

KG
11366
v.530

Zone.
Chronograph Records
Circle Readings

Charles W. Sever, University Bookstore, Cambridge.

From Dec. 26, 1870 to, Feb. 21, 1871

A 2.

Charles W. Sever, University Bookstore, Cambridge.

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

Handwritten notes in blue, green, and red ink, including the word "Hy" and various symbols.

Date.

Dec 26 1870

First minute-break.

23 30

c, set at.

35.5-00

N. Coll.

S. Coll.

37.284

33.716

282

726

294

711

283

712

282

713

Sum

475

28

Mean.

37.285

33.716

a.

s.

Mag.

REMARKS.

Po

a Piscium

all stars

a And.

" "

3 Boreas

a bore

a bore

n bore

new sheet - 1st m. b.

1st m. b.

Polaris

all but last three

Dec. Jan 1, 1871

Polaris

All the stars

Runs.

Pre 26

	A.		C.
715	710	249	257
278	286	248	253
279	290	248	253
273	290	247	250
277	288	247	259
280	283	243	
Sum	387	240	272
Mean.	277.4	28.74	24.80

2774	2480
2874	2540
<u>1100</u>	<u>.64</u>
-20	
-17	
<u>37</u>	
-18	

Pointer. Stroke. Rev. A. C. REMARKS.

0 4 4 12 00
 25 0 3.15 280
 40 0 25.3 219
 35 2 26.7 249

~~35 353.3~~
 - 35 3 5-3.3 43.5 + 3 37.9 26.8
 50.9 40.7 36.0 24.5
 49.7 39.0 31.3 20.6
 48.5 38.0 21.8 17.2
 45.7 35.8 23.0 12.8
 44.9 34.1 18.2 7.8
 44.2 34.0 15.7 5.1
~~37.9 26.5~~

Date.

First minute-break.

Set at.

N. Coll.

S. Coll.

37302

33.807

292

809

305

820

300

897

309

878

Sum

Mean.

1598

407

37.302

33.807

pre 31

Dec 26 1870

7871 Jan 1st m

35.551 Dec 31

28-500 Dec 26

35.551 Dec 31

a.

δ.

Mag.

REMARKS.

Skans.
1 17 20

59° 33'

50° 51'

h m
1 20 44
8.6

60.5

8.8

22 53
8.5

0.2

8.6

28 57
8.8

367

28.5

examine δ

Persei
1 30 1

49° 58'

Tom lost & fell Tom

32 21
8.0
3

16.1

8.6
8.6

33 19
9.0

53.6

—

not seen
lost 70 + 77

35 30
9.0

52.3

7.0
7.0
6.8

39 06
8.6

12.8

8.5
8.5
8.5

40 11
8.9

40.9

8.6

not seen

1870 Q203A

Runs.

	A.		C.	
	35.4	35.2	33.8	35.0
	34.6	35.1	33.2	35.1
	35.3	35.3	33.0	35.2
	34.7	36.0	33.7	34.6
	35.2	35.4	33.5	35.3
Sum	252	276	22	252
Mean.	35.021	35.52	33.44	35.04

35.04	33.44
35.52	35.021
300.48	1.60
-09	.82
-32	
-41	
-20	

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

40 1 25.3 20.5

The date opposite the
minutes is Dec 26

10 4 34.5 31.1

15 0 4.7 2.0

35 4 13.3 8.3

15 1 16.5 12.8

15 1 47.6 43.3

55 4 22.9 19.9

55 4 28.7 27.1

20 1 33.5 30.8

20 3 18.5 15.0

20 3 21.0 19.7

20 3 20.5 18.0

0 2 23.4 21.1

0 2 26.2 21.9

0 2 30.9 26.1

30 4 33.2 30.7

Date. 7870 Dec 26 1871
Jan. 1/1871

First minute-break.

Set at. 85.578

Sum
Mean.

N. Coll.	S. Coll.
37.350	23.607
360	806
355	804
347	806
353	809
205	25
37.355	23.806

Jan 1871

a.	d.	Mag.	REMARKS.
1 42 34 88	469	8.9 8.7	
89 43 41	334	9.2	Not seen setting wrong
88 46 41	139	8.5 8.7 8.6	lost all but 75 & 7m
86 48 53	89	8.5 8.7	seen but not obs cloudy
90 51 8	-17	9.3	
87 51 20	-15	8.8	2 ^d flower double long strip 2 ^d x
51 38	-12	8.6	lost 7m 5 full 7m
90 53 38	397		Not seen sure
90 55 23	560	9.0	
90 56 34	424	8.9	

Runs.

	A.		C.	
	23	38	58.1	59.4
	2.9	40	60.0	59.1
	2.4	33	59.4	56.8
	2.7	37	58.8	55.7
	2.3	42	58.3	55.0
Sum	26	190	294.6	291.0
Mean.	2.52	38.0	58.92	58.20

Jan 11/71

252

58.2

380

58.2

128

10

1256

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

25 3 5.8 0.8
 25 3 14.4 11.2
 25 3 15.4 12.9

40 1 42.7 39.3

0 2 21.9 19.2
 0 2 30.5 26.0
 0 2 32.0 29.4

5 1 20.0 17.6
 5 1 25.2 19.1

A-M Rev.

Jan 11/71

15 1 55.2 52.1
 15 1 57.8 55.1

15 0 58.1 53.1 ~~Not read.~~

15 3 55.6 50.9

30 2 48.9 46.0

Date.

1870 Dec 26 + 31

First minute-break.

c, set at.

Sum

Mean.

N. Coll.

S. Coll.

a.

δ.

Mag.

REMARKS.

1^h 58 23
80

60.0

9.0
9.0

2^h 1 13
72

267

8.8

not seen
close double 9.0 compo both

3 2
88

-0.2

8.8
8.9

5 47
87

-46

9.0

not seen too faint to ch

6 51
90

8.1

9.7
8.7
9.3

tg moving

7 56
93

54.4

8.7

not seen
Dec 26 ends, observed

9 14
90

172

8.9
9.0

Dec 31 begins

10 25
92

-51

9.0

11 36
70

215

6.5

13 5
85

47.1

not seen sure

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

15- 0 10.1 4.8 2026
16- 0 2.0 56.3

45- 2 42.2 38.8 2026

15- 0 32.3 29.2
15- 0 33.1 28.9

20 0 3.9 69.9 2031

The blue preceding this
air for Jan 1

5 2 24.2 19.1
5 2 24.9 20.2
5 2 18.0 16.0

Jan 7
The blue marked x
air for Jan 7

55- 4 24.3 24.2

55 4 23.0 22.0 x 2-7

20 0 14.8 14.3 2031

50 3 25.4 21.2 2031

50 3 24.3 22.3

Date.

1870 Dec 31
1871 Jan 1 + 7th

First minute-break.

c, Set at.

Sum
Mean.

N. Coll.

S. Coll.

a.

δ.

Mag.

REMARKS.

2^h 14 40 415 8.9
80 9.2

87 16 57 -52 8.0
8.6

65 19 14 -0.5 6.5
6.5

89 21 22 609 8.8
8.6

82 30 2 119 8.4
8.6
8.4

85 31 34 637 9.0
9.3

94 33 4 327 9.4

88A 34 46 -24
Perseus 48 41
2 35 20

84 36 6 106 8.5

81 37 31 49 8.2
8.5

both * long str 5 fol
very long str for 5
long str

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

30 3 32.1 29.0

x 30 3 29.2 25.4

20 0 24.8 20.0

x 20 0 27.0 23.3

15 0 48.6 43.4

x 15 0 48.0 43.8

15 0 7.2 1.8

x 15 0 8.8 4.4

0 3 16.5 12.5

0 3 18.1 14.1

x 0 3 19.0 16.5

10 0 39.9 36.5

0

40 2 35.2 31.0

0.0031

30 4 22.1 17.1

x 3.5 0 16.1 11.8

30 4 24.0 21.0

x 30 4 21.3 18.2

x 30 3 8.3 5.5

10 0 57.0 52.3

10 0 57.5 54.1

1870phae.pro.1534R

Date.

1870 Dec 31

1871 Jan 1 + 7x

First minute-break.

c, set at.

Sum

Mean.

N. Coll.

S. Coll.

α .

δ .

Mag.

REMARKS.

2^h 39^m 6^s 60.8 8.0
76 8.0

32 39 21 59.9 9.5

39 27 60.1 9.5
92 9.5

α Persei
2 41 14 55 21

3 44 15 30.4 9.2
93 9.5
9.0

44 20 30.1 8.6
81 8.5
8.4

45 58 27.2 8.4
85 8.2
8.2

47 50 16.0 8.1
85 8.5
8.4

53 50.8 16.5 9.0
90 9.5
9.2

54 51 26.7
87 Persei 53 00
52 50 24

1st caput lost for 5
long str lost Tm

1st + caput
lost Tm 5 fol
lost Tm 5 fol
lost Tm

Td fall long str
Td fall Tm

clouds lost for
8 fol

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

10 4 40.5 37.0

x 10 4 42.9 41.8

x 10 4 38.6 34.9

50 3 50.4 48.3

50 3 52.6 51.2

x 50 3 45.0 44.0

40 4 52.6 53.4

40 4 48.6 47.1

x 40 4 51.8 50.0

10 4 46.3 43.2

45 3 0.4 55.1

45 2 54.4 52.3

x 45 3 2.7 10.1

55 3 58.0 54.0

55 3 58.2 56.0

x 55 3 57.8 54.8

55 3 47.9 43.1

55 3 14.9 12.2

x 55 3 48.3 43.1

15 0 27.3 22.7

15 0 19.2 16.1

x 15 0 20.2 17.3

Date.

1870 Dec 31.

First minute-break.

1871 Jan 1st

Set at.

Sum
Mean.

N. Coll.

S. Coll.

α .

δ .

Mag.

REMARKS.

β Persei
2 59 43

40° 27'

3^h 1 27
87

586

209.2
+9.0

2 18

31

2 18
88

317

18.9

75 full lost 7m

7h double peak

4 01
92

-19

9.2
+9.0

6 20
85

263

208.7
+8.5

6 59
90

272

7.0

75 full 7m lost

7 57
92

422

9.0x

7m + 75 lost

9 12
80

48

Not seen back

10 50
90

299

7.0

11 44
90

315

9.0
9.0

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

45-

2

40.9 36.9

45-

2

44.8 43.0

x 45-

2

39.8 32.0

15-

1

34.5 28.2

+ 15

1

27.5 23.3

35-

4

8.1 3.8

35-

4

41.3 38.2

x 35-

4

31.3 26.8

15-

2

8.5 4.2

v 15-

2

10.8 7.5

45-

3

42.2 38.2

x 45-

3

40.4 43.9

45-

1

23.1 18.5

45-

1

16.1 12.0

x 45-

2

35.2 30.7

30

0

28.1 20.2

45

0

23.8 19.5

Dre31

40

3

46.1 42.1

40

3

30.1 26.1

Date.

1870 Dec 31

First minute-break.

1871 Jan 1+7

c, set at.

Sum

Mean.

N. Coll.

S. Coll.

a.

δ.

Mag.

REMARKS.

^h
3 12 42
^s
88

37.8

8.8

~~14 19 120~~
86 a Person 49.24
3 15 03

~~16 41 50~~
241 No Cam 59.29
3 18 40

Person 47.33
3 21 30

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

35 1 59.0 54.1

50 1 17.5-14.7

x 50 1 53.4 48.2

50 1 19.8 15.0

x 50 1 15.4 9.9

45 1 11.0 6.0

45 1 59.3

45 1 12.3 7.1

x 40 2 46.1 31.8

40 2 26.1 22.4

40 2 57.9 51.0

40 2 25.1 20.9

W A R Obs

x 40 2 24.6 20.4

A. M. Re

40 2 6.3 2.9

(40 2 6.3 2.9)

W R Obs

A. M. Re.

Date.

~~Dec 31~~
Jan 7 1871

First minute-break.

c, set at.

N. Coll.

S. Coll.

Sum

Mean.

a.

s.

Mag.

REMARKS.

Gr 716
331

62 47

T₁ full.

S Perseus
3 33 40

47° 22

S Perseus
3 36 20

42° 10'

T₁ full

3^h 38 50
6.0

199

6.0

8.0 39 53

319

75
82

9.0 41 36

576

92
95

8.8 42 52

590

90
86

full

8.3 44 8

338

83
83

8.5 45 14

~~193~~
23

84
85

9.0 47 43

288

90
90

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

					<i>H. M. obs. Wash Res.</i>
	25	2	240	220	<i>P. Son 3rd min</i>
	50	2	555	543	<i>W. M. obs. Wash Res.</i>
	50	4	524	487	
	0	4	614	584	
	0	4	614	584	
	0	4	356	330	
	55	0	12.0	56	
	40	2	552	528	
	40	3	62	51	
	15	2	263	246	
	15	2	260	253	
	15	1	220	187	
	15	4	278	225	
	40	1	475	433	
	40	1	540	498	
	15	2	357	340	
	15	2	380	344	
	45	1	353	325	
	45	1	397	349	

Date.

75031
Jan 7

First minute-break.

c, set at.

Sum

Mean.

N. Coll.

S. Coll.

a.

s.

Mag.

REMARKS.

8 50 13
9.3

314

9.3
9.4

Upper

8.0 52 1

214

8.8
9.0

f.b. after 3rd wire

9.5 54 8

284

9.4
9.3

19.0 55 30

431

8.6
8.6

fol.

8.89 57 8

134

8.9
8.7

8.96 58 20

134

Not seen
205 after above.

8.86 1 24

-18

8.7
8.0

8.88 3 26

-06

9.4
8.0

Prob. out the #

8.88 5 10

547

8.7
8.0

Very faint - in obs. upper
fol T. 1 fol
f.b. bet 1 & 2

9.5 6 53

175

8.8
8.8

Shine

Shine

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

40 3 610 588

40 4 104 65

50 3 350 321

50 3 336 311

45 2 35 14

45 2 128 98

30 1 473 443

30 1 488 450

0 1 583 576

0 1 563 530

15 2 212 172

15 2 245 227

15 4 88 82

15 1 257 200

20 0 236 220

20 0 512 462

55 2 197 177

55 2 180 165

Date.

Dec 31
Jan 1

First minute-break.

c, set at.

Sum

Mean.

N. Coll.

S. Coll.

a.

s.

Mag.

REMARKS.

4^h 7 52
90

33.2

70
6.5

T_v fol.

T_m l

61 10 26

36.4

60
6.5

~~8~~ false after T_e

95 12 8

38.8

98
9.0

88 13 34

28.8

88
8.6

double com
comp. 90 nearly same R H

88 15 5

32.7

80
8.3

40 T_v for another star pr.

90 16 15

12.8

50
8.4

86 17 37

25.6

86
9.0

90 18 36

59.3

85
9.3

90 20 35

-36

1 Camel
4 21 40

5338

fol

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

40 2 350 323

40 2 20.9 16.3

35 4 43 20

35 4 3.7 -0.2

35 1 45.0 40.0

35 1 38.7 36.1

45 1 40.4 36.9

45 1 37.1 33.5

40 2 46.3 43.9

40 2 44.7 41.9

0 2 49.3 46.2

0 2 45.7 42.3

50 0 -0.5 -1.5

50 1 9.3 50 sum

15 1 14.9 11.1

15 1 17.4 13.3

35 2 45.8 44.2

35 2 47.0 44.8

Date.

First minute-break.

set at.

Dec 31
Jan 1

Sum
Mean.

N. Coll.	S. Coll.

a.	s.	Mag.	REMARKS.
4 ^h 24 ^m 47 ^s 8.5	48.5	7.3 8.0	
8.9 25 59	20.4	8.3 8.6	
29 47	58.7	8.0 8.0	Setting 3rd out
9.0 31 45	57.3		Not seen
8.7 33 25	32.7	8.3 8.8	Not seen
8.0 34 48	17.3	8.6 8.5	fr. (comp 8.5) comp. 8.8
8.1 36 44	58.2	8.4 8.5	
8.8 37 52	58.4	9.2 9.3	
9.2 41 20	15.6	9.2 9.5	fr. buffer
8.8 42 16	35.1	8.8 9.1	

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

30 1 397 350

30 1 873 340

55 0 55 32

55 0 27 -13

~~57~~ 3 267 250

15 3 224 200

40 2 430 420

40 2 414 383

55 3 47 47

55 3 13 10

15 2 53 42

15 2 53 30

15 2 92 60

15 2 125 94

55 4 15 02 ✓ 250

55 4 577 551 same

35 4 309 308

40 4 277 250 same

Date.

first minute-break.

set at.

Dec 31
Jan 7

Sum
Mean.

N. Coll.

S. Coll.

a.

δ.

Mag.

REMARKS.

4 43 59
8.8

23.3

8.3
8.3

both #.5 per m.
per m.

8.5 45 26

18.9

8.6
8.7

Reg. str. before

8.8 47 47

46.4

8.8
8.3

8.4 49 20

2.1

not-seen same
not-seen same

8.5 51 26

3.8

8.3

8.5 52 11

3.7

8.8
8.3

be (double both same mag. 8.8)
dif RA = .4^h
m.

9.0 53 21

49.8

9.0

8.5 54 47

9.2

8.5
7.8

7.5 56 01

-7.5

8.8
8.0

Reg

7.5 57 27

6.7

7.3

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

50 1 499 472 Cont-Tm pulant

50 1 548 518 Feb. - Sep 2nd ✓

55-1 2.3 8.6

55-1 2.7 0.9

25 3 578 580

25 3 569 550

~~10 3 260 280~~

10 3 390 392

10 3 412 393

25 0 152 145

5 0 472 459

5 0 433 406

35 2 353 361

20 2 446 440

5 2 383 381

ate.

first minute-break.

set at.

Dec 31
Jan

Sum
Mean.

N. Coll.

S. Coll.

a.

δ.

Mag.

REMARKS.

4 58 28
83

36.1

86
9.0

94 3 26

53.2

88
9.5

✓ fore-lant 8 m.

90 4 51

45.4

8.7
8.8

circuit-broken.

a Aurigae
5 7 12

45.52

80 9 45

52.3

8.0
8.2

80 11 10

18.3

8.3

82 13 30

6.1

8.0
8.2

83 14 50

57.5

7.8
8.0

17 Camelopard
5 18 00
8

62.57

81 21 42

16.2

8.3
8.0

ful. after T_m

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

35 4 42.4 43.0

35 4 47.6 48.0

20 0 57.5 55.4

20 0 58.6 56.4

30 0 83.3 81.6

30 0 23.0 20.7

20 3 24.2 24.0

20 3 28.5 26.0

20 2 26.3 24.3

20 2 24.1 20.9

0 0 8.7 6.9

5 4 54.0 54.0

5 4 54.4 51.9

20 3 55.5 53.9

20 3 58.1 55.7

15 3 18.3 11.4

15 3 18.2 15.3

55 4 5.3 5.1

55 4 5.9 3.2

The full lost time

Date.

First minute-break.

C. set at.

84031
Jan 7 1891

35.574

N. Coll.	S. Coll.
3735	337415
398	740
392	741
393	742
390	713
Sum 413	239
Mean 37.391	33.7418

Jan 7 1890

a.

δ.

Mag.

REMARKS.

5 22 54 270 22.84

9.2 23 43 1.0 90.86

9.5 25 27 110 95.95 fl. bef T₁
fl. near T₁ in T₂

8.5 28 14 60.6 8.8 8.8

9.2 29 9 -1.6 90.83

7.0 33 19 37.8 7.8 7.8

o Aurigae 49 46
5 30 50

Runs.

	A.		C.
39.2	42.1	47.7	47.9
39.0	42.1	47.2	47.4
39.7	41.4	47.2	48.4
40.4	41.9	47.2	48.4
40.6	41.4	48.0	48.4
Sum	89	378	405
Mean.	35.78	47.76	48.10

Jan 7/1890

3978	4776
4178	4810
2.00	.34

REMARKS.

Pointer.

Stroke.

Rev.

A.

C.

45 2 44.8 43.5

45 2 45.5 46.8

10 4 2.3 3.2

10 4 5.7 4.6

0 4 17.3 17.3

0 4 17.3 15.4

15 0 0.1 0.0

15 0 6.8 2.7

15 0 42.0 41.2

15 0 13.7 10.7

35 2 8.3 8.2

35 2 19.7 16.4

25 4 16.5 17.0

25 4 19.3 18.7

5 feet

30 0 5.2 3.0

AM. Jas. W. R. R. R.

25 3 7.2 5.0

Jan 7

Ther 9.5

Bar 30.20

W. R. R. R. Bad seeing

Date.

Dec 31 1870

First minute-break.

set at.

Sum
Mean.

N. Coll.

S. Coll.

a.

δ.

Mag.

REMARKS.

7 stars
Polaris

W. R. D. S. S. S. S.

T. a. b. c. d.

-1 35 8 508 416
2 489 397
3 477 367
453 344
420 318
393 277

Tm 10⁶ late

5 stars

Bar. 29.78

Atm. 64.8

Th. 33.0

Polaris morning

-1 50 3 420 319 +1 3 508 414
-2 447 352 2 550 460
0 597 509

1 hr 2 mag

4 53 567
93 20
113 17
149 50
177 87
197 98
222 122

a Draco

262 163
282 196
330 230

a Bootis

2 Bootis

370 267
397 301
448 352

5 hrs min

473 390
530 437
595 527
640 534

Runs.

Sum
Mean.

A.

C.

Bar. 29.88
5th H. 59.0
54 H. 24.5

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

10 4 14.6 11.0

40 1 31.5 27.2

15 3 3.3 2.3
1 49.8 48.4

{ -1 15 2 0.2 54.2 }
-2 1 34.7 32.0
-3 1 8.7 8.1
{ +1 0 24.6 17.2 }
2 -10.2 -15.2

-1-45 44 82.7 29.9

+1 3 41.1 40.4

+1 2 33.0 31.7

-10 0 44.7 38.7

2 3 25.9 22.8

4 16.7 5.7

+1.45 0.9 4.3 -3.4
2 15.6 24.6
3 17.2 1.2
4 44.0 42.0
5 44.0 24.5

Date.
first minute-break.
set at.

1870 Dec 18th Continued
from A1

Sum
Mean.

N. Coll.	S. Coll.

a.			s.		Mag.	REMARKS.
2	39	36	20.8	7.5	50°-57°	
				6.8		
	42	14	16.4	8.9		
				—		
	44	14	30.4	8	2* ~~to~~ 5d fol T _m	
				8.3	about 8 ^s too late app _s below	
	45	14	38.1	6.5		
				6.5		
	46	28	32.8	8.3		
				8.0		
	47	49	44.3	5.8		
				6.0	expect 1 st for 5	
	49	4	26.7	9.7	sure	
				9.0		
	50	38	51.5	8.9	2 ^d ltr T ₀	
y Pucci						
B Pucci						

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

50 3 53.2 52.0

50 3 37.1 34.8

55- 3 22.2 19.2

55- 3 3.3 58.1

40 4 53.3 52.1

45 0 1.0 56.7

55- 1 59.8 55.6

35- 1 42.0 37.0

40 2 9.1 5.7

40 1 57.7 57.7

30 0 59.9 55.5

30 0 43.9 35.9

45- 3 38.0 35.1

45- 3 24.2 20.1

20 3 48.7 45.1

15- 0 26.8 21.9

10 4 30.1 26.2

45 2 22.9 18.9

All faint

for inclination

W.A.R. Obs
A.M. Rec

Date.

1870 Dec 18th
Dec 22

First minute-break.

set at.

Sum

Mean.

N. Coll.

S. Coll.

a.

s.

Mag.

REMARKS.

a Perseus

A.M. obs.

M. Camel.

A.M. obs.

Includer before P.M.

o Perseus

T 1st to 2nd soon8^h 23^m 4

13.4

92

Prob. wrong

24 47

86.

25-24

174

80

T lost

32 0

200

75

Ink faded till 3^h 58^m

80

33 45

250

97

94

34 48

767

90

S. 2nd wire
✓ for

37 8

483

80

92

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

50 1 22.7 20.2 M.R. reads.

50 1 13.7 09.7 "M.R. reads.

45 1 36.7
~~36.7~~ 17.5

42 1 4.7 5.1

50 0 10.2 2.0

40 2 14.0 9.2

0 1 41.2 37.0

55 2 46.6 44.0

50 1 12.2 7.2

50 0 26.8 23.6

20 1 49.0 45.0

25 2 26.2 22.2

Date.

1870 Dec 18
Dec 22

first minute-break.

set at.

Sum

Mean.

N. Coll.

S. Coll.

a.

δ.

Mag.

REMARKS.

38 7

46,5 9,5

39 6

58,0 8,0

80

40 10

48,0 8,4

88

41 36

57,6 9,0

90

42 52

59,0 8,3

98

44 ←

338 8,3

96

45-14

-2,3 8,0

80

47 43

288 8,2

—

falsch after T_n

50 13

314

94

52 14

16,4

98

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

15- 1 38.2 34.8

25- 2 15.2 11.8

15- 2 14.1 8.0

15- 1 5.4 0.6

40 1 32.8 29.1

15- 2 27.5 23.8

45 1 23.3 21.0

40 3 50.0 48.1

55- 3 40.4 43.2

Date.

1870 Dec 18
Dec 22

First minute-break.

c, set at.

Sum

Mean.

N. Coll.

S. Coll.

a.

δ.

Mag.

REMARKS.

54 7

284

90

55 29

431

85

57 8

134

80

58 20

134

f.b. bef T_r
~~Ints OK.~~
not seen

4 1 24

-1.8

83

Ints OK.

~~2 524~~

75

2 524

366

85

83

f.b. bef T_r

4 524

215

84

90

6 16

309

87

85

7 28

326

85

85

8 34

-13

70

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

45 1 557 53.1

30 1 12 -0.9

0 1 428 40.2

15 2 23.7 22.0

15 2 12.0 10.2

35 3 43.0 41.6

35 3 32.3 30.6

50 3 41.7 38.7

50 3 21.3 18.2

40 4 23.8 21.7

40 4 1.7 -1.3

40 2 55.7 53.7

40 2 38.8 34.0

15 1 44.4 41.3

date.

1870 Dec 18
Dec 22

first minute-break.

set at.

N. Coll.

S. Coll.

Sum

Mean.

a.

s.

Mag.

REMARKS.

9 30 62.4 78

10 25 36.4 70

12 8 38.8 55

13 34 28.8 80
80
Close double - closer14 45 32.8 75
75
f.b. bef. T₁15 59 62.3 88
83
~~closer & brighter~~17 8 53.8 76
70
closer & brighter18 31 23.7 80
8019 43 19.3 78
7820 49 23.5 80
90
f.b. pr. brighter

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

10 3 2.7 0.6

35 4 1.7 -1.0

35 1 98.1 44.8

45 1 40.7 38.1

45 1 26.1 22.8

40 2 46.4 43.3

40 2 31.3 28.3

10 3 16.0 12.9

10 2 54.7 52.8

20 1 42.5 40.9

20 0 27.7 26.7

50 1 57.0 52.7

50 1 38.0 35.1

55 1 11.2 8.8

55 0 56.4 54.5

15 3 52.6 51.1

15 3 88.5 88.0

ate. 1870 Dec 18
Dec 22

first minute-break.

set at.

Sum
Mean.

N. Coll.	S. Coll.

a.	δ.	Mag.	REMARKS.
23 23	46.3	8.0 8.2	close double m.
24 47	43.5	8.5 7.3	
25 59	20.4	8.0	
29 46	57.1	8.6 8.0	
31 45	57.3		not- seen one 20 ^s earlier not- seen
33 21	31.7	8.5 8.4	m.
34 39	7.2	8.5 8.5	
36 29	51.5	8.6 8.6	
37 43	19.5	7.8 8.0	
38 42	23.5	8.0 8.0	m.

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

254 4 10.3 9.1

21- 4 50.1 53.0

30 1 33.2 35.9

30 1 21.1 19.2

55- 0 8.8 5.0

15- 3 33.0 31.3

15- 3 15.7 13.2

40- 3 43.0 40.8

40 3 26.7 24.0

5 3 5.7 2.8

5 2 48.2 45.5

20 4 7.1 5.1

20 3 52.2 48.1

55 0 28.6 25.0

55 0 17.7 14.0

50 1 48.1 45.2

50 1 23.4 25.0

Date.

7870 Dec 18
Dec 22

First minute-break.

c, set at.

Sum

Mean.

N. Coll.

S. Coll.

a.

δ.

Mag.

REMARKS.

39 56

11.2

8.4

1

8.2

40 47

10.8

7.8

7.5

41 54

17.7

8.5

last break for T₂

43 46

23.4

8.3

8.7

for T₂ 1st

43 59

28.3

8.3

8.7

2nd T₂ for 1 stroke for 2nd

45 26

18.8

8.8

9.0

f.b. before T₂

47 7

58.0

9.0

8.8

49 20

2.1

Not seen. A# shows
30° later not seen

50 48

57.2

9.0

8.8

Came 20° too soon

51 54

49.0

8.9

8.6

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

0 4 6.2 4.2

0 3 51.7 40.4

0 4 250 250

0 4 140 —

55- 2 4.8 1.6

50 1 54.7 57.7

50 1 42.0 38.2

11 " " "

50 1 42.0 38.2

55 1 8.1 6.0

55 0 50.1 46.2

15 2 24.0 23.0

15 2 10.0 6.7

15 2 5.0 1.9

15 2 46.3 44.4

25 1 31.4 28.7

25 1 15.7 12.5

1870 Dec 18
1870 Dec 22

Dec.

First minute-break.

c, set at.

N. Coll.

S. Coll.

Sum

Mean.

a.

δ.

Mag.

REMARKS.

52 51

24.9

85

85

54 16

18.7

84

85

55 35

-78

8

88

57 1

22.4

88

85

58 28
5 4 51

45.4

80

82

5 48

60.9

a Aurigae

9 1

33.1

75

80

10 47

29.5

82

83

13 30

61

82

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

50 0 291 261

50 0 113 89

55 1 117 88

55 0 551 521

20 2 545 528

50 2 279 250

50 2 127 100

35 4 450 421
35 4 343 343

Ill bad.

Cw 4 14 00 for i
20 3 288 287

40 2 115 87

40 1 550 502

45 1 421 412

45 1 343 257

10 0 17 87

Date. 7840 Dec 18
Dec 22

First minute-break.

Set at.

Sum
Mean.

N. Coll.

S. Coll.

α .

δ .

Mag.

REMARKS.

5^h 14 50 57.5 84

16 1 54.0 85

21 47 54.8 75
78

22 54 27.0 75
78

23 43 1.0 85
83

25 27 11.0 95
(not seen?)
not seen?

28 12 28.2 80
78

29 9 -1.6 85
80

During

A.M. Ends.

A.M. Ends.

Polaris

Morning T_m d-e-h-u
not Obs.

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

20 3 58.7 56.3

20 1 41.1 38.7

15 4 58.7 58.2

15 4 41.4 38.6

15 2 47.2 46.1

Sum 45 2 35.7 33.2

10 4 8.2 6.7

10 3 53.7 50.7

0 4 20.5 20.6

45 3 25.7 23.7

45 3 10.2 8.0

15 0 52.0 51.1

15 0 30.3 28.1

25 4 27.3 26.3

25 4 17.0 16.0

25 6

50 3 47.7 37.2

4 16.1 5.6

for i

Date.

Dec 11
Dec 22

First minute-break.

Set at.

Sum
Mean.

N. Coll.

S. Coll.

α .

δ .

Mag.

REMARKS.

3 Jorgans

a Bontis

W.A.R. Obs

W.A.R. Obs.

5 Langer

11/11 "

8 "

3

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

15 2 552.56.2

MTR rec.

5 3 26.2 25.4

55 3 521 50.0

15 4 5.0 2.8

Date.

Dec 21 1870

First minute-break.

Set at.

35.570

Sum

Mean.

N. Coll.	S. Coll.
37,280	33,865
287	857
284	850
277	850
250	850
Sum	428
Mean.	37,286
	33,844

α .

δ .

Mag.

REMARKS.

i Cep
a Pic
o Cep
Polaris

for i

Jan 9 1871

Polaris outside mm S⁵ Gate

-35- 3 54.6 44.6
5.50 47.6
on wire 55.0 48.3 on
55.1 48.4
56.4 46.2
57.3 43.9
on wires { 48.8 41.0
47.8 40.0
46.1 38.1
mid wire 38.4 30.6
35.2 26.8
24.2 21.7
26.0 18.2
21.0 12.8
6.6
2 37.5 30.0

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

Before Tm

50

3

392

279

At Tm

3

530

420

After Tm

4

18,0

10,5

35,3

243

50,5

410

51,5

51,0

Date.

Jan 7 1871

First minute-break.

Set at.

Sum
Mean.

N. Coll.

S. Coll.

a.

δ.

Mag.

REMARKS.

3 stars

2 stars

5 fol.

0 stars

2 stars

Polaris

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

					04	450	410	
	✓	4	8.9	6.0				
					2	438	390	
	25-	0	0.7	-2.5				
	40	0	25.0	22.7	40	1	12.8	106
					35-	4	11.0	78
	5-	2	36.0	33.0				
—	35-	3	55.0	44.9				
			53.0	43.5				
			50.5	40.3				
			49.2	39.8				
—			47.4	38.8				
+		3	35.3	21.7				
			30.4	21.0				
			27.2	18.0				
+			21.7	13.0				

T₁ coincides with
 the wires.

Date.

1871 Jan 10
1871 Jan 17

First minute-break.

C, set at. 35.545

Sum
Mean.

N. Coll.

S. Coll.

51°

a.

s.

Mag.

REMARKS.

2 22 36 9.0 43.8 9.0 57° 52°

~~24 29 6.5 44.1~~

24 29 6.5 44.1 8.9

25 30 9.1 52.9

26 49 9.2 43.5 9.0

27 56 7.0 24.6

29 10 9.0 7.9 9.4

30 42 9.4 16.6 9.3 1 star of 100

33 8 8.7 35.8 8.4

34 37 9.0 57.7 Jan 10
O persw 48 41
2 35 20

35 42 8.0 44.8

Jan 10

Runs.

40.5' A. 40.0'	40.5' C. 40.0'
229	230
229	232
230	223
233	228
233	231
Sum	154
Mean.	2308

2308	2954
2288	2864
<u>20</u>	<u>10</u>
1021	102
102	102
<u>102</u>	<u>102</u>
102	102

21.4 W
21.4 W

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

~~30 0 24.8 25.0~~
30 1 15.3 13.0

30 1 03 55.0

~~20 2 24.5 23.0~~

30 2 8.5 3.4

5 2 29.1 24.3

35 2 528 478

35 4 28.7 23.7

30 4 24.5 22.3 104 R. Obs. S.M. Rec

30 4 138 20.0

30.4-57.2 53.2

30.3 25.2 21.9

ate.

first minute-break.

set at.

1871 Jan 10

1871 Jan 17

35.560

Sum

Mean.

N. Coll.

S. Coll.

37,290

33,830

293

819

281

831

291

837

292

829

151

146

29.02

8292

Jan 12 1271

37,2902

33,8292

111154

35,5597

a.		S.	Mag.	REMARKS.
2 ^h 37 ^m 50 ^s	83	510 284	9.2	Q
38 47	85	467	8.9 8.5	
40 02	90	74	9.0 9.2	
41 30	91	178	9.0	2
42 29	83	~~83~~ 536	8.3 8.1	
43 51	95	555	9.8 9.6	22,
44 46	89	324	8.2 9.3	sure * full 40 seconds
46 17	92	443	9.0 9.0	
48 11	80	586	8.2 8.3	
50 53	90	59	8.9 8.8	

Runs.

Sum
Mean.

A.

C.

Jan 12 1471

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

45 1 57.6 52.3

25 3 30.0 32.2

25 3 34.4 29.1

5 2 55.3 54.8

5 2 57.5 53.2

55 2 30.6 27.9

55 2 33.2 28.7

20 2 3.2 0.3

20 2 6.3 0.8

15 4 53.0 50.1

15 4 52.6 48.8

40 3 49.3 46.6

40 3 52.1 47.3

30 0 58.2 55.0

30 0 58.0 50.3

15 1 40.0 38.0

15 1 35.3 29.6

5 4 16.4 15.1

5 4 15.5 11.6

Date.

1871 Jan 10

First minute-break.

1871 Jan 17

Set at.

Sum

Mean.

N. Coll.

S. Coll.

α .

δ .

Mag.

REMARKS.

2	51	40	57	51.3	6.8 6.5	5 fac first true
53	42	90		44.0	9.6 9.0	3w bad
54	47	90		60.3	9.5 9.2 9.0	5 on 2w bad double both
57	5	85		3.8	9.5 8.7	
58	13	88		51.3	9.0 8.4	
59	51	90		36.0	9.5 9.0	examine setting
2	26	73		41.3	6.8 7.0	
3	31	91		62.1	9.0 8.9	2d x
4	32	78		71.83	7.02 8.5	
5	30	86		6.0	8.3 8.5	

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

20 4 53.3 41.0

20 4 59.0 57.0

30 1 20.2 16.8

30 1 18.1 11.5

10 4 40.2 37.8

10 4 56.0 50.1

10 1 42.9 41.4

10 1 40.6 35.3

25 0 22.8 21.0

25 0 25.4 19.8

35 3 30.4 28.1

35 3 28.0 23.8

30 4 58.1 55.7

30 4 58.3 53.6

10 2 25.9 23.7

10 2 21.2 16.3

55 2 15.2 13.1

55 2 22.4 17.8

5 3 54.1 52.9

5 3 57.5 52.8

Date.

1871 Jan 10

1871 Jan 17

first minute-break.

Sum

Mean.

N. Coll.

S. Coll.

α .

δ .

Mag.

REMARKS.

3 2^m 51^s

78

5.0

7.0

8.0

8 16

9.2

14.2

8.8 sure

9.0

10 05

9.1

24.4

8.8

9.0

11 4

76

89

7.4

7.0

12 36

9.1

52.9

9.0

8.9

13 54

9.3

47.4

9.5

9.4

14 52

9.0

62.8

9.2

8.5 sure

16 12

9.3

33.7

9.1

Too faint

9.2

17 17

8.0

16.4

8.9

8.0

σ Persei

3 21 25

47.33

Runs.

Sum
Mean.

A.

C.

Jan 10 Bar 30.20
 Ther 74.0
 Wet - 16.2

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

10 0 5.6 0.2

~~5 4 54.9 56.1~~

0 1 5.7 1.4

0 1 4.7 0.0

50 0 12.7 10.0

50 0 14.1 9.9

5 1 20.1 12.3

5 1 24.3 19.4

20 2 56.2 53.7

20 2 56.3 51.2

25 2 53.5 50.3

25 2 56.0 52.2

10 2 26.1 22.7

10 2 27.9 22.9

5

40 1 41.9 36.5

55 4 57.1 36.0

55 4 59.9 54.4

40 2 18.2 14.1

40 2 17.0 13.0

40 2 51.1 35.8

40 1 10.9 9.8

40 1 23.2 19.1

Jan 10 ends when good

ate.

first minute-break.

set at.

1871 Jan 18
1871 Feb 7

Sum
Mean.

N. Coll.

S. Coll.

a.

δ.

Mag.

REMARKS.

3 ⁿ 30 ^m 55 ^s	9.1	55.0	9.5	No limit cloudy
			9.2	
31 58	8.9	4.4	8	
			8.8	
33 59	9.5	5.33	8.10	
			8.4	
36 16	9.0	59.6	9.0	
			9.0	
37 35	6.5	1.0	~~7.8~~	
38 38	9.2	4.8	9.2	
40 46	9.5	60.3	9.8	2d x
43 10	8.9	5.3	9.0	
			9.0	
44 34	8.1	9.7	8.7	
			8.5	
45 55	8.9	52.4	8.8	
			8.9	

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

25 3 23.2 19.1

15 2 54.9 55.2

20 1 54.9 19.5

25 4 57.3 56.3

10 1 57.9 53.5

20 3 43.2 39.4

0 4 47.1 44.2

15 3 8.0 2.8

20 2 16.3 41.3

5 4 56.5 51.3

Sum 15 2 42.3 37.7

5 0 31.0 27.7

10 3 17.8 14.1

20 2 59.9 55.3

30 0 24.3 19.8

Date.

First minute-break.

Q set at.

1871 Jan 17
1871 Feb 7

Sum
Mean.

N. Coll.	S. Coll.

α .		δ .		Mag.	REMARKS.
3					
47	40	91	44.5	9.2	
				9.2	
49	13	78	7.6	7.4	
51	16			7.0	
51	16	85	47.7	8.5-	
				8.5-	
52	26	89	17.6	9.0	
				9.0	
53	46	91	29.4	9.0	
				9.2	
55	22	93	37.8	9.7	
				9.5-	reject Tm
57	02	90	45.3	9.0	superior x
				8.9	
~~58~~	~~02~~	~~95~~	~~5.9~~		
Q Permi		47	22'		
58 20					
60	30	95	28.2		
2	49	93	54.4	9.2	1x
				9.4	

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

25 2 461 40.7

35 0 30.2 26.1

5 2 50.2 45.7

15 0 35.7 32.6

25 2 30.4 24.7

35 0 16.8 12.3

55 2 22.7 18.1

5 0 6.9 3.0

45 0 45.3 41.1

50 3 29.1 25.5

~~35~~⁴⁵ 2 21.4 16.4

45 0 18.0 12.9

30 0 21.4 16.1

35 3 5.1 1.9

50 3 22.6 19.0

0 1 21.8 18.8

0 0 25.8 23.2

20 0 52.2 45.7

25 3 36.4 33.6

Date.

First minute-break.

c₁ set at.

1871 Jan 17
1871 Feb 7

Sum
Mean.

N. Coll.	S. Coll.

α.		δ.	Mag.	REMARKS.
4				
3	54	92	58.1	9.2 9.5-
6	45	16	30	8.9 8.8
7	55	91	56.8	9.0 8.9
9	55	90	46.8	9.0 8.9
12	33	58	30.1	9.1 9.3 9.2 9.4 8.9 for 12* 8.9 for 12 long etc 12*
14	20	66	37.5	7.0 6.5-
16	03	88	21.5	9.1 9.0
17	04	90	41.8	6.8 6.6
18	22	90	46.3	9.0 8.8
1. Camel		53.37		
4	27.44			

Runs.

Sum

Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

20 0 15.1 10.9

25 2 59.6 56.1

10 2 10.6 5.9

15 4 59.1 58.0

15 3 58.2 53.0

25 1 42.3 39.7

25 3 19.4 14.9

35 1 2.2 58.3

40 4 55.0 53.1

50 2 41.0 38.0

35 2 19.8 14.2

45 0 9.8 5.0

50 3 39.6 35.7

0 1 30.2 26.2

30 2 58.5 55.0

40 0 42.9 38.7

25 4 13.3 9.0

35 1 59.0 54.3

35 2 44.0 39.9

45 0 45.5 40.9

40 4 53.0 49.1

35.5- 15.0 10.9

35 1 44.8 40.0

Date.

First minute-break.

Set at.

Jan 7 1871
Feb 7 1871

Sum
Mean.

N. Coll.	S. Coll.

a.		δ.	Mag.	REMARKS.
4	37 11	56 31	5	A. M. Jas. Mark, etc.
40	19 8.5	56.2	8.5	A. M. Jas. " " "
			8.0	
42	19 9.2	46.2	8.5	Too faint -
			9.5	5 for 11 m l.
44	38 9.1	12.6	9.0	
			8.8	
45	51 8.9	6.4		not seen
47	48 8.0	54.7	8.5	
			9.0	
48	56 8.0	43.7	7.8	
			8.3	
50	46 8.9	18.2	8.8	
			8.8	
52	11 8.6	29.9		
e Aurigae	4 52 48	43 38'		ms
53	12 9.5	31.0		
e Aurigae	4 57 24	41 03'		

Runs.

Sum

Mean.

A.

C.

51°

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

40 3 570 546

50 1 430 413

15 4 579 535

25 2 399 380

30 3 273 256

0 1 344 370

5 4 342 315

20 1 383 493

25 3 303 287

30 1 50 594

35 3 465 430

55 2 208 175

5 0 110 64

35 2 170 138

45 0 108 79

10 1 436 403

15 4 280 268

for 16 -1.1

for 40 4 250 241

for 3 513 503

Date.

First minute-break.

C, set at.

Sum

Mean.

N. Coll.

S. Coll.

Jan 17 1871
Feb. 7 1871

a.

s.

Mag.

REMARKS.

a Aurigae
5 7 5

45.52'

20 3 15.4 5.5
20 2 25.1 21.7

5 11 00

90

19.3

88

12 29

80

5.9

86

80

13 31

95

1.3

800

faint,
not seen

14 31

80

30.9

22

Setting mings

15 41

89

29.8

86

18 42

84

38.9

85

82

20 96

89

12.1

88

92

21 48

91

17.4

91

90

22 47

90

15.5

89

92

174

Runs.

Sum

Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

20 3 273 26.0

30 1 5.4 5.5 fol. 34.7 33.2

55 3 40.4 36.1

5 4 42.1 44.9

15 2 29.3 26.4

10 4 12.3 9.9

45 0 20.0 15.2

35 1 38.3 33.0

40 4 20.3 16.6

0 3 21.1 17.1

10 1 2.3 -0.4

55 2 52.4 50.0

5 0 29.4 25.7

55 4 46.0 41.7

5 2 26.1 22.6

ate.

rst minute-break.

set at.

Jan 17
4.50.74

Sum

Mean.

N. Coll.

S. Coll.

a.

b.

Mag.

REMARKS.

5
33 51 20 17.4 8.7 22

9.5

24 37 20 11.0 8.8
8.5

27 19 28 18.4 8.9
8.8

29 20 84 15.4 8.7
8.5

36 30 93 24.5 9.5

too faint to see

38 29 81 6.5 8.4 2
8.0

39 28 82 19.7 8.2
8.3

40 42 63 28.6 7.8
7.3

44 16 90 45.4 9.0 2
9.2

45 13 83 5.8 8.7
9.5

Faintest seen

Runs.

Sum

Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

55 2 498 488

5 0 290 253

0 3 276 244

10 1 87 41

55 1 497 475

0 4 335 306

55 4 620 543

5 2 440 420

50 0 528 418

5 3 330 281

15 1 180 138

55 0 490 440

0 3 309 273

45 2 03 546

50 4 460 444

25 4 153 123

35 2 63 565

5 4 348 310

15 2 162 120

Ill. Rod.

Date.

First minute-break.

c, set at.

Jan 17 1420 Feb 7

Sum

Mean.

N. Coll.

S. Coll.

a.

s.

Mag.

REMARKS.

5 46 35 8.5 314 8.7 5 fol.

8.2

47 59 8.8 6.9 8.8 8.5

8.5

49 53 9.0 25.0 8.8 22p 8.3

8.3

50 46 8.8 4.3 8.3 5 fol 6 mag m. 8.0 5 fol

8.0

52 27 9.0 9.1 9.4 9.5

9.5

54 16 6.3 34.7 6.5 double bright m. 8.0 Pa.

8.0

55 23 8.5 53.1 8.4 8.8

8.8

57 14 8.9 58.6 8.8 8.5

8.5

5 59 08 8.0 32.1 8.7 5 sun 8.0 5 sun

8.0

6 0 88 9.0 16.4 9.0 9.5

9.5

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

40 3 163 111

50 1 537 490

5 8 307 280

15 1 149 104

50 0 -21 -69

55 2 432 390

10 0 238 182

15 2 550 529

5 0 460 423

10 3 340 302

40 0 580 528

45 3 411 377

20 1 64 20

25 3 507 477

15 2 220 180

25 0 90 50

40 3 60 22

50 0 447 401

55 3 583 556

5 1 428 383

Runs.

Sum
Mean.

A.

C.

Pre. Mid. at 20.00
Feb. 2.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

30 2 403 382

40 0 258 24

0 3 113 74

Sum 5 3 19.2 12.0 Feb 2

10 0 578 529

45 4 508 480

55 2 320 277

40 1 521 478

45 3 590 578 ✓ for all runs

10 2 208 159

Sum 15 2 49.1 41.8

20 0 28-24 for 15-4 26.0 23.9

25 3 522 498

35 1 290 259

20 4 190 175

30 2 83 568

50 4 218 202

55 4 508 468

0 2 80 568 for 1 26.0 22.0

45 2 563 521

50 3 270 227

55 0 403 354

25 4 323 296

35 0 1.9 57.2

55 0 40

35 2 143 110

Date.

Jan 10 1871

First minute-break.

c, set at.

Sum

Mean.

N. Coll.

S. Coll.

a.

s.

Mag.

REMARKS.

6 Perseu

lost - ✓

1 Cass

94 Canis

Q Persei

Jan 12 1871

a And.

2 Peg

48 2 11.7 13.2
1 31.7 33.1

3 Cors

a Cors

Q Cors

2 Cors

Beta

2 Cors

Polaris

Rig. Tm
Rig. Tm

Tal. 1.1

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

25 1 20.9 17.5

30 2 28.0 25.1 30 2 28.0 25.1

30 1 50.1 45.9 30 0 33.1 30.9

50 3 17.6 15.4 50 4 11.7 0.1
50 2 11.1 8.4

50 3 0.7 0.9

50 2 0.5 2.1

45 2 11.7 13.3
1 31.7 33.10 { 4 41.0 43.0
4 4.0 7.0
3 2.4 0.025 10 28.7 27.2 { 1 2.0 -2.2
20 4 32.3 30.0
2040 0 11.3 7.7 { 0 55.1 52.3
35 4 15.2 12.7
5 2 8.2 7.1

40 2 20.1 17.2 { 1 29.1 24.8

10 4 22.3 17.8 { 3 4.2 58.3

Date.

Jan 17/1871 Feb. 7

First minute-break.

C set at.

Sum

Mean.

N. Coll.

S. Coll.

 α . δ .

Mag.

REMARKS.

6^h 22 24 (7.0) 3.37.8
7.8

8.2

23 42 80 6.1

8.4

8.6

8 Lyncis 61° 35'

2

p2.

27 58 80 18.3

8.6

8.0

32 19 87 13.4

8.3

8.6

33 51 73 35.0

8.0

7.6

36 01 82 54.0

8.3

8.0

37 20 80 55.2

8.6

8.3

Something wrong about setting

38 58 90 31.4

9.0

8.8

40 35 86 40.2

8.7

9.0

(454)

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

1

10

2

483

413

15

3

114

20

0

223

190

10

0

332

278

15

3

178

158

40

0

23

585

45

2

475

450

55

2

55

30

0

4

476

441

0

3

125

106

10

0

572

550

40

0

533

493

45

3

360

326

15

3

67

39

25

0

482

439

20

0

283

242

25

3

77

53

40

2

460

435

50

0

257

209

30

0

208

163

35

3

65

30

Date.

First minute-break.

Set at.

N. Coll.

S. Coll.

Sum

Mean.

α .

δ .

Mag.

REMARKS.

6						
42	36	93	454	9.2		
				9.3		
43	40	83	390	6.5	same ✓ fol	
				6.5	same ✓ fol. & Tm	
15	Lynceis		58° 85'			
6	4600					
49	03	79	-0.4	7.7		
50	54	88	554	9.1		
51	52	86	21.7		not seen	
52	51	85	35.8	8.6		
				8.0		
53	52	77	15.7	8.8	✓ fol	
					not seen	
55	7	84	8.4	9.0	✓ fol	
56	57	89	36.3	8.5		
				9.0		

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

30 1 122 89

35 3 550 529

30 4 450 446

40 2 154 118 Am 8.3 pre^{old} 20.5

40 0 124 100

45 3 04 20

15 1 345 320

20 0 12 13

~~40 0 343 291~~

40 0 343 291

45 3 182 135

0 0 171 158

5 0 197 154 e.b. fine

40 0 -45 -73

45 2 390 343

Date.

first minute-break.

set at.

Jan 17 1871 Feb 7

N. Coll.

S. Coll.

Jan

Sum

Mean.

a.

δ.

Mag.

REMARKS.

1 58 28 34.7

80

82

7 0 12 37.8

93

98

Too ft. seen

2 0 88 36.2

89

84

3 18 6.0 37.7

60

65

4 30 9.4 1.3

96

Chronograph ran down
not seen

5 27 7.5 39.4

78

78

f. b. opt. Tg

6 58 9.2 18.6

90

90

64 Quig 41° 6'

7 9 0

19 Lynx 55° 31'

7 12 20

41-4 47.0 44.5
both 3 16.0 14.2

ful

Runs.

A.		C.	
2.8	8.2	12.7	13.0
7.2	10.0	12.0	15.0
7.4	10.3	13.2	15.0
7.2	9.7	13.8	14.7
7.6	50.0	13.6	14.7
Sum			
Mean.			

Jan 7 1871

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

40 1 ~~133~~ 100

45 3 51.7 48.7

35 2 49.5 45.4

4

35 4 35.7 33.0

45 2 18.2 12.6

35 2 1.3 5.6

40 4 45.1 41.7

15 0 32.3 28.6

35 0 16.5 12.6

40 3 31-13

55 2 25.0 22.0

5 0 -1.0 -4.6

5 0 0.6 -0.9

15 1 32.3 30.0

45 4 9.0 6.6

0 35.2 33.6

at m. Jas.

Sure, 50 1 54.7 53.3 fol. 50 at 5.2 6.1

Date.

First minute-break.

set at.

Jan 17/1871

35.588

N. Coll.	S. Coll.
37.500	33.683
504	675
506	670
520	675
506	660
16	363
Sum	
Mean.	37.5032 33.6726

Jan 17

a.

δ.

Mag.

REMARKS.

Polaris

All the stars

of Cass

Too faint - T_1 before T_2

2 Persei

Lost 3 stars. 1st doubtful

Barometer 30.15

Alt M. 67.0

Eq M. 28.5

Runs.

Sum

Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

Reading of circles - the outside wires

$\left. \begin{array}{l} 38 \\ - \end{array} \right\} \begin{array}{l} 3 \\ 3 \end{array} \begin{array}{l} 88 \\ 24.6 \end{array} \begin{array}{l} 57.0 \\ 14.3 \end{array} \left. \begin{array}{l} 3 \\ 3 \end{array} \right\} \begin{array}{l} 29.2 \\ 64 \end{array} \begin{array}{l} 14.3 \\ 57.2 \end{array} \left. \begin{array}{l} \\ \end{array} \right\} +$

10 $\left. \begin{array}{l} 3 \\ 3 \end{array} \right\} \begin{array}{l} 36.8 \\ 53.0 \end{array}$

15 ~~20.8~~ 20.8 15.6

Date. 1871 Jan 22

first minute-break.

set at. 35.572

Sum
Mean.

N. Coll.

S. Coll.

a.

δ.

Mag.

REMARKS.

2 hrs. Imm-
5' lat~~get of the wires~~v bars
~~old~~

Sandy

o Perin
η Tauri

" AR.

Jan 25

Polaris

n Manni

3 Sami

Reading of stars (taken at random) at T_1 and T_2

Mean of 5

A	b
298	292
	298
	<u>10</u>
	295

40° 5'

Runs.

Sum
Mean.

A.		C.	
12.9	13.8	16.4	17.2
13.0	12.7	16.8	16.9
12.6	13.3	17.1	17.4
12.4	13.4	17.3	17.1
12.7	13.3	17.1	17.8

4 + 3° 8 A.M.
30.002 630

5 22.000 micrometer

Pointer.	Stroke.	Rev.	A.	C.	REMARKS.
3/30	40	3	13.1	3.1	0'
	40	1	44.9	34.1	02
					1 282 290
					30.1 31.1
					314 3.09
					897 910
					1 299 3030
	30	1	11.0	4.1	1 30.3
					602
		4	40.9	33.0	1 30.10
	40	0	38.3	35.3	
	35	4	6.9	1.4	

ate.

1871 Feb 7th

first minute-break.

set at.

35.57

Sum

Mean.

N. Coll.

S. Coll.

37.367

33.767

.360

.787

37.3726

.380

.768

33.76800

.377

.771

111406

.329

.772

35.5703

363

340

37.3726

33.7680

a.

δ.

Mag.

REMARKS.

2 loss Min

B. frutes

2 frutes

+ Power

T "

Y "

B "

Runs.

Sum
Mean.

A.		C.	
22.3	23.8	27.8	28.9
22.0	24.2	27.4	28.9
22.8	23.7	27.2	28.4
23.1	24.6	27.9	28.7
22.0	23.7	27.3	29.3

f mic set at
16.50

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

45	1	20.0	11.8
	1	2.6	-2.4
40	4	52.8	42.5
10	2	35.2	35.0
	1	3.3	2.6

30	2	10.9	9.2
	0	35.1	35.0

40	2	11.7	8.8
5	4	39.0	
5	4	8.1	4.3

20	3	36.8	32.7
		11.8	6.3

55	0	27.0	24.2
----	---	------	------

Th. 22.2
Bar. 30.41
At Th. 70.0

Date.

Feb. 11 1871

First minute-break.

set at.

35.546

Sum

Mean.

N. Coll.

S. Coll.

37.207

320

311

300

33.788

.793

.783

.786

.777

38

37.309

42.7

33.785

a.

s.

Mag.

REMARKS.

2 Tarni

5 W. W. W.

1/2 Gunnison

57 Lephur

last two wires

Bar 30.47
At the 67.0
Re " 16.0

Runs.

	A.		C.	
	134	141	180	192
	138	141	181	188
	129	134	187	191
	138	142	184	189
	129	138	182	194
Sum	171	196	409	410
Mean.	1342	1392	1818	1900

1342	1808
1892	1902
50	92
92	
142	
14	

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

N. Coll.

S. Coll.

37361 33780

.352 804

.364 295

.351 804

.352 4003

.282

37356 33820

Date.

1871 Feb 16

First minute-break.

e, set at.

35.578

Sum

Mean.

a.

s.

Mag.

REMARKS.

Polaris

3 Arctus

2 Arctus

10 Camel

3 Auriga

2 "

last two outside w

1st w bad

last two wires

Tim bad & full

Runs.

Sum
Mean.

A.

C.

Pointer.

Stroke.

Rev.

A.

C.

REMARKS.

5 3 7.8 2.3

25 4 20.8 16.1

15 4 29.0 23.3 *for 15 3 40.1 34.8*

~~30 1 6.2~~ ~~30 1 24.2 19.3~~

Date.

Feb. 20 1871

First minute-break.

c, set at. 35.583

Sum

Mean.

N. Coll.

S. Coll.

37.486

33.650

478

683

491

686

477

680

480

685

412

424

37.482

33.645

a.

δ.

Mag.

REMARKS.

Polaris

Tr 25 late

P Aniks

a beet

14 Camel

5- 3 356 2.94 Te too soon
3 150 8.0

3 Arnyne

30 0 3.8 59.0 m,
25 4 13.2 9.1 ful.

22 Arnyne

15 4 235 18.3 middle
3 42.0 97.3 ful

5, Cepheus

Tr. - cf. g. n.

5 Canis.

✓ Gem.

False sho. before.

Feb 21 1871

Th.

30.21

Alt

65.0

Se = +15.0

a Arnyne

m. 30 1 107 67
pe 25 4 53.2 48.0

17 Cam

m. 25 1 31.5 257
pe 2 2.0 54.0 — 25 too soon
0 17.2 9.0

