HARVARD COLLEGE OBSERVATORY.

CIRCULAR 184.

STARS HAVING PECULIAR SPECTRA.

CIRCULAR 178 gives a list of peculiar objects found by Miss Cannon in the course of her observations for the New Draper Catalogue. Table I contains an additional list of stars having spectra with bright lines or other peculiarities. The successive columns give the Durchmusterung number, the right ascension for 1900, the declination for 1900, the photometric magnitude or the Durchmusterung magnitude reduced to the photometric scale, the latter being carried to tenths only, the class of spectrum, and a brief description of the observed peculiarities. The letters H.V. refer to the catalogue of variable stars discovered at this Observatory.

TABLE I.

STARS HAVING PECULIAR SPECTRA. 6 NEW VARIABLE STARS.

DM.	R. A. 1900.	Dec. 1900.	Magn.	Sp.	Remarks.
	h. m.	° ′			
+23° 123	0 48.9	+23 32	8.8	R	
..	6 34.1	+44 14	..	Md	Hγ and Hδ bright. Variable. H.V. 3373.
+14° 1598	7 7.2	+14 46	9.2	Rp	Hβ and Hγ bright. Variable. H.V. 3374.
−23° 5759	31.8	−23 22	11.6	N	
−26° 4942	42.2	−26 30	10.7	N	
..	42.5	−26 6	..	Md	Hγ and Hδ bright. Variable. H.V. 3375.
−28° 5249	55.7	−28 28	11.4	Oc	
−49° 3621	8 29.4	−49 16	7.3	B	Hβ bright.
..	11 27.6	−64 52	..	Pec.	Variable. H.V. 3376.
−34° 8125	12 18.9	−35 5	9.0	Mc	Variable. H.V. 3377.
..	57.9	−28 34	..	Md	Hγ and Hδ bright. Variable. H.V. 3378.
+42° 2811	17 10.4	+42 15	7.74	R	
+46° 2846	20 2.3	+46 24	8.8	B	Hβ bright.
− 3° 5751	23 57.0	− 3 23	9.9	R	

REMARKS.

h. m.
6 34.1. 063444. — Aurigae. This spectrum was found on a photograph taken April 22, 1914, with the 16-inch Metcalf Telescope. The variation was confirmed on five chart plates taken with the same instrument, which show that this star was about 12 magn. on December 12, 1912 and September 27, 1913,

h. m.
while on February 4 and February 18, 1913, it was invisible, and fainter than 14 magn. The period appears to be about 250 days.

7 7.2. 070714. — Geminorum. This spectrum was found on a photograph taken December 3, 1913, with the 16-inch Metcalf Telescope. Measures of its brightness have been made on 140 photographs, taken between February 22, 1891 and March 20, 1914. The variation is from 10.8 magn. to fainter than 14.9 magn. The period is about 377 days, but appears to be irregular.

7 42.5. *074226*. — Puppis. This spectrum was found on a photograph taken with the 8-inch Bache Telescope on April 21, 1914. The variation was confirmed on eleven photographic charts taken between December 16, 1895 and April 24, 1905. The range of variation is from 11.5 magn. to fainter than 15 magn.

11 27.6. *112764*. — Muscae. This spectrum was found on a photograph taken with the 8-inch Bache Telescope on May 1, 1908. It consists of four bright lines, which are Hβ, Hγ, Hδ, and probably 4653. The last line, which is faint, may be 4686. A variation of at least one magnitude was confirmed on nine photographic charts taken between June 10, 1896 and May 13, 1905. At maximum, the magnitude of the variable was estimated to be 0.8 fainter than C.P.D. −64° 1672, 9.7 magn.

12 18.9. *121835*. — Centauri. This spectrum was found on a photograph taken with the 8-inch Bache Telescope on June 3, 1910. The variation was confirmed on twelve photographic charts, taken between May 14, 1903 and January 25, 1909. At maximum, this star is equal to C. DM. − 35° 7907, 8.5 magn. At minimum, it is invisible on photographs taken with the Cooke lens showing stars of 11 magn.

12 57.9. *125728*. —Hydrae. This spectrum was found on a photograph taken with the 8-inch Bache Telescope on June 1, 1910. The variation was confirmed on ten photographs taken between April 8, 1892, and March 18, 1911. At maximum, the variable is equal to C.P.D. − 28° 4612, 9.5 magn. At minimum, it is invisible and fainter than 14 magn.

Table II gives a continuation of the list of stars having composite spectra. The first four columns contain the Durchmusterung number, the right ascension for 1900, the declination for 1900, and the photometric magnitude or the Durchmusterung magnitude reduced to the photometric scale, the latter being carried to tenths only. In the case of stars south of −52°, the magnitude according to the Cape Photographic Durchmusterung is given. The fifth column gives the number in Burnham's "General Catalogue of Double Stars," when the star is contained in that work. The sixth and seventh columns give the class of spectrum of the brighter and fainter components, as they are determined from the general appearance of the blended spectrum.

TABLE II.

STARS HAVING COMPOSITE SPECTRA. 24 NEW DOUBLE STARS.

DM.	R. A. 1900.	Dec. 1900.	Magn.	Burnham.	Br.	Ft.
	h. m.	° ′				
+51° 153	0 43.0	+51 33	6.84	..	F8	A3
+17° 1483	6 57.6	+17 0	9.9	..	F5	A0
− 1° 1612	7 9.8	− 1 12	7.9	..	G0	A3
−10° 2126	31.9	−10 25	8.0	..	F5	A2
− 3° 2061	41.7	− 3 38	8.1	..	G0	A2
− 8° 2186	56.9	− 8 19	7.21	..	F5	A2
−41° 3694	8 0.0	−41 54	10.6	..	F5	A2

DM.	R. A. 1900.	Dec. 1900.	Magn.	Burnham.	Br.	Ft.
	h. m.	° ′				
−26° 5599	8 5.5	−26 36	9.4	..	F5	A
−19° 2369	16.9	−19 46	5.56	..	G0	A3
−26° 6417	41.9	−26 14	7.32	..	K0	A3
−16° 2589	42.8	−16 41	6.62	4783	G0	A2
−36° 5125	48.8	−36 10	6.54	..	F5	A3
− 8° 2518	49.4	− 8 23	7.42	4849	F0	A2
−39° 4924	50.1	−40 4	6.46	..	K0	A5
−25° 6966	9 8.0	−25 11	7.36	..	F5	A2
− 2° 2906	24.6	− 2 41	7.8	5114	F5	A3
−70° 1047	10 18.6	−70 40	8.6	..	F5	A2
−23° 9339	26.4	−23 40	7.7	..	F5	A3
−57° 3663	37.0	−57 25	8.1	..	F5	A
−52° 3929	44.3	−52 20	9.4	..	F2	A3
−53° 4215	49.6	−53 23	8.8	..	G0	A2
−26° 8272	54.6	−26 14	8.1	..	F5	A2
−65° 1649	11 11.3	−65 58	8.8	..	K0	A2
−58° 3551	18.8	−59 2	9.0	..	F5	A3
−51° 5895	34.4	−51 20	8.8	..	G0	A3
−27° 8287	40.4	−27 49	8.4	..	F2	A3
−53° 4756	41.5	−53 37	8.4	..	F5	A3
+29° 2508	14 9.4	+29 35	6.76	6772	F0	A2
+52° 2258	18 36.6	+52 14	6.86	8732	F2	A3
+11° 3955	19 37.9	+11 35	5.32	9531	F5	A3
+11° 3994	44.0	+11 34	5.70	9634	F2	A2

Including those in Table II, one hundred stars with composite spectra have been found on the Harvard photographs. Of the forty-five brighter ones, which were published in H.A. 28, 93, 229 and H.A. 56, 113, 160, twenty-five, or 0.56, are known to be double, either visually or spectroscopically. Of the fifty-five published here and in H. C. 178, only eleven, or 0.20 are known to be double. It is probable that many of these will be found to be spectroscopic binaries.

EDWARD C. PICKERING.

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