KG
11366
v.631

ERROR OF FRODSHAM
CLOCK No. 1327
1901. Jan. 1 to 1901 Dec 20

Mer. Circle Wire Intervals page 5 – Jan 1901

Mer. Circle
Spider line intervals
from 150 stars
of miscellaneous δ

Upper Culmination -

Preced. to Following wire	from Wire 8	log.
1	+ 28.4189	1.45361
2	26.4147	1.42185
3	22.3604	1.34948
4	19.6374	1.29308
5	17.7586	1.24941
6	15.9002	1.20140
7	+ 13.1891	1.12021
8	——	
9	− 13.1442	1.11873
10	15.0303	1.17697
11	17.6900	1.24773
12	20.4615	1.31094
13	22.3060	1.34842
14	26.3714	1.42113
15	− 28.4321	1.45381

1st tally Mean +20.5256 log 1.31230

2nd tally Mean −20.4908 1.31156

January 1-1901

Mer. Circle — JHD. Jr.

c² Aquarii −21°43 all, faint in daylight
τ Pegasi +23°12 all.
4 Cass +61°44 all
70 Peg +12°13 all
[72 Peg] +30°46 all
7 Cephei +77°4 all
41 H Ceph +67°15 all
φ Peg. +18°34 all

Dark wires for all stars.

Last minute before rattle is 23ʰ53ᵐ (53)

c² Aquarii		τ Pegasi		4 Cass		41 H Ceph		φ Pegasi	
−21°43		+23°12		+61°44		+67°15		+18°34	
23ʰ4 32.8	3.5 17.5	16ᵐ 6.5	37.4 51.7	20ᵐ 18.6	19.0 46.6	47ᵐ 50.5	20.4 34.4	43 49.5	3.2 37.0
34.9	19.6	8.6	53.7	22.9	50.5	52.9	36.3	54.8	42.0
39.2	22.2	13.0	56.6	31.5	56.0	56.9	39.0	5.3	49.0
42.2	25.2	16.0	59.6	37.3	1.8	59.8	42.1	12.4	56.2
44.3	27.4	18.0	1.6	41.0	5.9	1.8	44.0	17.3	0.7
46.3	31.8	20.0	6.0	45.0	14.5	3.6	48.4	22.1	11.5
49.2	34.0	23.0	8.3	51.0	18.8	6.5	50.5	29.0	16.8
288.9	177.7	105.1	417.5	247.3	434.1	412.0	294.7	490.4	393.2
41.27	25.39	15.01	59.64	35.33	62.01	58.86	42.10	~~68.63~~ 20.06	56.17
22.07	22.07	22.30	22.30	43.28	43.28	~~53.01~~	~~53.01~~	~~21.63~~	~~21.63~~
3.34	3.32	37.31	37.34	18.61	18.73	~~51.87~~	~~49.09~~		
23ʰ 5 3.33		16ᵐ 37.32		21ᵐ 18.67		21.63	21.63	53.01	53.01
						20.49	20.47	3.64	3.16
						48ᵐ	20.48	44ᵐ	3.11
23 4 10.41		15ᵐ 44.69		20 26.71		47 27.71		43 11.06	
52.92		52.63		51.96		52.77		52.05	
−.39		−.15		+.28		−.18		+.43	
~~53.31~~		~~52.78~~		~~51.68~~		~~52.95~~		~~51.62~~	
52.53		52.48		52.24		52.59		52.48	

m − 48 N+
k = .77 +

+2.38 52.05
−40 52.92
2.78) .87
834
36
.31
m = .3

−21 .53
+18 59 } 53×3 159
23 48
61 24 } 24+2 48
67 .48 5) 207
232 .42
.46 52.44
.77 = bar. 4
53.21

Hod 1327 is fast
0ᵐ 53.20ˢ
at 23ʰ30ᵐ Sid Time

January 6-1901

Merchule..

Rattle before 2nd D. Assena ~~8~~ 34 5^h

[γ Aurigae] +39°7
α Orionis +7°23

δ Aurigae +54°16
β Aurigae +44°56 last 4
θ Aurigae +37°12 last 5; right lat.

γ Aurigae	α Orionis	δ Aurigae	β Aurigae	θ Aurigae
+39°7	+7°23	+54°16	+44°56	+37°12
5^h 45 30.8 47.6	50^m 12.6 41.2 54.5	52 38.5	53 39.1	54 ~~13.6~~
50.0	14.6 56.2	41.9	40.7	16.8
53.5	18.6 59.0	46.3	46.3	19.0
57.0	21.4 20	51.0	49.3	24.1
59.4	23.3 38	54.1		26.9
4.6	25.2 7.8	1.2		
7.3	28.0 10.0	4.8		
3994	1437 4333	3578	1754	868
57.06	20.53 61.90	51.12	43.85	21.70
26.42	20.67 20.67	35.11	1.3874	1.3874
30.64	41.20 41.23	16.01	0.1500	0.0988
	50 41.22		1.5374	1.4862
			34.46	30.63
5^h 45 30.64	50 41.22	52 16.01	53 9.39	53 51.07
5 44 40.72	5^h 49 51.05	51 26.33	52 19.28	53 1.22
49.92	50.17	49.68	50.11	49.85
+.03	−.24	+.15	+.03	−.05
49.95	49.93	49.83	50.14	49.80

+7 49.93
37 49.80 } 87 × 5 435
39 49.95 }
44 50.14
54 49.83 .99 × 4 396
249.65 831
49.93 .92

49.92
77 = [illegible]
50.69

Bond 1327 is fast
0^m $50^s.69$
at 5^h 50^m
Sid Time
Jan 6-1901

Jan. 8-1901

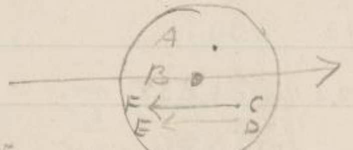
Mer Circle

J.A.D. Asr

red field

ζ Androm +23°44 all
γ Cass +60°11 all
ε Piscium +7°21 ← Prec. 6,6-7,0 star ds in T last wire
ε Pis +7,21 all 3′S
β Androm +35°6 Rate after 1h 2m
[τ Piscium] +29°34 almost all
also 8.0 m fol 2′ N, ds in 15″

Remark: During obs. of β Androm (2.0 mag) I noticed several variety of "ghosts"



Circle = field of view
A = The ordinary "ghost"
C = Ghost and D a fainter one springing into view at points C & D at just the moment the bright 2nd mag. star reaches B, the centre of field. These two ghosts move rapidly in opposite direction to direction of star transit and with 3 or 4 times the quickness of motion and disappear at F & E. the probable explanation is reflections in the lenses of the eye piece.

n
1.245 49.16
.129 49.95
1.616 −.80
n = 5

red field

17 τ Piscium 1-6-12.356
0.5170
9.5309
0.0479 > +1.117
8.5594
0.7031
9.2625 > +.183 } 13.653
8.8661
0.7659n
9.6320n > −.428
8.3391
1.2891
9.6282 > +.425

ζ Androm. +23°44	γ Cass. +60° 11′	ε Piscium (Prec. star) 3′s wire 4-7	ε Piscium +7° 21	β Androm +35° 6′	τ Piscium +29 34′	Foll. τ Pis. 2′N, 8.0 mag wire 15
0h 42 20.4 56.5 11.5	0h 50 37.3 34.6 0.9	57 29.2	58 10.6 52.5	1h 4 34.8 21.181	1h 6 3,5 18.5	7 53.1
27.5 12.7	41.4 4.6	31.0	12.6 54.5	38.2 20.5	20.6	
32.0 15.6	49.5 10.1	33.0	16.8 57.0	40.4 23.8	23.9	
34.8 18.5	55.0 15.7	35.6	19.5 59.8	42.8 27.0	43.0 27.0	
36.9 20.6	58.8 19.5		21.3 1.6	46.0 29.1	45.2 29.0	
38.7 25.0	2.6 27.6		23.1 5.8	~~49.2~~ 34.4	48.4 33.7	
41.9 27.2	7.6 31.6		25.9 7.9	36.9	36.0	
237.2 131.1	372.2 110.0	128.8	129.8 419.1	251.4 189.8	188.7	
33.89 18.73	53.17 15.71	32.20	18.54 59.87	40.44 27.11	26.96	
22.40 22.40	41.26 41.26		20.67 20.67	1.2494		
56.29 56.33	34.43 34.45		39.21 39.20	0.0872	23.57	
0h 42 56.31	0h 51 34.44		0h 58 39.21	1.3366 25.06	1h 7 3.39	
0 42 6.39	0 50 45.28		0 57 49.26	21.97		
				2.21 2.05	1 6 13.65	
49.92	49.16		49.95	1h 5 2.13	49.74	
−.23	+.42		−.40	1 4 12.55	−.18	
49.69	49.58		49.53	49.58	49.56	
				−.10		
				49.48		

δ
+7 .55
+23 .69
+29 .56 } 58
+35 .48
+60 .58
2.86
.57

49.57
.77 = band
50.34

Jan 8-1901

Frod 1327 is fast $0^{m}\,50^{s}.34$ at $0^{h}50$ Sid Time

Sunday Jan 13 1901

Me. Circle — JAD obs

λ Tauri +12 13 almost all
ν Tauri +5 43 prec 9.5 m 4's W182
" " all
c Persei +47°27 all

+47 27 last trip ... 1 ... 9.5
after 1/4's on Wu 8
~~Rattle through~~ 4h 6

λ Tauri	Prec ν Tauri	ν Tauri	c Persei	Foll. c Persei
+12°13		+5°43'	+47°27	
3h55 × 3.2 16.5	3h58 4.2	3h58 16.2 448 58.0	4h1 38.3 20.2 39.5	Wu 4.? 3 58.8 (Wu 8)
× 40.1 18.4	6.3	18.3 59.7	41.1 42.5	
43.0 21.1	5.25	22.3 2.5	47.0 46.5	
44.7 24.0	14378	25.0 5.4	51.3 50.5	Foll. 2m 39'
46.8 25.8	0.0022	26.8 7.0	54.1 53.3	
49.5 30.2	1.4400	28.7 11.1	56.6 59.2	
32.2		31.5 13.2	0.6 2.2	
168.2	27.54	168.8 456.9	349.0 353.7	Not on Dun
24.03	58 32.79	24.12 65.27	49.86 50.53	or A.G.
20.97		20.61 20.61	30.32 30.32	
3h56 3.06	prec 12s	44.73 44.66	20.18 20.21	
	Not on Dun	3h58 44.69	40 2 20.19	
3h55 13.68	or A.G	3 57 55.32	4 1 31.22	
49.38		49.37	48.97	
−.35		−.40	+.09	
49.03		48.97	49.06	

Used
n = 5

+5 −.03 } 0 1 0
+12 +.03 }
+47 +.06 6 × 2 12
.02 3 12/4

49.03
−.77 = bend
49.80

Frod 1327 is fast
0m 49.80s
at 4h 0 Sid Time

Date of record here = Jan 15-1901

The Wire Intervals of Meridian Circle

derived from 150 stars miscellaneously distributed in declination.

	from 150 stars		from 50 stars
Wire 1	+ 28.419	-.016	+ 28.403
2	+ 26.415	-.014	+ 26.401
3	+ 22.360	-.013	+ 22.347
4	+ 19.637	-.029	+ 19.608
5	+ 17.759	-.009	+ 17.750
6	+ 15.900	+.002	+ 15.902
7	+ 13.189	-.016	+ 13.173
8	0.000		0.000
9	— 13.144	+.013	— 13.157
10	— 15.030	+.017	— 15.047
11	— 17.690	+.018	— 17.708
12	— 20.462	+.012	— 20.474
13	— 22.306	+.008	— 22.314
14	— 26.371	+.002	— 26.373
15	— 28.432	-.009	— 28.423

Note:
The intervals
from the
150 stars were
determined
with the help
of the 50 stars
mentioned

The wire intervals used however in the reduction of stars for error of clock Frod.1327 since soon after the introduction of the new reticule in the spring of 1900 were those derived from 50 (fifty) stars miscellaneously distributed in declination as above.

These intervals derived from the 50 stars will be used in future time star reductions as tables have been computed by them and which tables give harmonious agreement of two tallies

Sun - Jan 17 - 1901

Russian Transit

Circle W Bubble W

E	W
15.4	37.5
34.5	1.5

Not seen. —

Probably too late

Jan 18 1901

Mer. Circle

α Androm +28 33 1st T

β Cass. up. +58° 36 2nd

Daylight obs.

Results after 0h 18

α And.

+28° 33

1st T

0h 3 ~~27.0~~

~~29.0~~

33.8

36.0

40.6

43.8

45.8

47.9

51.0

298.9

42.70

23.34

0h 4 6.04

0 3 16.78

49.26

Used n as .5

.20

49.06

β Cass

+58° 36

2nd T

0h 5m 8.1

11.8

16.7

21.8

25.7

33.4

37.5

155.0

22.14

39.36

0 4 42.78

0 3 54.07

48.71

.35

49.06

49.06

.77 = b corr

49.83

Trod 1327 is fast

0m 49.83s

at 0h 0m Sid Time

Jan 18, 1901

Jan 21-1901

υ Persei +48°7 T^2

φ Persei +50°11 all

τ Ceti −16°28 W 8 8 T^2

α Triang +29°6

J.A.D. [illegible]
Mer. Circle

~~Rain~~ after 1^h 45

υ Persei	φ Persei		τ Ceti	α Triang.
+48°7	+50°11		−16°28	+29°6
1^h 33 46	1^h 37 33.0 17.5	37.9	1^h 40 18.2 32.0	1^h 47 43.8
7.3	36.0	40.8	34.0	46.2
11.4	42.4	45.0	36.8	51.0 54.0
15.5	46.6	49.3	39.6	56.2
18.2	49.7	52.1	41.6	58.4
24.5	52.7	58.6	45.9	1.3
27.5	56.8	1.8	48.0	
109 0	317 2	345 5	277 9	370 9
15.57	45.32	49.36	39.70	52.99
30.71	32.02	32.02	21.38	23.46
1^h 33 ~~46.28~~ 44.86	17.34	17.34	1 18.32	16.45
	1^h 38 17.34		1^h 40 18.32	1^h 48 16.45
1^h 31 56.21	1^h 37 28.67		1^h 39 28.97	1 47 27.56
~~50.07~~ 48.6.5	48.67		49.35	48.89
.10	15		.60	.18
48.75	48.82		48.75	48.71

Used n as 5

−16 .75 } 73 3
+29 .71 }
+48 .75 } 78 16
+50 .82 }
303 5)19
.76 .76

48.76
.77 = [illegible]
49.53

Frod 1327 is fast

0^m $49.^s53$

at 1^h 40^m Sid Time

Jan 25-1901

JAD. obs.
Mer Circle. -

δ Cass. +59°43 Wires 8 & T² Cloudy
Rain after 1^h 27 } JAD. obs.

ν Persei +48°8' all

Pole Star: Wires 11 & 12 (by Miss Michaelis) (good)
Wire 13 by JAD (reject)

δ Cass

1^h20 8.6 34.8
38.5
43.6
49.2
53.0
1.0
5.1

345.2
49.32
40.66
1^h 20 8.66

used
mean .5

1 19 21.53

47.13
.40

47.53

ν Persei

1^h32 1.0 43.6 3.2
4.0 6.1
10.1 10.0
14.1 14.2
17.0 17.0
19.8 23.1
24.0 26.1

90.0 99.7
12.86 14.24
30.72 30.72

43.58 43.52

1^h 32 43.55
1 31 56.12

47.43
.11

47.54

47.54
.77 = b sec φ

48.31

Frod 1327 is fast

0^m $48^s.31$

at 1^h 20^m
Sid Time

Jan 26-1901

Mer Circle – Level determination

JAD. Asr

3^h 20 E.S.M.T.

		E	W
Tel S. Screw	E	− 53.8	− 19.0
	E	− 47.0	− 12.0
	WE	− 50.0	− 15.5
	WE	− 51.5	− 16.8
	W	+ 70.5	+ 105.0
	W	+ 72.0	+ 107.0
	W	+ 73.1	+ 108.0
	W	+ 71.7	+ 106.5
Tel. N, Screw	W	+ 44.0	+ 78.3
	W	+ 44.0	+ 78.7
	W	+ 43.5	+ 78.0
	W	+ 43.0	+ 77.5
	E	− 97.8	− 63.0
	E	− 101.0	− 66.5
	E	− 100.0	− 65.5
	E	− 100.0	− 65.5
		+ 287.3	+ 426.5
		+ 174.5	+ 312.5
		− 202.3	− 63.3
		− 398.8	− 260.5
		+ 461.8	+ 739.0
		− 601.1	− 323.8
		− 139.3	+ 415.2
			− 139.3

32) + 275.9 (8.62
256
199
192
70

.06
.5172
1.35
.70

b sec φ = 70 West end axis high

Note: Chauvenet's formula 6II pg 75 (58)
is $r = \frac{m}{d \sin 1''}$
where m = length division in linear units
d = value of div. in arc
r = radius

Jan 28-1901

Determination of approximate Circumference and diameter of circle represented by curve of level tube of Russian Transit and Clark-model Buff & Berger level of the Mer. Circle.

by J A Dunne.

Russian Transit Level:

Determination Mar 2, 1897, 1 division = $^{s}.1\overset{3}{~~545~~}$ = ~~2".3175~~ 1".93

Observation: Jan 28, 1901 70 division = 126 m.m. = 4.9644 inches } Necessarily approximate

Observation: Jan 28 1901 76 division = 138.3 mm = 5.4490 inches } being measured from outside of cover tube.

from 70 div, 1 div. = .0709 inches } 1 div. = .0713 inch and as above

from 76 div, 1 div. = .0717 inches } 1 div. = ~~2".3175~~ 1".93 hence $1'' = \frac{.0713}{\cancel{2.3175}\ 1.93}$ inch = .03~~076~~ 69 inche

360° = 1,29,6,000" of arc: Hence circumference in inches is as

1" : 129,600" :: .03076 inches : ——, or

log. ~~8.4879863~~
log ~~6.1126050~~
~~4.6005913~~
~~3986.497 inches~~
log 12: ~~1.0791812~~
~~3.5214101~~ = 332.2080 feet
~~0.4971498~~
log ~~3.0242603~~ = 105.7450 feet

8.5670264
6.1126050
4.6796314
1.0791812
3.6004502
0.4971498
3.1033004

3985.201 = Circumference

1,268.529 = Diameter (3.141592)
feet

log π =

Curve represented by Russian Transit level tube } Circumference = ~~332.2.08 feet~~
Diameter = ~~105.745 feet~~

Meridian Circle Level

Determination Feb. 19, 1897, 1 division = $^{s}.0601$ = 0".9015

Observation Jan 28, 1901, 110 division = 139.5 m.m = 5.4963 inches

Hence 1 division = 0.04996 inches = 0.050 inches. As above

1 division = 0".9015 : therefore $1'' = \frac{0.050}{0.9015}$ inches = 0.05546 inches

360° = 1,29,6,000" of arc: Hence circum. in inches is as

1" : 1,29,6,000" : 0.05546 m —, or log 8.7440034
log 6.1126050
4.8566084
log 12 = 1.0791812
3.7774272 = 599.0015 ft. = Circumference
log π 0.4971498
3.2802774 = 190.6679 ft = Diameter

Curve represented by Meridian Circle level tube of recent years } Circumference = 599.002 ft
Diameter = 190.668 ft

Jan. 29-1901

Mer. Circle :- J.A.D. obsr

α Arietis +23° 0' all }
β Triang +34° 31 " } dark lines
Lac μ Forn. −31° 11' W's of T² }
γ Triang +33° 23 W's of T2 bright line

Rattle before 2h 15

Skipped sheet then 36 H Cas +72°23 then foll 8.0 star all 2½ S on T' Cas

Rattle before 2h 36

α Arietis		β Triang		Lac μ Forn.	γ Triang	36 H Cas		Foll star
+23° 0		+34°31		−31°11	+33°23'	+72°23		
2h 1 53.5 24.5	38.8	3m 53.5 28	44.0	9 21.8 37.1	12 14.7 30.6	2h 27 52.4 29 26.2	30 9.8	31 14.2
55.7	40.8	55.9	46.2	39.3	32.7	58.9	16.1	20.6
0.2	43.7	1.0	49.5	42.5	35.9	12.2	24.8	27.2
3.3	46.8	4.2	52.8	45.7	39.0	21.3	33.9 40.1	36.0
5.3	48.7	6.4	56.2	47.8	41.1	27.5	53.7	98.0
7.2	53.2	8.7	0.0	52.6	46.1	33.5	0.0	24.50
10.0	55.4	11.9	2.6	55.0	48.7	42.6		
435.2	347.4	441.6	370.3	320.0	274.0	648.4	238.4	1.2203
62.17	~~49.63~~ 46.77	63.09	52.90	+ 45.72 ~~+ [illegible]~~	39.14	78.34	34.04	0.5179
22.27	22.27	24.88	24.88	~~46.72~~		67.75	67.75	1.7382
24.44	24.50	27.97	28.02	23.97	24.56	26.09	26.29	54.73
2h.2 24.47		4m 28.00		9 28.75	12 14.58	29 26.19		32 19.23
2h 1 36.73		3 40.48		8 33.59	11 27.08	28 39.81		Follows 36 H Cas
47.74		47.52		~~49.16~~ 48.16	47.50	46.38		2m 53s
−.23		−.11		−.71	−.12	± 1.02		2½ South
47.51		47.41		47.45	47.38	47.50		+ 8.0 mag

+ 3.15
−.61
3.76

46.38
48.16
1.78

3.26) 1.78 (.47
1504
2760

m = .47

δ	s	
−31	47.45	
+23	.51	43
+34	.41	
+33	.38	
+72	.50	47.44
	2.25	.70 barq
	.45	48.14

Frod 1327 is fast

0m 48.14s

at 2h 15m Sid Time

Feb 1-1901 Friday

α Arietis +23° 0   Mer Circle
β Triang +34° 31   J.A.D. Obsr

Rattle after 2^h 6

γ Triang + 33° 23   T last: Chron. stopped
T^2 all.
Rattle before 2^h 14

α Arietis		β Triang.			γ Triang.	
+23° 0'		+34° 31			+33° 23	
$2^h 2^m$ 0.0	24.3 38.5	4^m 4.0	32044.0		30.3	
3.0	40.6	6.3	46.1	2.1	32.5	2.1
5.0	43.4	8.5	49.3	3.2	35.5	3.0
7.0	46.6	11.9	52.7	3.4	39.0	3.5
	48.6		53.0	2.3	41.3	2.3
	53.0		0.0	5.0	48.5	7.2
	55.1					
15.0	32.58	307	307.1		178.6	
3.75	46.54	7.68	51.18		35.72	48.5
~~1.2203~~		1.2203	1.2829		1.2490	1.4537
~~0.0360~~		0.0840	0.0840		0.0783	0.0783
~~1.2563~~		1.3043	1.3669		1.3273	1.5320
~~18.04~~	22.27	20.15	23.27		21.24	34.04
~~21.79~~	24.27	27.83	27.91		~~56.96~~	14.46
20.53					14.48	
24.28						
2^h 2	$24^s.27$		4 27.88			$14^s.48$
2^h 1	36.68	2^h 3	40.42		2^h 11	27.02
	47.59		47.46			47.46
	−.23		−.09			−.12
	47.36		47.37			47.34

22.347
19.608
17.750
15.902
75.607
18.902

1.2765
0.0360
1.3125
20.53

Used n as 47

47.36
.70 as band
48.06

Frod 1327 is fast

0^m $48^s.06$

Feb 1, 1901 at 2^h 5^m Sid Time

Feb 6 - 1901

Mer Circle

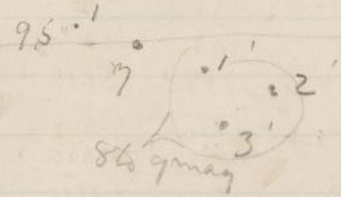
First mini 3^h 16

α Persei +49°30 last part
2 H Cam +59°36 1st T
[σ Persei] +47°39 T′
f Tauri +12°36
~~ε Eridani −9°48~~ not obs
Gr 716 +62°53 T′′
δ Persei +47°28 T′ last wire T²
ν Persei +42°15 T′
" " "
η Tauri +23°48
T′ only

J.A.D. obs of T²

Miss M. F. Michaels obsr

1st 3 (prec) identified
following 9.5 not " ;
probably is a ghost.



2 3 2 1 of 3
N N N S
1st 2nd 3rd 4th
fall on wire
9 in order of RA.

Last min 3^h 46

δ Persei Miss M. obs
3^h 36 15.0 41.5 08
18.0 3.5
21.5 7.5
11.6
14.7
20.3
23.4
54.5 81.8
18.17 11.69
1.1933
0.1703
1.3636 23.10 30.34
41.28 41.35
3^h 36 41.33
3 35 54.65
46.68
06
46.74

78
64 } 69
74
72

46.70
70
47.40

ν Persei Miss M. obs
3^h 38 38.5
41.2
46.3
50.0
52.8
55.1 0.1306
~~1.3372~~
~~1.4134~~
1.4678
1st 6
283.9
47.32
29.38
~~1.325~~
16.70
3^h 39 16.77
3 38 30.13
46.64

ν Persei J.A.D. obs
39 34.5
37.1
40.7
44.5
47.0
52.5
55.3
311.6
44.52
27.70
16.82

η Tauri J.A.D. obs
T′
41 53.5
53.8
04.1
05.2
7.3
10.3
435.6
62.23
22.41
42 24.67
41 37.67
~~43~~ 47.00
22
46.78

Hod 1327 is fast 0^m $47^s.40$
at 3^h 40^m Sid Time

8
Feb ~~7~~- 1901

Meridian Circle - M. F. M. obsr

~~not available for identifie~~ (~~3 rattles after $2^h 54^m$~~ by watch

~~β Persei~~ —

12 Eridani −29° 22′

(α) a Persei +49° 31′ last 2 wires

3 rattles after $3^h 14$

~~2 H Camel~~

~~ε Eridani — 9° 48′~~

~~δ Persei — 47°~~ 28′

2 faint stars both failed

~~η Tauri +23° 48′~~ → Was observed,

~~[27 Tauri] +23° 45′~~ — Not observed

ε Persei 39° 43′ T^2 / w^8

Rattle after $3^h 57$

12 Eridani
−29° 22′
$3^h 8$ 39.3 54.5
56.6
59.6
3.0
4.8
9.5
12.2
44.02
62.89
23.54
8 39.35
3 7 52.89
46.46
Used m = .50 −.74
45.72

α Persei
+49° 31
last 2 w
$3^h 18$ 43.8
46.8
45.3
1.4378
0.1875
1.6253
42.20
3^h 18 3.10
3 17 17.21
45.89
+.13
46.02

~~27~~ η Tauri
+23° 45.8
T^1
41
w
59.5 3
2.5 4
4.5 5
6.5 6
130
3.25
1.2765
0.0384
1.3149
2065
23.90
T = 3 42 23.90
3 41 37.68

.42
T^2
w
38.1 9
40.3 10
46.5 12
48.2 13
43.28
1.2492
0.0384
1.2876
19.34
23.89
46.22
−.23
45.99

ε Persei
+39° 43′
w^8 T^2
$3^h 52$ 07 17.5
20.4
23.5
26.9
29.5
34.7
37.2
189.7
27.10
26.66
3^h 52 0.45
3 51 14.62
45.83
−.04
45.79

δ
−29 45.72
+23 45.99
+39 45.79
+49 46.02
45.88
by weights
1 × .72 72
2 × .99 198
5 × .79 395
1 × 1.02 102
9 | 767
45.85
bamp = .70
46.55

Frod 1327 is fast ō $46^s.55$ Feb 8-1901
at $3^h 20$ Sid time

Feb 11 - 1901

Meridian Circle

observer M. F. Michaelis
Rattle after 3h 10m ~~Sid T~~,
Fr 1327

~~a Persei~~

Star ~~folls~~ Persei +47° 39' and is BD +47°846 } (~~σ Persei~~) of some star 47° 28' (should have been 39')
Gr 716 62° 54' T 1
5H Cameli 71° 2'
~~ε Persei~~ stet ~~39° 43'~~
ε Persei 39° 43'
c Persei 47° 26'
o' Eridani −7° 5' o' Eridani −7° 5'

Rattle after 4h 14m Fr 1327

c Persei
+47° 26

4h 1m 33.0 14.9 34.2
36.0 37.0
41.8 40.8
45.6 45.0
48.6 48.0
51.4 53.9
55.1 56.9
311.5 315.8
44.50 45.12
30.31 30.31
~~30.31 30.31~~
14.81 14.81
4h 2m 14.81
4 1 30.65
44.16
+ .07
44.23

[Gr 716]
+62° 54

3h 24 38.4 20.8 39.9
41.3 42.5
47.5 46.6
51.6 50.8
54.2 53.7
56.9 59.8
0.8 2.6
350.7 355.9
50.10 50.84
110.84
50.10
160.94
80.94
3h 25m 20.94
[3 23 38±]
1 42.9
0 43.4
59.5 foll c Pers

BD +47°846
Probably

Not Read:

5H Cam +71° 2'

3h 39m 13.0 40m 41.0 41m 21.5
19.9 27.0
32.0 35.3
40.7 43.6
46.8 49.5
52.0 2.1
0.4 8.0
264.8 307.0
37.83 43.86
63.08 63.08
40.91 40.78
3h 40 40.84
3 39 57.39
43.45
+ .74
44.19

ε Persei +39° 43'

3h 51m 24.8 22.1 59.0 16.0
30.0 18.5
33.5 22.0
36.0 25.6
38.5 28.1
41.9 33.5
36.2
226.8 179.9
32.40 25.70
26.66 26.66
59.06 59.04
3h 51m 59.05
3 51 14.56
44.49
− .03
44.46

o' Eridani
−7° 5

4h 7m 19.5 1.1
21.6 3.5
25.8 5.9
28.5 8.8
30.5 10.4
32.2 14.7
34.7 16.9
192.8 61.3
27.54 8.76
20.65 20.65
48.19 48.11
4h 7m 48.05
4 7 3.46
44.59
− .38
44.21

+2.90
− .12
+3.02

43.45
44.59
) 1.14 [.37
9 06
2.36

m = .37

δ
−7° 44.21
+39° [.46] ~~×3~~
+47° .23 ×~~2~~ } ~~+38~~ ~~.5~~ 34
+71 .19
1.09
.27

.27 } .30
.34

44.30
.70 = back
45.00

Frod 1327 is fast
0 45.00s

at 3h 50m
Sid Time

Feb 14-1901

Mer. Circle JAD

54 Persei
367
4h 13 58.797
0.5899
9.6439
0.2338 + 1.713

8.3078
0.6819
8.9897 +.098

8.5566
1.1900m -.558
9.7466m

8.8588
1.0635 +.836
9.9223 61.444
-.558
~~61.396~~
4h 13 60.886

1 Camel seq.
368
4 24 11.260

0.6754
9.6439 +2.085
0.3193

8.5663
0.6819 +0.127
9.2482

8.6600
1.1900m -.708
9.8500m

9.0124
1.0635 +1.191
0.0759 +14.713
-.708
4h 24 14.005

Used m as 37s

Wax 50

[54 Persei] +34°20 all; - prec star also obs (8.0 mag)
3′ S on Wire 1 & 2
also fol 7.7 star on Wire 7
1/5′ North
Also 9.5 star 2′N on W 7 & 15

δ Tauri +17°18 all.
ε Tauri +18°58 all.
1 Camel. seq. ; observed both

Double star fol brighter 3/4 mag. than prec.; both fit inside double δ line of δ Mic.

Rattle just after 4h 28 ft 1327

Prec star
4h 14m
3.5
6.0
Star is Dm +34 839 Mag 9.0

54 Persei +34°20
14 10.5 45.1 1.0 15.3
130 3.2
180 6.5
21.3 9.9
236 12.0
25.9 17.0
29.0 19.5
1413 691
20.19 9.87
2483 2483
45.02 45.04
4h 14 45.03
4 13 60.89
~~43.60~~
44.14
-.08
~~43.60~~
44.06

fol star 20.7
Star is Dm +34 863 Mag 7.5

δ Tauri
~~+18°58.~~
+17°18
fol star
19m 12.8 56.7
Probably Dm +17° 716

18 39.6 9.5 23.0
41.6 25.0
46.0 28.0
48.8 30.9
50.8 32.7
52.9 37.0
55.6 39.1
3353 2157
47.90 30.82
21.47 21.47
9.37 9.35
4h 19 9.36
4 17 15.26
1 54.10
Star is Dm +17°714

ε Tauri +18°58
23 6.1 36.1 50.0
8.4 52.0
12.5 54.8
15.5 57.9
17.6 59.7
19.5 4.1
22.4 6.3
1020 4048
14.57 57.83
21.69 21.69
36.26 36.14
4h 23 36.20
4 22 51.95
44.25
-.21
44.04

1 Camel seq. +53°42′
prec
25 18.7
22.3
26.6
31.3
34.3
41.1
44.7
2190
31.29

fol
25
20.0
22.2
27.5
32.1
35.2
42.1
45.8
2259
32.27
34.63
24 57.64
4h 24 14.00
0 43.64
+.17
43.81

δ
+18 +.04
34 +.06
53 -.19
-.03

+5 × 3 +.15
-19 × 2 -.38
5 -.23
-.04

43.97
.70 = 6 sec.0
44.67

Frod 1327 is fast
0m 44.67s
at 4h 20m Sid Time
Feb 14-1901

Feb 18, 1901

Mer Circle   J.A.D. obsr

1 Cam +53 42′   l. 3 min

G.r. 2373 +77 38 L.C. not observed

4 Cam +56 35′   δ 49.650
692
645
636

9 Cam +66 11   T² Cast 6
.48.868 bet the α
δ² .865 after α
δ³ .814 Edge of field

ε Urs Min
+82 12
L.C

47.550
505
reg. δ of one
prey. of one
~~wire~~ ⑥
l.c wire 10 ~~wire~~ ⑦ 47.400 [illegible]
l.c. wire 9 47.397
Wire 8
47.380
382
425
453

Feb 28, 1907

after RA

47.495
reg. next tap
47.565
47.625
47.670

Notes: Key dropped a number of times to floor, but δ taps are all long; chronograph threatens to stop running time.

19 H Cam +79°.7   Wml 8.

δ' 48.845 first
858
836
835
825

T^2

After RA
48.786
790
δ up reg
735
680
664
630

Long rattle on sheet

Remark: During above star, last star the seeing was good; all previous stars, bad; stars jumping

Feb 18-1901

Rattle after $5^h 15$

β Tauri +28.31 . last of Chron. shifting

17 Cam +63.0 T² last

Gr 966 +74.59 ξ star 6.7±

Perhaps
Wire 8 also
perhaps start before wire 8

δ '48.929
.900
wire 8
.922
.933
.941
.985
after RA
.885 ✓
.890 ✓
.845 ✓
.795
.765

T²

but same mean as
of last one

Wires apparently observed on
3 5 6 7 8 9 10 11 12 13 15

Chronograph needs adjusting

→ o Aurigae +49.47 all

the above polar stars observed for determining inclination of δ Micrometer double line. all obs in δ made here with double line

the other stars obs. for error of Fr 1327

South shutter could not be opened ice on top probably

Rattle after : $5^h 42$

Feb 18 - 1901

From pages 18 - 20

$\overset{1}{\chi}$ Cam +53°42
last 3 wires

$4^h 25$ 33.7
41.0
44.2

1189
39.64
1.1933
0.2277
1.4210
2636

$4^h\ 25\ 13^s.28$

Used n as 37

$\overset{4}{\chi}$ Cam
+ 56°35
~~+66 11~~
~~F last~~

$4^h 39$ 39.0 30.6 54.8
42.6 58.2
50.0 2.8
54.9 7.8
58.5 11.0
1.6 18.3
6.6 22.0

37.32 47.49
53.32 67.85
37.23 37.23
30.55 30.62

$4^h\ 40\ 30^s.59$
4 39 48.06
42.53
+ .22
42.75

β Tauri
+28°31

$5^h 20$ 32.1 47.0 2.0
4.1
7.1
10.5
12.5
17.0
19.5

72.7
10.39
23.33
47.06

$5^h\ 20$ 47.06
5 20 4.23
42.83
− .14
42.69

o Aurigae
~~17 Cam~~
+49°47'
~~+63 0~~

$5^h 38$ 15.4 59.5 19.8
18.4 22.6
24.8 26.6
29.0 31.1
31.7 33.9
34.8 40.2
38.8 43.4

1829 217.6
27.56 31.09
31.77 31.77
59.33 59.32

$5^h\ 38\ 59^s.32$
5 38 16.80
42.52
+ .10
42.62

δ +28 .69
49 .62
56 .75
.69

72 × 3 226
62 × 2 124
350
.70

42.70
70 = b[illegible]
43.40

Frod 1327 is fast
$0^m\ 43^s.40$
at $5^h\ 10^m$ Sid Time

Feb-19-1901

Mer Circle J.S.D. obsr.

c Persei +47°27 W 8 / T

o'Eridani −7°6 all

[54 Persei] +34°20 all

< Fr 1327; breaks before 4h 11m
Frodsham 3457; last visible = 4h 12m

δ Tauri +17°19 all ; lit rattle, and last T.h=wire 1

Fr 1327 ~~last~~ Rattle after 4h 19m

α ~~Tauri~~ +16° 18'

τ Tauri +22° 46' M. F. M. obsr.

54 Persei
+ 34° 20'
367
4h 13 58.797

0.5899
9.6561
0.2460 +1.762

8.3078
0.6624
8.9702 + .093

8.5361
1.2138
9.7704 −.589

8.8588
1.0022
9.8610 +.726

61.378
−.589
60.789

1.09 42.09
12 43.46
1.21) 1.37 (1.
1 21
160

n = .1

c Persei	o'Eridani		54 Persei		δ Tauri		τ Tauri	
+47°27	−7°6		+34°20		+17°19		+22°46	
4h 2m 12.5 32.0	7m 17.3	46.7 59.0	14m 8.7	43.0 59.0	17m 29.9	57.5 11.3	36m 31.4	24 16.5
34.8	19.2	1.0	11.1	1.3	34.3	13.2	33.5	18.4
38.7	23.2	3.7	16.0	4.5	36.9	16.0	38.0	21.5
42.8	26.0	6.6	19.3	7.9	39.0	19.0	40.9	24.3
45.5	27.9	8.3	21.5	10.0	40.9	20.9	43.0	26.5
51.6	29.5	12.3	23.8	15.0	43.8	25.1	45.0	30.9
54.6	32.5	14.5	27.1	17.5		27.3	47.9	33.1
300.0	175.6	45.3	127.5	55.2		132.8	279.7	171.2
42.86	25.09	6.47	18.22	7.89		18.97	39.96	24.46
30.32	20.65	20.65	24.83	24.83		21.47	22.23	22.23
2 12.54	45.75	45.82	43.05	43.06		57.50	62.19	2.23

c Persei	o'Eridani	54 Persei	δ Tauri	τ Tauri
4h 2 12.54	7 45.78	14 43.06	17 57.50	37 2.21
4 1 30.~~48~~	7 3.32	~~15.1~~	17 15.18	36 20.02
42.~~22~~	42.46	14 0.79	42.32	42.19
.09	~~1.04~~	42.27 ~~25~~	~~.60~~	~~.50~~
~~+.18~~	~~42.42~~	~~42.04~~	~~41.72~~	~~41.69~~
~~42.29~~				

~~Wau.~~

	c Persei	o'Eridani	54 Persei	δ Tauri	τ Tauri
n as .4	+.07	−.42	−.09	−.24	−.20
	42.16	42.04	42.18	42.08	41.99
n as 33	+.06	−.35	−.08	−.20	−.17
	42.15	42.11	42.19	42.12	42.02

mm M. obsn

s 10 earlier than J.S.D. nearly
see also Feb 6 x Persei

−7° .11 (s)
+17 .12 .12 } 16
+34 .19 .19 } } 16
+47 .15 .15 15
17
.14 .15

42.15
~~.70~~ = back 4
42.85

Frod 1327 is fast $\overset{m}{0}$ 42.85 s
at 4h 10m Sid Time

Feb 19 - 1901

It is proposed soon to remove clock Frodsham 1327 from vault and send it to Bond's for overhauling and cleaning.

Before this is done it is proposed to compare by chronographic comparison the chronometer (sidereal) Frod 3451 with Frod 1327. when rate of Chronometer Frod 3451 is studied for awhile, the chronometer will be used as the observatory standard time piece during the interval clock Frod 1327 is being cleaned. A temporary double switch has been placed in Fr 1327 vault where Fr 3451 is now placed.

First Chronograph comparison.

Feb 19, 1901 (on same sheet with time stars) (at same time)

Clock Frod. 1327		Chron. Frod 3451	
4h 12 8.95	#	4 11 16.00	Chron Frod 3451 is slow of true Sid T 10s.10 at 4h 11 Sid T.
fast 42.85			
Correct Time 4 11 26.10			

this crossed out note made with 1st impression ~~that~~ Fr 3451 was a meantime chronometer

~~Omitted to compare long enough for coincidence of tape~~; read Fr1327 by scale reading to hundredths

Note: Frod 1327 (clock) beats every 2s, thus no 2, 4, 6, 8 etc and omits 60th second.

Chronometer 3451 beats every 2s, thus 2, 4, 6, 8, etc but beats also the 59th second

Wed. Feb 20.25 1901

Comparison: Fr 3451 chronometer & Clock Fr 1327

Frod 3451 ; last min $3^h 58$

Fr 1327 ; " " $3^h 59$

Clouds prevent star observations:

Fr 1327 $3^h 58$ 50.40 Fr 3451 $3^h 58$ 00

Fr 1327 fast

Feb 19, 42.85

Call rate .57

42.28

Call Fr 1327 43.28 fast

Sid T = 3 58 7~~8~~.12 Hence Frod 3451 is slow $7^s.12$ ~~8.12~~

Feb 20.2 at $3^h 58$ Sid T.

Thurs- Feb 21-1901

Comparison: Chiffley Fr 3451 was shut out of circuit the last min = { 4h 3 Fr 3451 / 4h 4 Fr 1327 } on sheet

Remark: Arc of pendulum of Fr 1327 is North 1°.5 to S 1°.5

Time Stars

Mer Circle. J. A. D.

δ Tauri +17°18 all.

ε Tauri +18°58 T1

1 Cam seq. +53°42 all

Frod 1327 4 3 49.58
fast 39.35
4 3 10.23

Chronometer error

Frod 3451 4h 3m 00s

Chronometer Frod 1327 is ~~fast~~ slow 10s.23 at 4h 3m Sid Time

---

δ Tauri		ε Tauri	1 Cam seq.	
+17°18		+18°58	+53°42	
4h 17 24.5	54.1 7.9	4h 23 0.5	4h 24 44	52.5 14.4
26.7	9.9	2.9	7.7	17.5
30.6	12.6	7.2	14.1	22.0
33.6	15.5	10.0	19.0	26.5
35.5	17.5	11.9	22.2	29.7
37.5	21.9	14.0	25.4	36.6
40.3	24.0	16.7	29.5	40.5
228.7	109.3	63.2	122.3	187.2
32.67	15.62	9.03	17.47	26.74
21.47	21.47	21.69	34.63	34.63
54.14	54.15	30.72	52.10	52.11

368

4 24 11.260

9.6572
0.6754
0.3326 2.151
0.6600
8.5663
9.2263 .168
11.2200
8.6600
9.8800 -.759
0.9740
9.0124
9.9864 .969

14.548
.759
13.789

4h 17 54.14
4 17 15.14
39.00
-.20
38.80

4h 23 30.72
4 22 51.82
38.90
-.19
38.71

4h 24 52.10
4 24 13.79
0 38.31
+.15
38.46

m as 33

tan δ - tan α for +53 = +.45 | wt 4 × 31 124
+18 = -.57 | 3 × 90 270
+17 -.60 | 3 × 100 300
10 | 10) 694
38.69

+17 .80 } 75 × 3 225
+19 71 }
+54 46 46 × 2 .92
197 5) 3.17
.66 .63

38.65
.70 obs
39.35

Frod 1327 is fast 0m 39s.35 at 4h 20m Sid Time

Feb 23, 1901

Zenith stars (reduced in ~~but~~ Ifd… Mrs. Reduction contain. meteor list Nova Persei &c

			wt		
μ Aurig	+38.4	−36.435	1 × 6		36.451
η Aurig	+41.1	.270	3	2	36.286
ε Aurig	+43.7	.666	1	× 2	36.289
α Aurig	45.9	.421	3	2	36.506

by weights 36.506

give

36.383
.70
37.083

n assumed 2t,50

36.506
.70 = 6 sec φ
37.21

Fr1327 is fast 0 37.21
at 5h 0m

Fr1327	Fr3451
5 30 46.20	5 30 00
rate .04	
5 30 46.24	
Error 37.21	
5 30 9.03	at 5 30 00

Fr3451 is slow 9.03

at 5h 30m Sid T.

Feb 24-1901

Fr 1327 6^h $\overline{17}$ $44.^s75$ 6 17 on Fr 3451

fast 36.~~07~~ 637

6 17 ~~9.01~~ 8.38

rate 14
35.~~707~~
36 ~~.67~~

fast 36.46
.09
36.37

Fr 3451 is slow ~~7.09~~ $8.^s38$
at 6^h $\overline{17}$ Sid T.

Feb 24-1901

36.506
35.757
~~.750~~
.03

$6.^s3$
3.3
3.0

.09

Nova Persei stars	34.7	- 35.726
	40.6	864
	42.3	715
	47.5	761
	49.5	716
		35.756
		.70 - 6 mo
		36.46

Frod is fast 0 $36.^s46$
at 3^h $\overline{20}$
Sid Time

Feb 25-1901.

Mer. Circle J.R.D. obs

Recorded in zone book A20 16.

d_v	
+327	−34.989
406	973
423	
475	968
475	5.007
495	4.937
	34.979
	.70
	35.68

Frod 1327 is fast $0^m.35^s.68$
at ~~5^h 0^m~~ 3' 25 Sid Time

Comparison

Frod 1327	Frod 3451
4^h 25^m 43.87	4^h 25^m 0.00
fast $35^s.68$	
rate −.03	
Sid T. 4^h 25^m $8^s.22$	

Frod 3451 is slow $8^s.22$
at 4^h 25^m Sid T.

~~Feb 26-1901~~

~~Chronograph comparison~~

~~Frod 1327~~ ~~Chronometer Frod 3451~~

~~4^h 25^m 43^s87~~ ~~4 25 43.87~~

~~4^h 25 0.00~~

Feb 26-1901

Nova Persei Stars	+316	34.713
	+397	.774
	+423	.755
	+495	.723
		.741
		.70 [illegible]
		35.44

Frod 1327 is fast 0^m 35^s.~~44~~

at 3^h 35^m Sid T.

Comparison

Fr 1327	Fr 3451
4 30 43.85	4^h 30 0.00
fast 35.68	
4 30 8.17	

Fr 3451 is slow $8^s.17$

at 4^h 30^m

~~Feb~~ 8 1901 Nova Persei
and companion
Miss M. F. Michaels
rattle after
2^h 51^m Fred

-3 +53 . 7

5 +40° 34'. (1st δ tap bad)

8 +49 31'
Nova Persei +43° 34'

δ¹	δ²	δ
50.845	50.848.	50.833

λ

probably 2

H	F
0-3-01,2	0-3-34.0
55-8-20.5	55-8-34.1

H 10 +47°.28' F

55-2 (51)	10-2-10.4
50-7-0.5	5-7-10.2
δ¹	δ²
45.100	45.019

missed wires 8.9 and 10

16 + 31 35

~~missed wire 9~~
missed wire 9

Feb 28, 1901 ~~###~~ attach Therm 28.7
Bar 30.148
Therm 19.7

~~19~~
18 +39°43' (T2)
δ 1
43.560 (mark with pen beginning of δ taken)

25 probably
H
55 - 2 - 39.5
50.7 - 40.3
20

25 probably
F
55 - 3 - 0.2
56 - 8 - 5.7
20

22 +47 27
δ 1 δ 2
probably 48.+
49.420 (or 48)
48.899

4
H
10 - 1 - 0.0
5 - 6 - (-1.1)
35

4
10 - 1 - 0.5
~~50~~
5 - 6 - 20.3
~~45~~
35

28 -3°.33'
rattle after

closing rattle after 4h 45

30 +25°.46'
(rattle before and after)
middle wire and T 2

when ~~Fr [illegible]~~ Fr 3451
turned off last min

4 22 Fr 3451
4 23 Fr 1327

Feb 28 1901

3 ~ +53° 7'

δ'
57m 57s.7

2h 57m 24.3 58 11.9 33.5
27.7 36.8
34.6 41.4
39.0 46.0
42.4 49.0
45.6 55.8
49.9 59.2
263.5 321.7
37.64 45.96
1.3120 1.3118
0.2216 0.2216
1.5336 1.5334
34.17 34.15
11.81 11.81

T 2h 58m 11.81

5 +40° 34'

3h 1m 40.6 18.1 35.2
43.2 37.7
48.7 41.1
54.4 44.8
57.0 47.3
× 0.6 52.6
55.4
304.5 314.1
50.75 44.89
1-2-3-5-6-7
1.3153 1.3118
0.1194 0.1194
1.4347 1.4312
27.20 26.99
17.95 17.90

3h 2h 17.92

Feb 28-1901

m assumed
a fct .30

γ Persei
2 58 11.81
2 57 38.80
33.01
+.13
32.95

β Persei
3 2 17.92
3 1 44.80
33.12
-.02
33.10

α Persei
3 17 49.71
3 17 16.70
33.01
+.08
33.09

33.06
.70
A1327 fast 0 33.76 at 3h 5m Sid T.

Feb 28, 1901

8	+ 49° 31′	δ¹	δ²
		16^m $53^s.2$	17^m 59.0
3^h 17^m 6.2	50.0 18^m 10.2		
9.3	13.0		
15.2	16.8		
19.6	21.2		
22.5	24.2		
29.3	30.2		
	33.4		
102.1	149.0		
17.02	21.29		
1-2-3-4-5-7	9 to 15		
1.3269	1.3118		
0.1876	0.1876		
1.5145	1.4994		
32.70	31.58		
49.72	49.71		

3^h 17^m $49^s.72$

Nova Persei	+ 43° 34′	δ¹	δ²	δ3
		24^m 49.2	25^m 46.5	26^m 16.1
3^h 24^m 23.4	25^m2.8 20.8			
26.2	23.4			
31.9	27.2			
35.6	30.9			
38.3	33.4			
40.7	39.0			
44.4	41.9			
240.5	216.6			
34.36	30.94			
1 to 7	9 to 15			
1.3120	1.3118			
0.1399	0.1399			
1.4519	1.4517			
28.31	28.30			
2.67	2.64			

3^h 25^m $2^s.655$

28 $-3° 33'$

4^h 31^m 28.5 56.9 32^m 9.9
30.6 11.8
34.5 14.8
37.0 17.4
39.0 19.3
41.0 23.4
43.6 24.3

254.2 120.9
36.31 17.27
157 9.515
1.3120 1.3118
0.0008 0.0008

1.3128 1.3126
20.55 20.54
56.86 56.73

T 4^h 31^m $56.^s80$
α 4^h 31^m 23.64

$-$ $33^s.16$

30 $+75° 46'$
4^h 36^m 6.4
4^h 36^m 59.5
37^m 6.5
18.3
28.1
35.2
53.6
38^m 2.0

623.2
89.03
29.03
9.515
1.3118
0.6093

1.9211
83.39
23.39

5.64

T 4^h 36^m 5.64
4^h 35^m 34.54

$-$ 31.10

30 $\alpha - T =$ $-$ 31.10
28 $\alpha - T =$ $-$ 33.16

$+$ 2.06

$n = +.515$

30 tan = +3.942
28 tan $-$0.0618

+4.0038

Feb 27 - 1901

Nova Persei comparison stars

gave -33.576
.70
— 34.28

	(α−T)	m (time stars)	
γ Persei	33.412	+131	33.543
α "	424	+081	505
δ "	601	+056	657
ζ "	630	-092	538
ε "	650	-024	626
ζ "	529	+056	585
			33.576

Fr 1327 is slow 34.28

at 3h 35m Sid T.

Fr 1327	Fr 3451
4h 16 42.56	4h 16 0.00
34.28	
4 16 8.28	

Frod 3451 is ~~slow~~

slow 8.28

at 4h 16m Sid T.

Sat. Mar 2-1901

Mer Circle

J A D obsr

η Aurigae +41° 6

μ Aurigae +38° 22

α Aurigae +45° 54 1/2 wt for bright also 8.5 14h15 ; 10±5

Last min 5^h 14 Fr3451 5^h 15 Fr1327

η Aurigae
+41° 6'

$4^h\,58^m$ (9) 30.3 7.9 25.2
32.8 27.8
38.2 31.3
41.9 35.1
44.5 37.6
46.9 43.0
50.5 45.7
285.1 245.7
40.73 35.10
27.20 27.20
7.93 7.90
T = 4 58 (60) 7.92
α = 4 59 36.46
31.46
.01
31.45

μ Aurigae
+38° 22'

$5^h\,5^m$ (×6) 36.5 12.9 29.5
39.2 31.9
44.4 35.5
47.9 39.0
50.2 41.4
52.7 46.5
56.1 49.2
327.0 273.0
46.72 39.00
26.15 26.15
12.87 12.85
5^h 5 (2) 12.86
5 6 41.25
31.61
.03
31.64

α Aurigae
+45° 54

$5^h\,8$ (9×) 15.3 56.3 15.0
18.1 17.8
24.0 21.6
28.0 25.6
30.8 28.2
33.4 34.2
37.2 37.2
186.8 179.6
26.69 25.66
29.45 29.45
56.14 56.21
5^h 9 56.18
5 9 24.84
31.34
.03
31.37

Fr1327 Fr3451
5^h 14 39.08 5^h 14 00
- fast 32.18
6.90

Fr3451 is slow 6.90

45 45 × 2 90
64 } 50 × 3 150
37 5 240
146 .48
31.48
bank = .70
32.18

Frod 1327 is fast
0^m 32.18
at 5^h 0 Sid Time

Mar 5 th

Rattle after
4^h 9^m.

~~δ Tauri +17° 19'~~
~~ε Tauri +18° 58'~~
a Tauri +16° 19'

March 6th. 1901

Mer. Cir. Miss M. F. Michaelis obs

Meridian Circle:-

~~ε Orionis −1° 16'~~

σ Orionis (σ Orionis) −2° 39'

0 Aurigae +49° 47' T2

0 ~~Aurigae~~

See opposite } → [ψ Aurigae] +39° 7'
Star in Dm +39°.1418 }

(star pre 224 Camel.) +54° 16' (doubtful bad)

22 H Camelop +69° 21' 3 rattles before
1 rattle after

N Gemin +22° 34'.

Some traces of star pre
51 Aurigae +39° 29' T2
3 rattles before
" after.

Flash 3451 on after 6h 41m
" 1327 " "
off after 6h 43m

rattle after 6h 44m

March 6, 1901

Miss M. F. Michaelis obs.

Time stars

ο Aurigae
+49°47
T^2

$5^h 39^m$ 6.8
9.2
13.2
17.6
20.6
26.9
30.0
124.3
17.76
31.76
$5^h 38^m 46.00$
5 38 16.39
29.61

.08
29.69

m assumed = .3

ν Aurigae
+39°7

$5^h 42^m$ 14.4 50.9 8.0
17.0 10.2
22.0 13.9
25.5 17.0
28.0 19.6
30.2 24.9
33.9 27.8
171.0 121.4
24.43 17.34
26.42 26.42
50.85 50.92

5 42 50.89
5 44 40.03 Ansfl.

Star observed is
Dm +39° 1418

Dm mag 4.7
precedes ν about $2^m 19^s$

29.79
.70 = 6 secs
30.49

η ~~Geminorum~~ 51 Aurigae
~~+22 32~~ +39°29
T^2

$6^h 32^m$ 37.6
39.8
43.4
46.9
49.5
54.6
57.6
329.4
~~44.20~~
47.06
26.57
$6^h 32^m 20.49$
6 31 50.57
29.92

.03
29.89

Comparison
Clock Frod 1327
Chronometer Frod 3451

$6^h 42^m 35.15$
30.50
$6^h 42^m 4.65$

$6^h 42^m 0^s$

Frod 3451 is slow 4.65^s

Frod 1327 is fast
$0^m 30.50^s$
at $6^h 0^m$ Sid Time

March 12-1901

Mer Circle   J A Dolze

μ Gem +22° 34   9.2 6' S of δ on m W 15
ψ' Aurigae +49° 20   9.0 3' N of δ on m W 1
10 Monoc. -4° 42   among a nest of stars two of which
both 1+2   are about 7 mag. fall on wire 8 except 10 Mon.

Fr 3451 6h 28
Lasdmun Fr 1327 6h 29

μ Gem
+22° 34
6h 16 57.5
59.5
4.0
7.0
9.0
11.0
14.0
~~8.7~~
6.00
22.20
28.20
6h 17 0.37
27.83
.95
27.68

Gemin.
9.2 9.0
6' S 3' N
wire 15 wire 1
6h 15 28.0 6h 16 1.4

ψ' Aurigae
+49° 20
6h 17 46.6 6.8
9.8
13.9
18.2
21.0
27.4
30.5
127.6
18.23
31.47
17 46.76
6h 17 19.18
27.58
.08
27.66

10 Monoc.
-4° 42
6h 23 5.5 47.1
7.6 49.0
11.5 51.7
14.1 54.5
16.1 56.3
17.9 0.5
20.6 2.6
93.3 381.7
13.33 54.53
20.57 20.57
33.90 33.96
6h 23 33.93
6 23 6.02
27.89
.30
27.59

Around 10 Monoc.
stars all on 8th wire
23 25.0 28.5 29.1 30.4 35.3 42.5

Fr 1327
6 28 29.75
28.37
1.38

Fr 3451
~~7 28~~
6 28 0.00

Fr 3451 is
slow 1.38
at 6h 28 Sid T

27.67
.70 = 6 secd
28.37

Frod 1327 is fast
0 28.37
at 6h 20 Sid T

March 15-1901

Mer Circle Friday, J.A.D. obs

η Aurigae Wire 8 & T 2 +41°6 faint in clouds

α Aurigae +45°54 T 2 & wires 1st 2 & 3 bright

Last min { 5^h 17 Fr 3451
5^h 18 Fr 1327

Stars through clouds; cloudy.

η Aurigae
+41°6

$5^h 0^m$ 4.0 21.4
23.8
27.2
31.0
33.6
38.8
41.6
217.4
31.06
27.16
5^h 0 3.90
4 59 36.16
27.74

Assumed m = .30

.01
27.73

α Aurigae
+45°54

$5^h 9^m$ 11.4 52.2
14.2
20.0
23.9
26.6
29.4
33.2
158.7
22.67
29.45
5^h 9 52.12
5 9 24.55
27.57

.04
27.61

27.67
.70
28.37

Fr 1327
5^h 17 30.27
28.37
5 17 01.90

Fr 3451
5^h 17 00

Fr 3451 is slow
01.90
at 5^h 10^m
Sid T,

Frod 1327 is fast
0^m $28^s.37$
at 5^h 10^m
Sid T,

Mar 15-1901

Temporary Removal of Clock Frod 1327

Mr. Gerrish had Wm Bond & Co. dismount and remove clock Frod. 1327 from the observatory for cleansing. During its absence the sidereal chronometer Frod 3451 which has been compared for a long time with Frod 1327, will be used for the observatory standard time piece

Sat., March 16, 1901 :- $0\overset{4}{0}{}^{m}$

March 18-1901

Me. Circle   J.A.D. Rec

Chronometer Frod 3451

ι Aurigae +33° 0 Wire 81 T^2 : in clouds

ε Aurigae +43° 41'

η Aurigae +41 6 last 2 w.   Rattle after 5^h 2

	ι Aurigae	ε Aurigae		η Aurigae	
	+33° 0'	+43° 41'		+41° 6'	
	4^h 50 30.0 45.6	4^h 54 9.8	49.2 7.3	5^h 0 6.60	
	47.9	12.7	9.8	9.36	
	51.1	18.3	13.6	15.96	
	54.5	22.0	17.5	7.980	1.4378
	56.6	24.6	20.0		0.1229
	1.5	27.1	25.7		1.5607
	4.0	30.0	28.5	36.36	36.36
	381.2	144.5	122.4	4 59 31.62	
	54.46	20.64	17.49		
	24.44	28.36	28.36		
	30.02	49.00	49.13		
T	4^h 50 30.02	4^h 54 49.06			
α	4 50 34.38	4 54 53.59		4 59 36.08	
α−T	+4.36	+4.53		+4.46	
n(tan δ − tan φ)	+.08	±.01		∓.01	
	+4.44	+4.54		+4.47	

m assumed =+.3

.44×3 132
.54×5 270
.47×1 47
11 488
+4.49
b sec φ −.70
~~4.26~~ slow
3.70 slow

Chronometer Frod 3451
is slow
0 ~~4.26~~ 3.70
at 4^h55 Sid Time

March 19-1901

Meridian Circle.- Level.- J.A.D. obsr

		W.	E
Telescope S.	Screw E	-15.3	-47.6
mark 118.0	E	-13.6	-46.0
	E	-11.5	-44.0
ESM Time 0h 0m	E	-13.0	-45.4
	W	+102.1	+70.0
	W	+103.0	+70.7
	W	+1097	+68.4
	W	+97.0	+67.0
Telescope N.	Screw W	+49.0	+81.6
	W	+47.0	+79.4
	W	+47.5	+80.0
	W	+47.0	+79.0
	E	-60.7	-93.2
0h 19 ESMT	E	-64.0	-96.0
Ending	E	-66.5	-98.7
	E	-65.0	97.0
		+593.3	+596.1
		-309.6	-567.9
		+283.7	+28.2

+283.7

32) 311.9 (9.75 d

.06

.585=6

1.35

b sec φ: .79

W end high

March 19 - 1901

Mer Circle

J.A.D. obs

β Aurigae +44°56

θ Aurigae +37 12

5h 55 Last ring

7 Frod 3451 Chronometer

β Aurigae
+44°50

θ Aurigae
+37°12′

5h 51 34.1
37.0
42.8
46.6
49.0
51.7
55.7
316.9
45.27
28.91
5h 52 14.18

5h 52 23.3 56.5 12.9
28.2 15.2
31.6 18.6
34.1 22.0
36.7 24.2
39.6 29.8
32.0
193.5 154.7
32.25 22.10
25.74 25.74
57.99 56.36
24.11
56.36

1.2833
0.0988
1.3821
24.11

mean

5h 52 18.22
+4.04
-.02
4.02

5h 52 56.36
5 53 0.30
+ 3.94
.05
3.99

4.00
-70 = 6m4
3.30

Frod ~~1327~~ 3451? is ~~fast~~ slow
0m 3s.30
at 5h 50 Sid Time

March 21-1901

0h 0 ESMT. Level Meridian Circle.-

Telescope S. W E

~~Screw E -23.5 -57.6~~
~~E -18.5 -49.7~~
~~E -20.2 51.7~~
~~E -16.0 48.0~~
discarded; left telescope on other affairs.

Again.-

0h 15 ESMT Telescope S W E Level above

Screw E -16.0 -47.5
E -20.0 -51.0
118° mark
E -16.0 -47.4
E -17.5 -48.9
W +92.0 +61.0.
W +96.0 +65.0
W +98.0 +67.0
W +98.5 +67.0

Telescope N W E Level below

Screw W +86.3 +55.0
W +87.3 +56.0
W +86.3 +55.0
W +85.0 +53.5
E -55.0 -86.5
E -60.0 -91.0
E -61.0 -92.0
E 61.4 -92.5

+729.4 +479.5
-306.9 -556.8
West +422.5 -77.3
East -77.3
-32) 345.2 (10.8
32
25 2

10.8
.06
.648
1.35
3240
1944
648
.87480

b sec φ = .87
West end high

Frod 1327 Replaced in vault

March 21-1901

Noon: Bond's men replaced clock Frod 1327 and started it (See page 46).

March 22-1901

Mr Cook

Daylight Obs.

J.A.D. Obs

α Aurigae +45 54
β Tauri +28 31

Cloudy.

Comparison { 5^h 37 Fr 1327
(5^h 37 Fr 3451

α Aurigae

5^h 8 37.3 18.1 37.0
40.2 39.7
46.0 43.5
49.9 47.5
52.5 50.1
55.3 56.0
59.2 58.9
3404 3327
48.63 47.53
29.45 29.45
18.08 18.08

5^h 9 18.08
α = 5 9 24.34
α–T + 6.26
+ .03
+ 6.23

β Tauri

5^h19 25.3 57.5 12.5
27.5 14.6
32.2 17.7
Lost on sheet 37.4 21.0
39.6 23.0
42.6 27.5
30.0
850 1195 1463
28.34 39.84 20.90
29.26 17.76 23.33
57.60 57.60 57.57

5^h 19 57.59
5 20 3.64 = α
+ 6.05
–.11
+ 6.16

1.4102 1.1933
0.0561 0.0561
1.4663 1.2494
29.26 17.76

e

[illegible]
Comparison
Fr 1327 Fr 3451
5^h 36 57.78 5^h 37 00
Δ 5.33
5^h 37 3.11

+ 6.20
87 = b sec φ (W. list)
+ 5.33

Clock Frod 1327 is slow
$\bar{o}$ 5.33
at 5^h 10 Sid Time

March $22\frac{10}{10}$, 1901

Mer Circle

J.A.D. obs

Noon –

β Cass twely 2 +58° 36

Last min Fr 1327 0^h 7
Last min Fr 8451 0^h 7

β Cass

$0^h 4^m$ 11.30
15.20
20.13
25.57
29.00
36.50
~~41.00~~
178.70
25.53
.36
.9

n assumed ^{s}.5

25.53
39.36
$0^h 3^m$ 46.17
0 3 53.16
+ 6.99
+ 36 .14
+ 6.63 .85
.87 by φ
+ 5.76
5.98

See next page
n = +.2

Comparison

Fr 1327	Fr 3451
$0^h 6$ 57.15	$0^h 7$ 000
5.7698	
0 7 ~~2.91~~ 3.13	

Frod 3451 is slow ~~2.91~~ ^{s} 3.13

Clock Frod 1327 is slow

0^m $5^s.76$

at $0^h 4^m$

Sid T.

of March $22\frac{10}{10}$, 1901

just preceding noon of Mar 23

March 23. 1901

Meridian Circle   Miss M. F. Michaelis Obs.

obs. day light except last.   ~~rattle after~~ 5^h 42^m
2nd rattle after 5^h 44m

δ Aurig	+ 54° 17′	
~~[36 Camel]~~	~~+ 65° 44′~~	too faint
22 H Camel	+ 69° 21′	
[2 Lyncis]	+ 59° 3′	Wire 8 and T2
ψ Aurig	+ 49° 20′	T1
~~β Canis Major~~	~~– 17° 54′~~	too late
10 Monocer.	– 4° 42′	– 14 and 15
ξ² Canis Maj.	– 22° 53′	– last of T1 8 and T2
~~57 Aurig.~~	~~+ 39° 29′~~	
ψ5 Aurig	+ 43° 41′	

rattle after 6^h ~~5~~ 44.

δ Aurig +54° 17′

5^h 50^m 29.5 51^m 18.2 40.7
32.8 43.9?
39.9? 48.4
44.6 53.1
47.7 56.1
55.4 52^m 3.25
 6.8
249.9 372.2
41.65 53.17
36.44 35.12
18.09 18.05

T = 5^h 51 18.07
α 5 51 24.84
+6.77
.10
6.67

22 H Camel, +69° 21′

6^h 6^m 37.6 7^m 52.4 8^m 29.8
 35.2
49.6 42.6
57.0 50.5
2.4 55.8
6.9 7.0
15.0 13.3
347.9 354.2
57.98 50.60
54.44 58.13
52.42 52.47

6^h 7 52.44 = T
6 7 59.53 α
+7.09
.35
+6.74

[2 Lyncis] 59° 3′

m
+69 21 +7.09 +2.65
–22 53′ +6.45 –.42
+.64 +3.07
9.8062
0.4871
9.3191
m = .21

March 23-1901

Continued:-

ψ^1 Aurigae	ξ^2 Canis maj	[ψ^5 Aurig.]
+49°20	−22°53	+43°41

ψ^1 Aurigae — Trav. 1

6^h 16 { 28.7 (1st 4)
31.8 — 3.1
37.8 — 6.0
42.0 — 4.2
47.9 — 5.7 (Last 2)
51.6 — 3.7

23.98
39.97

1st 4	Last 2
35.08	49.75
1.3836	1.1625
0.1860	0.1860
1.5696	1.3485
37.12	22.31
12.20	~~7.44~~ 12.06

T = 6^h 17 12.15
α 6 17 18.87
α − T +6.72
.05
6.67

ξ^2 Canis maj — Tally 2

1st 6
6^h 31 3.8
5.8 — 2.0
8.6 — 2.8
11.7 — 3.1
13.6 — 1.9
18.0 — 4.4

61.5
10.25

1.2829
0.0357
1.3186

20.83
~~−49.42~~
6^h 30 ~~31.08~~ = T
6 30 55.87 = α
+ 6.45
.27
+ 6.72

[ψ^5 Aurig.]

6^h 38 52.5	32.0 50.4
55.4	52.8
1.0	56.4
4.8	0.0
7.5	2.8
10.0	8.4
14.0	11.2
44 52	42.20
63.60	60.29
28.36	28.36
31.96	31.93

6^h 39 $31^s.94$ = T
6 39 38.71 = α (Amer. Eph.)
+6.77
.01
6.76

δ	
−22	6.72
+43	.76
+49	.67
+54	.67
+69	.74

76 } .71
67 }
.70

+ 6.71
.87
$5^s.84$

Frod 1327 is slow
0^m $5^s.84$
at 6^h 15 Sid Time
Mar 23.2 1901

March 25 1901 Mer Circle JAD. Obs.

η Aurigae +41 06 faint,
α Aurigae +45 53

Landminute Fr 3451 5^h 13
Fr 1327 5^h 13

	η Aurigae +41° 6′			α Aurigae +45° 53′		
	$4^h 58^m$ 51.0	28.8	46.2	$5^h 8^m$ 36.1	17.0	36.0
	53.8		48.5	39.1		38.6
	59.2		52.3	45.0		42.5
	2.9		56.0	48.9		46.3
	5.3		58.5	51.5		49.0
	7.9		4.0	54.4		53.0
	11.5		6.6	58.2		58.0
	43.16		39.21	33.32		32.54
	61.66		56.01	47.60		46.49
	27.20		27.20	29.44		29.44
	28.86		28.81	17.04		17.05
T	4^h 59 28.84			5^h 9 17.04		
α	4 59 35.93			5 9 24.27		
α−T	+ 7.09			7.23		
	.01			02		
	7.10			7.21		

Comparison
Fr 1327 Fr 3451
5^h 11 55.20 5^h 12 00
6.30
5 12 1.50
chronometer
no 3451 Frodsham
is slow ō 1.50
at 5^h 5^m sid t.

Used n act.?

α bright wt 2 × 21 42
η faint 1 × 10 10
3)52
7.17
[illegible] .87
6.30

Frod 1327 is slow
ō $6^s.30$
at $5^h 5^m$ Sid Time

March 25
~~[illegible]~~

β Aurigae +44' 56'

M.F. in obs.
meas. cir.
rather after $5^h 57^m$

β Aurigae +44° 56'

5^h 51^m 30.8	10.9	29.4
33.5		32.2?
34.3		35.8
43.1		39.8
45.7		42.5
48.5		48.0
52.3		51.2
293.2		278.9
41.74		39.84
28.97		28.96
10.71		10.88

T 5^h 52^m $10^s.80$
α 5 52 18.06

α−T + 7.26
n tan δ − tan φ .02
7.24
b sec φ .87
6.37

2× 26 .48
.42
2× 21 .10
1× 10
5) 1.00
7.20
b sec φ .87
6.33

1×26 24
2×21 42
1×10 10
4).76
7.19
b sec φ .87
6.32

March 27-1901

Mer. Circle:- W. P. Gerrish, obs.

$6^h 31^m$ 24.2	32^m 7.5	$6^h 37^m$ 13.6	59.5	$6^h 40^m$ 55.0	
26.5	9.5	16.0	1.5	56.8	
30.7	12.4	20.2	4.5	59.5	
33.5	15.3	23.1	7.4	2.8	
35.4	17.2	25.2	9.5	4.4	
37.3	21.2	27.4	14.0	8.4	
40.0	23.5	30.1	16.4	10.7	
227.6	106.6	155.6	52.8	437.6	
32.51	15.23	22.23	7.54	62.51	

Interval

Obs. W 1 to 15 $59^s.2$	Obs. Interval Wire 1 to 15 $62^s.8$	Obs Wire 9 to 15 $15^s.7$
log. 1.7723	log. 1.7980	log. 1.1959
log 2 1.7545	1.7545	1.1837
l ~~cos~~ sec. δ 0.0178	l ~~cos~~ sec. δ 0.0435	l ~~cos~~ sec. δ 0.0122
δ $16^{\circ}.3$	δ $25^{\circ}.2$	δ $13^{\circ}.5$
γ Gemini $+16^{\circ} 29'$	ε Gemini $+25^{\circ} 14'$	~~ξ Gemini $+13^{\circ} 0'$~~, α Canis maj. $+16^{\circ} 35'$
$+21^s.38$ $-21^s.38$	$+22.66$ -22.66	$-21^s.$~~04~~ 39
$53^s.89$ 53.85	44.89 44.88	$41^s.$~~47~~ 12
$T = 6^h 31^m 53^s.87$	$T = 6^h 37^m 44^s.88$	$T = 6^h 40^m 41^s.$~~47~~ 12
$\alpha = 6\ 31\ 61.38$	$\alpha = 6\ 37\ 52.41$	$\alpha = 6$ ~~39~~ 40 ~~45.78~~ 48.58
7.51	7.53	7.46
.12	.09	.12
7.63	7.62	7.58

Used
m as $^s.2$

7.61
.87
6.74

Frod 1327 is slow

$\bar{0}$ $6^s.74$

at $6^h 30^m$ Sid T.

March 29 - 1901

Mer. Circle

J.A.D. Ser

μ Gemin. +22° 34 obs:-
γ Gem +16° 29
ε Gem +25° 14

Rutto after 6ʰ 39

	μ Gemin.		γ Gem		ε Gem	
	+22° 34		+16° 29		+25° 14	
	6ʰ 16 21.8 526	6.7	6ʰ 31 24.2 540	7.5	6ʰ 37 13.5 450	59.5
	24.0	8.9	26.2	9.6	15.8	1.5
	28.4	11.6	30.6	12.3	20.2	4.5
	31.3	14.7	33.3	15.1	23.1	7.5
	33.4	16.6	35.4	17.1	25.3	9.6
	35.5	21.0	37.4	21.3	27.5	14.0
	38.3	23.4	40.2	23.5	30.5	16.4
	2127	1029	2273	1064	1559	530
	30.39	14.70	32.47	15.20	22.27	7.5.72
Nedm as, 2	22.20	22.20	21.38	21.38	22.67	22.67
	52.59	52.50	53.85	53.82	44.94	44.90
T =	6ʰ 16 52ˢ.54		6ʰ 31 53ˢ.83		6ʰ 37 44ˢ.92	
α	6 17 0.05		6 32 1.35		6 37 52.37	
	7.51		7.52		7.45	
	.10		.12		.09	
	7.61		7.64		7.54	

7.60
.87 = 6 sec
6.73

Frod 1327 is slow

0 ~ 6ˢ.73

at 6ʰ 30 Sid T.

Mar 29 - 1901

Tues April 2-1901

Mer. Circle J.A.D. Jr.

β Gem +28°16 last w. cldy

π Gem +33° ~~40~~ ~~alt~~ last

[26 Lyncis] +47°49

Gr 1374 +74°11 last T

Clds for all stars - bright wires

Rain after 7h52

β Gem.	π Gem	[26 Lyncis]	Gr. 1374
+28°16	+33°40′	+47°49′	+74°11
~~7h 41 17.7~~ 39 33.0	7h 41 17.7	46 42.6 249 44.6	49 5.8
20.0 35.2	20.0	45.8 47.4	12.6
23.2 40.0	23.2	52.0 51.4	22.0
26.6 42.3	26.6	55.9 55.5	32.4
28.6	28.6	58.7 58.2	39.3
	33.8	1.5 4.2	54.2
	36.2	5.2 7.7	1.5
1505	1861	3817 3890	2278
1.3874 37.63	26.60	54.53 55.57	32.54
0.0552			
1.4426 27.71	24.63	30.53 30.53	75.23
T = 7h 39 9.92	7 41 1.97	25.06 25.04	48 17.31
α = 7 39 17.70	7 41 9.79	7h 47 25.05	48 25.67
7.78	7.82	7 47 32.99	8.36
.08	.05	7.94	.51
		.04	
7.86	7.87	7.90	7.85

+3.53
.54
3.

8.36
7.78
1.58
.20

m-t.

7.86
87
90
23
7.88
.87 = [illegible]
7.~~8~~1
0

Frod 1327 is slow

0m 7.~~8~~1 0

at 7h 40 Sid T.

+5°29 attempt to observe these two stars in daylight & clouds. +28°15'

2nd Tally Rejected 1st Tally

2nd w 4th

~~7^h 33 53.1 $\overset{s}{56.0}$ ~~34~~ $\overset{34\ s}{3.6}$ 8.4 16.5~~ ~~7^h 37 $10\overset{s}{.}9$ 18.7~~

~~1.4212~~ ~~1.4216~~ ~~1.2924~~

~~[illegible]~~ ~~0.0553~~ ~~0.0553~~

~~1.4233~~ ~~0.4769~~ ~~1,3477~~

~~29.98~~ ~~22.26~~

~~26.51~~ ~~T 7 37 $4\overset{s}{0}.88$~~ ~~40.96~~

~~33 50.00~~ ~~7 39 17.52~~

~~34 8.97~~

~~18.97~~

Note: Clouds:-

Since last observation April 2 ~~there~~ has been an extraordinary spell of continuously rainy weather, the sun in the first eleven days of April shone about 5 hrs only.

Thursday, April 11, 1901

Rattle before 12^h 47^m

ε Urs Maj +56°30 V8YT^2
12 Can Ven seq +38°51 T^2
ε Virginis +11°29 T^2
[17 Can Ven seq] +39°1
Mer. Circle — J.A.D. obsr

Rattle after 13^h 7^m

	ε Urs. Maj.	12 Can Ven seq	ε Virginis
	+56°30	+38°51	+11°29
	12^{h}49^m 33.8 57.8	12^{h}51^m 34.0	12^{h}57^m 21.5 23.5
	1.1	36.5	26.3
	6.0	39.9	29.0
	10.8	43.5	31.0
	14.4	45.5	35.2
	21.8	51.0	37.2
	25.5	53.5	
	497.4	3039	2037
	71.06	43.42	29.10
	37.14	26.33	20.92
	12^{h}49 33.92	51 17.09	12^{h}57 8.18
α	12 49 43.69	12 51 26.73	12 57 17.76
	9.77	9.64	9.58
	.12 56 59	.02	.14 7 10
Nas^s.15	9.65 71 .68	9.66 5 .66	9.72 65 68

72
66
65
203
9.68
.87 = [illegible]
8.81

65
65
71

68
66
68
9.68
.87
8.81

Frod 1327 is slow
0^m 8^s.81
at 12^h 55^m Sid T.

April 11, 1901

April 12 1901

Mer Corr

Miss M. F. M. obs.

Rattle after 7h 19m

α Gem +32° 6′ T2

~~−3 53~~ too faint

α Canis Major + 5 28 ba 5 of T 1 and all T 2

β Gemin +28° 16′

~~+33~~

First rattle not to be counted

~~Rattle after~~

3 Rattles after 7h 46m

	α Gem.	α Canis Maj.	β Gem	
	+32°6′	+5°28′	+28°16′	
	lat 6 7T²			
	7h28m 24.5	7h34m 12.0	7h38m 35.2 7.6	22.5
	26.8	14.0	37.5	24.6
	30.0	16.7	42.1	27.8
	33.1	19.5	45.2	30.9
	35.4	21.3	47.5	33.0
	40.0	25.6	49.5	37.5
		27.5	52.6	39.8
1.2829	189.8	136.6	309.6	216.1
0.0721	31.63	19.52	44.23	30.87
1.3550		20.60	23.29	23.29
2265	22.65			
	7h28m 8.98	7 33 58.92	17.52	7.58
				7h39m 7.55s
α	7 28 18.86	7 34 8.97		7 39 17.52
	9.88	10.05		9.97
	.064	.162		.086
n assumed to be 0s.15	9.94	~~10.21~~		~~10.05~~
	9.92	10.17		10.03

9.92
10.03
10.17
30.12
10.04 assume 10.00
.87 to add
9.13
.10 = corr for unobserved personal equation reducing to J.D.D.
9.03

See pp 56 & 57 & previous to that date

Frod 1327 is slow 0m 9.03s at 7h 35m Sid T. April 12, 1901

Saturday, April 13 1901

Mer Cir

Miss M. F. Michaelis obs.

3 rattles before 7h. 18m

(2nd time across) ~~+ 8° 29'~~

α Gem + 32° 6'

α Canis Min + 5° 28'

β Gemin + 28° 16' last 2 T1 wires and T2

ι Navis − 24° 1 rattle after 7h 46m

o Ursae Maj ~~B~~ + 61° 3' 3 rattles after last 2 wires

α Gemin.			α Canis			β Gemin	ι Navis
+32°6'			+5°28'			+28°16	−24°1
						T2	
7h27m 35.0	8.5	24.0	7h33m 29.8	58.5	11.5	7h39 22.1	
37.2		26.3	32.0		13.3	24.1	
42.2		29.3	36.0		16.1	27.3	
45.3		32.5	×		19.1	30.2	
47.5		34.7	40.6		20.8	32.3	
49.6		39.6	42.5		24.8	36.8	
52.8		42.0	45.1		27.0	39.4	
309.6		228.4			132.6	212.2	
44.23		32.63			18.94	30.32	
24.20		24.20			20.60	23.28	
8.43		8.43	7 33m 58.34			39 7.04	

7 h 28m 8s.43 | .15 | .06

.04

7. 28 8.47 | 7 33 58.49 | 39 7. 10

n used as .15

α 7 28 18.82	7 34 8.94	39 17.48
10.39	10.60	10.44
04	.15	06
10.43	10.75	10.50

10.43
75
.50
168
10.56
.87 = 6 sec
9.70
.10 = assumed correction MtM. to JAD
9.60

Frod 1327 is slow

Ō 9.~~7~~6 0 at 7h 35 Sid T

April 19 – 1901 –

Mer Circle

JAD Asr

ν Urs maj +33°38 first in clds T²
β Leonis +15 8 bright in clds
γ Urs. Maj. +54°15 T² Cart 6w.
Rattle after 11h 51

	ν Urs. maj	β Leonis		γ Urs. maj.	
	+33°38	+15°8		+54°15	
11h 13m	12.5	11h 43m 20.1	49 6 3.2	48m 52.4	
	15.0	22.2	5.2	56.9	
	18.3	26.5	8.0	1.6	
	21.5	29.2	10.9	4.9	
	23.9	31.1	12.8	12.1	
	28.6	33.0	17.0	15.5	
	31.3	35.9	19.0		
	151.1	198.0	76.1	383.4	1.3370
	21.59	28.29	10.87	63.90	0.2334
	24.62	21.23	21.23	~~35.09~~	1.5704
11h 12m	56.97	49.52	49.64	37.18	
		11h 43m 49.68		48m 26.72	
α 11 13	10.88	11 44 3.31		11h 48 40.66	
	13.91	13.63		13.94	
	.04	.10		.07	
	13.95	13.73		13.87	

95 } 84
73 }
87 87 } .86

73 } .77
87 }

13.80
.87
12.93

Frod 1327 is ~~fast~~ slow
0m 12s.93
at 11h 40m Sid Time

April 26-1901

ψ Urs maj. +45°2
δ Leonis +21°4 } → Mr [illegible]
J.A.D. [illegible]

ν Urs. maj. +33°38 Miss M. F. M. star
Gr 1771 +64°52 1st T only part
γ Crateris −17°8 prec star T² part; last 2 w. as last 2 w.
→ T² part, last 2 are last 2 w.

[58] Urs maj. +43°43 T¹ part; T² J.A.D. star

Rain after 11h 45m

ψ Urs maj	δ Leonis	Gr 1771	γ Crateris
+45°2'	+21°4	+64°52	−17°8'
		T¹ part last 6	last 2 wires; others on sheet
11h 3m 11.5 51.8 10.4	11h 8m 5.9 36.2 50.3	15m 42.2	20m 9.2
14.4 13.1	7.9 52.4	51.9 9.7	11.5
20.0 16.8	12.2 55.2	58.5 6.6	
23.9 20.6	15.1 58.1	2.7 4.2	
26.5 23.2	17.2 0.1	7.0 4.3	
29.2 29.0	19.1 4.5	13.0 6.0	
33.1 32.0	22.1 6.7		10.35
158.6 145.1	99.5 407.3	355.3	
22.66 20.73	14.22 58.19	59.22	
28.99 28.99	21.97 21.97	1.2833	1.4378
51.65 51.74	36.19 36.22	0.3719	0.0197
		1.6552	1.4575
11h 3m 51.69	11h 8m 36.20	45.21	28.67
		16 44.43	19 41.68
11 4 8.75	11 8 53.25	16 61.50	m = .0
17.06	17.05	17.07	

17.06
.87 = [illegible]
16.20

Frod 1327 is slow
16.20s
at 11h 5m Sid T.
April 26-1901

April 27-1901

Mer Circle JAD obs

11:41 χ = ψ Urs Maj +48°20 T¹ & T² Cont 4

11:45 β Leonis +15°8 all

Cont wire through 11h47

χ ~~ψ~~ Urs Maj.

+48°20

T¹

11h39 52.2 35.1

55.5

1.4

5.4

8.2

11.1

15.3

44.91

64.16

30.84

11h ~~40~~ ~~35.00~~

α = 11 40 52.35

~~49.03~~

17.35

~~03~~

β Leonis

+15°8'

T²

43 59.4

1.3

4.0

6.8

8.8

13.1

×

33.4

5.57

19.87

43 45.70

α = 44 3.26

17.56

09

1.2829

0.0154

1.2983

		wt		
χ	.21	3 × 35	105	
β	.60	1 × 56	56	
		4	161	
		$\bar{o}$	17.40	
			.87	= bar 4
		o	16.53	

Frod 1327 is slow

$\bar{o}$ 16.53^{s}

at 11h40 Sid T.

April 29-1901

Mer. Circle:- A. S. obs.

from
~~1.) r Hyd α 10h 44 −15° 40~~
~~2.) β Crater 11h 7 −22° 17~~
~~1.) Cmat trap. Pl~~
2. from β Crateris −22°17
app
49.90 − 47.23 =

7142	R 154
h^2 Hydrae −19°36′	α Urs. maj +62°17′
10h 48 35.911 (1900.0)	
+ 2.927 (Precn	
10h 48 38.838	
+ 2 67	
10 48 41.51 app'l	α = 10h 57 40.42

58.6 2.9		33.9 5.4	
1.5 2.0		39.3 4.2	
3.5 2.1		43.5 4.0	
5.6 2.8		47.5 6.0	
8.4		53.4	
3176	1.2494	2176	1.2494
3.52	0.0259	43.52	0.3324
	1.2753		1.5878
1885	1883	3847	3847
22.37		21.69	
10 48 41.51		10h 57 40.42	
19.14		18.73	

19.14
18.73 18.93
.87 = 6 m 4
18.06

Fred 1327 is slow

$\bar{o}$ 18.06s

at 10h 50 Sid T
April 29. 1901

May 1, 1901

Meridian Circle
μ Urs Maj +42° 0
31 Leon min +37°13

J.A.D. obs

Rattlefly 10°23

Pen defective!-

μ Urs maj
+42°0′

31 Leon min
+37°13

10ʰ 15 33.0 8.1	28.6	10ʰ 21ᵐ 16.3	22ᵐ 8.5
38.4 5.4 3.6	x		10.9 by 4
42.0 2.4	38.2	27.3	14.0
44.4 2.5	43.8	29.7 by	17.7
46.9 3.6	46.6 Ww 15	32.0 4	
50.5		35.5 by	
255.2	128.6	124.5	51.1
42.53	42.87	31.13	12.78
22.22	1.4100	1.2203	~~1.2204~~ 1.2201
44.44			
1.2494			
0.1289	0.1289	0.0989	0.0989
1.3783	1.5389	1.3192	1.3190
23.90	34.58	20.85	20.84
8.34	8.29	51.98	51.94

10ʰ 16ᵐ 8.31
RA. 10 16 28.47
20.16

10ʰ 21ᵐ 51.96
10 22 12.07
20.11

20.13
-87 = bank
19.26

Frod 1327 is slow

σ 19ˢ.26
at 10ʰ 20ᵐ
Sid Time

May 1, 1901

May 3-1901

Recorded in zone book "Mic 16"

Meridian Circle:- A. S. obsr.

~~48~~

R448

8 Drac. +66° 0'

12h ~~48m~~ 50	19.8	46.8	4.5
	26.4	51.3	6.7
	31.0	58.0	6.9
	35.3	4.9	
	42.2		
	154.7	221.0	
	30.94	55.25	

1.2494 1.2201
0.3907 0.3907
1.6401 1.6108
50.40 4081
4366 ~~2134~~ 14.44
14.60

T 12 ~~49~~ -51 14.52

12 51 35.65
21.13

7168

θ Virginis
-5° 1'

13h 4m	8.7	44.5
	11.5	46.3
	13.4	48.9
	15.2	51.8
	18.0	53.6
	66.8	245.1
	13.36	49.02

1.2494 1.2490
0.0017 0.0017
1.2511 1.2507
17.82 17.81
31.18 31.21
13 4 31.20
13 4 52.36
21.16

21.14
.87 -brace
20.27

Frod. 1327 is slow

ō 20s.27
at 13h 0m Sid Time
May 3, 1901

~~May 5th 1901~~

May 6 - 1901

Rattle before 8h 38m

ι Ursae Maj +48° 26' missed first wire of T'

κ Ursae Maj +47° 33'

Miss M. F. M. obs.

σ² Ursae Maj +67° 32'

~~[36 Lyncis] +43° 38~~

~~+37° 13'~~

α Hydrae − 8° 14'

Rattle after 9h 26m

ι Urs. maj
+48° 26

8h 51m 25.3 50 24.8
31.4 27.7
35.8 31.7
38.2 35.8
41.0 38.6
45.2 44.8
48.0

1.2833
0.1781
1.4614

2166 2514
36.10 35.92
28.94 30.90
5.04 5.82

8h 52m 5.03
~~8 52 28.02~~
22.99

κ Urs. maj.
+47° 33'

8h 53m 49.1 31.2 50.7
52.2 53.5
58.1 57.5
2.2 1.6
5.0 4.1
7.8 10.4
11.7 13.3

4261 4311
61.02 61.59
30.38 30.38
31.40 31.21
8h 56m 31.30
8 56 54.26
22.96

22.97
b sec φ. .87
22.10
pers. eq. .10
22.00

Frod 1327 is slow 22s.00
at 8h 53m Sid T.
May 6

May 8 - 1901

J.A.D. obs
Mer Circle

38 Lyncis +37°14 (double star: comp. preceding & about 3 mag fainter)
40 Lyncis +36°49

both in daylight
Last min 9 16

38 Lyncis +37°14			
$9^h\,11^m$	43.3	19.1	35.5
	45.8		38.0
	51.0		41.3
	54.3		44.7
	56.7		47.0
	59.1		52.1
	2.5		54.6
	3727		3132
	53.24		44.74
	25.75		25.75
	18.99		18.99

$9^h\,12^m\,18^s.99$
9 12 43.16 approx.
24.17

9 12 41.16   15 1.51
+ 2.00   15 35.1
9 12 43.16   2.00

40 Lyncis +34°49′			
$9^h\,14^m$	4.9	39.5	53.4
	7.2		57.7
	12.3		1.0
	15.5		4.4
	17.8		6.6
	20.0		11.6
	23.4		14.0
	1011		4507
	14.44		64.39
	24.98		24.98
	39.42		39.41

$9^h\,14^m\,39^s.42$
9 15 3.51
24.09

9 × 2 18
17 × 1 17
3) 35
.12

24.12
.40 = 6 mag
23.72

Frod 1327 is slow $0^m\,23^s.72$

at $9^h\,15^m$ Sid Time

May 9-1901
Thursday -

0h 55
E.S.M.T.

Meridian Circle:- Level:- J.A.D. for

mark
118.0

		E	W
Tel. S:- Screw E			
	"	− 57.0	− 26.2
	"	− 53.7	− 23.0
	"	− 58.0	− 27.4
	"	− 59.0	− 28.0
Screw W		+ 50.0	+ 81.3
	"	+ 54.5	+ 85.7
	"	+ 52.4	+ 83.7
	"	+ 52.7	+ 84.0
Tel. N- Screw W		+ 49.4	+ 80.5
	"	+ 52.0	+ 83.0
	"	+ 52.8	+ 84.0
	"	+ 52.1	+ 83.8
Screw E		− 87.2	− 55.2
	"	− 91.0	− 59.6
	"	− 91.7	− 60.0
	"	− 87.0	− 55.0
		+ 415.9	+ 666.0
		− 584.6	− 334.4
		− 168.7	+ 331.6
			− 168.7

1h 20 End.

32) + 162.9 [5.1
160
29

.06
.306
1.35
.41 = b sec φ

Call b sec φ = .40
West end high

May 13-1901

Mer Circle J.A.D. Jr

α Leonis +12°27
λ Hydrae −11°52 T² last 6 w.
λ Urs maj +43°24 T¹ last 5, w8 : T²
μ Urs maj +42°0 Last min 10ʰ 19ᵐ

α Leonis		λ Hydrae	λ Urs maj		μ Urs maj	
+12°27		−11°52	+43°24		+42°0	
		T²				
10ʰ 2ᵐ 11.7 40.8	54.2	×	T¹ 42.7	T² 0.8	10ʰ 15ᵐ 22.8 1.0	18.7
13.8	56.3	10ʰ 5ᵐ 35.8	×	3.5	25.5	21.3
17.9	59.0	38.5	×	7.1	31.0	24.9
20.7	1.7	41.2	×	11.0	34.6	28.6
22.6	3.5	43.0	10ʰ 10ᵐ 15.8	13.5	37.1	31.0
24.5	7.8	47.2	18.3	19.0	39.5	36.6
27.2	10.0	49.4	20.8	21.9	43.2	39.3
			24.6			
138.4	432.5	255.1	79.5	76.8	233.7	200.4
19.77	61.79	42.52	19.88	10.97	33.39	28.63
21.00	21.00	1.3370		28.21	27.58	27.58
40.77	40.79	0.0094		42.76	0.97	1.05
		1.3464				
		22.20				
10ʰ 2ᵐ 40.78ˢ		5ᵐ 20.32	10ʰ 10ᵐ 42.76ˢ		10ʰ 16ᵐ 1.01	
10 3 8.05		10 5 47.73	10 11 9.91		10 16 28.23	
27.27		+27.41	+27.15		27.22	
.14		.23	.00		.00	
27.13		27.18	27.15		27.22	

+ .946
− .212
1.158) − .26 (.22
.23
3

n = .2

18
13
22
15 } 18
68
.17

27.17
.40
26.77

Frod 1327 is slow
0ᵐ 26.77ˢ
at 10ʰ 5ᵐ
Sid Time

May 16 - 1901

Mer. Circle

Miss M. F. Michaelis obs

Rattle before $10^h\,23^m$

[ρ Leonis] +9°49'   Last 4 T^1 and T^2 (middle wire bad / Middle wire rejected)
~~+64°36'~~
~~+23°42'~~
(ν Hydrae) −15°04'
[46 Leo Min] +34°45' T^1 wire 8 Wire 8 and T^2
β Ursae Maj +56°55'

rattle ~~through~~ $10^h\,59^m$

Rattle before & after $10^h\,59^m$

	ρ Leonis +9°49	46 Leon. Min +34°45'	β Urs. Maj. +56°55'	
	$10^h\,27$ 22.9	$10^h\,47$ 20.5 36.5	$10^h\,54$ 34.3 26.3	50.4
	24.8	38.8	37.9	54.0
	27.5	41.9	45.4	58.8
	30.5	45.4	50.4	3.9
	32.2	47.6	54.0	7.1
	36.3	52.5	57.2	14.5
	38.5	55.0	2.3	18.6
	21 27	31 77	34 15	44 73
	30.39	45.39	48.79	63.90
	20 81	24.95	37.56	37.56
T =	$10^h\,27$ 9.58	$10^h\,47$ 20.44	26 35	26.34
			$10^h\,55$ 26.34	
α =	10 27 38.10 (Amer. Ephem	10 47 48.88 Amer. Ephem	10 55 54.65 α Jahrbuch	
α − T	+28.52	+28.44	+28.31	
n(tan δ − tan φ)	−.15	−.04	+.13	
	28.37	28.40	28.44	

Used n = .2

40
.44 } 28.42
40 : 6 and 4
28 02

.10 = assumed personal equation to J.R.E's obs

27.92

Ford 1327 is slow

$0^m\,27^s.92$

at $10^h\,50^m$

Sid Time

May 16-1901

May 21 1901

M. F. Michaels

Mer Cir

4 H Draco +78° 10' T

~~+73 39~~ 34

δ Corvi − 15° 58'

~~+58 57~~ '

8 Can Ven +41° 54'

~~+78 55~~ '

ε Ursae Maj +56° 30'

12 Can Ven (fol) +38° 51' T

rattle after 12h 1m

rattle after 12h 56

4 H Draco +78°10'
8m 13.0s
22.2
35.1
48.8
57.8
9m 17.0
27.8
341.7
48.81
99.97
8.84
T 12h 7m 8.84
α 12h 7m 37.13
+28s.29
+.57
+28.86

+4.773
−0.286
+5.059
+28.29
+29.12
− .83 t.164

n −.15

δ Corvi −15°58'
23m 57.8 | 24m 18.2 | 32.0
59.8 | 34.8 36.6
24 1.8 | 39.4
4.5 | 41.4
3.9 | 45.6
0.97 | 48.0
17.28 | 277.0
18.25 | 39.57
21.32
18.25
T 12h 24m 18.25
α 12h 24m 47.37
+29s.12
−.18
+28.94

8 Can Ven +41°54'
28m 6.3 | 36.2 | 53.7
9.9 | 56.4
12.6 | 29m 0.0
15.0 | 3.7
18.5 | 6.0
62.3 | 11.7
12.46 | 14.5
23.85 | 26.0
36.31 | 3.91
27.54
36.37
12h 28m 36.34
12h 29m 5.06
+28.72
−0.01
28.71

ε Ursae Maj +56° 30'
48m 22.9s | 49m 14.5 | 38.1
26.7 | 41.5
34.0 | 46.5
38.9 | 51.6
42.0 | 54.9
45.5 | 50m 2.2
50.7 | 5.8
260.7 | 360.6
37.24 | 51.51
37.16 | 37.15
14.40 | 14.36
12h 49m 14.38
12h 49m 43.15
+28.77
+.09
28.86

12 Can Ven +38°51'
51m 14.3
16.9
20.3
24.0
26.1
31.4
34.3
167.3
23.90
26.32
57.58
50m 57.58
~~51m 35.13~~
~~7.55~~
57h 26.46
+28.88
−.02
28.86

−15 .94
+38 .86
+41 .71
+56 .86
+78 .86
.846

} 78 × 4 wt.
— 86 × 1

312
86
5) 398
28.80
40 [illegible]
28.40
10 = assumed personal equat'n Jhs
28.30

Frod 1327 is slow 0m 28.30s @ 12h 40m Sid time.

May 23-1901

Mer Cir.

M.F.M. obs
rattle after $12^h\ 14^m$

[6 Can Ven] + 39°34'
20 Comae + 21°27' last $\overset{5}{4}$ T^1 T^2
~~8 Can Ven + 41°54'~~
~~β Comae −22°51'~~
st[illegible]
+63°15'
76 Ursae Maj +63°15 T^1
ε " " +56°30'
12 Can Ven seq + 38°51' T^2

rattle after $12^h\ 54^m$

[6 Can Ven] − +39°34'		20 Comae +21°27		76 Ursae Maj +63°15'	12 Can Ven +38°51'
19^m 54.0	31.0 47.9	23^m 53.4	17.2 31.3	37^m 17.0	
56.7	50.4	56.3	33.5	21.0	51^m 13.3
20^m 1.9	54.0	58.3	36.2	27.0	15.7
5.5	57.3	24 0.3	39.2	33.0	19.2
7.9	59.8	3.0	41.3	37.3	22.5
10.3	21^m 5.2		45.6	46.2	24.9
13.7	7.8		47.9	50.8	30.4
					33.0
30.0	402.4	291.3	275.0	232.3	159.0
4.29	57.49	58.26	39.29	33.19	22.71
1.3120	1.3118	1.2494	1.3118	1.3118	1.3118
0.1130	0.1130	0.0312	0.0312	0.3466	0.1086
1.4250	1.4248	1.2806	1.3430	1.6584	1.4204
26.61	26.60	19.08	22.03	45.54	26.32
30.90	30.89	17.34	17.26	47.65	56.39
$12^h\ 20^m\ 30^s.90$		$12^m\ 24^m\ 17^s.30$		$12^h\ 36^m\ 47^s.65 = T^1$	$12^h\ 50^m$ 56.39
12^h 21 1.02		12^2 24 47.53		$12^h\ 37^m$ 17.17 = α	$12^h\ 51^m$ 26.44
30.12		+ 30.23		+ 29.52	+ 30.05
− 0.01		−.08		+.16	−.01
+ 30.11		+ 30.15		+ 29.68	+ 30.04

n −.15

+21 30.15
+38. 30.04 }
+39. 30.12 }
+63 29.68

.15 × 1 .15
.08 × 4 .40
5) .55
30.11
.40 b sec φ
29.71
.10 assumed personal equation
29.61

Frod 1327
is slow
$0^m\ 29^s.61$
at $12^h\ 37^m$
Sid. Time.

May 25-1901

E W

0 17
ESMT

Tel. S. Screw E - 57.2 - 21.0
E - 57.5 - 20.0
E - 59.5 - 22.0
E - 59.0 - 21.5
W + 47.5 + 86.0
W + 49.0 + 87.5
W + 53.0 + 92.0
W + 51.0 + 90.0

Ind. lev. mark 118.0

Telescope N. Screw W + 50.0 + 90.0
W + 49.7 + 90.0
W + 47.5 + 88.0
W + 49.3 + 89.7
E - 91.0 - 50.4
E - 91.5 - 51.0
E - 92.0 - 52.0
E - 91.7 - 51.3

+ 200.5 + 355.5
+ 196.5 + 357.7
- 233.2 - 84.5
- 366.2 - 204.7

+ 397.0 + 713.2
- 599.4 - 289.2

- 202.4 + 424.0
- 202.4

32) + 221.6 (6.9^d
192
296

6.9^d Westend high
.06
.414 = b
1.35
.56 = b sec φ

2070
1242
14
55890

Use b sec φ = .56
Westend high
apply while clock is slow, to (α-T) as a minus correction

May 25-1901

Collimation:-

J.A.D. obs

Remark; Usually determinations of collimation are recorded in books of zone -9°50' & -14°10' of A Searles.

S. coll. on N coll.

ESMT
$0^{h}55$

91.0
88.0
90.5 (448.5 89.70
89.5 ~~[illegible]~~ at 89.7
89.5

S. coll. on N. coll

Miss M.F.M. obs 94.5
89.0
91.0
89.5 453.5 90.7
89.5

Set 90.0

Tel. on S. coll.

R.A. Mic found at 32.155

J.A.D., obs

31.885
.890
.884 427
.883
.885 | 31.8854

Miss M.F.M. obs

31.875
.880
870
.884 392
883
31.8784

1.239
.01

Collimation continued

May 25 - 1901
~~1101 1111 11~~

Tel. on N. Collimator

	JAD rdr	Miss M.F.M. rdr
	32.435	32.440
	.427	440
	.434	.460
	.428	.449
	.441	434
	165	223
Tel. on N. coll	32.4330	32.4446
Tel on S.	31.8854	31.8784
	4.3184	4.3230
	32.159	32.162
	.012 =	.012 =
	32.171	32.174

Set at 32.172

May 31 1901

Mer Cir.

~~Rattle before 2h 12m~~
M.F. Michaelis Obs

~~+72°23'~~ too faint
~~−0°6'~~. clouds

+ ~~48°49'~~
~~+55°~~ 29'

[20 Can Ven} + 41°6'
~~5 Ursa Maj + 55°27'~~
Gr 2001? + 72°54 T2
17 H Can Ven + 37°41'
η Ursae Maj +49°48'

no stars in morning

3 Rattles before 13h 3m

rattle through 13h 47m

	[20 Can Ven} +41°6'	star pre Gr 2001 by 27 sec. 7' south. ~~Gr 2001~~ + ~~72°54'~~	17 H Can Ven. +37°41'	η Ursae Maj. +49°48'
	13h 11m 59.0 36.5 54.0	23h 25.0	29m 17.2 53.0 30m 4.4	42m 25.0 43m 9.0 29.2
	12m 1.7 56.5	31.8	19.8 12.0	28.0 32.3
	6.9 13m 0.1 (3.7	41.2	24.9 15.4	34.3 36.2
	10.4 6.0	50.6	28.3 18.4	38.6 40.5
	13.0 11.6	56.7	30.6 21.1	41.5 43.2
	15.6 14.6	24 10.7	33.1 26.4	44.3 49.6
	19.0	17.2	36.4 28.9	48.4 53.0
	65.6 26.5	353.2	190.3 132.6	260.1 284.2
	9.37 3.79	50.46	27.19 18.94	37.16 40.60
	1.3120 1.3118	1.3118	1.3120 1.3118	1.3120 1.3118
	0.1229 0.1229	0.5316	0.1016 0.1016	0.1901 0.1901
n assumed -15?	1.4349 1.4347	1.8434	1.4136 1.4134	1.5021 1.5019
	27.22 27.20	69.72	25.92 25.90	31.78 31.77
	36.59 36.59	40.74	53.11 53.04	8.94 8.83
	13h 12m 36.59	13h 22m 40.74	T 13h 29m 53.08	13h 43m 8.88
	13h 13m 8.79	13h 23m 39.15	13h 30m 25.16	13h 43m 41.11
	+32.20	+58.41?	+32.08	+32.23
	n tan φ tan φ −.006	27.5	−.02	~~+.04~~
	32.19	31.41?	32.06	32.27
		n tan φ +.35		
		31.76		

32.17

14 × 3 = 42
23 × 2 = 46
5 | 88
32.18
4 .56
31.62

31.62
~~.10~~ assumed personal equation
~~31.52~~

Frod 1327
is slow
0 minutes 31.62 seconds
at 13 hours 30 min
Sid Time

June 3 – 1901

Mer. Cir.

M. F. Michaelis obs.

Rattle before 12h 47m

12 Can Ven seq 38°51' last 2 – repeat 1st

~~ε Virgin + 11° 29'~~

δ Virgin − 5° 1' last 16 wire

+ ~~39°~~ 1'

[20 Can Ven] + 41° 6'

ξ Urs Maj pr + 55° 27'

Gr 2001 + 72° 54'

rattle after 13h 26'

12 Can Ven
+38°51'

51m 27.0	
29.6	
56.6	
28.30	
1.4378	
0.1086	
1.5464	
35.19	
53.11	
12h 50m 53.11	
12h 51 26.31	
33.20	
.02	
33.18	

+3.251
−.0878
+3.3388

32.88
33.53
−.6544

h = −.20

δ Virgin,
−5°1'

3m 50.2	18.8 31.9
52.2	33.7
56.3	36.4
59.0	39.2
4 0.8	41.1
2.6	45.2
5.5	47.3 ?
.40 6.6	274.8
58.09	39.26
1.3120	1.3118
0.0017	0.0017
1.3137	1.3135
20.59	20.58
18.68	18.68

13h 4m 18.68
13h 4m 52.21
33.53
.20
33.33

[20 Can Ven],
+41°6'

11m 57.7 35.4	53.0
12m 0.4	55.5
5.6	58.8
9.4	13m 2.5
11.8	5.0
14.2	10.4
17.9	13.0
57.0	18.2
8.14	2.60
1.3120	1.3118
0.1229	0.1229
1.4349	1.4347
27.22	27.20
35.36	35.40

13h 12m 35.38
13 13 8.75
33.37
+.01
33.36

ξ Urs Maj
+55°27'

18m 35.5 25.8	48.8
39.0	51.9
46.2	56.9
51.0	20m 1.7
54.3	5.0
57.5	12.2
19 2.3	15.8
345.8	12.3
49.40	1.76
1.3120	1.3118
0.2464	0.2464
1.5584	1.5582
36.17	36.16
25.57	25.60

13h 19m 25.58
13 19m 58.89
33.31
+.10
33.41

Gr 2001,
+72°54'

22m 12.0 23.1	57.1
21.1 bad?	57.4
23	24 6.4
	15.6
33.1	21.8
16.55	35.9
1.1625	42.8
0.5316	111.0
1.6941	15.86
49.44	1.3118
5.99	0.5316
	1.8434
	69.72
	6.14

13h 23m 6.11
13h 23m 38.89
32.88
+.47
33.35

−5°	.33	
+34°	.18×1	18
+41°	.36 ×1	4504
+55°	.41×7	287
+72°	.35	

21) 809
33.38
f and −.56 level
32.82

Frod 1327 is slow
0 minutes ~~33.38~~ 32.82 seconds
at
13 hours 0 minutes
Sid Time

June 5 - 1901

Mer. Cir.

M. F. Michaelis obs
rather after
13h 18m

17 H Can Ven + 37° 41'
τ Bootis + 17° 57'
η Ursae Maj + 49° 48' Cast Eddy

rather after 13h 47m

17 H Can Ven.
+37°41'

29m 15.8	30m 8.2
	10.9
18.3	14.0
23.4	17.5
27.0	19.9
29.2	25.0
31.8	27.7
35.0	
180.5	123.2
25.79	17.60
1.3120	1.3118
0.1016	0.1016
1.4136	1.4134
25.92	25.90
51.71	51.70

T 13h 29m 51.70s
α 13 30 25.11
+ 33.41
-.03
+ 33.38

τ Bootis
+17°57'

41m 32.7	42m 2.5 16.3
34.8	18.3
37.0	21.1
41.8	23.9
45.8	25.9
	30.3
48.6	32.4
286.5	168.2
40.93	24.03
1.3120	1.3118
0.0216	0.0216
1.3336	1.3334
21.56	21.55
2.49	2.48

T 13h 42m 2.48s
α 13 42m 36.23
+33.75
- .25
+ 33. 50

η Ursae Maj
+49°48'
43m 28.0
30.9
35.0
39.3
42.2
48.5
51.4
275.3
39.33
1.3118
1.1901
1.5019
31.77
7.56
13h 43m 7.56s
13 43m 41.02s
33.46
+ .03
33s.49

+17° 33.50
+37° .38
+49° .49
.46

.38
.49
.44 × 3 132
.50 × 1 50
4)182
.455
-.56
32.90

Frod 1327 is slow
0 minutes 32.90 seconds
at 13h 30m
sid. time.

June 8th, 1901

rattle before $3^h\ 39^m$

η Ursa Maj * 49° 48'
[ι Draca) +65° 13' T!
η Bootis +18° 54' T — Chronograph irregular during obs.
11 Bootis + 27° 52' T' 5 of T²
+64° 51'

~~J. A. D.~~,

rattle after $4^m\ 5^s$

η Ursae Maj
+49° 48'
42^m 23.1 $\overset{m}{45}$ 27.5
26.4 30.6
32.6 34.7
37.0 39.1
39.8 41.7
42.4 48.1
46.9 51.1
248.2 272.8
35.46 38.97
1.3120 1.3118
0.1901 0.1901
1.5021 1.5019
31.78 31.77
7.24 7.20
$13^h\ 43^m\ 7^s.22$
13 43^m 40.97
+33.75
+.05
+33.80

[ι Draconis)
+65° 13'
46^m 53.8
58.5
47^m 8.5
14.8
19.3
23.6
30.1

η Bootis)
+18° 54'
49^m 41.1
42.8
45.8
48.7
50.5
54.8
57.0
340.7
48.67
1.3118
0.0241
1.3359
21.67
27.00
$13^h\ 49^m\ 27^s.00$
$13^h\ 50^m$ 1.03
34.03
−.10
33.93

11 Bootis
+27° 52'
55^m 38.0 56^m 10.0 24.8
40.2 27.0
44.6 29.9
47.8 33.2
49.8 35.4
52.3
55.0
327.7 150.3
46.81 30.06
1.3120 1.2490 ~~1.3118~~
0.0536 0.0536
1.3656 1.3026
23.20 20.07
10.01 9.99
$13^h\ 56^m$ 10.00
13 56^m 43.88
+33.88
−.07
+33.81

+33.80
+ secy .56
33.24

Frodsham 1327 is slow
0 minutes 33.24 seconds
at $13^h\ 45^m$
Sid Time

June 10-1901

Meridian Circle — M. F. Michaelis obs

rattle before 11h 31m

daylight observations

~~+67°~~ 18' Too faint

x Ursae Maj + 48° 20' missed wire I

β Leonis + 15° 8' last 4 of T 2

γ Ursa Maj + 54° 15'

rattle after 11h 53m

x Ursae Maj
+48° 20
39m 38.2 40m 17.18 37.6
44.3 40.5
48.4 44.5
51.2 48.7
54.0 51.4
58.0 57.6
41 0.6
~~340.9~~
294.1 ~~246.9~~
~~42.01~~ 49.02 ~~42.34~~ 48.30
1.2833 1.3118
0.1773 0.1773
1.4606 1.4891
28.88 30.84
17.90 ~~11.50~~ 17.86
11h 40m 17.88s
11h 40m 51.46
+ ~~33.58~~
+ 33.58
+ .04
+ 33.62

β Leonis
+15° 8'
43m 50.2
52.1
56.2
58.2
216.7
54.18
1.3874
~~1.3118~~
0.0154
~~1.3272~~
1.4028
~~21.24~~
25.26
~~32.94~~
~~28.90~~
11h 43m ~~32.94~~ 28.90
11 44m 2.79
~~29.85~~
+ 33.89
− .24
+ 33.65

γ Ursae Maj
+54° 15'
47m 17.3 48m 5.9 28.4
20.8 31.8
27.8 36.3
32.5 41.0
35.7 44.0
38.8 51.2
43.4 54.6
216.3 287.3
30.90 41.04
1.3120 1.3118
0.2334 0.2334
1.5454 1.5452
35.11 35.10
6.01 5.94
11h 48m 5.98s
11h 48m 39.48
+ 33.50
+ .10
+ 33.60

+ 15° 33.65
+ 48° 33.62
+ 54 33.60

33.62
avg − .56
33.06

Frodsham 1327 is slow
0 minutes 33.06 seconds
at 11h 30m
Sid Time

June 12, 1901

Level:- Meridian Circle.

Telescope S:- Screw East:- W E JAD obsr

bubble

0ʰ 20ᵐ
ES177.

Mark 1180

2 -14.7 -56.0 41.3
E -16.5 -58.4 41.9
E. -18.0 -60.0 42.0 41.80
E -16.5 -58.5 42.0
~~W +99.0 +57.0~~ rej. as below 41.99
W +105.0 +63.0 42.0
W +105.0 +63.0 42.0
W +109.0 +66.5 42.5 42.18

I will reject the 1st of these last 4 readings with the fair proposition of accepting the next reading whatever it may be as perhaps I put pressure on plate carrying level at time of 1st levelling of last 4. W +103.2 +61.0 42.2

Telescope N:- — — — — —

W E

Screw W +94.0 +52.0 42.0
W +91.0 +49.0 42.0
W +92.7 +50.3 42.4 42.13
W +93.1 +51.0 42.1 42.31
E -55.0 -97.7 42.7
E -57.0 -99.5 42.5 42.50
E -52.2 -95.0 42.8
E -55.0 -97.0 42.0

- 65.7 - 232.9
- 219.2 - 389.2
+ 422.2 + 253.5
+ 370.8 + 202.3

-284.9 -622.1
+793.0 +455.8
W +508.1 -166.3
E -166.3
W +341.8

32) 341.8 West
320
21.8

d. 10.7
.06
.642 = b
1.35
3210
1926
642
.86670 = b sec φ

West end high

Use b sec φ for the present with same sign as last obs. and with working value

☞ b sec φ = .80 (West end high

June 12, 1901

Collimation –
Meridian Circle J.A.D. obsr

$0^h\,51$
E.S.M.T.

S. collimator on N. collimator

86.0
83.5
84.0 232 Set at 84.6
85.2 8464
84.5

Telescope on S. collimator
R.A. Micrometer found at 32.164

31.874
885
888 414 31.8828
884
883

Tel. on N. collimator

32.505
Illumination too bright 523
519 95 32.5190
524 4.402
524 32.201
.012 dial
32.213

Wire 8 well adjusted to motion of telescope

Set at 32.213

June 12 - 1901

Mer. Cir.
M. F. Michaelis obr.

rattle before
10ʰ 44ᵐ

~~+56° 55'~~
~~+62° 17'~~
ψ Urs. Maj +45°2'
δ Leonis +21°4'
+69° 53' last 2 of T' and T²
− ~~31°~~ 19' bar in the way

rattle after
11ʰ 33ᵐ.

ψ Urs Maj +45°02'		δ Leonis +21°4'		ι Draconis +69°53'	
2ᵐ 53.8 33.9	52.5	7ᵐ 48.0	32.7	24ᵐ 11.8 25ˢ0.0	38.2
56.6	55.1	50.2	34.7	21.6	43.7
3 2.3	58.9	54.6	~~35.4~~ 37.4		57.6
6.0	4 ~~4.3~~ 3.0	56.5	40.5		54.6
~~8.8~~ 9.9	5.4	59.5	42.3		26 5.0
11.4	11.3	8 1.5	46.8		16.7
15.2	14.0	4.3	49.0		22.7
454.1	~~441.5~~ 440.2	394.6	283.4	33.4	407.5
64.87	~~63.07~~ 62.89	56.37	~~40.20~~ 40.49	16.70	58.21
1.3120	1.3118	1.3120	1.3118	1.1625	1.3118
0.1508	0.1508	0.0300	0.0300	0.4636	0.4636
1.4628	1.4626	1.3420	1.3418	1.6261	1.7754
29.02	29.01	21.48	21.47	42.28	59.62
33.89	~~34.06~~ 33.88	18.35	~~18.23~~ 18.52	58.98	58.59

T 11ʰ 3ᵐ 33ˢ.88
α 11ʰ 4ᵐ 7.82
+ 33.94
.02
+ 33.96

11ʰ 8 18.43
11 8 52.67
34.24
.13
34.11

11ʰ 24 58ˢ.68
11 24 33.42
34.74
.42
35.16
Not used

ˢ
2.73
.39
2.34

34.74
34.24
).54 [.23
.47
70

n = .23±

+45° −ˢ.04 × 5 = −.20
+21 +.11 × 1 = +.11
6) −.09
−.02
33.98
−.80 = bar φ
33.18

Frod 1327 is slow

0ᵐ 33ˢ.18

at 11ʰ 5ᵐ Sid Time

June 14, 1901

Mer Cir
M. F. Michalis obs.

rattle before
11h 47m

o ~~Virginis +9°17'~~
~~ε Corvi −22°5'~~ hazy
~~+17°~~
~~−17°0'~~ last wire
+ ~~41~~ 73'
[6 Can Ven] +39°34' wires 7 to 5 and T^2
δ Corvi −15°58' last 4 of T^2
8 Can Ven +41°54'
~~+18°~~ 55'

rattle after 12h 34m

[6 Can Ven]
+39°34'

20m 9.1 26.3 43.2
45.6
49.2
52.8
55.0
21 0.4
3.0
9.1 369.2
52.74
1.1197 1.3118
0.1130 0.1130
1.2327 1.4248
17.07 26.60
26.19 26.14
12h 20m 26.16
12h 21m 0.64
+34.48
~~.02~~ .03
+34.~~46~~
.45

δ Corvi
−15°58'

24m 33.7
35.5
39.7
42.0
150.9
37.72
1.3874
0.0171
1.4045
25.44
12.28
12h 24m 12.28
12h 24m 47.14
+34.86
− ~~.28~~ .46
+34.~~4~~8
5
34.40

8 Can Ven
+41°54'

27m 52.1 30.4 48.1
54.8 50.6
28 0.4 54.2
4.0 57.8
6.6 29 0.3
9.0 5.8
12.7 8.7
19.6 405.5
2.80 57.93
1.3120 1.3118
0.1282 0.1282
1.4402 1.4400
27.55 27.54
30.35 30.39
12h 28m 30.37
a 12h 29m 4.66
+34.29
−.01
+34.~~29~~
.28

n wsd ~~.23~~
−.38

.45 × 5 = 225
40 × 1 = 40
28 × 5 = 140
11) 405
37

34.37
sec φ −.80
33.57

Frod 1327 is slow
0 minutes 33.57 seconds
at 12h 30m
Sid time.

June 16 1901

Mer. Cir.

M. F. Michaelis
obs.

rattle after
$13^{h}\ 18^{m}$

ξ Virginis $-0°5'$ wind and T² } Gr 2001 $+72°54'$

17 H Can Ven $+37°41'$ last 2 of T²

η Urs. Maj. $+49°48'$

(+2) last tally

(+64° 51')

+25° 34'

Gr 2001
$+72°54'$

22^{m} 4.2   23 45. 44.2
10.0   55.3
19.2   24 4.6
14.1
20.3
34.2
41.0

33.4   98.7
11.13   14.10
1.1933   1.3118
0.5316   0.5316
1.7249   1.8434
53.08   69.72
4.21   4.38

T 13^{h} 23^{m} 4.33
α 13 23 38.25

+ 33.92
n(tan δ − tan φ) + .66
+ 34.58

ξ Virginis
$-0°5'$

29^{m} wind 6.9
20.0
21.9
24.6
27.3
29.2
33.1
35.2

191.3
27.33
1.3118
0.0000
1.3118
20.50
6.83

T 13^{h} 29^{m} 6.83
α 13^{h} 29^{m} 41.66

+ 34.83
− .25
+ 34.58

17 H Can Ven
$+37°41'$

30^{m} 23.6
26.2

49.8
24.90
1.4378
0.1016
1.5394
34.62
50.28

T 13^{h} 29^{m} 50.28
α 13^{h} 30^{m} 24.96

+ 34.68
− .04
+ 34.64

η Ursae Maj.
$+49°48'$

42^{m} 22.0 43^{m} 5.9   26.4
25.2   29.6
31.6   33.6
35.8   38.0
38.8   40.9
41.5   47.0
45.7   50.2

240.6   265.7
34.37   37.96
1.3120   1.3118
0.1901   0.1901
1.5021   1.5019
31.78   31.77
6.15   6.19

13^{h} 43^{m} 6.17
13^{h} 43^{m} 40.82

+ 34.65
+ .08
+ 34.73

33.92
34.83 = .91

+ 3.251
− .0017
+ 3.2527) .91 (−.279
6505
2595
22769
31810

n = −.28

$-0°5'$ 34.58
$+37°41'$ .64 × 1 = 64
$+49°48'$ .73 × 5 = 365
$+72°54$ .58   6) 427
+ 34.70
for sec φ − .80
33.90

Frod. chron. 1327 is slow
0^{m} $33.^{s}90$
at 13^{h} 45^{m}
Sid. time.

June 18 - 1901

Mer Cir
Mr F. M. obs.

rattle before
11h 33m

χ Urs. Maj +48° 20'
β Leonis +15° 8' first of 2 first taps to be rejected
γ Urs. Maj +54° 15'
~~+77~~ 28' two point
ε Corvi −22° 4'
4 H Draco +78° 10' T²

rattle after
12h 15m

χ Urs. Maj
+48°20'

39m 34.2 40m 16.8	36.6
37.0	39.6
43.2	43.3
47.1	47.5
50.3	50.4
53.0	56.5
57.1	59.6
321.9	333.5
45.99	47.64
1.3120	1.3118
0.1773	0.1773
1.4893	1.4891
3085	3084
−16.84	16.80

11h 40m 16.82
11h 40m 51.29
+34.47
r + .04
+34.51

+4773
− 0.4054
+5.178

+33.55
+34.46
− .91 t .197

r used = −.20

β Leonis
+15°8'

42 58.6	28.0	41.7
43 0.8		43.6
4.8		46.4
7.6		49.2
9.6		51.0
11.6		55.2
14.4		57.5
47.4		344.6
6.77		49.23
1.3120		1.3118
0.0154		0.0154
1.3274		1.3272
21.25		21.24
28.02		27.99

11h 43m 28.00
11 44 2.70
+34.70
r −.13
+34.57

γ Urs. Maj
+54°15'

47m 16.2	48m 5.0	27.4
19.6		30.5
26.6		35.2
31.2		39.9
34.4		43.0
37.7		50.0
42.2		53.4
207.9		279.4
29.70		39.91
1.3120		1.3118
0.2334		0.2334
1.5454		1.5452
35.11		35.10
4.81		4.81

11h 48m 4.81
11h 48m 39.27
+34.46
+.10
+34.56

ε Corvi
−22°4'

12h 3m 58.7	29.3	43.6
4m 0.8		45.7
5.4		48.7
8.3		51.7
10.3		53.6
12.3		58.0
15.2		5m 0.1
51.0		361.4
7.29		51.63
1.3120		1.3118
0.0330		0.0330
1.3450		1.3448
22.13		22.12
29.42		29.51

12h 4m 29.46
12h 5m 4.42
+34.96
−.26
+34.70

4 H Draco
+78°10'

8m 5.0
~~10.2~~
14.4
27.4
40.3
49.8
9m 10.2
19.8
286.9
40.99
1.3118
0.6881
1.9999
49.97
1.02
12h 7m 1.02
12 7 34.57
+33.55
+.76
34.31

−22 .70
+15 .57 × 2 = .14
+48 .51 × 5 = 5 34.54
+54 .56 × 4 = 24 b-self −.80
+78 .31 11)43 33.74
4
34.54
−.80

Frodsham 1327 is slow
0m 33.74s
at 12h 0m
Sid Time

June 21 1901

Mer. Cir.

~~M. J. Michaelis~~

rattle ~~before~~
12h 56m

ζ Urs Maj + 55° 27′. too cloudy

rattle before
14h 41m

Gr 2164 + 59° 42′
~~star prec.~~? P XIV ~~221~~ + 14° 51′ 1.T2
β Bootis + 40° 47′

rattle ~~Amount~~ before
15h 1m.

Gr 2164 +59°42		~~star~~ prec? XIV 221 +14°51′	β Bootis +40°47′	
47m 27.6 48m 23.8	49.9	51m 14.8	57m 3.8 41.3	58.7
31.6	53.6	17.0	6.6	58m 1.2
39.5	58.9	19.5	11.7	4.7
44.9	49m 4.4	22.6	15.3	8.3
48.7	7.8	24.4	17.8	10.9
52.4	16.2	28.7	20.3	16.1
57.7	20.1	31.0	23.9	18.9
302.4	30.9	158.0	99.4	58.8
43.20	4.41	22.57	14.20	8.40
1.3120	1.3118	1.3118	1.3120	1.3118
0.2971	0.2971	0.0148	0.1208	0.1208
1.6091	1.6089	~~1.3266~~	1.4328	1.4326
40.65	40.63	~~21.21~~	27.09	27.08
23.85	23.78	1.36	41.29	41.32
14h 48m 23.82		14h 51 1.36	14h 57m 41.30	
14h 48m 57.97		~~14 51 35.83~~	14h 58m 15.67	
+34.15		~~+38.89~~	+34.37	
+.16		+34.47	−.01	
+34.31		−.23	+34.36	
		+34.24		

n used = −.2

~~34.31 × 2 = 62~~
~~34.36 × 3 108~~

δ
14° 34.24 × 1 = 24
40° .36 × 2 = 72
59° .31 × 1 .31
4)1.27
34.32
.80
34.52
3

5)120
~~34.34~~
b ~~.80~~
~~33.54~~

Frodsham 1327 is slow
0m ~~33.54~~ 33.52
at
15h 0m
Sid Time

June 24 1901

~~12h 38m~~
8 S.M.T
0h 45m

Collimation
meridian Circle M. F. M. obs.

S Collimator on N Collimator
84.0
84.3
85.3
84.3
84.7
85.9
86.4
87.5
85.5
88.5
856.4 = 85.6

Telescope on S Collimator
31.835
.841
.825
.830
.830
.819
.825
.841
.843
.828
8.317

31.8317
32.5856
4.4173
32.2086
.012 di ab.
32.221

Telescope on N collimator
32.579
.561
.590
.600
.540
.588
.606
.581
.585 5856

R.H. Micr set at 32.221

June 25 - 1901

Mer. Cir.
M. F. Michaelis obs.

rattle before
12h 33m

ε Ursae Majoris +56° 30'

12 Can Ven seq +38° 51' T²

ε Virginis +11° 29'

rattle after
13h 0m

ε Ursae Maj. +56° 30'

48 17.7 49 50 32.9
21.3 36.3
28.6 41.0
33.5 46.2
36.8 49.6
40.3
45.1

223.3 206.0
31.90 41.20
37.16 1.2490
.3120 0.2581
0.2581 8.90 1.5071
1.5701 9.06 32.15
9.05

12h 49m 9.06s
n(tan δ - cot φ) -.12
12h 49m 8.94
12h 49m 42.23
+33.29

n used = -.2

12 Can Ven seq +38° 51'

50 52.5 51.9.4
11.6
15.0
18.8
21.0
26.3
29.0

131.1
18.73
26.32
52.41

12h 50m 52s.41
+.02
12h 50m 52s.43
12h 51m 25.93
+33.50

ε Virginis +11° 29'

56m 14.8 57.1
16.8 59.0
21.0 57 1.7
23.6 4.5
25.5 6.4
27.4 10.6
30.1 12.7

159.2 32.0
22.74 4.57
20.92 20.92
43.66 43.65

12h 56m 43.66
+.14
12h 56m 43.80
12 57m 17.36
+33.56

+11 +33.56 × 1 = 56
+38 .50 × 2 = 100
+56 .29 × 1 = 29
4) 185
+33.46
+ aux .80
+32.66

Frodsham 1324 slow
0m 32s.66
at 12h 50m

June 27 1901

Mer. C ½

M. F. Michalis Obs
rattle before
$15^h 25^m$

γ Librae −14°28' T²

[φ Bootis] +40 41'
[φ Coron bor] +26° 37'
β Serpentis +15° 44' T²

[12 H Dracon] +62° 54'
ξ Urs. Min. +78° 6' T²
−22° 20'

rattle after
$15^h 57^m$

γ Librae
−14°28'
29^m 28.6 42.2
44.2
47.0
49.8
51.8
56.0
58.0
349.0
49.86
21.18
$15^h 29^m 28^s.68$
α 15 30 2.88
+ 34.20
− .53
+ 33.67

[φ Bootis]
+40°41'
33^m 8.0 34^m 2.8
10.5 5.4
19.4 8.9
22.2 12.5
24.4 14.7
28.2 20.2
22.8
128.7 87.3
18.39 12.47
27.04 27.04
45.43 45.43
$15^h 33^m 45.43$
15 34 19.06
+ 33.63
− .02
+ 33.61

~~I~~ β Serpentis
+15°44'
41^m 64 19.8
~~19.8~~ 21.9
24.5
27.5
29.4
33.8
35.7
192.6
27.51
21.29
$15^h 41^m 6^s.22$
15 41 40.15
+ 33.93
− .16
~~+ 33.77~~
− .24
+ 33.64

[12 H Dracon]
+62° 54
43^m 41.0 45^m 7.5
49.8 11.9
55.9 17.6
59.6 23.7
44 3.6 27.8
9.9 36.6
41.0
339.8 166.2
− 56.63 1.31.18 23.73
1.2833
0.3415 0.3415
1.6248 1.6533
42.15 45.01
38.78 38.72
15^h 44 38.75
15 45 11.99
+ 33.24
+ .48
+ 33.72

ξ Urs. Min.
+78° 6'
47^m 7.4 48^m 9.1
18.2
30.9
44.8
53.8
49 13.4
23.4 <318.6
333.6
~~16.23~~
H 4.80
1.3118
0.6857
1.9975
99.42
15^h 47 5.38
15 47 37.31
+ 31.93
+ 1.74
+ 33.67

−22°20'
53^m 27.6 58.3 12.6
29.8 14.8
34.2 17.5
37.2 20.4
39.0 22.4
41.0 26.7
44.2 29.0
253.0 143.4
36.14 20.49
22.17 22.17
58.31 58.32
$15^h 53^m$ 58.32
15 54 32.63
+ 34.31
− .61
+ 33.70

+4.745
−.4108
5.1558
+ 31.93
+ 34.31
−2.38 (.46
2.0624
3.1760
3.0936

?

n used −.46

−22 33.70
−14 33.67
+15 33.64 x 3 192
+40 33.61 x 2 122
+62 33.72 5) 314
+78 33.67 33.62
b au φ .80
32.82

Frodsham 1327 is slow
0^m 32.82
at $15^h 30^m$

June 30 – 1901

Mer Cir
M. F. Michaelis

Rattle before
15h 46m

~~β Cor Bor~~ +29° 27′ last 5 of T′ and T″
ν′ Bootis +41° 10′
α Cor. Bor. +27° 31

Rattle after
15h 34m

β Coron. Bor
+29°27′
22m 47.9 13.4 28.5
50.7 30.7
53.0 33.7
55.2 37.0
58.2 39.0
265.0 43.7
53.00 46.0
258.6
36.94
12494 1.3118
0.0601 0.0601
1.3095 1.3719
20.39 23.55
13.39 13.39
15h 23m 13.39
15h 23m 47.68
+34.29
−.16
+34.13

ν′ Boots
+41°10′
26m 13.3 50.8 8.5 < 11.0
15.8 14.3
21.2 18.2
24.9 20.7
27.3 25.9
29.7 28.9
33.4 127.5
165.6 18.21
23.66 27.23
27.23
50.89 50.98
15h 26m 50.94
15h 27m 25.08
+34.14
−.02
+34.12

α Coron. Bor
+27°3′
29m 26.5 29 58.4 13.0
28.9 15.2
33.3 18.4
36.3 21.2
38.4 23.3
40.6 28.0
43.6 30.4
247.6 149.5
35.37 21.36
23.02 23.02
58.39 58.34
15h 29m 58.36
15 30 32.66
+34.30
−.18
34.12

n −.46

+34.12
bissel −80
+33.32

Frodsham 1327 is slow
0m 33.32s
at 15h 30m
Sid. Time.

July 1st - 1901

Level - Meridian Circle

M. F. Michaelis

0h 0m
E.S.M.T.

	W	E	bubble	
Telescope S- Screw W	~~+86.1~~	~~+54.0~~	32.1	
	~~+89.0~~	~~+56.1~~	32.9	
	~~+89.0~~	~~+56.1~~	32.9	32.55
	~~+91.3~~	~~+59.0~~	32.3	
				32.78
Screw E	~~-19.1~~	~~-52.9~~	33.8	
	~~-22.2~~	~~-55.1~~	32.9	
	~~-21.1~~	~~-54.0~~	32.9	33.10
	~~-21.5~~	~~-54.7~~	33.2	
			Tel. Reversed	
Telescope N. Screw W	~~+87.3~~	~~+55.8~~	31.5	
	~~+84.7~~	~~+52.5~~	32.2	
	~~+84.2~~	~~+52.6~~	31.6	32.00
	~~+80.8~~	~~+48.1~~	32.7	
				32.06
E	~~-70.1~~	~~-102.0~~	31.9	
	~~-68.9~~	~~-101.1~~	32.2	
	~~-71.1~~	~~-103.3~~	32.2	32.13
	~~-64.2~~	~~-96.4~~	32.2	-
	~~+87.3~~	~~+55.8~~		
	~~+84.7~~	~~+52.5~~		
	+692.4	+434.2		
	-358.2	-619.5		
	+334.2	-185.3		
		+334.2		

32) 148.9 (4.65
128
20.9
14.2

1h 0m

4.7
.06
.282 = b
1.35
1410
846
282
.38070 b. sec δ

Value Superseded by observation on next page

July 1, 1901

Level — Meridian Circle

J.A.D. obsr

4:25 SSMT.

Mark 118.0

W E

Telescope on South collimator:-

Screw W

W

W

W

~~E~~	~~-25.2 - 64.0~~	my. tube at fault		
E	~~-19.0 - 62.7~~	wrongly read		
			bubble	
E	-23.0 -61.8		38.8	
E	-23.5 - 62.1		38.6	
E	-21.5 - 60.2		38.7	38.73
E	-21.5 -60.3		38.8	
W	+84.0 + 45.2		38.8	38.84
W	+85.5 + 46.5		39.0	
W	+90.5 + 51.5		39.0	38.95
W	+89.0 + 50.0		39.0	

Telescope on North collimator Lel. Reversed

W	+ 85.4 + 46.8	38.6	
W	+ 84.6 + 46.0	38.6	38.75
W	+ 85.3 + 46.5	38.8	
W	+ 85.0 + 46.0	39.0	
E	-52.0 - 91.0	39.0	38.91
E	-50.0 - 89.0	39.0	
E	-48.5 - 87.9	39.4	39.10
E	-50.0 - 89.0	39.0	

West	East
+689.3	+378.5
-390.0	-601.3
+299.3	-222.8
-222.8	

32)+76.5 ⌊2.4

64 .06

125 .144

1.35

.19 = b sec φ

For the present use b sec φ = .20
West end high:- level
to be taken once a week:-

July 1 1901

$5^h 30^m$
E.S. M.J.

Collimation - M.J. Michalec
S Collimator on N. Collimator
N

90.0	88.9
89.0	87.4
90.8	91.6
89.9	89.1
89.5	90.0
	89.62

Set at 89.6

R.A Micrometer
found at 32.220

Telescope on S Collimator

32.655	64.2
658	65.4
64.7	66.0
65.3	66.6
66.8	65.0
31,655.3	

Reject!-
entirely.

Telescope on N Collimator

32,892	894
889	870
900	850
885	869
871	881
	~~8364~~
	32.8807

31.655
32.880
41,535

32,~~76~~2
32,268 = ~~result~~
.012
32,280

July 1, 1901

Meridian Circle -
Collimation

23h 10 ESMT South Collimator on N. Coll. J.A.D. obsr

95.8
94.0
95.6 262
95.8 95.24 Set at 95.2
95.0

Telescope on South collimator

R.A. Micrometer found at 32.761
R.A. Mic. had previously been 32.220

31.618
625
622 111 31.6222
622
624

Telescope on North collimator

32.895
887
884 450 32.8900
894
890

4.512
32.256
.012 di. aberration
32.268

R.A. Micrometer
set at 32.268

Wire 8 well
adjusted to
motion of telescope

July 3 - 1901

Mer. Cir.

M. T. Michaelis obs.
rattle before
13h 24m

η Urs. Maj + 49° 48′ last 5 of I′ wires and first wire of T′
η Bootis + 18° 54′ wires ~~3-4-5-~~ 10 to 15
4-5-6?

Rattle after
13h 53m

η Urs. Maj + 49° 48′

42m 31.2   26.3
35.3
38.6
41.2
45.3
191.6
38.32
1.2494   1.1192
0.1901   0.1901
1.4395   1.3093
27.51   20.38
5.83   5.92
13h 43m   5.88
α 13 43   40.44
+34.56
+12
n = .46   +34.68

η Bootis + 18° 54′

49m 5.0   41.8
6.9   44.7
9.0   47.4
49.5
20.9   53.8
6.97   55.7
1.2492   292.9
0.0241   48.82
1.2733   1.3370
18.76   0.0241
25.73   1.3611
22.97
25.85
13h 49   25.79
α 13 50   0.78
+34.99
-.26
+34.73

+34.70
b sec φ -.20
34.50s

Frodsham 1327 is slow
0m 34s.50
at 13h 45m
Sid Time

July 5, 1901

Meridian Circle

M. F. Michael's obs.

rattle before
13h 48m

+ ~~Virgin +~~ 2° 1' clouds
*~~α Draconis +64° 51'~~ clouds
α Boötis +19° 42'
~~λ " +46° 33'~~ clouds
δ Boötis +52° 18' (Wire 12 obs too soon)

rattle after
14h 25m

α Boötis
+19° 42'

10m 5.8 36.1 49.9
8.1 51.8
12.4 54.9
15.3 57.8
17.3 59.6
19.2 4.0
22.0 6.3
100.1 404.3
14.30 57.76
21.78 21.78
36.08 35.98
T 14h 10m 36.03
α 14h 11m 11s.24
+35.21
−.26
+34.95

δ Boötis
+52° 18'

20m 55.2 16.8 38.4
41.5
45.8
49.7
53.3
0.4
3.2 352.3
70.33
0.2136 0.2136
1.1197 1.3118
1.3333 1.5254
21.54 33.53
16.74 16.80
T 14h 21m 16.79
α 14h 21m 51s.61
+34.82
+.18
+35.00

h = −.46

+34.98
b. sec φ −.20
+34.78

Frodsham 1327 is slow
0 minutes 34.78 seconds
@ 14h 15m
Sid. Time

July 8th - 1901

Meridian Circle — M. F. Michaelis obs.

rattle before 13h 54m

~~α Draconis +64° 51'~~ clouds
~~δ Bootis +32° 18'~~
~~γ Bootis +38° 44'~~ clouds

July 10, 1901

Collimation

M. F. Michaelis obs.

4.30
8. S. M. T.

South Collimator on North Collimator

84.8	85.5
85.0	86.3
85.4	89.2
87.5	84.1
87.0	87.1

86.19

R. A. microm. found at 32.257

Wire 8 well adapted to motion of telescope

Telescope on South Collimator	Telescope on North Collimator
31.850	32.619
.859	.609
.856	.650
.862	.621
.868	.638
.861	.624
.862	.632
.871	.612
.865	.644
~~77~~ 54	5649
31.8515	32.6277

31.8615

R. A. micrometer set at 32.257

64.4892

32.2446

.0120 di aberration

~~R. A. microm. set at~~ → 32.257

July 10, 1901

– M. F. Michaels
obs
rattle before
14h 7m

α Bootis +19° 42'

δ Bootis +52° 18'

ρ Bootis +30° 48' T1 wire & first 4 of T2

γ Bootis +38° 44 T2

rattle through
14h 31m

α Bootis
+19°42'

δ Bootis
+52°18'

14h 10m 5.7 35.5 49.8
7.8 51.7
12.0 54.5
15.0 57.4
m 59.5
18.8 3.8
21.9 6.2

81.2 402.9
13.53 57.56
1.64 647
1.3216 1.3118
0.0262 0.0262

1.3478 1.3380
22.27 21.78
35.80 35.78

T 14h 10m 35.s79
α 14h 11m 11.18

n = –.467

+35.39
–.26 +30 35.26 × 2 = 52
+35.13 +19 35.13 × 1 13
~~b sec δ~~ ~~–.20~~ 3) 65
~~34.93~~ 35.22
b sec δ .20
35.62

ρ Bootis
+30°48'

26m 28.7
35.8
38.0
40.0
42.4
45.6

228.5
38.08 1.3567
~~1.2833~~ 1.2907
~~0.0660~~ 0.0660

~~1.3493~~ 1.3567
~~22.35~~ 22.74
~~0.43~~ 0.82

14h 27m 0.~~43~~ 82
14 27m 36.23

~~+35.80~~
~~–.15~~
~~+35.65~~
+35.41
–.15
35.26

Frodsham 1327 is slow
0m 35.02
at 14h 15m

July 12 – 1901

Meridian Circle

M. F. Michaelis obs.

~~rattle after~~ 13h 11m

rattle after 13h 24m

~~Urs Maj pr. +55° 27~~
ζ Virginis −0°5' (last 6 wires)
τ Bootis +17° 57'
η Ursae Maj +49° 48' T2
η Bootis +18° 54'
α Draconis +64° 51

rattle after 14h 7m

+2.13 +34.91
0.00 +35.60
+2.13 − .69(.327)
639
510
426
840

h = −.33

ζ Virginis −0°5'	τ Bootis +17°57		η Ursae Maj +49°48'	η Bootis +18°54'		α Draconis +64°51'	
29m 21.0	41m 30.4	42m 0.3 14.2	43m 25.3	48m 55.2	25.0 39.0	0m 1.8?	39.8
23.5	32.6	16.1	28.2	57.2	40.9	6.8	44.2
26.4	36.9	18.9	32.3	1.5	43.9	16.3	50.5
28.2	39.7	21.8	36.5	4.4	46.7	22.8	57.0
32.1	41.6	23.7	39.6	6.4	48.6	27.0	1.3
34.0	43.6	28.0	46.0	8.4	53.0	31.4	11.0
	46.6	30.2	49.0	11.2	55.2	37.7	15.4
165.2	271.4	152.9	256.9	24.3	327.3	143.8	399.2
27.53	38.77	21.84	36.70	3.47	46.76	20.54	57.03
1.3370	21.55	21.55	31.77	21.67	21.67	48.24	48.24
~~1.2833~~	0.32	0.29	4.93	25.14	25.09	8.78	8.79
0.0006	13h 42m 0.30		13h 43m 4.93	13h 49m 25.12		14h 1m 8.78	
~~19.20~~	13 42 35.84		13 43 40.22	13 50m 0.66		14 1 43.69	
21.33	+35.54		+35.29	+35.54		+34.91	
~~8.33~~	−.20		+.09	−.19		+.41	
~~5.80~~	+35.34		+35.38	+35.35		+35.32	
13h 29m 5.80							
13 29 41.40							
~~+33.07~~							
+35.60							
−.31							
+35.29							

−0°5' +35.29
+17°57 .34
+18°54 .35 3)17
.36
+49.48 .38
+64°51' .32

35.36
f secφ −.20
35.16

Frodsham 1327 is slow 0m 35.16s at 13h 43m Sid. Time.

July 16, 1901

Meridian Circle M. F. Michaelis obs

rattle after 14h 4m

α Bootis +19° 42'
[ι Bootis] +51° 49' T.
ϑ Bootis +52° 18'
γ Bootis +38° 44'

0.3309	8.8512n	8.9556
9.9158	0.8065	0.8699
0.2567	9.6577n	9.8255n
+ 1.806	−.455	−.669
		8.7704n
		1.2744n
		0.0453
		+1.110

[ι Bootis]
+1.806
−.455
−.669
+1.110
+1.792

rattle after 14h 30m

α Bootis
+19° 42'
10m 5.0 35.4 49.2
7.3 51.3
11.6 54.1
14.5 57.0
16.5 59.0
18.5 3.3
21.2 5.5
94.6 399.4
13.51 57.06
21.78 21.78
35.29 35.28
14h 10m 35.28
14 11m 11.11
+35.83
−.19
+35.64

[ι Bootis]
+51° 49'
12m 27.2
30.4
34.5 (39.1
42.0?
48.7
52.0?
273.9
39.13
33.15
~~0.41~~
5.98
14h 12m ~~0.41~~ 5.98
14 13 41.42
+35.44

ϑ Bootis
+52° 18'
20m 29.6 16.0 37.5
32.7 40.7
34.4 45.0
44.0 49.6
47.0 52.5
50.0 59.1
54.5 2.5
297.2 346.9
42.46 49.56
33.53 33.53
15.99 ~~7.46~~
16.03
14h 21m 16.01
14 21 51.32
+35.31
+.13
+35.44

γ Bootis
+38° 44'
26 56.0? 32.1
58.4
3.4
7.0
9.3
11.6
15.2
40.9
5.84
26.24
32.08
14h 27m 32s.08
14 28 7.65
+35.57
−.04
35.53

h = −.33

+19 +35.64
+38° + .53
+52 + .44

35.54
−.20
+35.34

Frodsham 1327 is slow
0m 35.34s
at 14h 15m
Sid. Time.

July 18, 1901

$4^h\ 0^m$
E.S.M.T.

Level Meridian Circle M. F. Michaels Obs

Telescope South

Marks 118.0

	W	E.		
Screw East	~~−21.0~~	~~−54.1~~	33.1	
E	~~−18.5~~	~~−51.5~~	33.0	
E	~~−4.0~~	~~−36.9~~	32.9	33.05
E	~~−21.1~~	~~−54.3~~	33.2	
				33.08
W	~~+89.1~~	~~+56.1~~	33.1	
W	~~+86.2~~	~~+53.1~~	33.1	
W	~~+87.3~~	~~+54.1~~	33.2	33.12
W	~~+87.2~~	~~+54.1~~	33.1	

Telescope North

Screw West	+60.0	+26.1	33.9	
W	+63.1	+29.2	33.9	
W	+67.0	+33.4	33.6	33.75
W	+67.0	+33.4	33.6	
				33.65
E	−59.5	−93.2	33.7	
E	−66.1	−99.9	33.8	33.55
E	−66.8	−100.3	33.5	
E	−66.1	−99.3	33.2	
	+257.1	+122.1		
	−258.5	−392.7		

July 18, 1901

5h 15m
E.S.M.T.

Telescope South	W	E		
Screw East	−9.0	−42.8	33.8	
E	−8.5	−42.1	33.6	33.75
E	−10.1	−44.1	34.0	
E	−7.8	−41.4	33.6	
W	+92.0	+58.1	33.9	33.78
W	+91.0	+57.3	33.7	
W	+89.0	+55.1	33.9	33.82
W	+87.1	+53.3	33.8	
	−35.4	−170.4		
	+359.1	+223.8		
	+323.7	+53.4		
	−1.4	−270.6		
	+322.3	−217.2		

+322.3
−217.2
32) +105.1 (3.28
96
91
64
270

3.28
.06
.1968
.135
.126568

West end high
b sec φ = .26
use .20 from level curve.

July 18, 1901

$5^h 15^m$ E.S.M.T. Collimators M. F. Michaels

S Collimator on N. Collimator

94.5	93.4
94.0	94.7
92.3	94.7
93.2	93.2
95.6	96.1

set at 94.17

94.2

R. A. Micrometer
found at 3,2,255

Wire 8 well adapted to motion.

Telescope on South Col.	Telescope on North Col.
31.737	32.810
.745	.759
.740	.761
.741	.802
.741	.785
.746	.796
.739	.809
.747	.799
.741	.781
377	.802
31.742	32.789
	31.742
	64.531
	32.265
	.012 di. ab.

$5^h 50$ E.S.M.T.

R.A. Micron set at 32.277

July 20 - 1901

Meridian Circle - M. F. Michaels obs

Battle after 14h ~~3~~ 27m

~~π Bootis +16°57'~~ cloudy

[ζ Bootis m] +14°9' last 4 wires

~~α Libræ −15°38'~~

~~β Ursæ Min +74°34'~~

β Bootis +40°47'

ψ Bootis +27°20' T²

~~δ Bootis +33°41'~~ } Clouds

~~17 Ursæ Min +67°43'~~ }

Battle through 15h 16m

β Bootis
+40°47'
57m 2.0 34.6 57.1
5.0 59.6
10.2 3.0
13.7 6.8
16.3 9.1
18.8 14.6
22.3 17.2
88.3 47.4
12.61 6.77
27.08 27.08
39.69 39.69
T 14h 57m 39.69s
14 58 15.20
+35.51

ψ Bootis
+27°20
59m 53.9
55.8
59.0
2.0
4.2
8.8
11.0
14.7
2.10
23.09
39.01
T 14h 59m 39.01
15 0 14.67
+35.66
−13
+35.53

Frodsham 1327 is slow 0m 35.s26 at 15h 0m

n = −.33

35.52
b sec φ .26
35.26

July 22 1901

Mer. Cir. Rattle after 14h 21m

M. F. Michaels obs.

ρ ~~Bootis + 30° 48'~~ clouds
γ Bootis + 38° 44' missed wire 10
π Bootispre + 16° 51' wires 7 and 8 T 2
109 Virginis + 2° 19' last 5 of T 1 and T 2
α Librae − 15° 38'
~~Σ 2164 + 59° 43'~~
β. Ursae min + 74° 34'

rattle after 14h 6-4m

+3.626 33.95
− .2795 35.73 45
+3.9055 ~~45~~
+3.9) −1.78
15 ~~6~~
220
19 ~~5~~
250

b sec φ use −.20 from level curve.

n −.46

γ Bootis + 38° 44'

26m 55.7 55.0
58.5 58.5
3.5 0.8
7.2 6.2
9.8 8.8
12.0
15.5

42.2 9.3
6.03 1.86
26.28 1.3627
323.1 0.1078
1.4705
2954
32.32

14 27 32.32
14 28 7.54
+35.22
−.05
35.17

π Bootispre. + 16° 51'

35m 17s.7 ~~55~~ 45.2
47.2
50.0
52.9
54.7
58.9
1.0

Good.

17.70 369.9
1.1197 52.84
0.0190 21.42
1.1387 31.~~28~~
13.76 .42
~~553~~
3146 44

14h 35 31.~~30~~
14 36 6.89
~~+35.59~~
~~−.29~~
~~+35.30~~
+35.45
−29
+35.16

109 Virginis + 2° 19'

40m 19s.4 55.0
22.1 56.8
26.0 59.4
28.5 2.4
(24.2) 4.0
8.2
10.4

120.2 16.2
24.05 2.37
12494 20.52
0.0003 41.79
1.2497
17.77
41.82

14h 40 41.80
14 41 17.36
+35.56
−.44
+35.12

α Librae − 15° 38'

44m 21.8 5.1
23.9 7.0
28.2 9.8
31.0 12.6
33.0 14.8
35.0 18.8
37.8 20.9

210.7 89.0
30.10 12.71
21.28 21.28
51.38 51.43
14h ~~54~~ 44 51.40
14 45 27.17
+35.73
−.55
+35.18

β Ursae Min + 74° 34'

49m 35.9 51m 14.4
22.8
31.8
42.5
49.3
4.5
12.3

35.90 297.6
1.1197 42.51
0.5749 1.3118
1.6946 0.5749
.4950 1.8867
25.40 77.03
25.48
14 50 25.44
14 50 59.39
+33.95
+1.24
35.19

−15 35.18
+2 35.12
+38 35.17
+74 35.19

12
153
16.5

35.16
b sec φ −26
34.90

Frodsham 1327 is slow
0m 34s.90
at 14h 30m

July 24, 1901

Mer. Cir. - M. F. Michaelis obs

Rattle before 14h 14m

δ Bootis +52 18 T¹ last four of T²
ρ Bootis +30° 48'
γ Bootis +38 44 last two wires
~~π Bootis pr. +16 51~~ too faint.
rattle before 14h 40m

~~14 12 39.00~~
14h 21m 51.11
14 27 36.00
14h 28m 7.50
~~14h 36m 6.87~~

n = .46

δ Bootis
+52°18

20m 29.9 49.8
33.2 52.8
39.7 59.4
44.2 3.0
47.3 2250
50.4 56.25
54.9 13874
299.6 02136
42.80 16010
33.53 39.90
16.33 1636
14h 21m 16.34
14 21m 51.11
+34.77
+.17
+34.94

ρ Bootis
+30°48'

26m 27.9 16.2
30.2 18.4
34.9 21.5
38.2 24.9
40.2 31.9
42.4 34.1 ?
45.4
259.2 173.7
37.03 24.81
23.86 23.86
~~0.60~~ 0.95
0.89
14h 27 0.92
14 27 36.00
+35.08
-.15
+34.93

γ Bootis
+38°44'

28m 6.3
8.9
15.2
7.60
14378
01678
15456
35.13
32.47
14h 27m 32.47
14 28 7.50
+35.03
-.05
+34.98

+52 34.94 1 94
+38 +.98 1. 98
+.30 .93 7 651
843
34.94
b sec φ -.20
34.74

Frodsham 1327 is slow
0m 34.s74
at 14h 30m

July 25, 1901

5h 30
E.S.M.T.

Level M. F. Michaelis
obs.

Telescope on South Collimator

$	W	E		
Screw W	+ ~~77.0~~	+ ~~46.0~~	moved	
W	+ 85.3	+ 54.5	30.8	
W	+ 87.0	+ 56.4	30.6	30.52
W	+ 91.0	+ 60.6	30.4	
W	+ 82.9	π + 52.6	30.3	
E	− 29.0 ~~31.0~~	− 59.1 ~~60.9~~	30.1	
E	− 28.1 ~~29.0~~	− 57.2 ~~62.0~~	29.9	
E	− 25.0 ~~35.0~~ 32.0	− ~~63.5~~ 62.1	30.1	30.07
E	− 34.0	− 65.0	31.0	

May 1.18

Telescope on North Collimator

	W	E	
Screw E	− 71.8	− 101.1	29.3
E	−	−	
E	−	−	
E	−	−	
W	+	+	
W	+	+	
W	+	+	
W	+	+	

July 26, 1901

4^h 15^m
E.S.M.T.

Level M. F. Michalley

Telescope on South Collimator

Mark 118

	W	E	
Screw E	~~19.1~~	~~51.0~~	31.9
E	~~22.1~~	~~53.2~~	31.1
E	~~12.1~~	~~43.2~~	31.9
E	~~17.1~~	~~48.3~~	31.2
W	~~76.5~~	~~45.3~~	31.2
W	~~76.2~~	~~44.8~~	31.4
W	~~75.3~~	~~44.1~~	31.2
W	~~75.1~~	~~44.1~~	31.0

Telescope on North Collimator

W	+ 74.0	+ 43.4	30.6
W	+ 73.0	+ 42.5	30.5
W	+ 68.9	+ 38.1	30.8
W	+ 66.9	+ 36.1	30.8
E	− 62.1	− 92.2	30.1
E	− 64.9	− 95.0	30.1
E	− 67.1	− 97.3	30.2
E	− 66.1	− 96.2	30.1
	+ 282.8	+ 160.1	
	− 260.2	− 380.7	

July 26, 1901

Telescope on South Collimator

$5^h 15^m$
E.S.M.T.

		W	E	
Screw	E	− 23,1	− 52,9	29,8
	E	− 19,1	− 49,4	30,3
	E	− 28,1	− 58,2	30,1
	E	− 18,1	− 48,8	30,7
	W	+ 920	+ 62,1	
	W	+ 89,9	+ 59,8	
	W	+ 91,3	+ 61,2	
	W	+ 919	+ 620	
		+365,1	+ 245,1	
		− 88,4	−209.3	
		+282.8	+ 160.1	
		− 260.2	−380.7	
		+ 647,9	+ 405,2	
		−348,6	−590,0	

West	East
+647.9	+ 405.2
−348.6	− 590.0
+299,3	− 184,8

+299,3
− 184.8
32) +114,5 (3,54
96
185
160
250
224

3.6
.06
,216
1,35
~~0~~,29160

b sec φ = ,29

July 26, 1901

5h 15m
E.S.M.T

Collimation

S Collimator on N Colimator

91.6	92.4
88.3	90.8
91.3	92.1
91.2	90.0
92.1	91.3
	91.11

R.A micrometer banged at 32.277

Telescope on S. Collimator

Wire 8 well adapted to motion of telescope

31.893	89.0
881	89.3
886	89.6
890	90.4
90.0	90.8
	31.8941

Telescope on N. Collimator

32.540	54.3
.546	.559
.550	.533
.540	.554
.584	.548
	32.5497
	64.5

31.8941
32.5497
64.4438
32.2219
.012 div ab
32.234

R A microm set @ 32.234

July 26, 1901

Meridian Circle

M. F. Michaelis,

rattle before
14h 34m

~~109 Virgin, +2° 19'~~

β Bootis +40° 47' last 4 of T' and T²
~~γ Bootis +27° 20'~~
δ Bootis 33° 41'

rattle after
15° 41
15hrs 14m

β Bootis

+40°47

~~15 24~~ 14h 57 14.5 40.5 57.7
16.9 0.5
19.5 4.0
23.0 7.5
10.0
last 4 1st 15.2 6

73.9 394.9
18.48 65.82

1.2203 1.2829
0.1209 0.1209
1.3412 1.4038
21.94 25.34
40.42 40.48
~~15h 24~~ 14 57 40.46
14 58 15.08
34.62
.00
34.62

δ Bootis

+33°41

15h ~~37~~ 10 24.3 58.4 14.0
26.5 16.2
31.5 19.6
34.7 22.9
37.0 25.0
39.2 30.0
42.5 32.5

235.7 160.2
33.67 22.89

24.64 24.64
58.31 58.25
~~15h 37~~ 58.28
15 10 32.94
15 11 34.66
.12
34.54

.62×2 124
.54×1 54
3 178
34.59
brief. .20
34.39

Frod 1327 is slow ~~o~~ 34s.39 at 15h 00 Sid Time

July ~~31~~ 30th Tuesday 1901

Mer Circle - J. A. D. obsr

First min 16h 52

ε Herculis +31°4 last 3 wires 4 T2

[Gr 2415] 1st all, - 2nd T, first wires
+40 39

Clouds, -

Last min 17h 6

ε Herculis
+31°4
16h 56m 25.0
29.9
32.2
871
29.04

1.4100
0.0672
1.4772
3.000
16h 55 59.04
16 56 32.96
33.92
.14
33.78

Gr. 2415
+40°39
17h 3 24.5
27.0
32.4
36.0
38.5
41.0
44.4
2438
34.83

4m 19.1
21.6
25.2
28.9
948
23.70

1.2201
0.1200
1.3401

26.99 21.89
1.82 1.81

17h 4 1.82
17 4 35.60
33.78
.03
33.75

480
17h 4 32.835

0.2920
9.9355
0.2275 +1.689
8.1372
0.7971m
8.9343m -.086
8.3233
1.0489m
9.3722m -.236
8.9310m
1.2159m
0.1469 +1.403
35.927
.322
17h 4 35.605

33.75 × 5 25
33.78 × 1 8
6 133
33.76
6 sec .20
33.56

Frod 1327 is slow
0m 33s.56
at 17h 0 Sid Time
Tues. July 30, 1901

August 1, 1901

Meridian Circle

M. F. Michaelis obs.

rattle before $14^h 52^m$

β Boots +40° 47'
ψ Boots +27° 20' +2
δ ~~Boots~~ +33° 41

Chronograph irregular

β Boots
+40°47'

57^m 4.2 41.8 59.0
6.9 1.5
12.2 5.0
16.0 8.7
18.4 11.1
20.7 16.6
24.1? 19.2

102.5 61.1
14.64 8.73
27.08 27.08

~~40.29~~ 41.65
41.72

T $14^h 57^m$ 41.68
α 14 58^m 14.95
+33.27
−02
+33.25

ψ Boots
+27°20'

59^m 41.25 55.9
58.2
1.0
4.2
6.2
10.9
13.2

29.6
4.23
23.09

41.14

T $14^h 59^m$ 41.14
α $15^h 0^m$ 14.47
+33.33
$n(\tan\delta - \tan\varphi)$ −.18
+33.15

used
$n = -.46$

33.27 × 13 351
.33 × 1 33
14) 384
.27

~~33.27~~ × 4
~~33.33~~ × 1
33.25 × 2 50
33.15 × 3 45
5) 95
.19

+33.19
bsecφ .20
32.99

Frodsham 1327 is slow
0^m 32.99^s
at $15^h 0^m$
Sid Time

August 2, 1901

11 30
E.S.M.T.

Level

M. F. Michaelis
obs.

Telescope on North Collimator

	W	E		
	~~83.1~~	~~52.3~~		
Screw West +	~~74.4~~	+ ~~45.1~~	~~29.3~~	
+	~~72.1~~	+ ~~42.5~~	~~29.6~~	~~29.42~~
+	~~79.7~~	+ ~~50.1~~	~~29.6~~	
+	~~71.2~~	+ ~~42.0~~	~~29.2~~	
				~~29.40~~
Screw East −	~~64.0~~	− ~~93.8~~	~~29.8~~	
−	~~68.7~~	~~97.3~~	~~29.2~~	~~29.37~~
−	~~66.0~~	~~95.2~~	~~29.2~~	
−	~~65.0~~	~~94.3~~	~~29.3~~	

reject

+53 2.7 +29 8.9
−46 4.0 −65 7.4
+68.7 258.5
−2 58.5
−189.8

Mark 118

Telescope on South Collimator

12 30
E.S.M.T.

Screw East	− 27.2	− 56.1	28.9	
	− 43.0	− 72.1	29.1	28.95
	− 46.4	− 75.3	28.9	
	− 44.3	− 78.3	29.0	
				28.94
Screw West	+ 57.4	+ 28.2	29.2	
	+ 58.3	+ 29.9	28.4	28.92
	+ 60.1	+ 31.1	29.0	
	+ 59.1	+ 30.0	29.1	

Telescope on North Col.
East End high

W	+ 68.0	+ 38.8	29.2	
	+ 66.2	+ 37.1	29.1	29.15
	+ 68.5	+ 39.4	29.1	
E	+ 77.2	+ 48.0	29.2	28.96
	− 55.2	− 84.3	29.1	
	− 46.1	− 75.1	29.0	28.77
	− 57.0	− 85.4	28.4	

E
+ 282.5
−604.6
322.1

W
+574.8
−373.6
+141.2
−322.1
−180.9

August 3, 1901

$0^h\ 0^m$
E.S.M.T

Level.

M. F. Michaelis obs.

Telescope on South Collimator

	W	E		
Screw East	−49.1	−82.0	32.9	
E	−53.1	−85.3	32.2	
E	−47.6	−80.1	32.5	32.5
E	−44.1	−76.8	32.7	
				32.54
Screw W	+65.2	+32.6	32.6	
W	+68.9	+36.3	32.3	32.5
W	+61.3	+28.7	32.6	
W	+65.3	+32.8	32.5	

Marks 118

Level bedplate a trifle loose, ~~tightened~~

Telescope on North Collimator.

	W	E		
Screw W	+94.1	+61.3	32.8	
	+94.0	+61.0	33.0	33
	+101.4	+68.3	33.1	
	+91.2	+58.1	33.1	
				32.96
Screw E	−50.0	−82.9	32.9	
	−50.0	83.0	33.0	32.92
	−42.3	75.2	32.9	
	−39.0	71.9	32.9	
	+641.4	+379.1		
	−375.2	−637.2		
	+266.2	258.1		
	−258.1			
	8.1			

1.35
.015
−.02025

32) 8.1 (.25
64
17
160
1 0
1

.06
.0150

b sec φ = .02

West end high

August 5, 1901

5h 15m
E.S.M.T

Collimation

M. F. Michaelis
obs.

S. Collimator on N. Collimator

83.3	82.1
83.1	82.3
82.6	84.0
82.9	84.0
83.0	81.1
	828.4

R. A. Microm. found at
32.234

Telescope on South Col.	Telescope on north Col.
31.938	32.546
.944	.541
.950	.539
.952	.543
.934	.533
.942	.524
.947	.518
.938	.521
.943	50.2
.945	53.8
31.9433	32.5305

32.5305
31.9433
64.4738
32.2369
.012 diab

R. A. Microm set at 32.249

August 5, 1901

Meridian Circle

M. F. Michaelis
obs

rattle before
~~17h 9m~~
~~17h 15m~~

[x Herculis] +48°21'
β Draconis +52°22'
~~α Ophiuchi~~
ι Herculis +46°4
μ ~~ψ~~ Herculis +27°47'

rattlebefore
17h 33m

(x Herculis)
0.2010 8.0678n
9.9418 0.7856
0.1428 8.8534n
+1.380 −.071

8.1943n 8.9960n
1.1096 1.1884n

9.3039n 0.1684
−.208 ~~+1.500~~ 1.477

1.390 .071
1.506 .208
2.887 .264
−.369 .272
+2.618
2.598
17 24 6.673
2.595
17h 24m 9.291
9.268

(x Herculis)
+48°21'
22m 54.6 37.2 57.2
57.8 57.8
3.8 4.0
8.0 8.0
10.9 10.9
13.5 17.0
17.5 20.0
46.1 56.9
6.59 8.13
30.85 30.85
37.44 37.28
17h 23 37.36
α 17 24 9.297
31.91

β Draconis
+52°22'
26m 55.4 42.3 3.6
58.9 6.7
5.7 11.2
10.0 15.8
13.0 18.9
16.1 25.4
20.8 29.0
59.9 110.6
8.41 15.80
33.58 33.58
41.99 42.22
17h 27m 42s.10
α 17 28 14.28
32.18
+.

3 rattles after
ι Herculis 17h 44m
+46°4'
35m 29.8 11.1 29.7
32.7 32.6
38.7 36.4
42.6 40.4
45.3 43.1
48.2 48.9
51.9 50.8
289.2 281.9
41.31 40.27
29.55 29.55
10.86 10.72
17h 36m 10s.79
α 17 36 42.98
32.19
+.0

μ ~~ψ~~ Herculis
+27°47'
41m 33.9 20.7
36.0 23.0
40.6 26.0
43.8 29.2
45.8 31.2
48.0 35.6
51.0 38.0
299.1 203.7
42.73 29.10
23.18 23.18
5.91 5.92
17 42 5.92
α 17 42 38.13
32.21
−.

+3.
−.
3.

32.18 × 2 .36
32.19 × 3 .57
32.21 × 2 .42
7)1.35
32.19
b sec φ − 20
31.99

Frodsham 1327 is slow
0m 31s.99
at 17h 30m
sid time

August 7, 1901

Meridian Circle

M. F. Michaelis
obs
rattle after
17^h 29^m

ι Herculis +46° 4'
μ Herculis +27° 47 wires 1 — 9-10?, 13.14.15 clouds
ψ Drac. austr +72° 12' wire 8 T²
ξ Draconis +56° 53' T' first 5 of T²
ν Ophiu. − 9° 46 wire 8 - first five of T²
rattle after
17^h 57^m

+3.115
− .170
3.285
+31.06
+31.69
+3.285 −.63 (.19
.3285
3.0150
2.9565
585

n = −.19

used −.20

~~ι~~ Herculis +46° 4'
35^m 30.5 10.6 30.4
33.6 33.4
39.4 37.1
43.4 41.0
46.1 43.6
48.8 49.5
52.5 52.7
294.3 287.7
42.04 41.10
29.55 29.55
11.59 11.55
17 36 11.57
17 36 42.95
31.38
−.02
31.40

μ Herculis +27° 47'
41^m ~~33.3~~ 21.3
23.4
31.8
36.4
38.7
151.6
~~33.0~~ 30.32 ~~1.3627~~ ~~0.0533~~ 1.3235 ~~1.3760~~
14534 1.3235
0.0932 0.0532
1.5066 1.3767
32.10 23.81
5.40 6.51
17 42 6.51
17 42 38.11
31.60
−.08
31.52

ψ Drac. austr +72° 12'
43^m ~~30.9~~ 55.7
12.3 1.5
10.7
19.6
25.2
39.0
45.9
137.6
19.66
67.07
12.59
17 43 12.59
17 43 43.65
31.06
+.44
31.50

ξ Draconis +56° 53
50^m 28.3 44.3
32.0 47.7
39.4 52.7
44.4 57.8
47.6 1.0
51.2 263.5
56.1 52.70
299.0 1.2490
42.71 0.2626
37.52 1.5116
20.23 32.48
20.22
17^h 51 20.23
17 51 51.85
31.62
+.12
31.74

ν Ophiuchi − 9° 46.
53^m 6.8 20.0
21.9
24.8
27.5
94.2
23.55
1.2201
0.0062
1.2263
16.84
6.71
17 53 6.71
17 53 38.40
31.69
−.22
31.47

δ		wt.	
+27	31.52	#1	52
+46	.40	4	160
+56	.74	1	74
		6	286

31.48
used = −.20
31.28

Frodsham 1327 is slow
0^m 31.28^s
at 18^h 0^m
Sid Time

August 10, 1901,

Meridian Circle M. F. Michaelis obs

rattle through
15h 44m

ε Coron. Borealis. +27°10'

~~θ Draconis +58°50'~~ Clouds

~~[φ Herculis] +45°12'~~ "

τ ~~Herculis +46°33'~~ "

γ ~~Herculis +19°23'~~ ~~took~~ too late

ε Coron Bor.
α 15 ~~15~~ 53 31.72
~~θ Dracon~~
~~α 16 0 34.8~~

ε Coron bor.
+27°10'

29.0 0.6 15.6
52m 31.1 17.7
35.7 20.6
38.8 23.7
40.8 25.9
42.9 30.5
46.0 32.8

264.3 166.8
37.76 23.83
23.05 23.05
0.81 0.78

T 15h 53m 0.s80
α 15 53 31.72
30.92
−.08
30.84
b sec φ .20
30.64

n = −.20

Frodsham 1327 is slow
0m 30.s64 @ 16h 0m
Sid. Time

August 11, 1901

Mer. Cir.

M. F. Michaelis
rattle after
$17^h\ 55^m$

wire 6 of T'
γ Draco. + 51° 30' ^ T^2
− 30 26
+ 42° 8'

3 rattles before
$18^h\ 5^m$

γ Draco
+ 51° 30'
11.2
54 14.4
50.2 18.5
23.0
53 24.8 26.0
1.2014 32.4
0.2059 35.6
1.4073 161.1
25.55 23.01
32.94
50.35 50.07

T 17^h 53^m $50^s.10$
α 17 54 21.04
30.94
+ 07
31.01
b sec φ −.20
30.81

Frodsham 1327 is slow
$0^m\ 30^s.81$ at $18^h\ 0^m$
Sid Time

August 13, 1901

4h 0m
E.S.M.T.

Level M.F.M. obs.

Telescope on North Collimator,
Screw West

marks 118

Level bed plate a trifle loose

	W	E		
	W. +64.4	+97.3	32.9	
	W. +69.0	+102.3	33.3	33.175
	W +75.6	+109.0	33.4	
	W +74.0	+107.1	33.1	
				33.14
Screw	E −73.0	−40.0	33.0	
	E −67.4	−34.0	33.4	
	E −72.0	−39.0	33.0	33.10
	E −67.0	−34.0	33.0	
	+283.0	+415.7		
	−279.4	−147.0		

Telescope on South Collimator

Screw	E −~~35.0~~ ~~67.4~~		32.4	
	35.0	−67.4	~~33.4~~	
	E −40.0	−72.9	32.9	
	E −33.5	−67.2	33.7	33.20
	E −33.0	−66.8	33.8	
				−32.73
	E			
	W +50.0	+18.7	32.3	
	W +51.7	+19.0	32.7	32.25
	W +44.3	+12.0	32.3	
	W +45.9	+13.8	32.1	
	−141.5	−274.3		
	+191.9	+62.5		

+283.0
−279.4
−141.5
+191.9
+54.0 west
+56.9

1.09°

32) − 2.90
2.88
2

+415.7
−147.0
−274.3
+62.5
+56.9 East

−.09
.06
.0054
135
540
675
−.007290

East End high

5h 0m
E.S.M.T.

August 13, 1901

$5^h 30^m$
E.S.M.T

Collimation – – M.F.M.

~~Nor~~ South Col. on North Col.

83.7	87.2
84.0	86.0
85.2	88.4
85.1	84.6
85.5	84.3

85.40

R.A. microm. found at
32.248

Telescope on S Col.	Telescope on N. Col.
31.899	32.593
.890	.600
.88.6	586
.881	581
.881	55.4
.887	56.1
.900	57.9
.885	589
.899	580
.901	57.4

31.8909
32.5797

64.4706
32.2353
.012 diab

32.247

R.A microm.
set at 32.247

130

August 13, 1901

Mer. Cir.

M. F. M. obs.
Rattle before
$16^h\ 0^m$

[ψ Herculis] +45° 12'
δ Ophiuchi −3° 26' wire 8, T^2 Chronograph irregular
19 ~~Urs. Min~~ ~~+76° 8'~~ too faint
τ Herculis +46° 33'
[η Urs. Min.] +75 59 last 4 of T' and T_2 rattle after
$16^h\ 24^m$

[ψ Herculis]
+45° 12'
4 30.0 28.9
32.9 31.6
38.4 35.3
45.2 39.3
47.6 420
51.4 47.8
50.6
288.0 275.5
41.14 39.37
29.09 29.09
~~10.19~~ ~~10.32~~
10.23 10.28
16 5 10.26
16 5 40.64
30.38
+.04
30.42

+4.006
−.06
+4.066

+30.38
+32.43
−2.05 [.50
20330
1700

+4.006 30.38
+4.056 30.51
+2.950 −.13 [.440
11800/6
12000
11800
2000

n^{used} = −.45

δ Ophiuchi
−3° 26'
8m 41.7 54.7
56.7
59.3
20
3.7
7.9
4.3
0.61
20.54
40.07
16 8 40.07
16 9 12.50
+32.43
−.44
31.99

τ Herculis
+46° 33'
26 sec to 15m reversal both tallies
10.0 10.0
12.9 13.2
18.6 17.0
22.7 21.0
25.4 23.6
28.0 29.4
32.0 32.7
1496 146.9
+18 ~~21.37~~ +18 ~~20.99~~
33 29.82 33 29.82
~~47.37~~ ~~46.99~~
~~51.19~~ ~~51.17~~
~~17.19~~ ~~17.17~~
~~16 15 51.18~~
16 16 17.18
16 16 47.69
+30.51
+.06
30.57

[η Ursae Min.]
+75° 59'
18 31.9 47.3 −
39.6 55.2
47.2 6.3
58.8 17.6
25.2
177.5 42.2
44.37 50.5
124.3
1.2203 17.76
0.6158 1.3118
1.8361 0.6158
68.57 1.9276
84.65
52.94 53.11
$16^h\ 19^m$ 53.02
16 20 23.40
+30.38
+1.40
31.78

30.42
30.57
30.49
to sec 9.20
30.29

Frodsham 1327 is slow
0m 30.29 s
at $16^h\ 15^m$
Sid time

August 14, 1901

$0^h\ 0$
E.S.M.T.

J.A.D. removed level from telescope (Mer. Circle) and cleansed bearing surfaces of bed plates: after slight oiling with clock oil replaced level and adjusted bearings with centre screw.

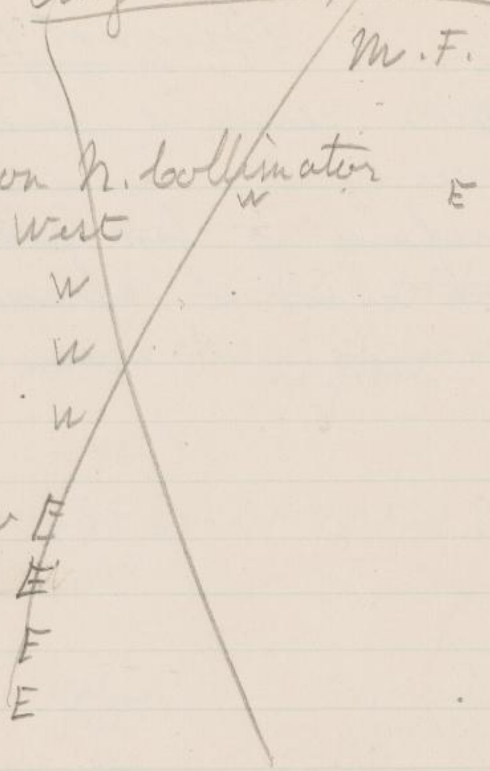
August 14, 1901

23h 0m. E.S.M.T. Level

M. F. Michaelis obs

Telescope on N. collimator

Screw West



August ~~14~~ 15, 1901,

Mer. Cir. M. F. Michaelis

β Lyrae +33 15 first 2 of T²

o Draco. +59 16 wire 4 and 5 T² (last doubtful)

R Lyrae +43 49 T² (first missing)

γ Lyrae +32 33 T¹ broken T²

rattle after 18h 58m

β Lyrae +33 15
46 13.4
15.9
29.3
14.65
1.1492
0.0776
1.22.68
16.86
57.79
18 45 57.79
18 46 28.67
+30.88
~~+.09~~
~~30.79~~

o Draco. +59 16
48 38.0 42.3
41.9 45.8
4 51.4
56.7
0.4
8.2
12.1
79.9 396.9
39.95 56.70
40.13
16.57
1.2714
0.2916
1.5630
36.56
16.51
18 49 16.56
18 49 47.22
30.66
~~+.25~~
~~30.91~~

R Lyrae +43°49'
51 51.6 12.4
16.0
20.2
22.6
28.2
30.9
7 130.3
21.72
1.3370
0.1417
1.4787
30.11
51.61
18 51 51.61
18 52 22.42
30.81
~~+.01~~
~~30.82~~

γ Lyrae +32°33'
54m 13.0 46.65 2.5
20.4 4.6
23.6 7.6
25.7 11.0
27.7 13.1
30.8 18.0
20.4
141.2
23.53 77.2
11.03
1.3507
1.3907
~~1.3378~~ 1.3118
0.0742 0.0742
~~1.3320~~ 1.3860
1.3649
~~21.43~~ 24.32
23.17
~~44.96~~ 46.71
46.70
18 54 46.71
18 55 17.63
30.92
~~-.09~~
~~30.83~~

~~n = .33~~

88x1	88x1	88	+32	30.83
92x1	92x1	92	+33	.79
66x1	66x1	66	+43	.82
1.62x2	81x3	243	+59	.91
408÷5	3)	489		
816		.815		

83

30.82
b corr. -.20
30.62

Frodsham 1327 is slow 0m 30.62s at 19h 0m

August 15, 1901

23^h 42^m
ESMT

Tel. S.		W		E
Screw	E	~~- 76.3~~	~~-~~	~~111,3~~
	E	~~- 77.0~~	~~-~~	~~112,0~~
	W	~~+ 57.8~~	~~+~~	~~22.5~~
	W	~~+ 55.7~~	~~+~~	~~21.0~~

Tel. N. Level needs further adjustment
JSP

Later
found the trouble - the looseness which prevented ~~satisfactory~~ observations to be caused by a looseness (in addition to that remedied yesterday, Aug 14) between upper brass plate and the next above to which it is ~~adde~~ attached by three screws; the brass binding screws close by these needed further screwing in in order to remedy the looseness.

August 16, 1901

Mer. Cir.

M. F. Michaelis
ofs
rattle before
18h 12m
3 rattles after
18h 25m

109 Herculis + ~~21~~° 43'
+58° 45'

α Lyrae +38 41 ✓
(G 26155) +77 28 T²
110 Herculis +20 2 }
~~β Lyrae +33~~ 15 } lost – Chronograph irregular
~~ο Sagitt. −26 25~~

~~+44.98~~
~~+.373~~
~~4.125~~
~~+30.63~~
~~+30.97~~ n?
~~−.34 +.082~~
33060
10000

~~109 Hercule~~
α Lyrae
+38°41'
32m 31.0s 7.4 24.3
33.7 26.6
38.7 30.1
42.2 33.7
44.7 36.0
46.9 41.0
50.7 43.9
287.9 235.6
41.13 33.66
26.26 26.26
7.39 7.40
18 33 7.40
18 33 38.22
30.82
−.04
30.78

n used −.33

[G 2655] ?
+77°28'
35m 44
13.2
25.2
38.0
46.7
5.2
14.7
267.4
38.20
94.50
~~3.74~~
3.70
18 34 3.70
18 34 34.33
30.63

β ~~Lyrae~~
110 Herculis + ~~33°~~15'
+20°27'
40m 26.2 56.4 10.5
28.2 12.5
32.5 15.2
35.5 18.3
37.2 20.3
39.6 24.6
42.4 26.8
241.6 128.2
34.51 18.31
21.88 21.88
56.39 56.43
18 40 56.41
18 41 27.38
30.97
−13
30.84

+20° 27' 30.84 ×1 .84
+38° 41' 30.78 ×2 1.56
3)2.40
.80
t sec φ − 20
30.60

Frodsham 1327 is slow
0m 30.60s
at 18h 30m
Sid Time

August 18, 1901

Mer. Cir   M. F. Michaelis obs.

~~+28~~ 45 Clouds
[Gr 2533] +42 8 T² last misted 13 bad very cloudy
109 Herculis +21 43 T² ₂T¹
b Draconis +58 45 f³ last T²

rattle after
$18^h 26^m$

[Gr 2533]
+ 42°8'

12 24.2
26.4
30.0
33.8
41.4
1558
31.16
1.2684
0.1298
1.3982
25.01
6.15

18 12 6.15
18 12 36.607
30.46

109 Herculis
+ 21° 43'

19 15.2
17.1
20.1
23.1
25.2
29.5
31.7
161.9
23.13
22.07
1.06

T 18 19 1.06
α 18 19 31.99
+ 30.93
~~- .13~~
~~+ 30.80~~
- 10
+ 30.83

b Draconis
+ 58° 45'

21 4.9 59.8 25.0
8.8
16.4
29.0?
34.3
93.4
18.68
13272
0.2850
1.6122
40.95

28.8
33.8
39.0
42.7
50.6
54.5
274.4
39.20
1.3118
0.2850
1.5968
39.52

59.63 59.68

18 21 59.66
18 22 30.41
+ 30.75
~~+ .19~~
~~30.94~~
+ .14
30.89

~~n = .25?~~
n = -.2

30.83 × 1 3
30.89 × 2 18
3)21
30.87
- 20
30.67

Frodsham 1327 is slow
0^m $30^s.67$
at $18^h 30^m$
Sid Time

August 21 1901

mer Cir

M. F. M. obs
rattle before
18h 14m

109 Herculis	+ 21	43	last 3 of T 2
b Draco.	+ 58	44	T 2
α Lyrae	+ 38	41	
[Gr 2655]	+ 77	28	last 4 of T 2
110 Herculis	+ 20	27	
β Lyrae	+ 33	15	
σ Sagittarii	− 26	25	

β Lyrae
+33° 15'

45m 24.2	13.9
26.6	16.3
31.6	19.3
34.8	22.8
37.0	24.6
39.3	29.8
42.4	32.3
235.9	159.2

rattle after
1852

+58 5353 51
+38 ~~51~~ 43 43
.33 43 45
20 ~~48~~ 45

b Draco +58 44	α Lyrae + 38°41'		[Gr 2655) +77°28'	110 Herculis +20°27'		σ Sagittarii − 26°25'	
21m 59.6	32m 31.3	24.7	35m 39.0	40m 26.6	11.0	48m 9.5	55.9
25.0	33.9	27.2	47.4	28.9	13.0	11.9	58.1
28.9	34.0	30.2	6.2	33.0	16.0	16.4	1.0
33.7	42.5	33.8	15.7	35.8	18.8	19.2	4.3
39.2	45.1	36.5		37.9	20.6	21.4	6.4
42.6	47.3	41.4	228.3	40.0	25.0	23.6	10.7
50.5	50.6	44.0	57.08	42.9	27.1	26.4	13.1
54.9							
274.8	289.7	237.8	13.874	245.1	131.5	128.4	29.6
39.26	41.39	33.97	0.6635	35.01	18.79	18.34	4.23
39.50	26.26	26.26	2.0509	21.88	21.88	22.89	22.89
59.76	7.65	7.71	112.40	56.89	56.91	41.23	41.34
			4.68				

+4.499 +29.25
−0.4967 +30.69
+4.996 −1.44
−.288

n = −.3

b Draco	α Lyrae	[Gr 2655)	110 Herculis	σ Sagittarii
18h 21m 59.76	18h 33m 7.68	18 34 4.68	18h 40m 56.90	18h 48m 41.28
18 22 30.29	18 33 38.19	18 34 33.93	18 41 27.35	18 49 11.97
30.53	30.51	29.25	30.45	30.69
+ 21	−.03	+ 1.08	−.16	−.42
~~30.74~~	30.48	30.33	30.29	30.27
~~30.45~~				
30.74				

β Lyrae
+33° 15'

235.9 159.2
33.70 22.74
24.51 24.51
58.21 58.23

18 45 58.22
18 46 28.65
30.43
−.08
30.35

+77 30.33
+38 30.48 ×20 ~~480~~ 960
+33 30.35 ×15 525
+20 30.29 ×5 145
−26 30.27 ~~30.7~~ ~~1150~~ 1630
~~38~~
40) 1630
41

~~30.38~~
~~b Dr~~ −.20
30.18

) 30.41
− b Dr .20
30.21

Frodsham is slow
0 m 30.21 s
at
18h 45m
Sid time

August 23, 1901

Mer. Cir. M. F. Michaelis obs

2 rattles after 18h 32m

8 10

110 Herculis + 20° 27' wire 7 doubtful T2 broken

o Draconis β Lyrae + 33° 15' missed wire 13?

+ 59 16 wires 12-13-15

R Lyrae + 43° 49 T1 broken T2 last 2 wires

110 Herculis
+ 20° 27'
40.m 26.8 29.0 57.0
33.3
36.2
38.2
40.3
43.2
247.0
35.29
21.88
57.17

11.4 9
16.0 11
25.3 14
27.6 15
80.3 20.07
~~20.07~~
7-11-14-15
1.3307
0.0282
1,3589
22.85
57.22

18 40 57.19
18 41 27.33
+ 30.14
− 17
~~30~~
29.97

β Lyrae
+ 33° 15'
45 24.6 58.5 14.1
26.8
31.7
35.0
37.2
39.6
42.5
237.4
33.91
24.52
58.43

16.2
19.7
23.0
30.0
324
1354
22.57
9-12-14-15
13054
0.0776
1,3830
24.45
58.42

18h 45m 58.43
18 46 28.62
+ 30.19
−.08
30.11

o Draconis
+ 59° 16'
49m 57.5
0.8
13.0
~~21.4~~
~~25.2~~
191.3
63.77
1.3754
0.2916
1.6670
46.45
17.32
~~17.32~~
17.32
18 48 ~~17.32~~
18 49 47.12
+ 29.80
+.22
30.02

R Lyrae
+ 43° 49'
51 15.8 2 52.35 28.9
21.4 3 31.7
25.3 4.
62.5
20.83
25.4
~~1.5387~~
1.3556
0.1417
~~1.6704~~
1.4993
~~46.81~~
31.57
~~7.64~~
52.40

60.6
30.30
1.4378
0.1417
1.5795
37.97
52.33

18 51 52.37
18 52 22.36
2999
+.01
30.00

n = −.3?

+ 30.00
b. level − .20
+ 29.80

Frodsham 1327
is slow
0m 29s.80
at 19h 0m
Sid Time

August 26-1901

Mer Circle — J.A.D. obsr

ζ Cygni $+29°49'$ all
[τ Cygni] $+37°37'$ lost 1st wires of T
Rattle after Last min. $21^h 14^m$

ζ Cygni
$+29°49'$

$21^h 7^m$ 44.7 2.2 17.4 32.6 2.1
46.9 4.7 34.7 3.3
51.6 3.2 38.0 3.0
54.8 2.2 41.0 2.1
57.0 2.0 43.1 4.7
59.0 3.2 47.8 2.4
2.2 50.2
3762 2874
53.74 41.06

23.62 23.62
17.36 17.44

21 8 17.40

21 8 47.26
0 29.86

0 29.84
.20
0 29.64

τ Cygni
$+37°37'$

$21^h 10^m$ 24.5 41.1
43.5
2.1 46.9
4.5 50.3
8.0 52.5
57.7
-0.3
146 3523
4.87 50.33
1.1933
0.1012
1.2945 25.88
19.70
24.57 24.45
12×3 - 36
10 4

21^h 10 $24^s.49$
21 10 54.33
29.84

Frod 1327 is slow
$0^m\ 29^s.64$
at $21^h\ 10^m$ Sid Time

Aug 28-1901

Mer. Circle J.A.D.-bar

Daylight-obs.

ι Draconis +59°19′ Wire 88 T

α Coron. bor. +27°3′ all

Rattle after $15^h 3^m$

ι Draconis
+59°19

$15^h 22^m$ 14.7 40.5
44.3
49.5
54.9
58.5
6.5
10.5
~~34 04~~
38 47
54.96
40.19
15 22 14.77
15 22 43.83
29.06

.75

06 × 1 6
46 × 2 92
3) 98
29.33

.22
29.28

29.31
b sin φ = 20
29.31

α Coron. bor.
+27°3′

$15^h 29^m$ 30.4 16.9
32.6 19.1
37.2 22.2
40.3 25.2
42.4 27.4
44.5 32.0
47.5 34.3
27 49 17 71
39.27 25.30
23.02 23.02
2.29 2.28
15 30 2.28
15 30 31.74
29.46

.40

.12
29.34

Frod 1327 is slow
0^m $29^s.30$
at $15^h 30^m$ Sid Time

Aug 30 - 1901 -

δ Ophiuchi 1 − 3°26 last 2 w 4 T^2
ε Ophiuchi − 4°28 all
τ Hercul. +46°33 all
η Hercul. +19°23 last 3 4 T^2

Mer. Circle
J.A.D. obs

Day light obs.
Rattle after last min: 16^h19^m

ε Ophiuchi
−4°28

16^h12 10.2 38.7 51.9
12.2 53.7
16.3 56.4
19.0 59.2
21.0
22.7 1.0
25.4 5.2
7.1
126.8 414.5
18.11 59.22
20.56 20.56
38.67 38.66

16^h12 38^s66
16 13 7.83
29.17
.30
29.87

assumed n = .3

τ Herculis
+46°33

16^h15 37.0 37.6
40.1 40.5
46.0 44.3
50.0 48.2
52.7 51.0
53.3 56.9
59.5 59.8
340.8 338.3
48.69 48.33
29.81 29.81
18.50 18.52

16 16 18.51
16 16 47.22
28.71
.04
28.75

.75 × 10 750
87 × 1 87
11 | 837
76

v sin φ 28.76
.20
28.56

Frod 1327 is slow
$\bar{o}$ $28^s.56$
at 16^h15^m Sid Time

Sept 4 1901

Mer Circle J.A.D. obsr

o' seq Cygni 15th wire only.
24 Vulpec. +24°22 Wire 8 & T^2
γ Cygni +39°56' lost last wires
73 Drac +74°37 {9.5 pr. obs on W3 3 M $20^h 30^m$ 25.5 — Identified in Dur. B.D.
all but W8 {9.0 pr; obs on W 11 5 N: $20^h 32^m$ 5.5
ε Aquarii −9°52' all; 8.5 pr. & 3'S; Wire 1 $20^h 40^m$ 26.2
Rattle before 20^h 44

24 Vulpec	γ Cygni	73 Drac	ε Aquarii
+24°22'	+39°56	+74°37'.	−9°52
T^2			
$20^h 12$ 9.6 23.9	$20^h 17$ x 16.9 34.1	$20^h 30$ 39.5 33 16.7	$20^h 41$ 27.1 56.1 9.5
25.9	x 36.6	47.5 23.9	29.1 11.3
29.1	48.0 40.1	2.9 33.7	33.5 14.1
32.1	51.4 43.9	13.0 44.1	36.2 17.0
34.2	54.0 46.2	20.0 51.1	38.1 18.6
38.6	56.5 51.6	27.0 6.6	40.0 22.7
40.9	0.0 54.3	37.5 14.1	42.7 25.0
22 47	2699 3068	4874 3102	2467 1182
32.10	1.2494 5398 43.83	~~69.63~~ 44.32	35.24 16.89
22.51	0.1153	77.30 77.30	20.81 20.81
	1.3647 23.15 26.74		
$20^h 12$ 9.59	17.13 17.09	26.93 27.02	56.05 56.08
20 12 36.50	20^h 18 17.11	20 32 26.97	20^h 41 56.07
	20 18 44.08	20 32 53.31	20 42 23.13
26.91	26.97	26.34	27.06
.09	.02	+ 3.63	
26.89	26.95	− .17	
		3.80) − .72 .76 i^2	
			m = −.2

26.91
.20
26.71

Frod 1327 is slow
ō $26^s.71$
at $20^h 15^m$ Sid Time

Sat. Sept 7-1901

first minim 22h 26

Mer Circle D.A.D. obsr

10 Lacertae +38°32′
η Pegasi +29°42

10 Lacertae				η Pegasi			
+38°32′				+29°42′			
22h34	51.5	278	44.5	22h38	27.3	0.2	15.0
	53.8		46.8		29.5		17.2
	59.0		50.4		34.2		20.5
	2.5		53.8		37.3		23.8
	5.0		56.4		39.6		25.7
	7.3		1.4		41.7		30.6
	10.8		4.0		44.9		32.9
	42.99		37.73		25.45		16.57
by Tables	60.14		53.90		36.36		23.67
not accepted something wrong	26.21		26.21		23.60		23.60
→	26.35		27.69		59.96		0.07

22h 39 0s.00 → sheet probably marked in wrong

RA. 22 34 53.52

22 38 25.94
34.06

25.83
02
25.81

25.94
07
25.87

25.84
20
25.64

Frod 1327 is slow

ō 25s.64

at 22h35
Sid Time

Sept 9-1901

Mer Circle J.A.D. obsr

θ Cygni +49 59
δ Cygni +44 53'

~~Rattle~~ before 19^h 35
Chronograph stopped less
than 1 min.

θ Cygni

+49 59

19^h 33	40.7	24.7	45.0
	43.8		48.1
	49.8		52.4
	54.0		56.6
	56.7		59.2
	59.9		5.5
	4.0		8.7
	3689		3955
	52.70		56.50
	31.89		31.89
	24.59		24.61

19^h 33 $24^s.60$
19 33 50.12
25.52
06
25.58

δ Cygni

+44 53

19^h 40	50.4	305	49.0
	53.2		51.6
	59.0		55.2
	2.8		59.3
	5.4		2.0
	8.0		7.8
	12.0		10.6
	4308		4155
	61.54		59.36
	28.94 ~~29.46~~		28.94 ~~29.46~~
	~~3100~~		~~2990~~
	30.48		30.42

19^h 41 $30^s.45$
19 41 55.96
25.51
02
25.53

25.55
.20
25.35

Frod 1327 is slow
0 $25^s.35$
at 19^h 40 Sid Time

Sept 11-1901

Mer. Circle

J.A.D. obsr

[From book mer No 16] zone -9°½ 14 10

No 5		No 8	
β Persei		α Persei	
+40°34		+49°31	
3 0 47.0	41.9	3 16 12.8	16.8
49.6	44.1	15.9	19.7
54.9	47.8	22.5	
58.6	51.3	26.3	24.0
1.0	53.9	29.3	28.1
3.5	59.0	32.0	30.6
7.0	1.9	36.4	37.0
			40.3
401.6	359.9	175.2	196.5
57.37	51.42	25.03	28.07
27.00	27.00	31.57	31.57
~~67.16~~	~~8.99~~	56.60	56.50
24.37	24.42		

3 1 24.39
3 1 48.23
23.84
.01
23.83

3 16 56.55
3 17 20.34
23.79
.05
23.84

23.83
20
23.63

Frod 1327 is slow
$\bar{0}$ 23.63
at 3h 10 Sid Time

Sept 13, 1901

J.A.D. obs
~~J.S.D. obs.~~

Mer. Circle

[from books - Mic 16]

No 5 β Persei +40°34'		No 8 +49°31' α Persei		No 10
3ʰ 0ᵐ 48.3	~~6.6~~ 43.3	16ᵐ 14.4	18.6	
51.1	45.7	17.5	21.4	
56.6	49.5	23.7	25.3	
0.2	53.0	27.9	29.5	
2.5	55.3	30.8	32.4	
5.0	0.7	33.6	38.6	
8.7	3.4	37.7	41.8	
412.4	370.9	185.6	207.6	
58.91	52.99	26.51	29.86	
27.00	27.00	31.58	31.58	
25.91	25.99	58.09	58.08	

T 3ʰ 1ᵐ 25.95 — T 3ʰ 16ᵐ 58.08

α 3ʰ 1ᵐ 48.30 — α 3ʰ 17ᵐ 20.44

22.35 — 22.36
.01 — .05
22.34 — 22.41

22.38
b sec φ − .20
22.18

Frodsham 1327 is slow
0ᵐ 22.18 sec
at 3ʰ 0ᵐ
Sid Time

J. September 17, 1901

$3^h\ 0^m$ E.S.M.T began

Collimation — M. F. Michaelis obs.

South Collimator on	North Collimator
81.3	81.2
81.5	81.8
80.5	81.1
81.2	81.9
81.2	82.8

Set at 81.45

R. A. Micrometer found at 32.341

wire 8 well adjusted to motion of telescope

Telescope on S. Collimator	Telescope on N. Collimator
31.879	32.522
.873	.519
.893	.520
.879	.531
.879	.542
.883	.523
.874	.529
.871	.509
.890	.521
.871	.516
31.8792	32.5232

$3^h\ 40^m$ E.S.M.T finished

32.5232
31.8792
64.4024
32.2012
.012 diurnal aberration
32.213

R. A. Micrometer set at 32.213

Sept. 16, 1901 (should be before Page 147)

Meridian Circle

Mr. Dunne obs.

no 5

β Persei
+ 40°34′

3h 0m	50.2	44.9
	53.0	47.5
	58.2	51.0
	1.8	54.6
	4.3	57.0
	6.7	2.3
	10.4	5.0
	4.6	382.3
	0.66	54.61
	26.98	26.98
	27.64	27.63
3h 1m		27.s64
3h 1m		48.s40
		20.76
		.01
		20.75

no 8

α Persei
+ 49°31′

16	16.1	20.2
	19.2	23.0
	25.4	27.3
	29.6	31.4
	32.6	34.2
	35.4	40.4
	39.6	43.7
	197.9	220.2
	28.27	31.46
	31.58	31.58
	59.85	59.88

3h 16m 59.s86
3h 17m 20.s54
20.68
.05
20.73

20.75
20.73 20.74
f decl ÷ .20
20.54

Fridsham 1327
is slow
0m 20.s54
at 3h 0m
Sid Time

Sept 19, 1901

J.A.D.

Meridian Circle — Mr. J. S. Duane obs

(from book mic no 16
zone −9°32' & −10)

τ² Eridani ~~no 5,~~ −21°25'
~~β Persei~~
~~+40° 34'~~

45^m 46.9	31.7
49.0	33.6
53.3	36.2
56.4	39.4
58.2	41.3
0.2	45.8
3.3	48.2
387.3	276.2
55.33	39.46
22.02	22.02
17.35	17.44

2 46 17.80
2 46 36.30
18.50

no 5
β Persei, +40° ~~37~~' 34

3^h 0^m 52.5	47.2
55.3	49.6
0.6	53.4
4.0	57.0
6.8	59.3
9.9 12.9	4.8
	7.3
20.9	398.6
2.99	56.94
26.98	26.98
29.97	29.96

3 1 29.96
3 1 48.48
18.52

no 8
α Persei
+ 49.31

16^m 18.4^s	22.3
21.5	25.6
22.8	29.4
320 35.0	33.6
37.8	36.4
42.0	42.7
	46.1
214.5	236.1
30.64	33.73
31.58	31.58
2.22	2.15

3 17 2.18
3 17 20.65
18.47

47H Cephei
+ 79° 2'

50^m 19.8	53^m 58.6
30.7	8.7
6.4	22.7
51 16.5	37.3
25.8	46.2
40.5	7.9
89.2	18.9
22.30	260.3
1.2203	37.19
0.7207	1.3118
	0.7207
1.9410	2.0325
87.30	107.70
52 49.60	52 49.49

2 52 49.54
2 53 8.04
18.50

18.50
18.50
+ .00

18.52
18.47
18.50
b sec φ 20
18.30

n = zero

Frodsham 1327 is slow
0^m 18.30^s
at 3^h 0^m
Sid time

Sept 22, 1901

Meridian Circle Mr J. A. Dunne obs

(from book Mic. 16)

β Persei
+40° 34

3h 0m 54.5	50.1
58.2	52.6
3.5	56.4
7.0	59.8
9.4	7.5
11.9	10.3
15.5	
40.0	418.9
5.71	59.84
26.98	26.98
32.69	32.86

3h 1m 32.78s
3h 1m 48.57
15.79

α Persei
+49° 31′

16m 21.3	25.4
24.4	28.1
30.5	32.2
34.8	36.5
37.6	39.3
40.4	45.7
44.8	48.9
233.8	256.1
33.40	36.59
31.58	31.58
4.98	5.01

3h 17m 5.00s
3 17 20.72
15.72

15.79
15.72
15.76
R sec φ − 20
15.56

Frodsham 1327 is slow
0m 15.56s
at 3h 0m
Sid Time

Sept. 24, 1901

Meridian Circle — Mr. J. A. Dunneck,

(from book, Mic. 16)

β Persei	+40°34′
$3^h\ 0^m\ 57^s.1$	51.6
59.6	54.2
5.0	57.8
8.6	1.3
11.0	3.8
13.3	9.0
17.0	11.7
51.6	9.4
7.37	1.34
26.98	26.98
34.35	34.36

T $3^h\ 1^m\ 34^s.36$
α $3^h\ 1^m\ 48.63$
14.27

α Persei	+ 49031
$3^h\ 16^m\ 23^s.0$	26.7
26.0	29.8
32.1	33.7
36.2	38.0
39.2	40.9
41.9	47.0
46.3	50.3
244.7	266.4
34.96	38.06
31.58	31.58
6.54	6.48

T $3^h\ 17^m\ 6^s.51$
α $3^h\ 17^m\ 20.82$
14.31

14.27
14.31

14.29
−.20
14.09

Frodsham 1327 is slow
$0^m\ 14^s.09$
at $3^h\ 0^m$
Sid. Time

Sept 27-1901

Meridian Circle level.-

I found yesterday in attempting to adjust the level that the chief difficulty with levelling with this Clark model "Buff & Berger" manufactured level was that the large single central screw which fastens the level bed plate to telescope bed plate unloosened or ~~fastened~~ tightened. as the the level was reversed. from an east to west position or the opposite. The reason was that the screw was a single one with nothing to prevent the above happening. Mr Gerrish found that an inner pressure spring which should have formed part of the level apparatus was missing; the office of this spring was to keep the surfaces of the two circular bed plates together irrespective of the absolute turn of the central screw. a pressure spring was made and inserted.

J.A.D.

Sept 26, 1901 (should precede Page 152)

Meridian Circle — Mr. J. A Dunne

+)5.161
0.3922
+5.553

13.89
12.83
+1.06 +.0140
.5553
50470
49977
493

T² Eridani −21°25′		47 H Cephei +79 2′		β Persei +40°34′		α Persei +49°31′	
45^m 53.2	37.9	50^m 26.0	54 3.7	3^h0^m58.6	53.5	16^m 24.6	28.5
55.2	39.8	36.8	13.5	1.2	55.7	27.4	31.4
59.5	42.6	57.2	28.1	6.5	59.2	33.6	35.2
2.6	45.6	11.1	42.4	10.2	2.9	38.0	39.5
4.6	47.5	21.9	57.6	12.7	5.2	40.9	42.3
6.5	52.0	31.6	13.4	15.0	10.7	43.6	48.6
9.5	54.0	45.3	24.3	18.7	13.3	47.7	51.8
111.1	319.4	469.9	297.0	62.9	26.5	255.8	277.3
1.59	45.63	51^m 7.13	54 42.43	8.99	2.93	36.54	39.61
22.02	22.02	107.80	107.70	26.98	26.98	31.58	31.58
23.61	23.61	52 54.93	52 54.73	35.97	35.95	8.12	8.03
T 2^h46^m 23.61^s		T 2^h 52^m 54.83^s		3^h 0 35.96		3^h 17^m 8.08^s	
α 2^h 46^m 36.44		α 2^h 53^m 8.72		3 1 48.69		3 17 20.89	
12.83		13.89		12.73		12.81	
+.26		−.77		+.01		−.05	
13.09		13.12		12.74		12.76	

~~n = +.02~~

n = +.2

12.74
12.76

12.75
b sec φ .20

12.55

Frodsham 1327 is slow
0^m 12^s.55 at 3^h0^m
Sid Time.

Sept 28, 1901

Meridian Circle

M. F. Michaelis obs

(2 rattles before hand)

ε Delphini +10° 58' missed wire!
β " +14° 15' 𝔮 2
α Cygni +44° 56'
ε " +33° 36

rattle after 20h 45m.

α Cygni
+44° 56

20h 37	15.3	2.8	38	14.0	2.6
	18.1	9.5		16.6	7.7
	27.6	2.7		24.3	2.5
	30.3			26.8	8.7
				35.5	
	91.3			117.2	
	22.83			23.44	

ε Cygni
+33° 36

20h 41	30.4	2.4	42	20.0	5.8
	32.8	8.0		25.8	3.2
	40.8	2.2		29.0	9.7
	43.0	2.2		38.7	
	45.2				

28.403	13.157
26.401	15.047
19.608	20.474
17.750	22.314
	28.423
92.162	99.415
23.040	19.8830
1.3624	1.2985
0.1500	0.1500
1.5124	1.4485
32.54	28.08
55.37	55.36

20h 37m 55.36
20 38 6.67
11.31
[illegible] = 20
11.11

Frod 1327 is slow

0m 11.11s

at 20h 40m Sid T.

Sept 30, 1901,

Meridian Circle

M F Michaels obs
rattle after 20h 57m

61 Cygni pre + 38 16
ξ Cygni + 29° 49

61 Cygni + 38° 16		ξ Cygni + 29° 49'	
21h 1m 45.6	38.7	8m 4.8	52.7
48.4	41.0	7.0	5.49
53.5	44.4	11.8	57.9
57.0	49.0	14.8	1.2
59.2	50.2	17.2	3.4
1.6	55.4	19.2	8.0
5.1	58.3	22.4	10.2
390.4	336.0	97.2	8.3
55.77	48.00	13.89	1.19
26.12	26.12	23.62	23.62
21.89	21.88	37.51	37.57

T 21h	2m	21.88s		T 21h	8m	37.54s
α 21	2	31.07		α 21	8	46.91
		9.19				9.37
		+.02				+.07
		9.21				9.44

n = +2

9.21 x 3   63
9.44 x 1   44
)107
27

b sec φ 9.27
-20
9.07

Frodsham 1327 is slow
0m 9.07s
at 21h 0m
Sid time.

October 3, 1901

Meridian Circle level:

Mr. Gerrish by request adjusted the level which proved to be a lengthy and painstaking task. The bubble now stands in the centre (approximately of the tube in all four positions.) The level is now presumably for the first time ~~since~~ in proper condition for levelling, for Buff and Berger omitted providing a central inner pressure spring which was made recently by Mr Gerrish's direction.

J.A.D.

October 3-1901

Observation of level error
Meridian Circle

mark 208 Telescope North
levelled; screw North; bubble ±80 and 44

Telescope North
Mark 118

	~~E~~ W	~~W~~ E
Screw E	−29.0	−65.0
E	−27.5	−63.5
E	−29.0	−64.8
E	−30.0	−66.0
~~W~~	~~+101.0~~	~~+65.0~~ rejected as being evidently wrong
W	+101.7	+66.5
W	+101.7	+66.5
W	+101.6	+66.5
W	+101.4	+66.3

1^h 0
ESMT

Telescope South
mark 208 levelled; screw South; bubble 68 and 33

Mark 118

	W	E
Screw W	+58.0	+22.5
W	+60.7	+24.7
W	+60.7	+24.7
W	+61.6	+25.6
E	−28.3	−64.0
E	−26.5	−62.2
E	−26.5	−62.0
E	−26.4	−61.9
	+647.4	+363.3
	−223.2	−509.4
W	+424.2	−146.1

E −146.1
W +278.1

32)+278.1(8.7
256
221
224

.06
b = .52 2
1.35
b sec φ = .70

b sec φ = ^{s}.70
West end
high

Oct 3-1901

Collimation
Meri. Circle

J.A.D. obsr

$3^h 50$ E.S.M.T.

S. coll on N. coll

81.0
80.8
81.4 48
80.6 8096
81.0 Set. 81.0

Note: Collimation taken because objectglass end of telescope has received handling recently and collimation may have been disturbed

Telescope on S. collimator

R.A. Micrometer found at 32.188

31.985
985
975 ~~31.9115~~
985 31.9830
985

Telescope on N. collimator

Wire 8 well adjusted to motion of telescope

32.388
380
385 30 32.3860
388 4369
389 32.1845
012 = di. aber.

Set at 32.197

Oct 3 1901

Meridian Circle

J A Dobson

Day light and clouds.

α Lyrae +38°41′   Wires & T^r
110 Herculis +20°27   on
β Lyrae +33°15′

Rattle after 18h 47

α Lyrae +38° 41′		wires	110 Herculis +20°27′				β Lyrae +33° 15′			
18h 33m	53.6	31.0	40m	50.2	20.5	34.4	45	47.6	21.7	37.4
	57.2			52.2		36.5		50.1		39.6
	59.5			56.7		39.4		55.0		42.9
	4.9			59.6		42.4		58.1		46.2
	7.3			1.3		44.3		0.4		48.3
				3.4		48.7		2.7		53.3
				6.5		50.9		5.8		55.7
	2.5			409.9		2966		399.7		323.4
	0.50			58.56		42.37		57.10		46.20
	1.3627			21.88		21.88		24.52		24.52
	0.1070			20.44		20.49		21.62		21.68
	1.4697									
	29.49									
	31.01									
18	33	31.01	18	41		20.46	18	46		21.65
18	33	37.17	18	41		26.58	18	46		27.74
		6.16				6.12				6.09
		~~+.05~~				~~+.27~~				~~.13~~
		~~6.21~~				~~6.39~~				~~6.22~~

n = ~~+~~.2

with n =+.1
6.17
6.12
6.17
6.15
b sec φ -.70
5.45

34
12
17
63
16

.621
6.22
6.39

42
44
39
125
.25

6.25
-.20
n =+.2 b sec φ 6.05

6.16
b sec φ -20
5.96

n = +.1

~~Frodsham 1327 is slow~~
~~0m 6.05~~
~~5.96~~
~~at 18h 45m~~

Frod 1327 is slow 0m 5s.45
at 18h 40m Sid Time

Oct. 3, 1901

Meridian Circle
(see book. Mic. 17)

Mr. J. A. Dunne obs

τ² Eridani		47 H Cephei		δ Persei		ν Persei	
−21° 25'		+79° 2'		+47° 28'		+42° 16'	
2h 46m 0.0 30.4	44.5	50m 34.2	54m 11.8	35m 10.0	11.8	38m 27.4	45.3
2.1	46.4	44.5	21.3	13.2	14.7		47.7
6.5	49.5	51 5.2	35.7	19.2	18.5		51.2
9.4	52.3	19.1	49.8	23.2	22.5		55.2
11.4	54.2	29.5	59.5	25.9	25.2		57.8
13.4	58.7	38.8	55 21.0	28.8	31.3		3.3
16.4	1.0	54.0	31.5	32.7	34.3		5.7
59.2	366.6	525.3	350.5	153.0	158.3		386.2
8.46	52.37	15.04	50.09	21.86	22.61		55.17
22.02	22.02	107.80	107.70	30.33	30.33		27.71
30.48	30.35	53 2.84	53 2.39	52.19	52.28		27.46
2 46 30.42		2 53 2.62		3 35 52.24		3 38 27.46	
2 46 36.57		2 53 9.34		3 35 58.19		3 38 33.42	
6.15		6.72		5.95		5.96	
+.13		−.42		−.02		−.00	
6.28		6.30		~~5.97~~		5.96	
				5.93			

+5.161
−0.3922
+5.553

6.72
6.15
+.570 +.1026
5553
14700
11106
35940

n = +.10

5.97
5.96

5.96
b sec φ −.70
5.26

~~5.96~~
~~b sec φ .20~~
~~5.76~~

~~Frodsham 1327 is slow~~
~~0m 5.76s~~
~~at 3h 30m~~
~~Sid Time~~

Frod 1327 is slow
0m 5.26s
at 3h 35m Sid T.

Oct 3-1901

Note:- Change of weights
Clock Frod 1327

Mr Stetwill added 2 grammes to bob of pendulum of Frod 1327 at $0^h 30^m$ Sid Time ($11^h 25^m$ E.S.M.T.): load is now 5 grammes,

Oct 3,6+ At $1^h 15^m$ Sid Time took 4 grammes from Fr 1327: load is now 1.0 grammes. ~~Previous~~ Previous change of weights a mistake.

October 5-1901

~~Collimation~~ Level determination

Meridian Circle - J.A.D. obsr

4^{h} 5^{m} E.S.M.T. Telescope North; levelled; Screw North; bubble 68+33 ±

Screw	W	E
E	-32.7	-66.7
E	-33.7	-68.0
E	-34.0	-68.0
E	-33.3	-67.6.
W	+99.0	+64.7
W	+99.8	+65.7
W	+101.9	+67.5
W	+101.0	+67.0

Telescope South; levelled; Screw South; bubble 41+75 ±

Screw	W	E
W	+61.0	+26.6
W	+60.6	+26.0
W	+60.8	+26.0
W	+61.2	+26.7
E	-29.4	-64.0
E	-29.7	-64.0
E	-30.3	-64.8
E	-30.0	-64.4

4^{h} 25

+645.3	+370.2
-253.1	-527.5
W +392.2	-157.3
E -157.3	
W +234.9	

32)+234.9(7.35
224
109
96
150
.06

b = .4410
1.35
.60 = b sec φ

b sec φ
is .60
West end high

Oct 5-1901

Meridian Circle:-

Note:

Collimation determinations when not found in these series of books (i.e. Error of Frodsham books) will be found in zone -9°50 to -14°10 ~~books~~ microscope books, as for instance almost all very recent observations.

October 5-1901

Meridian Circle

η Serpentis −2 56 Tally 1

109 Herculis +21 43' all

δ Dracon. +58 45 Tally 1 (~~11th~~ 12th wire double)

χ Dracon. +72 41 Tally 2 (12th wire double)

α Lyrae +38 41

Rate after 18h 38m

η Serpentis −2°56°

+3.208
−0.051
+3.269

~~7.18~~
~~5.84~~
~~+1.34~~
~~13/076~~
32400
29421

(.409

5.75
5.84
+3.264) −.09

(−.025

15m 39.8
41.8
45.9
48.4
50.6
52.3
55.0
333.8
47.69
20.53

18 16 8.20
18 16 14.04

5,84
−.02
5.82

h ~~+.41~~

h = −.025

109 Herculis +21°43'

19 54.7 25.2 39.3
56.8 41.4
1.2 44.3
4.0 47.2
6.1 49.2
8.1 53.6
11.0 55.8

21.9 330.8
23.13 47.26
22.07 22.07

25.20 25.19

18 19 25.20
18 19 31.10

5.90
−.01
5.89

δ Dracon. +58°45

21 27.9
31.9
37.8
45.1
48.5
52.1
57.1
3024
43.20
39.52
22.72

18 22 22.72
18 22 28.48

5.76
+.02
5.78

χ Draco +72°41'

23m 27.4
33.6
42.5
52.2 (52.7)
58.1
12.0
18.7
364.5
52.07
1.3718
05263
1.8381
68.84
43.18

18 22 43.18
18 22 48.93

5.75
+.06
5.81

α Lyrae +38°41

32m 55.0 48.0
57.5 50.4
2.8 54.0
6.2 57.5
8.8 59.9
11.0 5.0
14.5 7.7
35.8 40.25
5.11 57.50
26.26 26.26
31.37 31.24

18 33 31.30
18 33 37.12

5.82
+.00
5.82

5.82
5.89

4
9
3) 13
.4

5.76
5.89
582

247
82
84 = 83

5.83
[illegible] .70
5.13

Frodsham 1327 is slow
0m 5s.13
at 18h 30m

October 6, 1901

I Pegasi + 19 23 4 last T¹ 6 last T² rej. 8
St: pre 3 taps
[g Cygni³] + 46 6
74 Cygni + 39 58 rattle after 21h 37m

I Pegasi			[8 Cygni³]		74 Cygni	
+19°23			+46°6		+39°58'	
17m 7.4	28.6	44.1	25m 4.4	4.3	32m 19.4	13.8
9.3		46.8	7.1	7.0	21.9	16.2
11.3		50.0	13.2	11.0	27.4	19.5
14.2		51.8	17.0	14.8	30.9	23.3
		56.1	19.7	17.5	33.5	25.8
		58.3	22.4	23.3	35.8	31.0
			26.3	26.6	39.4	33.6
42.2		307.1	110.1	104.5	208.3	163.2
10.55		51.18	15.73	14.93	29.76	23.31
17.61		23.03	29.57	29.57	26.75	26.75
28.16		28.15	45.30	45.36	56.51	56.56
21	17	28.16	21h 25m	45.36	21 32	56.56

12203 13370
0.0254 0.0254
1.24577 13624
17.61 23.03

21 25 47.659

0.3438
0.0007
0.3445
+2.21
+1.374
~~+0.0458~~
~~.34~~
3.629
21 25 ~~47.658~~

21 25 51.288

8.7338 8.8762 8.7776n
0.7814 1.2618 0.6734
9.5152 0.1380 9.4510
+.3275 +1.374 −.2825

21	17	28.16	21	25	45.36	21	32	56.56
21	17	34.06	21	25	51.29	21	33	2.51
		5.90			5.93			5.95
		~~.01~~			.00			.00
		~~5.89~~			5.93			5.95

~~n used = .025~~
n used = .0

5.90
5.93
5.95

3
10
4) 13
3

5.93
tan φ − .70
5.23

0h 5m.23
at
21h 30m

October 8, 1901

Meridian Circle M. F. Michaelis obs

ψ Cygni + 52° 11′ T¹, wire 8, first 5 of T²
γ Sagittae + 19° 13. T² and wire 8
O′ sq Cygni + 46° 26′

Rattle after 20h 14m

ψ Cygni + 52° 11′

52m 13.4 59.9 21.2
16.7 24.4
23.4 28.7
27.9 33.2
30.8 36.0
33.8
38.2

184.2 143.5
26.31 28.70
13120 12490
0.2124 0.2124
15244 1.4614
33.45 28.94
59.76 59.76

19 52 59.76
19 53 6.43

6.67

γ Sagittae + 19° 13′

54m 17.6 31.5
33.5
36.4
39.2
41.2
45.5
47.8

275.1
39.30
21.71

17.59

19 54 17.59
19 54 24.25

6.76

O′ sq Cygni + 46° 26′

9m 45.6 26.8 45.9
48.5 48.6
54.4 52.5
58.3 56.6
1.0 59.2
3.6 5.0
7.6 7.8

399.0 395.6
57.00 56.51
29.75 29.75

26.75 26.76

20h 10m 26s.76
20 10 33.48

6.72

6.67
6.76

6.715
6.72

6.72
b sec φ − .70

6.02

Frodsham 1327 is slow
0m 6s.02
at 20h 0m
Sid. Time

Oct 10. 1901

Meridian Circle

M. F. Michaelis
obs

~~δ Capric −16° 35'~~

~~π^2 Cygni + 48 51~~

16 Pegasi + 25°28'

T^1 first 4^s of T^2
rattle after $21^h 52^m$

Oct 10-1901

Meridian Circle JAD. obsr.

Recorded in Mic. book No 17

β Persei	α Persei
3^h 1 3.1	3^h 16 29.1
5.8	32.2
11.1	38.6
14.6	42.6
17.2	45.5
19.6	48.3
23.2	52.6
94.6	288.9
13.52	41.27
27.00	31.57
3 1 40.52	3 17 12.84
3 1 49.04	3 17 21.31
8.52	8.47

Veaf 8.50
.70
7.80

Frod 1327 is slow

0m 7.80s

at 3^h 10^m Sid T.

Oct 14 $\frac{10}{10}$, 1901

J.A. Dicker

Meridian Circle – Level determination

22^h 45 ESMT

Telescope South.

Levelled; Mark 208: Bubble N74 : S42, Screw N.

			W	E
Mark 118	Screw	E	−26.5	−59.0
		E	−27.0	−59.5
		E	−27.0	−59.5
		E	−27.0	−59.5
		W	+60.6	+28.0
		W	+61.0	+28.0
		W	+61.0	+28.0
		W	+61.4	+28.6

~~22~~

Telescope North

Levelled: Mark 208: 38N 71S Screw S

			W	E
Mark 118	Screw	W	+103.4	+70.7
		W	+104.0	+71.0
		W	+104.0	+71.0
		W	+104.0	+71.3
		E	−29.0	−61.4
		E	−29.2	−61.6
		E	−29.0	−61.4
		E	−29.0	−61.2
			+659.4	+396.6
			−223.7	−483.1
			+435.7	−86.5

23^h 15 ESMT

+435.7
−86.5
32)+349.2 (10.9
32
29 2

.06
.654 = b
1.35
.88 = b sec φ

b sec φ = ^{s}.88 West end high

Oct 10-1901

Meridian Circle J.A.D. obsr.

Recorded in Mic. book No 17

β Persei	α Persei
$3^h\ \bar{1}$ 3.1	$3^h\ \bar{16}$ 29.1
5.8	32.2
11.1	38.6
14.6	42.6
17.2	45.5
19.6	48.3
23.2	52.6
94.6	288.9
13.52	41.27
27.00	31.57
3 1 40.52	3 17 12.84
3 1 49.04	3 17 21.31
8.52	8.47

Vecφ 8.50
.70
7.80

Frod 1327 is slow

$0^m\ 7.^s80$

at $3^h\ 1\bar{0}^m$ Sid T.

Oct 14 $\frac{10}{10}$, 1901

J. A. Dixon

Meridian Circle – Level determination

22h 45m ESMT

Telescope South:

Levelled; Mark 208: Bubble N74 : S42, Screw N.

~~22~~

		W	E
Mark 118	Screw E	−26.5	−59.0
	E	−27.0	−59.5
	E	−27.0	−59.5
	E	−27.0	−59.5
	W	+60.6	+28.0
	W	+61.0	+28.0
	W	+61.0	+28.0
	W	+61.4	+28.6

Telescope North

Levelled: Mark 208: 38N 71S Screw S

23h 15m ESMT

		W	E
Mark 118	Screw W	+103.4	+70.7
	W	+104.0	+71.0
	W	+104.0	+71.0
	W	+104.0	+71.3
	E	−29.0	−61.4
	E	−29.2	−61.6
	E	−29.0	−61.4
	E	−29.0	−61.2
		+659.4	+396.6
		−223.7	−483.1
		+435.7	−86.5

+435.7
−86.5
32)+349.2(10.9
32
29 2
.06
.654 = b
1.35
.88 = b sec φ

b sec φ = s.88 West end high

Oct 15, 1901

Meridian Circle
(see book, Mic 17)

Mr. J. A. Dunne obs.

	ι Draconis + 59° 19′			α Coron. bor. + 27° 3′	
21^{m}	33.3	54.8	29^{m}	45.4	32.1
	37.4	58.4		47.7	34.3
	45.0	3.7		52.2	37.3
	50.8	9.0		55.3	40.5
	54.4	13.0		57.5	42.4
	58.0	20.8		59.6	46.9
	3.2	24.8		2.7	49.3
	342.1	64.5		380.4	282.8
	48.87	9.21		54.34	40.40
	40.18	40.18		23.02	23.02
	29.05	29.03		17.36	17.38
15^{h} 22^{m}		$29\overset{s}{.}04$	15^{h} 30^{m}		$17\overset{s}{.}37$
15 22		42.23	15 30		30.96
		13.19			13.59
		+.26			−.13
		13.45			13.46

n assumed = −.33

13.46
b sec φ .88
12.58

Frodsham 1327 is slow
0^{m} $12\overset{s}{.}58$
at 15^{h} 30^{m}
Sid. Time

Oct 16, 1901

Meridian Circle
(see book Mic 17)

Mr. J. A Dunne
obs.

τ^2 Eridani
−21° 25′

2^h 45^m 50.3 35.1
52.4 37.1
56.8 39.8
59.7 42.8
1.7 44.9
3.6 49.2
6.6 51.4

411.1 300.3
58.73 42.90
22.02 22.02

20.75 20.88

2^h 46^m $20^s.82$
2 46 36.80

15.98

47 H Cephei
+ 74° 2′

2^h 50^m 57.4 54^m 34
11.5 13.5
21.1 27.1
31.0 41.6
44.6 51.2

105.6 12.8
21.12 23.1

292.7
12494 41.81
0.7207 107.70

1.9701 54.11
~~41.22~~
4335
~~52.34~~
54.47

2^h 52^m $54^s.29$
2^h 53^m $10^s.33$

16.04

β Persei
+ 47° 28′

3^h 0^m 56.1 50.8
58.8 53.3
4.1 56.6
7.8 0.2
10.4 2.7
12.6 8.2
16.0 10.8

45.8 2.6
6.54 0.37
~~27.00~~ ~~27.00~~
26.98 26.98

33.52 33.39

3^h 1^m $33^s.46$
3^h 1^m $49^s.17$

15.71

α Persei
+ 42° 16′

3^h 16^m 22.2 26.1
25.3 29.0
31.4 32.9
35.7 37.1
38.5 40.1
41.4 46.4
45.4 49.4

239.9 261.0
34.27 37.29
31.58 31.58

5.85 5.71

3^h 17^m $5^s.78$
3 17 21.49

15.71

15.71
b sec φ −.88

14.83

Frodsham 1327 is slow
0^m $14^s.83$
at 3^h 0^m
Sid Time.

Oct 18 – 1901

Friday night

Clouds coming on

o Piscium +8°40 } dark wires
α Triang +29°6 T¹ first 3 wires only, clouds }
γ Androm +41°51 all; clouds bright wires
α Arietis +23 0 all " bright wires
β Triang +34°31 T² last 4 " "

From +8°40 & +41°51 get approximation n

Rattle after 2h 6

0.8488 18.41
+ 0.1524 18.55
+ 0.7464 —— −.187
−.14
7464
65360
59712
56480

n −.19

o Piscium
+8°40
39m 27.1 9.2
29.1 11.0
33.2 13.8
36.0 16.5
37.9 18.3
39.8 22.6
42.6 24.6
245.7 116.0
35.10 16.57
20.74 20.74
55.84 55.83
1h 39m 55.84
1 40 14.39
18.55
−20
18.35

α Triang
+29°6'
46m 40.0
42.5
47.0
1 2.9 5
4.3 ~~20~~
1 41 02 17
~~1.1848~~
0.0586
~~1.2434~~
1.4688
~~17.52~~
29.43
~~21.84~~
1.363
~~0.72~~
1h 47m 12.630
~~0.72~~
1 47 31.30
~~18.97~~
18.70

γ Androm
+41°51'
56m 58.3 54.0
1.8 56.5
6.6 0.3
10.2 3.9
12.7 6.5
15.0 11.9
18.8 14.8
62.5 27.9
8.93 3.99
~~+0.36~~
~~1.48~~ ~~0.57~~
~~27.19~~ ~~27.99~~
~~27.52~~ ~~27.52~~
~~28.67~~
~~36.12~~ ~~36.80~~
36.45 36.47
1h 57m 36.46
1 57 54.87
18.41
.00
18.41

α Arietis
+23°0'
2h 0m 50.9 36.2
53.0 38.0
57.6 44.2
0.8 46.2
2.7 50.6
4.7 52.9
7.7
417.4 309.6
59.63 44.23
22.27 22.27
21.90 21.96
2h 1m 21.93
2 1 40.38
18.45
−04
18.36

β Triang
+34°31'
3m 60.8
52.8
57.8
0.4
221.8
55.45
13874
0.08481
147 20
29.657
25.80
2h 3m 25.804
2 3 44.42
18.62
−.04

+8 .35
+23 .36
+29 ~~.70~~ } clouds
+34 ~~.58~~ }
+41 .46

tan 46
.87 35
.14 .11
.71

n = .1 approximately

18.35 × 1 = .35
18.36 × 1 = .36
18.41 × 2 = .82
153
.38

18.38
b sec φ −.88
17.50

Frodsham is slow
0m 17s.50
at 2h 0m
Sid Time

Oct 21, 1901

0h 0m E.S.M.T Level - M. F. Michaelis obs

Telescope North
levelled Mark 208 Bubble N 40 S 75 Screw S

	W	E
Mark 118 Screw	W +96.3	+ 61.5
	W +96.7	+ 61.9
	W +96.8	+ 61.9
1h 0m	W +96.4	+ 61.7
	E -34.3	- 69.6
	E -33.5	- 68.7
	E -34.2	- 69.3
	E -34.1	- 69.4

Signs assumed.

Telescope south
levelled Mark 208 N 71 S 36 Screw W

Screw W	~~55.8~~ ?	~~19.0~~
	W +55.1	+ 19.9
	W +54.1	+ 18.5
	W +55.1	+ 19.5
	W +54.8	+ 19.0
	E -34.0	- 69.9
	E -33.8	- 69.0
	E -34.0	- 69.5
	E -33.8	- 69.0
	+ 6053	+ 3234
	- 2717	- 5544
	+ 3336	- 2310

+ 333.6 W
- 231.0 E
32) + 102.6 W (3.21
96
66
64
40

.06
.1926
1.35
.26

b sec φ = 26 West end high

Oct 21, 1901

meridian circle

Br 3077 + 56 37

+ ~~Pegasi~~ ~~+ 23 +2~~

+ 61° 44'

+ 12 13

Mr. F. Michaelis

wrong focus {does not matter for time service

rattle before 22 44m ?
chron stopped

Reduced Oct 23

Br 3077

+56° 37

~~22h 48~~ 21.2 49 12.8 36.9
25.4 40.4
32.8 45.0
38.0 49.7
41.4 53.8
44.5 0.9
49.4 5.0

25 27 35 17
36 10 50.24
37.27 37.27

13.37 ~~17.07~~
12.97

~~22 49~~ 13.17 h m s
23 8 35.95

22.78
.06

22.72

4 Cass.

+61° 44

~~23h 0~~ 31.6 8.7 36.5
35.5 41.0
41.0 46.3
52.6
56.5
4.8
8.8

36 65
52.36
43.28

~~23h 1~~ 9.08

23 20 31.77

22.69
.09

22.60

70 Pegasi

+12° 13

~~23h 4~~ 21.4 50.0 3.6
23.3 5.6
27.4 8.6
30.3 11.0
~~32.5~~ 34.5 13.6
36.7 17.5
19.6

20 61 79 2
29.44 11.32
20.97 20.97

50.41 50.35

~~23h 4~~ 50.38

23 24 12.98

22.60
.07

22.67

72
60
67
199
22.66
.26 - [illegible]

22.40

Frod 1327 is slow
0m 22s.40
at 23h 15m Sid Time

Oct 23-1901

Frod 1327
Change of weights

Mr. ~~Attwill~~ at $14^h 27^m$ Sid T. added 1 gr. to Fr 1327. The load is now 2.0 grms.

Oct 24-1901

Recorded in Mer book no 17

J.R.D. Obs.
Meridian Circle

γ Androm	α Arietis		β Triang
+41°51′	+23° 0′		+34°31′
T²			T′ ~~ba~~ T′
$1^h\,57^m$ 45.7	$2^h\,0^m$ 42.5 132	276	$2^h\,2^m$ 43.0 17.5
48.0	44.7	296	45.6
51.6	49.0 52.0	326	50.3
55.4	54.2	355	53.5
57.7	56.1	375	55.8
3.3	59.0	420	58.0
6.0		443	1.3 ~~5~~
3877	3575	2491	3675
55.39	51.07	35.59	52.50
27.52	22.27	22.27	24.89
$1^h\,57^m$ 27.87	$2^h\,1^m$ 13.34	13.32	~~27.61~~
	$2^h\,1^m$ 13.33		$2^h\,3^m$ 17.39
1 57 54.93	2 1 40.43		2 3 44.47
27.06	27.10		27.08

N effect
assumed
0

6
10
8
24
27.08
6 mlf = 26
26.82

Frod 1327 is slow

0 26.82

at $2^h\,0^m$ Sid Time

Oct 24 - 1901

Mr Attwill at $19^h 25^m$ Sid T.

added 1 gr to Fr 1317 Load is now 3 gms

Oct 25-1901

Mer Circle   J A D obs

Br 3077 +56°37 T² seeing very bad
T Pegasi +23°12

Last min 23^h 17

Br 3077
+56°37

8^m 31.8
35.6
39.6
44.6
48.4
56.0
59.6

31 5.6
4 5.09
37.27

7.82

23^h 8^m $7^s.82$
23 8 35.87

28.05
+.09

28.14

T Pegasi
+ 23°12'

14^m	49.2	34.7
	51.4	36.4
	55.7	39.4
	59.0	41.4
	0.8	44.6
	3.1	49.0
	6.2	51.2
	405.4	296.7
	57.91	42.39
	22.30	22.36
	20.21	20.09

23^h 15 20.15
23 15 48.35

28.20
−.07

28.13

28.05
28.20

.25   28.13
[illegible] −.26

27.87

Frodsham 1327 is slow
0^m $27^s.87$
at 23 hours 15 minutes
Sid time

n assumed −.15

Oct 26, 1901

Meridian Circle — M. F. Michaelis ob.

ϑ Cephei +62° 40′ T^1 first 5 of T^2
5th fol. ε Delphini +10° 58′ T^2
ν Capric. −18° 29′
~~+ 44° 56′~~
ε Cygni +33° 36′

rattle through 20h 44m

+1.935
−0.3343
+2.2693

28.65
29.08
−.43
22693
203070
204237

n −.19

ϑ Cephei
+62° 40′

26m	26.5	56.4
	30.8	1.1
	39.2	6.7
E 189	45.5	13.0
	49.4	17.2
	53.8	
	59.7	
	304.9	34.4
	43.56	6.88
	1.3120	1.2490
	0.3380	0.3380
	1.6500	1.5870
	4467	38.64
	28.23	28.24

20h 27m 28s.23
20h 27m 56s.88
28.65
+.20
28.85

star fol. ε Delphini
+10° 58′

29m	30.0
	32.3
	35.2
	37.2
	39.4
	43.8
	45.5
	263.4
	37.63
	20.98
	16.75

20h 29m ~~16s.75~~
20 28 ~~32.03~~

ν Capric.
−18° 29′

33m	29.5	13.1
	31.6	15.2
	35.8	17.9
	38.8	21.0
	40.7	22.9
	42.7	27.0
	45.3	29.1
	264.4	146.2
	37.77	20.89
	21.62	21.62
	59.39	59.27

20h 33m 59s.33
20h 34m 28s.41
29.08
−.24
28.84

ε Cygni
+33° 36′

41m	12.3	2.0
	14.6	4.5
	19.3	7.5
	22.7	11.0
	25.0	13.1
	27.3	17.8
	30.5	20.5
	151.7	76.4
	21.67	10.91
	24.61	24.61
	46.28	46.30

20h 41m 46s.29
20 42 15.16
28.87
−.05
28.82

28.82
b sec φ .26
28.56

Frodsham 1327 is slow
0 minutes 28.56 seconds
at 20h 30m
Sid Time.

Oct 27, 1901

Mer. Circle M. F. Michaelis obs

~~+19° 22~~ clouds.

> Lacertae ~~+49° 46'~~ "

10 Lacertae + 38' 32' wire. >

~~ζ Pegasi + 10° 19'~~

~~η Pegasi + 29° 42'~~

~~+ 65° 41~~ rattle after 22^h 46^m

10 Lacertae
+ 38° 32'

34^m 6.6

1.1197
0.1067

1.2264

16.85

23.45

22^h 34^m $23^s.45$
22 34 53.07

29.62
− 02

29.60
b sec φ .26

29.34

n used
− .15

Frodsham 1327 is slow
0^m 29.34 s

at 22^h 30^m

Oct 28 1901

Reduced on both mu No 17

JAD

κ Cass	δ Androm	ζ Androm	γ Cass	ε Pis.	β Androm
+62°.39	+30°.33	+23°.74	+60.19	+7°.36	+35°.10
0ʰ 26 57.92	0ʰ 33 35.78	0ʰ 41 39.04	0ʰ 50 19.61	0ʰ 57ᵐ 21ˢ.57	1ʰ 3ᵐ 45ˢ.23
	0 34 6.84	0 42 10.06	0 50 50.48	0 57 52.70	1 4 16.45
	31.06	31.02	30.87	31.13	31.22
	.05	.07	.12	.12	03
	31.01	30.95	30.99	31.01	31.19

n used = −.15

31.01
30.95
30.99
31.01
31.19

5 15

31.03

b corr .26

30.77

Frod 1327 is slow

0 30ˢ.77

at 0ʰ 50ᵐ Sid Time

Oct 29, 1901

0h 0m
E.S.M.T.

Level. M.T. . Michaelis obs

levelled

mark 208 Telescope North Screw North S 34, N, 74

Telescope N.

Screw East W E

mark 118 " — 34.0 — 74.3
" — 34.0 — 74.2
" — 34.8 — 74.9
" — 34.6 — 74.1

— 137.4 — 297.5

West + 96.6 + 56.8
" + 98.0 + 57.9
" + 98.0 + 58.0
" + 98.3 + 58.1

+ 390.9 + 230.8

Telescope South Screw South ~~S 71 N 31~~
S 79 N 38

Screw East W E
~~" — 32.1 — 72.0~~
~~" — 33.1 — 73.2~~
~~" — 33.0 — 73.2~~
~~" — 32.3 — 73.0~~
~~W + 57.0 + 6.3~~
W + 57.6 + 16.8
W + 57.9 + 17.0
W + 58.0 + 17.0 + 350.2 — 297.6
W + 57.2 + 16.3

+ 230.7 + 67.1

E — 34.1 — 75.0
E — 33.0 — 74.0
E — 33.0 — 74.0
E — 33.9 — 75.0
+ ~~110.1~~ ~~330~~

— 134.0 — 298.0

+350.2
—297.6
32) +52.6 (1.64
32
206
192
140
128
12

1.64
.06
.0984

.0984
1.35
.133

bsec φ West end high .13

Oct 30, 1901

2h 45m
E.S.M.T.

Level — M. F. Michaelis obs

Telescope North

Mark 208 levelled screw North N 83 S 44

Mark 118

Telescope North		W	E
Screw East		− 34.9	− 73.9
	E	− 35.0	− 74.0
	E	− 35.0	− 73.8
	E	− 33.8	− 73.1
	West	+ 98.6	+ 60.0
	W.	+ 98.0	+ 59.6
	W	+ 98.1	+ 59.8
	W	+ 98.2	+ 59.9
		− 138.7	− 294.8
		+ 392.9	+ 239.3
		+ 254.2	− 55.5

Mark 208 levelled Screw South S. 83 N. 45

Telescope South		W	E
Screw West		+ 57.0	+ 19.0
	w	+ 56.1	+ 18.2
	~~w~~	~~+ 55.9~~	~~+ 17.8~~
	w	+ 56.9	+ 19.0
	w	+ 55.9	+ 18.0
~~East~~			
East		− 35.0	− 73.0
	E	− 34.1	− 72.0
	E	− 33.9	− 71.4
	E	− 32.9	− 70.2
		+ 225.9	+ 74.2
		− 135.9	− 286.6
		+ 90.	− 212.4

+ 344.2
− 267.9
32) + 76.3
64
120
96
240
224
160
160

.2375
.06
.142 5
1.35
.19 2375

b sec φ .19 West end high

Oct 30, 1890

Mer. Circle M. F. Michaelis obs

[x Androm] +43 47 Clamps loose
41 H Cephei +67 15
φ Pegasi +18 34
[ρ Cassiop] +56° 56'

rattle after 23° 54'

[x Androm]
+43° 47'
35m 40.0
42.8
82.8
41.4

41 H Cephei
+67° 15'
41m 30.4 18.2
35.4 22.2
46.0 29.1
52.9 36.6
57.0 41.9
2.9 52.0
9.7 57.6
35 43 25 76
50.61 36.80
53.02 53.02
43.63 43.78
23h 42m 43.70
23 43 16.62
32.92
+22
33.14

φ Pegasi
+18° 54'
46m 28.1 12.0
30.4 14.0
34.5 16.9
37.5 19.7
41.3 21.6
44.1 26.0
49.5 28.3
25 54 13 8.5
36 49 19.79
21.67 21.67
58.16 58.12
23 46 58.14
23 47 31.30
33 16
−.09
33.07

[ρ Cassiop]
+56° 56'
49m 22.8
25.8
31.0
36.2
40.2
46.7
51.0
25 37
36.24
37.54
48 58.70

5 39
23 49 26.009

0.4739
0.0185
9.0101
0.8193
9.0868
1.1754
7.7508
1.0916
0.4924
9.8294
0.2622
8.8424n

3.107
674
1.829
−.069
5.541

α 23 49 31.550
T 23 48 58.70
32.85
.09
32.94

k = −15

32.92
33.16
66.08
33.04
b sec φ −.16
32.88

33.14
33.07
66.21
33.10
16 b sec φ
32.94

33.14
07
−06
.05 00

33.03
b sec φ 16
32.87

Frodsham 1327 is slow
0m ~~32.94~~ s 32.87
at 23h 45m

Oct 31-1901

Note: For some time past there has been started in the cellar an additional furnace with pipes containing heated water passing through cellar under meridian circle cellar in proximity to piers of the Russian transit and Meridian Circle, for the purpose of heating the east wing of the observatory main building. This additional heat has undoubtedly affected the level error of the Meridian Circle and the rate of clock Frodsham 1327 as the air inside vault of the clock has been extremely warm of late. J.A.D.

November 1, 1901

first min 0 58

β Androm +35 6' all: also ~~5~~ preceding 6½ star 2'S obs on last edge
τ Piscium +29°34 7² ~~all~~: also ffg 6.0 star 1.8 S obs mag

τ Pis.
.17
1 6 12.356

0.5170
0.0221
0.5391 +3.460
8.5594
0.8217
9.3811 +.240
8.8661
1.1636
0.0297 +1.071
8.3391
1.1109
9.4500 +.282
RA. 1 6 17.409

Preceding β Androm

1h 2m 1.1s
1 8.
1 0 53
1 3 42
mean 2 49s 0.53
2'S ~~prec~~
~~5½ star~~ 6th star

Star is
DM +34° 182
DM mag 7.7:- α
As observed
very much
brighter

From plates
taken soon
after this
evening
star seems
photographically
equal to
DM +35 207 8.8 mag
DM +35 209 8.9 mag
DM magnitudes
seem discrepant

β Androm

1h 3m 7.1	57.9
9.5	0.3
14.7	3.1
17.9	6.6
20.0	8.9
22.3	14.5
25.6	16.8
117.1	48.1
16.73	6.87
25.06	25.06
41.79	41.81

1h 3m 41.80
1h 4 16.44
34.64
.03
34.61
34.70
Gaud 16
34.54

stars near τ Piscium

τ²	6m	
1h 5m 56.8	29.9	7 19.5
59.7	31.9	19.8
3.0	37.0	22.8
6.2	40.0	25.8
8.5	42.1	28.0
13.2	44.2	32.8
15.6	47.5	35.2
44.30	272.6	181.9
66.14	38.94	25.99
23.57	23.57	23.57
1h ~~5 39.72~~	2.51	2.42
5 42.57		

1h 7 2.46

1 6 17.409
~~37.69~~
34.84
.05
34.79

1 5 42.57
7 19.9

Star follow τ Pis
1 19.9s
1 8/10' South
6.0 mag
Star is
DM +29° 193
6.5 mag

Frod 1327 is slow
0 34.54s
at 1h 5m Sid T.

Note!- Rate changed by Mr. Attwill:-
At $13^h\ 00^m$ Sid T added 2 grms. to Frod. 1327.
Load is now 5.0 grms.- Nov $1\frac{9}{10}$, 1901

November 2, 1901

Mer. Circle

Mr F. Michaelis obs

~~cloudy~~

~~(δ Cygni)~~ ~~+ 46° 6'~~
74 Cygni + 39° 58'
st foll? (13 H Cephei) + 57° 2' T' was 10-11-12 — 15 (doubtful)
~~ε Pegasi + 9° 25'~~
π² Cygni + 48 51 probably 10-11-12 last 2 very doubtful
16 Pegasi + 25 28 2 last of T' and T²!

rattle through 21h 52m

74 Cygni
+ 39° 58'

31m 50.0 44.2
52.6 46.7
57.9 50.0
1.5 53.8
3.8 56.2
6.3 1.4
9.9 4.2

2.0 37.65
0.29 53.79
26.75 26.75

27.04 27.04

n − .15

21h 32m 27.04
21 33 1.95

34.91
−.01

34.90

[13 H Cygni]
+57° 02'

~~35m 52.5 37m 12.4~~
~~57.4 17.7~~
~~3.6 23.7~~
~~8.7 37.4~~
~~12.1 9 1.2~~
~~16.0 22.80~~
~~21.2 1.3099~~
~~51.5 0.2643~~
~~7.36 1.5742~~
~~1.3120 37.54~~
~~0.2643 45.29~~
~~1.5763~~
~~37.70~~
~~45.06~~
~~21h 36m 45.14~~
~~21 35 56.28~~

2 4 9 5

π² Cygni
+ 48° 51'

16 Pegasi
+ 25° 28'

47m 44.1 48m ~~1.6~~
47.1 16.4
18.4
9.1.20 21.2
4 5.60 24.5
26.4
1.1625 30.9
0.0444 33.2
1.2069 17 1.0
16.10 24.43
22.70
1.70 1.73

21h 48 1.73
21 48 36.83

35.10
−.07

35.03

34.90×2 180
35.03×1 103
283 brief 34.94
94 .16
34.78

Frodsham 1327 is slow
0m 34.78s
at 21h 30m.

November 3, 1901

Mer. Circle — M. F. Michaelis obs

ω Piscium + 6° 17' last 2 or 3

~~α Androm + 28' 33°~~

β Cassio. + 58 36

γ Pegasi + 14' 38°

(− 9° 22' A.W. second taps double not to be used reject (1)x

last minute 0^h 17^m

(~~if close to end~~
~~otherwise 16m~~)

	β Cassiop. +58°36'			γ Pegasi +14' 30°	
$0^h 2^m$	29.7	49.1	7^m	8.3	51.2
	33.4	53.6		10.4	53.2
	41.7	58.7		14.8	56.0
	466	4.0		17.6	58.8
	50.9	7.3		19.2	1.6
	54.1	15.1		21.3	4.7
	59.3	19.0		23.8	7.0
	31,57	26,8		1154	4125
	45.10	3.83		16.49	58.93
	39.36	39.36		21.18	21.18
	24.46	24.47		37.67	37.75
0^h 3^m	$24^s.46$		0^h 7^m	$37^s.71$	
0^h 3^m	$59^s.34$		0^h 8^m	12.58	
	34.88			34.87	

34.88
b sec φ .16
34.72

Frodsham 1327 is slower
0 minutes 34.72 seconds
at 0^h 0^m
Sid. Time

November 4, 1901.

Mer. Circle

M. F. Michaelis obs,

J Cephei + 62° 40'
T' part 5 of T

ε foll. ε Delphini + 10° 58'
.10-11-12 — 14-15 Probably ~~Star~~ fol.

β Delphini + 14° 15'

α Cygni + 44° 56' first 6 of T'

ε Cygni + 33° 36'

rattle before 20h 46m

J Cephei
+ 62° 40'

26m 20.3 50.5.
24.6 54.4
33.6 1.2
39.4 7.5
43.4 10.8
47.8
53.4

26 25 4.4
37.50 0.88
1.3120 1.2490
0.3380 0.3380
1.6500 1.5870
44.67 38.64
22.17 22.24

20h 26m 22.19
20 27 56.46

34.27

1

β Delphini
+ 14° 15'

31m 53.5 36.4
55.5 38.5
59.6 41.4
2.5 44.0
4.4 45.7 ?
6.0 50.0 ?
9.4 52.4
306.0

10.9 ~~308.4~~ 41.20
1.56 44.06
21.14 ~~21.14~~ 18.37
22.70 ~~22.92~~ 22.89

20h 32m 22.78
20 32 57.24

34.46

α Cygni
+ 44° 56'

36h 51.0 50.0
53.8 52.6
57.5 56.8
3.6 0.4
5.9 3.0
8.8 8.4
11.0 ?

2.6 2.2
.43 .31
1.3372 28.96
0.1500
1.4872
30.70
31.13 31.35

20h 37 31.24
20 38 5.70

34.46

ε Cygni
+ 33° 36'

41 ~~6.4~~ stet. 40.5 last 5 56.4
13.7 58.7
19.1 1.5
4.9
24.6 7.0

63.8 8.5
15.95 1.70
1.3100 1.2490
0.0794 0.0794
1.3894 1.3284
24.51 21.30
40.46 40.40

20h 41 40.43
20 42 14.96

34.53

34.46
34.53
.99 4.95

34.50
+ sec φ .16
34.34

Frodsham 1327
is slow
0 minutes 34.34 seconds
at 20h 30m
Sid'l time

1901phae.pfoj.1635D

November ~~8~~ ~~7~~ 6 ✓ 1901

~~Tuesday~~ Wednesday

Mer. Circle

J. A. D.

I Pegasi +19°23' T² clouds; dark wires
74 Cygni +39°58 all bright wires
ε Pegasi +9°25 all " "

~~Rattle~~ Through } 21ʰ 41

I Pegasi
+19°23'

17ᵐ 14.2
16.4
18.8
22.0
23.9
28.3
30.2

153.8
21.97
21.74

0.23

21ʰ 17ᵐ 0.23
21 17 33.56

33.33
-.11

33.22

74 Cygni
+39°58'

31ᵐ 52.0 46.1
54.2 48.5
0.0 52.2
3.2 55.6
5.9 3.5
8.3 6.2
12.0

15.6 332.1
2.23 55.35
26.75 1.3053
0.1155
28.98 1.4208
29.00 26.35

21ʰ 32ᵐ 28.99
21 33 1.87

32.88
+.01
32.89

ε Pegasi
+9°25'

38.0ᵐ 20.8 2.8
22.8 7.5
27.0 10.5
29.8 12.2
31.8 16.4
33.5 18.3
36.3

202.0 67.7
28.86 11.28
20.78 1.3271
49.64 0.6059
1.3330
21.53
49.75

21ʰ 38ᵐ 49.69
21 39 22.79

33.10
-.15
32.95

n -.2
assumed

32.88 × 8 = 706
33.33 × 1 133
9) 839
93

32.89 × 3 267
32.95 × 2 190
457
914 with n

Frodsham 1327 is slow
0ᵐ 32.ˢ75
at 21ʰ 30ᵐ
Sid Time

32.91
b sec φ 16
32.75

f i

32.88 × 11 968
33.10 × 1 110
12) 1078
898

93
898
1828
91.4 without n

Friday November 8-1901

Meridian Circle:- J. A. Dobson

Bright wires

γ Cygni all:- and prec 8.0 star on wire 1 6' N
and foll 9.0 star on wire 8 1/4' S
and foll 9.5 star on wire 8 1/4' S
and prec 7.2 star on wire 12 ~~7~~ 1/2' N
~~7.0~~

61 Cygni pr. +38°15 all

9.5 star on wire 8 1' N
7.0 star on wire 1 4' N
8.0 star wire 1 6' N } [illegible] 1st is 7 mag 2nd is 8 mag

ξ Cygni +29°49 all
α Cephei +62°10 all: clouds
and 8.5 foll. on wire 7 & 7th, 4'S
probably brighter than 8.5 in clds.

ξ Capric −22°50 T² last 2 wires clouds:-
Rattle after 21h 27

ξ Cygni +29°49

21h 8 416 29.6
435 31.6
486 34.9
518 38.1
539 40.0
560 44.9
59.1 47.2
3545 2663
5064 3804
~~46.19~~
2362 23.62
14.26 14.42
21h 9 14.34
21 8 46.19
28.15
.11
28.26

α Cephei +62°10
~~ξ Cygni +29°49~~

21h 15 43.0 17 12.1
47.5 16.1
56.2 21.5
2.0 27.8
5.6 32.0
9.5 40.5
16.0 44.8
4198 1938
6000 2769
43.92 43.92
43.92 43.77
21h 15 43.84
21 16 15.24
28.60
.33
28.27

Foll α Ceph.
8.5 foll 4'S
Probably brighter in clds:
21h 18 1.3
15.4 = wire 7
8.35
follows 1 59.3
Star is Dm
+61° 2118

Capricorn
ξ ~~Cephei~~ −22°50
T² last 2 wires
21h 22 1.0
3.2
2.10
29.73
21h 21 32.37
α 21. 21 4.53
27.84
44
28.28

1,4378
0,0354
1.4732

1.90
.42
2.32

28.60
27.84
).76
69
70

[.33

3140
3216
.76 (

m = .33

November 8-1901

+40°47
ν Cygni

20h 53m	22.0 54m	17.1
	24.6	19.6
	30.3	23.2
	33.7	26.9
	36.4	28.3
	38.7	34.5
	42.4	37.4
	228.1	187.0
	32.59	26.72
	27.08	27.08
	59.67	59.64

20h 53 59.66
α 20 53 31.42
28.24
.02
28.26

Prec star
8.0 mag, 6′N
Wire 1
20h 53m 17.6s
Precedes 4.4s

Star is
Dm +40°4363
Dm mag 8.5

Fol star
9.0 mag 1/4′S
Wire 8
20h 55m 14.4
Follows
T 14.7s

Not in Dm
Given E.C.P.

Foll. star
9.5 mag 1/4′S
Wire 8
20h 55m 27.6s
Follows:
T 27.9

Not in Dm

Fol star
7.2 mag 7 1/2′N
Wire 1 and 2
20h 58m 50.0
52.5
51.25
Follows 5 28.0s

Star is
Dm +40°4393
Dm mag 8.4
Bonn mag 8.8
Given E.C.P.

61 Cygni prec. +38°15

21h	2m	22.4	3m	15.6
		25.0		18.0
		30.3		21.3
		33.8		24.8
		36.0		27.3
		38.6		32.4
		42.1		35.1
		228.2		174.5
		32.60		24.93
		26.11		26.11
		58.71		58.82

21h 2m 58.77
21 2 30.27
28.50
04
28.54

9.5 star 1′N
Wire 8
21h 4 16s or 18s
21 2 59
Follows 1 17s

Star is
probably
Dm +38°4354
with δ discordant
a few min. arc
mag 9.4

7.0 st. 4′N
Wire 1
21h 5 10.7
2 22.4
Follows 2 48.3

8.0 st. 6′N
Wire 1
21h 5 12.4
2 22.4
Follows 2 50.0s

These two stars
seem to be
Dm
+38°4362
7.8 mag 21h 3 29.2
+38° 8.4

Dm
+38°4363
9.1 mag
21h 3 29.2
+38° 10.4

which Dm R.As
are too large by
16s and 15s respectively.
This note given Prof E.C.P.

Note, all these minutes should be increased 1 min

δ	
−22	28.28s
+29	28.26
+38	28.54
+46	28.26
+62	28.27

} .36

133
.36 × 2 72
.40 + 3 120
5) 192
28.38
for error +.16
28.54

28.38
for error .16
28.22

Corrected figures

28.15	11	31.85	31.94
28.60	33	31.40	31.73
28.24	02	31.76	31.74
28.50	04	31.50	31.46

267
31.89
+16
31.73

~~Frodsham 1327 is ~~fast~~~~
~~0m 28.54s~~
~~at 21h 0m~~

Frod 1327 is slow
0m 31.73 ~~28.22~~
at 21h 0m Sid. Time

Nov 14-1901, Thursday

Meridian Circle   JAD, obs

First wire $21^h 36$

Very cloudy

abandoned

Later

first wire $1^h 13$

cloudy: Bright wires

η Piscium +14°50 T^1 3 wires 1 (6 7?) do not reduce too faint.

T^2 all 8 wires 8; reduce

ν Persei +48°8   Wire 8 of first 3 of T^2 two; reduce

T^2 three wires do not; too faint.

φ Persei +50°11 T^2 1st 6 wires

ο Piscium +8°40 T^2 all: 8 wires

Rattle through & after $1^h 42$

η Piscium
+14 50

25^m 45.7
59.1
1.2
4.0
6.8
8.6
12.8
15.1
47.6
6.80
21.20
45.60
1^h 25^m 45.60
1^h 26^m 15.74
30.14

30.14 × 1
30.25 × 1
30.32 × 2

14
25
64
103
.26

30.26
frac .16
30.10

ν Persei
+48°8'

31^m 30.9
51.0
53.5
57.4
16.19
5.396
1.1848
0.1756
1.3604
2293
31.03
1^h 32^m 0.81

φ Persei,
+50° 11'

37
24.0
26.3
30.5
35.0
37.8
44.5
198.1
33.02
1.2829
0.1936
1.4765
29.95
3.07
1^h 37 3.07
1 37 33.39
30.32

ο Piscium,
+8°40'

39^m 44.2
57.5
59.6
2.2
5.0
6.7
11.6
12.7
34.7
4.96
20.74
44.22
1^h 39^m 44.22
1 40 14.47
30.25

Frodsham 1327 is slow
0^m 30.10 seconds
at 1^h 30^m

Nov. 15 - 1901 Friday

Meridian Circle J. A. Dobson

[20 Pegasi] +12°39 acf
" also fol sty 9.2 wire 1+2 1' S } 3 taps
" also fol sty 9.8 wire 1 4½ S }

[2 Pegasi] +24°52 singly 1, chronom stopped
then T² last 2 wires
also 12.0 mag 2' S on wire 1, 2 & 3

π Pegasi +32°41 Tracks = lost few taps there
top edge of field fainter star ½ mag fainter than π
same ?
lamp? 2 taps are 14 & 15 of π Peg

Rained after 22^h 6

Nov ~~17~~ 16? 1901 Sunday Morning

Meridian Circle — M. F. Michaelis obs.

ε Ursae Maj +56° 30 T¹ wire 8, first 3 of T²
~~12 Can Ven ay +38° 51'~~ Chron stopped
~~ε Virginis +11° 29'~~ clouds
~~[17 Can Ven] +39° 1'~~ too faint
~~43 Comae +28° 23'~~
ξ Urs Maj pr +55° 27'

Rattle ~~through~~ before
13^h 24^m

ε Ursae Maj
+56° 30'

19.1 11.4 35.0
23.4 38.5
30.8 43.5
35.7
39.0
42.3
47.2

237.5 117.0
33.93 39.00
37.14 1.1648
11.17 0.2581
1.4429
27.73
11.27

13^h 11.20
12 49 40.96
29.76
−.07
29.69
30.00
59.69
29.84
b sec φ .16
29.68

n = +.12

ξ Urs Maj pr.
+55° 27'

18^m 35.7 26.5 49.5
40.0 53.0
47.2 57.8
52.1 2.5
55.3 5.8
58.7 13.0
3.5 16.6

352.5 438.2
50.36 2.60
36.16 36.16
~~28.46~~ ~~24.50~~
26.52 26.44

18^h 19^m 26.48
13 19 56.54
30.06
+.06
30.00

0^m $29^s.68$

at 13^h 0^m

Nov. 20, 1901 Wednesday evening

Mer. Circle M. F. Michaelis obs

16 ~~Peg. + 25~~ 28 + set wrong. rattle through 21^h 5-7^m
[20 Pegasi] + 12 39 reject last tap
ι Aquarii −14 21 T Last 5 wires, ~~at~~ first 2 of T^2 may be too faint
[27 ~~Pegasi~~]
20 Cephei +62 18 T^2
π Pegasi + 32 42 T^2
ξ Cephei + 57 43 T^2 first tap double reject latter

+1.905
−0.2558
+2.1608)

30.81
31.92
−1.11

n = −.5

[20 Pegasi]
+12°39

21^h 55^m 18.4 0.6
20.0 2.8
24.9 5.8
27.5 8.5
29.2 10.5
31.0 143
33.7 425
7.08
184.7 ~~1.2494~~
26.39 1.2829
21.02 0.0107
47.41 1.2936
19.66
47.42

21^h 55^m 47.41
21 56 19.15
31.74
−34
31.40

ι Aquarii
−14 21

22^h $0.^m$
14.2^s 50.5
16.8 52.5
18.5 55.4
20.6 58.2
23.0 0.1
4.1
93.1 6.0
18.62 406.8
1.2494 58.11
0.0138 21.14
1.2632
18.33 36.97
36.95

22^h 0^m 36.96
22 1 8.88
31.92
−.65
31.27

20 Cephei
+62 18

22^h 2^m 0.2
4.5
10.0
15.8
19.9
28.7
32.8
111.9
15.99
44.11
31.88

22^h 1^m 31.88
22 2 2.69
30.81
+.50
31.31

π Pegasi
+32 42

22^h 5^m 22.5
25.0
28.1
31.5
34.0
38.8
41.2
221.1
31.59
24.36
7.23

22^h 5^m 7.23
22 5 38.60
31.37
−13
31.24

ξ Cephei
+57°43′

22^h 7^m 21.8
24.5
29.4
35.6
39.2
46.6
50.5
2476
35.37
38.34
56.98

22^h 6^m 56.98
22^h 7^m 28.04
31.06
+34
31.40

no n
31.74×1 74
31.06×1 6
31.37×2 74
4)154
39

n=−.5
31.40×1 40
31.40×1 40
31.24×3 72
5)152
30.4

.34

31.34
[illegible] .16
31.18

Frodsham 1327 is slow
0 minutes 31.18 seconds
at 22^h 0m
Sid Time

Nov 22, 1901

3h 0m
E.S.M.T

Level — M. F. Michaelis obs

Telescope North, levelled Mark 208 Screw N
N 77 S 40

Mark 118 " North
W E
Screw ~~East — 36.2 — 36.2~~
E — 37.9 — 75.0
E — 37.0 — 74.2
E — 38.0 — 75.1
E — 38.8 — 76.1
— 151.7 — 300.4

Screw W + ~~96.0 + 58.8~~
W + 93.4 + 56.2
W + ~~94.0 + 57.9~~
~~W + 94.1 + 56.4~~ stet stet
W + 94.0 + 56.7
W + 94.0 + 56.9
+ 375.5 + 226.2
+ 223.8 — 74.2

Telescope South levelled Mark 208 Screw South
N 46 S 84

Screw W + 54.2 + 16.0 ~~21.0~~
W 54.4 + 16.0
W 55.0 16.2
W 55.3 17.0
+ 218.9 + 65.2
Screw E — 37.0 — 75.9
E — 36.0 — 74.9
E — 36.1 — 75.0
E ~~— 37.3 — 76.4~~
E — 36.0 — 74.9
— 145.1 — 300.7
+ 73.8 — 235.5

+ 297.6
— 309.7
32) 121 (
96
250
~~256~~
224
260
256
4.0306 2.610

6.38
.13781
06
.022686
1.35
113430
68058
22686
.030 62610

~~1~~.03
~~West~~
East end high

Nov 22, 1901

4h15m
ESMT

Collimation [by lamplight] M. + M.

South Collim. on North Collim.

9.15
91.0
90.5
91.0
88.0
88.8
540.8
set at 90.1

R.A. Microm. found at 32.222

Telescope on S. Collim	Telescope on N. Collim
~~32.209~~	32.366
~~32.309~~	32.368
~~32.300~~	32.374
~~32.106~~	32.370
~~32.200~~	32.376
1.122	~~65.854~~
.2244	1.854
3708	.3708
.5952	
32.2976	
.012	
32.310	

wire 8 well adapted to motion

R.A. microm set at 32.310

Probably should have been 32.211

32.029
32.037
32.030
32.016
32.020
.132
32.0264

32.0264
32.3708
.3972
32.1986
.012
32.211

Nov. 22, 1901

~~74 Cygni~~ + ~~34° 58'~~ chron irreg.
ε Pegasi + 9° 25'
π² Cygni + 48° 51' first 6 of π¹
16 Pegasi + 25° 28'
20 Cephei + 62° 18

rattle after 22h 5m

ε Pegasi
+ 9° 25'

38m 21.0	3.0
23.3	5.0
27.3	7.6
30.2	10.5
32.0	12.3
33.7	16.8
36.5	18.7
204.0	73.9
29.14	10.56
20.78	20.78
49.92	49.78

21h 38 49.85
21 39 22.55
32.70

π² Cygni
+ 48° 51'

41m 55.4	68.5
58.5	1.4
4.6	5.6
8.2	9.7
11.4	12.1
14.4	18.7
	22.0
32.5.	68.0
5.42	9.71
~~31.22~~	31.22
13372	38.49
0.1826	

1.5198
33.10
38.32

21 42 38.50
21 43 10.81
32.31

16 Pegasi,
+ 25° 28'

47m 32.5	18.5
34.7	20.8
39.3	23.4
42.3	26.6
44.0	28.5
46.1	33.5
49.2	35.4
288.1	186.7
41.16	26.67
22.71	22.71
3.87	3.96

21h 48m 3.92
21 48 36.50
32.58

20 Cephei
+ 62° 18'

22h 0m 29.4	59.2
34.2	3.2
43.0	8.3
48.2	14.8
52.6	18.8
56.6	27.6
2.0	31.7
326.0	103.6
46.57	14.80
44.11	44.11
30.68	30.69

22 1 30.68
22 2 2.60
31.92

32.70 × 1	1.70
31.90 × 1	.90
32.31 × 2	2.62
32.58 × 1	1.58

5)6.80
1.36
31.00
32.36

32.36
b sec φ .16
32.20

Frodsham 1327 is slow
0m 32.s20
at 21h 30m

Nov 25, 1901

Mer. Circle

M. F. Michaelis obs

~~+ 41 51~~ last 2 of T² } Chron. avg
+ ~~23° 0'~~
β. Triang + 34 31 last four T²
Probably pol. star [6 Persei] + 50 36 1–2 to 6 and T² very faint
[γ Triang] + 33 23 last tap of rattle is wire 1
[ξ Arietis] + 19 27 . rattle after 2ʰ 16ᵐ

β Triang.
+34° 31'

3ᵐ 36.4
38.4
43.5
46.0
164.3
~~40.08~~
41.07
1.3874
0.0846
1.4720
29.65
11.42
2ʰ 3ᵐ 11.42
2 3 44.62
33.20
.12
33.08

[6 Persei]
+ 50° 36'

5ᵐ 51.0 55.0 54.8
59.0
59.8 3.2
4.6 7.2
6.8 10.4
10.1 16.8
14.6 rejected 20.0
35.9 51.4
7.18 7.34
12494 322 9
0.1974 35.05
1.4468
27.98
35.16
2ʰ 6ᵐ 35.10
2 7 7.61
32.51

[γ Triang]
+ 33° 23'

10ᵐ 24.0 13.6
26.4 15.9
31.0 19.2
34.3 22.6
36.7 24.6
39.0 29.7
42.3 32.0
233.7 157.6
33.39 22.51
24.56 24.56
57.95 57.95
2ʰ 10ᵐ 57.95
2 11. 31.14
33.19
.12
33.07

[ξ Arietis]
+ 19° 27'

12ᵐ 9.1 22.9
24.8
27.4
30.4
32.3
36.7
38.8
213.3
30.47
21.74
8.73
2ʰ 12ᵐ 8.73
2 12. 42.23
33.50
–.28
33.22

k assumed = –.5

33.20 × 3 60
33.19 × 3 57
33.50 × 1 50
7)167
24

33.16
– 16
33.00

33.20
33.19
33.20
33.12
33.16

33.22
33.08
33.07
99.37
33.12

Frodsham is slow 0ᵐ 33ˢ.00
at 2ʰ 0ᵐ

Nov 26, 1901

12^h
$0^h\ 0^m$
E.S.M.T

Level

Telescope North levelled screw North N 74 S 39
Mark 208

Telescope North W E

Mark 118

Screw W + 93.8 +58.6 35.2
W + 93.8 58.5 35.3
W + 93.8 58.7
W + 93.6 58.2

E − 38.0 −73.0
E − 39.0 −74.0 35.0
E − 38.9 −74.0
E − 39.3 −74.2

+375.0 +234.0
−155.2 −295.2
+219.8 −61.2

Telescope South levelled Screw South N 38 S 72

E − 38.8 −73.5 35.3
E − 37.9 −73.0
E − 38.0 −73.0 35.0
E − 38.0 −73.0
W + 53.4 + 18.5 34.9
+ 53.3 + 18.4 34.9
+ 53.2 + 18.3 34.9
+ 54.1 + 19.2 34.9

− 152.7 − 292.5

+ 214.0 + 74.4

+ 61.3 − 218.1

+ 281.1 − 279.3

+ 281.1
− 279.3

32) 1.8 (.056
160
200
192
.06
.00336
1.35
1680
1008
336
West end high .0045360

$b \sec \varphi = .00$

Nov 26, 1906

Collimation M. F. Michaels obs

South Collim. on North Collim.

96.0
95.1
94.0
95.3
95.4

475.8
95.16 set at 95.2

R.A Microm found at 32.310

Telescope on S. Collim.	Telescope on N. Collim.
32.021	32.259
32.009	264
31.999	264
32.030	280
32.030	257
.089	1324
32.0178	32.2648
32.2648	
2826	
32.1413	
.012	

R.A Microm set at 32.153

Nov 27, 1901

Mer Cir. — M. F. Michalis obs

+7 21′ 1 wire

~~β Androm +36° 6′~~

ν Piscium +26 45

δ Cassio. +59 43

last minute rattle after } 1h 22m

β Androm
1h 4m 16.32s
ν Piscium
1h 14m 6.25s
δ Cassio
1h 19m 27.01s

assumed
n = −.3

ν Piscium
+26° 45

13m 8.5 33.3 48.0
18.7 50.1
53.0
56.2
58.4
2.7
5.0

27.2 3934
13.60 56.20
1.2495 22.94
0.0492 33.26
1.2987 7
19.89 182
33.49 9) 280
98
.31

1h 13m 33.31
1 14 6.25

32.94
−.12

32.82

p sec φ = .00

δ Cassio
+59 43

17m 58.0 20.2
1.8 24.3
10.4 29.9
15.6 35.0
19.0 46.4
23.0 51.0
28.7

96.5 245.5
13.79 35.07
40.65 40.651
~~3171~~ ~~3171~~

~~45.50~~

54.44 54.42

1h 18m 54.43
1 19 27.01

32.58
+.24

32.82

(Frodsham 1327 is slow
0m 32.82s
at 1h 15m
Sid Time

Dec 1, 1901

Mar. Lm.

M. F. Michaelis obs.

+41 48 for last 5 T' − T²
+14 40
−21 43 wire 8 T²
+74°51 last 6 of T'
+56 37

rattle after
23h 13m

+3.694 31.47
−0.3964 33.91
+4.0924 −2.44 (.58

n −.6

o Androm
+41°48'
~~57m~~ 56.m
56.m ~~28.5~~ 22.5 9.9
32.5 28.5 12.7
31.0 16.2
34.5 19.7
22.2
27.5
30.4
116.5 138.6
29.12 ~~34.65~~ 19.80
1.2402 1.3118 6
0.1276 0.1276
1.3678 1.4394
23.32 27.51
52.44 52.29
~~+7.14~~
22h 56m 52s.34
22 57 25.50
33.16
−.01
33.15

α Pegasi
+14°40'
59m 33.3
35.3
41.0
42.9
47.0
49.2
248.7
41.45
1.3215
0.0144
1.3359
21.67
19.78
23 59 19.78
22 59 53.30
33.52
−39
33.13

c² Aquarii
−21°43'
23 3m 39.8 54.0
55.9
59.0
1.8
4.0
8.0
10.4
13.1
1.87
22.07
39.80
23 3m 39.80
23 4 13.71
33.91
−.78
33.13

π Cephei
+74°51
5m 15.5
25.4
35.6
43.4
58.5
7.0
235.4
40.90
~~78.45~~
~~83.04~~
~~22.45~~
~~17.86~~ 17.76
23 4 ~~22.45~~
23 4 49.23
~~26.78~~
31.47
+1.67
33.14

Br 3077
+56°37'
8m 26.0
29.4
34.4
39.5
42.8
50.0
53.6
275.9
39.41
37.27
2.14
23h 8m 2.14
23 8 34.93
32.79
+.37
33.16

33.13 ×1 13
33.16 ×1 16
33.15 ×2 30
4) 59
.15

33.15
b sec φ − 00

Frodsham 1327 is slow
0m 33s.15
at 23h 0m

Dec. 2, 1901

$1^h\ 30^m$ E.S.M.T. Level

M. F. Michelis obs

Telescope South levelled marks 208. Screw North bubble S. 35 N 71

mark 118 Telescope S. W E

Screw East − 36.3 − 72.2 35.9

E − 37.3 − 73.1

E − 37.0 − 73.0 36.0

E − 37.5 − 73.2

−148.1 −291.5

~~Telescope~~

Screw West + 94.1 + 58.7

W + 95.5 + 60.0

W + 94.0 + 58.9

W + 94.7 + 59.3

+378.3 + 236.9

Telescope North levelled Screw South bubble N 74 S 39

Screw West + 52.6 + 17.7 34.9

W + 53.0 + 18.0 35.0

$2^h\ 15^m$ E.S.M.T. W + 52.6 + 17.6

W + 53.0 + 18.0

+211.2 + 71.3

Screw East − 36.0 − 71.1

E − 36.0 − 71.1

E − 34.9 − 70.0

E − 35.0 − 70.1

−141.9 −282.3

+589.5 +308.2

−290.0 −573.8

+299.5 −265.6

32) + 33.9 (1.06

32. .06

190 .0644

288 135

192 .08629

.0636

1.35

.08586

West end high

b sec φ = .09

Dec 4, 1901

Level — M. F. Michaelis obs

2h 30m
E.S.M.T

Telescope North
mark 208 levelled screw N. bubble N 72 S 34

	W	E
~~Screw E~~	~~− 35.5~~	~~− 72.0~~
~~E~~	~~− 35.6~~	~~− 72.1~~
~~E~~	~~− 35.9~~	~~− 72.3~~
~~E~~	~~− 36.0~~	~~− 72.4~~
~~Screw W~~	~~+ 34.1~~	~~+ 17.9~~

mark 118

	W	E
Screw E	− 37.1	− 73.4
E	− 34.6	− 71.1
E	− 35.5	− 72.0
E	− 36.0	− 72.3
	− 143.2	− 288.8
Screw W	+ 52.8	+ 16.1
~~W~~	~~+ 52.9~~	~~+ 16.1~~
W	+ 51.2	+ 14.8
W	52.9	16.0
W	53.0	16.1
	+ 209.9	+ 63.0

3h 10m
E.S.M.T.

Telescope South levelled screw S. bubble N 71 S 40

Screw W	+ 94.0	+ 57.2
W	+ 94.0	+ 57.1
W	+ 93.7	+ 56.8
W	+ 93.6	+ 56.8
	+ 375.3	+ 227.9
E	− 37.3	− 74.1
E	− 37.7	− 74.6
E	− 37.2	− 74.1
E	− 37.8	− 74.6
	− 150.0	− 297.4

+ 209.9
+ 375.3
6
+ 585.2
− 293.2
+ 292.0
− 295.3
32) − 3.3
3.2
100

− 288.8
− 297.4
− 586.2
+ 296.9
− 295.3

(0.113
.06
.00678

.00678
1.35
3390
2034
678
.0091530

− .01
+ .09 last determination
+ .08
+ .04 b sec φ = .00

Dec 4, 1901

Collimator - M. F. Michaels obs.

3h 15m
E.S.M.T

North Coll. on South Col.

72.9	78.4
74.8	78.5
74.4	76.2
78.7	79.0
77.9	76.7

76.75 set at

Telescope on S. Collimator

R.A. Microm
found at 32.153

8h 45m
E.S.M.T.

32.140	.203
.192	.178
.197	.201
.193	.171
.190	.199

32.1864

Telescope on N Collimator

32.100	.118
32.120	.126
.116	.103
.130	100
13.1	121

32.1165
32 1864

~~6~~4.3029

32.15145
012

R.A micrm set at 32.163

Dec 4 1901 Wednesday afternoon

Mer. Circle.

M. F. Michaelis obs

~~47~~ 9

ε Pegasi + 9 25
[π Pegasi] + 25 11 T²
π² Cygni + 48 51
16 Pegasi + 25 28

rattle through
21h 57m

ε Pegasi
+9° 25'

38m 19.6 48.4 18
21.8 36
25.7 6.3
28.6 9.1
30.6 11.0
32.0 15.2
35.2 17.3

193.5 64.3
27.64 9.19
20.78 20.78
48.42 48.41

21h 38m 48.42
21 39 22.40

33.98
− 19
33.79

[π Pegasi]
+25° 11'

39m 53.0
55.4
58.1
1.3
3.2
7.8
10.2

9.0
1.29
22.66
38.63

21h 39m 38.63
21 40 12.43

33.80
− .11
33.69

π² Cygni
+48° 51'

41m 53.7 56.9
56.9 59.8
3.2 3.9
7.0 7.9
9.9 9.8
12.6 17.2
16.3 20.2

39.6 55.7
5.66 7.96
31.16 31.16

36.82 36.80

21h 42 36.81
21 43 10.50

33.69
+ .06
33.75

16 Pegasi
+25° 28'

47m 31.0 17.0
33.3 19.4
37.8 22.2
40.7 25.2
42.6 27.0
45.0 31.7
47.9 33.8

278.5 176.3
39.79 25.19
22.71 22.71

2.50 2.48

21 48 2.49
21 48 36.32

33.83
− .11
33.72

33.80 x1 .80
33.83 x1 .83
33.98 x1 .98
33.69 x 3 207
6) 468
.78

k = −.25

33.74
t sec 900

33.79 x 2 158
33.69 x 3 207
33.75 x 4 300
33.72 x 3 216
12) 881
.734

.79
.69
.75
.72
4) 295
.74

Frodsham 1327 is slow
0 minutes 33.74 seconds
at 21h 30m
Sid Time

Dec 5, 1901
Thursday evening

Mer. Cir. M. F. Michaelis obs

~~+41 51~~ chron irreg

B Triang +34 31
55 Cassio +66 4 missed wire 1 and wire 14
+33 23 rattle before T^2
2 Arietis +19 27 T^2

rattle after 2^h 15^m

B Triang
+ 34°31′

2^m 36.0 10.55 26.6
38.6 29.0
43.6 31.8
46.4 35.5
49.0 37.6
51.4 42.8
53.8 45.0
318.8 248.3
45.54 35.47
24.88 24.88
10.42 10.59
2^h 3^m 10.53
2 3 44.58
34.05
−.08
33.97

55 Cassio
+66°4

5^m 12.7 17.4 49.8
21.8 54.4
29.2 1.3
33.8 13.0
37.5
45.3
180.3
30.05
1.2833
0.39.18
1.6751
4733
17.38
2 6 17.38
2^h 6^m 51.10
33.72
+.33
34.05

[ ]
+ 33 23

10^m 23.0 13.0
25.4 15.3
30.4 18.5
33.8 21.7
36.0 24.0
38.0 28.8
41.3 31.5
227.9 152.8
32.56 21.83
24.56 24.56
57.12 57.27
2^h 10 57.20
2 11 31.11
33.91
−08
33.83

2 Arietis
+19 27

12^m 22.1
24.1
26.8
29.9
31.7
36.2
38.4
209.2
29.59
21.74
7.85
2^h 12^m 7.85
2 12 42.03
34.18
−14
34.04

n = −.25

33.91
34.05
33.98 × 2 196
33.72 × 1 .72
34.18 × 1 118
4) 386
.96

33.96
bocc? −.00

33.97
33.83 = 33.90 × .90
34.05 105
34.04 1.05
3) 300
100

34.00

Frodsham 1327 is slow
0 minutes 33.96 seconds
at 2^h 0^m

Dec. 7 1901

Mer Cir M. F. Michaelis obs.

ι Androm + 42 43
[χ Androm] + 43 47

rattle after 23^h 38^m

ι Androm
+42° 43′

32ᵐ ~~8.5~~ 47.3 5.3
– 7.0
– 11.5
20.6 15.3
23.3 17.6
25.7 —
29.1 ~~26.0~~
~~98.7~~ 56.7
24.67 71.34
0.1339 0.1339
1,22.03 1.2490
1.3542 1.3829
22.60 24.15
47.27 47.19
23 32 47.23
23 33 20.78
33.55

[χ Androm]
+.43 47

34ᵐ 40.3 2.3 19.8
44.8 23.0
84.4 26.7
42.~~55~~ 20 30.6
1.1625 ~~33.1~~
0.1415 38.5
1.3040 ~~17.17~~
~~20.41~~ 138.6
~~2.86~~ ~~28.62~~
20.14 27.72
~~2.49~~ ~~1.2839~~ 1.2654
2.34 0.1415
~~1.4244~~
1.4099
~~26.5~~
~~25.64~~
25.69
~~2.05~~
2.03
23 35 2.12
23 33 35.87
33.75

33.55 × 2 110
33.75 × 1 ~~150~~
75
3)185
.62

33.62
b sec φ00

Frodsham is slow
0 minutes 33.62 seconds
at 23^h 30^m
Sid Time

Dec 10, 1901

Mer. Cir — M. F. Michaelis obs

+ 44 56 missed wires 12 and 13
+ 33 36 missed wire 14
+ 61 27 last 4 of T^h

Rattle after $20^h 48^m$

α Cygni
+ 44 56

36^m	51.1	31.2	49.8
	54.1		52.6
	59.8		56.3
	3.7		—
	6.0		—
	9.0		8.6
	12.8		11.3

16.5
2.36
28.96
31.32

29.86
59.72
1.3040
0.1500
1.4540
28.441
31.28

20^h 37^m 31.30
2 38. 4.89
33.59
+.05
33.64

h assumed = -55

ε Cygni
+ 33 36

41^m	6.4	40.5	56.4
	8.9		58.6
	13.6		1.8
	16.9		5.0
	19.2		7.2
	21.4		—
	~~24.0~~?		14.8

86.4
14.40
1.3372
0.0744
1.4166
26.10
40.50

~~17.04~~
~~1.577~~
~~24.61~~
~~40.38~~

23.8
3.97
1.2904
0.0794
1.3698
23.43
40.54

20^h 41 40.52
20 42 14.33
33.81
−.14
33.67

η Cephei
+ 61 27

43^m 26.6
30.5
38.9
43.0
139.0
34.75
1.3874
0.3206
1.7080
51.05
43.70

20^h 42^m $43^s.70$
20 43 16.84
33.14
+ 51
33.65

33.64 × 3 192
33.67 × 2 134
33.65 × 1 65
6) 391
33.65
t sec 400

33.59 × 3 177
33.81 × 2 162
5) 339
68

Frodsham 1327 is slow
0 minutes 33.65 seconds
at $20^h 30^m$

Dec 11, 1901

Mer. Circ

M. F. Mushaltis obs

γ Androm + 41 51 T1 better
α Arietis +23° 0′
β Triang + 34 31
~~+66~~ too hazy rattle after 2h 8m

γ Androm
+ 41 51

56m 43.0 21.6 38.0
45.8 41.2
51.4 45.4
55.1 49.0 262.5
57.3 51.4 52.50
59.8 56.9 1.3627
3.4 54.8 0.1274
1.4906
375 8 341.7 30.94
53.69 48.81 21.56
27.52 27.52
21.21 21.29

1 57 21.25
1 57 54.92
33,67

147
280
12)427
36

α Arietis
+23°0′

2h 0h 35.8 6.6 21.2
23.2
38.0
42.5 25.8
45.2 29.0
47.1 31.1
49.3 35.2
52.4 36.4
31 0.3 201.9
44.33 28.84
22.27 22.27
6.60 6.57

2h 1m 6.58s
2 1 40.48
33,90
−.12
33,78

β Triang
+34°31′

2m 36.4 27.0
28.9
38.9 32.4
43.5 34.9
47.1 37.9
49.4 42.8
51.4 45.2
54.5
321.2 250.1
45.89 35.73
24.88 24.88
10.77 10.85

2h 3m 10.81s
2 3 44.54
33.73
−.06
33.67

n = −.25

33.67 × 3 201
33.67 × 2 134
33.78 × 1 78
6)413
.69

33.69
b sec φ .00

Frodsham 1327 is slow
0m 33.69s
at 2h 0m

Dec 13, 1901

Level — M. F. Michaelis obs

0h 15m
E. S. M. T.

Telescope North – levelled mark 208 Screw North bubble N 71 S 38

	W.	E.
~~Screw~~	~~W + 93.0~~	~~+ 59.0~~
	~~W + 92.5~~	~~+ 58.5~~
	~~W + 92.3~~	~~58.3~~
	~~W + 92.6~~	~~+ 58.7~~

Screw W + ~~W E E W~~

mark 118 and 298

370.4 234.5

	W	E
Screw	E – 38.1	– 71.8
	E – 38.1	– 72.0
	E – 38.6	– 72.2
	E – 39.0	– 727
	– 153.8	– 288.7
Screw	W + ~~95.0~~	+ ~~61.4~~
	W + 93.8	+ 60.1
	W + 93.7	+ 60.0
	W + 95.0	+ 61.4
	W + 93.6	+ 60.0
	+ 376.1	+ 241.5

Telescope South, levelled, mark 28 Screw South bubble N 78 S 46

Screw	W + ~~51.0~~	+ ~~17.4~~
	W + 51.9	+ 18.1
	W + 52.1	+ 18.4
	~~W + 53.3~~	~~+ 20.0~~
	W + 52.9	+ 19.1
	W 53.9	+ 20.0
	+ 2108	+ 75.6
Screw	E – 37.0	– 71.0
	E – 37.0	– 71.0
	E – 36.0	– 70.0
	E – 36.4	– 70.4
	– 1464	– 2824

– 300.2	– 571.1
586.9	+ 317.1
+ 286.7	– 254.1
– 254.1	

32) 32.6
1.019
.06
.06114
135
30570
18342
06114
.0825390

b sec φ = .08 West end. high.

Dec 15, 1901

Mer. Cir.

M. F. Michaelis obs

γ Persei + 53° 7' missed wire 9
ρ Persei + 38 27 T^2
β Persei + 40 34

−29 23 g.

rattle after $3^h 13^m$

γ Persei
+ 53° 7'

56^m 23.7 —
27.4 36.1
34.0 40.6
38.7 45.2
41.2 48.7
44.6 55.3
49.3 58.5

2589 2844
36.99 47.40
34.15 13370
11.14 0.3217
1.5587
36.20
11.20

2^h 57 11.17
2 57 44.63
33.46
.10

ρ Persei
+ 38 27

58^m 38.8
41.4
44.6
48.3
50.4
55.6
58.5

337.6
48.23
26.18
~~41~~
22.05

2^h 58^m 22.05
2 58 55.90
33.85

β Persei
+ 40 34

$3^h 0^m$ 38.5 33.1
41.0 35.6
46.6 39.3
50.0 43.0
52.3 45.2
54.9 50.6
58.3 53.0

3416 2998
48.80 42.83
27.00 27.00
15.80 15.83

3^h 1^m 15.82
3 1 49.70
33.88

33.88 × 2 = 176
33.85 × 1 = 85
3)261
87

33.87
b sec φ .08
33.79

Frodsham 1327 is slow
0 minutes 33.79 seconds
at 3^h 0 m,
Sid. Time.

Dec 18, 1901

Mes Cis

m. F. Michaelis obs.
rattle before 23^h 30^m

wrong star
st ~~pl.? 41 H Cephei~~ + 67 15 rattle – 1st taps
φ Pegasi + 18 34 wires 7 and 8 and T^2
+ 6 19
α Androm + 28 33 ~~first 2~~ T^1 and last 2 T^2
β ~~Cassiop + 58 36~~
~~(22 Androm)~~ 45 31
γ Pegasi + 14 38 T^2

Clouds

~~st. pl.~~? 41 H Cephei ?
+ 67 15'

41^m 29.0 42.6
33.4
45.0

57.5
8.7

2336
46.72
1.3348
0.4126
1.7474
55.90
42.62

16.3
21.2
~~35.6~~
~~46.5~~
~~52.3~~
~~57.4~~
~~223.3~~
~~37.22~~
~~1.3295~~
~~0.4126~~
1.7341
54.21
43.01

23^h 42 46.62
23 43 14.72
28.10

φ Pegasi
+ 18 34

46^m 44.1 58.1
~~58.1~~
1.1197
0.0232
1.1429
13.90
58.00

11.8
13.9
16.4
19.8
22.3
26.4
27.8
138.4
19.77
21.63
58.14

23 46 58.12
23 47 30.76
32.64
23
32.41

ω Piscium
+6 19

53^m 15.6 44.05 57.4
17.6 59.1
21.8 67
24.8 4.4
26.7 6.2
28.4 10.1
30.8 13.0
165.7 31.9
23.67 4.56
20.63 20.63
~~3.04~~ 43.93
44.30
23 53 44.12
23 54 17.34
33.22
– 32
32.90

assumed
n = – .4

6° 32.90 × 14 1260
14° 32.88 × 7 616
18 32.41 × 8 ~~369~~ 328
28 32.84 × 9 756
3.03 38)2960
.76 .78

α Androm
+ 28° 33'

2^m 14.8 47.2 26
16.8 4.6
21.6 7.2
24.9 ~~1.03~~ 3.60
27.0 1.1492
28.9 0.0563
32.1 1.7055
166.1 ~~12.74~~
23.73 1605
23.34 ~~48.29~~
47.07 40.86
49.55

0^h 2^m 47.18
0 3 20.17
32.99
15
32.84

32.78
– .08
32.70

γ Pegasi
+ 14 38

7^m 52.6
54.4
57.0
2.4
6.2
8.3
1.2
0.17
21.18
38.99
0^h 7^m 38.99
0 8 12.13
33.14
26
32.88

Frodsham 1327 is slow
0^m 32.70^s
at 0^h 0^m

Dec 20 1901

Mer. Cir — M. F. Michaels obs.

o Androm ~~+ 41 48~~ ster — Chron stopped
[γ Piscium] + 2 44
τ Pegasi + 23 12 — wire 8 1st 5 & T^2
[ι Pegasi] ~~+ 22~~ 52 stet — 2 wires wire 7 wire 9 [illegible]
+ ~~61~~ 44
[λ Androm] + 45 55
ι Androm + ~~42~~ 43 — too near
+ 43 47? — T^2 last 5 best

rattle of $23^h 39^m$

o Androm
+ 41 48
22.8
26.5
29.3
31.9
35.5
~~146.7~~
~~29.18~~
146.0
29.20
1.2494 — ~~1.2293~~
0.1276 — ~~0.1276~~
1.3770 — ~~1.3479~~
23.82 — ~~22.28~~
~~08~~
53.02 — ~~51.46~~
22 — 51.46
~~22 57 25.13~~
~~53.67~~
82 — 53.02
22 57 25.13
32.11
− 1
32.10

n assumed −.5

[γ Piscium]
+ 2 44
11^m 4.2 — 32.5 — 45.9
6.5 — 48.1
10.4 — 50.5
— — 53.4
17.0 — 55.2
19.5 — 59.4
— 1.1
57.6 — 373.6
11.52 — 53.37
1.3272 — 20.52
0.0005 — 32.85
1.3277
21.26
32.78
23 11^m 32.82
23 12 5.35
32.53
−.44
32.09

τ Pegasi
+ 23 12
15^m 29.5
31.8
34.3
37.7
39.6
172.9
34.58
1.2490
0.0366
1.2846
19.26
15.32
23 15 15.32
23 15 47.64
32.32
−.12
32.20

[λ Androm]
+ 45 55
31^m 33.6 — 14.8 — 33.7
36.8 — 36.6
42.9 — 40.2
47.0 — 44.0
49.4 — 46.8
52.0 — 52.6
55.7 — 55.4
317.4 — 309.3
45.34 — 44.19
29.46 — 29.46
~~15.88~~ — 14.73
14.80
23 32 14.77
23 32 46.83
32.06
+.06
32.12

[κ Androm]
+ 43 47
35 20.9
24.8
27.7
31.7
34.5
39.8
42.7
221.6 — 176.4
31.66 — 35.28
28.16 — 1.3627
3.50 — 0.1379
1.5006
31.66
3.62
23 35 3.62
35.62
32.00
+ .01
32.01

32.09 × 1 — .09
32.20 × 2 — .40
32.10 × 3 — .30
32.01 × 4 — 4
32.12 × 5 — 60
15)1.43
.09

32.09
−.08
32.01

Frodsham 1327 is slow
0^m 32.01^s
at 23^h 15^m