LICK OBSERVATORY

UNIVERSITY OF CALIFORNIA

BULLETIN No. 12

OBSERVATIONS OF ONE HUNDRED NEW DOUBLE STARS

FOURTH CATALOGUE

For somewhat more than two years I have been devoting a portion of my time to the examination of large numbers of stars in various parts of the sky for the purpose of detecting hitherto unknown double stars. This search has resulted in the discovery of five hundred new pairs having distances under $5''$.

In Nos. 480, 485 and 494 of the *Astronomical Journal*, I have published three catalogues of new double stars, giving measures of three hundred pairs. The present catalogue contains observations of another hundred, and the stars in it are numbered in continuation of the preceding ones. Sets of measures for the fifth hundred are not yet completed.

The following table gives the classification of the stars in the four catalogues with respect to the distances between their components:

	1st Cat.	2d Cat.	3d Cat.	4th Cat.	Total.
0".25 or less	3	9	5	13	30
0.26 to 0".50	12	16	12	30	70
0.51 to 1.00	24	22	20	24	90
1.01 to 2.00	29	26	25	18	98
2.01 or more	32	27	38	15	112

According to this table 72 per cent. of these stars have distances not exceeding $2''$; 48 per cent. not exceeding $1''$; and 25 per cent. not exceeding $0''.5$.

I have endeavored to conduct my search for new pairs in a systematic manner, and in the end it is hoped that the work will afford considerable data respecting the distribution of close double stars in various parts of the sky, and of their numbers in respect to magnitude and in proportion to the total number of stars examined. Charts are prepared of the parts of the sky to be examined. These charts include all DM. stars to the 9.1 magnitude inclusive. When a region is examined it is indicated on the chart, together with the date of examination, the telescope and power used, and the quality of the

seeing at the time. As the work proceeds the known double stars are identified and their exact positions indicated on the charts. The charts will, therefore, eventually contain much information respecting the places of the known double stars and will serve to detect cases of mis-identification.

In examining large numbers of stars with high powers under good atmospheric conditions in various parts of the sky, one is impressed with the fact that the close double stars, those, for example, having distances under $5''$, are not distributed over the celestial sphere proportionally to the number of stars to a given magnitude, say 9.1. In some places one may examine all the stars to this magnitude over a considerable number of square degrees without finding any new pair, and but few known ones, while in other regions the double stars are comparatively numerous. This probably has a physical significance. The conditions which determine the existence or non-existence of telescopic double stars in given directions may possibly prevail throughout spaces of enormous extent.

The positions of the stars in the following list are for the epoch 1900. The magnitudes given are the means of estimates made at the times of observation. The columns of results in order from left to right give: (1) the date of observation, (2) the position angle, (3) the distance, (4) the sidereal time of observation, and (5) the telescope and power. Nearly all the measures have been made with the 36-inch refractor, though many of the pairs, including some of the very close ones, have been discovered with the 12-inch telescope.

WILLIAM J. HUSSEY.

December 2, 1901.

Hu. 301. DM. +10°541.R.A. 4^h 3^m 38^s ; Decl. +10° 30'0.
(8.5 and 9.6.)

1900.920	302 ^o .7	0 ^o .66	0 ^h .9	36:1000
1901.584	298.3	0.81	1.1	36:1000
.658	298.3	0.78	2.0	36:1000
1901.39	299.8	0.75		

302. DM. +22°651.R.A. 4^h 7^m 17^s ; Decl. +22° 42'2.
(9.5 and 9.5.)

1901.638	166.4	0.25	0.5	36:1000
.794	161.9	0.24	1.6	36:1500
1901.72	164.1	0.25		

303. DM. +21°639.R.A. 4^h 18^m 6^s ; Decl. +21° 18'5.
(8.5 and 12.0.)

1901.784	198.0	2.04	1.9	12: 600
.794	200.3	2.26	1.9	36:1000
1901.79	199.1	2.15		

304. 66 Tauri.R.A. 4^h 18^m 25^s ; Decl. +9° 13'7.
(5.9 and 5.9.)

1900.920	22.7	0.26	1.3	36:1000
1901.584	25.3	0.24	1.2	36:1500
.658	23.6	0.25	2.5	36:1900
1901.39	23.9	0.25		

According to AUWERS the proper motion of 66 Tauri is $\mu = -0.0027$, $\mu' = -0''.004$.

305. DM. +20°783.R.A. 4^h 31^m 1^s ; Decl. +20° 50'5.
(9.0 and 10.2.)

1901.784	277.5	2.17	2.8	12: 600
.794	276.6	2.25	2.0	36:1000
1901.79	277.0	2.21		

306. DM. -17°4300.R.A. 15^h 13^m 49^s ; Decl. -17° 58'2.
(9.5 and 9.8.)

1901.548	122.8	0.24	17.2	36:1000
.584	124.0	0.29	17.4	36:1000
.603	123.3	0.27	17.0	36:1000
1901.58	123.4	0.27		

307. DM. -16°4067.R.A. 15^h 17^m 2^s ; Decl. -16° 33'8.
(9.1 and 9.5.)

1901.510	1.9	2.89	16.4	12: 600
.545	3.9	2.97	17.2	36: 520
.548	3.2	2.99	17.8	36: 520
.584	2.8	3.09	17.5	36: 520
1901.55	2.9	2.98		

Hu. 308. DM. -15°4103.R.A. 15^h 20^m 9^s ; Decl. -15° 22'2.
(9.0 and 12.1.)

1901.545	299 ^o .5	0 ^o .48	17 ^h .6	36: 520
.548	297.8	0.56	17.4	36:1000
.584	298.6	0.64	17.8	36:1000
.603	295.8	0.62	17.5	36:1000
1901.57	297.9	0.58		

309. DM. -16°4086.R.A. 15^h 20^m 56^s ; Decl. -16° 44'5.
(9.0 and 10.0.)

1901.545	53.0	1.48	17.4	36:1000
.548	50.6	1.60	17.9	36:1000
.584	50.2	1.38	17.7	36:1000
1901.56	51.3	1.49		

310. DM. -14°4209.R.A. 15^h 22^m 53^s ; Decl. -14° 23'7.
(9.1 and 12.7.)

1901.548	249.1	0.88	17.6	36:1000
.584	249.8	0.94	18.0	36:1000
.603	250.2	0.86	17.7	36:1000
1901.58	249.7	0.89		

311. DM. -16°4269.R.A. 16^h 13^m 58^s ; Decl. -16° 14'6.
(8.5 and 12.2.)

1901.587	315.6	1.13	18.3	12: 600
.603	317.2	1.20	18.0	36:1000
1901.59	316.4	1.16		

312. DM. -17°4630.R.A. 16^h 40^m 29^s ; Decl. -17° 9'7.
(8.6 and 8.8.)

1901.597	87.7	3.52	18.0	12: 600
.603	85.6	3.77	18.2	36:1000
.661	87.9	3.69	17.8	36:1000
1901.62	87.1	3.66		

313. DM. -17°4632.R.A. 16^h 40^m 50^s ; Decl. -17° 32'3.
(9.3 and 10.5.)

1901.603	311.6	0.39	18.4	36:1000
.661	311.7	0.36	17.9	36:1000
1901.63	311.7	0.37		

314. DM. +18°3566.R.A. 18^h 4^m 6^s ; Decl. +18° 37'2.
(8.3 and 8.5.)

1901.485	146.1	0.32	15.0	36:1500
.496	146.9	0.37	15.5	36:1000
.523	146.9	0.35	16.7	36:1000
1901.50	146.6	0.35		

Hu. 315. DM. +23°3272.

R.A. 18^h 4^m 53^s ; Decl. +23° 33'4.
(9.3 and 9.3.)

1901.661	46.0	0.44	22.2	36:1000
.704	47.4	0.42	22.2	36:1000
.715	47.9	0.45	21.0	36:1000
1901.69	47.1	0.44		

316. DM. +18°3578.

R.A. 18^h 5^m 57^s ; Decl. +18° 15'4.
(9.0 and 10.1.)

1901.485	158.4	1.68	15.2	36:1000
.496	155.8	1.82	15.7	36:1000
.523	156.1	1.74	16.4	36:1000
1901.50	156.8	1.75		

317. DM. +17°3470.

R.A. 18^h 6^m 54^s ; Decl. +17° 11'9.
(8.5 and 8.8.)

1901.496	21.5	1.84	16.3	36: 520
.534	21.4	1.88	20.9	36:1000
.581	21.3	1.90	19.3	12: 600
1901.54	21.4	1.87		

318. DM. +23°3283.

R.A. 18^h 10^m 25^s ; Decl. +23° 33'4.
(10.0 and 11.0.)

1901.661	167.3	0.59	22.8	36:1000
.704	163.9	0.69	22.3	36:1000
.715	167.3	0.56	21.3	36:1000
1901.69	166.2	0.61		

319. DM. +22°3325.

R.A. 18^h 12^m 16^s ; Decl. +22° 47'0.
(9.2 and 9.6.)

1901.661	70.0	0.33	21.7	36:1000
.701	73.6	0.36	22.5	36:1000
.715	71.5	0.32	21.4	36:1000
1901.69	71.7	0.34		

320. DM. +16°3515.

R.A. 18^h 24^m 11^s ; Decl. +16° 9'9.
(9.2 and 9.6.)

1901.581	144.9	1.97	19.9	12: 600
.603	143.1	2.02	21.4	36:1000
.608	143.1	2.13	20.3	36: 520
1901.60	143.7	2.04		

321. DM. +23°3357.

R.A. 18^h 27^m 32^s ; Decl. +23° 5'7.
(9.3 and 11.1.)

1901.610	341.8	4.25	21.5	12: 600
.618	339.2	4.51	20.0	36:1000
.737	339.4	4.46	20.5	36:1000
1901.66	340.1	4.41		

Hu. 322. DM. +17°3627.

R.A. 18^h 29^m 20^s ; Decl. +17° 39'3.
(8.0 and 8.2.)

1901.603	85.2	0.20	21.7	36:1500
.608	87.0	0.18	20.6	36:1500
.623	86.7	0.20	20.3	36:1500
1901.61	86.3	0.19		

This is the principal component of Σ 2339. The mean of two measures of the STRUVE pair is

1901.61	270.6	2.45	2n	36-inch	Hu.
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323. DM. +21°3495.

R.A. 18^h 32^m 32^s ; Decl. +21° 15'0.
(8.9 and 10.2.)

1901.718	151.8	0.23	20.7	36:1500
.737	151.9	0.22	20.7	36:1000
.793	154.6	0.22	21.1	36:1500
1901.75	152.8	0.22		

324. DM. +21°3518.

R.A. 18^h 36^m 36^s ; Decl. +21° 36'1.
(9.1 and 11.0.)

1901.718	110.9	0.58	21.0	36:1000
.737	113.2	0.64	21.9	36:1000
.793	115.5	0.68	21.1	36:1000
1901.75	113.2	0.63		

325. DM. +20°3919.

R.A. 18^h 40^m 1^s ; Decl. +20° 46'2.
(9.3 and 10.0.)

1901.737	14.3	0.32	22.4	36:1000
.778	10.0	0.28	21.0	36:1000
.793	13.5	0.36	21.3	36:1500
1901.77	12.6	0.32		

326. DM. +23°3463.

R.A. 18^h 44^m 28^s ; Decl. +23° 23'5.
(8.7 and 9.0.)

1901.792	99.7	0.23	21.6	36:1500
.794	102.9	0.24	21.3	36:1500
1901.79	101.3	0.24		

327. DM. +21°3565.

R.A. 18^h 45^m 29^s ; Decl. +21° 17'4.
(9.0 and 9.1.)

1901.778	99.5	0.24		36:1500
.792	96.5	0.29	21.4	36:1500
.794	95.1	0.23	21.2	36:1500
1901.79	97.0	0.25		

328. DM. +20°3950.

R.A. 18^h 45^m 42^s ; Decl. +20° 36'4.
(9.0 and 10.3.)

1901.778	189.4	4.75	21.7	36:1000
.787	188.1	4.69		12: 600
.792	189.4	4.67	21.5	36:1000
1901.79	189.0	4.70		

Hu. 329. DM. +21°3619.R.A. 18^h 53^m 10^s ; Decl. +21° 20'8.

(9.1 and 9.6.)

1901.792	62°2	0'16	22 ^h 0	36:1500
.794	61.9	0.15	21.6	36:1500
1901.79	62.0	0.16		

330. DM. +19°3856.R.A. 18^h 54^m 19^s ; Decl. +19° 27'7.

(9.0 and 9.3.)

1901.587	30.0	0.83	20.9	12: 600
.602	31.6	0.70	22.1	36:1000
.608	31.8	0.72	21.0	36:1000
1901.60	31.1	0.75		

331. DM. +17°3805.R.A. 18^h 54^m 41^s ; Decl. +18° 1'9.

(8.4 and 12.4.)

1901.587	193.3	0.87	20.2	12: 600
.603	192.5	0.79	22.0	36:1000
.608	194.5	0.81	20.8	36:1000
1901.60	193.4	0.82		

332. DM. +22°3545.R.A. 18^h 54^m 50^s ; Decl. +22° 21'8.

(8.8 and 9.0.)

1901.792	198.3	0.41	21.8	36:1500
.794	197.1	0.36	21.5	36:1500
1901.79	197.7	0.38		

333. DM. +17°3881.R.A. 19^h 7^m 17^s ; Decl. +17° 43'1.

(8.1 and 13.2.)

1901.496	88.0	1.96	17.3	36: 520
.548	85.0	2.01	21.5	36:1000
.564	83.6	2.12	22.0	36: 520
.567	85.7	1.94	17.1	36: 520
1901.54	85.6	2.01		

334. DM. +17°3883.R.A. 19^h 7^m 25^s ; Decl. +17° 59'1.

(8.5 and 11.0.)

1901.496	244.4	1.54	17.5	36:1000
.548	244.7	1.62	21.2	36:1000
.564	245.5	1.57	21.8	36:1000
1901.54	244.9	1.58		

335. DM. +19°3949.R.A. 19^h 9^m 12^s ; Decl. +20° 1'7.

(7.3 and 11.0.)

1901.600	221.9	0.48	23.0	36:1000
.603	223.2	0.49	22.4	36:1000
.623	221.7	0.49	21.9	36:1000
1901.61	222.3	0.49		

Hu. 336. DM. +18°4017.R.A. 19^h 12^m 50^s ; Decl. +18° 42'3.

(8.9 and 9.2.)

1901.600	199°4	1'54	23 ^h 2	36:1000
.603	199.9	1.42	22.5	36:1000
.608	200.2	1.52	21.5	36: 520
1901.60	199.8	1.49		

337. DM. +17°3924.R.A. 19^h 14^m 21^s ; Decl. +17° 25'4.

(8.6 and 9.0.)

1901.488	65.8	0.25	20.9	36:1500
.496	68.2	0.27	18.2	36:1500
.548	71.9	0.28	21.9	36:1000
1901.51	68.6	0.27		

338. DM. +17°3935.R.A. 19^h 16^m 40^s ; Decl. +17° 30'5.

(9.4 and 9.4.)

1901.488	107.1	0.31	20.6	36:1500
.496	112.7	0.30	18.4	36:1500
.548	108.3	0.32	22.0	36:1000
1901.51	109.4	0.31		

339. DM. +18°4063.R.A. 19^h 20^m 38^s ; Decl. +18° 27'2.

(8.6 and 8.6.)

1901.488	43.1	0.51	21.4	36:1000
.548	44.3	0.58	22.2	36:1000
.564	46.2	0.50	22.5	36:1000
1901.53	44.5	0.53		

340. DM. +18°4092.R.A. 19^h 23^m 55^s ; Decl. +18° 16'8.

(9.0 and 9.3.)

1901.488	123.2	0.86	21.6	36:1000
.548	126.0	0.81	22.6	36:1000
.564	125.3	0.88	22.7	36:1000
1901.53	124.8	0.84		

341.R.A. 19^h 29^m 6^s ; Decl. +18° 27'5.

(9.3 and 12.0.)

1901.600	119.9	2.17	23.5	36:1000
.603	120.0	2.15	23.0	36:1000
.608	120.7	2.20	22.0	36:1000
1901.60	120.2	2.17		

342. DM. +17°4029.R.A. 19^h 32^m 38^s ; Decl. +17° 9'3.

(9.0 and 9.8.)

1901.600	255.2	4.55	17.7	36: 520
.603	254.7	4.65	23.0	36: 520
.608	255.3	4.87	22.1	36: 520
1901.60	255.1	4.69		

Hu. 343. DM. +16°3976.

R.A. 19^h 38^m 20^s ; Decl. +16° 56'7.
(9.1 and 9.5.)

1901.564	30°6	0'22	22°0	36:1500
.603	23.5	0.22	23.1	36:1500
.608	29.9	0.20	22.0	36:1500
.658	21.4	0.24	22.1	36:1900
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1901.61	26.4	0.22		

344. DM. +18°4232.

R.A. 19^h 41^m 48^s ; Decl. +18° 6'9.
(8.9 and 10.5.)

1901.488	332.7	0.30	18.5	36:1500
.567	328.3	0.25	17.9	36:1500
.623	328.1	0.33	21.2	36:1000
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1901.56	329.7	0.29		

345. DM. +17°4084.

R.A. 19^h 42^m 16^s ; Decl. +17° 18'5.
(9.0 and 9.8.)

1901.488	104.0	3.88	17.8	36: 520
.564	105.1	3.92	23.0	36: 520
.567	103.1	3.82	18.0	36:1000
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1901.54	104.1	3.87		

346. DM. +16°4019.

R.A. 19^h 43^m 5^s ; Decl. +16° 51'6.
(8.8 and 9.5.)

1901.488	180.2	0.58	17.2	36:1000
.608	184.0	0.55	23.0	36:1000
.623	184.2	0.59	22.5	36:1000
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1901.57	182.8	0.57		

347. DM. +18°4242.

R.A. 19^h 43^m 10^s ; Decl. +19° 2'1.
(8.5 and 11.5.)

1901.488	341.5	1.16	19.0	36:1000
.564	337.2	1.01	23.5	36:1000
.567	343.8	1.11	17.4	36:1000
.608	339.8	0.94	23.5	36:1000
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1901.56	340.6	1.06		

348. DM. +16°4007.

R.A. 19^h 43^m 42^s ; Decl. +16° 56'0.
(9.0 and 12.8.)

1901.488	114.3	1.40	17.6	36:1000
.603	114.1	1.36	23.2	36:1000
.608	113.5	1.33	22.3	36:1000
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1901.57	114.0	1.36		

349. DM. +16°4023.

R.A. 19^h 45^m 28^s ; Decl. +16° 46'6.
(8.4 and 12.8.)

1901.488	235.9	2.24	17.4	36:1000
.564	238.9	2.52	23.5	36: 520
.608	236.4	2.44	23.3	36: 520
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1901.55	237.1	2.40		

Hu. 350. DM. +19°4183.

R.A. 19^h 47^m 11^s ; Decl. +19° 53'3.
(8.9 and 9.3.)

1901.488	46°1	3'30	20°0	36:1000
.567	45.8	3.48	17.7	36:1000
.608	46.6	3.41	23.7	36:1000
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1901.55	46.2	3.40		

351. DM. +19°4187.

R.A. 19^h 47^m 48^s ; Decl. +19° 35'8.
(8.0 and 12.2.)

1901.488	152.8	2.05	19.5	36: 520
.567	153.2	2.04	17.5	36:1000
.608	153.0	1.91	23.9	36: 520
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1901.55	153.0	2.00		

352. DM. +17°4188.

R.A. 19^h 55^m 51^s ; Decl. +17° 40'1.
(8.6 and 9.1.)

1901.792	260.0	0.24	22.3	36:1500
.794	263.0	0.22	21.8	36:1500
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1901.79	261.5	0.23		

353. DM. +19°4258.

R.A. 19^h 58^m 13^s ; Decl. +19° 48'8.
(8.9 and 10.5.)

1901.792	338.2	0.47	22.5	36:1000
.794	339.1	0.36	21.9	36:1500
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1901.79	338.6	0.41		

354. DM. +17°4233.

R.A. 20^h 4^m 43^s ; Decl. +18° 4'2.
(8.8 and 13.0.)

1901.677	19.1	0.55	21.3	36:1000
.685	16.0	0.59	23.4	36:1000
.715	21.0	0.53	23.2	36:1000
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1901.69	18.7	0.56		

355. DM. +19°4299.

R.A. 20^h 4^m 52^s ; Decl. +19° 46'5.
(9.0 and 13.0.)

1901.661	350.3	1.16	21.3	36:1000
.677	355.5	1.01	21.5	36:1000
.685	349.8	1.05	23.2	36:1000
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1901.67	351.9	1.07		

356. DM. -12°5686.

R.A. 20^h 13^m 23^s ; Decl. -12° 20'0.
(9.4 and 9.5.)

1900.672	88.9	0.69	19.3	36: 520
1901.523	91.3	0.73	20.9	36:1000
.658	92.9	0.73	21.3	36:1000
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1901.28	91.0	0.72		

Hu. 357. DM. +17°4282.R.A. 20^h 13^m 43^s ; Decl. +18° 1'0.

(7.5 and 12.6.)

1901.671	195.1	1.75	20.1	12: 600
.677	198.0	1.96	21.1	36:1000
.685	197.8	1.90	21.0	36:1000
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1901.68	197.0	1.87		

358. DM. -11°5300.R.A. 20^h 14^m 30^s ; Decl. -11° 27'1.

(9.1 and 10.5.)

1901.523	94.2	0.44	21.1	36:1000
.658	96.1	0.52	21.4	36:1000
.661	96.1	0.46	20.7	36:1000
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1901.61	95.5	0.47		

359. DM. +18°4460.R.A. 20^h 15^m 32^s ; Decl. +18° 29'4.

(9.5 and 9.5.)

1901.600	32.3	0.34	0.0	36:1000
.608	31.5	0.32	0.0	36:1000
.649	29.6	0.28	19.9	36:1000
.685	30.4	0.35	23.6	36:1000
<hr/>				
1901.64	30.9	0.32		

360. DM. +16°4227.R.A. 20^h 15^m 56^s ; Decl. +16° 14'7.

(9.3 and 9.3.)

1901.715	136.4	0.19	23.4	36:1500
.738	138.0	0.23	21.7	36:1000
.793	135.7	0.23	22.8	36:1500
<hr/>				
1901.75	136.7	0.22		

361. DM. +18°4485.R.A. 20^h 19^m 46^s ; Decl. +18° 49'3.

(8.5 and 12.3.)

1901.600	193.0	0.42	0.5	36:1000
.649	185.6	0.40	20.2	36:1000
.658	190.6	0.48	22.3	36:1000
<hr/>				
1901.64	189.7	0.43		

362. DM. +18°4569.R.A. 20^h 34^m 57^s ; Decl. +18° 35'8.

(9.0 and 9.4.)

1901.485	306.5	0.48	17.8	36:1000
.649	306.2	0.56	20.3	36:1000
.658	304.2	0.49	22.5	36:1000
<hr/>				
1901.60	305.7	0.51		

363. DM. +17°4477.R.A. 20^h 54^m 8^s ; Decl. +17° 59'4.

(9.3 and 9.3.)

1901.600	96.8	0.56	19.8	36:1500
.638	93.7	0.56	20.5	36:1000
.649	92.3	0.67	20.4	36:1000
<hr/>				
1901.63	94.3	0.60		

Hu. 364. DM. +22°4306.R.A. 21^h 2^m 21^s ; Decl. +22° 41'5.

(9.5 and 9.8.)

1901.644	86.0	0.28	22.7	36:1500
.649	85.0	0.32	24.0	36:1000
.685	84.5	0.26	23.9	36:1000
<hr/>				
1901.66	85.2	0.29		

365. DM. +17°4509.R.A. 21^h 4^m 17^s ; Decl. +17° 23'5.

(9.0 and 13.2.)

1901.600	16.4	1.11	20.2	36:1000
.638	18.7	1.05	20.7	36:1000
.649	17.2	0.95	20.6	36:1000
<hr/>				
1901.63	17.4	1.04		

366. DM. -17°6195.R.A. 21^h 4^m 20^s ; Decl. -17° 39'1.

(9.4 and 9.8.)

1900.776	276.8	0.29	22.4	36:1000
1901.545	277.6	0.25	21.4	36:1000
.658	282.8	0.28	21.6	36:1000
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1901.33	279.1	0.27		

367. DM. +16°4468.R.A. 21^h 5^m 53^s ; Decl. +16° 25'6.

(8.9 and 9.8.)

1901.600	7.9	0.28	20.4	36:1000
.638	10.4	0.27	20.9	36:1000
.649	12.0	0.28	20.7	36:1000
<hr/>				
1901.63	10.1	0.28		

368. DM. +17°4542.R.A. 21^h 13^m 17^s ; Decl. +18° 5'9.

(9.0 and 10.7.)

1901.600	40.4	0.39	20.5	36:1000
.638	43.5	0.36	21.0	36:1000
.658	41.3	0.35	22.6	36:1000
<hr/>				
1901.63	41.7	0.37		

369. DM. +16°4523.R.A. 21^h 18^m 53^s ; Decl. +16° 51'2.

(8.9 and 12.8.)

1901.600	12.6	1.24	20.7	36:1000
.638	14.2	1.32	21.2	36:1000
.649	10.8	1.50	21.2	36:1000
<hr/>				
1901.63	12.5	1.35		

370. DM. +20°4906.R. A. 21^h 20^m 6^s ; Decl. + 20° 50'1.

(8.8 and 13.6.)

1901.649	111.0	1.93	24.2	36:1000
.677	109.9	2.06	23.0	36:1000
.685	112.4	2.10	24.1	36:1000
.704	107.9	2.09	23.1	36:1000
<hr/>				
1901.68	110.3	2.04		

Hu. 371. DM. +23°4346.R.A. 21^h 30^m 55^s ; Decl. +24° 0'4.

(7.0 and 7.5.)

1901.756	166.0	0.19	23.2	36:1500
.778	160.2	0.24	23.2	36:1500
.792	159.7	0.24	23.7	36:1500
.794	164.8	0.23	22.2	36:1500
<hr/>				
1901.78	162.7	0.22		

372. DM. +22°4445.R.A. 21^h 33^m 44^s ; Decl. + 23° 8'9.

(9.0 and 9.0.)

1901.756	143.6	0.29	23.5	36:1500
.778	142.7	0.28	23.3	36:1500
.793	140.6	0.32	23.9	36:1000
<hr/>				
1901.78	142.2	0.30		

373. DM. +17°4626.R.A. 21^h 37^m 42^s ; Decl. + 17° 12'2.8

(8.5 and 12.0.)

1901.600	318.2	0.74	21.4	36:1000
.638	317.0	0.87	21.3	36:1000
.649	315.6	1.03	21.5	36:1000
.652	317.1	1.00	20.6	12: 600
<hr/>				
1901.63	317.0	0.91		

374. DM. +23°4379.R.A. 21^h 38^m 52^s ; Decl. +23° 25'7.

(9.0 and 9.0.)

1901.756	35.2	0.35	23.7	36:1000
.778	39.7	0.35	23.6	36:1500
.792	40.0	0.28	24.0	36:1500
.794	39.0	0.34	22.5	36:1500
<hr/>				
1901.78	38.5	0.33		

375. DM. — 16°5938.R.A. 21^h 39^m 36^s ; Decl. — 16° 3'4.

(9.0 and 9.2.)

1900.647	171.5	0.43	23.5	36:1000
.743	167.6		23.3	36:1000
1901.545	169.8	0.42	21.5	36:1000
<hr/>				
1900.98	169.6	0.42		

376. DM. +19°4780.R.A. 21^h 41^m 30^s ; Decl. +19° 33'8.

(8.5 and 12.0.)

1901.600	16.7	1.43	0.6	36:1000
.649	17.9	1.56	21.6	36:1000
.658	18.4	1.41	23.2	36:1000
<hr/>				
1901.64	17.7	1.47		

377. DM. — 21°6093.R.A. 21^h 41^m 56^s ; Decl. — 21° 13'5.

(A = 9.5, B = 9.8, C = 11.8.)

A and B.

1900.776	137.5	0.54	23.0	36:1000
1901.573	141.5	0.54	22.6	36:1000
.584	136.9	0.53	23.5	36:1000
<hr/>				
1901.31	138.6	0.54		

AB and C.

1900.776	341.6	4.81	23.0	36:1000
1901.484	342.0	4.57	23.8	36:1000
<hr/>				
1901.13	341.8	4.69		

Hu. 378. DM. +20°5016.R.A. 21^h 43^m 24^s ; Decl. +20° 31'8.

(9.0 and 9.8.)

1901.644	345.2	0.54	23.9	36:1000
.685	346.3	0.61	24.3	36:1000
.701	346.1	0.68	21.0	36:1000
<hr/>				
1901.68	345.9	0.61		

379. DM. +4°4759.R.A. 21^h 48^m 1^s ; Decl. +4° 50'2.

(9.0 and 10.5.)

1900.647	253.9	1.41	20.4	36:1000
1901.573	253.0	1.33	20.7	36:1000
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1901.11	253.5	1.37		

380. DM. — 20°6313.R.A. 21^h 48^m 12^s ; Decl. — 20° 29'0.

(9.5 and 9.5.)

1900.776	57.7	0.38	23.3	36:1000
1901.573	56.3	0.44	22.4	36:1000
.584	54.7	0.36	24.0	36:1000
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1901.31	56.2	0.39		

This pair is the companion of β 168.**381. DM. +5°4903.**R.A. 21^h 51^m 32^s ; Decl. +6° 4'3.

(9.4 and 9.5.)

1900.647	43.1	0.56	21.3	36:1000
1901.573	40.8	0.49	21.2	36:1000
.584	41.1	0.56	22.8	36:1000
<hr/>				
1901.27	41.7	0.54		

382. DM. +18°4892.R.A. 21^h 51^m 48^s ; Decl. +19° 11'8.

(9.2 and 9.6.)

1901.638	173.2	0.43	21.5	36:1000
.649	171.5	0.41	21.9	36:1000
.658	170.5	0.35	23.2	36:1000
<hr/>				
1901.65	171.7	0.40		

383. DM. +20°5127.R.A. 22^h 14^m 51^s ; Decl. +20° 36'9.

(9.0 and 9.0.)

1901.685	44.1	0.23	1.8	36:1000
.704	42.4	0.24		36:1000
.715	41.2	0.25	0.8	36:1000
<hr/>				
1901.70	42.6	0.24		

Hu. 384. DM. +20°5135.R.A. 22^h 17^m 35^s ; Decl. +21° 00'8.
(9.4 and 11.0.)

1901.704	317.9	0.32	24.5	36:1000
.715	318.0	0.32	1.2	36:1000
.738	320.4	0.26	23.7	36:1000
1901.72	318.8	0.30		

385. DM. +21°4746.R.A. 22^h 19^m 9^s ; Decl. +22° 1'6.
(8.7 and 15.0.)

1901.704	77.0	1.34	24.9	36:1000
.756	76.6	1.35	23.9	36:1000
1901.73	76.8	1.35		

386. DM. -18°6130.R.A. 22^h 22^m 38^s ; Decl. -18° 38'7.
(9.0 and 11.5.)

1900.776	224.3	0.55	23.8	36:1000
1901.573	223.1	0.57	23.0	36:1000
.584	221.2	0.59	24.4	36:1000
1901.31	222.9	0.57		

387. DM. -8°5882.R.A. 22^h 24^m 12^s ; Decl. -7° 50'4.
(9.0 and 12.0.)

1901.685	33.6	1.62	21.1	36:1000
.792	33.0	1.68	23.6	36:1000
.794	32.9	1.64	24.1	36:1000
1901.76	33.2	1.65		

388. DM. +21°4770.R.A. 22^h 25^m 28^s ; Decl. +21° 57'3.
(8.0 and 8.5.)

1901.704	140.4	0.24	1.2	36:1500
.738	143.6	0.24	23.9	36:1000
.756	139.9	0.24	24.1	36:1500
1901.73	141.3	0.24		

389. DM. -19°6299.R.A. 22^h 28^m 46^s ; Decl. -19° 11'8.
(8.5 and 8.7.)

1900.776	102.9	0.36	24.0	36:1000
1901.573	100.6	0.38	23.4	36:1000
.584	104.2	0.33	24.5	36:1000
1901.31	102.6	0.36		

390. DM. -19°6303.R.A. 22^h 29^m 45^s ; Decl. -18° 56'0.
(8.4 and 13.5.)

1900.776	97.0	0.85	0.2	36:1000
1901.584	98.6	0.77	1.0	36:1000
1901.18	97.8	0.82		

Hu. 391. DM. +23°4575.R.A. 22^h 32^m 40^s ; Decl. +23° 25'1.
(9.2 and 10.5.)

1901.685	167.7	0.82	21.5	36:1000
.701	166.5	0.71	21.3	36: 520
.738	166.8	0.68	24.4	36:1000
1901.71	167.0	0.73		

392. DM. +18°5015.R.A. 22^h 34^m 7^s ; Decl. +18° 18'7.
(9.2 and 9.5.)

1901.649	346.0	0.50	22.4	36:1000
.652	343.0	0.55	21.2	12: 600
.658	344.5	0.47	24.7	36:1000
1901.65	344.5	0.51		

393. DM. +19°4976.R.A. 22^h 34^m 19^s ; Decl. +19° 42'3.
(9.0 and 11.5.)

1901.649	257.8	0.39	22.5	36:1000
.658	255.9	0.38	24.8	36:1500
.685	255.6	0.42	22.2	36:1000
1901.66	256.4	0.40		

394. DM. +5°5060.R.A. 22^h 38^m 00^s ; Decl. +6° 5'7.
(9.8 and 11.5.)

1900.776	69.9	0.63	2.7	36:1000
1901.573	68.0	0.60	21.7	36:1000
.584	72.1	0.70	23.4	36:1000
1901.31	70.0	0.64		

395. DM. +23°4595.R.A. 22^h 38^m 3^s ; Decl. +23° 16'5.
(9.3 and 9.5.)

1901.685	140.5	0.53	21.7	36:1000
.701	140.8	0.46	21.5	36:1000
.738	141.9	0.47	24.2	36:1000
1901.71	141.1	0.49		

This pair is the principal component of h 1800 =
h 3136. A measure of A and C gives

1901.685	64.8	11.28	21.7	36:1000
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396. DM. +5°5105.R.A. 22^h 49^m 51^s ; Decl. +5° 37'8.
(8.8 and 11.5.)

1900.776	30.3	4.76	2.8	36:1000
1901.573	29.2	4.43	22.0	36:1000
.584	28.3	4.49	23.5	36:1000
1901.31	29.3	4.56		

Hu. 397. DM. +18°5075.

R.A. 22^h 52^m 39^s ; Decl. +18° 46'7.

(9.1 and 11.7.)

1901.649	263°6	1'12	22.9	36:1000
.658	263.8	1.22	1.7	36:1000
.684	261.6	1.05	22.3	36:1000
<hr/>				
1901.66	263.0	1.13		

398. DM. +17°4853.

R.A. 22^h 57^m 27^s ; Decl. +18° 4'3.

(8.7 and 9.0.)

1901.649	321.7	0.48	22.8	36:1000
.658	320.8	0.43	1.5	36:1500
.685	322.4	0.41	22.7	36:1000
<hr/>				
1901.66	321.6	0.44		

Hu. 399. DM. -16°6250.

R.A. 23^h 11^m 24^s ; Decl. -16° 6'7.

(8.5 and 10.5.)

1900.806	323°7	0'70	23.7	12: 600
1901.737	324.3	0.72	22.9	36:1000
.794	320.1	0.69	23.9	36:1000
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1901.11	322.7	0.70		

400. DM. +17°4891.

R.A. 23^h 12^m 39^s ; Decl. +17° 45'6.

(7.4 and 8.8.)

1901.756	251.1	0.28	2.1	36:1000
.778	248.5	0.30	0.9	36:1000
.792	247.6	0.38	0.5	36:1000
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1901.78	249.1	0.32		

PUBLICATIONS OF THE LICK OBSERVATORY, VOLUME V

By authority of the Regents of the University of California, the Lick Observatory has just issued Volume V of its Publications, containing "Micrometrical Observations of the Double Stars Discovered at Pulkowa, Made with the Thirty-six-Inch and Twelve-Inch Refractors of the Lick Observatory; Together with the Mean Results of the Previous Observations of These Stars; by W. J. HUSSEY, Astronomer in the Lick Observatory."

Copies for domestic correspondents have been distributed by mail. Copies for foreign correspondents have been forwarded to the Smithsonian Institution, and will in due time reach their destinations through its kind offices.

W. W. CAMPBELL.

November 6, 1901.