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Observations of double stars.

By Charles P. Olivier and Ralph E. Wilson.

These observations are a continuation of those published in A. N. 4166. The data given for each star are the same as for those in that paper, with the exception of one column added to give the observer's initial, and that the numbers used to designate each star are taken from Burnham's »General Catalogue« instead of from the »Reference Catalogue of Southern Double Stars«. However, the name of its discoverer and its coordinates are still taken from the latter. In all, the following tables contain 420 observations of 116 double stars, measured with the 66 cm refractor by R. E. Wilson and C. P. Olivier. Those observed by the former were measured during 1906 and 1907, while those measured by the latter covered the two previous years also to some extent. Taking the mean results for both observers, it is found that 14 pairs of distance less than 1" were measured, 52 between 1" and 2", 31 between 2" and 3", and only 19 wider than 3". The same methods of selecting the observing lists and of measuring the stars were followed which were explained in A. N. 4166, except that, as a rule, one recorded while the other observed, thus adding somewhat to the accuracy of the work. The seven stars, found by C. P. Olivier and here published for the first time, are assumed to be new since they are not found in Burnham's »General Catalogue«. Their estimated magnitudes are as follows:

No. 1	9.5 and 10.0
2	9.0 » 11.2
3	10.0 » 10.6
4	10.0 » 10.3
5	9.0 » 11.2
6	9.5 » 10.8
8	9.7 » 10.4

Their positions are only approximately given.

Following the tables are some notes on the observations based on a comparison of them with those of the same pairs as published in Burnham's »General Catalogue«.

1900+	θ	n	ρ	n	t	Δ	S.	Pow.	Obs.
216 h 1968 $0^h 22^m 36^s - 16^\circ 57'.8$.									
07.703	187.9	4	2.40	4	+0.5	3 ± 3		2000	O
.751	188.4	4	2.47	4	+1.3	3 ± 3.5		850	O
.806	188.6	4	2.67	4	+0.1	3 3		850	O
.679	192.4	6	2.02	4	+0.1	2 ± 2.5		850	W
.703	189.2	4	2.17	4	+0.8	3 ± 3.5		1300	W
.806	186.5	4	2.60	4	+0.2	1.5 3.5		850	W
07.753	188.3		2.51						O
.729	189.4		2.26						W

1900+	θ	n	ρ	n	t	Δ	S.	Pow.	Obs.
298 Secchi I $0^h 29^m 23^s - 5^\circ 5'.9$.									
07.013	246.4	4	0.73	4	+0.9	0.6 4.5		1300	O
.751	247.6	4	0.91	4	+0.7	0.6 4		850	O
.806	248.0	4	0.75	4	+0.3	0.4 4		850	O
07.806	246.0	4	0.69	4	+0.2	0.3 4		850	W
.523	247.3		0.80						O
547 λ 10 $0^h 57^m 32^s - 22^\circ 8'.6$.									
07.679	326.0	4	4.59	4	-0.1	3 ± 1		850	O
.679	324.9	4	4.71	4	0.0	— 1.5		850	W
711 β 110 $1^h 15^m 3^s - 16^\circ 20'.1$.									
07.013	13.2	4	1.55	4	+0.4	0.2 4		1300	O
.703	12.4	4	1.65	4	+0.2	0.1 4		1300	O
.722	13.6	4	1.54	4	0.0	0.4 3		560	O
07.703	11.7	4	1.74	4	+0.1	0.2 4.5		1300	W
.479	13.1		1.58						O
810 Howe $1^h 28^m 37^s - 12^\circ 43'.5$.									
07.013	321.5	4	0.67	4	+0.4	0.3 4		1300	O
.703	317.7	4	0.69	4	+0.1	0.3 5		1300	O
.722	319.5	4	0.84	4	0.0	0.4 3		560, 1300	O
07.703	319.5	6	0.69	4	+0.2	0.2 4		1300	W
.479	319.6		0.73						O
913 β 6 $1^h 39^m 43^s - 7^\circ 16'.1$.									
05.983	167.1	5	2.15	4	+0.9	2.0 3.5		850	O
07.028	166.1	4	2.29	4	+1.5	3 ± 2.5		850	O
06.506	166.6		2.22						O
1091 β 516 $2^h 0^m 7^s - 1^\circ 26'.8$.									
07.013	290.3	4	0.65	4	+0.1	0.5 4.5		1300	O
.751	292.3	4	0.85	4	-0.1	0.5 4		850	O
.806	297.1	6	0.59	4	-0.9	0.4 4		850	O
.815	293.0	6	0.81	4	-1.7	0.4 3.5		850	O
.806	295.7	4	0.65	4	-0.8	0.3 4		850	W
.815	293.7	6	0.80	4	-1.0	0.3 3		850	W
07.596	293.2		0.72						O
.810	294.7		0.72						W
— h 3494 $2^h 15^m 36^s - 35^\circ 54'.3$.									
05.928	35.6	7	1.14	5	+0.8	0.4 4		1300	O
06.028	28.8	9	1.27	6	+0.9	0.4 2.5		1300	O
05.978	32.2		1.20						O

1900+	θ	n	ρ	n	t	Δ	S.	Pow.	Obs.
1247 Hough 313 2 ^h 18 ^m 21 ^s -8° 16' 3.									
05.983	74.4	5	1.86	4	+0.7	0.3	3	850	O
07.013	77.2	4	1.66	4	+0.1	0.8	4	1300	O
.722	76.6	4	2.09	4	-0.4	0.6	4	850	O
05.983	74.4		1.86						O
07.368	76.9		1.88						O
1253 Hough 314 2 ^h 19 ^m 5 ^s -8° 19' 0.									
05.899	202.3	5	3.66	6	0.0	2 ±	1	850	O
07.028	203.8	4	4.34	4	+1.4	1.0	2	850	O
.815	200.7	4	3.70	4	-1.5	1.3	3	850	O
07.815	203.8	4	3.95	4	-1.8	1.2	2.5	850	W
05.899	202.3		3.66						O
07.422	202.2		4.02						O
1288 β 519 2 ^h 24 ^m 39 ^s -2° 42' 7.									
07.013	58.1	4	0.66	4	+0.1	0.8	3	1300	O
1305 Howe 3 2 ^h 26 ^m 40 ^s -8° 2' 3.									
07.028	210.5	6	2.38	4	+1.0	0.2	2	850	O
.751	205.5	4	2.14	4	-0.2	0.2	4	850	O
.806	208.8	4	2.44	4	-0.9	0.3	3.5	850	O
07.806	206.7	4	2.08	4	-1.0	0.2	4	850	W
.528	208.3		2.32						O
1357 Hough 315 2 ^h 33 ^m 53 ^s -2° 1' 1.									
07.703	0.1	4	1.62	4	-0.5	0.1	4.5	1300	W
.806	359.1	4	1.75	4	-0.8	0.2	4	850	W
.815	358.3	4	1.55	4	-1.4	0.2	3	850	W
.703	359.5	4	1.54	4	-0.3	0.3	4	1300	O
.806	0.1	4	1.79	4	-0.9	0.2	3.5	850	O
.815	359.7	4	1.32	4	-1.3	0.3	3	850	O
07.775	359.2		1.64						W
.775	359.8		1.55						O
1640 β 84 3 ^h 11 ^m 4 ^s -6° 17' 3.									
06.893	24.6	4	0.85	4	-0.6	0.7	4	1300	O
.912	24.7	6	0.77	4	-1.3	1 ±	3	1300	O
06.902	24.7		0.81						O
1851 Leavenworth 3 ^h 39 ^m 28 ^s -13° 43' 0.									
06.893	2.2	6	1.12	4	-0.4	2 ±	4	1300	O
— Olivier 1 3 ^h 47 ^m 35 ^s -14° 1' 3.									
06.893	272.4	4	2.77	4	-0.3	0.5	3.5	1300	O
.912	275.4	4	2.86	4	-1.5	0.6	3.5	1300	O
.933	273.5	6	—	—	-0.6	0.5	2.5	850	O
06.898	274.9	4	—	—	-0.8	0.7	4	850	W
.913	273.8		2.82						O
1947 Washburn 67 3 ^h 49 ^m 51 ^s -13° 1' 0.									
06.017	152.9	12	2.48	4	-0.1	0.7	1	850	O
07.028	153.1	6	2.62	4	+0.6	0.8	2.5	850	O
06.522	153.0		2.55						O

1900+	θ	n	ρ	n	t	Δ	S.	Pow.	Obs.
1953 β 542 3 ^h 51 ^m 20 ^s -7° 14' 2.									
06.933	194.7	—	1.42	—	+0.3	0.7	3	850	O
07.028	192.3	—	1.24	—	+0.7	—	2	850	O
.153	196.7	—	1.80	—	+2.7	0.8	3	850	O
07.038	194.6		1.49						O
2054 Howe 4 ^h 3 ^m 2 ^s -29° 4' 5.									
06.082	171.6	10	1.38	5	+0.4	—	2.5	850	O
2157 Σ 536 4 ^h 17 ^m 13 ^s -4° 54' 8.									
06.085	169.4	10	1.45	5	+0.7	0.4	2	850	O
.112	164.6	9	1.75	7	—	0.4	2.5	850	O
07.028	163.5	6	1.78	4	+0.5	0.7	2.5	850	O
06.408	165.8		1.66						O
2194 β 403 4 ^h 20 ^m 39 ^s -2° 27' 7.									
06.112	97.3	5	2.00	7	—	—	3	850	O
2222 β 184 4 ^h 23 ^m 37 ^s -21° 43' 5.									
06.893	254.0	6	1.40	4	-0.4	0.2	4	1300	O
— Olivier 2 4 ^h 42 ^m 14 ^m -21° 37' 5.									
06.893	222.0	4	3.89	4	+0.1	2.0	4.5	850	O
.899	220.6	6	3.71	4	-1.2	2.5	4	850	O
06.896	221.3		3.80						O
— Olivier 3 4 ^h 42 ^m 34 ^s -22° 56'.									
06.893	58.7	6	1.40	4	-0.1	0.6	4	1300	O
.899	57.7	4	1.24	4	-1.0	0.6	3.5	850	O
.912	61.0	4	1.29	4	-0.9	—	2	1300	O
06.901	59.1		1.31						O
2494 Σ 636 4 ^h 58 ^m 15 ^s -8° 48' 3.									
05.923	104.5	6	3.94	6	+0.2	1.2	2	560	O
2695 h 3752 5 ^h 17 ^m 40 ^s -24° 52' 2.									
06.912	99.8	4	3.08	4	-1.8	—	2	1300	O
2766 Dawes 6 5 ^h 23 ^m 58 ^s -3° 23' 3.									
06.112	84.4	7	0.78	7	+0.9	—	3	850	O
— Olivier 4 5 ^h 35 ^m 52 ^s -21° 39'.									
06.893	69.4	6	1.80	4	-0.3	0.4	3.5	850	O
.899	70.8	4	1.87	4	-1.0	0.3	3	850	O
.912	69.2	4	1.96	4	-1.3	0.3	4	1300	O
06.901	69.8		1.88						O
3154 Argelander 1 6 ^h 1 ^m 10 ^s -25° 1' 2.									
06.912	293.6	4	4.43	2	-1.2	0.3	4	850	O
3659 β 898b 6 ^h 45 ^m 54 ^s -15° 54' 8.									
06.221	269.3	6	2.20	6	+1.3	0.2	2.5	850	O
4053 β 199 7 ^h 20 ^m 49 ^s -20° 58' 6.									
07.167	20.6	4	—	—	-0.8	0.7	4	850	W
.167	21.6	6	2 ±	—	+2.1	—	1.5	850	O

1900+	θ	n	ρ	n	t	Δ	S.	Pow.	Obs.
4143 Howe 7 $7^h 29^m 48^s - 23^\circ 29'.1$.									
06.175	205.2	4	2.00	3	0.0	0.6	2.5	560	O
— Olivier 5 $7^h 44^m 18^s - 19^\circ 6'.7$.									
06.899	194.2	4	2.54	2	—	2.5	4	850	O
.933	194.1	4	3.08	2	-2.3	2	2	850	O
06.916	194.2		2.81						O
— Olivier 6 $7^h 50^m 34^s - 20^\circ 29'.7$.									
06.899	50.3	4	2.99	2	—	1.5	4	850	O
07.167	48.9	4	2.87	4	+0.4	2.0	3	850	O
07.033	49.6		2.93						O
4364 β 902 $7^h 53^m 19^s - 10^\circ 36'.8$.									
06.189	244.0	6	1.30	4	-0.2	2.5	2.5	850	O
4828 β 587 $8^h 46^m 40^s - 6^\circ 48'.1$.									
07.205	142.4	6	0.83	4	+0.8	—	3.5	2000	W
.205	138.1	4	0.94	4	+0.5	2.5	4	2000	O
4832 Schj 13 $8^h 47^m 2^s - 10^\circ 45'.8$.									
07.167	352.0	4	2.39	4	+1.3	0.6	2.5	850	W
.216	351.2	6	2.24	4	0.0	0.8	3	850	W
.167	350.1	4	2.44	4	+1.1	0.6	3.5	850	O
.216	352.0	6	2.30	4	-0.1	0.6	3	850	O
07.192	351.6		2.32						W
.192	351.1		2.37						O
4849 β 24 $8^h 49^m 22^s - 8^\circ 22'.9$.									
07.167	176.7	6	1.53	4	+1.6	0.8	3	850	W
.205	175.8	4	1.21	3	—	—	3.5	2000	W
.216	176.4	6	1.51	4	+0.3	0.3	3	850	W
.167	173.1	6	1.48	4	+1.5	0.7	3	850	O
.205	176.7	6	1.19	4	+1.1	0.5	3.5	2000	O
.216	176.4	6	1.42	4	+0.2	0.8	3	850	O
07.196	176.3		1.42						W
.196	175.4		1.36						O
4970 β 336 $9^h 7^m 6^s - 16^\circ 24'.1$.									
06.066	238.6	7	1.96	5	+0.8	0.7	3	850	O
07.216	238.6	4	2.22	4	+0.7	1.0	3.5	850	O
07.216	238.0	4	1.91	4	+0.7	1.0	3.5	850	W
06.641	238.6		2.09						O
5319 Harvard 125 $10^h 1^m 49^s - 1^\circ 14'.3$.									
07.167	175.0	4	2.12	4	+0.1	0.3	3	850	O
5339 β 790 $10^h 5^m 4^s - 12^\circ 23'.1$.									
07.224	66.2	4	2.34	4	-0.7	1.5	3.5	850	W
.224	67.0	4	2.14	4	0.0	1.3	4	850	O
5375 Washburn 101 $10^h 12^m 1^s - 20^\circ 10'.2$.									
06.251	120.4	6	1.25	4	+0.6	3±	4	850	O
5408 β 219 $10^h 16^m 52^s - 22^\circ 1'.5$.									
07.224	188.6	4	2.47	4	+0.6	0.8	3	850	W

1900+	θ	n	ρ	n	t	Δ	S.	Pow.	Obs.
5633 Σ 1500 $10^h 54^m 56^s - 2^\circ 56'.2$.									
07.292	312.6	6	1.99	4	0.0	—	2.5	850	W
.313	309.7	4	1.58	4	+1.4	0.3	4.5	850	W
.292	309.0	6	1.65	4	+0.1	0.6	3	850	O
.313	311.4	4	1.48	4	+1.3	0.4	4.5	850	O
07.302	311.1		1.78						W
.302	310.2		1.56						O
5656 Howe 15 $10^h 58^m 27^s - 26^\circ 58'.7$.									
06.254	339.3	4	2.17	4	+0.3	1.8	3	850	O
07.224	337.2	4	2.39	4	+0.4	1.4	3.5	850	O
.316	338.9	4	1.67	4	+0.3	0.7	2	850	O
.224	340.0	4	2.57	4	+0.6	1.5	3.5	850	W
.316	339.6	4	1.66	4	+0.5	—	2	850	W
06.931	338.5		2.08						O
07.270	339.8		2.12						W
5702 β 220 $11^h 7^m 33^s - 17^\circ 57'.3$.									
07.313	138.2	6	0.45	4	+1.5	—	4	2000	O
.313	140.6	4	0.55	4	+1.7	—	4	2000	W
5766 β 26 $11^h 18^m 43^s - 9^\circ 52'.4$.									
07.202	65.7	4	2.79	4	+0.2	2+	4	850	O
5796 $11^h 24^m 8^s - 16^\circ 46'.7$.									
07.313	218.9	8	0.72	4	+1.9	0.7	3.5	2000	O
6041 β 412 $12^h 3^m 13^s - 18^\circ 1'.2$.									
07.202	160.9	4	2.51	4	+0.1	0.6	3	850	O
.293	156.4	4	2.34	4	-0.5	0.4	3	850	O
.365	159.0	4	1.97	4	+1.0	0.7	3.5	850	O
.367	161.6	4	2.17	4	+0.4	0.6	3.5	600	O
.293	157.9	6	1.99	4	-0.3	0.5	3	850	W
.365	162.1	4	2.04	4	+1.1	0.6	3.5	850	W
.367	162.5	4	2.13	4	+0.5	0.3	3.5	600	W
07.307	159.5		2.25						O
.342	160.8		2.05						W
— Jacob 8 $12^h 4^m 52^s - 34^\circ 8'.8$.									
07.224	21.4	4	3.55	2	-0.2	2.0	2.5	850	O
.293	18.6	6	3.28	4	0.0	2+	2	850	O
.365	14.4	6	2.55	4	+1.2	2±	1.5	850	O
.367	22.2	4	2.63	4	+1.7	2±	2	850	O
.224	16.1	4	3.28	4	—	—	3	850	W
.293	15.9	4	3.02	4	+0.1	2.1	3	850	W
.365	17.5	4	2.58	4	+1.4	2±	2	850	W
.367	18.0	6	2.76	4	+0.7	2.0	3	850	W
07.312	19.2		3.00						O
.312	16.9		2.91						W
6484 O. Stone $13^h 20^m 48^s - 22^\circ 43'.1$.									
07.292	356.8	4	1.67	4	0.0	0.3	3	850	W
.313	356.7	6	1.52	4	+0.6	0.6	4	2000	W
.367	354.6	6	1.36	4	0.0	0.8	3.5	850	W
.294	355.6	4	1.60	4	-0.4	0.5	3	850	O
.313	358.0	4	1.57	4	+0.2	0.6	4	2000	O
.367	355.5	6	1.64	4	+0.1	0.4	3	850	O
07.324	356.1		1.52						W
.325	356.4		1.60						O

1900+	θ	n	ρ	n	t	Δ	S.	Pow.	Obs.
6528 β 114 $13^h 29^m 3^s - 8^\circ 6'3$.									
07.452	143.6	4	1.43	4	+0.8	0.6	3	850	W
.452	144.1	4	1.52	4	+0.6	0.8	3	850	O
6569 H. C. Wilson $13^h 33^m 25^s - 30^\circ 14'5$.									
07.292	56.8	4	1.99	4	+0.2	0.2	3	850	W
.367	57.1	4	1.88	4	+0.2	0.5	2.5	850	W
.294	55.0	6	1.72	4	+0.2	0.4	3	850	O
.367	63.2	6	1.79	4	+0.1	0.3	3	850	O
07.330	57.0		1.94						W
.330	59.1		1.76						O
6607 Σ 3081 $13^h 39^m 51^s - 11^\circ 19'8$.									
07.452	65.1	6	1.97	4	+1.1	0.5	2.5	850	W
.452	63.3	4	2.06	4	+0.1	0.7	3	850	O
6649 β 343 $13^h 46^m 17^s - 31^\circ 7'4$.									
07.292	113.5	4	1.05	4	+0.5	1 \pm	3	1300	W
.313	117.8	4	1.11	4	+0.7	1 \pm	3.5	2000	W
.367	117.3	6	1.05	4	+0.4	0.2	3	850	W
.294	117.2	6	1.21	4	+0.3	1.5 \pm	3	1300	O
.313	117.4	4	0.93	4	+0.5	—	3.5	2000	O
.367	121.9	5	1.34	4	+0.3	—	2.5	850	O
07.324	116.2		1.07						W
.325	118.8		1.16						O
6749 h 4661 $14^h 6^m 18^s - 28^\circ 25'1$.									
07.292	231.7	6	4.29	4	+0.8	0.5	3	850	W
.362	230.4	4	4.50	4	+1.7	0.4	3	850	W
.294	231.0	4	4.58	4	+0.7	0.4	3.5	850	O
.362	231.4	4	4.15	4	+1.4	0.3	4	850	O
07.327	231.1		4.40						W
.328	231.2		4.36						O
6851 Σ 1837 $14^h 19^m 18^s - 11^\circ 13'0$.									
07.386	302.6	4	1.21	4	+1.2	1.4	3.5	850	W
.436	296.6	4	1.44	4	+2.9	1.0	3	850	W
.452	301.0	4	1.44	4	+0.9	1.5	3.5	850	W
07.452	300.7	4	1.35	4	+0.7	1.8	4	850	O
.425	300.1		1.36						W
6857 β 225 $14^h 19^m 52^s - 19^\circ 30'8$.									
07.293	100.4	6	1.43	4	+1.2	1.2	3.5	850	O
.313	96.4	4	1.35	4	+0.6	0.6	3.5	2000	O
.365	98.0	6	1.33	4	+1.0	0.7	3.5	1300	O
.292	99.0	6	1.29	4	+1.4	1.5	3.5	850	W
.313	96.0	4	1.35	4	+0.4	0.8	4	2000	W
.365	94.7	6	1.34	4	+0.9	0.7	3.5	1300	W
07.324	98.3		1.37						O
.323	96.6		1.33						W
6941 β 226 $14^h 33^m 13^s - 21^\circ 53'6$.									
07.313	91.1	8	1.06	4	+1.0	—	3.5	1300	O
.362	92.0	8	1.00	4	+1.8	0.4	3	1300	O
.365	91.3	4	0.98	4	+0.3	0.1	2.5	1300	O

1900+	θ	n	ρ	n	t	Δ	S.	Pow.	Obs.
07.313	93.5	4	1.06	4	+1.1	0.5	4	1300	W
.362	91.3	4	1.02	4	+2.0	—	3	1300	W
.365	91.1	4	1.08	4	+0.5	0.0	3	1300	W
07.347	91.5		1.01						O
.347	92.0		1.05						W
6946 β 806 b $14^h 34^m 41^s - 25^\circ 49'0$.									
07.313	344.8	6	1.16	4	+0.5	—	3.5	2000	O
.365	345.1	6	1.04	4	+1.3	—	2.5	1300	O
.313	345.0	6	1.24	4	+0.8	—	3.5	2000	W
.365	345.0	4	1.22	4	+1.1	—	2.5	1300	W
07.339	345.0		1.10						O
.339	345.0		1.23						W
7060 H N 28 $14^h 51^m 37^s - 20^\circ 57'8$.									
06.408	295.6	6	17.41	4	-0.4	2 \pm	2.5	850	O
7070 β 239 $14^h 52^m 44^s - 27^\circ 15'4$.									
07.292	315.3	4	1.08	4	+1.5	—	3.5	850	W
.313	323.1	6	1.00	4	+1.0	0.2	4	1300	W
.365	318.8	6	1.02	4	+1.3	—	2.5	1300	W
.367	319.2	4	1.12	4	-0.5	—	3	1300	W
.293	319.1	6	1.21	4	+1.4	—	3	850	O
.313	322.7	4	1.05	4	+1.1	—	2	1300	O
.365	320.9	6	0.94	4	+1.1	—	2.5	1300	O
.367	319.5	8	0.97	4	-0.3	—	2.5	850	O
07.334	319.1		1.06						W
.334	320.6		1.04						O
7137 β 809 $15^h 4^m 13^s - 22^\circ 20'8$.									
07.452	118.8	6	1.21	4	+0.8	2 \pm	2.5	850	O
7150 β 618 $15^h 6^m 35^s - 19^\circ 24'9$.									
07.365	17.7	6	2.06	4	+1.6	0.1	2.5	1300	W
7173 A 15 $15^h 8^m - 4^\circ 17'$.									
06.408	289.1	4	4.55	4	+0.2	1.5	3	850	O
.411	289.0	4	4.74	4	+0.2	2.0	3	850	O
.488	288.5	4	4.58	4	+0.9	1.5	4.5	560	O
06.436	288.9		4.62						O
7318 δ Serpentis $15^h 30^m 2^s + 10^\circ 52'4$.									
04.529	186.5	8	3.69	5	—	—	2	—	O
.537	187.6	8	3.48	5	—	—	—	—	O
04.533	187.0		3.58						O
7493 β Scorpii $15^h 59^m 37^s - 19^\circ 31'9$.									
06.498	24.2	—	13.77	—	+0.6	—	2	850	O
7786 β 123 $16^h 48^m 41^s - 21^\circ 52'7$.									
07.362	208.5	4	1.58	4	+0.4	0.3	3	850	O
.365	205.7	4	1.57	4	+0.3	0.5	3.5	1300	O
.679	204.6	4	1.65	4	+1.9	0.4	3	850	O
.365	198.1	4	1.54	4	+0.5	0.4	3.5	1300	W
.452	203.6	4	—	—	+1.2	—	2.5	850	W
.679	203.7	4	1.68	4	+2.0	—	2	850	W
07.469	206.3		1.60						O
.499	201.8		1.61						W

1900+	θ	n	ρ	n	t	Δ	S.	Pow.	Obs.	1900+	θ	n	ρ	n	t	Δ	S.	Pow.	Obs.
07.586	267.4	6	1.24	4	+0.8	1.5	3.5	850	W	9878 Washburn 155 20 ^h 0 ^m 51 ^s -13° 39' 3.									
.679	268.6	4	1.10	4	+0.7	1.5	2.5	850	W	07.709	277.8	6	1.65	4	-0.1	0.6	3.5	1300	O
.682	269.0	4	1.09	4	0.0	1.2	3	850	W	.753	280.0	6	1.69	4	+1.4	0.6	3.5	850	O
06.685	267.7		0.95						O	.773	277.4	4	1.70	4	+1.2	0.4	3.5	850	O
07.682	268.7		1.01						O	.709	278.5	6	1.73	4	0.0	-	2	1300	W
.649	268.3		1.14						W	.753	280.2	4	1.55	4	+1.3	0.7	3.5	850	W
										.773	277.2	4	1.72	4	+1.1	0.6	3	850	W
										07.745	278.4		1.68						O
										.745	278.7		1.67						W
										9983 Σ 2643 20 ^h 7 ^m 34 ^s -3° 17' 8.									
07.362	7.6	4	1.47	4	-0.7	0.3	3.5	850	W	07.665	72.8	4	3.01	4	+0.1	2+	4	850	O
.709	4.4	4	1.43	4	-0.4	0.4	2.5	1300	W	.682	71.6	4	2.76	4	+1.6	3±	3.5	850	O
.790	5.0	4	1.61	4	+1.7	1.2	4	850	W	.695	74.6	4	2.66	4	+0.6	2.5	3	850	O
.685	9.1	6	1.49	4	+0.7	-	3	850	O	.665	71.9	4	3.05	4	0.0	2±	3.5	850	W
.703	6.5	4	1.41	4	-0.4	0.8	4	1300	O	.695	75.3	4	3.09	4	+0.4	3.0	3	850	W
.709	3.2	4	1.47	4	-0.5	1.2	3	1300	O	.790	74.3	4	3.03	4	+1.9	2±	4	850	W
07.620	5.7		1.50						W	07.681	73.0		2.81						O
.699	6.3		1.46						O	.717	73.8		3.06						W
										10027 β 762 20 ^h 10 ^m 35 ^s -32° 55' 0.									
										07.362	307.2	6	2.32	4	-0.8	-	2	850	W
										.698	301.3	4	2.15	4	+0.5	0.6	3.5	850	W
										.753	302.4	4	2.25	4	+0.5	0.3	3.5	850	W
										.698	302.7	4	2.30	4	+0.7	0.4	4	850	O
										.703	305.9	4	2.43	4	-0.5	0.5	4	600	O
										.753	304.3	4	2.42	4	+0.6	0.4	3	850	O
										07.604	303.6		2.24						W
										.718	304.3		2.38						O
										10105 β 662 20 ^h 15 ^m 10 ^s -19° 57' 4.									
										06.687	294.3	4	2.25	4	+0.7	1.0	4.5	850	O
										07.698	300.3	4	1.91	4	+0.7	1.3	4	850	O
										.703	302.1	4	1.94	4	-0.7	1.4	4	1300	O
										.753	300.2	6	1.82	4	+0.1	1.2	3.5	850	O
										.698	300.2	4	1.90	4	+0.9	1.5	3	850	W
										.753	298.4	4	1.73	4	+0.2	1.0	3	850	W
										06.687	294.3		2.25						O
										07.718	300.9		1.89						O
										.726	299.3		1.82						W
										10207 π Capricorni 20 ^h 21 ^m 36 ^s -18° 32' 4.									
										07.586	142.9	4	3.50	4	-	-	3.5	850	W
										.695	141.2	6	3.30	4	+0.8	2.5	2	850	W
										.703	145.6	6	3.20	4	+1.0	2.5	3	1300	W
										.695	143.8	4	3.04	4	+1.0	1.8	2	850	O
										.703	147.3	6	3.12	4	+0.8	2.2	2	1300	O
										07.661	143.3		3.33						W
										.699	145.5		3.08						O
										10241 Washburn 38 20 ^h 23 ^m 53 ^s -8° 21' 5.									
										04.572	295.0	8	2.92	4	+0.3	-	2	850	O

1900+	θ	n	ρ	n	t	Δ	S.	Pow.	Obs.	1900+	θ	n	ρ	n	t	Δ	S.	Pow.	Obs.																	
10455 Washburn 162 $20^h 38^m 41^s - 14^\circ 3'8''$.										07.703	141.5	6	1.82	4	-0.2	0.3	2.5	1300	O	07.703	92.9	4	2.25	4	+0.5	1.2	4	1300	O							
07.709	139.9	6	1.75	4	+1.6	0.4	2	560	O	.753	95.6	4	2.07	4	+0.2	1.2	3.5	850	O	.773	92.4	4	2.02	4	+0.5	1.8	2.5	850	O							
.776	141.1	4	1.63	4	-0.4	-	2.5	1300	W	07.732	93.1		2.12																W							
.709	140.3	4	1.36	4	+1.5	0.2	2.5	850	W	.743	93.6		2.11																O							
07.742	140.7		1.78						O	11127 Cordoba [58] $21^h 34^m 37^s - 18^\circ 53'0''$.																										
.742	140.7		1.50						W	05.785	61.6	5	4.07	4	-	0.9	2	850	O	07.695	64.9	4	4.45	4	+0.4	0.6	3.5	850	O							
10731 β 368 $21^h 2^m 5^s - 8^\circ 38'2''$.										.773	65.7	4	4.75	4	+0.2	0.5	3	850	O	.695	68.5	4	4.50	4	+0.5	0.7	3.5	850	W							
07.703	94.7	4	0.64	4	-0.4	0.5	4	1300	W	.773	66.0	4	4.50	4	+0.1	0.3	2.5	850	W	05.785	61.6		4.07							O						
.709	95.2	6	0.63	4	-0.2	0.1	3.5	1300	W	07.734	65.3		4.60																O							
.753	94.4	4	0.68	4	+1.1	-	3.5	850	W	.734	67.3		4.50																W							
.703	96.4	4	0.64	4	-0.4	0.6	4	1300	O	11369 β 169 $21^h 51^m 57^s - 21^\circ 37'3''$.																										
.709	96.6	4	0.57	4	-0.3	0.5	3	1300	O	06.818	280.1	8	2.32	4	+1.5	0.4	3	850	O	07.583	279.7	4	1.88	4	+0.3	0.2	4	850	O							
.753	92.2	7	0.67	4	+1.0	0.5	3	850	O	.776	281.7	4	1.62	4	-0.1	0.3	2.5	560	O	.679	285.6	4	2.04	4	+0.5	-	2	850	W							
07.722	94.8		0.65						W	.776	282.4	4	1.67	4	+0.1	0.3	2.5	560	W	07.392	280.5		1.94							O						
.722	95.1		0.63						O	.728	284.0		1.86																W							
10919 β 1262 $21^h 16^m 45^s - 15^\circ 20'5''$.										11691 β 172 $22^h 18^m 54^s - 5^\circ 20'6''$.																										
07.695	112.0	4	1.88	4	+0.2	0.3	3	850	W	07.682	359.9	6	0.70	4	+0.1	0.2	4	1300	O	.703	0.6	6	0.71	4	+0.2	0.2	4	1300	O							
.700	108.5	6	1.86	4	+1.0	0.8	3.5	850	W	.709	3.2	4	0.72	4	-1.0	-	3	1300	O	.703	359.9	4	0.66	4	+0.1	-	4	1300	W							
.703	114.3	4	1.90	4	+0.4	0.7	3.5	1300	W	.709	1.4	6	0.76	4	-0.9	0.4	3.5	1300	W	.790	0.8	4	0.78	4	+0.1	-	4	850	W							
.709	114.0	6	1.99	4	-0.3	1.2	3.5	1300	W	07.698	1.2		0.71																O							
.695	113.4	4	2.00	4	+0.4	0.7	3	850	O	.734	0.7		0.73																W							
.703	115.0	4	1.84	4	+0.4	0.6	3.5	1300	O	11903 β 709 $22^h 36^m 28^s - 3^\circ 4'4''$.																										
.709	113.3	4	2.05	4	-0.1	0.5	3	1300	O	07.679	8.4	4	1.83	4	+0.6	1.2	3	850	O	.682	8.3	4	2.13	4	0.0	1.3	4	1300	O							
07.702	112.2		1.91						W	.695	7.4	6	1.92	4	-0.1	0.5	2.5	850	O	.709	8.8	4	1.82	4	0.0	0.6	3.5	1300	O							
.702	113.9		1.96						O	.679	4.3	4	2.03	4	+0.7	1.2	3.5	850	W	.695	4.8	4	1.99	4	+0.1	-	2.5	850	W							
11006 β 72 $21^h 24^m 47^s - 5^\circ 50'3''$.										.709	7.6	4	1.90	4	-0.1	-	3.5	1300	W	07.691	8.2		1.92													O
06.770	41.6	6	1.60		+1.0	-	2.5	850	O	.694	5.6		1.97																W							
07.682	40.6	6	1.72		+0.6	2 \pm	4	850	O	11968 H II 57 $22^h 42^m 41^s - 4^\circ 44'9''$.																										
07.226	41.1		1.66						O	07.679	260.4	6	3.17	4	+0.2	0.1	3	850	W	.709	260.0	4	3.34	4	-1.0	0.1	3	1300	W							
11007 β 684 $21^h 24^m 57^s - 5^\circ 55'3''$.										.806	260.3	4	3.12	4	-0.4	0.1	3	850	W	.679	261.0	6	3.27	4	+0.3	0.3	3	850	O							
07.773	120.1	6	1.02	4	+1.0	0.2	2.5	850	W	.709	261.0	4	3.27	4	-0.9	0.3	3	1300	O	.806	260.7	4	3.17	4	-0.2	0.1	3.5	850	O							
.815	126.2	4	1.08	4	+0.9	0.3	3.5	850	W	07.731	260.2		3.21																W							
07.794	127.6		1.05						W	.731	260.9		3.24																O							
13580 H 965 $21^h 30^m - 19^\circ 13'.$																																				
07.698	355.5	4	1.29	4	+0.8	0.4	3	850	O																											
.703	354.4	4	1.49	4	-0.5	0.7	3	1300	O																											
.709	357.0	6	1.48	4	+0.7	0.7	2	1300	O																											
.698	355.0	4	1.32	4	+0.5	0.3	4-1	850	W																											
.703	355.0	4	1.41	4	-0.7	0.8	2.5	1300	W																											
.709	354.8	4	1.52	4	+0.8	0.8	3	1300	W																											
07.703	355.6		1.42						O																											
.703	354.9		1.42						W																											
11101 Innes 302 $21^h 32^m 46^s - 11^\circ 21'0''$.																																				
07.700	91.7	4	2.17	4	+1.0	0.9	4	850	W																											
.703	92.9	4	2.08	4	+0.4	1.0	3	1300	W																											
.753	94.5	6	2.12	4	+0.3	1.5	3	850	W																											
.773	93.4	4	2.09	4	+0.6	1.5	2.5	850	W																											

1900+	θ	n	ρ	n	t	Δ	S.	Pow.	Obs.
12046 β 178 $22^h 50^m 0^s -5^\circ 31'2''$.									
07.682	328.1	6	0.61	4	+0.2	3+	3.5	1300	O
.703	326.0	4	0.70	4	-0.1	1.5	4	1300	O
.703	325.5	4	0.68	4	0.0	0.8	4	1300	W
.790	321.1	4	0.68	4	0.0	1.0	3	850	W
07.692	327.0		0.66						O
.746	323.3		0.68						W
12218 Washburn 170 $23^h 7^m 27^s -22^\circ 28'9''$.									
07.806	282.3	4	1.30	4	-0.3	0.5	3.5	850	W
.815	281.1	4	1.20	4	-0.2	0.8	3	850	W
07.810	281.7		1.25						W
12276 β 79 $23^h 12^m 26^s -2^\circ 3'8''$.									
06.782	74.2	6	0.90	4	+0.6	0.6	4.5	850	O
07.682	74.3	8	1.10	4	+0.2	0.8	3.5	1300	O
.703	75.9	4	1.06	4	+0.1	0.5	5	1300	O
07.703	76.0	4	1.05	4	+0.1	0.5	4	1300	W
.389	74.8		1.02						O
12508 A 423 $23^h 36^m -9^\circ 11'$.									
07.703	171.1	4	1.91	4	+0.7	0.6	4	1300	W
.753	170.1	6	1.90	4	-0.9	0.5	3	850	W
.703	171.7	4	1.77	4	+0.8	0.8	4	1300	O
.753	169.6	4	1.77	4	-0.7	0.6	4	850	O
07.728	170.6		1.90						W
.728	170.7		1.77						O
12443 β 81 $23^h 30^m 3^s -12^\circ 7'9''$.									
07.806	12.6	5	1.89	4	+0.3	1.8	4	850	O
.815	12.8	4	1.53	4	-0.1	1.8	3	850	O
.806	13.2	4	1.84	4	+0.4	1.2	4	850	W
.815	12.0	6	1.64	4	0.0	1.7	3.5	850	W
07.810	12.7		1.71						O
.810	12.6		1.74						W
12461 Muller 2 $23^h 29^m -12^\circ 13'$.									
07.815	301.6	-	2.88	-	-0.3	1.0	4	850	O
.815	302.2	4	3.07	4	-0.4	0.5	3.5	850	W

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1900+	θ	n	ρ	n	t	Δ	S.	Pow.	Obs.
12424 A 421 $23^h 28^m -8^\circ 35'$.									
07.703	108.4	4	1.32	4	+0.5	0.2	4	1300	O
.753	104.0	4	1.05	4	-0.9	0.2	3.5	850	O
.790	105.4	4	1.09	4	-0.4	0.3	3.5	560	O
.703	109.7	4	1.26	4	+0.6	0.4	4	1300	W
.753	105.3	4	1.14	4	-1.0	0.3	3.5	850	W
.790	104.7	6	1.01	4	-0.2	-	3	850	W
07.749	105.9		1.15						O
.749	106.6		1.14						W
12639 Σ 3046 $23^h 51^m 15^s -10^\circ 3'3''$.									
07.679	250.2	4	2.90	4	0.0	0.3	3	850	O
.806	251.1	4	3.13	4	-0.5	0.3	4	850	O
.815	250.1	4	2.95	4	-0.2	0.4	4	850	O
.679	251.9	4	3.00	4	+0.1	0.2	3.5	850	W
.806	252.2	4	3.18	4	-0.6	0.2	4	850	W
.815	252.8	4	3.00	4	+0.1	0.3	4	850	W
07.767	250.5		2.99						O
.767	252.3		3.06						W

- 810. Only two other measures. Seems to have turned 10° since discovery.
- 1091. Measures seem to confirm slow motion.
- 1357. First measures since discovery. Distance increased.
- 2157. Measures confirm motion.
- 4832. First measure since discovery. No motion.
- 6528. Possibly slow change.
- 6569. Change of 8° in 9 years.
- 6857. Probably no motion.
- 6941. Motion seems confirmed.
- 8483. Possible increase in angle.
- 8619. Possible decrease in angle.
- 9867. Apparent small decrease in angle.
- 9878. Only late measure. Change small, if real.
- 11101. Third measure. No motion shown.
- 11369. Apparent slow increase.
- 12046. Motion confirmed.
- 12218. Possible change.
- 12508. Possible increase in angle.

Charles P. Olivier, Ralph E. Wilson.

Photographische Aufnahmen 1908 Jan. 3.

Objekt	M.Z.Kgst.	α	δ	Gr.	Bb.	Objekt	M.Z.Kgst.	α	δ	Gr.	Bb.
(37) Fides	8 ^h 20 ^m 0	5 ^h 0 ^m 8	+28° 6'	9.3	S	(532) Herculina	12 ^h 28 ^m 4	7 ^h 30 ^m 2	+21° 30'	9.3	K
Komet 1907 a	8 39.3	2 14.5	+45 34	14.2	K	(24) Themis	>	7 32.3	+22 59	10.1	>
1908 BN (neu)	10 47.5	6 35.4	+ 9 21	18	W	1908 BO (neu)	>	7 33.6	+24 20	12.8	>
(133) Cyrene	12 28.4	7 11.4	+28 31	12.2	K	(203) Pompeja	>	7 34.6	+26 7	11.5	>

Tägliche Bewegungen: BN $-0^m.75 +2'$, BO [vielleicht (408) Fama] $-1^m.0 -2'$, (203) $-1^m.0 +1'$.

W = M. Wolf, K = A. Kopff, S = A. Scheifele.

Astrophys. Institut, Königstuhl-Heidelberg, 1908 Jan. 4.

M. Wolf.