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COMMUNICATIONS FROM THE OBSERVATORY AT LEIDEN.

Provisional elements of a variable star of the RR Lyrae type,

by *Ejnar Hertzsprung.*

By the comparison of plates I have taken of the great Magellanic Cloud with the 10 inch Franklin-Adams instrument, Dr. R. T. A. INNES found a variable star the position of which is $5^h\ 29^m\ 4^s{\cdot}6$, $-64°\ 22'{\cdot}7$ (1875) and which is thus outside the region examined closely at Harvard (*H. A.* **60**, 87; 1908). The star proved to be of the RR Lyrae type. It was observed near maximum at the 7 dates given in Table 1. As the star is only about 4° from the pole of the ecliptic no corrections for light equation have been applied. A least square solution gave the period $^d{\cdot}48268 \pm {}^d{\cdot}00011$ (m. e.). My estimates in an arbitrary scale on 53 plates from 27 nights are given in Table 2. The phases in fractions of the period have been calculated from the formula $P = 2{\cdot}071773$ (J. D. M. T. Grw. — 2420000). Arranging the 53 observations into 11 groups of 4 or 5 plates each the mean values given in Table 3 and graphically represented in the accompanying diagram were obtained. According to this the magnitudes at maximum and minimum are $11^m{\cdot}05$ and $11^m{\cdot}75$ respectively. Their mean, $11^m{\cdot}4$, is passed on the ascending branch of the lightcurve at the phase about ·51. The provisional ephemeris of this epoch is:

J. D. M. T. Grw. $2423785^d{\cdot}8926 + {}^d{\cdot}48268\ E.$

The maximum occurs about $^P{\cdot}05$ or about $^d{\cdot}024$ later.

TABLE 1.

J.D.M.T. Grw. 2420000 +	epoch	*O—C*
d		d
3757·445	0	— ·004
58·417	2	+ 2
86·396	60	— 14
88·334	64	— 17
90·289	68	+ 18
99·448	87	+ 6
3816·330	122	— 6

TABLE 2.

plate no.	time of exposure	J.D.M.T. Grw. 2420000+	phase	estim. phgr. mag.	plate no.	time of exposure	J.D.M.T. Grw. 2420000+	phase	estim. phgr. mag.	plate no.	time of exposure	J.D.M.T. Grw. 2420000+	phase	estim. phgr. mag.
	min.	d	P	m		min.	d	P	m		min.	d	P	m
1237	120	3756·3661	7782·338	11·5	1260	60	3784·3184	7840·249	11·8	1296	60	3791·4554	7855·035	11·75
38	40	·4895	·594	11·2	61	60	·3797	·376	11·8	1302	31	97·3029	67·150	11·95
39	60	57·3426	84·361	11·65	62	60	·4281	·476	11·6	03	30	98·2847	69·184	11·75
40	61	·3941	·468	11·4 :	63	37	85·3284	42·341	11·65	04	30	·3110	·238	11·75
41	60	·4451	·573	11·05	65	60	86·3465	44·450	11·6	05	30	·3366	·291	11·75
42	60	·5025	·692	11·25	66	60	·3964	·554	11·0	06	30	·3616	·343	11·8
43	56	58·4169	86·587	11·0	67	60	·4462	·657	11·2	07	30	·3879	·397	11·65
44	33	60·3417	90·574	11·1	72	34	87·3341	46·497	11·5	08	35	·4238	·472	11·75
45	120	62·3642	94·765	11·3	73	60	·4214	·677	11·2	09	60	99·4482	71·594	11·0
47	120	63·3532	96·814	11·5	74	60	·4843	·808	11·5	18	38	3812·3559	98·336	11·7
48	120	·4460	97·006	11·55	76	63	88·2853	48·467	11·75	19	60	13·2818	7900·254	11·8
49	120	64·3387	98·855	11·5	77	61	·3345	·569	10·9	20	60	·3310	·356	11·9
50	120	·4287	99·042	11·75	78	60	·3888	·682	11·05	34	60	14·3373	02·441	11·8
51	120	65·3457	7800·942	11·6	79	60	·4366	·781	11·25	48	60	16·3304	06·570	11·1
52	120	·4392	01·135	11·75	88	62	90·2892	52·619	11·05	55	60	17·3602	08·704	11·25
53	120	66·3810	03·086	11·8	89	60	·3370	·718	11·25	64	60	20·2952	14·784	11·3
57	60	83·3270	38·195	11·75	90	60	·3847	·817	11·4	90	60	40·2670	56·161	11·95
58	60	·3775	·299	11·7	91	60	·4318	·914	11·55					