

RATES OF CHRONOMETERS
ON TRIAL
FOR PURCHASE BY THE BOARD OF ADMIRALTY,
AT THE
ROYAL OBSERVATORY, GREENWICH.
1878.

RATES OF CHRONOMETERS ON TRIAL FOR PURCHASE BY THE ADMIRALTY,

NAME OF MAKER.	No.	Whether 2 or 8 Days.	Construction of Escapement and Balance, from the Description furnished by the Maker.	(I.) WEEKLY SUMS OF DAILY RATES											
				Jan. 12—19	Jan. 19—26	Jan. 26 to Feb. 2	Feb. 2—9	Feb. 9—16	Feb. 16—23	Feb. 23 to Mar. 2 †	Mar. 2—9 †	Mar. 9—16 †	Mar. 16—23 †	Mar. 23—30	
				s	s	s	s	s	s	s	s	s	s	s	
Pyott	478	2	Ordinary balance, with slight addition. Airy's Com- [pensation.	- 0.7	- 0.6	+ 2.9	+ 1.9	+ 2.0	- 2.5	+ 3.0	+ 1.4	+ 3.9	+ 2.9	+ 1.3	
Ainsley	3381	2	Auxiliary in cold. Airy's Compensation.	+ 0.5	+ 2.7	+ 2.8	+ 4.0	+ 5.5	+ 2.0	- 0.5	- 1.5	+ 3.2	+ 6.3	+ 5.6	
Fletcher	3482	2	Airy's Compensation.	+ 15.8	+ 16.0	+ 16.0	+ 16.0	+ 16.5	+ 15.2	+ 16.9	+ 15.4	+ 16.0	+ 18.0	+ 18.1	
Mann	3472	2	Auxiliary for low temperatures. Airy's Compen- [sation.	- 4.5	- 3.0	- 6.0	- 7.0	- 4.5	- 1.5	- 0.3	+ 1.3	+ 4.9	+ 7.2	+ 2.9	
Sewill	4240	2	No information received.	- 9.0	- 6.8	- 8.4	- 9.1	- 8.3	- 3.9	+ 2.7	+ 3.0	+ 5.3	+ 7.0	+ 1.2	
Moore	1817	2	Airy's Compensation.	+ 3.1	+ 4.2	+ 1.5	+ 3.0	+ 4.7	+ 4.5	+ 7.8	+ 7.7	+ 13.8	+ 15.5	+ 18.2	
Johnson	6278	2	Poole's Auxiliary.	+ 7.2	+ 7.6	+ 6.4	+ 5.6	+ 5.0	+ 4.0	+ 1.0	- 1.5	+ 2.0	+ 6.5	+ 2.5	
Reid and Sons	4556	2	Airy's Compensation.	- 1.5	- 0.5	- 0.6	- 1.9	+ 0.1	- 2.2	+ 7.1	+ 6.0	+ 7.7	+ 8.3	+ 7.1	
Poole & Co.	5677	2	Poole's Auxiliary. Airy's Compensation.	- 4.2	- 1.0	- 5.4	- 6.1	- 5.2	- 2.1	+ 3.8	+ 4.0	+ 5.5	+ 6.0	- 4.5	
Moore	1810	2	Airy's Compensation.	- 5.3	- 3.5	- 4.5	- 6.5	- 4.4	- 4.3	0.0	+ 1.2	+ 5.6	+ 11.1	+ 5.5	
Isaac	1599	2	Auxiliary Compensation. Airy's Compensation.	- 1.9	- 2.6	+ 1.0	+ 1.5	- 0.2	- 4.8	+ 3.5	- 6.6	- 9.9	- 4.0	+ 4.0	
Aitchison	4827	2	Auxiliary with Airy's Compensation.	- 9.1	- 7.2	- 9.3	- 9.0	- 7.0	- 9.8	- 12.3	- 12.4	- 10.0	- 7.3	- 4.2	
Hennessey	4822	2	No information received.	- 18.9	- 15.4	- 16.7	- 16.5	- 12.5	- 8.3	- 10.7	- 10.0	- 6.0	- 3.4	- 16.2	
Sewill	4241	2	No information received.	- 16.5	- 12.5	- 16.0	- 17.0	- 14.5	- 9.4	+ 2.8	+ 2.1	+ 3.1	+ 4.4	- 5.5	
Johnson	6276	2	Double auxiliary (original). Airy's Compensation.	- 3.8	- 0.1	- 2.1	- 2.6	+ 1.5	+ 1.8	+ 6.2	+ 6.2	+ 10.3	+ 14.1	+ 4.4	
Keys	257	2	Ordinary balance, with slight addition. Airy's Compen- [sation.	+ 11.6	+ 10.5	+ 13.0	+ 9.5	+ 4.0	+ 0.5	+ 9.0	+ 7.0	+ 7.5	+ 7.5	+ 1.7	
Williams	1479	2	Airy's Compensation.	- 14.0	- 10.8	- 13.7	- 16.0	- 12.9	- 8.6	- 10.0	- 10.5	- 6.5	- 4.2	- 8.9	
Nelson	2829	2	Double auxiliary gaining in cold. Airy's Compensation.	- 11.3	- 14.2	- 10.0	- 9.5	- 7.0	- 11.5	- 9.4	- 5.4	- 4.5	- 2.9	+ 8.1	
Nelson	2836	2	Double auxiliary gaining in cold. Airy's Compensation.	+ 21.0	+ 22.2	+ 24.7	+ 29.2	+ 31.2	+ 28.0	+ 15.4	+ 16.6	+ 19.6	+ 24.8	+ 33.0	
Aitchison	4827	2	Auxiliary with Airy's Compensation.	- 5.0	- 3.3	- 1.4	- 2.3	- 4.7	+ 1.8	+ 1.0	- 0.6	+ 2.0	+ 3.7	+ 9.6	
Sutton	2842	2	Auxiliary gaining in cold. Airy's Compensation.	- 2.2	0.0	- 3.5	- 1.5	+ 1.0	+ 4.5	+ 13.0	+ 13.3	+ 16.2	+ 18.5	+ 12.5	
Poole & Co.	5720	2	Poole's auxiliary. Airy's Compensation.	+ 1.3	+ 0.7	- 1.4	- 3.1	- 1.0	+ 2.5	- 17.7	- 17.6	- 14.2	- 11.8	+ 0.8	
Keys	252	2	Ordinary balance, with slight addition. Airy's [Compensation.	+ 6.7	+ 8.3	+ 10.2	+ 9.3	+ 10.5	+ 8.0	+ 16.0	+ 2.0	- 5.0	+ 14.2	+ 11.3	
Cornell	5658	2	Airy's Compensation.	- 4.1	- 5.9	- 2.0	- 2.0	- 2.4	- 9.1	- 16.5	- 12.5	- 8.3	- 5.1	+ 13.5	
Crisp	3463	2	Airy's Compensation, with auxiliary for high [range of temperature.	+ 9.4	+ 4.1	+ 3.0	+ 2.5	+ 8.5	+ 4.0	- 10.0	- 7.6	- 5.9	- 3.4	+ 17.1	
Usher and Cole	1507	2	Auxiliary to balance. Airy's Compensation.	- 23.7	- 25.5	- 27.0	- 29.0	- 27.5	- 25.1	- 17.9	- 14.0	- 9.5	- 4.5	- 1.3	
Sutton	2834	2	Auxiliary gaining in cold. Airy's compensation.	- 5.5	- 2.0	+ 1.6	+ 1.9	+ 3.6	+ 2.4	+ 23.2	+ 26.3	+ 32.0	+ 33.5	+ 14.6	
Usher and Cole	1517	2	Auxiliary to balance. Airy's Compensation.	- 16.4	- 16.3	- 18.5	- 18.5	- 10.3	- 14.6	+ 3.6	+ 5.1	+ 9.2	+ 11.7	+ 12.0	
Evans	1841	2	Airy's Compensation.	- 38.7	- 27.5	- 22.7	- 25.8	- 31.0	- 25.5	+ 19.0	+ 21.1	+ 20.9	+ 19.5	- 13.9	
Chronometrical Thermometer.				+1216.5	+1079.5	+1402.0	+1483.0	+1339.5	+827.2	-1943.7	-2534.0	-2321.0	-2189.3	(+546.0)	
Extremes of Temperature as shown by the Self-Regis- tering Thermometers				41—52	44—54	42—55	40—55	41—52	48—55	84—94	86—102	81—100	80—103	41—51	

The sign + indicates that the rate is gaining.

† During these weeks the Chronometers were placed in the chamber of a stove heated by jets of gas. The gas flames are exterior to the chamber, into which none of the injurious products of combustion can enter.

The Chronometrical Thermometer differs from an ordinary Chronometer only in the construction of the balance, the positions of the metals forming the compensating rims being reversed. By this arrangement the effect of temperature is much magnified.

The Chronometrical Thermometer was in the hands of the maker for the three weeks between March 23 and April 13. The rates in brackets under this head were obtained from a Chronometer with an uncompensated balance.

IN THE ORDER OF TIME.

IN THE ORDER OF TIME.																		NAME OF MAKER.		No.
Mar 30 Apr 6	April 6-13	April 13-20	April 20-27	April 27 to May 4	May 4-11	May 11-18	May 18-25 †	May 25 to June 1 †	June 1-8 †	June 8-15 †	June 15-22	June 22-29	June 29 to July 6	July 6-13	July 13-20	July 20-27				
0.0 + 9.1 + 17.8 + 4.0 - 0.5	- 3.0 + 9.0 + 15.6 + 7.0 + 2.5	- 5.0 + 7.3 + 14.5 + 8.0 + 4.5	- 3.9 + 7.5 + 14.8 + 7.7 + 5.0	- 3.6 + 8.7 + 15.4 + 7.8 + 6.0	- 3.0 + 8.5 + 17.8 + 7.5 + 6.7	- 3.0 + 8.3 + 19.5 + 7.0 + 6.1	+ 1.0 + 9.7 + 19.2 + 6.5 + 5.4	+ 1.5 + 10.8 + 19.2 + 6.0 + 4.3	+ 1.5 + 10.8 + 19.2 + 5.0 + 3.5	+ 2.0 + 9.2 + 20.0 + 4.5 + 3.5	- 1.0 + 9.5 + 15.3 + 10.0 + 4.2	+ 3.5 + 13.0 + 22.5 + 10.0 + 3.8	+ 1.2 + 13.0 + 21.0 + 10.2 + 5.0	+ 1.8 + 12.1 + 21.9 + 10.3 + 6.3	+ 4.0 + 12.6 + 22.1 + 10.5 + 6.7	+ 6.0 + 11.3 + 24.5 + 9.5 + 6.0	Pyott.....	478		
																	Ainsley.....	3381		
																	Fletcher.....	3482		
																	Mann.....	3472		
																	Sewill.....	4240		
+ 18.0 + 5.7 + 6.9 - 6.9 + 9.3	+ 15.9 + 2.8 + 5.6 - 1.0 + 11.8	+ 15.6 + 4.0 + 5.7 + 2.1 + 12.7	+ 14.8 + 4.7 + 5.3 + 1.0 + 12.5	+ 16.5 + 5.8 + 3.9 + 1.9 + 11.5	+ 16.0 + 7.0 + 3.2 + 4.0 + 10.6	+ 14.0 + 8.9 + 3.3 + 4.9 + 9.9	+ 15.9 + 14.4 + 11.0 + 6.2 + 13.0	+ 19.6 + 15.7 + 13.5 + 5.3 + 14.0	+ 21.4 + 15.2 + 12.0 + 4.5 + 16.8	+ 20.6 + 17.3 + 12.0 + 3.5 + 18.7	+ 20.5 + 14.0 + 6.0 + 7.5 + 15.6	+ 17.5 + 14.0 + 6.5 + 7.0 + 16.9	+ 17.6 + 14.5 + 6.2 + 6.5 + 15.5	+ 16.7 + 15.1 + 7.3 + 7.0 + 15.3	+ 17.9 + 16.9 + 7.0 + 7.5 + 16.2	+ 16.2 + 18.1 + 6.0 + 8.0 + 16.1	Moore.....	1817		
																	Johnson.....	6278		
																	Reid and Sons.....	4556		
																	Poole & Co.....	5677		
																	Moore.....	1810		
+ 2.5 - 3.5 - 13.4 - 6.8 + 5.2	- 2.6 - 4.0 - 7.3 - 4.0 + 8.3	+ 3.6 - 4.0 - 4.4 - 1.0 + 11.0	- 6.0 - 3.0 - 2.7 - 0.3 + 11.5	- 2.7 - 2.8 - 0.6 + 1.4 + 14.9	- 1.8 - 3.0 + 0.4 + 2.2 + 15.1	- 3.3 - 2.7 + 1.1 + 3.1 + 16.0	+ 3.1 - 10.8 - 7.3 + 4.6 + 15.0	+ 4.7 - 12.7 - 10.0 + 3.3 + 15.5	+ 7.8 - 13.9 - 12.5 - 4.0 + 15.5	+ 4.7 - 14.5 - 14.7 + 0.5 + 15.7	+ 0.6 - 2.6 - 4.5 + 4.5 + 18.1	- 4.6 - 0.5 - 10.3 + 4.5 + 22.7	- 4.0 - 1.5 - 12.7 + 0.5 + 22.5	- 4.4 0.0 - 12.5 + 2.0 + 23.6	- 7.1 0.0 - 11.3 + 3.5 + 26.4	- 6.9 + 0.5 - 10.8 + 3.0 + 25.0	Isaac.....	1599		
																	Aitchison.....	4827		
																	Hennessy.....	4822		
																	Sewill.....	4241		
																	Johnson.....	6276		
+ 2.3 - 9.3 + 6.1 + 39.9 + 13.9	- 3.2 - 4.5 + 7.0 + 45.9 + 12.8	- 6.7 - 1.5 + 6.7 + 45.4 + 16.5	- 4.1 - 0.9 + 6.8 + 47.5 + 18.0	- 5.4 - 0.4 + 6.7 + 46.1 + 20.6	- 2.2 + 0.4 + 3.1 + 41.9 + 20.4	- 1.7 + 0.3 + 5.2 + 44.3 + 18.2	+ 12.8 - 4.3 + 5.0 + 37.7 + 5.7	+ 13.5 - 5.2 + 2.5 + 38.2 + 3.8	+ 12.5 - 8.5 + 2.9 + 38.3 + 3.8	+ 13.0 - 11.8 + 2.3 + 38.8 + 3.1	- 2.3 + 4.3 + 15.3 + 44.2 + 19.1	+ 7.8 + 4.5 + 11.0 + 49.5 + 20.8	+ 3.5 + 4.5 + 13.5 + 51.0 + 23.1	+ 1.9 + 6.5 + 14.6 + 51.0 + 24.3	+ 5.6 + 5.5 + 14.9 + 50.5 + 24.7	+ 7.7 + 5.1 + 13.1 + 46.0 + 22.5	Keys.....	257		
																	Williams.....	1479		
																	Nelson.....	2829		
																	Nelson.....	2836		
																	Aitchison....	4827		
+ 15.7 + 1.8 + 11.0 + 15.4 + 17.4	+ 19.8 + 7.3 + 10.0 + 11.5 + 16.4	+ 22.7 + 8.9 + 9.0 + 9.4 + 15.0	+ 24.1 + 10.3 + 8.0 + 9.3 + 16.2	+ 26.5 + 8.7 + 8.5 + 9.9 + 15.4	+ 28.7 + 7.5 + 12.0 + 9.9 + 13.9	+ 29.5 + 6.0 + 14.5 + 7.5 + 13.0	+ 31.5 - 5.6 + 25.1 + 1.5 + 4.0	+ 30.5 - 5.4 + 22.9 + 3.0 + 6.5	+ 30.6 - 6.0 + 24.0 + 4.3 + 8.2	+ 32.4 - 5.8 + 23.3 + 4.8 + 10.4	+ 31.2 + 7.4 + 16.9 + 13.7 + 18.4	+ 39.3 + 0.6 + 20.8 + 10.2 + 14.2	+ 39.0 + 4.8 + 20.0 + 11.2 + 17.4	+ 38.9 + 7.7 + 21.0 + 10.4 + 17.4	+ 41.4 + 3.9 + 22.1 + 8.9 + 15.8	+ 41.7 + 3.9 + 23.2 + 6.6 + 11.1	Sutton.....	2842		
																	Poole & Co.....	5720		
																	Keys.....	252		
																	Cornell.....	5658		
																	Crisp.....	3463		
- 1.5 + 22.3 + 12.3 - 25.0	+ 1.3 + 28.3 + 16.1 - 10.2	+ 4.6 + 31.8 + 18.9 - 7.9	+ 5.6 + 34.1 + 27.4 - 1.0	+ 5.1 + 36.0 + 25.3 + 0.5	+ 5.2 + 36.6 + 22.9 + 5.9	+ 7.0 + 37.1 + 25.0 + 10.6	- 10.9 + 42.5 + 20.5 + 32.8	- 11.6 + 43.7 + 21.4 + 19.9	- 10.9 + 45.4 + 24.6 + 10.3	- 12.4 + 45.5 + 25.4 + 21.9	+ 3.8 + 37.6 + 37.0 + 4.6	+ 7.5 + 44.0 + 46.0 + 15.5	+ 9.5 + 43.5 + 47.5 + 15.5	+ 9.6 + 46.2 + 45.2 + 17.3	+ 9.2 + 43.8 + 47.1 + 11.0	+ 8.7 + 40.7 + 47.9 + 21.1	Usher and Cole.....	1507		
																	Sutton.....	2834		
																	Usher and Cole.....	1517		
																	Evans.....	1841		
(+555.5)	(+336.5)	+382.5	+325.0	+93.9	-94.4	-179.0	-2093.8	-2551.5	-2815.7	-2805.5	-164.5	-1036.0	-526.0	-521.5	-733.0	-923.3	Chronometrical Thermometer.			
42-52	47-57	54-61	55-61	56-66	60-67	61-69	83-93	87-98	88-98	92-99	59-74	66-82	64-78	65-72	66-80	67-78	{Extremes of Temperature as shown by the Self-Registering Thermometers.			

The Chronometers are placed in order of merit, their respective positions being determined by consideration of the irregularities of rate exhibited in Table III.

RATES OF CHRONOMETERS ON TRIAL FOR PURCHASE BY THE ADMIRALTY,

NAME OF MAKER.	No.	Whether 2 or 8 Days.	Construction of Escapement and Balance, from the Description furnished by the Maker.	(II.) WEEKLY SUMS OF DAILY RATES											
				June 1—8	June 8—15	May 25 to June 1	March 2—9	March 9—16	March 16—23	May 18—25	Feb. 23 to Mar. 2	June 22—29	July 20—27	July 13—20	
				†	†	†	†	†	†	†	†				
Pyott.....	478	2	Ordinary balance, with slight addition. Airy's Compens[ation].	+ 1.5	+ 2.0	+ 1.5	+ 1.4	+ 3.9	+ 2.9	+ 1.0	+ 3.0	+ 3.5	+ 6.0	+ 4.0	
Ainsley.....	3381	2	Auxiliary in cold. Airy's Compensation.	+ 10.8	+ 9.2	+ 10.8	— 1.5	+ 3.2	+ 6.3	+ 9.7	— 0.5	+ 13.0	+ 11.3	+ 12.6	
Fletcher.....	3482	2	Airy's Compensation.	+ 19.2	+ 20.0	+ 18.3	+ 15.4	+ 16.0	+ 18.0	+ 19.2	+ 16.9	+ 22.5	+ 24.5	+ 22.1	
Mann.....	3472	2	Auxiliary for low temperatures. Airy's Compens[ation].	+ 5.0	+ 4.5	+ 6.0	+ 1.3	+ 4.9	+ 7.2	+ 6.5	— 0.3	+ 10.0	+ 9.5	+ 10.5	
Sewill.....	4240	2	No information received.	+ 3.5	+ 3.5	+ 4.3	+ 3.0	+ 5.3	+ 7.0	+ 5.4	+ 2.7	+ 3.8	+ 6.0	+ 6.7	
Moore.....	1817	2	Airy's Compensation.	+ 21.4	+ 20.6	+ 19.6	+ 7.7	+ 13.8	+ 15.5	+ 15.9	+ 7.8	+ 17.5	+ 16.2	+ 17.9	
Johnson.....	6278	2	Poole's auxiliary.	+ 15.2	+ 17.3	+ 15.7	— 1.5	+ 2.0	+ 6.5	+ 14.4	+ 1.0	+ 14.0	+ 18.1	+ 16.9	
Reid and Sons.....	4556	2	Airy's Compensation.	+ 12.0	+ 12.0	+ 13.5	+ 6.2	+ 7.7	+ 8.3	+ 11.0	+ 7.1	+ 6.5	+ 6.0	+ 7.0	
Poole & Co.....	5677	2	Poole's auxiliary. Airy's Compensation.	+ 4.5	+ 3.5	+ 5.3	+ 4.0	+ 5.5	+ 6.0	+ 6.2	+ 3.8	+ 7.0	+ 8.0	+ 7.5	
Moore.....	1810	2	Airy's Compensation.	+ 16.8	+ 18.7	+ 14.0	+ 1.2	+ 5.6	+ 11.1	+ 13.0	0.0	+ 16.9	+ 16.1	+ 16.2	
Isaac.....	1599	2	Auxiliary Compensation. Airy's Compensation.	+ 7.8	+ 4.7	+ 4.7	— 6.6	— 9.9	— 4.0	+ 3.1	+ 3.5	— 4.6	— 6.9	— 7.1	
Aitchison.....	4387	2	Auxiliary with Airy's Compensation.	— 13.9	— 14.5	— 12.7	— 12.4	— 10.0	— 7.3	— 10.8	— 12.3	— 0.5	+ 0.5	0.0	
Hennessy.....	4822	2	No information received.	— 12.5	— 14.7	— 10.0	— 10.0	— 6.0	— 3.4	— 7.3	— 10.7	— 10.3	— 10.8	— 11.3	
Sewill.....	4241	2	No information received.	— 4.0	— 0.5	+ 3.3	+ 2.1	+ 3.1	+ 4.4	+ 4.6	+ 2.8	+ 4.5	+ 3.0	+ 3.5	
Johnson.....	6276	2	Double auxiliary (original). Airy's Compensation.	+ 15.5	+ 15.7	+ 15.5	+ 6.2	+ 10.3	+ 14.1	+ 15.0	+ 6.2	+ 22.7	+ 25.0	+ 26.4	
Keys.....	257	2	Ordinary balance, with slight addition. Airy's Compens[ation].	+ 12.5	+ 13.0	+ 13.5	+ 7.0	+ 7.5	+ 7.5	+ 12.8	+ 9.0	+ 7.8	+ 7.7	+ 5.6	
Williams.....	1479	2	Airy's Compensation.	— 8.5	— 11.8	— 5.2	— 10.5	— 6.5	— 4.2	— 4.3	— 10.0	+ 4.5	+ 5.1	+ 5.5	
Nelson.....	2829	2	Double auxiliary gaining in cold. Airy's Compensation.	+ 2.9	+ 2.3	+ 2.5	— 5.4	— 4.5	— 2.9	+ 5.0	— 9.4	+ 11.0	+ 13.1	+ 14.9	
Nelson.....	2836	2	Double auxiliary gaining in cold. Airy's Compensation.	+ 38.3	+ 38.8	+ 38.2	+ 16.6	+ 19.6	+ 24.8	+ 37.7	+ 15.4	+ 49.5	+ 46.0	+ 50.5	
Aitchison.....	4387	2	Auxiliary with Airy's Compensation.	+ 3.8	+ 3.1	+ 3.8	— 0.6	+ 2.0	+ 3.7	+ 5.7	+ 1.0	+ 20.8	+ 22.5	+ 24.7	
Sutton.....	2842	2	Auxiliary gaining in cold. Airy's Compensation.	+ 30.6	+ 32.4	+ 30.5	+ 13.3	+ 16.2	+ 18.5	+ 31.5	+ 13.0	+ 39.3	+ 41.7	+ 41.4	
Poole & Co.....	5720	2	Poole's auxiliary. Airy's Compensation.	— 6.0	— 5.8	— 5.4	— 17.6	— 14.2	— 11.8	— 5.6	— 17.7	+ 0.6	+ 3.9	+ 3.9	
Keys.....	252	2	Ordinary balance, with slight addition. Airy's [Compensation].	+ 24.0	+ 23.3	+ 22.9	+ 2.0	— 5.0	+ 14.2	+ 25.1	+ 16.0	+ 20.8	+ 23.2	+ 22.1	
Cornell.....	5658	2	Airy's Compensation.	+ 4.3	+ 4.8	+ 3.0	— 12.5	— 8.3	— 5.1	+ 1.5	— 16.5	+ 10.2	+ 6.6	+ 8.9	
Crisp.....	3463	2	Airy's Compensation, with auxiliary for high [range of temperature.	+ 8.2	+ 10.4	+ 6.5	— 7.6	— 5.9	— 3.4	+ 4.0	— 10.0	+ 14.2	+ 11.1	+ 15.8	
Usher and Cole.....	1507	2	Auxiliary to balance. Airy's Compensation.	— 10.9	— 12.4	— 11.6	— 14.0	— 9.5	— 4.5	— 10.9	— 17.9	+ 7.5	+ 8.7	+ 9.2	
Sutton.....	2834	2	Auxiliary gaining in cold. Airy's Compensation.	+ 45.4	+ 45.5	+ 43.7	+ 26.3	+ 32.0	+ 33.5	+ 42.5	+ 23.2	+ 44.0	+ 40.7	+ 43.8	
Usher and Cole.....	1517	2	Auxiliary to balance. Airy's Compensation.	+ 24.6	+ 25.4	+ 21.4	+ 5.1	+ 9.2	+ 11.7	+ 20.5	+ 3.6	+ 46.0	+ 47.9	+ 47.1	
Evans.....	1841	2	Airy's Compensation.	+ 10.3	+ 21.9	+ 19.9	+ 21.1	+ 20.9	+ 19.5	+ 32.8	+ 19.0	+ 15.5	+ 21.1	+ 11.0	
.....				†	†	†	†	†	†	†	†				
Chronometrical Thermometer.				—2815.7	—2805.5	—2551.5	—2534.0	—2321.0	—2189.3	—2093.8	—1943.7	—1036.0	—923.3	—733.0	
Extremes of Temperature as shown by the Self-Registering Thermometers.....				88—98	92—99	87—98	86—102	81—100	80—103	83—93	84—94	66—82	67—78	66—80	

The sign + indicates that the rate is gaining.

† During these weeks the Chronometers were placed in the chamber of a stove heated by jets of gas. The gas flames are exterior to the chamber, into which none of the injurious products of combustion can enter.

The Chronometrical Thermometer differs from an ordinary Chronometer only in the construction of the balance, the positions of the metals forming the compensating rims being reversed. By this arrangement the effect of temperature is much magnified.

The Chronometrical Thermometer being in the hands of the maker between March 23 and April 13, the arrangement in order of temperature was determined by the daily thermometer readings; the rates in brackets under the head "Chronometrical Thermometer" were obtained from a Chronometer with an uncompensated balance.

IN THE ORDER OF TEMPERATURE, AS DETERMINED GENERALLY BY THE CHRONOMETRICAL THERMOMETER.

June 29 to July 6	July 6—13	May 11—18	June 15—22	May 4—11	Apr. 27 to May 4	April 20—27	April 13—20	April 6—13	Feb. 16—23	Jan. 19—26	Mar. 30 to April 6	Jan. 12—19	Feb. 9—16	Jan. 26 to Feb. 2	March 23—30	Feb. 2—9	NAME OF MAKER.	No.
+ 1.2	+ 1.8	- 3.0	- 1.0	- 3.0	- 3.6	- 3.9	- 5.0	- 3.0	- 2.5	- 0.6	0.0	- 0.7	+ 2.0	+ 2.9	+ 1.3	+ 1.9	Pyott.....	478
+ 13.0	+ 12.1	+ 8.3	+ 9.5	+ 8.5	+ 8.7	+ 7.5	+ 7.3	+ 9.0	+ 2.0	+ 2.7	+ 9.1	+ 0.5	+ 5.5	+ 2.8	+ 5.6	+ 4.0	Ainsley.....	3381
+ 21.0	+ 21.9	+ 19.5	+ 15.3	+ 17.8	+ 15.4	+ 14.8	+ 14.5	+ 15.6	+ 15.2	+ 16.0	+ 17.8	+ 15.8	+ 16.5	+ 16.0	+ 18.1	+ 16.0	Fletcher.....	3482
+ 10.2	+ 10.3	+ 7.0	+ 10.0	+ 7.5	+ 7.8	+ 7.7	+ 8.0	+ 7.0	- 1.5	- 3.0	+ 4.0	- 4.5	- 4.5	- 6.0	+ 2.9	- 7.0	Mann.....	3472
+ 5.0	+ 6.3	+ 6.1	+ 4.2	+ 6.7	+ 6.0	+ 5.0	+ 4.5	+ 2.5	- 3.9	- 6.8	- 0.5	- 9.0	- 8.3	- 8.4	+ 1.2	- 9.1	Sewill	4240
+ 17.6	+ 16.7	+ 14.0	+ 20.5	+ 16.0	+ 16.5	+ 14.8	+ 15.6	+ 15.9	+ 4.5	+ 4.2	+ 18.0	+ 3.1	+ 4.7	+ 1.5	+ 18.2	+ 3.0	Moore.....	1817
+ 14.5	+ 15.1	+ 8.9	+ 10.5	+ 7.0	+ 5.8	+ 4.7	+ 4.0	+ 2.8	+ 4.0	+ 7.6	+ 5.7	+ 7.2	+ 5.0	+ 6.4	+ 2.5	+ 5.6	Johnson	6278
+ 6.2	+ 7.3	+ 3.3	+ 6.0	+ 3.2	+ 3.9	+ 5.3	+ 5.7	+ 5.6	- 2.2	- 0.5	+ 6.9	- 1.5	+ 0.1	- 0.6	+ 7.1	- 1.9	Reid and Sons.....	4556
+ 6.5	+ 7.0	+ 4.9	+ 7.5	+ 4.0	+ 1.9	+ 1.0	+ 2.1	- 1.0	- 2.1	- 1.0	- 6.9	- 4.2	- 5.2	- 5.4	- 4.5	- 6.1	Poole & Co.	5677
+ 15.5	+ 15.3	+ 9.9	+ 15.6	+ 10.6	+ 11.5	+ 12.5	+ 12.7	+ 11.8	- 4.3	- 3.5	+ 9.3	- 5.3	- 4.4	- 4.5	+ 5.5	- 6.5	Moore.....	1810
- 4.0	- 4.4	- 3.3	+ 0.6	- 1.8	- 2.7	- 6.0	+ 3.6	- 2.6	- 4.8	- 2.6	+ 2.5	- 1.9	- 0.2	+ 1.0	+ 4.0	+ 1.5	Isaac	1599
- 1.5	0.0	- 2.7	- 2.6	- 3.0	- 2.8	- 3.0	- 4.0	- 4.0	- 9.8	- 7.2	- 3.5	- 9.1	- 7.0	- 9.3	- 4.2	- 9.0	Aitchison	457
- 12.7	- 12.5	+ 1.1	- 4.5	+ 0.4	- 0.6	- 2.7	- 4.4	- 7.3	- 8.3	- 15.4	- 13.4	- 18.9	- 12.5	- 16.7	- 16.2	- 16.5	Hennessy.....	4822
+ 0.5	+ 2.0	+ 3.1	+ 4.5	+ 2.2	+ 1.4	- 0.3	- 1.0	- 4.0	- 9.4	- 12.5	- 6.8	- 16.5	- 14.5	- 16.0	- 5.5	- 17.0	Sewill	4241
+ 22.5	+ 23.6	+ 16.0	+ 18.1	+ 15.1	+ 14.9	+ 11.5	+ 11.0	+ 8.3	+ 1.8	- 0.1	+ 5.2	- 3.8	+ 1.5	- 2.1	+ 4.4	- 2.6	Johnson	6276
+ 3.5	+ 1.9	- 1.7	- 2.3	- 2.2	- 5.4	- 4.1	- 6.7	- 3.2	+ 0.5	+ 10.5	+ 2.3	+ 11.6	+ 4.0	+ 13.0	+ 1.7	+ 9.5	Keys	257
+ 4.5	+ 6.5	+ 0.3	+ 4.3	+ 0.4	- 0.4	- 0.9	- 1.5	- 4.5	- 8.6	- 10.8	- 9.3	- 14.0	- 12.9	- 13.7	- 8.9	- 16.0	Williams	1479
+ 13.5	+ 14.6	+ 5.2	+ 15.3	+ 3.1	+ 6.7	+ 6.8	+ 6.7	+ 7.0	- 11.5	- 14.2	+ 6.1	- 11.3	- 7.0	- 10.0	+ 8.1	- 9.5	Nelson	2829
+ 51.0	+ 51.0	+ 44.3	+ 44.2	+ 41.9	+ 46.1	+ 47.5	+ 45.4	+ 45.9	+ 28.0	+ 22.2	+ 39.9	+ 21.0	+ 31.2	+ 24.7	+ 33.0	+ 29.2	Nelson	2836
+ 23.1	+ 24.3	+ 18.2	+ 19.1	+ 20.4	+ 20.6	+ 18.0	+ 16.5	+ 12.8	+ 1.8	- 3.3	+ 13.9	- 5.0	- 4.7	- 1.4	+ 9.6	- 2.3	Aitchison	487
+ 39.0	+ 38.9	+ 29.5	+ 31.2	+ 28.7	+ 26.5	+ 24.1	+ 22.7	+ 19.8	+ 4.5	0.0	+ 15.7	- 2.2	+ 1.0	- 3.5	+ 12.5	- 1.5	Sutton.....	2842
+ 4.8	+ 7.7	+ 6.0	+ 7.4	+ 7.5	+ 8.7	+ 10.3	+ 8.9	+ 7.3	+ 2.5	+ 0.7	+ 1.8	+ 1.3	- 1.0	- 1.4	+ 0.8	- 3.1	Poole & Co.	5720
+ 20.0	+ 21.0	+ 14.5	+ 16.9	+ 12.0	+ 8.5	+ 8.0	+ 9.0	+ 10.0	+ 8.0	+ 8.3	+ 11.0	+ 6.7	+ 10.5	+ 10.2	+ 11.3	+ 9.3	Keys	252
+ 11.2	+ 10.4	+ 7.5	+ 13.7	+ 9.9	+ 9.9	+ 9.3	+ 9.4	+ 11.5	- 9.1	- 5.9	+ 15.4	- 4.1	- 2.4	- 2.0	+ 13.5	- 2.0	Cornell.....	5658
+ 17.4	+ 17.4	+ 13.0	+ 18.4	+ 13.9	+ 15.4	+ 16.2	+ 15.0	+ 16.4	+ 4.0	+ 4.1	+ 17.4	+ 9.4	+ 8.5	+ 3.0	+ 17.1	+ 2.5	Crisp	3463
+ 9.5	+ 9.6	+ 7.0	+ 3.8	+ 5.2	+ 5.1	+ 5.6	+ 4.6	+ 1.3	- 25.1	- 25.5	- 1.5	- 23.7	- 27.5	- 27.0	- 1.3	- 29.0	Usher and Cole	1507
+ 43.5	+ 46.2	+ 37.1	+ 37.6	+ 36.6	+ 36.0	+ 34.1	+ 31.8	+ 28.3	+ 2.4	- 2.0	+ 22.3	- 5.5	+ 3.6	+ 1.6	+ 14.6	+ 1.9	Sutton.....	2834
+ 47.5	+ 45.2	+ 25.0	+ 37.0	+ 22.9	+ 25.3	+ 27.4	+ 18.9	+ 16.1	- 14.6	- 16.3	+ 12.3	- 16.4	- 10.3	- 18.5	+ 12.0	- 18.5	Usher and Cole	1517
+ 15.5	+ 17.3	+ 10.6	+ 4.6	+ 5.9	+ 0.5	- 1.0	- 7.9	- 10.2	- 25.5	- 27.5	- 25.0	- 38.7	- 31.0	- 22.7	- 13.9	- 25.8	Evans.....	1841
- 526.0	- 521.5	- 179.0	- 164.5	- 94.4	+ 93.9	+ 325.0	+ 382.5	(+ 336.5)	+ 827.2	+ 1079.5	(+ 555.5)	+ 1216.5	+ 1339.5	+ 1402.0	(+ 546.0)	+ 1483.0	Chronometrical Thermometer.	
64—78	65—72	61—69	59—74	60—67	56—66	55—61	54—61	47—57	48—55	44—54	42—52	41—52	41—51	42—55	41—51	40—55	Extremes of Temperature as shown by the Self-Registering Thermometers.	

The Chronometers are placed in order of merit, their respective positions being determined by consideration of the irregularities of rate exhibited in Table III.

RATES OF CHRONOMETERS ON TRIAL FOR PURCHASE BY THE ADMIRALTY,

NAME OF MAKER.	No.	Whether 2 or 8 Days.	ADDRESS OF MAKER.	Construction of Escapement and Balance, from the Description furnished by the Maker.	(III.)—ABSTRACT OF THE			
					First Day of Rating.	Last Day of Rating.	Number of Weeks.	Least Weekly Sum.
Pyott	478	2	7, Jamaica Terrace, West India Dock Road.	Ordinary balance, with slight addition. [Compensation. Airy's	January 12	July 27	28	- 5.0
Ainsley	3381	2	86, Bute Street, Cardiff.	Auxiliary in cold. Airy's Compensation.	January 12	July 27	28	- 1.5
Fletcher	3482	2	95, Leadenhall Street, E.C.	Airy's Compensation.	January 12	July 27	28	+ 14.5
Mann	3472	2	The Cross, Gloucester.	Auxiliary for low temperatures. Airy's Compensation.	January 12	July 27	28	- 7.0
Sewill	4240	2	61, South Castle Street, Liverpool.	No information received.	January 12	July 27	28	- 9.1
Moore	1817	2	114, High Street, Belfast.	Airy's Compensation.	January 12	July 27	28	+ 1.5
Johnson	6278	2	9, Wilmington Square, Spa Fields, W.C.	Poole's auxiliary.	January 12	July 27	28	- 1.5
Reid and Sons	4556	2	41, Grey Street, Newcastle-on-Tyne.	Airy's Compensation.	January 12	July 27	28	- 2.2
Poole & Co.	5677	2	33, Spencer Street, Clerkenwell, E.C.	Poole's auxiliary. Airy's Compensation.	January 12	July 27	28	- 6.9
Moore	1810	2	114, High Street, Belfast.	Airy's Compensation.	January 12	July 27	28	- 6.5
Isaac	1599	2	10, Spencer Street, Clerkenwell, E.C.	Auxiliary compensation. Airy's Compensation.	January 12	July 27	28	- 9.9
Aitchison	4897	2	15, Bank Street, Edinburgh.	Auxiliary with Airy's Compensation.	January 12	July 27	28	- 14.5
Hennessy	4822	2	5, Wind Street, Swansea.	No information received.	January 12	July 27	28	- 18.9
Sewill	4241	2	61, South Castle Street, Liverpool.	No information received.	January 12	July 27	28	- 17.0
Johnson	6276	2	9, Wilmington Square, Spa Fields, W.C.	Double auxiliary (original). Airy's Compensation.	January 12	July 27	28	- 3.8
Keys	257	2	15, Craven Street, Strand, W.C.	Ordinary balance, with slight addition. Airy's	January 12	July 27	28	- 6.7
Williams	1479	2	2, Bute Docks, Cardiff.	Airy's Compensation. [Compensation.	January 12	July 27	28	- 16.0
Nelson	2829	2	31, Halton Road, Canonbury, N.	Double auxiliary gaining in cold. Airy's Compensation.	January 12	July 27	28	- 14.2
Nelson	2836	2	31, Halton Road, Canonbury, N.	Double auxiliary gaining in cold. Airy's Compensation.	January 12	July 27	28	+ 15.4
Aitchison	4897	2	15, Bank Street, Edinburgh.	Auxiliary with Airy's Compensation.	January 12	July 27	28	- 5.0
Sutton	2842	2	32, Lowther Street, Whitehaven.	Auxiliary gaining in cold. Airy's Compensation.	January 12	July 27	28	- 3.5
Poole & Co.	5720	2	33, Spencer Street, Clerkenwell, E.C.	Poole's auxiliary. Airy's Compensation.	January 12	July 27	28	- 17.7
Keys	252	2	15, Craven Street, Strand, W.C.	Ordinary balance, with slight addition. Airy's	January 12	July 27	28	- 5.0
Cornell	5658	2	74, Bank Street, Maidstone.	Airy's Compensation. [Compensation.	January 12	July 27	28	- 16.5
Crisp	3463	2	174, St. John's Street Road, E.C.	Airy's Compensation, with auxiliary for high range [of temperature.	January 12	July 27	28	- 10.0
Usher and Cole	1507	2	105, St. John's Street Road, E.C.	Auxiliary to balance. Airy's Compensation.	January 12	July 27	28	- 29.0
Sutton	2834	2	32, Lowther Street, Whitehaven.	Auxiliary gaining in cold. Airy's Compensation.	January 12	July 27	28	- 5.5
Usher and Cole	1517	2	105, St. John's Street Road, E.C.	Auxiliary to balance. Airy's Compensation.	January 12	July 27	28	- 18.5
Evans ..	1841	2	1, Sand Hill, Quay Side, Newcastle-on-Tyne.	Airy's Compensation.	January 12	July 27	28	- 38.7

The sign + indicates that the rate is gaining.

† During these weeks the Chronometers were placed in the chamber of a stove heated by jets of gas. The gas flames are exterior to the chamber, into which none of the injurious products of combustion can enter. In the column "Before and after what Day" the positions of the symbol (†), before or after the date, indicate respectively exposure to heat in the week immediately preceding, or in the week immediately following.

PRINCIPAL CHANGES OF RATE.

In what Week.	Greatest Weekly Sum.	In what Week.	Difference between the Greatest and Least.	Greatest Difference between one Week and the next.	Before and after what Day.	NAME OF MAKER.	No.
April 13 to 20	+ 6.0	July 20 to 27	11.0	5.5	February 23†	Pyott.....	478
March 2 to 9†	+ 13.0	June 22 to 29	14.5	4.7	† March 9†	Ainsley.....	3381
April 13 to 20	+ 24.5	June 29 to July 6	10.0	7.2	June 22	Fletcher.....	3482
February 2 to 9	+ 10.5	July 20 to 27	17.5	5.5	† June 15	Mann.....	3472
February 2 to 9	+ 7.0	July 13 to 20	16.1	6.6	February 23†	Sewill.....	4240
		March 16 to 23†					
January 26 to Feb. 2	+ 21.4	June 1 to 8†	19.9	6.1	† March 9†	Moore.....	1817
March 2 to 9†	+ 18.1	July 20 to 27	19.6	6.8	† June 15	Johnson.....	6278
February 16 to 23	+ 13.5	May 25 to June 1†	15.7	9.3	February 23†	Reid and Sons.....	4556
March 30 to April 6	+ 8.0	July 20 to 27	14.9	10.5	† March 23	Poole & Co.....	5677
February 2 to 9	+ 18.7	June 8 to 15†	25.2	5.6	† March 23	Moore.....	1810
March 9 to 16†	+ 7.8	June 1 to 8†	17.7	10.1	† March 2†	Isaac.....	1599
June 8 to 15†	+ 0.5	July 20 to 27	15.0	11.9	† June 15	Aitchison.....	487
January 12 to 19	+ 1.1	May 11 to 18	20.0	12.8	† March 23	Hennessy.....	4822
February 2 to 9	+ 4.6	May 18 to 25†	21.6	12.2	February 23†	Sewill.....	4241
January 12 to 19	+ 26.4	July 13 to 20	30.2	9.7	† March 23	Johnson.....	6276
April 13 to 20	+ 13.5	May 25 to June 1†	20.2	15.3	† June 15	Keys.....	257
February 2 to 9	+ 6.5	July 6 to 13	22.5	16.1	† June 15	Williams.....	1479
January 19 to 26	+ 15.3	June 15 to 22	29.5	13.0	† June 15	Nelson.....	2829
February 23 to Mar. 2†	+ 51.0	June 29 to July 6	35.6	12.6	February 23†	Nelson.....	2836
January 12 to 19	+ 24.7	July 6 to 13	29.7	16.0	† June 15	Aitchison.....	487
January 26 to Feb. 2	+ 41.7	July 20 to 27	45.2	8.5	February 23†	Sutton.....	2842
February 23 to Mar. 2†	+ 10.3	April 20 to 27	28.0	20.2	February 23†	Poole & Co.....	5720
March 9 to 16†	+ 25.1	May 18 to 25†	30.1	19.2	† March 16†	Keys.....	252
February 23 to Mar. 2†	+ 15.4	March 30 to April 6	31.9	18.6	† March 23	Cornell.....	5658
February 23 to Mar. 2†	+ 18.4	June 15 to 22	28.4	20.5	† March 23	Crisp.....	3463
February 2 to 9	+ 9.6	July 6 to 13	38.6	17.9	May 18†	Usher and Cole.....	1507
January 12 to 19	+ 46.2	July 6 to 13	51.7	20.8	February 23†	Sutton.....	2834
January 26 to Feb. 2	+ 47.9	July 20 to 27	66.4	18.2	February 23†	Usher and Cole.....	1517
February 2 to 9	+ 32.8	May 18 to 25†	71.5	44.5	February 23†	Evans.....	1841
January 12 to 19							

The Chronometers are placed in order of merit, their respective positions being determined by consideration of irregularities of rate exhibited in the Table above.