

RATES OF CHRONOMETER WATCHES
ON TRIAL
FOR PURCHASE BY THE BOARD OF ADMIRALTY,
AT THE
ROYAL OBSERVATORY, GREENWICH,
FROM 1912 AUGUST 3 TO 1912 NOVEMBER 23.

Order of Merit.	NAME OF MAKER.	No.	ADDRESS OF MAKER.	(1) WEEKLY RATES IN													
				Aug. 3-10.	Aug. 10-17.	Aug. 17-24.	Aug. 24-31.	Aug. 31 to Sept. 7.	Sept. 7-14.	Sept. 14-21.	Sept. 21-28.	Sept. 28 to Oct. 1.	Oct. 1-5.				
				Watch Horizontal. Dial up.										Watch Vertical. Pendant up.	Watch Vertical. Pendant right.	Watch Vertical. Pendant left.	Watch Vertical. Pendant up.
1	R. Künzler.	51909	31 St. George's Place, Birmingham	+ 4.2	+ 2.7	+ 1.6	+ 0.8	0.0	- 0.6	+ 6.2	+ 7.2	+ 6.8	+ 4.2	+ 14.7			
2	B. Haral.	1982	Edloe Street, Barnsley	- 7.5	- 6.8	- 7.5	- 7.5	- 7.2	- 8.2	- 4.3	- 0.2	- 51.1	- 22.5	+ 7.9			
3	F. C. Seife.	1845	19 Royal Hill, Greenwich, S.E.	- 12.8	- 12.0	- 18.1	- 15.9	- 10.8	- 12.0	- 18.1	- 7.9	- 29.6	- 42.4	- 5.1			
4	H. White & Co.	1880	63 Chesapeake, London, E.C.	- 0.1	- 2.6	- 5.0	- 5.5	- 5.1	- 8.3	- 9.1	+ 12.8	+ 7.9	- 5.1	+ 15.5			
5	A. Johansen & Co.	6686	149 Minorio, London, E.	+ 2.4	+ 3.8	+ 1.0	- 1.0	- 0.1	+ 1.0	- 2.4	- 22.1	- 32.7	- 8.7	- 15.6			
6	J. Ritchie & Son	51783	25 Leith Street, Edinburgh	- 18.0	- 19.2	- 19.2	- 20.1	- 27.2	- 24.0	- 21.5	- 8.9	- 31.5	- 28.0	- 12.6			
7	R. Künzler.	51926	31 St. George's Place, Birmingham	- 13.8	- 14.1	- 19.1	- 22.0	- 22.4	- 21.4	- 19.5	- 20.8	- 30.1	- 40.4	- 21.9			
8	R. Künzler.	51912	31 St. George's Place, Birmingham	- 17.8	- 18.5	- 19.5	- 20.5	- 21.4	- 22.8	- 16.2	- 42.7	- 30.9	- 38.3	- 18.7			
9	J. P. Davis.	1842	25 Strait Barga, Boston	+ 15.7	+ 13.0	+ 11.0	+ 4.0	+ 1.4	- 0.9	+ 4.9	+ 8.2	+ 14.9	+ 7.2	+ 11.4			
10	S. Yeomans	96492	48 Spon Street, Coventry	+ 17.9	+ 17.5	+ 15.0	+ 13.5	+ 9.0	+ 7.9	- 0.9	+ 7.7	- 1.6	+ 2.6	+ 2.1			
11	F. C. Seife.	1844	19 Royal Hill, Greenwich, S.E.	- 10.2	- 11.8	- 11.2	- 13.0	- 10.0	- 13.1	- 8.8	+ 1.2	- 7.9	- 36.2	+ 4.2			
12	R. Künzler.	51946	31 St. George's Place, Birmingham	0.0	+ 1.0	+ 1.8	- 0.2	+ 1.1	+ 4.5	- 4.1	- 2.3	+ 8.9	+ 10.0	+ 19.6			
13	R. Künzler.	51927	31 St. George's Place, Birmingham	+ 4.5	+ 1.3	- 2.1	- 1.8	+ 0.2	- 2.3	+ 6.0	+ 4.2	+ 1.4	- 11.4	+ 10.7			
14	B. Smith.	515	26 Duke Street, Manchester Square, W.	- 22.9	- 24.9	- 25.4	- 21.0	- 23.8	- 26.8	- 27.6	- 34.3	- 63.9	- 23.6	- 44.5			
15	L. F. Forestier	12346	Earlestone Avenue, Coventry	+ 10.3	+ 13.0	+ 10.6	+ 13.1	+ 8.7	+ 8.0	+ 19.5	+ 13.8	+ 12.8	+ 18.9	+ 12.6			
16	Carley & Clemence.	51617	30 Ivy Place, Holborn, W.C.	- 2.7	- 1.9	- 5.3	- 6.1	- 7.1	- 5.1	- 15.0	- 7.2	- 4.7	- 2.8	- 2.3			
17	R. Künzler.	51898	31 St. George's Place, Birmingham	+ 11.1	+ 10.9	+ 8.1	+ 11.1	+ 12.1	+ 14.6	+ 15.2	+ 18.2	+ 17.0	+ 14.5	+ 19.1			
18	R. Künzler.	51940	31 St. George's Place, Birmingham	+ 8.9	+ 9.0	+ 5.4	+ 5.4	+ 3.7	+ 3.2	- 1.7	+ 26.3	+ 12.8	+ 5.8	+ 26.6			
19	Wright & Craighad.	8450	319 St. John Street, Clerkenwell	+ 13.0	+ 14.0	+ 11.1	+ 8.0	+ 9.4	+ 10.3	- 3.3	- 7.2	- 0.7	- 1.6				
20	V. Kullberg.	8348	105 Liverpool Road, London, N.	- 4.7	- 1.8	+ 0.5	+ 2.2	+ 4.0	+ 3.4	+ 3.8	- 11.2	- 15.9	- 17.7	- 0.4			
21	R. Künzler.	51936	31 St. George's Place, Birmingham	- 4.0	- 4.0	- 5.2	- 5.3	- 4.4	- 5.0	- 15.2	+ 13.1	- 17.5	- 16.6	+ 14.0			
22	R. Künzler.	51913	31 St. George's Place, Birmingham	+ 4.8	+ 3.6	+ 1.8	+ 2.8	+ 1.2	+ 1.7	- 6.8	- 24.0	- 52.0	- 30.1	- 19.1			
23	S. Yeomans	96520	48 Spon Street, Coventry	+ 6.9	+ 7.5	+ 8.8	+ 2.5	+ 15.5	+ 12.4	+ 3.1	+ 5.1	+ 21.7	+ 21.7	- 18.6			
24	J. Lilley & Son.	1987	10 London Street, Fenchurch Street, E.C.	- 1.6	- 1.6	- 1.2	- 5.4	- 0.6	- 1.0	+ 0.9	+ 19.3	- 25.2	- 2.8	+ 14.0			
25	B. Smith.	516	26 Duke Street, Manchester Square, W.	+ 22.4	+ 22.2	+ 19.9	+ 20.5	+ 20.9	+ 32.9	+ 39.5	+ 12.6	+ 21.2	+ 18.7	+ 17.9			
The sign + indicates a gaining rate.				62.7	62.0	63.8	62.6	62.5	59.9	88.8	85.9	89.2					
The quantities a, b, c, d, e, in the formula $\alpha + 2b + \frac{1}{2}(c + \frac{d+e}{2})$, are taken numerically, without regard to sign.				62.6	60.5	62.1	61.0	60.8	57.5	86.2	87.8	86.9					
				65.0	64.0	64.8	64.6	64.0	62.2	89.5	89.9	90.2					

* The Weekly Rates have been computed from the rates for three days.

During the period Sept. 14 to Oct. 12, the watches were placed in an oven heated by jets of gas, the temperature being regulated by Kullberg's automatic governor, which controls the supply of gas. The gas flames are exterior to the chamber, into which none of the injurious products of combustion can enter.

† The Weekly Rates have been computed from the rates for four days.

During the period Sept. 14 to Oct. 12, the watches were placed in an oven heated by jets of gas, the temperature being regulated by Kullberg's automatic governor, which controls the supply of gas. The gas flames are exterior to the chamber, into which none of the injurious products of combustion can enter.

ORDER OF TIME.							(2) ABSTRACT OF THE PRINCIPAL CHANGES OF RATES.										No.	Order of Merit.
Oct. 8-12.	Oct. 12-19.	Oct. 19-26.	Oct. 26 to Nov. 2.	Nov. 2-9.	Nov. 9-16.	Nov. 16-23.	Difference between greatest and least Weekly Rates. Dial up. a.	Greatest difference between one week and the next. Dial up. b.	Difference of Weekly Rates.			Trial Number. $a + 2b + \frac{1}{2}(c + \frac{d+e}{2})$	NAME OF MAKER.					
Watch Horizontal. Dial up.									Pendant up. c.	Pendant right. Dial up. d.	Pendant left. Dial up. e.							
+ 7.3	- 0.8	+ 1.6	- 1.2	- 8.2	- 8.0	- 1.9	10.5	7.6	+ 4.2	- 0.5	- 2.6	25.7	28.3	R. Künzler.....	51909	1		
- 9.3	- 6.1	- 6.8	- 5.4	- 8.8	- 7.0	- 4.3	5.0	3.9	+ 10.7	- 44.8	- 35.7	12.8	31.5	B. Haral.....	1982	2		
- 21.3	- 16.2	- 11.2	- 12.8	- 15.9	- 10.7	- 9.6	11.7	6.1	+ 13.2	- 9.9	- 2.7	23.9	32.6	F. C. Seife.....	1845	3		
- 9.6	- 7.0	- 10.1	- 8.1	- 11.3	- 7.7	- 6.1	11.2	3.6	+ 24.1	+ 17.8	+ 4.3	18.4	34.1	H. White & Co.....	1980	4		
+ 0.5	- 1.2	+ 2.4	+ 2.9	+ 3.2	+ 5.3	+ 4.2	7.7	3.6	- 17.9	+ 33.7	- 36.8	14.9	35.7	A. Johansen & Co.....	6686	5		
- 25.3	- 27.7	- 31.1	- 24.8	- 28.2	- 27.8	- 26.4	13.1	7.1	+ 12.6	- 8.1	- 4.6	27.3	35.7	J. Ritchie & Son.....	51783	6		
- 14.9	- 22.4	- 23.9	- 25.2	- 27.9	- 25.7	- 25.2	14.1	7.5	- 4.2	- 12.9	- 23.2	29.1	37.2	R. Künzler.....	51926	7		
- 17.2	- 13.9	- 12.2	- 15.8	- 16.0	- 16.9	- 18.0	10.6	6.6	- 14.0	- 19.2	- 21.6	23.8	37.2	R. Künzler.....	51912	8		
+ 4.3	- 1.4	+ 1.0	+ 4.0	+ 3.9	+ 3.8	+ 5.0	17.1	7.0	+ 5.2	- 19.5	- 11.8	31.1	38.9	J. P. Davis.....	1842	9		
+ 9.7	+ 4.6	+ 1.0	+ 2.8	+ 2.5	+ 4.2	- 1.9	19.8	8.8	+ 0.5	- 6.0	- 1.8	37.4	39.0	S. Yeomans.....	96492	10		
- 10.3	- 15.8	- 15.1	- 12.4	- 20.6	- 15.4	- 15.7	11.8	8.2	+ 12.3	+ 1.7	- 28.6	28.2	39.1	F. C. Seife.....	1844	11		
+ 13.9	+ 6.7	- 2.0	- 3.8	- 1.0	- 6.2	+ 1.1	20.1	8.7	+ 3.8	+ 4.0	+ 5.1	37.5	40.9	R. Künzler.....	51946	12		
- 3.6	- 1.6	- 10.3	- 0.4	- 3.6	- 1.6	- 7.1	16.3	9.9	+ 3.3	+ 0.2	- 12.8	36.1	41.5	R. Künzler.....	51927	13		
- 29.6	- 20.9	- 24.0	- 20.3	- 17.1	- 21.8	- 23.1	12.5	8.7	- 10.8	- 35.3	+ 6.0	29.9	42.2	R. Smith.....	515	14		
+ 22.6	+ 16.2	+ 12.3	+ 17.8	+ 12.4	+ 14.9	+ 22.5	14.6	11.5	- 7.9	- 8.3	- 2.2	37.6	43.4	L. F. Forestier.....	12346	15		
- 10.9	- 5.6	+ 0.1	- 2.1	- 0.4	+ 1.5	- 0.2	16.5	9.9	+ 8.2	+ 8.3	+ 10.2	36.3	43.5	Carley & Clemence.....	51617	16		
+ 22.9	+ 9.2	+ 9.9	+ 13.8	+ 11.8	+ 14.7	+ 11.2	14.8	13.7	- 0.4	- 2.1	- 4.6	42.2	43.5	R. Künzler.....	51898	17		
+ 4.2	+ 11.7	+ 4.1	+ 2.5	+ 3.6	+ 2.0	+ 2.0	18.4	7.6	+ 25.2	+ 11.5	+ 4.5	36.6	43.9	R. Künzler.....	51940	18		
+ 20.6	+ 12.7	+ 16.6	+ 10.8	+ 17.7	+ 17.6	+ 17.3	12.6	7.9	- 18.0	- 22.7	- 16.2	28.4	43.9	Wright & Craighad.....	8450	19		
+ 10.5	+ 11.0	+ 15.4	+ 16.0	+ 15.0	+ 17.1	+ 17.3	22.0	4.4	- 13.0	- 23.1	- 24.9	30.8	45.8	V. Kullberg.....	8348	20		
- 9.2	- 4.0	- 5.3	- 7.5	- 5.6	- 2.6	- 6.4	12.6	10.2	+ 25.8	- 5.3	- 4.4	33.0	47.5	R. Künzler.....	51936	21		
- 4.1	+ 3.8	+ 2.9	+ 0.3	+ 1.1	- 0.2	+ 2.0	11.1	8.5	- 16.1	- 46.5	- 24.6	38.1	46.1	R. Künzler.....	51913	22		
+ 11.1	+ 9.7	+ 21.2	+ 17.3	+ 15.2	+ 22.4	+ 22.2	19.9	11.5	+ 4.8	+ 14.6	+ 14.6	42.9	50.2	S. Yeomans.....	96520	23		
+ 11.2	+ 11.5	+ 13.6	+ 15.7	+ 8.2	+ 14.1	+ 17.9	23.8	7.5	+ 10.6	- 31.3	- 8.9	38.3	50.3	J. Lilley & Son.....	1987	24		
+ 24.1	+ 32.4	+ 35.2	+ 39.3	+ 35.6	+ 36.7	+ 41.6	21.7	9.4	- 18.5	- 10.6	- 13.1	40.5	52.8	B. Smith.....	516	25		
88.7	59.9	60.0	61.0	54.9	57.6	67.8	Mean Weekly Temperature.											
85.5	56.8	55.0	58.0	51.5	54.2	58.0	Extremes of Temperature as shown by the Self-Registering Thermometer.											
90.1	62.0	68.5	68.8	59.9	63.2	59.5												

Only those watches have been included in this list for which "b" did not exceed 15 seconds, or for which a + 2b did not exceed 60, or the trial number did not exceed 100.

Order of Merit.	NAME OF MAKER.	No.	ADDRESS OF MAKER.	(1) WEEKLY RATES IN											
				Aug. 3-10.	Aug. 10-17.	Aug. 17-24.	Aug. 24-31.	Aug. 31 to Sept. 7.	Sept. 7-14.	Sept. 14-21.	Sept. 21-28.	Sept. 28-35.	Sept. 35 to Oct. 1.	Oct. 1-5.	
				Watch Horizontal. Dial up.										Watch Vertical. Dial up.	Watch Vertical. Right.
26	J. Lilley & Son	1992	10 London Street, Fenchurch Street, E.C.	+ 6.4	+ 5.8	+ 4.5	+ 2.5	+ 0.8	+ 1.2	+ 0.9	+ 17.7	+ 31.0	+ 39.2	+ 17.7	
27	Jones & Sons	7665	368 Holloway Road, N.	+ 10.0	+ 4.5	+ 2.9	+ 8.3	+ 1.2	+ 8.8	+ 6.6	+ 17.9	+ 18.2	+ 15.2	+ 8.8	
28	Reid & Sons	51994	Gum Buildings, Blackett Street, Newcastle	+ 4.0	+ 18.2	+ 23.1	+ 24.7	+ 23.0	+ 23.9	+ 24.5	+ 24.7	+ 24.5	+ 22.9	+ 22.4	
29	R. Künzler	51985	31 St. George's Place, Birmingham	+ 10.4	+ 11.2	+ 13.8	+ 15.3	+ 11.5	+ 10.2	+ 9.1	+ 35.0	+ 2.8	+ 14.0	+ 35.4	
30	A. Johannsen & Co.	6685	149 Minories, London, E.	+ 11.1	+ 15.4	+ 16.2	+ 16.3	+ 21.9	+ 23.5	+ 8.3	+ 9.1	+ 5.8	+ 16.8	+ 13.1	
31	R. Künzler	51907	31 St. George's Place, Birmingham	+ 3.4	+ 5.2	+ 4.1	+ 7.0	+ 5.5	+ 1.9	+ 7.3	+ 7.4	+ 11.0	+ 10.7	+ 24.9	
32	W. Matthews	2885	Elmcroft, 52 Holy Head Road, Coventry.	+ 16.4	+ 19.6	+ 15.2	+ 17.8	+ 21.0	+ 23.9	+ 10.2	+ 11.4	+ 11.4	+ 7.7		
33	R. Künzler	51938	31 St. George's Place, Birmingham	+ 16.2	+ 17.0	+ 17.1	+ 20.8	+ 22.0	+ 29.0	+ 14.9	+ 13.8	+ 18.4	+ 0.0	+ 5.6	
34	H. L. Brown & Son, Ltd.	61677	65 Market Place, Sheffield.	+ 84.2	+ 38.8	+ 37.2	+ 37.5	+ 33.4	+ 32.9	+ 49.7	+ 17.9	+ 38.0	+ 34.3	+ 18.0	
35	J. Lilley & Son	1990	10 London Street, Fenchurch Street, E.C.	+ 17.5	+ 16.3	+ 17.0	+ 15.7	+ 13.7	+ 13.6	+ 4.4	+ 15.8	+ 0.2	+ 55.8	+ 21.0	
36	W. Matthews	41029	Elmcroft, 52 Holy Head Road, Coventry.	+ 13.5	+ 16.7	+ 14.5	+ 21.7	+ 17.0	+ 15.7	+ 13.5	+ 12.4	+ 3.7	+ 34.1	+ 12.1	
37	W. Lindqvist	20792	13 Alderney Street, Pimlico W.	+ 13.0	+ 11.8	+ 11.3	+ 13.7	+ 16.1	+ 13.8	+ 8.8	+ 0.4	+ 4.7	+ 2.1	+ 1.9	
38	J. Lilley & Son	1723	10 London Street, Fenchurch Street, E.C.	+ 4.1	+ 1.7	+ 2.6	+ 2.2	+ 4.3	+ 6.5	+ 10.8	+ 2.6	+ 38.7	+ 19.8	+ 6.5	
39	F. J. Garrard	11502	The Cottages, Nottingham near Dorechester.	+ 15.0	+ 10.2	+ 22.5	+ 23.9	+ 12.5	+ 12.8	+ 9.1	+ 17.3	+ 21.9	+ 19.4	+ 25.0	
40	F. H. Phillips	1993	4 Finbury Pavement, London E.C.	+ 11.1	+ 13.7	+ 16.1	+ 19.0	+ 18.6	+ 22.6	+ 12.0	+ 14.5	+ 2.8	+ 40.8	+ 17.5	
41	Folle & Smith	1994	520 Oxford Street, London, W.	+ 19.3	+ 19.3	+ 13.1	+ 12.4	+ 12.1	+ 1.5	+ 0.9	+ 1.8	+ 1.4	+ 38.0	+ 9.8	
42	F. Self	1875	19 Royal Hill, Greenwich, S.E.	+ 7.5	+ 6.9	+ 3.5	+ 2.0	+ 2.3	+ 1.7	+ 10.4	+ 2.5	+ 19.4	+ 80.8	+ 5.8	
43	R. Künzler	51949	31 St. George's Place, Birmingham	+ 31.0	+ 31.1	+ 25.6	+ 24.8	+ 25.3	+ 31.2	+ 18.4	+ 65.3	+ 31.1	+ 11.2	+ 60.0	
44	V. Kullberg	5483	105 Liverpool Road, London, N.	+ 7.6	+ 11.3	+ 8.1	+ 5.7	+ 7.6	+ 12.9	+ 13.9	+ 15.8	+ 35.5	+ 4.2	+ 7.0	
45	W. A. Watkins	1877	29 Carey Street, Chancery Lane, W.C.	+ 15.6	+ 12.6	+ 15.1	+ 18.5	+ 17.2	+ 5.5	+ 14.7	+ 31.0	+ 0.2	+ 28.0	+ 32.0	
46	J. Hewitt	61716	Holy Head Road, Coventry	+ 5.8	+ 3.0	+ 1.6	+ 0.5	+ 0.9	+ 0.5	+ 5.0	+ 59.9	+ 65.8	+ 20.5	+ 50.9	
47	R. H. Halford & Sons	5204	129 Fenchurch Street, E.C.	+ 13.2	+ 9.8	+ 8.9	+ 12.4	+ 11.6	+ 12.7	+ 4.7	+ 10.7	+ 16.1	+ 13.9	+ 59.5	
48	H. L. Brown & Son	61717	65 Market Place, Sheffield.	+ 83.3	+ 38.8	+ 38.4	+ 36.7	+ 34.8	+ 31.1	+ 32.3	+ 128.8	+ 43.9	+ 135.1	+ 129.3	
49	Usher & Cole	30081	339 St. John's Street, Clerkenwell	+ 20.8	+ 22.8	+ 22.8	+ 29.3	+ 28.6	+ 35.8	+ 28.2	+ 25.4	+ 7.7	+ 5.1	+ 19.8	
50	S. Yeomans	96544	48 Spring Street, Coventry	+ 36.3	+ 38.8	+ 37.1	+ 39.0	+ 42.2	+ 43.9	+ 34.8	+ 32.2	+ 16.8	+ 8.9	+ 39.0	
The sign + indicates a gaining rate.				65.7	62.0	63.3	62.6	62.2	59.9	88.3	88.9	89.2			
The quantities a, b, c, d, e, in the formula $a + 2b + 3c + 4d + 5e$, are taken numerically, without regard to sign.				62.6	60.5	62.1	61.0	60.8	57.5	86.2	87.8	86.9			
				65.0	64.0	64.8	64.6	64.0	62.2	89.5	89.9	90.2			

* The Weekly Rates have been computed from the rates for three days.
During the period Sept. 14 to Oct. 12, the watches were placed in an oven heated by jets of gas, the temperature being regulated by Kullberg's automatic governor, which controls the supply of gas. The gas flames are exterior to the chamber, into which none of the injurious products of combustion can enter.

+ The Weekly Rates have been computed from the rates for four days.
During the period Sept. 14 to Oct. 12, the watches were placed in an oven heated by jets of gas, the temperature being regulated by Kullberg's automatic governor, which controls the supply of gas. The gas flames are exterior to the chamber, into which none of the injurious products of combustion can enter.

ORDER OF TIME.							(3) ABSTRACT OF THE PRINCIPAL CHANGES OF RATES.												NAME OF MAKER.	No.	Order of Merit.
Oct. 5-12.	Oct. 12-19.	Oct. 19-26.	Oct. 26 Nov. 2.	Nov. 2-9.	Nov. 9-16.	Nov. 16-23.	Difference between greatest and least Weekly Rates. Dial up.	Greatest difference between one week and the next. Dial up.	Difference of Weekly Rates.			a+2b	Trial Number a + 2b + 3 (c + 4d + 5e)								
Watch Horizontal. Dial up.							a.	b.	Pendant up—Dial up.	Pendant right up—Dial up.	Pendant left up—Dial up.	c.	d.	e.							
+ 8.5	+ 6.5	+ 10.7	+ 11.6	+ 9.8	+ 15.5	+ 14.7	21.9	5.7	+13.9	+34.8	+43.0	33.3	53.3		J. Lilley & Son.....	1992					
+ 12.6	+ 0.9	+ 4.4	+ 5.8	+ 0.6	+ 5.1	+ 1.5	22.6	13.5	+ 3.8	+ 8.6	+ 5.6	49.6	53.9		Jones & Sons.....	7665					
+ 17.8	+ 24.6	+ 10.3	+ 13.9	+ 27.8	+ 16.4	+ 26.9	23.8	14.3	+ 2.4	+ 3.3	+ 1.7	52.4	54.4		Reid & Sons.....	51994					
+ 3.9	+ 1.8	+ 5.5	+ 3.0	+ 3.0	+ 3.9	+ 5.3	20.6	7.3	+35.9	+ 2.4	+13.6	35.2	55.9		R. Künzler.....	51925					
+ 8.2	+ 23.9	+ 20.9	+ 24.1	+ 22.2	+ 20.0	+ 30.3	22.1	15.7	+ 2.8	+ 2.5	+ 8.0	53.5	56.7		A. Johannsen & Co.....	6685					
+ 18.2	+ 8.1	+ 5.1	+ 3.9	+ 11.0	+ 11.6	+ 8.2	29.8	10.1	+10.7	+ 5.5	+ 5.2	50.0	57.2		R. Künzler.....	51907					
+ 18.6	+ 14.1	+ 4.0	+ 6.4	+ 6.6	+ 4.2	+ 12.4	25.6	10.1	+15.1	+12.7	+12.7	45.8	57.6		W. Matthews.....	2885					
+ 7.0	+ 14.0	+ 20.3	+ 20.9	+ 21.8	+ 27.7	+ 26.4	22.0	14.1	+ 1.3	+29.4	+11.0	50.2	57.6		R. Künzler.....	51938					
+ 46.9	+ 35.9	+ 34.8	+ 33.3	+ 23.8	+ 23.8	+ 27.3	19.5	10.9	+27.3	+ 7.3	+11.0	41.3	58.1		H. L. Brown & Son, Ltd.	61677					
+ 0.1	+ 6.9	+ 1.2	+ 3.9	+ 1.8	+ 6.2	+ 4.1	23.7	10.3	+14.1	+ 4.1	+51.5	44.3	60.7		J. Lilley & Son.....	1990					
+ 24.0	+ 13.1	+ 13.5	+ 13.7	+ 12.4	+ 5.4	+ 7.2	18.6	10.9	+31.1	+15.1	+15.3	40.4	61.1		W. Matthews.....	41029					
+ 3.8	+ 20.1	+ 20.2	+ 19.1	+ 25.8	+ 24.2	+ 24.7	22.0	16.3	+ 7.1	+11.0	+ 8.4	54.6	61.4		W. Lindqvist.....	20792					
+ 7.1	+ 5.4	+ 6.1	+ 10.9	+ 9.0	+ 13.7	+ 15.1	25.9	12.5	+ 4.4	+29.7	+28.8	50.9	62.9		J. Lilley & Son.....	1723					
+ 16.0	+ 12.7	+ 16.4	+ 15.3	+ 8.1	+ 18.6	+ 16.7	21.8	17.4	+ 8.6	+ 9.8	+ 6.8	56.6	63.6		F. J. Garrard.....	11502					
+ 16.9	+ 28.0	+ 23.9	+ 23.9	+ 31.7	+ 26.3	+ 28.2	20.6	11.1	+30.5	+17.3	+26.3	42.8	65.4		F. H. Phillips.....	1993					
+ 6.6	+ 2.5	+ 8.9	+ 4.0	+ 13.3	+ 2.4	+ 2.1	25.9	15.7	+ 2.9	+ 4.3	+35.1	57.3	65.4		Folle & Smith.....	1994					
+ 13.6	+ 3.2	+ 1.6	+ 7.6	+ 6.0	+ 7.5	+ 9.4	23.0	10.4	+ 7.8	+31.4	+78.3	43.8	66.0		F. Self.....	1875					
+ 17.9	+ 25.8	+ 28.1	+ 28.2	+ 30.2	+ 24.6	+ 25.3	13.3	12.8	+44.5	+32.9	+ 7.0	38.9	67.9		R. Künzler.....	51943					
+ 15.3	+ 30.0	+ 30.0	+ 30.7	+ 28.0	+ 23.9	+ 25.5	25.0	10.0	+26.0	+50.1	+10.4	45.0	68.1		V. Kullberg.....	5483					
+ 15.8	+ 13.1	+ 9.9	+ 10.0	+ 10.6	+ 6.8	+ 13.6	13.0	11.7	+48.8	+15.5	+35.8	35.4	68.4		W. A. Watkins.....	1877					
+ 0.5	+ 3.3	+ 7.9	+ 11.6	+ 11.9	+ 14.1	+ 10.8	19.1	5.5	+52.6	+38.0	+17.7	30.1	69.9		J. Hewitt.....	61716					
+ 8.9	+ 20.4	+ 21.1	+ 21.7	+ 19.0	+ 26.0	+ 24.2	21.3	11.5	+41.9	+22.9	+ 6.5	44.3	70.2		R. H. Halford & Sons.....	5204					
+ 87.0	+ 91.6	+ 94.9	+ 90.9	+ 87.7	+ 87.9	+ 89.0	13.8	11.2	+39.4	+45.8	+45.4	36.2	71.1		H. L. Brown & Son.....	61717					
+ 21.7	+ 36.4	+ 33.4	+ 35.3	+ 49.7	+ 34.4	+ 39.0	29.4	15.3	+ 2.4	+32.7	+30.1	60.0	71.7		Usher & Cole.....	30081					
+ 49.0	+ 59.5	+ 63.4	+ 64.0	+ 66.9	+ 71.1	+ 73.0	38.2	10.5	+ 6.3	+25.1	+33.0	59.2	72.1		S. Yeomans.....	96544					
88.7	59.9	60.0	61.0	54.9	57.6	57.3	Mean Weekly Temperature.														
85.5	56.8	55.0	58.0	51.5	54.2	58.0	Extremes of Temperature as shown by the Self-Registering Thermometer.														
90.1	63.0	63.5	63.8	59.9	63.2	59.5															

RATES OF CHRONOMETER WATCHES ON TRIAL FOR PURCHASE BY THE ADMIRALTY AT THE

				(1) WEEKLY RATES IN													
Order of Merit.	NAME OF MAKER.	No.	ADDRESS OF MAKER.	Aug. 3-10.	Aug. 10-17.	Aug. 17-24.	Aug. 24-31.	Aug. 31 to Sept. 7.	Sept. 7-14.	Sept. 14-21.	Sept. 21-28.	Sept. 28-25.	Sept. 25 to Oct. 1.	Oct. 1-5.			
				Watch Horizontal. Dial up.										Watch Vertical. Pendant up.	Watch Vertical. Pendant right.	Watch Vertical. Pendant left.	Watch Vertical. Pendant up.
51	B. Smith.....	514	28 Duke Street, Manchester Square, W.....	- 14.0	- 16.0	- 16.4	- 21.4	- 13.2	- 19.5	- 17.0	+ 1.8	- 58.3	+ 34.8	+ 4.6			
52	H. L. Brown & Son.....	61678	65 Market Place, Sheffield.....	- 15.9	- 8.4	- 1.9	- 2.6	- 14.4	- 14.3	- 12.5	- 60.6	- 58.8	- 30.3	- 50.8			
53	R. Künzler.....	51945	31 St. George's Place, Birmingham.....	+ 9.7	+ 16.9	+ 13.1	+ 16.2	+ 16.7	+ 15.4	- 1.4	+ 18.2	+ 36.4	+ 31.0	+ 34.5			
54	H. L. Brown & Son.....	61674	65 Market Place, Sheffield.....	- 86.4	- 86.6	- 86.2	- 84.1	- 86.1	- 91.5	- 95.1	- 59.7	- 61.4	- 63.7	- 46.9			
55	Usher & Cole.....	28668	339 St. John Street, Clerkenwell.....	+ 8.6	+ 9.4	+ 14.0	+ 16.2	+ 9.2	+ 9.7	+ 20.4	- 10.7	+ 40.6	- 11.3	- 7.9			
56	J. Hewitt.....	61681	Holy Head Road, Coventry.....	+ 23.9	+ 19.9	+ 13.9	+ 14.6	+ 11.8	+ 21.5	+ 31.4	+ 73.5	+ 25.9	+ 60.7	+ 80.0			
57	J. Hewitt.....	61714	Holy Head Road, Coventry.....	+ 17.3	+ 16.0	+ 12.3	+ 16.7	+ 9.7	+ 14.1	+ 12.7	- 23.6	- 11.2	+ 4.2	- 57.2			
The sign + indicates a gaining rate. The quantities a, b, c, d, e, in the formula $a + 2b + \frac{1}{2}(c + \frac{d+e}{2})$, are taken numerically, without regard to sign.				63.7	62.0	63.3	62.6	62.2	59.9	88.3	88.9		89.2				
				62.6	60.5	62.1	61.0	60.8	57.5	86.2	87.8		86.9				
				65.0	64.0	64.8	64.6	64.0	62.2	89.5	89.9		90.2				

* The Weekly Rates have been computed from the rates for three days.
During the period Sept. 14 to Oct. 15, the watches were placed in an oven heated by jets of gas, the temperature being regulated by Künzler's automatic governor, which controls the supply of gas. The gas flames are exterior to the chamber, into which none of the injurious products of combustion can enter.

† The Weekly Rates have been computed from the rates for four days.
During the period Sept. 14 to Oct. 15, the watches were placed in an oven heated by jets of gas, the temperature being regulated by Künzler's automatic governor, which controls the supply of gas. The gas flames are exterior to the chamber, into which none of the injurious products of combustion can enter.

ROYAL OBSERVATORY, GREENWICH, FROM 1912 AUGUST 3 TO 1912 NOVEMBER 23.

ORDER OF TIME.							(2) ABSTRACT OF THE PRINCIPAL CHANGES OF RATES.										NAME OF MAKER.	No.	Order of Merit.
Oct. 5-12.	Oct. 12-19.	Oct. 19-26.	Oct. 26 to Nov. 2.	Nov. 2-9.	Nov. 9-16.	Nov. 16-23.	Difference between greatest and least Weekly Rates.	Greatest difference between one week and the next.	Difference of Weekly Rates.			a + 2b	Trial Number. $a + 2b + \frac{1}{2}(c + \frac{d+e}{2})$						
Watch Horizontal. Dial up.							Dial up. a.	Dial up. b.	Pendant up -Dial up. c.	Pendant right -Dial up. d.	Pendant left -Dial up. e.								
- 19.5	- 32.8	- 24.1	- 29.0	- 32.1	- 25.8	- 26.9	19.6	13.3	+ 21.5	- 40.0	+ 53.1	46.2	72.5	B. Smith.....	514	51			
- 7.1	- 2.3	- 4.5	- 1.2	- 9.0	- 7.5	- 8.3	14.7	11.8	- 45.9	- 49.0	- 20.5	38.3	72.9	H. L. Brown & Son.....	61678	52			
+ 14.1	+ 19.1	+ 24.0	+ 22.5	+ 24.5	+ 22.0	+ 23.1	25.9	16.8	+ 20.0	+ 30.0	+ 24.6	59.5	78.6	R. Künzler.....	51945	53			
- 90.3	- 103.7	- 108.4	- 102.7	- 97.8	- 90.0	- 96.1	24.3	13.4	+ 39.4	+ 31.3	+ 33.0	51.1	82.5	H. L. Brown & Son.....	61674	54			
+ 18.5	+ 2.0	+ 10.9	+ 10.6	- 4.7	+ 8.6	+ 4.5	25.1	16.5	- 28.3	+ 21.1	- 60.8	58.1	86.2	Usher & Cole.....	28668	55			
+ 39.3	+ 23.1	+ 17.6	+ 22.0	+ 19.6	+ 13.9	+ 14.5	27.5	16.2	+ 41.4	- 9.5	+ 25.3	59.9	86.4	J. Hewitt.....	61681	56			
+ 14.2	+ 30.8	+ 25.1	+ 16.7	+ 17.3	- 13.9	+ 13.9	21.1	16.6	- 53.9	- 24.7	- 9.3	54.3	87.0	J. Hewitt.....	61714	57			
88.7	59.8	60.0	61.0	64.9	57.6	57.3	Mean Weekly Temperature.												
85.5	56.8	55.0	58.0	51.5	54.2	53.0	Extremes of Temperature as shown by the Self-Registering Thermometer.												
90.1	63.0	63.5	63.8	59.9	63.2	59.5													

Only those watches have been included in this list for which "a" did not exceed 18 seconds or for which a + 2b did not exceed 60 or the trial number did not exceed 100.