2d Copy —

ANNALS

OF

THE ASTRONOMICAL OBSERVATORY OF HARVARD COLLEGE

VOLUME LV.—PART I

SECOND CATALOGUE OF VARIABLE STARS

BY

ANNIE J. CANNON

ASSISTANT IN THE OBSERVATORY

UNDER THE DIRECTION OF

EDWARD C. PICKERING

DIRECTOR OF THE OBSERVATORY

CAMBRIDGE, MASS.

Published by the Observatory

1907

PREFACE.

THE study of variable stars has formed an important portion of the work at the Harvard Observatory. In recent years, increased attention has been given to this subject, owing to the large number of variables discovered by means of their spectra, by direct comparison of negatives of clusters, and by superimposing positives on negatives; also, from visual estimates of the brightness of large numbers of variable stars of long period. A bibliography of variable stars was begun by Professor W. M. Reed, in 1897, who wrote fifteen thousand cards. It was transferred to Miss Cannon in 1901. Since then, she has added twenty thousand cards, and from them prepared a Provisional Catalogue of Variable Stars, published in these Annals, 48, No. 3, and annual supplements published in Circular 77, and Annals, 53, No. 7. A Second Catalogue of Variable Stars is contained in Part I of the present volume, and is intended to take the place of the previous catalogue published by Miss Cannon. The value of the work is greatly increased by the remarks and tables following the Catalogue. Part II will contain additional material extracted from the bibliography, including a study of all the published maxima and minima of variable stars of long period.

EDWARD C. PICKERING,
Director of Harvard College Observatory.

CAMBRIDGE, U. S., *December 21, 1906.*

CONTENTS OF PART I.

SECOND CATALOGUE OF VARIABLE STARS.

THE history of variable star catalogues extends as far back as 1844, when there appeared in Schumacher's Jahrbuch, page 214, a catalogue of 18 variable stars, compiled by Argelander. The following stars compose the list, which included all those far enough north to be visible from Germany, and considered by Argelander to be certainly variable. They are arranged in the order in which they were discovered to be periodically variable. They are, o Ceti, χ Cygni, R Hydrae, β Persei, η Aquilae, β Lyrae, R Leonis, δ Cephei, α Herculis, R Coronae, R Scuti, R Virginis, R Aquarii, S Serpentis, R Serpentis, α Cassiopeiae, α Orionis, and α Hydrae. It is interesting to note that, of these 18 stars, α Hydrae is not now included among the variables, and there is still a difference of opinion regarding the reality of the variation of α Herculis, α Cassiopeiae, and α Orionis. In 1854, Pogson published his Catalogue of 53 Known Variable Stars, in the Radcliffe Observations, Volume 15, 281. In 1864, a Catalogue of 123 Variable Stars was published by Chambers in the Astronomische Nachrichten, 63, 117. A Catalogue of 113 Variable Stars was prepared by Schönfeld in 1865, and published in the Astronomische Nachrichten, 64, 161. This was extended in 1875, in a second Catalogue which contains 143 stars. In 1883, the list was enlarged at this Observatory, by the addition of 48 variables, and 77 stars whose variability was suspected. Recent observations of these stars were indexed. This work was repeated in 1884, 1885, and 1886, and the results were published in the Proceedings of the American Academy, 19, 296; 20, 393; 21, 319; 22, 380. In 1888, an Index to Observations of Variable Stars was published in Volume 18, No. 8, of these Annals. This contained a Catalogue of 225 Variable Stars, and references to 125,720 observations of them, made during the years 1838 to 1888. Copies of a large portion of these observations have been sent to this Observatory, where they are now on file. Meanwhile, in 1888, Mr. S. C. Chandler had published his First Catalogue of 225 Variable Stars. This was followed, in 1893, by his Second Catalogue of 260 stars, and in 1896 by his Third Catalogue of 393 stars. These three catalogues appeared in the Astronomical Journal, 8, 81, 13, 89,

and 16, 145, respectively. In Volume 21, 84, of the same Journal, Roberts has given a useful Catalogue of 94 variable stars south of declination $-30°$. A very convenient ephemeris of variable stars has been published annually in the Vierteljahrsschrift der Astronomischen Gesellschaft, since 1870, under the successive editorship of Winnecke, Schönfeld, and Hartwig. Until 1889, the ephemeris included only stars north of $-2°$ in declination. In 1889, this limit was extended to $-30°$, in 1895 to $-35°$, and in 1902, to the South Pole. The Catalogue for 1906 contains 709 stars.

In 1903, a Provisional Catalogue of Variable Stars was published at this Observatory. Including the variables in clusters, 1,227 stars were referred to in this catalogue. Since 1903, the number of known variable stars has increased greatly, owing mainly to the discovery of large numbers of these objects in nebulous regions. 240 of these have been found by Wolf at Heidelberg, and 2,110 by Miss H. S. Leavitt at Harvard. The greater portion of these stars are so faint that they can be observed visually only with large telescopes, and cannot even be found except with the aid of marked photographs. However, to render the Catalogue as complete as possible, it seemed best to include these objects, with the exception of 1,791 found in the Magellanic Clouds. The present catalogue contains 1,957 stars, counting those in globular clusters. Adding to this, the 1,791 found in the Magellanic Clouds, we have 3,748 known variable stars. 2,909 of these have been found at Harvard. 514 of the latter have been found by Professor Bailey in globular clusters, and 221 by Mrs. Fleming, mainly by the presence of bright hydrogen lines in stars of the third type, as a result of the examination of stellar spectra forming a part of the Henry Draper Memorial. The material for the preparation of this Catalogue has been obtained from the Card Catalogue containing references to all published observations and investigations of variable stars, supplemented by unpublished photographic and visual observations made here. Sequences of comparison stars are selected from the photographs and measured by Mrs. Fleming for all variable stars discovered here, except those in clusters or special regions. Measures of the variables are made by Miss S. E. Breslin, comparing them by Argelander's method with two of a sequence whose magnitude has been determined. A graphical representation of the observations is then made. The plates upon which these stars appear, extend in general from 1889 to 1906, and thus the observations enable us to derive a more accurate value of the period and a better knowledge of the light curve of recently discovered variables than is possible from visual observations which extend over only a short period of time. Since 1904, the list of variables of long period observed visually at this Observatory has been increased to 309 stars. Monthly observations of these objects have been made by Mr. Leon Campbell with the 5-inch

or 24-inch telescopes, and by the writer with the 6-inch telescope. Observations have also been sent to this Observatory from the Halsted, Leander McCormick, Vassar, Mt. Holyoke, and Whiteside Observatories, and from Mr. J. H. Eadie and Señor Pereira.

This large amount of unpublished material has been of use in obtaining the observed range of variation of a number of stars, and in testing the given periods or in deducing new ones. Perhaps the most difficult task of the compiler of a Catalogue of Variable Stars is the selection of the best period. Different investigators give different values, and that which is accepted today, may be rejected tomorrow, in the light of additional facts. Much time has been spent on this part of the work, and it is believed that some of the formulas given here are more accurate than any yet published. For a large number of the stars discovered here, new elements have been derived, by a method of Least Squares, from all the available dates of maxima obtained from photographic measures, or from both photographic and visual observations. Circular 81 contains the results obtained by this method for 7 stars. For purposes of comparison, a trial of Professor Turner's method, as detailed in Memoirs Royal Astronomical Society, Volume 55, was also made in the case of several stars. The period of S Lacertae obtained by the method of Least Squares, and published in Circular 81, is 237.5 days. It is of interest to note that a computation of the period of this star was made by Professor Turner, by his method, using all the visual observations made here from 1894 to 1904. His result is sensibly the same, 237.6 days, or, omitting one discordant observation, 237.5 days. Somewhat larger differences were found for three other stars whose periods were deduced by both methods. When the elements derived here are given in Table I, the facts upon which they are based will be found in the remarks following the table.

It appears that some stars which were for a time considered to be variable, and to which letters have been assigned, are probably really constant in light. In cases where no variability has been found by systematic observations, these objects were removed from Table I and are given in Table II. A few other objects which were included in the Provisional Catalogue as suspected, are omitted from the present catalogue since there seems to be slight probability of their variability. It appears to be inexpedient to exclude from a catalogue of variable stars those whose variability is somewhat doubtful or unconfirmed. Several of the stars to which names have recently been assigned by the Committee of the Gesellschaft, appear to show little or no variation. For instance, see remarks upon V Piscium, Z Geminorum, RT Tauri, and RS Tauri. These and a few other objects are retained in the Catalogue, with the letter S for suspected in the column headed "Class," since, as

they are now being observed, it seems more convenient to include them in the general table.

The form of designation which was adopted for the Provisional Catalogue is retained in this Catalogue, owing to its great convenience in actual practise. It is found that the six figures, forming three pairs, are quite readily retained in the mind for those stars which are frequently observed, and also that, for familiar fields, the setting of the 6-inch telescope by means of these numbers is sufficiently accurate to enable the observer to identify the star at once. Another advantage of this designation may be seen by consulting Table III, where the approximate position of any variable which has received a letter can be readily found.

A description of the successive columns in the Catalogue is given below, the heading in each case being prefixed. Since the form of the table is nearly identical with that of the Provisional Catalogue, Annals 48, No. 3, a portion of the description is taken from that catalogue.

Des. A designation, consisting of six figures, which gives the approximate position of the variable. The first two figures represent the hour, and the next two the minutes of right ascension of the star, for 1900. The last two figures give the degree of declination. The designation is printed in Italics when the star is south of the Equator. Thus the designation of the first star should be read, zero, three, thirty-nine south, which gives the position, R.A. $= 0^h\ 3^m$, Dec. $= -39°$. In cases where two or more numbers are alike, the letter a is appended to the number designating the star first discovered, b to the second, and so on. The advantage of this notation is that it gives both coördinates of the variable directly, and without computation.

Name. The name of the variable, or merely the constellation preceded by a dash, in cases where no letter has yet been assigned.

DM. The number of the star in the zone of the Bonn Durchmusterung for stars north of declination $-23°$, of the Cordoba Durchmusterung for stars between declinations $-23°$ and $-52°$, and of the Cape Photographic Durchmusterung for stars south of declination $-52°$. The number is printed in Italics when, owing to precession, the degree differs from that given in the fifth column. References to the additional numbers given at the bottom of the pages of the revised edition of the Bonn Durchmusterung will be found in the remarks following Table I. These stars are designated by a letter following the number of the preceding star.

R.A. 1900. The approximate right ascension of the star for 1900.

Dec. 1900. The approximate declination of the star for 1900.

Max. The magnitude at maximum obtained from various sources. For the stars being observed visually at Harvard, the values of maximum and minimum were derived graphically from the plotted observations made here and those received from the observatories referred to above. For short period variables, Class IV, and Algol stars, Class V, photometric measures obtained here by Professor Wendell have generally been employed, except for extreme southern stars, for which the values given by Roberts in A. J. 21, 84, or by Innes in Annals of the Cape Observatory 9, 18 B, were used. For other stars, these values have been derived from the published results of the discoverers or the observers. Photographic values are printed in Italics, and for many of the variables discovered here are derived graphically from the measures, as in the case of the visual observations.

Min. The same rules have been followed for the minima, as for the maxima. The sign $<$ denotes that the star was invisible and certainly fainter than the magnitude given.

Period. As already stated, for a large number of the stars discovered here, periods have been derived from the Harvard observations. For other stars, the periods are taken mainly from Chandler's revised elements in A. J. 24, 1, from Roberts' Catalogue of Southern Variable Stars, or from the recent investigations of Hartwig, Williams, Innes, Graff, or Ceraski. The periods are given in the table in days and tenths, and when known more accurately, the precise value is given in the Remarks.

Epoch. The same authority is, in general, used for the epoch, as for the period.

Class. The class of the variable is given according to the classification proposed by Pickering in 1880 in the Proceedings of the American Academy, Volume 16, pp. 17, 257, in which Class I represents new, or temporary stars, Class II, variables of long period, Class III, variables of small range or irregular variation according to laws as yet unknown, Class IV, variables of short period, and Class V, variables of the Algol type. The letter S indicates stars suspected of variability which is not yet confirmed with certainty. The abbreviations Cl. and Neb. stand for cluster and nebula, respectively, and are used to signify that the object referred to is a star cluster or nebula, in which variable stars have been found. Additional facts are given in the Remarks.

Sp. The class of spectrum, when known, is given according to the notation employed in the Draper Catalogue, extended as described in Volume 28, page 140.

Prov. No. The provisional number assigned by the Editor of the Astronomische Nachrichten. This form of notation was adopted in 1900, in order to introduce a short and unambiguous provisional designation for variables, like that in use for

comets and minor planets. To this end, all novae and new variable stars are continuously numbered, throughout each year, in the order in which their discovery comes to the knowledge of Professor Kreutz.

Year. The year of discovery, or of announcement, when the date of discovery is uncertain.

Discoverer. The name of the discoverer. When it is not certain by whom the discovery was made, the place of discovery is substituted, and is placed in parentheses. "M and K " indicate Müller and Kempf.

General remarks giving additional facts concerning many of the variables follow Table I. Some of these remarks contain the results of unpublished investigations made here, representing both photographic and visual observations. Objects of especial interest are frequently noted, so that additional observations of them may be obtained. The positions of stars adjacent to the variable are also given, as an aid in the identification of the variable, or as a means of avoiding a confusion of the variable with an adjacent faint star of constant brightness. When these stars occur in the Harvard sequence of comparison stars for the variables, they are referred to by the letter in that sequence, and the photometric magnitude is given. For other stars contained in Hagen's Atlas Stellarum Variabilium, the Hagen number and magnitude are given. For stars not contained in Hagen's Atlas, approximate positions were estimated from photographs of the region.

TABLE I.

SECOND CATALOGUE OF VARIABLE STARS.

Des.	Name.	DM.	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. *m.*	° ′			*d.*						
000339	V Sculptoris	16	0 3.6	−39 47	*9.0*	*12.0*	295.0	2411050	II	Md	..	1896	Fleming
000451	− Cassiopeiae	..	4.3	+51 0	*9.0*	*11.5*	...	....	II?	Md	64	1905	Fleming
001032	S Sculptoris	69	10.3	−32 36	*6.6*	*12.8*	366.0	2411320	II	Md	..	1894	Fleming
001046	X Andromedae	..	10.8	+46 27	8.0	<12	347	2415039	II	Md	3	1900	Anderson
001249	− Cassiopeiae	41	12.2	+49 44	*7.5*	*9.0*	...	....	III	N	65	1905	Fleming
001620	T Ceti	50	16.7	−20 37	5.4	6.9	Irr.	....	III	Mb	..	1881	Chandler
001726	T Andromedae	43	17.2	+26 26	8.0	14.5	281	2398587	II	Md	..	1893	Anderson
001706	V Piscium	*43*	17.2	+ 6 7	9.5	12.0	...	....	S	..	60	1903	Linhart
001755	T Cassiopeiae	*48*	17.8	+55 14	6.9	12.3	443.5	2404540	II	Md	..	1870	Krueger
001855	− Cassiopeiae	*49*	18.0	+55 15	..	..	...	....	S	..	190	1904	Tass
001862	S Tucanae	28	18.4	−62 14	*8.7*	<*11.3*	240	2411357	II	Md	..	1895	Fleming
001838	R Andromedae	*58*	18.8	+38 1	6.0	14.9	410.7 +	2400131	II	Md	..	1858	(Bonn)
001909	S Ceti	*65*	19.0	− 9 53	7.9	14.5	320.2	2405165	II	Md	..	1872	Borrelly
001963	B Cassiopeiae	..	19.2	+63 36	>1	?	...	....	I	..	..	1572	R
001972	47 Tucanae	35	19.6	−72 38	..	..	....	....	Cl	..	..	1894	Bailey
*002438*a	T Sculptoris	138	24.3	−38 28	7.8	11.4	201.5	2415169	II	..	..	1895	(Cordoba)
*002438*b	RR Sculptoris	142	24.5	−38 36	9.0	11.5	...	....	S	..	..	1897	Innes
002546	T Phoenicis	*131*	25.6	−46 58	*8.5*	<*12.0*	280	2410144	II	Md	..	1897	Fleming
002614	T Piscium	*63*	26.8	+14 3	9.5	11.0	Irr.	....	III	..	..	1855	Luther
002833	W Sculptoris	185	28.2	−33 26	*8*	<*11*	...	....	II?	..	..	1896	(Cordoba)
003179	Y Cephei	..	31.3	+79 48	9	12	336	2415200	II	..	9	1900	L. Ceraski
003455	α Cassiopeiae	139	34.8	+55 59	2.2	2.8	Irr.	....	S	K	..	1831	Birt
003534	Z Sculptoris	224	35.0	−34 30	6	8	...	....	..	F 2 G	..	1896	(Cordoba)
003740	S Andromedae	..	37.2	+40 43	7	<15	...	....	I	R	..	1885	Hartwig
004047	U Cassiopeiae	194	40.8	+47 43	8.0	16	276.0	2410253	II	Md	..	1887	Espin
004132	RW Androm.	..	41.9	+32 8	*8.3*	<*12*	435?	2416825	II	..	189	1904	Williams
004281	− Cephei	18	42.0	+81 25	..	..	...	....	..	..	..	1882	Pickering
004435	V Andromedae	..	44.6	+35 6	8.4	14.3	263	2413869	II	Md	..	1896	Anderson
004435	X Sculptoris	..	44.7	−35 28	9	<13	250?	2413545	II	..	..	1896	West
004533	RR Androm.	..	45.9	+33 50	8	<13	340	2416164	II	Md	69	1901	Anderson
004746	RV Cassiopeiae	..	47.1	+46 53	*9.0*	*12.5*	...	....	II?	..	41	1905	L. Ceraski
004958	W Cassiopeiae	*165*	49.0	+58 1	8.3	12.1	404	2413387	II	Mb 5 c	..	1894	Espin
005381	U Cephei	25	53.4	+81 20	7.0	9.0	2.4 +	2407890	V	A	..	1880	W. Ceraski
005475	− Tucanae	..	54.2	−75 32	*9.1*	*13.0*	258.0	2411650	II	Md	..	1898	Fleming
005840	RX Androm.	..	58.9	+40 46	*10.5*	*11.8*	45.2	2414971	II	..	38	1905	Williams
005871	− Tucanae	35	58.9	−71 23	..	..	...	....	Cl.	..	..	1895	Bailey
010102	Z Ceti	..	1 1.6	− 2 1	*9.0*	*13.0*	187	2416723	II	..	156	1904	Luther
010564	RU Cassiopeiae	127	5.3	+64 27	5.1	5.5	...	....	S	A	186	1904	Barr
010630	U Sculptoris	375	6.8	−30 39	9.0	<13?	328.0	2415065	II	..	..	1896	(Cordoba)
010940	U Andromedae	..	9.8	+40 11	8.9	14.5	348	2413192	II	Md	..	1895	Anderson
011025	− Piscium	205	10.6	+25 14	..	..	...	....	III	N	..	1906	Wendell
011272	S Cassiopeiae	*66*	12.3	+72 5	7.6	14.5	609.5 +	2401615	II	Md	..	1861	(Bonn)
011208	S Piscium	203	12.4	+ 8 24	8.2	<14.7	404.3	2402606	II	Md	..	1851	Hind
011712	U Piscium	..	17.7	+12 21	9.4	15	172.7	2407723	II	..	..	1880	Peters
*012233*a	R Sculptoris	525	22.4	−33 4	6.2	8.8	376.4	2415341	II	N	..	1872	Gould
*012233*b	RS Sculptoris	..	22.5	−33 26	9.8	11.0	...	....	..	..	23	1903	deSitter

Des.	Name.	DM.	R. A. 1900.	Dec. 1900.	Max	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d.						
012288	– Ursae Min.	..	1 22.6	+88 46	8.5	9.6	...	....	S	..	18	1903	Clemens
012502	R Piscium	222	25.5	+ 2 22	7.6	13.5	344.1 +	2402928	II	Md	..	1850	Hind
013057	RW Cassiopeiae	342	30.7	+57 15	*8.9*	*11.0*	14.8	2417062	IV	..	46	1905	L. Ceraski
013238	RU Androm.	..	32.8	+38 10	9.2	<13	243	2410139	II	..	11	1903	Williams
013338	Y Andromedae	315	33.7	+38 50	8.3	13	217.9	2415086	II	Md	23	1900	Anderson
014958	X Cassiopeiae	..	49.8	+58 46	9.0	12.3	409	2410205	II	..	..	1895	Espin
015354	U Persei	431	53.0	+54 20	7.5	11.0	320	2410050	II	Md	..	1890	Fleming
015556	V Persei	..	55.1	+56 15	*9.2*	*<15.2*	...	....	I	R	..	1890	Fleming
015912	S Arietis	..	59.3	+12 3	9.1	<16	292.2	2404867	II	Md	..	1865	Peters
020257	– Eridani	400	2 2.2	–57 37	*7.5*	*10.0*	...	....	II	Md	66	1905	Fleming
020448	RV Androm.	616	4.6	+48 28	*8.5*	*10.5*	182	2416509	II	..	17	1904	Williams
021056a	– Persei	473	10.0	+56 40	8.1	9.5	...	....	S	..	..	1895	Lindemann
021024	R Arietis	330	10.4	+24 35	7.5	13.7	186.5 +	2402849	II	Md	..	1858	(Bonn)
021071	– Hydri	*155*	10.4	–71 57	*9.6*	*10.5*	Irr.	....	III	Mc 5 d	43	1901	Fleming
021056b	– Persei	481	10.6	+56 38	8.7	10.0	...	....	S	..	..	1895	Lindemann
021143a	W Andromedae	..	11.2	+43 50	6.5	14.0	395	2415790	II	Md	..	1899	Anderson
021143b	– Andromedae	462	11.4	+43 50	8.8	9.9	...	....	S	..	62	1903	Hagen
021258	T Persei	439	12.2	+58 30	8.4	8.8	...	....	S	Ma	..	1882	Safarik
021281	Z Cephei	..	12.8	+81 13	9.5	<14.5	285	2416176	II	..	15	1903	L. Ceraski
021356	– Persei	551	13.9	+56 42	..	..	...	....	..	..	..	1898	Bailey
021403	o Ceti	353	14.3	– 3 26	1.7	9.6	331.6 +	2402963	II	Md	..	1596	Fabricius
021556	RS Persei	583	15.3	+56 39	8	10	...	....	..	..	16	1904	L. Ceraski
021558	S Persei	*552*	15.7	+58 8	7.8	11.2	Irr.	....	II	Md	..	1874	Krueger
022000	R Ceti	..	20.9	– 0 38	7.8	14.0	167.0	2403028	II	Md	..	1866	Argelander
022150	RR Persei	557	21.7	+50 49	*9*	*<13*	374	2416482	II	..	1	1904	L. Ceraski
022260	S Horologii	..	22.4	–60 1	*9.7*	*12.6*	338	2410114	II	Md	..	1896	Fleming
022426	R Fornacis	892	24.8	–26 32	8.5	11.8	386	2415158	II	..	..	1896	(Cordoba)
022669	– Hydri	*155*	26.3	–69 58	*7.8*	*8.8*	...	....	III	Mc 5 d	44	1901	Fleming
022741	X Eridani	*845*	27.4	–41 54	10.0	11.5	270	2415806	II	..	22	1902	(Cape)
022813	U Ceti	479	28.9	–13 35	7.1	12.8	235.8	2409522	II	Md	..	1885	Sawyer
022980	RR Cephei	..	29.4	+80 42	*9.0*	*<13*	...	....	II	..	56	1903	L. Ceraski
023133	R Trianguli	470	31.0	+33 50	6.5	12.0	267.0	2410030	II	Md	..	1890	Fleming
023259	– Cassiopeiae	*501*	32.3	+59 10	..	..	...	....	S	..	..	1902	R
023341	Z Persei	504	33.7	+41 46	*9.4*	*12*	3.0 +	2416009	V	..	14	1902	Williams
023723	– Ceti	1029	37.4	–23 2	*7.7*	*8.6*	...	....	III	Mc 5 d	45	1901	Fleming
024032	– Fornacis	989	40.0	–32 8	9.2	9.9	...	....	..	..	..	1897	(Cape)
024154	– Horologii	471	41.2	–54 44	*9.1*	*10.4*	...	....	..	Mc	46	1901	Fleming
024217	T Arietis	*351*	42.8	+17 6	7.9	10.1	313	2405249	II	Md?	..	1870	Auwers
024356	W Persei	724	43.2	+56 34	7.5	11.5	Irr.	....	II	..	..	1893	Espin
024312	– Eridani	*530*	43.2	–12 53	6.5	7.5	...	....	III	Mc	..	1903	Pickering
024559	– Horologii	233	45.1	–59 28	*8.1*	*9.4*	...	....	..	Mc 5 d	41	1906	Fleming
024708	– Eridani	536	47.3	– 8 41	7.2	8.0	...	....	III	Mc	..	1903	Pickering
024729	– Fornacis	*1079*	47.6	–29 54	..	..	...	....	S	..	..	1897	(Cape)
025050	R Horologii	860	50.6	–50 18	*5.9*	*12.0*	405.0	2415229	II	Md	..	1892	Fleming
025751	T Horologii	..	57.7	–51 2	8.0	11.8	218.2	2415193	II	..	..	1896	Kapteyn
025867	RX Cassiopeiae	244	58.8	+67 11	8.6	9.1	32.3 +	2416250	V	..	6	1904	L. Ceraski
025838	ρ Persei	630	58.8	+38 27	3.4	4.2	Irr.	....	III	Mb	..	1854	Schmidt
030140	β Persei	673	3 1.7	+40 34	2.1	3.2	2.8 +	2410640	V	B 8 A	..	1669	Montanari
030514	U Arietis	..	5.5	+14 25	7.0	13.0	370	2412406	II	Md	..	1892	Schaeberle
031401	X Ceti	475	14.3	– 1 26	8.0	13.0	176.5	2410078	II	Mb	..	1895	Wells

Des.	Name.	DM.	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d.						
031646	RT Persei	740	3 16.7	+46 12	*9.5*	*11.5*	0.8+	2416741	V	..	155	1904	L. Ceraski
031919	– Arietis	..	19.3	+19 2?	*12*	..	...	....	..	..	116	1905	Wolf
032043	Y Persei	726	20.9	+43 50	8.3	11.0	257	2410092	II	N	68	1901	Williams
032335	R Persei	..	23.7	+35 20	8.0	13.5	210.1	2401044	II	Md	..	1861	Schönfeld
032339	RU Persei	797	23.9	+39 19	*9.5*	*11*	161.7	2416743	II	..	187	1904	Williams
032443	Nova Persei	..	24.4	+43 34	0.0	<13	...	....	I	Pec.	3	1901	Anderson
032528	T Fornacis	1162	25.4	−28 45	8.5	9.7	92?	....	II?	..	23	1902	(Cape)
032723	– Tauri	..	27.7	+23 10	*13*	<*15*	...	....	..	..	90	1901	Wolf
033362	U Camelop.	596	33.2	+62 19	*10.8*	*12.2*	Irr.	....	III	N	..	1891	Fleming
033451	– Persei	762	34.1	+51 11	..	..	...	....	S	..	..	1896	Espin
033555	– Reticuli	551	35.2	−55 43	*8.0*	*8.9*	...	....	III	Md?	..	1898	Fleming
034124	S Fornacis	1861	41.9	−24 42	..	..	...	....	S	F	..	1899	Abetti
034625	U Eridani	1602	46.2	−25 16	8.5	<11.4	239	2410199	II	..	..	1896	(Cordoba)
034601	– Eridani	546	46.4	− 1 41	*8.8*	*9.2*	Irr.	....	III	Mc 5 d	47	1901	Fleming
034707	X Tauri	560	47.8	+ 7 29	6.6	7.2	Irr.	....	III	F 2 G	..	1876	Gould
034930	X Persei	591	49.1	+30 45	6.	7	R	....	..	F	..	1898	M. and K.
035124	T Eridani	1960	51.0	−24 20	7.4	11.8	252	2410005	II	Md	..	1895	Fleming
035512	λ Tauri	539	55.1	+12 12	3.3	4.2	3.9+	2410612	V	B 3 A	..	1848	Baxendell
035727	RW Tauri	623	57.8	+27 51	*7.1*	*11*	2.7+	2410002	V	B 5 A	102	1905	Fleming
035916	V Eridani	771	59.8	−16 0	*8.4*	*9.3*	Irr.	....	III	Md?	..	1898	Fleming
040433	RV Persei	805	4 4.1	+33 59	*9.5*	*11.0*	...	....	..	..	61	1905	L. Ceraski
040725	W Eridani	1766	7.3	−25 24	*8.1*	<*12.5*	374	2410236	II	Md	..	1898	Fleming
040950	– Persei	961	9.1	+50 22	..	..	...	....	S	..	..	..	R
041619	T Tauri	706	16.2	+19 18	9.2	<13.5	Irr.	....	II	..	..	1852	Hind
042215	W Tauri	..	22.2	+15 49	8.0	12.2	Irr.	....	II	Mb	..	1886	Espin
042239	– Persei	..	22.8	+39 38	..	..	...	....	III	..	..	1898	Espin
042209	R Tauri	585	22.8	+ 9 56	8.0	14.0	325	2401262	II	Md	..	1849	Hind
042309	S Tauri	586	23.7	+ 9 44	9.5	14.6	365	2400080	II	..	..	1855	Oudemans
043065	T Camelop.	..	30.4	+65 57	7.0	13.5	370	2412091	II	Pec.	..	1891	Espin
043263	R Reticuli	..	32.5	−63 14	7	12	273.4	2415021	II	Md	..	1867	Ragoonath.
043274	X Camelop.	..	32.6	+74 56	8.0	13	140	2416266	II	Md	22	1903	L. Ceraski
043208	RX Tauri	..	32.8	+ 8 9	9.0	<12	...	....	II	Md	279	1904	Fleming
043562	R Doradus	372	35.6	−62 16	4.8	6.8	345	2415135	II	Mc 5 d	..	1874	Gould
043738	R Caeli	..	37.0	−38 26	*7.2*	*14.0*	398	2415258	II	Md	..	1890	Fleming
044068	– Camelop.	*350*	40.8	+68 0	..	..	...	....	III	N	..	1902	Backhouse
044126	RV Tauri	732	41.0	+26 0	*9.3*	*10.5*	...	....	..	..	45	1905	L. Ceraski
044349	R Pictoris	1439	43.5	−49 26	*7.6*	*10.0*	165	2410119	II	Md	..	1895	Fleming
044528	– Tauri	707	45.2	+28 21	..	..	...	....	III	..	..	..	R
044617	V Tauri	800	46.2	+17 22	8.3	13.6	170.1	2405050	II	Md	..	1871	Auwers
044880	RS Cephei	..	48.6	+80 6	*9.5*	*12*	12.4+	2410011	V	..	79	1905	L. Ceraski
045221	U Leporis	1019	52.0	−21 23	9.0	10.0	0.5+	2415020	IV	A	..	1890	(Cape)
045307	R Orionis	768	53.6	+ 7 59	8.7	13.5	378.5	2398676	II	Md?	..	1848	Hind
045443	ϵ Aurigae	1166	54.8	+43 40	3.4	4.1	...	....	..	F 5 G	..	..	R
045514	R Leporis	*915*	55.0	−14 57	6.1	9.7	436.1	2401937	II	N	..	1855	Schmidt
045823	RT Tauri	..	58.2	+23 30	9	10	...	....	S	..	2	1904	Millosevich
050001	W Orionis	*939*	5 0.2	+ 1 2	*8.8*	*11.0*	Irr.	....	III	N	..	1894	R
050022	T Leporis	995	0.6	−22 2	8.2	12.0	366.5	2410212	II	Md	..	1895	Fleming
050003	V Orionis	766	0.8	+ 3 58	8.4	<14.5	267	2411778	II	Md?	..	1887	Boss
050848	S Pictoris	1671	8.3	−48 38	*8.7*	<*13.9*	428.5	2415305	II	Md	..	1895	Fleming
050953	R Aurigae	882	9.2	+53 28	6.5	13.8	458.6+	2401486	II	Md	..	1862	(Bonn)

Des.	Name.	DM.	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d.						
051247	– Pictoris	1750	5 12.3	–47 2	8.4	12.4	200	2410004	II	Md	..	1898	Fleming
051533	T Columbae	2251	15.6	–33 49	7.5	11.8	225	2410134	II	Md	..	1896	Fleming
051869	S Doradus	356	18.9	–69 21	8.2	9.8	Irr.	....	III	Pec.	..	1897	Fleming
052036	W Aurigae	..	20.1	+36 49	8.7	15.0	276	2414648	II	..	..	1898	L. Ceraski
052024	– Leporis	3058	20.1	–24 37	. .	..	...	....	Cl.	..	..	1897	Bailey
052034	S Aurigae	1044	20.5	+34 4	9.0	11.2	Irr.	....	II	..	..	1881	Dunér
052142	Y Aurigae	1295	21.5	+42 21	8.6	9.6	3.8+	2415420	IV	..	71	1901	Williams
052372	RR Camelop.	275	23.4	+72 23	9.5	10.5	...	....	..	..	40	1905	L. Ceraski
052406	– Orionis	..	24.0	– 6 11	11.6	<15.4	...	....	..	..	114	1904	Leavitt
052404	S Orionis	1146	24.1	– 4 46	8.0	14.3	413	2404095	II	Md	..	1870	Webb
052504	– Orionis	..	25.2	– 4 34	12.4	13.1	...	....	..	..	115	1904	Leavitt
052530	T Aurigae	..	25.6	+30 22	4.5	<15	...	....	I	Pec.	..	1892	Anderson
052704	– Orionis	..	27.0	– 4 31	14.0	<15	...	....	..	..	32	1903	Wolf
052705c	– Orionis	..	27.1	– 5 1	10.0	11.0	...	....	..	..	116	1904	Leavitt
052702	– Orionis	..	27.1	– 2 54	9.0	11.4	...	....	..	..	117	1904	Leavitt
052705a	– Orionis	..	27.2	– 5 7	11.3	15.0	...	....	..	..	33	1903	Wolf
052707a	– Orionis	..	27.3	– 7 33	13.3	14.0	...	....	..	..	34	1903	Wolf
052707b	– Orionis	..	27.8	– 7 39	13.6	<14	...	....	..	..	35	1903	Wolf
052705b	– Orionis	..	27.9	– 5 44	14.1	<15.5	...	....	..	..	36	1904	Leavitt
052805b	– Orionis	..	28.4	– 5 26	14.5	<15.1	...	....	..	..	37	1904	Leavitt
052804b	– Orionis	..	28.6	– 4 48	14.0	15.0	...	....	..	..	38	1904	Leavitt
052804c	– Orionis	..	28.6	– 4 48	13.9	14.6	...	....	..	..	39	1904	Leavitt
052805a	– Orionis	..	28.6	– 5 16	13.8	15.0	...	....	..	..	36	1903	Wolf
052805c	– Orionis	..	28.7	– 5 6	13.3	14.6	...	....	IV?	..	40	1904	Leavitt
052806a	– Orionis	..	28.8	– 6 23	12.5	<15.5	...	....	..	..	41	1904	Leavitt
052805d	– Orionis	..	28.8	– 5 35	13.0	14.0	...	....	..	..	90	1904	Leavitt
052804a	– Orionis	..	28.9	– 4 43	12.8	<14	...	....	..	..	81	1901	Wolf
052806b	– Orionis	..	28.9	– 6 44	13.2	15.5	...	....	..	..	42	1904	Leavitt
052904a	– Orionis	..	29.0	– 4 52	13.0	15.2	...	....	..	..	37	1903	Wolf
052905a	– Orionis	..	29.0	– 5 46	13.2	14.1	...	....	..	..	43	1904	Leavitt
052906c	– Orionis	..	29.1	– 6 40	13.7	<15.5	...	....	..	..	44	1904	Leavitt
052905j	– Orionis	..	29.1	– 5 41	14.2	14.5	...	....	..	..	170	1904	Leavitt
052905b	– Orionis	..	29.1	– 5 41	12.9	14.0	...	....	IV?	..	45	1904	Leavitt
052905c	– Orionis	..	29.2	– 5 18	12.9	14.2	...	....	IV?	..	46	1904	Leavitt
052904c	– Orionis	..	29.3	– 4 54	14.5	15.2	...	....	..	..	47	1904	Leavitt
052905l	– Orionis	..	29.3	– 5 38	14.1	14.7	...	....	..	..	171	1904	Leavitt
052905d	– Orionis	..	29.4	– 5 9	14.3	<15.0	...	....	..	..	48	1904	Leavitt
052905k	– Orionis	..	29.4	– 5 36	14.6	15.0	...	....	..	..	91	1904	Leavitt
052906a	– Orionis	..	29.4	– 6 40	13.0	15.0	...	....	..	..	38	1903	Wolf
052905e	– Orionis	..	29.5	– 5 35	13.5	14.8	...	....	..	..	49	1904	Leavitt
052905m	– Orionis	..	29.5	– 5 1	14.2	<15.0	...	....	..	..	92	1904	Leavitt
052905n	– Orionis	..	29.5	– 5 1	13.6	14.1	...	....	..	..	172	1904	Leavitt
052905o	– Orionis	..	29.5	– 5 1	14.8	15.3	...	....	..	..	173	1904	Leavitt
052904d	– Orionis	..	29.5	– 4 50	14.9	15.5	...	....	..	..	50	1904	Leavitt
052906b	– Orionis	..	29.7	– 6 10	13.4	14.5	...	....	..	..	51	1904	I. Roberts
052905f	– Orionis	..	29.7	– 5 39	14.1	14.6	...	....	..	..	52	1904	Leavitt
052905g	– Orionis	..	29.8	– 5 27	12.1	12.7	...	....	..	..	53	1904	Leavitt
052905h	– Orionis	..	29.8	– 5 50	14.2	15.5	...	....	..	..	54	1904	Leavitt
052905i	– Orionis	..	29.8	– 5 15	14.2	15.5	...	....	..	..	55	1904	Leavitt
052905p	– Orionis	..	29.9	– 5 46	12.9	13.3	...	....	..	..	174	1904	Leavitt

Des.	Name.	DM.	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d.						
052906d	– Orionis	..	5 29.9	– 6 2	11.8	12.8	...	....	..	..	56	1904	Leavitt
052905q	– Orionis	..	29.9	– 5 46	13.2	14.0	...	....	..	..	175	1904	Leavitt
052904b	– Orionis	..	29.9	– 4 44	12.5	14.0	...	....	..	..	39	1903	Wolf
053005c	– Orionis	..	30.0	– 5 51	13.2	14.0	...	....	..	..	40	1903	I. Roberts
053005g	– Orionis	..	30.0	– 5 8	..	..	...	....	..	..	93	1904	I. Roberts
053005i	– Orionis	..	30.0	– 5 46	13.4	14.0	...	....	..	..	57	1904	Leavitt
053006c	– Orionis	..	30.0	– 6 28	13.1	14.0	...	....	..	..	58	1904	Leavitt
053005j	– Orionis	..	30.1	– 5 59	14.1	14.9	...	....	..	..	59	1904	Leavitt
053004c	– Orionis	..	30.1	– 4 55	12.7	13.1	...	....	..	..	60	1904	Leavitt
053068	S Camelopardali	398	30.2	+68 45	8.0	10.0	328	2412285	II	..	..	1891	Espin
053005k	– Orionis	..	30.2	– 5 40	12.9	14.7	...	....	..	..	61	1904	Leavitt
053004b	– Orionis	..	30.2	– 4 32	12.2	14.6	...	....	..	..	62	1904	I. Roberts
053005l	– Orionis	..	30.2	– 5 41	14.1	15.0	...	....	..	..	63	1904	Leavitt
053005d	– Orionis	..	30.3	– 5 50	12.0	14.5	...	....	..	..	41	1903	I. Roberts
053005m	– Orionis	..	30.3	– 5 47	12.7	13.7	...	....	..	..	64	1904	Leavitt
053005n	– Orionis	..	30.3	– 5 43	12.7	13.1	...	....	..	..	65	1904	Leavitt
053004a	– Orionis	..	30.3	– 4 50	12.7	<14	...	....	..	..	42	1903	I. Roberts
053005x	– Orionis	..	30.3	– 5 28	12.4	13.3	...	....	..	..	178	1904	Parkhurst
053005y	– Orionis	..	30.3	– 5 28	14.4	15.2	...	....	..	..	179	1904	Parkhurst
053005o	– Orionis	..	30.4	– 5 56	13.8	14.6	...	....	..	..	66	1904	Leavitt
053004d	– Orionis	..	30.4	– 4 58	14.2	14.9	...	....	..	..	67	1904	Leavitt
053004e	– Orionis	..	30.4	– 4 46	12.4	13.0	...	....	..	..	68	1904	Leavitt
053005e	– Orionis	..	30.4	– 5 39	12.3	<14	...	....	..	..	43	1903	Wolf
053005w	– Orionis	..	30.4	– 5 25	11.4	12.5	...	....	..	..	118	1904	Leavitt
053005z	– Orionis	..	30.4	– 5 28	15.2	16.5	...	....	..	..	180	1904	Parkhurst
053005aa	– Orionis	..	30.4	– 5 26	14.0	16.6	...	....	..	..	181	1904	Parkhurst
053005ab	– Orionis	..	30.4	– 5 27	..	..	...	....	..	..	182	1904	Parkhurst
053005p	– Orionis	..	30.5	– 5 14	11.1	12.5	...	....	..	..	69	1904	Leavitt
053005q	– Orionis	..	30.5	– 5 15	11.8	13.2	...	....	..	..	70	1904	Leavitt
053005r	– Orionis	..	30.5	– 5 30	10.7	11.3	...	....	..	..	71	1904	Leavitt
053006d	– Orionis	..	30.6	– 6 52	12.8	13.5	...	....	..	..	119	1904	Leavitt
053006e	– Orionis	..	30.6	– 6 5	14.0	<15.4	...	....	..	..	176	1904	Leavitt
053004f	– Orionis	..	30.6	– 4 59	13.2	14.3	...	....	..	..	72	1904	Leavitt
053005b	– Orionis	..	30.7	– 5 5	11.6	14.2	...	....	..	..	83	1901	Wolf
053006b	– Orionis	..	30.7	– 6 49	13.4	14.6	...	....	..	..	50	1903	Wolf
053005s	– Orionis	..	30.7	– 5 26	13.0	13.6	...	....	..	..	73	1904	Leavitt
053005t	– Orionis	..	30.8	– 5 32	10.3	11.0	...	....	..	..	74	1904	Leavitt
053005u	– Orionis	..	30.8	– 5 10	14.0	<15.2	...	....	..	..	75	1904	Leavitt
053005v	– Orionis	..	30.9	– 5 5	14.4	15.0	...	....	..	..	76	1904	Leavitt
053005a	T Orionis	..	30.9	– 5 32	9.0	13.0	...	....	..	..	..	1863	Bond
053005f	– Orionis	..	30.9	– 5 54	14.1	14.8	...	....	..	..	77	1904	I. Roberts
053005h	– Orionis	..	30.9	– 5 20	11.5	<15	...	....	..	..	8	1904	Wolf
053104a	– Orionis	..	31.0	– 4 51	12.8	<15	...	....	..	..	44	1903	Wolf
053105c	– Orionis	..	31.0	– 5 8	12.3	13.3	...	....	..	..	78	1904	Leavitt
053106c	– Orionis	..	31.0	– 6 26	14.1	14.7	...	....	..	..	79	1904	Leavitt
053106a	– Orionis	..	31.0	– 6 55	12.5	15.0	...	....	..	..	45	1903	Wolf
053104b	– Orionis	..	31.1	– 4 46	14.0	14.8	...	....	..	..	80	1904	Leavitt
053106i	– Orionis	..	31.1	– 6 1	13.0	<14.0	...	....	..	..	105	1904	Leavitt
053106j	– Orionis	..	31.1	– 6 41	14.2	15.0	...	....	..	..	177	1904	Leavitt
053106b	– Orionis	..	31.2	– 6 46	12.6	<14	...	....	..	..	46	1903	Wolf

Des.	Name.	DM.	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d.						
*053106*d	−Orionis	..	5 31.2	− 6 18	*12.8*	*13.9*	...	....	..	..	81	1904	Leavitt
*053106*e	−Orionis	..	31.3	− 6 52	*14.4*	<*15.4*	...	....	..	..	82	1904	Leavitt
*053106*f	−Orionis	..	31.3	− 6 33	*13.7*	<*15.0*	...	....	..	..	83	1904	Leavitt
*053105*b	−Orionis	..	31.4	− 5 15	*11.8*	<*14*	...	....	..	..	85	1901	Wolf
*053106*g	−Orionis	..	31.5	− 6 22	*13.0*	*14.5*	...	....	..	..	84	1904	Leavitt
*053105*e	−Orionis	..	31.6	− 5 21	*14.6*	<*15.0*	...	....	..	..	106	1904	Leavitt
*053105*d	−Orionis	..	31.7	− 5 30	*13.5*	*14.6*	...	....	..	..	85	1904	Leavitt
*053106*h	−Orionis	..	31.8	− 6 23	*12.1*	*13.3*	...	....	..	..	86	1904	Leavitt
*053206*a	−Orionis	..	32.1	− 6 37	*11.5*	<*14.8*	...	....	..	..	87	1904	Leavitt
*053205*a	−Orionis	..	32.1	− 5 28	..	..	...	....	..	..	168	1904	I. Roberts
*053206*b	−Orionis	1259	32.4	− 6 39	*8.0*	*10.0*	Irr.	....	..	..	120	1904	Leavitt
053201	X Orionis	..	32.6	− 1 50	*11.4*	*14.9*	146	2411774	II	..	11	1904	Wolf
*053307*b	−Orionis	..	33.1	− 7 1	*13.7*	*14.4*	...	....	..	..	88	1904	Leavitt
053326	RR Tauri	..	33.3	+26 19	*9*	<12	...	....	..	..	6	1900	L. Ceraski
053337	RU Aurigae	..	33.4	+37 35	*10.0*	<*12.5*	...	....	..	..	62	1905	L. Ceraski
*053302*c	−Orionis	..	33.4	− 2 50	*15.6*	<*16.4*	...	....	..	..	2	1906	Leavitt
*053302*a	−Orionis	..	33.5	− 2 48	*11.6*	*13.2*	...	....	..	..	121	1904	Leavitt
*053307*a	−Orionis	..	33.6	− 7 19	*13.5*	*15.0*	...	....	..	..	47	1903	Wolf
*053302*b	−Orionis	..	33.6	− 2 48	*11.4*	*14.2*	...	....	..	..	122	1904	Leavitt
*053402*a	−Orionis	..	34.0	− 2 51	*14.1*	<*16.4*	...	....	..	..	3	1906	Leavitt
*053402*b	−Orionis	..	34.4	− 2 44	*15.0*	*16.3*	...	....	..	..	4	1906	Leavitt
*053402*c	−Orionis	..	34.6	− 2 24	*14.5*	*16.0*	...	....	..	..	5	1906	Leavitt
*053402*d	−Orionis	..	34.6	− 2 35	*15.0*	*15.5*	...	....	..	..	6	1906	Leavitt
*053402*e	−Orionis	..	34.7	− 2 46	*14.4*	*16.0*	...	....	..	..	7	1906	Leavitt
053403	−Orionis	..	34.8	− 3 29	*11.7*	*13.0*	...	....	..	..	86	1901	Wolf
*053506*b	−Orionis	..	35.2	− 6 19	*12.2*	*13.2*	...	....	..	..	89	1904	Leavitt
053531	U Aurigae	..	35.6	+31 59	8.0	13.5	405.5	2411750	II	Md	..	1891	Espin
*053608*a	−Orionis	..	36.0	− 8 8	*13.0*	*15.0*	...	....	..	..	48	1903	Wolf
053604	Y Orionis	..	36.6	− 4 11	*9.8*	<*15.2*	268	2416875	II	..	49	1903	Wolf
053920	Y Tauri	1083	39.7	+20 39	6	8	Irr.	....	III	N	..	1887	R
054130	−Aurigae	1014	41.7	+30 36	..	..	...	....	..	..	..	1902	Backhouse
054206	−Orionis	..	42.5	− 6 15	*13.2*	*14.5*	...	....	..	..	88	1901	Wolf
054331	S Columbae	2732	43.2	−31 44	9.0	<12.0	325.5	2415149	II	..	..	1896	(Cordoba)
054615b	RS Tauri	..	46.1	+15 51	..	..	...	....	S	G	5	1903	Anderson
054615a	Z Tauri	..	46.7	+15 46	9.0	<13	516	2416130	II	..	4	1900	Anderson
054629	R Columbae	2538	46.7	−29 13	*8.0*	*12.5*	323	2410277	II	Md	..	1893	Fleming
054615c	RU Tauri	..	46.9	+15 57	10	*14.5*	580	2410360	II	..	20	1904	Fleming
054974	V Camelop.	..	49.4	+74 30	*8.0*	<*14*	207?	2416773	II	Md	8	1902	(Greenwich)
054907	α Orionis	1055	49.8	+ 7 23	1	1.4	Irr.	....	III?	Ma	..	1840	J. Herschel
054920	U Orionis	..	49.9	+20 10	5.5	12.5	375	2409877	II	Md	..	1885	Gore
055020	−Orionis	..	50.0	+20 9	10.5	11.2	Irr.?	....	III	..	9	1904	Luther
055353	Z Aurigae	979	53.6	+53 18	9	<12	112	2416377	II	..	1	1903	Anderson
055646	RS Aurigae	1089	56.4	+46 16	*9.2*	*10.5*	...	....	..	..	157	1904	L. Ceraski
055686	R Octantis	72	56.4	−86 26	*7.3*	*12.2*	408	2410356	II	Md	..	1892	Fleming
060124	S Leporis	3679	6 1.6	−24 11	6.5	7.5	Irr.	....	III	Mb	..	1891	Sawyer
060450	X Aurigae	..	4.4	+50 15	8.2	13	161	2415940	II	Md	8	1900	Anderson
060426	−Geminorum	1117	4.7	+26 3	7.4	8.2	Irr.	....	III	N	..	1897	Backhouse
060443	RR Aurigae	..	4.8	+43 11	..	..	...	....	II	Md	133	1904	Fleming
060521	−Geminorum	1146	5.8	+21 54	6.7	7.8	Irr.	....	III	K	..	1897	Backhouse
060822	η Geminorum	1241	8.8	+22 32	3.2	4.2	231.4	2402546	III	Ma	..	1865	Schmidt

Des.	Name.	DM.	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			*d.*						
061133	– Columbae	2825	6 11.2	−33 2	9.2	10.0	...	....	..	..	..	1889	Kapteyn
061275	W Camelop.	..	12.2	+75 30	*10.5*	*12*	305?	2416872	II	..	20	1903	L. Ceraski
061647	V Aurigae	..	16.5	+47 45	9.0	11.7	352	2410268	II	..	..	1893	Espin
061702	V Monocerotis	1581	17.7	− 2 9	7.2	<12.9	332.0	2408853	II	Md	..	1883	Schönfeld
061914	– Orionis	1283	19.8	+14 48	..	..	...	....	III	N	..	1906	Wendell
061907	T Monocerotis	1273	19.8	+ 7 8	5.7	6.8	27.0 +	2409633	IV	G	..	1871	Gould
062230	RT Aurigae	1238	22.1	+30 34	5.0	5.6	3.75	2416942	IV	F	47	1905	Astbury
062742	RV Aurigae	1571	27.6	+42 34	..	..	...	....	..	N	21	1904	Fleming
062808	Z Monocerotis	1467	28.0	− 8 48	*9.0*	<*10.1*	Irr.	....	III	G 5 K	..	1898	Fleming
062915	W Geminorum	1246	29.2	+15 24	6.7	7.5	7.7 +	2413267	IV	Cont?	..	1896	Sawyer
062938	– Aurigae	1539	29.7	+38 32	..	..	...	....	III	N	..	1906	Wendell
063308	R Monocerotis	1427	33.7	+ 8 49	9.5	13	Irr.	....	II	..	..	1861	Schmidt
063558	S Lyncis	..	35.9	+58 0	9.4	14	300	2410059	II	Md	..	1898	Anderson
063730	Nova Gemin.	..	37.8	+30 3	*5*	<13.5	...	....	I	Pec.	12	1903	Turner
064030	X Gemin.	1329	40.7	+30 23	8	13	262	2410307	II	Md	..	1897	Anderson
064018	RT Gemin.	..	40.7	+18 44	*10*	<*15.5*	...	....	..	..	12	1904	Wolf
064707	W Monocerotis	..	47.5	− 7 2	8.8	<13	262.5	2410617	II	..	..	1887	Espin
064907	RU Monocerotis	1623	49.4	− 7 28	*9.8*	*10.5*	0.9 +	2416900	V	..	43	1905	L. Ceraski
065111	Y Monocerotis	..	51.3	+11 22	8.0	13.5	225	2415790	II	..	21	1900	L. Ceraski
065208	X Monocerotis	1641	52.4	− 8 56	8.0	10.0	Irr.	....	II	Md	..	1898	Fleming
065355	R Lyncis	1154	53.0	+55 28	7.0	13.8	379.2 +	2405796	II	Md	..	1870	Krueger
065306	– Monocerotis	1462	53.0	+ 6 18	..	..	...	....	..	N	3	1902	L. Ceraski
065530	RS Geminorum	..	55.2	+30 40	9.8	13	Irr.	....	II?	..	14	1903	L. Ceraski
065820	ζ Geminorum	1687	58.2	+20 43	3.7	4.3	10.1 +	2410640	IV	G	..	1847	Schmidt
070122a	R Geminorum	1577	7 1.3	+22 52	6.4	13.8	370.2 +	2403370	II	Md	..	1848	Hind
070122c	– Geminorum	1576	1.3	+22 40	8.3	9.4	...	....	S	..	63	1905	Tass
070109	V Canis Min.	..	1.5	+ 9 2	8.8	<15	364	2411266	II	Md	..	1896	Fleming
070122b	Z Geminorum	1579	1.6	+22 41	R	..	...	....	S	..	9	1903	Graff
070135	– Puppis	3334	1.7	−35 47	*8.0*	*8.6*	...	....	III	Mc 5 d	48	1901	Fleming
070205	RS Monocerotis	..	2.2	+ 5 9	9	<10.5	...	....	..	..	10	1904	Anderson
070310	R Canis Min.	1428	3.2	+10 11	7.2	10.0	337.7	2400089	II	Md	..	1855	(Bonn)
070311	– Canis Majoris	1805	3.4	−11 46	*8.3*	*10.0*	Irr.	....	III	N	49	1901	Fleming
070532	S Canis Majoris	..	5.7	−32 46	9	10	...	....	S	A 5 F	..	1897	(Cape)
070772	R Volantis	..	7.4	−72 51	8.7	11.5	421?	2397145	II	..	..	1899	(Cape)
071044	L^2 Puppis	3227	10.5	−44 29	3.4	6.2	140.1 +	2415108	II	Md	..	1872	Gould
071124	RV Geminorum	..	11.9	+24 6	*10*	<*15*	...	....	..	..	141	1904	Wolf
071201	RR Monocerotis	..	12.4	+ 1 17	9.3	<15	336?	2416378	II	..	16	1903	L. Ceraski
071416	R Canis Majoris	1898	14.9	−16 12	5.8	6.4	1.1 +	2410357	V	F	..	1887	Sawyer
071531	RR Geminorum	..	15.1	+31 4	*10*	*11.5*	0.3 +	....	IV	..	13	1903	L. Ceraski
071725	T Canis Majoris	4409	17.3	−25 16	8.7	11.1	371	2412808	II	..	24	1903	deSitter
071713	V Geminorum	..	17.6	+13 17	8.0	14.5	276	2407754	II	Md	..	1880	Baxendell
072146	– Lyncis	1271	21.0	+46 10	*7.8*	*8.4*	...	....	III	Mc	50	1901	Fleming
072121	RU Geminorum	..	21.0	+21 38	*12.5*	*14*	338?	....	..	..	15	1904	Bohlin
072211	– Puppis	1941	22.4	−11 31	*10.0*	*10.7*	...	....	..	Pec.	..	1898	Fleming
072609	U Monocerotis	2085	26.0	− 9 34	6.7	7.5	Irr.	....	III	K	..	1873	Gould
072708	S Canis Minoris	1800	27.3	+ 8 32	7.0	12.2	330.3 +	2401629	II	Md	..	1856	Hind
072776	Y Camelop.	286	27.6	+76 17	*9.5*	*12*	3.3 +	....	V	..	21	1903	L. Ceraski
*072820*b	Z Puppis	..	28.3	−20 27	7.5	13	524	2415008	II	..	..	1897	Perry
072811	T Canis Minoris	..	28.4	+11 58	9.1	<13.5	322.7	2404138	II	..	..	1865	Schönfeld
*072820*a	X Puppis	2011	28.4	−20 42	8.0	9.0	25.9 +	2408893	IV	G 5 K	..	1889	Kapteyn

Des.	Name.	DM.	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d.						
073173	S Volantis	453	7 31.4	−73 10	9.1	<13	393.5	2415042	II	..	27	1900	Innes
073520	Y Geminorum	1875	35.3	+20 40	..	..	...	....	..	..	4	1902	L. Ceraski
073508	U Canis Minoris	..	35.9	+ 8 37	8.5	13.5	410	2407760	II	Mb	..	1879	Baxendell
073723	S Geminorum	1796	37.0	+23 41	8.2	14.5	294	2397546	II	Md	..	1848	Hind
074241	W Puppis	3363	42.6	−41 57	*8.7*	*12.6*	120.8	2415078	II	Md	..	1895	Fleming
074205	− Canis Minoris	..	42.8	+ 5 44	..	..	...	....	..	..	22	1904	Wells
074323	T Geminorum	*1778*	43.3	+23 59	8.1	<13.5	288.1	2396369	II	Md	..	1848	Hind
074305	− Canis Minoris	1797	43.5	+ 5 41	*9.8*	*11.3*	Irr.	....	III	N	..	1896	Fleming
074341	RR Puppis	3380	43.5	−41 8	9.4	10.7	6.4 +	2415021	V	..	..	1899	(Cape)
074922	U Geminorum	1807	49.2	+22 16	8.9	14	86.3	2415029	II	Cont.?	..	1855	Hind
075548	V Puppis	3349	55.4	−48 58	4.1	4.8	1.4 +	2415021	V	B 1 A	..	1886	Williams
075612	U Puppis	2275	56.1	−12 34	8.5	14.5	315	2408148	II	Md	..	1881	Pickering
075820	Y Cancri	..	58.6	+20 25	*12*	*14*	...	....	..	..	3	1904	Wolf
080138	RT Puppis	4049	8 1.7	−38 29	*9.3*	*10.2*	Irr.	....	III	N	..	1898	Wells
080322	RU Puppis	2160	3.1	−22 37	*9.4*	*11.6*	Irr.	....	III	N	..	1898	Wells
080310	RT Monocerotis	2396	3.9	−10 31	8.5	9.3	...	....	..	..	42	1905	Anderson
080834	Y Puppis	4482	8.8	−34 50	8.8	9.2	Irr.	....	III	..	..	1896	(Cordoba)
080934	RS Puppis	4488	9.2	−34 17	6.8	7.9	41.3 +	2414307	IV	K	..	1897	Reitsma
081112	R Cancri	1803	11.0	+12 2	6.0	11.3	362 +	2397553	II	Md	..	1829	Schwerd
081473	Z Camelop.	..	14.1	+73 26	*10*	*13*	180.5	2414313	II	..	183	1904	(Greenwich)
081403	− Hydrae	1958	14.9	+ 3 5	..	..	...	....	III	..	..	1896	Backhouse
081617	V Cancri	1825	16.0	+17 36	7.5	13.0	272.1	2404568	II	Md	..	1870	Auwers
081633	T Lyncis	1686	16.4	+33 51	9.5	10.8	...	....	II	..	1	1906	Anderson
081908	− Hydrae	2343	19.6	− 8 11	*8.2*	*8.8*	Irr.	....	III	Mc 5 d	51	1901	Fleming
082476	R Chamaeleon.	..	24.2	−76 2	*8.9*	*12.8*	335	2410238	II	Md	4	1901	Fleming
082405	RT Hydrae	2550	24.7	− 5 59	7.4	9.8	R	....	II	Md?	..	1898	Fleming
082659	V Carinae	1048	26.7	−59 47	7.4	8.1	6.6 +	2415026	IV	G 5 K	..	1892	Roberts
082958	X Carinae	1143	29.1	−58 53	7.9	8.7	0.5 +	2415021	V	A	..	1892	Roberts
083019	U Cancri	2042	30.0	+19 14	8.4	<14	305.0	2397962	II	Md	..	1853	Chacornac
083350	X Ursae Majoris	..	33.7	+50 30	8.4	<13.0	251	2412040	II	Md	..	1898	Fleming
083447	T Velorum	*4388*	34.4	−47 1	7.6	8.5	4.6 +	2415022	IV	G 5 K	..	1892	Roberts
083409	RV Hydrae	2612	34.9	− 9 14	*7.9*	*9.0*	Irr.	....	III	Mc 5 d	52	1901	Fleming
083679	RS Camelop.	289	36.9	+79 20	*8.4*	*9.2*	...	....	IV?	..	105	1905	L. Ceraski
083819	S Cancri	2090	38.2	+19 24	8.2	10.0	9.4 +	2403210	V	A	..	1848	Hind
084127	R Pyxidis	5879	41.3	−27 50	8.0	10.0	363?	2412769	II	..	..	1890	Holetschek
084803	S Hydrae	2085	48.4	+ 3 27	7.5	13.0	256	2399379	II	Md	..	1848	Hind
084917	X Cancri	1973	49.8	+17 37	6.2	6.6	...	....	III	N	..	1895	R
085008	T Hydrae	2525	50.8	− 8 46	7.0	13.1	288.8	2399739	II	Md	..	1851	Hind
085120	T Cancri	2243	51.0	+20 14	8.0	10.8	482	2399706	II	..	..	1850	Hind
090024	S Pyxidis	7693	9 0.7	−24 41	8.2	<12.0	208	2414040	II	Md	..	1896	(Cordoba)
090151	V Ursae Majoris	..	1.2	+51 31	9.6	10.6	201.5	2416231	V?	..	70	1901	Anderson
090331	− Cancri	1946	3.6	+31 23	5.4	6.6	...	....	III	Mc	..	1903	Pickering
090425	W Cancri	..	4.0	+25 39	*9.1*	*<13.5*	384	2410153	II	Md	..	1895	Fleming
091365	RU Carinae	..	13.5	−65 48	*10.9*	*12.1*	Irr.	....	III	N	..	1898	Fleming
091868	RW Carinae	921	18.2	−68 20	*8.5*	*<11.5*	322	2410259	II	Md	5	1901	Fleming
091955	V Velorum	2118	19.2	−55 32	7.5	8.2	4.3 +	2415021	IV	G 5 K	..	1892	Roberts
092048	RS Velorum	4658	20.4	−48 26	*9.5*	*<13.5*	421	2410403	II	Md	23	1904	Fleming
092551	Y Velorum	3858	25.7	−51 45	8.6	12.5	437	2415455	II	..	97	1901	Innes
092728	S Antliae	7373	27.9	−28 11	6.3	6.8	0.3 +	2410741	IV	F	..	1888	Paul
092856	N Velorum	2270	28.2	−56 36	..	..	...	....	S	K 5 M	..	1871	Gould

Des.	Name.	DM.	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d.						
092944	S Velorum	5573	9 29.4	−44 46	7.8	9.3	5.9 +	2415021	V	A	..	1894	Woods
092945	U Velorum	5574	29.5	−45 4	8.2	8.6	Irr.	....	III	Mb	..	1895	Roberts
092936	T Antliae	5776	29.7	−36 10	*8.7*	*9.6*	...	....	III	..	..	1897	(Cape)
092962	R Carinae	1253	29.7	−62 21	4.5	10.0	309.3 +	2415172	II	Md	..	1871	Gould
093014	X Hydrae	2893	30.7	−14 15	8.4	11.8	296	2412180	II	Md	..	1894	Skinner
093178	Y Draconis	..	31.1	+78 18	8.5	13	336	2417120	..	Md	2	1903	L. Ceraski
093656	W Ursae Maj.	1400	36.7	+56 25	7.9	8.6	0.1 +	2416129	IV	..	3	1903	M. and K.
093707	R Sextantis	2873	37.8	− 7 39	*9.5*	*10.6*	Irr.	....	III	..	..	1895	Wells
093934	R Leonis Min.	*2050*	39.6	+34 58	7.0	13.0	370.5 +	2402308	II	Md	..	1863	Schönfeld
094023	RR Hydrae	..	40.4	−23 34	8.4	<13.0	336.8	2415188	II	..	..	1898	(Cape)
094211	R Leonis	*2096*	42.2	+11 54	4.6	10.5	312.8	2362907	II	Md	..	1782	Koch
094262	l Carinae	*1333*	42.5	−62 3	3.6	5.0	35.5 +	2415044	IV	G	..	1871	Gould
094622	Y Hydrae	2739	46.4	−22 33	*8.0*	*10.0*	Irr.	....	II?	N	..	1896	Wells
094735	S Leonis Min.	..	47.8	+35 24	*8.5*	*11*	284	2413699	II	Md	19	1904	Anderson
094953	Z Velorum	..	49.5	−53 42	8.8	12.5	407	2415050	II	..	28	1900	Innes
095141	X Velorum	*5616*	51.3	−41 7	*9.5*	*11.8*	Irr.	....	II?	N	6	1901	Wells
095421	V Leonis	2140	54.5	+21 44	8.6	<13.5	273.1	2408545	II	Md	..	1882	Becker
095458	RR Carinae	1739	54.8	−58 23	*8.2*	*9.6*	Irr.	....	III	Md	..	1894	Fleming
095563	RV Carinae	1243	55.6	−63 25	9.4	<13	370	2415148	II	..	..	1899	Innes
100537	R Antliae	6338	10 5.4	−37 14	7.2	7.8	...	....	S	A	..	1872	Gould
100661	S Carinae	*1701*	6.2	−61 4	5.8	9.0	148.7	2415032	II	Md	..	1871	Gould
100860	U Ursae Maj.	1246	8.3	+60 31	*7.0*	*8.3*	Irr.	....	III	Pec.	..	1898	Fleming
101058	Z Carinae	..	10.4	−58 21	*10.0*	*13.4*	386	2410261	II	Md	..	1894	Fleming
101153	W Velorum	3515	11.5	−53 59	8.2	<12.0	390.5	2415045	II	..	..	1896	Kapteyn
101112	− Leonis	..	11.8	+12 53	*12*	?	...	....	..	..	13	1904	Wolf
101660	− Carinae	..	16.8	−60 57	*10.0*	*11.5*	...	....	..	..	123	1904	Leavitt
101741	RR Velorum	5804	17.8	−41 51	10.1	10.9	1.8 +	2415548	V	..	91	1901	Innes
102060	− Carinae	..	20.9	−60 24	*10.2*	*12.2*	...	....	..	..	124	1904	Leavitt
102957	Y Carinae	3424	29.4	−57 59	8.1	8.6	3.6 +	2415021	IV	G	..	1893	Roberts
102900	− Sextantis	..	29.9	+ 0 11	*8.9*	*10.5*	...	....	II?	..	42	1906	Leland
103039	U Antliae	*6579*	30.8	−39 3	*8.3*	*9.3*	Irr.?	....	III	N	7	1901	Wells
103212	U Hydrae	3218	32.6	−12 52	4.5	6.3	Irr.	....	III	N	..	1871	Gould
103270	RZ Carinae	..	32.8	−70 12	*9.0*	*<13.2*	272	2410126	II	..	24	1904	Fleming
103361	RX Carinae	..	33.2	−61 48	*10.0*	*<12.5*	334	2410147	II	..	8	1901	P ckering
103458	− Carinae	..	34.6	−58 41	*11.4*	*13.0*	...	....	..	..	125	1904	Leavitt
103460	− Carinae	..	34.7	−60 16	*13.4*	*<15.1*	...	....	..	..	126	1904	Leavitt
103657	− Carinae	..	36.4	−57 25	*11.1*	*12.8*	...	....	..	..	127	1904	Leavitt
103769	R Ursae Maj.	587	37.6	+69 18	7.0	13.5	302.1 +	2397951	II	Md	..	1853	Pogson
104058	RT Carinae	2663	40.9	−58 54	*9.3*	*10.7*	Irr.?	....	III	..	..	1898	Wells
104159	η Carinae	2620	41.2	−59 10	>1	7.4	Irr.	....	I?	Pec.	..	1827	Burchell
104265	− Carinae	1475	42.5	−65 5	*8.4*	*9.6*	...	....	..	N	..	1906	Fleming
104628	RS Hydrae	*7724*	46.6	−28 6	8.6	12.0	338	2409970	II	..	..	1897	(Cape)
104620	V Hydrae	3283	46.8	−20 43	7	10.0	Irr.?	....	II	..	..	1888	Chandler
104759	− Carinae	..	47.0	−59 49	*13.1*	*<15.1*	...	....	..	..	128	1904	Leavitt
104814	W Leonis	..	48.4	+14 15	9	<14	388	2400280	II	Md	..	1880	Peters
104957	− Carinae	..	49.9	−57 59	*12.6*	*14.9*	...	....	..	..	129	1904	Leavitt
105057	− Carinae	..	50.2	−57 52	*13.7*	*<15.1*	...	....	..	..	130	1904	Leavitt
105058	− Carinae	..	50.4	−58 15	*13.4*	*14.5*	...	....	..	..	131	1904	Leavitt
105159	T Carinae	2840	51.3	−59 59	6.7	7.0	...	....	S	K	..	1877	Gould
105160	− Carinae	2386	51.3	−60 24	*9.2*	*10.2*	...	....	..	..	132	1904	Pickering

Des.	Name.	DM.	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d.						
105359	U Carinae	2888	10 53.7	−59 12	6.8	8.0	38.7 +	2415034	IV	K	..	1891	Roberts
105517	R Crateris	3281	55.6	−17 47	..	..	...	....	III	Mc 5 d	..	1861	Winnecke
110254	RW Centauri	..	11 2.9	−54 35	*10.2*	*11.2*	Irr.	....	III	N	9	1901	Wells
110361	RS Carinae	..	3.8	−61 23	*8*	<*14*	...	....	I	Pec.	..	1895	Fleming
110506	S Leonis	..	5.7	+ 6 0	9.0	13.5	189.5	2400752	II	..	..	1856	Chacornac
111561	RY Carinae	..	15.8	−61 19	9.9	<12.0	R	....	..	..	98	1901	Innes
111661	RS Centauri	..	16.1	−61 20	*9.2*	<*12.9*	166	2410046	II	Md	..	1896	Fleming
113972	Z Draconis	533	39.8	+72 49	*9.9*	13.6	1.4 +	2416074	V	..	4	1903	L. Ceraski
114232	Z Hydrae	8314	42.6	−32 43	8.8	9.8	Irr.	....	III	..	..	1898	(Cape)
114441	X Centauri	6787	44.2	−41 12	*7.3*	*13.0*	313.9	2415234	II	Md	..	1895	Fleming
114707	− Crateris	*3469*	47.6	− 7 3	*8.2*	*9.2*	...	....	II	Md	43	1906	Fleming
115058	W Centauri	3924	50.0	−58 42	*8.6*	*13.1*	204.3	2415202	II	Md	..	1895	Fleming
115158	Z Ursae Major.	1346	51.3	+58 25	..	..	...	....	II	Md	25	1904	King
115609	X Virginis	..	56.7	+ 9 38	8?	12	...	....	S	..	..	1871	Peters
115919	R Com. Beren.	2527	59.1	+19 20	8.0	15.0	361.8	2399304	II	..	..	1856	Schönfeld
115905	RX Virginis	*3199*	59.6	− 5 13	*7.2*	*8.8*	Irr.	....	III	K	..	1898	Fleming
120206	RW Virginis	*3424*	12 2.1	− 6 12	*7.1*	*8.3*	Irr.	....	III	Md?	..	1898	Fleming
120444	RU Centauri	7820	4.2	−44 52	8.5	9.2	Irr.	....	III	F?	..	1897	(Cape)
120769	S Muscae	1646	7.4	−69 36	6.4	7.3	9.6 +	2415029	IV	K 5 M	..	1891	Roberts
120905	T Virginis	3456	9.5	− 5 29	8.7	13.5	339.5	2400891	II	Md	..	1849	Boguslawski
121418	R Corvi	3367	14.4	−18 42	7.5	12.6	318.5	2403476	II	Md	..	1867	Karlinski
121508	− Virginis	3329	15.2	− 8 27	*9.2*	*9.8*	...	....	III	Md?	53	1901	Fleming
121561	T Crucis	3100	15.9	−61 44	6.8	7.6	6.7 +	2415028	IV	K 5 M	..	1895	Roberts
121861	R Crucis	*3938*	18.1	−61 4	6.8	7.9	5.8 +	2415027	IV	K 5 M	..	1891	Roberts
121948	S Centauri	7401	19.2	−48 53	*8.1*	*9.5*	...	....	..	N	..	1889	Fleming
122001	SS Virginis	2694	20.1	+ 1 19	*8.3*	*12.5*	...	....	II?	N	78	1905	R
122532	T Can. Venat.	..	25.2	+32 3	8.6	12	281	2415184	II	Mc	..	1897	Anderson
122657	U Crucis	..	26.9	−57 1	*10.3*	<*13.2*	351.4	2410143	II	Md	..	1896	Fleming
122854	U Centauri	..	28.0	−54 6	*8.7*	*12.6*	220	2410211	II	Md	..	1894	Fleming
122803	Y Virginis	..	28.7	− 3 52	8.6	14.5	218.8	2408880	II	Md?	..	1874	Henry
123160	T Ursae Major.	1406	31.8	+60 2	6.4	13.1	257.2 +	2400705	II	Md	..	1860	(Bonn)
123307	R Virginis	2561	33.4	+ 7 32	6.4	12.1	145.4 +	2381934	II	Md	..	1809	Harding
123459	RS Ursae Maj.	..	34.4	+59 2	9.2	14.5	259	2410252	II	Md	67	1905	Fleming
123556	Y Ursae Major.	1615	35.8	+56 24	8	9	...	....	III	Mc 5 d	134	1904	Fleming
123668	R Muscae	1731	36.0	−68 52	6.5	7.6	0.8 +	2415021	IV	K	..	1871	Gould
123961	S Ursae Major.	1313	39.6	+61 38	7.3	12.5	226.5 +	2400571	II	Md	..	1853	Pogson
124204	RU Virginis	..	42.2	+ 4 42	8	12	440	2413314	II	..	..	1897	Roy
124606	U Virginis	2664	46.0	+ 6 6	7.5	13.5	206.9 +	2402784	II	Md	..	1831	Harding
124857	S Crucis	5776	48.4	−57 53	6.5	7.6	4.6 +	2415026	IV	K 5 M	..	1891	Roberts
125057	V Crucis	..	50.7	−57 21	*10.4*	*13.6*	377	2410279	II	Pec.	26	1904	Fleming
125266	− Draconis	780	52.5	+66 32	*8.5*	*10.5*	...	....	..	N	..	1906	Fleming
125705b	− Virginis	..	57.4	+ 5 43	*10.3*	*11.5*	...	....	..	..	68	1905	Fleming
125705a	RT Virginis	2708	57.6	+ 5 43	8.0	9.0	Irr.	....	III?	Md	..	1896	Fleming
130212	RV Virginis	..	13 2.7	−12 38	*10*	<*14*	...	....	II?	..	7	1900	Schwassmann
130656	− Centauri	5632	6.3	−56 28	*9.8*	*10.4*	Irr.	....	III	..	54	1901	Wells
130756	− Centauri	5650	7.6	−56 26	*10.0*	*10.7*	Irr.	....	III	..	27	1904	Breslin
130802	− Virginis	3653	8.9	− 2 16	*7.4*	*8.8*	Irr.	....	III	Mc 5 d	55	1901	Fleming
131283	U Octantis	..	12.3	−83 42	7.8	12.2	300.9	2415253	II	..	25	1900	(Cape)
131373	T Muscae	1134	13.5	−73 55	*8.0*	*9.7*	...	....	..	N	..	1904	Wells
131561	− Centauri	*4611*	15.1	−61 3	*10.5*	*11.3*	Irr.	....	III	Md?	..	1898	Fleming

Des.	Name.	DM	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d.						
131602	RZ Virginis	..	13 16.8	+ 2 22	9?	12	...	....	..	..	73	1905	Graff
132046	ω Centauri	8646	20.8	−46 57	..	..	...	....	Cl.	..	..	1897	Bailey
132002	W Virginis	3683	20.9	− 2 52	8.7	10.4	17.2 +	2402708	IV	Cont.	..	1866	Schönfeld
132262	RR Ursae Maj.	..	22.5	+62 55	*9.4*	<*12*	...	....	II	Md?	106	1905	L. Ceraski
132202	V Virginis	3686	22.6	− 2 39	8.0	14.0	250.5	2400456	II	Md	..	1857	Goldschmidt
132422	R Hydrae	3601	24.2	−22 46	4.0	9.8	425.1 +	2411931	II	Md	..	1670	Montanari
132477	− Chamaeleon.	*767*	24.6	−77 3	*7.0*	*8.0*	...	....	..	..	56	1901	Fleming
132706	S Virginis	3837	27.8	− 6 41	5.6	12.3	376.9	2397507	II	Md	..	1852	Hind
133119	− Virginis	*3640*	31.0	−19 5	..	..	...	....	..	..	28	1904	Fleming
133155	RV Centauri	5650	31.1	−55 58	*9.0*	<*12.6*	...	....	II	N	..	1897	Fleming
133273	T Ursae Min.	..	32.6	+73 56	8.5	<13	314?	2416973	II	Md	57	1903	L. Ceraski
133431	Z Centauri	..	34.3	−31 8	*7*	<16.5	...	....	I	Pec.	..	1895	Fleming
133633	T Centauri	*9549*	36.0	−33 6	*6.5*	*9.2*	90.3	2415076	II	Md	..	1894	Markwick
133618	RY Virginis	3660	36.3	−18 38	*8.3*	*9.3*	Irr.	....	III	Ma	10	1901	Wells
133728	− Can. Venat.	*2450*	37.6	+28 53	..	..	...	....	Cl.	..	..	1895	Bailey
134236	RT Centauri	8854	42.5	−36 22	7.9	<11.5	248.0	2414546	II	..	..	1896	Innes
134327	W Hydrae	9429	43.4	−27 52	6.7	8.0	384	2411061	II	Md	..	1889	Sawyer
134440	R Can. Venat.	2694	44.6	+40 2	6.1	12.7	333	2410742	II	Md	..	1888	Espin
134536	RX Centauri	..	45.6	−36 27	8.6	<12.5	329	2415225	II	..	..	1902	(Cape)
134677	T Apodis	..	46.1	−77 18	8.1	<12.0	269?	2415237	II	..	29	1900	Innes
135010	− Virginis	..	50.3	−10 44	*14.0*	*15.0*	...	....	..	..	8	1906	Leavitt
135112	− Virginis	..	51.5	−12 4	*13.0*	*14.0*	...	....	..	..	9	1906	Leavitt
135576	θ Apodis	799	55.6	−76 19	5.5	6.6	...	....	III	Md?	..	1879	Gould
135809	− Virginis	..	58.8	− 9 31	*13.0*	*14.0*	...	....		..	10	1906	Leavitt
135908	RR Virginis	3692	59.6	− 8 43	11	15	217	2407483	II	..	..	1880	Peters
140113	Z Boötis	*2700*	14 1.7	+13 59	8.3	<13	286	2410092	II	Md	..	1898	Wells
140512	Z Virginis	3983	5.0	−12 50	9	15	307.5	2407851	II	..	..	1880	Palisa
140528	RU Hydrae	10490	5.8	−28 25	7.5	<12.5	332.3	2415205	II	..	..	1898	(Cape)
140959	R Centauri	5476	9.4	−59 27	5.3	13	568.2	2415330	II	Md	..	1871	Gould
140919	T Boötis	..	9.4	+19 32	9.7	<14	...	....	I	..	..	1860	Baxendell
140957	RR Centauri	6572	9.9	−57 23	7.4	7.8	0.3 +	2415021	IV	F	..	1896	Roberts
141567	U Ursae Min.	..	15.1	+67 15	*8.5*	*12*	318?	2416647	II	..	113	1904	L. Ceraski
141549	T Lupi	8685	15.7	−49 24	*9.2*	*11.2*	Irr.	....	III	N	..	1895	Wells
141647	− Lupi	*9289*	16.9	−47 4	*10.7*	*11.7*	Irr.	....	III	N	57	1901	Fleming
141954	S Boötis	1671	19.5	+54 16	8.0	13.5	270.0 +	2401606	II	Md	..	1860	(Bonn)
141926	− Boötis	2563	19.7	+26 10	..	..	R	....	III	Mc	..	1893	Hartwig
142205	RS Virginis	..	22.3	+ 5 8	*8.1*	<*12.3*	355	2411510	II	Md	..	1892	Fleming
142584	R Camelop.	323	25.1	+84 17	7.9	13.7	269.5 +	2403987	II	Md	..	1858	Hencke
142529	Y Centauri	11116	25.1	−29 39	*7.7*	*8.8*	...	....	III	Mc 5 d	..	1895	Fleming
142556	V Centauri	6296	25.4	−56 27	6.4	7.8	5.4 +	2415025	IV	G 5 K	..	1894	Roberts
142539	V Boötis	2773	25.7	+39 18	6.9	11.0	256	2409419	II	Md	..	1884	Dunér
143017	RV Librae	4122	30.2	−17 36	*8.3*	*9.6*	Irr.	....	III	G?	..	1898	Leland
143227	R Boötis	2400	32.8	+27 10	6.6	12.9	223.3 +	2399842	II	Md	..	1858	(Bonn)
143417	V Librae	4142	34.8	−17 14	9.3	13.3	255.2	2408579	II	..	..	1882	Schönfeld
144342	RY Centauri	..	43.3	−42 5	..	..	...	....	II	Md	135	1904	Fleming
144676	R Apodis	924	46.5	−76 15	5.5	6.2	...	....	S	K	..	1873	Gould
*144646*a	S Lupi	..	46.8	−46 12	*9.6*	*14.2*	347	2410220	II	Md	..	1894	Fleming
*144646*b	− Lupi	..	46.8	−46 12	*10.4*	*12.8*	Irr.?	....	..	..	69	1905	Fleming
144918	U Boötis	..	49.7	+18 6	9.1	13.6	177.5	2407778	II	..	..	1880	Baxendell
145253	V Lupi	*7681*	52.6	−53 0	*9.7*	*10.7*	Irr.	....	III	N	11	1901	Fleming

Des.	Name.	DM.	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d.						
145508	δ Librae	*3938*	14 55.6	− 8 7	4.8	6.2	2.3 +	2403265	V	A	..	1859	Schmidt
145971	S Apodis	1743	59.4	−71 40	*9.0*	<*11.3*	355?	....	II	N	..	1896	Fleming
150018	RT Librae	3975	15 0.8	−18 21	8.5	13.5	252	2413035	II	..	..	1895	Skinner
150469	− Triang. Aust.	2267	4.8	−69 42	*8.2*	*10.0*	Irr.	....	III	N	..	1898	Wells
150519	T Librae	4041	5.0	−19 38	9.0	<16	238	2407105	II	..	..	1878	Palisa
150605	Y Librae	..	6.4	− 5 38	8.2	12	272	2400949	II	Md	..	1887	Bauschinger
150619	ι Librae	4047	6.5	−19 25	4.3	5.0	...	....	III	A	..	1896	Pickering
150850	W Lupi	..	8.5	−50 25	*10.6*	<*13.4*	236	2410203	II	..	12	1901	Pickering
151066	R Triang. Aust.	2753	10.8	−66 8	6.7	7.4	3.3 +	2404623	IV	G 5 K	..	1871	Gould
151302	− Librae	2943	13.5	+ 2 27	..	..	...	....	Cl.	..	..	1895	Bailey
151432	U Cor. Borealis	2569	14.1	+32 1	7.6	8.7	3.4 +	2404147	V	A	..	1869	Winnecke
151520	S Librae	*4084*	15.6	−20 2	7.6	<13	192.1	2405692	II	Md	..	1872	Borrelly
151714	S Serpentis	2864	17.0	+14 40	7.8	14.0	368.5 +	2388724	II	Md	..	1828	Harding
151731	S Cor. Borealis	2725	17.3	+31 44	6.7	12.7	361.2 +	2400647	II	Md	..	1860	Hencke
151822	RS Librae	..	18.5	−22 33	6.6	<12.0	219	2410102	II	Md	..	1892	Fleming
152057	R Circini	7055	20.0	−57 22	*9.8*	*10.9*	...	....	..	Md?	13	1901	Fleming
152250	Nova Normae	..	22.2	−50 14	*7*	<*16.6*	...	....	I	Pec.	..	1893	Fleming
152714	RU Librae	4228	27.7	−14 59	*8.5*	<*12.3*	314	2410209	II	Md	..	1895	Fleming
152849	R Normae	9787	28.8	−49 10	7.0	11.5	480.7	2415446	II	Mb	..	1879	Gould
153020	X Librae	4275	30.4	−20 50	9.5	14	163.6	2407183	II	..	..	1878	Peters
153215	W Librae	4148	32.2	−15 51	9.8	15	205.5	2407126	II	..	..	1878	Peters
153378	S Ursae Minor.	..	33.4	+78 58	7.5	11.0	324	2411630	II	Md	..	1895	Fleming
153454	U Normae	6636	34.6	−54 59	8.6	9.2	12.6 +	2415028	IV	G	..	1899	(Cape)
153620	U Librae	4305	36.2	−20 52	9	<14	226.2	2405363	II	..	..	1878	Peters
153654	T Normae	6651	36.4	−54 40	7.0	12.0	243.9	2415017	II	Md	..	1899	Innes
153937	− Lupi	10488	39.5	−37 26	..	..	...	....	Cl.	..	..	1897	Bailey
154020	Z Librae	..	40.7	−20 49	11	<13	295	2407109	II	..	..	1879	Peters
154428	R Cor. Borealis	2477	44.4	+28 28	5.5	12.5	Irr.	....	II?	Pec.	..	1795	Pigott
154536	X Cor. Borealis	..	45.2	+36 35	8.3	14	...	....	II	Md	44	1906	Fleming
154639	V Cor. Borealis	*2929*	46.0	+39 52	7.2	12.0	356.5	2407279	II	N	..	1878	Dunér
154615	R Serpentis	2918	46.1	+15 26	5.6	13	357.2 +	2388491	II	Md	..	1826	Harding
154736	R Lupi	*10567*	47.0	−36 0	9.0	<12?	234.5	2415024	II	..	..	1884	Gould
154748	ST Herculis	2334	47.8	+48 48	7.4	8.1	...	....	..	..	29	1903	M. and K.
154715	R Librae	4208	47.9	−15 56	9.2	<13	242.4	2399800	II	..	..	1858	Pogson
155018	RR Librae	..	50.6	−18 1	8.4	14	276.7	2409703	II	Md	..	1885	Peters
155263	S Triang. Aust.	3765	52.2	−63 30	6.4	7.4	6.3 +	2415023	IV	G 5 K	..	1879	Gould
155429	U Lupi	12172	54.5	−29 38	9.1	11.0	Irr.	....	..	..	..	1898	(Cape)
155526	T Cor. Borealis	2765	55.3	+26 12	2.0	9.5	...	....	I	Pec.	..	1866	Birmingham
155723	− Scorpii	..	57.6	−23 18	*12.8*	<*15.0*	...	....	..	..	191	1904	Leavitt
155862	U Triang. Aust.	5187	58.4	−62 38	7.8	8.4	2.5 +	2415022	IV	F 5 G	..	1893	Roberts
155823	RZ Scorpii	12676	58.6	−23 50	8.0	<13	158	2414965	II	Ma	..	1896	Innes
155947	X Herculis	2291	59.6	+47 31	6.6	..	...	....	S	Mc 5 d	..	1890	Gore
160021	Z Scorpii	4270	16 0.1	−21 28	9	12?	370	2405292	II	..	..	1883	Peters
160121	− Scorpii	..	1.1	−21 54	*13.5*	*14.4*	...	....	..	..	192	1904	Leavitt
160123a	− Scorpii	..	1.2	−23 24	*12.9*	*14.0*	...	....	..	..	193	1904	Leavitt
160150	RR Herculis	2251	1.5	+50 46	7.8	9.5	Irr.?	....	III	Md	..	1894	Espin
160118	R Herculis	3117	1.7	+18 38	8.6	14.8	317.7 +	2402440	II	Md	..	1855	(Bonn)
160123b	− Scorpii	..	1.8	−23 3	*11.3*	*14.5*	...	....	..	..	194	1904	Leavitt
160123c	− Scorpii	..	1.9	−23 48	*12.3*	*13.9*	...	....	..	..	195	1904	Leavitt
160210	U Serpentis	2956	2.5	+10 12	7.7	12.0	240	2410176	II	Md	..	1898	Fleming

Des.	Name.	DM	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d.						
*160221*b	– Scorpii	..	16 2.6	– 21 49	*12.4*	*14.2*	...	....	..	..	196	1904	Leavitt
160248	V Normae	10576	2.6	– 48 58	*8.9*	*9.9*	Irr.?	....	III	Md?	14	1901	Fleming
*160221*a	X Scorpii	4283	2.7	– 21 16	10	<13	199.0	2406364	II	..	..	1876	Peters
160321	– Scorpii	..	3.7	– 21 38	*13.0*	*13.6*	...	....	IV?	..	197	1904	Leavitt
*160422*a	– Scorpii	..	4.3	– 22 27	*11.8*	*13.3*	...	....	..	..	198	1904	Leavitt
160423	– Scorpii	..	4.4	– 23 50	*11.2*	*13.1*	...	....	..	..	199	1904	Leavitt
*160422*b	– Scorpii	..	4.9	– 22 48	*10.7*	*14.8*	...	....	..	..	200	1904	Leavitt
160519	W Scorpii	4330	5.9	– 19 53	10	<14.7	221.5	2406401	II	..	..	1877	Palisa
160524	RX Scorpii	12600	5.9	– 24 38	*9*	<*12*	...	....	II	..	..	1896	(Cordoba)
160625	RU Herculis	..	6.0	+ 25 20	7.3	14.2	486	2410463	II	Md	..	1896	Anderson
160619	– Scorpii	..	6.1	– 19 40	*13.0*	*14.2*	...	....	IV?	..	201	1904	Leavitt
160620	– Scorpii	..	6.6	– 20 40	*11.4*	*12.2*	...	....	..	..	202	1904	Leavitt
160821	– Scorpii	..	8.8	– 21 27	*11.2*	*14.3*	...	....	..	..	203	1904	Leavitt
160952	W Normae	9451	9.0	– 52 21	*9.5*	*10.3*	...	....	..	Md?	15	1901	Fleming
*160921*a	– Scorpii	..	9.1	– 21 31	*11.1*	*12.1*	...	....	..	..	204	1904	Leavitt
*160921*b	– Scorpii	..	9.6	– 21 46	*12.3*	*15.5*	...	....	..	..	205	1904	Leavitt
160922	– Scorpii	..	9.6	– 22 28	*11.2*	*12.8*	...	....	..	..	206	1904	Leavitt
161023	– Scorpii	..	10.2	– 23 21	*12.3*	*13.7*	...	....	IV?	..	207	1904	Leavitt
161057	S Normae	7821	10.6	– 57 39	6.6	7.6	9.7 +	2415029	IV	G?	..	1892	Roberts
161121	– Scorpii	..	11.0	– 21 24	*12.9*	*13.6*	...	....	IV?	..	208	1904	Leavitt
*161122*c	T Scorpii	..	11.1	– 22 44	7.0	<12	...	....	I	..	..	1860	Auwers
*161122*d	– Scorpii	4135	11.1	– 22 44	..	..	...	....	Cl.	..	..	1898	Bailey
*161122*a	R Scorpii	4140	11.7	– 22 42	9.5	16	224.1	2401594	II	..	..	1853	Chacornac
*161122*b	S Scorpii	4141	11.7	– 22 39	9.1	15	176.7	2392162	II	..	..	1854	Chacornac
161138	W Cor. Borealis	..	11.8	+ 38 3	7.8	14	244	2410068	II	Md	18	1902	Anderson
161221	– Scorpii	..	12.2	– 21 35	*13.4*	<*15.0*	...	....	..	..	209	1904	Leavitt
161220	– Scorpii	..	12.4	– 20 57	*12.4*	*14.2*	...	....	..	..	210	1904	Leavitt
161322	– Scorpii	..	13.5	– 22 7	*11.8*	<*15.0*	...	....	..	..	211	1904	Leavitt
161323	– Scorpii	..	13.7	– 23 10	*10.8*	*12.3*	...	....	..	..	212	1904	Leavitt
161423	– Scorpii	..	14.6	– 23 0	*12.9*	*14.1*	...	....	..	..	213	1904	Leavitt
161450	– Normae	10442	14.6	– 50 14	*9.6*	*10.1*	...	....	..	Md?	58	1901	Fleming
*161521*a	– Scorpii	..	15.0	– 21 17	*11.7*	*12.4*	...	....	..	..	214	1904	Leavitt
*161521*b	– Scorpii	..	15.5	– 21 53	*11.6*	*12.3*	...	....	..	..	215	1904	Leavitt
161522	– Scorpii	..	15.8	– 22 39	*13.6*	*14.7*	...	....	IV?	..	216	1904	Leavitt
161607	W Ophiuchi	4267	16.0	– 7 28	8.9	<13.5	329.8	2408276	II	..	..	1881	Schönfeld
161620	– Scorpii	..	16.7	– 20 44	*13.3*	*14.7*	...	....	IV?	..	217	1904	Leavitt
161617	U Scorpii	4554	16.8	– 17 38	9?	<12	...	....	I?	..	..	1863	Pogson
161726	– Scorpii	11314	17.5	– 26 17	..	..	...	....	Cl.	..	..	1904	Leavitt
161751	X Normae	10147	17.7	– 51 42	*11.0*	<*12.3*	...	....	..	N	16	1901	Fleming
161822	– Scorpii	..	18.2	– 22 16	*12.3*	*12.8*	...	....	..	..	218	1904	Leavitt
161924	– Scorpii	..	19.4	– 24 16	*12.5*	*12.9*	...	....	..	..	219	1904	Leavitt
*162022*a	– Scorpii	..	20.7	– 22 6	*12.9*	<*15.5*	...	....	..	..	220	1904	Leavitt
*162022*b	– Scorpii	..	20.8	– 22 0	*13.0*	*13.8*	...	....	..	..	221	1904	Leavitt
162131	– Scorpii	..	21.0	– 31 5	*10.6*	<*14.7*	...	....	..	..	222	1904	Leavitt
162112	V Ophiuchi	4510	21.2	– 12 12	7.0	10.5	302.5	2405670	II	..	..	1881	Dunér
162119	U Herculis	3098	21.4	+ 19 7	6.4	12.0	403	2407299	II	Md	..	1860	Hencke
*162221*a	– Scorpii	..	22.1	– 21 22	*12.1*	*13.0*	...	....	..	..	223	1904	Leavitt
*162221*b	– Scorpii	..	22.4	– 21 33	*12.0*	*12.9*	...	....	..	..	224	1904	Leavitt
162329	– Scorpii	..	23.1	– 29 48	*13.8*	*14.7*	...	....	..	..	225	1904	Leavitt
162320	– Scorpii	..	23.2	– 20 1	*12.4*	*13.5*	...	....	..	..	226	1904	Leavitt

Des.	Name.	DM.	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d.						
162319	Y Scorpii	..	16 23.8	−19 13	10?	14	365	2406438	II	..	..	1876	Peters
162542	g Herculis	2714	25.4	+42 6	4.7	6.0	Irr.	....	III	Mb	..	1857	Baxendell
162527	− Scorpii	..	25.5	−27 42	*12.2*	<*13.6*	...	....	..	..	227	1904	Leavitt
162546	Y Normae	10821	25.6	−46 44	8.8	10.0	...	....	..	..	26	1903	deSitter
162626	− Scorpii	..	26.7	−26 10	*11.8*	<*15.0*	...	....	..	..	228	1904	Leavitt
162725	− Scorpii	..	27.2	−25 59	*11.8*	*13.7*	...	....	..	..	229	1904	Leavitt
162726	− Scorpii	..	27.6	−26 32	*12.2*	*14.8*	...	....	..	..	230	1904	Leavitt
162807	SS Herculis	3199	28.0	+ 7 3	9.0	<12	100	2416953	II	..	77	1901	Anderson
162815	T Ophiuchi	4338	28.0	−15 55	10	12.5	361?	2400507	II	..	..	1860	Pogson
162826	− Scorpii	..	28.0	−26 24	*11.7*	*13.1*	...	....	..	..	231	1904	Leavitt
162816	S Ophiuchi	4307	28.5	−16 57	8.3	<13	233.8	2399495	II	..	..	1854	Pogson
162926	− Scorpii	..	29.1	−26 16	*11.2*	*15.0*	...	....	..	..	232	1904	Leavitt
163031	ST Scorpii	13283	30.2	−31 2	7.8	9.7	Irr.	....	III	..	..	1898	(Cape)
163029	− Scorpii	..	30.7	−29 32	*12.8*	<*15.0*	...	....	..	..	233	1904	Leavitt
163027	− Scorpii	..	30.9	−27 6	*12.2*	<*15.0*	...	....	..	..	234	1904	Leavitt
163127	− Scorpii	..	31.2	−27 54	*13.7*	<*15.0*	...	....	..	..	235	1904	Leavitt
163172	R Ursae Minor.	..	31.3	+72 28	9.2	10.6	Irr.	....	III	Mc	..	1881	Pickering
163156	R Arae	7804	31.4	−56 48	6.8	7.9	4.4+	2415025	V	A	..	1892	Roberts
163129	− Scorpii	..	31.5	−29 7	*13.2*	*14.2*	...	....	..	..	236	1904	Leavitt
163137	W Herculis	2771	31.7	+37 32	7.8	13.5	280.2+	2407537	II	Md	..	1880	Dunér
163228	− Scorpii	..	32.0	−28 22	*10.5*	<*15.0*	...	....	..	..	237	1904	Leavitt
163266	R Draconis	*950*	32.4	+66 58	7.0	12.7	245.6	2406715	II	Md	..	1876	Geelmuyden
163227	− Scorpii	..	32.6	−27 49	*13.5*	<*15.0*	...	....	..	..	238	1904	Leavitt
163432	SU Scorpii	11900	34.2	−32 11	8.0	9.4	...	....	III	..	..	1896	Innes
163427	− Scorpii	11069	34.8	−27 16	*10.9*	<*14.5*	...	....	...	..	239	1904	Leavitt
163624	− Scorpii	12774	36.6	−24 34	*10.5*	*12.0*	...	....	..	..	240	1904	Leavitt
163836	− Herculis	2768	38.1	+36 39	..	..	...	....	Cl.	..	..	1898	Bailey
163827	− Scorpii	..	38.3	−27 50	*13.1*	*14.1*	...	....	..	..	241	1904	Leavitt
163824	− Scorpii	..	38.7	−24 56	*11.2*	*12.8*	...	....	..	..	242	1904	Leavitt
163828	− Scorpii	..	38.8	−28 43	*13.6*	*14.5*	...	....	..	..	243	1904	Leavitt
163926	− Scorpii	..	39.0	−26 42	*12.6*	*13.8*	...	....	..	..	244	1904	Leavitt
163928	− Scorpii	..	39.5	−28 2	*10.9*	*13.0*	...	....	..	..	245	1904	Leavitt
163929	− Scorpii	..	39.7	−29 32	*13.6*	*14.9*	...	....	..	..	246	1904	Leavitt
163967	V Triang. Aust.	3220	39.8	−67 36	*9.2*	*10.1*	...	....	III	N	17	1901	Fleming
*164027*a	− Scorpii	..	40.4	−27 12	*10.7*	*14.8*	...	....	..	..	247	1904	Leavitt
164029	− Scorpii	..	40.4	−29 58	*13.8*	<*14.8*	...	....	..	..	248	1904	Leavitt
*164027*b	− Scorpii	..	40.5	−27 57	*13.6*	<*14.8*	...	....	..	..	249	1904	Leavitt
164055	S Draconis	1870	40.8	+55 7	7.5	9.3	...	....	III	Mc	..	1892	Espin
164130	− Scorpii	..	41.1	−30 16	*12.5*	*13.5*	...	....	..	..	250	1904	Leavitt
164128	− Scorpii	..	41.1	−28 2	*14.2*	*14.8*	...	....	..	..	251	1904	Leavitt
164129	− Scorpii	..	41.2	−29 25	*13.9*	*14.5*	...	....	IV?	..	252	1904	Leavitt
164229	− Scorpii	..	42.2	−29 57	*12.8*	*13.8*	...	....	..	..	253	1904	Leavitt
*164327*a	− Scorpii	..	43.1	−27 3	*13.0*	<*15.0*	...	....	..	..	254	1904	Leavitt
164319	RR Ophiuchi	4435	43.2	−19 17	8.0	<12.0	298	2415070	II	Md	..	1898	(Cape)
*164327*b	− Scorpii	..	43.6	−27 16	*13.7*	*14.9*	...	....	..	..	255	1904	Leavitt
164329	− Scorpii	..	43.6	−29 24	*11.3*	*11.8*	...	....	..	..	256	1904	Leavitt
164328	− Scorpii	..	43.9	−28 17	*10.9*	<*14.7*	...	....	..	..	257	1904	Leavitt
*164427*a	− Scorpii	..	44.1	−27 50	*13.0*	*14.0*	...	....	..	..	258	1904	Leavitt
164428	− Scorpii	..	44.2	−28 1	*13.6*	*14.5*	...	....	..	..	259	1904	Leavitt
164425	− Scorpii	..	44.3	−25 23	*10.9*	<*15.0*	...	....	..	..	260	1904	Leavitt

Des.	Name.	DM.	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d.						
*164427*b	– Scorpii	..	16 44.6	–27 48	*13.8*	*14.8*	...	....	..	..	261	1904	Leavitt
164628	– Scorpii	..	46.3	–28 23	*12.2*	<*15.0*	...	....	..	..	262	1904	Leavitt
164715	S Herculis	3063	47.4	+15 7	7.3	12.6	308.3+	2399197	II	Md	..	1856	(Bonn)
164705	RX Ophiuchi	..	47.9	+ 5 34	9.8	<14	510?	2416910	II	..	60	1905	Anderson
164844	RS Scorpii	11274	48.4	–44 56	*7.0*	*11.4*	323	2410123	II	Md	..	1890	Fleming
164832	SS Scorpii	12146	48.8	–32 28	7.5	9.5	Irr.?	....	II	Md	..	1897	(Cordoba)
165030	RR Scorpii	13626	50.2	–30 25	*7.0*	*12.1*	281	2410178	II	Md	..	1894	Fleming
165133	RV Scorpii	11607	51.8	–33 27	6.7	7.4	6.0+	2415026	IV	F 5 G	..	1894	Roberts
165312	Nova Ophiuchi	4633	53.9	–12 44	5.5	12.5	...	....	I	..	..	1848	Hind
165454	T Arae	7975	54.4	–54 55	*9.9*	*11.0*	Irr.	....	III	N	..	1898	Wells
165429	– Ophiuchi	13109	54.9	–29 58	..	..	...	....	Cl.	..	..	1897	Bailey
165631	RV Herculis	..	56.8	+31 22	9.0	15.8	200	2414160	II	..	..	1897	Anderson
165636	RT Scorpii	..	56.8	–36 47	*9.2*	<*12.9*	444	2410120	II	Md	..	1893	Fleming
170215	R Ophiuchi	4455	17 2.0	–15 58	7.1	13.6	302.2	2399507	II	Md	..	1853	Pogson
170627	RT Herculis	2772	6.8	+27 11	9	14	307	2414105	II	Md	..	1896	Anderson
170833	RW Scorpii	..	8.3	–33 19	*9.4*	*14.1*	385	2410292	II	Md	..	1895	Fleming
171014	α Herculis	3207	10.1	+14 30	3.1	3.9	Irr.	....	III	Mb	..	1795	Herschel
171101	U Ophiuchi	3408	11.4	+ 1 19	6.0	6.7	0.8+	2408279	V	B 8 A	..	1871	Gould
171145	– Arae	11383	11.6	–45 52	..	..	...	....	III	N	29	1904	Wells
171333	u Herculis	2864	13.6	+33 12	4.6	5.4	Irr.	....	III	B 3 A	..	1869	Schmidt
171401	Z Ophiuchi	3417	14.5	+ 1 37	7.5	12.5	348	2412590	II	Md	..	1894	Fleming
171723	RS Herculis	3090	17.5	+23 1	8.0	<12.5	223	2415112	II	Md	..	1895	Anderson
171843	SW Scorpii	11672	18.1	–43 44	*9.5*	*12.9*	260	2410151	II	Md	18	1901	Fleming
172421	Nova Ophiuchi	..	24.6	–21 24	>1	..	...	....	I	..	..	1604	R
172586	S Octantis	346	25.9	–86 46	*8.2*	*12.1*	258	2410189	II	Md	..	1892	Fleming
172809	RU Ophiuchi	3414	28.5	+ 9 30	9	<12	...	....	..	..	18	1904	L. Ceraski
172907	RV Ophiuchi	3404	29.8	+ 7 19	*9*	*12*	3.6+	2416604	IV	A	136	1904	Fleming
173253	– Arae	..	32.5	–53 37	..	..	...	....	Cl.	..	..	1898	Bailey
173457	V Pavonis	8687	34.7	–57 40	*8.3*	*9.8*	...	....	III	N	..	1898	Wells
173543	RU Scorpii	..	35.1	–43 42	*9.4*	*13.4*	377	2410102	II	Md	..	1895	Fleming
173535	– Scorpii	11829	35.7	–35 12	*10.7*	*11.6*	Irr.	....	III	N	..	1896	Fleming
174035	SX Scorpii	11923	40.8	–35 40	*9.6*	*11.1*	Irr.	....	III	N	19	1901	Fleming
174162	W Pavonis	..	41.1	–62 22	*9.1*	<*12.8*	282	2410115	II	Md	..	1898	Fleming
174127	X Sagittarii	11930	41.3	–27 48	4.4	5.0	7.0+	2404291	IV	F 8 G	..	1866	Schmidt
174135	SV Scorpii	..	41.6	–35 40	8.8	<11.6	257	2415265	II	..	..	1899	Innes
174433	RY Scorpii	12533	44.3	–33 40	7.5	9.0	39.1+	2415029	IV	F 2 G	..	1896	(Cordoba)
174422	SU Herculis	..	44.7	+22 34	10	<12	336?	2415286	II?	..	31	1903	L. Ceraski
174406	RS Ophiuchi	4661	44.8	– 6 40	*7.7*	*11.0*	...	....	I?	Pec.	20	1901	Fleming
174551	U Arae	11224	45.7	–51 40	*9.2*	*12.9*	224.5	2410127	II	Md	..	1898	Fleming
174622	– Sagittarii	..	46.0	–22 35	*12.0*	*14.7*	...	....	..	..	263	1904	Leavitt
174721	– Sagittarii	..	47.1	–21 45	*12.2*	*14.7*	...	....	..	..	264	1904	Leavitt
174706	Y Ophiuchi	4672	47.3	– 6 7	6.1	6.5	17.1+	2408694	IV	G	..	1888	Sawyer
174748	V Arae	12145	47.3	–48 17	*9.7*	<*12.3*	380	2410345	II	Md	21	1901	Fleming
174824	– Sagittarii	13604	48.2	–24 49	*9.3*	<*10.6*	...	....	S	..	27	1903	deSitter
174921	– Sagittarii	..	49.1	–21 44	*12.6*	*13.9*	...	....	..	..	265	1904	Leavitt
174949	W Arae	11810	49.2	–49 47	*10.0*	*10.7*	Irr.	....	III	Mc	22	1901	Fleming
175007	RW Ophiuchi	..	50.5	+ 7 51	*10*	*12.5*	745?	2414868	II	..	158	1904	L. Ceraski
175119	– Sagittarii	..	51.1	–19 20	*10.5*	<*14.5*	...	....	..	..	266	1904	Leavitt
175149	S Arae	11833	51.4	–49 25	8.9	9.7	0.4+	2415021	IV	..	24	1900	(Cape)
175111	RT Ophiuchi	..	51.8	+11 11	9.2	<13	426	2415347	II	..	76	1901	Anderson

Des.	Name.	DM	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d.						
175315	Z Herculis	3311	17 53.6	+15 9	7.1	7.9	3.9+	2413038	V	F	..	1891	M. and K.
175421	– Sagittarii	..	54.4	−21 8	*12.1*	*13.6*	...	....	..	..	267	1904	Leavitt
175458	T Draconis	..	54.8	+58 14	7.5	12.2	426	2413173	II	..	..	1894	Espin
175519	RY Herculis	..	55.4	+19 29	8.5	14	222.3	2415080	II	Md?	..	1899	Anderson
175554	– Draconis	1925	55.6	+54 41	..	..	...	....	..	Md	45	1906	Fleming
175654	V Draconis	..	56.3	+54 53	9.3	14.1	283	2415227	II	..	1	1900	Anderson
175724	SV Sagittarii	..	57.2	−24 30	*11.2*	*13.8*	...	....	..	..	30	1903	Wolf
*175726*a	– Sagittarii	..	57.3	−26 29	*11.0*	*12.3*	...	....	..	..	268	1904	Leavitt
175839	W Coron. Aust.	12196	58.2	−39 20	*10.0*	*11.0*	Irr.	....	III	N	23	1901	Fleming
*175832*a	– Sagittarii	..	58.4	−22 58	*13.4*	*14.5*	...	....	..	..	269	1904	Leavitt
175829	W Sagittarii	14447	58.6	−29 35	4.3	5.1	7.5+	2402849	IV	F 5 G	..	1866	Schmidt
*175822*b	– Sagittarii	..	58.8	−22 44	*10.9*	*12.0*	...	....	..	..	270	1904	Leavitt
180122	RW Herculis	3272	18 1.7	+22 4	R	..	...	....	S	..	..	1895	Becker
*180222*a	– Sagittarii	4575	2.0	−22 14	*9.5*	*11.9*	...	....	..	..	271	1904	Leavitt
*180222*b	– Sagittarii	..	2.3	−22 57	*13.7*	*14.6*	...	....	..	..	272	1904	Leavitt
180223	– Sagittarii	..	2.4	−23 5	*14.0*	*15.1*	...	....	..	..	273	1904	Leavitt
180245	X Coron. Aust.	..	2.6	−45 26	*9.9*	*11.6*	Irr.?	....	III	Mc	24	1901	Fleming
180363	R Pavonis	4323	3.3	−63 38	8.0	12.0	229	2415106	II	Md	..	1893	Fleming
180531	T Herculis	*3137*	5.3	+31 0	7.2	13.6	165.0+	2403399	II	Md	..	1857	(Bonn)
180565	W Draconis	..	5.′	+65 56	9.0	<14	255	2414197	II	..	6	1902	(Greenwich)
180620	– Sagittarii	..	6.1	−20 43	*10.9*	*12.8*	...	....	..	..	274	1904	Leavitt
180666	X Draconis	..	6.8	+66 8	*9.5*	*14*	...	....	II	..	7	1902	(Greenwich)
180742	Y Coron. Aust.	..	7.2	−42 53	*12.0*	*12.9*	Irr.?	....	II?	Md	25	1901	Fleming
180829	– Sagittarii	14717	8.7	−29 44	*10.6*	*12.1*	...	....	..	..	275	1904	Leavitt
181134	RS Sagittarii	12673	11.0	−34 8	5.9	6.3	2.4+	2415023	V	A	..	1874	Gould
181115	V Serpentis	4905	11.1	−15 33	*9.5*	*11.1*	3.4+	2410002	IV	A	165	1904	Leavitt
181136	W Lyrae	3066	11.5	+36 38	7.6	12.5	196.6	2413816	II	Md	..	1896	Anderson
181103	RY Ophiuchi	3656	11.6	+ 3 40	8.5	<10.4	...	....	II	..	77	1905	Anderson
181315	– Serpentis	4923	13.6	−15 39	*9.0*	*9.8*	Irr.	....	III	N	59	1901	Fleming
181518	Y Sagittarii	4926	15.5	−18 54	5.4	6.2	5.7+	2410175	IV	G	..	1886	Sawyer
181631	– Lyrae	..	16.7	+31 41	..	..	...	....	..	Md	281	1904	Fleming
181627	– Sagittarii	..	16.8	−27 28	*11.5*	<*13.0*	...	....	..	..	276	1904	Leavitt
181718	– Sagittarii	..	17.4	−18 37	*10.4*	*11.4*	...	....	..	..	277	1904	Leavitt
181730	– Sagittarii	15642	17.8	−30 39	*10.6*	*12.0*	...	....	..	..	278	1904	Leavitt
181859	RU Draconis	..	18.1	+59 32	*9.4*	*12.5*	...	....	II?	..	75	1905	L. Ceraski
181824	– Sagittarii	14289	18.4	−24 55	..	..	...	....	Cl.	..	..	1897	Bailey
181949	T Telescopii	..	19.0	−49 42	*11.3*	<*12.7*	256	2410201	II	Md	26	1901	Fleming
182133	RV Sagittarii	13234	21.4	−33 23	*8.2*	*12.3*	319	2410251	II	Md	..	1895	Fleming
182172	RT Draconis	..	21.4	+72 40	*9.4*	*12*	...	....	..	..	74	1905	L. Ceraski
182200	d Serpentis	3936	22.1	+ 0 8	5.2	..	...	....	S	A	..	1891	R
182224	SV Herculis	..	22.3	+24 58	9.5	<13	202	2412676	II	..	162	1904	Pickering
182345	– Coron. Aust.	..	23.7	−45 2	*11.0*	<*12.9*	303	2411189	II	Md	60	1901	Fleming
182306	T Serpentis	..	23.9	+ 6 14	9.1	<13.5	341.8	2400909	II	..	..	1860	Baxendell
182416	SS Sagittarii	4904	24.6	−16 59	*11.0*	*12.0*	...	....	III	N	27	1901	Fleming
182612	RX Herculis	3557	26.0	+12 32	7.0	7.6	0.8+	2414566	V	A	..	1898	Sawyer
182619	U Sagittarii	5047	26.0	−19 12	6.5	7.3	6.7+	2404245	IV	F 5 G	..	1866	Schmidt
182836	T Lyrae	3168	28.9	+36 55	7.2	7.8	...	....	III	..	..	1876	Birmingham
183023	– Sagittarii	*14516*	30.3	−23 59	..	..	...	....	Cl.	..	..	1895	Bailey
183225	RZ Herculis	..	32.7	+25 58	9	14	340?	2415536	II	..	10	1900	L. Ceraski
183308	X Ophiuchi	3780	33.6	+ 8 44	6.5	9.0	335	2410061	II	Md	..	1886	Espin

Des.	Name.	DM.	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d.						
183443	Y Lyrae	..	18 34.2	+43 52	11.3	12.3	0.5+	2415020	IV	..	12	1900	Williams
183437	U Coron. Aust.	12782	34.3	−37 56	*9.0*	*11.5*	146.5	2410063	II	Md	..	1896	Fleming
183728	−Lyrae	3055	37.6	+28 43	*10.2*	*11.0*	...	....	III	Mc	30	1904	Fleming
183838	−Coron. Aust.	..	38.7	−38 52	*11.0*	<*13.5*	218	2410223	II	..	..	1898	Fleming
183930	SX Sagittarii	16169	39.7	−30 36	8.7	9.8	2.0+	2410001	V	..	..	1906	Fleming
183932	RZ Lyrae	..	39.9	+32 41	*9.9*	*11.2*	0.5+	2416266	IV	..	19	1903	Williams
184017	−Sagittarii	..	40.0	−17 24	*12.2*	<*14.5*	...	....	..	..	139	1904	Wolf
184074	RS Draconis	788	40.2	+74 14	*9.5*	*11.5*	...	....	..	..	39	1905	L. Ceraski
184038	V Coron. Aust.	13089	40.7	−38 16	9	<10	...	....	..	F	..	1896	(Cordoba)
184062	RR Draconis	..	40.9	+62 34	*8.5*	<*12*	2.8+	2416766	V	..	188	1904	L. Ceraski
184008	T Aquilae	3835	40.9	+ 8 38	8.8	10.0	Irr.	....	III	..	..	1860	Winnecke
184007	RZ Ophiuchi	3832	40.9	+ 7 6	*9.0*	*10.5*	...	....	R	..	103	1905	L. Ceraski
184134	RY Lyrae	..	41.2	+34 34	10	<*14.5*	335	2416321	II	..	17	1903	Williams
184236	SV Lyrae	..	42.0	+36 12	*10.5*	*13.5*	...	....	II?	..	80	1905	Wolf
184243	RW Lyrae	..	42.1	+43 32	*9.0*	<*14.5*	496	2415299	II	Md	17	1902	Williams
184205	R Scuti	4760	42.2	− 5 49	4.8	7.8	Irr.	....	II?	Pec.	..	1795	Pigott
184212	V Scuti	..	42.5	−12 14	*11.5*	<*14.5*	255	2413000	II	..	140	1904	Dugan
184408	S Scuti	4726	44.9	− 8 1	*8.6*	*10.0*	...	....	III	N	28	1901	R
184633	β Lyrae	3223	46.4	+33 15	3.4	4.1	12.9+	2398590	IV	*B 2 A*	..	1784	Goodricke
184667	κ Pavonis	3603	46.6	−67 21	3.8	5.2	9.0+	2415029	IV	F 5 G	..	1872	Thome
184831	−Lyrae	..	48.7	+31 47	*13*	<*15*	...	....	..	..	88	1905	Wolf
184812	U Scuti	5202	48.9	−12 44	9.1	9.6	0.9+	2415651	IV	A	73	1901	L. Ceraski
185008	T Scuti	4764	50.0	− 8 18	*10.0*	*11.1*	Irr.?	....	III	N	29	1901	Fleming
185036	SU Lyrae	..	50.1	+36 23	*10*	<*15*	...	....	II?	..	59	1905	Wolf
185032	RX Lyrae	..	50.4	+32 42	12	17	247	2413756	II	..	10	1903	Silbernagel
185129	SW Lyrae	..	51.1	+29 44	*11*	<*13*	225?	....	II	..	81	1905	Wolf
185131	SX Lyrae	..	51.2	+31 20	*11.5*	<*13*	279?	....	II	..	82	1905	Wolf
185134	−Lyrae	..	51.5	+34 54	*12.5*	*14*	...	....	..	..	83	1905	Wolf
185132	−Lyrae	..	51.7	+32 47	*12.5*	*15*	...	....	..	..	84	1905	Wolf
185233	−Lyrae	..	52.0	+33 26	*12.5*	*13.5*	...	....	..	..	85	1905	Wolf
185243	R Lyrae	3117	52.3	+43 49	4.0	4.7	46.4	2410559	III	Mb	..	1856	Baxendell
185236	−Coron. Aust.	13199	52.8	−36 46	..	..	...	....	Cl.	..	..	1897	Bailey
185331	−Lyrae	..	53.0	+31 24	*13*	<*15*	...	....	..	..	86	1905	Wolf
185437	S Coron. Aust.	..	54.4	−37 5	>9.5	13	...	....	S	..	..	1866	Schmidt
*185537*a	R Coron. Aust.	..	55.2	−37 6	9.7	<11.0	89.2	2415050	II?	..	..	1865	Schmidt
*185537*b	T Coron. Aust.	..	55.2	−37 6	11	13	...	....	..	..	..	1876	Schmidt
185512	ST Sagittarii	..	55.9	−12 54	8.0	<12.5	403	2410339	II	Md	30	1901	Fleming
185634	Z Lyrae	..	56.0	+34 49	9	<12	290	2415562	II	..	15	1900	Williams
185613	Nova Sagittarii	..	56.2	−13 18	*4.7*	<*15*	...	....	I	Pec.	..	1899	Fleming
185604	Nova Aquilae	..	56.8	− 4 35	*9.1*	<14	...	....	I	Pec.	104	1905	Fleming
185722	SU Sagittarii	4958	57.7	−22 51	*8.0*	*9.0*	...	....	III	Md?	31	1901	Fleming
185737	RT Lyrae	..	57.8	+37 22	10.5	<14.5	248.7	2415953	II	..	5	1902	Williams
185830	−Lyrae	..	58.5	+30 52	*12*	*13*	...	....	..	..	87	1905	Wolf
185905	V Aquilae	4858	59.1	− 5 50	6.5	8.0	Irr.	....	III	N	..	..	R
190048	−Telescopii	12910	19 0.1	−48 44	..	..	...	....	..	Mc	61	1901	Fleming
190049	U Telescopii	..	0.5	−49 4	*9.5*	<*12.7*	437	2410031	II	Md	32	1901	Fleming
190134	−Lyrae	..	1.6	+34 8	*12.5*	<*15*	...	....	..	..	89	1905	Wolf
190108	R Aquilae	3970	1.6	+ 8 5	5.8	<12	355.0+	2399163	II	Md	..	1856	(Bonn)
190129	−Lyrae	..	1.8	+29 29	*12.5*	*14*	...	....	..	..	90	1905	Wolf
190260	−Pavonis	7271	2.0	−60 8	..	..	...	....	Cl.	..	..	1897	Bailey

Des.	Name.	DM	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d.						
190231a	– Lyrae	..	19 2.1	+31 5	*12.5*	*14.5*	...	....	..	..	91	1905	Wolf
190231b	– Lyrae	..	2.6	+31 27	*12*	<*15*	...	....	..	..	92	1905	Wolf
190333	– Lyrae	..	3.3	+33 34	*11*	*13.5*	...	....	..	..	93	1905	Wolf
190334	– Lyrae	..	3.9	+34 41	*11*	*14*	...	....	..	..	94	1905	Wolf
190430a	– Lyrae	..	4.0	+30 36	*10.5*	*12*	...	....	..	..	95	1905	Wolf
190430b	– Lyrae	..	4.7	+30 34	*12*	<*15*	...	....	..	..	96	1905	Wolf
190431	– Lyrae	..	4.8	+31 6	*10.5*	*12*	...	....	..	..	97	1905	Wolf
190529a	V Lyrae	..	5.2	+29 30	9.2	15.5	375	2412705	II	Md	..	1895	Anderson
190259b	– Lyrae	..	5.4	+29 23	*11*	*12.5*	...	....	..	..	98	1905	Wolf
190643	ST Lyrae	..	6.7	+43 27	*10*	*13*	...	....	..	..	109	1904	L. Ceraski
190736	– Lyrae	..	7.7	+36 1	*12*	<*14*	...	....	..	..	99	1905	Wolf
*190819*a	RW Sagittarii	5347	8.1	−19 2	9.0	11.7	...	....	II	Md	..	1896	Fleming
190834	– Lyrae	..	8.5	+34 22	*12*	*13.5*	...	....	..	..	100	1905	Wolf
*190819*b	– Sagittarii	..	8.6	−19 0	*12.7*	*13.7*	...	....	III	..	282	1904	Breslin
190818	RX Sagittarii	..	8.7	−18 59	9.5	<13.3	332	2413102	II	Md	..	1896	Fleming
190926	X Lyrae	3486	9.0	+26 36	8.6	11	...	....	..	..	..	1897	Espin
190925	S Lyrae	..	9.1	+25 50	9.5	16	438	2412654	II	..	..	1893	Espin
190941	RU Lyrae	..	9.1	+41 8	9.4	<12	380	2415983	II	..	11	1902	Williams
190933a	RS Lyrae	..	9.3	+33 15	10	<13.5	296	2415270	II	..	72	1901	L. Ceraski
190967	U Draconis	1124	9.9	+67 7	9.0	13.5	334	2415243	II	Md	..	1897	Anderson
190933b	– Lyrae	..	9.9	+33 19	*11*	<*13*	...	....	..	..	101	1905	Wolf
190904	– Aquilae	..	9.9	+ 4 4	*10.5*	<*14*	...	....	..	..	2	1905	Wolf
191007	W Aquilae	..	10.0	− 7 13	7.5	13	480	2412656	II	..	..	1893	de Ball
191033	RY Sagittarii	14076	10.0	−33 42	6.5	<11.5	Irr.	....	II?	Pec. ! !	..	1896	Markwick
191046	SS Lyrae	..	10.4	+46 49	9	13	...	....	II	..	63	1903	Anderson
191017	T Sagittarii	5546	10.5	−17 9	7.2	12.0	381.3 +	2402859	II	Md	..	1863	Pogson
191039	– Sagittarii	R	10.5	−39 47	..	..	...	....	..	..	..	1906	Fleming
191050	V Telescopii	12420	10.5	−50 38	*9.2*	*10.6*	Irr.	....	III	Md?	33	1901	Fleming
191019	R Sagittarii	5367	10.8	−19 29	6.9	12.3	269.0 +	2402796	II	Md	..	1858	Pogson
*191100*a	– Aquilae	..	11.5	− 0 3	*13.0*	<*15.5*	...	....	..	..	3	1905	Wolf
*191100*b	– Aquilae	..	11.6	− 0 46	*10.0*	*12.0*	...	....	..	..	4	1905	Wolf
191232	RV Lyrae	..	12.5	+32 15	11.0	12.8	3.5 +	2415665	V	..	13	1902	Williams
191331	SW Sagittarii	16579	13.4	−31 54	*9.1*	<*11.7*	289	2410259	II	Md	137	1904	Fleming
191350	TZ Cygni	..	13.4	+50 0	9.5	11.4	...	....	..	Mc	2	1901	Anderson
191319	S Sagittarii	5394	13.6	−19 12	9.1	14.5	230.7 +	2402865	II	..	..	1860	Pogson
191321	Z Sagittarii	..	13.8	−21 7	8.5	14.0	452	2410865	II	Md	..	1888	Peters
191403	– Aquilae	..	14.1	+ 3 13	*11.0*	*15.0*	...	....	..	..	5	1905	Wolf
191419	U Sagittae	3975	14.4	+19 26	6.5	9	3.3 +	2415690	V	A	93	1901	Schwab
191517a	W Sagittae	..	15.0	+17 1	*10.0*	*13.2*	278	2410206	II	Md?	46	1906	Fleming
191500	Nova Aquilae	..	15.3	− 0 19	*7*	<*13*	...	....	I	Pec.	11	1900	Fleming
191517b	– Sagittae	..	15.4	+17 5	*12.2*	*12.9*	...	....	..	..	47	1906	Breslin
191501	– Aquilae	..	15.9	+ 1 38	*13.5*	*15.0*	...	....	..	..	6	1905	Wolf
191637	U Lyrae	..	16.6	+37 42	8.3	<12	457	2415214	II	..	..	1894	Espin
191600	– Aquilae	..	16.9	+ 0 34	*13.0*	*13.5*	...	....	..	..	7	1905	Wolf
191717	T Sagittae	3940	17.2	+17 28	8.3	9.9	Irr.	....	III	Md?	..	1886	Espin
191703	– Aquilae	..	17.4	+ 3 8	*13.0*	*15.0*	...	....	..	..	8	1905	Wolf
191700	– Aquilae	..	17.7	− 0 48	*13.0*	*14.5*	...	....	..	..	9	1905	Wolf
191700	– Aquilae	..	17.8	+ 0 22	*13.5*	<*15.5*	...	....	..	..	10	1905	Wolf
191805a	– Aquilae	..	18.3	+ 5 44	*10.0*	*14*	...	....	..	..	11	1905	Wolf
191805b	– Aquilae	..	18.3	+ 5 32	*13.5*	*14.0*	...	....	S	..	12	1905	Wolf

Des.	Name.	DM.	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. *m.*	° ′			*d.*						
191801	– Aquilae	..	19 18.4	+ 1 20	*13.5*	<*15.5*	...	....	..	..	13	1905	Wolf
191903	– Aquilae	..	19.9	+ 3 47	*13.5*	*15.5*	...	....	..	..	14	1905	Wolf
192002	– Aquilae	..	20.1	+ 2 38	*13.0*	*15.0*	...	....	..	..	15	1905	Wolf
192105	– Aquilae	..	21.2	+ 5 2	13.5	*14.0*	...	....	..	..	16	1905	Wolf
192242	RR Lyrae	3338	22.3	+42 36	*7.2*	*8.1*	0.5 +	2414856	IV	F	34	1901	Fleming
192204	– Aquilae	..	22.7	+ 4 10	*13.5*	*15.5*	...	....	..	..	17	1905	Wolf
192303	– Aquilae	..	23.0	+ 3 30	*13.5*	*15.5*	...	....	..	..	18	1905	Wolf
192407	U Aquilae	4968	24.0	– 7 15	6.2	6.9	7.0 +	2410170	IV	G	..	1886	Sawyer
192403	– Aquilae	..	24.0	+ 3 28	*13*	*13.5*	...	....	..	..	19	1905	Wolf
192576	– Draconis	734	25.1	+76 23	..	..	...	....	S	N	..	1896	Backhouse
192501	– Aquilae	..	25.6	+ 1 58	*12.0*	*14.5*	...	....	..	..	20	1905	Wolf
192602a	– Aquilae	..	26.0	+ 2 31	*13.5*	<*15.5*	...	....	..	..	21	1905	Wolf
192600a	– Aquilae	..	26.1	+ 0 55	*14.0*	*14.5*	...	....	S	..	22	1905	Wolf
192602b	– Aquilae	..	26.2	+ 2 18	*12*	*15.0*	...	....	..	..	23	1905	Wolf
192600b	– Aquilae	..	26.9	+ 0 25	*13.0*	*14.0*	...	....	..	..	24	1905	Wolf
192701	– Aquilae	..	27.2	+ 1 50	*12.5*	<*15.5*	...	....	..	..	25	1905	Wolf
192710	SS Aquilae	..	27.8	+10 19	*11.5*	*15*	242	2416795	II	..	64	1903	Wolf
192843	UV Cygni	3268	28.0	+43 26	7?	9	...	....	III	Mc?	..	1899	Deichmüller
192802	– Aquilae	..	28.1	+ 2 38	*13.0*	*15.5*	...	....	..	..	26	1905	Wolf
192801	– Aquilae	..	28.4	+ 1 22	*13.0*	*13.5*	...	....	..	..	27	1905	Wolf
192803	– Aquilae	..	28.5	+ 3 19	*11.5*	*15.0*	...	....	..	..	28	1905	Wolf
192816	– Sagittarii	5360	28.6	–16 35	*8.5*	*9.7*	...	....	III	N	62	1901	Wells
192804	– Aquilae	..	28.9	+ 4 48	*13.0*	*14*	...	....	..	..	29	1905	Wolf
192928	TY Cygni	..	29.8	+28 6	8.7	<14	352	2416051	II	..	1	1900	Williams
192900	– Aquilae	..	29.8	– 0 46	*13.0*	<*15.5*	...	....	..	..	30	1905	Wolf
193000	– Aquilae	..	30.3	+ 0 29	*11.5*	<*15.5*	...	....	..	..	31	1905	Wolf
193056	XZ Cygni	2257	30.4	+56 10	*8.6*	*9.3*	0.4 +	2417201	IV	..	76	1905	L. Ceraski
193007	– Aquilae	..	30.4	+ 7 2	*12.5*	*14*	...	.....	..	..	65	1903	Wolf
193003	– Aquilae	..	30.9	+ 3 50	*13*	*14.5*	...	....	..	..	32	1905	Wolf
193103	SU Aquilae	..	31.0	+ 3 52	*10*	*14*	...	....	..	..	33	1905	Wolf
193101	– Aquilae	..	31.2	+ 1 50	*12.5*	<*15.5*	...	....	..	..	34	1905	Wolf
193104	– Aquilae	..	31.6	+ 4 31	*12.5*	*15*	...	....	..	..	35	1905	Wolf
193202	– Aquilae	..	32.1	+ 2 22	*12.5*	<*14*	...	....	..	..	36	1905	Wolf
193205	– Aquilae	..	32.1	+ 5 54	*13.0*	*15.0*	...	....	..	..	37	1905	Wolf
193220	U Vulpeculae	4200	32.3	+20 7	6.5	7.6	7.9 +	2414200	IV	K 5 M	..	1897	M. and K.
193208	– Aquilae	..	32.3	+ 8 59	*12.5*	*14.5*	...	....	..	..	48	1905	Wolf
193312	– Aquilae	..	33.2	+12 34	*13*	<*14.5*	...	....	..	..	66	1903	Wolf
193311	RT Aquilae	..	33.3	+11 30	8.0	<13	326	2411550	II	Md	..	1897	Anderson
193310	– Aquilae	..	33.7	+10 22	*13.0*	<*15*	...	....	..	..	111	1904	Wolf
193331	– Sagittarii	16934	33.7	–31 10	..	..	...	....	Cl.	..	..	1898	Bailey
193412	– Aquilae	..	34.0	+12 2	*11.0*	*14.5*	...	....	..	..	67	1903	Wolf
193449	R Cygni	3064	34.1	+49 58	6.6	13.9	425.9 +	2398504	II	Pec.	..	1852	Pogson
193410	– Aquilae	..	34.2	+10 17	*11.2*	*12.7*	...	....	..	..	112	1904	Wolf
193411a	SV Aquilae	..	34.3	+11 43	*11*	*14.5*	...	....	..	..	68	1903	Wolf
193411b	– Aquilae	..	34.5	+11 58	*12.5*	*14.5*	...	....	..	..	49	1905	Wolf
193408	– Aquilae	..	34.7	+ 8 23	*11*	*12*	...	....	..	..	109	1905	Wolf
193512	– Aquilae	..	35.6	+12 49	*11.5*	<*15*	...	....	..	..	110	1905	Wolf
193509	RV Aquilae	4205	35.9	+ 9 42	9	<14	117	2415281	II	Md	17	1900	Anderson
193607	– Aquilae	..	36.4	+ 7 11	*11.5*	*14.5*	...	....	..	..	69	1903	Wolf
193732	TT Cygni	3522	37.1	+32 23	*8.7*	*10.3*	...	....	III	N	..	1898	Wells

Des.	Name.	DM	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d.						
193813	– Aquilae	..	19 38.1	+13 20	*12.0*	*14.5*	...	....	..	..	70	1903	Wolf
193910	– Aquilae	..	39.0	+10 38	*12.5*	*13.5*	...	....	..	..	50	1905	Wolf
193972	T Pavonis	2452	39.5	−72 1	7.3	<12.5	244.0 +	2415034	II	Md	..	1896	Fleming
193907	– Aquilae	..	39.7	+ 7 21	*13*	<*14.5*	...	....	..	..	51	1905	Wolf
194011	– Aquilae	..	40.3	+11 31	*13*	*15*	...	....	..	..	52	1905	Wolf
194008	RX Aquilae	..	40.4	+ 8 12	*11.0*	<*15*	230	2417094	II	..	71	1903	Wolf
194080	– Draconis	..	40.6	+80 42	..	..	...	....	S	..	184	1904	(Greenwich)
194041	– Sagittarii	13684	40.6	−41 25	*9.1*	*9.9*	...	....	..	Mc 5 d	63	1901	Fleming
194048	RT Cygni	2942	40.8	+48 32	6.7	12.0	190.5	2410514	II	Md	..	1890	Fleming
194029	SU Cygni	*3460*	40.8	+29 1	6.2	7.0	3.8 +	2414202	IV	F 5 G	..	1897	M. and K.
194012	– Aquilae	..	40.9	+12 3	*12.5*	<*15*	...	....	..	..	112	1905	Wolf
194110a	– Aquilae	..	41.8	+10 32	*13.5*	<*15*	...	....	..	..	72	1903	Wolf
194110b	– Aquilae	..	41.9	+10 13	*14*	<*15*	...	....	..	..	73	1903	Wolf
194207	– Aquilae	..	42.4	+ 7 23	*11.5*	*13.5*	...	....	..	..	74	1903	Wolf
194216	– Sagittae	..	42.5	+16 33	*12.5*	*14.5*	...	....	..	..	117	1905	Wolf
194212	– Aquilae	..	42.5	+12 14	*11.5*	<*15*	...	....	..	..	75	1903	Wolf
194232	SY Cygni	..	42.7	+32 28	*10*	<*12*	6.0 +	2415004	V	..	..	1899	L. Ceraski
194208	– Aquilae	..	42.7	+ 8 20	*12*	*14.5*	...	....	..	..	53	1905	Wolf
194219	– Vulpeculae	..	42.8	+19 14	*11*	<*15*	...	....	..	..	118	1905	Wolf
194209a	– Aquilae	..	42.8	+ 9 42	*12.0*	<*15*	...	....	..	..	76	1903	Wolf
194209b	– Aquilae	..	42.8	+ 9 8	*13.5*	<*15*	...	....	..	..	54	1905	Wolf
194307	– Aquilae	..	43.1	+ 7 20	*11*	*13*	...	....	..	..	113	1905	Wolf
194350	W Telescopii	..	43.1	−50 15	*9.7*	<*12.7*	305	2410235	II	Md	35	1901	Fleming
194317	– Sagittae	..	43.2	+17 38	*13*	<*15*	...	....	..	..	119	1905	Wolf
194312	– Aquilae	..	43.2	+12 54	*13*	*14*	...	....	..	..	55	1905	Wolf
194348	TU Cygni	..	43.3	+48 49	9	<13	218	2411419	II	Md	13	1900	Hisgen
194327	11 Vulpeculae	..	43.5	+27 4	3	R	...	....	I	..	..	1670	Anthelm
194311	RY Aquilae	..	43.7	+11 17	*10*	*13*	350	2416966	II	..	77	1903	Wolf
194418a	– Sagittae	..	44.2	+18 33	*12.5*	<*15*	...	....	..	..	120	1905	Wolf
194427	S Vulpeculae	*3674*	44.3	+27 2	8.4	10	67.5	2402239	III	..	..	1862	Baxendell
194418b	– Sagittae	..	44.6	+18 39	*13*	<*14.5*	...	....	..	..	121	1905	Wolf
194412	ST Aquilae	..	44.6	+12 7	*10.5*	*13.5*	370?	....	II?	..	78	1903	Wolf
194541	XY Cygni	..	45.2	+41 24	*9.5*	<*15*	...	....	II?	..	72	1905	Wolf
194612a	SW Aquilae	..	46.0	+12 34	*11.5*	*14*	...	....	..	..	79	1903	Wolf
194618	– Sagittae	..	46.1	+18 25	*12.5*	<*15*	...	....	..	..	122	1905	Wolf
194612b	SX Aquilae	..	46.3	+12 58	*11*	<*14*	...	....	..	..	80	1903	Wolf
194617	– Sagittae	..	46.5	+17 24	*13.5*	*15*	...	....	..	..	123	1905	Wolf
194604	X Aquilae	4250	46.5	+ 4 13	8.5	<13.5	348	2412690	II	Md	..	1894	Fleming
194632	χ Cygni	3593	46.7	+32 40	4.0	13.5	406.0 +	2365136	II	Md	..	1686	Kirch
194659	S Pavonis	7544	46.8	−59 27	7.0	8.7	389?	2415310	II	Md	..	1894	Fleming
194615	– Aquilae	..	46.9	+15 29	*12*	*13*	...	....	..	..	124	1905	Wolf
194716a	– Sagittae	..	47.2	+16 10	*11.5*	<*14*	...	....	..	..	125	1905	Wolf
194716b	– Sagittae	..	47.4	+16 42	*12*	<*14.5*	...	....	..	..	126	1905	Wolf
194700	η Aquilae	4337	47.4	+ 0 45	3.7	4.5	7.1 +	2396168	IV	G	..	1784	Pigott
194818	– Sagittae	..	48.1	+18 51	*12*	*15*	...	....	..	..	127	1905	Wolf
194812	– Aquilae	..	48.1	+12 25	*11.5*	*13*	...	....	..	..	114	1905	Wolf
194809	– Aquilae	..	48.7	+ 9 7	*12*	<*14.5*	...	....	..	..	81	1903	Wolf
194921	– Vulpeculae	..	49.0	+21 53	*13*	*14.5*	...	....	..	..	128	1905	Wolf
194917a	– Sagittae	..	49.0	+17 59	*11.5*	<*15*	...	....	..	..	129	1905	Wolf
194910a	– Aquilae	..	49.0	+10 44	*12*	*13*	...	....	..	..	82	1903	Wolf

Des.	Name.	DM.	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d.						
194912	– Aquilae	..	19 49.0	+12 32	*12*	*14.5*	...	....	..	..	56	1905	Wolf
194917b	– Sagittae	..	49.1	+17 37	*13*	*<15*	...	....	..	..	130	1905	Wolf
194909	RZ Aquilae	..	49.1	+ 9 24	*11*	*13*	367	2417040	..	..	83	1903	Wolf
194918	– Sagittae	..	49.3	+18 6	*12.5*	*15*	...	....	..	..	131	1905	Wolf
194910b	– Aquilae	..	49.4	+10 2	*12.5*	*13.5*	...	....	..	..	57	1905	Wolf
194907a	– Aquilae	..	49.4	+ 7 21	*11.5*	*12.5*	...	....	..	..	84	1903	Wolf
194907b	– Aquilae	..	49.5	+ 7 45	*13*	*<14.5*	...	....	..	..	85	1903	Wolf
194908	– Aquilae	..	49.7	+ 8 39	*13*	*<15*	...	....	..	..	115	1905	Wolf
194929	RR Sagittarii	16646	49.7	−29 27	*7.5*	*<12.6*	335	2410022	II	Md	..	1892	Fleming
194917c	– Sagittae	..	49.8	+17 33	*12.5*	*14.5*	...	....	..	..	132	1905	Wolf
195019a	– Vulpeculae	..	50.5	+19 49	*12.5*	*14*	...	....	..	..	133	1905	Wolf
195020a	– Vulpeculae	..	50.5	+20 40	*12*	*<15*	...	....	..	..	134	1905	Wolf
195019b	– Sagittae	..	50.5	+19 5	*13*	*14.5*	...	....	..	..	135	1905	Wolf
195020b	– Vulpeculae	..	50.6	+20 44	*13.5*	*<15*	...	....	..	..	136	1905	Wolf
195018	– Sagittae	..	50.8	+18 51	*13.5*	*<15*	...	....	..	..	137	1905	Wolf
195019c	– Sagittae	..	50.9	+19 1	*11*	*13*	...	....	..	..	138	1905	Wolf
195121	– Vulpeculae	..	51.0	+21 11	*12.5*	*<15*	...	....	..	..	139	1905	Wolf
195115	– Aquilae	..	51.4	+15 36	*11*	*12.5*	...	....	..	..	140	1905	Wolf
195116	S Sagittae	4067	51.5	+16 22	5.5	6.1	8.3 +	2406602	IV	G	..	1885	Gore
195120	– Vulpeculae	..	51.8	+20 24	*13*	*15*	...	....	..	..	141	1905	Wolf
195142	RU Sagittarii	14584	51.8	−42 7	*9*	*13.1*	242	2410159	II	Md	..	1891	Fleming
195217	– Sagittae	..	52.1	+17 4	*13*	*<15*	...	....	..	..	142	1905	Wolf
195219a	– Sagittae	..	52.4	+19 21	*12*	*15*	...	....	..	..	143	1905	Wolf
195202	RR Aquilae	..	52.4	− 2 11	*8.4*	*<13.5*	395	2413327	II	Md	..	1895	R
195218	– Sagittae	..	52.5	+18 40	*11*	*15*	...	....	..	..	144	1905	Wolf
195219b	– Sagittae	..	52.7	+19 44	*11.5*	*13*	...	....	..	..	145	1905	Wolf
195315	– Sagittae	..	53.0	+15 56	*12*	*<15*	...	....	..	..	146	1905	Wolf
195317a	– Sagittae	..	53.0	+17 28	*13*	*<15*	...	....	..	..	147	1905	Wolf
195326	X Vulpeculae	3741	53.3	+26 17	*9.5*	*10.5*	...	....	IV?	..	161	1904	L. Ceraski
195317b	– Sagittae	..	53.4	+17 56	*13.5*	*15*	...	....	..	..	148	1905	Wolf
195322	– Vulpeculae	..	53.6	+22 25	*13*	*<15*	...	....	..	..	149	1905	Wolf
195308	RS Aquilae	..	53.7	− 8 9	*10.0*	*<12.4*	406	2413775	II	Md	..	1895	Fleming
195316	– Sagittae	..	53.9	+16 32	*11.5*	*<15*	...	....	..	..	150	1905	Wolf
195416	– Sagittae	..	54.1	+16 25	*13*	*<15*	...	....	..	..	151	1905	Wolf
195417	– Sagittae	..	54.4	+17 57	*13.5*	*<15*	...	....	..	..	152	1905	Wolf
195622	– Vulpeculae	..	56.6	+22 49	*12*	*13.5*	...	....	..	..	153	1905	Wolf
195717	– Sagittae	..	57.8	+17 20	*12.5*	*14*	...	....	..	..	154	1905	Wolf
195716	– Sagittae	..	57.9	+16 30	*13.5*	*<15*	...	....	..	..	155	1905	Wolf
195855	S Telescopii	9313	58.4	−55 50	*9.0*	*<12.5*	Irr.	....	II	..	..	1896	Kapteyn
195849	Z Cygni	..	58.6	+49 46	7.1	13	265	2410342	II	Md	..	1887	Espin
195818	– Sagittae	..	58.6	+18 59	*11.5*	*14*	...	....	...	..	156	1905	Wolf
195816	– Sagittae	..	58.8	+16 46	*12*	*<15*	...	....	..	..	157	1905	Wolf
195916	– Sagittae	..	59.1	+16 45	*12*	*13*	...	....	..	..	158	1905	Wolf
195921a	– Vulpeculae	..	59.6	+21 26	*11*	*13.5*	...	....	..	..	159	1905	Wolf
195921b	– Vulpeculae	..	59.6	+21 20	*12*	*<15*	...	....	..	..	160	1905	Wolf
200041	WW Cygni	3595	20 0.6	+41 18	*9.3*	*12.5*	3.3 +	2416722	V	..	154	1904	L. Ceraski
200019	– Sagittae	..	0.6	+19 7	*12.5*	*<15*	...	....	..	..	161	1905	Wolf
200036	– Cygni	3852	0.8	+36 32	8.0	9.2	...	....	S	N	..	1894	Espin
200027	– Sagittarii	14534	0.8	−27 31	..	..	...	....	..	Mc 5 d	64	1901	Fleming
200020	– Sagittae	..	0.9	+20 10	*12.5*	*<14.5*	...	....	..	..	162	1905	Wolf

Des.	Name.	DM	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d.						
200158	XX Cygni	..	20 1.3	+58 40	10.7	11.6	0.1+	2416917	IV	..	14	1904	L. Ceraski
200121	– Vulpeculae	..	1.7	+21 33	*13*	*14*	...	....	..	..	163	1905	Wolf
200119	– Sagittae	..	1.9	+19 42	*13.5*	*15*	...	....	..	..	164	1905	Wolf
200218	– Sagittae	..	2.0	+18 29	*13.5*	<*15*	...	....	..	..	165	1905	Wolf
200212	SY Aquilae	4228	2.3	+12 39	*9.5*	<*11.2*	357	2410254	II	Md	48	1906	Fleming
200217	– Sagittae	..	2.7	+17 55	*11.5*	<*15*	...	....	..	..	166	1905	Wolf
200322	– Vulpeculae	..	3.0	+22 31	*11.5*	*13.5*	...	....	..	..	167	1905	Wolf
200357	S Cygni	2134	3.4	+57 42	9.2	<14.7	323+	2402419	II	..	..	1860	(Bonn)
200360	X Pavonis	7384	3.4	−60 14	*9.0*	*10.2*	Irr.	....	III	Md?	..	1898	Fleming
200346	SW Cygni	*3062*	3.8	+46 1	*9.0*	*11.7*	4.5+	2411343	V	A	..	1899	L. Ceraski
200514	R Capricorni	5663	5.7	−14 34	9.0	<13	344	2400391	II	..	..	1848	Hind
200525	W Vulpeculae	4126	5.9	+25 59	9	10	Irr.	....	III	..	5	1904	L. Ceraski
200617	– Sagittae	..	6.1	+17 47	*13*	*14*	...	....	..	..	168	1905	Wolf
200647	SV Cygni	3031	6.5	+47 35	8	9	Irr.	....	III	N	..	1886	Espin
200619	– Sagittae	..	6.5	+19 7	*13*	*14.5*	...	....	..	..	169	1905	Wolf
200635	RY Cygni	4002	6.6	+35 39	8.5	10.5	Irr.?	....	III	N	..	1886	Espin
200715a	S Aquilae	4078	7.0	+15 19	8.4	11.8	146.7	2402553	II	..	..	1863	Baxendell
200720	– Sagittae	..	7.3	+20 19	*10.5*	*13*	...	....	..	..	170	1905	Wolf
200715b	RW Aquilae	4082	7.3	+15 46	8.4	9.2	7.8+	2415587	IV	F	..	1899	H.Parkhurst
200747	R Telescopii	13305	7.6	−47 16	*8.4*	*11.6*	372	2415331	II	Md	..	1895	Fleming
200747	RX Cygni	3038	7.8	+47 31	7.5	8.3	...	....	S	F	..	1893	Deichmüller
200812	RU Aquilae	..	8.0	+12 42	8.5	14.5	276	2414482	II	..	..	1898	Anderson
200821	– Sagittae	..	8.2	+21 4	*12*	*14*	...	....	..	..	171	1905	Wolf
200844	RZ Sagittarii	13831	8.5	−44 43	8.2	10.0	212?	2415096	II	N	..	1897	Fleming
200822	W Capricorni	5373	8.6	−22 17	10.2	<14.7	207.7	2404985	II	..	..	1872	Peters
200916	R Sagittae	4197	9.5	+16 25	8.5	10.4	70.5+	2400358	II?	Cont?	..	1859	Baxendell
200949	– Cygni	..	9.8	+49 9	..	..	...	....	..	Mc 5 d	283	1904	Fleming
200938	RS Cygni	3957	9.8	+38 28	6.7	8.4	Irr.	....	III	N	..	1887	Espin
200906	Z Aquilae	5419	9.8	− 6 27	8.8	13	127.2	2413131	II	..	..	1894	de Ball
201008	R Delphini	..	10.1	+ 8 47	7.6	13.0	284.4+	2402490	II	Md	..	1851	Hencke
201139	RT Sagittarii	13722	11.1	−39 25	*7.7*	*10.7*	301	2415182	II	Md	..	1890	Fleming
201152	X Telescopii	..	11.2	−52 56	*10.5*	*12.9*	...	....	II	Md	36	1901	Fleming
201121	RT Capricorni	5672	11.3	−21 38	*8.6*	*10.4*	...	....	III	N	..	..	R
201134	VW Cygni	3938	11.4	+34 12	9.8	11.8	8.4+	2416348	V	..	55	1903	Williams
201130	SX Cygni	..	11.6	+30 46	9	14.5	409	2414887	II	..	..	1899	Anderson
201250	– Telescopii	12918	12.9	−50 8	..	..	...	....	..	N	31	1904	Wells
201251	Y Telescopii	12487	12.9	−51 1	*8.1*	*9.7*	...	....	III	Mc 5 d	37	1901	Fleming
201316	– Capricorni	5558	13.3	−16 10	..	..	...	....	..	Mc	32	1904	Fleming
201437a	P Cygni	3871	14.1	+37 43	3.5	< 6	...	....	I?	*B 1 A*	..	1600	Janson
201434	– Cygni	..	14.7	+34 4	*9.9*	*12.5*	...	....	II	Md	49	1906	Fleming
201437b	WX Cygni	3876	14.8	+37 8	..	..	176	2410080	II	N	59	1903	Wolf
201520	V Sagittae	..	15.8	+20 47	9.5	12.0	Irr.	....	III	..	21	1902	L. Ceraski
201647	U Cygni	3077	16.5	+47 35	6.7	10.8	461.3	2404596	II	Pec.	..	1871	Knott
201942	UW Cygni	..	19.6	+42 55	10.5	13.0	3.4+	2410000	V	..	78	1901	Williams
202128	T Microscopii	16682	21.8	−28 35	*7.4*	*8.4*	...	....	II?	Md	..	1896	Fleming
202240	U Microscopii	13888	22.6	−40 45	*8.5*	<*12.5*	325	2410860	II	Md	..	1898	Fleming
202539	RW Cygni	4208	25.2	+39 39	8	9.5	Irr.?	....	III	Ma	..	1885	Espin
202622	RU Capricorni	..	26.7	−22 2	9.4	<12.0	341	2415270	II	..	99	1901	Innes
202817	Z Delphini	*4290*	28.1	+17 7	9.3	<12	303.4	2398539	II	..	16	1902	L. Ceraski
202946	SZ Cygni	2966	29.6	+46 16	8	10	15.0+	2414931	IV	K	2	1900	Williams

Des.	Name.	DM.	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d.						
202954	ST Cygni	..	20 29.9	+54 38	9	14	337	2410082	II	..	..	1898	Espin
203046	TV Cygni	2970	30.0	+46 13	9	10	...	....	III	K	16	1900	Köhl
203223	– Vulpeculae	..	32.0	+23 31	*11.2*	*13.2*	...	....	..	..	143	1904	Wolf
203226	V Vulpeculae	3937	32.3	+26 15	8.2	9.8	75.3	2416486	II	..	4	1904	Williams
203222	– Vulpeculae	..	32.3	+22 33	*10.8*	<*15*	...	....	..	..	144	1904	Wolf
203225	– Vulpeculae	..	32.7	+25 58	*12.0*	*15*	...	....	..	..	145	1904	Wolf
203317	W Delphini	4367	33.1	+17 56	9.4	12.1	4.8+	2413564	V	A	..	1895	Wells
203429	R Microscopii	17235	34.0	−29 9	*9.2*	<*11.7*	138.8	2413510	II	Md	..	1894	Fleming
203422	– Vulpeculae	4137	34.5	+22 54	*10.3*	*10.8*	...	....	IV?	..	146	1904	Götz
203423	– Vulpeculae	..	34.9	+23 9	*10.3*	*14*	...	....	..	..	147	1904	Wolf
203526	– Vulpeculae	..	35.3	+26 55	*11.9*	*14.0*	...	....	..	..	148	1904	Wolf
203611	Y Delphini	..	36.9	+11 31	9	<13	487	2416480	II	..	15	1902	Anderson
203726	– Vulpeculae	..	37.4	+26 57	..	..	...	....	..	..	149	1904	Wolf
203847	V Cygni	..	38.1	+47 47	8.3	13.5	418	2408244	II	..	..	1881	Birmingham
203816	S Delphini	4351	38.5	+16 44	8.4	12.0	277.5	2402621	II	Mc	..	1860	Baxendell
203905	Y Aquarii	5359	39.2	− 5 12	8.8	<13	382	2415224	II	..	..	1895	Becker
203935	X Cygni	4234	39.5	+35 14	6.0	7.0	16.3+	2410190	IV	Pec.	..	1886	Chandler
204031	– Cygni	..	40.5	+31 58	*14.1*	*14.7*	...	....	..	..	11	1906	Leavitt
204016	T Delphini	..	40.7	+16 2	8.2	<13	331.2	2402133	II	Md	..	1863	Baxendell
204017	U Delphini	4401	40.9	+17 44	6.4	7.3	Irr.	....	III	Md?	..	..	R
204104	W Aquarii	..	41.2	− 4 27	8.5	<13	382	2412825	II	Md	..	1891	Fleming
204102	V Aquarii	*4359*	41.8	+ 2 4	8.0	9.3	245.5	2416402	II	Md	..	1891	de Ball
204230	– Cygni	..	42.4	+30 36	*14.2*	*15.0*	...	....	..	..	12	1906	Leavitt
204244	RR Cygni	..	42.6	+44 30	8.1	9.7	Irr.	....	III	..	..	1888	Espin
204215	U Capricorni	5795	42.6	−15 9	10.2	14	202.5+	2399573	II	..	..	1857	Pogson
204231	– Cygni	..	42.7	+31 24	*13.6*	*14.3*	...	....	..	..	13	1906	Leavitt
204330	– Cygni	..	43.1	+30 50	*12.6*	*14.1*	...	....	..	..	14	1906	Leavitt
204334	T Cygni	*4028*	43.2	+34 0	..	..	...	....	III	K	..	1864	Schmidt
204318	V Delphini	..	43.2	+18 58	7.5	<17	532	2410140	II	Md	..	1891	Fleming
204331	– Cygni	..	43.5	+31 22	*13.8*	*14.9*	...	....	..	..	15	1906	Leavitt
204432	– Cygni	..	44.0	+32 42	*14.0*	*14.9*	...	....	..	..	16	1906	Leavitt
204405	T Aquarii	5390	44.7	− 5 31	6.7	13.0	203.3+	2401096	II	Md	..	1861	Goldschmidt
204431	– Cygni	..	44.9	+31 29	*10.5*	*12.5*	...	....	..	..	17	1906	Leavitt
204529	– Cygni	..	45.1	+29 40	*13.0*	*14.4*	...	....	..	..	26	1906	Leavitt
204727	T Vulpeculae	3890	47.2	+27 52	5.5	6.1	4.4+	2409849	IV	F	..	1885	Sawyer
204763	U Pavonis	..	47.2	−63 5	*9.6*	<*12.3*	277	2415082	II	Md	..	1896	Fleming
204733	– Cygni	..	47.3	+33 26	*12.0*	<*15.5*	...	....	..	..	18	1906	Leavitt
204745	– Cygni	..	47.4	+45 50	*12*	*13*	...	....	..	..	..	1893	Wolf
204731	– Cygni	..	47.7	+31 46	*12.9*	*16.0*	...	....	..	..	19	1906	Leavitt
204834	Y Cygni	4184	48.1	+34 17	7.1	7.9	1.4+	2410250	V	A	..	1886	Chandler
204846	RZ Cygni	..	48.5	+46 59	9.1	13	273	2417049	II	..	..	1893	Espin
204954	S Indi	8772	49.0	−54 42	8.6	<12.5	402.7	2415388	II	Md	..	1895	Fleming
204938	WZ Cygni	4262	49.3	+38 27	*9.9*	*10.8*	0.5+	2414936	IV	..	107	1905	Williams
205017	X Delphini	4452	50.3	+17 16	8	<13	277	2413450	II	Md	..	1895	Anderson
205030b	– Cygni	..	50.3	+30 14	*11.5*	*13.7*	...	....	..	..	20	1906	Leavitt
205030a	UX Cygni	*4231*	50.9	+30 2	8.5	<12	565	2416196	II	Md	96	1901	Williams
205126	– Vulpeculae	..	51.6	+26 18	*11.0*	<*15*	...	....	..	..	150	1904	Wolf
205233	– Cygni	..	52.1	+33 19	*13.4*	*15.3*	...	....	..	..	21	1906	Leavitt
205232	– Cygni	..	52.1	+32 23	*14.1*	<*16.5*	...	....	..	..	22	1906	Leavitt
205230	UY Cygni	..	52.3	+30 3	9.6	10.4	0.5+	2415346	IV	..	1	1902	Williams

Des.	Name.	DM	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d-						
205223	– Vulpeculae	..	20 52.3	+23 12	*11.9*	<*15*	...	....	..	..	151	1904	Wolf
205330	– Cygni	..	53.0	+30 57	*12.5*	*15.5*	...	....	..	..	23	1906	Leavitt
205332	– Cygni	..	53.1	+32 50	*13.0*	*15.2*	...	....	..	..	24	1906	Leavitt
205327	– Vulpeculae	..	53.1	+27 28	*9.9*	*11.2*	...	....	..	..	152	1904	Wolf
205325	– Vulpeculae	..	53.4	+25 7	*12.3*	*13.5*	...	....	..	..	153	1904	Wolf
205339	VX Cygni	4379	53.6	+39 48	9.1	10.3	20.1 +	2414934	IV	..	58	1903	Williams
205515	RV Capricorni	..	55.9	−15 37	*9.2*	*10.1*	R	....	IV	..	108	1905	Götz
205627	RR Capricorni	15202	56.4	−27 29	8.0	<12	240	2415260	II	..	..	1896	(Cordoba)
205642	TX Cygni	3935	56.4	+42 12	8.5	9.7	14.7 +	2415673	IV	..	22	1900	Williams
205782	T Octantis	..	57.4	−82 30	*9.0*	<*12.5*	205	2415021	II	Md	..	1895	Fleming
205840	– Cygni	4393	58.9	+40 54	..	..	...	....	III	..	33	1904	Dunne
205932	– Cygni	..	59.3	+32 40	*13.0*	*14.4*	...	....	..	..	25	1906	Leavitt
205923	R Vulpeculae	4230	59.9	+23 26	7.5	12.1	136.8 +	2402500	II	Md	..	1858	(Bonn)
210067	– Cephei	..	21 0.4	+67 28	..	..	...	....	Neb.	..	..	1902	Perrine
210039	VY Cygni	4423	0.4	+39 34	8.8	9.5	7.8 +	2416370	IV	..	61	1903	Williams
210116	RS Capricorni	*6181*	1.7	−16 49	*8.1*	*9.3*	...	....	III?	Mc	..	1898	Fleming
210129	TW Cygni	..	1.8	+29 0	9.0	13.5	347	2415977	II	..	20	1900	Williams
210124	V Capricorni	16479	1.8	−24 19	9	14.5	156.7	2403212	II	Md	..	1867	Peters
210245	VV Cygni	..	2.3	+45 23	*12.1*	*13.8*	1.4 +	2416074	V	..	20	1902	L. Ceraski
210221	X Capricorni	5934	2.8	−21 45	9.5	<16.2	218.1 +	2403196	II	..	..	1865	Pogson
210382	X Cephei	..	3.6	+82 40	9.0	<17	565?	2414935	II	Md?	..	1898	L. Ceraski
210516	Z Capricorni	5811	5.0	−16 35	9	<13	356	2413525	II	..	..	1885	Borrelly
210504	RS Aquarii	5381	5.8	− 4 27	9	<14	214	2414883	II	..	..	1898	Barnard
210714	– Aquarii	5960	7.3	−14 48	*8.4*	*9.3*	...	....	III	Mc	..	1898	Fleming
210868	T Cephei	*1291*	8.2	+68 5	5.1	10.5	387	2405359	II	Md	..	1878	W. Ceraski
210812	R Equulei	..	8.4	+12 23	8	<12	312	2415269	II	Md	18	1900	Anderson
210903	RR Aquarii	5159	9.8	− 3 19	8	13	190.5	2415128	II	Md	..	1899	Abetti
211345	T Indi	14302	13.6	−45 27	*7.2*	*8.9*	...	....	III	N	..	1898	Wells
211614	X Pegasi	..	16.3	+14 2	8.5	13	204	2415323	II	Ma	..	1898	Anderson
211615	T Capricorni	5960	16.5	−15 35	8.8	13.5	269.2	2398878	II	Md	..	1854	Hind
211741	V Microscopii	..	17.4	−41 8	..	..	...	....	II?	Md	138	1904	Fleming
211841	YY Cygni	4114	18.5	+41 57	8.7	9.3	R	....	S	..	94	1901	Deichmüller
212030	S Microscopii	18609	20.8	−30 17	7.9	11.5	213.2	2415212	II	Md?	..	1896	Innes
212511	– Pegasi	4577	25.2	+11 44	..	..	...	....	Cl.	..	..	1897	Bailey
212801	– Aquarii	4175	28.3	− 1 16	..	..	...	....	Cl.	..	..	1895	Bailey
212814	Y Capricorni	..	28.9	−14 25	10	14	206	2409790	II	..	..	1884	Peters
213244	W Cygni	3877	32.2	+44 56	5.0	6.7	131.5	2409506	III	Mc	..	1885	Gore
213423	– Capricorni	17047	34.7	−23 38	..	..	...	....	Cl.	..	..	1895	Bailey
213542	UU Cygni	4172	35.6	+42 49	..	..	...	....	S	..	38	1901	Colson
213678	S Cephei	*827*	36.5	+78 10	7.9	13.1	485.8 +	2402389	II	..	..	1858	Hencke
213753	RU Cygni	2684	37.3	+53 52	7.5	10	436?	2412701	II	Mc	..	1890	Espin
213742	Q Cygni	..	37.8	+42 23	3	15.7	...	....	I	Pec.	..	1876	Schmidt
213843	SS Cygni	..	38.8	+43 8	8.4	12.0	Irr.	....	II	A	..	1896	Wells
213937	RV Cygni	4407	39.1	+37 34	7.1	9.3	Irr.	....	III	..	..	1886	Safarik
214024	RR Pegasi	4462	40.0	+24 33	9	13.5	252.5	2415760	II	Md	95	1901	Anderson
214058	μ Cephei	2316	40.4	+58 19	4?	5?	Irr.	....	III	Ma	..	1848	R
214247	R Gruis	..	42.1	−47 22	*8.4*	*12.5*	331	2412397	II	Md	..	1895	Fleming
214464	RT Cephei	..	44.2	+64 9	*10*	*12.5*	...	....	..	..	185	1904	L. Ceraski
214443	WY Cygni	..	44.7	+43 46	*9*	*12.5*	309?	2417132	..	..	164	1904	L. Ceraski
214742	VZ Cygni	4233	47.6	+42 40	*8.2*	*9.2*	R	....	III	..	7	1904	L. Ceraski

Des.	Name.	DM.	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d.						
215122	– Pegasi	4508	21 51.7	+22 24	*8.1*	*9.4*	...	....	III	N	70	1905	Fleming
215543	UZ Cygni	R	55.2	+43 52	*8.9*	*11.6*	31.3 +	2410015	V	..	10	1902	Fleming
215605	V Pegasi	4928	56.0	+ 5 38	8.2	<14	303	2413353	II	Md	..	1895	Fleming
215717	U Aquarii	6424	57.9	−17 6	10	14?	258	2416105	II	..	..	1881	Peters
215828	S Piscis Aust.	17574	58.0	−28 32	8.7	<11	272	2411620	II	Md	..	1891	Holetschek
215934	RT Pegasi	..	59.8	+34 38	9.5	<13	214.6	2416082	II	..	19	1902	Anderson
220133a	– Pegasi	R	22 1.5	+33 2	*10*	*10.6*	...	....	..	..	50	1906	Fleming
220133b	– Pegasi	R	1.5	+33 2	*10*	*12.4*	...	....	..	Md	51	1906	Fleming
220337	W Lacertae	..	3.2	+37 15	*9.5*	*<12.5*	285	2415246	II	..	163	1904	L. Ceraski
220412	T Pegasi	*4738*	4.0	+12 3	8.5	<13	373.8	2402155	II	Md	..	1863	Hind
220585	– Octantis	535	5.7	−85 10	..	..	...	....	..	Mc 5 d	65	1901	Fleming
220613	Y Pegasi	..	6.8	+13 52	9.0	<12.5	203.3	2415324	II	..	14	1900	Anderson
220714	RS Pegasi	..	7.4	+14 4	8.8	<12.5	436	2416279	II	Md	12	1902	Graff
220912	RU Pegasi	..	9.2	+12 12	9.5	11.5	...	....	II?	..	142	1904	Graff
221230	R Piscis Aust.	19092	12.3	−30 6	8.5	<11.5	292	2405086	II	Md	..	1884	Gould
221321	X Aquarii	..	13.2	−21 24	7.7	12.5	315	2413365	II	Md	..	1895	Fleming
221608	– Aquarii	5858	16.5	− 8 7	..	..	...	....	..	Md?	..	1898	Fleming
221722	RT Aquarii	5901	17.7	−22 34	8.7	<11.5	241	2416018	II	Md?	39	1901	Fleming
221733	T Lacertae	4489	17.9	+33 52	R	..	...	....	III?	..	..	1897	Deichmüller
221938	T Gruis	15044	19.9	−38 4	*8.6*	*11.0*	141	2415038	II	Md	..	1896	Fleming
221948	S Gruis	..	19.9	−48 57	*7.2*	*12.3*	401.8	2415314	II	Md	..	1896	Fleming
222029	T Piscis Aust.	18337	20.5	−29 35	..	..	...	....	..	..	40	1901	Fleming
222129	RV Pegasi	..	21.0	+29 58	*9*	*<11*	...	....	II	Md	159	1904	Williams
222439	S Lacertae	4851	24.6	+39 48	8.0	12.5	237.5	2410003	II	Md	..	1891	Fleming
222557	δ Cephei	2548	25.4	+57 54	3.7	4.6	5.3 +	2393375	IV	G	..	1784	Goodricke
222867	R Indi	..	28.9	−67 48	8.5	12.5	216	2415193	II	..	..	1884	Gould
223257	W Cephei	2568	32.6	+57 54	7.3	8.3	6.4 +	2412778	S	K	..	1885	Espin
223462	T Tucanae	6358	34.0	−62 4	8	<14	250.6	2415050	II	..	86	1903	(Cape)
223841	R Lacertae	4589	38.8	+41 51	8.3	14.5	299.8	2408857	II	Md	..	1883	Deichmüller
224354	U Lacertae	2863	43.6	+54 38	..	..	Irr.	....	III	..	R	1894	Espin
224455	V Lacertae	2815	44.6	+55 48	*8.5*	*9.5*	...	....	IV	..	110	1904	L. Ceraski
224625	– Piscis Aust.	16142	46.7	−25 49	..	..	...	....	..	Mc	71	1905	Fleming
225120	S Aquarii	*6330*	51.8	−20 53	8	14.2	279.7	2400395	II	Md	..	1853	Argelander
225827	β Pegasi	4480	58.9	+27 32	2.2	2.7	Irr.	....	III	Mb	..	1847	Schmidt
225914	RW Pegasi	..	59.2	+14 46	*8.8*	*<12.6*	209	2412718	II	..	R	1901	Pickering
230110	R Pegasi	*5158*	23 1.6	+10 0	7.5	13.2	377.5 +	2397158	II	Md	..	1848	Hind
230330	Y Sculptoris	19448	3.7	−30 40	*7.8*	*8.9*	Irr.	....	III	Mc 5 d	..	1896	Fleming
230552	RZ Andromedae	3375	5.1	+52 31	8.8	9.5	...	....	..	..	166	1904	Graff
230652	– Andromedae	..	6.7	+52 29	..	..	...	....	S	..	79	1901	Deichmüller
230752	SS Andromedae	3386	7.0	+52 21	8.9	9.6	...	....	..	Mc 5 d	167	1904	Graff
230759	V Cassiopeiae	*2560*	7.4	+59 8	7.1	12.4	231.5	2412789	II	Md	..	1893	Anderson
231110	– Pegasi	*5191*	11.8	+10 4	..	..	...	....	..	Mc	35	1904	Fleming
231425	W Pegasi	..	14.8	+25 44	7.5	13.5	341	2413485	II	Md	..	1895	Anderson
231508	S Pegasi	..	15.5	+ 8 22	7.8	12.9	317.5	2402210	II	Md	..	1864	Marth
231539	RY Androm.	..	15.9	+39 5	*10*	*<12*	...	....	..	..	44	1905	L. Ceraski
231917	RU Aquarii	*6299*	19.2	−17 52	*8.3*	*< 9.4*	...	....	..	Pec.	66	1901	Fleming
232848	Z Andromedae	4093	28.8	+48 16	..	..	...	....	..	Md?	41	1901	Fleming
233261	RS Cassiopeiae	2487	32.6	+61 53	*9*	*11*	...	....	..	..	108	1904	L. Ceraski
233335	– Andromedae	*4974*	33.8	+35 13	*8*	*<10.5*	...	....	II?	N	52	1906	Fleming
233815	R Aquarii	*6352*	38.6	−15 50	6.2	11.0	387.1 +	2382847	II	Md	..	1811	Harding

Des.	Name.	DM	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d.						
233956	Z Cassiopeiae	..	23 39.7	+56 2	8.5	15	412?	2417135	II	Md	..	1898	Anderson
234153	RT Cassiopeiae	..	41.5	+53 56	*10*	*12*	...	....	..	..	160	1904	L. Ceraski
234758	RY Cassiopeiae	..	47.1	+58 12	*9.3*	*11.8*	...	....	IV?	..	28	1906	L. Ceraski
234716	Z Aquarii	6379	47.1	−16 25	8.0	9.2	216?	2415221	II	Md	..	1896	Fleming
234956	ρ Cassiopeiae	3111	49.4	+56 56	..	..	...	....	III	F 8 G	67	1901	Wells
235048	RS Androm.	*4318*	50.3	+48 5	*9.3*	*9.8*	...	....	III	Md?	..	1898	Fleming
235053	RR Cassiopeiae	..	50.7	+53 8	9.6	<12.8	307	2415345	II	..	5	1900	Anderson
235150	R Phoenicis	14082	51.3	−50 21	7.4	13.0?	270	2415099	II	Md	..	1884	Gould
235182	V Cephei	743	51.7	+82 38	6.2	..	360	2408886	S	A	..	1882	Chandler
235265	R Tucanae	*3816*	52.2	−65 57	*10.2*	<*12.6*	275	2415135	II	Md	..	1892	Fleming
235209	V Ceti	6294	52.8	− 9 31	8.5	14.5	261	2407590	II	..	..	1879	Peters
235215	U Pegasi	4915	52.9	+15 24	9.3	9.9	0.3+	2413514	IV	..	..	1894	Chandler
235350	R Cassiopeiae	4202	53.3	+50 50	5.3	12.8	431.6+	2398374	II	Md	..	1853	Pogson
235357	S Phoenicis	10393	53.9	−57 8	*7.2*	*8.7*	151.2	2415058	II	Md	..	1895	Fleming
235424	Y Ceti	..	54.4	−24 59	9.7	<11.5	...	....	II?	..	28	1903	de Sitter
235525	Z Pegasi	5054	55.0	+25 21	9	<11.5	...	....	II?	Md?	42	1901	Fleming
235715	W Ceti	6531	57.0	−15 14	6.5	12.0	366	2413565	II	Md	..	1894	Skinner
235855	Y Cassiopeiae	..	58.2	+55 7	9.0	13.9	411	2414753	II	Md	..	1898	Fleming
235943	− Andromedae	*4827*	59.4	+43 0	*8.3*	*9.7*	...	....	..	N	53	1906	Fleming

REMARKS.

000339. Visual magnitudes, 8.8 to <12.0? Roberts.

001032. Visual magnitudes, 5.8 to 11.8? Roberts.

001046. This is +46° 41ª in the Revised Durchmusterung.

001706. Variability was suspected by Linhart because he found the star much fainter than the magnitude 9.5, as given in the Durchmusterung. Variability apparently unconfirmed. 13 photographs taken between October 28, 1893, and October 15, 1904, were examined, and show no evidence of variation.

001755. Star e follows 10ˢ, north 0′.2, magn. 7.9. See 001855.

001855. This is star e in the Harvard sequence of comparison stars for the variable, T Cassiopeiae. See Annals **37**, 4. Tass thinks it is certainly variable and has a short period. Hagen found no evidence of variability in 5 estimates made from 1892 to 1897.

001862. The elements were derived from the Harvard photographic observations extending from October 8, 1889, to November 8, 1904, and including the determination of 9 maxima. Visual magnitudes 8.5 to <12.5. Innes.

001838. Additional term, +25 sin (12° E + 90°). Chandler. Star u follows 4ˢ, south 0′.8, magn. 11.6.

001909. Hagen 23 precedes 0ˢ, south 3′.4, magn. 10.9.

001963. Nova Cassiopeiae. +63° 39ª. Often called Tycho Brahé's new star, because of his observations and measures of position, although he said that it was seen by others some days before himself. It was probably seen by Wolfgang Schuler on November 6, by Lindauer on November 7, by Maurolycus on November 8, by Cornelius Gemma and several others on November 9, 1572. The first observers did not say anything about its brightness, but when seen by Tycho, it was nearly equal to Venus, and was bright enough to be seen in the daytime. It faded rapidly, remaining visible to the naked eye for only about sixteen months. It is uncertain whether this object is still visible. From a careful reduction of Tycho Brahé's measures, Argelander deduced the position for this Nova, R. A. = 4° 19′ 57″.7 = 0ʰ 17ᵐ 19ˢ.85, Dec. = + 63° 23′ 55″.4 (1865). This position agrees very nearly with that of star No. 129 in d'Arrest's Catalogue, communicated to the Royal Society of Sciences in Copenhagen, in January, 1864. d'Arrest estimated this star to be of the magnitude 10 to 11. A suspicion of variability was attached to this star by Argelander, who did not see it in the 8-foot telescope, between 1824 and 1849, although other stars which d'Arrest estimated as magnitude 10 to 11 were easily seen in a smaller telescope. No variation, however, was found by d'Arrest between 1863 and 1864. Owing to a prediction that this Nova would return in the latter half of the nineteenth century, the region was observed by Hind and Plummer at Bishop's Observatory, between 1870 and 1874, with the result that a variation of less than one magnitude was found in

d'Arrest 129. Safarik also found a slight variation of about 0.3 magn. in this star during 1888 and 1889, and that its color was a deep red. In Hagen's Supplementary Notes to the Atlas Stellarum Variabilium, a reproduction of Pogson's chart of the region of this Nova is given, and also of d'Arrest's chart from the Danske Vidensk. Selsk. Forhandlinger of 1864. The position of the Nova as marked on these two charts, is not the same. The position given by Pogson follows d'Arrest 129 by 2^s, that given by d'Arrest precedes the same star by 11^s. Seven photographic plates of this region were examined, but no object was distinctly seen in either Pogson's or d'Arrest's position. On a Bruce plate, taken December 26, 1893, a faint star is visible 1′ north of the position given by d'Arrest. d'Arrest 129 is visible on these plates, and is 0.5 magn. fainter on December 27, 1893, than on September 30, 1895.

001972. 47 Tucanae. N. G. C. 104. 6 variables have been found in this cluster.

*002438*a. The variability was confirmed by West in 1895, and by the Harvard photographs in 1896.

*002438*b. This star was announced by Gill as variable because Innes found it fainter than the magnitude, 9.0, as estimated at Cordoba, on October 14, 1890. 39 observations were made between 1897 and 1900, by Innes, who says, "At the Cape, this star has never been seen brighter than magnitude 10.5. The Cape observations by themselves do not indicate variability."

002546. Elements were derived from the Harvard photographic observations extending from August 2, 1889, to August 8, 1904.

002833. The variability was confirmed by the Harvard photographs.

003179. This is $+79° 14^a$. Star follows 12^s, south 0′.6, magn. 12.

003534. The variability was confirmed by the Harvard photographs.

003740. Nova Andromedae. $+40° 147^a$. This new star, which appeared in the Great Nebula of Andromeda, was of about the seventh magnitude when found by Hartwig on August 31, 1885. The light decreased rapidly, but not uniformly, until February 2, 1886, when there was no trace of the star in the 15-inch refractor of the Dun Echt Observatory. The spectrum of this Nova resembled that of the Great Nebula, and was unlike that of the other novae. It was observed by Vogel, Maunder, Sherman, and Perry, and described as perfectly continuous, with only a suspicion of bright lines occasionally seen.

004047. A maximum of this star occurred on March 23, 1905, according to the Harvard visual observations. This is 51 days later than the date computed by Chandler's formula given in Table I. A period of 277 days suits the published observations from 1889 to 1905 better than 276 days. Star g precedes 1^s, north 2′.2, magn. 11.1.

004281. Confirmed by Knott, with variation of 0.6 magn. Ten photographic plates taken between 1891 and 1903 were examined by Mrs. Fleming, and show a small variation, amounting to about 0.5 magn.

004435. This is $+34° 123^a$.

004533. This is $+33° 116^a$.

005381. Times of minimum, 1880, June $23^d\ 9^h\ 28^m + 2^d\ 11^h\ 49^m\ 44^s.55$ E, or J. D. 2407890.3944 $+2^d.4928767$ E. Chandler.

005475. The elements were derived from the Harvard photographic observations extending from September 11, 1889, to December 6, 1904.

005840. Announced by Williams as being of the δ Cephei type, with the elements given in the table. Observations made on 34 nights in 1905 proved to Williams, however, that the variation resembles that of U Geminorum and SS Cygni. Williams found that the star rises rapidly from minimum to maximum, that the interval between successive maxima varies from 23 to 65 days, and that there are other irregularities which he considers to be similar to those of U Geminorum and SS Cygni. The plot of Williams' observations in 1905 is given in Monthly Notices, **56**, 338. Additional observations are needed before the exact nature of the variation can be determined.

005871. Dunlop 62. N. G. C. 362. The position in the N. G. C, is about 1^m less than that given in the A. G. C. and C. P. D. 14 variables have been found in this cluster.

010564. Variation in short period was confirmed by Yendell and Hartwig. Period $7^h\ 59^m.2$. Barr. No evidence of variability from observations by Wendell. The range of 6 photometric observations on November 25, 1904, was 0.14 magnitude. 17 photographic observations on October 16, 16 on October 20, and 22 on November 9, 1905, by Parkhurst and Jordan, gave the mean magnitude 5.48, with the average residual ±0.04. 43 photometric observations by Clemens, and numerous Potsdam observations fail to show the slightest variation in this star.

010630. The variability was confirmed by West and the Harvard photographs.

010940. This is $+39° 291^a$.

011025. By means of photometric measures, Wendell has found this star to be variable with a range of 0.45 magn.

011272. Additional term, $+25 \sin (18°\,\mathrm{E} + 0°)$. Revised elements given by Chandler are J. D. 2401603 + 610.5 E + 37 sin (15° E + 59°). Star t precedes 0^s, north 0′.6, magn. 13.0.

011208. Additional term, $+18 \sin (10°\,\mathrm{E} + 352°)$. Chandler. Star o follows 1^s, north 0′.6, magn. 13.0. Star p precedes 2^s, south 0′.6, magn. 13.6.

011712. This is $+12° 170^a$. Hagen 17 follows 11^s, north 0′.9, magn. 11.1. Hagen 22 follows 7^s, north 0′.3, magn. 11.6.

012288. This is the companion to Polaris.

012502. Period $334^d.15$. Townley gives the observed magnitude 16.2, for the minimum of January, 1891. Hagen 18, follows 7^s, north 0′.6, magn. 10.3.

013238. Star precedes 8^s, south 0′.3, magn. 10. Star follows 10^s, south 0′.8, magn. 8. Elements were derived from the Harvard photographic observations, extending from December 7, 1889, to October 30, 1903, combined

with maxima observed by Williams on December 11, 1903, and August 2, 1904.

014958. This is + 58° 334ª. Spectrum, Type IV, Espin. + 58° 331 precedes 54ˢ, north 1′.1, magn. 7.5. The elements were derived from all available maxima. Large irregularities in times of maxima are evident.

015254. Star m follows 12ˢ, south 1′.3, magn. 10.8.

015556. Nova Persei, No. 1. + 56° 401ª. Eight images of this star were obtained on the Harvard plates in November and December, 1887. It soon faded away, and was invisible on 168 plates taken from October 31, 1890, to January 15, 1900. The spectrum, photographed on November 3, 1887, showed the hydrogen lines Hε, Hγ, Hβ, and a line near 4060, to be bright. The letter V was originally assigned to this star by Hartwig, but as the variability of the object was not accepted by Chandler, the latter assigned the letter V to Espin's variable, 024356, announced in 1893, and to which Hartwig gave the letter W. Later, Chandler included the Nova in his Third Catalogue under the designation, W Persei. The original letters assigned by Hartwig are now used to designate these two objects. See V. J. S. **29**, 239.

015912. This is + 11° 274ª.

020448. The elements are for minima.

021056a. In cluster, N. G. C. 869.

021024. Period 186ᵈ.55 + 7 sin (5° E + 235°) Chandler. Hagen 19 precedes 12ˢ, north 0′.3, magn. 10.8. This star is about midway between the variable and 21 Arietis, magn. 5.64.

021056b. In cluster, N. G. C. 869.

021143a. This is +43° 461ª. +43° 462, suspected of variability, follows 12ˢ, south 0′.3. See 021143b.

021143b. Attention was called to this star by Father Hagen, who cautioned observers from using it as a comparison star for W Andromedae, owing to his discordant estimates in 10 observations, from 1900 to 1903. Fifteen visual and photometric observations, made by J. A. Parkhurst between 1899 and 1903, showed only small fluctuations, "scarcely greater than would be expected in the case of a reddish-yellow star." Williams found a range of only 0.3 magn. in 8 photographic observations, between 1900 and 1902, and says, "the variation although small, has the appearance of being real."

021258. The range of 28 observations by Wendell, on 14 nights from 1899 to 1904, was 0.32 magn.

021356. Variable with small range. In cluster, N. G. C. 884, χ Persei.

021403. This star was first seen by Fabricius in August, 1596, and again in 1609. It was recognized as periodic by Holwarda in 1638. The observations have extended over a longer time than that of any other variable star. Large irregularities occur in the times of maxima and in the magnitude at maximum. The elements are given in the Table according to the Third Catalogue of Chandler, in which the Epoch corresponds to Epoch 227 of Argelander. A complete investigation of the observations and light curve of this star has been made by Guthnick, who gives the following formula to express the times of maximum, J. D. 2415574.96 + 331ᵈ.6926 E + 9ᵈ.5 sin (1°.4 E + 245°.8) + 11ᵈ.5 sin (3°.85 E + 124°.1) + 17ᵈ.5 sin (4°.56 E + 307°.2) + 12ᵈ.3 sin (9°.12 E + 71°.8). Star ε follows 10ˢ, north 0′.0, magn. 9.2.

021556. In cluster N. G. C. 884, χ Persei.

021558. Star l follows 3ˢ, north 0′.9, magn. 11.3.

022000. This is − 0° 361ª.

022260. Elements were derived from the Harvard photographic observations from September 11, 1889, to December 20, 1901. Visual magn., 9.7 to <11.2. Roberts.

022426. The variability was confirmed by West.

022313. Star q precedes 13ˢ, south 0′.7, magn. 11.0.

023133. Variability was also discovered and announced by Espin in 1890. Chandler's period of 268 days appears to be too long to satisfy the observed maxima of this star from 1890 to 1905. The period 267 days was deduced from all available maxima.

023259. Announced as a suspected variable by Espin in 1898. Confirmed by Backhouse, who found a range of 0.5 magn. Spectrum, Type IV, Espin.

023341. Times of minimum, J. D. 2416009.6934 + 3ᵈ.056623 E or 1902, September 16, 16ʰ 38ᵐ + 3ᵈ 1ʰ 21ᵐ 32ˢ.23 E. Williams. A minimum observed by Hartwig on October 29, 1902, came about one half hour later than these elements indicate.

024032. Suspected by Kapteyn. The range of 0.7 magn. given in the table was found during observations from January to March, 1897, by Innes, who thinks that "it is in excess of probable errors."

024217. + 16°355 follows 61ˢ, south 0′.7, magn. 5.30.

024356. Star h follows 5ˢ, north 1′.5, magn. 9.2.

024312. The evidence of variation shown by the photometric measures has been confirmed on about a dozen photographs.

024708. See *024312.*

024729. This object was not seen by Innes in 21 observations from 1897 to 1898. Gill suggested that it was identical with C. DM. − 30° 1082, which follows 25ˢ. Thome, however, states that both stars were seen on September 13, 1887, and October 12, 1892, the preceding star having the magn. 9.8, and the following star, 9.0. A search for − 30° 1079 has been made on Harvard photographs taken November 2, 1889, October 6, 1892, November 3, 1896, September 30, 1899, and September 5, 1900. No trace of − 30° 1079 was seen on any of these plates, although − 30° 1082 was clearly visible on all of them. Since two of the above plates were taken six days before one of the dates when the star was seen at Cordoba, the variation, if real, must be of the U Geminorum type.

025050. Visual magn., 5.8 to 10.3. Innes.

025867. Found by Blajko to be of the Algol type. Times of minimum, J. D. 2416250.9 + 32.315 E.

030514. This is + 14° 526ª.

030140. The first determination of the period was made by Goodricke in 1783. Times of minimum, 1888, January 3ᵈ 8ʰ 11ᵐ.2 + 2ᵈ 20ʰ 48ᵐ 55ˢ.6 E + 147ᵐ sin (0°.024 E + 226°) + 22ᵐ sin ($\frac{1}{13}$ E + 216°), or J. D. 2410640.3411 +

$2^d.867310\ E + 0^d.102 \sin(0°.024\ E + 226°) + 0^d.015 \sin(\frac{1}{13} E + 216°)$. Chandler.

031401. The elements were derived from recent visual observations made here, combined with the Harvard photographic measures, extending from October 17, 1888, to December 31, 1901.

031646. Times of minimum, 1904, September $17^d\ 5^h\ 45^m$ (G. M. T.) $+ 20^h\ 23^m\ 11^s$ E, or J. D. 2416741.240 + $0^d.84943$ E. The change occupies 2.5 hours. Ceraski.

031919. Wolf found this star to be of magn. 12 on a photograph taken November 6, 1905, and not to be seen on any earlier photographs. On November 21, the light had decreased to magn. 13.5.

032335. This is $+ 35° 701^b$.

032339. The elements are for minima. Williams.

032443. Nova Persei, No. 2. $+43°740^a$. This new star was discovered on February 21, 1901, at $14^h\ 40^m$ (G. M. T.), magn. about 2. Photographs obtained at Harvard on February 19, and by Williams on February 20, 1901, show that the Nova was fainter than 12.0 and 10.9, respectively, on those dates. Harvard photographs taken between October 26, 1890, and March 7, 1900, show a star whose light varied from the thirteenth to the fourteenth magnitude within one or two seconds of arc of the Nova, the difference in position being less than the errors of measurement. The Nova attained its maximum brightness of 0.0 on February 23, and then faded rapidly, but irregularly. From March 19, to the end of June, 1901, peculiar oscillations occurred in the light of the Nova, with a range of one magnitude or more, in irregular periods of two or more days. In July, 1901, the Nova had become of about the sixth magnitude, and since then the light has diminished gradually, until, in March, 1906, the magnitude was about 12.8. The spectrum was photographed at Harvard about 24 hours after the discovery of the star in Edinburgh. This is the first Nova whose spectrum has been studied while the star was still increasing in light. On February 22 the spectrum was nearly continuous, and traversed by numerous dark lines, of which the most conspicuous seemed to be slightly bright on the edge of greater wave length. On February 23 the spectrum was the same, except that the line K had become nearly as intense as Hε. On February 24 the spectrum had entirely changed, and resembled the spectrum which is typical of new stars. The principal lines were dark with accompanying bright bands of somewhat greater wave length. In June, 1901, the spectrum had changed into that of a gaseous nebula. The last published observation of the spectrum was that of Perrine, made with the Crossley Reflector on July 30, 1903, when the Nova was estimated to be of magn. 11.5 or 12. The bright lines were much fainter with respect to the continuous spectrum than in 1902, and two characteristic nebular lines had nearly or quite disappeared. Perrine concluded that this spectrum is rapidly approaching the state of a continuous one without bright lines which Q Cygni, Nova Cygni No. 2, appears already to have reached.

032528. Period 92 or 110 days. Innes.

033362. Wendell finds a range of 1.59 magn. from 134 observations on 88 nights.

033451. Espin found a range of 7.5 to 8.9. Backhouse confirmed the variability, but with smaller range. The range of 20 observations by Wendell on 11 nights from 1902 to 1905 was 0.20 magn. Spectrum, Type IV!! Espin.

034124. The supposed variability of this object appears to rest upon the observations of Abetti in Arcetri, Hartwig in Bamberg, and Holetschek in Vienna, while observing Comet 1899 I on the evening of March 6, 1899. Abetti estimated this star as magn. 5.5. Hartwig and Holetschek found difficulty in identifying their comparison stars owing to the unexpected brilliancy of this object, whose catalogue magnitude is 8.0. See A. N. **152**, 181, and V. J. S. **34**, 313. The field was low and no further observations were obtained before the star's conjunction with the Sun. At the end of August, when seen again by Holetschek, the star was about 8.5 magn., and during the next five months no change was found other than between 8.5 and 8.0 magn. A few visual observations made here in 1905 gave the approximate magnitudes 8.2 to 8.4. An examination was made of this object on several Harvard photographs. A chart plate was found which was taken on the critical evening, March 6, 1899, and a chart and spectrum plate taken on March 8, 1899. The photograph of March 6 does not confirm the unusual brilliancy of the star as seen by Abetti, Hartwig, and Holetschek. The star as seen on this plate, is brighter than C. DM. $-24°$ 1863, magn. 8.9, and fainter than C. DM. $-25°$ 1557, magn. 7.7. The neighboring star C. DM. $-24°$ 1877, magn. 5.5, is very conspicuous, and about 3 magnitudes brighter than S Fornacis. The plate taken on March 8 shows S Fornacis of about magn. 8, the same as on March 6, and the spectrum as photographed on March 8 shows no bright lines or other peculiarities. Photographs obtained on September 30 and October 2, 1899, show that this object had approximately the same magnitude as in March. It therefore appears that the photographic brightness of this object was normal on March 6, 1899.

034625. The variability was confirmed by West and the Harvard photographs.

034930. "A binary system, in which one star is at present transiting across the other. Period very long, perhaps 7.67 years." Müller and Kempf. The range of 32 observations by Wendell on 16 nights from 1902 to 1905 was 0.51 magn.

035512. Times of minimum, 1887, December $6^d\ 11^h\ 57^m + 3^d\ 22^h\ 52^m.2$ E, or J. D. 2410612.498 + $3^d.9529$ E. Chandler. Periodic irregularities exist.

035727. Times of minimum, J. D. 2410002.16 + $2^d.76886$ E. This Algol variable has the largest range of any variable star of this class yet discovered.

040950. Suspected by Espin in 1895, and confirmed by Backhouse with a range of 0.5 magn. or greater. Spectrum, Type IV. Espin.

041619. N. G. C. 1555 precedes 2^s, south $0'.7$.

042215. This is + 15° 628ª.

042239. This star was found by Espin to be of magn. 8.4 on November 13, 1898. Variability with small range confirmed on the Harvard photographs, by Mrs. Fleming. Spectrum, Type IV. Espin.

042209. Hagen 23 follows 1^s, north 2′.1, magn. 10.7.

042309. The observed maxima from 1855 to 1906 show that the mean period is about 365 days, or one half of that. There are, however, large irregularities in the times of maxima. Schönfeld's observations, that the light was decreasing on September 25, 1873, and also decreasing in August, 1874, appear to show that maxima occurred during the summers of those years.

043065. This is + 65° 422ª. The spectrum of this star is peculiar, on a photograph taken December 1, 1904. The line Hβ, and a wide band at about 4670 are present and dark, and the faint continuous spectrum extends to Hε. Star m follows 9^s, south 0′.7, magn. 12.0.

043738. Visual magnitudes, 7.2 to <12.0? Roberts. The elements are given according to Roberts.

044068. The variability was confirmed by Wendell, who finds a range of 1.30 magn., from 88 observations on 51 nights.

044349. The elements were deduced from the Harvard photographic observations, combined with Innes' visual observations. The given period satisfies the observed maxima from 1895 to 1906, with an average residual of ± 6 days.

044528. This star was suspected of variability by Birmingham in 1874, and confirmed by Backhouse in 1902, with range of less than 0.5 magn. Wendell finds a range of 0.69 magn., from 29 observations on 18 nights. Spectrum, Type IV, Krüger.

044880. The Algol nature of the variability was confirmed by Blajko. The period was determined at Harvard by means of visual and photographic observations. These observations show that the minima are nearly represented by the formula J. D. 2410011.4 + $12^d.42$ E. The Harvard photographs show a range of 1.7 magn., and that the star remains at nearly constant minimum brightness for four or five hours.

045221. Period not quite constant. Elements for mean maxima, 1900, January $0^d\,8^h$ + $13^h\,57^m\,16^s.2$E, or J. D. 2415020.3 + $0^d.58144$ E. Innes.

045443. Variability was suspected by Fritsch in 1821. Confirmed by Schmidt in 1843, and by Heis in 1847. In later years, it appears that Schmidt found little or no variation. Recent observers, Markwick, L. Campbell, and Besley, find slight, if any, real variation. The range of 14 observations, found by Wendell with the photometer, on 9 nights between April 2, 1904, and January 25, 1906, was 0.35 magn., period irregular. In 1902, ε Aurigae was discovered to be a spectroscopic binary of long period by Eberhard and Vogel, who found that the spectrum is that of two stars superposed, one spectrum similar to that of α Cygni, and the other similar to that of α Persei or γ Cygni. Ludendorff has made a complete investigation of the light changes, between 1842 and 1903, and has reached the conclusion that the variation is of the Algol character. He thinks that the period is 27.14 years, or perhaps 54.28 years, that the length of change is 1.99 years, and that the middle of the last minimum occurred on March 31, 1902.

045514. This "remarkable Crimson Star" was found by Hind in October, 1845, and although he said he kept a close watch on it from that time until 1850, apparently he did not notice its variability, which was established by Schmidt by means of regular observations from 1852 to 1855. Schmidt continued to observe the star until 1883, since which time very few observations have been published.

045823. The suspicion of variability appears to rest upon a single estimate of Millosevich, who noted it as magn. 10.3 on January 17, 1904, whereas it is given as 9.3, No. 1625, in the Catalog der Astronomischen Gesellschaft, **10**, 34.

050001. Variability suspected by Espin and confirmed by Backhouse in 1894. Also discovered independently by Miss Leland, at Harvard, in 1895. Measures of Harvard photographs from 1894 to 1902, show that the variation is irregular.

050003. Hagen 40 precedes 5^s, south 0′.9, magn. 12.0.

050848. Visual magnitudes, 7.9 to <13.3? Innes. The elements are given according to Roberts.

050953. Additional term, + 19 sin (12° E + 228°) Chandler. Star g precedes 5^s, south 0′.3, magn. 9.3.

051247. The elements were deduced from the Harvard photographic observations, from October 8, 1889, to December 20, 1901.

051869. In the cluster, N. G. C. 1910. The spectrum is of the first type, having also the hydrogen lines Hδ, Hγ, and Hβ bright.

052024. N. G. C. 1904. Messier 79. 5 variable stars have been found in this cluster.

052034. Spectrum, Type IV, Espin. Star x follows 1^s, south 0′.9, magn. 13.1. Hagen 111 precedes 2^s, south 0′.6, magn. 12.5.

052142. Times of maximum, 1901, February 4, $15^h\,22^m$ + $3^d\,20^h\,36^m\,58^s$ E, or J. D. 2415420.64 + $3^d.8590$ E. Williams.

052404. Star g precedes 2^s, south 0′.4, magn. 10.2. Star h precedes 1^s, north 1′.0, magn. 11.0.

052530. Nova Aurigae. + 30° 923ª. This new star was discovered during the last week in January, 1892, being then slightly brighter than χ Aurigae, magn. 5.00. An examination of the Harvard photographs proved that the star had escaped observation for nearly two months, since it appears on 17 plates taken between December 10, 1891, and January 31, 1892. A photograph taken at Heidelberg, on December 8, 1891, and showing stars of the ninth magnitude, does not show the Nova, so that the time of the outburst was within two days of December 10, when, according to a Harvard photograph the magnitude was 5.37. The maximum magnitude, 4.4, was reached about December 18, and on January 20, 1893, the photographic magnitude had decreased to 5.2. It thus appears that on February 2,

1892, when the announcement was made of the star's discovery, and when visual and spectroscopic observations began, the Nova had decreased about one magnitude from its maximum brightness. It diminished slowly and somewhat irregularly throughout February, but a very rapid diminution commenced in March, so that on April 26 the magnitude of the star was 16.2, according to visual observations at the Lick Observatory. After thus disappearing, the Nova became brighter in August, 1892, and the magnitude was 9.5 to 9.8 until 1896. In March, 1897, the magnitude was 11.3, and in August, 1903, the Nova was observed at the Lick Observatory, magnitude about 14. The spectrum of this Nova, at the time of discovery, consisted of numerous bright bands, situated on the edge of greater wave length of accompanying dark bands. At the reappearance in August, 1892, the spectrum had become nebular. In September, 1901, when the visual magnitude of the star was about 13, a photograph of the spectrum, secured with the Crossley Reflector, showed that the bright lines were growing weaker and were but little brighter than the continuous spectrum. A photograph secured in August, 1903, showed no trace of the nebular line at λ 5007, which was bright in 1901. It thus appears that this spectrum is approaching the condition of a continuous spectrum without bright lines, which Nova Cygni, No. 2, Q Cygni, has already reached, according to the observations of Pickering and Palmer.

053068. Star h precedes 14^s, north 0′.7, magn. 12.0.

053005r. Suspected of variability by Holden.

053005t. Suspected of variability by Schmidt.

053005a. θ^1 Orionis precedes 34^s, north 5′.2. Star k precedes 9^s, north 0′.3, magn. 11.4.

053201. Variability was confirmed by the Harvard photographs. Elements are given according to Hartwig.

053326. This is + 26° 887ª. Visual observations made at Harvard from 1904 to 1906 show that the period of this star is about 210 days, instead of 95 days, as assumed by Hartwig. The double star, DM. +26° 885, precedes 21^s, south 0′.1, magn. 9.2.

053302a, 053302b. These stars are within 40″ of each other, and since on most of the photographs examined by Miss Leavitt, they appear alternately bright and faint, it was at first thought that both have the same period. On one photograph, however, both stars are bright, so the periods are slightly different. Variability confirmed visually by Mr. Leon Campbell with the 24-inch Reflecting Telescope. Range for 053302a, 12.5 to 14.0, for 053302b, 12.4 to $<$13.6.

053531. This is + 31° 1057ª. Hagen 46 follows 3^s, north 0′.7, magn. 10.8.

053604. Variability was confirmed by the Harvard photographs, and visually by Daniel.

053920. This red star was suspected of variation by Birmingham and Webb, and confirmed by Backhouse in 1887. Variability was also independently discovered and announced by Köhl in 1898. A variation of 0.7 magn. has been found by Mrs. Fleming on the Harvard plates.

054130. Backhouse finds a range of 0.5 magn. The range of 8 observations by Wendell on 4 nights in 1902 and 1903 was 0.31 magn.

054206. A variable double star. Wolf states that the variation is perhaps due to the rapid motion of the companion.

054331. The variability was confirmed by West. Elements are given according to Roberts.

054615b. In 1900, Anderson called attention to the absence of this star in the Durchmusterung. Accordingly, observations were undertaken by Hartwig who found the star of magn. 8.7 or brighter, on November 3, 1901, and that it then decreased until, in the spring of 1903, it had become at least one magnitude fainter. Hartwig thinks the period is very long. Graff found no variation in 20 observations during 1903 and 1904. An examination by Miss Leavitt of 303 Harvard photographs, taken from December 16, 1885, to September 19, 1903, shows no evidence of variation.

054615a. This is + 15° 962ª. The elements are given according to Hartwig.

054629. The elements were deduced from Harvard photographic observations, extending from October 15, 1889, to December 3, 1901. Scattering visual observations made with the 6-inch telescope confirm the period given.

054615c. The variation of this star was discovered independently by Graff in September, 1903. The approximate period, 580 days, is deduced from the Harvard photographic observations, which show that Hartwig's period of 540 days is probably too short.

054974. This is + 74° 266ª. Variability was discovered by means of measures made, under the direction of Mr. Hollis, for the Astrophotographic Catalogue.

054907. A period of 196 days was found by Argelander, from observations extending from 1836 to 1849. Schmidt's observations, however, proved that the star was frequently constant in light for a year or more. The fluctuations, if real, are slight, and observations are very uncertain owing to the brightness and color of the star. Renewed interest was aroused in this star in October, 1902, when it was reported by several English observers to be passing a maximum. Gore found it about one magnitude brighter than α Tauri in October and November, 1902, and thinks that a maximum occurred on or about October 26. Photographic measures made at the Radcliffe Observatory, Oxford, show a slight increase, about 0.24 magn., between March, 1901, and October 22, 1902, and then a gradual decline to its former magnitude.

054920. This is + 20° 1171ª. It was thought to be a Nova, when first found by Gore, and it has often been referred to as "Nova Orionis." Star q, also variable, follows 4^s, south 0′.3. See 055020. Star w precedes 3^s, north 0′.0, magn. 12.7.

055020. This is star q in the Harvard sequence of comparison stars for U Orionis. See Annals **37**, 156. Variability was confirmed by Daniel, but Luther's period of 41.4 days was not confirmed. Variation probably irregular.

055353. The north preceding component of a double star, one or both of which may be + 53° 979. The second star follows 3^s, and is south 0′.6, magn. 11. Light curve irregular. Graff, who observed the star frequently from 1902 to 1904, found that the maxima and minima occurred in periods of 112 days until October, 1904, when the minimum predicted, according to his formula, for October 21, 1904, did not take place, the light being practically constant at magn. 9.5 from September 10 to December 8, 1904. The next minimum occurred near the predicted date, February 11, 1905, according to visual observations at Harvard. Continuous observations of this object are needed.

055686. Elements were deduced from an excellent series of photographic observations extending from May 9, 1889, to August 6, 1901, and including 10 well determined maxima.

060450. This is + 50° 1279ª. Graff's observations show that the light curve of this star is very flat at maximum and pointed at minimum.

060426. 96 observations of this star were made by Backhouse, between April 29, 1886, and September 18, 1900. Backhouse says, "A period of 432 days fits most of the observations, but is entirely inconsistent with some." The variability was confirmed by Wendell, who finds a range of 0.94 magn. from 9 observations on 6 nights in 1902, 1903, and 1905.

060443. A variation of 2.5 magn. was found by Mrs. Fleming from an examination of 16 plates taken between April 5, 1890, and February 23, 1903.

060521. 89 observations of this star were made by Backhouse, from April 29, 1886, to March 28, 1900. These observations show that in April, 1890, the star was about one magnitude fainter than normal. The variability was confirmed by Wendell who found a range of 0.8 magn. from 44 observations on 31 nights.

060822. Elements for minima are given according to Chandler. Period is very uncertain, owing to small range of variation which is usually not in excess of errors of eye observations. A range of only 0.3 magn. was found by L. Campbell, from 46 observations extending over 200 nights.

061133. Announced as probably variable, because a Cape photograph taken March 18, 1889, gave the magn. 10.0, while photographs of March 15 and 26, gave the magn. 9.2 and 9.3, respectively. 51 observations by Innes, from 1899 to 1901, show no variation greater than from magn. 9.6 to 10.0. Innes concluded that the star is "probably slightly variable, or perhaps an Algol type variable." 11 Harvard photographs, taken from November 10, 1894, to April 26, 1901, were examined. On a plate taken November 13, 1889, this star appears to be slightly fainter than on the other plates.

061275. Position and approximate elements are given according to Hartwig. According to photographs obtained here, the variable was bright on March 29, 1893, and December 16, 1897.

061647. This is + 47° 1291ª. The period is approximate, and was obtained from Hartwig's published dates of maxima, together with a maximum on April 19, 1905, derived from visual observations at Harvard.

061914. By means of photometric observations on 6 nights, between October 16, 1905, and February 17, 1906, Wendell finds this star to be variable with a range of 0.39 magn.

061907. Times of maximum, J. D. 2409633.63 + 27^d.0122 E. Yendell.

062230. 48 Aurigae. Found to be variable by T. H. Astbury, a member of the variable star section of the British Astronomical Association, as the result of a naked eye search of a portion of the Milky Way. Confirmed by Williams, who gives the times of maximum, J. D. 2416942.3 + 3^d.75 E, or 1905, April $6^d\ 7^h\ 12^m + 3^d\ 18^h$ E. Wendell finds a range of 0.80 magn. from 10 observations on 8 nights, between January 12 and 26, 1906.

062808. The spectrum shows some peculiarities.

062915. This spectrum is nearly continuous, but there is a faint trace of the lines Hγ and Hδ, and the dark lines, H and K, are well marked. Times of maximum J. D. 2413267.28 + 7^d. 74 E, or 1895, March $14^d\ 6^h\ 45^m + 7^d\ 17^h\ 46^m$ E. Sawyer.

062938. By means of photometric measures on 7 nights, between October 10, 1905, and February 17, 1906, Wendell finds this star to be variable, with a range of 0.54 magn.

063308. A suspected variable precedes 1^s, south 2′.3. N. G. C. 2261 is the northern component of R Monocerotis.

063558. This is + 58° 961ª. + 58° 960, magn. 9.0, precedes 23^s, north 1′.6.

063730. Nova Geminorum. Discovered by Turner and Bellamy on March 24, 1903, from a photographic plate taken at Oxford on March 16, 1903, when its magnitude was 8.0 A photograph of the region, taken at the Yerkes Observatory on February 21, 1903, shows a fifteenth magnitude star within three seconds of arc of the position of the Nova. This faint star was at first suspected to be the Nova before it became bright, but observations made since the Nova has faded show both stars to be visible. The first photograph of the Nova, so far as known, was obtained at Harvard on March 6, when the magnitude was 5.08. It was invisible, and fainter than the tenth magnitude on a plate taken on March 1. Photographs taken on March 11, 12, 13, 14, 15, and 25, show that the Nova was gradually diminishing. The spectrum was photographed at Harvard on March 25, 1903, before the announcement of discovery was received. The hydrogen lines Hζ, Hε, Hγ, and Hβ were bright, and a strong bright band was present at wave length 4643. No dark lines were seen, perhaps owing to the small dispersion. A photograph, taken on March 29, 1903, shows the presence of the nebular line, 5003, indicating the first step of the change into a gaseous nebula Barnard's observations of the light of the Nova, from March 27, 1903, to February 27, 1906, show that it decreased from magn. 8.0 to 14.8, during that time.

064030. Star precedes 0^s, north 4′.1, magn. 12. Star precedes 4^s, south 6′.0, magn. 11.

064707. Star d precedes 11^s, north 1′.4, magn. 9. The variable is the northern of a curving line of four faint stars.

064907. Provisional elements, 1905, February $23^d\ 6^h\ 9^m + 21^h\ 48^m$ E, or J. D. 2416900.256 + 0^d.908 E. The period is that given by Ceraski, and the epoch is assumed from a minimum observed by Blajko.

065111. This is + 11° 1370ª.

065208. Star h follows 6^s, south 0′.4, magn. 10. Star l precedes 5^s, south 0′.3, magn. 11. Measures of this star have been made on the Harvard photographs extending from March 24, 1888, to November 13, 1901. A period of 163 days satisfies many of these observations, but there are large irregularities, and assuming this period, the variable was sometimes at or near minimum at computed dates of maximum. The form of the light curve and range of variation are also very irregular. The spectrum of this star is that which is characteristic of long period variables. Very few visual observations have been published. Since it does not appear to go below the tenth magnitude, it could easily be followed with small telescopes, and continuous observations, when the star is not too near the Sun, are needed to learn the nature of the changes of this interesting variable.

065355. Additional term, + 14 sin (15° E + 270°). Chandler. Hagen 50 follows 7^s, south 1′.1, magn. 12.5.

065306. This star was found to be near maximum in March, 1902, magn. 7, by Ceraski, who thinks the period is probably not short. Not yet confirmed by other observers.

065530. Measures of 233 Harvard photographs of this star, extending from December 3, 1889, to November 1, 1903, give the limiting magnitudes 10.2 to 11.6, and show that the period is irregular.

065820. Times of maximum, J.D. 2410640.60 + 10^d.15382 E. Chandler.

070122a. Additional term, + 35 sin (6° E + 78°), Chandler. Star x precedes 1^s, south 0′.9, magn. 13.2.

070122c. This is star k in the Harvard sequence of comparison stars for the variable, R Geminorum. Variability not yet confirmed by other observers.

070109. This is + 9° 1517a. Star n precedes 3^s, south 0′.7, magn. 11.

070122b. This star is contained in the Durchmusterung, but was missed by Hagen, when preparing the chart of R Geminorum for the Atlas of Variable Stars. It was observed at Bonn on December 3, 1855, magn. 9.5, and at Strasburg, by Kobold, on March 22, 1895, magn. 9.8. It appears in the Catalog der Astronomischen Gesellschaft, **10**, 186, as 2788a. The suspected variability rests on these two observations. A photograph taken at this Observatory on April 5, 1895, 14 days after the observation by Kobold, shows no object at or near the position of the Durchmusterung star, which is brighter than the magnitude 11, or which is sensibly brighter than its image on plates taken at various other dates. 14 other plates examined show the star always faint with no certain variation. The star has not been observed as brighter than magn. 11, by J. A. Parkhurst, from 1900 to 1905, by Graff from 1902 to 1905, by Hartwig in 1903, and by Harvard observers in 1905. No confirmation of variability has been found by these observers. The exact position of this object appears to be in doubt, and it is not certain whether the observations of different observers refer to the same star. The position given in the Gesellschaft catalogue is 1′.6 south of that given in the Durchmusterung. J. A. Parkhurst identifies this star with Hagen 44, which is 0′.9 still further south.

070205. According to the observations of Anderson, this star was at maximum early in 1902, and in March, 1904. Hartwig also found it bright in March, 1904. No other observations have been published. The period, extreme range, and Class to which the variable belongs, are therefore unknown.

070311. Measures of the Harvard photographs from February 18, 1888, to February 11, 1902, show a certain variation of over one magnitude, but no regular period could be deduced.

070532. This star is C.P.D. — 32° 1376. Variability was suspected by Kapteyn because it appeared on the C.P.D. plates, but is not in the C. DM. The Cordoba records show that it was seen once of magnitude 10, and was invisible on two other dates. 16 observations by Innes during 1897, gave the range 9.0 to 9.7. It is uncertain whether this change is real or due to errors of observation. So far as known, not yet confirmed by other observers.

070772. Provisional elements are given according to Innes, who says, however, "It is quite possible that the period is as long as 440^d."

071044. Period 140^d.15. Roberts.

071201. Star g follows 4^s, north 0′.3, magn. 10. The provisional elements are given according to Hartwig.

071416. Times of minimum, 1887, March $26^d\ 15^h\ 18^m + 1^d\ 3^h\ 15^m\ 46^s.0$ E. or J.D. 2410357.638 + 1^d.135948 E. Chandler.

071531. Times of maximum, J.D. 2416223.372 + 0^d.397238 E. Graff.

071725. This is C.P.D. — 25° 2242. The elements are given according to Hartwig.

071713. This is + 13° 1653ª. The variable is the third of a line of 5 stars running north and south.

072121. 20 photographic observations, extending from January 23, 1901, to March 18, 1904, were made by Bohlin. He found that the time during which the star is faint is probably less than 28 days and suspects that the variation is of the Algol type. He found the period to be 338 days, or possibly, one-half of that. Hartwig found the star 0.5 magn. fainter on May 17, 1904, than on the preceding night. No other observations have been published.

072211. Mrs. Fleming found that the spectrum of this star resembles that of a star of the fourth type, except that the bands are of shorter wave length and thus they may be identical with those of a star of the third type. The portion of the spectrum whose wave length is less than

Hγ, 4341, is too faint to appear in the photographs. Measures of this star have been made on the Harvard photographs from January 24, 1888, to January 13, 1902. No regular period was found.

072609. 77 photometric observations by Pickering in 1897 and 1898 show that the variation is irregular.

072708. Additional term, $+ 20 \sin(12° \text{ E} + 30°)$. Chandler.

072776. Period $3^d.3056 = 3^d\ 7^h\ 20^m.1$. Blajko. This star was found by Mme. Ceraski to be of normal magnitude, 9.5, on 17 photographs taken from 1897 to 1903, but much fainter on a plate taken April 12, 1898.

*072820*b. Variability was also discovered independently by Innes and announced in 1900. The provisional designation 19.1900 was assigned before the star was found to be identical with Z Puppis, already discovered by Perry. Perry, however, erroneously identified the object with B.D. — 20° 2007. The variable was found by Innes to be Lalande 14755, and not to be identical with B.D. — 20° 2007, which is the same as C.P.D. — 20° 2569 and which follows 1^s and is north 0′.2. The period was obtained from the observations of Innes. This star is of especial interest owing to the length of its period. According to the observations of H. M. Parkhurst, the minimum magnitude is about 11, but Innes thinks the star is probably very faint at minimum.

072811. This is + 12° 1594a. Hagen 63 follows 4^s north 0′.2, magn. 11.4. Hagen 69 precedes 1^s, south 0′.3, magn. 12.3.

*072820*a. Variability was confirmed visually by Hartwig in 1895, who at first thought that the period was about 415 days, or half of that. Innes found the period to be much shorter and gives the following formula for the times of maximum, J.D. 2408893 + $25^d.948$ E. Hartwig has later suspected the star to be of the β Lyrae class, if not irregular. Additional observations are needed to establish the nature of the variation.

073520. Variability was confirmed visually by Blajko. No observations have been published by which the period or Class of this variable can be determined.

073508. This is + 8° 1847a.

073723. Hagen 40 follows 4^s, south 0′.3, photom. magn. 12.54.

074241. Measures of the Harvard photographs of this star, from October 3, 1889, to April 17, 1901, give the dates of 13 maxima and 7 minima. The elements of Roberts, which are given in Table I, are in good accordance with these observations.

074205. A variation of 0.5 magn. was found in the preceding and northern of two faint, adjacent stars.

074323. Star n precedes 1^s, south 1′.5, magn. 13.1.

074305. Measures of the Harvard photographs, from February 22, 1886, to April 23, 1901, show an irregular variation.

074541. Variability was suspected by Kapteyn, and confirmed by Innes, who also found the variable to be of the Algol type and who gives the following formula for the times of minimum, 1900 January $1^d\ 20^h\ 37^m$ + $6^d\ 10^h\ 18^m\ 58^s.2$ E. or J. D. 2415021.859 + $6^d.429840$ E.

074922. This star and SS Cygni may be regarded as belonging to a subdivision of Class II, which is characterized by general faintness, with occasional outbursts of light, in apparently irregular periods. No other stars are certainly known to belong to this class of variables. Elements are given in Table I, according to Chandler, but a comparison with observed dates of maxima shows that the period is probably irregular. Hagen 25 follows 18^s, south 0′.1, magn. 11.1. This is Winnecke's star d. Hagen 39 precedes 2^s, north 2′.1, magn. 12.6. This is Winnecke's star a.

075548. Times of minimum, 1900 January $1^d\ 5^h\ 5^m$ + $1^d\ 10^h\ 54^m\ 26^s.7$ E, or J. D. 2415021.212 + $1^d.454475$ E. Roberts. This star is a spectroscopic binary, and the lines of the spectrum are double in a period agreeing with that of the variation in light.

075820. This star was found to be of magn. 12 on a plate taken January 10, 1904, magn. 14 on January 11, 1904. Star precedes $1^s.21$, north 0′.2, magn. 12.

080138. Measures of the Harvard photographs, from October 22, 1889, to April 24, 1901, show that the period is probably irregular.

080322. Measures of the Harvard photographs, from November 6, 1889, to December 7, 1901, show that the period is probably irregular.

080310. Found to vary from 8.5 to 9.2 in three estimates made by Anderson on January 18, January 29, and February 22, 1905. Ebell states that he could not see the star distinctly on the Harvard map of the sky, No. 26, taken November 9, 1899. Five Harvard plates were accordingly examined and they confirm the variability with range of over one magnitude. The variable was brighter on October 5, 1897, than on September 13 and November 24, 1897. A maximum, therefore, probably occurred in October of that year. Faint phases occurred on May 10, 1897, and December 5, 1904. Additional observations are needed to determine the period and light curve of this star.

080834. The variability was established by West, who found a change from magn. 8.15 to 8.8, from 6 observations in 1896. Hartwig suspected a period of 204 days, but Roberts found the period to be irregular.

080934. Times of maximum, J. D. 2414307 + $41^d.313$ E. Innes. The variability was discovered by Miss Reitsma, from an examination of the C. P. D. plates.

081112. Additional term, $+ 60 \sin(6° \text{ E} + 144°)$. Chandler. Star s follows 5^s, north 0′.6, magn. 10.8.

081473. This variable was found in the course of the work for the Astrographic Catalogue, under Mr. Hollis' direction. The period is given according to Hartwig. Observations by Van Biesbroeck in June and July, 1905, led him to the conclusion that the period is about one month, and he gives the provisional formula for times of maximum, J. D. 2417076 + 29.54 E.

081403. The variability has been confirmed by Wendell, who found a range of 1.34 magn. from 11 observations on 6 nights in 1903, 1904, and 1905. Spectrum, Type IV, Espin.

081617. Star s follows 6^s, north 0′.1, magn. 11.9. Star y follows 3^s, north 0′.0, magn. 13.9.

081633. Anderson found this star to be of magn. 9.5 on October 16 and 17, 1905, and magn. 10.8 on January 13 and 15, 1906. A few photographs were examined to confirm the variability. On January 14, 1895, the star was visible and about 0.5 magn. fainter than + 33° 1687, magn. 9.5. On April 17, 1890, February 24, 1897, and March 15, 1898, the star was invisible and estimated as fainter than magnitude 10.5, 11, and 12, on the three dates, respectively. This is probably a variable star of long period.

081908. Measures of the Harvard photographs, from January 24, 1888, to December 25, 1901, show a small and irregular variation.

082476. The elements were deduced from the Harvard photographic observations extending from November 5, 1889, to December 11, 1901.

082405. The measures of the Harvard photographs from March 18, 1888, to December 25, 1901 appear to show evidence of a period of about 280 days, with approximate maxima on J. D. 2414000, 2415130 and 2415385. The observations are too scattering, however, to determine a precise value of the period, and it may be irregular.

082659. Times of maximum, J. D. 2415026.78 + $6^d.6951$ E. Roberts.

082958. Times of minimum, 1900 January $1^d\ 2^h\ 44^m$ + $12^h\ 59^m\ 29^s.9$ E, or J. D. 2415021.114 + $0^d.541318$ E. Roberts.

083350. The elements were deduced from the Harvard photographic observations, extending from March 7, 1890, to March 6, 1902. See Circular 81. Visual observations, made by the writer since the publication of that circular, appear to confirm the elements as given in the table.

083447. Times of maximum, J. D. 2415022.78 + $4^d.6392$ E. Roberts.

083409. Measures of the Harvard photographs, from January 24, 1888, to December 25, 1901, show that the period is probably irregular.

083679. An examination by Mme. Ceraski of 26 photographs, taken from 1897 to 1905, gave evidence of a short period, but the material was not sufficient to determine this with certainty.

083819. Times of minimum, 1867, August $31^d\ 14^h\ 2^m.89$ + $9^d\ 11^h\ 37^m\ 45^s$ E, or J. D. 2403210.585340 + $9^d.48455$ E. Schönfeld.

084127. Provisional elements given in the table were adopted from the observations of Holetschek. See A. N. **170**, 170.

084803. Star o follows 9^s, north 1′.0, magn. 11.5. Hagen 60 follows 4^s, north 0′.6, magn. 12.1.

084917. This star was announced as probably variable by Birmingham in 1871, and confirmed in 1895 by Espin, who stated that it varied from magn. 6.4 to 7.9. It was also marked as suspicious by Müller and Kempf in the Potsdam Photometric Catalogue. The range of 68 observations by Wendell on 33 nights in 1902 and 1903 was 0.45 magn.

085120. The epoch given is for minimum.

090024. Included in list of suspected variables in Volume 16 of the Cordoba Annals. Variability was confirmed by West, and by the H. C. O. photographs in 1896. Elements are given according to Innes.

090151. This is + 51° 1483ª. Observations by Graff, from March 24, 1902, to October 7, 1903, led him to consider this star an Algol variable, with a period of over 200 days. Later observations, however, gave evidence of irregularities which a single eclipse phenomenon could not explain. His observations show that well marked minima occurred from 1901 to 1904 at intervals of 202 days. Further observations are needed to determine the form of light curve of this star.

090331. This star was measured photometrically by Pickering on 15 nights between 1892 and 1898 as it had been found by Mrs. Fleming on the Draper photographs to have a spectrum of the Class Mc. The evidence of variation shown by the photometer has been confirmed on about a dozen photographic charts.

090425. This is + 25° 2053ª. Measures of this star have been made on the Harvard photographs from December 6, 1889, to April 13, 1901. Elements were deduced from these measures, combined with a few visual observations. See Circular 81.

091365. Measures of the Harvard photographs from March 12, 1890, to June 5, 1901, show that the period is probably irregular.

091868. The elements were deduced from the Harvard photographic observations from May 1, 1890, to December 20, 1901.

091955. This star was at first incorrectly assigned to the constellation Carina, by Roberts, and called W Carinae by Chandler. The constellation is Vela according to the U. A. Times of maximum, J. D. 2415021.64 + 4.3709 E. Roberts.

092048. The elements were deduced from the Harvard photographic measures from November 28, 1889, to May 19, 1902, and include the determination of 6 maxima. No letter has yet been assigned to this star.

092728. Times of minimum, 1888, April $13^d\ 12^h\ 33^m.0$ + $0^d\ 7^h\ 46^m\ 48^s.18$ E, or J. D. 2410741.5229 + $0^d.324169$ E. Chandler. Observations by Pickering in 1896, with the meridian photometer, proved that this star is not of the Algol type, as had been supposed, but that its light is continually changing, and that it belongs to Class IV, like δ Cephei and η Aquilae.

092856. Gould thought that this star varied in a short period of about $4^d.25$. Innes found, from 17 observations made in 1895, that it varied from magn. 3.2 to 3.8, in very irregular periods. Roberts' observations led him to conclude that the star is not variable in brightness, but that it changes in color. If really variable, the period is probably irregular.

092944. Times of minimum, 1900 January $1^d\ 3^h\ 44^m$ + $5^d\ 22^h\ 24^m\ 21^s.1$ E, or J. D. 2415021.155 + $5^d.933577$ E. Roberts.

092936. Kapteyn found a change of magnitude from 8.7 to 9.6 on a Cape plate exposed February 22, February 24, and March 7, 1896. 27 observations by Innes

from 1897 to 1900 show evidence of a slight variability, the extreme range being 8.85 to 9.35.

092962. Additional term, + 23^d cos (8°.2 E − 229.1°). Roberts.

093178. The period is that given by Hartwig. The epoch is assumed from a maximum observed here on the date given.

093656. Times of minimum, 1903 January $14^d\,4^h\,32^m$ G.M.T. + $4^h\,0^m\,12^s.8$ E, or J. D. 2416129.189 + $0^d.166815$ E. Müller and Kempf. The light curve is pointed at minimum, and very flat at maximum.

093707. Measures of the Harvard photographs from January 24, 1888 to January 1, 1902, show that the variation is irregular.

093934. Additional term, +20 sin(10° E+300°). Chandler.

094023. This star is C. P. D. — 23° 4672 and is not in the C. DM. Elements are given according to Innes.

094262. Period $35^d.523$. Roberts.

094622. Variability was suspected by Espin and Thome. Measures of the Harvard photographs from April 22, 1888, to April 6, 1901, show that the period is probably irregular. — 22° 7654 follows 11^s, north 3′.7, magn. 8.7.

094735. Variability was found independently by means of its spectrum, by Mrs. Fleming in January, 1905. The range is taken from estimates of 6 chart plates, which also show that the variable was brighter than + 35°2072, magn. 9.2, on May 19, 1896, and on December 4, 1904. The elements given in the table are provisionally adopted from estimates made on these six plates.

095141. Measures of the Harvard photographs from May 20, 1890 to July 3, 1902, show that the period is probably irregular, although there seems to be an indication of an approximate period of 350 days. No visual observations of this star have been published.

095421. Star 1 precedes 3^s, south 0′.7, magn. 12.8.

095458. Roberts' period of 365 days is not confirmed by the Harvard photographic measures from June 16, 1889 to May 14, 1901. The variation appears to be irregular. Visual magnitudes, 7.8 to 8.6. Roberts.

100537. Variability not confirmed with certainty. Roberts found the range given in the table, with no regular period. Markwick found little or no variation from 1894 to 1897.

100860. Measures of the Harvard photographs from March 17, 1886, to April 14, 1900, give no regular period. The spectrum is banded and resembles the third type, but shows peculiarities.

101058. Elements were derived from observations of the Harvard photographs from May 17, 1889 to December 6, 1901. These observations show that the period, 394 days, given by Roberts and adopted by Chandler and Hartwig, is too long. According to the photographs, a maximum occurred on April 7, 1892, whereas, the date computed by Roberts' formula is January 26, 1892.

101112. This star was found by Wolf on a plate taken February 21, 1901, but was not seen on his other photographs.

101741. Times of minimum, 1901 June $12^d\,5^h\,11^m$ + $1^d\,20^h\,30^m\,2^s.9$ E. or J. D. 2415548.216 + $1^d.854200$ E. Innes.

102957. Period $3^d.6401$. Roberts.

102900. The variation was confirmed by Mrs. Fleming on 5 chart plates taken between April 24, 1891 and February 11, 1905.

103039. Measures of the Harvard photographs from March 18, 1890 to November 25, 1902, show that the period is probably irregular.

103270. Elements were deduced from the Harvard photographic measures which extend from April 1, 1890 to May 17, 1902.

103361. Elements were derived from observations of the Harvard photographs from June 16, 1889 to December 28, 1901.

103769. Additional term, + 11 sin (8°E+238°). Chandler.

104058. Measures of the Harvard photographs from May 17, 1889 to November 12, 1901 give no regular period.

104159. Nova Carinae No. 1, also frequently called η Argus. The remarkable outburst in light in 1827 and the peculiar spectrum of this star cause it to be classed with the Novae rather than with the variables. The uncertainty of the early estimates renders it difficult to draw any conclusions concerning the reality or nature of the star's variation prior to the nineteenth century. In 1827, Burchell recognized its variability and estimated it equal to α Crucis, or about magn. 1.0. The light was then probably increasing, and from 1842 to 1850, approximately, η Carinae, next to Sirius and Canopus, was the brightest star in the whole sky. By 1870, the light had diminished, so that the star was about the seventh magnitude, and has remained nearly constant since that time. It was found by the writer in 1898 that a photograph of the spectrum of η Carinae, taken at Arequipa on May 25, 1895, showed nearly all the bright bands visible in Nova Aurigae on February 17, 1892, and of about the same intensity. In 1901, the same remarkable resemblance between the two spectra was found by Sir David Gill at the Cape.

104628. Additional term, + 40 sin 12° E. Innes.

104620. Variability suspected by Gould. Spectrum, Type IV. Dunér.

104814. This is + 14° 2312^a. Elements were derived from 10 observed maxima extending from 1885 to 1905. Irregularities are apparent and the need of a second term is indicated. According to Harvard visual observations, the maximum of 1906 occurred about May 9, which is 12 days earlier than the date computed by the formula given.

105159. The position of this star in Chandler's Third Catalogue, in Hartwig's Ephemeris, and in the Provisional Catalogue, is 5′ north of the position given by Gould, and in the C. P. D., which is assumed to be correct. Variability very doubtful. Roberts has used this star constantly as a comparison star for U Carinae and finds no variation outside of the limits given.

105359. Period $38^d.7397$. Roberts.

105517. Schönfeld's observations from 1865 to 1875 ap-

peared to confirm small changes in light. Color intensely red, period probably irregular. α Crateris precedes 43^s, north $1'.2$, magn. 4.20.

110254. No regular period could be determined from observations of the Harvard photographs from May 17, 1889, to July 14, 1902. At times a period of about 380 days is indicated, with approximate maxima on J. D. 2413385 and 2413765. In general, however, the observations indicate an irregular period.

110361. Nova Carinae, No. 2. This star was first photographed on April 8, 1895, magn. 8. It appears on 14 photographs taken between April 8 and November 13, 1895. On the last date its light had diminished to magn. 13. The position of the Nova precedes $0^m.5$, and is $0'.7$ north of the bright star, A. G. C. 15269, magn. 5.47. Two stars of the eleventh magnitude are near the place of the Nova. One is nearly north, $110''$ distant and the other is $80''$ south preceding. On April 14, 1895, the spectrum of this object showed bright hydrogen lines accompanied by dark lines of slightly shorter wave length. Other bright lines were present and the spectrum was like that of Nova Aurigae as regards its essential features. See Circular 1.

110506. This is + 6° 2412[a].

111561. This star, which precedes RS Centauri 17^s and is $1'.3$ south, was first seen by Innes on June 12, 1901, magn. 9.9, and was observed on 19 nights, between June and August 30, 1901. It was looked for on 37 nights, between December 18, 1901, and August 17, 1902, without being seen. In 1901, at Innes' request, a search for this star was made on the Harvard photographs taken in May, June, and July, 1901, and on a few plates taken on earlier dates. The object was not found. A further search has recently been made for this star. B 27574, taken June 6, 1901, and exposed 61^m, a plate which was not found at the time of the original search for RY Carinae, shows an object at the approximate position of Innes' star. The shape of this object is that of a red star, and the photographic magnitude is about 12.5. Photographs taken on August 28, 1894, and on April 30, 1900, show the star present but fainter than in June, 1901. It is thus apparent that this object was not a Nova, as has been suspected, but is a variable star having rather faint maxima, and so red in color that the photographic brightness is two or more magnitudes fainter than the visual.

111661. Elements were deduced from observations of the Harvard photographs from May 17, 1889, to December 28, 1901, and include the determination of 7 maxima and 5 minima.

113972. Times of minimum, 1903, March $3^d\ 9^h\ 34^m$ + $1^d\ 8^h\ 34^m\ 43^s$ E, or J. D. 2416177.399 + $1^d.35744$ E. Blajko. Seven minima were observed by Professor W. M. Reed at the Princeton Observatory. He found that the minima recurred with great regularity and satisfied Blajko's elements with a correction of only 1.3 minutes. Also that the magnitude at minimum, varies from 12.7 to 13.6, and that the shape of the light curve changed. He suggested that the eclipsing body might be a double star, in which the two components are close together.

114232. Innes found that a period of 61 days satisfies many of the minima, which are of short duration. But some minima are omitted altogether and thus the period is irregular.

115058. Elements are given according to Roberts, who found the visual variation from magn. 8.2 to 12.0? Measures of the Harvard photographs from May 17, 1889, to April 8, 1902, are in good accord with the elements of Roberts.

115158. An examination by Mrs. Fleming of 22 photographic plates taken between November 9, 1897, and March 13, 1904, shows a variation of at least 1.5 magn.

115609. This is + 9° 2573[a]. It was estimated by Peters on May 10 and 11, 1871, as magn. 8, and in April, 1872, as magn. 10.2. The only evidence of variability appears to rest upon these estimates. The star does not appear in the Durchmusterung, nor on the Berlin charts, and was not seen by Lalande, Bessel, or Lamont. Little, if any, variation was found by regular observations at Harvard from 1892 to 1901, or by Esch from 1899 to 1902. If Peters' observations of May 10 and 11, 1871, are correct, this star should be regarded as a Nova.

115919. Star b, + 19° 2526, precedes 11^s. north $3'.0$, magn. 7.64.

115905. Measures of the Harvard photographs from April 22, 1886, to December 25, 1901, show that the variation is irregular.

120206. Measures of the Harvard photographs from April 22, 1886, to December 25, 1901, show that the variation is irregular.

120444. Variability was suspected by Kapteyn because the magnitude is 8.95 on 7 plates, but on one plate with four exposures from March 7 to 14, 1896, the magn. is 9.75. It was estimated by Thome on February 28, 1894, as magn. 8.75 and on April 15, 1895, as magn. 9.25. 32 estimates by Innes from June 9, 1899, to April 8, 1901, gave the range adopted in the table, but no period could be deduced.

120769. Times of maximum, J. D. 2415029.18 + $9^d.657$ E. Roberts.

121418. Star o precedes $4^s.4$, north $0'.2$, magn. 10.9.

121508. Measures of the Harvard photographs from January 24, 1888, to December 25, 1901, show that the variation is small, and probably irregular.

121561. Times of maximum, J. D. 2415028.32 + $6^d.7322$ E. Roberts.

121861. Times of maximum, J.D. 2415027.39 + $5^d.82485$ E. Roberts.

121948. This star was found in 1889 to have a spectrum of Type IV on the Harvard photographs. Variability was then suspected because the star does not occur in the A. G. C., whereas the photographic image appeared to be as bright as other stars having the same type of spectrum, which are of magn. 6 or 7. The letter S was then assigned to the star, but, so far as known, no

further observations were made. In March 1906, estimates of the star's brightness were made by Mrs. Fleming on 16 plates taken from 1891 to 1904, with the result that a variation of 1.4 magn. was established.

122001. Variability suspected by Birmingham in 1874. Confirmed by Backhouse in 1897, with a range of 0.5 magn. or somewhat greater. Independently discovered by Wolf, who found a photographic range of over four magnitudes on plates taken from 1892 to 1905. A comparison of some visual observations of Backhouse with photographic estimates made on nearly the same dates led Wolf to the conclusion that the star's light may be strongly variable in shorter wave lengths, when hardly variable at all in visual rays. The estimates of Backhouse are, March 28 and April 18, 1900, magn. 7.7; April 3, 1902, magn. 7.8; March 20, 1904, magn. 7.7. Wolf's photographic estimates are, March 29, 1900, magn. 10.0, and April 19, 1900, magn. 8.8; April 8, 1902, magn. 9.2; March 14, 1904, magn. 8.5. The range of 12 observations by Wendell on 6 nights in 1903, 1904, and 1905, was 0.46 magn.

122532. This is + 32° 2250ª.

122657. Elements were deduced from observations of the Harvard photographs, extending from May 15, 1889, to June 20, 1901.

122854. The period 216.8 days, given by Roberts, is too short to satisfy the observations from the Harvard photographs, extending from May 25, 1889, to April 3, 1902, and from which the elements given in the table were deduced.

122803. Star q follows 6ˢ, north 2′.3, magn. 12.0.

123160. Times of maximum, J. D. 2400705.8 + 257.2 E + 20 sin (9° E + 90°). Chandler.

123307. Times of maximum, J. D. 2381934.8 + 145.47 E + 20 sin ($\frac{2}{5}$° E + 216°) + 4.8 sin ($\frac{4}{8}\frac{5}{3}$° + 343°). Chandler. There appears to be a misprint in the last term, although it is repeated in the revision. Astron. Jour. **24**, 3.

123459. Variability was discovered independently by Mme. Ceraski in September, 1905. Provisional elements given in the table were deduced from observations of the Moscow and Harvard photographs, together with a maximum observed visually at Harvard about February 3, 1906.

123556. Previously suspected by Espin, and published in the list of suspected variables following Chandler's Third Catalogue.

123668. Times of maximum, J.D. 2415021.23 + 0ᵈ.882495E. Roberts.

123961. Additional term, + 35 sin (5°.4 E + 194°). Chandler.

124204. This is + 4° 2651ª.

124606. Period 206.92 E − 0.006 E². Chandler. Star p precedes 9ˢ, south 0′.5, magn. 10.4.

124857. Times of maximum, J. D. 2415026.92 + 4ᵈ.68989 E. Roberts.

125057. The variability of this star was announced in the fifty-seventh Annual Report of the Harvard Observatory. The elements were deduced from the Harvard photographic measures, extending from May 15, 1889, to July 16, 1902, and include the determination of 9 maxima. Irregularities were found in the form of the light curve and in the times of maxima. The spectrum of this star is unique. A strong dark band extends from about λ 4650 to λ 4710. This band has apparently the same wave length as the bright band in H. P. 1311, and similar spectra of Type V. Hγ and Hβ are bright. See Harvard Circular 76.

125266. The variation was confirmed by Miss L. D. Wells. A range of 2 magnitudes was found from an examination of 10 plates, extending from April 11, 1892, to February 22, 1906.

125705b. This star precedes RT Virginis, 125705a, 11ˢ, and is 0′.2 south. A variation of more than a magnitude was found from an examination of 4 plates, taken between April 7, 1890, and May 7, 1898.

125705a. Measures of the Harvard photographs, extending from April 10, 1886, to June 25, 1901, show that the period is irregular.

130212. This variable was found from an examination of 10 photographic plates, taken from April 17, 1892, to April 2, 1900. J. A. Parkhurst observed this star with the 40-inch refractor of the Yerkes Observatory, on July 5, 1900, and found it between magn. 13 and 14. — 12° 3759 follows 4ˢ, south 0′.6, magn. 9.6.

130656. Measures of the Harvard photographs, extending from June 6, 1889, to July 29, 1902, show that the period is irregular.

130756. Measures of the Harvard photographs, extending from June 6, 1889, to July 29, 1902, show that the period is irregular.

130802. Measures of the Harvard photographs, extending from April 10, 1886, to February 23, 1903, show that the period is irregular. The range of 10 observations by Wendell, on 5 nights in 1903, 1904, and 1905, was 0.52 magn.

131283. This star was observed twice in Gilliss' Polar Zones as magn. 9.0, but was missed by Kapteyn on the C. P. D. plates. Variability was independently discovered by Innes, and announced in the Cape Report for 1900. Elements are given according to Innes.

131373. This star was suspected by Kapteyn. See Annals Cape Observatory **9**, 11 B.

131561. Measures of the Harvard photographs, extending from May 24, 1889, to June 26, 1901, show that the period is probably irregular.

131602. This star was suspected of variability by Graff, on account of the discordance in the estimates of various observers. It was estimated by Peters in 1862, and by Millosevich on June 8, 1887, as magn. 12, in Washington on May 9, 1878, as magn. 9.5, and in Hamburg, March 10 and May 6, 1905, as magn. 9.7. Van Biesbroeck estimated it as 10.88 and 10.96 in July, 1905. In order to confirm the variability of this object, 16 Harvard photographs, taken from May 28, 1891, to May 22, 1905, were examined. No certain variation was found in a star of the approximate magnitude 9.8, which appears to be in the position of RZ Virginis. This star is the preceding of 5 stars nearly in the same

declination. A faint star slightly preceding is about 1′ south.

132046. The cluster ω Centauri. N G. C. 5139. The declination in Dreyer's New General Catalogue is 10′ north of the true position. 128 variables have been found in this cluster. Nearly all of these variables have a period of less than one day, and belong to Class IV. See Harvard Annals **38**, for Professor Bailey's discussion of these variables.

132002. Times of maximum, J. D. 2402708.27 + 17^d.2711 E. Chandler.

132262. Estimates of 11 Moscow photographs gave a range of over 2 magnitudes, and showed that the variable was at or near maximum in August, 1905.

132422. Variability was confirmed by Maraldi in 1704. Period, 425^d.15 E. − 0^d.36 E^2 + 15 sin (7°.5 E + 202°). Chandler.

132477. Measures of the Harvard photographs, extending from June 1, 1889, to December 23, 1902, show that the period is probably irregular.

132706. Star u follows 2^s, south 2′.7, magn. 12.0.

133155. Measures of the Harvard photographs, extending from June 6, 1889, to July 26, 1901, show that the period, if regular, is over 400 days.

133273. Provisional elements given in the table were derived from Harvard observations. The star was bright on photographs taken November 9, 1896, and October 1, 1901. According to visual observations, maxima occurred about May 7, 1905, and March 15, 1906.

133431. Nova Centauri. This new star appeared very near the nebula, N. G. C. 5253, which it followed 1^s.28, and was north 23″. It was found by Mrs. Fleming in December, 1895, from the peculiarity of its spectrum on a plate taken at Arequipa on July 18, 1895. The spectrum of this object showed no bright lines, and was unlike the spectrum which is generally characteristic of new stars, but resembled that of the nebula surrounding 30 Doradus, and also that of the star A. G. C. 20937, magn. 8. The first photograph of this Nova was taken on July 8, 1895, magn. 7.2. 17 plates show the image of the Nova, while on 204 other plates, extending from May 21, 1889, to July 21, 1901, the star is invisible. On December 16, 1895, the Nova had faded to the eleventh magnitude, and visual observations of the spectrum, by Pickering, showed that it closely resembled that of the surrounding nebula. Like many other Novae, this star, therefore, appears to have changed into a gaseous nebula, although, when bright, its spectrum was unlike other objects of its class. From January, 1897, to April, 1898, the star was observed by Hussey, at the Lick Observatory, as magn. 16.5, or fainter.

133633. Variability was suspected by Kapteyn in 1890, because a plate taken July 18, 1888, gave the magn. 6.8, while two plates, taken July 20, 1888, 36 minutes apart, gave the magn. 8.7 and 7.0, respectively. Independently discovered by Markwick in 1894, and announced in the Gibraltar Chronicle of July 14. Also discovered by Mrs. Fleming, and announced on November 21, 1894. Measures of the Harvard photographs, extending from May 21, 1889, to February 20, 1903, give the range adopted in the table, and include the determination of 17 maxima. These observations appear, in general, to confirm the times of maximum given by Roberts, J. D. 2415076.1 + 90^d.30 E. No sudden changes of brightness were found similar to that of July 20, 1888, as shown by the Cape plates mentioned above. This star appears certainly to be of Class II, and is interesting on account of the shortness of its period. Visual magn., 6.5 to 8.0. Innes.

133618. Measures of the Harvard photographs, extending from May 31, 1889, to April 28, 1903, show that the period is irregular.

133728. N. G. C. 5272. Messier 3. 132 variables out of 1000 stars have been found in this cluster. Nearly all of them have periods of rather more than half a day, and belong to Class IV.

134327. Variability was discovered independently by Mrs. Fleming in 1890. Variation from photographic estimates, magn. 8.1 to 10.4. Elements are given according to Chandler, but the period and visual range are not well established. Markwick states that his observations in 1894 seemed to indicate irregular fluctuations in brightness, and that the star becomes fainter than magn. 8.0. Observations are somewhat difficult on account of the redness of the star.

134536. This is C. P. D. −36°6158, and is not in the C. DM. Variability was suspected by Kapteyn, and confirmed by Innes. Elements are given according to Innes.

134677. The elements are a first approximation by Innes, deduced from his visual observations from 1899 to 1902.

135576. Announced as variable by Gould in the Uranometria Argentina, p. 243. Variability was also announced by Williams in 1897, owing to the discordance of his estimates as compared with the S. M. P. magn. 5.68, and to the large residuals shown by Professor Bailey's measures. Discovered independently by Mrs. Fleming in 1898, by means of its photographic spectrum. Measures of the Harvard photographs, extending from May 20, 1889, to December 23, 1902, show a variation of about one magnitude. Period probably irregular.

140113. The elements were deduced from measures of the Harvard photographs, extending from April 1, 1890, to April 28, 1901, combined with Harvard visual observations from 1904 to 1906. The period of 281 days, which was given in Circular 81, is too short to satisfy the observed maxima from 1904 to 1906. This star was observed at Bonn as magn. 9.5, on April 27, 1854, and March 10, 1855, but was missing on April 13, 1853. According to the elements given in the table, maxima occurred on May 27, 1854, and March 9, 1855.

140528. Suspected at Cordoba, and missed by Kapteyn on the C. P. D. plates. Variability was established by the observations of Innes, whose formula is given for the times of maximum.

140959. The elements are those determined by Roberts, who says; "Each full light period consists of a double maximum and a double minimum. The two maxima

follow one another at intervals of 204 and 364 days, respectively." The magnitude is about 8.4 at secondary minimum.

140919. This is + 19° 2768ª. According to Baxendell, this star preceded Arcturus 1^m 45^s, and was south 11′ 30″. It was seen by Baxendell on April 9, 11, and 22, 1860, as magn. 9.7, 10.0, and 12.8, respectively. On April 23, it was invisible in a reflector showing stars of magn. 14, according to Baxendell's scale, and, although often looked for, it was never seen again. It was also repeatedly looked for by Schönfeld between 1865 and 1875, but was never seen.

140957. Times of maximum, 1900, January 1^d 4^h 57^m + 0^d 7^h 16^m $5^s.5$ E., or J. D. 2415021.248 + $0^d.302841$ E. Roberts.

141567. Near + 67° 830. Hartwig's position of this star is given in the table. This follows the position announced by Ceraski, $0^m.2$, and is north 5′.

141549. Visual variations 8.25 to 8.9, Innes. Roberts found no variation greater than 0.3 or 0.4 magnitude in 42 observations from 1896 to 1899.

141954. Additional term, + 60 sin (3°.6 E + 358°) Chandler.

141926. This star was announced as probably variable by Birmingham in 1874. A variation from about magnitude 7 to 8 was independently found by Hartwig, who thinks that the period is about 2 years.

142205. This is + 5° 2880ª. Measures of the Harvard photographs, extending from June 11, 1887, to December 30, 1901, appear to confirm the elements of Chandler given in the table.

142584. Additional term, + 65 sin (4° E + 218°). Chandler.

142529. Measures of the Harvard photographs, extending from June 3, 1889, to September 3, 1901, show that the period is probably irregular, although at times there is evidence of a period of 300 to 400 days.

142556. Times of maximum, J. D. 2415025.52 + $5^d.49394$ E. Roberts.

143017. Measures of the Harvard photographs, extending from March 3, 1890, to August 23, 1901, show that the period is irregular.

143227. Additional term, + 9 sin (9° E + 117°). Chandler. Hagen 13 precedes 11^s, north 0′.2, magn. 10.1. Hagen 16 follows 12^s, north 1′.5, magn. 10.5.

144342. A variation of at least 2.5 magn. was found from an examination of 8 Harvard photographs.

144676. Variability, with range given in the table, was announced in the Uranometria Argentina, p. 243. Roberts found little, if any, variation in scattering observations from 1891 to 1899, and thinks that the star is probably not variable, unless it is of the Algol type.

*144646*a. Elements deduced from observations of Harvard photographs, extending from June 13, 1889, to September 4, 1901.

*144646*b. This is a close companion to S Lupi, and follows S Lupi $0^s.4$, south 12″. It has been observed on 140 photographs, taken from June 13, 1889, to September 4, 1901. The period is probably irregular, but there is some uncertainty, owing to the difficulty of measuring this object, especially when S Lupi is bright.

144918. This is + 18° 2952ª. Hagen 9 precedes 2^s, south 4′.2, magn. 10.0. Hagen 13 precedes 1^s, north 2′.4, magn. 10.6.

145253. Measures of the Harvard photographs, extending from June 27, 1891, to January 7, 1903, show that the period is irregular.

145508. Times of minimum, 1867, October 25^d 9^h $17^m.5$ + 2^d 7^h 51^m $22^s.8$ E., or J. D. 2403265.3872 + $2^d.327347$ E. Chandler.

145971. The Harvard photographic measures, extending from May 31, 1889, to September 5, 1901, show that, if regular, the period is longer than 298.0 days, as given by Roberts. The photographs also show that on J. D. 2415194, two days before the epoch of maximum given by Roberts, the variable was fainter than magn. 11. The light curve is very flat at maximum, and the period may be irregular, although an approximate period of 355 days satisfies many of the observations.

150469. Previously suspected at Cordoba, and also by A. S. Williams, who observed the star as magn. 6.15 and 6.05 on February 12 and 14, 1886, whereas the magnitude given in Harvard Annals, Vol. 34, is 5.28. Observations of the Harvard photographs, extending from May 31, 1889, to September 5, 1901, show a decided variation of nearly two magnitudes, but no regular period was found.

150519. Hagen 20 follows 7^s, south 0′.7, magn. 10.7. Hagen 31 precedes 3^s, south 0′.1, magn. 10.8.

150605. A suspected variable follows 1^s, north 1′.7.

150619. Variability was suspected by Pickering, because of discordance in meridian photometer measures. Observations by Argelander's method were accordingly undertaken by Wendell, who found ι Librae two grades fainter than θ Librae on May 19, 1896, and two grades brighter than the same star on June 1, 1896. The range of 35 photometric observations by Wendell on 19 nights, between 1903 and 1905, was, however, only 0.27 magn.

150850. Elements were deduced from Harvard photographic observations, extending from May 31, 1889, to August 14, 1902.

151066. Times of maximum, J. D. 2404623.71 + $3^d.38922$ E. Chandler.

151302. N. G. C. 5904, Messier 5. 85 variables have been found in this cluster.

151432. Times of minimum, 1870, March 25^d 9^h 30^m + 3^d 10^h 51^m $11^s.7$ E + 80^m sin (0°.06 E + 78°), or J. D. 2414147.396 + $3^d.452219$ E + $0^d.056$ sin (0°.06 E + 78°). Chandler.

151714. Additional term, + 116 sin (4° E + 62°). Chandler. Star q precedes 7^s, north 0′.3, magn. 11.8. Hagen 27 follows 2^s, north 0′.3, magn. 13.5.

151731. Additional term, + 8 sin (12° E + 327°). Chandler. Star p follows 8^s, south 3′.7, magn. 10.3.

151822. Elements were derived from Harvard photographic observations, extending from June 4, 1889, to May 29, 1902. See Circular 81. Recent visual observations appear to confirm these elements.

152057. Harvard photographic observations, extending from May 31, 1889, to February 20, 1903, show that the variation is either irregular, or rudely periodic in about 100 days.

152250. Nova Normae. Designated R Normae by Chandler. Gould, however, had already given the letter R to the variable *152849*, and the Committee on Variable Stars of the Astron. Gesell. retained Gould's designation. Nova Normae was discovered on October 26, 1893, from an examination of a spectrum plate taken at Arequipa on July 10, 1893. The Nova appears on 37 plates, which show that the light diminished from magn. 7.0 to 14.6 between July 10, 1893, and August 7, 1895. A Bruce plate, taken on June 13, 1896, shows no trace of the Nova, although stars of magn. 16.5 are seen. The spectrum in July, 1893, was like that of Nova Aurigae in its earlier phase. Visual observations of this spectrum were made at the Lick Observatory, between February 13 and March 6, 1894, when the magnitude of the Nova was about 9.5. Professor Campbell found that the spectrum then resembled that of a gaseous nebula.

152714. Elements were deduced from Harvard photographic observations, extending from February 28, 1888, to May 26, 1903.

152849. This star was missed by Gould in meridian observations on June 18 and July 16, 1875. In 1876, it was estimated as magn. 8 on June 27, and fainter than 9.5 on August 5. It was watched by Hedrick at Cordoba, in August and September, 1876, and found always a little fainter than magn. 7. Gould assigned the letter R to the star on the evidence of these observations. The variability was confirmed in 1897 by Innes, who also found that the star has double maxima and minima. From Innes' observations, it appears that the magnitude is approximately 7.0 at both maxima, about 8.4 at secondary minimum, and that the interval between first and second maximum is about 187 days. The secondary minimum occurs not quite half way between the two maxima, but somewhat nearer to the second.

153215. Hagen 40 precedes 4^s, north 0′.0, magn. 11.5.

153378. This is $+79° 467^a$. $+79° 467$ follows 1^s, south $3^s.2$, magn. 9.4. Elements were deduced from the Harvard photographic observations, extending from March 9, 1890, to September 14, 1903, and including the determination of 9 maxima and 9 minima. This period is confirmed by recent visual observations made here.

153454. Times of maximum, J.D. 2415028.8 + 12.655 E. Innes.

153620. Hagen 14 precedes 2^s, north 0′.1, magn. 10.1. Hagen 29, a double star, precedes 2^s, south 2′.6, magn. 11.7.

153937. N. G. C. 5986. Dunlop 552. 1 variable has been found in this cluster.

154428. Star f precedes 53^s, north 19′.0, magn. 7.2. Hagen 22 follows 9^s, north 2′.7, magn. 10.7. The light curve of this remarkable variable is unlike that of any other so far known, except RY Sagittarii, and it is doubtful to what class of variables the star belongs. Considering the large range of variation, it might be called Class II, although the irregularities of the light curve indicate that the star might properly belong in Class III. The star is ordinarily of the sixth magnitude, and the light is frequently constant for a year or more. Not only the period, but also the minimum magnitude is highly variable. Renewed interest was aroused in this star in the spring of 1905, when the light diminished from magn. 6.0 on April 1 to magn. 12.5 on May 7. The spectrum of R Coronae was announced to be variable by Espin in 1890. He found remarkable changes in this spectrum while the magnitude of the star remained constant at about 6. On April 10, 1890, he found the spectrum continuous, but he suspected a bright line near Hβ. On September 8, 1890, he stated that "a most wonderful change has taken place in this star's spectrum. Two large absorption bands have appeared, one in the bluish-green and one in the bluish-violet." On September 14, 1890, he found the spectrum to be "apparently of the IV. type," but on October 10, it had "nearly returned to the continuous first type spectrum observed in the spring." The color of the star appeared to be more yellow in September, when the spectrum resembled Type IV, than when the spectrum was of the continuous type. No such marked changes appear in the Harvard photographs of the spectrum of this star. A photograph taken on April 28, 1890, gives substantially the same spectrum as various later plates, which show a number of bright and dark lines. Among the bright lines there are two, of slightly shorter wave length than Hδ and Hγ. The spectrum is peculiar and appears to be identical with that of RY Sagittarii.

154536. Estimates of the brightness of this star have been made by Mrs. Fleming on 12 photographs taken between July 23, 1890, and May 23, 1905. The period appears to be less than one year. Harvard visual observations show that a maximum was passed about February 23, 1906.

154639. Spectrum, Type IV. Dunér.

154615. Additional term, $+35 \sin (4° E + 48°)$. Chandler.

154748. "The period appears to be several months." Müller and Kempf.

154715. θ Librae follows 10^s, south 29′.8, magn. 4.8. Chandler's revised elements are given in the table. The period of this star was for a long time considered to be about two years. The reduction of Pogson's observations by Baxendell, however, proved that the period is really about eight months. This period was confirmed by the examination of several Harvard photographs.

155263. Times of maximum, J.D. 2415023.41 + $6^d.3231$ E. Roberts.

155429. "There is a slight trace of periodicity every 87 days, but some minima are entirely missed." Innes.

155526. Nova Coronae Borealis. This star was first seen by Birmingham on May 12, 1866, between $11^h 30^m$ and $11^h 45^m$, and was about equal to α Coronae, magn. 2.31.

Schmidt, who observed the region on the same evening, between $8^h\,30^m$ and $9^h\,45^m$, was sure that the star was not brighter than magn. 4 at that time. If this is correct, the outburst from at least magn. 4 to magn. 2, must have occurred within three hours. The decrease was rapid, and by June 7, the star had diminished to magn. 9. This star was observed at Bonn in 1855, and is still visible as a star of about magn. 9.5. The spectrum at the time of the outburst in 1866 was examined by Huggins, Stone, Sherman, and Espin. Huggins found that the spectrum was double, the principal one being analogous to that of the Sun, or α Orionis. A second spectrum, consisting of a few bright lines, two of which coincided with Hβ and Hα, and two were situated between Hγ and Hβ, was superposed on the principal spectrum. In 1894, Espin examined this spectrum and said, "The spectrum of T Coronae is now certainly not nebular, as Lockyer stated it to be in 1889, and probably it is of Type III. The Hγ line may be bright."

155862. Times of maximum, J. D. 2415022.02 + 2^d.5683 E. Roberts.

155823. Additional term, + 20^d.0 sin 22°.5 E. Innes.

155947. The variability was confirmed by Yendell, who deduced a period of 94.5 days. This star has been frequently observed by Markwick and the variable star section of the British Astronomical Association, with the result that only a small variation in irregular period was found. The range of 39 observations by Wendell on 20 nights in 1900 and 1902, was 0.62 magn.

160150. A period of 241 days is assumed by Hartwig, and 238 days by Chandler. Visual observations made here show that, since 1905, the variation has been irregular.

160118. Additional term, + 17 sin (10° E + 322°). Chandler.

160210. Elements were deduced from the Harvard photographic measures, extending from July 18, 1890, to September 30, 1903, and including the observation of 10 maxima. See Circular 81. Recent visual observations made here are in harmony with these elements.

160248. The Harvard photographic measures, extending from June 14, 1889, to March 3, 1903, show at times evidence of an approximate period of 100 days, but in general, the variation appears to be irregular.

*160221*a. Hagen 29 follows 1^s, north 1′.8, magn. 11.8.

*160422*a. This is C. DM. −22° 11391.

160524. Variability was confirmed by West, and the Harvard photographs, in 1896. Star follows 3^s, north 2′.0, magn. 12.

160625. This is +25° 3039a. Elements were deduced from the maxima observed by Hartwig and J. A. Parkhurst.

160952. Observations of the Harvard photographs, extending from June 14, 1889, to March 3, 1903, show that the variation is probably irregular.

161057. Times of maximum, J. D. 2415029.45 + 9^d.7525 E. Roberts.

*161122*c. Nova Scorpii. This new star appeared in N. G. C. 6093, Messier 80. It was discovered by Auwers on May 21, 1860, and independently by Pogson, one week later. It had nearly disappeared by June 10. The nebula was watched by Schmidt, from 1860 to 1876, but the star was not seen after its first appearance. Pogson's observations, reduced by Baxendell, seem to prove, however, that T Scorpii or some other object in the cluster showed remarkable fluctuations in later years. See A. J. **22**, 127.

*161122*d. Messier 80, N. G. C. 6093. 2 variables have been found in this cluster.

161138. Additional term, − 0.2 E^2. Pickering.

161450. Observations of the Harvard photographs, extending from June 14, 1889, to May 14, 1903, show that the variation is small and irregular.

161617. This star was seen by Pogson on May 20, 1863, of magn. 9, and on May 28 it was fainter than magn. 12. It was never seen by any one else, although it was repeatedly looked for by Schönfeld and Winnecke.

161726. N. G. C. 6121, Messier 4. 33 variables have been found in this cluster.

161751. Probably irregular. No period could be deduced from the Harvard photographic measures, extending from June 12, 1891, to September 4, 1900.

162112. Spectrum Type IV. Dunér.

162119. Elements are given according to Hartwig. Star y follows 1^s, south 1′.2, magn. 13.2. Hagen 31 follows 7^s, north 0′.4, magn. 12.8.

162319. There seems to be some doubt about the position of this object. In the original announcement of variability, A. N. **99**, 120, Peters gave the position $16^h\,21^m\,4^s$ — 19° 11′ (1852?) and later, in A. N. **121**, 186, he gave $16^h\,21^m\,29^s$ — 19° 7′.8 (1860). The latter position has been adopted in star catalogues. A star slightly north preceding this position has been found by Mrs. Fleming to be surely variable on the Harvard photographs, and is probably Y Scorpii.

162542. Variability was confirmed by Schmidt, and later by Sawyer. No definite variation was found by the variable star section of the British Astronomical Association, from 1900 to 1904.

162546. This is C. P. D. — 46° 8056.

162807. Elements are given according to Graff.

163031. This star was missed by Kapteyn on the C. P. D. plates. Variability was proved by Innes.

163172. This is + 72° 732ª. Harvard visual observations, from 1889 to 1899, show that the period is irregular. The range given in the table was determined by Wendell from 178 observations on 86 nights, extending from 1899 to 1903.

163156. Times of minimum, 1900, January $5^d\,7^h\,35^m$ + $4^d\,10^h\,12^m\,7^s$.9 E, or J. D. 2415025.316 + 4.425091 E. Roberts.

163137. Additional term, + 26 sin (13° E + 354°). Chandler. Star s follows 9^s, north 0′.7, magn. 13.2.

163432. Variability was confirmed by Wright. Color, "Deep red like a drop of blood." Innes. Observations by Innes, extending from May 7, 1896, to September 1, 1900, gave no regular period.

163836. N. G. C. 6205, Messier 13. 2 variables have been found in this cluster.

163967. Observations of the Harvard photographs, extend-

ing from July 9, 1889, to May 14, 1903, show that the period is probably irregular.

164055. Variability was confirmed by Yendell with given range. Period probably irregular.

164715. Additional term, $+ 35 \sin (9° \text{ E} + 86°)$. Chandler. Star b follows 11^s, north 2′.3, magn. 6.4. Star p follows 9^s, south 1′.6, magn. 10.5.

164705. Period of 510 days suspected. Hartwig.

164844. Elements were deduced from the Harvard photographic observations, extending from June 13, 1889, to September 8, 1902, and including the determination of 10 maxima. The observed dates of maximum are represented by the given formula, with an average residual of ± 5.8 days.

164832. Variability was confirmed by Innes.

165030. Elements were determined from the Harvard photographic observations, extending from July 13, 1889, to August 17, 1903. Ten maxima are represented by this formula, with an average residual of ± 4.0 days.

165133. Times of maximum, J. D. 2415026.04 + 6^d.0622 E. Roberts.

165312. Nova Ophiuchi, No. 2. This star was about magn. 5.5 when discovered on April 27, 1848, by Hind, who was confident that no star as bright as magnitude 9 to 10 existed in this position on April 3 or 5. The magnitude had decreased to 8 by June, 1849. Fluctuations of a magnitude or more were found by Hind when the star had become fainter. It is believed that the magnitude has been constant at about 12.5 since 1867.

165454. Observations of the Harvard photographs, extending from July 6, 1889, to May 14, 1903, show that the period is irregular.

165429. N. G. C. 6266, Messier 62. 26 variables have been found in this cluster.

165631. This is $+ 31° 2949^a$. Elements were deduced from the observations of J. A. Parkhurst, extending from 1897 to 1904, and including the determination of 13 maxima and 12 minima. ϵ Herculis precedes 16^s, south 17′.7, magn. 3.5.

165636. Elements were deduced from the Harvard photographic observations, extending from June 3, 1889, to May 16, 1903.

170215. Nebula follows 40^s, south 3′.3. η Ophiuchi follows 2^m.6, north 21′.7, magn. 2.63.

170833. Elements were deduced from the Harvard photographic observations, extending from June 4, 1889, to June 16, 1903, and including the determination of 8 maxima.

171014. The variability of this bright red star appears to have been confirmed by Argelander, Schmidt, and Baxendell. Luizet, in 1898 and 1899, found a variation from magn. 3.2 to 3.6. Observers of the Variable Star Section of the British Astronomical Association have found little, if any, variation.

171101. Times of minimum, 1881, July $17^d\ 15^h\ 32^m +$ $20^h\ 7^m.6903 \text{ E} - 3^m.0\, t + 0^m.3\, t \left(t = \frac{E}{1000}\right)$; Chandler, A. J. **24**, 5. There seems to be some misprint here, since the last two terms would equal $-2^m.7\, t$.

171145. A variation of one magnitude was found from an examination of 9 Harvard photographs, taken between June 24, 1893, and June 20, 1901.

171333. Schmidt considered tbe period to be from 37 to 40 days. Other observers have found no regular period. The range of 105 observations by Wendell on 41 nights in 1902, 1903, and 1904, was 0.69 magn.

171401. Observations have been made of this star on the Harvard photographs, extending from April 16, 1888, to October 22, 1903. The mean period during this time was 350^d. Elements in the table are given according to Chandler.

171843. Elements were derived from the Harvard photographic observations, extending from July 9, 1889, to October 10, 1903, and including the determination of 8 maxima.

172421. Nova Ophiuchi, No. 1. Formerly known as Nova Serpentarii. Discovered by Brunowski and Fabricius, on October 10, 1604. Often called Kepler's Nova, because of his observations and Memoir. Brightness, when discovered, was between Venus and Jupiter, and the star continued visible to the naked eye for about one year. In 1857, Winnecke examined this region, and found two small stars near the computed position, both of which he considered to be within the probable limits of error of Kepler's place.

172586. Elements were derived from Harvard photographic observations, extending from May 15, 1889, to October 9, 1903, and including the determination of 16 maxima.

172809. Six Moscow photographs gave a range of at least 3 magnitudes, but no period could be determined. A minimum of less than magn. 12, occurred in June or July, 1904, according to the observations of Hartwig.

172907. Times of minimum, J. D. 2416604.7396 + 3^d.6872 E. Dugan. From observations on 15 nights, Wendell finds that there is a secondary minimum of about one tenth of a magnitude, and that this variable is of the β Lyrae type. This variable was found independently by Mme. Ceraski, on April 26, 1904.

173253. N. G. C. 6397, Dunlop 366. 2 variables have been found in this cluster.

173457. Observations of the Harvard photographs, extending from July 7, 1889, to October 12, 1903, show that the period is probably irregular.

173543. Elements were derived from the Harvard photographic observations, extending from July 9, 1889. to October 12, 1903.

173535. Observations of the Harvard photographs, extending from July 9, 1889, to October 9, 1903, give no regular period. A star precedes 2^s, north 0′.0, magn. 10.

174035. Observations of the Harvard photographs, extending from July 5, 1889, to October 9, 1903, give no regular period.

174162. Elements were derived from the Harvard photographic observations, extending from July 7, 1889, to October 10, 1903.

174127. Times of maximum, J. D. 2404291.78 + 7^d.01185 E. Chandler.

174135. This is C. P. D. $-35°$ 7270, and is not in the C. DM.

Variability was independently discovered by Miss Wells at Harvard in 1901. Elements are given according to Innes, and appear to be fairly accordant with observations of the Harvard photographs, extending from June 12, 1890, to October 9, 1903.

174433. Variability was confirmed by West. Times of maximum, J. D. 2415029.5 + $39^d.14$ E. Roberts. An examination, by Mrs. Fleming, of 18 chart plates, taken between 1890 and 1904, shows that this variable is one of a pair of close stars, probably the following and northern component.

174422. The elements are given according to Graff, and are provisional.

174406. Nova Ophiuchi, No. 3. The variation of this star as shown on the Harvard photographs, extending from 1888 to 1905, was such as to class it with such new stars as P Cygni, T Coronae, and η Carinae, which were visible before the outburst, and have not disappeared. In 1888 and 1890, the magnitude of RS Ophiuchi was about 10.9. It then increased gradually to 10.4, and retained this brightness from 1893 to 1897. In 1898 its magnitude was 10.8 until May 31. On June 30 it had increased to 7.7. The spectrum was remarkable at the time of this outburst and resembled the spectra of Nova Geminorum and Nova Sagittarii at their maximum brightness. The lines Hζ, Hϵ, Hδ, Hγ, and Hβ were bright, and two bright bands were present between Hγ and Hβ at the approximate wave lengths 4656 and 4691. The brightness, which was 7.7 on June 30, decreased about a magnitude a month until October 8, when it was again 10.8. Since that time the star has fluctuated irregularly. In 1900, its magnitude was 9.3 in April, diminishing to 10.0 in September. See Circular 99. The range of 54 observations by Wendell on 16 nights in 1903 and 1904 was 0.76 magn. The spectrum of this star is generally of Class K, and no evidence of the presence of bright lines has been found except at the time of the remarkable increase in light which occurred in 1898.

174551. Elements were derived from the Harvard photographic observations, extending from June 13, 1889, to October 12, 1903, and including the determination of 9 maxima.

174706. Times of maximum, J.D. 2408694.25 + $17^d.1207$ E. Chandler.

174748. Elements were derived from the Harvard photographic observations, extending from June 13, 1889, to October 12, 1903, and including the determination of 7 maxima.

174949. The Harvard photographs, extending from June 13, 1889, to October 12, 1903, show that the period is probably irregular.

175007. The elements are given according to Hartwig, and are provisional.

175149. Times of maximum, 1900, January, $1^d\,8^h\,35^m + 10^h\,50^m\,43^s.5$ or J. D. 2415021.358 + $0^d.451892$ E. Cape M. T. Roberts, Innes. The light is stationary at minimum for about 3.5 hours, and rises from minimum to maximum in $1^h\,36^m$. The light curve resembles that of Y Lyrae, 183443, which is classed by Hartwig as belonging to the Antalgol, or cluster type.

175111. Elements are given according to Graff.

175315. Found by Müller and Kempf, during photometric observations, to be sometimes brighter and sometimes fainter than +15°3309, magn. 7.93. See Potsdam Photometric Durchmusterung, Part I, p. 482. Owing to this discordance the star was observed by Chandler and Hartwig, who independently discovered it to be a variable of the Algol type. Hartwig found that a secondary minimum occurred nearly half way between the principal minima, and this was also independently detected by Dunér. Times of minimum, 1894, July, $28^d\,11^h\,8^m.2 + 3^d\,23^h\,49.^m545$ E or J.D. 2413038.4640 + $3^d.9927396$ E. Secondary minimum occurs 45^h later. Hartwig. From Wendell's observations in 1895 and 1906, the star at secondary minimum is two tenths of a magnitude fainter than at full brightness.

175421. This star is probably of the Algol type, since the brightness is uniform on 22 out of 26 plates.

175458. This is +58° 1772^a, and it is the north following component of a double star. The companion precedes $2^s.8$, is south 17″, magn. 10.5. The elements are given according to Chandler, and are accordant with the Rousdon observations from 1895 to 1900, published by Turner in M. R. A. S. **55,** 96. Hartwig found large irregularities in the light curve and period. Spectrum, Type IV. Espin.

175519. This is +19° 3489^a. Elements are given according to Graff. +19° 3489 precedes 2^s, south 3′.1, magn. 9.0.

175554. An examination by Mrs. Fleming of this star on 47 photographs, taken between August 19, 1896, and October 15, 1900, shows a variation of at least 0.6 magn.

175654. This is +54° 1927^a. Elements are given according to Daniel.

175724. In nebula, N.G.C. 6523, Messier 8.

175839. Observations of the Harvard photographs, extending from June 13, 1889, to October 12, 1903, show that the period is probably irregular.

*175822*a. Suspected to be of the Algol type, since the brightness is uniform on 18 out of 20 plates.

175829. Times of maximum, J. D. 2402849.45 + $7^d.5946$ E. Curtiss has found that this star is a spectroscopic binary with a range of 39 km., the period of varying velocity agreeing with that of the light variation, and having also a secondary period of 3.80 days, and a range of 9.7 km. He also found a correction of 0.00072 days to the period, due to the continual approach of the system towards the Sun, making the true value of the light and velocity periods, 7.59532 days. The maximum of light occurs almost exactly at the time of minimum velocity.

180122. This Durchmusterung star was missed, in 1895, by Becker while making Berlin zone observations. He thought that this star and +22° 3274, which follows 9^s, and is north 0′.9, might be identical. Küstner found, however, from the original records of the Durchmusterung, that both stars were observed at Bonn, on

September 11, 1855, by Krueger, and on April 2, 1856, by Schönfeld. Kobold, on March 18, 1895, found a star of magnitude 11 near the position of RW Herculis, and, so far as known, no variation has been found in this faint object. 11 photographs, taken here from 1890 to 1904 and examined by Mrs. Fleming, show only a very faint star. Harvard visual estimates in 1904, 1905, and 1906 gave the magnitude about 12, with no certain variation.

*180222*a. This is the preceding of two stars.

180223. This star is probably of the Algol type, since the brightness is uniform on 18 out of 20 plates examined.

180245. The Harvard photographic measures, extending from June 13, 1889, to October 12, 1903, indicate at times a period of 300 ± days, but in general the variation appears to be irregular

180363. Observations of the Harvard photographs, extending from July 7, 1889, to October 10, 1903, and including the determination of 10 maxima, appear to confirm the elements of Roberts, given in the table.

180531. Additional term, $+10 \sin (5° \text{ E} + 110°)$. Chandler. Star p precedes 3^s, north $0'.8$, magn. 11.0.

180565. This is +65° 1241a. The elements are provisional, and are adopted from Harvard visual observations, with the epoch September 29, 1897, when the star is bright on a Harvard photograph.

180666. This is +66° 1078a.

180742. No regular period could be found from the Harvard photographic observations, extending from June 13, 1889, to April 22, 1904.

181134. Roberts, who found that this variable is of the Algol type, gives the times of minimum, 1900, January, $3^d\ 2^h\ 2^m + 2^d\ 9^h\ 58^m\ 36^s.7$ E or J.D. 2415023.085 +2 .415702 E.

181115. Times of minimum, J.D. 2410002.677 + 3.45348 E. This variable was measured by Miss Leavitt on 300 photographs, on 23 of which it is fainter than the normal brightness, magn. 9.55. From 53 photometric observations in 1904, 1905, and 1906, Wendell finds a secondary minimum, with a range of about 0.3 magn., and also that the variable is of the β Lyrae type.

181103. This star was invisible in Anderson's 3-inch telescope on May 8, 11, 22, and 30, 1905, and was magn. 9.9 on June 30, 1905. Wolf found that it had the mag. 9.3 on a photograph taken July 26, 1895, and magn. 9.8 on July 26, 1898. This star was looked for on 7 Harvard photographs, taken from July 17, 1892, to May 30, 1903. The variable is about magn. 9.2 on a plate taken July 10, 1893, magn. 9.5 on May 30, 1903, and is barely visible on September 11, 1896. The variable is invisible on 4 other plates examined, and on July 27, 1899, it was apparently fainter than magn. 12. It appears probable that this is a variable star of long period, Class II, but additional observations are needed to determine the period and light curve.

181315. The Harvard photographic observations, extending from March 9, 1888, to May 21, 1904, show that the period is probably irregular.

181518. Times of maximum, J.D. 2410175.10 + $5^d.773$ E. Chandler. This must not be confounded with the star *181134*, RS Sagittarii, called Y Sagittarii in the A.G.C.

181631. Announced in Harvard Circular 92, as in the constellation Hercules, which was changed to Lyra in the Astron. Nach. **167**, 183. The constellation is Hercules according to the Uranometria Nova, Plate V, and Lyra according to Plate VI. According to Heis, it is in Lyra, but only a tenth of a millimetre from the boundary line.

181859. The variation was established by a comparison of 9 plates taken by Blajko, extending from September 6, 1904, to May 10, 1905.

181824. N.G.C. 6626. Messier 28. 9 variables have been found in this cluster.

181949. Elements were deduced from the Harvard photographic observations, extending from June 13, 1889, to October 12, 1903.

182133. Previously suspected by Thome. Elements were deduced from the Harvard photographic observations, extending from June 13, 1889, to October 19, 1903.

182172. The variation was established by a comparison of 14 plates taken by Blajko, extending from October 30, 1897, to May 8, 1905.

182200. Suspected by Müller and Kempf in 1891. Confirmed by Yendell, with range from magn. 5.0 to 5.7, and period $8^d.72$. No evidence of variability from observations by Wendell and Pickering. Wendell found the range in magnitude of 20 observations on 9 nights to be only 0.1 magn. 42 observations by Pickering with the 4-inch Meridian Photometer in 1898 gave the mean magnitude 5.21, average deviation 0.086.

182224. This variable was discovered with the 12-inch Meridian Photometer while measuring the star +24° 3419. It was confirmed on the Harvard photographs, and also by Professor Turner on 3 plates of the Oxford Astrographic Catalogue. Elements are given according to Hartwig.

182345. Elements were deduced from the Harvard photographic observations, extending from June 13, 1889, to October 12, 1903. This object is difficult owing to its faintness and to the presence of a companion star slightly south preceding. At several maxima the variable was not brighter than magn. 12.

182306. This is +6° 3805a.

182416. Visual observations by Townley, published in Bulletin No. 95 of the Lick Observatory, confirm the variability, with range from magn. 8.0 to <14. On one date only was it fainter than magn. 10.5. On account of its red color this star is ordinarily about two magnitudes brighter visually than photographically. Yet, if Townley's observation that the star was fainter than magn. 14 on July 28, 1903, is correct, it was apparently fainter visually than photographically at that time, for the photographic magnitudes were, respectively, 11.28, 11.02, and 10.92 on July 24, 27, and 31, 1903. Observations of the Harvard photographs, extending from March 9, 1888, to April 12, 1904, give a range of about one magnitude, with no regular period.

182612. Times of minimum, J. D. 2414566.5369 +

$0^d.889288$E, or 1898, October, $3^d\,12^h\,53^m + 21^h\,20^m\,34^s.5$E. Paris M. T. Luizet. Yendell thinks that this star is not of the Algol, but of the β Lyrae, type. From observations in 1906, Wendell finds a range of about 0.5 magn.

182619. Period $6^d.7446$. Chandler.

182836. This star was found by Birmingham to be of a deep crimson color on April 13, 1876, and estimated as magn. 8. It is No. 448 in Birmingham's Red Star Catalogue, where the range is given from magn. 8 to 9. In 1881 he estimated its magnitude as 7.5 or perhaps nearer 7. The variability was confirmed by Safarik from observations on 30 evenings, between 1883 and 1886, with the range adopted in the table. Variability was also announced by Espin in 1893. The range of 14 observations by Wendell, on 8 nights in 1903, was 0.76 magn. Spectrum, Type IV, Dunér. Period probably irregular.

183023. N. G. C. 6656. Messier 22. 16 variables have been found in this cluster.

183225. This is $+25°\,3582^a$. Approximate elements by Hartwig are given in the table.

183443. This is $+43°\,3030^a$. Variability in short period was confirmed by Hartwig. Times of maximum, J. D. 2415020.2745 + $0^d.5026937$ E. Williams. The variable is near minimum for about nine hours out of the twelve, and the rise from minimum to maximum is very rapid. The form of the light curve and length of the period are like those of the cluster variables designated as Subclass a, by Professor Bailey in Harvard Annals **38**, p. 132, and illustrated in Plate VII of that volume. This form of variation has been called Antalgol by Hartwig, but it may readily be seen that it is not the antithesis of the Algol type of variation.

183437. Elements were deduced from the Harvard photographic observations, extending from July 8, 1889, to April 12, 1904, and including the determination of 10 maxima.

183728. The Harvard photographic measures, extending from August 2, 1890, to July 29, 1904, give no regular period.

183838. Elements were deduced from the Harvard photographic observations, extending from July 8, 1889, to April 12, 1904.

183930. Times of minimum, J.D. 2410001.980 + $2^d.07694$ E. Pickering. This variable was found by Mrs. Fleming from the examination of a plate taken with the Cooke Anastigmat lens, and having a number of exposures of 30^m each. The star appears on 323 other photographs, on 25 of which it is distinctly fainter than its maximum magnitude. See Circular 117.

183932. Times of maximum, J. D. 2416266.5768 + $0^d.511284$ E. Williams. He also states that the form of the light curve is of the cluster type, Subclass a, like Y Lyrae. The variability and form of the light curve were confirmed by R. S. Dugan, from a study of 27 plates taken at the Groszh. Astrophys. Observatorium Königstuhl, Heidelberg. The increase in light, from minimum to maximum, occurs in about 61 minutes, while the decrease occupies six or seven hours.

184074. The position of this star, as originally announced by Ceraski, was taken from the Dorpater Beobachtungen, Bd. XX. It was shown by Kreutz, however, that owing to error in reduction, and perhaps also in observations, the declination of this star in that catalogue is $1'\,37''$ north of the correct position. The latter, as given in BB. VI, is $18^h\,40^m\,14^s.11 + 74°\,14'\,1''.9$ (1900). Period about 3 months. Ceraski.

184038. Variability was suspected at Cordoba, and confirmed by Miss E. F. Leland in 1896 from an examination of the Harvard photographs. Photographic range exceeds one magnitude.

184062. This star was found to be magn. 9.3 on 5 plates taken by Blajko, and was missing, and fainter than magn. 12, on a plate taken October 12, 1904, $7^h\,22^m$ to $9^h\,18^m$, Moscow M. T. Variability of the Algol type was suspected. The variability was confirmed visually by Blajko. The Algol type of the variation was confirmed by Seares in 1905, and announced in Laws Observatory Bulletin, No. 6. Range 9.6 to about 13. Times of minimum, 2416766.229 + $2^d.83107$ E. Seares.

184008. This star occurs in Herschel's catalogue of red stars and is described as "9^m. Plum coloured or ruddy purple." Winnecke found a variability of about one magnitude in a period of 3 to 5 months. Schönfeld found the period to be irregular during numerous observations from 1868 to 1875.

184007. This star was about magn. 9.3 on 10 Moscow photographs taken in 1899 and 1900, and about magn. 10.5 on a photograph taken July 24, 1900. The variability was confirmed visually by Blajko, who found it magn. 9.2 in May and June, 1905, magn. 10.3 from July 28 to August 6, 1905, but on August 7, 1905, it was magn. 9.4. Later observations in 1905 and 1906 led Blajko to conclude that this star is of the Algol type, with period of 130.9 or 261.8 days, and range from magn. 9.3 to 10.4. Either period is longer than that of any known Algol star. Blajko thinks that the duration of the light change is between 11 and 21 days, and that the star remains at least 8 days at minimum. Photometric and photographic observations would be useful in studying the light curve of this interesting variable.

184134. The elements are given according to Williams.

184236. Discovered by M. and G. Wolf, from an examination of 8 plates, taken between November 4, 1896, and May 4, 1905. Confirmed visually on October 16, 1905, by Hartwig, who suspects a period of 217 days.

184243. The elements are given according to Williams.

184205. Argelander deduced a period of about 71 days from his observations extending from 1843 to 1859. Numerous observations by Schmidt from 1846 to 1856 led him to the conclusion that the true period was 145 to 151 days, and that the light curve resembled β Lyrae in having a secondary minimum and two maxima between each principal minimum. Both Argelander and Schönfeld found that bright and faint minima usually

alternate. Harvard visual observations from 1890 to 1906 show that the light curve is very irregular. In 1890, Espin announced that the spectrum of this star varied from a scarcely perceptible third type spectrum to one of a normal third type. Curtiss of the Lick Observatory has also found changes in this spectrum. On July 19, 1903, when the star was at maximum brightness, he found Hδ, Hγ, and Hβ bright, but at the next two maxima, the bright lines were not seen. At minimum he found this spectrum to be of the solar type. Mrs. Fleming believes that the spectrum changes from G 5 K to K 5 M.

184212. The elements were deduced by Hartwig from estimates made by Dugan on 9 photographic plates, taken from June 25, 1894, to June 21, 1904.

184408. This red star was seen by Schmidt on September 25, 1872, and its absence in Lalande and other catalogues noted. Variability was suspected by Birmingham in 1874, and confirmed by Safarik in 1888, with range from magn. 7.0 to 7.4. Independently discovered by Miss Wells in 1901 from an examination of the Harvard photographs. Measures of these photographs, extending from April 3, 1888, to July 22, 1904, give the range adopted in the table, but no regular period could be found. Visual observations by Townley in 1902 and 1903 gave a variation from magn. 6.4 to 7.1, and indicate a period of about 23 days. The range of 18 observations, by Wendell, on 10 nights in 1903, 1904, and 1905, was 0.44 magn.

184633. Times of principal minimum according to Pannekoek, J.D. $2398590.604 + 12^d.908009\,E + 0^d.000003855\,E^2 - 0^d.000000000047\,E^3$. Secondary minimum midway between primary minima. The spectrum of this star is remarkable for a series of changes occurring in the same period as the light variations. Bright lines which change their relative position according to the phase accompany the dark hydrogen and helium lines. From primary to secondary minimum these bright lines have greater wave length than the dark lines, while at other times they have shorter wave length than the dark lines. A peculiar doubling of the dark lines also occurs, and it thus appears probable that there are at least three bodies revolving round one another.

184667. The estimates of this star at Cordoba varied from 4.3 to 5.2 in 1871. A series of observations was therefore made by Thome, from September 26 to December 27, 1872, and variability was thus established. Times of maximum, J. D. $2415029.54 + 9^d.09155\,E + 0^d.43 \cos(1°.13\,E - 54°)$. Roberts.

184812. This variable was announced by Ceraski as of the Algol type. Wendell, however, from his observations between September 23 and November 7, 1901, found that it belongs to the βLyrae class. Range between summit of curve and primary minimum, 0.95 magn. Range between summit of curve and secondary minimum, 0.27 magn. The approximate times of primary minimum are J. D. $2415641.041 + 0^d.9545\,E$. The epoch is assumed from the observations of Wendell in 1901, at which time the period, $0^d.9545\,E$, represented the observations very well. Ceraski gives the period, $22^h.92$ or $0^d.9550$.

185008. Observations of the Harvard photographs, from August 19, 1891, to July 29, 1904, show that the period is probably irregular.

185036. Announced as a possible Nova, because Wolf found it magn. 10 on two photographs taken on April 13, 1905, but it was not seen on any of his earlier plates. On May 5, 1905, it was about magn. 11. An examination of the Harvard photographs, by Mrs. Fleming, showed that it appeared on numerous plates taken before 1905, and proved it to be a variable, and not a Nova.

185032. N.G.C. 6720, the Ring Nebula of Lyra, precedes 34^s, north 12′. This star was announced by Seeliger as a possible Nova, because it was found by E. Silbernagel to be of about magnitude 12.5 on photographs taken at the Munich Observatory on September 2 and 3, 1902, but could not be found on any earlier or later plates. Fifteen photographs taken by Wolf also failed to show the star. Considerable interest was aroused in this object, and observations were published by Stratanow, Pickering, Hartwig, Hartmann, Williams, Wolf, Leavenworth, Perrine, Graff, Luther, and Küstner. An examination of the Harvard photographs, by Mrs. Fleming, proved that the object is a faint variable star, and not a Nova. It was visible on June 3, 1888, September 24, 1895, July 2, 1896, and August 23, 1902. Stratanow also found the star visible on 33 photographs of the Ring Nebula of Lyra, taken at the Tachkent Observatory. Perrine photographed the spectrum of this star in April, 1903, and found the hydrogen lines bright and that it was an almost exact counterpart of the spectrum of R Draconis. The variable is the middle star of a line of three, of which the southerly one is double. Elements are given according to Stratanow.

185129. Discovered by M. and G. Wolf, from an examination of 8 plates taken between November 4, 1896, and May 4, 1905. A period of 225 days is suspected by Hartwig.

185131. Discovered by M. and G. Wolf, from an examination of 8 plates taken between November 4, 1896, and May 4, 1905. A period of 279 days is suspected by Hartwig.

185243. Variation probably irregular. Argelander found a period of 48 days, Schönfeld and Schmidt, about 46 days. Schmidt later announced that the period varies from 30 to 60 days. Pannekoek found that the observations of Sawyer, Yendell, Plassmann, Knopf, and Pannekoek, between 1887 and 1893, are represented by a period, oscillating in nine years, between $49^d.3$ and $46^d.0$. Sawyer found, however, that his observations in 1892 did not confirm this period. Pereira's observations in 1895, moreover, indicated minima at intervals of more than 60 days, which was also confirmed by the observations of Plassmann and Pannekoek. Luizet's observations between 1898 and 1903 also indicate an irregular period. Precise photometric observations would be of value in establishing the nature of

the light curve of this object, which is especially difficult for eye estimates by Argelander's method, owing to its brightness and the small range of less than one magnitude.

185236. N. G. C. 6723. Dunlop 573. 16 variables have been found in this cluster.

185437. Schmidt deduced a period of 6^d from his early observations, but this has not been confirmed by later observations. Estimates by Innes, from 1899 to 1901, gave the range 10.2 to 11.0, which he concluded was due to error, and that the star is probably not variable. Roberts has repeatedly looked for this star, but has not seen it.

*185537*a. Variability confirmed by Roberts and Innes. Elements are given according to Roberts, who states, however, that the variation is very irregular. The elliptical nebula in which this star is involved was suspected to be variable by Schmidt, and confirmed by Innes. Observations of this star are difficult on account of the surrounding nebulosity and the absence of faint stars in its neighborhood.

*185537*b. Seen by Schmidt in July and August, 1876, as magn. 11, and decreasing in September, 1876. This star has never been seen by Roberts. Innes finds it so difficult to separate from the surrounding nebula, that its stellar nature is only shown in the 18-inch telescope. The variation is apparently unconfirmed.

185512. Elements were deduced from observations of Harvard photographs, extending from October 18, 1888, to October 6, 1904.

185634. This is $+34°3382^a$.

185613. This Nova was found by Mrs. Fleming in March, 1899, from an examination of a spectrum plate taken at Arequipa on April 19, 1898. The spectrum was that which is usually characteristic of Novae. The lines, $H\eta$, $H\zeta$, $H\epsilon$, $H\delta$, $H\gamma$, and $H\beta$, were bright, and other bright lines were present, which correspond in position with those in Nova Aurigae. No dark lines were seen on the edge of shorter wave length of the bright lines. Nova Sagittarii was first photographed on March 8, 1898, magn. about 4.7. A Bruce plate taken October 23, 1897, does not show the Nova, although stars between magn. 14 and 15 are visible. From March, 1898, the brightness decreased rapidly for about one year. In March, 1899, at the time of its discovery, Wendell found the photometric magnitude to be about 11.37, and the light to be nearly monochromatic, with a faint continuous spectrum. Harvard Circular 42. The Nova was observed by Campbell and Wright at the Lick Observatory on April 5, 1899. Nine bright lines were measured in the spectrum and found to be identical with lines in the nebular spectrum of Nova Aurigae in August, 1892. It appears, therefore, that this Nova, like several others, had changed into a gaseous nebula. The photographs from 1899 to 1903 show that the light gradually decreased until the star became fainter than magn. 13.

185604. Nova Aquilae, No. 2. This Nova was first photographed on a spectrum plate taken August 18, 1905, and was found by Mrs. Fleming when examining the plate a few days later. The magnitude of the Nova was about 9, and the lines $H\delta$, $H\gamma$, 4272, 4646, and $H\beta$ were bright and broad. $H\gamma$ and $H\beta$ had accompanying dark lines on the edge of shorter wave length. The entire spectrum resembled that of Nova Persei, No. 2, on March 30, 1901. See Harvard Circular 106, and Annals **56**, No. 3, Plate I. The discovery was at once confirmed visually by Harvard observers. Observations were also made in September and October, 1905, by Graff, Guthnick, Wolf, Nijland, and Abetti. The photometric magnitude was 10.32 on August 31, 1905, and fainter than magn. 14 on September 7, 1906.

185722. Observations of the Harvard photographs, extending from November 3, 1888, to September 4, 1904, show that the variation is probably irregular. A maximum of this star was observed by Townley on July 15, 1902, magn. 8.4.

185737. This is $+37°3309^a$. Elements are given according to Williams.

185905. This red star was announced as variable by Knott in 1871, by Schmidt in 1872, by Safarik in 1884, by Fleming in 1890, and by Sawyer in 1892. The range of 41 observations by Wendell on 20 nights in 1903, 1904, and 1905, was 0.86 magn.

190049. Elements were deduced from observations of Harvard photographs, extending from June 10, 1889, to August 4, 1904, and including the determination of 5 maxima.

190108. Additional terms, $-0.63\,E^2+0.005\,E^3$. Chandler. Hagen 23 precedes 12^s, south $0'.2$, magn. 10.5. Hagen 30 precedes 5^s, north $0'.3$, magn. 10.9.

190260. N. G. C. 6752. Dunlop 295. One variable has been found in this cluster.

190529a. This is $+29°3493^a$. In A. P. J., **18**, 42, J. A. Parkhurst has published an investigation of the light curve of this star from observations on 106 nights, extending from September 22, 1896, to April 3, 1903. The elements are given according to Chandler.

190643. Visual observations by Blajko and Hartwig showed that this star was magn. 13 on May 7, June 7, and October 13, 1904.

*190819*a. Measures of Harvard photographs, extending from August 16, 1889, to October 6, 1904, show that the period is probably irregular, although a period of 300 to 400 days is sometimes indicated.

*190819*b. This star was discovered by Miss Breslin during photographic observations of RW and RX Sagittarii. Measures were accordingly made of this object. Period probably irregular, although the star is too faint to appear on 257 out of 302 photographs, extending from August 16, 1889, to October 6, 1904.

190818. Measures of the Harvard photographs, extending from August 16, 1889, to October 6, 1904, give a period of 332 days, which accords with that of the elements of Chandler, given in the table.

190926. This star was found by Espin to be magn. 8.6 on August 23, 1893, and fainter than magn. 10 on September 3, 1897. It appears that no observations have been

published, by which the period and light curve of this star can be determined. Harvard photographs, taken on October 15, 1894, May 10, 1900, and August 17, 1900, show that the star is certainly variable, and was near maximum on May 10, 1900. Spectrum, Type III, Espin.

190925. This is +25° 3752ª. Spectrum, Type III, banded. Espin. Elements are given according to J. A. Parkhurst, who also found that the variable is preceded by two stars of magn. 15 to 16, the three forming a line about 0′.5 long.

190941. This is +41° 3264ª. Elements are given according to Williams.

190933a. This is +33° 3371ª. +33° 3371 precedes 3ˢ, south 2′.3, magn. 8.7. Provisional elements are given according to Hartwig.

190967. Variability was confirmed by J. A. Parkhurst in 1898. Variability was independently discovered, in 1902, during measurement of the Oxford plates, under the direction of Mr. Hollis.

191007. Variability was confirmed by Hartwig, in 1893.

191033. Variability was also found, in 1896, by Mrs. Fleming, by means of the peculiar spectrum of this star, which contains bright lines showing evidence of change. See Harvard Circular 7. Variability was also announced by Kapteyn on October 10, 1896, because C. P. D. plates, taken on October 22 and 25, 1888, gave magn. 10.2, and plates taken on October 30, November 3, 14, 19, 1890, gave magn. 7.2, 7.2, 7.1, and 7.1, respectively. The spectrum of this star has been found by Mrs. Fleming to resemble that of R Coronae. The limits of variation, and the sudden, irregular fluctuations, are also similar to those of R Coronae. These two stars may belong to a subdivision of Class II or III.

191046. This star was found by Anderson to have the magn. 9.2 on November 2, 1903, and magn. 10.3 on December 14, 1903. Variability was confirmed by Hartwig, who found it magn. 12 on March 26, 1904, and magn. 13 in June, 1904. No observations have been published from which the light curve and period can be determined.

191017. Additional term, +0.3 E^2, Hartwig. Hagen 39 follows 10ˢ, north 0′.3, magn. 10.4. Hagen 62 follows 10ˢ, south 2′.4, magn. 11.5.

191039. A nebula precedes this star 0ᵐ.0, south 14″, and is perhaps C.DM. −39° 13207, magn. 9.5.

191050. Measures of 240 Harvard photographs, extending from June 13, 1889, to August 18, 1904, show that the period is irregular.

191019. Additional term, +18 sin (10° E + 320°). Chandler. Star u precedes 1ˢ, south 0′.3, magn. 11.5.

191232. Times of minimum, 1901, October, $7^d\ 9^h\ 21^m.2 + 3^d\ 14^h\ 22^m\ 34^s.7$ E, or J.D. 2415665.3897 + 3ᵈ.599013 E. Williams. A Harvard photograph, taken July 11, 1893, shows this star fainter than normal. In deriving the elements, Williams assumed that a minimum occurred $3^h\ 30^m$ earlier than the time of this photograph.

191331. Elements were derived from the Harvard photographic observations, extending from July 18, 1889, to July 1, 1904. The variable is the following of two close stars, less than 0ᵐ.1 apart in right ascension, and in the same declination. One or both is C. DM. −31° 16579.

191350. This is +49° 2968ª. Visual observations made at Harvard, from October 6, 1905, to August 27, 1906, confirm the variability with range given in the table. An examination of 4 Harvard photographs also confirms the variability of this star. A star suspected of variability by Mrs. Fleming follows 0ˢ, south 0′.2.

191319. Additional term, +15 sin (10° E + 110°). Chandler. On the Harvard photographs, a star follows 0ˢ.1, south 15″, magn. 13.

191321. Hagen 34 follows 0ˢ, south 0′.5, magn. 10.6. Hagen 52 follows 2ˢ, south 0′.6, magn. 11.1. Hagen 59 follows 5ˢ, south 0′.3, magn. 11.3.

191419. Times of minimum, 1901, November, $1^d\ 6^h\ 37^m + 3^d\ 9^h\ 8^m\ 10^s.2$, or J. D. 2415690.276 + 3ᵈ.380674 E. Ebell.

191517a. Elements were derived from the Harvard photographic observations, extending from August 4, 1893, to December 5, 1905.

191500. Nova Aquilae, No. 1. This Nova was discovered in July, 1900, from an examination of a spectrum plate taken at Arequipa on July 3, 1899. The first photograph of the star appeared on a plate taken April 21, 1899, magn. 7. 18 photographs, taken during the summer of 1899, show that the light faded rapidly. On October 27, 1899, it was about magn. 10, and at the time of discovery and announcement in July, 1900, it was about magn. 12. The photographic spectrum, on July 3, 1899, contained seven bright lines, Hζ, Hε, Hδ, Hγ, 4693, Hβ, and the nebular line, 5007. On October 27, 1899, the spectrum had become that of a gaseous nebula, and Hγ and 5007 were alone present and bright. See Circular 56. On July 9, 1900, the object was observed visually by Wendell. He estimated its magnitude as 11.5 to 12, and confirmed the monochromatic character of its spectrum. The spectrum was observed visually by Campbell and Wright on August 27, 1900. They also found the spectrum to be nebular, with three very broad, bright bands in the positions of the three principal nebular lines. The Nova was also observed visually by Deichmüller on July 25, August 2, and August 20, 1900, magnitude about 11.8.

191517b. This star was found during observations of 191517a. Period probably irregular.

191637. This is +37° 3418ª. Variability was confirmed by Yendell, in 1894. Star precedes 3ˢ, north 0′.0, magn. 11. Elements are given according to Hartwig. This star was looked for by the writer on 20 Harvard photographs, extending from September 4, 1891, to September 26, 1903. On 11 of these the star is visible, but owing to its red color the photographic image is usually faint. The star is brightest upon a plate taken August 23, 1902. The nearest maximum, according to the formula given in the table, was on January 13, 1903.

191717. Variability was confirmed by Backhouse, and also

by Hartwig who at first thought that the period was 149 days. H. M. Parkhurst found the variation to be small and irregular in 1898 and 1899.

192242. This variable was found from an examination of a plate taken as described in Circular 29. Each star has 13 exposures of $29^m\ 40^s$ each, the interval between each exposure being 20^s. Photometric measures by Wendell give the following times of maximum, J. D. $2414856.500 + 0^d.5668$ E.

192407. Times of maximum, J. D. $2410170.15 + 7^d.0240$ E. Chandler.

192576. Backhouse found a variation of over one magnitude in this star, but it has not yet been confirmed by other observers.

192710. Variability confirmed visually by Graff, whose elements are adopted in the table.

192843. On October 2, 1898, Deichmüller found this star about a magnitude fainter than in 1891, and he therefore suspected variability. By January 21, 1899, it had increased about 0.7 magn. He found no noticeable color in the star. No further observations have been published.

192816. Measures of the Harvard photographs, extending from October 30, 1888, to October 13, 1905, show a variation of over one magnitude, but no regular period has been found.

192928. This is $+28°\,3387^a$. Elements are given according to Williams.

193056. Observations of 13 Moscow photographs, by Blajko, gave the range 8.6 to 9.3, but no period was found. Visual observations by Enebo, from December 16, 1905, to February 27, 1906, proved that this variable has a short period, and gave the times of maximum, 1905, December, $21^d\ 6^h\ 6^m.0 + 0^d\ 11^h\ 11^m\ 51^s.0$ E, or J. D. $2417201.25417 + 0^d.46654$ E. Enebo found that the variable remains about three hours at minimum, and he suspects that the form of the light curve may be of the cluster type. The period appears to be incorrectly reduced, and should perhaps be $0^d.46656$.

193103. The variability was confirmed by Graff.

193220. Times of maximum, J. D. $2414200.47 + 7^d.98$ E. Müller and Kempf deduced period of $8^d.00$, but Pickering found that both the Potsdam and Harvard observations are better represented by the period, $7^d.98$.

193311. This is $+11°\,3919^a$. Observations of the Harvard photographs, extending from August 20, 1886, to August 13, 1897, combined with recent visual observations, made by Hartwig and at Harvard, give the elements adopted in the table.

193331. N. G. C. 6809, Messier 55. 2 variables have been found in this cluster.

193449. θ Cygni precedes 22^s, north $0'.7$, magn. 4.64. Hagen 14 follows 3^s, north $1'.2$, magn. 9.3. Additional term, $+0^d.01\ E^2$. Chandler. Changes, apparently not connected with the variation in brightness, have been found in the spectrum of this star. On August 13, 1888, Espin found the line Hβ "extraordinarily bright and the spectrum strongly banded." This bright line was observed by Copeland on August 22, and again by Espin on August 31, when it had faded and was not easily seen. Maunder also observed this spectrum on September 21 and October 1, 1888, and found the line Hβ bright and that the general character of the spectrum resembled Secchi's Type IV. Dunér, from observations in 1879, 1880, and 1882, classed the spectrum IIIa! without any mention of bright lines. At the maximum in 1889, Espin observed the spectrum, but did not see Hβ bright. Mrs. Fleming has found that this spectrum shows changes on the Harvard photographs. On November 19, 1890, the spectrum was Md, with Hδ and Hγ bright. On December 7, 1904, the spectrum appeared to be of the fourth type, with no trace of bright hydrogen lines.

193509. Elements are given according to Graff.

193732. Measures of the Harvard photographs, extending from May 22, 1890, to July 3, 1905, show that the variation is probably irregular.

193972. Period $244^d.07$. Innes. These elements appear to be accordant with observations of the Harvard photographs, extending from June 7, 1889, to November 8, 1904.

194008. Variability was confirmed visually by Graff and Hartwig. Elements are given according to Graff.

194080. This star was suspected of variability during the measurement of Oxford plates, for the Astrographic Catalogue, under the direction of Mr. Hollis. Confirmation has not yet been announced.

194041. This is C. P. D. $-41°\,9189$. Observations of the Harvard photographs, extending from June 17, 1889, to November 17, 1904, show that the variation is probably irregular.

194048. Elements are given according to Chandler. These elements appear to be accordant with observations of the Harvard photographs, extending from September 23, 1887, to October 10, 1905. Star follows 1^s, north $0'.6$, magn. 12.

194029. This star was at first called ST Cygni. Times of maximum, J. D. $2414202.66 + 3.844$ E. Müller and Kempf.

194232. This is $+32°\,3556^a$. The formula, J.D.$2415004.971 + 6^d.0065$ E was given by Ceraski to express the times of minimum deduced from photographic and visual observations by Blajko, extending from September 24, 1895, to December 16, 1899. The Harvard photographs carried the interval of observation back to 1890, and Pickering found that the period of Ceraski is too long by about $0^m.6$, and that all the observations are satisfied by the period $6^d.0061$ E. See Harvard Circular 47.

194350. Elements were derived from observations of the Harvard photographs, extending from June 17, 1889, to November 17, 1904.

194348. This is $+48°\,2948^a$. This star was found to be magn. 9 on May 4, 1900, while observing RT Cygni, magn. 9. It was invisible in a 9-inch telescope on September 15, 1900, but was visible in the same instrument on September 20, and the light was increasing. At the request of Father Hisgen, observations

were made of the Harvard photographs, extending from November 30, 1887, to December 12, 1900. See A. N. **155**, 245. From these observations, the elements given in the table were deduced by Pickering. Hartwig found a period of 215 days, from his observations extending from 1900 to 1903, and that the star was brighter and the curve more pointed at even epochs than at uneven. Star precedes 6^s, north 3′.7, magn. 11. Star follows 4^s, south 1′.0, magn. 13.

194327. This is $+26°3670^a$. Nova Vulpeculae. This star was of about the third magnitude when discovered by Anthelm, in June, 1670, and by September it had decreased to about the sixth magnitude. A faint star at or near the position of this Nova was observed by Hind in 1852, magnitude 10 to 11, and in 1861, magnitude 12. Hind considered it to be variable and thought that it might be identical with the Nova.

194311. Variability was confirmed by Graff, whose elements are given in the table.

194427. In 1861, it was pointed out by Hind that the observations for the Greenwich 12-Year Catalogue in 1837, proved this star to be variable. Baxendell proved it to be periodically variable in 1862, with a range of about one magnitude, while the Greenwich observations gave a variation from magn. 6 to 12.

194412. Variability was confirmed by Graff, who suspects a period of 370 days.

194604. Elements are given according to Chandler. Observations of the Harvard photographs, extending from August 23, 1888, to November 27, 1905, appear to be accordant with these elements.

194632. Times of maximum, J. D. $2365136.5 + 406^d.02\,E + 0^d.0075\,E^2 + 25 \sin(5° E + 272°)$. Chandler. This star is in a region rich in faint stars, and when the variable is faint, identification is difficult, except with the aid of an accurate chart. Hagen 74 follows 1^s, south 4′.0, magn. 10.5. Hagen 92 follows 2^s, south 2′.1, magn. 11.5. Hagen 87 precedes 12^s, south 0′.1, magn. 11.1. The variable forms an angle a little less than 90° with Hagen 87 and Hagen 92.

194659. Elements are given according to Roberts, who states, however, that the star is very irregular. Observations of the Harvard photographs, extending from July 8, 1889, to April 27, 1905, show that the light curve is very flat at maximum. The period of 389 days satisfies approximately some of the most marked maxima.

194700. Times of maximum, J. D. $2396168.6253 + 7^d.176381\,E$. Schur. The period appears to be variable. In 1895, Bélopolsky found that this star has a periodically variable velocity in the line of sight, but that the time at which the velocity in the line of sight is zero does not coincide with the minimum brightness of the star.

194909. Variability was confirmed by Graff, whose elements are given in the table.

194929. Elements were derived from Harvard photographic observations, extending from June 20, 1889, to November 24, 1905, and including the determination of 9 maxima.

195116. Times of maximum, J.D. $2406602.60 + 8^d.38320E$. Chandler.

195142. Elements were derived from Harvard photographic observations, extending from June 17, 1889, to November 24, 1905, including the determination of 7 maxima and 6 minima.

195202. This star was seen by Espin on July 15, 1895, magn. 8.4. It was announced as probably variable since it was not contained in the Durchmusterung. Variability was independently found by Mrs. Fleming, on September 13, 1895, by means of the photographic spectrum which is of the third type, having also bright hydrogen lines. Measures of a few Harvard photographs, extending from August 23, 1888, to July 2, 1895, give the range of variation adopted in the table.

195326. Estimates of the brightness of this star on the Moscow photographs led Ceraski to conclude that the period is probably short. Visual observations by Blajko on October 2, October 3, 1904, and by Hartwig on October 19, 1904, gave the magnitudes 8.2, 8.8, and 9.2, respectively.

195308. The elements are given according to Chandler, except that the epoch is assumed to be J. D. 2413775, instead of 2403775, as printed in A. J. **24**, 6. Measures of Harvard photographs, extending from November 3, 1888, to November 24, 1905, appear to confirm these elements.

195855. Kapteyn found that this star had the magn. 9.0 on photographs taken September 17 and 20, 1887, and that it was invisible and fainter than magn. 10 on photographs taken July 9, October 22, and November 4, 1890. The star was never certainly seen by Innes, although it was looked for on 54 nights, from 1897 to 1901. At the request of Innes, variability of this object was proved by Pickering, who found that 9 Harvard photographs, extending from September 16, 1890, to April 26, 1897, gave a variation from magn. 11.5 to 13.0.

195849. This is $+49°3160^a$. 26 Cygni, a double star, precedes 6^s, north 3′.7, magn. 5.28. Star p follows 14^s, north 0′.8, magn. 10.3. Star y precedes 1^s, south 0′.9, magn. 12.7.

200041. This star was found to be about magn. 12.5 on a Moscow photograph taken August 17, 1901, and on 20 other photographs it was about magn. 9.3. Variation of the Algol type was suspected. Visual observations were made by Blajko, who proved the variable to be of the Algol type, and gave the following formula for the times of minimum, 1904, August, $29^d\,12^h\,38^m + 3^d\,7^h\,37^m.9\,E$, or J. D. $2416722.526 + 3^d.31797\,E$.

200036. In 1891 this red star was announced by Espin to be variable with a change from magn. 8.3 to 9.2. The variation was confirmed photographically by Espin in 1894. 5 observations by Yendell in 1893 favored variability, but did not certainly confirm. Photometric observations by Wendell on 3 nights in 1903 and 1904 indicate a variation of 0.65 magn.

200027. Observations of the Harvard photographs, extend-

ing from June 20, 1889, to December 4, 1905, show that the variation is probably irregular.

200158. Visual observations by Blajko in March, 1904, confirmed the variability, and proved the period to be about $3^h.2$ and the light curve to be similar to those of the cluster variables. The shortness of the period has called especial attention to this star. Observations and elements have been published by Schwab, Blajko, Graff, and by J. A. Parkhurst and F. C. Jordan. The times of maximum, according to the elements of Schwab, are, 1905, March, $12^d\ 7^h\ 9^m + 3^h\ 14^m\ 11^s.8$, or J. D. 2416917.298 + $0^d.134859$ E. A study of the light variation, by Parkhurst and Jordan, by means of 50 photographs, taken from November 21 to November 28, 1905, gave the period $0^d.126$ or $3^h\ 1^m\ 26^s.4$. It was suspected by these observers that the period is not quite constant Numerous observations by Graff, in January and February, 1906, led him to the conclusion that the type of variation is like δ Cephei, and not like the cluster variables, and that the period is $3^h\ 14^m\ 10^s.68$, or $0^d.134846$. The period deduced by Blajko, from observations in 1904, 1905, and 1906, is $0^d.1348643$ or $3^h\ 14^m\ 12^s.28$. He found that the light curve is variable, and he suspects a small but systematic difference in the light curve of the odd and even epochs. If this result is confirmed, the period should be doubled. Otherwise, this variable has the shortest period of any star so far known. Precise photometric observations would be of value in determining the exact form of light curve and the period of this star.

200357. Star d follows 1^s, north $0'.8$, magn. 9.2. Additional term, $\pm 0.015\ E^2$, irregularities large. Chandler.

200360. Variability was suspected from the photographic spectrum, and confirmed from an examination of 75 photographs, extending from June 13, 1889 to November 17, 1897.

200346. This star was found by Mme. Ceraski to be faint on a plate taken May 20, 1898. Blajko, who suspected the variation to be of the Algol type, found it at minimum on May 7, 1899. As soon as the announcement of variability was received at Harvard, photographic and visual observations were undertaken in order to determine the period and light curve of the star. The Draper Memorial photographs carried the observations of minima back as far as September 23, 1887. From these observations, together with the two minima observed at Moscow, Pickering deduced the formula to express the times of minimum, J. D. 2411343.605 + $4^d.57294$ E. See Harvard Circular 44.

200525. This star was suspected of variability by Espin in 1894. The evidence from 4 observations by Yendell in 1894, "seemed to favor variability, but was not decisive." Discovered independently by Mme. Ceraski in 1901, and announced in 1904. Spectrum, Type III!!!. Espin.

200647. Observations by Chandler in 1888, and by Yendell in 1893 and 1894, did not confirm the variation of this star, as announced by Espin. Hartwig, however, found the star to be magn. 9.1 on January 13, 1893, and magn. 8.0 in October, 1893, and thought that the period was probably irregular.

200635. Variability confirmed by Yendell in 1894. The period is probably irregular, although the published observations are insufficient to determine this with certainty.

200715a. Star follows 2^s, south $1'.5$, approximate magn. 11.

200715b. Times of maximum, J. D. 2415587.60 + $7^d.87$ E. H. M. Parkhurst.

200747. Elements are given according to Roberts.

200747. Variability confirmed by Yendell. Observations by Hartwig, however, in 1893 and 1894, gave no evidence of variation in this object. The range of 15 observations by Wendell on 8 nights in 1903 and 1904 was only 0.17 magn. Probably not variable.

200812. This is $+12°\,4256^a$. Variability confirmed by J. A. Parkhurst, who also found that there is a star of magn. 12.5, 32″ north of the variable. Elements are given according to Hartwig.

200844. Suspected of variability at Cordoba. Discovered at Harvard by means of peculiarities in its photographic spectrum. See Circular 17. Variability found independently by Innes, by means of visual observations in 1901 and 1902. Range and approximate elements are given according to Innes.

200916. Times of maximum, J. D. 2400358.5 + $70^d.56$ E + 6.5 sin (2°.25 + 47°). Secondary maximum and minimum follow principal maximum and minimum 35^d and 33^d, respectively. Chandler. The presence of a distinctly marked secondary minimum was found, in 1861, by Baxendell, who also noted that the interval between the principal and secondary minimum is almost exactly one half of the whole period, as in the case of β Lyrae. R Sagittae is considered by Williams as of the β Lyrae type. Mrs. Fleming has found that the photographic spectrum shows the H and K bands well marked as in stars of the second type, but other lines are not seen. It is not certain whether this is due to the faintness of the star or to real absence of lines.

200949. A variation of about one magnitude was found by Mrs. Fleming from an examination of 16 Harvard photographs.

200938. Star c precedes 0^s, north $2'.5$, magn. 7.2. Bohlin deduced a period of 420 days from several published dates of maximum and minimum, but Harvard visual observations, from November 14, 1890, to August 12, 1906, show that the period is irregular.

201008. This is $+8°\,4385^a$. Additional term, + 26 sin (9° E + 200°). Chandler.

201139. Variability confirmed by Paul, who correctly identified the star with C. DM. $-39°$ 13722, and who found a companion star which follows $1^s.7$, north 20″, magn. 10.5. Elements are given according to Roberts.

201152. Variability was found from the photographic spectrum, and confirmed from an examination of 92 photographs, extending from June 17, 1889, to September 4, 1900.

201121. Variability suspected by Secchi in 1869. Inde-

pendently discovered by Gore in 1875, by Safarik in 1885, and by Miss Wells, from an examination of Harvard photographs, in 1898. This star was called V Capricorni by Gore. The period is probably irregular. The range of variation, from visual observations, appears to be from magn. 6.5 to about 8, although it may be greater. Very few observations have been published.

201134. Times of minimum, 1901, October $7^d\,17^h\,20^m +$ $8^d\,10^h\,20^m\,4^s$ E or J. D. 2415665.722 + $8^d.4306$ E. Williams.

201130. This is $+30°3960^a$. Elements were deduced by Hartwig, from the observations of J. A. Parkhurst.

201250. An examination of 10 plates, taken between August 25, 1889, and July 30, 1902, shows a variation of about 0.7 magn.

201251. Observations of Harvard photographs, extending from June 17, 1889, to November 13, 1899, show that the period is probably irregular.

201437a. Nova Cygni, No 1. This star was first seen by Willem Janszoon Blaeu on August 18, 1600, magn. about 3. It was seen by Kepler in 1601. From a study of the large variations, occurring in the seventeenth century, Pigott deduced a period of about 18 years. The light, however, appears to have been constant at about magn. 5, since 1677. Pigott observed the star from 1781 to 1786, but found no certain change during that time. Observations by Zaiser from 1884 to 1887, by Safarik from 1884 to 1888, and by von Prittwitz from 1898 to 1900, gave no evidence of variation. Before the character of the spectrum was known, Safarik expressed a doubt as to whether the DM. star now visible is identical with the Nova, or whether the Nova, appearing very near this star, did not disappear long ago. It appears to be unknown whether any star was recorded in this position before 1600. In the spectrum of this star, the lines of hydrogen and helium are dark, with bright lines on the edge of greater wave length. The dark and bright lines are narrow. Keeler found that this spectrum shows a striking resemblance to that of β Lyrae, except that no changes have been seen in the spectrum of P Cygni.

201434. Variability was found by means of the photographic spectrum, and confirmed from an examination of 5 chart plates, taken between September 9, 1893, and May 23, 1899. Period probably long.

201437b. This star was found to be variable by Wolf on September 23, 1903, and was announced as a probable Nova, because it appeared to be an abnormal object on a plate taken September 21, 1903, and the light appeared to be monochromatic. Much interest was created in this object, and numerous observations were immediately made. Barnard identified the star as $+37°3876$, and Pickering announced that Mrs. Fleming found a variation of over two magnitudes from an examination of Harvard photographs, and that the spectrum was of Type IV on July 30, 1895. Observations of 151 Harvard photographs, extending from July 21, 1891, to October 6, 1903, show that the variable is present on 24 plates. The approximate elements given in the table were derived from these observations. Hartwig gives a period of 111 days. Star precedes 4^s, north $1'.0$, magn. 10.

201520. A variation of two magnitudes was found from 7 Moscow photographs. Hartwig, who observed this star as fainter than magn. 13, on December 23, 1902, January 19, and October 25, 1903, deduced a period of 96 days. Measures of the Harvard photographs, and scattering visual observations made here, show that the variation is often rapid and probably irregular.

201647. Birmingham observed this as a very red star, on May 26, 1870, and noted that it was not in Schjellerup's Catalogue of Red Stars. Variability was established by Knott who observed a maximum of the star on June 16, 1871. Spectrum, Type IV, according to Espin and Dunér. Mrs. Fleming finds that the spectrum resembles that of $-$Crucis, *125057*, except that the lines Hγ and Hβ are not bright in U Cygni. Star e follows 2^s, north $1'.6$, magn. 7.8.

201942. This is $+42°3725^a$. This star was found to be about one magnitude fainter than normal brightness on October 21, 1900. From this minimum, and three observed visually in 1901, Williams deduced a period of $3^d\,10^h\,49^m$ or $3^d.4506$. By means of Harvard photographic observations, which extend the observed minima back to May 16, 1890, Pickering deduced the elements, J. D. 2410000.20 + 3.45083 E. See Circular 64.

202128. Discovered by means of its photographic spectrum and confirmed from an examination of 49 photographs, extending from July 17, 1888, to October 14, 1895. No regular period has yet been found.

202240. The elements were derived by Pickering from Harvard photographic observations, extending from June 17, 1889, to August 14, 1896.

202539. In 1885, Espin found this star to be variable, from magn. 7.9 to 9.0, but during occasional observations from 1886 to 1891, he found the light to be constant. He announced in 1891 that a comparison of this star on 3 of Wolf's photographs, taken in 1891, showed a variation of over one magnitude, but owing to its strong red color, it was two or three magnitudes fainter photographically than visually. Yendell confirmed the variation, finding the star about magn. 8.3 on December 29, 1892, and magn. 9.5 on November 7, 1893. Bohlin deduced period of 517 days, but the variation appears to be irregular.

202622. Elements are given according to Innes. This star is not in the Southern Bonn Durchmusterung, but is C.DM. $-22°$ 14789.

202817. Observations of the Harvard photographs, extending from June 30, 1890, to December 14, 1903, have been made by Miss Leavitt, who found that during that time there were generally alternate high and low maxima, the double period being about 609 days. Thus, at the maximum on the approximate date, July 5, 1895, the star was of magn. 9.2, at the next maximum on May 20, 1896, it was magn. 10.5, and at the following maximum on March 21, 1897, it was magn. 9.5. How-

ever, the observations were not complete enough to prove that this always occurred. The variation derived from the photographs is from magn. 9.3 to 14.3. Graff's observations of this star, from November 30, 1902, to December 21, 1904, do not show evidence of alternate high and low maxima, since the magnitude was practically the same, about 8.8, at the successive maxima on November 18, 1903, and September 22, 1904. Continuous observations would be of value for studying the light curve of this variable. Elements are given according to Graff.

202946. From an examination of 5 photographs, taken from October 2, 1899, to February 11, 1900, and 7 visual observations, extending from November 6, 1899, to February 11, 1900, Williams concluded that the period of this star was probably $31^d.0$. Deichmüller found that the period is really about one half of that, and Hartwig gives the formula for the time of maximum, J. D. $2414931.640 + 15^d.084$. The latter at first announced that the type of variation resembles that of U Geminorum and SS Cygni, but this has not been confirmed. Observations of the Harvard photographs, extending from October 10, 1889, to April 18, 1903, show that the period is probably not quite constant, and therefore the variable should be assigned to Class II. If so, it has the shortest period of any variable star of this class. Photometric observations by Wendell, from August 10 to August 24, 1903, gave a variation of 0.86 magn.

202954. This is $+54°2373^a$. The elements are only approximate, and were derived from the observations of J. A. Parkhurst, combined with a maximum observed at Harvard, about November 5, 1905.

203046. Variability was announced by Köhl because, while observing SZ Cygni, he found this object brighter on October 30, than on October 28, 1900. Variability of about 0.5 magn. was independently discovered by Hartwig on October 12, 1900. An examination by Williams of 8 photographs, taken in 1899 and 1900, gave no evidence of variation.

203226. By means of visual observations from September 25, 1903, to January 19, 1904, and between August 11 and November 27, 1904, Williams announced this to be a variable of the β Lyrae type. He found that a secondary minimum, of magn. 8.66, occurs midway between the principal minima, and deduced the formula given in the table, for the times of principal minimum. Later, he suspected that the period of $75^d.3$ is a little too short. The range of 58 observations by Wendell on 43 nights, between May 31, 1905, and January 25, 1906, was 1.00 magn. Assuming Williams' period of $75^d.3$, these observations occur in four different periods. They show that the successive light curves are not the same, and that therefore this star cannot be regarded as of the β Lyrae type. The form of the light curve appears rather to be of Class II, and resembles R Sagittae in having a secondary minimum nearly midway between the principal maxima. Results derived from the photographs confirm this view, and show that a secondary minimum occurs sometimes, if not always. Observations made at the Laws Observatory, by Seares and Haynes, from July 16, 1905, to August 29, 1906, led them to the conclusion that the period is about one half of that given by Williams, and that the light curve is of the ordinary continuous variation type. Times of maximum according to Seares, J. D. $2416411.4 + 37^d.79$ E. Spectrum, Type III? Espin.

203317. In July, 1895, Miss Wells found that no trace of this star appeared on a photograph taken September 26, 1891. From measurements of earlier photographs, and visual observations in 1895, Pickering derived the following times of minimum, J. D. $2412002.500 + 4^d.8064$. In 1897, Pickering found, from the observations of that year, that the period is not constant and that the deviations from the ephemeris were nearly one hour at the end of the year 1897. Irregularities have also been found by Hartwig and by Graff.

203429. Elements are given according to Paul. Star follows 2^s, north $0'.3$, magn. 12.2, and between this star and the variable there is another star of about magn. 12.2. Paul.

203611. Elements are given according to Graff.

203847. This is $+47°3167^a$. Hagen 63 follows 0^s, north $0'.7$, magn. 12.0. Spectrum, Type IV, according to Dunér, Espin, and Vogel.

203816. Hagen 5 precedes 1^s, north $0'.9$, magn. 8.6.

203905. Elements are given according to Hartwig.

203935. Times of maximum, J.D. $2410190.90 + 16^h.3855$ E. Chandler. Some minima were found by Chandler, Yendell, and Dunér to be brighter than others. Mrs. Fleming found that the spectrum is between Classes F and G, and has some peculiarities.

204016. This is $+15°4245^a$.

204017. Variability suspected by d'Arrest in 1874. Confirmed by Gore, who found a range of one magnitude by means of observations made from 1884 to 1891, and who deduced a period of 111 days. 15 photometric observations by Pickering, from 1893 to 1898, give the limits adopted in the table. The period appears to be irregular.

204104. Variability was found by means of the photographic spectrum, and confirmed from an examination of 5 photographic plates, which showed that the star was magn. 8.6 on October 18, 1888, 8.6, 8.4, 9.1, and 9.6 on November 8, November 13, December 12, and December 15, 1890, respectively. Elements are given according to Hartwig, and agree with recent visual observations made here.

204102. Star k follows 5^s, north $0'.8$, magn. 10.1. Elements are given according to Hartwig. Harvard visual observations show large irregularities.

204244. This is $+44°3571^a$. Spectrum, Type III!! Espin.

204215. Times of maximum, J. D. $2399573.5 + 202.5\,E + 20 \sin(5°\,E + 285°)$. Chandler.

204334. This star was thought by Schmidt to have a period of about 370 days. Slight variation in no regular period was apparently found by Schönfeld. No

certain variation was found by Pickering in 41 observations, from October 1, 1895, to September 13, 1898. A variation of 0.54 magn. was found by Wendell in 41 observations, from 1902 to 1904.

204318. This is +18°.4620ª. The period was derived from all the published dates of maxima, extending from November 30, 1893, to January 20, 1904. On July 20, 1900, J. A. Parkhurst found this star to be invisible in the 40-inch refractor of the Yerkes Observatory, and therefore it must have been fainter than magn. 17. The large range of 10 magnitudes, or greater, makes this star of unusual interest. Star precedes 4^s, north 0′.4, magn. 13.

204405. Additional term, $+8 \sin (7°.5\,E + 255°)$. Chandler.

204529. In Harvard Circular 107, for 21^h, read 20^h.

204727. Times of maximum, J. D. 2409849.01 + 4^d.43578 E. Luizet.

204763. The elements are given according to Roberts. The range of variation was obtained from preliminary observations of 43 Harvard photographs, taken from June 17, 1889, to August 1, 1895. Roberts found this star to be magn. 8.6 at maximum, and from the form of the light curve, he suspected it to be magn. 13, or fainter, at minimum.

204745. This red star was found by Wolf to vary from magn. 12 to 13 on 4 photographs, taken from December 12, 1890, to May 14, 1893. Espin observed this star as magn. 9.0, and found the spectrum banded, on December 9, 1893.

204834. Yendell found changes in the light curve of this star, which are probably explained by Dunér's discovery that the minima are alternately bright and faint. Times of even minimum, 1886, December, $9^d\ 11^h\ 31^m.0 + 1^d\ 11^h\ 57^m\ 26^s.1$ E, or J. D. 2410250.4799 + 1^d.498219 E. Times of odd minimum, 1886, December, $9^d\ 9^h\ 24^m.3 + 1^d\ 11^h\ 57^m\ 18^s.0$ E, or J. D. 2410250.3919 + 1^d.498125 E. Dunér. Mrs. Fleming found, from the Harvard photographs, that the lines Hγ and Hβ are very narrow and sharply defined in this spectrum.

204846. This is + 46° 3080ª. + 46° 3078 precedes 11^s, south 0′.8, magn. 9.5. Elements are given according to Hartwig. Spectrum, Type III. Espin.

204954. Variability was found by means of the photographic spectrum and confirmed from an examination of 26 plates, extending from June 20, 1889, to August 11, 1894, with variation from 8.4 to <12.4. Also confirmed by Kapteyn by means of 5 C. P. D. plates. Elements and limits of variation are given according to Innes, who observed the star from September 28, 1898, to December 31, 1901. The photographic observations were included in determining the elements, and the observation at Cordoba on August 10, 1873, when the star was estimated as magn. 9.5, was also used.

204938. By means of 25 photographic and 114 visual observations, this star was found by Williams to be a variable of the βLyrae type. Times of minimum, 1899, October, $8^d\ 13^h\ 10^m + 0^d\ 14^h\ 37^s.7$ E or J. D. 2414936.5487 + 0^d.584464 E. Magnitude at secondary minimum, 10.15. The principal minimum is very sharply marked. Williams.

205017. Anderson found that this star varied from magn. 8.0 to 8.9 in 12 observations between August 24 and October 10, 1895. He identified the object as + 17°4452. J. A. Parkhurst observed it in July, 1897, and measured its position with the micrometer. He found the position to be 1′.4 north of the place in the Durchmusterung. The position measured by J. A. Parkhurst was adopted by Hartwig in 1900, and has been used in all variable star catalogues since that time.

205030a. Elements are given according to Hartwig. Period is about 518 days, according to Williams. An interesting feature of the light curve is the rapid rise to maximum, which Williams found to be at the rate of about one magnitude in 8 days.

205230. Observations of this star, from December 31, 1899, to September 10, 1904, were made by Williams, who derived the following times of maximum, J. D. 2415346.3933 + 0^d.5607103 E. He also found that the form of the light curve is of the cluster type, of which Y Lyrae is another example.

205339. By means of 18 maxima, observed between 1899 and 1904, Williams has derived the following formula to express the times of maximum, J. D. 2414934.97 + 20^d.125 E. The maximum is sharply accentuated.

205515. From a study of 14 photographic plates, extending from July 26, 1900, to July 29, 1905, Götz found this star to be variable, and suspected it to be of the Algol type with a period of 3^d.254, and a light curve resembling those of Y Cygni and Z Herculis. Seares and Haynes find, however, from observations in 1906, that the variable is not of the Algol, but of the short period, type. According to their observations, the increase of 1.5 magn. occupies 1.7 hours, and the decrease of the same amount occupies 5 hours. For the remainder of the time they found the light to be nearly, if not quite, constant They give the formula, J. D. 2417436.87 + 0^d.4476 E, to express the times of maximum.

205627. Variability confirmed by Miss Leland, from an examination of the Harvard photographs. Elements are given according to Hartwig. Innes found a probable period of 277 days.

205642. Times of maximum, J.D. 2415673.41 + 14^d.726. Williams.

205782. Variability found from the photographic spectrum, and confirmed from an examination of 28 photographs taken between June 17, 1889, and September 10, 1894. The elements are given according to Roberts. A period of 218 days, however, is more accordant with the photographic observations.

205840. This star was found to be variable in 1901, by Mr. Dunne, from observations with the Harvard meridian circle. Confirmed with range of 1.0 magn. by Mrs. Fleming, from an examination of 19 photographs, taken between November 6, 1889, and July 12, 1900.

205923. Additional term, $+18 \sin (4°.5\,E + 61°)$. Chandler. Star m follows 6^s, north 0′.2, magn. 9.8.

210067. N. G. C. 7023. 2 variables have been found in this nebula. Periods probably short.

210039. Times of maximum, J. D. 2416370.88 + 7^d.857 E.

Williams. These elements were obtained by means of 46 visual observations, made between August 29 and November 7, 1903, and 24 photographic observations in the years 1899, 1900, and 1901.

210116. Measures of the Harvard photographs, extending from October 18, 1888, to November 24, 1896, give no regular period. The range of 8 observations by Wendell, on 5 nights in 1904 and 1905, was 0.89 magn.

210129. This is + 28° 3986[a]. Elements are given according to Williams.

210245. Variability of the Algol type was suspected from an examination of 10 Moscow photographs. The type of variation was confirmed visually, by Blajko. The star appeared faint on 10 out of 90 Harvard photographs. See Circular 69. Times of minimum, J. D. 2416074.164 + 1.477051 E. Blajko.

210221. Additional term, +20 sin (10° E + 50°). Chandler. The minimum magnitude of this star must be very faint, for it was less than magn. 16.2 on October 28, 1891, according to an observation by Stone at the Leander McCormick Observatory.

210382. This is + 82° 634[a]. This star was found by Mme. Ceraski to have the magn. 9.3 on a photograph taken May 11, 1898, and to be invisible on 4 other photographs. Visual observations by Ceraski and Blajko confirmed the variability, and showed that a maximum probably occurred about May 11, 1898, or before that date. Provisional elements given in the table were obtained from the observations of J. A. Parkhurst, who has made an investigation of the light curve of this star. See A. P. J., **17**, 57. On July 24, 1900, this star was photographed by Keeler with the Crossley Reflector of the Lick Observatory. Its photographic magnitude was then about 18, or 0.5 magn. fainter than the visual limit of the 40-inch Yerkes telescope. It is thus probably the faintest variable as yet observed.

210516. Found by Borrelly from a comparison of Charcornac's charts with the heavens. Discovered independently by Skinner, in the course of the observation of the Astronomische Gesellschaft Zone, − 13° 50′ to − 18 10′. Elements are given according to Chandler.

210504. This star, which is given in S. DM. as magn. 9.8, was found by Barnard to have the magn. 11.5 or 12 on November 7, 1898. Variability was confirmed by measures of the Harvard photographs, extending from June 27, 1890, to November 2, 1898. A period of 150 days was at first suspected by Pickering. Observations in 1899, by J. A. Parkhurst, together with the Harvard measures, however, proved the period to be about 214 days.

210714. This star, with several others having spectra of Class Mc, was measured photometrically by Pickering. 22 observations, from November 10, 1894, to September 28, 1898, gave the extreme limits of variation from 7.98 to 9.16. Measures of Harvard photographs, extending from October 18, 1888, to November 24, 1896, also show a small and irregular variation.

210868. The limits of variation of this star make it especially suitable for observers with small telescopes. It was observed regularly by Knott, from 1881 to 1887, by Peek and Corder at the Rousdon Observatory, from 1891 to 1899, and at Harvard, from 1889 to 1906. The mean period found by Turner, from the Rousdon observations, is $388^d.9$, while from the Harvard observations the mean period is $385^d.9$.

210812. This is + 12° 4573[a]. This star was found by Anderson to have the magn. 9.1, 9.5, and 10.1 on September 26, October 27, and November 10, 1900, respectively. Variability was confirmed by Hartwig, who found it fainter than magn. 11 in December, 1900. It was observed at Leipzig on September 27, 1870, and August 2, 1871, as magn. 8.0. The elements are provisional, and were derived by Hartwig on the assumption that a maximum occurred on September 6, 1900. Visual observations made here show that a maximum, magn. 9.5, occurred on October 18, 1905, also that a maximum was passed before July 18, 1906. These observations seem to indicate a shorter period than 312 days.

210903. Variability was suspected by Abetti in July, 1898, during observations of the asteroid Caldea, and confirmed in 1898 and 1899, by Abetti and Antoniazzi. A maximum was observed on October 15, 1899, by Hartwig who at first assumed the period to be 381 days, but later found it to be one half, or 190.5 days. Visual observations made here, since August 13, 1905, are not very accordant with the elements of Hartwig given in the table.

211345. An examination of 83 photographs, extending from June 7, 1889, to August 26, 1897, gave the limits adopted in the table, but no regular period has yet been found.

211614. This is + 13° 4676[b]. Variability confirmed in 1899, and position measured by J. A. Parkhurst. A probable period of 204 days was assumed by Hartwig. Visual observations, made at Harvard, show that a maximum, magn. 8.7, occurred on September 21, 1905, which is 49 days earlier than the date computed by the formula given in the table.

211741. An examination of 9 plates, taken between September 8, 1892, and May 14, 1903, shows a variation of at least 3.0 magn. in this star.

211841. Scattering observations by Deichmüller, from 1898 to 1901, showed a variation from magn. 9 to 10 in this star. Observations confirming variability, within the limits 8.7 to 9.3, were made by Graff in 1904, and the formula, J. D. 2416638 + 275 E was given to express the times of maxima. Later, the period was changed to 396^d. Hartwig finds a variation of 0.55 magn.

212030. This star was observed by Argelander on September 16, 1849, magn. 9.0. It was missed by Weiss at Vienna, who assumed a double error to account for Argelander's observation. The star was again missed by Kapteyn on a C. P. D. plate taken October 29, 1888. Observations by Innes in 1895 and 1896, proved the variability of the object and supplied the elements given in the table.

212511. N. G. C. 7078, Messier 15. 51 variables have been found in this cluster.

212801. N. G. C. 7089, Messier 2. 10 variables have been found in this cluster.

213244. Elements are given according to Chandler. Some observers have found that a regular period is not indicated. Period may be irregular, or irregularities may be due to the difficulty of observing so bright an object whose range is not very great. Curtiss observed the spectrum of this star at the Lick Observatory in 1903. He found Hδ, Hγ, and Hβ bright on August 3 of that year, and that these lines faded gradually as the light of the star decreased.

213423. N. G. C. 7099, Messier 30. 3 variables have been found in this cluster.

213542. This star was announced in Harvard Circular 54, as in R. A. $= 21^h\,35^m.7$, Dec. $= +42°\,45'$ (1900), which is $+42°\,4172^a$. The object first observed by Mr. Colson, and again identified by him as the star he observed, is, however, $+42°\,4172$. The position of this object has accordingly been entered in the catalogue. An examination of 25 photographs shows that the variation, if real, is small.

213678. This star, which was noted as very red by Lalande on October 20, 1789, and by Argelander on October 1, 1841, was missed by Hencke on May 10, 1855. Regular observations by Winnecke, from 1860 to 1871, enabled Schönfeld to derive a period of $487^d.1$. The extreme redness of the star and the flatness of the light curve at the time of maximum, make it difficult to determine an accurate date of maximum. The length of the period appears to change, and Chandler gives an additional term, $+\,0^d.05\,E^2$. From a discussion of the Rousdon observations, extending from August 30, 1886, to December 15, 1900, Turner derived a period of $489^d.8$. Harvard observations, extending from March 11, 1889, to December 28, 1899, show large irregularities in the length of the period. Spectrum, Type IV!!, Dunér. Photographs of the spectrum have been attempted at Harvard several times when the star was bright, but without success, probably owing to its red color.

213753. Variability confirmed by Mrs. Fleming, in 1891, from an examination of 5 photographs, with a change from magn. 10.0 to 10.8. Also confirmed by Reed and Yendell from visual observations during 1891 and 1892. From a discussion of all the observations between 1890 and 1895, Hisgen derived the period of 443^d. The period, as quoted by Hartwig in V. J. S., **39**, 260, is changed to 436^d. Systematic observations of this star are needed to determine the period and nature of the changes.

213742. Nova Cygni, No. 2. $+\,42°\,4182^a$. This star was discovered by Schmidt, on November 24, 1876, at $5^h\,45^m$ in the afternoon, its magnitude then being brighter than the fourth, and somewhat fainter than the third. Color, yellow. Schmidt had examined the region on November 20, and was sure that no star as bright as magn. 4 to 5 was at that time visible in the place of the Nova. Continuous observations from November 24 to December 15, showed that the magnitude was about 3.1 until November 28, when it had decreased to 3.8, and on November 29 it was 4.7. From November 29, 1876, to September 1, 1877, the light decreased gradually to magn. 10. On March 24, 1882, Copeland and Lohse found it to be about magn. 14. See Copernicus **2**, 101, for discussion of the Nova by the latter observers. On July 31, 1891, Burnham estimated the Nova to be magn. 13.5, and a series of observations by Barnard, extending from November 12, 1901, to January 27, 1902, gave the magnitude about 15.6. The spectrum of this star was observed by Cornu on December 4, 1876, and by Vogel on December 5, 1876. The spectrum at this time consisted of numerous bright lines and was probably of the type characteristic of new stars. In September, 1877, Copeland found that the spectrum had become nebular, the continuous spectrum and the lines not characteristic of nebulae having entirely disappeared. Palmer succeeded in photographing this spectrum on August 12, 1901, with the Crossley Reflector of the Lick Observatory. The star was estimated as about magn. 15, and an exposure of 4 hours gave a very distinct spectrum. The photograph shows that the spectrum of this Nova had then become continuous, with no trace of bright lines.

213843. This is $+42°\,4189^a$. This star resembles U Geminorum, 074922, in the character of its light curve. Its brightness and greater northern declination, however, make a more complete discussion of the light variations possible than in the case of U Geminorum. The light is nearly constant at about magn. 12 at minimum, and rises rapidly to its maximum of magn. 8.4. The duration of maximum brightness varies from 11.5 to 20.0 days, and long and short maxima usually, but not always, alternate. This star has been observed almost continuously at this Observatory, since its discovery in 1896, and measures have been made of the Harvard photographs, extending from September 19, 1890, to April 17, 1906. A discussion of these observations, by Mr. Leon Campbell, will soon be published in the Annals of this Observatory.

213937. Variation of 0.4 magn. was found by Safarik during 17 observations in 1885 and 1886, and a larger variation in 1887 and 1888. Variability was also independently discovered by Yendell and announced in 1892. This is called "one of the reddest stars in the sky," by Gore. Variability was suspected by Hartwig in 1881, but was not published until 1893. Spectrum, Type IV. Dunér.

214024. Variability was confirmed by Hartwig who found the star decreasing in June, 1902. Elements are given according to Graff.

214058. This is Sir William Herschel's "Garnet Star," and is perhaps the reddest star visible to the naked eye in the northern sky. Variability was announced by Hind partly because of discordances in catalogue estimates, and confirmed by Argelander by means of numerous observations. A period of 432 days was deduced by Argelander, but afterwards rejected on account of large residuals. Observations have also been made by Heis, Gore, Plassmann, Schmidt, Wendell, Campbell,

and the variable star section of the British Astronomical Association. The range of 41 observations by Wendell, on 23 nights from 1902 to 1904, was 0.71 magn.

214247. Variability was found from the photographic spectrum and confirmed from an examination of 26 photographs, extending from June 20, 1889, to August 31, 1894. Elements are given, according to Chandler, which appear to be accordant with the preliminary photographic observations. Measures of later photographs will probably indicate a correction to the period.

214464. This star was found to be visible on 4 photographs taken by Blajko, and a maximum at magn. 9.8 probably occurred about the last of August, 1904. The star is very faint or invisible on Moscow photographs taken from 1898 to 1903. It was observed visually by Blajko on November 12, 1904, magn. 10.5. On October 20, 1905, Hartwig found it fainter than magn. 11. No other observations have been published.

214443. An examination of 6 Moscow photographs showed that a maximum of this star occurred about the middle of September, 1900, magn. 9. A maximum was observed on October 13, 1905, by Hartwig, who derived the approximate period of 309^d.

214742. An examination of 20 Moscow photographs, extending from 1898 to 1903, led Blajko to conclude that the period is short, not more than 5 days, or possibly a few hours. Observations by Hartwig, however, in 1904 and 1905, appear to show that the star has no regular period. He found the star often at minimum, which lasted sometimes a longer, and sometimes a shorter, time. He also found the maxima very irregular. From a later discussion of visual and photographic estimates, Blajko finds that the light curve has two mrxima of magn. 8.3 and two minima of magn. 9.1. Times of principal minimum, J. D. 2417061.1 + $9^d.727$ E. The second minimum follows, 4 days.

215122. Variability suspected from the photographic spectrum, and confirmed from an examination of 9 Harvard photographs, taken between September 18, 1892, and October 27, 1904.

215543. This is $+43°\,4100^a$. $+43°\,4101$ follows 2^s, south $0'.3$, magn. 9.1. While looking for Comet a 1902, Mrs. Fleming found that this star was faint on a photograph taken April 7, 1900, and bright on one taken April 3, 1902. 407 photographs were found covering the region, on 19 of which the star is fainter than normal. A discussion of these photographs, extending from August 17, 1891, to April 28, 1902, gave the times of minimum, J. D. 2410015.05 + $31^d.304$ E. This period is the longest of any known to be surely of the Algol type. The star retains its full brightness for 28 days, and begins to diminish a day before minimum, in which phase it remains nearly constant at magn. 11.6 for more than half a day. See Harvard Circular 65. A secondary minimum, 0.3 or 0.4 magn. fainter than maximum brightness, was found by Hartwig during observations on the mornings of April 2 and 3, 1904. This secondary minimum lies about midway between the principal minima.

215605. Variability was confirmed by H. M. and J. A. Parkhurst. The latter assumed a period of 308 days. Visual observations made here, from October 30, 1901, to August 17, 1906, prove that this period is too long. The revised elements of Chandler appear to be accordant with these observations, as well as with the Harvard photographic measures, extending from November 18, 1889, to June 1, 1895, and published in A. P. J., **2**, 357.

215717. Observations by Peters from 1875 to 1878, made him suspect a period of 330^d. Observations from 1884 to 1898 led H. M. Parkhurst to conclude that this star has no regular period. He observed it decreasing in brightness from August 5 to September 28, 1885, and found it invisible in 1886, from August 2 to December 21. In some years it was of nearly uniform brightness. Regular observations are needed to determine the light curve of this star.

215828. Elements are given according to Holetschek.

215934. This star was seen by Anderson at maximum brightness, magn. 9.5, in November, 1902, and a period of 7 months was suspected. Deichmüller found that the variable is the south following component of a double star. The companion precedes 1^s, north $0'.1$, magn. 11. Observations have been published by Hartwig and Graff. Elements are given according to Graff. Observations of this star have been made on the Harvard photographs, extending from December 22, 1890, to January 19, 1903. A period of 214 days seems to satisfy all these observations.

220133a. This is the preceding and southern of two stars $40''$ apart, both of which are variable, and either, or both, of which may be identified as $+32°\,4335$, magn. 9.5. The variation was found from an examination of 16 photographs taken between December 22, 1890, and August 31, 1902.

220133b. See 220133a. This variable was found from its photographic spectrum, and confirmed from an examination of 9 photographs, extending from December 22, 1890, to November 23, 1900. As examples of other close stars, both of which are variable, reference may be made to S Lupi, *144646*a, and its companion *144646*b, and to the two stars in Orion, 053302a and 053302b.

220337. A variation from magn. 9.5 to 11 was found on 4 Moscow photographs. On 3 others, the star was invisible and fainter than magn. 12.5. The position of this star was measured by Graff. Hartwig found it magn. 12 on November 8 and 14, 1904, and deduced the approximate elements given in the table.

220412. The elements are given according to Chandler, who states that there are large inequalities. Argelander found that a period of 374^d satisfied the observations until 1864, including the estimate by Bessel, of magn. 9, on October 27, 1822. Schönfeld derived a period of $367^d.5$. Graff, who observed this star from July 10, 1904, to January 26, 1905, found that a maximum occurred on October 11, 1904, 32 days later than the date computed by Chandler's formula. An effort to derive a second term for the formula, which would satisfy the inequalities, was unsuccessful. According

to Harvard visual observations, a maximum occurred about November 15, 1905, which is 58 days later than the date computed by the formula. Hagen 27 follows 11^s, north 0′.0, magn. 10.9. Hagen 41 precedes 3^s, north 3′.6, magn. 11.7.

220585. Observations of the Harvard photographs, extending from May 17, 1889, to June 14, 1906, give the range of variation from magn. 8.8 to 9.7, period probably irregular.

220613. This is $+13°4864^a$. Variability was confirmed by Hartwig and Graff. Elements are given according to Graff.

220714. While observing Y Pegasi in April, 1902, Graff saw a star of magn. 8.6, in the same field of view, which was missing in the Durchmusterung. Observations from April 24 to May 28, 1904, confirmed the variability, the star decreasing from magn. 8.7 to 9.4. Elements are given according to Graff, who found the light curve to be of an interesting form, with well marked secondary maxima and minima, and that marked changes occurred in the color of the star. At the maximum of 1904, numerous observations of color showed that the redness decreased towards maximum brightness, and increased again as the light of the star diminished, the amplitude of the change in color being more than three steps according to the scale of Osthoff.

220912. This is the southern component of a close double star near $+11°4757$, magn. 8.7, which follows 8^s, and is north 0′.2, according to Graff. Observations from May 25, 1903, to September 10, 1905, led Graff to conclude that this variable is of the U Geminorum type, the long continuing minimum being broken by maxima of short duration.

221230. This star was invisible at Cordoba in June, 1883, and magn. 8.5 in October, 1884. Variability was later suspected by Kapteyn because it was invisible on 4 C. P. D. plates taken in January, 1889, and was magn. 9.45 on a photograph taken September 14, 1888. Elements are given according to Chandler. Innes found a mean period of about $293^d.5$.

221321. Variability was found from the photographic spectrum, and confirmed from an examination of 18 photographs, extending from August 28, 1889, to August 11, 1904. Visual observations by Yendell and Paul in 1895 indicate a period of 311 days. Elements according to Chandler are given in the table.

221722. So far as known, no observations have been published of this star. Visual observations made here show that maxima occurred near the dates October 21, 1904, and January 12, 1906. An examination of 6 Harvard photographs shows that maxima occurred in November, 1894, in October, 1896, and in September, 1902. The approximate times of maximum, J D. 2416018 + 241 E have been derived from these observations. According to this formula, a maximum occurred on September 10, 1906. The variable was observed by the writer on September 15, 1906, magn. 8.5.

221733. Variability was suspected by Deichmüller because this star, which was observed at Bonn on August 10 and 24, 1856, magn. 9.0, was not seen during the Leiden Zone observations on August 15, August 31, and September 1, 1871, and on August 13, 1893. A star, not included in the Durchmusterung, which follows 29^s, and is south 0′.5, was seen on the first three dates. The object missed at Leiden was looked for by Deichmüller on September 11, 1897, and found to be magn. 8.9. It was also observed by J. A. Parkhurst from October 9 to November 8, 1897, and found to be about magn. 9, with no variation. Regular visual observations made here from October 24, 1904, to September 1, 1906, showed no certain change in this star. An attempt was made to confirm the variability by means of photographs. Two were found which were taken near the date August 13, 1893, when the star was not seen at Leiden. These plates, which were taken on August 3, and September 3, 1893, show that the star was about magn. 9 and no fainter than on numerous photographs taken at various other dates between 1891 and 1899. Hence, if the observation at Leiden, that the star was fainter than normal on August 13, 1893, is correct, the period must be short.

221933. Elements are given in the table according to Roberts. The period, 141 days, appears to be too long, however, to satisfy the Harvard photographic measures, extending from July 17, 1889, to October 12, 1895. These observations are represented by the formula for the times of maximum, J.D. 2411202 + 136 E. A definitive discussion of the elements will be deferred until the observations of later photographs are obtained. Roberts found that the increase in brightness before maximum is very rapid, and amounts to about three magnitudes in one month.

221948. The elements are given according to Innes, and are accordant with measures of the Harvard photographs, extending from July 5, 1889, to November 11, 1895. Observations by Innes from September 23, 1898, to January 21, 1901, gave the range of variation from magn. 7.4 to 11.5.

222129. This star was announced as a possible Nova because it was photographed on September 20, 1904, magn. 9, but did not appear on 11 other plates taken by Williams between September 27, 1899, and January 16, 1904. On October 3, 1904, the star was observed visually by Williams. It was estimated as about magn. 9.4, and was of an intensely red, almost crimson, color. An examination of the Harvard photographs by Mrs. Fleming at once showed that the spectrum of the object was of the third type, having also the bright hydrogen lines which are characteristic of long period variables. Photographs by Götz showed that the star was about magn. 9.2 on August 6 and August 8, 1904, and a further examination of the Harvard photographs confirmed the variability. The decrease from magn. 9.5 to 10.5 was observed by Wickham at the Oxford Observatory, between October 8 and December 8, 1904.

222439. Variability was found by means of the photographic spectrum, and confirmed by the examination of

4 photographs, showing that the star was fainter than magn. 12.9 on November 6, 1889, 12.7 on August 6, 1890, 9.5 on July 9, 1891, and 9.9 on July 13, 1891. Elements were deduced by the writer in 1904 by means of the published dates of maxima from 1894 to 1903. See Harvard Circular 81. These elements appear to be accordant with visual observations made here since 1904.

222557. Times of maximum, 1840, September, $26^d\,10^h\,50^m + 5^d\,8^h\,47^m\,39^s.3\,E - 0^s.0008\,E^2 - 0.00000015\,E^3$, or J. D. $2393375.4514 + 5^d.366427\,E - 0^s.0008\,E^2 - 0.00000015\,E^3$. Chandler. Discussions of the light curve have been made by Argelander, Schönfeld, Wirtz, Schur, Meyermann, and Nijland. In 1894, Belopolsky discovered that this star is a spectroscopic binary, the period of revolution agreeing with that of the variation in light.

222867. This star was not seen at Cordoba during the revision of the Zone Catalogue. Observations on November 1 and 4, 1883, proved the variability. It was missed by Kapteyn on the C. P. D. plates. Observations were therefore made by Innes from December 7, 1898, to December 18, 1901, and the elements given in the table were derived by him from all available material. Roberts found a period of 209 days from observations in 1899 and 1900.

223257. This "orange-red" star was first seen by Espin, on October 24, 1885. Observations from October 24 to December 15, 1885, gave evidence of a variation from magn. 7.0 to 8.0, and Espin considered that the period was short. Observations by Yendell in 1893 and 1894, and by J. A. Parkhurst in 1894, confirmed the variability. Times of maximum, J. D. $2412778.1 + 6^d.44$ E. Yendell. 22 observations in 1895 by Hisgen gave only very small light variation, and 13 observations by Bohlin, from November 26, 1895, to February 22, 1896, showed that the star was constant in brightness. The variability of the object seems to be uncertain.

223462. This star was discovered by Cox during observations with the Cape Transit Circle. It was noted as "very faint" on October 9, 1901, and was invisible on November 3, 1902. According to Cox, a star follows 7^s, south 1′, magn. 10.5. Measures of the Harvard photographs, extending from July 17, 1889, to November 19, 1903, enabled Cox to determine the elements given in the table.

223841. Hagen 64 precedes 8^s, south 1′.5, magn. 11.7.

224354. Variability was suspected by Espin in 1893, and confirmed in 1894, with a change from magn. 7.6 to 8.5. Also confirmed by J. A. Parkhurst by means of observations from 1894 to 1896, and by Backhouse in 1897. Probable variability was also independently discovered and announced by Graff in 1902, and confirmed by Deichmüller. The designation 2.1902 was assigned to the star by the Editor of the Nachrichten. Only slight variation in no regular period was found by Hartwig during observations from March to July, 1902.

224455. An examination of Moscow photographs showed this to be a variable having probably a short period. This star has been regularly observed at the Laws Observatory of the University of Missouri by Seares and Haynes. 539 photometric observations between June, 1904, and September, 1906, give the approximate times of minimum, J. D. $2416666.74 + 4^d.9835$ E. There is some uncertainty in the elements, due to the fact that the comparison star, $+55°\,2817$, was found to be a variable of short period having a range of 0.4 magn.

224625. A variation of about 0.8 magn. was found from an examination of 25 Harvard photographs, extending from July 23, 1889, to October 3, 1901.

225120. This star was observed by Lalande on October 22, 1798, magn. 8.5. It was missed by Argelander on October 15 and November 3, 1852, but was seen on October 23, 1853, magn. 7.5, and on October 31, 1853, magn. 8. The period $279^d.35$ was deduced by Auwers in 1860, and differs but $0^d.35$ from that of Chandler, given in the table. Periodic inequality probably exists.

225827. Variability often hardly perceptible for a long period. Argelander found approximate period of 41 days, but the variation appears to be very irregular.

225914. Variability was discovered in 1901, and announced in 1904, when the designation 34.1904 was assigned by the Editor of the Nachrichten. Elements were deduced from observations of the Harvard photographs, extending from November 3, 1889, to January 4, 1902. The period appears to be regular.

230110. Additional term, $+60 \sin (7°.5\,E + 225°)$. Chandler.

230330. A small and irregular variation was found in 1896, from an examination of 47 Harvard photographs. 7 observations by West, from September 7, 1896, to January 13, 1897, confirmed the variability. Also confirmed by Roberts in 1898 and 1899.

230552. This star was used as a comparison star for the suspected variable 230652, and 37 estimates between March 17, 1903, and October 3, 1904, gave an apparent variation from 8.8 to 9.5.

230652. This star was observed by Schönfeld on December 4, 1856, and August 1, 1857, magn. 9.0. It was missed by Argelander on November 23, 1859, and, therefore, it was not included in the Durchmusterung. It was observed by Deichmüller on October 11, 1901, magn. 9.0, and was then suspected of variability. 37 observations by Graff from March 17, 1903, to October 3, 1904, showed no variation in this object, the light being constant at about magn. 9.0. Graff concluded that the star is not variable, and was perhaps merely overlooked at Bonn on November 23, 1859.

230752. While observing 230652, this star was suspected of variability. 37 observations by Graff, from March 17, 1903, to October 3, 1904, gave a range of about 0.7 magn., with the probable elements, J. D. $2416652 + 122\,E$.

230759. A discussion of the light curve of this variable, by J. A. Parkhurst, showed that the period $231^d.26$ satisfied his observations from 1894 to 1899, the Durchmusterung estimates that the star was magn. 9.5 on

August 30 and September 16, 1857, and also the observations of Harvard photographs, extending from August 4, 1890, to September 5, 1895. He found the light curve regular, and the period constant. Elements are given according to Chandler.

231110. An examination of 40 Harvard photographs showed a slight variation in this star.

231425. This is $+25°\,4919^a$.

231508. This is $+8°\,5047^a$.

231539. This star is invisible on 5 Moscow photographs, extending from October 3, 1900, to September 6, 1904, and magn. 10 on a photograph taken February 3, 1905. It was observed visually by Blajko on March 14, 1905, magn. 10.3.

231917. This star was suspected of variability from its photographic spectrum, which is M c 5 d with peculiarities. Variability was confirmed from an examination of 72 photographs, extending from October 25, 1888, to November 20, 1899.

233261. A variation of two magnitudes was found from the Moscow photographs, but the period was not determined. Observations by Professor Whitney at the Vassar College Observatory, from January 28, 1905, to March 6, 1905, confirmed the variation, with a change from magn. 9.7 to 10.4.

233335. A variation of more than two magnitudes was found from an examination of 5 Harvard photographs, extending from September 24, 1890, to November 29, 1899.

233815. Times of maximum, J. D. $2382847.6 + 387^d.16\,E + 35 \sin (10° E + 235°)$. Chandler.

233956. This is $+55°\,3009^a$. This star was missed by Anderson on September 23, 1897, and although frequently looked for, it was not seen again until December 5, 1898, when it was about magn. 10. The variability was confirmed by J. A. Parkhurst who found it magn. 10.5 and decreasing in January, 1899, stationary at magn. 15 in January, 1900, and magn. 9.5 in March, 1900. According to Harvard visual observations, a maximum occurred October 16, 1905, magn. 8.5. The approximate period given in the table was derived from the published observations.

234153. The position of this star is given according to the measures of Graff. No observations have been published from which the period and nature of the variation can be learned.

234758. An examination of 24 Moscow photographs showed that the period is probably short.

234716. No regular period could be derived from measures of Harvard photographs, extending from January 21, 1888, to October 18, 1895. Approximate elements, assumed by Hartwig, are given in the table.

234956. A small variation was found from an examination of 6 Harvard photographs, extending from January 3, 1890, to September 13, 1898. The range of 59 observations by Wendell on 31 nights in 1903, 1904, and 1905 was 0.63 magn. The lines in the spectrum of this star are narrow and well defined.

235048. Measures of the Harvard photographs, from November 22, 1887, to March 15, 1897, showed a small variation in no regular period. Hartwig found a range of 0.75 magn., and thought that the period was probably short.

235053. This is $+52°\,3559^a$. Elements and position are given according to Graff, who observed the star from March 5, 1902, to May 14, 1905.

235150. This star was observed at Cordoba on November 23, 1872, magn. 8.5, but was invisible in November, 1882. It was seen again on October 31, 1884, magn. 9.0. The elements are given according to Roberts. Innes, who observed the star, from October 15, 1898, to February 9, 1901, derived the period 268.9 days.

235182. Variability from magn. 6.2 or 6.4 to 7.1 was found by Chandler, and confirmed by Yendell by means of observations from July, 1889, to March, 1892. Yendell found an average period of about 348 days. The star was observed by Luizet 330 times between May 6, 1898, and February 6, 1904. He derived a period of 362 days, but found that the small range of variation and long duration of the period rendered the determination somewhat uncertain. Pickering found no evidence of variation in 48 photometric observations, extending from November 3, 1891, to December 27, 1897. The mean magnitude was 6.52, average deviation ± 0.07. Mrs. Fleming found no evidence of variation from an examination of 16 Harvard photographs taken in 1903.

235265. Elements are given according to Roberts. This period appears to be too long to satisfy observations of a few Harvard photographs, published in 1892. See Astronomy and Astro-Physics, **11**, 766. A period of about 260 days is indicated from these observations. A further discussion of the period will be postponed until observations of later photographs are made.

235215. Chandler at first supposed this star to be of the Algol type, with a period of $2^d.06$, or $2^d.07$. The variability was confirmed by Yendell, who thought the period was $0^d.69$. In 1895, Chandler found that the star varies continually, and therefore is not of the Algol type. Also, that the times of increase and decrease are equal, and therefore the light curve differs from those short period variables like δ Cephei and η Aquilae. Photometric observations were undertaken by Wendell on December 28, 1897, in order to determine the exact nature of the variation of this star and the length of the period. Observations on 8 nights proved that the form of the light curve closely resembles that of β Lyrae, the light at secondary minimum being 0.15 magn. brighter than at primary minimum. The period was assumed to be $8^h\,59^m\,41^s$, and the following formula was adopted for the times of principal minimum, J.D. $2413514.6157 + 0^d.37478\,E$. See Harvard Circulars, 23 and 25. The observations by Wendell have recently been used, by Roberts, as the basis of a discussion of the size of U Pegasi. See Monthly Notices, **66**, 128.

235350. This star was first observed by Johnson on November 29, 1850, magn. 6.5. It was missed in 1852, and variability was proved in 1853 by Pogson. Much difficulty has been found in determining the period of

this star. The observed maxima, from 1854 to 1875, led Schönfeld to conclude that the period was then decreasing, and had the mean value of $427^d.6$. The mean period of this star deduced by Turner, from the Rousdon observations, extending from June 8, 1887, to December 15, 1900, is $438^d.7$, and that deduced from the Harvard observations, extending from March 23, 1889, to December 27, 1899, is $438^d.0$. Elements are given in the table according to Chandler, who also assumes the additional term, $+ 32 \sin (9° \text{ E} + 60°)$. Star r precedes $0^s.5$, north $0'.6$, magn. 11.36.

235357. This variable was found by means of its photographic spectrum, and confirmed from an examination of 22 photographs, extending from July 17, 1889, to July 24, 1894. The elements are given according to Roberts, who, however, also states that the variation is irregular. Observations by Innes, from October 15, 1898, to February 22, 1901, gave a variation from magn. 6.8 to 8.4, but no regular period.

235424. This star was found to be magn. 9.77 on a Cape photograph taken October 7, 1893, magn. 10.36 on September 26, 1894, and it was missing on August 27, 1900. The variability was confirmed by the visual observations of deSitter and Innes.

235525. Variability discovered by means of the photographic spectrum. Confirmed by Hartwig, who found the star to be fainter than magn. 11.5 on August 1, 1901, and by Williams from an examination of 8 photographs taken between November 6, 1899, and January 14, 1901.

235715. This star was missed on November 1, 12, and 14, 1894, during Washington Zone observations. Variability was confirmed by Paul, who observed an increase of three magnitudes between November 24, 1894, and January 22, 1895. At the request of Skinner, a search for this object on the Harvard photographs was made in 1894. The variable was found to be magn. 9.60 on August 1, 1891, and on June 28, 1893. On 14 other plates, taken between January 21, 1888, and October 28, 1893, the variable is invisible. A period of 350^d was derived by Paul, which appeared to him to be the only value which would fairly satisfy his own observations and also those of Lalande, Argelander, Schönfeld, and the Harvard photographs. There is evidently some uncertainty about the period of 366^d, assumed by Chandler and given in the table.

235855. The elements were derived by Hartwig from the observations of J. A. Parkhurst, between 1898 and 1904, and including the determination of 7 maxima and 6 minima. These elements appear to be accordant with observations of the Harvard photographs, extending from October 16, 1885, to July 1, 1897, and with visual observations made here, from October 21, 1901, to September 6, 1906. Observations of later Harvard photographs, however, may indicate some correction to the period. The variable is the southern of a line of 4 stars. Star follows 2^s, north $0'.0$, magn. 14.

235943. A variation from magn. 7.2 to 8.4 was suspected by Espin in 1894. Variability was discovered by Mrs. Fleming, independently, from the photographic spectrum, and confirmed by Miss Wells from an examination of 10 photographs, taken between October 8, 1891, and November 25, 1903.

It appears from the preceding remarks that additional observations are needed before the following stars, which have received letters according to the usual variable star nomenclature, and are given in Table I, can be accepted as really variable: 001706 V Piscium, *002438*b RR Sculptoris, 010564 RU Cassiopeiae, 021258 T Persei, *034124* S Fornacis, 045823 RT Tauri, 054615b RS Tauri, 070122b Z Geminorum, *070532* S Canis Majoris, *100537* R Antliae, *105159* T Carinae, 115609 X Virginis, 131602 RZ Virginis, *144676* R Apodis, 180122 RW Herculis, *185437* S Coronae Australis, 200747 RX Cygni, 213542 UU Cygni, and 235182 V Cephei. Other stars in Table I, whose variability is still uncertain, have the following designations: 001855, 003455, 012288, 021056a, 021056b, 021143b, 023259, *024729*, 033451, 040950, 054130, 070122c, *092856*, *150619*, *174824*, 182200, 192576, 192600a, 194080, 211841, 230552, 230652, and 230752.

Table II contains a list of the stars to which letters have been assigned according to the usual nomenclature for variable stars, but regular observations have failed to show that they undergo any real change in light. The general form of the table is similar to that of Table I, except that several columns are omitted.

The first column gives the name assigned to the star; the second, its number in the Durchmusterung zone, as explained on p. 4; the third the right ascension, and the fourth the declination for 1900. The fifth column gives the spectrum; the sixth, the mean magnitude; the seventh, the year in which the variability was announced, and the eighth, the authority. Additional facts are given in the remarks following the table.

TABLE II.

STARS PROBABLY NOT VARIABLE.

Name.	DM.	R. A. 1900.	Dec. 1900.	Spectrum.	Magnitude.	Year.	Authority.
		h. m.	° ′				
U Tauri	705	4 15.9	+19 35	F ?	9.41	1862	Baxendell
R Eridani	992	50.8	−16 35	G 2 K	5.82	1879	Gould
S Eridani	1047	55.3	−12 41	A 5 F	4.85	1879	Gould
S Monocerotis	*1220*	6 35.5	+ 9 59	Oe 5 B	4.68	1867	Winnecke
R Puppis	4910	7 37.0	−31 25	G	7.0	1879	Gould
S Puppis	3303	43.8	−47 52	A	7.18	1879	Gould
T Puppis	3490	44.8	−40 24	Ma	6.5	1879	Gould
R Velorum	4471	10 2.4	−51 42	K	6.76	1879	Gould
U Leonis	2239	18.7	+14 31	..	12.	1876	Peters
T Leonis	*2506*[a]	11 33.3	+ 3 56	..	..	1862	Peters
S Can. Venat.	*2412*	13 8.5	+37 54	..	8.8	1891	Espin
Y Boötis	2970	14 17.4	+20 16	K 5 M	7.94	1894	H. M. Parkhurst
X Boötis	2641[a]	19.4	+16 46	..	9.4	1859	Baxendell
W Boötis	*2413*	39.0	+26 57	Ma	4.91	1867	Schmidt
T Triang. Aust.	2307	15 0.4	−68 20	A	6.97	1879	Gould
Y Herculis	3209	16 32.0	+ 7 19	A	7.15	1882	Chandler
V Herculis	2892	54.6	+35 13	..	9.	1880	Baxendell
V Sagittarii	4987	18 25.5	−18 20	F	8.1	1866	Quirling
Y Aquilae	3787	19 2.3	+10 55	A	5.05	1894	Chandler
R Cephei	117	58.9	+88 50	..	8.42	1856	Pogson
S Capricorni	5892	20 36.0	−19 25	K ?	8.5	1854	Hind

REMARKS.

U Tauri. A variation from magn. 9.0 to 10.4 was announced by Baxendell. Safarik apparently confirmed the variability, but with a range of only 0.3 magn. in irregular, short periods. Regular observations were made by Knott, from November 30, 1863, to January 1, 1891, but no certain variation was found. On December 4, 1867, Knott found that this object was a close double star, the components being 1″.5 apart, and of nearly equal brightness. Duplicity was also found by d'Arrest. Schönfeld observed the star from 1865 to 1871, and suspected a slight variability. He included the object in his First Catalogue of Variable Stars, but owing to the uncertainty as to which component was the suspected variable, he omitted the star in the Second Catalogue. It has not been included in any later catalogues of variable stars.

R Eridani. Gould stated, in the Uranometria Argentina, p. 273, that the Cordoba observations showed a change in this star, from magn. 5.4 to 6.0. He therefore assigned the letter R to it. So far as known, no confirmation

has ever been made. Observations by Pickering, Sawyer, and Pereira gave no certain variation in this object.

S Eridani. The Cordoba observations appeared to show a variation from magn. 4.8 to 5.7, and Gould assigned the letter S to the star. Observed by Sawyer, from 1883 to 1888, but no change was found.

S Monocerotis. This star, which is the principal one of the cluster N. G. C. 2264, is triple, the companions being magnitude 9 and 11.5, approximately. Winnecke found a variation of 0.5 magn., with a period of nearly 3.5 days. Schönfeld stated, in his Second Catalogue of Variable Stars, that some of his observations, extending from 1869 to 1875, confirmed Winnecke's period, while others were discordant. No evidence of variability was found from observations by Wendell. The range of 25 observations on 10 nights was from magn. 4.38 to 4.55. 68 photometric observations by Pickering, in 1897 and 1898, showed the mean magnitude to be 4.59, and the average value of the residuals to be ± 0.08. The spectrum of this star contains the additional hydrogen lines at wave lengths 3924.0, 4026.0, 4200.7, and 4542.4.

R Puppis. Considered by Gould to be variable, from magn. 6.5 to 7.5. Chandler, Sawyer, and Markwick found no variation. Also observed by Roberts more than 100 times between 1891 and 1899, with no variation beyond the limits 6.9 to 7.2.

S Puppis. The letter S was assigned to this star by Lacaille, and Gould thought that the letter should remain unchanged, owing to the star's variability within the limits 7.2 and 9.0. Roberts made numerous observations from 1891 to 1899, and found the star constant, magn. 7.5. Observations by Bailey on February 25, February 27, and March 7, 1899, gave the mean magnitude 7.18, average residual, ± 0.10.

T Puppis. Gould thought that the Cordoba observations proved this star to be variable within the limits 6.5 to 7.2. The variation was not confirmed by Sawyer. Roberts also found the star constant, from 1891 to 1899.

R Velorum. Variability, from magn. 6.5 to 7.5, announced by Gould. Not confirmed by Chandler and Roberts. Observations by Bailey on May 20 and 21, 1899, gave the magnitude 6.76.

U Leonis. Announced as variable by Peters in 1876 because his observations from 1872 to 1876 showed the star to be of magnitude 11, or fainter, while the Durchmusterung magnitude is 9.5. The zone observations by Schönfeld are, 1854, January 22, magn. 9.10?, and 1855, January 18, magn. 9.10. During 8 years of observation, H. M. Parkhurst found no variation in the star of the twelfth magnitude at or near the position of U Leonis, or in any other star near it.

T Leonis. Peters thought that this star varied from magn. 10 to <13.5. Schönfeld never certainly saw the star, and gave numerous dates between 1866 and 1875 when it must have been magn. 13, or fainter. H. M. Parkhurst's observations may not refer to the right object.

S Can. Venat. Suspected by Espin in 1891, and confirmed by Yendell. Gruss and Láska, from 33 observations in 1893 and 1894, found the star constant at about the magn. 8.8. H. M. Parkhurst found it constant in 1897. The range of 6 observations by Wendell, on 4 nights in 1903 and 1904, was only 0.09 magn.

Y Boötis. Variability confirmed by Yendell. Variation thought by H. M. Parkhurst to be of the Algol type, period 2.6 days. No evidence of variability was found from observations by Wendell. The range of 22 observations on 11 nights was from magn. 7.96 to 8.11. 20 photometric observations by Pickering, from April 26 to June 23, 1898, gave the mean magnitude 7.94, average residual, ± 0.04.

X Boötis. Announced in 1859. Confirmed in 1888 by Chandler, and in 1893 by Yendell. A range of about one magnitude and a period of 122 days were found by Baxendell. Later observers find no variability. Hisgen found the star constant at about magn. 9.4 in 1896, and Hartwig has found no variation after many comparisons.

W Boötis. A period of 361 days was found by Schmidt. Variability was confirmed by Schwab, with range of 0.7 magn. and period of a few days. This is one of the Fundamental stars of the Potsdam Durchmusterung, and 36 observations from April 18, 1888, to June 10, 1897, showed no variation in this object. Müller and Kempf think that the changes found by Schmidt and Schwab were due to the difficulty of observation caused by the bright star ϵ Boötis, magn. 2.56, which follows $1^m\,37^s$ and is north $32'.2$. Zaiser at the Georgetown College Observatory also found no variation in 35 observations from 1884 to 1887.

T Triang. Aust. Considered by Gould to vary from magn. 6.9 to 7.4 in a period of $0^d.98$. Roberts thinks that the variation found by Gould was due to position angle. 52 photometric observations by Bailey, in 1899, gave the mean magnitude 6.97, average residual, ± 0.07.

Y Herculis. Variability confirmed by Yendell, whose observations from 1889 to 1892, gave a period of 20.6 days. Later observers find no variation. 145 observations by the variable star section of the British Astronomical Association, from 1897 to 1902, showed no variation. Observations by Pickering on 21 nights, from May 21 to August 5, 1898, gave the magnitude 7.15, average residual, ± 0.07.

V Herculis. This star, which was observed at Bonn in 1856, magn. 8.9, was not seen by Baxendell in July, 1868, in a 5-inch telescope, but was estimated as magn. 9 to 10 in May, 1880. Variability was announced in the Dun Echt Circular, No. 6. Hartwig found the star constant during numerous observations. Chandler, Parkhurst, and Yendell found no variation. The star was also constant according to the observations of Gruss and Láska in July and August, 1893.

V Sagittarii. This star, which is B. A. C. 6293, was missed at the Radcliffe Observatory on September 5 and 19, 1862, by Lucas, who suspected variability. It was also missed by Quirling on July 14 and August 18, 1864. It was seen by Quirling on July 29, 1865, magn.

about 9, on August 16, magn. 7.7, and on August 22, magn. 9? On the evidence of these observations, Argelander assigned the name, V Sagittarii. Schönfeld found little or no variation. Chandler, Sawyer, and Yendell found no variation.

Y Aquilae. Variation from magnitude 5.3 to 5.7 suspected by Gould, and confirmed by Chandler and Yendell in 1894, with a period of nearly 5 days. No evidence of variability found from observations by Pickering with the meridian photometer on 19 nights in 1897, or from 75 observations made by Müller and Kempf, at Potsdam. Neither do the observations of Wendell confirm the variability. The range in magnitude of 30 observations on 6 nights is from 4.71 to 4.83. Even this deviation is probably due to accidental error, since the range of the mean values for the six different nights is only from 4.75 to 4.79, or 0.04 magn.

R Cephei. This is 24 Cephei (Hev.), and has been confounded, by Lalande and some other astronomers, with λ Ursae Minoris. Inserted in Pogson's Catalogue of Variable Stars, with range from magn. 5 to 11. The maximum magnitude was assumed from an estimate of Hevelius, probably in 1661. Groombridge, in 1807, estimated this star as equal to λ Ursae Minoris. Pogson thought that estimates by various observers, between 1838 and 1851, showed variation between the magnitudes 8 and 10. Observations by Sawyer, Yendell, and Chandler did not show the slightest variation. 35 observations by Pickering in 1897 and 1898 gave the mean magnitude 8.42, with the average deviation, ±0.05.

S Capricorni. There is some doubt as to whether the star originally suspected by Hind was −19° 5890, 5892, or 5893. See A. N. **39**, 133. Oudemans gave the name S Capricorni to Hind's suspected star. Hartwig in 1894 identified −19° 5892, the middle one of three stars nearly in line, as S Capricorni. No variation was found by Oudemans, Schönfeld, Auwers, or H. M. Parkhurst.

Table III serves to determine the position in Table I of any variable star when its usual designation is given. The name of the constellation is contained in the first column, and the designations, corresponding to the letters at the head of the columns, and taken from the first column of Table I, are given in the successive columns. Thus R Andromedae is 001838. When the designation consists of two letters, additional lines are used. Thus RR Andromedae is 004533, and VW Cygni is 201134. The letter N is inserted for those stars to which letters were assigned, but observations have proved that they are probably not variable. These stars will be found in Table II. The letter R is inserted for those cases in which there is no variable star designated by the corresponding letter or letters. Additional facts are then given in remarks following the table.

TABLE III.

INDEX TO DESIGNATIONS OF VARIABLE STARS.

Constellation.	R	S	T	U	V	W	X	Y	Z
Andromeda	001838	003740	001726	010940	004435	021143a	001046	013338	232848
" R	004533	235048	R	013238	020448	004132	005840	231539	230552
" S	....	230752	....	....	....	....	....	....	....
Antlia	*100537*	*092728*	*092936*	*103039*	....	....	....	....	....
Apus	*144676*	*145971*	*134677*	....	....	....	....	....	....
Aquarius	*233815*	*225120*	*204405*	*215717*	204102	*204104*	*221321*	*203905*	*234716*
" R	*210903*	*210504*	*221722*	*231917*	....	....	....	....	....
Aquila	190108	200715a	184008	*192407*	*185905*	*191007*	194604	N	*200906*
" R	*195202*	*195308*	193311	200812	193509	200715b	194008	194311	194909

Constellation.	R	S	T	U	V	W	X	Y	Z
Aquila .....S	....	192710	194412	193103	193411a	194612a	194612b	200212	....
Ara	*163156*	*175149*	*165454*	*174551*	*174748*	*174949*	....	....	....
Aries	021024	015912	024217	030514	....	....	....	....	....
Auriga	050953	052034	052530	053531	061647	052036	060450	052142	055353
" R	060443	055646	062230	053337	062742	050130	045439	....	....
Boötes.....	143227	141954	140919	144918	142539	N	N	N	140113
Caelum	*043738*	....	....	....	....	....	....	....	....
Camelopardus ..	142584	053068	043065	033362	054974	061275	043274	072776	081473
" R	052372	083679	062564	....	....	....	....	....	....
Cancer	081112	083819	085120	083019	081617	090425	084917	075820	....
Canes Venatici .	134440	N	122532	....	....	....	....	....	....
Canis Major ...	*071416*	*070532*	*071725*	....	....	....	....	....	....
Canis Minor ...	070310	072708	072811	073508	070109	....	....	....	....
Capricornus ...	*200514*	N	*211615*	*204215*	*210124*	*200822*	*210221*	*212814*	*210516*
" R	*205627*	*210116*	*201121*	*202622*	*205515*	....	....	....	....
Carina.....	*092962*	*100661*	*105159*	*105359*	*082659*	R	*082958*	*102957*	*101058*
" R	*095458*	*110361*	*104058*	*091365*	*095563*	*091868*	*103361*	*111561*	*103270*
" S	....	*105461*	....	....	....	....	....	....	....
Cassiopeia	235350	011272	001755	004047	230759	004958	014958	235855	233956
" R	235053	233261	234153	010564	004746	013057	025867	234758	023969
Centaurus	*140959*	*121948*	*133633*	*122854*	*142556*	*115058*	*114441*	*142529*	*133431*
" R	*140957*	*111661*	*134236*	*120444*	*133155*	*110254*	*134536*	*144342*	....
Cepheus	N	213678	210868	005381	235182	223257	210382	003179	021281
" R	022980	044880	214464	010884	000773	....	....	....	....
Cetus.....	*022000*	*001909*	*001620*	*022813*	*235209*	*235715*	*031401*	*235424*	*010102*
Chamaeleon ...	*082476*	....	....	....	....	....	....	.....	....
Circinus	*152057*	....	....	....	....	....	....	....	....
Columba	*054629*	*054331*	*051533*	....	....	....	....	....	....
Coma Berenices	115919	....	....	....	....	....	....	....	....
Corona Austrina	*185537a*	*185437*	*185537b*	*183437*	*184038*	*175839*	*180245*	*180742*	....
Corona Borealis	154428	151731	155526	151432	154639	161138	154536	....	....
Corvus	*121418*	....	....	....	....	....	....	....	....
Crater	*105517*	....	....	....	....	....	....	....	....
Crux	*121861*	*124857*	*121561*	*122657*	*125057*	....	....	....	....
Cygnus	193449	200357	204334	201647	203847	213244	203935	204834	195849
" R	204244	200938	194048	213753	213937	202539	200747	200635	204846
" S	....	213843	202954	194029	200647	200346	201130	194232	202946
" T	....	....	193732	194348	203046	210129	205642	192928	191350
" U	....	....	....	213542	192843	201942	205030a	205230	215543
" V	....	....	....	....	210245	201134	205339	210039	214742
" W	....	....	....	....	....	200041	201437b	214443	204938
" X	....	....	....	....	....	....	200158	194541	193056
" Y	....	....	....	....	....	....	....	211841	....
Delphinus	201008	203816	204016	204017	204318	203317	205017	203611	202817
" R	203813	....	....	....	....	....	....	....	....

Constellation.	R	S	T	U	V	W	X	Y	Z
Dorado	*043562*	*051869*	....	....	....	....	....	....	....
Draco	163266	164055	175458	190967	175654	180565	180666	093178	113972
" R	184062	184074	182172	181859	....	....	....	....	....
Equuleus.....	210812	....	....	....	....	....	....	....	....
Eridanus.....	N	N	*035124*	*034625*	*035916*	*040725*	*022741*	....	....
Fornax	*022426*	*034124*	*032528*	....	....	....	....	....	....
Gemini	070122a	073723	074323	074922	071713	062915	064030	073520	070122b
" R	071531	065530	064018	072121	071124	055523	....	....	....
Grus	*214247*	*221948*	*221938*	....	....	....	....	....	....
Hercules.....	160118	164715	180531	162119	N	163137	155947	N	175315
" R	160150	171723	170627	160625	165631	180122	182612	175519	183225
" S	....	162807	154748	174422	182224	....	....	....	....
Horologium ...	*025050*	*022260*	*025751*	....	....	....	....	....	....
Hydra	*132422*	084803	*085008*	*103212*	*104620*	*134327*	*093014*	*094622*	*114232*
" R	*094023*	*104628*	*082405*	*140528*	*083409*	....	....	....	....
Indus	*222867*	*204954*	*211345*	....	....	....	....	....	....
Lacerta	223841	222439	221733	224354	224455	220337	....	....	....
Leo	094211	110506	N	N	095421	104814	....	....	....
Leo Minor.....	093934	094735	....	....	....	....	....	....	....
Lepus	*045514*	*060124*	*050022*	*045221*	....	....	....	....	....
Libra.....	*154715*	*151520*	*150519*	*153620*	*143417*	*153215*	*153020*	*150605*	*154020*
" R	*155018*	*151822*	*150018*	*152714*	*143017*	....	....	....	....
Lupus	*154736*	*144646a*	*141549*	*155429*	*145253*	*150850*	....	....	....
Lynx.....	065355	063558	081633	....	....	....	....	....	....
Lyra	185243	190925	182836	191637	190529a	181136	190926	183443	185634
" R	192242	190933a	185737	190941	191232	184243	185032	184134	183932
" S	....	191046	190643	185036	184236	185129	185131	....	....
Microscopium ..	*203429*	*212030*	*202128*	*202240*	*211741*	....	....	....	....
Monoceros.....	063308	N	061907	*072609*	*061702*	*064707*	*065208*	065111	*062808*
" R	071201	070205	*080310*	*064907*	....	....	....	....	....
Musca	*123668*	*120769*	*131373*	....	....	....	....	....	....
Norma	*152849*	*161057*	*153654*	*153454*	*160248*	*160952*	*161751*	*162546*	....
Octans	*055686*	*172586*	*205782*	*131283*	....	....	....	....	....
Ophiuchus.....	*170215*	*162816*	*162815*	171101	*162112*	*161607*	183308	*174706*	171401
" R	*164319*	*174406*	175111	172809	172907	175007	164705	181103	184007
Orion	045307	*052404*	*053005a*	054920	050003	050001	*053201*	*053604*	....
Pavo.....	*180363*	*194659*	*193972*	*204763*	*173457*	*174162*	*200360*	....	....
Pegasus	230110	231508	220412	235215	215605	231425	211614	220613	235525
" R	214024	220714	215934	220912	222129	225914	....	....	....
Perseus.....	032335	021558	021258	015254	015556	024356	034930	032043	023341
" R	022150	021556	031646	032339	040433	041342	034432	....	....
Phoenix	*235150*	*235357*	*002546*	....	....	....	....	....	....
Pictor	*044349*	*050848*	....	....	....	....	....	....	....
Piscis	012502	011208	002614	011712	001706	....	....	....	....
Piscis Austrinus	*221230*	*215828*	*222029*	....	....	....	....	....	....

Constellation.	R	S	T	U	V	W	X	Y	Z
Puppis	N	N	N	*075612*	*075548*	*074241*	*072820*a	*080834*	*072820*b
" R	*074341*	*080934*	*080138*	*080322*	....	....	....	....	....
Pyxis	*084127*	*090024*	....	....	....	....	....	....	....
Reticulum.....	*043263*	....	....	....	....	....	....	....	....
Sagitta	200916	195116	191717	191419	201520	191517a	....	....	....
Sagittarius	*191019*	*191319*	*191017*	*182619*	N	*175829*	*174127*	*181518*	*191321*
" R	*194929*	*181134*	*201139*	*195142*	*182133*	*190819*a	*190818*	*191033*	*200844*
" S	....	*182416*	*185512*	*185722*	*175724*	*191331*	*183930*	....	....
Scorpius	*161122*a	*161122*b	*161122*c	*161617*	R	*160519*	*160221*a	*162319*	*160021*
" R	*165030*	*164844*	*165636*	*173543*	*165133*	*170833*	*160524*	*174433*	*155823*
" S	....	*164832*	*163031*	*163432*	*174135*	*171843*	*174035*	....	....
Sculptor	*012233*a	*001032*	*002438*a	*010630*	*000339*	*002833*	*004435*	*230330*	*003534*
" R	*002438*b	*012233*b	....	....	....	....	....	....	....
Scutum	*184205*	*184408*	*185008*	*184812*	*184212*	....	....	....	....
Serpens.....	154615	151714	182306	160210	*181115*	....	....	....	....
Sextans.....	*093707*	....	....	....	....	....	....	....	....
Taurus	042209	042309	041619	N	044617	042215	034707	053920	054615a
" R	053326	054615b	045823	054615c	044126	035727	043208	....	....
Telescopium ...	*200747*	*195855*	*181949*	*190049*	*191050*	*194350*	*201152*	*201251*	....
Triangulum....	023133	....	....	....	....	....	....	....	....
Triangul. Aust..	*151066*	*155263*	N	*155862*	*163967*	....	....	....	....
Tucana	*235265*	*001862*	*223462*	....	....	....	....	....	....
Ursa Major....	103769	123961	123160	100860	090151	093656	083350	123556	115158
" R	132262	123459	....	....	....	....	....	....	....
Ursa Minor....	163172	153378	133273	141567	....	....	....	....	....
Vela	N	*092944*	*083447*	*092945*	*091955*	*101153*	*095141*	*092551*	*094953*
" R	*101741*	*092048*	....	....	....	....	....	....	....
Virgo	123307	*132706*	*120905*	124606	*132202*	*132002*	115609	*122803*	*140512*
" R	*135908*	142205	125705a	124204	*130212*	*120206*	*115905*	*133618*	131602
" S	....	122001	....	....	....	....	....	....	....
Volans	*070772*	*073173*	....	....	....	....	....	....	....
Vulpecula.....	205923	194427	204727	193220	203226	200525	195326	....	....

REMARKS.

RT Andromedae. Apparently, this designation has not been assigned to any star.

W Carinae. The star, *091955*, to which this name was originally assigned, is in the constellation Vela, and is designated V Velorum.

V Scorpii. The star, *160519*, was called V Scorpii by Palisa, but Chandler called it W Scorpii, and the letter V has not been given to any star in this constellation.

In several cases, two objects have been designated by the same letter in different star catalogues. Thus, the variable star X Eridani, *022741*, must not be confounded with X Eridani of the A. G. C., R. A. $= 4^h\ 14^m.1$, Dec. $= -34°\ 2'$ (1900);

Z Puppis, *072820*b, with Z Puppis of the A. G. C., R. A. = 7^h $30^m.2$, Dec. = $-36°$ 7′ (1900); R Pyxidis, *084127*, with R Pyxidis of the A. G. C., R. A. = 8^h $48^m.8$, Dec. = $-36°$ 10′ (1900); Y Virginis, *122803*, with Y Virginis of the A. G. C., R. A. = 13^h $29^m.3$, Dec. = $-12°$ 42′ (1900); Y Sagitarii, *181518*, with Y Sagittarii of the A. G. C., R. A. = 18^h $11^m.0$, Dec. = $-34°$ 9′ (1900). The latter star is now called RS Sagittarii. The star, 001706, now designated V Piscium, is not the same as the star called V Piscium in Chambers' Catalogue of Variable Stars, which is $+8°$ 292, R. A. = 1^h $49^m.1$, Dec. = $+8°$ 17′ (1900), and which was designated U Piscium when first announced by Argelander in 1864. Observations by Schönfeld did not confirm the variability and the letter was not retained for the object. See also note on V Persei 015556, page 34.

After Table III was in print, No. 4127 of the Astronomische Nachrichten, containing names for 32 variable stars, was received. The designations of these stars were all added to the table, although eleven of them were announced to be variable too late to be included in Table I. They will be found in the supplementary list at the end of the catalogue.

Table IV gives the names in general use and the designations of several stars contained in Table I, but not in Table III. The Novae to which no letters have been assigned are included in Table IV.

TABLE IV.

INDEX TO ADDITIONAL STARS.

Name	Desig.	Name.	Desig.	Name.	Desig.
θ Apodis	*135576*	P Cygni	201437a	α Orionis	054907
η Aquilae	194700	Q Cygni	213742	κ Pavonis	*184667*
Nova Aquilae, No. 1 .	*191500*	ζ Geminorum	065820	β Pegasi	225827
Nova Aquilae, No. 2 .	*185604*	η Geminorum	060822	β Persei	030140
ϵ Aurigae	045443	Nova Geminorum . .	063730	ρ Persei	025838
η Carinae	*104159*	α Herculis	171014	Nova Persei, No. 2 .	032443
l Carinae	*094262*	g Herculis	162542	L^2 Puppis	*071044*
α Cassiopeiae	003455	u Herculis	171333	Nova Sagittarii . . .	*185613*
ρ Cassiopeiae	234956	δ Librae	*145508*	d Serpentis	182200
B Cassiopeiae . . .	001963	ι Librae	*150619*	λ Tauri	035512
δ Cephei	222557	β Lyrae	184633	N Velorum	*092856*
μ Cephei	214058	Nova Normae . . .	*152250*	11 Vulpeculae . . .	194327
o Ceti	*021403*	Nova Ophiuchi, No. 1	*172421*		
χ Cygni	194632	Nova Ophiuchi, No. 2	*165312*		

Table V supplements Table I by furnishing additional facts regarding many of the variable stars. The first two columns give the designation and name of the star, as in Table I. The third column gives the interval from minimum to maximum, or M—m, according to the same authority, in general, as the period which is given in Table I. The fourth column gives the color determination, followed by a letter designating the observer, in which C stands for Chandler, G for Graff, H for Harvard, I for Innes, K for Krueger, N for Nijland, and Y for Yendell. When the color was estimated by more than one authority, the mean is given, followed by the letter M. The individual estimates are then given in the Remarks following the table. The observations of Chandler and Yendell are on the scale of Chandler, those of the other observers are on the scale of Osthoff. Changes have been found in the color of certain variable stars, by several observers. Osthoff found that the colors of o Ceti, R Trianguli, χ Cygni, R Leonis, R Scuti, β Persei, and η Aquilae, deepened as the stars decreased in brightness. Thus, the color of Algol, from 49 observations at full brightness was $1^c.92$, and from 36 observations during minima, it was $3^c.61$. Nijland estimated the color of RV Andromedae as 2^c at maximum, and 3^c and 4^c at minimum. Graff found the color of RS Pegasi to be $4^c.5$ at maximum, and $7^c.5$ or $8^c.0$ at minimum. Owing to the fact that the colors of only a few stars have been estimated upon both scales, and the uncertainty as to whether the color determinations of different observers refer to the same phase of the star's light, it seemed inadvisable to attempt to reduce the observations to the same color scale.

Accordingly, a brief description of the two scales may be found useful. The scale of Chandler is thus described by him in A. J. 8, 137: "0 corresponds to white light, 1 to the slightest perceptible admixture of yellow with the white, 2 to yellow, 3 to yellowish orange, 4 to full orange or orange red, 5 to 10 to increasing shades of intensity up to the nearest approach to pure red light of which we have cognizance in the heavens, exemplified nearly by such stars as S Cephei, V Cygni, and R Leporis." The scale of Osthoff, as explained in A. N. 153, 141, may be translated thus: 0^c corresponds to white light; 1^c, to yellowish white; 2^c, to whitish yellow, having yellow and white in equal parts; 3^c, to clear or pale yellow; 4^c, to pure yellow; 5^c, to dark yellow; 6^c, to reddish yellow, in which yellow predominates; 7^c, to orange, or yellow and red in equal parts; 8^c, to yellowish red, in which red predominates; 9^c, to red with a slight trace of yellow; 10^c, to red.

The fifth column gives a reference to charts of the variables. Hg is used to refer to the charts of Father Hagen, and this is followed by the number of the

series, s being used to denote the Supplementary Notes to the Atlas of Variable Stars, in which, besides a chart for Nova Persei, there are also reproductions of ten of Pogson's engraved charts for long period variables, and of Pogson's and d'Arrest's charts of B Cassiopeiae, the Nova of 1572. Hd is used to denote the Harvard photographic enlargements of portions of the charts of the Bonn Durchmusterung. A region 3° square, surrounding the variable, was enlarged three times. We thus have a chart on the standard scale of one minute of arc to one millimetre. The designations of the comparison stars in the Harvard sequence for each of these variables are entered upon the enlargements. These charts are used here for observations when the variable is brighter than the tenth magnitude. Hp is used to denote the enlargements from the Harvard photographs, which have been made to supplement the charts of Hagen. The variable was identified and marked on a good chart plate. The region was then enlarged to a scale of $20'' = 0.1$ cm. These charts are printed on heavy paper. Identification of the variable and adjacent stars is very easily and rapidly made from them, notwithstanding the fact that the photographic magnitude of an object on the chart may differ considerably from the visual magnitude as seen in the sky. Similar enlargements to a scale of $60'' = 0.1$ cm. have been made of 50 variables of long period south of declination $-30°$. They are indicated in the table by Hps. Charts published in astronomical journals are referred to by the initials or abbreviated name of the journal, followed by the volume and page. P denotes Researches in Stellar Photometry, by John A. Parkhurst.

TABLE V.

MISCELLANEOUS FACTS.

Des.	Name.	M—m.	Color.	Chart.	Des.	Name.	M—m.	Color.	Chart.
001032	S Sculp.	160	..	Hp, Hps.	*002438*b	RR Sculp.	..	..	Cape **9**, 22 B.
001046	X Andr.	190	5.3G	Hp, P.A. **13**, 517, Hamburg **8**, 17.	002614	T Piscium	..	0 C	Hg 2, Hgs.
					003179	Y Cephei	..	5 H	Hp.
001620	T Ceti	..	4 C	Hg 5.	003455	α Cass.	..	5.8M	Hg 5.
001726	T Andr.	122	5.2Y	Hg 3, Hd, P. 12.	003740	S Andr.	..	5 C	M.N. **47**, 57, A.N. **148**, 11.
001755	T Cass.	247	6.7M	Hg 3, Hd.	004047	U Cass.	100	3.9M	Hg 3, P.A. **2**, 320.
001855	– Cass.	..	..	Hg 3, Hd.	004435	V Andr.	115	..	Hp, P.A. **4**, 528, P. 32.
001862	S Tucanae	75?	4 I	Cape **9**, 20 B.	004533	RR Andr.	174	4.0G	Hp.
001838	R Andr.	170	3.0M	Hg 3, Hd, Hgs.	004958	W Cass.	208	..	Hp, P.A. **4**, 421.
001909	S Ceti	145	2.0C	Hg 3, Hd.	005381	U Cephei	..	0 C	Hg 4, M.R.A.S. **52**, 1.
001963	B Cass.	..	..	Hgs.	*005475*	– Tucanae	124?	..	
*002438*a	T Sculp.	85	6 I	Cape **9**, 22 B.	005840	RX Andr.	..	..	A.N. **167**, 341, P.A. **13**, 274

Des.	Name.	M—m	Color.	Chart.
010102	Z Ceti	..	5.5G	
010564	RU Cass.	..	..	Hg 5.
010630	U Sculp.	..	..	Hp.
010940	U Andr.	..	6 C	Hp.
011025	– Piscium	..	5 H	
011272	S Cass.	280	5.4M	Hg 3, Hd.
011208	S Piscium	163?	1.0C	Hg 2, Hgs.
011712	U Piscium	83	..	Hg 2.
*012233*a	R Sculp.	171	9 C	Hps.
012502	R Piscium	143	2.0C	Hg 2, Hd, Hgs.
013238	RU Andr.	108?	..	Hp, P.A. **11**, 340.
013338	Y Andr.	102	..	Hp.
014958	X Cass.	..	6 C	Hp, P.A. **4**, 421.
015254	U Persei	160	4.2M	P.A. **2**, 218, Hg 3.
015556	V Persei	..	..	P.A. **4**, 422.
015912	S Arietis	165	2 C	Hg 2.
020448	RV Andr.	..	5 M	
021056a	– Persei	..	..	Acad. St. Petersburg, 1895, I.
021024	R Arietis	91.5	0.9M	Hg 2, Hd.
021056b	– Persei	..	..	Acad. St. Petersburg, 1895, I.
021143a	W Andr.	..	4 N	Hp, P.A. **7**, 162, P. 47.
021143b	– Andr.	..	..	Hp.
021258	T Persei	..	5.6M	Hd.
021281	Z Cephei	..	..	Hp.
021403	o Ceti	125	3.8M	Hg 4, Hd, P.A. **3**, 166, 207, **6**, 127, Hg 5.
021556	RS Persei	..	7.4K	
021558	S Persei	..	4.8M	Hg 3, Hd.
022000	R Ceti	70	2.4C	Hg 1, Hd.
022150	RR Persei	180?	7.4G	Hamburg **8**, 21, P.A. **13**, 515, A.N. **169**, 281.
022260	S Horol.	..	..	
022426	R Fornacis	140?	7.5M	Cape **9**, 26 B.
022741	X Eridani	..	..	Cape **9**, 28 B.
022813	U Ceti	122	3 C	Hg 4, Hp, Hd.
022980	RR Cephei	..	7 H	Hp.
023133	R Triang.	119	3.9Y	P.A. **2**, 218, Hg 3.
023341	Z Persei	..	..	Hp.
024217	T Arietis	127	3.2C	Hp, Hg 4.
024356	W Persei	..	4.9Y	Hp, P.A. **4**, 422, Hg 4.
025050	R Horol.	176	5 I	Hp, Hps, Cape **9**, 30 B.
025751	T Horol.	113	4.1I	Hp, Cape **9**, 32 B.
025838	ρ Persei	..	4.6M	Hg 5.
030140	β Persei	..	0 C	Hg 5.
030514	U Arietis	..	..	Hg 2.
031401	X Ceti	96	..	Hp.
031646	RT Persei	..	2 G	Hp.
031919	– Arietis	..	..	A.N. **169**, 416.
032043	Y Persei	128	7.1G	Hp, Hg 4.
032335	R Persei	96	2.3C	Hg 3.
032443	Nova Per.	..	..	P.A. **9**, 192, 280, Hg, Hgs, P.A. **10**, 385, M.N. **62**, 594, A.N. **163**, 344.
032528	T Fornacis	42?	(5)I	Cape **9**, 35 B.
033362	U Camel.	..	8.2M	P.A. **4**, 373, Hg 4.
034124	S Fornacis	..	..	Hp.
034625	U Eridani	124?	..	Hp.
034930	X Persei	..	..	Hg 4.
035124	T Eridani	110	..	Hp.
035512	λ Tauri	..	0 C	Hg 5.
035727	RW Tauri	..	..	Hp.
035916	V Eridani	..	..	Hg 4.
040725	W Eridani	146?	..	Hp.
041619	T Tauri	..	0 C	Hg 2, M.R.A.S. **52**, 34.
042215	W Tauri	..	5 C	Hg 2.
042239	– Persei	..	..	E.M. **68**, 371.
042209	R Tauri	140?	4.5C	Hg 2, Hd.
042309	S Tauri	70?	2.5C	Hg 2, Hd.
043065	T Camel.	175	4.7M	Hg 3, P.A. **4**, 373.
043263	R Reticuli	..	..	Hp, Hps.
043274	X Camel.	..	..	Hp.
043562	R Doradus	100	7 C	Hps.
043738	R Caeli	173	..	Hp, Hps.
044349	R Pictoris	71	6.5I	Hps, Cape **9**, 37 B.
044617	V Tauri	82	5.5M	Hg 2.
044880	RS Cephei	..	..	Hp.
045221	U Leporis	..	(4)I	Cape **9**, 40 B, Hg 4.
045307	R Orionis	168	4.9C	Hg 2.
045443	ϵ Aurigae	..	2.8M	Hg 5.
045514	R Leporis	212	9.4M	Hg 4.
050001	W Orionis	..	..	Hg 5.
050022	T Leporis	..	7.8I	Hp, Cape **9**, 42 B.
050003	V Orionis	125	3.6Y	Hg 2, Hd, P.A. **2**, 218, P.A. **13**, 469.
050848	S Pictoris	..	6.9I	Cape **9**, 45 B.
050953	R Aurigae	235	5.6M	Hg 3, Hd, M.R.A.S. **52**, 50.
051247	– Pictoris	200	..	
051533	T Colum.	105	..	
052036	W Aurigae	..	..	Hp, P.A. **7**, 43, P.A. **14**, 120.
052034	S Aurigae	..	6.7C	Hg 3.
052142	Y Aurigae	..	..	Hg 4.
052404	S Orionis	194	6.4C	Hg 1, M.R.A.S. **52**, 54.
052530	T Aurigae	..	..	A.A. **11**, 249, E.M. **54**, 575.
*052705*a	– Orionis	..	..	A.N. **164**, 393.
*052804*a	– Orionis	..	..	A.N. **164**, 393.
*052904*a	– Orionis	..	..	A.N. **164**, 393.
*052904*b	– Orionis	..	..	A.N. **164**, 393.
*053005*c	– Orionis	..	..	A.N. **164**, 393.
053068	S Camel.	162	6.6M	Hg 3, P.A. **4**, 373.
*053005*d	– Orionis	..	..	A.N. **164**, 393.

Des.	Name.	M—m	Color.	Chart.
*053004*a	– Orionis	..	..	A.N. **164**, 393.
*053005*e	– Orionis	..	..	A.N. **164**, 393.
*053005*a	T Orionis	..	0 C	Hg 1.
*053005*h	– Orionis	..	..	A.N. **164**, 393.
*053104*a	– Orionis	..	..	A.N. **164**, 393.
*053106*f	– Orionis	..	..	A.N. **171**, 77.
*053105*b	– Orionis	..	..	A.N. **164**, 393.
*053206*b	– Orionis	..	..	A.N. **171**, 77.
053201	X Orionis	..	..	A.N. **165**, 30.
053326	RR Tauri	..	..	Hp.
053531	U Aurigae	..	8.0Y	Hg 3.
053604	Y Orionis	..	..	A.N. **164**, 393.
053920	Y Tauri	..	..	Hg 4.
054331	S Colum.	..	..	Hp.
054615b	RS Tauri	..	..	Hp, A.N. **166**, 260.
054615a	Z Tauri	..	..	Hp, A.N. **166**, 260.
054629	R Colum.	130	..	Hp, Hps.
054615c	RU Tauri	..	..	A.N. **166**, 260.
054974	V Camel.	..	..	Hp.
054907	α Orionis	..	7.3M	Hg 5.
054920	U Orionis	145	6.7M	Hg 2, Hd, P.A. **12**, 143.
055353	Z Aurigae	53	5 G	Hp, Hg 4.
055686	R Octan.	171	..	Hps.
060124	S Leporis	..	..	Hg 4.
060450	X Aurigae	72	..	P.A. **12**, 211, A.N. **164**, 193
060426	– Gemin.	..	8.5K	
060822	η Gemin.	151.4	5.0M	Hg 5.
061275	W Camel.	..	..	A.N. **168**, 12.
061647	V Aurigae	128	..	Hg 3.
061702	V Monoc.	160	3.4C	Hp, Hg 4.
061914	– Orionis	..	5 H	
061907	T Monoc.	7.93	2 C	P.A. **2**, 165, 166, Hg 4, Hg 5.
062742	RV Aurig.	..	8.1K	
062808	Z Monoc.	..	..	Hg 4.
062915	W Gemin.	..	..	Hg 4.
062938	– Aurigae	..	6 H	
063308	R Monoc.	..	0 C	Hp.
063558	S Lyncis	129	..	Hp, P.A. **6**, 118, A.N. 149, 169.
063730	NovaGem.	..	..	P.A. **11**, 259, 329, 330, 342, Hg.
064030	X Gemin.	..	..	Hp, P.A. **6**, 184.
064707	W Monoc.	..	6 C	Hp.
065111	Y Monoc.	100	..	Hp.
065208	X Monoc.	..	..	Hp, Hg 4.
065355	R Lyncis	186	3.6M	Hg 3, Hd.
065820	ζ Gemin.	5.0	2.3M	P.A. **2**, 166, Hg 5.
070122a	R Gemin.	121	5.8M	Hg 2, Hd, Hg s.
070122c	– Gemin.	..	..	Hg 2, Hd.
070109	V Ca. Min.	..	..	Hp.
070122b	Z Gemin.	..	..	Hg 2, Hd, A.J. **24**, 201.
070310	R Ca. Min.	130	2.8M	M.R.A.S. **52**, 64, Hg 4.
070772	R Volantis	230?	8.9I	Cape **9**, 47 B.
071044	L^2 Puppis	59	8 C	Hg 5, Hps.
071201	RR Mon.	..	..	Hp.
071416	R Ca. Maj.	..	0 C	Hg 5.
071531	RR Gemin.	0.05	1 G	
071713	V Gemin.	132	2.8C	Hg 2, M.R.A.S. **52**, 70.
072146	– Lyncis	..	7.8K	
072121	RU Gem.	..	..	A.N. **165**, 123, P.A. **12**, 422.
072609	U Monoc.	..	2.0M	Hg 4.
072708	S Ca. Min.	164	4.1C	Hg 2, Hd. M.R.A.S. **52**, 80.
072776	Y Camel.	..	..	Hp.
*072820*b	Z Puppis	..	6.8I	Hp, Cape **9**, 50 B.
072811	T Ca. Min.	..	2 C	Hg 2.
*072820*a	X Puppis	5.2	4.0I	Cape **9**, 53 B.
073173	S Volantis	..	6.1I	Cape **9**, 55 B.
073508	U Ca. Min.	175	5.1C	Hg 2, M.R.A.S. **52**, 88.
073723	S Gemin.	120?	3 C	Hg 2.
074241	W Puppis	54	..	
074323	T Gemin.	..	3.0C	Hg 2.
074341	RR Pup.	..	(0)I	Cape **9**, 57 B.
074922	U Gemin.	..	0.0C	Hp, Hg 2, P.A. **5**, 19, M.R. A.S. **52**, 94.
075548	V Puppis	..	..	Hg 5.
075612	U Puppis	..	4.0M	Hg 1, A.N. **147**, 312
075820	Y Cancri	..	..	A.N. **164**, 350.
080322	RU Pup.	..	..	Hg 4.
080934	RS Pup.	13.	6.1I	Cape **9**, 61 B.
081112	R Cancri	125	5.3C	Hg 2, Hd.
081617	V Cancri	116	4.3C	Hg 2, Hd.
082405	RT Hydr.	..	..	Hp, Hg 4.
082659	V Carinae	2.16	..	
083019	U Cancri	..	2.3C	Hg 2, M.R.A.S. **52**, 140
083350	X Ur. Maj.	..	..	Hp.
083447	T Velorum	1.40	..	
083409	RV Hydr.	..	..	Hg 4.
083819	S Cancri	..	1 C	Hg 4.
084127	R Pyxidis	..	6 C	Hp.
084803	S Hydrae	100	3.1M	Hg 2, Hd, P.A. **3**, 218.
084917	X Cancri	..	..	Hg 4.
085008	T Hydrae	..	1.8C	Hg 1, Hd.
085120	T Cancri	..	7.8M	Hp, Hg 4.
090024	S Pyxidis	..	0 I	Hp.
090151	V Ur. Maj.	..	2 G	P.A. **12**, 423, A.N. **165**, 66, Hg 4.
090425	W Cancri	..	..	Hp.
091955	V Velorum	0.97	..	
092551	Y Velorum	..	6.3I	Cape **9**, 65 B.
092728	S Antliae	..	0 C	

Des.	Name.	M—m	Color.	Chart.
092856	N Velor.	. .	2 C	Hg 5.
092962	R Carinae	136	5 C	Hg 5, Hps.
093014	X Hydrae	. .	..	Hp.
093178	Y Drac.	. .	..	Hp.
093656	W Ur. Maj.	. .	..	Hg 4.
093934	RLe. Min.	165	6.0C	Hg 3, Hd.
094023	RR Hydr.	. .	3.8I	Hp, Cape **9**, 68 B.
094211	R Leonis	144	7.2M	Hd, P.A. **5**, 85, Hg 4.
094262	l Carinae	13	..	Hg 5, Hps.
094622	Y Hydrae	. .	..	Hp, Hg 4.
094953	Z Velor.	. .	7 I	Cape **9**, 69 B.
095421	V Leonis	. .	1.7C	Hg 2.
095458	RR Carin.	. .	..	Hps.
095563	RV Carin.	. .	..	Cape **9**, 70 B.
100537	R Antliae	. .	..	Hps.
100661	S Carinae	86	5 C	Hps.
100860	U Ur. Maj.	. .	..	Hg 4.
101058	Z Carinae	. .	..	Hps.
101153	W Velor.	. .	7.5I	Cape **9**, 72 B.
101741	RR Velor.	. .	..	Cape **9**, 74 B.
102957	Y Carinae	1.07	..	
103212	U Hydrae	. .	7 C	Hg 5.
103769	R Ur. Maj.	110	4.4M	Hg 3, Hd, Hgs, M.R.A.S. **52**, 150.
104159	η Carinae	. .	5 C	Hg 5.
104628	RS Hydr.	. .	3.3I	Hp, Cape **9**, 80 B.
104620	V Hydrae	. .	9.1M	Hp, Hg 4.
104814	W Leonis	. .	1.1Y	Hg 2.
105359	U Carinae	5.5	..	
105517	R Crateris	. .	8.4M	
110506	S Leonis	93	0.0C	Hg 2.
111561	RY Carin.	. .	..	Cape **9**, 84 B.
111661	RS Cent.	70?	6.4I	Cape **9**, 84 B.
113972	Z Drac.	. .	..	Hp.
114232	Z Hydrae	. .	5.7I	Cape **9**, 86 B.
114441	X Centauri	140	..	
115058	W Cent.	90?	..	
115158	Z Ur. Maj.	. .	7.1K	
115609	X Virginis	. .	5.8Y	Hd.
115919	R Com. B.	120	4.0C	Hg 2, Hd, P. 60.
115905	RX Virg.	. .	..	Hp, Hg 4.
120206	RW Virg.	. .	..	Hp, Hg 4.
120769	S Muscae	3.45	..	
120905	T Virginis	153	4.1C	Hg 1, Hd, Hgs.
121418	R Corvi	. .	3.7C	Hg 1, Hd.
121561	T Crucis	2.07	..	
121861	R Crucis	1.40	..	
122001	SS Virg.	. .	..	A.N. **169**, 110.
122532	T Can. V.	. .	..	Hp, P.A. **5**, 270.
122854	U Centauri	105	..	Hps.
122803	Y Virginis	85	3.6C	A.N. **169**, 111, Hg 1, Hd, P.A. **2**, 418, P.A. **13**, 469.
123160	T Ur. Maj.	107.5	2.3M	Hg 3, Hd, Hgs.
123307	R Virginis	68.5	1.0M	Hp, Hd, Hg 4.
123459	RS Ur. Ma.	. .	..	Hp.
123556	Y Ur. Maj.	. .	8.0K	Hg 4.
123668	R Muscae	0.26	..	
123961	S Ur. Maj.	108	3.4M	Hp, Hg 3, Hd, M.R.A.S. **52**, 162, Hg 4.
124204	RU Virg.	156?	8.2G	Hp.
124606	U Virginis	88	1.1C	Hp, Hg 2, Hd, P.A. **9**, 148.
124857	S Crucis	1.49	..	
125705b	– Virginis	. .	..	Hp.
125705a	RT Virg.	. .	..	Hp, Hg 4.
130212	RV Virg.	. .	..	Hp.
131283	U Octantis	110	5 I	Cape **9**, 92 B.
132002	W Virg.	8.20	0.4C	Hg 4.
132202	V Virginis	. .	3.8M	Hg 1, Hd.
132422	R Hydrae	190	6.6M	Hp, Hd, Hg 4, Hg 5,
132706	S Virginis	157?	2.3M	Hg 1, Hd.
133273	T Ur. Min.	. .	..	Hp.
133633	T Centauri	46	6 I	Cape **9**, 94 B, Hps.
134236	RT Cent.	120	7.6I	Cape **9**, 97 B.
134327	W Hydrae	. .	8.7Y	
134440	R Can. V.	. .	3 N	Hg 3, Hd.
134536	RX Cent.	. .	4.0I	Cape **9**, 99 B.
134677	T Apodis	. .	5 I	Cape **9**, 101 B.
135576	θ Apodis	. .	..	Hg 5.
135908	RR Virg.	. .	..	Hg 1.
140113	Z Boötis	. .	..	Hp.
140512	Z Virginis	. .	..	Hg 1.
140528	RU Hydr.	. .	4.6I	Hp, Cape **9**, 103 B.
140959	R Centauri	167?	6 C	Hps.
140957	RR Cent.	0.15	..	
141549	T Lupi	. .	8.0I	Cape **9**, 105 B.
141954	S Boötis	132	2.4M	Hg 3, Hd.
141926	– Boötis	. .	7.3Y	
142205	RS Virg.	. .	0.3Y	Hp.
142584	R Camel.	142	2.5M	Hg 3, Hd.
142556	V Centauri	1.47	..	
142539	V Boötis	102	3.6C	Hp, Hg 4.
143017	RV Librae	. .	..	Hg 4.
143227	R Boötis	101.5	2.7C	Hg 3, Hd.
143417	V Librae	119	..	Hg 1.
144676	R Apodis	. .	..	Hg 5.
144646a	S Lupi	. .	..	Hps.
144918	U Boötis	95	2.7C	Hg 2.
145508	δ Librae	. .	1.8M	Hg 5.
150018	RT Librae	. .	..	Hp.
150519	T Librae	105	..	Hg 1.

Des.	Name.	M—m	Color.	Chart.
150605	Y Librae	. .	1.6Y	Hp.
151066	R Tr. Aus.	1.01	. .	Hps.
151432	U Cor. B.	. .	0.0C	Hg 4.
151520	S Librae	93	3.0C	Hg 1, Hd.
151714	S Serpent.	. .	4.1C	Hg 2, Hd.
151731	S Cor. B.	120	6.2M	Hg 3, Hd, M.R.A.S. **52**, 174, M.R.A.S. **55**, LVI.
151822	RS Librae	130?	. .	Hp.
152714	RU Librae	. .	. .	Hp.
152849	R Normae	. .	7.4I	Cape **9**, 107 B.
153020	X Librae	80	. .	Hg 1.
153215	W Librae	. .	. .	Hg 1.
153378	S Ur. Min.	153	7 C	Hp, P.A. **4**, 372, Hg 4.
153454	U Normae	6.0	7.0I	Cape **9**, 108 B.
153620	U Librae	. .	3.4C	Hg 1.
153654	T Normae	108	4.9I	Cape **9**, 110 B.
154020	Z Librae	. .	. .	Hg 1.
154428	R Cor. B.	. .	2.8M	Hg 3, Hd.
154536	X Cor. B.	. .	. .	Hp.
154639	V Cor. B.	171	5.8M	Hp, Hg 3, P.A. **12**, 496.
154615	R Serpent.	151	3.7C	Hg 2, P.A. **5**, 388.
154736	R Lupi	117?	. .	Hps.
154748	ST Herc.	. .	. .	Hg 4.
154715	R Librae	. .	2 C	Hp.
155018	RR Librae	. .	3 C	Hg 1.
155263	S Tr. Aus.	2.10	. .	
155429	U Lupi	. .	3.5I	Cape **9**, 113 B.
155862	U Tr. Aus.	0.63	. .	
155823	RZ Scorpii	75?	6 I	Hp, Cape **9**, 116 B.
155947	X Herculis	. .	5.2M	Hg 5.
160021	Z Scorpii	. .	. .	Hg 1.
160150	RR Herc.	. .	6.3Y	Hp, P.A. **4**, 423, Hg 4.
160118	R Herc.	. .	2.0C	Hg 2, Hd.
160210	U Serpent.	. .	. .	Hp.
*160221*a	X Scorpii	. .	. .	Hg 1.
160519	W Scorpii	130?	. .	Hg 1.
160524	RX Scorp.	. .	. .	Hp.
160625	RU Herc.	220	. .	Hp, P.A. **4**, 384, P. 74.
161057	S Normae	4.4	. .	
*161122*a	R Scorpii	. .	0.9C	Hg 1, Hd, M.R.A.S. **52**, 184, 194.
*161122*b	S Scorpii	. .	0 C	Hg 1, Hd, M.R.A.S. **52**, 184, 194.
161138	W Cor. B.	115	4.0G	Hp, Hamburg **8**, 28, P.A. **13**, 516.
161607	W Oph.	. .	6 C	Hp.
162112	V Oph.	176?	6.6C	Hp, Hg 4.
162119	U Herc.	171	7.2M	Hg 2, Hd, P.A. **5**, 389.
162319	Y Scorpii	. .	. .	Hp.
162542	g Herculis	. .	6.1M	Hg 5.
162807	SS Herc.	. .	. .	Hp.
162815	T Oph.	. .	. .	Hg 1.
162816	S Oph.	. .	1 C	Hg 1.
163031	ST Scorpii	. .	7.8I	Cape **9**, 117 B.
163172	R Ur. Min.	. .	3.2C	Hd, Hg 4.
163137	W Herc.	128	2.6M	Hg 3, Hd.
163266	R Drac.	108	2 M	Hg 3, Hd.
163432	SU Scorpii	. .	9.0I	
164055	S Drac.	. .	7.0Y	Hg 4.
164319	RR Oph.	. .	5.6I	Hp, Cape **9**, 119 B.
164715	S Herculis	152	5.6C	Hg 2, Hd.
164705	RX Oph.	. .	. .	A.N. **169**, 63.
164844	RS Scorpii	. .	6.2I	Cape **9**, 121 B, Hps.
164832	SS Scorpii	. .	7.7I	
165030	RR Scorpii	124	3.6M	Hps, P.A. **1**, 27.
165133	RV Scorpii	1.41	. .	
165312	Nova Oph.	. .	5 C	
165631	RV Herc.	85	. .	Hp, P.A. **5**, 326, P. 88.
165636	RT Scorpii	. .	. .	Hps.
170215	R Oph.	. .	4.5C	Hg 1, Hd.
170627	RT Herc.	. .	. .	Hp.
170833	RW Scorp.	. .	. .	Hps.
171014	α Herculis	. .	6.0M	Hg 5.
171101	U Oph.	. .	0 C	Hg 5.
171333	u Herculis	. .	2.8M	Hg 5.
171401	Z Oph.	168	3.0C	Hp.
171723	RS Herc.	. .	5.8Y	Hp.
172586	S Octantis	108	. .	Hps.
173543	RU Scorp.	167	. .	Hps.
174035	SX Scorp.	. .	. .	Cape **9**, 125 B.
174127	X Sag.	2.89	1.1M	Hg 5.
174135	SV Scorp.	. .	6 I	Cape **9**, 125 B.
174433	RY Scorp.	12	. .	
174406	RS Oph.	. .	. .	Hp.
174706	Y Oph.	6.22	. .	Hg 5.
175149	S Arae	. .	. .	Cape **9**, 128 B.
175111	RT Oph.	. .	3 G	Hp.
175315	Z Herculis	. .	. .	Hg 4.
175458	T Drac.	182	. .	Hp, P.A. **4**, 423, Hg 4.
175519	RY Herc.	100	2.5G	Hp, P.A. **8**, 45.
175654	V Drac.	155	. .	Hp.
175829	W Sag.	3.00	0.8M	Hg 5.
180122	RW Herc.	. .	. .	Hp.
180363	R Pavonis	109?	. .	Cape **9**, 130 B, Hps.
180531	T Herculis	79	1.8M	Hg 3, Hd.
180565	W Drac.	. .	. .	Hp.
180666	X Drac.	. .	. .	Hp.
181136	W Lyrae	. .	1.6Y	Hp, P.A. **5**, 327.
181518	Y Sag.	2.10	0 M	Hg 5.
182133	RV Sag.	. .	. .	Hps.

Des.	Name.	M—m.	Color.	Chart.
182200	d Serpent.	. .	. .	Hg 5.
182306	T Serpent.	. .	2.0C	Hp.
182612	RX Herc.	. .	. .	P.A. **6**, 581, Hg 4.
182619	U Sag.	2.97	4.2M	Hg 4.
182836	T Lyrae	. .	8.9Y	
183225	RZ Herc.	. .	. .	Hp.
183308	X Oph.	208	3.3M	Hp, Hg 4.
183443	Y Lyrae	. .	. .	Hp, P.A. **10**, 216, M.N. **62**, 201.
183437	U Cor. A.	77	. .	
183932	RZ Lyrae	. .	. .	P.A. **11**, 401.
184017	– Sag.	. .	. .	A.N. **166**, 43.
184008	T Aquilae	. .	3.3C	Hg 4.
184134	RY Lyrae	. .	. .	Hp, A.N. **169**, 215.
184236	SV Lyrae	. .	. .	A.N. **169**, 215.
184243	RW Lyrae	. .	. .	Hp, P.A. **11**, 101, A.N. **160**, 301.
184205	R Scuti	. .	5.0M	Hd, Hg 5.
184212	V Scuti	. .	. .	A.N. **166**, 44.
184408	S Scuti	. .	7.4Y	Hg 4.
184633	β Lyrae	. .	1.6M	P.A. **2**, 204, Hg 5.
184667	κ Pavonis	4.0	. .	Hg 5.
184831	– Lyrae	. .	. .	A.N. **169**, 215.
184812	U Scuti	. .	. .	Hg 4.
185036	SU Lyrae	. .	. .	A.N. **169**, 215.
185032	RX Lyrae	. .	1 G	Hp, P.A. **11**, 274, A.N. **161**, 305, A.N. **162**, 321, A.N. **169**, 215.
185129	SW Lyrae	. .	. .	A.N. **169**, 215.
185131	SX Lyrae	. .	. .	A.N. **169**, 215.
185134	– Lyrae	. .	. .	A.N. **169**, 215.
185132	– Lyrae	. .	. .	A.N. **169**, 215.
185233	– Lyrae	. .	. .	A.N. **169**, 215.
185243	R Lyrae	22.7	4.1M	Hg. 5.
185331	– Lyrae	. .	. .	A.N. **169**, 215.
185437	S Cor. A.	. .	. .	Cape **9**, 133 B, Hps.
*185537*a	R Cor. A.	. .	. .	Cape **9**, 133 B, Hps.
*185537*b	T Cor. A.	. .	. .	Cape **9**, 133 B, Hps.
185512	ST Sag.	. .	. .	Hp.
185634	Z Lyrae	. .	. .	Hp, A.N. **169**, 215.
185613	Nova Sag.	. .	. .	Hp, P.A. **7**, 266.
185604	Nova Aq.	. .	. .	A.N. **169**, 238.
185737	RT Lyrae	. .	3.2G	Hp, Hamburg **8**, 43, P.A. **13**, 516.
185830	– Lyrae	. .	. .	A.N. **169**, 215.
185905	V Aquilae	. .	7.1Y	Hg 4, Hg 5.
190134	– Lyrae	. .	. .	A.N. **169**, 215.
190108	R Aquilae	138	4.8M	Hg 2.
190129	– Lyrae	. .	. .	A.N. **169**, 215.
190231a	– Lyrae	. .	. .	A.N. **169**, 215.
190231b	– Lyrae	. .	. .	A.N. **169**, 215.
190333	– Lyrae	. .	. .	A.N. **169**, 215.
190334	– Lyrae	. .	. .	A.N. **169**, 215.
190430a	– Lyrae	. .	. .	A.N. **169**, 215.
190430b	– Lyrae	. .	. .	A.N. **169**, 215.
190431	– Lyrae	. .	. .	A.N. **169**, 215.
190529a	V Lyrae	1.39	. .	Hp, P.A. **6**, 355, A.P.J. **18**, 34, A.N. **169**, 215.
190529b	– Lyrae	. .	. .	A.N. **169**, 215.
190736	– Lyrae	. .	. .	A.N. **169**, 215.
*190819*a	RW Sag.	. .	. .	Hp.
190834	– Lyrae	. .	. .	A.N. **169**, 215.
*190819*b	– Sag.	. .	. .	Hp.
190818	RX Sag.	. .	. .	Hp.
190926	X Lyrae	. .	. .	E.M. **66**, 110, Hg 4.
190925	S Lyrae	225	. .	Hp, C. **33**, 104.
190941	RU Lyrae	. .	. .	Hp.
190933a	RS Lyrae	. .	. .	Hp, A.N. **169**, 215.
190967	U Drac.	. .	. .	Hp, P.A. **5**, 586.
190933b	– Lyrae	. .	. .	A.N. **169**, 215.
190904	– Aquilae	. .	. .	A.N. **167**, 352.
191007	W Aquilae	. .	7 C	Hp.
191033	RY Sag.	. .	3.5I	Cape **9**, 138 B.
191017	T Sag.	. .	6.5C	Hg 1.
191019	R Sag.	138	2.7M	Hg 1, Hd.
*191100*a	– Aquilae	. .	. .	A.N. **167**, 352.
*191100*b	– Aquilae	. .	. .	A.N. **167**, 352.
191232	RV Lyrae	. .	. .	Hp, P.A. **14**, 248, M.N. **66**, 114.
191350	TZ Cygni	. .	. .	Hp.
191319	S Sag.	102?	0 C	Hg 1, Hp.
191321	Z Sag.	226?	2 C	Hg 1.
191403	– Aquilae	. .	. .	A.N. **167**, 352.
191419	U Sagittae	. .	0 G	Hg 4.
191517a	W Sagittae	. .	. .	Hp.
191517b	– Sagittae	. .	. .	Hp.
191501	– Aquilae	. .	. .	A.N. **167**, 352.
191637	U Lyrae	. .	. .	Hp.
191600	– Aquilae	. .	. .	A.N. **167**, 352.
191717	T Sagittae	. .	6.6Y	Hp, Hg 4.
191703	– Aquilae	. .	. .	A.N. **167**, 352.
191700	– Aquilae	. .	. .	A.N. **167**, 352.
191700	– Aquilae	. .	. .	A.N. **167**, 352.
191805a	– Aquilae	. .	. .	A.N. **167**, 352.
191805b	– Aquilae	. .	. .	A.N. **167**, 352.
191801	– Aquilae	. .	. .	A.N. **167**, 352.
191903	– Aquilae	. .	. .	A.N. **167**, 352.
192002	– Aquilae	. .	. .	A.N. **167**, 352.
192105	– Aquilae	. .	. .	A.N. **167**, 352.
192242	RR Lyrae	. .	. .	Hg 4.

Des.	Name.	M—m	Color.	Chart.
192204	– Aquilae	. .	. .	A.N. **167**, 352.
192303	– Aquilae	. .	. .	A.N. **167**, 352.
192407	U Aquilae	2.18	0 M	Hg 5.
192403	– Aquilae	. .	. .	A.N. **167**, 352.
192501	– Aquilae	. .	. .	A.N. **167**, 352.
192602a	– Aquilae	. .	. .	A.N. **167**, 352.
192600a	– Aquilae	. .	. .	A.N. **167**, 352.
192602b	– Aquilae	. .	. .	A.N. **167**, 352.
192600b	– Aquilae	. .	. .	A.N. **167**, 352.
192701	– Aquilae	. .	. .	A.N. **167**, 352.
192710	SS Aquilae	. .	. .	A.N. **165**, 363.
192843	UV Cygni	. .	. .	Hg 4.
192802	– Aquilae	. .	. .	A.N. **167**, 352.
192801	– Aquilae	. .	. .	A.N. **167**, 352.
192803	– Aquilae	. .	. .	A.N. **167**, 352.
192804	– Aquilae	. .	. .	A.N. **167**, 352.
192928	TY Cygni	153	8 H	Hp.
192900	– Aquilae	. .	. .	A.N. **167**, 352.
193000	– Aquilae	. .	. .	A.N. **167**, 352.
193007	– Aquilae	. .	. .	A.N. **167**, 352, A.N. **165**, 363.
193003	– Aquilae	. .	. .	A.N. **167**, 352.
193103	SU Aquilae	. .	. .	A.N. **167**, 352.
193101	– Aquilae	. .	. .	A.N. **167**, 352.
193104	– Aquilae	. .	. .	A.N. **167**, 352.
193202	– Aquilae	. .	. .	A.N. **167**, 352.
193205	– Aquilae	. .	. .	A.N. **167**, 352.
193220	U Vulpec.	. .	. .	Hg 4.
193208	– Aquilae	. .	. .	A.N. **168**, 145.
193312	– Aquilae	. .	. .	A.N. **165**, 363.
193311	RT Aq.	. .	5.2M	Hp, A.N. **164**, 371.
193310	– Aquilae	. .	. .	A.N. **165**, 363.
193412	– Aquilae	. .	. .	A.N. **165**, 363.
193449	R Cygni	157	6.0M	Hg 3, Hd, P.A. **5**, 389, Hgs, M.R.A.S **52**, 204.
193410	– Aquilae	. .	. .	A.N. **165**, 363.
193411a	SV Aquilae	. .	. .	A.N. **165**, 363.
193411b	– Aquilae	. .	. .	A.N. **168**, 145.
193408	– Aquilae	. .	. .	A.N. **169**, 407.
193512	– Aquilae	. .	. .	A.N. **169**, 407.
193509	RV Aq.	. .	6 H	Hp, A.N. **165**, 363.
193607	– Aquilae	. .	. .	A.N. **165**, 363.
193732	TT Cygni	. .	. .	Hg 4.
193813	– Aquilae	. .	. .	A.N. **165**, 363.
193910	– Aquilae	. .	. .	A.N. **168**, 145.
193972	T Pavonis	. .	5 I	Cape **9**, 140 B, Hps.
193907	– Aquilae	. .	. .	A.N. **168**, 145.
194011	– Aquilae	. .	. .	A.N. **168**, 145.
194008	RX Aq.	. .	. .	A.N. **165**, 363.
194048	RT Cygni	88	4.7Y	Hp, Hg 4.
194029	SU Cygni	. .	. .	Hg 4.
194012	– Aquilae	. .	. .	A.N. **169**, 407.
194110a	– Aquilae	. .	. .	A.N. **165**, 363.
194110b	– Aquilae	. .	. .	A.N. **165**, 363.
194207	– Aquilae	. .	. .	A.N. **165**, 363.
194216	– Sagittae	. .	. .	A.N. **170**, 362.
194212	– Aquilae	. .	. .	A.N. **165**, 363.
194232	SY Cygni	. .	. .	Hp, P.A. **8**, 159, A.N. **151**, 223.
194208	– Aquilae	. .	. .	A.N. **168**, 145.
194219	– Vulpec.	. .	. .	A.N. **170**, 362.
194209a	– Aquilae	. .	. .	A.N. **165**, 363.
194209b	– Aquilae	. .	. .	A.N. **168**, 145.
194307	– Aquilae	. .	. .	A.N. **169**, 407.
194317	– Sagittae	. .	. .	A.N. **170**, 362.
194312	– Aquilae	. .	. .	A.N. **168**, 145.
194348	TU Cygni	. .	. .	Hp.
194311	RY Aq.	. .	. .	A.N. **165**, 363.
194418a	– Sagittae	. .	. .	A.N. **170**, 362.
194427	S Vulpec.	26.5	3.0C	Hg 4.
194418b	– Sagittae	. .	. .	A.N. **170**, 362.
194612a	SW Aq.	. .	. .	A.N. **165**, 363.
194618	– Sagittae	. .	. .	A.N. **170**, 362.
194612b	SX Aquilae	. .	. .	A.N. **165**, 363.
194617	– Sagittae	. .	. .	A.N. **170**, 364.
194604	X Aquilae	. .	3.1Y	Hp, P.A. **2**, 418.
194632	χ Cygni	171.5	6.5M	Hg 3, Hd, Hg 5.
194659	S Pavonis	150?	8.0I	Hps.
194615	– Aquilae	. .	. .	A.N. **170**, 364.
194716a	– Sagittae	. .	. .	A.N. **170**, 364.
194716b	– Sagittae	. .	. .	A.N. **170**, 364.
194700	η Aquilae	2.25	2.6M	P.A. **2**, 206, Hg 5.
194818	– Sagittae	. .	. .	A.N. **170**, 364.
194812	– Aquilae	. .	. .	A.N. **169**, 407.
194809	– Aquilae	. .	. .	A.N. **165**, 363.
194921	– Vulpec.	. .	. .	A.N. **170**, 364.
194917a	– Sagittae	. .	. .	A.N. **170**, 364.
194910a	– Aquilae	. .	. .	A.N. **165**, 363.
194912	– Aquilae	. .	. .	A.N. **168**, 145.
194917b	– Sagittae	. .	. .	A.N. **170**, 364.
194909	RZ Aquilae	. .	. .	A.N. **165**, 363.
194918	– Sagittae	. .	. .	A.N. **170**, 364.
194910b	– Aquilae	. .	. .	A.N. **168**, 145.
194907a	– Aquilae	. .	. .	A.N. **165**, 363.
194907b	– Aquilae	. .	. .	A.N. **165**, 363.
194908	– Aquilae	. .	. .	A.N. **169**, 407.
194929	RR Sag.	140?	. .	Hps, E.M. **62**, 290.
194917c	– Sagittae	. .	. .	A.N. **170**, 364.
195019a	– Vulpec.	. .	. .	A.N. **170**, 364.
195020a	– Vulpec.	. .	. .	A.N. **170**, 364.

Des.	Name.	M—m.	Color.	Chart.
195019b	– Sagittae	. .	. .	A.N. **170**, 364.
195020b	– Vulpec.	. .	. .	A.N. **170**, 364.
195018	– Sagittae	. .	. .	A.N. **170**, 364.
195019c	– Sagittae	. .	. .	A.N. **170**, 364.
195121	– Vulpec.	. .	. .	A.N. **170**, 364.
195115	– Aquilae	. .	. .	A.N. **170**, 364.
195116	S Sagittae	3.40	0.3M	P.A. **2**, 207, Hg 5.
195120	– Vulpec.	. .	. .	A.N. **170**, 364.
195142	RU Sag.	101	. .	Hps.
195217	– Sagittae	. .	. .	A.N. **170**, 364.
195219a	– Sagittae	. .	. .	A.N. **170**, 364.
195202	RR Aq.	. .	6 C	Hp.
195218	– Sagittae	. .	. .	A.N. **170**, 364.
195219b	– Sagittae	. .	. .	A.N. **170**, 364.
195315	– Sagittae	. .	. .	A.N. **170**, 364.
195317a	– Sagittae	. .	. .	A.N. **170**, 364.
195317b	– Sagittae	. .	. .	A.N. **170**, 364.
195322	– Vulpec.	. .	. .	A.N. **170**, 364.
195308	RS Aq.	. .	. .	Hp.
195316	– Sagittae	. .	. .	A.N. **170**, 364.
195416	– Sagittae	. .	. .	A.N. **170**, 364.
195417	– Sagittae	. .	. .	A.N. **170**, 364.
195622	– Vulpec.	. .	. .	A.N. **170**, 364.
195717	– Sagittae	. .	. .	A.N. **170**, 364.
195716	– Sagittae	. .	. .	A.N. **170**, 364.
195849	Z Cygni	125?	5.3M	Hg 3.
195818	– Sagittae	. .	. .	A.N. **170**, 364.
195816	– Sagittae	. .	. .	A.N. **170**, 364.
195916	– Sagittae	. .	. .	A.N. **170**, 364.
195921a	– Vulpec.	. .	. .	A.N. **170**, 364.
195921b	– Vulpec.	. .	. .	A.N. **170**, 364.
200019	– Sagittae	. .	. .	A.N. **170**, 364.
200020	– Sagittae	. .	. .	A.N. **170**, 364.
200158	XX Cygni	. .	. .	A.P.J. **23**, 85, A.N. **170**, 369.
200121	– Vulpec.	. .	. .	A.N. **170**, 364.
200119	– Sagittae	. .	. .	A.N. **170**, 364.
200218	– Sagittae	. .	. .	A.N. **170**, 364.
200217	– Sagittae	. .	. .	A.N. **170**, 364.
200322	– Vulpec.	. .	. .	A.N. **170**, 364.
200357	S Cygni	163	5.1C	Hp, M.R.A.S. **52**, 210, P. 118.
200346	SW Cygni	. .	. .	P.A. **7**, 380.
200514	R Cap.	. .	4 C	Hg 1, Hp.
200525	W Vulpec.	. .	7.7K	Hg 4.
200617	– Sagittae	. .	. .	A.N. **170**, 364.
200647	SV Cygni	. .	. .	Hp, Hg 4.
200619	– Sagittae	. .	. .	A.N. **170**, 364.
200715a	S Aquilae	72	0.8C	Hp, M.R.A.S. **52**, 226, Hg 4.
200720	– Sagittae	. .	. .	A.N. **170**, 364.
200715b	RW Aq.	. .	. .	Hg 4.
200747	R Teles.	. .	. .	Hps.
200747	RX Cygni	. .	0.0Y	
200812	RU Aq.	. .	8 H	Hp, P.A. **7**, 265.
200821	– Sagittae	. .	. .	A.N. **170**, 364.
200844	RZ Sag.	89?	6.5I	Cape **9**, 143 B.
200822	W Cap.	87?	. .	Hg 1.
200916	R Sagittae	17.0	0.6M	Hg 4.
200938	RS Cygni	. .	10.2Y	Hp, Hd, Hg 4.
200906	Z Aquilae	65	. .	Hp.
201008	R Delphini	130?	2.4M	Hg 2, Hd.
201139	RT Sag.	130?	. .	Hps.
201121	RT Cap.	. .	9 H	Hg 4.
201134	VW Cygni	. .	. .	Hp, P.A. **14**, 248, M.N. **66**, 119.
201130	SX Cygni	175	. .	Hp, P. 134.
201437a	P Cygni	. .	3.3M	
201437b	WX Cygni	. .	7.5M	Hp.
201520	V Sagittae	. .	. .	Hp.
201647	U Cygni	229	8.8M	Hp, Hd, M.R.A.S. **52**, 244, Hg 4.
201942	UW Cygni	. .	. .	Hp.
202539	RW Cygni	. .	6.0Y	Hg 4.
202622	RU Cap.	. .	(4)I	Hp, Cape **9**, 145 B.
202817	Z Delphini	. .	2.7G	Hp, Hamburg **8**, 45, P.A. **13**, 517.
202946	SZ Cygni	. .	. .	Hp, A.N. **152**, 77, Hg 4.
202954	ST Cygni	. .	5.5M	Hp, P.A. **6**, 248, 304.
203223	– Vulpec.	. .	. .	A.N. **166**, 72.
203226	V Vulpec.	. .	6.3K	Hg 4.
203222	– Vulpec.	. .	. .	A.N. **166**, 72.
203225	– Vulpec.	. .	. .	A.N. **166**, 72.
203317	W Delph.	. .	3 G	Hp, P.A. **3**, 375.
203429	R Micros.	64	. .	Hps.
203422	– Vulpec.	. .	. .	A.N. **166**, 235.
203423	– Vulpec.	. .	. .	A.N. **166**, 72,
203526	– Vulpec.	. .	. .	A.N. **166**, 72,
203611	Y Delph.	. .	2 G	Hp, Hamburg **8**, 47, P.A. **13**, 517.
203726	– Vulpec.	. .	. .	A.N. **166**, 72,
203847	V Cygni	220	8.6M	Hg 3, Hd.
203816	S Delph.	118	6.0C	Hg 2.
203905	Y Aquar.	. .	. .	Hp.
203935	X Cygni	6.8	0.2M	P.A. **2**, 218, Hg 5.
204016	T Delph.	. .	2.0C	Hg 2, M.R.A.S. **52**, 258.
204017	U Delph.	. .	7 C	Hg 4.
204104	W Aquar.	. .	. .	Hp.
204102	V Aquar.	. .	1.6M	Hp, Hg 4.
204244	RR Cygni	. .	6.0Y	
204215	U Cap.	. .	. .	Hg 1.

Des.	Name.	M—m	Color.	Chart.
204334	T Cygni	. .	1.2M	
204318	V Delph.	166	..	Hp, P. 147.
204405	T Aquarii	88	1.2C	Hg 1, Hd.
204727	T Vulpec.	1.41	0 M	Hg 5.
204834	Y Cygni	. .	0 C	Hg 4.
204846	RZ Cygni	. .	..	Hp, A.N. **149**, 1.
204954	S Indi	. .	6.5I	Cape **9**, 147 B, Hps.
205017	X Delph.	. .	..	Hp.
205030a	UX Cygni	. .	..	Hp.
205126	– Vulpec.	. .	..	A.N. **166**, 72.
205230	UY Cygni	. .	..	M.N. **63**, 305.
205223	– Vulpec.	. .	..	A.N. **166**, 72.
205327	– Vulpec.	. .	..	A.N. **166**, 72.
205325	– Vulpec.	. .	..	A.N. **166**, 72.
205339	VX Cygni	. .	..	Hg 4.
205627	RR Cap.	. .	..	Cape **9**, 149 B.
205642	TX Cygni	. .	..	Hg 4.
205782	T Octantis	55	..	Hps.
205923	R Vulpec.	62.0	5.2M	Hg 2, Hd, M.R.A.S. **52**, 274.
210039	VY Cygni	. .	..	Hg 4.
210116	RS Cap.	. .	..	Hg 4.
210129	TW Cygni	. .	..	Hp.
210124	V Cap.	. .	5 H	Hg 1.
210245	VV Cygni	. .	..	Hp.
210221	X Cap.	117?	..	Hg 1.
210382	X Cephei	250?	..	Hp, P.A. **7**, 494.
210516	Z Cap.	. .	..	Hp.
210504	RS Aquar.	. .	..	Hp, P.A. **7**, 321.
210868	T Cephei	208	5.2M	Hd, M.R.A.S. **52**, 298, Hg 4.
210812	R Equul.	. .	..	Hp.
210903	RR Aquar.	. .	..	Hp.
211614	X Pegasi	. .	5 H	Hp.
211615	T Cap.	149	2 C	Hg 1.
212030	S Micros.	80?	6.8I	Cape **9**, 151 B.
212814	Y Cap.	. .	..	Hg 1.
213244	W Cygni	70.0	6.0M	Hg 5.
213678	S Cephei	267	8.8M	Hg 3, Hd.
213753	RU Cygni	. .	6.1M	P.A. **4**, 423, Hg 4.
213742	Q Cygni	. .	3 C	Copernicus **2**, 134.
213843	SS Cygni	. .	3 H	Hp, Hd, P.A. **4**, 423.
213937	RV Cygni	. .	9.7Y	Hg 4.
214024	RR Pegasi	. .	..	Hp.
214058	μ Cephei	. .	7.0M	Hg 5.
214247	R Gruis	. .	..	Hps.
214742	VZ Cygni	. .	..	Hg 4.
215543	UZ Cygni	. .	..	Hp, P.A. **12**, 424, A.N. **165**, 122.
215605	V Pegasi	115?	..	Hp.
215717	U Aquarii	. .	..	Hg 1.
215934	RT Pegasi	. .	1 G	Hp.
220412	T Pegasi	. .	3.6M	Hg 2.
220613	Y Pegasi	. .	2.2G	Hp, Hamburg **8**, 33, P.A. **13**, 515, P.A. **10**, 386.
220714	RS Pegasi	. .	..	Hp, Hamburg **8**, 33, P.A. **13**, 515, P.A. **10**, 386, A.N. **159**, 61.
220912	RU Pegasi	. .	..	A.N. **170**, 95.
221230	R Piscis A.	. .	..	Hp, Hps.
221321	X Aquarii	. .	..	Hp.
221722	RT Aquar.	. .	..	Hp.
221733	T Lacertae	. .	..	Hp.
221938	T Gruis	64	..	Hps.
221948	S Gruis	150?	6.5I	Cape **9**, 153 B, Hps.
222129	RV Pegasi	. .	..	A.N. **166**, 268.
222439	S Lacertae	. .	..	Hg 3, P.A. **5**, 437.
222557	δ Cephei	. .	2.7M	Hg 5.
222867	R Indi	75?	5 I	Hp, Hps, Cape **9**, 155 B.
223257	W Cephei	. .	3.4Y	P.A. **4**, 423.
223462	T Tucanae	. .	..	A.N. **166**, 91.
223841	R Lacertae	. .	1.8M	Hg 3.
224354	U Lacertae	. .	7.2M	Hp, Hg 4.
224455	V Lacertae	. .	..	Hg 4.
225120	S Aquarii	. .	2.0M	Hg 1, Hd.
225827	β Pegasi	. .	4.3M	Hg 5.
225914	RW Peg.	. .	..	Hp.
230110	R Pegasi	172?	4 C	Hg 2, Hd, P.A. **5**, 388.
230759	V Cass.	107	3.9M	Hp, P.A. **2**, 218.
231425	W Pegasi	. .	8 H	Hp, Hg 4, A.S.P. **10**, 23.
231508	S Pegasi	138	2.4M	Hg 2, Hd.
231917	RU Aquar.	. .	..	Hg 4.
233335	– Andr.	. .	..	Hp.
233815	R Aquarii	. .	4.3C	Hg 1, Hd.
233956	Z Cass.	. .	..	Hp, P.A. **7**, 94, 160, P. 162.
234716	Z Aquarii	. .	6 H	Hp, Hg 4.
235048	RS Andr.	. .	..	Hg 4.
235053	RR Cass.	158?	3.3M	Hp, Hamburg **8**, 53, P.A. **13**, 516.
235150	R Phoen.	137?	5.8I	Cape **9**, 158 B, Hps.
235182	V Cephei	. .	1.1Y	P.A. **4**, 372.
235265	R Tuc.	. .	..	Hps.
235209	V Ceti	. .	..	Hg 1.
235215	U Pegasi	. .	0 C	P.A. **3**, 215, 403, Hg 4.
235350	R Cass.	182	6.5C	Hp, Hd, Hg 4.
235357	S Phoen.	. .	6.0I	
235525	Z Pegasi	. .	..	Hp.
235715	W Ceti	. .	3 H	Hp.
235855	Y Cass.	160	..	Hp, P.A. **6**, 118, P. 176.
235943	– Andr.	. .	..	Hp.

REMARKS.

001755. 7c.3, C., 6c.8, Y., 6c.0, N.
001838. 5c.0, C., 1c.1, Y.
003455. 6c.7, O., 5c, C.
004047. 6c, C., 1c.8, Y.
011272. 6c.7, C., 5c.9, Y., 3c.5, N.
015254. 5c.2, Y., 3c.3, N.
020448. 8c.0, K., 2c, N.
021024. 1c.8, C., 0c.0, Y.
021258. 7c.3, Y., 4c, C.
021403. 5c.9 C., 1c.6, Y. Osthoff estimated the color as 6.6 when the star was at maximum, magn. 4, and found an increase of 0c.8 when the star was decreasing from magn. 4 to 5, an increase of 1c.3, when decreasing from magn. 5 to 6, of 1c.4 from magn. 6 to 7, and of 2c.9 from magn. 7 to 8.
021558. 5c.0, C., 4c.5, N.
022426. 9c.0, I., 6c, Y.
025050. 5c at maximum, 8c at minimum, I.
025838. 7c.1, O., 2c, C.
030140. At normal light, 1c.92; at minimum, 3c.61, O.
033362. 8c.4, Y., 8c, H.
034930. Color G W, Potsdam, which equals 3c.8 on Osthoff's scale.
043065. 6c, N., 3c.4, Y.
044617. 7c.7, Y., 3c.3, C.
045443. 1c, C., 4c.6, O.
045514. 9c.5, Y., 9c.4, C.
050953. 6c.5, C., 4c.8, N.
053068. 8c.0, Y., 5c.1, N.
054907. 9c.3, Y., 6c.6, O., 6c, C.
054920. 7c, C., 6c.4, Y.
060822. 7c.1, O., 3c, C.
065355. 4c.8, C., 2c.5, N.
065820. 4c.9, O., 2c, C., 0c.0, Y.
070122a. 5c.8, Y., 5c.7, C.
070310. 5c.5, C., 0c.0, Y.
072609. 3c, C., 1c.0, Y.
*072820*a. Color 4.0 when star was magn. 8.0, and color increasing to 7.2 as the star decreased to magn. 8.9, I.
075612. 4c.9, Y., 3c.2, C.
084803. 4c.1, Y., 2c.1, C.
084917. Color R, Potsdam, which equals 8c.8 on Osthoff's scale.
085120. 8c.2, Y., 7c.4, C.
093934. 3c.5 at maximum, 5c at minimum, N.
094211. 7c.6, Y., 6c.9, C.
103769. 8c.0, O., 3c.7, Y., 1c.6, C.
104620. 9c.2, Y., 9c, C.
105517. 8c.7, Y., 8c.1, C.
123160. 3c.3, Y., 2c.0 C., 1c.6 N.
123307. 1c.3, C., 0c.7, Y.
123961. 4c, N., 3c.2, C., 3c.1, Y.
132202. 4c.9, Y., 2c.7, C.
132422. 7c.3, Y., 5c.9, C.
132706. 2c.6, C., 2c.0, Y.
134236. 7c.6 to 8c.9, I.
141954. 2c.8, C., 2c, N.
142584. 3c.0, Y., 2c.5, N., 2c.1, C.
145508. 2c.6, O., 1c, C.
151731. 8c.3, O., 5c.5, Y., 4c.9, C.
152849. 7c.4 to 7c.9, I.
154428. 5c.1, O., 0c.5 C.
154639. 5c.9, C., 5c.8, Y.
155947. 7c, C., 3c.3, Y.
162119. 7c.9, Y., 6c.5, C.
162542. 7c.8, O., 7c.4, K., 3c, C.
163137. 3c.2, C., 2c, N.
163266. 2c.0, C., 2c, N.
164844. 6c.2 to 7c.7, I.
165030. 6c, C., 1c.2, Y.
170114. 7c.1, O., 5c, C.
171333. 4c, C., 1c.7, O.
174127. 1c.2, Y., 1c, C.
175829. 1c, C., 0c.6, Y.
180531. 2c.3, Y., 1c.4, C.
181518. 0c.0, Y., 0c, C.
182200. Color W G, Potsdam, which equals 5.6 on Osthoff's scale.
182619. 4c.6, Y., 3c.7, C. Innes found the color to be 4c.3, from magn. 7.0 to 7.5, and 6c.0 from magn. 7.6 to 8.0.
183308. 5c, C., 1c.6, Y.
184205. 7c.3, O., 4c, C., 3c.7, Y.
184633. 3c.1, O., 1c, C., 0c.6, Y.
185243. 6c.7, O., 4c, C., 1c.6, Y.
190108. 6c.0, N., 5c.5, C., 3c.0, Y.
191033. 3c.5 to 5c.5, I.
191019. 3c.6, C., 1c.8, Y.
192307. 0c.0, Y., 0c, C.
193220. Color G, Potsdam, which equals 6.7 on Osthoff's scale.
193311. 6c.5, G., 4c, H.
193449. 6c.0, C.. 6c, N.
194029. Color W G —, Potsdam, which equals 5.2 on Osthoff's scale.
194632. 7c.2, O., 6c.5, C., 5c.7, N.
194700. 5c.1, O., 2c, C., 0c.7, Y.
195116. 0c, C., 0c.6, Y.
195849. 8c.1, Y., 2c.5, N.
200916. 0c.8, C., 0c.5, Y.
201008. 4c.0, C., 0c.7, Y.
201437a. 4c.6, O., 2c, C.
201437b. 8c.0, K., 7c, H.
201647. 9c.3, C., 8c.4, Y.
202954. 8c, H., 3c. N.
203847. 9c.0, Y., 8c.3, C.
203935. 0c.3, Y., 0c C.
204102. 3c, H., 0c.2, Y.
204334. 1c.3, Y., 1c, C.
204727. 0c.0, Y., 0c, C.
205923. 8c.4, Y., 2c.0, C.
210868. 6c.3, C., 4c, N.
213244. 7c.8, O., 4c.1, Y.

213678. 9c.1, C., 9c.0, Y., 8c.3, N
213753. 6c.2, Y., 6c, H.
214058. 8c.0, O., 6c.8, Y., 6c.2, C.
220412. 4c.1, G., 3c, C.
222557. 4c.7, O., 2c, C., 1c.5, Y.
223841. 3c.5, N., 1c.8, C., 0c.0, Y.
224354. 8c.1, K., 6c.3, G.
225120. 4c.0. C., 0c.0, Y.
225827. 6c.6, O., 2c, C.
230759. 6c, H., 1c.8, Y.
231508. 3c.0, Y., 1c.7, C.
235053. 5c, H., 1c.6, G.

O, as an abbreviation for Osthoff, appears in the Remarks, but not in the table.

The conditions under which a star is accepted by the Committee on Variable Stars of the Astronomische Gesellschaft as truly variable, and a final name assigned to it, have recently been explained in A. N. 171, 347. Still, it will be noticed that no name has yet been assigned to the long period variable star, *005475*, —Tucanae, which was announced to be variable in Harvard Circular 32, published in 1898, and for which the magnitudes at maximum and minimum, the period, and the epoch were given in the Provisional Catalogue of Variable Stars, Harvard Annals 48, 96, published in 1903. The same may be said of the star, *051247*, —Pictoris, except that the period and epoch were published in the Second Supplement to the Provisional Catalogue of Variable Stars, Harvard Annals 53, 146. Numerous stars which have been known for several years to vary irregularly, as may be seen from the present catalogue, are still without names, while such doubtful objects as V Piscium, RU Cassiopeiae, RT Tauri, RS Tauri, and Z Geminorum have received final names.

A large number of new variable stars have been discovered and announced since Table I was in print. All those which have come to the knowledge of the writer up to January 1, 1907, are appended in Table VI. The variable star 052504, —Orionis, 280.1904, accidentally omitted in Table I, is also included.

A number of stars, whose spectra are of the fourth type, have been observed by Professor O. C. Wendell with the polarizing photometer attached to the 15-inch telescope of this Observatory. This photometer gives results in which the accidental errors are very small. The probable error of one measure, consisting of sixteen settings, does not exceed ± 0.03 magn. Accordingly, changes too small to be detected by ordinary methods have been found in several stars. These changes, however, appear to be real, and due to variation in the star, and not to errors of observation. Accordingly, these stars are included in Table VI. The range of the observations is given in the Remarks following the table, but as this includes the errors of observation, the actual variation is probably less by at least one tenth of a magnitude. Three of these stars have already been announced as variables by visual observers, but no certain confirmation of them has

hitherto been published. Two others were found, by Mrs. Fleming in 1905, to show changes on the Harvard photographs, but were reserved for announcement until more positive evidence of variability was obtained. These facts are referred to in the Remarks following the table. The form of Table VI is similar to that of Table I. The values given in the first column of this table and of Table I, for the designations of variable stars, are found by taking the hour and minute of right ascension and the degree of declination, after first reducing the position for 1900 to the nearest tenth of a minute of right ascension and to the nearest minute of declination.

TABLE VI.

SUPPLEMENTARY LIST.

Des.	Name	DM.	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. *m.*	° ′			*d.*						
000773	RV Cephei	..	0 7.8	+73 18	*10.8*	*13*	282	....	II	..	32	1906	L. Ceraski
001828	– Andromedae	54	18.4	+28 51	*8.7*	*9.9*	0.4	2410000	IV	A	..	1906	Cannon
002235	– Andromedae	*56*	22.2	+35 2	..	..	...	....	..	N	..	1906	Wendell
010884	RU Cephei	19	1 8.1	+84 36	*9.3*	*10.5*	...	....	..	..	31	1906	L. Ceraski
011041	– Andromedae	..	10.4	+41 12	*8.0*	*13.0*	...	....	II?	Md	..	1906	Fleming
012607a	– Piscium	227	26.1	+ 7 59	*9.0*	*9.7*	...	....	..	..	..	1906	Perrine
012607b	– Piscium	228	26.4	+ 7 46	*9.0*	*10.5*	...	....	..	..	..	1906	Perrine
012700	– Ceti	249	27.0	+ 0 49	8.3	9.0	...	....	..	..	122	1906	Oppolzer
023947	– Persei	692	2 39.0	+47 43	..	..	...	....	V	..	120	1906	L. Ceraski
023969	RZ Cass.	179	39.9	+69 13	6.4	7.8	1.1 +	2517355	V	..	77	1906	Müller
024368	– Cassiopeiae	200	43.0	+68 28	..	..	2	....	IV	F	..	1906	M. and K.
034432	RX Persei	..	3 44.8	+32 43	*10.8*	<*12.5*	270?	2416902	II	..	35	1906	L. Ceraski
034725	– Tauri	..	47.0	+25 15	*12.0*	*15.0*	...	....	..	..	..	1906	Leavitt
041342	RW Persei	851	4 13.3	+42 4	8.8	11.0	13.1 +	2410000	V	..	29	1906	Enebo
042257	– Camelopardi	806	22.4	+57 11	*7.8*	*9.5*	...	....	..	Md	..	1906	Fleming
045439	RX Aurigae	1138	54.5	+39 49	7.2	8.1	12.0 +	2415129	IV	..	33	1906	Williams
050130	RW Aurigae	792	5 1.3	+30 16	*10.0*	*12.2*	...	....	..	..	27	1906	L. Ceraski
052403	– Orionis	..	24.0	– 3 39	*12*	*13.5*	...	....	..	..	36	1906	Wolf
052504	– Orionis	949	25.1	+ 4 7	..	..	...	....	..	..	280	1904	Fleming
052603	– Orionis	..	26.1	– 3 28	*12.0*	*13.4*	...	....	..	..	..	1906	Leavitt
053009	– Orionis	..	30.2	– 9 33	*11.5*	<*14*	...	....	..	..	37	1906	Wolf
053004	– Orionis	..	30.7	– 4 50	*14.0*	*14.6*	...	....	..	..	..	1906	Leavitt
053805	– Orionis	..	38.7	– 5 7	*12*	*13.5*	...	....	..	..	38	1906	Wolf
054705	– Orionis	..	47.2	– 5 27	*10.5*	*14.5*	...	....	..	..	39	1906	Wolf
055523	RW Gemin.	1151	55.4	+23 8	9.6	11.0	2.8 +	2417262	V	..	30	1906	Wolf
062564	RT Camelop.	..	6 25.5	+64 9	*9.7*	<*12.5*	330?	2417073	II?	..	34	1906	L. Ceraski
063531	– Geminorum	3188	35.7	+31 33	..	..	...	....	..	N	..	1906	Wendell
065326	– Geminorum	1412	53.3	+26 11	9.1	9.5	...	....	..	..	40	1906	Enebo
073102	– Canis Minoris	1715	7 31.2	+ 2 17	..	..	...	....	..	N	..	1906	Wendell
091151	– UrsaeMajoris	*1378*	9 11.5	+51 50	*11.1*	*11.9*	...	....	..	..	..	1906	Wells
092673	– Carinae	..	26.5	–73 6	*9.0*	<*10.0*	...	....	..	..	..	1906	Leavitt
094501	– Sextantis	2312	45.9	– 1 33	..	..	...	....	..	N	..	1906	Wendell
101259	– Carinae	2007	10 12.5	–59 43	*9.2*	*10.3*	...	....	V?	..	..	1906	Leavitt
101659	– Carinae	2059	16.9	–59 57	*9.8*	*10.5*	...	....	..	..	..	1906	Leavitt

Des.	Name.	DM.	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. *m.*	° ′			*d.*						
101761	– Carinae	..	10 17.3	–61 14	*12.8*	*15.5*	...	....	..	..	55	1906	Leavitt
101860	– Carinae	..	18.4	–60 39	*13.5*	*14.5*	...	....	..	..	56	1906	Leavitt
102359	– Carinae	2135	23.2	–59 10	*9.4*	*10.3*	...	....	..	..	..	1906	Leavitt
102458	– Carinae	2234	24.6	–58 50	*8.8*	*9.6*	...	....	..	..	57	1906	Leavitt
102557	– Carinae	*3425*	25.4	–57 6	*8.0*	*9.0*	...	....	..	..	..	1906	Leavitt
102861	– Carinae	1705	28.5	–61 16	*8.8*	*9.8*	...	....	..	..	..	1906	Leavitt
103057	– Carinae	..	30.8	–57 30	*13.5*	*14.0*	...	....	..	..	58	1906	Leavitt
103160	– Carinae	..	31.3	–60 12	*13.6*	*16.0*	...	....	..	..	59	1906	Leavitt
103158	– Carinae	..	31.6	–58 35	*12.0*	*13.3*	...	....	..	..	60	1906	Leavitt
103260	– Carinae	2033	32.6	–60 30	*8.6*	*9.8*	...	....	..	..	61	1906	Leavitt
103261	– Carinae	..	32.8	–61 40	*12.7*	*13.3*	...	....	..	..	62	1906	Leavitt
103358	– Carinae	..	33.7	–58 29	*12.8*	*13.6*	...	....	..	..	63	1906	Leavitt
103560	– Carinae	..	35.1	–60 19	*11.9*	*14.2*	...	....	..	..	64	1906	Leavitt
103867	– UrsaeMajoris	*617*	38.1	+67 56	..	..	...	....	..	N	..	1906	Wendell
*104057*a	– Carinae	3737	40.6	–57 3	*8.0*	*8.9*	...	....	..	..	65	1906	Leavitt
104055	– Velorum	3800	40.9	–55 46	*8.4*	*9.4*	...	....	..	..	..	1906	Leavitt
*104057*b	– Carinae	..	40.9	–57 46	*13.0*	*13.9*	...	....	..	..	66	1906	Leavitt
104265	– Carinae	*1475*	42.5	–65 5	*8.4*	*9.6*	...	....	..	N	..	1906	Fleming
104460	– Carinae	..	44.5	–60 8	*12.5*	*13.1*	...	....	..	..	67	1906	Leavitt
104459	– Carinae	..	44.9	–59 32	*13.0*	*13.9*	...	....	..	..	68	1906	Leavitt
104758	– Carinae	2797	47.6	–58 51	*9.2*	*10.0*	...	....	..	..	69	1906	Leavitt
104860	– Carinae	..	48.6	–60 0	*10.6*	*11.4*	...	....	..	..	70	1906	Leavitt
104960	– Carinae	..	49.0	–60 8	*13.6*	*14.3*	...	....	..	..	71	1906	Leavitt
105061	– Carinae	1955	50.2	–61 30	*9.0*	*9.7*	...	....	..	..	..	1906	Leavitt
105158	– Carinae	..	51.0	–58 31	*11.7*	*13.7*	...	....	..	..	72	1906	Leavitt
105364	– Carinae	1564	53.4	–64 36	*9.0*	*10.0*	...	....	..	..	..	1906	Leavitt
105461	SS Carinae	..	54.2	–61 23	*12.2*	*12.8*	3.3 +	2410001	V	..	73	1906	Leavitt
105458	– Carinae	..	54.8	–58 33	*10.7*	*13.0*	...	....	..	..	74	1906	Leavitt
105657	– Carinae	..	56.3	–57 51	*13.8*	*14.5*	...	....	..	..	75	1906	Leavitt
105658	– Carinae	..	56.7	–58 16	*14.0*	*15.0*	...	....	..	..	76	1906	Leavitt
105853	Nova Velorum	..	58.3	–53 51	*9.7*	<*15*	...	....	I	..	..	1906	Leavitt
105863	– Carinae	1798	58.3	–63 43	*9.3*	*10.0*	...	....	..	..	..	1906	Leavitt
110060	– Carinae	2497	11 0.1	–60 26	*8.8*	*9.6*	...	....	..	..	..	1906	Leavitt
110558	– Carinae	3216	5.4	–58 18	*7*	*8*	...	....	..	..	..	1906	Leavitt
110551	– Centauri	3909	5.5	–51 57	*9.8*	*10.7*	...	....	IV	..	..	1906	Leavitt
110647	– Centauri	4810	6.6	–47 18	*8.7*	*9.6*	...	....	V?	..	..	1906	Leavitt
112650	– Centauri	4289	26.5	–50 53	*9.2*	*10.2*	...	....	..	..	..	1906	Leavitt
113547	– Centauri	5118	35.0	–47 24	*9.1*	*10.0*	...	....	..	..	..	1906	Leavitt
113657	– Centauri	..	36.2	–57 6	*9.8*	*13.0*	...	....	..	..	..	1906	Leavitt
113662	– Centauri	2223	36.2	–62 8	*8.7*	*9.5*	...	....	..	..	..	1906	Leavitt
113966	– Muscae	1637	39.8	–66 45	*8.7*	*9.7*	...	....	..	..	..	1906	Leavitt
114161	– Centauri	..	41.7	–61 20	*10.6*	<*11.4*	...	....	..	..	..	1906	Leavitt
114360	– Centauri	*3809*	43.1	–60 0	*8.8*	*9.8*	...	....	V?	..	..	1906	Leavitt
114764	– Muscae	1725	47.4	–64 51	*9.4*	*10.3*	...	....	..	..	..	1906	Leavitt
114953	– Centauri	4824	49.1	–53 37	*9.8*	*10.5*	...	....	..	..	..	1906	Leavitt
115763	– Crucis	..	57.8	–63 10	*10.8*	*16.0*	...	....	..	..	..	1906	Leavitt
120663	– Crucis	..	12 6.0	–63 53	*10.8*	*13.5*	...	....	..	..	..	1906	Leavitt
120658	– Crucis	4151	6.7	–58 14	*8.7*	*9.3*	...	....	IV	..	..	1906	Leavitt
120749	– Centauri	4965	7.8	–49 39	*9.1*	*10.0*	...	....	..	..	..	1906	Leavitt
121261	– Crucis	..	12.3	–61 12	*13.1*	*14.2*	...	....	..	..	..	1906	Leavitt

Des.	Name	DM.	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d.						
121249	– Centauri	5046	12 12.5	−49 11	*8.8*	*11.4*	5.2+	2410002	V	..	..	1906	Leavitt
121561	– UrsaeMajoris	*1224*	15.7	+61 52	..	..	...	....	..	..	..	1906	M. and K.
121548	– Centauri	4730	15.9	−48 39	*8.3*	*10.2*	...	....	IV	..	..	1906	Leavitt
121860	– Crucis	..	18.0	−60 3	*12.5*	*14.0*	...	....	..	..	..	1906	Leavitt
122060	– Crucis	..	20.4	−60 57	*13.4*	*17.4*	...	....	..	..	..	1906	Leavitt
122964	– Crucis	..	29.1	−64 1	*12.8*	*14.5*	...	....	..	..	..	1906	Leavitt
123263	– Crucis	..	32.8	−63 48	*14.2*	*17.0*	...	....	..	..	..	1906	Leavitt
123366	– Draconis	..	33.2	+66 9	*9.7*	<*12.5*	...	....	..	..	54	1906	L. Ceraski
123460	– Crucis	..	34.3	−60 52	*15.0*	*16.0*	...	....	..	..	..	1906	Leavitt
123564	– Muscae	..	35.3	−64 10	*14.2*	<*17.7*	...	....	..	..	..	1906	Leavitt
123559	– Crucis	4388	35.7	−59 15	*8.5*	*9.4*	...	....	..	..	..	1906	Leavitt
123753	– Centauri	5293	37.6	−53 59	*9.4*	<*12.0*	...	....	..	..	..	1906	Leavitt
124061	– Crucis	..	40.3	−61 17	*11.4*	*12.2*	...	....	..	..	..	1906	Leavitt
124058	– Crucis	4490	40.5	−58 35	*8.5*	*9.0*	...	....	..	..	..	1906	Leavitt
124361	– Crucis	..	43.6	−61 14	*15.0*	*16.0*	...	....	..	..	..	1906	Leavitt
124564	– Muscae	..	45.4	−64 56	*14.0*	*16.4*	...	....	..	..	..	1906	Leavitt
124863	– Crucis	..	48.4	−63 23	*12.7*	*13.8*	...	....	..	..	..	1906	Leavitt
125162	– Crucis	..	51.2	−62 56	*14.0*	*15.3*	...	....	..	..	..	1906	Leavitt
125262	– Centauri	..	52.1	−62 26	*10.2*	*10.9*	...	....	..	..	..	1906	Leavitt
125438	– Canes Venat.	2389	54.7	+38 20	..	..	...	....	..	N	..	1906	Wendell
125564	– Muscae	*2485*	55.6	−64 5	*8.5*	*8.9*	0.9+	2410000	IV	..	..	1906	Leavitt
125664	– Muscae	..	56.6	−64 43	*13.2*	*15.7*	...	....	..	..	..	1906	Leavitt
125763	– Centauri	..	57.2	−63 8	*14.0*	*17.1*	...	....	..	..	..	1906	Leavitt
125764	– Muscae	..	57.4	−64 15	*13.4*	*14.6*	...	....	..	..	..	1906	Leavitt
125860	– Centauri	..	58.0	−60 14	*11.5*	*13.0*	...	....	..	..	..	1906	Leavitt
125964a	– Muscae	..	59.4	−64 59	*10.5*	*12.1*	...	....	..	..	..	1906	Leavitt
125964b	– Muscae	..	59.4	−64 46	*14.7*	<*17*	...	....	..	..	..	1906	Leavitt
130359	– Centauri	4781	13 3.2	−59 43	*9.4*	*10.5*	...	....	..	..	..	1906	Leavitt
130662	– Centauri	..	6.4	−62 52	*11.5*	*12.5*	...	....	..	..	..	1906	Leavitt
130763	– Centauri	2632	7.2	−63 37	*8.8*	*10.2*	2.4+	2410000	V	..	..	1906	Leavitt
130962	– Centauri	..	9.8	−62 31	*12.3*	*13.5*	...	....	..	..	..	1906	Leavitt
131362	– Centauri	..	13.0	−62 24	*12.9*	*14.2*	...	....	..	..	..	1906	Leavitt
131360	– Centauri	..	13.2	−60 16	*11.2*	*16.0*	...	....	..	Md?	..	1906	Fleming
131560	– Centauri	..	15.6	−60 47	*10.4*	*14.4*	...	....	..	..	..	1906	Leavitt
131864	– Muscae	..	18.3	−64 8	*10.5*	<*14.0*	...	....	..	Md?	..	1906	Leavitt
132763	– Centauri	..	27.1	−63 32	*9.5*	*10.5*	...	....	..	..	..	1906	Leavitt
133357	– Centauri	5865	33.8	−57 6	*7.6*	*8.7*	...	....	..	..	..	1906	Leavitt
133561	– Centauri	3912	35.0	−61 16	*9.8*	*10.8*	...	....	V?	..	..	1906	Leavitt
134358	– Centauri	6324	43.8	−58 0	*8.0*	*8.9*	...	....	..	..	..	1906	Leavitt
134459	– Centauri	5228	44.4	−59 55	*9.7*	*10.7*	...	....	..	..	..	1906	Leavitt
142200	– Virginis	..	14 22.4	− 0 26	..	..	0.4+	2410000	IV	..	..	1906	Fleming
142932	– Boötis	2489	29.2	+32 11	*8.9*	*10.0*	0.4+	2410000	IV	..	..	1906	Fleming
144339	– Boötis	..	43.2	+39 44	*9.0*	*10.0*	...	....	..	..	86	1906	L. Ceraski
145254	– Lupi	..	52.3	−54 33	*8.5*	<*13.5*	...	....	II	Md	..	1906	Fleming
154338	– Cor. Borealis	2698	15 43.0	+38 35	*8.5*	*10.5*	...	....	..	Mc 5 d	..	1906	Fleming
155229	– Cor. Borealis	..	52.2	+29 32	*8.0*	<*11*	...	....	II	Md	..	1906	Fleming
163358	– Draconis	..	16 33.8	+58 1	*9.6*	*10.8*	...	....	IV?	..	87	1906	L. Ceraski
165103	– Ophiuchi	4031	51.9	− 3 57	..	..	...	....	Cl.	..	..	1906	Bailey
183936	– Lyrae	3243	18 39.4	+36 52	..	..	...	....	..	N	..	1906	R
185405	– Aquilae	..	54.4	− 5 22	*12*	<*15*	...	....	..	..	80	1906	Wolf

Des.	Name.	DM.	R. A. 1900.	Dec. 1900.	Max.	Min.	Period.	Epoch.	Class.	Sp.	Prov. No.	Year.	Discoverer.
			h. m.	° ′			d.						
185407	– Aquilae	..	18 54.7	– 7 28	*12.5*	*<15*	...	....	..	..	81	1906	Wolf
185609	– Aquilae	..	56.7	– 9 13	*13*	*14.5*	...	....	..	..	82	1906	Wolf
185807	– Aquilae	..	58.0	– 7 18	*10*	*13*	...	....	..	..	83	1906	Wolf
190158	– Draconis	..	19 1.1	+58 35	9.3	9.8	...	....	V	..	121	1906	L. Ceraski
190208	– Aquilae	..	2.2	– 8 23	*11*	*13*	...	....	..	..	84	1906	Wolf
190405	– Aquilae	..	4.4	– 5 32	*12.5*	*15*	...	....	..	..	85	1906	Wolf
191316	– Sagittarii	5272	13.5	–16 5	..	..	...	....	..	N	..	1906	Wendell
191327	– Lyrae	..	13.7	+27 57	*13*	*<14.5*	...	....	..	..	89	1906	Wolf
191425	– Vulpeculae	..	14.9	+25 12	*12*	*14*	...	....	..	..	90	1906	Wolf
191527	– Lyrae	..	15.4	+27 4	*13.5*	*<14.5*	...	....	..	..	91	1906	Wolf
191528	– Cygni	..	15.7	+28 56	*13*	*15*	...	....	..	..	92	1906	Wolf
191629	– Cygni	..	16.8	+29 21	*13.5*	*<15*	...	....	..	..	93	1906	Wolf
191624	– Vulpeculae	..	16.9	+24 48	*13*	*<15*	...	....	..	..	94	1906	Wolf
191726	– Vulpeculae	..	17.0	+26 50	*13.5*	*15*	...	....	..	..	95	1906	Wolf
191829a	– Cygni	..	18.1	+29 8	*13*	*14*	...	....	..	..	96	1906	Wolf
191829b	– Cygni	..	18.2	+29 56	*13*	*15*	...	....	..	..	97	1906	Wolf
191824	– Vulpeculae	..	18.6	+24 29	*12.5*	*15*	...	....	..	..	98	1906	Wolf
191826	– Vulpeculae	..	18.8	+26 47	*13.5*	*<15*	...	....	..	..	99	1906	Wolf
191928	– Cygni	..	19.3	+28 0	*11*	*<14.5*	...	....	..	..	100	1906	Wolf
191926	– Vulpeculae	..	19.4	+26 47	*13.5*	*<15*	...	....	..	..	101	1906	Wolf
192030	– Cygni	..	20.1	+30 49	*13*	*<15*	...	....	..	..	102	1906	Wolf
192028	– Cygni	..	20.6	+28 14	*14*	*<15*	...	....	..	..	103	1906	Wolf
192126	– Vulpeculae	..	21.9	+26 13	*11.5*	*<14.5*	...	....	..	..	104	1906	Wolf
192426	– Cygni	..	24.5	+26 55	*13.5*	*15*	...	....	..	..	105	1906	Wolf
192526	– Cygni	..	25.6	+26 53	*12.5*	*<15*	...	....	..	..	106	1906	Wolf
192525a	– Vulpeculae	..	25.7	+25 2	*13*	*14*	...	....	..	..	107	1906	Wolf
192525b	– Vulpeculae	..	25.8	+25 11	*12.5*	*<14.5*	...	....	..	..	108	1906	Wolf
192629a	– Cygni	..	26.1	+29 53	*13*	*14*	...	....	..	..	109	1906	Wolf
192629b	– Cygni	..	26.8	+29 54	*13.5*	*<15*	...	....	..	..	110	1906	Wolf
192829	– Cygni	..	28.6	+29 21	*13.5*	*15*	...	....	..	..	111	1906	Wolf
192927	– Cygni	..	29.8	+27 52	*14*	*15*	...	....	..	..	112	1906	Wolf
192930	– Cygni	..	29.9	+30 42	*13.5*	*15*	...	....	..	..	113	1906	Wolf
193129a	– Cygni	..	31.1	+29 54	*13*	*<14.5*	...	....	..	..	114	1906	Wolf
193129b	– Cygni	..	31.9	+29 56	*12.5*	*<14*	...	....	..	..	115	1906	Wolf
193227	– Cygni	..	32.8	+27 54	*12*	*14*	...	....	..	..	116	1906	Wolf
193428	– Cygni	..	34.1	+28 23	*12*	*15*	...	....	..	..	117	1906	Wolf
193429	– Cygni	..	34.2	+29 27	*13.5*	*<15*	...	....	..	..	118	1906	Wolf
194027	– Cygni	..	40.0	+27 32	*11*	*14*	...	....	..	..	119	1906	Wolf
195209	– Aquilae	..	52.0	– 9 37	*9.6*	*<11.5*	...	....	..	..	..	1906	Fleming
195609	– Aquilae	4369	56.3	+ 9 14	..	..	...	....	..	N	..	1906	Wendell
202415a	– Delphini	4172	20 24.6	+15 56	*8.9*	*9.8*	Irr?	....	..	Mc	..	1906	Fleming
202415b	– Delphini	..	24.6	+15 56	*11.8*	*<12.8*	...	....	..	..	..	1906	Fleming
203813	RR Delphini	4502	38.9	+13 35	9.5	10.5	...	....	V	..	79	1906	L. Ceraski
213735	DS Pegasi	*4500*	21 37.8	+35 3	..	..	...	....	..	N	..	1906	Wendell
224555	– Lacertae	2817	22 45.0	+55 54	..	..	5.4	2417412	IV	..	88	1906	S. and H.
224540	– Lacertae	R	45.4	+40 30	.	..	...	....	..	Mc 5 d	..	1906	Fleming
234102	– Piscium	4709	23 41.3	+ 2 56	..	..	...	....	..	N	..	1906	R
235659	– Cassiopeiae	2810	56.2	+59 48	..	..	...	....	..	N	..	1906	R

REMARKS.

000773. Approximate position for 1855, R. A. = $0^h\ 5^m\ 21^s$, Dec. = +73° 3′.0. An examination, by Blajko, of 24 Moscow photographs, extending from October 5, 1896, to December 16, 1905, indicated the range and probable period given in the table.

001828. This star was found to be missing on a plate taken September 28, 1899, with the Cooke lens. Observations of the Harvard photographs, extending from November 11, 1889 to November 16, 1906, showed it to be a variable of short period. From these observations, the following formula was deduced by Pickering to express the times of maximum, J.D. 2410000.10 + 0^d.49932 E.

002235. A range of 0.36 magn. was found by Wendell by means of photometric measures on 4 nights, between February 10 and October 2, 1906.

010884. An examination of 23 Moscow photographs, extending from October 2, 1896, to December 1, 1905, led Ceraski to believe that the period is about one year. Variability confirmed visually by Blajko, who found the star near maximum in January, 1906.

011041. Approximate position for 1855, R.A. = $1^h\ 7^m.8$, Dec. = + 40° 58′. Found by means of its photographic spectrum, and confirmed from an examination of 11 Harvard photographs, extending from February 19, 1891, to January 21, 1906, with range of 5 magnitudes.

023947. This star, which is given as magn. 8.3 in the Bonn Durchmusterung, was found to be fainter than normal brightness on 2 out of 22 Moscow photographs covering the region. On a plate taken August 11, 1906, $10^h\ 36^m$ to $11^h\ 40^m$, Moscow M.T., the magnitude was about 9.5. On a plate taken September 21, 1906, $12^h\ 10^m$ to $14^h\ 10^m$, the magnitude was about 10.

023969. Times of minimum, 1906, May $24^d\ 10^h\ 15^m$ + $1^d\ 4^h\ 40^m.8$ E, or J. D. 2417355.427 + 1^d.1950 E. Müller.

024368. Discordances of about 0.5 magn. were found in photometric measures for the Potsdam Durchmusterung. Accordingly, the star was frequently observed, and variation confirmed. Range about 0.5 magn., and period about 2 days.

034432. Approximate position for 1855, R. A. = $3^h\ 42^m\ 1^s$, Dec. = +32° 34′.8. An examination of 9 Moscow photographs, extending from September 15, 1904, to February 19, 1906, gave the range of variation from magn. 10.8 to <12.5. Variability confirmed by Blajko.

041342. Minima were observed by Enebo on November 17 and December 26, 1905, and on February 4 and February 17, 1906. A period of about 13 days was deduced. Observations, by Miss Leland, of 301 Harvard photographs showed that the variable was faint on 21 photographs. From these observations, the following times of minimum were deduced by Pickering, J. D. 2410000.08 + 13^d.199 E. The proportion of the time during which the star is faint is only about one fifteenth of the entire period. The nature of the variation was also confirmed by Graff and Hartwig.

042257. Suspected by Espin in 1893. Found by Mrs. Fleming by means of its photographic spectrum, and examined on 23 photographs, extending from January 3, 1890 to October 9, 1905. Confirmed by Miss Wells.

045439. Variability found by comparing two photographs, and confirmed by visual observations on 29 nights between January 22 and March 12, 1906. The visual observations combined with observations of photographs extending from March 1, 1900, to April 6, 1905, enabled Williams to determine the following times of maximum, J.D. 2415129.5 + 12^d.02 E + 2.0 sin (1°.8 E + 70°). A consideration of some early observations communicated by Kreutz, seems to show that this period is a little too long, and that the period 12^d.012 would better satisfy all the observations. The exact value of the third term is uncertain, although the existence of a large periodic irregularity appears to Williams to be beyond doubt.

050130. An examination, by Blajko, of 10 Moscow photographs confirmed the variability with the range given in the table. Variability also confirmed visually by Graff.

052504. The spectrum of this star was found by Mrs. Fleming to be between Classes K and M, and to contain a bright line of slightly shorter wavelength than Hδ. A variation of about 0.7 magn. was found. See H. C. O. Circular 92.

055523. Found by M. and G. Wolf to decrease from magn. 9.3 to 10.0, in about 90 minutes, on photographs taken February 20, 1906. An examination of 43 photographs, extending from December 19, 1891, to February 21, 1906, showed the star to be near minimum on only one other date, November 3, 1905. Observations by Graff, Hartwig, and Nijland confirmed the nature of the variation and determined the period. Times of minimum J.D. 2417262.48 + 2^d.865 E. Hartwig. Nijland deduced a period of 2^d.8665.

062564. Approximate position for 1855, R.A. = $6^h\ 21^m\ 9^s$, Dec. = + 64° 10′.3. An examination, by Blajko, of 8 Moscow photographs confirmed the variability, with the range given in the table. The approximate elements given in the table, were deduced by Hartwig from photographic estimates made by Blajko.

063531. A range of 0.28 magn. was found by Wendell from photometric observations on 4 nights, between October 17, 1905, and May 1, 1906. This star has been suspected of variation by Mrs. Fleming. An examination on October 16, 1905, of 20 Harvard photographs, extending from January 16, 1892, to April 24, 1903, showed a variation of 0.7 magn., but owing to the fact that the spectrum is of the fourth type, announcement was deferred until measures of more photographs could be made.

065326. This star was observed, by Enebo, to be magn. 9.5 in March, 1904, and to increase slowly until it was

magn. 9.1 in December, 1904. It remained constant until May, 1905, when it began to decrease slowly, and in March, 1906, it was again magn. 9.5.

073102. A range of 0.46 magn. was found by Wendell by means of photometric observations on 4 nights, between March 5 and May 8, 1906.

091152. Variability was found by Miss Wells in 1904, and confirmed in 1906. Also confirmed by Mrs. Fleming from an examination of 10 Harvard photographs.

094501. A range of 0.34 magn. was found by Wendell by means of photometric observations on 7 nights, between February 10 and May 22, 1906.

101259. Probably of the Algol type. Faint on 58 out of 453 Harvard photographs.

103867. A range of 0.45 magn. was found by Wendell by means of photometric observations on 13 nights, between February 3 and October 4, 1906.

104265. An examination of 13 photographs, extending from May 6, 1890, to December 6, 1904, gave a range of 1.2 magn. Variation confirmed by Miss Wells.

105461. Observations were made of 137 Harvard photographs, on 16 of which the star was found to be fainter than its normal brightness, magn. 12.25. From these observations the formula J.D. 2410001.53 + $3^d.30070$ E. was derived, to express the times of minimum.

105853. This Nova appears on 14 photographs taken at Arequipa, and extending from December 5, 1905, to June 29, 1906. The brightest photographic magnitude during this period was 9.72, and the faintest, 11.05. 127 photographs taken between 1889 and 1905, show no trace of the Nova, although 25 of these photographs show stars as faint as the magnitude 13.5, and 4 of them show stars at least as faint as the magnitude 15.0.

110647. C.DM. − 47° 6583. Faint on 22 out of 276 Harvard photographs. Probably of the Algol type.

112650. C.DM. − 50°6082.

113547. C.DM. − 47° 7032.

114360. Faint on 49 out of 351 Harvard photographs. Probably of the Algol type.

120749. C.DM. − 49° 6898.

121249. Times of minimum, J.D. 2410002.90 + $5^d.21943$ E.

121548. C.DM. − 48° 7357.

123366. Approximate position for 1855, R.A. = $12^h\,31^m\,12^s$, Dec. = + 66° 23′.6. Ceraski.

125438. A range of 0.42 magn. was found by Wendell by means of photometric observations on 6 nights between March 14, and September 5, 1906.

125564. Times of maximum, J.D. 2410000.15 + $0^d.93796$ E.

130763. Times of minimum, J.D. 2410000.35 + $2^d.47871$ E.

131360. An examination of 9 photographs, extending from June 22, 1893, to June 21, 1904, gave a variation of at least three magnitudes. Variability also found independently by Miss Leavitt.

133561. Faint on 30 out of 233 Harvard photographs. Probably of the Algol type.

134358. Faint on 58 out of 304 Harvard photographs. Perhaps of the Algol type.

142200. Times of maximum, J.D. 2410000.00 + 0.41224 E.

142932. Times of maximum, J.D. 2410000.34 + 0.49931 E.

144339. Approximate position for 1855, R.A. = $14^h\,41^m\,29^s$, Dec. = + 39° 55′.1. Observation of 5 Moscow photographs, taken in April and May, 1906, gave the range from magnitude 9.0 to 10.0.

145254. Observations of 12 Harvard photographs, extending from May 20, 1891, to June 23, 1905, gave a variation from 8.5 to $<$13.5. Confirmed by Miss Wells.

154338. Found from the photographic spectrum and confirmed from an examination of 17 Harvard photographs, extending from March 26, 1894, to April 27, 1906. Also confirmed by Miss Wells, who found that this star is about 2′ north of the position given in the Durchmusterung.

155229. Observations of 10 Harvard photographs, extending from May 25, 1891, to May 8, 1905, gave a variation of over three magnitudes. Confirmed by Miss Wells.

163358. Approximate position for 1855, R.A. = $16^h\,33^m\,2^s$, Dec. = + 58° 6′.8. Observations of 23 Moscow photographs did not determine the period, but Blajko found that it is probably short.

165103. N.G.C. 6254, Messier 10. 5 variables have been found in this cluster.

183936. Variation from magn. 7.2 to 7.6 was announced by Safarik in 1888. Also announced by Espin in 1893, with range from magn. 8.8 to 10.2. Eleven observations by Yendell, from June 4, to October 6, 1894, gave an apparent increase from magn. 8.45 to 7.4, but he considered that the redness of the star, which was estimated as 7.3, rendered the change uncertain. Observations by Wendell on 12 nights, between October 3, 1905, and October 27, 1906, gave a range of 0.4 magn.

190158. Approximate position for 1855, R.A. = $19^h\,0^m\,25^s$, Dec. = + 58° 31′.3. Discovered in 1905, and examined on 17 Moscow photographs. A variation of only 0.5 magn. was found, and announcement was deferred until the change could be confirmed by visual observations. 48 observations, by Blajko, showed it to be always of the same magnitude, about 9.3, until, on October 18, 1906, he observed a minimum of magn. 9.8.

191316. A range of 0.41 magn. was found by Wendell by means of photometric observations on 7 nights, between October 12, 1905, and October 4, 1906.

195209. Found while looking for Iris, and confirmed by an examination of 9 Harvard photographs, extending from November 16, 1894, to September 18, 1906. The variable was magn. 9.6 on July 18, 1896, and on September 13, 1898, and magn. 9.7 on May 28, 1902.

195609. A range of 0.30 magn. was found by Wendell by means of photometric observations on 8 nights, between October 3, 1905, and October 26, 1906. Variability was suspected by Mrs. Fleming in 1905 from the photographic spectrum. An examination of 32 photographs, extending from August 5, 1890, to August 3, 1905, gave an apparent variation of 0.4 magn., but announcement was deferred until further evidence of actual variation was obtained.

202415a. This star was suspected of variation in December, 1903, and confirmed in 1906. Observations of the Harvard photographs, extending from June 1, 1890, to

November 9, 1905, show that the period is probably irregular.

202415b. This is a faint companion of 202415a. Observations of the Harvard photographs, extending from June 1, 1890, to November 9, 1905, show that the period is probably irregular.

203813. On October 21, 1905, this star was found, by Mme. Ceraski, to be fainter than normal on a photograph taken September 4, 1905. On 5 other photographs, taken between 1898 and 1905, the magnitude was about 9.5. Visual observations were made by Blajko to confirm the variability, and a decrease to magn. 10.5 was seen on June 16, 1906. The star was found by Nijland to be increasing on July 23, 1906.

213735. A range of 0.34 magn. was found by Wendell by means of photometric observations on 8 nights, between December 5, 1905, and October 29, 1906.

224555. This is one of the comparison stars used at the Laws Observatory for observations of the variable, V Lacertae. A variation of 0.4 magn. was found by Seares and Haynes, and the following formula was derived, to express the times of maximum, J.D. $2417412.8 + 5^d.440E$.

224540. This star is double, and either component or both may be $+ 40° 4920$. The variable is the preceding and southern component. An examination of 13 photographs extending from November 20, 1891, to November 2, 1902, shows a variation of 1.5 magn.

234102. This is 19 Piscium. Variability has been suspected by several observers, especially Gould and Espin. The deep red color of the star renders observations especially difficult. A range of 0.36 magn. was found by Wendell from photometric observations on 10 nights, between October 5, 1905, and November 3, 1906.

235659. Variability has been suspected and announced by Secchi, Chandler, Birmingham, and Backhouse. Not confirmed by Yendell, who made 18 observations, between September 2, 1891, and November 7, 1893. Photometric observations by Wendell on 8 nights, between January 6, and October 1, 1906, indicate variability with a range of 0.36 magn

END OF VOLUME LV. PART I.