

des résultats acceptables, il convient d'essayer aussi les multiples et sous-multiples de ce nombre.

Enfin Hartmann a reconnu le fait nouveau suivant: la raie du calcium λ 393, qui est fine dans l'étoile, n'offre

pas de déplacement variable, et la vapeur correspondante a une vitesse radiale constante. J'ai cherché à vérifier ce fait très curieux sur mes épreuves; malheureusement, l'intensité du spectre dans la région, n'était pas assez forte.

Meudon, le 10 juillet 1904.

H. Deslandres.

Seventy-six new variable stars.

(Harvard College Observatory Circular No. 79).

Since the publication of Circular No. 78 (A. N. 3950), in which was given a list of 71 variable stars in the Great Nebula of Orion, a further examination of the region has been made by Miss *Leavitt*. The plates mentioned in the former circular were superposed successively upon a glass positive made from one of them. In this way, all the variables which show striking changes and are comparatively bright were rediscovered, and nine new ones were found. Six of them are outside of Bond's map, which was the region covered in the previous investigation. Additional plates have been examined for those of Wolf's variables which were not confirmed, with the result that 48.1903 has been found to be certainly variable. On Oct. 26, 1897, its magnitude was 14.8, and on March 3, 1904, it was 13.7. No variation was found in the star north of it, 54.1903. The star 8.1904 does not show variation on the Harvard photographs, being always fainter than the fifteenth magnitude. Marked variation, however, has been found in 11.1904, whose magnitude was 14.9 on Jan. 8, 1894, and 11.4 on Jan. 22, 1897.

An examination has been made of the stars near the Trapezium, which have been suspected of variability by Bond and other observers, especially Nos. 575, 589, 622, 641, 647, 654, 671, and 676 in Bond's Catalogue. On a few plates having short exposures, these stars can be seen, and show apparent fluctuations in brightness. It is probable that photographs taken with a telescope of great focal length, would settle this question.

The positions given by Wolf, of the variables discovered by him, agree very closely with those found from the measures of Bond. In four cases, Nos. 25, 26, 35, and

53, in Table I of Circular No. 78 (A. N. 3950), the positions differ by an appreciable amount. Plates taken on Jan. 25, 1894, and on Dec. 3, 1901, were superposed and examined carefully, but no evidence was found of proper motion during the interval. The right ascension of No. 5, given as $5^h 27^m 54^s.0$ in Table II, should read $5^h 27^m 45^s.0$.

A cursory examination of the vicinity of η Carinae has been made on six plates by the method described above. Ten new variables were found, besides the known variable, U Carinae. None of these are in the nebula. A similar examination of the Small Magellanic Cloud resulted in the discovery of 57 new variables, including three in the cluster 47 Tucanae, which appears on the same plates. These variables may be only a small portion of those actually existing in this region, as nearly all of them were found in a comparison of two plates. The known variable, ... Tucanae, $0^h 54^m 2^s - 75^\circ 32'$, in the Provisional Catalogue, Annals, XLVIII, No. 3, and six of the eight known variables in the cluster 47 Tucanae, were also found. A provisional scale of magnitudes has been adopted, as absolute magnitudes of the faint stars have not yet been determined.

A careful examination has been made of the Trifid Nebula. In the region $30'$ square, whose limits in 1900 extend from right ascension $17^h 55^m 2^s$ to $17^h 57^m 4^s$, and from declination $-22^\circ 47'$ to $-23^\circ 17'$, 1167 star images have been examined on two plates and no variable found. A similar examination of NGC. 2070, the Looped Nebula in the Large Magellanic Cloud, covered the region whose limits in 1900 extend from right ascension $5^h 37^m 6^s$ to $5^h 41^m 2^s$, and from declination $-69^\circ 0'$ to $-69^\circ 20'$. Out of 867 star images examined, two are suspected of slight variability.

Table I.
Variable stars in Orion and Carinae.*)

No.	Design. Orionis	α 1900	δ 1900	Br.	Ft.	No.	Design. Carinae	α 1900	δ 1900	Br.	Ft.
1	114.1904	$5^h 24^m 1^s$	$-6^\circ 11.3$	11.6	<15.4	10	123.1904	$10^h 16^m 8^s$	$-60^\circ 57'$	10.0	11.5
2	115.1904	5 25 13	-4 33.9	12.4	13.1	11	124.1904	10 20.9	-60 24	10.2	12.2
3	116.1904	5 27 5	-5 0.7	10.0	11.0	12	125.1904	10 34.6	-58 41	11.4	13.0
4	117.1904	5 27 8	-2 53.7	9.0	11.4	13	126.1904	10 34.7	-60 16	13.4	<15.1
5	118.1904	5 30 25	-5 24.8	11.4	12.5	14	127.1904	10 36.4	-57 25	11.1	12.8
6	119.1904	5 30 33	-6 51.7	12.8	13.5	15	128.1904	10 47.0	-59 49	13.1	<15.1
7	120.1904	5 32 22	-6 38.6	8.0	10.2	16	129.1904	10 49.9	-57 59	12.6	14.9
8	121.1904	5 33 32	-2 48.0	11.6	13.2	17	130.1904	10 50.2	-57 52	13.7	<15.1
9	122.1904	5 33 34	-2 47.5	11.4	14.2	18	131.1904	10 50.4	-58 15	13.4	14.5
						19	132.1904	10 51.3	-60 24	9.2	10.2

*) Die provisorische Numerierung 114—122.1904 Orionis, resp. 123—132.1904 Carinae ist von mir hinzugefügt worden. Kr.

2. This is the following of two stars which are usually of about the same magnitude.

5. This star is Bond 663.

6. This star is Bond 726.

7. This star is $-7^{\circ}11'32''$, and Bond 1036.

8, 9. Apparently these two adjacent stars vary alter-

nately. On the plates examined, one is always bright when the other is faint.

10, 11. These stars are near the edge of the plates examined, and estimates of their brightness were made with difficulty.

19. This star is C. P. D. $-60^{\circ}23'86''$. Variability discovered by Professor E. C. Pickering.

The new variables in Orion and Carina are given in Table I. A number for reference, the designation, the position for 1900, and the brightest and faintest magnitudes observed on the plates, are given in the successive columns. In Table II, the new variables in the Small Magellanic Cloud are given in a similar form as Table I.

Table II. Variable stars in the region of the Small Magellanic Cloud.*)

No.	α 1900	δ 1900	Br.	Ft.	No.	α 1900	δ 1900	Br.	Ft.
1	$0^h 9^m 5$	$-73^{\circ} 11'$	11.8	13.4	30	$0^h 52^m 4$	$-73^{\circ} 44'$	13.6	14.9
2	$0 18.9$	$-72 40$	11.4	13.3	31	$0 53.6$	$-71 48$	13.4	14.3
3	$0 20.2$	$-72 27$	11.5	12.4	32	$0 54.5$	$-72 57$	12.5	13.2
4	$0 20.2$	$-72 38$	11.7	12.3	33	$0 54.9$	$-72 19$	14.0	14.9
5	$0 20.7$	$-72 36$	11.4	12.4	34	$0 55.0$	$-72 58$	13.8	15.0
6	$0 24.4$	$-72 44$	11.9	12.6	35	$0 55.1$	$-72 59$	12.9	14.5
7	$0 33.6$	$-74 31$	13.9	14.7	36	$0 55.4$	$-72 27$	14.0	14.9
8	$0 34.7$	$-74 30$	13.8	14.7	37	$0 56.4$	$-73 25$	13.1	14.0
9	$0 35.4$	$-72 34$	12.0	13.2	38	$0 56.5$	$-73 59$	13.9	14.6
10	$0 36.7$	$-74 14$	13.0	14.4	39	$0 57.7$	$-72 44$	11.8	13.4
11	$0 37.1$	$-74 16$	12.0	13.7	40	$0 57.8$	$-72 42$	14.5	15.0
12	$0 37.5$	$-71 10$	13.6	14.4	41	$0 58.4$	$-70 34$	10.8	< 14.5
13	$0 38.0$	$-74 17$	10.8	12.1	42	$0 59.4$	$-72 31$	13.7	15.2
14	$0 38.3$	$-74 5$	13.0	13.8	43	$1 0.7$	$-73 7$	13.4	14.9
15	$0 40.1$	$-74 10$	12.1	13.3	44	$1 2.5$	$-72 56$	13.7	14.5
16	$0 43.3$	$-73 16$	11.1	12.0	45	$1 2.7$	$-74 11$	13.4	14.2
17	$0 44.8$	$-73 0$	12.6	13.7	46	$1 3.8$	$-73 48$	11.9	13.2
18	$0 45.6$	$-73 55$	13.6	14.3	47	$1 4.4$	$-73 45$	12.0	12.9
19	$0 45.9$	$-73 3$	12.7	13.9	48	$1 4.8$	$-72 3$	12.9	13.7
20	$0 46.4$	$-73 46$	13.6	15.0	49	$1 5.0$	$-74 16$	12.9	13.5
21	$0 46.8$	$-73 18$	11.1	12.1	50	$1 5.8$	$-72 35$	13.4	14.7
22	$0 47.2$	$-74 6$	14.2	15.0	51	$1 7.5$	$-73 8$	13.3	14.3
23	$0 47.7$	$-74 8$	14.4	15.0	52	$1 7.9$	$-77 23$	11.0	13.4
24	$0 47.8$	$-73 11$	12.3	13.6	53	$1 10.4$	$-73 3$	13.4	14.3
25	$0 49.3$	$-70 25$	9.4	14.3	54	$1 10.8$	$-72 13$	12.9	14.7
26	$0 50.3$	$-72 49$	11.1	12.0	55	$1 26.1$	$-74 18$	11.2	12.0
27	$0 50.7$	$-73 10$	13.2	13.9	56	$1 32.0$	$-75 43$	11.0	12.5
28	$0 52.4$	$-72 5$	12.8	13.7	57	$1 38.9$	$-75 1$	11.6	12.5
29	$0 52.4$	$-72 31$	11.7	12.8					

Probably, Nos. 11, 13, and 25, are variable stars of long period, while Nos. 9, 10, 18, 20, 28, 31, 33, 34, 36, 44, 46, 48, and 53 have periods that are short.

Harvard College Observatory, 1904 May 26.

Edward C. Pickering.

*) Da die Sterne durch die Zugehörigkeit zur kleinen magell. Wolke und die Pickeringsche Numerierung genügend gekennzeichnet sind, kann von einer besonderen provisorischen Numerierung abgesehen werden. Nr. 1—51, 53 und 54 liegen im Sternbilde Tucana, 52 und 55—57 im Sternbilde Hydrus. *Kz.*

Beobachtung von W Ursae majoris.

Neben drei Maxima am 10. Januar 1904, $7^h 50^m$, 27. Januar, $8^h 10^m$ und 7. Februar, $8^h 38^m$ (unsicher), habe ich folgende Minima beobachtet: Jan. 10 $9^h 50^m$; Jan. 17 $9^h 59^m$; Jan. 27 $6^h 17^m$ (unsicher) und $10^h 12^m$ (gut); Febr. 17 $10^h 40^m$; Febr. 19 $6^h 43^m$; März 14 $7^h 30^m$, aber die drei letzten Beobachtungen weniger sicher, die letzte etwas zu spät. Zeitangaben in M. E. Z.

Landstuhl, 1904 April 17.

Ph. Fauth.