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Measures of Eros.
" South Pole.

No. 15

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4

Measures of positions of Eros and Comparison Stars with reticule micrometer-eye-piece. 20.6441 from I 9801. Films ride up and N. at the top of frame.

Plate 20 6441 March 3, 1899.

	x	y	A.	B.	C.	D.	a+b.	B+D	b-a	B-D	x × 163.	y × 163	c-a ×.397	B-D ×.398
Eros.	15.9	5.2	15	40	190	163	205	203	+175	-123	2445.	815.	+69.5	-49.0
Eros	15.9	5.2	16	40	190	165	206	205	+174	-125	2445.	815.	+69.1	-49.8
a	0.6	4.2	90	21	115	183	205	204	+25	-162	0	652	+9.9	-64.5
b	2.5	9.9	111	190	92	15	203	205	-19	+175	326.	1467	-7.5	+69.6
c	4.7	22.6	60	110	145	94	205	204	+85	+16	652.	3586.	+33.7	+6.4
d	6.8	14.1	40	14	165	191	205	205	+125	-177	978	2282	+49.6	-70.4
e	14.3	23.7	136	150	69	55	205	205	-67	+95	2282	3749	-26.6	+37.8
f	12.6	6.1	80	20	126	185	206	205	+46	-165	1956	978	+18.3	-65.7
g	13.4	4.9	116	195	89	10	205	205	-27	+185	2119	652	-10.7	+73.6
h	20.3	5.7	150	155	56	50	206	205	-94	+105	3260	815	-37.3	+41.8
k	21.4	13.6	118	114	88	91	206	205	-30	+23	3423	2119	-11.9	+9.2
l	22.2	1.6	186	130	40	75	206	205	-126	+55	3586	163	-50.0	+21.9
m	22.8	4.3	45	50	160	155	205	205	+115	-105	3586	652	+45.7	-41.8
n	25.7	8.8	71	180	133	26	204	206	+62	+154	4075	1304	+24.6	+61.3
o	28.8	12.0	20	200	186	6	206	206	+166	+194	4564	1956	+65.9	+77.2
Eros	15.9	5.2	16	40	190	163	206	203	+174	-123	2445	815	+69.1	-49.0
Eros	15.9	5.2	15	40	190	164	205	204	+175	-124	2445	815	+69.5	-49.4
a	0.6	4.1	89	21	116	183	205	204	+27	-162	0	652	+10.7	-64.5
b	2.4	9.9	110	190	96	15	206	205	-14	+175	326.	1467	-5.6	+69.6
c	4.7	22.5	60	109	145	97	205	206	+85	+12	652.	3586	+33.7	+4.8
d	6.8	14.1	40	15	165	190	205	205	+125	-175	978.	2282.	+49.6	-69.6
e	14.3	23.7	138	150	67	55	205	205	-71	+95	2282	3749	-28.2	+37.8
f	12.6	6.1	80	20	125	185 194	205	205	+45	-165	1956.	978.	+17.9	-65.7
g	13.4	4.9	115	194	90	11	205	205	-25	+183	2119	652	-9.9	+72.8
h	20.3	5.7	150	156	56	50	206	206	-94	+106	3260	815	-37.3	+42.2
k	21.4	13.6	118	115	87	90	205	205	-31	+25	3423	2119	-12.3	+10.0
l	22.2	1.6	165	130	40	75	205	205	-125	+55	3586.	163	-49.6	+21.9
m	22.8	4.2	50	49	155	156	205	205	+105	-107	3586.	652	+41.7	-42.6
											5746	5736		
											28	28		

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Corr. x.	Corr. y
2514.5	766.0
2514.1	765.2
9.9	587.5
318.5	1536.6
685.7	3592.4
1027.6	2211.6
2255.6	3786.8
1974.3	912.3
2108.3	725.6
3222.7	856.8
3411.1	2128.2
3536.0	184.9
3631.7	610.2
4099.6	1365.3
4629.9	2033.2
2514.6	766.0
2514.5	765.6
10.7	587.5
320.4	1536.6
685.7	3590.8
1027.6	2212.4
2253.8	3786.8
1973.9	912.3
2109.1	724.8
3222.7	857.2
3410.7	2129.0
3536.4	184.9
3627.7	609.4

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6 Cont.

24.15 Plate 20 6441 March 3 1899

	x	y	A.	B.	C.	D.	a+b	B+D	b-a	B-D	x×163	y×163	b-a ×.397	B-D ×.398
✓	N.	25.6	8.8	71	180	184	25	205	205	+63	+155	4075	1304	+25.0	+61.7
✓	O.	28.8	12.0	25	201	180	4	205	205	+155	+197	4564	1956	+61.5	+78.4
✓	Eros	15.9	5.2	15	41	191	160	206	201	+176	-119	2445	815	+69.9	-47.4
✓	Eros	15.9	5.2	15	40	190	161	205	201	+175	-121	2445	815	+69.5	-48.2

24.30

28 5746 / 4 / 821 / 32) 6567 (205.219 / 410.44 : 163 :: 2x : 2X / 0.397x = X

205.22 : ½163 :: x : X

821/4 812/4 9

28 5736 / 4 / 8.12 / 32) 6548 (204.6250 / 0.398y = Y

204.62 : ½163 :: y : Y / 409.24 : 163 :: 2y : 2Y

25.18 Plate 20 6377 from I 9832

	x	y	A.	B.	C.	D.	a+b	B+D	b-a	B-D	x×163	y×163	c-a ×.397	B-D ×.398
✓ Center of image	Eros	15.0	13.0	201	200	3	5	204	205	-198	+195	2445	2119	-78.6	+77.6
✓ Center of brightest part of image	Eros	15.1	13.1	194	8	11	196	205	204	-183	-188	2445	2119	-72.7	-74.8
✓ centre	Eros	15.0	13.0	200	201	5	3	205	204	-195	+198	2445	2119	-77.4	+78.8
✓ Centre of br. patt	Eros	15.1	13.1	196	9	10	196	206	205	-186	-187	2445	2119	-73.8	-74.4
✓	L.	1.1	3.3	200	76	5	130	205	206	-195	-54	163	489	~~-214~~ 77	-21.5
✓	k.	1.4	11.3	119	57	88	150	207	204	-31	-96	163	1793	-12.3	-38.2
✓	m.	3.6	2.1	66	20	139	184	205	204	+73	-164	489	326	+29.0	-65.3
✓	n.	6.1	6.9	188	201	16	5	204	206	-172	+196	~~1793~~ 978	978	-68.3	+78.0
✓ ×	o.	8.9	10.4	1	90	203	125	204	(omit in mean) (215)	+202	-35	1304	1630	+80.2	-13.9
✓	p.	12.1	13.4	195	86	10	120	205	206	-185	-34	1956	2119	-73.4	-13.5
✓ ×	q.	13.4	12.7	114	140	81	66	(omit in mean) (195)	206	-33	+74	2119	1956	-13.1	+29.5
✓	r.	14.9	8.4	5	88	200	117	205	205	+195	+29	2282	1304	+77.4	-11.5
✓	s.	15.9	16.1	10	15	196	190	206	205	+186	-175	2445	2608	+73.8	-69.6
✓	t.	16.4	14.8	119	170	86	35	205	205	-33	+135	2608	2282	-13.1	+53.7
✓	u.	20.3	12.6	150	120	54	85	204	205	-96	+35	3260	1956	-38.1	+13.9
✓	w.	20.6	7.3	61	55	144	150	205	205	+83	-95	3260	1141	+33.0	-37.8
✓	x	21.3	0.3	155	75	50	— *	205	—	-105	—	3423	0	-41.7	—
✓ 25.35	z	21.2	19.9	165	189	40	17	205	206	-125	+172	3423	3097	-49.6	+68.5

3485/17 3281/16

* cannot see line of square

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4100.0	1365.7
4625.5	2034.4
2514.9	767.6
2514.5	766.8

2366.4	2196.6
2372.3	2044.2
2367.6	2197.8
2371.2	2044.6
85.6	467.5
150.7	1754.8
518.0	260.7
909.7	1056.0
1384.2	1616.1
1882.6	2105.5
2105.9	1985.5
2359.4	1292.5
2518.8	2538.4
2594.9	2335.7
3221.9	1969.9
3293.0	1103.2
3381.3	—
3373.4	3165.5

205-75 = 130 assume value ② B-D = -55 x.398 = -21.9 y = -21.9

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8

Cont.

25.35

Plate 20637 F I 9832 March 3, 1899.

	x	y	A.	B.	C.	D.	a+c	B+D	c-a	D-B	x×163	y×163	C-A ×.397	B-D ×.398
A.	23.2	4.1	167	20	38	185	205	205	-129	-165	3749	652	-51.2	-757
B.	23.3	19.8	151	175	53	30	204	205	-98	+145	3749	3097	-38.9	+57.7
C.	23.6	19.4	76	80	130	125	206	205	+54	-45	3749	3097	+21.4	-17.9
D.	24.3	17.0	135	205	71	0	206	205	-64	+205	3912	2771	-25.4	+81.6
E.	25.3	20.9	144	198	61	7	205	205	-83	+191	4075	3260	-33.0	+76.0
F.	26.6	4.9	78	189	129	17	207	206	+51	+172	4238	652	+20.2	+68.5
K.	27.3	8.2	161	44	45	163	206	207	-116	-119	4401	1304	-46.1	-47.4
L.	27.8	4.7	20	150	186	55	206	205	+166	+95	4401	652	+65.9	+37.8
M.	28.1	1.1	185	0	20	200	205	200	-165	-200	4564	163	-65.5	-79.6
N.	29.1	16.2	[illegible]	40	11	160	—	200	—	-120	4727	2608	—	-47.8
centering Eve	15.0	13.0	200	200	5	4	205	204	-195	+196	2445	2119	-77.4	+78.0
" hr. past Eve	15.1	13.1	195	9	10	196	205	205	-185	-187	2445	2119	-73.4	-74.4
centre of image Eve	15.0	13.0	200	205	5	0	205	205	-195	+205	2445	2119	-77.4	+81.6
26.00 " hr. past Eve	15.1	13.1	195	8	10	195	205	203	-185	-187	2445	2119	-73.4	-74.4
2.3.10 March 5, 1899														
24.49	j.	0.1	3.3	200	78	6	127	206	205	-194	-49	0	489	-77.0	-19.5
	k.	1.4	11.3	120	55	86	150	206	205	-34	-95	163	1793	-13.5	-37.8
	m.	3.6	2.1	69	20	136	185	205	205	+67	-165	489	326	+26.6	-65.7
	n.	6.1	6.9	188	200	17	5	205	205	-171	+195	978	978	-67.9	+77.6
	o.	8.9	10.4	1	80	204	125	205	205	+203	-45	1304	1630	+80.6	-17.9
	p.	12.1	13.4	198	89	7	116	205	205	-191	-27	1956	2119	-75.8	-10.7
	q.	13.4	12.6	115	138	90	67	205	205	-25	+71	2119	1956	-9.9	+28.3
	r.	14.9	8.4	2	85	202	120	204	205	+200	-35	2282	1304	+79.4	-13.9
	s.	15.9	16.1	10	15	196	191	206	206	+186	-176	2445 2608	2608	+73.8	-70.0
	t.	16.4	14.7	121	166	84	39	205	205	-37	+127	2608	2282	-14.7	+50.5
	u.	20.3	12.6	150	120	55	84	205	204	-95	+36	3260	1956	-37.7	+14.3
	w.	20.6	7.3	61	54	145	150	206	204	+84	-96	3260	1141	+33.3	-38.2
	x	21.3	0.3	155	74	50	— †	205	—	-105	—	3423	0	-41.7	—
	z	21.2	19.8	165	190	40	16	205 5543	206 5525	-125	+174	3423	3097	-49.6	+69.3

* Square on edge of plate & line cut off † cannot see line of square

27 27

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36978	586.3	
3710.1	3154.7	
3770.4	3079.1	
3886.6	2852.6	2852.6-163.= 2689.6
4042.0	3336.0	
4258.2	720.5	
4357.9	1256.6	
4466.9	689.8	
4498.5	83.4	
—	25602	205-11= 194 assume a, C-a = -183 x -72.7 x=4654.3
23676	21970	
23716	20446	
23676	22006	
23716	20446	
-77.0	4695	-77.0 / 163 / +86.0
149.5	17562	
5156	2603	
910.1	10556	
13846	1612.1	
18802	2108.3	
2109.1	19843	
23614	1290.1	
25188	25380	
2593.3	23325	
3222.3	1970.3	
3293.3	11028	
3381.3	—	265-74= ~~176~~ 131 assume D B-D= -57 x.398 = -22.7 y = -22.7
33734	31663	

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23.35

Plate 20 6377 fum I 9832. March 5, 1899.

	x	y	A.	B.	C.	D.	a+b	B+D	C-a	B-D	x×163	y×163	C-a ×.397	B-D ×.398
✓	A.	23.2	4.1	165	19	40	186	205	205	-125	-167	3749	652	-49.6	-66.5
✓	B.	23.2	19.8	155	174	50	31	205	205	-105	+143	3749	3097	-41.7	+56.9
✓	b.	23.6	19.4	77	80	129	125	206	205	+52	-45	3749	3097	+20.6	-17.9
✓	D.	24.3	17.0	13½	205	70	0	206	205	-66	+205	3912	2771	-26.2	+81.6
✓	F.	25.3	20.9	145	198	60	15	205	205	-85	+191	4075	3260	-33.7	+76.0
✓	H.	26.6	4.9	79	190	127	15	206	205	+48	+175	4238	652	+19.1	+69.6
✓	K.	27.3	8.2	160	45	45	164	205	209	-115	-119	4401	1304	-45.7	-47.4
✓	L.	27.9	4.7	20	154	190	51	210	205	+170	+103	4401	652	+67.5	+41.0
✓	M.	28.1	1.1	165		40	190	205	—	-125	—	4564	163	-49.6	—
✓	N.	29.1	16.2	*		40	20	161	—	201	—	-121	4727	2608	—	-48.2
✓	re-measured g.		13.4	12.6	115	138	90	66	205	204	-25	+72	2119	1956	-9.9	+28.7
✓	Center of image Eve.		15.0	13.0	200	201	5	4	205	205	-195	+197	2445	2119	-77.4	+78.4
✓	" " hr. part Eve.		15.1	13.1	196	20	10	195	206	204	-186	-186	2445	2119	-73.8	-74.0
✓	C. of image Eve.		15.1	13.0	200	201	5	4	205	205	-195	+197	2445	2119	-77.4	+78.4
✓	" " hr. part Eve.		15.1	13.1	196	8	9	197	205	205	-187	-189	2445	2119	-74.2	-75.2
									2879	2868						
									14	14						

23.55

17 34485
27 55443
14 2879
58) 1190 7 (205.293

205.29 : ½163 :: x : X
X = 0.397x

16 3281
27 5525
14 2868
57) 11674 (204.807

204.81 : ½163 :: y : Y
Y = 0.398y

Remeasures of D6377, see page 44.

24.25

20 6391 fum I 9862

	x	y	A.	B.	C.	D.
~~W.~~	~~7.2~~	3.6	165	134	40	71
~~X.~~	1.6	5.6	66	114	140	91
q.	0.6	9.9	55	200	*	5
r.	3.6	13.0	66	199	140	6
t.	3.9	11.6	5	139	200	66
w.	7.4	8.9	108	198	97	9
x	8.4	23.5	131	110	73	95
z	9.3	16.1	120	10	89	197

* line cut off

Reject

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3699.4	585.5	
3707.3	3153.9	
3769.6	3079.1	
3885.8	2852.6	−1 dw = 2689.6
4041.3	3336.0	
4257.1	721.6	
4355.3	1256.6	
4468.5	693.0	
4514.4	—	205−190 = 15 assume B, B−D = −175 × .398 = −69.6 y = 93.4
—	2559.8	205−20 = 183 " A, C−A = −163 × .397 = −64.7 x = 4662.3
2109.1	1984.7	
2367.6	2197.4	
2371.2	2045.0	
2367.6	2197.4	
2370.8	2043.8	

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12

20 6391 from I 9862.

24.45

March 5, 1899.

	x	y	A.B.	b.D.	a+b	B+D	b-a	B-D	x×163	y×163	C-a	B-D
	Eros.	12.6	14.4	69	75	138	130	207	205	+69	−55	1956	2282	+27.4	−21.8
	Eros.	12.6	14.3	70	75	135	130	205	205	+65	−55	1956	2282	+25.8	−21.8
	9	0.7	9.9	150	200	*	5	—	205	—	+195	0	1467	—	+77.4
	N.	1.6	5.6	65	115	140	90	205	205	+75	+25	163	815	+29.8	+9.9
July 24, 05															
	A.	3.6	12.9	68	200	138	6	206	206	+70	+194	489	1956	+27.8	+77.0
	t.	3.9	11.6	5	140	200	66	205	206	+195	+74	489	1793	+77.4	+29.4
	W	7.2	3.6	165	140	40	70	205	210	−125	+70	1141	489	−49.6	+27.8
	u.	7.4	8.9	106	200	99	6	205	206	−07	+194	1141	1304	−28	+77.0
	y.	8.4	22.5	135	110	70	95	205	205	−65	+15	1304	3749	−25.8	+6.0
	A.	9.3	0.2	165	49	40	156	205	205	−125	−107	1467	0	−49.6	−42.5
Corrected Mar. 23, 1905					39		165		204		−126				−50.0
	z.	9.4	16.1	120	10	85	194	205	204	−35	−184	1467	2608	−13.9	−73.0
	B.	11.4	15.6	121	149	83	56	204	205	−38	+93	1793	2445	−15.1	+36.9
	b.	11.7	15.2	50	41	155	164	205	205	+105	−123	1793	2445	+41.7	−48.8
	D.	12.1	12.7	178	156	27	50	205	206	−151	+106	1956	1956	−59.9	+42.1
	H	12.6	0.6	58	110	149	95	207	205	+91	+15	1956	0	+36.1	+6.0
	G.	13.6	22.9	84	190	121	15	205	205	+37	+175	2119	3586	+14.7	+69.5
	J.	13.5	16.5	85	104	120	101	205	205	+35	+03	2119	2608	+13.9	+1.2
	K.	13.7	3.7	51	151	154	54	205	205	+103	+97	2119	489	+40.9	+38.5
	L.	13.9	0.2	6	40	200	165	206	205	+194	−125	2119	0	+77.0	−49.6
	N.	16.6	11.4	65	70	140	135	205	205	+75	−65	2608	1793	+29.8	−25.8
	O.	18.9	13.0	10	205	199	0	209	205	+189	+205	2934	2119	+75.0	+81.4
	P.	19.4	13.1	120	15	85	190	205	205	−35	−175	3097	2119	−13.9	−69.5
	Q.	20.4	13.0	120	0	85	205	205	205	−35	−205	3260	2119	−13.9	−81.4
	Eros.	12.6	14.3	70	79	136	126	206	205	+66	−47	1956	2282	+26.2	−18.7
25.10	Eros.	12.6	14.4	70	80	135	125	205	205	+65	−45	1956	2282	+25.8	−17.9
22.95 March 6, 1899															
~~25.10~~	9.	0.7	9.9	51	200	*	5	—	205	—	+195	0	1467	—	+77.4
	N.	1.6	5.5	65	115	140	90	205	205	+75	+25	163	815	+29.8	+9.9
July 24, 05															
	A.	3.6	12.9	66	199	139	7	205	206	+73	+192	489	1956	+29.0	+76.2
	t.	3.9	11.6	5	138	201	70	206	208	+196	+68	489	1793	+77.8	+27.0

22.43

* line cut off

5546/27 5957/29

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1899phae.prqj..974L

19834	2260.2	
19824	2260.2	
—	1544.4	C-a ~~+1451 1596 1596~~ Assume C- 155, C-a = +105, +41.7, x = +41.7 ✓
192.8	824.9	
516.8	2033.0	
566.4	1822.4	
1091.4	5168	
1128.2	1381.0	
1278.2	3753.0	
1417.4	~~425~~ -50.0 Use	
1453.1	2535.0	
1777.9	2481.9	
1834.7	2396.2	
1896.1	1998.1	
1992.1	6.0	
21337	3655.5	
2132.9	2609.2	
2159.9	527.5	
2186.0	-49.6	
2637.8	1767.2	
3009.0	2200.4	-163 = 2037.4 ✓
3083.1	2049.5	
3246.1	2037.6	
1982.2	2263.3	
1981.8	2264.1	
—	1544.4	Assume C = 154 C-a = 103 +40.9 x = +40.9 ✓
192.8	824.9	
578.0	2032.2	
566.8	1820.0	

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1899phae.proj..974L

ZC. 6391 from I 9862.

March 6, 1899.

22.43

		x	y	A.	B.	C.	D.	a+b	B+D	b-a	B-D	x×163	y×163	x.397 C-a	x.397 B-D
✓	W	7.2	3.6	165	139	40	71	205	210	−125	+68	1141	489	−49.6	+27.0
✓	w	4.5	8.9	106	199	99	7	205	206	−07	+192	1141	1304	−2.8	+76.2
✓	y	8.4	23.5	132	110	72	95	204	205	−60	+15	1304	3749	−23.8	+6.0
✓	A	9.3	0.2	165	40	41	164	206	204	−124	−124	1467	0	−49.2	−49.2
✓	z	9.4	16.1	120	14	89	192	209	206	−31	−178	1467	2608	−12.3	−70.7
✓	B	11.4	15.6	121	145	83	60	204	205	−38	+85	1793	2445	−15.1	+33.7
✓	c	11.7	15.2	52	40	152	165	204	205	+100	−125	1793	2445	+39.7	−49.6
✓	D	12.1	12.7	178	151	27	54	205	205	−151	+97	1956	1956	−59.9	+38.5
✓	B	12.7	0.6	55	110	150	95	205	205	+95	+15	1956	0	+37.7	+6.0
✓	S	13.6	22.8	85	185	120	20	205	205	+35	+165	2119	3586	+13.9	+65.5
✓	F	13.6	16.5	84	101	121	103	205	204	+37	−02	2119	2608	+14.7	−0.8
✓	K	13.7	3.7	51	150	155	60	206	205	+104	+95	2119	489	+41.3	+37.7
✓	L	13.9	0.3	5	41	199	151	204	202	+194	−120	2119	0	+77.0	−47.6
✓	N	16.6	11.3	66	70	139	135	205	205	+73	−65	2608	1793	+29.0	−25.8
✓	O	18.9	13.0	10	205	195	0	205	205	+185	+205	2934	2119	+73.4	+81.4
✓	P	19.4	13.1	120	15	84	190	204	205	−36	−175	3097	2119	−14.3	−69.5
✓	Q	20.4	13.0	121	206	84	0	205	206	−37	+206	3260	2119	−14.7	+82.1
✓	Eros	12.6	14.4	69	75	136	135	205	210	+67	−60	1956	2282	+26.6	−23.8
✓ 23.10	Eros	12.6	14.4	69	75	136	140	205	(omit in mean 215)	+67	−65	1956	2282	+26.6	−25.8

3896/19 3698/18

a+C
27 5546
19 3896
46) 9442 (205.26

B+D
29 5957
18 3698
47) 9655 (205.426

205.26 : ½163 :: x : X
0.397 x = X

205.43 : y ½163 :: y : Y
0.397 y = Y

23.20 ZC 6390 from I 10095

		x	y	A.	B.	C.	D.	a+b	B+D	b-a	B-D	x×163	y×163	C-a x.397	B-D x.398
✓	Eros	4.6	18.4	85	85	120	121	205	206	+35	−36	652	2934	+13.9	−14.3
✓	Eros	4.6	18.4	86	85	119	120	205	205	+33	−35	652	2934	+13.1	−13.9
✓ 23.27	a	0.5	9.0	128	205	*	0	—	205	—	+205	0	1467		+81.6
** incent off	b	6.3	20.1	135	10	70	195	205	205	−65	−185	978	3260	−25.8	−73.6

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1899phae.proj..974L

1091.4	516.0
1138.2	1380.2
1280.2	3755.0
1417.8	-49.2
1454.7	2537.3
1777.9	2478.7
1832.7	2395.4
1896.1	1994.5
1993.7	6.0
2132.9	3651.5
2133.7	2607.2
2160.3	526.7
2196.0	-47.6
2637.0	1767.2
3007.4	2200.4
3082.7	2049.58
3245.3	2161.4
1982.6	2258.2
1982.6	2256.2

y = 2037.4

2200.7 - 163

2037.8

665.9	2919.7
665.1	2920.1
	1548.6
952.2	3186.4

205 - 128 = 77 assumed b. b-a = -.51 x .397 = -20.2 x = -20.2 y = 1548.6 - 163 = 1385.6

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D 6390 from I 10095

23.27
H20

March 6, 1899.

	x	y	A.	B.	6.	20	a+b	B+D	C-A	B-D	x×163	y×163	C-A ×.397	B-D ×.398
						Str. fil.	619	821						
✓ d.	7.6	5.1	76	11	130	192	206	203	+54	−181	1141	815	+21.4	−72.0
✓ c.	8.7	19.7	55	160	150	45	205	205	+95	+115	1304	3097	+37.7	+45.6
✓ f.	8.9	4.6	4	124	201	80	205	204	+197	+44	1304	~~875~~ 652	+78.2	+17.5
✓ e.	9.4	17.6	120	130	85	80	205	210	−35	+50	1467	2771	−13.9	+19.9
✓ g.	21.6	26.3	61	79	143	125	204	204	+82	−46	3423	4288	+32.6	−18.3
✓ k.	21.9	10.2	10	19	195	186	205	205	+185	−167	3423	1630	+73.4	−66.5
✓ h.	22.4	19.7	120	162	85	42	206	204	−35	+120	3586	3097	−13.9	+47.8
✓ Cor.	4.6	18.4	85	85	121	120	206	205	+36	−35	652	2934	+14.3	−13.9
✓ Cor.	4.6	18.4	86	86	119	120	205	206	+33	−34	652	2934	+13.1	−13.5
✓ a.	0.5	9.0	130	205	*	0	—	205	—	+205	0	1467		+81.6
✓ b.	6.3	20.0	135	10	70	196	205	206	−65	−186	978	3260	−25.8	−74.0
✓ c.	8.6	19.7	55	160	150	45	205	205	+95	+115	1304	3097	+37.7	+45.8
✓ d.	7.6	5.1	~~4~~ 75	11	133	194	208	205	+58	−183	1141	815	+23.0	−72.8
✓ f.	8.9	4.6	5	120	201	85	206	205	+196	+35	1304	652	+77.8	+13.9
✓ e.	9.4	17.6	120	130	85	75	205	205	−35	+55	1467	2771	−13.9	+21.9
✓ g.	21.6	26.4	64	80	141	126	205	206	+77	−46	3423	4238	+30.6	−18.3
✓ k.	21.9	10.2	10	15	196	185	206	200	+186	−170	3423	1630	+73.8	−67.7
✓ h.	22.4	19.7	120	165	86	80	206	205	−34	+125	3586	3097	−13.5	+49.8
✓ Cor.	4.6	18.4	86	85	120	121	206	206	+34	−36	652	2934	+13.5	−14.3
✓ 23.50 Cor.	4.6	18.4	86	85	119	120	205	205	+33	−35	652	2934	+13.1	−13.9

4518 / 22 = 4920 / 24

a+b

22) 4518. ⌊205.364
44
118
110
80
66
140

205.36 : ½163 :: x : X
410.72 : 163 :: 2x : 2X
0.397x = X

B+D

24) 4920. ⌊205.00
48
120

205.00 : ½163 :: x : X
410.00 : 163 :: 2x : 2X
0.398x = X

* line cut off

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1899phae.proj..974L

1162.4	743.0
1341.7	3142.8
1382.2	~~8325~~ 669.5
1453.1	2790.9
3455.6	4219.7
3496.4	1563.5
3572.1	3144.8
66.3	2920.1
665.1	2920.5
	1548.6 $\overset{205}{\wedge}$ 130 = 75 assumed C. C-a = -55 x .397 = -21.8 x = -21.8 y = 1548.6 - 163 = 1385.6
952.2	3186.0
1341.7	3142.8
1164.0	742.2
1381.8	665.9
1453.1	2792.9
3453.6	4219.7
3496.8	1562.3
3572.5	3146.8
665.5	2919.7
665.1	2920.1

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1899phae.proj..974L

D 6375 from I 10215.

March 8, 1899.

22.45

	x	y	A.	B.	C.	D.	A+C	B+D	C-A	B-D	x×163	y×163	C-a ×.398	B-D ×.398
✓ Enc.	~~10.7~~ 11.3	15.1	54	16	151	190	205	206	+97	-174	1630	2445	+38.6	-69.3
✓ Enc.	10.7	15.1	53	15	152	190	205	205	+99	-175	1630	2445	+39.4	-69.6
✓ a	5.0	23.3	205	80	205	125	410	205		-45	815	3749		-17.9
✓ b.	8.6	~~15.3~~ 13.9	85	190	120	15	205	205	+35	+175	1304	2119	+13.9	+69.6
✓ c.	9.2	11.5	175	94	30	110	205	204	-145	-16	1467	1793	-57.7	-6.4
✓ d.	9.3	17.3	136	50	70	155	206	205	-66	-105	1467	2771	-26.3	-41.8
✓ e.	9.3	21.1	131	~~15~~ 1	74	~~150~~ 9	205	205	-57	-175	1467	3423	-22.7	-69.6
✓ f.	10.2	21.6	175	15	30	190	205	205	-145	~~-175~~ +34	1630	3423	-57.7	~~-69.6~~ +13.5 ✓
corr. Mar. 23, 1905.				120		186								
✓ g'	12.6	12.7	75	144	130	61	205	205	+55	+83	1956	1956	+21.9	+33.0
✓ g.	13.3	2.7	137	145	68	60	205	205	-69	+85	2119	326	-27.5	+33.8
✓ h.	16.4	23.4	111	85	94	121	205	206	-17	-36	2608	3749	-6.8	-14.3
✓ k.	17.3	18.1	120	5	85	200	205	205	-35	-195	2771	2934	-13.9	-77.6
✓ l.	21.8	10.4	25	85	180	120	205	205	+155	-35	3423	1630	+61.7	-13.9
✓ Enc.	10.7	15.1	55	15	150	190	205	205	+95	-175	1630	2445	+37.8	-69.6
✓ Enc.	10.7	15.1	54	15	150	190	204	205	+96	-175	1630	2445	+38.2	-69.6
✓ a.	5.0	23.4	204	80	205	125	409	205	+0.1	-45	815	3749	+04	-17.9
✓ b.	8.6	13.9	85	190	120	15	205	205	+35	+175	1304	2119	+13.9	+69.6
✓ c	9.2	11.4	175	95	30	110	205	205	-145	-15	1467	1793	-57.7	-6.0
✓ d.	9.3	17.3	135	50	70	155	205	205	-65	-105	1467	2771	-25.9	-41.8
✓ e.	9.3	21.1	130	15	74	190	204	205	-56	-175	1467	3423	-22.3	-69.6
✓ f.	10.2	21.6	170	15	35	190	205	205	-135	-175	1630	3423	-53.7	-69.6
✓ g'	12.6	12.7	75	145	~~130~~	6~~8~~0	205	205	+55	+85	1956	1956	+21.9	+33.8
✓ g	13.3	2.7	136	145	69	60	205	205	-67	+85	2119	326	-26.7	+33.8
✓ h	16.4	23.4	111	85	95	120	206	205	-16	-35	2608	3749	-6.4	-13.9
✓ k.	17.3	18.1	120	5	85	200	205	205	-35	-195	2771	2934	-13.9	-77.6
✓ l.	21.9	10.4	25	85	180	120	205	205	+155	-35	3423	1630	+61.7	-13.9
✓ Enc.	10.7	15.1	54	15	150	190	204	205	+96	-175	1630	2445	+38.2	-69.6
✓23,35 Enc.	10.7	15.1	55	15	150	189	205	204	+95	-174	1630	2445	+37.8	-69.3

6148 / 30 — 5740 / 25

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1899phae.proj..974L

1668.6 2375.7
1669.4 2375.4
3731.1 815-81.5=733.5
1317.9 2188.6
1409.3 1786.6
1440.7 2729.2
1444.3 3353.4
1572.3 ~~3853.4~~ 3436.5 √
1977.9 1989.0
2091.5 359.8
2601.2 3724.7
2757.1 2856.4
3484.7 1616.1
1667.8 2375.4
1668.2 2375.4
815.4 3731.1 815.4-81.5=733.9
1317.9 2188.6
1409.3 1787.0
1441.1 2729.2
1444.7 3353.4
1576.3 3353.4
1977.9 1989.8
2092.3 359.8
2601.6 3735.1
2757.1 2856.4
3484.7 1616.1
1668.2 2375.4
1667.8 2375.7

a+c 30)6148(204.933 B+D 28)5740(205.00:½163::y:Y
60 54
148 204.93:½163::x:X 140 0.398y=Y
120 140
280 0.398x=X
270
100
90
100

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1899phae.proj..974L

23.35 D 6416 from I 10280 March 8, 1899.

		x	y	A. B. C. D.		a+C	B+D	C-a	B-D	x×163	y×163	C-a ×.397	B-D ×.398
✓	Eva. a.	11.6	15.1	60	10	145	195	205	205+85−185	1793	2445	+33.7	−73.6
✓	Eva. b.	11.6	15.1	59	10	145	195	204	205+86−185	1793	2445	+34.1	−73.6
✓	a. a	4.2	12.4	170	90	35	116	205	206−135−26	652	1956	−53.6	−10.3
✓	b. a	5.1	6.7	181	155	24	50	205	205−157+105	815	978	−62.3	+41.8
✓	c. a	5.6	18.2	65/73		31	142	173	207	204+77−142	815	2934	+30.6	−56.5
✓	d. a	7.5	19.2	100	46	105	159	205	205+05−113	1141	3097	+2.0	−45.0
✓	e. a	8.0	22.5	201	110	4	95	205	205−197+15	1304	3586	−78.2	+6.0
✓	f. a.	12.1	17.2	199	40	7	164	206	204−192−124	1956	2771	−76.2	−49.4
✓	g.	13.3	22.6	145	139	60	67	205	206−85+72	2119	3586	−33.7	+28.7
✓	h.	20.4	20.3	120	60	85	146	205	206−35−86	3260	3260	−13.9	−34.2
✓	Eva.	11.6	15.1	60	10	145	194	205	204+85−184	1793	2445	+33.7	−73.2
✓	Eva	11.6	15.1	60	11	145	193	205	204+85−182	1793	2445	+33.7	−72.4
✓	a.	4.2	12.4	169	90	36	115	205	205−133−25	652	1956	−52.8	−10.0
✓	b.	5.2	6.7	181	155	23	50	204	205−158+105	815	978	−62.7	+41.8
✓	c.	5.7	18.2	65	30	140	175	205	205+75−145	815	2934	+29.8	−57.7
✓	d.	7.5	19.2	100	45	105	161	205	206+05−116	1141	3097	+2.0	−46.2
✓	e.	8.0	22.5	200	110	5	95	205	205−195+15	1304	3586	−77.4	+6.0
✓	f.	12.1	17.2	200	40	6	165	206	205−194−125	1956	2771	−77.0	−49.8
✓	g.	13.4	22.6	145	139	60	66	205	205−85+73	2119	3586	−33.7	+29.1
✓	h.	20.4	20.3	120	59	85	146	205	205−35−87	3260	3260	−13.9	−34.6
✓	Eva.	11.6	15.1	60	10	146	195	206	205+86−185	1793	2445	+34.1	−73.6
✓	24.05 Eva.	11.6	15.1	59	11	146	191	205	202+87−180	1793	2445	+34.5	−71.6

$\frac{4513}{22}$ $\frac{4507}{22}$

a+C. 22)4513(205.13 (6)

205.14 : ½163 :: x : X

0.397x = X

B+D 22)4507(204.86 (4)

204.86 : ½163 :: y : Y

0.398y = Y

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1899phae.proj..974L

1826.7	2371.4
1827.1	2371.4
598.4	1945.7
752.7	1019.8
845.6	2877.5
1143.0	3052.0
1225.8	3592.0
1879.8	2721.6
2085.3	3614.7
3246.1	3225.8
1826.7	2371.8
1826.7	2372.6
599.2	1946.0
752.3	1019.8
844.8	2876.3
1143.0	3050.8
1226.6	3592.0
1879.0	2721.2
2085.3	3615.1
3246.1	3225.4
1827.1	2371.4
1827.5	2373.4

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1899phae.proj..974L

22.30

D 6283 from I 10321 March 12, 1899.

		x	y	A.	B.	C.	D.	A+C	B+D	C-A	B-D	x×163	y×163	C-a ×.398	B-D ×.397
✓	Cross.	13.6	11.8	69	180	136	25	205	205	+67	+155	2119	1793	+26.7	+61.5
✓	Cross.	13.6	11.8	70	180	136	25	206	205	+66	+155	2119	1793	+26.3	+61.5
✓	a.	0.6	10.7	61	160	143	45	204	205	+82	+115	0	1630	+32.6	+45.7
✓	b.	1.6	22.6	75	140	130	66	205	206	+55	+74	163	3586	+21.9	+29.4
✓	c.	8.6	2.1	66	12	140	192	206	204	+74	−180	1304	326	+29.5	−71.5
✓	d.	9.6	19.4	60	75	146	131	206	206	+86	−56	1467	3097	+34.2	−22.3
✓	e.	11.2	4.8	165	170	40	35	205	205	−125	+135	1793	652	−49.8	+53.6
✓	f.	14.4	15.2	111	40	94	165	205	205	−17	−125	2282	2445	−6.8	−49.6
✓	g.	15.4	11.7	119	160	86	45	205	205	−33	+115	2445	1793	−13.1	+45.7
✓	h.	15.6	16.6	60	105	145	100	205	205	+85	+05	2445	2608	+33.8	+2.0
✓	k.	16.4	12.8	110	162	95	43	205	205	−15	+119	2608	1956	−6.0	+47.2
✓	l.	16.6	12.7	59	145	146	60	205	205	+87	+85	2608	1956	+34.6	+33.8
✓	m.	20.6	11.3	61	65	141	140	202	205	+80	−75	3260	1793	+31.8	−29.8
✓	n.	24.5	8.3	100	61	105	144	205	205	+05	−83	3912	1304	+2.0	−33.0
✓	Cross.	13.6	11.8	70	180	135	25	205	205	+65	+155	2119	1793	+25.9	+61.5
✓	Cross.	13.6	11.8	70	180	136	25	206	205	+66	+155	2119	1793	+26.3	+61.5
✓	a.	0.6	10.8	61	162	143	45	204	207	+82	+117	0	1680	+32.6	+46.4
✓	b.	1.6	22.6	75	140	130	65	205	205	+55	+75	163	3586	+21.9	+29.8
✓	c.	8.6	2.1	65	12	140	193	205	205	+75	−181	1304	326	+29.8	−72.0
✓	d.	9.6	19.4	60	75	145	130	205	205	+85	−55	1467	3097	+33.8	−21.8
✓	e.	11.2	4.8	165	170	40	35	205	205	−125	+135	1793	652	−49.8	+53.6
✓	f.	14.4	15.2	111	40	93	165	204	205	−18	−125	2282	2445	−7.2	−49.6
✓	g.	15.4	11.8	120	160	85	45	205	205	−35	+115	2445	1793	−13.9	+45.7
✓	h.	15.6	16.5	60	105	145	100	205	205	+85	+05	2445	2608	+33.8	+2.0
✓	k.	16.4	12.8	111	166	95	40	206	206	−16	+126	2608	1956	−6.4	+50.0
✓	l.	16.6	12.7	60	146	145	60	205	206	+85	+86	2608	1956	+33.8	+34.1
✓	m.	20.6	11.3	65	69	140	136	205	205	+75	−67	3260	1793	+29.8	−26.6
✓	n.	24.5	8.3	100	60	105	145	205	205	+05	−85	3912	1304	+2.0	−33.7
								5739 / 28	5745 / 28						

23.00

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1899phae.proj..974L

2145.7	1854.5
2145.3	1854.5
32.6	1675.7
184.9	3615.4
1333.5	254.5
1501.2	3074.8
1743.2	705.6
2275.2	2395.4
2431.9	1838.7
2478.8	2610.0
2602.0	2003.2
2642.6	1989.7
3291.8	1763.2
3917.0	1271.0
2144.9	1854.5
2145.3	1854.7
32.6	1676.6
184.9	3615.8
1333.8	254.1
1500.8	3075.2
1743.2	705.6
2274.8	2395.4
2431.1	1838.7
2478.8	2610.0
2601.6	2006.0
2641.8	1990.1
3289.8	1766.4
3914.0	1270.3

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1899phae.proj..974L

23.00

D6283 from I 10321 March 12, 1899.

		x	y	A.	B.	C.	D.	a+c	B+D	c-a	B-D	x×163	y×163	c-a ×.398	B-D ×.397
x remeasured.		13										2119			
✓	y	Eros	32.6	11.8	70	180	136	25	206	205+66+155		4890	1793	+26.3	+61.5
			13									2119			
✓		Eros.	32.6	11.8	69	179	136	25	205	204+67+154		4890	1793	+26.7	+61.1
									411/2	409/2					

28 5789 / 2 411 / 30)6150(205.00

205.00 : ½163 :: x : X

0.398x = X

28 5745 / 2 409 / 30)6154(205.133

205.13 : ½163 :: y : Y

0.397y = Y

D6408 from I 10469 March 12, 1899

		x	y	A.	B.	C.	D.	a+c	B+D	c-a	B-D	x×163	y×163	c-a ×.398	B-D ×.398
	Eros.	14.1	10.8	178	180	26	25	204	205-152+155			2282	1630	-60.5	+61.7
	Eros.	14.1	10.8	176	179	30	25	206	204-146+154			2282	1630	-58.1	+61.3
✓	b.	13.7	14.8	60	169	145	36	205	205+85+133			2119	2282	+33.8	+52.9
✓	c.	15.1	9.1	180	5	25	200	205	205-155-195			2445	1467	-61.7	-77.6
✓	d.	15.2	15.2	155	25	49	180	204	205-106-155			2445	2445	-42.2	-61.7
✓	e.	15.4	16.1	120	30	85	174	205	204-35-144			2445	2608	-13.9	-57.3
✓	f.	16.1	11.1	195	10	9	195	204	205-186-185			2608	1793	-74.0	-73.6
✓	h.	19.5	13.9	102	191	103	13	205	204+01+178			3097	2119	+0.4	+70.8
	k.	23.1	14.1	195	15	10	190	205	205-185-175			3749	2282	-73.6	-69.6
a+c 3688/18	Eros.	14.1	10.8	178	180	27	25	205	205-151+155			2282	1630	-60.1	+61.7
	Eros.	14.1	10.8	179	180	26	26	205	206-153+154			2282	1630	-60.9	+61.3
✓	b.	13.7	14.8	60	169	145	36	205	205+85+133			2119	2282	+33.8	+52.9
B+D ✓3687/18	c.	15.1	9.1	184	5	21	200	205	205-163-195			2445	1467	-64.9	-77.6
✓	d.	15.2	15.2	155	25	50	180	205	205-105-155			2445	2445	-41.8	-61.7
✓	e.	15.4	16.2	118	30	87	175	205	205-31-145			2445	2608	-12.3	-57.7
✓	f.	16.1	11.1	195	10	10	194	205	204-185-184			2608	1793	-73.6	-73.2
✓	h.	19.5	13.9	100	190	105	15	205	205+05+175			3097	2119	+2.0	+69.6
23.30	k.	23.1	14.1	195	15	10	190	205	205-185-175			3749	2282	-73.6	-69.6

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1899phae.proj..974L

2145.3
~~4916.3~~ 1854.5
2145.7
~~4916.7~~ 1854.1

2221.5 1691.7
2223.9 1691.3
2152.8 2334.9
2383.3 1389.4
2402.8 2383.3
2431.1 2550.7
2534.0 1719.4
3097.4 2189.8
3675.4 2212.4
2221.9 1691.7
2221.1 1691.3
2152.8 2334.9
2380.1 1389.4
2403.2 2383.3
2432.7 2550.3
2534.4 1719.8
3099.0 2188.6
3675.4 2212.4

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1899phae.proj..974L

23.30

D 6408 from I 10469 March 12, 1899.

	x	y	A.	B.	C.	D.	A+C	B+D	C-a	B-D	x×163	y×163	C-a ×.398	B-D ×.398
Eros.	14.1	10.8	178	179	27	26	205	205	-151	+153	2282	1630	-60.1	+60.9
Eros.	14.1	10.8	179	180	26	25	205	205	-153	+155	2282	1630	-60.9	+61.7
							410/2	410/2						

a+c 18 3688 — B+D 18 3687

2/20) 4098 (204.90 — 2/20) 4097 (204.85

204.90 : ½163 :: x : X — 204.85 : ½163 : y : Y

0.398 x = X — 0.398 y = Y

D 6393 from I 10559. March 12 1899.

	x.	y.	A.	B.	C.	D.	A+C	B+D	C-a	B-D	x×163	y×163	C-a ×.398	B-D ×.397
✓ Eros.	14.2	12.8	181	175	25	30	206	205	-156	+145	2282	1956	-62.1	+57.6
✓ Eros.	14.2	12.6	180	110	25	96	205	206	-155	+ 14	2282	1956	-61.7	+ 5.6
✓ "	14.4	12.8	141	182	64	23	205	205	- 77	+159	2282	1956	-30.6	+63.1
✓ "	14.4	12.6	140	130	64	75	204	205	- 76	+ 55	2282	1956	-30.2	+21.8
✓ "	14.2	12.8	180	173	25	32	205	205	-155	+141	2282	1956	-61.7	+56.0
✓ "	14.2	12.6	180	110	25	95	205	205	-155	+ 15	2282	1956	-61.7	+ 6.0
✓ "	14.4	12.9	140	185	65	20	205	205	- 75	+165	2282	1956	-29.8	+65.5
✓ "	14.4	12.6	139	130	66	75	205	205	- 73	+ 55	2282	1956	-29.1	+21.8
✓ a.	5.2	10.8	189	190	16	15	205	205	-173	+175	815	1630	-68.9	+69.5
✓ b.	5.2	11.6	185	110	20	94	205	204	-165	+ 16	815	1793	- 65.7	+ 6.4
a+c B+D c.	10.6	8.2	84	30	121	175	205	205	+ 37	- 145	1630	1304	+14.7	-57.6
3690 3686 ✓18 17 d.	11.9	9.9	20	190	186	15	206	205	+166	+175	1793	1467	+66.1	+69.5
✓ e.	12.6	1.6	56	145	149	60	205	205	+ 93	+ 85	1956	163	+37.0	+33.7
✓ Image edge measured. f.	14.1	12.7	200	138	5	68	205	206	-195	+ 70	2282	1956	-77.6	+27.8
✓ g.	14.4	13.6	110	109	94	95	204	204	- 16	+ 14	2282	2119	- 6.4	+ 5.6
✓ h.	14.6	12.8	60	176	145	29	205	205	+ 85	+147	2282	1956	+33.8	+58.4
✓ 24.05 k.	14.8	11.8	35	171	170	35	205	206	+135	+136	2282	1783	+53.7	+54.0
✓✓ Eros. l.	14.6	0.6	70	*	135	80	205	—	+ 65	-	2282	0	+25.9	—

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1899phae.proj..974L

2221.9 1690.9
2221.1 1691.7

2219.9 2013.6
2220.3 1961.6
2251.4 2019.1
2251.8 1977.8
2220.3 2012.0
2220.3 1962.0
2252.2 2021.5
2253.1 1977.8
746.1 1699.5
749.3 1799.4
1647.7 1246.4
1859.1 1536.5
1993.0 196.7
2204.4 1983.8
2275.6 2124.6
2315.8 2014.4
2335.7 1847.0
2307.9 — 205 − 80 = 125 Bassumed B-D = +45 × 397 = +17.9 y = +17.9

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1899phae.proj..974L

24.05

D 6393 from I 10559 March 12, 1899.

		x	y	A.B.	C.D	A+B	B+D	C-A	B-D	x×163	y×163	C-a ×.398	B-D ×.397
✓	m.	15.0	8.7	205	160	205	46	410	206	+114	2445	1304	+45.3
✓	n.	15.6	14.4	64	69	141	136	205	205	+77	-67	2445	2282	+30.6	-26.6
✓	o.	17.6	17.6	56	110	150	94	206	204	+94	+16	2771	2771	+37.4	+6.4
✓	p.	18.8	4.3	25	60	180	145	205	205	+155	-85	2934	652	+~~24.7~~ 61.7	-33.7
✓	q.	20.6	9.4	70	71	135	133	205	204	+65	-62	3260	1467	+25.9	-24.6
✓	r.	21.5	15.3	96	67	109	139	205	206	+13	-72	3423	2445	+5.2	-28.6
✓	s.	22.5	22.1	110	12	95	193	205	205	-15	-181	3586	3586	-6.0	-71.9
✓	t.	22.6	20.6	89	134	116	71	205	205	+27	+63	3586	3260	+10.7	+25.0
✓	u.	22.5	8.4	100	80	104	125	204	205	+04	-45	3586	1304	+1.6	-17.9
✓	w.	23.9	5.3	185	65	190	139	205	204	+175	-74	3749	815	+69.6	-29.4
✓	x.	24.2	22.6	152	111	52	94	204	205	-100	+173	912	3586	-39.8	+6.7
✓ ✓	Eve.	14.2	12.8	180	175	25	31	205	206	-155	+144	2282	1956	-61.7	+57.2
✓ ✓	"	14.2	12.6	181	110	24	95	205	205	-157	+15	2282	1956	-62.5	+6.0
✓ ✓	"	14.4	12.8	140	185	65	20	205	205	-75	+165	2282	1956	-29.8	+65.5
✓ ✓ .	"	14.4	12.6	139	125	67	80	206	205	-72	+45	2282	1956	-28.7	+17.9
✓ ✓	"	14.2	12.8	180	174	25	31	205	205	-155	+143	2282	1956	-61.7	+56.8
✓ ✓	"	14.2	12.6	181	110	24	95	205	205	-157	+15	2282	1956	-62.5	+6.0
✓ a+c 6153 √30	B+D 5740 28 "	14.4	12.9	141	190	65	15	206	205	-76	+175	2282	1956	-30.2	+69.5
✓ ✓	"	14.4	12.6	140	129	66	76	206	205	-74	+53	2282	1956	-29.5	+21.0
✓ ✓	a.	5.2	10.8	190	191	15	14	205	205	-175	+177	815	1630	-69.6	+70.3
✓ ✓	b.	5.2	11.6	185	110	30	94	205	204	-165	+16	815	1793	-65.7	+6.4
✓ ✓	c.	10.6	8.2	84	30	121	175	205	205	+37	-145	1630	1304	+14.7	-57.6
✓ ✓	d.	11.9	9.9	19	190	187	15	206	205	+168	+175	1793	1467	+66.9	+69.5
✓ ✓	e.	12.6	1.6	55	141	150	64	205	205	+95	+77	1956	163	+37.8	+30.6
✓	f.	14.1	12.6	200	140	5	66	205	206	-195	+74	2282	1956	-77.6	+29.4
✓ ✓ 24.30	g.	14.4	13.6	111	110	94	95	205	205	-17	+15	2282	2119	-6.8	+6.0
✓ ✓	h.	14.7	12.8	60	175	145	30	205	205	+85	+145	2282	1956	+33.8	+57.6
✓ ✓	k.	14.8	11.8	35	170	170	35	205	205	+135	+135	2282	1793	+~~13.4~~ 53.7	+53.6
✓ line cut off	l.	14.6	0.6	70	*	135	80	205	—	+65	—	2282	0	+25.9	—

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(24450 -81.5) =
23635 1349.3
2475.6 2255.4
2808.4 2777.4
2995.7 618.3
3285.9 1442.4
3428.2 2416.4
3580.0 3514.1
3596.7 3285.0
3587.6 1286.1
3818.6 785.6
3872.2 3592.7
2220.3 2013.2
2219.5 1962.0
2252.2 2021.5
2253.3 1973.9
2220.3 2012.8
2219.5 1962.0
2251.8 2025.5
2252.5 1977.0
745.4 1700.3
749.3 1799.4
1644.7 1246.4
1859.9 1536.5
1993.8 193.6
2204.4 1985.4
2275.2 2125.0
2316.8 2013.6
2335.7 1846.6
2307.9 — assume value of $\mathfrak{G}^B = 125$ (May 7 1901) $y = 17.9$

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1899phae.proj..9744

30

24.30

D 6393 Fem I 10559 March 12, 1899.

		x	y	A.	B.	C.	D.	a+b	B+D	C-a	B-D	x×163	y×163	C-a ×.398	B-D ×.397
✓	m.	15.0	8.7	205	160	205	45	410	205		+115	2445	1304		+45.7
✓	n.	15.6	14.3	64	69	141	136	205	205	+77	-67	2445	2282	+30.6	-26.6
✓	o.	17.6	17.6	55	110	150	96	205	206	+95	+14	2771	2771	+37.8	+5.6
✓	p.	18.9	4.3	25	60	180	145	205	205	+155	-85	2934	652	+61.7	-33.7
✓	q.	20.6	9.4	70	75	135	130	205	205	+65	-55	3260	1467	+25.9	-21.8
✓	r.	21.5	15.3	95	66	110	140	205	206	+15	-74	3423	2445	+6.0	-29.4
✓	s.	22.5	22.1	110	15	95	191	205	206	-15	-176	3586	3586	-6.0	-69.9
✓	t.	22.6	20.6	89	132	116	73	205	205	+27	+59	3586	3260	+10.7	+23.4
✓	u.	22.5	8.4	100	84	105	121	205	205	+0.5	-37	3586	1304	+2.0	-14.7
✓	w.	23.9	5.3	15	65	190	139	205	204	+175	-74	3749	815	+69.6	-29.4
✓	x.	24.3	22.6	155	115	50	91	205	206	-105	+24	3912	3586	-41.8	+9.5
✓	Eur.	14.2	12.8	180	174	25	31	205	205	-155	+143	2282	1956	-61.7	+56.8
✓	Eur.	14.2	12.6	181	110	24	94	205	204	-157	+16	2282	1956	-62.5	+6.4
✓	Eur.	14.4	12.9	140	190	65	15	205	205	-75	+175	2282	1956	-29.8	+69.5
✓	Eur.	14.4	12.6	140	127	65	79	205	206	-75	+48	2282	1956	-29.8	+19.1
✓	"	14.2	12.8	181	176	24	30	205	206	-157	+146	2282	1956	-62.5	+58.0
✓	"	14.2	12.6	180	110	25	95	205	205	-155	+15	2282	1956	-61.7	+6.0
✓	"	14.2	12.9	140	190	65	16	205	206	-75	+174	2282	1956	-29.8	+69.1
✓	24.45	"	14.2	12.6	140	126	64	79	204	205	-76	+47	2282	1956	-30.2	+18.7

4099 3900
20 19

a+c 18 3690
30 6153
20 4099
68)13942(205.03

17 3486
28 5740
19 3900
64)13126(205.09

205.03 : ½163 :: x : X
0.398x = X

205.09 : ½163 :: y : Y
0.397y = Y

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1999phae.proj..974L

2363.5	1349.7
2475.6	2235.4
2808.8	2776.6
2995.7	618.3
3285.9	1445.2
3429.0	2415.6
3580.0	3516.1
3596.7	3283.4
3588.0	1889.3
3818.6	785.6
3870.2	3595.5
2220.3	2012.8
2219.5	1962.4
2252.2	2025.5
2252.2	1975.1
2219.5	2014.0
2220.3	1962.0
2252.2	2025.1
2251.8	1974.7

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1899phae.proj..9741

32

22,45

D 6442 from I 9801. March 13, 1899.

	x	y	A. 73. 6, 70.	a+b	B+D	b-a	B-D	x*163.y*163.	C-a x.397	B-D x.398
Cor.	15.6	5.2	60 30	145	176	205	206	+85 -146	2445.	815.	+33.7	-58.1
Cor.	15.6	5.2	61 30	144	175	205	205	+83 -145	2445	815	+33.0	-57.7
a.	0.3	4.1	136 10	70	195	206	205	-66 -185	0	652	-26.2	-73.6
b.	2.2	9.8	155 179	50	26	205	205	-105 +153	326	1467	-41.7	+60.9
c.	4.5	22.5	105 99	100	106	205	205	-05 -07	652	3586	-2.0	-2.8
d.	6.6	14.0	90 205	115	204	205	*409	+25 +0.1	978	2282	+9.9	+0.4
e.	14.1	23.7	185 139	20	66	205	205	-165 +73	2282	3749	-65.5	+29.1
f.	12.4	6.1	129 10	77	194	206	204	-52 -184	1956	978	-20.6	-73.2
g.	13.2	4.8	161 184	43	24	204	208	-118 +160	2119	652	-46.8	+63.7
h.	20.1	5.6	194 142	11	62	205	204	-183 +80	3260	815	-72.7	+31.8
k.	21.2	13.5	165 101	40	105	205	206	-125 -04	3423	2119	-49.6	-1.6
l.	21.9	1.4	9 120	196	85	205	205	+187 +35	3423	163	+74.2	+13.9
m.	22.5	4.3	90 35	115	170	205	205	+25 -135	3586	652	+9.9	-53.7
n.	25.4	8.8	115 169	90	36	205	205	-25 +133	4075	1304	-9.9	+52.9
o.	28.7	11.9	65 190	140	14	205	204	+75 +176	4564	1793	+29.8	+70.0
Cor.	15.6	5.2	60 30	145	175	205	205	+85 -145	2445	815	+33.7	-57.7
Cor.	15.6	5.2	60 29	145	175	205	204	+85 -146	2445	815	+33.7	-58.1
a.	0.3	4.1	135 10	70	194	205	204	-65 -184	0	652	-25.8	-73.2
b.	2.2	9.8	155 179	50	26	205	205	-105 +153	326	1467	-41.7	+60.9
c.	4.5	22.5	105 100	100	105	205	205	-05 -05	652	3586	-2.0	~~-1.9~~ 2.6
d.	6.6	14.0	90 205	115	205	205	*410	+25 0.0	978	2282	+9.9	0.0
e.	14.1	23.7	185 140	20	65	205	205	-165 +75	2282	3749	-65.5	+29.8
f.	12.4	6.1	126 10	80	195	206	205	-46 -185	1956	978	-18.3	-73.6
g.	13.3	4.8	160 185	45	20	205	205	-115 +165	2119	652	-45.7	+65.7
h.	20.1	5.6	195 141	10	64	205	205	-185 +77	3260	815	-73.4	+30.6
k.	21.3	13.5	165 105	40	100	205	205	-125 +05	3423	2119	-49.6	+2.0
l.	21.9	1.5	10 120	195	85	205	205	+185 +35	3423	163	+73.4	+13.9
m.	22.5	4.3	90 36	115	170	205	206	+25 -134	3586	652	+9.9	-53.3

23.40

5742 6150

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1899phae.proj..974L

2478.7 756.9
2478.0 757.3
-26.2 578.4
284.3 1527.9
650.0 3583.2
879
968.1 2282.4 -81.5 = 2200.9
2216.5 3778.1
1935.4 904.8
2072.2 715.7
3187.3 846.8
3378.4 2117.4
3497.2 176.9
3595.9 598.3
4065.1 1356.9
4593.8 1863.0
2478.7 757.3
2478.7 756.9
-25.8 578.8
284.3 1527.9
650.0 3584.0
3566.1
987.9 8 2282.0 -81.5 = 2200.5
2216.5 3778.8
1937.7 904.4
2073.3 717.7
3186.6 845.6
3373.4 2121.0
3496.4 176.9
3595.9 598.7

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1899phae.proj..974L

(23.40). D6442 from I 9801 March 13, 1899.

	x	y	A.	B.	C.	D.	a+b	B+D	b-a	B-D	x×163	y×163	c-a ×.397	B-D ×.398
✓	n.	25.4	8.8	115	169	90	36	205	205	−25	+133	4075	1304	−9.9	+52.9
✓	o.	28.6	11.9	65	190	140	15	205	205	+75	+175	4564	1793	+29.8	+69.6
✓	Cross	15.6	5.2	60	30	145	175	205	205	+85	−145	2445	815	+33.7	∓57.7
✓	Cross.	15.6	5.2	59	29	146	176	205	205	+87	−147	2445	815	+34.5	∓58.5
								820/4	820/4						

c-a
28 5742
4 820
32)4562(205.625
64
162
160
200
192
80
64
160

205.06 : ½163 :: x : X
410.12 : 163 :: 2x : 2X
0.397x = X

B-D
30 6150
4 820
34)4970(205.00
68
170
170

205.00 : ½163 :: y : Y
410.00 : 163 :: 2y : 2Y
0.398y = Y

D6442
remeas. p. 38. k

D6378 from I 9832 March 13, 1899.

	x	y	A.	B.	C.	D.	a+b	B+D	b-a	B-D	x×163	y×163	c-a ×.397	B-D ×.398
center of image	Cross	15.9	13.3	15	40	190	165	205	205	+175	−125	2445	2119	+69.5	−49.8
" " br. part	Cross	15.9	13.2	5	50	200	154	205	204	+195	−104	2445	2119	+77.4	−41.4
" " image	Cross	15.9	13.3	20	40	185	165	205	205	+165	−125	2445	2119	+65.5	−49.8
" " br. part	Cross	15.9	13.3	10	50	195	155	205	205	+185	−105	2445	2119	+73.4	−41.8
✓	k.	2.3	11.5	140	96	65	109	205	205	−75	−13	326	1793	−29.8	−5.2
✓	l.	1.9	3.6	10	120	195	85	205	205	+185	+35	163	489	+73.4	+13.9
✓	m.	4.6	2.3	85	61	120	144	205	205	+35	−83	652	326	+13.9	−33.0
✓	n.	7.0	7.2	205	40	204	165	409	205	−0.1	−125	1141	1141	−0.4	−49.8
✓	o.	9.9	10.6	19	121	186	84	205	205	+167	+37	1467	1630	+66.3	+14.7
✓	p.	12.9	13.6	10	129	195	76	205	205	+185	+53	1956	2119	+73.4	+21.1
✓	q.	14.3	12.8	135	180	70	25	205	205	−65	+155	2282	1956	−25.8	+61.7
✓	r.	15.9	8.7	20	130	185	76	205	206	+165	+54	2445	1304	+65.5	+21.5
✓	s.	16.8	16.3	29	60	176	145	205	205	+147	−85	2608	2608	+58.4	−33.8
✓	t.	17.3	15.1	140	8	66	197	206	205	−74	−189	2771	2445	−29.4	−75.2
								3075/15	2870/14						

24.05

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1899phae.proj..974L

4065.1 13569
4593.8 18626
2478.7 ~~8167~~ 7573
2479.5 ~~8165~~ 7565

2514.5 2069.2
2522.4 2077.6
2510.5 2069.2
2518.4 2077.2
2962 1787.8
2367 5029
665.9 2930
1091.2 1140.6 - 81.5 = 1059.1
1533.3 1644.7
2029.4 2140.1
2256.2 2017.7
2510.5 13255
2666.4 2574.2
2741.6 2369.8

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24.05 D6378 from I9832 March 13, 1899.

		x	y	A	B	a	b	a+b	B-D	b-a	B-D	x×163	y×163	C-a ×.397	B-D ×.398
✓	u.	21.2	12.8	170	166	35	40	205	206	-135	+126	3423	1956	-53.6	+50.1
✓	w.	21.6	7.5	80	99	125	107	205	206	+45	-08	3423	1141	+17.9	-3.2
✓	x.	22.2	0.6	171	120	34	85	205	205	-137	+35	3586	0	-54.4	+13.9
✓	z.	22.1	20.2	180	26	25	180	205	206	-155	-154	3586	3260	-61.5	-61.3
✓	A.	24.1	4.3	181	64	24	141	205	205	-157	-77	3912	652	-62.3	-30.6
✓	B.	24.2	20.1	174	14	31	190	205	204	-143	-176	3912	3260	-56.8	-70.0
✓	b.	24.5	19.6	95	124	110	81	205	205	+15	+43	3912	3097	+6.0	+17.1
✓	D.	25.2	17.2	155	41	50	161	205	202	-105	-120	4075	2771	-41.7	-47.8
✓	F.	26.2	21.2	160	29	45	175	205	204	-115	-146	4238	3423	-45.7	-58.1
✓	H.	27.5	5.2	95	27	110	178	205	205	+15	-151	4401	815	+6.0	-60.1
✓	L. X	28.8	4.9	35	200	170	6	205	206	+135	+194	4564	652	+53.6	+77.2
✓	K. L	28.1	8.4	179	90	26	115	205	205	-153	-25	4564	1304	-60.7	-10.0
✓	*M.	29.1	1.2	198	40	7	165	205	205	-191	-125	4727	163	-75.8	-49.8
✓	N.	29.9	16.4	5	90	200	115	205	205	+195	-25	4727	2608	+77.4	-10.0
✓	centre of image Erz.		15.9	13.3	15	40	190	165	205	205	+175	-125	2445	2119	+69.5	-49.8
✓	" bv. part Erz.		15.9	13.3	10	50	195	155	205	205	+185	-105	2445	2119	+73.4	-41.8
✓	" image Erz.		15.9	13.3	16	40	190	165	206	205	+174	-125	2445	2119	+69.1	-49.8
✓	24.15 b. part Erz.		15.9	13.3	10	50	195	155	205	205	+185	-105	2445	2119	+73.4	-41.8
✓	25.00	k.	2.3	11.5	140	95	65	110	205	205	-75	-15	326	1793	-29.8	-6.0
✓		l.	1.9	3.6	10	119	195	8/96	205	205	+185	+33	163	489	+73.4	+13.1
✓		m.	4.6	2.3	85	60	120	144	205	204	+35	-84	652	326	+13.9	-33.4
✓		n.	7.0	7.2	205	40	205	165	410	205	00	-125	1141	1141		-49.8
✓		r.	9.9	10.6	19	121	186	85	205	206	+167	+36	1467	1630	+66.3	+14.3
✓		s.	12.9	13.6	10	130	195	75	205	205	+185	+55	1956	2119	+73.4	+21.9
✓		y.	14.3	12.8	131	180	74	25	205	205	-57	+155	2282	1956	-22.6	+61.7
✓		v.	15.9	8.6	20	129	185	76	205	205	+165	+53	2445	1304	+65.5	+21.1
✓		w.	16.8	16.3	30	60	175	146	205	206	+145	-86	2608	2608	+57.6	-34.2
✓		t.	17.3	15.1	140	5	66	200	206	205	-74	-195	2771	2445	-29.4	-77.6

5947 5740
29 28

25.07 *"M" is very faint indistinct hard [illegible]

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1899phae.proj..974L

3369.4	2006.1
3440.9	1137.8
3531.6	13.9
3524.5	3198.7
3849.7	621.4
3855.2	3190.0
3918.0	3114.1
4033.3	2723.2
4192.3	3364.9
4407.0	754.9
4617.6	729.2
4503.3	1294.0
4651.2	113.2
4804.4	2598.0
2514.5	2069.2
2518.4	2077.2
2514.1	2069.2
2518.4	2077.2
296.2	1787.0
236.4	502.1
665.9	292.6
1091.2	1141.0 - 81.5 = 1059.5
1533.3	1644.3
2029.4	2140.9
2259.4	2017.7
2510.5	1325.1
2665.6	2573.8
2741.6	2367.4

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1899phae.proj..974L

25.07 D 6378 from I 9832 March 13, 1899
x y A.B.C.20.

								a+c	B+D	c-a	B-D	x×163.	y×163.	c-a ×.397	B-D ×.398
✓	m.	21.2	12.8	170	165	35	40	205	205	-135	+125	3423	1956	-53.6	+49.8
✓	w.	21.6	7.5	80	99	125	106	205	205	+45	-07	3423	1141	+17.9	-2.8
✓	x.	22.2	0.6	171	120	34	85	205	205	-137	+35	3586	0	-54.4	+13.9
✓	z.	22.1	20.2	181	30	24	176	205	206	-157	-146	3586	3260	-62.3	-58.1
✓	A.	24.1	4.3	185	65	20	140	205	205	-165	-75	3912	652	-65.5	-29.8
✓	B.	24.2	20.1	170	15	35	190	205	205	-135	-175	3912	3260	-53.6	-69.6
✓	C.	24.5	19.6	95	126	110	80 90	205	206	+15	+46	3912	3097	+6.0	+18.3
✓	D.	25.2	17.2	155	41	50	164	205	205	-105	-123	4075	2771	-41.7	-49.0
✓	F.	26.2	21.2	160	30	45	174	205	204	-115	-144	4238	3423	-45.7	-57.3
✓	H.	27.5	5.2	95	25	110	180	205	205	+15	-155	4401	815	+6.0	-61.7
✓	K.	28.1	8.4	180	91	25	114	205	205	-155	-23	4564	1304	-61.5	-9.2
✓	L.	28.8	4.9	35	200	170	5	205	205	+185	+195	4564	652	+53.6	+77.6
✓	M.	29.1	1.2	195	43	10	162	205	205	-185	-119	4727	163	-73.4	-47.4
✓	N.	29.9	16.4	5	90	200	115	205	205	+195	-25	4727	2608	+77.4	-10.0
✓	Centre d'image	Erst.	15.9	13.2	20	70	186	165	206	205	+166	-125	2445	2119	+65.9	-49.8
✓	" bn. fant	Erst	15.9	13.3	10	50	195	155	205	205	+185	-105	2445	2119	+73.4	-41.8
✓	" image	Kurz	15.9	13.2	20	69	185	165	205	204	+165	-126	2445	2119	+65.5	-50.1
✓	" bn. fant	Kurz	15.9	13.3	9	51	196	154	205	205	+187	-103	2445	2119	+74.2	-41.0

3691/18 3690/18

25.20
(c-a)
15 3075
29 5947
18 3691.
62)12713(205.048

205.05 : ½163 :: x : X
410.10 : 163 :: 2x : 2X
X = 0.397 x

14 2870
28 5740
18 3690
60)12900(205.00

205.00 : ½163 :: y : Y
410.00 : 163 :: 2y : 2Y
Y = 0.398 y

D6442 from I 9801 x y A. B. C. 20.

														c-a ×.397	B-D ×.398
✓	re-measure	k	X.	21.3	13.5	164	105	41	100	205	205	-123	+05	3423	2119	-48.8	+2.0

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1899phae..proj..974L

33697 2005.8
3440.9 1138.2
35316 13.9
3523.7 3201.9
3846.5 6222
3858.4 3190.4
3918.0 3115.3
4033.3 2722.0
4192.3 3365.7
4407.0 753.3
4502.5 1294.8
4617.6 729.6
4653.6 1156
48044 25980
2510.9 2069.2
2518.4 2077.2
2510.5 2068.9
2519.2 2078.0

3374.2 2121.0

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1899phae.proj..974L

(23.40) D 6392 fum I 9862 March 14. 1899.

		x	y	A.	B.	C.	D	a+b	B+D	b-a	B-D	x×163	y×163	C-a ×.397	B-D ×.397
✓	Enz.	11.7	14.6	46	105	160	101	206	206	+114	+04	1793	2282	+45.3	+1.6
✓	Enz.	11.7	14.6	46	106	160	100	206	206	+114	+06	1793	2282	+45.3	+2.4
		~~0.7~~	~~5.6~~	~~40~~	~~14.5~~	~~14.5~~	~~60~~	~~205~~	~~205~~	~~+125~~	~~+85~~	~~10~~	~~815~~	~~+49.6~~	~~+33.7~~
✓	W.S. Remeasure July 24 05 Sept 84 N.	2.4	4.6	122	125	83	80	205	205	−39	+45	326	652	−15.5	+17.9
✓	N.	2.7	13.1	45	24	160	181	205	205	+115	−157	326	2119	+45.7	−62.3
✓	t.	3.1	11.8	189	170	16	35	205	205	−173	+135	489	1793	−68.7	+53.6
✓	m.	6.6	9.1	85	21	120	184	205	205	+35	−163	978	1467	+13.9	−64.7
✓	w.	6.3	3.7	141	165	64	40	205	205	−77	+125	978	489	−30.6	+49.6
✓	y.	7.4	23.6	111	140	93	65	204	205	−18	+75	1141	3749	−7.1	+29.8
✓	z.	8.5	16.2	95	40	109	165	204	205	+14	−125	1304	2608	+5.6	−49.6
✓	A.	8.3	0.4	135	75	70	130	205	205	−65	−55	1304	0	−25.8	−21.8
✓	B.	10.5	15.8	100	176	105	29	205	205	+05	+147	1630	2445	+2.0	+58.4
✓	C.	10.8	15.4	30	70	175	185 (3)	205	205	+145	−65	1630	2445	+57.6	−25.8
✓	D.	11.3	12.9	155	180	50	25	205	205	−105	+155	1793	1956	−41.7	+61.5
	&	x													
✓	F.	12.6	16.6	60	134	145	71	205	205	+85	+63	1956	2608	+33.7	+25.0
✓	G.	12.6	23.1	61	14	144	191	205	205	+83	−177	1956	3749	+33.0	−70.3
✓	H.	11.8	0.6	30	141	175	64	205	205	+145	+77	1793	0	+57.6	+30.6
✓	K.	12.8	3.8	26	180	180	25	206	205	+154	+155	1956	489	+61.1	+61.5
✓	L.	13.1	0.3	185	75	20	180 (3)	205	205	−165	−55	2119	0	−65.5	−21.8
✓	N.	15.7	11.5	41	100	164	104	205	204	+123	−04	2445	1793	+48.8	−1.6
✓	O.	18.1	13.2	191	30	14	175	205	205	−177	−145	2934	2119	−70.3	−57.6
✓	P.	18.5	13.3	98	49	107	157	205	206	+09	−108	2934	2119	+3.6	−42.9
✓ 5741 28	Q.	19.5	13.3	100	35	105	170	205	205	+05	−135	3097	2119	+2.0	−53.6
✓	Enz.	11.6	14.6	45	105	160	100	205	206	+115	+06	1793	2282	+45.7	+2.4
✓ 5745 28	Enz.	11.7	14.6	45	107	160	100	205	207	+115	+07	1793	2282	+45.7	+2.8
		~~0.7~~	~~5.6~~	~~40~~	~~14.5~~	~~16.5~~	~~60~~	~~205~~	~~205~~	~~+125~~	~~+85~~	~~10~~	~~815~~	~~+49.6~~	~~+33.7~~
✓ W.S. Remeasure July 24 05 Sept 84 N.		2.4	4.6	125	130	80	75	205	205	−75	+55	326	652	−17.9	+21.8
✓	v.	2.7	13.1	44	25	161	181	205	206	+117	−156	326	2119	+46.4	−61.9
✓	t.	3.1	11.8	190	170	15	35	205	205	−175	+135	489	1793	−69.5	+53.6
✓ 24.10	w.	6.6	9.2	85	20	120	184	205	204	+35	−164	978	1467	+13.9	−65.1

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1899phae.proj..974L

1838.3 2283.6
1838.3 2284.4
~~49.6 848.7~~
310.5 669.9
371.7 2056.7
420.3 1846.6
991.9 14072
947.4 538.6
1137.9 3778
1309.6 2559.4
1278.2 -21.8
1632.0 2503.4
1687.6 2419.2
1757.3 2017.5

1989.7 2633.0
1989.0 3678.7
1850.6 30.6
2017.1 550.3
2053.5 -21.8
2493.8 1791.4
2863.7 2061.4
2937.6 2076.1
3099.0 2065.4
1838.7 2284.4
1838.7 2284.8
~~49.6 848.7~~
308.1 673.8
372.4 2057.1
419.5 1846.6
991.9 1401.9

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1899phae.proj..974L

24.10 D 6392 from I 9862 March 14, 1899.

	x	y	A.	B.	C.	D.	a+b	B+D	C-a	B-D	x×163	y×163	C-a ×.397	B-D ×.397
✓	W.	6.3	36.7	145	175 (6)	60	40	205	205	−85	+125	978	489	−33.7	+49.6
✓	Y.	7.4	23.6	111	140	94	65	205	205	−17	+75	1141	3749	−6.8	+29.8
✓	Z	8.5	16.3	96	40	110	164	206	204	+14	−124	1304	2608	+5.6	−49.2
✓	A.	8.4	0.4	140	75	65	131	205	206	−75	−56	1304	0	−29.8	−22.2
✓	B.	10.5	15.8	100	179	105	26	205	205	+05	+153	1630	2445	+2.0	+60.7
✓	C.	10.8	15.4	30	70	175	132 (5)	205	205	+145	−65	1630	2445	+57.6	−25.8
✓	D.	11.3	12.8	160	184	46	21	206	205	−114	+163	1793	1956	−45.3	+64.7
Remeasured ✓	F.	12.6	60.6 (16)	60	135	145	70	205	205	+85	+65	1956	2608	+33.7	+25.8
✓	G.	12.6	23.1	62	14	143	191	205	205	+81	−177	1956	3749	+32.2	−70.3
✓	H.	11.8	0.6	30	140	175	65	205	205	+145	+75	1793	0	+57.6	+29.8
✓	K.	12.8	3.8	25	180	180	25	205	205	+155	+155	1956	489	+61.5	+61.5
✓	L.	13.1	0.3	185	75	20	130	205	205	−165	−55	2119	0	−65.5	−21.8
✓	N.	15.7	11.5	44	100	161	105	205	205	+117	−05	2445	1793	+46.4	−2.0
✓	O.	18.1	13.2	191	30	13	175	204	205	−178	−145	2934	2119	−70.7	−57.6
✓	P.	18.5	13.3	100	45	106	160	206	205	+06	−115	2934	2119	+2.4	−45.7
✓	Q.	19.5	13.3	100	31	106	174	206	205	+06	−143	3097	2119	+2.4	−56.8
✓	Em.	11.7	14.6	46	107	160	99	206	206	+114	+08	1793	2282	+45.3	+3.2
24.25	Em.	11.6	14.6	45	106	160	100	205	206	+115	+06	1793	2282	+45.7	+2.4

3694/18 3692/18

28 5741
18 3694
46) 9435 (205.109
92
235
230
59
46
400

28 5745
18 3692
46) 9437 (205.152
92
237
230
70
46
240
230
10

205.11 : ½163 :: x : X
410.22 : 163 :: 2x : 2X
0.397x = X

205.15 : ½163 :: y : Y
0.397y = Y

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1899phae.proj..974L

944.3	538.6
1134.2	3778.8
1309.6	2558.8
1274.2	-22.2
1632.0	2505.7
1687.6	2419.2
1747.7	2020.7
1989.7	2633.8
1988.2	3678.7
1850.6	29.8
2017.5	550.5
2053.5	-21.8
2491.4	1791.0
2863.3	2061.4
2936.4	2073.3
3099.4	2062.2
1838.3	2285.2
1838.7	2284.4

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1899phae.proj..974L

22.05 D6377 from I9832 March 22, 1899.
Int. from f. 10.

		x	y	A.	B.	b.	D.	a+b	B+D	b-a	B-D	x×163.	y×163.	c-a ×.397	B-D ×.398
✓ remeasured	+	h.	1.1	3.3	200	75	6	130	206	205	-194	-55	163	489	~~-77.0~~ -70.7	-21.9
✓		o.	8.9	10.4	1	80	204	125	205	205	+203	-45	1304	1630	+80.6	-17.9
✓ 22.15		m.	28.2	1.2	180		25	199	205	—	-155	—	4564	163	-61.5	—

23.40 D6389 from I10095 March 26 1899

		x	y	A.	B.	b.	D.	a+b	B+D	b-a	B-D	x×163	y×163	c-a ×.398	B-D ×.398
✓		Eros.	3.7	~~17.3~~ 17.5	37	41	170	165	205	206	+135	-124	489	2771	+53.7	-49.4
✓		Eros.	3.8	17.3	35	42	170	163	205	205	+135	-121	489	2771	+53.7	-48.2
✓		a.	-0.4	7.7	75	165	*	40	—	205	—	+125	-0	1141		+49.8
✓		b.	5.6	18.7	80	170	125	35	205	205	+45	+135	815	2934	+17.9	+53.7
✓		c.	7.9	18.6	2	120	202	85	204	205	+200	+35	1141	2934	+79.6	+13.9
✓		d.	6.8	3.8	22	175	182	30	204	205	+160	+18~~5~~4	978	489	+63.7	+57.7
✓		e	8.~~7~~6	16.4	70	90	135	115	205	205	+65	-25	1304	2608	+25.9	~~-19.9~~ -10.0
✓		f.	8.3	3.4	155	84	50	121	205	205	-105	-37	1304	489	-41.8	-14.7
✓		g.	20.9	25.2	10	40	195	165	205	205	+185	-125	3260	4075	+73.6	-49.8
✓		h.	21.6	18.6	70	120	134	85	204	205	+64	+35	3423	2934	+25.5	+13.9
✓		k.	21.3	8.8	165	~~60~~ 158	40	16	205	205	-125	+173	3423	1304	-49.8	+68.9
✓		Eros.	3.8	17.3	35	42	170	163	205	205	+135	-121	489	2771	+53.7	-48.2
✓		Eros.	3.8	17.3	35	41	170	164	205	205	+135	-123	489	2771	+53.7	-49.0
✓		a.	-0.4	7.7	75	165	*	40	—	205	—	+125	0	1141		+49.8
✓		b.	5.6	18.7	80	170	125	35	205	205	+45	+135	815	2934	+17.9	+53.7
✓		c.	7.9	18.6	3	120	202	85	205	205	+199	+35	1141	2934	+79.2	+13.9
✓		d.	6.8	8.8	22	175	183	30	205	205	+161	+145	978	489	+64.1	+57.7
✓ 24.15		e.	8.6	16.4	70	90	135	115	205	205	+65	-25	1304	2608	+25.9	-10.0

3277/16 3691/18

* line cut off

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1899phae.proj..974L

86.0
92.3 467.1
1384.6 1612.1
4502.5 — 205-199 = 06 D assumed. B→D = -193 x .398 = -76.8 y = +86.2

542.7 2721.6
542.7 2722.8
1190.8 205-75 = 130 assumed C C-a = +55 x .398 = +21.9 x = +21.9 Minus x est. = 21.9 - 16.3 = -141.1
832.9 2987.7
1220.6 2947.9
1041.7 546.7
1329.9 2598.0
1262.2 474.3
3333.6 4025.2
3448.5 2947.9
3373.2 1372.9
542.7 2722.8
542.7 2722.0
1190.8 205-75=130 x = +21.9 21.9 - 163 = -141.1
832.9 2987.7
1248.2 2947.9
1042.1 546.7
1329.9 2598.0

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1899phae.proj..974L

24.15

March 26, 1899.

	x	y	A.	B.	C.	D	a+b	B+D	b-a	B-D	x×163	y×163	C-a ×.398	B-D ×.398
✓	f.	8.0	3.4	155	81	50	124	205	205	-105	-43	1304	489	-418	-17.1
✓	g.	20.9	25.2	10	40	197	165	204	205	+184	-125	3260	4075	+73.2	-49.8
✓	h.	21.6	18.6	70	120	135	85	205	205	+65	+35	3423	2934	+25.9	+13.9
✓	k.	21.3	8.8	165	185	40	20	205	205	-125	+165	3423	1304	-49.8	+65.7
✓	Em.	3.8	17.3	35	42	170	162	205	204	+135	-120	489	2771	+53.7	-47.8
✓	24.25 Em.	3.8	17.3	36	42	169	163	205	205	+133	-121	489	2771	+52.9	-48.2

$\frac{1229}{6}$ $\frac{1229}{6}$

16 3277 — $\frac{6}{22}$ — $\frac{1229}{45\,06}$ (204.82 — 44 — 106 — 88 — 180 — 176 — 40

204.82 : ½163 :: x : X
409.64 : 163 :: 2x : 2X
0.398x = X

18 3691 — $\frac{6}{24}$ — $\frac{1229}{4920}$ (205 — 48 — 120

205.00 : ½163 :: x : X
0.398x = X

23.40

D 6371 fm B 10909

March 27, 1899.

	x	y	A.	B.	C.	D	a+b	B+D	b-a	B-D	x×179	y×179	C-a ×.398	B-D ×.398
✓	Em.	13.9	11.2	5	39	220	186	225	225	+215	-147	2327	1969	+85.8	-58.5
✓	Em.	13.9	11.2	5	39	220	186	225	225	+215	-147	2327	1969	+85.8	-58.5
✓	a.	3.3	18.4	195	80	30	144	225	224	-165	-64	537	3222	-65.8	-25.5
✓	b.	3.4	16.7	165	182	60	42	225	224	-105	+140	537	2864	-41.9	+55.7
✓	c.	5.3	18.1	152	10	71	215	223	225	-81	-205	895	3222	-32.3	-81.6
✓	d.	6.2	15.8	185	200	40	25	225	225	-145	+175	1074	2685	-57.7	+69.5
✓	e.	12.1	4.9	205	221	20	3	225	224	-185	+218	2148	716	-73.8	+86.8
✓	f.	~~14.5~~ 10.1	8.3	~~116~~ 211	~~45~~ 50	~~109~~ 14	~~180~~ 175	225	225	-197	-126	2506	1432	-28.7	-53.7
✓	g.	15.2	6.3	190	45	35	180	225	225	-155	-135	2685	1074	-61.8	-53.7
✓	h.	13.6	16.6	100	159	125	66	225	225	+25	+93	2327	2864	+10.0	+37.0
✓	k.	14.6	10.3	71	58	154	167	225	225	+83	-109	2506	1790	+33.1	-43.4

24.00

$\frac{2473}{11}$ $\frac{2472}{11}$

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1899phae.proj..974L

1262.2 4719
3333.2 40252
3448.9 29479
33732 1369.7
542.7 2723.2
541.9 2722.8

2412.6 1910.5
2412.6 1910.5
471.3 3196.5
4952 2919.7
862.8 3140.4
1016.3 2754.6
20744 802.8
2503.2 1378.3
26233 1020.3
2337.0 2901.0
2539.0 1746.6

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1899phae.proj..974L

12 2400

Cont:

D6371 fm B10909

March 27, 1899.

	x	y	A.	B.	C.	D.	a+b	B+D	c-a	B-D	x×179	y×179.	c-a ×.398	B-D ×.398
✓	l.	15.8	19.1	20	3	205	222	225	225	+185	−219	2685	1969	+73.6	−87.2
✓	m.	18.5	16.6	105	159	119	66	224	225	+14	+93	3222	2864	+5.6	+37.0
Should be 19.4	× n.	~~19.4 10.4~~	13.5	141	100	84	~~125~~ 115	225	225	−57	−25	~~3401 1790~~	2827	−22.7	−10.0
✓	o.	25.3	12.4	150	84	75	141	225	225	−75	−57	4475	2148	−29.8	−22.7
✓	p.	25.3	12.1	150	10	74	215	224	225	−76	−205	4475	2148	−30.2	−81.6
✓	q.	25.8	0.6	25	130	200	95	225	225	+185	+35	4475	0	+69.6	+13.9
✓	Eur.	13.9	11.2	5	40	220	185	225	225	+215	−145	2327	1969	+85.6	−57.7
✓	Eur.	13.9	11.2	5	39	220	~~185~~ 186	225	225	+215	−147	2327	1969	+85.6	−58.5
✓	t. x.	3.2	~~16.7 18.3~~	165	185	60	40	225	225	−105	+145	537	2864	−41.8	~~+29.7~~ +29.7
✓	x.	3.2	18.3	195	80	30	144	225	224	−165	−64	537	3222	−65.7	−25.5
✓	c.	5.3	18.1	152	10	72	215	224	225	−80	−205	895	3222	−31.8	−81.6
✓	d.	6.2	15.8	185	200	40	25	225	225	−145	+175	1074	2685	−57.7	+69.6
✓	e.	12.1	4.9	205	221	20	4	225	225	−185	+217	2148	716	−73.6	+86.4
✓	f.	~~14.5 12.1~~	8.3	~~115 210~~	~~46 50~~	~~110 15~~	~~180 175~~	225	225	−195	−120	2506	1432	−2.0	−53.3
✓	g.	15.2	6.3	190	45	35	180	225	225	−155	−135	2685	1074	−61.8	−53.7
✓	h.	13.6	16.6	100	159	124	66	224	225	+24	+93	2327	2864	+9.6	+37.0
✓	k.	14.6	10.3	71	55	153	170	224	225	+82	−115	2506	1790	+32.6	−45.8
✓	l.	15.8	11.1	20	5	205	220	225	225	+185	−215	2685	1969	+73.6	~~−45.8~~ −85.6
✓	m.	18.5	16.7	105	160	120	65	225	225	+15	+95	3222	2864	+6.0	+37.8
✓	n.	19.4	13.4	141	100	84	125	225	225	−57	−25	3401	2327	−22.7	−10.0
✓	o.	25.4	12.4	150	85	75	140	225	225	−75	−55	4475	2148	−29.8	−21.9
✓	p.	25.3	12.1	150	10	75	215	225	225	−75	−205	4475	2148	−29.8	−81.6
✓	q.	25.8	0.6	25	130	200	95	225	225	+175	+35	4475	0	+69.6	+13.9
✓	Eur.	13.9	11.2	5	39	219	186	224	225	+214	−147	2327	1969	+85.4	−58.5
✓ 2435	Eur.	13.9	11.2	5	40	220	185	225	225	+215	−145	2327	1969	+85.6	−57.7

11 2473
25 5619
36) 8092 (224.78

11 2472
25 5625
36) 8097 (224.92

$\frac{5619}{25}$ $\frac{5624}{25}$

224.78 : ½ 179 :: x : X
0.398 x = X

224.92 : ½ 179 :: y : Y
0.398 y = Y

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1899phae.proj..974L

27586	1881.8
32276	2901.0
~~17673~~ 33783	2317.0
44452	21253
44448	20664
45446	13.9
24126	1911.3
24126	1910.5
495.2	~~2898~~ 2921.7
4713	3196.5
8632	31407
1016.3	27546
20747	8024
2504.0	1378.7
26233	1020.3
2336.6	2901.0
25386	17442
27586	~~1920.2~~ 1883.4
32280	29018
33783	23170
44452	21261
44452	20664
45446	13.9
24122	1910.5
24126	1911.3

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1899phae.proj..974L

25.00

D6374 from B10909

March 27, 1899.

	x	y	A.	73.	6.	20.	A+6	B+D	6A	6B	D	x×179	y×179	c-a ×.398	B-D ×.398
Eva.	13.2	11.6	195	139	30	86	225	225	-165	+53		2327	1969	-65.7	+21.1
Eva.	13.2	11.6	194	140	31	85	225	225	-163	+55		2327	1969	-64.9	+21.9
a.	2.3	18.7	160	171	65	54	225	225	-95	+117		358	3222	-37.8	+46.6
b.	2.4	17.3	132	50	93	175	225	225	-39	-125		358	3043	-15.5	-49.8
c.	4.5	18.4	120	105	105	120	225	225	-15	-15		716	3222	-6.0	-6.0
d.	5.4	16.3	150	69	75	156	225	225	-75	-87		895	2864	-29.8	-34.6
omit e	8.3	4.1	165	225	60	225	~~225~~	~~450~~	~~-105~~						
omit f	11.3	8.6	175	150	50	75	~~225~~	~~225~~	~~-125~~	~~+75~~					
e = g	11.3	5.4	165	96	60	129	225	225	-105	-33		1969	895	-41.8	-13.1
h	12.6	17.2	70	31	155	194	225	225	+85	-163		2148	3043	+33.8	-64.9
k.	13.8	10.7	35	155	190	70	225	225	+155	+85		2327	1790	+61.7	+33.8
l.	15.1	11.5	205	104	20	121	225	225	-185	-17		2685	1969	-73.6	-6.8
n	18.5	13.9	106	200	119	25	225	225	+13	+175		3222	2327	+5.2	+69.6
m.	17.6	17.3	70	34	155	191	225	225	+85	-157		3043	3043	+33.8	-62.5
o.	24.5	12.8	114	189	111	36	225	225	-3	+153		4296	2148	-1.2	+60.9
p.	24.6	12.5	115	111	110	113	225	224	-5	-2		4296	2148	-2.0	-0.8
q.	25.1	1.2	200	10	25	215	225	225	-175	-205		4475	179	-69.6	-81.6
Eva.	13.2	11.6	190	140	35	85	225	225	-155	+55		2327	1969	-61.7	+21.9
25.25 Eva.	13.2	11.6	192	139	33	86	225	225	-159	+53		2327	1969	-63.3	+21.1
April 12.10															
~~March 31~~, 1899 a.	2.3	18.7	160	171	65	54	225	225	-95	+117		358	3222	-37.8	+46.6
b.	2.4	17.3	132	50	93	175	225	225	-39	-125		358	3043	-15.5	-49.8
c.	4.5	18.4	121	105	104	120	225	225	-17	-15		716	3222	-6.8	-6.0
d.	5.4	16.3	150	70	75	155	225	225	-75	-85		895	2864	-29.8	-33.8
omit e	8.3	4.0	165	225	60	225	~~225~~	~~450~~	~~-105~~						
omit f	11.3	8.6	175	150	50	75	~~225~~	~~225~~	~~-125~~	~~+75~~					
24.2.0 e = g	11.3	5.4	165	98	60	127	225	225	-105	-29		1969	895	-41.8	-11.5

~~5300~~ ~~6199~~
~~24~~ ~~28~~
~~4950~~ 4949
22 22

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1899phae.proj..974L

2261.3 1990.1
2262.1 1990.9
320.2 3268.6
342.5 2993.2
710.0 3216.0
865.2 2829.4

1927.2 881.9
2181.8 2978.1
2388.7 1823.8
2611.7 1962.2
3227.2 2396.6
3076.8 2980.5
4294.8 2208.9
4294.0 2147.2
4405.4 97.4
2265.3 1990.9
2263.7 1990.1
320.2 3268.6
342.5 2993.2
709.2 3216.0
865.2 2830.2

1927.2 883.5

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1899phae.proj..974L

Cont.

24.20 D6374 Jup B1909 April 1, 1899

		x	y	A. B.	6. 20.	a+b	B+D	b-a	B-D	x×179	y×179	c-a / x.398	B-D / y.398
✓	h.	12.6	14.2	65	31	160	194	225	225	+95	-163	2148	3043	+37.8	-64.9
✓	k.	13.8	10.7	36	158	189	66	225	224	+153	+92	2327	1790	+60.9	+36.6
✓	l.	15.1	11.5	205	105	20	120	225	225	-185	-15	2685	1969	-73.6	-6.0
✓	m.	17.6	17.2	71	35	154	190	225	225	+83	-155	3043	3043	+33.0	-61.7
✓	n.	18.5	13.8	105	200	120	25	225	225	+15	+175	3222	2327	+6.0	+69.6
✓	o.	24.5	12.8	115	190	110	35	225	225	-05	+155	4296	2148	-2.0	+61.7
✓	p.	24.5	12.6	115	115	110	110	225	225	-05	+5	4296	2148	-2.0	+2.0
✓	q.	25.1	1.1	205	10	20	215	225	225	-185	-205	4475	179	-73.6	-81.6
✓	✓	Cross	13.2	11.6	190	139	35	86	225	225	-155	+53	2327	1969	-61.7	+21.1
✓	✓	24.45	Cross	13.2	11.6	190	139	35	86	225	225	-155	+53	2327	1969	-61.7	+21.1
										2250/10	2249/10				

✓	✓	f	13.6	8.6	80	149	145	76	225	225	+65	+73	2327	1432	+25.9	+29.1
✓	✓	g	14.4	6.6	151	145	74	80	225	225	-77	+65	2506	1074	-30.6	+25.9
✓	✓	f	13.6	8.6	80	148	145	78	225	226	+65	+70	2327	1432	+25.9	+27.9
✓	✓	g	14.4	6.6	150	145	75	80	225	225	-75	+65	2506	1074	-29.8	+25.9
										900/4	901/4				

22 4950
10 2250
4 900
36) 8100 (225.00

225.00 : ½179 :: x : X

0.398 x = X

22 4949
10 2249
4 901
36) 8099 (224.97

224.97 : ½179 :: y : Y

0.398 y = Y

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1899phae.proj..974L

21858 2978.1
23879 1826.6
26114 1963.0
30760 2981.3
32280 2396.6
42940 2209.7
42940 2150.0
44014 974
22653 1990.1
22653 1990.1

2352.9 1461.1
2475.4 1099.9
2352.9 1459.9
2476.2 1099.9

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1899phae.proj..974L

22.45

D 6344 from B 11174 April 4. 1899.

		x	y	A	B	C	D	A+C	B+D	C-A	B-D	x×179	y×179	C-A ×.398	B-D ×.398
✓	Em.	14.3	13.4	170	74	55	151	225	225	-115	-77	2506	2327	-45.8	-30.6
✓	Em.	14.2	13.4	170	75	55	150	225	225	-115	-75	2506	2327	-45.8	-29.8
✓	a.	2.3	11.8	170	~~168~~ 208	55	17	225	225	-115	+191	358	1969	-45.8	+76.0
✓	b.	4.1	18.2	193	30	31	195	224	225	-162	-165	716	3222	-64.5	-65.7
✓	c.	4.5	3.6	115	145	110	80	225	225	-05	+65	716	537	-2.0	+25.9
✓	d.	10.4	2.3	145	35	80	190	225	225	-65	-155	1790	358	-25.9	-61.7
✓	e.	10.5	19.6	129	140	96	85	225	225	-33	+55	1790	3401	-13.1	+21.9
✓	f.	12.3	13.7	160	160	65	65	225	225	-95	+95	2148	2327	-37.8	+37.8
✓	g.	13.4	14.7	130	183	95	41	225	224	-35	+142	2327	2506	-13.9	+56.5
✓	h.	13.8	13.4	29	95	196	130	225	225	+167	-35	2327	2327	+66.5	-13.9
✓	k.	14.1	21.9	199	220	26	5	225	225	-173	+215	2506	3759	-68.9	+85.6
✓	l.	14.4	14.6	150	135	74	90	224	225	-76	+45	2506	2506	-30.2	+17.9
✓	m.	15.4	12.1	150	10	75	215	225	225	-75	-205	2685	2148	-29.8	-81.6
✓	n.	20.0	1.9	1	220	224	5	225	225	+223	+215	3580	179	~~+49.0~~ +88.8	+85.6
✓	Em.	14.3	13.4	165	75	60	150	225	225	-105	-75	2506	2327	-41.8	-29.8
✓	Em.	14.3	13.4	168	75	57	150	225	225	-111	-75	2506	2327	-44.2	-29.8
✓	a.	2.3	11.8	171	208	54	17	225	225	-117	+191	358	1969	-46.6	+76.0
✓	b.	4.2	18.2	191	30	34	195	225	225	-157	-165	716	3222	-62.5	-65.7
✓	c.	4.5	3.6	115	145	110	80	225	225	-05	+65	716	537	-2.0	+25.9
✓	d.	10.4	2.2	145	~~85~~ 35	80	190	225	225	-65	-155	1790	358	-25.9	-61.7
✓	e.	10.4	19.6	130	140	95	85	225	225	-35	+55	1790	3401	-13.9	+21.9
✓	f.	12.3	13.7	160	160	65	65	225	225	-95	+95	2148	2327	-37.8	+37.8
✓	g.	13.4	14.7	130	185	95	40	225	225	-35	+145	2327	2506	-13.9	+57.7
✓	h.	13.8	13.4	29	95	196	130	225	225	+167	-35	2327	2327	+66.5	-13.9
✓	k	14.1	21.9	199	220	26	5	225	225	-173	+215	2506	3759	-68.9	+85.6
✓	l	14.4	14.6	150	135	74	90	224	225	-76	+45	2506	2506	-30.2	+17.9
✓ 23.15	m	15.4	12.1	150	10	75	215	225	225	-75	-205	2685	2148	-29.8	-81.6

$\frac{6072}{27}$ $\frac{6074}{27}$

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1899phae.proj..974L

2460.2 2296.4
2460.2 2297.2
312.2 2045.0
651.5 2156.3
714.0 562.9
1764.1 296.3
1776.9 3422.9
2110.2 2364.8
2313.1 2563.5
2393.5 2313.1
2437.1 3844.6
2475.8 2523.9
2655.2 2066.4
3668.8
~~2629.0~~ 264.6
2464.2 2297.2
2461.8 2297.2
311.4 2045.0
653.5 3156.3
714.0 562.9
1764.1 296.3
1776.1 3422.9
2110.2 2364.8
2313.1 2563.7
2393.5 2313.1
2437.1 3844.6
2475.8 2523.9
2655.2 2066.4

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1899phae.proj..974L

5R 23.15

Cont.

D 6344 from B 11174. April 4, 1899

		x	y	A.	B.	C.	D.	A+b	B+D	b-a	B-D	x×179	y×179	C-a ×.398	B-D ×.398
✓		N.	20.0	11.9	1	220	223	5	224	225	+222	+215	3580	179	+88.4	+85.6
✓		Eros	14.3	13.4	169	75	56	150	225	225	-113	-75	2506	2327	-45.0	-29.8
✓	23.18	Eros	14.3	13.4	169	75	56	150	225	225	-113	-75	2506	2327	-45.0	-29.8
									$\frac{674}{3}$	$\frac{675}{3}$						

27 6072
3 674
30)6746(224.867
224.87 : ½179 :: x : X
0.398 x = X

27 6074
3 675
30)6749(224.967
224.97 : ½179 :: y : Y
0.398 y = Y

δ 6346 from B 11174. April 10, 1899 S. E. 13.5 Recorder

		x	y	A.	B.	C.	D.	A+b	B+D	b-a	B-D	x×179	y×179	C-a ×.398	B-D ×.398
✓	23.10	Eros	14.2	13.1	181	20	43	203	224	225	-138	-185	2506	2327	-54.9	-73.6
✓		Eros	14.2	13.1	180	20	45	205	225	225	-135	-185	2506	2327	-53.7	-73.6
✓		a	2.3	11.7	185	150	40	78	225	225	-145	+75	358	1969	-57.7	+29.8
✓		b	4.1	17.8	203	199	20	26	225	225	-185	+173	716	3043	-73.6	+68.9
✓		c	4.5	3.4	190	86	95	140	225	226	-35	-54	716	537	-13.9	-21.5
✓		d	10.2	1.5	161	200	63	25	224	225	-98	+175	1790	179	-39.0	+69.6
✓		e	10.4	19.4	145	82	80	142	225	224	-65	-60	1790	3401	-25.9	-23.9
✓		f	12.3	12.5	171	102	53	122	224	224	-118	-20	2148	2327	-47.0	-8.0
✓		g	13.4	14.6	145	122	80	103	225	225	-65	+19	2327	2506	-25.9	+7.6
✓		h	12.7	13.2	41	35	183	190	224	225	+142	-155	2327	~~4117~~ 2327	+56.5	-61.7
✓		k	14.1	21.6	211	160	14	65	225	225	-197	+95	2506	3759	-78.4	+37.8
✓		l	14.3	14.4	165	79	60	146	225	225	-105	-67	2506	2506	-41.8	-26.7
✓		m	13.3	11.7	165	175	60	50	225	225	-105	+125	2685	1969	-41.8	+49.8
✓		n	19.9	1.6	15	129	210	66	225	225	+195	+93	3401	179	+77.6	+37.0
		Eros	14.2	13.1	180	20	45	205	225	225	-135	-185	2506	2327	-53.7	-73.6
		Eros	14.2	13.1	180	20	46	204	226	224	-134	-184	2506	2327	-53.3	-73.2
									$\frac{3597}{16}$	$\frac{3598}{16}$						

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1999phae.proj..974L

3668.4	2646
2461.0	2297.2
2461.0	2297.2

2451.1	2253.4
2452.3	2253.4
300.3	1998.8
642.4	3111.9
702.1	515.5
1751.0	248.6
	~~109.4~~
1764.1	3377.1
2101.0	2319.0
2301.1	2513.6
2383.5	2265.3
	~~4055.3~~
2427.6	3796.8
2464.2	2479.3
2643.2	2018.8
3478.6	216.0
2452.3	2253.4
2452.7	2253.8

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1899phae.proj..974L

RQ G 246 from B 11174 April 10 1899

23.20

		π	γ	A.	R.	C.	D.	a+b	B+D	b-a	B-D	x×179	y×179	C-a ×.398	B-D ×.398
✓	a	2.3	11.6	185	150	40	70	225	225	-145	+75	358	1969	-57.7	+29.8
✓	f	4.1	17.8	200	200	20	25	225	225	-185	+175	716	3043	-73.6	+69.6
✓	c	4.5	3.4	130	85	90	140	225	225	-35	-55	716	537	-13.9	-21.9
✓	d	10.3	1.8	163	200	62	25	225	225	-101	+175	1790	179	-40.2	+69.6
✓	e	10.4	19.4	144	80	81	144	225	224	-63	-64	1790	3401	-25.1	-25.5
✓	f	12.3	13.5	175	100	50	125	225	225	-125	-25	2148	2327	-49.8	-10.0
✓	g	12.4	14.6	145	125	80	100	225	225	-65	+25	2327	2506	-25.9	+10.0
✓	h	13.7	13.2	41	35	183	190	224	225	+142	-155	2327	2327	+56.5	-61.7
✓	i	14.1	21.6	210	160	15	60	225	225	-195	+95	2506	3759	-77.6	+37.8
✓	l	14.3	14.4	165	76	60	149	225	225	-105	-73	2506	2506	-41.8	-29.1
✓	m	15.3	11.7	163	175	60	50	225	225	-105	+125	2685	1969	-41.8	+49.8
✓	n	19.9	1.6	15	189	210	66	225	225	+195	+93	3401	179	+77.6	+37.0
✓	Cros	14.3	13.1	180	20	45	204	225	224	-135	-184	2506	2327	-53.7	-73.2
✓	Cros	14.3	13.1	179	20	46	205	225	225	-133	-185	2506	2327	-52.9	-73.6

23.40

3149/14 3148/14

16 3597
14 3149
30)6746(224.867

224.87 : ½179 :: x : X

0.398x = X

16 3598
14 3148
30)6746(224.867

224.87 : ½179 :: y : Y

0.398y = Y

D 6371 fr. B 10909
Remeasures

x y A. B. C. D.

e

f

g

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1999phae.proj..974L

300.3	1998.8
642.4	3112.6
702.1	515.1
1749.8	248.6
1764.9	3375.5
2098.2	23170
2301.1	2516.0
2383.5	2265.3
2428.4	3796.8
2464.2	2476.9
2643.2	2018.8
3478.6	216.0
2452.3	2253.8
2453.1	2258.4

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1899phae.proj..974L

Q 63650 fm B 10951 April 11, 1899

		12.50	x	y	a.	B.	C.	D.	a+b	B+D	b-a	B-D	x×179	y×179	C-a ×.398	B-D ×.398
√		Eros	16.8	13.2	175	46	50	180	225	225	-125	-135	2864	2327	-49.8	-53.7
√		Eros	17.2	13.2	175	46	50	179	225	225	-125	-133	2864	2327	-49.8	-52.9
√		O	4.4	16.3	155	40	70	185	225	225	-85	-145	716	2864	-33.8	-57.7
√		p	4.4	15.7	155	185	70	40	225	225	-85	+145	716	2685	-33.8	+57.7
√		q	4.6	4.4	70	80	155	145	225	225	+85	-65	716	716	+33.8	-25.9
√		r	6.1	3.7	216	173	9	52	225	225	-207	+121	1074	537	-82.4	+48.2
√		s	6.6	6.4	80	95	145	130	225	225	+65	-35	1874	1074	+25.9	-13.9
√		t	10.7	11.7	51	170	174	53	225	225	+123	+115	1790	1969	+49.0	+45.8
√		u	10.6	10.3	53	50	170	175	225	225	+115	-125	1790	1790	+45.8	-49.8
√		w	11.1	7.3	204	60	21	165	225	225	-183	-105	1969	1253	-72.8	-41.8
√		x	12.3	10.4	170	69	53	156	225	225	-115	-87	2327	1790	-45.8	-34.6
√		y	13.5	19.1	96	10	129	210	225	225	+33	-205	2327	3401	+13.1	-81.6
√		z	13.6	13.4	70	80	155	144	225	224	+85	-64	2327	2327	+33.8	-25.5
√		A	17.5	13.8	110	190	115	96	225	226	+05	+154	3043	2327	+2.0	+61.3
√		B	16.9	7.9	35	210	200	16	225	226	+175	+184	2864	1253	+69.6	+77.2
√		C	17.6	7.3	80	41	145	184	225	225	+65	-143	3043	1253	+25.9	-56.9
√		R	20.8	9.2	40	42	187	182	226	224	+146	-140	3580	537	+58.1	-55.7
√		Eros	16.3	13.2	174	46	51	180	225	226	-123	-134	2864	2327	-49.0	-53.3
√		Eros	16.3	13.2	175	45	50	180	225	225	-125	-135	2864	2327	-49.8	-53.7
√		o	4.4	16.3	154	39	71	186	225	225	-83	-147	716	2864	-33.0	-58.5
√		p	4.3	15.7	155	185	70	40	225	225	-85	+145	716	2685	-33.8	+57.7
√		q	4.6	4.4	70	80	155	145	225	225	+85	-65	716	716	+33.8	-25.9
√		r	6.1	3.7	217	171	9	54	226	225	-208	+117	1074	537	-82.8	+46.6
√		s	6.6	6.4	80	95	145	130	225	225	+65	-35	1074	1074	+25.9	-13.9
√		t	10.7	11.7	50	170	175	53	225	225	+125	+115	1790	1969	+49.8	+45.8
√		u	10.6	10.3	55	50	170	175	225	225	+115	-125	1790	1790	+45.8	-49.8
√		w	11.1	7.3	205	60	20	166	225	226	-185	-106	1969	1253	-73.6	-42.2

6077/27 6077/27

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1899phae.proj..974L

2814.2	2273.3
2814.2	2274.1
682.2	2806.3
682.2	2742.7
749.8	690.1
991.6	585.2
1099.9	1060.1
1839.0	2014.8
1835.8	1740.2
1896.2	1211.2
2281.2	1755.4
2340.1	3319.4
2360.8	2301.5
3045.0	2388.3
2933.6	1330.2
3068.9	1196.1
3638.1	481.3
2815.0	2273.7
2814.2	2273.8
683.0	2805.9
682.2	2742.7
749.8	690.1
991.2	583.6
1099.9	1060.1
1839.8	2014.8 ~~1923.2~~
1835.8	1740.2
1895.4	1210.8

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1899phae.proj..974L

April 11, 1899.

Q 6365 from B 1095-1

		x	y	A.	B.	C.	Q	a+b	B+D	C-a	B-D	xx179	yx179	x.398 C-a	x.398 B-D
√	x	13.9	10.4	170	70	6-5	15-4	225	224	-115	-84	2327	1790	-45.8	-33.4
√	y	13.5	19.1	95	10	130	215	225	225	+35	-205	2327	3401	+13.9	-81.6
√	z	13.6	13.4	70	80	135	144	225	224	+85	-64	2327	2327	+33.8	-25.5
√	A	17.5	13.8	110	190	115	95	225	225	+05	+155	3043	2327	+2.0	+61.7
√	B	16.9	7.9	25	210	200	10	225	225	+175	+195	2864	1253	+69.6	+77.6
√	C	17.6	7.3	80	40	145	184	225	224	+65	-144	3043	1253	+25.9	-57.3
√	Q	20.7	9.3	40	44	185	180	225	224	+145	-136	3580	537	+57.7	-54.1
√	Eros	16.3	13.3	175	45	5-0	179	225	224	-125	-134	2864	2327	-49.8	-53.3
B+D remeasured															
√ 1.95	Eros	16.3	13.2	174	~~39~~ 45	5-0	~~179~~ 180	224	225	-124	-135	2864	2327	-49.4	-53.7
								2024	2020						
								9	9						

$\frac{27}{9}\ \frac{6077}{2024}\ \frac{36}{)8101(225.028}$

225.03 : ½179 :: x : X

0.398x = X

$\frac{27}{9}\ \frac{6077}{2020}\ \frac{36}{)8097(224.917}$

224.92 : ½199 :: y : Y

0.398y = Y

Q 6370 fm B 1095-1

12.40

		x	y	A.	B.	C.	Q	a+b	B+D	C-a	B-D	xx179	yx179	x.398 C-a	x.398 B-D
√	Eros	16.3	13.1	139	20	66	203	225	225	-93	-185	2864	2327	-37.0	-73.6
√	Eros	16.3	13.1	139	19	67	206	226	225	-92	-187	2864	2327	-36.6	-74.4
√	a	14.3	16.1	140	10	85	216	225	226	-55	-206	716	2864	-21.9	-82.0
√	b	14.3	12.7	145	160	80	65	225	225	-65	+95	716	2285	-25.9	+37.8
√	g	14.4	14.3	55	50	175	175	225	225	+115	-125	716	716	+45.8	-49.8
√	p	16.1	3.6	201	116	23	79	224	225	-178	+67	1074	537	-70.8	+26.7
√	s	16.7	6.2	65	70	160	135	225	225	+95	-85	1074	1074	+37.8	-33.8
√	t	10.5	11.7	35	145	190	80	225	225	+155	+65	1790	1969	+61.7	+25.9
√	u	13.8	10.1	40	21	185	203	225	224	+145	-182	1790	1790	+57.7	-72.4
√	v	11.1	7.8	190	30	35	145	225	225	-155	-165	1969	1253	-61.7	-65.7
								2250	2250						
								10	10						

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1899phae.proj..974L

2281.2	1756.6
2340.9	3319.4
2360.8	2301.5
3045.0	2388.7
2933.6	1330.6
3068.9	1195.7
3637.7	482.9
2814.2	2273.7
2814.6	2273.3

2827.0	2253.4
2827.4	2252.6
694.1	2782.0
690.1	2722.8
761.8	666.2
1003.2	563.7
1111.8	1040.2
1851.7	1994.9
1847.7	1717.6
1907.3	1187.3

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1899phae.proj..974L

Oct 37 Sum B 1098 ± 1. 18. C. 40 April 14, 1899.

		x	y					a+b	B+D	C-a	B-D	xx179	yx179	C-a x.398	B-D x.398
√ 1.00	x	13.4	10.2	151	40.	74	185	225	225	−77	−145	2327	1790	−30.6	−57.7
√	y	13.6	18.9	81	309	143	16	224	225	+62	+193	2327	3222	+24.7	+76.8
√	g	13.7	13.3	55	55	170	169	225	224	+115	−114	2327	2327	+45.8	−45.4
√	A	17.6	13.6	95	160	130	65	225	225	+35	+95	3043	2327	+13.9	+37.8
√	B	16.9	7.8	15	180	210	40	225	225	+195	+145	2864	1253	+77.6	+57.7
√	C	17.6	7.1	66	20	159	205	225	225	+93	−185	3043	1253	+37.0	−73.6
√	Q	20.9	3.1	24	19	201	206	225	225	+177	−187	3580	537	+70.4	−74.4
√	Eros	16.3	13.1	165°	20	69°	205	225	225	−95	−185	2864	2327	−37.8	−73.6
√	Eros	16.3	13.1	160	19	65	206	225	225	−95	−187	2864	2327	−37.8	−74.4
√	o	4.4	16.1	140	10	85	215	225	225	−55	−205	716	2864	−21.9	−81.6
√	p	4.4	15.6	145	160	80	65	225	225	−65	+95	716	2685	−25.9	+37.8
√	q	4.7	4.3	55	50	170	175	225	225	+115	−125	716	716	+45.8	−49.8
√	r	6.1	3.6	201	145	24	80	225	225	−177	+65	1074	537	−70.4	+25.9
√	s	6.7	6.4	65	65	160	160	225	225	+95	−95	1074	1074	+37.8	−37.8
√	t	10.8	11.6	40	145	185	80	225	225	+145	+65	1790	1969	+577	+25.9
√	u	10.8	10.1	40	20	185	204	225	224	+145	−184	1790	1790	+577	−73.2
√	w	11.2	7.2	140	90	35	195	225	225	−155	−165	1969	1253	−61.7	−65.7
√	x	13.4	10.2	150	40	75	185	225	225	−75	−145	2327	1790	−29.8	−57.7
√	y	13.6	18.8	81	209	144	16	225	225	+68	+193	2327	3222	+25.1	+76.8
√	g	13.7	13.3	55	56	170	169	225	225	+115	−113	2327	2327	+45.8	−45.0
√	A remeasured	17.6	13.6	95	160	129	65	224	225	+34	+95	3043	2327	+13.5	+37.8
√	B	16.9	7.8	15	185	210	40	225	225	+205	+145	2864	1253	+77.6	+57.7
√	C	17.6	7.1	65	20	161	203	226	225	+95	−185	3043	1253	+38.2	−73.6
√	Q	20.9	3.1	21	20	203	205	224	225	+182	−185	3580	537	+72.4	−73.6
√	Eros	16.3	13.1	160	20	65	203	225	225	−95	−185	2864	2327	−37.8	−73.6
√ 1.12	Eros	16.3	13.21	161	20	64	205	225	225	−97	−185	2864	2327	−38.6	−73.6

5848 5848 5848
5843 26 26

10 2250
26 5848
36) 8098 (224.944

2250
5848
36) 8098 (224.944

224.94 : ½179 :: x : X
0.398x = X

0.398y = Y

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1899phae..proj..974L

2296.4 1732.3
2351.7 3298.8
2372.8 2281.6
3056.9 2364.8
2941.6 1310.7
3080.0 1179.4
3650.4 462.6
2826.2 2253.4
2826.2 2252.6
694.1 2782.4
690.1 2722.8
761.8 666.2
1003.6 562.9
1111.8 1036.2
1847.7 1994.9
1847.7 1716.8
1907.3 1187.3
2297.2 1732.3
2352.1 3298.8
2372.8 2282.0
3056.5 2364.8
2941.6 2310.7
3081.2 1179.4
3652.8 463.4
2826.2 2253.4
2825.4 2253.4

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1899phae.proj..974L

May 2, 1899.

Q 6976 from Q 10215

22.90

		x	y	A.	B.	C.	D.	A+C	B+D	C-A	B-D	x×163	y×163	x×398	y×398
✓	Eros	11.7	14.8	40	180	165	25	205	205	+125	+155	1793	2282	+49.8	+61.7
✓	Eros	11.7	14.8	41	180	164	25	205	205	+123	+155	1793	2282	+49.0	+61.7
✓	a	6.1	23.2	195	40	10	165	205	205	-185	-125	978	3749	-73.6	-49.8
✓	b	9.6	13.7	75	150	130	55	205	205	+55	+95	1467	2119	+21.9	+37.8
✓	c	10.2	11.3	164	50	41	155	205	205	-123	-105	1630	1793	-49.0	-41.8
✓	d	10.4	17.1	125	15	80	190	205	205	-45	-175	1630	2771	-17.9	-69.6
✓	e	10.4	20.9	120	180	85	24	205	204	-35	+156	1630	3260	-13.9	+62.1
✓	f	11.3	21.4	161	88	44	120	205	205	-117	-35	1793	3423	-46.6	-13.9
✓	g	13.6	12.5	59	100	146	105	205	205	+87	-05	2119	1956	+34.6	-2.0
✓	g	14.4	2.5	126	100	79	106	205	206	-47	-06	2282	326	-18.7	-2.4
✓	h	17.5	23.3	100	50	104	155	204	205	+04	-105	2771	3799	+1.6	-418
✓	k	18.5	17.8	110	180	95	35	205	205	-15	+135	2934	2771	-6.0	+53.7
✓	l	22.9	10.3	10	45	195	160	205	205	+185	-115	3586	1630	+73.6	-45.8
✓	Eros	11.7	14.8	41	180	164	25	205	205	+123	+155	1793	2282	+49.0	+61.7
✓	Eros	11.7	14.8	42	179	163	26	205	205	+121	+153	1793	2282	+48.2	+60.9
✓	a	6.1	23.2	195	40	10	165	205	205	-185	-125	978	3749	-73.6	-49.6
✓	b	9.6	13.7	75	150	130	55	205	205	+55	+95	1467	2119	+21.9	+37.8
✓	c	10.2	11.3	165	55	40	150	205	205	-125	-95	1630	1793	-49.8	-37.8
✓	d	10.4	17.1	125	45	80	190	205	205	-45	-175	1630	2771	-17.9	-69.6
✓	e	10.4	20.8	120	180	85	25	205	205	-35	+155	1630	3260	-13.9	+61.7
✓	f	11.3	21.4	160	88	44	120	204	205	-116	-35	1793	3423	-46.2	-13.9
✓	g'	13.6	12.5	60	100	145	105	205	205	+85	-05	2119	1956	+33.8	-2.0
✓	g	14.4	2.5	125	100	80	100	205	205	-45	+05	2282	326	-17.9	+2.0
✓ D. Remeasured	h	17.5	23.3	100	49	105	156	205	205	+05	-107 -54	2771	3749	+2.0	-42.6
✓	k	18.4	17.8	110	170	95	35	205	205	-15	+135	2934	2771	-6.0	+53.7
✓	l	22.9	10.3	10	45	195	160	205	205	+185	-115	3586	1630	+73.6	-45.8

5328/26 5330/26

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1899phae.proj..974L

1842.8 2343.7
1842.0 2343.7
9047 36992
1488.9 2156.8
1581.0 1751.2
1612.1 2701.4
1616.1 3322.1
1746.4 3409.1
2153.6 1954.0
2263.3 3236
2772.6 3757.2
2928.0 2824.7
3659.6 1584.2
1842.0 2343.7
1841.2 2342.9
9044 36992
1488.9 2156.8
1580.2 1755.2
1612.1 2701.4
1616.1 3321.7
1746.8 3409.1
21528 1954.0
2264.1 3280
2773.0 3706.4
2928.0 2824.7
3659.6 1584.2

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1899phae.proj..974L

FQ 6876 from I 10215

May 2 1899.

		x	y	A.	B.	C.	FQ.	A+C	B+D	C-A	B-D	x×163	y×163	C-A×.398	B-D×.398
√	Eros	11.7	14.8	40	180	164	35	204	205	+124	+155	1793	2282	+49.4	+61.7
23.00	Eros	11.7	14.8	41	180	164	35	205	205	+123	+155	1793	2282	+49.0	+61.7
								409/2	410/2						

26 5328
2 409
28)5737(204893

204.89 : ½163 :: x : X
0.398x = X

26 5330
2 410
28) 5740 (205.00

205.00 : ½163 :: y : Y
0.398y = Y

FQ 6417 from I 10280

May 10, 1899.

		x	y	A.	B.	C.	FQ.	A+C	B+D	C-A	B-D	x×163	y×163	C-A ×.397	B-D ×.397
29.10															
√	Eros	11.4	15.3	116	48	89	161	205	205	-27	-117	1793	2445	-10.7	-46.4
√	Eros	11.4	15.3	115	45	90	160	205	205	-25	-115	1793	2445	-9.9	-45.7
√	a	3.8	12.6	20	131	185	84	205	205	+165	+37	489	1956	+65.5	+14.7
√	f	4.7	6.9	35	190	170	15	205	205	+135	+175	652	978	+53.6	+69.5
√	c	5.4	18.4	120	68	85	140	205	206	-35	-74	815	2934	-13.9	-29.4
√	* d	7.3	19.4	154	80	51	125	205	205	-103	-45	1141	3097	-40.9	-17.9
√	e	7.7	22.7	55	140	150	64	205	204	+95	+76	1141	3586	+37.7	+30.2
√	f	11.7	17.4	50	70	155	135	205	205	+105	-65	1793	2771	+41.7	-25.8
√	g	13.1	22.8	199	171	6	34	205	205	-193	+137	2119	3586	-76.6	+54.4
√	h	20.2	20.4	175	90	30	115	205	205	-145	-25	3260	3260	-57.6	-9.9
√	Eros	11.4	15.3	116	45	90	160	206	205	-26	-115	1793 2445	2445	-10.3	-45.7
√	Eros	11.4	15.3	116	45	89	160	205	205	-27	-115	1793	2445	-10.7	-45.7
√	a	3.9	12.6	20	120	185	85	205	205	+165	+35	489	1956	+65.5	+13.9
√	f	4.7	6.9	35	190	170	15	205	205	+135	+175	652	978	+53.6	+69.5
√	c	5.4	18.4	120	65	85	140	205	205	-35	-75	815	2934	-13.9	-29.8
√	d	7.3	19.4	155	80	50	125	205	205	-105	-45	1141	3097	-41.7	-17.9
√	e	7.6	22.6	55	140	150	66	205	206	+95	+74	1141	3586	+37.7	+29.4
								3486/17	3486/17						

* FQ 6417

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1899phae.proj..974L

1842.4 2343.7
1842.0 2343.7

1782.3 2398.6
1783.1 2399.3
554.5 1970.7
705.6 1047.5
801.1 2904.6
1100.1 3079.1
1178.7 3616.2
1834.7 2745.2
2042.4 3640.4
3202.4 3250.1
1782.7 2399.3
1782.3 2399.3
554.5 1969.9
705.6 1047.5
801.1 2904.2
1099.3 3079.1
1178.7 3615.4

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1899phae.proj..974L

May 10, 1899.

FC 6417 from L 10280

23.45

	x	y	A.	B.	C.	FC.	A+C	B+D	C-a	B-D	x×163	y×163	C-a ×.397	B-D ×.397
✓ f	11.7	17.4	50	74	155	131	205	205+105	-57	1793	2771	+41.7	-22.6
✓ g	13.1	22.8	199	170	6	35	205	205-193	+135	2119	3586	-76.6	+53.6
✓ h	20.2	20.4	175	90	30	115	205	205-145	-25	3280	3260	-57.6	-9.9
✓ Eros	11.4	15.3	116	45	89	161	205	206	-27	-116	1793	2445	-10.7	-46.1
✓ Eros	11.4	15.3	115	44	90	161	205	205	-25	-117	1793	2445	-9.9	-46.4
							1025/5	1026/5						

17 3486
5 1025
22) 4511 (205.05

205.05 : ½163 :: x : X

0.397x = X

17 3486
5 1026
22) 4512 (205.09

205.09 : ½163 :: y : Y

0.397y = Y

FC 6982 from L 10321

	x	y	A.	B.	C.	FC.	A+C	B+D	C-a	B-D	x×163	y×163	C-a ×.398	B-D ×.398
✓ Eros	14.3	13.1	155	10	50	195	205	205-105	-185	2282	1956	-41.8	-73.6	
✓ Eros	14.3	13.1	154	10	50	195	204	205-104	-185	2282	1956	-41.4	-73.6	
✓ a	7.3	10.9	150	199	55	6	205	205-95	+193	163	1630	-37.8	+76.8	
✓ b	2.3	22.7	161	171	44	33	205	204-117	+138	326	3586	-46.6	+54.9	
✓ c	9.3	3.3	150	49	55	136	205	205-95	-107	1467	326	-37.8	-42.6	
✓ d	10.4	19.5	146	110	59	95	205	205-87	+15	1630	3097	-34.6	+6.0	
✓ e	11.7	5.0	45	205	160	205	205	410	+115		1793	815	+45.8	
✓ f	15.1	15.4	199	76	6	129	205	205-193	-53	2445	2445	-76.8	-21.1	
✓ g	16.0	16.9	205	198	205	7	410	205	+191	2608	1793		+76.8	
✓ h	16.4	16.6	148	140	57	65	205	205-91	+75	2608	2608	-36.2	+29.8	
✓ k	17.1	12.9	199	200	6	5	205	205-193	+195	2771	1956	-76.8	+77.6	
✓ l	17.4	12.8	144	185	61	20	205	205-83	+165	2771	1956	-33.0	+65.7	
✓ m	21.4	11.5	150	105	55	100	205	205-95	+05	3423	1793	-37.8	+2.0	
✓ n	28.1	8.5	186	100	19	105	205	205	167	-05	4075	1304	-66.5	-2.0
							3074/15	3074/15						

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1899phae.proj..974L

1834.7 2748.4
2042.4 3639.6
~~3182.4~~ 3202.4 3250.1
1782.3 2398.9
1783.1 2398.6

2240.2 1882.4
2240.6 1882.4
125.2 1706.8
279.4 3640.9
1429.2 283.4
1595.4 3103.0
1838.8 815-281.5 = 733.5
2368.2 2423.9
* 1869.0 2608.0-81.5=2526.5
2571.8 2637.8
2694.2 2033.6
2738.0 2021.7
3885.2 1795.0
4008.5 1302.0

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1899phae.proj..974L

6382 from 1 10 22 1

		x	y	A	B	C	D	a+C	B+D	C-a	B-D	xx163	yx163	Cxax.398	BDx.398
√2.00	Eros	14.3	12.1	155	10	50	195	205	205	-105	-185	2282	1956	-41.8	-73.6
√	Eros	14.3	12.1	154	10	50	195	204	205	-104	-185	2282	1956	-41.4	-73.6
√	a	1.3	10.9	150	199	55	6	205	205	-95	+193	163	1630	-37.8	+76.8
√	b	2.3	22.8	161	171	44	34	205	205	-117	+137	326	3586	-46.6	+54.5
√	c	9.4	2.3	150	49	55	156	205	205	-95	-107	1467	326	-37.8	-42.6
√	d	10.4	19.6	145	110	60	95	205	205	-85	+15	1630	3097	-33.8	+6.0
√	e	11.7	5.0	45	205	160	205	205	410	+115		1793	815	+45.8	
√	f	13.1	13.4	199	75	6	130	205	205	-193	-55	2445	2445	-76.8	-21.9
√	g	16.0	11.9	205	198	205	7	410	205		+191	2608	1793		+76.0
√	h	16.4	16.6	148	140	57	65	205	205	-91	+75	2608	2608	-36.2	+29.8
√	k	17.1	12.9	198	200	7	5	205	205	-191	+195	2771	1956	-76.0	+77.6
√	l	17.4	12.8	145	185	60	20	205	205	-85	+165	2771	1956	-33.8	+65.7
√	m	21.3	11.5	150	105	55	100	205	205	-95	-05	3423	1793	-37.8	+2.0
√	n	25.1	85	135	99	20	106	205	205	-165	-07	4075	1304	-65.7	-2.8
√	Eros	14.3	12.1	155	10	50	195	205	205	-105	-185	2282	1956	-41.8	-73.6
√2.150	Eros	14.3	12.1	154	10	51	195	205	205	-103	-185	2282	1956	-41.0	-73.6
								3484	3485						
								17	17						

a+C

15 3074
17 3484
32)6558(204.938

204.94 : ½163 :: x : X

0.398 x = X

B+D

15 3074
17 3485
32)6559(204.969

204.97 : ½163 :: y : Y

0.398 y = Y

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1899phae.proj..974L

2240.2	1882.4
2240.6	1882.4
125.2	1706.8
279.4	3640.5
1429.2	2834
1596.2	31030
1838.8	
2368.2	2423.1
2526.5	1869.0
2571.8	2637.8
2695.0	20336
2737.2	2021.7
3385.2	1795.0
4009.3	13012
22402	1882.4
22410	1882.4

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1899phae.proj..974L

RA 6409 from I 10469 May 22, 1899.

		x	y	A.	B.	C.	D.	A+C	B+D	C-a	B-D	x×163	y×163	C-a ×.397	B-D ×.398
22.30															
✓	Eros	13.9	10.10	10	179	195	26	205	205+185+153	2119	163.0			+73.4	+60.9
✓	Eros	13.9	10.8	10	180	196	25	206	205+186+155	2119	1630			+73.8	+61.7
Not on plate. a															
✓	b	13.5	14.8	100	169	105	36	205	205+0.5+133	2119	2282			+2.0	+52.9
✓	c	14.9	9.0	10	205	196	205	206	410+186	2282	1467			+73.8	
✓	d	15.1	15.2	188	25	17	180	205	205-171-155	2445	2445			-67.9	-61.7
✓	e	15.3	16.2	150	29	53	176	205	205-95-147	2445	2608			-37.7	-58.5
✓	f	15.9	11.1	21	15	184	190	205	205+163-175	2445	1793			+64.7	-69.6
Not on plate. g															
✓	h	19.4	13.8	135	189	70	16	205	205-65+173	3097	2119			-25.8	+68.9
✓	k	22.9	14.1	25	19	180	186	205	205+155-167	3586	2282			+61.5	-66.5
	Eros	13.9	10.8	10	179	195	26	205	205+185+153	2119	1630			+73.4	+60.9
✓	Eros	13.9	10.8	9	180	197	25	206	205+188+155	2119	1630			+74.6	+61.7
✓ "	a	13.5													
✓	b	13.5	14.8	100	170	106	35	206	205+106+135	2119	2282			+2.4	+53.7
✓	c	14.9	9.0	10	205	195	204	205	409+185+0.1	2282	1467			+73.4	+0.4 +1467.
✓	d	15.1	15.2	188	25	17	180	205	205-171-155	2445	2445			-67.9	-61.7
✓	e	15.3	16.2	150	30	53	175	205	205-95-145	2445	2608			-37.7	-57.7
✓	f	15.8	11.1	22	15	183	190	205	205+161-175	2445	1793			+63.9	-69.6
"	g														
✓	h	19.4	13.8	135	190	70	15	205	205-65+175	3097	2119			-25.8	+69.6
✓	k	22.8	14.1	25	19	181	186	206	205+156-167	3586	2282			+61.9	-66.5
✓	Eros	13.9	10.8	9	179	197	26	206	205+188+153	2119	1630			+74.6	+60.9
✓ 22.35	Eros	13.9	10.8	10	180	195	25	205	205+185+155	2119	1630			+73.4	+61.7

4106/20 4509/22

20) 4106 (205.30 22) 4509 (204.95

205.30 : ½163 :: x : I 204.95 : ½163 :: y : I

0.397x = I 0.398y = I

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1899phae.proj..974L

2192.7 1690.9
2192.8 1691.7

2121.0 2334.9
2355.8 ~~1467.0~~ 1385.5
2377.1 2383.3
2407.3 2549.5
2509.7 1723.4

3071.2 2187.9
3647.5 2215.5
2192.7 1690.9
2193.6 1691.7

2121.7 2335.7
2355.7 1467.4 -81.5 1385.9
2377.1 2383.3
2407.3 2550.3
2508.9 1723.4

3071.2 2188.6
3647.9 2215.5
2193.6 1690.9
2192.7 1691.7

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1899phae.proj..974L

K 6394 from 10559 May 22 1899.

		x	y	A	B	C	D	AC	B+D	C-a	B-D	x×163	y×163	C-a×398	B-D×398
23.00															
√	Eros	14.3	12.7	146	160	59	45	205	205	-87	+115	2282	1956	-34.6	+45.8
√	"	14.3	12.5	149	94	56	111	205	205	-93	-17	2282	1956	-37.0	-6.8
√	"	14.5	12.7	106	170	99	35	205	205	-07	+135	2282	1956	-2.8	+53.7
√	"	14.5	12.5	105	110	100	95	205	205	-05	+15	2282	1956	-2.0	+6.0
√	"	14.3	12.6	146	160	59	45	205	205	-87	+115	2282	1956	-34.6	+45.8
√	"	14.3	12.5	149	95	56	110	205	205	-93	-15	2282	1956	-37.0	-6.0
√	"	14.5	12.7	106	170	99	35	205	205	-07	+135	2282	1956	-2.8	+53.7 +53.7
√	"	14.5	12.5	105	110	100	94	205	204	-05	+16	2282	1956	-2.0	+6.4
√	a	15.3	10.8	155	172	50	32	205	204	-105	+140	815	1630	-41.8	+55.7
√	b	15.3	11.4	150	95	55	110	205	205	-95	-15	815	1793	-37.8	-6.0
√	c	10.7	8.1	50	16	156	159	206	205	+106	-173	1680	1304	+42.2	-68.9
√	d	12.1	9.8	190	176	15	30	205	206	-175	+146	1956	1467	-69.6	+58.1
√	e	12.8	1.6	30	129	185	77	205	206	+165	+52	1956	163	+65.7	+20.7
√	f	14.2	12.6	175	120	30	85	205	205	-145	+35	2282	1956	-57.7	+13.9
√	g	14.6	13.5	80	95	126	110	206	205	+46	-15	2282	2119	+18.3	-6.0
√	h	14.8	12.7	25	160	180	45	205	205	+155	+115	2282	1956	+61.7	+45.8
√	k	15.0	11.7	205	159	205	46	410	205		+113	2445	1793		+45.0
√	l	14.8	0.5	35	110	170	95	205	205	+135	+15	2282		0	+53.7 +6.0
√	m	13.2	8.7	170	145	34	60	204	205	-136	+85	2445	1304	-54.1	+33.8
√	n	13.8	14.3	29	53	176	152	205	205	+147	-99	2445	2282	+58.5	-39.4
√	o	17.8	17.4	95	95	180	110	205	205	+155	-15	2771	2771	+61.7	-6.0
√	p	19.1	4.3	195	46	10	159	205	205	-185	-113	3097	652	-73.6	-45.0
√	q	20.8	9.3	35	56	170	149	205	205	+135	-93	3260	1467	+53.7	-37.0
√	r	21.6	18.3	61	50	143	155	204	205	+82	-105	3423	2445	+32.6	-41.8
√	s	22.6	21.9	79	200	126	5	205	205	+47	+195	3586	3423	+18.7	+77.6
√	t	22.7	20.6	59	119	146	86	205	205	+87	+33	3586	3260	+34.6	+13.1
√	u	22.6	8.4	65	70	140	135	205	205	+75	-65	3586	1304	+29.8	-25.9

$\frac{5740}{28}$ $\frac{5535}{27}$

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1899phae.proj.974L

22474	2001.8
22450	1949.2
2279.2	2009.7
2280.0	1962.0
22474	2001.8
22450	19500
2279.2	2009.7 ~~1969.7~~
22800	1962.4
7732	1685.7
777.2	1787.0
1672.2	1235.1
1886.4	1525.1
2021.7	183.7
22243	1969.9
23003	2113.0
23437	2001.8
	1838.0
2335.7	6.0
23909	13378
25035	2242.6
28327	27650
30237	607.0
3313.7	1430.0
34556	2403.2
36047	36006
36206	3273.1
36158	1278.1

2445 − 81.5 = 2363.5

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1899phae.proj..974L

SQ 6894 from L 105-9 May 22, 1899.

		x	y	A.	B.	C.	SQ.	A+C	B+D	C-a	B-D	x×163	y×163	C-a ×.398	B-D ×.398
√	m	24.1	5.3	180	50	20	156	205	206	-165	-106	3912	815	-65.7	-42.2
√	x	24.4	22.3	121	101	84	104	205	205	- 37	- 03	3912	3586	-14.7	- 1.2
√	Eros	14.3	12.6	145	160	60	45	205	205	- 85	+115	2282	1956	-33.8	+45.8
√	"	14.2	12.5	149	94	56	111	205	205	- 93	- 17	2282	1956	-37.0	- 6.8
√	"	14.5	12.7	106	170	99	35	205	205	- 07	+135	2282	1956	- 2.8	+53.7
√	"	14.5	12.5	105	110	100	95	205	205	- 05	+ 15	2282	1956	- 2.0	+ 6.0
√	"	14.3	12.6	146	159	59	46	205	205	- 87	+113	2282	1956	-34.6	+45.0
√	"	14.3	12.5	150	95	56	110	206	205	- 94	- 15	2282	1956	-37.4	- 6.0
√	"	14.5	12.7	105	170	100	35	205	205	- 05	+135	2282	1956	- 2.0	+53.7
√	"	14.5	12.6	105	110	100	94	205	204	- 05	+ 16	2282	1956	- 2.0	+ 6.4
√	a	5.3	10.8	155	171	50	33	205	204	-105	+138	815	1630	-41.8	+54.9
√	b	5.3	11.4	150	95	55	110	205	205	- 95	- 15	815	1793	-37.8	- 6.0
√	c	10.7	8.1	50	15	155	190	205	205	+105	-175	1630	1304	+41.8	-69.6
√	d	12.1	9.8	190	175	15	30	205	205	-175	+145	1956	1467	-69.6	+57.7
√	e	12.8	1.6	20	129	185	76	205	205	+165	+ 59	1956	163	+65.7	+21.1
√	f	14.2	12.6	172	120	32	85	204	205	-140	+ 35	2282	1956	-55.7	+13.9
√	g	14.6	13.5	79	99	126	107	205	206	+ 47	- 08	2282	2119	+18.7	- 3.2
√	h	14.8	12.7	25	160	180	45	205	205	+155	+115	2282	1956	+61.7	+45.8
√	k	15.0	11.7	205	152	305	30	410	206		+106	2445	1793		+42.2
√	l	14.5	0.5	35	110	170	95	205	205	+135	+ 15	2282	0	+53.7	+ 6.0
√	m	15.2	8.7	170	145	35	60	205	205	-135	+ 85	2445	1304	-53.7	+33.8
√	n	15.8	14.3	30	35	175	150	205	205	+135	- 95	2445	2282	+53.7	-37.8
√	o	17.8	17.4	22	95	182	110	204	205	+ 160	- 15	2771	2771	+63.7	- 6.0
√	p	19.1	4.3	195	46	10	159	205	205	- 185	-113	3097	652	-73.6	-45.0
√	q	20.8	9.3	35	59	170	146	205	205	+ 135	- 87	3260	1467	+53.7	-34.6
√	r	21.6	15.3	65	50	140	155	205	205	+ 75	-105	3423	2445	+29.8	-41.8

5534/27 5331/26

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1999phae.proj..974L

3846.3 772.8
3897.3 3584.8
2248.2 2001.8
2245.0 1979.2
2279.2 2009.7
2280.0 1962.0
2247.4 2001.0
2244.6 1950.0
2280.0 2009.7
2280.0 1962.4
773.2 1684.9
777.2 1787.0
1671.8 1234.4
1886.4 1524.7
2021.7 184.1
2226.3 1969.9
2300.7 2115.8
2343.7 2001.8
1835.2 2445 - 81.5 = 2363.5
2335.7 6.0
2391.3 1337.8
2502.7 2244.2
2834.7 2765.0
3023.4 607.8
3313.7 1432.4
3452.8 2408.2

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1899phae.proj..974L

May 22 1899

RQ 6894 from Q 105°-5°9

		x	y	A.	B.	C.	D.	a+c	B+D	c-a	B-D	x×163	y×163	c-a×398	y×398
✓	o	22.6	21.9	76	200	129	5°	205	205	+53	+195	3586	3423	+21.1	+77.6
✓	h	22.6	20.6	59	119	146	86	205	205	+87	+33	3586	3260	+34.6	+13.1
✓	m	22.6	8.4	65°	70	140	136	205	206	+75	-66	3586	1304	+29.8	-26.3
✓	n	24.1	5.3	185°	50	20	185°	205	205	-165	-105	3912	815	-65.7	-41.8
✓	π	24.4	22.5°	120	100	85°	105°	205	205	-35	-05	3912	3586	-13.9	-2.0
✓	Eros	14.3	12.7	146	160	60	45°	206	205	-86	+115	2282	1956	-34.2	+45.8
✓	"	14.3	12.5°	149	94	56	111	205	205	-93	-17	2282	1956	-37.0	-6.8
✓	"	14.5°	12.8	106	171	99	33	205	204	-07	+138	2282	1956	-2.8	+54.9
✓	"	14.5°	12.6	105°	110	100	95°	205	205	-05	+15	2282	1956	-2.0	+6.0
✓	"	14.3	12.7	146	160	59	45°	205	205	-87	+115	2282	1956	-34.6	+45.8
✓	"	14.3	12.5°	150	95°	55°	110	205	205	-95	-15	2282	1956	-37.8	-6.0
✓	"	14.5°	12.8	106	170	99	35°	205	205	-07	+135	2282	1956	-2.8	+53.7
✓	"	14.5°	12.7	105°	110	101	95°	206	205	-04	+15	2282	1956	-1.6	+6.0
28.50			6												

2667/13 2665/13

28 5740
27 5534
13 2667
68)18941(205.014

205.01 : ½163 :: x : X
0.398x = X

27 5535
26 5331
13 2665
66)18531(205.015

205.02 : ½163 :: y : Y
0.398y = Y

RQ 6496 from Q 106°5°

May 25 1899

28.10

		x	y	A.	B.	C.	D.	a+c	B+D	c-a	B-D	x×163	y×163	c-a×398	B-D×398
✓	Eros	12.2	16.8	175°	170	30	35°	205	205	-145	+135	1956	2608	-57.7	+53.7
✓	"	12.2	16.8	176	170	29	35°	205	205	-147	+135	1956	2608	-58.5	+53.7
✓	a	0.6	8.5°	49	94	157	111	206	205	+108	-17	0	1304	+43.0	-6.8
very faint															
✓	c	5.7	27.6	54	118	151	87	205	205	+97	+31	815	4401	+38.6	+12.3
✓	d	6.3	2.4	146	65	59	140	205	205	-87	-75	978	326	-34.6	-29.8
✓	e	6.3	10.6	148	120	57	85°	205	205	-91	+35	978	1630	-36.2	+13.9
✓	f	9.2	16.4	150	90	55°	115°	205	205	-95	-25	1467	2608	-37.8	-10.0

1436/7 1435/7

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1999phae.proj..974L

3607.1 3500.6
3620.6 3273.1
3615.8 1277.7
3846.3 7732
3898.1 3584.0
2247.8 2001.8
2245.0 1949.2
2279.2 2010.9
2280.0 2062.0
2247.4 2001.8
2244.2 1950.0
2279.2 2009.7
2280.4 2062.0

1898.3 2661.7
1897.5 2661.7
43.0 1297.2

853.6 4413.3
943.4 296.2
941.8 1643.9
1429.2 2598.0

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1899phae.proj..974L

Q6436 from ♃ 10685 May 28, 1899.

		x	y	A.	B.	C.	D	Q+C	B+D	C-A	B-D	x×163	y×163	C-a ×.398	B-D ×.398
✓	g	10.6	29.6	80	130	135	75	205	205	+45	+55	1630	4727	+17.9	+21.9
✓	h	11.1	19.3	184	53	20	150	205	205	-165	-95	1793	3097	-65.7	-37.8
✓	k	10.9	28.0	5	205	200	205	205	410	+195	0.0	1630	4564	+77.6	
✓	l	11.7	13.1	40	19	165	187	205	206	+125	-168	1793	2119	+49.8	-66.9
✓	m	11.9	28.9	14	200	191	5	205	205	+177	+195	1793	4564	+70.4	+77.6
✓	n	12.7	28.5	30	170	175	35	205	205	+145	+135	1956	4564	+57.7	+53.7
—	o		N. S.												
✓	p	13.3	18.1	135	20	70	185	205	205	-65	-165	2119	2934	-25.9	-65.7
	q		N. S.												
✓	r	17.2	~~11.5~~ 4.6	180	115	25	90	205	205	-155	+25	2771	~~2282~~ 652	-61.7	+10.0
✓	s	18.7	9.3	45	45	160	160	205	205	+115	-115	2934	1467	+45.8	-45.8
✓	t	19.5	21.4	91	90	114	115	205	205	+23	-25	3097	3423	+9.2	-10.0
✓	u	21.6	5.6	80	140	125	65	205	205	+45	+75	3423	815	+17.9	+29.8
✓	Eros	12.2	16.8	175	170	30	35	205	205	-145	+135	1956	2608	-57.7	+53.7
✓	Eros	12.2	16.8	175	170	30	35	205	205	-145	+135	1956	2608	-57.7	+53.7
✓	a	0.7	8.8	48	92	157	113	205	205	+109	-21	0	1304	+43.4	-8.4
	b														
✓	c	5.6	27.6	55	119	150	86	205	205	+95	+33	815	4401	+37.8	+13.1
✓	d	6.2	2.4	145	65	60	140	205	205	-85	-75	978	326	-33.8	-29.8
✓	e	6.2	10.6	146	120	59	85	205	205	-87	+35	978	1630	-34.6	+13.9
✓	f	9.3	16.4	150	90	87	110	204	205	-96	-25	1467	2608	-38.2	-10.0
✓	g	10.6	29.6	80	130	125	75	205	205	+45	+55	1630	4727	+17.9	+21.9
✓	h	11.1	19.3	184	53	21	150	205	205	-163	-95	1793	3097	-64.9	-37.8
✓	k	10.9	28.0	5	205	200	205	205	410	+195	0.0	1630	4564	+77.6	
✓	l	11.7	13.1	40	19	165	186	205	205	+125	-167	1793	2119	+49.8	-66.5
✓	m	11.9	28.9	15	200	190	5	205	205	+175	+195	1793	4564	+69.6	+77.6
												4714	5126		
												23	25		

Reread.

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1899phae.proj..974L

1647.9 4748.9
1727.3 3059.2
1707.6 4564.0 -81.5 4482.5
1842.8 2052.1
1863.4 4641.6
2013.7 4617.7

2093.1 2868.3

2709.3 ~~2792.0~~ 662.0
2979.8 1421.2
3106.2 3413.0
3440.9 844.8
1898.3 2661.7
1898.3 2661.7
43.4 1295.6

852.8 4414.1
944.2 296.2
943.4 1643.9
1428.8 2598.0
1647.9 4748.9
1728.1 3059.2
1707.6 4564.0 -81.5 4482.5
1842.8 2052.5
1862.6 4641.6

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1899phae.proj..974L

Q 6486 from Q 10685 — May 28, 1899.

		x	y	A.	B.	C.	D	A+C	B+D	C−A	B−D	x×163	y×163 C−A	B−D
													x.398	x.398
✓	m	12.7	28.7	30	140	175	35	205	205+145+135			1956	4564	+57.7 +53.7
	o		N. S.											
✓	p	12.9	18.1	136	30	69	180	205	205 −67 −165			2119	2934	−26.7 −65.7
	q		N. S.											
✓	r	17.2	4.6	~~174~~ 180	115	25	90	205	205 −155 +25			2771	652	−61.7 +10.0
✓	s	18.7	9.9	45	45	160	160	205	205 +115 −115			2934	1467	+45.8 −45.8
✓	t	19.5	21.4	90	89	115	116	205	205 +25 −27			3097	3423	+10.0 −10.7
✓	u	21.6	5.6	80	140	135	65	205	205 +45 +75			3423	815	+17.9 +29.8
✓	Eros	12.2	16.8	176	170	29	35	205	205 −147 +135			1956	2608	−58.5 +53.7
✓	Eros	12.2	16.8	175	170	30	35	205	205 −145 +135			1956	2608	−57.7 +53.7

23.55

A+C: 7 1436; 23 4714; 8 1640; 38) 7790 (205.00

B+D: 7 1435; 25 5126; 8 1640; 40) 8201 (205.02

1640/8 1640/8

205. : ½163 :: x : X 205.02 : ½163 :: X y : Y

0.398x = X 0.398y = Y

July 24, 1905

D6391

b′ = h′	3.3	4.4	14.6	9.5	6.0	11.0	206	205 −86 −15	489	652	−34.2	−6.0
h′	3.4	4.4	14.5	9.6	6.0	11.0	205	206 −85 −14	489	652	−33.8	−5.6

D6392

b = h	0.7	5.6	40	14.5	16.5	6.0	205	205 +125 +85	0	815	+49.6	+33.7
b = h	0.7	5.6	40	14.5	16.5	6.0	205	205 +125 +85	0	815	+49.6	+33.7

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I 9862

Plate 3

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		Estimated x	y	A	B	b	D	Measured x	y
m	2	7.2	3.6	16.5	14.0	4.0	7.0	1091.4	516.8
				16.5	13.9	4.0	7.1	1091.4	516.0
n	1	7.4	8.9	10.6	20.0	9.9	0.6	1138.2	1381.0
				10.6	19.9	9.9	0.7	1138.2	1380.2
H	3	12.6	0.6	5.8	11.0	14.9	9.5	1992.1	6.0
				5.5	11.0	15.0	9.5	1993.7	6.0
L	4	13.9	0.2	0.6	4.0	20.0	16.5	2196.0	-49.6
				0.5	4.1	19.9	16.1	2196.0	-47.6
A	5	16.6	11.4	6.5	7.0	14.0	13.5	2637.8	1767.2
				6.6	7.0	13.9	13.5	2637.0	1767.2
P	6	19.4	13.1	12.0	1.5	8.5	19.0	3083.1	2049.5
				12.0	1.5	8.4	19.0	3082.7	2049.5
L	7	20.4	13.0	12.0	0.0	8.5	20.5	3246.1	2037.6
				12.1	20.6	8.4	0.0	3245.3	2037.8
								2y tr.	
								2y assume a value	
q	a	0.7	9.9	5.0	20.0	15.5	0.5	41.7	1544.4
				5.1	20.0	15.4	0.5	40.9	1544.4
r	b	1.6	5.6	6.5	11.5	14.0	9.0	192.8	824.9
				6.5	11.5	14.0	9.0	192.8	824.9
s	c	3.6	12.9	6.8	20.0	13.8	0.6	516.8	2033.0
				6.6	19.9	13.9	0.7	518.0	2032.2

		Measured x	y	A	B	b	D	x	y	x	y	x	y
m	2	6.3	3.7	14.1	16.5	6.4	4.0	9474	5386	-11802.0	+1903.0	5 4 0 0	✓
				14.5	16.5	6.0	4.0	9443	5386				
n	1	6.6	9.1	8.5	2.1	12.0	18.4	991.9	1402.3	-11753.0	2770.6	1 2 2 1	✓
				8.5	2.0	12.0	18.4	991.9	1401.9				
H	3	11.8	0.6	3.0	14.1	17.5	6.4	1850.6	30.6	-10896.8	1390.2	2 3 5 4	
				3.0	14.0	17.5	6.5	1850.6	29.8				
L	4	13.1	0.3	18.5	7.5	2.0	13.0	2053.5	-21.8	-10693.2	1336.4	1 0 5 5	
				18.5	7.5	2.0	13.0	2053.5	-21.8				
A	5	15.7	11.5	4.1	10.0	16.4	10.4	2493.8	1791.4	-10246.2	3158.0	5 4 3 2	
				4.4	10.0	16.1	10.5	2491.4	1791.0				
P	6	18.5	13.3	9.8	4.9	10.7	15.7	2937.6	2076.1	-9798.8	3441.6	0 0 0 1	
				10.0	4.5	10.6	16.0	2936.4	2073.3				
L	7	19.5	13.3	10.0	3.5	10.5	17.0	3099.0	2065.4	-9635.8	3430.0	4 4 2 2	
				10.0	3.1	10.6	17.4	3099.4	2062.2				
q	a												
r	b	2.4	4.6	12.2	12.5	8.3	8.0	310.5	669.9				
				12.5	13.0	8.0	7.5	308.1	673.8				
s	c	2.7	13.1	4.5	2.4	16.0	18.1	371.7	2056.7	-12373.8	+3427.6	1 7 1 6 2 8 2 7	
				4.4	2.5	16.1	18.1	372.4	2057.1				

b measured on D6392 B 16 h ~~84~~ July 24 05
b' " " D6391 " " " ~~84~~ " "

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1899phae.proj..974L

20137 4617.7

2092.3 2868.3

2709.3 662.0
2979.8 1421.2
3107.0 3412.3
3440.9 8448
1897.5 2661.7
1898.3 2661.7

4548 646.0
4555.4 646.4

49.6 848.7
49.6 848.7

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1899phae.proj..974L

July 5 1899.

Q 6437 from 2 10685

22.30

		x	y	A.	B.	C.	D.	A+C	B+D	C-A	B-D	x×163	y×163	C-A ×.397	B-D ×.397
✓	Eros	12.7	16.5	39	100	166	105	205	205	+127	-05	1956	2608	+50.4	-2.0
✓	Eros	12.7	16.5	38	100	168	105	206	205	+130	-05	1956	2608	+51.6	-2.0
✓	a	1.4	8.2	111	30	94	175	205	205	-17	-145	163	1304	-6.7	-57.6
✓ very ft.	b	2.5	9.3	105	76	100	130	205	205	-05	-55	326	1467	-2.0	-21.8
✓	c	6.4	27.3	115	57	90	154	205	205	-25	-103	978	4401	-9.9	-40.9
✓	d	6.9	1.9	9	305	193	205	204	410	+186	0	978	163	+73.8	0
✓	e	6.9	10.3	5	56	200	150	205	206	+195	-94	978	1630	+77.4	-37.3
✓	f	9.9	16.1	10	31	195	183	205	204	+185	-162	1467	2608	+73.4	-64.3
✓	g	11.4	29.3	140	70	65	195	205	205	-75	-65	1793	4727	-29.8	-25.8
✓	h	11.7	18.9	40	192	165	13	205	205	+125	+179	1793	2934	+49.6	+71.1
✓	k	11.7	27.6	65	140	140	66	205	206	+75	+74	1793	4401	+29.8	+29.4
✓	l	12.5	12.7	103	155	102	50	205	205	-01	+105	1956	1956	-0.4	+41.7
✓	m	12.6	28.6	70	131	135	73	205	204	+65	+58	1956	4564	+25.8	+23.0
✓	n	12.5	28.5	90	101	115	104	205	205	+25	-03	2119	4564	+9.9	-12
✓	p	13.9	17.7	5	150	200	55	205	205	+195	+95	2119	2771	+77.4	+37.7
✓	r	17.7	4.3	40	50	165	155	205	205	+125	-105	2771	652	+49.6	-41.7
✓	s	19.5	8.8	110	181	95	24	205	205	-15	+157	3097	1304	-6.0	+62.3
✓	t	20.3	21.1	150	25	55	180	205	205	-95	-155	3260	3423	-37.7	-61.5
✓	u	22.3	5.4	145	70	60	135	205	205	-85	-65	3586	815	-33.7	-25.8
✓	Eros	12.7	16.5	40	100	165	106	205	206	+125	-06	1956	2608	+49.6	-2.4
✓	Eros	12.7	16.5	39	99	166	106	205	205	+127	-07	1956	2608	+50.4	-2.8
✓	a	1.4	8.2	110	30	95	175	205	205	-15	-145	163	1304	-6.0	-57.6
✓	b	2.5	9.3	106	74	100	130	206	204	-06	-56	326	1467	-2.4	-22.2
✓	c	6.4	27.3	115	51	90	154	205	205	-25	-103	978	4401	-9.9	-40.9
✓	d	6.9	1.9	9	205	196	205	205	410	+187	0	978	163	+74.2	0
✓	e	6.9	10.3	5	55	200	150	205	205	+195	-95	978	1630	+77.4	-37.7

5331 / 26 — 5740 / 28

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1999phae.proj..974L

2006.4 2606.0
2007.6 2606.0
1583 1246.4
324.0 1445.2
968.1 4360.1
1051.8 163.0 + 81.5 = 244.5
1055.4 1592.7
1540.4 2543.7
1763.2 4701.2
1842.6 3005.1
1822.8 4430.4
1955.6 1997.7
1981.8 4587.0
2128.9 4562.8
2196.4 2808.7
2820.6 610.3
3091.0 1366.3
3222.3 3361.5
3552.3 789.2
2005.6 2605.6
2006.4 2605.2
157.0 1246.4
323.6 1444.8
968.1 4360.1
1052.2 163.0 + 81.5 = 244.5
1055.4 1592.3

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July 5 - 1899.

R 6437 from R 10683

		x	y	A.	B.	C.	D.	A+C	B+D	C-A	B-D	x×163	y×163	C-a ×.397	B-D ×.397
✓	f	9.9	16.1	10	20	195	185	205	205+185	-165	1467	2608	+ 73.4	-65.5
✓	g	11.4	29.4	140	65	66	140	206	205 - 74	- 75	1793	4727	- 29.4	-29.8
✓	h	11.7	18.9	40	190	165	15	205	205+125	+175	1793	2934	+49.6	+69.5
✓	k	11.6	27.6	65	139	140	66	205	205+75	+ 73	1793	4401	+29.8	+29.0
✓	l	12.5	12.7	105	135	100	5	205	205 - 05	+ 105	1956	1956	- 2.0	+41.7
✓	m	12.6	28.6	72	131	133	74	205	205+61	+ 57	1956	4564	+24.2	+22.6
✓	n	13.5	28.5	90	105	115	100	205	205+25	+ 05	2119	4564	+ 9.9	+ 2.0
✓	p	13.9	17.7	5	150	200	55	205	205+195	+95	2119	2771	+77.4	+37.7
✓	r	17.7	4.3	40	50	165	156	205	206+125	-106	2771	652	+49.6	-42.1
✓	A	19.5	8.8	110	180	95	25	205	205 - 15	+155	3097	1304	- 6.0	+61.5
✓	t	20.3	21.1	152	21	52	184	204	205 - 100	-163	3260	3423	-39.7	-64.7
✓	u	22.3	5.4	149	65	56	140	205	205 - 93	- 75	3586	815	-36.9	-29.8
✓	Eros	12.7	16.5	39	100	166	105	205	205+127	- 05	1956	2608	+50.4	- 2.0
R 3.40	Eros	12.7	16.5	39	100	167	106	206	206	+128	- 06	1956	2608	+50.8	- 2.4

$\frac{2871}{14}$ $\frac{2872}{14}$

A+C

26 5331
14 2871
40) 82 02 (205.05
*

B-D

28 5740
14 2872
42) 86 12 (205.048

205.05 : ½163 :: x : X

81.50 x = 20505 X

0.397 x = X

205.05 : ½163 :: y : Y

0.397 x = X

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1899phae.proj..974L

15404	2542.5
1763.6	16972
18426	30035
18228	44300
1954.0	1997.7
19802	45866
21289	4566.0
21964	2808.7
2820.6	6099
3091.0	13655
32203	33583
3549.1	7852
2006.4	2606.0
20068	26056

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July 7 1899.

Q 6410 from A 222

23.00

		x	y	A	B	C	D	A+C	B+D	C-A	B-D	x×60	y×60	C-a ×.200	c-d ×.199
upper end of image.	Eros	34.1	30.5	140	61	10	90	150	151	-130	-29	2040	1800	-26.0	- 5.8
lower end of image	Eros	34.1	28.1	140	5	10	14.6	150	151	-130	-141	2040	1680	-26.0	-28.1
upper end of image	"	34.1	30.5	140	60	10	90	150	150	-130	- 30	2040	1800	-26.0	- 6.0
lower end of image	"	34.1	28.1	139	5	11	143	150	150	-128	-140	2040	1680	-256	-27.9
√	a	5.4	55.1	80	10	70	141	150	151	- 10	-131	300	3300	- 2.0	-26.1
√	f	5.6	25.4	39	50	111	101	150	151	+72	- 51	300	1500	+14.4	- 10.1
√	e	12.2	39.7	110	120	40	31	150	151	- 70	+ 89	720	1740	-14.0	+17.7
√	d	18.8	46.2	150 30	15	150 2	135	150	150	+ 90	-120	1080	2760	+18.0	-23.9
√	c	26.6	22.2	51	25	100	125	151	150	+ 49	-100	1560	1320	+ 9.8	- 19.9
√	f	28.7	49.1	60	10	91	140	151	150	+ 31	-130	1680	2940	+ 6.2	- 25.9
√	g	29.3	30.3	83	40	65	110	150	150	- 20	- 70	1740	1800	- 4.0	- 13.9
√	h	30.8	27.8	20	120	130	20	150	150	+110	+ 90	1800	1620	+22.0	+ 17.9
√	k	32.5	26.2	65	20	85	130	150	150	+ 20	-110	1920	1560	+ 4.0	- 21.9
√	l	33.1	34.5	129	70	21	80	150	150	-108	- 10	1980	2040	-21.6	- 2.0
*33.5 Renrear. √ Aug. 26, 99.	m	*~~33.5~~	14.7	70	119	80	32	150	151	+ 10	+ 87	~~1920~~ 1980	840	+ 2.0	+ 17.3
√	n	33.8	29.4	70	69	80	82	150	151	+ 10	- 13	1980	1740	+ 2.0	- 2.6
√	o	34.6	29.3	60	38	90	112	150	150	+ 30	- 74	2040	1740	+ 6.0	- 14.7
√	p	35.4	26.1	60	2	90	149	150	151	+ 30	-147	2100	1560	+ 6.0	- 29.3
√	q	36.2	14.8	120	115	30	36	150	151	- 90	+ 79	2160	840	-18.0	+ 15.7
√	r	36.6	30.4	58	54	96	97	151	151	+ 41	- 43	2160	1800	+ 8.2	- 8.6
√	s	36.7	29.3	51	39	100	111	151	150	+ 49	- 72	2160	1740	+ 9.8	- 14.3
√	t	37.1	22.3	130	40	20	111	150	151	-110	- 71	2220	1320	-22.0	- 14.1
√	u	42.3	39.4	93	60	58	91	151	151	- 39	- 31	2520	2340	- 7.8	- 6.2
√	w	46.8	32.5	25	51	126	100	150	151	+100	- 49	2760	1920	+20.0	- 9.8
√	x	56.8	6.0	30	9	120	141	150	150	+ 90	-132	3360	360	+18.0	-26.3
√	y	60.2	8.3	110	41	26	110	151	151	- 79	- 69	3600	480	-15.8	- 13.7
								3906/26						3914/26	

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2014.0	1794.2
2014.0	1651.9
2014.0	1797.0
2014.4	1652.1
298.0	3273.9
314.4	1489.9
706.0	1757.7
1098.0	2736.1
1569.8	1300.1
1686.2	2914.1
1736.0	1786.1
1822.0	1637.9
1924.0	1538.1
1958.4	2038.0
1982.0	867.3
1982.0	1737.4
2046.0	1725.3
2106.0	1530.7
2142.0	855.7
2168.2	1791.4
2169.8	1725.7
2198.0	1305.9
2512.2	2333.8
2780.0	1910.2
3278.0	333.7
3584.2	466.3

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92

July 7 1899

6410 from A 222

24.00

		x	y	A.	B.	C.	D.	A+C	B+D	C-A	B-D	x×60	y×60	C-A ×200	B-D ×199
upper end of image.	Eros	24.1	30.5	140	62	10	88	150	150	-130	-26	2040	1800	-26.0	-5.2
lower end of image	Eros	24.1	28.1	139	5	11	148	150	150	-128	-140	2040	1680	-25.6	-27.9
upper end of image	"	24.1	30.5	140	62	10	88	150	150	-130	-26	2040	1800	-26.0	-5.2
lower end of image.	"	24.1	28.1	139	5	11	146	150	151	-128	-141	2040	1680	-25.6	-28.1
✓	a	5.6	55.1	80	10	70	140	150	150	-10	-130	300	3300	-2.0	-25.9
✓	b	8.6	33.4	39	50	111	101	150	151	+72	-51	300	1500	+14.4	-10.1
✓	c	12.2	29.8	110	120	40	31	150	151	-70	+89	720	1740	-14.0	+17.7
✓	d	18.2	46.2	~~150~~ 30	20	120	130	150	150	+90	-110	1080	2760	+18.0	-21.9
✓	e	26.6	32.2	51	39	99	121	150	150	+48	-92	1560	1320	+9.6	-18.3
✓	f	28.6	49.1	60	10	90	140	150	150	+30	-130	1680	2940	+6.0	-25.9
✓	g	29.3	30.3	85	40	66	110	151	150	-19	-70	1740	1800	-3.8	-13.9
✓	h	30.8	27.8	20	120	130	30	150	150	+110	+90	1800	1620	+22.0	+17.9
✓	k	32.5	26.1	63	20	87	130	150	150	+24	-110	1920	1560	+4.8	-21.9
✓	l	33.1	54.5	130	70	21	80	151	150	-109	-10	1980	2040	-21.8	-2.0
✓ 1/1	m	33.5	14.8	70	115	80	36	150	151	+10	+79	1980	840	+2.0	+15.7
✓	n	33.5	29.5	70	65	80	86	150	151	+10	-21	1980	1740	+2.0	-4.2
✓ 29.3 Reviewed Aug. 26, '99.	o	34.6	~~28.4~~ 28.8	60	39	90	111	150	150	+30	-72	2040	~~1680~~ 1740	+6.0	-14.3
✓	p	35.5	26.1	61	2	89	149	150	151	+28	-147	2100	1560	+5.6	-29.3
✓	q	36.2	14.8	120	111	30	40	150	151	-90	+71	2160	840	-18.0	+14.1
✓	r	36.6	30.4	~~62~~ 55	51	96	100	151	151	+41	-49	2160	1800	+8.2	-9.8
✓	s	36.7	29.9	51	39	99	111	150	150	+48	-72	2160	1740	+9.6	-14.3
✓	t	37.2	22.3	130	40	21	110	151	150	-109	-70	2220	1320	-21.8	-13.9
✓	u	42.3	29.4	99	60	51	91	150	151	-48	-31	2520	2340	-9.6	-6.2
✓	w	46.7	32.3	25	55	126	97	151	152	+101	-42	2760	1920	+20.2	-8.4
✓	x	56.8	6.1	30	5	120	146	150	151	+90	-141	3360	360	+18.0	-28.1
✓	y	60.2	8.8	115	41	86	110	151	151	-79	-69	3600	480	-15.8	-13.7
								3906/26							3913/26

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1899phae.proj..974L

2014.0	1794.8
2014.4	1652.1
2014.0	1794.8
2014.4	1651.9
298.0	3274.1
314.4	1489.9
706.0	1757.7
1098.0	2738.1
1569.6	1301.7
1686.0	2914.1
1736.2	1786.1
1822.0	1637.9
1916.8 (24.8)	1538.1
1958.2	2038.0
1982.0	855.7
1982.0	1735.8 (1725.7)
2046.0	~~1665.7~~
2105.6	1530.7
2142.0	854.1
2168.2	1790.2 (125.7)
2169.6	~~1754.3~~ (06.1)
2198.2	~~1333.9~~ (33.8)
2510.4	~~2346.2~~ (11.6)
2780.2	~~1928.4~~ (319)
3378.0	~~3881~~ (66.3)
3584.2	~~4937~~

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1899phae.proj..974L

July 7 1899.

RC 6410 from A 222

		x	y	A.	B.	C.	FC	A+C	B+D	C-a	B-D	x×60	y×60	C-a ×.200	B-D ×.199
upper end of image	Eas	34.1	30.3	140	62	10	89	150	151	-130	-27	2040	1800	-25.6	- 5.4
lower end of image	"	34.1	28.1	139	3	11	145	150	150	-128	-140	2040	1680	-25.6	-27.9
upper end of image	"	34.1	30.3	140	62	11	89	151	151	-129	-27	2040	1800	-25.8	- 5.4
lower end of image; 0.25	"	34.1	28.1	140	3	11	145	151	150	-129	-140	2040	1680	-25.8	-27.9
								602/4	602/4						

26 3906
26 3906
4 602
56)8414(150.250

150.25 : ½ 60 :: x : X
150.25 X = 30x
X = .200x

26 3914
26 3913
4 602
56)8429(150.518

150.52 : ½ 60 :: y : Y
150.52 Y = 30y
Y = .199y

RC 6411 from A 222

July 12 1899.

23.20

		x	y	A.	B.	C.	FC	A+C	B+D	C-a	B-D	x×60	y×60	C-a ×.200	B-D ×.199
upper end of image	Eas	33.9	29.7	15	95	136	56	151	151	+121	+ 39	2040	1740	+24.2	+ 7.8
lower end of image	"	33.9	27.3	10	35	141	116	151	151	+131	- 81	2040	1620	+26.2	- 16.1
upper end of image	"	33.9	29.7	15	94	136	56	151	150	+121	+ 38	2040	1740	+24.2	+ 7.6
lower end of image	"	33.9	27.3	10	34	140	116	150	150	+130	- 82	2040	1620	+26.0	- 16.3
✓	a	6.2	54.3	140	40	40	110	150	150	- 70	- 70	360	3240	- 14.0	- 13.9
✓	b	6.6	24.5	61	78	90	92	151	150	+29	+06	360	1440	+ 5.8	+ 1.2
✓	c	13.1	28.9	131	145	20	5	151	150	-111	+140	780	1680	- 22.2	+ 27.9
✓	d	19.6	45.3	52	49	98	102	150	151	+46	- 53	1140	2700	+ 9.2	- 10.5
✓	e	27.5	21.3	75	55	76	96	151	151	+01	- 41	1620	1260	+ 0.2	- 8.2
✓	f	29.4	48.3	80	40	70	110	150	150	- 10	- 70	1740	2880	- 2.0	- 13.9
✓	g	30.3	29.5	105	70	45	81	150	151	-60	- 11	1800	1740	- 12.0	- 2.2
✓	h	31.7	27.0	41	149	110	2	151	151	+69	+ 147	1860	1620	+ 13.8	+ 29.3
✓	k	33.5	25.3	85	50	65	100	150	150	-20	- 50	1980	1500	- 4.0	- 10.0
✓	l	34.0	33.7	150	100	150	51	200	151		+ 49	2040	1980		+ 9.8
✓	m	34.4	32.9	90	145	60	10	150	155	-30	+ 135	2040	1980	- 6.0	+ 26.9
								2407/16	2262/15						

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1899phae.proj..974L

2014.0 1794.6
2014.4 1652.1
2014.2 1794.6
2014.2 1652.1

2064.2 1747.8
2066.2 1603.9
2064.2 1747.6
2066.0 1603.7
3480 3226.1
365.8 1441.2
757.8 1707.9
1149.2 2689.5
1620.2 1251.8
1738.0 2866.1
1788.0 1737.8
1873.8 1649.3 ∴ 1649.3 − 60 = 1589.3
1976.0 1490.0
~~2040.0~~ 1989.8 2040.0 − 30 = 2010.0
2034.0 806.9

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1899phae.proj..974L

6411 from A 222 July 12 1899.

		x	y	A.	B.	C.	D.	A+C	B+D	C-a	B-D	x×60	y×60	C-a ×.200	B-D ×.199
✓	n	38.4	28.6	90	96	60	55	150	151	-30	+41	2040	1680	-6.0	+8.2
	o	~~31.5~~	28.4	80	66	70	85	150	151	-10	-19	~~2040~~ 2100	1680	-2.0	-3.8
✓	p	36.4	25.2	89	29	62	121	151	150	-27	-92	2160	1500	-5.4	-18.3
✓	q	37.1	13.9	141	140	10	10	151	150	-131	+130	2220	780	-26.2	+25.9
✓	r	37.5	29.6	79	80	71	70	150	150	-08	+10	2220	1740	-1.6	+2.0
✓	s	37.5	28.4	75	65	76	86	151	151	+01	-21	2220	1680	+0.2	-4.2
✓	t	38.1	21.5	148	70	2	80	150	150	-146	-10	2280	1260	-29.2	-2.0
✓	u	43.2	38.6	120	89	30	61	150	150	-90	+28	2580	2280	-18.0	+5.6
✓	v	47.6	31.5	41	80	110	70	151	150	+69	+10	2820	1860	+13.8	+2.0
✓	x	57.7	5.2	46	30	105	121	151	151	+59	-91	3420	300	+11.8	-18.1
✓	y	61.1	7.4	130	70	20	81	150	151	-110	-11	3660	420	-22.0	-2.2
✓ upper end of image	Eros	34.9	29.7	15	94	146	56	151	150	+121	+38	2040	1740	+24.2	+7.6
✓ lower end of image	"	34.9	27.3	10	35	140	116	150	151	+130	-81	2040	1620	+26.0	-16.1
✓ upper end of image	"	34.9	29.7	15	95	135	55	150	150	+120	+40	2040	1740	+24.0	+8.0
✓ lower end of image	"	34.9	27.3	10	34	141	116	151	150	+131	-82	2040	1620	+26.2	-16.3
✓	a	6.3	34.8	110	40	40	110	150	150	-70	-70	360	3240	-14.0	-13.9
✓	b	6.5	24.5	61	79	90	72	151	151	+29	+07	360	1440	+5.8	+1.4
✓	c	13.1	28.9	130	145	20	5	150	150	-110	+140	780	1680	-22.0	+27.9
✓	d	19.6	45.3	51	45	100	105	151	150	+49	-60	1140	2700	+9.8	-11.9
✓	e	27.5	21.4	~~82~~ 75	85	75	96	150	151	00	-41	1620	1260	0.0	-8.2
✓	f	29.3	48.2	80	40	70	111	150	151	-10	-71	1740	2880	-2.0	-14.1
✓	g	30.3	29.4	109	70	42	81	151	151	-67	-11	1800	1740	-13.4	-2.2
✓	h	31.7	27.0	40	149	110	1	150	150	+70	+148	1860	1620	+14.0	+29.5
✓ Limit of this group (very faint)	k	33.4	25.3	~~80~~ 85	50	68	101	150	151	-20	-51	1980	1500	-4.0	-10.1
✓	l	33.9	33.7	150	100	150	50	300	150		+50	1980	1980		+10.0
✓	m	34.4	~~13.9~~ 14.9	90	145	60	6	150	151	-30	+139	2040	780	-6.0	+27.7
								4060	3912						
								27	26						

*35.5 Remeas. ✓ Aug. 26, 99.

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1899phae.proj..974L

2034.0	1688.2	
~~2038.0~~ 1998.0	1676.2	
2154.6	1481.7	
2193.8	805.9	
2218.7	1742.0	
2220.2	1675.8	
2250.8	1258.0	
2562.0	2285.6	
2833.8	1862.0	
3431.8	281.9	
3638.0	417.8	
2064.2	1747.6	
2066.0	1603.9	
2064.0	1748.0	
2066.2	1603.7	
346.0	3226.1	
365.8	1438.6	
758.0	1707.9	
1149.8	2688.1	
1620.0	12518	
1738.0	2865.9	
1786.6	1737.8	
1874.0	1649.5	1649.5-60=1589.5
1976.0	1489.9	
(1980.0)	1990.0	1980.0+30.= ~~1950.0~~ 2010.0
2034.0	807.7	

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1899phae.proj..974L

Q6411 from A222 July 12, 1899.

		x	y	A.	B.	C.	Q.	AC	BD	c-a	B-D	c-a x.200	B-D x.199	x×60	y×60
✓	n	34.5	28.6	90	98	60	56	150	151	-30	+39	-6.0	+7.8	2040	1680
✓	o	35.5	28.4	80	65	70	85	150	150	-10	+20	-2.0	-4.0	2100	1680
✓	p	36.3	25.2	85	30	66	120	151	150	-19	-90	-3.8	-17.9	2160	1500
✓	q	37.1	13.9	140	140	10	11	150	151	-130	+129	-26.0	+25.7	2220	780
✓	r	37.5	29.6	78	80	72	70	150	150	-06	+10	-1.2	+2.0	2220	1740
✓	s	37.5	28.4	72	65	78	86	150	151	+06	-21	+1.2	-4.2	2220	1680
✓	t	38.1	21.5	148	70	2	81	150	151	-146	-11	-29.2	-2.2	2280	1260
✓	u	43.2	38.6	120	82	30	65	150	150	-90	+20	-18.0	+4.0	2580	2280
✓	w	46.6	31.5	45	80	106	71	151	151	+61	+09	+122	+1.8	2820	1860
✓	x	57.7	5.2	50	30	101	120	151	150	+51	-90	+10.2	-17.9	3420	300
✓	y	61.1	7.4	129	70	20	81	149	151	-109	-11	-21.8	-2.2	3660	420
✓	upper end of Eros image	34.9	29.7	14	95	137	53	151	150	+123	+40	+24.6	+8.0	2040	1740
✓	lower end of image	"	34.9	27.3	10	35	140	113	150	150	+130	-80	+26.0	-15.9	2040	1620
✓	upper end of image	"	34.9	29.7	15	95	125	56	150	151	+120	+39	+24.0	+7.8	2040	1740
✓	lower end of image	"	34.9	27.3	10	35	140	116	150	151	+130	-81	+26.0	-16.1	2040	1620
														2253 / 15	2258 / 15

24.20

16 2407
27 4060
15 2253
58) 8720 (150.3448

15) 2262
26 3912
15 2258
56) 8432 | 150.571

150.34 : ½ 60 :: x : X
150.34 X = 30 x
X = .200 x

150.57 : ½ 60 :: y : Y
150.57 Y = 30 y
Y = .199 y

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1999phae.proj..974L

2034.0 1687.8
2098.0 1676.0
2156.2 1482.1
2194.0 805.7
2218.8 1742.0
2221.2 1675.8
2250.8 1257.8
2262.0 2284.0
2832.2 1861.8
3430.2 282.1
3638.2 417.8
2064.6 1748.0
2066.0 1604.1
2064.0 1747.8
2066.0 1603.9

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1899phae.proj..974L

RR 6414 from A 246 July 14, 1899.

		x	y	A	B	C	FQ	A+C	B+D	C-A	B-D	x×60	y×60	C-A ×.200	B-D ×.199
23.45															
✓	Eros	35.6	23.6	51	100	99	51	150	151	+48	+49	2100	1380	+9.6	+9.8
✓	"	35.6	23.6	52	100	99	51	151	151	+47	+49	2100	1380	+9.4	+9.8
✓	a	4.5	0.9	85	140	65	10	150	150	−20	+130	240	0	−4.0	+25.9
✓	b	7.3	4.2	95	35	56	116	151	151	−39	−81	420	240	−7.8	−16.1
✓	c	18.7	52.9	50	140	100	10	150	150	+50	+130	1080	3120	+10.0	+25.9
not on plate	d														
✓	e	19.5	6.5	69	90	81	61	150	151	+12	+29	1140	360	+2.4	+5.8
✓	f	27.9	32.4	15	66	136	85	151	151	+121	−19	1620	1320	+24.2	−3.8
not on plate	g														
✓	h	33.1	30.1	141	15	9	136	150	151	−132	−121	1980	1800	−26.4	−24.1
✓	k	33.1	53.9	145	141	5	10	150	151	−140	+131	1980	3180	−28.0	+26.1
✓	l	34.7	13.2	39	30	111	120	150	150	+72	−90	2040	780	+14.4	−17.9
✓	m	35.7	56.6	50	89	100	61	150	150	+50	+28	2100	3360	+10.0	+5.6
Remeas. Sept. 2, '99.	n	38.1	56.2	130	30	20	120	150	150	−110	−90	2280	3360 3300	−22.0	−17.9
✓	o	37.9	30.5	15	71	136	80	151	151	+121	−09	2220	1200	+24	−1.8
✓	p	38.9	36.7	5	141	146	40	151	151	+141	+71	2280	1560	+28.2	+14.1
wrong star measured	q	39.9	23.9	15	131	136	20	[151	151	+121	+111]	omit.			
✓	s	53.5	2.4	65	69	85	81	150	150	+20	−12	3180	120	+4.0	−2.4
✓	t	56.1	35.8	129	130	21	21	150	151	−108	+109	3360	2100	−21.6	+21.7
✓	Eros	35.6	23.6	52	100	99	51	151	151	+47	+49	2100	1380	+9.4	+9.8
✓	"	35.6	23.6	51	100	100	51	151	151	+49	+49	2100	1380	+9.8	+9.8
✓	a	4.4	0.8	85	139	65	11	150	150	−20	+128	240	0	−4.0	+25.5
✓	b	7.3	4.2	95	35	56	115	151	150	−39	−80	420	240	−7.8	−15.9
✓	c	18.7	52.9	50	140	101	10	151	150	+51	+130	1080	3120	+10.2	+25.9
not on plate	d														
✓	e	19.5	6.5	69	85	81	63	150	150	+12	+20	1140	360	+2.4	+4.0

3309/22 3312/22

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1999phae.proj..974L

2109.6 1389.8
2109.4 1389.8
236.0 25.9
412.2 223.9
1090.0 3145.9

1142.4 365.8
1644.2 1316.2

1953.6 1775.9
1952.0
~~2005.0~~ 3206.1
2054.4 762.1
2110.0 3365.6
3342.1
2238.0 ~~3282.1~~
44
2259.2 1198.2
2308.2 1574.1

3184.0 117.6
3388.4 2121.7
2109.4 1389.8
2109.8 1389.8
236.0 25.5
412.2 224.1
1090.2 3145.9

1142.4 364.0

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1899phae.proj..974L

K 6414 from A 246 July 14, 1899.

		x	y	A.	B.	C.	K	A+C	B+D	C-a	B-D	x×60	y×60	C-a ×.200	B-D ×.199
✓	f	27.9	32.4	15	66	136	84	151	150	+121	-18	1620	1320	+24.2	-3.6
not on plate	g														
✓	h	33.1	30.1	140	15	10	136	150	151	-130	-121	1980	1800	-26.0	-24.1
✓	k	33.1	53.9	145	141	5	10	150	151	-140	+131	1980	3180	-28.0	+26.1
✓	l	34.7	13.2	39	30	111	120	150	150	+72	-90	2040	780	+14.4	-17.9
✓	m	35.7	56.6	50	90	100	61	150	151	+50	+29	2100	3360	+10.0	+5.8
✓ Remeas. Sept. 2'99	n	38.1	~~56.1~~ 56.2	130	30	21	120	151	150	-109	-90	2280	~~3480~~ 3360	-21.8	-17.9
✓	o	37.9	20.5	15	71	136	80	151	151	+121	-09	2220	1200	+24.2	-1.8
✓	p	38.9	26.7	5	111	140	40	150	151	+140	+71	2280	1560	+28.0	+14.1
✓	q	39.1	22.7	120	100	30	50	150	150	-90	+50	2340	1320	-18.0	+10.0
✓	s	53.5	2.4	60	69	85	81	150	150	+20	-12	3180	120	+4.0	-2.4
✓	t	56.1	35.8	129	130	21	21	150	151	-108	+109	3360	2100	-21.6	+21.7
✓	Eros	35.6	23.6	52	99	98	51	150	150	+46	+48	2100	1380	+9.2	+9.6
✓ 0.40	"	35.6	23.6	52	100	99	50	151	150	+47	+50	2100	1380	+9.4	+10.0
✓	g	39.2	22.7	120	101	30	50	150	151	-90	+51	2340	1320	-18.0	+10.1
								2104 / 14	2107 / 14						

22 3309
14 2104
36)5413(150.361

22 3312
14 2107
36)5419(150.53

150.36 : ½60 :: x : X
150.36 X = 30x
X = .200x

150.53 : ½60 :: y : Y
150.53 Y = 30y
Y = .199y

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1899phae.proj..974L

1644.2	1316.4
1954.0	1775.9
1952.0	3206.1
2054.4	762.1
2110.0	3365.8
2258.2	3362.1 (3321)
2244.2	1198.2
2308.0	1574.1
2322.0	1330.0
3184.0	117.6
3338.4	2121.7
2109.2	1389.6
2109.4	1390.0
2322.0	1330.1

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1899phae.proj..974L

D 6715 from A 246 July 15 1899.

12.00		x	y	A	B	C	D	AC	BD	C-a	B-D	x×60	y×60	C-a ×.200	B-D ×.200
✓	Ens.	36.1	23.7	135	110	15	40	150	150	-120	+70	2160	1380	-24.0	+14.0
✓	Ens	36.1	23.7	136	110	15	41	151	151	-121	+69	2160	1380	-24.2	+13.8
✓	a.	4.9	0.9	10	141	140	9	150	150	+130	+132	240	0	+26.0	+26.4
✓	b.	7.7	4.3	30	40	121	110	151	150	+91	-70	420	240	+18.2	-14.0
✓	c.	19.1	52.9	140	151	10	150	150	301	-130	+0.1	1140	3120	-26.0	+0.2
not on plate	d.	~~20.1~~	~~6.6~~	~~149~~	~~99~~	+	~~55~~								
✓	e.	20.1 ~~20.0~~	6.6 ~~20.5~~	~~149~~ 138	99	~~1~~ 52	55 ~~71~~	150	154	-148	+44	1200	360	-29.6	+8.8
✓	f.	28.3	22.5	98	79	52	71	150	150	-46	+08	1680	1320	-9.2	+1.6
too near edge plate	g.														
✓	h.	33.5	30.2	75	25	75	125	150	150	00	-100	1980	1800	00	-20.0
✓	k.	33.4	54.1	81	5	69	145	150	150	-12	-140	1980	3240	-2.4	-28.0
✓	l.	35.2	13.3	120	40	30	110	150	150	-90	-70	2100	780	-18.0	-14.0
✓	m.	36.1	56.7	138	100	13	50	151	150	-125	+50	2160	3360	-25.0	+10.0
✓	n.	38.6	56.3	65	40	85	110	150	150	+20	-70	2280	3360	+4.0	-14.0
✓	o.	38.4	20.6	99	85	51	65	150	150	-48	+20	2280	1200	-9.6	+4.0
✓	p.	39.4	26.8	90	125	60	26	150	151	-30	+99	2340	1560	-6.0	+19.8
✓	q.	39.6	22.7	50	110	100	40	150	150	+50	+70	2340	1320	+10.0	+14.0
✓	r.	54.1	2.5	145	88	6	70	151	150	-139	+10	3240	120	-27.8	+2.0
✓	t.	56.7	35.8	60	145	90	5	150	150	+30	+140	3360	2100	+6.0	+28.0
✓	Ens.	36.1	23.7	135	110	15	40	150	150	-120	+70	2160	1380	-24.0	+14.0
✓	Ens	36.1	23.7	136	110	14	40	150	150	-122	+70	2160	1380	-24.4	+14.0
✓	a.	4.9	0.9	10	140	141	10	151	150	+131	+130	240	0	+26.2	+26.0
✓	b.	7.7	4.3	30	40	120	110	150	150	+90	-70	420	240	+18.0	-14.0
✓	c.	19.1	52.9	140	151	10	150	150	301	-130	+0.1	1140	3120	-26.0	+0.2
not on plate	d.														
✓	e.	20.0	6.6	145	100	5	50	150	150	-140	+50	1200	360	-28.0	+10.0
✓	f.	28.4	22.5	99	76	51	75	150	151	-48	+01	1680	1320	-9.6	+0.2
								3605/24	3907/26						

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1899phae.proj.0741

21360 1394.0
2135.8 1393.8
266.0 26.4
438.2 226.0
11140 3120.2+30. 3150.2

11704 3688
1670.8 1321.6

1980.0 1780.0
1977.6 3212.0
2082.0 766.0
2135.0 3370.0
2284.0 3346.0
2270.4 1204.0
2334.0 1579.8
2350.0 1334.0
32122 122.0
3366.0 2128.0
2136.0 1394.0
2135.6 1394.0
266.2 26.0
438.0 226.0
11140 3120.2+30. 3150.2

11720 370.0
1670.4 1320.2

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1899phae.proj..974L

July 15, 1899

D 6415 from A 246

		x	y	A.	B.	C.	D.	a+C	B+D	x×60	y×60	C-a ×200	B-D ×200
too near edge g													
✓	h	33.5	30.2	75	25	75	126	150	151	00	-121	1980	1800	00	-20.2
✓	k	33.4	54.0	81	5	69	145	150	150	-12	-140	1980	3240	-2.4	-28.0
✓	l	35.2	13.3	120	40	30	110	150	150	-90	-70	2100	780	-18.0	-14.0
✓	m	36.1	56.7	135	100	16	50	151	150	-119	+50	2160	3360	-23.8	+10.0
✓												2280			
✓ Remeas. Sept 2.	n	38 85.6	56.3	65	40	85	110	150	150	+20	-70	2100	3360	+4.0	-14.0
✓	o	38.4	20.6	98	85	52	66	150	151	-46	+19	2280	1200	-9.2	+3.8
✓	p	39.4	26.8	90	125	60	25	150	150	-30	+100	2340	1560	-6.0	+20.0
✓	q	39.6	22.7	50	111	100	40	150	151	+50	+71	2340	1320	+10.0	+14.2
✓	r	54.1	2.5	145	80	5	70	150	150	-140	+10	3240	120	-28.0	+2.0
✓	t	56.6	35.9	60	145	90	5	150	150	+30	+140	3360	2100	+6.0	+28.0
✓	Enc.	36.1	23.7	136	110	14	40	150	150	-122	+70	2160	1380	-24.4	+14.0
✓ 12.35	Enc.	36.1	23.7	135	109	15	41	150	150	-120	+68	2160	1380	-24.0	+13.6
								1801	1802						
								12	12						

24 3605
12 1801
36)5406(150.167

26 3909
12 1802
38)5712(150.289

150.17 : ½ 60 :: x : X
150.17 X = 30 x
X = .200 x

150.29 : ½ 60 :: y : Y
150.29 Y = 30 y
Y = .200 y

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1999phae.proj.0741

1980.0	17798
19776	3212.0
20820	7660
2136.2	3370.0
~~2104.0~~ 22840	3346.0
2270.8	1203.8
23340	1580.0
2350.0	1305.8 3462
32120	122.0
3366.0	21280
21356	13940
2136.0	13936

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1899phae.proj..974L

22.20

D 6360 from B 15531. August 29, 1899.

		x	y	A.	B.	C.	D.	A+C	B+D	C-A	B-D	x×179	y×179	C-a ×.398	B-D ×.398
√	Eros.	9.8	13.6	30	125	195	100	225	225	+165	+25	1611	2327	+65.7	+10.0
√	Eros.	9.8	13.6	30	124	196	100	226	224	+166	+24	1611	2327	+66.1	+9.6
√	a.	0.9	12.7	11	175	213	50	224	225	+202	+125	0	2148	+80.4	+49.8
√	b.	1.3	9.3	161	40	64	184	225	224	-97	-144	179	1611	-38.6	-57.3
√	c.	2.7	15.4	55	75	170	150	225	225	+115	-75	358	2685	+45.8	-29.8
√	d.	6.2	19.4	195	80	30	145	225	225	-165	-65	1074	3401	-65.7	-25.9
√	e.	6.6	13.9	108	210	116	14	226	224	+10	+196	1074	2327	+4.0	+78.0
√	f.	7.7	15.9	70	210	154	15	224	225	+84	+195	1253	2685	+33.4	+77.6
√	g.	8.6	10.6	71	124	154	100	225	224	+83	+24	1432	1790	+33.0	+9.6
√	h.	9.1	13.6	210	140	15	85	225	225	-195	+55	1611	2327	-77.6	+21.9
√	k.	9.5	13.7	105	168	120	58	225	226	+15	+110	1611	2327	+6.0	+43.8
√	l.	9.7	14.2	60	39	165	187	225	226	+105	-148	1611	2506	+41.8	-58.9
√	m.	9.9	13.4	5	42	220	153	225	225	+215	-81	1611	2327	+85.6	-32.2
√	n.	10.1	13.8	210	200	16	25	226	225	-194	+175	1790	2327	-77.2	+69.6
√	o.	11.3	20.7	160	180	65	44	225	224	-95	+136	1969	3580	-37.8	+54.1
√	p.	12.2	7.7	185	170	40	55	225	225	-145	+115	2148	1253	-57.7	+45.8
√	q.	12.8	13.3	30	61	195	163	225	224	+165	-102	2148	2327	+65.7	-40.6
√	r.	12.8	13.7	20	180	206	45	226	225	+186	+135	2148	2327	+74.0	+53.7
√	s.	13.3	11.2	158	30	68	195	226	225	-90	-165	2327	1969	-35.8	-65.7
√	t.	13.5	5.4	110	71	115	154	225	225	+05	-83	2327	895	+2.0	-33.0
√	u.	16.1	17.2	201	29	24	196	225	225	-177	-167	2864	3043	-70.4	-66.5
√	w.	16.8	5.7	42	169	183	56	225	225	+141	+113	2864	895	+56.1	+45.0
√	x.	17.4	19.1	121	6	103	219	224	225	-18	-213	3043	3401	-7.2	-84.8
√	y.	19.3	17.1	160	10	65	215	225	225	-95	-205	3401	3043	-37.8	-81.6
√	Eros	9.8	13.6	30	124	195	100	225	224	+165	+24	1611	2327	+65.7	+~~10.6~~ 9.6
√22.50	Eros	9.8	13.6	30	125	196	100	226	225	+166	+25	1611	2327	+66.1	+10.0

5863 ~~5883~~ 5845
26 26

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1899phae.proj.974L

1676.7	2337.0
1677.1	2336.6
80.4	2197.8
140.4	1553.7
403.8	2655.2
1008.3	3375.1
107.8.0	2405.0
1286.4	2762.6
1465.0	1799.6
1533.4	2348.9
1617.0	2390.8
1652.8	2445.1
1696.6	2294.8
1712.8	2396.6
1931.2	3642.1
2090.3	1298.8
2213.7	2286.4
2222.0	2380.7
2291.2	1903.3
2329.0	862.0
2793.6	2976.5
2920.1	940.0
3035.8	3716.2
3363.2	2961.4
1676.7	2336.6
1677.1	2337.0

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1899phae.proj..974L

22.50

D 6360 from B 15531 August 29, 1899

		x.	y.	A.	B.	C.	D.	A+C	B+D	C-A	B-D	x×179	y×179	C-A ×.398	B-D ×.398
√	a.	0.9	12.7	10	176	215	49	225	225	+205	+127	0	2148	+81.6	+50.5
√	b.	1.3	9.2	161	40	64	185	225	225	-97	-145	179	1611	-38.6	-57.7
√	c.	2.7	15.4	51	79	174	146	225	225	+123	-67	358	2685	+49.0	-26.7
√	d.	6.2	19.3	194	80	31	145	225	225	-163	-65	1074	3401	-64.9	-25.9
√	e.	6.6	13.9	109	210	116	14	225	224	+07	+196	1074	2327	+2.8	+78.0
√	f.	7.6	15.9	71	210	153	15	224	225	+82	+195	1253	2685	+32.6	+77.6
√	g.	8.6	10.6	70	124	155	101	225	225	+85	+23	1432	1790	+33.8	+9.2
√	h.	9.1	13.6	210	140	15	84	225	224	-195	+56	1611	2327	-77.6 -37.8	+22.3
√	k.	9.5	13.7	108	168	118	57	226	225	+10	+111	1611	2327	+4.0	+44.2
√	l.	9.7	14.2	60	39	165	186	225	225	+105	-147	1611	2506	+41.8	-58.5
√	m.	9.9	13.4	5	74	220	151	225	225	+215	-77	1611	2327	+85.6	-30.6
√	n.	10.1	13.8	206	200	19	25	225	225	-187	+175	1790	2327	-74.4	+69.6
√	o.	11.3	20.7	160	180	65	44	225	224	-95	+136	1969	3580	-37.8	+54.1
√	p.	12.2	7.7	185	170	40	55	225	225	-145	+115	2148	1253	-57.7	+45.8
√	q.	12.8	13.3	30	60	195	165	225	225	+165	-105	2148	2327	+65.7	-41.8
√	r.	12.8	13.7	20	180	204	44	224	224	+184	+136	2148	2327	+73.2	+54.1
√	s.	13.3	11.2	159	34	66	191	225	225	-93	-157	2327	1969	-37.0	-62.5
√	t.	13.5	5.4	110	74	115	150	225	224	+05	-76	2327	895	+2.0	-30.2
√	u.	16.1	17.2	209	30	24	195	224	225	-176	-165	2864	3043	-70.0	-65.7
√	w.	16.8	5.7	42	170	182	55	224	225	+140	+115	2864	895	+55.7	+45.8
√	x.	17.5	19.1	120	6	104	219	224	225	-16	-213	3043	3401	-6.4	-84.8
√	y.	19.3	17.1	160	10	65	215	225	225	-95	-205	3401	3043	-37.8	-81.6
√	Em.	9.8	13.6	30	125	194	100	224	225	+164	+25	1611	2327	+65.3	+10.0
√23.20	Em.	9.8	13.6	29	124	196	101	225	225	+167	+23	1611	2327	+66.5	+9.2
								5395/24		5395/24					

26 5853
24 5395
50) 11248 (224.96
224.96 : ½179 :: x : X
224.96 X = 89.50 x
X = 0.398 x

26 5845
24 5395
50) 11240 (224.80
224.80 : ½179 :: y : Y
224.80 Y = 89.50 y
Y = 0.398 y

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1899phae.proj..974L

81.6	21985
140.4	15533
407.0	26583
1009.1	33751
1076.8	24050
12856	27626
1465.8	17992
15732 (3334)	23493
16150	23712
1652.8	24475
1696.6	22964
1715.6	23966
1931.2	36341
2090.3	12988
22137	22852
2221.2	23811
23640 (22900)	19065
23290	8648
29340 (27940)	29773
2919.7	9408
30366	33162
33632	29614
1676.3	23370
1677.5	23362

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1899phae.proj..974L

23.25

6361 from B 15531 September 2, 1899.

		x.	y.	A.	B.	C.	D.	A+C	B+D	C-A	B-D	x×179	y×179	C-A ×.398	B-D ×.398
✓	Eur.	10.1	13.4	210	107	15	119	225	226	-195	-12	1790	2327	-77.6	-4.8
✓	Eur.	10.1	13.4	210	108	15	117	225	225	-195	-09	1790	2327	-77.6	-3.6
✓	a.	1.2	12.7	194	155	34	70	228	225	-160	+85	179	2148	-63.7	+33.8
✓	b.	1.5	9.2	115	20	110	205	225	225	-05	-185	179	1611	-2.0	-73.6
✓	c.	2.9	15.3	10	65	214	160	224	225	+204	-95	358	2685	+81.2	-37.8 -74.6
✓	d.	6.4	19.3	151	60	74	165	225	225	-77	-105	1074	3401	-30.6	-41.8
✓	e.	6.7	13.8	61	190	163	35	224	225	+102	+155	1074	2327	+40.6	+61.7
✓	f.	7.8	15.8	29	190	196	34	225	224	+167	+161 5	1253	2685	+66.5	+62.1
✓	g.	8.8	10.5	24	105	200	120	224	225	+176	-15	1432	1790	+70.0	-6.0
✓	h.	9.3	13.6	165	120	60	104	225	224	-105	+16	1611	2327	-41.8	+6.4
✓	k.	9.7	13.7	61	149	164	76	225	225	+103	+73	1611	2327	+41.0	+29.1
✓	l.	9.9	14.2	19	20	206	205	225	225	+187	-185	1611	2506	+74.4	-73.6
✓	m.	10.2	13.3	181	60	43	165	224	225	-138	-105	1790	2327	-54.9	-41.8
✓	n.	10.3	13.8	170	180	55	45	225	225	-115	+135	1790	2327	-45.8	+53.7
✓	o.	11.5	20.7	119	164	106	61	225	225	-13	+103	1969	3580	-5.2	+41.0
✓	p.	12.4	7.6	140	150	85	74	225	224	-55	+76	2148	1253	-21.9	+30.2 +70.0
✓	q.	13.1	13.2	210	45	15	180	225	225	-195	-135	2327	2327	-77.6	-53.7
✓	r.	13.2	13.7	204	165	21	60	225	225	-183	+105	2327	2327	-72.8	+41.8
✓	s.	13.5	11.1	111	18	114	207	225	225	+03	-189	2327	1969	+1.2	-75.2
✓	t.	13.7	5.3	60	60	165	165	225	225	+105	-105	2327	895	+41.8	-41.8
✓	u.	16.3	17.1	160	14	64	211	224	225	-96	-197	2864	3043	-38.2	-78.4
✓	w.	17.0	5.7	220	150	5	74	225	224	-215	+76	3043	895	-85.6	+30.2
✓	x.	17.6	18.9	80	215	145	9	225	224	+65	+206	3043	3222	+25.9	+82.0
✓	y.	19.5	16.9	115	220	110	5	225	225	-05	+215	3401	2864	-2.6	+85.6
✓	Eur.	10.1	13.4	210	109	15	116	225	225	-195	-07	1790	2327	-77.6	-2.8
✓23.55	Eur.	10.1	13.4	209	109	16	116	225	225	-193	-07	1790	2327	-76.8	-2.8
								5848/26							
									5846/26						

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1899phae.proj..974L

17124 23222
17124 23234
1153 21818
1770 15374
439.2 26472
1043.4 3359.2
1114.6 23887
1319.5 2747.1
1502.0 17840
1569.2 23334
1652.0 23561
1685.4 24324
1735.1 22852
1744.2 2380.7
1963.8 3621.0
2126.1 1283.2
2249.4 22733
22542 23688 52
2328.2 18938
23688 8532
28258 29646
29574 9252
30689 33040
3329.0 2949.6
17124 23242
17132 23242

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1899phae.proj..974L

23.55

D 6361 from B 15531 . September 2, 1899.

	x.	y.	A.	B.	C.	D.	A+C	B+D	C-A	B-D	x×179	y×179	C-a ×.398	B-D ×.398
✓	a.	1.2	12.7	194	155	31	70	225	225	-163	+85	179	2148	-64.9	+33.8
✓	b.	1.5	9.2	115	21	110	204	225	225	-05	-183	179	1611	-2.0	-72.8
✓	c.	2.9	15.3	10	60	215	165	225	225	+205	-105	358	2685	+81.6	-41.8
✓	d.	6.4	19.3	150	60	75	165	225	225	-75	-105	1074	3401	-29.8	-41.8
✓	e.	6.7	13.8	60	190	165	34	225	224	+105	+156	1074	2327	+41.8	+62.1
✓	f.	7.8	15.8	29	190	196	34	225	224	+167	+156	1253	2685	+66.5	+62.1
✓	g.	8.9	10.5	25	105	200	120	225	225	+175	-15	1432	1790	+69.6	-6.0
✓	h.	9.3	13.6	165	120	60	105	225	225	-105	+15	1611	2327	-41.8	+6.0
✓	k.	9.7	13.7	60	150	165	75	225	225	+105	+75	1611	2327	+41.8	+29.8
✓	l.	9.9	14.1	15	20	210	205	225	225	+195	-185	1611	2506	+77.6	-73.6
✓	m.	10.2	13.3	181	59	44	166	225	225	-137	-107	1790	2327	-54.5	-42.6
✓	n.	10.3	13.8	170	184	55	41	225	225	-115	+143	1790	2327	-45.8	+56.9
✓	o.	11.5	20.7	118	165	107	60	225	225	-11	+105	1969	3580	-4.4	+41.8
✓	p.	12.4	7.7	140	151	85	73	225	224	-55	+78	2148	1253	-21.9	+31.0
✓	q.	13.1	13.2	210	45	15	180	225	225	-195	-135	2327	2327	-77.6	-53.7
✓	r.	13.2	13.7	205	165	20	60	225	225	-185	+105	2327	2327	-73.6	+41.8
✓	s.	13.5	11.1	110	19	115	206	225	225	+05	-187	2327	1969	+2.0	-74.4
✓	t.	13.7	5.3	60	60	165	165	225	225	+97	-105	2327	895	+38.6	-41.8
✓	u.	16.3	17.1	160	15	65	210	225	225	-95	-185	2864	3043	-37.8	-77.6
✓	w.	17.0	5.7	220	155	5	70	225	225	-215	+85	3043	895	-85.6	+33.8
✓	x.	17.6	18.9	80	215	145	10	225	225	+65	+205	3043	3222	+25.9	+81.6
✓	y.	19.5	16.9	115	220	110	5	225	225	-05	+215	3401	2864	-2.0	+85.6
✓	Eu.	10.1	13.4	209	109	16	116	225	225	-193	-07	1790	2327	-76.8	-2.8
✓24.30	Eu.	10.1	13.4	210	109	15	116	225	225	-195	-07	1790	2327	-77.6	-2.8
								5400/24	5397/24						

26 5848 / 24 5400 / 50)11248(224.96

26 5846 / 24 5397 / 50)11243(224.86

22496 : ½179 :: x : X

22496 X = 89.50 x

X = 0.398 x

224.86 : ½179 :: y : Y

224.86 Y = 89.50 y

Y = 0.398 y

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1899phae.proj...974L

114.1	2181.8
177.0	1538.2
439.6	2643.2
1044.2	3359.2
1115.8	2389.1
1319.5	2747.1
1501.6	1784.0
1569.2	2333.0
1652.8	2356.8
1688.6	2432.4
1735.5	2284.4
1744.2	2383.9
1967.6	3621.8
2126.1	1284.0
2249.4	2273.3
2253.4	2368.8
2329.0	1894.6
2365.6	853.2
2826.2	2965.4
2957.4	928.8
3068.9	3303.6
3399.0	2949.6
1713.2	2324.2
1712.4	2324.2

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1899phae.proj..9741

35
22.80
-6413
A 1876

September 6, 1899.

		x.	y.	A.	B.	C.	D	AC	BD	C-a	B-D	x×60	y×60	C-a ×.199	B-D ×.199
✓	Upper end	Error.	28.4	36.5	105	70	46	80	151	150	-59	-10	1680	2160	-11.7	-2.0
✓	Lower "	Error.	29.3	35.9	120	145	30	6	150	151	-90	+139	1740	2100	-17.9	+27.7
✓	Upper "	Error.	28.4	36.5	105	70	47	81	152	151	-58	-11	1680	2160	-11.5	-2.2
✓	Lower "	Error.	29.3	35.9	119	145	31	6	150	151	-88	+139	1740	2100	-17.5	+27.7
✓		A.	7.4	45.3	86	50	65	100	151	150	-21	-50	420	2700	-4.2	-10.0
✓		a.	14.0	40.1	150	5	150	145	300	150		-140	840	2400		-27.9
✓		b.	18.5	4.9	80	145	71	5	151	150	-09	+140	1080	240	-1.8	+27.9
✓		B. ~~20.~~	27.8	35.4	21	59	130	92	151	151	+109	-33	1620	2100	+21.7	-6.6
✓		b. ~~B.~~	28.7	36.8	50	125	101	26	151	151	+51	+99	1680	2160	+10.1	+19.7
✓		d. ~~b.~~	29.8	35.6	29	90	121	60	150	150	+92	+30	1740	2100	+18.3	+6.0
✓		e. ~~d.~~	30.3	32.8	110	129	40	21	150	150	-70	+108	1800	1920	-13.9	+21.5
✓		D. ~~e.~~	30.3	36.9	99	148	51	3	150	151	-48	+145	1800	2160	-9.6	+28.9
✓		f. ~~D.~~	38.0	33.3	109	50	42	101	151	151	-67	-51	2280	1980	-13.3	-10.1
✓		g.	37.8	8.2	25	35	126	116	151	151	+101	-81	2220	480	+20.1	-16.1
✓		h.	41.3	34.4	102	50	49	100	151	150	-53	-50	2460	2040	-10.5	-10.0
✓		k.	42.1	23.2	148	35	2	116	150	151	-146	-81	2520	1380	-29.1	-16.1
✓		l.	43.2	10.8	110	119	40	31	150	150	-70	+88	2580	600	-13.9	+17.5
✓		m.	44.3	23.7	115	96	35	55	150	151	-80	+41	2640	1380	-15.9	+8.2
✓		n.	46.6	26.1	65	3	85	148	150	151 ~~148~~	+20	-145	2760	1560	+4.0	-28.9
✓		o.	51.2	25.1	125	11	25	139	150	150	-100	-128	3060	1500	-19.9	-25.5
✓		p.	51.4	28.7	95	100	55	50	150	150	-40	+50	3060	1680	-8.0	+10.0
✓		q.	52.9	17.1	5	10	145	140	150	150	+140	-130	3120	1020	+27.9	-25.9
✓	Upper end	Error.	28.4	36.5	105	70	46	81	151	151	-59	-11	1680	2160	-11.7	-2.2
✓	Lower "	Error.	29.3	35.9	120	145	31	5	151	150	-89	+140	1740	2100	-17.7	+27.9
✓	Upper "	Error.	28.4	36.5	104	70	47	80	151	150	-57	-10	1680	2160	-11.3	-2.0
✓	Lower "	Error.	29.3	35.9	119	144	31	6	150	150	-88	+138	1740	2100	-17.5	+27.5
									4063	3912						
									27	26						

23.20

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1899phae.proj..9741

1668.3 2158.0

D6413 from A 1876 October 23 1899 $2^h.55^m$

	x	y	A	B	C	D	a+C	B+D	C-a	B-D	xx60	yx60	C-a x.199	B-D x.199		
A	1.9	44.4	3	50	147	101	150	151	+144	-51	60	2640	+28.7	-10.1	88.7	2629.9

October 24, 1899 $1^h.24^m$

	x	y	A	B	C	D	a+C	B+D	C-a	B-D	xx60	yx60	C-a x.199	B-D x.199		
A'	1.9	44.4	4	50	148	101	152	151	+144	-51	60	2640	+28.7	-10.1	88.7	2629.9

2566.1 617.5
2624.1 1388.2
2764.0 1531.1
3040.1 1474.5
3052.0 1690.0
3147.9 994.1
1668.3 2157.8
1722.3 2127.9
1668.7 2168.0
1722.5 2127.5

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1899phae.proj..974L

1668.3	2158.0	
1722.1	21277	
1668.5	21578	
1722.5	2127.7	
415.8	2690.0	
(840.0)	2372.1	840.0 - 30 = 810.0
1078.2	267.9	
1641.7	2093.4	
1690.1	2179.7	
1758.3	2106.0	
1786.1	1941.5	
1790.4	2188.9	
2266.7	1969.9	
2240.1	463.9	
2479.5	2030.0	
2490.9	1363.9	
2566.1	617.5	
2624.1	1388.2	
2764.0	1531.1	
3040.1	1474.5	
3052.0	1690.0	
31479	994.1	
1683	2157.8	
17223	2127.9	
1668.7	2158.0	
17225	2127.5	

2h.55m

B-D
X.199
-10.1 88.7 2629.9

B-D
X.199
7 -10.1 88.7 2629.9

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1899phae.proj..974L

22.10

September 8, 1899.

	x	y	A.	B.	C	D.	a+C	B+D	c-a ×60	B-D	x×60	y×60	c-a ×.199	B-D ×.199
A.	7.4	45.3	88	50	63	100	151	150	-25	-50	420	2700	-5.0	-10.0
a.	~~10.9~~ 14.0	~~39.9~~ 40.0	150	5	150	145	300	150	0.	-140	840	2400		-27.9
b.	18.5	4.9	99	148	71	3	150	151	-08	+145	1080	240	-1.6	+28.9
B.	27.8	35.4	21	60	129	91	150	151	+108	-31	1620	2100	+21.5	-6.2
c.	28.7	36.8	50	125	100	26	150	151	+50	+99	1680	2160	+10.0	+19.7
d.	29.8	35.6	30	90	120	61	150	151	+90	+29	1740	2100	+17.9	+5.8
e.	30.3	32.8	110	130	40	21	150	151	-70	+109	1800	1920	-13.9	+21.7
D.	30.4	36.9	98	148	52	3	150	151	-46	+145	1800	2160	-9.2	+28.9
f.	38.3	33.3	109	50	41	101	150	151	-68	-51	2280	1980	-13.5	-10.1
g.	37.8	8.2	25	36	125	114	150	150	+100	-78	2220	480	+19.9	-15.5
h.	41.3	34.3	105	50	46	100	151	150	-59	-50	2460	2040	-11.7	-10.0
k.	42.1	23.2	148	32	2	118	150	150	-146	-86	2520	1380	-29.1	-17.1
l.	43.3	10.7	111	115	40	35	151	150	-71	+80	2580	600	-14.1	+15.9
m.	44.3	23.6	116	96	34	55	150	151	-82	+41	2640	1380	-16.3	+8.2
n.	46.6	26.0	66	151	84	150	150	151	+18	+1	2760	1560	+3.6	+0.2
o.	51.2	25.1	128	15	22	137	150	152	-106	-122	3060	1500	-21.1	-24.3
p.	51.4	28.6	95	100	55	50	150	150	-40	+50	3060	1680	-8.0	+10.0
q.	52.9	17.1	5	8	146	143	151	151	+141	-135	3120	1020	+28.1	-26.9
Upper end Ecl.	28.4	36.5	105	70	46	80	151	150	-59	-10	1680	2160	-11.7	-2.0
Lower end Ecl.	29.3	35.9	120	145	31	6	151	151	-89	+139	1740	2100	-17.7	+27.7
Upper end Ecl.	28.4	36.5	105	70	45	80	150	150	-60	-10	1680	2160	-11.9	-2.0
Lower end Ecl.	29.3	35.9	120	144	30	6	150	150	-90	+138	1740	2100	-17.9	+27.5
22.50							3456/23	3453/23						

a+C 27 4063
23 3456
50) 7519 (150.38
150.38 : ½60 :: ~~150.35~~ x : X
150.38 X = 30 x
X = 0.199 x

B+D 26 3912
23 3463
49) 78375 (150.51
150.51 : ½60 :: y : Y
150.51 Y = 30 y
Y = 0.199 y

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1999phae.proj..974L

415.0	2690.0	
	2372.1	x 840.0-30=810.0
1078.4	2689	
1641.5	2093.8	
1690.0	2179.7	
1757.9	2105.8	
1786.1	1941.7	
1790.8	2188.9	
2266.5	1969.9	
2239.9	464.5	
2448.3	2030.0	
2490.9	1362.9	
2565.9	615.9	
2623.7	1388.2	
2763.6		y 1560.2-30=1530.2
3038.9	1875.7	
3052.0	1690.0	
3148.1	993.1	
1668.3	2158.0	
1722.3	2127.7	
1668.1	2158.0	
1722.1	2127.5	

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1899phae.proj..974L

120 22.00

D6412 from
A 1876

Dept. 9, 1899.

	x	y	A.	B.	C	D.	a+c	B+D	C-a	B-D	x×60	y×60	C-a ×.200	B-D ×.200
Upper end Ens.	28.1	36.3	140	35	10	115	150	150	-130	-80	1680	2160	-26.0	-16.0
Lower " Ens.	28.9	35.7	5	110	147	40	152	150	+142	+70	1680	2100	+28.4	+14.0
Upper " Ens.	28.1	36.3	140	36	11	115	151	151	-129	-79	1680	2160	-25.8	-15.8
Lower " Ens.	28.9	35.7	5	110	146	41	151	151	+141	+69	1680	2100	+28.2	+13.8
✓	A.	7.2	45.1	124	15	27	136	151	151	-97	-121	420	2700	-19.4	-24.2
✓	f. ~~xx~~	18.3	4.7	109	119	41	32	150	151	-68	+87	1080	240	-13.6	+17.4
✓	n. b.	13.7	39.7	36	120	115	30	151	150	+79	+90	780	2340	+15.8	+18.0
✓	B.	27.6	35.2	56	25	94	126	150	151	+38	-101	1620	2100	+7.6	-20.2
✓	C.	28.4	36.6	85	90	65	60	150	150	-20	+30	1680	2160	-4.0	+6.0
✓	D.	30.2	36.7	130	115	20	36	150	151	-110	+79	1800	2160	-22.0	+15.8
✓	e.	30.1	32.7	145	95	5	55	150	150	-140	+40	1800	1920	-28.0	+8.0
✓	d.	29.6	35.4	62	55	88	95	150	150	+26	-40	1740	2100	+5.2	-8.0
✓	f.	38.1	33.1	141	19	9	131	150	150	-132	-112	2280	1980	-26.4	-22.4
✓	g.	37.6	8.1	55	9	96	141	151	150	+41	-132	2220	480	+8.2	-26.4
✓	h.	41.1	34.1	138	19	12	131	150	150	-126	-112	2460	2040	-25.2	-22.4
✓	k.	41.7	23.1	35	2	116	148	150	150	+81	-146	2460	1380	+16.2	-29.2
✓	l.	43.1	10.5	144	89	6	61	150	150	-138	+28	2580	600	-27.6	+5.6
✓	m.	44.0	23.4	149	69	1	82	150	151	-148	-13	2640	1380	-29.6	-2.6
✓	n.	46.3	25.8	100	122	50	29	150	151	-50	+93	2760	1500	-10.0	+18.6
✓	o. ~~p.~~	50.9	24.9	10	135	140	15	150	150	+130	+120	3000	1440	+26.0	+24.0
✓	p.	51.2	28.4	130	71	20	79	150	150	-110	-08	3060	1680	-22.0	-1.6
✓	q.	52.8	16.8	40	125	110	25	150	150	+70	+100	3120	960	+14.0	+20.0
Upper end Ens.	28.1	36.3	140	36	10	115	150	151	-130	-79	1680	2160	-26.0	-15.8
Lower " Ens.	28.9	35.7	5	110	145	40	150	150	+140	+70	1680	2100	+28.0	+14.0
Upper " Ens.	28.1	36.3	140	37	11	114	151	151	-129	-77	1680	2160	-25.8	-15.4
Lower " Ens.	28.9	35.7	5	110	146	40	151	150	+141	+70	1680	2100	+28.2	+14.0
22.25							3909/26	3910/26						

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1899phae.proj..974L

16540 2144.0
1708.4 2114.0
1654.2 2144.2
1708.2 2113.8
4006 2675.8
1066.4 257.4
795.8 2358.0
1627.6 2079.8
1676.0 2166.0
~~1822.0~~ 1778.0 2175.8
~~1828.0~~ 1772.0 1928.0
1745.8 2092.0
2253.6 1857.6
2228 2446 2441 2475 2562 2621 2750 3026 3031 3134 165 170 165 170

D6412 A1876 Oct. 23, 1899. 2h 50m

	x	y	A	B	C	D	a+C	B+D	C-a	B-D	x×60	y×60	C-a X.200	B-D X.200
A'	1.7	47.2	38	15	112	136	150	151	+74	-121	60	2640	+14.7	-24.2

x = 74.8 y = 2615.8

~~D6413 A1876~~

October 24, 1899 1h 25m

	x	y	A	B	C	D	a+C	B+D	C-a	B-D	x×60	y×60	C-a X.200	B-D X.200
A'	1.7	47.2	38	11	113	139	151	150	+75	-128	60	2640	+15.0	-25.6

x = 75.0 y = 2614.4

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1899phae.proj..974L

16540 21440
17084 21140
16542 21442
17082 21138
4006 26758
10664 25714
7958 23580
16276 20798
16760 21660
~~17788~~
~~18220~~ 21758
~~17720~~
~~18280~~ 19280
17458 20920
22536 18576
22282 4536
24748 20176
24762 13508
~~25524~~
~~25624~~ 6056
26204 13774
27500 15186
30260 14640
30380 16784
31340 9800
16540 21442
17080 21140
16548 21446
17082 21140

Oct. 23, 1899. $2^h\ 50^m$

B	C	D	a+C	B+D	C-a	B-D	x x 60	y x 60	C-a x.200	B-D x.200
15	112	136	160	151	+74	-121	60	2640	+14.8	-24.2

x = 74.8 y = 2615.8

October 24, 1899 $1^h\ 25^m$

B	C	D	a+C	B+D	C-a	B-D	x x 60	y x 60	C-a x.200	B-D x.200
11	113	139	151	150	+75	-128	60	2640	+15.0	-25.6

x = 75.0 y = 2614.4

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1899phae.proj..974L

122

22.25
D 6712 fm
A 1876

Sept. 9, 1899.

	x	y	A.	B.	C.	D.	A+C	B+D	C-A	B-D	x×60	y×60	C-A ×.200	B-D ×.200
A.	7.2	45.1	122	15	28	136	150	151	-94	-121	420	2700	-18.8	-24.2
a.	13.7	39.7	35	120	115	30	150	150	+80	+90	780	2340	+16.0	+18.0
b.	18.3	4.7	110	115	40	36	150	151	-70	+79	1080	240	-14.0	+15.8
B.	27.6	35.2	58	25	92	126	150	151	+34	-101	1620	2100	+6.8	-20.2
C.	28.4	36.6	85	90	66	60	151	150	-19	+30	1680	2160	-3.8	+6.0
D.	30.2	36.7	131	115	20	35	151	150	-111	+80	1800	2160	-22.2	+16.0
e.	30.1	32.7	146	95	4	56	150	151	-142	+39	1800	1920	-28.4	+7.8
d.	29.6	35.4	61	55	89	96	150	151	+28	-41	1740	2100	+5.6	-8.2
f.	38.1	33.1	144	15	6	135	150	150	-138	-120	2280	1980	-27.6	-24.0
g.	37.6	8.1	55	5	~~145~~ 95	145	150	150	+40	-140	2220	480	+8.0	-28.0
h.	41.1	34.1	139	15	11	135	150	150	-128	-120	2460	2040	-25.6	-24.0
k.	41.7	23.1	31	2	119	148	150	150	+88	-146	2460	1380	+17.6	-29.2
l.	43.1	10.5	141	89	9	61	150	150	-132	+28	2580	600	-26.4	+5.6
m.	44.1	23.4	148	65	2	85	150	150	-146	-20	2640	1380	-29.2	-4.0
n.	46.4	25.7	100	125	50	26	150	151	-50	+~~64~~ 99	2760	1500	-10.0	+19.8
o.	50.9	24.9	10	134	140	16	150	150	+130	+118	3000	1440	+26.0	+23.6
p.	51.2	28.5	130	70	20	80	150	150	-110	-10	3060	1680	-22.0	-2.0
q.	52.7	16.7	38	125	113	25	151	150	+75	+100	3120	960	+15.0	+20.0
Iffar and Eins.	28.1	36.3	140	36	10	115	150	151	-130	-79	1680	2160	-26.0	-15.8
Eins " Eins.	28.9	35.7	5	110	146	40	151	150	+141	+70	1680	2100	+28.2	+14.0
Iffar " Eins.	28.1	36.3	139	35	11	115	150	150	-128	-80	1680	2160	-25.6	-16.0
Eins " Eins.	28.9	35.7	6	110	145	40	151	150	+139	+70	1680	2100	+27.8	+14.0

22.50

3305 / 22 — 3307 / 22

26 3909
22 3305
48) 7214 (150.291

150.29 : ½60 :: x : X
x = 0.200 X

26 3910
22 3307
48) 7217 (150.354

150.35 : ½60 :: y : Y
y = 0.200 Y

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1999phae.proj..974L

401.2	2675.8
796.0	2358.0
1066.0	2558
1626.8	2079.8
1676.2	2166.0
1877.8	2176.0
17716	1927.8
1745.6	2091.8
22524	1956.0
2228.0	452.0
24344	2016.0
24776	1350.8
25536	605.6
26108	1376.0
2750.0	1519.8
3026.0	1463.6
30380	1678.0
3135.0	980.0
1654.0	21442
1708.2	2114.0
16544	2144.0
1707.8	2114.0

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1899phae.proj..974L

D 4851 (Negative)

Oct. 23, 1899.

h m
0 40

Measures of positions of stars within 30′ of S. Pole.

No.	x	y	Est. Magn.	A.	B.	C.	D.	A+C	B+D	C-a	B-D	x×60	y×60	C-a ×.199	B-D ×.199	
Gillis	7980	5.5	42.4	B.	79	100	71	51	150	151	−0.8	+49	300	2520	−1.6	+9.8	
"	8714	5.7	57.7	B.	40	45	110	107	150	152	+70	−62	300	3420	+13.9	−12.3	
"	7923	9.7	41.9	B.	55	10	95	140	150	150	+40	−130	540	2460	+8.0	−25.9	
"	6508	18.2	17.5	8.0	115	68	35	83	150	151	−80	−15	1080	1020	−15.9	−3.0	
"	11,113	36.8	88.5	7.0	30	89	121	61	151	150	+91	+28	2160	5280	+18.1	+5.6	
	a	26.2	64.7	9.0	144	50	7	101	151	151	−137	−51	1560	3840	−27.3	−10.1	
	d	35.6	62.3	8.4	60	119	90	31	150	150	+30	+88	2100	3720	+6.0	+17.5	
	c	35.8	61.4	8.0	25	80	125	71	150	151	+100	+09	2100	3660	+19.9	+1.8	
	g	~~39.5~~ 38.5	54.5	10.0	88	65	62	90	150	155	−26	−25	2880	3240	−5.2	−5.0	
	p	46.0	53.9	14.5	150	10	151	141	301	151	+0.1	−131	2760	3180	+0.2	−26.1	
	k	46.2	44.4	11.0	122	80	30	71	152	151	−92	+09	2760	2640	−18.3	+1.8	
	m	~~48.9~~ 47.9	49.8	12.0	10	19	140	132	150	151	+130	−113	2820	2940	+25.9	−22.5	
	n	47.4	53.4	14.5	100	95	51	55	151	150	−49	+40	2820	3180	−9.8	+8.0	
	h	47.8	53.1	10.8	20	141	130	10	150	151	+110	+131	2820	3180	+21.9	+26.1	
	o	49.7	55.9	13.5	35	10	115	140	150	150	+80	−130	2940	3300	+15.9	−25.9	
	l	50.3	56.9	12.2	100	7	50	144	150	151	−50	−137	3000	3360	−10.0	−27.3	
	j	50.5	51.4	16.3	79	105	71	45	150	150	−08	+60	3000	3060	−1.6	+11.9	
	f	50.9	55.6	9.5	5	60	145	91	150	151	+140	−31	3000	3300	+27.9	−6.2	
	q	51.6	51.4	16.3	49	110	101	41	150	151	+52	+69	3060	3060	+10.3	+13.7	
	r	51.9	53.6	16.0	6	55	145	95	151	150	+139	−40	3060	3180	+27.7	−8.0	
	t	53.6	58.1	15.7	51	147	100	4	151	151	+49	+143	3180	3480	+9.8	+28.5	
	g	53.5	53.4	14.5	85	95	66	55	151	150	−19	+40	3180	3180	−3.8	+8.0	
	n	55.3	49.4	12.3	101	82	49	69	150	151	−52	+13	3300	2940	−10.3	+2.6	
	w	55.8	53.1	15.7	25	142	126	9	151	151	+101	+133	3300	3180	+20.1	+26.5	
	s	56.3	41.6	15.0	110	60	40	90	150	150	−70	−30	3360	2460	−13.9	−6.0	
	b	57.6	39.2	7.4	65	136	86	15	151	151	+21	+121	3420	2340	+4.2	+24.1	
	u	57.4	53.9	16.0	96	5	55	146	151	151	−41	−141	3420	3180	−8.2	−28.1	
Gillis	4034 = a	66.0	40.6	7.0	151	45	150	105	301	150	−01	−60	3960	2400	−0.2	−11.9	

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Est. Y fract reduced to Cent. Eq.

x y
" "
300.0 2514.0

+(C-a)	-(B-D)
298.4	2510.2
313.9	3432.3
548.0	2485.9
1064.1	1023.0
2178.1	5274.4
1532.7	3850.1
2106.0	3702.5
2119.9	3658.2
2274.8	3245.0
2760.2	3206.1
−30	
2730.2	
2741.7	2638.2
2845.9	2962.5
2810.2	3172.0
2841.9	3153.9
2955.9	3325.9
2990.0	3387.3
2998.4	3048.1
3027.9	3306.2
3070.3	3046.3
3087.7	3188.0
3189.8	3451.5
3176.2	3172.0
3289.7	2937.4
3320.1	3153.5
3346.1	2466.0
3424.2	2315.9
3411.8	3208.1
3959.8	
−30	
3929.8	2411.9

3930.0 2406.0

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D 4851

h m
1 45

Measures of positions continued

	No	x	y	Magn. Est	A	B	θ	D	A+C	B+D	c-a	B-D	x×60	y×60	c-a ×.199	B-D ×.199
Gillis	13902	76.8	77.8	6.7	30	20	122	131	152	151	+92	−111	4568	4620	+18.3	−22.1
"	14603	83.7	73.6	B	40	50	110	100	150	150	+70	−50	4980	4380	+13.9	−10.0
"	15462	91.9	66.3	8.2	10	115	140	35	150	150	+130	+80	5460	3960	+25.9	+15.9
h m 0 00																
	1	20.4	47.5	15.0	99	80	51	71	150	151	−48	+09	1200	2820	−9.6	+1.8
	2	21.0	56.4	14.5	152	80	150	71	302	151	−02	+09	1260	3360	−0.4	+1.8
	3	21.5	54.9	15.7	65	3	85	147	150	150	+20	−144	1260	3240	+4.0	−28.7
	4	21.6	49.4	16.0	68	98	82	53	150	151	+14	+45	1260	2940	+2.8	+9.0
	5	21.8	48.7	16.0	25	89	126	112	151	151	+101	−73	1260	2880	+20.1	−14.5
	6	22.6	48.4	15.7	56	85	96	67	151	152	+41	+18	1320	2880	+8.2	+3.6
	7	22.7	38.5	15.0	35	78	115	73	150	151	+80	+05	1320	2280	+15.9	+1.0
	8	23.6	53.3	14.5	75	107	75	44	150	151	00	+63	1380	3180	00	+12.5
	9	24.1	60.1	15.9	144	149	7	2	151	151	−137	+147	1440	3600	−27.3	+29.3
	10	24.3	55.4	14.0	110	81	41	70	151	151	−69	+11	1440	3300	−13.7	+2.2
	11	24.4	38.1	9.0	95	145	56	6	151	151	−39	+139	1440	2280	−7.8	+27.7
	12	24.9	38.3	10.2	11	102	139	50	150	152	+128	+52	1440	2280	+25.5	+10.3
Dub.	13	24.9	38.7	16.0	20	30	130	121	150	151	+110	−91	1440	2280	+21.9	−18.1
	14	26.2	61.5	13.9	125	70	25	81	150	151	−100	−11	1560	3660	−19.9	−2.2
	15	26.6	59.5	15.0	50	80	100	71	150	151	+50	+09	1560	3540	+10.0	+1.8
	16	27.7	63.2	15.7	31	132	120	19	151	151	+89	+113	1620	3780	+17.7	+22.5
	17	27.5	45.5	16.0	80	75	70	76	150	151	−10	−01	1620	2700	−2.0	−2.0
	18	28.7	69.9	15.0	25	15	125	136	150	151	+100	−121	1680	4140	+19.9	−24.1
	19	28.1	48.5	10.0	145	65	150	86	150	151	−140	−21	1680	2880	−27.9	−4.2
	20	28.2	34.3	15.1	131	120	20	32	151	152	−111	+88	1680	2040	−22.1	+17.5
	21	28.6	32.7	16.0	45	35	106	116	151	151	+61	−81	1680	1920	+12.1	−16.1
	22	28.7	31.7	11.0	40	30	110	120	150	150	+70	−90	1680	1860	+13.9	−17.9
	23	30.8	39.6	15.7	21	60	130	91	151	151	+109	−31	1800	2340	+21.7	−6.2
	24	31.6	64.3	12.2	64	120	88	31	152	151	+24	+89	1860	3840	+4.8	+17.7
	25	31.3	56.2	15.8	79	132	71	20	150	152	−08	+112	1860	3360	−1.6	+22.3
									4365	4228						
									29	28						

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Est. of track red. to Cent. Sq.

(C-a)	-(B-D)	x	y
4578.3	4642.1	4578.0	4638.0
4993.9	4390.0		
5485.9	3947.1		
11907	28182		
1259.6 − 30. = 1229.6	3358.2		
1264.0	3268.7		
1262.8	2931.0		
1280.1	2894.5		
1328.2	2876.7		
1335.9	2278.0		
1380.0	3167.5		
1412.7	3570.7		
1426.3	3297.8		
1432.2	2252.3		
1465.5	2269.7		
1461.9	2298.1		
1540.1	3662.2		
1570.0	3538.2		
1637.7	3757.5		
1618.0	2702.0		
1699.9	4164.1		
1652.1	2884.2		
1657.9	2022.5		
1692.1	1936.1		
1693.9	1779 ~~1861.8~~		
1821.7	2346.2		
1864.8	3822.3		
1858.4	3337.7		

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Oct.

~~Sept.~~ 24, 99

D 4851

Measures of positions continued

No	x	y	Magn.	A	B	b	D	A+C	B+D	C-a	B-D	x×60	y×60	C-a x.199	B-D x.199	+C
✓ 26	31.6	44.0	15.5	50	151	101	150	151	301	+51	+01	1860	2400	+10.1	+0.2	18
✓ 27	31.3	28.2	~~14.2~~ 15.3	121	128	30	23	151	151	−91	+105	1860	1680	−18.1	+20.9	18
✓ 28	32.2	72.2	16.0	120	125	31	26½	151	151	−89	+99	1920	4320	−17.7	+19.7	1
✓ 29	32.5	70.0	12.9	75	150	76	150	151	300	+01	00	1920	4200	+0.2	00	19
✓ 30	32.4	65.5	14.0	105	70	46	80	151	150	−59	−10	1920	3900	−11.7	−2.0	1
✓ 31	32.3	61.4	10.5	110	85	40	67	150	152	−70	+18	1920	3660	−13.9	+3.6	1
✓ 32	32.9	40.2	16.1	15	121	136	30	151	151	+121	+91	1920	2400	+24.1	+18.1	1
✓ 33	34.6	57.5	10.0	50	71	100	80	150	151	+50	−09	2040	3060	+10.0	−1.8	2
✓ 34	35.4	24.2	15.5	91	130	60	20	151	150	−31	+~~92~~ 116	2100	1440	−6.2	+21.9	2
✓ 35	36.3	54.7	7.2	105	29	46	121	151	150	−59	−92	2160	3240	−11.7	−18.3	2
✓ 36	37.1	59.7	14.0	140	35	11	116	151	151	−129	−81	2220	3540	−25.7	−16.1	2
✓ 37	37.6	53.5	15.7	60	70	90	81	150	151	+30	−11	2220	3180	+6.0	−2.2	2
✓ 38	37.9	51.9	13.8	10	10	140	141	150	151	+130	−131	2220	3060	+25.9	−26.1	2
✓ 39	37.2	31.8	11.0	135	10	15	141	150	151	−120	−131	2220	1860	−23.9	−26.1	2
✓ 40	37.3	24.3	13.9	15	29	135	121	150	150	+120	−92	2220	1440	+23.9	−18.3	2
✓ 41	38.1	66.2	11.0	145	136	5	15	150	151	−140	+121	2280	3960	−27.9	+24.1	2
✓ 42	38.6	63.7	13.2	50	34	100	116	150	150	+50	−82	2280	3780	+10.0	−16.3	2
✓ 43	38.5	55.2	15.9	79	135	71	16	150	151	−08	+119	2280	3300	−1.6	+23.7	2
✓ 44	38.4	53.6	15.0	90	49	61	101	151	150	−29	−52	2280	3180	−5.8	−10.3	2
✓ 45	38.5	51.9	15.8	90	5	60	145	150	150	−30	−140	2280	3060	−6.0	−27.9	2
✓ 46	38.9	22.7	13.5	15	30	135	121	150	151	+120	−91	2280	1320	+23.9	−18.1	2
✓ 47	39.1	74.8	15.5	140	29	11	121	151	150	−129	−92	2340	4440	−25.7	−18.3	2
✓ 48	39.2	66.3	15.8	130	120	21	30	151	150	−~~119~~ 109	+90	2340	3960	−21.7	+17.9	2
✓ 49	39.5	62.4	15.8	85	95	66	56	151	151	−19	+39	2340	3720	−3.8	+7.8	2
✓ 50	39.5	26.4	15.5	75	106	76	47	151	153	+01	+59	2340	1560	+0.2	+11.7	2
✓ 51	39.8	24.7	15.8	114	32	36	118	150	150	−78	−86	2340	1440	−15.5	−17.1	2
✓ 52	39.9	29.8	15.5	1	110	150	40	151	150	+149	+70	2340	1740	+29.7	+18.9	2
✓ 53	40.4	58.6	13.2	88	50	63	101	151	151	−25	−51	2400	3480	−5.0	−10.1	2

4216/28 4519/30

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		Centres x	y
+(C-a)	-(B-D)	2981.5	2953.7
1870.1	2398.8 − 30 = 2368.8		
1841.9	1659.1		
1902.3	4300.3		
1920.2	4200.0 − 30.0 = 4170.0		
	3902.0		
1908.3	~~3898.0~~ 3879.0		
1906.1	3656.4		
1944.1	2381.9		
2050.0	3061.8		
2093.8	1418.1		
2148.3	3258.3		
2194.3	3556.1		
2226.0	3182.2		
2245.9	3086.1		
2196.1	1886.1		
2243.9	1458.3		
2252.1	3935.9		
2290.0	3796.3		
2278.4	3276.3		
2274.2	3190.3	−707.3	−236.6
2274.0	3087.9	−707.5	−134.2
2303.9	1338.1		
2314.3	4458.3		
2318.3	3942.1		
2336.2	3712.2		
2340.2	1548.3		
2324.5	1457.1		
2369.7	1726.1		
2395.0	3490.1		

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1899phae.proj..974L

D 4851

Measures of positions continued.

	No	x	y	Magn.	A	B	C	D	A+C B+D	C-a B-D	x×60	y×60	C-a ×.199	B-D ×.199
h m				East										
1 15	✓ 54	40.2	68.2	15.0	130	129	21	22	151 151	−109 +107	2400	4080	−21.7	+21.3
h m Oct. 26, '97														
23 15	✓ 55	41.6	45.6	14.9	70	45	81	105	151 150	+ 11 − 60	2460	2700	+ 2.2	− 11.9
	✓ 56	41.6	22.4	15.0	55	99	95	51	150 150	+ 40 + 48	2460	1320	+ 8.0	+ 9.6
	✓ 57	42.0	70.1	15.8	151	145	150	5	301 150	− 01 + 140	2520	4200	− 0.2	+ 27.9
	✓ 58	42.9	50.4	15.8	5	95	145	55	150 150	+ 140 + 40	2520	3000	+ 27.9	+ 8.0
	✓ 59	42.7	32.4	14.8	31	100	119	51	150 151	+ 88 + 49	2520	1920	+ 17.5	+ 9.8
Haag. Arrestw.	60	42.3	24.6	12.8 ~~14.0~~	115	60	35	91	150 151	− 80 − 31	2520	1440	− 15.9	− 6.2
	✓ 61	42.8	71.6	10.5	15	61	135	90	150 151	+ 120 − 29	2520	4260	+ 23.9	− 5.8
	✓ 62	43.3	67.8	10.3	94	18	67	132	151 150	− 37 − 114	2580	4020	− 7.4	− 22.7
	✓ 63	43.4	63.1	10.0	101	145	50	5	151 150	− 51 + 140	2580	3780	− 10.1	+ 27.9
	✓ 64	43.3	59.6	10.2	115	55	36	96	151 151	− 79 − 41	2580	3540	− 15.7	− 8.2
≠	✓ 65	43.5	44.3	16.0	72	114	78	36	150 150	+ 06 + 78	2580	2640	+ 1.2	+ 15.5
	✓ 66	43.2	29.9	10.8 ~~12.5~~	6	25	146		150 152	− 100 − 140	2580	1740	− 19.9	− 27.9
≠	✓ 67	44.2	51.9	16.0	130	5	21	146	151 151	− 109 − 141	2640	3060	− 21.7	− 28.1
	✓ 68	44.7	44.3	11.2	40	105	110	46	150 151	+ 70 + 59	2640	2640	+ 13.9	+ 11.7
	✓ 69	44.2	26.1	11.0	131	144	20	06	151 150	− 111 + 138	2640	1560	− 22.1	+ 27.5
	✓ 70	44.4	21.6	10.2	82	40	68	110	150 150	− 14 − 70	2640	1260	− 2.8	− 13.9
	✓ 71	45.1	69.7	15.5	146	35	5	116	151 151	− 141 − 81	2700	4140	− 28.1	− 16.1
	✓ 72	45.4	77.3	15.0	89	120	61	30	150 150	− 28 + 90	2700	4620	− 5.6	+ 17.9
	✓ 73	45.5	68.1	15.0	85	149	66	2	151 151	− 19 + 147	2700	4080	− 3.8	+ 29.3
	✓ 74	45.1	39.7	14.0	135	26	15	124	150 150	− 120 − 98	2700	2340	− 23.9	− 19.5
≠	✓ 75	46.1	64.7	16.0	140	40	10	110	150 150	− 130 − 70	2760	3840	− 25.9	− 13.9
	✓ 76	46.6	63.8	16.0	44	20	106	130	150 150	+ 62 − 110	2760	3780	+ 12.3	− 21.9
	✓ 77	46.9	59.6	15.1	10	55	140	96	150 151	+ 130 − 41	2760	3540	+ 25.9	− 8.2
	✓ 78	46.8	46.2	14.0	111	130	40	21	151 151	− 71 + 109	2760	2760	− 14.1	+ 21.7
	✓ 79	47.8	69.3	15.2	111	100	40	50	151 150	− 71 + 50	2820	4140	− 14.1	+ 10.0
	✓ 80	47.7	30.6	11.0	41	50	110	101	151 151	+ 69 − 51	2820	1800	+ 13.7	− 10.1
	✓ 81	47.5	27.7	13.5	75	41	76	110	151 151	+ 01 − 69	2820	1620	+ 0.2	− 13.7
									4364 4215					
									29 25					

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+(C-a)	-(B-D)
2378.3	4058.7
2462.2	2711.9
2468.0	1310.4
2519.8 − 30. = 2489.8	4172.1
2547.9	2992.0
2537.5	1910.2
2504.1	1446.2
2543.9	4265.8
2572.6	4042.7
2569.9	3752.1
2564.3	3531.8 .482
2581.2	2624.5
2560.1	1767.9
2618.3	3088.1
2653.9	2628.3
2617.9	1532.5
2637.2	1273.9 − 3443 + 1679.8
2671.9	4156.1
2694.4	4602.1
2696.2	4050.7
2676.1	2359.5
2734.1	3853.9
2772.3	3801.9
2785.9	3548.2
2745.9	2738.3
2805.9	4130.0
2833.7	1810.1
2820.2	1633.7

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1899phae.proj..974L

Oct. 26, '99.

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Measures of positions continued

	x	y	Mag.	A	B	b	D	A+C	B+D	C-a	B-D	x×60	y×60	C-a ×.199	B-D ×.199
✓ 82	47.7	20.6	11.0	31	56	120	94	151	150	+89	−38	2820	1200	+17.7	−7.6
✓ 83	48.1	76.7	15.8	145	30	5	120	150	150	−140	−90	2880	4560	−27.9	−17.9
✓ 84	48.6	42.7	14.3	51	40	100	110	151	150	+49	−70	2880	2520	+9.8	−13.9
✓ 85	48.4	29.8	13.0	80	19	90	132	150	151	−10	−113	2880	1740	−2.0	−22.5
✓ 86	48.4	29.4	14.9	91	95	60	55	151	150	−31	+40	2880	1740	−6.2	+8.0
✓ 87	48.6	24.1	15.2	50	146	100	5	150	151	+50	+141	2880	1440	+10.0	+28.1
✓ 88	48.8	24.0	15.3	20	150	130	150	150	300	+110	00	2880	1440	+21.9	0.0
✓ 89	49.6	38.1	12.5	50	150	100	151	150	301	~~+100~~ 50	−01	2940	2280	+10.0	−0.2
✓ 90	49.8	35.9	14.8	21	~~130~~ 2	~~148~~ 130	148	151	150	+109	−146	2940	2100	+21.7	−29.1
✓ 91	49.6	21.9	11.0	55	~~155~~ 5	95	146	150	151	+40	−141	2940	1260	+8.0	−28.1
✓ 92	50.0	40.4	10.2	150	94	150	57	300	151	00	+37	3000	2400	00	+7.4
✓ 93	50.3	22.1 219	13.9	115	135	35	15	150	150	−80	+120	3000	1320	−15.9	+23.9
Dillon ✓ 7980	5.5	42.4	8	75	100	76	50	151	150	+01	+50	300	2520	+0.2	+10.0
" ✓ 8714	5.6	5.6	8	40	42	110	108	150	150	+70	−66	300	3420	+13.9	−13.1
" ✓ 7923	9.6	41.9	8	55	10	96	140	151	150	+41	−130	540	2460	+8.2	−25.9
" ✓ 6508	18.3	17.5	7.3	115	69	35	81	150	150	−80	−12	1080	1020	−15.9	−2.4
" ✓ 11,113	36.8	88.4	7.2	25	90	125	61	150	151	+100	+29	2160	5280	+19.9	+5.8
✓ e	26.1	64.6	9.0	145	50	10	100	155	150	−135	−50	1560	3840	−26.9	−10.0
✓ d	35.6	62.3	8.8	61	119	90	33	151	152	+29	+86	2100	3720	+5.8	+17.1
✓ c	35.7	61.4	8.0	25	80	124	70	149	150	+99	+10	2100	3660	+19.7	+2.0
✓ g	38.4	54.6	10.0	85	62	65	90	150	152	−20	−28	2280	3240	−4.0	−5.6
✓ f	46.0	53.9	14.0	151	10	150	141	301	151	−01	−131	2760	3180	−0.2	−26.1
✓ k	46.3	44.4	11.0	124	80	27	71	151	151	−97	+09	2760	2640	−19.3	+1.8
✓ m	47.8	49.8	12.0	10	19	140	132	150	151	+130	−113	2820	2940	+25.9	−22.5
✓ n	47.4	53.4	14.7	100	95	50	55	150	150	−50	+40	2820	3180	−10.0	+8.0
✓ h	47.8	53.1	10.0	20	140	130	10	150	150	+110	+130	2820	3180	+21.9	+25.9
✓ o	49.7	55.9	13.4	35	10	115	140	150	150	+80	−130	2940	3300	+15.9	−25.9
✓ l	50.4	56.9	12.4	100	5	50	145	150	150	−50	−140	3000	3360	−10.0	−27.9

$\frac{4523}{30}$ $\frac{4513}{30}$

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1899phae.proj..974L

+(C-a)	-(B-D)
2837.7	1207.6
2852.1	45779
2889.8	25339
2878.0	17625
2873.8	17320
2890.0	1411.9
2901.9	1440.0 −30. 1410.0
2950.0	2279.880.2 −136 2249.850.2
2961.7	2129.1
2948.0	1288.1
3000.0 −30. 2970.0	2392.6
29 3084.1	1296.1
300.2	2510.0
313.9	3433.1
548.2	2485.9
1064.1	1022.4
2179.9	5274.2
1533.1	3850.0
2105.8	3702.9
2119.7	3658.0
2276.0	3245.6
2759.8 −30 2729.8	3206.1
2740.7	2638.2
2845.9	2962.5
2810.0	3172.0
2841.9	3154.1
2955.9	3325.9
2990.0	3387.9

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1899phae.proj..974L

D 4851

March 27, 1899

Measures of positions continued.

	x	y	Magn.	A.	B	C	D	A+C	B+D	C-a	B-D	x×60	y×60	C-a ×.199	B-D ×.199
✓ z	50.5	51.4	16.0	80	105	70	45	150	150	150 − 10	+ 60	3000	3060	−2.0	+11.9
✓ f	50.9	55.6	9.0	5	61	145	89	150	150	+ 140	− 28	3000	3300	+27.9	−5.6
✓ y	51.6	51.3	16.0	50	110	100	40	150	150	+ 50	+ 70	3060	3060	+10.0	+13.9
✓ x	51.9	53.6	15.9	5	56	145	95	150	151	+ 140	− 39	3060	3180	+27.9	−7.8
✓ t	53.6	58.1	15.5	50	145	100	5	150	150	+ 50	+ 140	3180	3480	+10.0	+27.9
✓ q	53.5	53.7	14.0	85	95	65	55	150	150	− 20	+ 40	3180	3180	−4.0	+8.0
✓ w	55.8	53.1	15.8	22	140	129	10	151	150	+ 107	+ 130	3300	3180	+21.3	+25.9
✓ n	55.4	49.4	12.3	100	80	50	71	150	151	− 50	+ 09	3300	2940	−10.0	+1.8
✓ d	56.8	41.6	15.0	108	60	42	90	150	150	− 66	− 30	3360	2460	−13.1	−6.0
✓ b	57.6	39.2	7.3	62	135	89	16	151	151	+ 27	+ 119	3420	2340	+5.4	+23.7
✓ v	57.4	58.9	15.8	95	5	55	146	150	151	− 40	− 141	3420	3180	−8.0	−28.1
Gilliss 4034=a	66.0	40.6	7.0	150	45	150	106	300	151	0.0	− 61	3960	2400	0.0	−12.1
✓ 13902	76.8	77.8	0	30	15	121	135	151	150	+ 91	− 120	4560	4620	+18.1	−23.9
✓ 14603	83.6	73.6	B	45	50	105	100	150	150	+ 60	− 50	4980	4380	+11.9	−10.0
✓ 15462	91.9	66.3	8.5	10	110	140	40	150	150	+ 130	+ 70	5460	3960	+25.9	+13.9
✓ 94	50.4	33.8	16.0	85	29	65	121	150	150	− 20	− 92	3000	1980	−4.0	−18.3
✓ 95	51.8	43.5	13.2	11	65	139	85	150	150	+ 128	− 20	3060	2580	+25.5	−4.0
✓ 96	53.8	78.3	13.0	25	111	126	39	151	150	+ 101	+ 72	3180	4680	+20.1	+14.3
✓ 97	53.1	25.2	15.5	145	134	5	16	150	150	− 140	+ 118	3180	1500	−27.9	+23.5
✓ 98	54.5	69.7	13.3	70	33	80	118	150	151	+ 10	− 85	3240	4140	+2.0	−16.9
✓ 99	54.6	22.3	10.8	45	106	105	45	150	151	+ 60	+ 61	3240	1320	+11.9	+12.1
✓ 100	55.9	76.7	13.9	15	30	135	120	150	150	+ 120	− 90	3300	4560	+23.9	−17.9
✓ 101	55.9	72.3	14.0 5	5	107	146	44	151	151	+ 141	+ 63	3300	4320	+28.1	+12.5
Magn. Rerating ✓ 102	55.5	67.0	12.9	71	150	79	151	150	301	+ 08	− 01	3300	4020	+1.6	−0.2
✓ 103	55.7	66.2	14.2	30	130	121	21	151	151	+ 91	+ 109	3300	3960	+18.1	+21.7
✓ 104	55.3	45.6 ~~49.7~~	13.0 ~~12.3~~	101	50	50	100	151	150	− 51	− 50	3300	2700	−10.1	−10.0
✓ 105	55.3	34.5	14.9	118	65	33	86	151	151	− 85	− 21	3300	2040	−16.9	−4.2
✓ 106	56.7	68.3	15.2	40	105	111	46	151	151	+ 71	+ 59	3360	4080	+14.1	+11.7

$\frac{4359}{29}$ $\frac{4362}{29}$

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+(C-a)	-(B-A)
2998.0	3048.1
3027.9	3305.6
3070.0	3046.1
3087.9	3187.8
3190.0	3452.1
3176.0	3172.0
3321.3	3154.1
3290.0	2938.2
3346.9	2466.0
3425.4	2316.3
3412.0	3208.1
3960.0 -30 3930.0	2412.1
4578.1	4643.9
4991.9	4390.0
5485.9	3946.1
2996.0	1998.3
3085.5	2584.0
3200.1	4665.7
3152.1	1476.5
3242.0	4156.9
3251.9	1307.9
3323.9	4577.9
3328.1	4307.5
3301.6	4020.2 -30 3990.2
3318.1	3938.3
3289.9	2710.0
3283.1	2044.2
3374.1	4068.3

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1899phae.proj..974L

D 4851

Oct 28, 1899

Measures of positions continued.

		x	y	Mean Magn	A	B	C	D	A+C B+D	C-a	B-D	x×60	y×60	C-a ×.199	B-D ×.199
✓	107	56.6	64.2	15.8	57	126	100	25	151 151	+49	+101	3360	3840	+9.8	+20.1
Defect	108	56.7	62.5	12.8	25	70	126	80	151 150	+101	−10	3360	3720	+20.1	−2.0
✓	109	56.9	28.6	15.5	11	57	139	93	150 150	+128	−36	3360	1680	+25.5	−7.2
✓	110	57.1	78.5	15.7	148	65	3	86	151 151	−145	−21	3420	4680	−28.9	−4.2
✓	111	57.7	68.7	16.1	81	48	119	103	150 151	+88	−55	3420	4080	+17.5	−10.9
113 = ✓	112	58.4	63.3	8.9	89	118	61	32	150 150	−28	+86	3480	3780	−5.6	+17.1
114 = ✓	113	58.6	61.4	10.9	56	100	94	50	150 150	+38	+50	3480	3660	+7.6	+10.0
115 = ✓	114	58.7	42.1	16.8	50	147	100	4	150 151	+50	+143	3480	2520	+10.0	+28.5
118 = ✓	115	57.9	36.8	15.5	5	29	145	122	150 151	+140	−93	3428	2160	+27.9	−18.5
✓	116	58.3	26.2	14.5	105	120	45	30	150 150	−60	+90	3480	1560	−11.9	+17.9
✓	117	59.0	25.6	14.0	151	56	150	94	301 150	−01	−38	3540	1500	−0.2	−7.6
✓	118	59.4	75.4	15.7	79	100	72	51	151 151	−07	+49	3540	4500	−1.4	+9.8
✓	119	59.6	62.1	16.0	50	136	101	15	151 151	+51	+121	3540	3720	+10.1	+24.1
✓	120	59.2	61.6	11.5	140	48	11	102	151 150	−129	−54	3540	3660	−25.7	−10.7
✓	121	59.8	59.7	14.2	119	35	31	116	150 151	−88	−81	3540	3540	−17.5	−16.1
✓	122	60.5	75.1	15.8	75	130	75	20	150 150	00	+110	3600	4500	00	+21.9
2 Defect	123	60.5	73.4	16.0	70	105	80	46	150 151	+10	+59	3600	4380	+2.0	+11.7
✓	124	60.4	69.0	9.5 16.6	106	150	44	151	150 301	−62	−01	3600	4140	−12.3	−0.2
Remeasured	125	60.8	64.7	11.8 16.3	30	28	120	123	150 151	+90	−95	3600	3840	+17.9	−18.9
✓	126	60.6	58.1	13.0	59	146	91	5	150 151	+32	+141	3600	3480	+6.4	+28.1
✓	127	60.9	41.1	15.8	1	140	149	11	150 151	+148	+139 2	3600	2460	+29.5	+25.7
✓	128	61.7	72.2	15.8	41	120	110	31	151 151	+69	+89	3660	4320	+13.7	+17.7
✓	129	61.6	60.4	15.6	40	95	110	53	150 150	+70	+40	3660	3600	+13.9	+8.0
Remeasured	130	61.2	33.6	15.0 15.7	135	50	16	101	151 151	−119	−51	3660	1980	−23.7	−10.1
✓	131	61.3	22.6	7.3	119	70	32	80	151 150	−87	−10	3660	1320	−17.3	−2.0
✓	132	62.8	58.1	14.5	119	135	31	15	150 150	−88	+120	3720	3480	−17.5	+23.9
✓	133	62.5	52.8	16.0	75	15	76	136	151 151	+01	−121	3720	3120	+0.2	−24.1
✓	134	62.6	32.2	15.8	70	130	80	20	150 150	+10	+110	3720	1920	+2.0	+21.9

4361 / 29 = 4366 / 29

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1999phae.proj.974L

+(C-a)	-(B-D)
3369.8	3819.9
3380.1	3722.0
3385.5	1687.2
3391.1	4684.2
3437.5	4090.9
3474.4	3762.9
3487.6	3650.0
3490.0	2491.5
3447.9	2178.5
3468.1	1542.1
3539.8 − 32. = 3507.8	1507.6
3538.6	4490.2
3550.1	3695.9
3514.3	3670.7
3522.5	3556.1
3600.0	4478.1
3602.0	4368.3
3587.7 − ½ dw 30.0	4137.8 − 4110.2 +6062 −1156.1
3617.9	3858.9
3606.4	3451.9
3629.5	2434.3
3673.7	4302.3
3673.9	3592.0
3636.3	1990.1
3642.7	1322.0
3702.5	3456.1
3720.2	3144.1
3722.0	1898.1

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1899phae.proj.974L

D 4851

Oct 31 1899

Measures of positions continued

h m 1 00

		x	y	Mag.	Each	A	B	b	D	A+C	B+D	C-a	B-D	x×60	y×60	C-a ×.199	B-D ×.199
	✓ 135	62.9	26.3	15.0	20	111	130	40	150	151	+110	+70		3720	1560	+21.9	+13.9
	✓ 136	63.8	76.2	15.8	106	115	44	36	150	151	−62	+79		3780	4560	−12.3	+15.7
Defect?	137	63.5	69.8	15.2	75	20	75	130	150	150	00	−110		3780	4140	00	−21.9
	✓ 138	64.4	52.2	12.0	91	129	60	21	151	150	−31	+108		3780	3120	−6.2	+21.5
≠	✓ 139	63.7 ~~63.6~~	39.3 ~~32.1~~	10.8 ~~16.0~~	40 ~~70~~	106 ~~130~~	110 ~~80~~	45 ~~20~~	150	151	+70	+61		3780	2340	+13.9	+12.1
	✓ 140	63.7	38.9	14.0	134	19	16	132	150	151	−118	−113		3780	2280	−23.5	−22.5
≠	✓ 141	64.1	64.0	16.0	146	151	5	150	151	301	−141	+01		3840	3840	−28.1	+0.2
	✓ 142	64.4	69.3	15.8	104	108	46	42	150	150	−58	+66		3840	4140	−11.5	+13.1
	✓ 143	64.1	32.4	13.8	145	94	5	56	150	150	−140	+38		3840	1920	−27.9	+7.6
	✓ 144	66.3	74.2	12.0	120	135 (2)	31	26	151	151	−89	+99		3960	4440	−17.7	+19.7
	✓ 145	66.6	68.3	15.0	62	118	88	33	150	151	+26	+85		3960	4080	+5.2	+16.9
	✓ 146	66.4	49.6	15.7	105	55	45	96	150	151	−60	−41		3960	2940	−11.9	−8.2
Remeasured	✓ 147	66.2	38.8	~~13.8~~ 13.9	125	29	26	122	151	151	−99	−93		3960	2280	−19.7	−18.5
	✓ 148	66.5	26.6	15.2	70	40	80	111	150	151	+10	−71		3960	1560	+2.0	−14.1
	✓ 149	66.9	27.6	15.5	5	58	146	93	151	151	+141	−35		3960	1620	+28.1	−7.0
	✓ 150	67.6	70.9	8.5	54	11	96	146	150	150	+42	−142		4020	4200	+8.4	−28.3
≠	✓ 151	67.5	64.4	16.0	80	90	70	60	150	150	−10	+30		4020	3840	−2.0	+6.0
	✓ 152	67.6	53.4	14.9	45	78	105	72	150	150	+60	+06		4020	3180	+11.9	+1.2
	✓ 153	67.8	45.1	15.0	18	148	132	3	150	151	+114	+145		4020	2700	+22.7	+28.9
Defect?	✓ 154	68.7	62.1	16.0	40	145	111	7	151	152	+71	+138		4080	3720	+14.1	+27.5 ~~+27.6~~
	✓ 155	68.6	61.1	15.9	55	144	95	6	150	150	+40	+138		4080	3660	+8.0	+27.5
	✓ 156	68.6	48.9	14.0	48	10	102	140	150	150	+54	−130		4080	2880	+10.7	−25.9
Defect?	157	68.7	33.9	16.0	30	10	120	140	150	150	+90	−130		4080	1980	+17.9	−25.9
Defect?	158	69.0	34.1	15.8	150	148	150	2	300	150	00	+146		4140	2040	00	+29.1
	✓ 159	69.3	72.2	16.0	120	135	30	15	150	150	−90	+120		4140	4320	−17.9	+23.9
	✓ 160	69.1	71.1	10.8	140	~~135~~ 145	10	6	150	151	−130	+139		4140	4260	−25.9	+27.7
	✓ 161	69.5	62.4	10.5	80	85	90	66	150	151	−10	+19		4140	3720	−2.0	+3.8
Defect?	162	69.3	34.7	16.0	111	41	40	110	151	151	−71	−69		4140	2040	−14.1	−13.7

4357/29 4367/29

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1899phae.proj..974L

+(C-a)	-(B-D)
3741.9	15461
37677	45443
3780.0	4161.9
37738	30985
3793.9	2327.9
3756.5	23025
3811.9	3839.8 − 30. = 3809.8
38285	4126.9
3812.1	19124
3942.3	44203
3965.2	4063.1
3948.1	2948.2
3940.3	22985
3962.0	15741
3988.1	1627.0
4028.4	4228.3 ~~4104.6.9 − 12746~~
4018.0	3834.0
4031.9	31788
4042.7	2671.1
4094.1	3892.5
4088.0	36325
4090.7	29059
4097.9	20059
4140.0 − 30.0 = 4110.0	2010.9
4122.1	4296.1
4114.1	42323
4138.0	3716.2 ~~+1156.5 − 762.5~~ = 1257
41259	20537

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1899phae.proj..974L

Oct 31, 1899

D 4851

Measures of positions continued

		x	y	Magn	A	B	b	D	A+C	B+D	C-a	B-D	x×60	y×60	C-a ×.199	B-D ×.199
Defect?	163	69.3	34.6	15.7	110	60	40	90	150	150	−70	−30	4140	2040	−13.9	−6.0
✓	164	69.3	34.2	14.2	120	129	30	23	150	152	−90	+106	4140	2040	−17.9	+21.1
Defect?	165	69.3	34.0	10.6	~~151~~ 106	~~44~~ 151	~~150~~ +44	150	150	301	−62	+01	4140	2040	−12.3	+0.2
✓	166	69.6	32.4	15.0	45	90	105	60	150	150	+60	+30	4140	1920	+11.9	+6.0
✓	167	70.4	63.2	14.7	89	120	61	30	150	150	−28	+90	4200	3780	−5.6	+17.9
✓	168	70.5	44.1	15.8 7	76	130	74	20	150	150	−02	+110	4200	2640	−0.4	+21.9
?	169	70.5	29.4	15.8	82	100	68	51	150	151	−14	+49	4200	1740	−2.8	+9.8
✓	170	70.5	28.4	16.0	80	111	70	40	150	151	−10	+71	4200	1680	−0.2 2.0	+14.1
✓	171	71.6	68.8	16.0	70	30	80	121	150	151	+10	−91	4260	4080	+2.0	−18.1
Dec assumed to fit 562	✓ 172	71.3	~~76.2~~ 54.2	9.2	110	135	40	15	150	150	−70	+120	4260	3360	−13.9	+23.9
✓	173	71.9	48.1	16.0	9	146	141	5	150	151	+132	+141	4260	2880	+26.3	+28.1
✓	174	71.9	43.4	15.7	10	106	140	45	150	151	+130	+61	4260	2580	+25.9	+12.1
✓	175	72.1	66.8	13.0	145	22	5	129	150	151	−140	−107	4320	3900	−27.9	−21.3
✓	176	~~72.8~~ 72.1	42.5	10.5	22	69	128	81	150	150	+106	−12	4320	2520	+21.1	−2.4
✓	177	73.4	57.2	12.0	90	125	61	26	151	151	−29	+99	4380	3420	−5.8	+19.7
✓	178	73.4	52.9	14.0	100	6	51	144	151	150	−49	−138	4380	3120	−9.8	−27.5
?	179	74.1	56.7	16.0	141	36	9	114	150	150	−132	−78	4440	3360	−26.3	−15.5
?	✓ 180	74.2	54.9	16.0	129	10	21	141	150	151	−108	−131	4440	3240	−21.5	−26.1
	✓ 181	74.3	45.1	15.2	115	138	35	23	150	151	−80	+105	4440	2700	−15.9	+20.9
?	182	74.4	41.6	15.9	101	50	50	100	151	150	−51	−50	4440	2460	−10.1	−10.0
	✓ 183	74.2	36.7	9.0	134	40	16	111	150	151	−118	−71	4440	2160	−23.5	−14.1
?	184	74.2	33.5	16.0	~~134~~	65	~~65~~ 19	~~19~~ 85	150	150	−112	−20	4440	1980	−22.3	−4.0
	✓ 185	75.0	43.4	10.2	150	81	150	70	300	151	00	+11	4500	2580	0.0	+2.2
	✓ 186	75.1	39.7	15.8	130	49	20	101	150	150	−110	−52	4500	2340	−21.9	−10.3
	✓ 187	75.4	36.6	16.0	105	50	45	100	150	150	−60	−50	4500	2160	−11.9	−10.0
	✓ 188	75.4	63.1	16.0	100	140	50	10	150	150	−50	+130	4500	3780	−10.0	+25.9
I	✓ 189	75.5	61.7	16.2	89	40	61	110	150	150	−28	−70	4500	3660	−5.6	−13.9
	✓ 190	75.9	62.3	16.0	20	115	130	36	150	151	+110	+79	4500	3720	+21.9	+15.7

$\frac{43533}{29}$ $\frac{43655}{29}$

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1899phae.proj..974L

4126.1	2046.0
4122.1	2018.9
4127.7	2039.8 − 30. = 2009.8
4151.9	1914.0
4194.4	3762.1
4199.6	2618.1
4197.2	1730.2
4198.0	1665.9
4262.0	4098.1
4246.1	3336.1
4286.3	2851.9
4285.9	2567.9
4292.1	3921.3
4341.1	2522.4
4374.2	3400.3
4370.2	3147.5
4413.7	3375.5
4418.5	3266.1
4424.1	2679.1
4429.9	2470.0
4416.5	2174.1
4417.7	1984.0
4500.0 − 30. = 4470.0	2577.8
4478.1	2350.3
4488.1	2170.0
4490.0	3754.1
4494.4	3673.9
4521.9	3704.3

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1899phae.proj.974L

Oct 31, 1899

D 4851

Measures of positions continued

	x	y	Magn.	Est. a	B.	b.	D	ak	B+D	C-a	A-D	x×60	y×60	C-a ×.199	B-D ×.199
√ 191	76.1	62.3	15.9	141	104	10	46	151	150	−131	+58	4560	3720	−26.1	+11.5
√ 192	76.6	38.9	16.0	60	10	91	140	151	150	+31	−130	4560	2280	+6.2	−25.9
√ 193	77.5	58.7	15.8	80	35	70	116	150	151	−10	−81	4620	3480	−2.0	−16.1
√ 194	77.2	57.1	16.1 (121)	140	29	10		150	150	−92	+130	4620	3420	−18.3	+25.9
√ 195	78.7	48.1	14.5	50	139	100	11	150	150	+50	+128	4680	2880	+10.0	+25.5
12h m 15 √ 196	79.4	54.2	11.0	76	131	75	20	151	151	−01	+111	4740	3240	−0.2	+22.1
√ 197	79.6	46.4	14.0	45	85	106	65	151	150	+61	+20	4740	2760	+12.1	+4.0
Gillies √ 7980	5.5	42.4	−	75	96	76	50	151	146	+01	+46	300	2520	+0.2	+9.2
" √ 8714	5.6	57.7	−	40	41	110	110	150	151	+70	−69	300	3420	+13.9	−13.7
" √ 7923	9.6	41.9	−	55	10	95	140	150	150	+40	−130	540	2460	+8.0	−25.9
" √ 6508	18.2	17.5	−	115	65	35	85	150	150	−80	−20	1080	1020	−1.6 (159)	−4.0
" √ 11,113	36.8	88.4	−	26	89	125	61	151	150	+99	+28	2160	5280	+19.7	+5.6
√ e	26.1	64.6	−	145	50	8	102	153	152	−137	−52	1560	3840	−27.3	−10.3
√ d	35.6	62.3	−	61	118	90	32	151	150	+29	+86	2100	3720	+5.8	+17.1
28 28h m 15 √ c	35.8	61.4	−	25	80	125	70	150	150	+100	+10	2100	3660	+19.9	+2.0
√ g	38.4	58.5 (4)	−	88	61	62	90	150	151	−26	−29	2280	3240	−5.2	−5.8
√ f	46.0	58.9	−	151	10	150	141	301	151	−0.1	−131	2760	3180	−0.2	−26.1
√ k	46.3	44.5	−	122	80	29	71	151	151	−93	+09	2760	2640	−18.5	+1.8
√ m	47.9	49.8	−	10	19	140	131	150	150	+130	−112	2820	2940	+25.9	−22.3
√ n	47.4	53.4	−	100	95	61	55	151	150	−49	+40	2820	3180	−9.8	+8.0
√ h	47.9	53.1	−	19	140	132	10	151	150	+113	+130	2820	3180	+22.5	+25.9
√ o	49.7	55.9	−	35	10	115	140	150	150	+80	−130	2940	3300	+15.9	−25.9
√ l	50.4	56.9	−	100	5	51	145	151	150	−49	−140	3000	3360	−9.8	−27.9
√ j	50.5	51.4	−	79	105	71	45	150	150	−08	+60	3000	3060	−1.6	+11.9
√ f	50.9	55.6	−	5	60	146	90	151	150	+141	−30	3000	3300	+28.1	−6.0
√ y	51.6	51.4	−	49	110	102	41	151	151	+53	+69	3060	3060	+10.5	+13.7
√ x	51.9	53.6	−	8	55	143	96	151	151	+135	−41	3060	3180	+26.9	−8.2
√ t	53.6	58.1	−	50	145	100	5	150	150	+50	+140	3180	3480	+10.0	+27.9
								4368 / 29					4206 / 28		

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4533.9	3708.5
4566.2	2305.9
4618.0	3796.1
4601.7	3397.1
4690.0	2854.5
4739.8	3217.9
4752.1	2756.0
300.2	2510.8
313.9	3433.7
548.0	2485.9
1064.1	1024.0
2179.7	5274.4
1532.7	3850.3
2105.8	3702.9
2199.9	3658.0
2274.8	3245.8
2759.8 / 36 / 2723.8	3206.1
2741.5	2638.2
2845.9	2962.3
2810.2	3172.0
2842.5	3154.1
2955.9	3325.9
2990.2	3387.9
2998.4	3048.1
3028.1	3306.0
3070.5	3046.3
3086.9	3188.2
3190.0	3452.1

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1899phae.proj..974L

D 4851

Measures of positions continued

	x	y	Measr.	A	B	b.	D.	a+C	B+D	C-a	B-D	x×60	y×60	C-a ×.199	B-D ×.199
√ 9	53.4	53.4	~~8.1~~	84	95	66	53	150	150	−18	+40	3180	3180	−3.6	+8.0
√ 10	55.~~8~~ 4	~~49.4~~ 49.4	~~101~~	101	80	50	70	151	150	−51	+10	3300	2940	−10.1	+2.0
√ 11	53.8	53.1	−	20	141	130	9	150	150	+110	+132	3300	3180	+21.9	+26.3
√ 12	56.4	41.6	−	108	60	42	90	150	150	−66	−30	3360	2460	−13.1	−6.0
√ 13	57.6	39.1	−	62	138	88	12	150	150	+26	+126	3420	2340	+5.2	+25.1
√ 14	57.4	53.9	−	96	6	54	145	150	151	−42	−139	3420	3180	−8.4	−27.7
Gillis 4034=a √	66.0	40.6	−	150	41	151	110	301	151	+01	−69	3960	2400	+0.2	−13.7
√ 13902	76.8	77.8	−	28	20	123	130	151	150	+95	−110	4560	4620	+18.9	−21.9
√ 14603	83.6	73.5	−	45	45	105	105	150	150	+60	−60	4980	4380	+11.9	−11.9
√ 15462	90.9	66.3	−	10	110	141	40	151	150	+131	+70	5460	3960	+26.1	+13.9
								1654 / 11		1502 / 10					

4 nw 23.30

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+(C-a)	-(B-D)
3176.4	3172.0
3289.9	2938.0
3321.9	3153.7
3346.9	2466.0
3425.2	2314.9
3411.6	3207.7
3960.2	2413.7
-30.	
3930.2	
4578.9	4641.9
4991.9	4391.9
5486.1	3946.1

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1899phae.proj.974L

(1899) 4847 (Prs.)

Nov 6, 1899

h m

0 15

Measures of positions continued

	x	y	Magn.	A	B	C	D	A+C	B+D	C-a	B-D	x×60	y×60	C-a ×.199	B-D ×.199	
Gillis ✓ 7980	5.5	57.6	B	75	59	76	92	151	151	+01	−33	300	3420	+0.2	−6.6	
" ✓ 8714	5.6	42.8	B	40	109	110	42	150	151	+70	+67	300	2520	+13.9	+13.3	
" ✓ 7923	9.5	58.1	B	51	140	99	10	150	150	+48	+130	540	3480	+9.6	+25.9	
" ✓ 6508	18.2	82.4	8.0	115	81	35	69	150	150	−80	+12	1080	4920	−15.9	+2.4	
✓ e	26.1	35.3	9.0	14.6	105	5	46	151	151	−141	+59	1560	2100	−28.1	+11.7	
✓ d	35.6	37.8	8.5	61	86	90	117	151	153	+29	−81	2100	2220	+5.8	−16.1	
✓ c	35.8	38.5	8.0	25	70	125	81	150	151	+100	−11	2100	2280	+19.9	−2.2	
Gillis ✓ 11,113	36.9	11.6	7.2	28	64	122	87	150	151	+94	−23	2160	660	+18.7	−4.6	
✓ g	38.5	45.4	9.8	88	90	62	61	150	151	−26	+29	2280	2700	−5.2	+5.8	
✓ fv	45.9	46.1	15.0	5	140	146	10	151	150	+141	+130	2700	2760	+28.1	+25.9	
✓ k	46.2	45.5	11.0	125	70	26	80	151	150	−99	−10	2760	3300	−19.7	−2.0	
✓ n	47.4	46.6	15.0	100	55	51	96	151	151	−49	−41	2820	2760	−9.8	−8.2	
✓ h	47.8	46.9	10.8	20	9	131	142	151	151	+111	−133	2820	2760	+22.1	−26.5	
✓ m	47.9	50.2	12.0 ~~11.8~~	11	132	140	20	151	151	+129	+111	2820	3000	+25.7	+22.1	
W.S 8	48.3	48.7	16.0	68	39	82	111	150	150	+14	−72	2880	2880	+2.8	−14.3	
✓ ~~t~~ e	49.7	44.1	~~11.5~~ 11.8	35	140	115	10	150	150	+80	+130	2940	2640	+15.9	+25.9	
✓ ~~t~~	50.3	43.1	13.5	101	144	49	6	150	150	−52	+138	3000	2580	−10.3	+27.5	
Sup ~~198~~ 186 for remeasure. ✓	50.5	48.6	16.0	79	45	72	106	151	151	−07	−61	3000	2880	−1.4	−12.1	
✓ f	50.9	44.4	9.8	10	90	141	60	151	150	+131	+30	3000	2640	+26.1	+6.0	
✓ q	53.5	46.6	15.0	85	55	65	96	150	151	−20	−41	3180	2760	−4.0	−8.2	
✓ t	53.6 ~~54.1~~	41.9	15.2	57	5	100	146	151	151	+49	−141	3180	2460	+9.8	−28.1	
✓ r	55.3	50.5	12.5	105	70	46	80	151	150	−59	−10	3300	3000	−11.7	−2.0	
✓ u	55.8	46.9	15.9	21	8	130	143	151	151	+109	−135	3380	2760	+21.7	−26.9	
✓ s	56.3	58.4	15.0	109	89	41	61	150	150	−68	+28	3360	3480	−13.5	+5.6	
✓ w	57.4	46.1	15.8	96	141	54	9	150	150	−42	+131	3420	2760	−8.4	+26.3	
✓ b	57.5	60.8	7.3	65	15	86	137	151	152	+21	−122	3420	3600	+4.2	−24.3	
Gillis 4034 = a	66.0	59.4	7.0	150	106	150	44	300	150	∞	+62	3960	3540	∞	+12.3	
✓ p	57.9	46.4	15.8	9	95	142	56	151	151	+133	+39	3060	2760	+26.5	+7.8	

4365 4219
29 28

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Est + fract. pos. to cent. of g.

x y

300.0 3426.0

+(C-a)	-(B-D)	
300.2	3426.6	
313.9	2506.7	
549.6	3454.1	
1064.1	4917.6	
1531.9	2088.3	
2105.8	2236.1	
2119.9	2282.2	
2178.7	664.6	
2274.8	2694.2	
2728.1	2734.1	
2740.3	3302.0	
2810.2	2768.2	
2842.4	2786.5	
2845.7	2977.9	
2882.8	2894.3	
2955.9	2614.1	
2989.7	2552.5	
2998.6	2892.1	=3
3026.1	2634.0	
3176.0	2768.2	
3189.8	2488.1	
3288.3	3002.0	
3321.7	2786.9	
3346.5	3474.4	
3411.6	2733.7	
3424.2	3624.3	
3960.0 − 30 = 3930.0	3527.7	
3086.5	2752.2	

S. Pole Rem. Nos.

in Minute 4851 & 7042

Nos. 7
13
32 a
59
118
121
139
154
188
189
190
197
Add. 2

Remeasured Oct 28 1902
E.L.

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Measures of positions continued

	x	y	Magn.	A	B	b.	D	a+c	B+D	C-a	B-D	x×60	y×60	C-a ×.199	B-D ×.199
Gillis ✓ 13902	76.9	22.2	10	30	135	120	15	150	150	+90	+120	4560	1320	+17.9	+23.9
✓ 14603	83.6	26.3	8	50	110	100	41	150	151	+50	+69	4980	1560	+10.0	+13.7
✓ 15462	91.9	33.7	8	10	40	140	110	150	150	+130	-70	5460	1980	+25.9	-13.9
								450/3	451/3						

h 20 m

23 h 50 m

November 7, 1899

	x	y	Magn.	A	B	b.	D	4847	C-a	B-D	x×60	y×60	C-a ×.199	B-D ×.199
Gillis ✓ 7980	5.5	37.6	–	75	55	76	96	151	151	+01	-41	300	3420	+0.2	-8.2
✓ 8714	5.7	42.3	–	38	110	112	41	150	151	+74	+69	300	2520	+14.7	+13.7
✓ 7923	9.5	58.1	–	51	139	100	11	151	150	+49	+128	540	3480	+9.8	+25.5
✓ 6508	18.2	82.4	–	115	81	35	70	150	151	-80	+11	1080	4920	-15.9	+2.2
✓ e	26.1	35.8	–	145	100	6	50	151	150	-139	+50	1560	2100	-27.7	+10.0
✓ d	35.6	37.7	–	60	36	90	116	150	152	+30	-80	2100	2220	+6.0	-15.9
✓ c	35.8	38.5	–	25	70	125	81	150	151	+100	-11	2100	2280	+19.9	-2.2
Gillis ✓ 11,113	36.9	116	–	25	65	126	86	151	151	+101	-21	2160	660	+20.1	-4.2
✓ g	38.5	45.4 44.4	–	89	90	62	61	151	151	-27	+29	2280	2700	-5.4	+5.8
✓ f	45.9	46.1	–	5	140	146	10	151	150	+141	+130	2700	2760	+28.1	+25.9
✓ fs	46.2	55.5	–	121	71	30	80	151	151	-91	-09	2760	3300	-18.1	-1.8
✓ N	47.4	46.6	–	100	55	51	97	151	152	-49	-42	2820	2760	-9.8	-8.4
✓ h	47.9	46.9	–	20	10	131	140	151	150	+111	-130	2820	2760	+22.1	-25.9
✓ m	47.9	50.1	–	11	135	141	16	151	151	+130	+119	2820	3000	+25.9	+23.7
W.S ✓	48.6	48.7	–	66	36	84	115	150	151	+18	-79	2880	2880	+3.6	-15.7
								2261/15	2263/152						

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+(C-a)	-(B-D)
4577.9	1296.1
4990.0	1546.3
5485.9	1983.9

+(C-a)	-(B-D)
300.2	3428.2
314.7	2506.3
549.8	3454.5
1064.1	4917.8
1532.3	2090.0
2106.0	2235.9
2119.9	2282.2
2180.1	664.2
2274.6	2694.2
2728.1	2734.1
2741.9	3301.8
2810.2	2768.4
2842.1	2785.9
2845.9	2976.3
2883.6	2895.7

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1899phae.proj..974L

D 4847

Measures of positions continued

	x	y	Lieut. Mayer.	A.	B	a.	D	a+c	B+D	c-a	B-D	x×60	y×60	c-a ×.199	B-D ×.199	
l	~~49.4~~ 50.3	43.1	–	100	144	50	7	150	151	– 50	+137	3000	2580	-10.0	+27.3	29
✓ o	49.8	44.1	–	38	140	112	11	150	151	+74	+129	2940	2640	+14.7	+25.7	29
Sup 186 for remeasure of ij n	50.4	48.6	–	80	49	71	102	151	151	–09	– 53	3000	2880	–1.8	–10.5	29
✓ ij	50.9	44.4	–	8	90	140	61	148	151	+132	+ 29	3000	2640	+26.3	+5.8	30
✓ q	53.4	46.6	–	85	60	65	92	150	152	– 20	–32	3180	2760	–4.0	–6.4	31
✓ t	53.6	41.9	–	50	3	100	147	150	150	+50	–148	3180	2460	+10.0	–28.7	31
✓ w	55.4	50.6	–	104	70	46	81	150	151	– 58	– 11	3300	3000	–11.5	–2.2	32
✓ u	55.8	46.9	–	21	10	130	140	151	150	+109	–130	3300	2760	+21.7	–25.9	33
✓ d	56.3	58.4	–	110	90	41	61	151	151	– 59	+ 29	3360	3480	–13.7	+5.8	33
✓ w	57.4	46.1	–	96	144	55	7	151	151	– 41	+137	3420	2760	–8.2	+27.3	34
✓ b	57.5	60.9	–	61	15	89	136	150	151	+28	– 121	3420	3600	+5.6	–24.1	34
Gillies 4034 = a	66.0	59.4	–	150	106	151	45	301	151	+0.1	+ 61	3960	3540	+0.2	+12.1	3
✓ k	51.9	46.4	–	10	95	141	56	151	151	+131	+ 39	3060	2760	+26.1	+7.8	3
Gillies ✓ 13902	76.8	22.2	–	26	~~145~~ 135	126	16	152	151	+100	+119	4560	1320	+19.9	+23.7	4
14603	83.6	26.4	–	50	109	101	~~50~~ 41	151	150	+51	+ 68	4980	1560	+10.1	+13.5	4
ole 30 m ✓ 15462	91.8	33.7	–	11	39	140	112	151	151	+129	– 73	5460	1980	+25.7	–14.5	5
												2358 / 17	2414 / 16			

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1899phae.proj..974L

(C-a)	-(B-A)
2990.0	2552.7
2954.7	2614.3
2998.2	2890.5
3026.3	2634.2
3176.0	2766.4
3190.0	2488.7
3288.5	3002.2
3321.7	2785.9
3346.3	3474.2
3411.8	2732.7
3425.6	2624.1
3960.2 − 30. = 3930.2	3527.9
3086.1	2752.2
4579.9	1297.3
4990.1	1546.5
5485.7	1994.5

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D 4847

Measures of positions continued

Apr. 8, 1899

		h m			East Magn.	A.	B.	b.	D.	A+C	B+D	C-A	B-D	x×60	y×60	C-a ×199	B-D ×199
		23 H 30	x	y													
Gillis	7980		5.5	57.6	–	75	56	75	95	150	151	00	– 39	300	3420	00	– 7.8
	8714		5.7	42.3	–	38	109	112	42	150	151	+74	+67	300	2520	+14.7	+13.3
	7928		9.6	58.1	–	52	140	98	10	150	150	+46	+130	540	3480	+ 9.2	+25.9
	6508		18.2	82.4	–	115	81	35	69	150	150	–80	+ 12	1080	4920	–15.9	+ 2.4
	e		26.1	35.3	–	145	100	5	50	150	150	–140	+50	1560	2100	–27.9	+ 10.0
	d		35.6	37.8	–	60	35	90	116	150	151	+ 30	– 81	2100	2220	+ 6.0	–16.1
	c		35.8	38.6	–	25	71	125	80	150	151	+100	– 09	2100	2280	+19.9	– 1.8
Gillis	11, 113		36.9	11.6	–	25	62	125	89	150	151	+100	– 27	2160	660	+19.9	– 5.4
	g		38.4	45.4	–	90	89	61	62	151	151	– 29	+27	2280	2700	– 5.8	+5.4
	f		45.9	46.1	–	5	140	146	10	151	150	+141	+130	2700	2760	+28.1	+25.9
	k		46.2	55.5	–	121	70	29	80	150	150	– 92	– 10	2760	3300	–18.3	– 2.0
	n		46.4	46.6	–	100	55	50	95	150	150	– 50	– 40	2820	2760	–10.0	– 8.0
	b		47.8	46.9	–	20	10	131	141	151	151	+111	– 131	2820	2760	+22.1	–26.1
	m		47.9	50.1	–	10	132	140	19	150	151	+130	+113	2820	3000	+25.9	+22.5
W.S	8		48.5	48.7	–	66	39	85	111	151	150	+ 19	– 72	2880	2880	+ 3.8	–14.3
	l		50.3	43.4	–	100	145	50	6	150	151	– 50	+139	3000	2580	–10.0	+27.7
	o		49.8	44.1	–	35	140	115	11	150	151	+ 80	+129	2940	2640	+15.9	+25.7
See p 186 for remarks.	4		50.5	48.6	–	80	45	70	106	150	151	– 10	– 61	3000	2880	– 2.0	–12.1
	k		51.9	46.4	–	6	95	145	55	151	150	+139	+ 40	3060	2760	+27.7	+ 8.0
	f		50.9	44.4	–	5	90	145	61	150	151	+140	+ 29	3000	2640	+27.9	+ 5.8
	q		53.4	46.6	–	85	56	65	95	150	151	– 20	–39	3180	2760	– 4.0	– 7.8
	t		53.6	41.9	–	50	5	100	145	150	150	+ 50	– 140	3180	2460	+10.0	–27.9
	w		55.4	50.6	–	~~110~~ 104	~~4~~ 70	~~70~~ 47	80	151	150	– 57	– 10	3300	3000	–11.3	– 2.0
	w		55.9	46.9	–	21	10	80	141	151	151	+109	– 131	3300	2760	+21.7	–26.1
	D		56.3	58.4	–	110	90	40	61	150	151	– 70	+ 29	3360	3480	–13.9	+ 5.8
	w		57.3	46.1	–	95	145	56	6	151	151	– 39	+139	3 2420	2760	– 7.8	+27.7
	t		57.5	60.8	–	64	15	86	134	150	149	+22	– 119	3 2420	3600	+4.4	–23.7
Gillis 4034=a			66.0	59.4	–	150	105	151	45	301	150	+0.1	+ 60	3960	3540	+0.2	+11.9

435.9 / 29 = 15.0 ; 421.5 / 28 = 15.1

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+(C-a)	-(B-D)
300.0	3427.8
314.7	2506.7
549.2	3454.1
1064.1	4917.6
1532.1	2090.0
2106.0	2236.1
2119.9	2281.8
2179.9	665.4
2274.2	2694.6
2728.1	2734.1
2741.7	3302.0
2810.0	2768.0
2841	2786.1
2845.9	2977.5
2883.8	2894.3
2990.0	2552.3
2955.9	2614.3
2998.0	2892.1
3087.7	2752.0
3027.9	2634.2
3176.0	2767.8
3190.0	2487.9
3288.7	3002.0
3321.7	2786.1
3346.1	3474.2
3412.2	2732.3
3424.4	3623.7
3960.2	3528.1
-30.	
3930.2	

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D 4847

Measures of positions continued

		x	y	Magn.	A	B	b.	D	a+c	B+D	C-a	B-D	x×60	y×60	C-a ×.199	B-D ×.199
Gillis	✓13902	76.8	22.2	–	25	135	126	15	151	150	+121	+120	4560	1320	+20.1	+23.9
	✓14603	83.6	26.3	–	46	105	105	45	151	150	+59	+60	4980	1560	+11.7	+11.9
	✓15462	91.9	33.7	–	10	39	141	111	151	150	+131	−72	5460	1980	+26.1	−14.3
									453	450						
									3	3						

November 8, 1899

D 23° 42′ 20″ (neg)

		x	y	Magn.	A	B	b.	D		C-a	B-D	x×60	y×60	C-a ×.199	B-D ×.199
Gillis	✓7980	5.0	42.1	B.	151	135	150	15	301	150	−0.1	+120	300	2520	−0.2	+23.9
"	✓7923	9.2	41.7	B.	131	50	20	100	151	150	−111	−50	540	2460	−22.1	−10.0
"	✓8714	5.2	57.4	B.	120	85	30	66	150	151	−90	+19	300	3420	−17.9	+3.8
"	✓6508	17.8	17.3	8.2	30	110	120	40	150	150	+90	+70	1020	1020	+17.9	+13.9
	✓e	25.5	64.4	9.9	81	81	70	70	151	151	−11	+11	1500	3840	−2.2	+2.2
	✓d	35.0	62.1	8.5	151	149	150	2	301	151	−0.1	+147	2100	3720	−0.2	+29.3
	✓c	35.2	61.3	8.0	116	115	35	36	151	151	−81	+79	2100	3660	−16.1	+15.7
	✓11,113	36.2	88.3	7.3	125	115	25	36	150	151	−100	+79	2160	5280	−19.9	+15.7
	✓g	37.9	54.4	10.0	21	98	129	53	150	151	+108	+45	2220	3240	+21.5	+9.0
	✓f	45.5	53.7	138	85	45	66	105	151	150	−19	−60	2700	3180	−3.8	−11.9
	✓k	45.7	44.3	11.0	51	119	100	32	151	151	+49	+87	2700	2640	+9.8	+17.3
	✓h	46.3	53.2	14.5	31	131	120	20	151	151	+89	+111	2760	3180	+17.7	+22.1
	✓b	47.3	52.8	10.1	105	26	46	124	151	150	−59	−98	2820	3120	−11.7	−19.5
	✓m	47.4	49.6	12.0	94	55	56	96	150	151	−38	−41	2820	2940	−7.6	−8.2
									2409	2109						
									11	14						

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+(C-a)	-(B-D)
4580.1	1296.1
4991.7	1548.1
5486.1	1994.3

+(C-a)	-(B-D)
299.8 −30. 269.8	2496.1
517.9	2470.0
282.1	3416.2
1037.9	1006.1
1497.8	3837.8
2099.8 −30. 2069.8	3690.7
2083.9	3644.3
2140.1	5264.3
2241.5	3231.0
2696.2	3191.9
2709.8	2622.7
2777.7	3857.9
2808.3	3139.5
2812.4	2948.2

270.0 2496.0
522.0 2472.0

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D 7042

Measures of positions continued

		y	Mag	Ed	A.	B.	b	D.	a+c	B+D	C-a	B-D	x×60	y×60	C-a x.199	B-D x.199	
	h																
	k																
✓	e	49.7	56.7	12.0	26	40	115	110	151	150	+79 −70		2940	3360	+15.7	−13.9	29
✓	d	49.3	55.6	13.0	12.1	45	31	105	152	150	−90	−60	2940	3300	−17.9	−11.9	29
✓	3	49.9	57.1	16.0	10	141	140	10	150	151	+130	+131	2940	3060	+25.9	+26.1	29
✓	f	50.4	55.4	9.2	91	96	60	55	151	151	−31	+41	3000	3300	−6.2	+8.2	29
✓	y	W. S.															
✓	x	51.5	53.4	15.9	89	90	61	60	150	150	−28	+30	3060	3180	−5.6	+6.0	30
✓	t	53.1	57.8	15.7	135	29	15	122	150	151	−120	−93	3180	3420	−23.9	−18.5	31
✓	g	52.9	53.2	14.0	19	130	132	20	151	150	+113	+110	3120	3180	+22.5	+21.9	31
✓	m	54.7	49.3	11.8	35	119	115	31	150	150	+80	+88	3240	2940	+15.9	+17.5	32
✓	u	55.3	52.8	15.7	105	25	45	126	150	151	−60	−101	3300	3120	−11.9	−20.1	32
✓	s	55.7	41.4	15.0	36	99	114	51	150	150	+78	+48	3300	2460	+15.5	+9.6	33
✓	b	57.1	38.7	7.5	145	20	5	130	150	150	−140	−110	3420	2280	−27.9	−21.9	33
✓	w	56.8	53.7	15.9	30	40	120	110	150	150	+90	−70	3360	3180	+17.9	−13.9	33
Gillis 4034	✓	a	65.4	40.5	7.0	89	85	61	66	150	151	−28	+19	3900	2400	−5.6	+3.8	38
"	✓	13902	76.2	77.7	7.0	125	49	25	101	150	150	−100	−52	4560	4620	−19.9	−10.3	45
"	✓	14603	83.0	73.6	Q	150	75	150	76	300	151	00	−01	4980	4380	00	−0.2	
"		15462	91.3	66.1 ✓	8.5	105	145	45	5	150	150	−60	+140	5460	3960	−11.9	+27.9	54
	✓	1	19.8	47.3	15.2	21	120	130	31	151	151	+109	+89	1440	2820	+21.7	+17.7	11
	✓	2	20.5	56.3	14.5	81	119	69	32	150	151	−12	+87	1200	3360	−2.4	+17.3	11
	✓	3	21.1	54.6	15.5	145	41	6	110	151	151	−139	−69	1260	3240	−27.7	−13.7	1
?	✓	3a	20.6	51.4	16.0	65	105	86	45	151	150	+21	+60	1200	3060	+4.2	+11.9	1
	✓	4	21.1	49.2	15.8	144	135	6	15	149	150	−139	+120	1260	2940	−27.7	+23.9	1
	✓	5	21.4	48.4	16.0	100	75	51	76	151	151	−49	−01	1260	2880	−9.8	−0.2	
	✓	6	22.2	48.2	15.0	131	121	20	30	151	151	−111	+91	1320	2880	−22.1	+18.1	
	✓	7	22.3	38.3	15.3	110	120	41	30	151	150	−69	+90	1320	2280	−13.7	+17.9	
	✓	8	22.9	53.1	14.7	5	145	146	6	151	151	+141	+139	1320	3180	+28.1	+27.7	
	✓	9	23.5	59.8	15.8	74	31	76	121	150	152	+02	−90	1380	3540	+0.4	−17.9	

4061 / 27 — 3914 / 24

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+(C-a)-(B-A)

2955.7	3373.9
2922.1	3311.9
2965.9	3033.9
2993.8	3291.8
3054.4	3174.0
3156.1	3438.5
3142.5	3158.1
3255.9	2922.5
3288.1	3140.1
3315.5	2450.4
3392.1	2301.9
3377.9	3193.9
3814.4	2396.2
4540.1	4630.3
4980.0 / 30 / 4950.0	4380.2
5448.1	3932.1
1161.7	2802.3
1197.6	3342.7
1232.3	3253.7
1204.2	3048.1
1232.3	2916.1
1250.2	2880.2
1297.9	2861.9
1306.3	2262.1
1348.1	3152.3
1380.4	3557.9

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1899phae.proj..974L

D 7042

Measures of positions continued.

	♀	♂ Mag.	East A	B	b	D	a+C	B+D	C-a	B-D	C-a x.199	B-D x.199	x60	y x60
✓	10	23.7	55.3	13.8	40	116	110	34	150	150	+70	+82	1380	3300	+139	+16.3
✓	11	23.9 24.4	37.7	8.8	20	35	130	116	150	151	+110	-81	1380	2220	+21.9	-16.1
✓	12	24.4	38.1	10.5 11.0	88	140	62	11	150	151	-26	+129	1440	2280	-5.2	+25.7
✓	13	24.4	38.5	15.8	88	79	63	82	151	152	-25	-12	1440	2280	-5.0	-2.4
✓	14	25.6	61.3	13.7	59	105	92	46	151	151	+33	+59	1500	3660	+6.6	+11.7
✓	40	25.2	40.8	16.0	125	120	26	31	151	151	-99	+89	1500	2400	-19.7	+17.7
✓	14½	25.2	41.7	14.0	129	35	21	115	150	150	-108	-86	1500	2460	-21.5	-15.9
✓	15	26.2	59.3	15.0	132	111	18	40	150	151	-114	+71	1560	3540	-22.7	+14.1
✓	16	27.3	62.9	15.5	120	15	32	136	152	151	-88	-121	1620	3720	-17.5	-24.1
✓	17	26.9	45.4	15.8	5	115	145	36	150	151	+140	+79	1560	2700	+27.9	+15.7
✓	18	28.3	69.7	14.5	111	40	41	111	152	151	-70	-71	1680	4140	-13.9	-14.1
✓	19	27.5	48.4	9.8	72	100	78	51	150	151	+06	+49	1620	2880	+1.2	+9.8
✓	20	27.7	33.9	15.0	50	10	100	140	150	150	+50	-130	1620	1980	+10.0	-25.9
✓	21	28.3	32.5	15.9	115	79	36	72	151	151	-79	+07	1680	1920	-15.7	+1.4
✓	22	28.4	31.5	10.9	110	71	40	80	150	151	-70	-09	1680	1860	-13.9	-1.8
✓	23	30.4	39.4	15.7	95	96	55	55	150	151	-40	+41	1800	2340	-8.0	+8.2
✓	24	31.0	64.0	12.5	150	1	151	149	301	150	+0.1	-148	1860	3840	+0.2	-29.5
✓	25	30.9	55.8	15.7	11	19	140	132	151	151	+129	-113	1800	3300	+25.7	-22.5
✓	26	31.3	39.7	15.8	125	40	215	110	150	150	-100	-70	1860	2340	-19.9	-13.9 ~~-14~~ -13.9
✓	27	30.7	27.9	15.5	126	40	25	110	151	150	-101	-70	1800	1620	-20.1	~~-14~~
✓	28	31.6	71.9	16.0	55	1	95	149	150	150	+40	-148	1860	4260	+8.0	-29.5
✓	29	31.9	69.8	12.5	15	29	135	122½	150	151	+120	-93	1860	4140	+23.9	-18.5
✓	30	31.7	65.3	13.8	40	100	110	50	150	150	+70	+50	1860	3900	+13.9	+10.0
✓	31	31.6	61.3	10.5	45	116	106	35	151	151	+61	+81	1860	3660	+12.1	+16.1
✓	32	32.4	39.9	15.9	90	6	60	145	150	151	-30	-139	1920	2340	-6.0	-27.7
✓	33a	32.4	43.5	15.9	96	75	54	76	150	151	-42	-01	1920	2580	-8.4	-0.2
✓	33	32.1	37.7	15.9	145	40	5	111	150	151	-140	-71	1920	2220	-27.9	-14.1
		34.2	51.3	10.0	135	108	16	42	151	150	-119	+66	2040	3060	-23.7	+13.1
✓	34	34.9	23.8	15.1	10	21	140	130	150	151	+130	-109	2040	1380	+25.9	-21.7
✓	35	35.7	54.5	7.5	110	65	110	86	150	151	+70	-21	2100	3240	+13.9	-4.2
✓	36	36.6	39.5	14.0	75	70	76	80	151	150	+01	-10	2160	3540	+0.2	-2.0
✓	37	37.1	53.3	15.5	145	109	5	42	150	151	-140	+67	2220	3180	-27.9	+13.3
													4967 .33	4823 .32		

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+(C-a)	-(B-D)
1393.9	3283.7
1401.9	2236.1
1434.8	2254.3
1435.0	2282.4
1506	3648.3
1480.3	2382.3
1478.5	2475.9
1587.3	3525.9
1602.5	3744.1
1587.9	2684.3
1666.1	4154.1
1621.2	2870.2
1630.0	2005.9
1664.3	1918.6
1666.1	1861.8
1792.0	2331.8
1860.2	9 — 1 div.
−30	
1830.2	3889.5
1825.7	3322.5
	53.9 ✓
1840.1	2371.4
	33.9 ✓
1779.9	1621.4
1868.0	4289.5
1883.9	4158.5
1873.9	3890.0
1872.1	3643.9
1914.0	2367.7
1911.6	2580.2
1892.1	2234.1
2016.3	3046.9
2065.9	1401.7
2113.9	3244.2
2160.2	3542.0
2192.1	3166.7

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1899phae.proj..974L

D 7042

Measures of positions continued

		x	y	Magn.	A	B	C	D	A+C	B+D	C-A	B-D	x×60	y×60	x.199	x.199
	38	37.4	55.7	13.2	91	46	59	105	150	151	-32	-59	2220	3060	-6.4	-11.7
	39	37.6	31.6	10.5	55	50	95	100	150	150	+40	-50	2160	1860	+8.0	-10.0
	40	36.7	24.0	13.8	36	150	115	151	151	301	+79	-01	2160	1440	+15.7	-.2
W.S meas.	41	37.4	65.9	~~15.6~~ 11.0	85	15	66	136	151	151	-19	-121	2220	3900	-3.8	-24.1
	42	38.1	63.5	13.5	138	66	12	84	150	150	-126	-18	2280	3780	-25.1	-3.6
	43	37.9	54.9	15.8	11	15	140	136	151	151	+129	-121	2220	3240	+25.7	-24.1
	44	37.9	58.4	14.5	20	85	131	65	151	150	+111	+20	2220	3180	+22.1	+4.0
Nov. 13, 1899	45	37.9	51.6	15.5	20	40	130	111	150	151	+110	-71	2220	3060	+21.9	-14.1
	46	38.5	22.5	13.8	85	70	65	80	150	150	-20	-10	2280	1320	-4.0	-2.0
	47	38.5	74.6	15.5	80	55	70	96	150	151	-10	-41	2280	4440	-2.0	-8.2
	48	38.6	66.0	15.7	66	150	84	151	150	301	+18	-0.1	2280	3960	+3.6	-0.2
	49	38.8	62.2	15.9	16	125	135	25	151	150	+119	+100	2280	3720	+23.7	+19.9
	50	39.1	26.1	15.5	144	145	6	5	150	150	-138	+140	2340	1560	-27.5	+27.9
	51	N. L.														
	52	38.5	29.0	15.5	75	150	76	150	151	300	+01	00	~~2280~~ 2340	1740	+0.2	0.0
	53	38.8	58.4	13.3	21	82	129	69	150	151	+108	+13	~~2280~~ 2340	3480	+21.5	~~+10.5~~ 2.6
	54	39.5	67.9	15.0	70	5	81	146	151	151	+11	-141	2340	~~3920~~ 3940	+2.2	-28.1
	55	41.1	45.4	14.7	148	86	3	64	151	150	-145	+22	2460	2700	-28.9	+4.4
	56	41.2	22.1	15.0	125	140	26	10	151	150	-99	+130	2460	1320	-19.7	+25.9
	57	41.4	69.6	15.8	90	20	61	130	151	150	-29	-110	2460	4140	-5.8	-21.9
	58	42.4	50.1	15.8	85	130	65	20	150	150	-20	+110	2520	3000	-4.0	+21.9
	59	42.4	32.1	14.0	101	139	50	11	151	150	-51	+128	2520	1920	-10.1	+25.5
	60	41.7	24.8	13.2	35	99	115	52	150	151	+80	+47	2460	1440	+15.9	+9.4
	61	42.3	41.4	12.7	108	91	42	60	150	151	-66	+31	2520	~~2460~~ 2520	-13.1	+6.2
	62	42.7	67.7	11.0	30	45	~~105~~ 120	105	150	150	+90	-60	2520	4020	+17.9	-11.9
	63	42.7	62.8	10.3	41	25	110	126	151	151	+69	-101	2520	3720	+13.7	-20.1
	64	42.6	59.4	10.4	51	90	100	61	151	151	+49	+29	2520	3540	+9.8	+5.8
	65	43.1	44.0	15.8	150	151	151	150	301	301	+0.1	+0.1	2580	2640	+0.2	+0.2

4214 / 28 = 150.5 ; 4664 / 31 = 150.4

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1899phae.proj.0741

Centers
x y
2947.0 2933.8

(C-A)	(B-D)
2213.6	3071.7
2168.0	1870.0
2175.7	14402 / Mean 1410.2
2216.2	3924.1
2254.9	3783.6
2245.7	3264.1
2242.1	3176.0 −704.9 − 236.2
2241.9	3074.1
2276.0	1322.0
2278.0	4448.2
2283.6	3960.2 / 30. / 3930.2
2303.7	3700.1
2312.5	1532.1
34 2280.2	1740.0 / 1730.0 / 77.4 ✓
6 2301.5	3467.5
2342.2	4048.1
2431.1	2695.6
2440.3	1294.1
2454.2	4161.9
2516.0	2978.1
2509.9	1894.5
2475.9	1430.6
2506.9	4253.8
2537.9	4031.9
2533.7	3740.1
2529.8	3534.2
2580.2 / −30 / 2550.2	2639.8 / −30 / 2609.8

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1899phae.proj..974L

D 7042

Measures of positions continued

bb	x	y	Magn.	A	B	C	D	a+c	B+D	C-a	B-D	x×60	y×60	C-a ×.199	B-D ×.199
✓ 66	42.7	29.7	11.0	45	46	105	105	150	151	+60	-59	2520	1740	+11.9	-11.7
✓ 67	43.6	51.7	16.0	61	40	90	110	151	150	+29	-70	2580	3060	+5.8	-13.9
✓ 68	44.2	44.1	11.0	121	140	30	10	151	150	-91	+130	2640	2640	-18.1	+25.9
✓ 69	43.6	25.7	11.0	50	35	100	115	150	150	+50	-80	2580	1500	+10.0	-15.9
✓ 70	43.9	21.4	10.5	150	81	150	70	300	151	∞	+11	2580	1260	∞	+2.2
✓ 71	44.5	69.6	15.5	85	60	65	90	150	150	-20	-30	2640	4140	-4.0	-6.0
✓ 72	44.7	77.1	15.0	31	145	120	5	151	150	+89	+140	2640	4620	+17.7	+27.9
✓ 73	44.8	67.8	15.0	22	25	128	125	150	150	+106	-100	2640	4020	+21.1	-19.9
✓ 74	44.6	39.6	13.5	60	65	90	86	150	151	+30	-81	2640	2340	+6.0	-4.2
✓ 75	45.5	64.5	16.0	79	70	71	80	150	150	-08	-10	2700	3840	-1.6	-2.0
✓ 76	46.1	63.6	16.0	130	54	20	96	150	150	-110	-42	2760	3780	-21.9	-8.4
✓ 77	46.4	59.4	145	95	89	55	61	150	150	-40	+28	2760	3540	-8.0	+5.6
✓ 78	45.7	45.9	138	40	15	110	135	150	150	+70	-120	2700	2700	+13.9	-23.9
✓ 79	46.7	69.2	15.5	50	130	100	21	150	151	+50	+109	2760	4140	+10.0	+21.7
✓ 80	47.3	30.4	11.0	115	89	35	61	150	150	-80	+28	2820	1800	-15.9	+5.6
✓ 81	47.1	27.4	13.5	150	82	150	68	300	150	∞	+14	2820	1620	∞	+2.8
✓ 82	47.4	20.8	13.0	105	95	46	65	151	150	-59	+40	2820	1200	-11.7	+8.0
✓ 83	47.5	76.6	15.5	84	56	66	95	150	151	-18	-39	2820	4560	-3.6	-7.8
✓ 84	48.2	42.4	13.8	131	76	19	74	150	150	-112	+02	2880	2520	-22.3	+0.4
✓ 85	47.9	29.6	13.0	5	60	146	91	151	151	+141	-31	2820	1740	+28.1	-6.2
✓ 86	47.9	29.1	14.5	15	140	135	11	150	151	+120	+129	2820	1740	+23.9	+25.7
✓ 87	48.2	23.8	15.0	121	36	30	115	151	151	-91	-79	2880	1380	-18.1	-15.7
✓ 88	48.4	23.7	15.0	90	41	60	110	150	151	-30	-69	2880	1380	-6.0	-13.7
✓ 89	49.2	37.8	12.0	130	39	20	111	150	150	-110	-72	2940	2220	-21.9	-14.3
✓ 90	49.3	35.7	14.0	100	40	51	110	151	150	-49	-70	2940	2100	-9.8	-13.9
✓ 91	49.2	21.7	11.0	130	45	20	104	150	149	-110	-59	2940	1260	-21.9	-11.7
✓ 92	49.4	40.1	10.5	80	130	70	20	150	150	-10	+110	2940	2400	-2.0	+21.9
✓ 93	49.7	21.8	14.0	40	25	111	125	151	150	+71	-100	2940	1260	+14.1	-19.9
								4508	4208						
								30	28						

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+(C-a)	-(B-D)	
2531.9	1751.7	
2585.8	3073.9	
2621.9	2617.1	
2590.0	1515.9	
2580 +½ 30	1257.8	x = 2550.0 + 60 = 2610.0 ~~−337.0 + 1682.0~~
2636.0	4146.0	
2657.7	4592.1	
2661.1	4039.9	
2646.0	2344.2	
2698.4	3842.0	
2738.1	3788.4	
2752.0	3534.4	
2713.9	2723.9	
2770.0	4118.3	
2804.1	1794.4	
2820.0 −30 2790.0	1617.2	
2808.3	1192.0	
2816.4	4567.8	
2857.7	2519.6	
2848.1	1746.2	
2843.9	1714.3	
2861.9	1395.7	
2874.0	1393.7	
2918.1	2234.3	
2930.2	2113.9	
2918.1	1271.7	
2938.0	2378.1	
2954.1	1279.9	

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D 7042

Nov. 14, 1899.

23h 40m

Measures of positions continued

	x	y	Mag.	Est.	A	B	C	D	a+c	B+D	C-a	B-D	x×60	y×60	C-a ×.199	B-D ×.199
Gillis	7980	50	42.1	-	151	135	150	151	301	150	-0.1	+120	300	2520	-0.2	+23.9
✓	8714	52	57.4	-	119	80	32	70	151	150	-87	+10	300	3420	-17.3	+2.0
✓	7928	9.1	41.7	-	130	50	20	100	150	150	-110	-50	540	2460	-21.9	-10.0
✓	6508	17.9	17.3	-	30	110	120	41	150	151	+90	+69	1020	1020	+17.9	+13.7
	11,113	36.2	88.3	-	125	110	25	40	150	150	-100	+70	2160	5280	-19.9	+13.9
✓	e	25.5	64.4	-	80	79	70	71	150	150	-10	+08	1500	3840	-2.0	+1.6
✓	d	35.0	62.0	-	150	148	150	3	300	151	00	+145	2100	3720	00	+28.9
✓	o	35.2	61.3	-	115	116	35	35	150	151	-80	+81	2100	3660	-15.9	+16.1
✓	g	37.8	54.4	-	21	97	130	54	151	151	+109	+43	2220	3240	+21.7	+8.6
✓	y_2	45.4	58.7	-	86	45	64	106	150	151	-22	-61	2700	3180	-4.4	-12.1
✓	k_2	45.7	44.2	-	51	118	100	33	151	151	+49	+85	2700	2640	+9.8	+16.9
✓	m	47.4	49.6	-	95	54	56	96	151	150	-39	-42	2820	2940	-7.8	-8.4
✓	p_2	46.8	58.2	-	30	131	120	20	150	151	+90	+111	2760	3180	+17.9	+22.1
✓	h	47.3	52.8	-	105	26	45	124	150	150	-60	-98	2820	3120	-11.9	-19.5
✓	o	49.3	55.6	-	121	45	30	106	151	151	-91	-61	2940	3300	-18.1	-12.1
✓	l	49.7	56.7	-	35	40	115	110	150	150	+80	-70	2940	3360	+15.9	-13.9
✓	g	49.9	51.1	-	10	140	140	11	150	151	+130	+129	2940	3060	+25.9	+25.7
✓	f	50.4	55.4	-	~~144~~ 94	96	56	55	150	151	-38	+41	3000	3300	-7.6	+8.2
	by N. L.															
✓	k_1	51.4	53.4	-	88	90	63	60	151	150	-25	+30	3060	3180	-5.0	+6.0
✓	t	53.1	57.8	-	135	26	15	124	150	150	-120	-98	3180	~~3060~~ 3420	-23.9	-19.5
✓	q	52.9	53.2	-	20	130	130	21	150	151	+110	+109	3120	3180	+21.9	+21.7
✓	n	54.7	49.3	-	38	119	112	32	150	151	+74	+87	3240	2940	+14.7	H7.3
✓	w	55.3	52.8	-	106	25	44	126	150	151	-62	-101	3300	3120	-12.3	-20.1
✓	s	55.6	41.4	-	36	100	115	50	151	150	+79	+50	3300	2460	+15.7	+10.0
✓	r	57.1	38.8	-	148	25	3	126	151	151	-145	-101	3420	2280	-28.9	-20.1
✓	v	56.8	53.7	-	30	H1	120	110	150	151	+90	-69	3360	3180	+17.9	-13.7
Gillis	H63H=w	65.4	40.5	-	85	85	66	65	151	150	-19	+20	3900	2400	-3.8	+4.0
									4360	4065						
									29	27						

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(C-a)	(B-D)
229.8 − 30 = 259.8	2496.1
2927	3418.0
518.1	2470.0
1037.9	10063
2140.1	5266.1
1498.0	3838.4
2100. − 30 = 2070.0	3691.1
2084.1	3643.9
2241.7	3231.4
2695.6	3192.1
2709.8	26231
2812.2	2948.4
2777.9	3157.9
2808.1	3139.5
2921.9	3312.1
2955.9	3373.9
2965.9	3034.3
2992.4	3291.8
3055.0	3174.0
3156.1	3439.5
3141.9	3158.3
3254.7	2922.7
3287.7	3140.1
3315.7	2450.0
3391.1	2300.1
3377.9	3193.7
3896.2	2396.0

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1899phae.proj..974L

D 7043

Measures of positions continued

	x	y	Mag.	A	B	L	D	a+c	B+D	c-a	B-D	x×60	y×60	c-a ×.199	B-D ×.199
Gillis	18902	76.2	77.7	L	126	45	25	105	151	150	-101	-60	4560	4620	-20.1	-11.9
✓	14603	88.0	73.5	–	150	80	150	70	300	150	00	+10	4980	4380	00	+2.0
✓	15462	91.3	66.1	–	110	145	41	5	151	150	-69	+140	5460	3960	-13.7	+27.9
✓	94	49.9	33.5	16.0	8	69	143	82	151	151	+135	-13	2940	1980	+26.9	-2.6
✓	95	51.4	48.4	13.0	91	100	69	51	150	151	-32	+49	3060	2580	-6.4	+9.8
✓	96	53.3	78.1	12.8	120	140	31	11	151	151	-89	+129	3180	4680	-17.7	+25.7
✓	97	52.5	24.8	15~~8~~ 2	70	21	80	130	150	151	+10	-109	3120	1440	+2.0	-21.7
✓	98	53.9	69.6	13.0	15	60	136	90	151	150	+121	-30	3180	3140 4	+24.1	-6.0
✓	99	54.3	22.0	11.0	120	150 ~~146~~	30	151	150	301	-90	-0.1	3240	1320	-17.9	-0.2
✓	100	55.3	76.6	14.0	109	55	41	95	150	150	-68	-40	3300	4360 5	-13.5	-8.0
✓	101	55.4	72.1	14.1	96	135	54	16	150	151	-42	+119	3300	4320	-8.4	+23.7
✓	102	54.9	66.8	12.9	15	29	136	121	151	150	+121	-92	3240	3960	+24.1	-18.3
✓	103	55.2	65.9	14.0	121	5	29	145	150	150	-92	-140	3300	3900	-18.3	-27.9
✓	104	54.7	46.4	13.0	65	85	115	66	150	151	+80	+19	3240	2700	+15.9	+3.8
✓	105	54.6	34.4	15.0	45	106	105	44	150	150	+60	+62	3240	2040	+11.9	+12.3
✓	106	~~56.2~~ 56.5	68.2	15~~2~~ 5	129	135	21	16	150	151	-108	+119	3360	4080	-21.5	+23.7
✓	107	56.1	63.9	15.9	141	5	10	146	151	151	-131	-141	3360	3780	-26.1	-28.1
	108	N. D.														
✓	109	56.5	28.4	15.0	85	100	65	51	150	151	-20	+49	3360	1680	-4.0	+9.8
✓	110	56.4	78.4	15.5	90	88	60	62	150	150	-30	+26	3360	4680	-6.0	+5.2
✓	111	57.2	68.5	16.0	124	75	26	76	150	151	-98	-01	3420	4080	-19.5	-0.2
✓	112	57.4	36.5	15.2	84	69	66	81	150	150	-18	-12	3420	2160	-3.6	-2.4
✓	113	57.8	63.1	8.7	29	149	121	2	150	151	+92	+147	3420	3780	+18.3	+29.3
✓	114	58.0	61.2	11.0	14.5	136	5	15	150	151	-140	+121	3480	3660	-27.9	+24.1
✓	115	58.2	41.8	15.7	130	30	20	120	150	150	-110	-90	3480	2460	-21.9	-17.9
✓	116	57.7	25.9	14.0	25	10	125	140	150	150	+100	-130	3420	1500	+19.9	-25.9
✓	117	58.5	25.4	13.5	75	99	76	52	151	151	+01	+47	3480	1500	+0.2	+9.4
✓	118	58.9	75.2	16.0	20	121	130	29	150	150	+110	+92	3480	4500	+21.9	+18.3
									4208	4214						
									28	28						

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+(C-a)	-(B-D)
4539.9	4631.9
4980.0 −30 4950.0	4378.0
5746.3	3932.1
2966.9	1982.6
3053.6	2570.2
3162.3	4654.3
3122.0	1461.7
3204.1	4146.0 4134.0
3222.1	1319.8 20.2 −30 1289.8 90.2
3286.5	4568.0
3291.6	4296.3
3264.1	3978.3
3281.7	3927.9
3255.9	2696.2
3251.9	2027.7
3338.5	4056.3
3333.9	3808.1
3356.0	1670.2
3354.0	4674.8
3400.5	4080.2 4079.8
3416.4	2157.6 2124
3438.3	3750.7 3809.3
3452.1	3635.9
3458.1	2477.9
3439.9	1525.9
3480.2	1490.6
3501.9	4481.7

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1899phae.proj..974L

D 7042.

Measures of positions continued

	x	y	Magn.	A	B	C	D	A+C	B+D	C-a	B-D	x×60	y×60	C-a ×.199	B-D ×.199
✓	119	59.2	61.8	116.0	135	16	15	134	150	150	−120	−118	3540	3660	−23.9	−23.5
✓	120	58.5	61.4	12.0	79	80	71	70	150	150	−08	+10	3480	3660	− 1.6	+2.0
✓	121	58.6	59.5	14.0	51	70	99	80	150	150	+48	−10	3480	3540	+9.6	−2.0
✓	122	59.9	74.9	16.0	20	5	130	146	150	151	+110	−141	3540	4440	+21.9	−28.1
	123	N. S														
✓	124	59.6	68.7	9.5	46	30	105	120	151	150	+59	−90	3540	4080	+11.7	−17.9
✓	125	60.3	64.6	12.2	121	60	30	91	151	151	−91	−31	3600	3840	−18.1	−6.2
✓	126	60.1	57.7	13.2	149	26	2	124	151	150	−147	−98	3600	3420	−29.3	−19.5
✓	127	60.4	40.8	15.5	85	25	66	125	151	150	−19	−100	3600	2400	−3.8	−19.9
✓	128	61.2	72.0	15.9	136	150	15	151	151	301	−121	−0.1	3660	4320	−24.1	−0.2
✓	129	61.2	60.2	15.8	130	126	21	25	151	151	−109	+101	3660	3600	−21.7	+20.1
✓	130	60.6	38.4	14.8	61	90	90	60	151	150	+29	+30	3600	1980	+5.8	+6.0
✓	131	60.7	22.3	7.2	45	115	106	35	151	150	+61	+80	3600	1320	+12.1	+15.9
✓	132	61.6	57.9	14.3	55	15	96	136	151	151	+41	−121	3660	3420	+8.2	−24.1
✓	133	61.9	52.6	98	10	51	140	100	150	151	+130	− 49	3660	3120	+25.9	−9.8
✓	134	62.1	31.8	15.8	150	21	1	130	151	151	−149	−109	3720	1860	−29.7	−21.7
✓	135	62.4	25.9	14.9	95	5	56	146	151	151	− 39	−141	3720	1500	−7.8	−28.1
✓	136	62.6	76.1	15.8	46	140	104	11	150	151	+58	+129	3720	4560	+11.5	+25.7
	137	N. S.														
✓	138	62.8	57.9	11.8	25	15	125	136	150	151	+100	−121	3720	3060	+19.9	−24.1
✓	139	63.2	39.1	11.0	125	135	25	15	150	150	−100	+120	3780	2340	−19.9	+23.9
✓	140	62.6	38.6	13.7	65	55	85	96	150	151	+ 20	− 41	3720	2280	+4.0	−8.2
✓	141	63.5	63.8	15.8	85	80	66	120	151	150	− 19	− 90	3780	3780	−3.8	−17.9
✓	142	63.6	69.1	15.8	45	142	105	18	150	160 (omit in sum)	+60	+124	3780	4140	+11.9	+24.7
✓	143	63.5	82.1	135	75	85	76	16	158	151	+01	+119	3780	1920	+2.0	+23.7
✓	144	65.6	73.9	120	65	10	86	141	151	151	+21	−131	3900	4380	+4.2	−26.1
✓	145	66.0	68.1	155	1	145	148	6	149	151	+147	+139	3960	4080	+29.3	+27.7
✓	146	66.7	49.4	157	40	90	110	60	150	150	+70	+30	3900	2940	+13.9	+6.0
									3913	3914						
									26	26						

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+(C-a)	-(B-D)	
3516.1	3683.5	
3478.7	3658.0	
3489.6	3542.0	
3561.9	4468.1	
3551.7	4097.9	+604.7 −1158.1
3581.9	3846.2	
3570.7	3439.5	
3596.2	2419.9	
3635.9	4320.2 / 4290.2	
3638.3	3579.9	
3605.8	1974.0	
3612.1	1304.1	
3668.2	3444.1	
3685.9	3129.8	
3690.3	1881.7	
3712.2	1528.1	
3731.5	4534.3	
3739.9	3084.1	
3760.1	2316.1	
3724.0	2288.2	
3776.2	3797.9	
3791.9	~~4115.3~~ 4117.3	
3782.0	1896.3	
3904.2	4406.1	
~~3929.3~~ ~~3989.3~~	4052.3	
3913.9	2934.0	

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1899phae.proj..974L

D 7042

Measures of positions continued

	x	y	Magn	East A	B	b	D	a+c	B+D	c-a	B-D	x×60	y×60	c-a ×.199	B-D ×.199
✓ 147	65.6	38.6	12.8	~~60~~	65	90	85	150	150	+30	−20	3930	2280	+6.0	−4.0
✓ 148	66.1	26.4	15.5	145	80 78	5	63	150	(150 141)	140	+15 +10	3960	1560	−27.9	+3.0 +2.0
✓ 149	66.5	27.4	15.7	80	95	70	56	150	151	−10	+39	3960	1620	−2.0	+7.8
✓ 150	67.1	70.7	8.5	145	135	5	16	150	151	−140	+119	4020	4200	−27.9	+23.7
✓ 151	66.8	64.8	16.0	20	120	130	31	150	151	+110	+89	3960	3840	+21.9	+17.7
✓ 152	67.1	53.3	15.2	131	111	20	40	151	151	−111	+71	4020	3180	−22.1	+14.1
✓ 153	67.3	44.8	15.3	100	31	50	120	150	151	−50	−89	4020	2640	−10.0	−17.7
154	N.S														
✓ 155	68.1	60.8	16.0	142	25	7	126	149	151	−135	−101	4080	3600	−26.9	−20.1
✓ 156	68.2	48.6	13.7	131	45	19	105	150	150	−112	−60	4080	2880	−22.3	−11.9
157	N. S.														
158	N. S.														
✓ 159	68.6	71.9	15.8	64	10	86	140	150	150	+22	−130	4080	4260	+4.4	−25.9
✓ 160	68.5	74.8	~~10.0~~ 11.0	85	20	65	130	150	150	−20	−110	4080	4200	−4.0	−21.9
161	~~68.4~~	~~70.8~~	~~12.8~~	~~130~~	85	20	66	131	151	151	−19	−111	4080	~~4140~~ 4200	−3.8	−22.1
162	N.S														
163	N. S.														
✓ 164	68.6	63.9	13.7	50	15	100	135	150	150	+50	−120	4080	1980	+10.0	−23.9
165	N. S														
✓ 166	69.2	32.2	15.0	125	130	26	20	151	150	−99	+110	4140	1920	−19.7	+21.9
✓ 167	69.7	63.0	15.7	29	151	122	150	151	301	+93	+0.1	4140	3780	+18.5	+0.2
✓ 168	69.9	43.9	15.8	10	16	140	135	150	151	+130	−119	4140	2580	+25.9	−23.7
169	N.S														
✓ 170	70.0	28.0	16.0	5	151	145	150	150	301	+140	+1	4200	1680	+27.9	+2
✓ 171	70.9	68.6	16.0	10	55	140	96	150	151	+130	−41	4200	4080	+25.9	−8.2
✓ 172	70.6	55.8	9.0	50	20	100	131	150	151	+50	−111	4200	3300	+10.0	−22.1
✓ 173	71.4	47.8	15.7	95	30	56	120	151	150	−39	−90	4260	2820	−7.8	−17.9
✓ 174	71.4	43.1	15.7	92	144	58	7	150	151	−34	+137	4260	2580	−6.8	+27.3
								3154 / 21				3313 / 22			

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+(C-a)	-(B-D)	
3906.0	2284.0	
3932.1	1557.0 (1558.0)	B 7 8 D 7 3 (assumed) B-D = +0 5, +1.0 1559.0
3958.0	1612.2	
3992.1	4176.3	~~+10451 − 12365~~
3981.9	3822.3	
3997.9	3165.9	
4010.0	2657.7	
4053.1	3620.1	
4057.7	2891.9	
4084.4	4285.9	
4076.0	4221.9	
4076.2	4162.1 (4262.1)	~~+4292 − 11223~~ diff star p 138 = 160 ~~= 1257~~
4090.0	2003.9	
4120.3	1898.1	
4158.5	3780.2 − 30 = 3750.2	79.8 49.8
4165.9	2603.7	
Ficw 16	1679.8 − 30. = 1649.8	
4227.9		
4225.9	4088.2	
4210.0	3322.1	
4252.2	2837.9	
4253.2	2552.7	

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D 7042

Measures of positions continued

	x	y	Magn.	A	B	C	D	A+C	B+D	C-A	B-D	x×60	y×60	C-A ×.199	B-D ×.199
✓175	71.4	65.6	13.5	90	50	60	100	150	150	-30	-50	4260	3900	-6.0	-10.0
✓176	72.3	42.3	10.9	110	105	40	46	150	151	-70	+59	4320	2520	-13.9	+11.7
✓177	72.7	56.9	11.5	30	5	120	145	150	150	+90	-140	4320	3360	+17.9	-27.9
✓178	72.7	52.6	14.0	35	40	115	110	150	150	+80	-70	4320	3120	+15.9	-13.9
179	N.S														
✓180	73.6	54.6	16.0	65	45	86	106	151	151	+21	-61	4380	3240	+4.2	-12.1
✓181	73.6	44.8	15.7	50	15	101	135	151	150	+51	-120	4380	2640	+10.1	-23.9
182	N.S														
✓183	73.6	36.5	8.5	65	80	85	70	150	150	+20	+10	4380	2160	+4.0	+2.0
184	N.S Plate badly scratched in this region														
✓185	74.4	43.2	10.6	85	120	66	30	151	150	-19	+90	4440	2580	-3.8	+17.9
✓186	74.6	39.5	15.7	60	85	90	66	150	151	+30	+29	4440	2340	+6.0	+3.8
✓187	74.6	36.4	16.0	40	89	110	60	150	149	+70	+29	4440	2160	+13.9	+5.8
✓188	74.6	62.9	16.0	35	20	115	130	150	150	+80	-110	4440	3720	+15.9	-21.9
✓189	74.8	61.5	16.0	25	65	125	86	150	151	+100	-21	4440	3660	+19.9	-4.2
✓190	75.4	62.1	16.2	105	145	45	6	150	151	-60	+139	4500	3720	-11.9	+27.7
✓191	75.5	62.2	16.0	81	130	69	20	150	150	-12	+110	4500	3720	-2.4	+21.9
✓192	76.1	~~38.5~~ 38.6	16.6	~~70~~ 140	~~70~~ 75	~~18~~ 10	~~81~~ 105	150	150	-130	-60	4560	2280	-25.9	-11.9
✓193	76.9	58.5	15.8	20	70	131	81	151	151	+111	-11	4560	3480	+22.1	-2.2
✓194	76.6	56.8	16.2	60	20	90	130	150	150	+30	-110	4560	3360	+6.0	-21.9
✓195	78.2	47.9	14.0	136	25	14	125	150	150	-122	-100	4680	2820	-24.3	-19.9
✓196	78.8	53.9	11.0	21	20	130	131	151	151	+109	-111	4680	3180	+21.7	-22.1
✓197	79.2	46.3	14.0	130	115	20	36	150	151	-110	+79	4740	2760	-21.9	+15.7
7980	5.0	42.1	-	150	140	151	10	301	150	+0.1	+130	300	2520	+0.2	+25.9
✓8714	5.2	57.4	-	122	80	30	71	152	151	-92	+09	300	3420	-18.3	+1.8
✓7923	9.2	41.7	-	130	55	20	96	150	151	-110	-41	540	2460	-21.9	-8.2
✓6508	17.8	17.3	-	30	110	121	40	151	150	+91	+70	1020	1020	+18.1	+13.9
✓11,113	36.2	64.3	-	125	110	25	40	150	150	-100	+70	2160	5280	-19.9	+13.9
								3909	3759						
								26	25						

Nr. 21 39. 23 50 Gillies

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* See Cat. of other readings

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+(C-A)	-(B-D)
4254.0	3910.0
4306.1	2508.3
4337.9	3387.9
4335.9	3133.9
4384.2	3252.1
4390.1	2663.9
4384.0	2158.0
4436.2	2562.1
4446.0	2336.2
4453.9	2154.2
4455.9	3741.9
4459.9	3664.2
4488.1	3692.3
4497.6	3698.1
4534.1	2291.9
4582.1	3482.2
4566.0	3381.9
4655.7	2539.9
4701.7	3202.1
4718.1	2744.3
300.2 / 30 / 270.2	2494.1
281.7	3418.2
518.1	2468.2
1038.1	1006.1
2140.1	5266.1

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D 7042

Measures of positions included

	x	y	Measrs	d	B	b. D.	a+c	B+D	C-a	B-D	x×60	y×60	C-a ×.199	B-D ×.199
✓ e	25.4	64.5	–	80	81	70	70	150	151	-10	+11	1500	3840	-2.0	+2.2
✓ d	35.0	62.1	–	150	149	151	2	301	151	+0.1	+147	2100	3720	+0.2	+29.3
✓ c	35.2	61.3	–	115	116	35	35	150	151	-80	+81	2100	3660	-15.9	+16.1
✓ g	37.9	54.4	–	20	99	130	52	150	151	+110	+47	2220	3240	+21.9	+9.4
✓ f	45.4	53.7	–	86	41	65	109	151	150	-21	-68	2700	3180	-4.2	-13.5
✓ k	45.7	44.3	–	51	119	99	32	150	151	+88	+87	2700	2640	+9.6	+17.3
✓ m	47.4	49.6	–	95	54	56	96	151	150	-39	-42	2820	2940	-7.8	-8.4
✓ i	46.8	53.2	–	30	131	120	20	150	151	+90	+111	2760	3180	+17.9	+22.1
✓ h	47.3	52.6	–	105	26	46	124	151	150	-59	-98	2820	3120	-11.7	-19.5
✓ o	49.3	55.6	–	121	45	30	105	151	150	-91	-60	2940	3300	-18.1	-11.9
✓ l	49.7	56.7	–	35	40	115	110	150	150	+80	-70	2940	3360	+15.9	-13.9
✓ z	49.9	51.1	–	10	141	140	10	150	151	+130	+131	2940	3060	+25.9	+26.1
✓ y	50.4	55.4	–	92	100	58	62	150	152	-34	+48	3000	3300	-6.8	+9.6
y	N.S.		–												
✓ x	51.4	53.4	–	90	90	61	60	151	150	-29	+30	3060	3180	-5.8	+6.0
✓ t	53.1	57.8	–	136	29	15	121	151	150	-121	-92	3180	3420	-24.1	-18.3
✓ q	52.9	53.2	–	19	130	132	20	151	150	+113	+110	3120	3180	+22.5	+21.9
✓ n	54.8	49.3	–	35	118	115	33	150	151	+80	+85	3240	2940	+15.9	+16.9
✓ u	55.3	52.8	–	108	25	42	125	150	150	-66	-100	3300	3120	-13.1	-19.9
✓ p	55.7	41.3	–	35	96	115	55	150	151	+80	+41	3300	2460	+15.9	+8.2
✓ r	57.1	38.9	–	150	25	151	125	301	150	+0.1	-100	3420	2280	+0.2	-19.9
✓ v	56.7	50.7	–	30	41	120	110	150	151	+90	-69	3360	3180	+17.9	-13.7
Gillis 4034 = a	65.4	40.5	–	85	86	65	65	150	151	-20	+21	3900	2400	-4.0	+4.2
✓ 13902	76.2	77.6	–	125	50	25	105	150	155	-100	-55	4560	4620	-19.9	-10.9
✓ 14603	83.0	73.5	–	150	75	151	75	301	150	+0.1	00	4980	4380	+0.2	0.0
✓ 15462	91.3	56.1	–	105	145	46	5	151	150	-59	+140	5460	5160	-11.7	+27.9

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4211/28 3768/25

Re-cat. Jan. 25, 1901

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(C-a)	(B-D)
1498.0	3837.8
2100.2 −30 2070.2	3690.7
2084.1	3643.9
2241.9	3230.6
2695.8	3193.5
2709.6	2622.7
2812.2	2948.4
2777.9 −421	3157.9
2808.3	3139.5
2921.9	3311.9
2955.9	3373.9
2965.9	3033.9
2993.2	3290.4
3054.2	3174.0
3155.9	3438.3
3142.5	3158.1
3255.9	2923.1
3286.9	3139.9
3315.9	2451.8
3420.2 −30 3390.2	2299.9
3377.9	3193.7
3896.0	2395.8
4540.1	4630.9
4980.2 −30 4950.2	4380.0
5448.3	3932.1

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1899phae.proj..974L

D 6980 Pos.

See 15462 for 4 other readings 26.2 66 Cancr.

November 22, 1899.

h m															c-a X.200	B-D X.199
0 57		ν	y	Magn	A	B	b	D	a+c	B+D	C-a	B-D	x	y		
Gillis	✓	15462	8.1	66.2	8.0	136	130	15	20	151	150	-121	+110	480	3960	-24.2	+21.9
	✓	14603	16.4	73.5	8	95	50	55	100	150	150	-40	-50	960	4380	-8.0	-10.0
	✓	13902	23.2	77.8	6.8	120	25	30	126	150	151	-90	-101	1380	4620	-18.0	-20.1
4034 =	a		~~33.9~~ 4034	40.5	7.0	5	60	145	90	150	150	+140	-30	1980	2400	+28.0	-6.0
	✓	b	42.4	39.0	7595	150	55	150	150	300	-40	0.0		2520	2340	-8.0	0.0
	✓	w	42.6	53.9	155	60	19	89	131	149	150	+29	-112	2520	3180	+5.8	-22.3
	✓	z	43.6	41.5	150	61	75	100	76	151	151	+49	-01	2580	2460	+9.8	-0.2
	✓	u	44.1	52.9	158	131	2	19	149	150	151	-112	-147	2640	3120	-22.3	-29.3
	✓	n	44.6	49.4	128	51	90	100	59	151	149	+49	+31	2640	2940	+9.8	+6.2
	✓	t	~~46.3~~ 158	~~57.9~~ 105	158	105	4	46	146	151	150	-59	-142	2760	3420	-11.8	-28.3
	✓	q	46.5	53.3	148	70	106	80	45	150	151	+10	+61	2760	3180	+2.0	+12.1
	✓	x	47.9	53.5	159	3	68	148	82	151	150	+145	-14	2820	3180	+29.0	-2.8
	✓	f	49.1	55.5	100	150	71	151	80	301	151	+0.1	-09	2940	3300	+0.2	-1.8
	✓	g	49.5	51.3	160	80	119	70	32	150	151	-10	+87	2940	3060	-2.0	+17.3
	✓	l	49.6	56.9	~~123~~ 118	55	15	96	135	151	150	+41	-120	2940	3360	+8.2	-23.9
	✓	o	50.2	55.8	133	120	20	30	130	150	150	-90	-110	3000	3300	-18.0	-21.9
y		N. S.															
	✓	h	52.1	62.9	11.1	136	3	15	148	151	151	-121	-145	3120	3120	-24.2	-28.9
	✓	m	52.1	49.7	12.2	149	30	2	121	151	151	-147	-91	3120	2940	-29.4	-18.1
	✓	p	52.6	53.3	148	60	105	90	46	150	151	+30	+59	3120	3180	+6.0	+11.7
	✓	k	53.7	44.4	110	40	91	110	60	150	151	+70	+31	3180	2640	+14.0	+6.2
	✓	j	53.9	53.8	149	5	20	145	131	150	151	+140	-111	3180	3180	+28.0	-22.1
	✓	i	61.5	54.5	100	70	75	80	76	150	151	+10	-01	3660	3240	+2.0	-0.2
	✓	c	64.2	61.4	8.0	129	90	21	60	150	150	-108	+30	3840	3660	-21.6	+6.0
	✓	d	64.4	62.2	8.8	91	125	60	25	151	150	-31	+100	3840	3720	-6.2	+19.9
Gillis	✓	11,113	62.2	88.4	75	120	90	30	61	150	151	-90	+29	3780	5280	-18.0	+5.8
	✓	r	78.9	64.6	9.2	10	60	140	91	150	151	+130	-31	4380	3840	+26.0	-6.2
Gillis	✓	6508	81.6	17.4	8.2	60	85	90	65	150	150	+30	+20	4860	1020	+6.0	+4.0
										4209 / 28	4213 / 28						

*The lines on the edge of this plate are very broad and hazy

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1999phae.proj..974L

Est + fract. reject to Cent. E.
x 456.0 y 3942.0

+(C-A)	-(B-D)
4558	3938.1
952.0	4390.0
1362.0	4640.1
2008.0	2406.0
2512.0	2340.0 −30 2310.0
25258	3202.3
2589.8	2460.2
2617.6	3179.3
2649.8	2933.8
2748.2	34483
2762.0	31679
2849.0	31828
2940.2 −30 2910.2	3301.8
2938.0	3042.7
2948.2	33839
2982.0	33219
3095.8	3148.9
3090.6	2958.1
3126.0	31683
3194.0	2643.8
3208.0	3202.1
3662.0	32402
3818.4	36540
3833.8	3700.1
3762.0	52742
4406.0	3846.2
4864.0	1016.0

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1899phae.proj..974L

D 6980 Measures of positions continued

	x	y	Magn.	Est.	A	B	b	D	a+c	B+D	C-a	B-D	xx60	yx60	C-a x.200	B-D x.199
Gillis	7923	90.2	41.8	B	110	30	40	120	150	150	-70	-90	5400	2460	-14.0	-17.9
"	8714	94.2	57.7	B	121	60	30	91	151	151	-91	-31	5640	3420	-18.2	-6.2
"	7980	94.4	42.3	B	90	120	61	30	151	150	-29	+90	5640	2520	- 5.8	+17.9
									458 2/3	451 3						

Nov 28 3h 30m 99

	x	y	Magn.	Est.	A	B	b	D			C-a	B-D	xx60	yx60	C-a x.200	B-D x.199
Gillis	16462	82	~~56.3~~ 66		-	135	120	15	30	150	150	-120	+90	480	+360 31	-24.0	+ 17.9
re-est. July 16, 1901	14603	16.3	78.5		-	96	50	55	100	151	150	- 41	- 50	960	4380	- 8.2	- 10.0
	13902	23.1 ~~49~~	~~30~~ 77.8		-	~~29~~ 119	~~130~~ 20	31	130	150	150	- 88	-110	1380	2820 46	-17.6	- 21.9
4084 =	a	33.9	40.5		-	3	60	148	90	151	150	+145	- 30	1980	2400	+29.0	- 6.0
	b	42.4	39.0		-	95	150	55	150	150	300	-40	0.0	2520	2340	- 8.0	0.0
	w	42.6	53.9		-	61	19	89	131	150	150	+28	-112	2520	3180	+ 5.6	- 22.3
	D	43.6	41.5		-	51	75	99	76	150	151	+48	- 01	2580	2460	+9.6	- 0.2
	u	44.1	52.9		-	135	151	16	150	151	301	-119	+0.1	2640	3120	-23.8	+0.2
	w	44.6	49.4		-	50	92	100	69	150	151	+50	+33	2640	2940	+10.0	+6.6
	t	46.3	57.9		-	105	2	45	148	150	150	-60	-146	2760	3420	-12.0	-29.1
	g	46.5	53.4		-	70	105	80	45	150	150	+ 10	+ 60	2760	3180	+ 2.0	+11.9
	x	47.9	58.6		-	1	66	148	85	149	151	+147	- 19	2820	3180	+29.4	- 3.8
	f	49.0	55.4		-	150	71	151	80	301	151	+0.1	- 09	2940	3300	+0.2	- 1.8
3		49.5	51.3		-	81	116	69	34	150	150	-12	+ 82	2940	3060	- 2.4	+16.3
	k	49.6	56.8		-	61	15	99	136	150	151	+48	-121	2940	3360	+9.6	-24.1
	o	56.2	55.8		-	120	21	30	130	150	151	- 90	- 109	3000	3300	-18.0	- 21.7
y		N 8			-												
	h	52.1	52.9		-	139	1	11	150	150	151	-128	-149	3120	3120	-25.6	- 29.7
	w	52.1	49.8		-	149	30	2	121	151	151	-147	- 91	3120	2940	-29.4	- 18.1
										2884	3009						

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1899phae.proj..974L

+(C-a)	-(B-D)
5386.0	2477.9
5621.8	3426.2
5634.2	2502.1

+(C-a)	-(B-D)
456.0	1542.1
951.8	4390.0
1362.4	4641.9
2009.0	2406.0
2512.0	2340.0 − 30 = 2310.0
2525.6	3202.3
2589.6	2460.2
2616.2	3119.8 − 30 = 3089.8 + 1 div. = 3149.8
2650.0	2933.4
2748.0	3449.1
2762.0	3168.1
2849.4	3183.8
2946.2 − 30 = 2910.2	3301.8
2937.6	3043.7
2949.6	3384.1
2982.0	3321.7
3094.4	3149.7
3090.6	2968.1

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1899phae.proj..974L

D 6980 Measures of positions continued

			Est. Magn.	A	B	b	D	a+c	B+D	C-A	B-D	x x 60	y x 60	C-A x.200	B-D x.199	
✓	n	52.6	53.4	–	60	105	90	45	150	150	+30	+60	3120	3180	+ 6.0	+ 11.9	31
✓	k	53.7	44.4	–	39	91	111	60	150	151	+72	+31	3180	2640	+14.4	+ 6.2	3
✓	p	53.9	53.8	–	5	20	146	131	151	151	+141	-111	3180	3180	+ 28.2	- 22.1	3
✓	q	61.6	54.5	–	70	71	80	79	150	150	+10	- 08	3660	3240	+ 2.0	- 1.6	3
✓	c	64.2	61.4	–	129	90	21	61	150	151	-108	+29	3840	3660	- 21.6	+ 5.8	3
✓	d	64.4	62.2	–	90	121	60	29	150	150	- 30	+92	3840	3720	- 6.0	+18.3	3
Gillis	✓	11,113	63.2	88.4	–	120	85	30	66	150	151	- 90	+19	3780	5280	-18.0	+ 3.8	
Re-reb. Jan. 25, 1901	e	73. ~~75.9~~	64.6	–	11	56	140	94	151	150	~~+130~~ +129	- 38	~~4500~~ 4380	3840	+25.8	- 7.6	
Gillis	✓	6508	81.6	17.4	–	60	80	90	90	150	150	+30	+10	4860	1020.	+ 6.0	+ 2.0	
	✓	7928	90.2	41.8	–	111	30	40	120	151	150	- 71	- 90	5400	2460	-14.2	-17.9	
28h 20m	✓	8714	94.2	57.7	–	120	55	30	95	150	150	- 90	- 40	5640	3420	-18.0	- 8.0	
	✓	7980	94.3	42.3	–	90	121	60	30	150	151	- 30	+91	5640	2520	- 6.0	+18.1	

1803 / 12 1805 / 12

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1999phae.proj..974L

+(C-a)	-(B-D)
3126.0	3168.1
3194.4	2633.8
3208.2	3202.1
3662.0	3241.6
3818.4	3654.2
3834.0	3701.7
3762.0	5276.2
4525.8 (4.0)	3847.6
4866.0	1018.0
5385.8	2477.9
5622.0	3472.0 (12.8)
5634.0	2538.1 (0.1.9)

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182

D 6980

0h 4m 45s

Nov. 24, '99

Measures of positions continued

																c-a	B-D
*re-est. July 16, 1901.		X	Y	Mag.		A.	B	b.	D	a+c	B+D	C-a	B-D	xx60	yx60	x.200	x.199
Dillon	15462	8.21 154	66. 26.3	–	135	120	15	30	150	150	-120	+90	480	37 1560		-24.0	+17.9
"	√14608	16.3	73.5	–	96	50	55	100	151	150	-41	-50	960	4380		- 8.2	-10.0
"	√13902	23.2	77.8	–	120	20	30	130	150	150	-90	-110	1380	4620		-18.0	-21.9
4084	= √a	33.9	40.6	–	2	60	148	90	150	150	+146	-30	1980	2400		+29.2	- 6.0
	√b	42.4	39.0	–	95	150	56	150	151	300	-39	0.0	2520	2340		- 7.8	0
	√m	42.6	53.8	–	60	16	90	124	150	150	+30	-118	2520	3180		+ 6.0	-23.5
	√ z	43.6	41.5	–	51	71	99	80	150	151	+48	-09	2580	2460		+ 9.6	- 1.8
	√ w	44.1	52.9	–	135	151	16	150	151	301	-119	+0.1	2640	3120	2	-23.8	+0.2
	√ n	44.7	49.4	–	50	91	100	59	150	150	+ 50	+32	2640	2940		+10.0	+ 6.4
	√ t	46.3	57.9	–	105	2	46	149	151	151	- 59	-147	2760	3420		- 11.8	-29.3
	√ q	46.5	53.3	–	70	106	80	45	150	151	+10	+ 61	2760	3180		+ 2.0	+ 12.1
	√ r	47.9	53.6	–	2	65	148	85	150	150	+146	-20	2820	3180		+29.2	- 4.0
	√ f	49.0	55.5	–	150	70	150	80	300	150	0.0	- 10	2940	3300		0.0	- 2.0
	√ g	49.5	51.3	–	80	119	70	32	150	151	- 10	+ 87	2940	3060		- 2.0	+17.3
	√ ll	49.6	56.8	–	55	15	96	135	151	150	+41	-120	2940	3360		+ 8.2	-23.9
	√ v	50.2	55.8	–	120	20	81	130	151	150	- 89	-110	3000	3300		-17.8	-21.9
		~~N.I.~~ 5		–													
	√ h	52.1	52.9	–	135	2	15	149	150	151	-120	-147	3120	3120		-24.0	-29.3
	√ m	52.1	49.8	–	146	29	5	122	151	151	-141	- 93	3120	94 2820		-28.2	-18.5
	√ y	52.5	53.8	–	60	105	90	45	150	150	+30	+ 60	3120	3180		+ 6.0	+11.9
	√ k	53.7	44.4	–	40	92	110	59	150	151	+70	+ 33	3180	2640		+14.0	+ 6.6
Re-est. Jan. 25, 1901	√ p	53 ~~52.9~~	53.8	–	5	19	145	131	150	150	+140	-112	3180 2880	3180		+28.0	-22.3
	√ d	61.5	54.5	–	70	71	80	79	150	150	+10	- 08	3660	3240		+ 2.0	- 1.6
	√ k	64.2	61.8	–	130	90	21	61	151	151	-109	+29	3840	3660		-21.8	+ 5.8
	√ d	64.4	62.3	–	91	125	59	25	150	150	-32	+100	3840	3720		- 6.4	+19.9
	√ 11, 113	63.2	88.4	–	120	85	30	65	150	150	-90	+20	3780	5280		-18.0	+ 4.0
	√ e	73.9	64.6	–	12	59	139	92	151	151	+127	- 33	4380	3840		+25.4	- 6.6
	√ 6508	81.6	17.4	–	60	80	90	70	150	150	+30	+ 10	4880	1020		+ 6.0	+ 2.0

4209 4380 60
37 39

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1999phae.proj.:974L

+(C-a)	-(B-D)
456.0	+1542.1
951.8	4390.0
1362.0	4641.9
2009.2	2406.0
2512.2	2340.0 − 30 = 2310.0
2526.0	3203.5
2589.6	2461.8
2626.2	3119.8 − 30 = 3089.8 + 1 div. = 3149.8
2650.0	2933.6
2748.2	3449.3
2762.0	3167.9
2849.2	3184.0
2940.0 − 30 = 2910.0	3302.0
2938.0	3042.7
2948.2	3383.9
2982.2	3321.9
3096.0	3149.3
3091.8	2958.5
3126.0	3168.1
3194.0	2633.4
3208.0	3202.3
3662.0	3241.6
3818.2	3654.2
3833.6	3700.1
3762.0	5276.0
4405.4	3846.6
4866.0	1019.8 1018.0

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1899phae.proj..974L

D 6980

Measures of positions

h m / 1 10	x	y	East Magn.	A	B	b. D	a+c	B+D	c-a	B-D	x×60	y×60	c-a ×.200	B-D ×.199
Gillis ✓7923	902	41.8	–	110	25	40 125	150	150	-70	-100	5400	2460	-14.0	-19.9
✓8714	942	57.7	–	120	55	31 95	151	150	-89	-40	5640	3420	-17.8	-8.0
✓7980	943	42.8	–	90	120	60 30	150	150	-30	+90	5640	2520	-6.0	+17.9
							451 / 3	450 / 3						

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1899phae.proj.974L

+(C-a)	-(B-D)
5386.0	2479.9
5622.2	3428.0
5634.0	2502.1

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1899phae.proj..974L

~~22.20~~

Remeasures of So. Polar stars.

H.S. Records.

D4847

June 10, 1902.

	x	y	a	B	b.	D	a+c	B+D	C-a	B-D			C-A x199	B-D x199
✓y	51.6	48.6	50	40	101	110	151	150	+51	−70	3060	2880	+10.1	−13.9

D4851

22.20	✓3a	21.2	51.5	135	70	16	81	151	151	−119	−11	1260	3060	−23.7	−2.2
June 10 1902	✓14a	25.6	40.5	55	80	96	71	151	151	+41	+9	1500	2400	+8.2	+1.8
	✓14b	25.6	42.0	50	150	101	02	151	152	+51	+148	1500	2520	+10.1	+29.5
	✓27	31.2	28.2	120	129	30	21	150	151	−90	+107	1860	1680	−17.9	+21.3
	✓32a	32.8	43.7	25	39	126	112	151	151	+101	−93	1920	2580	+20.1	−18.5
	✓32b	32.5	38.0	70	2	80	150	150	152	+10	−148	1920	2280	+2.0	−29.5
	✓40	37.3	24.3	120	105	30	45	150	150	−90	+60	2220	1440	−17.9	+11.9
	✓52	40.9	29.3	2	110	149	40	151	150	+147	+70	2340	1740	+29.3	+13.9
	✓53	40.4	58.6	90	50	61	101	151	151	−29	−51	2400	3480	−5.8	−10.1
Cape	✓17	60.8	21.7	20	30	130	120	150	150	+110	−90	3600	1260	+21.9	−17.9
	✓150	67.6	70.9	50	2	100	89	150	151	+50	−147	4020	4200	+10.0	−29.3
	✓161	69.5	62.4	80	85	70	65	150	150	−10	+20	4140	3720	−2.0	+4.0
J	✓265	78.3	60.4	110	105	40	45	150	150	−70	+60	4680	3600	−13.9	+11.9

~~23.05~~

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1899phae.proj..974L

(C-A) - (B-D)

3070.1 2893.9

1236.3 3062.2

1508.2 2398.2

1510.1 2490.5

1842.1 1658.7

1940.1 2594.5

1922.0 2309.5 — 2309.5 − 60 = 2249.5

2202.1 1428.1

2369.3 1726.1

2394.2 3490.7

3621.9 1277.9

4030.0 4229.3

4138.0 3716.0

4666.1 3588.1

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1899phae.proj..974L

Remeasures of Eros

1899			x	y	A	B	C	D	A+C	B+D	C-a	B-D	x×163	y×163	C-a ×.398	B-D ×.398
Nov. 24	2.30 aff I	10685 D6436	12.2	16.7	175	174	29	31	204	205	-146	+143	1956	2608	-58.1	+56.9
Nov. 25	1:0		12.2	16.8	176	172	29	33	205	205	-147	+139	1956	2608	-58.5	+55.3
Nov. 29	see page 80		12.2	16.7	176	170	30	36	206	206	-146	+134	1956	2608	-58.1	+53.3

													x×163	y×163	C-a ×.397	B-D ×.397
Nov. 24	2.30 aff I	10685 D6437	12.7	16.5	38	100	168	105	206	205	+130	-05	1956	2608	+51.6	-2.0
Nov. 25	1:0	D6437	12.7	16.5	39	100	166	105	205	205	+127	-05	1956	2608	+50.4	-2.0
Nov. 29			12.7	16.5	39	100	166	105	205	205	+127	-05	1956	2608	+50.4	-2.0

see page 86

													x×179	y×179	C-a ×.398	B-D ×.397
Nov. 24	2.30 aff	B16108 D6351	11.9	11.7	220	175	05	50	225	225	-215	+125	1969	1969	-85.6	+49.6
Nov. 25	1:00		12.0	11.7	22.0	173	05	52	225	225	-215	+121	2148	1969	-85.6	+48.0
Nov. 29			12.0	11.7	22.1	172	05	53	226	225	-216	+119	2148	1969	-86.0	+47.2

see Bk. 7, page 84

													x×179	y×179	C-a ×.403	B-D ×.400
Nov. 24	2.30 aff	B16108 D6350	12.5	11.6	36	139	190	86	226	225	+154	+53	2148	1969	+62.1	+21.2
Nov. 25	1:0		12.8	11.6	38	136	186	89	224	225	+148	+47	2148	1969	+59.6	+18.8
Nov. 29	1.0 ~~1.00~~		12.8	11.6	38	137	187	9.0	225	227	+149	+47	2148	1969	+60.0	+18.8

see Bk. 7, p. 80

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1899phae.proj..974L

1897.9 2664.9
1897.5 2663.3
1897.9 2661.3

2007.6 2606.0
2006.4 2606.0
2006.4 2606.0

(1883.4) 2018.6 1883.4+179. 2062.4
2062.4 2017.0
2062.0 2016.2

2210.1 1990.2
2207.6 1987.8
2208.0 1987.8

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1899phae.proj..974L

Remeasures Do. Polar stars.

H.D.S. Ricander

D7042

23.05

June 10, 1902

	x	y	A	B	C	D	A+C	B+D	C-A	B-D	C-A x.199	B-D x.199
✓ 27	30.6	27.8	40	18	110	132	150	150	+70	-114	1800	1620	+13.9	-22.7
✓ 40	36.7	24.0	36	149	114	152	150	301	+78	- 3	2160	1440	+15.5	-0.6
✓ 51	38.6	24.5	41	75	110	75	151	150	+69	00	2280	1440	+13.7	00
✓ 52	39.5	29.0	70	150	80	151	150	301	+10	-1	2340	1740	+2.0	-0.2
✓ 53	39.8	58.4	25	81	125	70	150	151	+100	+11	2340	3480	+19.9	+2.2
2 defect	108													
2 defect	123													
Cafe 17 dbl	60.4	21.5	95	76	55	74	150	150	-40	+2	3600	1260	-8.0	+0.4
2 defect	137													
✓ 150	67.1	70.7	148	30	2	120	150	150	-146	-90	4020	4200	-29.1	-17.9
y remeas. Nov. 21. ✓ 154	68.1	60 ~~61~~.8	145	2.5	5	125	150	150	-140	-100	4080	3660	-27.9	-19.9
2 defect	157													
2 defect	158													
	161	68.~~7~~ 4	9.8	85	20	66	131							
		68.~~7~~	6.~~8~~.3	~~3~~.1	~~11~~6	~~13~~.0	~~34~~	→	151	158	-19	-111	4080	4140	-3.8	-22.1
Defect. J257 =									151	150	+69	+82	4080	3720	+21.7	+16.3
~~Defect.~~	~~166~~	68.6	33.8	50	10	100	140		150	150						
2 defect	163															
2 defect	165															
2 defect	169															
2 defect	179															
2 defect	182															
2 defect?	184															
		7.6	1	50	135	100	15	Plate is defective in this region If star is there - it could not be seen								
J 265		~~8~~.3	60.~~4~~	~~11~~0	~~12~~1	~~4~~0	~~50~~	150	150	+50	+120	4620	3600	+10.0	+23.9	

24.20.

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1899phae.proj..974t

(C-A) - (B-D)

1813.9 1642.7

2175.5 1440.6 — 1440.6 / 30 / 1410.6 ✓

2293.7 1440.0

2342.0 ~~1740.2~~ — 1740.2 / 30 / 1710.2 ✓

2359.7 3477.8

3592.0 1259.6

3990.9 4217.9

4052.1 3689.9

4076.2 4162.1

4101.7 3703.7 right ascen. = J257. retain.

4630.0 3576.1

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1899phae.proj..974L

Additional So. Polar stars which come between red ink lines of circle.

D 7042

Sept. 23, 1902

	x	y	A.	B.	C.	D.	A+6	B+D	C−A	B−D		C−A ×.199	B−D ×.199
Meas p. 158 No 134? ↓ → 1	34.9	23.8	10	21	140	130	150	151	+130	−109	20′40″	13′80″	+25.9	−21.7
↓ 2	63.4	22.9	85	5	65	145	150	150	−20	−140	37′80″	13′20″	−4.0	−27.9
3	78.3	39.0	105	150	46	150	151	300	−59	vv	46′80″	23′40″	−11.7	vv
4	79.3	54.7	115	35	35	116	150	151	−80	−81	47′40″	32′40″	−16.0 (15.9)	−16.1

D 4851

Meas. p 128 No 64? ↓ → 1	35.4	24.2	94	130	57	20	151	150	−37	+110	21′00″	14′40″	−7.4	+21.9
↓ 2	63.9	23.3	14	120	137	31	151	151	+123	+89	37′80″	13′80″	+24.5	+17.7
↓ 3	78.8	39.3	20	115	130	35	150	150	+110	+80	46′80″	23′40″	+21.9	+15.9
↓ 4	79.7	55.0	25	150	126	150	151	300	+101	vv	47′40″	33′00″	+20.1	vv

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~~(C-A)~~ – (B-D)

2065.9 1401.7

3776.0 1347.9

4668.3 2340
−30
2310.0

4724.8 3256.1

2092.6 1418.1

3804.5 1362.3

4701.9 2324.1

4760.1 3300
−30
3270.0

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1899phae.proj..974L

194

D4851

22.50

Remeasures of South Polar Stars

October 27, 1902 H.J.S.

No.	x	y	A.	B.	C.	D.	A+C	B+D	C-A	B-D	C-A x.199	B-D x.199	x x 60	y x 60
✓7.	22.7	38.5	36	79	115	71	151	150	+79	+08	+15.7	+1.6	1320	2280
✓13	24.9	38.8	20	30	131	121	151	151	+111	-91	+22.1	-18.1	1440	2280
very ftn object 32a	32.4	43.5	105	65	46	85	151	150	-59	-20	-11.7	-4.0	1920	2580
✓59	42.8	32.4	31	100	120	51	151	151	+89	+49	+17.7	+9.8	2520	1920
✓118	59.5	75.4	78	99	74	52	152	150	-04	+48	-0.8	+9.6	3540	4500
✓121	59.2	59.7	120	35	30	116	150	151	-90	-81	-17.9	-16.1	3540	3540
✓139	63.7	39.3	40	105	111	45	151	150	+71	+60	+14.1	+11.9	3780	2340
✓154	68.7	62.1	40	146	110	5	150	151	+70	+141	+13.9	+28.1	4080	3720
✓188	75.3	63.1	100	140	51	11	151	151	-49	+129	-9.8	+25.7	4500	3780
✓189	75.5	65.7	86	40	65	111	151	151	-21	-71	-4.2	-14.1	4500	3660
✓190	75.8	62.3	21	116	130	35	151	151	+109	+81	+21.7 +13.4	+16.1	4500	3720
✓197	79.6	46.4	45	85	106	66	151	151	+61	+19	+12.1	+3.8	4740	2760
additional ✓2	63.9	23.3	15	119	136	32	151	151	+121	+87	+24.1	+17.3	3780	1380

23.30

Wrong star mistaken for 7	48.6	51.3	6.5	118	85	35	150	150	+20	+80	+4.0	+15.9	2880	3060

161 69.1 71.1 = 160

184 Defect.

December 21, 1902.

32a	32.8	43.7	25	35	126	115	151	150	+101	-80	+20.1	-15.9	1920.	2580.

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1999phae.proj..974L

+(C-a)	−(B-D)	
1335.7	2278.4	
1462.1	2298.1	
1908.3	2584.0	= W.S. mean for 32a = 32c
2537.7	1910.2	
3539.2	4490.4	
3522.1	3556.1	
3794.1	2328.1	
4093.9	3.691.9	
4490.2	3757.3	
4495.8	3687.1	
4521.7	3703.9	
4752.1	2756.2	
3804.1	1362.7	

Est. reduced
x y
2886.0 3048.0

28840 3044.1

1940.1 2595.9 ~~= 32c~~

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1899phae.proj..974L

D7042

23.30

Re-measures of South Polar Stars.

October 27, 1902 (17.9.8. Rec)

No.	x	y	A.	B.	C.	D.	a+c	B+D	c-a	B-D	c-a ×.199	B-D ×.199	x×60	y×60
✓ 7	22.3	68.3	110	119	41	32	151	151	-89	+87	-13.7	+17.3	1320	2280
✓ 13	24.4	38.5	90	70	61	91	151	161	-29	-21	-5.8	-4.2	1440	2280
	"	"	98	70	61	80	151	150	-29	-10	-5.8	-2.0		
✓ 32a	32.4	43.5	95	71	52	80	150	151	-46	-09	-9.2	-1.8	1920	2580
✓ 59	42.3	32.1	101	140	50	11	151	151	-51	+129	-10.1	+25.7	2520	1920
✓ 118	58.9	75.2	20	120	130	31	150	151	+110	+89	+21.9	+17.7	3480	4500
✓ 121	58.6	59.5	51	68	100	81	151	149	+49	-13	+9.8	-2.6	3480	3540
✓ 139	63.3	39.1	121	148	30	3	151	151	-91	+145	-18.1	+28.9	3780	2340
257=154	58.8	62.2	20	118	131	33	151	151	+111	+85	+22.1	+16.9	4080	3720
188	74.7	62.9	40	20	111	131	151	151	+71	-111	+14.1	-22.1	4440	3720
189	74.8	61.5	25	69	126	82	151	151	+101	-13	+20.1	-2.6	4440	3660
191=~~190~~	75.4	62.2	81	135	70	20	151	155	-11	+115	-2.2	+22.9	4500	3720
24.00 197	79.2	46.2	130	120	21	31	151	151	-109	+89	-21.7	+17.7	4740	2760
additional ✓ 2	63.8	22.9	85	10	66	141	151	151	-19	-131	-3.8	-26.1	3780	1320
190	75.3	62.1	110	145	41	06	151	151	-69	+139	-13.7	+27.7	4500	3720

Wrong star mkd. for 2 Not seen.

161 y should read 70.8.

Nov. 21, 1902.

154 reading for 190 y erroneous = 155.

32c	31.8	43.4	25	108	125	45	150	153	+100	+63	+19.9	+12.5	1860.	2580.
D7042 Dec 3, 1902 32c	31.8	43.4	25	107	125	44	150	151	+100	+63	+19.9	+12.5	1860	2580
D4851 Dec 3, 1902 32c	32.4	43.6	105	65	45	86	150	151	-60	-21	-11.9	-4.2	1920	2580

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x+(C-a)	y-(B-D)	
1306.3	2262.7	
1434.2	~~2284.2~~	2282.2 ass. scale D=81
1434.2	2282.0	
1910.8	2581.8	
2509.9	1894.3	
3501.9	4482.3	
3489.8	3542.6	
3761.9	2311.1	
4102.1	3703.1	
4454.1	3742.1	
4460.1	3662.6	
4497.8	3697.1	
4718.3	2742.3	
3776.2	1346.1	
4486.3	3692.3	
~~4513.7~~	~~3747.7~~	

~~1879.9 2567.5~~

1879.9 2567.5

1908.1 2584.2

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List of 50 Polar Stars having discordant magnitudes. Reestimated.

Dec. 5, 1902

		Magn
D4851		
	3a	15.8
	14a	15.5
	14b	15.8
	32a	16.0
	32b	15.7
	61	10.5
	82	10.8
Cape.	17	8.3
Add.	2	14.8
"	3	15.5
	4	14.5
d	265	10.0
	32c	16.0
D7042		15
	51	15.0
	161	11.0
	61	10.9
	82	10.5
Cape	17	8.0
Add.	2	15.0
	3	15.2
	4	15.0
d	265	9.8
	32c	16.0

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D 4851

J 265 · Magn 10.0

32 c " 16.0

D 7042

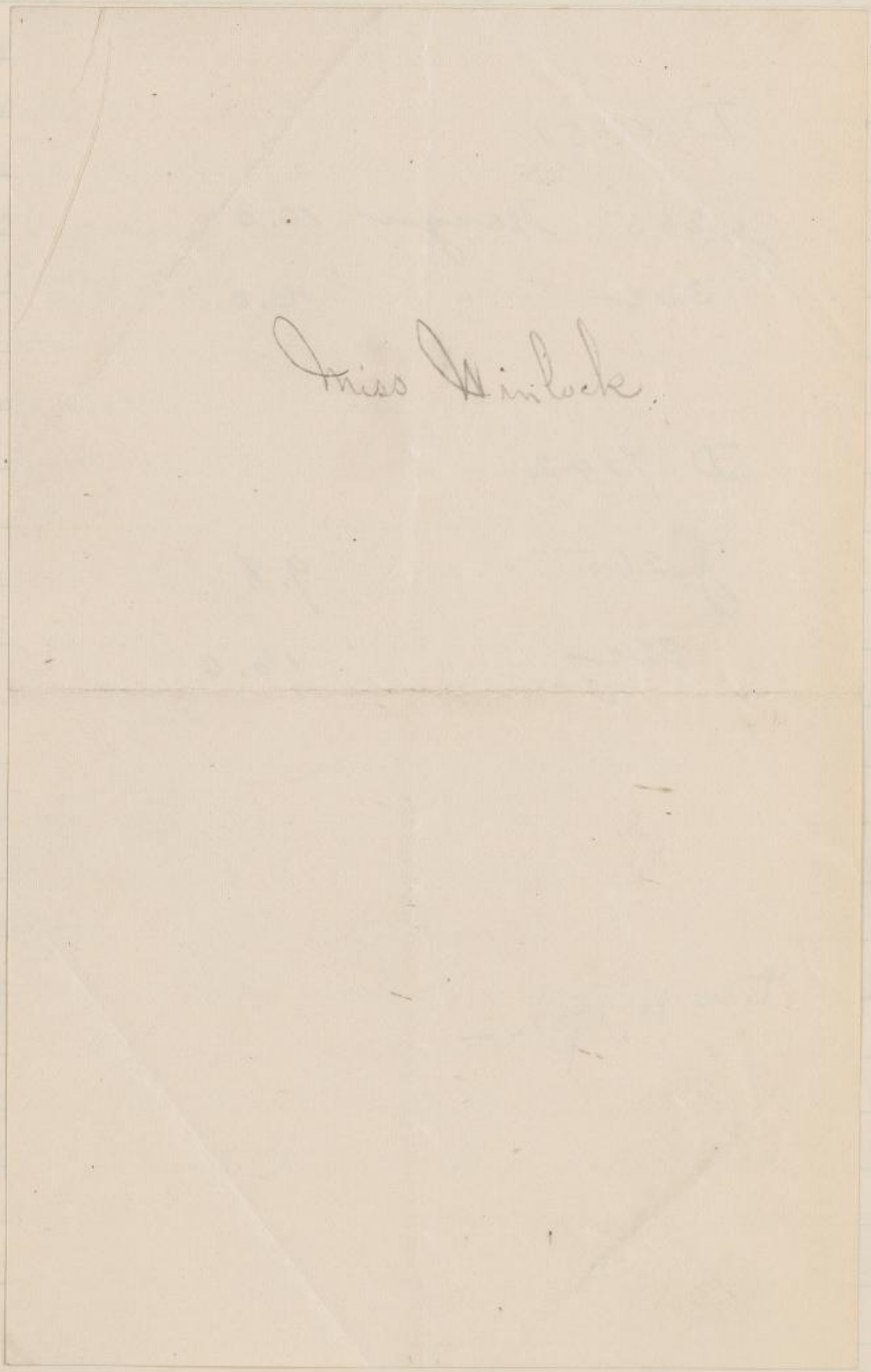
J 265 " 9.8

32 c " 16.0

Dec 10, 1902 —

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200

G13902

6508

D4851

Remeasures of positions of b, c, d, e, f, and t, u, w, x, + y. (South Pole) Plates reversed - film up.

December 23, 1902

		x	y	a	B	C	D	a+b	B+2D	C-a	B-D	x×60	y×60	$\frac{C-a}{x \cdot 1.99}$	$\frac{B-D}{x \cdot 1.99}$	
	b	57.6	60.8	86	15	65	135	151	150-21	-120	3420	3600		-4.2	-23.9	341
	c	35.8	38.5	125	70	25	81	150	151-100	-11	2100	2280		-19.9	-2.2	208
	d	35.6	37.7	90	33	60	120	150	153-30	-87	2100	2220		-6.0	-17.3	209
	e	26.1	35.4	8	101	142	50	150	151+134	+51	1560	2100		+26.7	+10.1	158
	f	50.9	44.4	145	90	5	60	150	150-140	+30	3000	2640		-27.9	+6.0	297
	t	53.7	41.9	100	5	50	146	150	151-50	-141	3180	2460		-10.0	-28.1	317
Hazy	u	55.8	46.9	128	10	23	140	151	150-105	-130	3300	2760		-20.9	-25.9	327
	w	57.4	46.1	55	145	96	5	151	150+41	+140	3420	2760		+8.2	+27.9	342
	x	51.9	46.4	145	95	6	56	151	151+139	+39	3060	2760		-27.7	+7.8	303
3 =	y	50.5	48.6	70	45	80	106	150	151+10	-61	3000	2880		+2.0	-12.1	300

D7042	b	57.1	61.2	5	128	145	22	150	150+140	+106	3420	3660	+27.9		+21.1	340
	c	35.3	38.7 36	36	115	114		151	150+79	-78	2100	2280	+15.7		-15.5	211
	d	35.0	34.0 151	2	150	149	301	151	-01	-147	2100	2280	-0.2		-29.3	(210 209
	e	25.5	35.5 70	69	80	81		150	150+10	-12	1580	2100	+2.0		-2.4	150
	f	50.4	44.6	59	53	91	98	150	151+32	-45	3000	2640	+6.4		-9.0	300
	t	53.1	42.2	15	124	135	26	150	150+120	+98	3180	2520	+23.9		+19.5	320
	u	55.3	47.2	45	125	106	25	151	150+61	+100	3300	2820	+12.1		+19.9	331
	w	57 6 8	46.3	120	110	30	40	150	150-90	+70	3360	2760	-17.9		+13.9	334
	x	51.4	46.6	63	60	87	90	150	150+24	-30	3060	2760	+4.8		-6.0	306
	y	49.9	48.9	140	10	10	140	150	150-130	-130	2940	2880	+25.9		-25.9	296

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Reject.

x (C-a)	y -(B-D)	-(C-A)
3415.8	3623.9	3424.2
2080.1	2282.2	2119.9
2094.0	2237.3	2106.0
1586.7	2089.9	1533.3
2972.1	2634.0	3027.9
3170.0	2488.1 ~~3032.3~~	3190.0
3279.1	2785.9	3320.9
3428.2	2732.1	3411.8
3032.3	2752.2	3087.7
3002.0	2892.1	2998.0

x	y
3447.9	3638.9
2115.7	2295.5
2099.8 (2109.8)	2809.3
1502.0	2102.4
3006.4	2649.0
3203.9	2500.5
3312.1	2800.1
3342.1	2746.1
3064.8	2766.0
2965.9	2905.9

x
y
3392.1
2084.3

2099 24 2109.8 − 30. = 2079.8 = x

2069.8

1498.0
2993.6
3156.1
3287.9
3377.9
3055.2
2965.9

14.1

2100.2 − 30. = 2070.2

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1899phae.proj.0741

Maps mailed

		Estar	δ	2nd ☆	γ
3a	4851	21.2	51.5	15.8	———
14a	4851	25.6	40.5	15.5	———
14b	4851	25.6	42.0	15.8	———
32a	4851	32.8	43.7	16.0	———
32b	4851	32.5	38.0	15.7	———
51	———			7042 (15.0)	38.6 24.5
161	———			7042 (11.0)	68.4 62.3
61	4851 (10.5)	42.8	71.6	7042 (10.9)	42.3 71.4
82	4851 (10.8)	47.7	20.6	7042 (10.5)	47.4 20.3
Cape 17	4851 (8.3)	60.8	21.7	7042 (8.0)	60.4 21.5
Add 2	4851 (14.8)	63.9	23.3	7042 (15.0)	63.4 22.9
3	4851 (15.5)	78.8	39.3	7042 (15.2)	78.3 39.0
4	4851	79.7	55.0	7042 (15.0)	79.3 54.7

Nov 26 1902

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1998phae.proj..974L

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