

KG

11366

v. 639

Chronograph Record.

A. 1. 1872

From 1872, Feb. 21 to 1872, July 31

C. W. Sever, University Bookseller, Cambridge.

9 87
3451 p = 3.1 feet
387 = 8.4 slowness
3451 = 11.5 feet

50.211872

41.620 41.850

620

850

612

845

620

845

613

850

41.617

41.9495

41.583

Reading of distance between
wires of the new lines with
the Clark screen.

a	b	c	a	b	c	d	e	a	b	c
42.9	83.4	23.7	31	42.8	83.6	22.5	63.5	42.0	82.8	22.0
42.8	83.2	23.0	31	42.4	83.3	22.1	63.3	42.7	82.6	23.2
42.8	83.3	22.4	31	42.6	83.3	22.4	63.0	42.6	82.6	22.4
33	83.2	22.7	30	42.7	83.2	22.3	63.0	42.5	82.8	22.0
42.2	83.2	22.8	29	42.6	82.9	22.2	63.0	42.8	82.8	22.0
158	13	146	157	31	163	115	8	136	26	126
42.78	83.26	22.92	31	42.62	83.6	22.20	63.16	42.72	82.52	22.52
4306										

46.3	86.3	31	42.6	6.3	45.9	86.3	25.5	66.2	45.6	86.4	26.2
46.1	85.8	31	25.4	6.9	45.6	85.8	25.5	65.6	45.8	85.8	25.2
46.2	85.9	31	25.5	6.6	45.7	85.9	25.7	66.1	45.9	85.9	25.6
45.8	85.8	31	25.7	6.1	45.4	85.9	25.8	65.9	46.0	85.4	25.3
46.3	85.8	21	25.6	5.7	45.4	85.8	25.8	65.8	45.9	85.6	25.2
307	296	276	5.3	29	30	85.4	25.66	65.2	45.80	85.82	25.50
46.14	85.92	25.52	29.2	5.4	45.60						

For S

98.4	58.3	62.5	58.1	12.0	54.2	25.2	83.6
98.4	58.2	58.0	58.0	12.2	26.0		83.2
98.3	58.3	58.2	58.2	12.1	25.9		83.1
98.4		58.0	58.0	12.2	26.9		83.1
98.4		58.0	58.0	12.1	26.6		83.2
		3	6		306		12
					26.12		83.24
		62.5806	12.12				12.12
		54.2612					71.12
		8.3194					

4278		
2253		
4306		
<u>4614</u>	308	
820		
8326		
<u>8592</u>	266	
918		
2307		
<u>2552</u>	245	
855		
2 314		
<u>584</u>	270	
858		
4252		
<u>4560</u>	298	
822		
2 8326		
<u>8594</u>	268	
920		
3 2230		
<u>2566</u>	336	
796		
3 6316		
<u>6552</u>	276	
908		
4 4272		
<u>4590</u>	308	
832		
4 8252		
<u>8582</u>	330	
834		
5 2252		
<u>2550</u>	298	
802		

0 4410	4049
0 8459	3980
1 2429	4020
2 4411	3962
2 8460	4049
3 2398	3938
3 6454	4056
4 4426	3972
4 8417	3991
5 2401	3984
3 2774	
2 8428	
52714	
2 449	
2 4411	
2 8460	
3 2398	
3 6454	
14 2172	
2 8435	

25.50 2.70

$$\begin{array}{r} 4948 \\ 5244 \end{array} \quad 5096$$

$$\begin{array}{r} 8958 \\ 5242 \end{array} \quad 9100$$

$$\begin{array}{r} 2530 \\ 3242 \end{array} \quad 3086$$

$$\begin{array}{r} 962 \\ 1258 \end{array} \quad 11.10$$

$$\begin{array}{r} 4956 \\ 5258 \end{array} \quad 5142$$

$$\begin{array}{r} 8950 \\ 9238 \end{array} \quad 9109$$

$$\begin{array}{r} 2924 \\ 3238 \end{array} \quad 3081$$

$$\begin{array}{r} 6976 \\ 7272 \end{array} \quad 7124$$

$$\begin{array}{r} 5022 \\ 5282 \end{array} \quad 5152$$

$$\begin{array}{r} 8958 \\ 9262 \end{array} \quad 9130$$

$$\begin{array}{r} 3008 \\ 3222 \end{array} \quad 3115$$

2.9113

2.9113

Group of 9 mins.

962	2964	6582	8580	9524	2924	4974	6976
1258	3274	5288	8238	1234	2238	5260	9272
256	310	306	258	290	314	286	256

0 5096

0 9100

1 3086

2 1110

2 3119

2 5142

2 7131

2 9109

3 1094

3 3081

3 5117

3 7124

2.9114

4 5152

4 5130

5 3115

43 6710

2.9114

The new screen[?] is put in on
account of the lines being
out - a little nearer.

Jan 2 1872
 Feb.
New Wine

42450	42750	
484	747	
499	753	
501	748	
504	769	
<u>2478</u>	<u>287</u>	
42,4956	42,7494	
	4956	2738
	<u>12450</u>	136

42,6225
 MR des lib.
 Polaris α_1 1 18 56.5
 α_2 4 17.5 } 236
236 = 57.3 feet of 8.C.

50.0	49.6	21.9	21.1
3	158	8	+2
6	496	9	-3
3	502	5	-4
2	504	6	-1
<u>2</u>	<u>504</u>	<u>6</u>	<u>-1</u>

Feb. 22 1872

$$\begin{array}{r} 9.8 \\ 29.7 \} 4 \text{ h } 30 \text{ m} \\ 61.8 \} \end{array}$$

$$\begin{array}{r} 59.1 \text{ h m} \\ 29.8 \} 6 \text{ 30} \\ 65.0 \} \end{array}$$

Comp of 236 at 6 14 30^{h m s.}

Seeing bad

wt = 461

2 = 462

Feb 23

42,605 - 42,594

556

550

600

600

551

557

600

550

29922971

42,598

42,594

558

12

42,596

Feb. 24 1872

W.R. Os. 66.

W.R. Os. 2000

W.R. Os. 66.

50	88	478 ⁿ	480
49	89	473	480
50	95	479	482
50	86	480	479
53	86	481	477
<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>

35-2 4 W B63 = 201
 2920 } 7.0
 71.61

464 = W 2

Feb. 26 1872
 W.R. St. L. 6.

Sunny. good,
 Wind

WOT = 461

2 = 466

Feb 29 1872.

MR Ashb.

MR Ashb. now
10 stars. too dim

Nov 467

Nov 468

Feb. 28/17 2
 224 R. S. H.
 seeing young,
 207 - 469
 # =

man¹ ~~11~~ 1872
A.M. Only 6.

No 2 = 470

Mar 18 2
Ward's file,

No 1 = 471
2 = 472

Sting good

Mar 11 1872

WPK des. sb.

Palais ab e
2 2 2

WPK. des. some

WPK. sb. sb.

Seeing good but coming
towards the end,

Nov = 473

2 = 474

Mar 14 1872
 2 WR obs. b.
 WR des. some
 2 WR des. b.
 Seeing good

No 1 = 475

2 = 476

Mar 1872

W R Dyer bl.

W R Dyer stone

W R Dyer bl.

Seving road

Wol = 477

Mar 19 / 1872

W. R. de G. B.

m. 1 = 478

seeing pretty good.

Mar 21 1882

Woods 46.

3 A Rds home

2 A Rds 46.

1000 N 9 185' + 15' 3

42.583 42.653

602

555

559

603

559

42.643

654

683

686

682

689

18.3 6^h 50^m

16.5 9^h 15^m

3000

66.1

No 479

Seeing good

Mar 24 1832
W Rds. Lyle,

No. 450

Sewing work

Mar 27 1851

WRR Dr 56.

" " " 300

" " " 56.

Wt = 451

seeing very good

1 Deco N 9 1857

181° 53'

30 1 3! 29.1 / 0 25.3 - 8.0

Mar 28 1872

W.R. R. Gb.

W.R. R. home

W.R. R. Gb.

no 1 = 482

2 = 483

being prod

Apr 1 1872

W.R. Salsbery.

When there are no
the circle ^{are} leading

Joseph McCormack who
began work this date.

Leaving pretty good

$N_1 = 4.72$

Sh 2 1872
M R ds. 56.
M R & I M Rec.
deering good
no. 1 = 485

Am. 3 1H 2

NR des. 66

NR = 11.22

Being apod

NR = 486

Apr 4 1882

W.R. Jones

W.R. Jones

W.R. Jones

Oct 24 82

Apr 6 1882

W.R. Dawkins.

W.R. & J.M. rec.

Being good but
troubled with both the
illumination of the lens
and the microscope.
No. 488

Found out that J.M. has
the habit of ^{at times} ~~at times~~
being in the habit of throwing
up the telescope by pushing
on the dew cap after putting
on the cap. This very much
affected the illumination.

Apr. 10 1872

W & R chs, h.b.

W & R chs, zone

being good for h.b.

and rather bad for zone
on account of aurora

W1 = 489

2 = 490

Apr 11 1872

a Leo 01 112 36

45 2 44.5 29.8

~~A Leo 10 918 + 4333~~

50 0 27.0 6.1 45 44 0.5 21.5

u Leo May 10 14 38 + 4209

15. 0 13.3 ⁴ 53.3 10 4 26.9 8.2

31 Leo 10 20 25 + 350 22

36 2 2 21 + 56 38 = 36 Leo May

45.0 49.2 26.0 45 0 12.0 ⁴ 49.0

37 Leo May 10 26 50 + 5745

35 4 36.5 13.1 3 58.7 36.1

Apr 11 1872
 W R D. S. L. G.
 W R D. S. L. G.
 I M. records.
 seeing both.

$$N_{11}^0 = 491$$

$$2 = 492$$

Sh 16
W. R. R. G.
W. R. R. G.
Seymour

no 1 = 493

Apr 18

NR do bl.

S.M. Rec.

being good

Nov 1 = 484

2 = 494

Apr 18 1872
W.R. Smith
J. M. Reed
No. 1 = 496

Seeing tolerable

1872 April 19th
A m obs
Z. M. Re

No 1 = 492

no th or bar. got.

1872 Apr. 21
 2nd obs & red star 10^h m
 J. M. begins to record
 at 10^h

Mr = 488

2 = 499

Seeing good

Am 22 1852
 W. R. D. S. C.
 S. M. L. S. S.
 Being W. L. S. S.

W. L. S. S. = 1852

Apr 23 1872
W. R. Durblo.

J. M. Reed's
Sewing foot

No 1 = 501

2 = 502

Am 24187 2

24 R. H. S. L.
 C. M. v. e. d. s.

decreasing word
 No 1 = 503

Apr 25 1872

W & R obs.

"Mucd."

Nov = 504
505

Being good

1872 April 26th

A-M - obs

J. M. - Rec except
4 stars at first

On 1 = 506

2 = 507

Being var

7872 April 28th
4 m obs

9 m Rec except
2 stars at first

No 1 = 508

seem variable

Am 29 1872

W.R. Dr. G.C.

7 W.R. reads till 10^h of m

J. N. Bradburn 10 of m

No 1 = 509

2 = 510

Apr 30 1872

W & R Des. bl.

W & R Des. some

W & R Des. bl.

J. M. reads.

Sewing machine.

Nov. 511

Dec. 512

May 2 1872

Compensation of pendulum
of South Clock made by
Mr. Carr at Howard
& Co's Clock Postage.

Total height of mercury before
compensation = 5326 ^{mm} 99 ^{mm} 92 ^{mm} 9

height of jar 1021 ^{mm} 5 ^{mm} 92 ^{mm} 9

Put the pendulum as near as
possible on sidereal time
Set it in coincidence by the
with sidereal Chronometer
(Circuit No 3451 at
5^h 45^m sid. T.

(The comparisons are made with the
Russian Chronometer)

41-6^h 15^m pendulum = 1^s fast
 Lowered pendulum one turn

At 6^h 45^m pend = .60

710 " .52

730 " 40

Set pendulum up 9 dia.

At 7^h 40^m pend = .07 fast

840 " .05 fast

2240 " 5.05 "

~~Lowered~~ pendulum up 2 dia

At 11^h 5^m pend = .20 slow

" 25 " = .20 "

12 55 " = .02 "

12 25 " = .00 "

12 55 " = .00 "

opened Can and in section
 Observatory Thermometer No.

Main - 6.0

at 14^h

The two Thermometers at first
seemed to disagree but after
a little time the readings
more nearly coincided.

The readings from this time
will be given, the Howard
thermometer being denoted by
No and the Cambridge ther-
mometer by Co.

Time	No	Co
24 ^h 15 ^m	148	147.7
	R	
pend. =	.78	83
	80	79
	76	84
	25	81
	309	317
	.77	.82

con.

2nd 45-

Read = slow

No 1481

ols

6

48

50

30

49

1520

ols

R

49

16

10

50

15-

1522

1585

Read. slow

6

R

36

35

34

35

15^h 45^m = 12^h M. 1602

1630

Read =

30

slow

30

30

30

15-

1588

1589

Read =

70

50

68

60

see note on next page

~~The~~ The record stone
is in error on account of
the change in the unit - 2 Sec
only on the chronograph.

New Series

C = 157.5 Time 4^h 30^m

N = 156.0 Pend = .68

Done

C 157.8 Time 4 45

N 156.4 Pend = 0.63

Done

C 157.5 Time 5^h 0^m

N 157.0 Pend = 0.67

Done

C 158.3 Time 5^h 15^m

N 158.2 Pend = .70

Done

C 157.8 Time = 6^h 30^m

N 157.6 Perd = 0.71 slow

C = 158.5 Time = 5-45

N = 158.2 Perd = 0.72

C = 158.9 Time = 6 00

N 158.7 Perd = 0.71 slow,

C = 155.1 Time = 6 30

N — 153.2 Perd = 0.70 slow

Opened Obolot - to put in
temperature chronometer.

C = 152.8 Time 6 50

N = 150.4 Perd = 0.68 slow,

opened the case several times be-
tween 6^h 30 and 6^h 50

665.5			
H 64.	Time 11-30.	-.25	
664}	" 12	-.22	
H 64}			
664}	" 12.30	-.27	
H 64}			
"	1-0	-.29	
664.25	1-30	-.42	
H 64.25			
664.50	2-0	-.49	
H 64.50			
665	2-30	-.34	
H 66			
666	4-0	-.55	
H 67			

Least in 12 hours

.09 sec

Least in 12 hours .06 sec

Least in 3 hours .21 sec

" " " .07 sec

May 6ST

~~1.9~~
 - 3.9 sec at 8-5^{pm} = 15-3⁰

Observations of temperature
 therm Chronometer No 3424,
 the comparisons being
 made with local circular
 Chronometer No. 3454

At $14^h 30^m$ (ST), Therm. 71.7°
 No 3424 = $1^h 46^m 4.20$ slow.

3454 = $8^h 00.00$ Nongrate = 9.18
~~3424 = $2^h 22.00$~~
 $1^h 46^m 10.00$ slow 71.0

3424 $0^h 2^m 0$ Nongrate = 9.30
 71.0
 3454 $8^h 48^m 16.20$
 $1^h 46^m 16.20$ slow

3454 = $4^h 48^m 26.80$ 10.6
 71.5
 3424 $3^h 2^m 0.0$
 $1^h 46^m 26.80$

1 46 26.80

3454	5	24	38.2	71.0
3424	3	38	80	Hourly rate
	1	46	38.2	= 18.6

3454	5	50	38.2	71.0
3424	4	04	00	Rate - 11.0
	1	46	38.2	

3454	6	14	42.8	71.1
3424	5	27	00	11.4
	1	46	42.8	

Put 3424 in hot closet -
at 6^h 16^m

Jun 6^h 35^m Therm 130°
Slow 1 46 49.0

Jun 6^h 47^m Therm 149°
Slow 1 46 53.8

Jun 7^h 02^m Therm 162°
Slow 1 47 1.4

Ther 180

Sid. 8-16 - 1h 47m 55.5sec

May 7 1872

Comparison of pendulum
mini. Clock (Howard),

Break Circuit Chronometer

No. ~~345~~ Bond and No. ~~267~~ Proctor
387 345

New Series

The comparison times are
mean time civil day.At 8^h 48^m

No	387	=	267	=	Ther
No.	345	=	345	=	Ther
Clock	—	=	—	=	—

At 8^h 48^m M T

$$\text{No. } 387 = \overset{h}{11} \overset{m}{53} \overset{s}{0.5}$$

$$3451 = 11 \overset{h}{53} \overset{m}{0.0}$$

Clock-

Pend.

$$\text{Time} = 8^h 52^m$$

$$\text{Temp } 153.2$$

$$387 = 8 \overset{h}{56} \overset{m}{00.5}$$

$$3451 = 8 \overset{h}{56} \overset{m}{00.0} - 0.50$$

$$\text{Clock} = 2^m 38.5 \text{ slow of Pend}$$

$$\text{Pend} = 8 \overset{h}{14} \overset{m}{28.0} \overset{s}{33.5}$$

$$8^h 2^m$$

$$387 = 12^h 8^m 0.$$

$$3451 = 12 \overset{h}{8}$$

Pend

$$\text{Clock} = 2 \overset{h}{40.0} \text{ slow.}$$

Pend.

Proved 3451 just $0.8'$ from
vermince of reading.

9 15

156.5

+12

$$3451 = 12 \quad 21^m \quad \text{on}$$

$$387 = 12 \quad 21 \quad 1.53$$

$$\text{Pend.} = 12 \quad 19 \quad 28.5$$

Clock

42.00

Hourly rate 10.00

$$\begin{aligned} \text{Clock} &= 9 \quad 33 \quad 00 \\ \text{Pend} &= 9 \quad 35 \quad 45 \end{aligned} \quad 158.8$$

$$3451 = 12 \quad 41 \quad 00$$

$$387 = 12 \quad 40 \quad 1.5$$

$$\text{Pend} = 12 \quad 39 \quad 28.0$$

Rate = 10.0

$$\text{Clock } 9 = 45 \quad 00$$

159.5

$$\text{Pend } 9 = 47 \quad 47.0$$

$$3451 = 12 \quad 51 \quad 00$$

$$387 = 12 \quad 51 \quad 1.5$$

$$\text{Pend} = 12 \quad 49 \quad 27.5$$

Rate = 10.00

$$8457 = 1^h 4^m 00$$

$$387 = 1 \quad 4 \quad 1.50$$

$$\text{Pend.} = 2 \quad 27.80$$

$$\text{Clock} = 10^h 4^m 00 \quad \text{date} = 9.48$$

$$\text{Pend.} = 10 \quad 6 \quad 50$$

$$3451 = 1 \quad 24 \quad 00$$

$$15.90$$

$$387 = 1 \quad 24 \quad 01.5$$

$$\text{Pend.} = 1 \quad 22 \quad 27.85$$

$$\text{Clock} = 10^h 29^m 00.0$$

$$9.54$$

$$= 10 \quad 31 \quad 54.0$$

$$3451 = 1 \quad 48 \quad 27.95$$

$$160.5$$

$$\text{Pend.} = 1 \quad 48 \quad 27.95$$

$$\text{Clock} = 9^{10} 48 \quad 00.0$$

$$\text{Pend.} = 9^{10} 48 \quad 57.0$$

$$(3451 = 2 \quad 08 \quad 00.0$$

$$161.0$$

$$\text{Pend.} = 2 \quad 06 \quad 27.80$$

$$(\text{Clock } 11 \quad 12 \quad 00$$

$$(10.02)$$

$$\text{Pend.} \quad 15 \quad 1.00$$

$$3451 = 2^2 \quad 7 \quad 00.0$$

$$387 = 2 \quad 7 \quad 1.55$$

$$\text{Clock} - 11 \quad 36 \quad 00 \quad 160.4$$

$$\text{Read} - 11 \quad 39 \quad 05$$

$$3451 = 2 \quad 42 \quad 00$$

$$\text{Read} - 40 \quad 27.80$$

$$3451 = 3 \quad 4 \quad 00 \quad 161.8$$

$$387 \quad 3 \quad 4 \quad 1.56$$

~~2~~

$$3451 \quad 30.5 \quad 00$$

$$\text{Read} \quad 32 \quad 27.80$$

$$\del{32.80}$$

$$\text{Clock} \quad 12 \quad 13 \quad 00.0 \quad (97.8)$$

$$\text{Read} \quad 16 \quad 71.0$$

Turned off heat and opened ^{Care.}

$$3451 = 3 \quad 26 \quad 00$$

$$\times 98.0$$

$$387 = 3 \quad 26 \quad 1.60$$

$$3451 = 3 \quad 29 \quad 000$$

$$\text{Revd} = 3 \quad 27 \quad 27.72$$

$$\text{Clock} \quad 12 \quad 31 \quad 00.0$$

$$\text{Revd} \quad 12 \quad 34 \quad 14.0$$

$$3451 = 4 \quad 11 \quad 00$$

$$79.5$$

$$387 = 4 \quad 11 \quad 1.55$$

$$3451 = 4 \quad 14 \quad 00$$

$$387 = 12 \quad 28.0$$

$$(14.02)$$

$$\text{Clock} = 1 \quad 19 \quad 00.0$$

$$\text{Revd} = 1 \quad 22 \quad 22.0$$

$$3451 = 5 \quad 04 \quad 00$$

$$(80.0)$$

$$387 = 4 \quad 1.65$$

$$3451 \quad 5 \quad 17 \quad 000$$

$$\text{Revd} \quad 5 \quad 15 \quad 28.05$$

$$31.95$$

$$\text{Clock} =$$

$$\text{Revd} =$$

May 7 1872
 Temperature Chronometer

3451 = 12 33 00

3424 = 10 28 56.5

2 04 3.5

Mean

69.0

Rate (10.92)

3424

~~12~~

28 00.0

3457

1

32 13.50

2 4 13.5

3424 = 23 59 00.0

70.4

3451 = 2

3 19.9

(10.68)

11 19.0

3424 = 0 16 00

(10.56)

3451 = 2 20 22.0

70.4

Put 3424 in the box of 2 20

3457 = 2 46 00

160.4

3424 0 41 30

~~May 8~~

$$3451 = 3 \quad 10 \quad 00 \quad 161.5$$

$$3424 = 1 \quad \begin{array}{r} 05 - 165 \\ 4 \quad 44.5 \end{array} \quad (36.24)$$

$$3424 = 1 \quad 32 \quad 00.0 \quad 88.5$$

$$3451 = 3 \quad 37 \quad 57.0$$

$$3224 = 2 \quad 45 \quad 00 \quad 0$$
$$3451 = 4 \quad 10 \quad 08.0 \quad 72.0$$

$$3224 = 5 \quad 9 \quad 00 \quad 71.5$$

$$3451 = 3 \quad 3 \quad 37.5$$

End of temperature
comparison

my 7 page.
Comparing Pendulum
and Chronometers continued.

$$\begin{array}{r} 3451 = 5 \quad 47 \quad 000 \\ 387 \quad 5 \quad 47 \quad 1.70 \end{array}$$

$$\begin{array}{r} 3451 = 7 \quad 09 \quad 00 \quad 78.2 \\ 387 \quad 7 \quad 09 \quad 1.78 \\ \hline \end{array}$$

$$3451 = 7 \quad 13 \quad 00$$

$$\text{Pend} = 11 \quad 27.98 \quad 32.02$$

$$\begin{array}{r} \text{Clock} \quad 4 \quad 16 \quad 00 \\ \text{Pend} \quad 4 \quad 19 \quad 50.0 \\ \hline \end{array}$$

Pen on sec h m
 -1.31.85 slow 8-11 Ther 76 ST.

~~B 5.20~~
~~B 1~~

May 28

on 2-58m Ther 70
 -1m 34.20 =
 25.8

Results

Clocks and Pend.
 Under heat the hourly
 rate of the pendulum from
 the clocks for 18.75 hours in
 interval = 9.76

Under 78° Temperature
 the hourly losing rate of the
 pendulum = 9.76 the
 interval being 18.75 hours
 Over

Chronometer and
pendulum

Under heat the pendu-
lum loses on the chro-
nometer .090^h per hour
At 70° the pendulum
loses .020^h per hour

May 9, 9 30 AM
Frog Mt

Look out 130 mercury

New Series.
May 9

The comparisons with
the clock and two chro-
nometers in this series were
made independently.

made independently

very Clock and Pend.
Clock and Pendulum

Clock	10 ^h	8 ^m	00.0	71.5
Pend		20	15.0	

Let the pendulum be 40 in.

Clock = 10 ^h	26 ^m	00.0	71.7
Pend	38	19.0	

Clocks	10	55	00	72.0
Pend				723.0

Let pendulum be 40 in.
 new series

Clock = 11	2	00	72.8
Pend	33	28.0	

cl.	11	47	00	72.4
Pend.		55	32.0	

cl	0 ^h	5 ^m	00 Noon	72.1
		17	35.0	

cl = 0	50	00	73.0
P =	2	42.0	

3457 ^{may 9} and Rendu

$$3451 = 1^h 3^m 00 \quad 71.5^{\circ}$$

$$\text{Rendu} = 1 \quad 2 \quad 59.4$$

Set the pend up 40 in

$$3451 = 1^h 34^m 00 \quad 71.7^{\circ}$$

$$\text{Rendu} = 1 \quad 34 \quad 00$$

$$3451 = 2 \text{ New Series} \quad 72.0$$

$$3451 = 2 \quad 36 \quad 00 \quad 72.8$$

$$2 \quad 36 \quad 59.81$$

$$3457 = 3 \quad 0 \quad 1.00$$

$$0 = 3 \quad 00 \quad 59.60$$

$$3451 \quad 3 \quad 19 \quad 00$$

$$3 \quad 18 \quad 59.52$$

$$73.0$$

$$3451 \quad 4 \quad 12 \quad 00$$

$$11 \quad 58.95$$

$$78.0$$

387 and ^{my} Rendulen

$$\begin{array}{r} 1^h 10^m \\ 387 = 1^h 13^m 05.0 \\ \text{Rend} = 113 \text{ vv} \end{array} \quad 71.50$$

Set the pend up 40 dia.

$$\begin{array}{r} 387 = 1 \quad 36 \quad 00 \\ \text{Pend} = 1 \quad 35 \quad 55.95 \end{array}$$

Set pend up 40 dia. at 11^h 54^m
new series

$$\begin{array}{r} 387 = 2 \quad 45 \quad 00 \\ 44.60 \end{array}$$

$$\begin{array}{r} 387. = 3 \quad 8 \quad 00 \\ \quad \quad 7 \quad 55.50 \end{array} \quad 72.5$$

$$\begin{array}{r} 387. = 3 \quad 27 \quad 00 \\ \quad \quad 26 \quad 55.25 \end{array}$$

$$\begin{array}{r} 387 = 4 \quad 10 \quad 00 \\ \quad \quad 4 \quad 9 \quad 54.90 \end{array} \quad 73.0$$

May 9
34 24 and 34 51

~~Set the~~
11^h 27^m ova 3424 71.5
1^h 40 51.0 13 57.0

0 26 ov. 0 72.8
2 40. 250 14 2.5

1 24 ov 73.2
38 14.0 14 14.0

May 10
5^h 50^m MIT

3424 = 1^h 7^m 44.0^s

3451 = 10 49 ov

18 44

Nowy rate = 11.41

3457 and 387 ^{May 9}

At $7^h 30^m$ MT

$387 = 4.0^s$ faint of 3451

set pend up 40 dir.

At $11^h 30^m$ MT

$387 = 4.15^s$ faint of 3451

At $0^h 50^m$ MT

$387 = 4.28$ faint of 3457

At $5^h 28^m$ ^{May 9} $387 = 4.46$ faint

At $8^h 56^m$ ^{May 10}

$387 = 5.30$ faint

Nowly rate = 0.65^s

May 9

Clock and Pend.

At 5^h 28^m 00^s

76.0

Pend. fast 13^m 25.5^s

May 10

At 7^h 0^m

Pend fast

16^m 33.0^sClock 9^h 3^m 00^s

76.0

Pend

~~16~~

6.2

15 52Hourly rate = 9.40^s

May 9

3451 and Rend.

At 8h 45 ST

76

Rend close 3.12^s

At 10^h 24 = May 10 Rend = 9.20 slow

3451 = 12 33 00

Rend = $\frac{12\ 32\ 49.80}{10.20}$

Nowly rate = 460
new

losing on 3451.

May 9
387 and Rend.

At 8^h 53^m ST =
Rend = 1758 slow
mij 10

At 10 28 = 1450 slow
Rend =

387=0	56	00	76
Rend	55	44.2	
			1580

Hourly rate = .616

Put in 26 phot.

May 10

Th. 160°

At 5^h 50^m MT pend ^{in S} = 17 13.75

At 9^h 00^m ST 3451 = 15.00 slow.

At 9 00 ST 387 = 20.88 slow

At 8 36 ST 34924 = 2^h 24 30.5 ^{in S} feet of 24.4

At 7^h 48^m MT pend = +19 25.0

May 11

Ther. = 42°

At 7^h 48^m MT pend = +19 25.0

At 11^h 02^m ST 3451 = - 215.0

At 11^h 6^m ST 387 = 28.54

At 11 11 ST 3424 = 2 30 54^{in S}

Th 146°

At 1^h 10^m MT pend = + 20 15.40

At 4 33 ST 3351 = - 2440

At 4 36 ST 387 = - 31.55

At 4 39 ST 3424 = 2^h 34 14.0 ^{in S} feet

Results May 9

Under low temperature

Pend gain, hourly on clock	9.40 ¹⁵
Pend. loss on 3451	4.460
Pend loss on 387	0.576
387 gain on 3451	0.055 ⁻
3451 gain on 3424	11.410 ⁸

May 11

Under high temperature

Pend gain on clock	9.40 ¹⁵
Pend loss on 3451	.483
Pend loss on 387	.544

~~030~~ - ~~730 PM~~

$$M = 5797$$

gains less under heat than cold. ⁸023

gens less under heat than cold. 23

In the former trial
The pendulum ~~gained~~^{lost} .030^s
per hour more under cold
than heat, or for a gain
of 1.5' it lost .25' per hour.

In the last trial the pend
lost .023^s less in cold than heat
on a rate of .46 per hour or for
a loss of 1.5' .068^s. The ratio of
.05 to .25 = $\frac{1}{5}$ shows that
there must be put back $\frac{1}{5}$ of .030
that is 26 parts.

Put back 26 parts,

May 13

73 { At 4^h 33^m P.m. M.T. P = 29^m 17.0 feet
 6-40 = 29 16.0
 19 40 31 36.5

May 14

152 { At 1-9^h 55^m A.M. = 31 58.5
 11 17 32 122.0
 13 20 32 32.25

345-1

73 { At 1-7^h 55^m P.m. P.m. = .02 feet
 9 07 " = .07 "
 23 00 " = .77 "
 1^h 23 " = .53 "
 152 { 2 41 .43
 4 52 .68

Aug 13

347

Pend = 10.20 slow

" 10.15 "

" 10.22 "

39 } 8^h 00^m
 9 02
 23 06

152 } 1^h 18^m
 2 47
 4 48

" 10.72

10.80

10.90

Results

Ph = 73°

Pend gains on 3451 .050 hourly

Pend loses on 347 001

Th 15-20

Pend. gains on 3451 .040

Pend loses on 347 .051

040
 050
 ———
 090
 0030

Put back 39 put in many.

Lat-Luce

my 14 1852

3451

A-6 35 ST = (3 P. m. m. T)

p = 0.7000

A-9 33 p = 2.938

22 53 p = 14.25 "

Hourly rate = 84.8

my 15

A-8 38 pend = 22.72

22 48 = 34.28

26 14 3 7.10

Hourly rate = 81.7

my 14 1852
my 15
my 16 1853

May 14

387
1500

A 16^h 38^m ST. P = -1062 slow
9 30 = -850 slow
22 57 = +200 fast

May 15
73.0

A 1-5^h 16^m P = +7.28
22 43 P = 20.45
26 11 P = 23.18

Newly pat. gainy = 28.8

May 14
A 9 40 ST. 387 = 1150 fast

" = 1238
May 15 =

5326.8
-130.
5196.8
+26.0
5222.8
5238.0
5264.8
5282.0
5304.5

8415

2254

2620

work out - 27 phot -

1275

1296

1375

1387

6284.8 phot. May
leaving in this m.

May 20/82
 24Rds 56.
 24Rds 30m

17 New Can.

13 2902 + 3750

n New May

13 42 27 + 49 57

25 1 41.3 49.9 0 221 8.6

10 Dec 2

13 47 38 + 65 21

0 2 3.5 45.3

n Boole's

13 48 31 + 19 03

20 0 20.1 71.0

15 4 25.6 15.8

Thyning

13 550 4 + 2⁰ 10¹

20 234.7 23.8

a D wco

M on 5-1 + 64 59

20 4 10.1 53.6

20 3 36.8 20.1

M₁ = 573

2 = 574

May 2, 1872
 WTR Obs, P. ~~25~~

~~4 N Deco~~

~~12 6 10 + 28 20~~

~~12 N. 2. 10. 0 1~~
~~13 20 + 0 20 3~~
~~5 Ns May~~
~~12 9.00 + 57 45~~
~~35 3 6.9 53.0~~

2 Dringis

12 10 15 + 0 03

15 4 32.2 26.1
~~35 3 6.9~~

6 Can Ren

~~12 19 29 + 29 44~~

74 Ns May

12 23 55 + 59 07

151 148 0.3

~~8 Oct~~ K Draco

12 27 58 + 70 29

50 3 46.1 33.3 3 7.0 53.2

θ Virginis

13 3 17 - 4.50

cloudy!

Nov = 57.5

May 22 1872

W.R. Obs. fulmin
Nov = 516 cloudy

May 25 1872

214 R.R. J.M. Rec.

4 Dugger's No 1203 + 7820

0 3 56.9 40.8

0 3 15.9 59.6

~~U.S. May 12 0901 + 5745~~
W2 - 517

2 Can 2142 9 39 + 41 2 3
0 0 31.9 20.2 55 4 43.9 33.6

2 Virgin 12 13 18 + 0 03

15.4 35.1 30.6 3 37.1 31.9

6 Can 2142 15 28 + 39 44
35 4 14.9 4.1 35 3 36.9 26.9

74 No May 12 23 57 + 5907
15 1 8.1 54.2

8 Can 2142 27 36 + 42 03

15 4 47.9 38.2 49.4 0.0

1872 Apr. 29

W.R. Dr. May

32 Camelopard. last 4 wires W.R.

~~12 Camelopard.~~ O Virginis.

Bolaris. Ind. gr.

E Bootis last 3 wires

~~B Ursa. min. last 2 wires~~~~B Bootis.~~ μ_1 Bootis ^{wt = 5.18} ~~α Serpentis~~

Jan 3 1872

15 ~~3 20.9~~ 13, 3 18 - 4 50
~~Q~~ *Ulysses*.

17 Can. Ven. 13 4 9 + 39 10

5 3 39.7 28.9

Polaris.

0. 0 55.7 37.4

5 Ursa. Maj. ^{13 18 45} pr. + 55 35

45 2 7.8 53.8 1(29.4 15.4

G₂, 2164. ^{ln m sec} 14 48 12 + 59 48

30 4 10.9 54.8 3 30.8 15.2

P 14 221 14 50 9 + 14 58

20 4 26.2 17.8 3 19.2 11.1

no 1 = 519

June 3 1872
 2 Rev. Uss. Min 145536 +6626

55 141.1 23.8

B Bootes 14577 +4053

25 3 1.4 49.9

4 Bootes 145857 +2727

55 0 41.1 30.0 4 48.2 36.8

3 Serpente 15 8 48 +525

55 2 12.1 31

1 Uss. Min 15 13 14 +6750

30 3 20.1 1.9 2 38.0 19.4

11 Bootes 15 19 37 +3750

30 3 6.9 55.1

γ^2 Uss. Min. 1520 57+72 18

5 0 58.7 40.4

a Corone 15-29 14+27 09

10 3 47.1 36.7 3 5.1 52.9

$nv1 = 520$
2 521

1872 June 6

a Draco 14^h 0^m 56 + 64 59

20 3 29.3 34.4 2 59.5 43.9

d Bootis 14 4 32 + 25 42

35 4 43.9 35.0

a Bootis 14 9 48 + 19 51

36 1 24.8 17.9 0 42.1 35.1

x Bootis 14 11 30 + 46 41

40 2 12.4 0.9 1 27.1 16.2

(θ 14 20 50 + 52 27
Bootis)

55 1 17.9 6.0 55 0 37.1 26.0

p Bootis 14 26 18 + 30 56

38 2 4.8 54.8

June 9, 1872

Eth, May 12 44 20 + 56 39

40 · 3 37.1 25.2 250.1 37.1

12 Canum 12 45 58 + 39 01

20 1 35.9 25.7 cont a,

~~12 Canum 13 04 07 + 39 10~~~~Eth, May, 12 44 + 11 39~~~~40 3 23.1 16.7 2 37.7 31.1~~

17 Canum 13 04 07 + 39 10

10 1 56.5 46.8 1 20.9 12.9

43 Corv. 13 05 50 + 2 + 3 <

50 0 52.9 42.1 0 8.1 4 58.7

Polaris 0 0 54.9 37.1

1. 4.9 46.9

32. 2164 14 48.10 + 59 49

30 4 10.9 57.6 3 36.0 21.9

P 14.221 ^{Aug 9} (14 50 10 + 14 58

20 4 11.9 6.6 3 22.7 16.8

2 Nev. No. in 14 55 31 + 6627

55 1 34.0 19.5

13 Bootis

14 57 04 + 40 54

25 3 1.0 50.9 3 17.4 8.9

~~3 Librae 15 10 3 + 8 54~~

~~14 Bootis 14 58 54 + 27 27~~

55 0 34.3 26.1

B Librae 15 10 5 + 8 54

15 1 15.2 7.7 0 21.1 20.1

14 Bootis 15 19 20 + 37 59

30 3 10.9 1.9

1 Star. W. W. May. 15 13 13 + 67 50

30 3 11.9 57.0 2 32.1 15.1

Jan 9
W. A. R. D. S. T. S.
J. M. rec.

82 26.5 min 15210 +72 18
5 0 49.0 35.2 08.5 54.9

$\mu_0 = 522$

$\mu = 523$

June 11 1871

W. R. S. S.

J. M. Reed's

12 Can Ven 12 14.8 + 39 01

25 2 10.0 0.6

Σ Virginis 12 55 44 + 11 39

45 3 31.2 25.9 2 46.0 39.4

ϵ Virginis 13 3 17 - 4 57

15 3 25.9 21.8

17 Can Ven 13 4 9 + 39 10

15 1 39.8 30.1

43 Comae 13 5 52 + 28 32

55 1 4.7 54.3 0 14.9 6.1

Polaris

5 0 59.1 45.9 1 8.1 52.7

Nov 11. $N_{11}^0 1 = 52.4$

" $Q = 52.5$

June 13 1871,
 20 Rds. R & only,
~~14 Rds.~~
~~24 Rds.~~ to

43 Corn 13.
 15 Can 20
 15 02 6,3 58,5

Polan's

5 1 552 44,0

Plus my m. 13 1870 255-36

Net = \$26

June 17 1872

W. H. L. S.,

J. M. Reed,

θ Virginis $\alpha, R, 13 \ 3 \ 17$
-4 51

17 Can. 22 13 04 06 +39 11

43 Comae 13 05 50 +28 32

55 0 20.8 13.1

Polaris. lost ~~4th time~~ 2.3.4. Wire

5 1 0.0 47.2

ζ Urs. Maj. per. 13 18.45 +55 36

50 2 30.8 20.1 1 30.6 20.8

Clouded ^{no = dry} up.

1872 June 18

43 Comden. 13 5 52 + 2832

55 0 1.3 53.1 55 0 14.5 6.1

Polaris Obs'd W. 1. 3.8 5

5 1 5.8 53.1 1.9.9 57.0

5 Urs. Maj. pr. 13 18 45 + 55 36

50 2 20.1 10.5 1 39.0 28.2

69 Rev. Urs. Maj. 13 23 45 + 60 37

50 1 39.1 28.8 1 2.8 51.9

20 3 27.9 26.0

Clouded up.

hr = 82.8

June 19 1872
 W. R. Obs. Polam
 Lint and zone
 seeing bad

W. R. = 529
 2 = 530

1872 June 21st

A. M. Obs.
 seeing very bad

2 Bootes
 2 Draconis
 2 Bootes
 2 Bootes

5 Mus Min

all wires under

2 Bootes

W. R. = 531

22 Librae

W. R. 8 45

June 27 1872

W.R. Du P. b. & zone

Seeing to be white

W.R. rec.

No 1 = 532

2 = 533

July 1 1872

W.R. Sh. P.B.

W.R. rec.

Very good.

$m = 536$

537

Removed all the shot on
the pendulum, the rate being
too large gaining.

July 2 1872

B. Mes. Min.
B. Porto

$M_4 = 5-38.$

Aug 3 1872
 WVRds PL,
 Ill rec.

No 1 = 539

Sewing good

Stopped the Sutter Clock at 9^h
 15^m (Mth)
 Morning of Aug 4
 and lowered the jar 2.2 div.
 Put on one foot.

Aug 6 / H 2

W R Dux

P. b. and 30m

J. M. record still 17 ^{2m} 3 up

W R record still 17 ^{2m} B

seeing good

No 1 = 54V

July 7 1872
 WKR ds B. B. & 2000
 WKR reads tree ^{h in} 1505
 J. M. reads tree 1508 to 1609
 WKR reads for 1700 & c

Sleeping good

W01 = 541
 2 = 542

Aug 8 1872

Lovend pendulum

2 1/2 div.

Oscillator for time

Gr 2320

R. Nere

R. D. 1000

Nov = 5413

Polaris } morning
Polaris }

July 9, 1912

WTR Dr. P. B. & son

WTR ~~Read~~ from ^{14:55} till 15:08

I Read from 15:10 till 16:59

WTR reads from 17:01 to

Being very good.

WOT = 544

2 1745

July 11/872

W.R. Obs. P.B.

B.M. reads from 14 48 to 458

W.R. reads from 18 54 till 15 40

J.M. rec. from 15 43 till 16 59

W.R. reads from 17 01

Seeing good.

$\mu = 5216$

$z = 547$

Aug 13 1872

Attempted a run
but failed on acct of
failure of chimney when
got two or three times
stays.

no 1 = 548

July 14/87

W.R. Dr. P. b. Stone

W.R. v. d. t. u. e 15 ^h 33 ^m mcl.

J. M. v. d. s. p. u. 15 ^h 33 ^m t. u. e and

Seeing good

NOT \equiv 549.

July 15 1872

W. R. S. P. B.

For hang fu now

I. M. veds,

no. = 550

seeing prod,

Added weight supposed
equal to 18° at Aug 15.8.

July 16 1872

W & R obs P. b. & zone

J. R. M records,

seeing from

July 16

a Opus. 17 28 58 + 12 39
45 3 5.8 5.9

Draco. 27 29 41 + 55 16

10 1 31.8 25.0

$\frac{1}{2}$ Draco. 17 29 45 + 55 16

10 1 31.8 25.0

least 3 of md. gr. for 2nd star

L Herens 17 35 50 + 46.04

20 3 30.0 24.0

W Draco. 17 37 45 + 68 49

35 4 28.9 21.1

July 21 1872

W R Dr P. L. and
two Starry Night
Almanac.

~~R Ophiuchi 16 51 36 +~~

d Herculis 16 56 51 + 33 45

Gr. 966 17 22 29 + 105 03

B Draco 17 27 35 + 52 24

a Ophiuchi 17 28 57 + 12 39

w Draco 17 37 42 + 68 49

u Herculis 17 41 25 + 27 48

ψ Draco 17 44 14 + 72 13

July 20th
 α Herculis 17 846 +1432

γ Ophiuchi 171830 - 24 3

γ Draconis 17 53 30 +5130

γ² Sagittarii 17 57 31 - 3025

δ Urs. Min 18 14 00 +8636

1 Aquarii 18 28 11 - 8 20

α Lynce 18 22 34 +3840

51 Cephei ^{18 39} 18 45 2 480 372

β Lynce 18 45

α Sapiens 18 46

10 1 497 382

18 45 2
 18 46 2
 18 47 2

10 D. nov

Seeing not very good

July 21 1872

Mr R. No. trim stars
for H. R. only.

De Cymen lost 7 min
veg thunder - still miss
Clouded up.

no 1 = 554

1872 July 22 Stars

2nd Day P. b. zone and line
 T Hercules 16 15 52 + 46 37

A Scorpi 16 21 30 - 26 9
 lost 1st 3 Mid gr

H Hercules 16 38 30 + 39 10

K Ophiuchi 16 51 36 + 19 34

L Hercules 16 56 50 + 33 45

E Uro. Min. 16 59 16 + 82 15

a Hercules 17 0 8 46 + 14 32

44 Ophiuchi 17 18 30 - 24 3

∞ Draco 17 37 42 + 65 49

~~in Hercules~~ (Krotzger?)

u. Herculis 174124 + 2748

Y, D rocois 174414 + 7213

2 D rocois 175337 + 5130

D ro min 1814 + 8636

a Lynx 183234 + 8839

57 Caphei 1839 + 86°36'

B Lynx 184019 + 8313

O Sagitt 184716 - 2624

50 D rocois 185031 + 7517

Seeing pretty good

no1 = 555

no2 = 556

July 23 1872

W.R. obs. P. b. ~~me~~ and
 Jim daughter's wife
~~W.R. and wife~~
~~I.M. record~~ ~~the~~

Polaris mid 20 & 1/2

~~W.R. 15-20 17+8 2 1/8~~

a Scorpius 16 21.30-26 09

~~W.R. 22 15+6 1 48~~

A X 16 28 20 + 69 03

~~g Slerculis 16 38 30 + 39 10~~

d Slerculis 16 56 51 + 33 45

E Uro Min. 16 59 16 + 82 15

101 = 557 Clouds
 2 = 558

July 24 1872

W. H. R. P. b. some

and time stay
 VSR records time 15^h 29^m
 4 P.M. .. from 16^h 7^m

Palau's Port 15^h 48^m md. gr.

h Bores 13^h 48^m

a Bores 14^h 29^m

g Bores 14^h 21^m

B Bores 14^h 51^m

B Bores 14^h 57^m

B Libine 15^h 10^m reg.

new sheet

22 hrs Min 15^h 28^m 57

a Comm 15^h 29^m

50 M. 16^h 07^m

T Hercules 16^h 15^m 53^s + 46 37

a Scorpi 16^h 21^m 32^s + 26 48

1872 July 24

$\frac{3}{2}$ Draco. 16 22 16 + 61 48

A Draco, 16 28 20 + 69 03

g Ophiuchi 16 30 05 - 10 18

h Ophiuchi 16 51 36 + 9 34

d Herculis 16 56 51 + 33 45

rej. a, b, c,

E Urs. Min. 16 59 16 + 82 15

B Draco, 17 27 35 + 52 24

$\frac{7}{2}$ Sagittari 17 57 31 - 30 25

False Jrs.
J Urs Min 18 13

1 Aquilae 18 28

a Lynx 18 32

51 Cephei 18 38

B Lynx 18 45

Sagittari #49
 50 Droco #50
 3 Symplic #59
 Sagittari 19 110
 ✓ Droco 19 12
 7 Droco 19 11
 5 Symplic 19 19

Seeing word

NO1 = 559

2 = 560

3 = 561

4 = 562

Jul 25 1872
 WPA No. 7.6.2
 Jan stars,
 J. P. M. Records,

γ Hercules 16 15 52 + 46 37
~~w Hercules 16 19 30 + 14 20~~
 a Scorpi. 16 21 30 + 26. 9
~~hd zuci 16 22~~
 A Draco. 16 28. 20 + 69 03
~~n Hercules 16 38 30 + 39 10~~
 K Ophiuchi 16 51 36 + 9 34
 d Hercules 16 56 51 + 33 45
 E Ursa. Min. 16 59 16 + 82 15
 a Hercules 17 8 46 + 14 32
 G 1966 17 2 2 29 + 105 03

1872 July 25

B Draco. 17 27 35 + 52 24

a Ophiuchi 17 28 57 + 12 39

γ , δ Leo 17 44 + 72 13

γ δ Leo 17 53 + 57 30

~~Sagittarii~~

no = 563

1872 July 27

α Scorpi 16 21 30 - 26 8

Δ Draco, 16 28 26 + 69 03

~~ζ Ophiuchi 16 30 4 - 10 18~~

~~lost 3rd W. d. gr. & fall.~~

η Herculis 16 38 30 + 39 10

κ Ophiuchi 16 51 36 + 9 34

ϵ Urs. Min., 16 59 16 + 82 15

44 Ophiuchi 17 18 29 - 24.3

β Draco. 17 27 35 + 52 24

α Ophiuchi 17 28 57 + 12 39

ω Draco. 17 37 42 + 68 49

μ , Herculis 17 41 25 + 27 48

ψ , Draco. 17 44 14 + 72 13

γ Draco 17 53 37 + 51 30

1872 July 27

GF M records, Tue 1753

24R records for 1753

(4 Sagittari 806 - 2, 05
uj 15 - min mid pt)

Ms Min 1512 + 8636

1 Aquilae 18 28 11 - 8 20

a Lyrae 18 32 34 + 38 40

51 Cygni 18 36

B Lyrae 18 45 A + 20 14

a Sagittari 18 47 16 - 26 27

50 Draconis 18 50 31 + 75 17

d Sagittari 19 10 05 - 19 11

5 Draconis 19 12 31 + 67 26

Seeing pretty good.

Nov = 164

July 28/87 2

W.R. Obs. P. B. and
Time Star for longitude
J. H. M. Rec.

Palanis 6: a,

~~M 2320 16 558 +6 +09~~

T Hercules	16	15	52	+46	37
a Scorpii	16	21	30	-26	9
η Draco	16	22	16	+61	9
A Draco	16	28	20	+69	48
ζ Ophiuchi	16	30	4	-10	18
η Hercules	16	38	30	+39	10
κ Ophiuchi	16	51	36	+9	34
d Hercules	16	56	57	+33	45
E Ursa Min	16	59	16	+82	15
a Hercules	17	08	46	+14	32
γ Ophiuchi	17	18	29	+24	03
ϵ 966	17	22	29	+105	03

~~92.966 17 22.29 + 105 03~~

1872 July 28

B Draco 17 27 35 + 5224

Seeing pretty good

201 - 566

~~2~~

July 29 / M 2
 W.R. Dr. P. b. and
 Jim Davis

~~4552~~
 2 Corb 15 + 2 15 + 27 15?

(~~T. Scorp 15 5240 - 22 15~~
~~rej lost 4 units mid yr.~~)

⊙ Mercuris 1604 + 33 15
 rej all but 1st ~~the~~ and last
 3 units.

~~50 M 16 555 = 322~~

T. Mercuris 16 154637

Dr Scorpius 16 21

2 Draco 16 22

4 Draco 16 28

2 Hercules 16 38 mgr. 5 m.

d Hercules 16 56 51 + 33 45
md. gr. 5 Wires

ε Uro. Min. 16 59 16
+ 82 15

a Hercules 16 8 46 + 14 32

44 Ophiuchi 17 18 29 - 24 03

gr 966 17 22

b Draco 17 27 35 + 52 24

w Draco 17 37 42 + 68 49

μ Hercules 17 41 25 + 27 48

γ Draco 17 44 19 + 72 13

γ Draco 17 53 37 + 51 30

W1 = 567
2 = 568

1872 July 30

44 Ophuchi 17 18 30 - 24 03
 B Draco 17 27 35 + 52 24
 a Ophuchi 17 28 59 + 12 39
 w Draco. 17 37 42 + 68 49
 u, Hercules 17 41 25 + 27 48
 y Draco. 17 44 14 + 72 13
 x Draco. 17 53 38 + 51 30
 - 2 Sagittarii 17 57 30 - 30 25
 obs'd. on lower set of wires
 u' Sagittarii 18 6 3 - 21 5

✓ h's in 1/12

vis 6C 1 - 7 - 62 C₂
 51 b' after mis 1 1/2 b₁

5 Ophiuchi 18 59 + 13 40

5 Draco 19 12

5 Ophiuchi 19 19

u' Draco. I. F. M. rec.

r Draconis 19 18

w₁ = 569
 w₂ = 570

7

~~Aug~~ Aug 31.8.

a. Supriya 5-27

B. Janni 5-18

a. Cairny 6-39

B. Gen 7-37

No 1-54

Σ
~~346459~~

290 470

29.3 46.3

32.9 43.2

32.5 43.5

1237 200

31.92 45.00

30.92

1408

7.04

14 15

