NOTE ON A POSSIBLE NEW OB ASSOCIATION IN SCORPIUS.

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ABSTRACT.

During a survey of Hα-emission stars, a clustering of OB and A-type stars was noticed in the constellation Scorpius. It is believed that these stars form a new association extending in R.A. from 17^h00^m to 17^h16^m (1900) and in Dec. from -31°30′ to -34°30′ (1900). The distance to this association is probably about 1400 psc.

In the course of a recent survey of Hα-emission stars (1) in the vicinity of the emission nebulosities NGC 6334 and NGC 6357, the author noticed a clustering of Hα-emission stars to the north of a dark nebula. This nebula is believed to form a connection between the two emission nebulae. The group of Hα-emission stars is centered about the Hα-emission star HD 155806 (R.A. = $17^h08.^m7$, Dec. = -33°26′; 1900), which is classified as Oe5p in the Henry Draper Extension, while in the Henry Draper Catalog it is classified as B3p.

A total of 13 Hα-emission stars were found in a circular area of 1,5 degrees radius, centered on the star HD 155806. Two of these stars are of late spectral type, six are of early spectral type, and the remaining five are too faint to classify on both red and blue plates. They might possibly be T Tauri-type stars, as may also be the case for the faint Hα-emission stars which are seen projected on the dark nebulosity mentioned above.

It is well known that T associations are sometimes found together with OB associations. In order to determine whether or not an OB association exists together with the above mentioned possible T association, the author made a preliminary search for such an association in a circular area of one degree radius centered on the star HD 155806. Chart No. 180 in the Henry Draper Extension was used for this survey. Within the prescribed area, 49 OB-Type and 85 A-type stars were found. The corresponding surface densities are thus 15.6 and 27.0 stars per square degree.

Inspection of the Lick Sky Atlas chart centered at R.A. 17^h00^m and Dec. -30° (1900 coord.) shows that the clustering of fairly bright stars found in the circular area extends northward to a declination of -31°30′. For this reason,

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a search was made in the Henry Draper Catalog and the Henry Draper Extension for all stars of types OB and A having a R.A. from 17^h00^m to $17^h 16^m$ and a Dec. from -31°30′ to -34°30′ (1900 coord). The results of this search are listed in Tables I through IV. Tables I and II list the OB-type stars found in the Henry Draper Catalog and the Henry Draper Extension, respectively, while Table III and IV list the A-type stars found in the Henry Draper Catalog and the Henry Draper Extension, respectively. Table V lists the known Hα-emission objects in the same region, taken from the data of The (1), Merrill and Burwell (2,3,4,5), Bidelman (6), Haro (7), and Roberts (8). Vorontsov-Velyaminov (9), Minkowsky (10,11,12) and Perek (13) list no planetary nebulae in the area under consideration.

The Lick Sky Atlas chart also shows that this group of stars is seen projected against a dark nebula. This increases the likelihood that these stars do indeed form an association. To determine whether or not this grouping corresponds to a known association, the lists of Morgan (14), Schmidt (15), and Alter, Ruprecht and Vanysek (16) were consulted, with negative results.

The surface density of the OB-type stars listed in Table I is 5.9 stars per square degree, while that of the A-type stars listed in Table III is 5.5 stars per square degree. The limiting visual magnitude of these stars is given by the Henry Draper Catalog as about 11.5 mag. The visual magnitudes and spectral types (both from the Henry Draper Catalog) for the stars in Tables I and III are plotted in Figure 1. This figure shows that these stars form a spectralclass-magnitude diagram similar to that of other associations. More accurate observations are needed, however, to definitely establish that these stars really form an association.

In order to determine the distance to this new association, the author made use of the following references: Morgan's work on distances of associations (14), a list of blue giants in the neighbourhood of NGC 6231 by Morgan, Gonzàlez and Gonzàlez (17), and the list of OB giants on M8 by Walker (18). From a comparison of magnitudes one can draw the conclusion that the new association is probably located at about the same distance as the I Sco and the I Sgr associations, if it is assumed that the amount of absorption is the same in the direction of these associations and in the direction of the new association. The I Sco and the I Sgr associations were found by Morgan to be situated in a spiral arm at a distance of about 1400 pc. and 1300 pc., respectively.

It is a pleasure to thank Dr. V.M. Blanco for his interest in this work, Dr. P. Pesch for checking whether the association found is known before, and Mr. J. Finnerty for making a copy of the Lick Sky Atlas chart.

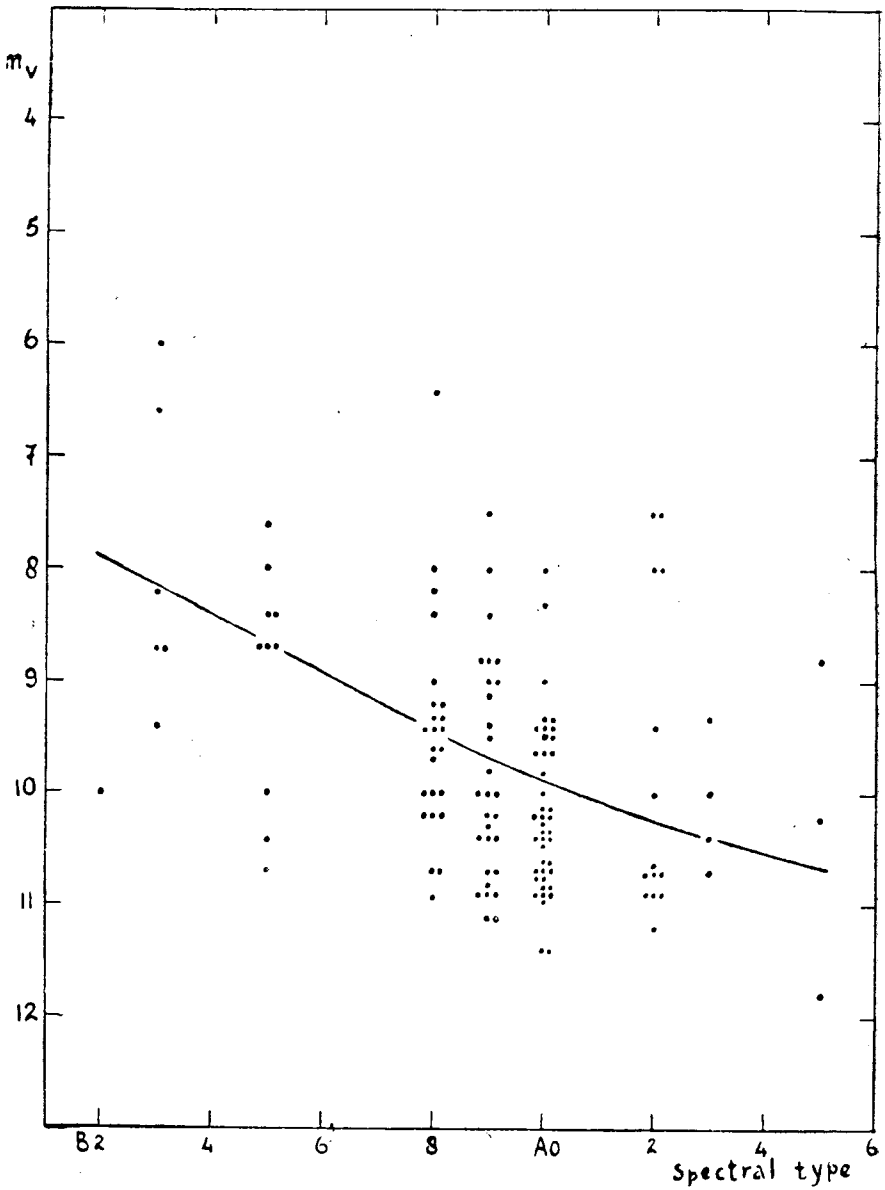

Fig. 1. The visual magnitudes plotted against the spectral types as given by the Henry Draper Catalog, for the stars listed in Tables I and III.

Table I.

HD	CD	R.A. (1900)	Dec. (1900)	Sp.	m_v
154500	-34°11489	$17^h\ 00.^m7$	-34°21′	B8	10.7
154535	-34 11493	00.9	-34 22	5	8.7
154614	-33 11749	01.4	-33 30	9	10.9
154664	-33 11753	01.7	-33 44	8	9.3
154740	-32 12378	02.1	-32 19	9	10.0
154768	-33 11757	02.3	-33 34	9	10.7
154806	-33 11760	02.5	-33 27	9	11.1
154853	-33 11762	02.8	-33 22	9	8.8
154872	-33 11765	02.9	-33 40	9	10.2
155014	-32 12410	03.9	-32 29	9	8.0
155015	-32 12409	03.9	-32 54	8	8.4
155049	-32 12413	04.1	-32 45	8	9.4
155146	-33 11798	04.7	-33 15	9	10.4
155217	-32 12434	05.1	-32 06	5	8.7
155255	-33 11807	05.3	-33 35	9	10.9
155272	-31 13682	05.4	-31 41	9	9.0
155273	-33 11810	05.4	-33 29	8	9.4
155320	-34 11554	05.7	-34 15	5	8.4
155336	-32 12444	05.8	-32 58	2	10.0
155337	R	05.8	-33 22	9	10.0
155349	-31 13694	05.9	-32 02	8	9.2
155350	-33 11823	05.9	-33 18	8	10.2
155385	-33 11826	06.1	-33 08	8	10.0
155402	-33 11830	06.2	-33 14	5	8.7
155403	-33 11828	06.2	-33 33	3	8.7
155448	-32 12461	06.5	-32 07	9	9.4
155449	-32 12464	06.5	-32 08	9	10.4
155450	-32 12460	06.5	-32 19	3	6.00
155506	-33 11844	06.9	-33 14	5	8.0
155519	-32 12475	07.0	-33 00	8	10.2
155550	-32 12479	07.2	-32 44	9	9.0
155600	-32 12485	07.5	-32 07	8	8.0
155614	-33 11853	07.6	-33 06	8	9.02

Table I. (Continued)

HD	CD	R.A. (1900)	Dec. (1900)	Sp.	m_v
155665	-33 11859	07.9	-33 43	8	10.7
155703	-33 11865	08.1	-33 18	8	9.28
155754	-33 11867	$17^h08.4$	-33°37′	B 5	8.4
155774	-32 12508	08.5	-32 42	8	10.0
155805	-33 11874	08.7	-33 04	9	8.35
155806	-33 11875	08.7	-33 26	3p	5.50
155850	-31 13758	09.0	-31 51	8	9.2
155851	-32 12518	09.0	-32 24	Op	8.0
155855	-34 11589	09.0	-34 23	9	10.7
155869	-31 13761	09.1	-31 38	8	10.2
155888	-33 11885	09.2	-33 34	9	10.0
155889	-33 11887	09.2	-33 37	3	6.64
155890	-33 11886	09.2	-33 56	8	10.0
155910	-31 13763	09.3	-31 56	9	7.5
155929	-32 12530	09.4	-32 28	5	10.7
156004	-32 12538	10.0	-32 14	5	7.6
156040	-31 13784	10.2	-31 43	9	9.5
156066	-33 11913	10.3	-33 34	9	11.1
156081	-33 11917	10.4	-33 28	9	10.9
156099	-33 11919	10.5	-33 10	9	8.8
156119	-32 12547	10.6	-32 40	8	10.9
156187	-32 12559	11.0	-32 04	3	9.4
156213	-33 11935	11.2	-33 31	8	9.6
156254	-31 13808	11.4	-31 51	8	9.7
156256	-34 11617	11.4	-34 06	8	8.2
156269	-32 11937	11.5	-33 07	5	10.0
156321	-32 12574	11.8	-32 13	3	8.2
156322	-32 12575	11.8	-32 16	B	9.0
156323		11.8	-32 16		
156324	-32 12576	11.8	-32 18	9	10.2
156325	-32 12573	11.8	-32 27	8	6.41
156326	-33 11943	11.8	-34 00	8	9.4

Table I. (Continued)

HD	CD	R.A. (1900)	Dec. (1900)	Sp.	m_v
156327	-34 11622	11.8	-34 18	O a	9.4
156383	-33 11950	12.1	-34 01	B 9	8.8
156395	-32 12587	12.2	-32 08	9	9.8
156424	-32 12593	12.4	-32 15	3	8.7
156976	-33 11996	15.4	-33 19	9	9.1
157003	-32 12662	$17^h15^m.6$	-32°26′	B 8	9.6

Table II.

HE	Sp	HE	Sp.
319423	B 8	319588	B 8
441	8	590	8
443	8	604	8
479	9	605	8
483	5	618	8
319488	B	319642	B 8
499	8	648	5
506	8	655	9
586	8	660	5
587	8	678	2

Table III.

HD	CD	R.A. (1900)	Dec. (1900)	Sp.	m_v
154448	-32°12347	$17^h\ 00^m.4$	-32°59′	A 0	9.4
154470	-33 11733	00.5	-33 36	2	10.9
154605	-34 11499	01.3	-34 18	5	10.4
154725	-33 11755	02.0	-33 58	2	9.4
154755	-32 12380	02.2	-32 52	0	10.4
154807	-34 11513	02.5	-34 09	2	10.0
154822	-31 13618	02.6	-31 58	0	10.2
154852	-31 13626	02.8	-31 53	0	9.5
154854	-33 11763	02.8	-33 55	3	10.7
154871	-31 13630	02.9	-31 32	0	8.3
155016	-33 11780	03.9	-33 43	0	9.6
155083	-33 11791	04.3	-33 25	2	10.7
155129	-32 12422	04.6	-32 35	2	10.9
155130	-32 12424	04.6	-32 56	3	10.0
155131	-33 11796	04.6	-33 08	5	11.8
155145	-33 11797	04.7	-33 09	5	10.2
155147	-34 11541	04.7	-34 06	0	9.4
155162	-32 12430	04.8	-32 38	5	8.8
155163	-33 11800	04.8	-33 34	2	10.7
155254	-31 13679	05.3	-31 50	2	11.2
155256	-33 11808	05.3	-33 46	0	10.7
155312	-33 11815	05.6	-33 29	0	11.4
155313	-33 11816	05.6	-33 49	0	10.9
155335	-32 12445	05.8	-32 24	0	10.7
155387	-34 11556	06.1	-34 09	0	10.4
155472	-33 11840	06.7	-33 04	0	10.4
155534	-32 12477	07.1	-32 57	0	10.9
155569	-33 11848	07.3	-33 16	0	9.84
155615	-33 11855	07.6	-33 09	0	9.6
155652	-32 12495	07.8	-32 22	2	10.0
155688	-33 11860	08.0	-33 44	0	10.7
155689	-34 11578	08.0	-34 16	0	10.2
155832	-33 11881	08.9	-33 10	0	10.9

Table III. (Continued)

HD	CD	R.A. (1900)	Dec. (1900)	Sp.	m_v
155853	-33 11882	$17^h09^m.0$	-33°44′	A 2	8.0
155930	-33 11890	09.4	-33 05	0	10.2
155941	-32 12533	09.5	-32 12	0	9.6
155942	-32 11891	09.5	-33 22	0	11.4
155973	-33 11896	09.7	-33 59	0	10.9
155984	-33 11902	09.8	-33 18	2	10.7
155994	-33 11904	09.9	-33 33	3	9.3
156064	-31 13789	10.3	-31 30	0	9.5
156083	-33 11914	10.4	-33 50	0	10.9
156100	-33 11918	10.5	-34 00	0	9.4
156120	-32 12548	10.6	-33 02	0	10.7
156171	-33 11926	10.9	-33 38	0	10.2
156199	-33 11932	11.1	-33 12	3	10.4
156353	-32 12578	11.9	-32 38	0	10.7
156354	-34 11624	11.9	-34 05	0	10.7
156381	-32 12579	12.1	-32 15	0	10.7
156439	-32 12599	12.5	-32 49	0	10.4
156467	-32 12601	12.6	-32 35	0	10.4
156507	-32 12605	12.8	-32 02	0	9.4
156508	-32 12607	12.8	-32 17	0	10.9
156660	-32 12526	13.7	-32 46	0	8.0
156686	-32 12630	13.9	-32 59	0	9.4
156722	-33 11982	14.1	-33 03	0	10.9
156737	R	14.2	-33 36	0	10.3
156781	-32 12642	14.4	-32 04	2	8.0
156806	-33 11990	14.5	-33 23	0	9.4
156883	-31 13896	14.9	-31 29	2	7.47
156902	-31 13895	15.0	-31 41	0	10.2
156934	-34 13901	15.2	-31 47	0	10.4
156977	-33 11995	15.4	-33 39	2	10.9
156993	-33 12001	15.5	-33 24	2	10.7
157018	-32 12663	15.7	-32 52	0	9.0
157035	-31 13913	15.8	-31 30	2	7.35

Table IV.

HE	Sp.	HE	Sp.
317542	A 0	319509	A 0
551	2	510	2
319421	0	511	A
422	0	517	2
424	2	556	A
319425	A 5	319557	A 0
428	A	558	A
429	A	560	A
430	0	563	0
431	2	564	A 0
319435	A 0	319566	A
437	5	571	0
438	0	572	0
440	0	573	7
444	3		
319481	A 5	319579	A 0
482	0	581	0
484	0	583	0
485	0	584	0
486	0	585	0
319487	A	319591	A 5
489	0	592	A
490	5	594	3
491	0	596	3
492	0	597	2
319493	A 3	319598	A 0
494	0	600	3
496	5	601	A
498	A	602	0
500	3	603	A
319501	A 2	319606	A
503	A	607	0
504	2	641	0
505	2	643	2
507	0	644	3

Table IV. (Continued)

HE	Sp.	HE	Sp.
319645	A 2	319663	A 7
646	3	666	A
647	0	669	3
650	3	670	5
651	2	673	0
319653	A 5	319674	A
657	2	675	A
658	A	676	A
659	2	677	A
662	3		

Table V.

HD	CD	RA. (1900)	Dec. (1900)	Sp.	magn.	Remarks.
-	-	$17^h00^m.8$	-33°57′	-	Var.	V455 Sco; MHα 71-15.
154566	-	01.1	-31 42	M6e	Var.	Sp. H.D.: Md; TU Sco.
-	-	03.7	-32 51	-	> 14.5	
155161	-32°12429	04.8	-32 12	M3e	Var.	Sp. H.D.: Md; AH Sco.
-	-	05.6	-32 32	-	-	Possible Plan. Neb.
-	-	05.7	-32 28	-	17	MHα 276-12.
155313	-33 11816	05.7	-33 49	A0	11.1	
155349	-31 13694	05.9	-32 02	B8e	9.2	Sp.H.D.: B8
-	-	08.0	-33 17	-	-	Planetary Nebula.
155734	-	08.3	-33 19	M5e	Var.	Sp. H.D.: Md.
155806	-33 11875	08.7	-33 26	O8e	4.7	Sp. H.D.: B3p
155851	-32 12518	09.0	-32 34	B0ne	9.5	Sp. H.D.: B0p
-	-	10.2	-33 30	-	11.2	
-	-34 11604	10.4	-34 10	-	9.8	
156325	-32 12573	11.8	-32 27	B6neα	6.41	Sp. H.D.: B8
156327	-34 11622	11.8	-34 18	WC7+O	9.3	Sp. H.D.: Oa
-	-	12.2	-34 21	-	12.7	
-	-33 11955	12.4	-33 51	WR	12.4	
-	-	14.0	-33 03	M3	14.0	
-	-32 12653	15.2	-32 59	-	9.7	

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