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A new semi-regular variable star

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The epoch of the minimum is now given by: the J. D. of $y_0 - 1077 \times$ the distance in time between two consecutive y 's, in our case half the distance in time between two observed points of the lightcurve.

$$\text{Epoch of minimum: } 2425497.48082 - 1077 \times 00191 = 2425497.48061$$

The epochs of minimum found in this way for the six minima observed, are:

J. D. H. M. T. Gr.	2425497.48061
	5498.47589
	5502.45869
	5503.45411
	5504.44976
	5506.44140

With the aid of the Leiden observations and the epoch given by GUTHNICK and PRAGER, the period could be redetermined. The new value adopted is:

$$\text{Per.} = 0.3318867 \quad \text{Per.}^{-1} = 3.013076$$

The mean error of the period is estimated to be

about ± 0.000010 and depends mainly on the mean error of the epoch given by GUTHNICK and PRAGER, the value of which I estimated to be about ± 0.002 .

Using this period, the residuals $O-C$ are as follows:

	^d
	+ 0.00028
	- 0.00010
	+ 0.00006
	- 0.00018
	- 0.00019
	+ 0.00013

According to these figures the mean error of a single epoch of minimum is ± 0.00021 or ± 20 sec.

Even when this value should prove to be accidentally somewhat too small, the accuracy obtained is very satisfactory.

The elements are now:

$$\text{J.D.H.M.T.Gr. } 2425497.48033 + 0.3318867 (E - 2221) \pm 0.00009 \pm 0.000010 \quad (\text{m. e.})$$

I want to thank Prof. HERTZSPRUNG for his advice during the observations and the preparing of this paper.

A new semiregular variable star, by *P. Th. Oosterhoff*.

By the comparison in the blinkmicroscope of pairs of plates, covering a region in Crux, Centaurus and Musca, and taken with the Franklin-Adams instrument at Johannesburg, a number of variable stars have been discovered, the larger part of which has already been published in *B. A. N.* 148. Some of the variables were retained for further investigation, since no final period could be determined. The variable, which forms the object of the present note, was found on plates, having an interval in time of about 33 days.

Its position is:

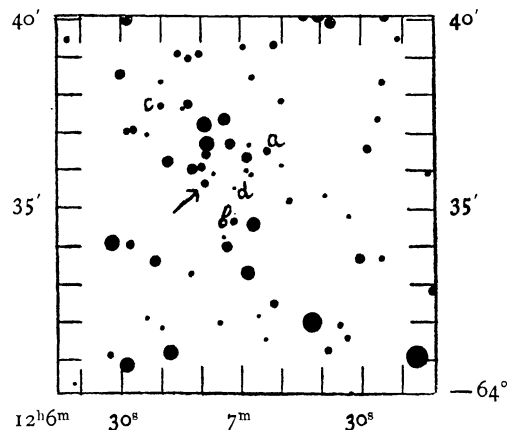
$$12^{\text{h}} 6^{\text{m}} 51^{\text{s}}, -64^{\circ} 35'.7 \quad (1875)$$

Figure I gives a chart, covering $10' \times 10'$, on which the variable is marked with an arrow, the comparison stars with letters.

The variable has been estimated visually on the plates then available and from these estimates a period of about 29 days was found, but the representation was not satisfactory and some parts of the lightcurve were not covered at all by the observations, since

the variable has a period not very different from the moon's period and no plates were taken at Johannesburg on moonlit nights.

FIGURE I.



Therefore the variable was retained until more plates from Johannesburg had arrived here. In the autumn of 1928 we received again 150 plates of this

region, taken by Mr. VAN GENT, the total number of plates being now 308.

The new estimates of all the plates gave the same period of about 29 days, but the representation remained unsatisfactory. A period of a few days or a still shorter one is very improbable, since no variation in brightness could be detected on plates taken during the same night.

Some estimates indicate that the ascending branch of the lightcurve is steeper than the descending one, but many of the estimates of the later plates do not

fit in very well and the range in brightness seems to be different at different epochs. The brightness of the star has been estimated to be 13^m at maximum and fainter than 14^m at minimum. The total number of plates estimated is 249, the variable being too faint on the remaining ones. No mean lightcurve has been derived, but in Table I the mean results have been given for 99 nights.

This object reminds one of the semiregular variable announced by HERTZSPRUNG in *B. A. N.* 147 page 173. In both cases the period is about 4 weeks.

TABLE I.

J.D.H.M.T. Gr.	brightness in steps.	number of plates.	J.D.H.M.T. Gr.	brightness in steps.	number of plates.	J.D.H.M.T. Gr.	brightness in steps.	number of plates.	J.D.H.M.T. Gr.	brightness in steps.	number of plates.
d s			d s			d s			d s		
2423788·56	·79	1	2423964·28	·74	1	2424288·31	·58	6	2425355·26	·55	2
3790·51	·57	1	3966·28	·74	1	4289·32	·50	6	5356·40	·49	2
3791·54	·66	1	3967·28	·89	1	4290·30	·43	4	5357·36	·36	2
3799·53	·15	1	3972·26	·25	1	4291·33	·53	8	5360·45	·39	1
3801·51	·20	1	3973·25	·20	1	4292·29	·46	5	5361·37	·41	1
3883·52	·32	1	3975·26	·20	1	4293·30	·41	6	5362·33	·54	5
3884·31	·27	2	3976·25	·00	1	4294·31	·40	6	5378·41	·84	2
3885·25	·20	1	3985·23	·46	1	4296·31	·26	5	5380·32	·40	3
3886·24	·10	1	3986·23	·39	1	4297·31	·23	5	5381·30	·35	2
3887·48	·15	1	3987·24	·41	2	4298·38	·27	2	5383·45	·22	2
3904·44	·68	1	3988·24	·69	1	4560·52	·15	1	5385·29	·25	2
3916·42	·20	1	3992·23	·61	1	4566·50	·20	1	5386·33	·23	8
3930·33	·66	1	4000·21	·46	1	4586·53	·23	2	5388·37	·22	2
3931·22	·49	1	4258·32	·70	2	4918·52	·29	1	5391·32	·29	3
3933·27	·74	1	4259·32	·74	9	5025·43	·20	1	5393·34	·31	10
3940·34	·43	1	4260·32	·76	8	5328·43	·24	1	5414·25	·34	2
3941·34	·45	1	4261·29	·70	1	5329·42	·26	8	5415·35	·47	2
3942·35	·15	1	4262·29	·72	3	5330·39	·21	4	5417·37	·69	1
3943·34	·10	1	4263·40	·72	3	5331·40	·31	10	5418·27	·54	1
3944·33	·10	1	4264·42	·64	4	5332·37	·23	2	5420·28	·47	2
3945·34	·20	1	4281·23	·34	1	5348·28	·28	2	5435·24	·81	2
3946·33	·15	2	4282·26	·34	2	5350·41	·18	2	5441·30	·10	1
3958·28	·74	1	4285·33	·59	2	5351·40	·20	5	5452·28	·29	1
3959·28	·74	1	4286·32	·53	5	5353·32	·26	3	5453·26	·26	2
3963·27	·89	1	4287·29	·50	5	5354·38	·33	6			