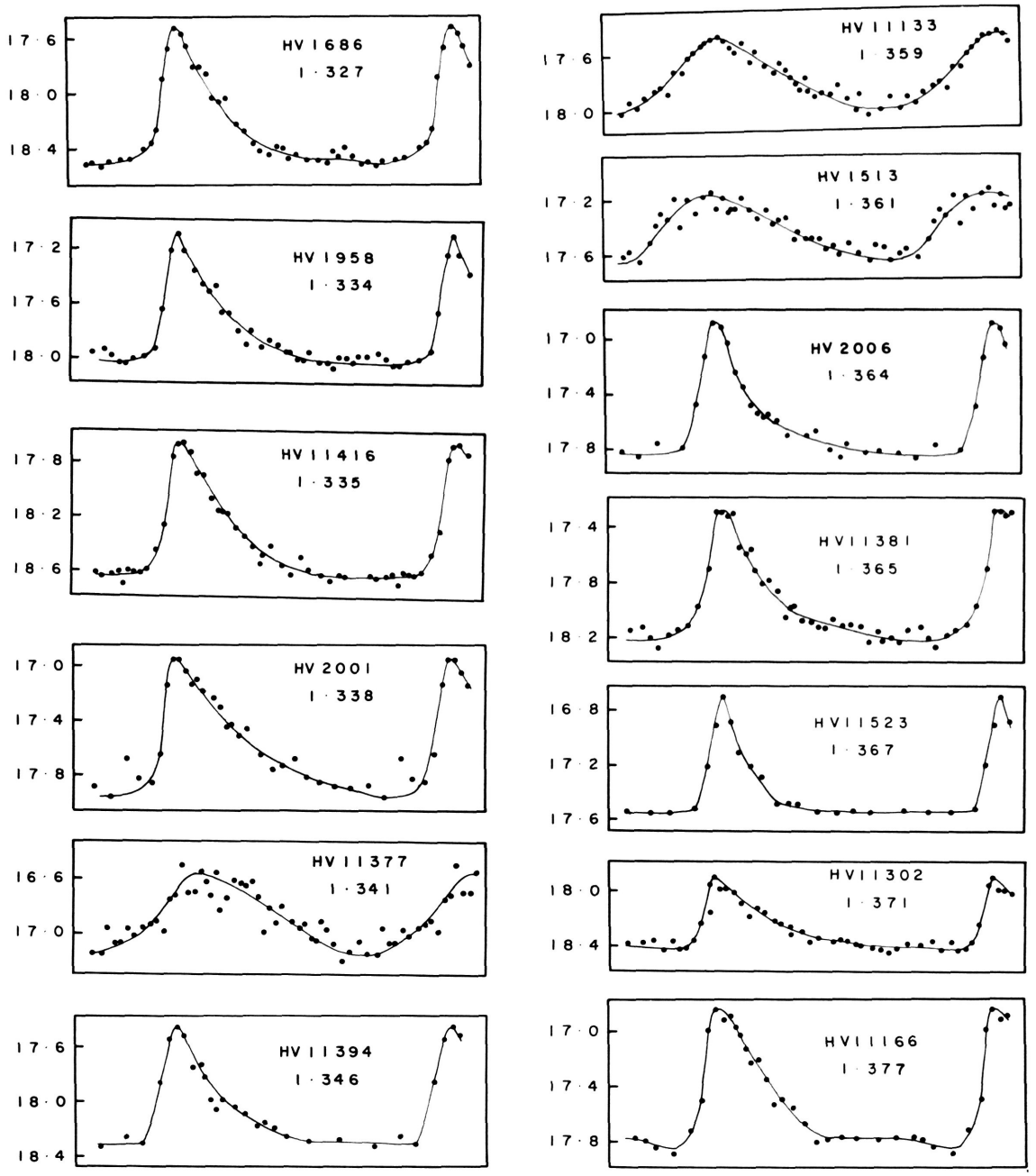

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

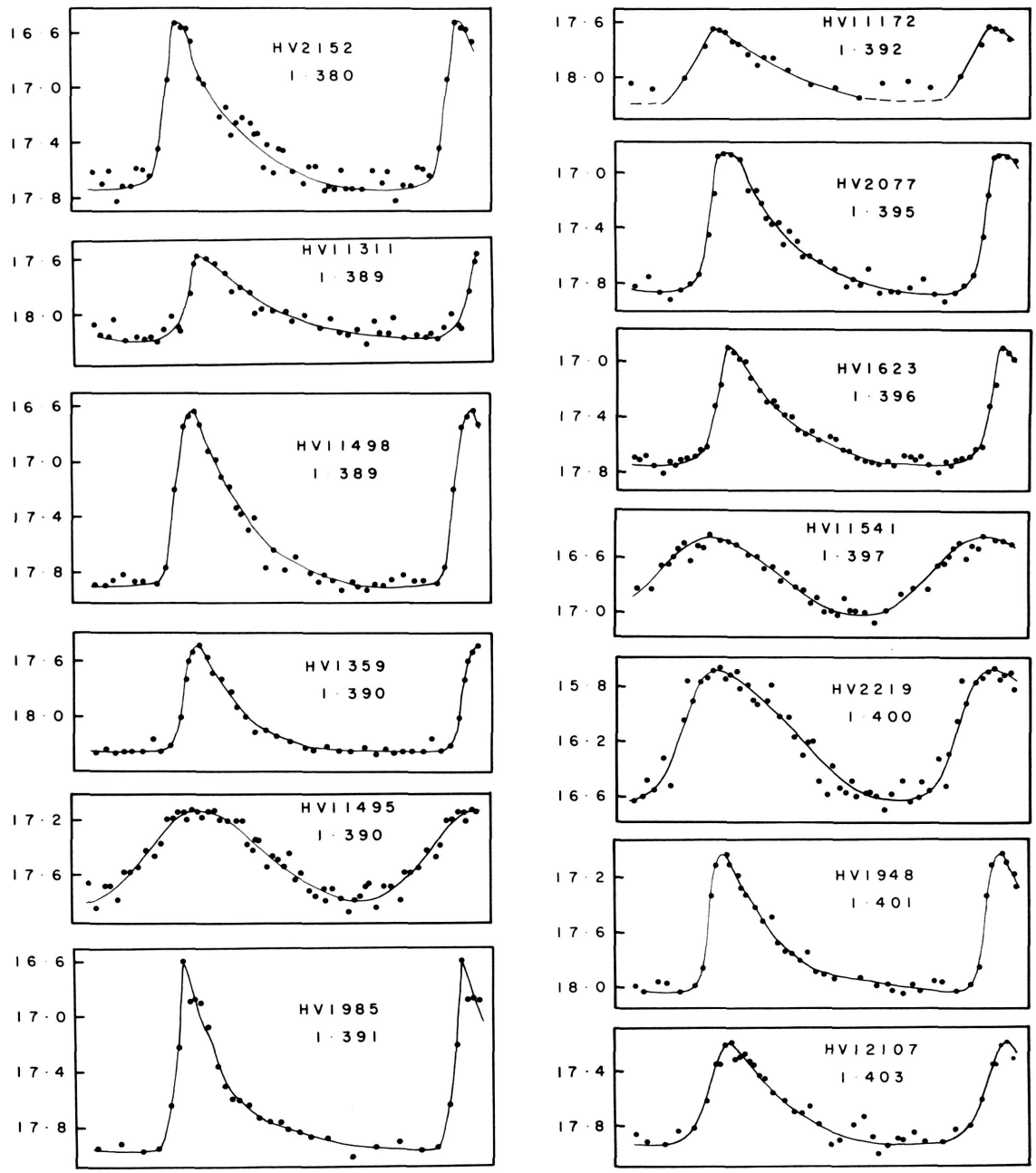

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

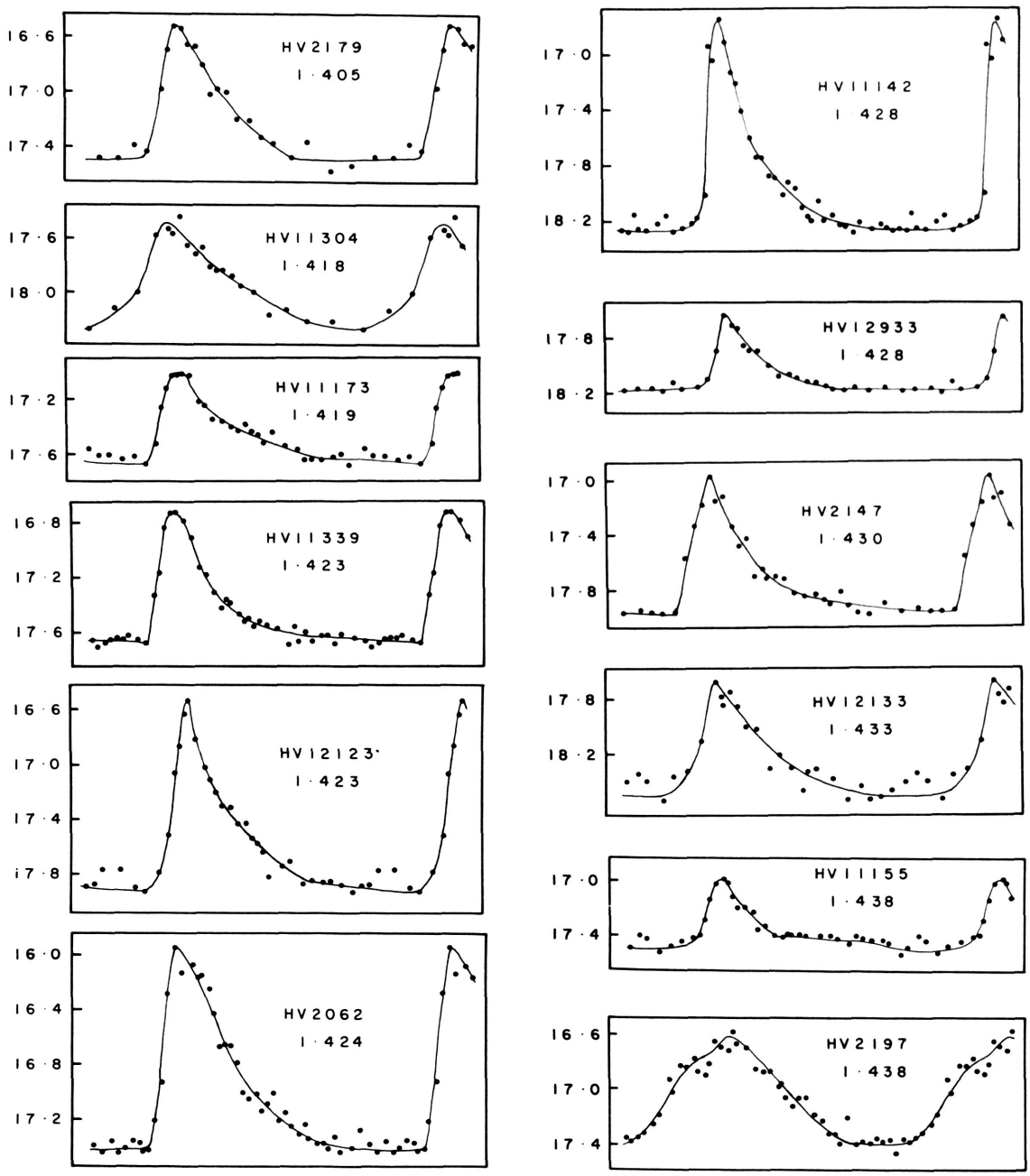

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

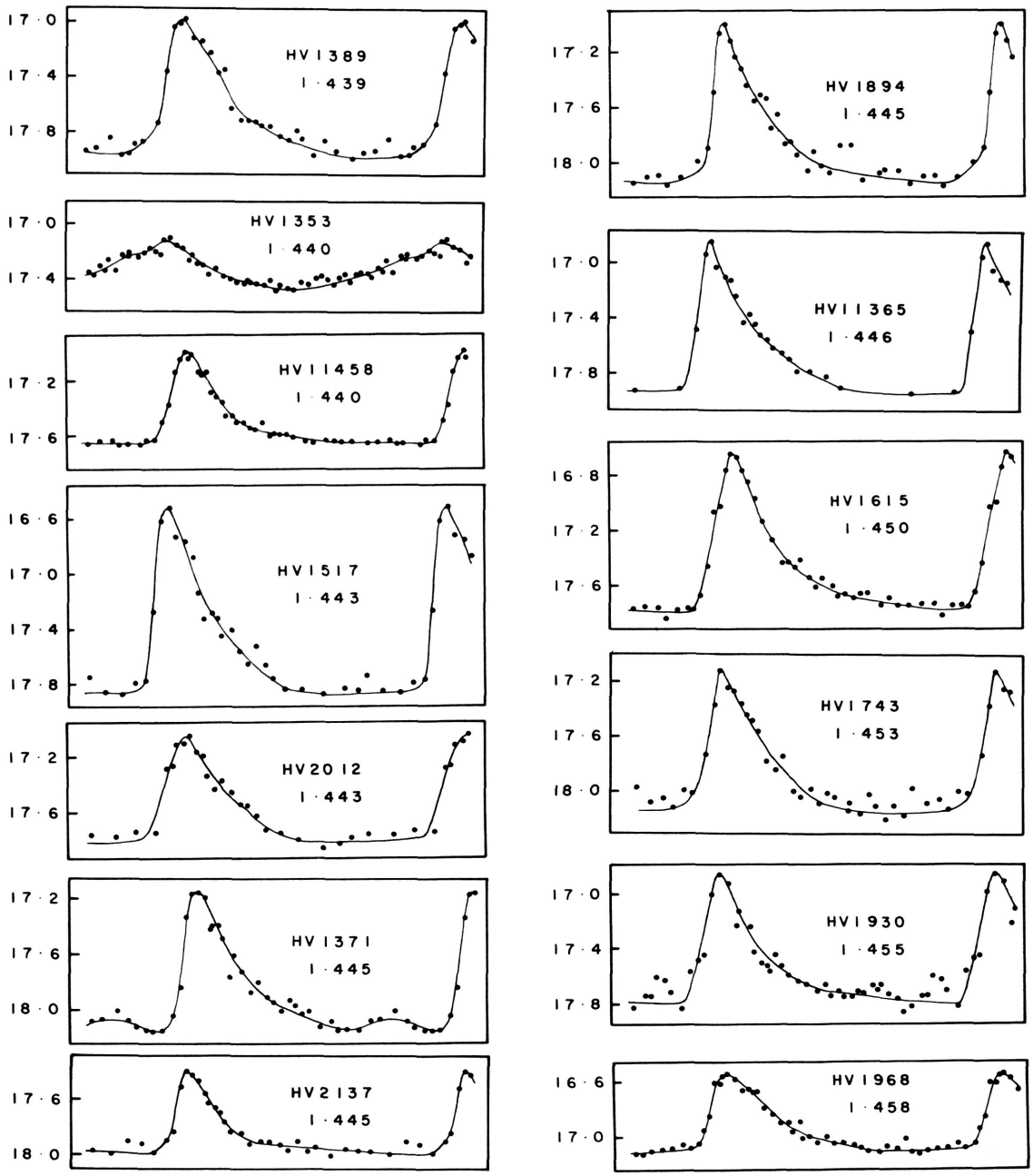

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

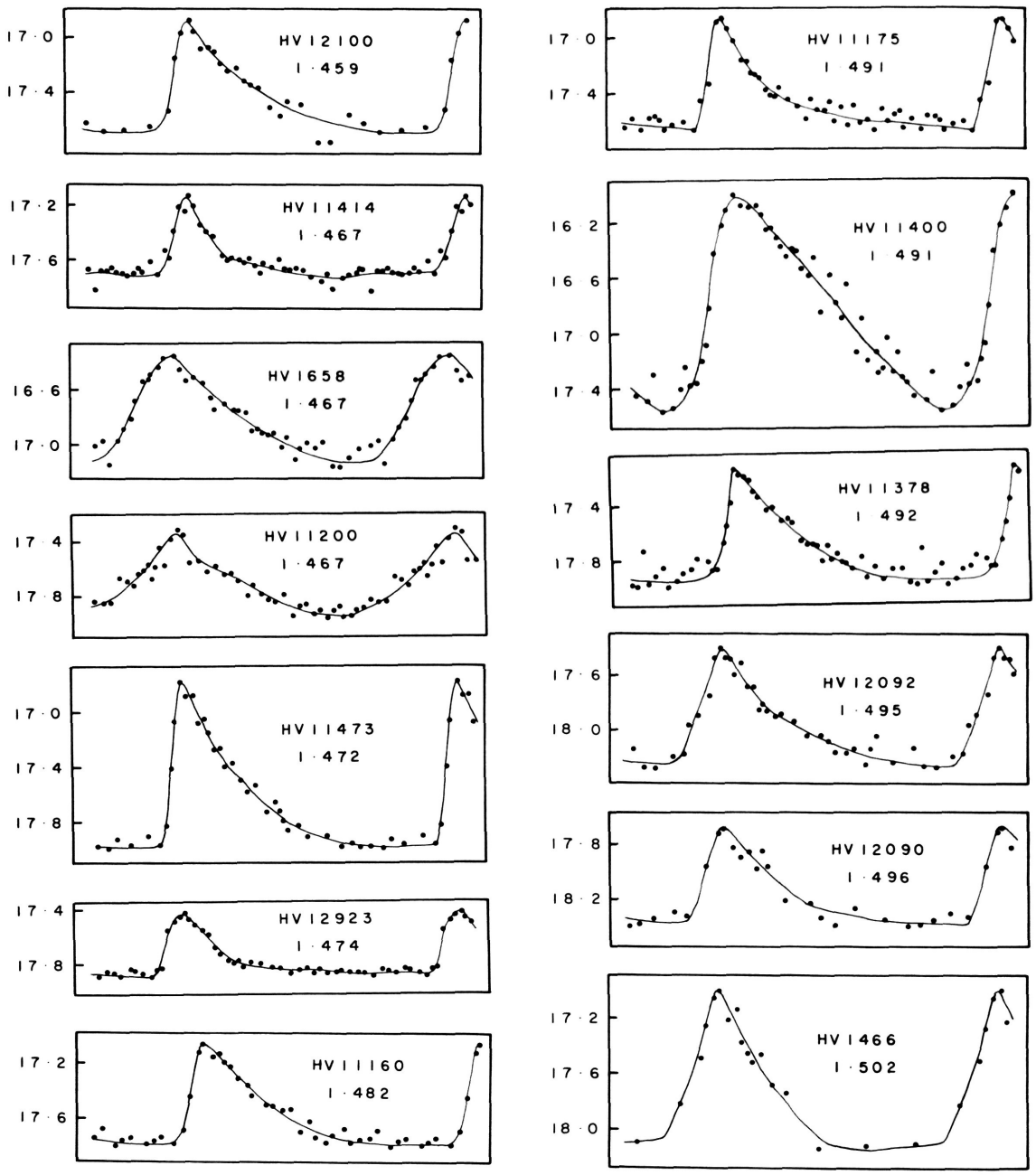

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

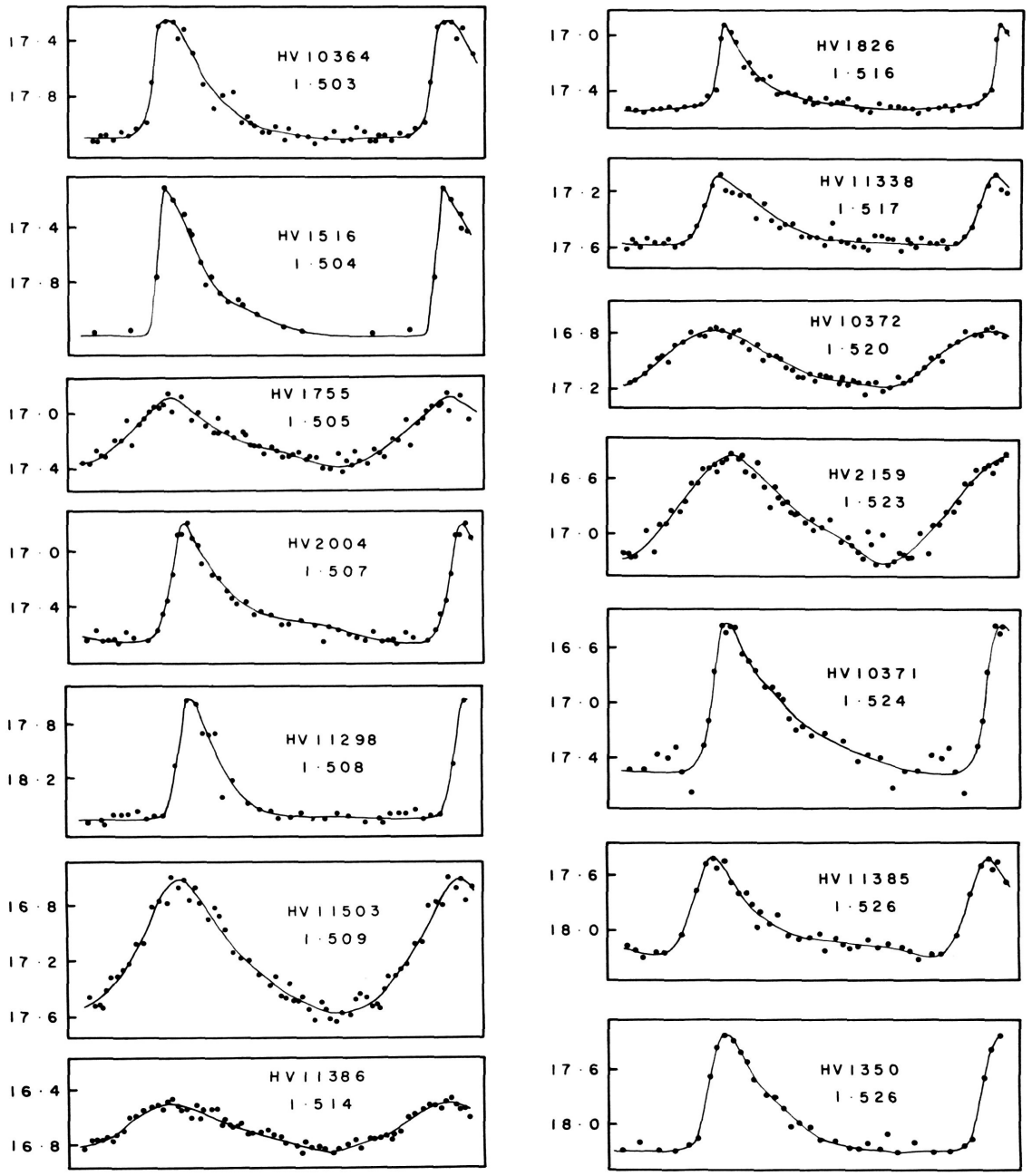

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

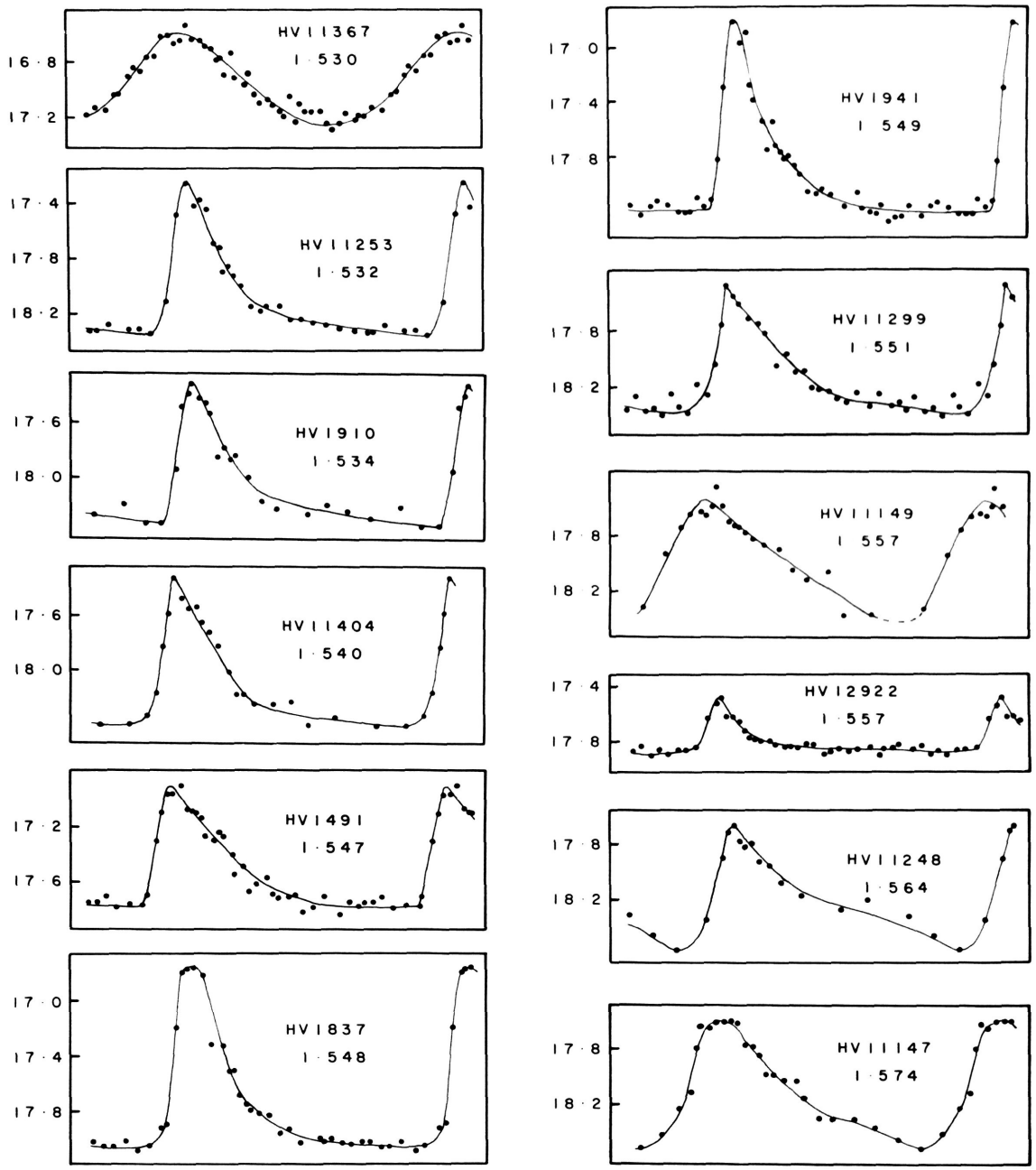

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

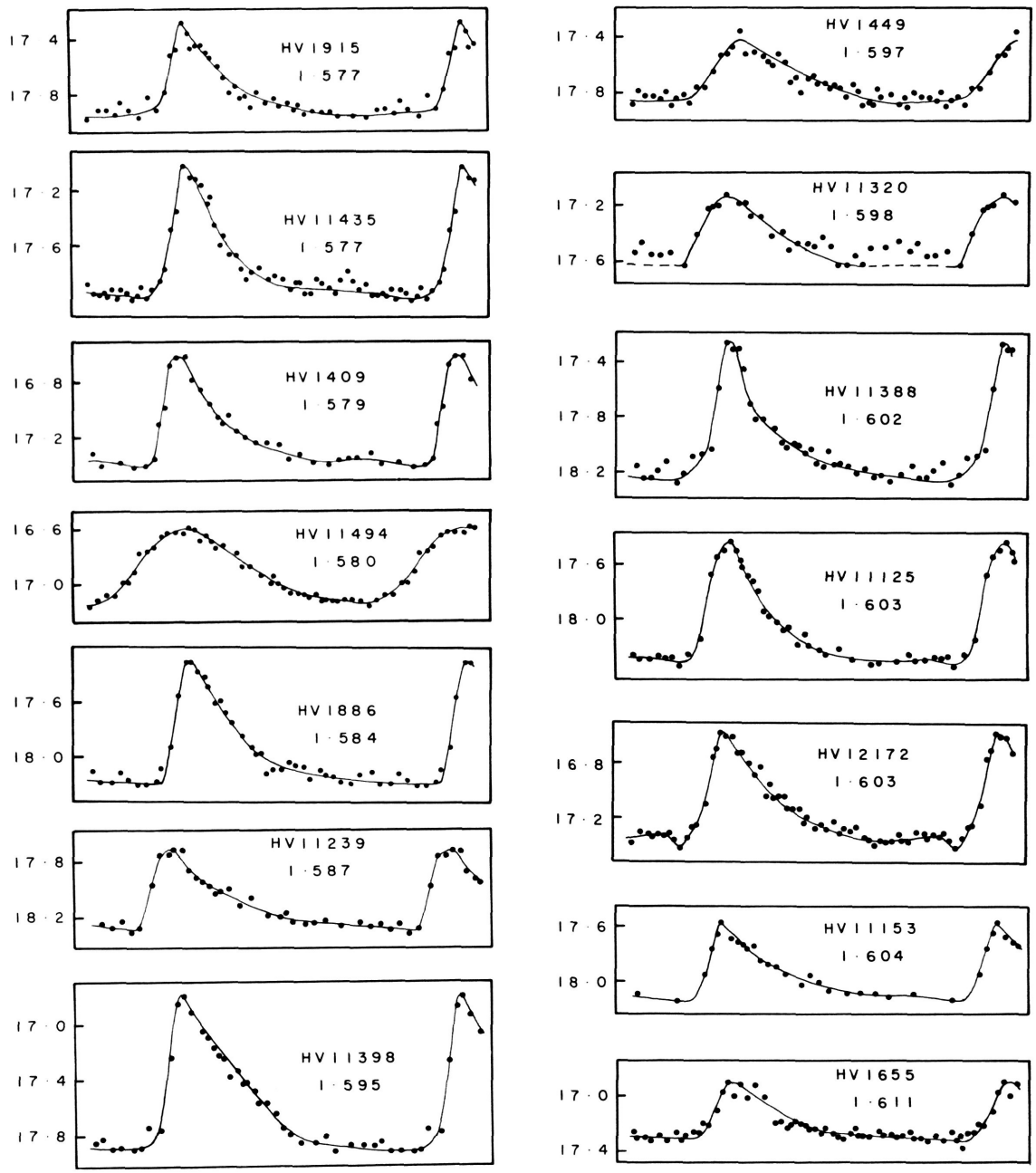

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

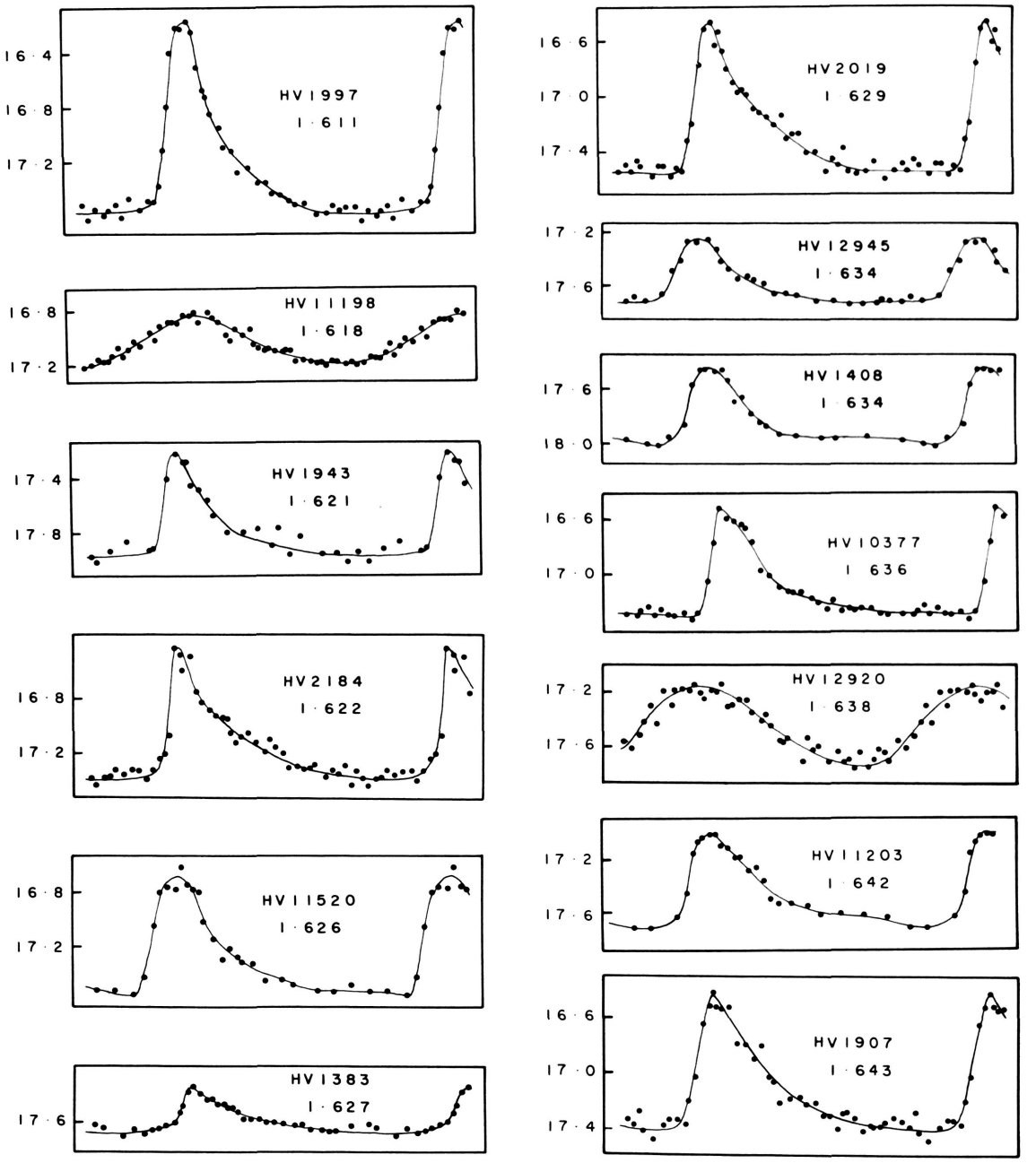

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

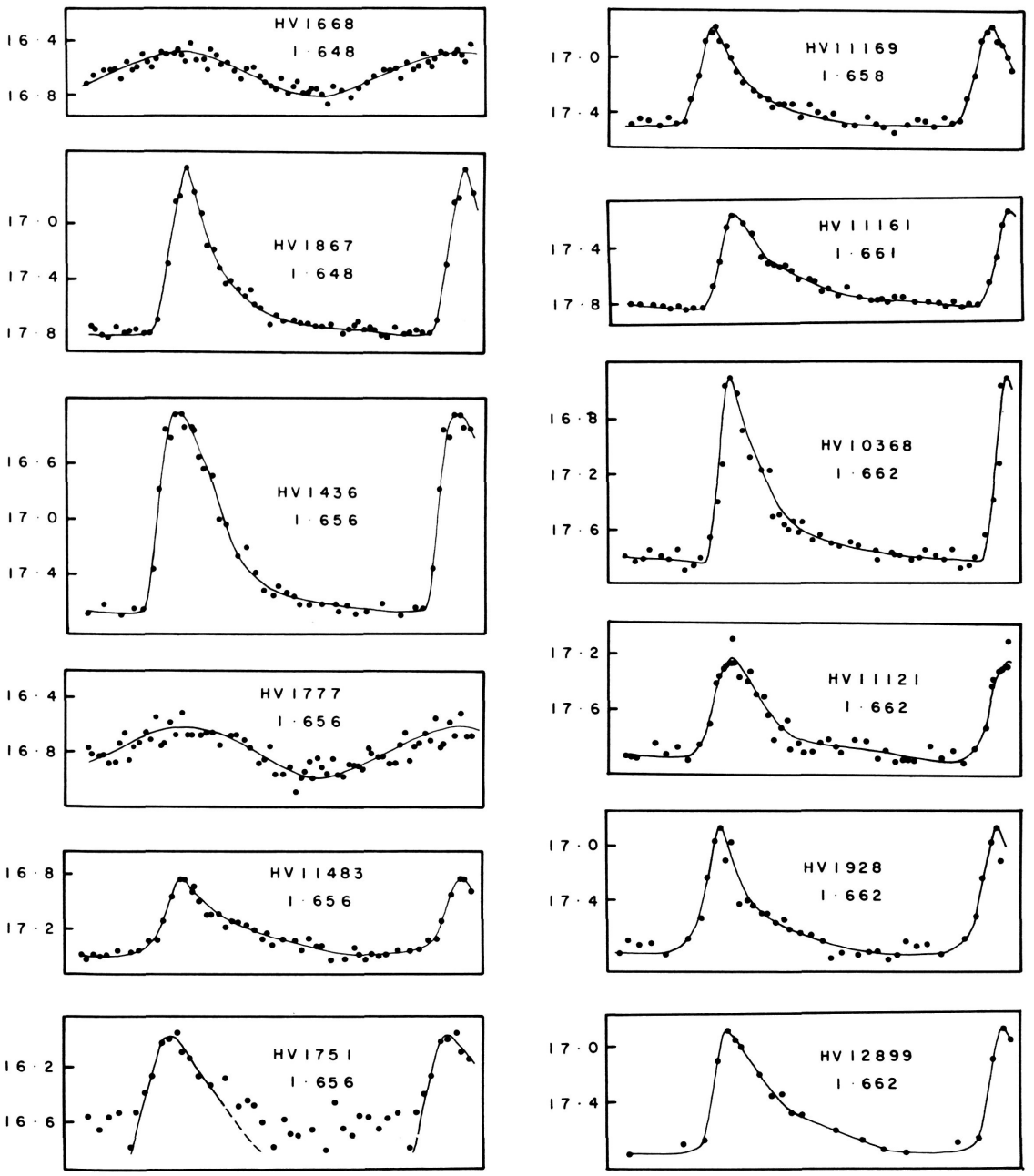

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

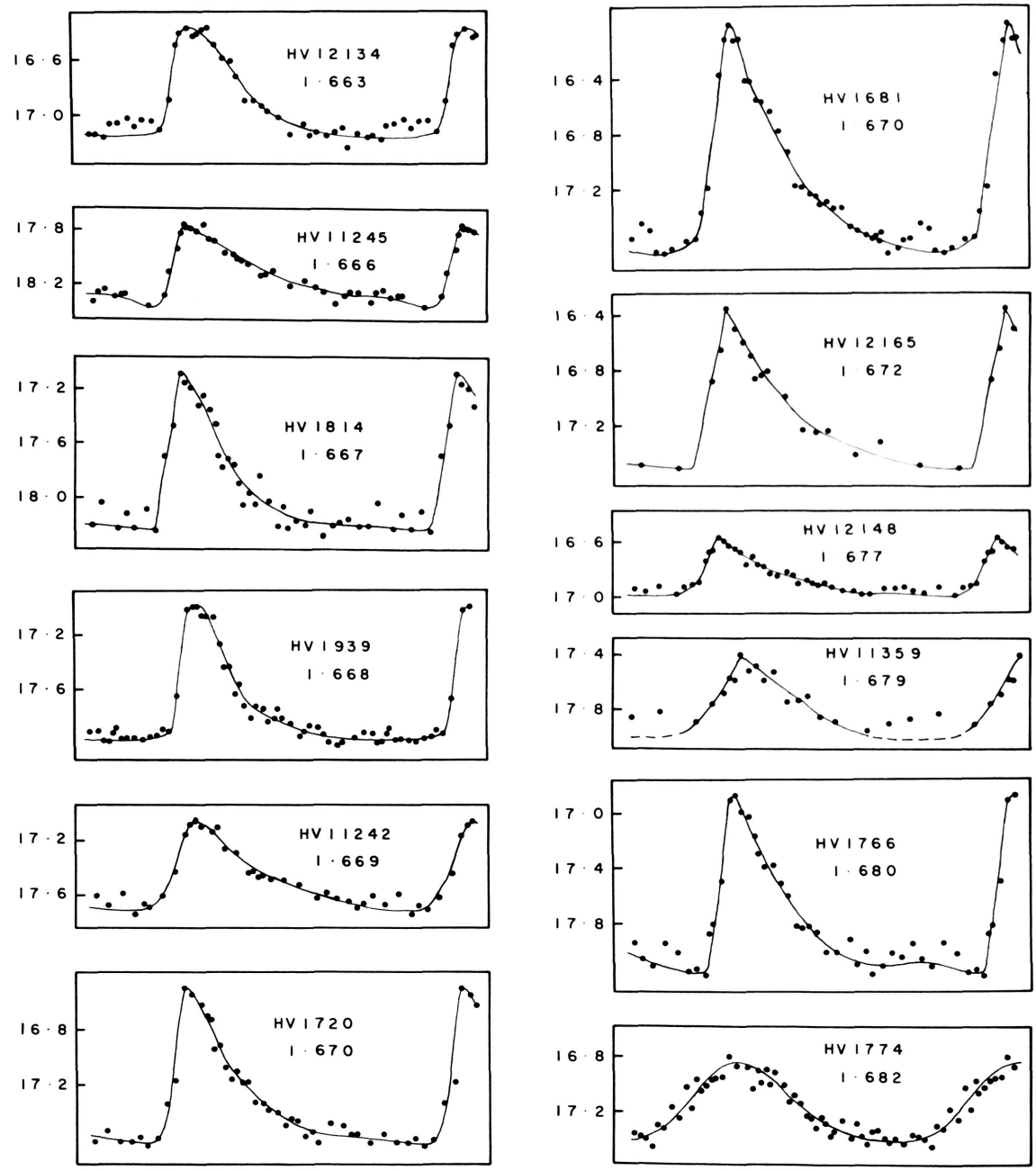

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

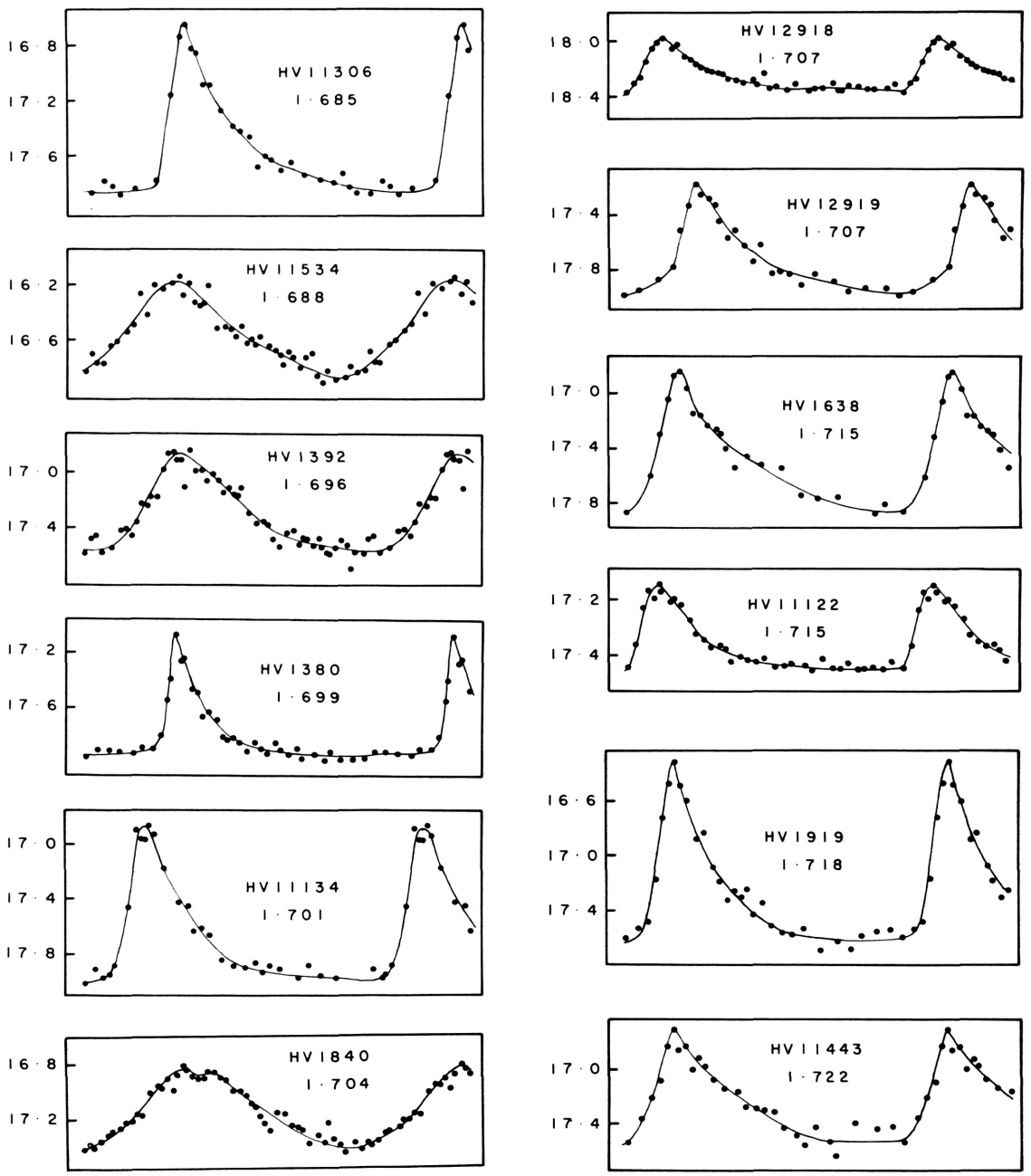

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

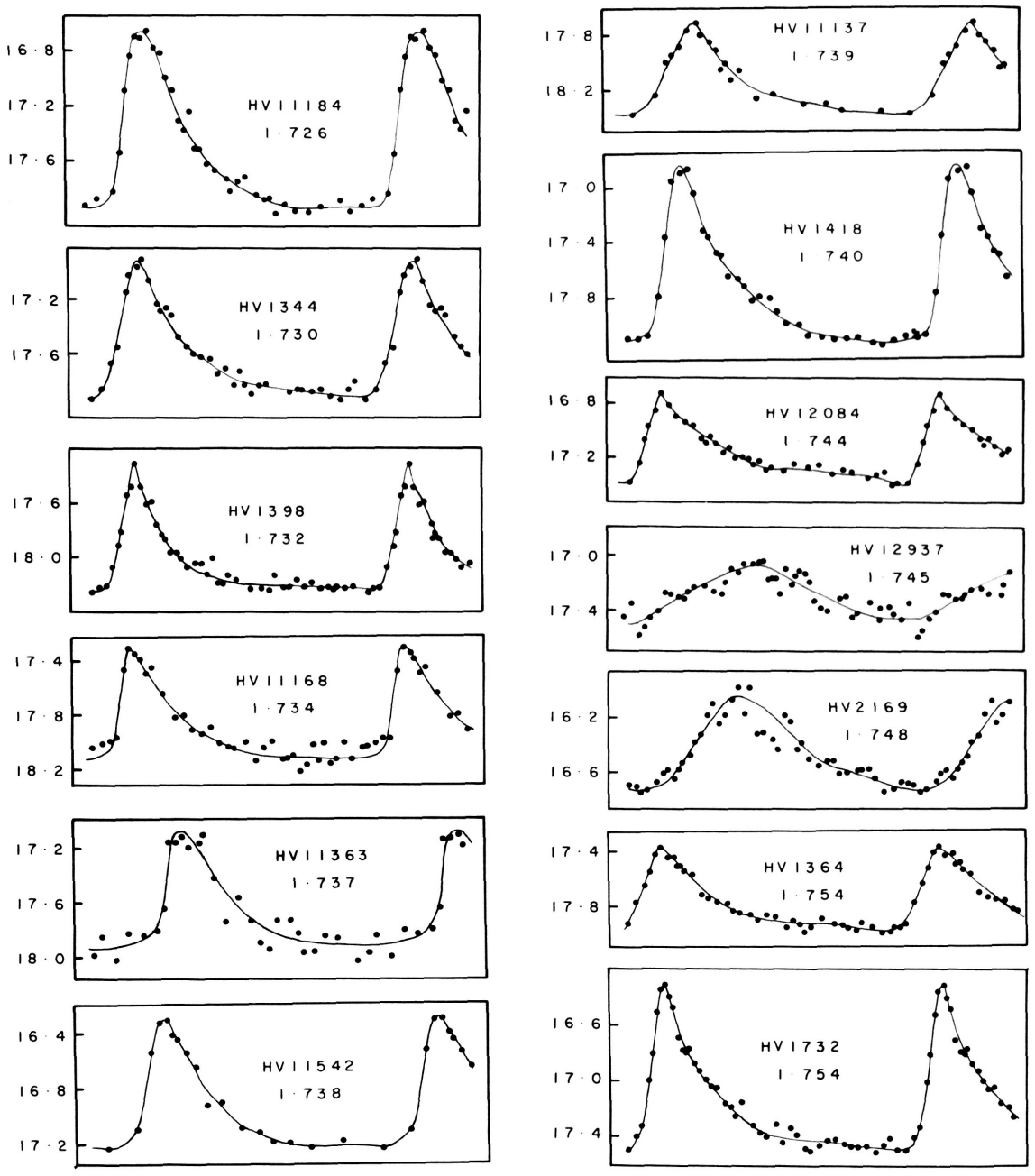

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

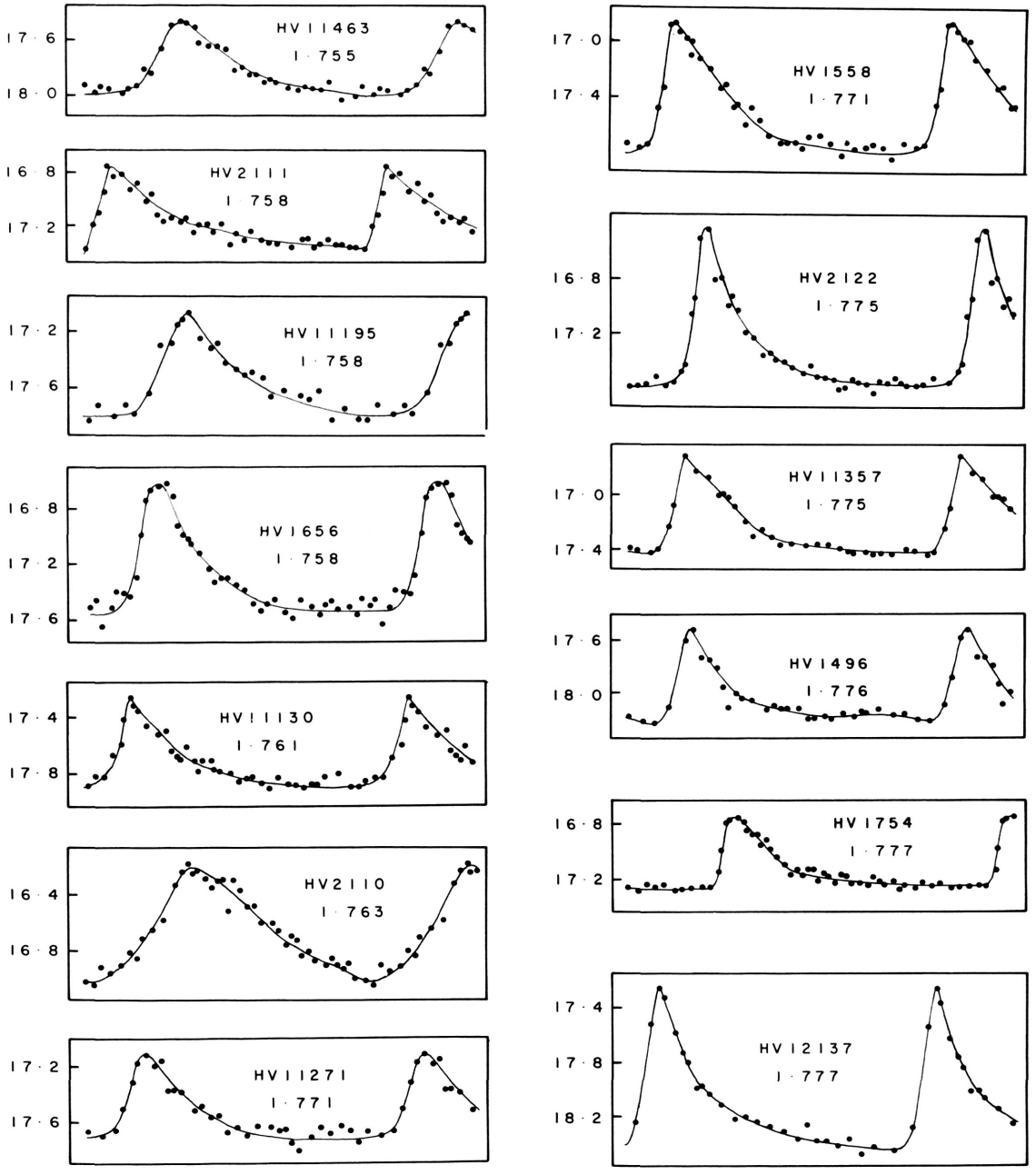

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

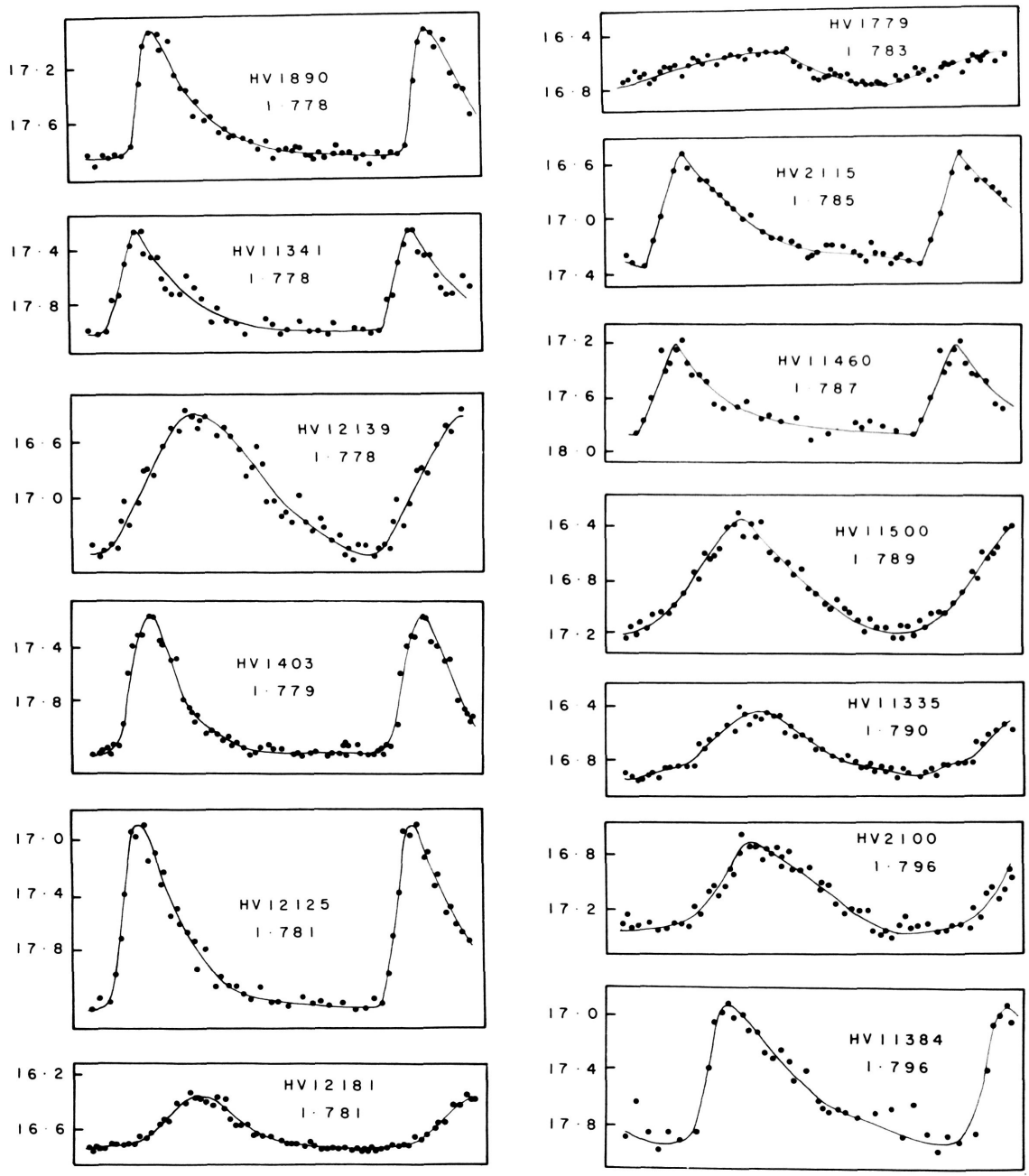

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

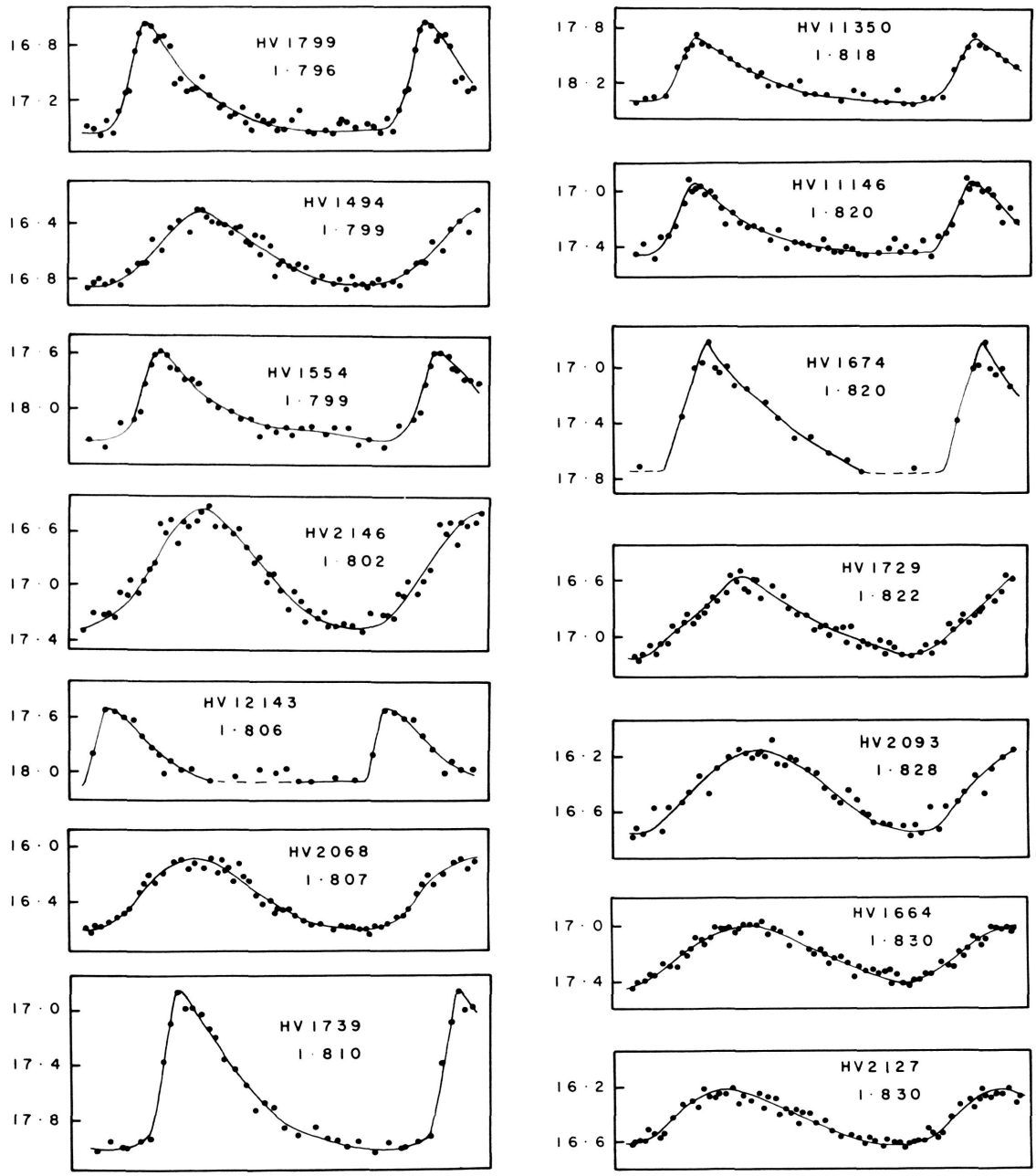

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

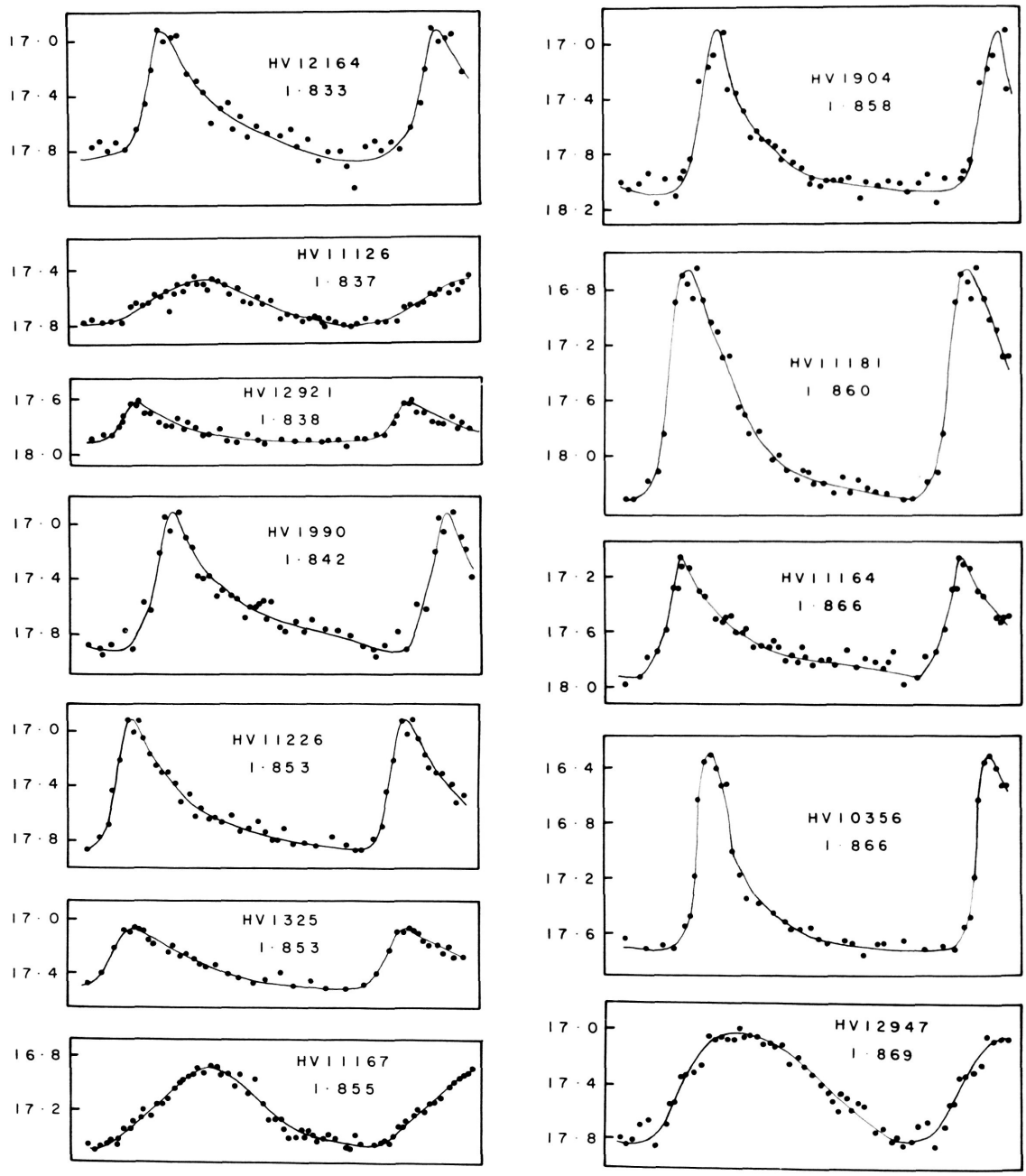

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

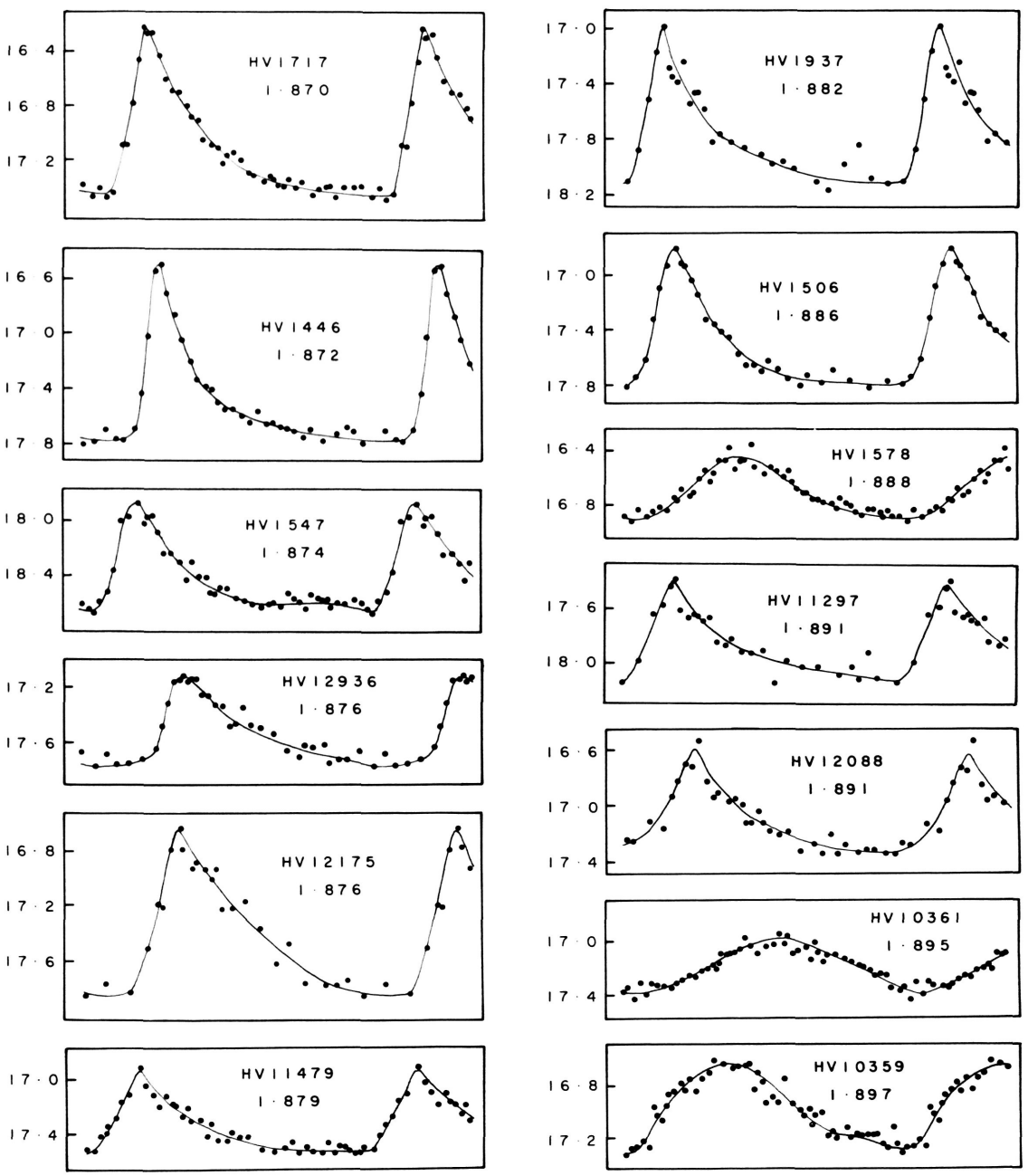

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

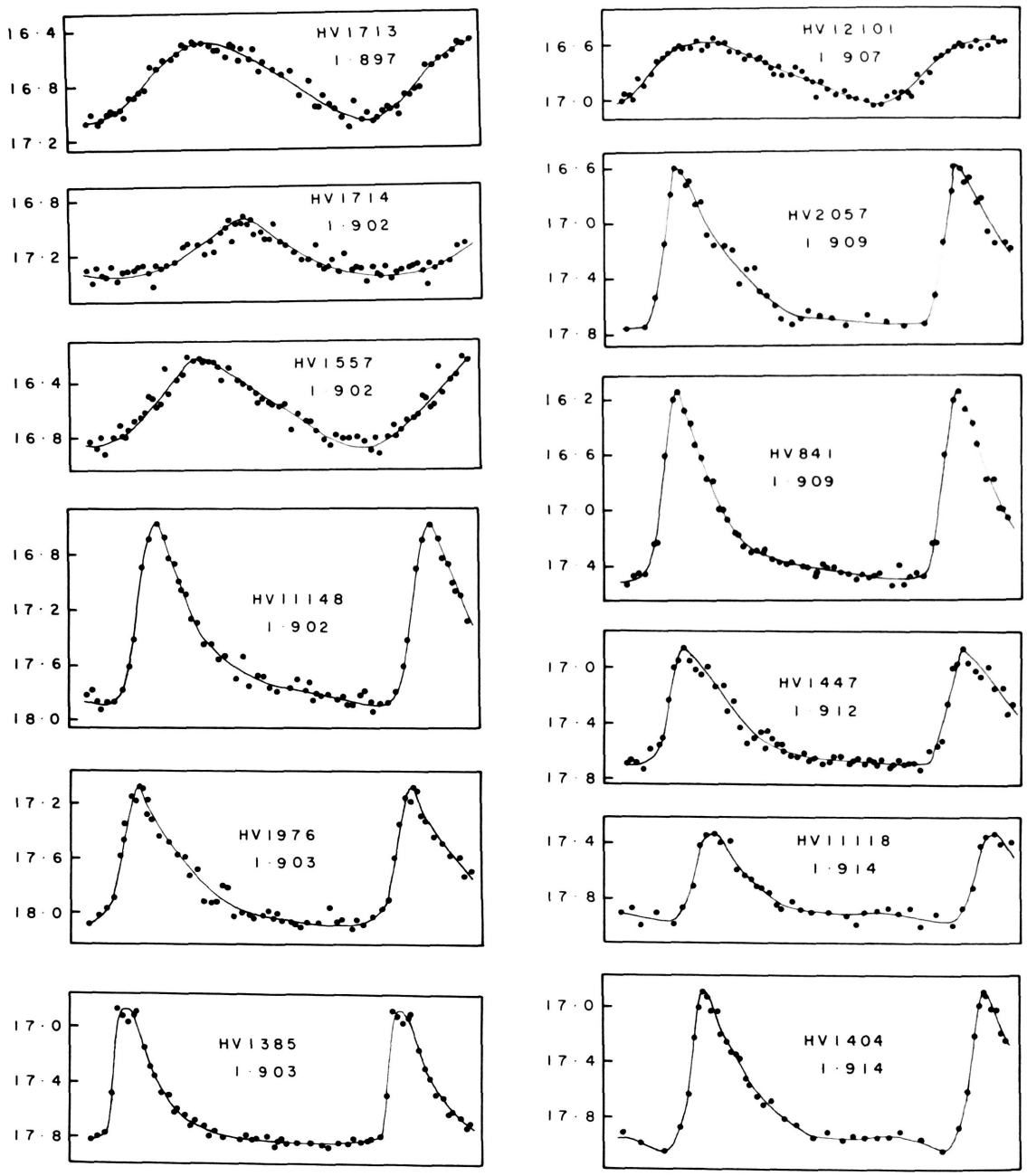

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

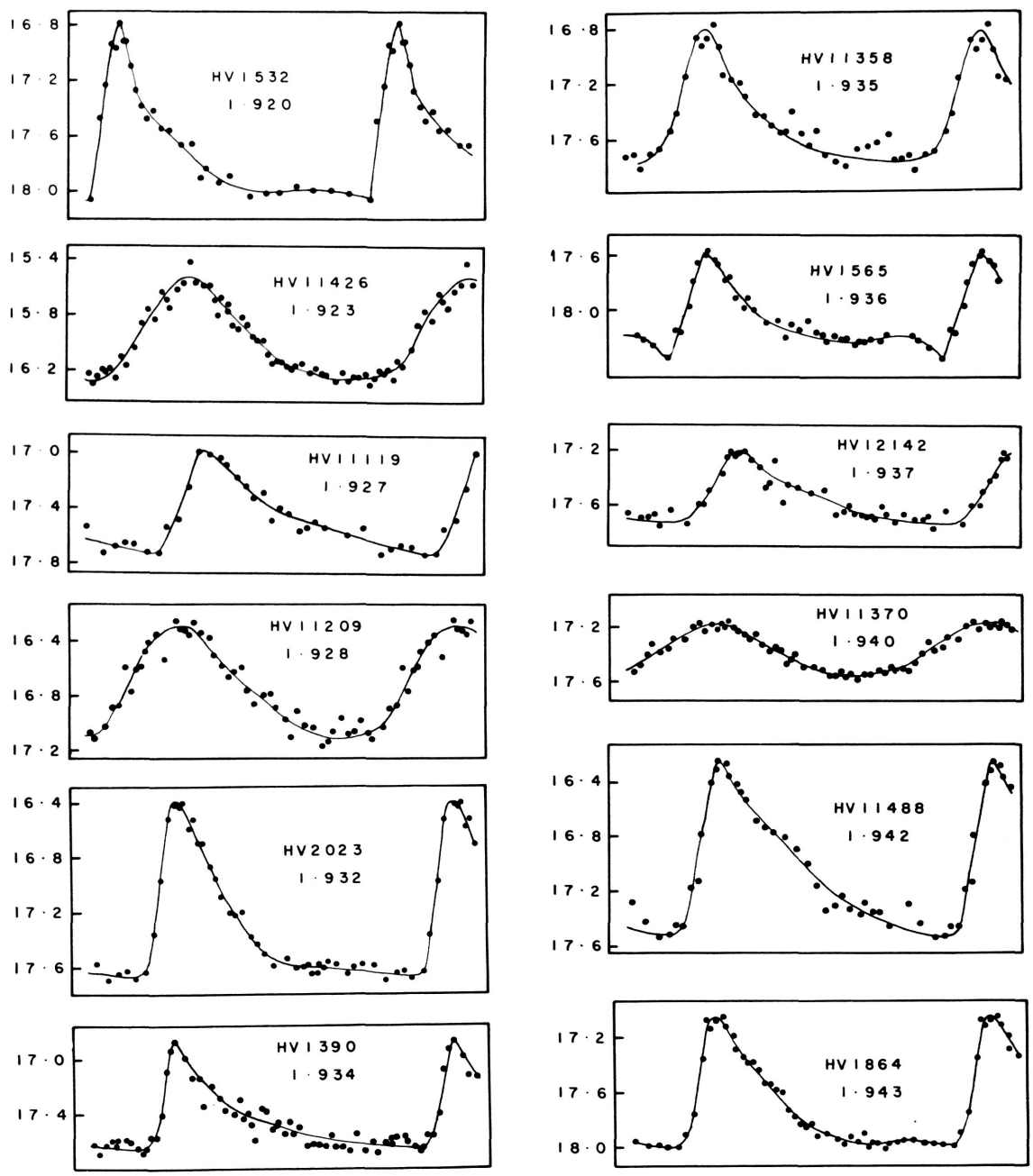

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

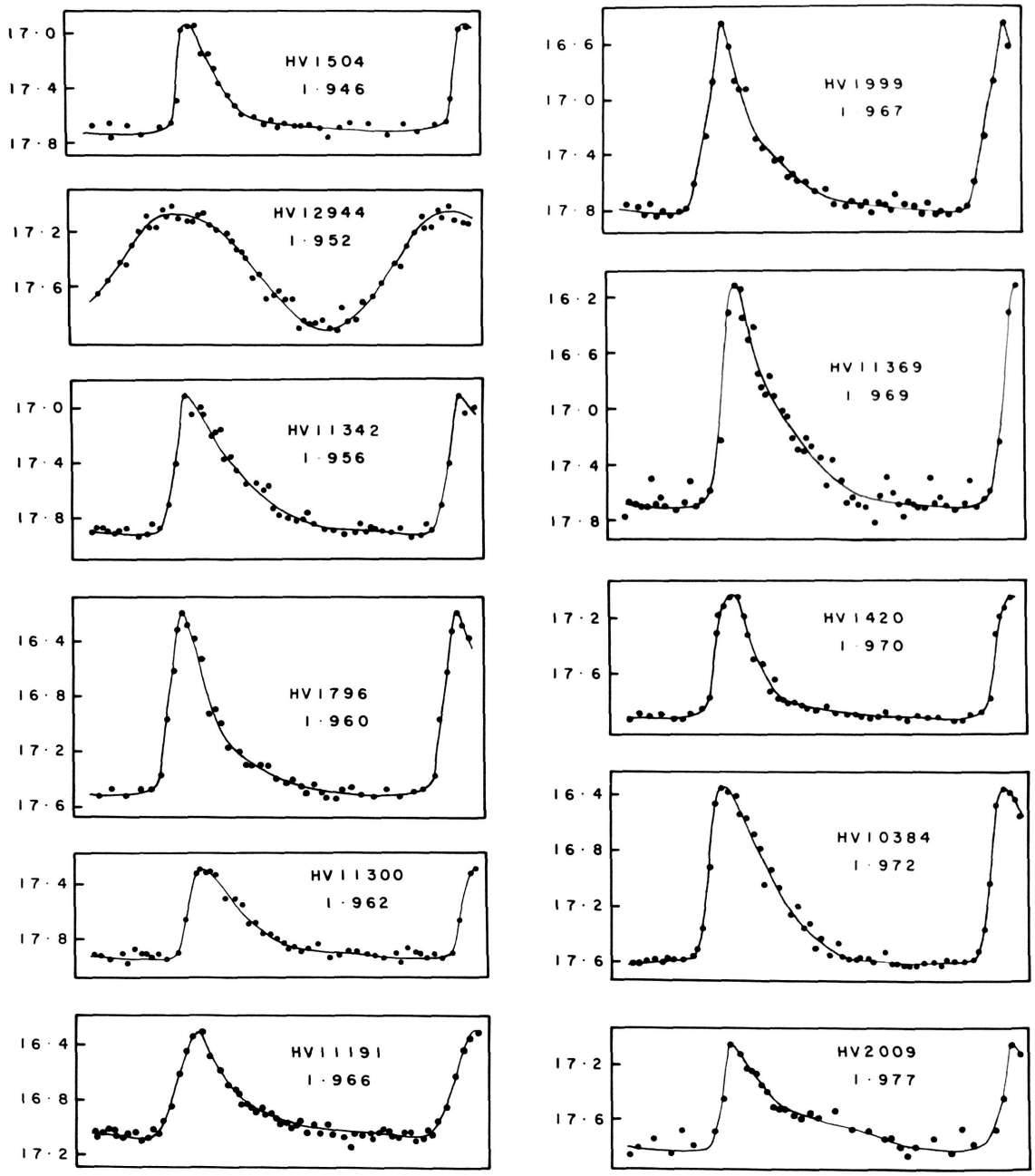

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

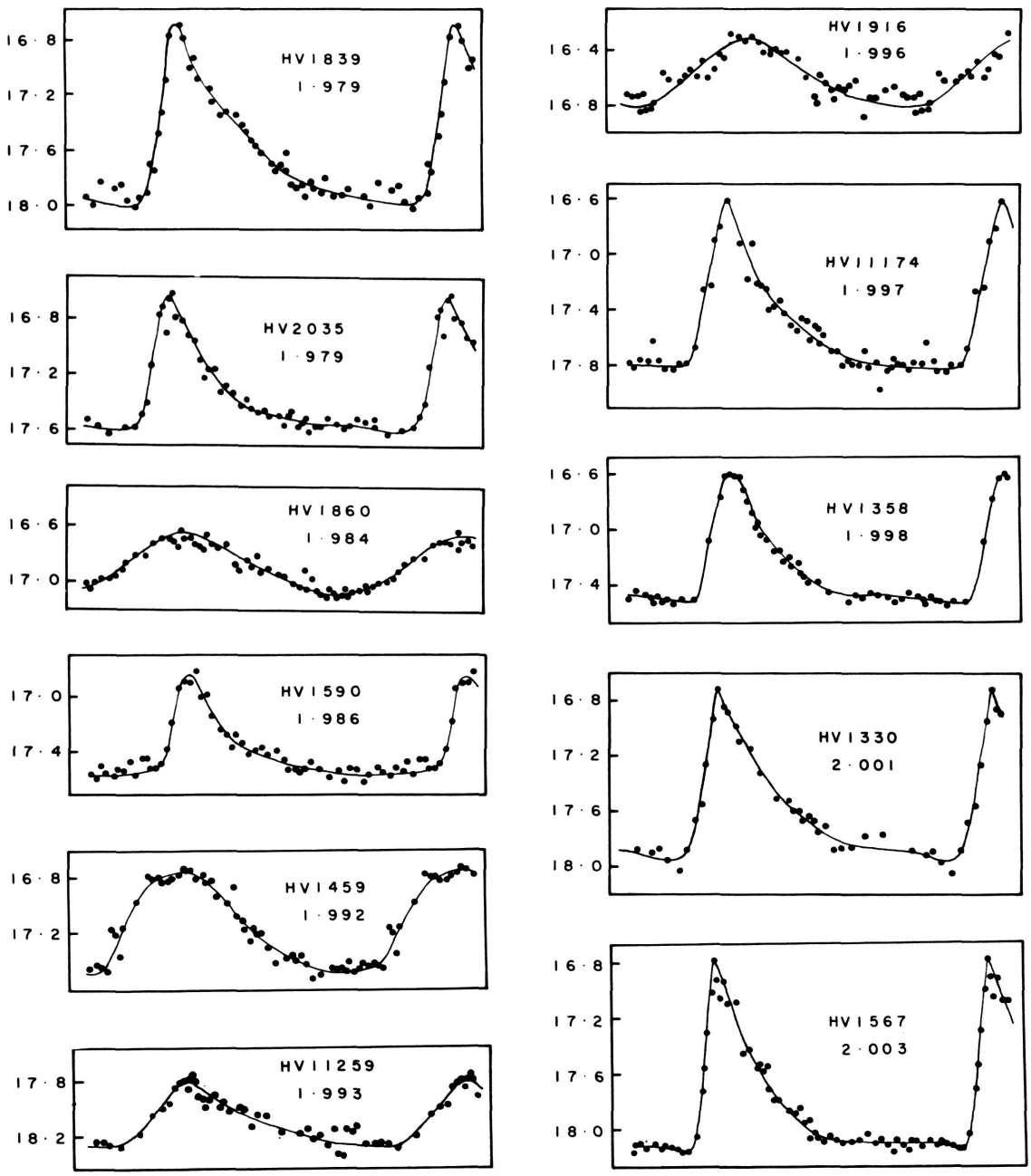

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

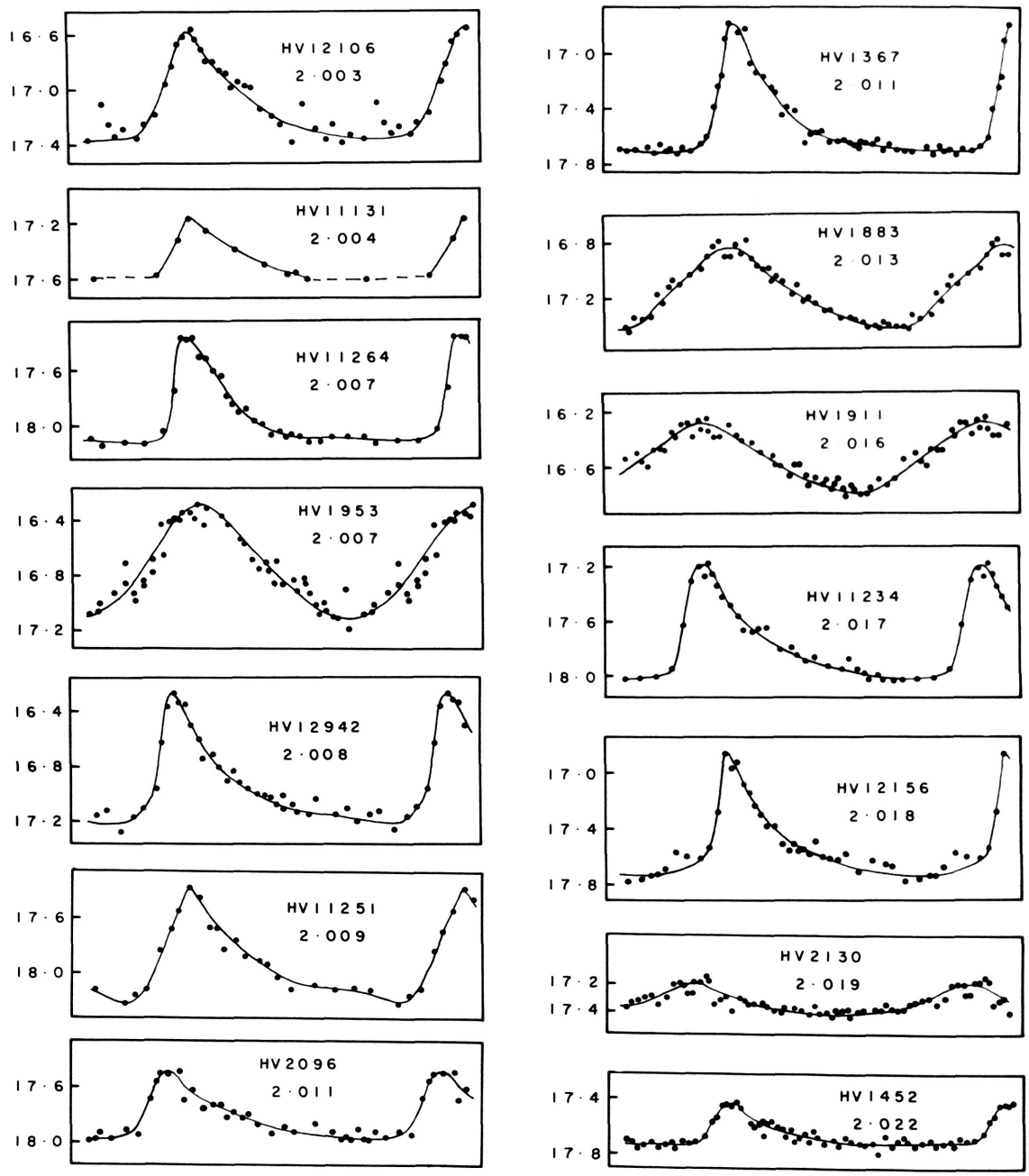

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

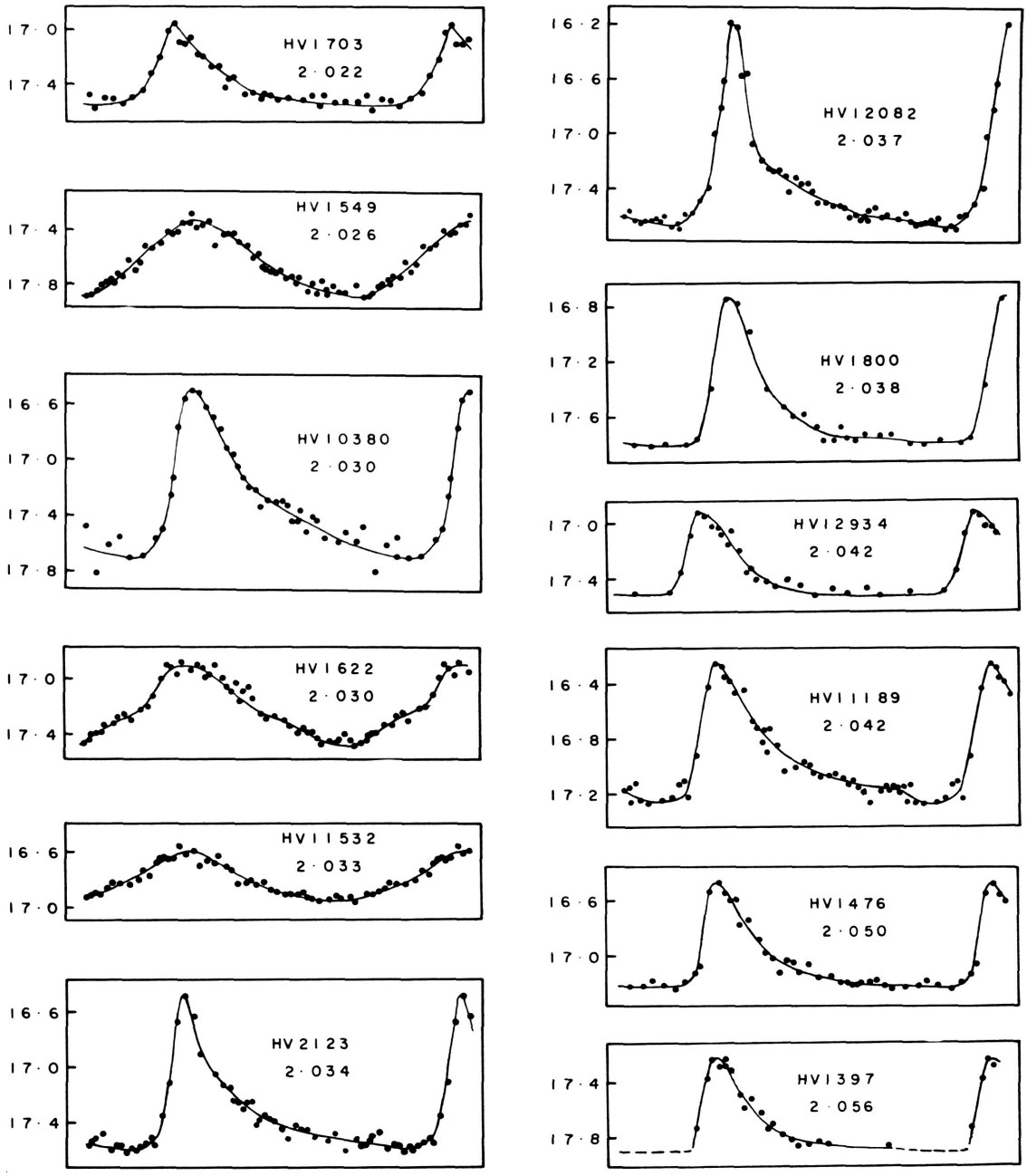

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

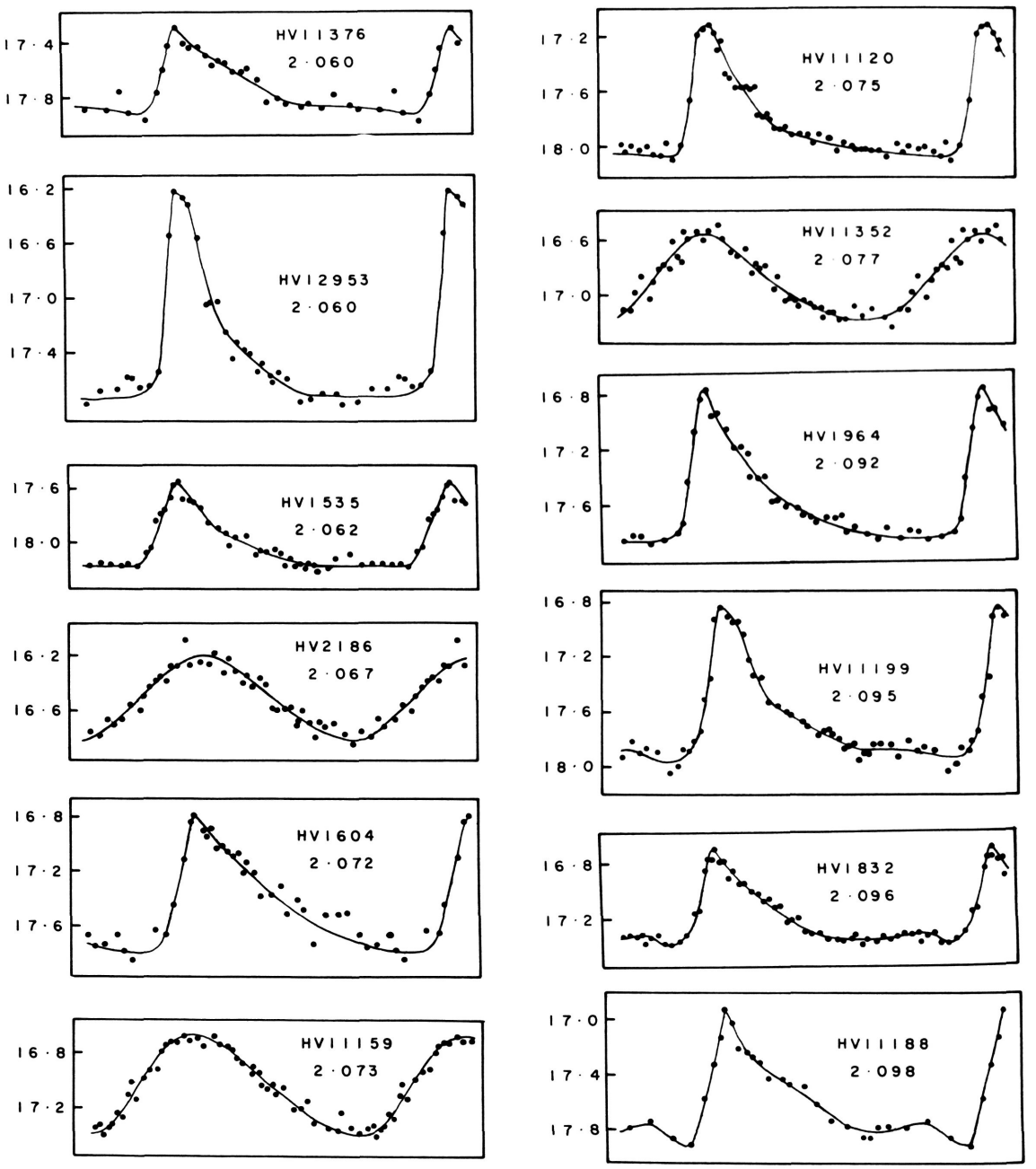

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

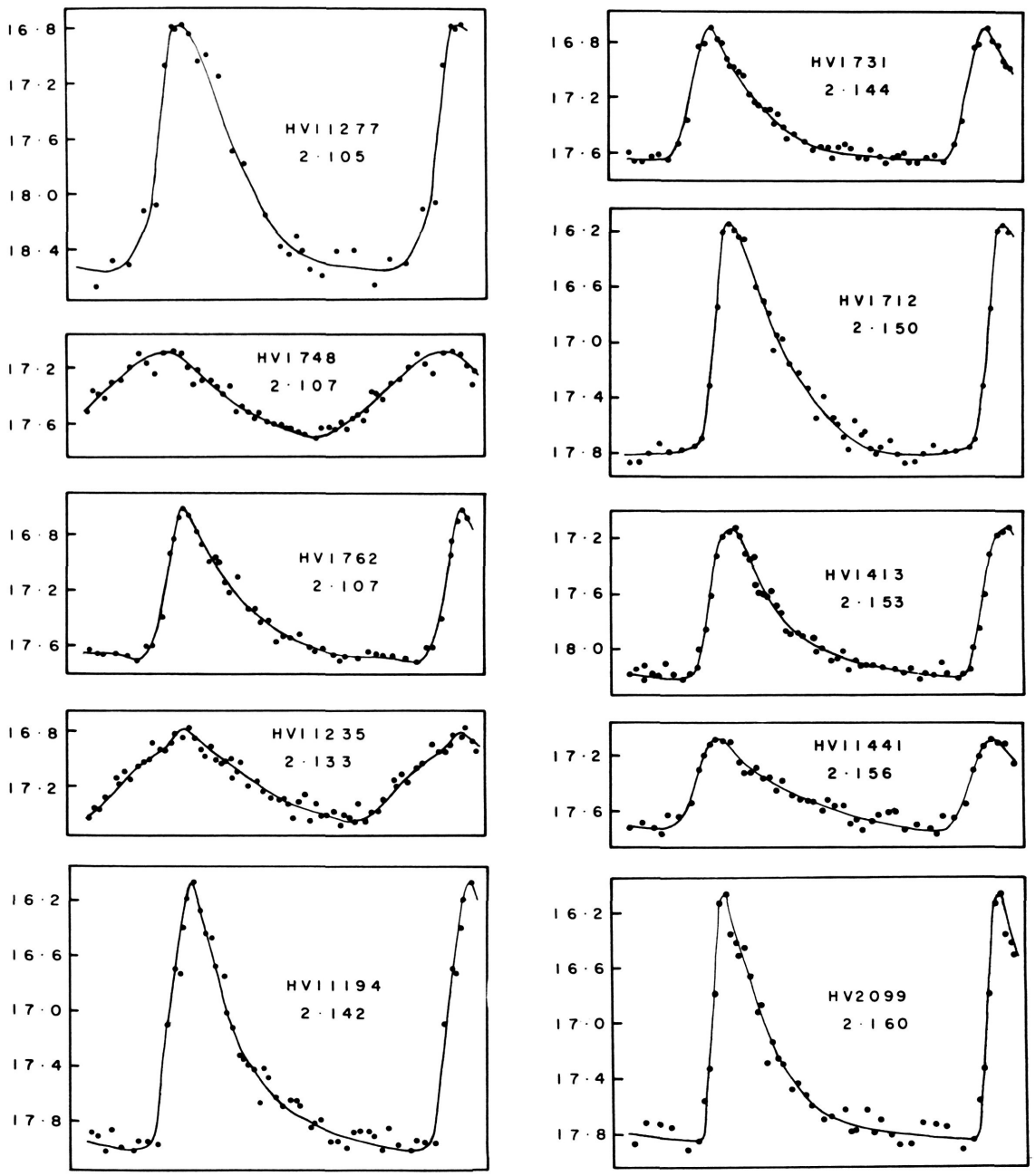

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

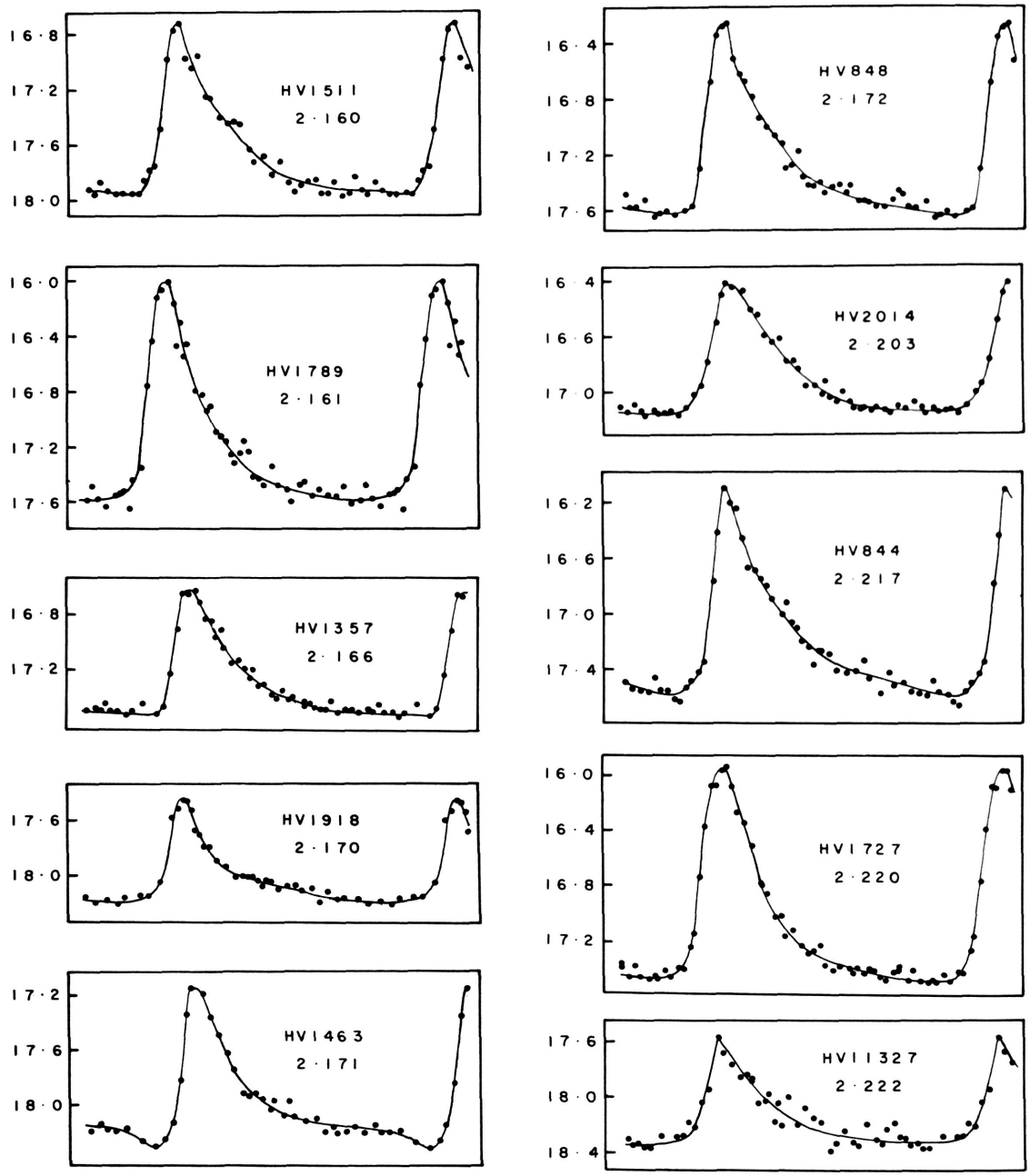

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

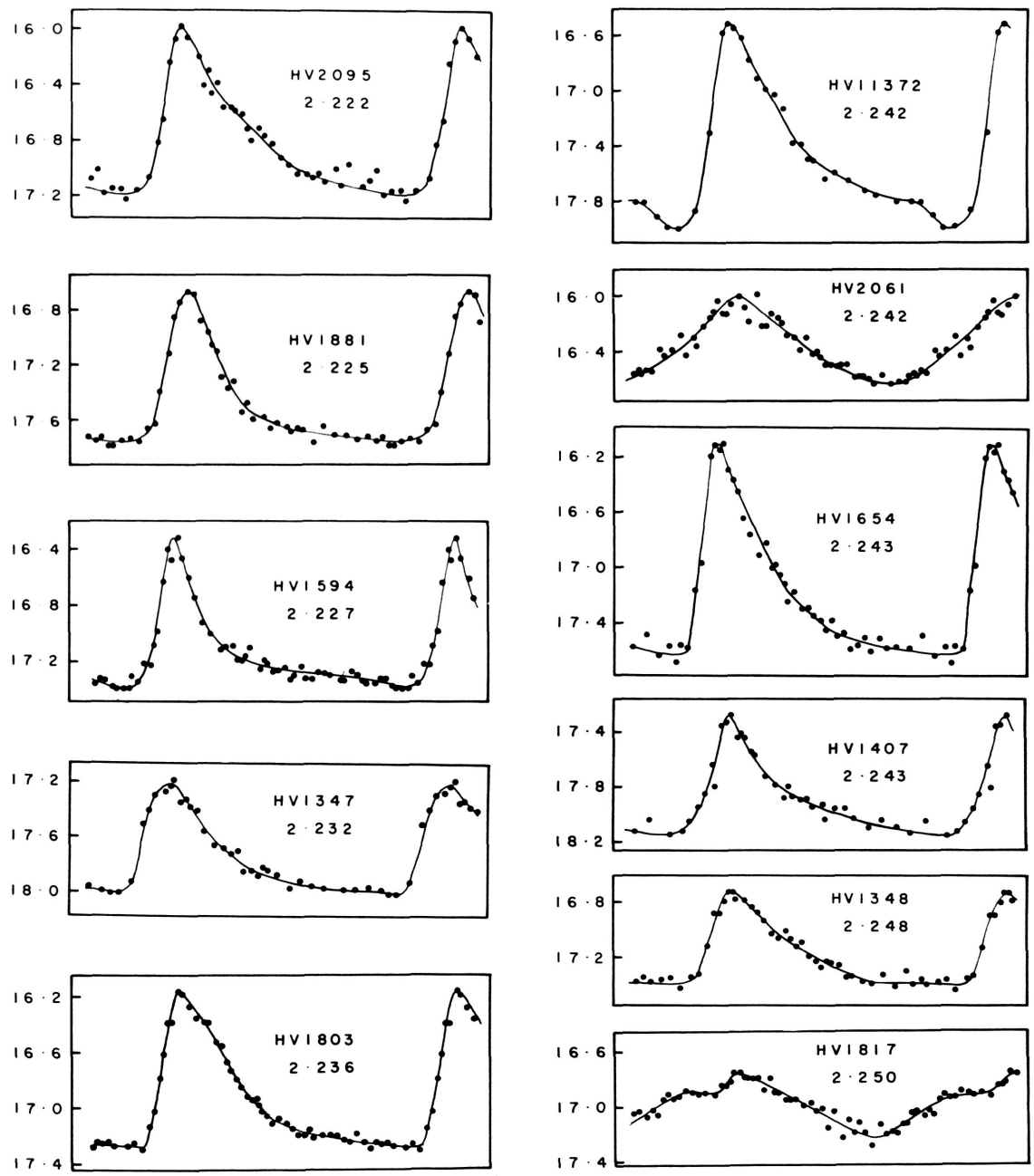

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

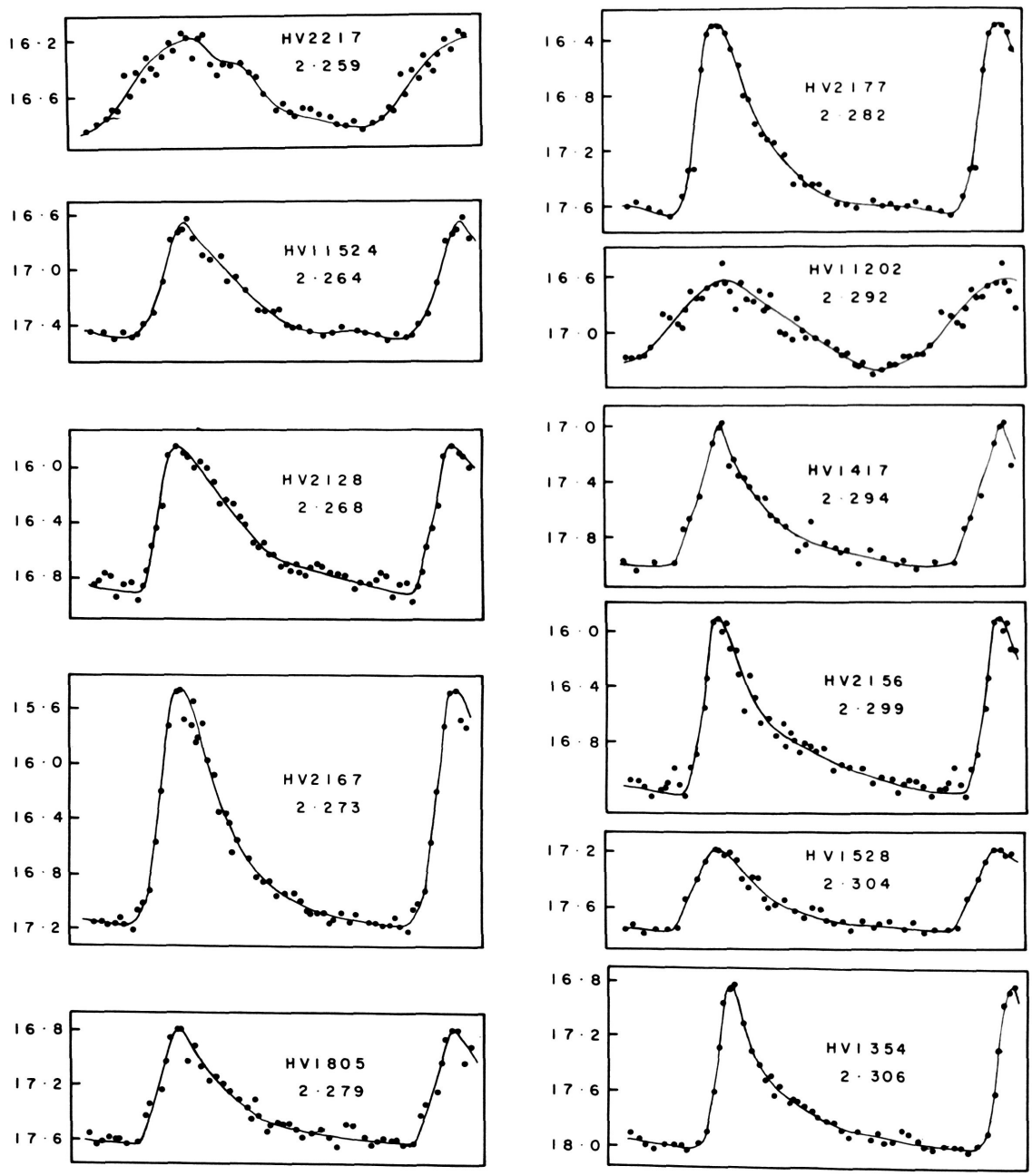

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

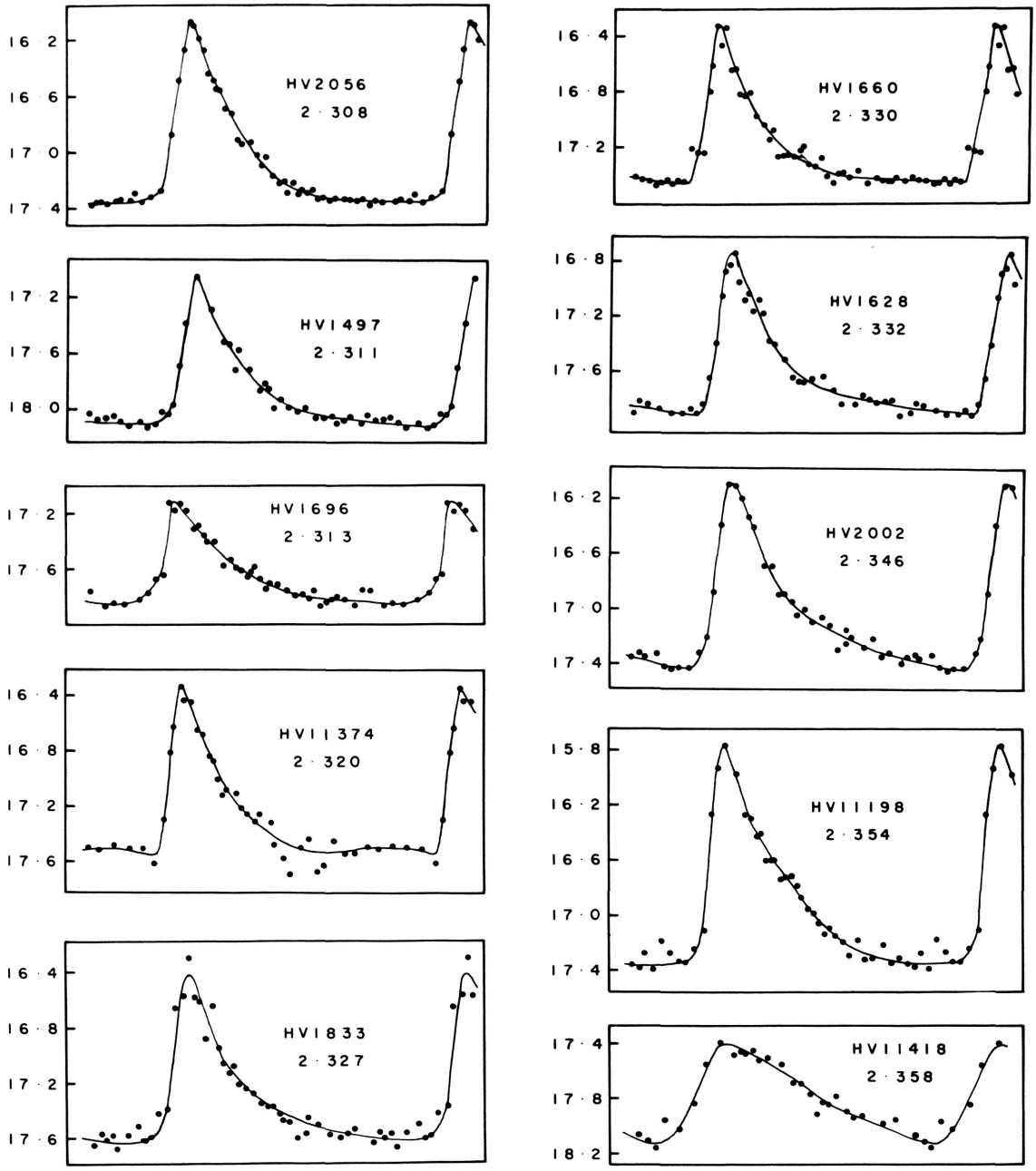

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

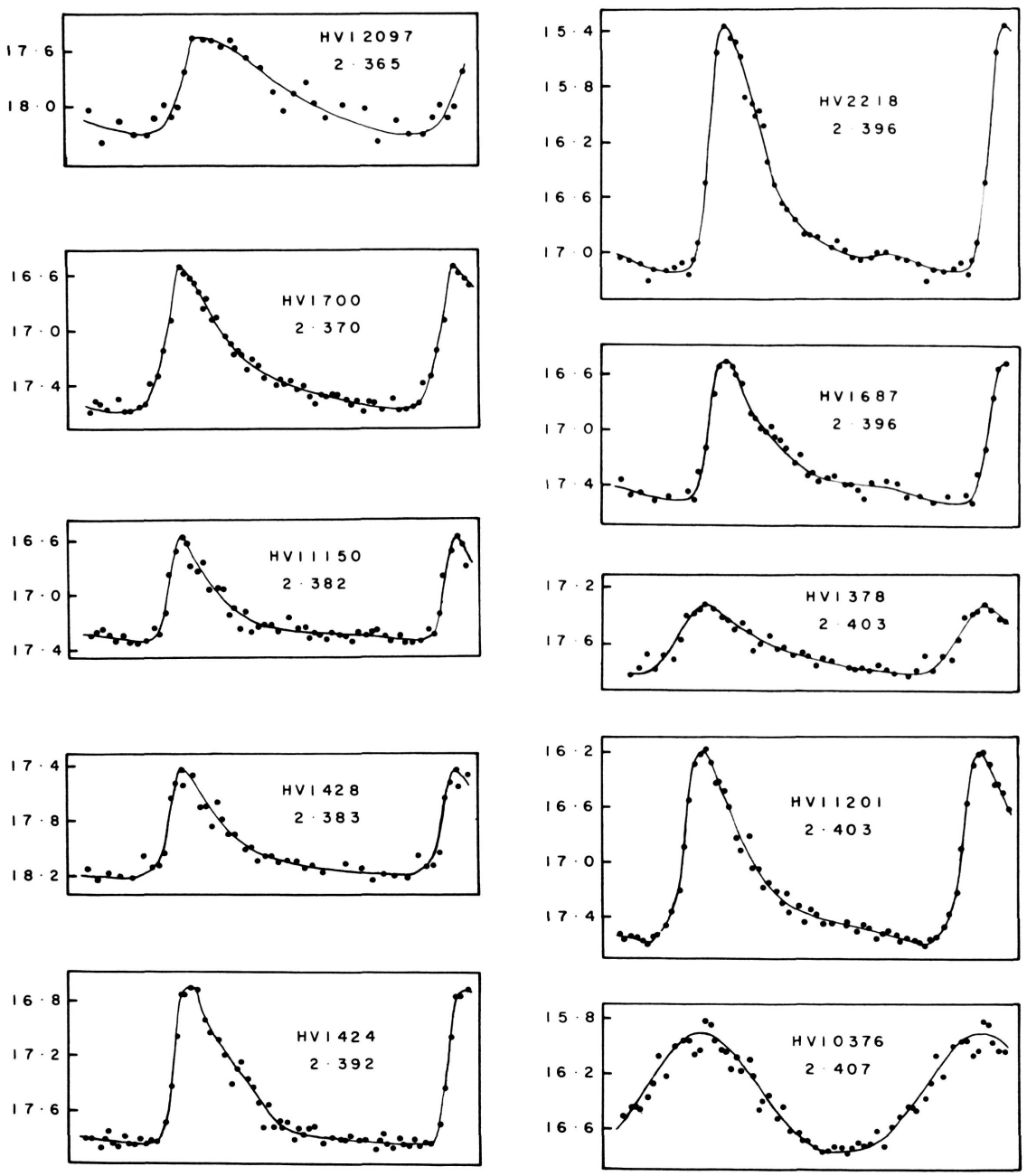

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

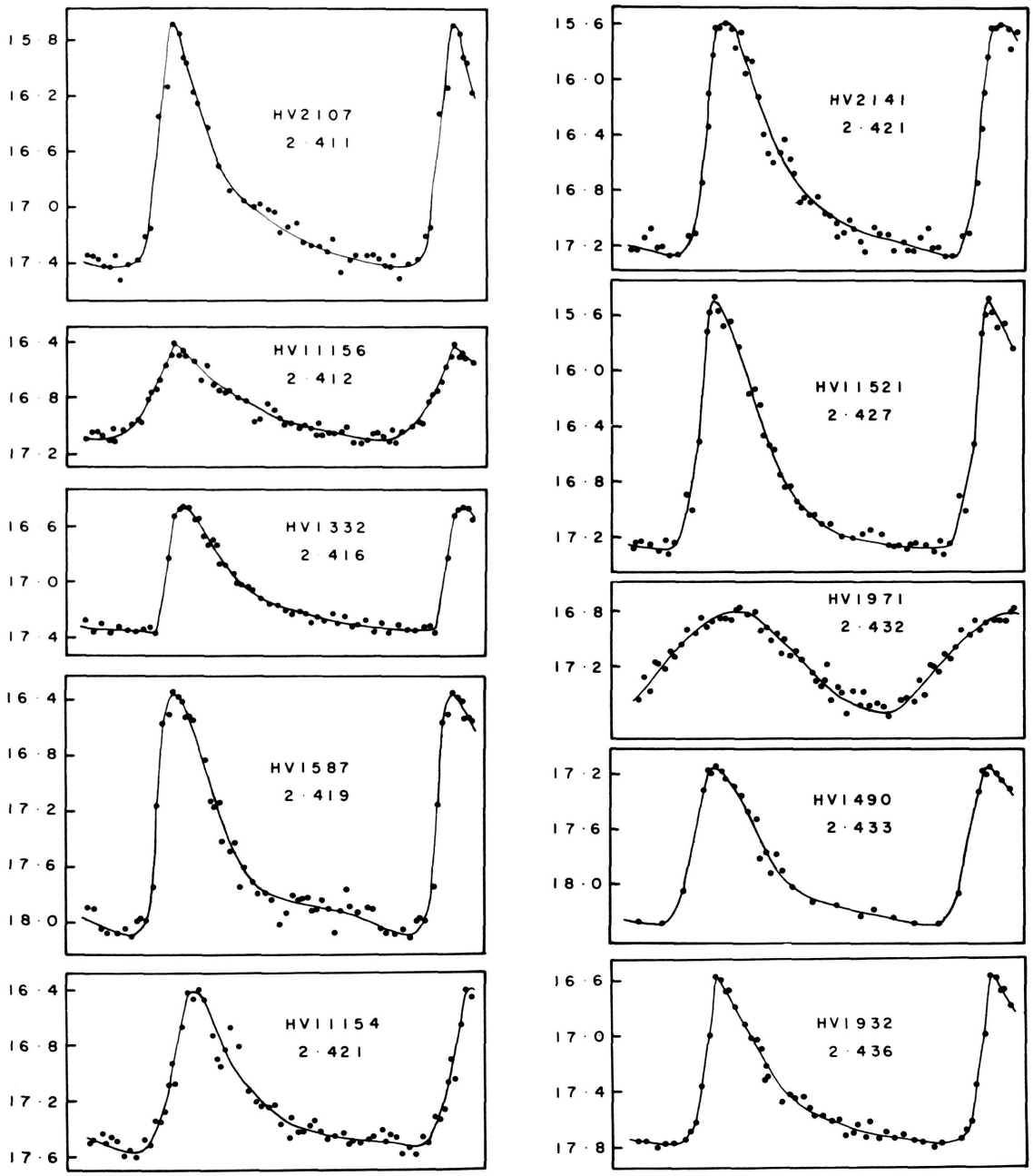

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

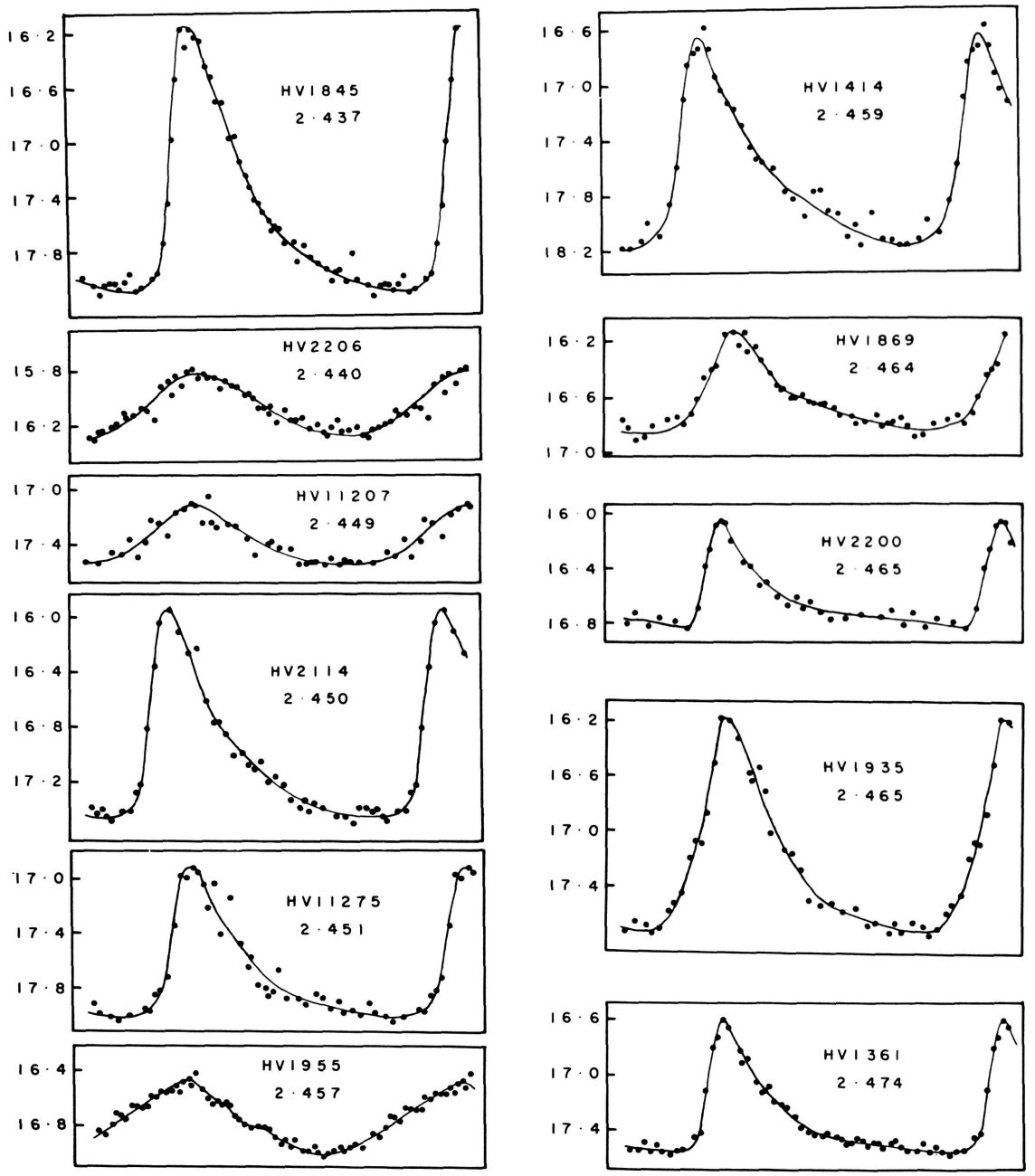

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

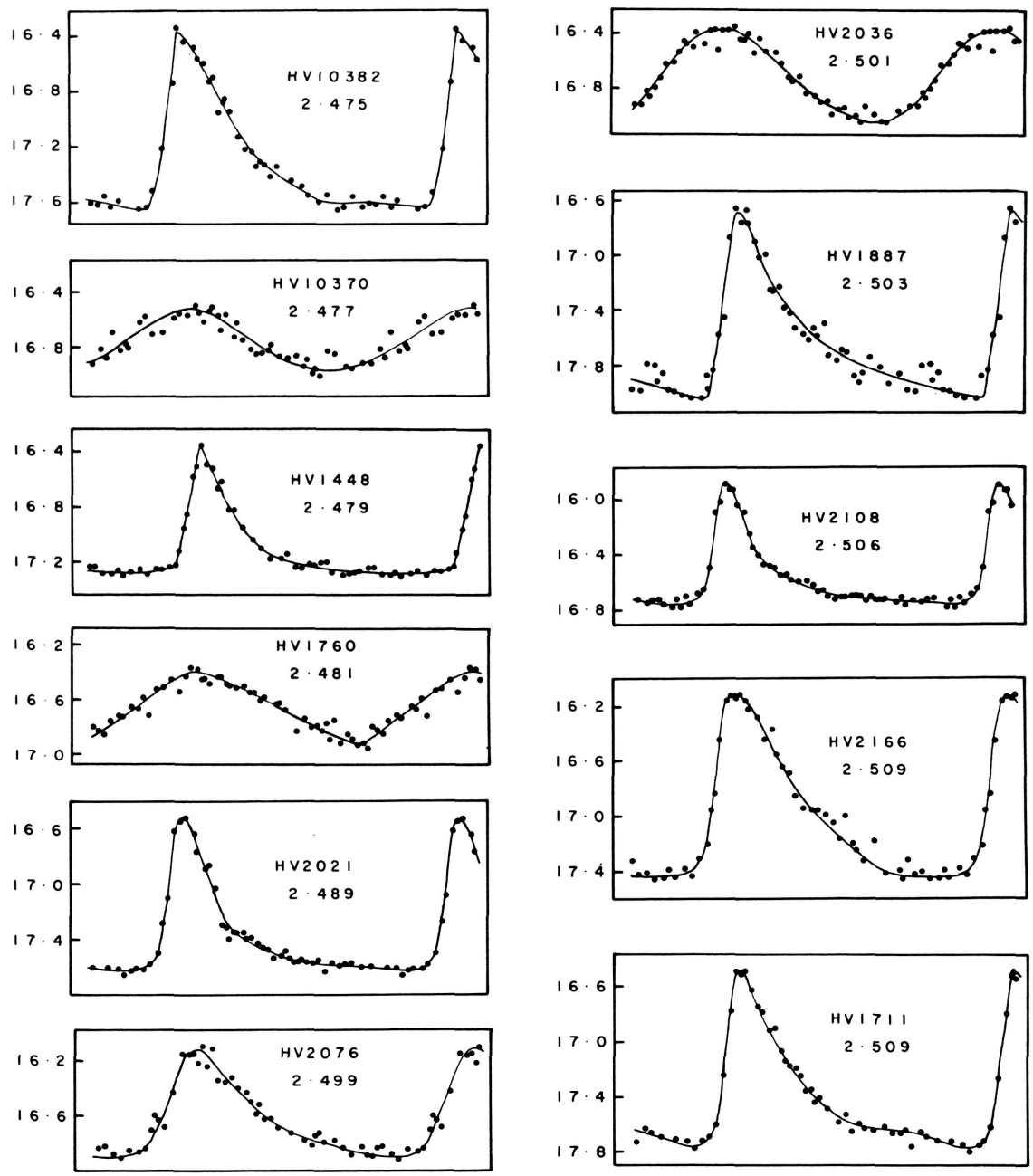

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

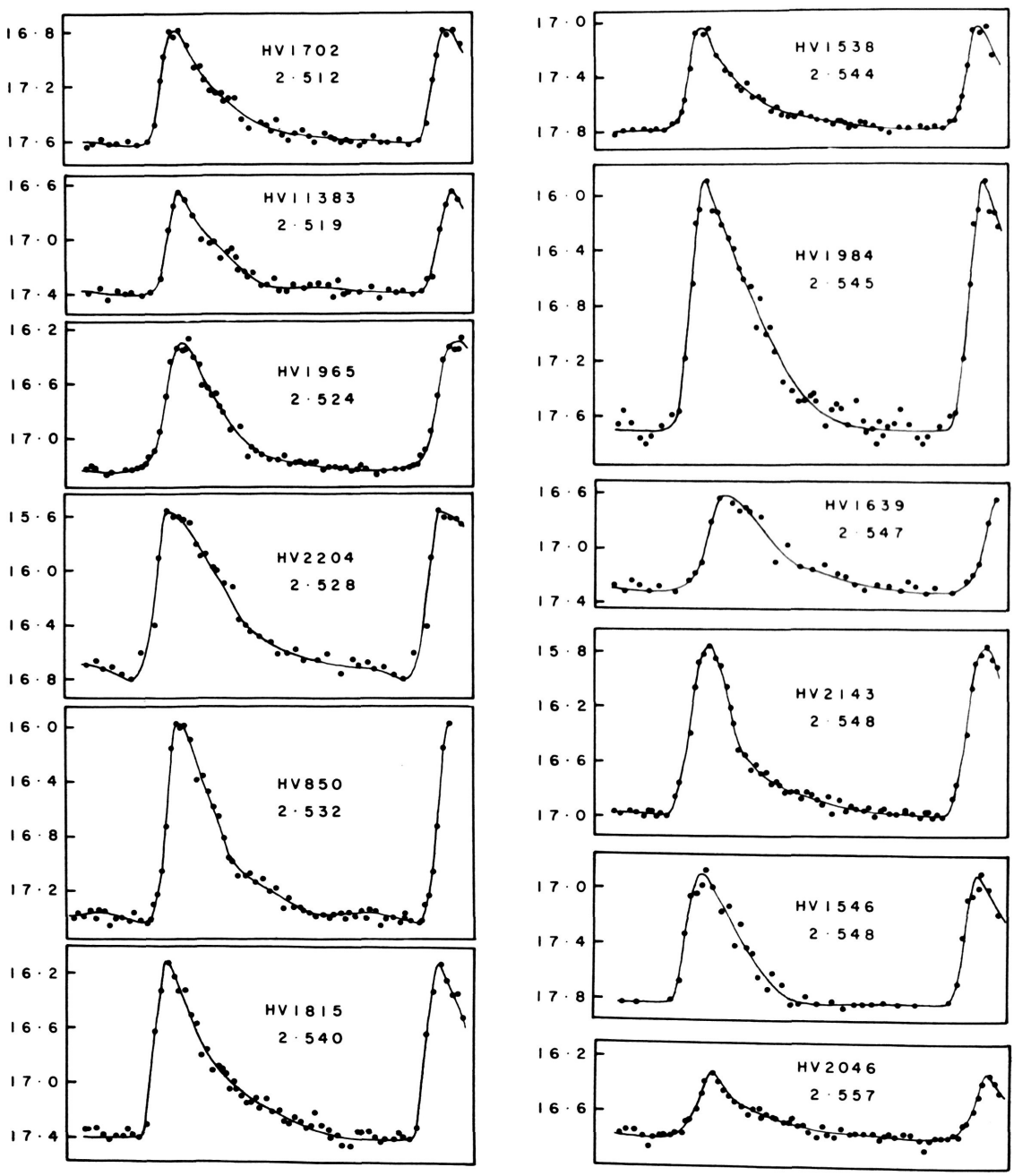

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

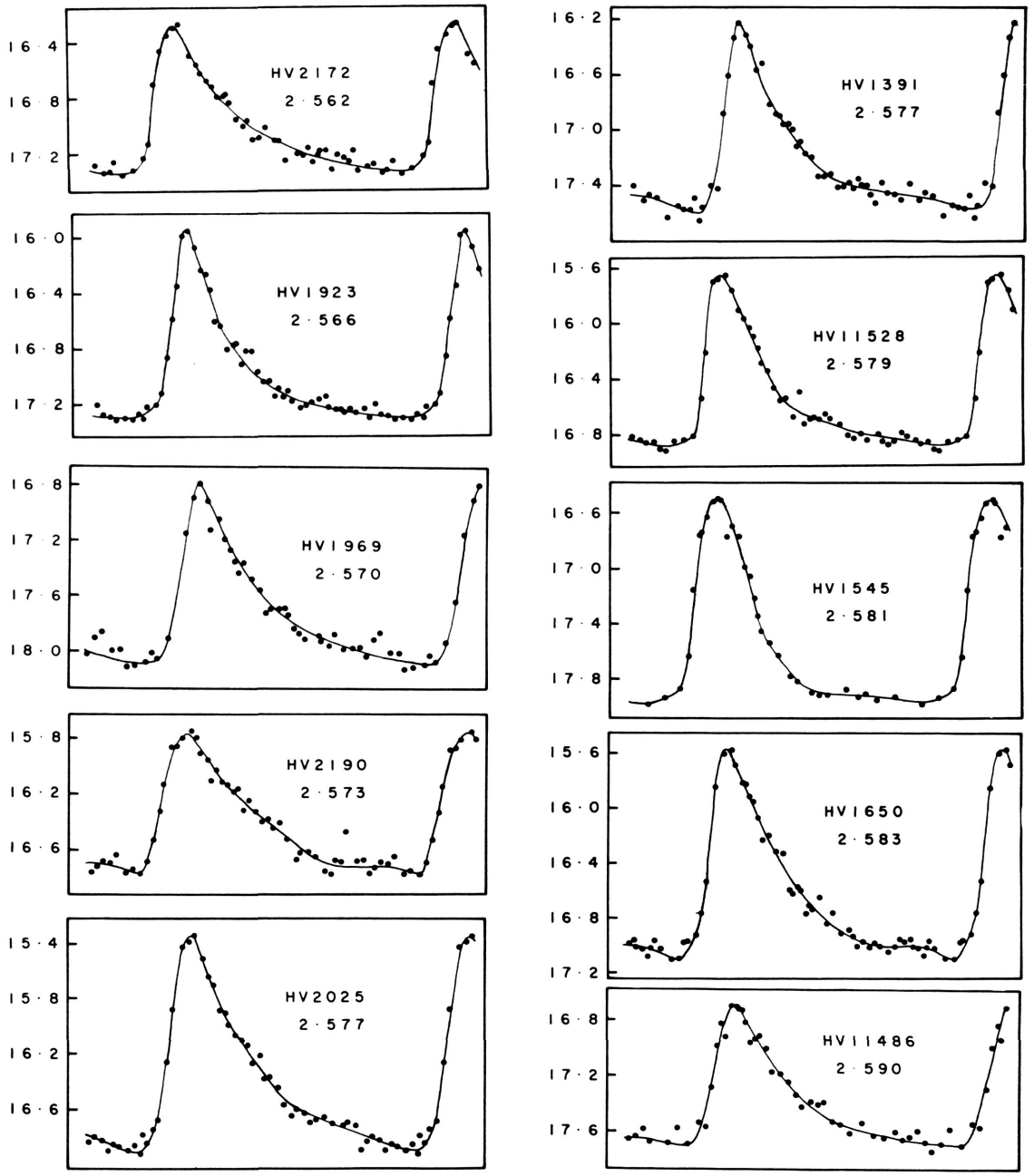

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

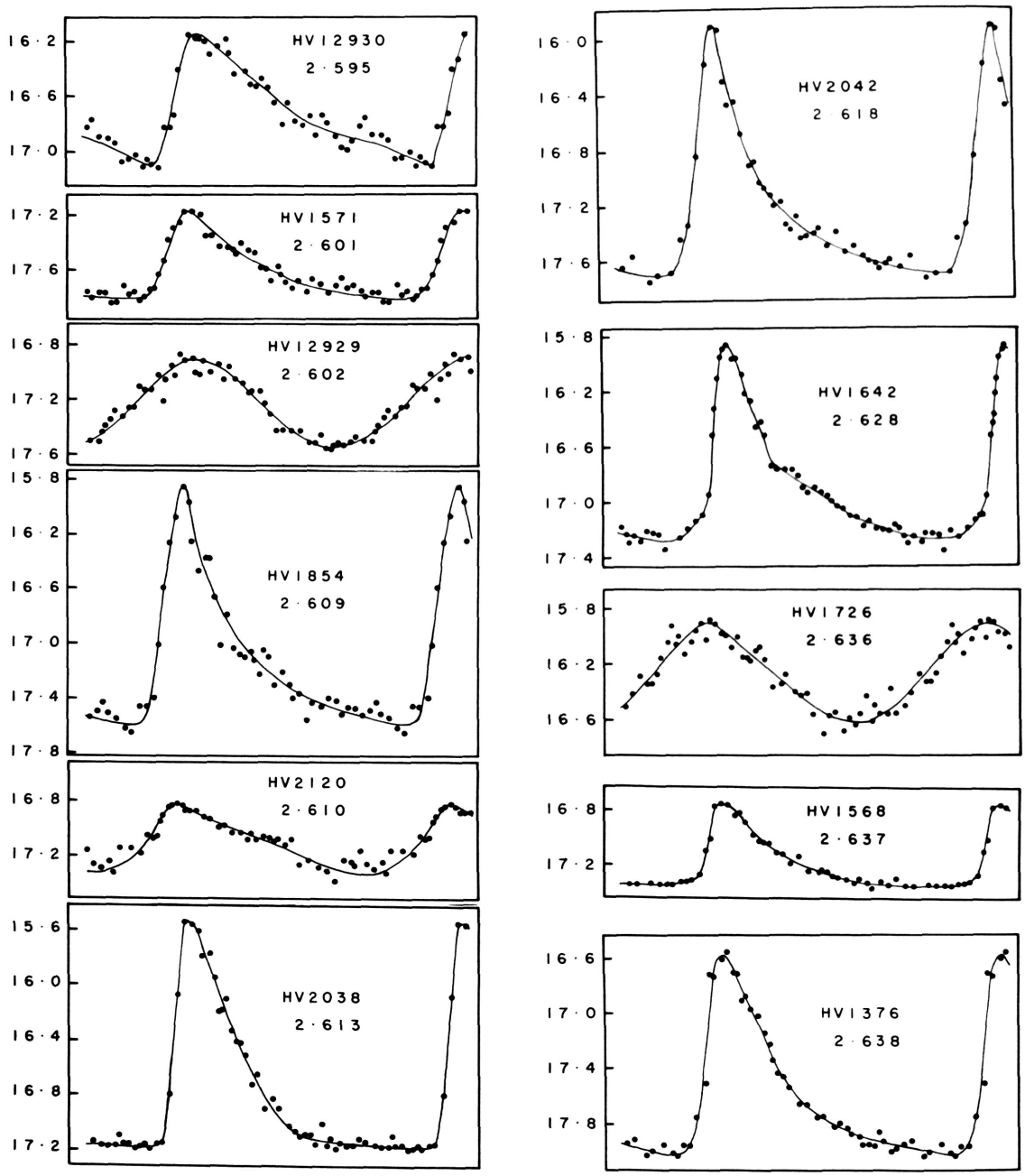

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

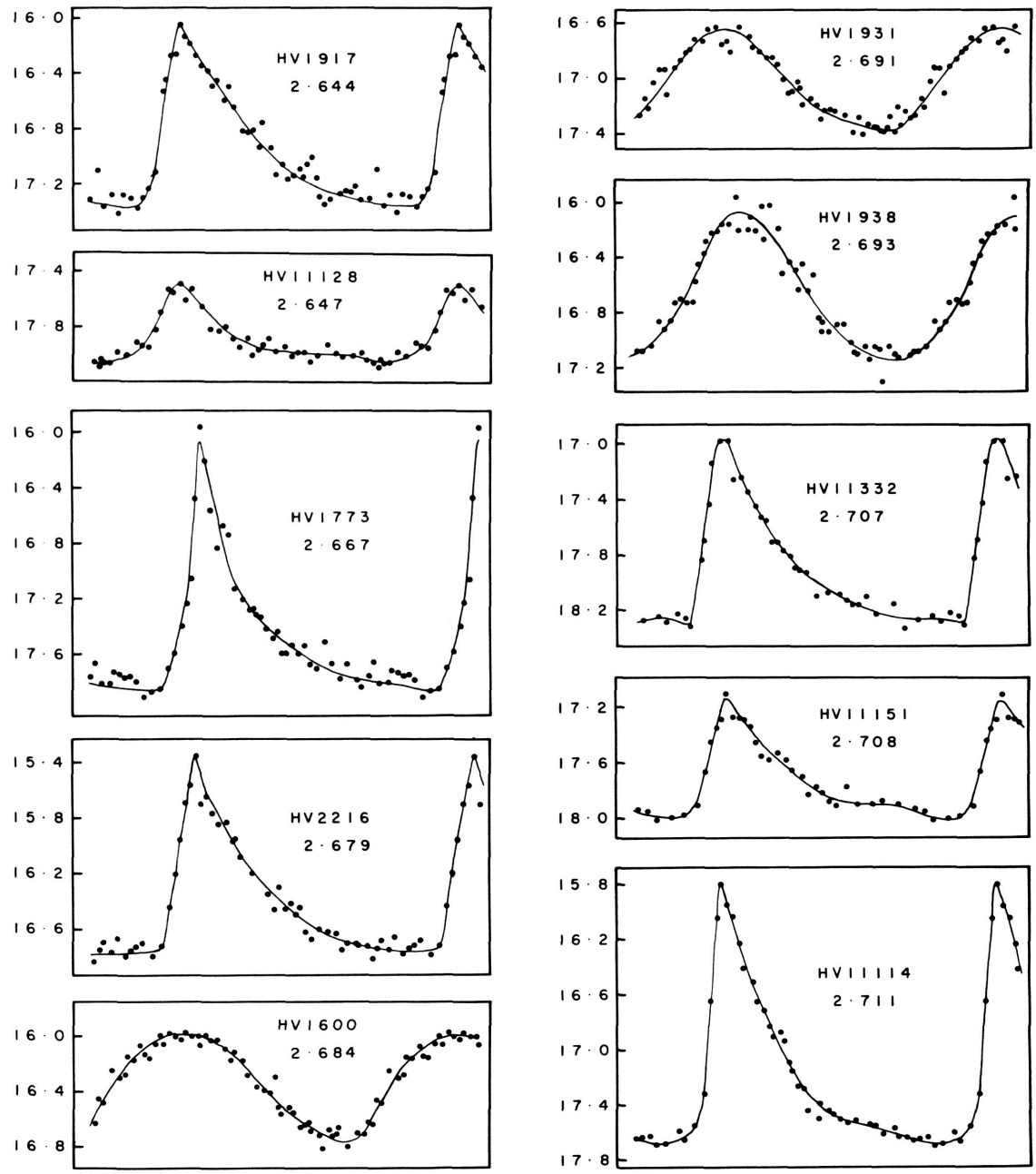

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

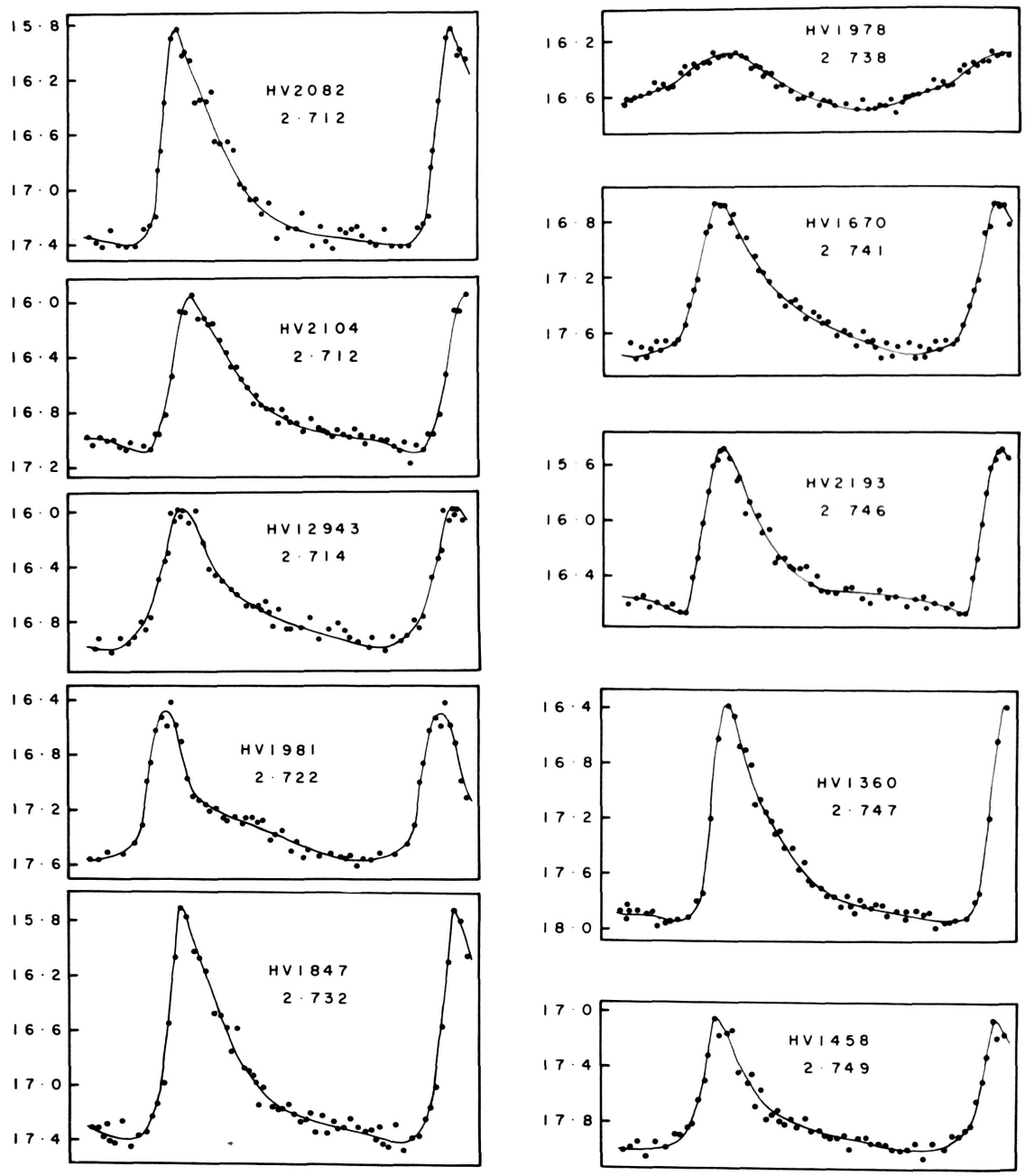

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

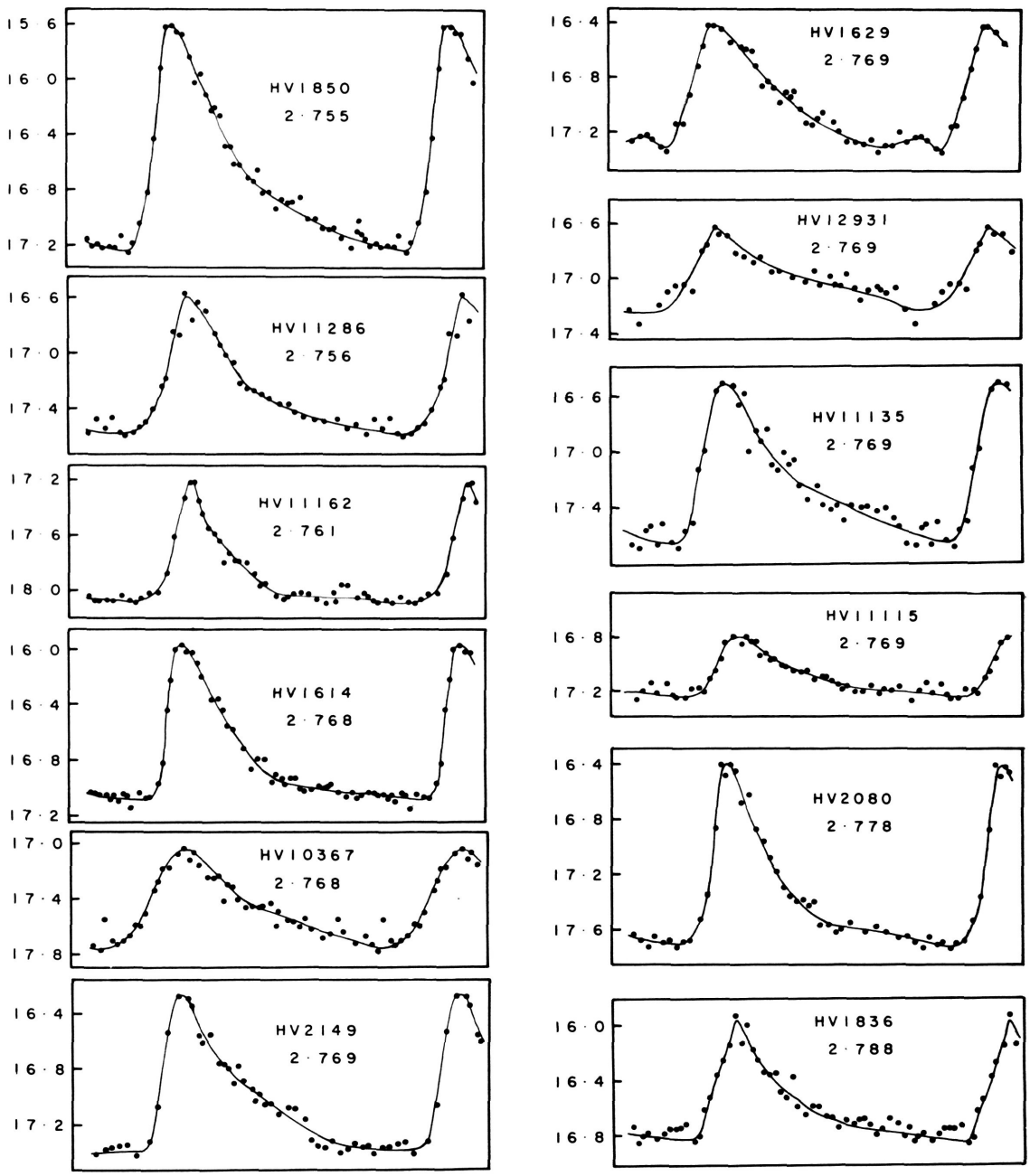

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

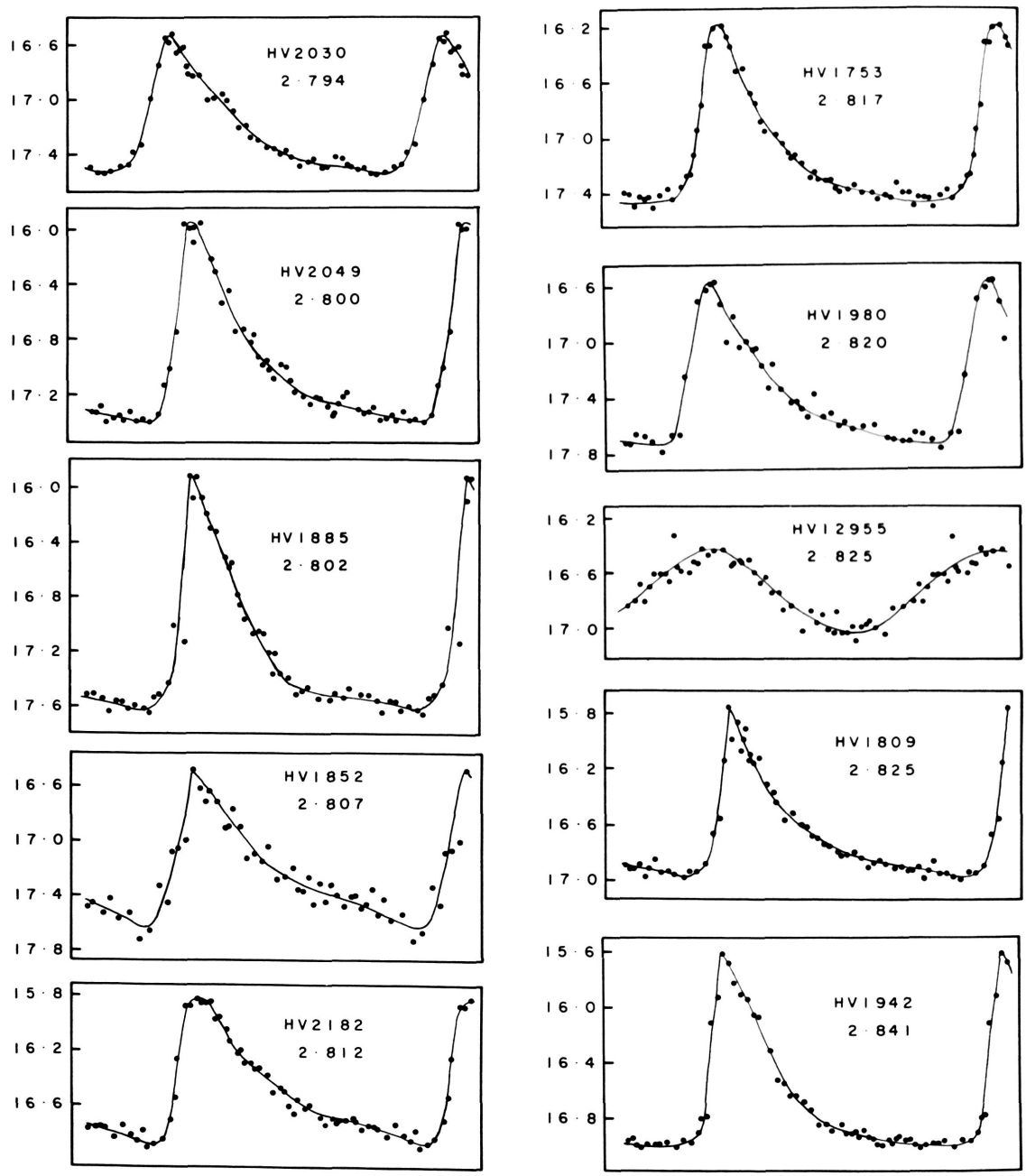

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

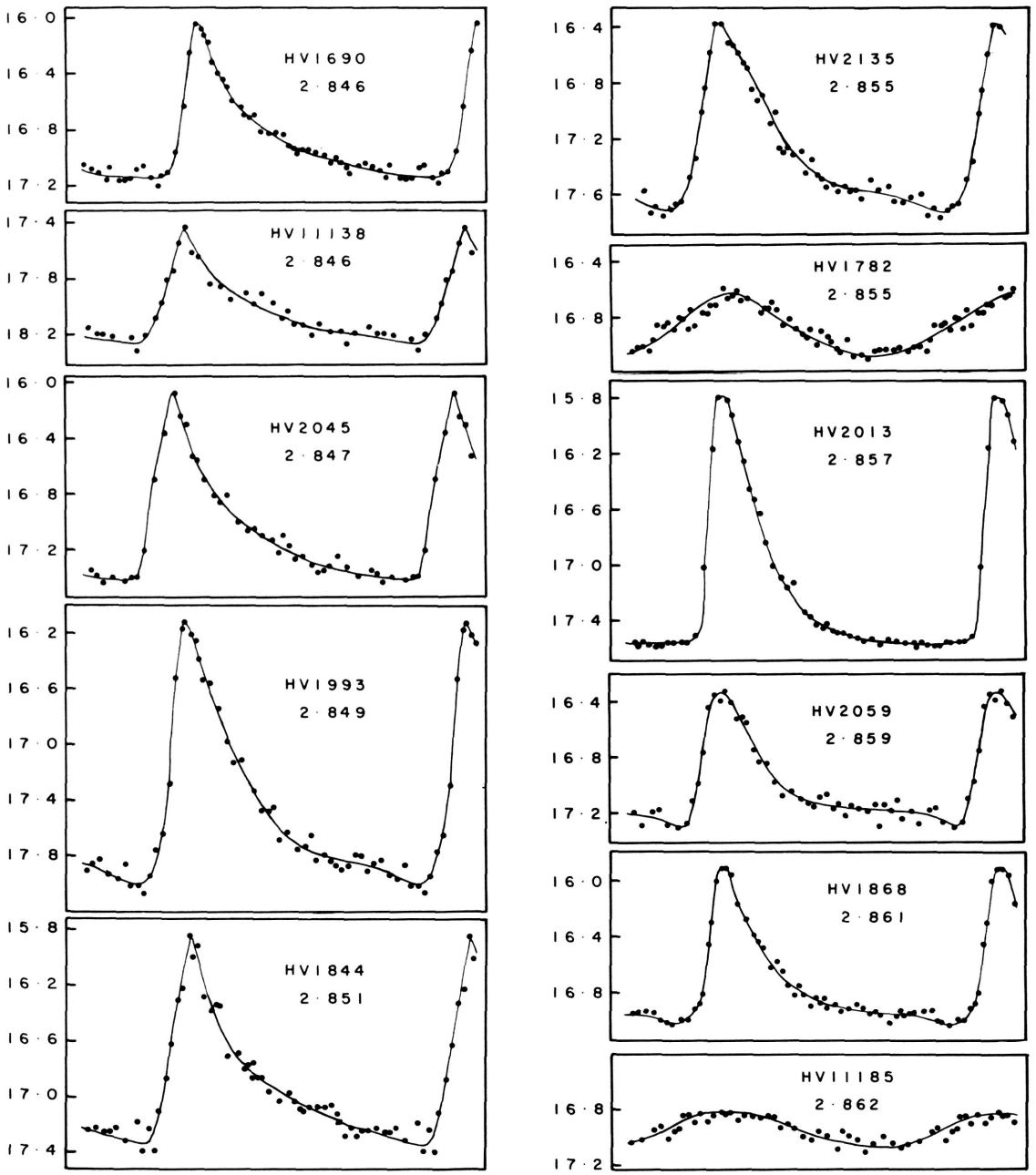

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

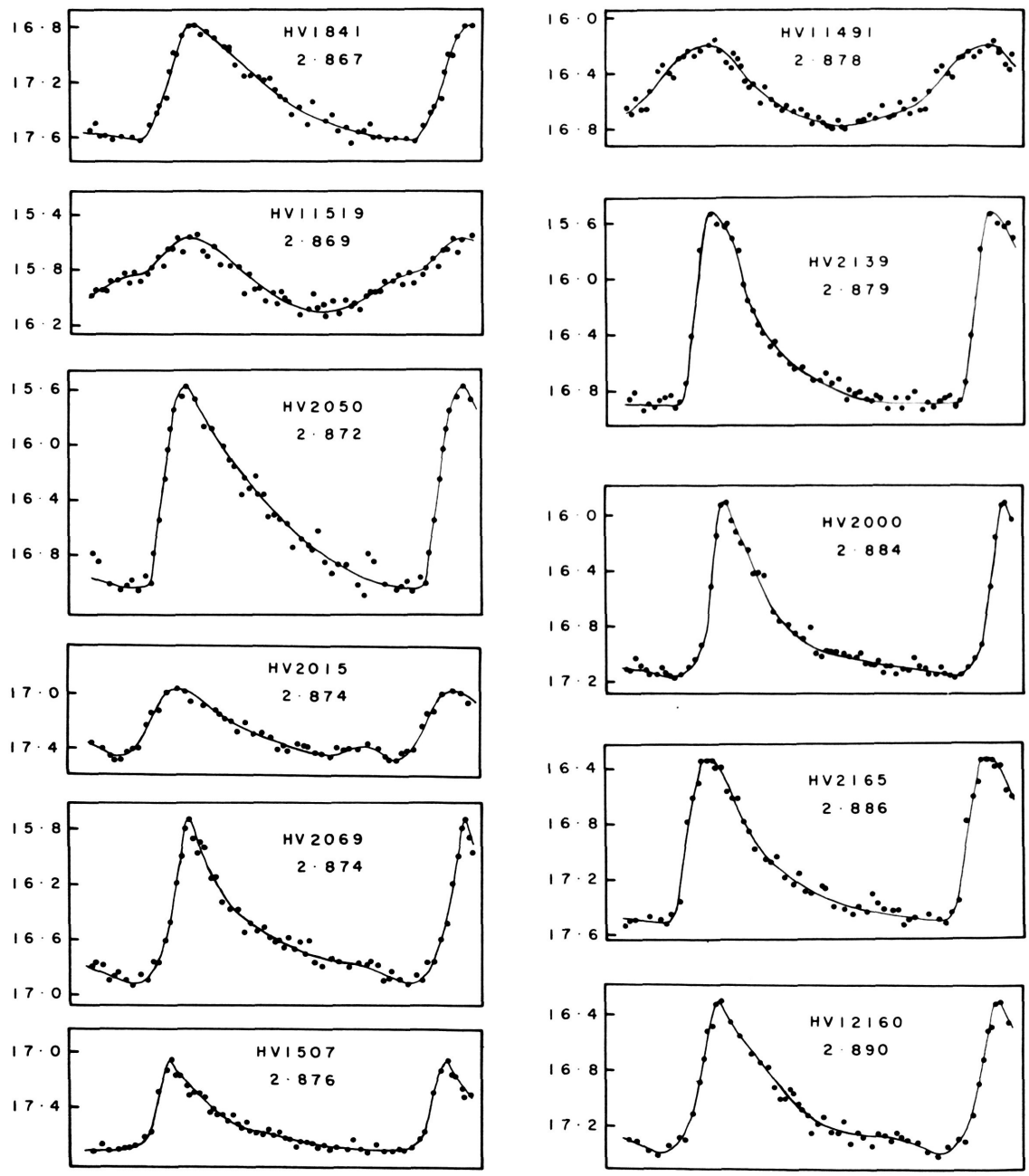

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

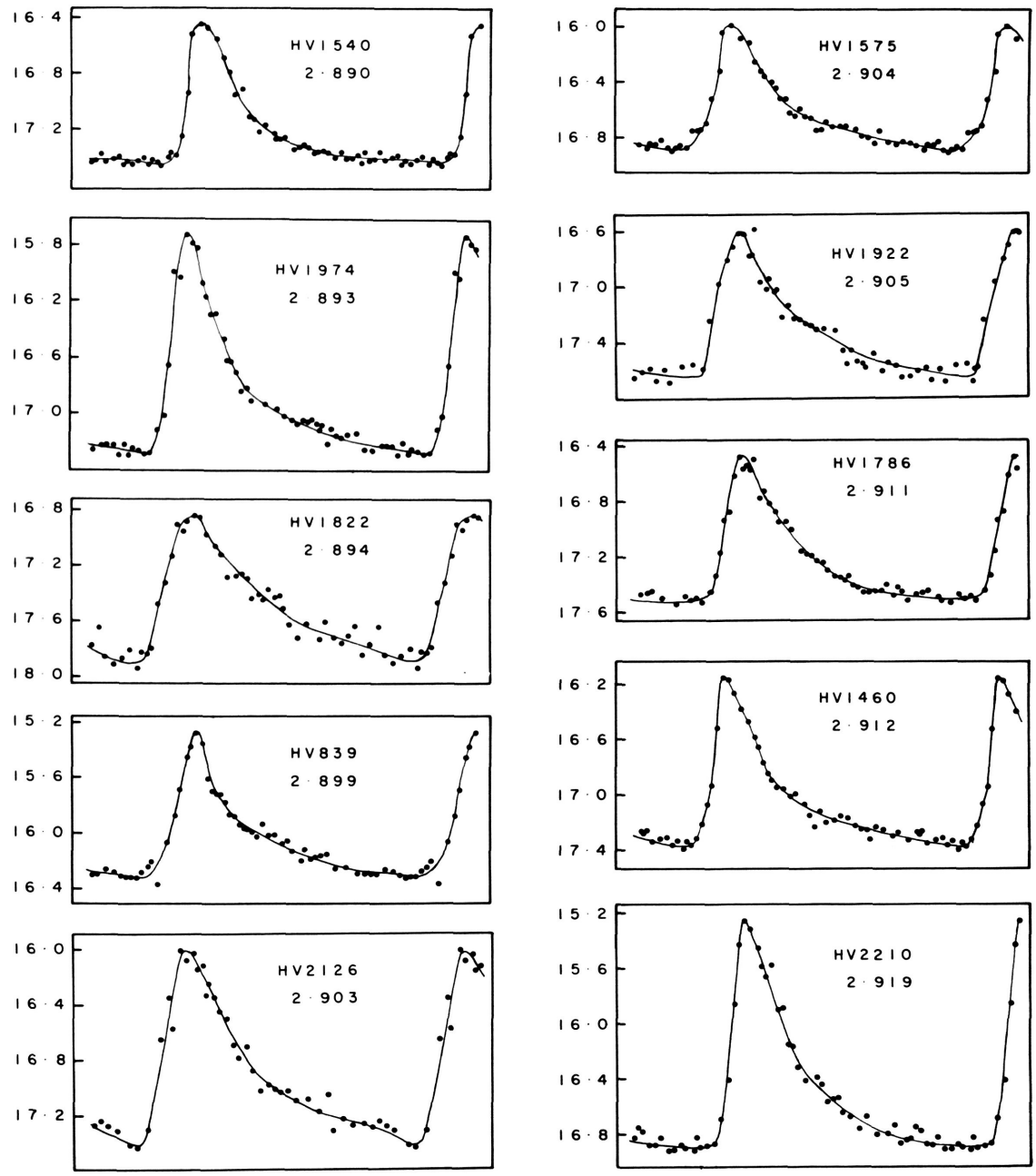

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

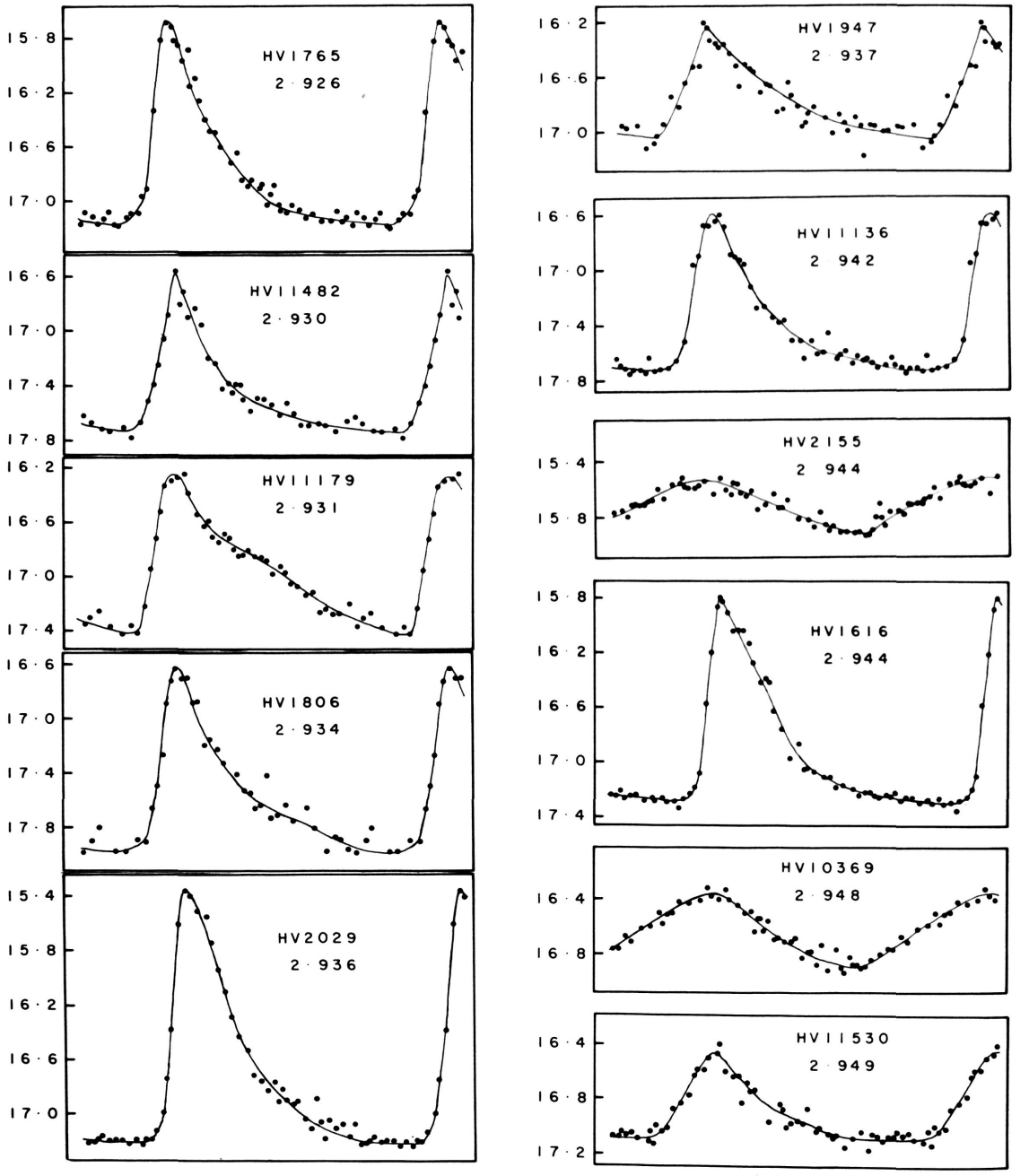

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

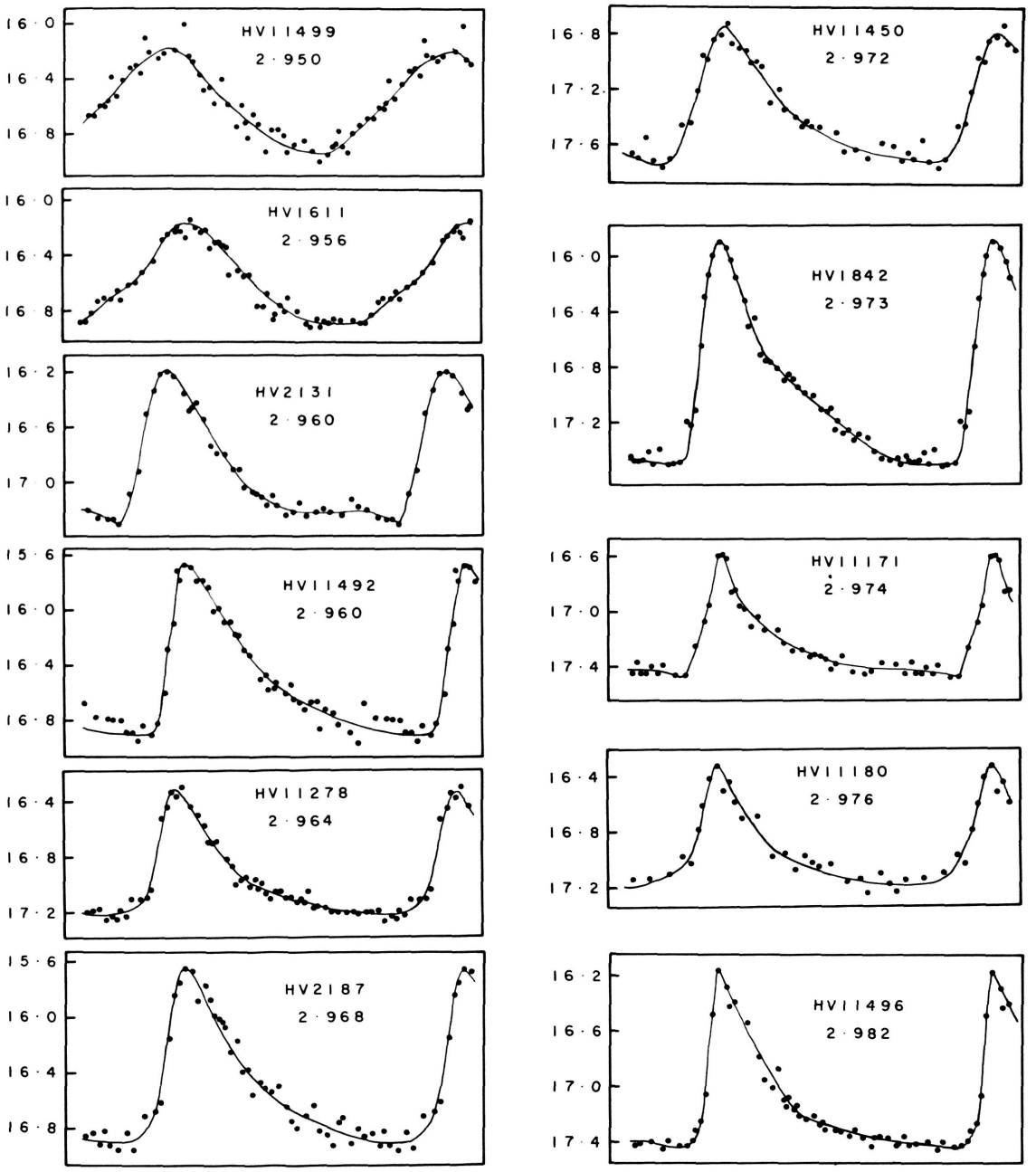

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

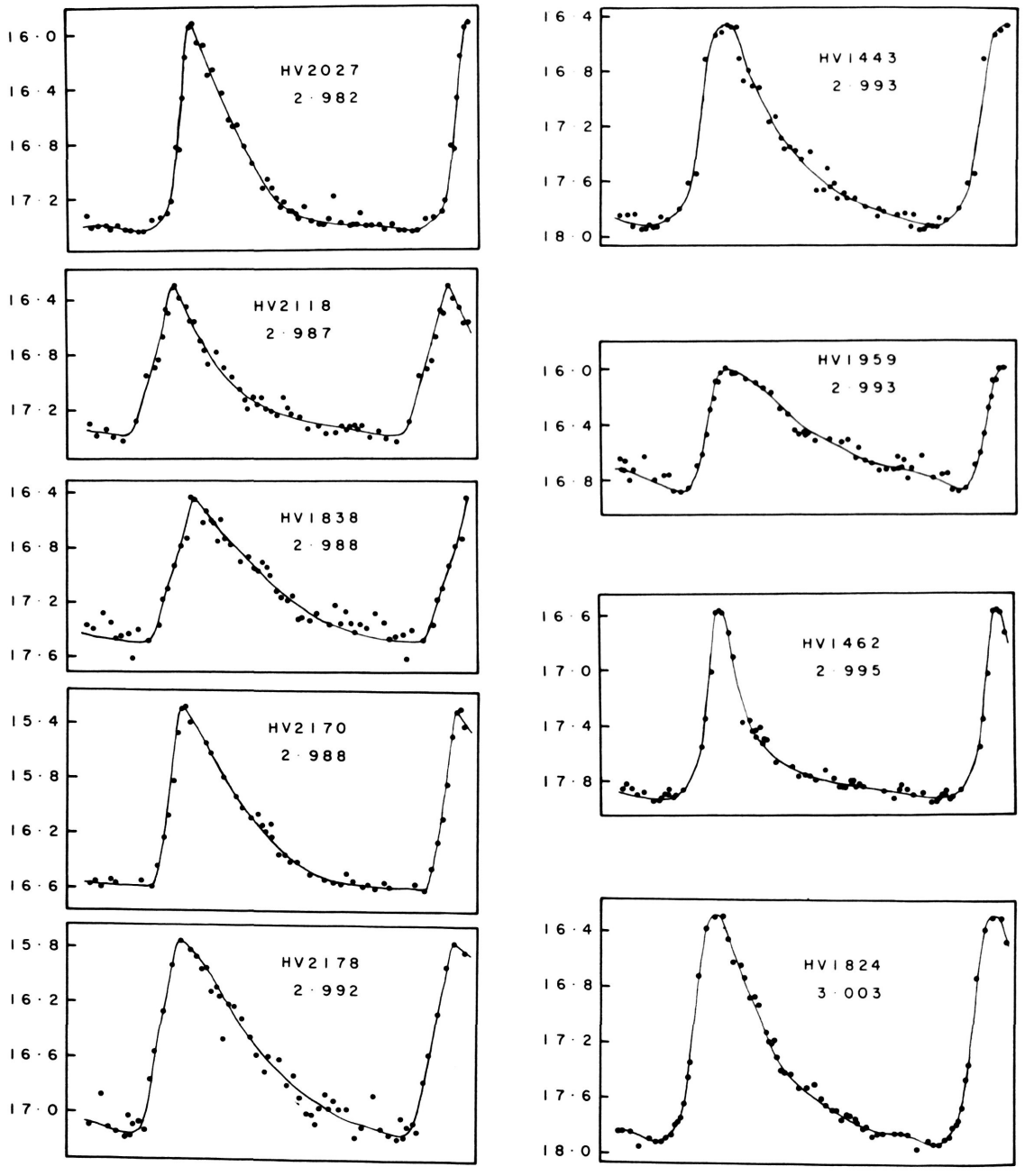

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

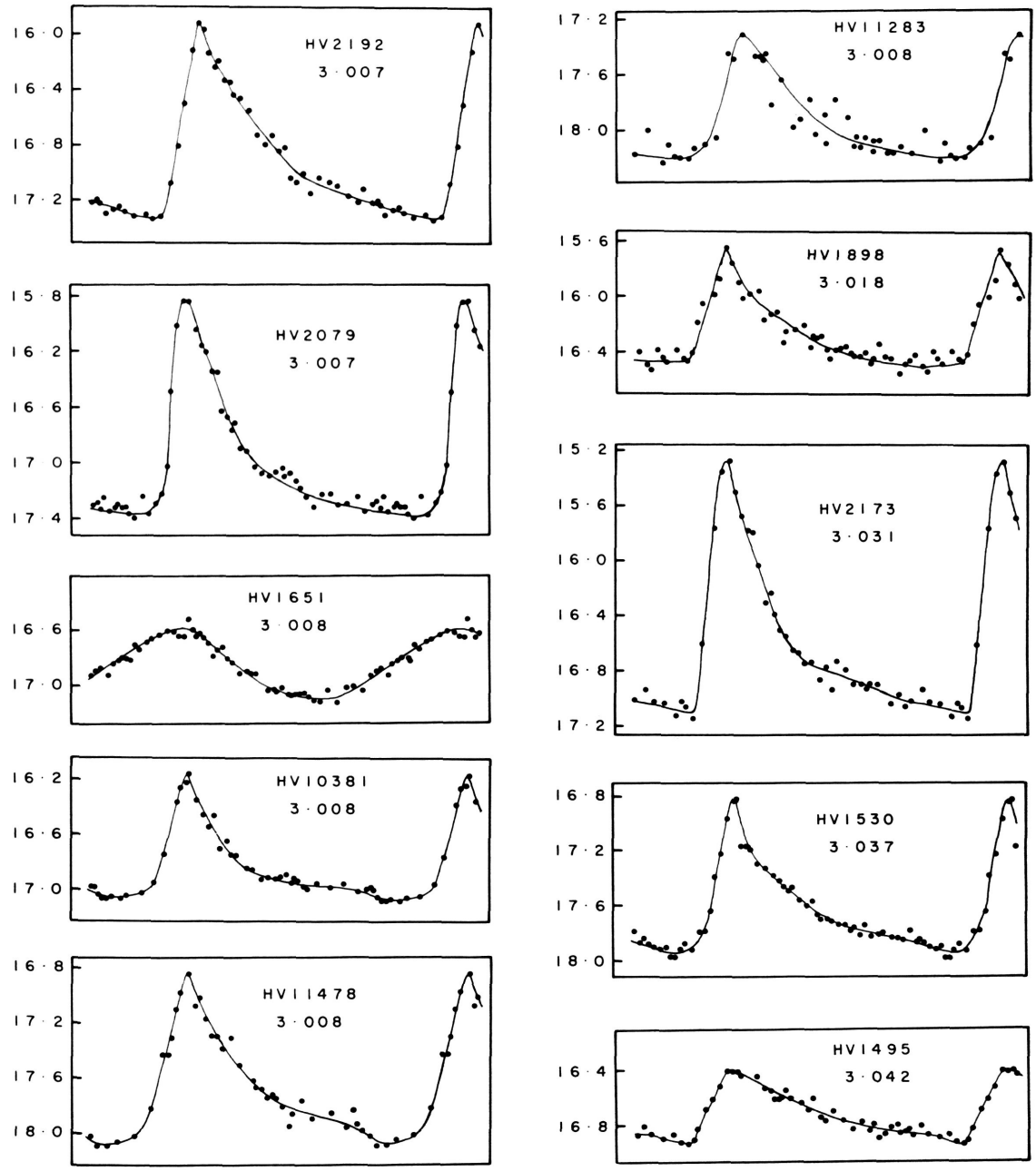

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

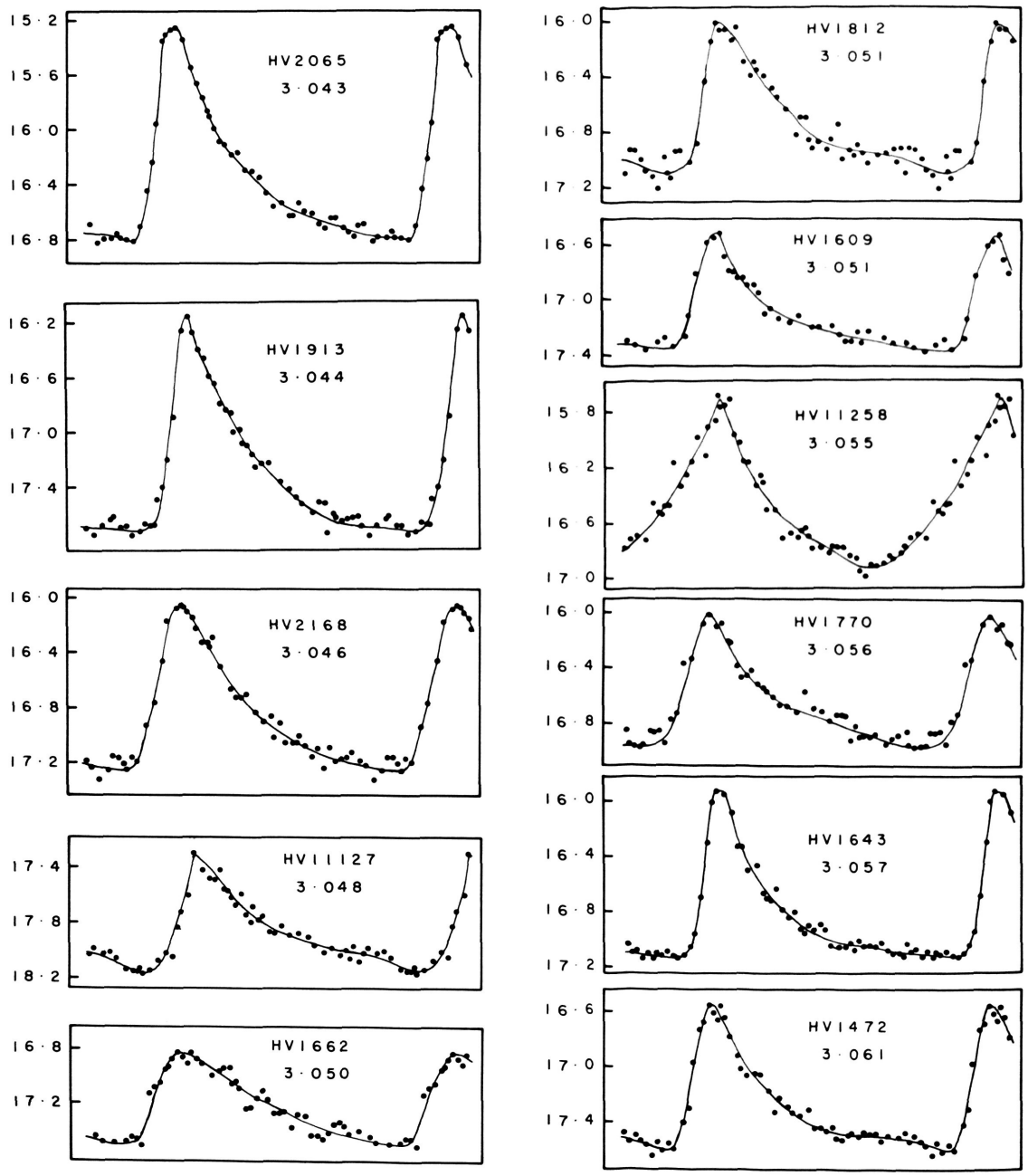

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

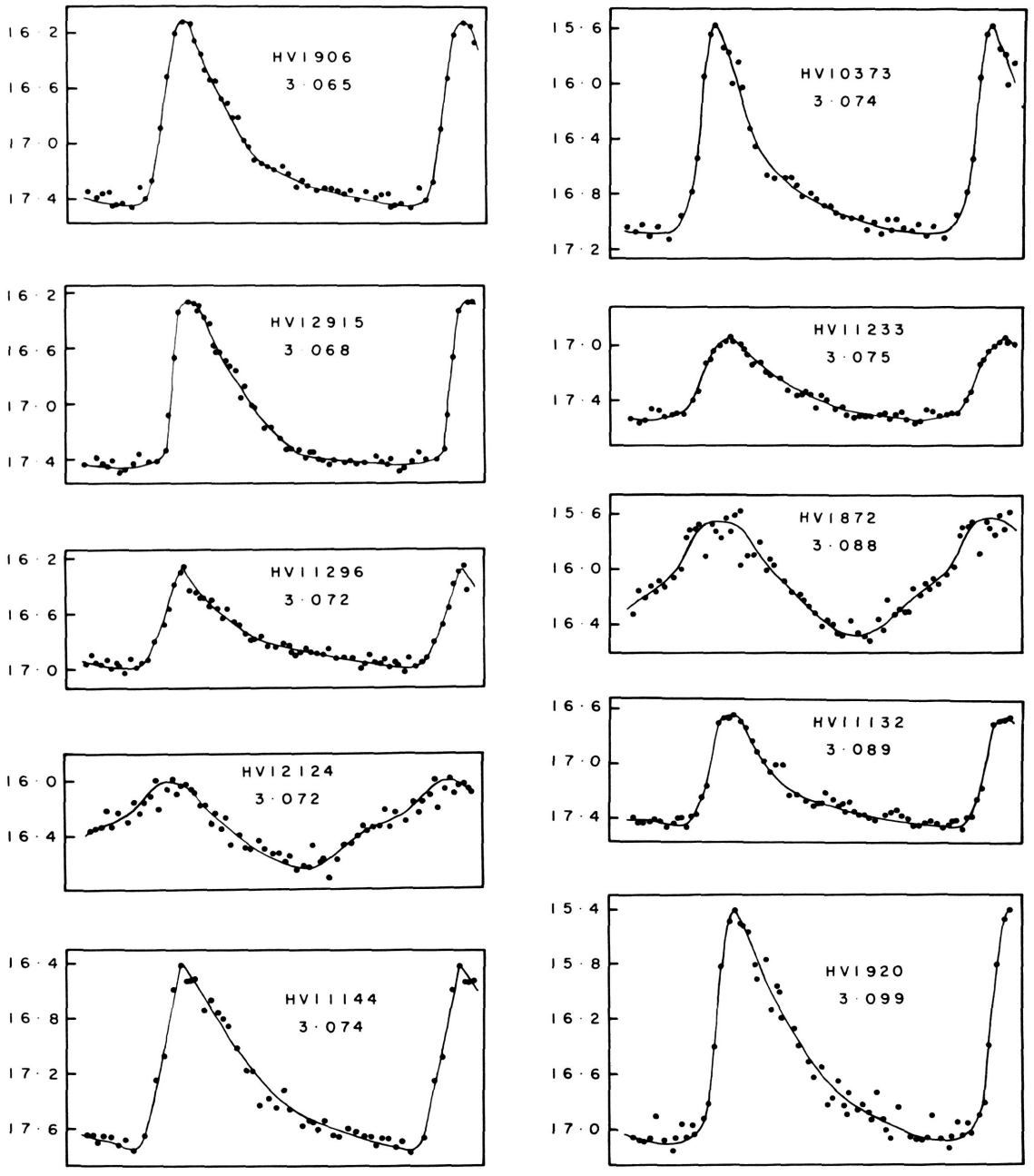

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

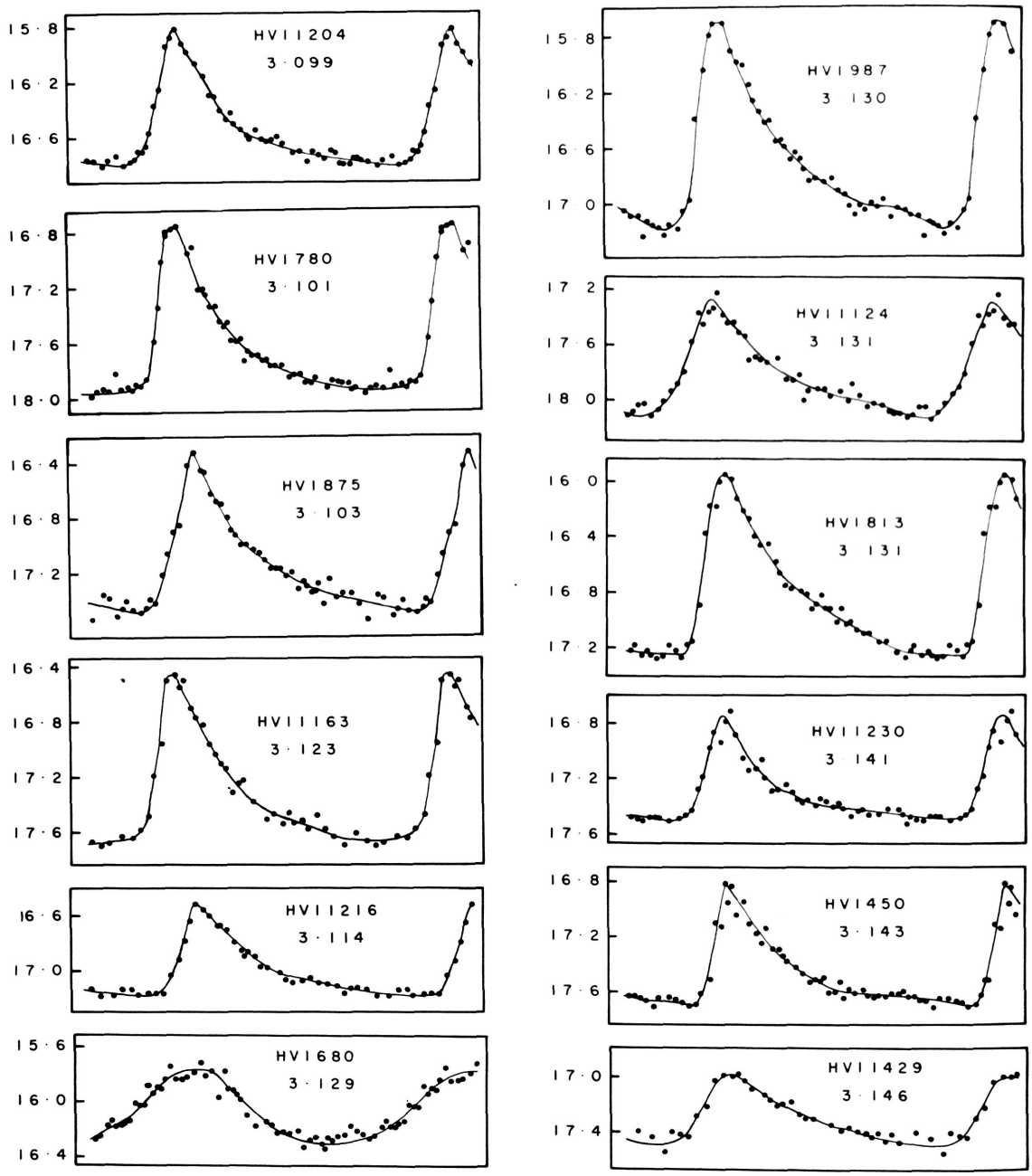

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

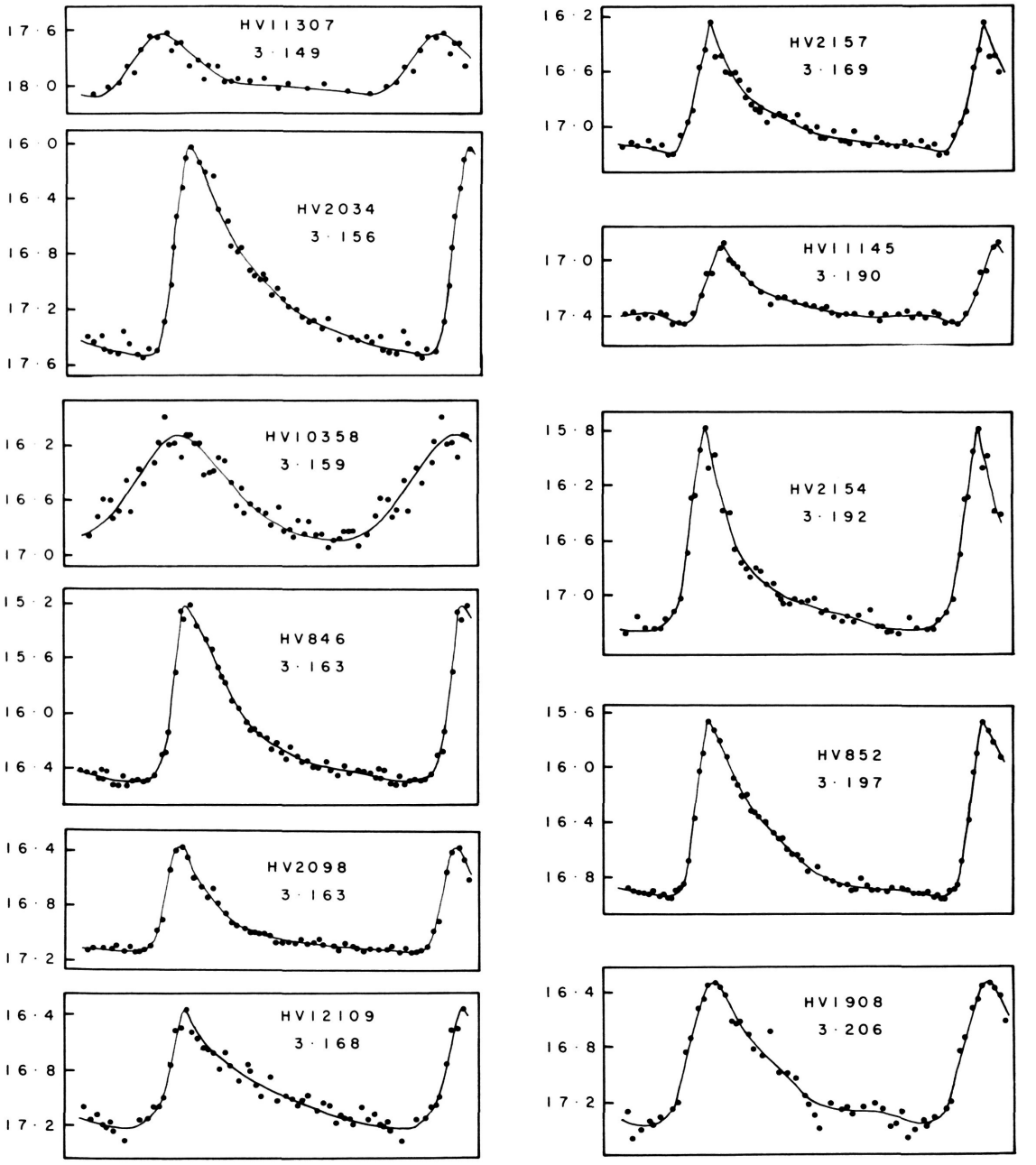

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

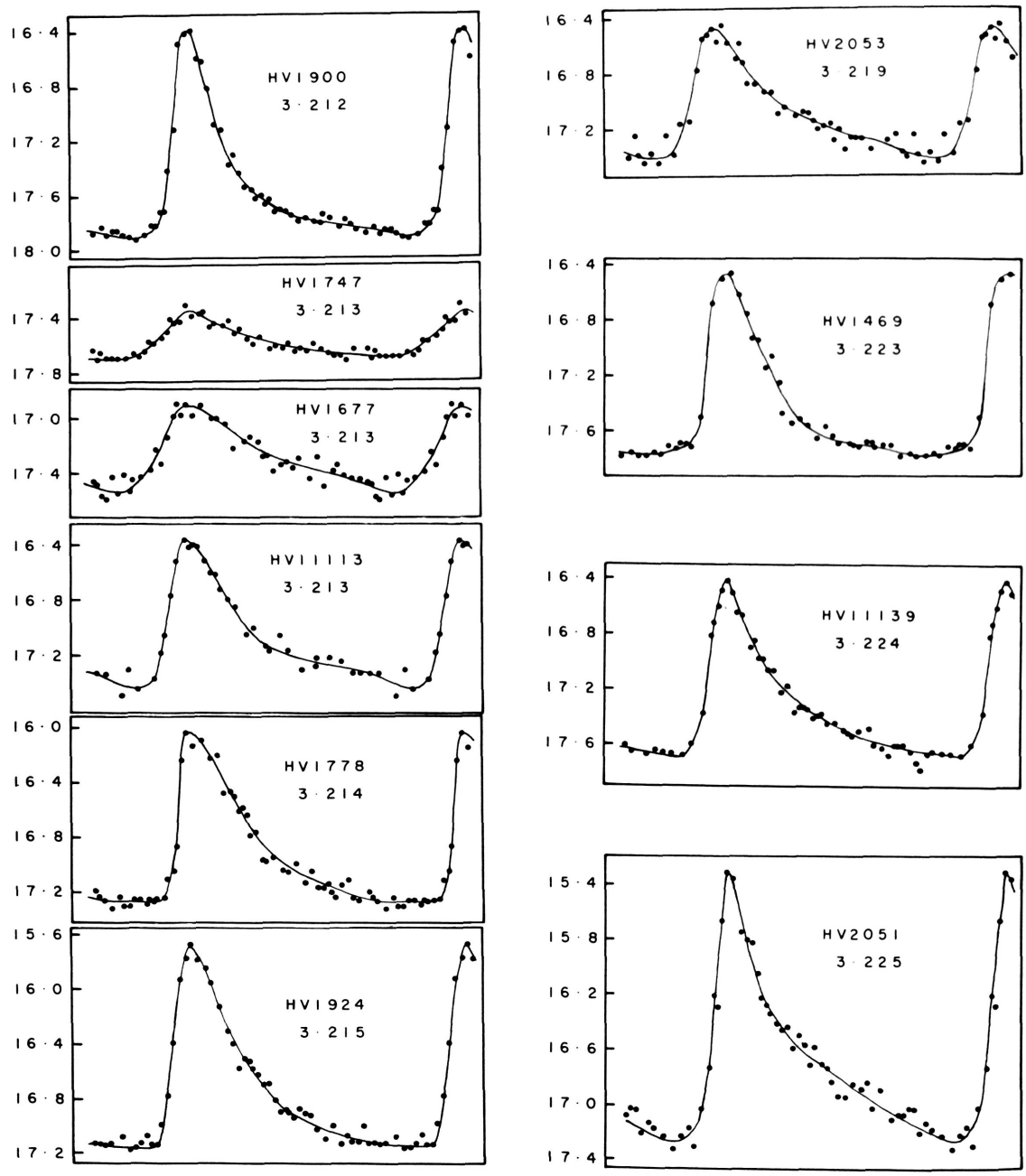

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

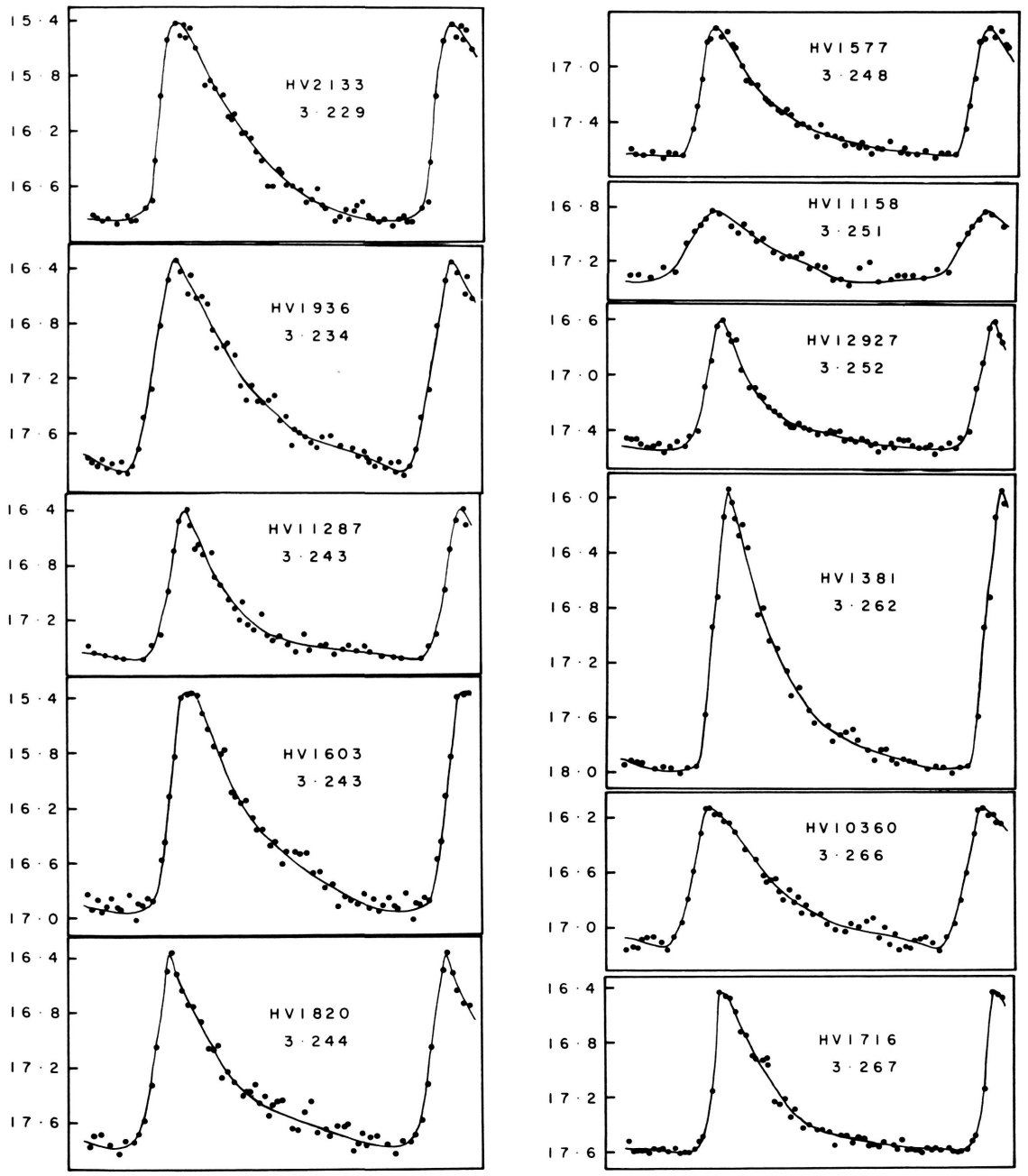

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

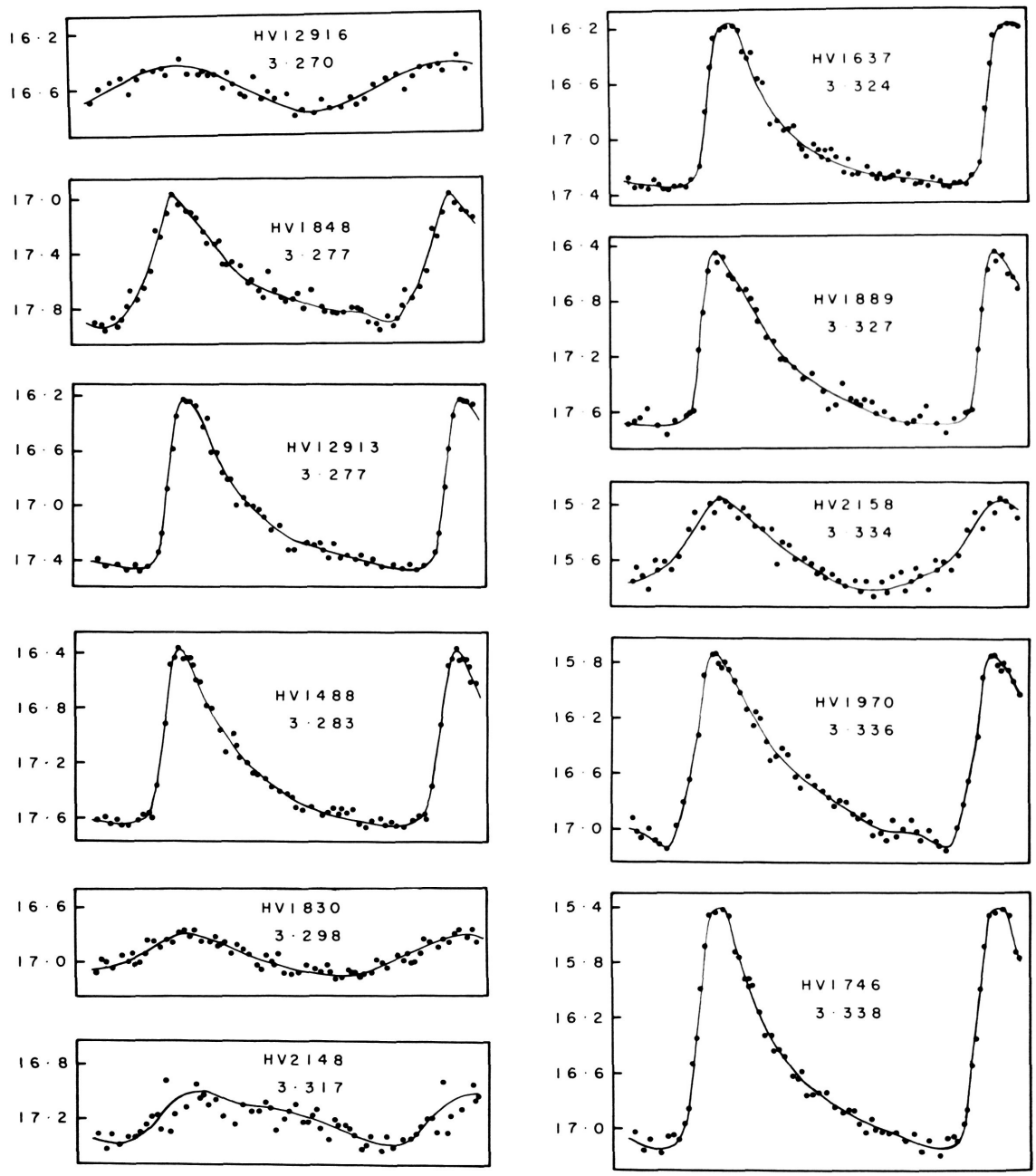

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

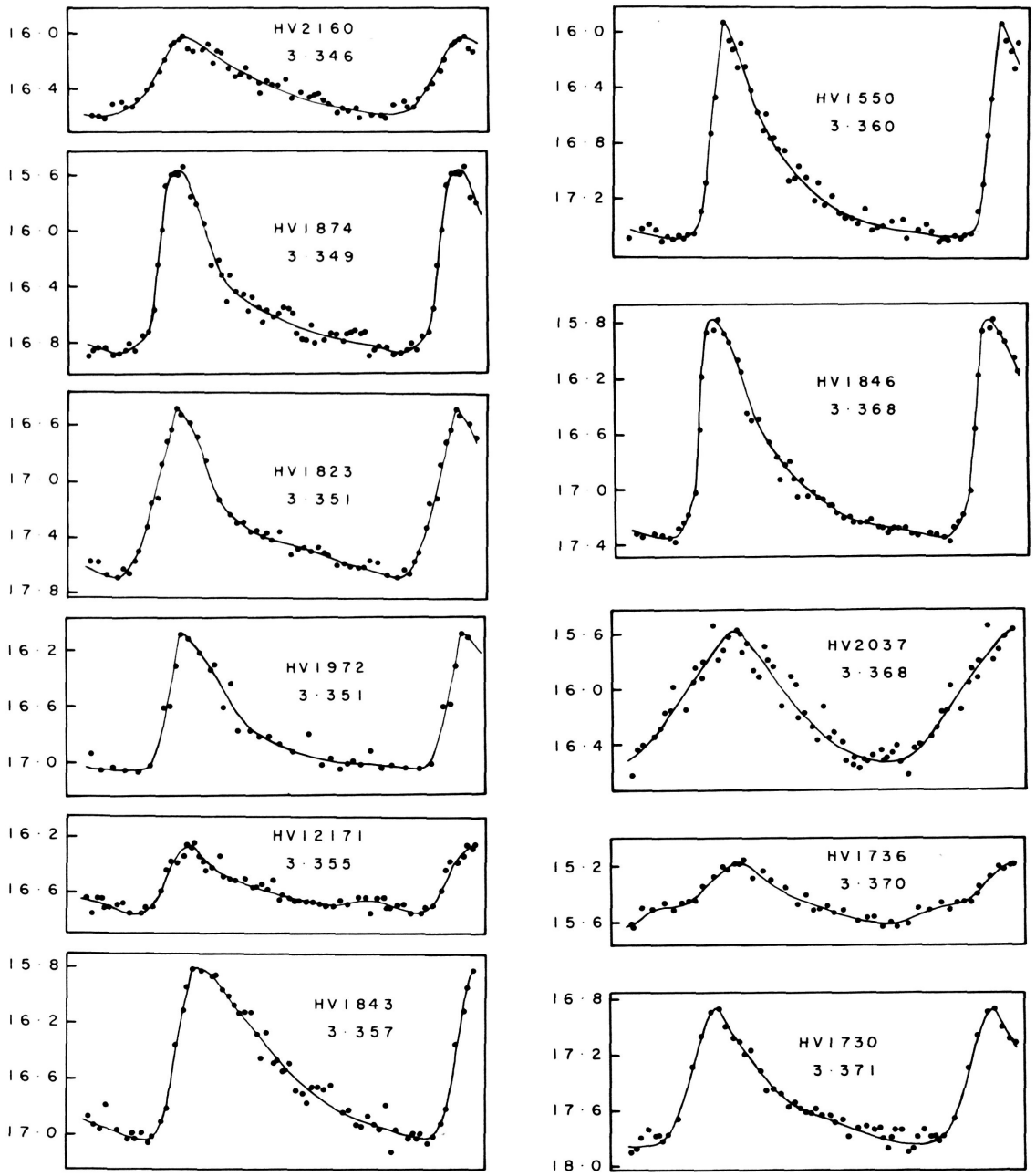

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

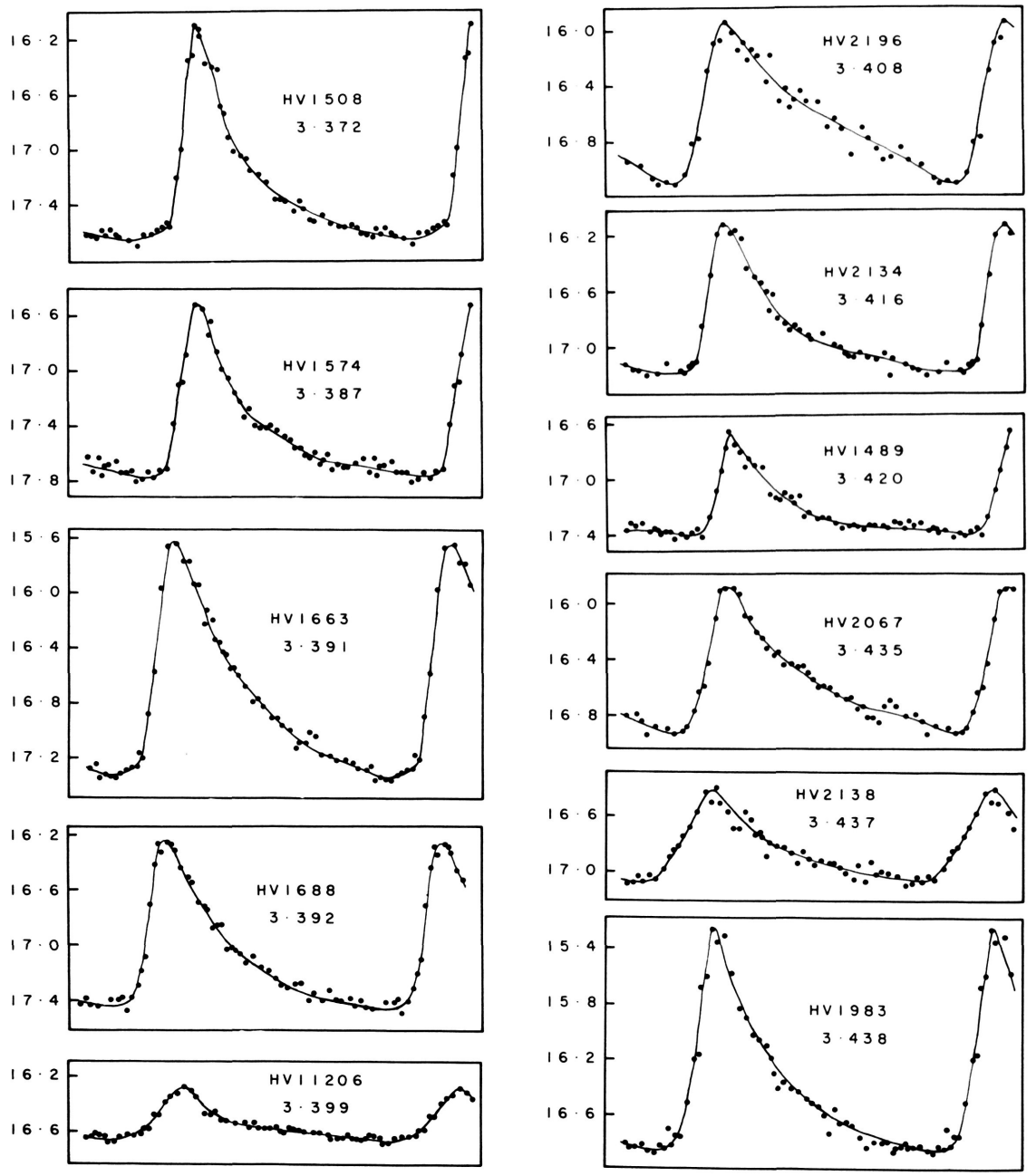

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

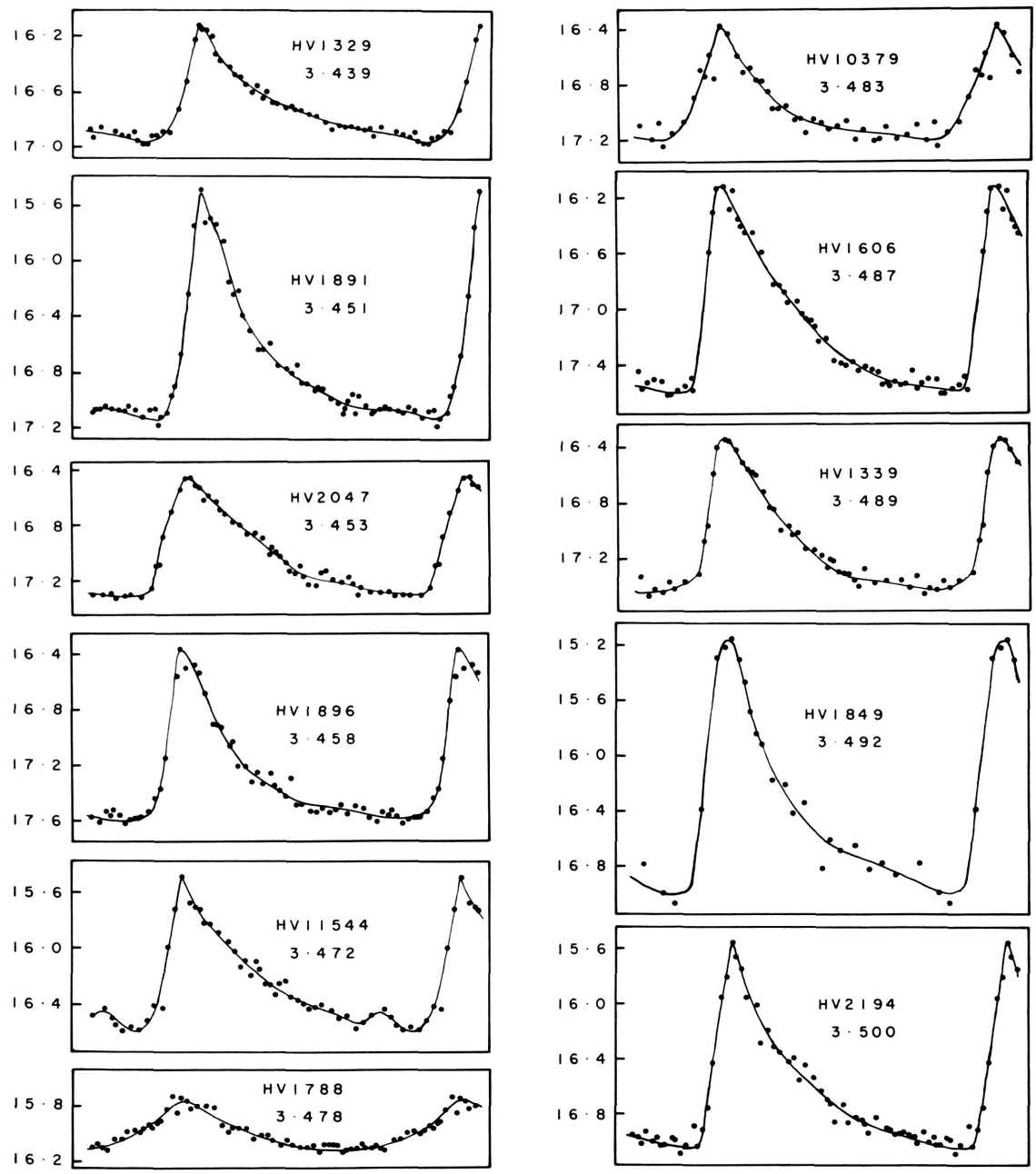

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

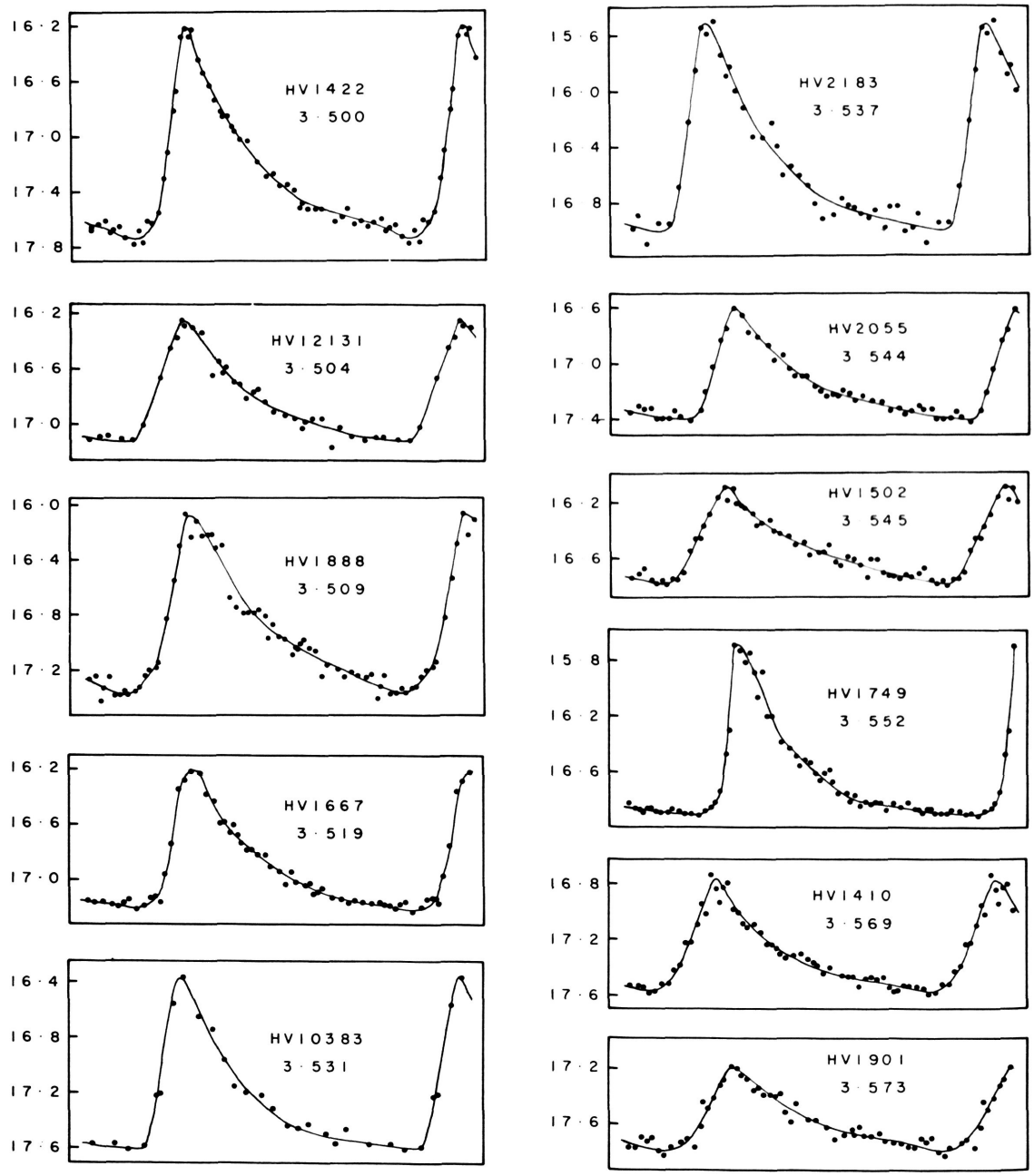

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

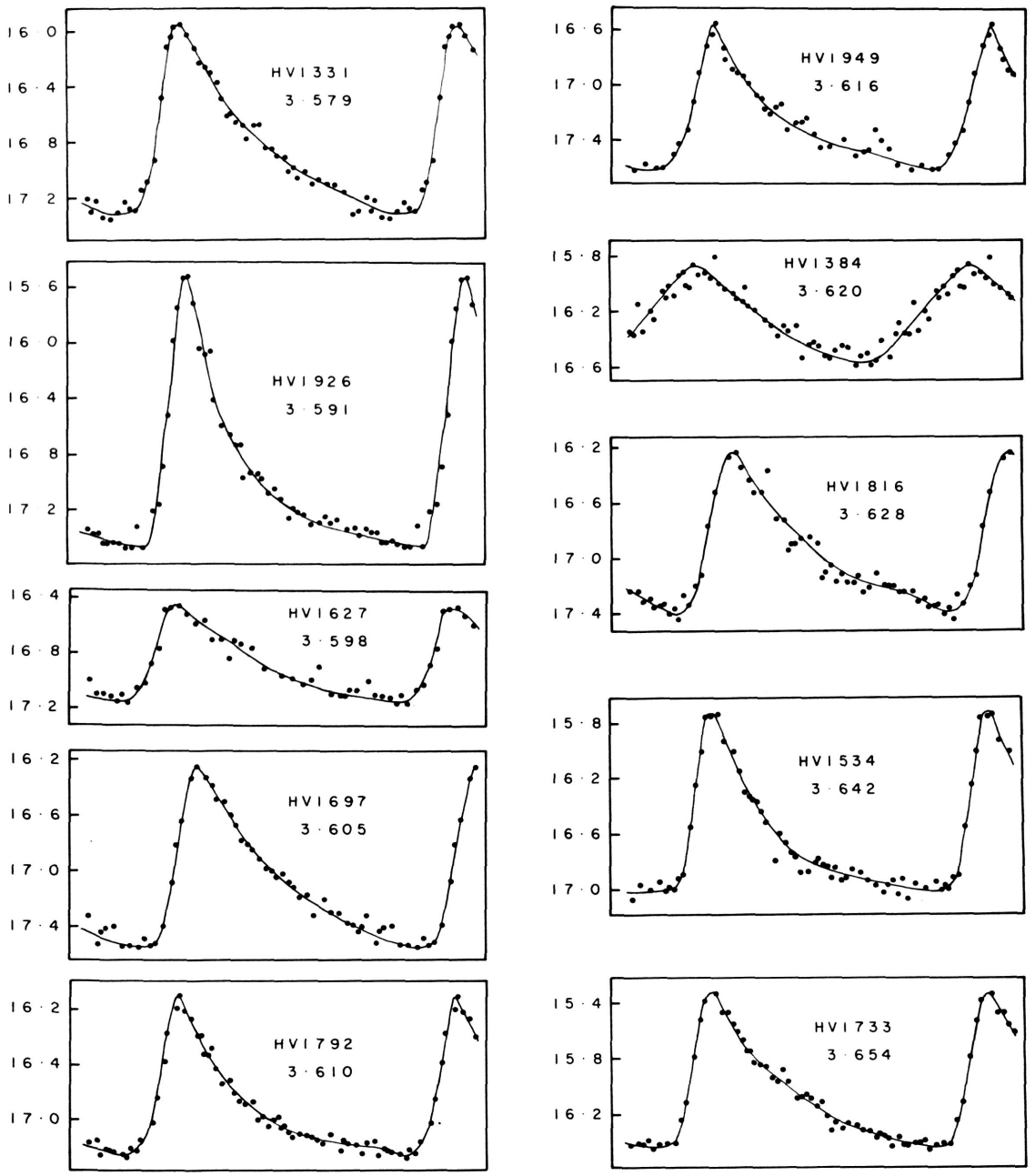

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

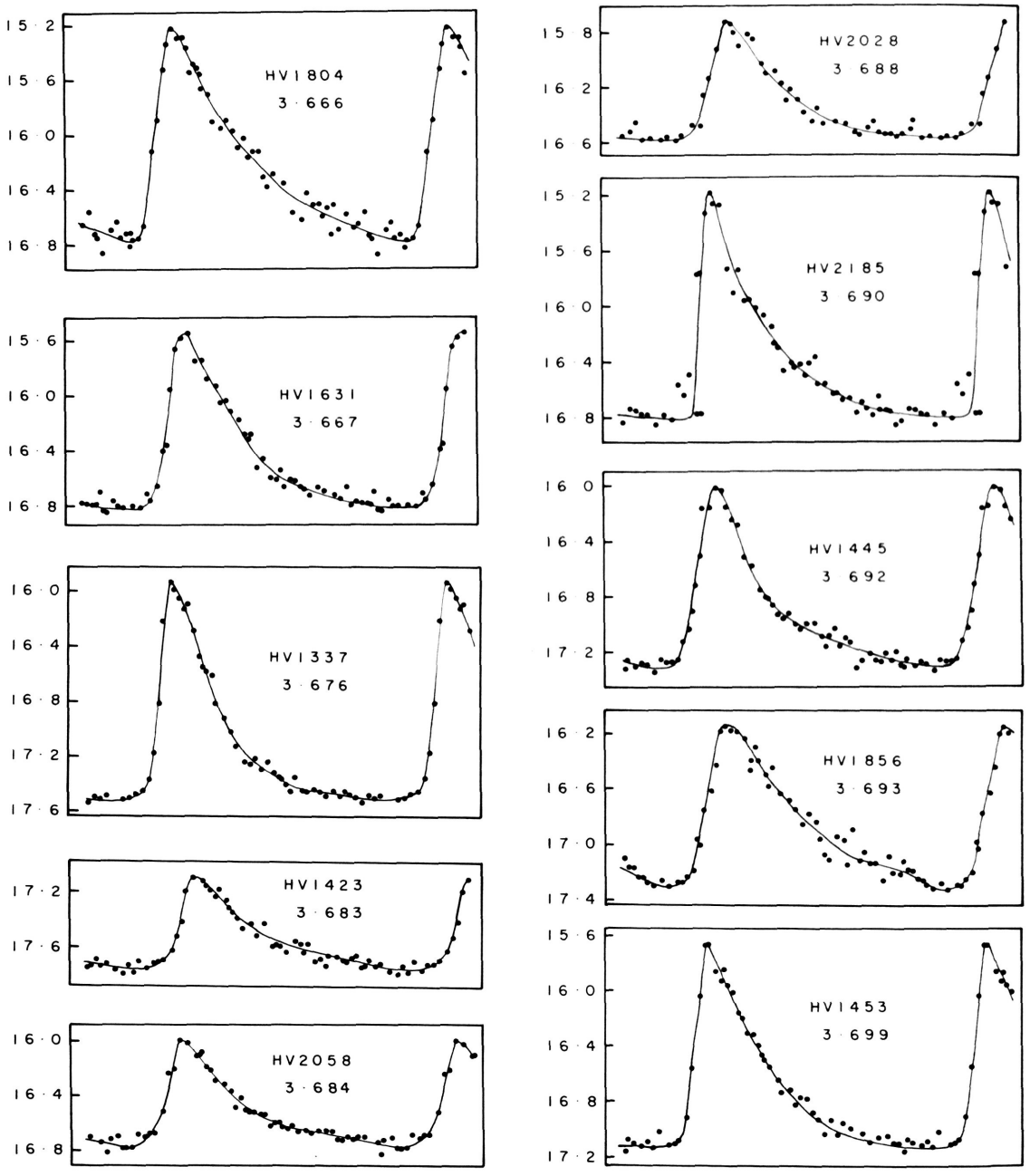

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

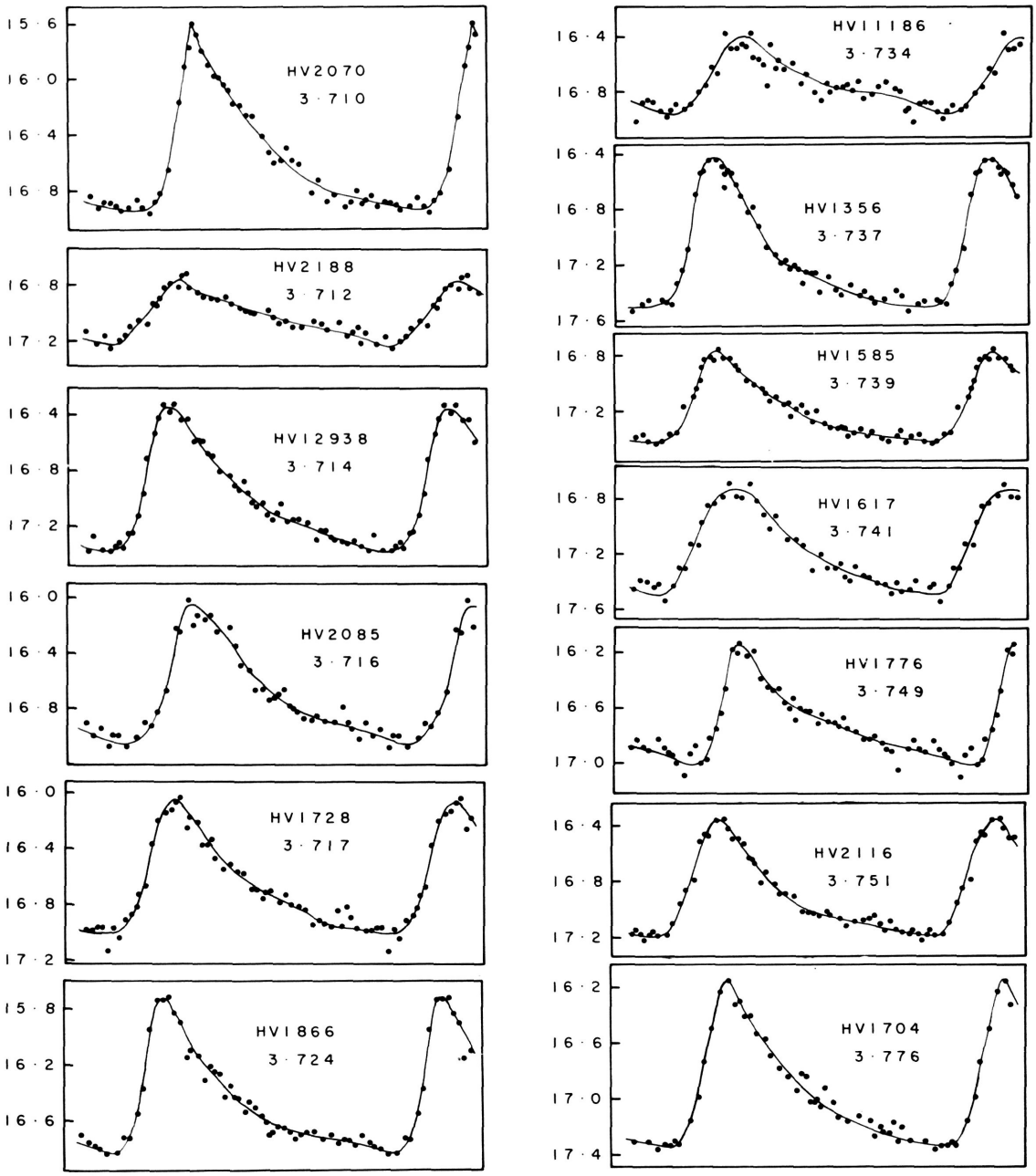

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

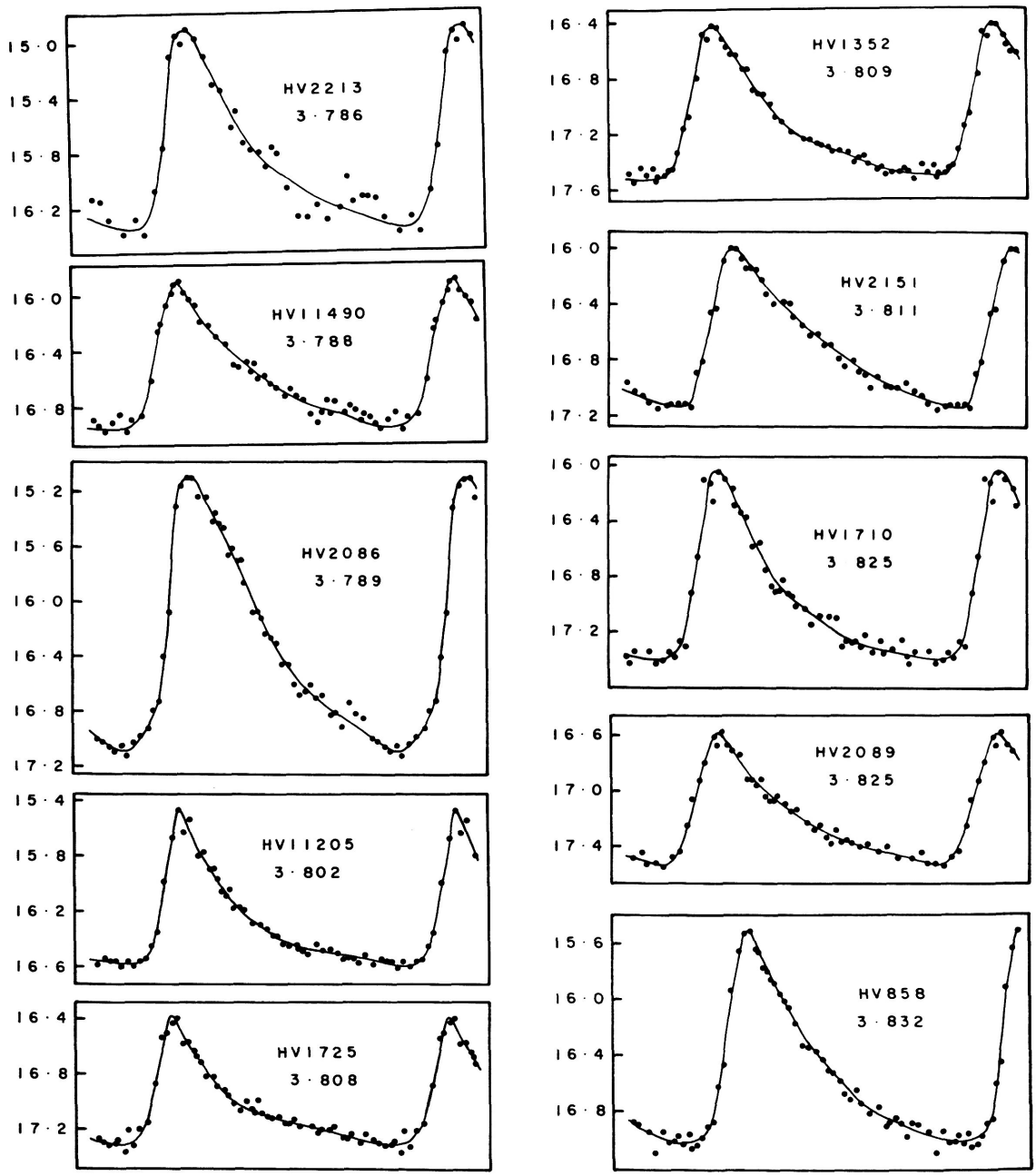

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

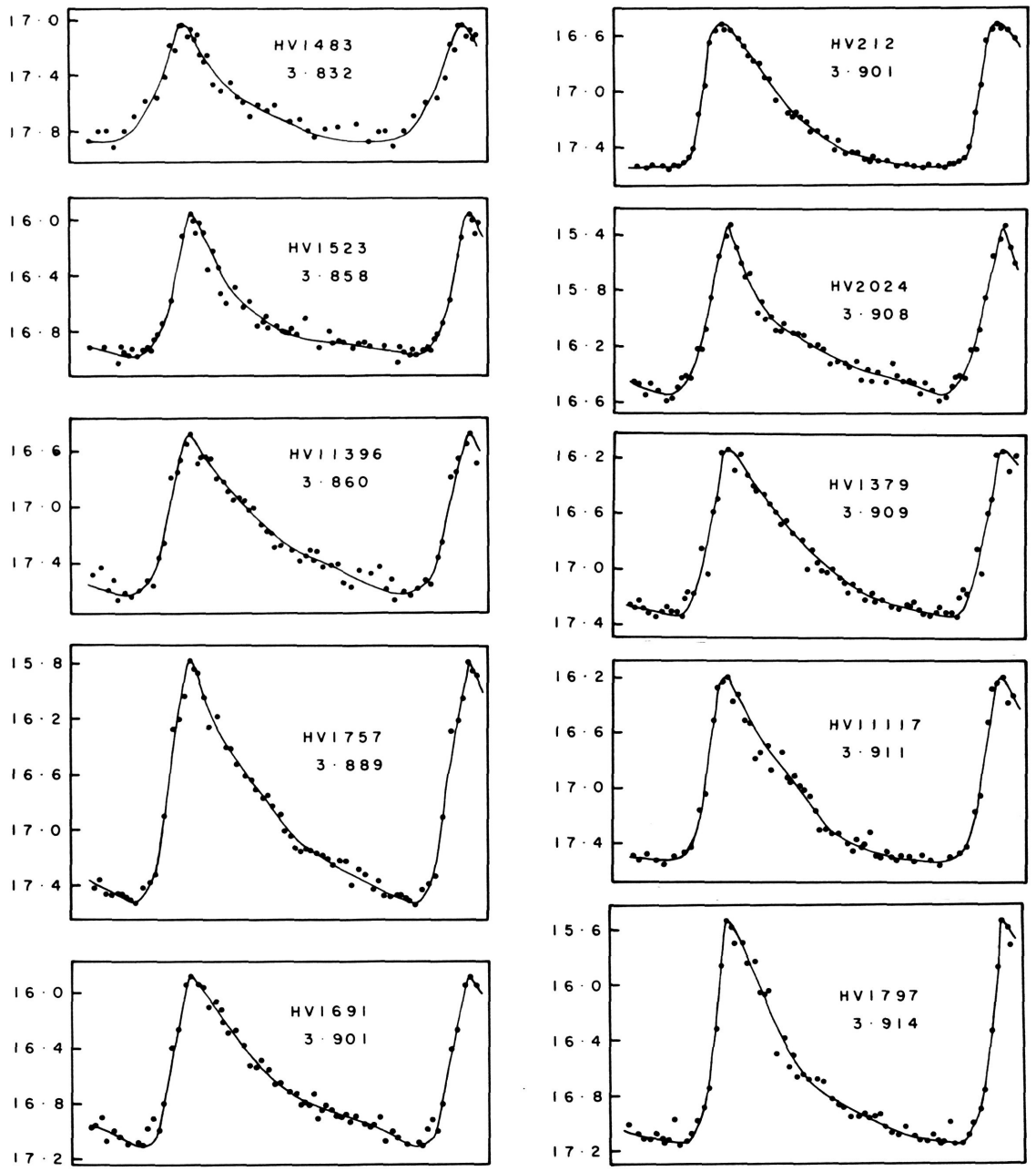

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

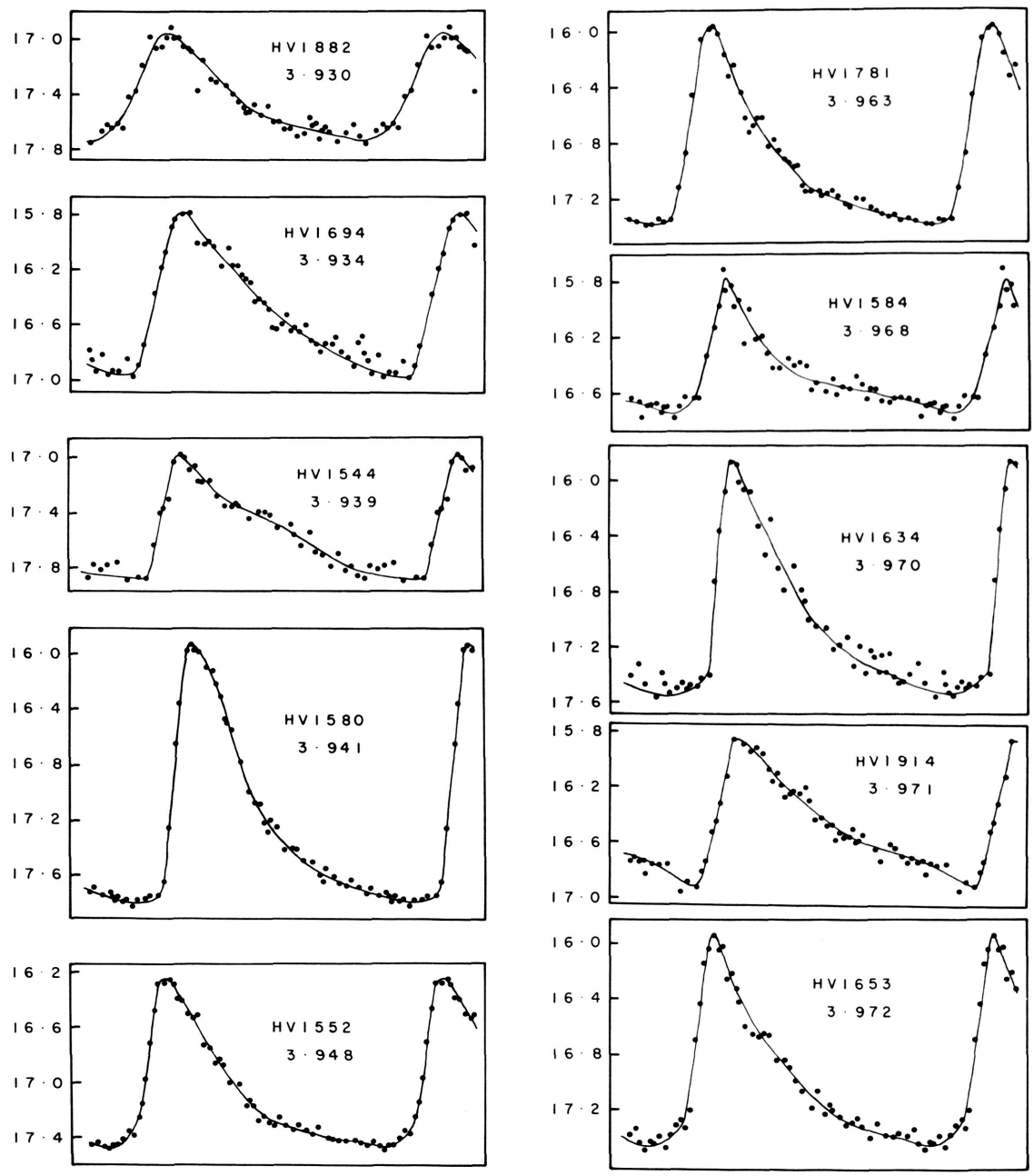

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

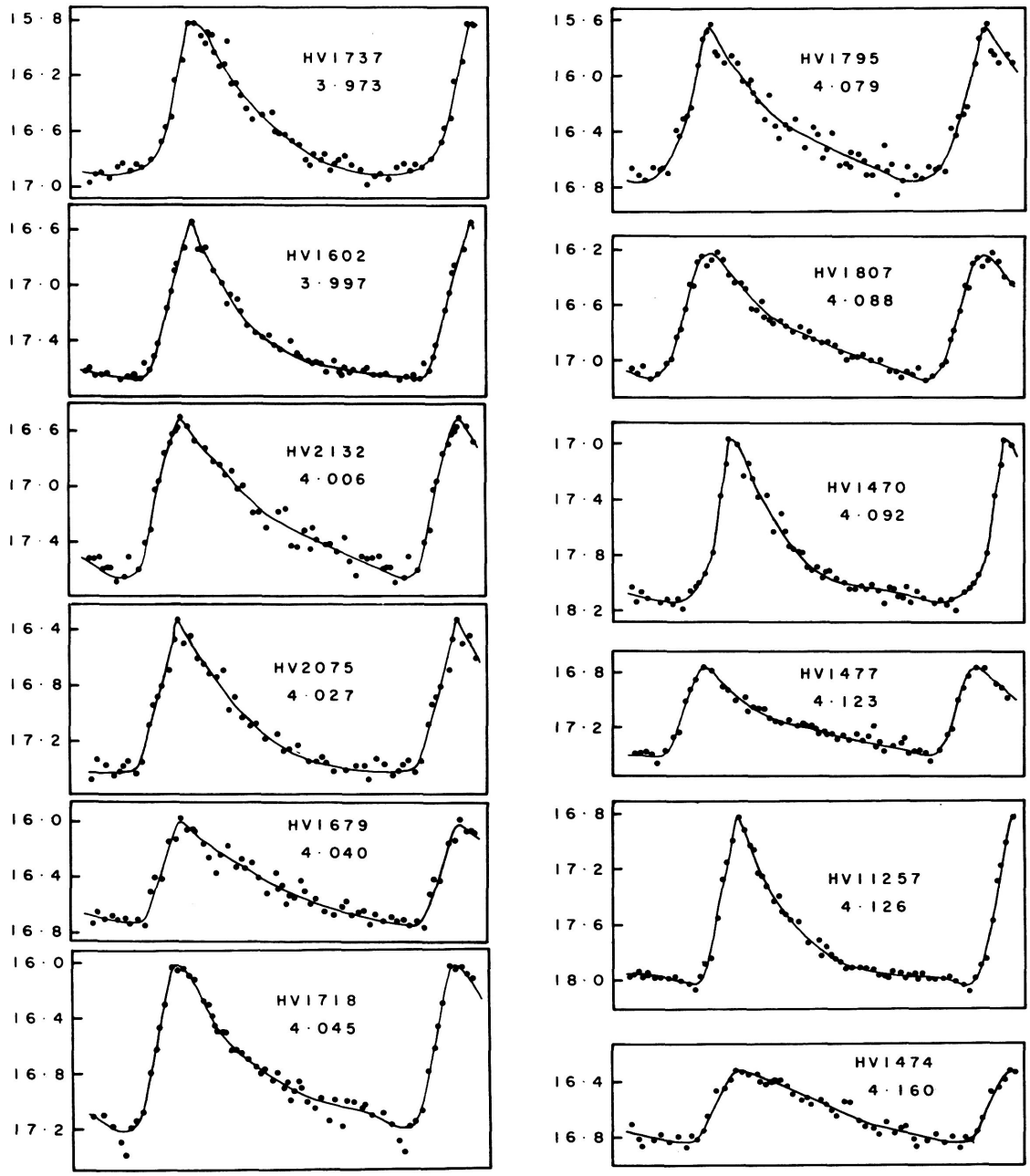

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

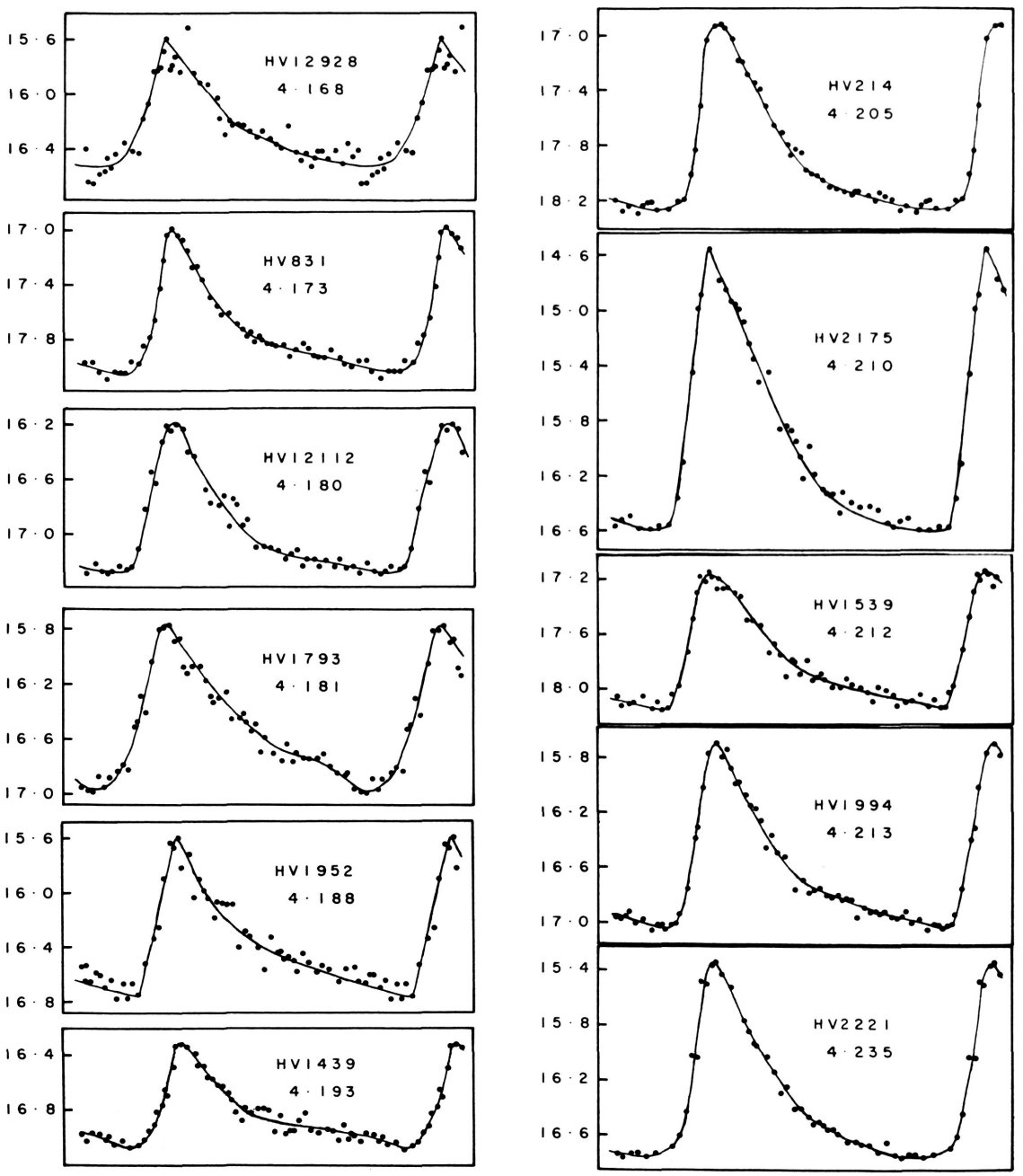

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

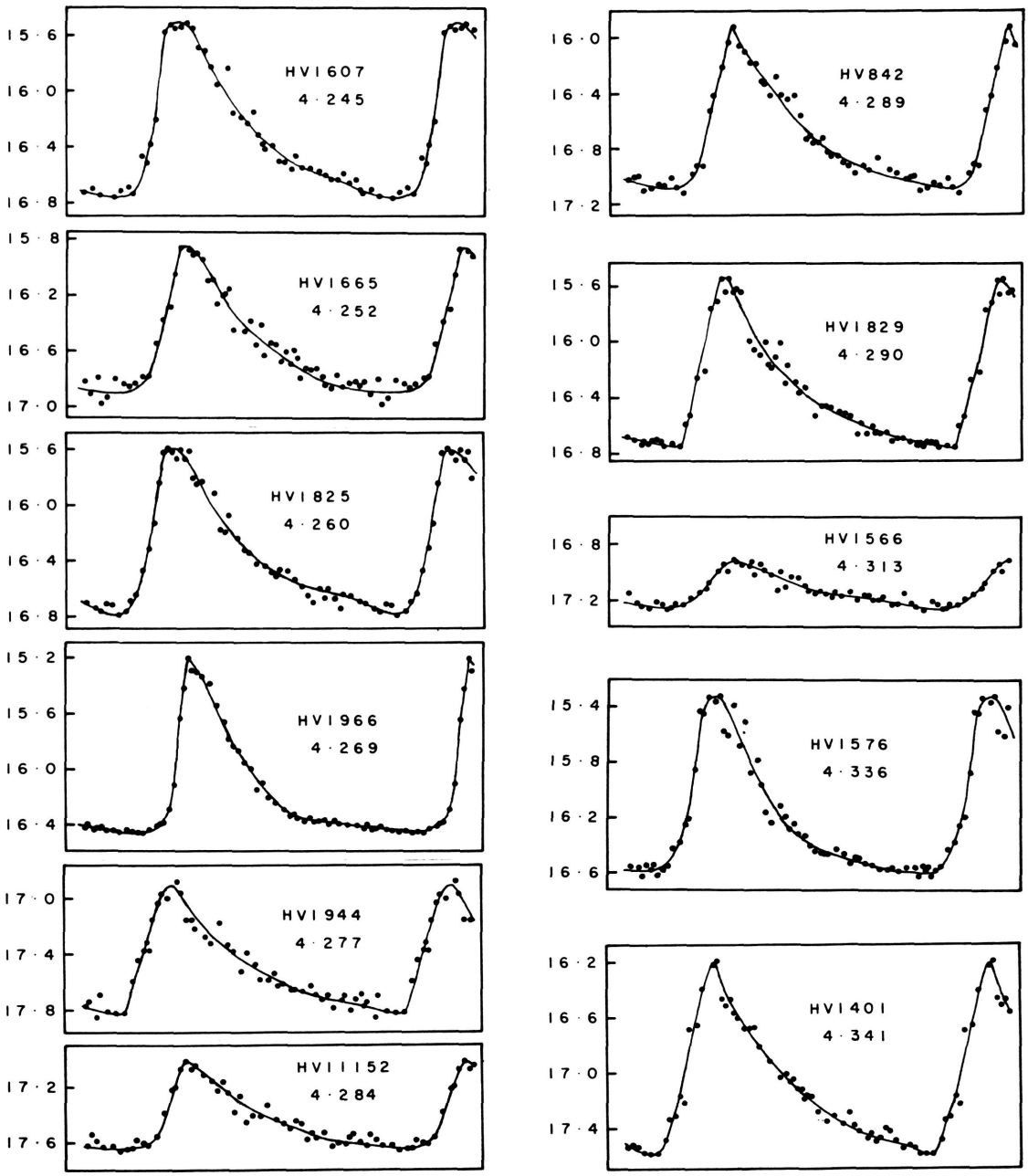

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

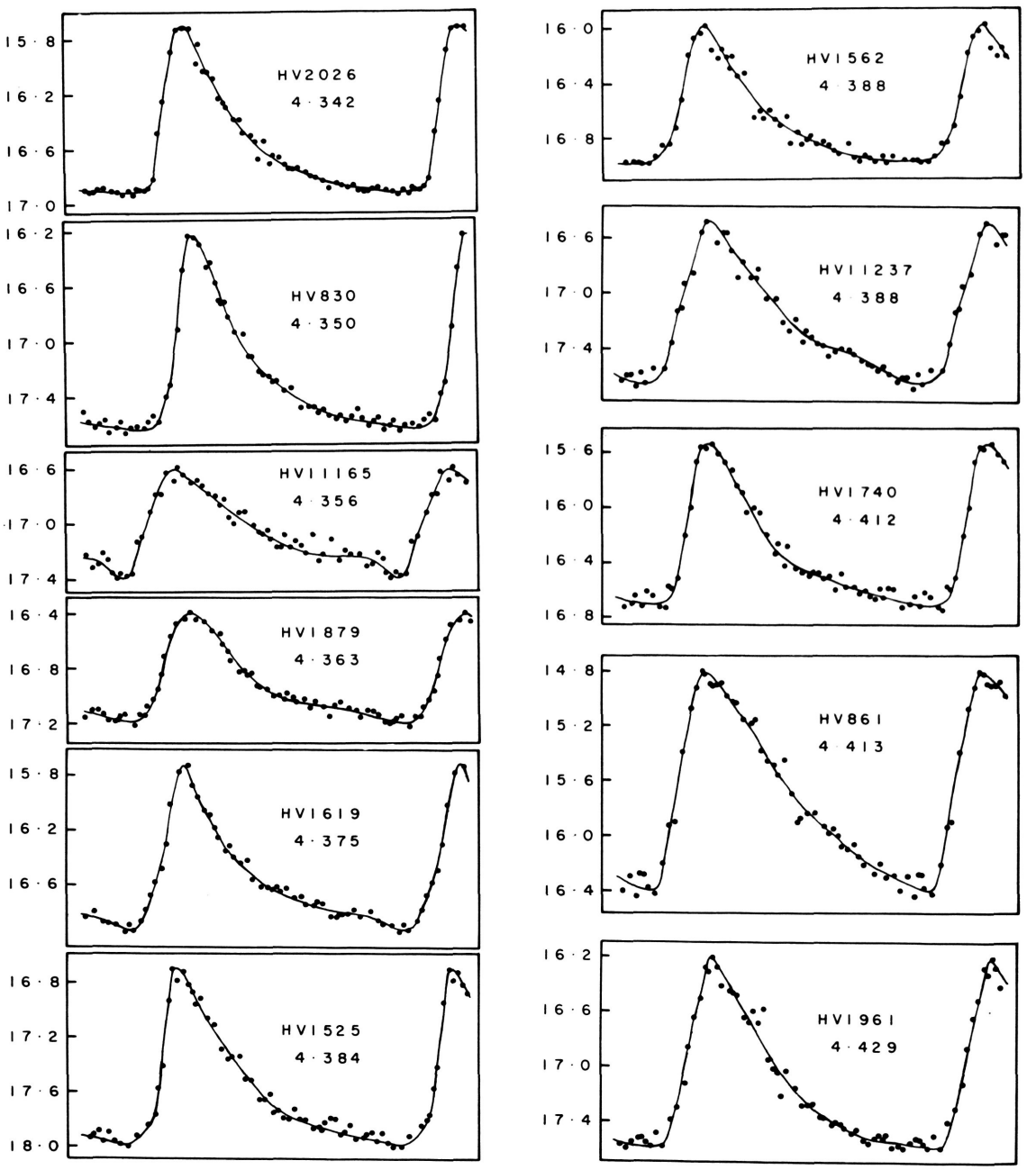

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

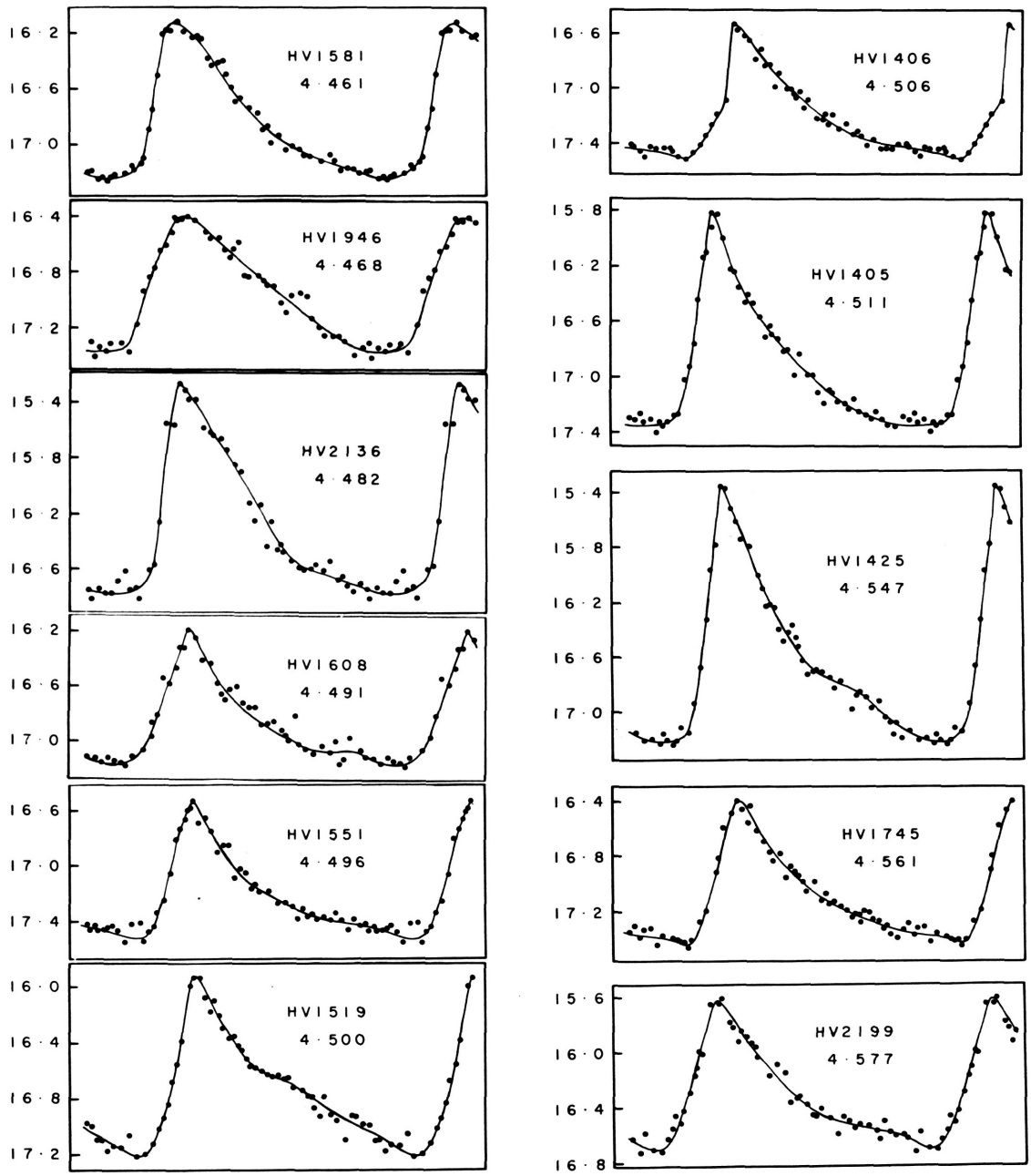

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

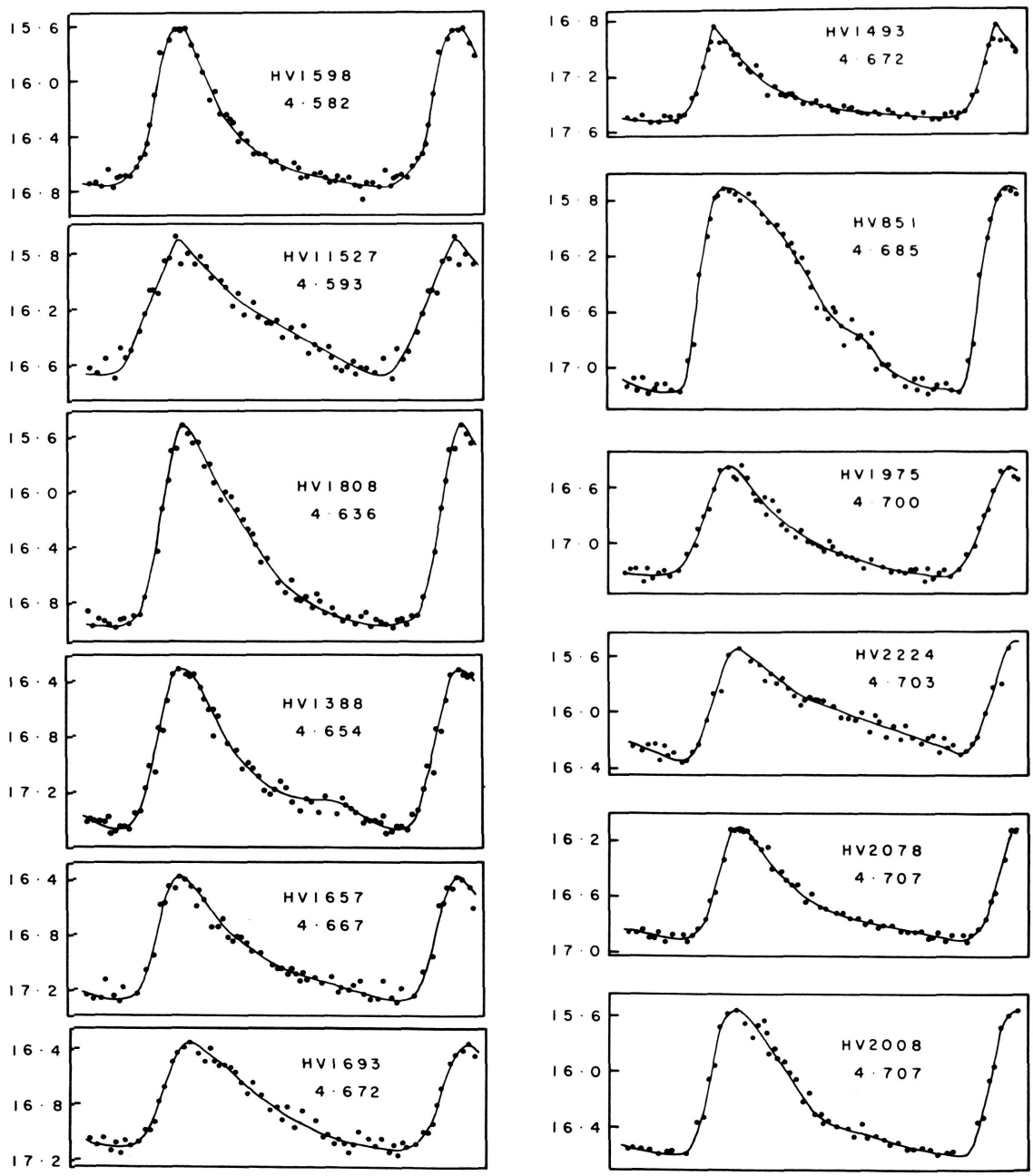

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

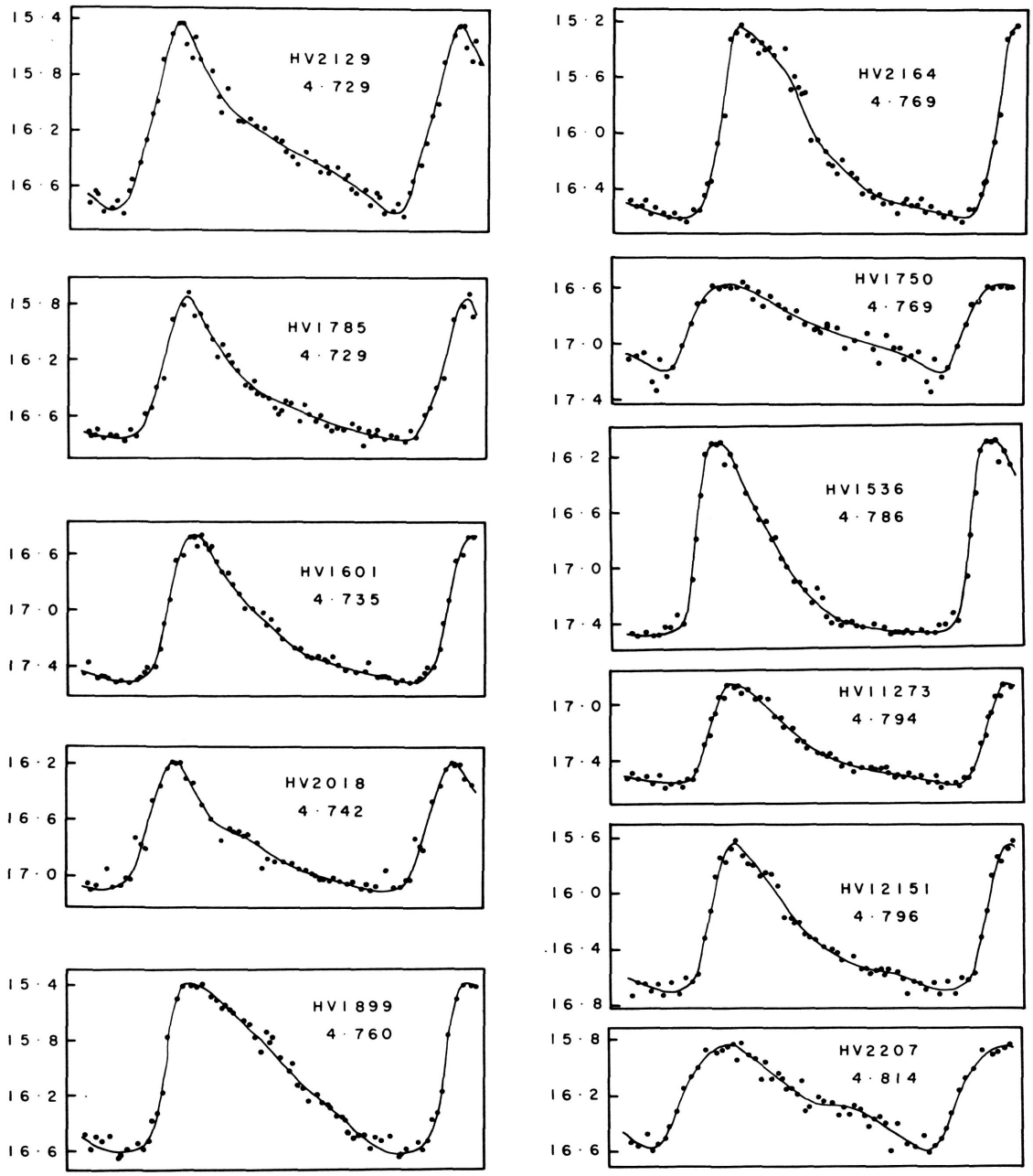

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

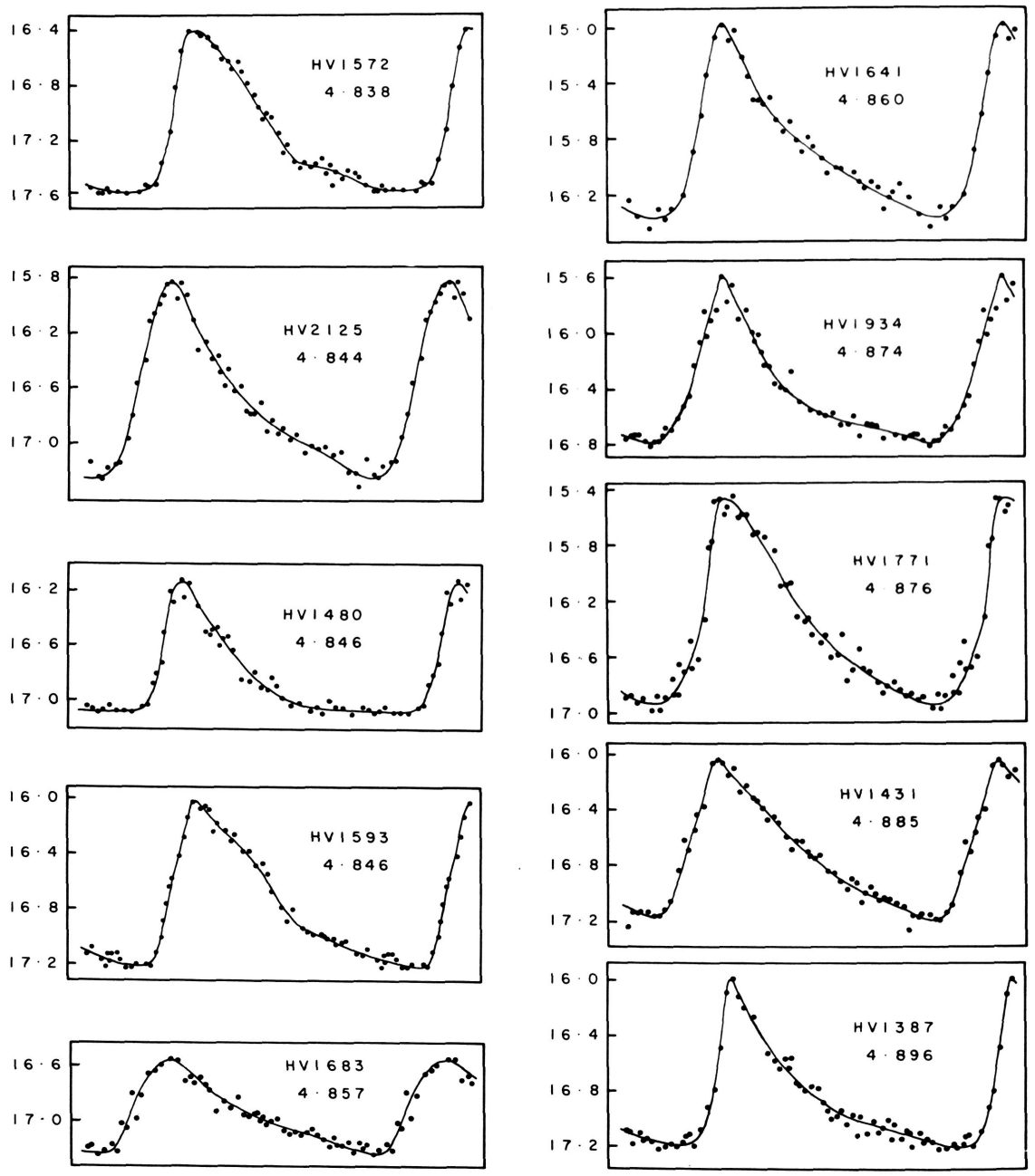

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

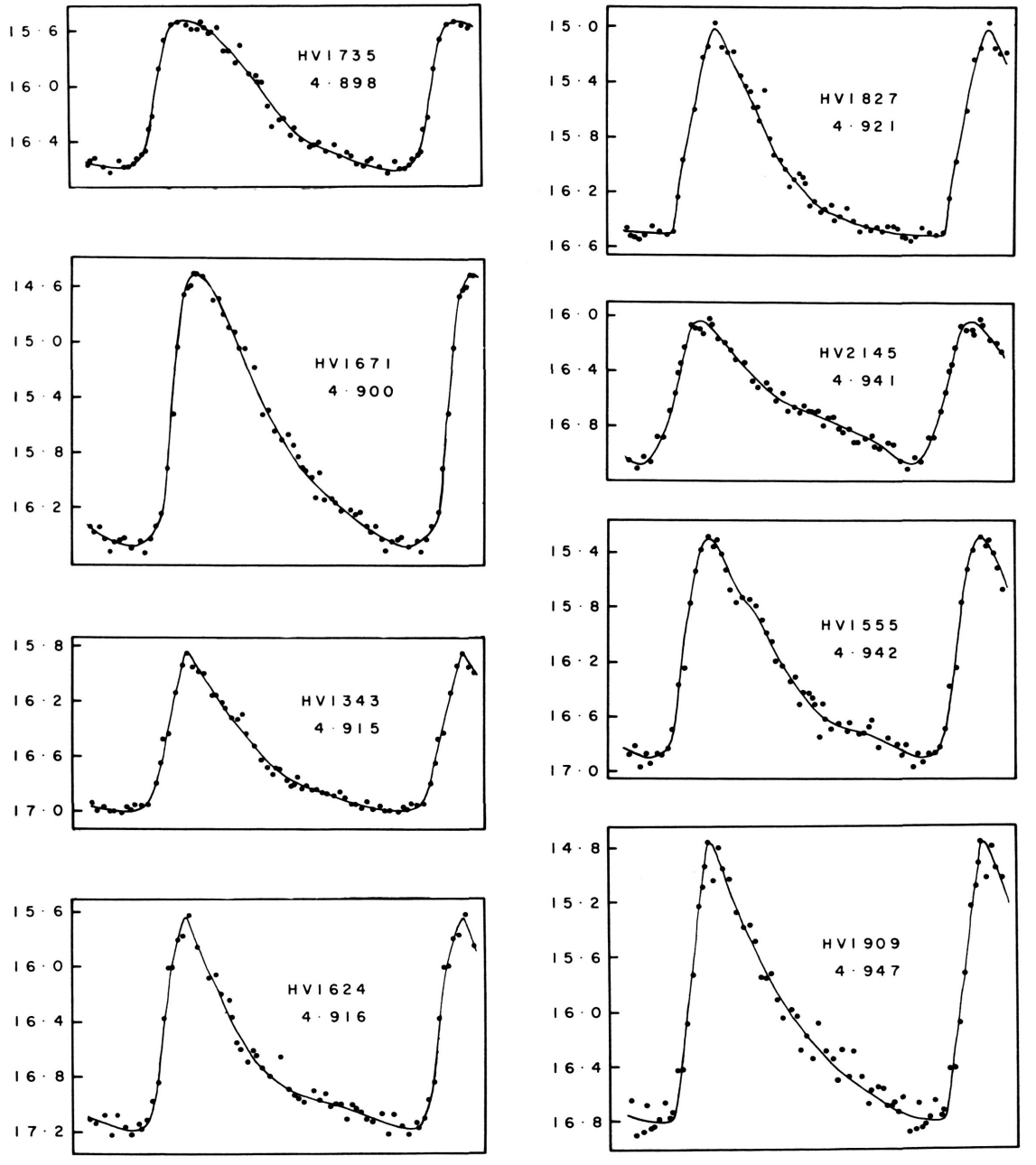

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

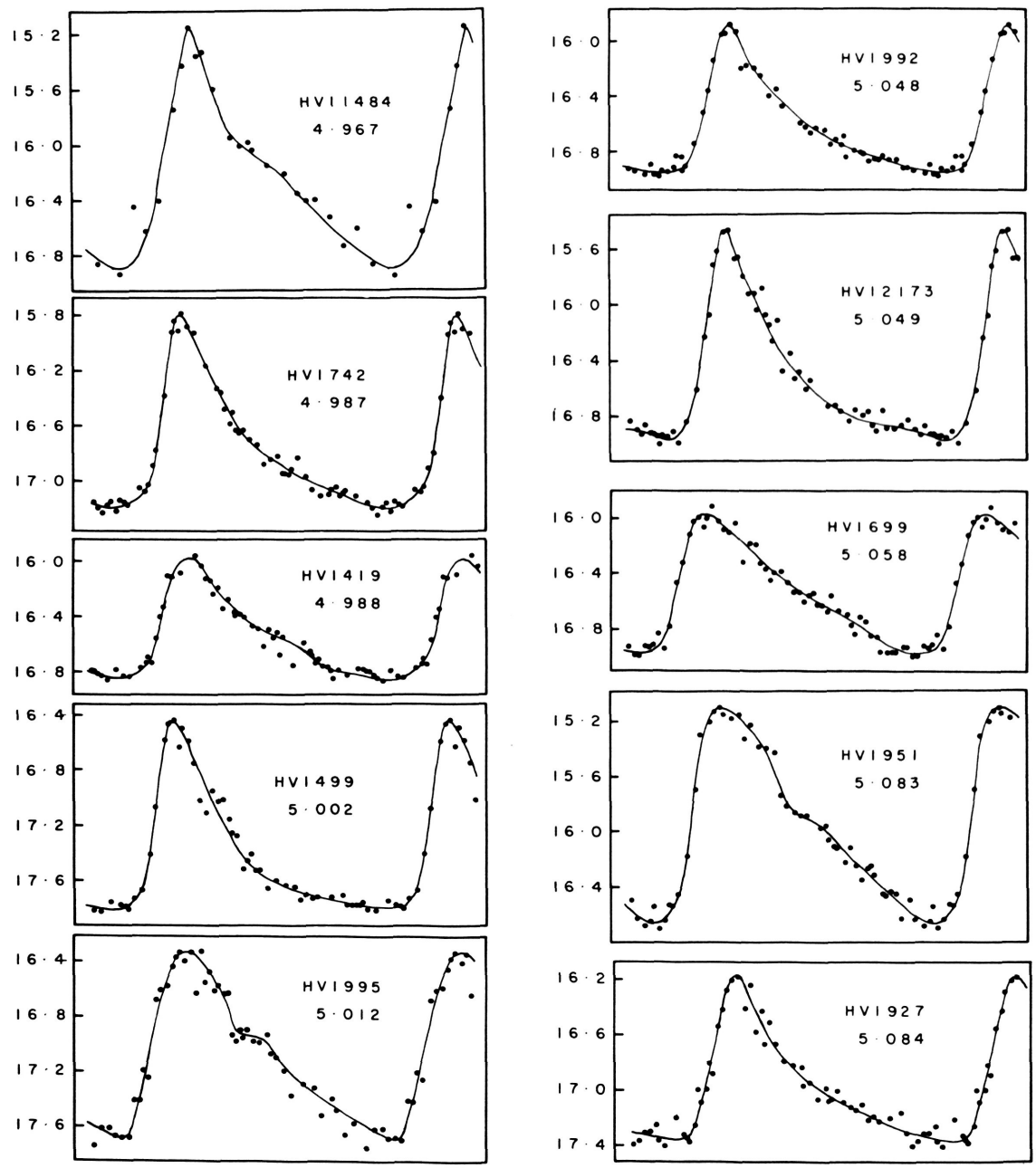

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

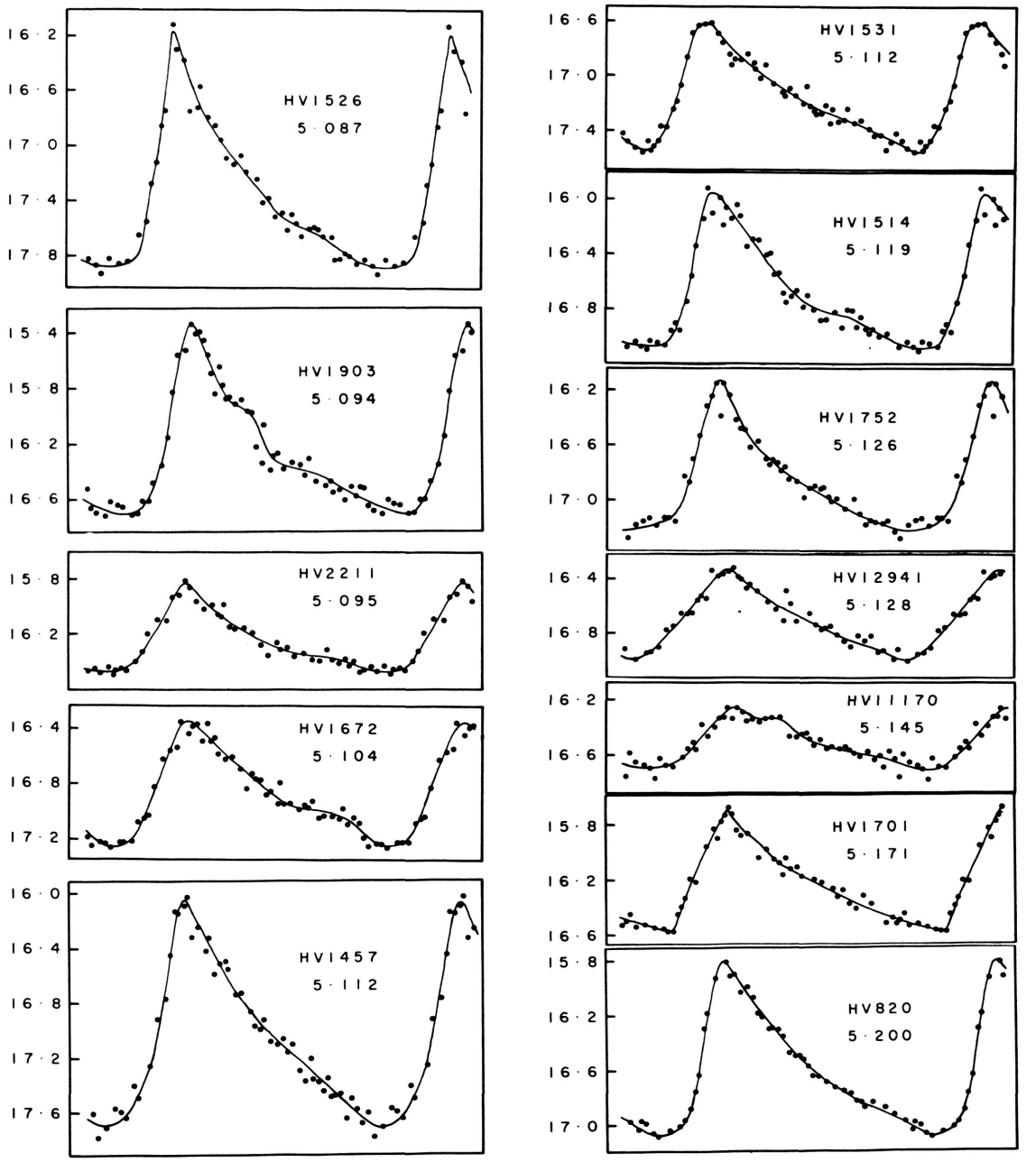

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

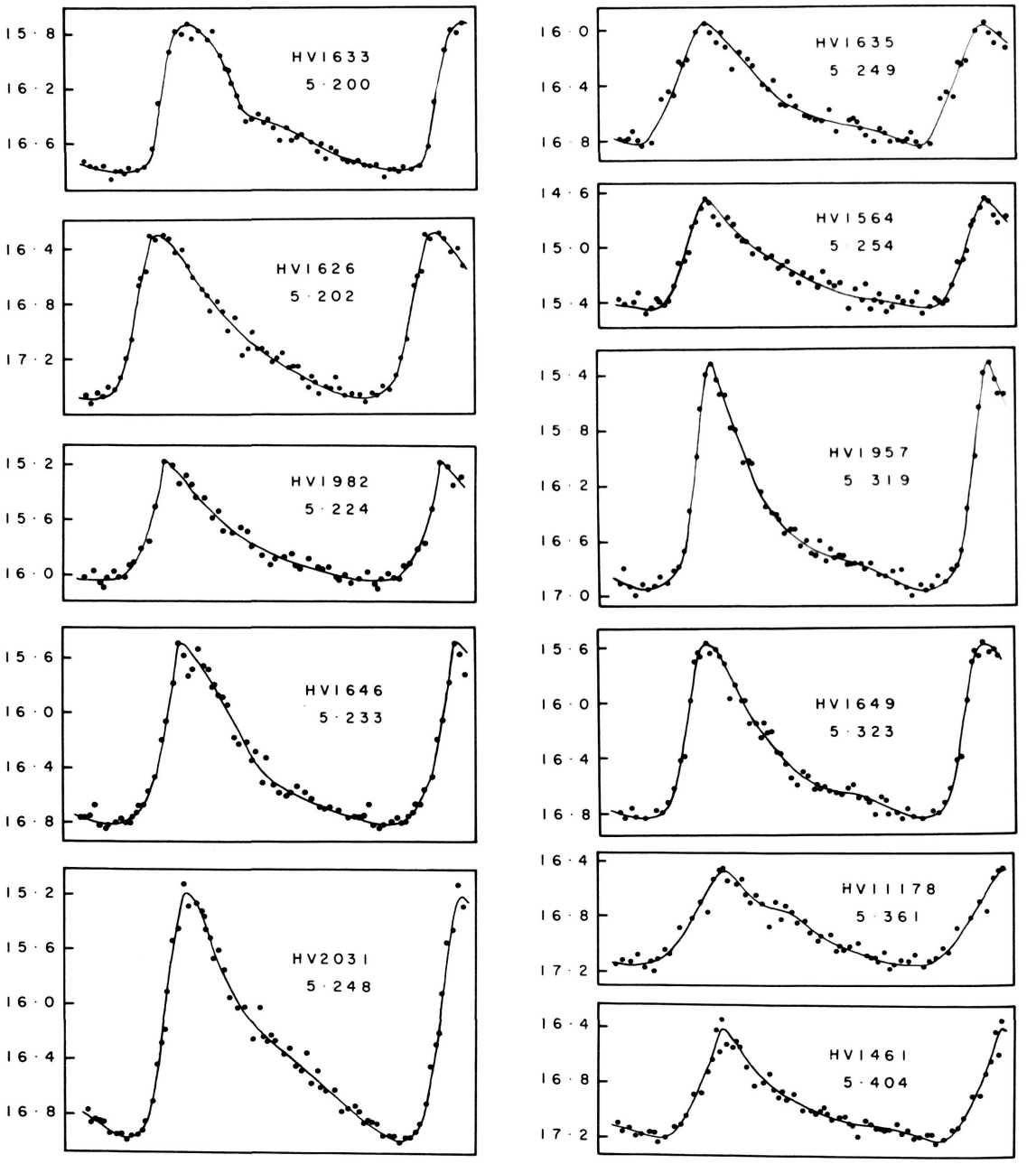

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

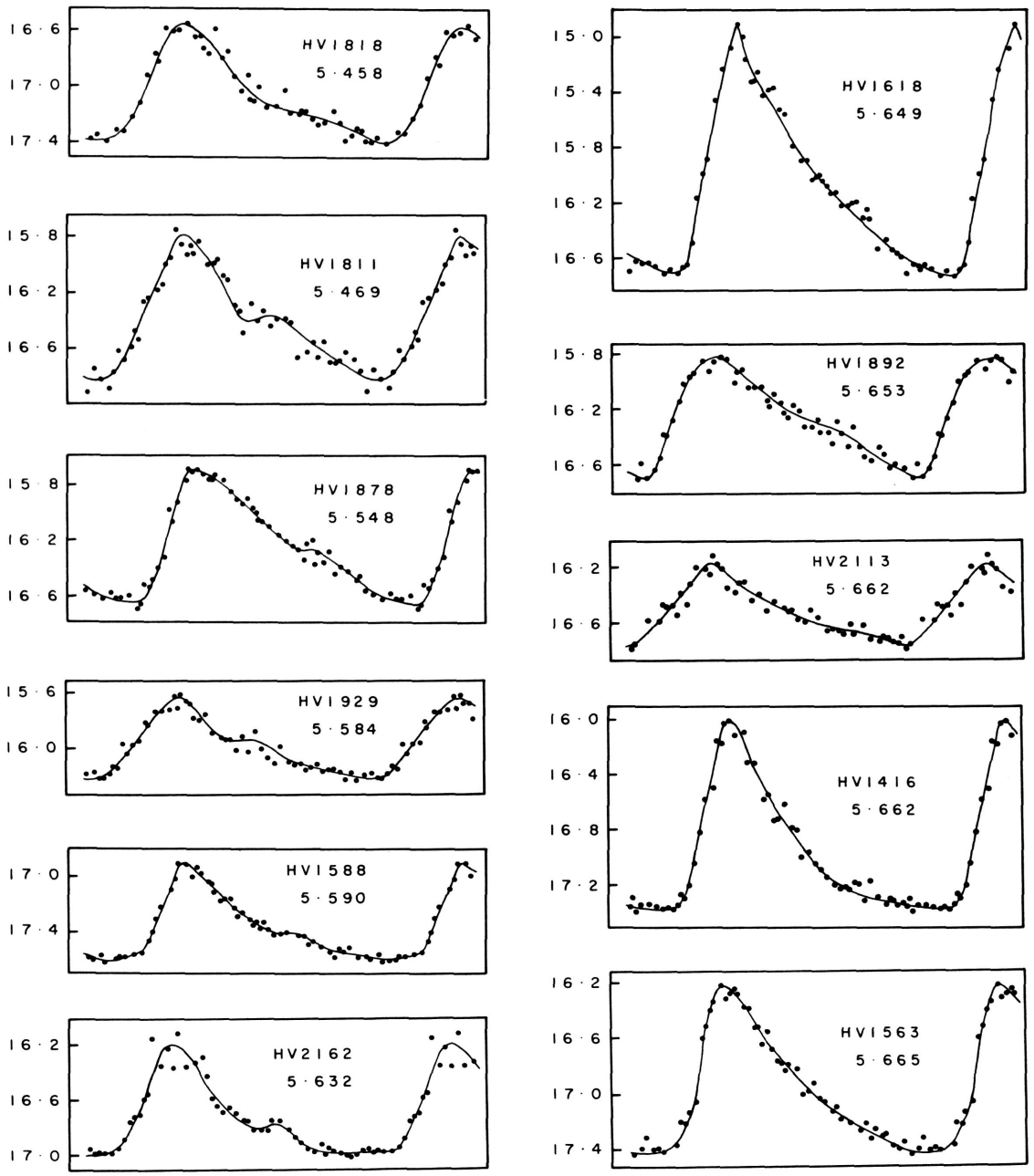

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

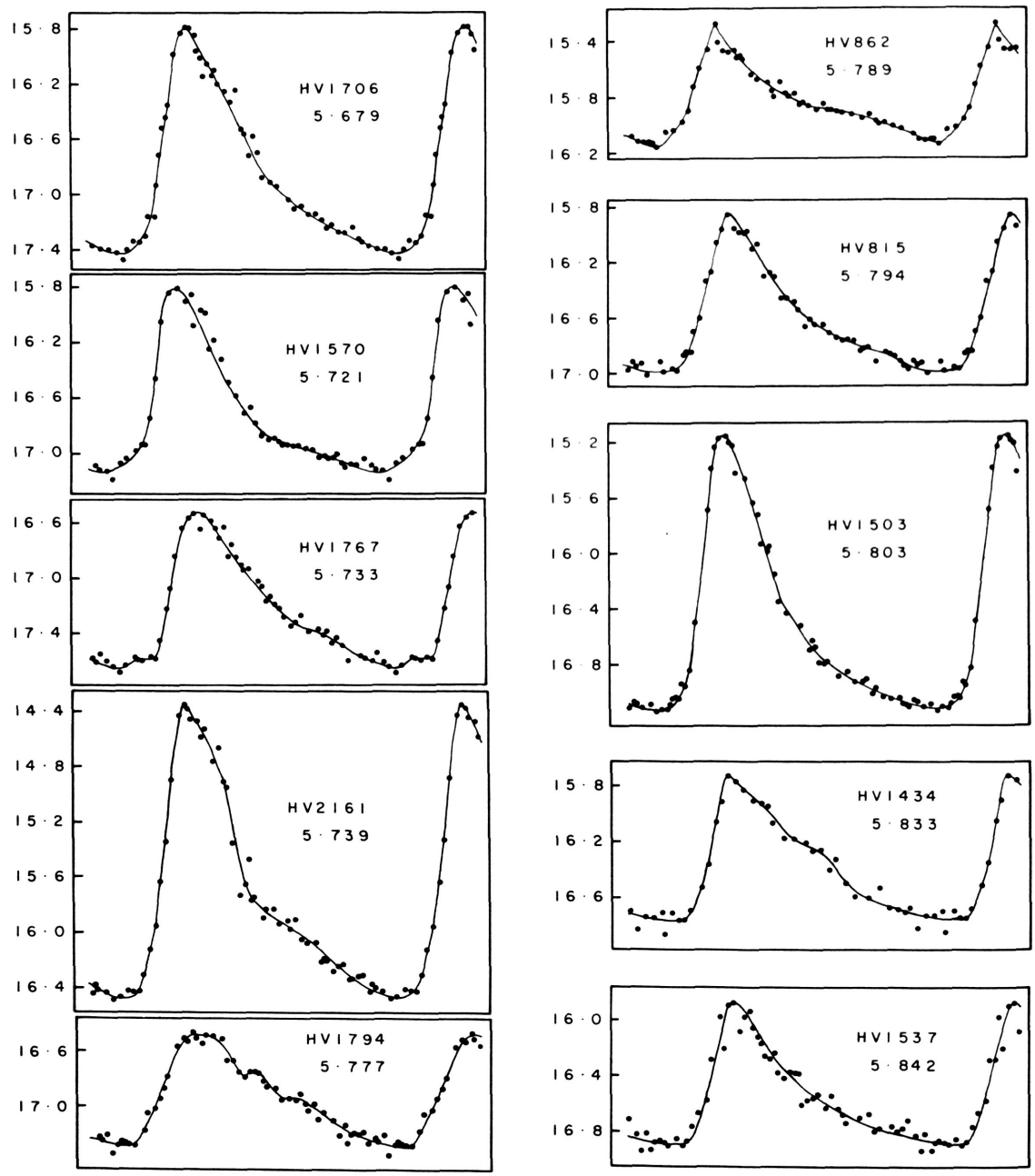

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

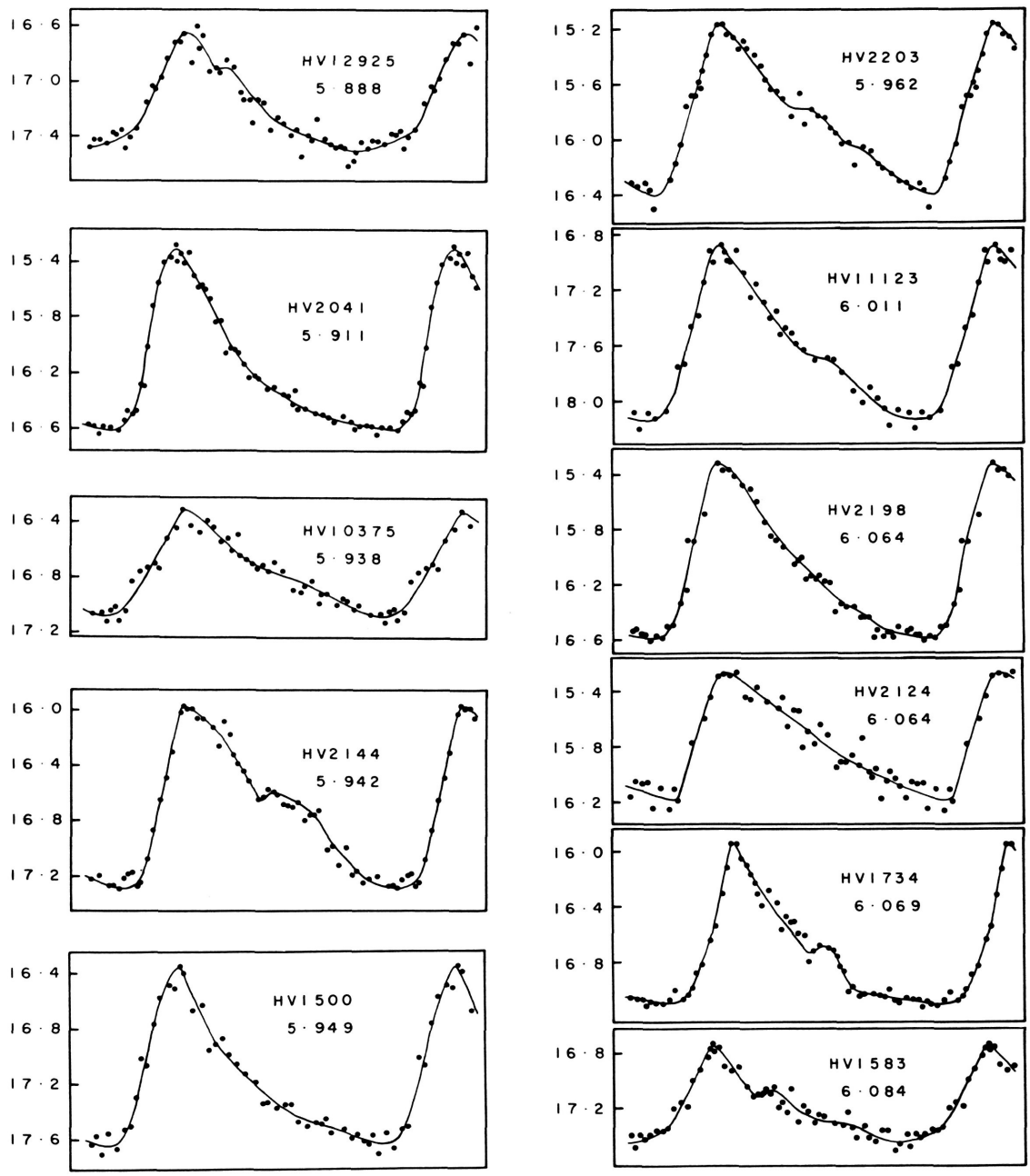

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

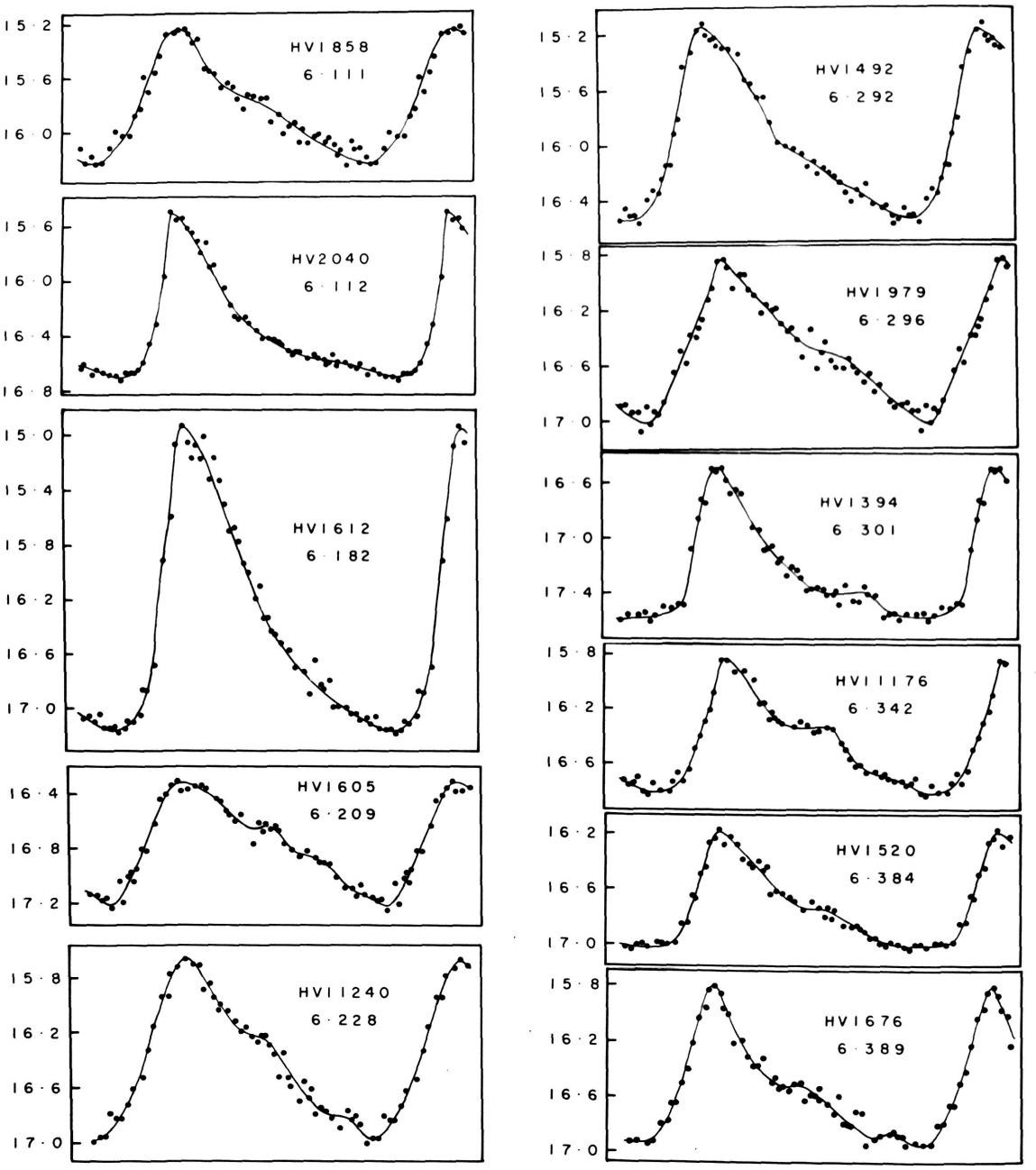

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

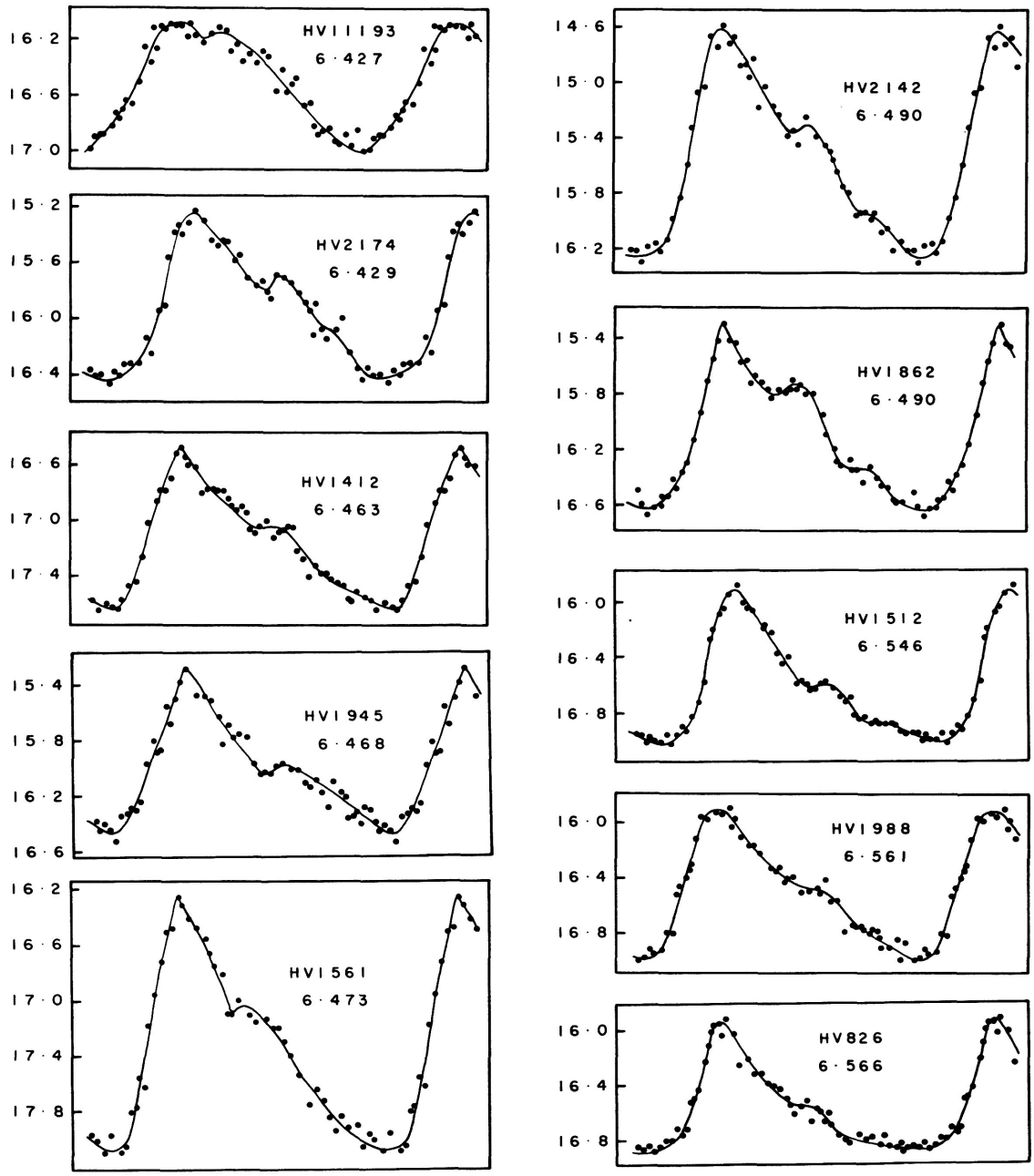

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

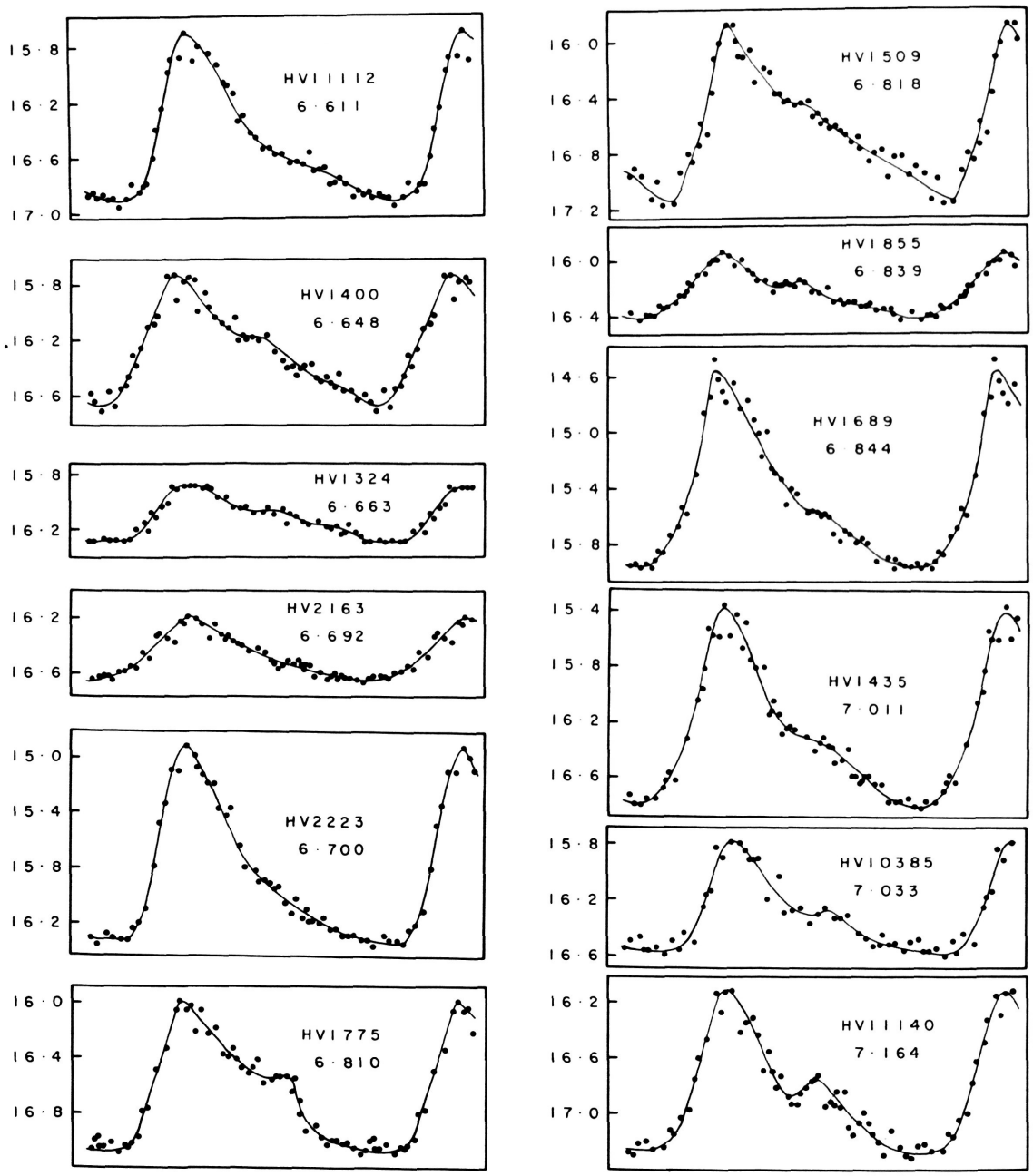

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

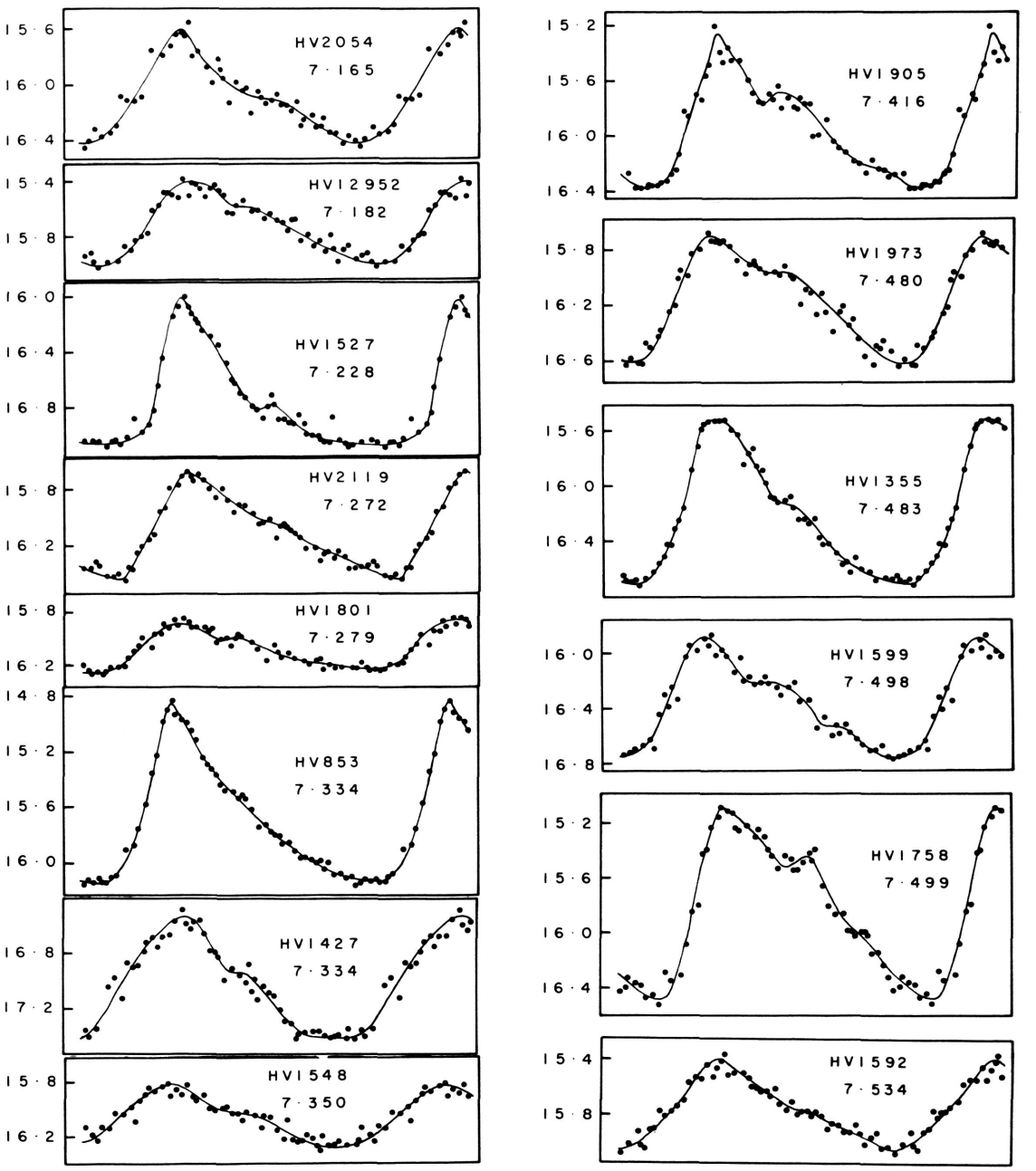

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

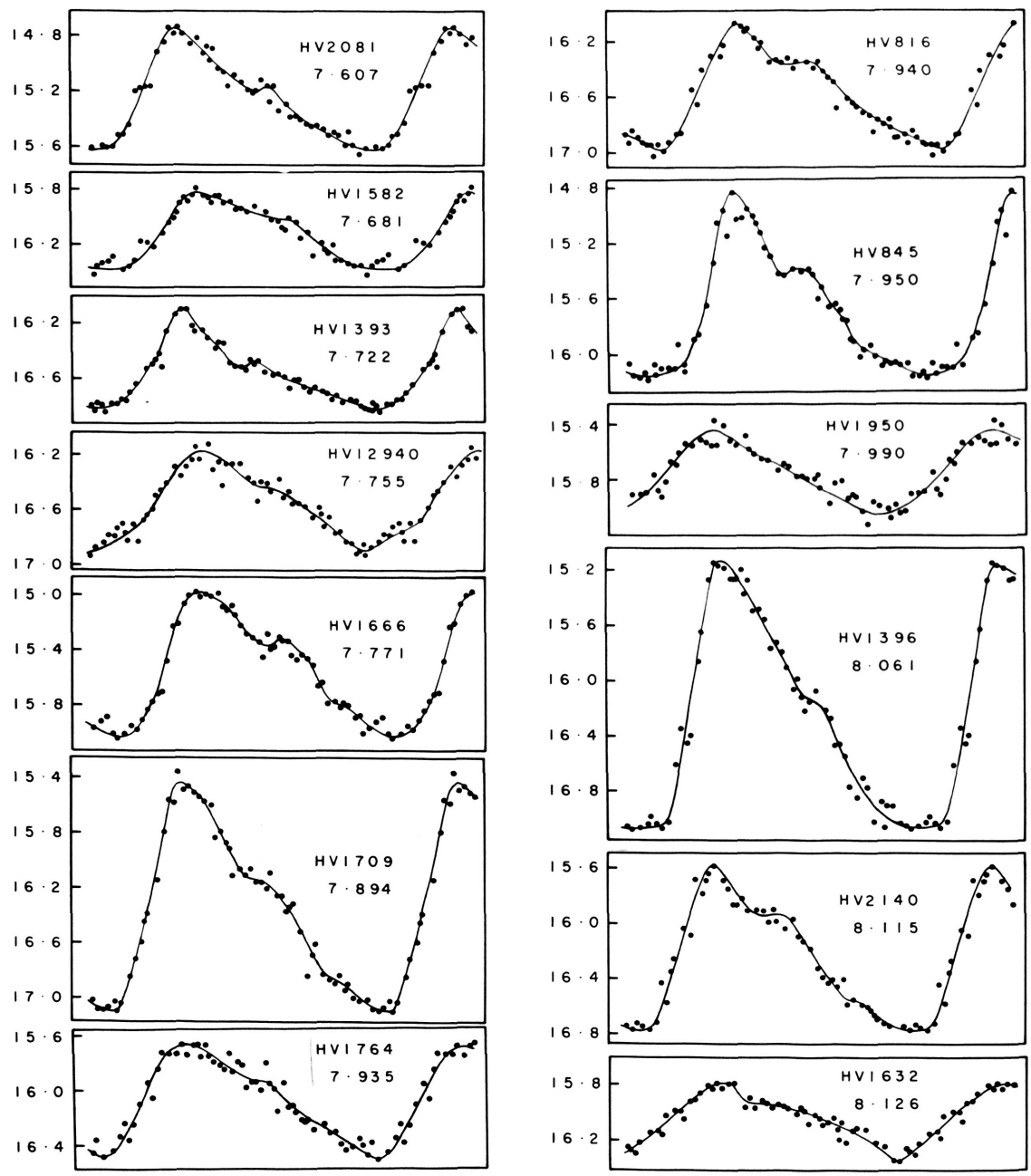

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

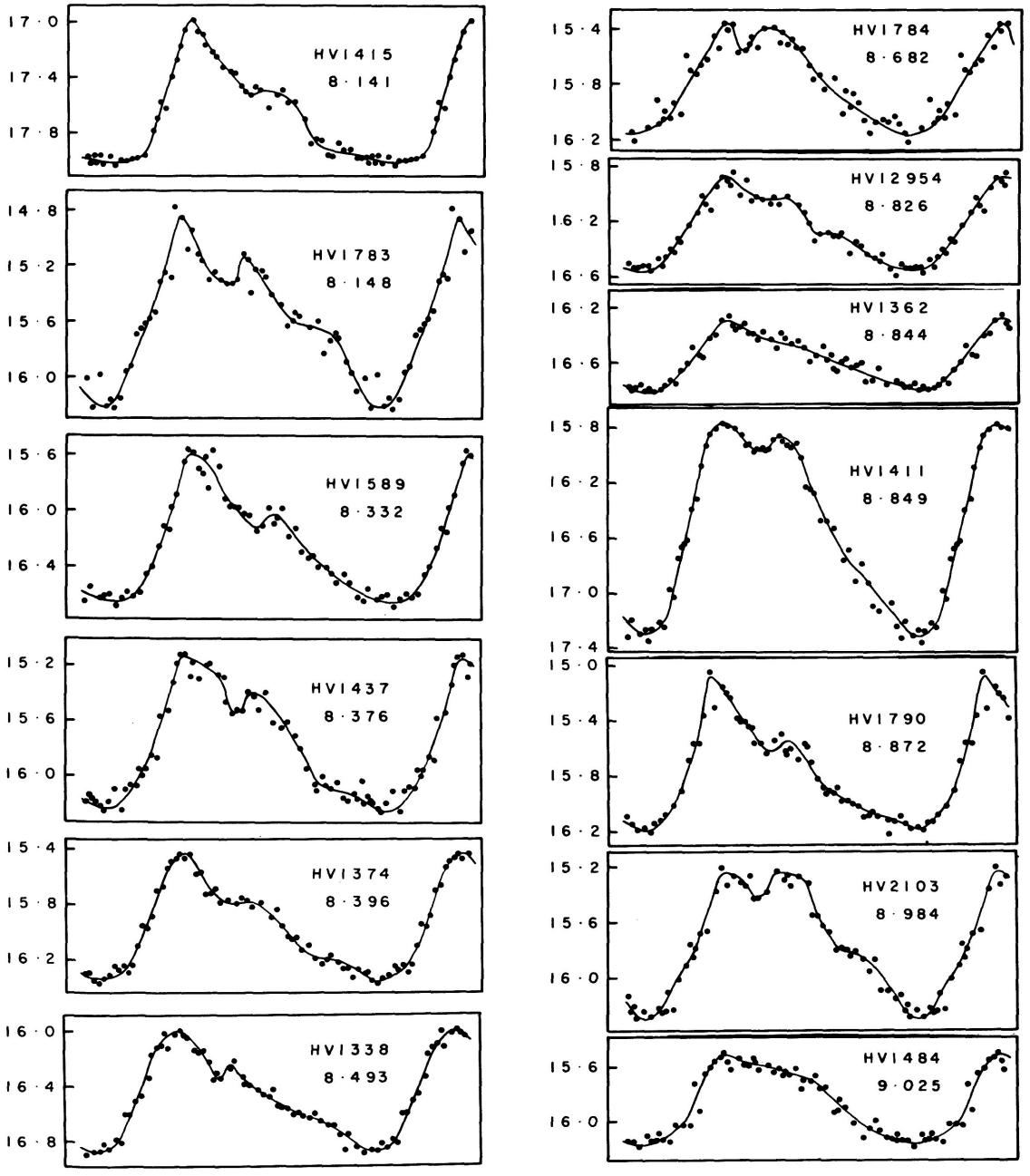

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

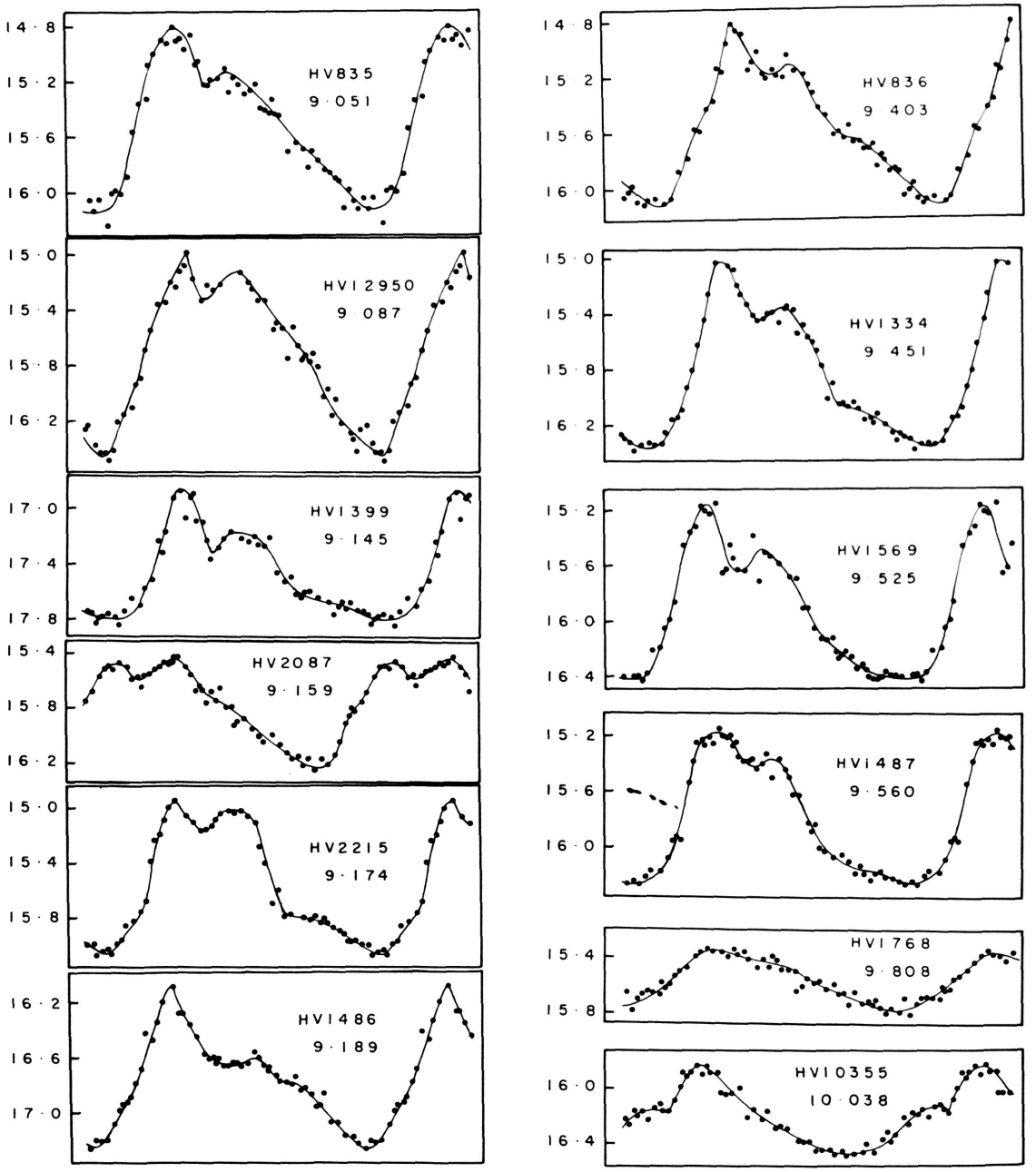

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

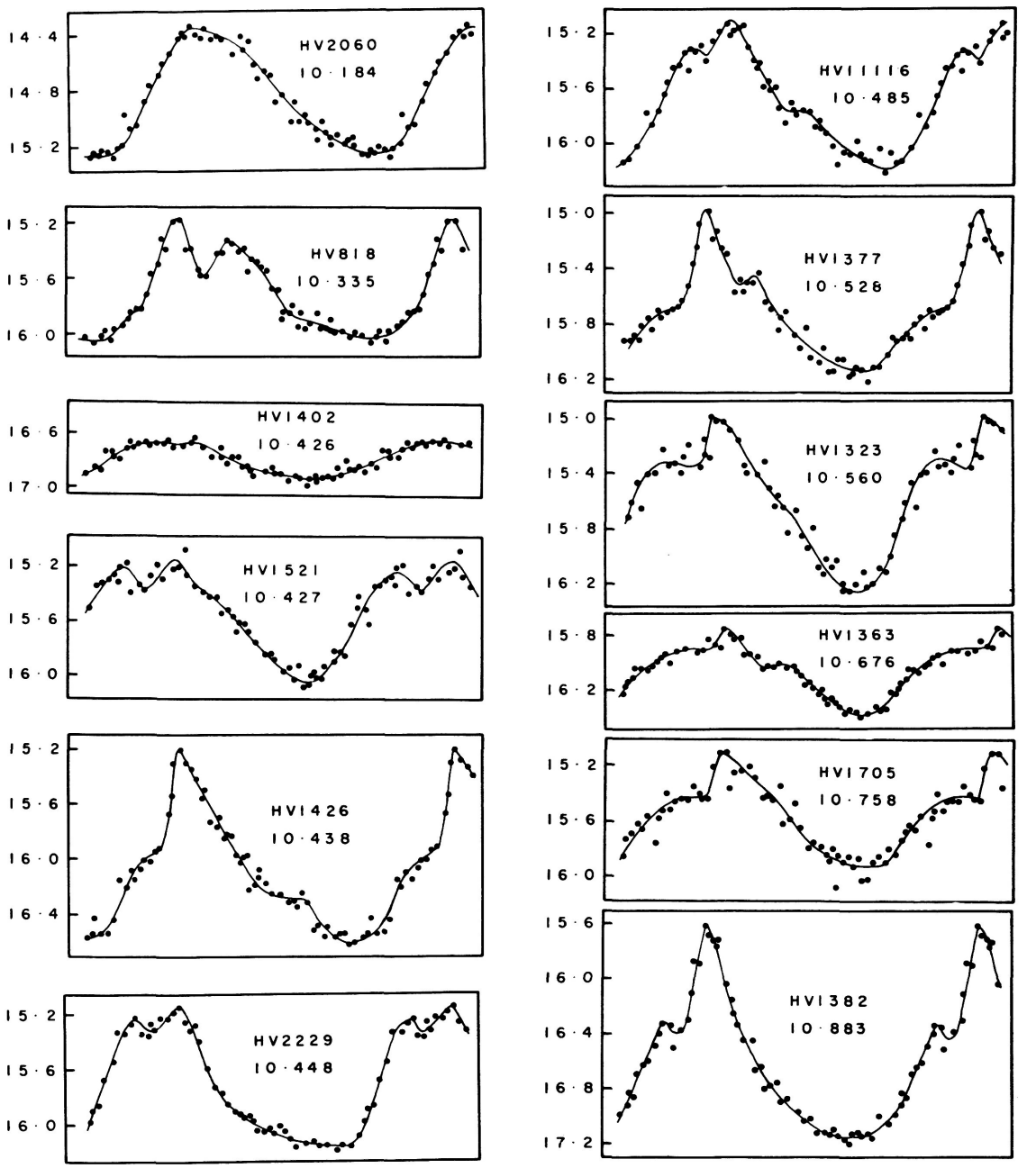

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

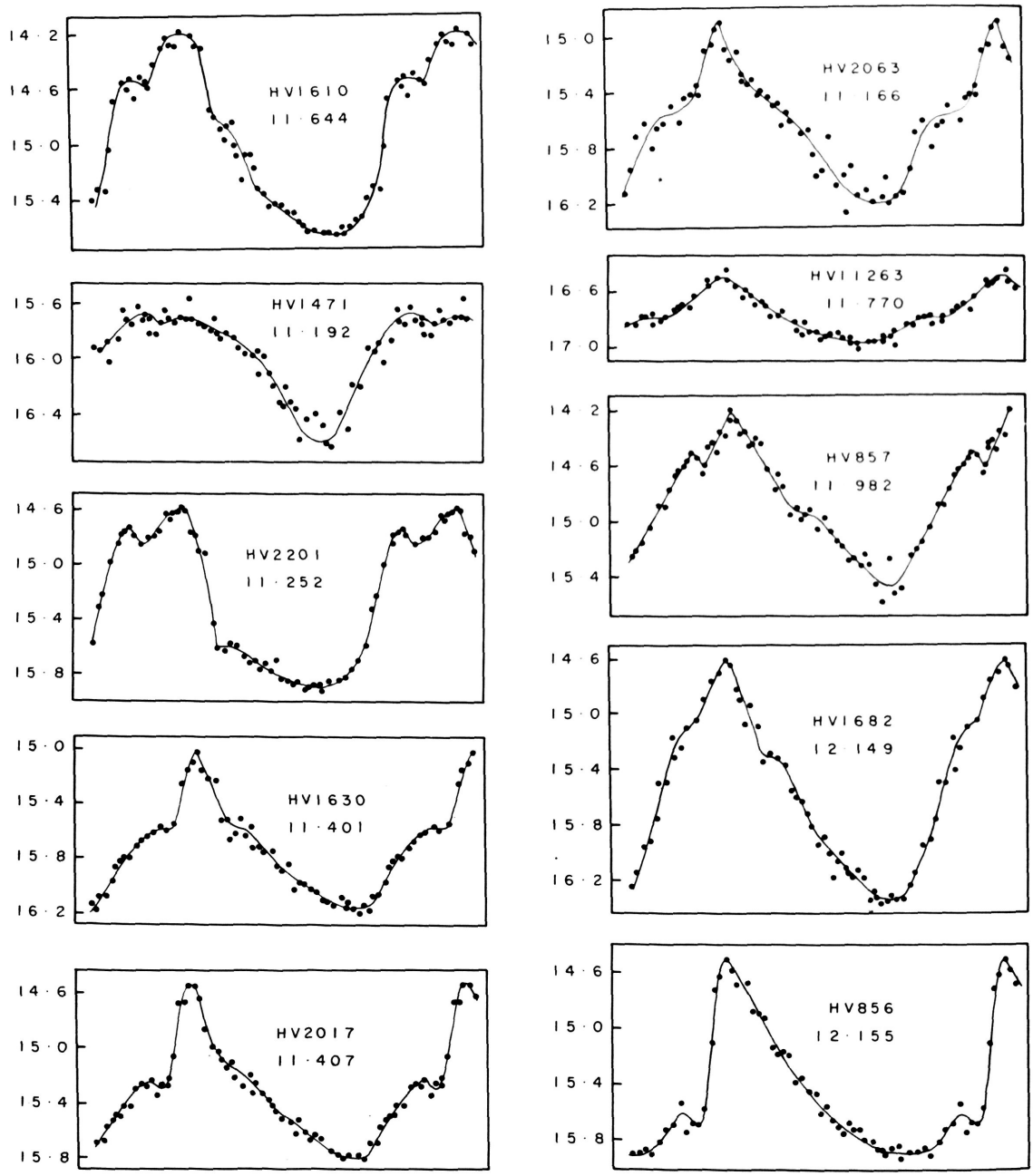

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

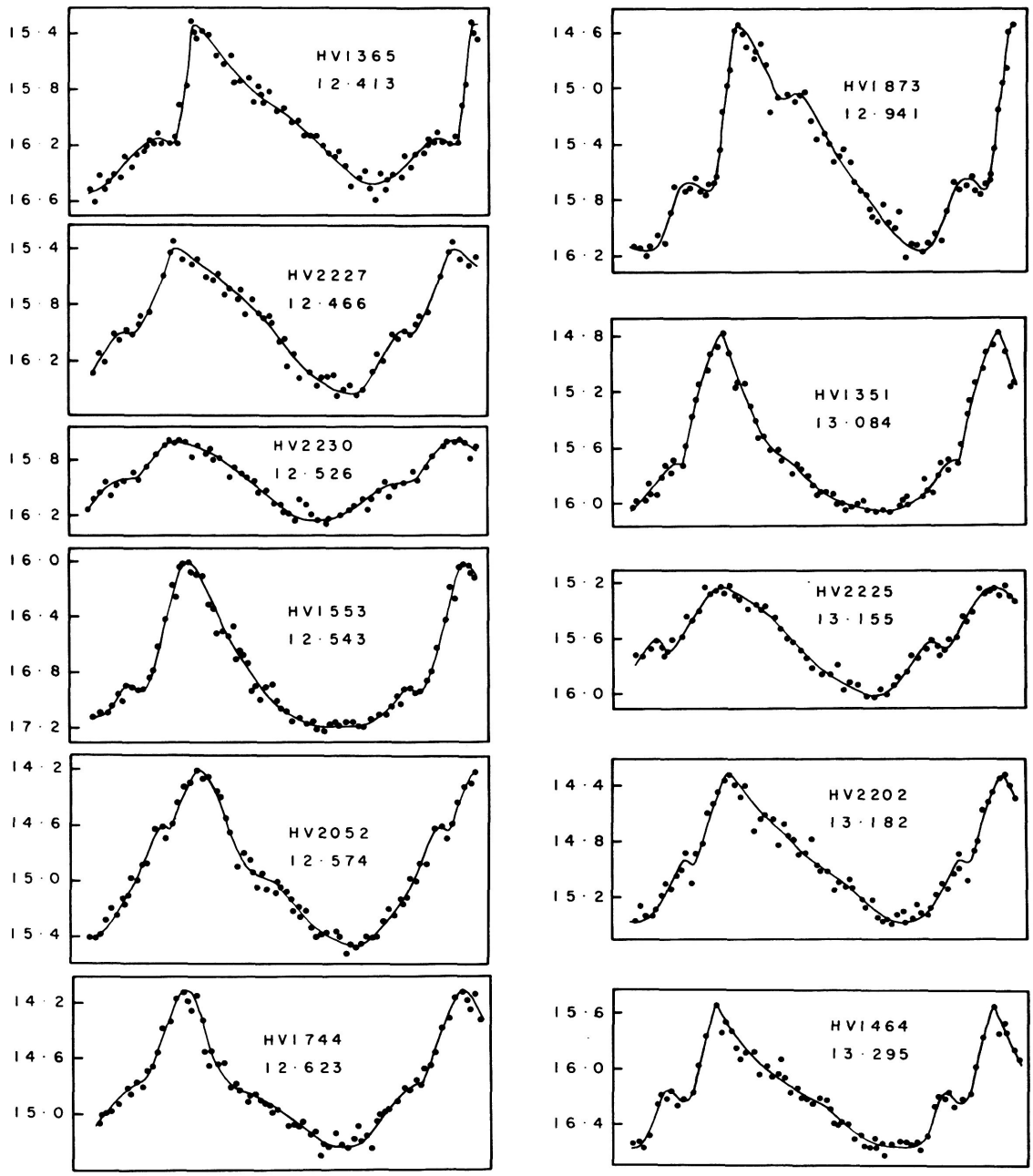

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

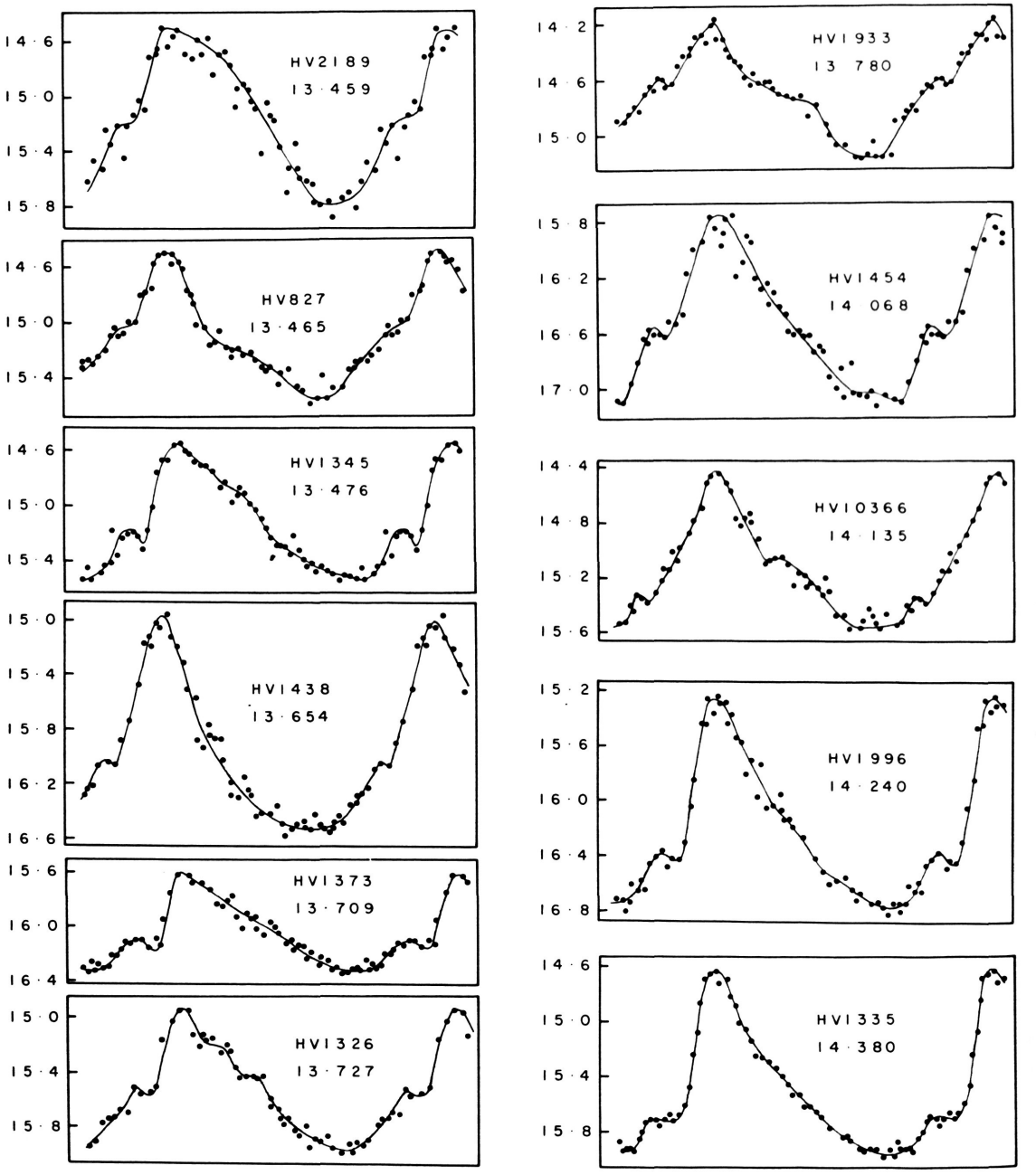

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

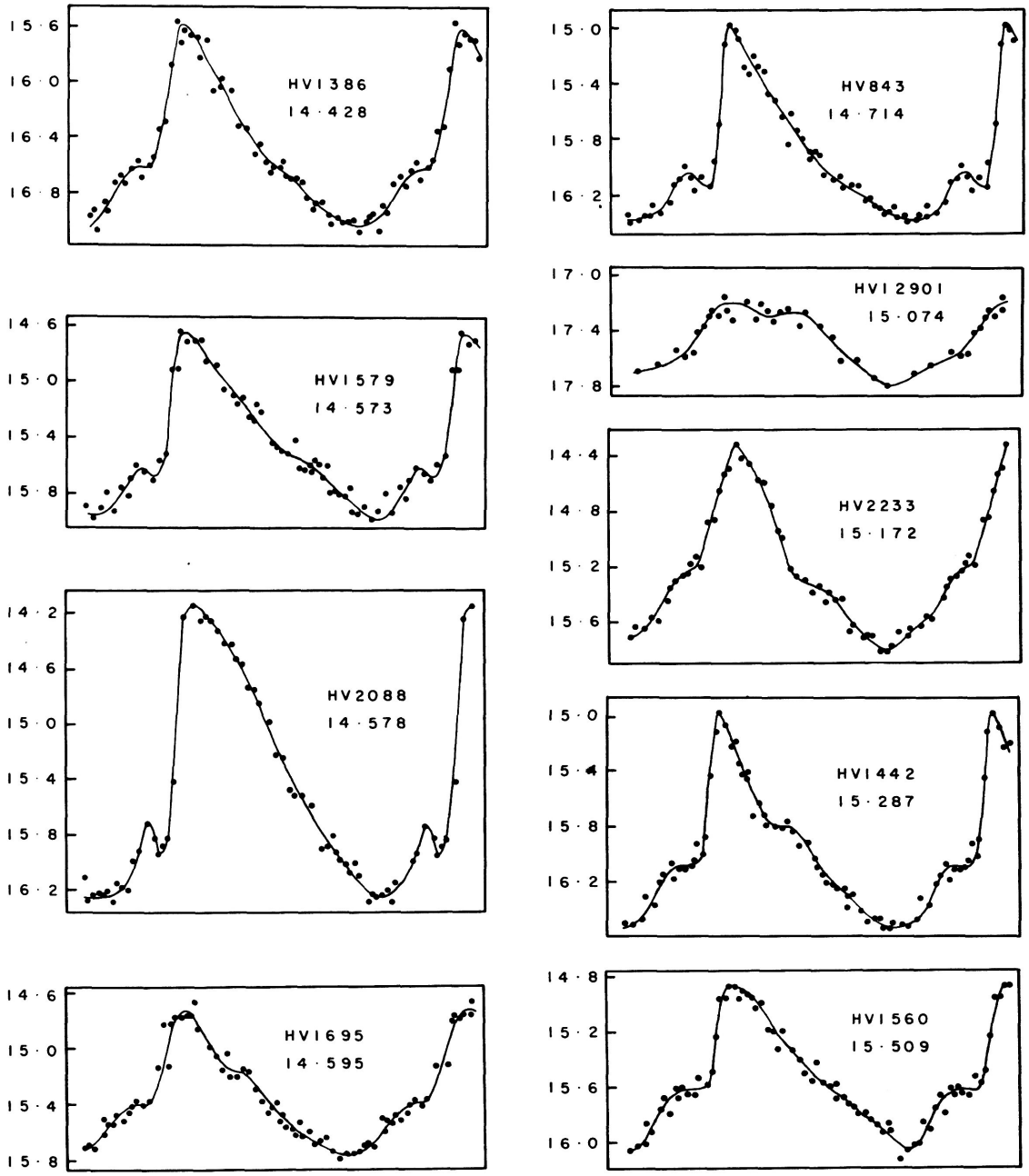

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

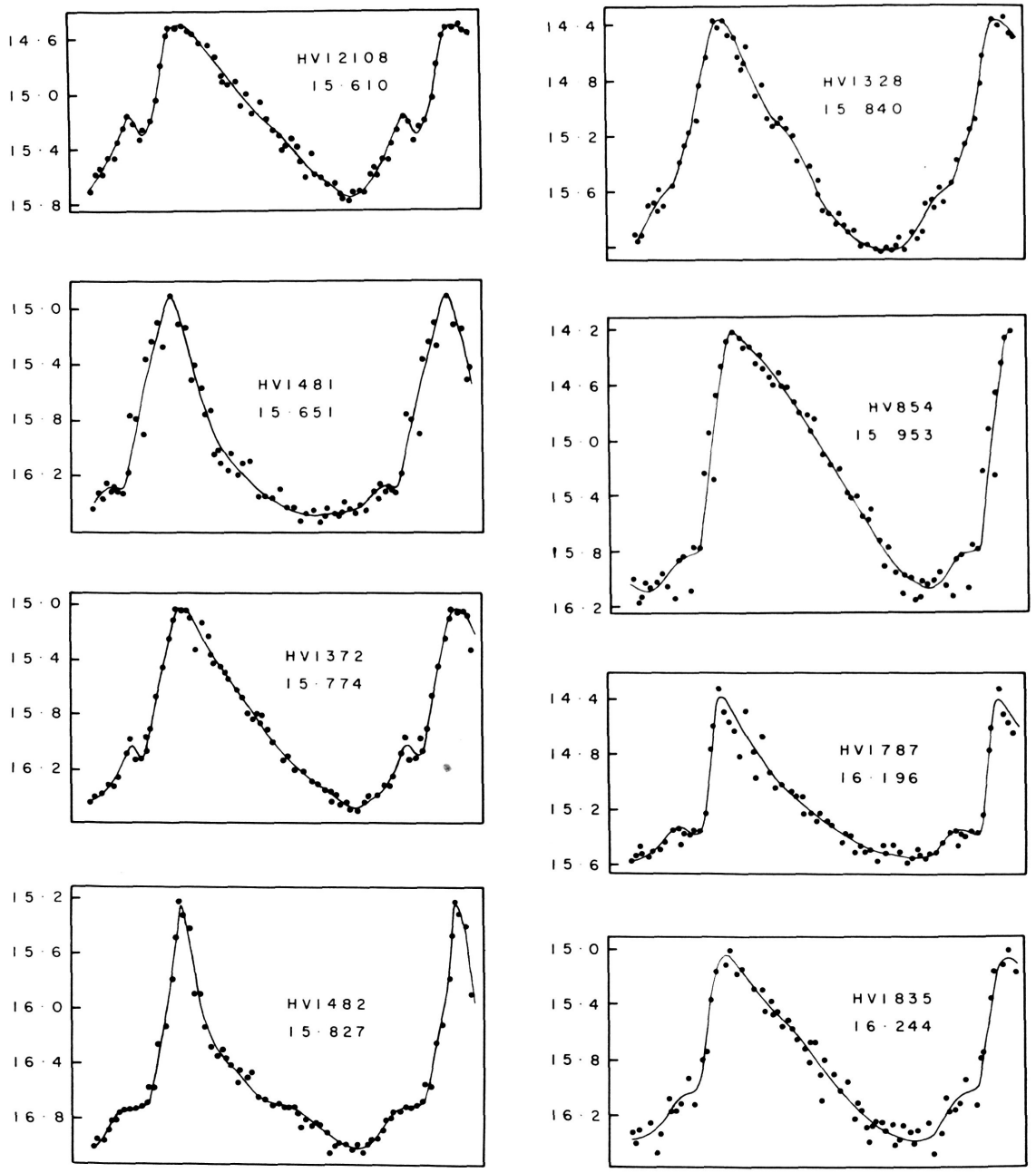

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

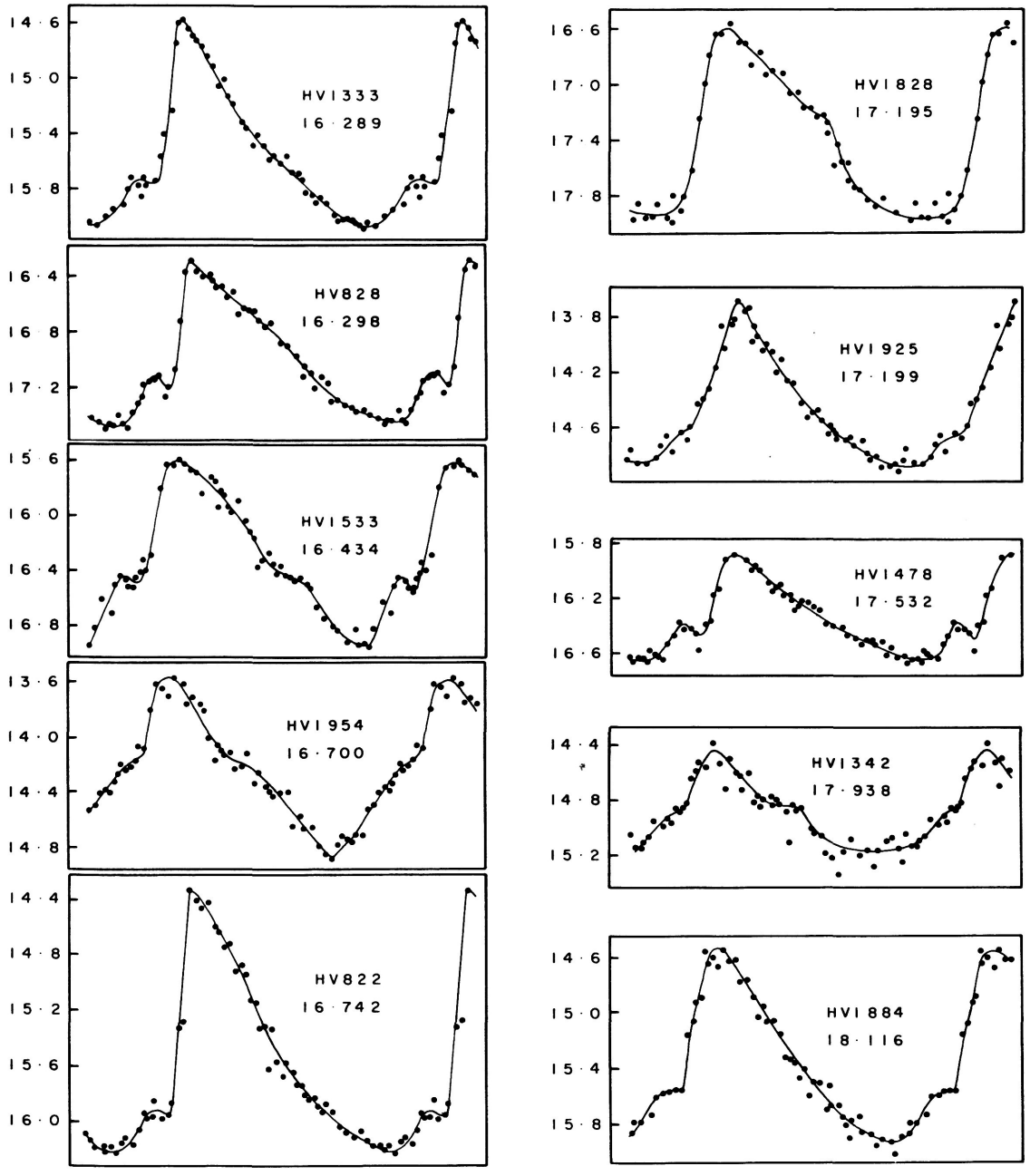

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

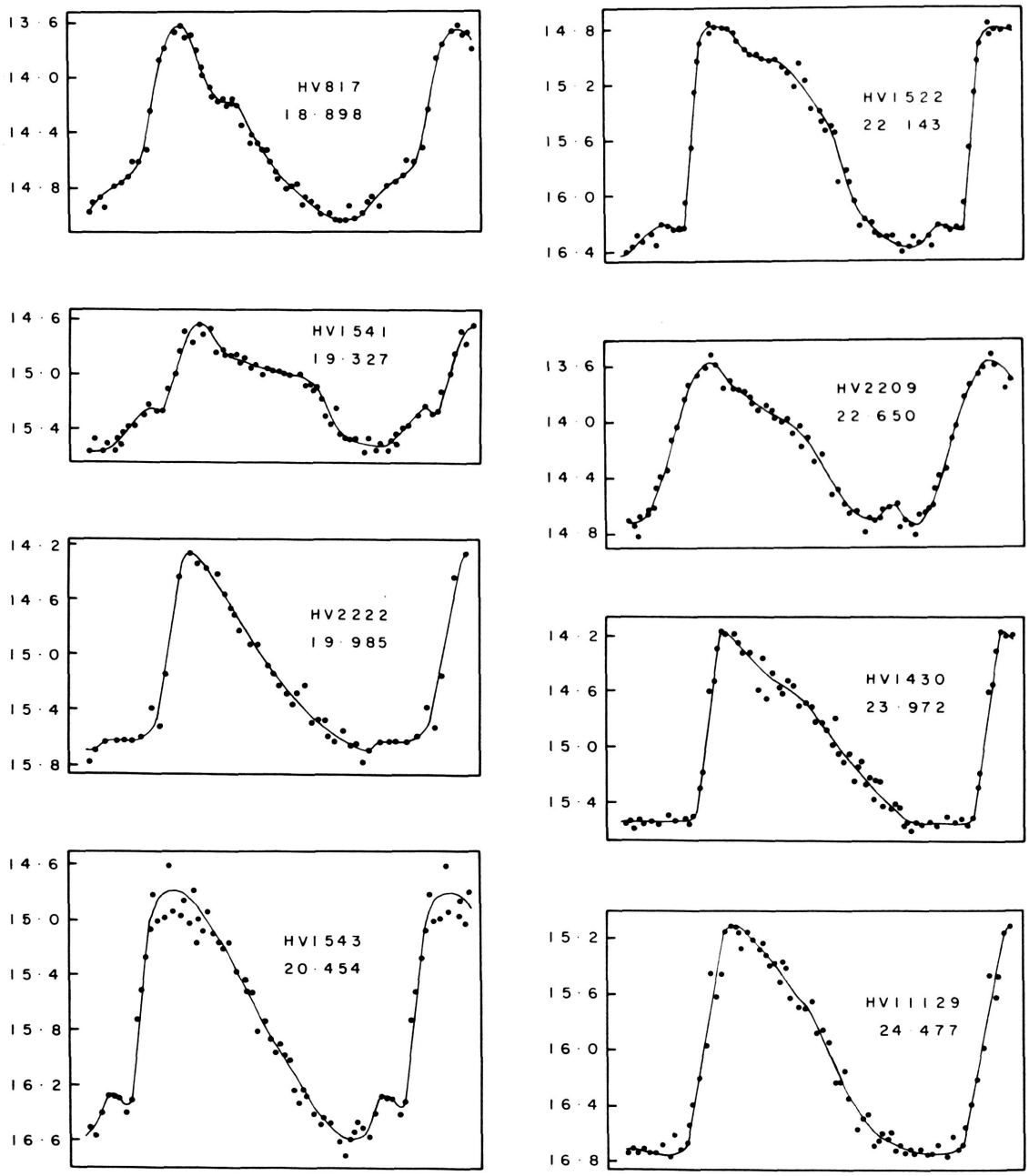

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

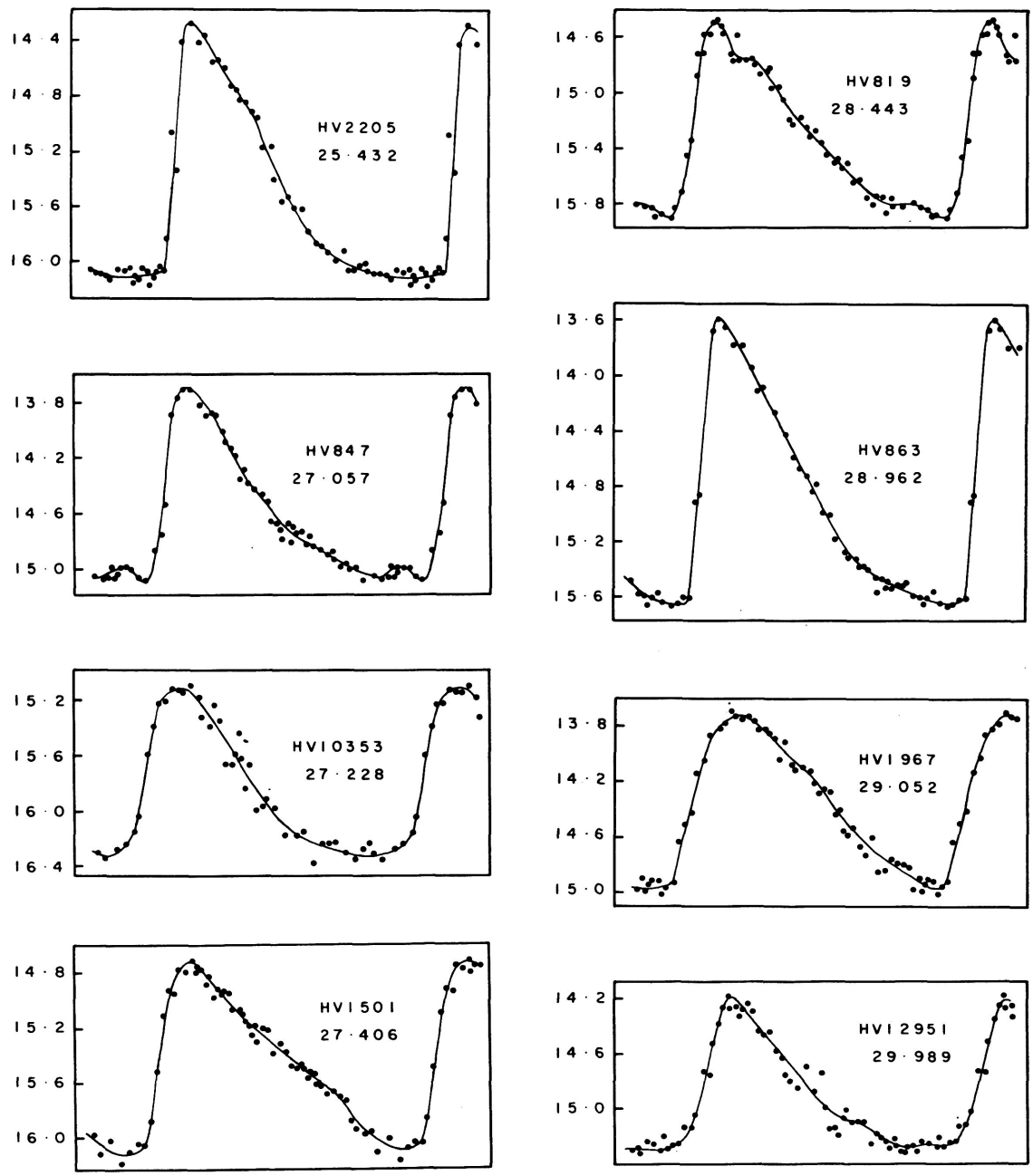

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

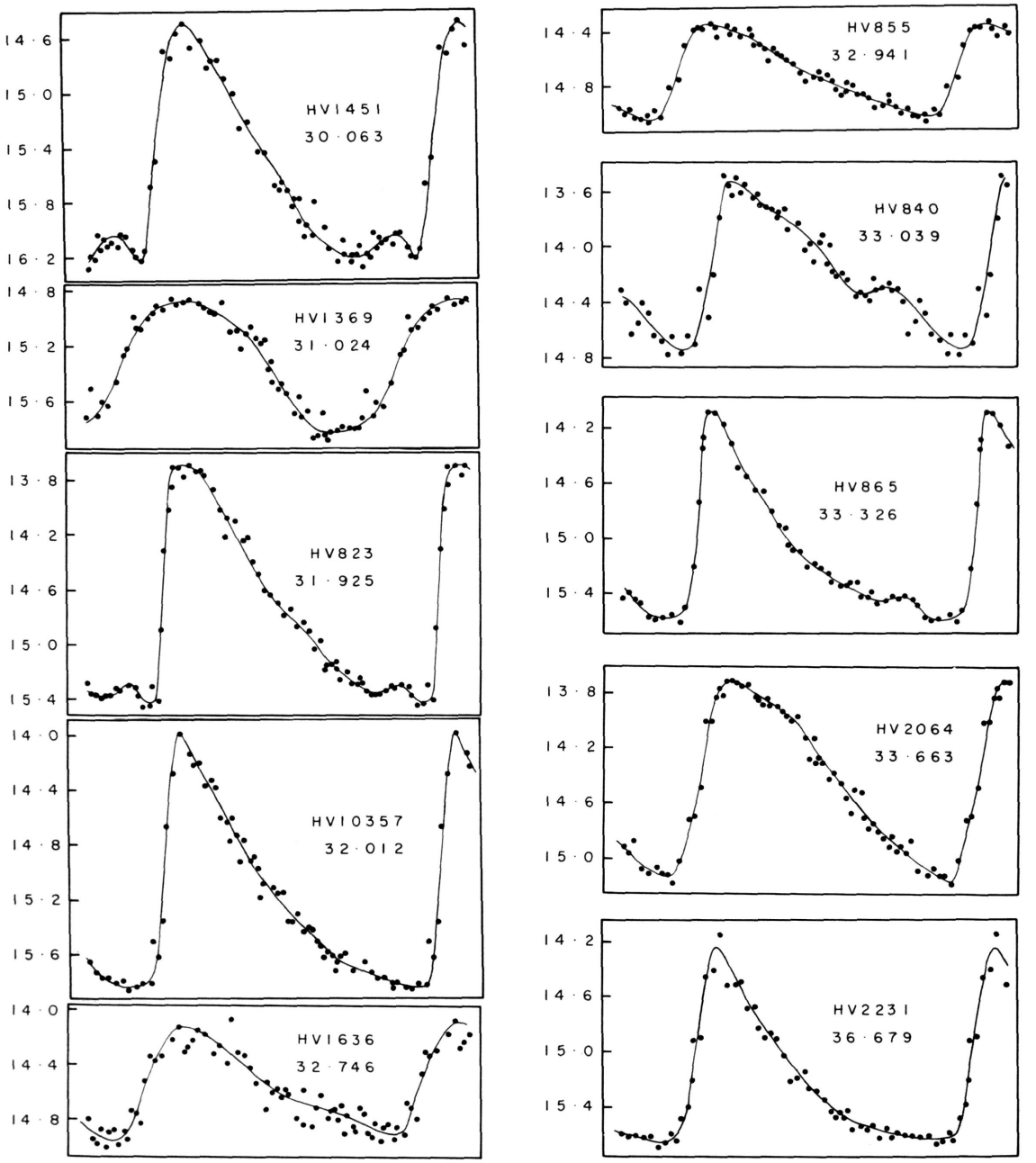

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

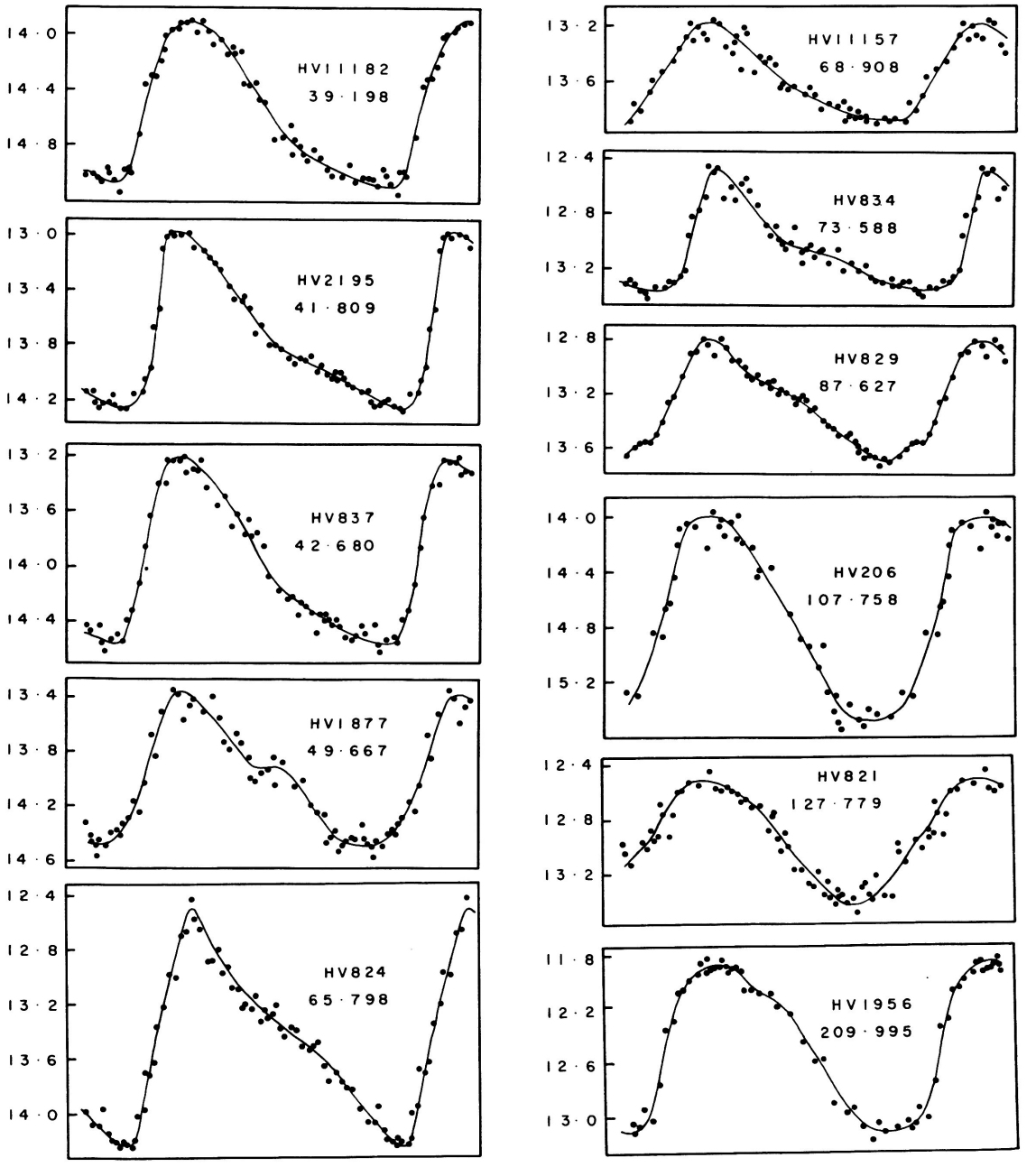

FIGURE 7.—The mean light curves of the intrinsic periodic variables arranged in order of period.—Continued

TABLE 1.—*List of variables studied*

Harvard variables previously announced			1566
New Harvard variables (this paper)			46
Duplications			−20
Total stars investigated			1592
Cepheids (including P<1^d)	1186	Variable, no period found	125
Long-period variables	24	Variability doubtful	60
Irregular variables	62	Not variable	51
Eclipsing stars	34	Too faint for study	11
Total (table 2)	1306	Not measured	39
		Total	286

TABLE 2.—*List of Harvard variables*

CODING FOR RESULTS

C	Cepheid (including P<1^d)	nm	not measured
E	Eclipsing star	nv	not variable
I	Irregular variable	v	variable, no period found
L	Long-period variable	v?	variability doubtful
f	too faint for study	*	see notes

NOTES

HV
809=HV 6323=UX Tuc
833=HV 4075=HV 8008=TZ Tuc
841=HV 11183
849=Nova Tuc 1897
860=HV 6346=RS Hyi
864=HV 6354=RY Hyi
865=HV 6357 (not 6358 as in n)=ST Hyi
1447 Published coordinates incorrect
1454=HV 10354
1498 Original value of X=11702 erroneous
1510=AF Tuc
1583 Published coordinates incorrect
1615=HV 12113
1625 Close pair; both perhaps variable
1627 Published value of Y revised
1629=HV 12121
1640=Z Tuc; close companion disturbs measures
1669=Star f (Arp, Astron. Journ., vol. 64, p. 254, 1959)
1684 Close companion
1690=HV 12135
1708 Published period not verified
1723 Published coordinates incorrect; close double
1743=RS Tuc
1762=RV Tuc
1773=RT Tuc
1789=RU Tuc
1820=RW Tuc
1825=HV 12161
1829=RX Tuc
1830=ST Tuc
1842=RZ Tuc
1861 Close double
1871=HV 10362
1887=SS Tuc
1922=SU Tuc
1926=SW Tuc
1929=SV Tuc
1932=HV 10363
1934=HV 11456
1938=HV 11462
1962=SY Tuc=Arp g
1971 Published data (m) refer to HV 1993
1972=SX Tuc
1974=SZ Tuc
1993 Published data (m) refer to HV 1971
2002=TT Tuc
2005 Close double
2040=TW Tuc
2041=TV Tuc
2043=AH Tuc
2046=TX Tuc

(Continued on page 141)

TABLE 2.—*List of Harvard variables.*—Continued

HV	x	y	Reference	Results	HV	x	y	Reference	Results
206	15472	16597	aa	C	1341	8892	4754	a n	nv
212	15467	16488	aa	C	1342	9027	6013	a d k o p x	C
214	15708	16402	aa	C	1343	9054	9175	a	C
809	1907	9287	a h j n r	C*	1344	9162	7062	a	C
810	4205	11520	a w	C	1345	9175	9740	a j k	C
811	4298	12295	a	I	1346	9189	5650	a t	E
812	4421	11640	a	v?	1347	9216	7506	a	C
813	4585	11774	a	I	1348	9240	7700	a	C
814	5586	11440	a j w	C	1349	9275	7334	a	L
815	8564	5186	a m o p	C	1350	9303	8425	a	C
816	8842	5244	a m o p	C	1351	9358	6836	a b d k o p	C
817	8511	12207	a j k o p s x	C	1352	9361	5322	a m	C
818	9220	6297	a b d k o p	C	1353	9394	8698	a	C
819	9326	6146	a d k	C	1354	9406	6785	a d k	C
820	8774	17366	a	C	1355	9406	7445	a b d k	C
821	9570	6141	a b d k s u x	C	1356	9425	5556	a m	C
822	9581	6805	a b d k	C	1357	9479	8136	a	C
823	10077	6567	a b d k o p x	C	1358	9486	8164	a	C
824	10734	9857	a b d k s x	C	1359	9497	8472	a	C
825	11125	10813	a j s	I	1360	9507	8932	a	C
826	11445	7449	a d f k	C	1361	9544	7225	a	C
827	11473	10674	a b d k o p x	C	1362	9574	7680	a	C
828	11594	8045	a d f k	C	1363	9585	6865	a	C
829	11706	9748	a j k s x	C	1364	9586	8995	a	C
830	11782	6843	a	C	1365	9594	6124	a b d k o p	C
831	11926	6774	a	C	1366	9687	9062	a	L
832	11943	10143	a j s	I	1367	9705	8040	a	C
833	12233	20164	a n	L*	1368	9734	7788	a	nv
834	12555	11451	a j k s x	C	1369	9758	8337	a j k	C
835	12722	10260	a j k q	C	1370	9763	6969	a	nv
836	13150	14274	a g k o p	C	1371	9827	9344	a	C
837	13164	12554	a d k s v x	C	1372	9866	7601	a	C
838	13095	8168	a s	L	1373	9876	8774	a	C
839	13508	15187	a g k	C	1374	9884	6726	a b d k	C
840	13703	11000	a j k s v	C	1375	9885	5706	a s	L
841	13805	13274	a m n	C*	1376	9887	5659	a m	C
842	13863	10884	a b d k	C	1377	9894	7554	a	C
843	13871	10860	a m v	C	1378	9898	9518	a	C
844	14024	12823	a m v	C	1379	9913	8062	a	C
845	14206	9359	a j k	C	1380	9922	8894	a	C
846	14139	7182	a	C	1381	9935	8317	a	C
847	14582	11765	a d k s v	C	1382	9952	7916	a	C
848	14624	11901	a d k v	C	1383	9967	5536	a u	C
849	15063	19530	a	nm*	1384	9974	8362	a	C
850	15083	12522	a m v	C	1385	10003	8884	a	C
851	15328	10347	a m o p	C	1386	10022	7574	a	C
852	15789	11804	a m	C	1387	10035	7584	a	C
853	15650	6404	a r	C	1388	10036	8094	a	C
854	15994	7824	a j k	C	1389	10049	10794	a	C
855	16142	7994	a j k o p	C	1390	10084	9641	a	C
856	16583	14153	a j k o p v	C	1391	10104	9335	a m	C
857	16173	6117	a j k o p	C	1392	10119	9679	a	C
858	16795	12185	a m o p	C	1393	10143	7532	a f k	C
859	17098	10222	a s	L	1394	10197	7423	a d f k	C
860	...	...	a h n	nm*	1395	10203	6663	a	v?
861	17860	10474	a	C	1396	10205	8302	a m	C
862	18215	13426	a r	C	1397	10274	7332	a f m	C
863	21397	5445	a j k s u	C	1398	10293	8858	a m	C
864	21863	198	a h j n	nm*	1399	10304	7749	a d f k	C
865	23924	2424	a j h k n s u	C*	1400	10304	10786	a b d k o p x	C
1323	6639	5040	a m	C	1401	10318	8046	a d f k	C
1324	6762	6237	a	C	1402	10322	5281	a m	C
1325	7062	6290	a	C	1403	10324	8948	a m	C
1326	7342	7194	a r	C	1404	10328	9206	a m	C
1327	7366	11187	a	C	1405	10334	7881	a d f k	C
1328	7374	5606	a j k o p x	C	1406	10374	8043	a d f k m	C
1329	7460	12545	a	C	1407	10427	8399	a e k	C
1330	7582	7884	a	C	1408	10467	9214	a l	C
1331	7642	7324	a	C	1409	10498	10682	a	C
1332	8025	6216	a	C	1410	10515	9334	a m	C
1333	8199	5276	a m o p	C	1411	10534	7369	a d f k	C
1334	8214	5859	a j k o p	C	1412	10544	6187	a	C
1335	8417	5266	a m o p	C	1413	10546	6744	a b d k	C
1336	8617	7978	a	nv	1414	10571	8489	a e k	C
1337	8706	4904	a m	C	1415	10597	7418	a f k	C
1338	8724	5752	a m o p	C	1416	10614	7755	a d f k	C
1339	8782	7694	a	C	1417	10614	8345	a f m	C
1340	8806	6624	a t	E	1418	10636	8364	a f m	C

TABLE 2.—*List of Harvard variables.*—Continued

HV	x	y	Reference	Results	HV	x	y	Reference	Results
1419	10646	7960	a d f k	C	1497	11698	6400	a	C
1420	10649	9186	a l	C	1498	14698	7670	a n	nm*
1421	10655	7274	a f n	nv	1499	11707	8699	a d k m	C
1422	10663	6563	a b d k	C	1500	11712	6566	a	C
1423	10665	6685	a	C	1501	11749	9005	a j k	C
1424	10686	9692	a e	C	1502	11764	11845	a	C
1425	10697	10476	a b d k o p x	C	1503	11771	10125	a	C
1426	10709	8864	a m o p	C	1504	11779	8653	a d k	C
1427	10724	8594	a e k	C	1505	11781	12212	a b d k o p	C
1428	10816	10243	a	C	1506	11784	11355	a b d k	C
1429	10829	7126	a f n	nv	1507	11802	6917	a	C
1430	10845	8972	a j k	C	1508	11805	6979	a	C
1431	10912	9683	a e k	C	1509	11843	7850	a f k	C
1432	10915	7333	a f s	I	1510	11845	15900	a g r	C*
1433	10951	6334	a	E	1511	11847	10780	a k	C
1434	10959	7607	a d f k	C	1512	11849	7094	a	C
1435	11004	8057	a d f k	C	1513	11853	11282	a k o p	C
1436	11031	10889	a b d k	C	1514	11859	7483	a f k	C
1437	11045	9046	a e k	C	1515	11880	11225	a	C
1438	11054	8712	a e m	C	1516	11886	6513	a	C
1439	11072	8817	a e m	C	1517	11890	11181	a m	C
1440	11076	9006	a e n	nv	1518	11904	6734	a	v?
1441	11086	7175	a f t	E	1519	11905	9279	a e k	C
1442	11086	7711	a d f k	C	1520	11914	9846	a e k	C
1443	11089	9373	a e k	C	1521	11922	10414	a j k	C
1444	11108	8623	a e	nv	1522	11928	8166	a f k	C
1445	11109	9584	a e k	C	1523	11934	10387	a	C
1446	11146	10941	a b d k o p	C	1524	11954	8072	a e f	v?
1447	11188	6822	a	C*	1525	11955	6637	a	C
1448	11175	9057	a e k	C	1526	11957	6847	a	C
1449	11186	9834	a e	C	1527	11971	9056	a e k	C
1450	11195	7147	a d f k	C	1528	11971	11495	a	C
1451	11206	8022	a d f k	C	1529	11981	6792	a	I
1452	11224	6984	a	C	1530	12006	6407	a	C
1453	11241	9003	a e k	C	1531	12006	6675	a	C
1454	11243	7873	a	C*	1532	12013	8936	a e m	C
1455	11251	5735	a j s	I	1533	12040	8773	a e k	C
1456	11254	6363	a	I	1534	12044	7235	a	C
1457	11254	9412	a e k	C	1535	12048	6665	a	C
1458	11295	9471	a e m	C	1536	12055	8213	a f k	C
1459	11301	7070	a	C	1537	12063	5931	a m	C
1460	11311	12362	a b d k o p	C	1538	12072	6487	a	C
1461	11314	7839	a d f k	C	1539	12076	6205	a	C
1462	11346	6826	a	C	1540	12076	6975	a	C
1463	11350	6214	a	C	1541	12086	8297	a f k s	C
1464	11366	8074	a d f k	C	1542	12095	12748	a	C
1465	11380	10079	a	v	1543	12106	7540	a f k	C
1466	11394	9086	a m	C	1544	12107	8498	a e k	C
1467	11384	9178	a n	nv	1545	12110	8994	a e m	C
1468	11397	6423	a	I	1546	12116	8133	a f k	C
1469	11432	6621	a	C	1547	12116	10356	a	C
1470	11432	7575	a d f k	C	1548	12119	10596	a	C
1471	11434	9228	a e m	C	1549	12121	6754	a	C
1472	11444	6986	a	C	1550	12125	8717	a m	C
1473	11445	11808	a	nv	1551	12126	7066	a	C
1474	11461	10194	a	C	1552	12154	9640	a	C
1475	11474	7747	a d f s	I	1553	12156	8037	a f k	C
1476	11483	10852	a	C	1554	12162	6403	a	C
1477	11484	10494	a	C	1555	12171	10944	a k	C
1478	11503	7695	a d f k	C	1556	12177	10314	a	v?
1479	11514	8826	a e n	nv	1557	12233	7273	a m	C
1480	11520	8480	a d k	C	1558	12247	9275	a e m	C
4181	11540	7996	a d f k	C	1559	12279	10104	a	E
1482	11544	8344	a d f k	C	1560	12280	9875	a j k	C
1483	11544	8739	a e	C	1561	12284	7926	a f k	C
1484	11561	8727	a d k m	C	1562	12284	9494	a j k	C
1485	11570	11320	a t	E	1563	12286	6386	a	C
1486	11587	8294	a d f k	C	1564	12286	8905	a j k	C
1487	11593	9874	a	C	1565	12311	7566	a m	C
1488	11603	6802	a	C	1566	12324	6326	a g	C
1489	11628	6966	a	C	1567	12342	7629	a m	C
1490	11634	8844	a e m	C	1568	12344	16633	a k	C
1491	11663	10415	a	C	1569	12367	10947	a k	C
1492	11666	10803	a b d k o p x	C	1570	12384	9264	a e j k m	C
1493	11669	7094	a	C	1571	12397	11537	a k	C
1494	11686	15915	a g k	C	1572	12406	6657	a	C
1495	11687	11068	a k	C	1573	12434	9378	a	I
1496	11696	6478	a	C	1574	12444	10789	a k	C

TABLE 2.—*List of Harvard variables.*—Continued

HV	x	y	Reference	Results	HV	x	y	Reference	Results
1575	12466	11322	a k	C	1653	13051	8761	a m	C
1576	12471	8755	a m	C	1654	13058	13356	a m	C
1577	12475	6645	a	C	1655	13065	9663	a l	C
1578	12480	14724	a g k	C	1656	13070	9203	a m	C
1579	12483	8451	a e k	C	1657	13075	9673	a j k	C
1580	12484	7586	a m	C	1658	13086	11751	a q	C
1581	12488	6813	a	C	1659	13094	11419	a	E
1582	12495	11735	a j k	C	1660	13099	8694	a	C
1583	11180	7116	a	C*	1661	13108	8133	a	v?
1584	12519	8465	a e k	C	1662	13124	14094	a	C
1585	12534	7359	a m	C	1663	13132	7390	a	C
1586	12534	10416	a s	I	1664	13136	6711	a	C
1587	12540	10703	a m	C	1665	13144	9774	a	C
1588	12544	7804	a m	C	1666	13149	11134	a k	C
1589	12564	9194	a j k	C	1667	13157	8466	a	C
1590	12566	11506	a k	C	1668	13162	6785	a	C
1591	12571	10597	a	v?	1669	13162	10796	a j t	E*
1592	12579	9113	a j k	C	1670	13165	7613	a	C
1593	12591	6824	a	C	1671	13178	12849	a d k	C
1594	12603	7232	a	C	1672	13180	7769	a	C
1595	12606	4849	a	C	1673	13184	8121	a	v?
1596	12612	8804	a j	I	1674	13185	8973	a	C
1597	12626	12759	a t	E	1675	13205	8045	a d l	v?
1598	12641	9945	a	C	1676	13213	7258	a	C
1599	12646	8794	a m	C	1677	13215	8779	a	C
1600	12668	13076	a	C	1678	13217	9168	a	C
1601	12685	6625	a	C	1679	13241	12884	a d k	C
1602	12685	7044	a	C	1680	13260	11213	a	C
1603	12685	15060	a g k	C	1681	13260	12163	a d k	C
1604	12694	12730	a d k	C	1682	13281	7471	a j k	C
1605	12723	6456	a	C	1683	13294	9446	a j k	C
1606	12724	6740	a	C	1684	13304	13313	a	v*
1607	12744	11525	a k	C	1685	13305	7160	a	I
1608	12760	11617	a k	C	1686	13305	8016	a	C
1609	12764	8405	a m	C	1687	13308	9061	a	C
1610	12767	11006	a b d k o p	C	1688	13311	7442	a	C
1611	12769	13055	a q	C	1689	13314	10896	a k	C
1612	12777	7914	a m	C	1690	13324	12577	a d k	C*
1613	12784	8716	a n	nv	1691	13324	13504	a m	C
1614	12792	9748	a	C	1692	13325	7906	a	v
1615	12796	11654	a k	C*	1693	13333	8804	a j k	C
1616	12798	13566	a m	C	1694	13355	9205	a j k	C
1617	12799	7943	a m	C	1695	13359	11462	a q v	C
1618	12800	12307	a k	C	1696	13363	10565	a m	C
1619	12805	12764	a d k o p	C	1697	13364	10447	a	C
1620	12816	10555	a j t y	E	1698	13383	11641	a	nv
1621	12824	9054	a n	nv	1699	13402	12015	a d k	C
1622	12854	6955	a	C	1700	13406	7454	a	C
1623	12862	5513	a m	C	1701	13408	7986	a	C
1624	12862	10886	a k	C	1702	13410	9064	a	C
1625	12866	6744	a	nm*	1703	13414	13791	a u	C
1626	12874	7429	a m	C	1704	13417	9104	a	C
1627	12884	7928	a	C*	1705	13424	9345	a	C
1628	12887	8233	a m	C	1706	13445	9877	a	C
1629	12906	10521	a m	C*	1707	13463	4449	a u	nm
1630	12916	8634	a j k	C	1708	13463	12373	a d k	v*
1631	12920	12318	a d k	C	1709	13479	7146	a	C
1632	12924	11599	a q	C	1710	13480	10294	a m	C
1633	12925	8354	a j k	C	1711	13482	10993	a m	C
1634	12926	9524	a j k	C	1712	13484	11187	a m	C
1635	12927	8264	a m	C	1713	13487	6640	a	C
1636	12934	9714	a j k s	C	1714	13487	9928	a	C
1637	12944	7680	a m	C	1715	13489	8574	a u	C
1638	12960	11820	a q	C	1716	13506	7178	a	C
1639	12962	8523	a m	C	1717	13506	13701	a m	C
1640	12966	9934	a	nm*	1718	13507	13124	a m	C
1641	12974	12406	a q	C	1719	13514	8786	a s	L
1642	12980	6024	a m	C	1720	13518	11474	a m	C
1643	12982	7836	a m	C	1721	13524	4335	a	v
1644	12995	7356	a s	L	1722	13525	8498	a s	I
1645	12996	7973	a s	L	1723	13349	10392	a	nm*
1646	13012	10047	a b d k	C	1724	13527	7398	a	nm
1647	13021	7565	a	v	1725	13537	6748	a	C
1648	13021	9135	a n	nv	1726	13559	8226	a	C
1649	13021	9944	a b d k	C	1727	13564	13783	a m	C
1650	13023	7936	a j k	C	1728	13573	8665	a m	C
1651	13037	6604	a	C	1729	13583	8511	a m	C
1652	13037	10326	a j s	I	1730	13588	8081	a m	C

TABLE 2.—*List of Harvard variables.*—Continued

HV	x	y	Reference	Results	HV	x	y	Reference	Results
1731	13591	8489	a l	C	1809	14201	12772	a m v	C
1732	13593	13434	a m	C	1810	14208	10618	a	v
1733	13603	12658	a d k	C	1811	14212	11592	a d k	C
1734	13606	9766	a	C	1812	14235	9144	a m	C
1735	13607	9009	a m	C	1813	14236	10168	a m	C
1736	13613	11673	a	C	1814	14237	9019	a m	C
1737	13623	10051	a	C	1815	14245	9872	a	C
1738	13624	6538	a	C	1816	14247	9097	a m	C
1739	13630	7905	a d k	C	1817	14264	10343	a	C
1740	13634	9155	a j k	C	1818	14265	8988	a m o p	C
1741	13635	7906	a d k	E	1819	14268	7836	a	v
1742	13640	10519	a b d k	C	1820	14274	9066	a m	C*
1743	13654	9703	a	C*	1821	14276	4022	a	C
1744	13666	11504	a j k v	C	1822	14286	8915	a m	C
1745	13681	9609	a	C	1823	14292	7917	a l	C
1746	13692	7659	a	C	1824	14295	7794	a	C
1747	13726	7194	a	C	1825	14297	12032	a d k v	C*
1748	13726	8074	a m	C	1826	14331	10624	a m	C
1749	13732	11645	a m	C	1827	14395	12034	a d k v	C
1750	13741	10055	a	C	1828	14353	6028	a	C
1751	13743	11462	a	C	1829	14355	10154	a m	C*
1752	13747	8335	a m	C	1830	14360	9640	a m	C*
1753	13766	8114	a m	C	1831	14361	7700	a	v?
1754	13771	9074	a m	C	1832	14366	7387	a	C
1755	13795	13686	a q	C	1833	14374	8975	a m	C
1756	13812	7154	a	C	1834	14375	6173	a	C
1757	13814	7484	a	C	1835	14408	9626	a j k m	C
1758	13824	9206	a j k	C	1836	14408	11672	a d k v	C
1759	13835	13825	a	v?	1837	14417	8103	a m	C
1760	13844	6025	a m	C	1838	14424	8464	a m	C
1761	13854	12156	a t	E	1839	14425	6784	a	C
1762	13856	10326	a m	C*	1840	14428	9774	a	C
1763	13858	7267	a	v	1841	14439	9826	a	C
1764	13867	11286	a m	C	1842	14444	9489	a m	C*
1765	13868	7160	a	C	1843	14445	6522	a	C
1766	13893	9244	a m	C	1844	14453	8425	a m	C
1767	13896	7532	a	C	1845	14461	6694	a	C
1768	13898	11946	a d k o p v	C	1846	14462	7556	a	C
1769	13910	4760	a m	C	1847	14471	8345	a m	C
1770	13919	8654	a m	C	1848	14515	7415	a	C
1771	13923	11117	a m	C	1849	14515	12265	a d k	C
1772	13926	7755	a	C	1850	14536	12333	a d k v	C
1773	13926	9166	a m	C*	1851	14538	6582	a	C
1774	13935	9019	a m	C	1852	14548	8762	a m	C
1775	13937	9285	a m	C	1853	14552	8904	a	C
1776	13946	10014	a	C	1854	14562	8765	a m	C
1777	13953	7343	a	C	1855	14593	13199	a m o p v	C
1778	13967	9084	a m	C	1856	14616	7347	a	C
1779	13968	14789	a g k	C	1857	14626	6654	a	v?
1780	13980	7514	a	C	1858	14645	11578	a d k v	C
1781	13982	8499	a m	C	1859	14657	6397	a	E
1782	13983	7194	a	C	1860	14664	12992	a	C
1783	13986	12834	a m	C	1861	14666	9404	a	nv*
1784	14027	8746	a u	C	1862	14673	8234	a m	C
1785	14042	12444	a d k v	C	1863	14682	15095	a	C
1786	14046	9534	a m	C	1864	14685	7426	a	C
1787	14046	12266	a d k v	C	1865	14694	9784	a s	L
1788	14054	14254	a	C	1866	14694	11377	a m	C
1789	14068	8790	a m	C*	1867	14703	7774	a	C
1790	14071	9393	a m o p	C	1868	14706	11314	a m v	C
1791	14075	7722	a	v?	1869	14713	15059	a g	C
1792	14085	7311	a	C	1870	14724	7281	a	v
1793	14090	13204	a m v	C	1871	14744	14984	a g k	C*
1794	14093	6699	a	C	1872	14754	8796	a	C
1795	14122	9386	a m	C	1873	14764	10718	a k v	C
1796	14125	10874	a m	C	1874	14774	10673	a m	C
1797	14127	9176	a m	C	1875	14775	8266	a m	C
1798	14133	8353	a	I	1876	14794	11155	a t	E
1799	14134	10140	a q	C	1877	14805	12128	a j k v	C
1800	14139	10078	a	C	1878	14813	7585	a	C
1801	14144	7525	a	C	1879	14826	6244	a	C
1802	14146	10184	a	v	1880	14826	10720	a j	I
1803	14149	5603	a m	C	1881	14831	9551	a	C
1804	14168	10492	a m	C	1882	14835	7275	a	C
1805	14178	9618	a	C	1883	14835	15844	a g k	C
1806	14191	10984	a m	C	1884	14836	11765	a j k v	C
1807	14192	13701	a m	C	1885	14846	9636	a	C
1808	14193	8122	a m	C	1886	14847	6884	a	C

TABLE 2.—*List of Harvard variables.*—Continued

HV	x	y	Reference	Results	HV	x	y	Reference	Results
1887	14859	7154	a	C*	1965	15500	10624	a m	C
1888	14871	7242	a	C	1966	15534	11626	a m v	C
1889	14879	8824	a j k	C	1967	15537	12425	a j k v	C
1890	14888	14051	a m	C	1968	15546	12724	a m	C
1891	14894	12540	a m v	C	1969	15550	6969	a	C
1892	14904	13494	a m v	C	1970	15554	13732	a m	C
1893	14906	6312	a	v	1971	15567	5683	a m	C*
1894	14909	6314	a	C	1972	15567	11301	a m	C*
1895	14951	7004	a	v	1973	15586	7402	a	C
1896	14980	5630	a m	C	1974	15586	11204	a m v	C*
1897	14984	15083	a g k	C	1975	15610	6556	a	C
1898	14999	13586	a m v	C	1976	15624	14292	a k	C
1899	15002	7653	a	C	1977	15639	9473	a	I
1900	15004	8589	a	C	1978	15649	12586	a m v	C
1901	15007	14301	a	C	1979	15656	10030	a	C
1902	15014	7746	a	v	1980	15668	8771	a	C
1903	15021	11024	a q v	C	1981	15673	11206	a m v	C
1904	15023	6385	a	C	1982	15712	14925	a g k	C
1905	15026	12164	a m v	C	1983	15715	13715	a m	C
1906	15041	15486	a g k	C	1984	15718	7381	a	C
1907	15045	14906	a g k	C	1985	15723	8214	a	C
1908	15074	9553	a	C	1986	15725	11004	a	v
1909	15079	7394	a	C	1987	15728	13150	a m v	C
1910	15086	7400	a	C	1988	15740	6706	a	C
1911	15088	7714	a	C	1989	15743	13763	a	v?
1912	15090	7514	a	v	1990	15750	6732	a	C
1913	15093	6626	a	C	1991	15752	8055	a	v?
1914	15100	9106	a	C	1992	15754	4793	a k	C
1915	15114	6701	a	C	1993	15764	6134	a m	C*
1916	15114	7673	a	C	1994	15785	11552	a m v	C
1917	15114	9053	a j k	C	1995	15814	9213	a j k	C
1918	15126	8223	a	C	1996	15830	9386	a	C
1919	15129	14918	a g k	C	1997	15833	6333	a	C
1920	15140	9583	a j k	C	1998	15844	12365	a j t	E
1921	15144	7174	a	v	1999	15865	13820	a m	C
1922	15154	9514	a	C*	2000	15875	11766	a m v	C
1923	15164	11763	a m v	C	2001	15886	8214	a	C
1924	15165	7895	a	C	2002	15893	13015	a d l m v	C*
1925	15167	10474	a j k v	C	2003	15914	13986	a	v?
1926	15191	9677	a j k	C*	2004	15946	10579	a q	C
1927	15194	9382	a	C	2005	15956	13484	a n	nv*
1928	15206	8887	a l	C	2006	15966	7045	a	C
1929	15214	13025	a m v	C*	2007	15973	9313	a	v?
1930	15224	10008	a	C	2008	15976	8093	a	C
1931	15226	8592	a	C	2009	15981	7146	a	C
1932	15226	9090	a	C*	2010	15984	9820	a	C
1933	15234	12454	a j k v	C	2011	16014	8062	a	I
1934	15237	13381	a m v	C*	2012	16016	7684	a	C
1935	15240	10115	a	C	2013	16032	13554	a m	C
1936	15241	6828	a	C	2014	16054	13366	a m v	C
1937	15258	9985	a	C	2015	16055	14776	a g k	C
1938	15271	8684	a	C*	2016	16066	11665	a j t	E
1939	15281	8255	a	C	2017	16084	12832	a j k o p v	C
1940	15292	7504	a	C	2018	16092	8683	a d k	C
1941	15295	7630	a	C	2019	16107	11707	a m v	C
1942	15308	11224	a m	C	2020	16108	7444	a	C
1943	15310	8800	a l	C	2021	16115	11878	a m v	C
1944	15327	6845	a	C	2022	16116	12364	a q v	C
1945	15332	12964	a m v	C	2023	16119	7452	a	C
1946	15338	8817	a	C	2024	16119	8864	a d k	C
1947	15344	10009	a	C	2025	16126	7557	a	C
1948	15355	9050	a	C	2026	16134	10653	a m	C
1949	15356	8054	a	C	2027	16154	11392	a m v	C
1950	15356	12925	a m v	C	2028	16160	8042	a	C
1951	15360	7998	a r	C	2029	16185	10138	a m	C
1952	15394	9640	a	C	2030	16190	8484	a d k	C
1953	15397	10347	a	C	2031	16195	11343	a m o p	C
1954	15397	11614	a j k v	C	2032	16200	7907	a	I
1955	15399	10684	a	C	2033	16206	10062	a	v?
1956	15406	10672	a j k s	C	2034	16207	6954	a	C
1957	15406	10672	a m	C	2035	16224	11586	a q v	C
1958	15417	14567	a g k	C	2036	16233	7807	a	C
1959	15425	11105	a m	C	2037	16242	6865	a	C
1960	15436	7321	a	v	2038	16254	9852	a	C
1961	15438	7266	a	C	2039	16262	13824	a	C
1962	15474	11898	a t v y	E*	2040	16291	10534	a m	C*
1963	15477	10365	a s	L	2041	16292	10637	a m	C*
1964	15497	8545	a l	C	2042	16302	9784	a	C

TABLE 2.—*List of Harvard variables.*—Continued

HV	x	y	Reference	Results	HV	x	y	Reference	Results
2043	16322	13454	a r	C*	2121	17063	10509	a r	C*
2044	16324	7305	a	C	2122	17065	13338	a q	C
2045	16331	13975	a m	C	2123	17070	9048	a d k	C
2046	16342	12721	a m v	C*	2124	17074	14912	a k o p	C
2047	16352	8033	a	C	2125	17085	9114	a d k	C
2048	16360	11846	a	v	2126	17093	10305	a	C
2049	16360	12578	a m v	C	2127	17104	12623	a o p	C
2050	16366	7345	a	C	2128	17108	12055	a o p	C
2051	16368	9468	a d k	C	2129	17119	13914	a	C
2052	16386	8589	a d k o p	C	2130	17136	10772	a	C
2053	16400	13208	a o p	C	2131	17148	14804	a k	C
2054	16403	13284	a	C	2132	17153	9105	a d k	C
2055	16405	14575	a k	C	2133	17177	9982	a	C
2056	16413	11258	a	C*	2134	17184	9924	a r	C
2057	16414	13234	a	C	2135	17194	9108	a d k	C
2058	16437	12744	a	C	2136	17204	14243	a k	C
2059	16456	13345	a	C	2137	17245	9104	a d k	C
2060	16478	11400	a j k o p v	C	2138	17259	10558	a	C
2061	16486	10244	a	C	2139	17264	12526	a	C
2062	16504	9284	a	C	2140	17294	3766	a k	C
2063	16504	13178	a o p v	C	2141	17297	9164	a	C
2064	16505	10526	a j k s v	C	2142	17303	14794	a k	C
2065	16506	9966	a	C	2143	17305	9575	a	C
2066	16532	10166	a n	I*	2144	17328	7851	a	C
2067	16546	12727	a	C	2145	17334	8865	a d k	C
2068	16574	14204	a k	C	2146	17335	9220	a	C
2069	16605	10308	a	C	2147	17346	9123	a d k	C
2070	16619	9915	a	C	2148	17347	9076	a d k	C
2071	16644	4281	a	v	2149	17373	14393	a k	C
2072	16644	7771	a	v?	2150	17394	13934	a	v?
2073	16645	10408	a	v?	2151	17407	14246	a k	C
2074	16646	13004	a	v	2152	17413	12082	a	C
2075	16650	9324	a d k	C	2154	17429	10846	a	v?
2076	16662	13614	a o p	C	2154	17468	9744	a	C
2077	16684	9085	a d k	C	2155	17503	9178	a	C
2078	16689	15713	a g k	C	2156	17507	14807	a	C
2079	16694	10884	a	C	2157	17517	9606	a	C
2080	16703	8678	a d k	C	2158	17523	15495	a g k	C
2081	16705	10203	a o p	C	2159	17528	9928	a	C
2082	16715	7644	a	C	2160	17543	11582	a	C
2083	16724	7269	a	v	2161	17545	13825	a	C
2084	16733	7566	a j s	I	2162	17582	9664	a	C
2085	16742	13754	a o p	C	2163	17585	8615	a d k	C
2086	16749	8236	a d k	C	2164	17585	10799	a	C
2087	16779	11182	a	C	2165	17591	13531	a	C
2088	16784	14526	a k	C	2166	17623	12606	a	C
2089	16799	8916	a d k	C	2167	17624	10071	a	C
2090	16804	9406	a	C	2168	17634	13477	a	C
2091	16806	5634	a j n r	C*	2169	17644	14496	a k	C
2092	16808	12632	a t y	E	2170	17651	15414	a g k	C
2093	16820	9673	a	C	2171	17655	8423	a	I
2094	16824	5426	a	v	2172	17667	12204	a	C
2095	16825	10375	a	C	2173	17695	14324	a l	C
2096	16827	8074	a d k	C	2174	17706	14395	a k	C
2097	16843	8336	a d k	C	2175	17737	14668	a	C
2098	16845	12871	a	C	2176	17748	11744	a	v?
2099	16866	7413	a	C	2177	17749	6965	a k	C
2100	12881	6953	a	C*	2178	17774	9168	a	C
2101	16876	9161	a d k	C	2179	17775	14454	a	C
2102	16906	15132	a g r	C*	2180	17776	11164	a	C
2103	16908	8131	a d k o p	C	2181	17811	10664	a	v
2104	16922	11642	a	C	2182	17842	11104	a	C
2105	16922	12544	a s	I	2183	17844	14649	a	C
2106	16931	10426	a	I	2184	17846	7410	a k	C
2107	16948	14447	a k	C*	2185	17847	13865	a	C
2108	16961	11327	a	C	2186	17859	14455	a	C
2109	16964	13124	a	C	2187	17871	10335	a	C
2110	16965	13444	a	C	2188	17945	13270	a	C
2111	16969	4915	a	C	2189	17946	10618	a j k	C
2112	16991	10164	a s	L	2190	17958	10518	a	C
2113	17004	10452	a	C	2191	18010	12773	a	v
2114	17011	14436	a l	C	2192	18097	9554	a	C
2115	17012	14235	a	C	2193	18103	9721	a	C
2116	17034	6234	a k	C	2194	18132	13999	a	C
2117	17034	13006	a	v?	2195	18166	9904	a j r s x	C
2118	17049	9048	a d k	C	2196	18203	9922	a	C
2119	17054	10614	a q	C	2197	18266	7894	a k	C
2120	17054	13027	a	C	2198	18292	13683	a	C

TABLE 2.—*List of Harvard variables.*—Continued

HV	x	y	Reference	Results	HV	x	y	Reference	Results
2199	18298	14005	a	C	10385	23535	9207	k	C
2200	18323	14154	a	C	10386	...	...	k u	nm
2201	18338	12444	a j k	C	11112	5226	4920	m u	C
2202	18386	9775	a j k	C	11113	5820	3894	m u	C
2203	18386	13133	a	C	11114	6738	4581	m	C
2204	18443	14295	a	C	11115	8967	5130	m	C
2205	18513	6044	a k	C	11116	10365	7713	m	C
2206	18596	11161	a	C	11117	10416	8100	m	C
2207	18615	13400	a	C	11118	10430	9273	m	C
2208	18757	9824	a t	E	11119	10510	8836	m	C
2209	18774	6361	a j k	C	11120	10531	9084	m	C
2210	18774	13394	a	C	11121	10728	8715	m	C
2211	18846	10442	a	C	11122	10735	7959	m	C
2212	18914	12149	a	v	11123	10740	8430	m	C
2213	19034	13420	a	C	11124	10839	9078	m	C
2214	19101	14174	a	I	11125	10908	5466	m	C
2215	19134	4889	a k	C	11126	10925	9188	m	C
2216	19137	13836	a	C	11127	10926	8955	m	C
2217	19205	9194	a k	C	11128	11059	9350	m	C
2218	19313	9207	a k	C	11129	11090	9290	m	C
2219	19314	13425	a	C	11130	11118	8544	m	C
2220	19456	8547	a j t	E	11131	11197	8705	m	C
2221	19512	13333	a	C	11132	11238	8100	m	C
2222	19604	8905	a j k	C	11133	11298	8388	m	C
2223	19865	7166	a j k	C	11134	11370	10770	m	C
2224	19943	10324	a j k	C	11135	11465	9034	m	C
2225	20158	3833	a k u	C	11136	11481	7808	m	C
2226	20374	7129	a t y	E	11137	11496	9120	m	C
2227	20661	4305	a k u	C	11138	11515	9096	m	C
2228	20893	10639	a s	I	11139	11607	8682	m	C
2229	21018	5414	a j k u	C	11140	11693	8908	m	C*
2230	21764	8985	a j k	C	11141	11745	8913	m	*
2231	22120	7120	a j k u	C	11142	11748	8508	m	C
2232	22155	7113	a j s	I	11143	11768	8909	m	C
2233	23178	4830	a j k u	C*	11144	11770	9146	m	C
2234	23438	10574	a j r	C*	11145	11783	7784	m	C
3610	14809	8606	c	nm	11146	11880	7458	m	C
4075	...	...	z	*	11147	11906	8752	m	C
6320	...	...	h	nm*	11148	11932	8486	m	C
6323	...	...	h	*	11149	11943	7829	m	C
6334	...	...	h	nm*	11150	11974	7448	m	C
6346	...	...	h	*	11151	11990	7990	m	C
6354	...	...	h	*	11152	12063	7552	m	C
6357	...	...	h	*	11153	12132	5859	m	C
8008	...	...	dd	*	11154	12156	8700	m	C
8009	...	...	dd	*	11155	12223	8976	m	C
10353	10992	8286	k	C	11156	12300	9096	m	C
10354	11241	7875	k	*	11157	12360	12804	m s	C
10355	11370	8595	k	C	11158	12373	8856	m	C
10356	11445	11379	k	C	11159	12393	9192	m	C
10357	11700	8397	k	C	11160	12408	6108	m	C
10358	12096	11055	k	C	11161	12452	8768	m	C
10359	12417	9645	k	C	11162	12486	8013	m	C
10360	12672	9261	k	C	11163	12510	1629	m	C
10361	13359	9519	j k	C	11164	12511	8204	m	C
10362	14736	14991	k	*	11165	12615	8262	m	C
10363	15201	9099	j k	*	11166	12633	9318	m	C
10364	15246	14487	k o p	C	11167	12641	7583	m	C
10365	15273	14586	k	C	11168	12644	8447	m	C
10366	15381	4461	k	C	11169	12647	8940	m	C
10367	15573	14934	k	C	11170	12705	12897	m	C
10368	16004	5086	k	C*	11171	12832	8812	m	C
10369	16143	4362	k	C	11172	12923	8309	m	C
10370	16332	5679	k	C	11173	12939	8815	m	C
10371	16692	4989	k	C	11174	12942	9522	m	C
10372	16765	5895	k	C	11175	13038	9564	m	C
10373	16929	14334	k	C	11176	13248	4416	m	C
10374	16947	14439	k	*	11177	13248	12216	m	C
10375	16947	15069	k	C	11178	13344	8481	m	C
10376	16992	14832	k	C	11179	13368	4692	m	C
10377	17043	14655	k	C	11180	13377	8895	m	C
10378	17139	4956	k	C	11181	13500	8370	m	C
10379	17199	14994	k	C	11182	13659	12252	m v	C
10380	17211	6348	k	C	11183	13842	13284	m n	*
10381	17643	6438	k	C	11184	13887	8559	m	C
10382	18219	6264	k	C	11185	14076	8190	m	C
10383	18591	7236	k	C	11186	14078	8643	m	C
10384	19539	9993	k	C	11187	14112	14016	m	v?*

TABLE 2.—*List of Harvard variables.*—Continued

HV	x	y	Reference	Results	HV	x	y	Reference	Results
11188	14146	8380	m	C	11266	11129	8783	n	nv
11189	14293	9612	m	C**	11267	11148	8280	n	v
11190	14436	13727	m	v?*	11268	11157	8131	n	v
11191	14445	13755	m	C	11269	11193	6543	n	v?
11192	14586	13086	m v	C	11270	11193	10368	n	v
11193	14610	12378	m v	C	11271	11212	9055	n	C
11194	14712	8520	m	C	11272	11220	10170	n	v
11195	14767	9087	m	C	11273	11274	4872	n	C
11196	14883	8934	m	C	11274	11283	10182	n	I
11197	15654	13392	m n v	C	11275	11292	10188	n	C
11198	15714	12192	m v	C	11276	11306	8202	n	v
11199	15792	12960	m v	C	11277	11306	8919	n	C
11200	15846	6102	m	C	11278	11328	10542	n	C
11201	15849	12327	m	C	11279	11382	8990	n	v
11202	15924	9564	m	C	11280	11394	9389	n s	I
11203	15963	10830	m	C	11281	11466	10566	n	v
11204	16164	10326	m	C	11282	11478	10323	n	v
11205	16299	10845	m	C	11283	11494	8371	n	C
11206	16326	12828	m o p v	C	11284	11514	9378	n t	E
11207	16623	10242	m	C	11285	11520	8280	n	nv
11208	16797	11985	m	C	11286	11535	9381	n	C
11209	16860	13860	m	C	11287	11628	10182	n	C
11210	...	...	m u	nm	11288	11632	9058	n	v
11211	...	...	m u	nm	11289	11646	9387	n	C
11212	3462	14232	n r	C*	11290	11682	6582	n	nv
11213	4230	6204	n	v?	11291	11794	8277	n	v
11214	4494	6114	n	v	11292	11810	7883	n	I
11215	4632	6798	n	nv	11293	11811	7767	n	nm*
11216	4782	6390	n	C	11294	11825	9198	n	v?
11217	5388	6384	n	v?	11295	11829	9324	n s	L
11218	5748	7458	n	nv	11296	11868	13074	n	C
11219	5796	5985	n	nv	11297	11942	9217	n u	C
11220	6006	6966	n	nv	11298	11948	8123	n u	C
11221	6471	5805	n	nv	11299	11987	8100	n u	C
11222	6825	5529	n	C	11300	12005	8634	n	C
11223	7014	7215	n	L	11301	12036	7826	n t	E
11224	7098	5058	n	nv	11302	12042	8324	n	C
11225	7098	17478	n	nv	11303	12090	13890	n s	L
11226	7542	12168	n	C	11304	12099	9360	n	C
11227	7554	6330	n	v?	11305	12126	11055	n	nv
11228	7722	6882	n	v?	11306	12149	9436	n	C
11229	7968	17634	n	C	11307	12170	7910	n u	C
11230	8064	6918	n	C	11308	12172	7790	n t	E
11231	8958	9684	n	v?	11309	12204	9648	n	v?
11232	9177	9567	n	nv	11310	12232	7492	n	v?
11233	9186	10332	n	C	11311	12239	8580	n	C
11234	9261	7834	n	C	11312	12271	9039	n	f
11235	9315	6639	n	C	11313	12303	7977	n	f
11236	9396	10128	n	nv	11314	12306	11976	n	nv
11237	9747	6201	n	C	11315	12330	9702	n t	E
11238	9762	9465	n	C	11316	12333	10779	n	nv
11239	9768	8907	n	C	11317	12372	8142	n	nm
11240	9813	7665	n	C	11318	12376	7398	n	v
11241	9828	8796	n	nm	11319	12376	8906	n	nv
11242	9840	12162	n	C	11320	12394	8830	n	C
11243	9945	6264	n	v	11321	12406	11289	n t	E
11244	10104	14394	n	nv	11322	12438	9687	n	v
11245	10123	5249	n	C	11323	12441	10803	n	v
11246	10176	9822	n	I	11324	12493	8786	n	C
11247	10187	8627	n	v	11325	12498	7400	n	v
11248	10437	9062	n	C	11326	12513	14313	n	nv
11249	10470	2754	n	I	11327	12535	8123	n	C
11250	10542	8256	n	nm*	11328	12564	8451	n	v
11251	10633	9050	n	C	11329	12591	9327	n s	L
11252	10650	9129	n	I	11330	12597	13662	n	I
11253	10730	7691	n u	C	11331	12660	14793	n	v?
11254	10794	13836	n	nv	11332	12670	7995	n	C
11255	10824	7638	n	nm	11333	12744	7745	n	nv
11256	10854	8298	n	v	11334	12786	19002	n	nv
11257	10869	6711	n	C	11335	12788	9368	n	C
11258	10896	10458	n	C	11336	12821	8392	n	v?
11259	10937	6735	n	C	11337	12858	8829	n	I
11260	10962	10389	n	C	11338	12986	9040	n	C
11261	10995	8789	n	nm*	11339	13051	9749	n	C
11262	10998	8556	n s	I	11340	13059	9425	n	v
11263	11063	8058	n t	C	11341	13070	10226	n	C
11264	11072	9454	n	C	11342	13086	12990	n q	C
11265	11088	10020	n	nv	11343	13096	9081	n	v

TABLE 2.—*List of Harvard variables.*—Continued

HV	x	y	Reference	Results	HV	x	y	Reference	Results
11344	13098	9276	n	v	11422	14598	8124	n	nv
11345	13128	9294	n t	E	11423	14622	13830	n s	I
11346	13130	10166	n	v?	11424	14634	11694	n	v
11347	13148	10356	n	C	11425	14673	14625	n	I
11348	13158	10965	n	v	11426	14676	6261	n	C
11349	13200	7908	n	nv	11427	14679	9564	n s	L
11350	13205	10310	n	C	11428	14687	9760	n	v
11351	13206	12738	n	I	11429	14705	9149	n	C
11352	13233	6210	n	C	11430	14715	16731	n	nv
11353	13234	10391	n	v	11431	14726	9760	n	v
11354	13287	9186	n	v	11432	14751	9477	n	v*
11355	13290	9228	n	v	11433	14790	5604	n	v?*
11356	13296	8751	n	v?	11434	14814	7797	n	v
11357	13302	13122	n q	C	11435	14818	10500	n	C
11358	13317	10912	n q	C	11436	14844	8988	n	C
11359	13323	9723	n	C	11437	14850	6300	n	v?
11360	13335	8238	n	v	11438	14864	9055	n	C
11361	13344	9394	n	v	11439	14867	9801	n	v
11362	13344	10604	n	v	11440	14872	9344	n	v
11363	13354	9942	n	C	11441	14875	8871	n	C
11364	13400	10812	n	v	11442	14880	14328	n	nm
11365	13440	13284	n q	C	11443	14943	14964	n	C
11366	13473	11658	n	L	11444	14969	8836	n	v
11367	13500	14010	n	C	11445	15078	15132	n	v
11368	13518	9931	n	C	11446	15000	4422	n	C
11369	13518	11064	n q	C	11447	15042	8922	n	C
11370	13566	9198	n	C	11448	15069	6450	n	v?
11371	13576	12092	n	v	11449	15102	14865	n	v?
11372	13578	10456	n	C	11450	15104	9916	n	C
11373	13596	11508	n s	I	11451	15147	7407	n	C
11374	13599	9764	n	C	11452	15159	6864	n	L
11375	13600	12901	n	C	11453	15168	8988	n	nv
11376	13602	7182	n	C	11454	15177	8784	n	v?
11377	13602	12861	n q	C	11455	15186	12363	n s	I
11378	13641	10692	n	C	11456	15222	13404	n	*
11379	13651	9660	n t	E	11457	15252	12945	n	v?
11380	13651	10824	n	v	11458	15208	12650	n q	C*
11381	13657	10717	n	C	11459	15294	6227	n	v
11382	13662	8135	n	v	11460	15312	9660	n	C
11383	13712	10812	n	C	11461	15337	9675	n	v
11384	13717	10939	n	C	11462	15357	9045	n	*
11385	13724	9582	n	C	11463	15378	14292	n	C
11386	13731	6210	n	C	11464	15393	9438	n	I
11387	13743	9457	n	nm	11465	15423	9858	n s	I
11388	13748	8995	n	C	11466	15425	9822	n	C
11389	13773	9993	n	I	11467	15436	9243	n	v
11390	13960	9952	n	C	11468	15489	9900	n	v?
11391	13991	10142	n	v	11469	15522	4416	n	v
11392	14000	10589	n	v	11470	15525	10554	n s	I
11393	14003	9258	n	v	11471	15546	6900	n	v?
11394	14044	9910	n	C	11472	15582	14652	n	C
11395	14100	15528	n	nv	11473	15585	9096	n	C
11396	14137	10166	n q	C	11474	15603	9321	n	nm
11397	14134	10466	n	I	11475	15615	10896	n	nv
11398	14157	10443	n q	C	11476	15626	10651	n	v
11399	14160	12901	n	v?	11477	15630	5610	n	nv
11400	14163	10944	n q	C	11478	15630	9477	n	C
11401	14193	9318	n s	L	11479	15696	8340	n	C
11402	14193	11544	n s	I	11480	15729	7893	n	v?
11403	14212	10049	n	v	11481	15757	9665	n	v
11404	14225	9948	n	C	11482	15810	9216	n	C
11405	14246	9363	n	nv	11483	15870	11865	n q	C
11406	14252	9942	n	v?	11484	15927	10860	n q	C
11407	14278	9580	n	*	11485	15927	14244	n	C
11408	14289	7740	n	v	11486	16044	8571	n	C
11409	14322	6432	n	v	11487	16179	8817	n	C
11410	14352	8244	n	v	11488	16329	9522	n	C
11411	14392	9725	n	v	11489	16338	8034	n	C
11412	14319	10484	n	v	11490	16440	8772	n	C
11413	14337	10169	n	v	11491	16440	11073	n	C
11414	14366	10521	n q	C	11492	16584	8028	n	C
11415	14421	9838	n	C	11493	16622	15306	n	nv
11416	14442	6957	n	C	11494	16638	9720	n	C
11417	14455	9404	n s	nm	11495	16650	6600	n	C
11418	14460	9739	n	C	11496	16704	7710	n	C
11419	14472	7926	n	C	11497	16841	7807	n	C
11420	14473	10114	n	v	11498	16860	8691	n	C
11421	14508	6702	n	E	11499	16860	9294	n	C

TABLE 2.—*List of Harvard variables.*—Continued

HV	x	y	Reference	Results	HV	x	y	Reference	Results
11500	16908	13773	n q	C	12109	12636	11568	q	C
11501	16926	14358	n	v*	12110	12696	9672	q	v
11502	16959	13068	n	I	12111	12702	10200	q	E
11503	16974	9108	n	C	12112	12732	10572	q	C
11504	17136	8700	n	v	12113	12810	11658	q	*
11505	17139	9477	n	nm*	12114	12828	9852	q	C
11506	17142	7641	n	v	12115	12846	10788	q	v
11507	17154	5820	n	v	12116	12870	10554	q	v
11508	17205	6690	n	v	12117	12906	10854	q	v
11509	17235	10899	n	nv	12118	12906	11970	q	v
11510	17238	6846	n	v	12119	12912	10771	q	v
11511	17304	12444	n	I	12120	12948	10104	q	v
11512	17334	14613	n	C	12121	12948	10488	q	*
11513	17343	6045	n	v	12122	12966	12156	q s	L
11514	17394	7008	n	v	12123	13092	10872	q	C
11515	17397	14550	n	v	12124	13122	11238	q	C
11516	17508	11757	n	v?	12125	13158	10272	q	C
11517	17694	12468	n	C	12126	13212	9858	q	I
11518	17880	5748	n	I	12127	13224	11214	q	v
11519	17934	9933	n	C	12128	13230	10446	q	C
11520	17943	10119	n	C	12129	13242	11172	q	v
11521	18018	9546	n	C	12130	13266	10200	q	nm
11522	18060	14526	n	v?	12131	13257	11289	q	C
11523	18138	11616	n	C	12132	13278	11232	q	C
11524	18186	10431	n	C	12133	13302	10068	q	C
11525	18318	12762	n	v	12134	13350	11652	q	C
11526	18402	3768	n	v?	12135	13368	12588	q	*
11527	18492	13230	n	C	12136	13380	10512	q	f
11528	18504	13062	n	C	12137	13440	10038	q	C
11529	18528	13242	n	v	12138	13488	10494	q	I
11530	18570	14109	n	C	12139	13518	10008	q	C
11531	18606	12720	n	I	12140	13626	11394	q	nm*
11532	18720	11472	n	C	12141	13674	10260	q	v?
11533	18729	7038	n	v	12142	13698	11028	q	C
11534	18822	13281	n	C	12143	13776	9942	q	C
11535	18903	11304	n	f	12144	13788	11052	q	f
11536	18972	5001	n	C	12145	13842	11448	q	v
11537	18987	9999	n	I	12146	13848	11766	q	v
11538	19026	11037	n	v?	12147	13866	11406	q	nm
11539	19122	10782	n	f	12148	13932	11832	q	C
11540	19161	10338	n	C	12149	13968	11370	q s	L
11541	19221	10284	n	C	12150	14034	10938	q	nm
11542	19350	11850	n	C	12151	14046	12198	q	C
11543	19653	7647	n	v?	12152	14052	11442	q	v
11544	19662	11922	n	C	12153	14052	12144	q	v
11545	19788	14910	n	I	12154	14064	11070	q	v
11546	22146	9267	n s	I	12155	14094	11172	q	v
11547	...	...	n	nm	12156	14112	11478	q	C
11548	...	...	n	nm	12157	14136	10758	q	v
11549	...	...	n	nm	12158	14178	12384	q	v?
11550	...	...	n	nm	12159	14190	10884	q	v
12082	10980	10044	q	C	12160	14250	11772	q	C
12083	11340	11034	q	nm	12161	14292	12036	q	*
12084	11466	10014	q	C	12162	14298	11562	q	v
12085	11580	10200	q	v*	12163	14442	12288	q	C
12086	11670	11052	q	v	12164	14502	11238	q	C
12087	11712	11598	q	v	12165	14502	11916	q	C
12088	11802	10956	q	C	12166	14508	12066	q	f
12089	12018	16032	q	C	12167	14550	12048	q	f
12090	12048	10332	q	C	12168	14688	11424	q	C
12091	12048	11568	q	C	12169	14802	11814	q	v
12092	12090	10320	q	C	12170	15006	11706	q	C
12093	12144	10422	q	C	12171	15042	11418	q	C
12094	12144	10608	q	v	12172	15078	12138	q	C
12095	12192	10510	q	nm*	12173	15084	11664	q	C
12096	12234	10134	q	v?	12174	15198	10758	q	v
12097	12288	9918	q	C	12175	15408	11592	q	C
12098	12288	12012	q	C	12176	15432	11358	q	v?
12099	12312	11748	q	nv	12177	15444	12600	q	v?*
12100	12348	10230	q	C	12178	15654	11496	q	v
12101	12348	11424	q	C	12179	15702	12042	q	L
12102	12372	10368	q t	E	12180	15768	12258	q	v
12103	12402	10776	q	f	12181	15792	11088	q	C
12104	12432	10170	q	v	12182	15834	10854	q	v
12105	12516	10098	q	v?	12183	15924	11028	q	v?
12106	12534	10092	q	C	12184	16002	11292	q	nv
12107	12552	10440	q	C	12899	3618	5418	u	C
12108	12606	10848	q r	C	12900	5358	4500	u	f

TABLE 2.—*List of Harvard variables.*—Continued

HV	x	y	Reference	Results	HV	x	y	References	Results
12901	8688	14232	u	C	12932	13084	6042		C
12902	9630	1902	u	C	12933	13166	7637		C
12903	11784	5806	u	nm	12934	13278	13504		C
Nova1951	7760	7890	bb	nm*	12935	13627	8091		C
Nova1951	...	...	cc	nm*	12936	13825	7507		C
No. 12	15424	16704	g	C*	12937	13957	9590		C
12912	5288	4778		C	12938	13963	7213		C
12913	8258	5087		C	12939	14147	8387		I
12914	8916	9835		C	12940	14199	9718		C
12915	9265	5562		C	12941	14280	7760		C
12916	9388	5260		C	12942	14305	13533		C
12917	10004	5551		I	12943	14307	13548		C
12918	10110	5289		C	12944	14426	7952		C
12919	10902	10369		C	12945	14454	6671		C
12920	11078	10375		C	12946	14498	9762		E
12921	11209	7034		C	12947	14663	7888		C
12922	11276	7044		C	12948	14709	9817		E
12923	11311	7031		C	12949	14893	14863		C
12924	11683	6951		I	12950	15258	11791		C
12925	11700	8506		C	12951	16521	10603		C
12926	11869	6512		E	12952	16611	12162		C
12927	12024	7041		C	12953	16720	6690		C
12928	12364	8826		C	12954	16787	6415		C
12929	12634	7985		C	12955	16834	9206		C
12930	12710	10611		C	12956	17050	14774		L
12931	12886	7926		C	12957	17228	5705		C

NOTES—Continued from page 130

2056=TU Tuc
2066 Earlier Harvard work concluded "not variable"
2091=HV 8009=AL Tuc
2100 Published coordinates in error
2102=AI Tuc
2107=HV 10374
2121=AK Tuc
2233=RZ Hyi
2234=WZ Hyi
4075=HV 833=HV 8008=TZ Tuc
6320=R Hyi
6323=HV 809=UX Tuc
6334=Nova Tuc 1927=VZ Tuc
6346=HV 860=RS Hyi
6354=HV 864=RY Hyi
6357=HV 865=ST Hyi
8008=HV 833=HV 4075=TZ Tuc
8009=HV 2091=AL Tuc
10354=HV 1454
10362=HV 1871
10363=HV 1932
10368 Published position incorrect
10374=HV 2107
11140=HV 11141; in spite of difference of published coordinates the stars seem to be the same
11141=HV 11140
11183=HV 841
11187 Published period not verified
11189=HV 11407
11190 Published period not verified
11212=AD Tuc
11407=HV 11189
11456=HV 1934
11462=HV 1938
12113=HV 1615
12121=HV 1629
12135=HV 1690
12161=HV 1825
No. 12=No. 12 in NGC 362, no HV number

REFERENCES FOR TABLE 2

a. LEAVITT, H. S.
1906. 1777 variables in the Magellanic Clouds. Ann. Harvard Coll. Obs., vol. 60, pp. 87–108.

b. PICKERING, E. C.
1912. Periods of 25 variable stars in the Small Magellanic Cloud. Circ. Harvard Coll. Obs., no. 173, 3 pp.

c. SHAPLEY, H.
1922. The absolute magnitude of cluster type variables. Bull. Harvard Coll. Obs., no. 765, 4 pp.

d. SHAPLEY, H.; YAMAMOTO, I.; and WILSON, H. H.
1925. The Magellanic Clouds, VII: The photographic period-luminosity curve. Circ. Harvard Coll. Obs., no. 280, 8 pp.

e. MOHR, J., and HOFFLEIT, D.
1931. New periods for variables in the Small Magellanic Cloud. Bull. Harvard Coll. Obs., no. 882, pp. 20–23.

f. SHAPLEY, H., and MORSE, A.
1932. A study of forty-two variable stars in the Small Magellanic Cloud. Bull. Harvard Coll. Obs., no. 886, pp. 12–14.

f. SAWYER, H. B.
g. 1931. Periods and light curves of thirty-two variable stars in the globular clusters NGC 362, 6121, and 6397. Circ. Harvard Coll. Obs., no. 366, 36 pp.
g. 1932. Periods and light curves of twenty-two variable stars in the northern border of the Small Magellanic Cloud. Circ. Harvard Coll. Obs., no. 374, 16 pp.
h. SHAPLEY, H., and HUGHES, E. M.
1934. Variable stars in high galactic latitudes. Ann. Harvard Coll. Obs., no. 90, pp. 163–175.
j. HOFFLEIT, D.
1935. New periods for variable stars in the Small Magellanic Cloud. Bull. Harvard Coll. Obs., no. 900, pp. 3–9.
k. SHAPLEY, H., and MCKIBBEN, V.
1940. A summary of the periods and median magnitudes of Magellanic Cloud Cepheids. Circ. Harvard Coll. Obs., no. 439, 5 pp.
l. SHAPLEY, H.
1940. Galactic and extragalactic studies, VIII: A new determination of the period-luminosity curve. Proc. Nat. Acad. Sci., vol. 26, pp. 541–548.
m. MCKIBBEN, V.; CRAIG, R. A.; and WRIGHT, F. W.
1942. Periods for 307 variables in the Small Magellanic Cloud. Circ. Harvard Coll. Obs., no. 444, 4 pp.
n. NAIL, V. MCK.
1942. Three hundred and thirty-nine new variable stars in the Small Magellanic Cloud. Ann. Harvard Coll. Obs., no. 109, pp. 27–30.
o. SHAPLEY, H.; CARLSTON, A. S.; and NAIL, V. MCK.
1948. The light curves of forty-nine selected Cepheids in the Small Magellanic Cloud. Ann. Harvard Coll. Obs., no. 109, pp. 47–56.
p. SHAPLEY, H., and NAIL, V. MCK.
1948. Cepheid variable stars in the Small Magellanic Cloud. Proc. American Phil. Soc., vol. 92, pp. 310–323. Also Harvard Reprint Ser. II, no. 25.
NAIL, V. MCK.
q. 1949. List of 103 new variable stars and 28 periods in the Small Magellanic Cloud. Bull. Harvard Coll. Obs., no. 919, pp. 6–8.
r. 1951a. Three notes on variable stars in the Small Magellanic Cloud. Bull. Harvard Coll. Obs., no. 920, pp. 13–15.
r. 1951b. Variables in the globular cluster 47 Tucanae. Bull. Harvard Coll. Obs., no. 920, pp. 15–16.
SHAPLEY, H., and NAIL, V. MCK.
s. 1951. Magellanic Clouds, II: Supergiant red variable stars in the Small Cloud. Proc. Nat. Acad. Sci., vol. 37, pp. 138–145.
t. 1953. Magellanic Clouds, V: Fifty eclipsing stars. Proc. Nat. Acad. Sci., vol. 39, pp. 1–5.
u. 1955. Magellanic Clouds, XVII: Seven notes on the Cepheid variables. Proc. Nat. Acad. Sci., vol. 41, pp. 829–836.
v. ARP, H. C.
1960. Southern hemisphere photometry, VIII: Cepheids in the Small Magellanic Cloud. Astron. Journ., vol. 65, pp. 404–444.
w. FEAST, M. W.; THACKERAY, A. D.; and WESSELINK, A. J.
1960. 47 Tucanae: the membership of two RR Lyrae variables. Monthly Notices Roy. Astron. Soc., vol. 120, pp. 64–71.
x. GASCOIGNE, S. C. B., and KRON, G. E.
1964. Photoelectric observations of Magellanic Cloud Cepheids. Private communication (preprint).
SHAPLEY, H., and MCKIBBEN, V.
y. 1942a. Note on the variable stars in the center of the Small Magellanic Cloud. Bull. Harvard Coll. Obs., no. 913, pp. 1–2.
y. 1942b. Eclipsing stars in the Magellanic Clouds. Bull. Harvard Coll. Obs., no. 916, pp. 19–20.
z. GERASIMOVIČ, B. P.
1927. Thirty-two new variable stars. Bull. Harvard Coll. Obs., no. 853, 12 pp.
aa. BAILEY, S. I.
1902. Positions of stars. Ann. Harvard Coll. Obs., vol. 38, Appendix, pp. 237–238.
bb. HENIZE, K. G.; HOFFLEIT, D.; and NAIL, V. MCK.
1954. Magellanic Clouds, XI: Survey of the novae. Proc. Nat. Acad. Sci., vol. 40, pp. 365–372.
cc. SMITH, H. J.
1954. Magellanic Clouds, XII: Observations of a nova in the Small Cloud. Proc. Nat. Acad. Sci., vol. 40, pp. 372–373.

TABLE 3.—*Results of observations* (* in Column 1 denotes newly discovered variables; in Column 5 denotes variable periods)

HV	x	y	Published P	Period	Normal Maxima	M	m	$\overline{m}$	A	⟨m⟩	Obs.
809	1907	9287	0.50909	0.509104*	...	13.51	14.68	14.29	1.17	14.25	480
11212	3462	14232	0.60622	0.606228	31639.636	15.40	15.87	15.64	0.47	15.61	434
12899	3618	5418	1.6906	1.662748	29926.240	16.89	17.80:	17.39	0.91:	17.33	142
810	4205	11520	0.73652	0.736327*	...	13.45	14.63	14.20	1.18	14.16	412
811	4298	12295	Irr.	Irr.	...	14.00	15.00	...	1.00	...	481
813	4585	11774	Irr.	Irr.	...	12.40	14.10	...	1.70	...	487
11216	4782	6390	...	3.114799	32852.400	16.51	17.18	16.95	0.67	16.91	365
11112	5226	4920	6.6774	6.611559	32879.373	15.70	16.92	16.51	1.22	16.43	473
12912*	5288	4778	...	0.885430	32537.270	17.24	17.76:	17.49	0.52:	17.46	176
814	5586	11440	0.37143	0.371546*	...	13.99	14.68	14.34	0.69	14.29	505
11113	5820	3894	3.21393	3.213946	27750.478	16.37	17.45	16.99	1.08	16.92	319
1323	6639	5040	10.74	10.560554	23654.886	14.99	16.25	15.64	1.26	15.56	512
11114	6738	4581	2.7141	2.711953	31296.478	15.90	17.68	17.13	1.78	17.01	400
1324	6762	6237	...	6.663735	29489.442	15.88	16.28	16.09	0.40	16.06	454
11222	6825	5529	1.7155	1.253912	26177.587	17.21	17.85	17.53	0.64	17.49	352
11223	7014	7215	6.0226	407:	25890	16.45	17.55	...	1.10	...	437
1325	7062	6290	...	1.853472	24824.624	17.07	17.50	17.29	0.43	17.23	282
1326	7342	7194	13.732	13.7274	32846.275	14.95	15.97	15.29	1.02	15.22	461
1327	7366	11187	...	0.726109*	...	16.00	16.88	16.60	0.88	16.54	466
1328	7374	5606	15.8396	15.840831	32011.598	14.32	16.00	15.35	1.68	15.24	520
1329	7460	12545	...	3.439606	24761.721	16.13	16.97	16.70	0.84	16.64	456
11226	7542	12168	...	1.853118	29874.456	16.92	17.86	17.54	0.94	17.48	343
1330	7582	7884	...	2.001986	32503.365	16.72	17.93	17.52	1.21	17.43	307
1331	7642	7324	...	3.579654	23340.676	15.96	17.32	16.72	1.36	16.61	459
11229	7968	11634	...	0.584136	31290.495	16.31	17.29	16.94	0.98	16.87	360
1332	8025	6216	...	2.416883	26626.464	16.47	17.36	17.06	0.89	17.00	426
11230	8064	6918	...	3.141217	33172.348	16.72	17.50	17.29	0.78	17.24	444
1333	8199	5276	16.289	16.289	32062.363	14.59	16.07	15.54	1.48	15.44	525
1334	8214	5859	9.45144	9.451439	13888.576	15.03	16.36	15.80	1.33	15.71	518
12913*	8258	5087	...	3.277872	24363.898	16.23	17.46	17.07	1.23	16.99	441
1335	8417	5266	14.3806	14.3806	23344.791	14.65	15.98	15.51	1.33	15.42	527
817	8511	12207	18.900	18.892520*	...	13.63	15.04	14.50	1.41	14.40	533
815	8564	5186	5.79478	5.794683	26547.584	15.86	16.98	16.60	1.12	16.52	500
12901	8688	14232	1.166	15.074089	32053.587	17.16	17.80	17.40	0.64	17.36	279
1337	8706	4904	3.6767	3.676525	31293.486	15.94	17.52	17.10	1.58	16.99	464
1338	8724	5752	8.4933	8.493446	16754.598	16.00	16.87	16.45	0.87	16.39	515
820	8774	17366	6.295	5.200560	26546.594	15.80	17.08	16.57	1.28	16.48	437
1339	8782	7694	...	3.489208	32860.391	16.34	17.44	17.06	1.10	16.99	416
1340	8806	6624	2.45889E	2.458916E	26310.310	16.45	17.37	...	0.92	...	518
816	8842	5244	7.94085	7.94085	31327.456	16.06	16.97	16.57	0.91	16.51	514
12914*	8916	9835	...	1.205423	29958.306	17.40	18.02	17.84	0.62	17.80	325
11115	8967	5130	2.7700	2.769930	31681.542	16.80	17.24	17.08	0.44	17.05	433
1342	9027	6013	17.93849	17.938507	26945.391	14.43	15.22	14.90	0.79	14.85	539
1343	9054	9175	...	4.915696	32879.326	15.85	17.00	16.65	1.15	16.57	510
1344	9162	7062	...	1.730957	32861.343	16.93	17.92	17.61	0.99	17.54	344
1345	9175	7940	13.5	13.476726	27253.625	14.56	15.54	15.14	0.96	15.07	524
11233	9186	10332	...	3.075267	26594.456	16.94	17.54	17.33	0.60	17.29	457
1346	9189	5650	66.93E	66.93E	16755.544	15.86	17.73	...	1.87	...	517
1347	9216	7506	...	2.232631	24684.863	17.20	18.01	17.72	0.81	17.67	327
818	9220	6297	10.33506	10.33506	26304.269	15.18	16.05	15.71	0.87	15.65	527
1348	9240	7700	...	2.248030	34689.458	16.72	17.40	17.14	0.68	17.09	375
11234	9261	7834	...	2.017850	34689.263	17.18	18.01	17.72	0.83	17.66	321
12915*	9265	5562	...	3.068595	30673.250	16.29	17.51	17.09	1.22	17.01	472
1349	9275	9334	...	615:	29869	15.88	17.85	...	1.97	...	347
1350	9303	8425	...	1.526946	29896.383	17.34	18.20	17.92	0.86	17.86	262

TABLE 3.—*Results of observations* (* in Column 1 denotes newly discovered variables; in Column 5 denotes variable periods).—Continued

HV	x	y	Published P	Period	Normal Maxima	M	m	$\overline{m}$	A	⟨m⟩	Obs.
11235	9315	6639	...	2.133454	23344.791	16.78	17.44	17.16	0.66	17.11	489
819	9326	6146	28.4	28.443029	31799.349	14.47	15.90	15.34	1.43	15.24	534
1351	9358	6836	13.08440	13.084381	32037.518	14.79	16.08	15.69	1.29	15.60	517
1352	9361	5322	3.8095	3.8095	29135.403	16.43	17.52	17.17	1.09	17.10	493
12916*	9388	5260	...	3.270539	34685.415	16.43	16.80	16.60	0.37	16.58	343
1353	9394	8698	...	1.440349	28804.379	17.13	17.47	17.33	0.34	17.31	463
1354	9406	6785	2.14	2.306268	31757.240	16.84	18.02	17.71	1.18	17.63	376
1355	9406	7445	7.483	7.483014	29902.361	15.52	16.71	16.23	1.19	16.15	521
1356	9425	5556	3.7464	3.737912	24352.826	16.44	17.52	17.11	1.08	17.04	460
1357	9479	8136	...	2.166298	21816.787	16.62	17.41	17.26	0.79	17.20	438
1358	9486	8164	...	1.998761	30593.593	16.60	17.52	17.21	0.92	17.15	410
1359	9497	8472	...	1.390069	27707.376	17.49	18.25	18.04	0.76	17.99	301
1360	9507	8932	...	2.747562	26502.700	16.39	17.94	17.54	1.55	17.43	446
1361	9544	7225	...	2.474574	32797.400	16.62	17.56	17.31	0.94	17.25	451
821	9570	6141	127.99	127.78	29849.448	12.52	13.44	13.00	0.92	12.94	546
1362	9574	7680	...	8.844470	31291.479	16.30	16.81	16.57	0.51	16.53	519
822	9581	6805	16.75	16.742006	27746.529	14.34	16.21	15.59	1.87	15.46	524
1363	9585	6565	...	10.676233	32846.275	15.74	16.38	16.08	0.64	16.04	523
1364	9586	8995	...	1.754284	33073.647	17.37	18.00	17.79	0.63	17.75	378
1365	9594	6124	12.414156	12.413262	34682.429	15.35	16.54	16.05	1.19	15.97	520
12902	9630	1902	1.13	1.130463	29808.570	16.54	17.80:	17.12:	1.26:	17.04:	86
1366	9687	9062	...	293.2	29808	16.64	[18.00	...	]1.36	...	199
1367	9705	8040	...	2.011372	23341.590	16.78	17.71	17.48	0.93	17.41	439
11237	9747	6201	...	4.388429	29877.448	16.48	17.64	17.20	1.16	17.12	446
1369	9758	8337	31.0	31.024	24332.829	14.85	15.82	15.34	0.97	15.27	530
11238	9762	9465	...	0.618163	25850.393	17.16	17.64	17.41	0.48	17.38	445
11239	9768	8907	...	1.587728	31436.340	17.71	18.30	18.08	0.59	18.05	282
11240	9813	7665	...	6.228822	26572.516	15.66	16.97	16.40	1.31	16.31	493
1371	9827	9344	...	1.445072	30521.643	17.16	18.16	17.85	1.00	17.78	344
11242	9840	12162	...	1.669240	31998.632	17.06	17.71	17.45	0.65	17.40	292
1372	9866	7601	...	15.774115	30548.613	15.04	16.50	15.87	1.46	15.77	515
1373	9876	8774	...	13.709335	29566.245	15.63	16.08	16.08	0.70	16.03	524
1374	9884	6726	8.397	8.396235	31610.648	15.44	16.35	15.97	0.91	15.91	521
1375	9885	5706	510.2	512	26508	16.50	[18.80	...	]2.30	...	220
1376	9887	5659	2.6341	2.638279	32135.248	16.57	18.01	17.54	1.44	17.44	429
1377	9894	7554	...	10.528089	29778.637	14.98	16.20	15.75	1.22	15.67	520
1378	9898	9518	...	2.403286	32879.383	17.32	17.82	17.63	0.50	17.60	356
1379	9913	8062	...	3.909380	27653.590	16.14	17.33	16.94	1.19	16.86	481
1380	9922	8894	...	1.699143	23596.901	17.07	17.95	17.77	0.88	17.71	353
1381	9935	8317	...	3.262293	29870.451	15.94	17.98	17.37	2.04	17.23	414
1382	9952	7916	...	10.883998	30885.633	15.60	17.17	16.62	1.57	16.52	519
1383	9967	5536	1.67	1.627652	26504.653	17.34	17.70	17.57	0.36	17.55	337
1384	9974	8362	...	3.620437	32466.394	15.87	16.56	16.25	0.69	16.20	505
1385	10003	8884	...	1.903428	29911.283	16.87	17.83	17.60	0.96	17.53	401
12917*	10004	5551	...	Irr.	...	16.13	17.30	...	1.17	...	491
1386	10022	7574	...	14.428973	29468.565	15.56	17.06	16.52	1.50	16.42	521
1387	10035	7584	...	4.896944	23974.863	15.97	17.20	16.88	1.22	16.80	521
1388	10036	8094	...	4.654453	29566.245	16.32	17.48	17.07	1.16	16.99	502
1389	10049	10794	...	1.439027	31681.542	16.99	17.96	17.66	0.97	17.60	304
823	10077	6567	31.925	31.925	14604.612	13.68	15.42	14.74	1.74	14.60	544
1390	10084	9641	...	1.934955	16754.598	16.88	17.66	17.47	0.78	17.42	493
1391	10104	9335	2.5775	2.577499	31642.644	16.24	17.59	17.19	1.35	17.10	469
12918*	10110	5289	...	1.707335	30920.612	17.96	18.36	18.24	0.40	18.21	385
1392	10119	9679	...	1.696379	32135.248	16.86	17.56	17.31	0.70	17.26	502
11245	10123	5249	...	1.666819	31610.648	17.76	18.36	18.10	0.60	18.06	322

TABLE 3.—*Results of observations* (* in Column 1 denotes newly discovered variables; in Column 5 denotes variable periods).—Continued

HV	x	y	Published P	Period	Normal Maxima	M	m	$\overline{m}$	A	⟨m⟩	Obs.
1393	10143	7532	7.722	7.722902	26322.285	16.09	16.81	16.54	0.72	16.49	493
11246	10176	9822	...	Irr.	...	15.13	15.67	...	0.54	...	546
1394	10197	7423	6.3023	6.301158	29911.283	16.50	17.58	17.21	1.08	17.14	494
1396	10205	8302	8.08153	8.061161	31062.273	15.14	17.07	16.22	1.93	16.09	522
1397	10274	7332	2.05499:	2.056331	24461.641	17.23	17.90:	17.60	0.67:	17.56	202
1398	10293	8858	1.7321	1.732080	23595.881	17.32	18.25	18.02	0.93	17.96	417
1399	10304	7749	9.1468	9.145282	32818.369	16.87	17.80	17.45	0.93	17.38	486
1400	10304	10786	6.648163	6.648163	29903.610	15.72	16.66	16.25	0.94	16.19	504
1401	10318	8046	4.341	4.341107	24815.593	16.20	17.59	17.10	1.39	17.01	498
1402	10322	5281	10.166	10.426007	32851.302	16.66	16.97	16.82	0.31	16.80	514
1403	10324	8948	1.7793	1.779273	26956.392	17.18	18.19	17.95	1.01	17.88	491
1404	10328	9206	1.9148	1.914748	24051.760	16.89	18.03	17.57	1.14	17.49	298
1405	10334	7881	4.5116	4.511556	32880.265	15.82	17.34	16.91	1.52	16.81	513
11116	10365	7713	10.1594	10.485807	29454.660	15.12	16.14	15.66	1.02	15.59	530
1406	10374	8043	4.50603	4.506027	32850.246	16.53	17.51	17.18	0.98	17.11	497
11117	10416	8100	3.9346	3.911128	32490.255	16.19	17.32	17.10	1.13	17.02	460
1407	10427	8399	2.2437	2.243544	27341.376	17.27	18.14	17.81	0.87	17.75	333
11118	10430	9273	1.9146	1.914638	31782.262	17.32	17.96	17.74	0.64	17.70	290
11248	10437	9062	...	1.564169	31701.458	17.66	18.56:	18.03:	0.90:	17.97:	153
1408	10467	9214	1.6378	1.634472	32062.363	17.44	18.01	17.78	0.67	17.74	213
11249	10470	2754	Irr.	Irr?	...	16.80	17.80	...	1.00	...	364
1409	10498	10682	...	1.579347	32879.372	16.62	17.42	17.16	0.80	17.11	290
11119	10510	8836	1.92765:	1.927625	31976.647	16.99	17.72	17.43	0.73	17.38	251
1410	10515	9334	3.5698	3.569797	30548.613	16.76	17.56	17.30	0.80	17.25	489
11120	10531	9084	2.0750	2.075037	27697.456	17.12	18.07	17.78	0.95	17.72	462
1411	10534	7369	8.850	8.849558	29806.638	15.76	17.30	16.44	1.54	16.33	527
1412	10544	6187	...	6.463832	32052.381	16.48	17.64	17.12	1.16	17.04	507
1413	10546	6744	2.17352	2.153952	23751.559	17.12	18.21	17.86	1.09	17.79	438
1414	10571	8489	2.4592	2.459108	23341.590	16.64	18.18	17.60	1.54	17.50	352
1415	10597	7418	8.141	8.141068	32861.343	16.99	18.02	17.65	1.03	17.58	508
1416	10614	7755	5.663	5.662354	32879.373	16.02	17.38	16.96	1.36	16.87	507
1417	10614	8345	2.29435	2.29435	32860.300	16.99	18.02	17.67	1.03	17.60	317
11251	10633	9050	...	2.009994	31642.644	17.38	18.20	17.87	0.82	17.81	205
1418	10636	8364	1.7410	1.740069	30665.247	16.84	18.12	17.73	1.28	17.64	295
1419	10646	7950	4.9875	4.988128	30507.635	15.98	16.85	16.55	0.87	16.48	501
1420	10649	9186	1.97038	1.970381	16758.644	17.02	17.92	17.69	0.90	17.63	363
11252	10650	9129	...	Irr.	...	16.85	17.62	...	0.77	...	490
1422	10663	6353	3.501	3.500824	33211.448	16.22	17.75	17.23	1.53	17.13	481
1423	10665	6685	...	3.683533	32878.257	17.10	17.76	17.55	0.66	17.50	482
1424	10686	9692	...	2.392815	29135.403	16.70	17.83	17.55	1.13	17.47	472
1425	10697	10476	4.54717	4.547170	24380.743	15.36	17.22	16.61	1.86	16.49	508
1426	10709	8864	10.43885	10.43885	30593.593	15.21	16.63	16.10	1.42	16.01	534
1427	10724	8594	7.335	7.334587	32879.275	16.44	17.42	17.03	0.98	16.96	501
11121	10728	8715	1.6623	1.662300	32037.518	17.24	17.94	17.69	0.70	17.64	363
11253	10730	7691	1.5321	1.532060	32879.326	17.24	18.35	18.00	1.11	17.92	265
824	10734	9857	65.8	65.798	29871.460	12.48	14.22	13.46	1.74	13.34	557
11122	10735	7959	1.7155	1.715560	29926.283	16.88	17.50	17.32	0.62	17.28	345
11123	10740	8430	6.0226	6.011533	32702.459	16.89	18.14	17.56	1.25	17.48	397
1428	10816	10243	...	2.383040	33073.647	17.43	18.02	17.96	0.59	17.92	331
11124	10839	9078	3.13120:	3.131203	25893.497	17.27	18.11	17.79	0.94	17.73	447
1430	10845	8972	24.0	23.97284	34685.262	14.16	15.56	14.99	1.40	14.90	538
11257	10869	6711	...	4.126519	27658.416	16.82	18.02	17.69	1.20	17.61	486
11258	10896	10458	...	3.055944	32879.373	15.70	16.94	16.49	1.24	16.41	523
12919*	10902	10369	...	1.707404	25881.416	17.17	17.97	17.67	0.80	17.62	254
11125	10908	5466	1.58075	1.603654	23596.901	17.44	18.33	18.03	0.89	17.98	358

TABLE 3.—*Results of observations* (* in Column 1 denotes newly discovered variables; in Column 5 denotes variable periods).—Continued

HV	x	y	Published P	Period	Normal Maxima	M	m	$\overline{m}$	A	⟨m⟩	Obs.
1431	10912	9683	4.885	4.885317	25892.327	16.02	17.17	16.71	1.15	16.63	510
1432	10915	7333	Irr.	Irr.	...	16.30	18.00	...	1.70	...	498
11126	10925	9188	1.8388	1.837804	32804.452	17.45	17.78	17.62	0.33	17.60	433
11127	10926	8955	3.05171	3.048898	31291.478	17.32	18.15	17.86	0.93	17.80	452
11259	10937	6735	...	1.993342	29906.234	17.79	18.26	18.05	0.47	18.01	411
1433	10951	6334	...	2.046987E	24431.682	16.14	16.72	...	0.58	...	519
1434	10959	7607	5.833	5.833013	30673.250	15.74	16.87	16.40	1.13	16.32	350
11260	10962	10389	...	1.187552	32851.408	17.30	18.18:	17.78:	0.88:	17.72:	198
12082	10980	11004	...	2.037125	26978.452	16.19	17.66	17.36	1.47	17.26	471
10353	10992	8286	26.567	27.228396	23288.713	15.10	16.32	15.78	1.22	15.70	399
11262	10998	8556	Irr.	Irr.	...	14.47	16.52	...	2.05	...	549
1435	11004	8057	7.011	7.011885	32052.381	15.40	16.80	16.26	1.40	16.17	520
1436	11031	10889	1.6637	1.656112	30561.604	16.25	17.68	17.18	1.43	17.08	347
1437	11045	9046	8.374	8.376213	24821.586	15.16	16.24	15.76	1.08	15.68	544
1438	11054	8712	13.598	13.646365	31799.291	15.02	16.54	16.03	1.52	15.90	542
11128	11059	9350	2.6454	2.647469	28845.285	17.51	18.06	17.90	0.55	17.86	419
11263	11063	8058	23.535E	11.770245	32818.369	16.44	17.00	16.79	0.56	16.75	506
1439	11072	8817	4.18783	4.193169	26563.608	16.32	17.08	16.82	0.76	16.77	513
11264	11072	9454	...	2.007049	26334.320	17.37	18.12	17.88	0.75	17.83	274
12920*	11078	10375	...	1.638479	29811.606	17.16	17.74	17.45	0.58	17.41	423
1441	11086	7175	1.02307E	1.023075E	26944.366	16.04	16.64	...	0.60	...	527
1442	11086	7711	15.292	15.287481	24440.733	14.96	16.50	15.97	1.54	15.87	523
1443	11089	9373	2.994	2.993751	34685.312	16.47	17.92	17.45	1.45	17.35	464
11129	11090	9290	24.480	24.4757	28371.501	15.11	16.74	16.03	1.63	15.92	540
1445	11109	9584	3.693	3.692881	29903.610	16.02	17.32	16.95	1.30	16.86	512
11130	11118	8544	1.7613	1.761301	26689.282	17.25	17.89	17.72	0.64	17.67	394
825	11125	10813	Irr?	Irr.	...	14.42	15.50	...	1.08	...	516
1446	11146	10941	1.8721	1.872140	34682.472	16.50	17.76	17.46	1.26	17.38	335
1448	11175	9057	2.48	2.479556	31293.486	16.37	17.28	17.07	0.91	17.01	428
1449	11186	9834	...	1.597990	26303.401	17.40	17.85	17.71	0.45	17.68	450
1447	11188	6822	...	1.912035	26304.269	16.85	17.71	17.49	0.86	17.43	489
1450	11195	7147	3.143	3.143102	32850.289	16.84	17.68	17.44	0.84	17.38	488
11131	11197	8705	2.0044	2.004402	23751.559	17.16	[17.6	17.43:	...	17.40:	98
1451	11206	8022	30.055	30.063434	24352.826	14.51	16.26	15.69	1.71	15.58	518
12921*	11209	7034	...	1.838299	24686.855	17.62	17.92	17.82	0.30	17.80	330
11271	11212	9055	...	1.771157	29911.283	17.08	17.70	17.52	0.62	17.48	311
1452	11224	6984	...	2.022102	24763.720	17.44	17.74	17.66	0.30	17.64	480
11132	11238	8100	3.089	3.089339	16755.544	16.65	17.44	17.26	0.79	17.21	479
1453	11241	9003	3.70	3.699185	24772.722	15.67	17.13	16.68	1.46	16.58	461
1454	11243	7873	14.068	14.068061	29867.456	15.80	17.11	16.52	1.31	16.43	521
1455	11251	5735	Irr?	Irr.	...	14.63	15.83	...	1.20	...	534
1456	11254	6363	...	Irr.	...	15.40	19.04:	...	3.64:	...	468
1457	11254	9412	5.115	5.112759	27727.294	16.06	17.70	17.03	1.64	16.92	496
11273	11274	4872	...	4.794025	27755.401	16.86	17.58	17.30	0.72	17.25	500
12922*	11276	7044	...	1.557591	24065.748	17.48	17.89	17.70	0.41	17.67	353
11274	11283	10182	...	Irr.	...	16.90	18.10	...	1.20	...	365
11275	11292	10188	...	2.451083	32878.257	16.93	18.02	17.67	1.09	17.60	373
1458	11295	9471	2.7495	2.749549	31379.370	17.07	18.00	17.75	0.93	17.69	429
11133	11298	8388	1.359:	1.359052	24440.733	17.48	18.01	17.77	0.53	17.73	394
1459	11301	7070	...	1.992746	24417.779	16.78	17.50	17.18	0.72	17.13	494
11277	11306	8919	...	2.105760	29585.264	16.80	18.56	17.87	1.76	17.75	242
12923*	11311	7031	...	1.474796	26626.464	17.43	17.89	17.77	0.46	17.74	383
1460	11311	12362	2.91286	2.912862	34299.297	16.15	17.36	17.04	1.21	16.96	473
1461	11314	7839	5.405	5.404616	32850.289	16.40	17.21	16.94	0.81	16.89	496
11278	11328	10542	...	2.964746	26572.516	16.32	17.20	16.96	0.88	16.90	504

TABLE 3.—*Results of observations* (* in Column 1 denotes newly discovered variables; in Column 5 denotes variable periods).—Continued

HV	x	y	Published P	Period	Normal Maxima	M	m	$\bar{m}$	A	⟨m⟩	Obs.
1462	11346	6826	...	2.995806	31611.626	16.56	17.93	17.62	1.37	17.53	497
1463	11360	6214	...	2.171586	23315.640	17.14	18.29	17.94	1.15	17.86	328
1464	11366	8074	9.055	13.295751	32804.452	15.55	16.57	16.22	1.02	16.15	501
10355	11370	8595	9.9157	10.038246	33211.448	15.92	16.52	16.25	0.60	16.21	481
11134	11370	10770	1.70141	1.701427	32504.261	16.88	18.00	17.63	1.12	17.56	279
1466	11384	9086	1.50230	1.502300	32061.385	17.00	18.14:	17.54	1.14:	17.46	163
1468	11397	6423	...	Irr.	...	17.17	18.09	...	0.92	...	367
1469	11432	6621	...	3.223893	26981.369	16.46	17.77	17.44	1.31	17.35	381
1470	11432	7575	4.093	4.092239	28034.526	16.96	18.14	17.82	1.18	17.74	487
1471	11434	9228	11.231	11.192693	16759.606	15.62	16.57	15.98	0.95	15.92	521
1472	11444	6986	...	3.061915	29903.335	16.56	17.60	17.26	1.04	17.12	478
826	11445	7449	6.5657	6.566419	26568.516	15.94	16.88	16.56	0.94	16.50	521
10356	11445	11379	1.8644	1.866556	31701.458	16.30	17.72	17.30	1.42	17.21	289
1474	11461	10194	...	4.160616	27783.280	16.31	16.83	16.59	0.52	16.56	420
11135	11465	9034	2.7698	2.769799	30344.395	16.51	17.66	17.24	1.15	17.16	402
12084	11466	10014	...	1.744832	30344.395	16.72	17.38	17.16	0.66	17.12	352
827	11473	10674	13.4657	13.465656	30561.604	14.50	15.56	15.12	1.06	16.05	511
1475	11474	7747	...	Irr.	...	13.41	14.27	...	0.86	...	516
11136	11481	7808	2.9427	2.942630	30507.635	16.60	17.74	17.40	1.14	17.32	465
1476	11483	10852	2.05518	2.050013	23752.564	16.47	17.22	17.03	0.75	16.98	345
1477	11484	10494	...	4.123949	26328.373	16.78	17.42	17.19	0.64	17.15	461
11283	11494	8371	0.749	3.008297	24025.729	17.31	18.20	17.92	0.89	17.86	360
11137	11496	9120	1.73984	1.739793	29806.638	17.72	18.38	18.09	0.66	18.05	203
1478	11503	7695	17.535	17.532786	26563.608	15.88	16.65	16.36	0.77	16.31	512
11284	11514	9378	3.62549E	3.625487E	34682.321	15.36	16.04	...	0.68	...	516
11138	11515	9096	2.846	2.846392	32880.265	17.43	18.26	18.00	0.93	17.94	339
1480	11520	8480	4.8459:	4.846055	29872.455	16.14	17.08	16.78	0.94	16.72	450
11286	11535	9381	...	2.756272	28373.456	16.60	17.58	17.26	0.98	17.19	357
1481	11540	7996	15.02	15.651902	26512.623	15.08	16.50	16.04	1.42	15.95	512
1482	11544	8344	15.836	15.82769	31398.246	15.27	17.04	16.57	1.77	16.45	532
1483	11544	8739	...	3.832782	16760.531	17.04	17.87	17.52	0.83	17.46	346
1484	11561	8727	9.10291	9.025906	32508.406	15.51	16.17	15.84	0.66	15.80	528
1485	11570	11320	7.1561E	3.577997E	16757.542	17.30	17.54	...	0.24	...	414
1486	11587	8294	9.18991	9.189303	31782.262	16.08	17.25	16.75	1.17	16.67	524
1487	11593	9874	...	9.560778	24504.568	15.18	16.26	15.74	1.08	15.67	525
828	11594	8045	16.29	16.296996	13861.607	16.31	17.48	17.02	1.17	16.94	504
1488	11603	6802	...	3.283231	25881.416	16.37	17.65	17.22	1.28	17.14	487
11139	11607	8682	3.2250	3.224949	26313.268	16.41	17.68	17.21	1.27	17.12	461
1489	11628	6966	...	3.420441	28776.476	16.69	17.40	17.22	0.71	17.17	516
11287	11628	10182	3.24414	3.243583	31738.367	16.40	17.49	17.18	1.09	17.11	389
1490	11634	8844	2.43022	2.433851	30593.593	17.14	18.28	17.74	1.14	17.66	233
11289	11646	9387	...	0.788189	29926.405	17.46	18.18	17.88	0.72	17.83	340
1491	11663	10415	...	1.547633	31342.355	17.00	17.78	17.48	0.78	17.43	344
1492	11666	10803	6.292208	6.292208	23654.886	15.14	16.54	15.99	1.40	15.90	500
1493	11669	7094	...	4.672416	32490.255	16.86	17.52	17.33	0.66	17.28	502
12924*	11683	6951	...	Irr.	...	16.67	17.75	...	1.08	...	449
1494	11686	15915	1.799570	1.799570	26312.267	16.30	16.85	16.62	0.55	16.58	444
1495	11687	11068	1.48554:	3.042297	26956.392	16.40	16.94	16.71	0.54	16.67	418
11140	11693	8908	7.1638	7.164241	34682.472	16.11	17.26	16.84	1.15	16.76	502
1496	11696	6478	...	1.776653	31998.632	17.54	18.21	18.03	0.67	17.99	299
1497	11698	6400	...	2.311001	29881.449	16.04	18.12	17.89	1.08	17.82	352
10357	11700	8397	32.010	32.012175	26568.518	13.98	15.83	15.19	1.85	15.07	523
12925*	11700	8506	...	5.888865	26177.587	16.65	17.51	17.20	0.86	17.14	516
829	11706	9748	88.5	87.627059*	...	12.80	13.72	13.30	0.85	13.24	555
1499	11707	8699	4.9868	5.002076	31625.631	16.45	17.80	17.40	1.35	17.31	452

TABLE 3.—*Results of observations* (* in Column 1 denotes newly discovered variables; in Column 5 denotes variable periods).—Continued

HV	x	y	Published P	Period	Normal Maxima	M	m	$\overline{m}$	A	⟨m⟩	Obs.
1500	11712	6566	...	5.949796	26572.516	16.35	17.64	17.18	1.29	17.09	401
11142	11748	8508	1.4285	1.428525	31625.631	16.79	18.27	17.94	1.48	17.84	405
1501	11749	9005	27.4	27.406271	34300.306	14.75	16.16	15.38	1.41	15.29	534
1502	11764	11845	...	3.545848	13861.607	16.09	16.79	16.53	0.70	16.48	484
11143	11768	8909	1.2902	1.290208	29870.451	17.10	18.00:	17.54:	0.90:	17.49:	333
11144	11770	9146	3.0744	3.074443	26308.461	16.40	17.75	17.26	1.35	17.17	380
1503	11771	10125	...	5.803359	31796.310	15.16	17.12	16.54	1.96	16.41	514
1504	11779	8653	1.94869	1.946370	28776.476	16.96	17.94	17.53	0.98	17.46	302
1505	11781	12212	1.2512200	1.251220	32846.275	17.09	17.74	17.48	0.65	17.44	378
830	11782	6843	...	4.350607	16727.653	16.24	17.64	17.24	1.40	17.15	492
11145	11783	7784	3.1905	3.190287	29881.449	16.88	17.46	17.28	0.58	17.24	366
1506	11784	11355	1.87502	1.886248	16760.614	16.80	17.80	17.47	1.00	17.40	296
1507	11802	6917	...	2.876680	14604.612	17.08	17.71	17.52	0.63	17.48	469
12088	11802	10956	...	1.891453	31701.458	16.68:	17.36	17.13	0.68:	17.08	324
1508	11805	6979	...	3.372966	23340.586	16.10	17.64	17.22	1.54	17.11	485
11292	11810	7883	...	Irr.	...	17.10	17.95	...	0.85	...	167
11295	11829	9324	571.02	565.02	33563	15.10	17.74	...	2.64	...	299
1509	11843	7850	6.820:	6.818213	23290.707	15.89	17.14	16.58	1.25	16.50	485
1510	11845	15900	0.5708566	0.570857	33104.622	15.82	16.79	16.53	0.97	16.47	468
1511	11847	10780	2.16088	2.160859	29585.264	16.72	17.96	17.63	1.24	17.55	401
1512	11849	7094	...	6.546816	29849.488	15.92	17.02	16.63	1.10	16.58	512
1513	11853	11282	1.36142	1.361420	30528.640	17.18	17.64	17.41	0.46	17.38	389
1514	11859	7483	5.1206	5.119096	34682.429	15.97	17.08	16.67	1.11	16.62	493
11296	11868	13074	...	3.072054	29681.369	16.25	17.00	16.77	0.75	16.72	489
12926*	11869	6512	...	18.613655E	34685.415	17.68	18.13	...	0.45	...	478
11146	11880	7458	1.820	1.820141	29938.243	16.94	17.46	17.29	0.52	17.26	410
1515	11880	11225	...	1.140726	32142.259	17.12	17.70	17.48	0.58	17.44	386
1516	11886	6513	...	1.504662	30578.513	17.11	18.20:	17.77	1.09:	17.70	182
1517	11890	11181	1.44324	1.443249	23320.599	16.53	17.87	17.47	1.34	17.38	275
1583	11894	7068	...	6.084428	26689.282	16.74	17.45	17.18	0.71	17.13	507
1519	11905	9279	4.501	4.500673	28065.301	15.94	17.22	16.70	1.28	16.61	498
11147	11906	8752	1.5742	1.574201	29585.264	17.60	18.52	18.01	0.92	17.95	239
1520	11914	9846	6.384	6.384758	29926.333	16.17	17.02	16.71	0.85	16.65	499
1521	11922	10414	10.4	10.427528	26929.624	15.18	16.04	15.58	0.86	15.52	512
831	11926	6774	...	4.173919	34685.466	17.00	18.04	17.72	1.04	17.66	475
1522	11928	8166	22.154	22.14355	26508.640	14.75	16.36	15.62	1.61	15.51	533
11148	11932	8486	1.9030	1.902969	30578.503	16.57	17.89	17.52	1.32	17.43	430
1523	11934	10387	...	3.858813	34299.297	15.96	16.98	16.68	1.02	16.61	490
11297	11942	9217	1.8911	1.891206	32034.503	17.40	18.13	17.83	0.73	17.78	263
11149	11943	7829	1.5576	1.558969	26689.282	17.53	[18.4	17.82	...	17.75:	193
832	11943	10143	...	Irr.	...	14.13	14.75	...	0.62	...	533
11298	11948	8123	1.5097	1.508145	28783.395	17.65	18.50	18.32	0.85	18.26	272
1525	11955	6637	...	4.384541	29811.606	16.70	17.99	17.58	1.29	17.49	496
1526	11957	6847	...	5.087583	23682.813	16.16	17.88	17.35	1.72	17.23	432
1527	11971	9056	7.23	7.228515	26945.391	16.00	17.06	16.74	1.06	16.67	517
1528	11971	11495	...	2.304647	26571.493	17.19	17.77	17.56	0.58	17.52	340
11150	11974	7448	2.3821	2.382121	26502.647	16.57	17.33	17.15	0.76	17.10	432
1529	11981	6792	...	Irr.	...	16.43	18.28	...	1.85	...	304
11299	11987	8100	1.5515	1.551542	31796.310	17.46	18.39	18.12	0.93	18.06	319
11151	11990	7990	2.7086	2.708452	26929.624	17.14	18.00	17.67	0.86	17.61	320
11300	12005	8634	...	1.962502	29585.264	17.30	17.95	17.75	0.65	17.71	357
1530	12006	6407	...	3.037925	27750.478	16.84	17.94	17.62	1.10	17.54	483
1531	12006	6675	...	5.112082	29484.460	16.62	17.55	17.14	0.93	17.07	523
1532	12013	8936	1.9193	1.920399	29906.385	16.80	18.06	17.57	1.26	17.49	273
12089	12018	10632	...	1.270844	29926.240	17.23	18.12	17.77	0.89	17.71	207

TABLE 3.—*Results of observations* (* in Column 1 denotes newly discovered variables; in Column 5 denotes variable periods).—Continued

HV	x	y	Published P	Period	Normal Maxima	M	m	$\bar{m}$	A	⟨m⟩	Obs.
12927*	12024	7041	...	3.252551	30663.265	16.60	17.54	17.31	0.94	17.25	500
11301	12036	7826	1.27665E	1.276650E	31799.291	17.22	17.67	...	0.45	...	444
1533	12040	8773	16.45	16.435021	28804.379	15.61	16.94	16.29	1.33	16.20	523
11302	12042	8324	...	1.371704	28034.526	17.90	18.42	18.27	0.52	18.24	337
1534	12044	7235	...	3.642337	31712.374	15.74	17.02	16.66	1.28	16.55	473
1535	12048	6665	...	2.062948	34682.378	17.55	18.18	17.92	0.63	17.88	400
12090	12048	10332	1.49606	1.496128	29868.460	17.69	18.39	18.12	0.70	18.07	191
12091	12048	11568	...	1.170326	29843.597	17.16	17.54	17.34	0.38	17.31	375
1536	12055	8213	4.787	4.786655	30619.350	16.10	17.48	17.05	1.38	16.96	472
1537	12063	5931	5.8418	5.842213	32031.595	15.88	16.90	16.54	1.01	16.47	522
11152	12063	7552	4.2845	4.284600	26511.653	17.01	17.65	17.43	0.64	17.39	447
1538	12072	6487	...	2.544633	28034.526	17.05	17.79	17.62	0.74	17.57	436
1539	12076	6205	...	4.212814	32441.399	17.17	18.15	17.75	0.98	17.68	481
1540	12076	6975	...	2.890675	32052.381	16.46	17.46	17.24	1.00	17.17	502
1541	12086	8297	19.335	19.326884	32846.275	14.66	15.54	15.12	0.88	15.06	493
12092	12090	10320	1.49554	1.495513	26956.392	17.41	18.25	17.93	0.84	17.87	315
11303	12090	13890	540	533.87	29958	15.20	[18.00	...	]2.80	...	308
1542	12095	12748	...	1.319185	26331.335	16.68	17.20:	17.07	0.52:	17.04	443
10358	12096	11055	3.17798	3.159687	29100.560	16.12	16.90	16.58	0.78	16.53	491
11304	12099	9360	...	1.418273	34689.263	17.50	18.26	17.76	0.76	17.71	194
1543	12106	7540	20.461	20.454500	24402.678	14.85	16.68	15.75	1.83	15.63	530
1544	12107	8498	3.94	3.939403	31625.631	16.98	17.88	17.50	0.90	17.44	413
1545	12110	8994	2.5857	2.581644	26331.335	16.50	17.98	17.35	1.48	17.25	300
1546	12116	8133	2.7988	2.548317	23751.559	16.90	17.85	17.54	0.95	17.48	298
1547	12116	10356	...	1.874579	29926.538	17.88	18.66	18.44	0.78	18.39	426
1548	12119	10596	...	7.350077	29843.597	15.82	16.28	16.07	0.46	16.04	512
1549	12121	6754	...	2.026096	16727.653	17.32	17.87	17.63	0.55	17.59	506
1550	12125	8717	3.367827	3.360949	33129.642	15.93	17.47	17.04	1.54	16.34	382
1551	12126	7066	...	4.496747	26632.395	16.54	17.52	17.18	0.98	17.11	508
11153	12132	5859	1.6034	1.604173	34300.306	17.60	18.14:	17.91	0.54:	17.87	224
12093	12144	10422	1.28163	1.281473	26547.584	17.48	17.90	17.73	0.42	17.70	440
11306	12149	9436	...	1.685201	24433.677	16.64	17.86	17.49	1.22	17.41	280
1552	12154	9640	...	3.948901	27786.361	16.26	17.49	17.08	1.23	17.00	503
1553	12156	8037	12.539	12.543274*	...	16.02	17.20	16.79	1.18	16.71	536
11154	12156	8700	2.4215	2.421604	26303.401	16.41	17.56	17.24	1.15	17.17	478
1554	12162	6403	...	1.799775	32878.396	17.59	18.23	17.99	0.64	17.94	303
11307	12170	7910	3.1498	3.149805	32861.253	17.62	18.06	17.88	0.44	17.85	273
1555	12171	10944	4.9273	4.942396	21813.786	15.29	16.90	16.30	1.61	16.19	487
11308	12172	7790	3.2868:	3.286803E	26329.300	17.45	17.79	...	0.34	...	485
11155	12223	8976	1.4383	1.438301	33073.647	17.00	17.50:	17.34:	0.50:	17.31:	346
833	12233	20164	228.8	239.92	24359	11.20	[17.70	...	]6.50	...	225
1557	12233	7273	1.9028	1.902801	30970.373	16.23	17.86	16.57	0.63	16.53	502
11311	12239	8580	...	1.389389	24462.659	17.58	18.20	18.00	0.62	17.96	337
1558	12247	9275	1.77177:	1.771764	32031.595	16.86	17.80	17.51	0.94	17.45	339
1559	12279	10104	...	5.953409E	24408.793	16.64	17.33	...	0.69	...	518
1560	12280	8975	15.50	15.509166	29074.651	14.87	16.06	15.52	1.19	15.44	510
1561	12284	7926	6.473	6.473372	32880.399	16.26	18.08	17.33	1.92	17.21	432
1562	12284	9494	4.388	4.388255	32845.251	15.99	16.98	16.60	0.99	16.53	483
1563	12286	6386	...	5.665369	31976.647	16.19	17.46	16.99	1.27	16.91	508
1564	12286	8905	5.25	5.254004	32509.259	14.65	15.46	15.26	0.81	15.21	529
12097	12288	9918	2.36526	2.365257	30619.350	17.53:	18.24:	17.89:	0.68:	17.84:	253
12098	12288	12012	...	1.193612	32845.251	17.85	[18.4	18.20:]	0.55	18.15:	185
11156	12300	9096	2.40930	2.412790	29787.639	16.40	17.10	16.87	0.70	16.82	491
1565	12311	7566	1.9369:	1.936813	25892.327	17.47	18.34	18.00	0.87	17.94	369
1566	12324	6326	...	4.313878	29871.460	16.91	17.25	17.11	0.34	17.09	483

TABLE 3.—*Results of observations* (* in Column 1 denotes newly discovered variables; in Column 5 denotes variable periods).—Continued

HV	x	y	Published P	Period	Normal Maxima	M	m	$\overline{m}$	A	⟨m⟩	Obs.
11315	12330	9702	2.00335E	2.003334E	25850.293	15.88	16.68	...	0.80	...	486
1567	12342	7629	2.00302	2.00302	34690.319	16.79	18.16	17.87	1.37	17.78	479
1568	12344	16633	2.63775	2.637709	29484.460	16.76	17.34	17.17	0.58	17.13	401
12100	12348	10230	...	1.459004	29870.451	16.88	17.70	17.34	0.82	17.29	254
12101	12348	11424	...	1.907298	26626.464	16.77	17.22	16.99	0.45	16 96	479
11157	12360	12804	64.85	68.9085	24408.793	13.18	13.90	13.58	0.82	13.53	511
12928*	12364	8826	...	4.168230	31712.374	15.60	16.52:	16.25:	0.92:	16.19:	517
1569	12367	10947	9.47006	9.525624	23320.599	15.17	16.42	15.94	1.25	15.86	509
12102	12372	10368	1.04318E	1.043197E	32003.648	16.62	17.03	...	0.41	...	476
11158	12373	8856	3.2518	3.251800	16753.625	16.83	17.37:	17.15	0.54:	17.12	331
1570	12384	9264	5.7215	5.721871	25850.393	15.81	17.14	16.73	1.33	16.64	482
11159	12393	9192	2.07318:	2.073063	30885.633	16.66	17.38	17.04	0.72	17.33	446
11320	12394	8830	...	1.598271	29896.402	17.13	[17.63	17.42:]	0.50	17.36:	283
1571	12397	11537	2.6018	2.601802	32504.261	17.18	17.82	17.60	0.64	17.56	457
1572	12406	6657	...	4.838280	29791.623	16.41	17.58	17.15	1.17	17.07	490
11321	12406	11289	2.08597	2.087309E	26565.502	16.31	16.97	...	0.66	...	502
11160	12408	6108	1.48292	1.482934	23751.559	17.00	17.80	17.57	0.80	17.52	323
10359	12417	9645	1.898	1.897825	32142.259	16.65	17.27	16.98	0.62	16.94	517
1573	12434	9378	...	Irr.	...	16.23	17.40	...	1.17	...	494
1574	12444	10789	3.38782	3.387867	32880.265	16.52	17.77	17.44	1.25	17.36	509
11161	12452	6768	1.6612	1.661201	24461.641	17.16	17.84	17.65	0.68	17.60	330
1575	12466	11322	2.89979	2.904684	29958.306	15.99	16.89	16.64	0.90	16.58	473
11162	12468	8013	2.7612	2.761200	30523.640	17.21	18.09	17.87	0.88	17.81	423
1576	12471	8755	4.34794	4.336307	24824.624	15.33	16.58	16.21	1.25	16.13	509
1577	12475	6645	...	3.248895	23320.599	16.72	17.66	17.35	0.94	17.29	469
1578	12480	14724	1.888397	1.888397	25893.497	16.46	16.90	16.70	0.44	16.67	495
1579	12483	8451	14.58	14.573011	24331.824	14.63	15.97	15.46	1.34	15.37	489
1580	12484	7586	3.94610	3.941244	31738.367	15.94	17.80	17.21	1.86	17.09	497
1581	12488	6813	...	4.461876	34685.312	16.12	17.26	16.83	1.14	16.75	495
11324	12493	8786	4.16146:	1.313907	31006.291	17.62	18.20	17.93	0.58	17.89	102
1582	12495	11735	7.68	7.681495	32861.343	15.82	16.38	16.10	0.56	16.06	495
11163	12510	1629	3.1123	3.112379	26945.391	16.46	17.68	17.27	1.22	17.17	354
11164	12511	8204	1.8664	1.866406	29811.606	17.06	17.92	17.63	0.86	17.57	393
1584	12519	8465	3.969	3.968207	34690.267	15.77	16.74	16.45	0.97	16.39	485
1585	12534	7359	3.7442	3.739800	31398.246	16.75	17.42	17.17	0.67	17.13	490
12106	12534	10092	...	2.003811	24408.793	16.57	17.38	17.06	0.81	17.01	327
1586	12534	10416	Irr.	Irr.	...	16.42	17.38	...	0.96	...	450
11327	12535	8123	...	2.222217	32034.461	17.58	18.35:	18.13:	0.77:	18.08:	273
1587	12540	10703	2.4194	2.419333	32879.275	16.34	18.10	17.54	1.76	17.42	478
1588	12544	7804	5.59018	5.590184	16760.780	16.92	17.62	17.36	1.30	17.27	496
12107	12552	10440	1.40359	1.403556	29100.560	17.20	17.94	17.63	0.74	17.58	315
834	12555	11451	73.5	73.589*	...	12.47	13.40	13.05	0.93	12.99	518
1589	12564	9194	8.333	8.332986	24418.727	15.60	16.66	16.19	1.06	16.12	505
1590	12566	11506	1.98565	1.985652	34299.274	16.84	17.57	17.38	0.73	17.33	464
1592	12579	9113	7.53	7.534092	29872.455	15.40	16.06	15.76	0.66	15.72	509
1593	12591	6824	...	4.846347	27664.414	16.04	17.22	16.76	1.18	16.68	495
11329	12591	9327	388.05	390	23344	15.76	17.80	...	2.04	...	466
1594	12603	7232	...	2.227757	29906.327	16.30	17.40	17.14	1.10	17.07	494
1595	12606	4849	...	0.547478	29926.283	15.93	16.83	16.61	0.90	16.55	492
12108	12606	10848	15.60	15.610365	24380.743	14.50	15.76	15.22	1.26	15.14	505
11165	12615	8262	4.357	4.356862	26559.611	16.60	17.40	17.05	0.80	17.00	490
1597	12626	12759	4.19275	4.192749E	31655.524	16.96	17.86	...	0.90	...	446
11166	12633	9318	1.37784	1.377264	32004.637	16.85	17.86	17.47	1.01	17.40	256
12929*	12634	7985	...	2.602804	31710.455	16.90	17.55	17.24	0.65	17.20	479
12109	12636	11568	...	3.168306	34690.370	16.36	17.23	16.95	0.87	16.89	453

TABLE 3.—*Results of observations* (* in Column 1 denotes newly discovered variables; in Column 5 denotes variable periods).—Continued

HV	x	y	Published P	Period	Normal Maxima	M	m	$\bar{m}$	A	⟨m⟩	Obs.
11167	12641	7583	1.8562	1.855078	32793.394	16.88	17.48	17.23	0.60	17.19	487
1598	12641	9945	...	4.582237	24504.568	15.62	16.76	16.44	1.14	16.38	535
11168	12644	8447	1.7347	1.734575	27746.529	17.30	18.12	17.86	0.82	17.81	309
1599	12646	8794	7.4985	7.498219	27680.449	15.87	16.75	16.35	0.88	16.29	485
11169	12647	8940	1.6587	1.658716	28783.395	16.78	17.50	17.29	0.72	17.24	311
1600	12668	13076	...	2.684117	23347.528	15.99	16.78	16.34	0.79	16.28	508
11332	21670	7995	...	2.707408	25850.393	16.99	18.32	17.84	1.33	17.75	350
10360	12672	9261	3.2665	3.266554	28040.467	16.12	17.14	16.78	1.02	16.71	459
1601	12685	6625	...	4.735880	29806.634	16.47	17.54	17.12	1.07	17.05	491
1602	12685	7044	...	3.997793	29928.242	16.54	17.67	17.35	1.13	17.27	488
1603	12685	15060	3.24365	3.243647	29926.405	15.37	16.98	16.43	1.61	16.32	487
1604	12694	12730	2.08	2.072058	23320.599	16.80	17.80	17.35	1.00	17.28	319
12111	12702	10200	...	102.817E	29958.306	17.00	17.53	...	0.53	...	448
11170	12705	12897	5.153550	5.145696	31796.310	16.25	16.70	16.51	0.45	16.48	483
12930*	12710	10611	...	2.595966	34690.418	16.16	17.12	16.69	0.96	16.64	437
835	12722	10260	9.05141	9.051330	32878.305	14.82	16.14	15.50	1.32	15.41	437
1605	12723	6456	...	6.209522	29778.637	16.30	17.23	16.71	0.93	16.66	487
1606	12724	6740	...	3.487541	28045.406	16.12	17.60	17.12	1.48	17.02	485
12112	12732	10572	...	4.180584	32880.399	16.21	17.29	16.93	1.08	16.86	443
1607	12744	11626	4.2403	4.245816	31801.286	15.51	16.76	16.30	1.25	16.22	438
1608	12760	11617	4.4739	4.491939	32419.541	16.20	17.16	16.83	0.96	16.78	440
1609	12764	8405	3.0519	3.051804	32880.296	16.52	17.34	17.07	0.82	17.02	357
1610	12767	11006	11.644997	11.644997	31799.349	14.20	15.66	15.03	1.46	14.93	520
1611	12769	13055	2.95661:	2.956673	24772.722	16.15	16.90	16.59	0.75	16.54	502
1612	12777	7914	6.1823	6.182992	32062.363	14.94	17.16	16.34	2.22	16.19	533
11335	12788	9368	...	1.790078	23341.668	16.48	16.95	16.74	0.48	16.71	437
1614	12792	9748	...	2.768695	24787.682	15.97	17.10	16.80	1.13	16.72	495
1615	12796	11654	1.4486	1.450501	26594.456	16.66	17.82	17.45	1.16	17.37	350
1616	12798	13566	2.94764	2.944988	31976.647	15.79	17.29	16.88	1.50	16.78	470
1617	12799	7943	3.7411	3.741143	31342.355	16.74	17.50	17.29	0.76	17.24	413
1618	12800	12307	5.61	5.649335	14604.612	14.89	16.70	16.00	1.81	15.88	492
1619	12805	12764	4.37535	4.375314	26328.373	15.73	16.94	16.55	1.21	16.47	467
1620	12816	10555	3.62043E	3.626460E	32537.326	14.25	14.77	...	0.52	...	535
12114	12828	9852	...	1.280633	28376.572	17.20	18.30	17.91	1.10	17.84	397
11171	12832	8812	2.9741	2.974102	26304.269	16.58	17.47	17.21	0.89	17.15	366
1622	12854	6955	...	2.030989	27253.622	16.90	17.48	17.22	0.58	17.18	489
11337	12858	8829	...	Irr.	...	17.15	17.55	...	0.40	...	334
1623	12862	5513	1.3961	1.396100	26502.647	16.90	17.76	17.50	0.86	17.44	396
1624	12862	10886	4.93861	4.916808	26929.624	15.66	17.20	16.72	1.54	16.62	460
1626	12874	7429	5.211	5.202724	29826.594	16.30	17.48	17.06	1.18	16.98	497
2100	12881	6953	...	1.796300	23344.538	16.68	17.35	17.07	0.67	17.03	527
1627	12884	7936	...	3.598520	31670.549	16.47	17.15	16.89	0.68	16.84	335
12931*	12886	7926	...	2.769561	33160.533	16.62	17.30:	16.97	0.68:	16.92	331
1628	12887	8233	2.3328	2.332737	27722.387	16.73	17.90	17.53	1.17	17.45	358
1629	12906	10521	2.76673	2.769078	24468.688	16.42	17.32	16.99	0.90	16.93	410
1630	12916	8634	11.4	11.401209	24025.729	15.03	16.17	15.75	1.14	15.67	493
1631	12920	12318	3.65920	3.667450	27658.416	15.55	16.82	16.46	1.27	16.38	485
11172	12923	8309	1.3929	1.392919	31738.367	17.66	18.20:	17.90:	0.54:	17.86:	176
1632	12924	11599	8.1057:	8.126580	29778.637	15.78	16.34	16.04	0.56	16.00	488
1633	12925	8354	5.20	5.200830	32000.655	15.74	16.81	16.44	1.07	16.37	470
1634	12926	9524	3.97	3.970365	32004.637	15.88	17.76	17.05	1.88	16.92	491
1635	12927	8264	5.2502	5.249619	29204.247	15.93	16.81	16.48	0.88	16.40	454
1636	12934	9714	32.7	32.746	31752.242	14.14	14.97	14.64	0.83	14.58	544
11173	12939	8815	1.4199	1.419892	31626.627	17.01	17.67	17.43	0.66	17.39	281
11174	12942	9522	1.9977	1.997551	13888.576	16.60	17.81	17.53	1.21	17.45	482
1637	12944	7680	3.32157	3.324999	17447.825	16.19	17.36	17.01	1.17	16.93	531
1638	12960	11820	1.71537	1.715372	29826.594	16.84	17.86	17.41	1.02	17.34	208

TABLE 3.—*Results of observations* (* in Column 1 denotes newly discovered variables; in Column 5 denotes variable periods).—Continued

HV	x	y	Published P	Period	Normal Maxima	M	m	$\bar{m}$	A	⟨m⟩	Obs.
1639	12962	8523	2.5475	2.547530	23287.716	16.64	17.32	17.08	0.68	17.03	265
12122	12966	12156	Irr.	119.54	24077.	14.55	[17.3	...]	2.75	...	307
1641	12974	12406	4.86003	4.860834	33563.346	14.98	16.38	15.84	1.40	15.75	396
1642	12980	6024	2.62051	2.628929	24359.896	15.90	17.31	16.85	1.41	16.76	472
1643	12982	7836	3.0576	3.057767	24002.830	15.94	17.14	16.86	1.20	16.78	509
11338	12986	9040	...	1.517858	31379.370	17.07	17.58	17.46	0.51	17.43	407
1644	12995	7356	Irr.	210 ±	26329.	15.40	17.20	...	1.80	...	504
1645	12996	7973	300.3	300.3	26978.	17.56	18.72	...	1.16	...	122
1646	13012	10047	5.311	5.233821	26594.456	15.50	16.82	16.37	1.32	16.28	521
1649	13021	9944	5.323	5.323963	32822.403	15.56	16.83	16.38	1.27	16.30	523
1650	13023	7936	2.58	2.583839	29872.455	15.58	17.10	16.64	1.52	16.54	482
1651	13037	6604	...	3.008016	23341.689	16.57	17.12	16.85	0.55	16.81	492
1652	13037	10326	...	Irr.	...	14.47	15.72	...	1.25	...	536
11175	13038	9564	1.4912	1.491177	23605.845	16.86	17.67	17.44	0.81	17.39	429
1653	13051	8761	3.9717	3.972384	26570.518	15.95	17.46	16.99	1.51	16.89	487
11339	13051	9749	...	1.423040	27749.451	16.72	17.68	17.44	0.96	17.37	395
1654	13058	13356	2.24494	2.243380	29542.397	16.10	17.63	17.14	1.53	17.04	414
1655	13065	9663	1.61232:	1.611432	32467.374	16.89	17.32	17.20	0.43	17.17	457
1656	13070	9203	1.7587	1.758690	32508.261	16.62	17.55	17.29	0.93	17.23	399
11341	13070	10226	...	1.778777	24363.898	17.25	17.98	17.76	0.73	17.71	360
1657	13075	9673	4.667	4.667009	26189.516	16.38	17.27	16.93	0.89	16.87	466
12932*	13084	6042	...	0.671453	30523.640	16.65	17.11	16.87	0.46	16.84	477
1658	13086	11751	1.4669	1.467565	16760.614	16.36	17.13	16.82	0.77	16.77	385
11342	13086	12990	1.9555:	1.956663	29926.488	16.92	17.92	17.63	1.00	17.56	378
12123	13092	10872	...	1.423518	26547.584	16.53	17.92	17.50	1.39	17.41	319
1659	13094	11419	...	4.051388E	29906.385	15.78	16.51	...	0.73	...	499
838	13095	8168	Irr.	663	23545.	14.40	[17.95	...]	3.55	...	394
1660	13099	8694	...	2.330948	29519.364	16.32	17.44	17.18	1.12	17.10	470
12124	13122	11238	...	3.072820	23752.564	16.00	16.63	16.34	0.63	16.30	474
1662	13124	14094	...	3.050324	32537.326	16.83	17.50	17.19	0.67	17.15	460
11345	13128	9294	1.176027	2.352054E	24763.720	16.70	17.44	...	0.74	...	528
1663	13132	7390	...	3.391003	32135.248	15.62	17.34	16.77	1.72	16.65	500
1664	13136	6711	...	1.830680	24402.678	16.96	17.41	17.19	0.45	17.16	483
1665	13144	9774	...	4.252677	29926.333	15.85	16.90	16.54	1.05	16.47	510
11347	13148	10356	...	1.186869	29869.389	17.10	17.91	17.61	0.81	17.55	318
1666	13149	11134	7.75344	7.771699	26310.310	14.99	16.02	15.51	1.03	15.44	523
836	13150	14274	9.40344	9.403445	29780.630	14.81	16.12	15.54	1.31	15.45	506
1667	13157	8466	...	3.519801	16755.628	16.21	17.21	16.90	1.00	16.83	456
12125	13158	10272	...	1.781369	29204.247	16.88	18.02	17.80	1.14	17.72	363
1668	13162	6785	...	1.648353	31342.355	16.46	16.90	16.64	0.44	16.61	490
1669	13162	10796	3.1888	3.188674E	32860.300	14.75	15.28	...	0.53	...	528
837	13164	12554	42.6	42.680324*	...	13.20	14.56	13.99	1.36	13.90	519
1670	13165	7613	...	2.741296	32854.288	16.66	17.76	17.41	1.10	17.34	484
12933*	13166	7637	...	1.428982	32851.254	17.64	18.18	18.05	0.54	18.01	271
1671	13178	12849	4.839625	4.900736	26978.452	14.51	16.49	15.74	1.98	15.61	504
1672	13180	7769	...	5.104515	34682.429	16.34	17.26	16.86	0.92	16.80	488
1674	13185	8973	...	1.820330	29870.451	16.78	[17.8	...]	1.02	17.4 :	165
11350	13205	10310	...	1.818129	27253.625	17.84	18.22	18.16	0.38	18.13	305
11351	13206	12738	...	Irr.	...	14.84	16.00	...	1.16	...	509
1676	13213	7258	...	6.389654	31293.486	15.82	16.97	16.53	1.15	16.45	507
1677	13215	8779	...	3.213615	26308.461	16.91	17.54	17.27	0.63	17.23	427
1678	13217	9168	...	1.279961	24402.678	17.10	17.60:	17.49:	0.50:	17.46:	462
12128	13230	10446	...	1.271508	29938.501	17.44	18.22	17.98	0.78	17.93	292
11352	13233	6210	...	2.077313	31799.349	16.48	17.22	16.90	0.74	16.85	462
1679	13241	12884	4.03	4.040812	32854.383	16.00	16.73	16.46	0.73	16.41	456

TABLE 3.—*Results of observations* (* in Column 1 denotes newly discovered variables; in Column 5 denotes variable periods).—Continued

HV	x	y	Published P	Period	Normal Maxima	M	m	$\bar{m}$	A	⟨m⟩	Obs.
11176	13248	4416	6.34195	6.342160	31324.386	15.84	16.80	16.44	0.96	16.37	488
11177	13248	12216	1.258351	1.258329	16753.625	16.55	17.33	16.99	0.78	16.94	385
12131	13257	11289	...	3.504149	32860.340	16.25	17.12	16.79	0.87	16.73	323
1680	13260	11213	...	3.129851	32504.417	15.77	16.31	16.07	0.54	16.04	495
1681	13260	12163	1.81	1.670054	17447.825	16.00	17.66	17.14	1.66	17.03	391
12132	13278	11232	...	0.331516	31729.387	15.88	16.31	16.08	0.43	16.05	500
12934*	13278	13504	...	2.042288	33073.647	16.92	17.52:	17.29	0.60:	17.25	235
1682	13281	7471	12.15	12.149930	32861.298	14.62	16.36	15.65	1.74	15.53	501
1683	13294	9446	4.8575	4.857411	32681.809	16.56	17.24	16.97	0.68	16.92	497
12133	13302	10068	...	1.433883	29780.630	17.68	18.50:	18.23	0.82:	18.17	257
11357	13302	13122	1.7758	1.775839	32509.403	16.71	17.42	17.24	0.71	17.19	289
1685	13304	7160	...	Irr.	...	14.28	15.05	...	0.77	...	509
1686	13305	8016	...	1.327894	31313.372	17.53	18.52	18.24	0.99	18.17	355
1687	13308	9061	...	2.396909	34689.263	16.49	17.50	17.14	1.01	17.07	353
1688	13311	7442	...	3.392752	24440.733	16.24	17.44	17.03	1.20	16.95	484
1689	13314	10896	6.887:	6.844018	32419.541	14.55	15.95	15.47	1.40	15.38	510
11358	13317	10912	1.937:	1.935962	29825.590	16.78	17.80:	17.65	1.02:	17.58	340
11359	13323	9723	...	1.679253	32507.306	17.42	18.00:	17.70:	0.58:	17.66:	195
1690	13324	12577	2.79	2.846262	32441.399	16.04	17.16	16.84	1.12	16.76	463
1691	13324	13504	3.90619	3.901449	29542.397	15.88	17.10	16.65	1.22	16.57	474
1693	13333	8804	4.672	4.672220	31669.540	16.35	17.12	16.82	0.77	16.77	452
11178	13344	8481	5.370598	5.361528	32419.541	16.48	17.16	16.90	0.68	16.85	472
12134	13350	11652	...	1.663907	34684.405	16.36	17.16:	16.88	0.80:	16.83	367
11363	13354	9942	...	1.737819	28034.526	17.12:	17.94:	17.70:	0.82:	17.65:	261
1694	13355	9205	3.935	3.934808	29870.451	15.79	16.97	16.49	1.18	16.41	518
10361	13359	9519	1.896	1.895806	26929.624	16.98	17.38	17.17	0.40	17.14	479
1695	13359	11462	14.512	14.596196	24418.737	14.75	15.78	15.37	1.03	15.30	527
1696	13363	10565	2.31232	2.313974	29928.242	17.12	17.86	17.63	0.74	17.58	394
1697	13364	10447	...	3.605670	31611.626	16.25	17.55	17.08	1.30	16.99	430
11179	13368	4692	2.9315	2.931563	31681.542	16.25	17.41	16.91	1.16	16.83	419
11180	13377	8985	2.976935	2.976863	34685.312	16.32	17.20	16.90	0.88	16.84	269
1699	13402	12015	5.08	5.058118	32851.408	15.96	16.97	16.55	1.01	16.48	515
1700	13406	7454	...	2.370073	26605.579	16.54	17.59	17.26	1.09	17.19	464
1701	13408	7986	...	5.171807	29876.448	15.67	16.58	16.44	0.91	16.38	435
1702	13410	9064	...	2.512291	26566.612	16.80	17.63	17.39	0.83	17.33	417
1703	13414	13791	2.02:	2.022756	26334.320	16.95	17.54	17.37	0.59	17.33	349
1704	13417	9104	...	3.776164	26330.284	16.15	17.35	16.94	1.20	16.86	426
1705	13424	9345	...	10.758125	31274.639	15.10	15.96	15.60	0.86	15.54	516
12137	13440	10038	...	1.777812	32490.255	17.25	18.40	18.06	1.15	17.98	247
11365	13440	13284	1.44614	1.446150	32006.650	16.84	17.93:	17.49	1.09:	17.42	214
1706	13445	9877	...	5.679043	32061.385	15.79	17.43	16.77	1.64	16.66	520
11366	13473	11658	...	365.65	26573.	16.45	17.85	...	1.40	...	481
1709	13479	7146	...	7.894529	32800.380	15.44	17.12	16.35	1.68	16.24	515
1710	13480	10294	3.82561	3.825628	32052.381	16.04	17.40	16.94	1.36	16.85	462
1711	13482	10993	2.50578	2.509643	29135.403	16.48	17.75	17.32	1.27	17.24	391
1712	13484	11187	2.150061	2.150061	27680.449	16.15	17.85	17.30	1.70	17.19	380
1713	13487	6640	...	1.897864	31739.356	16.48	17.08	16.76	0.60	16.72	486
1714	13487	9928	...	1.902041	27756.256	16.94	17.36	17.20	0.42	17.17	519
12138	13488	10494	...	Irr.	...	15.95	17.02	...	1.07	...	528
1715	13489	8574	6.3698	0.862245	26656.265	16.23	16.82	16.58	0.59	16.54	502
11181	13500	8370	1.861892	1.860929	29825.590	16.67	18.32	17.77	1.65	17.66	341
11367	13500	14010	...	1.530702	31698.467	16.58	17.24	16.96	0.66	16.92	438
1716	13506	7178	...	3.267728	24332.829	16.44	17.61	17.35	1.17	17.27	500
1717	13506	13701	1.871443	1.870375	16787.591	16.23	17.44	17.09	1.21	17.01	423
1718	13507	13124	4.05014	4.045226	27749.451	16.03	17.21	16.77	1.18	16.69	489

TABLE 3.—*Results of observations* (* in Column 1 denotes newly discovered variables; in Column 5 denotes variable periods).—Continued

HV	x	y	Published P	Period	Normal Maxima	M	m	$\bar{m}$	A	⟨m⟩	Obs.
839	13508	15187	2.89973	2.899643	29108.594	15.28	16.32	16.02	1.04	15.95	466
1719	13514	8786	531.9	531	31313	14.78	[17.60	...	]2.82	...	157
11368	13518	9931	...	0.484509*	...	17.57	18.30	17.94	0.73	17.89	225
12139	13518	10008	...	1.778900	27980.658	16.39	17.40	16.94	1.01	16.87	458
11369	13518	11064	1.97098	1.969644	32462.292	16.12	17.70	17.30	1.58	17.19	466
1720	13518	11474	1.670872	1.670043	32879.373	16.49	17.61	17.28	1.12	17.20	345
1722	13525	8498	Irr.	Irr.	...	15.99	17.90	...	1.91	...	440
1725	13537	6748	...	3.808537	31796.310	16.37	17.33	17.03	0.96	16.96	489
1726	13559	8226	...	2.636296	24716.860	15.90	16.62	16.29	0.72	16.24	496
1727	13564	13783	2.220697	2.220697	27783.280	15.94	17.46	17.06	1.52	16.95	458
11370	13566	9198	...	1.940761	32817.346	17.18	17.58	17.41	0.40	17.38	439
1728	13573	8665	3.718025	3.717928	29454.660	16.04	17.01	16.67	0.97	16.61	483
11372	13578	10456	...	2.242168	23341.590	16.52	17.99	17.34	1.47	17.24	248
1729	13583	8511	1.822486	1.822486	29926.333	16.57	17.14	16.89	0.57	16.85	487
1730	13588	8081	3.371817	3.371817	31321.524	16.86	17.86	17.55	1.00	17.48	418
1731	13591	8489	2.1256	2.144588	27779.285	16.70	17.65	17.37	0.95	17.31	435
1732	13593	13434	1.757410	1.754580	25944.340	16.30	17.50	17.14	1.20	17.06	421
11373	13596	11508	...	Irr.	...	14.46	15.10	...	0.64	...	528
11374	13599	9764	...	2.320821	25944.340	16.34	17.58	17.24	1.24	17.16	350
11375	13600	12901	...	1.114956	27341.376	16.33	17.21	16.87	0.88	16.81	425
11376	13602	7182	...	2.060101	29585.264	17.32	18.03	17.68	0.71	17.63	281
11377	13602	12861	1.3419	1.341414	31626.627	16.55	17.16	16.87	0.51	16.84	421
1733	13603	12658	4.00	3.654730	32473.363	15.32	16.44	16.07	1.12	16.00	490
1734	13606	9766	...	6.069029	32861.253	15.94	17.10	16.70	1.16	16.62	515
1735	13607	9009	4.906218	4.898838	26571.493	15.52	16.60	16.14	1.08	16.07	503
1736	13613	11673	...	3.368013	28040.420	15.20	15.62	15.45	0.42	15.42	200
				3.370181	32441.399						211
1737	13623	10051	...	3.973442	32854.332	15.82	16.91	16.52	1.09	16.45	475
1738	13624	6538	...	0.612928	29877.448	15.51	17.12	16.62	1.61	16.51	486
12935*	13627	8091	...	1.297493	31345.385	17.62	18.57	18.19	0.95	18.13	201
1739	13630	7905	1.8030	1.810168	30901.610	16.86	18.00	17.57	1.14	17.49	254
1740	13634	9155	4.41228	4.412280	26626.464	15.54	16.70	16.34	1.16	16.26	491
1741	13635	7906	1.8836	46.972615E	32852.298	17.07	17.57	...	0.50	...	321
1742	13640	10519	4.9866	4.987233	26547.584	15.78	17.20	16.77	1.42	16.67	494
11378	13641	10692	...	1.492899	30575.539	17.15	17.96	17.70	0.81	17.65	449
11379	13651	9660	1.312793	1.325965E	34299.297	17.38	17.70	...	0.32	...	449
1743	13654	9703	...	1.453900	28845.285	17.12	18.15	17.83	1.03	17.76	312
11381	13657	10717	...	1.365844	29927.325	17.29	18.23	18.07	0.94	18.01	360
11182	13659	12252	39.67	39.199	26501.621	13.89	15.10	14.55	1.21	14.47	511
1744	13666	11504	12.6	12.623872	34684.372	14.14	15.27	14.86	1.13	14.78	532
1745	13681	9609	...	4.561669	19684.526	16.41	17.44	17.10	1.03	17.03	526
1746	13692	7659	...	3.338073	29135.403	15.40	17.14	16.54	1.74	16.42	473
12142	13698	11028	...	1.937958	16787.589	17.21	17.75	17.52	0.54	17.48	376
840	13703	11000	33.1	33.039284	31611.626	13.48	14.78	14.14	1.30	14.05	524
11383	13712	10812	...	2.519203	32804.452	16.65	17.40	17.22	0.75	17.17	393
11384	13717	10939	...	1.796361	32467.374	16.92	17.91	17.48	0.99	17.41	289
11385	13724	9582	...	1.526121	32850.246	17.47	18.18	17.94	0.71	17.89	317
1747	13726	7194	...	3.213471	31642.644	17.32	17.72	17.59	0.40	17.56	459
1748	13726	8074	2.108712	2.107428	29867.456	17.08	17.70	17.43	0.62	17.39	423
11386	13731	6210	...	1.514748	34685.312	16.46	16.86	16.69	0.40	16.66	482
1749	13732	11645	3.56804	3.552511	24431.682	15.69	16.91	16.60	1.22	16.52	515
1750	13741	10055	...	4.769900	27683.401	16.57	17.20	16.88	0.63	16.84	408
1751	13743	11462	...	1.656935	30619.350	15.97	17.10:	16.80:	1.13:	16.72:	300
1752	13747	8335	5.126391	5.126391	30885.633	16.15	17.22	16.84	1.07	16.77	482
11388	13748	8995	...	1.602015	24763.720	17.26	18.26	17.98	1.00	17.91	366
1753	13766	8114	2.817679	2.817679	16787.589	16.18	17.46	17.11	1.28	17.02	487

TABLE 3.—*Results of observations* (* in Column 1 denotes newly discovered variables; in Column 5 denotes variable periods).—Continued

HV	x	y	Published P	Period	Normal Maxima	M	m	$\bar{m}$	A	⟨m⟩	Obs.
1754	13771	9074	1.777449	1.777449	30665.247	16.76	17.27	17.12	0.51	17.09	429
12143	13776	9942	...	1.806750	29806.628	17.54	18.06:	17.87:	0.52:	17.84:	202
1755	13795	13686	2.9552	1.505709	32852.341	16.90	17.40	17.19	0.50	17.16	470
841	13805	13274	1.904893	1.909333	23320.599	16.14	17.51	17.16	1.37	17.07	440
1756	13812	7154	...	1.145422	29928.283	16.96	17.80	17.55	0.84	17.50	199
1757	13814	7484	...	3.889765	34690.319	15.78	17.52	16.91	1.74	16.79	472
1758	13824	9206	7.5019	7.499625	34299.297	15.09	16.48	15.77	1.39	15.68	512
12936*	13825	7507	...	1.876666	27750.391	17.12	17.77	17.48	0.65	17.44	324
1760	13844	6025	2.481:	2.481463	32845.299	16.38	16.95	16.67	0.57	16.63	482
1761	13854	12156	1.471116	1.471125E	23596.901	15.34	15.95	...	0.61	...	500
1762	13856	10326	2.104909	2.107633	32849.266	16.60	17.70	17.34	1.10	17.27	362
843	13863	10884	4.2897	4.289563	26547.584	15.92	17.12	16.69	1.20	16.61	455
1764	13867	11286	7.99348	7.935437	32060.374	15.76	16.47	16.04	0.80	15.99	527
1765	13868	7160	...	2.926638	31321.524	15.65	17.19	16.75	1.54	16.65	502
843	13871	10860	14.6477	14.714971	26308.461	14.99	16.38	15.92	1.39	15.83	507
11184	13887	8559	1.726788	1.726788	32852.341	16.71	17.80	17.43	1.09	17.36	368
1766	13893	9244	1.680441	1.680441	30673.239	16.87	18.16	17.73	1.29	17.64	334
1767	13896	7532	...	5.733945	28371.501	16.53	17.66	17.19	1.13	17.11	526
1768	13898	11946	9.808210	9.808249	31342.355	15.32	15.76	15.55	0.44	15.52	500
1769	13910	4760	1.1267	1.126754	29811.606	17.30	17.84	17.64	0.54	17.60	345
1770	13919	8654	3.056440	3.056440	24761.749	16.02	16.97	16.66	0.95	16.60	461
1771	13923	11117	4.899085	4.876621	26244.371	15.48	16.96	16.36	1.48	16.26	501
1772	13926	7755	...	1.321541	26626.464	16.94	17.98	17.68	1.04	17.61	381
1773	13926	9166	2.667278	2.667278	24033.774	16.08	17.88	17.42	1.80	17.30	455
12148	13932	11832	...	1.677202	16753.625	16.56	17.00:	16.83:	0.44:	16.80:	355
1774	13935	9019	1.682527	1.682527	21151.521	16.84	17.42	17.18	0.58	17.14	476
1775	13937	9285	6.824541	6.810273	32854.332	15.98	17.07	16.66	1.09	16.59	502
1776	13946	10014	...	3.749756	29586.258	16.14	17.01	16.69	0.87	16.63	488
1777	13953	7343	...	1.656485	29872.455	16.60	17.03	16.81	0.43	16.78	500
12937*	13957	9590	...	1.745286	30882.642	17.05	17.46:	17.26	0.41:	17.23	441
11390	13960	9952	...	0.827969	16760.531	17.26	17.98	17.68	0.72	17.63	360
12938*	13963	7213	...	3.714048	26869.645	16.35	17.39	17.00	1.04	16.93	496
1778	13967	9084	3.214463	3.214370	32861.343	16.03	17.27	16.94	1.24	16.86	480
12149	13968	11370	740.7	741.8	32004	13.65	[17.0	...	]3.35	...	134
1779	13968	14787	1.78339	1.783390	28065.290	16.50	16.77	16.64	0.27	16.62	478
1780	13980	7514	...	3.101381	29869.462	16.76	17.96	17.66	1.20	17.58	508
1781	13982	8499	3.963080	3.963080	32854.332	15.96	17.39	16.93	1.43	16.83	483
1782	13983	7194	...	2.855381	29554.242	16.59	17.12	16.87	0.53	16.84	501
1783	13986	12834	8.14883	8.148830	26512.623	14.86	16.20	15.55	1.34	15.46	503
844	14024	12823	2.217580	2.217580	13861.607	16.09	17.58	17.16	1.49	17.06	422
1784	14027	8746	8.68274	8.682741	27980.658	15.36	16.16	15.76	0.80	15.71	496
1785	14042	12444	4.90	4.729944	31642.644	15.76	16.76	16.48	1.00	16.41	488
11394	14044	9910	...	1.346232	13893.570	17.46	18.31	18.00	0.85	17.94	212
1786	14046	9534	2.911564	2.911564	24033.774	16.49	17.52	17.19	1.03	17.12	485
12151	14046	12198	...	4.796347	29926.283	15.66	16.71	16.31	1.05	16.24	456
1787	14046	12266	16.22	16.196955	24002.830	14.32	15.54	15.20	1.22	15.12	506
1788	14054	14254	...	3.478672	14604.612	15.75	16.11	15.99	0.36	15.96	492
1789	14068	8970	2.161022	2.161022	31669.540	16.01	17.58	17.16	1.57	17.05	464
1790	14071	9393	8.872721	8.872721	32851.349	15.08	16.20	15.66	1.12	15.58	520
11185	14076	8190	2.865288	2.862942	30648.240	16.81	17.07	16.93	0.26	16.91	373
11186	14078	8643	3.734506	3.734506	28372.495	16.40	16.95	16.72	0.55	16.68	475
1792	14085	7311	...	3.610043	26330.284	16.08	17.24	16.91	1.16	16.83	408
1793	14090	13204	4.18689	4.181441	24821.586	15.76	16.97	16.50	1.21	16.42	490
1794	14093	6699	...	5.777367	32003.648	16.50	17.30	16.96	0.80	16.91	520
12156	14112	11478	...	2.018660	30882.642	16.86	17.74	17.48	0.88	17.42	335

TABLE 3.—*Results of observations* (* in Column 1 denotes newly discovered variables; in Column 5 denotes variable periods).—Continued

HV	x	y	Published P	Period	Normal Maxima	M	m	$\bar{m}$	A	⟨m⟩	Obs.
1795	14122	9386	4.074100	4.079218	34299.274	15.65	16.76	16.37	1.21	16.29	507
1796	14125	10874	1.965328	1.960615	31642.644	16.19	17.53	17.17	1.34	17.08	338
1797	14127	9176	3.914415	3.914369	29566.245	15.52	17.14	16.66	1.62	16.55	481
1798	14133	8353	...	Irr.	...	16.62	17.39	...	0.77	...	485
1799	14134	10140	1.79636	1.796387	32861.343	16.66	17.44	17.21	0.78	17.16	459
11396	14137	10166	3.861:	3.860750	29906.385	16.48	17.64	17.18	1.16	17.10	453
846	14139	7182	3.163035	3.163035	28034.526	16.10	17.40	17.08	1.30	16.99	507
1800	14139	10078	...	2.038104	16760.531	16.74	17.82	17.60	1.08	17.53	214
1801	14144	7525	...	7.279345	26689.282	15.88	16.24	16.08	0.35	16.06	525
11188	14146	8380	2.098323	2.098323	31379.370	16.94	17.91	17.53	0.97	17.46	241
12939*	14147	8387	...	Irr.	...	15.28	17.33	...	2.11	...	499
1803	14149	5603	2.2376	2.236086	23704.772	16.15	17.30	16.94	1.15	16.86	477
11398	14157	10443	1.596	1.595507	27694.363	16.77	17.89	17.51	1.12	17.43	338
11400	14163	10944	1.4904	1.491785	24404.675	16.02	17.56	16.81	1.54	16.71	452
1804	14168	10492	3.666280	3.666213	31701.458	15.22	16.78	16.22	1.56	16.12	517
1805	14178	9618	...	2.279576	32004.637	16.80	17.63	17.37	0.83	17.32	393
1806	14191	10984	2.93450	2.934522	28065.301	16.63	17.98	17.50	1.35	17.41	368
1807	14192	13701	4.073087	4.088458	29869.462	16.22	17.13	16.75	0.91	16.60	478
1808	14193	8122	4.630165	4.636777	29584.258	15.52	16.97	16.48	1.45	16.38	498
11401	14193	9318	...	365±	24332	14.89	16.30	...	1.41	...	534
11402	14193	11544	Irr.	Irr.	...	13.69	15.08	...	1.39	...	425
12940*	14199	9718	...	7.755305	25890.396	16.17	16.90	16.56	0.73	16.51	522
1809	14201	12772	2.823288	2.825761	31610.650	15.86	16.97	16.62	1.11	16.57	454
845	14206	9359	7.95229	7.950832	23974.863	14.82	16.16	15.66	1.34	15.57	519
1811	14212	11592	4.67	5.469861	29778.637	15.80	16.82	16.38	1.02	16.31	481
11404	14225	9948	...	1.540272	28376.572	17.33	18.40	17.97	1.07	17.90	203
1812	14235	9144	3.051376	3.051376	32850.332	16.02	17.10	16.75	1.02	16.68	490
1813	14236	10168	3.128696	3.131655	32879.373	15.96	17.25	16.84	1.29	16.75	466
1814	14237	9019	1.667575	1.667575	26689.282	17.09	18.22	17.78	1.13	17.70	372
1815	14245	9872	...	2.540702	29843.597	16.11	17.40	17.06	1.29	16.97	485
1816	14247	9097	3.628368	3.628368	32852.298	16.24	17.40	16.99	1.16	16.91	464
12160	14250	11772	...	2.890416	31324.386	16.30	17.40	17.03	1.10	16.96	417
1817	14264	10343	...	2.250731	29938.501	16.76	17.24	16.99	0.48	16.96	481
1818	14265	8988	5.458843	5.458843	23340.586	16.55	17.38	17.03	0.83	16.98	434
1820	14274	9066	3.244678	3.244678	29897.452	16.36	17.78	17.36	1.42	17.27	398
1821	14276	4022	...	0.502753	29081.611	17.10	17.70	17.39	0.60	17.34	376
12941*	14280	7760	...	5.128021	24716.860	16.64	17.30	17.00	0.67	16.96	433
1822	14286	8915	2.894968	2.894968	26189.520	16.85	17.90	17.48	1.05	17.41	425
1823	14292	7917	3.3447	3.351611	23340.676	16.48	17.68	17.31	1.20	17.23	407
11189	14293	9612	2.042363	2.042359	29199.254	16.24	17.25	16.95	1.01	16.88	450
1824	14295	7794	...	3.003679	24002.830	16.28	17.92	17.42	1.64	17.31	513
1825	14297	12032	4.23	4.260377	21815.779	15.60	16.78	16.33	1.18	16.25	486
12942*	14305	13533	...	2.008089	28371.501	16.27	17.21	16.89	0.94	16.83	320
12943*	14307	13548	...	2.714153	32852.254	15.99	17.00	16.62	1.01	16.55	429
1826	14331	10624	1.51659	1.516562	16760.531	16.93	17.55	17.41	0.62	17.37	405
1827	14345	12035	3.60	4.921478	32828.390	15.04	16.51	16.04	1.47	15.94	499
1828	14353	6028	...	17.195722	24824.624	16.55	17.98	17.38	1.43	17.28	415
1829	14355	10154	4.29091	4.290777	26323.283	15.53	16.74	16.34	1.21	16.26	513
1830	14360	9640	3.298447	3.298447	29926.228	16.80	17.10	16.95	0.30	16.93	494
1832	14366	7487	...	2.096854	26689.282	16.70	17.38	17.18	0.67	17.14	451
11414	14366	10521	1.4675:	1.467209	16757.542	17.13	17.73	17.60	0.60	17.56	453
1833	14374	8975	2.328148	2.327725	23290.707	16.32	17.64	17.30	1.32	17.21	391
1834	14375	6173	...	0.603578	31589.631	16.55	17.25	16.90	0.70	16.85	488
1835	14408	9626	16.2382	16.244842	26944.366	15.00	16.40	15.84	1.40	15.75	526
1836	14408	11672	2.82	2.788133	25944.330	16.00	16.83	16.57	0.83	16.51	448

TABLE 3.—*Results of observations* (* in Column 1 denotes newly discovered variables; in Column 5 denotes variable periods).—Continued

HV	x	y	Published P	Period	Normal Maxima	M	m	$\bar{m}$	A	⟨m⟩	Obs.
1837	14417	8103	1.548201	1.548201	29877.448	16.76	18.07	17.72	1.31	17.63	323
11415	14421	9838	...	0.774007	32061.385	17.85	18.24	18.07	0.39	18.04	317
1838	14424	8464	2.996506	2.988312	34690.462	16.43	17.49	17.09	1.06	17.02	470
1839	14425	6784	...	1.979222	26329.300	16.68	18.00	17.58	1.32	17.49	481
12944*	14426	7952	...	1.952263	29903.227	17.04	17.88	17.45	0.84	17.39	423
1840	14428	9774	...	1.704640	23751.559	16.82	17.42	17.15	0.60	17.11	469
1841	14439	9826	...	2.867038	26973.379	16.78	17.62	17.29	0.84	17.23	414
11416	14442	6957	...	1.335427	23751.559	17.65	18.64	18.37	0.99	18.30	353
12163	14442	12288	...	1.141162	31345.385	16.95	17.44:	17.30	0.49:	17.27	337
1842	14444	9489	2.973182	2.973182	32023.603	15.88	17.48	17.00	1.60	16.89	486
1843	14445	6522	...	3.357575	16758.644	15.82	17.04	16.54	1.22	16.46	453
11191	14445	13755	1.960631	1.966510	29484.460	16.30	17.07	16.89	0.77	16.84	460
1844	14453	8425	2.851269	2.851245	29896.383	15.84	17.34	16.88	1.50	16.78	455
12945*	14454	6671	...	1.634446	31379.370	17.27	17.73	17.58	0.46	17.55	254
11418	14460	9739	....	2.358696	29847.558	17.39	18.10	17.75	0.71	17.70	264
1845	14461	6694	...	2.437899	27697.456	16.14	18.08	17.46	1.94	17.33	499
1846	14462	7556	...	3.368387	26331.335	15.78	17.35	16.91	1.57	16.80	504
1847	14471	8345	2.732084	2.732084	16757.627	15.70	17.40	16.96	1.70	16.85	465
11419	14472	7926	...	1.124126	26594.450	17.34	18.48	18.20	1.14	18.12	293
12946*	14498	9762	...	1.632530E	16758.644	17.13	17.62	...	0.49	...	457
12164	14502	11238	...	1.833537	32861.343	16.93	17.86	17.58	0.93	17.50	271
12165	14502	11916	...	1.672056	32880.265	16.35	17.51	17.18	1.16	17.10	299
11421	14508	6702	...	100.776E	32800.380	16.78:	16.95:	...	0.17	...	503
1848	14515	7415	...	3.277324	26334.320	16.97	17.94	17.59	0.97	17.52	484
1849	14515	12265	3.50	3.492279	23315.640	15.18	17.00	16.23	1.82	16.11	227
1850	14536	12333	2.77	2.755618	26573.519	15.62	17.25	16.70	1.63	16.59	472
1851	14538	6582	...	0.824853*	...	15.60	16.16	15.88	0.56	15.84	492
1852	14548	8762	2.807427	2.807427	29877.448	16.47	17.62	17.19	1.15	17.11	411
1853	14552	8904	...	1.084694	24065.748	16.80	17.44	17.17	0.64	17.13	429
1854	14562	8765	2.605116	2.609256	24051.760	15.86	17.58	17.08	1.72	16.96	437
847	14582	11765	27.2	27.057009	29566.245	13.71	15.08	14.61	1.37	14.52	533
11192	14586	13086	2.352437	2.354104	31674.549	15.77	17.36	16.88	1.60	16.77	409
1855	14593	13199	6.83990	6.839898	23974.863	15.95	16.40	16.21	0.45	16.18	505
11193	14610	12378	6.439648	6.427066	24408.793	16.08	17.00	16.51	0.92	16.45	503
1856	14616	7347	...	3.693157	27683.401	16.14	17.30	16.87	1.16	16.79	507
11423	14622	13830	Irr.	Irr.	...	12.59	13.55	...	0.96	...	506
848	14624	11901	2.178	2.172770	34685.368	16.25	17.63	17.25	1.38	17.16	413
1858	14645	11578	6.15	6.111834	31610.648	15.23	16.22	15.82	0.99	15.75	504
1859	14657	6397	...	4.309732E	24065.748	15.11	15.78	...	0.67	...	517
12947*	14663	7888	...	1.869295	29872.455	17.04	17.84	17.40	0.80	17.35	417
1860	14664	12992	...	1.984796	26547.584	16.64	17.10	16.89	0.46	16.86	500
1862	14673	8234	6.490598	6.490598	32490.255	15.29	16.62	16.08	1.33	15.99	496
11426	14676	6261	...	1.932495	26929.624	15.53	16.28	15.98	0.75	15.93	505
11427	14679	9564	245.45	250.8	26595	16.94	[18.00	...	]1.06	...	242
1863	14682	15095	...	0.527340	31611.626	16.53	17.18	16.94	0.65	16.90	193
1864	14685	7426	...	1.943053	29869.389	17.06	18.00	17.70	0.94	17.64	420
12168	14688	11424	...	1.275772	26945.394	16.71	17.29	17.14	0.58	17.10	286
1865	14694	9784	562.4	556	28043	15.40	18.70	...	3.30	...	303
1866	14694	11377	3.73339	3.724908	24821.590	15.72	16.83	16.47	1.11	16.40	467
1867	14703	7774	...	1.648701	24404.670	16.60	17.80	17.54	1.20	17.46	410
11429	14705	9149	...	3.146455	31729.387	16.97	17.48	17.27	0.51	17.24	304
1868	14706	11314	2.863683	2.861157	32467.374	15.91	17.03	16.73	1.12	16.65	467
12948*	14709	9819	...	3.452228E	16758.650	17.59	17.73	...	0.14	...	380
11194	14712	8520	2.142594	2.142594	26244.371	16.07	18.00	17.40	1.93	17.27	416
1869	14713	15059	1.34618	2.464918	29903.400	16.13	16.84	16.60	0.71	16.55	398

TABLE 3.—*Results of observations* (* in Column 1 denotes newly discovered variables; in Column 5 denotes variable periods).—Continued

HV	x	y	Published P	Period	Normal Maxima	M	m	$\bar{m}$	A	⟨m⟩	Obs.
1871	14744	14984	1.300855	1.300860	32136.259	16.73	17.75	17.47	1.02	17.40	284
1872	14754	8796	...	3.088278	31108.274	15.66	16.50	16.12	0.84	16.06	476
1873	14764	10718	12.91	12.941131	32879.373	14.55	16.24	15.49	1.69	15.38	529
11195	14767	9087	1.758622	1.758622	26945.391	17.05	17.80	17.49	0.75	17.44	225
1874	14774	10673	3.353263	3.349848	24418.737	15.54	16.90	16.49	1.35	16.40	519
1875	14775	8266	3.103258	3.103258	34690.319	16.32	17.48	17.13	1.16	17.05	461
1876	14794	11155	2.757997	2.758309E	32880.311	14.79	15.53	...	0.74	...	526
1877	14805	12128	49.6	49.667	27750.478	13.34	14.56	14.05	1.22	13.97	510
1878	14813	7585	...	5.548958	29870.495	15.69	16.65	16.20	0.96	16.14	502
11435	14818	10500	...	1.577145	27683.401	17.02	17.99	17.75	0.97	17.69	484
1879	14826	6244	...	4.363782	29514.379	16.38	17.19	16.91	0.81	16.86	496
1880	14826	10720	Irr?	Irr.	...	14.60	15.19	...	0.59	...	532
1881	14831	9551	...	2.225759	26656.265	16.67	17.76	17.44	1.09	17.37	370
1882	14835	7275	...	3.930679	29519.364	16.96	17.74	17.44	0.78	17.39	483
1883	14835	15844	1.976231	2.013109	29826.594	16.80	17.42	17.16	0.62	17.12	435
1884	14836	11765	18.11	18.116598	29872.455	14.54	16.01	15.38	1.47	15.28	515
11436	14844	8988	...	1.047160	32878.396	17.24	17.70	17.48	0.46	17.45	297
1885	14846	9636	...	2.802212	32011.598	15.98	17.62	17.10	1.64	16.99	433
1886	14847	6884	...	1.584349	31650.654	17.30	18.19	17.93	0.89	17.87	370
1887	14859	7154	...	2.503104	24787.682	16.70	18.03	17.55	1.33	17.46	449
11438	14864	9055	...	1.322865	31313.372	17.27	17.72	17.48	0.45	17.45	210
1888	14871	7242	...	3.509831	32503.365	16.08	17.39	16.94	1.31	16.85	506
11441	14875	8871	...	2.156009	29867.456	17.07	17.72	17.45	0.65	17.41	319
1889	14879	8824	3.3283	3.327986	34682.321	16.44	17.70	17.23	1.26	17.15	386
11196	14883	8934	1.311638	1.311653*	29135.403	17.31	17.85	17.59	0.54	17.55	350
1890	14888	14051	1.778540	1.778540	29811.606	16.94	17.85	17.63	0.91	17.57	435
12949*	14893	14863	...	0.474978	26331.335	16.54	17.46	17.11	0.92	17.05	344
1891	14894	12640	3.45	3.451489	27746.529	15.49	17.18	16.74	1.69	16.63	504
1892	14904	13494	5.66277	5.653194	32804.452	15.84	16.70	16.27	0.86	16.21	485
1894	14909	6314	...	1.445706	24716.860	16.98	18.15	17.75	1.17	17.67	312
11443	14943	14964	...	1.722887	27650.633	16.71	17.54:	17.23	0.83:	17.18	269
1896	14980	6530	3.4810	3.458999	32861.298	16.36	17.60	17.27	1.24	17.19	475
1897	14984	15083	1.241356	1.241317	29877.448	16.80	17.28	17.07	0.48	17.04	397
1898	14999	13586	3.02432	3.018713	16757.542	15.66	16.50	16.31	0.84	16.26	470
11446	15000	4422	...	0.497787	32135.248	16.44	17.82	17.39	1.38	17.30	365
1899	15002	7653	...	4.760545	26322.285	15.39	16.61	16.06	1.22	15.98	485
1900	15004	8589	...	3.212614	29897.452	16.40	17.91	17.53	1.51	17.43	451
12170	15006	11706	...	0.811079	29897.228	17.21	17.91	17.67	0.70	17.62	464
1901	15007	14301	...	3.573097	29881.449	17.19	17.81	17.57	0.62	17.53	435
1903	15021	11024	5.1208	5.094892	24468.688	15.35	16.72	16.21	1.37	16.12	518
1904	15023	6385	...	1.858453	32136.259	17.02	18.08	17.80	1.06	17.73	367
1905	15026	12164	7.41	7.416802	29906.327	15.20	16.38	15.93	1.18	15.85	511
1906	15041	15486	3.06551	3.065511	26949.367	16.12	17.44	17.03	1.32	16.94	428
11447	15042	8922	...	0.863009	31669.540	16.88	17.52	17.27	0.64	17.23	412
12171	15042	11418	...	3.355693	28078.342	16.26	16.73	16.57	0.47	16.54	470
1907	15045	14906	1.643255	1.643280	26949.367	16.41	17.42	17.13	1.01	17.06	398
1908	15074	9553	...	3.206115	32136.259	16.33	17.40	16.99	1.07	16.92	391
12172	15078	12138	...	1.603857	26563.608	16.59	17.42	17.15	0.83	17.09	484
1909	15079	7394	...	4.947874	26973.379	14.78	16.81	16.12	2.03	15.98	513
850	15083	12522	2.534545	2.532453	29554.242	15.97	17.45	17.06	1.48	16.96	500
12173	15084	11664	...	5.049689	29811.606	15.46	17.00	16.48	1.54	16.38	409
1910	15086	7400	...	1.534557	27746.441	17.30	18.32	17.87	1.02	17.80	205
1911	15088	7714	...	2.016629	31296.478	16.27	16.79	16.55	0.52	16.52	464
1913	15093	6626	...	3.044984	26328.373	16.16	17.72	17.26	1.56	17.16	464
1914	15100	9106	...	3.971579	27749.451	15.86	16.92	16.46	1.06	16.39	496

TABLE 3.—*Results of observations* (* in Column 1 denotes newly discovered variables; in Column 5 denotes variable periods).—Continued

HV	x	y	Published P	Period	Normal Maxima	M	m	$\bar{m}$	A	⟨m⟩	Obs.
11450	15104	9916	...	2.972801	34689.458	16.74	17.72	17.33	0.98	17.26	350
1915	15114	6701	...	1.577073	26547.584	17.28	17.96	17.76	0.68	17.71	389
1916	15114	7673	...	1.996813	29514.379	16.31	16.80	16.58	0.49	16.55	462
1917	15114	9053	2.6447	2.644705	32851.254	16.06	17.36	16.85	1.30	16.76	424
1918	15126	8223	...	2.170935	34690.370	17.44	18.19	17.95	0.75	17.90	319
1919	15129	14918	1.718573	1.718591	26566.612	16.32	17.62	17.25	1.30	17.16	290
1920	15140	9583	3.0992	3.099199	31697.371	15.42	17.10	16.55	1.68	16.44	483
11451	15147	7407	...	1.308274	28078.342	17.32	18.20	17.88	0.88	17.82	302
1922	15154	9514	...	2.905313	26508.640	16.60	17.66	17.29	1.06	17.22	444
11452	15159	6864	...	515.73	29847	15.45	[17.80	...	]2.35	...	303
1923	15164	11763	2.562289	2.566228	29826.594	15.95	17.31	16.96	1.39	16.87	486
1924	15165	7895	...	3.215858	31655.524	15.68	17.16	16.75	1.48	16.65	453
1925	15167	10474	17.18	17.199567	30262.346	13.70	14.90	14.44	1.20	14.36	527
11455	15186	12363	...	Irr.	...	17.17	18.00	...	0.83	...	427
1926	15191	9677	3.5919	3.591696	32880.399	15.54	17.47	16.93	1.93	16.80	471
1927	15194	9382	...	5.084556	29784.626	16.18	17.36	16.95	1.18	16.88	490
1928	15206	8887	1.6618	1.662646	23340.676	16.86	17.78	17.54	0.92	17.48	287
11458	15208	12650	1.44089	1.440845	24462.659	16.98	17.66	17.46	0.60	17.42	383
1929	15214	13025	5.59381:	5.584440	32441.361	15.63	16.22	15.98	0.59	15.94	491
1930	15224	10008	...	1.455729	23824.400	16.87	17.81	17.57	0.94	17.51	381
1931	15226	8592	...	2.691051	29847.591	16.65	17.38	17.07	0.73	17.02	522
1932	15226	9090	...	2.436544	26572.516	16.58	17.78	17.42	1.20	17.34	394
1933	15234	12454	13.80	13.780938	26347.271	14.17	15.16	14.69	0.99	14.62	512
1934	15237	13381	4.88210	4.874815	33563.346	15.60	16.80	16.40	1.20	16.32	488
1935	15240	10115	...	2.465447	29877.448	16.19	17.72	17.19	1.53	17.09	346
1936	15241	6828	...	3.234686	25881.416	16.35	17.88	17.36	1.53	17.26	478
10364	15246	14487	1.503053	1.503052	27750.389	17.27	18.10	17.91	0.83	17.85	377
1937	15258	9985	...	1.882679	16757.627	17.00	18.12	17.72	1.12	17.65	268
12950*	15258	11791	...	9.087687	29876.448	14.98	16.49	15.72	1.51	15.62	514
1938	15271	8684	...	2.693363	23288.713	16.06	17.14	16.68	1.08	16.61	510
10365	15273	14586	1.2600	1.258093	30593.593	16.38	17.52	17.15	1.14	17.07	399
1939	15281	8255	...	1.668090	26565.502	16.98	17.96	17.71	0.98	17.64	431
1940	15292	7504	...	1.253062	23732.610	17.06	18.22	17.92	1.16	17.84	329
1941	15295	7630	...	1.549727	29811.606	16.81	18.18	17.88	1.37	17.79	401
1942	15308	11224	2.84102	2.841071	28845.285	15.62	17.00	16.68	1.38	16.59	469
1943	15310	8800	1.620313	1.621936	32879.275	17.22	17.98	17.73	0.76	17.68	242
11460	15312	9660	...	1.787467	27783.280	17.20	17.86	17.63	0.66	17.59	280
1944	15327	6845	...	4.277416	23347.528	16.90	17.82	17.47	0.92	17.41	471
851	15328	10347	4.685052	4.685052	21815.779	15.70	17.17	16.50	1.47	16.40	492
1945	15332	12964	6.46868	6.468724	29135.403	15.27	16.46	16.01	1.19	15.93	496
1946	15338	8817	...	4.468974	27694.363	16.40	17.37	16.92	0.97	16.85	452
1947	15344	10009	...	2.937384	24065.748	16.24	17.05	16.76	0.81	16.71	479
1948	15355	9050	...	1.401956	25881.416	17.03	18.04	17.71	1.01	17.65	294
1949	15356	8054	...	3.616610	33129.642	16.56	17.60	17.22	1.04	17.53	381
1950	15356	12925	7.97086	7.990220	24761.749	15.44	16.06	15.78	0.62	15.74	499
1951	15360	7998	5.084	5.083367	26264.443	15.11	16.66	16.01	1.55	15.91	477
11463	15378	14292	1.7628:	1.755276	33172.348	17.45	18.00	17.81	0.55	17.78	324
10366	15381	4461	14.263	14.135674	17476.649	14.44	15.54	15.13	1.10	15.06	521
11464	15393	9438	...	Irr.	...	14.29	15.69	...	1.40	...	533
1952	15394	9640	...	4.188271	29876.448	15.60	16.75	16.33	1.15	16.25	479
1953	15397	10347	...	2.007613	23654.886	16.27	17.11	16.74	0.84	16.68	464
1954	15397	11614	16.71	16.700904	29958.306	13.60	14.87	14.28	1.27	14.20	518
1955	15399	10684	...	2.457685	29585.264	16.45	17.00	16.75	0.55	16.71	517
1956	15406	9725	209	209.9958	27184	11.89	13.14	12.41	1.25	12.33	407
1957	15406	10672	5.30200	5.319262	27980.658	15.31	16.96	16.47	1.65	16.36	521

TABLE 3.—*Results of observations* (* in Column 1 denotes newly discovered variables; in Column 5 denotes variable periods).—Continued

HV	x	y	Published P	Period	Normal Maxima	M	m	$\bar{m}$	A	⟨m⟩	Obs.
12175	15408	11592	...	1.876768	31702.459	16.63	17.84	17.29	1.21	17.21	235
1958	15417	14567	1.33444	1.334426	26561.637	17.08	18.03	17.80	0.95	17.74	360
362-12	15424	16704	...	0.652545	32508.261	16.49	17.09	16.88	0.60	16.84	445
11466	15425	9822	...	1.211246	33172.340	17.04	17.72	17.46	0.68	17.41	294
1959	15425	11105	2.99652	2.993797	31436.340	16.00	16.89	16.49	0.89	16.43	471
1961	15438	7266	...	4.429267	29927.402	16.21	17.58	17.12	1.37	17.03	511
212	15467	16488	...	3.901449	16755.628	16.52	17.55	17.20	1.03	17.13	441
206	15472	16597	...	107.8*	...	14.00	15.50	14.72	1.50	14.62	200
1962	15474	11898	8.78596	8.786497E	29958.306	15.02	15.67	...	0.65	...	515
1963	15477	10365	Irr.	330 ±	16757	15.90	18.56	...	2.66	...	432
1964	15500	8545	2.09414	2.092773	32473.363	16.78	17.86	17.52	1.08	17.45	343
1965	15500	10624	2.52046	2.524309	31782.262	16.28	17.26	16.99	0.98	16.92	505
11470	15525	10554	Irr.	Irr.	...	15.48	16.24	...	0.76	...	500
1966	15534	11626	4.285	4.269964	29784.636	15.20	16.45	16.14	1.25	16.06	501
1967	15537	12425	29.1	28.9357 29.0533	27755.401	13.70	15.00	14.36	1.30	14.27	493
1968	15546	12724	1.459875	1.458571	26566.612	16.55	17.12	16.92	0.57	16.88	379
1969	15550	6969	...	2.570978	32854.285	16.78	18.08	17.66	1.30	17.57	396
1970	15554	13732	3.339712	3.336301	21813.786	15.73	17.11	16.58	1.38	16.49	480
1971	15567	5683	2.431:	2.432522	23605.845	16.77	17.52	17.15	0.75	17.10	472
1972	15567	11301	3.351689	3.351689	26331.335	16.09	17.07:	16.75:	0.98:	16.68:	287
10367	15573	14934	2.5410	2.768726	34690.267	17.04	17.76	17.45	0.72	17.40	438
11472	15582	14652	...	1.049538	16754.598	16.92	17.77	17.38	0.85	17.32	322
11473	15585	9096	...	1.472806	29554.242	16.79	17.98	17.58	1.09	17.51	322
1973	15586	7402	...	7.480607	29911.283	15.69	16.60	16.15	0.91	16.09	514
1974	15586	11204	2.885437	2.893108	31108.274	15.73	17.29	16.86	1.56	16.76	474
1975	15610	6556	...	4.700419	32822.403	16.46	17.25	16.95	0.79	16.90	490
1976	15624	14292	1.8997	1.903073	32878.396	17.08	18.08	17.76	1.00	17.69	418
11478	15630	9477	...	3.008234	13888.576	16.85	18.09	17.62	1.24	17.54	364
1977	15639	9473	...	Irr.	...	16.76	18.00	...	1.24	...	451
1978	15649	12586	2.73197	2.738848	29585.264	16.29	16.70	16.51	0.41	16.48	495
853	15650	6404	7.33326	7.334443	32878.305	14.85	16.15	15.70	1.30	15.61	522
11197	15654	13392	1.074196	1.073493	32854.332	16.56	17.33	17.02	0.77	16.97	440
1979	15656	10030	...	6.296595	24787.682	15.84	17.02	16.48	1.18	16.40	515
1980	15668	8771	...	2.820007	30264.346	16.58	17.74	17.35	1.16	17.27	381
1981	15673	11206	2.720267	2.722555	32880.265	16.50	17.60	17.22	1.10	17.15	415
11479	15696	8340	...	1.879212	29870.451	16.94	17.53	17.35	0.59	17.31	408
12179	15702	12042	...	480 ±	32059	15.96	17.60	...	1.64	...	478
214	15708	16402	...	4.205197	32878.305	14.94	16.27	15.84	1.33	15.75	444
1982	15712	14925	5.2255	5.224855	14604.612	15.17	16.03	15.63	0.86	15.57	414
11198	15714	12192	1.618050:	1.618050	29927.435	16.84	17.21	17.06	0.35	17.04	484
1983	15715	13715	3.43843	3.438435	33104.622	15.26	16.85	16.43	1.59	16.32	493
1984	15718	7381	...	2.545092	32879.326	15.88	17.70	17.17	1.82	17.05	465
1985	15723	8214	...	1.391115	29839.571	16.73	17.98	17.56	1.25	17.48	240
1987	15728	13150	3.130851	3.130802	32852.254	15.74	17.21	16.71	1.47	16.61	485
1988	15740	6706	...	6.561163	32854.383	15.90	16.98	16.51	1.08	16.44	500
1990	15750	6732	...	1.842724	30935.512	16.91	17.92	17.56	1.01	17.49	357
1992	15754	4793	5.02563	5.048695	32509.348	15.89	16.96	16.64	1.07	16.57	479
1993	15764	6134	2.8441	2.849043	24331.824	16.12	18.00	17.41	1.88	17.28	417
1994	15785	11552	1.307855	4.213400	29780.630	15.70	17.04	16.60	1.39	16.51	492
852	15789	11804	3.197953	3.197953	31681.542	15.67	16.95	16.60	1.28	16.51	494
12181	15792	11088	...	1.783024	34682.472	16.34	16.73	16.60	0.39	16.57	488
11199	15792	12960	2.101953	2.095233	26547.584	16.84	17.96	17.61	1.12	17.53	416
11482	15810	9216	...	2.930205	32850.391	16.58	17.73	17.40	1.15	17.32	383
1995	15814	9213	5.0128	5.012808	32037.601	16.32	17.70	17.02	1.38	16.93	443

TABLE 3.—*Results of observations* (* in Column 1 denotes newly discovered variables; in Column 5 denotes variable periods).—Continued

HV	x	y	Published P	Period	Normal Maxima	M	m	$\bar{m}$	A	⟨m⟩	Obs.
1996	15830	9386	...	14.240957	23593.899	15.24	16.78	16.17	1.54	16.07	515
1997	15833	6333	...	1.611796	21815.779	16.16	17.57	17.18	1.41	17.09	400
1998	15844	12365	0.8331956	0.833196E	24462.659	14.64	15.77	...	1.13	...	513
11200	15846	6102	1.4676:	1.4676:	34682.472	17.37	17.95	17.73	0.58	17.69	407
11201	15849	12327	2.40717	2.403583	32441.361	16.18	17.58	17.13	1.40	17.04	443
1999	15865	13820	1.325492	1.967818	21815.769	16.45	17.82	17.52	1.37	17.43	365
11483	15870	11865	1.6567	1.656762	31998.632	16.85	17.40	17.22	0.55	17.18	372
2000	15875	11766	2.881545	2.884088	23340.586	15.92	17.17	16.85	1.25	16.77	486
2001	15886	8214	...	1.338848	29871.460	16.94	17.95	17.52	1.01	17.45	274
2002	15893	13015	2.3447	2.346362	23340.586	16.08	17.42	17.01	1.34	16.92	354
11202	15924	9564	2.156027	2.292595	33150.580	16.63	17.29	16.96	0.66	16.92	440
11484	15927	10860	4.97:	4.967660	32800.380	15.15	16.90	16.16	1.75	16.04	222
11485	15927	14244	...	1.209275	32880.399	17.27	18.33	17.99	1.06	17.92	290
2004	15946	10579	1.50708	1.507086	34690.370	16.79	17.65	17.39	0.96	17.33	366
11203	15963	10830	1.642184	1.642184	32861.343	17.03	17.71	17.37	0.68	17.32	235
2006	15966	7045	...	1.364970	29204.247	16.88	17.84	17.54	0.96	17.77	238
2008	15976	8093	...	4.707921	32851.408	15.56	16.60	16.20	1.04	16.13	403
2009	15981	7146	...	1.977355	32828.390	17.06	17.82	17.54	0.76	17.49	273
2010	15984	9820	...	0.656520	29867.456	16.20	16.65	16.42	0.45	16.39	482
854	15994	7824	15.95	15.953034	31800.288	14.22	16.12	15.28	1.90	15.15	513
2011	16014	8062	...	Irr.	...	16.50	16.99	...	0.49	...	205
2012	16016	7684	...	1.443737	16759.606	17.05	17.82	17.51	0.77	17.46	230
10368	16029	5103	1.6715	1.662267	24745.829	16.50	17.85	17.53	1.35	17.44	383
2013	16032	13554	2.85038	2.857789	29938.501	15.79	17.57	17.16	1.78	17.04	415
11486	16044	8571	...	2.590942	29135.403	16.69	17.69	17.26	1.00	17.19	379
2014	16054	13366	2.200796	2.203742	24033.774	16.23	17.16	16.91	0.93	16.85	419
2015	16055	14776	2.87414	2.874156	31697.371	16.97	17.46	17.30	0.49	17.26	377
2016	16066	11665	2.95446	2.954107E	32003.648	14.30	15.35	...	1.05	...	527
2017	16084	12832	11.4072	11.407450	28374.453	14.56	15.80	15.34	1.24	15.26	507
2018	16092	8683	4.40	4.742146	29839.571	16.18	17.09	16.69	0.91	16.63	444
2019	16107	11707	1.629527	1.629511	26313.268	16.47	17.57	17.26	1.10	17.19	424
2020	16108	7444	...	0.616453	29867.456	17.38	17.66	17.54	0.28	17.52	367
2021	16115	11878	2.491051	2.489228	24824.624	16.52	17.64	17.37	1.12	17.30	454
2022	16116	12364	1.30887	1.308877	32838.390	17.23	18.09	17.93	0.76	17.88	264
2023	16119	7452	...	1.932868	30507.635	16.40	17.66	17.36	1.26	17.28	384
2024	16119	8864	3.86	3.908311	29926.538	15.36	16.55	16.18	1.19	16.10	475
2025	16126	7557	...	2.577227	29839.571	15.34	16.90	16.40	1.56	16.30	438
2026	16134	10653	4.34263	4.342576	29454.660	15.72	16.92	16.52	1.20	16.44	515
855	16142	7994	32.9618	32.941331	31799.291	14.34	15.03	14.68	0.69	14.63	521
10369	16143	4362	2.9702	2.948731	32818.369	16.36	16.90	16.65	0.54	16.61	468
2027	16154	11392	2.985271	2.982519	27727.294	15.92	17.43	17.03	1.51	16.93	496
2028	16160	8042	...	3.688962	31800.288	15.74	16.58	16.30	0.84	16.24	401
11204	16164	10326	3.099468	3.099468	32475.373	15.81	16.80	16.54	0.99	16.47	486
857	16173	6117	11.9831	11.982936	29927.277	14.22	15.50	14.84	1.28	14.75	528
11487	16179	8817	...	1.291626	29808.570	16.72	17.47	17.12	0.75	17.07	380
2029	16185	10138	2.93690	2.936978	25892.327	15.36	17.21	16.74	1.85	16.62	461
2030	16190	8484	2.79	2.794475	31324.386	16.52	17.53	17.17	1.01	17.10	437
2031	16195	11343	5.248655	5.248655	21813.786	15.20	16.99	16.30	1.79	16.18	515
2032	16200	7907	...	Irr.	...	16.66	17.55	...	0.89	...	390
2034	16207	6954	...	3.156177	29868.460	16.04	17.53	17.04	1.49	16.94	448
2035	16224	11586	1.97945	1.979254	34682.378	16.63	17.60	17.06	0.97	17.00	444
2036	16233	7807	...	2.501551	29926.333	16.35	17.02	16.68	0.67	16.64	455
2037	16242	6865	...	3.368761	30673.250	15.57	16.53	16.14	0.96	16.07	488
2038	16254	9852	...	2.613415	31342.355	15.53	17.18	16.77	1.65	16.66	467
2039	16262	13824	...	1.123134	27980.654	17.38	18.11	17.88	0.73	17.83	285

TABLE 3.—*Results of observations* (* in Column 1 denotes newly discovered variables; in Column 5 denotes variable periods).—Continued

HV	x	y	Published P.	Period	Normal Maxima	M	m	$\bar{m}$	A	⟨m⟩	Obs.
2040	16291	10534	6.12359	6.112096	32466.394	15.50	16.70	16.34	1.20	16.26	528
2041	16292	10637	5.92179	5.911249	34684.314	15.32	16.61	16.13	1.29	16.04	530
11205	16299	10845	3.816022	3.802571	30528.640	15.49	16.58	16.28	1.09	16.21	469
2042	16302	9784	...	2.618130	31680.531	15.91	17.70	17.19	1.79	17.07	388
2043	16322	13454	0.6032495	0.603217*	...	14.70	15.54	15.25	0.84	15.19	382
				0.603334							
2044	16324	7305	...	0.802974*	...	17.02	17.66	17.38	0.64	17.34	296
11206	16326	12828	3.399471	3.399471	26573.519	16.27	16.67	16.55	0.40	16.52	488
11488	16329	9522	...	1.942815	32860.256	16.26	17.51	16.98	1.25	16.90	329
2045	16331	13975	2.85226	2.847232	32850.289	16.08	17.42	17.04	1.34	16.95	363
10370	16332	5679	2.4772	2.477345	32878.257	16.42	16.96	16.76	0.54	16.72	437
11489	16338	8034	...	1.110743	32878.305	17.00	17.41	17.28	0.41	17.25	441
2046	16342	12721	2.553763	2.557713	26594.456	16.30	16.79	16.57	0.49	16.54	473
2047	16352	8033	...	3.453981	24824.624	16.46	17.32	17.00	0.86	16.94	457
2049	16360	12578	2.800893	2.800893	23605.845	15.96	17.40	16.99	1.44	16.89	458
2050	16366	7345	...	2.872111	31799.291	15.58	17.05	16.52	1.47	16.42	445
2051	16368	9468	3.26	3.225973	26328.373	15.32	17.28	16.63	1.96	16.50	441
2052	16386	8589	12.575	12.57498	26564.625	14.21	15.47	14.99	1.26	14.91	529
2053	16400	13208	3.219886	3.219796	27756.265	16.47	17.40	17.06	0.93	17.00	433
2054	16403	13284	7.118096	7.165295	29926.283	15.60	16.42	16.09	0.82	16.04	482
2055	16405	14575	3.52591	3.544907	26571.490	16.60	17.40	17.15	0.80	17.10	394
2056	16413	11258	2.305688	2.308962	32142.259	16.07	17.37	17.01	1.30	16.92	465
2057	16414	13234	1.906767	1.909013	32441.361	16.60	17.75	17.33	1.15	17.25	295
2058	16437	12744	3.688893	3.684718	31397.251	15.99	16.78	16.54	0.79	16.50	483
11490	16440	8772	...	3.788955	33172.348	15.90	16.96	16.58	1.06	16.51	457
11491	16440	11073	...	2.878319	24402.678	16.18	16.78	16.54	0.60	16.50	522
2059	16456	13345	2.842568	2.859993	29100.560	16.34	17.30	16.99	0.96	16.93	405
2060	16478	11400	10.18447	10.18447	24686.855	14.35	15.27	14.86	0.92	14.80	528
2061	16486	10244	...	2.242726	32849.404	16.00	16.62	16.35	0.62	16.31	486
2062	16504	9284	...	1.424031	23752.564	15.98	17.42	17.01	1.44	16.91	420
2063	16504	13178	11.166230	11.166230	32850.391	14.89	16.18	15.63	1.29	15.54	486
2064	16505	10526	33.7	33.663233	29199.254	13.71	15.18	14.26	1.47	14.16	539
2065	16506	9966	...	3.043955	24761.749	15.26	16.81	16.32	1.55	16.22	464
12951*	16521	10603	...	29.989504	32849.266	14.22	15.31	14.90	1.09	14.83	538
2066	16532	10166	...	Irr.	...	14.54	15.82	...	1.28	...	521
2067	16546	12727	3.43868	3.435033	26632.395	15.88	16.92	16.54	1.04	16.47	450
2068	16574	14204	1.80619	1.807181	27749.451	16.09	16.60	16.37	0.51	16.34	429
856	16583	14153	12.155	12.155307	32473.363	14.52	15.92	15.47	1.40	15.38	469
11492	16584	8028	...	2.960884	32490.255	15.67	16.91	16.46	1.24	16.38	470
2069	16605	10308	2.87427	2.874273	23288.713	15.76	16.93	16.53	1.17	16.45	459
12952*	16611	12162	...	7.182360	29927.325	15.40	16.01	15.70	0.61	15.66	513
2070	16619	9905	...	3.710850	25944.340	15.60	16.94	16.51	1.34	16.42	438
11207	16623	10242	2.456978	2.449509	32061.385	17.21	17.53	17.37	0.32	17.35	347
11494	16638	9720	...	1.580251	26565.502	16.60	17.14	16.91	0.54	16.87	417
11495	16650	6600	...	1.390353*	26510.624	17.13	17.80	17.47	0.67	17.43	451
				1.390556							
2075	16650	9324	3.46	4.027581	32504.261	16.33	17.43	17.08	1.10	17.01	408
2076	16662	13614	2.499041	2.499111	29108.594	16.11	16.90	16.60	0.79	16.55	414
2077	16684	9085	1.39	1.395878	32800.380	16.86	17.86	17.52	1.00	17.45	322
2078	16689	15713	4.74	4.707034	26605.579	16.12	16.92	16.62	0.80	16.57	432
10371	16692	4989	1.5241	1.524111	32878.396	16.43	17.50	17.10	1.07	17.03	311
2079	16694	10884	3.013319	3.007808	26341.281	15.84	17.38	16.97	1.54	16.87	478
2080	16703	8678	2.79	2.778719	33071.620	16.40	17.72	17.31	1.32	17.22	367
11496	16704	7710	...	2.982155	31398.246	16.16	17.44	17.15	1.28	17.06	431
2081	16705	10203	7.60792	7.607628	32466.394	14.74	15.62	15.25	0.88	15.19	418

TABLE 3.—*Results of observations* (* in Column 1 denotes newly discovered variables; in Column 5 denotes variable periods).—Continued

HV	x	y	Published P.	Period	Normal Maxima	M	m	$\bar{m}$	A	⟨m⟩	Obs.
2082	16715	7544	...	2.712460	23341.590	15.84	17.40	16.94	1.56	16.84	438
12953*	16720	6690	...	2.060420	32804.452	16.23	17.54	17.35	1.31	17.26	319
2084	16733	7566	Irr.	R CrB	...	13.95	15.60	...	1.65	...	490
2085	16742	13754	3.716671	3.716671	24763.720	16.05	17.05	16.68	1.00	16.61	408
2086	16749	8236	3.58	3.789458	29869.462	15.11	17.10	16.29	1.99	16.13	476
10372	16765	5895	1.52301	1.520168	29811.606	16.78	17.20	17.01	0.42	16.98	450
2087	16779	11182	9.15919	9.159187	31697.371	15.44	16.22	15.78	0.78	15.73	524
2088	16784	14526	14.322	14.578832	32462.292	14.14	16.23	15.48	2.09	15.34	468
12954*	16787	6415	...	8.826671	34690.319	15.87	16.56	16.25	0.69	16.21	497
858	16795	12185	3.83273	3.832724	26568.516	15.50	17.00	16.50	1.50	16.46	497
11208	16797	11985	1.30193	1.300882	24404.670	16.42	17.32	17.06	0.90	17.00	415
2089	16799	8916	3.75	3.825657	31796.310	16.59	17.54	17.16	0.95	17.09	422
2090	16804	9406	...	0.539090	16760.614	16.18	17.74	17.32	1.56	17.22	421
2091	16806	5634	0.5332815	0.533280	31397.251	14.48	15.50	15.17	1.02	15.10	492
2092	16808	12632	1.77155	1.771551E	30547.583	16.12	17.08	...	0.96	...	489
2093	16820	9673	...	1.828382	31976.647	16.15	16.75	16.43	0.60	16.39	363
				1.828214							
2095	16825	10375	2.219514	2.222553	24761.749	15.98	17.20	16.77	1.22	16.69	395
2096	16827	8074	5.09	2.011024	27658.416	17.48	17.98	17.81	0.50	17.78	300
12955*	16834	9206	...	2.825034	24065.740	16.42	17.02	16.73	0.60	16.69	477
11497	16841	7807	...	1.278946	29784.636	16.52	17.70	17.39	1.18	17.31	379
2097	16843	8336	1.20	1.198709	32851.349	16.60	17.66	17.27	1.06	17.20	362
2098	16845	12871	3.16393	3.163960	26308.461	16.37	17.13	16.96	0.76	16.91	444
11498	16860	8691	...	1.389549	16755.544	16.62	17.90	17.52	1.28	17.43	328
11499	16860	9294	...	2.950000	29847.587	16.16	16.92	16.58	0.76	16.53	484
11209	16860	13860	1.935175	1.928373	26189.516	16.27	17.10	16.72	0.83	16.66	413
2099	16866	7413	...	2.160121	31642.644	16.06	17.84	17.30	1.78	17.18	351
2101	16876	9161	2.17	0.692515	24431.682	16.38	17.27	16.86	0.89	16.80	461
2102	16906	15132	0.5140561	0.514051*	...	15.48	17.08	16.42	1.60	16.31	418
2103	16908	8131	8.9839	8.984080	32854.332	15.24	16.30	15.75	1.06	15.68	492
11500	16908	13773	1.7899	1.789818	32824.400	16.35	17.18	16.84	0.83	16.78	415
2104	16922	11642	2.72170	2.712666	27786.361	15.96	17.12	16.53	1.16	16.45	473
2105	16922	12544	Irr.	Irr.	...	16.12	17.50	...	1.38	...	470
10373	16929	14334	3.07465	3.074643	32845.251	15.58	17.08	16.66	1.50	16.56	388
2106	16931	10426	...	Irr.	...	16.00	16.50	...	0.50	...	461
10375	16947	15069	6.0035	5.938101	16760.614	16.33	17.08	16.76	0.75	16.71	423
2107	16948	14447	2.4115	2.411440	24417.779	15.70	17.43	16.96	1.73	16.84	383
11502	16959	13068	...	Irr.?	...	16.66	17.30	...	0.64	...	496
2108	16961	11327	2.502803	2.506661	29868.460	15.89	16.76	16.56	0.87	16.50	494
2109	16964	13124	1.320183	1.321779	32880.355	16.82	17.42	17.18	0.60	17.14	384
2110	16965	13444	1.763081	1.763122	23667.803	16.20	17.02	16.64	0.82	16.59	387
2111	16969	4915	...	1.758372	30901.610	16.75	17.36	17.18	0.61	17.14	374
11503	16974	9108	...	1.509484	33211.448	16.62	17.56	17.23	0.94	17.16	455
2112	16991	10164	607.2	608	32880	13.00	[17.80	...	]4.80	...	323
10376	16992	14832	2.4180	2.407301	28380.640	15.90	16.76	16.38	0.86	16.32	451
2113	17004	10452	5.632978	5.662258	31293.606	16.17	16.77	16.51	0.60	16.47	458
2114	17011	14436	2.456094	2.450566	32860.346	15.95	17.46	17.06	1.51	16.96	378
2115	17012	14235	...	1.785176	26949.367	16.54	17.34	17.09	0.80	17.04	348
2116	17034	6234	3.75626	3.751937	29927.402	16.36	17.20	16.90	0.84	16.84	469
10377	17043	14655	1.63640	1.636410	31398.246	16.54	17.32	17.12	0.78	17.07	354
2118	17049	9048	2.99	2.987518	31345.388	16.31	17.38	17.03	1.07	16.96	450
12956*	17050	14774	...	517.47	31436	15.38	[17.75	...	]2.37	...	168
2119	17054	10614	7.24034	7.272674	32142.259	15.67	16.45	16.09	0.78	16.04	518
2120	17054	13027	2.612904	2.610736	29778.637	16.82	17.32:	17.08	0.50:	17.05	421

TABLE 3.—*Results of observations* (* in Column 1 denotes newly discovered variables; in Column 5 denotes variable periods).—Continued

HV	x	y	Published P.	Period	Normal Maxima	M	m	$\bar{m}$	A	⟨m⟩	Obs.
2121	17063	10509	0.6867	0.686908*	...	15.97	16.72	16.53	0.73	16.48	482
				0.686931							
2122	17065	13338	1.7750	1.775036	32537.326	16.44	17.38	17.16	0.94	17.10	383
2123	17070	9048	2.00:	2.034551	29542.397	16.48	17.60	17.37	1.12	17.29	436
2124	17074	14912	6.06454	6.064539	26563.608	15.26	16.17	15.79	0.91	15.73	434
2125	17085	9114	4.831	4.844562	30575.539	15.84	17.26	16.67	1.42	16.57	473
2126	17093	10305	2.90568	2.903061	32732.610	16.00	17.41	16.82	1.41	16.73	370
859	17098	10222	573.39	581.96	32011	13.73	[18.5	...	]4.77	...	220
2127	17104	12623	1.83085	1.830875	29811.606	16.22	16.62	16.43	0.40	16.40	468
2128	17108	12055	2.268759	2.268759	32852.298	15.85	16.92	16.55	1.07	16.48	458
2129	17119	13914	4.72322	4.729917	24304.858	15.43	16.77	16.24	1.34	17.15	471
2130	17136	10772	...	2.019915	32851.254	17.19:	17.41:	17.33	0.22:	17.32:	478
10378	17139	4956	2.5949	0.720539	32037.518	16.18	16.45	16.34	0.27	16.32	475
2131	17148	14804	2.98176	2.960042	32850.289	16.20	17.30	16.93	1.10	16.86	376
2132	17153	9105	4.00	4.006124	31670.549	16.50	17.66	17.19	1.16	17.11	485
2133	17177	9982	...	3.229595	29938.453	15.42	16.85	16.44	1.43	16.34	504
2134	17184	9924	3.4166	2.416804	25850.393	16.12	17.18	16.86	1.06	16.79	433
2135	17194	9108	2.91	2.854977	31589.631	16.36	17.72	17.25	1.36	17.16	452
10379	17199	14994	3.4876:	3.483796	29958.306	16.37	17.20	16.94	0.83	16.88	359
2136	17204	14243	4.4759	4.482065	32800.380	15.27	16.80	16.28	1.53	16.18	454
10380	17211	6348	2.03316	2.030636	24716.860	16.50	17.70	17.26	1.20	17.18	373
12957*	17228	5705	...	1.131560	32845.251	16.62	17.27	16.94	0.65	16.90	384
2137	17245	9104	1.45	1.445555	29826.589	17.40	17.99:	17.80	0.59:	17.76	280
2138	17259	10558	...	3.437439	31739.356	16.41	17.06	16.84	0.65	16.80	466
2139	17264	12526	...	2.879809	16755.628	15.54	16.90	16.54	1.36	16.45	455
2140	17294	3766	8.13597	8.115697	23667.803	15.58	16.77	16.26	1.19	16.18	485
2141	17297	9164	...	2.421202	23341.689	15.60	17.27	16.68	1.67	16.57	462
2141	17303	14794	6.5167	6.490233	29204.247	14.64	16.26	15.53	1.62	15.42	461
11511	17304	12444	...	Irr.	...	16.10	16.78	...	0.68	...	484
2143	17305	9575	...	2.548160	32062.363	15.76	16.99	16.69	1.23	16.61	497
2144	17328	7851	...	5.942971	24380.743	15.97	17.28	16.70	1.31	16.61	489
2145	17334	8865	4.96	4.941147	16760.780	16.04	17.09	16.62	1.05	16.55	496
11512	17334	14613	...	0.988300	30575.539	16.40:	17.09	16.86	0.69:	16.81	272
2146	17335	9220	...	1.802097	23681.809	16.44	17.30	16.92	0.86	16.86	427
2147	17346	9123	2.79	1.430679	24821.586	16.99	17.97	17.85	0.98	17.78	287
2148	17347	9076	3.55	3.317442	16754.596	17.00:	17.38:	17.20:	0.38:	17.17:	447
2149	17373	14393	2.76674	2.769072	27650.630	16.28	17.40	17.04	1.12	16.96	386
2151	17407	14246	3.79328	3.811053	24745.830	16.00	17.13	16.68	1.13	16.62	419
2152	17413	12082	...	1.380363	29927.278	16.53	17.74	17.40	1.21	17.32	412
2154	17468	9744	...	3.192787	26949.367	15.78	17.26	16.89	1.48	16.79	446
2155	17503	9178	...	2.944608	17447.825	15.54	15.93	15.72	0.39	15.69	514
2156	17507	14807	...	2.299232	32011.598	15.91	17.16	16.76	1.25	16.68	444
2157	17517	9606	...	3.169060	32850.289	16.24	17.19	16.93	0.95	16.87	467
2158	17523	15495	3.33413	3.333967	16758.644	15.15	15.82	15.56	0.67	15.51	444
2159	17528	9928	...	1.523523	26312.267	16.43	17.21	16.85	0.68	16.80	494
2160	17543	11582	...	3.346353	32880.399	16.05	16.60	16.36	0.55	16.32	458
2161	17545	13825	...	5.739025	29074.650	14.36	16.47	15.73	2.11	15.59	514
2162	17582	9664	...	5.632320	27755.401	16.24	17.01	16.74	0.77	16.69	483
2163	17585	8615	6.68	6.693010	27707.376	16.18	16.66	16.47	0.48	16.44	522
2164	17585	10799	...	4.769157	23341.590	15.23	16.62	16.10	1.39	16.01	506
2165	17591	13531	...	2.886543	27683.401	16.35	17.51	17.10	1.16	17.02	431
2166	17623	12606	...	2.509613	32860.300	16.12	17.43	16.94	1.31	16.85	407
2167	17624	10071	...	2.273591	28376.572	15.47	17.18	16.63	1.71	16.52	450
2168	17634	13477	...	3.046718	24417.779	16.05	17.24	16.82	1.19	16.74	466
10381	17643	6438	3.0193	3.008185	27750.391	16.15	17.06	16.80	0.91	16.75	404

TABLE 3.—*Results of observations* (* in Column 1 denotes newly discovered variables; in Column 5 denotes variable periods).—Continued

HV	x	y	Published P.	Period	Normal Maxima	M	m	$\bar{m}$	A	⟨m⟩	Obs.
2169	17644	14496	1.74991	1.748006	26572.513	16.05:	16.73	16.45	0.68:	16.40	423
2170	17651	15414	2.98884	2.988864	24461.641	15.29	16.59	16.15	1.30	16.06	363
2171	17655	8423	...	Irr.	...	16.75	17.77	...	1.02	...	449
2172	17667	12204	...	2.562346	26973.379	16.27	17.34	17.02	1.07	16.95	464
11517	17694	12468	...	1.295794	27756.256	16.15	16.48	16.34	0.33	16.32	419
2173	17695	14324	3.03699	3.031310	23344.538	15.28	17.10	16.57	1.82	16.45	388
2174	17706	14395	6.4300	6.429336	29778.637	15.24	16.44	15.90	1.20	15.82	466
2175	17737	14668	...	4.210763	26502.647	14.55	16.59	16.40	2.04	16.25	406
2177	17749	6965	2.2873	2.282549	16758.559	16.29	17.65	17.22	1.36	17.13	346
2178	17774	9168	...	2.992632	28034.526	15.76	17.16	16.65	1.40	16.56	435
2179	17775	14454	...	1.405161	29906.234	16.53	17.50	17.13	0.97	17.07	216
2180	17776	11164	...	0.685890	31324.386	15.96	16.44	16.24	0.48	16.21	489
2182	17892	11104	...	2.812180	28776.476	15.84	16.90	16.47	1.06	16.40	472
2183	17844	14649	...	3.537532	31655.524	15.51	17.00	16.52	1.49	16.42	365
2184	17846	7410	1.6233	1.622441	24787.682	16.42	17.40	17.14	0.98	17.07	419
2185	17847	13865	...	3.690300	32819.398	15.19	16.80	16.37	1.61	16.26	489
2186	17859	14455	...	2.067745	30593.593	16.20	16.82	16.50	0.62	16.46	409
861	17860	10474	...	4.413842	21816.787	14.81	16.40	15.71	1.59	15.60	474
2187	17871	10335	...	2.968883	13861.607	15.65	16.90	16.47	1.25	16.39	441
11518	17880	5748	Irr. ?	Irr.	...	14.88	15.90	...	1.02	...	503
11519	17934	9933	...	2.869377	24745.830	15.57	16.11	15.88	0.54	15.85	481
11520	17943	10119	...	1.626238	30665.247	16.67	17.75	17.18	1.08	17.11	250
2188	17945	13270	...	3.712066	24304.858	16.76	17.23	17.00	0.47	16.97	429
2189	17946	10618	13.45	13.459131	27746.529	14.50	15.80	15.15	1.30	15.06	510
2190	17958	10518	...	2.573948	29927.236	15.74	16.77	16.40	1.03	16.33	437
11521	18018	9546	...	2.427265	25850.393	15.47	17.27	16.75	1.80	16.63	405
2192	18097	9554	...	3.007754	29839.571	15.92	17.22	16.85	1.30	16.76	393
2193	18103	9721	...	2.746566	29927.325	15.48	16.66	16.25	1.18	16.16	438
2194	18132	13999	...	3.500543	31675.572	15.56	17.05	16.66	1.49	16.56	493
11523	18138	11616	...	1.367884	32878.396	16.71	17.65:	17.34:	0.94:	17.28:	176
2195	18166	9904	41.7815	41.809912	24408.793	12.99	14.27	13.76	1.28	13.68	518
11524	18186	10431	...	2.264649	26981.369	16.64	17.49	17.19	0.85	17.13	311
2196	18215	9922	...	3.408125	31274.639	15.94	17.11	16.59	1.17	16.51	383
862	18215	13426	5.790	5.789717	24402.678	15.32	16.15	15.81	0.83	15.75	474
10382	18219	6264	2.47732	2.475501	32828.390	16.34	17.64	17.22	1.30	17.13	379
2197	18266	7894	1.4384	1.438424	29081.611	16.63	17.40	17.08	0.77	17.01	418
2198	18292	13683	...	6.064465	29813.648	15.32	16.58	16.16	1.26	16.08	474
2199	18298	14005	...	4.577015	31739.356	15.63	16.70	16.29	1.07	16.22	499
2200	18323	14154	...	2.465313	32537.326	16.06	16.83	16.58	0.77	16.53	274
2201	18338	12444	11.25	11.252644	26573.519	14.60	15.90	15.32	1.30	15.23	483
2202	18386	9775	13.2	13.182314	27756.256	14.34	15.39	14.98	1.05	14.91	510
2203	18386	13133	...	5.962282	29897.452	15.16	16.40	15.81	1.24	15.73	457
2204	18443	14295	...	2.528560	23338.634	15.45	16.79	16.31	1.34	16.22	382
11527	18492	13280	...	4.593755	32752.564	15.70	16.67	16.28	0.97	16.22	459
11528	18504	13062	...	2.579047	31801.286	15.65	16.89	16.54	1.24	16.46	427
2205	18513	6044	26.04	25.432997	26319.275	14.28	16.12	15.55	1.84	15.43	512
11530	18570	14109	...	2.949948	29074.646	16.46	17.09	16.91	0.63	16.87	471
10383	18591	7236	3.531678	3.531678	28804.381	16.37	17.61	17.23	1.24	17.15	202
2206	18596	11161	...	2.440239	25850.393	15.82	16.28	16.07	0.46	16.04	475
11531	18606	12720	...	Irr. ?	...	15.85	16.31	...	0.46	...	452
2207	18615	13400	...	4.814729	26570.518	15.82	16.58	16.20	0.76	16.15	458
11532	18720	11472	...	2.033686	27750.391	16.58	16.93	16.79	0.35	16.77	435
2208	18757	9824	3.21277	3.212749E	24787.682	15.02	15.91	...	0.89	...	490
2209	18774	6366	22.7	22.650006	32854.383	13.55	14.74	14.23	1.19	14.15	511
2210	18774	13394	...	2.919222	30648.337	15.26	16.90	16.45	1.76	16.33	447

TABLE 3.—*Results of observations* (* in Column 1 denotes newly discovered variables; in Column 5 denotes variable periods).—Continued

HV	x	y	Published P.	Period	Normal Maxima	M	m	$\bar{m}$	A	⟨m⟩	Obs.
11534	18822	13281	...	1.688563	29566.245	16.17	16.87	16.58	0.70	16.53	440
2211	18846	10442	...	5.095061	25892.327	15.84	16.48	16.26	0.64	16.22	423
11536	18972	5001	...	0.569098	26593.551	16.36	16.90:	16.64:	0.54:	16.60:	307
11537	18987	9999	...	Irr.	...	16.15	16.71	...	0.56	...	404
2213	19034	13420	...	3.786521	32037.518	14.90	16.34	15.80	1.44	15.70	326
2214	19101	14174	...	82 ±	...	16.05	16.91	...	0.86	...	353
2215	19134	4889	9.17498	9.174396	26304.269	14.94	16.05	15.55	1.11	15.48	481
2216	19137	13836	...	2.679895	32508.406	15.38	16.78	16.37	1.40	16.28	430
11540	19161	10338	...	0.870331*	...	16.61	17.22	16.97	0.61	16.93	266
2217	19205	9194	2.39816	2.259640	30528.640	16.20	16.84	16.52	0.64	16.48	399
11541	19221	10284	...	1.397722	29825.590	16.44	17.04	16.75	0.60	16.71	341
2218	19313	9207	1.7828	2.396421	29897.452	15.37	17.14	16.63	1.77	16.51	375
2219	19314	13425	...	1.400598	29825.590	15.68	16.62	16.20	0.94	16.14	416
11542	19350	11850	...	1.738064	33563.346	16.30	17.23	16.83	0.93	16.77	166
2220	19456	8547	4.37905	4.379522E	29808.570	15.90	16.59	...	0.69	...	469
2221	19512	13333	...	4.235353	31291.478	15.34	16.75	16.27	1.41	16.18	409
10384	19539	9993	1.9747	1.972354	27715.399	16.34	17.61	17.28	1.27	17.19	403
2222	19604	8905	20.0	19.985803	30935.512	14.27	15.70	15.20	1.43	15.10	361
11544	19662	11922	...	3.472644	32850.200	15.49	16.60	16.23	1.11	16.16	413
11545	19788	14910	...	Irr.	...	15.12	15.59	...	0.47	...	437
2223	19865	7166	6.70	6.700442	23595.881	14.91	16.33	15.84	1.42	15.74	452
2224	19943	10324	4.70	4.703865	23605.845	15.57	16.38	16.06	0.81	16.01	427
2225	20158	3833	13.2086	13.154599	23288.713	15.24	16.03	15.63	0.79	15.58	438
2226	20374	7129	1.89983	1.900934E	29870.451	15.69	16.37	...	0.68	...	450
2227	20661	4305	...	12.466963	29808.570	15.38	16.43	15.97	1.05	15.89	440
2228	20893	10639	Irr.	Irr.	...	13.90	15.30	...	1.40	...	475
2229	21018	5414	10.45	10.448011	24815.593	15.15	16.18	15.74	1.03	15.67	452
863	21397	5445	29.0	28.961606	32052.381	13.58	15.65	15.00	2.07	14.86	451
2230	21764	8985	12.52	12.526122	32034.503	15.66	16.26	15.97	0.60	15.93	438
2231	22120	7120	36.7	36.67924	32845.251	14.16	15.66	15.21	1.50	15.11	442
11546	22146	9267	Irr.	Irr.	...	12.59	13.38	...	0.79	...	406
2232	22155	7113	Irr.	Irr.	...	13.80	16.80	...	3.00	...	442
2233	23178	4830	15.2	15.172204	31734.237	14.32	15.80	15.24	1.48	15.14	439
2234	23438	10574	0.5402149	0.5402149	26945.391	14.32	15.36	15.07	1.04	15.02	434
10385	23535	9207	6.9774	7.037199	26978.452	15.78	16.58	16.29	0.80	16.24	397
865	23924	2424	33.3	33.326668	30561.604	14.07	15.59	15.09	1.52	14.99	423

TABLE 4.—*Light-curve parameters for periodic variables* (*in Column 1 denotes *W* Virginis stars; in Column 2 denotes variable periods)

HV	Period	log P	M_0	m_0	A	$\langle m \rangle_0$	x_0	M-m	s	A_1	A_2	dm
12132	0.331516	-0.4795	15.73	16.16	0.43	15.90	15.90	0.52	0.9	0.45	0.00	...
814	0.371546*	-0.4300	13.99	14.68	0.69	14.29	14.32	0.45	1.2	0.64	0.12	...
12949	0.474978	-0.3233	16.14	17.06	0.92	16.65	16.74	0.12	4.0	0.57	0.69	...
11368	0.484509*	-0.3147	17.31	18.04	0.73	17.63	17.68	0.28:	1.3	0.64	0.17	0.26
11446	0.497787	-0.3030	16.44	17.82	1.38	17.30	17.29	0.16	2.8	0.94	0.88	...
1821	0.502753	-0.2986	17.10	17.70	0.60	17.34	17.39	0.40	1.2	0.55	0.11	0.00
809	0.509104*	-0.2932	13.51	14.68	1.17	14.25	14.19	0.22	2.2	0.86	0.64	...
2102	0.514051*	-0.2890	15.17	17.00	1.83	16.30	16.26	0.18	2.4	1.30	1.06	...
1863	0.527340	-0.2780	16.53	17.18	0.65	16.90	16.92	0.18	2.6	0.45	0.40	...
2091	0.533280	-0.2730	14.48	15.50	1.02	15.10	15.13	0.15	3.7	0.65	0.75	...
2090	0.539090	-0.2683	16.18	17.74	1.56	17.22	17.20	0.17	4.4	0.95	1.21	...
2234	0.540212	-0.2674	14.32	15.36	1.04	15.02	15.01	0.20	5.4	0.61	0.85	...
1595	0.547478	-0.2616	15.93	16.83	0.90	16.55	16.50	0.15	3.0	0.59	0.60	...
11536	0.569098	-0.2448	16.36	16.90	0.54	16.60	16.70	0.26	3.1	0.36	0.37	...
1510	0.570857	-0.2435	15.82	16.79	0.97	16.47	16.43	0.14	3.3	0.63	0.68	...
11229	0.584136	-0.2335	16.31	17.29	0.98	16.87	16.90	0.19	2.5	0.69	0.59	...
2043	0.603344*	-0.2195	14.50	15.34	0.84	14.99	14.98	0.21	2.2	0.63	0.42	...
1834	0.603578	-0.2193	16.55	17.25	0.70	16.85	16.93	0.41	1.7	0.56	0.29	...
11212	0.606288	-0.2174	15.40	15.87	0.47	15.61	15.69	0.28	2.7	0.32	0.30	...
1738	0.612928	-0.2126	15.02	16.63	1.61	16.02	16.03	0.16	3.2	1.06	1.11	...
2020	0.616453	-0.2101	17.08	17.36	0.28	17.22	17.20	0.37	1.0	0.28	0.00	0.30
11238	0.618163	-0.2089	16.54	17.02	0.48	16.76	16.78	0.41	1.3	0.42	0.11	...
362-12	0.652545	-0.1853	16.49	17.09	0.60	16.84	16.86	0.16	3.0	0.40	0.40	...
2010	0.656520	-0.1828	15.95	16.40	0.45	16.14	16.17	0.46	1.2	0.41	0.08	...
12932	0.671453	-0.1730	16.03	16.49	0.46	16.22	16.25	0.41	1.2	0.42	0.08	...
2180	0.685890	-0.1637	15.96	16.44	0.48	16.21	16.19	0.48	1.2	0.44	0.09	...
2121	0.686931*	-0.1631	15.97	16.72	0.73	16.48	16.44	0.15	2.7	0.50	0.46	...
2101	0.692515	-0.1596	16.38	17.27	0.89	16.80	16.83	0.43	1.3	0.78	0.20	...
10378	0.720539	-0.1423	16.18	16.45	0.27	16.32	16.30	0.44	1.0	0.27	0.00	...
1327	0.726109*	-0.1390	16.00	16.88	0.88	16.54	16.47	0.26	1.6	0.72	0.33	...
810	0.736327*	-0.1329	13.45	14.63	1.18	14.16	14.19	0.17	3.5	0.77	0.84	...
11415	0.774007	-0.1113	17.63	18.02	0.39	17.82	17.83	0.50	1.4	0.34	0.11	0.22
11289	0.788189	-0.1033	16.90	17.62	0.72	17.27	17.28	0.36	1.5	0.60	0.24	0.56
2044	0.802974*	-0.0953	17.02	17.66	0.64	17.36	17.34	0.40	1.3	0.56	0.15	0.30
12170	0.811079	-0.0909	17.21	17.91	0.70	17.62	17.59	0.23	1.7	0.56	0.29	0.00
1851	0.824853*	-0.0836	15.24	15.80	0.56	15.48	15.52	0.43	1.3	0.49	0.13	...
11390	0.827969	-0.0820	17.00	17.72	0.72	17.37	17.42	0.28	2.1	0.53	0.37	0.26
1715	0.862245	-0.0644	15.75	16.34	0.59	16.06	16.03	0.43	1.2	0.54	0.11	...
11447	0.863009	-0.0640	16.49	17.13	0.64	16.84	16.85	0.33	1.9	0.49	0.30	0.39
11540	0.870331*	-0.0603	16.61	17.22	0.61	16.93	16.87	0.27	1.5	0.51	0.20	...
12912	0.885430	-0.0429	17.24	17.76	0.52	17.46	17.55	0.43	2.2	0.37	0.28	0.00
11512	0.988300	-0.0051	16.40	17.09	0.69	16.81	16.80	0.47	1.4	0.59	0.22	0.00
11436	1.047160	0.0200	16.85	17.31	0.46	17.06	17.11	0.24	2.0	0.35	0.23	0.39
11472	1.049538	0.0210	16.40	17.25	0.85	16.80	16.87	0.28:	1.7	0.68	0.35	0.52
11197	1.073493	0.0308	16.56	17.33	0.77	16.97	17.02	0.25:	2.4	0.55	0.45	0.00
1853	1.084694	0.0352	16.52	17.16	0.64	16.75	16.85	0.33:	1.5	0.54	0.21	0.28
11489	1.110743	0.0456	16.70	17.11	0.41	16.95	16.92	0.32	1.7	0.33	0.17	0.30
11375	1.114956	0.0473	16.33	17.21	0.88	16.81	16.75	0.40	1.2	0.81	0.16	0.00
2039	1.123134	0.0504	17.09	17.82	0.73	17.54	17.51	0.20	2.1	0.54	0.38	0.29
11419	1.124126	0.0508	16.99	18.13	1.14	17.77	17.73	0.10	4.0	0.71	0.86	0.35
1769	1.126754	0.0518	17.30	17.84	0.54	17.60	17.66	0.23:	5.7	0.32	0.44	0.00
12902	1.130463	0.0533	16.54:	17.80:	1.26:	17.03:	17.30:	0.16:	2.5:	0.88:	0.76:	0.00
12957	1.131560	0.0537	16.62	17.27	0.65	16.90	17.00	0.36	2.1	0.48	0.34	0.00
1515	1.140726	0.0572	16.92	17.50	0.58	17.24	17.26	0.23	2.3	0.42	0.33	0.20
12163	1.141162	0.0573	16.93	17.42	0.49	17.25	17.23	0.14	2.9	0.33	0.32	0.02
1756	1.145422	0.0590	16.47	17.31	0.84	17.01	16.99	0.14	2.8	0.57	0.54	0.49
12091	1.170326	0.0683	16.96	17.34	0.38	17.11	17.17	0.34	1.8	0.30	0.16	0.20
11347	1.186869	0.0744	16.80	17.61	0.81	17.25	17.33	0.10	4.2	0.50	0.62	0.30
11260	1.187552	0.0747	16.82	17.70	0.88	17.24	17.34	0.19	2.2	0.64	0.48	0.48
12098	1.193612	0.0769	17.82	18.4	...	18.12:	....	...	...	...	...	0.03
2097	1.198709	0.0787	16.60	17.66	1.06	17.20	17.30	0.16	5.0	0.64	0.85	0.00
12914	1.205423	0.0811	17.00	17.62	0.62	17.40	17.41	0.17	4.2	0.38	0.47	0.40
11485	1.209275	0.0825	16.85	17.91	1.06	17.50	17.50	0.14	2.6	0.73	0.66	0.42
11466	1.211246	0.0832	16.74	17.42	0.68	17.11	17.15	0.18	2.7	0.47	0.43	0.30
1897	1.241317	0.0939	16.40	16.88	0.48	16.64	16.69	0.33	2.5	0.34	0.29	0.40
1505	1.251220	0.0973	17.06	17.71	0.65	17.41	17.44	0.21	2.3	0.47	0.37	0.03
1940	1.253062	0.0980	16.58	17.74	1.16	17.36	17.33	0.10	3.8	0.73	0.86	0.48
11222	1.253912	0.0983	17.21	17.85	0.64	17.49	17.61	0.19	3.4	0.42	0.45	0.00
10365	1.258093	0.0997	15.92	17.06	1.14	16.61	16.58	0.39:	1.8	0.89	0.50	0.46
11177	1.258329	0.0998	16.52	17.30	0.78	16.93	16.93	0.40	1.5	0.66	0.26	0.03
12089	1.270844	0.1041	16.88	17.77	0.89	17.36	17.44	0.15	3.0	0.59	0.60	0.35
12128	1.271508	0.1043	17.14	17.92	0.78	17.63	17.64	0.10	3.6	0.50	0.56	0.30
12168	1.275772	0.1058	16.63	17.21	0.58	17.02	16.97	0.14	2.3	0.42	0.33	0.08
11497	1.278946	0.1068	16.52	17.70	1.18	17.31	17.25	0.14	2.8	0.80	0.76	0.00
1678	1.279961	0.1072	16.66	17.16:	0.50:	17.02:	16.92:	0.18	1.4	0.43:	0.13:	0.44
12114	1.280633	0.1074	16.76	17.86	1.10	17.40	17.42	0.16	2.5	0.77	0.66	0.44
12093	1.281473	0.1077	17.05	17.47	0.42	17.27	17.29	0.31	2.0	0.32	0.21	0.43
11143	1.290208	0.1107	16.50	17.40:	0.90:	16.89:	17.07:	0.14	3.0	0.59:	0.60:	0.60
11487	1.291626	0.1111	16.44	17.19	0.75	16.79	16.84	0.40	1.6	0.62	0.28	0.28
11517	1.295794	0.1125	16.14	16.48	0.33	16.32	16.30	0.40	1.20	0.30	0.06	0.00

TABLE 4.—*Light-curve parameters for periodic variables* (*in Column 1 denotes *W* Virginis stars; in Column 2 denotes variable periods).—Continued

HV	Period	log P	M_0	m_0	A	$\langle m \rangle_0$	x_0	M-m	s	A_1	A_2	dm
12935	1.297493	0.1131	17.14	18.09	0.95	17.65	17.71	0.14	2.4	0.67	0.55	0.48
1871	1.300860	0.1142	16.33	17.35	1.02	17.00	16.98	0.14	3.5	0.66	0.72	0.40
11208	1.300882	0.1142	16.42	17.32	0.90	17.00	17.00	0.10	4.1	0.56	0.68	0.00
11451	1.308274	0.1167	16.84	17.72	0.88	17.34	17.40	0.12	3.5	0.57	0.62	0.48
2022	1.308877	0.1169	17.13	17.99	0.76	17.78	17.70	0.08	2.8	0.52	0.49	0.10
11196	1.311653*	0.1178	16.92	17.46	0.54	17.16	17.26	0.23	3.0	0.36	0.36	0.39
11324	1.313907	0.1186	17.10	17.68	0.58	17.37	17.42	0.29:	1.7	0.46	0.24	0.52
1542	1.319185	0.1203	16.68	17.20:	0.52:	17.04	17.02:	0.09	4.7	0.31:	0.41:	0.00
1772	1.321541	0.1211	16.46	17.50	1.04	17.13	17.13	0.10	4.1	0.65	0.78	0.48
2109	1.321779	0.1212	16.82	17.42	0.60	17.14	17.20	0.16	3.5	0.39	0.43	0.00
11438	1.322865	0.1215	16.88	17.33	0.45	17.06	17.10	0.43	1.2	0.41	0.08	0.39
1686	1.327894	0.1232	16.99	17.98	0.99	17.63	17.62	0.11	3.3	0.64	0.69	0.54
1958	1.334426	0.1253	16.56	17.51	0.95	17.22	17.18	0.10	4.1	0.59	0.71	0.52
11416	1.335427	0.1256	17.29	18.28	0.99	17.96	17.93	0.11	3.8	0.62	0.73	0.36
2001	1.338848	0.1267	16.54	17.55	1.01	17.05	17.20	0.12	4.5	0.62	0.79	0.40
11377	1.341414	0.1276	16.55	17.16	0.51	16.84	16.94	0.40	1.9	0.39	0.24	0.00
11394	1.346232	0.1291	17.30	18.15	0.85	17.78	17.78	0.13	2.6	0.59	0.53	0.16
11133	1.359052	0.1332	16.69	17.22	0.53	16.94	16.96	0.41	1.4	0.46	0.15	0.79
1513	1.361420	0.1340	16.98	17.44	0.46	17.18	17.24	0.40	1.9	0.35	0.22	0.20
2006	1.364970	0.1351	16.58	17.84	0.96	17.47	17.47	0.13	2.7	0.66	0.60	0.30
11381	1.365844	0.1354	17.12	18.06	0.94	17.84	17.73	0.10	4.2	0.58	0.71	0.17
11523	1.367884	0.1361	16.71	17.65	0.94	17.28	17.25	0.11	2.0	0.71	0.47	0.00
11302	1.371704	0.1373	17.20	17.72	0.52	17.54	17.54	0.10	4.7	0.32	0.41	0.70
11166	1.377264	0.1390	16.41	17.42	1.01	16.96	17.08	0.09	5.3	0.60	0.82	0.44
2152	1.380363	0.1400	16.53	17.74	1.21	17.32	17.33	0.09	4.8	0.73	0.96	0.00
11311	1.389389	0.1428	16.88	17.50	0.62	17.26	17.28	0.11	4.8	0.38	0.50	0.70
11498	1.389549	0.1429	16.62	17.90	1.28	17.43	17.43	0.12	3.5	0.83	0.91	0.00
1359	1.390069	0.1430	16.75	17.51	0.76	17.25	17.23	0.10	3.3	0.49	0.53	0.74
11495	1.390*	0.1431	17.13	17.80	0.67	17.43	17.49	0.42	1.6	0.55	0.25	0.00
1985	1.391115	0.1434	16.33	17.58	1.25	17.08	17.16	0.08	4.9	0.75	1.00	0.40
11172	1.392919	0.1439	17.18	17.72:	0.54:	17.38:	17.52:	0.16:	3.1	0.36:	0.37:	0.48
2077	1.395878	0.1449	16.86	17.86	1.00	17.45	17.51	0.11	4.4	0.61	0.77	0.00
1623	1.396100	0.1449	16.90	17.76	0.86	17.44	17.45	0.12	3.8	0.54	0.64	0.00
11541	1.397722	0.1454	16.44	17.04	0.60	16.71	16.73	0.44	1.2	0.55	0.11	0.00
2219	1.400598	0.1463	15.68	16.62	0.94	16.14	16.25	0.35	2.5	0.66	0.56	0.00
1948	1.401956	0.1467	16.68	17.69	1.01	17.30	17.32	0.11	3.7	0.65	0.74	0.35
12107	1.403556	0.1472	16.84	17.58	0.74	17.22	17.27	0.18	2.2	0.54	0.41	0.36
2179	1.405161	0.1477	16.53	17.50	0.97	17.07	17.14	0.12	3.0	0.64	0.65	0.00
11304	1.418273	0.1518	16.94	17.70	0.76	17.15	17.41	....	2.7	0.52	0.48	0.56
11173	1.419892	0.1523	16.57	17.23	0.66	16.95	16.99	0.13	3.5	0.43	0.47	0.44
11339	1.423040	0.1532	16.36	17.32	0.96	17.01	16.97	0.12	3.3	0.62	0.67	0.36
12123	1.423518	0.1534	16.29	17.68	1.39	17.17	17.16	0.12	3.0	0.92	0.93	0.24
2062	1.424031	0.1535	15.98	17.42	1.44	16.91	16.93	0.09	4.9	0.86	1.15	0.00
11142	1.428525	0.1549	16.09	17.57	1.48	17.14	17.04	0.09	3.9	0.93	1.11	0.70
12933	1.428982	0.1550	17.10	17.64	0.54	17.47	17.45	0.07	4.3	0.33	0.41	0.54
2147	1.430679	0.1555	16.74	17.72	0.98	17.53	17.33	0.14	2.6	0.69	0.61	0.25
12133	1.433883	0.1565	17.38	18.20:	0.82:	17.87	17.88:	0.13	2.8:	0.56:	0.52:	0.30
11155	1.438301	0.1578	16.40:	16.90:	0.50:	16.71:	16.71:	0.13	3.1:	0.33:	0.41:	0.60
2197	1.438424	0.1579	16.63	17.40	0.77	17.01	17.00	0.43	1.2	0.71	0.14	0.00
1389	1.439027	0.1581	16.50	17.47	0.97	17.11	17.07	0.18	2.3	0.70	0.55	0.49
1353	1.440349	0.1585	16.39	16.73	0.34	16.57	16.53	0.55	1.0	0.36	0.00	0.74
11458	1.440845	0.1586	16.98	17.66	0.60	17.42	17.42	0.13	2.4	0.43	0.35	0.00
1517	1.443249	0.1593	16.33	17.67	1.34	17.18	17.20	0.09	4.1	0.83	1.00	0.20
2012	1.443737	0.1595	16.75	17.52	0.77	17.16	17.19	0.16	2.0	0.58	0.38	0.30
1371	1.445072	0.1599	16.54	17.54	1.00	17.16	17.20	0.09	4.8	0.60	0.80	0.62
2137	1.445555	0.1600	17.15	17.74:	0.59:	17.51:	17.53:	0.08	4.1	0.37:	0.44:	0.25
1894	1.445706	0.1601	16.50	17.67	1.17	17.19	17.29	0.06	6.0	0.68	0.97	0.48
11365	1.446150	0.1602	16.84	17.93:	1.09:	17.42:	17.57:	0.07	5.6	0.64:	0.89:	0.00
1615	1.450501	0.1615	16.49	17.65	1.16	17.20	17.21	0.14	3.0	0.77	0.78	0.17
1743	1.453900	0.1625	16.83	17.86	1.03	17.47	17.48	0.12	3.0	0.68	0.69	0.29
1930	1.455729	0.1631	16.78	17.72	0.94	17.42	17.36	0.13	2.9	0.63	0.62	0.09
1968	1.458571	0.1639	16.55	17.12	0.57	16.88	16.90	0.15	2.8	0.39	0.36	0.00
12100	1.459004	0.1641	16.52	17.34	0.82	16.93	17.05	0.12	4.2	0.51	0.62	0.36
11414	1.467209	0.1665	17.00	17.60	0.60	17.43	17.27	0.11	2.6	0.41	0.37	0.13
1658	1.467565	0.1666	16.33	17.10	0.77	16.74	16.73	0.38	1.5	0.65	0.25	0.03
11200	1.4676	0.1666	17.37	17.95	0.58	17.69	17.65	0.42	1.2	0.53	0.10	0.00
11473	1.472806	0.1681	16.44	17.63	1.09	17.16	17.27	0.07	6.4	0.63	0.92	0.35
12923	1.474796	0.1687	16.52	16.98	0.46	16.83	16.80	0.15	2.0	0.32	0.23	0.91
11160	1.482934	0.1711	16.29	17.09	0.80	16.81	16.81	0.10	4.7	0.49	0.63	0.71
11175	1.491177	0.1735	16.50	17.31	0.81	17.03	17.04	0.09	5.1	0.48	0.65	0.36
11400	1.491785	0.1737	15.89	17.43	1.54	16.58	16.89	0.18	4.1	0.96	1.16	0.13
11378	1.492899	0.1737	16.98	17.79	0.81	17.48	17.51	0.10	4.7	0.49	0.65	0.17
12092	1.495513	0.1748	16.98	17.82	0.84	17.44	17.51	0.13	3.7	0.54	0.61	0.43
12090	1.496128	0.1750	17.26	17.76	0.70	17.64	17.52	0.10	4.8	0.42	0.55	0.43
1466	1.502300	0.1768	16.33	17.47:	1.14:	16.79	17.01:	0.17	2.3	0.82:	0.65:	0.67
10364	1.503052	0.1770	16.81	17.64	0.83	17.39	17.33	0.11	3.2	0.55	0.57	0.46
1516	1.504662	0.1774	16.26	17.35:	1.09:	16.85:	17.00:	0.05	7.2:	0.62:	0.94	0.85
1755	1.505709	0.1777	16.90	17.40	0.50	17.16	17.16	0.41	1.4	0.43	0.14	0.00
2004	1.507086	0.1781	16.79	17.65	0.86	17.33	17.34	0.12	3.8	0.54	0.64	0.00

TABLE 4.—*Light-curve parameters for periodic variables* (*in Column 1 denotes *W* Virginis stars; in Column 2 denotes variable periods).—Continued

HV	Period	log P	M_0	m_0	A	$\langle m \rangle_0$	x_0	M-m	s	A_1	A_2	dm
11298	1.508145	0.1784	16.95	17.80	0.85	17.56	17.48	0.09	3.2	0.56	0.59	0.70
11503	1.509484	0.1788	16.62	17.56	0.94	17.16	17.07	0.45	1.2	0.86	0.17	0.00
11386	1.514748	0.1803	15.97	16.37	0.40	16.17	16.19	0.42	1.7	0.32	0.16	0.49
1826	1.516562	0.1808	16.80	17.42	0.62	17.24	17.22	0.08:	5.7	0.36	0.51	0.13
11338	1.517858	0.1812	16.63	17.14	0.51	16.99	16.95	0.14	3.2	0.34	0.35	0.44
10372	1.520168	0.1819	16.78	17.20	0.42	16.98	16.98	0.39	1.2	0.39	0.08	0.00
2159	1.523523	0.1828	16.43	17.21	0.68	16.80	16.85	0.44	1.2	0.63	0.15	0.00
10371	1.524111	0.1830	16.43	17.50	1.07	17.03	17.13	0.11	4.5	0.65	0.83	0.00
11385	1.526121	0.1836	17.18	17.89	0.71	17.60	17.61	0.18	2.5	0.50	0.43	0.29
1350	1.526946	0.1838	16.60	17.46	0.86	17.12	17.13	0.13	2.8	0.58	0.55	0.74
11367	1.530702	0.1849	16.58	17.24	0.66	16.92	16.89	0.45	1.2	0.61	0.12	0.00
11253	1.532060	0.1853	16.34	17.45	1.11	17.02	17.05	0.15	3.9	0.70	0.83	0.90
1910	1.534557	0.1860	16.82	17.84	1.02	17.32	17.49	0.09	4.4	0.62	0.79	0.48
11404	1.540272	0.1876	17.17	18.26	1.07	17.74	17.88	0.10	3.8	0.67	0.79	0.16
1491	1.547633	0.1897	16.53	17.31	0.78	16.96	17.04	0.10	4.6	0.48	0.61	0.47
1837	1.548201	0.1898	16.42	17.73	1.31	17.29	17.21	0.13	2.5	0.92	0.79	0.34
1941	1.549727	0.1902	16.33	17.70	1.37	17.31	17.22	0.08	4.2	0.85	1.04	0.48
11299	1.551542	0.1908	16.76	17.69	0.93	17.36	17.37	0.10	4.9	0.56	0.74	0.70
11149	1.557487	0.1925	16.78	...	...	17.01:	...	...	...	...	...	0.74
12922	1.557591	0.1925	16.57	16.98	0.41	16.76	16.82	0.11	2.4	0.29	0.24	0.91
11248	1.564169	0.1943	16.92	17.82:	0.90:	17.23:	17.49:	0.17	3.5:	0.59:	0.64:	0.74
11147	1.574201	0.1971	17.00	17.92	0.92	17.35	17.60	0.21	4.0	0.57	0.69	0.60
1915	1.577073	0.1978	16.80	17.48	0.69	17.23	17.25	0.08	4.4	0.41	0.52	0.48
11435	1.577145	0.1978	16.95	17.92	0.97	17.62	17.56	0.10	3.3	0.63	0.68	0.07
1409	1.579347	0.1985	16.13	16.93	0.80	16.62	16.65	0.11	3.8	0.50	0.59	0.49
11494	1.580251	0.1987	16.60	17.14	0.54	16.87	16.83	0.35	1.4	0.46	0.16	0.00
1886	1.584349	0.1998	16.82	17.71	0.89	17.39	17.40	0.09	4.4	0.55	0.68	0.48
11239	1.587728	0.2008	16.99	17.58	0.59	17.33	17.36	0.14	3.7	0.38	0.43	0.72
11398	1.595507	0.2029	16.61	17.73	1.12	17.27	17.36	0.09	5.3	0.66	0.92	0.16
1449	1.597990	0.2036	16.84	17.29	0.45	17.12	17.10	0.20	2.2	0.33	0.25	0.56
11320	1.598271	0.2036	16.61	...	...	16.74:	...	...	...	...	...	0.52
11388	1.602015	0.2047	16.91	17.91	1.00	17.56	17.54	0.12	3.1	0.66	0.68	0.35
11125	1.603564	0.2051	16.41	17.30	0.89	16.95	16.95	0.16	2.6	0.61	0.55	1.03
12172	1.603857	0.2052	16.59	17.42	0.93	17.09	17.14	0.10	5.0	0.50	0.66	0.00
11153	1.604173	0.2053	16.80	17.34:	0.54:	17.07	17.15:	0.12:	3.9	0.34:	0.40:	0.80
1655	1.611432	0.2072	16.53	16.96	0.43	16.81	16.80	0.13	3.4	0.28	0.31	0.36
1997	1.611796	0.2073	15.76	17.17	1.41	16.69	16.68	0.11	4.1	0.87	1.06	0.40
11198	1.618050	0.2090	16.84	17.21	0.37	17.04	17.04	0.44	1.5	0.29	0.12	0.00
1943	1.621936	0.2100	16.87	17.63	0.76	17.33	17.35	0.10	3.5	0.49	0.54	0.35
2184	1.622441	0.2102	16.42	17.40	0.98	17.07	17.08	0.07	6.7	0.56	0.83	0.00
11520	1.626238	0.2112	16.67	17.75	1.08	17.11	17.29	0.20	2.0	0.81	0.54	0.00
1383	1.627652	0.2116	16.31	16.67	0.36	16.52	16.53	0.15:	3.0	0.24	0.24	1.03
2019	1.629511	0.2121	16.47	17.57	1.10	17.19	17.17	0.11	3.6	0.70	0.79	0.00
12945	1.634446	0.2134	16.91	17.37	0.46	17.19	17.18	0.18	2.4	0.33	0.27	0.36
1408	1.634472	0.2134	16.70	17.27	0.67	17.00	17.04	0.13	4.9	0.40	0.54	0.74
10377	1.636401	0.2139	16.54	17.32	0.78	17.07	17.05	0.09	4.3	0.48	0.60	0.00
12920	1.638479	0.2144	16.68	17.26	0.58	16.93	16.98	0.39	1.4	0.50	0.17	0.48
11203	1.642184	0.2154	17.03	17.71	0.68	17.32	17.47	0.13	4.0	0.42	0.51	0.00
1907	1.643280	0.2157	16.01	17.02	1.01	16.66	16.66	0.12	3.8	0.64	0.75	0.40
1668	1.648353	0.2170	15.86	16.30	0.44	16.01	16.06	0.46	1.1	0.42	0.04	0.60
1867	1.648701	0.2171	16.12	17.32	1.20	16.98	16.88	0.11	3.3	0.78	0.84	0.48
1436	1.656112	0.2191	15.89	17.32	1.43	16.72	16.81	0.11	3.8	0.90	1.06	0.36
1777	1.656485	0.2192	16.10	16.54	0.43	16.29	16.30	0.51	1.0	0.43	0.00	0.49
11483	1.656762	0.2193	16.85	17.40	0.55	17.18	17.20	0.13	3.4	0.36	0.39	0.00
1751	1.656935	0.2193	15.86:	16.99:	1.13:	16.61:	16.53:	0.19	2.3:	0.81:	0.64:	0.11
11169	1.658706	0.2198	16.26	16.98	0.72	16.72	16.69	0.13	2.5	0.51	0.42	0.52
11161	1.661201	0.2204	16.44	17.12	0.68	16.88	16.89	0.11	5.0	0.41	0.54	0.72
10368	1.662267	0.2207	16.20	17.55	1.35	17.14	17.06	0.09	3.7	0.86	0.98	0.30
11121	1.662300	0.2207	16.54	17.24	0.70	16.94	16.96	0.16	2.4	0.50	0.41	0.70
1928	1.662646	0.2208	16.47	17.39	0.92	17.09	17.03	0.13	2.5	0.64	0.55	0.39
12899	1.662748	0.2209	16.89	17.80:	0.91:	17.33	17.49:	0.09	5.4	0.54:	0.53:	0.00
12134	1.663907	0.2211	16.21	17.01:	0.80:	16.68	16.73:	0.12	4.0	0.50	0.60	0.15
11245	1.666819	0.2219	16.73	17.33	0.60	17.03	17.14	0.09	6.6	0.34	0.52	1.03
1814	1.667575	0.2221	16.81	17.94	1.13	17.42	17.54	0.10	4.2	0.70	0.86	0.28
1939	1.668090	0.2222	16.50	17.48	0.98	17.16	17.11	0.11	3.1	0.65	0.67	0.48
11242	1.669240	0.2225	17.06	17.71	0.65	17.40	17.47	0.18	3.0	0.43	0.44	0.00
1720	1.670043	0.2227	16.38	17.50	1.12	17.09	17.12	0.09	5.1	0.67	0.90	0.11
1681	1.670054	0.2227	15.93	17.63	1.66	17.00	17.03	0.13	3.6	1.06	1.20	0.03
12165	1.672056	0.2233	16.33	17.49	1.16	17.08	17.08	0.12	4.2	0.72	0.88	0.02
12148	1.677202	0.2246	16.53	16.97:	0.44:	16.77:	16.82:	0.11	4.4	0.27:	0.34:	0.03
11359	1.679253	0.2251	17.06:	17.64:	0.58:	17.30	...	0.18:	...	...	...	0.36
1766	1.680441	0.2254	16.52	17.81	1.29	17.29	17.36	0.12	4.1	0.80	0.97	0.35
1774	1.682527	0.2260	16.49	17.07	0.58	16.79	16.78	0.44	1.3	0.51	0.13	0.35
11306	1.685201	0.2267	16.08	17.30	1.22	16.85	16.86	0.10	3.7	0.78	0.89	0.56
11534	1.688563	0.2275	16.17	16.87	0.70	16.53	16.53	0.40	1.4	0.60	0.20	0.00
1392	1.696379	0.2295	16.31	17.01	0.70	16.81	16.72	0.32	2.2	0.51	0.39	0.55
1380	1.699143	0.2302	16.33	17.21	0.88	16.97	16.90	0.06	4.0	0.55	0.66	0.74
11134	1.701427	0.2308	16.52	17.64	1.12	17.20	17.22	0.12	3.2	0.74	0.77	0.36
1840	1.704640	0.2316	16.60	17.20	0.60	16.89	16.94	0.42	1.9	0.46	0.28	0.22

TABLE 4.—*Light-curve parameters for periodic variables* (*in Column 1 denotes *W* Virginis stars; in Column 2 denotes variable periods).—Continued

HV	Period	log P	M_0	m_0	A	$\langle m \rangle_0$	x_0	M-m	s	A_1	A_2	dm
12918	1.707335	0.2323	16.93	17.33	0.40	17.18	17.17	0.14	3.4	0.26	0.28	1.03
12919	1.707404	0.2323	16.79	17.49	0.80	17.14	17.20	0.14	3.4	0.52	0.57	0.48
1638	1.715372	0.2344	16.81	17.83	1.02	17.31	17.46	0.14	3.7	0.65	0.74	0.03
11122	1.715559	0.2344	15.98	16.60	0.62	16.38	16.34	0.16	2.0	0.46	0.31	0.90
1919	1.718591	0.2352	15.92	17.22	1.30	16.76	16.72	0.12	2.8	0.88	0.83	0.40
11443	1.722887	0.2363	16.31	17.14:	0.83:	16.78	16.83:	0.15	3.0	0.55:	0.56:	0.40
11184	1.726788	0.2372	16.27	17.36	1.09	16.92	16.95	0.15	3.0	0.72	0.73	0.44
1344	1.730957	0.2383	16.43	17.42	0.99	17.04	17.05	0.14	2.9	0.66	0.65	0.50
1398	1.732080	0.2386	16.58	17.51	0.93	17.22	17.17	0.10	3.0	0.61	0.62	0.74
11168	1.734575	0.2392	16.73	17.55	0.82	17.24	17.28	0.08	5.4	0.48	0.67	0.57
11363	1.737819	0.2400	16.82:	17.64:	0.82:	17.35:	17.35:	0.11	4.1	0.51:	0.62:	0.30
11542	1.738064	0.2401	16.30	17.23	0.93	16.77	16.87	0.13	2.8	0.63	0.60	0.00
11137	1.739793	0.2405	17.05	17.51	0.66	17.38	17.23	0.20	2.0	0.50	0.33	0.67
1418	1.740069	0.2406	16.03	17.31	1.28	16.83	16.85	0.12	3.6	0.82	0.92	0.81
12084	1.744832	0.2417	16.25	16.91	0.66	16.65	16.69	0.10	5.4	0.39	0.54	0.47
12937	1.745286	0.2419	16.76	17.17	0.41	16.94	16.94	0.44	1.0	0.41	0.00	0.29
2169	1.748006	0.2425	16.05	16.73	0.68	16.40	16.41	0.36	1.6	0.56	0.26	0.00
1364	1.754284	0.2441	16.55	17.28	0.63	17.03	17.04	0.16	2.9	0.42	0.42	0.72
1732	1.754580	0.2442	16.30	17.50	1.20	17.06	17.09	0.09	4.3	0.73	0.92	0.00
11463	1.755276	0.2444	16.93	17.48	0.55	17.26	17.26	0.19	2.4	0.39	0.32	0.52
2111	1.758372	0.2451	16.75	17.36	0.61	17.14	17.16	0.08	6.8	0.35	0.52	0.00
11195	1.758622	0.2452	16.66	17.41	0.75	17.05	17.13	0.21	2.0	0.49	0.37	0.39
1656	1.758690	0.2452	16.18	17.11	0.93	16.79	16.75	0.19	2.6	0.64	0.57	0.44
11130	1.761301	0.2458	16.46	17.10	0.64	16.88	16.87	0.21	4.2	0.40	0.49	0.79
2110	1.763122	0.2463	16.20	17.02	0.82	16.59	16.68	0.34	2.2	0.60	0.45	0.00
11271	1.771157	0.2483	16.41	17.04	0.63	16.81	16.79	0.16	2.4	0.44	0.36	0.67
1558	1.771764	0.2484	16.26	17.20	0.94	16.85	16.89	0.08	5.6	0.55	0.77	0.60
2122	1.775036	0.2492	16.44	17.38	0.94	17.10	17.03	0.10	3.1	0.62	0.64	0.00
11357	1.775834	0.2494	16.71	17.42	0.71	17.19	17.18	0.11	5.5	0.42	0.58	0.00
1496	1.776653	0.2496	16.56	17.23	0.67	17.00	16.99	0.13	3.8	0.42	0.50	0.98
1754	1.777449	0.2498	16.41	16.92	0.51	16.74	16.63	0.11	3.7	0.24	0.27	0.35
12137	1.777812	0.2499	16.95	18.10	1.15	17.68	17.60	0.12	4.2	0.71	0.87	0.30
1890	1.778540	0.2501	16.64	17.55	0.91	17.27	17.24	0.09	4.6	0.55	0.71	0.30
11341	1.778777	0.2501	16.95	17.68	0.73	17.41	17.41	0.11	3.3	0.47	0.51	0.30
12139	1.778900	0.2502	16.13	17.14	1.01	16.61	16.72	0.34	2.2	0.74	0.56	0.26
1403	1.779273	0.2502	16.44	17.45	1.01	17.14	17.03	0.14	2.2	0.74	0.56	0.74
12125	1.781369	0.2508	16.58	17.72	1.14	17.42	17.32	0.10	4.0	0.71	0.86	0.30
12181	1.783024	0.2512	16.34	16.73	0.39	16.57	16.54	0.39	1.4	0.34	0.11	0.00
1779	1.783390	0.2512	16.50	16.77	0.27	16.62	16.62	0.59	0.5	0.27	0.00	0.00
2115	1.785176	0.2517	16.54	17.34	0.80	17.04	17.06	0.12	4.6	0.49	0.62	0.00
11460	1.787467	0.2522	16.90	17.56	0.66	17.29	17.31	0.14	3.0	0.44	0.44	0.30
11500	1.789818	0.2528	16.35	17.10	0.83	16.78	16.77	0.42	1.3	0.73	0.19	0.00
11335	1.790078	0.2529	16.04	16.51	0.47	16.27	16.29	0.42	1.6	0.39	0.18	0.44
2100	1.796300	0.2544	15.98	16.65	0.67	16.33	16.30	0.45	1.2	0.62	0.12	0.70
11384	1.796361	0.2545	16.75	17.74	0.99	17.24	17.37	0.15	3.1	0.65	0.67	0.17
1799	1.796387	0.2545	16.50	17.28	0.78	17.00	17.01	0.12	4.0	0.48	0.58	0.16
1494	1.799570	0.2552	16.30	16.85	0.55	16.58	16.58	0.40	1.4	0.47	0.16	0.00
1554	1.799775	0.2552	16.74	17.38	0.64	17.09	17.14	0.14	3.4	0.42	0.45	0.85
2146	1.802097	0.2558	16.19	17.05	0.86	16.61	16.61	0.45	1.2	0.79	0.15	0.25
12143	1.806750	0.2569	17.28	17.80:	0.52:	17.58:	17.62:	0.10:	5.1:	0.31:	0.42:	0.26
2068	1.807181	0.2570	16.09	16.60	0.51	16.34	16.35	0.40	1.3	0.45	0.12	0.00
1739	1.810168	0.2577	16.38	17.52	1.14	17.01	17.12	0.12	4.0	0.71	0.86	0.48
11350	1.818129	0.2596	17.54	17.92	0.38	17.83	17.79	0.11	4.5	0.23	0.30	0.30
11146	1.820141	0.2601	16.14	16.66	0.52	16.46	16.47	0.13	3.3	0.34	0.36	0.80
1674	1.820330	0.2601	16.78	[17.8	...	17.00:	...	0.12:	...	...	...	0.44
1729	1.822486	0.2607	16.13	16.70	0.57	16.41	16.42	0.37	1.6	0.47	0.22	0.44
2093	1.828382*	0.2621	16.15	16.75	0.60	16.39	16.40	0.40	1.3	0.53	0.14	0.00
1664	1.830680	0.2626	16.36	16.81	0.45	16.56	16.56	0.44	1.0	0.45	0.00	0.60
2127	1.830875	0.2627	16.22	16.62	0.40	16.40	16.45	0.34	2.0	0.30	0.20	0.00
12164	1.833537	0.2633	16.85	17.78	0.93	17.42	17.43	0.14	3.2	0.61	0.64	0.08
11126	1.837804	0.2643	16.75	17.08	0.33	16.90	16.91	0.42	1.2	0.30	0.06	0.70
12921	1.838299	0.2644	16.71	17.01	0.30	16.99	16.90	0.12	3.1	0.20	0.20	0.91
1990	1.842724	0.2655	16.51	17.52	1.01	17.00	17.16	0.12	3.8	0.63	0.74	0.40
11226	1.853118	0.2679	16.92	17.86	0.94	17.48	17.51	0.16	3.5	0.61	0.67	0.00
1325	1.853472	0.2679	17.07	17.50	0.43	17.23	17.33	0.22	2.6	0.30	0.26	0.00
11167	1.855078	0.2684	16.23	16.83	0.60	16.54	16.52	0.42	1.2	0.55	0.11	0.65
1904	1.858453	0.2691	16.54	17.60	1.06	17.25	17.19	0.11	2.8	0.72	0.68	0.48
11181	1.860929	0.2697	16.23	17.88	1.65	17.22	17.24	0.15	2.7	1.14	1.04	0.44
11164	1.866406	0.2710	16.49	17.35	0.86	17.00	17.06	0.18	4.3	0.52	0.66	0.57
10356	1.866556	0.2710	16.08	17.50	1.42	16.99	16.97	0.10	3.2	0.94	0.98	0.22
12947	1.869295	0.2717	16.69	17.49	0.80	17.00	17.14	0.38	1.8	0.62	0.35	0.35
1717	1.870375	0.2719	16.23	17.44	1.21	17.01	17.02	0.13	4.4	0.75	0.94	0.00
1446	1.872140	0.2723	16.14	17.40	1.26	17.02	16.97	0.12	4.9	0.76	1.01	0.36
1547	1.874579	0.2729	17.45	18.23	0.78	17.96	17.96	0.14	3.1	0.51	0.53	0.43
12936	1.876666	0.2734	16.64	17.29	0.65	16.96	17.05	0.16	3.2	0.43	0.45	0.48
12175	1.876768	0.2734	16.63	17.84	1.21	17.21	17.39	0.16	3.1	0.80	0.82	0.00
11479	1.879212	0.2740	16.54	17.13	0.59	16.91	16.90	0.17	2.6	0.41	0.37	0.40
1937	1.882679	0.2748	16.91	18.03	1.12	17.56	17.59	0.12	3.7	0.72	0.82	0.09
1506	1.886248	0.2756	16.60	17.60	1.00	17.20	17.19	0.15	2.3	0.72	0.57	0.20

TABLE 4.—*Light-curve parameters for periodic variables* (*in Column 1 denotes *W* Virginis stars; in Column 2 denotes variable periods).—Continued

HV	Period	log P	M_0	m_0	A	$\langle m \rangle_0$	x_0	M-m	s	A_1	A_2	dm
1578	1.888397	0.2761	16.46	16.90	0.44	16.67	16.68	0.37	1.4	0.38	0.13	0.00
11297	1.891206	0.2767	16.80	17.53	0.73	17.18	17.26	0.15	3.3	0.47	0.51	0.60
12088	1.891453	0.2768	16.33	17.01:	0.68:	16.73	16.71:	0.23	1.8	0.53:	0.30:	0.35
10361	1.895806	0.2780	16.62	17.02	0.40	16.78	16.82	0.49	1.3	0.35	0.09	0.36
10359	1.897825	0.2783	16.21	16.83	0.62	16.50	16.54	0.36	1.5	0.52	0.20	0.44
1713	1.897864	0.2783	15.88	16.48	0.60	16.12	16.20	0.40	1.6	0.49	0.23	0.60
1714	1.902041	0.2792	16.64	17.06	0.42	16.87	16.94	0.50	1.2	0.39	0.08	0.30
1557	1.902801	0.2794	15.43	16.06	0.63	15.73	15.78	0.41	1.8	0.49	0.28	0.80
11148	1.902969	0.2794	15.87	17.19	1.32	16.73	16.70	0.13	3.2	0.87	0.91	0.70
1976	1.903073	0.2794	16.56	17.56	1.00	17.17	17.18	0.14	2.9	0.67	0.66	0.52
1385	1.903428	0.2795	16.13	17.09	0.96	16.79	16.74	0.09	3.7	0.61	0.70	0.74
12101	1.907298	0.2804	16.60	17.05	0.45	16.79	16.85	0.37	1.7	0.36	0.18	0.17
2057	1.909013	0.2808	16.40	17.55	1.15	17.05	17.16	0.09	4.9	0.69	0.92	0.89
841	1.909333	0.2809	16.14	17.51	1.37	17.07	16.99	0.11	3.6	0.88	0.99	0.00
1447	1.912035	0.2815	15.87	16.73	0.86	16.45	16.44	0.13	4.3	0.52	0.66	0.98
11118	1.914368	0.2821	16.58	17.22	0.64	16.96	16.99	0.14	4.2	0.40	0.49	0.74
1404	1.914748	0.2821	16.15	17.29	1.14	16.75	16.89	0.15	4.5	0.70	0.89	0.74
1532	1.920399	0.2834	16.20	17.46	1.26	16.89	17.02	0.11	4.0	0.78	0.94	0.60
11426	1.923495	0.2841	15.53	16.28	0.75	15.93	15.94	0.39	1.7	0.60	0.31	0.00
11119	1.927625	0.2850	16.29	17.02	0.73	16.68	16.77	0.16	4.6	0.45	0.57	0.70
11209	1.928373	0.2852	16.27	17.10	0.83	16.66	16.67	0.45	1.2	0.76	0.15	0.00
2023	1.932868	0.2862	16.10	17.36	1.26	16.98	16.92	0.10	4.2	0.78	0.96	0.30
1390	1.934955	0.2867	16.33	17.11	0.78	16.87	16.84	0.13	5.2	0.47	0.62	0.55
11358	1.935962	0.2869	16.54	17.56:	1.02:	17.34	17.15:	0.18	2.3	0.73:	0.58:	0.24
1565	1.936813	0.2871	16.82	17.69	0.87	17.29	17.39	0.14	4.4	0.53	0.67	0.65
12142	1.937958	0.2874	17.04	17.58	0.54	17.31	17.36	0.22	2.4	0.38	0.31	0.17
11370	1.940761	0.2880	16.83	17.23	0.40	17.03	17.00	0.52	1.0	0.40	0.00	0.35
11488	1.942815	0.2884	16.01	17.26	1.25	16.65	16.83	0.14	4.5	0.76	0.98	0.25
1864	1.943053	0.2885	16.70	17.64	0.94	17.28	17.29	0.13	3.3	0.61	0.66	0.36
1504	1.946370	0.2892	16.26	17.24	0.98	16.76	16.87	0.10	2.9	0.66	0.65	0.70
12944	1.952263	0.2905	16.69	17.53	0.84	17.04	17.13	0.45	1.4	0.71	0.24	0.35
11342	1.956663	0.2915	16.92	17.92	1.00	17.56	17.57	0.15	4.2	0.62	0.76	0.00
1796	1.960615	0.2924	16.06	17.40	1.34	16.95	16.91	0.10	3.3	0.87	0.94	0.13
11300	1.962505	0.2928	16.60	17.35	0.65	17.01	17.12	0.12	3.8	0.41	0.48	0.70
11191	1.966510	0.2937	16.30	17.07	0.77	16.84	16.76	0.20	2.4	0.55	0.45	0.00
1999	1.967818	0.2940	16.21	17.58	1.37	17.19	17.07	0.14	3.0	0.90	0.92	0.24
11369	1.969644	0.2944	15.95	17.53	1.58	17.02	16.96	0.16	3.6	1.01	1.14	0.17
1420	1.970381	0.2946	16.32	17.22	0.90	16.93	16.88	0.14	2.9	0.60	0.59	0.70
10384	1.972354	0.2950	16.34	17.61	1.27	17.19	17.16	0.10	4.2	0.79	0.96	0.00
2009	1.977355	0.2961	16.76	17.52	0.76	17.19	17.27	0.14	5.3	0.45	0.62	0.30
1839	1.979222	0.2965	16.32	17.64	1.32	17.13	17.16	0.14	3.7	0.85	0.96	0.36
2035	1.979254	0.2965	16.63	17.60	0.97	17.00	17.24	0.15	3.5	0.63	0.69	0.00
1860	1.984796	0.2977	16.64	17.10	0.46	16.86	16.87	0.45	1.3	0.40	0.11	0.06
1590	1.985652	0.2979	16.67	17.40	0.73	17.16	17.09	0.17	2.1	0.54	0.38	0.17
1459	1.992746	0.2994	15.87	16.59	0.72	16.22	16.24	0.43	1.4	0.62	0.21	0.91
11259	1.993342	0.2996	16.76	17.23	0.47	16.98	17.03	0.24	2.0	0.35	0.24	1.03
1916	1.996813	0.3003	15.83	16.32	0.49	16.07	16.08	0.39	1.3	0.43	0.11	0.48
11174	1.997551	0.3005	16.24	17.45	1.21	17.09	16.98	0.17	2.6	0.83	0.75	0.36
1358	1.998761	0.3007	15.86	16.78	0.92	16.41	16.41	0.16	2.3	0.66	0.53	0.74
1330	2.001986	0.3015	16.55	17.76	1.21	17.26	17.34	0.14	4.5	0.74	0.94	0.17
1567	2.003020	0.3017	16.14	17.51	1.37	17.13	17.03	0.10	4.6	0.84	1.07	0.65
12106	2.003811	0.3019	16.21	17.02	0.81	16.65	16.69	0.20	2.4	0.58	0.47	0.36
11131	2.004402	0.3020	16.49	[16.9	...	16.73:	...	...	3.0:	...	...	0.67
11264	2.007049	0.3025	16.88	17.63	0.75	17.34	17.38	0.12	4.8	0.45	0.59	0.59
1953	2.007613	0.3027	16.07	16.91	0.84	16.48	16.49	0.45	1.3	0.74	0.19	0.20
12942	2.008089	0.3028	16.27	17.21	0.94	16.83	16.87	0.15	3.5	0.61	0.67	0.00
11251	2.009994	0.3032	16.68	17.50	0.82	17.11	17.18	0.22	2.5	0.57	0.49	0.70
2096	2.011024	0.3034	17.48	17.98	0.50	17.78	17.77	0.18	2.2	0.37	0.27	0.00
1367	2.011372	0.3035	16.01	16.94	0.93	16.64	16.59	0.14	3.6	0.62	0.67	0.77
1883	2.013109	0.3039	16.80	17.42	0.62	17.12	17.13	0.40	1.5	0.52	0.20	0.00
1911	2.016629	0.3046	15.79	16.31	0.52	16.04	16.04	0.42	1.2	0.48	0.09	0.48
11234	2.017850	0.3049	16.68	17.51	0.83	17.16	17.20	0.14	3.0	0.55	0.56	0.50
12156	2.018660	0.3051	16.78	17.66	0.88	17.34	17.35	0.10:	4.3	0.54	0.68	0.08
2130	2.019915	0.3053	17.19:	17.41:	0.22:	17.32:	17.30:	0.44	1.2	0.20:	0.04:	0.00
1452	2.022012	0.3058	16.53	16.83	0.30	16.73	16.72	0.16	2.1	0.22	0.16	0.91
1703	2.022756	0.3059	16.95	*17.54	0.59	17.33	17.31	0.20:	2.6	0.41	0.37	0.00
1549	2.026096	0.3067	16.47	17.02	0.55	16.74	16.73	0.38	1.3	0.52	0.13	0.85
10380	2.030636	0.3076	16.35	17.55	1.20	17.03	17.11	0.12	3.7	0.77	0.88	0.15
1622	2.030989	0.3077	16.20	16.78	0.58	16.48	16.50	0.40	1.5	0.49	0.19	0.70
11532	2.033686	0.3083	16.58	16.93	0.35	16.77	16.75	0.43	1.2	0.32	0.06	0.00
2123	2.034551	0.3085	16.48	17.60	1.12	17.29	17.19	0.14	3.5	0.73	0.80	0.00
12082	2.037125	0.3090	15.83	17.30	1.47	16.90	16.71	0.18	2.4	1.04	0.85	0.36
1800	2.038104	0.3092	16.58	17.66	1.08	17.37	17.24	0.16	2.6	0.74	0.67	0.16
12934	2.042288	0.3101	16.92	17.52	0.60	17.25	17.30	0.11	3.3	0.39	0.41	0.00
11189	2.042359	0.3101	16.02	17.03	1.01	16.66	16.68	0.18	4.3	0.62	0.78	0.22
1476	2.050013	0.3118	16.11	16.86	0.75	16.62	16.58	0.10	3.4	0.49	0.53	0.36
1397	2.056331	0.3131	16.32	16.99:	0.67:	16.65	16.76:	0.10:	4.5	0.41:	0.52:	0.91
11376	2.060101	0.3139	16.83	17.54	0.71	17.14	17.30	0.12	4.5	0.43	0.55	0.49
12953	2.060420	0.3140	16.23	17.54	1.31	17.26	17.09	0.07	4.3	0.80	1.01	0.00

TABLE 4.—*Light-curve parameters for periodic variables* (*in Column 1 denotes *W* Virginis stars; in Column 2 denotes variable periods).—Continued

HV	Period	log P	M_0	m_0	A	$\langle m \rangle_0$	x_0	M-m	s	A_1	A_2	dm
1535	2.062948	0.3145	16.70	17.33	0.63	17.03	17.08	0.17	2.4	0.45	0.37	0.85
2186	2.067745	0.3155	16.20	16.82	0.62	16.46	16.51	0.45	1.3	0.55	0.14	0.00
1604	2.072058	0.3164	16.80	17.80	1.00	17.28	17.46	0.16	4.3	0.61	0.77	0.00
11159	2.073063	0.3166	16.14	16.86	0.72	16.52	16.54	0.36	1.8	0.56	0.32	0.52
11120	2.075037	0.3170	16.42	17.37	0.95	17.02	17.04	0.13	4.0	0.59	0.71	0.70
11352	2.077313	0.3175	15.86	16.60	0.74	16.23	16.18	0.40	1.0	0.74	0.00	0.62
1964	2.092773	0.3207	16.38	17.46	1.08	17.05	17.08	0.16:	4.0	0.67	0.81	0.40
11199	2.095233	0.3212	16.84	17.96	1.12	17.53	17.55	0.16	3.7	0.72	0.82	0.00
1832	2.096854	0.3216	16.34	17.02	0.67	16.78	16.77	0.14	3.2	0.44	0.46	0.36
11188	2.098323	0.3219	16.60	17.57	0.97	17.12	17.23	0.12	3.8	0.61	0.72	0.34
11277	2.105760	0.3234	16.13	17.89	1.76	17.08	17.27	0.19	4.0	1.09	1.18	0.67
1748	2.107428	0.3237	16.60	17.22	0.62	16.91	16.88	0.45	1.1	0.60	0.06	0.48
1762	2.107633	0.3238	16.34	17.44	1.10	17.01	17.04	0.14	3.7	0.71	0.81	0.26
11235	2.133454	0.3291	15.99	16.65	0.66	16.32	16.33	0.39	1.4	0.57	0.18	0.79
11194	2.142594	0.3309	15.59	17.52	1.93	16.79	16.79	0.16	2.9	1.19	1.27	0.48
1731	2.144588	0.3313	16.26	17.21	0.95	16.87	16.84	0.14	2.7	0.66	0.60	0.44
1712	2.150061	0.3325	16.00	17.70	1.70	17.04	17.11	0.11	4.3	1.05	1.31	0.15
1413	2.153952	0.3332	16.09	17.18	1.09	16.76	16.77	0.16	2.9	0.73	0.72	1.03
11441	2.156009	0.3336	16.68	17.33	0.65	17.02	17.08	0.18	2.8	0.44	0.42	0.39
2099	2.160121	0.3345	16.06	17.84	1.78	17.18	17.22	0.11	4.6	1.09	1.39	0.00
1511	2.160859	0.3346	16.37	17.61	1.24	17.20	17.15	0.14	3.4	0.81	0.87	0.35
1789	2.161022	0.3347	15.73	17.38	1.57	16.77	16.77	0.15	2.7	1.08	0.99	0.28
1357	2.166298	0.3357	15.88	16.67	0.79	16.46	16.38	0.12	3.2	0.52	0.55	0.74
1918	2.170935	0.3366	16.96	17.71	0.75	17.42	17.42	0.16	2.5	0.52	0.45	0.48
1463	2.171586	0.3368	16.16	17.31	1.15	16.88	16.93	0.13	6.4	0.67	0.96	0.98
848	2.172770	0.3370	16.23	17.61	1.38	17.14	17.10	0.17	3.3	0.90	0.97	0.02
2014	2.203742	0.3432	16.03	16.90	0.93	16.65	16.56	0.16	3.4	0.60	0.66	0.20
844	2.217580	0.3459	16.09	17.58	1.49	17.06	17.07	0.13	4.5	0.91	1.16	0.00
1727	2.220697	0.3465	15.94	17.46	1.52	16.95	16.87	0.18	2.6	1.05	0.94	0.00
11327	2.222217	0.3468	17.01	17.78:	0.77:	17.51:	17.50:	0.16:	3.5:	0.50:	0.55:	0.57
2095	2.222553	0.3469	15.98	17.20	1.22	16.69	16.78	0.15	4.3	0.74	0.94	0.00
1881	2.225759	0.3475	16.37	17.46	1.09	17.07	17.01	0.18	2.2	0.80	0.60	0.30
1594	2.227757	0.3479	15.60	16.70	1.10	16.37	16.29	0.14	3.3	0.72	0.76	0.70
1347	2.232631	0.3488	16.70	17.51	0.81	17.17	17.19	0.18	2.5	0.57	0.49	0.50
1803	2.236086	0.3495	16.15	17.30	1.15	16.86	16.90	0.12	4.2	0.71	0.87	0.00
11372	2.242168	0.3507	16.26	17.73	1.47	16.98	17.23	0.16	4.9	0.88	1.16	0.26
2061	2.242726	0.3508	16.00	16.62	0.62	16.31	16.30	0.45	1.2	0.57	0.10	0.00
1654	2.243380	0.3509	16.10	17.63	1.53	17.04	17.09	0.12	4.2	0.95	1.17	0.00
1407	2.243544	0.3509	16.46	17.33	0.87	16.94	17.00	0.20	2.9	0.58	0.57	0.81
1348	2.248030	0.3518	16.22	16.90	0.68	16.59	16.65	0.16	3.3	0.44	0.47	0.50
1817	2.250731	0.3523	16.60	17.08	0.48	16.80	16.81	0.49	1.0	0.48	0.00	0.16
2217	2.259640	0.3540	16.20	16.84	0.64	16.48	16.53	0.38	1.4	0.55	0.18	0.00
11524	2.264649	0.3550	16.64	17.49	0.85	17.13	17.17	0.18	3.2	0.56	0.59	0.00
2128	2.268759	0.3558	15.85	16.92	1.07	16.48	16.56	0.14	5.0	0.64	0.85	0.00
2167	2.273591	0.3567	15.47	17.18	1.71	16.52	16.53	0.16	2.9	1.15	1.13	0.00
1805	2.279576	0.3579	16.58	17.41	0.83	17.10	17.10	0.15	3.1	0.55	0.56	0.22
2177	2.282549	0.3584	16.14	17.50	1.36	16.98	16.98	0.16	2.9	0.91	0.90	0.15
11202	2.292595	0.3603	16.38	17.04	0.66	16.67	16.72	0.45	1.4	0.57	0.19	0.25
1417	2.294352	0.3607	16.18	17.21	1.03	16.79	16.79	0.23	2.3	0.74	0.58	0.81
2156	2.299232	0.3616	15.85	17.10	1.25	16.62	16.66	0.12	4.2	0.78	0.95	0.06
1528	2.304647	0.3626	16.99	17.57	0.58	17.32	17.35	0.16	2.8	0.39	0.38	0.20
1354	2.306268	0.3629	16.05	17.23	1.18	16.84	16.81	0.12	4.1	0.74	0.90	0.79
2056	2.308962	0.3634	16.07	17.37	1.30	16.92	16.89	0.11	3.3	0.85	0.91	0.00
1497	2.311001	0.3638	16.06	17.14	1.08	16.84	16.77	0.12	4.6	0.66	0.84	0.98
1696	2.313974	0.3644	16.88	17.62	0.74	17.34	17.38	0.12	6.7	0.42	0.63	0.24
11374	2.320821	0.3656	16.05	17.29	1.24	16.87	16.87	0.09	4.8	0.74	0.98	0.29
1833	2.327725	0.3669	16.04	17.36	1.32	16.93	16.87	0.16	3.2	0.87	0.91	0.28
1660	2.330948	0.3675	15.84	16.96	1.12	16.62	16.55	0.10	3.6	0.72	0.80	0.48
1628	2.332737	0.3679	16.16	17.33	1.17	16.88	16.92	0.08	4.2	0.73	0.89	0.57
2002	2.346362	0.3704	16.08	17.42	1.34	16.92	16.95	0.14	3.8	0.84	0.98	0.00
11192	2.354104	0.3718	15.77	17.36	1.60	16.77	16.81	0.16	4.7	0.98	1.26	0.00
11418	2.358696	0.3727	17.17	17.88	0.71	17.48	17.62	0.22	3.4	0.46	0.50	0.22
12097	2.365257	0.3739	17.10:	17.78:	0.68:	17.41:	17.56:	0.23	3.4	0.44	0.48	0.43
1700	2.370073	0.3748	15.96	17.01	1.09	16.61	16.63	0.17	4.0	0.68	0.82	0.58
11150	2.382121	0.3770	15.77	16.53	0.76	16.30	16.26	0.12	4.2	0.47	0.58	0.80
1428	2.383040	0.3771	16.95	17.54	0.59	17.46	17.32	0.15	3.5	0.38	0.42	0.48
1424	2.392815	0.3789	16.11	17.24	1.13	16.88	16.83	0.14	3.7	0.72	0.82	0.59
2218	2.396421	0.3796	15.37	17.14	1.77	16.51	16.50	0.14	3.7	1.13	1.30	0.00
1687	2.396909	0.3797	16.05	17.06	1.01	16.63	16.68	0.16	3.0	0.67	0.67	0.44
1378	2.403286	0.3808	16.70	17.20	0.50	16.98	17.00	0.23	2.4	0.35	0.29	0.62
11201	2.403583	0.3809	16.18	17.58	1.40	17.04	17.06	0.17	3.1	0.92	0.95	0.00
10376	2.407301	0.3815	15.90	16.76	0.86	16.32	16.31	0.50	1.2	0.79	0.14	0.00
2107	2.411440	0.3823	15.70	17.43	1.73	16.84	16.83	0.14	4.3	1.06	1.37	0.00
11156	2.412790	0.3825	15.88	16.58	0.70	16.32	16.32	0.22	3.1	0.46	0.48	0.52
1332	2.416883	0.3833	16.31	17.18	0.89	16.82	16.87	0.10	4.1	0.55	0.88	0.18
1587	2.419333	0.3837	16.03	17.79	1.76	17.11	17.21	0.12	6.0	1.02	1.46	0.31
2141	2.421202	0.3840	15.35	17.02	1.67	16.32	16.40	0.16	3.4	1.09	1.17	0.25
11154	2.421604	0.3841	15.81	16.96	1.15	16.57	16.52	0.18	2.8	0.78	0.75	0.60
11521	2.427265	0.3851	15.47	17.27	1.80	16.63	16.65	0.13	4.5	1.10	1.40	0.00

TABLE 4.—*Light-curve parameters for periodic variables* (*in Column 1 denotes *W* Virginis stars; in Column 2 denotes variable periods).—Continued

HV	Period	log P	M_0	m_0	A	$\langle m \rangle_0$	x_0	M-m	s	A_1	A_2	dm
1971	2.432522	0.3860	16.77	17.52	0.75	17.10	17.07	0.44	0.9	0.75	0.00	0.00
1490	2.433851	0.3863	16.47	17.61	1.14	16.99	17.17	0.19	2.8	0.77	0.74	0.67
1932	2.436544	0.3868	16.19	17.39	1.20	16.95	16.98	0.14	5.2	0.72	0.97	0.39
1845	2.437899	0.3870	15.78	17.72	1.94	16.97	17.05	0.14	4.4	1.18	1.49	0.36
2206	2.440239	0.3874	15.82	16.28	0.46	16.04	16.06	0.43	1.6	0.38	0.17	0.00
11207	2.449509	0.3891	17.21	17.53	0.32	17.35	17.35	0.50	1.0	0.32	0.00	0.00
2114	2.450566	0.3893	15.95	17.46	1.51	16.96	16.91	0.16	3.5	0.98	1.07	0.00
11275	2.451083	0.3894	16.46	17.55	1.09	17.13	17.14	0.20	3.0	0.72	0.73	0.47
1955	2.457685	0.3905	16.45	17.00	0.55	16.71	16.67	0.51	0.9	0.58	0.00	0.00
1414	2.459108	0.3908	15.83	17.87	1.54	16.69	16.80	0.20	3.4	1.00	1.08	0.81
1869	2.464918	0.3917	15.73	16.44	0.71	16.15	16.14	0.20	2.2	0.52	0.39	0.40
2200	2.465313	0.3919	16.06	16.83	0.77	16.53	16.55	0.12	3.9	0.49	0.57	0.00
1935	2.465447	0.3919	16.10	17.63	1.53	17.00	17.03	0.22	2.5	1.07	0.92	0.09
1361	2.474574	0.3935	15.83	16.77	0.94	16.46	16.42	0.14	3.2	0.62	0.65	0.79
10382	2.475501	0.3937	16.34	17.64	1.30	17.13	17.20	0.12	5.1	0.78	1.04	0.00
10370	2.477345	0.3940	16.12	16.66	0.54	16.42	16.36	0.50	1.0	0.54	0.00	0.30
1448	2.479556	0.3944	15.70	16.61	0.91	16.34	16.26	0.20	2.9	0.61	0.60	0.67
1760	2.481463	0.3947	15.89	16.46	0.57	16.14	16.19	0.39	1.6	0.47	0.22	0.49
2021	2.489228	0.3961	16.52	17.64	1.12	17.30	17.22	0.14	3.1	0.74	0.76	0.00
2076	2.499111	0.3978	16.11	16.90	0.79	16.55	16.57	0.24	2.2	0.58	0.43	0.00
2036	2.501551	0.3982	16.05	16.72	0.67	16.34	16.39	0.43	1.3	0.59	0.15	0.30
1887	2.503104	0.3985	16.22	17.55	1.33	16.98	17.09	0.11	4.7	0.81	1.05	0.48
2108	2.506661	0.3991	15.89	16.76	0.87	16.50	16.45	0.13	3.9	0.55	0.64	0.00
2166	2.509613	0.3996	16.12	17.43	1.31	16.85	16.99	0.15	5.6	0.77	1.07	0.00
1711	2.509643	0.3996	16.24	17.51	1.27	17.00	17.08	0 13	5.0	0.76	1.02	0.24
1702	2.512291	0.4001	16.36	17.19	0.83	16.89	16.87	0.14	2.7	0.57	0.52	0.44
11383	2.519203	0.4013	16.48	17.23	0.75	17.00	16.95	0.12	3.5	0.49	0.53	0.17
1965	2.524309	0.4021	16.28	17.26	0.98	16.92	16.85	0.16	2.1	0.73	0.51	0.00
2204	2.528560	0.4029	15.45	16.79	1.34	16.22	16.34	0.11	6.6	0.76	1.14	0.00
850	2.532453	0.4035	15.97	17.45	1.48	16.96	16.93	0.11	4.0	0.92	1.11	0.00
1815	2.540702	0.4050	15.89	17.18	1.29	16.75	16.74	0.10	5.2	0.77	1.04	0.22
1538	2.544633	0.4056	16.20	16.94	0.74	16.72	16.67	0.10	3.7	0.47	0.54	0.85
1984	2.545092	0.4057	15.48	17.30	1.82	16.65	16.67	0.10	4.3	1.11	1.40	0.40
1639	2.547530	0.4061	16.16	16.74	0.68	16.55	16.50	0.17	4.0	0.42	0.51	0.48
2143	2.548160	0.4062	15.51	16.74	1.23	16.36	16.22	0.15	2.1	0.91	0.64	0.25
1546	2.548317	0.4063	16.20	17.15	0.95	16.78	16.80	0.10	3.5	0.62	0.67	0.70
2046	2.557713	0.4079	16.20	16.69	0.49	16.44	16.51	0.16	3.2	0.32	0.34	0.10
2172	2.562346	0.4086	16.27	17.34	1.07	16.95	16.93	0.18	2.8	0.73	0.68	0.00
1923	2.566228	0.4093	15.95	17.31	1.36	16.87	16.79	0.17	2.8	0.92	0.87	0.00
1969	2.570978	0.4101	16.38	17.68	1.30	17.17	17.21	0.16	3.7	0.83	0.95	0.40
2190	2.573948	0.4106	15.74	16.77	1.03	16.33	16.36	0.20	2.4	0.73	0.60	0.00
2025	2.577227	0.4111	15.04	16.60	1.56	16.00	16.03	0.16	3.7	1.00	1.14	0.30
1391	2.577499	0.4112	15.69	17.04	1.35	16.55	16.58	0.12	4.9	0.81	1.08	0.55
11528	2.579047	0.4115	15.65	16.89	1.24	16.46	16.45	0.16	4.0	0.77	0.93	0.00
1545	2.581644	0.4119	15.90	17.38	1.48	16.65	16.78	0.20	2.4	1.06	0.86	0.60
1650	2.583839	0.4123	15.04	16.56	1.52	16.00	16.00	0.16	3.4	0.99	1.08	0.54
11486	2.590942	0.4135	16.39	17.39	1.00	16.89	17.01	0.17	2.8	0.68	0.64	0.30
12930	2.595966	0.4143	15.85	16.81	0.96	16.33	16.48	0.16	5.0	0.58	0.79	0.31
1571	2.601802	0.4153	17.01	17.65	0.64	17.39	17.41	0.18	3.1	0.42	0.44	0.17
12929	2.602804	0.4154	16.25	16.90	0.65	16.55	16.56	0.49	1.2	0.60	0.12	0.65
1854	2.609256	0.4165	15.56	17.30	1.72	16.68	16.63	0.17	2.6	1.19	1.07	0.28
2120	2.610736	0.4168	16.82	17.32:	0.50:	17.05	17.13:	0.26	2.9	0.34:	0.33:	0.00
2038	2.613415	0.4172	15.28	16.93	1.65	16.41	16.37	0.14	5.0	0.99	1.32	0.25
2042	2.618130	0.4180	15.66	17.45	1.79	16.82	16.80	0.15	3.6	1.15	1.29	0.25
1642	2.628929	0.4198	15.28	16.69	1.41	16.14	16.21	0.15	3.7	0.84	0.96	0.62
1726	2.636296	0.4210	15.46	16.18	0.72	15.80	15.81	0.45	1.2	0.66	0.13	0.44
1568	2.637709	0.4212	16.76	17.34	0.58	17.13	17.14	0.10	4.5	0.35	0.45	0.00
1376	2.638279	0.4213	15.78	17.22	1.44	16.65	16.74	0.18	5.6	0.84	1.20	0.79
1917	2.644705	0.4224	15.67	16.97	1.30	16.37	16.53	0.16	4.6	0.79	1.01	0.39
11128	2.647469	0.4228	16.92	17.47	0.55	17.27	17.24	0.22	2.3	0.40	0.31	0.59
1773	2.667278	0.4261	15.73	17.53	1.80	16.95	16.90	0.14	4.1	1.12	1.35	0.35
2216	2.679895	0.4281	15.38	16.78	1.40	16.28	16.26	0.13	3.3	0.91	0.98	0.00
1600	2.684117	0.4288	15.99	16.78	0.79	16.28	16.41	0.38	1.5	0.66	0.26	0.00
1931	2.691051	0.4299	16.17	16.90	0.73	16.54	16.50	0.42	1.1	0.70	0.07	0.48
1938	2.693363	0.4303	15.58	16.66	1.08	16.13	16.05	0.40	1.3	0.95	0.25	0.48
11332	2.707408	0.4326	16.34	17.67	1.33	17.10	17.18	0.13	3.5	0.86	0.94	0.65
11151	2.708452	0.4327	16.40	17.26	0.86	16.87	16.96	0.16	4.2	0.53	0.65	0.74
11114	2.711953	0.4333	15.90	17.68	1.78	17.01	17.09	0.16	5.3	1.05	1.44	0.00
2082	2.712460	0.4334	15.84	17.40	1.56	16.84	16.74	0.15	3.8	0.97	1.17	0.00
2104	2.712666	0.4334	15.96	17.12	1.16	16.45	16.71	0.17	3.9	0.73	0.87	0.00
12943	2.714153	0.4336	15.99	17.00	1.01	16.55	16.60	0.20	2.7	0.70	0.64	0.00
1981	2.722555	0.4350	16.50	17.60	1.10	17.15	17.15	0.24	2.2	0.80	0.60	0.00
1847	2.732084	0.4365	15.36	17.06	1.70	16.51	16.46	0.16	3.9	1.07	1.27	0.34
1978	2.738848	0.4376	16.29	16.70	0.41	16.48	16.47	0.52	0.9	0.41	0.00	0.00
1670	2.741296	0.4380	16.12	17.22	1.10	16.80	16.81	0.24	3.0	0.73	0.74	0.54
2193	2.746566	0.4388	15.48	16.66	1.18	16.16	16.22	0.14	3.4	0.77	0.84	0.00
1360	2.747562	0.4390	15.67	17.22	1.55	16.71	16.68	0.15	4.1	0.96	1.18	0.72
1458	2.749549	0.4393	16.51	17.44	0.93	17.13	17.10	0.18	3.3	0.60	0.65	0.56
1850	2.755618	0.4402	15.62	17.25	1.63	16.59	16.70	0.13	4.9	0.98	1.30	0.00

TABLE 4.—*Light-curve parameters for periodic variables* (*in Column 1 denotes *W* Virginis stars; in Column 2 denotes variable periods).—Continued

HV	Period	log P	M_0	m_0	A	$\langle m \rangle_0$	x_0	M-m	s	A_1	A_2	dm
11286	2.756272	0.4403	16.04	17.02	0.98	16.63	16.65	0.18	3.1	0.65	0.67	0.56
11162	2.761200	0.4411	16.56	17.44	0.88	17.16	17.10	0.12	2.8	0.60	0.56	0.65
1614	2.768695	0.4423	15.53	16.66	1.13	16.28	16.27	0.12	4.4	0.69	0.87	0.44
10367	2.768726	0.4423	16.36	17.08	0.72	16.72	16.80	0.26	2.5	0.50	0.43	0.68
2149	2.769072	0.4423	16.28	17.40	1.12	16.96	16.99	0.14	3.3	0.73	0.78	0.00
1629	2.769078	0.4423	16.18	17.08	0.90	16.69	16.77	0.14	4.5	0.55	0.70	0.24
12931	2.769561	0.4424	15.97	16.65:	0.68:	16.27	16.41:	0.18	3.9	0.43:	0.51:	0.65
11135	2.769799	0.4424	15.84	16.99	1.15	16.49	16.59	0.16	4.1	0.71	0.87	0.67
11115	2.769930	0.4425	16.27	16.71	0.44	16.52	16.53	0.18	2.4	0.31	0.26	0.53
2080	2.778719	0.4438	16.40	17.72	1.32	17.22	17.25	0.15	3.9	0.83	0.99	0.00
1836	2.788133	0.4453	15.92	16.75	0.83	16.43	16.44	0.15	3.1	0.55	0.57	0.08
2030	2.794475	0.4463	16.32	17.23	1.10	16.80	16.86	0.18	3.6	0.65	0.73	0.30
2049	2.800893	0.4473	15.86	17.30	1.44	16.79	16.89	0.14	4.9	0.86	1.15	0.10
1885	2.802212	0.4475	15.68	17.32	1.64	16.69	16.75	0.14	4.6	1.00	1.28	0.30
1852	2.807427	0.4483	16.19	17.34	1.15	16.73	16.94	0.16	4.2	0.71	0.88	0.28
2182	2.812180	0.4490	15.84	16.90	1.06	16.40	16.52	0.16	3.9	0.67	0.80	0.00
1753	2.817679	0.4499	15.64	17.02	1.28	16.58	16.54	0.18	3.0	0.85	0.86	0.44
1980	2.820007	0.4503	16.23	17.39	1.16	16.92	16.98	0.18	3.9	0.73	0.87	0.35
12955	2.825034	0.4510	16.42	17.02	0.60	16.69	16.68	0.49	0.9	0.60	0.00	0.00
1809	2.825761	0 4511	15.86	16.97	1.11	16.57	16.58	0.14	4.4	0.68	0.85	0.00
1942	2.841071	0.4535	15.62	17.00	1.38	16.59	16.53	0.13	4.9	0.83	1.10	0.00
1690	2.846262	0.4543	16.04	17.16	1.12	16.76	16.78	0.12	5.0	0.67	0.90	0.00
11138	2.846392	0.4543	16.76	17.59	0.83	17.27	17.28	0.16	3.4	0.54	0.59	0.67
2045	2.847232	0.4544	15.79	17.13	1.34	16.66	16.65	0.12	3.8	0.84	0.99	0.29
1993	2.849043	0.4547	16.12	18.00	1.88	17.28	17.35	0.13	4.7	1.15	1.49	0.00
1844	2.851245	0.4550	15.50	17.00	1.50	16.44	16.44	0.14	3.4	0.98	1.06	0.34
2135	2.854977	0.4556	16.11	17.47	1.36	16.91	17.00	0.16	4.4	0.83	1.06	0.25
1782	2.855381	0.4557	16.10	16.63	0.53	16.35	16.35	0.50	1.2	0.49	0.10	0.49
2013	2.857789	0.4560	15.49	17.27	1.78	16.74	16.67	0.10	5.4	1.05	1.44	0.30
2059	2.859993	0.4564	16.14	17.10	0.96	16.73	16.74	0.16	3.0	0.63	0.64	0.20
1868	2.861157	0.4565	15.86	16.98	1.12	16.60	16.58	0.14	3.9	0.70	0.84	0.05
11185	2.862942	0.4568	16.47	16.73	0.26	16.57	16.60	0.45	1.3	0.23	0.06	0.34
1841	2.867038	0.4574	16.56	17.40	0.84	16.87	17.08	0.20	2.8	0.57	0.54	0.22
11519	2.869377	0.4578	15.57	16.11	0.54	15.85	15.83	0.53	1.2	0.50	0.10	0.00
2050	2.872111	0.4582	15.25	16.72	1.47	16.12	16.16	0.18	3.2	0.97	1.01	0.30
2015	2.874156	0.4585	16.47	16.96	0.49	16.76	16.78	0.20	3.0	0.32	0.33	0.50
2069	2.874273	0.4585	15.76	16.93	1.17	16.45	16.51	0.16	3.9	0.74	0.88	0.00
1507	2.876680	0.4589	16.28	16.91	0.63	16.68	16.69	0.16	4.2	0.39	0.49	0.80
11491	2.878319	0.4591	16.18	16.78	0.60	16.50	16.44	0.50	1.0	0.60	0.00	0.00
2139	2.879809	0.4594	15.54	16.90	1.36	16.45	16.43	0.12	4.4	0.83	1.05	0.00
2000	2.884088	0.4600	15.92	17.17	1.25	16.77	16.71	0.16	3.3	0.81	0.88	0.00
2165	2.886543	0.4604	16.35	17.51	1.16	17.02	17.09	0.14	3.6	0.74	0.84	0.00
12160	2.890416	0.4610	16.28	17.38	1.10	16.94	16.98	0.18	3.7	0.70	0.80	0.02
1540	2.890675	0.4610	15.66	16.66	1.00	16.37	16.29	0.14	3.2	0.66	0.69	0.80
1974	2.893108	0.4614	15.73	17.29	1.56	16.76	16.75	0.12	4.5	0.95	1.22	0.00
1822	2.894968	0.4616	16.57	17.62	1.05	17.13	17.21	0.21	2.6	0.72	0.65	0.28
839	2.899643	0.4623	15.28	16.32	1.04	15.95	15.93	0.16	3.3	0.68	0.73	0.00
2126	2.903061	0.4629	16.00	17.41	1.41	16.73	16.90	0.16	3.6	0.90	1.02	0.00
1575	2.904684	0.4631	15.82	16.72	0.90	16.41	16.40	0.16	3.8	0.57	0.67	0.17
1922	2.905313	0.4632	16.30	17.36	1.06	16.92	16.96	0.16	3.0	0.70	0.71	0.30
1786	2.911564	0.4641	16.27	17.30	1.03	16.90	16.98	0.18	3.2	0.56	0.59	0.22
1460	2.912862	0.4643	16.15	17.36	1.21	16.96	16.97	0.10	6.6	0.69	1.03	0.00
2210	2.919222	0.4653	15.26	16.90	1.76	16.33	16.30	0.14	4.9	1.06	1.41	0.00
1765	2.926638	0.4664	15.16	16.70	1.54	16.16	16.13	0.13	3.4	1.00	1.10	0.49
11482	2.930205	0.4669	16.23	17.38	1.15	16.97	16.95	0.16	3.2	0.76	0.79	0.35
11179	2.931563	0.4671	16.25	17.41	1.16	16.83	17.01	0.14	4.6	0.70	0.90	0.00
1806	2.934522	0.4675	16.50	17.85	1.35	17.28	17.37	0.16	3.8	0.85	1.00	0.13
2029	2.936978	0.4679	15.36	17.21	1.85	16.62	16.57	0.14	4.4	1.13	1.42	0.00
1947	2.937384	0.4680	16.04	16.85	0.81	16.51	16.56	0.14	3.8	0.51	0.60	0.20
11136	2.942630	0.4687	15.75	16.89	1.14	16.47	16.45	0.20	2.8	0.78	0.73	0.85
2155	2.944608	0.4690	15.29	15.68	0.39	15.44	15.47	0.47	1.1	0.37	0.04	0.25
1616	2.944988	0.4691	15.79	17.29	1.50	16.78	16.78	0.12	5.1	0.90	1.20	0.00
10369	2.948731	0.4696	16.06	16.60	0.54	16.31	16.29	0.48	0.9	0.54	0.00	0.30
11530	2.949948	0.4698	16.46	17.09	0.63	16.87	16.82	0.22	1.9	0.48	0.30	0.00
11499	2.950000	0.4698	16.16	16.92	0.76	16.53	16.49	0.46	0.9	0.76	0.00	0.00
1611	2.956673	0.4708	16.15	16.90	0.75	16.54	16.53	0.44	1.3	0.66	0.17	0.00
2131	2.960042	0.4714	16.14	17.24	1.10	16.80	16.80	0.18	2.5	0.77	0.66	0.06
11492	2.960884	0.4714	15.67	16.91	1.24	16.38	16.48	0.14	4.3	0.76	0.95	0.00
11278	2.964746	0.4720	15.96	16.84	0.88	16.54	16.51	0.18	3.2	0.58	0.61	0.36
2187	2.968883	0.4726	15.65	16.90	1.25	16.39	16.44	0.19	3.5	0.81	0.89	0.00
11450	2.972801	0.4732	16.65	17.63	0.98	17.17	17.23	0.20	2.4	0.70	0.57	0.09
1842	2.973182	0.4732	15.66	17.26	1.60	16.67	16.69	0.16	3.8	1.01	1.18	0.22
11171	2.974102	0.4734	16.06	16.95	0.89	16.63	16.62	0.15	3.0	0.59	0.60	0.52
11180	2.976863	0.4738	15.88	16.76	0.88	16.40	16.41	0.16	2.4	0.62	0.51	0.44
11496	2.982155	0.4745	16.16	17.44	1.28	17.06	17.02	0.10	6.4	0.74	1.08	0.00
2027	2.982519	0.4746	15.92	17.43	1.51	16.93	16.86	0.14	3.0	1.00	1.00	0.00
2118	2.987518	0.4753	16.31	17.38	1.07	16.96	16.98	0.16	3.0	0.71	0.72	0.00
1838	2.988312	0.4754	16.09	17.15	1.06	16.68	16.79	0.17	5.2	0.64	0.86	0.34

TABLE 4.—*Light-curve parameters for periodic variables* (*in Column 1 denotes *W* Virginis stars; in Column 2 denotes variable periods).—Continued

HV	Period	log P	M_0	m_0	A	$\langle m \rangle_0$	x_0	M-m	s	A_1	A_2	dm
2170	2.988864	0.4755	15.29	16.59	1.30	16.06	16.15	0.12	5.6	0.77	1.07	0.00
2178	2.992632	0.4760	15.51	16.91	1.40	16.31	16.43	0.13	4.4	0.85	1.08	0.25
1443	2.993751	0.4762	15.88	17.33	1.45	16.76	16.72	0.24	2.1	1.07	0.75	0.59
1959	2.993797	0.4762	16.00	16.89	0.89	16.43	16.59	0.16	5.4	0.53	0.73	0.00
1462	2.995806	0.4765	15.58	16.95	1.37	16.55	16.41	0.17	2.5	0.96	0.82	0.98
1824	3.003679	0.4777	15.93	17.57	1.64	16.96	16.97	0.16	3.6	1.05	1.18	0.35
2192	3.007754	0.4782	15.92	17.22	1.30	16.76	16.77	0.13	4.6	0.79	1.01	0.00
2079	3.007808	0.4782	15.84	17.38	1.54	16.87	16.86	0.12	4.8	0.92	1.22	0.00
1651	3.008016	0.4783	15.97	16.52	0.55	16.21	16.21	0.49	0.7	0.55	0.00	0.60
10381	3.008185	0.4783	16.00	16.91	0.91	16.60	16.60	0.18	2.9	0.54	0.53	0.15
11478	3.008234	0.4783	16.55	17.79	1.24	17.24	17.33	0.23	3.0	0.82	0.83	0.30
11283	3.008297	0.4783	16.52	17.41	0.89	17.07	17.08	0.19	3.1	0.59	0.60	0.79
1898	3.018713	0.4798	15.36	16.20	0.84	15.96	15.89	0.18	3.1	0.55	0.57	0.30
2173	3.031310	0.4816	15.28	17.10	1.82	16.45	16.45	0.12	3.9	1.15	1.37	0.00
1530	3.037925	0.4826	15.99	17.09	1.10	16.69	16.68	0.18	3.1	0.73	0.75	0.85
1495	3.042297	0.4832	16.04	16.58	0.54	16.31	16.39	0.16	4.4	0.33	0.42	0.36
2065	3.043955	0.4834	15.26	16.81	1.55	16.22	16.23	0.15	3.1	1.02	1.05	0.00
1913	3.044984	0.4836	15.68	17.24	1.56	16.68	16.70	0.14	4.7	0.95	1.23	0.48
2168	3.046718	0.4838	16.05	17.24	1.19	16.74	16.78	0.20	2.7	0.82	0.75	0.00
11127	3.048898	0.4841	16.62	17.75	0.83	17.10	17.47	0.15	5.0	0.50	0.66	0.70
1662	3.050324	0.4843	16.83	17.50	0.67	17.15	17.26	0.18	3.9	0.42	0.50	0.00
1812	3.051376	0.4845	15.74	16.82	1.08	16.40	16.45	0.15	4.6	0.66	0.85	0.28
1609	3.051804	0.4846	15.95	16.77	0.82	16.45	16.44:	0.20	2.4:	0.58:	0.40:	0.57
11258	3.055944	0.4851	15.22	16.46	1.24	15.93	15.78	0.48	1.1	1.19	0.11	0.48
1770	3.056440	0.4852	15.58	16.53	0.95	16.14	16.17	0.21	2.9	0.63	0.62	0.44
1643	3.057767	0.4854	15.40	16.60	1.20	16.24	16.17	0.12	3.9	0.76	0.90	0.54
1472	3.061915	0.4860	15.65	16.69	1.04	16.21	16.30	0.14	3.4	0.68	0.74	0.91
1906	3.065511	0.4865	16.12	17.44	1.32	16.94	16.92	0.17	2.7	0.91	0.83	0.00
12915	3.068595	0.4869	15.76	16.98	1.22	16.48	16.57	0.16	5.1	0.73	0.98	0.53
11296	3.072054	0.4874	16.25	17.00	0.75	16.72	16.72	0.18	3.3	0.49	0.52	0.00
12124	3.072820	0.4875	15.85	16.48	0.63	16.15	16.14	0.49	1.1	0.60	0.06	0.15
11144	3.074443	0.4878	15.80	17.15	1.35	16.57	16.67	0.15	4.2	0.84	1.03	0.60
10373	3.074643	0.4878	15.58	17.08	1.50	16.56	16.52	0.15	3.4	0.98	1.07	0.00
11233	3.075267	0.4879	16.54	17.14	0.60	16.89	16.89	0.26	2.1	0.44	0.31	0.40
1872	3.088278	0.4897	15.27	16.11	0.84	15.67	15.65	0.49	1.1	0.81	0.08	0.39
11132	3.089339	0.4899	15.86	16.65	0.79	16.42	16.34	0.19	2.6	0.55	0.49	0.79
1920	3.099199	0.4913	15.12	16.80	1.68	16.14	16.19	0.20	3.6	1.08	1.21	0.30
11204	3.099468	0.4913	15.81	16.80	0.99	16.47	16.43	0.16	3.2	0.65	0.68	0.00
1780	3.101381	0.4916	16.28	17.48	1.20	17.10	17.04	0.17	3.6	0.77	0.87	0.48
1875	3.103258	0.4918	15.94	17.00	1.16	16.57	16.57	0.16	3.4	0.76	0.82	0.48
11163	3.112379	0.4931	16.46	17.68	1.22	17.17	17.23	0.15	3.4	0.79	0.87	0.00
11216	3.114799	0.4935	16.51	17.18	0.67	16.91	16.93	0.17	3.3	0.44	0.47	0.00
1680	3.129851	0.4955	15.62	16.16	0.54	15.89	15.85	0.52	0.9	0.54	0.00	0.15
1987	3.130802	0.4957	15.74	17.21	1.47	16.61	16.68	0.19	3.6	0.93	1.10	0.00
11124	3.131203	0.4957	16.57	17.41	0.84	17.03	17.10	0.21	3.0	0.55	0.56	0.70
1813	3.131655	0.4958	15.80	17.09	1.29	16.59	16.61	0.15	3.3	0.84	0.90	0.16
11230	3.141217	0.4971	16.54	17.32	0.78	17.06	17.00	0.18	2.3	0.56	0.44	0.18
1450	3.143102	0.4974	15.93	16.77	0.84	16.47	16.49	0.10	4.9	0.50	0.67	0.91
11429	3.146455	0.4978	16.58	17.09	0.51	16.85	16.89	0.22	2.7	0.35	0.32	0.39
11307	3.149805	0.4983	16.88	17.32	0.44	17.11	17.13	0.24	1.9:	0.33:	0.21:	0.74
2034	3.156177	0.4992	15.74	17.23	1.49	16.64	16.68	0.16	3.4	0.97	1.06	0.30
10358	3.159687	0.4996	15.77	16.55	0.78	16.18	16.16	0.43	1.3	0.69	0.18	0.35
846	3.163035	0.5001	15.74	17.04	1.30	16.63	16.60	0.12	5.0	0.78	1.04	0.36
2098	3.163960	0.5002	16.21	16.97	0.76	16.75	16.69	0.14	3.1	0.50	0.52	0.16
12109	3.168306	0.5008	16.19	17.06	0.87	16.72	16.75	0.17	3.8	0.55	0.64	0.17
2157	3.169090	0.5009	15.99	16.94	0.95	16.62	16.59	0.14	3.4	0.62	0.67	0.25
11145	3.190287	0.5038	16.14	16.72	0.58	16.50	16.52	0.12	4.3	0.35	0.45	0.74
2154	3.192787	0.5042	15.53	17.01	1.48	16.54	16.45	0.15	2.9	0.99	0.98	0.25
852	3.197953	0.5049	15.67	16.95	1.28	16.51	16.52	0.12	5.3	0.76	1.04	0.00
1908	3.206115	0.5060	16.03	17.10	1.07	16.62	16.67	0.24	2.4	0.76	0.62	0.30
1900	3.212614	0.5069	15.92	17.43	1.51	16.95	16.86	0.16	2.9	1.01	1.00	0.48
1747	3.213471	0.5070	16.83	17.23	0.40	17.07	17.07	0.21	2.4	0.28	0.23	0.49
1677	3.213615	0.5070	16.37	17.00	0.63	16.69	16.76	0.23	3.0	0.42	0.42	0.54
11113	3.213946	0.5070	16.37	17.45	1.08	16.92	17.08	0.14	4.6	0.65	0.84	0.00
1778	3.214370	0.5071	15.68	16.92	1.24	16.51	16.51	0.11	7.8	0.72	1.09	0.35
1924	3.215858	0.5073	15.20	16.68	1.48	16.17	16.12	0.16	3.0	0.98	0.99	0.48
2053	3.219796	0.5078	16.27	17.20	0.93	16.80	16.87	0.16	3.9	0.58	0.70	0.20
1469	3.223893	0.5084	15.48	16.79	1.31	16.37	16.27	0.22	2.5	0.92	0.79	0.98
11139	3.224949	0.5085	15.62	16.89	1.27	16.33	16.42	0.14	3.5	0.83	0.90	0.79
2051	3.225973	0.5087	15.07	17.03	1.96	16.25	16.34	0.16	4.2	1.22	1.48	0.25
2133	3.229595	0.5091	15.42	16.85	1.43	16.34	16.35	0.18	4.1	0.89	1.07	0.00
1936	3.234686	0.5098	15.87	17.40	1.53	16.78	16.86	0.16	4.1	0.95	1.16	0.48
11287	3.243583	0.5110	15.93	17.02	1.09	16.64	16.61	0.15	3.0	0.72	0.73	0.47
1603	3.243687	0.5110	15.37	16.98	1.61	16.32	16.41	0.17	4.1	1.00	1.21	0.00
1820	3.244678	0.5112	16.08	17.50	1.42	16.99	17.05	0.16	6.6	0.80	1.20	0.28
1577	3.248895	0.5117	16.00	16.94	0.94	16.57	16.61	0.12	4.0	0.58	0.70	0.72
11158	3.251800	0.5121	16.31	16.85:	0.54:	16.60	16.63:	0.20	2.5	0.38:	0.32:	0.52
12927	3.252551	0.5122	15.80	16.74	0.94	16.45	16.39	0.15	3.1	0.62	0.64	0.80
1381	3.262293	0.5135	15.13	17.17	2.04	16.42	16.43	0.14	4.5	1.31	1.59	0.81

TABLE 4.—*Light-curve parameters for periodic variables* (*in Column 1 denotes *W* Virginis stars; in Column 2 denotes variable periods).—Continued

HV	Period	log P	M_0	m_0	A	$\langle m \rangle_0$	x_0	M-m	s	A_1	A_2	dm
10360	3.266554	0.5141	15.60	16.62	1.02	16.19	16.27	0.15	4.5	0.62	0.80	0.52
1716	3.267728	0.5142	15.95	17.12	1.17	16.78	16.73	0.10	6.1	0.68	0.98	0.49
12916	3.270539	0.5146	15.64	16.01	0.37	15.79	15.82	0.47	1.2	0.34	0.07	0.79
1848	3.277324	0.5155	16.61	17.58	0.97	17.16	17.22	0.20	3.3	0.63	0.68	0.36
12913	3.277872	0.5156	15.78	17.01	1.23	16.54	16.55	0.20	3.2	0.81	0.85	0.45
1488	3.283231	0.5163	15.39	16.67	1.28	16.16	16.21	0.16	3.8	0.81	0.95	0.98
1830	3.298447	0.5183	16.58	16.88	0.30	16.71	16.73	0.44	1.4	0.26	0.09	0.22
2148	3.317443	0.5208	16.75	17.13:	0.38:	17.17:	16.99:	0.25	3.0	0.25:	0.25:	0.25
1637	3.324999	0.5218	15.65	16.82	1.17	16.39	16.34	0.20	2.3	0.84	0.67	0.54
1889	3.327986	0.5222	16.05	17.31	1.26	16.76	16.87	0.15	4.0	0.78	0.94	0.39
2158	3.333967	0.5230	15.15	15.82	0.67	15.51	15.47	0.44	1.2	0.62	0.12	0.00
1970	3.336301	0.5233	15.49	16.87	1.38	16.25	16.37	0.16	3.6	0.88	0.99	0.24
1746	3.338073	0.5235	14.92	16.66	1.74	15.94	16.02	0.17	3.4	1.13	1.24	0.48
2160	3.346353	0.5246	16.05	16.60	0.55	16.32	16.38	0.26	2.5	0.39	0.33	0.00
1874	3.349848	0.5250	15.47	16.83	1.35	16.33	16.33	0.17	3.5	0.88	0.96	0.07
1823	3.351611	0.5253	16.13	17.33	1.20	16.88	16.90	0.18	3.9	0.76	0.90	0.35
1972	3.351689	0.5253	16.09	17.07:	0.98:	16.68:	16.72:	0.14	4.1	0.61:	0.74:	0.00
12171	3.355693	0.5258	16.21	16.68	0.47	16.49	16.50	0.16	3.4	0.31	0.33	0.05
1843	3.357575	0.5260	15.46	16.68	1.22	16.10	16.27	0.14	5.6	0.72	1.00	0.36
1550	3.360949	0.5265	15.93	16.87	1.54	16.34	16.36	0.14	5.9	0.89	1.28	0.60
1846	3.368387	0.5274	15.45	17.00	1.57	16.45	16.40	0.12	2.9	1.05	1.04	0.35
2037	3.368761	0.5275	15.27	16.23	0.96	15.77	15.69	0.45	1.0	0.96	0.00	0.30
1736	3.370181*	0.5275	15.09	15.51	0.42	15.31	15.29	0.46	1.2	0.39	0.08	0.11
1730	3.371817	0.5279	16.38	17.38	1.00	17.00	16.99	0.24	2.7	0.69	0.63	0.48
1508	3.372966	0.5280	15.30	16.84	1.54	16.31	16.27	0.16	3.5	1.00	1.09	0.80
1574	3.387867	0.5299	16.21	17.46	1.25	17.05	17.02	0.14	4.0	0.78	0.94	0.31
1663	3.391003	0.5303	15.04	16.76	1.72	16.07	16.14	0.18	3.7	1.10	1.26	0.58
1688	3.392752	0.5305	15.66	16.86	1.20	16.37	16.44	0.14	4.2	0.74	0.91	0.58
11206	3.399471	0.5314	16.17	16.57	0.40	16.42	16.40	0.22	2.1	0.30	0.21	0.10
2196	3.408125	0.5325	15.94	17.11	1.17	16.51	16.71	0.18	4.6	0.71	0.91	0.00
2134	3.416804	0.5336	16.12	17.18	1.06	16.79	16.81	0.12	4.0	0.66	0.80	0.00
1489	3.420441	0.5341	15.78	16.49	0.71	16.26	16.23	0.12	3.9	0.45	0.53	0.91
2067	3.435033	0.5359	15.72	16.76	1.04	16.31	16.40	0.16	4.1	0.64	0.78	0.00
2138	3.437439	0.5362	16.41	17.06	0.65	16.80	16.79	0.23	2.2	0.47	0.36	0.00
1983	3.438435	0.5364	15.02	16.61	1.59	16.08	16.01	0.18	3.1	1.05	1.08	0.24
1329	3.439606	0.5365	16.13	16.97	0.84	16.64	16.66	0.14	3.5	0.55	0.60	0.00
1891	3.451489	0.5380	15.49	17.18	1.69	16.63	16.58	0.13	4.2	1.05	1.28	0.00
2047	3.453981	0.5383	16.16	17.02	0.86	16.64	16.70	0.16	3.3	0.56	0.60	0.30
1896	3.458999	0.5390	15.88	17.12	1.24	16.61	16.70	0.19	5.0	0.74	1.00	0.48
11544	3.472644	0.5407	15.49	16.60	1.11	16.16	16.21	0.14	4.7	0.68	0.88	0.00
1788	3.478672	0.5414	15.75	16.11	0.36	15.96	15.95	0.41	1.8	0.28	0.16	0.00
10379	3.483796	0.5421	16.31	17.14	0.83	16.82	16.82	0.18	2.9	0.56	0.55	0.06
1606	3.487541	0.5425	15.40	16.88	1.48	16.30	16.39	0.11	5.3	0.87	1.20	0.72
1339	3.489208	0.5427	15.84	16.94	1.10	16.49	16.53	0.20	3.5	0.72	0.78	0.50
1849	3.492279	0.5431	15.16	16.98	1.82	16.09	16.29	0.18	2.9	1.22	1.20	0.02
2194	3.500453	0.5441	15.56	17.05	1.49	16.56	16.52	0.14	3.9	0.94	1.12	0.00
1422	3.500824	0.5442	15.19	16.72	1.53	16.10	16.20	0.14	4.9	0.91	1.22	1.03
12131	3.504149	0.5446	16.10	16.97	0.87	16.58	16.64	0.18	2.9	0.58	0.57	0.15
1888	3.509831	0.5453	15.60	16.91	1.31	16.37	16.45	0.22	3.8	0.82	0.97	0.48
1667	3.519801	0.5465	15.73	16.73	1.00	16.35	16.37	0.16	3.6	0.64	0.72	0.48
10383	3.531678	0.5480	16.37	17.61	1.24	17.15	17.15	0.16	3.4	0.81	0.88	0.00
2183	3.537532	0.5487	15.51	17.00	1.49	16.42	16.48	0.14	4.0	0.92	1.12	0.00
2055	3.544907	0.5496	16.18	16.98	0.80	16.68	16.70	0.14	4.1	0.50	0.60	0.42
1502	3.545848	0.5497	16.06	16.76	0.70	16.45	16.49	0.20	2.9	0.47	0.46	0.03
1749	3.552511	0.5505	15.58	16.80	1.22	16.41	16.39	0.11	5.5	0.72	1.00	0.11
1410	3.569797	0.5526	16.17	16.97	0.80	16.66	16.66	0.20	2.9	0.54	0.53	0.59
1901	3.573097	0.5530	16.73	17.35	0.62	17.07	17.11	0.22	2.0	0.42	0.41	0.46
1331	3.579654	0.5538	15.78	17.14	1.36	16.43	16.66	0.19	4.0	0.84	1.02	0.18
1926	3.591696	0.5553	15.24	17.17	1.93	16.50	16.45	0.15	3.2	1.27	1.33	0.30
1627	3.598520	0.5561	15.82	16.50	0.68	16.19	16.27	0.14	5.0	0.41	0.54	0.65
1697	3.605670	0.5570	15.95	17.25	1.30	16.69	16.78	0.18	3.7	0.83	0.95	0.30
1792	3.610043	0.5575	15.72	16.88	1.16	16.47	16.47	0.15	3.8	0.73	0.86	0.36
1949	3.616610	0.5583	16.16	17.20	1.04	17.13	16.81	0.18	3.0	0.69	0.70	0.40
1384	3.620437	0.5588	15.06	15.75	0.69	15.39	15.43	0.38	1.6	0.57	0.26	0.81
1816	3.628368	0.5597	15.96	17.12	1.16	16.63	16.69	0.20	3.0	0.76	0.78	0.28
1534	3.642337	0.5614	14.94	16.22	1.28	15.75	15.75	0.17	3.5	0.83	0.91	0.80
1733	3.654730	0.5628	15.32	16.44	1.12	16.00	16.03	0.18	3.4	0.73	0.80	0.00
1804	3.666213	0.5642	15.06	16.62	1.56	15.96	16.10	0.12	5.5	0.92	1.28	0.16
1631	3.667450	0.5644	15.55	16.82	1.27	16.38	16.34	0.14	3.2	0.84	0.88	0.00
1337	3.676525	0.5654	15.38	16.96	1.58	16.43	16.30	0.22	4.3	0.98	1.22	0.56
1423	3.683533	0.5663	16.07	16.73	0.66	16.47	16.50	0.16	5.0	0.40	0.53	1.03
2058	3.684718	0.5664	15.89	16.68	0.79	16.40	16.41	0.16	4.5	0.48	0.62	0.10
2028	3.688962	0.5669	15.44	16.28	0.84	15.94	15.97	0.18	3.5	0.55	0.60	0.30
2185	3.690300	0.5671	15.19	16.80	1.61	16.26	16.25	0.08	5.9	0.93	1.33	0.00
1445	3.692881	0.5674	15.46	16.76	1.30	16.30	16.27	0.16	2.9	0.87	0.86	0.56
1856	3.693157	0.5674	15.78	16.94	1.16	16.43	16.54	0.18	4.3	0.71	0.89	0.36
1453	3.699185	0.5681	15.00	16.46	1.46	15.91	15.95	0.16	4.2	0.90	1.12	0.67
2070	3.710850	0.5695	15.60	16.94	1.34	16.42	16.47	0.15	4.1	0.83	1.00	0.00
2188	3.712066	0.5696	16.76	17.23	0.47	16.97	17.05	0.22	3.3	0.31	0.33	0.00

TABLE 4.—*Light-curve parameters for periodic variables* (*in Column 1 denotes *W* Virginis stars; in Column 2 denotes variable periods).—Continued

HV	Period	log P	M_0	m_0	A	$\langle m \rangle_0$	x_0	M-m	s	A_1	A_2	dm
12938	3.714048	0.5698	15.86	16.90	1.04	16.44	16.52	0.20	3.3	0.68	0.73	0.49
2085	3.716671	0.5702	16.05	17.05	1.00	16.61	16.68	0.20	3.5	0.65	0.71	0.00
1728	3.717928	0.5703	15.60	16.57	0.97	16.17	16.19	0.22	2.5	0.68	0.58	0.44
1866	3.724908	0.5711	15.64	16.75	1.11	16.32	16.37	0.14	4.5	0.68	0.87	0.08
11186	3.734506	0.5722	16.06	16.61	0.55	16.34	16.29	0.26	2.4	0.38	0.32	0.34
1356	3.737912	0.5726	15.65	16.73	1.08	16.25	16.33	0.18	3.1	0.71	0.73	0.79
1585	3.739800	0.5728	16.05	16.72	0.67	16.43	16.47	0.20	3.2	0.44	0.46	0.70
1617	3.741143	0.5730	16.09	16.85	0.76	16.59	16.54	0.25	2.4	0.54	0.44	0.65
1776	3.749756	0.5740	15.88	16.75	0.87	16.37	16.45	0.14	4.5	0.53	0.68	0.26
2116	3.751937	0.5743	16.36	17.20	0.84	16.84	16.86	0.20	2.4	0.60	0.49	0.00
1704	3.776164	0.5770	15.71	16.91	1.20	16.42	16.36	0.16	3.2	0.79	0.83	0.44
2213	3.786521	0.5782	14.90	16.34	1.44	15.70	15.82	0.18	3.7	0.92	1.05	0.00
11490	3.788955	0.5785	15.62	16.68	1.06	16.23	16.30	0.20	3.6	0.68	0.76	0.28
2086	3.789458	0.5786	15.11	17.10	1.99	16.13	16.42	0.18	4.3	1.21	1.53	0.00
11205	3.802571	0.5801	15.49	16.58	1.09	16.21	16.20	0.14	4.2	0.68	0.83	0.00
1725	3.808537	0.5808	15.88	16.84	0.96	16.47	16.50	0.14	4.2	0.60	0.73	0.49
1352	3.8095	0.5809	15.64	16.73	1.09	16.31	16.36	0.22	4.5	0.66	0.85	0.79
2151	3.811053	0.5810	16.00	17.13	1.13	16.62	16.74	0.17	4.3	0.69	0.86	0.00
1710	3.825628	0.5827	15.74	17.10	1.36	16.55	16.59	0.18	3.0	0.90	0.91	0.30
2089	3.825657	0.5827	16.59	17.54	0.95	17.09	17.18	0.19	3.2	0.63	0.65	0.00
858	3.832724	0.5835	15.50	17.00	1.50	16.26	16.44	0.21	3.2	0.99	1.03	0.00
1483	3.832782	0.5835	16.37	17.20	0.83	16.79	16.85	0.20	2.1	0.61	0.43	0.67
1523	3.858813	0.5865	15.53	16.55	1.02	16.18	16.17	0.19	3.1	0.67	0.69	0.43
11396	3.860750	0.5867	16.32	17.48	1.16	16.94	17.06	0.20	3.6	0.74	0.84	0.16
1757	3.889765	0.5899	15.29	17.03	1.74	16.30	16.41	0.17	3.8	1.10	1.29	0.49
1691	3.901449	0.5912	15.88	17.10	1.22	16.73	16.69	0.15	4.9	0.73	0.98	0.00
212	3.901449	0.5912	16.52	17.55	1.03	17.13	17.18	0.16	3.9	0.65	0.77	0.00
2024	3.908311	0.5920	15.08	16.27	1.19	15.82	15.78	0.22	2.2	0.87	0.65	0.28
1379	3.909380	0.5921	15.26	16.45	1.19	15.98	16.04	0.15	4.4	0.73	0.92	0.88
11117	3.911128	0.5923	15.38	16.51	1.13	16.21	16.10	0.18	3.4	0.73	0.80	0.81
1797	3.914360	0.5928	15.24	16.86	1.62	16.27	16.31	0.13	5.1	0.97	1.29	0.28
1882	3.930679	0.5945	16.48	17.26	0.78	16.91	16.94	0.26	2.3	0.56	0.44	0.48
1694	3.934808	0.5949	15.35	16.53	1.18	15.97	16.09	0.18	3.5	0.77	0.84	0.44
1544	3.939403	0.5954	16.38	17.18	0.90	16.74	16.89	0.12	6.5	0.52	0.76	0.70
1580	3.941244	0.5956	15.29	17.15	1.86	16.44	16.50	0.16	4.1	1.15	1.40	0.65
1552	3.948901	0.5965	15.70	16.93	1.23	16.44	16.47	0.18	3.1	0.81	0.84	0.56
1781	3.963080	0.5980	15.52	16.95	1.43	16.39	16.39	0.18	2.8	0.98	0.92	0.44
1584	3.968207	0.5986	15.20	16.17	0.97	15.82	15.83	0.15	4.0	0.60	0.73	0.57
1634	3.970365	0.5988	15.52	17.40	1.88	16.56	16.77	0.15	5.2	1.11	1.52	0.36
1914	3.971579	0.5990	15.47	16.53	1.06	16.00	16.17	0.14	5.1	0.64	0.85	0.39
1653	3.972384	0.5991	15.51	17.02	1.51	16.45	16.48	0.18	3.8	0.95	1.12	0.44
1737	3.973442	0.5992	15.56	16.65	1.09	16.19	16.25	0.22	3.3	0.71	0.76	0.26
1602	3.997793	0.6018	15.84	16.97	1.13	16.57	16.52	0.18	2.5	0.79	0.68	0.70
2132	4.006124	0.6027	16.25	17.41	1.16	16.86	17.00	0.20	3.8	0.73	0.86	0.25
2075	4.027581	0.6050	16.33	17.43	1.10	17.01	17.02	0.19	3.2	0.73	0.76	0.00
1679	4.040812	0.6065	16.00	16.73	0.73	16.41	16.48	0.13	5.1	0.44	0.58	0.00
1718	4.045226	0.6069	16.03	17.21	1.18	16.69	16.80	0.16	4.5	0.72	0.92	0.00
1795	4.079218	0.6106	15.43	16.54	1.21	16.07	16.08	0.22	2.9	0.81	0.80	0.22
1807	4.088458	0.6116	16.22	17.13	0.91	16.69	16.80	0.20	3.3	0.59	0.64	0.00
1470	4.092239	0.6120	16.11	17.29	1.18	16.89	16.86	0.17	3.6	0.76	0.85	0.85
1477	4.123949	0.6153	16.21	16.95	0.64	16.68	16.72	0.17	4.0	0.40	0.48	0.47
11257	4.126519	0.6156	15.79	16.99	1.20	16.58	16.54	0.16	3.0	0.79	0.80	1.03
1474	4.160606	0.6192	15.84	16.36	0.52	16.09	16.18	0.19	4.4	0.32	0.41	0.47
12928	4.168230	0.6199	15.08	16.00:	0.92	15.67:	15.65:	0.21	3.1	0.61:	0.63:	0.52
831	4.173919	0.6205	16.15	17.19	1.04	16.81	16.83	0.14	4.3	0.63	0.80	0.85
12112	4.180584	0.6212	15.90	16.98	1.08	16.55	16.57	0.19	2.9	0.72	0.71	0.31
1793	4.181441	0.6213	15.76	16.97	1.21	16.42	16.52	0.17	3.5	0.79	0.86	0.00
1952	4.188271	0.6220	15.30	16.45	1.15	15.95	16.01	0.14	3.9	0.72	0.86	0.30
1439	4.193169	0.6225	15.62	16.38	0.76	16.07	16.12	0.14	4.9	0.46	0.61	0.70
214	4.205197	0.6238	14.94	16.27	1.33	15.75	15.78	0.18	3.4	0.86	0.94	0.00
2175	4.210763	0.6244	14.55	16.59	2.04	16.25	15.89	0.16	4.2	1.24	1.57	0.00
1539	4.212814	0.6246	16.37	17.35	0.98	16.86	17.00	0.17	3.8	0.62	0.73	0.80
1994	4.213400	0.6246	15.70	17.04	1.39	16.51	16.53	0.16	3.3	0.90	0.97	0.00
2221	4.235353	0.6269	15.34	16.75	1.41	16.18	16.22	0.22	3.1	0.93	0.96	0.00
1607	4.245816	0.6280	15.34	16.59	1.25	16.05	16.13	0.18	3.4	0.81	0.89	0.17
1665	4.252677	0.6287	15.49	16.54	1.05	16.11	16.17	0.13	4.2	0.65	0.80	0.36
1825	4.260377	0.6294	15.58	16.76	1.18	16.23	16.35	0.16	4.1	0.73	0.89	0.02
1966	4.269964	0.6304	15.20	16.45	1.25	16.06	16.01	0.13	4.1	0.78	0.94	0.00
1944	4.277916	0.6312	16.50	17.42	0.92	17.01	17.06	0.18	2.7	0.63	0.58	0.40
11152	4.282600	0.6319	16.27	16.91	0.64	16.65	16.69	0.17	4.3	0.39	0.49	0.74
842	4.289563	0.6324	15.75	16.95	1.20	16.44	16.31	0.18	3.5	0.78	0.85	0.17
1829	4.290777	0.6325	15.37	16.58	1.21	16.10	16.02	0.16	2.9	0.81	0.80	0.16
1566	4.313878	0.6349	16.19	16.53	0.34	16.37	16.40	0.24	2.7	0.23	0.21	0.72
1576	4.336307	0.6371	14.81	16.06	1.25	15.61	15.58	0.15	2.9	0.84	0.83	0.52
1401	4.341107	0.6376	15.32	16.71	1.39	16.13	16.18	0.20	2.9	0.93	0.92	0.88
2026	4.342576	0.6378	15.72	16.92	1.20	16.44	16.50	0.16	4.1	0.74	0.91	0.00
830	4.350607	0.6385	15.39	16.79	1.40	16.30	16.28	0.16	3.7	0.90	1.02	0.85
11165	4.356862	0.6392	16.03	16.83	0.80	16.43	16.54	0.19	3.3	0.56	0.52	0.57
1879	4.363782	0.6399	15.90	16.71	0.81	16.38	16.43	0.20	4.2	0.50	0.62	0.48

TABLE 4.—*Light-curve parameters for periodic variables* (*in Column 1 denotes *W* Virginis stars; in Column 2 denotes variable periods).—Continued

HV	Period	log P	M_0	m_0	A	$\langle m \rangle_0$	x_0	M-m	s	A_1	A_2	dm
1619	4.375314	0.6410	15.73	16.94	1.21	16.47	16.49	0.17	3.3	0.79	0.85	0.00
1525	4.384541	0.6419	15.85	17.14	1.29	16.64	16.71	0.14	5.3	0.76	1.06	0.85
1562	4.388255	0.6423	15.43	16.42	0.99	15.97	16.03	0.20	2.6	0.68	0.61	0.56
11237	4.388429	0.6423	15.69	16.85	1.16	16.33	16.41	0.22	3.1	0.77	0.79	0.79
1740	4.412280	0.6447	15.19	16.35	1.16	15.91	15.92	0.17	3.3	0.75	0.81	0.35
861	4.413842	0.6448	14.81	16.40	1.59	15.60	15.83	0.19	3.8	1.00	1.18	0.00
1961	4.429267	0.6464	15.81	17.18	1.37	16.63	16.67	0.20	3.2	0.90	0.95	0.40
1581	4.461876	0.6495	15.40	16.54	1.14	16.03	16.13	0.20	3.8	0.72	0.84	0.72
1946	4.468974	0.6502	16.05	17.02	0.97	16.50	16.58	0.20	1.7	0.78	0.40	0.35
2136	4.482065	0.6515	15.27	16.80	1.53	16.18	16.28	0.18	4.8	0.92	1.21	0.00
1608	4.491939	0.6524	16.03	16.99	0.96	16.61	16.62	0.21	2.6	0.66	0.60	0.17
1551	4.496747	0.6529	15.74	16.72	0.98	16.31	16.33	0.19	2.5	0.69	0.59	0.80
1519	4.500673	0.6533	15.34	16.62	1.28	16.01	16.16	0.18	3.8	0.81	0.95	0.60
1406	4.506027	0.6538	15.65	16.63	0.98	16.23	16.31	0.17	5.8	0.57	0.81	0.88
1405	4.511556	0.6543	14.94	16.46	1.52	15.93	15.92	0.17	3.9	0.96	1.14	0.88
1425	4.547170	0.6577	14.88	16.74	1.86	16.01	16.10	0.17	4.5	1.13	1.45	0.48
1745	4.561669	0.6591	16.12	17.15	1.03	16.74	16.77	0.18	3.3	0.67	0.72	0.29
2199	4.577015	0.6606	15.63	16.70	1.07	16.22	16.30	0.20	3.0	0.71	0.72	0.00
1598	4.582237	0.6611	15.26	16.40	1.14	16.02	15.91	0.24	2.0	0.86	0.57	0.36
11527	4.593755	0.6622	15.70	16.67	0.97	16.22	16.31	0.23	3.2	0.64	0.67	0.00
1808	4.636777	0.6662	15.18	16.63	1.45	16.04	16.09	0.22	3.0	0.96	0.97	0.34
1388	4.654453	0.6679	15.44	16.60	1.16	16.11	16.15	0.20	2.8	0.79	0.74	0.88
1657	4.667009	0.6690	16.02	16.91	0.89	16.51	16.58	0.18	3.3	0.58	0.62	0.36
1693	4.672220	0.6695	15.91	16.68	0.77	16.33	16.39	0.24	2.8	0.52	0.49	0.44
1493	4.672416	0.6695	15.95	16.63	0.66	16.37	16.41	0.16	3.3	0.39	0.42	0.91
851	4.685052	0.6707	15.50	16.97	1.47	16.20	16.44	0.17	3.6	0.94	1.06	0.20
1975	4.700419	0.6721	16.06	16.85	0.79	16.50	16.54	0.22	2.8	0.54	0.50	0.40
2224	4.703865	0.6725	15.57	16.38	0.81	16.01	16.08	0.21	3.5	0.53	0.56	0.00
2078	4.707034	0.6727	16.12	16.92	0.80	16.57	16.63	0.21	3.3	0.52	0.56	0.00
2008	4.707921	0.6728	15.26	16.30	1.04	15.83	15.88	0.20	2.4	0.74	0.60	0.30
2129	4.729917	0.6748	15.43	16.77	1.34	16.15	16.27	0.24	3.0	0.88	0.90	0.00
1785	4.729944	0.6749	15.76	16.76	1.00	16.41	16.37	0.20	2.8	0.68	0.64	0.00
1601	4.735880	0.6754	15.75	16.82	1.07	16.33	16.41	0.20	2.8	0.73	0.68	0.72
2018	4.742146	0.6760	15.88	16.79	0.91	16.33	16.43	0.18	2.5	0.64	0.55	0.30
1899	4.760545	0.6777	14.91	16.13	1.22	15.50	15.72	0.23	5.3	0.72	0.99	0.48
2164	4.769157	0.6784	15.23	16.62	1.39	16.01	16.15	0.19	4.6	0.83	1.10	0.00
1750	4.769900	0.6785	16.31	16.94	0.63	16.58	16.71	0.25	3.0	0.41	0.42	0.26
1536	4.786655	0.6800	15.40	16.78	1.38	16.26	16.26	0.21	3.1	0.91	0.94	0.70
11273	4.794025	0.6807	15.88	16.60	0.72	16.27	16.34	0.18	4.2	0.45	0.55	0.98
12151	4.796347	0.6809	15.64	16.69	1.05	16.22	16.28	0.22	2.6	0.72	0.65	0.02
2207	4.814729	0.6826	15.82	16.58	0.76	16.15	16.26	0.29	2.0	0.57	0.38	0.00
1572	4.838280	0.6847	15.69	16.86	1.17	16.35	16.46	0.18	4.3	0.71	0.89	0.72
2125	4.844562	0.6853	15.84	17.26	1.42	16.57	16.67	0.27	2.2	1.04	0.78	0.00
1480	4.846055	0.6854	15.35	16.29	0.94	15.93	15.93	0.16	2.8	0.64	0.60	0.79
1593	4.846347	0.6854	15.32	16.50	1.18	15.96	16.09	0.18	4.0	0.73	0.89	0.72
1683	4.857411	0.6864	16.20	16.88	0.68	16.56	16.61	0.26	2.4	0.48	0.39	0.36
1641	4.860834	0.6867	14.98	16.38	1.40	15.75	15.86	0.20	3.1	0.92	0.95	0.00
1934	4.874815	0.6880	15.50	16.70	1.20	16.22	16.23	0.21	2.6	0.83	0.74	0.10
1771	4.876621	0.6881	15.37	16.85	1.48	16.15	16.31	0.21	3.5	0.96	1.05	0.11
1431	4.885317	0.6889	15.43	16.58	1.15	16.04	16.15	0.20	3.3	0.75	0.80	0.59
1387	4.896944	0.6899	15.09	16.32	1.23	15.92	15.91	0.15	4.7	0.73	0.96	0.88
1735	4.898838	0.6901	15.17	16.25	1.08	16.72	15.86	0.20	3.6	0.69	0.78	0.35
1671	4.900736	0.6903	14.51	16.49	1.98	15.61	15.67	0.20	3.6	1.27	1.43	0.00
1343	4.915696	0.6916	15.40	16.55	1.15	16.12	16.12	0.18	3.6	0.75	0.83	0.45
1624	4.916808	0.6917	15.35	16.89	1.54	16.31	16.29	0.17	2.7	1.06	0.97	0.31
1827	4.921478	0.6921	15.02	16.49	1.47	15.92	15.92	0.18	2.6	1.01	0.91	0.02
2145	4.941147	0.6938	15.79	16.84	1.05	16.30	16.45	0.22	3.3	0.68	0.74	0.25
1555	4.942396	0.6939	14.94	16.55	1.61	15.84	15.98	0.18	3.5	1.05	1.14	0.35
1909	4.947874	0.6944	14.30	16.33	2.03	15.50	15.62	0.14	4.0	1.26	1.52	0.48
11484	4.967660	0.6962	15.15	16.90	1.75	16.04	16.24	0.23	3.1	1.16	1.19	0.00
1742	4.987233	0.6979	15.61	17.03	1.42	16.50	16.51	0.19	3.6	0.91	1.02	0.17
1419	4.988128	0.6979	15.08	15.95	0.87	15.58	15.62	0.23	2.8	0.59	0.56	0.90
1499	5.002076	0.6691	15.75	17.10	1.35	16.61	16.60	0.18	3.5	0.88	0.96	0.70
1995	5.012808	0.7001	15.97	17.35	1.38	16.58	16.83	0.22	2.9	0.92	0.91	0.35
1992	5.048695	0.7032	15.89	16.96	1.07	16.57	16.56	0.21	3.3	0.70	0.75	0.00
12173	5.049689	0.7033	15.41	16.95	1.54	16.33	16.37	0.18	3.2	1.02	1.06	0.05
1699	5.058118	0.7040	15.93	16.94	1.01	16.45	16.57	0.22	3.4	0.66	0.72	0.03
1951	5.083367	0.7062	14.71	16.26	1.55	15.51	15.68	0.24	3.0	1.02	1.04	0.40
1927	5.084556	0.7063	15.88	17.06	1.18	16.58	16.61	0.20	2.8	0.80	0.76	0.30
1526	5.087583	0.7065	15.31	17.03	1.72	16.38	16.43	0.17	4.4	1.05	1.34	0.85
1903	5.094892	0.7071	15.28	16.65	1.37	16.05	16.13	0.20	2.9	0.92	0.90	0.07
2211	5.095061	0.7072	15.84	16.48	0.64	16.22	16.22	0.24	2.5	0.45	0.38	0.00
1672	5.104515	0.7080	16.80	16.72	0.92	16.26	16.37	0.24	3.0	0.61	0.62	0.54
1531	5.112082	0.7086	15.77	16.70	0.93	16.22	16.35	0.21	3.0	0.61	0.62	0.85
1457	5.112759	0.7087	15.50	17.14	1.64	16.36	16.53	0.24	3.2	1.08	1.13	0.56
1514	5.119096	0.7092	15.17	16.28	1.11	15.82	15.90	0.17	4.7	0.67	0.88	0.80
1752	5.126391	0.7098	15.71	16.78	1.07	16.33	16.37	0.25	2.9	0.72	0.71	0.44
12941	5.128021	0.7099	16.29	16.95	0.67	16.61	16.68	0.28	2.4	0.48	0.39	0.35
11170	5.145696	0.7114	16.25	16.70	0.45	16.48	16.53	0.26	2.9	0.30	0.30	0.00

TABLE 4.—*Light-curve parameters for periodic variables* (*in Column 1 denotes *W* Virginis stars; in Column 2 denotes variable periods).—Continued

HV	Period	log P	M_0	m_0	A	$\langle m \rangle_0$	x_0	M-m	s	A_1	A_2	dm
1701	5.171807	0.7136	15.13	16.04	0.91	15.84	15.70	0.21	3.1	0.60	0.62	0.54
820	5.200560	0.7160	15.80	17.08	1.28	16.48	16.61	0.20	3.5	0.83	0.91	0.00
1633	5.200830	0.7161	15.22	16.33	1.07	15.89	15.91	0.20	2.7	0.74	0.67	0.48
1626	5.202724	0.7162	15.60	16.78	1.18	16.28	16.36	0.19	3.8	0.74	0.87	0.70
1982	5.224855	0.7181	14.49	15.35	0.86	14.89	15.05	0.18	4.1	0.53	0.64	0.68
1646	5.233821	0.7188	15.20	16.52	1.32	15.98	16.06	0.19	4.4	0.81	1.02	0.30
2031	5.248655	0.7201	15.20	16.99	1.79	16.18	16.36	0.18	4.2	1.11	1.36	0.00
1635	5.249619	0.7201	15.45	16.33	0.88	15.92	15.98	0.22	2.5	0.62	0.53	0.48
1564	5.254004	0.7205	14.05	14.86	0.81	14.61	14.56	0.16	3.4	0.53	0.58	0.60
1957	5.319262	0.7259	15.31	16.96	1.65	16.36	16.35	0.24	3.4	1.07	1.17	0.00
1649	5.323693	0.7262	15.26	16.53	1.27	16.00	16.07	0.18	3.3	0.81	0.88	0.30
11178	5.361528	0.7293	16.00	16.68	0.68	16.37	16.24	0.28	2.3	0.42	0.39	0.48
1461	5.404616	0.7328	15.55	16.36	0.81	16.04	16.03	0.21	2.8	0.58	0.61	0.85
1818	5.458843	0.7371	16.27	17.10	0.83	16.70	16.75	0.26	2.2	0.61	0.46	0.28
1811	5.469861	0.7380	15.72	16.74	1.02	16.23	16.34	0.24	2.7	0.70	0.64	0.08
1878	5.548958	0.7442	15.21	16.17	0.96	15.66	15.82	0.20	3.6	0.61	0.69	0.48
1929	5.584440	0.7470	15.53	16.12	0.59	15.84	15.86	0.29	1.8	0.46	0.26	0.10
1588	5.590184	0.7474	16.27	16.97	0.70	16.66	16.63	0.21	3.2	0.60	0.67	0.65
2162	5.632320	0.7507	15.99	16.76	0.77	16.44	16.45	0.22	2.5	0.54	0.46	0.25
1618	5.649335	0.7520	14.89	16.70	1.81	15.88	16.00	0.21	2.8	1.23	1.16	0.00
1892	5.653194	0.7523	15.74	16.60	0.86	16.11	16.25	0.28	2.4	0.61	0.50	0.10
2113	5.662258	0.7530	16.17	16.77	0.60	16.47	16.52	0.28	2.1	0.44	0.31	0.00
1416	5.662354	0.7530	15.12	16.48	1.36	15.97	15.94	0.20	2.5	0.95	0.82	0.90
1563	5.665369	0.7532	15.34	16.61	1.27	16.06	16.14	0.20	3.4	0.83	0.90	0.85
1706	5.679043	0.7543	15.43	17.07	1.64	16.30	16.46	0.20	3.1	1.08	1.12	0.36
1570	5.721871	0.7575	15.29	16.62	1.33	16.12	16.10	0.22	2.7	0.92	0.84	0.52
1767	5.733945	0.7585	16.05	17.18	1.13	16.63	16.74	0.24	2.6	0.78	0.70	0.48
2161	5.739025	0.7588	14.36	16.47	2.11	15.59	15.68	0.20	3.1	1.39	1.41	0.00
1794	5.777367	0.7617	16.14	16.94	0.80	16.55	16.63	0.24	2.7	0.55	0.50	0.36
862	5.789717	0.7627	15.32	16.15	0.83	15.75	15.86	0.21	3.8	0.52	0.61	0.00
815	5.794863	0.7631	15.41	16.53	1.12	16.07	16.10	0.22	2.9	0.75	0.74	0.45
1503	5.803359	0.7637	14.73	16.79	2.06	15.98	15.87	0.21	2.3	1.63	1.48	0.43
1434	5.833013	0.7659	14.84	15.97	1.13	15.42	15.58	0.17	4.4	0.69	0.87	0.90
1537	5.842213	0.7666	15.08	16.10	1.02	15.67	15.70	0.19	2.7	0.70	0.64	0.80
12925	5.888865	0.7700	15.95	16.81	0.86	16.44	16.44	0.40	1.9	0.65	0.40	0.70
2041	5.911249	0.7717	15.32	16.61	1.29	16.04	16.11	0.19	2.8	0.88	0.83	0.00
10375	5.938101	0.7736	16.33	17.08	0.75	16.71	16.79	0.26	2.7	0.52	0.47	0.00
2144	5.942971	0.7740	15.97	17.28	1.31	16.61	16.82	0.26	4.1	0.81	0.98	0.00
1500	5.949796	0.7745	15.50	16.79	1.29	16.24	16.27	0.23	2.4	0.92	0.75	0.85
2203	5.962282	0.7754	15.16	16.40	1.24	15.73	15.94	0.22	3.3	0.81	0.87	0.00
11123	6.011533	0.7790	16.08	17.33	1.25	16.67	16.86	0.24	3.0	0.83	0.84	0.81
2198	6.064465	0.7828	15.32	16.58	1.26	16.08	16.11	0.18	3.0	0.83	0.84	0.00
2124	6.064539	0.7828	15.26	16.17	0.91	15.73	15.85	0.19	4.0	0.56	0.68	0.00
1734	6.069029	0.7831	15.65	16.81	1.16	16.33	16.38	0.20	3.3	0.75	0.81	0.29
1583	6.084428	0.7842	15.94	16.65	0.71	16.33	16.37	0.26	2.6	0.49	0.44	0.80
1858	6.111834	0.7862	15.15	16.14	0.99	15.67	15.74	0.26	2.6	0.68	0.61	0.08
2040	6.112096	0.7862	15.50	16.70	1.20	16.26	16.31	0.18	5.9	0.70	1.00	0.00
1612	6.182992	0.7912	14.29	16.51	2.22	15.54	15.71	0.19	3.9	1.40	1.67	0.65
1605	6.209522	0.7931	15.58	16.51	0.93	15.94	16.14	0.24	2.4	0.66	0.53	0.72
11240	6.228822	0.7944	14.89	16.20	1.31	15.54	15.67	0.31	2.2	0.94	0.72	0.77
1492	6.292208	0.7988	14.78	16.18	1.40	15.54	15.66	0.23	3.2	0.92	0.97	0.36
1979	6.296595	0.7991	15.64	16.82	1.18	16.20	16.36	0.26	2.5	0.82	0.71	0.20
1394	6.301158	0.7994	15.59	16.67	1.08	16.23	16.27	0.20	3.3	0.70	0.76	0.91
11176	6.342160	0.8022	15.84	16.80	0.96	16.37	16.47	0.22	4.5	0.59	0.75	0.00
1520	6.384748	0.8051	15.61	16.46	0.85	16.09	16.15	0.26	3.4	0.55	0.60	0.56
1676	6.389654	0.8055	15.24	16.39	1.15	15.87	15.93	0.24	2.4	0.82	0.67	0.58
11193	6.427066	0.8080	16.08	17.00	0.92	16.45	16.64	0.32	2.6	0.64	0.57	0.00
2174	6.429336	0.8082	15.24	16.44	1.20	15.82	15.99	0.28	2.9	0.80	0.79	0.00
1412	6.463832	0.8105	15.45	16.61	1.16	16.01	16.17	0.22	3.0	0.77	0.78	1.03
1945	6.468724	0.8108	15.27	16.46	1.19	15.93	16.01	0.23	2.9	0.80	0.78	0.00
1561	6.473372	0.8111	15.52	17.34	1.82	16.37	16.67	0.22	3.3	1.18	1.27	0.74
2142	6.490223	0.8123	14.64	16.26	1.62	15.42	15.65	0.26	3.1	1.07	1.10	0.00
1862	6.490598	0.8123	14.95	16.28	1.33	15.65	15.80	0.22	3.6	0.85	0.96	0.34
1512	6.546816	0.8160	15.12	16.22	1.10	15.78	15.78	0.24	2.6	0.77	0.69	0.80
1988	6.561163	0.8170	15.50	16.58	1.08	16.04	16.17	0.26	2.8	0.73	0.69	0.40
826	6.566419	0.8173	15.03	15.97	0.94	15.59	15.62	0.22	3.1	0.62	0.64	0.91
11112	6.611559	0.8203	15.70	16.92	1.22	16.43	16.47	0.22	3.0	0.80	0.81	0.00
1400	6.648163	0.8227	15.23	16.17	0.94	15.70	15.81	0.24	2.9	0.63	0.62	0.49
1324	6.663725	0.8237	15.88	16.28	0.40	16.06	16.12	0.27	2.6	0.28	0.25	0.00
2163	6.693010	0.8256	16.18	16.66	0.48	16.44	16.44	0.35	1.7	0.38	0.20	0.00
2223	6.700442	0.8261	14.91	16.33	1.42	15.74	15.75	0.24	2.3	1.02	0.81	0.00
1775	6.810273	0.8332	15.63	16.72	1.09	16.24	16.32	0.22	3.5	0.71	0.77	0.35
1509	6.818213	0.8337	15.15	16.40	1.25	15.76	15.95	0.20	3.8	0.79	0.92	0.74
1855	6.839898	0.8350	15.95	16.40	0.45	16.18	16.21	0.29	2.1	0.33	0.23	0.00
1689	6.844018	0.8353	14.31	15.71	1.40	15.14	15.19	0.22	3.2	0.92	0.97	0.24
1435	7.011885	0.8458	14.50	15.90	1.40	15.27	15.34	0.26	2.4	0.99	0.81	0.90
10385	7.033122	0.8471	15.78	16.58	0.80	16.24	16.27	0.21	2.8	0.54	0.51	0.00
11140	7.164241	0.8552	15.44	16.59	1.15	16.09	16.10	0.28	2.0	0.86	0.58	0.67
2054	7.165295	0.8552	15.40	16.22	0.82	15.84	15.86	0.32	1.8	0.64	0.36	0.20

TABLE 4.—*Light-curve parameters for periodic variables* (*in Column 1 denotes *W* Virginis stars; in Column 2 denotes variable periods).—Continued

HV	Period	log P	M_0	m_0	A	$\langle m \rangle_0$	x_0	M-m	s	A_1	A_2	dm
12952	7.182360	0.8563	15.40	16.01	0.61	15.66	15.76	0.30	2.3	0.44	0.35	0.00
1527	7.228515	0.8590	15.40	16.46	1.06	16.07	16.06	0.21	3.1	0.70	0.72	0.60
2119	7.272674	0.8617	15.67	16.45	0.78	16.04	16.16	0.24	2.9	0.52	0.51	0.00
1801	7.279345	0.8621	15.53	15.89	0.35	15.71	15.63	0.29	2.0	0.26	0.18	0.35
853	7.334443	0.8653	14.45	15.75	1.30	15.21	15.26	0.22	3.1	0.86	0.88	0.40
1427	7.334587	0.8654	15.63	16.61	0.98	16.15	16.12	0.41	1.3	0.86	0.23	0.81
1548	7.350077	0.8663	15.47	15.93	0.46	15.69	15.72	0.43	1.7	0.37	0.19	0.35
1905	7.416802	0.8702	15.20	16.38	1.18	15.85	15.94	0.23	3.4	0.77	0.84	0.00
1973	7.480607	0.8740	15.29	16.20	0.91	15.69	15.81	0.26	3.2	0.69	0.63	0.40
1355	7.483104	0.8741	14.73	15.92	1.19	15.36	15.46	0.25	2.8	0.81	0.76	0.79
1599	7.498219	0.8744	15.35	16.23	0.88	15.77	15.88	0.28	2.4	0.62	0.51	0.52
1758	7.499625	0.8750	14.74	16.13	1.39	15.33	15.64	0.26	4.0	0.86	1.04	0.35
1592	7.534092	0.8770	14.88	15.54	0.66	15.20	15.24	0.36	1.7	0.53	0.27	0.52
2081	7.607628	0.8812	14.74	15.62	0.88	15.19	15.27	0.27	2.7	0.61	0.55	0.00
1582	7.681495	0.8854	15.82	16.38	0.56	16.06	16.14	0.28	2.7	0.39	0.35	0.00
1393	7.722902	0.8878	15.21	15.93	0.72	15.51	15.64	0.26	2.4	0.51	0.42	0.88
12940	7.755305	0.8896	15.95	16.68	0.73	16.29	16.37	0.34	1.9	0.55	0.34	0.22
1666	7.771699	0.8905	14.84	15.87	1.03	15.29	15.48	0.25	3.0	0.68	0.69	0.15
1709	7.894529	0.8973	14.86	16.54	1.68	15.66	15.92	0.22	3.4	1.09	1.19	0.58
1764	7.935437	0.8996	15.56	16.36	0.80	15.88	16.03	0.30	2.3	0.58	0.46	0.11
816	7.94085	0.8999	15.53	16.44	0.91	15.98	16.08	0.27	2.6	0.63	0.56	0.53
845	7.950832	0.9004	14.60	15.94	1.34	15.35	15.42	0.27	2.8	0.91	0.86	0.22
1950	7.990220	0.9025	15.44	16.06	0.62	15.74	15.77	0.40	1.5	0.52	0.20	0.00
1396	8.061161	0.9064	14.33	16.27	1.93	15.28	15.55	...	3.2	1.27	1.33	0.81
2140	8.115697	0.9093	15.58	16.77	1.19	16.18	16.31	...	2.7	0.82	0.75	0.00
1632	8.126580	0.9099	15.63	16.19	0.56	15.85	15.95	...	1.9	0.43	0.26	0.15
1415	8.141068	0.9107	16.04	17.07	1.03	16.53	16.67	...	2.8	0.70	0.66	0.95
1785	8.148830	0.9111	14.86	16.20	1.34	15.46	15.71	...	3.7	0.86	0.98	0.00
1589	8.332986	0.9208	15.08	16.14	1.06	15.60	15.77	...	4.4	0.65	0.82	0.52
1437	8.376213	0.9230	14.46	15.54	1.08	14.98	15.15	...	3.7	0.69	0.79	0.70
1374	8.396235	0.9241	14.65	15.56	0.91	15.12	15.20	...	2.5	0.64	0.55	0.79
1338	8.493446	0.9291	15.50	16.37	0.87	15.89	16.01	...	2.1	0.64	0.45	0.50
1784	8.682741	0.9387	15.08	15.88	0.80	15.43	15.56	...	2.4	0.57	0.46	0.28
12954	8.826671	0.9458	15.87	16.56	0.69	16.21	16.28	...	2.4	0.49	0.40	0.00
1362	8.844470	0.9467	15.53	16.04	0.51	15.76	15.84	...	2.6	0.35	0.32	0.77
1411	8.849588	0.9469	14.81	16.35	1.54	15.38	15.79	...	3.6	0.99	1.11	0.95
1790	8.872721	0.9481	14.86	15.98	1.12	15.36	15.57	...	3.6	0.72	0.81	0.22
2103	8.984080	0.9535	15.24	16.30	1.06	15.68	15.70	...	...	1.06	0.46	0.00
1484	9.025906	0.9555	14.84	15.50	0.66	15.13	15.26	...	3.3	0.43	0.46	0.67
835	9.051330	0.9567	14.46	15.78	1.32	15.05	15.21	...	...	1.00	0.77	0.36
12950	9.087687	0.9584	14.98	16.49	1.51	15.62	15.74	...	...	1.32	0.65	0.00
1399	9.145282	0.9612	15.99	16.92	0.93	16.50	16.57	...	3.1	0.61	0.63	0.88
2087	9.159187	0.9619	15.44	16.22	0.78	15.73	15.78	...	...	0.78	0.28	0.00
2215	9.174396	0.9626	14.94	16.05	1.11	15.48	15.46	...	...	1.04	0.50	0.00
1486	9.189303	0.9633	15.29	16.46	1.17	15.88	16.00	...	2.7	0.81	0.74	0.79
836	9.403445	0.9733	14.81	16.12	1.31	15.45	15.64	...	3.6	0.84	0.94	0.00
1334	9.451439	0.9755	14.65	15.98	1.33	15.33	15.48	...	3.0	0.88	0.89	0.38
1569	9.525624	0.9789	14.86	16.11	1.25	15.55	15.59	...	...	0.92	0.77	0.31
1487	9.560778	0.9805	14.62	15.70	1.08	15.11	15.30	...	3.0	0.71	0.72	0.56
1768	9.808249	0.9916	15.29	15.73	0.44	15.49	15.56	...	2.7	0.30	0.28	0.03
10355	10.038246	1.0002	15.13	15.73	0.60	15.42	15.40	...	1.1	0.58	0.05	0.79
2060	10.18447	1.0079	14.35	15.27	0.92	14.80	14.89	...	2.1	0.68	0.48	0.00
818	10.33506	1.0143	14.68	15.55	0.87	15.15	15.21	...	2.7	0.60	0.55	0.50
1402	10.426007	1.0181	15.63	15.94	0.31	15.77	15.76	...	1.0	0.31	0.00	1.03
1521	10.427528	1.0182	14.75	15.61	0.86	15.09	15.12	...	...	0.86	0.00	0.43
1426	10.43885	1.0187	14.51	15.93	1.42	15.31	15.33	...	2.0	1.07	0.71	0.70
2229	10.448011	1.0190	15.15	16.18	1.03	15.67	15.60	...	...	1.03	0.41	0.00
11116	10.485807	1.0206	14.24	15.26	1.02	14.71	14.66	...	0.9	1.02	0.00	0.88
1377	10.528089	1.0223	14.21	15.43	1.22	14.90	14.84	...	1.4	1.05	0.35	0.77
1323	10.560554	1.0237	14.99	16.25	1.26	15.56	15.54	...	1.0	1.26	0.00	0.00
1363	10.676233	1.0284	14.95	15.59	0.64	15.25	15.21	...	0.9	0.64	0.00	0.79
1705	10.758125	1.0317	14.74	15.60	0.86	15.18	15.13	...	1.1	0.83	0.08	0.36
1382	10.883998	1.0368	14.72	16.29	1.57	15.64	15.51	...	1.3	1.38	0.36	0.88
2063	11.166230	1.0479	14.89	16.18	1.29	15.54	15.54	...	1.3	1.14	0.30	0.00
1471	11.192693	1.0489	14.95	15.90	0.95	15.25	15.54	...	3.2	0.63	0.66	0.67
2201	11.252644	1.0513	14.60	15.90	1.30	15.23	15.16	...	...	1.30	0.47	0.00
1630	11.401209	1.0569	14.55	15.69	1.14	15.19	15.33	...	...	0.64	0.49	0.48
2017	11.407450	1.0572	14.46	15.70	1.24	15.16	15.30	...	...	0.71	0.64	0.10
1610	11.644997	1.0661	13.89	15.35	1.46	14.62	14.75	...	...	1.06	0.55	0.31
11263	11.770245	1.0708	15.54	16.10	0.56	15.85	15.78	...	1.0	0.56	0.00	0.90
857	11.892936	1.0786	13.92	15.20	1.28	14.45	14.53	...	1.2	1.18	0.23	0.30
1682	12.149930	1.0846	14.04	15.78	1.74	14.95	14.80	...	...	1.74	0.30	0.58
856	12.155307	1.0848	14.52	15.92	1.40	15.38	15.37	...	2.7	0.97	0.88	0.00
1365	12.413262	1.0939	14.56	15.75	1.19	15.18	15.32	...	3.6	0.76	0.86	0.79
2227	12.466963	1.0958	15.38	16.43	1.05	15.89	15.98	...	1.9	0.80	0.49	0.00
2230	12.525122	1.0978	15.66	16.26	0.60	15.93	15.97	...	1.4	0.52	0.17	0.00
1553	12.543247*	1.0984	15.28	16.46	1.18	15.97	15.91	...	1.6	0.97	0.45	0.74
2052	12.57498	1.0995	13.91	15.17	1.26	14.61	14.77	...	...	0.70	0.64	0.30
1744	12.623872	1.1012	14.03	15.16	1.13	14.67	14.57	...	1.2	1.04	0.20	0.11

TABLE 4.—*Light-curve parameters for periodic variables* (*in Column 1 denotes *W* Virginis stars; in Column 2 denotes variable periods).—Continued

HV	Period	log P	M_0	m_0	A	$\langle m \rangle_0$	x_0	M-m	s	A_1	A_2	dm
1873	12.941131	1.1120	14.48	16.17	1.69	15.31	15.51	...	...	1.16	0.92	0.07
1351	13.084381	1.1167	14.00	15.29	1.29	14.81	14.64	...	1.3	1.14	0.30	0.79
2225	13.154599	1.1191	15.24	16.03	0.79	15.58	15.63	...	1.3	0.70	0.18	0.00
2202	13.182314	1.1200	14.34	15.39	1.05	14.91	14.90	...	1.6	0.86	0.40	0.00
1464	13.295751	1.1237	14.70	15.72	1.02	15.30	15.31	...	2.4	0.72	0.59	0.85
2189	13.459131	1.1290	14.50	15.80	1.30	15.06	15.26	...	2.1	0.96	0.68	0.00
827	13.465656	1.1292	14.14	15.20	1.06	14.69	14.68	...	1.4	0.91	0.31	0.36
1345	13.476726	1.1296	14.06	15.04	0.96	14.57	14.64	...	2.2	0.70	0.53	0.50
1438	13.646365	1.1350	14.32	15.84	1.52	15.20	15.04	...	1.2	1.40	0.27	0.70
1373	13.709355	1.1370	14.91	15.61	0.70	15.31	15.32	...	2.1	0.52	0.36	0.72
1326	13.7274	1.1374	14.95	15.97	1.02	15.22	15.51	...	1.7	0.82	0.42	0.00
1933	13.780938	1.1392	14.17	15.16	0.99	14.62	14.77	...	...	0.68	0.48	0.00
1454	14.068061	1.1482	14.95	16.26	1.31	15.58	15.64	...	1.5	1.10	0.43	0.85
10366	14.135674	1.1503	14.44	15.54	1.10	15.06	15.03	...	1.6	0.90	0.42	0.00
1996	14.240957	1.1535	14.94	16.48	1.54	15.77	15.85	...	2.3	1.11	0.88	0.30
1335	14.3806	1.1578	14.20	15.53	1.33	14.97	14.99	...	2.3	0.96	0.76	0.45
1386	14.428973	1.1592	14.68	16.18	1.50	15.54	15.58	...	2.5	1.05	0.90	0.88
1579	14.573011	1.1635	14.06	15.40	1.34	14.80	14.83	...	...	1.00	0.80	0.57
2088	14.578832	1.1637	14.14	16.23	2.09	15.34	15.49	...	4.0	1.30	1.56	0.00
1695	14.596196	1.1642	14.60	15.63	1.03	15.15	15.15	...	1.6	0.84	0.39	0.15
843	14.714971	1.1678	14.82	16.21	1.39	15.66	15.68	...	2.9	0.93	0.92	0.17
12901*	15.074089	1.1782	17.16	17.80	0.64	17.36	17.40	...	2.1	0.70	0.47	0.00
2233	15.172204	1.1810	14.32	15.80	1.48	15.14	15.06	...	1.3	1.30	0.34	0.00
1442	15.287481	1.1843	14.06	15.60	1.54	14.97	15.00	...	2.8	1.05	0.99	0.90
1560	15.509166	1.1906	14.27	15.46	1.19	14.84	14.97	...	2.3	0.86	0.68	0.60
12108	15.610365	1.1934	14.19	15.45	1.26	14.83	14.92	...	2.1	0.93	0.66	0.31
1481	15.651902	1.1946	14.23	15.65	1.42	15.10	14.99	...	1.6	1.16	0.54	0.85
1372	15.774115	1.1979	14.27	15.73	1.46	15.00	15.16	...	2.6	1.01	0.91	0.77
1482	15.82769	1.1994	14.48	16.25	1.77	15.66	15.44	...	1.7	1.42	0.72	0.79
1328	15.840831	1.1998	14.32	16.00	1.68	15.24	15.34	...	2.6	1.16	1.04	0.00
854	15.953034	1.2028	13.92	15.82	1.90	14.85	15.16	...	3.9	1.17	1.43	0.30
1787	16.196955	1.2094	14.30	15.52	1.22	15.10	15.08	...	3.6	0.78	0.88	0.02
1835	16.244842	1.2107	14.78	16.18	1.40	15.53	15.66	...	3.1	0.92	0.95	0.22
1333	16.289	1.2119	14.14	15.62	1.48	14.99	15.06	...	3.1	0.98	1.01	0.45
828	16.296996	1.2121	15.46	16.63	1.17	16.09	16.22	...	4.0	0.73	0.88	0.85
1533	16.435021	1.2158	15.01	16.34	1.33	15.60	15.79	...	2.2	0.97	0.73	0.60
1954	16.700904	1.2227	13.60	14.87	1.27	14.20	14.30	...	...	1.01	0.42	0.00
822	16.742006	1.2238	13.55	15.42	1.87	14.67	14.79	...	5.1	1.12	1.50	0.79
1828*	17.195722	1.2354	16.55	17.98	1.43	17.28	17.38	...	3.2	0.94	0.99	0.00
1925	17.199567	1.2355	13.61	14.81	1.20	14.27	14.27	...	1.7	0.96	0.48	0.09
1478	17.532786	1.2439	15.03	15.87	0.77	15.46	15.58	...	2.8	0.52	0.49	0.85
1342	17.938507	1.2538	13.93	14.72	0.79	14.35	14.40	...	1.6	0.57	0.30	0.50
1884	18.116598	1.2581	14.54	16.01	1.47	15.28	15.37	...	...	1.14	0.66	0.00
817	18.892520*	1.2762	13.63	15.04	1.41	14.40	14.44	...	1.9	1.06	0.52	0.00
1541	19.326884	1.2862	13.96	14.84	0.88	14.36	14.49	...	2.7	0.61	0.55	0.70
2222	19.985803	1.3007	14.27	15.70	1.43	15.10	15.17	...	3.2	0.99	0.94	0.00
1543	20.454500	1.3108	14.11	15.94	1.83	14.89	15.20	...	2.4	1.30	1.06	0.74
1522	22.14355	1.3452	14.05	15.66	1.61	14.81	15.09	...	4.0	1.00	1.21	0.70
2209	22.650006	1.3551	13.55	14.74	1.19	14.15	14.26	...	...	0.87	0.65	0.00
1430	23.97284	1.3797	13.46	14.86	1.40	14.20	14.40	...	6.5	0.81	1.18	0.70
11129	24.4757	1.3887	14.41	16.04	1.63	15.22	15.43	...	3.0	1.08	1.09	0.70
2205	25.432997	1.4054	14.28	16.12	1.84	15.43	15.53	...	6.6	1.05	1.56	0.00
847	27.057009	1.4323	13.69	15.06	1.37	14.50	14.57	...	3.8	0.86	1.01	0.02
10353	27.228396	1.4350	14.29	15.51	1.22	14.89	15.03	...	2.6	0.84	0.76	0.81
1501	27.406271	1.4379	14.15	15.56	1.41	14.69	15.03	...	3.2	0.93	0.97	0.60
819	28.443029	1.4539	13.68	15.11	1.43	14.45	14.61	...	4.1	0.89	1.09	0.79
863	28.961606	1.4618	13.58	15.65	2.07	14.86	15.08	...	6.5	1.00	1.74	0.00
1967	29.0533*	1.4631	13.70	15.00	1.30	14.27	14.49	...	2.6	0.90	0.81	0.00
12951	29.989504	1.4770	14.22	15.31	1.09	14.83	14.89	...	2.7	0.75	0.69	0.00
1451	30.063434	1.4780	13.66	15.41	1.71	14.73	14.74	...	2.7	1.18	1.08	0.85
1369	31.024	1.4916	14.11	15.08	0.97	14.53	14.66	...	1.9	0.74	0.46	0.74
823	31.925	1.5041	13.34:	15.08:	1.74	14.24:	14.51:	...	6.3	1.01	1.46	0.34
10357	32.012175	1.5053	13.28	15.13	1.85	14.37	14.56	...	11.0	1.00	1.68	0.70
1636	32.746	1.5152	13.78	14.61	0.83	14.22	14.29	...	2.8	0.56	0.53	0.36
855	32.941331	1.5177	14.04	14.73	0.69	14.33	14.47	...	3.0	0.46	0.46	0.30
840	33.039284	1.5190	13.31	14.61	1.30	13.88	14.19	...	8.2	0.75	1.14	0.17
865	33.326668	1.5228	14.07	15.59	1.52	14.99	15.09	...	6.2	0.88	1.28	0.00
2064	33.663263	1.5272	13.71	15.18	1.47	14.16	14.69	...	3.6	0.86	0.96	0.00
2231	36.67924	1.5644	14.16	15.66	1.50	15.11	15.08	...	2.8	1.02	0.96	0.00
11182	39.199	1.5933	13.86	15.07	1.21	14.44	14.55	...	2.0	0.91	0.60	0.03
2195	41.809912	1.6213	12.99	14.27	1.28	13.68	13.85	...	5.3	0.75	1.03	0.00
837	42.680324*	1.6302	13.20	14.56	1.36	13.90	14.04	...	2.8	0.92	0.87	0.00
1877	49.667	1.6961	13.34	14.56	1.22	13.97	14.11	...	3.0	0.80	0.82	0.00
824	65.798	1.8182	11.89	13.63	1.74	12.75	12.99	...	3.4	1.13	1.24	0.59
11157	68.9085	1.8383	13.18	13.90	0.82	13.53	13.52	...	1.6	0.67	0.31	0.00
834	73.589*	1.8668	12.30	13.23	0.93	12.82	12.90	...	4.1	0.58	0.71	0.17
829	88.5*	1.9469	12.24	13.16	0.85	12.68	12.80	...	2.0	0.64	0.43	0.56
206*	107.8*	2.0162	14.00	15.50	1.50	14.62	14.80	...	1.6	1.23	0.57	0.00
821	127.78	2.1065	11.73	12.65	0.92	12.15	12.17	...	1.2	0.85	0.17	0.79
1956	209.996	2.3222	11.59	12.84	1.25	12.03	12.30	...	1.9	0.95	0.59	0.30

TABLE 5.—*Frequency of period for 1155 Cepheids*

(M-m) < 0.3				(M-m) > 0.3	
Period	No. of stars	Period	No. of stars	Period	No. of stars
>1 <2	252	>11 <12	8	<1	11
2 3	232	12 13	9	>1 <2	72
3 4	183	13 14	11	2 3	39
4 5	98	14 15	9	3 4	13
5 6	57	15 16	10		
6 7	35	16 17	7		
7 8	27	17 18	4		
8 9	15	18 19	2		
9 10	12	19 20	2		
10 11	13	>20	34		

TABLE 6.—*Frequency of log P for 1155 Cepheids*

(M-m) < 0.3						(M-m) > 0.3		
log P		No. of stars	log P		No. of stars	log P		No. of stars
> 0.00 < 0.05		1	> 1.00 < 1.05		15	> -0.35 < -0.30		1
0.05	0.10	17	1.05	1.10	13	-0.30	-0.25	1
0.10	0.15	38	1.10	1.15	14	-0.25	-0.20	1
0.15	0.20	57	1.15	1.20	17	-0.15	-0.10	2
0.20	0.25	73	1.20	1.25	11	-0.10	-0.05	4
0.25	0.30	64	1.25	1.30	4	-0.05	0.00	2
0.30	0.35	55	1.30	1.35	3	0.00	0.05	5
0.35	0.40	57	1.35	1.40	3	0.05	0.10	5
0.40	0.45	65	1.40	1.45	4	0.10	0.15	10
0.45	0.50	98	1.45	1.50	6	0.15	0.20	11
0.50	0.55	75	1.50	1.55	7	0.20	0.25	11
0.55	0.60	66	1.55	1.60	2	0.25	0.30	29
0.60	0.65	45	1.60	1.65	2	0.30	0.35	13
0.65	0.70	55	1.65	1.70	1	0.35	0.40	12
0.70	0.75	34	1.80	1.85	2	0.40	0.45	6
0.75	0.80	35	1.85	1.90	1	0.45	0.50	15
0.80	0.85	24	1.90	1.95	1	0.50	0.55	6
0.85	0.90	23	2.00	2.05	1	0.55	0.60	1
0.90	0.95	16	2.10	2.15	1			
0.95	1.00	13	2.30	2.35	1			

TABLE 7.—*Numbers of Cepheids within given intervals of period*

Period (days)	This paper	Shapley and Nail (1955)	Ratio
< 2	324	160	2.03
> 2 < 3	271	144	1.88
> 3 < 4	196	102	1.92
> 4 < 5	98	57	1.72
< 5	889	463	1.92
> 5 < 10	146	106*	1.38
> 10 < 20	75	62*	1.21
> 20	34	33*	1.03

TABLE 8.—*Frequency of* $\langle m_o \rangle$ *for 1151 Cepheid variables*

Magnitude limits	No. of stars	Magnitude limits	No. of stars	Magnitude limits	No. of stars
12.00-12.19	2	14.80-14.99	20	16.80-16.99	130
12.60-12.19	2	15.00-15.19	21	17.00-17.19	152
12.80-12.99	1	15.20-15.39	27	17.20-17.39	88
13.40-13.59	1	15.40-15.59	28	17.40-17.59	43
13.60-13.79	1	15.60-15.79	42	17.60-17.79	16
13.80-13.99	3	15.80-15.99	50	17.80-17.99	7
14.00-14.19	2	16.00-16.19	83	18.00-18.19	2
14.20-14.39	10	16.20-16.37	117	18.20-18.39	1
14.40-14.59	7	16.40-16.59	147	18.40-18.49	1
14.60-14.79	10	16.60-16.79	147		

TABLE 9.—*Least-squares solutions for the period-luminosity relation*

Solution no.	Selection	No. of stars	Solutions for $\langle m \rangle_0$		Solutions for x_0	
			Zero point	Slope	Zero point	Slope
1	$P > 1^d$	1139	17.52 ± 0.01	-2.03 ± 0.02	17.52 ± 0.01	-1.95 ± 0.02
2	$P > 1^d$, (M-m) < 0.3	986	17.63 ± 0.01	-2.13 ± 0.02	17.63 ± 0.01	-2.04 ± 0.02
3	$P > 1^d < 5^d$, (M-m) > 0.3	147	17.12 ± 0.03	-1.94 ± 0.06	17.15 ± 0.03	-1.94 ± 0.06
4	$P > 1^d < 8^d$	1005	17.43 ± 0.02	-1.79 ± 0.04	17.43 ± 0.02	-1.72 ± 0.04
5	$P > 3^d < 8^d$	502	17.58 ± 0.04	-2.03 ± 0.06	17.54 ± 0.04	-1.88 ± 0.06
6	$P > 8^d$	133	17.67 ± 0.13	-2.20 ± 0.11	17.68 ± 0.13	-2.14 ± 0.10
7	$P > 16^d$	47	18.81 ± 0.28	-2.98 ± 0.19	18.88 ± 0.29	-2.94 ± 0.19
8	$A > 1^m.25$	313	17.58 ± 0.03	-2.12 ± 0.04	17.56 ± 0.03	-2.01 ± 0.04

TABLE 10.—*Frequency of residuals from the period-luminosity curve*

Limits		Sol. 2 $\langle m \rangle_0$	Sol. 2 $\langle x \rangle_0$	Sol. 5 $\langle m \rangle_0$	Sol. 8 $\langle m \rangle_0$	Greater than	Sol. 2 $\langle m \rangle_0$	Sol. 2 x_0	Sol. 5 $\langle m \rangle_0$	Sol. 8 $\langle m \rangle_0$
	>+1.5	0.0	0.0	0.2	0.0	+1.5	0.0	0.0	0.2	0.0
<±1.5	>±1.4	0.1	0.0	0.0	0.0	+1.4	0.1	0.0	0.2	0.0
+1.4	+1.3	0.0	0.0	0.0	0.0	+1.3	0.1	0.0	0.2	0.0
+1.3	+1.2	0.0	0.1	0.2	0.0	+1.2	0.1	0.1	0.4	0.0
+1.2	+1.1	0.0	0.0	0.0	0.0	+1.1	0.1	0.1	0.4	0.0
+1.1	+1.0	0.1	0.0	0.0	0.0	+1.0	0.2	0.1	0.4	0.0
+1.0	+0.9	0.0	0.2	0.0	0.0	+0.9	0.2	0.3	0.4	0.0
+0.9	+0.8	0.3	0.5	0.0	0.3	+0.8	0.5	0.8	0.4	0.3
+0.8	+0.7	0.7	0.9	1.0	1.0	+0.7	1.2	1.7	1.4	1.3
+0.7	+0.6	1.6	1.7	2.4	2.9	+0.6	2.8	3.4	3.8	4.2
+0.6	+0.5	3.4	3.2	2.2	3.2	+0.5	6.2	6.6	6.0	7.4
+0.5	+0.4	4.7	4.1	5.2	4.2	+0.4	10.9	10.7	11.2	11.6
+0.4	+0.3	6.4	7.4	5.8	8.3	+0.3	17.3	18.1	17.0	19.9
+0.3	+0.2	9.9	8.3	9.2	4.8	+0.2	27.2	26.4	26.2	24.7
+0.2	+0.1	10.2	12.8	10.8	11.5	+0.1	37.4	39.2	37.0	36.2
+0.1	0.0	11.7	10.8	11.3	14.0	0.0	49.1	50.0	48.3	50.2
0.0	-0.1	13.1	12.7	13.5	11.8	-0.1	62.2	62.7	61.8	62.0
-0.1	-0.2	12.2	10.7	11.7	13.1	-0.2	74.4	73.4	73.5	75.1
-0.2	-0.3	7.6	8.4	8.0	8.9	-0.3	82.0	81.8	81.5	84.0
-0.3	-0.4	6.7	7.4	7.4	5.1	-0.4	88.7	89.2	88.7	89.1
-0.4	-0.5	3.6	4.2	4.2	4.5	-0.5	92.6	93.4	93.1	93.6
-0.5	-0.6	3.3	2.6	3.6	2.2	-0.6	95.9	96.0	96.7	95.8
-0.6	-0.7	2.5	2.2	2.8	2.2	-0.7	98.4	98.2	99.5	98.0
-0.7	-0.8	0.7	0.9	0.4	0.3	-0.8	99.1	99.1	99.9	98.3
-0.8	-0.9	0.3	0.5	0.2	1.0	-0.9	99.4	99.6	100.1	99.3
-0.9	-1.0	0.4	0.2	0.0	0.6	-1.0	99.8	99.8		99.9
-1.0	-1.1	0.1	0.2	0.0	0.0	-1.1	99.9	100.0		
-1.1	-1.2	0.1	0.0	0.0	0.0	-1.2	100.0			

TABLE 11.—*Test for constancy of period*

HV	Period (Harvard)	Period (Arp)	Difference (H - A)	x_1	x_2	y
11197	1.073493	1.0736	-0.00011	-0.0000029	-0.0000057	+0.0000000011
	±0.000004	±0.0002	±0.0002	±0.0000035	±0.0000046	±0.0000000011
2022	1.308877	1.3090	-0.00012	-0.0000022	-0.0000043	-0.0000000012
	4	5	5	27	63	11
2019	1.629511	1.6303	-0.00079	+0.0000041	+0.0000061	-0.0000000009
	2	4	4	13	21	7
2035	1.979418	1.9800	-0.00058	-0.0000027	-0.0000032	+0.0000000002
	6	9	9	28	56	2
11199	2.095233	2.0952	+0.000033	+0.00000053	+0.0000015	+0.0000000020
	7	9	9	32	33	12
848	2.172770	2.178	-0.0052	+0.0000016	+0.0000027	+0.0000000007
	2	1	1	11	13	4
2014	2.203742	2.2028	-0.00094	+0.0000048	+0.0000036	+0.0000000026
	6	8	8	27	26	11
844	2.217580	2.219	-0.0014	-0.0000016	-0.0000035	+0.0000000011
	3	1	1	13	15	5
2002	2.346362	2.345	+0.0014	-0.0000027	-0.0000054	+0.0000000010
	6	1	1	27	45	13
11192	2.354104	2.3543	-0.00020	-0.0000054	+0.000014	-0.0000000074
	7	7	7	30	6	21
2021	2.489228	2.4875	+0.0017	-0.0000034	-0.0000095	+0.0000000029
	8	10	10	34	63	25
850	2.532543	2.5350	-0.0025	-0.0000013	-0.0000033	+0.0000000012
	4	7	7	16	19	6
2046	2.557713	2.554	+0.0037	-0.00000087	+0.0000038	+0.0000000029
	7	1	1	28	50	26
1923	2.566228	2.564	+0.0022	-0.0000028	+0.000029	+0.000000013
	12	1	1	46	9	4
1981	2.722555	2.724	-0.0014	+0.000020	+0.000019	+0.0000000003
	10	1	1	4	15	42
1850	2.755618	2.760	-0.0044	-0.0000058	-0.0000040	+0.0000000032
	8	2	2	30	30	14
2049	2.800893	2.800	+0.00089	-0.0000013	-0.0000012	-0.0000000016
	9	2	2	33	33	16
1809	2.825761	2.825	+0.00076	-0.000011	-0.000011	+0.0000000003
	9	2	2	3	3	23
2000	2.884008	2.880	+0.0041	+0.0000018	+0.0000018	-0.0000000003
	7	2	2	23	23	10
1974	2.893108	2.896	-0.0029	-0.000016	-0.000016	-0.0000000019
	6	1	1	2	2	9
2027	2.982519	2.984	-0.0015	+0.0000048	+0.0000098	+0.0000000045
	5	2	2	18	19	10

TABLE 11.—*Test for constancy of period.*—Continued

HV	Period (Harvard)	Period (Arp)	Difference (H - A)	x_1	x_2	y
1898	3.018713 10	3.021 1	-0.0029 1	-0.0000074 32	-0.000012 3	-0.0000000086 15
1987	3.130851 10	3.130 1	+0.00085 1	-0.000016 3	-0.000012 4	-0.0000000037 14
11206	3.399471 19	3.400 2	-0.00053 2	+0.000016 6	+0.000021 5	-0.000000081 32
1891	3.451489 9	3.451 2	+0.00049 2	-0.0000026 27	-0.0000020 28	+0.0000000018 18
1793	4.181441 18	4.180 4	+0.0014 4	+0.0000088 44	+0.000013 5	+0.0000000075 38
1994	4.213400 23	4.217 3	-0.0036 3	-0.000019 6	-0.000034 11	+0.000000012 8
1825	4.260377 36	4.265 3	-0.0046 3	-0.000025 8	-0.000026 13	+0.0000000017 11
1966	4.269964 24	4.270 2	-0.000006 2	-0.0000069 55	-0.000018 12	+0.0000000095 88
1785	4.729944 71	4.725 3	+0.0049 3	-0.0000081 15	-0.000020 30	+0.000000017 36
1934	4.874815 62	4.885 3	+0.0098 3	+0.000027 13	+0.000078 29	-0.000000043 22
1827	4.921478 97	4.924 2	-0.0025 2	+0.000080 20	-0.0000091 64	+0.000000048 33
1903	5.094892 63	5.091 4	+0.0039 4	+0.0000099 48	+0.0000084 41	-0.000000014 3
1929	5.584440 63	5.579 7	+0.0054 7	+0.0000062 11	+0.000035 27	-0.000000029 25
1892	5.653194 50	5.660 5	-0.0068 5	-0.000018 9	-0.000014 12	+0.000000043 99
1858	6.111834 38	6.120 7	-0.0082 7	-0.000014 6	-0.000012 10	+0.0000000008 30
11193	6.427066 166	6.440 8	-0.0129 8	+0.000027 26	+0.000025 28	+0.000000076 30
1945	6.468724 124	6.465 5	+0.0037 5	+0.000030 19	+0.000033 22	+0.0000000048 20
1855	6.839898 41	6.830 6	+0.0099 6	+0.0000095 61	+0.000012 9	+0.0000000014 35
1905	7.416802 88	7.413 10	+0.0038 10	-0.000028 12	-0.000029 10	+0.000000055 13
1950	7.990220 162	7.980 1	+0.010 1	+0.0000029 20	+0.0000050 21	-0.000000014 27
1768	9.808249 20	9.798 1	+0.010 1	+0.0000044 20	-0.000031 27	-0.000000031 16

TABLE 11.—*Test for constancy of period.*—Continued

HV	Period (Harvard)	Period (Arp)	Difference (H - A)	x_1	x_2	y
2060	10.18447	10.21	-0.026	-0.00015	+0.000043	-0.00000039
	32	1	1	3	94	18
2063	11.166230	11.18	-0.014	-0.000079	-0.000059	-0.000000070
	25	2	2	23	53	12
2017	11.407450	11.43	-0.022	+0.000020	+0.000042	-0.000000043
	19	2	2	16	34	58
1744	12.623872	12.59	+0.034	-0.000056	-0.000048	-0.000000083
	20	3	3	16	15	31
1873	12.941131	12.91	+0.031	-0.000024	-0.000016	+0.00000011
	17	2	2	13	12	3
1933	13.780938	13.76	+0.021	-0.0000020	-0.0000012	+0.000000012
	24	4	4	18	18	45
1695	14.596196	14.50	+0.096	-0.0000033	-0.000083	-0.000000079
	22	5	5	15	19	14
843	14.714971	14.70	+0.015	+0.000025	+0.000026	+0.000000029
	32	2	2	22	23	58
1787	16.196955	16.22	-0.023	-0.000087	+0.00024	-0.00000089
	68	4	4	42	17	45
1954	16.700904	16.71	-0.0091	-0.000065	+0.00010	-0.00000063
	58	2	2	35	5	17
1925	17.199567	17.18	+0.020	-0.00014	-0.00021	+0.00000021
	71	7	7	4	9	29
1884	18.116598	18.11	+0.0066	-0.000038	-0.000096	-0.00000042
	48	4	4	26	24	3
817	18.892520	--	--	+0.00040	+0.00022	+0.00000086
	83			4	5	17
2222	19.985803	--	--	-0.000058	-0.000056	+0.0000000051
	65			32	53	16
1543	20.454500	--	--	-0.000097	-0.00071	-0.0000013
	10			50	14	3
1522	22.14355	--	--	+0.000025	+0.0000058	-0.000000026
	43			20	32	35
2209	22.650006	--	--	+0.000041	-0.000042	+0.00000039
	64			28	36	16
1430	23.97284	--	--	+0.000018	+0.000045	-0.00000028
	10			42	44	16
11129	24.4757	--	--	+0.00026	+0.00025	+0.00000017
	11			4	5	22
2205	25.432997	--	--	-0.000027	-0.000027	+0.00000019
	86			34	34	15
847	27.057009	27.2	-0.143	-0.000029	-0.000066	-0.000000067
	78	1	1	29	46	66

797-819 O—66——13

TABLE 11.—*Test for constancy of period.*—Continued

HV	Period (Harvard)	Period (Arp)	Difference (H - A)	x_1	x_2	y
10353	27.228396 10	--	--	-0.000075 38	-0.000056 48	+0.00000017 24
1501	27.406271 11	--	--	+0.00012 4	+0.00011 4	+0.00000036 19
819	28.443029 84	--	--	+0.000029 30	+0.000069 42	+0.000000088 66
863	28.961606 11	--	--	+0.000054 39	-0.000032 46	-0.00000075 25
1967	29.040221 61	29.1 1	-0.059 1	-0.0010 2	-0.0010 2	-0.0000022 11
1451	30.063434 11	--	--	+0.00011 4	+0.00010 4	-0.000000033 18
1369	31.023 3	--	--	-0.00028 11	-0.000028 18	-0.0000022 12
823	31.925 1	--	--	+0.000014 31	+0.000048 50	-0.00000014 9
10357	32.012175 14	--	--	+0.00019 4	+0.00018 5	+0.00000026 28
1636	32.746 23	--	--	-0.000027 70	-0.00022 13	-0.00000035 21
855	32.941331 31	--	--	+0.00025 10	+0.00032 27	-0.00000039 15
840	33.039284 19	33.1 2	-0.061 2	+0.00014 6	+0.00013 6	+0.00000054 30
865	33.326668 13	--	--	-0.000068 39	+0.0011 1	+0.0000013 6
2064	33.663223 35	33.7 3	-0.037 3	+0.00000064 10	+0.00013 18	-0.0000014 15
2231	36.67924 23	--	--	+0.000011 64	+0.000022 67	-0.00000037 50
11182	39.199 21	39.6 2	-0.401 2	+0.000047 54	+0.00013 8	+0.00000023 16
2195	41.809912 17	--	--	-0.000059 40	-0.000064 44	-0.00000010 35
837	42.680324 79	42.6 4	+0.080 4	-0.0000090 18	-0.046 10	+0.00023 6
1877	49.667 15	49.5 3	+0.167 3	-0.00040 29	-0.00066 33	+0.000012 7
824	65.798 7	--	--	+0.000057 11	+0.0000001 13	+0.0000013 19
11157	68.9085 95	--	--	+0.00030 14	+0.00024 14	+0.0000018 14
834	73.589 11	--	--	-0.00015 15	-0.00044 13	+0.000010 20
829	87.627059 45	--	--	+0.00029 51	+0.012 8	-0.00064 14
821	127.78 44	--	--	-0.0032 8	-0.00020 21	-0.000057 36

TABLE 12.—*HV 2019*
(P=1.629511; P′=1.629518±0.000002; P_A=1.6303±0.0004)

Maximum	Epochs		
	P	P′	P_A
21815.779	-0.032	-0.032	-0.033
23347.528	939.973	939.988	939.518
23596.901	1093.009	1093.023	1092.479
23974.863	1324.957	1324.970	1324.315
24504.568	1650.027	1650.038	1649.228
25881.416	2494.972	2494.980	2493.764
26313.268	2759.992	2759.998	2758.656
26567.522	2916.022	2916.028	2914.611
26598.466	2935.012	2935.017	2933.591
26981.369	3169.993	3169.997	3168.458
27680.449	3599.005	3599.006	2597.262
28477.315	4088.026	4088.026	4086.047
29808.570	4904.992	4904.988	4902.618
29839.571	4924.017	4924.012	4921.633
29870.495	4942.994	4942.990	4940.602
29906.327	4964.984	4964.979	4962.580
29927.538	4978.000	4977.996	4975.591
30507.635	5333.995	5333.988	5331.413
30659.244	5427.035	5427.028	5424.408
31589.631	5997.995	5997.986	5995.092
31998.632	6248.991	6248.980	6245.967
32034.503	6271.005	6270.996	6267.970
32800.380	6741.009	6740.996	6737.746
33160.533	6962.028	6962.016	6958.658
35518.366*	8408.985	8408.964	8404.915
35658.479*	8494.970	8494.948	8490.586

*Maximum from Arp (1960a).

TABLE 13.—*HV 848*
(P=2.172770±0.000002; P_A=2.178±0.001)

Maximum	Epochs	
	P	P_A
13861.607	0.039	0.039
14604.612	342.000	341.180
16755.544	1331.958	1328.752
16755.628	1331.988	1328.791
21813.786	3659.965	3651.178
24025.729	4677.995	4666.763
24440.733	4868.997	4857.307
25944.340	5561.020	5547.688
26626.464	5874.962	5860.857
27341.376	6203.995	6189.099
28034.526	6523.011	6507.350
28045.406	6528.019	6512.346
28373.456	6679.001	6662.965
29468.565	7183.016	7165.771
29542.397	7216.997	7199.670
29566.245	7227.973	7210.619
29870.451	7367.981	7350.291
29870.495	7368.001	7350.311
30344.270	7586.053	7567.839
30648.337	7725.997	7707.448
30659.244	7731.017	7712.455
31291.478	8021.997	8002.737
31669.540	8195.997	8176.320
32508.261	8582.012	8561.407
32860.256	8744.015	8723.021
33129.642	8867.998	8846.706
34685.312	9583.982	9560.972
34685.415	9584.030	9561.019
35452.559*	9937.102	9913.244
35476.401*	9948.075	9924.190

*Maximum from Arp (1960a).

TABLE 14.—*HV 2021*
(P=2.489228±0.000008; P_A=2.4875±0.0010)

Maximum	Epochs	
	P	P_A
23343.558	-0.011	-0.011
23704.772	145.100	145.200
23965.832	249.976	250.149
24025.729	274.038	274.228
24331.824	397.006	397.282
24468.688	451.988	452.302
24824.624	594.979	595.392
26313.268	1193.013	1193.842
26328.373	1199.082	1199.914
26559.611	1291.977	1292.874
26564.625	1293.991	1294.890
26594.456	1305.975	1306.882
26945.391	1446.957	1447.962
27341.376	1606.036	1607.152
27749.451	1769.973	1771.202
27779.315	1781.970	1783.207
29108.594	2315.983	2317.591
29454.660	2455.008	2456.713
29484.460	2466.980	2468.693
29514.379	2478.999	2480.721
29554.242	2495.013	2496.746
29780.631	2585.960	2587.756
29927.486	2644.957	2646.794
29927.538	2644.978	2646.815
30507.635	2878.021	2880.019
31321.524	3204.985	3207.211
31416.257	3243.042	3245.294
31642.644	3333.989	3336.304
31657.596	3339.996	3342.315
31702.459	3358.019	3360.351
32790.387	3795.073	3797.708
34684.405	4555.959	4559.123
34689.458	4557.989	4561.154
35458.521*	4866.945	4870.325
35518.366*	4890.987	4894.383

*Maximum from Arp (1960a).

TABLE 15.—*HV 1923*

(P=2.566228; P′=2.566221±0.000012; P_A=2.564±0.001)

Maximum	Epochs		
	P	P′	P_A
23595.881	0.024	0.019	0.018
23667.803	28.050	28.045	28.069
26308.461	1057.054	1057.051	1057.968
26567.562	1158.004	1158.002	1159.006
26626.464	1180.973	1180.970	1181.994
27750.478	1618.975	1618.970	1620.377
27786.361	1632.958	1632.957	1634.372
28040.467	1731.977	1731.976	1733.478
28371.501	1860.973	1860.973	1862.586
29585.264	2333.949	2333.950	2335.973
29808.570	2420.966	2420.967	2423.066
29826.594	2427.990	2427.990	2430.096
29906.234	2459.024	2459.024	2461.157
30578.503	2720.991	2720.993	2723.352
31589.631	3115.005	3115.007	3117.709
31697.371	3156.988	3156.991	3159.729
31782.262	3190.069	3190.071	3192.838
32136.259	3328.013	3328.016	3330.902
32462.292	3455.061	3455.064	3458.060
32508.261	3472.974	3472.977	3475.989
32880.399	3617.987	3617.991	3621.129
33211.448	3746.989	3746.994	3750.243
35431.397*	4612.052	4612.059	4616.059
35449.371*	4619.057	4619.063	4623.069
35636.516*	4691.983	4691.989	4696.058

*Maximum from Arp (1960a).

TABLE 16.—*HV 2046*

(P=2.557713±0.000007; P_A=2.554±0.001)

Maximum	Epochs	
	P	P_A
23320.599	-0.001	-0.001
23596.901	108.026	108.193
24077.656	295.989	296.430
24417.779	428.968	429.602
26341.281	1181.007	1182.736
26594.456	1279.992	1281.865
26929.624	1411.034	1413.098
27658.416	1695.973	1698.451
27694.363	1710.027	1712.526
27786.361	1745.996	1748.547
28845.285	2160.007	2163.161
29791.623	2530.001	2533.693
29809.528	2538.001	2540.704
29927.236	2583.021	2586.792
30548.613	2826.974	2830.088
31290.495	3116.021	3120.566
31436.285	3173.021	3177.649
31589.631	3233.975	3237.691
32060.374	3417.024	3422.007
32441.361	3566.980	3571.180
32817.346	3713.980	3718.394
35426.569*	4733.118	4740.017
35518.366*	4769.009	4775.960
35656.473*	4823.005	4830.034

*Maximum from Arp (1960a).

TABLE 17.—*HV 1850*

(P=2.755618±0.000008; P_A=2.760±0.002)

Maximum	Epochs	
	P	P_A
16760.780	-0.013	-0.013
23732.610	2530.030	2526.014
24418.737	2779.022	2774.610
26303.401	3462.957	3457.460
26328.373	3472.019	3466.508
26331.335	3473.094	3467.581
26573.519	3560.981	3555.329
26598.466	3570.034	3564.368
26689.282	3602.991	3597.272
27783.280	3999.997	3993.648
29566.245	4647.026	4639.650
29808.570	4734.965	4727.449
29902.361	4769.001	4761.432
29938.243	4782.023	4774.432
31321.524	5284.008	5275.621
31379.370	5305.000	5296.580
31704.450	5422.970	5414.363
32462.292	5697.987	5688.943
32509.259	5715.032	5705.960
32845.241	5836.961	5827.696
32878.305	5848.956	5839.673
32878.349	5848.972	5839.689
32878.396	5848.990	5839.706
34300.306	6364.994	6354.891
35449.371*	6781.983	6771.219
35603.649*	6837.970	6827.117

*Maximum from Arp (1960a).

TABLE 18.—*HV 2000*
($P=2.884088\pm0.000002$; $P_A=2.880\pm0.002$)

Maximum	Epochs	
	P	P_A
13860.564	-0.010	-0.009
23340.586	3286.998	3291.663
23340.676	3287.030	3291.694
23605.845	3378.972	3383.766
23654.886	3395.976	3400.795
24433.677	3666.006	3671.208
25881.416	4167.980	4173.895
26331.335	4323.981	4330.117
26334.320	4325.016	4331.153
26547.584	4398.961	4405.203
27727.294	4808.002	4814.824
27756.256	4818.034	4824.881
28373.456	5032.045	5039.181
29867.456	5550.060	5557.936
31107.309	5979.954	5988.440
31274.639	6037.973	6046.541
31626.627	6160.017	6168.759
31675.572	6176.988	6185.753
31701.458	6185.964	6194.742
31704.450	6187.001	6195.781
31782.262	6213.981	6222.699
31998.632	6289.003	6299.927
32056.390	6309.029	6317.982
32800.380	6566.993	6576.312
32849.404	6583.991	6593.334
32852.298	6584.994	6594.339
32852.392	6585.027	6594.371
32878.257	6593.995	6603.352
32878.396	6594.043	6603.400
35603.649*	7538.970	7549.668
35658.479*	7557.981	7568.706

*Maximum from Arp (1960a).

TABLE 19.—*HV 1974*
(P=2.893108; P′=2.893058±0.000006; P_A=2.896±0.001)

Maximum	Epochs		
	P	P′	P_A
16787.589	0.067	-0.012	-0.014
24763.720	2757.005	2756.978	2754.178
25909.380	3153.001	3152.981	3149.779
27697.456	3771.048	3771.038	3767.209
27746.529	3788.010	3788.000	3784.153
28371.501	4004.031	4004.025	3999.950
28776.476	4144.010	4144.007	4139.798
29566.245	4416.993	4416.994	4412.509
30619.350	4780.998	4781.005	4776.150
30648.240	4790.984	4790.991	4786.126
30648.337	4791.017	4971.025	4786.159
31108.274	4949.994	4950.004	4944.977
31669.540	5143.995	5144.009	5138.785
32135.248	5304.966	5304.983	5299.596
33211.448	5676.954	5676.977	5671.212
34299.274	6052.960	6052.990	6046.843
34299.297	6052.968	6052.998	6046.850
35427.577*	6442.957	6442.993	6436.450
35517.365*	6473.992	6474.029	6467.454

*Maximum from Arp (1960a).

TABLE 20.—*HV 1994*
(P=4.213400; P′=4.213321±0.000023; P_A=4.217±0.003)

Maximum	Epochs		
	P	P′	P_A
23287.716	-0.036	-0.060	-0.059
23338.634	12.049	12.025	12.015
23751.559	110.052	110.025	109.934
23974.863	163.050	163.030	162.887
24391.838	262.014	261.995	261.766
24745.830	346.030	346.012	345.710
24821.586	364.010	363.992	363.675
26309.385	717.121	717.109	716.484
26561.629	776.988	776.977	776.300
26949.367	869.013	869.004	868.240
28040.467	1127.972	1127.968	1126.984
28078.342	1136.962	1136.957	1135.966
28373.456	1207.003	1207.000	1205.947
29780.630	1540.979	1540.981	1539.638
29839.571	1554.968	1554.970	1553.613
29877.448	1564.958	1564.960	1562.597
29928.242	1576.013	1576.016	1574.642
29928.283	1576.023	1576.026	1574.651
30547.583	1723.006	1723.011	1721.509
30619.350	1740.039	1740.042	1738.528
31436.285	1934.929	1934.938	1932.251
31655.524	1985.963	1985.972	1984.241
32013.653	2070.960	2070.971	2069.166
32797.374	2256.967	2256.981	2255.013
32818.369	2261.950	2261.964	2259.992
32852.254	2269.992	2270.007	2268.027
32852.298	2270.003	2270.017	2268.038
32852.341	2270.013	2270.027	2268.048
32852.392	2270.025	2270.039	2268.060
33172.348	2345.963	2345.978	2343.933
34689.458	2706.031	2706.052	2703.693
35426.569*	2880.975	2881.000	2878.487
35603.649*	2923.003	2923.028	2920.479
35658.479*	2936.016	2936.042	2933.481

*Maximum from Arp (1960a).

TABLE 21.—*HV 1825*
(P=4.260377; P′=4.260272±0.00004; P_A=4.265±0.003)

Maximum	Epochs		
	P	P′	P_A
21815.779	-0.022	-0.053	-0.063
23315.640	352.026	351.995	351.605
24363.898	598.074	598.050	597.387
24461.641	621.013	620.993	620.305
24815.593	704.097	704.075	703.295
25944.340	969.037	969.022	967.949
26319.275	1057.042	1057.029	1055.858
26566.612	1115.098	1115.086	1113.851
27341.376	1296.951	1296.944	1295.507
27746.441	1392.028	1392.024	1390.482
27750.391	1392.956	1392.951	1391.408
27750.478	1392.976	1392.971	1391.428
27980.658	1447.008	1447.001	1445.398
28078.342	1469.932	1469.930	1468.302
28372.470	1538.970	1538.970	1537.265
28845.285	1649.950	1649.952	1648.124
29484.460	1799.978	1799.986	1797.990
29514.379	1807.001	1807.007	1805.005
29902.361	1898.068	1898.076	1895.974
29906.327	1898.999	1899.007	1896.904
29927.402	1903.946	1903.954	1901.845
29927.486	1903.965	1903.974	1901.865
29927.538	1903.978	1903.986	1901.877
31397.251	2248.942	2248.978	2246.476
31610.648	2299.039	2299.058	2296.511
31734.237	2328.048	2328.067	2325.488
31976.647	2384.947	2384.967	2382.325
32509.259	2509.962	2509.986	2507.205
32790.387	2575.948	2575.974	2573.121
32833.309	2586.023	2586.049	2583.184
35636.516*	3243.995	3244.037	3240.444
35657.494*	3248.919	3248.942	3245.363

*Maximum from Arp (1960a).

TABLE 22.—*HV 1785*
(P=4.729944; P′=4.729906±0.00007; P_A=4.725±0.003)

Maximum		Epochs	
	P	P′	P_A
23341.689	-0.021	-0.031	-0.031
24065.748	153.059	153.051	153.209
24462.659	236.974	236.966	237.211
24798.666	308.012	308.005	308.324
26501.621	668.049	668.045	668.737
27783.280	939.016	939.015	939.987
29542.397	1310.927	1310.929	1312.287
29826.594	1371.012	1371.014	1372.434
29869.462	1380.075	1380.078	1381.507
29878.453	1381.976	1381.978	1383.410
29897.228	1385.945	1385.948	1387.383
29911.283	1388.917	1388.919	1390.358
31416.257	1707.097	1707.102	1708.870
31680.531	1762.969	1762.976	1764.802
31699.454	1766.970	1766.976	1768.806
31704.450	1768.026	1768.033	1769.864
35426.569*	2554.953	2554.967	2557.619
35634.618*	2598.938	2598.953	2601.645

*Maximum from Arp (1960a).

TABLE 23.—*HV 1934*
(P=4.874815; P′=4.874945±0.000062; P_A=4.885±0.003)

Maximum	Epochs		
	P	P′	P_A
23340.586	-0.083	-0.051	-0.062
26309.385	608.925	608.941	607.675
26329.300	613.010	613.027	611.751
26504.653	648.981	648.997	647.648
26563.608	661.075	661.090	659.716
26626.464	673.969	673.984	672.583
28040.467	964.032	964.040	962.041
28371.501	1031.933	1031.945	1029.806
28376.572	1032.979	1032.986	1030.844
29839.571	1333.093	1333.092	1330.332
29843.597	1333.919	1333.918	1331.156
29868.460	1339.019	1339.018	1336.246
29897.452	1344.967	1344.965	1342.181
30507.635	1470.137	1470.133	1467.090
30560.614	1481.005	1481.000	1477.935
30648.240	1498.980	1498.975	1495.873
30648.337	1499.000	1498.995	1495.893
31345.385	1641.990	1641.981	1638.584
31701.458	1715.033	1715.041	1711.745
32003.648	1777.023	1777.011	1773.336
32037.601	1783.988	1783.976	1780.268
32052.381	1787.020	1787.008	1783.312
32135.248	1804.019	1804.007	1800.275
32793.394	1939.029	1939.013	1935.003
32822.403	1944.979	1944.963	1940.941
33563.346	2096.973	2096.954	2092.618
35518.366*	2498.019	2497.989	2492.827
35635.594*	2522.066	2522.036	2516.824

*Maximum from Arp (1960a).

TABLE 24.—*HV 1892*
(P=5.653194; P′=5.653095±0.00005; P_A=5.660±0.005)

Maximum	Epochs		
	P	P′	P_A
13860.564	-0.010	-0.017	-0.017
16727.653	507.152	507.153	506.534
16755.544	512.086	512.087	511.462
16760.531	512.968	512.969	512.343
16760.697	512.998	512.999	512.372
23595.881	1722.080	1722.102	1719.999
25890.396	2127.959	2127.988	2125.389
26303.401	2201.016	2201.046	2198.358
26331.335	2205.943	2205.987	2203.294
26512.623	2238.025	2238.056	2235.323
26568.576	2247.912	2247.954	2245.209
26981.369	2320.942	2320.974	2318.140
27327.470	2382.165	2382.197	2379.289
27722.387	2452.022	2452.056	2449.062
27750.391	2456.925	2457.010	2454.010
28372.470	2567.016	2567.052	2563.917
29135.403	2701.928	2702.010	2698.711
29519.364	2769.909	2769.930	2766.548
29813.648	2821.947	2821.987	2818.542
29870.451	2831.995	2832.036	2828.577
29926.283	2841.871	2841.912	2838.442
29927.236	2842.040	2842.080	2838.610
29938.412	2844.017	2844.057	2840.585
30560.614	2954.079	2954.121	2950.514
31436.285	3108.977	3109.022	3105.226
31639.636	3144.948	3144.994	3141.154
31701.458	3155.884	3155.930	3152.076
32793.394	3349.037	3349.087	3344.997
32804.452	3350.993	3351.043	3346.951
33104.622	3404.091	3404.141	3399.984
33211.448	3422.997	3423.038	3418.858
35636.516*	3851.960	3852.018	3847.314

*Maximum from Arp (1960a).

TABLE 25.—*HV 1858*
($P=6.111834\pm0.00004$; $P_A=6.120\pm0.007$)

Maximum	Epochs	
	P	P_A
16759.606	0.072	0.073
23341.590	1076.997	1075.562
23341.689	1077.013	1075.579
23732.610	1140.974	1139.455
24025.729	1188.934	1187.350
26177.587	1541.014	1538.962
26189.516	1542.966	1540.911
26330.284	1565.998	1563.912
26501.621	1594.032	1591.908
26568.516	1604.977	1602.839
26605.579	1611.041	1608.895
27650.633	1782.030	1779.656
27651.625	1782.192	1779.818
27980.658	1836.027	1833.582
28078.342	1852.010	1849.543
28371.501	1899.976	1897.445
29494.460	2082.076	2079.301
29526.370	2088.932	2086.149
29575.253	2096.930	2094.137
29813.648	2135.936	2133.090
29826.594	2138.054	2135.206
30700.279	2281.004	2277.965
30700.335	2281.013	2277.974
31610.648	2429.955	2426.718
31702.459	2444.977	2441.720
31739.356	2451.014	2447.749
31757.240	2453.940	2450.671
31800.288	2460.984	2457.705
32142.259	2516.936	2513.583
32503.365	2576.019	2572.587
32509.259	2576.983	2573.550
32509.348	2576.998	2573.565
32845.299	2631.965	2628.459
33071.620	2668.995	2665.440
34685.368	2933.032	2929.124
35504.316*	3067.026	3062.940
35656.473*	3091.921	3087.802
35657.494*	3092.088	3087.969

*Maximum from Arp (1960a).

TABLE 26.—*HV 1855*
($P=6.839898\pm0.00004$; $P_A=6.830\pm0.006$)

Maximum	Epochs	
	P	P_A
16710.843	-0.025	-0.019
16758.559	6.951	6.967
21813.786	746.030	747.118
23338.634	968.965	970.361
23974.863	1061.982	1063.528
24077.656	1077.010	1078.578
24439.744	1129.948	1131.592
26177.587	1384.022	1386.035
26334.320	1406.937	1408.983
26512.623	1433.005	1435.089
26929.624	1493.971	1496.143
27750.478	1613.981	1616.327
28065.301	1660.008	1662.421
28373.456	1705.061	1707.539
28783.395	1764.994	1767.559
28804.379	1768.062	1770.632
28845.285	1774.043	1776.621
29809.528	1915.016	1917.798
29871.460	1924.070	1926.867
29877.448	1924.946	1927.743
29926.333	1932.093	1934.900
30575.539	2027.007	2029.952
31293.606	2131.989	2135.087
31642.644	2183.019	2186.190
31669.540	2186.951	2190.128
31710.455	2192.933	2196.119
31799.349	2205.930	2209.134
32011.598	2236.961	2240.210
32060.374	2244.092	2247.352
32135.248	2255.038	2258.314
32490.255	2306.941	2310.292
32504.261	2308.989	2312.342
32819.398	2355.062	2358.483
32860.391	2361.055	2364.484
32880.399	2363.980	2367.414
35452.599*	2740.033	2744.012
35636.516*	2766.927	2770.945
35657.494*	2769.994	2774.017

*Maximum from Arp (1960a).

TABLE 27.—*HV 11193*
(P=6.427066; P′=6.427241±0.00017; P_A=6.440±0.008)

Maximum	Epochs		
	P	P′	P_A
16754.598	0.007	0.055	0.051
23341.689	1024.906	1024.928	1022.850
23605.845	1066.007	1066.027	1063.869
24363.898	1183.954	1183.971	1181.579
24402.678	1189.987	1190.005	1187.601
25893.497	1421.947	1421.958	1419.095
25944.340	1429.858	1429.869	1426.990
26561.629	1525.903	1525.912	1522.843
26632.395	1536.914	1536.922	1533.831
26973.379	1589.968	1589.975	1586.779
27309.490	1642.264	1642.270	1638.971
27750.391	1710.865	1710.869	1707.434
27783.280	1715.982	1715.986	1712.541
28034.526	1755.074	1755.077	1751.554
28804.379	1874.857	1784.857	1871.097
29585.264	1996.356	1996.353	1992.353
29808.570	2031.101	2031.097	2027.028
29813.648	2031.891	2031.887	2027.816
29903.426	2045.860	2045.855	2041.757
29938.243	2051.277	2051.272	2047.163
30527.583	2146.086	2146.078	2141.782
31324.386	2266.950	2266.940	2262.404
31639.636	2316.000	2315.989	2311.356
32462.292	2443.999	2443.984	2439.098
32507.306	2451.003	2450.998	2446.087
32790.387	2495.048	2495.032	2490.044
32828.390	2500.961	2500.945	2495.945
32879.383	2508.895	2508.878	2503.864
32880.399	2509.053	2509.037	2504.021
33104.622	2543.940	2543.923	2538.839
33150.580	2551.091	2551.073	2545.975
35431.397*	2905.968	2905.941	2900.140
35451.479*	2909.093	2909.066	2903.259
35476.401*	2912.970	2912.943	2907.129
35509.365*	2918.099	2918.072	2912.247

*Maximum from Arp (1960a).

TABLE 28.—*HV 2060*
(P=10.18447; P′=10.182911±0.00032; P_A=10.21±0.01)

Maximum	Epochs		
	P	P′	P_A
24025.729	0.063	0.002	0.002
24402.678	37.076	37.020	36.921
24462.659	42.965	42.910	42.796
24686.855	64.979	64.937	64.755
24800.660	76.153	76.103	75.901
25890.396	183.153	183.119	182.633
27681.382	359.008	359.001	358.048
29108.594	499.145	499.159	497.833
29585.264	545.949	545.970	544.520
31642.644	747.961	748.013	746.025
31998.632	782.915	782.973	780.892
32060.374	788.977	789.036	786.939
32142.259	797.017	797.077	794.959
32507.306	832.861	832.926	830.713
32508.406	832.969	833.035	830.821
32854.288	866.931	867.001	864.697
32854.332	866.935	867.006	864.702
32854.383	866.940	867.011	864.707
35452.559*	1122.052	1122.162	1119.180
25635.594*	1140.024	1140.137	1137.107

*Maximum from Arp (1960a).

TABLE 29.—*HV 1873*
(P=12.941131; P′=12.940817±0.000167; P_A=12.91±0.02)

Maximum	Epochs		
	P	P′	P_A
16755.544	0.054	0.031	0.029
16755.628	0.061	0.037	0.035
23315.640	506.972	506.962	508.167
23341.689	508.985	508.975	510.185
24363.898	587.974	587.966	589.364
24402.678	590.971	590.963	592.368
26978.452	790.009	790.006	791.885
28065.301	873.993	873.992	876.071
29074.651	951.989	951.990	954.254
29100.560	953.991	953.992	956.261
29204.247	962.003	962.004	964.293
29514.379	985.968	985.970	988.315
29877.448	1014.023	1014.026	1016.438
29903.335	1016.023	1016.026	1018.443
31274.639	1121.988	1121.994	1124.663
31610.648	1147.953	1147.959	1150.690
31701.458	1154.970	1154.976	1157.724
31702.459	1155.047	1155.054	1157.802
32504.261	1217.005	1217.013	1219.909
32504.417	1217.017	1217.025	1219.921
32879.326	1245.987	1245.996	1248.961
32880.355	1246.067	1246.075	1249.040
33150.580	1266.948	1266.957	1269.972
35506.349*	1448.985	1448.999	1452.447
35635.594*	1458.972	1458.987	1462.458

*Maximum from Arp (1960a).

TABLE 30.—*HV 847*
(P=27.057009±0.0008; P_A=27.2±0.1)

Maximum	Epochs	
	P	P_A
14604.612	0.004	0.004
17447.825	105.086	104.534
23288.713	320.960	319.275
23315.640	321.955	320.265
23343.558	322.987	321.291
23667.803	334.970	333.212
23751.559	338.066	336.291
23965.832	345.985	344.169
26264.443	430.940	428.677
26319.275	432.966	430.693
26322.285	433.077	430.804
26347.271	434.001	431.722
26561.629	441.923	439.603
27756.256	486.076	483.524
27783.280	487.274	484.517
28078.342	497.979	495.365
28376.572	509.002	506.330
28380.640	509.152	506.479
28783.395	524.038	521.287
29484.460	549.948	547.061
29809.528	561.962	559.012
29839.571	563.073	560.117
30648.240	592.960	589.848
30648.337	592.964	589.851
30919.605	602.990	599.824
31108.274	609.963	606.761
31324.386	617.950	614.708
31379.370	619.982	616.691
31436.285	622.086	618.820
31650.654	630.009	626.701
31757.240	633.948	630.620
32000.655	642.944	639.569
32056.390	645.004	641.618
32136.259	647.956	644.555
32462.292	660.006	656.541
35519.378*	772.993	768.935
35627.559*	776.991	772.912

*Maximum from Arp (1960a).

TABLE 31.—*HV 11182*
(P=39.199±0.002; P_A=39.6±0.2)

Maximum	Epochs	
	P	P_A
23287.716	-0.001	0.001
23288.713	0.096	0.026
24304.858	25.949	25.687
24380.743	27.885	27.603
24462.659	29.975	29.672
26308.461	77.063	76.284
26344.280	77.977	77.188
26347.271	78.053	77.264
26502.647	82.017	81.187
26504.653	82.068	81.238
26656.265	85.936	85.067
26929.624	92.910	91.970
27756.256	113.998	112.845
28776.476	140.025	138.608
29204.247	150.938	149.411
29519.364	158.976	157.368
29870.451	167.933	166.234
29876.448	168.086	166.386
29911.283	168.975	167.266
30344.395	180.024	178.203
30575.539	185.921	184.080
30700.335	189.104	187.192
31284.609	204.010	201.946
31324.386	205.024	202.951
31675.572	213.984	211.819
31712.374	214.922	212.749
32849.266	243.926	241.459
32850.336	243.953	241.486
32851.408	243.980	241.513
32852.254	244.002	241.534
32854.245	244.053	241.584
33211.448	253.165	250.605
33563.346	262.143	259.491
34267.407	280.104	277.271
34690.370	290.894	287.952
35476.401*	310.946	307.802
35517.365*	311.911	308.836
35519.378*	312.043	308.887
35635.594*	315.008	311.822

*Maximum from Arp (1960a).

TABLE 32.—*Test of Arp's estimated errors of period*

HV	Period (Arp)	Est. error (Arp)	No. of epochs (N)	Difference (H-A) P	$\frac{N \times \text{est. error}}{\text{period}}$ P
2019	$1^d.6303$	$0^d.0004$	8495	+ 4.092	±2.08
848	2.178	0.001	9948	+23.885	4.57
2021	2.4875	0.0010	4891	- 3.396	1.97
2046	2.554	0.001	4823	- 7.029	1.89
1923	2.564	0.001	4692	- 4.075	1.83
1850	2.760	0.002	6838	+10.853	4.96
2000	2.880	0.002	7558	-10.725	5.25
1974	2.896	0.001	6474	+ 6.475	2.23
1994	4.217	0.003	2936	+ 2.561	2.09
1825	4.265	0.003	3249	+ 3.579	2.28
1785	4.725	0.003	2599	- 2.692	1.65
1934	4.885	0.003	2522	+ 5.242	1.55
1892	5.660	0.005	3852	+ 4.704	3.40
1858	6.120	0.007	3092	+ 4.119	3.52
11193	6.440	0.008	2918	+ 5.825	3.62
1855	6.830	0.006	2770	- 4.023	2.43
2060	10.21	0.01	1140	+ 3.030	1.12
1873	12.91	0.02	1459	- 4.486	2.26
847	27.2	0.1	777	+ 4.079	2.86
11182	39.6	0.2	315	+ 3.186	1.61

TABLE 33.—*HV 1553*
(Adopted period = 12.543274)

Normal maximum	Epoch	Residuals		
		P = 12.543274 P	12.540915 P	12.543274 P
14001.367	0	+0.185	+0.007	+0.211
16797.764	223	+0.120	-0.019	+0.151
21789.235	621	+0.065	+0.004	+0.091
23494.179	757	-0.010	-0.046	+0.016
24497.453	837	-0.025	-0.046	+0.001
25487.933	916	-0.015	-0.066	+0.011
26491.395	996	-0.035	-0.051	-0.009
27495.233	1076	-0.030	-0.006	-0.004
28498.569	1156	-0.040	-0.001	-0.014
29489.425	1235	-0.045	+0.009	-0.019
30744.192	1335	-0.010	+0.063	+0.016
31496.600	1395	-0.025	+0.059	+0.001
32500.125	1475	-0.020	+0.079	+0.006
33490.918	1554	-0.030	+0.084	-0.004
34494.380	1634	-0.030	+0.099	-0.004

TABLE 34.—*HV 837*
(Adopted period = 42.625746)

Normal maximum	Epoch	Residuals		
		P = 42.625746 P	42.651198 P	42.660296 P
12233.163	0	+0.027	+0.124	+0.192
16710.571	106	+0.036	+0.101	+0.146
19995.737	183	+0.083	+0.125	+0.154
23528.559:	265	-0.062:	-0.44:	-0.033:
24509.165	288	-0.064	-0.053	-0.047
25491.262	312	-0.030	-0.027	-0.025
26470.588	335	-0.062	-0.066	-0.069
27494.587	359	-0.046	-0.057	-0.065
28476.982	382	-0.006	-0.024	-0.037
29500.426	406	-0.004	-0.028	-0.047
30736.999:	435	-0.002:	-0.034:	-0.060:
31506.394	452	+0.042	-0.004	-0.025
32487.639	476	+0.056	+0.010	-0.023
33509.804	500	+0.028	-0.024	-0.063

TABLE 35.—*HV 817*
(Adopted period=18.898233)

Normal maximum	Epoch	Residuals				
		P = 18.898233 P	18.893591 P	18.888752 P	18.911457 P	18.900376 P
14198.242	0	+0.156	+0.002	-0.089	+0.709	+0.269
16692.242	132	+0.126	+0.004	-0.044	+0.586	+0.224
19487.302	299	+0.076	-0.005	0.000	+0.420	+0.155
21793.442	402	+0.056	0.000	+0.039	+0.328	+0.123
23492.677	492	-0.029	-0.063	+0.005	+0.180	+0.028
24493.433	545	-0.074	-0.095	-0.010	+0.098	-0.023
25494.756	598	-0.089	-0.097	+0.005	+0.046	-0.044
26496.268	651	-0.094	-0.089	+0.030	+0.004	-0.055
27498.346	704	-0.069	-0.051	+0.085	-0.008	-0.036
28500.898	757	-0.019	+0.013	+0.165	+0.004	+0.008
29483.511	809	-0.024	+0.020	+0.189	-0.037	-0.003
30749.787	876	-0.019	+0.042	+0.232	-0.079	-0.006
31487.102	915	-0.004	+0.066	+0.270	-0.091	+0.005
32488.803	958	+0.001	+0.084	+0.305	-0.123	+0.004
33490.504	1021	+0.006	+0.102	+0.345	-0.155	+0.003
34397.619	1069	+0.006	+0.114	+0.367	-0.189	-0.002

TABLE 36.—*HV 1967*
(Adopted period = 29.052876; $P_A = 29.1 \pm 0.1$)

Normal maximum	Epochs	
	P	P_A
11647.298	0.000	0.000
12700.174	36.240	36.181
13861.418:	76.210:	76.086:
14965.572	114.215	114.029
15332.365:	126.840:	126.633:
16755.956:	175.840:	175.554:
17449.157::	199.700::	199.375::
19673.446:	276.260:	275.810:
20020.337:	288.200:	287.731:
21795.468:	349.300:	348.731:
23597.327	411.320	410.651
24440.441	440.340	439.623
25895.700	490.430	489.632
26506.246	511.445	510.613
27639.454	550.450	549.554
28482.568	579.470	578.527
29498.838	614.450	613.450
30690.441	655.465	654.398
31417.199	680.480	679.373
32492.155	717.480	716.312
33566.676	754.465	753.237
34697.559:	793.390	792.099:
34987.216*	803.360	802.053
38317.838:	918.000:	916.506:

*Maximum from Arp (1960a).

TABLE 37.—*HV 1695*
(Maximum = 14199.909 + 14.6013 E − 0.00000328 E^2)

Normal maximum	Epoch	Residual (P)
14199.909	0	0.000
16711.258	172	+0.002
21805.768	521	-0.036
23513.961	638	-0.017
24492.417	705	+0.015
25806.002	795	+0.009
26608.792	850	+0.010
27601.334	918	+0.013
28492.139	979	+0.048
29512.706	1049	-0.025
30753.528	1134	-0.009
31512.092	1186	-0.024
32504.926	1254	+0.010
33511.333	1323	-0.024
34504.021	1391	+0.003
35627.559*	1468	+0.001

*Maximum from Arp (1960a).

TABLE 38.—*HV 834*
(Maximum = 11531.386 + 73.4175 E + 0.00037 E^2)

Normal maximum	Epoch	Residual (P)
11531.386	0	0.000
12712.488	16	+0.086
14182.795:	36	+0.108
15286.997:	51	+0.141
16818.015:	72	-0.018
17332.033:	79	-0.022
17628.965:	83	+0.187
19611.450	110	-0.005
20055.928	116	+0.044
21008.904	129	+0.007
21820.590	140	+0.047
23511.664	163	+0.044
24465.376	176	+0.014
25786.666	194	-0.023
26519.611	204	-0.060
27478.107	217	-0.032
28509.456	231	-0.016
29467.216	244	-0.002
30715.652	261	-0.041
31526.970	272	-0.019
32484.362	285	-0.016
33517.183	299	+0.011
34472.735	312	-0.014
37939.142	359	+0.042

TABLE 39.—*HV 829*
(Maximum = 11508.062 + 89.92 E − 0.006 E^2)

Normal maximum	Epoch	Residual (P)
11508.062	0	0.000
12495.619::	11	+0.013::
14036.102:	28	+0.167:
15538.030::	45	-0.048::
16522.082::	56	-0.030::
17516.649::	67	+0.121::
19558.360::	89	+0.066::
20532.772	100	+0.044
21501.927	111	-0.013
23538.381	134	+0.005
24506.660	144	-0.020
25576.586::	156	+0.122::
26534.350	167	+0.013
27501.752	178	+0.028
28552.401	190	+0.011
29511.041	200	-0.039
30565.194	212	+0.019
31522.958	223	+0.005
32565.720	234	-0.038
33526.989	245	+0.010
34573.256:	257	+0.053:
37581.493::	290	-0.191::

TABLE 40.—*Possible cloud members with periods under a day*

HV	P	$\langle m \rangle_0$	HV	P	$\langle m \rangle_0$	HV	P	$\langle m \rangle_0$
11368	0.484509	17.63	11289	0.788189	17.27	11447	0.863009	16.84
1821	0.502753	17.34	2044	0.802974	17.36	12912	0.885430	17.46
2020	0.616453	17.22	12170	0.811079	17.62	11512	0.988300	16.81
11415	0.774007	17.82	11390	0.827969	17.37			

TABLE 41.—*Comparison with Cordoba results*

Period			Mean magnitude			Remarks
Star	Cordoba	Harvard	Cordoba*	Harvard	$\langle m \rangle_0$	
CV 277	0.200	–	17.86	17.80	17.44	Period not verified
HV11174	0.496686	1.997551	17.38	17.45	17.09	Cordoba regards as eclipsing
CV 240	0.51	0.571	17.50	17.90	17.46	
HV12089	0.56:	1.270844	17.6:	17.71	17.36	Cordoba period not verified
CV 270	0.64732	0.650	18.07	18.27	17.84	
CV 216	0.67:	0.712	17.77	17.90	17.46	
CV 152	0.75:	0.721	16.55	16.93	(16.37)	Foreground
CV 233	0.74689	0.747	17.73	17.82	17.26	
CV 101	0.76:	–	18.12	17.94	17.47	Close companion; not studied
CV 206	0.778	–	17.60	(16.96)	(16.53)	Close companion; not studied
CV 106	0.91285	–	17.58	17.79	17.23	Cordoba period not verified
CV 254	1.56658	–	17.74	17.90	17.54	Cordoba period verified
CV 274	1.5716	–	17.55	17.78	17.22	Cordoba period verified
CV 3	1.58115	–	17.75	17.90	17.34	Cordoba period verified
CV 214	2.3690	–	16.90	17.26	16.70	Cordoba period verified

*Magnitude reduced to our system.

TABLE 42.—W *Virginis stars*

HV	Period	log P	$\langle m \rangle_0$	dm
12901	15.074089	1.1782	17.36	2.06
1828	17.195722	1.2354	17.28	2.15
206	103.8	2.0162	14.62	2.01

TABLE 43.—*Long-period variables*

HV	x	y	Period	M_0	m_0	A
12149*	13968	11370	741.8	13.54	[16.89	]3.35
838**	13095	8168	663	13.92	[17.47	]3.55
1349	9275	9334	615:	15.16	17.13	1.97
2112*	16991	10164	608	13.00	[17.80	]4.80
859*	17098	10222	582.0	13.73	[18.50	]3.77
11295*	11829	9324	565.02	14.54	17.18	2.64
1865*	14694	9784	556	15.18	18.48	3.30
11303*	12090	13890	533.87	15.20	[18.00	]2.80
1719*	13514	8786	531	14.43	[17.25	]2.82
12956	17050	14774	517.5	15.38	17.75	2.37
11452	15159	6864	515.7	14.97	[17.32	]2.25
1375*	9885	5706	512	15.71	[18.01	]2.30
12179	15702	12042	480±	15.96	17.60	1.64
11223	7014	7215	407:	16.45	17.55	1.10
11329*	12591	9327	390	15.32	17.36	2.04
11366	13473	11658	365.6	16.30	17.70	1.40
11401**	14193	9318	365±	14.67	16.08	1.41
1963**	15477	10365	330±	15.70	18.36	2.66
1645**	12996	7973	300.3	17.02	18.18	1.16
1366	9687	9062	293.2	15.92	[17.28	]1.30
11427*	14679	9564	250.8	16.72	[17.78	]1.06
(833)	12233	20164	239.92	11.20	[17.70	]6.50
1644**	12995	7356	210±	14.82	16.62	1.80
12122**	12966	12156	119.5	14.52	[17.27	]2.75

*Long-period variables (Shapley and Nail, 1951b).
**Semiregular variables (Shapley and Nail, 1951b).

TABLE 44.—*Irregular variables*

HV	x	y	M_0	m_0	A
811	4298	12295	14.00	15.00	1.00
813	4585	11774	12.40	14.10	1.70
12917	10004	5551	15.10	16.27	1.17
11246	10176	9822	14.17	14.63	0.54
11249	10470	2754	16.80	17.80	1.00
11252	10650	9129	16.15	16.92	0.77
1432*	10915	7333	15.40	17.10	1.70
11262*	10998	8556	13.66	15.71	2.05
825*	11125	10813	14.06	15.14	1.08
1455*	11251	5735	13.65	14.85	1.20
1456	11254	6363	14.42	18.06	3.64
11274	11283	10182	16.43	17.63	1.20
11280*	11394	9489	14.79	15.73	0.94
1468	11397	6423	16.19	17.11	0.92
1475*	11474	7747	12.56	13.42	0.86
12924	11683	6951	15.76	16.84	1.08
11292	11810	7883	16.36	17.21	0.85
832*	11943	10143	13.70	14.32	0.62
1529	11981	7692	15.58	17.43	1.85
1573	12434	9378	15.79	16.96	1.17
1586*	12534	10416	16.06	17.02	0.96
11330	12597	13662	14.40	15.20	0.80
1596	12612	8804	15.03	15.86	0.83
11337	12858	8829	16.63	17.03	0.40
1652*	13037	10326	14.17	15.42	1.25
11351	13206	12738	14.84	16.00	1.16
12126	13212	9858	15.97	17.24	1.27
1685	13304	7160	13.70	14.47	0.77
12138	13488	10494	15.65	16.72	1.07
1722*	13525	8498	15.55	17.46	1.91
11373*	13596	11508	14.35	14.99	0.64
11389	13773	9993	16.34	17.04	0.70
1798	14133	8353	16.25	17.05	0.77
11397	14134	10466	16.03	16.94	0.91
12939	14147	8387	14.94	16.99	2.05
11402*	14193	11544	13.61	15.00	1.39
11423*	14622	13830	12.59	13.55	0.96
11425	14673	14625	16.82	17.80	1.02
1880	14826	10720	14.53	15.12	0.59
11455*	15186	12363	17.17	18.00	0.83
11464	15393	9438	13.99	15.39	1.40
11465*	15423	9858	14.20	15.54	1.34
11470*	15525	10554	15.48	16.24	0.76
1977	15639	9473	16.43	17.70	1.24
2011	16014	8062	16.20	16.69	0.49
2032	16200	7907	16.36	17.25	0.89
2066	16532	10166	14.54	15.82	1.28
2084*	16735	7566	13.94	15.60	1.65
2105*	16922	12544	16.12	17.50	1.38
2106	16931	10426	16.00	16.50	0.50
11502	16959	13068	16.66	17.30	0.64
11511	17304	12444	16.10	16.78	0.68
2171	17655	8423	16.75	17.77	1.02
11518	17880	5748	14.88	15.90	1.02
11531	18806	12720	15.85	16.31	0.46
11537	18987	9999	16.15	16.71	0.56
2214	19101	14174	16.05	16.91	0.86
11545	19788	14910	15.12	15.59	0.47
2228*	20893	10639	13.90	15.30	1.40
11546*	22146	9267	12.59	13.38	0.79
2232*	22155	7113	13.80	16.80	3.00

*Irregular or semiregular (Shapley and Nail, 1951b).

TABLE 45.—*Rate of production of stars that are now Cepheids*

(T) 10^7 years	No. of Cepheids (N)	N/T	(T) 10^7 years	No. of Cepheids (N)	N/T
2 to 4	20	5.0	28 to 30	35	1.2
4 6	51	8.3	30 32	23	0.72
6 8	55	6.9	32 34	24	0.71
8 10	62	6.2	34 36	19	0.53
10 12	81	6.6	36 38	13	0.34
12 14	102	7.3	38 40	4	0.10
14 16	116	7.2	40 42	4	0.10
16 18	110	6.1	42 44	4	0.09
18 20	103	5.2	44 46	2	0.04
20 22	91	4.2	46 48	4	0.08
22 24	79	3.3	48 50	3	0.06
24 26	70	2.7	>50	2	0.04
26 28	65	2.3			

TABLE 46.—*Frequency of amplitude*

Amplitude	All stars (M-m)< 0.3	Percent	All stars (M-m)> 0.3	Percent	Period $>2^d<3^d$ (M-m)< 0.3	Percent
$>0^m.2<0^m.3$	0	—	4	3.0	0	—
0.3 0.4	8	0.8	17	12.6	1	0.4
0.4 0.5	24	2.4	24	17.8	3	1.3
0.5 0.6	46	4.5	22	16.3	8	3.5
0.6 0.7	68	6.7	32	23.7	12	5.2
0.7 0.8	67	6.6	22	16.3	16	7.0
0.8 0.9	100	9.9	11	8.1	21	9.1
0.9 1.0	103	10.2	3	2.2	17	7.4
1.0 1.1	108	10.6	2	1.5	24	10.4
1.1 1.2	117	11.5	1	0.7	33	14.3
1.2 1.3	102	10.0	1	0.7	16	7.0
1.3 1.4	84	8.3	0	—	25	10.9
1.4 1.5	60	5.9	0	—	14	6.1
1.5 1.6	44	4.3	0	—	14	6.1
1.6 1.7	27	2.7	0	—	6	2.6
1.7 1.8	23	2.3	0	—	12	5.2
1.8 1.9	16	1.6	0	—	6	2.6
1.9 2.0	9	0.9	0	—	2	0.9
2.0 2.1	7	0.7	0	—	0	—
2.1 2.2	1	0.1	0	—	0	—
2.2 2.3	1	0.1	0	—	0	—

U.S. GOVERNMENT PRINTING OFFICE: 1966 O—797-819