Observations et nouveaux éléments de l'étoile variable R Trianguli (Ch. 906)

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De 13 observations de R Trianguli faites entre le 31 août et le 26 décembre 1906, j'ai tiré graphiquement le maximum suivant:

		O — C	Gr.
$E = 22$	Max. 1906 octobre 16 = 2417500	-27^j	$6^m.2$.

L'éclat maximum est rapporté aux deux étoiles BD +33°454 et BD +33°461, en adoptant pour chacune d'elles les grandeurs $5^m.94$ et $6^m.83$ du catalogue photométrique de Potsdam.

La différence O — C ci-dessus a été obtenue avec les éléments du 3e catalogue de M. Chandler. Elle est trop forte pour être entièrement imputable à des erreurs d'observation; et, comme d'autre part les maxima que j'ai publiés dans A. N. no. 3958, ainsi que tous les maxima et minima observés dans ces dernières années donnent des différences O — C de même signe et de grandeurs croissantes, il semble qu'on doive admettre que les éléments adoptés ne satisfont pas aux observations actuelles.

Pour en déterminer de nouveaux, j'ai utilisé les maxima et minima des tableaux I et II.

Tableau I. (Maxima).

E	Observations	Gr.	O—C′	O — C	Observateurs
2	1892 Mars 11	$5^m.8$	+ 2^j	— $1^j.7$	Yendell
2	1892 Mars 12	5.9	+ 3	— 0.7	Knott
3	1892 Nov. 28	5.9	— 4	— 6.5	Yendell
3	1892 Nov. 28	6.2	— 4	— 6.5	Sawyer
4	1893 Août 13	—	—14	—15.4	Yendell
6	1895 Févr. 9	6.6	— 5	— 4.0	Gruss et Laska
6	1895 » 14	6.2	0	+ 1.0	Yendell
6	1895 » 16	6.2	+ 2	+ 3.0	Sawyer
6	1895 » 20	6.3	+ 6	+ 7.0	H. M. Parkhurst
6	1895 » 23	6.6	+ 9	+10.0	J. A. Parkhurst
7	1895 Nov. 4	$5^m.5$	— 5^j	— $2^j.9$	H. M. Parkhurst
7	1895 Nov. 11	5.5	+ 2	+ 4.1	Gill
7	1895 Nov. 12	6.5	+ 3	+ 5.1	Yendell
10	1898 Janv. 21	5.1	0	+ 5.6	H. M. Parkhurst
11	1898 Oct. 9	6.0	— 7	— 0.2	»
13	1900 Avril 2	—	— 3	+ 6.1	»
14	1901 Janv. 2	5.3	+ 4	+14.1	»
17	1903 Févr. 25	6.2	—16	— 2.3	Luizet
18	1903 Nov. 26	6.5	—10	+ 4.9	»
20	1905 Avril 28	6.0	—27	— 9.8	Nijland
21	1906 Janv. 26	6.0	—22	— 7.5	Ida Whiteside
22	1906 Oct. 16	6.2	—27	— 3.6	Luizet

Tableau II. (Minima).

E	Observations	Gr.	O—C′	O — C	Observateurs
1	1891 Févr. 22	$11^m.7$	+ 6^j	+$6^j.0$	Knott
2	1891 Nov. 8	11.7	— 3	—1.9	»
5	1894 Janv. 17	12.0	— 6	—1.4	H. M. Parkhurst
5	1894 Janv. 26	11.7	+ 3	+7.6	J. A. Parkhurst
8	1896 Mars 27	12.0	—10	—1.9	H. M. Parkhurst
13	1899 Nov. 20	»	—17	—3.1	»
20	1904 Déc. 30	12.7	—27	—5.0	Nijland

Dans ces tableaux, les différences O — C′ sont obtenues avec les anciens éléments, et celles O — C avec les nouveaux:

Max. 1890 sept. 26.0 = 2411637.0
Min. 1890 mai 25.2 = 2411513.2
} $+266^j.84\,E$.

D'après ces nouveaux éléments, la période d'augmentation de lumière, $M - m$ est de $123^j.8$.

St. Genis-Laval, 1907 Mars 14.

M. Luizet.

15 new variable stars in Harvard Maps Nos. 31 and 62.

(Auszug aus Harvard College Observatory Circular No. 129).

Circular 127 (A. N. 175.91) contains a description of a search for variables in all parts of the sky, according to a uniform system, and the results derived from the regions of the Harvard Map of the Sky, Nos. 3 and 6. A similar study of No. 31, by Miss *Annie J. Cannon*, is contained in the present circular. A preliminary and incomplete study was also made of the region whose centre is in RA. 1^h, Decl. +45°, before the division of the work, adopted later, had been made. This region will be designated as No. 62, since this will be its number in the second map of the sky, in which the centres of the plates alternate with those of the first map, the centres of one set, in general, coinciding with the corners of the other.

Of the fifteen new variable stars given in Table I, the first and last were found in region No. 62, and the other thirteen in No. 31.

In No. 62, the known variables, 000451 (64.1905 Cassiopeiae), T Cassiopeiae, V Andromedae, RV Cassiopeiae, RW Cassiopeiae, Y Andromedae, U Persei, and V Cassiopeiae were also found. No. 31 contains 28 known variables brighter than magnitude 11 at maximum, of which Z Ophiuchi, RV Ophiuchi, RY Herculis, RY Ophiuchi, T Serpentis, X Ophiuchi, R Scuti, and R Aquilae were also found. If we assume that the number of known variables found is to the total number found, as the number already known is to the whole number existing in the region, it follows that there are probably 73 variable stars in this region, of which only 41, or about 0.56 have so far been discovered. It is evident that an examination of additional plates of this region would be profitable.

The successive columns of Table I give our designation, the Harvard number, the designation of the Editor of the

Astr. Nachr., the number in the Bonn Durchmusterung, the right ascension for 1900, the declination for 1900, the brightest observed photographic magnitude, the faintest observed photographic magnitude, the range, and the class to which the variable belongs. The facts which have so far been collected relating to these stars are given in the Remarks following Table I. The variability of all these objects has been confirmed either by a second observer, or by examination of a sufficient number of photographs to establish the variability beyond question. Several stars were suspected of variability and showed an apparent change of about 0.5 magnitude on the photographs. They are not included in the following list, however, but have been reserved until further evidence of real variability can be secured.

Table I. New variable stars.

Design.	Harvard No.	Design. A. N.	BD No.	RA. 1900	Decl. 1900	Br.	Ft.	Range	Class
012746	2905	51.1907 Andromedae	—	$1^h 27^m 34^s$	+46° 0′.4	9.2	<11.5	>2.3	II
172801n	2906	52.1907 Ophiuchi	—	17 28 50	− 1 0.4	10.0	11.1	1.1	IV
173401	2907	53.1907 Ophiuchi	—	17 34 22	+ 1 39.8	10.0	11.0	1.0	IV
175103	2908	54.1907 Ophiuchi	—	17 51 25	+ 3 24.1	9.7	<12.0	>2.3	II
180415n	2909	55.1907 Serpentis	−15°4842	18 4 7	−15 33.8	8.5	10.0	1.5	V
181813n	2910	56.1907 Scuti	−13 4965	18 18 54	−13 42.6	9.3	10.4	1.1	V
182513n	2911	57.1907 Scuti	−13 5014	18 25 41	−13 10.9	9.5	11.0	1.5	IV
183208n	2912	58.1907 Scuti	− 8 4663	18 32 36	− 8 27.3	8.9	10.2	1.3	IV
183604n	2913	59.1907 Scuti	− 4 4553	18 36 40	− 4 12.6	9.1	10.2	1.1	IV
183606	2914	60.1607 Ophiuchi	—	18 36 49	+ 6 19.6	10.6	11.4	0.8	—
183705n	2915	61.1907 Scuti	− 5 4734	18 37 36	− 5 55.9	9.0	10.3	1.3	IV
184310n	2916	62.1907 Scuti	−10 4814	18 43 40	−10 21.0	8.9	9.8	0.9	IV
185901	2917	63.1907 Aquilae	+ 1 3877	18 59 35	+ 1 9.1	8.8	10.5	1.7	IV
190301	2918	64.1907 Aquilae	+ 1 3899	19 3 10	+ 1 8.7	7.6	9.0	1.4	IV
230258	2919	65.1907 Cassiopeiae	—	23 2 53	+58 1.0	9.2	10.2	1.0	IV

Remarks.

012746. This star has been observed on 50 photographs, taken between November 2, 1892 and February 15, 1907. These observations are satisfactorily represented by the formula for times of maximum, J. D. 2412486 + 337 E. The range of variation is probably greater than that indicated by the photographic magnitudes given in the table. Miss Cannon looked for this object with the 6-inch Equatorial of this Observatory, on March 6, 1907 and April 2, 1907. On the first date, the star was barely glimpsed in a clear sky, and estimated as about magnitude 13. On the second date, it was not seen and estimated as certainly fainter than magnitude 12.5. These observations are in agreement with the elements given above, according to which the next maximum will occur on October 29, 1907.

172801n. Observations of this star have been made on 31 photographs, taken between July 19, 1893 and August 4, 1904. The period is short. The rise to maximum is rapid, since on Plate B 33655 taken at Arequipa on May 5, 1904, $18^h 35^m$ G. M. T., the star is at minimum, about magnitude 11.1, while on Plate AM 2619, taken at Arequipa on May 5, 1904, $20^h 17^m$ G. M. T., the star is at maximum, and at least one magnitude brighter than on the earlier plate. On May 6, 1904, $19^h 43^m$ G. M. T., the star was also at maximum. The period is probably about one day or a divisor thereof.

173401. This star has been observed on 30 photographs, taken between April 11, 1900 and September 12, 1904. At maximum, it is as bright photographically as +1°3476, magnitude 9.4. At minimum, it is about one magnitude fainter. To gain some idea of the period and nature of the variation, a series of plates taken from May to September, 1904, was examined. The variable was at maximum on May 3, May 5, May 6, May 7, May 21, August 18, and September 1, 1904, and at minimum or fainter than normal, on June 18, June 20, July 1, July 14, July 21, and July 30, 1904. The period is therefore short.

175103. Observations have been made of this star on 42 photographs, taken between July 11, 1893 and April 21, 1907. These observations are satisfactorily represented by the formula for times of maximum, J. D. 2414862 + 216 E.

180415n. This is a variable star of the Algol type. It has been observed on 366 photographs, taken between March 1, 1888 and October 20, 1906. The approximate period, $14^d.15$, has been derived from a preliminary study of these observations, of which a complete discussion has not yet been made.

181813n. This is a variable star, apparently of the Algol type. It is of normal magnitude on 100 photographs out of 120 which were examined. Photographs taken on July 5, 1901, July 14, 1903, June 7, June 17, August 18, September 28, 1904, April 21, and October 21, 1905, show the object at or near minimum.

182513n. This star has been observed on 35 photographs, taken between March 9, 1888 and June 12, 1906. The period is short. On a plate taken June 3, 1904, $17^h 23^m$ G. M. T., the star is at maximnm, while on June 4, 1904, $18^h 24^m$ G. M. T., the star is more than one magnitude fainter. The star was also faint on June 17, 1904, about $17^h 0^m$ G. M. T., and on June 18, 1904, about $16^h 59^m$ G. M. T.

183208n. Observations of this star have been made on 23 photographs, taken between August 25, 1902 and June 12, 1906. The observations show that the period is not greater than ten days, and it may be much less.

183604n. Observations of this star have been made on 25 photographs, taken between August 25, 1902 and June 12, 1906. The period is short.

183606. This star has been observed on 32 photographs taken between July 16, 1893 and July 22, 1905. The observations so far obtained do not determine the nature of the variation. The period may be irregular.

183705n. This star has been observed on 20 photographs, taken between August 25, 1902 and June 12, 1906. The period is short, and apparently does not exceed four days.

184310n. This star has been observed on 39 photographs, taken between June 10, 1892 and July 22, 1905. It was at first thought to be of the Algol type, Class V, but later observations make it more probable that it belongs to Class IV.

185901. This star has been observed on 512 photographs, taken between May 22, 1888 and November 9, 1906. The observations are fairly well represented by the provisional elements for times of maximum, J. D. 2412685.63 + $17^d.132$ E. This star is AG Alb 6507, where its magnitude is given as 8.5. This magnitude depends on observations by

Boss at the Dudley Observatory on August 7, and August 12, 1880. According to the elements given above, a maximum occurred on Aug. 12, 1880. As shown on about thirty photographs, the change is slow at the time of maximum, and the star probably remains bright for at least two days.

190301. This star has been observed on 506 photographs, taken between May 22, 1888 and November 9, 1906. The provisional elements for times of maximum, J. D. 2411873.865 + 13^d.75 E, have been derived from a preliminary study of these observations. The spectrum appears to change. At maximum, it is of Class G, and the distribution of the light is even from the bands H and K to the line $H\beta$. At or near minimum, the spectrum resembles Class K, and the portion of the spectrum from $H\varepsilon$ to $H\gamma$ has become much fainter than the portion from $H\gamma$ to $H\beta$. It thus appears as if the variation may be due to a diminution in the rays of shorter wave length.

230258. Observations of this star have been made on 24 photographs, taken between August 8, 1899 and December 19, 1906. The period appears to be about five days. At maximum, this star is as bright as +57°2694, magnitude 9.2. At minimum, it becomes at least one magnitude fainter.

Harvard College Observatory, Cambridge, Mass., 1907 May 10. *Edward C. Pickering.*

Notiz betreffend die Sekularstörungen von (433) Eros.

In den Nr. 4178-79 der Astr. Nachr., in dem Artikel: »Secular pertubations of Eros« äußerte Herr C. J. Merfield die Meinung, daß ein paar Fehler in meinen Rechnungen (Sekulare Marsstörungen in der Bewegung des Eros, Krakau, 1906) vorhanden seien. Ich untersuchte diese Stellen, und es zeigte sich, daß in dem Ausdrucke für $\left[\frac{dL}{dt}\right]_{oo}$ ein Glied falsch genommen ist, deswegen änderte sich dieser Ausdruck für alle vier Planeten.

Es wird nämlich:

für Mars	$\left[\frac{dL}{dt}\right]_{oo}$	$= +\ 0.27514$
für Erde	»	$= +\ 7.44828$
für Jupiter	»	$= -17.29578$
für Saturn	»	$= -\ 0.74556$

Diese Resultate stimmen ziemlich nahe mit den Resultaten von Herrn Merfield überein.

Dann kommt noch ein Fehler in der Tafel II in dem Ausdrucke $\log W_0$ für 0°. Es soll dort heißen: 9.07707_n, was mit dem entsprechenden Ausdrucke in den Tafeln des Herrn Merfield fast übereinstimmt. Deswegen muß man auch für 0° die entsprechenden Glieder in $W_0 \cos u$ und $W_0 \sin u$ ändern, nämlich in +0.11932 und −0.00490. Daraus folgt, daß die Sekularstörungen der Erde andere Werte erhalten:

$$\frac{di}{dt} = -0.00085, \quad \frac{d\Omega}{dt} = -3.22923, \quad \frac{d\pi}{dt} = +2.62889$$

was aber nicht stark von den früher angegebenen abweicht.

Da der Hauptfehler die Ausdrücke für die Länge betrifft, so bleiben die Untersuchungen der kritischen Epochen noch ziemlich richtig, und es muß nur die Zeit der größten Annäherung in der kritischen Epoche als falsch angesehen werden.

Krakau, Sternwarte, 1907 Juni 7. *W. Dziewulski.*

Beobachtungen der Kometen 1906 d (Finlay) und 1906 g.

1906	M. Z. Wien	$\Delta\alpha$	$\Delta\delta$	Vgl.	α app.	$\log p.\Delta$	δ app.	$\log p.\Delta$	Red. ad l. app.	*
					Finlayscher Komet 1906 d.					
Aug. 22	14^h 20^m 58^s	−5^m 37^s.80	+ 1′ 36″.6	5	4^h 40^m 43^s.54	9.559$_n$	+12° 39′ 45″.8	0.765	+1^s.02 − 0″.2	1
23	14 58 52	−2 59.34	−18 1.2	5	4 47 35.96	9.522$_n$	+13 10 47.9	0.749	+1.03 − 0.5	2
28	14 48 13	−6 43.92	+ 1 14.0	6	5 18 20.44	9.551$_n$	+15 18 31.5	0.745	+1.00 − 2.0	3
29	15 8 8	+3 31.32	+18 3.5	5	5 24 3.66	9.531$_n$	+15 40 15.7	0.734	+1.05 − 1.8	4
30	14 57 56	+4 56.75	− 3 57.1	5	5 29 30.81	9.545$_n$	+16 0 36.1	0.737	+1.07 − 2.1	5
					Komet 1906 g.					
Nov. 20	17 43 11	−2 35.99	+ 3 11.0	5	10 4 38.39	8.663$_n$	+25 24 26.6	0.531	+1.75 −17.6	6

Mittlere Örter der Vergleichsterne für 1906.0.

*	α	δ	Autorität	*	α	δ	Autorität
1	4^h 46^m 20^s.32	+12° 38′ 9″.4	AG Lpz I 1396	4	5^h 20^m 31^s.29	+15° 22′ 14″.0	AG Berl A 1516
2	4 50 34.27	+13 28 49.6	AG Lpz I 1423	5	5 24 32.99	+16 4 35.3	AG Berl A 1545
3	5 25 3.36	+15 17 19.5	AG Berl A 1548	6	10 7 12.63	+25 21 33.2	AG Cbr 5249, Bo VI 2212

Jeder dieser zwei Kometen erschien im 6-zöll. Refraktor als ein ziemlich großer runder Nebel mit einer helleren Mitte, in welcher beim ersten Kometen eine kernartige Verdichtung, wenn auch nicht immer deutlich, zu sehen war, während eine solche beim zweiten nur in seltenen Momenten und auch da nicht mit Sicherheit erkannt werden konnte. Der zweite Komet war überdies mehr blaß und an den Rändern sehr unsicher begrenzt.