1896phae.proj.1673P

KG
11366
v.669

Memoranda
and Examinations.

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U Cephei.

Special observations, (and an indefinite number of them) are wanted ~~of~~ on U Cephei when its magnitude is about the same as that of the comparison star.

This occurs on front side of curve at abt.

1h 3m Sid. Time

and on fol. side of curve at abt.

2h 2m Sid. Time.

Ten groups (or 160 comparisons) are to be taken at these times, ~~as frequently~~ as nearly Later as possible.

Or. in other words, at

1h 10m ~~East.~~ time before theoretical minimum. +

2h 20m " " after " "

Oct. 24. 1896.

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1899phmo.proj..1673p

Comp. Stars for U Cephei: (Reeds')

a	0h	29m	1.s	+81°	K1.6	13	6.s
t	0	K1	26.	+82	19.K	19	9.2
k	0	KK	K6.	+81	s3.9	23	8.9
g	0	s1	7.	+81	Ks.7	28	9.0
g'	0	s1	3s.	+81	28.1	29	8.6
h	0	s0	s6.	+81	19.3	29	8.6
d	0	38	28.	+81	10.s	18	7.6
m	0	31	K8.	+80	s9.7	16	8.9
g	0	s2	29.	+81	10.9	30	8.3
f	0	s9	2s.	+81	0.K	3K	8.7
R	1	6	1s.	+80	s7.K	37	9.1
S	1	K	23.	+80	K7.s	3K	8.0
l	0	K9	K3.	+80	12.9	26	8.s
p	0	K3	31.	+80	302	2K	9.1
o	0	39	s.	+80	K8.9	21	8.9
n	0	K2	K.	+81	7.s	22	9.2

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Comparison Stars for Variables.

The following notation should always be employed when selecting comparison stars for variables. On the first night select a star a little brighter than the variable and call it A, also one a little fainter and call it B. Add other stars as required, whether brighter or fainter, assigning them the designations C, D, E etc. in alphabetical order and using capitals only. Under no circumstances change these letters, but adopt new letters as required, until the final sequence of comparison stars is adopted.

Use lower case letters for this and change from the old to the new notation on a specified day. Retain the old notation for stars not in sequence until copy is prepared for the printer.

10, 1896

Edward C. Pickering

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24 = Nights.
10

♄ = Saturday
13

☉ = Sunday.
11

☾ = Monday

♂ = Thursday.
3

☿ = Wednesday
3

0.

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U Cephei.

Special observations, (and an indefinite number of them) are wanted on U Cephei when its magnitude is about the same as that of the comparison star.

This occurs on front side of curve at abt.

1h 3m Sid. Time

and on fol. side of curve at abt.

9h 9m Sid. Time.

Ten groups (or 160 comparisons) are to be taken at these times, as frequently as possible.

Or, in other words, at

1h 10m before theoretical minimum. +

2h 20m " " after " "

Oct. 24. 1896.

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Mr. Davidson's address is # 273 Huron Ave

Memoranda.

P. TO.

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Correction to desip. of Jupiter IV. p. 75.

Comp. stars for ~~variables~~ δ and μ Cephei. p. 70

Comp. stars for Variables, used with polarizing photometers } p. 40.

Rule for Computing Equation of Light. p. ~~30~~. 63.

List of Special Objects to be looked after. p. 100

Special cases of comp. stars for Circumpolar Variables. p. 210.

Var. Star estimate notation in volume p. 208.

Obs. of W. P. 899. (Leland's Var.) p. 73.

" " Wells Var. p. 76.

Diagrams, or lettered stars. East Equatorial. p. 140.

" " " " West " . p. 150.

Explanation of Harv. Reads abbreviations p. 62.

Final N. P. maps. of Comp. Stars for Var. p. 110 ff.

Value of Harv. Seawards grade for Var. 1895. p. 72.

Computation of Light Equation for N. P. Variables. p. 154. ff.

Suspected Variables needing watching. p. 90.

For. comp. star for χ Cygni. see p. 40.

Rule for time of obs. on Short Period Algol Variables. p. 220.

Memoranda. p. 192.

Ephemeris of Wells Var. for 1895. p. 3.

N Delphini. F.B. 1895 and 1896 p. 214

Phot Scale Maps. (p 131)

" " " for Air. Var. p 204-205

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Pozarge. Phot. Mags. of Comp. Stars for Variables.

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Ephemeris of Wells Variable

for the latter part of 1895. (Continued backwards from Ephemeris in Astro-Phys. Journal Vol. III. p. 200, with period 6.d 06 6000)

1895	Dec.	7.	17h	47m	42.s	Br. M. T.
		12	13	8	55	" " "
		17	8	30	8	" " "
		22	3	51	21	" " "
		26	23	12	34	" " "
		31	18	33	47	" " "
1896	Jan	5	13	55	0	" " "

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Memoranda.

Notify Prof. P., day by day, of any variables betw. stars 9.0 mags., in order for him to observe them with Meridian Photometer.

R Draconis. 9 star 9 variable. Mr. Seagrave thinks a star in about this position, &c.

Observe ν Cass esp. and star 9 for R Draconis. Will notify Mr. Seagrave a day in advance.

Begin to observe U Cephei. systematically at first end of variation, about Oct. 24. 9 P.M. Get the first end of curve fully on several nights and gradually get the whole curve.

Observe Vesta again, perhaps, but not until the next (about the 1st of November) moon.

Copy in Book Series I. No. 5. the results of measts. of Harvard Comp. Stars for variable with Plot. I.

D. Bring up telegrams in telegraph book.

A. Observe Wolfe's Var. and H. P. 499. (Zelaud's) Position of Wolfe's Var. is $9^h\ 13^m\ 12^s.-7°\ 40.7$. This is SD $-7°\ 2743$. (9.4).
Zelaud's Var. (H. P. 499) is by H. P. in R.A. $4^h\ 9^s.2$ and Dec. $+1°\ 1'$ (mag. there is 6.49)

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Memoranda.

Star Sch. +17° 4367, $20^h\ 31^m.1$ +17° 46'.6 (9.1) is faint on one of the photographic plates, and may be an Algol type variable.

Have it observed the first and last of the evening by the Great Equatorial.

Observe χ Cygni.

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Rule for Computing the Equation of Light.

by which we refer the observations of a Variable Star of the Algol Type to the Sun and thus render the observations homogeneous.



~~To find~~ To find ~~the first, compute~~ the diff. of longitude between the Sun and Star, as seen from the Earth, we can compute first the longitude + latitude of the star, from its R. A. and Dec. and this will be practically constant.

From Chauvenet Vol. I. p. 40. Formula 29.

$$\cos\beta \sin\lambda = \sin\varepsilon \sin\delta + \cos\varepsilon \cos\delta \sin\alpha$$
$$\cos\beta \cos\lambda = \cos\delta \cos\alpha$$

$\varepsilon = 23^\circ\ 27'\ 10.''$

Star's $\alpha = 17^h\ 51'\ 34.^s = 267^\circ\ 53'\ 30.''$

" $\delta = +15^\circ\ 9'$

Log sin $23^\circ\ 27'\ 10''$ $= +9.\ 599\ 88^v$

" " $+15^\circ\ 9'$ $= +9.\ 41722^v$

$+0.\ 10402$ $= +9.\ 01710$

Log cos $23^\circ\ 27'\ 10''$ $= +9.\ 96257$

" cos $+15^\circ\ 9'$ $= +9.\ 98464$

" sin $267^\circ\ 53'\ 30''$ $= -9.\ 99970$

$-0.\ 88494$ $= -9.\ 94691$

$+0.\ 10402$

$-0.\ 78092$

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Log. −0.7[illegible]92 = n9. [illegible]9261 v

Log cos λ = +9.9[illegible]66 v
" cos ε = n9.v6v71 v
Log cos β cos λ = n9.vv03v v=
" cos β sin λ = n9.[illegible]9261 v
λ = 2[illegible]° 32′ v3″ = +0.3[illegible]226

Log cos β cos λ = n9.vv03v
" cos λ = n9.6[illegible]692
" cos β = +9.933[illegible]3 = +30° vv′ 9″ = β

Log. v00.v = 2.69[illegible]97
" cos. β = 9.933[illegible]3
[illegible]2g v = 2.632[illegible]0

Date.	Suns Long.	Long ☆	Earths Long.
July 1v.	112° 47′	2[illegible]° 33′	292° 47′
Aug. 1v.	142 27	"	322 27
Sept. 1v.	172 2[illegible]	"	3v2 2[illegible]
Oct. 1v.	201 v[illegible]	"	21 v[illegible]
Nov. 1v.	232 v9	"	v2 v9

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	(Col. 1.) Earth's Long. − Mars Long.		140° − Col. 1.	
July 1st.	17°	14′	132°	46′
Aug. 1st.	76	14	103	6
Sept. 1st.	106	11	73	1
Oct. 1st.	136	21	43	31
Nov. 1st.	167	26	12	34

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Plan for Observation of Joint Culmination
stars of Ursa Minoris & Cep. made with Meridian T.
Observe five stars of Regulus beginning with faintest
practicable, and compare with a star observed
with meridian photometer. Take four sets of five
settings each on each star observing limbs after
two sets. Repeat - a second night - using another
star observed with meridian photometer. If convenient
if not - use same star.

December 21. 1895.

E. C. Pickering

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Comps. Stars for Variables used with Polarizing Photometers.

χ Cygni. The comps. star for χ Cygni used with Slot R is close to, and a very little north of 2 UU. +32° 3′ 91 (9.5) and is just about the same brightness as the latter. It precedes the variable 16 secs. and is 3′ south of it. It was probably first used Oct. 20. 1893. (See R 67. p. 104)

Pos. of χ Cygni is Att. $19^h\ 41^m + 33.°4$

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Began to observe H. P. 499 (Misp. Leland's susp. var.) Oct. 21. 1896.
This star is Dm. +0° 939 (6.0)
Two comp. stars (a and b) selected.
Comp. star a = +1° 846 (6.5)
" " b = +1° 847 (7.5)

Began to observe Misp. Wells' Susp. var.
Oct. 21. 1896.
This star is Dm. +17° 4367 (9.1)
Two comp. stars selected, a and b.
Comp. star c selected Oct. 23. 1896.

On Chandler's New Var. (U Pegasi)
(See Ast. Jour. Vol. 15. p. 141)

23h 50m 35s.0 +15° 49' (1855.)

The star (according to Chandler) varies from 8.9 to 9.7 magn. in a period of 5h 31m 15s

Elements.

Gr. m. T. { Minimum 1896 Sept. 22d 16h 56m.0 } 5h 31m 9s.0 E.
{ Maximum " " 22 17 41.6 }

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Chandler's Var. com.

Comp. Stars.

			1900			In	Mag.
a	23h	51m	20.5s	+15°	2.2	19.0	8.8s
b		50	21.	14	39.6	16s	9.10
c		52	25.	14	54.5	14.5	9.30
d		49	41.	+15	13.6	10.0	9.7s

This Variable is probably 8 Mu. + 15° 49 1s (9.3)

Look up -1° 47s (9.1) right away.
It is variable.

Obs. N.P. 499 with Plat. I. both in moonlight and when not moonlight.
Also get estimates under both conditions with Field Glass.

Observe N.P. 2494 with field glass right away. It seems to be variable.

Look at Nova Aurigae with direct vision prism.

Observe I Coronae with Plat. I. right away.

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Variables brtr. than 9.0 and as candidates for the Harvd. Photometer, iii

October. 1896

Posn.	Est. mag.
T Cephei.	7.5
R Cassiop.	7.0
T "	7.4
~~R Aurigae~~	~~10.0~~
T Persei.	8.6
~~R Can. Ven.~~	~~9.5~~
~~R Ophiuchi~~	~~10.5.~~
R Scuti.	7.0
R S Cygni.	7.5
R Cygni.	7.4
R Boötis	8.2
R Coronae	7.0
~~S Cygni.~~	~~10.5.~~
~~R Vulpec.~~	~~10.5~~
R Aquarii.	8.0
S Ursæ maj.	8.7
R Arietis.	8.3
T Aquarii.	8.0
~~R Canis Maj.~~	~~10.0.~~

Photographic Var

Z Herculis.
Z Ophiuchi.
M. P. 4411.

T Herculis.	8.1
S Cetæ.	8.1
S Ursæ maj.	7.9
U Coronæ	8.0

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Observations of H. P. 499. (Celands' Ver.)

This is probably the form to be used in printing.

Date.	G. M. T.	Comparr.	Magn.	Results.	Est. Magn.	Last Obs.		Remarks.
96 K. K.	32 48	1K1 A r	6.8			Y.	Y.	Region low. Est. uncertain
K. V.	32 49	13 r B 2, 1 C	6.8	3 1		Y	Y	Brt. moonlight.
K 10.	32 54	13 r d 3, 3 C	6.6	1 1		Y.	Y.	Region low.
" "	"	" d 2. 4 C	6.4	1 1		Y.	Ya.	" "
" "	"	" d 1 r, 3 C	6.7	0 1		Y	C	" "
" "	"	13 8 d K.	6.6			Y G.	Y.	" "
K. U.	32 gr	12 9 d 3. 3 C	6.6	1 1		Y	Y.	
" "	"	13 2 d r	6.7			Y. S.	Y.	
" "	"	" d K	6.6			"	C	
" "	"	13 3 d 1 r, 3 B	6.2	1 2		Y.	A	
" "	"	" d 2, 3 B	6.2	1 2		Y	Ya.	
" "	"	13 r 2 C	6.4			Y G.	Y.	
10. 2 r	3 [illegible]	16 K A 1. 3 B	6.2	1 2		"	Y.	
" "	"	16 r A 1. 3 B	6.2	1 2		"	A.	
10. 23	3 K 90	16 3 A 1. 3 B	6.2	1 2		"	Y.	
10. 2 [illegible]	3 K 91	16 9 A 1. 3 B	6.2	1 2		"	Y.	
" "	"	16 40 A = r	6.3			"	A.	

Comp. Star A = +1° 846 Phot. Magn. 6.3

" " B = +1° 847 " " 6.4

" " C = +1° 847 " " 7.0

" " d = +0° 923 " " 6.2

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The comp. star for Nova Aurigae is the northern of pair, and about 2' north of Nova.

Join the Comp. Stars for Wells Variable with Potsdam 3030. = +17° 1573.
This can probably be done by one intermediate step.

+59° 2410 is a double star, one component being very red and the other very blue. The blue is much the brt. photographically and the red visually.
Prof. Pickering wants this star observed on two nights with Phot. R. when there is no moon, and also on two nights when the moon is practically full.

The Ver. Phot. values of the comp. stars used with Photometer I. on T Andromedae, are as follows.

+26° 40 (7.5) 8.20
+26 37 (8.8) 9.13
+26 42 (8.1) 8.57

Observe N Cancri with Photometer.

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Nov. 26. 1895.

Continue to observe T Andromedae in sets of six and take mags. to hundredths as before. This is to be continued through the present opposition. — All other stars, from this date, are to be observed in sets of four and the mags. taken to hundredths. When more than four sets are desirable, take additional groups of 4 sets.

Abbreviations for Names.

Wendell	= W.	Searle	= S.
Waite	= Wa.	Seyrue	= Se.
Attwill	= A.	Jameson	= Ja.
Cram	= Cr.		
Colson.	= Co.		
Davidson	= D.		
Read.	= R.		
Clymer	= Cl.		

In Circumpolar Variable work, E. denotes East Equatorial — W. = West Equatorial, — F = Finder — F. G. = Field Glass.

In Vol. 16. P. 153, Tab. 13. Standard Stars, observe with Phot. I. stars K. L. M. N, on two nights. compare with two of the M. P. Stars (one on one night, and another on the next), these M. P. stars to differ somewhat in brightness. but not so much as to make the interval between them and K. L. M. N. too large

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Wells Variable

BD +17°4367 hrs 20 m 31 +17°.8

Date	J.D. 241-	Gr. m. Time	Compar	Mag.	Resids.	Est. Mag	Anal.	Obs.
1895. 7. 23	3398	14 06	a 1, 2 b	9.46	02.02		W	Wa
" "	"	14 54	a 1, 1 b	9.51	07.07		W	a
10 21	3488	13 38	a 1, 3 b	9.41	03.03		W	W
" "	"	13 42	a 1, 3 b	9.41	03.03		W	a
10. 22	3489	12 05	a 0.5, 3 b	9.32	01.00		W	W
10. 23	3490	14 25	c 1, 1a, 3.5 b				W	W
" "	"	14 35	c 1, 1.5 a, 2 b				W	Cr
10 24	3491	16 40	c 1.5, 1a, 3 b				W	W
10 25	3492	16 08	c 1.5, 1a, 2.5 b				W	W
" "	"	16 14	c 2, a 1, 1 b				W	Cr
11 4	3502	16 04	c 1, 1a, 2.5 b				W	W
" "	"	16 07	c 2 1a 1.5 b				W	Cr
" "	"	16 20	c 2				W	Co
11 6	3504	16 00	c 2, a 1, 1.5 b				W	W
" "	"	16 00	c 2, 1a, 1.5 b				W	Cr
" "	"	16 02	a 2, 1 b				W	a
" "	"	16 20	c 3, 2a				W	a
11 7	3505	14 00	c 2, 2a, 3 b				W	S
11 12	3510	12 46	Variable at normal brightness				W	a
11 13	3511	12 35	a 3, b 1,				W	a
11 15	3513	13 01	a 2, 1 b				W	a
11 21	3519	12 54	a 2, 1 b				W	a
12 14		12 41	a 3, 1 b				W	a
12 16		13 40	a 3, 1 b				W	Wa
12.20		13 23	2a				W	D
1896. 1. 5		11 35	ok			12.5	W	a
~~2.14~~	~~14 23~~	~~b 1, 4 c~~				~~9.5~~	~~W~~	~~Wa~~
4. 4	3654	18 57	a 2, 1 b				W	Wa

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Algol Variable

Date.	J. D. 241-	Sid. Time.	Compar.	Mag.	Remks.	Est. Mag.	Inst.	Obs.
1896. 4. 5	3655	h 19 m 35	e 3, 0 f			...	W	Wa
" " "		19 46	f 3, 1 g			...	"	"
" " "		19 57	0 g			...	"	"
" " "		20 47	h 1, 3 k			...	"	"
" " "		20 58	0 h			...	"	"
" " "		21 12	h 1, 3 k			...	"	"
4. 29	3679	19 50	d 1, 2 e			...	W	Wa
" " "		20 11	e 2, 1 f			...	"	"
" " "		20 25	f 1, 3 g			...	"	"
" " "		20 35	f 2, 2 g			...	"	"

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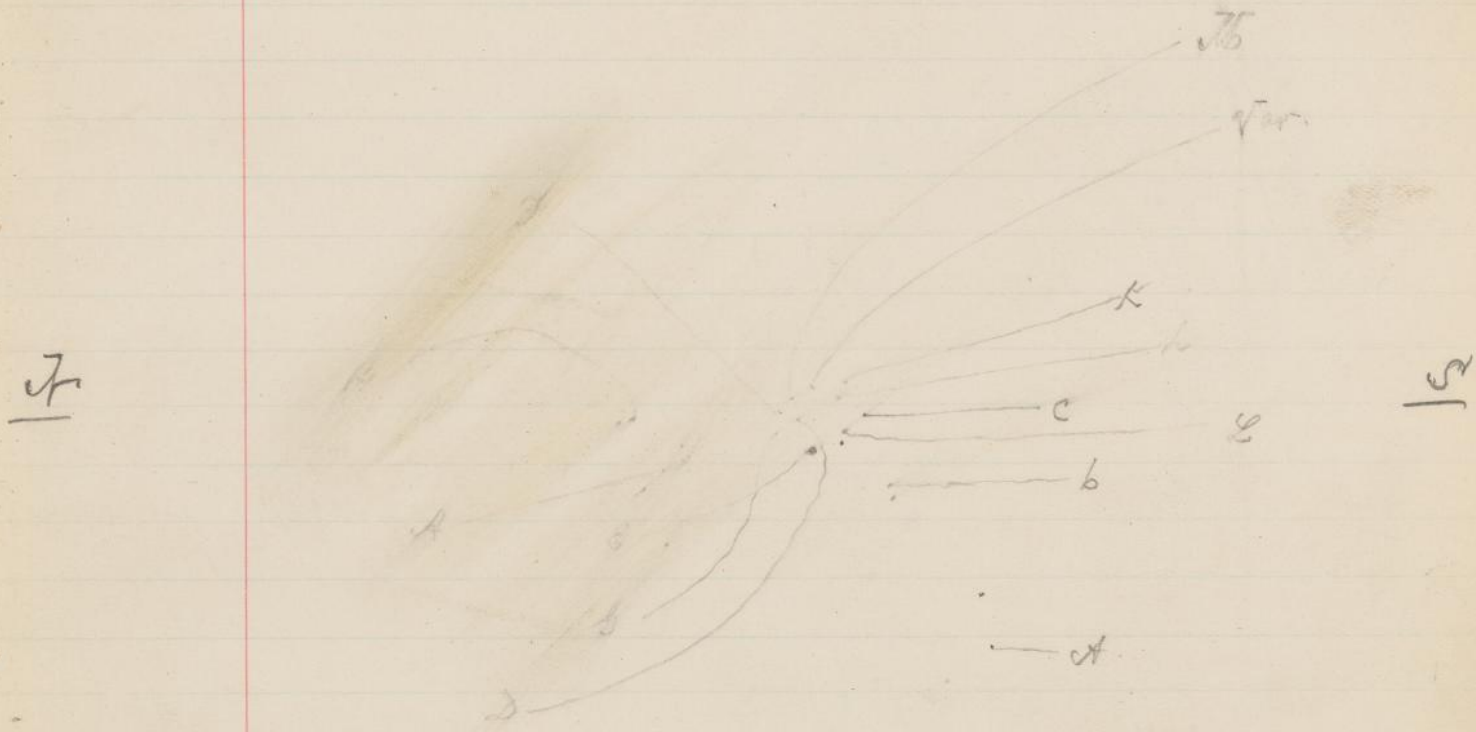
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Wells Variable.

Date. 1896.	East. Time when Var. Leo. H.A. of 6	East. Time of Sunrise.	Diff.	East. Time of Min.
Feb. 12.	16h 44m	18h 47m	2h 1m	19h 44m
" 17.	16 24	18 38	2 14	19 06
Mar. 7.	15 9	18 8	2 59	20 31
" 12.	14 50	18 0	3 10	19 52
" 17.	13 31	17 25	3 54	21 17.
Apr. 5.				16 34

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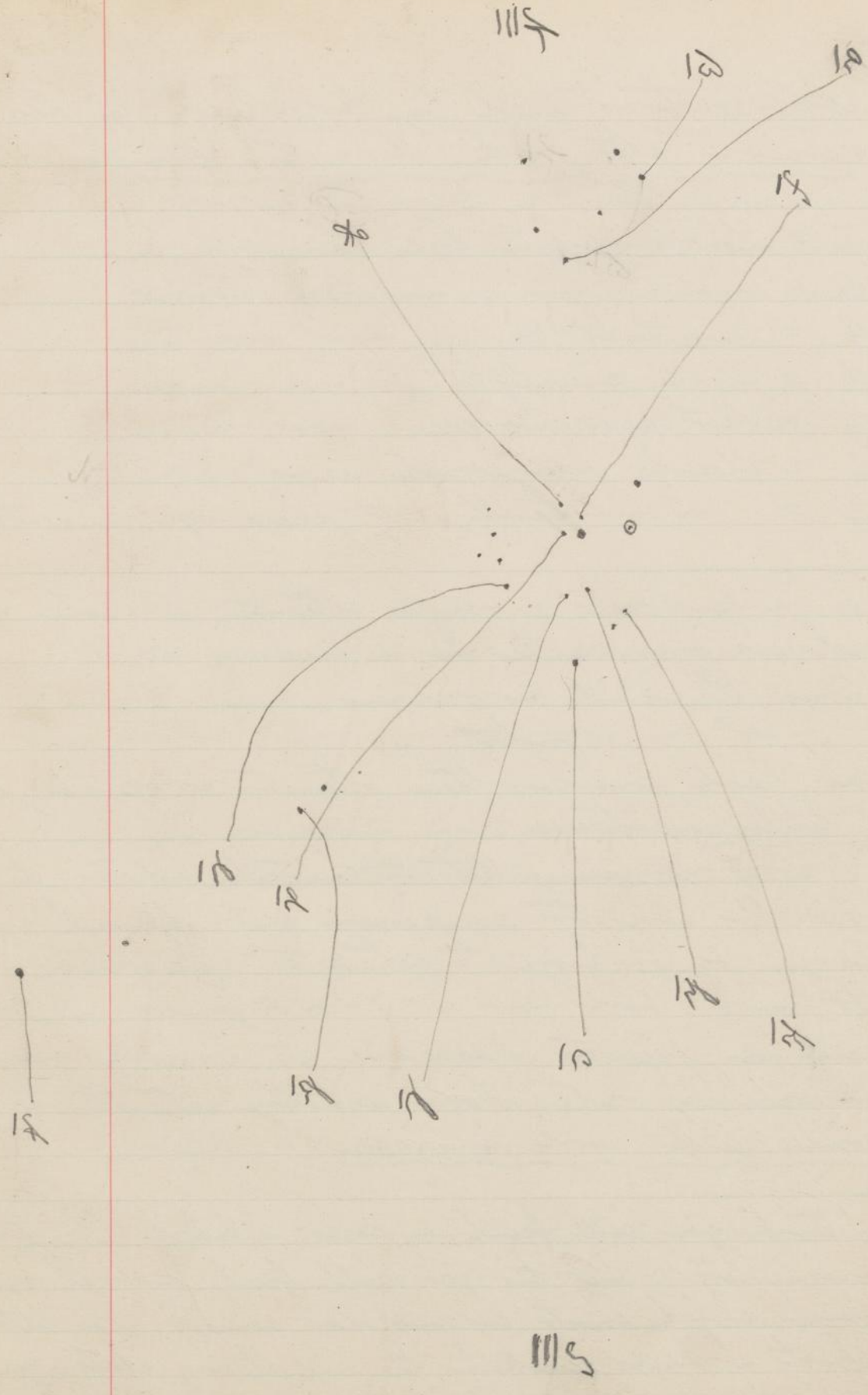


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Abbreviations used by Mr. Reed in his variable star work. - also extracts from his letter.

L = Low magnifying Eye Piece.
H = High " " "
M = moonlight.
M = Strong moonlight.
Z = Star near horizon.
C = Clouds dangerously near.
C = " actually at place of observation.

In a few cases a rough estimate of scale of redness was made on a scale of 10.
Thus 0^R meant no redness.
" 10^R " greatest "
Mr. Reed considers these estimates as of very little importance.

V 6-7-8 means that the interval between the variable and the comparison star appeared very large — too large to estimate accurately. It might have been 6-7- or 8 grades. In this case you refer to, I presume the variable was exceedingly red. For I usually estimate 6 grades with more precision.

I think you will find a cover labelled "Comparison Stars." In this you will find several very much soiled charts or circumpolar charts. On these charts I have marked the auxiliary stars you refer to.

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Inv. Reed's letter continued.

You will find at the beginning of my ledger a "half sheet" containing all necessary explanations. It may be by itself or under cover of the first star on the list which is if I remember correctly 112 J Andromedæ, or it may be under cover of the first star of the circumpolars, which is 1 Cassiop.

In plotting mags. of circumpolar variables.
100 days to 1 inch = abscissa.
1 mag. " 1 " = ordinate.

In computing light equation of short period variables. The formula is ~~(ρ) × cos lat~~

$$499^{s}.(\rho) \times (\cos.\ \text{lat.}\ \odot) \times (\cos.(\text{long.}\ \star - \text{long.}\ \odot)).$$

in which ρ = Radius vector of earth's orbit.
Lat. ☉ can be obtained from U. S. Naut. Almanac.
Long. " " " " " " " "
" sun " " " " " Almanac.
499. = Time required for light to pass from Sun to Earth.
make table for every ten days.

See also Computing Book I 6 pp. 130-131 for instructions from Professor Newcomb. — also B B VII. p 350 and Berlin Jahrbuch for 1900 K. p. 151.

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Memoranda.

Make experiment for focus with Phot. F. by taking a rather close double [2" or 3"] and focus on components when the achromatics are down near eye piece, and focus again when the achromatics are run pretty well up the track.

~~Make opts.~~

Make a list of double stars from Vol. 34. for obs. with Equatorial = including all stars in vol. which are 7.0 magn. or brtr. and whose distance apart is 1' or less.

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The below are the values of the Right Ascensions of the short period variables, and the corresponding Longitudes and Latitudes (approximate).

	1900.					N	B	
β Persei.	3h	1m	40.5	+40°	34.2	5K.8	+22.5 -	10h 0
χ Tauri	3	55	8.	+12	12.5	59.2	-7.7	10 0
S Cancri.	8	38	1K.	+19	23.6	127.2	+0.8	21 30
δ Librae	14	55	38.	-8	7.3	223.7	+8.0	12 0
U Coronae.	15	1K	7.	+32	0.8	213.8	+47.7	9 K2
U Ophei.	0	53	23.	+81	20.2	71.2	+62.8	10 0
U Ophiuchi	17	11	27.	+1	19.3	256.8	+24.2	K 30
R Can. Maj.	7	1K	56.	-16	12.K	113.2	-38.1	5 0
δ Cygni.	20	K8	K.	+3K	17.0	328.6	+49.7	8 0
Z Herculis.	17	53	36.	+15	8.8	268.0	+38.7	6.6
S Sagittae	9	27	56.	-28	11.2	156.2	-40.7	3.5 ±
Walls Var.	20	33	38.	+17	55.8	316.3	+35.K	12.
U Pegasi.	23	52	53.	+15	23.9	4.7	+15.0	
Messier 3.	13	37	35.	+28	52.9	190.0	+36.0	
Messier 5.	15	13	29.	+2	26.8	225.3	+19.K	
ω Centauri.	13	20	K6.	-46	K9.K	218.0	-35.0	
Anne Arasteir Var.	20	3	50.	+46	0.6			
R S Sagittarii	18	10	59.	-3K	8.5			
R R Lyrae	19	22	17.	+42	35.5			

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Computation of Light Equation for Algol Type Variables.

Desig.	Lat. *	Log cos. Lat. *
U Cephei.	+63°.	9.6v̄70v̄
β Persei.	+22.	9.96717
R Tauri.	−4.	9.99v̄7v̄
R Can. maj.	−34.	9.4496v̄3
S Cancri.	+1.	9.99993
S Aurigæ.	−41.	9.4777 4
δ Librae.	+4.	9.99v̄7v̄
U Coronæ	+44.	9.42v̄v̄1
U Ophiuchi.	+2K.	9.96073
Z Herculis.	+39.	9.4907v̄0
Y Cygni.	+v̄0.	9.4044 07
Wells Var.	+3v̄.	9.91336

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β Persei.

$3^h\ 1^m\ 40^s = 45^\circ\ 25'\ 0'' = \alpha$

$+40^\circ\ 34' = \delta$

$23^\circ\ 27.1 = \varepsilon$

Log sin δ = +9.8131 = m sin $\lambda\beta$

" cos δ = +9.8806

" sin ε = +9.9996

+9.8047 = m cos $\lambda\beta$

+0.3326 = log tan $\lambda\beta$ $\lambda\beta = 65^\circ\ 4'$

" sin $\lambda\beta$ = +9.9951

Log m = +9.8963

$\lambda\beta - \varepsilon = 41\ 37$

" sin $(\lambda\beta - \varepsilon)$ = +9.8226

" m = +9.8963

" sin β = +9.6789

β = +24° 27' −

Wrong.

" cos $(\lambda\beta - \varepsilon)$ = +9.8736

" m = +9.8963

+9.7293

" cos β = +9.9540

" sin γ = +9.7820

γ = 37° 34'

" cos β = +9.9540

" cos γ = +9.8984

+9.8524

" cos δ = +9.8806

" cos α = 9.8630

9.7269

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~~Argelander's~~ Comp. Stars for Variables.
See Vol. XIV. p. 403.

Comp. Stars for δ and ζ Cephei.

4142	γ	Cephei.	23h	34.4	+76° 54′		3.37
3923	ζ	"	22	6.7	+57	37	3.54
4037	ι	"	22	44.4	+65	34	3.62
3947	α		22	26.3	+49	40	3.90
3942	ε	"	22	10.6	+56	27	4.24
3903	ξ	"	22	0.3	+64	3	4.44
3855	γ	"	21	42.0	+60	34	4.50
3849	β		21	34.0	+57	26	5.49
3821	ε		21	32.2	+56	57	5.54
3841	δ	"	22	24.7	+57	42	Var.

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Value of Inv. Leavitt's grade for chr. 1429

δ Cassiop.		ν Persei.		R. Aurigæ.		R Draconis	
r	1.11	3	0.6r	3	0.rK	r	0.97
K	0.40	3	0.6r	3	0.rK	3.	0.K0
r	1.17	K	0.6r	r	1.7r		
				K	1.69		
				K	1.rA		
R Urs. min.		δ Cassiop.		δ Cephei.		ν Bootis.	
r	0.K6	r	1.32	r	0.96	9	1.69
K	0.K6	6	1.9K	A	1.A2	r	0.97
K	0.K6	6	0.A2	7	1.A2		
δ Cephei.							
6	0.61						

r	1.11
K	0.40
r	1.17
3	0.6r
3	0.6r
K	0.6r
3	0.rK
3	0.rK
r	1.7r
K	1.69
K	1.rA
r	0.97
3	0.K0
r	0.K6
K	0.K6
K	0.K6
r	1.32
6	1.9K
6	0.A2
r	0.96
A	1.A2
7	1.A2
9	1.69
r	0.97
6	0.61
121)	25.63

mean value = 0.213

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(Apr. 2, 1902)

β Persei. Computation of $\lambda + \beta$, in connection with light equation computation from $\lambda + \delta$ (1900) given on p. 67 of this book. (Recomputation made Apr. 1, 1902.) to check.

$3^h\ 1^m\ 40^s = 25^\circ\ 25'\ 0'' = \lambda$

$+40^\circ\ 34' = \delta$

Log. tan δ = +9.9325 v

" sin λ = +9.6262 v

" tan A = +0.07990 v

A = +50 14 v

ε = +23 27

$A - \varepsilon$ = +26 47 v

" cos $(A-\varepsilon)$ =	+9.9519 v	+9.9507 v
" tan λ =	+0.00632	+0.00632
	+9.9530 v	+9.9503
" cos A =	+9.8059 v	+9.8059
N = 5° 51' =	+0.1573 v	+0.1510 = 5° 46' = N
" sin N =	+9.9172 v	+9.9172
" tan $(A-\varepsilon)$ =	+9.70309	+9.70309
" tan β =	+9.6175 v	+9.6121
β =	+22° 26'	22° 24' = β
" cos $(A-\varepsilon)$ =	+9.9507 v	+9.9507 v
" cos A =	+9.8059 v	+9.8059 v
" Fraction =	+0.1448	+0.1446
" cos β =	+9.9642 v	+9.9643 v
" sin N =	+9.9172 v	+9.9172 v
Sum =	+9.8814 v	+9.8815 v
" cos δ =	+9.8861 v	+9.8861 v
" sin λ =	+9.6262 v	+9.6262 v
Sum =	+9.5123 v	+9.5123 v
	+0.1448 v	+0.1446 v Check.

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In the eclipse of Oct. 20. 1895. Jupiters sat. IV disappeared 7m 49s later than the almanac ephemeris.

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U Pegasi.

~~According to Chandler's note of Mar. 29. 1896. the following~~

The following is a partial copy of Chandler's letter to Prof. Pickering, under date of Mar. 29. 1896.

~~Copy.~~

While on this subject &c. I would like to make another correction in the elements of U Pegasi (A. J. XV. 141)

The observations can be somewhat better represented by shifting the numbering of the periods elapsed between the groups of observed phases which lie several months apart. This gives the elements

Min. 1894. Sept. 22^d 16^h 23.^{m}0 Gr. m. S.
+ 5^h 32^m 47.^{s}6 E. or
241 309 ^{d}.4 Cambridge + 0.^{d}23061

But, of course, there are anomalies still left which do not admit of explanation by the accidental errors of observation. The discordance on the average is still about ± 0.^{d}020 whereas the real uncertainty in the determination of the individual phases is certainly not over ± 0.^{d}002

Whether I have yet got the correct numbering of the epochs or not, it is manifest that large objective irregularities exist.

Yours Truly
(Signed) S. C. Chandler.

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α Coronae. Computation of Longitude & Latitude (to check) Apr. 2. 1902.

$\alpha = 15^h\ 14^m\ 7^s$ (1900) $= 228°\ 31'\ 45''$
$\delta = +32°\ 04'$ (")

Log tan δ	$+9.79601$
" sin α	$\underline{n9.87468}$
" tan N	$n9.92133$
N	$-39°\ 50'$
ε	$\underline{+23\ 27}$
$N-\varepsilon$	$-63\ 17$
" cos $(N-\varepsilon)$	$+9.65121$
" tan α	$\underline{+0.05370}$
	$+9.70651$
" cos N	$\underline{+9.80131}$
$A = 213°\ 32'$	$+9.82120$

" sin A	$n9.74227$
" tan $(N-\varepsilon)$	$\underline{n0.29816}$
" tan β	$+0.04043$
β	$+47°\ 40'$

Log cos $(N-\varepsilon)$	$+9.65121$
" cos N	$\underline{+9.89131}$
" Fraction	$+9.76750$
" cos β	$+9.82830$
" sin A	$\underline{n9.74227}$
Sum	$n9.57057$
" cos δ	$+9.92836$
" sin α	$\underline{n9.87468}$
Sum	$n9.80304$
	$+9.76753$ Check.

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Computation of Table for Light Equation of Stella Variable ($20^h\ 31^m\ +19.^\circ 2$)

Date.		Sun's Long.	Log ρ	
Jan.	1			
	11			
	21			
	31			
Feb.	10			
	20			
Mar.	1.			
	11.			
	21.			
	31.			
Apr.	10.			
	20.			
	30.			
May	10.			
	20.			
	30.			
June	9.			
	19.			
	29.			
July	9.			
	19.			
	29.			
Aug.	8.			
	18.			
	28.			
Sept.	7.			
	17.			
	27.			

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Date.	Sun's Long.	Log. p
1896. Oct. 7.		
17.		
27.		
Nov. 6.		
16.		
26.		
Dec. 6.		
16		
26.		

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Suspected Variables.

Either ~~comp. star~~ k or l (comp. stars for "Caphei") are variable.

" m " n (" " " " k Aurigae) are probably variable. The means of my original estimates make m 0.02 brtr. than n, and the means of Mr. Reed's make m 0.30 " " n; whereas the Phot. I. in Apr. 1896. (mean of two nights, on Apr. 22 and 30) make n 0.06 brtr. than m, and an eye estimate with N with equatorial on Mars), makes n 1 grade brtr. than m thus confirming the photometer, and establishing its variability.

ι (iota) Librae is a suspected variable and should be watched.

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Phot. Mag. of Comp. Stars for Variables.

Comp. Stars used by L.C. in visual work.

β Persei:-

Phot. not.	DM No.	H.P. No.	Desig.	Rev. H.P. Magn.
a	+34° 198	185	3 And.	2.37
b	+41 395	324	γ And.	2.20
c	+32 855	862	ζ Aurig.	2.90
d	+39 895	649	ε Persei	2.96
e	+34 381	336	β Trian.	3.08
f	+30 91	92	δ Andr.	3.49
g	+47 467	251	ν Persei	3.77
h	+35 775	652	ξ "	4.05

λ Tauri.

a	-2 1235	975	η Orion	3.44
b	+18 640	773	ε Tauri	3.63
c	+8 511	550	o "	3.80
d	+5 581	665	ν "	3.94
e	+12 486	567	f "	4.28
f	+21 585	670	A "	4.50

ε Aurigae

a	+32 855	862	ζ Aur	2.90
b	+39 895	649	ε Persei	2.96
c	+41 1058	896	η Aur.	3.28
d	+40 1142	879	ξ "	3.94
e	+48 1063	702	μ Per.	4.28
~~f~~	~~+39 1418~~	~~1063~~	~~τ Persei~~	~~4.64~~
f		944	λ Aurig	4.85

η Geminorum

Phot. not.	DM No.	H.P. No.	Desig	Rev. H.P. Magn.
~~a~~	~~+37° 1380~~	~~1104~~	~~ε Aurigae~~	~~2.74~~
b	+25 1406	1263	ε Gem.	3.18
c	+13 1396	1272	ξ "	3.40
d	+34 1480	1295	ζ "	3.64
~~e~~	~~+28 1385~~	~~1394~~	~~ι " ?~~	~~3.89~~
~~f~~	~~+7 1337~~	~~1231~~	~~13 Mono.~~	~~4.50~~

ζ Geminorum.

a	+16 1443	1373	λ Gem	3.65
b	+28 1385	1394	ι "	3.89
c	+14 1187	1153	ξ Orion	4.35
d	+13 1390	1266	30 Gem	4.65
e	+13 1462	1305	e "	4.70

α Herculis.

a	+21 2934	2774	β Hercules	2.81
b	+25 3221	2880	δ "	3.16
c	+39 3029	2810	π "	3.61
d	+19 3086	2747	γ "	3.79
e	+31 2947	2844	ε "	3.92

β & R Lyrae

a	+32 3286	3232	γ Lyrae	3.30
b	+27 2888	2976	μ Her	3.48
c	+28 2925	3048	o "	3.83
d	+37 3222	3172	β Lyrae	4.29
e	+36 3094	3093	π "	4.34
f	+36 3319	3210	δ^2 "	4.52

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η Aquilae

Prov not.	DM No.	A.P. No.	Desig	Rev. A.P. Magn.
a	+2° 3879	3343	η Aquilae	3.44
b	+6 4357	3450	β "	3.90
c	−1 3782	3381	ζ "	4.28
d	+7 4132	3368	ε "	4.65
e	+0 4206	3349	ν "	4.86
f	+5 4225	3394	θ "	5.17

δ & μ Cephei.

a	+77 928	0182	γ Cephei.	3.42
b	+57 2475	3923	β "	3.62
c	+65 1814	4037	ζ "	3.68
d	+49 3875	3987	7 Lacertæ	3.85
e	+56 2741	3942	ε Cephei	4.23
f	+63 1802	3903	ξ "	4.40
g	+60 2288	3855	ν "	4.46

χ Herculis

a	+43 2542		5.54
b	+50 2237		5.90
c	+49 2491		6.19
d	+47 2300		6.54
e	+46 2110		6.84
f	+47 2267		7.17
g	+47 2288		7.40

Comp. Stars for Vesta.

Not	DM No.	Magn.	Resids.	Fin Not
a	+26° 1865	6.67	A	a
b	+25 2013	6.72	11 11	b
c	+21 1991	6.09	A	c
d	+22 2029	7.01	A	d
e	+27 1715	5.96	07 06	e
f	+24 1968	6.84	02 02	f
g	+26 1855	7.51	A	g
~~h~~	~~+24 2022~~	~~7.56~~	~~A~~	
k	+23 2040	7.18	A	h
l	+24 2065	7.50	A	k
m	+23 2071	7.13	A	l
n	+22 2102	7.52	A	m
~~o~~	~~+22 2100~~	~~6.81~~	~~A~~	
p	+20 2351	6.80		n
~~q~~	~~+20 2366~~	~~7.24~~		
r	+21 2113	6.01		
s	+19 2251	6.64		
t	+19 2254	6.92		o
u	+21 2100	7.44		p
w	+20 2391	7.46		q
x	+20 2399	7.10		r
y	+19 2307	7.11		s
z	+19 2297	7.90		t

see page 96

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Cont from Prev. Page

S Sagittae.

Ref.	DM. No.	H.P. No.	Desig.	Rev. H.P. Magn.
a	+19 4277			5.26
b	+16 4081			5.38
c	+16 4121			5.89
d	+18 4365			6.14
e	+15 4040			6.56
f	+16 4086			6.81

Mars.

a		1275	α Can. Maj.	-1.58
b			α Aurigae	0.21
c		2400	α Bootis	0.24
d		1091	α Orionis	0.92
e		1459	β Gem.	1.21
~~d~~		~~797~~	~~α Tauri.~~	~~1.06~~
f			α Virginis	1.21
g			α Leonis	1.34
h			α Arcturi	2.12
k			β Leonis	2.23

R Serpentis.

a	+14° 2969	5.66
b	+17 2906	5.89
c	+16 2840	6.14
d	+17 2926	6.44
f	+15 2925	7.62
e	+15 2923	7.27

X Cancri.

c	+17 1990	7.11
d	+18 2075	7.12
b	+17 1966	6.82
a	+17 1979	6.29

R Trianguli

a	+33° 45' 4"	5.90
~~c~~	~~+33 44 5"~~	~~6.25~~
~~b~~	~~+32 47 7"~~	~~6.29~~
d	+33 46 1"	6.92
e	+34 46 2"	7.34
f	+33 45 8"	7.53

R Aquilae

a	+8° 3951	6.62
b	+7 4002	6.95
c	+7 3987	7.39
d	+8 3956	7.55

V Cephei

a	+82° 20'	5.55
b	+84 51 7"	6.18
c	+81 13"	6.40
d	+82 748"	7.20
e	+82 728"	7.69

U Camelop.

a	+63 436	7.30
b	+61 600	7.22
c	+62 582	7.58
d	+63 426	7.68

— Piscium

7 20 +4.6

a	+3 190	6.96
b	+4 230	7.52 ?

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R Sculptoris

a	-30	540	5.64
b	-31	562	5.82
c	-34	576	6.62
d	-32	548	6.83
e	-33	498	7.12
f	-35	472	7.52
g	-31	560	7.92

93.1901 Sagittae Vol. 45

a	+19	4010	5.38
b	+19	3956	5.97
c	+19	4009	6.27
d	+18	4043	6.77
e	+18	4014	6.97
f	+18	4055	7.52
g	+19	3976	7.76
h	+19	3981	8.07
k	+19	3978	8.42
l	+18	4039	8.70
m	+18	4030	
n	+19	3974	
o	+19	3977	
p			

α Arietis

a	+15	430	6.59
b	+15	450	7.34
c	+13	525	7.42
d	+13	496	7.46
e	+14	518	8.14
f	+14	513	

χ Persei

a	+36	742	5.57
b	+30	582	6.22
c	+31	649	6.51
d	+31	662	6.70
e	+33	719	7.12
f	+33	724	7.36

ρ Persei

a	ε Persei	2.96
b	δ "	3.10
c	ε Cassiop.	3.44
d	ν Persei	3.93

93.1901 Sagittal

a	+19	3956	5.97
b	+18	4043	6.77
c	+18	4024	

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Comparison Stars for Vesta used by L. Campbell.

Singl. Not.	DM No.	RA. 1900.	Dec. 1900.	Magn Vol. 45	
a	+26.1865	8h 49.0m	+26° 36′	6.67	
b	+25.2013	8 50.4	24 51	6.83	
c	+21.1991	9 7.9	21 42	6.09	
d	+22.2029	8 51.3	22 15	7.01	
e	+27.1715	9 3.0	27 3	5.90	
f	+24.1968	8 32.9	24 2	6.82	
g	+26.1855	8 46.1	26 5	7.51	
h	+23.2060	8 59.2	23 16	7.18	
k	+24.2065	9 10.4	23 50	7.50	1901 opposition
l	+23.2072	9 12.1	23 30	7.13	
m	+22.2102	9 26.6	22 18	7.52	
n	+20.2851	9 33.3	20 45	6.70	
o	+19.2254	9 40.3	19 9	6.92	
p	+21.2100	9 40.6	20 57	7.44	
q	+20.2391	9 47.7	20 25	7.46	
r	+20.2399	9 51.5	20 14	7.42	
s	+19.2307	10 03.7	+19 1	7.11	
t	−19.5721	20 2.4	−19° 6′	7.01	
u	−21 5684	20 13.6	−21 15	6.61	
w	−24° 15668	~~20~~ 19 48.3	−24 11	6.28	
x	−22 5296	~~20~~ 19 53.7	−22 29	6.84	1902 Oppos.
y	−24 15307	19 19.4	−24 9	5.48	
z	−24 15161	19 9.4	−24 21	6.07	
α	−26 13936	19 7.0	−26 5	5.86	
β	−27 13620	19 3.6	−27 17	6.79	
γ	−26 14096	19 15.5	−26 21	7.40	
δ	−25 14267	19 36.3	−25 6	6.66	
ε	−26 14281	19 26.7	−26 15	7.56	
ζ	−27 14515	19 59.1	−27 6	7.08	

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Vesta Comp. Stars cont.

Nos.	Dm. No.	R.A. 1900	Dec. 1900	Magn. Vol. 45	Date 1902
η	−25 14589	20 4.1	−25 35	7.24	"
θ	−24° 15814	20 1.7	−24 10	7.54	"

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List of Special Objects.

Wells Var.	9h 36m		− 6.0
" "	20h 31m		+ 17.°7 (Susp. Algol type)
Zelandi " (+0° 939)	4 57	57.4	+ 0° 54.5 (14 Var) =
Chandler " (+15° 49 15 9.3)	23h 50m	35.5	+15° 4.9 (14 Var) =
Var. −1° 47.	3 12	2.5	−1° 36.0 "
o Cetti.	2 4		− 2.°5
M. P. 441.	3 31		+62.4
Nova Aurigae	5 23		+32.0
Algol Var.			
γ Androm.	0h 14m		+26.°1
Z Herculis.	17 53		+15.1
Var. in Um. Min.	15 50		+74.2 This star
H. P. 249 4.	17 13		+49.9
Var. dis by Pkt.	9 0		+27.2
χ Cygni.	19 41		+33.4
T Coronae.	15 55		+26.6
δ Cephei.			
β Lyrae.			
Phot. Var.	9h		+27.0
U Cephei.			

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1896phat..proj..107S

H.P. 499.
U Cygni

is close to +79° 467 = 15h 35m 10s. +79° 6.0 (9.5) (1900)

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1896phac..1proj.1073p

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Final Heriâ. Photometer Values of Comp. Stars for Circumpolar Variables. (on this and following pages)

I Cassiopeiæ. 0h 15m 25 +57° 59′.3

Comp.	Final Value.	No. Observations. a	b	c	d	e	Residuals. a	b	c	d	e
a	5.46	3	.	.	.	4	.10	.	.	.	.10
b	6.65	.	R	.	.	6	.	R	.	.	4.
c	6.40	.	.	.	.	3	.	.	.	.	4.
d	7.32	.	2	3	.	3	.	.01	.11	.	.09
e	7.95	.	2	3	.	6	.	.06	.08	.	.15
f	8.18	.	.	3	.	3	.	.	.08	.	.08
g	8.62	.	.	3	.	3	.	.	.11	.	.12
h	8.96	.	2	3	.	3	.	.10	.07	.	.16
k	9.47	.	.	.	.	6	.	.	.	.	4
l	9.77	.	.	.	.	3	.	.	.	.	4
m	9.97	.	.	.	.	3	.	.	.	.	4

In the above. a indicates No. of Vol. 14.
" " " b " " " Vol. 24, part I.
" " " c " " " " " " " II.
" " " d " " " " 30.
" " " e " " " "

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Cassiopeia. 1h 9m 4s +71° 50.8

Sto. Observations.

Designation.	Final Magn.	a	b	c	d	e	a	b	c	d	e
a	6.15	.	.	.	.	6	.	.	.	.	A
b	7.08	.	.	3	.	3	.	.	.08	.	.07
c	7.15	.	.	.	.	3	.	.	.	.	A
d	7.16	.	.	3	.	3	.	.	.06	.	.06
d	7.98	.	.	.	.	6	.	.	.	.	A
e	8.15	.	.	.	.	3	.	.	.	.	A
f	8.34	.	.	3	.	3	.	.	.02	.	.02
g	8.67	.	.	3	.	3	.	.	.03	.	.03
h	9.08	.	.	.	.	3	.	.	.	.	A
m	9.92	.	.	.	.	3	.	.	.	.	A

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1896 R Cassiop. 23h 51m 4s +50°. 34'.9

Designation	Final Mag.	No. Observations. a	b	c	d	e	a	b	c	d	e
a	K.04	7	3		3		.09	.00		.09	
b	K.36	6			3		.06			.06	
c	K.89	3	2		K		.07	.23		.16	
d	5.09	6	6		3		.17	.03		.14	
e	5.60	7	2	3	3		.19	.23	.05	.02	
f	6.40		2	3	3			.17	.03	.13	
g	6.62		2	3	3			.00	.05	.05	
h	7.17		2	3	3			.15	.00	.15	
k	7.39		2	3	3			.10	.10	.20	
l	8.16		2	3	3			.05	.18	.13	
m	8.72			3	3				.08	.09	
n	9.25			3	3				.05	.05	
o	9.80				3					.00	

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'9

K + D. Persei. S = 2h 12m 29 +57° 33' 2

Designation	Final mags.	a	b	c	d	e	a	b	c	d	e
a	7.40	.	.	3	.	6	"	"	.07	"	.07
"g"	7.67	.	.	.	.	6	"	"	"	"	A
b	8.0K	.	.	3	.	6	"	"	.02	"	.01
"f"	7.76	.	.	3	.	6	"	"	.03	"	.0K
c	8.K6	.	.	3	.	6	"	"	.03	"	.03
d	8.60	.	.	.	.	7	"	"	"	"	A
e	9.0K	.	.	3	.	6	"	"	.0V	"	.06
f	9.1V	.	.	.	.	6	"	"	"	"	A
g	9.3K	.	.	.	.	K	"	"	"	"	A

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Adopted Inp. of Comp. Stars for Circumpolar Variables.

T Cassiopeiae.

Seq.	Magn.
a	7.44
b	6.47
c	6.49
d	7.24
e	7.49
f	8.19
g	8.76
h	8.98
k	9.36
l	9.81
m	10.17
n	10.72
o	11.04
p	11.36
q	11.46
r	12.39
s	12.87
t	13.43
u	13.82
w	14.21

R Cassiopeiae.

Seq.	Magn.
a	4.00
b	4.41
c	4.84
d	5.17
e	5.73
f	6.26
g	6.70
h	7.19
k	7.70
l	8.16
m	8.80
n	9.40
o	9.93
p	10.50
q	10.98
r	11.36
s	11.78
t	12.12
u	12.40
w	12.81

S Cephei.

Seq.	Magn.
a	7.40
b	7.83
c	8.15
d	8.68
e	9.04
f	9.39
g	9.84
h	10.22
k	10.70
l	11.04
m	11.58
n	11.95
o	12.44
p	12.75
q	13.12
r	13.67

R Draconis.

Seq.	Magn.
a	6.88
b	7.19
c	7.44
d	7.66
e	8.02
f	8.28
g	8.76
h	9.06
k	9.40
l	9.80
m	10.16
n	10.56
o	10.97
p	11.59
q	12.01
r	12.52
s	12.87
t	13.33

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Desig.	Redness		N Bootis.		R Aurigae.		R Draconis.
T Cassiop.	7.3	a	7.40	a	6.17	a	6.46
S "	6.7	b	7.91	b	6.61	b	7.19
T Persei.	4.	c	8.39	c	7.16	c	7.44
S "	5.0	d	8.78	d	7.72	d	7.66
R Aurigae	6.5	e	9.12	e	8.16	e	8.02
R Lyncis	4.8	f	9.67	f	8.42	f	8.24
R Ursæ Maj.	1.6	g	10.14	g	9.28	g	8.56
T " "	2.0	h	10.60	h	9.72	h	9.06
S " "	3.2	k	11.12	k	10.26	k	9.40
S Bootis.	2.8	l	11.57	l	10.64	l	9.80
R Camelop.	2.1	m	12.04	m	11.13	m	10.16
R Ursæ Min.	3.2	n	12.50	n	11.48	n	10.56
R Draconis	2.0	o	12.94	o	11.93	o	10.99
S Cygni	5.1	p	~~13.32~~ 13.29	p	12.36	p	11.59
T Cephei.	6.3	q	13.59	q	12.82	q	12.01
S "	9.1	r	13.94	r	13.26	r	12.52
R Cassiop.	6.5	s	14.33	s	13.62	s	12.85
				t	13.96	t	13.33
				u	14.23		

Con. on p. 131 f.f.

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R Aurigæ. $5^h\ 5^m\ 36^s$ $+53°\ 25'.0$

Desig.	Final Mags.	a	b	c	d	e	a	b	c	d	e
a	6.17	3	.	3	.	K	.03	"	.07	"	.05
b	6.7K	.	2	.	.	3	"	.04	"	"	.09
c	6.9A	A	.	3	.	6	.12	"	.09	"	.0K
d	7.A1	.	.	3	.	3	"	"	.0A	"	.04
e	A.0A	.	.	3	.	3	"	"	.06	"	.05
f	A.92	.	.	3	.	3	"	"	.05	"	.05
g	9.16	.	.	3	.	3	"	"	.0K	"	.03
h	9.A0	.	.	.	.	3	"	"	"	"	.0A

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β Lyncis 6h 49m 20s +55° 31.6

Seq.	Visual Mag.	a	b	c	d	e	a	b	c	d	e
a	6.70	.	.	3	.	K	"	"	.01	"	.02
b	7.20	.	.	.	.	3	"	"	"	"	4
c	7.KO	.	.	.	.	3	"	"	"	"	4
d	7.9K	.	.	3	.	3	"	"	.0K	"	.0K
e	8.69	.	.	3	.	K	"	"	.03	"	.03
f	8.96	.	.	3	.	3	"	"	.03	"	.03
g	9.K7	.	.	.	.	3	"	"	"	"	4
h	9.70	.	.	.	.	3	"	"	"	"	4

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R Ursæ Majoris: $10^h\ 34^m\ 19^s$ $+69°\ 32'.1$

Seq.	Final Mag.	a	b	c	d	e	a	b	c	d	e
a	5.90	4	.	.	.	6	.04	"	"	"	.05
b	6.32	.	.	3	.	5	"	"	.05	"	.04
c	6.24	3	2	3	.	6	.04	.09	.01	"	.02
d	6.63	.	2	3	.	3	"	.01	.04	"	.04
e	7.26	.	.	3	.	4	"	"	.19	"	.20
f	7.55	.	2	3	.	3	"	.09	.11	"	.01
g	7.77	.	.	3	.	3	"	"	.06	"	.06
h	8.04	.	.	7	.	3	"	"	.06	"	.05
k	9.47	.	.	.	.	5	"	"	"	"	=
l	8.92	.	.	3	.	3	"	"	.05	"	.04
m	9.53	.	.	.	.	3	"	"	"	"	=
n	9.53	.	.	.	.	3	"	"	"	"	=
o	9.90	.	.	3	.	2	"	"	.03	"	.02

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Trans. Uranus: $12^h\ 29^m\ 47^s$ $+60°\ 17'.2$

Designation	Final Diameters	a	b	c	d	e	a	b	c	d	e
a	6.22	"	2	3	"	6	"	.06	.06	"	.13
b	7.10	"	"	3	"	3	"	"	.11	"	.10
c	7.32	"	"	3	"	3	"	"	.03	"	.02
d	7.60	"	"	6	"	9	"	"	.13	"	.12
e	7.87	"	"	6	"	3	"	"	.04	"	.04
f	8.30	"	"	6	"	3	"	"	.09	"	.10
g	8.46	"	2	3	"	3	"	.12	.04	"	.04
h	9.21	"	"	3	"	3	"	"	.12	"	.12
k	9.40	"	"	"	"	3	"	"	"	"	4

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N Nb. Nuj. $12^h\ 37^m\ 35^s$ $+61.^\circ\ 53'3$

Dauj.	Nupn.	a	b	c	d	e	a	b	c	d	e
a	6.42	,	,	,	,	4	"	"	"	"	4
b	7.10	,	,	3	,	3	"	"	.11	"	.10
c	7.34	,	,	3	,	3	"	"	.03	"	.02
d	7.60	,	,	6	,	9	"	"	.13	"	.12
e	7.07	,	,	6	,	3	"	"	.04	"	.04
f	8.40	,	,	3	,	3	"	"	.19	"	.20
g	8.81	,	,	,	,	3	"	"	"	"	4

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3'3

N Boötis. 14h 18m 1s +34° 28'3

Designation.	Final Mags.	a	b	c	d	e	a	b	c	d	e
a	7.43	.	.	3	.	3	"	"	.06	"	.06
b	7.94	.	.	3	.	3	"	"	.04	"	.04
c	8.40	.	.	3	.	3	"	"	.01	"	.00
d	8.63	.	.	.	.	3	"	"	"	"	0
e	9.13	.	.	3	.	3	"	"	.03	"	.03
f	9.90	.	.	3	.	3	"	"	.19	"	.20

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R Camelop. 14h 28m 54s +84° 29'.2

Descr.	Fiducial mags.	a	b	c	d	e	a	b	c	d	e
B	7.73	3	2	.	.	4	.06	.02	"	"	.03
a	7.12	.	4	.	.	3	"	.04	"	"	.03
b	8.72	.	6	.	.	0	"	.04	"	"	.04
c	8.94	.	3	.	.	3	"	.07	"	"	.02
d	9.68	.	.	.	.	2	"	"	"	"	ct
e	9.69	.	.	.	.	1	"	"	"	"	ct
f	10.20	.	.	.	.	1	"	"	"	"	ct

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R Ursæ Minoris. $16^h\ 31^m\ 57^s$ $+72°\ 34'.4$

Star.	Faint rays.	a	b	c	d	e	a	b	c	d	e
"γ"	6.64	,	,	3	,	3	"	"	.04	"	.04
a	8.25	,	,	3	,	3	"	"	.04	"	.04
b	8.95	,	,	3	,	3	"	"	.01	"	.01
c	8.82	,	,	3	,	3	"	"	.04	"	.04
d	~~9.16~~ 9.02	,	,	3	,	3	"	"	.14	"	.14
e	~~9.24~~ 9.60	,	,	3	,	3	"	"	.36	"	.37
f	9.39	,	,	,	,	3	"	"	"	"	"

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R Draconis. $16^h\ 32^m\ 17^s$ $+67°\ 3.5'$

Denj.	Find mag.	a	b	c	d	e	a	b	c	d	e
a	6.73	.	.	V	.	3	"	"	.07	"	.07
b	7.24	.	.	K	.	K	"	"	.04	"	.09
c	7.K0	.	.	3	.	3	"	"	.11	"	.10
d	7.V6	.	.	3	.	3	"	"	.04	"	.07
e	8.0V	.	.	3	.	3	"	"	.16	"	.16
f	8.K2	.	.	3	.	3	"	"	.02	"	.07
g	8.K8	.	.	3	.	3	"	"	.06	"	.0V
h	9.13	.	.	.	.	3	"	"	"	"	A
k	9.23	.	.	.	.	3	"	"	"	"	A

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ν Cygni $20^h\ 2^m\ 28^s$ $+37°\ 34'.2$

Decy.	Fluid lines	a	b	c	d	e	a	b	c	d	e
β	K.29	7	.	3	.	5	.12	"	.06	"	.05
a	7.AA	.	.	3	.	3	"	"	.05	"	.05
b	A.43	.	.	.	.	3	"	"	"	"	4
c	A.76	.	.	3	.	3	"	"	.23	"	.23
d	9.1K	.	.	K	.	3	"	"	.10	"	.11
e	9.43	.	.	3	.	3	"	"	.23	"	.23

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I Cephei, $21^h\ 7^m\ 33^s$ $+67°\ 54'.4$

Days.	Final Mags.	a	b	c	d	e	a	b	c	d	e
a	K.78	6	.	.	.	✓	.01	"	"	"	.01
b	✓.✓6	12	.	.	.	39	.02	"	"	"	.03
c	✓.92	3	.	.	.	✓	.0✓	"	"	"	.0K
d	6.77	.	.	3	.	3	"	"	.10	"	.10
e	7.20	.	.	6	.	3	"	"	.0K	"	.03
f	7.62	.	.	3	.	3	"	"	.12	"	.11
g	8.26	.	.	3	.	3	"	"	.0K	"	.03
h	8.01	.	.	3	.	3	"	"	.10	"	.10
k	8.49	.	.	.	.	3	"	"	"	"	½
l	9.12	.	.	3	.	3	"	"	.02	"	.01
m	9.6K	.	.	.	.	3	"	"	"	"	½

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N Cephei. 21h 36m 57s +77 58.2

Day.	Final Mag.	a	b	c	d	e	a	b	c	d	e
a	7.2K	.	.	.	.	3	"	"	"	"	4
b	A.01	.	.	.	.	6	"	"	"	"	4
c	A.1A	.	.	3	.	3	"	"	.10	"	.11
d	A.V7	.	.	.	.	3	"	"	"	"	4
e	9.02 ~~9.60~~	.	.	3	.	2	"	"	.13 ~~.1K~~	"	.14 ~~.1K~~
f	9.37	.	.	.	.	3	"	"	"	"	4
g	9.9K	.	.	.	.	1	"	"	"	"	4
h	9.9K	.	.	.	.	1	"	"	"	"	4

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R Cygni.

Descr.	Final mags.	a	b	c	d	e	a	b	c	d	e
a	5.17	2	.	3	.	5	.13	"	.13	"	.01
b	5.65	3	.	.	.	3	.04	"	"	"	.04
c	6.19	3	.	.	.	4	.09	"	"	"	.09
d	6.50	.	.	3	.	3	"	"	.04	"	.03
e	6.50	.	.	.	.	3	"	"	"	"	0
f	7.17	.	.	.	.	3	"	"	"	"	0
g	7.24	.	.	3	.	3	"	"	.06	"	.01
h	7.64	.	.	3	.	3	"	"	.03	"	.04
k	8.04	.	.	3	.	3	"	"	.03	"	.04
l	8.10	.	.	.	.	3	"	"	"	"	0
m	8.26	.	.	3	.	3	"	"	.14	"	.13
n	9.29	.	.	3	.	3	"	.07	.15	"	.09
o	9.38	.	.	3	.	3	"	"	.16	"	.15

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V Cygni.

Desig.	Final mag.	a	b	c	d	e	a	b	c	d	e
a	6.22	.	2	.	.	3	"	.10	"	"	.09
b	6.72	3	.	.	.	K	.02	"	"	"	.02
c	7.19	.	.	.	.	3	"	"	"	"	A
d	7.60	.	.	.	.	3	"	"	"	"	A
e	4.20	.	.	.	.	3	"	"	"	"	A
f	4.10	.	.	.	.	3	"	"	"	"	A
g	4.60	.	.	3	.	3	"	"	.03	"	.03
h	4.43	.	.	.	.	3	"	"	"	"	A
K	9.03	.	.	.	.	3	"	"	"	"	A
l	9.20	.	.	.	.	3	"	"	"	"	A

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U Cygni.

Seq.	Finish Mags.	a	b	c	d	e	a	b	c	d	e
a	5.87	3	2	,	,	5	.07	.25	"	"	.17
b	6.24	,	2	,	,	6	"	.14	"	"	.15
c	6.47	,	,	,	,	3	"	"	"	"	.1/2
d	6.93	,	,	,	,	3	"	"	"	"	.1/2
e	7.77	,	,	3	,	3	"	"	.10	"	.10
f	8.37	,	,	,	,	3	"	"	"	"	.1/2
g	8.77	,	,	,	,	3	"	"	"	"	.1/2
h	9.25	,	,	4	,	3	"	"	.12	"	.12
K	9.33	,	,	,	,	3	"	"	"	"	.1/2
L	9.97	,	,	,	,	3	"	"	"	"	.1/2

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$20^h\ 31^m 4^s$ $+17°\ 46.'6$

Wells Variable. (κ Delphini)

Design.	Phot. mags.	Vis. red. to Phot. Scale.
a	9.27	9.34
b	9.40	9.62
c	9.46	9.94
d	10.47	10.30
e	10.49	10.72
f	11.10	11.06
g		11.49
h	12.09	11.80
k		12.23
l		12.17
m		12.41
n		13.07

For method of obtaining Phot. mags (9.27 above) of star a, see Book 1. Series I. K. 136.

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Adopted mags. of Comp. Stars for Circumpolar Variables.

	R Lyncis		R Urs. Min.		X Cygni		Urs. Maj.		R Urs. Maj.		T Urs. Maj.	
a	6.69	a	4.25	a	7.92	a	6.65	a	5.92	a	6.42	
b	7.10	b	4.66	b	8.36	b	7.02	b	6.21	b	6.96	
c	7.52	c	4.26	c	8.78	c	7.30	c	6.42	c	7.30	
d	8.02	d	9.16	d	9.16	d	7.52	d	6.90	d	7.58	
e	8.60	e	9.58	e	9.48	e	7.86	e	7.08	e	8.00	
f	9.02	f	9.90	f	9.97	f	8.50	f	7.48	f	8.38	
g	9.36	g	10.25	g	10.26	g	8.83	g	7.71	g	8.86	
h	9.74	h	10.66	h	10.66	h	9.22	h	8.18	h	9.17	
k	10.13	k	11.04	k	11.08	k	9.74	k	8.90#	k	9.85	
l	10.52	l	11.50	l	11.36	l	10.09	l	8.80	l	10.40	
m	10.93	m	11.86	m	11.69	m	10.65	m	9.43	m	10.75	
n	11.45	n	12.20	n	12.15	n	11.08	n	9.76	n	11.26	
o	15.49	o	12.58	o	12.43	o	11.52	o	9.84	o	11.73	
p	11.82	p	12.92	p	12.85	p	11.94	p	10.46	p	12.09	
q	12.42			q	13.23	q	12.54	q	11.02	q	~~12.84~~ 12.26	
r	12.80			r	13.51	r	13.12	r	11.48	r	12.38	
s	13.13			s	13.88	s	13.55	s	12.02	s	12.67	
t	13.46			t	14.31	t	13.98	t	12.52	t	12.84	
u	13.78			u	14.68	u	14.67	u	13.12	u	~~13.09~~ 12.99	
				w	15.17	w	13.50	w	13.17			
						x	14.03	x	13.47			
						y	14.50	y	13.60			
						z	14.89					
						&	15.17					

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Adopted Mags. of Comp. Stars for Certain Polar Variables.

	Cassiop.		R Camelop.		Cepheï	R Cassiop.		S Persei.		R Hor. Min.	
a	~~6.46~~ 6.56	a	7.47	a	4.42	a	4.00	a	7.84	a	8.25
b	~~7.00~~ 7.02	b	8.45	b	5.52	b	4.41	b	8.10	b	8.62
c	~~7.27~~ 7.29	c	9.02	c	6.04	c	4.84	c	8.38	c	8.90
d	~~7.72~~ 7.64	d	9.50	d	6.64	d	5.17	d	8.68	d	9.26
e	~~8.05~~ 7.98	e	9.82	e	~~7.12~~ 7.09	e	5.73	e	8.88	e	9.62
f	~~8.32~~ 8.32	f	10.32	f	~~7.69~~ 7.64	f	6.26	f	9.07	f	9.96
g	~~8.76~~ 8.68	g	10.80	g	~~8.18~~ 8.04	g	6.70	g	9.53	g	10.30
h	~~9.20~~ 9.14	h	11.22	h	~~8.12~~ 8.26	h	7.17	h	9.92	h	10.64
k	~~9.54~~ 9.72	k	11.40	k	8.92	k	7.50	k	10.68	k	11.05
l	~~10.06~~ 9.98	l	12.20	l	~~9.18~~ 9.41	l	8.16	l	11.33	l	11.50
m	~~10.36~~ 10.30	m	12.66	m	9.65	m	8.80	m	11.80	m	11.84
n	~~10.74~~ 10.84	n	12.86	n	~~10.10~~ 10.02	n	9.40	n	12.44	n	12.18
o	~~11.02~~ 11.20	o	13.23	o	10.50	o	9.93	o	12.84	o	12.56
p	~~11.48~~ 11.69	p	13.56	p	~~11.06~~ 11.04	p	10.50	p	13.29	p	12.93
q	~~11.87~~ 12.20	q	13.86	q	11.56	q	10.98	q	13.81		
r	~~12.28~~ 12.80	r	14.07	r	11.96	r	11.36	r	14.35		
s	~~12.61~~ 13.22			s	~~12.39~~ 12.80	s	11.78	s	14.78		
t	~~12.90~~ 13.99			t	~~12.71~~ 13.34	t	12.12				
u	~~13.20~~ 14.36					u	12.40				
w	13.56					w	12.81				
x	13.91					x	13.13				
y	14.33					y	13.48				
						z	13.78				
						α	14.10				
						β	14.37				

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Adopted Mags. of Comp. Stars for ~~Circumpolar~~ Variables.

S Cephei.		R Draconis.		S Bootis.		R Aurigae.		T Cassiop.		ε Cet.	
a	7.40	a	6.88	a	7.40	a	6.17	a	5.84	a	1.26
b	7.83	b	7.19	b	7.91	b	6.61	b	6.47	b	1.66
c	8.15	c	7.44	c	8.39	c	7.18	c	6.89	c	1.86
d	8.68	d	7.66	d	8.78	d	7.72	d	7.24	d	2.03
e	9.04	e	8.02	e	9.12	e	8.16	e	7.87	e	2.19
f	9.37	f	8.28	f	9.67	f	8.82	f	8.17	f	2.39
g	9.84	g	8.56	g	10.18	g	9.28	g	8.56	g	2.62
h	10.22	h	9.06	h	10.60	h	9.72	h	8.98	h	2.95
k	10.70	k	9.40	k	11.12	k	10.26	k	9.36	k	3.56
l	11.04	l	9.80	l	11.57	l	10.68	l	9.81	l	3.83
m	11.58	m	10.16	m	12.04	m	11.13	m	~~10.18~~ 10.14	m	4.13
n	11.95	n	10.56	n	12.50	n	11.48	n	10.52	n	4.27
o	12.44	o	10.97	o	12.94	o	11.93	o	~~11.04~~ 11.32	o	4.39
p	12.75	p	11.59	p	13.29	p	12.36	p	~~11.34~~ 12.06	p	4.62
q	13.12	q	12.01	q	13.59	q	12.82	q	~~11.86~~ 12.43	q	4.93
r	13.66	r	12.52	r	13.94	r	13.26	r	~~12.37~~ 12.84	r	5.10
s	14.02	s	12.85	s	14.33	s	13.62	s	~~12.88~~ 13.30	s	5.32
t	14.34	t	13.33			t	13.96	t	~~13.43~~ 13.60	t	5.53
		u	13.84			u	14.23	u	~~13.82~~ 13.93	u	5.67
		w	14.43					w	~~14.21~~	w	5.84
		x	15.02					p'	11.72	x	6.02
										y	6.36
										z	6.67
										α	7.24
										β	8.02
										γ	8.58
										δ	8.82
										ε	9.19

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Adopted mags. of Comp. Stars for Variables.

U Arietis		S Cam. mire		S S Cygni		Tetubrou	
a	K.K9	a	6.72	a	A.00	a	7.K7
b	K.99	b	7.06	b	A.32	b	7.6A
c	V.27	c	7.KK	c	A.V0	c	A.07
d	V.A1	d	7.70	d	A.60	d	A.K0
e	6.0K	e	A.06	e	A.90	e	A.7V
f	6.63	f	A.KA	f	9.39	f	9.0A
g	7.09	g	A.79	g	9.62	g	9.29
h	7.62	h	9.27	h	9.9A	h	9.K6
k	7.9K	k	9.66	k	10.K3	k	9.A2
l	A.2A	l	10.02	l	10.92	l	10.0K
m	A.A1	m	10.KK	m	10.90	m	10.2V
n	9.32	n	10.A2	n	11.32	n	10.V8
o	9.K6	o	11.26	o	11.77	o	10.69
p	9.7K	p	11.70	p	12.1K	p	10.90
q	10.2K	q	12.26			q	11.2K
r	10.VK	r	12.67			r	11.VK
s	11.03	s	13.1A			s	11.77
t	11.V6	t	13.62			t	12.0V
u	12.17	u	1K.1A			u	12.33
w	12.6A					w	12.V0
x	13.26					x	12.A0
y	13.A7					y	13.03
							13.30
							13.69
							13.96
							1K.K2
							1K.77
							1K.06

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Phot. mags. of Comparison Stars for Saturn, as measured with the Meridian Photometer.

−13°	39.46	v.3
−13	39.4	7.7
−12	41.1	7.46
−14	40.2	8.79
−14	40.9	8.44
−13	40.2	8.10
−13	39.0	9.2
−13	40.3	9.1
−14	41.0	9.2

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χ Cygni.
Int. P. Values of Comp. Stars.

a	3.30
b	3.42
c	4.03
d	4.46
e	4.34
f	5.03
g	5.49
h	6.00
k	6.14
l	6.35
m	6.54
n	6.44
o	7.24
p	7.62
q	7.60
r	8.10
s	8.33
t	8.73
u	9.04
w	9.25
z	9.03

Harv. Comp. Stars.

H.P.		Rev. H.P. Comp.
1275.	α Canis. maj.	−1.54
2400.	α Bootis.	0.24
1091	α Aquilæ.	0.92
1459	β Geminorum.	1.21
797	α Tauri.	1.06
	α Virginis	1.21
	α Leonis	1.34

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Diagrams, or newly lettered stars.

East Equatorial.

T. Cass.	Feb. 20, 1897.	Bk. 50,	pg. 149.
S. Persei.	" " "	" "	" 150.
S. Cass.	Feb. 25, "	" "	" 157.
K. Cygnae.	" " "	" "	" 158.
S. Cephei.	Mar. 11, "	" "	" 185.
K. Cass.	" " "	" "	" 186.
K. Cass.	Mar. 23, "	" "	" 196.
K. Cass.	" " "	" "	" 198.
K. Cass.	Mar. 26, "	" "	" 202.
K. Cygnei.	" " "	" "	" " .
K. Ursae Maj.	Mar. 26, "	" "	" 204.
" " "	Mar. 28, "	" "	" 206.
T. Ursae Maj.	" " "	" "	" 207.
" " "	Mar. 30, "	" "	" 211.
S. Ursae Maj.	Apr. 2, "	" "	" 216.
K. Ursae Maj.	Apr. 6, "	" 51,	" 8.
T. Cephei.	Apr. 9, "	" "	" 13.
S. Bootis.	Apr. 10, "	" "	" 19.
K. Ursae Min.	Apr. 15, "	" "	" 28.
S. Bootis.	Apr. 19, "	" "	" 38.
K. Ursae Min.	" " "	" "	" 39.
K. Ursae Maj.	Apr. 23, "	" "	" 45.
S. Cygni.	Apr. 30, "	" "	" 56.
S. Cephei.	" " "	" "	" 59.
K. Cass.	" " "	" "	" 61.
K. Draconis.	May 6, "	" "	" 68.
S. Cygni.	May 8, "	" "	" 70.

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T. Ceplrei.	May 8, 1889.	Bk. 51, p. 71.
S. Ceplrei.	May 9, " .	" " " 78.
R. Casa.	" " , " .	" " " 80.
R. Crocomiz.	May 17, " .	" " " 100.
S. Cygni.	" " " .	" " " 101.
T. Ins. Maj.	" " " .	" " " 104.
S. Ins. Maj.	" " " .	" " " " .
R. Casa.	May 18, " .	" " " 111.
T. Ceplrei.	May 24, " .	" " " 115.
S. Ceplrei.	" " " .	" " " 116.
T. Casa.	May 28, " .	" " " 127.
R. Casa.	" " " .	" " " 128.
R. Ins. Maj.	May 29, " .	" " " 130.
R. Lyncis.	May. 31, " .	" " " 132.
S. Ceplrei.	June 22, " .	" " " 160.
T. Ceplrei.	" " , " .	" " " 161.
R. Ins. Maj.	June 29, " .	" " " 168.
S. Ceplrei.	July 5, " .	" " " 183.
S.C. 3636.	July 12, " .	" " " 194.
S. Casa.	July 18, " .	" 52, " 10.
" " .	Aug. 6, " .	" " " 53.
R. Aurigae.	Oct. 16, " .	" " " 159.
" " .	Oct. 18, " .	" " " 170.
S. Cygni.	Oct. 23, " .	" " " 181.
R. Aurigae.	Nov. 14, " .	" " " 205.
R. Cam.	Nov. 15, " .	" " " 210.
R. Casa.	Nov. 30, " .	" 53, " 40.
R. Lyncis.	Dec. 21, " .	" " " 99.
S. Casa.	Jan. 22, 1890.	" " " 193.
T. Cass.	Feb. 11, " .	" 54, " 10.

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Nova Aur (4h.6 -38°).	Feb. 21, 1890.	Bk. 54, p. 37.
" " " "	" " "	" " " 43.
R. Cam	June 28, "	" 55, " 102.
R. Ursæ Min.	Oct. 11, "	" 56, " 124.
S. Ursæ Maj.	Oct. 22, "	" " " 148.
T. Ursæ Maj.	" " "	" " " 149.
Nova Aur discovered by photography (2h.1+54°)	Oct. 31, "	" " " 155.
R. Ursæ Min.	Nov. 1, "	" " " 158.
T. Cephei.	Nov. 10, "	" " " 177
R. Cam.	Nov. 13, "	" " " 179.
R. Lyncis	Nov. 14, "	" " " 183.
R. Ursæ Maj.	Nov. 14, "	" " " 184
" " "	Nov. 20, "	" " " 198.
S. Cassiop.	Dec. 9, "	" 57, " 7.
S. Ursæ Maj.	Dec. 15, "	" " " 25.
S. Cygni.	Dec. 22, "	" " " 40.
T. Cephei.	" " "	" " " "
S. Ursæ Maj.	Dec. 24, "	" " " 45.
T. Cephei.	Dec. 27, "	" " " 47.
T. Ursæ Maj.	" " "	" " " "
R. Cass.	Jan. 3, 1891.	" " " 56.
T. Cephei.	Jan. 10, "	" " " 63.
New Var. discovered by phot. (1h.8 +56°.3)	Jan. 16, "	" " " 77
U. Geminorum.	Jan. 24, "	" " " 79.
New Var. discovered by phot. (1h.8 +56°.3)	Feb. 2, "	" " " 90.
R. Cass.	Feb. 11, "	" " " 102.
R. Cam.	" " "	" " " 103.
R. Aurigæ	" " "	" " " 106.
Comet Wolf.	Sept. 9, "	" 59 " 69.
" "	Sept. 12, "	" " " 87.

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R. Pegasi	Sept. 24, 1891.	Bk.	59.	p. 125.
R. Draconis	Sept. 25, " .	"	"	" 130.
R. Cygni	" " "	"	"	" 131.
" "	Oct. 9, " .	"	"	" 190.
T. Aquarii.	" " " .	"	"	" 191.
S. Aquarii.	Oct. 24, " .	"	60	" 41.
" " .	Oct. 28 " .	"	"	" 47.
V. Cygni.	" " " .	"	"	" 48.
" "	Nov. 3, " .	"	"	" 74.
— Lacertae.	Nov. 19, " .	"	"	" 120.
Ind. Var. W.M. +9° 4777	Dec. 1, " .	"	"	" 149.
R. Tauri.	Dec. 28, 11 .	"	"	" 217.
Copeland's Nova.	Feb. 4, 1892.	"	61	" 49.
" "	Feb. 5, " .	"	"	" 55.
" "	Mar. 5, " .	"	"	" 98.
V. Cancri.	Mar. 19, " .	"	"	" 143.
Copeland's Nova.	Mar. 25, " .	"	"	" 168.
S. Hydrae.	Mar. 30, " .	"	"	" 196.
Copeland's Nova.	Apr. 9, " .	"	"	" 214.
" "	Apr. 12, " .	"	62	" 4.
" "	Apr. 13, " .	"	"	" 7.
R. Leo Min.	Apr. 16, " .	"	"	" 15.
S. Librae	July 18, " .	"	"	" 125.
T. Herculis.	July 20, " .	"	"	" 127.
R. Scuti.	July 21, " .	"	"	" 132.
Comet Holmes.	Nov. 16, " .	"	63	" 162.
" "	Nov. 23, " .	"	"	" 199.
R. Arietis.	Dec. 5 " .	"	"	" 213.
R. Andromedae.	Jan. 21, 1893.	"	64	" 109.
R. Persei.	Mar. 6, " .	"	"	" 170.

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R. Tauri.	Mar. 6, 1893.	Bk. 64, p. 171.
" "	Mar. 7, " .	" " " 174.
R. Coronae.	Mar. 13, " .	" " " 180.
R. Tauri.	Mar. 13, " .	" " " 181.
R. Geminorum	Mar. 13, " .	" " " 182.
T. Hydrae.	Mar. 15, " .	" " " 187.
R. Coronae.	Mar. 16, " .	" " " 190.
R. Geminorum	" " " .	" " " 191.
R. Tauri.	Mar. 18, " .	" " " 194.
T. Virginis	Mar. 20, " .	" " " 198.
T. Virginis.	" " " .	" " " 199.
N.G.C. 6644.	Oct. 5, " .	" 67 " 32.
N.G.C. 6578.	Oct. 7, " .	" " " 46.
R. Cygni.	Nov. 18, " .	" " " 201.
S. Tauri.	" " " .	" " " 202.
R. Tauri.	Dec. 7, " .	" 68 " 60.
" "	Dec. 13, " .	" " " 73.
Var. in Perseus. (Anderson's Var.)	Jan. 1, 1894.	" " " 137.
D.M. +26° 43	Jan. 2, " .	" " " 140.
" " " "	Jan. 8, " .	" " " 151.
T. Virginis.	Mar. 26, " .	" 69 " 177.
R. Coronae.	" " " .	" " " 179.-80.
T. Virginis.	" " " .	" " " 181.
R. Gem.	Apr. 3, " .	" " " 204.
T. Gem.	" " " .	" " " 206.
R. Serpentis.	Apr. 25, " .	" 70 " 25.-6.
R. Corvi.	Apr. 26, " .	" " " 33.
D.M. -21° 4483	May 9, " .	" " " 57.
R. Corvi.	May 10, " .	" " " 60.
D.M. +19° 3706	" " " .	" " " 61.

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D.M. +19° 3708	May 10, 1894.	Bk. 70, p. 62.
D.M. +19° 3751.	" " "	" " " "
R. Serpentis.	May 21, "	" " " 79.
T. Geminorum	" " "	" " " 81.
Nebula.	July 5, "	" " " 198.
R. Coronae.	July 24, "	" 71 " 25.
U. Librae.	" " "	" " " "
T. Serpentis.	" " "	" " " 26.
R. Serpentis.	" " "	" " " "
S Scorpii.	" " "	" " " 27.
T. Ophiuchi.	" " "	" " " "
T. Herculis.	July 25, "	" " " 30.
" "	July 26, "	" " " 34.
K Scorpii.	" " "	" " " "
Y Librae.	" " "	" " " 35.
Z. Sagitt.	" " "	" " " 36.
Jup. + Sats.	Oct. 27, "	" 72 " 14.
Nova Cunigae	Dec. 5, "	" " " 159.
X Cygni.	Dec. 18, "	" " " 202.
Jup. + Sats.	Jan. 14, 1895.	" 73. " 63.
D.M. -7° 2873	Mar. 30, "	" 74 " 55.
S. Virginis.	Apr. 23, "	" " " 138.
R. Gem.	May 1, "	" " " 155.
T. Virginis	" " "	" " " 156
V. Virginis.	" " "	" " " 157
M.P. 441.	May 7, "	" " " 187.
T. Androm.	July 29, "	" 76 " 40.
" "	Sept. 13, "	" " " 135.
Var. in Nebula	" " "	" " " 138.
T. Androm.	Oct. 18, "	" 77 " 113.

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S. Androm.	Oct. 23, 1895.	Bk. 77, page. 132.
Clymer's Nav. Var. (Vesta)	Nov. 1, " .	" " " 205.
D.M. +5°4928.	Nov. 7, " .	" 78, " 13.
N.G.C. 5253.	Dec. 16, " .	" " " 141.
" " "	Dec. 19, " .	" " " 165.
Well's Var. (20h5 +17°7)	Dec. 20, " .	" " " 166.
" " "	Dec. 24, " .	" " " 185
" " "	Jan. 3, 1896.	" " " 218.
" " "	" " " .	" 79 " 1.
" " "	" " " .	" " " 2.
T. Cass.	Jan. 18, " .	" " " 103.

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Diagrams, or newly lettered stars.

West Equatorial.

Susp. Var.	Dec. 13, 1894	Bk. 1. p. 43.
H.P. 899.	Apr. 11, 1895.	" " " 100.
R.S. Virginis	May 2, " .	" " " 119.
R.S. Librae	" " " .	" " " 121.
Well's Var. (9ᵐ.6 - 7ᵐ.3)	" 24, " .	" " " 135.
R. Leo Min.	" " " .	" " " 136.
R. Corvi.	" " " .	" " " 137.
W. Herculis	June 14, " .	" " " 160.
T. " .	" " " .	" " " 161.
χ Cygni	" " " .	" " " " .
R.T. Cygni	June 20, " .	" " " 171.
B.D. +14°4228.	July 2, " .	" " " 174.
χ Cygni	July 10, " .	" " " 183.
R. Virginis	July 19, " .	" " " 192.
B.D. +13°4367	July 23, " .	" " " 195.
T. Persei	July 26, " .	" " " 198.
R.T. Cygni	" " " .	" " " " .
T. Androm.	July 30, " .	" " " 204.
R. Vulpec.	July 31, " .	" " " 207
S. Coronae	Aug. 8, " .	" " " 214
R. Aquilae	Aug. 14, " .	" " " 218.
S. Pegasi	Aug. 21, " .	Bk 2. " 6.
χ Cygni	" " " .	" " " " .
" "	Sept. 12, " .	" " " 7.
R. Pegasi	" " " .	" " " 26.
R. Androm.	" " " .	" " " 27.
Z Herculis	Sept. 13, " .	" " " 28.
		" " " 31.

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T. Androm.	Sept. 14, 1895.	Bk. 2, p. 35.
" " .	Oct. 18, " .	" " " 56.
Will's Var (20h.5-17°.7)	Oct. 21, " .	" " " 58.
H.P. 899.	" " " .	" " " 60.
R. Cygni.	Nov. 21, " .	" " " 69.
R. Trianq.	Dec. 16, " .	" " " 82.
R. Arietis.	Dec. 19, " .	" " " 86.
R. Piscium.	Dec. 20, " .	" " " 87.
U. Orionis.	" " " .	" " " 88.
T. Androm.	" " " .	" " " 89.
R. Columbae.	Feb. 12, 1896.	" " " 98.
R. Arietis.	" " " .	" " " 100.

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Computation of Light Equation for Short Period Variable.

See remarks on page 156.

Date.	☉ long. 1836.	☉ long. 1840.	Eq. R.V. 1836.	Eq. R.V. 1899	Eq. R.V. Tab. of ☉	Eq. of Center				
Jan. 0.	279° 16′	279 12	9.9926	9.9927		−0° 4′ 10.″9	278° 56′ 0.″0	279 ♌ 10.3		
10.	289 21	289 27	9.9927	9.9927	9.9927	+0 16 0.0	288 41 23.3	289° 19′ 44.″3		
20.	299 32	299 37	9.9931	9.9931	9.9929	+0 37 40.7	298 32 46.6	299 30 ♌.7		
30	309 42	309 47	9.9936	9.9936	9.9933	+0 57 14.4	308 24 9.9	309 40 47.7		
Feb. 9.	319 50	319 53	9.9943	9.9943	9.9940	+1 11 6.6				
19.	329 56	329 58	9.9952	9.9952	9.9948	+1 27 46.4				
Mar. 1.	339 59	340 1	9.9962	9.9962	9.9958	+1 37 47.9				
11.	349 59	350 2	9.9974	9.9974	9.9969	+1 46 50.3				
21.	359 56	359 58	9.9986	9.9986	9.9980	+1 52 39.1				
31.	9 49	9 52	9.9996	9.9996	9.9993	+1 57 57.7				
Apr. 10.	19 39	19 42	0.0011	0.0011	0.0007	+1 57 48.0				
20.	29 26	29 29	0.0023	0.0022	0.0018	+1 49 49.8				
30.	39 10	39 12	0.0034	0.0034	0.0029	+1 42 20.7				
May 10.	48 50	48 53	0.0047	0.0044	0.0040	+1 31 57.4				
20.	58 28	58 31	0.0057	0.0053	0.0050	+1 18 53.2				
30.	68 4	68 7	0.0061	0.0061	0.0057	+1 3 37.7				
June 9.	77 38	77 41	0.0067	0.0067	0.0064	+0 46 34.8				
19.	87 11	87 14	0.0070	0.0070	0.0069	+0 28 14.1				
29.	96 44	96 46	0.0072	0.0072	0.0071	+0 9 6.3				
July 9.	106 17	106 18	0.0072	0.0072	0.0072	−0 10 16.7				
19.	115 48	115 50	0.0070	0.0069	0.0071	−0 29 22.7				
29.	125 21	125 23	0.0067	0.0067	0.0067	−0 47 39.3				
Aug. 8.	134 56	134 58	0.0059	0.0059	0.0062	−1 4 36.4				
18.	144 32	144 34	0.0051	0.0051	0.0055	−1 19 44.7				
28.	154 11	154 13	0.0042	0.0042	0.0046	−1 32 30.0				
Sept. 7.	163 52	163 54	0.0031	0.0032	0.0036	−1 42 37.1				
17	173 37	173 39	0.0020	0.0020	0.0025	−1 50 11.0				
27	183 24	183 26	0.0009	0.0008	0.0013	−1 54 17.3				

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Date.	☉ Long. 1836.	☉ Long. 1896.	Eq. R.V. 1836.	Eq. R.V. 1899.	Eq. R.V. Eq. of ☉	
Oct. 7.	193 17	193 18	9.9997	9.9995	0.0000	-1 rv- 27
17.	203 10	203 12	9.9982	9.9983	9.9982	
27.	213 2	213 10	9.9970	9.9971	9.9976	
Nov. 6.	223 9	223 11	9.9959	9.9960	9.9964	
16.	233 13	233 17	9.9949	9.9950	9.9954	
26.	243 19	243 21	9.9941	9.9941	9.9944	
Dec. 6.	253 26	253 30	9.9933	9.9933	9.9937	
16.	263 32	263 40	9.9929	9.9930	9.9931	
26.	273 49	273 51	9.9927	9.9927	9.9928	

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Computation of Light Equation for B Persei

Lat. = +22°.5

Log cos. Lat. = 9.9656 (Log from Taylor's Tables.)
= 2.6984 / 2.6637

Long. = 5°4.8

Date.	From Brit. N. A. for 1836 Time	Long.	Log. ρ	Long. ☆ − ☉	Log. cos. (Long. ☆ − ☉)	Log. ρ	Log. cos. (Long. ☆ ☉)	Log Final Log.	
Jan. 0.	279.2	9.993	13 5.6	9.4547	9.9927	u 9.4540	2.5104	+324.5
10.	289.4	9.993	12 5.4	9.7633	9.9927	u 9.7629	2.4193	+263.
20.	299.5	9.993	11 5.3	9.6316	9.9929	u 9.6304	2.2475	+194.
30.	309.7	9.993	10 5.1	9.4516	9.9933	u 9.4504	2.0730	+118.
Feb. 9.	319.8	9.994	9 5.0	9.9403	9.9942	u 9.9403	1.5942	+39.
19.	329.9	9.995	8 4.9	9.9479	9.9951	+9.9479	1.6077	+41.
Mar. 1.	340.0	9.996	7 4.8	9.4196	9.9961	+9.4186	2.0748	−120.
11.	350.0	9.997	6 4.8	9.6296	9.9972	+9.6292	2.2901	−192.
21.	0.0	9.998	5 4.8	9.7617	9.9984	+9.7607	2.4224	−262.
31.	9.8	9.999	4 5.0	9.8450	9.9997	+9.8447	2.5129	−326.
Apr. 10.	19.6	0.000	3 5.2	9.9126	0.0009	+9.9123	2.5769	−378.
20.	29.4	0.002	2 5.4	9.9756	0.0022	+9.9752	2.6217	−418.
30.	39.2	0.003	1 5.6	9.9843	0.0033	+9.9837	2.6507	−447.
May 10.	49.2	0.004	6.0	9.9982	0.0043	+9.9976	2.6656	−463.
20.	59.1	0.005	3 6.3	9.9999	0.0053	+9.9991	2.6681	−466.
30.	68.1	0.006	3 6.7	9.9842	0.0060	+9.9842	2.6579	−455.
June 9.	77.6	0.006	337.2	9.9654	0.0066	+9.9647	2.6307	−432.
19.	87.2	0.007	327.6	9.9269	0.0070	+9.9267	2.5972	−396.
29.	96.7	0.007	31 8.1	9.8472	0.0072	+9.8471	2.5427	−349.
July 9.	106.2	0.007	30 8.6	9.7957	0.0072	+9.7957	2.4660	−292.
19.	115.8	0.007	29 9.0	9.6847	0.0070	+9.6845	2.3563	−227.
29.	125.4	0.007	28 9.4	9.5721	0.0066	+9.5713	2.1916	−157.
Aug. 8.	134.9	0.006	27 9.9	9.2357	0.0060	+9.2353	1.9050	−80.
18.	144.5	0.006	27 0.3	9.7179	0.0052	+7.7190	0.3879	−2.
28.	154.2	0.005	26 0.6	9.2130	0.0043	u 9.2131	1.8811	+76.
Sept. 7.	163.9	0.004	25 0.9	9.5154	0.0036	u 9.5154	2.1817	+152.
17.	173.6	0.002	24 1.2	9.6432	0.0021	u 9.6421	2.3486	+223.
27.	183.4	0.001	23 1.6	9.7957	0.0011	u 9.7957	2.4597	+284.

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For (Long. * − Long. ☉) between 90° and 270° the cor. to obs. is +.

<<

Date.	Sun's Long.	Log. ρ	Long. * − " ☉	Log. cos (Long. * − " ☉)	Log. ρ	Log. cos (Long. * − " ☉)	Log. Final Eq.	
Oct. 7.	193.°2	0.000	221.°6	9.874n	~~0.0000~~ 9.9996	n9.8738	2.5371	+344.
17.	203.2	9.998	211.6	9.930n	9.9988 (4)	n9.9303	2.5924	+391.
27.	213.1	9.997	201.7	9.968n	9.9976 (2)	n9.9681	2.6290	+426.
Nov. 6.	223.2	9.996	191.6	9.991n	9.9964 (1)	n9.9910	2.6508	+448.
16.	233.2	9.995	181.6	0.000n	9.9954 (50)	n9.9998	2.6585	+456.
26.	243.3	9.994	171.5	9.995n	9.9948 (2)	n9.9952	2.6531	+450.
Dec. 6.	253.5	9.993	161.3	9.976n	9.9937 (5)	n9.9764	2.6336	+430.
16.	263.6	9.993	151.2	9.943n	9.9934 (0)	n9.9427	2.5994	+398.
26.	273.8	9.993	141.0	9.890n	9.9928 (7)	n9.8905	2.5469	+352.

+324		
	−61	
+263		−8
	−69	
+194		−7
	−76	
+118		~~−2~~ −3
	−79	
+39		~~−3~~ −1
	−80	
−41		~~+2~~ +1
	−79	
−120		+4
	−75	
−195		+5
	−70	
−265		+9
	−61	
−326		+9
	−52	
−378		+12
	−40	
−418		+11
	−29	
−447		+13
	−16	
−463		+13
	−3	
−466		+14
	+11	
−455		

		+12
	+23	
−432		+13
	+36	
−396		+11
	+47	
−349		+10
	+57	
−292		+8
	+65	
−227		+7
	+72	
−155		+3
	+75	
−80		+3
	+78	
−2		0
	+78	
+76		−2
	+76	
+152		−5
	+71	
+223		−6
	+65	
+288		−9
	+56	
+344		−9
	+47	
+391		−12
	+35	
+426		−13
	+22	
+448		

		−14
	+8	
+456		−14
	−6	
+450		−14
	−20	
+430		−12
	−32	
+398		−14
	−46	
+352		

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Computation of Light Equation for δ Tauri.

Lat. = −7.7 Log. cos Lat. = 9.9961
Long. = 59.2 " K99. = 2.6981
2.6942

1 Date.	2 Sun's Long.	3 Long. * − 60 Long.	Log cos Col. 3	Log ρ	Log. Fluid Dy.			
Jan. 0.	279.2	1K0.0	u9.8842	9.9927	u2.5712	+373.	−61	−10
10.	289.K	129.8	u9.8072	9.9927	u2.K981	+312.	−71	−7
20.	299.5	119.7	u9.6975	9.9930	u2.3822	+2K1.	−78	−5
30.	309.7	109.5	u9.5235	9.9935	u2.2112	+163.	−83	−3
Feb. 9.	319.8	99.K	u9.2131	9.99K2	u1.9015	+80.	−86	0
19.	329.9	89.3	+0.0870	9.9951	0.7763	−62.	−86	+3
Mar. 1.	3K0.0	79.2	+9.2727	9.9961	1.9630	−92.	−83	+6
11.	350.0	69.2	+9.5508	9.9972	2.2K18	−175.	−77	+7
21.	0.0	59.2	+9.7093	9.99K4	2.K019	−255.	−70	+10
31.	9.8	49.K	+9.8136	9.9991	2.5073	−322.	−60	+11
Apr. 10.	19.6	39.6	+9.8869	0.0009	2.5819	−382.	−K9	+12
20.	29.K	29.8	+9.9348	0.0022	2.63K8	−K31.	−37	+14
30.	39.2	20.0	+9.9730	0.0033	2.6705	−K68.	−23	+13
May 10.	K8.2	10.K	+9.9928	0.00K3	2.6913	−K91.	−10	+16
20.	589	0.7	+0.0000	0.0053	2.6995	−501.	+6	+13
30.	68.1	351.1	+9.9947	0.0060	2.69K9	−K95.	+19	+13
June 9.	77.6	341.6	+9.9772	0.0066	2.6780	−K76.	+32	+13
19.	87.2	332.0	+9.9K59	0.0070	2.6K71	−KKK.	+K5	+11
29.	96.7	322.5	+9.8995	0.0072	2.6009	−399.	+56	+10
July 9.	106.2	313.0	+9.8338	0.0072	2.5352	−3K3.	+66	+8
19.	115.8	303.K	+9.7K07	0.0070	2.KK19	−277.	+7K	+5
29.	125.K	293.8	+9.6076	0.0066	2.3067	−203.	+79	+K
Aug. 8.	135.9	2K3.3	+9.3927	0.0060	2.0929	−125.	+83	+2
18.	1K5.5	273.7	+8.9135	0.0052	1.6079	−K1.	+85	−3
28.	155.2	263.0	u8.9K03	0.00K3	1.6385	+KK.	+82	−3
Sept. 7.	163.9	253.3	u9.K0KK	0.0032	2.1018	+126.	+79	−5
17.	173.6	243.6	u9.6161	0.0021	2.3125	+205.	+7K	−9
27.	183.K	233.8	u9.7K98	0.0009	2.KKK9	+279.	+6K	

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Computation of Light Equation for X Tauri. 157

1	2	3						
	Sun's Long.	Long. ☆ − Long. ☉	Log. cos Col. 3.	Log. ρ	Log. Fund. Eq.			
Oct. 7.	193.2	226.0	9.9418	9.9996	2.5736	+3K4	+56	−10
17.	203.2	216.0	9.9040	9.9948	2.6026	+399		−13
27.	213.1	206.1	9.9533	9.9972	2.6447	+K00	+K3	−14
Nov. 6.	223.2	196.0	9.9428	9.9961	2.6731	+K71	+29	−14
16.	233.2	186.0	9.9976	9.9950	2.6826	+K86	+30	−15
26.	243.3	175.9	9.9949	9.9942	2.6873	+K87	+15	−16
Dec. 6.	253.5	165.7	9.9863	9.9935	2.6750	+K72	+1	−15
16.	263.6	155.6	9.9594	9.9930	2.6566	+K53	−29	−15
26.	273.8	145.5	9.9155	9.9927	2.6025	+400	−43	

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Computation of Light Equation for Z Herculis.

Long. = 26A.0 Log. cos. lat. = 9.A923<
Lat. = +3A.7 " K99. = 2.69A1<
2.V90K<

1 Date.	2 Sun's Long.	Long. * − « ⊙	Log. cos. Col. 3.	Log. ρ.	Log Finish Eq	Finish Eq.	
Jan. 0.	279.2	3KA.A<	+9.9916 <	9.9927	2.V7K7<	−376. <	
10.	289.K	33A.6<	+9.9690 <	9.9927	2.VV21<	−3V7. <	+19 +11
20.	299.V	32A.V<	+9.930A<	9.9930	2.V1K2<	−327. <	+30 +10
30.	309.7	31A.3<	+9.A731<	9.993V	2.KV70<	−2A6. <	+K0 +7 +9
Feb. 9.	319.A	30A.2<	+9.7913<	9.99K2	2.37V9<	−23A. <	+K9 +9
19.	329.9	29A.1<	+9.6730<	9.99V1	2.2VAV<	−1A1. <	+V7 +V
Mar. 1.	3K0.0	2AA.0<	+9.K900<	9.9961	2.0706V<	−119. <	+62 +3
11.	3V0.0	27A.0<	+9.1K36<	9.9972	1.7312<	−VK. <	+6V +3
21.	0.0	26A.0<	+A.VK2A<	9.99AK	1.1316<	+1K. <	+6A −2
31.	9.A	2VA.2<	+9.3107<	9.9997	1.9000A<	+A0. <	+66 −2
Apr. 10.	19.6	2KA.K<	+9.V660<	0.0009	2.1V73<	+1KK. <	+6K −K
20.	29.K	23A.6<	+9.716A<	0.0022	2.3095K<	+20K. <	+60 −6
30.	39.2	22A.A<	+9.A1A7<	0.0033	2.K12K<	+2VA. <	+VK −7
May 10.	KA.K	219.2<	+9.AA93<	0.00K3	2.KAK0<	+30V. <	+K7 −9
20.	VAV	209.V<	+9.9397<	0.00V3	2.V3VK<	+3K3. <	+3A −10
30.	6A.1	199.9<	+9.9733<	0.0060	2.V697<	+371. <	+2A −10
June 9.	77.6	190.K<	+9.992A<	0.0066	2.VA9A<	+3A9. <	+1A −11
19.	A7.2	1A0.A<	+0.0000<	0.0070	2.V97K<	+396. <	+ 7 −12
29.	96.7	171.3<	+9.99V0<	0.0072	2.V926<	+391. <	− V −10
July 9.	106.2	161.A<	+9.9777<	0.0072	2.V7V3<	+376. <	−1V −11
19.	11V.A	1V2.2<	+9.9K67<	0.0070	2.VKK1<	+3V0. <	−26 −10
29.	12V.K	1K2.6<	+9.9000<	0.0066	2.K970<	+31K. <	−36 −A
Aug. A.	13K.9	133.1<	+9.A3K6<	0.0060	2.K310<	+270. <	−KA −A
18.	14KV	123.V<	+9.7K19<	0.00V2	2.3379<	+21A. <	−V2 −7
28.	15K.2	113.A<	+9.60V9<	0.00K3	2.2006<	+1V9. <	−V9 −K
Sept. 7.	163.9	104.1<	+9.3A67<	0.0032	1.9A03<	+96. <	−63 −3
17.	173.6	9K.K<	+A.AAK9<	0.0021	1.K77K<	+30. <	−66 −1
27.	183.A	AK.6<	+A.9736<	0.0009	1.V6K9<	−37. <	−67

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Computation of Light Equation for Z Herculis. 159

Date.	Sun's Long.	Long. ☽ − ☉	Lg. cos. Col. 3.	Lg. ρ.	Lg. Finish Lg.	Finish Lg.	
Oct. 7.	193.2	7 K.A	+9.K1AV	9.9996	2.00AV<	−102.<	−6V +2
17.	203.2	6 K.A	+9.629	9.99AK	2.21A0<	−16V.<	−63 +6
27.	213.1	VK.9	+9.7V99	9.9972	2.3K73<	−222.<	−V7 +V
Nov. 6.	223.2	KK.A	+9.AV10	9.9961	2.K37V2	−27K.<	−V2 +10
16.	233.2	3 K.A	+9.91KK	9.99V0	2.K99A<	−316.<	−K2 +9
26.	243.3	2K7	+9.9VA3	9.99K~	2.VK29<	−3K9.<	−33 +11
Dec. 6.	253.V	1KV	+9.9AV9	9.993V	2.V69A	−371.<	−22 +11
16.	263.6	K.K	+9.99A7	9.9930	2.VA21	−3A2.<	−11 +12
26.	273.A	3VK.2<	+9.997A<	9.9927	2.VA09	−3AV.<	+1

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Computation of Light Equation for U Cephei

Long. = 71.2 Log. cos. Lat. = 9.6600
Lat. = 62.8 " K99. = 2.69[illegible] / 2.3[illegible]

1 Date.	2 Sun's Long.	3 Long. ☽ − ☉	Log. cos. Col. 3.	Log. ρ	Log. Anal Sy.	Anal Sy.	
Jan. 0.	279.2	1[illegible]2.0	u9.9[illegible]9	9.9927	2.2967	+198.	
10.	289.[illegible]	1[illegible]1.[illegible]	u9.[illegible]9[illegible]3	9.9927	2.2[illegible]61	+176.	−22 −[illegible]
20.	299.[illegible]	131.7	u9.[illegible]230	9.9930	2.17[illegible]1	+149.	−27 −[illegible]
30.	309.7	121.[illegible]	u9.71[illegible]1	9.9935	2.0697	+117.	−32 −3
Feb. 9.	319.[illegible]	111.[illegible]	u9.[illegible]621	9.99[illegible]2	1.91[illegible]7	+82.	−35 −3
19.	329.9	101.3	u9.2921	9.99[illegible]1	1.6[illegible]73	+44.	−38 −1
Mar. 1.	340.0	91.2	u[illegible].3210 → 0.6752	9.9961	0.7100	+5.	−39 −1
11.	350.0	[illegible]1.2	+9.1[illegible]7	9.9972	1.[illegible]007	−35.	−40 +2
21.	0.0	71.2	+9.[illegible]0[illegible]2	9.99[illegible]	1.[illegible]67	−73.	−38 +2
31.	9.[illegible]	61.[illegible]	+9.6[illegible]01	9.9999	2.0379	−109.	−36 +3
Apr. 10.	19.6	[illegible]1.6	+9.7932	0.0009	2.1[illegible]22	−142.	−33 +[illegible]
20.	29.[illegible]	[illegible]1.[illegible]	+9.[illegible]72[illegible]	0.0022	2.2327	−171.	−29 +[illegible]
30.	39.2	32.0	+9.92[illegible]	0.0033	2.2[illegible]9[illegible]	−195.	−24 +6
May 10.	[illegible]0.[illegible]	22.[illegible]	+9.96[illegible]9	0.00[illegible]3	2.32[illegible]3	−213.	−18 +6
20.	[illegible]9[illegible]	12.7	+9.9[illegible]92	0.00[illegible]3	2.3[illegible]26	−225.	−12 +6
30.	60.1	3.1	+9.999[illegible]	0.0060	2.363[illegible]	−231.	−6 +7
June 9.	7.6	3[illegible]3.6	+9.9973	0.0066	2.3620	−230.	+1 +6
19.	[illegible]7.2	3[illegible][illegible].0	+9.9[illegible]2[illegible]	0.0070	2.3[illegible]79	−223.	+7 +7
29.	96.7	33[illegible].[illegible]	+9.9[illegible][illegible][illegible]	0.0072	2.3208	−209.	+14 +[illegible]
July 9.	106.2	32[illegible].0	+9.913[illegible]	0.0072	2.27[illegible]7	−190.	+19 +6
19.	11[illegible].[illegible]	31[illegible].[illegible]	+9.[illegible][illegible][illegible]	0.0070	2.2176	−165.	+25 +[illegible]
29.	12[illegible].[illegible]	30[illegible].[illegible]	+9.7671	0.0066	2.1318	−135.	+30 +3
Aug. 8.	13[illegible].9	296.3	+9.6[illegible]6[illegible]	0.0060	2.00[illegible]6 (106)	−102.	+33 +3
18.	1[illegible][illegible].[illegible]	2[illegible]6.7	+9.[illegible][illegible][illegible]	0.00[illegible]2	1.[illegible]217	−66.	+36 +2
28.	1[illegible][illegible].2	277.0	+9.0[illegible]9	0.00[illegible]3	1.[illegible][illegible]23	−28.	+38 +1
Sept. 7.	163.9	267.3	u[illegible].6731	0.0032	1.034[illegible]	+11.	+39 −1
17.	173.6	257.6	u9.3319	0.0021	1.6921	+49.	+38 −1
27.	183.[illegible]	247.[illegible]	u9.[illegible]773	0.0009	1.9363	+86.	+37

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Computation of Light Equation for U Cephei

1 Date.	2 Sun's Long.	3 Long. ☽ − ☉	Log. cos. Col. 3.	Log. ρ	Log. Fruit 1y.	Fruit 1y.	
Oct. 7.	193.2	23A.0	ω9.72K2	9.9996	2.0A19	+121.	+3v −2
17.	203.2	22A.0	ω9.A2v7	9.99AK	2.1A20	+152.	+31 −v
27.	213.1	21A.1	ω9.A9v9	9.9982	2.2v12	+178.	+26 −4−v
Nov. 6.	223.2	20A.0	ω9.9Kv9	9.9961	2.3001	~~+199.~~ +200.	+21 −4 −6
16.	233.2	19A.0	ω9.97A2	9.99v0	2.3313	+214.	+15 −v −6
26.	2K3.3	18A.9	ω9.99v9	9.99K2	2.3KA2	+223.	+9 −A
Dec. 6.	2v3.v	177.7	ω9.9996	9.993v	2.3v12	+224.	+1 −6
16.	263.6	167.6	ω9.9A97	9.9930	2.3K0A	+219.	−v −7
26.	273.2	157.K	ω9.96v3	9.9927	2.3161	+207.	−12

This Table superseded by a new one with computed values of λ and β instead of scaled values from old maps. For new Table see Book 17, p. 130.

New Table goes into current use Apr. 12. 1902.

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Computation of Light Equation for ν Arthuræ.

Long. 156.2 Log. cos lat. = 9.8797
Lat. −40.7 " 499. = 2.6982
2.5779

1 Date.	2 Sun's Long.	3 Long. ☽ − ☉	Log. cos. Col. 3.	Log. ρ	Log. Fluid Eq.	Fluid Eq.	D.
Jan. 0.	279.2	237.0	n 9.7361	9.9923	2.3066	+203.	
10.	289.8	226.8	n 9.8357	9.9923	2.5059	+357 −9 −8	
20.	299.5	216.7	n 9.9051	9.9930	2.5749	+375 −7 −9	
30.	309.3	206.5	n 9.9518	9.9935	2.5231	+335 −12 −11	
Feb. 9.	319.8	196.8	n 9.9820	9.9952	2.5570	+352 −10	
19.	329.9	186.3	n 9.9978	9.9951	2.5703	+372 −12	
Mar. 1.	340.0	176.2	n 9.9990	9.9961	2.5729	+375 −11	
11.	350.0	166.2	n 9.9873	9.9972	2.5623	+365 −11	
21.	0.0	156.2	n 9.9615	9.9982	2.5396	+345 −10	
31.	9.8	146.8	n 9.9206	9.9997	2.5981	+315 −10	
Apr. 10.	19.6	136.6	n 9.8613	0.0009	2.5800	+295 −7	
20.	29.8	126.8	n 9.7778	0.0022	2.5758	+228 −8	
30.	39.2	117.0	n 9.6570	0.0033	2.2381	+173. −4	
May 10.	48.8	107.8	n 9.5257	0.0043	2.0579	+115. −4	
20.	57.5	97.7	n 9.1291	0.0053	1.7102	+51. −1	
30.	68.1	88.1	+ 8.5206	0.0060	1.1048	−13. +1	
June 9.	77.6	78.6	+9.2959	0.0066	1.8803	−76. +1	
19.	87.2	69.0	+9.5583	0.0070	2.1391	−132. +5	
29.	96.7	59.5	+9.7055	0.0072	2.2905	−195. +5	
July 9.	106.2	50.0	+9.8081	0.0072	2.3931	−257. +6	
19.	115.8	40.8	+9.8817	0.0070	2.4665	−293. +6	
29.	125.5	30.8	+9.9340	0.0066	2.5184	−330. +10	
Aug. 8.	134.9	21.3	+9.9693	0.0060	2.5531	−357. +9	
18.	144.5	11.7	+9.9909	0.0052	2.5739	−377. +11	
28.	154.2	2.0	+9.9997	0.0043	2.5818	−382. +11	
Sept 7.	163.9	352.3	+9.9961	0.0032	2.5771	−374. +11	
17.	173.6	342.6	+9.9797	0.0021	2.5596	−363. +11	
27.	183.4	332.8	+9.9491	0.0009	2.5279	−337.	

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Computation of Light Equation for δ Cephei

1 Date.	2 Sun's Long.	3 Long. ☽ − Long. ☉	Log. cos. Col. 3.	Log. ρ	Log. Final Log.	Final Log.	
Oct. 7.	193.2	323.0	+9.9023	9.9996	2.4797	−302.	+9 +3
17.	203.2	313.0	+9.8338	9.9944	2.4100	−257.	+10 +4
27.	213.1	303.1	+9.7373	9.9972	2.3123	−205.	+7 +2
Nov. 6.	223.2	293.0	+9.5919	9.9961	2.1659	−146.	+7 +3
16.	233.2	283.0	+9.3521	9.9950	1.9249	−84.	+3 +6
26.	243.3	272.9	+9.0041	9.9942	1.2761	−19.	+1 +6
Dec. 6.	253.5	262.7	+8.5100	9.9935	1.6935	+87.	−2 +6
16.	263.6	252.6	+7.9567	9.9930	~~1.9456~~ 2.0465	+111.	−3 +6
26.	273.8	242.4	+7.3669	9.9929	2.2364	+172.	+1

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Computation of the Light Equation for R Cam. May:

Long. = 113.2
Lat. = −34.1

Log. cos. lat. = 9.8959
" K99. = 2.6981
2.5940

Date.	Sun's Long.	Long. ☉ − ☊	Log. cos. Col. 3.	Log. ρ	Log. Fluct. Eq.	Fluct. Eq.	
Jan. 0	279.2	194.0	n 9.9869	9.9927	2.5736	+37.	
10	289.4	183.8	n 9.9990	9.9927	2.5857	+38.	+10 −11
20	299.6	173.7	n 9.9974	9.9930	2.5844	+38.	−1 −12
30	309.7	163.6	n 9.9817	9.9935	2.5692	+37.	−13 −12
Feb. 9	319.8	153.5	n 9.9514	9.9942	2.5396	+36.	−28 −10
19	329.9	143.3	n 9.9041	9.9951	2.4932	+31.	−35 −10
Mar. 1	340.0	133.2	n 9.8354	9.9961	2.4282	+26.	−65 −07
11	350.0	123.2	n 9.7384	9.9972	2.3296	+21.	−52 −05
21	0.0	113.2	n 9.5954	9.9984	2.1872	+15.	−60 −3
31	9.8	103.4	n 9.3650	9.9997	1.9582	+9.	−63 −3
Apr. 10	19.6	93.6	n 8.7979	0.0009	1.3922	+2.	−66 −2
20	29.4	83.8	+9.0334	0.0022	1.6296	−13.	−68 +2
30	39.2	74.0	+9.4403	0.0033	2.0376	−109.	−66 +4
May 10	49.2	64.4	+9.6356	0.0043	2.2339	−171.	−62 +3
20	58.8	54.7	+9.7618	0.0053	2.3611	−230.	−59 +5
30	68.1	45.1	+9.8487	0.0060	2.4487	−241.	−51 +6
June 9	77.6	35.6	+9.9101	0.0066	2.5107	−324.	−43 +8
19	87.2	26.0	+9.9537	0.0070	2.5547	−359.	−35 +11
29	96.7	16.5	+9.9817	0.0072	2.5829	−343.	−28 +11
July 9	106.2	7.0	+9.9965	0.0072	2.5980	−396.	−13 +10
19	115.8	357.4	+9.9996	0.0070	2.6006	−399.	−3 +12
29	125.4	347.8	+9.9901	0.0066	2.5907	−390.	+9 +11
Aug. 8	134.9	338.3	+9.9681	0.0060	2.5681	−370.	+20 +10
18	144.5	328.7	+9.9317	0.0052	2.5309	−340.	+30 +10
28	154.2	319.0	+9.8778	0.0043	2.4761	−299.	+41 +9
Sept. 7	163.9	309.3	+9.8017	0.0032	2.3929	−251.	+48 +7
17	173.6	299.6	+9.6937	0.0021	2.2898	−196.	+55 +6
27	183.4	289.8	+9.5299	0.0009	2.1248	−133.	+62 +6
							+3

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Computation of Light Equation for R Can. Maj. 165

Date.	Sun's Long.	Long. ☆ − " ☉	Lg. cos. Col. 3.	Lg. ρ	Lg. Fund Eq.	Fund Eq.	
Oct. 7	193.2	280.0	+ 9.2397	9.9996	1.2333	− 6A. +6A	+3
17	203.2	270.0	~~0.0000~~	9.9984	~~2.5924~~	0. +67	−1
27	213.1	260.1	n9.2353	9.9972	1.2426	+ 67.	−1
Nov. 6	223.2	250.0	n9.5341	9.9961	2.1242	+133. +66.	−5
16	233.2	240.0	n9.6990	9.9950	2.2440	+ 194. +61	−5
26	243.3	229.9	n9.8090	9.9942	2.3972	+ 250. +56	−4
Dec. 6	253.5	219.7	n9.8862	9.9930	2.4737	+ 294. +44	−10
16	263.6	209.6	n9.9393	9.9930	2.5263	+ 336. +32	−10
26	273.6	199.4	n9.9746	9.9927	2.5613	+ 364. +28	

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Computation of Light Equation for S Cancri.

Long. = 127.2
Lat. = +0.2
3 K

Log. cos. lat. * = 0.0000
" K99. = 2.6921
2.6921

1 Date.	2 Sun's Long.	Long. * − ☉	Log. cos. col. 3.	Log. ρ	Log. Final Eq.	Final Eq.	
Jan. 0.	279.2	208.0	n 9.9	9.9927	2.6367	+ 43.	
10.	289.4	197.2	n 9.97	9.9927	2.6692	+ 67.	-14
20.	299.5	187.7	n 9.9961	9.9930	2.6272	+ 47.	-16
30.	309.7	177.5	n 9.9996	9.9935	2.6912	+ 81.	-14
Feb. 9.	319.2	167.4	n 9.9	9.9942	2.6217	+ 42.	-18 -6 -14
19.	329.9	157.3	n 9.96	9.9957	2.6522	+ 66.	-25 -13
Mar. 1.	340.0	147.2	n 9.92	9.9961	2.6122	+ 16.	-39 -13
11.	350.0	137.2	n 9.86	9.9972	2.5602	+ 36.	-52 -11
21.	0.0	127.2	n 9.78	9.9942	2.4780	+ 30.	-63 -9
31.	9.2	117.4	n 9.6629	9.9997	2.3607	+ 22.	-72 -6
Apr. 10.	19.6	107.6	n 9.40	0.0009	2.1799	+ 15.	-78 -5
20.	29.4	97.8	n 9.1326	0.0022	1.8329	+ 6.	-83 -3 -2
30.	39.2	88.0	+ 8.52	0.0033	1.2442	- 1.	-85 +1
May 10.	48.8	78.4	+ 9.3034	0.0043	2.0052	- 101.	-84 +2
20.	58.5	68.7	+ 9.5602	0.0053	2.2636	- 183.	-82 +5
30.	68.1	59.1	+ 9.7106	0.0060	2.4147	- 260.	-77 +9
June 9.	77.6	49.6	+ 9.8117	0.0066	2.5164	- 328.	-68 +7
19.	87.2	40.0	+ 9.8843	0.0070	2.5849	- 389.	-60 +11
29.	96.7	30.5	+ 9.9352	0.0072	2.6406	- 437.	-48 +11
July 9.	106.2	21.0	+ 9.9702	0.0072	2.6755	- 474.	-37 +14
19.	115.8	11.4	+ 9.9913	0.0070	2.6964	- 497.	-23 +14
29.	125.4	1.8	+ 9.9998	0.0066	2.7050	- 506.	-9 +14
Aug. 8.	134.9	352.3	+ 9.9961	0.0060	2.7002	- 501.	+5 +14
18.	144.5	342.7	+ 9.9799	0.0052	2.6832	- 482.	+19 +14
28.	154.2	333.0	+ 9.9499	0.0043	2.6523	- 449.	+33 +13
Sept. 7.	163.9	323.3	+ 9.9041	0.0032	2.6054	- 403.	+46 +11
17.	173.6	313.6	+ 9.8346	0.0021	2.5342	- 346.	+57 +11
27.	183.4	303.8	+ 9.7453	0.0009	2.4443	- 276.	+68

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Computation of Light Equation for Canopus.

Date.	Sun's Long.	Long. ☆ − ☉	Log. cos. col. 3.	Log. ρ	Log. Fluid Eq.	Final Eq.
Oct. 7.	193.2	294.0	+9.6093	9.9996	2.3070	−203. +7 +6 +2 +6
17.	203.2	284.0	+9.3837	9.9944	2.0802	−120. +37 +2
27.	213.1	274.1	+8.8543	9.9972	1.5496	− 35. +40 +2
Nov. 6.	223.2	264.0	n9.0192	9.9961	1.7134	+ 51. +40 −3 −1
16.	233.2	254.0	n9.4403	9.9950	2.0353	+136 +56 −3 +107. +41
26.	243.3	243.9	n9.6434	9.9942	2.3357	+ 217. +109 −7
Dec. 6.	253.5	233.7	n9.7723	9.9935	2.4639	+ 291. +74 −9
16.	263.6	223.6	n9.8798	9.9930	2.5509	+ 356. +65 −11
26.	273.8	213.4	n9.9216	9.9927	2.6124	+ 410. +54

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Computation of Light Equation for U Ophiuchi.

Long. = 2v6.A
Lat. = +2K.2

Log. cos. lat. = 9.9600
" K99. = 2.69A1
2.6vA1

1 Date.	2 Sun's Long.	3 Long. * − ☉	Log. cos. Col. 3.	Log. ρ	Log. Final Eq.	Final Eq.	
Jan. 0.	279.2	337.6	+9.96v9	9.9927	2.6167	−K1K.vS	
10.	289.K	327.K	+9.92vv	9.9927	2.v763	−377.v+37.	+11
20.	299.v	317.3	+9.A662	9.9930	2.v173	−329.v+KA	+11
30.	309.7	307.1	+9.7A0v	9.993v	2.K321	−270.v+v9	+7
Feb. 9.	319.A	297.0	+9.6v70	9.99K2	2.3093	−20K.v+66	+7
19.	329.9	286.9	+9.K63K	9.99v1	2.1166	−131.v+73	+v
Mar. 1.	3K0.0	276.A	+9.073K	9.9961	1.7276	−v3.v+7A	0
11.	3v0.0	266.A	+A.7K6A	9.9972	1.K021	+2v.v+7A	+1
21.	0.0	2v6.A	+9.3vA6	9.99AK	2.01v1	+10K.v+79	−v
31.	9.A	2K7.0	+9.v969	9.9997	2.2K97	+17A.v+7K	−v
Apr. 10.	19.6	237.2	+9.7332	0.0009	2.392A	+2K7.v+69	−6
20.	29.K	227.K	+9.A30v	0.0022	2.K90A	+310.v+63	−10
30.	39.2	217.6	+9.A9A9	0.0033	2.v603	+363.v+v3	−10
May 10.	KA.A	20A.0	+9.9Kv9	0.00K3	2.60A3	+K06.v+K3	−12
20.	vA.v	19A.3	+9.977v	0.00v3	2.6K09	+K37.v+31	−12
30.	6A.1	18A.7	+9.99v0	0.0060	2.6v91	+Kv6.v+19	−13
June 9.	77.6	179.2	+0.0000	0.0066	2.66K7	+K62.v+6	−13
19.	A7.2	169.6	+9.992A	0.0070	2.6v79	+Kvv.v−7	−13
29.	96.7	160.1	+9.9733	0.0072	2.63A6	+K3v.v−20	−12
July 9.	106.2	1v0.6	+9.9K01	0.0072	2.60vK	+K03.v−32	−12
19.	11v.A	1K1.0	+9.A90v	0.0070	2.vvv6	+3v9.v−KK	−9
29.	12v.K	131.K	+9.A20K	0.0066	2.KAv1	+306.v−v3	−9
Aug. 8.	13K.9	121.9	+9.7230	0.0060	2.3A71	+2KK.v−62	−7
18.	1KK.v	112.3	+9.v792	0.00v2	2.2K2v	+17v.v−69	−6
28.	vK.2	102.6	+9.3347	0.00K3	2.0011	+100.v−7v	−2
Sept. 7.	163.9	92.9	+A.70K1	0.0032	1.36vK	+23.v−77	−1
17.	173.6	A32	+9.073K	0.0021	1.7336	−vv.v−7A	+3
27.	183.K	73.K	+9.Kvv9	0.0009	2.11K9	−130.v−7v	

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Computation of Light Equation for U Ophiuchi.

1 Date.	2 Sun's Long.	3 Long ☆ − ☉	Lg. cos. Col. 3.	Lg. Δ	Lg. Fluct. Eq.	Fluct. Eq.	
Oct. 7.	193.2	63.6	+9.6K40	9.9996	2.30V7	−201.	−71 +K
17.	203.2	V3.6	+9.773K	9.99AK	2.K299	−26[illegible].	−6[illegible] +10 +A
27.	213.1	K3.7	+9.AV91	9.9972	2.V1KK	−329.	−V9 +9 +10
Nov. 6.	223.2	33.6	+9.9206	9.9961	2.V7KA	−376.	−K9 +13 +12
16.	233.2	23.6	+9.9621	9.99V0	2.61V2	−K13.	−39 +11 +13
26.	2K3.3	13.V	+9.9A7A	9.99K2	2.6K01	−K37.	−2K +1K +13
Dec. 6.	2V3.V	3.3	+9.9993	9.993V	2.6V09	−KK0A.	−11 +1K
16.	263.6	3V3.2	+9.9969	9.9930	2.6K40	−KKV.	+3 +1K
26.	273.A	3K3.0	+9.9A06	9.9929	2.631K	−K2A.	+17

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Computation of Light Equation for U Coronæ.

Long. = 213.4 Log. cos. lat. = 9.9220
Lat. = +57.7 " 499. = 2.6941
2.5261

Date.	Time Long.	Long. ☆ − ☉	Log cos. Col. 3.	Log ρ	Log. Hvcl 2y.	Hvcl 1y.	
Jan. 0.	279.2	29K.6	+9.619K	9.9927	2.1342	−137.	
18.	289.K	2844	+9.3957	9.9927	1.91K5	− 82.	+2
20.	299.5	27K.3	+8.8749	9.9930	1.39K0	− 25.	+2
30.	309.7	26K.1	−9.0120	9.9935	1.5316	+ 3K.	−2
Feb. 9.	319.8	25K.0	−9.KK03	9.99K2	1.9606	+ 91.	−2
19.	329.9	2K3.9	−9.6K3K	9.9951	2.16K6	+1K6.	−K
Mar. 1.	3K0.0	233.8	−9.7713	9.9961	2.2935	+197.	−7
11	350.0	223.8	−9.8584	9.9972	2.3817	+2K1.	−7
21	0.0	213.8	−9.9196	9.99KK	2.KK51	+237.	−8
31	9.8	20K.0	−9.9607	9.9997	2.K865	+307.	−10
Apr. 10	19.6	19K.2	−9.9865	0.0009	2.5135	+326.	−8
20	29.K	18K.K	−9.9987	0.0022	2.5270	+337.	−11
30	39.2	17K.6	−9.9981	0.0033	2.5275	+337.	−9
May 10	K8.K	165.0	−9.9KK9	0.00K3	2.5153	+328.	−10
20	58.5	155.3	−9.9583	0.0053	2.K897	+309.	−9
30	68.1	14K.7	−9.9170	0.0060	2.KK91	+281.	−7
June 9	77.6	136.2	−9.8584	0.0066	2.3911	+2K6.	−8
19	87.2	126.6	−9.7755	0.0070	2.3085	+203.	−K
29	96.7	117.1	−9.6585	0.0072	2.1918	+156.	−6
July 9.	106.2	107.6	−9.KA05	0.0072	2.0138	+103.	−2
19	115.8	98.0	−9.1K36	0.0070	1.6767	+ K8.	~~−3~~ −2
29	125.K	88.K	+8.KK59	0.0066	0.9786	− 10.	~~+2~~ 0
Aug. 8	13K.9	78.9	+9.2855	0.0060	1.8166	− 66.	~~+1~~ +3
18	14K.5	69.3	+9.5K85	0.0052	2.0797	−120.	~~+2~~ +3
28	15K.2	59.6	+9.7052	0.0043	2.2356	−171.	~~+6~~ +K
Sept. 7	163.9	K9.9	+9.8090	0.0032	2.3383	−218.	~~+6~~ +7
17	173.6	K0.2	+9.8830	0.0021	2.K112	−255.	+8
27	183.K	30.K	+9.9375	0.0009	2.K628	−290.	−32

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Computation of Light Equation for U Coronae.

1 Date.	2 Sun's Long.	3 Long. ☽ − ☉	Log. cos. Col. 3.	Log A	Log. Anal. Sy.	Anal. Sy.	+A
Oct. 7	193.2	20.6	+9.9713	9.9996	2.4970	−312	+9
17	203.2	10.6	+9.9924	9.9994	2.5170	−329	+10
27	213.1	0.7	+0.0000	9.9972	2.5233	−334	+11
Nov. 6	223.2	350.6	+9.9961	9.9961	2.5163	−324	+9
16	233.2	340.6	+9.9746	9.9950	2.4975	−313	+10
26	243.3	330.5	+9.9397	9.9942	2.4600	−282	+8
Dec. 6	253.5	320.3	+9.8862	9.9935	2.4058	−235	+9
16	263.6	310.2	+9.8099	9.9930	2.3290	−213	+6
26	273.8	300.0	+9.6990	9.9927	2.2176	−165	

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Computation of Light Equation for δ Cygni.

Long. = 322.6 Log. cos. lat. = 9.2102
Lat. = +69.7 " 69. = 2.6981
2.8083

Date.	Sun's Long.	Long. ☀ − " ☉	Log. cos. Col. 3.	Log. ρ	Log. Final Eq.	Final Eq.
Jan. 0.	279.2	69.6	+9.9138	9.9929	2.3108	−204.
10	289.6	39.2	+9.9493	9.9929	2.3909	−246. −39 +7
20	299.8	29.1	+9.9618	9.9930	2.4033	−278. −32 +9
30	309.9	18.9	+9.9789	9.9932	2.4743	−301. −23 +9
Feb. 9	319.8	8.8	+9.9969	9.9962	2.4980	−318. −18 +10
19	329.9	358.7	+9.9999	9.9981	2.8039	−319. −1 +9.
Mar. 1	340.0	348.6	+9.9913	9.9961	2.4963	−314. +5 +10
11	350.0	338.6	+9.9690	9.9972	2.4781	−299. +15 +10 +9
21	0.0	328.6	+9.9312	9.9944	2.4324	−278. +21 +6 +8
31	9.8	318.8	+9.8768	9.9997	2.3851	−243. +35 +8 +7
Apr. 10	19.6	309.0	+9.7949	0.0009	2.3047	−206. +39 +7
20	29.4	299.2	+9.6843	0.0022	2.1994	−167. +46 +4
30	39.2	289.4	+9.5213	0.0033	2.0333	−108. +59 +3
May 10	49.0	279.6	+9.2310	0.0053	1.7482	−53. +53 +1
20	58.8	270.1	+7.2819	0.0073	9.7861	−1. +52 +1
30	68.1	260.8	−9.2176	0.0060	1.7322	+54. +55 −2
June 9	77.6	251.0	−9.0126	0.0066	2.0281	+107. +53 −3
19	87.2	241.4	−9.6801	0.0070	2.1960	+157. +50 −5
29	96.7	231.9	−9.7903	0.0072	2.3064	+202. +45 −5
July 9	106.2	222.4	−9.8643	0.0072	2.3844	+242. +40 −6
19	115.8	212.8	−9.9256	0.0070	2.4450	+276. +34 −9
29	125.4	203.2	−9.9634	0.0066	2.4849	+301. +25 −8
Aug. 8	135.9	193.7	−9.9870	0.0060	2.5024	+318. +17 −9
18	146.8	184.1	−9.9949	0.0052	2.5130	+326. +8 −10
28	158.2	174.8	−9.9979	0.0043	2.5111	+324. −2 −8
Sept. 7.	169.9	166.7	−9.9853	0.0032	2.4966	+314. −10 −10
17	173.6	157.0	−9.9573	0.0021	2.4683	+294. −20 −8
27	183.4	147.2	−9.9144	0.0009	2.4244	+266. −28 −8

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Computation of 'Light Equation' for δ Cygni.

Date.	Sun's Long.	Long. * − " ☉	Log. cos. Col. 3.	Log. ρ	Log. Anal 2y.	Anal 2y.	−Δ.
Oct. 7	193.2	13v.K	9.Δv2v	9.9996	2.3610	+230. −36	−Δ−7
17	203.2	12v.K	9.7629	9.99Δ5	2.2702	+186. −K5	−K−6
27	213.1	11v.v	9.63K0	9.9972	2.1K01	+132. −K9	v−K
Nov. 6	223.2	10v.K	9.K2K2	9.9961	1.9292	+Δv. −v3	−2
16	233.2	9v.K	Δ.9736	9.99v0	1.Kv7v	+30. −vv	−1
26	2K3.3	Δv.3	+Δ.913v	9.99K2	1.K166	−26. −v6	0
Dec. 6	2v3.v	7v.1	+9.K102	9.9935	1.9126	−Δ2. −v6	+K
16	263.6	6v.0	+9.62v9	9.9930	2.127Δ	−13K. −v2	+3
26	273.Δ	vK.Δ	+9.7607	9.9927	2.2623	−1Δ3. −K9	

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Computations of Light Equation for δ Librae.

$\lambda = 223.7$ ‹

$\beta = +4.0$ ‹

Log. cos. lat. = 9.99[illegible] ‹
" K99. = 2.69[illegible] ‹
2.6939 ‹

Date.	Sun's Long.	Long. ☽ − " ☉	Log. cos. Col. 3.	Log. ρ	Log. Final Eq.	Final Eq.
Jan. 0.	279.2	304.[illegible]	+9.7[illegible]31	9.9927	2.K397	−27. +7
10.	289.K	29K.3	+9.61KK	9.9927	2.3010	−200. +6
20.	299.[illegible]	2[illegible]K.2	+9.3[illegible]97	9.9930	2.0766	−119. +K
30.	309.7	27K.0	+[illegible].[illegible]K36	9.993[illegible]	1.[illegible]310	−3K. +1
Feb. 9.	319.[illegible]	263.9	n9.026K	9.99K2	1.71K[illegible]	+[illegible]2. −2
19.	329.9	2[illegible]3.[illegible]	n9.KK[illegible]6	9.99[illegible]1	2.13K6	+136. −3
Mar. 1.	3K0.0	2K3.7	n9.6K6[illegible]	9.9961	2.336[illegible]	+217. −7
11.	3[illegible]0.0	233.7	n9.7723	9.9972	2.K63K	+291. −9
21.	0.0	223.7	n9.[illegible]9[illegible]	9.99[illegible]K	2.[illegible]1K	+3[illegible]6. −11
31.	9.[illegible]	213.9	n9.9191	9.9997	2.6127	+K10. −12
Apr. 10.	19.6	20K.1	n9.960K	0.0009	2.6[illegible]2	+K[illegible]2. −13
20.	29.K	19K.3	n9.9[illegible]63	0.0022	2.6[illegible]2K	+K[illegible]. −1K
30.	39.2	18K.[illegible]	n9.99[illegible]7	0.0033	2.69[illegible]9	+K96. −1K
May 10.	K[illegible].[illegible]	17K.9	n9.99[illegible]3	0.00K3	2.696[illegible]	+K97. −1K
20.	[illegible]0.[illegible]	16[illegible].2	n9.9[illegible]3	0.00[illegible]3	2.6[illegible]K[illegible]	+K[illegible]0. −1[illegible]
30.	6[illegible].1	1[illegible]6	n9.9[illegible]9K	0.0060	2.6[illegible]93	+K[illegible]6. −12
June 9.	77.6	1K6.1	n9.9191	0.0066	2.6196	+K16. −12
19.	[illegible]7.2	136.[illegible]	n9.[illegible]606	0.0070	2.[illegible]61[illegible]	+36K. −10
29.	96.7	127.0	n9.779[illegible]	0.0072	2.K[illegible]06	+302. −8
July 9.	106.2	117.[illegible]	n9.66KK	0.0072	2.36[illegible][illegible]	+232. −8
19.	11[illegible].2	107.9	n9.K[illegible]76	0.0070	2.1[illegible][illegible]	+1[illegible]K. −K
29.	12[illegible].K	9[illegible].3	n9.1[illegible]9K	0.0066	1.[illegible][illegible]99	+72. −1
Aug. [illegible].	13K.9	[illegible][illegible].[illegible]	+[illegible].3210	0.0060	1.0209	−10. 0
16.	14K.[illegible]	79.2	+9.2727	0.00[illegible]2	1.971[illegible]	−9K. +2
26.	[illegible]K.2	69.[illegible]	+9.[illegible]KK3	0.00K3	2.2K2[illegible]	−17[illegible]. +6
Sept. 7.	163.9	[illegible]9.[illegible]	+9.7016	0.0032	2.39[illegible]7	−2[illegible]0. +6
17.	173.6	[illegible]0.1	+9.[illegible]072	0.002[illegible]	2.[illegible]032	−319. +10
27.	183.K	K0.3	+9.[illegible]823	0.0009	2.[illegible]771	−37K.

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Computation of Light Equation for δ Librae.

Date.	Sun's Long.	Log. ☆ − ☉	Log. cos. Col. 3.	Log. ρ	Log. Fluct. Eq.	Fluct. Eq.	
Oct. 7.	193.2	30.5	+9.935	9.9996	2.624	−425.	−47 +12
17.	203.2	20.5	+9.9716	9.9944	2.6639	−461.	−36 +11
27.	213.1	10.6	+9.9925	9.9972	2.6436	−443.	−22 +15
Nov. 6.	223.2	0.5	+0.0000	9.9961	2.6900	−490.	−7 +15
16.	233.2	350.5	+9.9940	9.9950	2.6429	−442.	+4 +15
26.	243.3	340.4	+9.9741	9.9942	2.6622	−459.	+23 +14
Dec. 6.	253.3	330.2	+9.9344	9.9935	2.6254	−422.	+37 +12
16.	263.6	320.1	+9.8449	9.9930	2.5714	−373.	+49 +12
26.	273.8	309.9	+9.8072	9.9927	2.5934	−392.	+61

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4 Delphini — Computation of Light Equation for Hello Var.

$\lambda = 316.3$

$\beta = +35.K$

Log. cos. lat. = 9.9112

" K99. = 2.6981

2.6093

Date.	Sun's Long.	Long. * − " ☉	Log. cos. Col. 3,	Log. ρ	Log. Fluct. Eq.	Fluct. Eq.	
Jan. 0	279.2	37.1	+9.9019	9.9927	2.5039	−319.5	
10	289.K	26.9	+9.95̄03	9.9927	2.5̄52̄3	−35̄7.	−3A +12
20	299.5̄	16.A	+9.9A11	9.9930	2.5̄A3K	−3A3.	−26 +11
30	309.7	6.6	+9.9971	9.993̄	2.5̄999	−39A.	−1̄5 +12
Feb. 9.	319.A	35̄6.5̄	+9.9992	9.99K2	2.6027	−K07	−3 +13
19.	329.9	3K6.K	+9.9A76	9.99̄51	2.5̄920	−391.	+10 +12
Mar. 1.	3K0.0	336.3	+9.9617	9.9961	2.5̄671	−369.	+22 +11
11.	3̄50.0	326.3	+9.9201	9.9972	2.5̄266	−336.	+33 +10
21.	0.0	316.3	+9.Ā95̄1	9.99AK	2.4̄66A	−293.	+K3 +A
31.	9.A	306.5̄	+9.77KK	9.9997	2.3A3K	−2K2.	+5̄1 +A
Apr. 10.	19.6	296.7	+9.65̄26	0.0009	2.262A	−1A3.	+5̄9 +5̄
20.	29.K	2A6.9	+9.K63K	0.0022	2.07K9	−119.	+6K +K
30.	39.2	277.1	+9.0920	0.0033	1.70K6	−5̄1.	+6A +1
May 10.	K8.A	267.5̄	u̇A.6397	0.00K3	1.2̄533	+1A.	+69 0
20.	5̄A.5̄	2̄57.A	u̇9.3̄250	0.005̄3	1.9396	+A7.	+69 −3
30.	6A.1	2KA.2	u̇9.5̄69A	0.0060	2.1A5̄1	+1̄53.	+66 −4
June 9.	77.6	23A.7	u̇9.715̄6	0.0066	2.3315̄	+215̄.	+62 −6
19	87.2	229.1	u̇9.A161	0.0070	2.K324	+271.	+5̄6 −A
29.	96.7	219.6	u̇9.AA6A	0.0072	2.5̄033	+319.	+KA −9
July 9	106.2	210.1	u̇9.9371	0.0072	2.5̄536	+35̄A.	+39 −10
19	115̄.A	200.5̄	u̇9.9716	0.0070	2.5̄A79	+3A7.	+29 −10 −11
29	125̄.K	190.9	u̇9.9921	0.0066	2.60A0	+K06.	+18 −13 −11
Aug. A.	135.9	181.K	u̇9.9999	0.0060	2.615̄2	+K12.	+7 −11 −12
18.	145.5̄	171.A	u̇9.995̄5̄	0.005̄2	2.6100	+K07.	−5̄ −11
28.	155.2	162.1	u̇9.97A5̄	0.00K3	2.5̄921	+391.	−16 −12
Sept. 7.	163.9	152.K	u̇9.9K75̄	0.0032	2.5̄600	+363.	−2A −10
17.	173.6	142.7	u̇9.9006	0.0021	2.5̄120	+325̄	−3A −10
27.	183.K	132.9	u̇9.A330	0.0009	2.4K32	+277	−KA

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Computation of Light Equation for Hills' Var. 177

Date.	Sun's Long.	Long. * − ☉	Log. cos. Col. 3.	Log. ρ	Log. Final Eq.	Final Eq.	
Oct. 7.	193.2	123.1	n9.7373	9.9996	2.3462	+222.	−7
17.	203.2	113.1	n9.5937	9.9984	2.2014	+159. −63	−4
27.	213.1	103.2	n9.3546	9.9972	1.9651	+92. −67	−3
Nov. 6.	223.2	93.1	n8.7330	9.9961	1.3384	+22. −70	0
16.	233.2	83.1	+9.0797	9.9950	1.6840	−48. −70	+1
26.	243.3	73.0	+9.4659	9.9942	2.0694	−117. −69	+3
Dec. 6.	253.5	62.8	+9.6600	9.9935	2.2628	−183. −66	+6
16.	263.6	52.7	+9.7825	9.9930	2.3848	−243. −60	+8
26.	273.8	42.5	+9.8676	9.9927	2.4696	−295. −52	

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Computation of Light Equation for α Pegasi.

$\lambda = 47$
$\beta = +15.0$

Log. cos. lat. = 9.9847
" 499. = 2.6921
2.6830

Date.	Sun's Long.	Long. ☀ − " ☉	Log. cos. Col. 3.	Log. ρ	Log. Final Eq.	Final Eq.
Jan. 0	279.2	285.5	+8.4946	9.9925	1.5703	− 37.
10	289.4	305.3	+9.6044	9.9927	2.0401	− 120.
20	299.5	316.2	+9.6227	9.9930	2.2947	− 199.
30	309.7	325.0	+9.7586	9.9932	2.4381	− 272.
Feb. 9.	319.8	334.9	+9.8502	9.9942	2.5274	− 337.
19.	329.9	343.8	+9.9184	9.9955	2.5921	− 391.
Mar. 1.	340.0	352.7	+9.9583	9.9961	2.6374	− 434.
11.	350.0	1.7	+9.9885	9.9972	2.6657	− 463.
21.	0.0	4.7	+9.9985	9.9984	2.6799	− 479.
31.	9.8	353.9	+9.9983	9.9997	2.6810	− 480.
Apr. 10.	19.6	351.1	+9.9851	0.0009	2.6690	− 467.
20.	29.5	339.3	+9.9583	0.0022	2.6433	− 440.
30.	39.2	329.5	+9.9160	0.0033	2.6023	− 400.
May 10.	48.8	319.9	+9.8962	0.0043	2.5843	− 349
20.	58.5	306.2	+9.7713	0.0053	2.4896	− 248.
30.	68.1	296.6	+9.6510	0.0060	2.3400	− 219.
June 9.	77.6	287.1	+9.4684	0.0066	2.1580	− 144.
19.	87.2	277.5	+9.1157	0.0070	1.8056	− 64.
29.	96.7	268.0	w 9.8572	0.0072	1.2330	+ 17.
July 9.	106.2	258.5	w 9.2997	0.0072	1.9499	+ 90.
19.	115.8	248.9	w 9.0763	0.0070	2.2463	+ 176.
29.	125.4	239.3	w 9.7040	0.0066	2.3976	+ 250.
Aug. 8.	135.0	229.8	w 9.8099	0.0060	2.4929	+ 312.
18.	144.7	220.2	w 9.8430	0.0052	2.5712	+ 373.
28.	154.2	210.7	w 9.9373	0.0043	2.6226	+ 419.
Sept. 7.	163.9	200.8	w 9.9707	0.0032	2.6569	+ 457.
17.	173.6	191.1	w 9.9918	0.0021	2.6769	+ 477.
27.	183.4	181.3	w 9.99[illegible]	0.0009	2.6838	+ 483.

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Computation of Light Equation for α Pegasi: 179

Date.	Sun's Long.	Log. * − ☉	Log. cos. Col. 3.	Log ρ	Log. Annual Eq.	Annual Eq.	
Oct. 7.	193.2	171.5	9.9952	9.9996	2.6772	+ 476.	-7 -15
			9.1697		1.8523	+ 71.	-21 -14
17.	203.2	161.5	9.9770	9.9994	2.6542	+ 452.	-13
			9.9015		2.1829	+ 152.	-34
27.	213.1	151.6	9.9843	9.9992	2.6245	+ 421.	-13
			9.6773		2.3573	+ 224.	-47
Nov. 6.	223.2	141.5	9.8934	9.9991	2.5726	+ 374.	-11
			9.7941		2.4732	+ 299.	-54
16.	233.2	131.5	9.8213	9.9990	2.4993	+ 316.	-10
			9.8276		2.5052	+ 320.	-64
26.	243.3	121.4	9.7168	9.9982	2.3940	+ 248.	-8
			9.9312		2.6084	+ 406.	-76
Dec. 6.	253.5	111.2	9.1543	9.9983	2.2372	+ 172.	-5
			9.9696		2.6461	+ 443.	-41
16.	263.6	101.1	9.2845	9.9930	1.9605	+ 91.	-3
			9.9910		2.6679	+ 466.	-44
26.	273.8	90.9	9.1961	9.9927	0.8719	+ 7.	
			9.9999		2.6756	+ 476.	

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Computation of Light Equation for Hussier 3.

$N = 190.0$

$\beta = +36.0$

Log. cos. Lat. = 9.9040

" " $\odot\odot$. = 2.6941 / 2.6061

Date.	Sun's Long.	Long. * − " ⊙	Log. cos. Col. 3.	Log. ρ	Log. Final Eq.	Final Eq.	
Jan. 0	279.2	270.8	+8.1450	9.9927	0.7438	− 6.	
10	289.4	260.6	n9.2131	9.9927	1.4119	+ 65.	+71 −3
20	299.5	250.5	n9.5235	9.9930	2.1226	+133.	+68 −4
30	309.7	240.3	n9.6950	9.9935	2.2946	+197.	+64 −6
Feb. 9	319.8	230.2	n9.8063	9.9942	2.4066	+252.	+55 −4
19	329.9	220.1	n9.8836	9.9951	2.4844	+305.	+53 −9
Mar. 1	340.0	210.0	n9.9375	9.9961	2.5397	+346.	+41 −10
11	350.0	200.0	n9.9730	9.9972	2.5763	+377.	+31 −12
21	0.0	190.0	n9.9934	9.9984	2.5979	+396.	+19 −12
31	9.8	180.2	n0.0000	9.9997	2.6054	+403.	+7 −11
Apr. 10	19.6	170.4	n9.9939	0.0009	2.6009	+399.	−4 −12
20	29.4	160.6	n9.9746	0.0022	2.5829	+383.	−16 −12 −11
30	39.2	150.8	n9.9410	0.0038	2.5504	+356.	−27 −9 −11
May 10	48.8	141.2	n9.8917	0.0043	2.5021	+318.	−38 −9 −9
20	58.5	131.5	n9.8213	0.0053	2.4327	+271.	−47 −8
30	68.1	121.9	n9.7230	0.0060	2.3351	+216.	−55 −7
June 9	77.6	112.4	n9.5810	0.0066	2.1937	+156.	−60 −5
19	87.2	102.8	n9.3455	0.0070	1.9586	+91.	−65 −2
29	96.7	93.3	n8.7602	0.0072	1.3733	+24.	−67 −1
July 9	106.2	83.8	+9.0334	0.0072	1.6467	− 44.	−68 0
19	115.8	74.2	+9.4350	0.0070	2.0481	−112.	−68 +4
29	125.4	64.6	+9.6324	0.0066	2.2471	−176.	−64 +6
Aug. 8	134.9	55.1	+9.7577	0.0060	2.3696	−234.	−58 +6
18	144.5	45.5	+9.8457	0.0052	2.4570	−286.	−52 +7 +8
28	154.2	35.8	+9.9091	0.0043	2.5194	−330.	−44 +11 +9
Sept. 7	163.9	26.1	+9.9533	0.0032	2.5626	−365.	−35 +7 +11
17	173.6	16.4	+9.9820	0.0021	2.5902	−389.	−24 +11
27	183.4	6.6	+9.9971	0.0009	2.6047	−402	−13

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Computation of Light Equation for Messier 3.

Date.	Sun's Long.	Long. ☆ − ☉	Log. cos. Col. 3.	Log. ρ	Log. Anal Eq.	Anal Eq.	
Oct. 7	193.2	356.8	+ 9.9993	9.9996	2.6050	− 403.	+12
17	203.2	346.8	+ 9.9884	9.9984	2.5929	− 392.	+11
27	213.1	336.9	+ 9.9637	9.9972	2.5670	− 369.	+23
Nov. 6	223.2	326.8	+ 9.9226	9.9961	2.5248	− 335.	+34
16	233.2	316.8	+ 9.8627	9.9950	2.4632	− 291.	+44
26	243.3	306.7	+ 9.7764	9.9942	2.3767	− 232.	+53
Dec. 6	253.3	296.7	+ 9.6495	9.9935	2.2491	− 171.	+61
16	263.6	286.4	+ 9.4508	9.9930	2.0499	− 112.	+65
26	273.8	276.2	+ 9.0334	9.9927	1.6322	− 43.	+69

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Computation of Light Equation for Nessier v.

$\nu = 22\nu.3$
$\beta = +19.4$

Log. cos lat. = 9.9746
" Rad. = 2.6901
2.6727

Date.	Sun's Long.	Long. ☿ − " ☉	Log. cos. Col. 3.	Log. ρ	Log. Trial Eq.	Trial Eq.
Jan. 0.	279.2	306.1	+9.7703	9.9927	2.K3ν7	−273.
10.	289.K	29ν.9	+9.6K03	9.9927	2.30ν7	−202. +71 +ν +6
20.	299.ν	2Aν.A	+9.K3ν0	9.9930	2.1007	−125. +79 +ν +3
30.	309.7	27ν.6	+A.9A9K	9.993ν	1.6νν6	− Kν. +A0 0 +1
Feb. 9.	319.A	26ν.ν	ω A.AqK6	9.99K2	1.ν61ν	+ 36. +A1 0
19.	329.9	2νν.K	ω9.K0ν	9.99ν1	2.0693	+ 117. +A1 −3
Mar. 1.	3K0.0	2Kν.3	ω9.6210	9.9961	2.2A9A	+ 19ν. +7A −7
11.	3ν0.0	23ν.3	ω9.7νν3	9.9972	2.K2ν2	+ 266. +71 −7
21.	0.0	22ν.3	ω9.AK72	9.99AK	2.ν1A3	+ 330. +6K −11
31.	9.A	21ν.ν	ω9.9107	9.9997	2.νA31	+ 3A3. +ν3 −11
Apr. 10.	19.6	20ν.7	ω9.9νKA	0.0009	2.62AK	+ K2ν. +K2 −12
20.	29.K	19ν.9	ω9.9A31	0.0022	2.6νA0	+ Kνν. +30 −10 −1K
30.	39.2	18A.1	ω9.997ν	0.0033	2.673ν	+ K71. +10 −ν −13
May 10.	K0.A	176.ν	ω9.9992	0.00K3	2.6762	+ K7K. +3 −2 −13
20.	νAν	166.A	ω9.9AAK	0.00ν3	2.666K	+ K6K. −10 −1K
30.	6A.1	1ν7.2	ω9.96K7	0.0060	2.6K3K	+ KK0. −2K −12
June 9.	77.6	1K7.7	ω9.9270	0.0066	2.6063	+ K0K. −36 −12
19.	A7.2	13A.1	ω9.A71A	0.0070	2.ννν1ν	+ 3ν6. −KA −9
29.	96.7	12A.6	ω9.79ν1	0.0072	2.K7ν0	+ 299. −ν7 −9
July 9.	106.2	11q.1	ω9.6A69	0.0072	2.366A	+ 233. −66 −7
19.	11ν.A	109.ν	ω9.ν23ν	0.0070	2.2032	+ 160. −73 −ν
29.	12ν.K	99.9	ω9.23ν3	0.0066	1.91K6	+ A2. −7A −1
Aug. A.	13K.9	90.K	ω7.AK39	0.0060	0.ν226	+ 3. −79 0
18.	14K.ν	A0.A	+9.203A	0.00ν2	1.AA17	− 76. −79 +1
28.	15K.2	71.1	+9.ν10K	0.00K3	2.1A7K	− 1ν4. −7A +ν
Sept. 7.	163.9	61.K	+9.6A01	0.0032	2.3ν60	− 227. −73 −66 +7
17.	173.6	ν1.7	+9.7922	0.0021	2.K670	− 293. +A
27.	183.K.	K1.9	+9.A71A	0.0009	2.νKνK	− 3ν1. −νA

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Computation of Light Equation for Nessus V.

Date.	Sun's Long.	Long. ☾ − ☉	Log. co. Col. 3.	Log. ρ	Log. Fluid Eq.	Fluid Eq.	
Oct. 7.	193.2	32.1	+9.9279	9.9996	2.6002	− 398.	−47 +11
17.	203.2	22.1	+9.9669	9.9944	2.6380	− 434.	−36 +13
27.	213.1	12.2	+9.9901	9.9972	2.6600	− 457.	−23 +14
Nov. 6.	223.2	2.1	+9.9997	9.9961	2.6661	− 466.	−9 +14
16.	233.2	352.1	+9.9959	9.9950	2.6636	− 461.	+5 +14
26.	243.3	342.0	+9.9742	9.9942	2.6451	− 442.	+19 +14
Dec. 6.	253.3	331.8	+9.9451	9.9930	2.6113	− 409.	+33 +13
16.	263.6	321.7	+9.8947	9.9930	2.5604	− 363.	+46 +10
26.	273.8	311.5	+9.8213	9.9927	2.4867	− 307.	+56

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Computation of Light Equation for ω Cent. aucr.

$\lambda = 216.0$ Log. cos. lat. = 9.913K
$\beta = -3\nu.0$ " K99. = 2.69A1
2.611ν

Date.	Sun's Long.	Long. ☽ − " ☉	Log. cos. Col. 3.	Log. Δ	Log. Final Eq.	Final Eq.
Jan. 0.	279.2	29A.A	+9.6A2A	9.9927	2.2A70	−19K.
10.	2A9.K	2AA.6	+9.ν037	9.9927	2.1079	−12A. +66 +3
20.	299.ν	27A.ν	+9.1697	9.9930	1.77K2	−ν9. +69 +2
30.	309.7	26A.3	ω2.K723	9.993ν	1.0773	+12. +71 −1
Feb. 9.	319.A	2νA.2	ω9.3107	9.99K2	1.916K	+A2. +70 −1
19.	329.9	2KA.1	ω9.ν717	9.99ν1	2.17A3	+1ν1. +69 −ν
Mar. 1.	3K0.0	23A.0	ω9.72K2	9.9961	2.3318	+21ν. +6K −7
11.	3ν0.0	22A.0	ω9.A2νν	9.9972	2.K3K2	+272. +ν7 −A
21.	0.0	21A.0	ω9.A96ν	9.99AK	2.ν06K	+321. +K9 −10
31.	9.A	20A.2	ω9.9Kν1	9.9997	2.ννν63	+360. +39 −10
Apr. 10.	19.6	19A.K	ω9.9772	0.0009	2.νA96	+3A9. +29 −1ν
20.	29.K	18A.6	ω9.99ν1	0.0022	2.60AA	+K06. +17 −11
30.	39.2	17A.A	ω9.9999	0.0033	2.61K7	+K12. +6 −12
May 10.	KA.A	169.2	ω9.9922	0.00K3	2.60A0	+K06. −6 −12
20.	νA.ν	1ν9.ν	ω9.9716	0.00ν3	2.νAAK	+3AA. −1A −11
30.	6A.1	1K9.9	ω9.9371	0.0060	2.ννK6	+3ν9. −29 −10
June 9.	77.6	1K0.K	ω9.AA6A	0.0066	2.ν0K9	+320. −39 −10 −9
19.	A7.2	130.A	ω9.A1ν2	0.0070	2.K337	+272. −K8 −6 −A
29.	96.7	121.3	ω9.71ν6	0.0072	2.33K3	+216. −ν6 −7 −6
July 9.	106.2	111.A	ω9.ν69A	0.0072	2.1AAν	+1νK. −62 −K
19.	11ν.A	102.2	ω9.3ν20	0.0070	1.9K3ν	+AA. −66 −3
29.	12ν.K	92.6	ωA.6ν67	0.0066	1.27KA	+19. −69 0
Aug. A.	13K.9	A3.1	+9.0797	0.0060	1.6972	−ν0. −69 +2
18.	1KK.ν	73.ν	+9.Kν33	0.00ν2	2.0700	−117. −67 +2
28.	νK.2	63.A	+9.6KKA	0.00K3	2.2607	−1A2. −6ν +ν
Sept. 7.	163.9	ν01	+9.76A2	0.0032	2.3A29	−2K2. −60 +A
17.	173.6	KK.K	+9.AνK0	0.0021	2.K676	−29K. −ν2 +9
27.	183.K	3K.6	+9.91νν	0.0009	2.ν279	−337. −K3

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Computation of Light Equation for ω Centauri.

Date.	Sun's Long.	Long. ☆ − " ☉	Log. coo. Col. 3.	Log. ρ	Log. Fluid Eq.	Fluid Eq.
Oct. 7.	193.2	2K.A	+9.9V40	9.9996	2.V691	− 371. −3K +9
17.	203.2	1K.A	+9.9AV3	9.99AK	2.V9V2	− 39K. −23 +11
27.	213.1	K.9	+9.99AK	9.9972	2.6071	− K0V. −11 +12
Nov. 6.	223.2	3VK.A	+9.99A2	9.9961	2.60VA	− K03. +2 +13
16.	233.2	3KK.A	+9.9AKV	9.99V0	2.V910	− 390. +13 +11
26.	2K3.3	33K.7	+9.9V62	9.99K2	2.V619	− 36V. +25 +12
Dec. 6.	2V3.V	32K.V	+9.9107	9.993V	2.V1V7	− 32A. +37 +10
16.	263.6	31K.K	+9.AKK9	9.9930	2.KK9K	− 2AI. +KJ +A
26.	273.A	30K.2	+9.7K9A	9.9927	2.3VK0	− 226. +VV

(Light Equation for Nov. Cygni's Var. computed on p. 19K.)

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Value + Sign of Light Equation in dec. Day to be applied to Observations in order to obtain [O-C] in time. (γ Delphini)

Date.	Light Eq.		Light Eq. in Dec. Day to be app. to Obs.
Jan. 0.	-5m	19s.	-.0037
10.	-5	57.	-.0041
20.	-6	23.	-.0044
30.	-6	38	-.0046
Feb. 9.	-6	41	-.0046
19.	-6	31	-.0045
Mar. 1.	-6	9	-.0043
11.	-5	36	-.0039
21.	-4	53	-.0034
31.	-4	2	-.0028
Apr. 10.	-3	3	-.0021
20.	-1	59	-.0014
30.	-0	51	-.0006
May 10.	+0	18	+.0002
20.	+1	27	+.0010
30.	+2	33	+.0019
June 9.	+3	35	+.0025
19.	+4	31	+.0031
29.	+5	19	+.0037
July 9.	+5	58	+.0041
19.	+6	27	+.0045
29.	+6	45	+.0047
Aug. 8.	+6	52	+.0048
18.	+6	47	+.0047
28.	+6	31	+.0045
Sept. 7.	+6	3	+.0042
17.	+5	25	+.0036
27.	+4	37	+.0032
Oct. 7.	+3m	42s.	+.0026
17.	+2	39.	+.0018
27.	+1	32.	+.0011
Nov. 6.	+0	22.	+.0003
16.	-0	48.	-.0006
26.	-1	57.	-.0013
Dec. 6.	-3	3.	-.0021
16.	-4	3.	-.0028
26.	-4	55.	-.0034

These tables for Light Equation are made for an ordinary year, that is not a leap year.

To enter one of these Light Equation Tables for a leap year we add one to the date of observation, after Feb. 29. and then enter table for value.

That is, if the date of observation is actually March. 3. we should call it March 4. and then enter table. for Light Equation

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Times of Minimum (theoretical) of Algol Variable.

not corrected for Light Equation. = G. M. Time.

Epoch.	Time of Min.	Epoch	Time of Min.	Epoch	Time of Min.
290	3396.3560	339	3631.8696	368	3771.2552
309	3487.6776	340	3636.6760	369	3776.0616
310	3492.4840	341	3641.4824	370	3780.8680
312	3502.0968	342	3646.2888	371	3785.6744
313	3506.9032	343	3651.0952	372	3790.4808
314	3511.7096	344	3655.9016	373	3795.2872
315	3516.5160	345	3660.7080	374	3800.0936
317	3526.1288	346	3665.5144	375	3804.9000
318	3530.9352	347	3670.3208	376	3809.7064
319	3535.7416	348	3675.1272	377	3814.5128
320	3540.5480	349	3679.9336	378	3819.3192
321	3545.3544	350	3684.7400	379	3824.1256
322	3550.1608	351	3689.5464	380	3828.9320
323	3554.9672	352	3694.3528	381	3833.7384
324	3559.7736	353	3699.1592	382	3838.5448
325	3564.5800	354	3703.9656	383	3843.3512
326	3569.3864	355	3708.7720	384	3848.1576
327	3574.1928	356	3713.5784	385	3852.9640
328	3578.9992	357	3718.3848	386	3857.7704
329	3583.8056	358	3723.1912	387	3862.5768
330	3588.6120	359	3727.9976	388	3867.3832
331	3593.4184	360	3732.8040	389	3872.1896
332	3598.2248	361	3737.6104	390	3876.9960
333	3603.0312	362	3742.4168	391	3881.8024
334	3607.8376	363	3747.2232	392	3886.6088
335	3612.6440	364	3752.0296	393	3891.4152
336	3617.4504	365	3756.8360	394	3896.2216
337	3622.2568	366	3761.6424	395	3901.0280
338	3627.0632	367	3766.4488	396	3905.8344

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Theoretical times of Minima of Wells Variable =

BD +12°4367 W Delphini Not corrected for Light Equation

Gr. M. Time.

Epoch	Time of Min.	Epoch	Time of Min.	Epoch	Time of Min.
397	3910.6408	426	4050.0264	455	4189.4120
398	3915.4472	427	4054.8328	456	4194.2184
399	3920.2536	428	4059.6392	457	4199.0248
400	3925.0600	429	4064.4456	458	4203.8312
401	3929.8664	430	4069.2520	459	4208.6376
402	3934.6728	431	4074.0584	460	4213.4440
403	3939.4792	432	4078.8648	461	4218.2504
404	3944.2856	433	4083.6712	462	4223.0568
405	3949.0920	434	4088.4776	463	4227.8632
406	3953.8984	435	4093.2840	464	4232.6696
407	3958.7048	436	4098.0904	465	4237.4760
408	3963.5112	437	4102.8968	466	4242.2824
409	3968.3176	438	4107.7032	467	4247.0888
410	3973.1240	439	4112.5096	468	4251.8952
411	3977.9304	440	4117.3160	469	4256.7016
412	3982.7368	441	4122.1224	470	4261.5080
413	3987.5432	442	4126.9288	471	4266.3144
414	3992.3496	443	4131.7352	472	4271.1208
415	3997.1560	444	4136.5416	473	4275.9272
416	4001.9624	445	4141.3480	474	4280.7336
417	4006.7688	446	4146.1544	475	4285.5400
418	4011.5752	447	4150.9608	476	4290.3464
419	4016.3816	448	4155.7672	421	4314.3412
420	4021.1880	449	4160.5736		
421	4025.9944	450	4165.3800		
422	4030.8008	451	4170.1864		
423	4035.6072	452	4174.9928		
424	4040.4136	453	4179.7992		
425	4045.2200	454	4184.6056		

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Reduction of observations of Iapetus to dist. 1.

Date.	Col. 1. log r	Col. 2. log Δ	$\frac{\text{Cols. 1+2}}{2}$ = log r to dist. 1.
1896. Apr. 14.	0.9950	0.9514	9.73
" " 22.	0.9951	0.9490	9.72
" " 26.	0.9951	0.9489	9.72
" " 30.	0.9952	0.9487	9.72
" May 7.	0.9952	0.9486	9.72
" " 11.	0.9953	0.9487	9.72
" " 16.	0.9953	0.9493	9.72
" " 29.	0.9954	0.9524	9.74
" June 4.	0.9955	0.9547	9.75
" " 10.	0.9955	0.9576	9.76
" " 14.	0.9956	0.9606	9.78
" " 30.	0.9957	0.9687	9.82
" July 9.	0.9958	0.9754	9.86
" " 21.	0.9959	0.9833	9.90

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Memoranda.

Expts. with Phot. R. R. 76. 197.
Fracture of Prism of Phot. T. R. 76. 222.
Expts. with images of Phot. T. R. 77. 24.
" " Phot. T. R. 77. 42.
Scain. of Field Phot. T. R. 77. 46.
Focus of images for the two achromatic Prisms (Phot. T.) R. 20. 44.

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Computation of Light Equation for Nova Cygni Var.

$\lambda = 216\ 41.0$ ✓ — Log cos. lat. $= +9.64732$ ✓

$\beta = +63\ 46$ ✓ — " 99. $= +2.69810$ ✓

$+2.34342$ ✓

Date.	Sun's Long.	Long. ☽ − ☉	Log. cos. Col. 3.	Log. ρ	Lg. Final Eq.	Final Eq.		
Jan. 0.	279.2	297.5	+9.66441	9.99927	+2.000	−100.		
10.	289.4	287.3	+9.47330	9.99927	+1.8094	− 64.	+36	+1
20.	299.5	277.2	+9.09807	9.99930	+1.4345	− 27.	+37	+1
30.	309.7	267.0	+8.71880	9.99925	+1.0557	+ 11.	+38	0
Feb. 9.	319.8	256.9	+8.35736	9.99942	+1.6930	+ 49.	+38	−1
19.	329.9	246.8	+7.95743	9.99951	+1.9389	+ 86.	+37	−3
Mar. 1.	340.0	236.7	+7.73959	9.9961	+2.0791	+120.	+34	−4
11.	350.0	226.7	+7.38621	9.9972	+2.1764	+150.	+30	−4
21.	0.0	216.7	+7.90405	9.9948	+2.2552	+176.	+26	−6
31.	9.8	206.9	+7.95027	9.9997	+2.2934	+192	+20	−5
Apr. 10.	19.6	197.1	+7.98036	0.0009	+2.3247	+211.	+19	−6
20.	29.4	187.3	+7.99643	0.0022	+2.3421	+220.	+9	−7
30.	39.2	177.5	+7.99979	0.0033	+2.3463	+222.	+2	−6
May 10.	48.8	167.9	+7.99024	0.0043	+2.3379	+218.	−4	−7
20.	58.5	158.2	+7.96772	0.0053	+2.3167	+207.	−11	−5
30.	68.1	148.6	+7.93123	0.0060	+2.2806	+191.	−16	−6
June 9.	77.6	139.1	+7.87844	0.0066	+2.2284	+169.	−22	−4
19.	87.2	129.5	+7.80381	0.0070	+2.1539	+143.	−26	−5
29.	96.7	120.0	+7.69897	0.0072	+2.0496	+112.	−31	−3
July 9.	106.2	110.5	+7.55433	0.0072	+1.8949	+ 79.	−33	−2
19.	115.8	100.9	+7.27668	0.0070	+1.6271	+ 42.	−37	−1
29.	125.5	91.3	+8.35775	0.0066	+0.7056	+ 5.	−37	0
Aug. 8.	135.9	81.0	+9.15421	0.0060	+1.5036	− 32.	−37	+1
18.	145.5	72.2	+9.42529	0.0052	+1.8339	− 68.	−36	+2
28.	155.2	62.5	+9.66441	0.0043	+2.0121	−102	−34	+2
Sept. 7.	163.9	52.8	+9.78147	0.0032	+2.1281	−134.	−32	+2
17.	173.6	43.1	+9.86342	0.0021	+2.2089	−162.	−28	+3
27.	183.4	33.3	+9.92211	0.0009	+2.2664	−185.	−23	+5

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Date.	Aeros Long.	Long. ☀ − ☉	Log. cos. Col. 3.	Log ρ	Log. Final Eq.	Final Eq.
Oct. 7.	193.2	23.5	+9.96240	9.9996	+2.30554	−202. −17 +5
17.	203.2	13.5	+9.98383	9.9944	+2.32396	−214. −12 +7
27.	213.1	3.6	+9.99914	9.9992	+2.33907	−219. −5 +7
Nov. 6.	223.2	353.5	+9.99720	9.9961	+2.33667	−217. +2 +6
16.	233.2	343.5	+9.98174	9.9950	+2.32401	−209. +8 +6
26.	243.3	333.4	+9.95141	9.9942	+2.29490	−195. +14 +7
Dec. 6.	253.5	323.2	+9.90349	9.9935	+2.24084	−174. +21 +5
16.	263.6	313.1	+9.83459	9.9930	+2.17710	−144. +26 +4
26.	273.6	302.9	+9.73494	9.9927	+2.07710	−114. +30

This Table wrong. (For Correct Light Equation Table of this star, see Book 17, p. 120)

!

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Computation of Lat. and Longitude of Comet - Perrine's New Var.

$\varepsilon = 23^\circ\ 27.'1$

R.A. = $20^h\ 2^m\ 24.^s$ = $300^\circ\ 36.'$

Dec. = $+44^\circ\ 52.'9$

~~Log sin δ = +9.8960~~

~~" cos δ = +9.8420~~

~~" sin A = n9.9346~~

~~n9.7776~~

~~" tan $\frac{1}{2}\theta$ = n0.0712~~

$-52^\circ\ 9.'0$

$23\ 27.'1$

$-73\ 36.'1 = A - \varepsilon$

Log tan δ = +0.01336

" sin A = n9.9346

" tan N = n0.0790

$N = -52^\circ\ 9.'0$

" cos $(N-\varepsilon)$ = +9.4520

" tan A = +0.2209

Sum logs. = +9.6722

Log. cos N = +9.8071

" tan γ = +9.8651

$\gamma = 216^\circ\ 41.'0$

" tan $(N-\varepsilon)$ = n0.2524

" sin γ = n9.7726

" tan β = +0.3070

β +63 46.'

Log cos $(N-\varepsilon)$ = +9.4520

" cos (N) = +9.8071

+9.6591

Log cos β = +9.6432

" sin N = n9.7726

n9.4158

" cos δ = +9.8420

" sin A = n9.9346

n9.7766

Check +9.6592

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Computation of Light Equation for R Sagittarii.

$\lambda = 272° 18.8$ ✓ Log cos Lat. $* = 9.99236$ ✓
$\beta = -10\ 42.8$ ✓ " $\mathfrak{P}$ = 2.69810 ✓
2.69046

Date.	Sun's Long.	Long. $* - \odot$	Log. cos. Col. 3.	Log ρ	Log. Final Eq.	Final Eq.		
Jan. 0.	279.2	3 3.1	+9.9968	9.9927	+2.6800	-479	+18	
10.	289.4	3 2.9	+9.9 8036	9.9927	+2.6636	-461		+14
20.	299.7	332.8	+9.9 4911	9.9930	+2.6326	-429	+32	+13
30.	309.7	322.6	+9.9000	9.9937	+2.7 8 40	-348	+47	+12
Feb. 9.	319.8	312.7	+9.8296 8	9.9942	+2.7 1 44	-327	+17	+10
19.	329.9	302.4	+9.7 2902	9.9971	+2.4146	-260	+67	+8 +9
Mar. 1.	340.0	292.3	+9.7 7916	9.9961	+2.2678	-184	+78	+6 +4
11.	350.0	282.3	+9.3284 4	9.9972	+2.0161	-104	+24	+3 +4
21.	0.0	272.3	+8.6034 9	9.9984	+1.2924	-20	+84	0
31.	9.8	262.7	n9.1179 0	9.9997	n1.8059	+64	+82	-2
Apr. 10.	19.6	252.7	n9.4733 0	0.0009	n2.1647	+146	+72	-4
20.	29.4	242.9	n9.6783 2	0.0022	n2.3712	+224	+73	-6 -4
30.	39.2	233.1	n9.7746 6	0.0033	n2.4723	+292	+62	-9 -4
May 10.	48.8	223.7	n9.8607 6	0.0043	n2.7777	+379	+93	-10 -8
20.	58.7	213.8	n9.9197 9	0.0073	n2.6157	+412	+41	-12 -13 -12
30.	68.1	204.2	n9.9600 7	0.0060	n2.6776	+4773	+29	-13 -14
June 9.	77.6	194.7	n9.9877 7	0.0066	n2.6827	+4841	+14	-14 -13
19	87.2	185.1	n9.9948 8	0.0070	n2.6976	+4961	+1	-14
29.	96.7	175.6	n9.9982 2	0.0072	n2.6966	+4971	-13	-14
July 9.	106.2	166.1	n9.9870 9	0.0072	n2.6848	+4844	-27	-14
19.	115.8	156.5	n9.9624 0	0.0070	n2.6799	+4877	-40	-13
29.	125.4	146.9	n9.9231 0	0.0066	n2.6202	+4171	-71	-11
Aug. 8.	134.9	137.4	n9.8669 4	0.0060	n2.5763	+3661	-62	-11
18.	144.5	127.8	n9.7873 9	0.0052	n2.4831	+3044	-71	-9
28.	154.2	118.1	n9.6730 3	0.0043	n2.3674	+2331	-77	-6
Sept. 7.	163.9	108.4	n9.4992 0	0.0032	n2.1929	+1586	-81	-4
17.	173.6	98.7	n9.1797 3	0.0021	n1.8723	+787	-84	-3
27.	183.4	88.9	+8.2832 4	0.0009	n0.9746	-96		

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Computation of Light Equation for R. S. Sagittarii. 199

Date.	Sun's Long.	Long. ☆ − ☉	Log. cos. Col. 3.	Log ρ	Log. Final Eq.	Final Eq.		
Oct. 7.	193.2	79.1	+9.2766	9.9996	+1.9662	−93.	−44	0
							−41	+3
17.	203.2	69.1	+9.5523	9.9944	+2.2413	−174		+6
							−75	+7
27.	213.1	59.2	+9.7093 1	9.9972	+2.3970	−249		+6
							−69	+9
Nov. 6.	223.2	49.1	+9.8160 7	9.9961	+2.5027	−318		+11
							−58	+12
16.	233.2	39.1	+9.8899	9.9950	+2.5754	−376		+11
							−47	
26.	243.3	29.0	+9.9418 2	9.9942	+2.6265	−423		+13
							−34	
Dec. 6.	253.5	18.8	+9.9761 9	9.9935	+2.6602	−457		+14
							−20	
16.	263.6	8.7	+9.9949 7	9.9930	+2.6780	−477		+15
							−5	
26.	273.8	358.5	+9.9994 5	9.9927	+2.6830	−482		

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Computation of Latitude and Longitude for R S Sagittarii.

$\varepsilon = 23^\circ\ 27'$

R.A. $= 18^h\ 10^m\ 9^s.0$ } 1900. $= 272^\circ\ 44'\ 45''.0$

dec. $= -34^\circ\ 4'.2$

Log tan δ	$= n\,9.82131$
" sin λ	$= n\,9.99970$
" tan A	$= +9.82161$
A	$= +34^\circ\ 10'.4$
" cos $(A-\varepsilon)$	$= +9.99230$
" tan α	$= n\,1.31899$
Sum logs.	$= n\,1.31134$
Log. cos A	$= 9.91762$
" tan γ	$= n\,1.39366$
γ	$= 272^\circ\ 18'.2$
" tan $(A-\varepsilon)$	$= +9.27720$
" sin γ	$= n\,9.99964$
" tan β	$= -9.27684$
β	$= -10^\circ\ 42'.2$
" cos $(A-\varepsilon)$	$= +9.99230$
" " A	$= +9.91764$
" " β	$= +9.99236$
" sin γ	$= n\,9.99964$
" cos δ	$= +9.91720$
" sin λ	$= n\,9.99970$
Check	$= +0.07746$

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Light Equation for Sun. t K 2° 333 R.

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	T. Cassiop. ×	S Cassiop ×	T & S Persei ×	R. Aurigæ ×	R Lyncis ×	R Ursæ maj. ×	T. Ursæ maj ×	S Ursæ maj. ×	S Bootis ×
a	5.84	6.46	7.84	6.17	6.69	5.92	6.42	6.65	7.40
b	6.47	7.00	8.10	6.61	7.10	6.21	6.96	7.02	7.91
c	6.89	7.27	8.38	7.18	7.52	6.42	7.30	7.30	8.39
d	7.24	7.72	8.68	7.72	8.02	6.70	7.58	7.52	8.78
e	7.87	8.05	8.88	8.16	8.60	7.08	8.00	7.86	9.12
f	8.17	8.38	9.07	8.82	9.02	7.48	8.34	8.50	9.67
g	8.56	8.76	9.53	9.28	9.36	7.71	8.84	8.83	10.18
h	8.98	9.20	9.92	9.72	9.74	8.18	9.17	9.22	10.60
k	9.36	9.78	10.68	10.26	10.13	8.90	9.85	9.74	11.12
l	9.81	10.06	11.33	10.68	10.52	8.80	10.40	10.09	11.57
m	10.14	10.36	11.80	11.13	10.73	9.43	10.75	10.65	12.04
n	10.52	10.78	12.44	11.48	11.15	9.76	11.26	11.08	12.50
o	11.02	11.08	12.84	11.93	11.49	9.88	11.73	11.58	12.94
p	11.32	11.48	13.29	12.36	11.88	10.46	12.09	11.94	13.89
q	12.06	11.87	13.81	12.82	12.42	11.02	12.26	12.54	13.59
r	12.43	12.28	14.35	13.26	12.80	11.48	12.38	13.12	13.94
s	12.84	12.61	14.78	13.62	13.13	12.02	12.67	13.55	14.33
t	13.30	12.95		13.96	13.46	12.53	12.84	13.98	
u	13.60	13.20		14.23	13.78	13.12	12.99	14.67	
w	13.93	13.56				13.50	13.17	15.17	
x		13.91				14.03	13.42		
y		14.33				14.50	13.60		
z						14.89			
α						15.17			
β									
k'	11.78								

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	R Cornelop. ×	R Vulpec. min. ×	R Draconis ×	S Cygni ×	T Ophei. ×	S Ophei. ×	R Cassiop. ×
a	7.87	8.25-	6.88	7.92	4.88	7.40	4.00
b	8.45	8.62	7.19	8.36	5.52	7.83	4.41
c	9.02	8.90	7.44	8.78	6.04	8.18-	4.84
d	9.50	9.26	7.66	9.16	6.68	8.68	5.17
e	9.82	9.62	8.02	9.48	7.12	9.04	5.73
f	10.32	9.96	8.28	9.97	7.69	9.37	6.26
g	10.80	10.30	8.56	10.26	8.18	9.84	6.70
h	11.22	10.68	9.06	10.66	8.12	10.22	7.17
k	11.80	11.04	9.40	11.08	8.78	10.70	7.50
l	12.20	11.50	9.80	11.36	9.18	11.04	8.16
m	12.66	11.84	10.16	11.69	9.65-	11.58	8.80
n	12.86	12.18	10.56	12.15	10.10	11.90-	9.40
o	13.23	12.54	10.97	12.43	10.50	12.44	9.93
p	13.56	12.93	11.59	12.85	11.06	12.75-	10.50
q	13.86		12.01	13.23	11.56	13.12	10.98
r	14.07		12.52	13.51	11.96	13.66	11.36
s			12.85	13.88	12.39	14.02	11.78
t			13.33	14.31	12.71	14.38	12.12
u			13.84	14.68			12.40
w			14.43				12.81
x			15.02				13.13
y							13.48
z							13.78
α							14.10
β							14.37

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In reducing Var. Star estimates, the following rules can be regarded.

or probably not seen.

Not seen = *

~~Prob. not seen = *:~~

Not seen. A star 2 ftr. than it could be seen should be written ~~2 with faint sign in italics~~. It 2 *

Var. = b should be ~~b~~ bO

Var. not seen and ftr. than 2 = 2 : 1 * and record, in magn. col. (to tenths) and magn. under 1

~~For Not seen. Ftr. than 14.9, or prob. ftr. than 14.9, can be written R in "Comparison" column and a remark made in notes.~~

~~When the~~

Not seen. Ftr. than 14.9 = * in "Comparison" col. and 14.9 in "Est. mag." col.

* = Star close to limit of visibility but with no relative estimate, or too ft. to estimate. When there is no rec'd. insert *.

If an absolute estimate as 12.7, is also given with the *, insert 12.6 in magn. col. also.

When as simple * occurs in comparison column, insert * also in magnitude column, unless an absolute estimate was made. In this latter case, insert the estimated magnitude instead, in roman numerals, in magnitude column.

When a simple * occurs in comparison column, insert * also in magnitude column.

When as simple * occurs in comparison column, insert * also in magnitude column, unless an absolute estimate was made. In this latter case, insert the estimated magnitude instead, in roman numerals, in magnitude column.

When a relative estimate of the variable, as given, but the variable is very faint, reduce the obs. as in any other case, and insert in roman to hundredths of a mag. in magn. col. Do not insert * in comparison col. but simply kO or k3.

Rev. Feb. 27, 1891. Began underlining the star that was on the right. (See Sp. Notes)

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Characters used in plotting variables.

Wendell = •
Waite = ⊙
Attwell = ○
Seagrave = □
Cram = △
Davidson = ⊡
Reed = +

When several observers cannot be plotted separately, a square the fol. symbol is used, viz:, △

Cannon. ⊕
Clymer, ⊖ ⊞ ✱
Colson ◇
Bradford. ◈
Jayeben
Wendell = W. — —
Waite = Wa. — —
Attwell = A. — —
Cram = Cr. — —
Colson = Co. — —
Davidson = D. — —
Reed = R. — —
Clymer = Cl. — —
Searle = S. —
Seagrave = Se. —
Jauson = Ja.
Bradford = B.
Stewart = St.
Dawes = Dw.
Frost. = Fr. = ◊ — —
Cannon = Ca.
Campbell = C

Spencer ⊡
Grover ⊞
Searle □
Pickering ○
W W White ⊡ = Wh
Colson ⊙
McCulloh ◇ = Mc.
Winnick ?
Dole +
Eadie ◈
Washburn ⊡

When a var. is not seen and Mr. Cannon uses for another, untask the full value of the comparison on alter to hundredths, and add on one tenth of a magn. and then give the result to the nearest tenth of a magn.

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Special Cases of Comp. Stars for Circumpolar Variables.

			Diff. Mag.	Phot. Mag.	Diff. Dec.
	γ Cassiop.				
Star "2 e"	= 0h 14m 8.5	+57° 13′	8.3	8.63	+57° 57
" "x"	= 0 10 25.8	+54 37.5	9.0	—	+54° 26
	δ Cassiop.				
Star "8 c"	= 1 9 6.	+71 59	8.6	8.53	+71° 67
" "2 f"	= 1 6 28.	+71 40.9	9.4	—	+71 62
" +71° 57	= 1 2 14.	+71 37.9	8.9	—	+71 57
	δ Persei.	**ζ Persei.**			
Star "5 g"	= 2 11 6.1	+57 52.1	9.4	—	+57 547
" "7 c"	= 2 11 15.5	+58 6.7	8.7	8.29	+58 542
" "14 b"	= 2 15 3.1	+57 31.4	8.1	7.79	+57 566
" "g'"	= 2 10 0.	+57 45.	10.9	—	—
	R Aurigae.				
" "7 e"	= 5 5 34.1	+53 0.3	8.8	9.04	+53 881
" "13 y"	= 5 6 30.	+53 30 (12.0)		—	
	R Lyncis.				
" "12 u"	= 6 51 20.8	+55 47	8.5	8.63	+55° 1109
	R Ursæ Maj.				
" "3 c"	= 10 31 13.	+69 22	12.0	—	—
" "6 l"	= 10 32 17.	+70 16	8.3	8.44	+70° 622
" "9 c"	= 10 34 22.	+68 54	9.4	9.71	+68 616

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This is a star on Chandler's chart, with no letter. See "Cr. Var. Bank."
Star afterwards abandoned.

This star is possibly 32 + 53° 807 9.5

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Special cases of Comp. Stars for Circumpolar Variables.

		Ser. No.	Mag.	Ser. No.
Star "12c"	= 12h 33m +9.6	+60° 2 A.r	8.9	8.89	+60° 1 K r
" "A"	= 12 31 +0.	+60 2 r (11.0)	—	—	—
" "V"	= Near Var.		—	—	—
" "2t"	= 12 2 A 19.7	+r 9 r 2.1	9.1	9.86	+r 9° 1 K K 9
" "16b"	= 12 +2 11.	+61 36.7	7.8	7.73	+61° 1 3 1 9

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See diagram in R 51. p. 104. – Also faint chart.

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η Delphini (Full Brightness) Phot. T.

The below includes all the obs. for Full Br. made in 1895 & 1896; also obs. for Full Br. made in 1897.

Date.	Phase	Magn.	Date.	Phase.	Magn.	Date	Phase	Magn.
95. 12. 14	2.0042	9.39	96. 7. 25	0.2672	9.51			
12. 16	3.9999	9.35	" "	0.2716	9.49			
12. 19	2.1622	9.33	9. 1	4.5455	9.48			
12. 20	3.1929	9.48	" "	4.5557	9.57			
12. 22	0.2591	9.33	9. 11	0.2531	9.44			
" "	0.2669	9.47	" "	0.2619	9.44			
" "	0.2719	9.37	10. 22	2.6467	9.33			
" "	0.2791	9.33	" "	2.6522	9.31			
" "	0.2859	9.39	" "	2.6580	9.36			
12. 31.	4.4562	9.39	" "	2.6639	9.35			
" "	4.4601	9.33	" "	2.6700	9.35			
" "	4.4650	9.34	10. 26	1.8742	9.27			
" "	4.4791	9.37	" "	1.8822	9.35			
" "	4.4832	9.29	" "	1.8891	9.31			
" "	4.4829	9.29	" "	1.8959	9.34			
" "	4.4887	9.19	" "	1.9022	9.29			
" "	4.4942	9.29	9. 7	0.9143	9.44			
" "	4.5029	9.37	" "	0.9215	9.37			
" "	4.5118	9.42	" "	0.9292	9.34			
" "	4.5180	9.39	" "	0.9362	9.33			
" "	4.5228	9.19	" "	0.9427	9.42			
" "	4.5278	9.43						
" "	4.5350	9.49						
" "	4.5389	9.49						
" "	4.5496	9.55						
96. 6. 16	4.5373	9.64						
" "	4.5417	9.67						
7. 25	0.2545	9.49						
" "	0.2631	9.37						

Breaks

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ο Ceti. Comp. Stn.

Argelander's values reduced to scale of Harv. Phot.

Argelander's days	
g	1.1 = a
c	2.0 = f
d	2.0 = e
β	2.1 = d
e	2.1 = c
β′	2.4
ε	2.6
ι	2.7
ι	2.7 = g
f	2.9 = h
γ′	2.9
γ	3.7 = k
a	3.8 = l
δ	4.1 = m
ξ″	4.2 = n
ξ	4.2
ξ′	4.4 = o
μ	4.4 = p
λ	4.8 = q
ν	5.1 = r
χ	5.3
b	5.6 = s
70	5.6 = t
69	5.8 = u
63	6.1
71	6.3

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Disp. Wells
Var. in Cygnus.

S S Cygni.

Dissp.	Provis. Light Scale.	Dun. mags.	R.A.		Dec.	Dun. No.	
a h	7.v	8.v	21h	39m 3.8	+K2° 46.6	4199	7.89 v
b h'		8.1				(43° 4024)	
c K	8.0	8.3	21	37 26.8	+K2 vv.3	4190	8.61
d L	8.3	8.2	21	39 41.9	+K3 16.0	4037	8.6v v
e M	8.8	8.6	21	38 40.7	+K3 8.6	4030	8.93 v
f N	9.1	9.2	21	37 1.2	+K3 3.K	4020	9.39 v
g O	9.3	9.2	21	36 39.1	+K2 vK.K	4146	9.48 v
h o'			Read from chart.				
k P	9.9		21	37 20.	+K3 6.		
m Q	10.2		21	37 23.	+K3 1.		
l R	10.6		21	36 K7.	+K2 v3.		
n S	10.8		21	37 38.	+K2 v6.		
o T	11.1						
p U	11.3						

The provisional light scale was derived from the Dun. mags. combined with relative estimates.

Star h' (b in final notation) inserted between h and K (a and c in final notation)

Star o' (h in final notation) inserted between o and p (g and k in final notation).

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Comp. Class for Circumpolar Variables.

In the case of Circumpolar Variables, the use of third notation of comp. class was begun on Feb. 9. 1891 (See R v7. p. 101) and the third system seems to have completely adopted by Mar. 16. 1891. (See R v7. p. 142)

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Rule for Time of Observation on the Short Period Algol Variables.

In all the short period Algol Variables take the time of observation at the Telescope to seconds on each set.

In the reduction of same, use minutes only, and 3 decimals (only) of a day for all the ~~short period variables~~ except U Cephei & V Delphini. On these latter use tenths of minutes and 4 decimals.

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Revised Form for Tabulation of Photometric Observations for Printer.

Date.	Sid. T.	Jul. Day.	Diff. Intensity Means Magn.	A-B.	Results.	O-C Time.	O-C Magn.

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Tabulat

Date. ✓

G.M.T. H. M. Secs ✓ 0.86 9.86

Mean Sym ∠a-B

Res. 1 — 1

" 2 — 2

" 3 — 3

C-C. Sine. — 4

C-C Sym.

Observer. ✓

Obs.	a-B		
.68	+15	-01	-02
.70		+01	
.56		+02	+04
.52		-.02	

246

.62

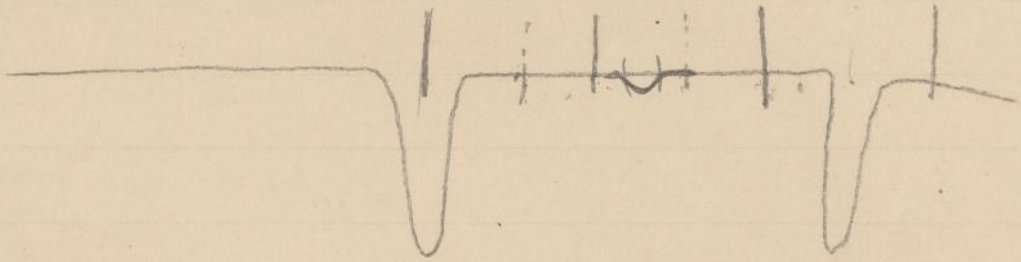
~~.62~~ ~~+15~~

.62 +15 -02 +04

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~~1.64~~



5

0 Mon	0.5	Mon Sunday Thurs 0.0
0.5	1.0	Tues 1.0
1.0	1.5	Wed 2.0
1.5	2.0	Thurs 0.5
2.0		Fri 1.5
~~2.5 Sat~~	1.25	Sat 0.0

4 ctg = 1 cat. 3.5 S.T.

4 ~~Cat~~ cat. = 1 gray 9.5 S.T.

5 m.

Take 5 groups.

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η Aquilae
β Persei.
δ Librae,

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2 Herculis.

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In Vol. 47. p. 177 of the "Astronomical Transactions" Burnham tells where 13 of his different Catalogues are printed.

The average of the resids. on comps. obsd for var. observed with Phot. I up to Nov. 20. 1897 is .048 mag.

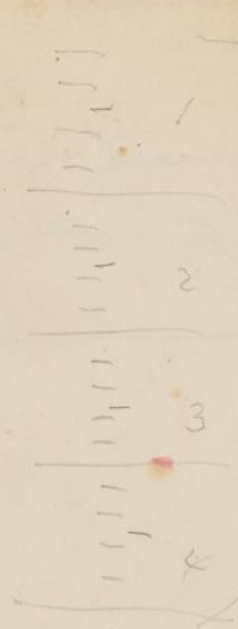
The average of 222 resids. on ο Ceti with Phot. R. in 1897 and before modification, is .030 mag.

The average on 3 doubles with Phot. R. since modification is .022 mag.

The average of Phot. N. on 6 doubles since modification is .034 mag.

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1896phae.proj.1673P



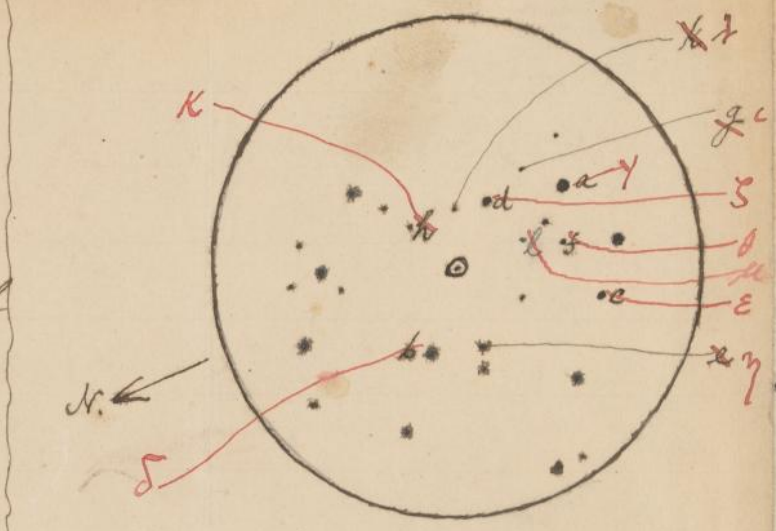
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1896phne.proj.1673p

Cambridge, Dec. 19, 1894.

Mr. Reed.

The adjoining diagram presents the faint stars (and associated stars) selected last night as faint comparison stars for χ Cygni.



Star a is the one which I have always used as comparison star for χ with Phot. R, and is approximately 11.^{m}4 magn. It measured 11.03 magn. last night, with Phot. I. Star K (my last one) measured 14.17 and was the faintest to be seen at that altitude, as the region was getting a little low.

The last star that we selected was D.M. +32° 3745 magn. 9.3 but the interval between this and my star a is unfilled. The sketch is free hand and approximate, being made by allineation.

Please fill the interval mentioned in the last paragraph, and make the estimates of the intervals between the various steps necessary to complete the series, so that the final magnitudes can be determined.

Edward C. Pickering

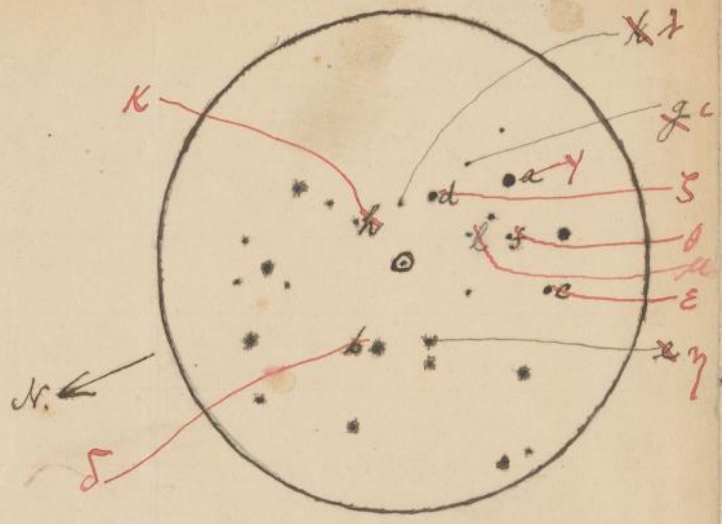
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1896PASP..8..167P

Cambridge, Dec. 19, 1894.

Mr. Reed.

The adjoining diagram presents the faint stars (and associated stars) selected last night as faint comparison stars for χ Cygni.



Diameter of circle = 20′

Star a is the one which I have always used as comparison star for χ with Plot. R, and is approximately 11th magn. It measured 11.03 magn. last night, with Plot. I. Star K (my last one) measured 14.17 and was the faintest to be seen at that altitude, as the region was getting a little low.

The last star that we selected was 3 M. +32° 3748 magn. 9.3 but the interval between this and my star a is unfilled. The sketch is free hand and approximate, being made by allineation.

Please fill the interval mentioned in the last paragraph, and make the estimates of the intervals between the various steps necessary to complete the series, so that the final magnitudes can be determined.

Edward C. Pickering

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