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Vol. VI

Positions
of
Nebulae.

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A7457 No. 37. March 3, 1909.

					1900 fm.				
a = −51 11467	20 14 53.4	−51 33.4	+ 12.5	=	20	15	5.9	−19.3	= −51 52.6
b = −52 11683	20 15 22.1	−52 18.9	− 15.8	=	20	15	6.3	+26.5	= −51 52.4
c = −52 11681	20 14 52.4	−52 7.4			20	15	6.1		−51 52.6
	x								
	c − a = −1.0				−0.4	+0.4		−0.1	+0.1
c00 − 52.1 / 2	.307								
	−0.3								

	x	y	x	y
a	65.0	106.5	70.0	115.1
b	73.6	15.9	78.6	24.6
η	68.8	68.3	73.8	77.0
	x	x	y	y
	η − a + 3.8	η − b − 4.8	η − a − 38.2	η − b + 52.4
	+ 3.8	− 4.8	− 38.1	+ 52.4
	+ 3.8	− 4.8	− 38.15	+ 52.4
	+ 3.84	− 4.85	− 38.53	+ 52.92
	÷ .308	÷ .308	− 19.26	+ 26.46
	+ 12.5	− 15.8		
	✓	✓		

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For new meas. see Bk. 10, pg 211.

A7451 No. 38 March 3, 4, 1909.

							1900 prs.	20	5	20.6	- 51 52.1
a =	- 51	11429	20	0	32.4	- 51	43.7	+ 175.1 (3.3) x =	20	3	27.5 (5.7) - 13.5 (4) =	- 51	57.1 (2)
b =	- 52	11659	20	8	20.2	- 52	17.7	- 292.0 (89.1) a =	20	3	38.7 (31.1) + 21.9 (7) =	- 51	55.8 (6.0)
c =	- 52	11458	20	8 (90)	12.8 (2.0)	- 52	33.0 (28.1)		20	3	27.8 (8.4)	- 51	56.5 (6)
				x			Mean prs.	20	3	27.4	- 51	56.7
				c - a = - 19.6					- 2.7	+ 2.7		+ 0.5	- 0.6
cos - 52.5 / 2				.304					- 1.7	+ 3.7		+ 04	- 07
				- 6.0									

	x	y	x	y
a	30.0	105.7	35.0	114.1
b	172.4	35.5	177.5	44.1
η	83.4	78.9	88.4	87.5

x	x	y	y
η - a + 53.4	η - b - 89.0	η - a - 26.8	η - b + 43.4
+ 53.4	- 89.1	- 26.6	+ 43.4
+ 53.4	- 89.05	- 26.7	+ 43.4
+ 53.93	- 89.94	- 26.97	+ 43.83
÷ .308	÷ .308	- 13.48	+ 21.92
+ 175.1	- 292.0		
√	√		

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For new meas. see Bf. 10, pg 212.

A 7451 No. 39 March 3d, 4th, 1909.

						1900 fno.	20	5	9.0	−51	50.7
a =	−51	11429	20	0	32.4	−51	43.7	+ 16	= 20 3 15.4	− 11.7	= −51 55.4
b =	−52	11659	20	8	20.2	−52	17.7	− 30	= 20 3 16.4	+ 13.7	= −51 54.2
c =	−51	11455	20	0	17.8	−52	33.0		20 3 16.0		−51 54.8
								Mean fno.	20 3	15.8	−51 55.0
									− 2.5	+2.6	+0.5 −0.6
									−17	36	03 −08

x

c − a = − 19.6

.304

− 6.0

c00 − 52.5 / 2

	x	y	x	y
a	30.0	105.7	35.0	114.1
b	172.4	35.5	177.5	44.1
η	79.8	82.4	84.8	91.0

x	x	y	y
η − a	+ 49.8	η − b	− 92.6
	+ 49.8		− 92.7
	+ 49.8		− 92.65
	+ 50.30		− 93.58
	÷ .308		÷ .308
	+ 163.3		− 303.8

x	x	y	y
η − a	− 23.3	η − b	+ 46.9
	− 23.1		+ 46.9
	− 23.2		+ 4.69
	− 23.43		+ 47.37
	− 11.72		+ 23.685

Large motion in dec: Heb. + for 38.
probably due to some combination of i.e.
slight error - some check nos. wd. mention.
the star 11659 is distant from the rich.

Look out for faster motion.

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A 7451 No. 40 March 4, 1909.

					1900 fm.	20 22 30.7	-52 2.9
a	-52 11696	20 19 44.3	-52	1.9	+ 55.1 =	20 20 38.8	-6.0 = -52 7.9
b	-52 11701	20 20 58.5	-52	9.6	-19.8 =	20 20 38.8	+1.9 = -52 7.7
c	-51 11495	20 20 48.3	-51	2.4		20 20 38.9	-52 7.8

x

c - b = -10.2

-0.1 +0.1 +0.1 -0.1

C00 - 51.0 = 315

-3.2

	x	y	x	y
a	45.0	27.3	27.3	37.8
b	45.0	11.5	50.0	21.9
η	39.0	15.3	44.0	25.7

	x	x	y	y
η-a	+16.8	-6.0	-12.0	+3.8
η-b	+16.7	-6.0	-12.1	+3.8
	+16.75	-6.0	-12.05	+3.8
	+16.92	-6.06	-12.17	+3.84
	÷.307	÷.307	-6.08	+1.92
	+55.1	-19.78		
	✓	✓		

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A 7451 No. 41 March 4, 1909.

							1900 jun.	20	20	56.6	−52	10.3
a =	−52 11688	20	17	20.0	−52	20.0	+ 105.6	= 20	19	51.2	+4.9	= −52	15.1
b =	−52 11698	20	20	28.0	−52	10.7	− 84.2	= 20	19	3.8	−4.4	= −52	15.1
c =	−51 11476	20	17	16.6	−51	24.4			20	19	4.7		−52 15.1

$c - a = -3.4$

$\frac{c_{00} - 51.4}{2}$

.312

− 1.1

−0.1 0.0 0.0 0.0

	x	y	x	y
a	30.0	25.0	35.0	36.4
b	87.5	43.4	92.5	54.8
η	62.0	34.7	68.0	46.0

x	x	y	y
$\eta - a$ +32.0	$\eta - b$ −25.5	$\eta - a$ + 9.7	$\eta - b$ − 8.7
+32.0	−25.5	+ 9.6	− 8.8
+32.0	− 25.5	+ 9.65	− 8.75
+32.32	− 25.76	+ 9.75	− 8.84
÷ .306	÷ .306	+ 4.88	− 4.42
+105.6	− 84.2		

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1909phae.proj.2299B

A 7451 No. 42 March 4, 1909.

						1900 prec.	20	20	41.6	−52	1.1	
a =	−52	11687	20	17	14.1	−52	11.3	+ 97.1	= 20	18	52.2	+ 5.5 = −52 5.8
b =	−52	11697	20	20	32.5	−52	0.2	− 93.9	= 20	18	48.8	− 5.8 = −52 5.9
c =	−51	11473	20	16	43.6	−51	7.0		20	18	49.8	−52 5.9
					×							
			c − a =		−30.5				+ 0.4		− 0.3	0.0 0.0
C_{00} = −51.1					.314							
					− 9.5							

	x	y	x	y
a	30.0	40.0	35.0	48.5
b	88.1	62.5	93.0	70.9
η	59.5	50.9	64.5	59.4
	4	×	y	y
	η − a + 29.5	m − b − 28.6	n − a + 10.9	m − b − 19.6
	+ 29.5	− 28.5	+ 10.9	− 11.5
	+ 29.5	− 28.55	+ 10.9	− 11.55
	+ 29.80	− 28.84	+ 11.01	− 11.67
	÷ .307	÷ .307	+ 5.50	− 5.84
	+ 97.1	− 93.9		
	√	√		

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1909phaeq.proj.2299B

A 7451 No. 43 March 4, 1909.

							1900 fro.	20	20	6.8	−51	59.0	
a = −52 11681	20	14	52.4	−52	7.4	+ 20 4.0	=	20	18	18.4	+ 3.2	= −52	4.2
b = −52 11696	20	19	44.3	−52	1.9	− 90.2	=	20	18	14.3	− 1.5	= −52	3.4
c = −51 11465	20	14	35.2	−51	14.1			20	18	15.8		−52	3.8
		x											
	c − a = −17.2							−0.4	+0.3			+0.4	−0.4
Cor −51.2 / 2	.313												
	−5.4												

	x	y	x	y
a	40.0	11.5	45.0	17.0
b	129.4	20.9	134.4	26.7
n	102.0	17.9	107.0	23.6

x	x	y	y
n − a + 62.0	n − b − 27.4	n − a + 6.4	n − b − 3.0
+ 62.0	− 27.4	+ 6.4	− 3.1
+ 62.0	− 27.4	+ 6.4	− 3.05
+ 62.62	− 27.67	+ 6.46	− 3.08
÷ .307	÷ .307	+ 3.23	− 1.54
+ 204.0	− 90.2		
✓	✓		

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A 7451 No. 44 March 4, 1909

							1900 prec.	20	20	9.8	−52	8.0	
a =	−52	11688	20	17	30.0	−52	20.0	+ 58.3	= 20	18	18.3	+ 7.8	= −52 12.9
b =	−52	11696	20	19	44.3	−52	1.9	− 87.6	= 20	18	16.7	− 10.9	= −52 12.8
c =	−52	11476	20	17	16.6	−51	24.4			20	18	17.5	−52 12.8

c − a = − 3.4

− 3.12

− 1.1

+0.1 0.0 +0.2 −0.1

C₀₀ − 51.4

	x	y	x	y
a	60.0	6.7	650	12.0
b	104.2	42.4	108.2	47.8
n	77.6	20.4	82.7	26.2

x	x	y	y
n − a + 17.6	n − b − 26.6	n − a + 14.0	n − b − 21.7
+ 17.7	− 26.5	+ 14.2	− 21.6
+ 17.65	− 26.55	+ 14.1	− 21.65
+ 17.83	− 26.81	+ 14.24	− 21.87
÷ .306	÷ .306	+ 7.12	− 10.94
+ 58.3	− 87.6		
✓	✓		

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1909phae.proj.2299B

A7451 No. 45 March 4, 1909.

							1900 Jno.	20	18	54.5	−52	0.4
a =	−52	11684	20	15	39.6	−52	13.5	+82.6	= 20	17	1.2 + 8.4	= −52 5.2
b =	−51	11484	20	18	38.6	−51	54.7	−97.1	= 20	17	1.5 − 10.8	= −52 5.3
c =	−51	11469	20	15	29.9	−51	7.9		20	17	1.8	−52 5.2
					x							
			c − a = −9.7								−0.6 +0.5	0.0 0.0
c00 − 51.1 / 2					314							
					−3.0							

	x	y	x	y
a	20.0	19.6	25.0	27.0
b	74.6	57.1	79.6	64.7
η	45.1	36.1	50.1	43.7
	x	x	y	y
	η − a + 25.1	η − b − 29.5	η − a + 16.5	η − b − 21.0
	+ 25.1	− 29.5	+ 16.7	− 21.0
	+ 25.1	− 29.5	+ 16.6	− 21.0
	+ 25.35	− 29.80	+ 16.47	− 21.21
	÷ .307	÷ .307	+ 8.395	− 10.60
	+ 82.6	− 97.1		
	∫	∨		

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1909phae.proj.2299B

A 7451 No. 46 March 4, 1909.

						1900 fnn.	20	14	43.2	-52 1.6
a = -52	11668	20	10	43.2	-52	2.7	+127.6	- 20 12	49.5 50.8	- 3.4 = -52 6.1
b = -52	11680	20	14	44.9	-52	10.2	+114.8	- 20 12	50.1	+ 3.9 = -52 6.3
c = -51	11467	20	14	53.4	-51	33.4			20 12 50.4	-52 6.2
				x						
		c-b =		+ 8.5					-0.9 +0.9	-0.1 +0.1

cos -51.5 / 2

.311

+ 2.6

	x	y	x	y
a	46.3	25.5	51.3	34.8
b	120.0	11.0	125.0	20.5
η	85.1	18.8	90.1	28.0

x	x	y	y
η-a +38.8	η-b - 34.9	η-a - 6.7	η-b + 7.8
+ 38.8	- 34.9	- 6.8	+ 7.8
+ 38.8	- 34.9	- 6.75	+ 7.7
+ 39.19	- 35.25	- 6.82	+ 7.78
÷ .307	÷ .307	- 3.41	+ 3.89
+ 127.6	- 114.8		
√	√		

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1909phae.proj.2299B

A 7451 No. 47 March 4, 1909

						1900 fm.	20	14	32.7	−52	6.8
a = −52 11669	20	10	49.4	−52	13.6	+ 111.4 (0.3)	= 20	12	40.8 (39.7)	+ 2.4	= −52	11.2
b = −52 11681	20	14	52.4	−52	7.4	− 134.0 (2.7)	= 20	12	38.4 (9.7)	− 4.1	= −52	11.5
c = −51 11467	20	14	53.4	−51	33.4			20	12 39.6 (7)		−52	11.4
									0.0	0.0	−0.2	+0.1

$\frac{C_{00} - 51.5}{2}$

x

e − b = + 1.0

· 311

+ 0.3

	x	y	x	y
a	25.7	17.3	30.6	25.7
b	100.0	30.0	105.0	38.5
η	59.4	23.0	64.4	30.4

x		x		y		y	
η − a	+ 33.7	η − b	− 40.6	η − a	+ 4.7	η − b	− 8.0
	+ 33.8		− 40.6		+ 4.7		− 8.1
	+ 33.75		− 40.6		+ 4.7		− 8.05
	+ 34.09		− 41.01		+ 4.75		− 8.13
	÷ .306		÷ .306		+ 2.38		− 4.06
	+ 111.4		− 134.0				
	√		√				

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1909phae.proj.2299B

A 7451 No. 48 March 4, 1909

1900 jan. 20 12 55.7 - 52 6.1

a = -51	11453	20	9	21.0	-51	53.8	+102.0	= 20	11	3.0	-17.1	= -52	10.9
b = -52	11675	20	12	29.9	-52	26.1	-120.8	= 20	11	1.7	+15.8	= -52	10.5
c = -51	11461	20	12	40.0	-51	22.7			20	11	2.4		-52	10.7
				x									
				c-b = +10.1							-0.5 +0.5		0.0 0.0

Cor -51.4

.312

+3.2

	x	y	x	y
a	12.5	75.2	17.5	83.6
b	70.0	10.5	75.0	19.1
η	48.4	41.3	48.4	49.9

x	x	y	y
η-a +30.9	η-b -36.6	η-a -33.9	η-b +38.8
+30.9	-36.6	-33.7	+30.8
+30.9	-36.6	-33.8	+30.8
+31.21	-36.87	-34.14	+31.11
÷.306	÷.306	-17.07	+15.56
+102.0	-120.8		
	87.8		

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1909phae.proj.2299B

A7451 No. 49 March 5, 1909.

									1900 fm.	20	31	23.7	− 52	29.5
a =	−52 11723	20	28	19.7	− 52	25.4	+ 73.1	=	20	29	32.8	− 9.2	= − 52	16.2
b =	−52 11731	20	30	9.5	− 52	42.3	− 37.5	=	20	29	32.0	+ 7.8	= − 52	34.5
c =	−53 9919	20	28	36.0	− 53	10.2			20	29	32.4		− 52	34.6
				×										
				$c-a$ =	+ 16.3						−0.1	+0.2		−0.1 0.0
$\frac{c_{00}-53.2}{2}$					.300									
					+ 4.9									

	x	y	x	y
a	30.0	124.5	35.0	140.0
b	63.3	90.6	68.3	105.3
η	52.0	106.1	57.0	121.8

	x	x	y	y
	$\eta-a$ +22.0	$\eta-b$ − 11.3	$\eta-a$ − 18.4	$\eta-b$ + 15.5
	+22.0	− 11.3	− 18.3	+ 15.5
	+22.0	−11.3	− 18.3	+ 15.5
	+22.22	−11.41	− 18.48	+ 15.66
	÷ .304	÷ .304	− 9.24	+ 7.83
	+73.1	− 37.5		
	✓	✓		

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1909phae.proj.2299B

Atlas No. 50 March 5, 1909.

								1900 prec.	20	30	57.8	-52	27.5	
a =	-52	11723	20	38	19.7	-52	25.4	+47.4 =	20	29	6.5 X	-7.1 =	-52	32.6
b =	-52	11731	20	30	9.5	-52	42.3	-63.3 =	20	29	6.8 X	+9.8 =	-52	32.5
c =	-53	9919	20	38	36.0	-53	10.2		20	29	6.6		-52	32.6
					x									
					c-a = +16.3						-0.1	+0.2	-0.1	0.0
Corr -53.1					-300									
					+4.9									

	x	y	x	y
a	30.0	124.5	35.0	140.0
b	63.3	90.6	68.3	105.3
n	44.2	110.1	48.3	125.8
	x	x	y	y
n-a	+14.2	n-b -19.1	n-a -14.4	n-b +19.5
	+14.3	-19.0	-14.2	+19.5
	+14.25	-19.05	-14.3	+19.5
	+14.39	-19.24	-14.44	+19.70
	÷.304	÷.304	-7.22	+9.85
	+47.4	-63.3		
	✓	✓		

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1909phae.proj.2299B

A 7451 No. 51 March 5, 1909.

						1900 fm.	20	26	42.8	− 52 28.6
a = − 52 11 7^{0}_{8}	20	24	36.2	− 52	43.7	+ 15.5	= 20	24	51.7	+ 10.1 = − 52 33.7
b = − 52 11 7 3	20	25	3.2	− 52	26.2	− 12.8	= 20	24	50.4	− 7.5 = − 52 33.6
c = − 51 11 50 7	20	24	8.6	− 51	42.3			20	24 51.0	− 52 33.6

x

$c - a = -27.6$

Cos − 51.7 / Σ

-310

-8.6

+0.5 −0.5 +0.1 0.0

	x	y	x	y
a	35.0	21.5	40.0	27.0
b	43.5	55.4	48.5	61.9
n	39.6	41.5	44.7	47.1
	x	x	y	y
	$n-a$ + 4.6	$n-b$ − 3.9	$n-a$ + 20.0	$n-b$ − 14.9
	+ 4.7	− 3.8	+ 20.1	− 14.8
	+ 4.65	− 3.85	+ 20.05	− 14.85
	+ 4.70	− 3.89	+ 20.25	− 15.00
	÷ .304	÷ .304	+ 10.12	− 7.50
	+ 15.5	− 12.8		
	✓	✓		

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1909phae.proj.2299B

see page 23 for better results..
" 18 J. 2 pg. 9 for 1st meas. this net.

A 8514 No. 24 March 5, 1909

a = −45	10180	21	33	26.4	− 45	17.3	+ 59.4	= 21	34	35.8	− 4.1	= −45	21.4		
b = −45	10195	21	37	59.9	− 45	36.8	− 22.4	= 21	34	19.5	+ 1.0	= −45	22.8		
c = −44	10093	21	38	15.7	−44	35.9			21	34	22.8		−45	22.2	
				x											
		c − b = + 15.8								+ 1.8	− 1.7		− 0.8	+ 0.7	
c₀₀ − 44.4 / 2				.357											
				+ 5.6											

	x	y	x	y
a	7.8	43.5	12.7	47.0
b	105.0	7.7	110.0	11.1
η	78.4	35.3	33.4	39.8

	x	x	y	y
	η−a + 20.6	η−b − 76.6	η−a − 8.2	η−b + 27.6
	+ 20.7	− 76.6	− 8.1	+ 27.8
	+ 20.65	− 76.6	− 8.15	+ 27.7
	+ 20.85	− 77.37	− 8.23	+ 27.98
	÷ .357	÷ .357	− 4.12	+ 13.99
	+ 59.4	− 220.4		
	✓	✓		

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1909phae.proj.2299B

see Bk. 2 – page 109 for note on this neb.

A 8288 8514 No. 1 March 6, 1909

				1900 pos	14 39 51.6	+ 2 22.4	
a = + 2 7852	14	34	14.6	+ 2	28.3 + 20.2	= 14 37 38.8 + 6.3	= + 2 34.5
b = + 2 7865	14	40	6.3	+ 2	39.8 − 15.8	= 14 37 34.7 − 4.5	= + 2 35.3
c = + 1 2980	14	39	39.6	+ 1	59.8	14 37 35.5	+ 2 34.9
		x			mean pos	14 37 34.8	+ 2 34.3
		c − b = − 26.7				− 0.4 + 0.5	− 0.4 + 0.4
cos + 2.0 / 2		· 500				(0.0 + 0.9)	(+ 0.2 + 1.0)
		− 13.4					

	x	y	x	y
a	4.6	79.8	9.6	88.6
b	180.0	101.3	185.0	109.9
η	104.7	92.4	109.7	101.0

	x	x	y	y
η − a	+ 100.1 m − b	− 75.3 m − a	+ 12.6 m − b	− 8.9
	+ 100.1	− 75.3	+ 12.4	− 8.9
	+ 100.1	− 75.3	+ 12.5	− 8.9
	+ 101.10	− 75.05	+ 12.62	− 8.99
	÷ .500	÷ .500	+ 6.31	− 4.495
	+ 202.2	− 150.1		
	✓	✓		

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1909phae.proj.2299B

see page 110. Bl. 2 for note on this net.

A 8288 No. 2 March 6, 1909.

1900 for 14 38 45.3 +2 20.9

a	+2	2852	14	34	14.6	+2	28.3	+135.X	= 14 36 29.X	+ 4.8 = +2 33.1
b	+2	2865	14	40	6.8	+2	39.8	−219.3	= 14 36 27.0	− 6.0 = +2 33.8
c	+1	2980	14	39	39.6	+1	59.8		14 36 28.4	+2 33.4

mean for 14 36 28.5 +2 33.6

−0.5 +0.4 −0.4 +0.4

(−0.2 +0.7) (+0.5 +0.3)

x

c − b = − 26.7

.500

− 13.4

c00 + 2.0 / 2

	x	y	x	y
a	4.5	88.8	9.6	82.2
b	180.0	110.1	185.0	103.6
n	71.4	98.3	76.5	91.8
	x	x	y	y
	n−a + 66.9	n−b −108.6	n−a + 9.5	n−b − 11.8
	+ 66.9	−108.5	+ 9.6	− 11.8
	+ 66.9	− 108.55	+ 9.55	− 11.8
	+ 67.57	− 109.63	+ 9.65	− 11.92
	÷ .500	÷ .500	+ 4.82	− 5.96
	+ 135.1	− 219.3		

✓ ✓

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1909phae.proj.2299B

see note at original meas. — B52 – page 160 —

A 8788 No. 50 March 6, 1909.

1900 for 14 41 1.4 +0 11.5

a = −0 2869	14 38 2.9	−0	0.1	+41.7	= 14 38 44.6	+ 24.1 = +0 28.0
b = +0 3236	14 39 8.6	+0	37.6	−25.5	= 14 38 43.4	− 15.4 = +0 22.2
c = +0 3237	14 39 10.0	+0	2.9		14 38 43.8	+0 23.1
	x				mean for 14 38 43.2	+0 23.1
	c − b = + 1.4				+0.4 −0.4	+0.7 −0.7
c₀₀ + 0.0 / 2	.500				(+1.0 +0.2)	(+0.7 −0.7)
	+0.7					

	x	y	x	y
a	21.7	31.8	26.8	43.1
b	55.0	110.1	60.0	121.5
n	42.4	79.6	47.4	90.9

x	x	y	y
n − a + 20.7	n − b − 12.6	n − a + 47.8	n − b − 30.5
+ 20.6	− 12.6	+ 47.8	− 30.6
+ 20.65	− 12.6	+ 47.8	− 30.55
+ 20.86	− 12.73	+ 48.28	− 30.85
÷ .500	÷ .500	+ 24.14	− 15.42
+ 41.7	− 25.5		

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1909phae.proj.2299B

See Bk. 2, page 171 for note on this net.

A 8788 No. 64 March 6, 1909.

					1900 pos	14	25	55.5	−0	28.2
a	= −0	2833	14	23	27.9	− 0	46.4	+ 10.3	= 14	23	37.6	+ 29.9	= −0	16.5
b	= +0	3919	14	23	45.7	+ 0	25.9	− 10.3	= 14	23	35.4	− 4.2	= −0	15.3
c	= +0	3915	14	23	12.8	+ 0	8.0		14	23	36.5		−0	15.9
								mean pos	14	23	37.3		−0	16.0
									+1.0	−1.0			+1.0	−0.9
									(+0.2	−1.8)			(+0.8	−1.1)

c − a = − 14.5

cos +0.1 / 2

.500

− 7.2

	x	y	x	y
a	30.0	5.5	35.0	13.0
b	40.2	146.3	45.2	153.7
η	35.1	64.7	40.1	72.2

	x	x	y	y
η − a	+5.1	− 5.1	+59.2	− 81.6
η − b	+5.1	− 5.1	+59.2	− 81.5
	+5.15	− 5.15	+59.79	− 82.37
	÷ .500	÷ .500	+29.895	− 41.185
	+10.3	− 10.3		

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1909phae.proj.2299B

A 8288 No. 69 March 6, 1909.

1900 pos 14 50 52.4 −0 58.8

a = −1 2997	14 47 47.2	−1	32.0	+46.6	= 14 48 33.8	+40.7 = −0 48.3
b = −0 2903	14 49 35.5	−0	12.1	−62.6	= 14 48 32.9	−35.3 = −0 47.6
c = −0 2901	14 48 2.6	−0	11.5		14 48 33.4	−0 47.6

x

c − a = + 15.4

Cor −0.2

.500

+ 7.7

−0.1 +0.2 +0.7 −0.6

		x	y	x	y
	a	40.0	7.0	45.0	14.3
	b	94.1	164.0	99.0	171.3
	η	63.1	94.3	68.0	101.5
−0 2902	c	50.4	86.7	55.3	94.0
	Δ	x	x	y	y
		n−a, + 23.1	n−b, − 31.0	n−a, + 87.3	n−b, = 69.9
		+ 23.0	− 31.0	+ 87.2	− 69.8
		+ 23.05	− 31.0	+ 87.25	− 69.85
		+ 23.18	− 31.31	+ 88.12	− 70.55
		÷ .500	÷ .500	+ 44.06	− 35.28
		+ 46.6	− 62.6		

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1909phae.proj.2299B

see Bf. 2 pag. 176 for note on this neb.

A8288 No. 70 March 6, 1909.

							1900 pos	14	42	18.5	− 1	12.8	
a	− 0	2879	14	39	44.4	− 0	52.1	+ 54.8	= 14	39	59.2	− 9.9	= − 1	22.0
b	− 1	2989	14	41	56.9	− 1	24.5	− 118.0	= 14	39	58.9	+ 23.1	= − 1	1.4
c	+ 0	3237	14	39	36.9	+ 0	2.9			14	39	59.0	− 1	11.7
			x				mean pos		14	39	59.8	− 1	11.2
			c − a = + 5.6						− 0.8	+ 0.7		+ 0.1	− 0.5	
									(− 0.9	+ 0.6)		(+ 0.7	+ 0.4)	

cos +0.0 / 1

.500

+ 2.8

	x	y	x	y
a	20.0	70.1	25.0	75.5
b	105.5	4.7	110.6	10.1
η	47.2	50.5	52.1	55.9

x	x	y	y
η − a + 27.2	η − b − 58.3	η − a ∓ 19.6	η − b + 45.8
+ 27.1	− 58.5	∓ 19.4	+ 45.8
+ 27.15	− 58.4	− 19.6	+ 45.8
+ 27.42	− 58.98	− 19.80	+ 46.26
÷ .500	÷ .500	− 9.90	+ 23.13
+ 54.8	− 117.0		

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1909phae.proj.2299B

see B[illegible] 3 pg. 90 for 1st meas. of this nebula

A 8514 No. 24 March 5. 1909.

object is quite faint and close to edge of plate

a	-45	10180	21	33	26.4	-45	17.3	+59.4	= 21 34 25.8	-4.1	= -45 21.4
b	-45	10195	21	37	59.9	-45	36.8	-318.8	= 21 34 21.1	+14.6	= -45 22.2
c	-44	10092	21	37	42.7	-44	42.7		21 34 23.4		-45 21.8

x

c - b = -17.2

.350

-6.0

$\frac{c_{00} - 44.7}{2}$

+1.0 −0.9 −0.5 +0.5

	x	y	x	y
a	8.3	69.3	13.3	72.5
b	105.0	30.1	110.0	35.5
η	28.9	59.0	34.0	64.4

x	x	y	y
η-a	+20.6	η-b	-76.1	η-a	-8.3	η-b	+28.9
	+20.7		-76.0		-8.1		+28.9
	+20.65		-76.05		-8.2		+28.9
	+20.86		-76.81		-8.28		+29.19
	÷ .351		÷ .351		-4.14		+14.595
	+59.4		-218.8				
	✓		✓				

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1909phae.proj.2299B

see B[illegible] 2 pg. 5 for original meas. of this neb.

A 8257 No. 5 March 6, 1909.

				1900 pos	11 57 34.9	+2 32.6	
a = +3 2588	11 54 3.6	+3	10.2	+75.2	= 11 55 18.8	−23.3	= +2 48.9
b = +2 2509	11 56 48.5	+2	16.6	−93.8	= 11 55 14.7	+30.8	= +2 47.4
c = +2 2510	11 57 6.5	+2	47.5		11 55 16.8		+2 47.2
	x			mean pos	11 55 16.7		+2 47.6
	c − b = +18.0				+1.2 −1.2		0.0 0.0
cos +2.8	.499				(+1.3 −1.1)		(−0.5 −0.5)
	+9.0						

	x	y	x	y
a	51.5	120.9	56.5	126.5
b	135.0	14.0	140.0	19.4
n	88.7	74.9	93.6	80.3

x	x	y	y
n−a +37.2	n−b −46.3	n−a −46.0	n−b +60.9
+37.1	−46.4	−46.2	+60.9
+37.15	−46.35	−46.1	+60.9
+37.52	−46.81	−46.56	+61.51
÷ .499	÷ .499	−23.28	+30.76
+75.2	−93.8		

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1909phae.proj.2299B

See B1 § 2 pg. 27 for original meas. of this net.

A 8257 No. 31 March 8, 1909

					1900 pos	11 54 42.4	+1	43.3
a = +1 2633	11 50 47.7	+1	40.6	+96.4	=	11 52 24.1	+178	= +1 58.4
b = +2 2507	11 55 9.0	+2	26.9	−167.2	=	11 52 23.8	−28.8	= +1 58.6
c = +2 2497	11 50 57.1	+2	13.8			11 52 23.0		+1 58.1
					mean pos	11 52 24.2	+1	58.3
						−0.2 +0.2		−0.5 +0.5
						(−1.1 −0.7)		(−0.1 +0.9)

$\frac{\cos +2.2}{2}$ · .500

c − a = + 9.4

+ 4.7

	x	y	x	y
a	40.0	10.1	45.0	18.5
b	170.4	100.8	175.5	109.4
n	87.6	45.4	93.8	53.7

	x	x	y	y
	n − a + 47.6	n − b − 82.8	n − a + 35.3	n − b − 55.4
	+ 47.8	− 82.7	+ 35.2	− 55.4
	+ 47.7	− 82.75	+ 35.25	− 55.5
	+ 48.18	− 83.58	+ 35.50	− 56.06
	÷ .500	÷ 500	+ 17.75	− 28.03
	+ 96.4	− 167.2		

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1909phae.proj.2299B

See Bk 2 pg. 28 for original meas. of this net.

A 8257 No. 32 March 8, 1909.

1900 pos 11 54 39.0 +1 40.2

a = +1 2633	11 50 47.5	+1	40.6	+93.2	= 11 52 20.8	+14.7	= +1	55.8
b = +2 2507	11 55 9.0	+2	26.9	−170.4	= 11 52 18.6	−3.8	= +1	55.8
c = +2 2497	11 50 57.1	+2	13.8		11 52 19.7		+1	55.6

mean pos 11 52 20.8 +1 55.2

−0.2 +0.2 −0.5 +0.5

(−0.9 −0.5) (−0.1 +0.9)

x

c − a = + 9.4

cos +2.2

.500

+4.7

	x	y	x	y
a	40.0	10.1	45.0	18.5
b	107.4	100.8	175.5	109.4
n	86.1	39.2	91.1	47.7

x	x	y	y
n − a + 46.1	n − b − 84.3	n − a + 29.1	n − b − 61.6
+46.1	−84.4	+29.2	−61.6
+46.1	−84.35	+29.15	−61.6
+46.56	−85.19	+29.44	−62.22
÷.500	÷.500	+14.72	−31.11
+93.1	−170.4		

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1909phae.proj.2299B

see Bk. 2 pg. 36 for original mean of this net.

A 8254 No. 41 March 8, 1909.

						1900 pos	11	52	14.9	+ 1	1.9
a = + 1	2626	11	46	43.0	+ 1	46.6	+ 194.7	= 11	49	57.7	− 39.8 X	= + 1	16.5	8
b = + 0	2874	11	52	6.8	+ 0	57.1	− 130.7 X	= 11	49	58.4 X	+ 19.7 X	= + 1	16.8	5
c = + 1	7625	11	46	38.6	+ 1	6.8			11	49	56.9		+ 1	16.6
				x				mean pos	11	49	56.7		+ 1	16.9
				c − a = − 4.4						− 0.9	+ 0.8		+ 0.1	− 0.1
Cos + 1.1				.500						(− 1.0	+ 0.7)		(− 0.1	∓ 0.3)
				− 2.2										

	x	y	x	y
a	20.0	116.5	25.0	124.0
b	181.1	17.8	186.1	25.4
η	116.4	56.9	121.4	64.4

x	x	y	y
η − a + 96.4	η − b − 64.7	η − a − 59.6	η − b + 39.1
+ 96.4	− 64.7	− 59.6	+ 39.0
+ 96.4	− 64.7	− 59.6	+ 39.05
+ 97.36	− 65.35	− 60.20	+ 39.44
÷ .500	÷ .500	− 30.10	+ 19.72
+ 194.7	− 130.7		

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1909phae.proj.2299B

See Bk. 2 - pg. 92 for original meas. of this neb.

A8257 No. 95 March 8, 1909.

					1900 pos	11 52 58.1		−1 34.0	
a = −1° 2588	11 47 50.7		∓1	44.7	+ 169.5 =	11 50 39.8	+ 25.8 =	−1 18.9	
b = −1 2600	11 52 9.4	8.8	−1	7.0	− 89.1 =	11 50 40.9	− 19.5 =	−1 19.4	19.1
c = −1 2580	11 47 36.7		−1	38.5		11 50 39.6		−1 19.5	
					mean pos	11 50 39.9		−1 19.0	
						−1.7 +1.6		−0.2 +0.1	
						(− 2.0 + 2.3)		(+0.2 + 0.5)	

c − a = + 27.3

.500

− 13.7

cos − 1.8 / − 0.8

	x	y	x	y
a	27.1	35.8	32.0	44.0
b	155.0	111.7	160.0	120.0
η	110.9	86.9	115.9	95.1

x	x	y	y
η − a + 83.8	η − b − 45.0	η − a + 51.1	η − b + 25.8
+ 83.9	− 44.1	+ 51.1	− 25.9
+ 83.85	− 44.1	+ 51.1	− 25.85
+ 84.44	− 44.54	+ 51.61	− 26.60
÷ .500	÷ .500	+ 25.80	− 14.88
+ 169.5	− 89.1		

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1909phae..proj.2299B

See B.J. 2. pg. 103 for original meas. of this neb

A 8257 No. 106. March 8, 1909.

					1900 jas.	11 42 51.0	−1 57.2	
a =	−1 2563	11 37 27.2	−1 14.2	+188.5	=	11 40 35.7	−1 42.0	
b =	−1 2572	11 42 9.5	−1 56.1	−99.2	=	11 40 30.3	−1 41.8	
c =	−1 2573	11 42 20.6	−1 0.3			11 40 33.0	−1 42.0	
		x				11 40 32.8	−1 42.2	
		c − b = +11.1				+1.2 −1.1	0.0 −0.1	
		.500				08 −15	−02 −13	
		+5.6						

	x	y	x	y
a	12.7	90.9	17.7	97.5
b	155.0	7.1	160.0	13.7
η	105.9	35.4	110.9	41.9

x	x	y	y
η − a + 93.2	η − b − 49.1	η − a − 55.5	η − b + 28.3
+93.2	−49.1	−55.6	+28.2
+93.2	−49.1	−55.56	+28.25
+94.13	−49.59	−56.10	+28.53
÷ .500	÷ .500	−28.06	+14.26
+188.3	−99.2		

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1909phae.proj.2299B

See Bk. 2, pg. 106 for original meas. of this net.
also " 10 pg. 183 for new meas.

A8257 No. 109 March 8, 1909.

Star # 3460 is close to edge of plate ~~&~~ may be accountable for large res.

1900 pos 11 58 4.3 − 2 19.7

a = − 1 2605	11 53 29.7	− 1 54.8	+ 38.9	=	11 55 48.0	− 11.0	= − 2	5.9
b = − 2 3460	11 58 34.5	− 2 19.2	− 17.9	=	11 55 43.5	+ 15.6	= − 2	3.6
c = − 1 2619	11 58 33.0	− 1 38.3			11 55 45.9		− 2	4.8

mean pos 11 55 46.1 − 2 4.6

+0.7 −0.7 +1.0 −1.0

(+0.5 −0.9) (+1.2 −0.8)

c − b = − 23.5

.500

− 11.8

cos − 1.4 / 2

	x	y	x	y
a	11.9	60.2	16.9	67.9
b	165.0	7.5	170.0	15.0
η	80.4	38.3	85.3	45.9

x	x	y	y
n−a + 68.5	n−b − 84.6	n−a ∓ 21.9	n−b + 30.8
+ 68.4	− 84.7	∓ 22.0	+ 30.9
+ 68.45	− 84.65	− 21.95	+ 30.85
+ 69.13	− 85.50	− 22.17	+ 31.16
÷ .500	÷ .500	− 11.08	+ 15.68
+ 138.3	− 171.0		

✓ ✓

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1909phae.proj.2299B

See Bk. 3 pg. 123 for original meas. of this neb.
also pg. 32 this Bk. for meas. of star + 2 2389.

A 8326 No. 18 March 8, 1909.

1900 pos. 10 51 11.8 + 2 3.7

a =	+ 2 2389	10	47	44.9	+ 2	25.7	+ 68.7	=	10	48	53.6	− 8.5	= + 2	17.2
b =	+ 1 2506	10	52	20.0	+ 1	51.1	− 208.7	=	10	48	51.3	+ 28.9	= + 2	19.1
c =	+ 1 2501	10	48	14.6	+ 1	29.7			10	48	53.4		+ 2	18.0
		x					(mean) (3 meas)		10	48	52.8	+2°	18.0	
		c − a = + 29.7							− 0.3	+ 0.2		− 0.7	+ 0.8	
cos + 1.5 / 2		.500							(+ 0.1	+ 0.6)		(− 0.7	+ 0.8)	
		+ 14.8												

	x	y	x	y
a	20.0	114.9	25.0	122.8
b	157.3	42.7	162.3	50.4
n	54.0	99.0	59.0	105.9
	x	x	y	y
	n − a + 34.0	n − b − 103.3	n − a − 16.9	n − b + 55.3
	+ 34.0	− 103.3	− 16.9	+ 55.5
	+ 34.0	− 103.3	− 16.9	+ 55.4
	+ 34.34	− 104.33	− 17.07	+ 55.95
	÷ .500	÷ .500	− 8.54	+ 27.98
	+ 68.7	− 208.7		

See book III. p. 123.

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1909phae.proj.2299B

See note in B.f.3 pg. 123 on this star.

A8326 Star # 2369 +2° March 8, 1909.

a = + 2 2365	10	43	52.1	+ 2	46.7	+ 23	2.1	4.2	4	10	47	4[8].5	− 20.6	= + 2 26.3
b = + 2 2371	10	49	18.0 20.5	+ 2	16 6 [8].6	− 9	3	4[8].3	3	10	47	4[8].8	+ 10.4	= + 2 26.96 [8].8
c = + 2 2362	10	43	44.0	+ 2	8.9					10	47	[4]0.8 44.1		+ 2 26.6 27.4

a

b

c

x

c − a = − 8.1

.500

− 4.0

Cos + 2.1

=

	x	y	x	y
a	15.0	120.5	20.0	111.0
b	178.0	59.3	182.9	49.7
η	131.1	79.8	136.0	70.2

x	x	y	y
η − a + 116.1	η − b − 46.9	η − a − 40.7	η − b + 20.5
+ 116.0	− 46.9	− 40.8	+ 20.5
+ 116.05	− 46.9	− 40.75	+ 20.5
+ 117.18	− 47.37	− 41.16	+ 20.70
÷ .500	÷ .500	− 20.58	+ 10.35
+ 234.4	− 94.7		
✓	✓		

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1909phae.proj.2299B

see Bk. 3 pg. 124 for original mean of this net.

A 8326 No. 19 March 8, 1909.

						1900 pos.	10	50	48.9	+ 2	4.2
a = + 2 2368	10	45	18.6	+ 2	6.4	+ 193.1	= 10	48	29.8	+ 11.6	= + 2	18.4
b = + 2 2373	10	51	20.6	+ 2	30.4	− 172.1	= 10	48	30.2	− 10.6	= + 2	19.0
c. + 2 2367	10	45	18.4	+ 2	52.4			10	48	30.0	+ 2	18.8
	x					mean −	10	48	29.9	+ 2°	18.5
	c − a = − 0.2						− 0.2	+ 0.2		− 0.8	+ 0.9
Corr. +2.9 / 2	.499						(− 0.1	+ 0.3)		(− 0.5	+ 1.3)
	− 0.1										

	x	y	x	y
a	5.0	19.4	6.6	22.5
b	185.8	63.9	186.8	64.9
η	100.6	48.7	101.6	45.7
	x	x	y	y
	η − a + 95.6	η − b − 85.2	η − a + 23.3	η − b − 21.2
	+ 95.6	− 85.2	+ 23.2	− 21.2
	+ 95.6	− 85.2	+ 23.25	− 21.2
	+ 96.56	− 86.05	+ 23.48	− 21.41
	÷ .500	÷ .500	+ 11.74	− 10.70
	+ 193.1	− 172.1		
	✓	✓		

See Book III, page 123.

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1909phae.proj.2299B

See B.A. v. pg. 153 for original meas. of this net.

A 8326 No. 49 March 8, 1909.

								1900 pos.	10	44	17.5	+0°	46'.0	
a	= +0	2702	10	39	23.9	+0	36.8	+154.6	= 10	41	58.5	+23.4	= +1	0.2
b	= +1	2488	10	42	47.6	+1	7.1	−49.7	= 10	41	57.9	−7.4	= +0	59.7
c	= +1	2479	10	39	24.4	+1	34.4			10	41	58.2		+0	0.0
				x				(mean pos)	10	41	58.9		+1	0.2
				c−a = +0.5					−0.7	+0.8			+0.1	−0.1
				.500					(−2.0	−0.5)			(−0.2	−0.4)
				+0.2										

Cor +1.6

	x	y	x	y
a	10.0	38.6	15.0	45.2
b	111.1	99.7	116.2	107.2
η	86.5	84.9	91.6	92.5

x	x	y	y
η−a +76.5	η−b −24.6	η−a +46.3	η−b −54.8
+76.6	−24.6	+46.3	−14.7
+76.55	−24.6	+46.3	−14.75
+77.31	−24.85	+46.76	−14.80
÷.500	÷.500	+23.38	−7.45
+154.6	−49.7		

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1909phae.proj.2299B

see Bk. 3 pg. 157 for original meas. of this net.
How would det pos. of 2731 +0° on meas. pg. 178, Bk. 10.
for corrected pos. of star b. & results are thereby accordant.

A 8326 No. 53 March 8, 1909.

						1900 pos.	10	58	42.4	+0	20.5
-a = +0 2729	10	56	12.5	+0	48.2	+11.9	+0	56	24.3	−12.8	+0 35.4
b = +0 2731	10	56	40.6	+0	16.6	−17.0	10	56	23.6	+18.5	+0 37.1
c = +0 2730	10	56	36.4	+0	45.0		10	56	24.8		+0 35.8
	x					mean pos	10	56	23.8		+0 35.0
	c − b = −4.2						+0.1	−0.2			+0.3 −0.3 +1.8
cos +0.7 / 2	−500						(+0.5	+0.2)			(+0.5 −0.1)
	−2.1										

	x	y	x	y
a	85.7	92.0	90.7	99.5
b	100.0	30.1	105.0	37.6
η	91.6	66.8	96.6	74.2

x	x	y	y
η−a + 5.9	η−b − 8.4	η−a − 25.2	η−b + 36.7
+ 5.9	− 8.4	− 25.3	+ 36.6
+ 5.9	− 8.4	− 25.25	+ 36.65
+ 5.96	− 8.48	− 25.50	+ 37.02
÷ .500	÷ .500	− 12.75	+ 18.51
+ 11.9	− 16.0		
✓	✓		

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1909phae.proj.2299B

see Bk. 2 page 109 for note on this neb. and original meas.

A 8788 No. 1 March 8, 1909

1900 pos 14 39 51.6 +2 22.7

a =	+2	2857	14	36	43.6	+2	59.0	+50.3	= 14	37	33.8	− 25.5	= +2	33.2
b =	+2	2861	14	37	57.8	+2	12.3	−23.7	= 14	37	34.1	+23.3	= +2	35.4
c =	+2	2859	14	37	46.2	+2	41.6	−80.3	= 14	37	35.8	+ 3.8	= +2	33.4
d =	+2	2862	14	38	56.2	+2	29.6	−136.2	= 14	37	34.2	+21.7	= +2	33.9
e =	+2	2863	14	39	50.4	+2	12.8							34.1

c − b = − 11.6

14 37 34.5 +2° 34.0

(00 + 2.7)/2

.499

− 5.8

−1.6 −0.7 +1.7 +0.6 −0.5 +1.3 −0.6 −0.1

mean pos 14 37 34.8 +2 34.3

(−1.4 −0.5 +1.9 +0.8) (−0.8 +1.0 −0.9 −0.4)

		x	y	x	y
	a	23.3	170.8	13.4	174.1
	b	60.0	73.6	50.0	77.2
	n	48.2	119.7	38.3	123.3
+2 2862	c	88.0	102.2	78.0	116.9
+2 2863	d	115.7	77.3	105.7	80.9

use cat pos. for +2° 2861, 2865, 2862, 2863

p. 109 Bk 2. +14.17 +36

x x x x

n−a, + 24.9 n−b, − 11.8 n−d, − 39.8 n−e, − 67.5

+ 24.9	− 11.7	− 39.7	− 67.4
+ 24.9	− 11.75	− 39.75	− 67.45
+ 25.15	− 11.87	− 46.15	− 68.12
÷ .500	÷ .500	÷ .500	÷ .500
+ 50.3	− 23.7	− 80.3	− 136.2

y y y y

n−a, − 51.1 n−b, + 46.1 n−d, + 47.5 n−e, + 42.4

− 51.1	+ 46.1	+ 7.4	+ 42.4
− 51.1	+ 46.1	+ 7.45	+ 42.4
− 51.61	+ 46.56	+ 7.52	+ 42.82
÷ .500	÷ .500	÷ .500	÷ .500
− 25.80	+ 23.28	+ 3.76	+ 21.41

+2 33.2 −7
34.0 +1
34.5 +6
34.2 +3
33.5 −4
34.0 +1
34.0 +1
34.0 +1
31.4

+2° 33.1 9

13 − 11

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1909phae.proj.2299B

See Ref. 2 – page 110 for note on this neb.

A 8288 No. 2 March 8, 1909.

1900 pos 14 38 45.3 +2 20.9

a =	+2	2854	14	35	12.4	+2	54.5	=	14	36	27.8	+2 32.8
b =	+2	2861	14	37	57.8	+2	12.2	=	14	36	28.0	+2 32.8
c =	+2	2855	14	35	52.9	+2	26.7	=	14	36	28.8	+2 32.8
d =	+2	2859	14	37	46.2	+2	41.6	=	14	36	28.8	+2 32.8
e =	+2	2862	14	38	56.2	+2	29.6	=	14	36	30.3	+2 32.0
											28.4	

c − a = +40.5

cos +2.4 / 2 = .500

+20.2

+0.7 −0.3 −2.3 +2.0 | 0.0 +1.8 +0.7 −2.5

mean pos 14 36 28.5 +2 32.6

(+05 −05 −2.5 +1.8) (−06 +1.2 +0.1 −3.1)

	x	y	x	y
a	30.0	127.6	15.0	119.9
b	113.2	34.4	98.2	31.8
c, η	68.3	77.7	53.3	75.0
+2 2859 d e	102.6	95.6	92.6	92.8
+2 2862 b d	141.3	78.9	126.2	75.1

Error of 5 div. in scale div. reading of +2° 2862. corrected for adding correction of 2.5 to final result

DV.

	x	x	x	x
	n−a, +38.3	n−b, −44.9	n−d, −39.3	n−e, −73.0
	+38.3	−44.9	−39.3	−72.9
	+38.3	−44.9	−39.3	−72.95
	+38.68	−45.35	−39.69	−73.68
	÷.500	÷.500	÷.500	÷.500
	+77.4	−90.7	−79.4	−147.4

	y	y	y	y
	n−a, −44.9	n−b, +43.3	n−d, −17.9	n−e, +0.2 ** +0.1
	−44.9	+43.2	−17.8	−0.15
	−44.9	+43.25	−17.85	−0.15
	−45.35	+43.68	−18.03	−0.13
	−22.68	+21.84	−9.02	−0.08

R.a using cat. pos. for 2854, 2861, 2862. 2859 r

36

14

28.1 −3
29.3 +9
28.3 −1
28.1 −3
27.8 −6
29.2 +8
27.1 −13
29.1 +7
67.0

24 −26

14 36 28.4

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1909phae.proj.2299B

See Obj. 2 page two for note on this neb.

A 8788 No. 50 March 8, 1909.

						1900 for	14	41	1.4	+0	11.5	
a = +0 3234	14	38	11.8	+0	15.7	+33.0 =	14	38	44.4	+8.6 =	+0	24.3
b = +0 3236	14	39	8.6	+0	37.6	−25.6 =	14	38	43.0	−15.5 =	+0	22.1
c = −0 3875	14	38	57.3	−0	12.7	−38.1 =	14	38	44.9	+20.1 =	+0	23.3
d = +0 3238 7	14	39	10.0	+0	2.9	−27.0 =	14	38	40.5	+8.5 =	+0	22.1
e = +0 3237	14	39	18.6	+0	14.3							
						37.8	14	38	42.8		+0	23.2

c − b = ∓ 16.3

c − a = ∓ 16.8

c − d = ∓ 8.2

.500

+1.0 +0.5 +0.5 − 2.0 +1.1 −0.8 +0.0 −0.3

mean for 14 38 43.2 +0 23.1

(+0.6 +0.1 +0.1 − 2.4) (+1.1 −0.8 +00 −0.3)

		x	y	x	y
	a	56.0	65.9	61.0	72.6
	b	85.0	113.6	90.0	120.2
	η	72.4	87.9	77.3	89.6
+0 3238	e	91.2	65.9	96.2	72.6
+0 3237	d	85.7	43.5	90.7	49.1
		x	x	x	x

η − a, + 16.4 η − b, − 12.6 η − e, − 18.8 η − d, − 13.3

+16.3	−12.7	−18.9	−13.4
+16.35	−12.65	−18.85	−13.35
+16.51	−12.78	−19.04	−13.48
÷ .500	÷ .500	÷ .500	÷ .500
+33.0	−25.6	−38.1	−27.0
y	y	y	y

η − a, + 17.0 η − b, − 30.7 η − e, + 17.0 η − d, +40.4

+17.0	−30.6	+17.0	+40.5
+17.0	−30.65	+17.0	+40.45
+17.17	−30.96	+17.17	+40.85
+8.58	−15.48	+8.58	+20.42

the only comp. st. I can get for is +0 3234 near this

14h 38m +0 22.9

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1909phae.proj.2299B

A 8788 No. 64 March 8, 1909.

a =	+0	3195	14	23	12.8	+0 8.0
b =	−0	2834	14	24	22.6	−0 34.6
c =	−1	2963	14	24	35.4	−1 8.5

c − b + 17.8

Cor − 1.1

− .500

+ 6.4

	x	y	x	y
a				
b				
n				

	x	x	y	y
	n − a	n − b	n − a	n − b

	x	y	x	y
a				
b				
n				
c				
d				

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1909phae.proj.2299B

see Bk. 2 - page 171 for note on this neb.

A 8288 No. 64 March 9, 1909.

							1900 fo	14	25	55.5		−0	38.2
a = +0	3195	14	23	12.8	+0	8.0	+21.9	= 14	23	39.8	− 23.8	= +0	15.8
b = −0	2834	14	24	22.6	−0	34.6	−47.4	= 14	23	35.2	+ 18.5	= −0	16.1
c = −1	2963	14	24	35.4	−1	8.5	98.5			8.0			
d = −0	2838	14	25	16.14	−0	5.9	−89.5	= 14	23	34.6	− 10.8	= −0	16.6
e = −0	2840	14	24	19.0	−0	18.0	−163.2	= 14	23	35.8	+ 1.4	= −0	16.6
							161.6			37.4			
										37.6			
		c − b = + 17.8						14	23	38.8		−0	16.2

$\frac{c_{00} - 1.1}{2}$ −.500 + 6.4

	+1.9	−1.9	0.0 −0.2
mean fo	14	23	37.3
	(+2.2	−1.6	+0.3 +0.1)

		x	y	x	y
	a	8.2	169.5	13.2	177.2
	b	45.0	85.5	50.0	93.2
	η	21.5	122.5	26.6	130.1
−0.2838	d	70.8	143.9	75.8	151.6
−0.3840	e	102.3	119.8	107.4	127.4
		x	x	x	x
	n−a,	+13.3	n−b, −23.5	n−d, −49.3	n−e, −80.8
		+13.4	−23.4	−49.2	−80.8
		+13.35	−23.45	−49.25	−80.8
		+13.48	−23.68	−49.74	−81.64
		÷.500	÷.500	÷.500	÷.500
		+27.0	−47.4	−99.5	−163.2
		y	y	y	y
	n−a,	−47.0	n−b, +37.0	n−d, −21.4	n−e, +2.7
		−47.1	+36.9	−21.5	+2.7
		−47.05	+36.95	−21.45	+2.7
		−47.52	+37.32	−21.66	+2.73
		−23.76	+18.66	−10.83	+1.36

Cd. slew over. BK 2. p. 171. No 40. 14h. 2838' + 2838' = 5676. 2833.3196

14 23 37.4

39.6 + 2.2
35.0 − 2.4
38.1 + 0.7
35.9 − 1.5
39.5 + 2.1
35.7 − 1.7
38.0 + 0.6
37.4 0
37.2 1.56

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1909phae.proj.2299B

see Bk. 2. pg. 176 for note on this neb.

A8288 No. 60 March 9, 1909.

1900 pos 14 42 18.5 −1 12.8

a = −1	2984	14	39	5.7	−1	14.0	+54.8	=	14	39	59.9	+14.4	=	−0 59.6
b = −0	2885	14	41	21.9	−0	46.0	−8.9	=	14	39	58.7	−16.5	=	−1 2.9
c = −0	2882	14	39	32.9	−0	12.0								
d = −0	2879	14	39	4.4	−0	52.1	+54.8	=	14	39	58.3	−9.8	=	−1 1.8
e = −1	2986	14	39	20.6	−1	4.7	+39.4	=	14	39	59.4	+3.5	=	−1 1.2
							38.7							
									14	39	59.8			−1° 1.2

a − x = +27.2

cos −0.2 / 2 = .500

+13.6

+0.5 +0.3 −0.8 −0.1 −1.5 +0.9 +0.6 0.0

mean pos 14 39 59.8 −1 1.2

(+04 +07 −09 −02) (+15 +09 +06 00)

		x	y	x	y
	a	20.0	40.4	30.0	51.5
	b	88.2	101.2	98.3	112.3
	η	47.2	69.1	57.1	80.0
−0 2879	c	20.0	88.5	30.0	99.5
−1 2985	d	27.8	62.0	37.8	73.1

x	x	x	x
n−a, +27.2	n−b, −41.0	n−d, +27.2	n−e +19.4
+27.1	−41.2	+27.1	+19.3
+27.15	−41.1	+27.15	+19.35
+27.42	−41.51	+27.42	+19.54
÷.500	÷.500	÷.500	÷.500
+54.8	−83.0	+54.8	+39.1

y	y	y	y
n−a, +28.7	n−b, −32.1	n−d, −19.4	n−e, +7.1
+28.5	−32.3	−19.5	+6.9
+28.6	−32.2	−19.45	+7.0
+28.88	−32.52	−19.64	+7.07
+14.44	−16.26	−9.82	+3.54

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1909phae.proj.2299B

see page 5 B15.2 for note on this neb.

A8257 No. 5 March 9, 1909. and Feby. 14, 1910.

1900 pos 11 57 34.9 +2 32.6

a = +2 2505	11	53	35.2	+2	42.2	+10 2.9	= 11	55	19.1	+5.4	= +2	47.6
b = +2 2510	11	57	6.5	+2	47.5	−11 2.1	= 11	55	15.4	−0.5	= +2	47.0
c = +2 2507	11	55	9.0	+2	26.9	−27.4	= 11	55	14.8	+1.1	= +2	47.6
d = +2 2508	11	55	43.3	+2	46.6							
e = +2 2511	11	57	50.0	+2	32.4	−154.7	= 11	55	15.9	+17.2	= +2	49.2
						153.2			16.8			
	c − a = +93.8						11	55	16.6		+2°	48.0

Coe +2.4 / 2

500

+46.9

+1.5 −1.1 −0.4 +0.2 −0.4 −1.0 −0.3 +1.6

mean pos 11 55 16.7 +2 47.6

(+1.4 −1.2 −0.5 +0.1) (+0.0 −0.6 +0.1 +2.0)

		x	y	x	y
	a	30.0	91.4	35.0	100.0
	b	136.9	103.4	142.0	112.0
	d	81.5	102.3	86.4	111.0
+2 2508	e	95.0	100.2	100.0	108.9
+2 2511	c	158.0	67.7	163.1	76.6
		x	x	x	x
		n−a, +51.5	n−b, −55.4	n−d, −13.5	n−e, −66.5
		+51.4	−55.6	−13.6	−66.7
		+51.45	−55.5	−13.55	−76.6
		+51.96	−56.06	−13.69	−77.37
		÷.500	÷.500	÷.500	÷.500
		+103.9	−112.1	−27.4	−154.7
		y	y	y	y
		n−a, +10.9	n−b, −1.1	n−d, +2.1	n−e, +34.6
		+11.0	−1.0	+2.1	+34.4
		+10.95	−1.05	+2.1	+34.5
		+11.06	−1.06	+2.12	+34.84
		+5.53	−0.53	+1.06	+17.42

Repeat the last pair as 2511 is too distant for correlation to be used — Send them

11 55 18.1 +13 / 15.6 −12 / 18.0 +12 / 15.6 −12 / 18.1 +13 / 15.5 −13 / 55 16.8

11 +2 47.6 +4 / 47.0 −2 / 47.1 −1 / 47.1 −1 / 47.6 +4 / 47.0 −2 / 47.2

+2

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1909phae.proj.2299B

Stem for mountings

See Bk. 3. pg. 37 for note on this net.

A 8257 No. 31 March 9. 1909. and Feby. 14, 1910.

1900 pos 11 54 42.4 +1 43.4

a = +1 2634	11	50	58.1	+1	46.8	+8	11	52	27.5	+ 5.3	= +1	57.2	
b = +2 2504	11	53	33.6	+2	2.2	−71.7	= 11	52	24.9	− 3.8	= +1	58.4	
c = +2 2499	11	51	59.9	+2	37.7	+8	11	52	24.1	− 15.1	= +1	58.9	
d = +2 2497	11	50	57.1	+2	13.8	+8	11	52	24.6	− 26.1	= +1	59.4	
e = +2 2498	11	51	38.4	+2	25.8	+44.7	11	52	24.5				
						45.7			24.9				

c − a = +61.8

11 52 24.8 +1° 38.4

Cos +2.6 / 2

.500

+30.9

+2.5 −1.5 −0.9 +0.0 −1.3 0.0 +0.5 +0.9

mean pos 11 52 24.2 +1 58.3

(+2.4 −1.6 −0.0 −0.1) (−1.2 +0.1 +0.6 +1.0)

		x	y	x	y
	a	45.0	19.5	50.0	15.0
	b	134.7	37.7	139.8	43.1
	n	89.9	30.0	94.3	35.6
	d				
+2 2497	c	46.2	59.9	51.2	65.4
	e				
+2 2498	d	66.4	83.2	71.4	88.7

see sheet

	x	x	x	x
n−a,	+44.2	n−b, −35.5	n−d, +43.0	n−e, +22.8
	+44.3	−35.5	+43.1	+22.9
	+44.25	−35.5	+43.05	+22.85
	+44.69	−35.86	+43.48	+23.08
	÷ .500	÷ .500	÷ .500	÷ .500
	+89.4	−71.7	+87.0	+46.2

	y	y	y	y
n−a,	+10.05	n−b, −7.7	n−d, −29.9	n−e, −53.2
	+10.6	−7.5	−29.8	−53.1
	+10.55	−7.6	−29.85	−53.15
	+10.67	−7.68	−30.15	−53.68
	+15.38	−3.84	−15.08	−26.84

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1909phae.proj.2299B

See B[2-pg.28 for note on this neb

A 8257 No. 32 March 9, 1909 & July 14, 1910.

1900 pos 11 54 39.0 + 1 40.2

a = +1	2634	11 50 58.1	+1	46.8 + 8[5.2]X	= 11 52 [3.3]X	+ 7.X°	= +1 53.[8]X
b = +2	2504	11 53 33.6	+2	2.2 − 7[4.4]X	= 11 52 [19.4]X	− 7.X°	= +1 55.[2]X
c = +2	2499	11 51 59.9	+2	37.7			
d = +2	2497	11 50 57.1	+2	13.8 + 8[2.8]X	= 11 52 [19.9]X	− 18.[1]X	= +1 55.[7]X
e = +2	2498	11 51 38.4	+2	25.8 + 4[3.8]X	= 11 52 [21.7]X	− 38.[7]X	= +1 55.[7]X
						20.8 29.8	56.0

c − a = +61.8

Cos +2.6 / 2

.500

+ 30.9

11 52 [0.8]21.4 +1° 55.[1]2

mean pos 11 52 20.8 + 1 55.2

+ 2.5 −1.4 −0.9 0.0 −1.4 0.0 +0.5 +0.8

		x	y	x	y
a		45.0	19.5	50.0	15.0
b		124.7	37.7	129.8	43.1
[d]c		87.6	23.7	92.6	29.1
+2 2497	R	46.2	59.9	51.2	65.4
+2 2498	[c]d	66.4	83.2	71.4	88.7
		x	x	x	x

only star on Cat + 2633

Terms are probably Panel but see sheets +

m-a, + 42.6 m-b, − 37.1 m-d, + 41.4 m-e, + 21.2

+ 42.6	− 37.2	+ 41.4	+ 21.2
+ 42.6	− 37.15	+ 41.4	+ 21.2
+ 43.03	− 37.52	+ 41.82	+ 21.41
÷ .500	÷ .500	÷ .500	÷ .500
+ 86.1	− 75.0	+ 83.6	+ 42.8
y	y	y	y

m-a, + 14.2 m-b, − 14.0 m-d, − 36.2 m-e, − 59.5

+ 14.1	− 14.0	− 36.3	− 59.6
+ 14.15	− 14.0	− 36.25	− 59.55
+ 14.29	− 14.14	− 36.61	− 60.15
+ 7.14	− 7.07	− 18.30	− 30.08

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1909phae.proj.2299B

See B1.1 - page 36 for note on this neb.

A 8257 No. 41 March 9, 1909. and Feby. 14, 1910.

1900 pos 11 52 14.9 + 1 1.9

a = +1 2629	11 48 37.4	+1	47.8	+82.7	= 11 49 59.1	− 29.2	= +1 18.9	
b = +0 2870	11 51 52.9	+0	48.5	−118.7	= 11 49 59.1	+ 27.1	= +1 16.1	
c = +1 2631	11 49 37.9	+1	25.6					
d = +1 2636	11 51 38.4	+1	20.2	−101.5	= 11 49 59.9	− 3.16	= +1 17.17	
e = +0 2874	11 52	+0	57.1	−137.7	= 11 49 55.4	+ 18.8	= +1 15.8	
	x 6,8			131.4				
					11 49 56.8		+1° 16.9	

c − a = +60.5

cos +1.4 / 2 · .500 = +30.3

+2.0 −1.9 +1.1 −1.4 +2.0 −1.1 +0.2 −1.2

mean pos 11 49 56.7 +1 16.9

(+2.1 −1.8 +1.2 −1.3) (+2.0 −1.1 +0.2 −1.2)

	x	y	x	y
a	45.0	122.4	50.0	123.9
b	144.7	9.9	149.7	11.5
m	85.7	64.6	90.7	66.0
+1 2636 d	135.9	70.6	141.0	72.3
+0 2874 e	151.4	27.2	156.4	28.8
	x	x	x	x

m-a, + 40.7 m-b, − 59.0 m-d, − 50.2 m-c, − 65.7

+ 40.7	− 59.0	− 50.3	− 65.7
+ 40.7	− 59.0	− 50.25	− 65.7
+ 41.11	− 59.59	− 50.75	− 66.36
÷ .500	÷ .500	÷ .500	÷ .500
+ 82.2	− 119.2	− 101.5	− 132.7
	y	y	y	y

m-a, − 57.8 m-b, + 54.7 m-d, − 6.0 m-c, + 37.4

− 57.9	+ 54.6	− 6.3	+ 37.2
− 57.85	+ 54.65	− 6.15	+ 37.3
− 58.43	+ 58.28	− 6.21	+ 37.67
− 29.22	+ 27.6	− 3.10	+ 18.84

See sheet for new pos. 5 m 57.1 h 49 11 ° 17.4 + 1

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1909phae.proj.2299B

see Bk 2. pg. 92 for note on this neb.

A 8257 No. 95 March 9, 1909 and Feby. 14, 1910.

1900 pos 11 52 58.1 −1 34.0

a = −1	2590	11	48	59.4	−1	8.3	+100.1	= 11	50	39.5	−11.8	= −1 20.0
b = −1	2603	11	52	36.1	−1	26.0	−116.8	= 11	50	39.3	+ 8.4	= −1 17.7
c = −1	2592	11	49	5.1	−1	28.8						
d = −1	2597	11	50	11.6	−1	32.4	+ 2.1	= 11	50	42.5	+13.0	= −1 19.5
e = −1	2597	11	50	42.1	−1	10.6	+ 30.9	= 11	50	40.0	− 7.8	= −1 18.8
							− 2.1					

c − a = + 5.7

Corr − 1.5

·500

+ 2.8

11 50 40.3 −1° 18.9

− 1.8 +0.2 + 1.9 −0.3 +1.1 −1.2 +0.6 −0.5

mean pos 11 50 39.9 −1 19.0

(−1.4 +0.6 + 2.3 +0.1) (+1.0 −1.3 +0.5 −0.6)

Using Cat for
of our cat stars
−1 2088 + 2600,
R.A. 11.92. Bk 2
.28 + 46. Bk 6

	x	y	x	y
a	35.0	105.2	40.0	112.8
b	142.3	65.3	147.6	72.3
η	84.4	81.9	89.5	88.8
c	85.6	97.5	90.6	104.4
−1 2597 d	69.2	56.5	74.3	63.1
	x	x	x	x
	n−a, + 49.6	n−b, −57.7	n−c, − 1.0	n−d, + 15.4
	+ 49.5	−57.9	− 1.1	+ 15.2
	+ 49.55	−57.8	− 1.05	+ 15.3
	+ 50.05	−58.38	− 1.06	+ 15.45
	÷ .500	÷ .500	÷ .500	÷ .500
	+ 100.1	− 116.8	− 2.1	+ 30.9
	y	y	y	y
	n−a, − 23.3	n−b, + 16.6	n−c, − 15.6	n−d, + 25.6
	− 23.3	+ 16.5	− 15.6	+ 25.7
	− 23.3	+ 16.55	− 15.6	+ 25.65
	− 23.53	+ 16.71	− 15.76	+ 25.91
	− 11.76	+ 8.36	− 7.88	+ 12.96

30 38.7 −12
40.2 +3
38.4 −13
40.6 +7
38.5 −14
40.5 +6
42.2 +23
40.0 +1
40.4 1
11 39.1

11h 50m 39.9s

Dec.
−1 19.9 +10
17.8 −11
18.5 −4
19.1 +2
20.0 +11
17.7 −12
19.5 +6
18.4
70.9

−1° 18.9

99 − 32

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1999phae.proj.2299B

See Bk. 2 - pg. 103 for note on this neb.

A 8257 No. 106. March 9, 1909. & Feby. 14, 1910

1900 jnr. 11 42 51.0 -1 57.2

a = -1 2568	11 38 34.1	-1	39.2	+120.7	= 11 40 35.8	-3.4	= -1	42.6
b = -1 2572	11 42 9.5	-1	56.1	-99.2	= 11 40 31.3	+14.3	= -1	41.6
c = -1 2573	11 42 20.6	~~-1~~	~~0.3~~	~~-14.9~~	11 39 54.7	-5.6	-1	
d = -1 2570	11 40 18.3	-1	51.6	+14.5	= 11 40 32.8	+9.7	= -1	42.1
	x							
	c-b = +11.1				11 40 32.7		-1°	42.3

c-b / 2 = -1.0

.500

+5.6

+1.2 -1.3 +0.0

10 -15

02 -

+0.4 -0.3 -0.2

+04 -03

-02 .-

	x	y	x	y
a	31.1	45.7	36.0	49.5
b	140.0	10.7	145.0	14.5
η	90.9	39.0	95.9	42.9
c	83.7	19.9	88.7	23.7
d	165.1	49.9	170.1	53.9

-1°2570

Reject these - & use ordinary slow var. for measures. Bk 2. p. 103.

Bk 2. p. 29 + 47 of this book: -

11 40 33.6 +10 / 31.3 -1.3 / 32.8 +12 / 31.3 +13 / 32.8 +02

+24 -46

11 40 32.6

-1 42.0 -2 / 41.9 +5 / 42.6 -2 / 41.9 -1 / 42.0

10.4

-1 42.1

	x	x	x	x
	n-a, +59.8	n-b, -49.1	n-d, +7.2	n-e, -74.2
	+59.9	-49.1	+7.2	-74.2
	+59.85	-49.1	+7.2	-74.2
	+60.45	-49.59	+7.27	-74.94
	÷.500	÷.500	÷.500	÷.500
	+120.9	-99.2	+14.5	-149.9
	y	y	y	y
	n-a, -6.9	n-b, +28.4	n-d, +19.1	n-e, -109
	-6.6	+28.4	+19.2	-11.0
	-6.65	+28.4	+19.15	-10.95
	-6.72	+28.68	+19.34	-11.06
	-3.96	+14.34	+9.67	-5.53

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1909phae.proj.2299B

A 8757 No. 109 March 9, 1909.

a =	−1	2605	11 53 29.7	−1	54.8
b =	−2	3457	11 57 41.0	−2	20.6
c =					

Orienting by Dec. -
Dif. a-b = x = 25.8

x x'
51.6

	x	y	x	y
a	17.2	61.6	17.2	71.6
b	140.0	10.0	145.0	20.0
n	81.2	41.5	86.2	58.4
d				
e	91.3	93.2	95.3	103.2
f	113.5	47.8	118.5	57.8
	x	x	x	x

n-a, n-b, n-d, n-e,

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1909phae.proj.2209B

see 31[.3 pg. 123 for note on this ref.

A 8326 No. 18 March 9, 1909 and Feby. 14, 1910.

1900 pos 10 51 11.8 + 2° 3'.7

a = + 2 2369	10	47	44.9	+ 2	25.7	+ 68.5	=	10	48	51.1	− 8.3	= + 2	17.4
b = + 2 2371	10	49	20.5	+ 2	18.5	− 25.7	=	10	48	54.8	+ 1.5	= + 2	18.8
c = + 1 2501	10	48	14.6	+ 1	29.7								
d = + 1 2503	10	49	25.3	+ 1	49.2	− 33.8	=	10	48	51.5	+ 28.8	= + 2	18.8
e = + 2 2372	10	49	58.2	+ 2	34.3	− 65.3	=	10	48	53.5	− 14.5	= + 2	19.8

c − a = + 29.7

Cos + 1.5 / 2 · .500

+ 14.8

10 48 53.2 + 2° 18.7 (18.3)

mean pos. 10 48 52.8 + 2 18.0

		x	y	x	y
	a	15.0	145.6	70.0	155.2
	b	61.6	125.0	66.6	135.8
	n	48.9	128.0	53.9	138.8
+ 1 2503	d	65.7	79.9	70.6	81.7
+ 2 2372	e	81.2	157.1	86.3	167.8
		x	x	x	x
		n−a, + 33.9	n−b, − 12.7	n−d, − 16.8	n−e, − 32.3
		+ 33.9	− 12.7	− 16.7	− 32.4
		+ 33.9	− 12.7	− 16.75	− 32.35
		+ 34.24	− 12.83	− 16.92	− 32.67
		÷ .500	÷ .500	÷ .500	÷ .500
		+ 68.5	− 25.7	− 33.8	− 65.3
		y	y	y	y
		n−a, − 16.6	n−b, + 3.0	n−d, + 57.1	n−e, − 29.1
		− 16.4	+ 3.0	+ 57.1	− 29.0
		− 16.5	+ 3.0	+ 57.1	− 29.05
		− 16.66	+ 2.03	+ 57.67	− 29.34
		− 8.33	+ 1.52	+ 28.84	− 14.67

see work III. 1 ##

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1909phae.proj.2299B

see Bf. 3 pg. 124 for note on this Ref. (see note sheet +2° 2371)

A8326 No. 19 March 9, 1909 and July 14, 1910.

a = +2	2369	10	47	44.9	+2	25.7	+45.5	= 10	48	30.4	− 8.8	= +2	17.6
b = +2	2371	10	49	30.5	+2	18.3	−48.6	= 10	48	31.8	+ 1.7	= +2	20.0
c = +1	2501	10	48	14.6	+1	29.7							
d = +1	2503	10	49	25.3	+1	49.2	−56.8	= 10	48	28.5	+ 2.8	= +2	18.5
e = +2	2372	10	49	58.2	+2	34.3	−88.3	= 10	48	29.9	− 14.4	= +2	15.8
										30.8			20.0
								10	48	30.4		+2°	18.5

c − a = +29.7

Cor +1.5 / 2

·500

+14.8

+0.6 +1.8 −1.5 +0.5 / 0.0 −0.1 −0.9 +0.8

−1.2 +1.1 −0.9 +1.1 / −0.8 −0.2 −0.5 +1.5

mean pos. 10 48 29.9 +2 18.5

(+0.1 0.0 −0.9 +0.9) (−0.8 −0.2 −0.5 +1.5)

See book III 1123. correction entered on card & list. Means on 8.1A corrected.

		x	y	x	y
a		15.0	145.6	30.0	155.2
b		61.6	125.0	66.6	135.8
η	1/2	37.5	128.5	47.6	189.2
2503	φ	65.7	76.9	70.6	81.7
2372	ψ	81.2	157.1	86.3	167.8
		x	x	x	x

n−a, +22.5 n−b, −24.1 n−d, −28.2 n−e, −43.7

+22.6	−24.0	−28.0	−43.7
+22.55	−24.05	−28.1	−43.7
+22.77	−24.29	−28.38	−44.14
÷ .500	÷ .500	÷ .500	÷ .500
+45.5	−48.6	−56.8	−88.3
y	y	y	y

n−a, −16.1 n−b, +3.5 n−d, +57.6 n−e, −28.6

−16.0	+3.4	+57.5	−28.6
−16.05	+3.45	+57.55	−28.6
−16.21	+3.48	+58.13	−28.89
−8.10	+1.74	+29.06	−14.44

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1999phas.proj.22998

see Bk. 8 pg. 153 for note on this net. ✓

A 8326 No. 49 March 9, 1909. and Feby. 14, 1910

					(1900 pos)	10	44	17.5	+0°	46.0
a = +1	2482	10	40	4.5	+1	23.1	+ 111.2	= 10	41	54.5 − 23.7	= +0	59.4
b = +0	2708	10	44	36.8	+0	23.9	− 152.6	= 10	42	37.2 + 37.3	= +1	1.5
c = +0	2703	10	39	30.2	+0	51.4						
d = +1	2485	10	42	10.6	+1	6.6	− 12.8	= 10	41	57.8 − 6.7	= +1	0.5
e = +1	2488	10	42	47.6	+1	7.1	− 50.5	= 10	41	57.2 − 7.9	= +1	0.2
									10	41 58.9	+1°	0.3

c − a = − 34.3

Cos +0.8 / 2 = .500

− 17.2

− 4.5 + 6.8 − 1.0 − 1.2 − 0.9 + 0.9 + 0.3 − 0.1

(mean pos) 10 41 58.9 +1 0.2

(+0.8 + 1.0 + 0.4 + 0.0)

(−4.5 + 6.8 − 1.0 − 1.2)

		x	y	x	y
	a	30.0	174.6	35.0	178.2
	b	160.5	2.6	165.5	6.2
	η	85.0	76.1	89.9	80.9
+1 2485	d ξ	91.3	89.4	96.3	92.9
+1 2488	d ζ	110.0	91.1	114.9	94.8
		x	x	x	x
	n−a,	+ 55.0	n−b, − 75.5	n−d, − 6.3	n−e, − 25.0
		+54.9	− 75.6	− 6.41	− 25.0
		+54.95	− 75.55	− 6.35	− 25.0
		+55.50	− 76.31	− 6.41	− 25.25
		÷ .500	÷ .500	÷ .500	÷ .500
		+ 111.0	− 152.6	− 12.8	− 50.5
		y	y	y	y
	n−e,	− 47.5	n−b, + 74.5	n−d, −12.3	n−e, − 14.0
		− 47.3	+ 74.7	−12.0	− 13.9
		− 47.4	+ 74.6	−12.15	− 13.95
		− 47.87	+ 75.35	−12.27	− 14.09
		− 23.94	+ 37.68	− 6.14	− 7.04

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1909phae.proj.2299B

See Bk 3 – pg. 157 for note on this net

A 8326 No. 53 March 10, 1909 and Feby. 14, 1910.

1900 pos. 10 58 42.4 +0 20.5

a	+0 2729	10 56 12.5	+0	48.2	+13.0 =	10 56 25.5	−12.5 = +0 35.7
b	+0 2731	10 56 40.6	+0	16.6 13.7	−1.9 =	10 56 20.8	+18.4 = +0 34.8
c	−0 2701	10 56 56.3	−0	3 50.0			
d	+0 2727	10 55 18.3	+0	53.0	+5.4 =	10 56 23.4	−18.8 = +0 34.2
e	+0 2736	10 56 36.4	+0	45.0	−11.6 =	10 56 24.8	−10.8 = +0 34.1
						10 56 23.6	+0 34.8
		c − b = +15.7				23.9	

(c00 − 0.5)/2 .500 + 7.8

+1.8 −1.8 −1.7 +1.7 +0.9 0.0 −0.6 −0.4 +1.7 −2.1 +0.7 +0.2

mean pos 10 56 23.8 +0 35.0

(+1.7 −1.8 −1.3 +1.0) (+0.7 −0.2 −0.6 −0.8)

		x	y	x	y
	a	39.1	166.8	29.1	168.5
	b	55.0	105.7	45.0	107.1
	η	45.6	143.0	36.6	143.6
	d				
+0 2727	ξ	17.5	179.2	7.5	180.7
	e				
+0 2730	ζ	51.4	163.6	41.4	165.1
		x	x	x	x

η−a, +6.5 η−b, −9.4 η−d, +28.1 η−e, −5.8

+6.5	−9.4	+28.1	−5.8
+6.5	−9.4	+27.1	−5.8
+6.56	−9.49	+27.37	−5.86
÷.500	÷.500	÷.500	÷.500
+13.1	−18.9	+54.7	−11.7
y	y	y	y

η−a, −24.8 η−b, +36.3 η−d, −37.5 η−e, −21.6

−24.9	+36.5	−37.1	−21.5
−24.85	+36.4	−37.15	−21.55
−25.10	+36.76	−37.52	−21.77
−12.55	+18.38	−18.76	−10.88

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1909phae.proj.2299B

see Bf. 3 pg. 158 for original meas of this net.
also meas of star b +0°2731 Bf. 10, 178

A 8326 No. 54 March 10, 1909. & Feby. 14, 1910

1900 pos. 10 57 26.1 +0 15.3

a =	+0 2725	10	53	39.3	+0	49.6	+89.4	= 10 55 8.0	−20.2	= +0 29.4
b =	+0 2731	10	56	40.6	+0	13.9	−94.4	= 10 55 7.1	+13.6	= +0 27.9
c =	−0 3395	10	53	45.7	−0	16.2				
d =	+0 2726	10	55	8.0	+0	42.0	−0.0	= 10 55 8.0	−11.8	= +0 30.2
e =	+0 2728	10	55	51.0	+0	1.8	−42.1	= 10 55 8.9	+27.5	= +0 29.3

c − a = + 6.4

10 55 7.8 +0 29.8

Cor −0.3 / 2 = −.500 + 3.2

+0.2 −0.5 +0.2 +0.1 −0.4 +0.4 +0.4 −0.5

mean pos. 10 55 7.9 +0 29.8

(+0.1 −0.6 +0.1 +1.0) (−0.4 +0.4 +0.4 −0.5)

		x	y	x	y
	a	25.0	150.1	15.0	150.5
	b	116.1	82.8	106.1	83.4
	n	69.4	109.9	59.3	110.2
+0 2726	d e	69.4	133.5	59.3	133.8
+0 2728	a d	90.	54.8	80.2	55.4

x x x x

n−a, +44.4 n−b, −46.7 n−d, +0.0 n−e, −20.8

+44.3 −46.8 +0.0 −20.9

+44.35 −46.75 +0.0 −20.85

+44.79 −47.22 +0.0 −21.06

÷.500 ÷.500 ÷.500 ÷500

+89.6 −94.4 −0.0 +42.1

y y y y

n−a, −40.2 n−b, +27.1 n−d, −23.6 n−e, +55.1

−40.4 +27.1 −23.7 +54.8

−40.3 +27.1 −23.65 +54.95

−20.15 +13.55 −11.82 +27.48

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1909phae.proj.2299B

see meas. of Companion star b + 0°.2731 on pg. 178 Bk. 10.
also Bk. 3, pg 159 for original meas. this nebula.

A8326 No. 55 March 10, 1909 and Aug. 16, 1910

1900 pos. 10 57 19.6 +0 22.7

a = +0	2725	10	53	39.3	+0	49.6	+82.9	= 10	55	1.4	−12.7 = +0 36.9
b = +0	2731	10	56	40.6	+0	13.6	−10.1	= 10	55	0.5	+30.9 = +0 34.6
c = −0	2395	10	53	45.7	−0	16.2					
d = +0	2726	10	55	8.0	+0	42.0	−6.7	= 10	55	1.4	−4.4 = +0 37.6
e = +0	2728	10	55	51.0	+0	1.8	−48.8	= 10	55	2.7	−34.9 = +0 36.7
		c − a = + 6.4						10	55	1.6	+0 37.2

Cos −0.3 / 2 · 500 / +3.2

−0.2 −0.9 −0.2 +1.1 −0.3 +0.3 +0.4 −0.5

mean pos. 10 59 1.4 +0 37.2

(−0.0 −0.7 0.0 +1.3) (−0.3 +0.3 +0.4 −0.5)

		x	y	x	y
	a	35.0	150.1	15.0	150.5
	b	116.1	82.8	106.1	83.4
	η	66.1	124.7	55.0	125.0
+0 2726	d	69.4	133.5	59.3	133.8
+0 2728	e	90. 104.2	54.8 144.6	80.2 94.4	55.4 145.4

10 55 1.3 + 1 / 0.8 − 6 / 1.4 0 / 0.7 − 7 / 1.4 0 / 2.7 + 13 / 85 / 1.4 / 10 55

	x	x	x	x
	n−a, + 41.1	n−b, − 50.0	n−d, − 3.3	n−e, − 55.1
	+ 41.0	− 50.1	− 3.3	− 55.1
	+ 41.05	− 50.05	− 3.3	− 55.15
	+ 41.46	− 50.55	− 3.33	− 55.45
	÷ .500	÷ .500	÷ .500	÷ 2.739
	+ 82.9	− 101.1	− 6.7	− 20.8 48.8

	y	y	y	y
	n−a, − 25.4	n−b, + 41.9	n−d, − 48.8	n−e, − 69.9
	− 25.5	+ 41.6	− 48.8	− 69.6
	− 25.45	+ 41.75	− 8.8	− 69.75
	− 12.72	+ 20.88	− 4.4	− 34.88

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1909phae.proj.2299B

see Bf. 3 pg. 207 for original meas. of this nebula

A8326 No. 106 March 10, 1909 & Feby. 14, 1910

10 56 19.2 − 1 40.5

a =	−1	2465	10	51	26.3	−1	27.6	+154.8	= 10	54	1.5 + 0.9	= −1 26.7
b =	−1	2475	10	56	21.4	−1	23.2	−141.5	= 10	52	0.3 − 2.0	= −1 25.2
c =	−0	2399	10	56	13.7	−0	49.8					
d =	−1	2467	10	52	27.6	−1	13.1	+96.7	= 10	54	2.7 − 13.4	= −1 −26.5
e =	−1	2474	10	55	49.0	−1	6.8	−188.1	= 10	53	59.9 − 19.4	= −1 26.2
								109.1				

c − b = −14.8

10 54 1.1 −1° 26.2

$\frac{c_{00} - 0.7}{2}$ .500 −7.4

+0.4 −0.8 +1.6 −1.2 +0.5 −1.0 +0.3 0.0

mean pos. 10 54 1.0 −1 26.1

(+0.5 −0.7 +1.7 −0.1) (+0.6 −0.9 +0.4 +0.1)

		x	y	x	y
	a	11.8	13.8	16.9	20.4
	b	160.0	19.3	165.0	26.1
	η	89.4	15.5	94.5	22.1
−1 2467	d	41.6	42.1	46.6	58.8
−1 2474	e	144.0	54.3	149.0	61.0

	x	x	x	x
n−a, + 77.6	n−b,	− 70.6	n−d, + 47.8	n−e, − 54.6
+ 77.6		− 70.5	+ 47.9	− 54.5
+ 77.6		− 70.55	+ 47.85	− 54.55
+ 78.38		− 71.25	+ 48.33	− 55.09
÷ .500		÷ .500	÷ .500	÷ .500
+ 156.8		− 142.5	+ 96.7	− 110.2

	y	y	y	y
n−a, + 1.7	n−b,	− 3.8	n−d, − 26.6	n−e, − 38.8
+ 1.7		− 4.0	− 26.7	− 38.9
+ 1.7		− 3.9	− 26.65	− 38.85
+ 1.72		− 3.94	− 26.92	− 39.24
+ 0.86		− 1.97	− 13.46	− 19.62

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1909phae.proj.2299B

See B∫ 3. pg. 308 for original meas. of this neb.

A 8326 No. 107 March 10, 1909 & Feby. 14, 1910

1900 pos. 10 52 43.4 −1° 43′ 5

a = −1	2461	10	49	5.3	−1	13.5	+ 76.8	= 10	50	21.1	− 16.2	= −1 29.7
b = −1	2464	10	50	49.1	−1	31.2	− 27.9	= 10	50	27.4	+ 2.6	= −1 28.6
c = −0	2392	10	49	17.1	−0	23.2	49.8					28.9
d = −1	2462	10	49	38.0	−1	48.5	+ 50.8	= 10	50	27.8	+ 18.3	= −1 30.1
e = −1	2465	10	51	26.3	−1	27.6	− 20.0	= 10	50	26.5	− 0.7	= −1 28.3
							59.4					

c − a = + 11.8

Cor −0.4 / 2

.500

+ 5.9

10 50 25.8 −1° 29.2

−4.7 + 1.5 + 2.0 + 1.1 +0.5 −0.6 +1.2 −0.9

mean pos. 10 50 25.2 −1 29.2

(−4.1 + 2.1 + 2.6 + 1.7) (+0.5 −0.6 +1.2 −0.9)

		x	y	x	y
	a	70.0	70.5	25.0	75.9
	b	68.8	32.8	73.8	38.1
	c	57.9	38.0	62.9	44.4
−1° 2462	d	33.0	1.8	38.0	7.0
−1° 2465	e	87.6	39.3	92.6	44.7
		x	x	x	x

c−a, + 37.9 c−b, − 10.9 c−d, + 24.9 c−e, − 29.7

+ 37.9	− 10.9	+ 24.9	− 29.7
+ 37.9	− 10.9	+ 24.9	− 29.7
+ 38.28	− 11.01	+ 25.15	− 30.00
÷ .500	÷ .500	÷ .500	÷ .500
+ 76.6	− 22.0	+ 50.3	− 60.0
y	y	y	y

c−a,	− 32.5	c−b,	+ 5.2	c−d, + 36.2 c−e, − 1.3
	− 32.5		+ 5.3	+ 36.4 − 1.3
	− 32.5		+ 5.25	+ 36.3 − 1.3
	− 32.82		+ 5.30	+ 36.66 − 1.31
	− 16.41		+ 2.65	+ 18.33 − 0.66

with a constant term in R.a. for −1 2461
+ in Dec. for −1 2462
we get in R.a. (see sheet)

10 50 26.7
1.208 BK 3 pc

pc: −1 29.7 +7
28.6 −4
29.7 +7
28.6 −4
28.9 −1
28.3 −7
53.8 −14 −16

−1 0 28.98
−1 0 29.0

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1909phag.proj.2299B

see Bf. 3 pg. 163 for the original meas. of this neb.
Have used meas. pos. of star b, +0°2731 - see note Bf. 3, 163.
which makes results accordant.

A8326 No. 61 March 10, 1909 and Feby. 14, 1910

1900 pos. 10 5 56.5 57.4 −0 5.2

a = −0 2394	10 52 58.9	−0	2.4	+ 10 1.3	= 10 54 39.2	+ 12.2	= +0	9.8
b = +0 2731	10 56 40.8	+0	16.6	− 123.1	= 10 54 39.9	− 7.6	= +0	9.1
c = −0 2401	10 56 56.3	−0	30.0					
d = +0 2723	10 52 39.1	+0	9.0	+ 121.9	= 10 54 39.2	+ 0.1	= +0	9.13
e = +0 2728	10 55 51.0	+0	1.8	− 71.2	= 10 54 46.5	+ 6.6	= +0	8.1
				0.5				

c − b = + 15.7

Corr −0.5 / 2 = .500

+ 7.8

10 54 39.4 +0° 8.1 9.0

−0.2 −0.7 −0.2 +1.1 +0.8 −0.2 +0.1 −0.7

mean pos 10 54 39.3 +0 9.2

60.4 − 0.4 − 0.6 + 1.2) (+0.6 −02 −01 −09)

		x	y	x	y
	a	23.9	70.1	28.9	75.3
	b	135.0	109.7	140.0	115.1
	n	74.1	94.5	79.0	99.8
+0 2723	c	14.0	94.4	19.0	99.6
+0 2728	d	114.3	81.4	114.3	86.6
	e				
		x	x	x	x

n-a, +50.2 n-b, −60.9 n-d, +60.1 n-e, −35.2

+50.1	−61.0	+60.0	−35.3
+50.15	−60.95	+60.05	−35.25
+50.65	−61.56	+60.65	−35.60
÷ .500	÷ .500	÷ .500	÷ .500
+ 101.3	− 123.1	+ 121.3	− 71.2
y	y	y	y

n-a, +24.4 n-b, −15.2 n-d, +0.1 n-e, +13.1

+24.5	−15.3	+0.2	+13.2
+24.45	−15.25	+0.15	+13.15
+24.69	−15.40	+0.15	+13.28
+12.34	− 7.70	+0.08	+ 6.64

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1909phae.proj.2299B

For note on this net. see original meas. Bk. 3, pg. 90 —

A851H No. 24 March 10, 1909. and Feby. 14, 1910

								1900 fm ·	21	36	2.2	− 45	14.7	
a = − 45 10183	21	34	28.1	− 45	1.0	− 2.3	=	21	34	25.8	− 20.9	= − 45	21.8	a
b = − 45 10184	21	34	42.4	− 45	37.1	− 17.4	=	21	34	25.8	+ 15.5	= − 45	21.6	b
c = − 44 10076	21	35	18.4	− 44	32.4									c
d = − 45 10180	21	33	26.4	− 45	17.3	+ 59.4	=	21	34	25.8	− 4.3	= − 45	21.6	
e = − 44 10073	21	34	34.4	− 44	47.0	− 9.1	=	21	34	25.8	− 34.8	= − 45	21.4	
									21	34	25.8		− 45°	21.6
	c − b = + 36.0													21.5
Cos − 44.8 / 2	.357							+0.4	−0.2	−0.2	0.0	+0.1	0.0	0.0 − 0.2
	+ 12.8											+0.2	+0.1	+0.1 −0.1

		x	y	x	y
	a	39.8	87.9	34.9	102.5
	b	45.0	15.5	40.0	30.0
	η	38.9	46.5	34.0	61.1
− 45 10180	d	18.2	55.0	13.7	69.5
− 44 10073	e	42.1	115.5	37.1	130.1

	x	x	x	x
	η−a, ∓0.7	η−b, − 6.1	η−d, + 20.7	η−e, − 3.2
	− 0.9	− 6.0	+ 20.7	− 3.1
	−0.8	− 6.05	+ 20.7	− 3.15
	−0.81	− 6.11	+ 20.91	− 3.18
	÷ .352	÷ .352	÷ .352	÷ .352
	− 2.3	− 17.4	+ 59.4	− 9.1
	y	y	y	y
	η−a, − 41.4	η−b, + 31.0	η−d, − 8.5	η−e, − 69.0
	− 41.4	+ 31.1	− 8.4	− 69.0
	− 41.4	+ 31.05	− 8.45	− 69.0
	− 41.81	+ 31.36	− 8.53	− 69.69
	− 20.90	+ 15.68	− 4.26	− 34.84

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1909phae.proj.2299B

see page 73 for better results - new stars used.

A 7451 No. 52 March 11th 1909.

a =	−52	11685	20	15	55.7	−52	44.2	+ 25.4	=	20	20	6.8	+ 17.8	=	−52	31.4
b =	−52	11705	20	23	9.2	−52	18.2	− 18.8	=	20	20	4.6	− 8.5	=	−52	30.2
c =	−52	11684	20	15	39.6	−52	13.5			20	20	5.7			−52	30.8
					x											
					c − a = − 16.1							+ 1.1	− 1.1		+ 0.7	− 0.6
C00 − 52.2 / 2					.306											
					− 4.9											

	x	y	x	y
a	30.0	20.0	35.0	29.5
b	162.5	62.3	167.6	71.9
n	106.3	45.4	111.4	55.0

x	x	y	y
n − a + 76.3	n − b − 56.2	n − a + 25.4	n − b − 16.9
+ 76.4	− 56.2	+ 25.5	− 16.9
+ 76.35	− 56.2	+ 25.45	− 16.9
+ 77.11	− 56.76	+ 25.70	− 17.07
÷ .304	÷ .304	+ 12.85	− 8.54
+ 253.6	− 186.7		

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see page 59 for no. 53.

1909phae.proj.2299B

A 7451 No. 53 (2) March 10, 1909.

			1900 pos. 20 25 56.2	-52 19.1	
a = -52 11705	20 23 9.5	-52 21.8 + 55.2 (4.5) =	20 24 4.7 (6) - 2.3 =	-52 24.1	
b = -52 11713	20 25 3.2	-52 26.2 - 58.9 (8.4) =	20 24 4.5 (8) + 2.1 =	-52 24.1	
c = -51 11504	20 22 55.1	-51 29.1	20 24 4.5	-52 24.1	

x

c-a = -14.4   -0.4 +0.4   0.0 0.0

Cos -51.5 / 2   .311 → -4.5

	x	y	x	y
a	30.0	45.1	40.0	45.5
b	64.4	36.4	74.5	36.7
η	46.6	40.6	56.7	41.0

x	x	y	y
η-a +16.6	η-b -17.8	η-a -4.5	η-b +4.2
+16.7	-17.8	-4.5	+4.3
+16.65	-17.8	-4.5	+4.25
+16.82	-17.98	-4.54	+4.29
÷ .305	÷ .305	-2.27	+2.14
+55.2 (1) ✓	-58.9 (9.0) ✓		

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1909phae.proj.2299B

Ast 51 No. 54 March 10, 1909.

										1900 Jan.	20	18	54.8	−52	32.4	
a =	−5	11	68	20	15	39.6	−52	18.5	+	100.7	=	20	17	18.8	−18.5	=	−52	37.4
b =	−5	11	48	20	18	38.6	−52	54.7	−	87.5	=	20	17	0.5	+13.5	=	−52	37.7
c =	−5	11	48	20	15	28.8	−51	33.8				20	17	1.6			−52	37.3

c − a = + 9.7

cor − 51.5

.314

0.2

− 3.0

+0.6

+0.2 −0.2 0.0 +0.1

	x	y	x	y
a	32.8	73.7	37.8	80.2
b	90.0	10.3	95.0	16.9
η	63.4	36.9	68.4	43.6

x	x	y	y
η − a + 30.6	η − b − 26.6	η − a − 36.8	η − b + 26.6
+ 30.6	− 26.6	− 36.6	+ 26.7
+ 30.6	− 26.6	− 36.7	+ 26.65
+ 30.91	− 26.87	− 37.07	+ 26.92
÷ .307	÷ .307	− 18.54	+ 13.46
+ 100.7	− 87.5		
✓	✓		

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1909phae.proj.2299B

A 7451 No. 55 March 11, 1909.

1900 fno. 20 16 35.3 −52 20.6

a =	−52	11680	20 14 44.9	−52	10.2	+0.0	= 20 14 44.9	−15.2	= −52	25.4	a
b =	−52	11682	20 14 53.2	−52	36.6	−8.6	= 20 14 44.8	+11.2	= −52	25.3	b
ρ =	−52	11681	20 14 52.4	−52	7.4		20 14 44.8		−52	25.4	c

×

c − b = −0.8

+0.1 −0.1 −0.1 +0.1

(c₀₀ − 52.1)/2

.307

−0.2

	x	y	x	y
a	77.4	98.8	82.4	109.6
b	80.0	46.3	85.0	57.0
η	77.4	68.8	82.4	79.4

	x		x		y		y	
a	0.0	η − b	− 2.6	η − a	−30.0	η − b	+ 22.5	
b	0.0		− 2.6		−30.2		+ 22.4	
η	0.0		− 2.6		− 30.1		+ 22.45	
	0.0		− 2.6		− 30.40		+ 22.67	
	÷ .305		÷ .305		− 15.20		+ 11.34	
	0.0		− 8.6					

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1909phae.proj.2299B

A 7451 No. 56 March 11, 1909.

								1900 fun.	20	15	53.5	−52	23.9	
a = −52	11674	20	12	21.4	−52	38.8	+98.7	= 20	14	59.1	+10.8	= −52	28.5	6
b = −52	11683	20	15	22.1	−52	18.9	−8.8	= 20	14	1.2	−9.9	= −52	28.8	7
c = −51	11468	20	15	16.9	−51	49.1			20	14	0.6		−52	28.6
				×						−1.4	+1.4		0.0	+0.1
				c − b = −5.2										
Cos −51.8				.309										
2				−1.6										

	x	y	x	y
a	45.9	5.6	50.9	15.1
b	100.0	45.6	105.0	55.0
η	75.6	26.0	80.6	35.4

x	x	y	y
η − a + 29.7	η − b − 24.4	η − a + 20.4	η − b − 19.6
+ 29.7	− 24.4	+ 20.3	− 19.6
+ 29.7	− 24.4	+ 20.35	− 19.6
+ 30.00	− 24.64	+ 20.55	− 19.80
÷ .304	÷ .304	+ 10.28	− 9.90
+ 98.7	− 80.8		
✓	✓		

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1909phae.proj.2299B

A 7451 No. 57 March 11, 1909.

								1900 fun.	20	13	2.7	-52	29.2	
a =	-52	11667	20	12	58.4	-52	51.1	+46.7	= 20	11	9.1	-8.4	= -52	33.8
b =	-52	11673	20	12	0.4	-52	44.3	-50.9	= 20	11	9.5	+10.7	= -52	33.6
c =	-53	9849	20	9	49.8	-51	22.2			20	11	9.3	-52	33.8

x

c − a = −32.6

−51.4 / 2

.312

− 10.2

−0.6 +0.7 +0.0 −0.1

	x	y	x	y
a	40.0	124.5	25.0	177.2
b	69.4	86.8	57.4	89.6
η	54.0	107.9	39.1	110.7

	x	x	y	y
η − a	+ 14.0	η − b − 15.4	η − a − 16.6	η − b + 21.1
	+ 14.1	− 15.3	− 16.5	+ 21.1
	+ 14.05	− 15.35	− 16.55	+ 21.1
	+ 14.19	− 15.50	− 16.71	+ 21.31
	÷ .304	÷ .304	− 8.36	+ 10.66
	+ 46.7	− 50.9		

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1909phae.proj.2299B

A 7451 No. 58 March 11, 1909.

								1900 fm.	20	20	53.8	−52	45.2
a =	−52	11690	20	18	28.0	−52	50.7	+32.9	= 20	19	0.9	+0.7	= −52 50.0
b =	−52	11695	20	19	18.0	−52	48.6	−16.4	= 20	19	1.8	−1.4	= −52 50.0
c =	−51	11487	20	19	1.1	−51	50.3			20	19	0.8	−52 50.0
					x						−0.6	+0.6	0.0 0.0
					c − b = −16.9								
Cos −51.8 / 2					.309								
					−5.2								

	x	y	x	y
	20.3			
a	35.0	26.3	35.2	34.9
b	35.0	30.5	40.0	39.0
η	30.1	27.6	35.1	36.2

x	x	y	y
η − a + 9.8	η − b − 4.9	η − a + 1.3	η − b − 2.9
+ 9.9	− 4.9	+ 1.3	− 2.8
+ 9.85	− 4.9	+ 1.3	− 2.85
+ 9.94	− 4.95	+ 1.31	− 2.88
÷ .302	÷ .302	+ 0.66	− 1.44
+ 32.9	− 16.4		
√	/		

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1909phae.proj.2299B

A 7451 No. 59 March 11, 1909.

								1900 pos.	20	20	17.9	−52	42.6	
a =	−52	11685	20	15	55.7	−52	44.2	+150.2 (48.7)	= 20	18	25.9 (4.4)	−3.2	= −52	47.4
b =	−52	11695	20	19	18.0	−52	48.6	−53.5 (0)	= 20	18	24.5 (5.0)	+1.2	= −52	47.4
c =	−51	11488	20	19	12.1	−51	56.6		20	18	25.7 (4.7)		−52	47.4
									−0.3		+0.3		0.0	0.0

c − b = +59

.308

− 1.8

(c − 51.9)/2

	x	y	x	y
a	9.1	45.1	14.1	29.6
b	70.0	35.5	75.0	21.0
n	59.0 (4)	38.8 (2)	59.0	23.3

x	x	y	y
n − a + 44.9	n − b − 16.0	n − a − 6.3	n − b + 2.3 (2)
+ 44.9	− 16.0	− 6.3	+ 2.3
+ 44.9	− 16.0	− 6.3	+ 2.3
+ 45.35	− 16.16	− 6.36	+ 2.32
÷ .302	÷ .302	− 3.18	+ 1.16
+ 150.2	− 53.5		
√	√		

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1909phae.proj.2299B

A 7451 No. 60 March 11, 1909.

								1900 prec.	20	20	0.6	−52	41.8	
a =	−52	11685	20	15	55.7	−52	44.2	+ 132.6	= 20	18	8.9	− 2.3	= −52	46.5
b =	−52	11695	20	19	18.0	−52	48.6	− 71.8	= 20	18	6.6	+ 2.0	= −52	46.6
c =	−51	11488	20	19	12.1	−51	56.6			20	18	7.8	−52	46.6
											−0.4	+0.3	−0.1	0.0

$\frac{C_{00} - 51.9}{2}$

x

c − b = − 5.9

.308

− 1.8

	x	y	x	y
a	9.1	45.1	14.1	29.6
b	70.0	35.5	75.0	21.0
η	48.8	40.6	53.7	25.0
	x	x	y	y
	η − a + 39.7	η − b − 21.2	η − a + 4.5	η − b − 4.1
	+ 39.6	− 21.3	+ 4.6	− 4.0
	+ 39.65	− 21.25	+ 4.55	− 4.05
	+ 40.05	− 21.46	− 4.59	− 4.09
	÷ .302	÷ .302	− 2.295	− 2.04
	+ 132.6	− 71.8		

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1909phae.proj.2299B

A 7451 No. 62 March 11, 1909.

													1900 Pos.	20	18	49.1	−52	43.6	
a =	−52	11	68	20	16	57.9	−52	36.6	+123.7	=	20	16	56.4	−11.7	=	−52	48.3	a
b =	−52	98	90	20	18	28.0	−53	50.4	−175.9	=	20	16	53.4	+16.6	=	−52	48.4	b
p =	−53	11	96	20	16	44.6	−58	39.5			20	16	55.3			−52	48.4	c

c − x = −6.3

Cos −52.5

.308
.951
−1.9

+0.1 −0.1 −0.2 +0.2

	x	y	x	y
a	20.4	69.7	25.4	79.2
b	110.0	13.6	115.0	27.0
η	57.4	46.4	62.4	56.0

	x	x	y	−y
η−a	+37.0	η−b −52.6	η−a −23.9	η−b +32.8
	+37.0	−52.6	−23.2	+33.0
	+37.0	−52.6	−23.25	+32.9
	+37.37	−53.13	−23.48	+33.23
	÷.302	÷.302	−11.74	+16.62
	+123.7	−175.9		

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1909phae.proj.2299B

A 7451 No. 61 March 11, 1909.

							1900 fno.	20	19	21.7	−52	49.4	
a =	−52	11686	20	16	17.9	−52	55.4	+78.6	20	17	28.5	+1.1	−52 54.3
b =	−52	11690	20	18	18.0	−52	50.7	−60.3	20	17	28.1	−3.3	−52 54.0
c =	−53	9866	20	16	11.6	−53	30.5		20	17	28.3		−52 54.2

α

c − a = −6.3

+0.6 −0.5 +0.1 −0.2

C/D − 53.5 / 2

.297

− 1.9

	x	y	x	y
a	55.0	81.7	60.0	89.2
b	94.6	90.4	99.6	98.2
η	76.4	83.9	81.4	91.5

x	x	y	y
η − a + 21.4	m − b − 18.2	m − a + 2.2	m − b − 6.5
+ 21.4	− 18.2	+ 2.3	− 6.7
+ 21.4	− 18.2	+ 2.25	− 6.6
+ 21.61	− 18.38	+ 2.27	− 6.67
÷ .302	÷ .302	+ 1.14	− 3.34
+ 71.6	− 60.9		
✓	✓		

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1909phae.proj.2299B

A7451 No. 63 March 11, 1909.

						1900 fno.	20	13	45.4	-52 47.3
a = -53 9853	20	11	26.3	-53	10.4	+ 25.6	= 20	11	51.9 + 18.6	= -52 51.8
b = -52 11673	20	12	0.4	-52	44.3	- 9.4	= 20	11	51.2 - 7.6	= -52 51.8
c = -52 11670	20	11	20.4	-52	20.7			20	11 51.4	-52 51.8

×

$c - a$ = + 5.9

.306

-1.8

+0.2 -0.3 +0.1 -0.1

Cos -52.3 / 2

	x	y	x	y
a	75.0	15.0	80.0	21.5
b	85.5	62.0	90.4	73.6
η	82.7	51.9	87.6	58.4

x	x	y	y
$\eta - a$ + 7.7	$\eta - b$ - 2.8	$\eta - a$ + 36.9	$\eta - b$ - 10.1
+ 7.6	- 2.8	+ 36.9	- 15.2
+ 7.65	- 2.8	+ 36.9	- 15.15
+ 7.73	- 2.83	+ 37.27	- 15.30
÷ .302	÷ .302	+ 18.64	- 7.65
+ 25.6	- 9.4		

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1909phae.proj.2299B

A 7451 No. 64 March 11, 1909.

1900 fus. 20 9 30,5 −52 58,6

a = −52 11643	20	4	49.8	−52	48.9	+ 167.9	= 20	7	37.7 − 14.8	= −53 3.8
b = −53 9843	20	8	30.3	−53	7.4	− 54.8	= 20	7	35.4 + 4.3	= −53 3.1
c = −51 11440	20	5	18.0	−51	52.6			20	7 36.8	−53. 30

x

c − a = +28.2 1 0.0 +0.1 −0.1 +0.1

cos −51.9 / 2 .308 + 7.0

	x	y	x	y
a	25.0	60.0	30.0	68.5
b	91.4	23.6	96.4	32.1
n	75.1	32.1	80.0	40.6

x	x	y	y
n − a + 50.1	n − b − 16.3	n − a − 27.9	n − b + 8.5
+ 50.0	− 16.4	− 27.9	+ 8.5
+ 50.05	− 16.35	− 27.9	+ 8.5
+ 50.55	− 16.51	− 28.18	+ 8.58
÷ .308	÷ .308	− 14.09	+ 4.29
+ 167.9	− 54.8		
✓	✓		

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1909phae.proj.2299B

A 7451 No. 65 March 11, 1909

				1900 Jan.	20 27 29.9 − 52 57.8
a = − 52 11707	20 23 40.2	− 52 55.8	+ 117.1	=	20 25 37.9 − 7.1 = − 53 2.9
b = − 53 9913	20 26 56.5	− 53 6.8	− 79.7	=	20 25 36.8 + 4.0 = − 53 2.8
c = − 52 11706	20 23 31.7	− 52 21.9			20 25 36.4 − 53 2.9

x

c − a = − 8.5

Cos − 52.3 / 2

.306

− 2.6

−0.3 +0.4 +0.1 0.0

	x	y	x	y
a	80.0	38.5	70.0	42.0
b	138.9	16.2	138.9	19.7
η	184.9	24.1	104.9	27.7

x	x	y	y
η − a + 34.9	η − b − 24.0	η − a − 14.4	η − b + 7.9
+ 34.9	− 24.0	− 14.3	+ 8.0
+ 34.9	− 24.0	− 14.35	+ 7.95
+ 35.25	− 24.24	− 14.49	+ 8.03
÷ .301	÷ .301	− 7.24	+ 4.02
+ 117.1	− 80.5		
1	1		

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1909phae.proj.22998

A 7451 No. 53 March 12, 1909.

								1900 Jno.	20	21	59.7	−52 26.1
a =	−52	11695	20	19	18.0	−52	48.6	+ 49.5	= 20	20	7.5	+ 17.6 = −52 30.1
b =	−52	11701	20	20	58.5	−52	9.6	+ 52.1	= 20	20	7.0	− 21.7 = −52 31.0
c =	−51	11487	20	19	1.1	−51	50.3		20	20	7.2	−52 30.9
					x							
					c − a = −16.9				+ 0.3	− 0.2		+ 0.1 − 0.1
Cos −51.8 / 2					.309							
					−5.2							

	x	y	x	y
a	30.0	14.5	35.0	28.0
b	60.7	95.2	65.7	105.8
η	45.1	58.8	50.0	67.3
	x	x	y	y
	η − a + 15.1	η − b − 15.6	η − a + 33.3	η − b − 44.4
	+ 15.0	− 15.7	+ 35.3	− 42.5
	+ 15.05	− 15.65	+ 35.3	− 42.45
	+ 15.20	− 15.81	+ 35.65	− 42.87
	÷ .304	÷ .304	+ 17.82	− 21.44
	+ 50.0	− 52.0		
	✓	✓		

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1909phae.proj.2299B

A 7451 No. 66 March 12, 1909

						1900 prs.	20	23	37.4	-52 56.7
a = -53 9874	20	18	21.1	-53	4.5	+ 20 4.2	= 20	21	45.3	+ 5.2 = -53 1.3
b = -53 9897	20	23	25.2	-53	0.6	- 10 0.0	= 20	21	44.2	- 1.2 = -53 1.8
∫ = -52 11705	20	23	9.5	-52	21.8			20	21	44.8 -53 1.6
		x								
		a-b = -15.7						-0.9	+1.0	-0.3 +0.2

Cos -52.3 / 2

.306

- 4.8

	x	y	x	y
a	38.1	10.1	44.0	26.2
b	130.0	28.7	135.0	65.0
η	99.9	26.3	104.9	32.6

x	x	y	y
η-a + 60.8	η-b -30.1	m-a + 6.2	η-b - 2.4
+ 60.9	- 30.1	+ 6.3	- 2.4
+ 60.85	- 30.1	+ 6.25	- 2.4
+ 61.46	- 30.40	+ 6.31	- 2.42
÷ .301	÷ .301	+ 3.16	- 1.21
+ 204.2	- 101.0		

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1909phac.proj.22998

A 7451 No. 67 March 6?, 1909

								1900 fnd.	20	23.0	2.2	−52	58.5
a =	−53	9874	20	18	21.1	−53	4.5	+ 10 7.7 =	20	20	8.8	+ 1.4	= −53 3.1
b =	−53	9897	20	23	25.2	−53	0.6	− 197.1 =	20	20	8.1	− 2.9	= −53 3.5
c =	−52	11705	20	23	9.5	−52	21.8		20	20	8.4		−53 3.3
				x									
				c − b =	−15.7						−1.0	+1.1	−0.2 +0.2
					.306								
					− 4.8								

	x	y	x	y
a	38.1	10.1	44.0	36.7
b	130.0	28.7	135.0	35.0
η	71.3	22.9	76.2	29.2
	x	x	y	y
	η − a + 32.2 n − b	− 58.7 n − a + 7.2 n − b	− 5.8	
	+ 32.2	− 58.8	+ 2.9	− 5.8
	+ 32.2	− 58.75	+ 2.85	− 5.8
	+ 32.52	− 59.34	+ 2.88	− 5.86
	÷ .301	÷ .301	+ 1.44	− 2.93
	+ 108.0	− 197.1		
	√	√		

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1909phae.proj.2299B

A 7451 No. 68 March 12, 1909.

							1900 prec.	20	20	46.4	-53 0.4
a =	-53	9874	20	18	21.1	-53	4.5	+31.7	20	18	53.0 -0.8 = -53 5.3
b =	-53	9881	20	19	49.6	-53	5.0	-56.1	20	18	53.5 -0.2 = -53 5.2
ρ =	-52	11696	20	19	44.3	-52	1.9		20	18	53.3 -53 5.2

x

a - b = -5.3

-0.2 +0.3 +0.1 0.0

Cos -52.0

.308

-1.6

	x	y	x	y
a	43.6	22.7	48.6	35.1
b	70.0	21.5	75.0	35.0
η	58.1	21.1	58.3	34.8

x	x	y	y
η-a +14.5	η-b -18.9	η-a -1.6	η-b -0.4
+9.6	-16.8	-1.5	-0.3
+9.55	-16.85	-1.55	-0.35
+9.65	-17.02	-1.56	-0.35
÷300	÷300	-0.78	-0.18
+32.2	-56.7		

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1909phac.proj.22998

A7451 No. 69 March 12, 1909.

							1900 fro.	20	20	26.9	−52	56.9
a =	−52	11686	20	16	17.9	−52	55.4	+ 137.2 =	20	18	35.4	−6.4 = −53	18
b =	−53	9881	20	19	49.6	−53	5.0	− 76.7 =	20	18	37.8	+3.5 = −53	1.7
ρ =	−52	11696	20	19	44.3	−53	1.9		20	18	34.6		−53 1.5

$c - b = -5.3$

0.0 0.0 0.0 0.0

$\frac{c_{100} - 53.0}{2}$ .308 − 1.6

	x	y	x	y
a	21.2	54.2	76.3	60.7
b	85.0	30.0	90.0	41.5
η	62.1	41.6	68.2	48.1

x	x	y	y
$\eta - a$ + 40.9	$\eta - b$ − 22.9	$\eta - a$ − 12.6	$\eta - b$ + 6.6
+ 40.9	− 22.8	− 12.6	+ 6.6
+ 40.9	− 22.85	− 12.6	+ 6.6
+ 41.31	− 23.08	− 12.73	+ 6.67
÷ .301	÷ .301	− 6.36	+ 3.34
+ 137.2	− 76.7		
✓	✓		

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1909phae.proj.2299B

~~Void~~ - ~~see page 79~~

A 7451 No. 70 March 12, 1909.

a = −52 11677	20 12 53.4	−52 51.1 + ~~143.7~~ 138.5	= 20 15 ~~16.8~~ 11.9	− ~~22.5~~ 3.0 = −53 ~~13.6~~ 4.1
b = −53 9871	20 17 35.1	−53 36.8 − ~~149.5~~ 143.1	= 20 15 ~~8.6~~ 12.0	+ ~~22.8~~ 22 = −53 ~~15.0~~ 4.6
ρ = −52 11688	20 17 20.0	−52 20.0	20 15 12.0	−53 14.4

$a - b = -15.1$ −0.1 0.0 −0.3 +0.2

$\frac{\cos -52.3}{2}$ .606 (3)

−4.6

	x	y	x	y
a	~~XXX~~ 20.5	~~95.2~~ 8.1	~~22.6~~ 15.5	~~115.7~~ 6.5
b	105.0	7.5	110.0	26.0
n	~~60.6~~ 20	~~50.6~~ 20	~~65.6~~ 7.1	~~69.X~~ 70.5

~~x x y y~~

~~n−a + 42.9 n−b − 44.4 n−a − 44.6 n−b + 43.1~~
~~+ 43.0 − 44.4 − 44.6 + 43.1~~
~~+ 42.95 − 44.4 − 44.6 + 43.1~~
~~+ 43.38 − 44.84 − 45.05 + 43.53~~
~~÷ .300 ÷ .300 − 22.52 + 21.76~~
~~+ 143.7~~ 4.6 ~~− 149.5~~

error was made in orientation. R.O.M.

x ✓	x ✓	y	y
n−a + 41.5	n−b − 43.0	n−a − 46.1	n−b + 44.5
+ 41.6	− 42.9	− 46.0	+ 44.5
+ 41.55	− 42.95	− 46.05	+ 44.5
÷ .300	÷ .300	− 23.02	+ 22.25
+ 138.5 ✓	− 143.1 ✓		

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1999phac.proj.22998

A 7451 No. 70 March 22, 1909.

1900 fm. 20 15 7 6.2 33.8 − 54 3 9.8 14.7

a =	−53	9861	20	14	50.1	−53	3.1	+ 32.7	= 20	15	12.8	−11.5	= −53	14.6
b =	−53	9864	20	15	19.6	−53	26.7	− 7.4	= 20	15	12.2	+12.3	= −53	14.4
c =	−52	11680	20	14	44.9	−52	10.2		20	15	12.2		−53	14.5
					×						−0.1	+0.1	0.0	0.0
			c − a = −5.2											
Cos − 52.2 / 2			.306											
			−1.6											

	x	y	x	y
a	15.0	59.9	20.0	65.5
b	23.8	12.8	38.8	18.3
η	21.4	32.4	26.6	42.6

x	x	y	y
η − a + 6.6	η − b − 2.2	η − a − 22.4	η − b + 24.3
+ 6.6	− 2.2	− 22.9	+ 24.3
+ 6.6	− 2.2	− 22.85	+ 24.3
+ 6.67	− 2.22	− 23.08	+ 24.54
÷ .300	÷ .300	− 11.54	+ 12.27
+ 22.2	− 7.4		
✓	✓		

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1909phae.proj.2299B

A 7451 No. 71 March 12, 1909.

								1900 fm.	20	14	42.6	-53	5.4		
a =	-53	9849	20	9	49.8	-53	22.2	+179.1	= 20	12	48.8	+12.5	= -53	9.8	a
b =	-53	9861	20	14	50.1	-53	3.1	-12.5	= 20	12	48.4	-7.3	= -53	10.3	b
c =	-50	11680	20	14	44.9	-52	10.2			20	12	48.8		-53	10.0	c
					x						-1.3	+1.4		-0.2	+0.3	
			c-b =		-5.2											
Cos	-52.2				.306											
					-1.6											

	x	y	x	y
a	16.7	15.3	20.7	25.7
b	105.0	54.5	110.0	64.9
n	68.9	40.1	73.9	50.5
	x	x	y	y
	n-a +53.2	n-b -36.1	n-a +24.8	n-b -14.4
	+53.2	-36.1	+24.8	-14.4
	+53.2	-36.1	+24.8	-14.4
	+53.73	-36.46	+25.05	-14.52
	÷.300	÷.300	+12.52	-7.27
	+179.1	-121.5		
	√	√		

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1909phae.proj.22998

A 7451 No. 72 March 12, 1909.

						1900 fno.	20	13	31.7	−53	9.0
a	−53 9849	20	9	49.8	−53	22.2	+ 106.9	= 20	11	38.1 + 8.9	= −53 13.8
b	−53 9861	20	14	50.1	−53	3.1	− 193.8	= 20	11	36.3 − 10.9	= −53 14.9
c	−52 11680	20	14	44.9	−52	10.2			20	11 36.5	−53 13.6
										−1.3 + 1.3	−0.2 + 0.3

c − b = −52

.306

− 1.6

cos −52.2 / 2

	x	y	x	y
a	16.7	15.3	20.7	35.7
b	105.0	54.5	110.0	64.9
η	46.5	33.0	52.4	43.3

x	x	y	y
η − a + 31.8	η − b − 57.5	η − a + 17.7	η − b − 21.5
+ 31.7	− 57.6	+ 17.6	− 21.6
+ 31.75	− 57.55	+ 17.65	− 21.55
+ 32.07	− 58.13	+ 17.83	− 21.76
÷ .300	÷ .300	+ 8.92	− 10.88
+ 106.9	− 193.8		
✓	✓		

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1909phae.proj.2299B

A 7451 No. 73 March 12, 1909.

					1900 fno.	20	11	26.6	-53	12.9
a = -53	9843	20	8	30.3	-53	7.4	+6.3 =	20	9	32.9 -10.1 = -53 17.6
b = -53	9849	20	9	49.8	-53	22.2	-17.5 =	20	9	31.3 +5.9 = -53 17.7
c = -52	11664	20	9	49.7	-52	44.8		20	9	31.8 -53 17.4
				x						
				c-b = -0.1				+0.2	-0.3	+0.1 -0.1

Cor -52.7 / x

.303

-0.0

	x	y	x	y
a	26.3	45.1	31.3	53.5
b	50.0	14.9	55.0	23.4
η	44.8	24.9	49.8	33.4
	x	x	y	y
	η-a + 18.5	η-b - 5.2	η-a - 20.2	η-b + 10.0
	+ 18.5	- 5.2	- 20.1	+ 10.0
	+ 18.5	- 5.2	- 20.15	+ 10.0
	+ 18.68	- 5.25	- 20.35	+ 10.10
	÷ .300	÷ .300	- 10.18	+ 5.05
	+ 62.3	- 17.5		
	√	√		

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1909phae.proj.22998

A 7451 No. 74 March 12, 1909.

								1900 fno.	20	11½	12.8	-52	59.9
a =	-52	11661	20	8	20.2	-52	58.1	+ 1.9 =	20	9	18.8	-6.1 =	-53 4.8
b =	-53	9846	20	9	18.3	-53	8.2	9.4 =	20	9	18.8	+ 3.7 =	-53 4.5
c =	-52	11662	20	9	20.2	-52	21.0		20	9	18.8		-53 4.4
					α						-0.4	+0.4	-0.2 +0.1
					c − t =	-8.1							
Cos −52.3						.306							
						-2.5							

	x	y	x	y
a	39.4	69.7	44.5	82.2
b	50.0	49.9	55.0	62.5
η	47.2	57.3	52.2	69.9

x	x	y	y
n-a + 7.8	n-b − 2.8	m-a − 12.4	n-b + 7.4
+ 7.7	− 2.8	− 12.3	+ 7.4
+ 7.75	− 2.8	− 12.35	+ 7.4
+ 7.83	− 2.83	− 12.47	+ 7.47
÷ .301	÷ .301	− 6.24	+ 3.74
+ 26.0	− 9.4		
✓	✓		

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1909phae.proj.2299B

See Ref. 12 pg. 156 for remeas. of this net.
error was made in reduction of c –

A 7451 No. 75 March 12, 1909.

1900 hrs. 20 10 30.1 – 53 10.7

a =	– 53	9842	20	8	30.3	– 53	16.8	+ 15.3	=	20	8	46.1	+ 11.6	= – 53	15.4
b =	– 52	1166	20	8	52.5	– 52	58.1	– 17.0	=	20	8	35.5	– 17.0	= – 53	15.5
c =	– 52	1166	20	9	30.2	– 52	21.0			20	8	35.6		– 53	15.4

+0.0 –0.1 +0.1 –0.1
–3.5 +3.6 0.0 0.0

c – b = + 17.7
.306
+ 5.4

C00 – 52.4 / 2

	x	y	x	y
a	45.3	12.9	50.3	23.4
b	55.0	70.0	60.0	80.5
η	49.9	35.9	54.9	46.4

x	x	y	y
η – a + 4.6	η – b – 5.1	η – a + 23.0	η – b – 34.1
+ 3.4	– 3.8	+ 3.0	– 34.1
+ 4.6	– 5.1	+ 26.0	– 34.1
+ 3.4	– 3.8	+ 23.0	– 34.1
+ 8.04	– 8.94	+ 53.08	– 54.76
÷ .300	÷ .300	+ 11.50	– 17.85
+ 15.3	– 17.0		
+ 11.5	– 11.8		

✓ ✓

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1909phaa.proj.2299B

A 7451 No. 76 March 12, 1909.

						1900 Jno.	20	26	33.2	-53	19.2
a =	-53 9901	20	23	48.5	-53	41.4	+52.4	= 20	24	40.8	+17.4 = -53 24.8
b =	-52 11717	20	26	5.2	-52	55.2	-86.2	= 20	24	39.0	-29.4 = -53 24.6
C =	-53 9897	20	23	25.2	-53	0.6		20	24	40.8	-53 24.4
				x						+0.2	-0.3 0.0 +0.1
				a - a =	-23.3						
Cos -53.0 / 2				.301							
				-7.0							

	x	y	x	y
a	35.0	42.8	40.0	53.5
b	76.0	135.5	81.0	146.0
η	50.5	77.3	55.5	97.9

	x	x	y	y
η-a	+15.5 m-b	-25.5 m-a	+34.5 m-b	-58.2
	+15.5	-25.5	+34.4	-58.1
	+15.5	-25.5	+34.45	-58.15
	+15.66	-25.76	+34.79	-58.73
	÷.299	÷.299	+17.395	-29.36
	+52.4	-86.2		
	✓	✓		

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1909phae.proj.2299B

A7451 No. 77 March 12, 1909.

								1900 fno.	20	14	56.6		−53	35.0		
a =	−53	9847	20	9	38.3	−53	43.2	+20 4.7 =	20	13	8.0	+ 2.9 =	−53	40.3		
b =	−53	9871	20	17	35.1	−53	36.8	−275.4 =	20	17	59.5	− 2.1 =	−53	38.9		
c =	−53	11664 9849	20	9	49.8	−53	44.8 22.2		20	13	1.4		−53	39.6		
					×						−0.8	+0.7		+0.7	−0.7		
					$c-a$ = +11.4												
					.303												
					+3.4												

	x	y	x	y
a	20.0	4.9	25.0	11.3
b	60.7	14.8	165.7	21.2
η	80.0	10.5	85.0	17.1

	x	x	y	y
$\eta-a$	+60.0	$\eta-b$ −80.7	$\eta-a$ +5.6	$\eta-b$ −4.3
	+60.0	−80.7	+5.8	−4.1
	+60.0	−80.7	+5.7	−4.2
	+60.60	−81.51	+5.76	−4.24
	÷.296	÷.296	+2.88	−2.12
	+204.7	−275.4		

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1909phae.proj.2299B

A 7451 No. 78 March 13, 1909

				1900 Jno.	20 14 43.1	−53 29.9
a	−53 9847	20 9 38.3	−53 43.2	+191.6	= 20 12 49.8	+8.3 = −53 34.5
b	−53 9864	20 15 19.6	−53 26.7	−151.5	= 20 12 47.1	−7.4 = −53 34.1
c	−53 11664 9849	20 9 49.7	−53 44.8		20 12 48.5	−53 34.5
		×			−0.3 +0.3	+0.5 −0.5
		c − a = +11.1				
	c₀ − 53 7 / 2	.303				
		+3.4				

	x	y	x	y
a	20.0	4.9	15.0	11.3
b	121.2	31.9	126.2	43.4
η	76.3	21.3	81.4	27.7

x	x	y	y
η − a +56.3	η − b − 44.9	η − a +16.4	η − b − 15.6
+56.4	−44.8	+16.4	−15.7
+56.85	−44.85	+16.4	−14.65
+56.91	−45.20	+16.56	−14.80
÷.297	÷.297	+8.28	−7.40
+191.6	−152.5		
✓	✓		

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1909phae.proj.2299B

A 7451 No. 79 March 13, 1909

						1900 prs.	20	14	43.9		−53	17.6		
a = −53 9846	20	9	28.3	−53	8.2	+203.2	20	12	51.5	−1.0	−53	22.2	a	
b = −53 9859	20	14	36.3	−53	28.4	−108.1	20	12	48.2	+6.1	−53	22.2	b	
c = −52 11680	20	14	44.9	−52	10.2		20	12	49.8		−53	22.2	c	
			x											
	c − b = +8.6						+0.1 −0.2			−0.1 +0.1				
Cor −52.2			.306											
2			+2.6											

	x	y	x	y
a	13.8	64.5	7.9	55.2
b	105.0	24.5	100.0	15.6
η	93.0	36.8	68.0	27.3

x	x	y	y
η − a + 60.2	η − b − 32.0	η − a − 27.7	η − b + 12.3
+ 60.1	− 32.0	− 27.9	+ 12.2
+ 60.15	− 32.0	− 27.8	+ 12.25
+ 60.75	− 32.32	− 28.08	+ 12.37
÷ .299	÷ .299	− 14.04	+ 6.18
+ 203.2	− 108.1		
✓	✓		

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1909phae.proj.2299B

error – in sign-orientation
see page 90.

A 7451 No. 80 March 13, 1909

a = −53 9901	20	23	48.5	−53	41.4	+178.2	=	20	26	48.9	−11.7	=	−53	53.1
b = −53 9916	20	27	54.5	−53	54.1	−48.1	=	20	27	6.4	+3.3	=	−53	50.8
c = −53 11707	20	25	40.2	−53	55.8			20	26	56.6			−53	52.0

x

$c - a = \pm 8.3$

$\frac{c_{aa} - 52.9}{2}$

± 2.5

$\frac{30.2}{}$

	x	y	x	y
a	20.0	40.5	25.0	50.1
b	86.1	10.6	91.1	20.4
η	72.0	17.4	77.1	28.9

x	x	y	y
$n-a$ +52.0	$n-b$ −14.1	$n-a$ ± 23.3	$n-b$ + 6.8
+52.1	−14.0	−23.2	+6.6
+52.05	−14.05	−23.15	+6.7
+52.57	−14.19	−23.38	+6.7
÷ 29.5	÷ 29.5	−11.69	+3.38
+178.3	−48.1		

✓ ✓

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1909phae.proj.2299B

A 7451 No. 80. March 13, 1909.

1900 pos. 20 28 43.1 − 53 46.4

a = −53 9901	20 23 48.5	−53 41.4	+ 182.6 = 20 26 51.1 − 10.3	= −53 51.7
b = −53 9916	20 24 54.5	−53 54.1	− 65.9 = 20 26 48.6 + 2.8	= −53 51.3
c = −52 11707	20 23 40.2	−52 55.8	20 26 49.8	−53 51.5

x

c − a = − 8.3

Cos − 52.9

.302

− 2.5

0.0 0.0 +0.2 −0.1

	x	y	x	y
a	20.0	40.5	15.0	45.0
b	92.6	14.6	87.6	19.2
n	73.4	20.1	68.3	24.7

x	x	y	y
n−a + 53.4	n−b − 19.2	n−a − 20.4	n−b + 5.5
+ 53.3	− 19.3	− 20.3	+ 5.5
+ 53.35	− 19.25	− 20.35	+ 5.5
+ 53.88	− 19.44	− 20.55	+ 5.56
÷ .295	÷ .295	− 10.28	+ 2.78
+ 182.6	− 65.9		
✓	✓		

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1909phae.proj.2299B

Cannot measure No. 81 – on account of not being able to get desireable ~~stars~~ for determining position. Object is very close to edge of plate – also

A 7451 No. 8 March 13, 1909.

1900 fm. 20 28 23.0 – 54 38.5

a = – 54 9722 20 26 24.3 – 54 34.7 + 3.7 = 20 26 28.0 – 8.7 = – 54 43.4

b = – 54 9723 20 26 30.8 – 54 55.1 – 2.8 = 20 26 28.0 + 11.6 = – 54 43.5

c = – 54 9721 20 26 19.8 – 54 32.6 20 26 28.0 – 54 43.5

0.0 0.0 – 0.1 + 0.1

x

c – b = – 11.0

cos –54.4 = .591

– 3.2

	x	y	x	y
a	78.1	55.3	88.2	67.5
b	80.0	14.9	90.0	24.3
n	79.2	37.8	89.2	50.2

x	x	y	y
n – a + 1.1	n – b – 0.8	m – a – 17.5	n – b + 22.9
+ 1.0	– 0.8	– 17.3	+ 22.9
+ 1.05	– 0.8	– 17.4	+ 22.9
+ 1.06	– 0.80	– 17.57	+ 23.13
÷ .789	÷ .789	– 8.78	+ 11.56
+ 3.7	– 2.8		
√	√		

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1909phae.proj.2299B

A 7451 No. 83 March 13, 1909.

							1900 fno.	20	24	30.3	−54 4.7
a =	−53 4	9904 7	20	21	26.6	−54	10.1	+ 70.7 69.9	= 20	22	37.3 65 +0.6 = −54 9.5
b =	−54	9717	20	25	17.8	−54	7.1	− 158.7 7.1	= 20	25	34.1 5.7 −2.6 = −54 9.7
p =	−53	9896 9.7	20	24	35.0	−53	15.6		20	22	36.14 32.7 −54 9.6

a

c

× × +0.4 −0.4 −0.1 +0.1

c−b = −37.8 −2.2

C00 − 53.2 / 2

−300

−11.3

	x	y	x	y
a	28.5	29.1	33.4	23.9
b	95.0	35.5	100.0	29.9
q	49.0	30.3	53.9	25.0
	x	x	y	y
	n−a + 20.5	n−b − 46.0	n−a + 1.2	n−b − 5.2
	+ 20.5	− 46.1	+ 1.1	− 4.9
	+ 20.5	− 46.05	+ 1.15	− 5.05
	+ 20.70	− 46.51	+ 1.16	− 5.10
	÷ .293	÷ .293	+ 0.58	− 2.55
	+ 70.6	− 158.7		

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1909phae.proj.2299B

A 7451 No. 85 March 13, 1909.

						1900 Jan.	20	24	17.8	−54	6.5
a =	−54	9703	20	21	0.1	−54	13.1	+ 8.4 =	20	22	25.5 + 1.8 = −54 11.3
b =	−54	9717	20	21	12.8	−54	7.1	− 1.2 =	20	22	24.6 − 4.5 = −54 11.6
c =	−54	9807	20	24	35.0	−53	15.6		20	22	23.6 −54 11.4
				x							
			c − b =	−37.8					−0.3 + 0.3		−0.1 + 0.2
Cos −53.2				.300							
				−11.3							

	x	y	x	y
a	21.2	22.7	26.1	17.7
b	95.0	35.5	100.0	29.9
η	45.4	26.5	50.3	21.2

x	x	y	y
η − a +24.2	η − b −49.6	η − a +3.8	η − b −9.0
+24.2	−49.7	+3.5	−8.7
+24.2	−49.65	+3.65	−8.85
+24.44	−50.15	+3.69	−8.94
÷ .293	÷ .293	+1.84	−4.47
+83.4	−171.2		
✓	✓		

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1909phae.proj.2299B

A7451 No. 84 March 13, 1909.

								1900 fno.	20	24	29.6	− 53	58.1		
a =	− 54	9704	20	21	26.6	− 54	10.1	+ 69.4 x	= 20	22	36.0	− 7.2	= −54	3.9	a
b =	− 53	9903	20	24	13.0	− 53	55.1	− 99.3	= 20	22	35.7	+ 7.9	= −54	3.0	b
c =	− 53	9890	20	21	27.6	− 53	17.4				35.7		−54	3.0	c

x

c − a = + 1.0 +0.6 −0.7 0.0 −0.1

c₀₀ − 53.3

· 299

+ 0.3

	x	y	x	y
a	40.0	24.5	45.0	31.0
b	89.2	54.5	94.3	60.9
n	60.4	38.8	65.4	45.2

x	x	y	y
n − a + 20.4	n − b − 28.9	n − a − 14.3	n − b + 15.7
± 20.4	− 28.9	− 14.2	+ 15.7
+ 20.4	− 28.9	− 14.25	+ 15.7
+ 20.60	− 29.19	− 14.39	+ 15.86
÷ .299	÷ .299	− 7.195	+ 7.93
+ 70.1	− 99.3		
/	√		

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1909phae.proj.2299B

see page 94 for No. 85.

A 7451 No. 85 March 13, 1909.

							1900 fm.	20	23	51.3	−53 53.1
a =	−53	9888	20	21	14.1	−53 58.8	+42.8	= 20 21 56.9	+0.8	= −53 58.0	
b =	−53	9903	20	24	13.0	−53 55.1	−137.5	= 20 21 55.4	−7.8	= −53 57.9	
c =	−53	9889	20	21	26.6	−53 13.3		20 21 56.8		−53 58.0	
									−0.13 +0.2	0.0 −0.1	

c − a = +12.5

Cos − 53.2 / 2

.300

+ 3.8

	x	y	x	y
a	40.0	35.5	45.0	46.0
b	92.6	42.6	97.7	47.9
η	52.5	37.0	57.5	42.4

x	x	y	y
η−a + 12.5	η−b − 40.1	η−a + 1.5	η−b − 5.6
+ 12.5	− 40.2	+ 1.6	− 5.5
+ 12.5	− 40.15	+ 1.55	− 5.55
+ 12.62	− 40.55	+ 1.57	− 5.60
÷ .295	÷ .295	+ 0.78	− 2.80
+ 42.8	− 137.5		

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1909phae.proj.2299B

A 7451 No. 87 March 13, 1909.

											1900 fno.	20	21	42.6	−	53	39.8			
a	= − 53	9868	20	16	41.6	− 53	22.8	+ 187.3	=	20	19	48.9	−	22.1	= −	53	44.9			a
b	= − 53	9892	20	22	11.6	− 53	59.6	− 143.1	=	20	19	48.5	+	15.3	= −	53	44.8			b
ζ	= − 54	9687	20	17	3.6	− 54	13.4			20	19	48.7			−	53	44.6			ζ
												− 1.4	+ 1.5		+ 0.1	− 0.1				

Cos − 54.2 = .592

α − a = + 22.0

.592

+ 6.44

	x	y	x	y
a	15.0	124.5	20.0	130.9
b	111.8	50.5	116.9	56.8
η	69.9	80.8	74.9	87.1

x	x	y	y
η − a + 54.9	η − b − 41.9	η − a − 43.7	η − b + 30.3
+ 54.9	− 42.0	− 43.8	+ 30.3
+ 54.9	− 41.95	− 43.75	+ 30.3
+ 55.45	− 42.37	− 44.19	+ 30.60
÷ .296	÷ .296	− 22.095	+ 15.30
+ 187.3	− 143.1		
√	√		

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1909phae.proj.2299B

A 7451 No. 88 March 15, 1909.

						1900 fus.	20	20	13.2	−54 57.6
a =	−54	9693	20	18	11.1	−54 49.9	+6.2 =	20 18	17.5	−12.5 = −55 2.5
b =	−55	9690	20	18	14.5	−55 20.2	−2.3 =	20 18	16.8	+18.0 = −55 2.7
ζ =	−54	9695	20	18	31.6	−54 42.6		20 18	17.0	−55 2.4

$a - b = +17.1$ × .389 = +4.9

$\frac{\text{cos} - 54.7}{5}$

+0.2 −0.2 0.0 0.0

	x	y	x	y
a	98.9	70.8	103.9	77.4
b	100.0	10.5	105.0	16.8
η	100.6	46.0	105.7	52.4

	x	x	y	y
	$\eta - a$ + 1.7	$\eta - b$ + 0.6	$\eta - a$ −24.8	$\eta - b$ + 35.5
	+ 1.8	+ 0.7	− 25.0	+ 35.6
	+ 1.75	+ 0.65	− 24.9	+ 35.55
	+ 1.77	+ 0.65	− 25.15	+ 35.90
	÷ .286	÷ .286	− 12.58	+ 17.96
	+ 6.2	+ 2.3		
	✓	✓		

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1909phae.proj.2299B

Note – Nos. 89 and 90 are rejected.

A 7451 No. 91 March 15, 1909.

							1900 pos.	20	17	49.0	– 53 40.5
a =	– 53	9862	20	15	4.6	– 53 43.0	+ 49.5 =	20	15	53.8	– 2.3 = – 53 45.3
b =	– 53	9873	20	17	52.6	– 53 49.2	– 119.0 =	20	15	53.8	+ 4.2 = – 53 45.0
c =	– 53	9861	20	14	50.1	– 53 3.1		20	15	53.8	– 53 45.2
											– 0.7 + 0.6 + 0.1 – 0.2

c – a = – 13.5

C00 – 53.0 / 2

.301

– 4.4

	x	y	x	y
a	30.0	40.6	35.0	50.0
b	79.2	27.7	84.2	37.1
η	44.5	36.0	49.4	45.6

x	x	y	y
η – a + 14.5	η – b – 34.7	η – a – 4.6	η – b + 8.3
+ 14.4	– 34.8	– 4.4	+ 8.5
+ 14.45	– 34.75	– 4.5	+ 8.4
+ 14.59	– 35.10	– 4.54	+ 8.48
÷ .295	÷ .295	– 2.27	+ 4.24
+ 49.5	– 119.0		
√	√		

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1909phae..proj.2299B

A 7451 No. 92 March 15, 1909.

								1900 pm.	20	15	34.0	−54	14.8	
a =	−54	9672	20	12	47.8	−54	14.5	+ 5′.0	= 20	13	38.8	− 4.9	= −54	15.4
b =	−54	9680	20	14	54.8	−54	25.2	− 7′.4	= 20	13	37.4	+ 6.0	= −54	19.2
c =	−53	9859	20	14	36.3	−53	28.4		20	13	38.0		−54	19.3

× c − b = − 18.5

.397

− 5.5

$\frac{\text{Coo} - 53.5}{2}$

+0.1 −0.2 0.0 −0.1

	x	y	x	y
a	22.8	57.1	27.8	64.6
b	60.0	35.6	65.0	43.0
η	37.5	47.3	42.6	54.9

x	x	y	y
η − a + 14.7	η − b − 22.5	η − a − 9.8	η − b + 11.7
+ 14.8	− 22.4	− 9.7	+ 11.9
+ 14.75	− 22.45	− 9.75	+ 11.8
+ 14.90	− 22.67	− 9.85	+ 11.92
÷ .292	÷ .292	− 4.92	+ 5.96
+ 51.0	− 77.6		

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1909phae.proj.2299B

A 7451 No. 93 March 15, 1909.

1900 jm. 20 11 30.0 −53 43.4

a = −54 9662	20 9 26.8	−54 49.0	+6.1	= 20 9 34.9	+16.2	= −53 47.7	
b = −53 9847	20 9 38.3	−54 43.2	3.4	= 20 9 34.9	−4.7	= −53 47.9	
c = −53 9846	20 9 28.3	−53 8.2		20 9 34.8		−53 47.8	

c − b = −10.0

Cos −53.1 / 2

·300

−3.0

−0.1 +0.1 0.0 0.0

	x	y	x	y
a	37.3	20.1	42.2	30.9
b	40.0	61.4	45.0	72.1
n	39.0	52.1	44.0	62.9
	x	x	y	y
	n−a +1.7	n−b −1.0	n−a +32.0	n−b −9.3
	+1.8	−1.0	+32.0	−9.2
	+1.75	−1.0	+32.0	−9.25
	+1.77	−1.01	+32.32	−9.34
	÷.295	÷.295	+16.16	−4.67
	+6.1	−3.4		
	✓	✓		

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1909phae.proj.2299B

A 7451 No. 94 March 15, 1909

1900 pos. 20 11 54.4 −53 48.9

a = −53 9847	20 9 28.8	−53 43.9 + 21.5	= 20 9 0.0 −10.1	= −53 53.3
b = −54 9669	20 10 54.5	−54 1.4 − 56.3	= 20 9 58.8 + 8.0	= −53 53.4
c = −53 9846	20 9 28.3	−53 8.2	20 9 59.2	−53 53.4

c − a = −10.0 +0.4 −0.4 −0.1 0.0

Cos −53.1 .300

−3.0

	x	y	x	y
a	45.0	54.8	50.0	63.5
b	67.7	18.6	72.8	27.2
n	51.3	34.7	56.3	43.2

x	x	y	y
n−a + 6.3	n−b − 16.4	n−a − 20.1	n−b + 16.1
+ 6.3	− 16.5	− 20.3	+ 16.0
+ 6.3	− 16.45	− 20.2	+ 16.05
+ 6.36	− 16.61	− 20.40	+ 16.21
÷ .295	÷ .295	− 10.20	+ 8.10
+ 21.5	− 56.3		

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1909phae.proj.2299B

A 7451 No. 95 March 15, 1909.

						1900 fm.	20	10	57.8	−54	18.7	
a =	−54 9659	20 8 16.8	−54	21.3	+45.8	= 20	9	2.6	−2.0	= −54	23.3	a
b =	−54 9668	20 10 34.8	−54	26.7	−94.2	= 20	9	1.8	+3.5	= −54	23.2	b
c =	−53 9845	20 8 20.3	−53	26.8			20	9	1.8	−54	23.2	c
		×										
		c − a = +3.5					+0.3	−0.3		+0.1	0.0	
c00 − 53.4 / 2		.298										
		+1.0										

	x	y	x	y
a	45.0	38.4	40.0	35.0
b	85.3	27.5	90.4	34.1
n	58.2	34.5	53.2	30.9
	x	x	y	y
	n − a + 13.2	n − b − 27.1	n − a − 3.9	n − b + 7.0
	+13.2	−27.2	−4.1	+6.8
	+13.2	−27.15	−4.0	+6.9
	+13.53	−27.42	−4.04	+6.97
	÷ .391	÷ .291	−2.02	+3.48
	+45.8	−94.2		
	✓	✓		

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1909phae.proj.2299B

A 7451 No. 96 March 15, 1909.

								1900 Jan.	20	9	37.8	-54	15.2	
a.	-54	9651	20	6	37.3	-54	17.0	+64.5	= 20	7	41.8	-2.7	= -54	19.7
b.	-54	9659	20	8	16.8	-54	21.3	-35.5	= 20	7	41.3	+1.7	= -54	19.6
c.	-53	9842	20	8	20.3	-54	26.8		20	7	41.6		-54	19.6
									-0.3	+0.3			+0.1	0.0

$\frac{c_{00} - 53.4}{2}$

e − b = + 3.5

.298

+ 1.0

	x	y	x	y
a	11.1	33.9	16.1	41.8
b	40.0	25.3	45.0	33.1
η	29.8	28.7	34.7	36.3

x	x	y	y
η − a + 18.7	η − b − 10.2	η − a − 5.2	η − b + 3.4
+ 18.6	− 10.3	− 5.4	+ 3.2
+ 18.65	− 10.25	− 5.3	+ 3.3
+ 18.84	− 10.35	− 5.35	+ 3.33
÷ .292	÷ .292	− 2.68	+ 1.66
+ 64.5	− 35.5		
✓	✓		

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1909phae.proj.2299B

A 7451 No. 97 March 15, 1909.

					1900 pw.	20	9	13.9	-53	52.8
a =	-53	9838	20	5 41.8	-53	50.4	+96.4	= 20	7 18.2	-6.8 = -53 57.4
b =	-54	9662	20	9 38.8	-54	3.9	-131.0	= 20	7 18.8	+ 6.6 = -53 57.3
c =	-53	9846	20	9 38.3	-53	8.2			20 7 18.0	-53 57.2

c − b = −0.5

−0.9 +0.9 −0.1 +0.2

c₀₀ − 53.1 / 2

.300

−0.2

	x	y	x	y
a	23.6	56.1	13.6	58.5
b	90.0	29.6	80.0	32.0
η	51.8	42.9	41.7	45.0

x	x	y	y
η − a + 28.2	η − b − 37.2	η − a − 13.4	η − b + 13.1
+ 28.1	− 38.3	− 13.5	+ 13.0
+ 28.15	− 38.25	− 13.45	+ 13.05
+ 28.43	− 38.63	− 13.58	+ 13.18
÷ .295	÷ .295	− 6.79	+ 6.59
+ 96.4	− 131.0		
/	/		

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1909phae.proj.2299B

A7451 No. 98 — March 15, 1909

object - quite faint.

						1900 prs.	20	9	44.6	−53	35.4
a = −53 9838	20	5	41.8	−53	50.4	+127.8 (6.0)	= 20	7	47.8	+ 10.8	= −53 39.6
b = −53 9852	20	11	2.8	−53	21.8	−193.7 (1.8)	= 20	7	51.0	− 18.4 (2)	= −53 40.2
c = −54 9669	20	10	54.5	−54	1.4			20	7 49.4		−53 39.8
	c − b = − 8.3							− 1.6	+1.6		−0.2 +0.2
Cos − 540 / 2	.294										
	− 2.4										

	x	y	x	y
a	45.6	65.2	50.6	60.8
b	140.0	123.4	145.0	118.9
η	83.1	86.9/5	88.0	82.4/4

x	x	y	y
η − a + 37.5	η − b − 56.9	η − a + 21.7	η − b − 36.5 (6)
+ 37.4	− 57.0	+ 21.6	− 36.5
+ 37.45	− 56.95	+ 21.65	− 36.5
+ 37.82	− 57.52	+ 21.87	− 36.86
÷ .297	÷ .297	+ 10.94	− 18.43
+ 127.3	− 193.7		
√	√		

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1909phae.proj.2299B

A. 7451 No. 99 March 15, 1909.

								1900 Jan.	20	9	13.6		-53	20.4				
a =	-53	9837	20	5	34.8	-53	47.1	+10.0	= 20	7	17.8	+32.6	=	-53	34.5				
b =	-53	9843	20	8	30.3	-53	7.4	-7.9	= 20	7	19.3	-17.6	=	-53	24.8				
c =	-54	9659	20	8	16.8	-54	21.3		20	7	18.6			-53	24.8				
											-1.6	+1.6			-0.1	0.0			
					c-b =	-13.5													
						-392													
						-3.9													

Coo $\frac{-54.3}{2}$

	x	y	x	y
a	23.6	76.9	18.7	78.5
b	75.0	156.5	70.0	158.0
n	54.0	121.7	49.1	123.3

x	x	y	y
n-a +30.4	n-b -21.0	n-a +44.8	n-b -34.8
+30.4	-20.9	+44.8	-34.7
+30.4	-20.95	+44.8	-34.75
+30.70	-21.16	+45.25	-35.10
÷.298	÷.298	+32.62	-17.55
+103.0	-71.0		
✓	✓		

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1909phae..proj.2299B

A 7451 No. 100. March 15, 1909.

1900 fm. 20 4 39.1 − 53 19.1

a = −53 9833	20 2 44.0 (3.5)	− 53	29.7	+ 40.2 (39.8)	= 20 2 43.7 (3)	+ 6.5 (2) = −53 23.4 (5)
b = −53 9832	20 3 26.5	− 53	16.1	− 42.9 (5)	= 20 2 43.6 (4.0)	− 7.5 (2) = −53 33.4 (3)
c = −54 9633	20 2 17.8	− 54	13.3		20 2 43.6	− 53 33.4

×

c − a = + 14.3

Cos −54.2 / 2

.292

+ 4.2

− 0.3 + 0.4 + 0.1 − 0.1

	x	y	x	y
a	45.0	123.3	40.0	132.1
b	69.5	150.2	64.5	159.0
η	56.9	135.7	51.8	144.6
	x	x	y	y
	n−a + 11.9	n−b − 12.6	n−a + 12.4	n−b ∓ 14.5
	+ 11.8	− 12.7	+ 12.5	− 14.4
	+ 11.85	− 12.65	+ 12.45	− 14.45
	+ 11.97	− 12.78	+ 12.57	− 14.59
	÷ .298	÷ .298	+ 6.28	− 7.295
	+ 40.2	− 42.9		
	✓	✓		

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1909phae.proj.2299B

A 7451 No. 101 March 15, 1909.

										1900 fw.	20	2	45.8	-53	47.6			
a =	-53	9811	20	0	47.6	-53	56.8	-1.2	=	20	0	48.6	+5.0	=	-53	51.8			
b =	-53	9812	20	0	51.7	-53	43.4	-7.7	=	20	0	49.5	-8.4	=	-53	51.8			
c =	-54	9626	20	0	43.6	-54	24.3			20	0	49.2			-53	51.8			
					x														
			c − a =		∓7.0							-0.6	+0.5			0.0	−0.1		
cos −54.4					291														
2					∓2.0														

	x	y	x	y
a	39.7	89.3	29.7	107.8
b	40.0	116.0	30.0	134.6
n	39.3	99.4	29.4	117.9

x	x	y	y
n-a −0.4	n-b −0.7	n-a +10.1	n-b −16.6
−0.3	−0.6	+10.1	−16.7
−0.35	−0.65	+10.1	−16.65
−0.35	−0.65	+10.20	−16.82
÷.295	÷.395	+5.1	−8.41
−1.2	−1.7		
√	√		

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1909phae.proj.2299B

A 7451 No. 102 March 15, 1909.

1900 Jno. 20 7 3.4 − 54 28.6

a = −54 9639 20 4 15.3 −54 38.1 + 33.6 = 20 5 8.9 + 4.7 = −54 33.4

b = −54 9645 20 5 49.8 −54 29.9 − 44.9 = 20 5 3.9 − 3.8 = −54 37.7

c = −53 9838 20 5 41.8 −53 50.4 20 5 6.9 −54 33.9

x

e − b = − 8.0 −0.4 +0.3 +0.1 0.0

$\frac{e-a}{z} = \frac{-53.8}{z}$ · 295 − 24

	x	y	x	y
a	35.0	20.0	49.0	27.3
b	63.3	34.9	68.5	44.4
η	50.4	29.3	55.4	36.9

error made in inverting signs

	x	x	y	y
	n − a + 15.4	n − b − 12.9	n − a + 9.3	n − b − 5.6
	+ 15.4	− 12.9	+ 9.4	− 5.5
	+ 15.4	− 12.9	+ 9.35	− 5.55
	+ 15.55	− 13.03	+ 9.44	− 5.61
	÷ .290	÷ .290	+ 4.72	− 2.80
	+ 53.6	− 44.9		

	x	x	y	y
	n − a, + 14.8	n − b, − 12.4	n − a, + 10.2	n − b, − 6.1
	+ 14.7	− 12.5	+ 10.0	− 6.3
	+ 14.75	− 12.45	+ 10.1	− 6.2
	+ 14.90	− 12.57	+ 10.20	− 6.26
	÷ .290	÷ .290	+ 5.1	− 3.13
	+ 51.4	− 43.3		

✓ ✓

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1909phae.proj.2299B

A 7451 No. 103 March 16, 1909.

1900 fus. 20 7 27.2 -54 41.5

a = -54 9639	20 4 15.3	-54 38.1	+74.8	= 20 5 29.3 X - 7.9	= -54 46.2	a
b = -54 9648	20 6 8.3	-54 50.5	-37.9	= 20 5 30.4 + 4.6	= -54 45.9	b
c = -53 9834	20 3 57.0	-53 58.6		20 5 30.2	-54 46.0	c
	x					
	c - a = -x3.3			- 0.7 +0.8	0.0 0.0	
Cor -53.0 / 2	.294					
	- 6.8					

	x	y	x	y
a	25.0	60.4	30.0	64.9
b	57.2	35.8	67.3	40.2
n	46.4	44.9	51.4	49.3

x	x	y	y
n-a + 21.4	n-b - 15.8	n-a -15.5	n-b + 9.1
+ 21.4	- 10.9	- 15.6	+ 9.1
+ 21.4	- 10.85	- 15.55	+ 9.1
+ 21.61	- 10.96	-15.71	+ 9.19
÷ .289	÷ .289	- 7.86	+ 4.595
+ 74.8	- 37.9		
✓	✓		

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1909phae.proj.2299B

A 7451 No. 104 March 16, 1909.

						1900 fun.	20	4	37.5	-54	39.3		
a = -54 9628	20	0	53.5	-54	46.3	+ 108.0	= 20	2	42.5	+2.7	= -54	43.6	
b = -54 9639	20	4	15.3	-54	38.1	- 96.8	= 20	2	38.5	-5.5	= -54	43.5	
c = -53 9811	20	0	49.6	-53	56.8			20	2	40.0		-54	43.6
			x										
			$c-a$ = -3.9						+0.4	-0.5		0.0	-0.1
$\frac{c-a}{2}$ = -53.9			.395										
			-1.2										

	x	y	x	y
a	30.0	36.5	35.0	43.0
b	88.6	52.7	93.6	59.3
η	60.9	41.9	65.9	48.3
	x	x	y	y
	$\eta-a$ +30.9	$\eta-b$ -27.7	$\eta-a$ +5.4	$\eta-b$ -10.8
	+30.9	-27.7	+5.3	-11.0
	+30.9	-27.7	+5.35	-10.9
	+31.21	-27.98	+5.40	-11.01
	÷.389	÷.389	+2.7	-5.50
	+108.0	-96.8		
	✓	✓		

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1909phae.proj.2299B

A 7451 No. 105 March 16, 1909.

				1900 fm.	20 2	20.2	-54 56.8
a = -.55 9332	19 59	32.1	-55 3.8	+50.5 =	20 0	22.6 + 2.7 =	-55 1.1
b = -.54 9630	20 1	54.3	-54 56.6	-93.3 =	20 0	21.0 - 4.4 =	-55 1.0
c = -.53 9807	19 59	29.4	-53 58.5		20 0	21.8	-55 1.8
		x					
		c - a = - 2.7			+0.1 0.0		+0.1 0.0
c₀₀ - 540 / 2		.394					
		- 0.8					

	x	y	x	y
a	35.0	28.0	30.0	35.4
b	65.8	41.1	70.9	49.7
η	38.4	33.3	44.3	40.9

x	x	y	y
η-a + 3.4	η-b - 7.4	η-a + 5.3	η-b - 9.8
+ 14.3	- 26.6	+ 5.5	- 8.8
+ 14.35	- 26.5	+ 5.4	- 8.8
+ 14.49	- 26.76	+ 5.45	- 8.89
÷ .387	÷ .387	+ 2.72	- 4.44
+ 50.5	- 93.3		
✓	✓		

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1909phae.proj.2299B

A 7451 No. 98 [a] March 17, 1909

This object was not recorded by Prof. Bailey - but looks nebulous.

R.C.W.

1900 jrs. 20 9 43.1 −53 35.6

a =	−53	9838	20	5	41.8	−53	50.4	+125.5	=	20	7	47.3	+ 10.8	= −53 39.6
b =	−53	9852	20	11	2.8	−53	21.8	−195.6	=	20	7	47.2	− 18.5	= −53 40.1
c =	−54	9669	20	10	54.5	−54	1.4			20	7	47.2		− 53 40.0

×

c − b = − 8.3 | −1.6 +1.6 | −0.2 +0.2

$\frac{C_{00} - 54.0}{2}$

.294

− 2.4

	x	y	x	y
a	45.6	65.2	50.6	60.9
b	140.0	123.4	145.0	118.9
n	82.5	86.7	87.5	82.3
	x	x	y	y
	n−a +36.9	n−b −57.5	n−a +21.5	n−b −36.7
	+36.9	−57.5	+21.4	−36.6
	+36.9	−57.5	+21.45	−36.65
	+37.27	−58.08	+21.66	−37.02
	÷ .297	÷.297	+10.83	−18.51
	+125.5	−195.6		
	✓	✓		

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1909phae.proj.2299B

A. 7451 No. 106 March 17, 1909.

This object was marked by Mrs. Fleming — this date.

			1900 pos.	20 9 58.2	−53 28.0
a = −53 9837	20 5 34.8	−53 47.1	+ 148.3 (6.8) =	20 8 3.1 (1.6) + 15.0 (4.8) =	−53 32.1 (3)
b = −53 9853	20 11 26.3	−53 10.4	− 203.4 (1.) =	20 8 2.9 (4) − 22.3 (1) =	−53 32.1 (5)
c = −54 9669	20 10 54.5	−54 1.4		20 8 3.0 (2)	−53 32.4

x

c − b = −31.8 −1.6 +1.7 −0.1 +0.1

cos −54.0 / 2

.294

−9.3

	x	y	x	y
a	26.6	46.2	31.6	40.6
b	130.0	120.1	135.0	114.5
η	70.2	76.0	75.2	70.4

x	x	y	y
n−a +43.6	n−b −59.8	n−a +29.8	n−b −44.1
+43.6	−59.8	+29.8	−44.1
+43.6	−59.8	+29.8	−44.1
+44.04	−60.40	+30.10	−44.54
÷ .297	÷ .297	+15.05	−22.27
+148.3	−203.4		
✓	✓		

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1909phae.proj.2299B

A 7377 Variable Star — March 21, 1909.

(Miss Mactie)

a = −53 10010	21	4	2.2	− 53	37.1	+ 84.7	= 21	5	26.8	+ 5.0	= − 53	32.1
b = −53 10029	21	9	14.8	− 53	19.0	− 229.7	= 21	5	25.1	− 13.6	= − 53	32.6
c = −54 9834	21	8	58.1	− 54	1.0			21	5	26.6		− 53	32.4

c − b = − 16.7

c − 54.0 = z

. 294

− 4.9

	x	y	x	y
a	32.8	63.4	37.8	73.4
b	120.0	100.1	130.0	110.5
n	57.5	73.2	62.4	83.5

x	x	y	y
n − a + 24.7	n − b − 67.5	m − a + 9.8	n − b − 27.9
+ 24.6	− 67.6	+ 9.9	− 27.0
+ 24.65	− 67.55	+ 9.85	− 26.95
+ 24.90	− 68.23	+ 9.95	− 27.22
÷ .397	÷ .297	+ 498	− 13.61
+ 84.7	− 229.7		

Checked, Sept 14, 1909
by R. Chu

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1909phae.proj.2299B

A 7377 No. 1 March 23, 1909.

asteroid Trail. – (a)

					1900 fm.	21 13 36.6	– 51 6.1	
a = – 51 11645	21 11 28.8	– 51 10.0	+ 23.2	=	21 11 51.8	– 2.4	= – 51 12.4	a
b = – 51 11655	21 13 42.0	– 51 18.1	– 111.3	=	21 11 50.7	+ 5.9	= – 51 12.2	b
c = – 52 11850	21 11 21.4	– 52 7.3			21 11 51.4		– 51 12.3	c

×

c – a = – 7.4

0.0 0.0 0.0 – 0.1

Cos – 52.1 / I

.307

– 2.3

	x	y	x	y
a	15.0	140.6	20.0	150.9
b	56.7	123.9	61.7	134.5
n	22.2	135.7	27.2	146.2

x	x	y	y
n – a + 7.2	n – b – 34.5	m – a – 4.9	n – b + 11.8
+ 7.2	– 34.5	– 4.7	+ 11.7
+ 7.2	– 34.5	– 4.8	+ 11.75
+ 7.27	– 34.84	– 4.85	+ 11.87
÷ .313	÷ .313	– 2.42	+ 5.94
+ 23.2	– 111.3		
√	√		

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1909phae.proj.2299B

A 7377 No. 1 March 23, 1909.

Asteroid Trail — (b)

						1900 prec.	21 13 45.6	−51	4.9
a =	−51 11645	21 11 38.8	−51	10.0	+32.3	=	21 12 0.8 X.X − 1.4	= −51	11.4
b =	−51 11655	21 13 42.0	−51	18.1	−102.3	=	21 12 59.7 + 2.9	= −51	11.1
c =	−52 11850	21 11 21.4	−52	7.3		(c)	21 12 0.4	−51	11.2
		x				(a)	21 11 51.4	−51	12.3
		c − a = −7.4				prec. centre	21 11 55.9	−51.	11.8
						(b)	+0.0 −0.1	+0.2 −0.2	

$\frac{c_{00} - 52.1}{2}$ · 307 = −2.3

	x	y	x	y
a	15.0	140.6	20.0	150.9
b	56.7	123.9	61.7	134.5
n	25.0	137.8	30.0	148.2

x	x	y	y
n−a + 10.0	n−b −31.7	n−a −2.8	n−b +13.9
+10.0	−31.7	−2.7	+13.7
+10.0	−31.7	−2.75	+13.8
+10.10	−32.02	−2.78	+13.94
÷ .313	÷ .313	−1.39	+6.97
+32.3	−102.3		
/	/		

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1909phae.proj.2299B

A 7377 No. 2 March 23, 1909.

					1900 fno.	21 16	1.9	−50	11.3
a =	−50 11537	21 13 7.0	−50	24.1	+ 71.9	= 21 14	18.2 + 6.6	= −50	17.5
b =	−50 11542	21 15 17.8	−50	10.1	− 59.7	= 21 14	18.6 − 7.6	= −50	17.6
c =	−51 11660	21 15 24.8	−51	5.7		21 14	18.7	−50	17.6
							−0.5 + 0.5		−0.1 0.0

a − b = +7.0

cos α − 51.1

.314

+ 2.2

	x	y	x	y
a	63.6	133.1	58.6	118.7
b	10.50	161.3	70.0	147.0
η	86.3	146.4	51.3	132.0

x	x	y	y
η − a + 22.7	η − b − 18.7	η − a + 13.3	η − b − 14.9
+ 22.7	− 18.7	+ 13.3	− 15.0
+ 22.95	− 18.89	+ 13.43	− 15.10
÷ .319	÷ .319	+ 6.72	− 7.55
+ 71.9	− 59.2		
√	√		

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1909phae.proj.22998

A7377 No. 3 March 23, 1909.

										1900 fm.	21	11	48.6		−50	12.6		
a =	−50	11517	21	8	59.0	−50	37.2	+ 64.7	=	21	10	3.1	+ 18.6	=	−50	18.6		
b =	−50	11522	21	10	38.5	−50	10.8	− 32.8	=	21	10	6.0	− 8.2	=	−50	18.8		
c =	−51	11640	21	9	3.3	−51	19.3				21	10	4.6		−50	18.8		
					×								−1.5	+1.4		0.0	0.0	
			c − a =		+ 4.3													
c − a − 51.3 / 2					.313													
					+ 1.3													

	x	y	x	y
a	30.0	110.6	35.0	122.0
b	60.8	163.7	65.8	175.0
η	50.4	142.5	55.5	158.9

	x	x	y	y
η − a	+ 20.4	η − b − 10.4	η − a + 36.9	η − b − 16.2
	+ 20.5	− 10.3	+ 36.9	− 16.1
	+ 20.45	− 10.35	+ 36.9	− 16.15
	+ 20.65	− 10.45	+ 37.27	− 16.31
	÷ .319	÷ .319	+ 18.64	− 8.16
	+ 64.7	− 32.8		
	✓	✓		

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1909phae.proj.2299B

A 7377 No. 4 March 23, 1909.

1900 Jan. 21 4 5.5 −50 20.0

a	= −50	11491	20	58	39.9	−50	26.3	+ 220.7 (18.5)	= 21	2	19.4	−0.0	= −50	26.3
b	= −50	11500	21	4	18.9	−50	26.2	− 119.5 (8.3)	= 21	2	20.6	+ 0.4	= −50	25.8
c	= −51	11609	21	58	47.3	−51	17.3		21	2	20.0		−50	26.0
					x									
			c − a = + 7.4								−0.6	+0.6	+0.3	−0.2

$\frac{c_{00} - 51.3}{2}$

.313

+ 2.3

	x	y	x	y
a	35.0	110.5	45.0	116.1
b	142.4	109.7	152.5	115.3
n	104.7	110.5	114.7	115.2

x	x	y	y
n − a + 69.7	n − b − 37.7	n − a − 0.0	n − b + 0.8
+ 69.7	− 37.8	− 0.1	+ 0.9
+ 69.7	− 37.75	− 0.05	+ 0.85
+ 70.90	− 38.13	− 0.05	+ 0.85
÷ .319	÷ .319	− 0.02	+ 0.42
+ 220.7	− 119.5		
✓	✓		

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1909phae.proj.22998

A 7377 No. 5 March 23, 1909.

								1900 fm.	21	10	59.7	− 50	34.4	
a =	−50	11508	21	7	20.5	− 50	37.1	+ 115.5	= 21	9	16.0	− 3.5	= −50	33.6
b =	−50	11520	21	9	49.5	− 50	41.8	− 34.3	= 21	9	15.2	+ 1.2	= −50	40.6
c =	−51	11641	21	9	59.9	− 51	27.1		21	9	15.6		−50	40.6
					×									
			c − b = + 9.8						−0.4	+0.3			0.0	0.0
c − 51.4 / 2					− 31.2									
					+ 3.0									

	x	y	x	y
a	38.0	110.5	33.0	134.3
b	8.50	101.4	80.0	115.0
n	74.2	103.7	68.3	118.3
	x	x	y	y
	n − a + 36.2	n − b − 10.8	n − a − 6.8	n − b + 2.3
	+ 36.3	− 10.7	− 7.0	+ 2.3
	+ 36.25	− 10.75	− 6.9	+ 2.3
	+ 36.61	− 10.86	− 7.97	+ 2.32
	÷ .317	÷ .317	− 3.48	+ 1.16
	+ 115.5	− 34.3		
	✓	✓		

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1909phae.proj.2299B

A7377 No. 6, March 23, 1909.

								1900 jms.	21	15	46.4	− 50	52.2	
a =	− 50	11539	21	13	29.8	− 50	53.5	+ 32.4	= 21	14	3.2	− 5.1	= − 50	58.4	
b =	− 51	11660	21	15	24.8	− 51	5.7	− 88.9	= 21	14	55.9	+ 7.3	= − 50	58.4	
c =	− 51	11653	21	13	29.5	− 51	39.1			21	13	59.0		− 50	58.5
					×										
					c − a =		∓ 0.3					− 0.5 + 0.6		0.0	0.0
							· 31								
							∓ 0.1								

cos − 51.6 / 2

	x	y	x	y
a	70.0	110.7	75.0	114.3
b	105.8	85.9	110.9	92.7
η	80.1	100.5	85.1	107.2
	x	x	y	y
	η − a + 10.1	η − b − 25.7	η − a − 10.2	η − b + 14.6
	+ 10.1	− 25.8	− 10.1	+ 14.5
	+ 10.1	− 25.75	− 10.15	+ 14.55
	+ 10.20	− 28.01	− 10.25	+ 14.69
	÷ .315	÷ .315	− 5.12	+ 7.34
	+ 32.4	− 88.9		
	✓	✓		

In checking above computation found the error in reduction of b.

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1999phae.proj.2299B

A 7377 No. 7 March 23. 1909.

									1900 jan.	21	13	9.9	−50	54.5		
a =	−51	11644	21	11	2.8	−51	14.8	+23.8	= 21	11	25.6	+14.8	= −51	0.8		
b =	−50	11529	21	11	29.0	−50	58.3	−4.2	= 21	11	24.8	−2.4	= −51	0.7		
c =	−50	11524	21	10	48.5	−50	28.1			21	11	25.1 24.3		−51	0.8	
					×							+0.3 −0.3		0.0 − 0.1		
			c − a =		∓ 14.3											
Cor − 50.5 / 5					.318											
					− 4.5											

	x	y	x	y
a	45.0	53.5	50.0	62.0
b	53.4	86.1	58.4	94.7
n	52.1	81.3	57.1	89.9

	x	x	y	y
	n−a + 7.1	n−b − 1.3	n−a + 27.8	n−b − 4.8
	+ 7.1	− 1.3	+ 27.9	− 4.8
	+ 7.1	− 1.3	+ 27.85	− 4.8
	+ 7.17	− 1.31	+ 28.13	− 4.85
	÷ .314	÷ .314	+ 14.06	− 2.42
	+ 22.8	− 4.2		
	✓	✓		

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1909phae.proj.2299B

Duplicate.

A 7377 No. 7 March 23, 1909.

a = -51	11645	21	11	38.8	-57	10.0	-2.7	= 21	11	26.1 38.5	+ 9.1/2	= -51	0.8/9
b = -50	11529	21	11	29.0	-50	58.3	-4.5	= 21	11	24.5 33.5	- 2.4	= -51	0.7
c = -52	11650	21	11	21.4	-52	7.3			21	11	32.5		-51	0.8
				x									
		c - a =		- 7.4						+ 0.8 - 0.8		+ 0.1 - 0.1	

cos - 52.1 / 2

.307

- 2.3

	x	y	x	y
a	30.0	135.4	25.0	135.0
b	30.6	158.5	25.5	158.0
n	29.2	153.7	24.1	153.3

	x	x	y	y
n-a	- 0.8	n-b - 1.4	n-a + 18.3	n-b - 4.8
	- 0.9	- 1.4	+ 18.3	- 4.7
	- 0.85	- 1.4	+ 18.3	- 4.75
	- 0.86	- 1.41	+ 18.48	- 4.80
	÷ .314	÷ .314	+ 9.24	- 2.40
	- 2.7	- 4.5		

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1909phae..proj.22998

A7377 No. 8 March 23, 1909.

								1900 pm.	21	13	12.4	−51	1.7
a =	−51	11645	21	11	28.8	−51	10.0	−0.5 =	21	11	29.3	+1.9 = −51	8.1
b =	−50	11529	21	11	29.0	−50	58.3	−2.2 =	21	11	26.8	−9.4 = −51	7.9
c =	−52	11850	21	11	24.4	−52	7.3		21	11	27.6		−51	8.0
					×								
			c − a =		−7.4				+0.7		−0.8		+0.1	−0.1
cos −52.1 / 2					.307									
					−2.3									

	x	y	x	y
a	30.0	135.4	25.0	135.0
b	30.6	158.5	25.5	158.0
η	29.8	139.2	24.9	138.9

	x		x		y		y	
n − a	−0.2	n − b	−0.8	n − a	+3.8	n − b	−19.3	
	−0.1		−0.6		+3.9		−19.1	
	−0.15		−0.7		+3.95		−19.2	
	−0.15		−0.7		+3.99		−19.39	
	÷ .314		÷ .314		+1.94		−9.695	
	−0.5		−2.2					
	✓		✓					

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1909phae.proj.2299B

A 7377 No. 9 March 23, 1909.

						1900 prec.	21	2	44.7	−50	43.0
a =	−50	11494	21	0	33.9	−50	53.2	+34.4	= 21	0	58.3 +3.1 = −50 49.1
b =	−50	11499	21	3	57.0	−50	32.2	−17.2 a	= 21	0	58.9.8 −16.7 = −50 48.8.9
c =	−51	11615	21	0	38.3	−51	45.7				21 0 58.9.x −50 49.8.x

×

c − a = + 4.4

Cos −51.7 = .621

.310

+1.4

−0.9 +0.9 +0.1 −0.1

	x	y	x	y
a	150	133.4	30.0	133.1
b	82.0	163.0	87.0	172.7
η	35.8	129.5	30.8	139.1

x	x	y	y
η − a + 10.8	η − b −56.2	η − a + 6.1	η − b −33.5
+ 10.8	− 56.2	+ 6.0	− 33.6
+ 10.8	− 56.2	+ 6.05	−33.55
+ 10.91	− 56.76	+ 6.11	− 33.89
÷ .317	÷ .317	+ 3.06	− 16.94
+ 34.4	− 179.0		
√	√		

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1909phae.proj.22998

A 7377 No. 10 March 23, 1909.

				1900 fm.	21 24 40.0		−51	11.0
a = −51 11669	21 19 58.9		−51 17.0	+180.2	= 21 22 57.1	−0.9	= −51	17.9
b = −51 11689	21 26 46.7		−51 16.7	−432.2	= 21 22 54.5	−0.2	= −51	16.9
c = −52 11879	21 19 41.3		−52 6.8		21 22 56.8		−51	17.4
					57.0			17.5

c − a = −17.6

Cos −52.1 = .307

−5.4

	−0.3	+0.2	+0.5	−0.5
	+03	+08	+04	−06

	x	y	x	y
a	40.0	110.2	45.0	118.4
b	167.8	108.6	172.8	114.0
n	95.8	108.3	100.9	103.7

x		x		y		y	
n − a	+55.8	n − b	−72.0	n − a	−1.9	n − b	−0.3
	+55.9		−71.9		−1.7		−0.3
	+55.85		−71.95		−1.8		−0.3
	+56.41		−72.67		−1.82		−0.3
	÷.313		÷.313		−0.91		−0.15
	+180.2		−432.2				
	+237.2						

✓ ✓

See B.S. 10 pg. 115 for remeas. of this neb.

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1909phae.proj.2299B

(see page 129.) ~~Letter~~ ~~from~~ Gibson.

A 7377 No. 11 – March 24, 1909.

a = -51 11609	20 58 47.3	-51 17.3	+246.4 (3.9)	= 21 2 58.7 (1.2)	+1.9	= -51 15.4
b = -51 11631	21 6 32.8	-51 12.2	-225.6 (3.3)	= 21 2 47.2 (9.5)	-1.4	= -51 13.6
c = -51 11612	21 59 9.3	-51 55.1		21 2 50.4		-51 14.5
	x					
	c - a = +22.0			+ 0.8	-0.9	+0.9 -0.9

$\frac{\text{cos} - 51.9}{2}$

.308

+ 6.8

	x	y	x	y
a	15.0	95.5	20.0	107.1
b	161.2	101.9	166.3	113.7
η	91.3	99.1	96.4	110.9

x	x	y	y
η-a + 76.3	η-b - 69.9	η-a + 3.6	η-b - 2.8
+ 76.4	- 69.9	+ 3.8	- 2.8
+ 76.35	- 69.9	+ 3.7	- 2.8
+ 77.12	- 70.60	+ 3.74	- 2.85
÷ .313	÷ .313	+ 1.87	- 1.42
+ 246.4	- 225.6		
✓	✓		

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1909phae.proj.2299B

A 7377 No. 1 March 24, 1909.

star, first selected for orienting was too near in Dec.

						19,00 prec.	21	49.5	36.3	−51	8.7
a = −50 11496	21	1	39.4	−50	54.0	+ 70.8	= 21	2	56.6	− 20.4	= −51	14.4
b = −51 11623	21	3	28.8	−51	24.4	− 39.8	= 21	2	49.2	+ 9.4	= −51	15.0
c = −50 11488	21	0	56.7	−50	53.4				50.8			
							21	2	57.9		−51	14.7

x

a − 42.7

c − x = − 42.7
.306
.8159
13.1
− 1.2

2.2
Cos − 50.8
2

−0.7 +1.2 −0.1 +0.1

	x	y	x	y
	30.0	179.8	35.0	171.4
a	33.7	119.7	38.7	139.1
	63.5	117.6	68.6	110.9
b	60.0	68.6	55.0	79.0
	52.0	136.7	57.0	130.1
η	44.7	89.3	42.7	94.6

x	x	y	y
η − a + 24.0	η − b − 12.3	η − a − 40.4	η − b + 18.7
+ 24.0	− 12.3	− 40.3	+ 18.6
+ 24.0	− 12.3	− 40.35	+ 18.65
+ 24.24	− 12.42	− 40.75	+ 18.84
÷ .314	÷ .314	− 20.38	+ 9.42
+ 77.2	− 39.6		

x	x	y	y
η − a, + 22.0	η − b, − 11.5	η − a, − 41.2	η − b, + 19.1
+ 22.0	− 11.6	− 41.3	+ 19.2
+ 22.0	− 11.55	− 41.25	+ 19.15
+ 22.22	− 11.67	− 41.66	+ 19.84
÷ .314	÷ .314	− 20.83	+ 9.67
+ 70.8	− 37.2		

✓ ✓

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1909phae.proj.2299B

A 7377 No. 12 March 24, 1909.

						1900 fm.	21	3	1.7	−51	34.3
a =	−51	11607	20	58	36.3	−51	30.5	+160.4	= 21	1	16.4	−10.0	= −51	40.4
b =	−51	11624	21	3	50.8	−51	50.0	−157.4	= 21	1	13.4	+9.8	= −51	40.2
c =	−50	11491	20	58	39.9	−50	26.3		21	1	14.9		−51	40.3

c − a = + 3.6

c₀₀ − 50.4 = 2

·319

+1.1

−0.1 +0.1 +0.1 −0.1

	x	y	x	y
a	25.0	44.5	20.0	53.0
b	122.5	4.9	117.4	17.6
η	74.2	34.6	69.1	31.7

x	x	y	y
η−a + 49.2	η−b − 48.3	η−a − 19.9	η−b + 19.7
+ 49.1	− 48.3	− 19.9	+ 19.5
+ 49.15	− 48.3	− 19.9	+ 19.6
+ 49.64	− 48.78	− 20.10	+ 19.80
÷ .310	÷ .310	− 10.05	+ 9.90
+ 160.1	− 157.4		
✓	✓		

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A 7377 No. 13 March 24, 1909.

		1907 proc. 21 2 37.3	−51 24.6
a = −51 11609 20 58 47.3	−51 17.3 + 125.7 =	21 0 52.0 − 13.2 =	−51 30.5
b = −51 11624 21 3 50.8	−51 50.0 − 187.5 =	21 0 50.3 + 19.2 =	−51 30.8
c = −50 11499 21 3 57.0	−50 32.2	21 0 51.0	−51 30.6

x

c − b = + 6.2

$\frac{c_{00} - 50.5}{2}$ .318

+ 2.0

+0.8 −0.9 +1.0 −0.7 −0.1 +0.2

	x	y	x	y
a	10.0	82.9	15.1	89.7
b	105.0	18.3	110.0	25.0
n	48.9	56.6	53.8	63.4

x	x	y	y
n−a + 38.9	n−b − 56.1	n−a − 26.3	n−b + 38.3
+ 38.7	− 56.2	− 26.3	+ 38.4
+ 38.8	− 56.15	− 26.3	+ 38.35
+ 39.19	− 56.71	− 26.56	+ 38.73
÷ .311	÷ .311	− 13.28	+ 19.36
+ 126.0	− 182.3		
✓	✓		

See B1f. 10 pg. 116 for remeas. of this neb.

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1909phae.proj.2299B

1909phae.proj.2299B

A 7377 No. 14 March 24, 1909.

							1900 fm.	21	24	2.9	−51	51.6	
a =	−52	11885	21	21	20.0	−52	11.7	+58.4	= 21	22	18.4	+8.6	= −51 58.1 a
b =	−51	11675	21	22	47.4	−51	50.1	−28.4	= 21	22	19.0	−8.4	= −51 58.4 b
c =	−51	11674	21	22	39.9	−51	33.4			21	22	18.8	−51 58.1 c

c − b = −17.5

−0.9 +0.9 0.0 0.0

cos −51.4 = .312

−5.5

	x	y	x	y
a	53.6	26.6	58.7	22.0
b	80.0	59.5	85.0	65.1
m	71.4	48.6	46.5	49.1
	x	x	y	y
m − a	+17.8	m − b −8.6	m − a +17.0	m − b −15.9
	+17.8	−8.5	+17.1	−16.0
	+17.8	−8.55	+17.05	−15.95
	+17.98	−8.63	+17.32	−16.11
	÷ .308	÷ .308	+18.66	−8.06
	+58.4	−28.0		

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1000phac.proj.2299B

A 7377 No. 15 March 24, 1909.

1900 fm. 21 22 24.5 -51 45.1

a =	-52	11884	21	20	40.8	-52	13.2	+0.2	= 21	20	41.0	+ 21.9	= -51	51.5
b =	-51	11672	21	20	42.9	-51	39.0	-2.9	= 21	20	40.0	- 13.8	= -51	51.8
c =	-50	11555	21	20	41.6	-50	51.5			21	20	40.5		-51	57.6

×

c - a = +0.8

.316

+0.2

+0.5 −0.5 −0.1 +0.1

$\frac{c_{00} - 50.8}{2}$

	x	y	x	y
a	35.0	14.5	40.0	19.9
b	35.8	82.9	40.9	88.8
η	34.9	57.8	40.0	63.3

	x	x	y	y
η - a	+0.1	η - b +0.9	η - a +43.4	η - b −25.3
	+0.0	−0.9	+43.4	−25.3
	+0.05	−0.9	+43.3	−25.25
	+0.05	−0.90	+43.73	−25.50
	÷.308	÷.308	+21.86	−12.75
	+0.2	−2.9		

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1909phae.proj.2299B

A 7377 No. 16, March 1st, 1909.

					1900				
					fno.	21	20	58.8	-51 45.6
a = -51 11667	21 18 39.9	-51 40.2	+ 35.6	=	21	19	15.5	− 11.7	= -51 51.9
b = -52 11884	21 20 40.8	-52 13.2	− 8.7	=	21	19	13.1	+ 21.2	= -51 52.0
ρ = -51 11672	21 20 42.9	-51 39.0				21	19	14.3	-51 52.0
	×								
	c − b = + 2.1							+0.5 −0.6	−0.2 +0.2
c₀₀ − 51.6 / Σ	.311								
	+0.6								

	x	y	x	y
a	17.4	77.1	22.4	86.7
b	55.0	11.8	60.0	20.5
η	28.3	53.9	33.2	63.5
	x	x	y	y
	η−a + 10.9	η−b − 26.7	η−a − 23.2	η−b + 42.1
	+ 10.8	− 26.8	− 23.2	+ 42.0
	+ 10.85	− 26.75	− 23.2	+ 42.05
	+ 10.96	− 27.02	− 23.43	+ 42.47
	÷ .308	÷ .308	− 11.72	+ 21.24
	+ 35.6	− 87.7		
	✓	✓		

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1909phae.proj.2299B

A 7377 No. 17 March 24, 1909.

								1900 fno.	21	20	22.8	−51	46.3		
a =	−51	11665	21	17	29.9	−51	38.1	+68.9	= 21	18	38.8	−14.5	= −51	52.8	
b =	−52	11879	21	19	41.3	−52	6.8	−63.4	= 21	18	37.9	+14.0	= −51	52.9	
c =	−52	11872	21	17	47.2	−52	29.5		21	18	38.4		−51	52.8	
					x										
					c − a = + 17.3				+0.1	−0.1		−0.1	+0.1		
Cor −52.5 / 2					.304										
					+ 5.2										

	x	y	x	y
a	35.0	127.5	40.0	137.1
b	75.5	70.3	80.5	79.9
n	56.0	98.3	61.0	107.9
	x	x	y	y
	n − a + 21.0	n − b − 19.5	n − a − 29.2	n − b + 28.0
	+ 21.0	− 19.5	− 29.2	+ 28.0
	+ 21.0	− 19.5	− 29.2	+ 28.0
	+ 21.21	− 19.70	− 29.49	+ 28.28
	÷ .308	÷ .308	− 14.74	+ 14.14
	+ 68.9	− 63.9		
	✓	✓		

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1909phae.proj.2299B

A 7377. No. 18 March 24, 1909.

						1900 Jno.				
a = −52 11866	21 15 40.5	−52	4.4	+78.2	=	21	16	58.4	+ 9.8	= −51 54.6
b = −51 11667	21 18 39.9	−51	40.2	−103.1	=	21	16	58.8	− 14.4	= −51 54.4
c = −51 11660	21 15 24.8	−51	5.7			21	16	58.2		−51 54.6

×

c − a = − 15.7

.314

− 4.9

c00 − 51.1

	x	y	x	y
a	25.0	55.5	30.0	66.0
b	80.6	103.4	85.6	113.9
η	49.1	75.0	54.2	85.4

x	x	y	y
n−a + 24.1 n−b	−31.5 n−a	+ 19.5 n−b	− 28.4
+ 24.2	− 31.4	+ 19.4	− 28.5
+ 24.15	− 31.45	+ 19.45	− 28.45
+ 24.39	− 31.76	+ 19.64	− 28.73
÷ .308	÷ .308	+ 9.82	− 14.36
+ 79.2	− 103.1		
✓	✓		

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1909phae.proj.2299B

A 7377 No. 19 – March 29, 1909.

						1900 fm.	21	3 47.8	– 51 52.9
a =	– 51 11612	20 59 9.3	– 51	55.1	+ 171.6 =	2h	2	59.2 0.9 – 3.9 =	– 51 59.0
b =	– 52 11832	21 3 59.0	– 52	1.5	– 117.9 =	2h	2	1.3 + 2.7 =	– 51 58.8
c =	– 53 9992	20 58 43.7	– 53	13.8		21	2	0.8 1.0	– 51 58.9
		x							
		c – a = – 25.6					– 1.6	+ 1.5	+ 0.1 – 0.1
$\frac{c_{obs} - 53.2}{2}$		· 300							
		– 7.8							

	x	y	x	y
a	20.0	170.8	25.0	165.0
b	108.3	158.0	113.3	151.9
η	72.3	163.2	77.4	157.3
	x	x	y	y
	η – a + 52.3	η – b – 36.0	m – a – 7.6	m – b + 5.2
	+ 52.4	– 35.9	– 7.7	+ 5.4
	+ 52.35	– 35.95	– 7.65	+ 5.3
	+ 52.37	– 36.31	– 7.73	+ 5.35
	÷ .308	÷ .308	– 3.86	+ 2.68
	+ 171.6	– 117.9		
	✓	✓		

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1909phae.proj.2299B

A 7377 No. 20 March 29, 1909.

1900 prec. 21 14 16.1 −52 9.1

a =	−52 11850	21 11 21.4	−52 7.3	+69.5	= 21 12 30.2	−8.1	= −52 15.4
b =	−52 11858	21 12 59.9	−52 18.5	−29.7	= 21 12 30.7	+3.1	= −52 15.4
ϱ =	−53 10039	21 11 31.8	−53 15.9		21 12 30.8		−52 15.4
		×			−0.4	+0.4	0.0 0.0
		c − a = +10.4					
c₀₀	−53.2	·300					
	2	+3.1					

	x	y	x	y
a	30.0	145.5	25.0	155.0
b	59.9	123.0	54.9	138.7
η	51.1	129.2	46.0	138.8
	x	x	y	y
	η−a + 21.1	η−b + 8.8	η−a − 16.3	η−b + 6.2
	+ 21.0	− 8.9	− 16.2	+ 6.1
	+ 21.05	− 8.85	− 16.25	+ 6.15
	+ 21.26	− 8.94	− 16.41	+ 6.21
	÷ .306	÷ .306	− 8.20	+ 3.10
	+ 69.5	− 29.2		
	✓	✓		

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1909phae.proj.2299B

A 7377 No. 21 March 29, 1909.

								1900 fun.	21	11	3.6	− 52	8.6	
a	− 52	11839	21	7	25.7	− 52	21.4	+ 113.4	= 21	9	18.0	+ 6.5	= − 52	14.8
b	− 52	11850	21	11	21.4	− 52	7.3	− 124.9	= 21	9	16.5	− 7.6	= − 52	14.8
c	− 51	11645	21	11	28.8	− 51	10.0			21	9	17.8		− 52	14.8
					×									
			c − b =		+ 3.4						+0.2	−0.1		+0.1	0.0
					31.3									
					+ 2.3									

$\frac{C_{00} - 51.2}{2}$

	x	y	x	y
a	22.8	30.4	27.8	41.9
b	95.0	58.5	100.0	70.1
n	57.2	43.4	62.1	55.0

x	x	y	y
n − a + 34.4	n − b − 37.8	n − a + 13.0	n − b − 15.1
+ 34.3	− 37.9	+ 13.1	− 15.1
+ 34.35	− 37.85	+ 13.05	− 15.1
+ 34.69	− 38.23	+ 13.18	− 15.25
÷ .306	÷ .306	+ 6.59	− 7.62
+ 113.4	− 124.9		
√	√		

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1909phae.proj.2299B

A 7377 No. 22 March 29, 1909

			1900 pro. 21 4 54.0	− 52 6.4
a = − 52 11826	21 1 58.7	− 52 25.7 + 69.5 =	21 7 8.2 + 13.5 =	− 52 12.2
b = − 52 11833	21 3 59.0	− 52 1.5 − 52.6 =	21 3 9.5 − 16.0 =	− 52 12.5
			21 3 7.3	− 52 12.4
c = − 53 10005	21 2 6.6	− 53 28.9		
	x			
$\frac{\text{Coo} - 53.5}{2}$	c − a = + 7.9		+ 0.3 − 0.3	− 0.1 0.0
	.297			
	+ 2.3			

	x	y	x	y
a	30.0	132.7	35.0	130.1
b	67.0	181.1	72.0	178.6
η	51.0	159.4	56.1	156.8

x	x	y	y
n−a + 21.0	n−b − 16.0	n−a + 26.7	n−b − 21.7
+ 21.1	− 15.9	+ 26.7	− 21.8
+ 21.05	− 15.95	+ 26.7	− 21.75
+ 21.26	− 16.11	+ 26.97	− 21.97
÷ .306	÷ .306	+ 13.48	− 15.98
+ 69.5	− 52.6		
✓	✓		

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1909phae.proj.2299B

A 7377 No. 23 March 29, 1909.

						1900 fno.	20	58	37.0	−52	6.3
a = −51 11604	20	55	44.3	−51	46.1	+65.6	= 20	56	49.4	−26.1	= −52 12.3
b = −52 11822	20	57	21.7	−52	23.5	−32.8	= 20	56	48.9	+11.2	= −52 12.3
c = −52 11815	20	55	27.7	−52	23.2			20	56	49.4	−52 12.5
	×								0.0	0.0	0.0 +0.1
	c − a = −16.6										
c₀₀ − 52.4 / Σ	305										
	− 5.1										

	x	y	x	y
a	25.0	140.4	30.0	150.1
b	55.0	65.8	60.0	75.6
η	45.0	88.3	50.0	98.0

	x		x		y		y	
	n−a	+20.0	n−b	−10.0	n−a	−52.1	n−b	+22.5
		+20.0		−10.0		−52.1		+22.4
		+20.0		−10.0		−52.1		+22.45
		+20.20		−10.10		−52.62		+22.67
		÷ .308		÷ .308		−26.31		+11.34
		+65.6		−32.8				
		✓		✓				

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1909phae.proj.2299B

A 7377 No. 25 March 29, 1909.

1900 Jno. 20 57 44.1 −52 13.0

a = −52 11815	20 55 27.7	−52 23.2	+28.4	= 20 55 56.1	+4.3	= −52 18.9
b = −52 11818	20 56 17.7	−52 13.0	−21.5	= 20 55 56.2	−10.0	= −52 18.2
c = −53 9984	20 56 18.2	−53 11.2		20 55 56.1		−52 18.9
	×			−0.3 +0.3		+0.1 0.0
	a − b = +0.5					
Cos −53.2 / 2	.300					
	+0.2					

	x	y	x	y
	14.9			
a	30.0	154.8	19.9	146.2
b	30.0	175.1	35.0	167.5
η	13.5	163.4	28.5	154.7
	x	x	y	y
	η−a + 8.6	η−b − 6.5	η−a + 8.6	η−b − 11.7
	+ 8.6	− 6.5	+ 8.5	− 11.8
	+ 8.6	− 6.5	+ 8.55	− 11.75
	+ 8.69	− 6.56	+ 8.63	− 11.87
	÷ .306	÷ .306	+ 4.32	− 4.99
	+ 28.4	− 21.5		
	✓	✓		

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1909phae.proj.22998

A 7377 No. 25 March 29, 1909.

						1900 prec.	21	10	28.5	-52	33.6
a = -52 11840	21	8	8.2	-52	46.8	+34.8	= 21	8	43.0	+ 7.0	= -52	39.8
b = -52 11845	21	9	43.9	-52	33.5	-6.5	= 21	8	41.4	-6.4	= -52	39.8
c = -53 10031	21	9	41.3	-53	19.7			21	8	42.3	-52	39.8
			x									
	c - b = -2.6								+0.3	-0.3	+0.1	0.0
Cor -53.3	.299											
	-0.8											

	x	y	x	y
a	40.8	113.0	35.8	106.7
b	70.0	139.4	65.0	133.1
η	51.3	126.9	46.2	120.4
	x	x	y	y
	η-a +10.5	η-b -18.7	η-a +13.9	η-b -12.5
	+10.4	-18.8	+13.7	-12.7
	+10.45	-18.75	+13.8	-12.6
	+10.55	-18.94	+13.94	-12.78
	÷ .303	÷ .303	+6.97	-6.36
	+34.8	-62.5		
	✓	✓		

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1909phae.proj.2299B

A 7377 No. 26 March 29, 1909

					1900 prec.	21 2 45.1	-52 28.6	
a	-52 11822	20 57 21.7	-52	23.5	+216.4	20 58 58.8	-11.2	-52 34.6
b	-52 11828	21 2 42.2	-52	40.1	-104.4	21 0 58.9	+5.7	-52 34.4
c	-53 9986	20 57 4.7	-53	24.5		21 0 58.0		-52 34.6
						57.3		
		c-a = -17.0				-1.4	+1.4	0.0 -0.1
		.298						
		-5.1						

$\frac{c_{000} - 53.4}{2}$

	x	y	x	y
a	20.0	156.3	25.0	165.0
b	116.6	122.7	121.6	131.4
η	85.8	134.1	90.2	143.4

x	x	y	y
η-a +65.1	η-b -31.5	η-b -22.2	η-b +11.4
+65.2	-31.4	-22.4	+11.3
+65.15	-31.45	-22.35	+11.35
+65.80	-31.76	-22.47	+11.46
÷.304	÷.304	-11.24	+5.73
+216.4	-104.4		
✓	✓		

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1009phae.proj.22008

See B.f. 10 pg 122 for pemeas. of this neb.

A 7377 No. 27 March 29. 1909.

								1900 Jan. 21	1	40.6	−52	28.7	
a = −52 11818	20	56	17.7	−52	13.0	+218.0	=	20	59	55.7	−52	34.5	
b = −52 11827	21	2	29.2	−52	50.8	−159.0	=	20	59	52.7	−52	34.8	
c = −51 11621	21	2	27.3	−51	50.0			20	59	53.0	−52	34.6	
										52.8		34.7	

c − b = ∓ 1.9

$\frac{c_{00} - 51.8}{\Sigma}$ · 309 = ∓ 0.6

+0.9 −0.8 −0.3 +0.4
+0.7 −1.0 −0.4 +0.6

	x	xy	x	y
a	66	119.2	11.5	126.7
b	130.0	45.0	125.0	79.8
η	72.2	76.8	77.1	84.1
	x	x	y	y
	η − a + 65.6	η − b − 47.8	η − a − 42.6	η − b + 31.6
	+65.6	−47.9	−42.6	+31.6
	+65.6	−47.85	−42.6	+31.6
	+66.26	−48.33	−43.03	+31.92
	÷ 304	÷ 304	−21.52	+15.96
	+218.0	−159.0		
	✓	✓		

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1909phae.proj.2299B

A 7377 No. 28 March 30, 1909.

				1900 Jan. 21	17.1	−52	34.3
a = −52 11821	20 57 7.2	−52 52.5	+ 141.7	= 20 59 28.8	+ 12.6	= −52	40.8
b = −52 11816	21 1 58.7	−52 25.7	− 149.5	= 20 59 29.2	− 14.8	= −52	40.5
c = −53 10003	21 1 51.1	−53 37.9		20 59 29.2		−52	40.2
		×					
	a − b = − 7.6				− 1.6	+ 1.6	− 0.2 + 0.1
cos − 53.6 / Σ		.297					
		− 2.2					

	x	y	x	y
a	17.4	113.5	22.3	119.8
b	105.0	167.6	110.0	173.9
η	60.0	138.3	65.0	144.7

x	x	y	y
η − a + 42.6	η − b − 45.0	η − a + 24.8	η − b − 29.3
+ 42.7	− 45.0	+ 24.9	− 29.2
+ 42.65	− 45.0	+ 24.85	− 29.25
+ 43.08	− 45.45	+ 25.10	− 29.54
÷ .304	÷ .304	+ 12.55	− 14.77
+ 141.7	− 149.5		
✓	✓		

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1909phae.proj.2299B

See B.J. 10 pg. 123 for remeas. this neb.

A 7377 No. 29 March 30, 1909.

						1900 prec.	21	0	34.9	−52	27.1
a = −52	11809	20	53	48.2	−52	23.5	+ 307.3	= 20 58	47.5	−8.9	= −52 32.3
b = −52	11828	20	52	42.2	−52	40.1	− 237.9	= 20 58	47.3	+6.7	= −52 33.4
c = −51	11621	20	2	29.3	−51	50.0			20 58	47.4	−52 32.9
											33.0
					c − b =	− 14.9			+0.4	−0.4	−0.6 +0.6
						.309					−07 +05
						− 4.6					

c₀₀ − 51.8 / 2

	x	y	x	y
a	17.4	41.5	17.4	50.0
b	175.0	10.5	180.0	18.9
n	103.4	23.8	108.4	32.3

x	x	y	y
n−a + 91.0	n−b − 71.6	n−a − 17.7	n−b + 13.3
+ 91.0	− 71.6	− 17.7	+ 13.4
+ 91.0	− 71.6	− 17.7	+ 13.35
+ 91.91	− 72.32	− 17.88	+ 13.48
÷ .304	÷ .304	− 8.94	+ 6.74
+ 302.3	− 237.9		
✓	✓		

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1909phae.proj.2299B

see page 149 for measurement of this nebula.

A 7377 — No. 30 — March 30, 1909.

a =	−53	11804	20	51	40.7 / 51.2	−52	36.7 / 48.3	+	26 3.0 / 26.1	0.4	=	20	56	1.1 / 3.7	+ 11.0	= −52	15.7 / 17.2
b =	−52	11822	20	57	21.7	−52	23.5	−	78.5	0.8	=	20	56	3.7 / 5.1	− 3.1	= −52	26.6
c =	−53	9986	20	57	4.7	−53	24.5					20	56	3.3 / 2.4		−52	26.2

×

a − b = −17.0 | −1.3 + 1.3 | −0.5 + 0.4

cos − 53.4 / Σ

·298

− 5.1

	x	y	x	y
a	12.1	137.6	17.2	145.1
b	115.0	165.6	120.0	173.1
η	91.3	159.5	96.3	167.0
	x	x	y	y
	η − a + 79.2	η − b − 23.7	η − a + 21.9	η − b − 6.1
	+ 79.1	− 23.7	+ 21.9	− 6.1
	+ 79.15	− 23.7	+ 21.9	− 6.1
	+ 79.94	− 23.94	+ 22.12	− 6.16
	÷ .30 4	÷ .30 4	+ 11.06	− 3.08
	+ 26 3.0 / 26.1	− 78.8 5		
	✓	✓		

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1909phae.proj.22998

A 7377 No. 30 – April 6, 1909.

							1900 fno.	20	57	52.2	−52	20.6
a = −52 11814	20	54	58.2	−52	34.7	+64.8	= 20	56	3.4	+6.7	= −52	26.1
b = −52 11819	20	56	41.2	−52	20.4	−35.9	= 20	56	5.7	−6.3	= −52	26.7
c = −53 9986	20	57	4.7	−53	24.5			20	56	4.8		−52 26.4
			×									
	$c-b$ = +23.5							−1.6	+1.7		−0.3	+0.2
$\frac{c_0-53.4}{2}$	298											
	+ 7.0											

	x	y	x	y
a	39.6	125.7	34.6	133.3
b	70.0	155.7	65.0	163.0
η	59.1	143.1	54.2	150.5

x	x	y	y
$\eta-a$ + 19.5	$\eta-b$ − 10.9	$\eta-a$ + 17.4	$\eta-b$ − 12.6
+ 19.6	− 10.8	+ 17.2	− 12.5
+ 19.55	− 10.85	+ 17.3	− 12.55
+ 19.75	− 10.96	+ 17.47	− 12.67
÷ .305	÷ .305	+ 8.74	− 6.34
+ 64.8	− 35.9		
✓	✓		

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1909phae.proj.2299B

A 7377 No. 31 April 6, 1909

								1900 prs.	20	56	30.7	−52	22.4	
a =	−52	11807	20	53	17.7	−52	46.9	+84.8 =	20	54	42.5	+18.8 =	−52	28.3
b =	−52	11817	20	55	56.7	−52	13.6	−74.1 =	20	54	42.8	−14.7 =	−52	28.9
ρ =	−53	9981	20	55	48.7	−53	16.1		20	54	42.5		−52	28.2

c − b = − 8.0

Corr − 53.2

·300

− 2.4

	x	y	x	y
a	22.2	98.6	27.2	106.0
b	70.0	165.0	75.0	172.5
η	47.7	135.9	52.7	143.3
	x	x	y	y
η − a	+ 25.5	η − b − 22.3	η − a + 37.3	η − b − 29.1
	+ 25.5	− 22.3	+ 37.3	− 29.2
	+ 25.5	− 22.3	+ 37.3	− 29.15
	+ 25.76	− 22.52	+ 37.67	− 29.44
	÷ .304	÷ .304	+ 18.84	− 14.72
	+ 84.8	− 74.1		
	✓	✓		

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1909phae..proj..22998

A 7377 No. 32 April 6, 1909.

						1900 Jno.	20 55 22.2	-52 24.9	
a = -52 11804	20 51 40.7	-52	36.7	+11 2.6	=	20 53 33.3	+6.3	= -52 30.4	
b = -52 11815	20 55 27.7	-52	33.2	-11 3.0	=	20 53 34.7	-7.8	= -52 30.9	
c = -51 11604	20 55 44.3	-51	46.1			20 53 34.0		-52 30.7	
						-1.8	+1.8	-0.2	+0.2

×

c − b = +16.6

.309

+5.1

$\frac{C_{00} - 51.8}{2}$

	x	y	x	y
a	72.1	66.6	17.0	56.2
b	90.0	94.6	85.0	84.1
n	56.0	79.1	51.0	63.6

x	x	y	y
n-a + 33.9	n-b − 34.0	n-a +12.5	n-b − 15.5
+ 33.9	− 34.0	+12.4	− 15.5
+ 33.9	− 34.0	+12.45	− 15.5
+ 34.24	− 34.34	+12.57	− 15.66
÷ .304	÷ .304	+ 6.28	− 7.83
+112.6	−113.0		
✓	✓		

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1909phae.proj.2299B

A 7377 No. 33 April 6, 1909.

1900 fm. 20 54 19.6 −52 24.2

a = −52 11805	20 51 51.2	−52	38.3	+39.4	= 20 52 30.8	−1.6	= −52	29.9
b = −52 11814	20 54 58.2	−52	34.7	−147.7	= 20 52 32.5	+4.5	= −52	30.2
c = −51 11604	20 55 44.3	−51	46.1		20 52 31.6		−52	30.0

×

c − b = +46.1

−0.9 +0.9 −0.1 +0.2

c00 − 51.8 / 2

.304

+14.2

	x	y	x	y
a	13.7	71.7	18.7	87.4
b	70.0	59.6	75.0	70.1
η	25.6	68.6	30.5	79.6
	x	x	y	y
	n − a +11.9	n − b −44.4	n − a −3.1	n − b +9.1
	+11.8	−44.5	−3.3	+8.9
	+11.85	−44.45	−3.2	+9.0
	+11.97	−44.89	−3.23	+9.09
	÷.304	÷.304	−1.62	+4.54
	+39.4	−147.7		
	√	√		

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1909phae.proj.22998

A 7377 No. 34 April 6, 1909.

							1900 Jan.	20	52	1.4	− 52	23.3	
a =	−52	11798	20	49	5.6	− 52	35.1	+67.6 (6.9)	= 20	50	13.2 (2.5)	+6.1	= −52 29.0
b =	−52	11801	20	51	1.1	− 52	22.2	−49.9 (8.5)	= 20	50	12.4 (6)	−6.9 (8)	= −52 29.1
c =	−51	11594	20	51	27.8	− 51	45.1			20	50	12.6	−52 29.0
											−0.1	0.0	+0.1 0.0

×

c − b = + 26.7

.310

+ 8.3

$\frac{C_{00} - 51.7}{2}$

	x	y	x	y
a	19.9	64.3	29.9	57.8 (7)
b	55.0	90.0	65.0	83.5
η	40.2	76.3	50.3	69.8

x	x	y	y
η − a + 20.3	η − b − 14.8	η − a + 12.0	η − b − 13.7
+ 20.4	− 14.7	+ 12.1	− 13.7
+ 20.35	− 14.75	+ 12.05	− 13.7
+ 20.55	− 14.90	+ 12.17	− 13.84
÷ .304	÷ .304	+ 6.08	− 6.92
+ 67.6	− 49.0		
√	√		

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1909phae.proj.2299B

A 7377 No. 35 April 6, 1909

									1900 prs.	20	50	43,0	−52	15,1					
a =	−52	11796	20	47	8.1	−52	6.3	+10 6.1 .2	=	20	48	55.3 4.2	−14.5 4	=	−52	20.8 7			a
b =	−52	11802	20	51	25.1	−52	37.3	−15 0.8 .8	=	20	48	57.8 4.3	+16.7 5	=	−52	20.6 8			b
c =	−51	11594	20	51	24.8	−51	45.1			20	48	54.2			−52	20.8 7			c

×

c − b = + 2.7

·310

+ 0.8

C00 − 51.7 / 2

0.0 +0.1 −0.1 0.0

	x	y	x	y
a	11.3	122.0	16.4	127.5
b	90.0	60.3	95.0	65.7
η	43.8	93.3	48.9	98.8
	x	x	y	y
	η − a + 32.5	η − b − 46.2	η − a − 28.7	η − b + 33.0
	+ 32.5	− 46.1	− 28.7	+ 33.1
	+ 32.5	− 46.15	− 28.7	+ 33.05
	+ 32.82	− 46.61	− 28.99	+ 33.38
	÷ .306	÷ .306	− 14.495	+ 16.69
	+ 107.2	− 152.3		
	√	√		

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1909phae.proj.2299B

A 7377 No. 36 April 6, 1909.

					21 28 44.4	−52	42.8
a = −52 11895	21 25 57.3	−52 45.8	+63.7	=	21 27 0.4 × 0.9 − 3.8	= −52	49.6
b = −52 11907	21 29 42.6	−52 58.2	−164.2	=	21 26 59.4 + 9.2	= −52	49.2
c = −53 10102	21 26 22.9	−53 33.0			21 26 59.7	−52	49.4
	×						
	c − a = +25.6				+0.2 −0.2		+0.2 −0.2
Cor −53.4 / 2	.298						
	+7.6						

	x	y	x	y
a	30.0	110.0	20.0	103.5
b	98.2	84.5	88.1	78.0
n	49.1	102.5	39.0	96.0
	x	x	y	y
	n−a +19.1	n−b −49.1	n−a −7.5	n−b +18.0
	+19.0	−49.1	−7.5	+18.0
	+19.05	−49.1	−7.5	+18.0
	+19.24	−49.59	−7.58	+18.18
	÷.302	÷.302	−3.79	+9.09
	+63.7	−164.2		
	√	√		

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1909phae.proj.2299B

A7377 No. 37 April 6, 1909.

								1900 Jno.	21	0	23.42	-52 44.1
a =	-52	11821	20	57	7.2	-52	52.5	+89.2 =	20	58	34.4	+2.6 = -52 49.9
b =	-52	11838	21	2	43.2	-52	40.1	-249.7 =	20	58	32.5	-10.1 = -52 50.2
c =	-51	11621	21	2	27.3	-51	50.0		20	58	34.4	-52 50.0

$\frac{c_{00} - 51.8}{2}$

$c - b = -14.9$

$.309$

-4.6

+0.2 −0.3 −0.1 +0.1

	x	y	x	y
a	8.7	50.4	13.7	55.0
b	110.0	75.5	115.0	80.0
η	35.4	55.4	40.3	60.1

	x	x	y	y
η−a	+26.7	η−b −74.6	η−a +5.0	η−b −20.1
	+26.6	−74.7	+5.1	−19.9
	+26.65	−74.65	+5.05	−20.0
	+26.92	−75.40	+5.00	−20.50
	÷.302	÷.302	+2.55	−10.10
	+89.2	−249.7		

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1909phae.proj.2299B

A 7377 No. 38 April 7th 1909.

1900 Jno. 20 58 27.2 −52 46.3

a = −52 9984	20 56 18.2	−53	11.2	+19.8	− 20 56 38.4	+19.9	= −52 52.3
b = −52 11820	20 56 57.7	−52	24.7	−19.8	− 20 56 38.9	−27.5	= −52 52.2
c = −52 11819	20 56 41.2	−52	20.4		20 56 38.4		−52 52.5

x

c − a = + 23.0

.306

+ 7.0

− 0.6 + 0.5 + 0.1 0.0

$\frac{c+a-52.3}{2}$

	x	y	x	y
a	30.0	50.6	35.0	59.0
b	41.6	143.4	46.7	151.8
n	35.9	88.5	41.0	96.8

x	x	y	y
n − a + 5.9	n − b − 5.7	n − a + 37.9	n − b − 54.9
+ 6.0	− 5.7	+ 37.8	− 55.0
+ 5.95	− 5.7	+ 37.85	− 54.95
+ 6.01	− 5.76	+ 38.23	− 55.50
÷ .303	÷ .303	+ 19.12	− 27.75
+ 19.8	− 19.0		

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1909phae.proj.2299B

A7377 No. 39 April 7th, 1909

1900 prec. 20 58 18.3 −52 56.7

a = −53 9984 20 56 18.2 −53 11.2 +10.7 = 20 56 28.9 +8.8 = −53 2.0
b = −52 11820 20 56 57.7 −52 24.7 −27.8 = 20 56 29.9 −38.2 = −53 3.0
c = −52 11819 20 56 41.2 −52 20.4 20 56 29.4 −53 2.8

x

c − a = +230

−0.7 +0.7 +0.1 0.0

$\frac{c_{00} - 52.3}{2}$

.306

+ 7.0

	x	y	x	y
a	30.0	50.6	35.0	59.0
b	41.6	143.4	46.7	157.8
η	33.2	67.7	38.2	76.0

x	x	y	y
η−a + 3.2	η−b − 8.4	η−a + 17.1	η−b − 75.7
+ 3.2	− 8.3	+ 17.0	− 75.8
+ 3.2	− 8.35	+ 17.05	− 75.75
+ 3.23	− 8.43	+ 17.22	− 76.51
÷ .303	÷ .303	+ 8.61	− 38.26
+ 10.7	− 27.8		

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1909phae.proj.2299B

A 7377 No. 40 April 7, 1909.

1900 fm. 20 54 30,4 − 52 53.6

a = −53 9971	20 49 4.7	−53 4.2	+318.1	= 20 52 43.8	+5.0	= −52	59.3
b = −52 11812	20 54 44.9	−52 56.7	−120.0	= 20 52 44.9	−2.7	= −52	59.4
c = −52 11815	20 55 24.7	−52 33.2		20 52 43.5		−52	59.3

×

c − b = +42.8

.305

+ 13.0

(c00 − 52.4)/2

−0.8 +0.7 ∓0.6 +0.0

	x	y	x	y
a	18.1	30.3	23.0	26.6
b	120.0	35.5	125.0	41.9
η	83.0	30.1	88.1	36.6
	×	×	y	y
	n−a + 64.9	n−b − 37.0	n−a + 9.8	n−b − 5.4
	+ 65.1	− 36.9	+ 10.0	− 5.3
	+ 65.0	− 36.95	+ 9.9	− 5.35
	+ 65.65	− 37.32	+ 10.00	− 5.40
	÷ .301	÷ .301	+ 5.0	− 2.70
	+ 218.1	− 124.0		
	✓	✓		

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1909phae.proj.2299B

For mean meas. see Bd 10, pg 213.

A 7377 No. 41 April 7, 1909.

object quite elongated

1900 fm. 21 22 5.7 -53 11.9

a =	-53	10066	21	17	31.4	-53	23.8	+ 168.4	= 21	30	19.8	+ 5.1	= -53 18.6
b =	-53	10088	21	23	8.9	-53	13.1	- 168.3	= 21	30	28.6	- 5.1	= -53 18.5
c =	-52	11870	21	17	22.2	-52	21.0			21	30	20.2	-53 18.4

c - a = - 9.2 | - 2.1 + 2.1 | + 0.3 - 0.2

Cos -52.3 = .806

- 2.8

	x	y	x	y
a	10.0	20.5	15.0	34.8
b	110.7	41.2	115.6	55.4
η	59.9	30.8	64.8	45.1

x	x	y	y
η - a + 49.9	η - b - 50.8	η - a + 10.3	η - b - 10.4
+ 49.8	- 50.8	+ 10.3	- 10.3
+ 49.85	- 50.8	+ 10.3	- 10.35
+ 50.35	- 51.31	+ 10.40	- 10.45
÷ .299	÷ .299	+ 5.20	- 5.32
+ 168.4	- 168.3		

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1909phae.proj.2299B

A 7377 No. 42 April 7, 1909.

							1900 fws.	21	14	21.3	− 53	18.9
a =	−53	10042	21	11	58.8	− 53	33.5	+ 35.9	= 21	12 34.7	+ 8.4	= − 53 25.2
b =	−53	10048	21	13	19.3	− 53	14.3	− 45.4	= 21	12 33.9	− 10.9	= − 53 25.4
c =	−52	11854	21	12	15.4	− 52	21.9			21 12 34.3		− 53 25.2

$\frac{\cos -52.3}{2}$

x

c − a = + 16.6

.306

+ 5.1

0.0 0.0 0.0 − 0.1

	x	y	x	y
a	40.0	20.5	45.0	32.0
b	64.0	58.6	69.0	70.2
η	50.6	37.0	55.6	49.7

x	x	y	y
η − a + 10.6	η − b − 13.4	η − a + 16.5	η − b − 21.6
+ 10.6	− 13.4	+ 16.7	− 21.5
+ 10.6	− 13.4	+ 16.6	− 21.55
+ 10.71	− 13.53	+ 16.77	− 21.76
÷ .398	÷ .398	+ 8.38	− 10.88
+ 35.9	− 45.4		
✓	✓		

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1909phae.proj.2299B

A 7377 No. 43 April 7th, 1909

								1900 prec.	21	4	55.2	−53	9.4	
a.	−53	10005	21	2	6.6	−53	28.9	+6 x.3	21	3	7.9	+13.6	−53	15.2
b.	−53	10008	21	3	20.6	−53	11.9	−13.6	21	3	6.9	−3.5	−53	15.4
c.	−52	11826	21	1	58.7	−52	25.7		21	3	7.4		−53	15.3
					x									
					c − a = − 7.9				+0.1	−0.2			−0.1	0.0
Corr	−53.4				.305									
	2				− 2.4									

	x	y	x	y
a	40.0	35.3	45.0	36.0
b	62.2	59.5	67.2	70.1
η	58.2	56.6	63.1	63.1
	x	x	y	y
	η − a + 18.2	η − b − 4.0	η − a + 27.3	η − b − 6.9
	+ 18.1	− 4.1	+ 27.1	− 7.0
	+ 18.15	− 4.05	+ 27.2	− 6.95
	+ 18.33	− 4.09	+ 27.47	− 7.02
	÷ .399	÷ .399	+ 13.74	− 3.51
	+ 61.3	− 13.7		
	✓	✓		

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1909phae.proj.2299B

A7337 No. 44 April 7, 1909.

						1900 fro.	21	2	18.2	-53	20.0
a = -53	9990	20	58	31.7	-53	19.6	+118.8	= 21	0	29.3	-6.5 = -53 26.8
b = -53	10005	21	2	6.6	-53	38.9	-98.9	= 21	0	28.4	+3.0 = -53 25.9
c = -52	11826	21	1	58.7	-52	25.7			21	0	29.4 -53 26.0
									-0.1	+0.2	0.0 -0.1

c-b = -7.9

.305

-2.4

c₀ = -52.4

	x	y	x	y
a	26.8	39.3	16.1	45.9
b	90.0	20.5	95.0	37.1
η	61.1	26.3	56.1	33.0

x	x	y	y
η-a +34.1	η-b -28.9	η-a -13.0	η-b +5.8
+35.0	-28.9	-12.9	+5.9
+35.05	-28.9	-12.95	+5.85
+35.40	-29.19	-13.08	+5.91
÷.298	÷.298	-6.54	+2.96
+118.8	-97.9		
✓	✓		

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1909phae.proj.2299B

A 7377 No. 45 April 7, 1909

					1900 fun.	20 59 37.9	-53 9.4	
a = -53 9981	20 55 48.7	-53 16.1	+ 121.5	=	20 57 58.2	+0.8	= -53 15.3	-a
b = -53 9992	20 58 43.7	-53 13.8	- 54.5	=	20 57 49.2	-1.5	= -53 15.3	b
c = -52 11817	20 55 56.7	-52 13.6			20 57 49.7		-53 15.3	c =
	x							
	c - a = +8.0				-0.2 +0.3		0.0 0.0	
Cos a = 52.2 / I	.306							
	+ 7.4							

	x	y	x	y
a	35.0	45.0	38.0	44.5
b	77.3	49.6	87.3	49.0
η	61.1	46.6	71.1	46.0

	x	x	y	y
	η-a +36.1	η-b -16.2	η-a +1.6	η-b -3.0
	+36.1	-16.2	+1.5	-3.0
	+36.1	-16.2	+1.55	-3.0
	+36.46	-16.36	+1.567	-3.03
	÷.300	÷.300	+0.98	-1.52
	+121.5	-54.5		
	✓	✓		

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1909phate.proj.22998

A 7377 No. 46 April 7, 1909.

								1900 fm.	20	52	17.1	− 53	3.1	
a =	− 53	9968	20	48	14.7	− 53	9.8	+ 13.8	= 20	50	28.5	+ 1.3	= − 53	8.5
b =	− 53	9977	20	53	29.2	− 53	7.9	− 18.0	= 20	50	28.7	− 1.1	= − 53	9.0
c =	− 52	11809	20	53	48.2	− 52	23.5			20	50	27.4	− 53	8.8
					x									
			c − b =		+ 19.0						− 0.4	+ 0.4	− 0.3	+ 0.2
$\frac{c_{00} - 52.4}{2}$					.305									
					+ 5.8									

	x	y	x	y
a	15.9	59.7	20.9	69.3
b	110.0	64.5	115.0	74.0
η	55.7	62.4	60.6	71.9

x	x	y	y
η − a + 39.8	η − b − 54.3	η − a + 2.7	η − b − 2.1
+ 39.7	− 54.4	+ 2.6	− 2.1
+ 39.75	− 54.35	+ 2.65	− 2.1
+ 40.15	− 54.89	+ 2.67	− 2.12
÷ .300	÷ .300	+ 1.34	− 1.06
+ 133.8	− 182.0		
✓	✓		

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1909phae.proj.2299B

A 7377 No. 47 April 7, 1909.

							1900 fus.	20	51	38.0	− 53 11.3
a =	−53	9968	20	48	14.7	−53	9.8	+88.2	= 20	49	42.9 − 7.3 = −53 17.6
b =	−53	9974	20	50	48.7	−53	26.5	−67.5	= 20	49	41.2 + 9.5 = −53 17.0
c =	−52	11801	20	51	1.1	−52	22.2		20	49	42.0 −53 17.0

× 0.0 − 0.1 0.0 + 0.1

c − b = + 124

Cos −52.4 / 2 — .305 — + 3.8

	x	y	x	y
a	23.9	73.7	18.9	84.4
b	70.0	40.5	65.0	51.1
n	50.0	59.3	45.0	70.0
	x	x	y	y
	n − a + 26.1	n − b − 20.0	n − a − 14.4	n − b + 18.8
	+ 26.1	− 20.0	− 14.4	+ 18.9
	+ 26.1	− 20.0	− 14.4	+ 18.85
	+ 26.36	− 20.20	− 14.54	+ 19.04
	÷ .299	÷ .299	− 7.27	+ 9.52
	+ 88.2	− 67.6		
	√	√		

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1909phae.proj..2299B

A 7377 No. 48 (9) April 9. 1909

			1900 pos. 21 16 37.9	−53 22.6
a = −53 10050	21 13 48.8	−53 34.0	+ 63.3 (2.7) = 21 14 51.X (1.5) + 5.2 (1) =	−53 28.8 (9)
b = −53 10057	21 15 21.4	−53 25.5	− 30.3 (0) = 21 14 51.X (4) − 3.4 =	−53 28.9
c = −52 11865	21 15 12.5	−52 45.9	21 14 51.6 (4)	−53 28.8 (9)

x

c − b = − 8.9

$\frac{\cos -52.7}{2}$ .303

− 2.7

+0.1 0.0 0.0 0.0

	x	y	x	y
a	37.5	18.8	22.5	29.0
b	65.0	35.8	70.0 (5)	46.0
n	56.1	29.0	41.1	39.3

x		x		y		y	
n−a	+ 18.6	n−b	− 8.9	n−a	+ 10.2	n−b	− 6.8
	+ 18.6		− 8.9		+ 10.3		− 6.7
	+ 18.6		− 8.9		+ 10.25		− 6.75
	+ 18.79		− 8.99		+ 10.35		− 6.82
	÷ .297		÷ .297		+ 5.18		− 3.41
	+ 63.3		− 30.3				
	✓		✓				

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1909phae.proj.2299B

No. 49 on page 167.

A7377 No. 48 April 9, 1909

								21 25	21.4	−53	26.6
a	−53	10082	21	21	39.4	−53	16.7	+ 11 7.3	= 21 23	35.5 − 16.5	= −53 33.4
b	−53	10098	21	26	1.4	−53	54.1	− 142.4	= 21 23	35.5 + 21.3	= −53 33.8
c	−52	11886	21	21	25.3	−52	40.7		21 23	36.2	−53 33.1
				×							
			c − a =		−14.1				−0.7	+0.8	+0.1 −0.1

Cor $\frac{-52.7}{2}$

30.3
− 4.3

	x	y	x	y
a	35.0	96.0	40.0	105.3
b	113.4	20.6	116.4	30.2
η	69.5	62.9	74.5	72.3
	x	x	y	y
	η−a + 34.5	η−b − 42.9	η−a − 33.1	η−b + 42.3
	+ 34.5	− 42.9	− 33.0	+ 42.1
	+ 34.5	− 42.9	− 33.05	+ 42.2
	+ 34.84	− 43.33	− 33.38	+ 42.62
	÷ .297	÷ .297	− 16.69	+ 21.31
	+ 117.3	− 145.9		
	✓	✓		

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1999phae.proj.22998

A 7377 No. 50 April 9, 1909.

							1900 Jno.	21	15 30.4	17.0	− 53 24.4
a.	−53 10042	21 11 58.8	− 53	33.5	+ 92.5	=	21 13	30.4	+ 2.6	=	− 53 30.9
b.	−53 10057	21 15 21.4	− 53	25.5	− 112.6	=	21 13	30.0	− 5.0	=	− 53 30.5
c.	−52 11854	21 17 15.4	− 52	21.9			21 13	30.2			− 53 30.7
		x									
		c − a = +16.6						+0.2 −0.2			+0.2 −0.2
Cor − 52.3 / 2		.306									
		+ 5.1									

	x	y	x	y
a	35.0	36.0	30.0	43.5
b	95.3	51.2	90.3	57.8
η	62.1	41.1	57.3	49.6

x		x		y		y	
η − a	+ 27.1	η − b	− 33.2	η − a	+ 5.1	η − b	− 10.1
	+ 27.3		− 33.0		+ 5.1		− 10.2
	+ 27.2		− 33.1		+ 5.1		− 10.15
	+ 27.47		− 33.43		+ 5.15		− 10.25
	÷ .297		÷ .297		+ 2.58		− 5.12
	+ 92.5		− 112.56				
	√						

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1909phae.proj.2299B

A 7377 No. 51 April 9, 1909

					1900 fm.	21 5	21.5 − 53 57.7
a	−53	10004	21 1 56.6	−53 59.1	+96.7	= 21 3 33.3 − 4.6	= −54 3.7
b	−53	9830	21 4 39.1	−54 8.6	−66.1	= 21 3 33.6 + 4.9	= −54 3.7
c	−52	11827	21 2 29.2	−52 50.8		21 3 33.5	−54 3.7
			×				
			c − a = +32.6			−0.7 + 0.7	0.0 0.0
			.302				
			+ 9.8				

c00 − 52.8 / 2

	x	y	x	y
a	35.0	35.5	40.0	45.0
b	82.4	16.8	87.4	26.2
η	63.2	26.4	68.1	35.9

	x	x	y	y
	η − a + 28.2	η − b − 19.2	η − a − 9.1	η − b + 9.6
	+ 28.1	− 19.3	− 9.1	+ 9.7
	+ 28.15	− 19.25	− 9.1	+ 9.65
	+ 28.43	− 19.44	− 9.19	+ 9.75
	÷ 294	÷ 294	− 4.595	+ 4.88
	+ 96.7	− 66.1		
	✓	✓		

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1909phae..proj..2299B

A 7377 No. 52 April 9, 1909.

					1900 pro.	21 3 40.2	−53	49.5
a = −53 10003	21 1 51.1	−53	37.9	−0.3 =	21 1 50.8	−17.8 =	−53	55.7
b = −53 10004	21 1 56.6	−53	59.1	−5.5 =	21 1 51.1	+3.6 =	−53	55.5
c = −52 11827	21 2 29.2	−52	50.8		21 1 57.0		−53	55.6
	x							
	c − b = +32.6				−0.2	+0.2	0.0	0.0
C.O. − 52.8 / Σ	.302							
	+9.8							

	x	y	x	y
a	38.5	72.4	43.5	79.9
b	40.0	30.0	45.0	37.5
n	38.4	37.1	43.4	45.7

x		x		y		y	
n − a	−0.1	n − b	−1.6	n − a	−35.3	n − b	+7.1
	−0.1		−1.6		−35.2		+7.2
	−0.1		−1.62		−35.60		+7.22
	÷.295		÷.295		−17.80		+3.61
	−0.3		−5.5				
	✓		✓				

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1909phae.proj.2299B

Für permeab. pu Bd. 10 pg. 124.

A 7377 No. 53 April 9, 1909.

						1900 Jan.	21	21	34.3	−54	4.7		
a =	−53	10065	21	17	20.9	−53	49.9	+149.2	= 21	19	48.6 −21.5	= −54	11.2
b =	−54	9881	21	23	9.1	−54	44.3	−204.1	= 21	19	47.0 +33.5	= −54	10.8
c =	−53	10085	21	22	25.4	−53	41.5			21	19 47.8		−54 11.0

x

c − b = −43.7

· 296

−12.9

c − a = −53.7 / 2

−0.2 +0.2

0.0 +0.1

	x	y	x	y
a	7.8	120.1	129	178.6
b	110.0	11.6	11.50	30.2
c	51.0 49.7	77.9	56.0 54.8	86.4

	x	x	y	y
n−a	+43.2	−59.0	−42.2	+66.3
n−b	+43.1	−59.0	−42.2	+66.2
	+43.15	−59.0	−42.2	+66.25
	+43.58	−59.59	−42.62	+66.91
	÷.292	÷.292	−21.31	+33.46
	+149.2	−204.1		

√ √

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1909phae.proj.2299B

For remeas. see Bk. 10, pg. 125.

A 7377 No. 54 April 9, 1909.

1900 hrs. 21 21 30.2 −54 7.2

a = −53 10065 21 17 20.9 −53 49.9 + 144.8 = 21 19 45.8 − 33.8 = −54 13.5

b = −54 9881 21 23 9.1 −54 44.3 − 208.4 = 21 19 45.7 + 31.6 = −54 13.5

c = −53 10085 21 27 25.4 −53 41.5 21 19 43.6 − 54 13.5

43.7

× e − b = −43.7

e−b / 2 · 296

− 12.9

+0.8 −0.8 +07 −09 −0.1 0.0

	x	y	x	y
a	7.8	120.1	12.9	138.6
b	110.0	11.6	115.0	20.2
η	49.7	73.0	54.8	81.5

x	x	y	y
η − a + 41.9	η − b − 60.3	η − a − 47.1	η − b + 61.4
+ 41.9	− 60.1	− 47.1	+ 61.3
+ 41.9	− 60.25	− 47.1	+ 61.35
+ 42.32	− 60.85	− 47.57	+ 61.96
÷ .291	÷ .296	− 23.78	+ 30.98
+ 145.4	− 205.4		

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1909phae.proj.2299B

For remeas. Bull. 10 pg. 126

A7377 No. 55 April 12, 1909.

					1900 prec.	21	16	1.4	−54	6.1
a = −53 10038	21 11 20.3	−53 41.0	+ 175.8	=	21	14	16.4	− 31.5	= −54	12.5
b = −54 9862	21 16 31.1	−54 37.1	− 140.0	=	21	14	1.6	+ 24.7	= −54	12.8
ρ = −53 10061	21 16 14.4	−53 39.1			21	14	13.9		−54	12.4

x

c − b = − 16.7

.297

− 5.0

Cos −53.6 / I

+0.9 −0.9 +0.4 −1.4 −0.2 +0.2

	x	y	x	y
a	8.4	128.0	13.4	138.2
b	100.0	16.7	105.0	27.1
η	59.4	65.7	64.4	45.9

x	x	y	y
η − a + 51.0	η − b − 40.6	η − a − 62.3	η − b + 49.0
+ 51.0	− 40.6	− 62.3	+ 48.8
+ 51.0	− 40.6	− 62.3	+ 48.9
+ 51.51	− 41.01	− 62.92	+ 49.39
÷ .293	÷ .293	− 31.46	+ 24.695
+ 175.8	− 140.0		
✓	✓		

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1909phae..proj..2299B

A 7377 — No. 56 — April 12, 1909.

									1900 jno.	21	0	9.9	−54	9.9	
w =	−54	9897	20	56	6.5	−54	17.7	+135.1	=	20	58	21.6	+1.9	= −54	15.8
t =	−54	9810	21	1	19.0	−54	12.6	−180.2	=	20	58	18.8	−3.1	= −54	15.7
p =	−53	9984	20	56	18.2	−53	11.2			20	58	20.7		−54	15.8

$\frac{\text{Cor} - 53.2}{2}$

× c − a = + 11.7

.300

+ 3.5

−0.2 +0.2 0.0 −0.1

	x	y	x	y
a	20.0	25.5	35.0	38.0
b	111.1	35.2	116.2	47.8
η	59.0	29.1	64.1	41.8

x	x	y	y
η − a + 39.0	η − b − 52.1	η − a + 3.6	η − b − 6.1
+ 39.1	− 52.1	+ 3.8	− 6.0
+ 39.05	− 52.1	+ 3.7	− 6.05
+ 39.44	− 52.62	+ 3.74	− 6.11
÷ .292	÷ .292	+ 1.87	− 3.06
+ 135.1	− 180.2		
√	√		

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1909phae.proj.2299B

A 7377 No. 57 ~~No. 57~~ April 15, 1909

											1900	Jno.	20	59	52.2	−	54	18.1	
a =	− 54	9797	20	56	6.5	− 54	17.7	+ 116.6	=	20	58	2.1	−	6.5	=	− 54	24.1		a
b =	− 54	9808	21	0	42.0	− 54	31.4	− 160.7	=	20	58	2.3	+	7.6	=	− 54	23.8		b
c =	− 53	9984	20	56	18.2	− 53	11.2			20	58	2.2				− 54	24.0		c

c − a = + 11.7

· 300

+ 3.5

c00 − 53.2 / 2

−0.5 +0.5 +0.1 −0.1

	x	y	x	y
a	30.0	44.1	15.0	39.6
b	99.9	16.2	94.9	11.6
n	53.6	31.4	47.6	26.7

x	x	y	y
n − a + 33.6	n − b − 46.3	n − a − 12.7	n − b + 15.2
+ 33.6	− 46.3	− 12.9	+ 15.1
+ 33.6	− 46.3	− 12.8	+ 15.15
+ 33.94	− 46.76	− 12.93	+ 15.30
÷ .291	÷ .291	− 6.46	+ 7.65
+ 116.6	− 160.7		

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1909phae.proj.2299B

A 7377 No. 58 April 16, 1909.

						1900 jun.	21	6	24.2	−54	25.1
a =	−54 9816	21	3	21.5	−54	34.9	+74.2	= 21	4 35.7	+3.6	= −54 31.3
b =	−54 9834	21	6	20.6	−54	26.5	−106.2	= 21	4 34.4	−4.5	= −54 31.0
c =	−53 10008	21	3	20.6	−53	11.9			21 4 35.2		−54 31.2

$\cos \frac{-53.2}{2}$ × $e - a = -0.9$ · .300 = −0.3

−0.2 +0.3 +0.1 −0.2

	x	y	x	y
a	20.0	5.5	25.0	12.0
b	71.8	21.7	76.8	28.0
n	41.3	12.7	46.3	19.0

x	x	y	y
$n-a$ +21.3	$n-b$ −30.5	$n-a$ +7.2	$n-b$ −9.0
+21.3	−30.5	+7.0	−9.0
+21.3	−30.5	+7.1	−9.0
+21.51	−30.80	+7.17	−9.09
÷.290	÷.290	+3.58	−4.54
+74.2	−106.2		
✓	✓		

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1909phae.proj.2299B

A7377 No. 59 April 16, 1909.

1900 Jno. 21 3 0.6 − 54 35.2

a = −54 9805	20	59	20.0	−54	46.2	+ 111.8	= 21	1	11.8 + 5.0 = −54 41.2
b = −54 9816	21	3	31.5	−54	34.9	− 135.6	= 21	1	8.9 − 6.4 = −54 41.3
c = −53 9995	21	59	29.6	−53	45.9			21	1 10.4 −54 41.2

+0.3 −0.2 +0.1 0.0

cos − 53.2

a: x + 8.1, c − x = + 0.9

2.4

+ 0.8

	x	y	x	y
a	25.0	8.1	30.0	19.4
b	95.0	30.6	99.9	41.9
n	57.0	17.9	62.0	29.2

x	x	y	y
n−a + 32.0	n−b − 38.0	n−a + 9.8	n−b − 12.7
+ 32.0	− 37.9	+ 9.8	− 12.7
+ 32.0	− 37.95	+ 9.8	− 12.7
+ 32.32	− 38.33	+ 9.90	− 12.83
÷ .289	÷ .289	+ 4.95	− 6.42
+ 111.8	− 133.6		
√	√		

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1909phae..proj..2299B

A 7377 No. 60 April 16, 1909.

						1900	for.	21	3	2.4	-54	21.3
a = -54 9808	21	0	42.0	-54	31.4	+ 30.6	=	21	1	12.6	+4.1	= -54	27.3
b = -54 9813	21	2	33.5	-54	16.2	- 8.6	=	21	1	1.7	-11.1	= -54	27.4
c = -53 9999	21	0	46.6	-53	31.9			21	1	12.4		-54	27.4

×

c - a = +4.6

0.0 + 0.1 — 0.0 0.0

Cos -53.5 / 2

.297

+ 1.4

	x	y	x	y
a	20.0	19.9	25.0	34.7
b	52.4	55.3	57.4	81.0
η	30.0	31.1	33.9	58.7

x	x	y	y
η - a + 8.9	η - b - 23.5	η - a + 8.2	η - b - 22.3
+ 8.9	- 23.5	+ 8.1	- 22.3
+ 8.9	- 23.5	+ 8.15	- 22.25
+ 8.99	- 23.74	+ 8.23	- 22.44
÷ .291	÷ .291	+ 4.12	- 11.24
+ 30.9	- 81.6		
✓	✓		

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1909phae.proj.2299B

A 7377 No. 61 April 16, 1909.

1900 pos. 20 51 21.4 - 54 34.3

a = -54 9775	20 47 56.4	-54 35.9	+93.9	= 20 49 29.4	-4.1	= -54 30.0	a
b = -54 9781	20 50 44.1	-54 42.7	-75.9	= 20 49 29.1	+2.6	= -54 40.1	b
c = -53 9975	20 50 49.7	-53 55.4		20 49 29.6		-54 40.0	c
	x						
	c-b = +5.6			-0.2	+0.3	00 +0.1	

$\frac{c_{00} - 53.9}{3}$

.295

+1.6

	x	y	x	y
a	21.5	29.5	26.5	45.6
b	70.0	16.0	75.0	32.5
η	48.4	20.3	53.5	37.7
	x	x	y	y
	n-a +26.9	n-b -21.6	n-a -9.1	n-b +4.3
	+27.0	-21.5	-8.0	+5.2
	+26.95	-21.55	-8.05	+5.25
	+27.22	-21.76	-8.13	+5.30
	÷.390	÷.390	-4.06	+2.65
	+93.9	-75.0		
	√	√		

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1909phae.proj.2299B

For remeas. B15 f.10, pg. 127.

A 7377 No. 62 April 62, 1909.

								1900 fun.	21	1	55.9	−55	0.6		
a =	−55 9576	20	58	20.9	−55	7.8	+106.1	=	21	0	5.9	+ 1.4	= −55	6.4	
b =	−55 9535	20	3	42.9	−55	4.2	−230.0	=	21	0	5.1	− 2.5	= −55	6.7	
c =	−54 9817	21	3	38.1	−54	0.0			21	0	5.5		−55	6.6	
				x							5.4				
			c − b =	−14.8											
				.294											
				−4.4											

	x	y	x	y
a	12.6	15.7	17.7	27.3
b	105.0	23.4	110.0	35.0
n	42.7	18.5	47.7	30.0

x	x	y	y
n − a + 30.1	n − b − 62.3	n − a + 2.8	n − b − 4.9
+ 30.0	− 62.3	+ 2.7	− 5.0
+ 30.05	− 62.3	+ 2.75	− 4.95
+ 30.35	− 62.92	+ 2.88	− 5.00
÷ .286	÷ .286	+ 1.44	− 2.50
+ 106.1	− 220.0		
✓	✓		

+0.4 −0.4 −0.2 +0.1
+0.5 −0.3

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1909phae.proj.2299B

A 7377 No. 63 April 16. 1909

						1900 prec.	21	29	27.2	-55	0.2
a =	-55	9625	21	27	0.2	-55	8.5	+44.2	= 21 27 41.4	+1.8	= -55 6.7
b =	-55	9638	21	28	24.4	-55	2.0	-43.8	= 21 27 40.6	-4.9	= -55 6.9
c =	-53	10098	21	26	1.4	-53	54.1		21 27 41.0		-55 6.8
										0.0	0.0
										-0.1	+0.1

c-a = -58.8

c∞ - 53.9

Σ

.795

-17.3

	x	y	x	y
a	60.0	10.9	65.0	22.5
b	84.1	24.2	89.0	35.7
n	71.7	14.5	76.6	26.0

	x	x	y	y
n-a	+11.7	n-b -12.4	n-a +3.6	n-b -9.7
	+11.6	-12.4	+3.5	-9.7
	+11.65	-12.4	+3.55	-9.7
	+11.77	-12.52	+3.58	-9.80
	÷ .286	÷ .286	+1.795	-4.90
	+41.2	-43.8		
	√	√		

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1909phae.proj.2299B

A 7377 No. 64 April 16, 1909.

								1900	jan.	21	11	51.4	-55	4.6
a	-55	9554	21	8	41.4	-55	14.4	+81.6	=	21	10	50	+3.5	= -55	10.9
b	-55	9565	21	12	30.9	-55	4.0	-148.6	=	21	10	0.8	-6.8	= -55	10.8
c	-54	9835	21	8	23.1	-54	32.1			21	10			-55	10.8
										0.0	+0.1			+0.1	-0.1

c - a = -18.3

$\frac{\cos -54.5}{2}$ .290

-5.3

	x	y	x	y
a	40.0	18.5	45.0	26.0
b	105.6	38.0	110.6	46.6
η	63.1	24.5	68.1	33.0

x	x	y	y
η-a +23.1	η-b -42.5	η-a +6.0	η-b -13.5
+23.1	-42.5	+7.0	-13.6
+23.1	-42.5	+7.0	-13.55
+23.33	-42.92	+7.07	-13.69
÷.786	÷.786	+3.54	-6.84
+81.6	-150.1		

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1909phae.proj.2299B

A 7377 No. 65 April 16, 1909.

						1900 pos.	20	57	15.5	−55	12.3
a =	−55	9495	20	51	15.6	−55	24.1	+ 250.6	= 20 55 28.2	+ 6.3	= −55 17.8
b =	−55	9520	20	58	48.9	−55	14.4	− 200.5	= 20 55 27.9	− 4.6	= −55 19.0
c =	−54	9806	20	59	35.0	−54	25.8		20 55 25.3		−55 18.4

c − b = + 36.1

·291

+ 10.5

Cor − 54.4 / 2

− 1.6 + 1.6 | − 0.5 + 0.6

	x	y	x	y
a	11.7	5.2	16.8	8.5
b	140.0	26.7	145.0	30.0
n	82.5	17.7	87.4	20.9

	x	x	y	y
n − a + 70.8	n − b	− 57.5 n − a	+ 12.5 n − b	− 9.0	
	+ 70.6	− 57.6	+ 12.4	− 9.1
	+ 70.7	− 57.55	+ 12.45	− 9.05
	+ 71.41	− 58.13	+ 12.57	− 9.14
	÷ .285	÷ .285	+ 6.285	− 4.57
	+ 250.6	− 204.0		

✓ ✓

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1909phae.proj.2299B

Note — No. 1 is rejected.

A 1695 — No. 2 April 27, 1909

					1900 fno.	19 49 25.2	-55 24.0	
a =	-55 9250	19 46 16.5	-55	28.0	+68.9	= 19 47 35.7	+0.3	= -55 27.7
b =	-55 9274	19 50 11.0	-55	28.2	-166.9	= 19 47 34.8	+0.2	= -55 28.0
c =	-56 9357	19 50 7.6	-56	36.5		19 47 27.8		-55 27.8
		x						
		c − b = − 3.4				−0.5	+0.6	−0.1 +0.2
cos − 56.6 / 2		.245						
		−0.9						

	x	y	x	y
a	14.0	161.9	18.9	173.2
b	80.0	162.2	85.0	173.6
n	33.3	162.6	38.2	173.8
	x	x	y	y
	n−a + 19.3	n−b − 46.7	n−a +0.7	n−b +0.4
	+ 19.3	− 46.8	+0.6	+0.2
	+ 19.3	− 46.75	+0.65	+0.3
	+ 19.49	− 47.22	+0.66	+0.3
	÷ .283	÷ .283	+0.33	+0.15
	+ 68.9	− 166.9		
	✓	✓		

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1909phae.proj.2299B

A 5695 No. 3 April 22, 1909.

									1900 pos.	19	46	53.2	−55	22.0
a =	−55	9223	19	42	44.7	−55	26.9	+ 128.7	=	19	44	53.1	+ 1.2 =	−55 25.7
b =	−55	9251	19	46	24.5	−55	25.8	− 91.4	=	19	44	53.0	+ 0.1 =	−55 25.7
c =	−56	9313	19	42	26.2	−56	14.9			19	44	53.2		−55 25.7
										−0.9		+1.0		0.0 0.0

Cor $\frac{-56.2}{2}$

c − a = − 18.5

.278

− 5.1

	x	y	x	y
a	25.0	155.5	30.0	165.0
b	86.9	157.7	91.9	167.3
n	61.2	157.9	66.2	167.4

x	x	y	y
n − a + 36.2 n − b	− 25.7 n − a	+ 2.4 n − b	+ 0.2
+ 36.2	− 25.7	+ 2.4	+ 0.1
+ 36.2	− 25.7	+ 2.4	+ 0.15
+ 36.56	− 25.96	+ 2.42	+ 0.15
÷ .284	÷ .284	+ 1.21	+ 0.08
+ 128.7	− 91.4		
√	√		

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1909phae.proj.2299B

A 5695 No. 4 April 22, 1909.

								1900 for.	19	40	40.5	−55	21.6		
a = −55 9185	19	37	47.9	− 55	19.3	+ 52.5	=	19	38	39.9	− 5.6	=	−55	25.0	4.9
b = −55 9201	19	39	27.2	− 55	30.6	− 47.6	=	19	38	40.1	+ 5.4	=	−55	25.3	
c = −55 9188	19	38	1.4	− 55	55.2			19	38	40.0			−55	25.1	
			×												
	c − a = + 13.5							−0.1	+0.1			−0.2	+0.2		
Cor −55.9 / 2			780												
			+ 3.8												

	x	y	x	y
a	40.0	165.0	450	170.5
b	68.1	142.9	73.2	148.5
n	54.7	153.7	59.8	159.1
	x	x	y	y
	n−a + 14.7	n−b − 13.4	n−a + 11.3	n−b + 10.8
	+ 14.8	− 13.4	− 11.4	+ 10.6
	+ 14.75	− 13.4	− 11.35	+ 10.7
	+ 14.90	− 13.53	− 11.46	+ 10.81
	÷ .284	÷ .284	− 5.73	+ 5.40
	+ 52.5	− 47.6		
	✓	✓		

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1909phae.proj.2299B

A 5695 No. 5 April 22, 1909.

						1900 fno.	19	56	12.6	-55	31.0
a = -55 9295	19	53	48.8	-55	35.9	+24.4	= 19	54	13.2	+0.9	= -55 35.0
b = -55 9302	19	54	17.8	-55	34.2	-5.2	= 19	54	17.8	-0.7	= -55 34.9
c = -55 9290	19	54	28.1	-56	8.1			19	54	12.8	-55 35.0
			x								
	c-b = -5.7								+0.2	-0.1	0.0 -0.1
Cos -56.1			.279								
2			-1.6								

	x	y	x	y
a	56.8	89.2	61.7	99.8
b	65.0	92.3	70.0	103.1
n	63.6	90.9	68.5	101.7
	x	x	y	y
	n-a + 6.8	n-b - 1.4	n-a + 1.7	n-b - 1.4
	+ 6.8	- 1.5	+ 1.9	- 1.4
	+ 6.8	- 1.45	+ 1.8	- 1.4
	+ 6.87	- 1.46	+ 1.82	- 1.41
	÷ .282	÷ .282	+ 0.91	- 0.70
	+ 24.4	- 5.2		
	✓	✓		

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1909phae.proj.2299B

A 5695 No. 6, April 22, 1909.

						1900 Jus.	19	54	33.1	−55	36.0
a	−55	9283	19	51	46.5	−55	51.7	+4 6.6	= 19	52	33.1 6 +11.7 = −55	40.1
b	−55	9291	19	52	56.3	−55	35.2	−23.5	= 19	52	33.8 − 4.8 = −55	40.0
c	−56	9374	19	52	41.1	−56	45.1		19	52	33.1	−55	40.0
									0.0	0.0		+0.1	0.0

$\frac{\cos -56.7}{2}$

c − b = − 15.2

.274

− 4.2

	x	y	x	y
a	35.3	143.5	40.3	130.7
b	55.0	176.0	60.0	163.5
η	48.5	166.5	53.4	154.0

x	x	y	y
η − a + 13.2	η − b − 6.5	η − a + 33.1	η − b − 9.5
+ 13.1	− 6.6	+ 23.3	− 9.5
+ 13.15	− 6.55	+ 23.2	− 9.5
+ 13.28	− 6.61	+ 23.43	− 9.60
÷ .282	÷ .282	+ 11.72	− 4.80
+ 47.1	− 23.5		

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1909phae.proj.2299B

A 5695 No. 7. April 22, 1909.

						1900 fno.	19	52	45.6	-55	42.9
a = -55	9276	19	50	27.0	-55	55.1	+18.2	= 19	50	45.4	+8.4 = -55 46.7
b = -55	9280	19	51	11.0	-55	38.9	-26.8	= 19	50	44.9	-7.9 = -55 46.8
c = -56	9388	19	51	23.1	-56	21.2		19	50	45.6	-55 46.8
				x							
				c - b = +12.1				-0.2	+0.2		0.0 -0.1

Cos -56.3 = z

.277

+3.4

	x	y	x	y
a	50.0	129.7	42.7	138.4
b	50.0	163.0	55.0	170.5
n	42.7	146.4	47.8	154.8

	x		x		y		y	
n-a	+5.0	n-b	-7.3	n-a	+16.7	n-b	-15.6	
	+5.1		-7.2		+16.4		-15.7	
	+5.05		-7.25		+16.55		-15.65	
	+5.10		-7.32		+16.71		-15.81	
	÷.281		÷.281		+8.36		-7.90	
	+18.1		-26.0					

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1909phae.proj.2299B

A 5695 No. 8 April 22, 1909.

								1900 fm.	19	50	15.7	−55	42.7	
a = −55 9255	19	47	16.0	−55	46.4	+5 8.5	=	19	48	15.1 45	+0.0	= −55	46.4	
b = −55 9268	19	49	8.0	−55	45.2	−5 7.0	=	19	48	15.5 6.0	−1.4	= −55	46.6	
c = −56 9352	19	49	20.6	−56	39.5			19	48	15.3 2		−55	46.5	
			×											
			e − b = +12.6							−0.7	+0.8	−0.1	+0.1	
cos −56.6 / 2			.275											
			+3.5											

	x	y	x	y
a	18.9	150.7	23.8	162.4
b	50.0	153.5	55.0	165.0
n	35.4	150.8	40.3	162.3

x	x	y	y
n − a + 16.5	n − b − 14.6	n − a + 0.1	n − b − 2.7
+ 16.5	− 14.7	+ 0.1	− 2.7
+ 16.5	− 14.65	+ 0.1	− 2.7
+ 16.66	− 14.80	+ 0.1	− 2.73
÷ .282	÷ .282	+ 0.05	− 1.36
+ 59.1	− 52.5		
√	√		

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1909phae.proj.2299B

A 5695 No. 9 April 22, 1909.

						1900 prec.	19	49	8.9	-55	40.1	
a = -55 9250	19	46	16.5	-55	28.0	+52.45	= 19	47	9.0	− 16.2	= -55	43.8 44.4 x 2.0
b = -55 9255	19	47	16.0	-55	46.4	− 7.7	= 19	47	8.3	+ 2.4	= -55	44.0
c = -56 9338	19	46	45.0	-56	24.1			19	47	8.6	− 55	44.2
			x									3.9
	c − a = +28.5								0.0	0.0	−0.1	+0.1

Cor −56.4 / 2

.277

+ 8.0

	x	y	x	y
a	35.0	167.5	40.0	173.0
b	51.8	131.1	56.8	136.6
η	49.6	135.8	54.7	141.3

x	x	y	y
η − a + 14.6	η − b − 2.2	η − a − 31.7	η − b + 4.7
+ 14.7	− 2.1	− 31.7	+ 4.7
+ 14.65	− 2.15	− 31.7	+ 4.7
+ 14.80	− 2.17	− 32.02	+ 4.75
÷ .282	÷ .282	− 16.01	+ 2.38
+ 52.45	− 7.7		

✓ ✓

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1909phae.proj.22908

A5695 No. 10 April 23, 1909.

						1900 prn.				
						19	48	12.7	-55	33.4
a = -55 9741	19	44	50.7	-55	36.7	+ 82.4	= 19	46	13.3 − 0.2 =	-55 36.9
b = -55 9748	19	45	57.5	-55	40.5	− 217.6	= 19	46	8.9 − 1.4 =	-55 37.4
c = -56 9328	19	44	35.1	-56	16.0			19	46	11.5 −55 37.2

c − a = −

cos −56.4 / 2

.277
2.9
− 8.2

	x	y	x	y
a	39.0	158.4	31.2	103.9
b	120.0	144.4	115.0	106.5
n	59.2	107.1	54.3	113.6

	x	x	y	y
n-a	+28.9	− 60.8	− 0.3	− 7.8
n-b	+23.1	− 60.7	− 0.3	− 2.9
	+23.0	− 60.75	− 0.3	− 2.85
	+23.23	− 61.36	− 0.3	− 2.88
	÷ .282	÷ .282	− 0.15	− 1.44
	+82.4	− 217.6		
	√	√		

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1909phae.proj.2299B

A 5695 No. 11 April 23, 1909.

						1900 fnd.	20	3	17.4	-55	55.1	
a =	-55	9333	20	0	18.1	-55	57.9	+	=	20	1	18.1 − 1.3 =	-55	59.2	a
b =	-56	9434	20	1	44.3	-56	0.6	−	=	20	1	17.8 + 1.2 =	-55	59.4	b
c =	-56	9431	20	1	17.9	-56	34.9			20	1	17.8	-55	59.3	c
												+0.1 −0.1	−0.1	+0.1	

$\frac{c_{00} - 56.6}{2}$

$c - b = -26.4$

.275

−7.3

	x	y	x	y
a	25.8	145.5	30.8	162.0
b	50.0	140.5	550	157.1
η	42.5	147.8	47.5	159.4

x	x	y	y
η−a + 16.7	η−b − 7.5	η−a − 2.7	η−b + 2.3
+ 16.7	− 7.5	− 2.6	+ 2.3
+ 16.7	− 7.5	− 2.65	+ 2.3
+ 16.87	− 7.58	− 2.68	+ 2.32
÷ .280	÷ .280	− 1.34	+ 1.16
+ 60.3	− 27.1		

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1909phae.proj.2299B

A 5695 No. 12 April 23, 1909.

					1900 fm.	20	1	39.7	-55 59.9
a = -56 9414	19 58 5.0	-55	11.8	+94.5	= 19 59	39.5	+8.0	= -56	3.8
b = -55 9345	20 2 41.7	-55	49.0	-18x.3	= 19 59	41.2	-15.5	= -56	4.3
c = -56 9440	20 2 46.8	-56	46.9		19 59	39.4		-56	4.2
	x								
	c-b = +5.1					-1.3	+1.3		-0.2 +0.2
$\frac{c_{00} - 56.8}{2}$	.254								
	+1.4								

	x	y	x	y
a	18.2	116.0	23.3	178.5
b	95.0	162.5	100.0	174.9
η	44.4	141.8	49.5	144.2

x	x	y	y
n-a +26.2	n-b -40.6	n-a +55.8	n-b -30.7
+26.2	-40.6	+15.7	-30.7
+26.2	-50.55	+15.75	-30.7
+26.46	-51.05	+15.91	-31.01
÷.280	÷.280	+7.96	-15.50
+94.5	-182.3		
✓	✓		

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1909phae.proj.2299B

A 5695 No. 13 April 23, 1909.

								1900 Jno.	19	57	11.2		-55	53.1	
a =	-55	9783	19	51	46.5	-55	51.7	+205.8	= 19	55	17.3	−	4.9	= -55	57.6	a
b =	-56	9422	19	59	3.0	-56	3.9	−283.2	= 19	55	17.8	+	7.5	= -55	56.4	b
c =	-56	9374	19	52	0.1	-56	50.7		19	55	17.9			-55	57.2	c

c − a = + 13.6 | −1.0 +0.9 | +0.4 −0.5

Cos / 2 — 56.8

.274

+ 3.7

	x	y	x	y
a	25.0	122.0	30.0	126.5
b	146.7	95.6	151.7	100.2
η	82.1	110.1	87.0	104.8
	x	x	y	y
	n−a + 57.1	n−b − 64.6	m−a − 11.9	n−b + 14.6
	+ 57.0	− 64.7	− 11.7	+ 14.6
	+ 57.05	− 64.65	− 11.8	+ 14.55
	+ 57.62	− 65.30	− 11.92	+ 14.69
	÷ .280	÷ .280	− 5.96	+ 7.34
	+ 205.8	− 233.2		

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1909phae..proj..2299B

A 5695 No. 14 April 23, 1909.

neb. *

						1900 fno.	19	52	58.7	-55 54.3
a =	-55	9276	19	50	27.0	-55	55.1	+ 30.5 =	19	50 57.5 - 2.9 = -55 58.0
b =	-56	9378	19	52	38.6	-56	2.1	- 9.3 =	19	50 58.3 + 3.8 = -55 58.3
c =	-56	9379	19	52	41.1	-56	45.1		19	50 57.9 -55 58.2

*

c - b = + 12.5

.274

+ 3.4

-0.4 +0.4 -0.2 +0.1

$\frac{\text{fno} - 56.7}{2}$

	x	y	x	y
a	31.1	168.4	26.2	155.8
b	65.0	155.0	60.0	142.5
η	39.7	162.6	34.7	150.0

x	x	y	y
η - a + 8.6	η - b - 25.3	η - a - 5.8	η - b + 7.6
+ 8.5	- 25.3	- 5.8	+ 7.5
+ 8.55	- 25.3	- 5.8	+ 7.55
+ 8.63	- 25.55	- 5.86	+ 7.63
÷ .280	÷ .280	- 2.93	+ 3.82
+ 30.8	- 91.2		
✓	✓		

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1909phae.proj.2299B

A3695 — No. 15 April 23, 1909.

							1900 fno.	19	50	46.2	− 55	51.3		
a	− 55	9257	19	47	25.5	− 55	55.8	+79.6	= 19	48	45.7	+0.7	= − 55	53.1
b	− 55	9276	19	50	27.0	− 55	55.1	−10.2	= 19	48	45.8	−0.2	= − 55	53.3
c	− 57	9552	19	47	35.2	− 57	4.4		19	48	45.4		− 55	55.2
					×									
					c − a = + 9.7						−0.3	+0.4	−0.1	+0.1
					7									
c∞ − 57.1					.272									
2					+ 2.6									

	x	y	x	y
a	25.0	151.5	30.0	165.0
b	75.7	152.6	80.6	166.2
η	47.3	153.0	52.3	166.4
	x	x	y	y
	η − a + 22.3	η − b − 28.4	η − a + 1.5	η − b + 0.4
	+ 22.3	− 28.3	+ 1.4	+ 0.2
	+ 22.3	− 28.35	+ 1.45	+ 0.3
	+ 22.52	− 28.63	+ 1.46	+ 0.3
	÷ .280	÷ .280	+ 0.73	+ 0.15
	+ 80.4	− 102.2		
	✓	✓		

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1909phae..proj..22999

A 5695 No. 16 April 23, 1909

Neb. *

							1900 fno.	19	50	27.4	−55	51.0	
a =	−55 9257	19	47	25.5	−55	55.8	+61.7	= 19	48	27.4	+0.9	= −55	54.9
b =	−55 9276	19	50	27.0	−55	55.1	−121.0	= 19	48	26.0	−0.3	= −55	54.8
c =	−57 9552	19	47	35.2	−57	4.4			19	48	26.6		−55 54.8

c − a = + 9.7

$\frac{c - a - 57.1}{2}$. 272

+ 2.6

	x	y	x	y
a	25.0	151.5	30.0	165.0
b	75.7	152.6	80.6	166.2
η	42.1	153.2	47.1	166.8

x	x	y	y
η − a + 17.1	η − b − 33.6	η − a + 1.7	η − b + 0.6
+ 17.1	− 33.5	+ 1.8	+ 0.6
+ 17.1	− 33.55	+ 1.75	+ 0.6
+ 17.24	− 33.89	+ 1.77	+ 0.61
÷ .280	÷ .280	+ 0.88	+ 0.30
+ 61.7	− 121.0		
✓	✓		

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1909phae.proj.2299B

A 5695 No. 16 April 23, 1909.

									1900 fno.	19	49	34.8		−55	50.6			
a = −55 9257	19	47	25.5	−55	55.8	+ 8.3	=	19	47	33.8	+ 1.4	=	−55	54.4				a
b = −55 9268	19	49	8.0	−55	45.2	− 9.7	=	19	47	33.3	− 9.2	=	−55	54.4				b
c = −56 9352	19	49	20.6	−56	39.5			19	47	34.0			−55	54.4				c
			×								− 0.3	+ 0.3		+ 0.0	− 0.1			
			c − b = + 12.6															
Cor − 56.6 / 2			.275															
			+ 3.5															

	x	y	x	y
a	41.4	138.4	46.3	146.8
b	70.0	159.5	45.0	167.9
η	43.7	141.1	48.6	149.7
	x	x	y	y
	η − a + 2.3	η − b − 26.3	η − a + 2.7	η − b − 18.4
	+ 2.3	− 26.4	+ 2.9	− 18.2
	+ 2.3	− 26.35	+ 2.8	− 18.3
	+ 2.332	− 26.61	+ 2.833	− 18.48
	÷ .381	÷ .381	+ 1.442	− 9.24
	+ 8.3	− 94.7		
	✓	✓		

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1909phae.proj.2290B

A 5695 No. 18 April 23, 1909.

								1900 fro.	19	50	12.8	−55	56.8
a =	−55	9257	19	47	25.5	−55	55.8	+46.9	= 19	48	1.9 / 38.4	−4.8	= −56 0.6
b =	−56	9350	19	48	40.8	−56	2.3	−29.0	= 19	48	2.1 / 38.8	+1.7	= −56 0.6
c =	−56	9351	19	48	53.6	−56	57.9		19	48	12.0		−56 0.6
												−0.1	+0.1 0.0 0.0

c − b = +17.8

cor −56.9 / 2

.273

+3.5

	x	y	x	y
a	18.0	164.4	18.9	173.1
b	35.0	151.4	40.0	160.0
n	26.9	154.9	32.0	163.4

x	x	y	y
n−a + 12.9	n−b − 8.1	n−a − 9.5	n−b + 3.5
+ 13.1	− 8.0	− 9.7	+ 3.4
+ 13.0	− 8.05	− 9.6	+ 3.45
+ 13.13	− 8.13	− 9.70	+ 3.48
÷ .280	÷ .280	− 4.85	+ 1.74
+ 46.9	− 29.0		
✓	✓		

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1909phae.proj.2299B

A 5695 No. 19 April 23, 1909.

								1900 fm.	19	50	17.8	−56	2.8		
a =	−56	9342	19	47	50.0	−56	9.2	+ 27.2 (6.9)	= 19	48	17.2 (6.9)	+ 2.6	= −56	6.6	a
b =	−56	9350	19	48	40.8	−56	3.3	− 26.9 (3.7)	= 19	48	13.9 (13.1)	− 4.5	= −56	6.6	b
c =	−56	9351	19	48	53.6	−56	57.9			19	48	15.8 (7.9)		−56	6.6	c
					×										
					c − b =	+ 12.8					−0.1	+0.1		0.0	0.0

$\frac{c_{00} - 56.9}{2}$

.273

+ 3.5

	x	y (48)	x	y
a	30.9	153.4	35.9	141.7
b	45.0	167.0	50.0	155.5
n	38.4	153.5	43.4	146.9

	x	x	y (5)	y (8)
n − a	+ 7.5	− 6.6	+ 8.1	− 13.5
	+ 7.5	− 6.6	+ 5.2	− 8.6
	+ 7.5	− 6.6	+ 5.15	− 8.55
	+ 7.58	− 6.67	+ 5.20	− 8.63
	÷ .279	÷ .279	+ 2.60	− 4.32
	+ 27.2	− 23.9		
	✓	✓		

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1000photo.proj.22000

A 5695 — No. 20 — April 23, 1909.

						1900 fm.	19	45	25.1	− 55 57.4
a = −56 9319	19	43	20.0	−56	13.0	+3.1 =	19	43	23.1	+1.9 = −56 1.1
b = −55 9229	19	43	25.2	−55	47.3	−1.2 =	19	43	24.0	−18.4 = −56 1.0
c = −56 9318	19	43	18.0	−56	9.6		19	43	23.6	−56 1.1
			×						÷0.5	+0.4 +0.1 0.0
			c − b =	− 7.2						
c − 56.1 / 2				.280						
				− 2.0						

	x	y	x	y
a	43.8	44.5	48.8	48.9
b	45.0	105.6	50.0	110.0
n	44.6	68.2	49.7	72.7
	x	x	y	y
	n − a + 0.8	n − b − 0.4	n − a + 23.7	n − b − 37.4
	+ 0.9	− 0.3	+ 23.8	− 37.3
	+ 0.85	− 0.35	+ 23.75	− 37.35
	+ 0.86	− 0.35	+ 23.99	− 37.72
	÷ .280	÷ .280	+ 11.995	− 18.86
	+ 3.1	− 1.2		
	/	√		

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1909phae.proj.2299B

A 5695 No. 21 April 23, 1909.

							1900 fr.	19	38	15.4	−55	58.0	
a =	−56	9276	19	35	32.7	−56	0.4	+ 40.8	= 19	36	13.5	−1.0	= −56 1.4
b =	−56	9279	19	36	25.5	−56	1.6	− 12.2	= 19	36	13.3	+0.2	= −56 1.4
c =	−55	9178	19	36	27.9	−55	5.1			19	36	13.4	−56 1.4
										−0.1	+0.2		0.0 0.0

$c - b = +2.4$

$\frac{c_2 - 55.1}{2}$

.386.

+0.7

	x	y	x	y
		20		
a	35.3	61.8	40.3	73.6
b	50.0	59.5	55.0	41.2
η	46.6	60.0	51.6	41.7
	x	x	y	y
	$n-a$ +11.3	$n-b$ −3.4	$n-a$ −2.0	$n-b$ +0.5
	+11.3	−3.4	−1.9	+0.5
	+11.3	−3.4	−1.95	+0.5
	+11.41	−3.43	−1.97	+0.5
	÷.280	÷.280	−0.98	+0.2
	+40.8	−12.2		
	✓	✓		

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1909phae.proj.22998

A 5695 No. 22 April 23, 1909.

					1900 Jan.	20	5	35.2	−56	8.5
a = −56 9441	20 3 18.8	−56 5.2	+ 17.3	=	20 3 35.9	− 7.1	=	−56	12.8
b = −56 9443	20 4 3.3	−56 22.3	− 29.5	=	20 3 34.4	+ 9.6	=	−56	12.7
c = −55 9347	20 2 54.7	−55 29.2			20 3 35.4			−56	12.8
	×								
	$c-a$ = − 24.1					+ 0.7	− 0.8	0.0	0.0
$\frac{\cos -55.5}{2}$	.283								
	− 6.8								

	x	y	x	y
a	25.0	65.0	30.0	75.5
b	37.8	30.7	42.8	41.4
η	29.8	49.8	34.7	60.3
	x	x	y	y
	$\eta-a$ + 4.8	$\eta-b$ − 8.0	$\eta-a$ −15.2	$\eta-b$ + 19.1
	+ 4.7	− 8.1	− 15.2	+ 18.9
	+ 4.75	− 8.05	− 15.2	+ 19.0
	+ 4.80	− 8.13	− 15.35	+ 19.19
	÷ .278	÷ .278	− 7.68	+ 9.595
	+ 17.3	− 29.3		

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1909phae.proj.2299B

A 5695 No. 23 April 5-6, 1909

					1900 Jno.	20	3	12.7	-56	12.5
a =	-56	9+20	19 20	58	51.5	-56	20.0	+ 14 1.6 (1.4 0.3 x.7)	= 20	1	13.1 (1.8) + 3.5	= -56	16.5
b =	-56	9+38	20	2	10.5	-56	13.9	- 67.8 (1 3.2)	= 20	1	12.5 - 3.0	= -56	16.9
c =	-55	9341	20	1	40.7	-55	18.9			20	1	12.8 (5)	-56	16.7

x

c - b = -39.6

.248

-11.2

c00 - 55.3 / 2

-0.7 +0.7 -0.2 +0.2

	x	y	x	y
a	12.3	47.3	14.4	61.5 (6)
b	70.0	60.1	75.0	44.5
n	51.3	54.2	56.4	68.7
	x	x	y	y
	n-a + 39.0	n-b - 18.7	n-a + 6.9	n-b - 5.9
	+ 39.0	- 18.6	+ 7.1	- 5.8
	+ 39.0	- 18.65	+ 7.0	- 5.85
	+ 39.39	- 18.84	+ 7.07	- 5.94
	÷ .248	÷ .248	+ 3.54	- 2.96
	+ 14 1.6 (1.7)	- 67.8		
	✓	✓		

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1909phate.proj.2299B

See page 308 for better results.
new stars selected.

A 5695 No. 24 April 24, 1909

a = -56	9377	19	52	25.6	-56	18.2	+ 90.8	= 19	53	56.3	- 2.7 = -56 20.9
b = -56	9421	19	58	56.0	-56	25.1	- 298.6	= 19	53	57.4	+ 6.1 = -56 18.9
c = -57	9579	19	51	59.2	-56	17.8			19	53	56.8	-56 18.9

c - a = - 26.4

c₀₀ - 57.2 / 2

.271

- 7.2

	x	y	x	y
a	15.0	160.1	20.0	170.5
b	121.7	142.5	126.8	153.0
n	39.8	154.8	44.9	165.2

x	x	y	y
n-a + 24.8	n-b - 81.9	n-a - 5.3	n-b + 12.3
+ 24.9	- 81.9	- 5.3	+ 12.3
+ 24.85	- 81.9	- 5.3	+ 12.25
+ 25.10	- 82.72	- 5.35	+ 12.37
÷ .277	÷ .277	- 2.68	+ 6.18
+ 90.6	- 298.6		
✓	✓		

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1909phae.proj.2299B

A 5695 No. 25 April 24, 1909

					1900 fno.	19	55	56.6	− 56	16.6
a = − 56 9379	19	52	41.1	− 56	45.1	+ 76.6	= 19	53	57.9	+ 34.5 = − 56 20.6
b = − 55 9308	19	55	35.3	− 55	42.5	− 101.4	= 19	53	53.9	− 38.4 = − 56 30.9
c = − 56 9378	19	52	38.6	− 56	2.1			19	53	55.8 − 56 20.6

a =
b =
c =

×

$c - a$ = − 12.5

+0.6 −0.7 0.0 −0.1

$\frac{c_0 - 56.0}{2}$

.280

− 3.5

	x	y	x	y
a	30.0	30.3	35.0	44.7
b	78.8	155.3	83.8	169.7
η	50.9	79.3	55.9	93.7
	×	×	y	y
	$\eta - a$ + 20.9	$\eta - b$ − 27.9	$\eta - a$ + 49.0	$\eta - b$ − 76.0
	+ 20.9	− 27.9	+ 49.0	− 76.0
	+ 20.9	− 27.9	+ 49.0	− 76.0
	+ 21.11	− 28.18	+ 49.49	− 76.76
	÷ .278	÷ .278	+ 24.74	− 38.38
	+ 76.6	− 101.4		
	✓	✓		

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1999phae.proj.2209B

— see page 210 for No. 25 —

A 5695 No. 25 April 24, 1909

						19 54 25.1		− 56 7.9
a =	− 56 9377	19 52 25.6	− 56	18.2	− 1.6	= 19 52 24.0	+ 6.5	= − 56 11.7
b =	− 56 9378	19 52 28.6	− 56	2.1	− 4.4	= 19 52 24.2	− 10.1	= − 56 13.8
c =	− 56 9379	19 52 41.1	− 56	45.1		19 52 24.1		− 56 11.9
						−0.1	+0.1	−0.1 +0.1

$a - b$ = + 12.5

Cos $\frac{-56.7}{2}$

.244

+ 3.4

	x	y	x	y
a	44.3	132.5	49.2	131.0
b	45.0	155.0	50.0	163.5
n	43.8	135.2	48.8	143.9

x	x	y	y
$n-a$ − 0.5	$n-b$ − 1.2	$n-a$ + 12.7	$n-b$ − 19.8
− 0.4	− 1.2	+ 12.9	−19.6
− 0.45	−1.2	+ 12.8	−19.7
− 0.45	− 1.21	+ 12.93	− 19.90
÷ .278	÷ .278	+ 6.46	− 9.95
− 1.6	− 4.4		
✓	✓		

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1909phae.proj.2299B

A 5695 No. 28 April 24, 1909.

Neb. *

						1900 prec.	19	54	36.9	−56	6.0
a = −56	9377	19	52	35.6	−56	18.2	+10.4	= 19	52 36.9	+8.4	= −56 9.8
b = −56	9378	19	52	38.6	−56	2.1	+7.6	= 19	52 36.7	−7.9	= −56 10.1
c = −56	9379	19	52	41.1	−56	45.1			19 52 36.1		−56 10.0
									−0.2	+0.2	−0.1 0.0

c − b = +12.5

c00 − 56.7

.274

+3.4

	x	y	x	y
a	44.3	132.5	49.2	131.0
b	45.0	155.0	50.0	163.5
η	47.1	139.1	52.1	147.7
	x	x	y	y
	η−a + 2.8	η−b + 2.1	η−a + 16.6	η−b − 15.9
	+ 2.9	+ 2.1	+ 16.7	− 15.8
	+ 2.85	+ 2.1	+ 16.65	− 15.85
	+ 2.88	+ 2.12	+ 16.82	− 15.91
	÷ .278	÷ .278	+ 8.41	− 8.00
	+ 10.4	+ 7.6		

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1909phae.proj.22909

A 5695 No. 27 April 24, 1909

								1900 fm.	19	54	37.8	− 56	12.2
a =	−56	9368	19	57	23.1	− 56	21.2	+74.1	= 19	52	36.5	+ 4.9	= −56 16.3
b =	−56	9390	19	54	12.1	− 56	8.1	−95.9	= 19	52	36.2	− 8.1	= −56 16.0
c =	−55	9280	19	51	11.0	− 55	38.9			19	52	36.7	−56 16.2
					×							−0.3	+0.4 +0.1 0.0
					c − a = −12.1								
c − a / 2					.282								
					−3.4								

	x	y	x	y
a	30.0	54.0	35.0	63.6
b	76.8	79.9	81.8	89.4
η	50.4	63.8	55.4	73.2
	x	x	y	y
	η − a + 20.4	η − b − 26.4	η − a + 9.8	η − b − 16.1
	+ 20.4	− 26.4	+ 9.6	− 16.2
	+ 20.4	− 26.4	+ 9.7	− 16.15
	+ 20.60	− 26.66	+ 9.80	− 16.31
	÷ .278	÷ .278	+ 4.90	− 8.16
	+ 74.1	− 95.9		
	✓	✓		

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1909phae.proj.2299B

A 5695 — No. 38 — April 24, 1909

						1900 fm.	19	52	5.6	−56	11.1		
a =	−56	9343	19	47	55.5	−56	29.0	+138.8 =	19	50	4.3	+ 14.4 =	−56	14.6	a
b =	−56	9378	19	52	28.6	−56	2.1	−143.9 =	19	50	4.9	− 13.8 =	−56	15.3	b
c =	−57	9579	19	52	29.7	−57	15.3		19	50	4.5		−56	15.0	c
											−1.6	+1.5	−0.3	+0.2	

c − b = + 1.1

Cos $\frac{-57.2}{2}$

· 271

+ 0.3

	x	y	x	y
a	9.9	114.8	15.0	135.3
b	85.0	169.5	90.0	180.0
η	45.4	143.3	50.4	153.8

x	x	y	y
η − a + 35.5	η − b − 39.6	η − a + 28.5	η − b − 26.2
+ 35.4	− 39.6	+ 28.5	− 26.2
+ 35.45	− 39.6	+ 28.5	− 26.2
+ 35.80	− 39.00	+ 28.78	− 26.46
÷ .278	÷ .278	+ 14.39	− 13.23
+ 128.8	− 143.9		
✓	✓		

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1909phae.proj.22998

A5695 No. 29 April 24, 1909.

						1900 fm.	19	51	4.6	-56	11.7		
a =	-56	9338	19	46	45.0	-56	24.1	+138.4	= 19	49	3.4	+ 9.9	= -56	15.7
b =	-56	9378	19	52	38.6	-56	2.1	-205.6	= 19	49	3.9	-14.0	= -56	16.0
c =	-57	9579	19	52	29.7	-56	15.3			19	49	3.7	-56	15.6
				x										
				c−b =	+ 1.1						+ 1.6 − 1.5		− 0.4 + 0.4	

$\frac{C_{00} - 56.2}{2}$

.271

+ 0.3

	x	y	x	y
a	10.3	119.2	15.3	134.4
b	105.0	164.6	110.0	180.0
η	48.4	137.9	53.4	152.2

x	x	y	y
η−a + 38.1	η−b − 56.6	η−a + 17.8	η−b − 27.6
+ 38.1	− 56.6	+ 17.8	− 27.8
+ 38.1	− 56.6	+ 17.8	− 27.7
+ 38.48	− 57.17	+ 17.98	− 27.98
÷ .278	÷ .278	+ 8.99	− 13.99
+ 138.4	− 205.6		
✓	✓		

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1909phae.proj.2299B

A 5695 No. 30 April 24, 1909

								1900 fun.	20	2	23.0	−56	29.6	
a	= −56	9421	19	58	56.0	−56	25.1	+ 87.4	= 20	0	25.5	− 8.6	= −56	33.7	a
b	= −56	9440	20	2	46.8	−56	46.9	− 146.5	= 20	0	23.3	+ 13.9	= −56	33.9	b
c.	= −55	9345	20	2	41.7	−56	49.0		20	0	24.8		−56	33.8	c.
									+0.3		−0.4		−0.2	+0.2	

c − b = − 5.1

$\frac{c - a = -55.8}{2}$

.781

− 1.4

	x	y	x	y
a	26.3	92.9	76.3	106.4
b	85.0	50.1	90.0	63.5
η	45.1	75.9	50.1	88.3

x	x	y	y
η − a + 23.8	η − b − 39.9	η − a − 17.0	η − b + 25.8
+ 23.8	− 39.9	− 17.1	+ 25.8
+ 23.8	− 39.9	− 17.05	+ 25.75
+ 23.04	− 40.30	− 17.22	+ 26.01
÷ .275	÷ .275	− 8.61	+ 13.00
+ 87.4	− 146.5		
✓	✓		

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1999phae.proj.22998

A 5695 No. 31 April 24, 1909

						1900 fno.	19	57	50.6	− 56	33.3
a = − 56 9396	19	55	37.0	− 56	37.0	+ 12.5	= 19	55	49.5	− 0.4	= − 56	37.4
b = − 56 9405	19	56	51.0	− 56	36.2	− 6.2	= 19	55	48.8	− 1.2	= − 56	37.4
c = − 56 9394	19	55	15.0	− 56	0.1		19	55	49.1		− 56	37.4

0.0 0.0 0.0 0.0

c − a = − 22.0

cor − 56.0 / 2

.280

− 6.2

	x	y	x	y
a	30.0	85.1	35.0	95.6
b	40.3	86.7	45.4	97.3
n	33.4	84.3	38.4	94.8
	x	x	y	y
	n − a + 3.4	n − b − 16.9	n − a − 0.8	n − b − 2.4
	+ 3.4	− 17.0	− 0.8	− 2.5
	+ 3.4	− 16.95	− 0.8	− 2.45
	+ 3.43	− 17.12	− 0.81	− 2.47
	÷ .275	÷ .275	− 0.40	− 1.24
	+ 12.5	− 62.3		
	✓	✓		

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1909phae.proj.2299B

No. of Stat.	Diff. in R.A.	Diff. in Deg.	No. of Stat.	Diff. in R.A.	Diff. in Deg.
A7451 Crit. – 37	∓0.4	+0.3	a8376 – 18	+2.3	−1.9
38	−0.7	+1.4	" 19	+3.2	−1.5
39	−0.7	+1.4	" 49	+0.6	+0.5
40	+0.7	+0.3	a7451 – 53	+6.5	+1.1
41	+1.8	0.0	52	+0.4	0.0
42	+2.6	−0.2	54	+2.3	+0.2
43	+2.3	+0.8	55	+0.3	+0.1
44	+1.6	+0.1	56	−0.9	−0.3
45	+0.7	−0.2	57	−0.4	+0.3
46	+0.7	−0.2	58	−0.7	0.0
47	+2.4	−0.3	59	+1.4	0.0
48	+1.3	+0.4	60	+1.4	−0.1
49	+0.8	+0.1	61	+2.4	+0.3
50	+0.9	+0.1	62	+3.2	−0.1
51	+1.3	−0.1	63	+0.9	−0.1
A8514 → 24	+6.3	−1.4	64	+2.3	−0.1
A8788 – 2nd meas. 1	+2.6	−0.7	65	+1.3	+0.2
2nd meas ✓ 2nd 2	+2.7	−0.7	53	+1.6	−0.2
" ✓ 60	+1.5	+1.8	66	+1.1	−0.5
" ✓ 64	+2.2	+1.2	67	+0.7	−0.4
" ✓ 70	+0.3	+0.6	68	+0.4	+0.1
a8514 24	+4.7	−0.8	69	+2.2	−0.1
a8757 5	+4.1	−0.5	70	+0.1	+0.2
1 meas – 31	+2.3	−0.5	71	+0.3	−0.7
" ✓ 32	+2.4	−0.5	72	+0.4	−0.7
" ✓ 41	+1.6	−0.3	73	+1.3	+0.4
" ✓ 95	+0.6	−1.2	74	−0.3	−0.2
" ✓ 106	+5.4	+0.5	75	−6.9	−0.3
" ✓ 109	+4.5	+2.3	76	+1.9	−0.6

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1999phao.proj.22008

No. of Neb	Diff. in R.A.	Diff in Dec	No. of Neb.	Diff in R.A.	Diff. in Dec.	
			a 7377 —			
77	+ 3.3	+ 1.4	1	+ 1.3	+ 0.2	ast. trail.
78	+ 2.8	+ 0.8	1	+ 1.4	+ 0.3	ast. trail.
79	+ 3.3	0.0	2	+ 0.3	— 0.3	
80	+ 2.5	+ 0.4	3	— 2.0	— 0.4	
82	0.0	0.0	5	+ 0.8	0.0	
83	+ 3.2	— 0.2	4	+ 1.2	+ 0.5	
85	+ 1.9	— 0.3	6	+ 6.3	+ 0.2	
84	+ 3.0	— 0.1	7	+ 0.8	0.0	
86	+ 1.4	+ 0.1	8	— 1.9	+ 0.1	
87	+ 0.4	+ 0.6	9	+ 0.3	0.0	
88	+ 0.5	+ 0.3	10	+ 4.6	+ 1.0	
91	+ 0.5	+ 0.3	11	+ 7.4	— 0.6	
92	+ 1.7	+ 0.2	12	+ 3.0	+ 0.4	
93	0.0	— 0.2	13	+ 4.5	0.0	
94	+ 1.8	— 0.1	14	— 0.9	— 0.2	
95	+ 2.0	+ 0.1	15	+ 1.0	— 0.5	
96	+ 0.5	+ 0.1	16	+ 2.4	— 0.1	
97	+ 0.4	— 0.1	17	+ 1.4	+ 0.1	
98	0.0	— 0.7	18	+ 2.9	0.0	
99	— 1.5	— 0.5	19	— 0.2	+ 0.2	
100	+ 0.1	0.0	20	+ 0.2	+ 0.1	
101	— 1.2	— 0.1	21	+ 2.6	— 0.1	
102	+ 4.0	+ 0.7	22	+ 1.9	— 0.3	
103	+ 0.3	+ 0.1	23	+ 1.0	+ 0.2	
104	+ 3.0	0.0	24	— 0.1	— 0.1	
105	+ 1.6	+ 0.1	25	+ 1.6	— 0.1	
106	+ 0.2	— 0.6	26	+ 0.3	+ 0.3	
			27	+ 5.5	— 0.3	
			28	∓ 0.3	— 0.6	

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1909phae.proj.2299B

No. of Sket.	Diff. in R.A.	Diff. in Dec.	No. of Sket.	Diff. in R.A.	Diff. in Dec.
A 377 – 29	+ 6.2	– 1.0	59	+ 1.8	+ 0.4
30	– 2.3	– 0.7	58	+ 1.3	+ 0.3
31	– 0.1	– 0.2	59	+ 2.9	– 0.1
32	– 1.4	– 0.6	60	+ 1.0	– 0.1
33	+ 0.1	– 0.3	61	+ 1.2	– 0.1
34	+ 1.1	– 0.1	62	+ 4.1	– 0.3
35	+ 2.5	+ 0.2	63	+ 0.8	– 0.2
36	+ 2.6	+ 0.5	64	+ 2.2	– 0.1
37	+ 3.9	– 0.3	65	+ 1.3	– 1.2
38	– 0.5	– 0.4	A 5695 2	+ 1.3	– 0.3
39	– 1.0	– 0.4	3	+ 0.3	0.0
40	– 1.4	– 0.2	4	+ 0.9	– 0.2
41	– 0.8	+ 0.3	5	+ 0.6	+ 0.1
42	+ 0.8	– 0.1	6	+ 0.8	0.0
43	+ 1.0	– 0.2	7	+ 0.3	– 0.1
44	+ 1.8	+ 0.2	8	– 0.4	– 0.2
45	+ 1.0	0.0	9	+ 0.7	0.0
46	+ 2.3	– 0.5	10	+ 3.2	– 0.5
47	+ 1.8	+ 0.1	11	+ 1.2	– 0.2
49	+ 1.0	– 0.1	12	+ 0.1	– 0.7
48	+ 1.2	+ 0.6	13	+ 2.5	+ 1.1
50	+ 1.5	+ 0.3	14	+ 0.4	– 0.3
51	+ 0.3	0.0	15	+ 1.1	– 0.2
52	– 0.3	+ 0.2	16	+ 1.2	+ 0.1
53	+ 5.1	+ 0.4	17	+ 0.5	0.0
54	+ 5.1	+ 0.4	18	+ 0.6	0.0
55	+ 5.0	+ 0.1	19	+ 0.3	0.0
56	+ 2.8	+ 0.1	20	– 0.9	– 0.2

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1999phae.proj.22998

No. of Ket. a5895 cont	Diff in R.A.	Diff in Dec.
21	+0.2	0.0
22	+2.0	+0.2
23	+0.7	−0.4
24	+3.8	−0.5
25	−0.2	−0.3
26	−0.2	−0.4
27	+1.0	0.0
28	−0.4	−0.7
29	+0.4	−1.0
30	+3.1	−0.2
31	+0.8	0.0
32	∓1.0	+0.4
33	−0.2	0.0
34	+0.7	0.0
35	+3.7	+1.2
37	+0.9	+0.4
38	+2.0	+0.9
42	+1.9	+0.4
43	+2.6	+0.6
44	+2.6	+0.1
45	+1.1	0.0
46	+0.7	−0.2
52	+0.8	−0.2
47	+2.0	+0.2
48	+0.9	−0.8
49	+1.9	+0.3
50	+2.5	+0.3
51	+0.8	−0.3

No. of Ket.	Diff in R.A.	Diff in Dec.
53	+0.6	+0.2
55	+2.1	+0.1
56	−0.9	+0.3
57	+1.0	+0.1
58	−1.9	+0.7
59	−1.9	+0.7
60	+3.0	−0.2
61	+1.4	+0.6
62	−1.4	−0.2
63	+1.0	−0.3
66	+0.4	−0.1
67	+0.1	0.0
68	+3.7	−1.3
69	+1.2	+0.5
70	+0.8	0.0
72	+2.8	−0.6

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1909phae.proj.2299B

A 7377, No. 6 March 23, 1909.

a =

b =

c =

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