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Mean Places for 1888.0 of Comparison-Stars.

*	α	Red. to app. place	δ	Red. to app. place	Authority
	h m s	s	° ′ ″	″	
1	12 12 31.	—0.58	–	–	DM. +41°2285
2	12 18 22.28	—0.56	+41 20 24.8	+5.6	Weisse's Bessel XII. 346
3	12 27 39.26	—0.54	+40 44 12.3	+5.9	10ᴹ, comp. with W.B. XII, 676-8
4	12 40 40.72	—0.49	+39 43 48.7	+6.5	Bonn VI, +39°2559 [*Nach.* 2871
5	12 46 43.62	—0.46	+39 9 21.8	+6.6	DM. +39°2572, Rome obs., *Astr.*
6	12 49 34.57	—0.46	+39 0 5.6	+6.7	10ᴹ, comp. with Gr. 9-yr. 1196
7	12 54 7.52	—0.43	–	–	Weisse's Bessel XII, 1046
8	13 1 11.67	—0.40	+37 51 22.7	+7.1	" " XIII, 1173
9	13 3 29.53	—0.40	–	–	" " " 11
10	13 13 17.56	—0.33	+36 32 40.5	+7.5	" " " 220
11	13 17 35.15	—0.33	+36 30 43.0	+7.6	" " " 305-6
12	13 25 24.25	—0.29	+35 4 21.9	+7.6	" " " 467-8
13	13 24 51.61	—0.29	+35 6 10.3	+7.6	" " " 456-7
14	13 32 35.	—0.25	+34 18 32.6	+7.9	" " " 618-9
15	13 33 2.11	—0.25	–	–	" " " 628-9
16	13 38 46.51	—0.22	+33 34 40.3	+8.0	" " " 781
17	13 45 0.94	—0.21	+32 54 45.6	+8.2	Harvard obs., *Astr. Jour.* VIII, 135
18	13 56 3.22	—0.16	+31 13 41.2	+8.4	Weisse's Bessel XIII, 1197
19	14 4 19.03	—0.13	+29 41 9.8	+8.6	" " XIV, 37
20	14 20 35.88	—0.05	+27 25 10.2	+8.8	Bonn VI, +27°2375
21	15 6 9.41	+0.13	+19 1 52.7	+8.8	Weisse's Bessel XV, 85 [711
22	15 40 37.56	+0.25	–	–	DM. 12°2894, comp. with W.B. (1)
23	15 54 50.77	+0.29	+ 9 42 11.6	+8.3	DM. 9°3129, comp. with " 902
24	15 57 14.33	+0.30	+ 9 9 36.2	+8.3	Weisse's Bessel (1) XV, 1054

Star Differences.

Stars	No. Comp.	Δα	Δδ
		m s	′ ″
* 3—W.B.(2) 676-8	7	—5 50.18	+0 43.7
* 6—Gr. 9-yr. 1196	7	—1 13.04	+4 42.2
*22—W.B.(1) 711	6	+2 9.99	–
*23—W.B.(1) 902	7	+5 45.53	+3 28.0

[October 4, 8, 9, comet on the limit of vision.]

Ann Arbor, 1889 *June* 12.

OBSERVED MAXIMA AND MINIMA OF VARIABLE STARS, 1888-89,

BY PAUL S. YENDELL.

S Sagittae.

By the application of a mean light-curve, the following maxima, in addition to those published in Vol. VIII, page 146, have been deduced from the scattered observations of this star,

1888 June	d 13.53	1888 Aug.	d 11.6
	22.4	Oct.	8.62
	30.17	1889 Feb.	2.74

T Vulpeculae.

A series of 103 observations of this star, extending from June 1, 1888, to June 4, 1889, yields the following maxima to the application of a mean light-curve:

	d	p		d	p
1888 June	4.67	3	1888 June	13.56	3
	9.45	4		18.06	4
				26.56	2
				30.7	1
July				5.74	3
				9.4	3
				14.73	4
				19.25	2
				23.33	2
				27.8	2
Aug.				9.18	1
				14.9	3
				19.3	3
				23.76	3
				28.36	3
Sept.				5.55	3
				10.5	4
				14.75	2
				23.93	2
				27.8	4
1888 Oct.				11.15	3
				20.58	2
				24.73	3
				29.49	4
Nov.				2.11	2
				6.98	2
				11.34	3
				20.61	3
				30.15	3
Dec.				3.05	3
				21.25	3
1889 Feb.				17.24	2
				21.68	3
				25.22	4
May				26.19	4
				29.78	4
June				3.23	3

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T Monocerotis.

Sixty-eight observations of *T Monocerotis*, beginning 1888 Sept. 28, and ending 1889 April 30, give seven maxima and six minima. These have all been deduced by the usual method of single light-curves, with the exception of the maxima of Nov. 13 and March 1 only, which were obtained by the use of a mean curve, formed from all the observations of this and the preceding year, numbering in all 112.

Maxima		Minima	
	p		p
d		d	
1888 Nov. 13.8	3	1888 Dec. 3.1	4
Dec. 13.0	4	30.	5
1889 Jan. 11.8	5	1889 Jan. 26.8	5
Feb. 4.75	5	Feb. 24.0	5
Mar. 1.92	4	Mar. 24.4	5
30.5	4	Apr. 19.0	4
Apr. 28.8	4		

U Monocerotis.

A good series of observations of this star was obtained, from 1888 Dec. 6 to 1889 April 28, which yielded three maxima and as many minima. The first maximum, Dec. 21.8, was a bright and sharply marked one, and was followed, 1889 Jan. 16.3, by a bright minimum. Between this and the following minimum the star behaved rather oddly, rising to a pretty bright maximum on Jan. 26.2, after which it dropped several steps, and then remained stationary from Feb. 1 to Feb. 18, and from this date rapidly declined to a very faint minimum on March 3.5, when it was nearly equal to the comparison-star g. It remained at this point for about a week, rising then steadily and pretty rapidly until it reached a sharply indicated maximum on March 23.3. After this it very nearly repeated its behavior in February, but could not be so closely watched, on account of weather and moonlight. It descended April 22.5 to a bright and not very definitely indicated minimum on April 22.5, after which it was rising pretty rapidly when the last observation, April 28, was made.

Maxima		Minima	
	p		p
d		d	
1888 Dec. 21.8	4	1889 Jan. 16.3	3
1889 Jan. 26.2	3	Mar. 3.5	5
Mar. 23.3	4	Apr. 22.5	2

I regret that I have not the means at hand of estimating the magnitudes of the star at the several phases; as its behavior during the season has been of an exceedingly interesting character.

R Leonis.

This star was observed 45 times from Jan. 23 to May 19, 1889. A maximum is indicated April 16. The star was pretty bright at the maximum, being two steps >18 *Leonis*, or about sixth magnitude.

S Coronae.

Twenty-five observations of *S Coronae*, from March 23 to May 24, 1889, show a maximum to have been passed April 13.

S Serpentis.

This star was first looked for on the morning of March 13, but was not seen with the $4\frac{1}{4}$-inch refractor; it was found on the evening of March 28, when its light was estimated to equal that of DM. 14°2868, or $8^{M}.5$, from which brightness it increased steadily until May 5, when its light was 4 steps >DM. 14°2866, equivalent to $7^{M}.4$. From this point it rapidly declined, and when last observed, on May 18, was 4 steps < DM. 14°2868, 9.0 magnitude.

A projection of the light-curve shows a maximum to have passed on May 4, 1889.

Dorchester, Mass., 1889 *June* 8.

COMET *c* 1889.

A faint comet was discovered June 23, by Barnard, in the position,

1889 June 23.9499 G.M.T. $\alpha = 1^{h}\ 20^{m}\ 53^{s}.4$ $\delta = +38°\ 50'\ 44''$. Daily motion in α, $+4^{m}\ 24^{s}$; in δ, $34'$ northward.

Prof. Holden telegraphs an orbit computed by Leuschner, from observations of June 23, 24 and 25, as follows:

T = 1889 June 20.15 Greenw. M.T.
ω = 59° 21′
Ω = 271 4
i = 31 15
q = 1.1024

Ephemeris for Greenwich Midnight.

1889	α	δ	Brightness
	h m s	° ′	
June 29	1 47 4	+41 51	0.92
July 3	2 5 48	+43 40	
7	2 24 20	+45 11	
11	2 42 36	+46 27	0.76

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Elements and Ephemeris of Comet *b* 1889, by Mr. W. W. Campbell.
Ephemeris of Variables of the Algol-Type, by Mr. S. C. Chandler.
Ring-Micrometer Observations of Comet *e* 1888 (Brooks, August 7), by Mr. W. W. Campbell.
Observed Maxima and Minima of Variable-Stars, 1888-89, by Mr. Paul S. Yendell.
Comet *c* 1889.

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