1996phae.proj..971L

KG
11365
970

Observing Book.

E. F. Leland.

No 4

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

KG1365.970

1896phae.proj..971L

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

424

X1	424	21	8904
2	848	22	9328
3	1272	23	9752
4	1696	24	10176
5	2120	25	10600
6	2544		
7	2968	26	11024
8	3392	27	11448
9	3816		
10			
11	4664		
12	5088		
13	5512		
14	5936		
15	6360		
16	6784		
17	7208		
18	7632		
19	8056		

MS in Bk 5 E.F.L.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

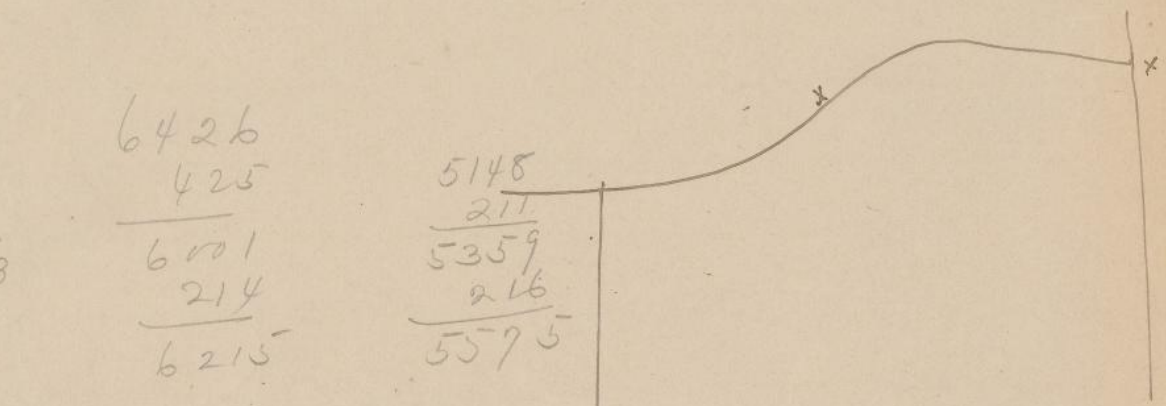
John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

a+c. B+D C-a D-B

page 8 5591 6427
mean 215 mean 214

" 10 5148 5554
Mean 214 Mean 214

" 12 4291 4295
Mean 215 Mean 215



5591
212
5803

6426
425
6851
214
6215

5148
211
5359
216
5575

See Bk. 5, p. 12 (?)

over

1896phae.proj..971L

1896phae.proj..971L

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

For Miss Leland.

After this date all measurements of Stars in Clusters made with ruled Reticule in eye piece will be read $\overset{A}{+}$ $\overset{C}{+}$ A, B, C, and D, $\overset{D}{+}$ $\overset{B}{+}$ A & C = (1st & 3rd) will be the horizontal readings which will represent the right ascension, while B and D ~~both~~ (2nd and 4th) will be vertical readings which will represent the declinations. E. C. Pickering

May 11, 1896.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

KG 11365.970

HARVARD
UNIVERSITY
LIBRARY
JUL 17 1956

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

Contents.

Objects.	Page.
Preliminary measures of the positions of stars in M5 by means of reticule in eye-piece. D 4429	2, 5
Measures of positions of stars in M5. D 4440	6, 7
Measures of positions of stars in M5 by means of reticule. D 4429	8–13
Same. D 4440	14–17
Reduction of readings on pages 14, 15	18, 19
Measurements of Scale	20–22
Measures of C Plates taken with Iceland Spar.	26–65
Measures of positions of variable stars in M5 with reticule	66–69
Measures of positions of stars in Nebula of Orion	70–79

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

April 29, 1896.

Preliminary measures of the positions of stars in M 5 by means of reticule in eyepiece

D 4429 F.F.L., Obs. U.S. Rec.

x	y	a	B	b	D
19.9	3.7	32	88	52	82
		32	88	52	82
Pos. 7		(37	3	53	83)
		56	39	30	46

x	y	a	B	b	70
4.3	4.9	05	67	80	20
		04	67	79	20

x	y	a	B	b	70
18.6	23.9	01	28	83	59
		01	27	82	59
Pos. 7 rec.		01	26	84	60

x	y	a	B.	b	70
5.5	24.4	57	40	30	45
		57	40	29	46
Pos. 7 rec.		(56	39	30	46)

Center of Cluster

x	y	a	B.	b	70
16.7	16.8	1	21	76	65
		1	21	76	65
Pos. 7 rec.		10	21	74	66

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971t

April 29, 1896.

Center of Cluster

x	y	a	B.	C.	D.
10.7	14.7	22	19	62	68
		22	18	62	68

x	y	a	B	C	D
15.3	12.7	67	72	20	12
		66	72	20	12

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

Second set of

April 29, 1896

Preliminary measures of the positions of stars in M 5 by means of reticule in eye-piece.

20 4440

x	y	a.	B.	c.	20.
19.8	3.7	28	88	59	82
		28	88	59	82
Pos. Tues. 27		+4	20	5-7	830
		+5	0	-6	0

x.	y.	a.	B.	c.	20.
4.3	4.9	04	65	80	20
		05	65	79	20
		0	+2	0	0

x	y	a.	B.	c.	20.
18.6	24.0	85	27	88	60
		85	27	88	60
Pos. Tues.		84	025	-62	-161
		+3	+1	-4	0

x	y	a.	B.	c.	20.
5.5	24.4	58	40 30	29	47
		58	40	28	47
		-1	0	+1	-1

Center of Cluster

x	y	a.	B.	c.	20.
16.7	16.8	08	21	79	65
		08	21	79	65
Pos. Tues.		-707	020	-378	066
		+02	+1	-4	0

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

April 29, 1896.

Center of cluster

x	y	a.	B.	c.	70.
10.7	14.7	21	18	67	68
		21	18	64	68
		+1	0	−2	0

x	y	a.	B.	c.	70.
15.2	12.4	63	73	21	11
		63	74	21	11
		+4	−2	−1	+1

+4	0	−7	0	+5	0	−6	0
0	+2	0	0				
÷	0	−6	−1	+3	+1	−4	0
−1	0	+1	−1				
+2							
~~=7~~	0	−3	0	+3	+1	−4	0
+1	0	−2	0				
+4	−2	−1	+1				

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

April 30

March 1, 1896.

Preliminary measures of the positions of stars in M 5 by means of reticule in eye-piece

23.05 D 4429 E.F.L. phs. H.S. Rec

Design.	X.	Y.	D	a	b	c	B+D	A+C	B−D	C−A	y	x
I	19.9	3.6	80	~~220~~ 6	131	209	211	~~#20~~ 215	51	~~##~~ +203	50	~~##~~ +201
II	4.4	4.9	10	~~15~~ 62	203	50	213	212	193	+12	191	-111
III	18.6	23.9	05	65	209	150	214	215	204	+85	202	84
IV	5.5	24.4	141	99	71	114	212	213	-70	15	-69	15
V	16.7	16.8	28	51	189	162	217	213	161	111	159	110
VI	10.7	14.6	59	45	159	169	218	214	100	124	99	123
VII	15.3	12.4	165	182	50	31	215	213	-115	-151	-114	~~-150~~ -149
Comp. b.	3.3	11.0	~~#18~~ 4	185	211	29	429	214	~~-207~~ +207	-156	~~-205~~ +205	-154
" d.	13.1	25.4	129	209	89	~~###~~ 6	218	~~#20~~ 215	-40	~~#203~~	-40	~~#~~ -201
" e.	11.9	18.4	149	~~210~~ 5	71	210	220	~~#20~~ 215	-78	~~-09~~ +205	-77	~~-09~~ +~~#~~203
" f.	12.7	17.7	52	50	159	161	211	211	+107	+111	106	110
" g.	~~11.8~~ 11.9	~~17.8~~ 17.5	~~175~~ 175	~~120~~ 40	~~09~~ 222	~~92~~ 100	~~205~~ 205	~~212~~ (70)	~~214~~ 420	~~-28~~ 30	~~+196~~ -17	-28
" h.	11.8	16.6	71	22	145	190	216	212	74	168	73	166
" l.	10.6	15.7	48	64	169	150	217	214	121	86	120	85
" m.	9.9	16.6	99	~~220~~ 6	119	209	218	~~#20~~ 215	20	~~##~~ +203	20	~~##~~ +201
" n.	~~K~~ 8.5	15.6	80	125	135	92	215	217	55	-33	54	-33
" o.	11.6	15.5	128	99	87	118	215	217	-41	+19	-41	+19
" p.	11.2	15.4	155	196	60	20	215	216	-95	-176	-94	-174
" q.	11.1	14.8	25	210	190	08	215	218	165	-~~210~~ 202	163	-200
23.35 No. 1.	14.2	16.8	21	190	196	20	217	210	175	-170	173	-168
" 2.	5.2	12.8	28	194	189	19	217	213	161	-175	159	-173
" 3.	17.3	15.6	85	180	130	33	215	213	45	-147	44	-145
" 4.	13.2	14.8	21	202	192	12	213	214	171	-190	169	-188
" 5.	13.3	14.4	131	186	80	29	211	215	-51	-157	-50	-155
" 6	13.7	12.0	210	40	~~#0~~ 5	179	~~#8~~ 215	219	~~-09~~ -205	139	~~-09~~ -203	137

2nd est. x=11.9

23.45

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

				Corr. x	Corr. y	(x-5)424	(y-5)424
805.6	127.2	889.6	126.1	~~825.6~~	132.2 ~~147.3~~	822.6	131.4
1696	1696	188.7 ~~150.5~~	158.5	158.5	188.7	165.4	186.6
763.2	975.2	78 3.4 ~~743.0~~	983.6	771.6	995.4		
212.0	1017.6	205.1	1019.1	213.5	1010.7		
678.4	678.4	69 4.3 ~~662.5~~	689.4	689.4	694.3 ~~662.5~~		
424.0	593.6	43 3.9 ~~414.1~~	695.9	436.3	603.5		
636.0	508.8	624.6	493.9	621.1	497.4		
1272	466.4	126.5	451.0	111.8 ~~147.7~~	486.9	-1div y = 444.5	Error 10 1902 error found by Prof. Bailey
551.2	1060.0	547.2	1061.1	~~531.1~~ 538	1056.0 ~~1039.9~~ 1047.1		
466.4	763.2	458.7	762.3	446.7	755.5 ~~741.7~~		
508.8	720.8	51 9.4 ~~498.2~~	731.8 ~~709.8~~	519.8	731.4		
~~678.4~~ 466.4	720.8	463.6	740.2	485.8	718.0		
466.4	678.4	47 7.7	695.0	483.0	685.7		
424.0	636.0	436.0	644.5	432.5	648.0		
381.6	678.4	383.6	677.3	401.7	680.4 ~~658.3~~		
466.4	636.0	471.8	632.7	463.1	641.4		
466.4	636.0	462.3	637.9	468.3	631.9		
466.4	636.0	457.0	618.6	449.0	626.6		
466.4	593.6	482.7 ~~450.1~~	573.6	446.4	609.9		
593.6	678.4	61 9.9 ~~576.3~~	661.6	576.8	695.7		
212.0	508.8	227.9	491.5	194.7	524.7		
728.0 0.8	636.0	~~732.4~~	621.5	~~713.5~~ 706.3	~~631.6~~ 640.4		
551.2	593.6	568.1	574.8	532.4	610.5		
551.2	593.6	546.2	578.1	535.7	588.6		
551.2	508.8	552.1	522.5	~~530.9~~ 564.9	488.5		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.45

April 30

May 1, 1896

Preliminary measures of the positions of stars in A 5 by means reticule in eye-piece

70 4429

No.	x	y	D	a	B	C	B+D	a+C	B-D	C-a	y	x	x
~~No. 7~~			~~A.~~	~~B.~~	~~b.~~	~~D.~~	a+b	B+D	b-a	D-B			
No. 7.	12.8	18.6	75	24	139	189	214	213	64	165	6.3	163	
" 8.	16.4	9.7	38	161	179	51	217	212	141	-110	139	-109	
" 9.	19.9	14.9	10	9	202	205	212	214	192	+196	190	194	
" 10.	16.4	21.9	05	160	211	54	216	214	206	-106	204	-105	
	9.6	15.4	140	65	71	149	211	214	-69	+84			
" 11.	~~9.6~~	~~15.4~~	~~89~~	~~65~~	~~94~~	~~149~~	(163)	214	-15	+84	-68	83	
" 12.	9.2	12.9	04	198	210	19	214	217	206	-179	204	-177	
" 13.	13.5	11.6	89	120	128	95	217	215	39	-25	39	-25	
" 14.	9.8	15.7	49	~~120~~ 102	~~168~~ 178	200	219	218	121	182	120	180	
" 15.	17.7	12.9	09	48	205	169	214	217	196	121	194	120	
" 16.	15.5	14.9	00	109	212	109	212	218	212	00	210	00	
" 17.	12.6	14.3	168	70	45	142	213	212	-123	72	-122	71	
" 18.	16.6	10.5	130	69	85	144	215	213	-45	75	-44	74	
" 19.	18.6	9.7	50	75	164	141	214	216	114	66	113	65	
" 20.	7.3	12.8	20	179	194	32	214	211	174	-147	172	-145	
" 21.	20.9	14.5	119	10	99	202	218	212	-20	192	-20	190	
	8.7	22.5	117	29	99	182	216	211	-18	+153			
" 22.	~~8.7~~	~~22.5~~	~~69~~	~~30~~	~~42~~	~~182~~	(111)	212	-27	152	-18	151	
" 23.	7.4	13.4	162	162	51	50	213	212	-111	-112	-110	-111	
" 24.	12.1	11.6	101	202	111	10	212	212	10	-192	10	-190	
" 25.	12.4	10.3	179	130	39	81	218	211	-140	-49	-138	-48	
	19.9	3.6	79	05	134	209	213	214	55	204	54	202	
	4.4	4.9	10	162	205	50	215	212	195	-112	193	-111	
	18.6	23.9	01	65	211	149	212	214	210	84	208	83	
	5.5	24.4	141	99	71	111	212	210	-70	12	-69	12	
	16.6	16.7	25	51	190	167	215	212	165	110	163	109	
	10.7	14.6	58	47	159	169	217	216	101	122	100	121	
	15.3	12.4	162	181	50	32	212	213	-112	-149	-111	-147	

24.25

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

	x×42.4	y×42.4			x Corr.	y Corr.
	508.8	763.2	515.1	779.5	525.1	769.5
	678.4	381.6	692.3	370.7	667.5	395.5
	805.6	593.6	824.6	613.0	825.0	612.6
	678.4	890.4	698.8	879.9	667.9	910.8
	381.6	636.0	374.8	644.7	389.9	629.2
	381.6	508.8	402.0	491.1	363.9	529.2
	551.2	466.4	555.1	463.9	548.7	470.3
	381.6	636.0	393.6	654.0	399.6	648.0
	720.8	508.8	740.2	520.8	732.8	528.2
	636.0	593.6	657.0	593.6	636.0	614.6
	508.8	593.6	496.6	600.7	515.9	581.4
	678.4	424.0	674.0	431.4	685.8	419.6
	763.2	381.6	774.5	388.1	769.7	392.9
	296.8	508.8	314.0	494.3	282.3	526.0
	848.0	593.6	846.0	~~574.6~~ 947.9	867.0	591.6
	339.2	932.8	337.4	~~947.9~~	354.3	931.0
	296.8	551.2	285.8	540.1	285.7	540.2
	508.8	466.4	509.8	447.4	489.8	467.4
	508.8	424.0	495.0	419.2	504.0	410.2
	805.6	127.2	811.0	147.4	825.8	132.6
	169.6	169.6	188.9	158.5	158.5	188.9
	763.2	975.2	784.0	983.5	771.5	996.0
	212.0	1017.6	205.1	1018.8	213.2	1010.7
	678.4	678.4	694.7	689.3	689.3	694.7
	424.0	593.6	434.0	605.7	436.1	603.6
	636.0	508.8	624.9	494.1	621.3	497.7

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

May 1, 1896

Measures of positions of Stars in M5 (cont)

D 4429 — E. F. L. Obs. — J. E. W. Red.

	No.	x	y	A	a	B	b	E	B+D	a+c	B-D	c-a	y	x	x
3h 35m		13.7	15.5	105	23	109	192	214	215	04	169	04	167		5
	" 27	13.1	11.7	50	211.	163	02	213	213	113	-209	112	-207		5
	" 28	16.4	10.3	191	170	22	45	213	215	-169	-125	-167	-124		6
	" 29	4.4	11.7	32	150	181	68	213	218	149	-82	147	-81		
	" 30	13.5	8.2	190	100	21	115	211	215	-169	15	-167	15		5
	" 31	16.6	9.6	88	79	129	138	217	217	41	59	41	58		
	" 32	17.7	9.4	149	38	69	179	218	217	-80	141	-79	139		
	" 33	12.8	16.3	179	22	38	190	217	212	-141	168	-139	166		
	" 34	15.4	14.5	121	150	90	65	211	215	-31	-85	-31	-84		6
	" 35	12.7	10.5	115	40	100	172	215	212	-15	132	-15	131		3
	" 36	12.9	11.8	15	216	200	00	215	216	185	-216	183	-214		3
	" 37	14.4	11.5	106	170	109	43	215	213	03	-127	03	-126		3
?	" 38	12.4	15.9	10	140	205	72	215	212	195	-68	193	-67		
	" 39	9.9	7.5	120	05	91	209	211	214	-29	204	-29	202		
	" 40	16.4	15.6	77	145	138	71	215	216	61	-74	60	-73		
	" 41	13.9	18.6	95	05	121	211	216	216	26	206	26	204		
	" 42	10.4	10.5	112	172	101	40.	213	212	-11	-132	-11	-131		
	V	16.7	16.7	28	51	189	169	217	220	161	118	159 160	117		
	VA	10.7	14.7	59	44	159	170	218	214	100	126	99	125		
4h 00m	VII	15.3	12.7	164	181	50	32	214	213	-114	-149	-113	-147		
									215	214					
									1569	16061					
									73	75					
									=214.64	=214.15					

g
11
22

214.4 : 24 = x : 1

214.4 / 24 = 8.93

536/6 = 89.33

214.4/56 = 3.828

536/7 = 76.57

214.4
214.8

1896phae.proj..971L

x×424	y×424			x Corr.	y Corr.
551.2	636.0	551.6	652.7	567.9	636.4
551.2	466.4	562.4	445.7	530.5	477.6
678.4	424.0	661.7	411.6	666.0	467.3 ~~673~~
169.6	466.4	184.3	458.3	161.5	481.1
551.2	339.2	534.5	340.7	552.7	322.5
678.4	381.6	682.5	387.4	684.2	384.7 ~~376.5~~
720.8	381.6	712.9	395.5	734.7	373.7
508.8	678.4	494.9	695.0	525.4	664.5
636.0	593.6	632.9	585.2	627.6	590.5 ~~589.5~~
508.8	424.0	507.3	437.1	521.9	422.5
508.8	466.4	527.1	445.0	487.4 4div	448.4 ~~448.4~~
593.6	466.4	593.9	453.8	581.0	466.7
508.8	636.0	528.1	629.3	502.1	655.3
381.6	296.8	378.7	317.0	401.8	293.9
678.4	636.0	684.4	628.7	671.1	642.0
551.2	763.2	553.8	783.6	571.6	765.8
424.0	424.0	422.9	410.9	410.9	422.9
678.4	678.4	694.3	690.1	690.1	694.3
424.0	593.6	433.9	606.1	436.5	603.5
636.0	508.8	624.7	494.1	621.3	497.5

$x = 529.8$ Equation for Error formed by Prof Bailey

Sub.	4429	4440	4429	4440
0	0 ~ 446	0 ~ 382	0 ~ 44	0 ~ 38
1	447 ~ 1339	383 ~ 1148	45 ~ 133	39 ~ 114
2	1340 ~ 223	1149 ~ 1914	134 ~ 223	115 ~ 191
3		1915 ~ 2239		192 ~ 220
4				

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..9711

14

22.45

May 3, 1896. E.F.L. Ch. H.D.S Rec.

Measures of positions of variable stars in M 5

D 4440

Design.	x	y	D	a	B	C	B+D	a+C	B-D	C-a	Corr. C-a	Corr. D-B
			A.	B.	b.	C.	a+C	B+D.	C-a	D-B		
	19.9	13.6	69	04	178	209	217	213	79	205	78	202
	4.4	4.8	11	162	201	51	212	213	190	-111	188	-110
	18.6	24.0	210	67	~~211~~ 4	149	~~220~~ 214	216	-206 ~~209~~	82	~~209~~ 203	81
	5.5	24.4	142	100	71	114	213	214	-71	14	-70	14
*	16.7	16.8	20	51	195	165	215	216	+175	+114		
	~~16.7~~	~~16.8~~	~~19~~	~~52~~	~~147~~	~~162~~	~~166~~	~~214~~	~~128~~	~~110~~	173	113
	10.7	14.7	52	43	160	170	212	213	108	127	107	125
	15.3	12.4	158	182	58	30	216	212	-100	-152	-99	-150
No. 1.	14.3	16.8	19	191	199	23	218	214	180	-168	178	-166
" 2.	5.2	12.8	28	195	189	20	217	215	161	-175	159	-173
" 3.	17.3	15.6	79	177	138	39	217	216	59	-138	58	-136
" 4.	13.1	14.8	175	204	200	10	215	214	185	-194	183	-191
" 5.	13.3	14.4	130	189	85	26	215	215	-45	-163	-44	-161
" 6.	13.7	12.1	205	37	~~224~~ 10	175	215	212	-195	138	-192	136
" 7.	12.7	8.6	70	21	145	192	215	213	75	171	74	169
" 8.	16.4	9.7	31	164	185	51	216	215	154	-113	152	-112
" 9.	17.9	14.9	00	05	211	209	211	214	211	204	208	201
" 10.	16.4	23.0	208	161	05	52	213	213	-203	-109	-200	-108
" 11.	9.6	15.4	139	65	78	150	217	215	-61	85	-60	84
" 12.	9.2	13.0	00	197	214	20	214	217	214	-177	211	-175
" 13.	13.5	11.6	82	119	131	95	213	214	49	-24	48	-24
" 14.	9.8	15.7	41	15	174	200	215	215	133	185	131	183
" 15.	17.7	13.0	210	43	~~219~~ 03	170	213	213	~~207~~	127	-204	125
" 16.	15.5	15.1	208	107	05	107	213	214	-203	00	-200	00
" 17.	12.6	14.4	168	81	48	134	216	215	-120	53	-118	52
" 18.	16.6	10.5	122	69	91	150	213	219	-31	81	-31	80
" 19.	18.6	9.7	40	71	175	141	215	212	135	70	133	69

23.20

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23,20

May 3, 1896

20 4440 Continued

Design.	x	y	A.	B.	C.	D.	A+C.	B+D.	C-a.	D-B.	C-a y	D-B x
No. 20	7.3	12.8	19	175	199	40	218	215	180	-135	178	-133
" 21.	20.9	14.5	109	09	105	209	214	218	-04		200	-04 197
" 22.	8.7	22.5	119	29	99	188	218	217	-20	159	-20	157
" 23.	7.4	13.4	163	161	51	53	214	214	-112	-108	-111	-107
" 24.	12.1	11.6	100	201	116	12	216	213	16	-189	16	-187
" 25.	12.7	10.5	17	29	102	179	212	215	-132	-47	-130	-46
" 26.	13.7	15.6	100	25	115	189	215	214	15	164	15	162
" 27.	13.1	11.7	45	210	170	05	215	215	125	-205	123	-202
" 28.	16.3	10.3	181	168	30	51	211	219	-151	-117	-149	-115
" 29.	4.4	11.7	31	150	182	66	213	216	151	-84	149	-83
" 30.	13.5	8.2	186	100	28	112	214	212	-158	12	-156	12
" 31.	16.6	9.6	78	75	138	140	216	215	60	65	59	64
" 32.	17.7	9.4	138	38	79	177	217	215	-59	139	-58	137
" 33.	12.8	16.3	171	20	42	199	213	219	-129	179	-127	177
" 34.	15.4	14.5	117	148	99	68	216	216	-18	-80	-18	-79
" 35.	12.7	10.5	111	-39	102	179	213	218	-09	140	-09	138
" 36.	12.9	11.9	08	211	209	00	217	211	201	-211	198	-208
" 37.	14.4	11.6	100	169	115	49	215	218	+15	-120	15	-118
" 38.	12.4	15.9	04	140	211	79	215	219	208	-61	204	-60
" 39.	9.9	7.5	119	09	98	210	217	219	-21	201	-21	198
" 40.	16.4	15.6	69	141	149	72	218	213	80	-69	79	-68
" 41.	13.9	18.6	89	01	129	211	218	212	40	210	37	207
" 42.	10.4	10.5	110	177	105	38	215	215	-05	-139	-05	-137
Comp. b.	3.3	11.0	98	188	210	29	215	217	205	-159	202	-157
" d.	13.1	25.4	120	209	93	06	213	215	-27	-203	-27	-200
" e.	11.9	18.4	140	02	75	210	215	212	-65	208	-64	205

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.45

May 3, 1896

D 4440 Continued

	D	a	B	C	B+D	a+C	B-D	c-a	Cozr.	Cozr.	
	x	y	A.	b.	b.	D.	a+C	B+D	c-a	D-B	c-a	D-B	χx
Comp. f.	12.7	17.7	50	51	165	165	215	216	115	114	113	113	5
" g.	11.9	17.5	119	09	98	204	217	213	-21	195	-21	192	4
" h.	11.8	16.6	68	21	149	191	217	212	81	170	80	168	4
" l.	10.6	15.7	41	60	173	151	214	211	132	91	130	90	4
" m.	9.9	16.6	95	06	120	210	215	216	25	204	25	201	3
" n.	11.5	15.6	78	120	139	95	217	215	61	-25	60	-25	4
" o.	11.5	15.5	126	99	90	117	216	216	-36	+18	-36	18	4
" p.	11.2	15.4	151	189	62	26	213	215	-89	-163	-88	-161	4
" q.	11.0	14.8	21	207	197	08	218	215	176	-199	174	-196	4
	19.9	3.6	70	05	148	210	218	215	78	205	77	202	8
	4.4	4.9	11	162	205	50	216	212	194	-112	191	-111	1
	18.6	24.1	210	65	05	149	215	214	-205	84	-202	83	7
	5.5	24.4	142	100	70	115	212	215	-72	15	-71	15	2
	16.7	16.8	19	51	198	164	217	215	179	113	177	112	6
	10.7	14.7	54	41	160	170	214	211	106	129	105	127	4
24.5	15.3	12.4	160	184	55	29	215	213	-105	-155	-104	-153	6
Centre of Cluster D 4440	13.8	13.0	182	159	29	55	211	214	-153	-104	-151	-103	3
" " " D 4429	13.5	13.0	180	162	35	50	215	212	-145	-112	-143	-111	5
							215	215					
additional Mean of g'	11.9	17.5	120	09	92	205	212	214	-28	194	adopt.		4
" " " 11'	9.6	15.4	140	65	71	149	211	214	-69	84	adopt.		3
" " " 22'	8.8	22.4	116	30	99	69	215	99	-17	39			3
Centre Cluster D 4429			182	163	31	54	213	217	-151	-109	-149	-108	5
" " D 4440			179	165	35	50	214	215	-144	-115	-142	-113	5
Additional Mean of 22' D 4429	8.7	22.5	117	29	99	69	216	98	-18	40			3
" " " 22' D 4440			117	29	99	182	216	211	-18	153	adopt.		
" " " ref. star 15.5	16.7	16.8	20	51	195	165	215	216	+175	+114	adopt.		6

15263 15024

71 70

= 21487 = 21463

24.15

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

Corr.	x×42.4	y×42.4			xCorr.	yCorr.
13	508.8	720.8	520.1	732.1	520.1	732.1
92	466.4	720.8	464.3	740.0	485.6	717.7
68	466.4	678.4	474.4	695.2	483.2	~~670.4~~ 686.4
90	424.0	636.0	437.0	645.0	433.0	~~623.0~~ 649.0
201	381.6	678.4	384.1	698.5	401.7	680.9
25	466.4	636.0	472.4	633.5	463.9	642.0
18	466.4	636.0	462.8	637.8	468.2	632.4
161	466.4	636.0	457.6	619.9	450.3	627.2
196	466.4	593.6	483.8	574.0	446.8	611.0
202	805.6	127.2	813.3	147.4	825.8	134.9
111	169.6	169.6	188.7	158.5	158.5	188.7
83	763.2	1017.6	743.0	1025.9	771.5	997.4
15	212.0	1017.6	204.9	1019.1	213.5	1010.5
112	678.4	678.4	696.1	689.6	689.6	696.1
127	424.0	593.6	434.5	606.3	436.7	604.1
153	636.0	508.8	625.6	493.5	620.7	498.4
103	551.2	551.2	~~540.9~~		540.9	536.1
111	551.2	551.2	~~540.1~~		540.1	536.9
	466.4	720.8				
	381.6	636.0				
	339.2	932.8				
108	551.2	551.2			540.4	536.3
113	551.2	551.2			539.9	537.0
	339.2	932.8				
	678.4	678.4				

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

Reduction of readings on page 14. $x+(c-a)$ $y+(b-d)$

				x Cor.	y Cor.
	x×42.4	y×42.4			
	805.6	127.2	813.4	147.4	825.8	135.0
	169.6	169.6	188.4	158.6	158.6	188.4
	763.2	1017.6	~~764.1~~ 742.9	1025.7	771.3	~~1018.5~~ 997.3
	212.0	1017.6	205.0	1019.7	213.4	1010.6
	678.4	678.4	695.7	689.7	689.7	695.7
	424.0	593.6	434.7	606.1	436.5	604.3
	636.0	508.8	626.1	493.8	621.0	498.9
1)	593.6	678.4	611.4	661.8	577.0	696.2
2)	212.0	508.8	227.9	491.5	194.7	523.7
3)	720.8	636.0	~~715.0~~ 726.6	622.4	707.2	641.8
4)	551.2	593.6	569.5	574.5	532.1	611.9
5)	551.2	593.6	546.8	577.5	535.1	589.2
6)	551.2	508.8	532.0	522.4	564.8	489.6
7)	508.8	339.2	516.2	356.1	525.7	346.6
8)	678.4	381.6	693.6	370.4	667.2	396.8
9)	720.8	593.6	~~700.0~~ 741.6	~~573.5~~ 613.7	740.9	614.4
10)	678.4	932.8	658.4	922.0	667.6	912.8
11)	381.6	636.0	375.6	644.4	390.0	639.0
12)	381.6	551.2	402.7	~~537.7~~ 533	364.1	572.3
13)	551.2	466.4	556.0	464.0	548.8	471.2
14)	381.6	636.0	394.7	654.3	399.9	649.1
15)	720.8	551.2	700.4	563.7	733.3	530.8
16)	636.0	636.0	616.0	636.0	636.0	616.0
17)	508.8	593.6	497.0	598.8	514.0	581.8
18)	678.4	424.0	675.3	432.0	686.4	420.9
19)	763.2	381.6	776.5	388.5	770.1	394.9

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj...971L

Reduction of readings on page 15.

	x×42.4	y×42.4			x Corr.	y Corr.	y Corr.	
20	296.8	508.8	314.6	495.5	283.5	526.6	526.6	
21	848.0	593.6	847.6	613.3	867.7	847.6	593.2	
22	339.2	932.8	337.2	948.5	354.9	337.2	930.8	
23	296.8	551.2	285.7	540.5	286.1	285.7	540.1	
24	508.8	466.4	510.4	447.7	490.1	510.4	468.0	
25	508.8	424.0	495.8	419.4	504.2	495.8	411.0	
26	551.2	636.0	552.7	652.2	567.4	552.7	637.5	
27	551.2	466.4	563.5	446.2	531.0	563.5	478.7	
28	678.4	424.0	663.5	412.5	666.9	663.5	409.1	
29	169.6	466.4	184.5	458.1	161.3	184.5	481.3	
30	551.2	339.2	535.6	340.4	552.4	535.6	323.6	
31	678.4	381.6	684.3	388.0	684.8	684.3	387.5 ~~375.7~~	
32	720.8	381.6	715.0	396.3	734.5	715.0	375.8	
33	508.8	678.4	496.1	696.1	526.5	496.1	665.7	
34	636.0	593.6	634.2	585.7	628.1	634.2	591.8	
35	508.8	424.0	507.9	437.8	522.6	507.9	423.1	
36	508.8	466.4	528.6	445.6	488.0 Holes	528.6	486.2	$x = 5304$
37	593.6	466.4	595.1	454.6	581.8	595.1	467.9	
38	508.8	636.0	529.2	630.0	502.8	529.2	656.4	
39	381.6	296.8	379.5	316.6	401.4	379.5	294.7	
40	678.4	636.0	686.3	629.2	671.6	686.3	643.9	
41	551.2	763.2	555.1	783.9	571.9	555.1	767.1	
42	424.0	424.0	423.5	410.3	410.3	423.5	423.5	
b	127.2	466.4	147.4	450.7	111.5	147.4	486.6	Holes $y = 4442$
d	551.2	1060.0	548.5	1040.0	531.2	548.5	1057.3	
e	466.4	763.2	460.0	783.7	486.9	460.0	756.8	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L


10th line from top.


19th line from bottom.

22.30

May 4, 1896. Measurements of Scale 23.20

10th H. line		19th line from bottom.	
22875		7374	
23833	958 −32	8328	954 −25
24759	926 +35	9257	929 +23
25720	961 −12	10209	952 −10
26669	949 +01	11151	942 +16
27619	950 −19	12109	958 −31
28550	931 +22	13036	927 +28
29503	953 −15	13987	951 −07
30441	938 +15	14931	944 −35
31394	953 −14	15840	909 +74
32333	939 +10	16823	983 −32
33282	949 +02	17774	951 −04
34233	951 +02	18721	947 00
35186	953 −05	19668	947 +03
36134	948 −09	20618	950 −03
37073	939 +05	21565	947 −07
38017	944 +07	22505	940 +10
38968	951 −16	23455	950 −14
39903	935 +27	24391	936 +27
40865	962 −16	25354	963 −23
41811	946 +03	26294	940 +07
42760	949 −06	27241	947 +05
43703	943 +01	28193	952 −14
44647	944 +05	29131	938 +28
45596	949 −06	30092	961 −21
46539	943 +12	31032	940 +02
47494	955 −15	31974	942 +08
48434	940 +07	32924	950 −04
49381	947 +07	33878	946 +04
	954		950

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

10th. H line

50335 -12
942
51277 +05
947
52224 -01
946
53170 -01
945
54115 +04
949
55064 -06
943
56007 +02
945
56952 +06
951
57903 -14
937
58840 +05
942
59782 +11
953
60735 -06
947
61682 +16
963
62645 -19
944
63589 -01
943
64532 +04
947
65479 -03
944
66423 +01
946
67368 +09
954
68322 -08
946
69268 +01
947
70215 -08
939
71154 +16
955
72109 -13
942
73051 +09
951
74002 -01
950
74952 -13
937
75889 +15
962
76841

19th line from bottom. 23.30

34820 -10
940
35760 +08
948
36708 -02
946
37654 +05
951
38605 -03
948
39553 +01
949
40502 -07
942
41444 +01
943
42387 +07
950
43337 -01
949
44286 00
949
45235 -15
934
46169 +18
952
47121 00
952
48073 -09
943
49016 +08
951
49967 -08
943
50910 +01
944
51854 +10
954
52808 -11
943
53751 +09
952
54703 -19
933
55636 +24
957
56593 -08
949
57542 -02
947
58489 -01
946
59435 +01
947
60382 +01
948
61330

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

23.40

1896phae.proj..971L

May 4, 1896 Measurement of Scale

22.50
from top
10th N. line 77792
78731
79676
80636
81574
82520
83463
84412
85361
86310
87255
88201
89146
90093
91028
91985
92931

19th line from bottom 23.40
62281
63224

D 4429 δ
No 7. x y
12.7 8.6

D 4429
Re-estimate No 9 17.9 14.9

D 4429
No 12 9.2 12.9

D 4440
No 7 12.7 8.6
No 9 17.9 14.9
No 12 9.2 13.0

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

D 4429

No 3	x.	y	a	B	G	D
" "	17.3	15.6	85	179	129	34
No 11	9.6	15.4	139	65	73	150

D 4440

No 3	17.3	15.6	79	179	136	34
No 11	9.6	15.4	139	66	78	150

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

12.0

May 23, 1896.

Measure of Plate Le 8836 Pleiades.
Plates taken with Iceland Spar.

Scale D.	a	1	4.0
		2	6.2
		3	4.2
		4	6.0
Scale D.	b	1	5.5
		2	6.8
		3	5.3
		4	6.7
Scale B.	c	1	7.5
		2	9.8
		3	7.5
		4	9.7
Scale B	d	1	9.0
		2	10.7 ~~.7 fainter than 10 10.~~
		3	8.9
		4	10.8

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

May 23, 1896

Measure of Plate C 8914 Pleiades.

Scale D. a.	1	4.3
	2	6.7
	3	4.2
	4	6.7
Scale D. b.	1	4.8
	2	6.9
	3	4.8
	4	7.0
Scale C. c.	1	5.8
	2	8.1
	3	5.7
	4	7.9
Scale C d.	1	6.0
	2	8.8
	3	6.1
	4	8.9
f.	1	6.9
	2	9.6
	3	7.0
	4	9.7

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

12.15

May 23, 1896

Measure of Plate C 8914

Scale 6 gf	1	8.5
	2	10.9
	3	8.7
	4	10.8
Scale 6. h	1	8.7
	2	10.9
	3	8.9
	4	10.9

Measure of Plate C 9098 Pole Star.

Scale D. a	1	4.0
	2	6.5
	3	4.0
	4	6.3
Scale D. b	1	4.7
	2	6.8
	3	4.6
	4	6.6
Scale D C	1	5.3
	2	7.2
	3	5.4
	4	7.2

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

May 23, 1893 6

Measure of Plate 6. 9098

Scale 6.	d 1	5.5
	2	8.0
	3	5.5
	4	7.8
Scale 6	e 1	6.3
	2	8.6
	3	6.4
	4	8.6
Scale 6	f 1	6.9
	2	9.1
	3	7.1
	4	9.3
Scale 6.	g 1	7.2
	2	9.8
	3	7.3
	4	9.9
Scale D	a' 1	4.0
	2	6.7
	3	4.2
	4	6.6

12.35

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

12.35

May 23, 1896.

Measure of Plate 6 9898

Scale D	b'	1 4.7
		2 4.0
		3 4.9
		4 6.9
Scale D	c'	1 5.2
		2 7.3
		3 5.3
		4 7.2
Scale b	d'	1 5.5
		2 7.7
		3 5.5
		4 7.8
Scale b	e'	1 6.2
		2 8.3
		3 6.3
		4 8.5
Scale b	f'	1 6.7
		2 9.2
		3 6.9
		4 9.2

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

May 23, 1896

Measure of Plate C 9098

Scale C g'	1	7.7
	2	9.9
	3	8.0
	4	10.0

Measure of Plate C 9140 Praesepe

Scale C. a	1	6.5
	2	8.8
	3	6.5
	4	8.7
Scale C. f	1	6.9
	2	9.2
	3	7.0
	4	9.0
Scale C. c	1	7.0
	2	9.5
	3	7.1
	4	9.3
Scale C. e	1	7.2
	2	9.7
	3	7.3
	4	9.7

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

1.5

May 23, 1896.

Measure of Plate 6 9140.

Scale 6. f 1 7.7
2 9.8
3 7.8
4 10.0

Scale 6 g 1 7.8
2 9.8
3 7.7
4 10.0

Scale 6 h 1 7.8
2 9.8
3 7.7
4 9.9

Scale 6. k 1 9.3
2
3 9.4
4

Scale 6 l 1 9.7
2
3 9.7
4

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1990phae.proj..0711

May 23, 1896

Measure of B 9140

Scale B. x	1	8.0
	2	10.0
	3	7.9
	4	10.1
Scale B. y	1	6.8
	2	9.5
	3	6.8
	4	9.3
a'	1	7.2
	2	9.2
	3	7.0
	4	9.3
b'	1	7.8
	2	9.8
	3	7.6
	4	9.7
c'	1	7.7
	2	9.7
	3	7.8
	4	9.8

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

1.25

May 23, 1896

Measure of 6 9140

Scale 6 e' 1 7.9
2 9.9
3 8.0
4 10.0

Scale 6 f' 1 8.2
2 10.1
3 8.2
4 10.2

Scale 6 g' 1 ~~8.2~~ ~~7.8~~ 10.1
2 ~~9.8~~
3 ~~8.3~~ ~~7.8~~
4 ~~10.2~~

Scale 6 h' 1 ~~8.0~~ ~~7.7~~ 10.1
2 ~~9.7~~
3 ~~8.1~~ ~~7.6~~
4 ~~10.1~~ ~~9.9~~ 9.7

Scale 6 x' 1 8.2
2 10.5
3 8.3
4 10.8

Scale 6 y' 1 7.3
2 9.6
3 ~~7.2~~ 9.7
4 ~~9.7~~ 9.4

Wrong images measured for g' + h'

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

May 23, 1896.

Measure of 6 8902 Pleiades.

Scale D. a	1	4.7
	2	7.0
	3	4.8
	4	7.1
Scale D f	1	5.0
	2	7.1
	3	5.1
	4	7.1
Scale C. c	1	6.0
	2	8.2
	3	6.4
	4	8.7
Scale C d	1	6.8
	2	8.9
	3	7.0
	4	9.1
Scale C e	1	7.7
	2	9.8
	3	7.6
	4	10.0

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

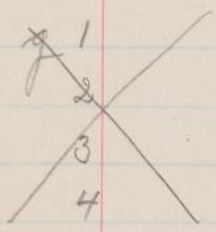
1896phae.proj..971L

1.55

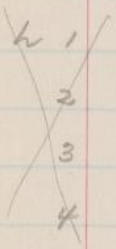
May 23, 1896

Measure of Plate C 8902

Scale 6 f 1 7.6
2 9.8
3 7.8
4 9.8



2.00



John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

22.20

May 24, 1896

Measure of Plate C. 9143

Set of measures
farthest from
plate no. a 1 7.0
Scale 6. 2 9.3
3 7.1
4 9.4

Scale 6. b 1 7.5
2 ~~8.7~~ 9
3 7.5
4 9.7

Scale 6 c 1 7.5
2 9.6
3 7.6
4 9.8

Scale 6 e 1 7.8
2 9.9
3 7.8
4 10.0

Scale 6 f 1 8.2
2 10.1
3 8.3
4 10.2

22.30

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

22.30

May 24, 1896.

Measure of Plate 6. 9143

Scale 6 y 1 8.0
2 10.0
3 8.1
4 10.1

Scale 6 w 1 8.0
2 10.1
3 8.2
4 10.1

Scale 6 w 1
2
3
4

Scale 6 x 1 8.5
2 10.2
3 8.5
4 10.3

Scale 6 y 1 7.2
2 9.6
3 7.3
4 9.7

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971t

May 24, 1896.

Measure of Plate 6 9143

Scale 6 a' 1 7.5
2 9.6
3 7.7
4 9.7

Scale 6 f' 1 8.1
2 10.0
3 8.1
4 10.1

Scale 6 c' 1 8.2
2 10.1
3 8.3
4 10.2

Scale 6 e' 1 8.5
2 10.3
3 8.5
4 10.4

Scale 6 ~~f~~ g' 1
2
3
4

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

22.40

May 24, 1896

Measure of Plate 6 9143

Scale 6 g'	1	8.6
	2	10.3
	3	8.7
	4	10.3
Scale 6 h'	1	8.7
	2	10.4
	3	8.6
	4	10.4
Scale 6 x'	1	
	2	
	3	
	4	
Scale 6 y'	1	7.9
	2	10.0
	3	8.0
	4	10.1

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

May 24, 1896.

Measure of Plate 6 9141

Set of measures
farthest from Plate no.

Scale 6 a
1 7.2
2 9.6
3 7.3
4 9.7

Scale 6. b
1 ~~8.2~~ ~~7.6~~ ~~10.1~~
2 ~~9.7~~ ~~8.2~~
3 ~~7.8~~
4 ~~10.2~~ ~~9.9~~ ~~9.1~~

Scale 6 c
1 ~~8.3~~ ~~7.7~~ ~~10.2~~
2 ~~9.9~~ ~~8.4~~
3 ~~7.8~~ ~~9~~
4 ~~10.1~~

Scale 6 d
1 8.0
2 10.1
3 8.2
4 10.2

Scale 6 f
1 8.5
2 10.3
3 8.7
4 10.4

2850

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

22.50

May 24, 1896

Measure of Plate C 9141

Scale C y 1 8.2
2 10.2
3 8.3
4 10.3

Scale C x 1 8.1
2 10.2
3 8.3
4 10.3

Scale C. x 1
2
3
4

Scale C y 1 7.7
2 9.8
3 7.9
4 10.0

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj.0711

May 24, 1896

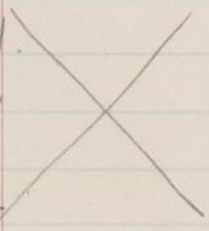
Measure of Plate 69141

Scale 6 a' 1 7.8
2 9.8
3 7.9
4 10.0

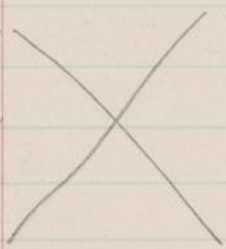
Scale 6 b' 1 8.2
2 10.3
3 8.3
4 10.4

Scale 6 c' 1 8.1
2 10.3
3 8.3
4 10.4

Scale 6 e' 1
2
3
4



Scale 6 f' 1
2
3
4



John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.10

May 24 1896

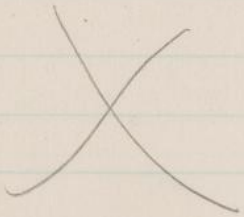
Measure of Plate 6 9141

Scale 6 g'1

2

3

4

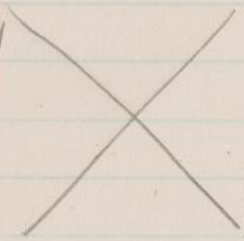


Scale 6 h'1

2

3

4



Scale 6 x'1

2

3

4

Scale 6 y'1 8.1

2 10.3

3 8.3

4 10.4

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj - 9711

May 24. 1896

Set of images nearest plate number: Measure of Plate 6 9095

Scale ~~D~~ C a	1	5.6
	2	~~6.0~~ 7.9
	3	~~7.1~~ 5.8
	4	8.0
Scale C b	1	6.2
	2	8.2
	3	6.3
	4	8.4
Scale C c	1	6.2
	2	8.3
	3	6.3
	4	8.5
Scale C d	1	9.3
	2	10.4
	3	9.3
	4	10.3
Scale C e	1	6.8
	2	8.8
	3	7.0
	4	8.9

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.5

May 24, 1896

Measure of Plate 6 9095

Scale 6. f	1	6.8
	2	9.0
	3	7.0
	4	9.1
Scale 6 g	1	6.9
		9.0
		7.0
		9.0
Scale 6 h	1	6.9
	2	8.8
	3	7.0
	4	9.0
Scale 6 k	1	8.6
	2	10.1
	3	8.7
	4	10.2
Scale 6 l	1	8.7
	2	10.3
	3	8.6
	4	10.4

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..9711

May 24, 1896.

Measure of Plate C 9095

Scale 6 mv 1 8.9
2 10.3
3 8.8
4 10.4

Scale 6. mv 1 9.2
2 10.3
3 8.9
4 10.4

Scale 6 ro 1 9.2
2 10.4
3 9.3
4 10.5

Scale 6 pi 1 9.2
2 10.3
3 9.3
4 10.4

Scale 6 gf 1 9.4
2 10.5
3 9.4
4 10.5

2315
John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.15

May 24, 1896

Measure of Plate 6 9095

Scale 6 r 1 9.4
2 10.5
3 9.5
4 10.5

Scale 6 r' 1 6.4
2 8.3
3 6.7
4 8.5

Scale 6 f' 1 6.8
2 8.7
3 7.0
4 8.9

Scale 6 c' 1 7.0
2 8.9
3 7.1
4 9.0

Scale 6 d' 1
2
3
4

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae..proj..971L

May 24, 1896

Measure of Plate 6095

Scale 6 e'	1	7.4
	2	9.2
	3	7.5
	4	9.3
Scale 6 f'	1	7.7
	2	9.6
	3	7.9
	4	9.7
Scale 6 g'	1	7.7
	2	9.6
	3	7.9
	4	9.7
Scale 6 h'	1	7.7
	2	9.6
	3	7.8
	4	9.7
Scale 6. k'	1	9.1
	2	10.3
	3	9.2
	4	10.4

l' too faint

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.20

Set of images for this Plate No.

May 24, 1896

Measure of Plate C 9142

Scale C a	1	6.0
	2	8.0
	3	6.1
	4	8.1
Scale C b	1	6.2
	2	8.5
	3	6.3
	4	8.6
Scale C c	1	6.5
	2	8.6
	3	6.5
	4	8.7
Scale C e	1	6.7
	2	8.7
	3	7.0
	4	8.7
	f 1	7.1
	2	9.6
	3	7.2
	4	9.6

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

May 24, 1896.

Measure of Plate 6142

Scale 6	g	1 7.0
		2 9.5
		3 7.1
		4 9.6
Scale 6	h	1 7.2
		2 9.5
		3 7.2
		4 9.6
	k	too faint
Scale 6	k	1 7.2
		2 9.7
		3 7.3
		4 9.7
Scale 6	g	1 6.1
		2 8.2
		3 6.2
		4 8.3
Scale 6	a'	1 6.5
		2 8.5
		3 6.6
		4 8.6

2 3 4 8 John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.40

May 24, 1896

Measure of Plate 6 9142

Scale 6 b'	1	6.7
	2	8.7
	3	6.9
	4	8.9
Scale 6 c'	1	6.9
	2	8.9
	3	7.0
	4	9.0
Scale 6 e'	1	7.4
	2	9.0
	3	7.4
	4	9.1
Scale 6 f'	1	7.6
		9.7
		7.9
		9.8
Scale 6 g'	1	7.1
	2	9.8
	3	7.2
	4	9.9

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae..proj..971L

May 24, 1896

Measure of Plate C 9142

Scale C	h' 1	7.7
	2	9.7
	3	7.9
	4	9.7
	k'	too faint
Scale C	x' 1	8.0
	2	10.0
	3	8.1
	4	10.0
Scale C	y' 1	6.7
	2	9.0
	3	6.8
	4	9.1

Measure of Plate C 9109

Set of measures
farthest from Plate rim

Scale	a 1	7.9
	2	10.2
	3	8.1
	4	10.3

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.50

May 24, 1896

Measure of Plate C 9109

b 1 too faint

a' too faint

Set further from plate no.

Measure of Plate C 9108

Scale C	a	1 6.5
		2 8.9
		3 6.5
		4 9.2
Scale C	b	1 7.0
		2 9.7
		3 7.1
		4 9.8
Scale C	c	1 7.0
		2 9.7
		3 7.1
		4 9.7
Scale C	e	1 7.6
		2 10.0
		3 7.7
		4 10.1

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

May 24, 1896

Measure of Plate C 9108

Scale 6 f 1 7.8
2 10.1
3 7.9
4 10.0

Scale 6 g 1 7.9
2 10.0
3 7.9
4 10.3

Scale 6 h 1 8.0
2 10.2
3 8.0
4 10.3

23.55

May 25, 1896

24.20 d' 1 7.5
2 9.7
3 7.4
4 9.8

Scale 6 f' 1 7.6
2 10.1
3 7.7
4 10.2

24 9t

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

24.21

May 27/5 1896.

Measure of Plate 6 9108

Plate 6 c'	1	7.8
	2	10.2
	3	7.8
	4	10.3
e'	1	Too faint

Measure of Plate 6 9056

measures farthest from plate no.

Scale 6 a	1	4.9
	2	6.4
	3	4.8
	4	6.5
Scale 6 b	1	7.3
	2	9.7
	3	7.1
	4	9.7
Scale 6 c	1	8.2
	2	10.1
	3	8.0
	4	10.1

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

May 25 1896

Measure of Plate 6 9056

Scale 6 d	1	9.0
	2	10.2
	3	9.0
	4	10.2
e		N.S
f		too faint
Scale 6 * a'	1	4.8
	2	7.1
	3	4.9
	4	7.2
Scale 6 b'	1	7.8
	2	9.8
	3	7.7
	4	9.7
Scale 6 c'	1	8.3
	2	10.0
	3	8.2
	4	10.0

2448 * a' is not accurately elongated and cannot be compared with the scale.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

24.40

May 25, 1896.

Measure of Plate 6 9056

Scale 6	d'	1 9.0
		2 10.5
		3 9.1
		4 10.4
	e'	11.5
Scale 6	f'	too faint

Measure of Plate 6 9057*

Scale 6	a	1 4.9
		2 7.1
		3 5.0
		4 7.0
Scale 6	f	1 8.2
		2 10.1
		3 8.0
		4 10.2

* Image elongated & hard to measure on the scale

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae..proj..971L

May 27.5 1896

Measure of Plate 6

Scale 6 c too faint

Set of measures nearest plate/no

Measures of Plate C 9097

Scale 6 a 1 4.6
2 7.0
3 4.7
4 6.9

Scale 6 b 1 5.0
2 7.2
3 5.0
4 7.1

Scale 6 c 1 5.8
2 7.6
3 6.0
4 7.6

Scale 6 d 1 6.0
2 8.2
3 5.9
4 8.2

24.55

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

24.55

May 27, 1896

Measure of 6 9697

Scale 6	e 1	6.7 ~~8.7~~ 8.9
	2	~~6.8~~
	3	8.6 8
	4	8.9
Scale 6	f 1	7.8
	2	9.6
	3	7.7
	4	9.7
20. Scale ~~6~~	a' 1	4.3
	2	6.9
	3	4.5
	4	6.7
20 Scale ~~6~~	b' 1	5.2
	2	7.1
	3	5.3
	4	7.0
Scale 20	c' 1	5.8
	2	7.5
	3	6.0
	4	7.7

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae..proj..971L

May 25, 1896

Measure of Plate 69097

Scale 6 d' 1 6.0
2 8.1
3 6.1
4 8.2

Scale 6 e' 1 6.8
2 8.7
3 7.0
4 8.7

Scale 6 f' 1 7.7
2 9.7
3 7.8
4 9.8

set of images nearest plate no

Measure of Plate 69096

Scale 6 a1 5.7
2 8.2
3 5.8
4 8.2

Scale 6 b1 6.0
2 8.7
3 6.2
4 8.8

25

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

25.10

May 25, 1896

Measure of Plate 6 9096

Scale 6 c	1	6.1
	2	9.0
	3	6.2
	4	9.1
Scale 6 d	1	6.2
	2	8.8
	3	6.3
	4	9.0
Scale 6 e	1	6.7
	2	9.1
	3	6.8
	4	9.2
Scale 6 f	1	6.8
	2	9.2
	3	6.9
	4	9.3
Scale 6 g	1	7.0
	2	9.2
	3	7.0
	4	9.3

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae..proj..971L

May 25, 1896.

Measure of Plate 6 9096

Scale 6 h	1	6.9
	2	9.6
	3	6.1
	4	9.6
Scale 6 b	1	8.7
	2	10.3
	3	9.0
	4	10.4
	m	too faint
Scale 6 k	1	8.9
	2	10.1
	3	9.0
	4	10.2)
Scale 6 a'	1	4.8
	2	8.2
	3	5.0
	4	8.4
Scale 6 b'	1	6.1
	2	9.0
	3	6.0.
	4	8.8

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..97L

25.25

May 25, 1896

Measure of Plate 6.9096

Scale 6	c' 1	6.2
	2	8.2
	3	6.4
	4	8.3
Scale 6	d' 1	6.9
	2	9.1
	3	7.0
	4	8.9
Scale 6	e' 1	7.1
	2	9.1
	3	7.2
	4	9.2
Scale 6	f' 1.	7.2
	2.	9.2
	3.	7.4
	4.	9.5
Scale 6	g' 1	7.1
	2	9.2
	3	7.3
	4	9.3

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..97L

May 25, 1896.
Measure of Plate 6906

Scale 6 K'	1	7.2
	2	9.0
	3	7.3
	4	9.3
Scale 6 K'	1	8.5
	2	10.0
	3	8.7
	4	10.1
Scale 6 b'	1	9.0
	2	10.3
	3	9.1
	4	10.4
Scale 6 m'	1	9.2
	2	10.2
	3	9.1
	4	10.3

K' too faint

25.35

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

2 x 30

May 26, 1896

Measures of the positions of the Plate D 4429

No.	x	y	∠	B.	C.	D.
" 43	8.6	17.1	72	09	140	204
" "	8.6	17.1	70	10	144	200
" 44	10.8	14.0	30	04	189	210
" "	10.7	14.0	30	05	183	209
" 45	10.5	14.8	95	179	120	33
" "	10.5	14.7	94	182	120	29
" 46	11.5	14.8	120	189	95	24
" "	11.5	14.8	120	192	95	20
" 47	11.5	14.6	99	129	115	81
" "	11.5	14.6	100	133	118	80
" 48	11.8	15.7	20	151	190	58
" "	11.8	15.7	20	160	190	52
" 49	14.6	17.4	61	55	150	160
" "	14.6	17.4	62	59	154	157
" 50	14.4	15.6	151	143	60	70
" "	14.4	15.6	155	150	60	65
" 51	13.4	16.4	128	74	89	140
" "	13.5	16.4	129	79	88	135
" 52	15.7	13.7	35	178	180	35
" "	15.7	13.8	31	185	180	30
" 53	14.8	13.5	25	110	190	105
" "	14.8	13.6	25	115	190	100
" 54	13.9	14.5	10	93	205	120
" "	13.9	14.5	10	100	200	110
" 55	13.9	9.3	15	39	159	175
" "	14.9	9.3	15	48	201	169
" 56	11.6	15.5	55	109	159	106
" "	11.7	15.5	55	115	160	101

(May 26, 1896)

Variables in M 5 with reticule * (Plate D 4440)

a+C	B+D.	C-a	B-D	x	y
212	213	+68	-195	+67	-193
214	210	+74	-190	+73	-188
219	214	+159	-206	+157	-204
213	214	+153	-204	+151	-201
215	212	+25	+146	+25	+144
214	211	+26	+153	+26	+151
215	213	-25	+165	-25	+163
215	212	-25	+172	-25	+170
214	210	+16	+48	+16	+47
218	213	+18	+53	+18	+52
210	209	+170	+93	+168	+92
210	212	+170	+108	+168	+107
211	215	+89	-105	+88	-104
216	216	+92	-98	+91	-97
211	213	-91	+73	-90	+72
215	215	-95	+85	-94	+84
217	214	-39	-66	-39	-65
217	214	-41	-56	-40	-55
215	213	+145	+143	+143	+141
211	215	+149	+155	+147	+153
215	215	+165	+05	+163	+05
215	215	+165	+15	+163	+15
215	213	+195	-27	+193	-27
210	210	+190	-10	+188	-10
214	+144	-136	+142	-134	
216	217	+186	-121	+184	-119
214	215	+104	+03	+103	+03
215	216	+105	+14	+104	+14

23.25

23.50

2 x .50

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1990phae.proj..971L

x×42.4	y×42.4	x Corr.	y Corr.	$\frac{x-40.2}{40.4}$	$\frac{y-36.1}{37.1}$	Mean x	Mean y	$\lvert x-\bar{x}\rvert$	$\lvert y-\bar{y}\rvert$	Cor $\bar{x}-\bar{y}$
339.2	720.8	346.9	701.5	305.7	665.4					
						305.9	665.2	-0.4	+0.5	-0.1
339.2	720.8	346.5	702.0	306.1	664.9					
424.0	593.6	439.7	573.2	399.5	536.1					
						399.1	536.2	+0.8	-0.3	-0.5
424.0	593.6	439.1	573.5	398.7	536.4					
424.0	593.6	426.5	608.0	386.3	571.9					
						386.2	571.8	+0.1	+0.3	-0.1
424.0	593.6	426.6	608.7	386.2	571.6					
466.4	593.6	463.9	609.9	423.7	573.8					
						423.6	573.6	+0.2	+0.3	-0.1
466.4	593.6	463.9	610.6	423.5	573.5					
466.4	593.6	468.0	598.3	427.8	562.2					
						427.8	562.0	0.0	+0.5	+0.3
466.4	593.6	468.2	598.8	427.8	561.7					
466.4	636.0	483.2	645.2	443.0	609.1					
						442.9	609.4	+0.2	-0.5	-0.8
466.4	636.0	483.2	646.7	442.8	609.6					
593.6	720.8	602.4	710.4	562.2	674.3					
						562.2	674.2	-0.1	+0.3	+0.2
593.6	720.8	602.7	711.1	562.3	674.0					
593.6	636.0	584.6	643.2	544.4	607.1					
						544.1	607.2	+0.6	-0.2	-0.3
593.6	636.0	584.2	644.4	543.8	607.3					
551.2	678.4	547.3	671.9	507.1	635.8					
						507.0	635.8	+0.3	0.0	-0.2
551.2	678.4	547.2	672.9	506.8	635.8					
636.0	551.2	650.3	565.3	610.1	529.2					
						610.2	529.3	-0.2	-0.2	-0.1
636.0	551.2	650.7	566.5	610.3	529.4					
593.6	551.2	609.9	551.7	569.7	515.6					
						569.6	515.6	+0.2	0.0	-0.1
593.6	551.2	609.9	552.7	569.5	515.6					
551.2	593.6	570.5	590.9	530.3	554.8					
						530.0	555.2	+0.7	-0.7	-0.7
551.2	593.6	570.0	592.6	529.6	555.5					
593.6	381.6	607.8	368.2	567.6	332.1					~~-0.1~~ -0.5
						332.4		-0.5		(to next page)
593.6	381.6	612.0	369.7	571.6	332.6					
466.4	636.0	476.7	636.3	436.6	600.2					
						436.4	600.2	+0.1	-0.1	-0.4
466.4	636.0	476.8	637.4	436.4	600.3					

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

May 26, 1896. May 26, 1896

Measures of D 4429 continued (Plate D 4440 cont)

	No	x	y	A	B	C	D	a+c	B+D	c-a	B-D	x	y
	" 57	12.5	15.5	72	110	139	100	211	210	+67	+10	+66	+10
	" "	12.5	15.5	75	120	140	98	215	218	+65	+22	+64	+22
	" 58	not on plate											
	" 59	9.6	12.5	75	109	140	105	215	214	+65	+04	+64	+04
	" "	9.6	12.5	75	114	140	100	215	214	+65	+14	+65	+14
	" 60	10.6	13.5	71	102	141	110	212	212	+70	-08	+69	-08
	" "	10.6	13.5	71	109	140	107	211	216	+69	+02	+68	+02
	" 61	7.3	12.7	173	160	39	52	212	212	-134	+108	-132	+107
	" "	7.3	12.7	173	162	40	50	213	212	-133	+112	-131	+111
23.05	* " 62	16.9	7.7	20	172	198	41	218	213	+178	+131	+176	+130
23.55	" "	16.8	7.8	20	179	199	31	219	210	+179	+148	+177	+146

21414 21326

37 38

Plate D 4429 x y A. B. C. D.

additional measure	" 55	14.9	9.3	15	40	200	173	215	213	+185	-133	+183	-132
D 4440				15	48	201	169	216	217	+186	-121	+184	-119

February 21, 1896

		x	y	a	B	C	D						
Pl. D 4429	* " 63	18.3	14.1	14.2	15	70	200	212	215	-72	-185	-71	-183
D 4440	" "	18.3	14.2	140	21	71	193	211	214	-69	-172	-68	-170

No 62 is Mr. Pickering's variable

" 63 " " Bailey's "

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1996phae.proj..971L

x×42.4	y×42.4	x Corr.	y Corr.	x − 40.2/40.4	y − 36.1/37.1	Mean x.	Mean y.	x−x′	y−y′
5088	6360	5154	6370	475.2	600.9				
5088	6360	5152	6382	474.8	601.1	475.0	601.0	+0.4	−0.2 −0.5
3816	5088	3880	5092	347.8	473.1				
3816	5088	3880	5102	347.6	473.1	347.7	473.1	+0.2	0.0 −0.1
4240	5512	4309	5504	390.7	514.3				
4240	5512	4308	5518	390.4	514.3	390.6	514.3	+0.3	0.0 −0.2
2968	5088	2836	5195	243.4	483.4				
2968	5088	2837	5199	243.3	482.8	243.4	483.1	+0.1	+0.6 +0.2
6784	2968	6960	3098	655.8	273.7				
6784	2968	6961	3114	655.7	274.3	655.8	274.0	+0.1	−0.6 0.0
5936	3816	6119	3684	571.7	332.3				
		6120	3697	571.6	332.6	571.6	332.4	+0.1	−0.3 −0.1
7632	5936	7561	5753	715.9	539.2				
						716.0	539.4	−0.1	−0.3
7632	5936	7564	5766	716.0	539.5				

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

June 28, 1896

23.30 Measures of positions of Stars in Nebula in Orion

D 4256

No.	x	y	A.	B.	C.	D.	a+C	B+D	c-a	B-D	x	y	Ek.
1.	23.6	21.2	78	34	140	180	218	214	+62	-146	+62	-145	97
1a.	23.2	5.4	190	61	20	150	210	211	-170	-89	-169	-89	91
1b.	22.1	6.3	200	39	10	175	210	214	-190	-136	-189	-135	93
2.	21.9	25.7	~~220~~ 210	158	209	50	219	208	+199	+108	+198	+107	87
3.	21.8	5.3	21	50	194	164	215	214	+173	-114	+172	-113	89
4.	21.6	16.6	60	113	154	101	214	214	+94	+12	+94	+12	89
5.	21.4	6.8	138	189	79	29	217	218	-59	+160	-59	+159	89
6.	20.3	7.5	160	101	50	110	210	211	-110	-09	-109	-09	84
7.	19.5	27.6	128	135	~~89~~ 88	78	217	213	-39	+57	-39	+57	86
8.	19.4	14.7	125	160	85	52	210	212	-40	+108	-40	+107	86
9.	19.4	3.7	118	159	99	55	217	214	-19	+104	-19	+103	86
10.	defect												
11.	18.5	4.1	98	08	119	205	217	213	+21	-197	+21	-196	76
12.	18.6	0.9	90	205	127	10	217	215	+37	+195	+37	+194	76
13.	18.1	9.4	190	74	20	139	210	213	-170	-65	-169	-65	76
14.	17.9	18.4	10	61	201	150	211	211	+191	-89	+190	-89	72
15.	17.1	7.8	190	170	20	41	210	211	-170	+129	-169	+128	72
16.	16.3	9.5	~~185~~ 184	129	70	85	~~218~~ 215	214	-75	+44	-75	+44	67
17.	16.4	8.7	~~180~~ 184	159	79	51	219	210	-61	+108	-61	+107	67
18.	16.4	6.0	141	218	72	210	213	428	-69	+08	-69	~~+08~~ -206	67
19.	16.4	26.3	152	70	60	149	212	219	-92	-79	-92	-79	67
20.	16.2	23.6	180	115	38	~~175~~ 100	218	215	-142	+15	-141	+15	67
21.	15.5	1.5	90	104	120	108	210	212	+30	-04	+30	-04	67
22.	14.7	16.1	40	10	171	202	211	212	+131	-192	+130	-191	57
23.	14.4	27.6	145	160	65	50	210	210	-80	+110	-80	+109	57
24.	14.6	7.3	79	39	132	179	211	218	+53	-140	+53	-139	57
25.	14.3	7.4	170	65	40	150	210	215	-130	-85	-129	-85	57
26.	14.3	14.3	150	55	60	161	210	216	-90	-106	-90	-105	57

24.5

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1996phae.proj..971L

Est. x × 42.4	Est. y × 42.4	x Corr.	y Corr.			Vol. V No.			Corr. x −520	Corr. y −485	Corr. x −520.0	Corr. y −485.0
975.2	890.4	981.4	875.9	+462	−396	+464.7	+391.2	808	516.7	484.7	928.4	827.4	461.4	390.9
975.2	212.0	958.3	203.1								906.3	154.6	438.3	−28.19
932.8	254.4	913.9	240.9	+396	+246	+395.9	−245.7	789	518.0	486.6	861.9	192.4	393.9	−244.1
890.4	1060.0	980.2	1070.7	+384	−588	+389.7	+587.2	785	520.5	483.5	848.2	1022.2	380.2	585.7
890.4	212.0	907.6	200.7	+384	+288	+388.4	−286.0	784	519.2	486.7	855.6	152.2	387.6	−284.3
890.4	678.4	899.8	679.6	+372	−198	+373.8	+195.5	781	526.0	484.1	847.8	631.1	379.8	194.6
890.4	254.4	884.5	270.3	+372	+216	+366.7	−216.0	778	517.8	486.3	832.5	221.8	364.5	−214.7
848.0	296.8	837.1	295.9	+318	+192	+317.0	−193.9	767	520.1	498	785.1	247.4	317.1	−189.1
805.6	1144.8	801.7	1150.5	+276	−666	+280.5	+666.1	757	521.2	484.4	749.7	1102.0	281.7	665.5
805.6	593.6	801.6	604.3								749.6	555.8	281.6	119.3
805.6	127.2	803.7	137.5	+276	+345	+277.7	−348.3	756	526.0	485.8	751.7	89.0	283.7	−347.5
763.2	169.6	765.3	150.0	+234	+380	+236.4	−333.4	747	528.9	483.4	713.3	101.5	245.3	−335.0
763.2	0.0	766.9	19.4	+252	+462	+248.4	−467.1	750	518.5		714.9		246.9	−465.6
763.2	381.6	746.3	375.1	+222	+108	+225.9	−110.5	741	520.4	385.6	694.3	326.6	226.3	−109.9
720.8	763.2	739.8	754.3	+216	−270	+220.2	+266.1	737	519.6	488.2	687.8	705.8	219.8	269.3
720.8	296.8	703.9	309.6	+186	+174	+183.3	−176.0	724	520.6	485.6	651.9	261.1	183.9	−175.4
678.4	381.6	670.9	386.0	+150	+96	+151.4	−98.5	708	519.5	484.5	618.9	337.5	150.9	−99.0
678.4	339.2	672.3	349.9	+150	+138	+152.9	−136.4	709	519.4	486.3	620.3	301.4	152.3	−135.1
678.4	254.4	671.5	~~255.2~~ 246.0	+144	+252	+151.2	−253.5	707	520.3	508.7	619.5	~~206.7~~ 241.0	151.5	~~−229.8~~ −251.0
678.4	~~97.52~~ 110.24	669.2	1094.5	+140	−615	+147.2	+611.2	705	522.0	483.3	617.2	1046.0	149.2	609.5
678.4	97.52	664.3	976.7	+145	−498	+143.4	+492.7	700	520.9	484.0	612.3	928.2	144.3	491.7
636.0	42.4	639.0	42.0	+114	+444	+119.4	−443.7	690	519.6	485.7	587.0	−6.5	119.0	−443.0
593.6	678.4	606.6	659.3								554.6	610.8	86.6	174.3
593.6	1144.8	585.6	1155.7	+63	−670	+64.2	+673.2	670	521.4	482.5	533.6	1107.2	6.56	670.7
593.6	296.8	598.9	282.9	+84	+210	+78.6	−201.4	677	520.3	484.3	546.9	234.4	78.9	−192.1
593.6	296.8	580.7	288.3	+66	+204	+59.7	−195.8	666	521.0	484.1	528.7	239.8	60.7	−196.7
593.6	593.6	584.6	583.1								532.6	534.6	64.6	98.1

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

Continued

June 28, 1896

24.5

Measures of positions of stars in Nebula in Orion.

D 4556

No.	x.	y.	A.	B.	C.	D.	a+C.	B+D	$C^{x}-aB^{y}-D$ x	y
27.	14.1	15.4	190	85	20	131	210	216	-170	-46 -169 -46
28.	13.6	15.7	60	170	151	41	211	211	+91	+129 +91 +128
28a	13.5	15.9	99	197	120	10	219	207	+21	+187 +21 +186
29.	13.5	22.1	99	10	119	205	218	215	+20	-195 +20 -194
30.	13.4	21.5	129	102	89	105	218	207	-40	-03 -40 -03
31.	13.0	14.3	~~220~~ 06	49	210	161	215	210	+205	-112 +204 -111
32.	11.9	1.3	9	39	209	171	218	210	+200	-132 +199 -131
33.	11.3	8.2	180	30	30 05	189	210	219	-150	-159 -149 -158
34.	11.0	20.9	215	210	~~210~~	04	220	214	-210	+206 -209 +205
35.	10.7	7.7	49	159	161	55	210	214	+112	+104 +111 +104
36.	10.5	5.5	95	112	119	101	214	213	+24	+11 +24 +11
37.	10.4	2.6	136	118	73	98	209	216	-63	+20 -63 +20
38.	9.1	9.2	199	25	14	181	213	206	-185	-156 -184 -155
39.	8.6	23.9	65	204	150	10	215	214	+85	+194 +85 +193
40.	8.9	27.5	05	129	200	90	205	219	+195	+39 +194 +39
41.	8.3	2.5	160	100	49	119	209	219	-111	-19 -110 -19
42.	7.1	12.4	198	70	14	141	212	211	-184	-71 -183 -71
43.	7.1	9.2	190	32	20	179	210	211	-170	-147 -169 -146
44.	6.4	11.2	159	26	51	189	210	215	-108	-163 -107 -162
45.	5.6	12.1	85	10	129	209	214	219	+44	-199 +44 -198
46.	5.5	1.9	109	195	105	15	214	210	-04	+180 -04 +179
47.	3.7	10.8	49	184	165	22	214	206	+116	+162 +115 +161
48.	3.4	17.4 8	127	72	89	140	216	212	-38	-68 -38 -68
49.	1.7	9.4	30	81	—	130		211		-49 -49

25.10

213.30 213.08

Adopt - mean 213. and
subtract 1 for all values
of 10.6 or greater

50 52

July 14, 1896 E. C. Pickering

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj.971t

Vol. V

Vol. V No.

Est. x ×42.4	Est. y ×42.4	X Corr.	Y Corr.							Corr. x -520.0	Corr. y. -485.0
593.6	636.0	576.7	631.4							56.7	146.4
551.2	636.0	560.3	648.8							40.3	163.8
551.2	636.0	553.3	654.6							33.3	169.6
551.2	932.8	553.2	913.4	+3/16	-432	+30.8	+429.7	653	522.4	483.7	33.2	428.4
551.2	890.4	547.2	890.1	+24	-408	+28.5	+408.8	650	518.7	481.3	27.2	405.1
551.2	593.6	571.6	582.5								51.6	97.5
466.4	42.4	486.3	29.3	-42	+450	-38.6	-455.1	598	524.9	484.4	-33.7	-455.7
466.4	339.2	451.5	323.4	-78	+156	-76.1	-159.1	581	527.6	482.5	-68.5	-161.6
466.4	848.0	445.5	868.5	+78	-384	-77.6	+385.8	580	523.1	482.7	-74.5	383.5
424.0	296.8	435.1	307.2	-90	+180	-87.3	-179.0	573	522.4	486.2	-84.9	-177.8
424.0	212.0	426.4	213.1	-102	+270	-94.8	-273.2	570	521.2	486.3	-93.6	-271.9
424.0	84.8	417.7	86.8	-105	+408	-104.1	-406.3	466	521.8	493.1	-102.3	-398.2
381.6	381.6	363.2	366.1	-162	+120	-158.9	-118.6	558	522.1	484.7	-156.8	-118.9
339.2	975.2	347.7	994.5	-174	-510	-175.1	+510.8	551	522.8	483.7	-172.3	509.5
339.2	1144.8	358.6	1148.7	-162	-670	-163.1	+666.0	554	521.7	482.7	-161.4	663.7
339.2	84.8	328.2	829.	-198	+396	-195.5	-401.3	545	523.7	484.2	-191.8	-402.1
296.8	508.8	278.5	501.7	-228	-30	-241.4	+16.8	524	519.9	484.9	-241.5	16.7
296.8	381.6	279.9	367.0	-246	+115	-242.3	-116.0	523	522.2	483.0	-240.1	-118.0
254.4	466.4	243.7	450.2	-276	+30	-276.0	-29.5	516	519.7	479.7	-276.3	-34.8
212.0	508.8	216.4	489.0	-306	+06	-306.0	+5.6	506	522.4	483.4	-303.6	4.0
212.0	42.4	211.6	60.3	-312	+426	-309.6	-424.7	505	521.2	485.0	-308.4	-424.7
127.2	424.0	138.7	440.1	-375	+48	-380.7	-49.3	490	519.4	489.4	-381.3	-44.9
127.2	763.2	123.4	756.4	-402	-276	-400.4	+272.3	479	523.8	484.1	-396.6	271.4
42.4	381.6		376.7	-468	+108	-464.7	-107.8	458				-108.3

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

74

22.40

July 1, 1896

Measures of positions of Stars in Nebula in Orion

70 4555

No.	x	y	A	B.	C.	70.	A+C	B+D	C-A	B-D	x	y	Est. x
1.	23.6	21.3	74	35	142	180	216	215	+68	-145	+68	-144	97
1.a.	23.2	5.8	189	62	20	149	209	211	-169	-87	-168	-87	97
1.b.	22.1	6.2	195	35	10	179	205	214	-185	-144	-184	-143	93
2.	22.0	25.7	08	159	210	60	218	219	+202	+99	+201	+99	93
3.	21.8	5.3	20	48	191	165	211	213	+171	-117	+170	-116	89
4.	21.6	16.5	60	112	155	101	215	213	+95	+11	+95	+11	89
5.	21.4	6.8	140	189	79	30	219	219	-61	+159	-61	+158	89
6.	20.3	7.5	165	102	50	110	215	212	-115	-08	-114	-08	84
7.	19.5	27.6	120	179	95	80	215	219	-25	+59	-25	+59	80
8.	19.5	14.7	120	161	95	51	215	212	-25	+110	-25	+109	80
9.	19.5	3.6	119	155	96	57	215	212	-23	+98	-23	+98	80
10.	defect.												
11.	18.5	4.1	100	10	111	201	211	211	+11	-191	+11	-190	74
12.	18.5	0.9	90	205	125	8	215	213	+35	+197	+35	+196	74
13.	18.2	9.4	185	77	40	139	225	216	-145	-62	-144	-62	74
14.	17.9	18.4	10	69	208	145	218	214	+198	-76	+197	-76	74
15.	17.1	7.8	190	170	20	49	210	219	-170	+121	-169	+120	72
16.	16.5	9.6	140	134	79	65	219	199	-61	+69	-61	+69	69
17.	16.4	8.7	140	151	70	59	210	210	-70	+92	-70	+92	67
18.	16.4	6.0	141	210	69	221	210	431	-72	+201 −11	-72	-11	67
19.	16.4	26.4	150	71	65	142	215	213	-85	-71	-85	-71	67
20.	16.2	23.6	175	117	40	99	215	216	-135	+18	-134	+18	67
21.	15.5	1.5	96	101	120	105	216	206	+24	-04	+24	-04	63
22.	14.8	16.1	35	10	169	205	204	215	+134	-195	+133	-194	59
23.	14.4	27.7	140	160	72	54	212	214	-68	+106	-68	+105	59
24.	14.6	7.4	85	44	134	170	219	214	+49	-126	+49	-125	59
25.	14.3	7.4	179	69	32	149	211	218	-147	-80	-146	-80	59

23.5

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

Vol. V.

Est x ×42.4	Est y ×42.4	x Corr.	y Corr.	Vol. V x	y	Plate 4555 x−5200	y−4850	Plate 4556 x−5200	y−4850	4555 − Vol V x	4555 − Vol V y	4556 − Vol V x	4556 − Vol V y
975.2	890.4	982.0	875.9	808	+464.7	+391.2	462.0	396.9	461.4	390.9	−2.7	−3.3	−0.2	−0.3
975.2	212.0	958.3	203.3				438.3	−281.7	438.3	−281.9				
932.8	254.4	914.3	240.0	789	+395.9	−245.7	394.3	−245.0	393.9	−244.1	−1.8	−2.0	+0.8	+1.6
932.8	1060.0	953.0	1069.9	785	+389.7	+587.2	(433.0)	584.9	390.2	585.7	+0.5	+0.5	−2.3	−1.5
890.4	212.0	907.5	200.3	784	+388.4	−286.0	387.5	−284.7	387.6	−284.3	−0.8	−0.8	+1.4	+1.7
890.4	678.4	899.9	679.5	781	+373.8	+195.5	379.9	194.5	379.8	194.6	+6.1	+6.0	−1.0	−0.9
890.4	254.4	884.3	270.3	778	+366.7	−216.0	364.3	−214.7	364.5	−214.7	−2.4	−2.2	+1.2	+1.3
848.0	296.8	836.5	296.0	767	+317.0	−193.9	316.5	−189.0	317.1	−189.1	−0.5	+0.1	+4.9	+4.8
805.6	1144.8	803.1	1150.7	757	+280.5	+666.1	283.1	665.7	281.7	665.5	+2.6	+1.2	−0.4	−0.6
805.6	593.6	803.1	604.8				283.1	119.8	281.6	11.9.3				
805.6	127.2	803.3	137.0	755	+277.7	−348.3	283.3	−348.0	283.7	−347.5	+5.6	+6.0	+0.3	+0.8
763.2	169.6	764.3	150.5	747	+236.4	−333.4	244.3	−334.5	245.3	−335.0	−			
763.2	0.0	766.7	19.7	750	+248.4	−467.1	246.7	−465.3	246.9	−465.6	−1.7	−1.5	+1.7	+1.5
763.2	381.6	748.7	375.4	741	+225.9	−110.5	225.7	−109.6	226.3	−109.9	+2.8	+0.4	+0.9	+0.6
720.8	763.2	740.6	755.6	737	+220.2	+266.1	220.6	270.6	219.8	269.3	+0.4	−0.4	+4.5	+3.2
720.8	296.8	703.8	308.8	724	+183.3	−176.0	183.8	−176.2	183.9	−175.4	+0.5	+0.6	−0.2	+0.6
678.4	381.6	672.3	388.5	708	+151.4	−98.5	152.3	−96.5	150.9	−99.0	+0.9	−0.5	+2.0	−0.5
678.4	339.2	671.4	348.4	709	+152.9	−136.4	151.4	−136.6	152.3	−135.1	−1.5	−0.6	−0.2	+1.3
678.4	254.4	671.2	250.3	707	+151.2	−253.5	151.2	−253.9	151.5	−251.0	−229.8	0.0	+0.3	+21.8	+23.7
678.4	1102.4	669.9	1095.3	705	+147.2	+611.2	149.9	610.3	149.2	609.5	+2.7	+2.0	−0.9	−1.7
678.4	975.2	664.9	977.0	700	+143.4	+492.7	144.9	492.0	144.3	491.7	+1.5	+0.9	−0.7	−1.0
636.0	42.4	638.4	42.0	690	+119.4	−443.7	118.4	−443.0	119.0	−443.0	−1.0	−0.4	+0.7	+0.7
593.6	678.4	607.0	658.9				87.0	173.9	86.6	174.3				
593.6	1144.8	586.8	1155.4	670	+64.2	+673.2	66.8	670.4	65.6	670.7	+2.6	+1.4	−2.9	−2.5
593.6	296.8	598.5	284.2	677	+78.6	−201.4	78.5	−200.7	78.9	−202.1	−0.1	+0.3	+0.7	−0.7
593.6	296.8	578.9	288.8	666	+59.7	−195.8	58.9	−196.2	60.7	−196.7	−0.8	+1.0	−0.4	−0.9

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.5

continued July 13, 1896.

Measures of positions of Stars in Nebula in Ori.

ZC 4555

No.	x.	y	A.	B.	C.	ZC.	A+C	B+D	C-A	B-D	x	y	Ext.
26.	14.3	14.4	155	60	59	158	214	218	-96	-98	-96	-98	5
27.	14.2	15.4	185	78	20	131	205	209	-165	-53	-164	-53	5
28.	13.7	15.8	60	175	150	42	210	217	+90	+133	+90	+132	5
28a	13.5	15.9	110	205	100	10	210	215	-10	+195	-10	+194	5
29.	13.5	22.1	95	15	120	200	215	215	+25	-185	+25	-184	5
30.	13.5	21.5	125	106	90	110	215	216	-35	-04	-35	-04	5
31.	13.0	14.3	10	49	200	180	210	229	+190	-131	+189	-130	5
32.	11.9	1.3	10	39	205	171	215	210	+195	-132	+194	-131	4
33.	11.2	8.1	170	20	40	185	210	205	-130	-165	-129	-164	4
34.	11.0	21.0	205	210	9	05	214	215	-199	+205	-195	+204	4
35.	10.7	7.7	35	159	180	52	215	211	+145	+107	+144	+106	4
36.	10.5	5.5	91	118	121	95	212	213	+30	+23	+30	+23	4
37.	10.4	2.5	140	118	75	96	215	214	-65	+22	-65	+22	4
38.	9.1	9.2	200	25	10	189	210	214	-190	-164	-189	-163	3
39.	8.7	23.9	61	208	150	10	211	218	+89	+198	+89	+197	3
40.	9.0	27.5	200	131	10	79	210	210	-190	+52	-189	+52	3
41.	8.3	2.5	165	99	49	115	214	214	-116	-16	-115	-16	3
42.	7.1	12.4	190	69	19	140	209	209	-171	-71	-170	-71	2
43.	7.1	9.2	290	36	22	175	212	211	-168	-139	-167	-138	2
44.	6.3	11.2	160	30	51	184	211	214	-109	-154	-108	-153	2
45.	5.6	12.1	81	10	130	200	211	210	+49	-190	+49	-189	2
46.	5.5	1.9	110	195	105	11	215	206	-05	+184	-05	+183	2
47.	3.7	10.8	49	189	168	22	217	211	+119	+167	+118	+166	1
48.	3.5	18.4	125	74	89	139	214	213	-36	-65	-36	-65	1
49.	1.8	9.4	20	79	—	135		214		-56		-56	

213.14 213.44

23.55

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1996phae.proj.:971L

Est x×42.4	Est y×42.4	x Corr.	y Corr.	Vol V No.	Vol V x	Vol V y	Plate 4555 x-5200	Plate 4555 y-4850	Plate 4456 x-5200	Plate 4456 y-4850				
593.6	593.6	584.0	583.8				64.0	98.8	64.6	98.1				
593.6	636.0	577.2	630.7				57.2	145.7	56.7	146.4				
551.2	636.0	560.2	649.2				40.2	164.2	40.3	163.8				
551.2	636.0	550.2	655.4				30.2	170.4	33.3	169.6				
551.2	932.8	553.7	914.4	653	+30.8	+429.7	33.7	429.4	33.2	428.4	+2.9	+2.4	-0.3	-1.3
551.2	890.4	547.7	890.0	650	+28.5	+408.8	27.7	405.0	27.2	405.1	-0.8	-1.3	-3.8	-3.7
551.2	593.6	570.1	580.6				50.1	95.6	51.6	97.5				
466.4	42.4	485.8	29.3	598	-38.6	-455.1	-34.2	-455.7	-33.7	-455.7	+4.4	+3.9	-0.6	-0.6
466.4	339.2	453.5	322.8	581	-76.1	-159.1	-66.5	-162.2	-68.5	-161.6	+9.6	+7.6	-3.1	-2.5
466.4	890.4	446.9	910.8	580	-77.6	+385.8	-73.1	~~1283.4~~ 383.4 ~~+258~~ 42.4	-74.5	383.5	+4.5	+3.1		
424.0	296.8	438.4	307.4	573	-87.3	-179.0	-81.6	-177.6	-84.9	-177.8	+5.7	+2.4	+2.4	+1.4
424.0	212.0	427.0	212.3	570	-94.8	-273.2	-93.0	-270.7	-93.6	-271.9	+1.8	+1.2	+2.5	+1.3
424.0	848	417.5	87.0	466	-104.1	-406.3	-102.5	-398.0	-102.3	-398.2	+1.6	+1.8	+8.3	+8.1
381.6	381.6	362.7	365.3	558	-158.9	-118.6	-157.3	-119.7	-156.8	-118.9	+1.6	+2.1	-1.1	-0.3
339.2	975.2	348.1	994.9	551	-175.1	+510.8	-171.9	509.9	-172.3	509.5	+3.2	+2.8	-0.9	-1.3
381.6	1144.8	362.7	1150.0	554	-163.1	+666.0	-157.3	665.0	-161.4	663.7	+5.8	+1.7	-1.0	-2.3
339.2	84.8	327.7	83.2	545	-195.5	-401.8	-192.3	-401.8	-191.8	-402.1	+3.2	+3.7	-0.5	-0.8
296.8	508.8	279.8	501.7	524	-241.4	+16.8	-240.2	16.7	-241.5	16.7	+1.2	+0.1	-0.1	-0.1
296.8	381.6	280.1	367.8	523	-242.3	-116.0	-239.9	-117.2	-240.1	-118.0	+2.4	+2.2	-1.2	-2.0
254.4	466.4	243.6	451.1	516	-276.0	-29.5	-276.4	-239	-276.3	-348	+0.4	+0.3	-4.4	-5.3
212.0	508.8	216.9	489.9	506	-306.0	+56	-303.1	4.9	-303.6	4.0	+2.9	+2.4	-0.7	-1.6
212.0	424	211.5	60.7	505	-309.6	-424.7	-308.5	-424.3	-308.4	-424.7	+1.1	+1.2	+0.4	+0.0
127.2	424.0	139.0	440.6	490	-380.7	-49.3	-381.0 ~~417~~	-444	-381.3	-449	+0.6	+0.3	+4.7	+4.4
127.2	763.2	123.6	756.7	479	-400.4	+272.3	-396.4	271.7	-396.6	271.4	+4.0	+3.8	-1.6	-0.9
42.4	381.6		376.0	458	-464.7	-107.8		-109.0		-108.3				

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

1.55

D. 4555[6] August 3. 1896.

Additional measures of positions of Stars in Nebula of Orion

No.	x	y	A.	B.	b.	D.	a+c	b+d	c-a	b-d	x	y	Ex
2.	21.9	25.7	09	160	205	58	214	218	+196	+102	+195	+101	89
13.	18.1	9.4	192	78	21	134	213	212	-171	-56	-170	-56	76
16.	16.4	9.6	138	140	75	78	213	218	-63	+62	-63	+62	67
28a	13.5	15.9	100	200	115	14	215	214	+15	+186	+15	+185	75
33.	11.2	8.2	178	32	38	180	216	212	-140	-148	-139	-147	46
35.	10.7	7.7	45	160	165	51	210	211	+120	+109	+119	+108	4
40.	8.9	27.5	10	125	205	85	215	210	+195	+40	+194	+40	3

D. 4555

No	x	y	A.	B.	b.	D.							
2.	21.9	25.7	8	159	205	55	213	214	+197	+104	+196	+103	89
13.	18.1	9.4	185	80	210	135	205	215	-165	-55	-164	-55	76
16.	16.4	9.6	139	140	74	78	213	218	-65	+62	-65	+62	67
28a	13.5	15.8	102	201	112	15	214	216	+10	+186	+10	+185	52
33.	11.3	8.2	179	32	36	182	215	214	-148	-150	+42	-149	46
35.	10.7	7.7	47	160	167	50	214	210	+120	+110	+119	+109	42
40.	8.9	27.5	05	124	204	86	209	210	+199	+38	+198	+38	3

2.20

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

Est. x ×42.4	Est. y ×42.4	x Corr.	y Corr.	x − 5200	y − 4850
890.4	1060.0	909.9	1070.1	+389.9	+585.1
763.2	381.6	746.2	376.0	+226.2	−109.0
678.4	381.6	672.1	387.8	+152.1	−97.2
551.2	636.0	552.7	654.5	+ 32.7	+169.5
466.4	339.2	452.5	324.5	− 67.5	−160.5
424.0	296.8	435.9	307.6	− 84.1	−177.4
339.2	1144.8	358.6	1148.8	−161.4	+663.8

890.4	1060.0	910.0	1070.3	+390.0	+585.3
763.2	381.6	746.8	376.1	+226.8	−108.9
678.4	381.6	671.9	387.8	+151.9	− 98.2
551.2	636.0	552.2	654.5	+ 32.2	+169.5
466.4	339.2	452.2	324.3	− 67.8	−160.7
424.0	296.8	~~412.4~~ 435.9	~~869~~ 307.7	− 84.1	−177.3
339.2	1144.8	~~3194~~ 359.0	1148.6	−161.0	+663.6

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.30

March 21, 1897 D 48 78 85

Measures of positions of Stars within 30' of N. Pole

No	x	y	A.	B.	C.	D.	a+b	B+D	c-a	B-D	52.6x	52.6y	
✓	1.	15.3	48.3	99	98	30	32	129	130	−69	+66	789.0	2524.8	
✓	2.	15.4	47.7	72	21	55	108	127	129	−17	−87	789.0	2472.2	
✓	3.	15.8	56.7	15	25	115	105	130	130	+100	−80	789.0	2945.6	
✓	4.	16.2	47.3	114	81	15	48	129	129	−99	+33	841.6	2472.2	
✓	5.	16.4	44.9	81	04	45	125	126	129	−36	−121	841.6	2314.4	
✓	6.	16.6	51.4	45	75	88	55	133	130	+43	+20	841.6	2682.6	
✓	7.	17.1	56.2	115	105	15	25	130	130	−100	+80	894.2	2945.6	
✓	8.	17.8	47.4	19	79	109	50	128	129	+90	+29	894.2	2472.2	
✓	9.	17.9	46.5	05	55	125	71	130	126	+120	−16	894.2	2419.6	
✓	10.	18.4	53.4	70	75	58	55	128	130	−12	+20	946.8	2787.8	
✓	11.	18.4	62.6	72	49	55	80	127	129	−17	−31	946.8	3261.2	
✓	12.	18.9	40.8	10	30	115	100	125	130	+105	−70	946.8	2104.0	
✓	13.	18.9	42.3	05	89	125	41	130	130	+120	+48	946.8	2209.2	
✓	14.	19.1	53.6	119	42	10	89	129	131	−109	−47	999.4	2787.8	
✓	15.	19.9	64.7	05	32	125	96	130	128	+120	−64	999.4	3366.4	
✓	16.	19.9	67.9	01	05	128	125	129	130	+127	−120	999.4	35242	
✓	17.	20.3	~~66.7~~ 67.1	~~95~~ 94	119	38	10	133	129	−57	+109	1052.0	35242	
✓	18.	20.5	~~55.8~~ 54.8	49	20	81	111	130	131	+32	−91	1052.0	2840.4	
✓	19.	20.6	50.7	42	40	85	90	127	130	+43	−50	1052.0	2630.0	
✓	20.	21.1	40.6	125	44	05	85	130	129	−120	−41	11046	2104.0	
✓	21.	21.2	41.2	100	105	29	25	129	130	−71	+80	11046	2156.6	
✓	22.	21.5	43.9	71	04	55	128	126	132	−16	−124	11046	2261.8	
✓	23.	21.1	46.5	121	59	10	71	131	130	−111	−12	11046	2419.6	
✓	24.	21.0	47.4	125	81	04	49	129	130	−121	+32	11046	2472.2	
✓	25.	21.3	60.0	99	118	30	04	129	132	−69	+124	11046	3156.0	
✓	26.	21.8	67.5	15	60	111	69	126	129	+96	−09	11046	35242	
✓	27.	21.9	51.3	01	95	125	35	126	130	+124	+60	11046	2682.6	
✓	28.	22.1	41.2	111	101	15	29	126	130	−96	+72	11572	2156.6	
✓	29.	22.3	48.8	101	20	25	109	126	129	−76	−89	11572	2524.8	

24.10

3728/29 = 128.6

3761/29 = 129.7

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

c-a ×2.03	@-Q ×2.03			-2610.	-2580.
-14.0	+13.4	775.0	2511.4	-1835.0	-68.6
- 3.5	- 17.7	785.5	2489.9	-1824.5	- 90.1
+20.3	- 16.2	809.3	2961.8	-1800.7	+381.8
-20.1	+ 6.7	821.5	2465.5	-1788.5	- 114.5
- 7.3	-24.6	834.8	2339.0	-1775.7	-241.0
+ 8.7	+ 4.1	850.3	2678.5	-1759.7	+ 98.5
-20.3	+16.2	878.9	2929.4	-1736.1	+349.4
+18.3	+ 5.9	912.5	2466.3	-1697.5	-113.7
+24.4	- 3.2	918.6	2422.8	-1691.4	-157.2
- 2.4	+ 4.1	944.4	2783.7	-1665.6	+203.7
- 3.5	- 6.3	943.3	3267.5	-1666.7	+687.5
+21.3	- 14.2	968.1	2118.2	-1641.9	-461.8
+24.4	+ 9.7	971.2	2199.5	-1638.8	-380.5
-22.1	- 9.5	977.3	2797.3	-1632.7	+217.3
+24.4	-13.0	1023.8 970.0	3379.4	-1586.2	+799.4
+25.8	-24.4	1025.2	3548.6	-1584.8	+968.6
-11.6	+22.1	1040.4	3502.1	-1569.6	+922.1
+6.5	- 18.5	1058.5	2858.9	-1551.5	+278.9
+ 8.7	- 10.2	1060.7	2640.2	-1549.3	+ 60.2
-24.4	- 8.3	1080.2	2112.3	-1529.8	-467.7
-14.4	+16.2	1090.2	2140.4	-1519.8	-439.6
- 3.2	-25.2	1101.4	2287.0	-1508.6	-293.0
-22.5	- 2.4	1082.1	2422.0	-1527.9	-158.0
-24.6	+ 6.5	1080.0	2465.7	-1530.1	- 114.3
-14.0	+25.2	1090.6	3130.8	-1519.4	+550.8
+19.5	- 1.8	1124.1	3526.0	-1485.9	+946.0
+25.2	+12.2	1129.8	2670.4	-1480.2	+ 90.4
-19.5	+14.6	1137.7	2142.0	-1472.3	-438.0
-15.4	- 18.1	1141.8	2542.9	-1468.2	- 37.1

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..9711

82 2nd

4
28.10 continued March 21, 1897 20 48 78 85

Measures of positions of Stars within 30 degrees of the No. Pole

No. x. y. A. B. C. D

								a+C	B+D	C-a	B-D	52.6×x	52.6×y	
✓	30.	22.8	28.8	20	21	105	110	125	131	+85	−89	1157.2	1472.8	+
✓	31.	22.9	34.8	~~85~~ 0	25	130	108	130	133	+130	−83	1157.2	1788.4	+
✓	31a	22.5	63.7	7.0	2.5	6.0	105	~~130~~ 130	~~125~~ 130	−1.0	~~+80~~ −80	1157.2	3313.8	−
✓	32.	23.8	40.8	20	10	109	120	129	130	+89	−110	1209.8	2104.0	+
✓	33.	23.7	43.2	35	~~115~~ 0	98	19	133	129	+63	+91	1209.8	2261.8	+
✓	34.	23.7	47.6	28	~~52~~ 42	101	85	129	127	+73	−43	1209.8	2472.2	+
✓	35.	23.3	59.0	96	127	31	05	127	132	−65	+122	1209.8	3103.4	−
✓	36.	23.7	60.1	35	120	95	10	130	130	+60	+110	1209.8	3156.0	+
✓	37.	23.6	72.9	44	07	~~85~~ 89	~~121~~ 111	133	128	+45	−114	1209.8	3787.2	+
✓	38.	24.6	27.3	55	~~75~~ 96	70	40	125	130	+15	+50	1262.4	1420.2	+
✓	39.	24.8	32.5	19	60	109	70	128	130	+90	−10	1262.4	1683.2	+
✓	40.	25.0	47.3	0	~~80~~ 99	130	30	130	129	+130	+69	1315.0	2472.2	+
✓	41.	25.1	72.7	115	~~99~~ 30	15	100	130	130	−100	−70	1315.0	3787.2	−
✓	42.	25.3	58.3	99	~~75~~ 95	30	35	129	130	−69	+60	1315.0	3050.8	−
✓	43	25.4	61.0	85	~~128~~ 128	41	02	126	130	−44	+126	1315.0	3208.6	−
✓	44	25.9	57.7	0	~~105~~ 125	130	105	130	130	+130	−80	1315.0	2998.2	+
✓	45.	26.3	25.3	95	~~40~~ 91	38	40	133	131	−57	+51	1367.6	1315.0	−
✓	46.	26.6	25.8	41	~~49~~ 10	89	119	130	129	+48	−109	1367.6	1315.0	+
✓	47	26.3	31.4	91.	64	35	64	126	128	−56	00	1367.6	1630.6	−
✓	48	26.6	31.3	45	~~55~~ 7	85	55	130	130	+40	+20	1367.6	1630.6	+
✓	48a	26.4	54.1	9.1	12.5	49	0.5	131	130	−51	+120	1367.6	2840.4	−
✓	49.	27.0	39.9	121	~~115~~ 15	~~115~~ 75	115	126	130	−116	−100	1420.2	2051.4	−
✓	50.	27.2	26.8	99	~~75~~ 25	30	100	129	125	−69	−75	1420.2	1367.6	−
✓	51.	27.6	52.7	45	~~99~~ 31	85	100	130	131	+40	−69	1420.2	2735.2	+
✓	52.	27.5	55.3	61	~~80~~ 99	65	31	126	130	+04	+68	1420.2	2893.0	+
✓	53.	27.5	64.4	55	~~75~~ 75	72	55	127	130	+17	+20	1420.2	3366.4	+
✓	54.	27.6	64.6	42	~~45~~ 45	89	85	131	130	+47	−40	1420.2	3366.4	+
✓	55.	27.9	64.9	05	~~99~~ 02	125	127	130	129	+120	−125	1420.2	3366.4	+
✓	56.	27.3	70.7	95	~~99~~ 215	35	105	130	130	−60	−80	1420.2	3682.0	−
✓	57.	27.8	70.4	12	69	119	60	131	129	+107	+09	1420.2	3682.0	+

55
25.~~8~~2

3613/28 = 129 3631/28 = 129.6

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

C-a	B-D				
2.03	2.03			-2610	-2580.
+17.3	-18.1	1174.5	1490.9	-1435.5	-1089.1
+26.4	-16.8	11836	18052	-14264	-7748
-20.3	-16.2	1155.2	3330 32976	-1454.8	+4476 +750.0
+18.1	-22.3	1227.9	2126.3	-1382.1	-453.7
+12.8	+18.5	12226	22433	-1387.4	-336.7
+14.8	-8.7	12246	24809	-1385.4	-99.1
-13.2	+24.8	11866	30786	-1413.4	+4986
+12.2	+22.3	12220	31337	-1388.0	+553.7
+9.1	-23.1	12189	38103	-1391.1	+1230.3
+3.0	+10.2	1265.4	14100	-1344.6	-1170.0
+18.3	-2.0	1280.7	16852	-1329.3	-894.8
+26.4	+14.0	13414	24582	-1268.6	-121.8 -1321.2
-20.3	-14.2	1294.7	38014	-1315.3	+1221.4
-14.0	+12.2	1301.0	30386	-1309.0	+458.6
-8.9	+25.6	1306.1	31830	-1303.9	+603.0
+26.4	-16.2	13414	30174	-1268.6	+434.4
-11.6	+10.4	1356.0	13046	-1254.0	-1275.4
+9.7	-22.1	1377.3	1337.1	-1232.7	-1242.9
-11.4	0.0	1356.2	1630.6	-1253.8	-949.4
+8.1	+4.1	13757	1626.5	-1234.3	-953.5
-10.4	+24.4	1357.7	2816.0	-1252.8	+236.0
-23.6	-20.3	1396.7	2071.7	-1213.3	-508.3
-14.0	-15.2	14062	13828	-1203.8	-1197.2
+8.1	-14.0	1428.3	27492	-1181.7	+169.2
+0.8	+13.8	1421.0	28792	-1189.0	+299.2
+3.5	+4.1	1423.7	33623	-1186.3	+782.3
+9.5	-8.1	1429.7	33745	-1180.3	+794.5
24.4 +24.4	-25.4	14226	44 33918	-1187.4	65 +811.8
-12.2	-16.2	1408.0	36982	-1202.0	+1118.2
+21.7	+1.8	1441.9	36802	-1168.1	+1100.2

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..9711

22.40

March 22, 1897

D 4878 85

Measures of positions of stars within 35° of No. Pole.

	No.	x	y	A	B	C	D	a+b	B+D	C-a	B-D	526.6/y	526.6/y	c-a 2×0.3	B-D 2×0.3
√	58.	28.5	23.5	65	60	60	69	125	129	−0.5	−0.9	1472.8	1209.8	−1.0	−1.8
√	59.	28.5	26.4	55	80	71	50	126	130	+1.6	+3.0	1472.8	1367.6	+3.2	+6.1
√	60.	28.1	29.6	120	55	10	75	130	130	−11.0	−2.0	1472.8	1525.4	−22.3	−4.1
√	61.	28.5	29.7	59	35	70	95	129	130	+1.1	−6.0	1472.8	1525.4	+2.2	−12.2
√	62.	28.5	30.7	69	35	60	95	129	130	−0.9	−6.0	1472.8	1578.0	−1.8	−12.2
√	63.	28.7	43.8	30	29	99	100	129	129	+6.9	−7.1	1472.8	2261.8	+14.0	−14.4
√	64.	28.6	44.5	49	61	80	68	129	129	+3.1	−0.7	1472.8	2314.4	+6.3	−1.4
√	65.	28.4	67.4	71	70	55	59	126	129	−1.6	+1.1	1472.8	3524.2	−3.2	+2.2
√	66.	28.5	72.4	65	71	64	58	129	129	−0.1	+1.3	1472.8	3787.2	−0.2	+2.6
√	67.	29.6	43.8	50	25	79	105	129	130	+2.9	+8.0	1525.4	2261.8	+5.9	−16.2
√	68.	29.3	44.4	89	88	40	44	129	132	−4.9	+4.4	1525.4	2314.4	−9.9	+8.9
√	+89° 26− 69.	29.7	44.7	22	22	105	107	127	129	+8.3	−8.5	1525.4	2314.4	+16.8	−17.3
√	70.	29.4	51.8	75	25	54	107	129	132	−2.1	−8.2	1525.4	2682.6	−4.3	−16
√	71.	29.4	57.3	75	85	56	45	131	130	−1.9	+4.0	1525.4	2998.2	−3.9	+8.1
√	72.	29.4	63.0	75	02	55	129	130	131	−2.0	−12.7	1525.4	3313.8	−4.1	−25.8
√	73.	29.6	64.2	40	109	90	22	130	131	+5.0	+8.7	1525.4	3366.4	+10.2	+17.7
√	74.	30.6	25.5	45	61	85	69	130	130	+4.0	−0.8	1578.0	1315.0	+8.1	−1.6
	defect? 75.	30.5	40.3	50	99	79	30	129	129	+2.9	+6.9	1578.0	2104.0	+5.9	+14.0
√	76.	30.9	50.4	04	67	125	62	129	129	+12.1	+0.5	1578.0	2630.0	+24.6	+1.0
√	defect? 77.	30.4	55.4	91	85	38	45	129	130	−5.3	+4.0	1578.0	2893.0	−10.8	+8.1
√	78.	30.8	66.8	11	20	119	110	130	130	+10.8	−9.0	1578.0	3471.6	+21.9	−18.3
√	79.	30.9	67.2	10	111	120	19	130	130	+11.0	+9.2	1578.0	3524.2	+22.3	+18.7
√	80.	30.2	67.4	109	80	20	50	129	130	−8.9	+3.0	1578.0	3524.2	−18.1	+6.1
√	81.	30.4	67.5	71	65	55	65	126	130	−1.6	0.0	1578.0	3524.2	−3.2	0.0
√	82.	30.4	68.2	89	110	40	20	129	130	−4.9	+9.0	1578.0	3576.8	−9.9	+18.3
√	83.	30.5	70.0	55	01	71	129	126	130	+1.6	−12.8	1578.0	3682.0	+3.2	−26.0
√	+89° 12 84.	30.6	74.6	35	39	95	90	130	129	+6.0	−5.5	1578.0	3892.4	+12.2	−11.2 10.4
√	85.	31.3	23.1	100	120	30	10	130	130	−7.0	+9.0 110	1630.6	1209.8	−14.2	+18.3 22.3

23.20

3604 / 28 = 1287 — 3637 / 28 = 1298

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

D			-2610	-2580
.3				
.8	1471.8	12116	-1138.2	-1368.4
6.1	1476.0	13615	-1134.0	-1218.5
4.1	1450.5	15295	-1159.5	-1050.5
2.2	1475.0	15376	-1135.0	-1042.4
2.2	1471.0	15902	-1139.0	- 989.8
144	1486.8	22762	-1123.2	- 303.8
2.4	1479.1	23158	-1130.9	-2642
2.2	1469.6	35220	-1140.4	+9420
2.6	1472.6	37846	-1137.4	+1204.6
6.2	1531.3	22780	-1078.7	- 302.0
.9	1515.5	23055	-1094.5	-274.5
7.3	1542.2	23317	-1067.8	- 248.3
6	1521.1	26992	-1088.9	+1192 ~~868~~
.1	1521.5	2990.1	-1088.5	+ 410.1
5.8	1521.3	33396	-1088.7	+ 759.6 +707.0
7.7	1535.6	33487	-1074.4	+ 768.7
.6	1586.1	13166	-1023.9	-1263.4
4.0	1583.9	20900	-1026.1	- 490.0
.0	1602.6	26290	-1007.4	+ 49.0
.1	1567.2	28849	-1042.8	+304.9
8.3	1599.9	34899	-1010.1	+909.9
18.7	1600.3	35055	-1009.7	+925.5
.1	1559.9	35181	-1050.1	+938.1
0.0	1574.8	35242	-1035.2	+944.2
18.3	1568.1	35585	-1041.9	+978.5
26.0	1581.2	37080	-1028.8	+1128.0 +1075.4
10.4		2.8		
1.2	1590.2	3903~~6~~	-1019.8	+1323.6
3.3		87		92
1.8	1616.4	11~~9~~45	-9936	-1388.5

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971

23.20

March 22, 1897

D 4878

85

Measures of positions of stars within 30° (cont)

	№	x	y	A, B, C, D	A+C	B+D	C−a	B−D	526 p	526 y	C−a x 2.03	B−D x 2.03	
✓	86.	31.9	30.5	05 45 125 86	130	131	+120	−41	1630.6	1578.0	+24.4	−8.3	1
✓	87.	31.8	40.0	15 125 114 05	129	130	+99	+120	1630.6	2104.0	+20.1	+24.4	
✓	88.	31.3	43.7	106 19 22 111	128	130	−84	−92	1630.6	2261.8	−17.1	−18.7	1
✓	89.	31.1	54.8	121 19 10 110	131	129	−111	−91	1630.6	2840.4	−22.5	−18.5	
✓	dbl.? or dif.? 90.	31.4	59.4	89 79 40 51	129	130	−49	+28	1630.6	3103.4	−9.9	+5.7	1
✓	91.	31.4	59.9	81 05 49 125	130	130	−32	−120	1630.6	3103.4	−6.5	−24.4	1
✓	92.	31.3	60.9	101 10 27 120	128	130	−74	−110	1630.6	3156.0	−15.0	−22.3	
✓	93.	31.9	61.9	15 05 115 124	130	129	+100	−119	1630.6	3208.6	+20.3	−24.2	
✓	94.	31.5	71.5	69 61 60 68	129	129	−09	−07	1630.6	3734.6	−1.8	−1.4	1
✓	95.	31.8	71.3	20 89 110 41	130	130	+90	+48	1630.6	3734.6	+18.3	+9.7	
✓	96.	32.0	24.3	−0 90 129 40	129	130	+129	+50	1683.2	1262.4	+26.2	+10.2	
✓	97.	32.4	28.3	80 101 50 29	130	130	−30	+72	1683.2	1472.8	−6.1	+14.6	
✓	98.	32.3	51.7	105 25 24 105	129	130	−81	−80	1683.2	2682.6	−16.4	−16.2	
✓	99.	32.4	56.4	75 70 52 60	127	130	−23	+10	1683.2	2945.6	−4.7	+2.0	1
✓	100.	32.6	65.2	50 109 80 21	130	130	+30	+88	1683.2	3419.0	+6.1	+17.9	
✓	101.	32.9	74.7	05 29 125 100	130	129	+120	−71	1683.2	3892.4	+24.4	−14.4	
✓	102.	33.9	26.4	10 77 120 55	130	132	+110	+22	1735.8	1367.6	+22.3	+4.5	1
✓	+89° 29= 103.	33.6	31.1	39 118 91 14	130	132	+52	+104	1735.8	1630.6	+10.6	+21.1	
✓	104.	33.1	35.4	121 69 05 61	126	130	−116	+08	1735.8	1841.0	−23.5	+1.6	
✓	105.	33.3	36.9	86 08 41 121	127	129	−45	−113	1735.8	1893.6	−9.1	−22.9	1
✓	106.	33.7	71.3	30 95 100 35	130	130	+70	+60	1735.8	3734.6	+14.2	+12.2	
✓	107.	33.7	75.4	31 77 95 50	126	127	+64	+27	1735.8	3945.0	+13.0	+5.5	17
✓	108.	33.9	77.1	10 121 120 09	130	130	+110	+112	1735.8	4050.2	+22.3	+22.7	17
✓	109.	34.2	21.3	100 92 31 37	131	129	−69	+55	1788.4	1104.6	−14.0	+11.2	1
✓	110.	34.5	37.1	59 120 70 10	129	130	+11	+110	1788.4	1946.2	+2.2	+22.3	1
✓	111.	34.4	41.4	71 89 59 41	130	130	−12	+48	1788.4	2156.6	−2.4	+9.7	1
✓	112.	34.6	57.3	41 100 89 29	130	129	+48	+71	1788.4	2998.2	+9.7	+14.4	1
✓	113.	34.3	58.6	99 59 30 71	129	130	−69	−12	1788.4	3050.8	−14.0	−2.4	

3617/28 = 1292 | 3635/28 = 1298

23.50

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj...971L

		-2610.	-2580.	
16550	15863	-9550	-9937	
16507	20796	-9593	-5004	
16135	22805	-9965	-2995	
16081	28889	-10019	+2789	
16207	30977	-9893	+5177	
16671	31278	-9859	+5478	
16166	31783	-9944	+5983	
16509	32328	-9591	+6528	
16288	37360	-9812	+11560	
16489	37249	-9611	+11449	
17094	12522	-9006	-13278	x=-9532
16771	14582	-9329	-11218	
16668	26988	-9432	+1188	
16785	29436	-9315	+3636	
16893	34011	-9207	+8211	
17076	39068	-9024	+13268	
17581	13631	-8519	-12169	
17464	16095	-8636	-9705	
17123	18394	-8977	-7406	
17267	19165	-8833	-6635	
17500	37224	-8600	+11424	
17488	39395	-8612	+13595	
17581	40275	-8519	+14475	
17744	10934	-8356	-14866	
17906	19239	-8194	-6561	
17860	21469	-8240	-4331	
17981	29838	-8119	+4038	
17744	30532	-8356	+4732	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971

38

213.50

March 22, 1897. D 4878 85

Measures of positions of Stars within 30° (cont)

	No.	x	y	a, B, C, D	a+6	B+D	C-a	B-D	52.6 x	52.6 y	C-a ×2.63	B-D ×2.63	
✓	114.	34.7	60.1	34 125 95 05	129	130	+61	+120	1788.4	3156.0	+12.4	+24.4	1
✓	115.	34.4	61.8	77 25 51 107	128	132	-26	-82	1788.4	3208.6	-5.3	-16.6	1
✓	116.	34.8	65.6	19 51 111 79	130	130	+92	-28	1788.4	3419.0	+18.7	-5.7	1
✓	117.	34.4	70.2	76 118 51 11	127	129	-25	+107	1788.4	3682.0	-5.1	+21.7	1
✓	118.	35.2	23.9	105 04 25 125	130	129	-80	-121	1841.0	1209.8	-16.2	-24.6	1
✓	119.	35.3	30.3	86 89 44 41	130	130	-42	+48	1841.0	1578.0	-8.5	+9.7	1
✓	120.	35.5	31.6	59 55 70 75	129	130	+11	-20	1841.0	1630.6 2051.4	+2.2	-4.1	1
✓	121.	35.3	39.4	100 76 30 55	130	131	-70	+21	1841.0	2051.4 2419.6	-14.2	+4.3	1
✓	122.	35.4	46.5	75 61 54 68	129	129	-21	-07	1841.0	2419.6	-4.3	-1.4	1
✓	123.	35.9	61.6	06 40 122 89	128	129	+116	-49	1841.0	3208.6	+23.5	-9.9	1
✓	24.00 124.	35.7	71.8	35 26 95 105	130	131	+60	-79	1841.0	3734.6	+12.2	-16.0	1
~~Harv 29477~~	25.45 125.	35.2	66.9	118 02 12 125	130	127	-106	-123	1841.0	3471.6	-21.5	-25.0	1
✓	126.	35.4	67.0	90 128 40 02	130	130	-50	+126	1841.0	3524.2	-10.2	+25.6	1
✓	127.	36.7	19.2	30 101 99 29	129	130	+69	+72	1893.6	999.4	+14.0	+14.6	1
✓	128.	36.9	18.8	05 10 125 119	130	129	+120	-109	1893.6	946.8	+24.4	-22.1	1
✓	129.	36.3	41.1	89 125 40 05	129	130	-49	+120	1893.6	2156.6	-9.9	+24.4	1
✓	130.	36.5	41.0	71 128 59 03	130	131	-12	+125	1893.6	2156.6	-2.4	+25.4	1
✓	131.	36.4	42.1	87 125 41 04	128	129	-46	+121	1893.6	2209.2	-9.3	+24.6	1
✓	132.	36.7	43.2	32 116 95 14	127	130	+63	+102	1893.6	2261.8	+12.8	+20.7	1
✓	133.	36.3	46.5	99 60 30 69	129	129	-69	-09	1893.6	2419.6	-14.0	-1.8	1
✓	134.	36.4	47.3	41 91 60 39	131	130	-11	+52	1893.6	2472.2	-2.2	+10.6	1
✓	135.	36.4	57.4	78 85 51 45	129	130	-27	+40	1893.6	2998.2	-5.5	+8.1	1
✓	136.	36.6	62.0	50 128 80 02	130	130	+30	+126	1893.6	3261.2	+6.1	+25.6	1
✓	137.	36.1	62.5	112 65 15 67	127	132	-97	+02	1893.6	3261.2	-19.7	+0.4	1
✓	138.	36.5	63.4	61 92 69 36	130	128	+08	+56	1893.6	3313.8	+1.6	+11.4	1
✓	139.	36.4	80.7	75 28 54 101	129	129	-21	-73	1893.6	4208.0	-4.3	-14.8	1
✓	140.	36.6	81.2	45 108 81 25	126	133	+36	+83	1893.6	4260.6	+7.3	+16.8	1
✓	141.	37.2	20.4	60 69 70 60	130	129	+10	+09	1946.2	1052.0	+2.0	+1.8	1

26.5

3614 / 28 = 129.00 — 3636 / 28 = 129.3

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj...971L

		-2610.	-2580.
1800.8	3131.6	-809.2	+551.6
1783.1	3225.2	-826.9	+645.2
1807.1	3424.7	-802.9	+844.7
1783.3	3660.3	-826.7	+1080.3
1824.8	1234.4	-785.2	-1345.6
1832.5	1568.3	-777.5	-1011.7
1843.2	1634.7	-766.8	-945.3
1826.8	2047.1	-783.2	-532.9
1836.7	2421.0	-773.3	-159.0
1864.5	3218.5	-745.5	+638.5
1853.2	3750.6	-756.8	+1170.6
1819.5	3496.6	-790.5	+916.6
1830.8	3498.6	-779.2	+918.6
1907.6	984.8	-602.4	-1595.2
1918.0	968.9	-692.0	-1611.1
1883.7	2132.2	-726.3	-447.8
1891.2	2131.2	-718.8	-448.8
1884.3	2184.6	-725.7	-395.4
1906.4	2241.1	-703.6	-338.9
1879.6	2421.8	-730.4	-158.6
1891.4	2461.6	-718.6	-118.4
1888.1	2990.1	-721.9	+410.1
1899.7	3235.6	-710.3	+655.6
1873.9	3260.8	-736.1	+680.8
1895.2	3301.4	-714.8	+721.4
1889.3	4222.8	-720.7	+1642.8
1900.9	4243.8	-709.1	+1663.8
1948.2	1050.2	-661.8	-1529.8

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..97TL

90

26.5

March 22, 1897. D 48 78 83

Measures of positions of stars within 30° of North Pole (cont.)

No	x	y	A, B, C, D	A+C	B+D	C-a	B-D	52.6 x	52.6 x y	C-a / 2.03 x	B-D / 2.03 x	
✓	142	37.8	20.9 25 10 105 120	130	130	+80	−110	1946.2	1052.0	+16.2	−22.3	1
✓	143	37.4	37.3 81 100 45 30	126	130	−36	+70	1946.2	1946.2	−7.3	+14.2	1
✓	144	37.8	37.8 19 19 110 111	129	130	+91	−92	1946.2	1946.2	+18.5	−18.7	1
✓	145	37.5	38.4 59 79 70 51	129	130	+11	+28	1946.2	1998.8	+2.2	+5.7	1
✓	146	37.6	46.4 44 75 85 56	129	131	+41	+19	1946.2	2419.6	+8.3	+3.9	1
✓	147	37.5	60.4 64 75 65 55	129	130	+01	+20	1946.2	3156.0	+0.2	+4.1	
✓	148	37.8	64.3 21 90 109 40	130	130	+88	+50	1946.2	3366.4	+17.9	+10.2	
✓	149	37.2	64.8 107 25 22 105	129	130	−85	−80	1946.2	3366.4	−17.3	−16.2	1
✓	150	37.5	79.1 61 119 68 10	129	129	+07	+109	1946.2	4055.4	+1.4	+22.1	1
✓	151	38.9	45.6 01 45 126 85	127	130	+125	−40	1998.8	2367.0	+25.4	−8.1	2
✓	152	38.9	48.4 02 82 127 48	129	130	+125	+34	1998.8	2524.8	+25.4	+6.9	2
✓	153	38.8	59.2 15 100 111 30	126	130	+96	+70	1998.8	3103.4	+19.5	+14.2	2
✓	154	38.5	65.3 60.3 60 99 69 31	129	130	+09	+68	1998.8	3419.0 3156.0	+1.8	+13.8	2
✓	155	38.2	76.3 110 102 19 27	129	129	−91	+75	1998.8	3997.6	−18.5	+15.2	
✓	156	39.2	17.8 100 25 29 105	129	130	−71	−80	2051.4	894.2	−14.4	−16.2	2
✓	157	39.9	19.8 10 22 119 108	129	130	+109	−86	2051.4	999.4	+22.1	−17.5	2
✓	158	39.9	26.3 10 81 120 49	130	130	+110	+32	2051.4	1367.6	+22.3	+6.5	2
✓	159	39.2	39.2 100 101 28 29	128	130	−72	+72	2051.4	2051.4	−14.6	+14.6	2
✓	160	39.7	43.9 35 09 91 120	126	129	+56	−111	2051.4	2261.8	+11.4	−22.5	2
✓	161	39.9	50.1 10 125 119 05	129	130	+109	+120	2051.4	2630.0	+22.1	+24.4	2
✓	162	39.7	51.8 31 20 95 109	126	129	+64	−89	2051.4	2682.6	+13.0	−18.1	2
✓	163	39.5	60.1 62 121 66 08	128	129	+04	+113	2051.4	3156.0	+0.8	+22.9	2
✓	164	39.5	78.0 81 128 45 01	126	129	−36	+127	2051.4	4102.8	−7.3	+25.8	2
✓	165	39.6	78.6 49 49 80 81	129	130	+31	−32	2051.4	4102.8	+6.3	−6.5	2
✓	166	40.3	45.3 98 4 32 10 5 28 105	129	130	−81	+66	2104.0	2367.0	−16.4	+13.4	2
✓	167	40.1	49.0 25 9 105 01 12 119 79	130	130	+80	+128	2104.0	2577.4	+16.2	+26.6	2
✓	168	40.8	61.6 119 51 10 79 2	129	130	−109	−28	2104.0	3208.6	−22.1	−5.7	2
✓	169	40.8	61.6 98 11 32 189 4	130	130	−66	−48	2104.0	3208.6	−13.4	−9.7	2

3598 / 25 = 143.9 — 3835 / 28 = 136.9

2.3.96

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

		-2610.	-2580.
1962.4	1074.3	-647.6	-1505.7
1938.9	1932.0	-671.1	-648.0
1964.7	1964.9	-648.3	-615.1
1948.4	1993.1	-661.6	-586.9
1954.5	2415.7	-655.5	-164.3
1946.4	3151.9	-663.6	+571.9
1964.1	3356.2	-645.9	+776.2
1928.9	3382.6	-681.1	+802.6
1947.6	4133.3	-662.4	+1553.3
2024.2	2375.1	-585.8	-204.9
2011.3	2528.5	-585.8	-62.1
2018.3	3089.2	-591.7	+509.2
2000.6	3142.2	-609.4	+562.2 +825.2
1980.3	3982.4	-629.7	+1402.4
2037.0	910.4	-573.0	-1669.6
2073.5	1016.9	-536.5	-1563.1
2073.7	1361.1	-536.3	-1218.9
2036.8	2036.8	-573.2	-543.2
2062.8	2284.3	-546.2	-295.7
2073.5	2605.6	-536.5	+25.6
2057.8	2691.5	-545.6	+120.7
2052.2	3133.1	-557.8	+553.1
2044.1	4077.0	-565.9	+1497.0
2057.7	4109.3	-552.3	+1529.3
2187.6	2357.6	-522.4	-226.4
2120.2	2551.4	-489.8	-286
2081.9	3214.3	-528.1	+634.3
2090.6	3218.3	-519.4	+638.3

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..9711

92

23.12

March 23, 1897. 20 4878 85

Measures of positions of Stars within 30° of the North Pole (cont.)

	No	x	y	a	B	C	D	A+C	B+D	C-a	B-D	52.6 x	52.6 x	C-a	B-D
												x	y	2.03	2.03
✓	170	41.0	64.5	0	58	130	75	130	133	+130	−17	2156.6	3366.4	+26.4	−3.5
✓	171	40.9	66.2	01	105	129	25	130	130	+128	+80	2104.0	3471.6	+26.0	+16.2
✓	172	40.6	69.3	50	80	79	71	129	131	+29	+49	2104.0	3629.4	+5.9	+9.9
✓	173	40.5	74.0	55	124	75	88	130	132	+20	+116	2104.0	3892.4	+4.1	+23.5
✓	174	40.7	74.6	1	48	129	84	130	132	+128	−36	2104.0	3892.4	+26.0	−7.3
✓	175	40.4	82.4	95	70	35	60	130	130	−60	+10	2104.0	4313.2	−12.2	+2.0
✓	176	41.8	17.2	125	109	5	20	130	129	−120	+89	2156.6	894.2	−24.4	+18.1
✓	177	41.9	17.4	5	68	122	61	127	129	+117	+07	2156.6	894.2	+23.8	+1.4
✓	178	41.5	30.6	69	49	61	80	130	129	−08	−31	2156.6	1578.0	−1.6	−6.3
✓	179	41.4	30.7	80	35	50	95	130	130	−30	−60	2156.6	1578.0	−6.1	−12.2
✓	180	41.1	31.1	121	125	9	5	130	130	−112	+120	2156.6	1630.6	−22.7	+24.4
✓	181	41.3	32.4	110	72	20	55	130	127	−90	+17	2156.6	1683.2	−18.3	+3.5
✓	182	41.7	32.4	21	85	109	47	130	132	+88	+38	2156.6	1683.2	+17.9	+7.7
✓	183	41.8	36.2	01	110	129	20	130	130	+128	+90	2156.6	1893.6	+26.0	+18.3
✓	184	41.3	45.0	91	129	39	1	130	130	−52	+128	2156.6	2367.0	−10.6	+26.0
✓	185	41.8	47.9	15	5	112	125	127	130	+97	−120	2156.6	2472.2	+19.7	−24.4
✓	186	41.6	61.5	39	62	91	68	130	130	+52	−06	2156.6	3208.6	+10.6	−1.2
✓	187	41.5	73.8	60	19	70	110	130	129	+10	−91	2156.6	3839.8	+2.0	−18.5
✓	188	41.4	82.9	69	4	60	126	129	130	−09	−122	2156.6	4313.2	−1.8	−24.8
✓	189	42.9	22.8	0	25	130	105	130	130	+130	−80	2209.2	1157.2	+26.4	−16.2
✓	190	42.6	26.4	40	79	91	51	131	130	+51	+28	2209.2	1367.6	+10.4	+5.7
✓	191	42.9	27.2	8	64	121	64	129	128	+113	00	2209.2	1420.2	+22.9	0.0
✓	192	42.7	31.9	30	5	100	125	130	130	+70	−120	2209.2	1630.6	+14.2	−24.4
✓	193	42.4	47.5	71	70	58	60	129	130	−13	+10	2209.2	2472.2	−2.6	+2.0
✓	194	42.4	48.7	82	39	45	90	127	129	−37	−51	2209.2	2524.8	−7.5	−10.4
✓	195	42.1	49.2	120	100	10	30	130	130	−110	+70	2209.2	2577.4	−22.3	+14.2
✓	196	42.4	51.4	78	88	51	42	130	130	−28	+46	2209.2	2682.6	−5.7	+9.3
✓	197	42.4	51.9	75	4	55	125	130	129	−20	−121	2209.2	2682.6	−4.1	−24.6

24.00

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

		−2610	−2580	
2183.0	33699	−4270	+789.9	x = 479.6
2130.0	34554	−4800	+8754	
2109.9	3619.5	−5001	+10395	~~x = 479.6~~
2108.1	3868.9	−5019	+12889	
2130.0	3899.7	−4800	+1319.7	
2091.8	4311.2	−5182	+1731.2	
2132.2	876.1	−4778	−17039	
2180.4	8928	−4296	−16872	
2155.0	1584.3	−4550	−9957	
2150.5	1590.2	−4595	−9898	
2133.9	1606.2	−4761	−9738	
2138.3	1679.7	−4717	−9003	
2174.5	1675.5	−4355	−9045	
2182.6	18753	−4274	−7047	
2146.0	2341.0	−4640	−2390	
2176.3	2496.6	−4337	−834	
2167.2	3209.8	−4428	+6298	
2158.6	3858.3	−4514	+1278.3	
21548	4338.0	−4552	+1758.0	
2235.6	1173.4	−3744	−14066	
2219.6	1361.9	−3907	−1218.1	
2232.1	1420.2	−3779	−1159.8	
2223.4	1655.0	−3866	−9250	
2207.9 (6.6)	2478.2 (0)	−4034	−1098	
2201.7	25352	−4083	−448	
2286.9	2563.2	−4231	−168	
2203.5	2673.3	−4065	+933	
2207.2 (5.1)	~~2694.7~~ 2707.2	−4049	+127.2	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..9711

24.00

March 23, 1897. D4878

Measures of positions of Stars within 30° of North Pole (cont.)

	No.	x	y	A, B, C, D.	A+C	B+D	C-a	B-D	52.6 × x	52.6 × y	C-a × 2.03	B-D × 2.03
√	198	42.5	56.2	60 108 70 27	130	132	+ 10	+ 84	2209.2	2945.6	+2.0	+17.0
√	199	42.6	56.4	35 70 95 60	130	130	+ 60	+ 10	2209.2	2945.6	+12.2	+2.0
√	200	42.3	60.5	104 65 25 65	129	130	− 79	00	2209.2	3156.0	−16.0	0.0
√	201	42.7	64.7	29 31 102 98	131	129	+ 73	− 67	2209.2	3366.4	+14.8	−13.6
√	202	42.6	70.8	50 21 80 109	130	130	+ 30	− 88	2209.2	3682.0	+6.1	−17.9
√	203	42.6	73.6	45 47 85 82	130	129	+ 40	− 35	2209.2	3839.8	+8.1	−7.1
√	204	42.8	74.7	19 29 110 100	129	129	+ 91	− 71	2209.2	3892.4	+18.5	−14.4
√	205	43.3	25.7	99 40 31 89	130	129	− 68	− 49	2261.8	1315.0	−13.8	−9.9
√	206	43.4	27.3	90 ~~55~~ 99 40 31	130	130	− 50	+ 68	2261.8	1420.2	−10.2	+13.8
√	207	43.7	29.3	25 85 105 46	130	131	+ 80	+ 39	2261.8	1525.4	+16.2	+7.9
√	208	43.3	37.4	89 75 40 55	129	130	− 49	+ 20	2261.8	1946.2	−9.9	+4.1
√	209	43.7	38.8	40 15 89 115	129	130	+ 49	− 100	2261.8	1998.8	+9.9	−20.3
√	210	43.7	39.6	25 51 101 79	126	130	+ 76	− 28	2261.8	2051.4	+15.4	−5.7
√	211	43.3	49.4	98 79 31 50	129	129	− 67	+ 29	2261.8	2577.4	−13.6	+5.9
√	212	43.8	60.3	19 89 110 41	129	130	+ 91	+ 48	2261.8	3156.0	+18.5	+9.7
√	213	43.3	41.6	99 48 30 81	129	129	− 69	− 33	2261.8	3734.6	−14.0	−6.7
√	214	43.5	82.1	52 114 75 15	127	129	+ 23	+ 99	2261.8	4313.2	+4.7	+20.1
√	215	44.8	25.7	22 35 108 95	130	130	+ 86	− 60	2314.4	1315.0	+17.5	−12.2
√	216	44.6	26.1	45 122 82 8	127	130	+ 37	+ 114	2314.4	1367.6	+7.5	+23.1
√	217	44.8	27.1	12 79 119 50	131	129	+ 107	+ 29	2314.4	1420.2	+21.7	+5.9
				1.5 12.0 11.5 1.0	130	130	+ 100	+ 100			+20.3	+22.3
√	218	44.2	35.2	105 110 2 120	126	130	− 84	+ 90	2314.4	1841.0	−17.1	+18.3
√	219	44.6	39.3	51 98 79 32	130	130	+ 28	+ 66	2314.4	2051.4	+5.7	+13.4
√	b 220	44.6	44.3	49 98 80 32	129	130	+ 31	+ 66	2314.4	2314.4	+6.3	+13.4
√	221	44.2	51.0	110 0 20 130	130	130	− 90	− 130	2314.4	2682.6	−18.3	−26.4
√	222	44.1	52.4	0 71 130 59	130	130	+ 130	+ 12	2314.4	2735.2	+26.4	+2.4
√	223	44.9	58.6	2 49 128 80	130	129	+ 126	− 31	2314.4	3050.8	+25.6	−6.3
√	224	44.3	59.7	91 21 35 109	126	130	− 56	− 88	2314.4	3103.4	−11.4	−17.9
√	24.25 225	44.5	83.4	55 80 75 50	130	130	+ 20	+ 30	2314.4	4365.8	+4.1	+6.1

v. page 207.

3616/28 = 1291 3634/24 = 1298

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

		-2610.	-2580.	
2211.2	2928.6	-3988	+348.6	
2221.4	2943.6	-3886	+3636	
2193.2	3156.0	-4168	+576.0	
2224.0	3352.8	-386.0	+800.0	
2215.3	3699.9	-3947	+1119.9	
2214.3	3846.9	-3927	+1266.9	
2227.7	39068	-382.3	+1326.8	
2248.0	1.3249	-3620	-1255.1	
2251.6	14064	-3584	-11736	
2278.0	15275	-3320	-1052.5	
2251.9	19421	-358.1	-637.9	
2271.7	2019.1	-338.3	-560.9	
2277.2	2057.1	-3328	-522.9	
2248.2	2571.5	-3618	-85	
2280.3	3146.3	-329.7	+566.3	
22478	3741.3	-362.2	+1161.3	
22665	42931	-343.5	+17131	
2331.9	13272	-278.1	-12528	
2321.9	13445	-288.1	-1235.5	
23361	14143	-273.9	-11657	
2334.7	13979	-241.3	-1182.1	
2297.3	1822.7	-3127	-757.3	
2320.1	2038.0	-289.9	-5420	
2317.5	2307.8	-289.3	-279.0	
2296.1	2709.0	-3139	+129.0	-526 +764 sub 1 diag.
2340.8	27328	-269.2	+152.8	x = -321.8
2340.0	30571	-270.0	+4771	
2303.0	31213	-3070	+541.3	
2318.5	43597	-291.5	+1779.7	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

22.55

March 25, 1897. D4878 85

Measures of Positions of Stars within 30° of North Pole (cont.)

	No.	x	y	A,B,C,D	a+c	B+D	C-a	B-D	x×52.6	y×52.6	C-a ×2.03	B-D ×2.03
✓	226	45.5	25.7	58 29 71 100	129	129	+13	−71	2367.0	1315.0	+26	−144
✓	227	45.5	29.6	55 41 71 88	126	129	+16	−47	2367.0	1525.4	+32	−95
✓	228	45.2	43.2	119 110 10 20	129	130	−109	+90	2367.0	2261.8	−221	+183
✓	229	45.2	43.4	128 81 02 49	130	130	−126	+31	2367.0	2261.8	−256	+63
✓	230	45.2	50.5	108 55 21 75	129	130	−87	−20	2367.0	2630.0	−177	−41
✓	231	45.1	51.2	0 100 13031	130	131	+130	+69	2367.0	2682.6	+264	+140
✓	232	45.1	53.7	119 30 11 100	130	130	−108	−70	2367.0	2787.8	−219	−142
✓	233	45.2	70.6	115 31 15 98	130	129	−100	−67	2367.0	3682.0	−203	−136
✓	234	45.4	70.9	81 04 49 125	130 129	129	−32	−121	2367.0	3682.0	−65	−246
✓	235	45.6	73.7	39 31 92 90	131	121	+53	−59	2367.0	3839.8	+108	−120
✓	236	45.9	74.8	01 25 129 105	130	130	+128	−80	2367.0	3892.4	+260	−162
✓	237	45.6	79.8	48 20 85 110	133	130	+37	−90	2367.0	4155.4	+75	−183
✓	238	46.6	16.0	39 129 90 01	129	130	+51	+128	2419.6	841.6	+104	+260
✓	239	46.4	18.7	75 36 55 91	130	127	−20	−55	2419.6	946.8	−41	−112
✓	240	46.2	19.6	115 40 14 90	129	130	−101	−50	2419.6	999.4	−205	−102
✓	241	46.5	26.5	50 60 80 71	130	131	+30	−11	2419.6	1367.6	+61	−22
✓	242	46.4	27.5	91 60 39 70	130	130	−52	−10	2419.6	1420.2	−106	−20
✓	243	46.6	27.7	39 35 90 92	129	127	+51	−57	2419.6	1420.2	+104	−116
✓	244	46.4	28.6	75 49 52 80	127	129	−23	−31	2419.6	1472.8	−47	−63
✓	245	46.7	37.0	29 1 99 129	128	130	+70	−128	2419.6	1946.2	+142	−260
✓	246	46.4	59.6	79 45 50 85	129	130	−29	−40	2419.6	3103.4	−59	−81
✓	247	46.9	69.3	11 90 118 40	129	130	+107	+50	2419.6	3629.4	+217	+102
✓	248	46.3	74.2	95 109 32 20	127	129	−63	+89	2419.6	3892.4	−128	+181
✓	249	46.8	75.4	11 71 118 57	129	129	+107	+15	2419.6	3945.0	+217	+30
✓	250	46.2	83.3	109 90 20 40	129	130	−89	+50	2419.6	4365.8	−181	+102
✓	251	47.6	17.4	49 92 80 38	129	130	+31	+54	2472.2	894.2	+63	+110
✓	252	47.4	17.6	90 40 39 89	129	129	−51	−49	2472.2	894.2	−104	−99
✓	253	47.4	28.6	75 40 51 89	126	129	−24	−49	2472.2	1472.8	−49	−99

+89° 87' = 2-

2-

passimod tube 65.3

23.20

B615 / 28 = 1291

3688 / 28 = 1292

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

		-2610.	-2580	
2369.6	13294	- 240.4	-12506	
2370.2	15349	- 239.8	-10451	
2344.9	22436	-265.1	-336.4	
2341.4	22555	- 268.6	- 324.5	
2349.3	26259	- 260.7	+ 54.1	
2393.4	26686	- 216.6	+ 88.6	x = -269.2
2345.1	28020	- 264.9	+ 222.0	
2346.7	36956	- 263.3	+ 1115.6	
2360.5	37066	- 249.5	+ 1126.6	
2377.8	38518	- 232.2	+ 1271.8	
2393.0	39086	- 217.0	+ 1328.6	
2374.5	41737	- 235.5	+ 1593.7	
2430.0	8156	- 180.0	- 1764	
2415.5	9580	- 194.5	- 1622.0	
2399.1	10096	- 289.9	- 1570.4	
2425.7	13698	- 184.3	- 1210.2	
2409.0	14222	- 201.0	- 1157.8	
2430.0	14318	- 180.0	- 1148.2	
24149	14791	- 195.1	- 1100.9	
2405.4	19722	- 204.6	- 607.8	y = -660.4
2413.7	31115	- 1963	+ 531.5	
2397.9	36192	- 2021	+ 1039.2	+ 828.8 using Est y = 65.
24068	38743	- 2032	+ 12943	
2429.1	39420	- 180.9	+ 1362.0	
2401.5	43556	- 208.5	+ 1775.6	
24785	8832	- 131.5	- 1696.8	
24618	9041	- 1482	- 1675.9	
24673	14827	- 142.7	- 1097.3	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..9711

98

85

23.20

March 25, 1897

D 4878

No. x y A B C 20. Measures of Positions of Stars within 38° of No. Pole (Cont.)

									a+c	B+D	C-a	B-D	x 52.6	y x 52.6	c-a x 2.03	B-D x 2.03
✓	254	47.2	32.3	110	91	19	39	129	130	-91	+52		2472.2	1683.2		
✓	255	47.6	34.4	38	85	90	45	128	130	+52	+40	2472.2	1788.4		-18.5	+10.6
✓	256	47.5	44.6	55	50	74	79	129	129	+19	-29	2472.2	2314.4		+10.6	+ 8.1
✓	257	47.6	45.5	40	64	90	69	130	133	+50	-05	2472.2	2367.0		+ 3.9	- 5.9
✓	258	47.2	47.3	108	100	20	30	128	130	-88	+70	2472.2	2472.2		+10.2	- 1.0
✓	259	47.7	48.1	31	121	98	9	129	130	+67	+112	2472.2	2524.8		-17.9	+14.2
✓	260	47.5	51.1	55	128	71	01	126	129	+16	+127	2472.2	2682.6		+13.6	+22.7
✓	261	47.6	55.8	45	10	95	120	130	130	+60	-110	2472.2	2893.0		+ 3.2	+25.8
✓	262	47.9	63.3	19	97	114	34	133	131	+95	+63	2472.2	3313.8		+12.2	-22.3
✓	263	47.5	75.5	61	60	69	70	130	130	+08	-10	2472.2	3945.0		+19.3	+12.8
✓	264	47.4	82.6	81	52	45	78	126	130	-36	-26	2472.2	4313.2		+ 1.6	- 2.0
✓	265	48.2	26.4	105	79	21	50	126	129	-84	+29	2524.8	1367.6		- 7.3	- 5.3
✓	266	48.5	31.5	69	60	61	70	130	130	-08	-10	2524.8	1630.6		-17.1	+ 5.9
✓	267	48.3	40.3	95	90	31	40	126	130	-64	+50	2524.8	2104.0		- 1.6	- 2.0
✓	268	48.4	49.6	77	48	52	82	129	130	-25	-34	2524.8	2577.4		-13.0	+10.2
✓	269	48.6	61.4	39	85	91	45	130	130	+52	+40	2524.8	3208.6		- 5.1	- 6.9
✓	270	48.4	65.2	75	105	57	25	126	130	-24	+80	2524.8	3419.0		+10.6	+ 8.1
✓	271	48.2	80.3	114	99	15	31	129	130	-99	+68	2524.8	4208.0		- 4.9	+16.2
✓	272	49.6	16.4	42	75	89	55	131	130	+47	+20	2577.4	841.6		-20.1	+13.8
✓	273	49.3	20.7	91	30	39	100	130	130	-52	-70	2577.4	1052.0		+ 9.5	+ 4.1
✓	274	49.4	25.5	90	60	40	70	130	130	-50	-10	2577.4	1315.0		-10.6	-14.2
✓	275	49.9	37.7	9	36	120	92	129	128	+111	-56	2577.4	1946.2		-10.2	- 2.0
✓	276	49.6	39.4	40	88	89	45	129	133	+49	+43	2577.4	2051.4		+22.5	-11.4
✓	277	49.1	40.6	122	35	6	95	128	130	-116	-60	2577.4	2104.0		+ 9.9	+ 8.7
✓	278	49.4	61.7	81	80	48	100	129	130	-33	-70	2577.4	3208.6		-23.5	-12.2
✓	279	49.7	77.8	31	11	99	119	130	130	+68	+108	2577.4	4050.2		- 6.7	-14.2
✓	280	49.5	79.3	61	105	68	25	129	130	+07	+85	2577.4	4155.4		+13.8	+21.9
✓	281	50.4	19.4	92	81	40	50	132	131	-52	+31	2630.0	999.4		+ 1.4	+17.3
✓	282	50.2	25.6	110	35	19	95	129	130	-91	-60	2630.0	1315.0		-10.6	+ 6.3
									3739		3773				-18.5	-12.2

23.45

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phaet.proj..971L

		-2610.	-2580.
2453.7	1672.6	-156.3	-907.4
2482.8	1780.3	-127.2	-799.7
2476.1	2320.3	-133.9	-259.7
2482.4	2368.0	-127.6	-212.0
2454.3	2458.0	-155.7	-122.0
2485.8	2502.1	-124.2	-77.9
2475.4	2656.8	-134.6	+76.8
2484.4	2915.3	-125.6	+335.3
2491.5	3301.0	-118.5	+721.0
2473.8	3947.0	-136.2	+1367.0
2464.9	4318.5	-145.1	+1738.5
2507.7	1361.7	-102.3	-1218.3
2523.2	1632.6	-86.8	-947.4
2511.8	2093.8	-98.2	-486.2
2519.7	2584.3	-90.3	+4.3
2535.4	3200.5	-74.6	+620.5
2519.9	3402.8	-90.1	+822.8
2504.7	4194.2	-105.3	+1614.2
2586.9	837.5	-23.1	-1742.5
2566.8	1066.2	-43.2	-1513.8
2567.2	1317.0	-42.8	-1263.0
2599.9	1957.6	-10.1	-622.4
2587.3	2042.7	-22.7	-537.3
2553.9	2116.2	-56.1	-463.8
2570.7	3227.8	-39.3	+647.8
2591.2	4028.3	-18.8	+1448.3
2578.8	2738.1	-31.2	+158.1
2619.4	993.1	+9.4	-1586.9
2611.5	1327.2	+1.5	-1252.8

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..9711

100

23.145

March 25, 1897. D4878 85

Measures of positions of Stars within 30° of North Pole (cont.)

	No.	x	y	A.	B.	C	D	a+c	B+D	C-a	B-D	x ×52.6	y ×52.6	C-a ×2.03	B-D ×2.23
✓	286	50.3	27.2	105	125	24	5	129	130	-81	+120	2630.0	1420.2	-164	+244
✓	284	50.9	29.3	9	101	120	29	129	130	+111	+72	2630.0	1525.4	+225	+146
✓	285	50.3	29.4	105	85	25	45	130	130	-80	+40	2630.0	1525.4	-162	+81
✓	286	50.4	34.4	85	89	46	41	131	130	-39	+48	2630.0	1788.4	-79	+97
✓	287	50.5	48.4	58	89	71	41	129	130	+13	+48	2630.0	2261.8	+26	+97
✓	288	50.4	47.9	90	2	39	127	129	129	-51	-125	2630.0	2472.2	-104	-254
✓	289	50.6	52.3	45	100	85	29	130	129	+40	+71	2630.0	2735.2	+81	+144
✓	290	50.4	61.8	91	12	39	118	130	130	-52	-106	2630.0	3208.6	-106	-215
✓	291	50.5	84.2	65	110	65	20	130	130	00	+90	2630.0	4418.4	0.0	+183
✓	292	51.1	19.9	120	5	10	128	130	132	-110	-122	2682.6	999.4	-223	-248
✓	293	51.2	33.8	110	10	20	119	130	129	-90	-109	2682.6	1735.8	-183	-221
✓	294	51.8	89.7	14	29	115	100	129	129	+101	-71	2682.6	2051.4	+205	-144
✓	295	51.4	64.2	70	110	60	19	130	129	-10	+91	2682.6	3366.4	-20	+185
✓	296	51.9	70.5	10	54	119	78	129	132	+109	-24	2682.6	3682.0	+221	-49
✓	297	51.7	74.9	31	9	99	120	130	129	+68	-111	2682.6	3892.4	+138	-226
✓	298	52.5	17.7	70	39	60	92	130	131	-10	-53	2735.2	894.2	-20	-108
✓	299	52.1	32.1	123	120	7	11	130	131	-116	+109	2735.2	1683.2	-235	+221
✓	300	52.5	40.8	59	13	71	117	130	130	+12	-104	2735.2	2104.0	+24	-211
✓	301	52.6	44.5	49	60	81	69	130	129	+32	-09	2735.2	2317.4	+65	-18
✓	302	52.4	52.5	74	60	56	70	130	130	-18	-10	2735.2	2735.2	-37	-20
✓	303	52.5	52.7	53	35	76	94	129	129	+23	-59	2735.2	2735.2	+47	+120
✓	304	52.8	58.6	11	44	119	87	130	131	+108	-43	2735.2	3050.8	+219	-87
✓	305	52.4	63.9	78	4	52	126	130	130	-26	-122	2735.2	3313.8	-53	-248
✓	306	52.8	69.9	19	7	109	124	128	131	+90	-117	2735.2	3629.4	+183	-238
✓	307	53.5	19.1	67	126	61	4	128	130	-06	+122	2787.8	999.4	-12	+248
✓	308	53.4	22.9	81	01	49	128	130	129	-32	-127	2787.8	1157.2	-65	-258
✓	309	53.7	22.9	26	3	105	126	131	129	+79	-123	2787.8	1157.2	+160	-250
✓	310	53.8	28.6	21	57	108	74	129	131	+87	-17	2787.8	1472.8	+177	-35

24.00
March 26, 1897
22.25

22.40

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phaet.proj..971L

		−2610	−2580
2613.6	1395.8	+ 3.6	−1184.2
2652.5	1510.8	+ 42.5	− 1069.2
2613.8	1517.3	+ 3.8	− 1062.7
2622.1	1778.7	+ 12.1	− 801.3
2632.6	2252.1	+ 22.6	− 327.9
2619.6	2497.6	+ 9.6	− 82.4
2638.1	2720.8	+ 28.1	+ 140.8
2619.4	3230.1	+ 9.4	+ 650.1
2630.0	4400.1	+ 20.0	+ 1820.1
2660.3	1024.2	+ 50.3	* 1555.8
2664.3	1757.9	+ 54.3	− 822.1
2703.1	2065.8	+ 93.1	− 514.2
2680.6	3347.9	+ 70.6	+ 767.9
2704.7	3686.9	+ 94.7	+ 1106.9
2696.4	3914.9	+ 86.4	+ 1334.9
2733.2	965.0	+ 123.2	− 1615.0
2711.7	1661.1	+ 101.7	− 918.9
2737.6	2125.1	+ 127.6	− 454.9
2741.7	2316.2	+ 131.7	− 263.8
2731.5	2737.2	+ 121.5	+ 157.2
2739.9	2747.2	+ 129.9	+ 167.2
2757.1	3059.5	+ 147.1	+ 479.5
2729.9	3338.6	+ 119.9	+ 758.6
2753.5	3653.2	+ 143.5	+ 1073.2
2786.6	974.6	+ 176.6	− 1605.4
2781.3	11830	+ 171.3	− 1397.0
2803.8	11822	+ 193.8	− 1397.8
2805.5	1476.3	+ 1955	− 1103.7

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..9711

102

22.40

March 26, 1897

D4878.

Measures of positions of Stars within 30° of No. Pole (cont)

	No.	x	y	A.	B.	6.	70.	a+c	B+D	C-a	B-D	X x 52.6	Y x 52.6	C-a x 2.03	B-D x 2.03
✓	311	53.6	31.3	51	100	77	30	128	130	+26	+70	2787.8	1630.6	+5.3	+14.2
✓	312	53.3	37.7	99	21	30	108	129	129	-69	-87	2787.8	1946.2	-14.0	-17.7
✓	313	53.5	58.6	63	46	67	84	129	130	+04	-38	2787.8	3050.8	+0.8	-7.7
✓	314	53.2	65.8	117	11	11	120	128	131	-108	-109	2787.8	3419.0	-21.9	-22.1
✓	315	53.4	66.7	99	23	50	108	129	131	-29	-85	2787.8	3471.6	-5.9	-17.3
✓	316	53.3	71.8	104	17	26	113	130	130	-78	-96	2787.8	3734.6	-15.8	-19.5
✓	317	53.3	77.4	101	87	29	41	130	128	-72	+46	2787.8	4050.2	-14.6	+9.3
✓	318	53.3	80.2	106	117	21	12	127	129	-85	+105	2787.8	4208.0	-17.3	+21.3
✓	319	53.4	80.4	74	86	53	45	127	131	-21	+41	2787.8	4208.0	-4.3	+8.3
✓	320	53.5	81.4	72	80	57	49	129	129	-15	+31	2787.8	4260.6	-3.0	+6.3
✓	321	53.5	82.6	71	48	57	81	128	129	-14	-33	2787.8	4313.2	-2.8	-6.7
✓	322	53.1	82.7	123	24	7	106	130	130	-116	-82	2787.8	4313.2	-23.5	-16.6
✓	323	53.3	83.0	114	3	15	127	129	130	-99	-124	2787.8	4365.8	-20.1	-25.2
✓	324	53.5	83.5	71	193	59	64	130	257	-12	+129	2787.8	4365.8	-2.4	+26.2
				7.0	6.5	6.0	6.5	130	130	-10	0.0			-2.0	0.0
✓	325	54.3	25.6	96	39	33	92	129	131	-63	-53	2840.4	1315.0	-12.8	-10.8
✓	326	54.9	33.2	6	102	123	26	129	128	+117	+76	2840.4	1735.8	+23.8	+15.4
✓	327	54.8	38.2	23	114	107	16	130	130	+84	+98	2840.4	1998.8	+17.1	+19.9
✓	328	54.7	42.1	30	124	100	6	130	130	+70	+118	2840.4	2209.2	+14.2	+24.0
✓	329	54.3	49.4	109	80	20	50	129	130	-89	+30	2840.4	2577.4	-18.1	+6.1
✓	330	54.1	54.5	124	70	4	59	128	129	-120	+11	2840.4	2840.4	-24.4	+2.2
✓	331	54.4	59.1	76	126	53	03	129	129	-23	+123	2840.4	3103.4	-4.7	+25.0
✓	332	54.6	63.5	39	49	88	70	127	129	+49	-11	2840.4	3313.8	+9.9	-2.2
✓	333	54.4	68.4	84	96	45	34	129	130	-39	+62	2840.4	3576.8	-7.9	+12.6
✓	334	54.6	70.1	37	126	92	03	129	129	+55	+123	2840.4	3682.0	+11.2	+25.0
✓	335	54.5	73.8	56	13	73	114	129	127	+17	-101	2840.4	3839.8	+3.5	-20.5
✓	336	54.3	78.4	97	80	31	50	128	130	-66	+30	2840.4	4102.8	-13.4	+6.1
✓	337	54.5	82.7	62	27	67	103	129	130	+05	-76	2840.4	4313.2	+1.0	-15.4
✓	338	55.4	19.7	89	30	41	100	130	130	-48	-70	2893.0	999.4	-9.7	-14.2

23.05

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

		-2610.	-2580.
2793.1	16164	+183.1	- 963.6
2773.8	19639	+163.8	- 616.1
2788.6	30585	+178.6	+ 478.5
2768.9	34411	+158.9	+ 861.1
2781.9	34889	+171.9	+ 908.9
2772.0	37541	+162.0	+1174.1
2773.2	40409	+163.2	+1460.9
2770.5	41867	+160.5	+1606.7
2783.5	41997	+173.5	+1619.7
2784.8	42543	+174.8	+1674.3
2785.0	43199	+175.0	+1739.9
2764.3	43298	+154.3	+1749.8
2767.7	43910	+157.7	+1811.0
2785.4	43396	+175.4	+1759.6
2785.8	43658	+175.8	+1785.8
2827.6	13258	+217.6	-1254.2
2864.2	17204	+254.2	- 859.6
2857.5	19789	+247.5	- 601.1
2854.6	21852	+244.6	- 394.8
2822.3	25713	+212.3	- 8.7
2816.0	28382	+206.0	+ 258.2
2835.7	30784	+225.7	+ 498.4
2850.3	33160	+240.3	+ 736.0
2832.5	35642	+222.5	+ 984.2
2851.6	36570	+241.6	+1077.0
2843.9	38603	+233.9	+1280.3
2827.0	40967	+217.0	+1516.7
2841.4	43286	+231.4	+1748.6
2883.3	10136	+273.3	-1566.4

$y = +1758.4 \quad (B - 10 = .9)$

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..97IL

85

23.05

March 26, 1897 D 4878

Measures of positions of Stars within 30° of North Pole (cont.)

	No.	x	y	A.	B.	C.	D.	a+c	B+D	c-a	B-D	x × 52.6	y × 52.6	c-a ×2.03	B-D ×2.03
dll. ?	339	55.5	19.2	73	120	56	10	129	130	-17	+110	2893.0	999.4	- 3.5	+22.3
		55.5	19.3	45	114	55	17	130	131	-20	+ 97	2893.0	999.4	- 4.1	+ 19.7
√	340	55.9	29.9	10	3	120	127	130	130	+110	-124	2893.0	1525.4	+22.3	-25.2
√	341	55.4	32.4	74	81	56	49	130	130	-18	+32	2893.0	1683.2	- 3.7	+ 6.5
√	342	55.7	37.4	29	89	101	41	130	130	+72	+48	2893.0	1946.2	+14.6	+9.7
√	343	55.6	40.6	49	50	80	80	129	130	+31	-30	2893.0	2104.0	+ 6.3	- 6.1
√	344	55.3	55.3	96	100	33	30	129	130	-63	+70	2893.0	2893.0	-12.8	+14.2
√	345	55.4	57.9	80	04	49	126	129	130	-31	-122	2893.0	2998.2	- 6.3	-24.8
√	346	55.3	61.4	98	79	32	50	130	129	-66	+29	2893.0	3208.6	-13.4	+5.9
√	347	55.8	72.2	14	110	116	19	130	129	+102	+91	2893.0	3787.2	+20.7	+18.5
23.15 March 28, 1897. 22.40 √	348	56.9	21.5	5	59	124	72	129	131	+119	-13	2945.6	1104.6	+24.2	-2.6
√	349	56.8	21.7	16	32	114	98	130	130	+98	-66	2945.6	1104.6	+19.9	-13.4
√ +89 36 =	350	56.7	27.7	27	28	103	102	130	130	+76	-74	2945.6	1420.2	+15.4	-15.0
√	351	56.6	29.1	37	126	92	4	129	130	+55	+122	2945.6	1525.4	+11.2	+24.8
√	352	56.3	37.4	107	74	21	56	128	130	-86	+18	2945.6	1946.2	-17.5	+3.7
√	353	56.9	56.7	7	29	122	101	129	130	+115	-72	2945.6	2945.6	+23.3	-14.6
√	354	56.2	58.3	120	91	10	38	130	129	-110	+53	2945.6	3050.8	-22.3	+10.8
√	355	56.2	67.3	112	99	16	31	128	130	-96	+68	2945.6	3524.2	-19.5	+13.8
√	356	56.5	76.5	73	59	56	71	129	130	-17	-12	2945.6	3997.6	- 3.5	-2.4
√	357	56.7	76.8	29	13	100	117	129	130	+71	-104	2945.6	3997.6	+14.4	-21.1
√	358	56.3	80.7	106	36	23	93	128	129	-84	-57	2945.6	4208.0	-17.1	-11.6
√	359	56.6	81.3	41	104	88	26	129	130	+47	+78	2945.6	4260.6	+9.5	+15.8
√	360	57.6	18.4	35	87	96	44	131	131	+61	+43	2998.2	946.8	+12.4	+8.7
√	361	57.6	26.4	36	70	94	60	130	130	+58	+10	2998.2	1367.6	+11.8	+2.0
√	362	57.8	34.4	18	70	110	61	128	131	+92	+ 9	2998.2	1788.4	+18.7	+1.8
√	363	57.4	40.9	70	9	60	120	130	129	-10	-111	2998.2	2104.0	- 2.0	-22.5
√	364	57.3	45.4	101	74	29	58	130	132	-72	+16	2998.2	2367.0	-14.6	+3.2
√	365	57.6	48.6	46	39	84	90	130	129	+38	-51	2998.2	2524.8	+ 7.7	-10.4
√ 22.55	366	57.4	50.3	76	105	52	24	128	129	-24	+81	2998.2	2630.0	- 4.9	+16.4

3751 3769

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

		-2610.	-2580.
2889.5	977.1	+ 279.5	-1602.9
2888.9	976.7	+ 278.9	-1602.3
2915.3	1550.6	+ 305.3	-1029.4
2889.3	1676.7	+ 279.3	- 903.3
2907.6	1936.5	+ 297.6	- 643.5
2899.3	2110.1	+ 289.3	- 469.9
2880.2	2878.8	+ 270.2	+ 298.8
2886.7	3023.0	+ 276.7	+ 443.0
2879.6	3202.7	+ 269.6	+ 622.7
29137	3768.7	+ 303.7	+1188.7
2969.8	1107.2	+ 369.8	-1472.8
2965.5	1118.0	+ 365.5	-1462.0
2961.0	1435.2	+ 351.0	-1144.8
2956.8	1500.6	+ 346.8	-1079.4
2928.1	1942.5	+ 318.1	- 637.5
2968.9	2960.2	+ 358.9	+ 380.2
2923.3	3040.0	+ 313.3	+ 460.0
2926.1	3510.4	+ 316.1	+ 930.4
2948.1	4000.0	+ 338.1	+1420.0
2960.0	4018.7	+ 350.0	+1438.7
2928.5	4219.6	+ 318.5	+1639.6
2955.1	4244.8	+ 345.1	+1664.8
3010.6	938.1	+ 400.6	- 1641.9
3010.0	1365.6	+ 400.0	- 1214.4
3016.9	1786.6	+ 406.9	- 793.4
2996.2	2126.5	+ 386.2	- 453.5
2983.6	2363.8	+ 373.6	- 216.2
3005.9	2535.2	+ 395.9	- 44.8
2993.3	2613.6	+ 383.3	+ 33.6

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..9711

22.55

March 28, 1897. D 4878 85

Measures of positions of stars within 30° of North Pole (Cont-

No.	x	y	A,	B,	C,	D,	A+C	B+D	C−a	B−D	x×62.6	y×52.6	C−a ×2.03	B−D ×2.03
✓	367	57.9	55.3	4	90	127	39	131	129	+123	+51	2998.2	2893.0	+250	+10.4
✓	368	57.9	65.4	2	69	128	60	130	129	+126	+9	2998.2	3419.0	+256	+1.8
✓	369	57.8	66.2	13	107	117	24	130	131	+104	+83	2998.2	3471.6	+211	+16.8
✓	370	57.1	69.5	126	57	3	71	129	128	−123	−14	2998.2	3629.4	−250	−2.8
✓	371	57.1	82.3	127	100	2	89	129	129	−125	+71	2998.2	4313.2	−254	+14.4
✓	372	58.4	21.7	84	22	45	109	129	131	−39	−87	3050.8	1104.6	−79	−17.7
✓	373	58.5	33.9	61	10	68	120	129	130	+7	−110	3050.8	1735.8	+14	−22.3
✓	374	58.1	37.1	121	119	7	11	128	130	−114	+108	3050.8	1946.2	−231	+21.9
✓	375	58.6	38.1	36	127	93	3	129	130	+57	+124	3050.8	1998.8	+116	+25.2
✓	376	58.5	73.4	70	86	59	44	129	130	−11	+42	3050.8	3839.8	−22	+8.5
✓	377	58.5	74.5	61	68	69	61	130	129	+8	+7	3050.8	3892.4	+16	+1.4
✓	378	58.3	82.5	107	61	22	68	129	129	−85	−7	3050.8	4313.2	−173	−1.4
✓	379	59.9	20.5	5	60	124	69	129	129	+119	−9	3103.4	1052.0	+242	−18
✓	380	59.4	25.6	93	42	36	88	129	130	−57	−46	3103.4	1315.0	−116	−93
✓	381	59.3	27.9	104	9	25	121	129	130	−79	−112	3103.4	1420.2	−160	−227
✓	382	59.9	32.6	7	39	122	90	129	129	+115	−51	3103.4	1683.2	+233	−104
✓	383	59.1	52.6	121	40	8	89	129	129	−113	−49	3103.4	2735.2	−229	−99
✓	384	59.5	59.5	55	59	76	71	131	130	+21	−12	3103.4	3103.4	+43	−24
✓	385	59.7	77.4	29	83	100	47	129	130	+71	+36	3103.4	4050.2	+144	+73
✓	386	59.4	81.4	69	75	60	53	129	128	−9	+22	3103.4	4260.6	−18	+45
assumed to be 17.9	387	60.5	~~17.9~~ 4.2	66	5	64	124	130	129	−2	−119	3156.0	892.5	−04	−242
✓	388	60.6	35.6	40	40	89	90	129	130	+49	−50	3156.0	1841.0	+99	−102
✓	389	60.4	38.3	87	110	42	20	129	130	−45	+90	3156.0	1998.8	−91	+183
✓	390	60.4	38.4	96	91	34	39	130	130	−62	+52	3156.0	1998.8	−126	+106
✓	+89° 1 = 391	60.1	51.1	125	120	5	10	130	130	−120	+110	3156.0	2682.6	−244	+223
✓	392	60.4	51.5	77	57	52	74	129	131	−25	−17	3156.0	2682.6	−51	−35
✓	393	60.2	73.3	113	103	17	26	130	129	−96	+77	3156.0	3839.8	−195	+156
									3493 / 27 = 1294				3499 / 27 = 1296		

23.20

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1996phae.proj..971L

	-2610.	-2580.
30232	28826	+413.2 +302.6
30238	3417.2	+ 413.8 + 837.2
3019.3	3454.8	+ 409.3 + 874.8
29732	3632.2	+ 363.2 + 1052.2
29728	4298.8	+ 362.8 + 1718.8
30429	1122.3	+ 482.9 - 1457.7
30522	1758.1	+ 442.2 - 831.9
30277	1924.3	+ 417.7 - 655.7
30624	1973.6	+ 452.4 - 606.4
3048.6	3831.3	+ 438.6 + 1251.3
30524	3891.0	+ 442.4 + 1311.0
30325	4314.6	+ 422.5 + 1734.6
3127.6	1053.8	+ 517.6 - 1526.2
3091.8	1324.3	+ 481.8 - 1255.7
30874	1442.9	+ 477.4 - 1137.1
3126.7	1693.6	+ 516.7 - 886.4
30805	2745.1	+ 470.5 + 165.1
31077	3105.8	+ 497.7 + 525.8
31178	5042.9	+ 507.8 + 2462.9
3101.6	4256.1	+ 491.6 + 1676.1
3155.6	9187	+ 545.6 - 1663.3
31659	18512	+ 555.9 - 728.8
3146.9	1980.5	+ 536.9 - 599.5
31434	1988.2	+ 533.4 - 591.8
3131.6	2660.3	+ 521.6 + 80.3
3150.9	2686.1	+ 540.9 + 106.1
31365	3824.2	+ 526.5 + 1244.2

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.20

March 28, 1897. D 4878 85

Measures of positions of Stars within 30° of North Pole

	No.	x	y	A, B, & D.	a+c	B+D	c-a	B-D	x ×526	y ×52.6	c-a ×2.03	B-D ×2.03
✓	394	60.1	74.8	117 18 12 111	129	129	-105	-93	3156.0	3892.4	-21.3	-18.9
✓	395	60.4	76.1	88 119 41 11	129	130	-47	+108	3156.0	3997.6	-9.5	+21.9
✓	396	60.5	81.4	69 90 60 39	129	129	-9	+51	3156.0	4260.6	-1.8	+10.4
✓	397	61.5	23.6	59 52 70 79	129	131	+11	-27	3208.6	1209.8	+2.2	-5.5
✓	398	61.1	67.5	124 59 5 71	129	130	-119	-12	3208.6	3524.2	-24.2	-2.4
✓	399	62.4	50.3	89 106 40 125	129	231	-49	-19	3261.2	2630.0	-9.9	-3.9
✓	400	62.4	51.6	74 49 55 92	129	131	-19	-53	3261.2	2682.6	-3.9	-10.8
✓	401	62.3	54.1	93 122 37 7	130	129	-56	+115	3261.2	2840.4	-11.4	+23.3
✓	402	62.6	55.5	36 70 94 59	130	129	+58	+11	3261.2	2893.0	+11.8	+2.2
✓	403	62.9	66.4	3 70 127 60	130	130	+124	+10	3261.2	3471.6	+25.2	+2.0
✓	404	62.5	70.5	51 61 79 68	130	129	+28	-7	3261.2	3682.0	+5.7	-1.4
✓	405	62.1	76.8	118 11 12 119	130	130	-106	-108	3261.2	3997.6	-21.5	-21.9
✓	406	62.3	82.3	110 95 20 34	130	129	-90	+61	3261.2	4313.2	-18.3	+12.4
✓	407	63.4	26.4	84 88 46 45	130	133	-38	+43	3313.8	1367.6	-7.7	+8.7
✓	408	63.1	27.9	120 6 9 ~~25~~ 120	129	126	-111	-114	3313.8	1420.2	-22.5	-23.1
✓	409	63.7	29.0	30 2 99 128	129	130	+69	-126	3313.8	1525.4	+14.0	-25.6
✓	410	63.8	31.6	13 52 117 77	130	129	+104	-25	3313.8	1630.6	+21.1	-5.1
✓	411	63.4	35.7	89 26 40 104	129	130	-49	-78	3313.8	1841.0	-9.9	-15.8
✓	412	63.6	37.1	37 117 91 13	128	130	+54	+104	3313.8	1946.2	+11.0	+21.1
✓	413	63.4	47.3	70 109 59 20	129	129	-11	+89	3313.8	2472.2	-2.2	+18.1
✓	414	63.7	58.4	81 77 98 53	129	130	+67	+24	3313.8	3050.8	+13.6	+4.9
✓	415	63.6	64.2	39 106 90 23	129	129	+51	+83	3313.8	3366.4	+10.4	+16.8
✓	416	63.9	65.9	8 7 121 122	129	129	+113	-115	3313.8	3419.0	+22.9	-23.3
✓	417	63.5	71.5	50 64 79 67	129	131	+29	-3	3313.8	3734.6	+5.9	-0.6
✓	418	63.6	76.3	50 104 79 27	129	131	+29	+77	3313.8	3997.6	+5.9	+15.6
✓	419	63.5	76.9	56 10 74 120	130	130	+18	-110	3313.8	3997.6	+3.7	-22.3
✓	420	64.5	26.5	67 63 61 66	128	129	-6	-3	3366.4	1367.6	-1.2	-0.6

3490/27 = 1292 3563/27 = 1297. omitting 399 3372/26

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1996phae.proj..971L

		-2610.	-2580.	
3134.7	3911.3	+524.7	+1331.3	
3146.5	3975.7	+536.5	+1395.7	
3154.2	4250.2	+544.2	+1670.2	
3210.8	1215.3	+600.8	−1364.7	
3184.4	3527.6	+574.4	+947.6	
3251.3	2633.9	+641.3	+539	~~y=+27.6~~
	2614.4		+34.4	
3257.3	2693.4	+647.3	+113.4	
3249.8	2817.1	+639.8	+237.1	
3273.0	2890.8	+663.0	+310.8	
3286.4	3469.6	+676.4	+889.6	
3266.9	3683.4	+656.9	+1103.4	
3239.7	4019.5	+629.7	+1439.5	
3242.9	4300.8	+632.9	+1720.8	
3306.1	1358.9	+696.1	−1221.1	
3291.3	1443.3	+681.3	−1136.7	
3327.8	1551.0	+717.8	−1029.0	y = −1081.6
3334.9	1635.7	+724.9	−944.3	
3303.9	1856.8	+693.9	−723.2	
3324.8	1925.1	+714.8	−654.9	
3311.6	2454.1	+701.6	−125.9	
3300.2	3045.9	+717.4	+465.9	
3324.2	3349.6	+714.2	+769.6	
3336.7	3442.3	+726.7	+862.3	
3319.7	3735.2	+709.7	+1155.2	
3319.7	3982.0	+709.7	+1402.0	
3317.5	4019.9	+707.5	+1439.9	
3365.2	1368.2	+755.2	−1211.8	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.40

March 28, 1897. D 4878 85

Measures of Positions of Stars within 30° of North Pole Cont.

No.	x.	y.	A, B, C, D.	A+C	B+D	C-a	B-D	x × 52.6	y × 52.6	C-a × 2.03	B-D × 2.03	
✓	64.5	38.1	60 124 69 7	129	131	+ 9	+117	3366.4	1998.8	+1.8	+23.8	3
✓	64.2	38.5	112 60 16 70	128	130	−96	− 10	3366.4	1998.8	−19.5	− 2.0	3
✓	64.4	40.6	94 50 35 79	129	129	−59	−29	3366.4	2104.0	−12.0	−5.9	3
✓	64.5	41.7	60 29 70 101	130	130	+10	−72	3366.4	2156.6	+2.0	−14.6	3
✓	64.6	47.4	40 71 90 59	130	130	+50	+12	3366.4	2472.2	+10.2	+2.4	3
✓	64.8	62.7	19 39 110 90	129	129	+91	−51	3366.4	3261.2	+18.5	−10.4	3
✓	64.1	68.1	121 120 7 8	128	128	−114	+112	3366.4	3576.8	−23.1	+22.7	3
✓	64.2	68.4	109 79 21 49	130	128	−88	+30	3366.4	3576.8	−17.9	+6.1	3
✓	64.7	68.6	22 44 107 87	129	131	+85	−43	3366.4	3576.8	+17.3	−8.7	3
✓ 23.50 March 31, 1897 22.45	64.9	74.5	3 57 126 73	129	130	+123	−16	3366.4	3892.4	+25.0	−3.2	3
✓	65.5	19.5	59 61 72 69	131	130	+13	− 8	3419.0	999.4	+2.6	−1.6	3
✓	65.6	21.4	41 74 88 57	129	131	+47	+17	3419.0	1104.6	+9.5	+3.5	3
✓	65.3	36.8	86 15 42 115	128	130	−44	−100	3419.0	1893.6	− 8.9	−20.3	3
✓	65.5	40.6	55 50 72 80	127	130	+17	− 30	3419.0	2104.0	+3.5	− 6.1	3
✓	65.1	51.4	120/40 80 10 50	130	130	−110	+ 30	3419.0	2682.6	−22.3	+ 6.1	3
✓	65.2	52.6	110 53 18 77	128	130	− 92	−24	3419.0	2735.2	−18.7	− 4.9	3
✓	65.1	58.7	127 20 2 110	129	130	−125	− 90	3419.0	3050.8	−25.4	−18.3	3
✓	65.4	64.4	89 84 40 46	129	130	+49	+ 38	3419.0	3366.4	− 9.9	+ 7.7	3
✓	65.8	79.6	17 41 111 89	128	130	+94	− 48	3419.0	4155.4	+19.1	− 9.7	3
✓	66.7	24.9	31 10 99 120	130	130	+68	−110	3471.6	1262.4	+13.8	−22.3	3
✓	66.7	28.4	29 83 100 45	129	128	+71	+ 38	3471.6	1472.8	+14.4	+ 7.7	3
✓	66.1	34.9	125 4 3 127	128	131	−122	−123	3471.6	1788.4	−24.8	−25.0	3
✓	66.9	41.9	5 3 125 127	130	130	+120	−124	3471.6	2156.6	+24.4	−25.2	3
✓	66.6	54.3	51 102 79 27	130	129	+28	+ 75	3471.6	2840.4	+5.7	+15.2	3
✓	66.4	65.5	80 55 49 75	129	130	+31	− 20	3471.6	3419.0	− 6.3	− 4.1	3
✓	66.7	72.8	28 21 100 107	128	128	+72	− 86	3471.6	3787.2	+14.6	−17.5	3
✓ 23.00	66.3	79.4	101 75 29 54	130	129	−72	+ 21	3471.6	4155.4	−14.6	+4.3	4
				3484/27 = 1290						3562/27 = 1297		3

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj - 9711

		-2610	-2580
3368.2	1975.0	+758.2	-605.0
3346.9	2000.8	+736.9	-479.2
3357.4	2109.9	+744.4	-470.1
3368.4	2171.2	+758.4	-408.8
3376.6	2469.8	+766.6	-110.2
3384.9	3271.6	+774.9	+691.6
3343.3	3554.1	+733.3	+974.1
3348.5	3570.7	+738.5	+990.7
3383.7	3585.5	+773.7	+1005.5
3391.4	3895.6	+781.4	+1315.6
3421.6	1001.0	+811.6	-1579.0
3428.5	1101.1	+818.5	-1478.9
3410.1	1913.9	+800.1	-666.1
3422.5	2110.1	+812.5	-469.9
3396.7	2676.5	+786.7	+96.5
3400.3	2740.1	+790.3	+160.1
3393.6	3069.1	+783.6	+489.1
3409.1	3358.7	+799.1	+778.7
3438.1	4165.1	+828.1	+1585.1
3485.4	1284.7	+875.4	-1295.3
3486.0	1465.1	+876.0	-1114.9
3446.8	1813.4	+836.8	-766.6
3496.0	2181.8	+886.0	-398.2
3477.3	2825.2	+867.3	+245.2
3467.3	3423.1	+855.3	+843.1
3486.2	3804.7	+876.2	+1224.7
~~4408~~ 3457.0	4151.1	+847.0	+1571.1

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.00

March 31, 1897

D +48 78 85

Measures of Positions of Stars within 30° of North Pole (Cont)

No.	x.	y.	A	B	C	D	a+c	B+D	C-a	B-D	x ×52.6	y ×52.6	C-a ×2.03	B-D ×2.03	
448	67.1	29.1	126	119 4	4	11	130	130	-122	+108	3524.2	1525.4	-24.8	+21.9	3
449	67.7	29.4	28	75	101	57	129	132	+73	+18	3524.2	1525.4	+14.8	+3.7	3
450	67.6	34.6	40	55	89	76	129	131	+49	-21	3524.2	1788.4	+9.9	-4.3	3
451	67.3	35.8	100	20	30	110	130	130	-70	-90	3524.2	1841.0	-14.2	-18.3	3
452	67.8	46.2	13	110	118	20	131	130	+105	+90	3524.2	2419.6	+21.3	+18.3	3
453	67.3	55.4	104	79	27	50	131	129	-77	+29	3524.2	2893.0	-15.6	+5.9	3
454	67.1	68.4	121	88	9	43	130	131	-112	+45	3524.2	3576.8	-22.7	+9.1	3
455	67.5	70.2	57	111	71	18	128	129	+14	+93	3524.2	3682.0	+2.8	+18.9	3
456	67.3	74.7	99	41	30	89	129	130	-69	-48	3524.2	3892.4	-14.0	-9.7	3
457	68.3	26.7	94	22	34	107	128	129	-60	-85	3576.8	1367.6	-12.2	-17.3	3
458	68.5	27.8	58	19	71	110	129	129	+13	-91	3576.8	1420.2	+2.6	-18.5	3
459	68.1	35.1	120	129	9	1	129	130	-111	+128	3576.8	1841.0	-22.5	+26.0	3
460	68.7	35.4	25	79	104	50	129	129	+79	+29	3576.8	1841.0	+16.0	+5.9	3
461	68.6	49.1	40	126	90	4	130	130	+50	+122	3576.8	2577.4	+10.2	+24.8	3
462	68.6	50.1	30	122	100	7	130	129	+70	+115	3576.8	2630.0	+14.2	+23.3	3
463	68.5	50.3	52	108	79	22	131	130	+27 6	+86	3576.8	2630.0	+5.5	+17.5	3
464	68.1	51.8	123	14 6	115		129	129	-117	-101	3576.8	2682.6	-23.8	-20.5	3
465	68.5	58.3	60	106	70	24	130	130	+10	+82	3576.8	3050.8	+2.0	+16.6	3
466	68.5	63.8	61	20	67	110	128	130	+6	-90	3576.8	3313.8	+1.2	-18.3	3
467	69.1	21.8	110	5	20	125	130	130	-90	-120	3629.4	1104.6	-18.3	-24.4	3
468	69.5	29.5	74	69	56	62	130	131	-18	+7	3629.4	1525.4	-3.7	+1.4	3
469	69.3	30.7	96	36	35	96	131	132	-61	-60	3629.4	1578.0	-12.4	-12.2	3
470	69.6	32.8	50	18	80	114	130	132	+30	-96	3629.4	1683.2	+6.1	-19.5	3
471	69.1	43.8	125	19	4	110	129	129	-121	-91	3629.4	2261.8	-24.6	-18.5	3
472	69.8	44.0	16	129	115	1	131	130	+99	+128	3629.4	2314.4	+20.1	+26.0	3
473	69.6	45.2	52	110	78	20	130	130	+26	+90	3629.4	2367.0	+5.3	+18.3	3
474	69.6	47.5	34	57	97	73	131	130	+63	-16	3629.4	2472.2	+12.8	-3.2	3
475	69.7	48.3	20	99	110	30	130	129	+90	+69	3629.4	2524.8	+18.3	+14.0	3

23.20

3632 / 28

3640

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

		-2610.	-2580.
3499.4	15035	+889.4	-1076.5
3539.0	1521.7	+929.0	-1058.3
3534.1	1792.7	+924.1	-787.3
3570.0	1859.3	+900.0	-720.7
3545.5	2401.3	+935.5	-178.7
3508.6	2887.1	+898.6	+307.1
3501.5	3567.7	+891.5	+987.7
3527.0	3663.1	+917.0	+1083.1
3510.2	3902.1	+900.2	+1322.1
3564.6	1384.9	+954.6	-1195.1
3579.4	1438.7	+969.4	-1141.3
3554.3	1815.0	+944.3	-765.0
3592.8	1835.1	+982.8	-744.9
3587.0	2552.6	+977.0	-27.4
3591.0	2606.7	+981.0	+26.7
3582.3	2612.5	+972.3	+32.5
3553.0	2703.1	+943.0	+123.1
3578.8	3033.2	+968.8	+454.2
3578.0	3332.1	+968.0	+752.1
3611.1	1129.0	+1001.1	-1451.0
3625.7	1524.0	+1015.7	-1056.0
3617.0	1590.2	+1007.0	-989.8
3635.5	1702.7	+1025.5	-877.3
3604.8	2280.3	+994.8	-299.7
3649.5	2288.4	+1039.5	-291.6
3634.7	2348.7	+1024.7	-231.3
3642.2	2475.4	+1032.2	-104.6
3647.7	2510.8	+1037.7	-69.2

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.20

March 31, 1897. D 4878 85

Measures of Positions of Stars within 30° of North Pole (Cont.)

No	x	y	A	B	C	D	a+C	B+D	C-a	B-D	x x 52.6	y x 52.6	C-a x 2.03	B-D x 2.03
476	69.1	66.9	120	5	9	125	129	130	-111	-120	3629.4	3471.6	-22.5	-24.4
+89°4 = 477	69.5	69.3	57	101	71	29	128	130	+14	+72	3629.4	3629.4	+2.8	+14.6
478	69.2	75.8	110	14	19	115	129	129	-91	+101	3629.4	3945.0	-18.5	-20.5
479	70.9	23.6	11	50	119	80	130	130	+108	-30	3682.0	1209.8	+21.9	-6.1
480	70.9	26.1	14	120	119	09	133	129	+105	+111	3682.0	1367.6	+21.3	+22.5
481	70.8	41.7	11	30	119	100	130	130	+108	-70	3682.0	2156.6	+21.9	-14.2
482	70.2	44.1	116	120	13	10	129	130	-103	+110	3682.0	2314.4	-20.9	+22.3
483	70.9	46.2	5	115	124	15	129	130	+119	+100	3682.0	2419.6	+24.2	+20.3
484	70.4	51.6	93	42	37	87	130	129	-56	-45	3682.0	2682.6	-11.4	-9.1
485	70.9	56.2	6	112	124	18	130	130	+118	+94	3682.0	2945.6	+24.0	+19.1
486	70.3	58.9	109	9	20	120	129	129	-89	-111	3682.0	3050.8	-18.1	-22.5
487	70.9	60.3	10	102	120	28	130	130	+110	+74	3682.0	3156.0	+22.3	+15.0
488	70.2	75.1	106	116	24	14	130	130	-82	+102	3682.0	3945.0	-16.6	+20.7
489	70.6	76.1	44	119	85	10	129	129	+41	+109	3682.0	3997.6	+8.3	+22.1
490	71.1	27.7	125	38	4	93	129	131	-121	-55	3734.6	1420.2	-24.6	-11.2
491	71.6	27.8	49	19	81	111	130	130	+32	-92	3734.6	1420.2	+6.5	-18.7
492	71.5	29.4	52	70	75	58	127	128	+23	+12	3734.6	1525.4	+4.7	+2.4
493	71.5	43.9	66	4	64	125	130	129	-2	-121	3734.6	2261.8	-0.4	-24.6
494	71.5	44.2	60	111	69	18	129	129	+9	+93	3734.6	2314.4	+1.8	+18.9
495	71.8	46.1	19	120	110	10	129	130	+91	+110	3734.6	2419.6	+18.5	+22.3
496	71.3	51.4	103	80	30	50	130	130	-70	+30	3734.6	2682.6	-14.2	+6.1
497	71.6	55.4	45	86	84	44	129	130	+39	+42	3734.6	2893.0	+7.9	+8.5
498	71.4	59.6	89	59	41	71	130	130	-48	-12	3734.6	3103.4	-9.7	-2.4
499	71.3	62.5	100	62	30	69	130	131	-70	-7	3734.6	3261.2	-14.2	-1.4
500	71.3	65.3	99	85	31	46	130	131	-68	+39	3734.6	3419.0	-13.8	+7.9
501	71.6	67.7	54	39	76	90	130	129	+22	-51	3734.6	3524.2	+4.5	-10.4
502	71.8	72.5	28	68	101	62	129	130	+73	+6	3734.6	3787.2	+14.8	+1.2
503	72.1	24.1	120	110	10	20	130	130	-110	+90	3787.2	1262.4	-22.3	+18.3

Defect.

23.35
April 1, 1897 mth
23.15

2.3.18

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj...971L

		−2610.	−2580.
3606.9	3496.0	+996.9	+916.0
3632.2	3614.8	+1022.2	+1034.8
3610.9	3924.5	+1000.9	+1385.5
3703.9	1203.4	+1093.9	−1364.1
3703.3	1345.1	+1093.3	−1234.9
3703.9	2170.8	+1093.9	−409.2
3661.1	2292.1	+1051.1	−287.9
3706.2	2399.3	+1096.2	−180.7
3670.6	2691.7	+1060.6	+111.7
3706.0	2926.5	+1096.0	+346.5
3663.9	3073.3	+1053.9	+493.3
3704.3	3141.0	+1094.3	+561.0
3665.4	3924.3	+1055.4	+1344.3
3690.3	3975.5	+1080.3	+1395.5
3710.0	1431.4	+1100.0	−1148.6
3741.1	1438.9	+1131.1	−1141.1
3739.3	1523.0	+1129.3	−1057.0
3734.2	2286.4	+1124.2	−293.6
3736.4	2295.5	+1126.4	−284.5
3753.1	2397.3	+1143.1	−182.7
3720.4	2676.5	+1110.4	+96.5
3742.5	2884.5	+1132.5	+304.5
3724.9	3105.8	+1114.9	+525.8
3720.4	3262.6	+1110.4	+682.6
3720.8	3411.1	+1110.8	+831.1
3739.1	3534.6	+1129.1	+954.6
3749.4	3786.0	+1139.4	+1206.0
3763.9	1244.1	+1153.9	−1335.9

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.18

April 1, 1897

D 4878 (85)

Measures of Positions of Stars within 30° of North Pole (Cont)

Sts.	x	y	A,B,C,D	A+C	B+D	C-a	B-D	x×52.6	y×52.6	C-a ×2.03	B-D ×2.03
504	72.1	25.8	122 14 8 116	130	130	-114	-102	3787.2	1315.0	-23.1	-20.7
505	72.4	38.6	86 55 44 76	130	131	-42	-21	3787.2	1998.8	-8.5	-4.3
506	72.9	54.7	9 30 121 120	130	130	+112	-70	3787.2	2840.4	+22.7 -0.2	-14.2
507	72.5	59.5	65 59 64 71	129	130	-1	-12	3787.2	3103.4	-0.2	-2.4
508	72.5	61.9	60 3 70 125	130	128	+10	-122	3787.2	3208.6	+2.0	-24.8
509	72.8	72.2	19 115 111 14	130	129	+92	+101	3787.2	3787.2	+18.7	+20.5
510	73.2	35.4	111 79 17 51	126	130	-94	+28	3839.8	1841.0	-19.1	+5.7
511	73.8	48.8	22 11 108 119	130	130	+86	-108	3839.8	2524.8	+17.5	-21.9
512	73.3	60.5	97 52 31 78	128	130	-66	-26	3839.8	3156.0 ~~2524.8~~	-13.4	-5.3
513	73.0	64.7	125 22 4 107	129	129	-121	-85	3839.8	3366.4	-24.6	-17.3
514	74.8	27.5	10 51 119 79	129	130	+109	-28	3892.4	1420.2	+22.1	-5.7
515 dbl.?	74.5	32.5	58 60 71 70	129	130	+13	-10	3892.4	1683.2	+2.6	-2.0
	74.6	32.5	48 58 81 73	129	131	+33	-15	3892.4	1683.2	+6.7	-3.0
516	74.7	32.7	29 31 101 100	130	131	+72	-69	3892.4	1683.2	+14.6	-14.0
517	74.4	48.6	90 47 38 82	128	129	-52	-35	3892.4	2524.8	-10.6	-7.1
518	74.4	60.2	75 107 53 23	128	130	-22	+84	3892.4	3156.0	-4.5	+17.1
519	74.7	60.6	30 39 101 91	131	130	+71	-52	3892.4	3156.0	+14.4	-10.6
520	74.6	62.9	36 2 94 128	130	130	+58	-126	3892.4	3261.2	+11.8	-25.6
521	74.5	70.6	56 35 71 93	127	128	+15	-58	3892.4	3682.0	+3.0	-11.8
522	75.7	28.0	28 125 100 79	128	129	+72	+121	3945.0	1472.8	+14.6	+24.6
523	75.3	28.4	109 82 21 48	130	130	-88	+34	3945.0	~~1578.0~~ 1472.8	-17.9	+6.9
524	75.5	30.7	71 30 59 100	130	130	-12	-70	3945.0	1578.6	-2.4	-14.2
525	75.2	33.4	111 80 19 50	130	130	-92	+30	3945.0	1735.8	-18.7	+6.1
526	75.7	42.8	28 18 101 111	129	129	+73	-93	3945.0	2209.2	+14.8	-18.9
527	75.6	49.6	31 44 99 86	130	130	+68	-42	3945.0	2577.4	+13.8	-8.5
528	75.8	65.4	22 75 108 56	130	131	+86	+19	3945.0	3419.0	+17.5	+3.9
529	75.2	65.7	111 35 19 94	130	129	-92	-59	3945.0	3419.0	-18.7	-12.0
530	75.4	66.7	92 33 37 98	129	131	-55	-65	3945.0	3471.6	-11.2	-13.2

23.35

3621/28 = 1293 (3638/28 = 1298)

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

		-2610.	-2580.
3764.1	1335.7	+1154.1	-1244.3
3778.7	2003.1	+1168.7	- 576.9
3809.9	2854.6	+1199.9	+274.6
3787.0	3105.8	+1177.0	+525.8
3789.2	3233.4	+1179.2	+653.4
3805.9	3766.7	+1195.9	+1186.7
3820.7	1835.3	+1210.7	-744.7
3857.3	2546.7	+1247.3	- 33.3
~~3826.4~~	~~2530.~~ 3161.8	+1216.4	~~+ 49.9~~ +581.3
3815.2	~~3383.7~~	+1205.2	+803.7
3914.5	1425.9	+1304.5	-1154.1
3895.0	1685.2	+1285.0	-894.8
3899.1	1686.2	+1289.1	-893.8
3907.0	1697.2	+1297.0	-882.8
3881.8	2531.9	+1271.8	- 48.1
3887.9	3138.9	+1277.9	+558.9
3906.8	3166.6	+1296.8	+586.6
3904.2	3286.8	+1294.2	+706.8
3895.4	3693.8	+1285.4	+1113.8
3959.6	1448.2	+1349.6	-1131.8
3927.1	1465.9	+1317.1	-1114.1
3942.6	1592.2	+1332.6	-987.8
3924.3	1729.7	+1316.3	- 850.3
3959.8	2228.1	+1349.8	- 351.9
3958.8	2585.9	+1348.8	+ 5.9
3962.5	3415.1	+1352.5	+835.1
3926.3	3431.0	+1316.3	+851.0
3933.8	3484.8	+1323.8	+904.8

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971

23.35

April 1, 1897 D 4878

Measures of Positions of Stars within 30° of North Pole (Cent)

No.	x	y	A.	B.	b.	D.	a+c	B+D	c−a	B−D	x × 52.6	y × 52.6	c−a ×2.03	B−D ×2.03
531	76.9	32.3	3	90	127	40	130	130	+1 2.4	+5.0	3997.6	1683.2	+25.2	+10.2
532	76.3	40.5	90	53	37	78	127	131	−5.3	−2.5	3997.6	2104.0	−10.8	−5.1
533	76.4	41.3	75	92	54	38	129	130	−2.1	+5.4	3997.6	2156.6	−4.3	+11.0
534	76.6	47.4	40	80	90	50	130	130	+5.0	+3.0	3997.6	2472.2	+10.2	+6.1
535	76.4	56.7	79	27	51	104	130	131	−2.8	−7.7	3997.6	2945.6	−5.7	−15.6
536	76.3	57.8	94	16	35	114	129	130	−5.9	−9.8	3997.6	2998.2	−12.0	−19.9
537	76.4	59.4	81	68	49	61	130	129	−3.2	+.7	3997.6	3103.4	−6.5	+1.4
538	76.3	60.5	95	56	35	74	130	130	−6.0	−1.8	3997.6	3156.0	−12.2	−3.7
539	76.2	65.6	110	45	20	87	130	132	−9.0	−4.2	3997.6	3419.0	−18.3	−8.5
540	76.4	67.1	77	120	52	10	129	130	−2.5	+11.0	3997.6	3524.2	−5.1	+22.3
541	77.9	33.1	10	122	119	8	129	130	+10.9	+11.4	4050.2	1735.8	+22.1	+23.1
542	77.8	34.2	20	105	110	25	130	130	+9.0	+8.0	4050.2	1788.4	+18.3	+16.2
543	77.9	38.6	1	40	129	90	130	130	+12.8	−5.0	4050.2	1998.8	+26.0	−10.2
544	77.7	45.3	34	103	95	127	129	230	+6.1	−2.4	4050.2	2367.0	+12.4	−4.9
			3.5	10.5	94	2.5	(129)	(130)	+5.9	+8.0			+12.0	+16.2
545	77.6	50.9	40	5	89	124	129	129	+4.9	−11.9	4050.2	2630.0	+9.9	−24.2
546	77.1	51.7	118	25	11	103	130	128	−10.8	−7.8	4050.2	2682.6	−21.9	−15.8
547	77.8	62.3	18	88	111	41	129	129	+9.3	+4.7	4050.2	3261.2	+18.9	+9.5
548	77.8	68.4	20	79	110	50	130	129	+9.0	+2.9	4050.2	3576.8	+18.3	+5.9
549	77.7	69.7	35	30	94	100	129	130	+5.9	−7.0	4050.2	3629.4	+12.0	−14.2
550	78.4	36.4	68	80	60	49	128	129	−8	+3.1	4102.8	1893.6	−1.6	+6.3
550a	78.0	38.6	129	40	130	90	259	130	+0.1	−5.0	4102.8	1998.8	+0.2	−10.2
551	78.2	40.8	110	11	20	119	130	130	−9.0	−10.8	4102.8	2104.0	−18.3	−21.9
552	78.7	41.1	35	124	92	6	127	130	+5.7	+11.8	4102.8	2156.6	+11.6	+24.0
553	78.4	45.3	74	94	55	36	129	130	−1.9	+5.8	4102.8	2367.0	−3.9	+11.8
554	78.6	46.6	40	47	90	83	130	130	+5.0	−3.6	4102.8	2419.6	+10.2	−7.3
555	78.8	49.6	21	53	109	78	130	131	+8.8	−2.5	4102.8	2577.4	+17.9	−5.1
556	78.4	51.7	76	20	52	109	128	129	−2.4	−8.9	4102.8	2682.6	−4.9	−18.1
557	78.3	52.3	96	97	33	35	129	132	−6.8	+6.2	4102.8	2735.2	−12.8	+12.6

23.55

3490/27 = 1293 3609/27 = 1333

v. page 207. Assumed title 77.6

April 14, '98.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj . 971L

-2610 . . -2580

4022.8	1673.0	+1412.8	-907.0
3986.8	2109.1	+1376.8	-470.9
3993.3	2145.6	+1383.3	-434.4
4006.8	2466.1	+1397.8	-113.9
3991.9	2961.2	+1381.9	+381.2
3985.6	3018.1	+1375.6	+438.1
3991.1	3102.0	+1381.1	+522.0
3985.4	3159.7	+1375.4	+579.7
3979.3	3427.5	+1369.3	+847.5
3992.5	3501.9	+1382.5	+921.9
4072.3	1712.7	+1462.3	-867.3
4068.5	1772.2	+1458.5	-807.8
4076.2	2009.0	+1466.2	-571.0
4062.6	~~2371.9~~ 2350.8	+1452.6	~~-208.1~~ ~~-234.4~~ -229.2
4062.2		+1452.2	
4060.1	2654.2	+1450.1	+74.2
4028.3	2698.4	+1418.3	+118.4
4069.1	3251.7	+1459.1	+671.7
4068.5	3570.9	+1458.5	+990.9
4062.2	3643.6	+1452.2	+1063.6
4101.2	1887.3	+1491.2	-692.7
4093.0	2009.0	+1493.0	-571.0
4084.5	2125.9	+1474.5	-454.1
4114.4	2132.6	+1504.4	-447.4
4098.9	2355.8	+1488.9	-224.8
4113.0	2426.9	+1503.0	-153.1
4120.7	2582.5	+1510.7	+2.5
4097.9	2700.7 2720.6	+1487.9	+120.7
4090.0	2722.6 4090.2	+1480.0	+142.6

$x = 1466.7$ 25 pl.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.55

April 1, 1897 D 4878

85

Measures of Positions of Stars within 30° of North Pole (C

No	x	y	A.B.C.	D	a+c	B+D	c-a	B-D	x×52.6	y×52.6	c-a ×2.03	B-D ×2.03
558	78.8	54.5	25	68	10561	130	129	+80	+0.7	4102.8	2840.4	+16.2	+1.4
559	78.3	59.3	105	102	2528	130	130	-80	+7.4	4102.8	3103.4	-16.2	+15.0
560	78.8	59.3	17	90	11540	132	130	+98	+5.0	4102.8	3103.4	+19.9	+10.2
561	79.4	44.8	78	21	5210	130	130	-26	-8.8	4155.4	2314.4	-5.3	-17.9
562	80.8	40.5	20	50	11080	130	130	+90	-3.0	4208.0	2104.0	+18.3	-6.1
563	80.6	40.7	40	28	90	101	130	129	+50	-7.3	4208.0	2104.0	+10.2	-14.8
564	80.4	45.6	72	47	58	85	130	132	-14	-3.8	4208.0	2367.0	-2.8	-7.7
565	79.0	46.6	127	40	3	90	130	130	-124	-5.0	4155.4	2419.6	-25.2	-10.2
566	80.6	49.5	47	65	83	66	130	131	+36	-0.1	4208.0	2577.4	+7.3	-0.2
567	80.7	61.2	30	109	100	20	130	129	+70	+8.9	4208.0	3208.6	+14.2	+18.1
568	81.6	45.3	42	93	87	38	129	131	+45	+5.5	4260.6	2367.0	+9.1	+11.2
569	81.4	53.9	81	4	49	125	130	129	-32	-12.1	4260.6	2787.8	-6.5	-24.6
570	82.2	39.9	110	3	18	127	128	130	-92	-12.4	4313.2	2051.4	-18.7	-25.2
571	82.9	50.7	9	29	120	100	129	129	+111	-7.1	4313.2	2630.0	+22.5	-14.4
572	82.7	51.9	26	10	103	120	129	130	+77	-11.0	4313.2	2682.6	+15.6	-22.3
573	82.6	56.5	48	60	80	70	128	130	+32	-1.0	4313.2	2945.6	+6.5	-2.0
574	82.2	58.9	110	9	20	120	130	129	-90	-11.1	4313.2	3050.8	-18.3	-22.5
575	83.6	46.1	49	128	81	3	130	131	+32	+12.5	4365.8	2419.6	+6.5	+25.4
576	83.5	46.3	50	105	80	26	130	131	+80	+7.9	4365.8	2419.6	+6.1	+16.0
577	83.7	47.3	30	100	99	30	129	130	+69	+7.0	4365.8	2472.2	+14.0	+14.2
578	83.3	49.2	90	107	40	25	130	132	-50	+8.2	4365.8	2577.4	-10.2	+16.6
579	83.7	49.7	30	27	100	103	130	130	+70	-7.6	4365.8	2577.4	+14.2	-15.4
24.10 580	83.4	56.0	90	1	40	129	130	130	-50	-12.8	4365.8	2945.6	-10.2	-26.0

2984 / 23 = 1297

2992 / 23 = 1300

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

		−2610	−2580	
4119.0	2839.0	+1509.0	+259.0	
4086.6	3088.4	+1476.6	+508.4	
4122.7	3093.2	+1512.7	+513.2	
4150.1	2332.3	+1540.1	−247.7	
4226.3	2110.1	+1616.3	−469.9	
4218.2	2118.8	+1608.2	−461.2	
4205.2	2374.7	+1595.2	−205.3	
4130.2	2429.8	+1520.2	−150.2	
4215.3	2577.6	+1605.3	−2.4	
4222.2	3190.5	+1612.2	+610.5	
4269.7	2355.8	+1659.7	−224.2	
4257.1	2812.4	+1644.1	+232.4	
			676	
4294.5	2076.6	+1684.5	−503.4	
4335.7	2644.4	+1725.7	+64.4	
4328.8	2704.9	+1718.8	+124.9	
4319.7	2947.6	+1709.7	+367.6	
4294.9	3073.3	+1684.9	+493.3	
4372.3	2394.2	+1762.3	−185.8	
4371.9	2403.6	+1761.9	−176.4	
4379.8	2458.0	+1769.8	−122.0	
4355.6	2560.8	+1745.6	−19.2	
4380.0	2592.8	+1770.0	+12.8	
4355.6	2971.6	+1745.6	+391.6	$y = 339.0$

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

April 6, 1897

D 4878 85

Measures of positions of No. Polar Standard Stars

		a	B	b	D	a+C	B+D	C-a	B-D	C-a x 203	B-D x 203
+89°	1	126.	120.	4.	10	130	130	-12.2	+110	-24.8	+22.3
✓	2	112	20	18	110	130	130	- 9.4	- 9.0	- 19.1	-18.3
✓	3	9	4	121	126	130	130	+112	-12.2	+ 22.7	-24.8
✓	4	59	100	70	30	129	130	+ 1.1	+ 7.0	+ 2.2	+ 14.2
✓	5	40	8	90	121	130	129	+ 5.0	- 11.3	+ 10.2	- 22.9
✓	5a	93	60	37	70	130	130	- 5.6	- 1.0	- 11.4	- 2.0
✓	6	51	115	79	15	130	130	+ 2.8	+ 10.0	+ 5.7	+ 20.3
✓	9	10	71	120	60	130	131	+11.0	+ 1.1	+ 22.3	+ 2.2
✓	12	34	39	96	90	130	129	+ 6.2	- 5.1	+ 12.6	- 10.4
✓	16	101	120	28	10	129	130	- 7.3	+11.0	- 14.8	+ 22.3
✓	17	61	2	69	128	130	130	+0.8	-12.6	+ 1.6	- 25.6
✓	18	129	70	129	60	258	130	0.0	+ 1.0	- 0.8	+ 2.0
✓	23	15	14	114	115	129	129	+9.9	-10.1	+ 20.1	- 20.5
✓	25	40	128	89	2	129	130	+ 4.9	+12.6	+ 9.9	+ 25.6
✓	26	22	24	106	107	128	131	+8.4	- 8.3	+ 17.1	- 16.8
✓	29	39	117	90	13	129	130	+ 5.1	+10.4	+ 10.4	+ 21.1
✓	31	39	80	90	50	129	130	+ 5.1	+ 3.0	+ 10.4	+ 6.1
✓	35	12	109	119	20	131	129	+10.7	+ 8.9	+ 21.7	+ 18.1
✓	36	28	28	101	102	129	130	+ 7.3	- 7.4	+ 14.8	- 15.0
✓	a	127	80	2	49	129	129	-12.5	+ 3.1	- 25.4	+ 6.3
✓	b	48	98	82	33	130	131	+ 3.4	+ 6.5	+ 6.9	+ 13.2
✓	c	73	70	56	60	129	130	- 1.7	+ 1.0	- 3.5	+ 2.0
✓	d	3	80	127	50	130	130	+12.4	+ 3.0	+ 25.2	+ 6.1
✓	e	32	20	97	110	129	130	+ 6.5	- 9.0	+ 13.2	- 18.3
✓	f	76	3	54	127	130	130	- 2.2	-12.4	- 4.5	- 25.2
✓	g	107	55	22	76	129	131	- 8.5	- 2.1	- 17.3	- 4.3
✓	h	49	60	81	70	130	130	+ 3.2	- 1.0	+ 6.5	- 2.0
✓	k	90	3	39	126	129	129	- 5.1	-12.3	- 10.4	- 25.0
✓	l	76	48	64	83	130	131	- 2.2	- 3.5	- 4.5	- 7.1
✓	37	120	110	10	20	130	130	-11.0	+ 9.0	- 22.3	+ 18.3

78.2 75.6 (x 52.6) 4102.8 3945.0

129.87/80 130-1/80

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

+521.2 +80.3
+2473.1 +1225.5
+726.5 +916.4 y=+863.8
+1021.6 +1035.2
+1555.6 +1335.3
+4091.4 +3947.0 +1481.4 +1367.0
+2024.5 +2028.5
-3259 +1888.8
-1019.4 +1322.8
-1783.2 +869.3
-2450.6 +706.8 y=+654.2
~~-1847.3~~ +205.8
-2432.1 -613.3
-1683.3 -869.8
-1067.5 -248.8
-863.8 -970.5
-390.4 -1218.5
-431.7 -704.5
+350.4 -1144.8

2341.6 2255.5 -268.4 -324.5
2321.3 2301.2 -288.7 -278.8
2205.7 2470.2 -404.3 -109.8
2024.0 2518.7 -586.0 -61.3
2064.6 2700.9 -545.4 +120.9
2204.7 2707.8 -405.3 +127.8
2349.7 2634.3 -260.3 +54.3
2741.7 2316.4 +131.7 -263.6
2619.6 2497.2 +9.6 -82.8
2520.3 2584.5 -89.7 +95.5
-336.5
-265.3 -261.3

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

April 6, 1897.

D 4878 85

Measures of positions of N. Polar Standard Stars. (ten)

		a	B	C	D	a+C	B+D	C-a	B-D	C-ax203	B-Dx203
✓	23	15	14	114	116	129	130	+99	-10.2	+20.1	-20.7
	19	129	129	130	130						
✓	17	61	01	68	129	129	130	+07	-12.8	+1.4	-26.0
	24	43	10	87	120						
✓	18	130	69	129	61	259	130	-0.1	+0.8	= 26.3 / .2	+1.6
✓	16	101	120	28	10	129	130	-73	+11.0	-14.8	+22.3
✓	25	40	126	90	4	130	130	+50	+12.2	+10.2	+24.8
✓	9	9	71	121	60	130	131	+112	+1.1	+22.7	+2.2
✓	5	40	7	90	122	130	129	+50	-11.5	+10.2	-23.3
✓	5a	93	60	36	70	129	130	-57	-1.0	-11.6	-2.0
✓	2	113	20	117	109	130	129	-9.6	-8.9	-19.5	-18.1
✓	6	50	116	72 9	14	129	130	+2.9	+10.2	+5.9	+20.7
✓	April 10.97 a	129	81	1	48	130	129	-12.8	+3.3	-26.0	+6.7
✓	b	49	98	81	37 2	130	130	+3.2	+6.6	+6.5	+13.4
✓	c	73	70	55	60	128	130	-1.8	+1.0	-3.7	+2.0
✓	d	5	80	125	50	130	130	+12.0	+3.0	+24.4	+6.1
✓	e	33	20	96	110	129	130	+6.3	-9.0	+12.8	-18.3
✓	f	74	4	55	126	129	130	-1.9	-12.2	-3.9	-24.8
✓	g	108	55	22	74	130	129	-8.6	-1.9	-17.5	-3.9
✓	h	49	60	80	70	129	130	+3.1	-1.0	+6.3	-2.0
✓	k	91	4	39	126	130	130	-5.2	-12.2	-10.6	-24.8
✓	l	76	47	53	83	129	130	-2.3	-3.6	-4.7	-7.3
✓	+89° 1	125	119	4	10	129	129	-12.1	+10.9	-24.6	+22.1
✓	3	9	5	120	124	129	129	+11.1	-11.9	+22.5	-24.1 2
✓	4	89	99	70	30				+2.2	+14.0	
✓	5a	79	629	36	70 30	129	129	+11	+69	-11.6	+12.0
						129	130	-5.7	-1.0		
	12	34	37	95	92	129	129	+61	-55	+12.4	-11.2
	26	22	23	106	107	128	130	+8.4	-8.4	+17.1	-17.1
	29	34	118	92	1	129	129	+55	+10.7	+11.2	+21.7
	31	40	75	90	57	130	132	+50	+1.8	+10.2	+3.7
	35	10	108	119	21	129	129	+109	+8.7	+22.1	+17.7
	36	27	28	102	103	129	131	+75	-7.5	+15.2	-15.2
	37	120	110	10	19	130	129	-11.0	+9.1	-22.3	+18.5

+ Cancelled April 16/97
Have sent list of measures to Dr. Doolittle, Manager, 75 Madison Square, N.Y.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

-2432.1 -6545 (13.1)

-2450.8 +6552 (7.07) $y = +6546$ ✓

-1847.5 +2094 (6.2)
-17832 +9139 (869.3)
-1653.0 -869.0
- 325.5 +1888.8
+1555.6 +1335.7
4091.2 3947.0 +1481.2 ✓ +1367.0 ✓
+2472.7 +1225.3
+2024.7 +2028.1

2341.0 2255.1 -269.0 -327.9
2320.9 2301.0 -289.1 -279.0
2205.5 2470.2 -407.5 -109.8
2028.2 (13.2) 2518.7 -586.8 - 61.3
2064.2 2700.9 -545.8 +120.9
2205.3 2707.4 -404.7 +127.4
2349.5 2633.9 -260.5 + 53.9
2741.5 2316.4 +131.5 -263.6
2619.4 2497.0 + 9.4 - 83.0
2520.1 2584.7 - 89.9 + 4.7

+5214 + 80.5
+726.8 +915.7 (8) +863.2 ✓
+1021.6 +1035.4
4091.2 ✓ 3947.0 ✓ +1481.2 ✓ -1367.0 ✓
-1019.6 +1323.6
- 1067.5 - 248.5
- 868.0 - 971.1
- 390.6 - 1216.1 reduced with -B + 2 80 + 51 gives $y = -1218.3$ ✓
- 431.3 - 704.1
+ 350.8 - 1144.6
- 265.3 - 836.7

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.40

April 6. 1897 D4849

Measures of Positions of Stars within 30° of North Pole

	No.	x	y	A, B, C, D	A+C	B+D	C-A	B-D	$x^{52.6}$	$y^{52.6}$	$\frac{203}{C-A}$	$\frac{203}{B-D}$
✓	a	45.2	43.4	120 78 10 53	130	131	-110	+25	2367.0	2261.8	-22.3	+5.1
✓	b	44.7	44.3	40 98 90 32	130	130	+50	+66	2314.4	2314.4	+10.2	+13.4
✓	c	42.5	47.4	70 70 60 60	130	130	-10	+10	2209.2	2472.2	-2.0	+2.0
✓	d	39.1	48.3	125 81 4 50	129	131	-121	+31	2051.4	2524.8	-24.8	+6.3
✓	e	39.8	51.8	27 20 102 109	129	129	+75	-89	2051.4	2682.6	+15.2	-18.1
✓	f	42.5	51.9	67 3 61 127	128	130	-6	-124	2209.2	2682.6	-1.2	-25.2
✓	g	45.2	50.5	100 58 30 77	130	130	-70	-24	2367.0	2630.0	-14.2	-4.9
✓ W.S.	h	~~52.4~~ 2.6	~~47.5~~ 44.5	~~79~~ 39	~~85~~ 59	~~3~~ 90	~~75~~ 40	~~126~~	129	129	+51	-11	2735.2	2314.4	+10.4	-2.2
✓ W.S	k	~~48.4~~ 50.4	~~49.6~~ 47.9	~~69~~ 85	~~48~~ 3	~~60~~ 44	~~84~~ 127		129	130	-41	-124	2630.0	2472.2	-8.3	-25.2
✓ W.S	l	~~48.5~~ 49.6	~~51~~	69 47 60 83	129	130	-9	-36	2524.8	2577.4	-1.8	-7.3
	1											
	2											
	3											
✓	4	16.2	47.4	105 87 25 43	130	130	-80	+44	841.6	2472.2	-16.2	+8.9
✓	5	16.4	44.8	98 ~~47~~ 32	111	130	128	-66	-94	841.6	2314.4	-13.4	-19.1
✓	6	16.6	51.4	36 79 93 50	129	129	+57	+29	841.6	2682.6	+11.6	+5.9
	7											
✓	8	17.8	47.3	10 84 120 45	130	129	+110	+39	894.2	2472.2	+22.3	+7.9
✓	9	18.0	46.4	127 60 2 70	129	130	-125	-10	946.8	2419.6	-25.4	-2.0
✓	10	18.5	53.4	66 80 65 50	131	130	-1	+30	946.8	2787.8	-0.2	+6.1
✓	11	18.5	62.6	67 55 62 74	129	129	-5	-19	946.8	3261.2	-1.0	-3.9
✓	12	18.9	40.7	5 33 124 96	129	129	+119	-63	946.8	2104.0	+24.2	-12.8
✓	13	19.0	42.3	125 92 3 39	128	131	-122	+53	999.4	2209.2	-24.8	+10.8
✓	14	19.2	53.6	113 46 17 84	130	130	-96	-38	999.4	2787.8	-19.5	-7.7
✓	15	~~19.5~~ 20.0	64.6	130 38 130 92	(260)	130	00	-54	1052.0	3366.4	~~+52.8~~	-11.0
✓	16	20.0	67.9	124 10 5 120	129	130	-119	-110	1052.0	3524.2	-24.2	-22.3
✓	17	20.4	67.1	88 ~~87~~ 122 40 7	128	129	-48	+115	1052.0	3524.2	-9.7	+23.3
					2845 / 22 = 1293					2984 / 23 = 1297		

1552/12 1684/13

24.30

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1990phae.proj..971L

		-2610	-2580
2344.7	2256.7	-265.3	-328.3
2324.6	2301.0	-285.4	-279.0
2217.2	2470.2	-402.8	-109.8
2026.8	2518.5	-583.2	-61.5
2066.6	2700.7	-543.4	+120.7
2208.0	2707.8	-402.0	+127.8
2352.8	2634.9	-257.2	+54.9
2745.6	2316.6	+135.6	-263.4
2621.7	2497.4	+11.7	-82.6
2523.0	2584.7	-87.0	+4.7

825.4	2463.3	-1784.6	-116.7
828.2	2333.5	-1781.8	-246.5
853.2	2676.7	-1756.8	+96.7

916.5	2464.3	-1693.5	-115.7
921.4	2421.6	-1688.6	-158.4
946.6	2781.7	-1663.4	+261.7
945.8	3265.1	-1664.2	+785.1
971.0	2116.8	-1639.0	-363.2
974.6	2198.4	-1635.4	-381.6
979.9	2795.5	-1630.1	+215.5
1052.0	3377.7	-1558.0	+797.4
1027.8	3546.5	-1582.2	+966.5
1042.3	3500.9	-1567.7	+920.9

-1584.3

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..9711

23.15

April 7, 1897. Plate D 4849.

Measures of Positions of Stars within 30° of North Pole (Cont.)

	No.	x	y	A,B	C,D	A+C	B+D	C-A	B-D	x×52.6	y×52.6	C-a ×2.03	B-D ×2.03
✓	18	20.6	54.7	40	23	90	107	130	130	+50	-84	1052.0	2840.4	+10.2	-17.1
✓	19	20.6	50.6	37	38	92	90	129	128	+55	-52	1052.0	~~2625.0~~ 2630.0	+11.2	-10.6
✓	20	21.2	40.6	118	49	12	81	130	130	-106	-32	1104.6	~~2100.0~~ 2104.0	-21.5	-6.5
✓	21	21.3	41.2	95	110	34	20	129	130	-61	+90	1104.6	~~2152.5~~ 2156.6	-12.4	+18.3
✓	22	21.5	43.9	68	8	61	121	129	129	-7	-113	1104.6	~~2257.5~~ 2261.8	-1.4	-22.9
✓	23	21.2	46.5	111	60	18	69	129	129	-93	-9	1104.6	~~2415.0~~ 2419.6	-18.9	-1.8
✓	24	21.1	47.3	119	83	10	46	129	129	-109	+37	1104.6	~~2467.5~~ 2472.2	-22.1	+7.5
✓	25	21.3	59.9	91	3	39	127	130	130	-52	-124	1104.6	3103.4	-10.6	-25.2
✓	26	21.9	67.5	10	66	120	64	130	130	+110	+2	1104.6	3524.2	+22.3	+0.4
✓	27	22.1	51.3	122	99	6	31	128	130	-116	+68	1157.2	2682.6	-23.5	+13.8
✓	28	22.2	41.2	105	104	24	25	129	129	-81	+79	1157.2	~~2152.5~~ 2156.6	-16.4	+16.0
✓	29	22.3	48.7	99	24	31	106	130	130	-68	-82	1157.2	~~2520.0~~ 2524.8	-13.8	-16.6
✓	30	22.8	28.8	18	24	111	107	129	131	+93	-83	1157.2	~~1470.0~~ 1472.8	+18.9	-16.8
✓	31	23.1	34.7	120	29	10	101	130	130	-110	-82	1209.8	~~1780.0~~ 1788.4	-22.3	-14.6
✓	31a	22.5	63.7	61	28	70	102	131	130	+9	-74	1157.2	3313.8	+1.8	-15.0
✓	32	23.9	40.8	14	12	115	119	129	131	+101	-107	1209.8	~~2100.0~~ 2104.0	+20.5	-21.7
	n.s.	33													
✓	34	23.8	47.6	20	45	109	85	129	130	+89	-40	1209.8	2472.2	+18.1	-8.1
✓	35	23.3	59.0	90	130	39	130	129	260	-51	0.0	1209.8	3103.4	-10.4	0.0
✓	36	23.8	60.1	25	124	103	6	128	130	~~+88~~ 78	+118	1209.8	3156.0	~~+179~~ +15.8	+24.0
✓	37	23.7	72.8	38	11	91	119	129	130	+53	-108	1209.8	3787.2	+10.8	-21.9
✓	38	24.6	27.3	49	90	81	40	130	130	+32	+50	1262.4	1420.2	+6.5	+10.2
✓	39	24.9	32.5	11	64	119	68	130	132	+108	-4	1262.4	1683.2	+21.9	-0.8
✓	40	25.1	47.2	120	99	9	31	129	130	-111	+68	1315.0	2472.2	-22.5	+13.8
✓	41	25.2	72.7	110	36	20	95	130	131	-90	-59	1315.0	3787.2	-18.3	-12.0
	n.s.	42													
✓	43	25.4	61.0	80	129	50	130	130	259	-30	-1	1315.0	3208.6	-6.1	-0.2
✓	44	26.1	57.7	123	29	6	100	129	129	-117	-71	1367.6	2998.2	-23.8	-14.4

$\frac{3364}{26} = 129\frac{4}{26}$ $\frac{3637}{28} = 129\frac{25}{28}$

23.50

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

x-2610	y-2580	Corr x	Corr y
-1558.0	+2604	-1547.8	+277.5
-1558.0	+ 50.0	-1546.8	+ 60.6
-1505.4	- 476.0	-1526.9	- 469.5
-1505.4	- 423.4	- 1517.8	- 441.7
-1505.4	- 318.2	-1506.8	-295.3
-1505.4	- 170.4	- 1524.3	- 158.6
-1505.4	- 107.8	-1527.5	-115.3
-1505.4	+ 523.4	-1516.0	+548.6
-1505.4	+ 944.2	-1483.1	+943.8
-1452.8	+ 102.6	-1476.3	+ 88.8
-1452.8	- 423.4	-1469.2	- 439.4
-1452.8	- 55.2	-1466.6	- 38.6
-1452.8	- 1107.2	-1433.9	- 1090.4
-1400.2	- 791.6	-1422.5	- 777.0
-1452.8	+ 733.8	-1451.0	+ 748.8
-1400.2	- 476.0	-1379.7	- 454.3
-1400.2	- 107.8	-1382.1	- 99.7
-1400.2	+ 523.4	-1410.6	+497.1
-1400.2	+ 576.0	-1382.3	+552.0
-1400.2	+ 1207.2	-1389.4	+1229.1
-1347.6	- 1159.8	-1281.1	-1170.0
-1347.6	- 896.8	-1325.7	- 896.0
-1295.0	- 107.8	-1317.5	-121.6
-1295.0	+1207.2	-1313.3	+1219.2
-1295.0	+6286	-1301.1	+628.8 +602.5
-1242.4	+4182	-1266.2	+432.6

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.50

April 7, 1897. D4849

Measures of Positions of Stars within 30° of North Pole (Cont.)

	No.	x	y	A.	B	C.	D	A+C	B+D	C-a	B-D	x×52.6	y×52.6	C-a ×2.03	B-D ×2.03
✓	45	26.4	25.3	85	92	44	39	129	131	-41	+53	1367.6	1315.0	-83	+10.8
✓	46	26.7	25.8	34	15	95	115	129	130	+61	-100	1367.6	1315.0	+124	-20.3
	n.s.	47													
✓	48	26.6	31.4	40	77	90	53	130	130	+50	+24	1367.6	1630.6	+10.2	+4.9
✓	48a	26.4	54.1	81	128	48	2	129	130	-33	+126	1367.6	2840.4	-6.7	+25.6
✓	49	28.1	39.8	119	14	10	115	129	129	-109	-101	1420.2	2051.4	-22.1	-20.5
✓	50	27.3	26.7	90	32	39	97	129	129	-51	-65	1420.2	1367.6	-10.4	-13.2
✓	51	27.7	52.7	39	36	90	94	129	130	+51	-58	1420.2	2735.2	+10.4	-11.8
✓	52	27.6	55.3	55	100	75	3 / 70	130	130	+20	+70	1420.2	2893.0	+4.1	+14.2
✓	53	27.5	64.4	64	75	69	57	133	132	+5	+18	1420.2	3366.4	+1.0	+3.7
	n.s.	54													
	n.s.	55													
	n.s.	56													
	n.s.	57													
✓	57a	27.9	75.8	8	16	122	116	130	132	+114	+100	1420.2	3945.0	+231	-20.3
✓	58	28.5	23.5	58	60	71	69	129	129	+13	-9	1472.8	1209.8	+2.6	-1.8
	n.s.	59	~~28.2 29.6 111 57 18 72~~												
✓	60	28.2	29.6	111	57	18	72	129	129	-93	-15	1472.8	1525.4	-18.9	-3.0
✓	61	28.6	29.6	49	37	81	93	130	130	+32	-56	1472.8	1525.4	+6.5	-11.4
✓	62	28.5	30.6	60	39	70	90	130	129	+10	-51	1472.8	1578.0	+2.0	-10.4
✓	62a	28.5	35.4	56	82	74	47	130	129	+18	+35	1472.8	1841.0	+3.7	+7.1
✓	63	28.8	43.7	25	30	106	100	131	130	+81	-70	1472.8	2261.8	+16.4	-14.2
✓	64	28.6	44.5	41	60	89	70	130	130	+48	-10	1472.8	2314.4	+9.7	-2.0
✓	65	28.5	67.4	65	75	63	57	128	132	-2	+18	1472.8	3524.2	-0.4	+3.7
✓	65a	28.5	70.9	68	10	61	120	129	130	-7	+110	1472.8	3682.0	-1.4	-22.3
✓	66	28.6	72.4	58	77	71	55	129	132	+13	+22	1472.8	3787.2	+2.6	+4.5
✓	67	29.7	43.7	45	29	85	101	130	130	+40	-72	1525.4	2261.8	+8.1	-14.6
✓	68	29.3	44.3	83	90	46	40	129	130	-37	+50	1525.4	2314.4	-7.5	+10.2
✓	69	29.8	44.8	15	23	114	107	129	130	+99	-84	1525.4	2314.4	+20.1	-17.1
✓	70	29.5	51.7	70	25	60	106	130	131	-10	-81	1525.4	2682.6	-2.0	-16.4
	n.s	71													

+89° 26'

3114.0 / 24 = 1297

3124 / 24 = 1301

24.15

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1890phae.proj..971L

		-2610.	-2580.
1358.3	1304.2	-1250.7	-1275.8
1380.0	1335.3	-1230.0	-1244.7
1377.8	1625.7	-1232.2	-954.3
1360.9	2814.8	-1249.1	+234.8
1398.1	2071.9	-1211.9	-508.1
1409.8	1380.8	-1200.2	-1199.2
1430.6	2747.0	-1179.4	+167.0
1424.8	2878.8	-1185.7	+298.8
1421.2	3362.7	-1188.8	+782.7
1443.3	3965.3	-1176.7	+1385.3
1475.4	1211.6	-1134.6	-1368.4
1453.9	1528.4	-1156.1	-1051.6
1479.3	1536.8	-1130.7	-1043.2
1474.8	1588.4	-1135.2	-991.6
1476.5	1833.9	-1133.5	-746.1
1489.2	2276.0	-1120.8	-304.0
1482.5	2316.4	-1127.5	-263.6
1472.4	3520.5	-1137.6	+940.5
1471.4	3704.3	-1138.6	+1124.3
1475.4	3782.7	-1134.6	+1202.7
1533.5	2276.4	-1076.5	-303.6
1517.9	2304.2	-1092.1	-275.8
1545.5	2331.5	-1064.5	-248.5
1523.4	2699.0	-1086.6	+119.0

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

24.15

April 7, 1897. Plate D 4847

Measures of Positions of Stars within 30° of North Pole (Cont)

	No.	x	y	A, B, C, D	A+C	B+D	C-a	B-D	x×52.6	y×52.6	C-a ×2.03	B-D ×2.03
✓	72	29.4	62.9	67 4 61 126	128	130	-6	-122	1525.4	3261.2	-1.2	-24.8
✓	73	29.7	64.2	34 110 95 20	129	130	+61	+90	1525.4	3366.4	+12.4	+18.3
	n.s.	74										
	n.s.	75										
✓	76	31.0	50.4	125 68 5 64	130	132	-120	+4	1630.6	2630.0	-24.4	+0.8
	n.s.	77										
	n.s.	78										
	n.s.	79										
✓	80	30.3	67.4	103 82 27 47	130	129	-76	+35	1578.0	3524.2	-15.4	+7.1
✓	81	30.5	67.4	70 70 60 60	130	130	-10	+10	1578.0	3524.2	-2.0	+2.0
✓	82	30.4	68.2	82 113 49 17	131	130	-33	+96	1578.0	3576.8	-6.7	+19.5
✓	83	30.6	69.9	50 5 80 124	130	129	+30	-119	1578.0	3629.4	+6.1	-24.2
✓	+89° 12=84	30.7	74.6	27 40 103 90	130	130	+76	-50	1578.0	3892.4	+15	4 28 -10.2
✓	85	31.3	23.1	93 121 37 8	130	129	-56	+113	1630.6	1209.8	-11.4	+22.9
✓	86	31.9	30.6	1 47 129 83	130	130	+128	-36	1630.6	1578.0	+26.0	-7.3
✓	87	31.9	40.1	9 125 120 4	129	129	+111	+121	1630.6	2104.0	+225	+24.6
✓	88	31.3	43.8	96 18 33 111	129	129	-63	-93	1630.6	2261.8	-12.8	-18.9
✓	89	31.2	54.8	110 20 20 110	130	130	-90	-90	1630.6	2840.4	-18.3	-18.3
	n.s.	90										
✓	91	31.5	59.9	75 7 54 123	129	130	-21	-116	1630.6	3103.4	-4.3	-23.5
✓	92	31.3	60.8	96 13 32 117	128	130	-68 4	-104	1630.6	3156.0	-13.0	-21.1
✓	92a	31.6	61.6	140 47 90 85	130	132	+50	-38	1630.6	3208.6	+10.2	-7.7
✓	93	31.9	61.9	10 9 120 121	130	130	+110	-112	1630.6	3208.6	+223	-22.7
	n.s.	94										
24.40	n.s.	95										
April 21 1897 23.05	96	32.1	24.3	122 93 8 37	130	130	-114	+56	1683.2	1262.4	-23.1	+11.4
✓	97	32. 38.4	28.2	72 115 58 25	130	130	-14	+80	1683.2 1998.8	1472.8	-2.8	+16.2
✓	98	32.2	51.8	100 27 29 103	129	130	-71	-76	1683.2	2682.6	-14.4	-15.4

2592/20 = 1296 2599/20 = 1299

23.10

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phaed.proj..971L

		−2610.	−2580.
1524.2	3286.0	−1085.8	+706.0
1537.8	3348.1	−1072.2	+768.1
1606.2	2629.2	−1003.8	+49.2
1562.6	3517.1	−1047.4	+937.1
1576.0	3522.2	−1034.0	+942.2
1571.3	3557.3	−1038.7	+977.3
1584.1	3653.6	−1025.9	+1073.6
1593.4	3902.6	−1016.6	+1322.6
1619.2	1286.9	−990.8	−1393.1
1656.6	1885.3	−953.4	−794.7
1653.1	2079.4	−956.9	−500.6
1617.8	2280.7	−992.2	−299.3
1612.3	2858.7	−997.7	+278.7
1626.3	3126.9	−983.7	+546.9
1617.6	3177.1	−992.4	+597.1
1640.8	3216.3	−969.2	+636.3
1652.9	3231.3	−957.1	+651.3
1660.1	1267.0	−949.9	−1329.0
1680.4	1456.6	−929.6	−1123.4
1668.8	2698.0	−941.2	+118.0

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.10

April 21, 1897 D 4879

Measures of Positions of Stars within 30° of North Pole (cont.)

No.	x	y	A, B, C, D	A+C	B+D	C−a	B−D	x×52.6	y×52.6	C−a ×2.03	B−D ×2.03
n.s	99	~~32.6~~	~~65.2~~	~~42~~	~~111~~	~~88~~	~~20~~				
✓	100	32.6	65.2	42	111	88	20	130	131	+46	+91	1688.2	3419.0	+9.3	+18.5
✓	101	33.0	74.7	1	32	129	98	130	130	+128	−66	17358	3892.4	+26.0	−13.4
✓	101a	33.4	20.2	84	110	46	20	130	130	−38	+90	1736.8	1052.0	−7.7	+18.3
✓	102	34.0	26.7	1	79	128	51	129	130	+127	+28	1788.4	1367.6	+25.8	+5.7
✓	+89° 29 = 103	33.7	31.2	29	114	101	16	130	130	+72	+98	1735.8	1630.6	+14.6	+19.9
✓	104	33.2	35.4	115	70	14	60	129	130	−101	+10	1735.8	1841.0	−20.5	+2.0
✓	105	33.4	36.9	80	9	50	120	130	129	−30	−111	1735.8	1893.6	−6.1	−22.5
✓	106	33.8	71.3	22	99	108	31	130	130	+86	+68	1735.8	3734.6	+17.5	+13.8
✓	107	33.7	75.4	29	80	100	50	129	130	+71	+30	1735.8	3945.0	+14.4	+6.1
n.s	108	34.3										1788.4			
✓	109	~~32.3~~	21.3	90	93	39	37	129	130	−51	+56	1688.2	1104.6	−10.4	+11.4
✓	110	34.6	37.1	54	120	75	10	129	130	+21	+110	1788.4	1946.2	+4.3	+22.3
✓	111	34.5	41.4	63	89	66	40	129	129	+03	+49	1788.4	2155 (66)	+0.6	+9.9
✓	112	34.7	57.3	40	104	90	26	130	130	+50	+78	1788.4	2998.2	+10.2	+15.8
✓	113	34.3	58.5	91	60	39	70	130	130	−52	−10	1788.4	3050.8	−10.6	−2.0
✓	114	34.8	60.1	26	128	103	2	129	130	+77	+126	1788.4	3156.0	+15.6	+25.6
n.s	115														
✓	116	34.9	65.5	10	56	120	75	130	131	+110	−19	1788.4	3419.0	+22.3	−3.9
✓	117	34.4	70.1	71	120	59	10	130	130	−12	+110	1788.4	3682.0	−2.4	+22.3
✓	118	35.3	23.9	99	3	30	127	129	130	−69	−124	1841.0	1209.8	−14.0	−25.2
✓	119	35.4	30.3	79	92	50	38	129	130	−29	+54	1841.0	1578.0	−5.9	+11.0
✓	120	35.6	31.6	50	56	79	74	129	130	+29	−18	1841.0	1630.6	+5.9	−3.7
✓	121	35.3	39.4	90	78	39	52	129	130	−51	+26	1841.0	2051.4	−10.4	+5.3
✓	122	35.4	46.7 (5)	70	66	60	63	130	129	−10	+03	1841.0	2419.6	−2.0	+0.6
✓	122a	35.1	50.3	125	94	5	36	130	130	−120	+58	1841.0	2630.0	−24.4	+11.8
✓	123	35.9	61.6	1	40	128	89	129	129	+127	−49	1841.0	3208.6	+25.8	−9.9
✓	124	35.8	71.7	29	28	100	101	129	129	+71	−73	1841.0	3734.6	+14.4	−14.8
✓	125	35.2	66.9	110	5	20	124	130	129	−90	−119	1841.0	3471.6	−18.3	−24.2
								3367	3376						
								26 = 1295	26 = 1298						

23.35

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1996phaed.proj..971L

-2610. -2580.

16925 34005 - 9175 + 820.5
17618 39058 - 849.2 +13258 X=900.8
17281 10337 - 881.9 - 1546.3
1814.2 13619 - 7958 -1218.1 X=848.4
17607 16107 - 8596 - 969.3
17153 18390 - 8947 - 741.0
17297 19161 - 8803 - 563.9
17533 37208 - 8567 + 1140.8
17502 39389 - 8598 +13589

17780 - 8480 8320

16728 10932 - 9372 - 1486.8
17927 19239 - 8173 - 656.1
17890 21445 - 8210 - 435.5 3.3 3.3
17986 29824 - 8114 + 402.4
17778 30528 - 8322 + 472.8
18040 31304 - 8060 + 550.4

18107 34229 - 7993 + 842.9
17860 36597 - 8240 +1079.7
18270 12350 - 7830 - 1345.0
18351 15670 - 7749 -10130
18469 16343 - 7631 - 945.7
18306 20461 - 7794 - 533.9
18390 24190 - 7710 - 161.0
18166 26182 - 7934 + 38.2
18688 32185 - 7432 + 638.5
18554 37494 - 7546 +1169.4
18227 34958 - 7873 + 9158

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.35

April 21, 1897. D 4849

Measures of Positions of Stars within 30' of Math Pole (cont'd)

No.	x	y	A.R. h.	D.	a+c	B+D	c-a	B-D	x×52.6	y×52.6	c-a ×2.03	B-D ×2.23
N.S	126											
✓	127	36.8 ~~35.8~~	19.2	24	100	105	30	129	130	+81	+70	1893.6 ~~1841.0~~	9994	+16.4	+14.2
✓	128	37.0	18.8	129	111	130	19	259	130	+1	+92	1946.2	9468	+0.2	+18.7
✓	129	36.4	41.1	80	125	49.5		129	130	-31	+120	1893.6	2156.6	-6.3	+24.4
✓	130	36.5	41.1	64	128	65	2	129	130	+1	+126	1893.6	2156.6	+0.2	+25.6
✓	131	36.4	42.0	80	128	50	1	130	129	-30	+127	1893.6	2209.2	-6.1	+25.8
✓	132	36.8	43.2	25	118	104	12	129	130	+79	+106	1893.6	2261.8	+16.0	+21.5
✓	133	36.3	46.5	90	60	40	69	130	129	-50	-9	1893.6	2419.6	-10.2	-1.8
✓	134	36.4	47.4	72	91	58	39	130	130	-14	+52	1893.6	2472.2	-2.8	+10.6
✓	135	36.4	57.3	70	88	60	42	130	130	-10	+46	1893.6	2998.2	-2.0	+9.3
✓	136	36.6	61.9	43	1	87	129	130	130	+44	-128	1893.6	3208.6	+8.9	-26.0
✓	137	36.2	62.5	107	68	22	61	129	129	-85	+7	1893.6	3261.2	-17.3	+1.4
✓	138	36 ~~43.5~~	63.3	55	93	75	37	130	130	+20	+56	1893.6	3313.8	+4.1	+11.4
✓	139	36.4	80.7	70	31	60	99	130	130	-10	-68	1893.6	4208.0	-2.0	-13.8
✓	140	36.6	81.2	39	110	90	20	129	130	+51	+90	1893.6	4260.6	+10.4	+18.3
✓	141	37.2	20.2	101	70	29	59	130	129	-72	+11	1946.2	1052.0	-14.6	+2.2
✓	142	37.8	20.8	17	10	112	119	129	129	+95	-109	1946.2	1052.0	+19.3	-22.1
✓	143	37.4	37.3	75	100	55	30	130	130	-20	+70	1946.2	1946.2	-4.1	+14.2
✓	144	37.9	37.8	18	20	120	110	130	130	+110	-90	1946.2	1946.2	+22.3	-18.3
✓	145	37.6	38.4	50	79	80	50	130	129	+30	+29	1946.2	1998.8	+6.1	+5.9
✓	146	37.6	46.4	35	75	94	5 ~~74~~	129	129	+59	+21	1946.2	2419.6	+12.0	+4.3
✓	147	37.5	60.4	58	77	70	54	128	131	+12	+23	1946.2	3156.0	+2.4	+4.7
✓	148	37.9	64.8	19	93	111	37	130	130	+92	+56	1946.2	3366.4	+18.7	+11.4
✓	149	37.3	64.7	100	31	29	99	129	130	-71	-68	1946.2	3366.4	-14.4	-13.8
✓	150	37.6	79.1	59	124	70	6	129	130	+11	+118	1946.2	4155.4	+2.2	+24.0
✓	151	39.0	45.6	121	46	8	84	129	130	-113	-38	2051.4	2367.0	-22.9	-7.7
✓	152	39.1	48.4	125	82	4	48	129	130	-121	+34	2051.4	2524.8	-24.6	+6.9

3495 / 27 = 1294

3374 / 26 = 1298

23.55

Assumed to be 36.5

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1996phae.proj..971L

		-2610	-2580
1910.0		-700.0	
~~1857.#~~	985.2	~~-752.6~~	-1594.8
1946.4	928.1	-663.6	-1651.9 x=689.9 ~~y=-1623.6~~
1887.3	2132.2	-722.7	-447.8
1893.8	2131.0	-716.2	-449.0
1887.5	2183.4	-722.5	-396.6
1909.6	2240.3	-700.4	-339.7
1883.4	2421.4	-726.6	-158.6
1890.8	2461.6	-719.2	-118.4
1891.6	2988.9	-718.4	+408.9
1902.5	3234.6	-707.5	+654.6
1876.3	3259.8	-733.7	+679.8
1897.7	3302.4	-712.3	+722.4
1891.6	4221.8	-788.4	+1641.8
1904.0	4242.3	-706.0	+1662.3
1931.6	1049.8	-678.4	-1570.2
1965.5	1029.4	-644.5	-1505.9
1942.1	1932.0	-667.9	-648.0
1968.5	1964.5	-641.5	-615.5
1952.3	1992.9	-657.7	-587.1
1958.2	2485.3	-651.8	-164.7
1948.6	3157.3	-661.4	+571.3
1964.9	3355.0	-645.1	+775.0
1931.8	3380.2	-678.2	+800.2
1948.4	4131.4	-661.6	+1551.4
2028.5	2374.7	-581.5	-205.3
2026.8	2517.9	-583.2	-62.1

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.55

April 21, 1897 D 4849

Measures of Positions of Stars within 3.0° of North Pole (cont.)

	No.	x	y	A, B, & D	A+C	B+D	C−a	b−D					
√	153	38.9	59.2	10 102 120 28	130	130	+110	+ 74	1998.8	3103.4	+22.3	+15.0	2
√	154	38.5	65.3	53 100 76 30	129	130	+23	+ 70	1998.8	3419.0	+ 4.7	+14.2	2
√	154a	38.2	75.6	108 39 21 91	129	130	− 87	− 52	1998.8	3945.0	−17.7	−10.6	1
√	155	38.2	76.2	109 165 19 25	128	130	− 90	+ 80	1998.8	3997.6	−18.3	+16.2	1
√	156	39.3	17.8	91 28 39 102	130	130	− 52	− 74	2051.4	8942	−10.6	−15.0	2
√	157	40.0	19.8	1 25 129 105	130	130	+128	− 80	2104.0	999.4	+26.0	−16.2	2
√	158	40.0	26.4	130 80 129 50	259	130	− 1	+ 30	2104.0	1367.6	− 0.2	+ 6.1	21
√	159	39.3	39.3	91 101 38 28	129	129	− 53	+ 73	2051.4	2057.4	−10.8	+14.8	20
√	160	39.8	43.9	29 10 100 120	129	130	+ 71	− 110	2051.4	2261.8	+14.4	−22.3	20
√	161	39.9	50.0	2 128 127 2	129	130	+125	+126	2051.4	2630	+25.4	+25.6	20
√	162	39.8	51.8	25 20 104 110	129	130	+ 79	− 90	+16.0	−18.3	2051.4	2682.6	20
√	162a	39.2	55.2	110 100 19 30	129	130	− 91	+ 70	2051.4	2893.0	−18.5	+14.2	20
	n.s	163											
	n.s	164											
√	24.10 April 26, 1897	165	39.6	78.6	45 50 84 80	129	130	+ 39	− 30	2051.4	4102.8	+ 7.9	− 6.1	20
√	23.10	166	40.2	45.2	100 99 30 31	130	130	− 70	+ 68	2104.0	2367.0	−14.2	+13.8	20
√		167	40.8	49.0	21 128 108 2	129	130	+ 87	+126	2104.0	2577.4	+17.7	+25.6	21
√		168	40.2	61.6	111 52 19 78	130	130	− 92	− 26	2104.0	3208.6	−18.7	− 5.3	20
	defect	169	~~41.1~~	~~64.6~~	~~121 51 8 80~~									
√		170	41.1	64.6	121 51 8 80	129	131	−113	− 29	2156.6	3366.4	−22.9	− 5.9	21
√		171	41.0	66.2	125 109 52 1	130	130	−120	+ 88	2156.6	3471.6	−24.4	+17.9	21
√		172	40.6	69.3	49 90 80 40	129	130	+ 31	+ 50	2104.0	3629.4	+ 6.3	+10.2	2
√		173	40.6	74.0	50 129 80 1	130	130	+ 30	+128	2104.0	3892.4	+ 6.1	+26.0	2
	defect	174	~~40.0~~	~~82.4~~	~~90 74 39 59~~									
√		175	40.3	82.4	90 74 39 59	129	133	− 51	+ 15	2104.0	4313.2	−10.4	+ 3.0	20
√		176	41.1	17.2	111 110 18 20	129	130	− 93	+ 90	2156.6	894.2	−18.9	+18.3	21
√		177	42.0	17.4	125 68 4 61	129	129	−121	+ 7	2209.2	894.2	−24.6	+ 1.4	21
√		178	41.5	30.7	70 32 60 98	130	130	− 10	− 66	2156.6	1578.0	− 2.0	−13.4	21
	n.s.	179												

3233/25 = 1293 3122/24 = 1297

23.30

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

		-2610.	-2580.	
2021.1	30884	-588.9	+508.4	
2003.5	34048	-606.5	+824.8	
1981.1	39556	-628.9	+1375.6	
1980.5	39814	-629.5	+1401.4	
2040.8	909.2	-569.2	-1670.8	
2130.0	10156	-480.0	-15644	-X=532.6
2103.8	1361.5	-506.2	-1218.5	X=532.5
2040.6	2036.6	-569.4	-543.4	
2065.8	22841	-544.2	-295.9	
2076.8	26044	-533.2	+24.4	
2067.4	2700.9	-542.6	+120.9	
2032.9	2878.8	-577.1	+298.8	
2059.3	41089	-550.7	+1528.9	
2089.8	23532	-520.2	-226.8	
2121.7	25518	-488.3	-28.2	
2085.3	3213.9	-524.7	+633.9	
2133.7	33723	-476.3	+792.3	
2132.2	3453.7	-477.8	+873.7	
2110.3	3619.2	-499.7	+1039.2	
2110.1	3864	-499.9	+1286.4	
2093.6	4310.2	-516.4	+1730.2	
2137.7	875.9	-472.3	-1704.1	
2184.6	892.8	-425.4	-1687.2	
2154.6	1591.4	-455.4	-988.6	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971

23.30

April 26. 1897 D 4879

Measures of position of Stars within 30° of North Pole (cont)

	No.	x	y	A	B	b	D.	a+c	B+D	c-a	B-D	x×52.6	y×52.6	2.03×(c-a)	2.03×(B-D)
✓		180	41.2	31.1	110	125	20	4	130	129	−90	+121	2156.6	1630.6	−18.3	+24.9
✓		181	41.2	32.4	101	72	28	58	129	130	−73	+14	2156.6	1683.2	−14.8	+2.8
✓		182	41.8	32.3	15	87	115	45	130	132	+100	+42	2156.6	1683.2	+20.3	+8.5
✓	+89° 35=	183	41.9	36.2	2	109	128	21	130	130	+126	+88	2156.6	1893.6	+25.6	+17.9
✓		184	41.3	45.0	86	129	44	130	130	259	−42	−1	2156.6	2367.0	−8.5	−0.2
✓	defect?	185	41.9	47.9	10	5	120	124	130	129	+110	−119	2156.6	2472.2	+22.3	−24.2
✓		186	41.7	61.5	29	61	100	68	129	129	+71	−7	2156.6	3208.6	+14.4	−1.4
✓		187	41.6	73.8	55	20	75	110	130	130	+20	−90	2156.6	3839.8	+4.1	−18.3
✓		188	41.5	82.9	65	6	65	123	130	129	0	−117	2156.6	4332	0	−23.8
✓		189	43.1	22.8	120	20	10	109	130	129	−110	−89	2261.8	1157.2	−22.3	−18.1
✓	+89° 31 =	190	42.7	216.4	30	79	100	51	130	130	+70	+28	2209.2	1867.6	+14.2	+5.7
✓		191	43.0	27.2	129	109	130	20	259	129	+1	+89	2861.8	1420.2	+0.2	+18.1
	n. s.	192														
✓	C =	193	42.5	47.5	71	70	60	60	131	130	−10	+10	2209.2	2472.2	−2.0	+2.0
✓	?	194	42.4	48.7	~~120~~ 80	39	50	90	130	129	−30	−51	2209.2	2524.8	−6.1	−10.4
✓	?	195	42.1	49.3	115	~~20~~ 100	15	30	130	130	−100	+70	2209.2	2577.4	−20.3	+14.2
✓		196	42.4	51.4	70	88	60	42	130	130	−10	+46	2209.2	2682.6	−2.0	+9.3
✓	f =	197	42.5	51.9	69	3	60	127	129	130	−9	−124	2209.2	2682.6	−1.8	−25.2
✓		198	42.6	56.2	54	108	78	22	129	130	+27	+86	2209.2	2945.6	+5.5	+17.5
✓		199	42.7	56.4	29	71	100	60	129	131	+71	+11	2209.2	2945.6	+14.4	+2.2
✓	defect?	200	42.3	60.5	98	68	31	62	129	130	−67	+6	2209.2	3156.0	−13.6	+1.2
✓		201	42.8	64.7	21	35	109	94	130	129	+88	−59	2209.2	3366.4	+17.9	−12.0
✓		202	42.7	70.8	41	21	88	108	129	129	+47	−87	2209.2	3682.0	+9.5	−17.7
✓		203	42.7	73.6	40	39	90	81	130	130	+50	−42	2209.2	3839.8	+10.2	−8.5
✓		204	42.9	74.7	11	31	119	99	130	130	+108	−68	2209.2	3892.4	+21.9	−13.8
✓		205	43.5	25.7	90	40	39	90	129	130	−51	−50	2261.8	1315.0	−10.4	−10.2
✓		206	43.4	27.2	81	99	48	31	129	130	−33	+68	2261.8	1420.2	−6.7	+13.8

23.50

3501/27 = 1297

3503/27 = 1297

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1996phae.proj..971L

		-2610.	-2580.
2138.3	1605.7	-471.7	-974.3
2141.8	1680.4	-4682	-899.6
2136.3	1674.7	-4331 ✓	-905.3
2182.2	1876.7	-427.8	-704.3
2148.1	2367.2	-4619	-212.8 y = 239.1
2178.9	2496.4	-431.1	-83.6
2171.0	3210.0	-4390	+630.0
2160.7	3858.1	-4493	+1278.1
2156.6	4337.0	-4534	+1757.0
2239.5	1175.3	-3705	-1404.7
2223.4	1361.9	-386.6	-1218.1
2262.0	1402.1	-3480	-1177.9 y = -374.3

		3.0 ✓	
2207.2	2470.2	-402.8	-109.8
2203.1	2535.2	-4069	-44.8
2188.9	2563.2	-421.1	-16.8
2207.2	2673.3	-402.8	+93.3
2207.4	2707.8	-4026	+127.8
2214.7	2928.1	-3953	+348.1
2233.6	2943.4	-3864	+363.4
2195.6	3154.8	-4144	+574.8
2227.1	3378.4	-3829	+798.4
2218.7	3664.3	-3913	+1119.7
2219.4	3848.3	-3906	+1268.3
2231.1	3906.2	-3789	+1326.2
2251.4	1325.2	-3586	-1254.8
2255.1	1406.4	-3549	-1173.6

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.10

April 27 1897. D4849.

Measures of positions of Stars within 30° of North Pole (Cont.)

	No.	x	y	A	B	D	a+c	B+D	c−a	B−D	x×52.6	y×52.6	c−a ×2.03	B−D ×2.03
✓	207	43.8	29.3	19	83	120	47	129	130	+91	+36	2261.8	1525.4	+18.5	+7.3
✓	208	43.4	37.4	79	74	50	55	129	129	−29	+19	2261.8	1946.2	−5.9	+3.9
✓	209	43.7	~~33.8~~ 38.8	31	15	99	115	130	130	+68	−100	2261.8	~~1735.8~~ 1998.8	+13.8	−20.3
✓	210	43.8	39.6	20	50	110	80	130	130	+90	−30	2261.8	2051.4	+18.3	−6.1
✓	*	211	43.2	49.4	91	79	—	51	—	130	+28	2261.8	2577.4	—	+5.7
✓		212	43.9	60.3	11	89	118	41	129	130	+107	+48	2261.8	3156.0	+21.7	+9.7
✓		213	43.3	71.6	93	49	36	81	129	130	−57	−32	2261.8	3734.6	−11.6	−6.5
✓		214	43.6	82.1	50	119	80	11	130	130	+30	+108	2261.8	4313.2	+6.1	+21.9
✓		215	44.9	25.7	15	35	114	95	129	130	+99	−60	2314.4	1315.0	+20.1	−12.2
✓		216	44.6	26.1	39	120	90	10	129	130	+51	+110	2314.4	1367.6	+10.4	+22.3
✓		217	44.9	27.1	5	119	125	11	130	130	+120	+108	2314.4	1420.2	+24.4	+21.9
✓		218	44.3	35.2	100	110	30	20	130	130	−70	+90	2314.4	1841.0	−14.2	+18.3
✓		218,a	44.6	36.1	49	120	80	10	129	130	+31	+110	2314.4	1893.6	+6.3	+22.3
✓		219	44.6	39.3	45	98	85	32	130	130	+40	+66	2314.4	2051.4	+8.1	+13.4
✓	b=	220	44.7	44.3	39	98	90	32	129	130	+51	+66	2314.4	2314.4	+10.4	+13.4
✓	defect?	221	44.2	51.0	105	129	25	130	130	259	−80	−1	2314.4	2682.6	−16.2	−0.2
✓		222	44.1	52.4	121	71	9	59	130	130	−112	+12	2314.4	2735.2	−22.7	+2.4
✓		223	45.0	58.6	125	49	5	82	130	131	−120	−33	2367.0	3050.8	−24.4	−6.7
✓		224	44.~~4~~3	~~59.6~~ 58.8	~~74~~ 89	~~42~~ 22	~~55~~ 41	~~81~~ 108	130	130	−48	−86	2314.4	3103.4	−9.7	−17.5
✓		225	44.6	83.4	50	80	79	50	129	130	+29	+30	2314.4	4365.8	+5.9	+6.1
✓		226	45.6	25.7	49	30	80	100	129	130	+31	−70	2367.0	1315.0	+6.3	−14.2
✓	defect?	227	45.6	29.6	49	40	80	90	129	130	+31	−50	2367.0	1525.4	+6.3	−10.2
✓	+89° 37=	228	45.2	43.2	110	110	20	21	130	131	−90	+89	2367.0	2261.8	−18.3	+18.1
✓	a−	229	45.2	43.4	120	80	10	50	130	130	−110	+30	2367.0	2261.8	−22.3	+6.1
✓	g−	230	45.2	50.5	100	56	29	75	129	131	−71	−19	2367.0	2630.0	−14.4	−3.9
✓		231	45.1	51.3	120	100	10	30	130	130	−110	+70	2367.0	2682.6	−22.3	+14.2
✓		232	45.2	53.7	111	31	19	99	130	130	−92	−68	2367.0	2787.8	−18.7	−13.8
✓		233	45.2	70.7	109	35	20	95	129	130	−89	−60	2367.0	3682.0	−18.1	−12.2

$\frac{3497}{27} = 1295$ $\frac{3771}{29} = 1300$

23.40

* Could not see right hand side of the square. so could not get reading for b

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

		-2610	-2580	
2280.3	1518.1	-329.7	-1061.9	
2255.9	1942.3	-354.1	-637.7	
2275.6	~~1756.1~~ 2191	-3344	~~-823.9~~	-560.9
2280.1	2057.5	-329.9	-522.5	
—	2571.7	—	-8.3	Areas: C-3.9 C'-a = -52 C-a corr. = -10.6 | 2251.2 -358.8
2283.5	3146.3	-326.5	+566.3	
2250.2	3741.1	-359.8	+1161.1	
2267.9	4~~2~~913	-342.1	+1711.3	
2334.5	13272	-275.5	-12528	
2324.8	13453	-285.2	-1234.7	
2338.8	1398.3	-271.2	-1181.7	
2300.2	1822.7	-309.8	-757.3	
2320.7	1871.3	-289.3	-708.7	
2322.5	2038.0	-287.5	-542.0	
2324.8	2301.0	-285.2	-279.0	
2298.2	2682.8	-311.8	+102.8*	*y-½div.= +76.5
2291.7	2732.8	-318.3	+152.8	
2342.6	3057.5	-287.4	+477.5	
2304.7	3120.9	-305.3	+540.9	
2320.3	4359.7	-289.7	+1779.7	
2373.3	1329.2	-236.7	-1250.8	
2373.3	1535.6	-236.7	-1044.4	
2348.7	2247.7	-261.3	-336.3	
2344.7	2255.7	-265.3	-324.3	
2352.6	2633.9	-257.4	+53.9	
2344.7	2668.4	-265.3	+88.4	
2348.3	2801.6	-261.7	+221.6	
2348.9	3694.2	-261.1	+1114.2	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

April 28, 1897 D 4849

		No.	x	y	A	B	a	b	D	a+c	B+D	c-a	B-D	y×52.6	y×52.6	c-a ×203	B-D ×203	
14h 45																		
√		234	45.4	70.9	75	8	53	121	128	129	-22	-113	2367.0	3682.0	-4.5	-22.9	23
√		235	45.7	73.7	31	35	99	96	130	131	+68	-61	2367.0	3839.8	+13.8	-12.4	23
	defect.	236	45.	77.														
√		237	45.6	79.8	40	21	90	109	130	130	+50	-88	2367.0	4155.4	+10.2	-17.9	23
√		238	46.7	16.0	30	129	99	130	129	259	+69	-1	2419.6	841.6	+14.0	-0.2	23
√		239	46.4	18.7	68	39	61	91	129	130	-7	-52	2419.6	946.8	-1.4	-10.6	23
√		240	46.2	19.7	106	39	22	90	128	129	-84	-51	2419.6	999.4	-17.1	-10.4	23
√	defect?	241	46.5	26.5	55	69	74	61	129	130	+19	+8	2419.6	1367.6	+3.9	+1.6	23
√		242	46.4	27.5	82	60	49	70	131	130	-33	-10	2419.6	1420.2	-6.7	-2.0	23
√		243	46.7	27.7	30	35	99	95	129	130	+69	+60	2419.6	1420.2	+14.0	+12.2	24
	n.o.	244	~~46.8~~	~~37.0~~	~~20~~	~~128~~	~~109~~	3										
√		245	46.8	37.0	20	128	109	3	129	131	+89	+125	2419.6	1946.2	+18.1	+25.4	2
√		246	46.4	59.6	71	45	59	85	130	130	-12	-40	2419.6	3103.4	-2.4	-8.1	23
	n.o.	247																
√		248	46.3	74.2	90	110	39	20	129	130	-51	+90	2419.6	3892.4	-10.4	+18.3	24
√		249	46.9	75.4	6	75	122	54	128	129	+116	+21	2419.6	3945.0	+23.5	+4.3	24
√		250	46.3	83.3	103	92	26	38	129	130	-77	+54	2419.6	4365.8	-15.6	+11.0	24
√		251	47.6	17.3	40	90	89	39	129	129	+49	+51	2472.2	894.2	+9.9	+10.4	24
√		252	47.4	17.6	82	40	46	90	128	130	-36	-50	2472.2	894.2	-7.3	-10.2	24
√		253	47.5	28.6	70	40	59	89	129	129	-11	-49	2472.2	1472.8	-2.2	-9.9	24
√		254	47.3	32.3	101	90	28	40	129	130	-73	+50	2472.2	1683.2	-14.8	+10.2	24
√		255	47.7	34.4	30	82	99	48	129	130	+69	+34	2472.2	1788.4	+14.0	+6.9	24
√		256	47.6	44.6	50	50	80	80	130	130	+30	-30	2472.2	2314.4	+6.1	-6.1	24
√		257	47.7	45.5	30	60	100	70	130	130	+70	-10	2472.2	2367.0	+14.2	-2.0	24
	no.	258																
√		259	47.8	48.1	29	120	100	10	129	130	+71	+110	2472.2	2524.8	+14.4	+22.3	24
√	defect?	260	47.6	51.1	51	128	79	2	130	130	+28	+126	2472.2	2682.6	+5.7	+25.6	24

$\frac{2971}{23} = 129.2$ $\frac{3116}{24} = 129.8$

15 - 0

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

		-2610.	-2580.
23625	3704.9	-2475	+11249
23808	3852.2	-2292	+12722
23772	4173.3	-232.8	+1593.3
24336	8418	-1764	-17382 y=-1764.5.
24182	9574	-191.8	-1822.6
24025	10098.	-207.5	-1570.2
24235	1366.0	-186.5	-1214.0
24129	1422.2	-197.1	-1157.8
24336	14324	-1764	-1147.6
24377	1920.8	-172.3	-659.2
24172	3111.5	-192.8	+531.5
24092	3874.1	-200.8	+1294.1
24431	3940.7	-166.9	+1360.7
24040	4354.8	-2060	+1774.8
24821	8838	-127.9	-1696.2
24649	9044	-145.1	-1675.6
24700	1482.7	-140.0	-1097.3
24574	1673.0	-152.6	-907.0
24862	1781.5	-123.8	-798.5
24783	2320.5	-131.7	-259.5
24864	2369.0	-123.6	-211.0
24866	25025	-123.4	-77.5
24779	2657.0	-132.1	+77.0

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

April 28, 1897 D 4849

15h 0 Measures of Positions of Stars within

	No	x	y	A	B	k	D	A+C	B+D	c-a	b-d	x×52.6	y×52.6	c-a ×2.03	B-D ×2.03	
✓		261	47.7	55.9	89	10	90	120	129	130	+51	-110	2472.2	2893.0	+10.4	-22.3	2
✓	defect?	261a	47.1	56.5	118	60	12	70	130	130	-106	-10	2472.2	2945.6	-21.5	-2.0	2
✓		262	47.9	63.3	10	99	119	31	129	130	+109	+68	2472.2	3313.8	+22.1	+13.8	2
✓		263	47.5	75.5	59	61	70	69	129	130	+11	-8	2472.2	3945.0	+2.2	-1.6	2
✓	defect?	264	47.4	82.6	80	35	50	94	130	129	-30	-59	2472.2	4313.2	-6.1	-12.0	2
✓		265	48.3	26.4	99	79	81	51	130	130	-68	+28	2524.8	1367.6	-13.8	+5.7	2
✓		266	48.5	31.5	60	58	69	72	129	130	+9	-14	2524.8	1630.6	+1.8	-2.8	2
✓		267	48.4	40.4	90	89	40	40	130	129	-50	+49	2524.8	2104.0	-10.2	+9.9	2
✓	l =	268	48.5	49.6	69	48	60	82	129	130	-9	-34	2524.8	2577.4	-1.8	-6.9	2
✓		269	48.6	61.4	35	81	95	49	130	130	+60	+32	2524.8	3208.6	+12.2	+6.5	2
✓		270	48.4	65.2	70	108	59	22	129	130	-11	+86	2524.8	3419.0	-2.2	+17.5	2
✓		271	48.2	80.2	110	100	20	30	130	130	-90	+70	2524.8	4208.0	-18.3	+14.2	2
✓	= +89 33	272	49.6	16.5	32	70	98	61	130	131	+66	+9	2577.4	841.6	+13.4	+1.8	2
✓		273	49.3	20.7	81	30	48	99	129	129	-33	-69	2577.4	1052.0	-6.7	-14.0	2
✓		274	49.4	25.5	81	60	49	70	130	130	-32	-10	2577.4	1315.0	-6.5	-2.0	2
✓	defect?	274a	49.3	28.6	89	49	41	80	130	129	-48	-31	2577.4	1472.8	-9.7	-6.3	2
✓		275	50.0	37.7	1	38	129	91	130	129	+128	-53	2630.0	1946.2	+26.0	-10.8	2
✓		276	49.7	39.4	35	85	95	44	130	129	+60	+41	2577.4	2051.4	+12.2	+8.3	2
✓		277	49.2	40.7	115	32	14	98	129	130	-101	-66	2577.4	2104.0	-20.5	-13.4	2
✓		278	49.4	61.7	80	31	50	99	130	130	-30	-68	2577.4	3208.6	-6.1	-13.8	2
✓	defect?	278a	49.2	63.0	105	130	25	130	130	260	-80	00	2577.4	3313.8	-16.2	0.0	2
✓		279	49.8	77.8	30	12	100	118	130	130	+70	-106	2577.4	4050.2	+14.2	-21.5	2
✓		278b	49.2	72.0	115	1	14	129	129	130	-101	-128	2577.4	3787.2	-20.5	-26.0	2
✓		280	49.5	79.2	60	109	70	21	130	130	+10	+88	2577.4	4155.4	+2.0	+17.9	2
✓		281	50.4	19.4	81	80	48	50	129	130	-33	+30	2630.0	999.4	-6.7	+6.1	2
✓		282	50.2	25.7	108	36	22	94	130	130	-86	-58	2630.0	1315.0	-17.5	-11.8	2
✓		283	50.3	27.2	99	120	30	11	129	131	-69	+109	2630.0	1420.2	-14.0	+22.1	2
✓		284	51.0	29.3	128	100	2	30	130	130	-126	+70	2682.6	1525.4	-25.6	+14.2	2
✓		285	50.3	29.4	100	81	30	49	130	130	-70	+32	2630.0	1525.4	-14.2	+6.5	2
✓		286	50.4	34.4	75	89	52	41	127	130	-23	+48	2630.0	1788.4	-4.7	+9.7	2
✓		287	50.6	43.4	50	88	79	41	129	129	+29	+47	2630.0	2261.8	+5.9	+9.5	2

15h 25

129 4015/31 = 1295 129 4155/32 = 1298

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

		-2610	-2580	
2482.6	~~29153~~ 28707	-1274	+3353	
2450.7	29476	-159.3	+367.6	
2494.3	3300.0	-115.7	+720.0	
24744	39466	-1356	+13666	
2466.1	43252	-1439	+17452	
2511.0	1361.9	-99.0	-1218.1	
25266	16334	-834	-9466	
2514.6	2094.1	-954	-485.9	
2523.0	2584.3	-870	+ 4.3	
2537.0	3202.1	-730	+622.1	
2522.6	3401.5	-874	+821.5	
2506.5	4193.8	-1035	+1613.8	
2590.8	8398	-192	-1740.2	
2570.7	1066.0	-393	-1514.0	
2570.9	1317.0	-391	-1263.0	
2567.7	1479.1	-423	-1100.9	
2556.0	1954.0	~~-540~~ +42.0	-623.0	x = -6.6
2589.6	2043.1	-204	-536.9	
2556.9	21174	-531	-462.6	
2571.3	32224	-387	+6424	
2561.2	3313.8	-488	+733.8	y = 707.5
2591.6	4071.7	-184	+149.17	
2556.9	38132	-531	+1233.2	-1 cm y = +1180.6
2579.4	4137.5	-306	+1587.5	
26233	9933	+133	-1586.7	
26125	13268	+ 2.5	-1253.2	
26160	13981	+ 6.0	-11819	
26570	1511.2	+47.0	-1068.8	
26158	1518.9	+ 5.8	-1061.1	
26253	1778.7	+15.3	- 801.3	
26359	2252.3	+25.9	- 327.7	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.00

April 28, 1897. D4849

Measures of positions of stars within 30° of North Pole (Cont.)

	No.	x	y	A	B	Le.	Da+c	B+D	c-a	B-D	x x 52.6	y x 52.6	c-a x 2.03	B-D x 2.03
✓	k =	288	50.4	47.9	85	2	44	128 129	130	−41	−126	2630.0	2472.2	−8.3	−25.6
✓		289	50.6	52.2	39	90	90	40 129	130	+51	+50	2630.0	2735.2	+10.4	+10.2
✓		290	50.3	61.8	85	14	44	115 129	129	−41	−101	2630.0	3208.6	−8.3	−20.5
✓		291	50.5	84.2	61	114	68	15 129	129	+7	+99	2630.0	4418.4	+1.4	+20.1
✓		292	51.1	19.9	111	2	18	128 129	130	−93	−126	2682.6	999.4	−18.9	−25.6
✓		293	51.2	33.9	100	10	29	119 129	129	−71	−109	2682.6	1735.8	−14.4	−22.1
✓		294	51.9	39.7	10	29	120	141 130	130	+110	−72	2682.6	2051.4	+22.3	−14.6
✓		295	51.5	64.2	64	110	68	20 132	130	+4	+90	2682.6	3366.4	+0.8	+18.3
✓		296	51.9	70.5	5	55	125	79 130	131	+120	−21	2682.6	3682.0	+24.4	−4.3
✓		297	51.8	74.9	30	10	100	120 130	130	+70	−110	2682.6	3892.4	+14.2	−22.3
	W.S	298													
✓		299	52.1	32.1	119	119	10	11 129	130	−109	+108	2735.2	1683.2	−22.1	+21.9
✓		300	52.6	40.8	50	11	80	119 130	130	+30	−108	2735.2	2104.0	+6.1	−21.9
✓	h =	301	52.6	44.5	40	59	90	71 130	130	+50	−12	27352	2314.4	+10.2	−2.4
✓		302	52.4	52.5	70	59	60	70 130	129	−10	−11	2735.2	27352	−2.0	−2.2
✓		303	52.6	52.7	45	34	85	96 130	130	+40	−62	27352	27352	+8.1	12.6 −25.4
✓		304	52.9	58.6	8	41	121	89 129	130	+113	−48	2735.2	3050.8	+22.9	−9.7
✓	~~defect~~	305	52.4	64.0	71	2	58	127 129	129	−13	−125	2735.2	3366.4	−2.6	−25.4
✓		306	52.9	69.9	15	10	114	120 129	130	+99	−110	27352	3629.4	+20.1	−22.3
✓		307	53.5	19.1	60	125	70	5 130	130	+10	+120	2787.8	999.4	+2.0	+24.4
✓		308	53.4	23.0	72	129	57	130 129	259	−15	−1	27878	1209.8	−3.0	−0.2
✓		309	53.8	22.9	19	2	110	127 129	129	+91	−125	27878	11572	+18.5	−25.4
✓		310	53.9	28.6	15	54	113	78 128	132	+98	−24	2787.8	1472.8	+19.9	−4.9
✓		311	53.6	81.3	42	95	87	35 129	130	+45	+60	2787.8	1630.6	+9.1	+12.2
✓		312	53.2	37.8	95	20	35	110 130	130	−60	−90	2787.8	1946.2	−12.2	−18.3
✓		313	53.5	58.6	59	41	70	88 129	129	+11	−47	2787.8	3050.8	+2.2	−9.5
✓		314	53.1	65.9	114	10	15	120 129	130	−99	−110	2787.8	3419.0	−20.1	−22.3

23.20

3365/26 = 1294 3505/27 = 1298

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj...971L

		-2610	-2580	
2	3621.7	2497.8	+ 11.7	- 8.22
	2640.4	2725.0	+ 30.4	+ 145.0
	2621.7	3229.1	+ 11.7	+ 649.1
	2631.4	4398.3	+ 21.4	+ 1818.3
	2663.7	1025.0	+ 53.7	- 1555.0
	2668.2	1757.9	+ 58.2	- 822.1
	2704.9	2066.0	+ 94.9	- 514.0
	2683.4	3348.1	+ 73.4	+ 768.1
	2709.0	3686.3	+ 97.0	+ 1106.3
	2696.8	3914.7	+ 86.8	+ 1334.7
2	3713.1	1661.3	+ 103.1	- 918.7
	2741.3	2125.9	+ 131.3	- 454.1
	2745.4	2316.8	+ 135.4	- 263.2
	2733.2	2737.4	+ 123.2	+ 157.4
	2743.3	2747.8	+ 133.3	+ 167.8
	2758.1	3060.5	+ 148.1	+ 480.5
	2732.6	3391.8	+ 122.6	+ 811.8
	2755.3	3651.7	+ 145.3	+ 1071.7
	2789.8	985.0	+ 179.8	- 1605.0
	2784.8	1210.0	+ 174.8	- 1370.0
	2806.3	1182.6	+ 196.3	- 1397.4
	2807.7	1477.7	+ 197.7	- 1102.3
	2796.9	1618.4	+ 186.9	- 961.6
	2775.6	1964.5	+ 165.6	- 615.5
	2790.0	3060.3	+ 180.0	+ 480.3
	2767.7	3441.3	+ 157.7	+ 861.3

$y = +759.2$

$y = -1396.3$

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

2.3.20

Positions of April 28, 1897 D7249

Measures of stars within 30° of North Pole (cont)

No	x	y	A, B, k, D	a+c	B+D	c-a / a-c	B-D	x×52.6	y×52.6	c-a ×2.03	B-D ×2.03	
✓	315	53.4	66.8 75 81 53 109	128	130	−22	−88	2787.8	3471.6	−4.5	−17.9	27
✓	316	53.3	71.8 100 15 29 114	129	129	−71	−99	2787.8	3734.6	−14.4	−20.1	27
✓	317	53.3	77.3 96 90 34 40	130	130	−62	+50	2787.8	4050.2	−12.6	+10.2	27
✓	318	53.2	80.2 105 119 25 10	130	129	−80	+109	2787.8	4208.0	−16.2	+22.1	2
✓	319	53.5	80.4 70 88 60 41	130	129	−10	+47	2787.8	4208.0	−2.0	+9.5	2
✓	320	53.5	81.4 70 81 59 48	129	129	−11	+33	2787.8	4260.6	−2.2	+6.7	2
✓	321	53.5	82.6 69 49 61 80	130	129	−8	−31	2787.8	4313.2	−1.6	−6.3	2
✓	322	53.1	82.7 120 21 10 109	130	130	−110	−~~109~~ 88	2787.8	4313.2	−22.3	−17.9	2
✓	323	53.2	83.0 110 21 19 127	129	129	−91	−125	2787.8	4365.8	−18.5	−25.4	2
✓	324	53.5	83.5 65 61 63 68	128	129	−2	−7	2787.8	4365.8	−0.4	−1.4	2
✓	325	54.3/4	25.6 90 40 40 91	130	131	−50	−51	2840.4	1315.0	−10.2	−10.4	2
✓	326	55.0	33.2 129 100 130 30	259	130	+1	+70	2893.0	1735.8	+0.2	+14.2	2
✓	327	54.9	38.1 15 111 114 20	129	131	+99	+91	2840.4	1998.8	+20.1	+18.5	2
✓	328	54.8	42.1 23 120 106 11	129	131	+83	+109	2840.4	2209.2	+16.8	+22.1	2
✓	329	54.2	49.4 110 80 28 50	128	130	−72	+30	2840.4	2577.4	−14.6	+6.1	2
✓	330	54.1	54.5 120 70 9 60	129	130	−111	+10	2840.4	2840.4	−22.5	+2.0	2
✓	331	54.5	59.1 70 126 60 3	130	129	−10	+123	2840.4	3103.4	−2.0	+25.0	2
✓	332	54.7	63.5 35 59 94 70	129	129	+59	−11	2840.4	3313.8	+12.0	−2.2	2
✓	333	54.4	68.3 49 97 50 35	129	132	−29	+62	2840.4	3576.8	−5.9	+12.6	28
✓	334	54.7	70.1 34 128 96 3	130	131	+62	+125	2840.4	3682.0	+12.6	+25.4	28
✓	334a	54.4	71.8 76 20 51 109	129	129	−27	−89	2840.4	3734.6	−5.5	−18.1	28
✓	335	54.6	73.8 49 11 80 118	129	129	+31	−107	2840.4	3839.8	+6.3	−21.7	28
✓	336	54.3	78.4 92 81 37 50	129	131	−55	+31	2840.4	4102.8	−11.2	+6.3	28
✓	337	54.5	82.7 60 35 70 94	130	129	+10	−59	2840.4	4313.2	+2.0	−12.0	28
✓	338	55.4	19.7 81 25 49 105	130	130	−32	−80	2893.0	999.4	−6.5	−16.2	2
n.s	339											
n.s	340											
✓	341	55.5	82.4 65 79 64 50	129	129	−1	+29	2893.0	1683.2	−0.2	+5.9	28

3491 / 27 = 1293 — 3374 / 26 = 1298

23.40

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

		-2610.	-2580.	
27833	3489.5	+173.3	+ 909.5	
27734	3754.7	+163.4	+1174.7	
27752	4040.0	+165.2	+1460.0	
27716	4185.9	+161.6	+1605.9	
27858	4198.5	+175.8	+1618.5	
27856	4253.9	+175.6	+1673.9	
2786.2	4319.5	+176.2	+1739.5	
27655	4331.1	+155.5	+1751.1	
2769.3	4391.2	+159.3	+1811.2	$y = +1758.6$
2787.4	4367.2	+177.4	+1787.2	
2830.2	1325.4	+220.2	-1254.6	
2893.2	1721.6	+283.2	- 858.4	$x = 256.9$
2860.5	1980.3	+250.5	- 599.7	
2857.2	2187.1	+247.2	- 392.9	
2825.8	2571.3	+215.8	- 8.7	
2817.9	2838.4	+207.9	+258.4	
2838.4	3078.4	+228.4	+ 498.4	
2852.4	3316.0	+242.4	+ 736.0	
2834.5	3564.2	+224.5	+ 984.2	
2853.0	3656.6	+243.0	+1076.6	
2834.9	3752.7	+224.9	+1172.7	
2846.7	3861.5	+236.7	+1281.5	
2829.2	4096.5	+219.2	+1516.5	
2842.4	4325.2	+232.4	+1745.2	
2886.5	1015.6	+276.5	-1564.4	
2892.8	1677.3	+282.8	- 902.7	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.00

April 29 1897 D4849

Measures of Positions of Stars within 30° of North Pole (cont)

	No.	x	y	A,	B,	ℓc.	D	a+c	B+D	c-a	B-D	x×52.6	y×52.6	c-a ×2.03	B-D ×2.03
✓	342	55.8	~~36.4~~ 37.4	20	89	110	41	130	130	+90	+48	2893.0	~~1683.2~~ 1946.2	+18.3	+9.7
✓	343	55.6	40.6	42	45	87	85	129	130	+45	−40	2893.0	2104.0	+9.1	−8.1
✓	343a	55.2	47.3	109	91	20	39	129	130	−89	+52	2893.0	2472.2	−18.1	+10.6
✓	344	55.3	55.3	90	100	40	29	130	129	−50	+71	2893.0	2893.0	−10.2	+14.4
✓	345	55.4	57.9	78	2	51	127	129	129	−27	−125	2898.0	2998.2	−5.5	−25.4
✓	346	55.2	61.4	91	79	38	52	129	131	−53	+27	2893.0	3208.6	−10.8	+5.5
✓	347	55.9	72.2	10	111	120	20	130	131	+110	+91	2893.0	3787.2	+22.3	+18.5
✓	347a	56.6	17.2	39	109	90	21	129	130	+51	+88	2945.6	894.2	+10.4	+17.9
✓	348	57.0	21.5	121	50	8	80	129	130	−113	−30	2998.2	1104.6	−22.9	−6.1
✓	349	56.9	21.7	10	29	120	100	130	129	+110	−71	2945.6	1104.6	+22.3	−14.4
✓	350	56.8	27.8	19	20	111	110	130	130	+92	−90	2945.6	1420.2	+18.7	−18.3
✓	351	56.7	29.1	30	121	100	9	130	130	+70	+112	2945.6	1525.4	+14.2	+22.7
✓	352	56.3	37.5	99	70	30	60	129	130	−69	+10	2945.6	1946.2	−14.0	+2.0
✓	353	57.0	56.7	1	27	128	102	129	129	+127	−75	2998.2	2945.6	+25.8	−15.2
✓	354	56.2	58.3	111	90	19	40	130	130	−92	+50	2945.6	3050.8	−18.7	+10.2
✓	355	56.2	67.3	109	95	20	35	129	130	−89	+60	2945.6	3524.2	−18.1	+12.2
✓	356	56.5	76.5	70	60	60	71	130	131	−10	−11	2945.6	3997.6	−2.0	−2.2
✓	357	56.8	76.8	25	11	105	119	130	130	+80	−108	2945.6	3997.6	+16.2	−21.9
✓	358	56.3	80.7	101	39	29	91	130	130	−72	−52	2945.6	4208.0	−14.6	−10.6
✓	359	56.7	81.3	39	108	91	22	130	130	+52	+86	2945.6	4260.6	+10.6	+17.5
✓	360	57.7	18.4	29	82	101	48	130	130	+72	+34	2998.2	946.8	+14.6	+6.9
✓	361	57.7	26.4	29	69	100	60	129	129	+71	+9	2998.2	1367.6	+14.4	+1.8
✓	362	57.9	34.5	10	69	119	61	129	130	+109	+8	2998.2	1788.4	+22.1	+1.6
✓	363	57.5	40.9	61	8	68	122	129	130	+7	−114	2998.2	2104.0	+1.4	−23.1
✓	364	57.3	45.4	95	70	35	59	130	129	−60	+11	2998.2	2367.0	−12.2	+2.2
✓	365	57.7	48.7	40	38	90	92	130	130	+50	−54	2998.2	2524.8	+10.2	−11.0
✓	366	57.4	50.3	70	101	60	28	130	129	−10	+73	2998.2	2630.0	−2.0	+14.8
✓	367	58.0	55.3	121	90	8	40	129	130	−113	+50	3050.8	2893.0	−22.9	+10.2
✓	368	58.0	65.4	121	70	8	60	129	130	−113	+10	3050.8	3419.0	−22.9	+2.0

23.25

3756 / 29 = 1295

3766 / 29 = 1299

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

	1936.5	−26.10.	−25.80.	
2911.3	16735	+301.3	−9065	−643.5
2962.1	2112.1	+292.1	−467.9	
2874.9	2461.6	+264.9	−118.4	
2882.8	2878.6	+272.8	+298.6	
2887.5	3023.6	+277.5	+443.6	
2882.2	3203.1	+272.2	+623.1	
2915.3	3768.7	+305.3	+1188.7	
2956.0	876.3	+346.0	−1703.7	
2975.3	1110.7	+365.3	−1469.3	
2967.9	1119.0	+357.9	−1461.0	
2964.3	1438.5	+354.3	−1141.5	
2959.8	1502.7	+349.8	−1077.3	
2931.6	1944.2	+321.6	−635.8	
3024.0	2960.8	+414.0	+380.8	x = 361.4
2926.9	3040.6	+316.9	+460.6	
2927.5	3512.0	+317.5	+932.0	
2943.6	3999.8	+333.6	+1419.8	
2961.8	4019.5	+351.8	+1439.5	
2931.0	4218.6	+321.0	+1638.6	
2956.2	4243.1	+346.2	+1663.1	
3012.8	939.9	+402.8	−1640.1	
3012.6	1365.8	+402.6	−1214.2	
3020.3	1786.8	+410.3	−793.2	
2999.6	2127.1	+389.6	−452.9	
2986.0	2364.8	+376.0	−215.2	
3008.4	2535.8	+398.4	−44.2	
2996.2	2615.2	+386.2	+35.2	
3027.9	2882.8	+417.9	+302.8	
3027.9	3417.0	+417.9	+837.0	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.25

April 29, 1897. D 4849

Measures of Positions of Stars within 30° of North Pole (cont.)

	No.	x	y	A, B, le, D	a+c	B+D	α-a	β-b	x×52.6	y×52.6	α-a ×2.03	β-b ×2.03
✓	369	57.9	66.2	9 109 121 21	130	130	+112	+88	2998.2	3471.6	+22.7	+17.9
✓	370	57.1	69.6	121 58 8 72	129	130	-113	-14	2998.2	3629.4	-22.9	-2.8
✓	371	57.1	82.2	120 102 10 27	130	129	-110	+75	2998.2	4313.2	-22.3	+15.2
✓	372	58.4	21.8	79 21 50 109	129	130	-29	-88	3050.8	1104.6	-5.9	-17.9
✓	373	58.5	33.9	57 9 72 120	129	129	+15	-111	3050.8	1735.8	+3.0	-22.5
✓	374	58.1	37.1	116 115 14 14	130	129	-102	+101	3050.8	1946.2	-20.7	+20.5
	n.s.	375										
✓	376	58.5	73.4	65 85 64 46	129	131	-1	+39	3050.8	3839.8	-0.2	+7.9
	n.s.	377										
✓	defect?	378	58.2	82.4 101 60 27 70	128	130	-74	-10	3050.8	4313.2	-15.0	-2.0
✓		379	60.0	20.5 128 58 1 72	129	130	-127	-14	3156.0	1052.0	-25.8	-2.8
✓		380	59.4	25.6 88 40 42 91	130	131	-46	-51	3103.4	1315.0	-9.3	-10.4
✓	defect?	381	59.3	27.9 95 5 34 125	129	130	-61	-120	3103.4	1420.2	-12.4	-24.4
✓		382	60.0	32.6 130 35 129 94	259	129	-1	-59	3156.0	1683.2	-0.2	-12.0
✓		383	59.1	52.7 115 39 14 91	129	130	-101	-52	3103.4	2735.2	-20.5	-10.6
	defect.	384										
✓		385	59.8	77.4 25 80 104 50	129	130	+79	+30	3103.4	4050.2	+16.0	+6.1
✓		386	59.5	81.4 68 ~~79~~ 61 51	129	130	-7	+28	3103.4	4260.6	-1.4	+5.7
✓		387	60.5	17.9 58 2 71 127	129	130	+13	-124	3156.0	894.2	+2.6	-25.2
✓		387a	60.5	29.5 61 62 70 68	131	130	+9	-6	3156.0	1525.4	+1.8	-1.2
✓		388	60.7	35.6 39 40 91 90	130	130	+52	-50	3156.0	1841.0	+10.6	-10.2
✓		389	60.4	38.2 80 109 50 24	130	133	-30	+85	3156.0	1998.8	-6.1	+17.3
✓		390	60.3	38.4 90 89 40 40	130	129	-50	+49	3156.0	1998.8	-10.2	+9.9
✓	+89° 1 =	391	60.1	51.2 120 118 10 12	130	130	-110	+106	3156.0	2682.6	-22.3	+21.5
✓		392	60.4	51.5 71 51 57 78	128	129	-14	-27	3156.0	2682.6	-2.8	-5.5
✓		393	60.2	73.2 109 101 21 29	130	130	-88	+72	3156.0	3839.8	-17.9	+14.6
✓		394	60.2	74.8 111 19 19 111	130	130	-92	-92	3156.0	3892.4	-18.7	-18.7
✓		395	60.4	76.1 81 119 49 11	130	130	-32	+108	3156.0	3997.6	-6.5	+21.9

23.45

3366/26 = 1295 — 3249/25 = 1300

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

			-2610.	-2580.	-2580.	
30209	34537		+410.9	-2169.1	+873.7	
2975.3	3632.2		+365.3	-2214.7	+1052.2	
2975.9	4298.0		+365.9	-2214.1	+1718.0	
3044.9	1122.5		+434.9	-2145.1	-1457.5	
3053.8	1758.3		+443.8	-2116.2	-821.7	
3030.1	1925.7		+420.1	-2159.9	-654.3	
3050.6	3831.9		+440.6	-2139.4	+1251.9	
3035.8	4315.2		+425.8	-2154.2	+1735.2	
3130.2	1054.8		+520.2	-2059.8	-1525.2	
3094.1	1325.4		+484.1	-2095.9	-1254.6	
3091.0	1444.6		+481.0	-2099.0	-1135.4	
3155.8	1695.2		+545.8	.2	-884.8	x = 519.5
3082.9	2745.8		+472.9		+165.8	
3119.4	4044.1		+509.4		+1464.1	
3102.0	4254.9		+492.0		+1674.9	
3158.6	919.4		+548.6		-1660.6	
3157.8	1526.6		+547.8		-1053.4	
3166.6	1851.2		+556.6		~~-953.4~~ -728.8	
3149.9	1981.5		+539.9		-598.5	
3145.8	1988.9		+535.8		-591.1	
3133.7	2661.1	+523.7 763	+	81.1	+ 81.1	
3153.2	2688.1		+543.2		+1081	
3138.1	3825.2		+528.1		+1245.2	
3137.3	3911.1		+527.3		+1831.1	
3149.5	3975.7		+539.5		+1395.7	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.45

April 29 1897 D 4849

Measures of Positions of Stars within 30° of North Pole (Cont'd)

	No.	x	y	A	B	le	D	a+c	B+D	c-a	B-D	x×52.6	y×52.6	C-Ax/2.03	B-Dx/2.03	
✓	396	60.5	81.4	62	91	67	38	129	129	+5	+53	3156.0	4260.6	+1.0	+10.8	315
✓	397	61.6	23.6	50	49	80	81	130	130	+30	−32	3208.6	1209.8	+6.1	−6.5	32
	397a	61.7	53.5	22	68	108	62	130	130	+86	+6	3208.6	2787.8	+17.5	+1.2	32
	n.s.	398														
✓	399	62.4	50.3	85	100	44	29	129	129	−41	+71	3261.2	2630.0	−8.3	+14.4	32
✓	400	62.4	51.7	69	31	60	98	129	129	−9	−67	3261.2	2682.6	−1.8	−13.6	32
✓	401	62.3	54.1	90	119	40	10	130	129	−50	+109	3261.2	2840.4	−10.2	+22.1	32
✓	402	62.7	55.4	30	69	100	61	130	130	+70	+8	3261.2	2893.0	+14.2	+1.6	32
✓	403	63.0	66.5	129	70	1	60	130	130	−128	+10	3313.8	3471.6	−26.0	+2.0	32
✓	404	62.6	70.5	49	60	81	70	130	130	+32	−10	3261.2	3682.0	+6.5	−2.0	32
✓	405	62.1	76.9	112	10	16	120	128	130	−96	−110	3261.2	3997.6	−19.5	−22.3	32
✓	406	62.3	82.3	107	95	23	35	130	130	−84	+60	3261.2	4313.2	−17.1	+12.2	32
✓	407	63.4	26.4	75	80	55	50	130	130	−20	+30	3313.8	1367.6	−4.1	+6.1	33
✓	408	63.1	27.9	115	5	14	124	129	129	−101	−119	3313.8	1420.2	−20.5	−24.2	32
✓	409	63.8	29.0	22	130	107	130	129	260	+85	0.0	3313.8	1525.4	+17.3	0.0	33
✓	410	63.9	31.6	6	49	123	81	129	130	+117	−32	3313.8	1630.6	+23.8	−6.5	33
✓	411	63.4	35.8	80	21	50	109	130	130	−30	−88	3313.8	1841.0	−6.1	−17.9	3
✓	412	63.8	37.2	30	111	100	19	130	130	+70	+92	3313.8	1946.2	+14.2	+18.7	33
✓	413	63.5	47.3	62	106	68	23	130	129	+6	+83	3313.8	2472.2	+1.2	+16.8	33
✓	414	63.8	58.4	29	75	100	56	129	131	+71	+19	3313.8	3050.8	+14.4	+3.9	33
✓	415	63.7	64.3	35	105	94	25	129	130	+59	+80	3313.8	3366.4	+12.0	+16.2	33
✓	416	64.0	66.0	1	3	129	127	130	130	+128	−124	3366.4	3471.6	+26.0	−25.2	33
✓	417	63.6	71.5	48	60	82	69	130	129	+34	−9	3313.8	8734.6	+6.9	−1.8	3
✓	418	63.6	76.3	45	101	84	29	129	130	+39	+72	33138	3997.6	+7.9	+14.6	33
✓	419	63.6	76.9	50	10	79	120	129	130	+29	−110	33138	3997.6	+5.9	−22.3	33
✓	419a	63.6	81.4	55	78	74	52	129	130	+19	+26	3313.8	4260.6	+3.9	+5.3	3
✓	420	64.5	26.5	60	60	69	70	129	130	+9	−10	3366.4	1367.6	+1.8	−2.0	33
✓	420a	64.8	29.3	25	99	104	31	129	130	+79	+68	3366.4	1525.4	+16.0	+13.8	33
✓	421	64.6	38.1	52	120	77	10	129	130	+25	+110	3366.4	1998.8	+5.1	+22.3	3
✓	422	64.2	38.6	108	55	22	74	130	129	−86	−19	3366.4	1998.8	−17.5	−3.9	33

24.25

3754/29 = 1294 3893/30 = 1298

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

		X −2610	Y −2580	
3157.0	4249.8	+547.0	+1669.8	
3214.7	1216.3	+604.7	−1363.7	
3226.1	2786.6	+616.1	+206.6	
3252.9	2615.6	+642.9	+35.6	
3259.4	2696.2	+649.4	+116.2	
3251.0	2818.3	+641.0	+238.3	
3275.4	2891.4	+665.4	+311.4	
3287.8	3469.6	+677.8	+889.6	
3267.7	3684.0	+657.7	+1104.0	
3241.7	4019.9	+631.7	+1439.9	
3244.1	4301.0	+634.1	+1721.0	
3309.7	1361.5	+699.7	−1218.5	
3292.3	1444.4	+682.3	−1135.6	
3331.1	1525.4	+721.1	−1054.6	y=−1080.9
3337.6	1637.1	+727.6	−942.9	
3307.7	1858.9	+697.7	−721.1	
3328.0	1957.5	+718.0	−652.5	
3315.0	2455.4	+705.0	−124.6	
3328.2	3046.9	+718.2	+466.9	
3325.8	3350.2	+715.8	+770.2	
3392.4	3496.8	+782.4	+916.8	−52.6) 729.8 +864.2
3320.7	3736.4	+710.7	+1156.4	
3321.7	3973.0	+711.7	+1403.0	
3319.7	4019.9	+709.7	+1439.9	
3314.7	4255.3	+704.7	+1675.3	
3368.2	1369.6	+758.2	−1210.4	
3382.4	1511.6	+772.4	−1068.4	
3371.5	1976.5	+761.5	−603.5	
3348.9	2002.7	+738.9	−577.3	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..9711

24.25

May 3, 1897. D +849

Measures of Positions of Stars within 30° of North Pole (cont)

No.	x	y	A, B, & D	A+C	B+D	C-a	B-D	x×52.6	y×52.6	C-a ×2.03	B-D ×2.03	
✓	423	64.4	40.6	90 49 40 81	130	130	-50	-32	3366.4	2104.0	-10.2	-6.5
✓	424	64.6	41.8	51 28 78 102	129	130	+27	-74	3366.4	2156.6	+5.5	-15.0
✓	425	64.7	47.4	32 68 98 62	130	131	+66	+5	3366.4	2472.2	+13.4	+1.0
✓	426	64.9	62.7	12 38 118 92	130	130	+106	-54	3366.4	3261.2	+21.5	-11.0
✓	427	64.1	68.1	119 119 10 11	129	130	-109	+108	3366.4	3576.8	-22.1	+21.9
✓	428	64.3	68.4	102 78 28 52	130	130	-74	+26	3366.4	3576.8	-15.0	+5.3
✓	429	64.8	68.6	18 40 111 90	129	130	+93	-50	3366.4	3576.8	+18.9	-10.2
✓	430	65.0	74.5	129 55 1 74	130	129	-128	-19	3419.0	3892.4	-26.0	-3.9
✓	431	65.5	19.5	49 59 80 70	129	129	+31	-11	3419.0	999.4	+6.3	-2.2
✓	432	65.7	21.4	31 70 98 60	129	130	+67	+10	3419.0	1104.6	+13.6	+2.0
✓	433	65.4	36.9	80 10 50 119	130	129	-30	-109	3419.0	1893.6	-6.1	-22.1
✓	434	65.6	40.6	49 48 80 81	129	129	+31	-33	3419.0	2104.0	+6.3	-6.7
✓	435	65.1	51.4	110 75 19 54	129	129	-91	+21	3419.0	2682.6	-18.5	+4.3
✓	436	65.2	52.6	108 50 21 80	129	130	-87	-30	3419.0	2735.2	-17.7	-6.1
✓	437	65.1	58.8	121 19 8 111	129	130	-113	-92	3419.0	3050.8	-22.9	-18.7
✓	438	65.4	64.4	82 82 48 49	130	131	-34	+33	3419.0	3366.4	-6.9	+6.7
✓	439	65.9	79.6	11 40 119 90	130	130	+108	-50	3419.0	4155.4	+21.9	-10.2
✓	440	66.8	24.9	21 5 109 124	130	129	+88/28	-119	3471.6	1262.4	+17.9	-24.2
✓	441	66.8	28.4	21 79 109 51	130	130	+88	+28	3471.6	1472.8	+17.9	+5.7
✓	442	66.1	37.5/4.0	118 130 11 129	129	259	-107	+1	3471.6	1841.0	-21.7	+0.2
✓	443	67.0	42.0	130 2 130 128	260	130	00	-126	3524.2	2209.2	0.0	-25.6
✓	444	66.6	54.3	48 100 81 30	129	130	+33	+70	3471.6	2840.4	+6.7	+14.2
	Defect	445	66.3	65.5								
✓	446	66.8	72.8	25 20 105 110	130	130	+80	-90	3471.6	3787.2	+16.2	-18.3
✓	447	66.3	79.4	100 71 30 60	130	131	-70	+11	3471.6	4155.4	-14.2	+2.2
✓	447a	67.5	25.5	59 162 70 69	129	131	+11	-7	3524.2	1315.0	+22	-1.4
✓	448	67.1	29.2	119 114 10 16	129	129	-109	+99	3524.2	1525.4	-22.1	+20.1
✓	449	67.8	29.4	20 70 110 60	130	130	+90	+10	3524.2	1525.4	+18.3	+2.0

3621/28 = 1295 3636/28 = 1299

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

		−2610.	−2580.
33562	21105	+746.2	−469.5
33719	21716	+761.9	−408.4
33798	24712	+769.8	−108.8
33879	32722	+777.9	+692.2
33443	35549	+734.3	+974.9
33514	35715	+741.4	+991.5
33853	35870	+775.3	+1007.0
33930	38963	+783.0	+1316.3
34253	10016	+815.3	−1578.4
34326	11026	+822.6	−1477.4
34129	19158	+802.9	−664.3
34253	21107	+815.3	−469.3
34005	26788	+790.5	+98.3
34013	27413	+791.3	+161.3
33971	30695	+787.1	+489.5
34121	33597	+802.1	+779.7
34409	41656	+830.9	+1585.6
34895	12866	+879.5	−1293.4
34895	14671	+879.5	−1112.9
34499	18408	+839.9	−739.2 y=−765.5
35242	22348	+914.2	−345.2 x=+887.9 y=−397.8
34783	28262	+868.3	+246.2
34878	38055	+877.8	+1225.5
34884	41532	+847.4	+1573.2
35264	13164	+916.4	−1263.6
35021	15053	+892.1	−1074.7
35425	15234	+932.5	−1056.6

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

24.15

May 6. 1897. D 4849

Measures of Positions of Stars within 30° of No. Pole (cont'd)

	No.	x	y	A	B	l	D	a+c	b+d	c−a	b−d	x×52.6	y×52.6	c−a ×2.03	b−d ×2.03
✓	450	67.7	34.6	34	50	95	80	129	130	+61	−30	3524.2	1788.4	+12.4	−6.1
✓	451	67.3	35.8	95	19	34	111	129	130	−61	−92	3524.2	1841.0	−12.4	−18.7
✓	452	67.9	46.2	8	109	121	21	129	130	+113	+88	3524.2	2419.6	+22.9	+17.9
✓	453	67.3	55.4	98	79	31	53	129	132	−67	+26	3524.2	2893.0	−13.6	+5.3
✓	454	67.1	68.3	115	85	14	44	129	129	−101	+41	3524.2	3576.8	−20.5	~~+18.1~~ +18.3
✓	455	67.6	70.2	50	110	80	21	130	131	+30	+89	3524.2	3682.0	+6.1	+18.1
✓	456	67.3	74.7	96	40	33	90	129	130	−63	−50	3524.2	3892.4	−12.8	−10.2
✓	457	68.3	26.8	89	20	41	110	130	130	−48	−90	3576.8	1367.6	−9.7	−18.3
✓	458	68.6	27.8	50	15	79	114	129	129	+29	−99	3576.8	1420.2	+5.9	−20.1
✓	459	68.1	35.1	114	125	15	5	129	130	−99	+120	3576.8	1841.0	−20.1	+24.4
✓	460	68.8	35.4	20	75	109	55	129	130	+89	+20	3576.8	1841.0	+18.1	+4.1
✓	461	68.7	49.1	35	121	94	10	129	131	+59	+111	3576.8	2577.4	+12.0	+22.5
✓	462	68.8	50.1	22	120	108	10	130	130	+86	+110	3576.8	2630.0	+17.5	+22.3
✓	463	68.6	50.3	49	101	80	29	129	130	+31	+72	3576.8	2630.0	+6.3	+14.6
✓	464	68.1	51.9	118	10	12	120	130	130	−106	−110	3576.8	2682.6	−21.5	−22.3
✓	464a	68.5	55.4	59	75	70	55	129	130	+11	+20	3576.8	2893.0	+2.2	+4.1
✓	465	68.6	58.3	52	101	78	30	~~129~~ 130	131	+26	+71	3576.8	3050.8	+5.3	+14.4
✓	466	68.5	63.8	59	19	70	111	129	130	+11	−92	3576.8	3313.8	+2.2	−18.7
✓	466a	68.9	64.7	15	29	114	101	129	130	+99	−72	3576.8	3366.4	+20.1	−14.6
✓	467	69.2	21.9	101	2	29	128	130	130	−72	−126	3629.4	1104.6	−14.6	−25.6
✓	468	69.5	29.5	69	48	61	62	130	130	−08	+06	3629.4	1525.4	−1.6	+1.2
✓	469	69.3	30.7	89	30	40	99	129	129	−49	−69	3629.4	1578.0	−9.9	−14.0
✓	470	69.7	32.8	41	14	89	115	130	129	+48	−101	3629.4	1683.2	+9.7	−20.5
✓	471	69.1	43.8	120	11	10	119	130	130	−110	−108	3629.4	2261.8	−22.3	−21.9
✓	472	69.9	44.0	10	125	120	5	130	130	+110	+120	3629.4	2314.4	+22.3	+24.4
	N. 8.	473													
✓	474	69.7	47.6	28	51	101	79	129	130	+73	−28	3629.4	2472.2	+14.8	−5.7
✓	475	69.8	48.3	15	96	115	34	130	130	+100	+62	3629.4	2524.8	+20.3	+12.6
✓	476	69.1	66.9	115	2	14	128	129	130	−101	−126	3629.4	3471.6	−20.5	−25.6

24.45

3629.4 / 28 = 1294 ~~3~~ 4

3641 / 28 = 1300

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1990phaeA.proj..97IL

		−2610.	−2580.
3536.6	1794.5	+926.6	−785.5
3511.8	1859.7	+901.8	−720.3
3547.1	2401.7	+937.1	−178.3
3510.6	2887.7	+900.6	+307.7
3503.7	3568.5	+893.7	+988.5
3530.3	3663.9	+920.3	+1083.9
3511.4	3902.6	+901.4	+1322.6
3567.1	1885.9	+957.1	−1194.1
3582.7	1440.3	+972.7	−1139.7
3556.7	1816.6	+946.7	−763.4
3594.9	1836.9	+984.9	−743.1
3588.8	2557.9	+978.8	−25.1
3594.3	2607.7	+984.3	+27.7
3583.1	2615.4	+973.1	+35.4
3554.3	2704.9	+944.3	+124.9
3579.0	2888.9	+969.0	+308.9
3582.1	3036.4	+972.1	+456.4
3579.0	3332.5	+969.0	+752.5
3596.9	3381.0	+986.9	+801.0
3614.8	1130.2	+1004.8	−1449.8
3627.8	1524.2	+1017.8	−1055.8
3619.5	1592.0	+1009.5	−988.0
3639.1	1703.7	+1029.1	−876.3
3607.1	2283.7	+997.1	−296.3
3651.7	2290.0	+1041.7	−290.0
3644.2	2477.9	+1034.2	−102.1
3649.7	2512.2	+1039.7	−67.8
3608.9	3497.2	+998.9	+917.2

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

24.45

May 6, 1897. D4849

Measures of Positions of Stars within 30° of No. Pole (cont)

No.	x	y	A	B	b	D	a+c	B+D	c-a	b-D	x×52.6	y×52.6	c-a ×2.23	B-D ×2.03
+89° 4 = 477	69.6	69.3	51	98	79	32	130	130	+28	+66	3629.4	3629.4	+5.7	+13.4
478	69.2	75.8	105	12	24	118	129	130	-81	-106	3629.4	3945.0	-16.4	-21.5
479	71.0	23.6	2	48	127	82	129	130	+125	-34	3734.6	1209.8	+25.4	-6.9
480	70.9	26.1	10	115	120	14	130	129	+110	+101	3682.0	1367.6	+22.3	+20.5
481	70.9	41.7	5	28	125	102	130	130	+120	-74	3682.0	2156.6	+24.4	-15.0
482	70.2	44.1	110	119	20	11	130	130	-90	+108	3682.0	2314.4	-18.3	+21.9
483	71.0	46.2	1	110	129	20	130	130	+128	+90	3734.6	2419.6	+26.0	+18.3
484	70.4	51.7	89	39	40	90	129	129	-49	-51	3682.0	2682.6	-9.9	-10.4
485	71.0	56.2	129	110	130	20	259	130	+01	+90	3734.6	2945.6	+0.2	+18.3
486	70.2	58.9	102	2	28	128	130	130	-74	-126	3682.0	3050.8	-15.0	-25.6
487	70.9	60.3	8	100	122	30	130	130	+114	+70	3682.0	3156.0	+23.1	+14.2
488	70.2	75.2	102	116	28	14	130	130	-74	+102	3682.0	3945.0	-15.0	+20.7
489	70.7	76.1	40	120	90	10	130	130	+50	+110	3682.0	3997.6	+10.2	+22.3
490	71.1	27.7	120	31	10	99	130	130	-110	-68	3734.6	1420.2	-22.3	-13.8
491	71.7	27.8	40	11	89	118	129	129	+49	-107	3734.6	1420.2	+9.9	-21.7
492	71.6	29.4	49	69	81	61	130	130	+32	+08	3734.6	1525.4	+6.5	+1.6
493	71.5	44.0	60	129	70	130	130	259	+10	-0.1	3734.6	2314.4	+2.0	-0.2
494	71.6	44.3	58	109	71	20	129	129	+13	+89	3734.6	2314.4	+2.6	+18.1
495	71.9	46.1	15	118	114	12	129	130	+99	+106	3734.6	2419.6	+20.1	+21.5
496	71.3	51.4	95	76	35	54	130	130	-60	+22	3734.6	2682.6	-12.2	+4.5
497	71.6	55.4	40	81	89	48	129	129	+49	+33	3734.6	2893.0	+9.9	+6.7
498	71.4	59.6	85	58	45	72	130	130	-40	-14	3734.6	3103.4	-8.1	-28
499	71.3	62.5	92	59	38	70	130	129	-54	-11	3734.6	3261.2	-11.0	-2.2
500	71.3	65.3	92	90	37	39	129	129	-55	+51	3734.6	3419.0	-11.2	+10.4
N.S. 501	Defect.													
502	71.8	72.4	22	65	108	61	130	126	+86	+04	3734.6	3787.2	+17.5	+0.8
503	72.1	24.2	110	109	19	21	129	13X0	-91	+88	3787.2	1262.4	-18.5	+17.9

25.00

3510 / 27 = 1296

3498 / 27 = 1296

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1996phaet.proj..971L

		-2610.	-2580.	
36351	36428 (16.0)	+1025.1	+1036.0	
36130	39665	+1003.0	+1386.5	
37600	12167	+1150.0	-1363.3	x = 1097.4
37043	13471	+1094.3	-1232.9	
37064	21716	+1096.4	-408.4	
36637	22925	+1053.7	-287.5	
37606	24013	+1150.6	-178.7	x = 1098.0
36721	26930	+1062.1	+113.0	
37348	29273	+1124.8	+347.3	x = 1098.5
36670	30764	+1057.0	+496.4	
37151 (0)	31418	+1105.1 (1095.)	+561.8	
36670	39243	+1057.0	+1344.3	
36922	39783 (5)	+1082.2	+1395.3	
37123	14340	+1102.3	-1146.0	
37445	14419	+1134.5	-1138.1	
37411	15238	+1131.1	-1056.2	
37366	23146	+1126.6	-265.4	y = -291.7
37372	22963	+1127.2	-283.7	
~~37147~~ 37547	23981	+1144.7	-181.9	
37224	26781	+1112.4	+98.1	
37247 (4) (5)	28863	+1134.5	+306.3	
37265	31062	+1116.5	+526.2	
37236	32634	+1113.6	+683.4	
37234	34086	+1113.4	+828.6	
37521	37864	+1142.1	+1206.4	
37687	12445	+1158.7	-1335.5	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.20

May 6, 1897 D 4849

Measures of Positions of Stars within 30° of N. Pole (cont.)

	No.	x	y	A	B	C	D	A+C	B+D	c-a	B-D	x×52.6	y×52.6	c-a ×2.03	B-D ×2.03
✓	504	72.1	25.9	115	10	14	119	129	129	-101	-109	3787.2	1315.0	-20.5	-22.1
✓	505	72.4	38.6	80	50	50	79	130	129	-30	-29	3787.2	1998.8	-6.1	-5.9
✓	506	72.9	54.7	4	25	125	104	129	129	+121	-79	3787.2	2840.4	+24.6	-16.0
✓	507	72.5	59.5	60	58	70	72	130	130	+10	-14	3787.2	3103.4	+2.0	-2.8
✓	508	72.6	62.0	58	130	72	129	130	259	+14	+01	3787.2	3261.2	+2.8	+0.2
✓	509	72.9	72.2	15	111	116	19	131	130	+101	+92	3787.2	3787.2	+20.5	+18.7
✓	510	73.2	35.4	108	74	22	56	130	130	-86	+18	3839.8	1841.0	-17.5	+3.7
✓	511	73.9	48.9	17	9	112	121	129	130	+95	-112	3839.8	2524.8	+19.3	-22.7
✓	512	73.3	60.6	95	50	36	80	131	130	-59	-30	3839.8	3156.0	-12.0	-6.1
✓	513	73.1	64.8	120	20	9	110	129	130	-111	-90	3839.8	3366.4	-22.5	-18.3
✓	514	74.9	27.6	5	49	125	81	130	130	+120	-82	3892.4	1420.2	+24.4	-6.5
✓	dlr.?	515	74.6	32.5	50	55	80	76	130	131	+30	-21	3892.4	1683.2	+6.1	-4.3
✓			74.6	32.6	41	50	89	79	130	129	+48	-29	3892.4	1683.2	+9.7	-5.9
✓		516	74.8	32.8	20	29	110	100	130	129	+90	-71	3892.4	1683.2	+18.3	-14.4
✓		516a	74.6	45.2	45	105	84	24	129	129	+39	+81	3892.4	2367.0	+7.9	+16.4
✓		517	74.4	48.6	88	41	41	89	129	130	-47	-48	3892.4	2524.8	-9.5	-9.7
✓		518	74.4	60.2	72	101	58	30	130	131	-14	+71	3892.4	3156.0	-2.8	+14.4
	n.s.	519														
✓		520	74.7	63.0	30	129	99	1	129	130	+69	+128	3892.4	3313.8	+14.0	+26.0
✓		521	74.6	70.7	51	31	79	99	130	130	+28	-68	3892.4	3682.0	+5.7	-13.8
✓		522	75.8	28.1	21	120	109	10	130	130	+88	+110	3945.0	1472.8	+17.9	+22.3
✓		523	75.3	28.4	100	78	30	52	130	130	-70	+26	3945.0	1472.8	-14.2	+5.3
✓		524	75.5	30.8	68	28	62	102	130	130	-06	-74	3945.0	1578.0	-1.2	-15.0
✓		525	75.2	33.4	108	71	22	59	130	130	-86	+12	3945.0	1735.8	-17.5	+2.4
✓		526	75.8	42.8	21	10	108	119	129	129	+87	-109	3945.0	2209.2	+17.7	-22.1
✓		527	75.7	49.7	25	40	104	90	129	130	+79	-50	3945.0	2577.4	+16.0	-10.2
✓	*	528	75.9	65.4	20	—	110	50	130		+90	—	3945.0	3419.0	+18.3	—
✓	*	529	75.2	65.7	108	—	22	99	130		-86	—	3945.0	3419.0	-17.5	—
✓	*	530	75.4	66.8	90	30	40	—	130		-50	—	3945.0	3471.6	-10.2	—

23.45

3633 / 26 = 1297 3374 / 26 = 1298

* Cannot see the line to get reading of B Cros 528 + 529 and D" no 530

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1996phaeproj..971L

		−2610.	−2580.	
3766.7	1337.1	+1156.7	−1242.9	
3781.1	2004.7	+1171.1	− 575.3	
3811.8	2856.4	+1201.8	+ 276.4	
3789.2	3106.2	+1179.2	+ 526.2	
3790.0	3261.0	+1180.0	+ 681.0	y=+654.7
3807.7	3768.5	+1197.7	+1188.5	
3822.3	1837.3	+1212.3	− 742.7	
3859.1	2547.5	+1249.1	− 32.5	
3827.8	3162.1	+1217.8	+ 582.1	
3817.3	3384.7	+1207.3	+ 804.7	
3916.8	1426.7	+1306.8	−1153.3	
3898.5	1687.5	+1288.5	− 892.5	
3902.1	1689.1	+1292.1	− 890.9	
3900.7	1697.6	+1290.7	− 882.4	
3900.3	2350.6	+1290.3	− 229.4	
3882.9	2534.5	+1272.9	− 45.5	
3889.6	3171.6	+1279.6	+ 561.6	
3906.7	3287.8	+1296.7	+ 707.8	
3898.1	3695.8	+1288.1	+1115.8	
3962.9	1450.5	+1352.9	−1129.5	
3930.8	1467.5	+1320.8	−1112.5	
3943.8	1593.0	+1333.8	− 987.0	
3927.5	1733.4	+1317.5	− 846.6	
3962.7	2231.3	+1352.7	− 348.7	
3961.0	2587.6	+1351.0	+ 7.6	
3963.3	—	+1353.3	—	Assume B=80 B-D=+30 Corr B-D +6.1 3412.9 +832.9
3927.5	—	+1317.5	—	" B=31 B-D=-68 -13.8 3432.8 +852.8
3934.8	—	+1324.8	—	" D=100 B-D=-70 -14.2 3485.8 +905.8

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.45

May 6, 1897 D 4849

Measures of Position of Stars within 30° of No. Pole (Cont.)

No.	x	y	A	B	b	D	a+c	B+D	c-a	B-D	Xx52.6	yx52.6	c-a x 2.03	B-D x 2.03
531	77.1	32.4	124	89	54	2	129	131	-119	~~-82~~ +47	4050.2	1683.2	~~-242~~	+9.5
532	76.4	40.6	89	50	41	80	130	130	-48	-30	3997.6	2104.0	-9.7	-6.1
533	76.4	41.4	69	89	60	41	129	130	-9	+48	3997.6	2156.6	-1.8	+9.7
534	76.7	47.4	35	75	94	55	129	130	+59	+21	3997.6	2472.2	+12.0	+4.1
535	76.4	56.8	72	20	57	109	129	129	-15	-89	3997.6	2945.6	-3.0	-18.1
536	76.3	57.9	89	10	40	119	129	129	-49	-109	3997.6	2998.2	-9.9	-22.1
537	76.5	59.5	78	62	51	68	129	130	-27	-06	3997.6	3103.4	-5.5	-1.2
538	76.4	60.6	91	52	40	78	131	130	-51	-26	3997.6	3156.0	-10.4	-5.3
539	76.3	65.6	105	40	25	90	130	130	-80	-50	3997.6	3419.0	-16.2	-10.2
540	76.4	67.1	72	~~30~~ 119	58	~~40~~ 11	130	130	-14	+108	8997.6	3524.2	-2.9 8	+21.9
541	77.9	33.1	5	119	125	11	130	130	+120	+108	4050.2	1735.8	+24 4	+21.9
542	77.9	34.3	11	99	119	31	130	130	+108	+68	4050.2	1788.4	+21.9	+13.8
543	78.1	38.7	124	38	5	92	129	130	-119	-54	41028	1998.8	-24.2	-11.0
544	77.8	45.2	28	99	101	31	129	130	+73	+68	40502	2367.0	+14.8	+13.8
545	77.7	50.9	35	2	94	129	129	131	+59	-127	4050.2	2680.0	+12.0	-25.8
546	77.1	51.8	111	20	18	110	129	130	-93	-90	4050.2	2682.6	-18.9	-18.3
547	77.9	62.3	12	81	117	49	129	130	+105	+32	4050.2	3261.2	+21.3	+6.5
547a	77.7	62.5	31	60	99	70	130	130	+68	-10	4050.2	3261.2	+13.8	-2.0
548	77.9	68.4	15	74	115	55	130	129	+100	+19	4050.2	3576.8	+20.3	+3.9
549	77.7	69.8	29	25	100	104	129	129	+71	-79	4050.2	3629.4	+14.4	-16.0
550	78.5	36.4	60	80	69	50	129	130	+09	+30	4102.8	1893.6	+1.8	+6.1
April 14, '98. 550a	78.1	38.7	122	38	0.8	9.2	130	130	-114	-54	4102.8	1998.8	-23.1	-11.0
551	78.2	40.8	101	10	28	120	129	130	-73	-110	4102.8	2104.0	-14.8	-22.3
552	78.8	41.1	30	120	100	10	130	130	+70	+110	4102.8	2156.6	+14.2	+22.3
553	78.4	45.4	70	90	60	40	130	130	-10	+50	4102.8	2367.0	-2.0	+10.2
554	78.7	46.6	35	40	95	89	130	129	+60	-49	4102.8	2419.6	+12.2	-9.9
555	78.9	49.6	19	50	110	80	129	130	+91	-30	4102.8	2577.4	+18.5	-6.1
556	78.4	51.8	70	18	60	112	130	130	-10	-94	4102.8	2682.6	-2.0	-19.1
557	78.3	52.3	90	90	40	39	130	129	-50	+51	4102.8	2735.2	-10.2	+10.4

24.00

36.26 / 28 = 1295

36.36 / 28 = 1299

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1996phae.proj..971L

		−2610.	−2580.
40744	16737	+1416.0	− 906.3
39879	2110.1	+ 1377.9	− 469.9
39958	21469	+ 1385.8	− 433.1
40096	24681	+ 1399.6	− 111.9
39946	29637	+ 1384.6	+ 383.7
39877	30203	+ 1377.7	+ 440.3
39921	31046	+ 1382.1	+ 524.6
39872	31613	+ 1377.2	+ 581.3
39814	3429.2	+ 1371.4	+ 849.2
39948	35023	+ 1384.8	+ 922.3
40746	1713.9	+ 1464.6	− 866.1
4072.1	17746	+ 1462.1	− 805.4
40786	20098	+ 1468.6	− 570.2
40650	23532	+ 1455.0	− 2268
40622	26558	+ 1452.2	+ 758
40313	27009	+ 1421.3	+ 1209
40715	32547	+ 1461.5	+ 674.7
40640	32632	+ 1454.0	+ 683.2
40705	3572.9	+ 1460.5	+ 992.9
40646	36454	+ 1454.6	+ 1065.4
41046	18875	+ 1494.6	− 692.5
40797	20098	+ 1469.7	2009.8 − 570.2
40880	21263	+ 1478.0	− 453.7
41170	21343	+ 1507.0	− 445.7
41008	23568	+ 1490.8	− 223.2
41150	24295	+ 1505.0	− 150.5
41213	25835	+ 1511.3	+ 8.5
41008	27017	+ 1490.8	+ 1217
40926	27248	+ 1482.6	+ 1448

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

24.00

May 6, 1897 D 4849

No.	x	y	A	B	b	D	a+c	b+d	c-a	b-d	x×52.6	y×52.6	c-a ×2.03	b-D ×2.03
✓	558	78.8	54.5	20	61	110	69	130	130	+90	-08	4102.8	2840.4	+18.3	-1.6
✓	559	78.3	59.3	100	99	30	31	130	130	-70	+68	4102.8	3103.4	-14.2	+13.8
✓	560	78.9	59.3	10	85	119	45	129	130	+109	+40	4102.8	3103.4	+22.1	+8.1
✓	561	79.4	44.8	72	18	58	111	130	129	-17	-93	4155.4	2314.4	-2.8	-18.9
✓	562	80.8	40.6	15	42	114	87	129	129	+99	-45	4208.0	2104.0	+22.1	-9.1
✓	563	80.7	40.8	35	21	94	109	129	130	+59	-88	4208.0	2104.0	+12.0	-17.9
✓	564	80.5	45.7	69	41	60	89	129	130	-09	-48	4208.0	2367.0	-1.8	-9.7
✓	565	79.1	46.7	121	35	9	94	130	129	-112	-59	4155.4	2419.6	-22.7	-12.0
✓	566	80.6	49.5	42	60	88	70	130	130	+26	-10	4208.0	2577.4	+9.3	-2.0
N.S.	567														
✓	568	81.6	45.3	39	89	91	42	130	131	+52	+47	4260.6	2367.0	+10.6	+9.5
✓	569	81.4	54.0	79	130	50	130	129	260	-29	00	4260.6	2840.4	-5.9	0.0
✓	570	82.2	40.0	108	125	21	4	129	129	-87	+121	4313.2	2104.0	-17.7	+24.6
✓	571	82.9	50.8	4	25	125	105	129	130	+121	-80	4313.2	2630.0	+24.6	-16.2
✓	572	82.8	51.9	20	8	110	122	130	130	+90	-114	4313.2	2682.6	+18.3	-23.1
✓	573	82.6	56.5	41	55	88	74	129	129	+47	-19	4313.2	2945.6	+9.5	-3.9
✓	574	82.2	58.9	108	3	22	127	130	130	-86	-124	4313.2	3050.8	-17.5	-25.2
✓	575	83.7	46.1	~~35~~ 40	120	89	10	129	130	+49	+110	4365.8	2419.6	+9.9	+22.3
✓	576	83.6	46.3	45	100	84	30	129	130	+39	+70	4365.8	2419.6	+7.9	+14.2
✓	577	83.8	47.3	25	92	104	38	129	130	+79	+54	4365.8	2472.2	+16.0	+11.0
✓	578	83.4	49.3	82	100	48	30	130	130	-34	+70	4365.8	2577.4	-6.9	+14.2
✓	579	83.8	49.7	25	20	105	109	130	129	+80	-89	4365.8	2577.4	+16.2	-18.1
✓	579a	83.6	50.1	55	119	74	14	129	133	+19	+105	4365.8	2630.0	+3.9	+21.3
✓	580	83.4	56.1	85	122	44	7	129	129	-41	+115	4365.8	2945.6	-8.3	+23.3

2977 / 23 = 1294.

3117 / 24 = 1299

24.25

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

		−2610.	−2580.
4121.1	2842.0	+1511.1	+262.0
4088.6	3089.6	+1478.6	+509.6
4124.9	3095.3	+1514.9	+515.3
4152.6	2333.3	+1542.6	−246.7
4228.1	2113.1	+1618.1	−466.9
4220.0	2121.9	+1610.0	−458.1
4206.2	2376.7	+1596.2	−203.3
4132.7	2431.6	+1522.7	−148.4
4217.3	2579.4	+1607.3	− 0.6
4271.2	2357.5	+1661.2	−222.5
4254.7	2840.4	+1644.7	+260.4
4295.5	2079.4	+1685.5	−500.6
4337.8	2646.2	+1727.8	+ 66.2
4331.5	2705.7	+1721.5	+125.7
4322.7	2949.5	+1712.7	+369.5
4295.7	3076.0	+1685.7	+496.0
4375.7	2997.3	+1765.7	−182.7
4373.7	2405.4	+1763.7	−174.6
4381.8	2461.2	+1771.8	−118.8
4358.9	2563.2	+1748.9	− 16.8
4382.0	2595.5	+1772.0	+ 15.5
4369.7	2608.7	+1759.7	+ 28.7
4357.5	2922.3	+1747.5	+342.3

$y = 234.1$

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

170

D 4915

23.15

May 2, 1897.

	x	y	A.	B.	C.	2θ	a+c	B+D	c-a	B-D	C-a ×2.03	B-D ×2.03		
✓	1	60.0	51.1	1	121	129	9	130	130	+128	+112	+26.0	+22.7	
	On the edge - squares not ruled	2			- 20	- 110			130		-90	—	-18.3	
✓	3	62.9	65.9	120	4	9	125	129	129	-111	-121	-22.5	-24.6	
✓	4	69.5	67.3	70	100	60	30	130	130	-10	+70	-2.0	+14.2	
✓	5	78.7	74.9	89	8	40	121	129	129	-49	-113	-9.9	-22.9	
✓	5a	77.3	75.5	35	65	94	65	129	130	+59	00	+12.0	00	
✓	6	88.6	88.2	71	115	59	14	130	129	-12	+101	-2.4	+20.5	
✓	9	43.9	85.4	118	71	11	58	129	129	-107	+13	-21.7	+2.6	
✓	12	30.7	74.7	90	41	39	89	129	130	-51	-48	-10.4	-9.7	
✓	16	16.2	66.1	20	122	110	8	130	130	+90	+114	+18.3	+23.1	
✓	17	3.5	61.9	61	9	68	121	129	130	+7	-112	+1.4	-22.7	
✓	18	14.9	53.4	122	70	8	50	130	120	-114	+20	-23.1	+4.1	
✓	23	3.8	37.8	105	30	25	100	130	130	-80	-70	-16.2	-14.2	
✓	25	18.7	32.9	88	9	41	121	129	130	-47	-112	-9.5	-22.7	
✓	26	29.8 33.7	44.7 31.0	105 90	30 128	25 40	100 2	130	130	-80	-70	-16.2	-14.2	
✓	29	33.7	31.0	90	128	40	2	130	130	-50	+126	-10.2	+20.7 5.6	
✓	31	42.7	26.3	89	90	41	40	130	130	-48	+50	-9.7	+10.2	
✓	35	41.9	36.2	118	119	11	10	129	129	-107	+109	-21.7	+22.1	
✓	36	56.7	27.7	101	33	29	97	130	130	-72	-64	-14.6	-13.0	
✓	37	45.2	43.2	10	119	120	11	130	130	+110	+108	+22.3	+21.9	(corr. x. sign changed.) X
✓	a	45.0	43.4	130	90	130	40	260	130		+50		+10.2	
✓	b	44.6	44.3	80	100	50	30	130	130	-30	+70	-6.1	+14.2	2320.5 -289.5
✓	c	42.4	47.4	50	76	79	54	129	130	+29	+22	+5.9	+4.5	22033 -406.7
✓	d	38.9	48.3	121	86	8	44	129	130	-113	+42	-22.9	+8.5	2021.7 -588.3
✓	very faint e	39.7	51.8	90	29	40	101	130	130	-50	-72	-10.2	-14.6	2061.6 -548.4
✓	very faint f	42.3	51.8	39	20	91	110	130	130	+52	-90	+10.6	-18.3	2198.6 -411.4
	~~f faint~~	g	~~52.6~~	~~44.5~~	~~81~~	~~67~~	~~49~~	~~64~~	n.s.					
✓ 3760/29=1297 3756/29=1295		h	52.6 ~~50.3~~	44.5 ~~44.9~~	81	~~76~~ 67	49	~~120~~ 64	130	131	-32	+ 3	-6.5	+0.6	2741.7 +131.7
✓		k	50.3	47.9	31	10	99	120	130	130	+68	-110	+13.8	-22.3	2616.2 + 6.2
✓	24.10	l	48.4	40.6	60	51	70	79	130	130	+10	-28	+2.0	-5.7	2522.8 -87.2

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

Cor x − 2610	Cor. y − 2880
+520.0	+ 799
+726.3	+1225.5
	863.6
+726.3	+962
+1021.4	+1035.2
+1555.3	+1335.3
+1480.8	+1365.0
+2021.2	+2028.3
−326.5	+1888.4
−1021.6	+1822.1
−1786.7	+868.5
	651.3
−2453.6	+703.9
1850.5	
−1797.9	+203.7
−2436.0	−619.6
	874.1
−1653.7	−821.5
−1068.4	−251.4
−864.0	−925.8
−391.1	−1222.6
−431.7	−708.5
+350.2	+1468
−265.3	−340.1
	22516

		y	
			−328.4
2308.3	2300.2	−301.7	−279.8
2215.1	24677	−394.9	−112.3
1975.9	25163	−634.1	−63.7
2041.2	26972	−568	+117.2
2219.8	27009	−402	+120.9
2728.7	23138	+118.7	−266.2
2643.8	24945	+ 33.8	− 85.5
2526.8	25831	− 832	+ 9.1

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

172

D 4915

24.00

May 6, 1897.

Hercules

	x	y	A	B	C	D	a+c	B+D	c-a	B-D	c-a 2.83	B-D 2.03
1	1	122	128	9	129	131	+127	+113	+25.8	+22.9		
cannot see lines of squares 2		20		110		130		-90		-18.3		
3	120	8	10	122	130	130	-110	-114	-22.3	-23.1		
4	70	100	59	29	129	129	-11	+71	-2.2	+14.4		
5	89	9	41	121	130	130	-48	-112	-9.7	-22.7		
5a	35	66	95	64	130	130	+60	+2	+12.2	+0.4		
6	71	115	59	14	130	129	-12	+101	-2.4	+20.5		
9	119	70	11	60	130	130	-108	+10	-21.9	+2.0		
12	91	42	39	89	130	131	-52	-47	-10.6	-9.5		
16	21	125	109	5	130	130	+88	+120	+17.9	+24.4		
17	61	9	68	120	129	129	+7	-111	+1.4	-22.5		
18	123	79	6	51	129	130	-117	+28	-23.8	+5.7		
23	105	29	25	101	130	130	-80	-72	-16.2	-14.6		
25	86	9	43	121	129	130	-43	-112	-8.7	-22.7		
26	101	30	28	100	129	130	-73	-70	-14.8	-14.2		
29	89	128	40	3	129	131	-49	+125	-9.9	+25.4		
31	88	89	41	40	129	129	-47	+49	-9.5	+9.9		
35	118	119	11	11	129	130	-107	+108	-21.7	+21.9		
36	100	31	29	98	129	129	-71	-67	-14.4	-13.6		
37	10	119	120	11	130	130	+110	+108	+22.3	+21.9		
a	130	89	130	41	260	130		+48		+9.7	x	y 2252.1
b	79	105	50	25	129	130	-29	+80	-5.9	+16.2	2308.5	2298.2
c	50	75	80	55	130	130	+30	+20	+6.1	+4.1	2213.3	2468.1
d	125	85	4	44	129	129	-121	+41	-24.6	+8.3	1974.2	2516.5
e	89	25	41	105	130	130	-48	-80	-9.7	-16.2	2041.7	2698.8
f	39	20	91	111	130	131	+52	-91	+10.6	-18.5	2219.8	2701.1
g	~~81~~	~~68~~	~~49~~	~~62~~								
h	81	68	49	62	130	130	-32	+6	-6.5	+1.2	2728.7	2313.2
k	38	11	92	120	130	131	+54	-109	+11.0	-22.1	2641.0	2494.3
l	55	49	74	81	129	130	+19	-32	+3.9	-6.5	2528.7	2583.9

W.S. 3757 / 29 = 1296 — 3768 / 29 = 1299

24.15

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phaeproj..971L

2610 2580

+5202 +79.7
+1188.9 (1265.5)
+726.1 +914.7
+1021.6 +1035.0
+1555.1 +1289.7 (1335.1)
+1480.6 +1364.6
+2021.2 +2028.3
-376.3 +1889.0
-1021.4 +1321.9
-1786.3 +866.0 (717.2)
-2453.6 +658.4 (703.7) y = +651.1 ✓
-1797.2 +151.0 (+202.1)
-2436.0 -619.2
-1657.5 -821.5
-1069.8 -251.6
-864.3 -974.8
-391.3 -1222.8 (1222.3)
-431.7 -708.3
+350.0 -1146.2
-265.3 -340.1
-327.9 corr x sign changed X-2610
-301.5 -281.8 2320.3 -289.7
-394.7 -111.9 2203.1 -406.9
-635.8 -635.2 2023.4 ✓ -586.6 38 = Est used in K
-568.3 +118.8 2061.1 -548.9
-390.2 +121.1 2198.6 -411.4

+1187.7 -2668 2741.7 +131.7
+ 31.0 - 85.7 2619.0 + 9.0
- 81.3 + 3.9 2529.9 - 89.1

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

174

D 4915

23.05

May 6, 1897.

Table

	x	y	A	B	C	D	C-a	B-D	C^2a	B^2D			
✓ 1	1	124	128	6	129	130			+25.8	+24.0			
✓ 2	—	21	—	108		129	+127	+118	—	-17.7			
✓ 3	120	8	10	122	130	130	-110	-114	-22.3	-23.1			
✓ 4	70	100	59	30	129	130	-11	+70	-2.2	+14.2			
✓ 5	89	8	41	121	130	129	-48	-113	-9.7	-22.9			
✓ 5a	36	66	93	63	129	129	+57	+3	+11.6	+0.6			
✓ 6	71	119	58	11	129	130	-13	+108	-2.6	+21.9			
✓ 9	120	71	10	59	130	130	-110	+12	-22.3	+2.4			
✓ 12	91	41	39	89	130	130	-52	-48	-10.6	-9.7			
✓ 16	20	122	110	7	130	129	+90	+115	+18.3	+23.3			
✓ 17	61	9	68	120	129	129	+7	-111	+1.4	-22.5			
✓ 18	121	79	8	51	129	130	-113	+28	-22.9	+5.7			
✓ 23	105	28	24	101	129	129	-81	-73	-16.4	-14.8			
✓ 25	85	9	44	121	129	130	-41	-112	-8.3	-22.7			
✓ 26	101	30	28	99	129	129	-73	-69	-14.8	-14.0			
✓ 29	90	128	40	2	130	130	-50	+126	-10.2	+25.6			
✓ 31	88	90	41	40	129	130	-47	+50	-9.5	+10.2			
✓ 35	115	119	14	11	129	130	-101	+108	-20.5	+21.9			
✓ 36	101	35	29	96	130	131	-72	-61	-14.6	-12.4			
✓ 37	10	119	120	11	130	130	+110	+108	+22.3	+21.9			
✓ a	130	89	129	41	259	130		+48		+9.7	x	y	2252.1
✓ b	79	101	51	28	130	129	-28	+73	-5.7	+14.8	2308.7	2299.6	
✓ c	55	75	74	54	129	129	+19	+21	+3.9	+4.3	2213.1	2467.9	
✓ d	121	88	9	42	130	130	-112	+46	-22.7	+9.3	1976.1	2515.5	
✓ Very faint e	90	29	39	101	129	130	-51	-72	-10.4	-14.6	2041.0	2697.2	
✓ Very faint f	35	20	95	110	130	130	+60	-90	+12.2	-18.3	2221.4	2700.9	
N.S. g													
✓ h	80	65	49	65	129	130	-31	0	-6.3	0	2728.9		
✓ k	38	10	92	120	130	130	+54	-110	+11.0	-22.3	2641.9	2494.5	
✓ 23.30 l	50	50	80	80	130	129	+30	-29	+6.1	-5.9	2530.9	2583.3	

3755/29 = 129.5

3761/29 = 129.7

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phaeproj..971L

+520.2	+ 78.6		
	+1224.9		
+726.1	+ ~~914.7~~ 862.1		
+1021.6	+1035.2		
+1555.1	+1335.3		
+1481.2	+1364.4		
+2021.7	+2026.9		
-325.9	+1888.6		
-1021.4	+1822.1		
-1786.7	+868.3		
-2453.6	+ ~~703.7~~ 651.1		
~~-1798.1~~ 1850.7	+202.1		
-2435.8	-619.0		
-1664.9	- ~~821.5~~ 874.1		
-1069.8	-251.6		
-864.0	-975.0		
-391.3	-1222.6		
-432.9	-708.3		
+350.2	-1147.4		
-265.7	-340.1	x(aigueb.)	x-2610
	-327.9		
-301.3	-280.4	2320.1 -289.9	
-396.9	-112.1	2205.3 -404.7	
-633.9	-64.5	2021.5 -588.5	
-569.0	+117.2	2061.8 -548.2	
-388.6	+120.9	2197.0 -413.0	
+118.9		2741.5	+131.5
+31.0	-85.5	2819.0	+109.0
-79.1	+33.3	2518.7	-91.3

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

24.35

May 6, 1897

D4849

North Polar Standard Stars outside circle

		A.	B.	C.	D.			C-a	B-D	C-a 25.3	
✓	2	110	15	19	114	129	129	C-a +79.1	-99	-18.5	-20.1
✓	5	35	3	94	127	129	130	+69	-124	+12.0	-25.2
✓	5a	90	59	39	71	129	130	-51	-12	-10.4	- 2.4
✓	6	48	111	81	19	129	130	+33	+92	+ 6.7	+18.7
✓	9	1	72	128	58	129	130	+127	+14	+25.8	+ 2.8
✓	16	95	124	34	5	129	129	-61	+119	-12.4	+24.2
✓	17	51	1	78	129	129	130	+27	-128	+ 5.5	-26.0
✓	18	122	70	8	60	130	130	-114	+10	-23.1	+ 2.0
✓	23	5	18	125	112	130	130	+120	-94	+24.4	-19.1
	24	30	11	100	119	130	130				
✓ 24.40	25	29	128	100	3	129	131	+71	+125	+14.4	+25.4
May 9, 1897											
✓ 23.05	1	120	119	10	11	130	130	-110	+108	-22.3	+21.9
✓	3	2	130	128	130	130	260	+126	0	+25.6	0.0
✓	4	50	95	79	34	129	129	+29	+61	+ 5.9	+12.4
✓	12	29	40	101	90	130	130	+72	-50	+14.6	-10.2
✓	26	15	22	114	108	129	130	+99	- 86	+20.1	-17.5
✓	29	29	115	100	14	129	129	+71	+101	+14.4	+20.5
✓	31	31	79	99	51	130	130	+68	+28	+13.8	+ 5.7
✓	35	2	108	129	22	131	130	+127	+86	+25.8	+17.5
✓	36	20	20	110	110	130	130	+90	- 90	+18.3	-18.3
✓	37	110	109	20	20	130	129	-90	+89	-18.3	+18.1

23.10

2720/21 = 1295 ; 2856/22 = 1298

		x	y	A	B	C	D					x x 52.6	
D4849													
✓	+89 16a	11.1	66.3	120	100	10	31	130	131	-110	+69	-22.3 +14.0	578.6 3471.6
D4880													
✓	+89 16a	11.0	66.3	130	95	130	35	260	130	0.0	+60	0.0 +12.2	578.6 3471.6

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phaeo.proj..971L

+2010.7	+11871	(2
+15574	+12872	(5
+14824	+13626	(5a
+20255	+2030.1	(6
-322.4	+1888.2	(9
-1780.8	+867.4	(16
-2446.7	+707.2	(17
-1844.1	+205.8	(18
-2427.8	-614.7	(23
-1648.8	-869.6	(25
+523.7	+80.7	(1
+729.+	+891.6	(3 y=+865.3
+1025.3	+1037.0	(4
-1017.4	+1322.6	(12
-1064.5	-248.1	(26
-859.8	-969.9	(29
-387.0	-1218.1	(31
-427.6	-703.9	(35
+353.9	-1141.5	(36
-261.3	-336.3	(37

-2610 -2580 ax by c Σ Corr.x cáy-bx c' Σ Corr.y

+6009 556.3 3457.6 -2009.1 + 877.6 .25 .11 +.84+.48 -2054.2 .04 .80 +3.90+3.06 +874.5

578.6 3459.4 (-2031.4) + 879.4 1.05 .23 -2.15-2.97 -2054.7 +.52 +1.05+3.00 +4.58 +874.8

-2057.7 Mean -2054.4 +874.6

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

Estimates of brightness of No. Polar Stars.

June 16, 1897 Plate D 4885

12.10 No.	D 4885 Est Br.	D 4849 July 8, 1897 Br. 22.50		D 4849 July 23, 1897	D 4885 July 23, 1897	July 25, 1897 measures
1	16.0	n.s				
2	15.8	~~16.0~~ n.s.	2			~~15.9 1 1~~
3	15.0	n.s.				
4	15.0	14.5	.5			14.8 2 3
5	16.0	15.8	2			15.9 1 1
6	15.5	15.5	0			15.5 0 0
7	15.0	15.8	8	n.s	defect.	13.0 8 0 0,0 0 Rj
8	12.0	13.0	10	13.0	13.0	~~12.8 8 2 2 2~~ ?
9	12.2	13.2	10	13.5	13.5	13.4 3 1 2, 2 1 Rj ?
10	15.8	15.8	0			15.8 0 0
11	15.0	15.5	5			15.2 2 3
12	14.0	13.5	5			13.8 2 3
13	14.0	13.8	2			13.9 1 1
14	15.5	15.5	0			15.5 0 0
15	15.2	15.5	3			15.4 2 1
16	14.2	14.0	2			14.1 1 1
17	11.5	12.5	10	12.5	12.5	12.2 7 3 2 3 3
18	14.2	14.5	3			14.4 2 1
19	11.5	13.0	15	13.0	12.7	12.7 3 0 5, 3 3 Rj ?
20	15.0	15.0	0			15.0 0 0
21	15.5	15.5	0			15.5 0 0
22	15.5	15.7	2			15.6 1 1
23	11.8	13.0	12	13.0	13.0	13.0 3 0 0,0 0 Rj
24	14.0	14.8	8	15.2	15.0	15.0 0 0 0,2 2 Rj
25	16.0	16.0	0			16.0 0 0
26	15.9	15.8	1			15.8 1 0
27	12.0	12.5	5			12.2 2 3
28	12.0	12.0	0			12.0 0 0
29	13.8	14.5	7	14.5	14.8	14.6 8 22,1 1 Rj
30	16.0	16.0	0			16.0 0 0
12.45 31	14.0	14.5	2 3 10 5			14.2 2 3

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

Estimates of br. of No. Polar Stars. (cont)

12,45	No	D 4885 Estr. Br.	D4849 July 8, 1897 Br 23,10		June 16, 1897 D4849 D4885 July 23, 1897		July 26, 1897 Plate D 4885	
	32	14.0	14.5	5				
	33	16.0	n.s.					
	34	15.5	15.5	0				
	35	15.0	15.8	8	15,8	15.8	15.6	6222
	36	13.9	14.0	1				
	37	15.0	15.0	0				
	38	15.5	15.5	0				
	39	16.0	16.0	0				
	40	16.0	16.0	0				
	41	14.5	14.0	5				
	42	15.5	16.0	5				
	43	15.2	15.0	2				
	44	15.5	15.8	3				
	45	13.0	13.2	2				
	46	15.5	15.8	3				
	47	15.5	16.0	5				
	48	15.7	15.8	1				
	49	14.5	14.0	5				
	50	14.2	13.8	4				
	51	15.5	15.5	0				
	52	11.0	11.0	0				
	53	15.5	defect 14.0?	15	defect	defect		
	54	defect?	n.s.					
	55	14.8	n.s					
	56	14.8	15.8	10	n.s	defect?		
	57	defect?	16.0					
	58	14.0	14.2	2				
	59	15.5	n.s.					
	60	12.0	12.8	8	12.7	12.8	12.6	6212
	61	11.0	11.0	0				
1.05	62	15.5	15.5	0				

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

(Cont'd

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

Estimates (cont'd)

D 4885 July 14, 1897
Est. D4849

1.05

No	Br.	Br. 22.45		June 16, 1897 Plate D 4885
				D4849 D4885
63	15.5	15.5	0	July 23, 1897 July 26, 1897
64	15.7	15.5	2	
65	10.0	10.5	5	
66	11.5	12.5	10	12.5 11.5 12.0 5 5, 55
67	16.0	16.0	0	
68	15.2	15.5	3	
69	10.0	10.5	5	
70	15.2	15.5	3	
71	14.5	n.s		
72	15.0	15.4	4	
73	12.5	13.5	10	13.3 13.0 13.1 6 4 2 1
74	15.0	n.s		
75	defect?	n.s		
76	15.5	15.5	0	
77	defect?	n.s		
78	defect?	n.s		
79	defect?	n.s		
80	15.8	15.5	3	
81	15.5	15.5	0	
82	13.5	15.0	15	15.0 15.0 15.0 5 00, 00
83	14.0	14.5	5	
84	too bright	too bright		
85	14.21	15.0	8	15.0 15.2 ~~14.9 7 3 1, 1~~ ~~15.0 8 20,00~~ set
86	15,5	15.5	0	
87	14.0	14.5	5	
88	11.0	11.5	5	
89	15.5	15.9	4	
90	defect?	n.s.		
91	13.5	14.0	5	
92	13.0	13.5	5	
93	12.0	12.5	5	

1.15

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

Estimates (cont)

July 14, 1897

	No.	D4885 Br.	D4849 Br. 23.00					
12.05	94	15.5	n.s.		June 24 1897.			
defect?	95	15.5	n.s		D4849 July 23, 1897	D4885 July 26, 1897		
defect?	96	15.0	15.0	0			15.00	
	97	14.2	14.0	2				
	98	15.5	15.5	0				
defect?	99	16.0	n.s.					
	100	16.0	15.7	3				
	101	16.0	15.8	2				
	102	15.8	15.5	3				
too bright	103		~~too bright~~					
defect	104		15.5					
	105	15.0	15.2	2				
	106	12.0	12.5	5				
	107	12.0	12.2	2				
	108	16.0	n.s					
	109	11.5	12.0	5				
defect?	110	15.5	15.5	0				
defect?	111	15.0	15.3	3				
	112	16.0	16.0	0				
	113	14.0	14.7	7	14.5	14.8	14.5	5203
?	114	13.5	15.0	15	14.8	14.5 (14)		
defect	115		~~n.s~~					
defect?	116		15.5					
	117	14.0	14.8	8	14.8	14.5	14.5	5330
	118	11.7	12.0	3				
	119	16.0	15.8	2				
	120	15.5	15.0	5				
	121	15.8	15.5	3				
	122	16.0	16.0	0				
	123	15.5	15.5	0				
12.25	124	15.0	15.[illegible]	0	23.15			

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

Estimates (cont'd)

	No.	Br.	Br. 23,15		June 27, 1897 (July 23, 1897 D4849 / August 6, 1897 D4885)			
12.25	125	15.8	15.8	0				
	126	16.0	16.0	0				
	127	14.5	15.0	5				
	128	15.5	15.5	0				
	129	14.8	13.8	2				
	130	14.2	14.0	2				
	131	15.0	15.5	5				
	132	13.0	13.0	0				
	133	16.0	16.0	0				
	134	12.8	12.8	0				
defect?	135	15.0	14.9	1				
	136	15.9	15.3	6	15.5	15.5	15.6	3 3 1 1
	137	15.8	15.5	3				
	138	13.0	13.2	2				
	139	15.5	15.5	0				
	140	16.0	16.0	0				
	141	14.5	14.8	3				
	142	14.4	14.5	1				
	143	14.5	15.0	5				
	144	12.5	13.5 (R)	10	12.0 (12.5)	13.3 (13.0)	12.7	2 6 3, 8 7 2 (R)
	145	12.6	13.5	9	13.0	13.3	13.1	5 4 1 2
	146	16.0	15.8	2				
	147	12.5 (N)	14.5	20	14.5	14.0 (13.5)	14.1	6 1 6 44
	148	16.0	16.0	0				
	149	15.9	16.0	1				
	150	16.0	15.5	5				
	151	14.0	13.5	5				
	152	12.9	12.5	4				
	153	15.5	15.8	3				
See note on page 90	154	15.5	n.s					
12,40	155	15.0	15.0	0	23,25			

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

Estimates (cont)

D4885 July 14, 1897 D4849

	No.	Br.	Br. 23.25					
12.40	156	14.5	14.8	3				
	157	15.0	15.5	5				
	158	12.0	12.5	5				
	159	14.0	14.0	0				
	160	15.0	14.8	2				
	161	16.0	16.0	0				
	162	15.0	15.0	0				
	162a		15.5					
defect?	163		n.s					
?	164	16.0	defect					
	165	11.0	11.00	0				
	166	15.5	15.5	0				
	167	16.0	16.0	0				
	168	15.0	14.8	2				
	169	15.8	16.0	2				
	170	12.0	12.5	5				
	171	15.5	15.5	0				
	172	15.5	15.5	0				
	173	16.0	16.0	0				
	174	15.9	15.8	1				
	175	15.8	16.0	2				
	176	15.8	~~15.8~~ 14.8	0				
	177	12.2	14.5	23	14.0	13.8 (12.8)		
	178	15.8	16.0	2				
	179	15.5	15.5	0				
	180	11.8	12.5	7	12.5	12.0	12?	4 3 3 ?
	181	15.0	14.5	5				
	182	15.5	15.8	3				
	183	10.0	10.0	0				
	184	13.9	12.8	11	13.0	13.0	13?	7 4 ? ?
	185	16.0	16.0	0				
12.55	186	15.8	15.8	0				

D4849 June 27, 1897 (5)
June 23, 1897
July 22, 1897
D4885 July 26, 1897

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

Estimates (cont)

22.25 No.	D4885 Br.	D4849 Br.	23,40.	D4849 June 28, 1897 July 23, 1897 July 26, 1897			
187	15.5	15.5	0				
188	11.7	12.5	8	12.5	D4885 12.0	July 26, 1897	
189	14.8	15.0	2				
190	10.0	10.0	0				
191	15.0	15.5	5				
192	16.0	15.5					
193	13.9	12.8	11	13.0	13.0	13.2	7 4 2 2
194	15.8	15.8	0				
195	16.0	16.0	0				
196	15.8	15.5	3				
197	15.0	14.8	2				
198	15.2	15.0	2				
199	15.2	15.2	0				
200	16.0	16.0	0				
201	10.0	10.0	0				
202	15.0	14.8	2				
203	15.5	15.5	0				
204	16.0	16.0	0				
205	15.0	15.0	0				
206	15.2	15.2	0				
207	15.0	14.8	2				
208	15.5	15.2	3				
209	16.0	16.0	0				
210	16.0	16.0	0				
211	15.5	15.8	3				
212	15.0	15.5	5				
213	14.9	14.0	9	15.0 (15.0)	15.0 (15.0)	15.0	100,000
214	14.8	14.5	3				
215	15.5	15.8	3				
216	15.8	16.0	2				
22.40 217	15.8	15.8	0 3 5				

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

Estimates (cont)

July 16, 1897

D4885 D4849

22.40

No.	Br.	Br. 12.25	Diff	Additional measures June 28, 1897
218	15.0	14.8	2	~~D4849 July 22, 1897~~
219	15.1	14.5	6	July 23 1897 14.5 D4885 15.0 July 26, 1897
220	11.5	11.5	0	
221	16.0	16.0	0	
222	15.0	15.5	5	
223	15.2	15.5	3	
224	14.0	15.0	10	15.0 15.0 14.9 15.0 0 0 1,00
225	15.5	15.5	0	
226	15.5	15.8	3	
227	16.0	16.0	0	
228	10.0	10.0	0	
229	11.0	11.0	0	
230	15.9	15.8	1	
231	16.0 ~~14.2~~	16.0	0	
232	14.2	14.5	3	
233	15.0	15.0	0	
234	13.5	13.5	0	
235	15.5	15.3	2	
236	16.0	16.0	0	
237	15.8	15.5	3	
238	15.8	15.8	0	
239	15.55	15.2	3	
240	15.0	14.5	5	
241	15.8	defect?		
242	14.8	15.2	4	
243	14.0	13.3	7	13.0 12.8 12.7 13.0 0 2 3 3 0
defect? 244		12.5		
245	15.5	15.8	3	
246	15.5	15.8	3	
247	16.0	16.0	0	
22.55 248	15.2	15.5	3 1/2 35	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1990phaa.proj..971L

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

Estimates (cont'd)

July 16, 1897

	No	D4885 Br.	D4849 Br.	12,35	June 28, 1897
22.55	249	15.0	14.5	5	July 23, 1897
	250	11.0	11.0	0	July 22, 1897 D4849 D4885 July 26, 1897
	251	15.5	15.8	3	
	252	14.8	15.0	2	
	253	15.5	15.5	0	
	254	11.7	11.5	2	
	255	15.8	15.8	0	
	256	15.0	15.0	0	
defect?	257		15.8		
	258	15.8	defect?		
	259	16.0	16.0	0	
defect?	260	15.5	defect?		
	261	14.0	13.3	7	13.0 13.0 (13.0) 13.1 9 1 1, 21
	262	16.0	15.5	5	
	263	15.0	15.0	0	
	264	16.0	15.8	2	
	265	11.2	11.0	2	
	266	15.8	15.8	0	
	267	13.9	12.5	14	12.5 12.5 (12.5) 12.5 4 00,00
	268	14.2	14.0	2	
	269	16.0	16.0	0	
	270	15.0	15.0	0	
	271	15.8	15.5	3	
too bright	272		too bright		
	273	14.8	15.0	2	
	274	15.0	15.2	2	
	275	13.9	12.5	14	12.2 12.0 (12.8)
	276	15.2	15.0	2	
	277	11.0	11.2	2	
	278	15.5	15.8	3	
23.00	279	14.8	14.8	12.0 45	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1996phao.proj..971L

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

Estimates (cont)

July 16, 1897

D4885 D4849

	No	Br.	Br.		
23.00				12.75	June 28, 1897
	280	14.5	14.0	5	July 23 1897
	281	11.5	11.5	0	July 22, 1897 D4849 D4885 July 26, 1897
	282	16.0	16.0	0	
	283	10.5	10.0	5	
	284	16.0	16.0	0	
	285	14.5 n	13.0	15	12.8 13.0 n 12.5 12.8 Σ 23,20
	286	15.5	15.5	0	
	287	14.2	14.0	2	
	288	12.0	11.8	2	
	289	16.0	16.0	0	
	290	14.8	14.0	8	14.0 14.3 14.3 5 3,3 0
	291	15.5	15.5	0	
	292	14.0	13.5	5	
	293	12.0	11.7	3	
	294	15.5	15.3	2	
	295	14.9	15.0	1	
	296	16.0	16.0	0	
	297	15.0	15.0	0	
defect?	298		n.s.		
	299	15.0	15.5	5	
	300	14.0 n	12.0	20	12.5 11.5 n 12.8
	301	11.2	11.8	1	
	302	16.0	16.0	0	
	303	15.5	15.8	3	
	304	15.0	15.5	5	
	305	16.0	16.0	0	
defect?	306	15.5	15.2	3	
	307	15.0	15.0	0	
	308	14.2 n	12.5	17	12.5 12.5 12.4 [18] 4, 1 1 12.2 [20] 3 2,33
	309	12.0	14.00	20	14.0 14.0
23.15	310	15.8	15.5	3	12.55

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971t

Estimates. (cont)

July 16, 1897

D4885 D4849

22.40

No.	Br.	Br.	12,55				
311	10.8	11.0	2				
312	14.5	14.8	3				
313	14.0	13.5	5				
314	14.8	15.0	2				
315	15.5	15.5	0				
316	10.0	10.0	0				
317	16.0	15.5	5				
318	16.0	15.8	2				
319	16.0	16.0	0				
320	16.2	16.0	2				
321	14.5	15.0	5				
322	14.3	14.8	5				
323	15.0	15.5	5				
324	15.8	15.5	3				
325	15.5	15.5	0				
326	14.0	14.5	5				
defect? 327		15.8					
328	14.5	15.0	5				
329	14.5	14.0	5				
330	15.0	14.5	5				
331	13.8	12.8	10	12.5	13.0	13.0	8 2,50
332	13.8	13.0	8	12.5	12.5 (12.8)	12.7	1 21,32
333	14.0	13.0	10	13.0	12.8 (13.0)	13.0	0 20,00
334	14.1	14.7	6	14.5	14.0	14.3	2 4,23
334a		15.8					
defect? 335	15.5	15.5	0				
336	15.8	15.5	3				
337	15.5	15.3	2				
338	12.5	11.7	8	12.5	12.5	12.3	26,22
defect 339		14.8					
defect? 340	15.5	14.5					
23.00			1.05				

June 30 1897.

July 23 1897

July 12 1897

D4849 D4885

July 16, 1897

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phad.proj..971L

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

		D4885	D4849 July 23,'97	
23.00	No.	Br.	Br.	
	341	15.0	14.5	5
	342	13.8	13.5	3
	343	16.0	15.8	2
	a		16.0	
	344	15.5	15.5	0
	345	15.0	15.0	0
	346	14.2	14.5	3
defect ?	347	15.5	15.5	0
	348	10.0	10.2	2
	349	15.0	15.5	5
too bright	350			
	351	15.5	15.5	0
too bright	332			
	353	15.2	15.5	3
	354	15.5	15.8	3
	355	15.0	15.5	5
	356	15.8	15.8	0
	357	15.5	15.5	0
	358	13.5	14.0	5
	359	15.8	15.8	0
	360	14.8	15.2	4
	361	14.8	15.0	2
	362	15.5	15.8	3
	363	15.8	16.0	2
	364	11.5	11.5	0
	365	15.5	15.5	0
	366	15.8	15.8	0
	367	15.8	15.8	0
	368	15.5	16.0	5
	369	15.5	15.5	0
2.3.10	370	15.8	15.5	3
22.20				

22.60

D4849 June 30, 1897
July 22, 1897
July 23 1897 D4885 July 26, 1897

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phad.proj..971L

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

D4885 D4849 22207

23.10 No Br. Br.

June 30, 1897.

defect? 371 15.2

D4849 July 23, 1897

D4885 July 26, 1897

372	15.8	~~12.0~~ 15.8	0	
373	16.0	16.0	0	
374	15.5	15.7	2	
375	15.8	NS		
376	15.8	15.8	0	
377	15.8	NS		
378	15.5	15.5	0	
379	13.5	14.0	5	
380	15.5	15.5	0	
381	15.8	16.0	2	
382	15.5	15.8	3	
383	13.9	13.0	9	12.5 13.8 12.8 1 00,23
384	16.0	16.0	0	
385	16.0	15.8	2	
386	15.5	15.5	0	
387	15.5	15.5	0	
388	16.0	16.0	0	
389	14.8	15.0	2	
390	13.8	12.8	10	12.5 13.0 13.0 8250
too bright 391				
392	15.5	15.5	0	
393	15.3	15.2	1	
394	12.0	12.8	8	12.5 12.0
395	15.8	15.8	0	
396	12.8	12.0	3	
397	11.5	11.5	0	
398	15.5	NS		
399	15.5	15.5	0	
400	14.2	14.8	6	13.0 14.0

23.25 22.35

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phad.proj..971L

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

June 30, 1897.

	No.	D4885 Br.	D4849 2235 Br						
23.25	401	14.2	14.5	3	July 23, 1897 D4849	July 28, 1897 D4885	July 26, 1897		
	402	15.5	15.8	3					
	403	15.5	15.5	3					
	404	15.5	15.5	0					
	405	14.0	14.8	8	14.5	14.5	14.4	± 411	
	406	15.0	15.5	5					
	407	10.0 (2)	11.0	10	11.0	11.0	10.5 10.9 (R)	± 411	
	408	17.8 (5)	16.0	2					
	409	14.8	15.0	2					
too bright	410		10.0						
too bright	411	~~15~~	10.0						
defect?	412	15.8	15.8	0					
	413	15.0	15.5	5					
	414	15.1	15.5	4					
	415	16.0	16.0	0					
too bright	416								
	417	14.5	15.0	5					
	418	16.0	16.0	0					
	419	15.0	15.5	5					
	420	14.5	14.8	3					
	421	12.5	12.5	0					
defect?	422	16.0 ~~17.8~~	16.0	0					
	423	14.5	14.8	3					
	424	11.5	11.5	0					
	425	16.0	16.0	0					
	426	15.5	15.8	3					
	427	15.5	15.5	0					
	428	15.0	15.0	0					
	429	10.5	11.0	5					
	430	16.0	16.0	0					
23.40			2240						

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phaa..proj..971L

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

23.40

No.	Br	Br		D4885	D4849	2240
				June 30, 1897		
431	15.0	15.5	5	July 23 1897		
432	15.1	15.7	6	D4849	July 28. 1897	
433	14.0	15.0	10	15.5	20 4885 15.3	July 26, 1897 15.4 3 1 31
434	13.9	14.0	1	14.0 (14.0)	14.0	14.0 00,000
435	16.0	16.0	0			
436	15.8	15.8	0			
437	16.0	15.8	2			
438	11.5	11.5	0			
439	10.5	11.0	5			
440	12.5	12.5	0			
441	10.0	too br.				
442	14.8	15.0	2			
443	16.0	16.0	0			
444	15.5	15.5	0			
445	15.8	defect				
446	16.0	15.8	2			
447	15.5	15.0	5			
448	14.5	14.8	3			
449	15.8	15.8	0			
450	12.5	11.5	10	12.0	12.2	4885=I III=4849 12.0 52,50
451	15.5	15.8	3			
defect? 452	15.5	15.5	0			
453	11.5	11.5	0			
454	16.0	16.0	0			
455	15.5	15.5	0			
456	12.5 ~~11.3~~	13.0	5			
457	15.5	15.5	0			
458	15.5	15.3	3			
459	14.0	15.0	10	14.0	14.0	
460	15.5	15.5	0			

23.50 22.45

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

Remeasures. April 14, 1898

				a	B	C	D
D4885	✓	324	53.5	83.5	7.0	6.5	6.0 6.5
	✓	399	62.4	50.3	8.9	10.5	4.0 2.8
	✓	544	77.7	45.3	3.5	10.5	9.4 2.5
	✓	217	44.8	27.1	1.5	12.0	1.15 1.0
	✓	127	x	36.8			
	✓	209	y	43.7	38.8		
4849	✓	342		55.8	37.4		
	✓	209	y	43.7	38.8		
	✓	~~229~~ 127	x	36.8			
	✓	109	x	34.3			

550 a meas. D4849 p. 166.
55 a " D4885 p 118.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

D4885 D4849

23.10 No | Br. | Br. 2245

No	Br.	Br. 2245	
461	15.8	15.8	0
462	15.0	15.5	5
463	15.8	16.0	2
464	14.0	14.5	5
465	15.5	15.5	0
466	15.5	15.5	0
467	14.0 n	16.0 12.5	15
468	16.0	15.8	2
469	15.8	15.8	0
470	15.0	15.5	5
471	15.8	16.0	2
472	15.0	15.3	3
defect? 473	15.5	15.5	
474	12.0	12.0	
475	14.8	15.0	2
476	15.5	15.5	0
too bright 477		10.0	
478	12.7	14.0 n	13
479	11.2	11.5	3
480	15.8	15.8	0
481	11.7	12.0	3
482	15.8	15.8	0
483	15.5	15.8 5	0
484	15.0	15.0	0
485	15.9	16.0	1
486	16.0	16.0	0
487	15.5	15.5	0
488	15.0	15.0	0
489	15.8	15.5	3
490	15.5	15.5	0
23.15 491	14.8	14.8	0 2255

D4849

July 1, 1897

2 2 1897

Aug 23, 1897 Aug 26 1897

D4885

12.7 12.8 (12.8) (12.7) 3 11, 2 0

12.8 (12.7) 12.8 (12.8) 10, 2 0 1

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

Second Series of Extended Impressions

Obs. Nice Exp. July 28. 1897

Star				
8	13.0	12.0 or 13.0	6885	
9	~~12.5~~ 13.2	not. 12.2 " 13.5	"	
? 17	12.0	11.5 " not. 12.5	"	
19	12.2	not. 11.5 " 12.7	"	
23	13.0	not 11.8 " 13.0	"	
24	15.0	not 14.0 " 15.0	"	
29	14.8	not 13.8 " 14.8	"	
6.6	Examin other obs			
82	15.0	not 13.5 " 15.0	"	
85	15.0	not 14.2 " 15.2	"	
? 114	13.2	13.5 " not. 14.5	"	
144	13.0 12.5	not not [?] 13.5 " 12.0	6849	
147	13.5	not 12.5 " 14.0	6885	
? 177	12.8	not not 12.2 " 13.8	"	
213	15.0 15.0	not. 14.0 " 15.0	4849	
224	14.9	not. 14.0 " 15.0	4885	
243	12.7	not 14.0 " 12.8	"	
261	13.0	not 14.0 " 13.0	"	
267	12.5	not 13.9 " 12.5	"	
275	12.8	not not 13.9 " 12.0	"	
285	12.5	not not [?] 14.5 " 13.0	"	
300	12.8	not not 14.0 " 11.5	"	
308	12.0	not 14.2 " 12.5	"	
309	13.0	not not 12.0 " 14.0	"	
322	12.8	not 13.8 " 12.5	"	
333	13.0	not 14.0 " 12.8	"	
383	12.8	not 13.9 " 12.8	"	
407	10.5	not 10.0 " 11.0	"	
433	14.0	not 15.0 " 14.0	4849	
460	15.0	15.0 " not 14.0	"	

467	12.8	not 14.0 or 12.8	6885	
478	12.7	not 14.0 " 12.8	4849	
534	13.0	not 14.5 " 13.0	4885	
543	12.8	not 14.0 " 12.8	4885	
550	13.0	not 14.0 " 13.0	"	
572	11.5	not 13.0 " 11.5	"	
578	12.5	not 14.1 " 12.8	"	
Ex 459	13.0	not 15.0 " 14.0	~~4849~~ ~~4885~~	
390	114 no coincidence of variable			
331	177 " " " "			
334				
290				
180				
73				
✓66				

	Var?	Var?			
67	114	177	275	300	309
11.5	13.5	12.2 n	13.9 n	14.0 n	12.0 n
12.5 n	14.5 n	13.8 n	12.0 n	11.5 n	14.0 n
12.0	13.2	12.8	12.8	12.8	13.0
12.5	15.0	14.5	12.5	12.0	14.0
12.5	14.8	14.0	12.2	12.5	14.0
	14.1	13.5	12.7	12.6	13.4
394	459				
12.0	14.0				
12.0	14.0				
12.8	15.0 n				
12.5	14.0 n 13.0				

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971h

D4885 D4849

	No	Br.	Br.	22,55	
23.15	492	15.2	15.5	3	July 1, 1897
	493	15.5	15.5	0	D4885 23h 1897
	494	15.0	15.0	0	July 6, 1897
	495	14.8	14.8	0	
	496	11.3	11.0	3	
	497	15.0	15.2	2	
	498	15.8	16.0	2	
	499	15.8	15.8	0	
	500	15.0	15.2	2	
defect?	501	15.5	NS		
	502	15.8	15.8	0	
	503	11.5	11.3	2	
	504	15.2	15.5	3	
	505	15.2	15.0	2	
	506	15.0	15.2	2	
	507	16.0	16.0	0	
	508	15.0	15.2	2	
	509	15.8	15.8	0	
	510	15.8	15.5	3	
	511	15.1	15.0	1	23.00
	512	15.5	15.5	0	23.15
	513	14.9	15.2	3	
	514	15.5	15.5	0	
dbl.?	515	15.5	15.5	0	
		14.9	15.0	1	
	516	15.8	15.8	0	
	517	15.2	15.5	3	
	518	15.8	16.0	2	
	519	16.0	NS		
	520	13.9	13.5	4	
	521	16.0	15.8	2	
23.25	522	15.5	15.0	5	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

	No	D4885 Br.	D4849 Br		23.25	23.20
	523	15.0	15.0	0		
	524	15.8	16.0	2		
	525	15.8	15.8	0		
	526	15.5	15.3	2		
	527	16.0	16.0	0		
	528	15.8	[illegible]			
defect?	529	15.8	15.5	3		
	530	15.5	15.5	0		
	531	15.5	15.5	0		
	532	15.8	15.8	0		
	533	15.8	15.5	3		
	534	14.5	13.0	15	12.8 13.0 (13.0)	13.0 500,02
	535	15.0	15.5	5		
	536	15.8	16.0	2		
	537	15.5	15.8	3		
	538	15.5	15.5	0		
	539	15.0	15.2	2		
	540	15.2	15.5	3		
	541	15.7	15.8	1		
	542	15.0	14.8	2		
	543	14.0	13.0	10	12.8 12.8 (12.8)	12.8 200,200 550 a same star
	544	16.0	16.0	0		
	545	15.5	15.8	3		
	546	15.5	16.0	5		
	547	15.1	15.2	1		
	548	15.5	15.8	3		
	549	15.7	16.0	3		
	550	14.0	13.0	10	12.8 13.0 (13.0)	13.0 00003
	551 a	16.0	12.8 15.8	2		
	552	15.5	15.5	0 23.25		

July 1, 1897
" 25, 1897
D4885 July 26, 1897

See p. 216

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

February 10, 1897

Measures of Comp. Stars of R Trianguli (scale)

D 2235

a	5.2
b	5.5
c	5.8
d	6.7
e	7.5
f	8.0
g	8.7
h	9.3
v	6.1

D 2005

a	4.8
b	5.0
c	5.8
d	6.7
e	7.6
f	8.2
g	8.8
h	10.0
v	5.5

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

February 10, 1897

Comp Stars of R Trianguli (cont)

I 7824

a 5.2
b 5.4
c 5.7
d 6.5
e 7.4
f 7.9
g 8.7
h 9.3
r 5.8

5308
~~I 417~~

a 4.8
b 4.8
c 5.7
d 6.8
e 7.7
f 8.3
g 9.0
h 9.5
r 7.6

Rejected

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971

February 15. 1897.

Scale measures of Comp Stars of R Trianguli

I 2235

a	5.2
b	5.5
c	5.8
d	6.2
e	6.7
f	7.5
g	8.0
h	8.8
k	9.5
v	6.2

I 7824

a	5.1
b	5.3
c	5.7
d	6.0
e	6.4
f	7.3
g	7.7
h	8.5
k	9.3
v	5.9

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

February 15, 1897

Scale measures of Comp Stars of R Trianguli (cont)

I 5308

a	5.0
b	5.2
c	5.5
d	6.9
e	6.8
f	7.7
g	8.2
h	9.0
k	9.7
v.	8.0

I 2005

a	5.0
b	5.3
c	5.8
d	6.2
e	6.8
f	7.8
g	8.5
h	9.2
k	10.0
v.	5.5

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

Continued from page 211

D4885

D4849 2325

D4849

July 1, 1897

23.30 No	Br.	Br		July 23, 1897	25. 1897 D4885	July 26, 1897
553	16.0	16.0	0			
554	15.1	15.0	1			
555	15.7	15.5	2			
556	15.7	15.8	1			
557	16.0	16.0	0			
558	15.5	15.5	0			
559	14.3	14.8	5			
560	16.0	16.0	0			
561	16.0	16.0	0			
562	15.8 15.5	15.5	3			
563	15.5	15.0	5			
564	16.0	15.8	2			
565	16.0	16.0	0			
566	16.0	16.2	2			
567	15.0	NS				
defect? 568	15.8	15.5	3			
569	12.3 12.0	12.5	5			
570	15.0	15.0	0			
571	15.8	15.8	0			
572	13.0	11.5	15	11.5	11.5 115	115 500,00
573	15.0	15.0	0			
574	11.0	11.0	0			
575	15.5	15.5	0			
576	15.0	15.2	2			
577	16.0	16.0	0			
578	14.1	13.0	11	12.8	12.8 125	125 3 03 20
579	15.8	15.8	0			
580	16.0	16.0	0			

23.40 23 30

36/56

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

D 4913 = a = b 824
D 4842 = B = b 10047
D 4849 = b = b 10052
D 4879 = D = b 10092
D 4885 = E = b 10092

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

ω Centauri.

D4828 20x24 Dir. from X 5557.
D4831 20x24 Dir. " X 5560

In the sky (North Pole)
Estimates are made from eyepiece
Scale readings " " centre "

Scale readings follow estimates
numerically by ½ div.

∴ Subtract ½ div (26.3) from whole
estimate (times) X 52.6 ~~from~~ positive values
& add 26.3 to negative values
before comparing with x & y
from Scale readings.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..9711

To be preserved by Miss C. F. L. and produced when called for.

Meas. of Positions of Stars in Clusters by means of enlarged Reticules.

Instructions to be studied and understood by both observer and recorder.

1. Use only left hand pages of record books.
2. Record meas. of 1st plate ~~on alternate lines~~
   " " " 2nd plate ~~on intermediate lines~~
3. After bisecting the image of each star with the reticule read scales A and B (to left and below). When all the stars are measured in this way bisect images again and read C and D (to right and above). Whatever the observation, it must be recorded without regard to previous readings.

May 23, 1896.

Edward C. Pickering

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

ω Centauri.

D4828 20x24 Dir. from X 5557.
D4831 20x24 Dir. " X 5560

In the sky (North Pole)

Estimates are made from eyepiece
Scale readings " " centre "

Scale readings follow estimates
numerically by ½ div.

∴ Subtract ½ div (26.3) from whole
estimate (times) X 52.6 ~~from~~ positive values
& add 26.3 to negative values
before comparing with x & y
from Scale readings.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..9711

To be preserved by Miss C. F. L. and produced when called for.

Meas. of Positions of Stars in Clusters
by means of enlarged Reticules.

Instructions to be studied and understood by both observer and recorder.

1. Use only left hand pages of record books.
2. Record meas. of 1st plate ~~on alternate lines~~
" " " 2nd plate ~~on intermediate lines~~
3. After bisecting the image of each star with the reticule read scales A and B (to left and below). When all the stars are measured in this way bisect images again and read C and D (to right and above). Whatever the observation, it must be recorded without regard to previous readings.

May 23, 1896.

Edward C. Pickering

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1896phae.proj..971L

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1999phar.proj..971L

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System