LICK OBSERVATORY BULLETIN

NUMBER 57

OBSERVATIONS OF ONE HUNDRED NEW DOUBLE STARS

SEVENTH CATALOGUE

Most of the double stars contained in this catalogue were discovered with the twelve-inch and thirty-six-inch telescopes of the Lick Observatory, and nearly all the measures were made with the latter instrument. In April 1903 I spent a few days at Echo Mountain, and while there the pairs in this list numbered 628, 649, 652, 657, 661, 663, and 664 were discovered with the sixteen-inch telescope of the Lowe Observatory. A few other pairs were also found there but they have not yet been measured. In July 1903 I spent a week at the Lowell Observatory at Flagstaff, Arizona. While there the pairs numbered 643 and 644 were discovered with the twenty-four-inch telescope, and the duplicity of No. 647, which had been suspected to be a close pair at Echo Mountain, was verified. I may here express my cordial appreciation of the kindness of Mr. Larkin, and of Mr. Lowell in placing their telescopes and other facilities at my disposal.

The position of the stars in this list are for the epoch 1900. The columns in order from left to right contain: (1) the date of observation, (2) the position angle, (3) the apparent distance, (4) the sidereal time of observation, and (5) the aperture and power of the telescope used in making the observations. In general each position angle depends upon four settings of the circle, and each distance upon four measures of the double distance.

W. J. HUSSEY.

June 2, 1904.

Hu. 601. DM. +20°47.

R.A. 00^h 23^m 31^s ; Decl. +21°00'8.
(9.2 and 9.8.)

1901.838	298.0	0.27	3.0	36:1000
1902.022	305.5	0.21	3.8	36:1000
1901.93	301.8	0.24		

602. DM. +33°182.

R.A. 1^h 04^m 38^s ; Decl. +33° 42'1.
(9.0 and 10.2.)

1902.753	203.4	4.14	23.0	36: 520
.830	202.6	4.11	23.1	36: 520
1902.79	203.0	4.13		

603. DM. +22°353.

R.A. 2^h 23^m 25^s ; Decl. +22° 25'7.
(8.5 and 11.8.)

1901.844	226.7	5.34	2.2	12: 625
.850	226.8	5.29	24.2	12: 625
1901.85	226.8	5.31		

604. DM. +35°563.

R.A. 2^h 42^m 09^s ; Decl. +35° 54'9.
(9.0 and 11.0.)

1902.753	212.1	2.01	24.7	36:1000
1903.213	210.1	1.76	7.7	36: 520
1904.174	208.7	1.98	7.6	36: 520
1903.38	210.3	1.92		

605. DM. — 14°610.

R.A. 3^h 05^m 28^s ; Decl. — 14° 14'4.
(9.0 and 11.5.)

1901.853	62.4	2.53	4.5	36:1000
.890	62.5	2.10*	4.0	36:1000
1902.033	62.2	2.63	5.3	36: 520
1901.92	62.4	2.42		

* Measured through thin clouds.

Hu. 606. DM. +34°766.

R.A. 3^h 48^m 53^s ; Decl. +34° 50'2.
(8.9 and 11.2.)

1902.750	32°6	2'92	0.9	36:1000
1903.210	35.2	3.03	8.2	36: 520
.213	35.6	3.17	7.9	36: 520
1903.06	34.5	3.04		

607. DM. +33°798.

R.A. 4^h 02^m 32^s ; Decl. +33° 49'4.
(9.0 and 12.0.)

1902.657	331.0	4.91	0.8	36: 520
1903.210	328.3	4.89	8.4	36: 520
.213	327.5	4.81	8.2	36: 520
1903.03	328.9	4.87		

608. DM. +35°867.

R.A. 4^h 19^m 38^s ; Decl. +35° 30'7.
(8.4 and 8.8.)

1902.750	174.0	0.32	1.9	36:1500
.827	173.3	0.44	2.2	36:1500
1902.79	173.7	0.38		

609. DM. +34°878.

R.A. 4^h 19^m 43^s ; Decl. +34° 29'4.
(8.1 and 8.5.)

1902.750	10.8	0.14	1.7	36:1500
.753	10.5	0.18	2.4	36:1500
.827	10.1	0.19	2.4	36:1500
1902.78	10.5	0.17		

610. DM. +33°884.

R.A. 4^h 29^m 52^s ; Decl. +34° 00'1.
(8.5 and 8.8.)

1902.753	29.6	0.15	2.6	36:1500
.827	27.1	0.15	3.8	36:1500
1902.79	28.4	0.15		

611. DM. +53°793.

R.A. 4^h 30^m 23^s ; Decl. +53° 34'8.
(8.5 and 12.0.)

1902.676	19.5	0.78	1.6	36:1000
.695	14.5	0.73	1.6	36:1000
.712	14.9	0.75	2.8	36:1000
1902.69	16.3	0.75		

612. DM. +53°813.

R.A. 4^h 39^m 53^s ; Decl. +53° 07'3.
(6.7 and 8.7.)

1902.676	197.1	0.21	2.0	36:1000
.695	194.4	0.22	1.8	36:1500
.712	203.8	0.22	3.0	36:1500
1902.69	198.4	0.22		

Hu. 613. DM. +32°937.

R.A. 5^h 11^m 00^s ; Decl. +33° 00'9.
(8.5 and 12.5.)

1901.893	231°6	2'59	2.9	12: 625
1902.788	235.5	2.64	2.7	36: 520
1903.213	236.9	2.61	9.1	36: 520
1902.63	234.7	2.61		

614. DM. +32°957.

R.A. 5^h 15^m 18^s ; Decl. +32° 23'7.
(8.8 and 11.5.)

1901.893	4.8	3.38	3.2	12: 625
1903.213	2.1	3.57	9.3	36: 520
1902.55	3.5	3.48		

615. DM. +49°1557.

R.A. 6^h 45^m 37^s ; Decl. +49° 24'1.
(9.0 and 12.0.)

1902.964	322.6	1.54	4.0	36:1000
1903.021	317.0	1.62	3.3	36: 520
1902.99	319.8	1.58		

616. DM. +33°1427.

R.A. 6^h 47^m 31^s ; Decl. +33° 49'0.
(9.1 and 9.5.)

1902.753	305.1	0.20	4.3	36:1500
.772	304.1	0.16	4.1	36:1500
1902.76	304.6	0.18		

617. DM. +50°1371.

R.A. 6^h 49^m 01^s ; Decl. +50° 07'8.
(9.5 and 9.5.)

1902.964	138.0	1.03	3.4	36:1000
1903.021	141.0	1.23	3.5	36:1000
1902.99	139.5	1.13		

618. DM. +51°1292.

R.A. 7^h 04^m 17^s ; Decl. +51° 33'2.
(8.8 and 10.8.)

1902.964	122.0	1.43	4.3	36:1000
1903.021	122.2	1.35	3.7	36:1000
1902.99	122.1	1.39		

619. DM. +48°1513.

R.A. 7^h 12^m 43^s ; Decl. +48° 30'7.
(9.0 and 10.5.)

1902.723	339.3	0.61	4.4	36:1000
.964	340.2	0.56	4.6	36:1000
1903.021	336.5	0.54	3.9	36:1000
1902.90	338.7	0.57		

This pair is the principal component of h 2367.

Hu. 620. DM. +0°1913.

R.A. 7^h 16^m 02^s ; Decl. +0° 12'4.
(8.8 and 8.8.)

1899.111	115.2	0.86	7.5	36:1000
.117	114.7	0.85	10.0	36:1000
1899.11	114.9	0.86		

621. DM. +35°1622.

R.A. 7^h 22^m 30^s ; Decl. +35° 33'0.
(8.6 and 13.0.)

1902.772	337.5	3.74	4.8	36: 520
1903.213	335.6	3.51	11.1	36: 520
1902.99	336.6	3.63		

622. DM. +50°1450.

R.A. 7^h 29^m 31^s ; Decl. +50° 49'9.
(9.0 and 9.8.)

1902.964	35.4	3.26	4.8	36:1000
1903.021	35.2	3.14	4.0	36: 520
1902.99	35.3	3.20		

623. DM. — 13°2381.

R.A. 8^h 00^m 52^s ; Decl. — 13° 17'3.
(7.5 and 13.0.)

1900.207	62.6	5.25	9.5	36: 520
.243	64.5	5.39	10.3	36: 520
1900.22	63.5	5.32		

624. DM. +33°1660.

R.A. 8^h 08^m 19^s ; Decl. +33° 28'9.
(9.0 and 13.0.)

1902.827	232.5	1.35	5.7	36:1000
1903.213	238.8	1.39	11.5	36: 520
1903.02	235.6	1.37		

625. DM. +33°1670.

R.A. 8^h 11^m 13^s ; Decl. +33° 08'0.
(8.8 and 11.2.)

1902.827	351.4	1.76	5.9	36:1000
1903.213	350.4	1.79	11.9	36:1000
1903.02	350.9	1.78		

626. DM. +32°1717.

R.A. 8^h 13^m 51^s ; Decl. +32° 38'8.
(8.0 and 12.0.)

1902.827	153.2	3.40	6.1	36: 520
1903.213	153.9	3.33	12.0	36: 520
1903.02	153.6	3.37		

627. DM. +35°1833.

R.A. 8^h 24^m 48^s ; Decl. +34° 51'6.
(9.0 and 10.0.)

1902.772	266.1	0.98	6.2	36:1000
1903.213	265.8	0.78	12.3	36:1000
1902.99	266.0	0.88		

Hu. 628. 9 Ursae Majoris. BC.

R.A. 8^h 52^m 22^s ; Decl. +48° 26'1.
(9.5 and 9.8.)

1903.350	203.5	0.94	13.7	36:1000
.407	203.2	0.92	13.2	36:1000
1903.38	203.4	0.93		

This pair is the companion of OΣ 196. These measures are by Dr. Aitken.

629. DM. +51°1537.

R.A. 9^h 36^m 13^s ; Decl. +51° 02'6.
(8.1 and 8.6.)

1902.337	188.9	0.48	1.6	36:1000
.964	185.4	0.49	6.4	36:1500
1903.021	193.8	0.54	6.7	36:1000
.029	196.0	0.49	5.7	36:1500
1902.84	191.0	0.50		

630. DM. +51°1543.

R.A. 9^h 40^m 57^s ; Decl. +51° 25'1.
(8.8 and 8.8.)

1902.964	72.8	2.44	6.6	36:1000
1903.021	72.8	2.49	6.8	36:1000
.029	71.8	2.37	5.8	36:1000
1903.00	72.5	2.43		

631. DM. +33°1938.

R.A. 9^h 58^m 09^s ; Decl. +33° 07'8.
(7.0 and 8.6.)

1902.827	271.4	0.84	7.1	36:1000
1903.155	273.4	0.74	7.1	36:1000
.158	271.0	0.69	6.8	36:1000
1903.05	271.9	0.76		

632. DM. +49°1931.

R.A. 10^h 06^m 38^s ; Decl. +49° 04'9.
(9.0 and 10.8.)

1902.964	64.3	3.15	7.8	36:1000
1903.021	63.0	3.20	7.0	36:1000
.029	65.1	3.01	6.2	36: 520
1903.00	64.1	3.12		

633. DM. +49°1933.

R.A. 10^h 09^m 54^s ; Decl. +49° 14'4.
(8.4 and 10.2.)

1902.964	344.2	0.38	7.6	36:1000
1903.029	339.1	0.35	6.5	36:1000
1902.99	341.7	0.36		

634. DM. +33°1962.

R.A. 10^h 10^m 33^s ; Decl. +33° 39'1.
(8.4 and 9.8.)

1902.827	167.4	1.91	7.6	36:1000
1903.155	167.3	1.70	7.5	36:1000
.158	166.6	1.88	6.9	36: 520
1903.05	167.1	1.83		

Hu. 635. DM. +48°1868.R.A. 10^h 22^m 25^s ; Decl. +48° 03'6.

(9.2 and 9.2.)

1903.021	174.4	4.38	7.3	36: 520
.029	173.4	4.17	6.6	36: 520
1903.02	173.9	4.28		

636. DM. +33°2000.R.A. 10^h 26^m 35^s ; Decl. +33° 21'3.

(9.0 and 10.5.)

1902.827	205.7	1.72	8.1	36:1000
1903.158	203.8	1.81	7.2	36: 520
1902.99	204.8	1.76		

637. DM. — 17°3265.R.A. 10^h 52^m 38^s ; Decl. — 17° 46'2.

(8.0 and 11.0.)

1900.371	66.7	4.98	12.3	36: 520
.374	66.5	5.36	12.0	36: 520
1902.274	65.8	5.26	12.6	36: 520
1901.00	66.3	5.20		

638. DM. +51°1648.R.A. 11^h 00^m 04^s ; Decl. +51° 21'6.

(8.5 and 10.8.)

1902.964	328.9	1.99	8.1	36:1000
1903.021	329.4	1.91	7.7	36: 520
.029	326.5	1.97	6.9	36: 520
1903.00	328.3	1.96		

639. DM. +48°1925.R.A. 11^h 09^m 51^s ; Decl. +48° 01'5.

(7.5 and 7.5.)

1902.964	94.3	0.31	8.7	36:1500
1903.029	94.0	0.32	7.1	36:1500
1902.99	94.2	0.32		

640. DM. +21°2462.R.A. 12^h 45^m 46^s ; Decl. +21° 04'8.

(9.3 and 9.3.)

1902.545	104.5	0.39	16.5	36:1000
1904.328	104.6	0.42	10.9	36:1000
.344	103.6	0.36	11.8	36:1000
1903.74	104.2	0.39		

641. DM. +50°1965.R.A. 12^h 53^m 25^s ; Decl. +50° 20'7.

(9.0 and 10.0.)

1902.964	188.7	0.30*	10.1	36:1000
1904.276	188.3	0.45	10.3	36:1500
.341	189.2	0.42	11.4	36:1000
1903.86	189.7	0.39		

*Through thick haze.

Hu. 642. DM. — 12°3747.R.A. 12^h 59^m 13^s ; Decl. — 12° 43'9.

(9.5 and 9.5.)

1900.415	21.4	0.33	15.5	36:1000
.423	25.4	0.30	15.5	36:1000
1900.42	23.4	0.32		

643. DM. +51°1808.R.A. 13^h 01^m 07^s ; Decl. +51° 31'4.

(9.5 and 10.5.)

1904.276	202.4	0.35	10.1	36:1000
.341	204.4	0.36	11.1	36:1500
.344	202.6	0.30	10.8	36:1000
1904.32	203.1	0.34		

This pair is the principal component of Σ 1718.**644. DM. +48°2108.**R.A. 13^h 15^m 26^s ; Decl. +48° 18'2.

(8.4 and 9.0.)

1904.276	98.7	0.94	9.7	36:1000
.341	98.8	0.85	11.6	36:1000
.344	99.4	0.95	11.1	36:1000
1904.32	99.0	0.91		

645. DM. +22°2612.R.A. 13^h 34^m 11^s ; Decl. +21° 57'3.

(9.2 and 9.6.)

1902.545	21.2	0.88	18.2	36:1000
1904.328	19.4	0.79	11.5	36:1000
1903.44	20.3	0.84		

646. DM. +35°2521.R.A. 14^h 00^m 14^s ; Decl. +34° 54'1.

(7.5 and 14.0.)

1903.158	24.4	1.93	11.3	36: 520
1904.352	25.3	1.96	11.3	36: 520
1903.75	25.8	1.95		

647. DM. +48°2243.R.A. 14^h 45^m 48^s ; Decl. +48° 18'9.

(9.0 and 9.3.)

1904.276	83.5	0.42	10.6	36:1500
.341	84.9	0.38	12.0	36:1000
.363	83.7	0.35	11.2	36:1000
1904.33	84.0	0.38		

648. DM. +21°2705.R.A. 14^h 52^m 24^s ; Decl. +20° 57'7.

(8.8 and 13.5.)

1902.545	135.2	1.47	18.8	36:1000
1904.328	131.6	1.71	12.1	36:1000
1903.44	133.4	1.59		

u. 649. DM. +50°2174.

R.A. 15^h 20^m 47^s ; Decl. +49° 52'6.
(8.2 and 13.0.)

1904.276	49°2	4'52	11.3	36:1000
.341	49.8	4.51	12.2	36:1000
1904.31	49.5	4.51		

650. DM. — 18°4074.

R.A. 15^h 23^m 00^s ; Decl. — 18° 22'5.
(8.0 and 12.5.)

1902.432	333.4	1.56	16.8	12: 625
.463	334.5	1.47	16.7	36:1000
.465	332.5	1.52	17.0	36: 520
.471	334.4	1.53	17.8	36: 520
1902.46	333.7	1.52		

651. DM. +50°2182.

R.A. 15^h 26^m 03^s ; Decl. +50° 47'5.
(8.2 and 12.8.)

1904.276	346.1	1.06	11.6	36:1000
.341	346.1	1.13	12.3	36:1000
1904.31	346.1	1.10		

652. DM. +49°2408.

R.A. 15^h 33^m 03^s ; Decl. +49° 08'8.
(8.5 and 8.8.)

1904.276	171.9	0.75	12.3	36:1000
.341	172.1	0.80	12.5	36:1000
1904.31	172.0	0.77		

653. DM. — 19°4190.

R.A. 15^h 36^m 35^s ; Decl. — 19° 10'0.
(8.5 and 13.0.)

1902.463	194.4	3.64	17.0	36: 520
.465	194.4	3.59	17.3	36: 520
.471	194.3	3.69	17.9	36: 520
1902.47	194.4	3.64		

654. DM. — 19°4203.

R.A. 15^h 38^m 35^s ; Decl. — 19° 23'7.
(9.0 and 9.0.)

1902.463	356.5	0.91	17.1	36:1000
.465	355.6	0.91	17.4	36:1000
.493	354.1	1.03	14.9	36:1000
1902.47	355.4	0.95		

655. DM. — 16°4154.

R.A. 15^h 39^m 19^s ; Decl. — 16° 24'2.
(8.5 and 12.0.)

1902.463	30.7	2.24	16.3	36: 520
.465	32.4	2.13	17.7	36: 520
.493	31.3	2.20	14.8	36: 520
1902.47	31.5	2.19		

Hu. 656. DM. — 18°4163.

R.A. 15^h 41^m 14^s ; Decl. — 18° 49'2.
(8.5 and 9.0.)

1904.393	22°1	1'53	16.7	12: 625
.401	20.7	1.49	14.7	36: 520
1904.40	21.4	1.51		

657. DM. +51°2028.

R.A. 15^h 42^m 50^s ; Decl. +50° 58'9.
(8.5 and 8.5.)

1904.276	123.8	0.51	12.3	36:1000
.341	120.9	0.58	12.7	36:1000
.363	123.3	0.58	11.4	36:1000
1904.33	122.7	0.56		

658. DM. +51°2038.

R.A. 15^h 50^m 45^s ; Decl. +51° 44'4.
(8.4 and 13.0.)

1904.276	339.4	2.28	13.0	36: 520
.341	340.6	2.49	13.0	36:1000
.363	341.0	2.42	14.0	36:1000
1904.33	340.3	2.40		

659. DM. +49°2443.

R.A. 15^h 55^m 39^s ; Decl. +49° 15'5.
(8.8 and 11.0.)

1904.276	244.7	0.42	12.9	36:1000
.341	241.7	0.38	13.4	36:1000
.363	246.2	0.44	11.7	36:1000
1904.33	244.2	0.41		

660. DM. — 20°4417.

R.A. 16^h 03^m 44^s ; Decl. — 20° 21'0.
(8.2 and 12.0.)

1902.463	89.2	1.78	17.3	36:1000
.465	87.0	1.83	18.0	36: 520
.493	88.7	1.80	15.0	36: 520
1902.47	88.3	1.80		

661. DM. +49°2489.

R.A. 16^h 14^m 58^s ; Decl. +49° 32'5.
(9.0 and 9.2.)

1904.363	51.4	0.81	12.1	36:1000
.404	50.1	0.80	12.2	36:1000
1904.38	50.7	0.80		

662. DM. +51°2077.

R.A. 16^h 17^m 08^s ; Decl. +51° 48'6.
(8.5 and 12.0.)

1904.276	224.1	4.13	13.2	36: 520
.341	224.3	4.19	13.9	36: 520
.404	223.2	4.25	12.4	36: 520
1904.34	223.9	4.19		

Hu. 663. DM. +51°2105.

R.A. 16^h 25^m 30^s ; Decl. +51° 48'7.
(7.0 and 11.8.)

1904.276	235.5	2.98	13.3	36: 520
.341	235.2	2.99	14.0	36: 520
1904.31	235.4	2.98		

664. DM. +51°2130.

R.A. 16^h 41^m 18^s ; Decl. +51° 43'5
(7.5 and 8.0.)

1904.276	303.4	0.34	13.7	36:1500
.341	304.6	0.34	14.4	36:1000
.404	303.3	0.32	12.5	36:1000
1904.34	303.8	0.33		

665. DM. +21°2986.

R.A. 16^h 42^m 55^s ; Decl. +21° 43'3.
(8.8 and 13.0.)

1902.312	140.1	2.37	14.9	36: 520
.427	141.9	—	14.8	36: 520
.495	141.3	2.48	19.5	36: 520
1904.387	142.2	2.60	14.6	36: 520
1902.91	141.4	2.48		

666. DM. +23°2997.

R.A. 16^h 43^m 10^s ; Decl. +23° 10'8.
(8.7 and 12.5.)

1902.312	206.3	0.52	15.2	36:1000
1904.387	204.8	0.61	14.8	36:1000
1903.35	205.6	0.56		

667. DM. +48°2461.

R.A. 16^h 55^m 39^s ; Decl. +48° 02'2.
(8.7 and 12.5.)

1904.363	168.5	2.30	12.7	36:1000
.404	170.4	2.31	12.7	36:1000
1904.38	169.4	2.30		

668. DM. +21°3084.

R.A. 17^h 13^m 00^s ; Decl. +21° 19'3.
(8.5 and 13.5.)

1902.495	29.6	1.22	20.2	36:1000
1904.387	31.2	1.17	15.0	36:1000
1903.44	30.4	1.20		

669. DM. +50°2386.

R.A. 17^h 15^m 44^s ; Decl. +49° 58'0.
(9.0 and 9.0.)

1904.363	79.5	0.21	13.5	36:1500
.404	79.3	0.22	13.0	36:1500
1904.38	79.4	0.22		

Hu. 670. DM. +49°2617.

R.A. 17^h 16^m 42^s ; Decl. +49° 23'5.
(8.7 and 10.5.)

1904.363	7.6	0.22	13.4	36:1000
.404	5.9	0.19	12.9	36:1500
1904.38	6.8	0.21		

671. DM. +22°3133.

R.A. 17^h 19^m 35^s ; Decl. +22° 00'7.
(8.4 and 9.0.)

1904.325	276.4	0.44	14.7	36:1000
.387	276.5	0.45	15.3	36:1000
1904.36	276.4	0.44		

672. DM. +51°2210.

R.A. 17^h 23^m 08^s ; Decl. +51° 34'8.
(8.0 and 11.5.)

1904.363	62.5	4.21	13.1	36: 520
.404	61.6	4.16	13.2	36: 520
1904.38	62.0	4.18		

673. DM. — 10°4507.

R.A. 17^h 25^m 45^s ; Decl. — 10° 53'6.
(7.5 and 12.8.)

1900.418	187.1	5.31	19.9	36:1000
.442	188.4	5.45	19.3	36:1000
.470	189.0	5.48	19.0	36:1000
1900.44	188.2	5.41		

674. DM. +50°2531.

R.A. 18^h 07^m 15^s ; Decl. +50° 22'8.
(7.5 and 8.0.)

1904.276	279.2	0.47	14.6	36:1000
.363	278.8	0.47	14.0	36:1000
1904.32	279.0	0.47		

675. DM. +14°3601.

R.A. 18^h 33^m 41^s ; Decl. +14° 21'4.
(9.2 and 9.8.)

1902.451	69.5	0.20	17.4	36:1000
.640	72.5	0.20	21.5	36:1000
.657	71.2	0.19	20.9	36:1500
1902.58	71.1	0.20		

676. DM. +14°3719.

R.A. 18^h 52^m 38^s ; Decl. +14° 42'0.
(7.2 and 10.0.)

1902.695	80.4	1.46	21.8	36:1000
.712	79.0	1.36	20.9	36:1000
1902.70	79.7	1.41		

Hu. 677. DM. +12°3751.

R.A. 18^h 55^m 36^s ; Decl. +12° 54'5.
(8.8 and 9.5.)

1902.695	43.0	1.87	22.0	36:1000
.712	42.9	1.78	21.0	36:1000
1902.70	43.0	1.83		

678. DM. +12°3754.

R.A. 18^h 55^m 55^s ; Decl. +12° 05'2.
(8.0 and 10.5.)

1902.695	359.0	2.98	22.0	36: 520
.712	360.0	2.98	21.1	36:1000
1902.70	359.5	2.98		

679. DM. +50°2819.

R.A. 19^h 32^m 24^s ; Decl. +50° 24'2.
(8.2 and 9.0.)

1904.341	259.5	0.29	16.6	36:1000
.363	264.9	0.33	14.8	36:1000
.404	262.0	0.38	15.8	36:1000
1904.37	262.1	0.33		

680. DM. +35°3753.

R.A. 19^h 38^m 17^s ; Decl. +35° 27'2.
(8.8 and 10.0.)

1902.638	147.7	0.52	24.0	36:1000
.651	145.5	0.48	23.1	36:1000
1904.352	144.7	0.47	16.7	36:1000
1903.21	146.0	0.49		

681. DM. +35°3799.

R.A. 19^h 42^m 59^s ; Decl. +35° 37'1.
(8.5 and 15.0.)

1902.638	196.6	1.79	23.5	36: 520
.651	199.2	1.82	23.0	36: 520
1904.352	199.0	1.72	16.4	36:1000
1903.21	198.3	1.78		

682. DM. +34°3725.

R.A. 19^h 44^m 47^s ; Decl. +34° 35'0.
(9.0 and 11.5.)

1902.638	108.4	0.47	23.7	36:1000
.651	107.7	0.50	23.3	36:1000
1904.352	107.5	0.49	16.8	36:1000
1903.21	107.9	0.49		

683. DM. +48°2952.

R.A. 19^h 44^m 59^s ; Decl. +48° 42'9.
(9.0 and 13.0.)

1904.363	268.8	1.20	15.4	36:1000
.404	270.1	1.48	16.2	36: 520
1904.38	269.5	1.34		

Hu. 684. DM. +48°2966.

R.A. 19^h 47^m 51^s ; Decl. +48° 36'0.
(8.6 and 8.6.)

1904.363	175.5	0.86	15.6	36:1000
.404	173.9	1.00	16.1	36:1000
1904.38	174.7	0.93		

685. DM. +35°3845.

R.A. 19^h 48^m 43^s ; Decl. +35° 21'2.
(9.0 and 14.5.)

1902.638	66.1	1.50	23.3	36:1000
.651	65.2	1.73	22.9	36: 520
1904.352	66.0	1.73	16.9	36:1000
1903.21	65.8	1.65		

686. DM. +50°2904.

R.A. 19^h 48^m 51^s ; Decl. +50° 23'3.
(7.0 and 12.0.)

1904.363	145.8	4.45	15.0	36: 520
.404	146.9	4.41	16.3	36: 520
1904.38	146.4	4.43		

687. DM. +50°2920.

R.A. 19^h 52^m 13^s ; Decl. +50° 33'3.
(7.5 and 7.5.)

1904.363	91.2	0.14	16.3	36:3000
.404	94.4	0.16	16.3	36:1500
1904.38	92.8	0.15		

688. DM. +48°2984.

R.A. 19^h 53^m 02^s ; Decl. +48° 55'7.
(8.2 and 13.0.)

1904.363	290.4	3.99	15.8	36: 520
.404	292.1	4.11	16.7	36: 520
1904.38	291.3	4.05		

689. DM. +50°2936.

R.A. 19^h 55^m 00^s ; Decl. +51° 01'7.
(7.8 and 8.2.)

1904.363	18.7	0.35	16.5	36:1500
.404	14.4	0.36	16.5	36:1500
1904.38	16.6	0.35		

690. DM. +33°4011.

R.A. 20^h 40^m 32^s ; Decl. +33° 47'5,
(9.0 and 9.2.)

1902.651	281.5	0.64	24.0	36:1000
.657	283.3	0.55	24.2	36:1000
1904.352	282.8	0.57	18.0	36:1000
1903.22	282.5	0.59		

Hu. 691. DM. +34°4285.

R.A. 21^h 02^m 41^s ; Decl. +34° 30′.4.
(8.5 and 9.0.)

1902.638	310°1	0′30	24.6	36:1000
1904.352	311.8	0.35	18.3	36:1000
1903.50	310.9	0.33		

692. DM. +49°3494.

R.A. 21^h 14^m 48^s ; Decl. +49° 30′.6.
(8.2 and 10.0.)

1904.341	207.7	0.32	18.0	36:1000
.352	202.4	0.41	18.7	36:1000
1904.35	205.0	0.36		

693. DM. +49°3605.

R.A. 21^h 40^m 18^s ; Decl. +50° 06′.2.
(8.7 and 9.2.)

1904.341	230.2	1.04	19.2	36:1000
.352	230.5	1.08	18.8	36:1000
1904.35	230.4	1.06		

694. DM. +49°3641.

R.A. 21^h 47^m 25^s ; Decl. +49° 55′.2.
(9.0 and 10.0.)

1904.341	192.5	1.64	18.7	36:1000
.352	192.9	1.73	18.9	36:1000
1904.35	192.7	1.68		

695. DM. +50°3612.

R.A. 22^h 08^m 59^s ; Decl. +50° 33′.3.
(9.0 and 9.5.)

1902.569	16.5	0.80	19.6	36:1000
1904.352	13.7	0.85	19.1	36:1000
1903.46	15.1	0.83		

Hu. 696. DM. +51°3307.

R.A. 22^h 11^m 47^s ; Decl. +51° 22′.4.
(8.8 and 9.0.)

1902.569	233°8	0′25	19.2	36:1500
1904.352	231.6	0.30	19.3	36:1000
1903.46	232.7	0.28		

697. DM. +51°3693.

R.A. 23^h 38^m 12^s ; Decl. +51° 41′.3.
(9.5 and 9.5.)

1902.523	121.8	0.45	21.0	36:1000
1904.404	122.2	0.47	20.6	36:1000
1903.46	122.0	0.46		

698. DM. — 18°6378.

R.A. 23^h 45^m 02^s ; Decl. — 17° 55′.8.
(8.6 and 9.1.)

1900.836	315.3	0.82	1.5	36:1000
1901.794	318.0	1.00	23.3	36:1000
1901.31	316.7	0.91		

699. DM. +50°4171.

R.A. 23^h 46^m 32^s ; Decl. +50° 57′.8.
(8.4 and 13.0.)

1902.523	110.2	1.03	20.8	36:1000
.561	110.7	1.00	19.2	36:1000
1902.54	110.5	1.02		

700. DM. +48°4210.

R.A. 23^h 55^m 23^s ; Decl. +48° 43′.9.
(8.6 and 13.5.)

1902.528	340.1	4.74	22.8	36: 520
.561	340.8	4.58	21.1	36: 520
1902.54	340.5	4.66		