

KG
11366
v. 657

Chronograph Record.

A 7

From June 16. 1881 to Oct. 25 1881.

2

June 15⁶, 1881

No. 1 = 245

5 31

5 49

" 2 = 246

12 49

13 33

June 17, 1881

No. 1 = 247

5 30

5 33

" 2 = 248

12 53

13 38

" 3 = 249

0 47

2 46

June 18, 1881

No. 1 = 250

12 56

13 54

June 19, 1881

No. 1 = 257

0 46

2 20

June 21, 1881

No. 1 = 252

5 58

6 21

" 2 = 253

12 40

13 37

" 3 = 254

0 43

1 58

June 22, 1881

No. 1 - 20-5- 12 47 13 44

June 23, 1881

No. 1 = 256	5	55	6	15
" 2 = 257	12	51	13	45
" 3 = 258	12	46	13	58

June 25, 1881

No. 1 = 259

6

12

6

28

" 2 = 260

13

0

14

41

June 28, 1881

No. 1 = 261

5 40

6 41

" 2 = 262

0 27

2 19

June 29, 1881

No. 1 = 263

12 49

14 1

" 2 = 264

0 48

2 3

June 30, 1881

No. 1 = 265	6	1	6	50
" 2 = 266	17	28	18	37

July 1, 1881

No. 1 = 267 17 26 18 45
" 2 = 268 1 4 1 55

At about

2/1

July 2, 1887

No. 1 = 269

" 2 = 270

6	39	6	57
13	4	1-3	47

W.V.B. having observed with the Meridian Circle last night at about 18^h, sidereal time, ~~he~~ forgot to close the shutters.

During the night it rained; and the telescope got very wet. The cap was on; & examination showed that the water did not get between the glasses, nor in the body of the instrument.

W.V.B. at once cleaned off the whole instrument with kerosene oil, then oiled the pivots, & determined the collimation finding no change. Mr. Rogers in the afternoon got the level, for results of which see record book.

July 3, 1881

No. 1 = 271

6

41

6

58

" 2 = 272

0

44

2

0

July 4, 1881

No. 1 = 273	6	46	7	27
" 2 = 274	13	0	13	45

July 5, 1881

No. 1 = 275 6 52 7 7
" 2 = 276 17 27 18 23

July 6, 1881

No. 1 = 277	13	2	13	59
" 2 = 278	17	21	19	28

July 7. 1881

No. 1 = 279 6 53. 7. 14

A change of level having been found on July 2, ~~day~~ ^{by W.V.T.} the showing of the Long level, it was suggested that it might have been caused by a 15° plate on the West circle, which he observed to rub or press against the pier, when the telescope was swung through 360°, during the process of cleaning. This A.M. at ~~7~~ ^{22^h} M.S.T.

Mr. Rogers tested this by again swinging the telescope around, & ~~concluded~~ finding that the plate yielded readily, concluded that it could not have caused harm.

July 8, 1881

No. 1 = 280

" 2 = 281

7 0 7 20

0 47 1 51

July 9, 1881

no. 1 = 282

" 2 = 283

7	7	7	22
12	35	13	46

July 10. 1881

No. 1 = 284

0

4.8

2^h

0^m

July 12, 1881

No. 1 = 285-	7	18	7	38
" 2 = 286	12	53	13	47

July 13, 1881

No. 1 = 287	7	24	7	44
" 2 = 288	12	43	13	25
" 3 = 289	1	5	2	3

July 14, 1881

no. 1 = 290	7	29	7	46
.. 2 = 291	12	51	13	47
.. 3 = 292	0	38	1	59

July 15, 1881

no. 1 = 293	7	35	7	48
- 2 = 294	12	55	13	49

July 16, 1881

No. 1 = 29~~8~~5 7 36 7 56

July 17, 1881

No. 1 = 296 0 47 2. 14

July 18, 1881

No. 1 = 297 0 47 2 4

July 19, 1881

No. 1 = 298

13 18

13 57

July 20, 1881

No. 1 = 299	7	53	8	10
" 2 = 300	12	48	13	50

July 21, 1881

No. 1 = 301	7	56	8^h	8^m
" 2 = 302	12	40	13	46

July 25, 1881

No. 1 = 303

" 2 = 304

8 13 1 - 8.28

12 24 13 52

July 26 — The Boston signal clock stopped on this day and Mr. Asten while here to attend to it, also looked over 1327, but did not take it down, nor alter anything.

July 28, 1881

No. 1 = 305-

8 24

8 40

Aug. 1

No. 1 = 306

8 38

8 59

" 2 = 307

12 44

13 46

Aug 2
 J. R. returns to the observatory after an absence since May 29, on account of illness.

Aug. 8, 1881

No. 1 = 308	19 8	20 46
" 2 = 309	20 49	23 8
" 3 = 310	0 13	4 21
" 4 = 311	4 23	6 34
" 5 = 312	6 39	8 45

~~Removal~~

Mr. Aster removed the South Clock 1327 from the previous ^{old} Clock room to the new room fitted up by Mr. Stevens and under the pier of the West-Equatorial. The brick walls were put up in 1880. In 1881

Mr. Stevens coated the room on the inside ~~and~~. Preliminary observations with the Hygrodeik showed the moisture to be about .70, within two pans of chl. of Calcium in the room in 2 days.

Mr. Aster in taking the Clock down found a slight warping of the Crutem, which will probably occur occasionally in the irregularities in the rate which have lately existed.

A needle point has been attached to the end of the pendulum rod and the arc in the bottom of the case was moved forward a short distance in order to have the needle point swing directly over the graduation. Mr. Aster, after setting up the clock

adjusted it to be 2.9^s slower than Chron.
 3451. M was started with 12 grammes on the pendulum

Aug. 8, 1881

Aug. 8

Took off 5 + 2 grammes weights
 at 6^h 4^m

Aug 9

Reading of zero of 3451 from zero of 1327
 Aug 8. ^{After adding 7 grammes to 1327}
 6^h 45 3314
 8^h 40 3278 hourly change 18^s

Before adding 7 grammes
 (taken off)

4 30 3334
 6 0 3325 hourly change = -06^s

7 grammes = 12^s
 1 gramme = 1^s 12^s per hour
 = 41^s per day.

2

Aug. 9. 1881

No. 1 = 313	8	47	9	22
" 2 = 314	9	25	10	12
" 3 = 315	10	13	12	26
" 4 = 316	12	28	14	40
" 5 = 317	15	3	16	20

Pat-flock 5729 grams
weights of 142532

8^h 13^m - Added 29 grams
to pendulum, ~~leaving 9 grams~~
There are now 9 grams
in pendulum

No. 6 = 318	16	22	17	56
" 7 = 319	4	16	6	19
" 8 = 320	6	21	7	18
" 9 = 321	7	19	9	26

Before adding 9 grams After adding 9 grams
 15 15 3129 25 2876
 17 45 3064 9 25 2876
 Some change = 260 :100

9 grams = 160

1 gram = 18 per hour
 = 43 per day.

Aug. 10, 1881

No. 1 = 322	169	21227	^{to} 17103854
" 2 = 323	411	1641	~~to~~ 141948
" 3 = 324	614	2149	~~to~~ 7161854
" 4 = 325	76	1919	~~to~~ 962642
" 5 = 326	96	21744	~~to~~ 85460

Began reading Thermometer
in Mr. Cook Case.

This thermometer is designa-
ted No. 6

No. 6 = 69!

Aug. 11, 1887

No. 1 = 327	8	52	10	24
" 2 = 328	~~10~~	~~27~~	~~12~~	~~44~~
" 3 = 329	13	40	~~15~~	59
" 4 = 330	7	46	9	47

At 18^h 5^m added 3 grains
to pendulum of 1327

At 7^h 45^m found that the 3 grains
added at 18^h should have been
subtracted. Therefore took off 6 grains
and added $\frac{1}{2}$ grain.

Aug 15 1881

Mr. Stevens placed the surveying carriage in position and having raised the telescope from its leaning, took off the wooden arch.

XXII
 Began an investigation of the errors of the quadrant-points of the east-circle. The new circle is in the same position as the telescope has occupied in the last 2 years. The plan of proceeding and the observations will be found on page 3 of book A containing the investigation of the errors of this circle.

Aug 17

Having completed the investigation of the error of the quadrant - pairs of the East-Elle the instruments were reversed at -13° S. T.

For the values of the collimation and the flexure before and after reversal see Report & book page.

- and adjusted microscopes so that P & H are greater than E for every position from $z = 270$ to $z = 90$
- (b) Adjusted P & C carefully for parallelism of wires and for focus of microscopes.
 - (c) Brought the North Collimator into the ^{new} line of collimation.
 - (d) Put ^{up} ~~on~~ both protective cases
 - (e) Got level with both the old and the new level.

Aug. 20, 1881

No. 1 = 331

18 30

19. 24

No. 2 = 700 .

Aug. 21. 1881

No. 1 = 332	9 58	11 15
" 2 = 330	13 5	14 50
" 3 = 334	2 24	4 01
" 4 = 335	4 2	6 1.5
" 5 = 336	6 12	8 8

Aug. 22, 1881

W. 1 = 337	8	9	10	20
" 2 = 338	13	3	15	13
" 3 = 339	15	14	17	10
" 4 = 340	0	50	3	10
" 5 = 341	3	35	6	45
" 6 = 342	5	47	8	1

While working at the level, between 11 & 13 hrs. sidereal time, Mr. Rogers happened to strike the eye-faces of the transit. Before getting Polaris, he again collimated & for values of C before & after hitting, see record book.

Aug. 23. 1881

No. 1 = 343

5 37 ~~6~~ 7 4

Aug. 25, 1881

No. 1 = 344 10 24 10, 25

No 6 = 70.0

Aug. 26, 1881

No. 1 = 345 10 13 10. 29

Aug. 27, 1881

No. 1 = 346

" 2 = 347

10 17

12 59

10 33

15 9

Aug. 29, 1881

No. 1 = 348	10	²⁷ ~~30~~	10	38
" 2 = 349	12	55	14	12
" 3 = 350				

Aug. 30, 1881

No. 1 = 351

" 2 = 352

" 3 = 353

" 4 = 354.

" 5 = 355

No. 6 = 689

Aug. 31, 1881

No. 1 = 356

" 2 = 357

" 3 = 358

Aug. 31, 1881

Sept. 1, 1887

No. 1 = 359

1 2 = 360

Mag = 7.0

Sept. 6, 1887

No. 1 = 361

Sept. 7. 1881

No. 1 = 362

" 2 = 363

" 3 = 364

" 4 = 365

Today began to take but a single reading of the microscopes, ~~on the~~ by Mr. Rogers and W.V.B., on the second setting, instead of 2 each as formerly. This is done in order to relieve the eyes of W.V.B. as they have been troubling him.

Sept. 8. 1881

No. 1 = 366

" 2 = 367

" 3 = 368

" 4 = 369

" 5 = 370

" 6 = 371

Sept. 9, 1881

No. 1 = 372

No. 6 = 682

Sept. 12, 1881

No. 1 = 373

.. 2 = 374

.. 3 = 375

.. 4 = 376

Sept, 13, 1881.

No. 1 = 377

" 2 = 378

" 3 = 379

" 4 = 380

" 5 = 381

Sept. 14. 1881

No. 1 = 382

2 = 383

Sept. 15, 1881

No. 1 = 384

" 2 = 385

" 3 = 386

No 6 = 68.2

Sept. 17, 1881

No. 1 = 387

" 2 = 388

" 3 = 389

" 4 = 390

" 5 = 391

" 6 = 392

Sept. 18, 1881

No. 1 = 393

No. 6 = 69.0

Sept. 19, 1881

No. 1 = 394

" 2 = 395

" 3 = 396

" 4 = 397

" 5 = 398

Sept. 20, 1881

No. 1 = 399

" 2 = 400

" 3 = 401

" 4 = 402

" 5 = 403

Sept. 21, 1881

W. 1 = 404
" 2 = 405
" 3 = 406

Sometime during the morning of Sept. 21 (Civil Day) the Waltham clock jumped forward 4³, probably due to the jar caused by a workman placing a bale of "waste" against the joists. (see further particulars under date of 25th.)

Sept. 22. 1881

No. 1 = 407

" 2 = 408

Sept. 23, 1881

No. 1 = 409

Sept. 25, 1881

No. 1 = 410

" 2 = 411

" 3 = 412

" 4 = 413

" 5 = 414

No 6 = 700

Sept. 25, 1881

The following are additional data in regard to the "jump" in the Waltham clock.

" Sept. 17 ^d 8 ^h 34 ^m	Waltham fast	^s 0.95
20 8 1	" "	0.96
20 21 50		1.00
20 23 58		4.98
21 5 8		5.02
22 21 53		5.11

We have no check on the minute of Waltham.
(per. Mr. Chandler.)

The change, apparently of ^s 4.00, in Waltham, must have occurred between the hours of 9^h 50^m and 11^h 58^m A.M. of Wednesday, Sept 21 (civil time).

Sept. 26, 1881

W. 1 = 415

" 2 = 416

" 3 = 417

" 4 = 418

" 5 = 419

Sept. 27, 1881

no. 1 = 420

Sept. 28, 1881

No. 1 = 421

" 2 = 422

Sept. 29. 1881

No. 1 = 423

" 2 = 424

Sept. 30, 1881

No. 1 = 425

" 2 = 426

" 3 = 427

No. 6 = 713

Oct. 1, 1881

No. 1 = 428

" 2 = 429

" 3 = 430

Oct. 3, 1881

No. 1 = 431

" 2 = 432

" 3 = 433

" 4 = 434

" 5 = 435

Oct. 4, 1881

No. 1 = 436

" 2 = 437

" 3 = 438

Oct. 5, 1881.

$$w. 1 = 439$$

$$" 2 = 440$$

$$" 3 = 441$$

$$" 4 = 442$$

$$" 5 = 443$$

1 1 - . 8
 1 1 - . 1
 1 1 - 2 1
 1 1 - 1 1

$$w 6 = 67.0$$

Oct. 6. 1881

$$No. 1 = 444$$

$$" 2 = 445$$

$$" 3 = 446$$

$$" 4 = 447$$

Oct. 7, 1881

No. 1 = 448

" 2 = 449

121 - 1 1

121 - 1 1

Oct. 8, 1881

No. 1 = 450

" 2 = 451

Oct. 9, 1881

No. 1 = 452

" 2 = 453

" 3 = 454

At. $6^h 40^m$ (sidereal time) the eyepiece of the Meridian Circle fell out of its socket, & may have disturbed the collimation.

Oct. 10. 1881

No. 1 = 455

" 2 = 456

" 3 = 457

" 4 = 458

No. 6 = 693

Oct. 11, 1881

No. 1 = 459

" 2 = 460

" 3 = 461

Oct. 12, 1881

No. 1 = 462

" 2 = 463

" 3 = 464

Oct. 13, 1881

No. 1 = 465

" 2 = 466

" 3 = 467

" 4 = 468

5 = 469

DCI-13 1881

$$\mu_{01} = 469$$

$$\mu_{06} = 72.3$$

Oct. 14 1881

$$M_{v1} = 470$$

$$M_{v6} = 750$$

807-15

W1-471

Oct-16/81

$W = 474$
 $2 = 473$

Oct-18/1881

No 1 = 474
2 = 475

No 6 = 762

001-19 1881

$$\mu_1 = 4.76$$

$$\mu_0 = 7.70$$

Oct 20 / 1881

$N_0 = 479$

2 = 478

3 = 479

Oct 21 1881

Nr 1 = 480

2 = 481

Oct 23 1887

$$\begin{aligned} \text{Nov} &= 482 \\ 2 &= 483 \end{aligned}$$

$$\text{Nov} = 77.4$$

Oct 25-

$\mu_0 = 2.84$
 $2 = 485$
 $3 = 486$
 $4 = 487$

$\mu_0 = 76.0$

1881phae.proj.1661R

188101ae-0001-1861R