

RATES OF CHRONOMETER WATCHES
AND POCKET CHRONOMETERS
ON TRIAL
FOR PURCHASE BY THE BOARD OF ADMIRALTY,
AT THE
ROYAL OBSERVATORY, GREENWICH,
FROM 1914 AUGUST 1 TO 1914 NOVEMBER 21.

Order of Merit.	NAME OF MAKER.	No.	ADDRESS OF MAKER.	(1) WEEKLY RATES IN															
				Aug. 1—8.	Aug. 8—15.	Aug. 15—22.	Aug. 22—29.	Aug. 29 to Sept. 5.	Sept. 5—12.	Sept. 12—19.	Sept. 19—23.	Sept. 23—26.	Sept. 26—29.	Sept. 29 to Oct. 3.	Chronometer Watch Horizontal. Dial up.				
															Watch Vertical. Dial up. 1.	Watch Vertical. Dial up. right.	Watch Vertical. Dial up. left.	Watch Vertical. Dial up. up.	Watch Vertical. Dial up. up.
1	H. White & Co.	2060	63 Chesapeake, London, E.C.	+ 9.8	+ 4.0	+ 6.0	+ 5.7	+ 4.3	+ 7.2	+ 1.4	+ 1.9	- 35.9	- 28.5	+ 2.8					
2	Newsome & Co.	151350	14 & 15 The Butts, Coventry.	- 5.3	- 9.1	- 7.8	- 6.6	- 6.6	- 7.4	- 1.6	- 8.9	- 4.4	- 4.8	- 4.6					
3	J. Lilley & Son, Ltd.	1768	10 London Street, London, E.C.	+ 1.3	+ 0.6	+ 1.7	- 0.4	- 1.0	- 1.2	- 0.2	- 0.7	+ 3.3	- 9.8	+ 2.8					
4	Barfoot Bros.	2140	2 Church Road, Hove	- 8.9	- 11.9	- 11.1	- 9.0	- 9.8	- 6.8	- 3.7	- 5.1	- 25.4	+ 1.6	+ 2.3					
5	Foile & Smith.	2062	22 Orchard Street, London, W.	- 10.4	- 11.7	- 12.3	- 9.5	- 10.6	- 9.1	- 11.6	- 19.4	- 64.9	- 28.5	- 13.8					
6	H. White & Co.	2059	63 Chesapeake, London, E.C.	- 10.1	- 11.6	- 8.6	- 10.8	- 10.1	- 8.8	- 7.7	+ 22.4	- 14.0	- 23.6	+ 24.7					
7	R. Künzler.	51901	31 St. George's Place, Birmingham	+ 17.1	+ 10.0	+ 6.0	+ 2.0	+ 0.1	+ 1.2	- 8.1	- 4.6	- 3.3	+ 4.2	+ 19.3					
8	Usher & Cole.	31885	339 St. John Street, Clerkenwell, E.C.	- 4.1	- 4.1	- 6.1	- 2.3	- 0.6	+ 0.6	0.0	- 10.7	+ 15.9	+ 3.7	- 6.8					
9	Wales & McCulloch.	3892	20 Ludgate Hill, London, E.C.	- 11.1	- 10.8	- 13.7	- 13.1	- 14.3	- 11.0	- 5.5	+ 3.0	- 3.3	+ 2.6	+ 0.5					
10	Bolton Smith.	597	25 Duke Street, London, W.	- 13.4	- 11.3	- 16.9	- 10.2	- 5.4	- 4.8	- 6.3	- 24.7	- 3.3	- 11.7	- 29.8					
11	A. Johannsen & Co.	7172	149 Minories, London, E.	- 3.1	- 6.8	- 3.8	- 3.0	+ 2.5	+ 1.8	+ 6.1	+ 14.2	+ 29.2	+ 17.3	+ 29.2					
12	R. Künzler.	51960	31 St. George's Place, Birmingham	- 7.6	- 13.5	- 17.0	- 16.2	- 14.6	- 10.2	- 6.0	- 9.6	- 31.6	- 27.5	+ 4.2					
13	Usher & Cole.	31885	339 St. John Street, Clerkenwell, E.C.	- 18.0	- 29.5	- 27.6	- 27.6	- 25.4	- 23.7	- 19.3	- 13.0	- 32.7	- 43.1	- 29.6					
14	S. F. Stanley.	1955	46 Chancery Lane, London, E.C.	- 3.7	- 9.4	- 3.9	- 5.8	- 5.8	- 1.8	- 2.7	+ 20.1	- 28.3	+ 2.1	+ 20.0					
15	Harrison & Son.	35351	4 High Row, Darlington	+ 13.3	+ 9.9	+ 7.0	+ 4.9	+ 2.5	+ 4.2	+ 5.9	- 6.7	- 34.5	- 27.1	- 8.1					
16	H. White & Co.	2049	63 Chesapeake, London, E.C.	+ 12.9	+ 14.0	+ 9.7	+ 12.2	+ 10.7	+ 10.4	+ 1.5	- 22.1	- 37.8	- 12.1	- 18.6					
17	A. Johannsen & Co.	6827	149 Minories, London, E.	- 2.4	- 3.8	+ 3.4	+ 4.6	+ 5.7	+ 9.3	+ 3.9	- 1.1	- 3.3	+ 2.3	+ 5.1					
18	Austin & Williams.	2111	Cornhill Street, London, W.	- 0.7	- 7.2	+ 0.2	+ 0.7	+ 2.0	+ 4.3	+ 4.0	+ 4.4	- 10.0	+ 13.3	+ 11.7					
19	Usher & Cole.	31877	339 St. John Street, Clerkenwell, E.C.	+ 20.1	+ 26.9	+ 23.7	+ 20.8	+ 14.3	+ 15.6	+ 20.6	+ 47.1	- 0.7	- 5.6	+ 49.7					
20	A. Johannsen & Co.	7002	149 Minories, London, E.	+ 3.1	- 2.2	+ 4.8	+ 1.0	+ 3.9	+ 2.6	+ 9.8	+ 7.2	- 27.5	- 35.0	- 11.0					
21	R. Ashworth & Co.	145701	4 Cambridge Crescent, Harrogate.	+ 24.9	+ 22.9	+ 21.9	+ 29.3	+ 20.0	+ 21.3	+ 10.1	+ 49.4	+ 23.6	+ 25.9	+ 33.0					
22	H. White & Co.	2052	63 Chesapeake, London, E.C.	- 0.1	- 0.8	+ 0.2	+ 3.4	+ 2.6	+ 4.6	- 9.9	- 7.9	- 32.4	- 13.2	- 4.4					
23	R. Künzler.	51965	31 St. George's Place, Birmingham	- 12.5	- 14.0	- 14.1	- 14.4	- 15.4	- 15.9	- 27.3	- 5.4	- 37.3	- 35.7	- 2.6					
24	R. Künzler.	51920	31 St. George's Place, Birmingham	- 12.0	- 16.9	- 15.9	- 17.0	- 17.1	- 17.5	- 25.6	- 4.4	- 42.9	- 40.9	- 7.0					
25	Birch & Gaydon.	2568	153 Fenchurch Street, London, E.C.	+ 3.7	+ 0.3	+ 3.9	+ 11.9	+ 11.9	+ 9.9	+ 2.5	- 8.6	- 11.0	- 9.6	- 9.5					
				67.1	69.2	68.2	70.0	69.7	69.5	69.8	68.6	68.5	68.5	68.5					
				65.7	66.2	67.4	68.0	68.9	67.0	68.9	87.2	87.2	88.3	88.3					
				69.3	71.0	69.4	73.1	70.8	71.6	91.5	90.8	91.1	91.1	91.1					

The sign + indicates a gaining rate.

The quantities a, b, c, d, e , in the formula $a + 2b + \frac{1}{2}(c + \frac{4d}{3} + \frac{e}{6})$, are taken numerically, without regard to sign.

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

During the period Sept. 12 to Oct. 10, 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.										NAME OF MAKER.	No.	Order of Merit.
Oct. 3—10.	Oct. 10—17.	Oct. 17—24.	Oct. 24—31.	Oct. 31 to Nov. 7.	Nov. 7—14.	Nov. 14—21.	Difference between greatest and least Weekly Rates.			Difference of Weekly Rates.			Trial Number. $a + 2b + \frac{1}{2}(c + \frac{4d}{3} + \frac{e}{6})$						
Chronometer Watch Horizontal. Dial up.							Dial up. a .	Dial up. b .	Pendant up. c .	Pendant right. Dial up. d .	Pendant left. Dial up. e .								
+ 5.3	+ 5.3	+ 3.8	+ 4.0	+ 5.8	+ 8.3	+ 6.8	6.9	5.8	- 1.0	- 39.3	- 31.9	19.5	20.9	H. White & Co.	2060	1			
+ 1.8	- 0.3	- 5.6	- 5.1	- 6.9	- 5.1	- 11.5	13.3	6.4	+ 6.8	- 4.5	- 4.3	26.9	31.0	Newsome & Co.	151350	2			
+ 1.8	- 7.8	- 8.5	- 9.2	- 9.0	- 3.4	- 1.1	10.3	9.6	+ 0.3	+ 2.5	- 10.6	29.5	31.9	J. Lilley & Son, Ltd.	1768	3			
- 3.8	- 11.3	- 13.7	- 15.3	- 10.9	- 10.5	- 17.6	14.9	7.5	+ 1.9	- 22.1	+ 4.9	29.9	35.4	Barfoot Bros.	2140	4			
- 16.0	- 14.8	- 20.9	- 17.9	- 17.1	- 16.2	- 19.7	11.8	6.1	- 2.8	- 61.1	- 14.7	34.0	38.4	Poile & Smith.	2062	5			
- 4.2	- 9.1	- 11.8	- 10.8	- 8.0	- 8.5	- 10.5	7.6	4.9	+ 29.6	- 8.0	- 17.6	17.4	36.5	H. White & Co.	2059	6			
+ 5.3	+ 7.3	+ 8.7	+ 14.8	+ 16.0	+ 15.1	+ 17.0	20.2	7.1	+ 6.3	- 4.4	+ 3.1	34.4	39.2	R. Künzler.	51901	7			
+ 7.3	+ 6.7	- 1.8	+ 1.7	+ 7.5	+ 7.8	+ 2.8	13.9	8.5	- 12.5	+ 12.2	0.0	30.9	39.2	Usher & Cole.	31882	8			
- 0.7	- 3.8	- 14.8	- 10.2	- 10.7	- 11.2	- 14.2	14.1	11.0	+ 4.9	+ 5.7	- 36.1	39.7	Wales & McCulloch.	3892	9				
- 7.5	- 6.6	- 7.8	- 3.3	- 4.8	- 2.5	- 5.6	15.9	7.1	- 18.9	+ 10.4	- 4.3	30.1	42.1	Bolton Smith.	597	10			
+ 20.1	+ 15.5	+ 12.3	+ 12.9	+ 16.4	+ 20.2	+ 17.3	27.0	5.5	+ 8.1	+ 16.1	+ 4.2	38.0	45.5	A. Johannsen & Co.	7172	11			
- 23.4	- 24.1	- 26.2	- 26.7	- 24.7	- 24.9	- 26.2	20.7	5.9	+ 12.0	- 36.9	- 12.2	32.5	46.8	R. Künzler.	51960	12			
- 21.3	- 20.4	- 20.7	- 21.9	- 16.4	- 18.5	- 20.3	13.1	11.5	- 1.3	- 22.4	- 27.8	36.1	46.8	Usher & Cole.	31885	13			
+ 7.5	+ 0.9	- 1.9	- 3.7	- 3.0	+ 4.0	+ 8.8	18.2	6.6	+ 17.7	- 40.7	- 0.3	31.4	47.1	S. F. Stanley.	1955	14			
+ 5.3	+ 2.5	+ 0.6	- 1.5	- 0.9	- 1.0	- 6.1	19.4	5.1	- 13.0	- 40.1	- 22.7	29.6	48.2	Harrison & Son.	35351	15			
+ 2.7	+ 10.7	+ 9.0	+ 7.3	+ 6.8	+ 6.3	+ 3.7	12.5	8.9	- 22.5	- 29.9	- 14.2	30.3	49.0	H. White & Co.	2049	16			
+ 30.9	+ 14.1	+ 8.5	+ 4.5	+ 6.3	+ 8.1	+ 8.0	24.7	7.2	- 9.9	- 15.2	- 9.6	39.1	50.2	A. Johannsen & Co.	6827	17			
+ 14.2	+ 2.0	- 1.8	- 4.1	+ 0.5	+ 5.2	+ 8.2	21.4	12.2	- 1.0	- 19.1	+ 4.2	45.8	50.2	Austin & Williams.	2111	18			
+ 25.9	+ 25.5	+ 19.2	+ 17.4	+ 20.4	+ 19.7	+ 14.8	14.3	7.4	+ 25.4	- 23.7	- 28.6	29.1	50.5	Usher & Cole.	31877	19			
+ 10.2	+ 0.7	0.0	+ 0.4	+ 8.1	+ 5.4	+ 0.1	12.4	9.5	- 11.9	- 37.5	- 45.0	31.4	51.2	A. Johannsen & Co.	7002	20			
+ 27.9	+ 23.3	+ 19.7	+ 24.3	+ 23.9	+ 30.8	+ 21.0	15.1	9.5	+ 29.2	+ 11.6	+ 3.9	34.7	61.9	R. Ashworth & Co.	145701	21			
- 1.1	- 8.4	- 12.5	- 9.5	- 6.5	- 6.8	- 9.4	17.1	13.8	- 1.0	- 27.2	- 13.0	44.7	61.9	H. White & Co.	2052	22			
- 20.9	- 11.2	- 14.8	- 13.7	- 11.6	- 12.8	- 15.0	16.1	11.4	+ 20.1	- 13.2	- 11.6	38.9	53.1	R. Künzler.	51965	23			
- 27.6	- 21.9	- 22.2	- 31.1	- 31.9	- 30.9	- 30.0	19.9	8.1	+ 29.9	- 16.3	- 29.3	26.1	53.1	R. Künzler.	51920	24			
- 1.5	- 10.9	- 3.5	- 7.5	- 9.3	- 7.3	- 14.2	20.1	9.4	- 9.6	- 11.5	- 10.1	44.9	53.3	Birch & Gaydon.	2568	25			
68.5	68.2	68.0	68.3	68.3	68.0	57.4	Mean Weekly Temperature.												
68.8	57.3	67.0	67.5	68.5	69.4	58.6	Extremes of Temperature as shown by the Self-Registering Thermometer.												
90.0	61.7	59.2	60.7	62.2	64.0	67.0													
Only those watches have been included in this list for which "b" did not exceed 18 seconds, or for which a + 2b did not exceed 60, or the trial number did not exceed 100.																			

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

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

Order of Merit.	NAME OF MAKER	No.	ADDRESS OF MAKER.	(1) WEEKLY RATES IN																
				Aug. 1-8.	Aug. 8-15.	Aug. 15-22.	Aug. 22-29.	Aug. 29 to Sept. 5.	Sept. 5-12.	Sept. 12-19.	Sept. 19-23.	Sept. 23-26.	Sept. 26-29.	Sept. 29 to Oct. 3.						
				Chronometer Watch Horizontal. Dial up.										Watch Vertical. Dial up.	Watch Vertical. Dial up.	Watch Vertical. Dial up.	Watch Vertical. Dial up.			
														Right. Pend.	Right. Pend.	Left. Pend.	Left. Pend.			
26	V. Kullberg	8830	105 Liverpool Road, London, N.	+ 0.9	- 6.6	- 1.2	- 5.7	- 3.8	- 0.7	+ 6.0	+ 9.5	+ 4.2	- 4.0	+ 15.4						
27	R. Künzler	51949	31 St. George's Place, Birmingham.	- 7.7	- 7.5	- 11.6	- 11.8	- 10.1	- 10.2	- 24.1	- 26.6	- 31.7	- 48.3	- 25.6						
28	R. Künzler	51955	31 St. George's Place, Birmingham.	+ 1.4	+ 7.9	+ 6.7	+ 8.8	+ 10.5	+ 10.8	- 0.5	+ 13.9	+ 4.0	+ 8.4	+ 25.8						
29	R. Künzler	51966	31 St. George's Place, Birmingham.	+ 2.2	+ 2.9	+ 0.2	- 0.9	- 1.3	- 2.0	- 13.0	+ 13.7	- 25.0	- 25.0	+ 13.3						
30	H. White & Co.	2067	63 Chespie, London, E.C.	- 6.2	- 7.8	- 1.8	- 3.1	- 3.7	- 1.5	- 4.9	+ 1.4	- 33.3	- 49.9	+ 6.0						
31	R. Künzler	51952	31 St. George's Place, Birmingham.	- 17.9	- 30.3	- 24.3	- 25.3	- 29.0	- 29.5	- 22.5	- 22.2	- 35.5	- 50.6	- 22.6						
32	W. Bryer & Sons.	2088	53 & 54 Barbican, London, E.C.	- 7.6	- 10.2	- 5.5	- 7.4	- 5.1	- 2.4	- 8.5	+ 18.7	- 24.7	+ 11.9	+ 28.4						
33	R. Künzler	51943	31 St. George's Place, Birmingham.	+ 13.6	+ 21.8	+ 15.9	+ 19.7	+ 28.4	+ 29.1	+ 34.3	+ 38.2	+ 35.5	+ 41.3	+ 60.2						
34	R. Künzler	51952	31 St. George's Place, Birmingham.	+ 4.5	+ 8.7	+ 12.6	+ 15.6	+ 17.1	+ 14.9	- 1.5	+ 3.7	- 18.1	- 12.8	- 3.2						
35	S. Alexander & Sons.	95934	41 Allsley Old Road, Coventry.	- 9.9	- 6.9	- 5.1	- 4.1	- 4.4	- 3.4	- 15.9	+ 5.4	- 12.8	+ 14.9	- 12.8						
36	J. Lilley & Son, Ltd.	1790	10 London Street, London, E.C.	+ 7.0	- 1.4	- 4.0	- 4.4	- 5.0	- 3.9	+ 4.0	- 0.2	+ 2.3	+ 19.4	- 5.1						
37	R. Künzler	51951	31 St. George's Place, Birmingham.	- 14.8	- 15.8	- 13.7	- 13.9	- 14.6	- 13.5	- 29.1	- 40.8	- 24.3	- 24.5	- 39.0						
38	S. F. Stanley	1954	46 Chancery Lane, London, E.C.	- 2.2	- 6.2	+ 3.8	- 2.1	+ 0.8	+ 4.8	+ 7.3	+ 7.7	+ 7.0	- 21.0	+ 13.3						
39	Wales & McCulloch.	3430	20 Ludgate Hill, London, E.C.	- 9.0	- 9.9	- 13.9	- 8.0	- 10.3	- 13.5	- 27.5	- 5.3	+ 19.4	- 25.0	- 9.1						
40	Harrison & Son.	35246	4 High Row, Darlington.	+ 8.4	+ 6.0	+ 2.0	+ 3.2	+ 2.0	+ 1.6	- 13.1	- 0.5	- 32.0	- 27.1	- 0.5						
41	F. A. Chandler.	2047	4 Victoria Terrace, Leamington.	- 3.2	- 5.1	+ 6.3	- 3.8	- 2.1	+ 6.2	+ 1.1	- 3.5	- 39.7	- 52.0	+ 1.4						
42	R. Künzler	51961	31 St. George's Place, Birmingham.	- 2.9	- 3.2	- 10.0	- 11.6	- 10.1	- 11.0	- 25.5	- 23.1	- 11.7	- 50.2	- 30.8						
43	Reid & Sons.	39239	60m Buildings, Newcastle-on-Tyne.	+ 0.4	+ 0.4	+ 0.1	+ 1.9	+ 1.6	+ 1.1	+ 41.7	+ 28.5	+ 23.8	+ 48.7							
44	H. White & Co.	2061	63 Chespie, London, E.C.	- 8.1	- 8.9	- 16.8	- 13.8	- 16.8	- 15.5	- 18.8	- 19.7	- 77.8	- 31.0	- 16.1						
45	D. Buckney	33040	35-37 Broad Street House, London, E.C.	+ 8.6	+ 4.9	+ 9.4	+ 6.5	+ 1.6	+ 3.4	+ 4.8	- 5.3	- 5.1	- 4.0	+ 1.6						
46	Newsome & Co.	148644	14 & 15 The Butts, Coventry.	+ 5.0	+ 4.8	+ 4.9	+ 7.5	+ 10.8	+ 14.0	- 2.5	- 7.4	- 8.6	- 6.3	- 5.4						
47	H. White & Co.	2066	63 Chespie, London, E.C.	- 5.5	- 8.6	- 6.1	- 5.6	- 6.0	- 4.3	- 2.0	- 11.7	- 30.3	- 81.2	- 41.3						
48	Ollivant & Botsford.	31179	12 & 14 St. Ann Street, Manchester.	+ 8.8	+ 7.3	+ 12.9	+ 7.0	+ 9.8	+ 9.4	+ 0.9	+ 27.3	- 11.7	- 5.8	+ 15.9						
49	R. Künzler	51957	31 St. George's Place, Birmingham.	- 6.7	- 9.3	- 8.1	- 11.0	- 12.9	- 11.2	- 17.2	+ 11.7	- 15.3	+ 20.8	+ 8.1						
50	R. Künzler	51981	31 St. George's Place, Birmingham.	- 2.1	0.0	- 1.9	- 1.9	- 1.9	+ 7.5	- 9.6	+ 19.4	- 3.0	- 3.7	+ 29.1						
				67.1	68.2	68.2	70.0	69.7	69.5	69.8	68.6	68.5	68.5	68.5						
				65.7	66.2	67.4	68.0	68.9	67.0	68.9	67.2	68.2	68.3	68.3						
				69.3	70.0	69.4	72.1	70.8	71.6	91.5	90.8	88.5	91.1	91.1						
The sign + indicates a gaining rate.																				
The quantities a, b, c, d, e, in the formula $a + 2b + \frac{1}{2} (c + \frac{4d}{e})$, are taken numerically, without regard to sign.																				

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.

* The Weekly Rates have been computed from the rates for three days.
 During the period Sept. 12 to Oct. 16, the watches were placed in an oven heated by jets of gas, the temperature being regulated by Kaillberg'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. 12 to Oct. 16, the watches were placed in an oven heated by jets of gas, the temperature being regulated by Kaillberg'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 1914 AUGUST 1 TO 1914 NOVEMBER 21.

ORDER OF TIME.							(2) ABSTRACT OF THE PRINCIPAL CHANGES OF RATES.										NAME OF MAKER.	No.	Order of Merit.		
Oct. 3-10.	Oct. 10-17.	Oct. 17-24.	Oct. 24-31.	Oct. 31 to Nov. 7.	Nov. 7-14.	Nov. 14-21.	Difference between greatest and least Weekly Rates.					Difference of Weekly Rates.								Trial Number.	
Chronometer Watch Horizontal. Dial up.							Difference between greatest and least Weekly Rates.					Difference of Weekly Rates.								Trial Number.	
							Dial up. a.	Dial up. b.	Dial up. c.	Dial up. d.	Dial up. e.	a+2b + (c + $\frac{d+e}{2}$)	Trial Number.								
+ 16.0	+ 16.2	+ 5.2	+ 6.0	+ 9.6	+ 16.7	+ 20.3	26.9	11.0	+ 1.5	- 6.8	- 15.0	48.9	53.3	V. Kullberg.....	8630	26					
- 28.4	- 11.2	- 11.3	- 9.7	- 7.9	- 9.3	- 15.3	18.9	15.2	- 0.8	- 6.4	- 23.0	49.3	54.6	R. Künzler.....	51949	27					
- 1.9	+ 1.0	+ 4.1	- 5.8	- 1.8	- 1.4	- 8.9	18.8	11.3	+ 22.8	+ 5.2	+ 9.6	41.4	55.3	R. Künzler.....	51955	28					
- 7.8	- 6.4	- 6.8	- 5.9	- 5.1	- 5.7	- 12.2	15.9	11.0	+ 25.4	- 14.6	- 14.6	37.9	55.3	R. Künzler.....	51966	29					
+ 6.9	- 5.3	- 5.9	- 4.9	+ 3.9	+ 5.8	+ 7.0	14.8	12.2	+ 2.7	- 39.3	- 50.9	39.3	55.6	H. White & Co.....	2057	30					
- 27.2	- 32.7	- 42.6	- 43.0	- 41.0	- 42.8	- 46.2	28.3	9.9	+ 7.5	- 5.6	- 20.7	48.1	56.3	R. Künzler.....	51953	31					
+ 14.7	+ 17.7	+ 11.7	+ 10.4	+ 11.6	+ 16.0	+ 18.8	28.5	6.1	+ 20.5	- 27.8	+ 8.8	40.7	57.1	W. Bryer & Sons.....	2088	32					
+ 35.9	+ 29.5	+ 17.6	+ 21.5	+ 18.4	+ 21.1	+ 20.8	22.3	11.9	+ 14.1	+ 20.4	+ 6.2	46.1	57.6	R. Künzler.....	51947	33					
- 4.2	+ 2.0	- 0.2	- 0.8	- 0.5	- 1.6	- 4.3	21.4	16.4	- 0.6	- 13.2	- 9.9	54.2	58.1	R. Künzler.....	51962	34					
- 3.8	+ 4.3	+ 0.6	+ 1.9	+ 5.9	+ 6.4	+ 10.8	26.7	12.5	+ 5.7	- 3.9	+ 24.8	51.7	59.4	S. Alexander & Sons.....	95934	35					
+ 4.1	- 12.4	- 13.5	- 5.1	- 9.0	- 10.7	- 4.7	20.5	16.5	- 6.8	- 1.8	+ 15.3	53.5	59.8	J. Lilley & Son, Ltd.....	1790	36					
- 28.8	- 11.0	- 14.5	- 13.9	- 13.6	- 14.9	- 14.3	17.8	17.8	- 10.9	+ 4.7	+ 4.5	53.4	60.4	R. Künzler.....	51951	37					
+ 16.0	+ 3.4	- 6.8	- 13.8	- 10.5	- 8.5	- 4.3	29.2	12.6	- 1.2	+ 4.7	- 23.7	55.0	61.8	S. F. Stanley.....	1954	38					
- 15.7	- 24.5	- 23.7	- 24.9	- 26.1	- 24.5	- 27.9	19.9	14.6	+ 14.4	+ 41.0	- 3.4	47.9	62.5	Wales & McCulloch.....	3430	39					
- 5.3	+ 2.2	- 0.5	+ 1.5	+ 0.5	- 2.5	- 5.1	21.5	14.7	+ 8.7	- 22.8	- 27.9	59.9	63.8	Harrison & Son.....	35246	40					
- 7.5	- 3.0	- 5.3	- 1.2	- 3.4	+ 11.2	+ 12.7	20.2	14.6	+ 2.8	- 35.5	- 48.8	49.4	64.8	F. A. Chandler.....	2047	41					
- 27.9	- 19.1	- 21.7	- 24.0	- 21.3	- 25.6	- 33.2	30.3	14.2	- 0.4	+ 12.9	- 23.6	56.7	65.0	R. Künzler.....	51961	42					
- 1.2	- 7.6	- 8.6	- 5.1	- 2.5	+ 0.6	- 0.5	10.7	9.3	+ 40.2	+ 23.5	+ 18.8	38.3	65.4	Reid & Sons.....	39239	43					
- 19.2	- 22.9	- 32.2	- 32.1	- 33.4	- 35.6	- 40.4	32.3	10.3	+ 1.6	- 58.2	- 12.0	52.9	65.4	H. White & Co.....	2061	44					
+ 17.6	+ 2.5	- 4.1	- 1.6	+ 1.4	+ 3.3	- 7.6	25.2	15.1	- 12.9	- 16.1	- 15.0	55.4	67.1	D. Buckney.....	33040	45					
+ 11.2	+ 15.0	+ 7.0	- 1.9	- 7.4	- 10.7	- 10.1	25.7	18.5	- 10.8	- 13.0	- 10.7	56.7	68.1	Newsome & Co.....	148644	46					
- 11.1	- 5.9	- 8.6	- 9.3	- 7.0	- 12.0	- 13.8	16.5	9.2	- 17.9	- 74.7	- 72.6	34.9	68.5	H. White & Co.....	2066	47					
- 6.6	+ 9.3	+ 14.5	+ 14.3	- 16.0	+ 11.9	+ 9.6	22.5	15.8	+ 23.3	- 8.0	- 2.1	54.1	69.5	Ollivants & Botsford.....	31179	48					
- 14.8	+ 0.0	- 0.2	- 2.2	- 9.1	- 3.1	+ 3.1	20.3	14.8	+ 25.9	+ 8.0	- 36.8	49.9	69.2	R. Künzler.....	51897	49					
- 1.6	+ 9.4	- 0.0	- 7.3	- 4.4	- 4.2	- 8.5	19.0	17.4	+ 30.0	- 2.7	+ 2.0	53.8	69.6	R. Künzler.....	51911	50					
55.5	59.2	58.0	59.3	60.3	62.0	57.4	Mean Weekly Temperature.														
59.6	57.3	57.0	57.5	58.5	60.4	58.6	Extremes of Temperature as shown by the Self-Registering Thermometer.														
50.0	61.7	59.2	60.7	62.2	64.0	59.0															

				(1) WEEKLY RATES IN											
Order of Merit.	NAME OF MAKER.	No.	ADDRESS OF MAKER.	Aug. 1-8.	Aug. 8-15.	Aug. 15-22.	Aug. 22-29.	Aug. 29 to Sept. 5.	Sept. 5-12.	Sept. 12-19.	Sept. 19-23.	Sept. 23-26.	Sept. 26-29.	Sept. 29 to Oct. 3.	
				Chronometer Watch Horizontal. Dial up.											
				Watch Vertical. Dial up.											
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RATES OF CHRONOMETER WATCHES ON TRIAL FOR PURCHASE BY THE ADMIRALTY AT THE

Order of Merit.	NAME OF MAKER.	No.	ADDRESS OF MAKER.	(1) WEEKLY RATES IN																
				Aug. 1—8.	Aug. 8—15.	Aug. 15—22.	Aug. 22—29.	Aug. 29 to Sept. 5.	Sept. 5—12.	Sept. 12—19.	Sept. 19—23.	Sept. 23—26.	Sept. 26—29.	Sept. 29 to Oct. 3.						
				Pocket Chronometer Horizontal. Dial up.										Watch Vertical. Dial up. †	Watch Vertical. Dial up. *	Watch Vertical. Dial up. †	Watch Vertical. Dial up. *			
1	Carley & Clémence, Ltd.	51619	30 Ely Place, London, E.C.	- 1.1	- 3.8	- 5.4	- 3.6	- 3.7	- 4.2	- 15.0	- 9.5	- 6.3	- 8.6	- 7.4						
2	S. Alexander & Sons...	138977	61 Allesey Old Road, Coventry	+ 3.8	+ 6.1	+ 12.0	+ 13.4	+ 12.5	+ 10.2	+ 6.7	- 2.3	- 30.6	+ 8.2	- 6.0						
3	Kullberg	8646	105 Liverpool Road, London, N.	- 7.0	+ 7.2	+ 0.8	- 0.9	+ 3.1	+ 4.0	+ 12.9	+ 19.3	- 1.9	+ 7.7	+ 15.4						
4	Carley & Clémence, Ltd.	51620	30 Ely Place, London, E.C.	- 5.4	- 12.0	- 2.9	- 1.1	+ 0.8	+ 5.2	- 9.3	- 8.4	- 9.5	+ 1.9	+ 4.2						
5	S. Smith & Son, Ltd...	19345	6 Grand Hotel Buildings, London, W.C.	+ 35.1	+ 35.7	+ 33.0	+ 33.3	+ 34.7	+ 38.5	+ 34.8	- 5.6	- 29.2	+ 16.3	+ 0.7						
				67.1	68.2	68.2	70.0	65.7	69.5	89.8	88.6	89.3	89.5							
The sign + indicates a gaining rate.																				
The quantities a, b, c, d, e, in the formula $a + 2b + \frac{1}{3}(c + \frac{d+e}{2})$, are taken numerically, without regard to sign.				65.7	66.2	67.4	68.0	68.9	67.0	88.9	87.2	87.2	88.3	88.3						
				69.3	71.0	69.4	73.1	70.8	71.6	91.5	90.8	90.8	91.1	91.1						

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

† The Weekly Rates have been computed from the rates for four days. During the period Sept. 12 to Oct. 10, 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.

ROYAL OBSERVATORY, GREENWICH, FROM 1914 AUGUST 1 TO 1914 NOVEMBER 21.

ORDER OF TIME.							(2) ABSTRACT OF THE PRINCIPAL CHANGES OF RATES.										NAME OF MAKER.	No.	Order of Merit.
Oct. 3—10.	Oct. 10—17.	Oct. 17—24.	Oct. 24—31.	Oct. 31 to Nov. 7.	Nov. 7—14.	Nov. 14—21.	Difference between greatest and least Weekly Rates. Dial up.	Greatest difference between one week and the next. Dial up.	Difference of Weekly Rates.			Trial Number. $a + 2b + \frac{1}{3}(c + \frac{d+e}{2})$							
Pocket Chronometer Horizontal. Dial up.									Pendant up Dial up.	Pendant right Dial up.	Pendant left Dial up.								
<i>a.</i>							<i>b.</i>		<i>c.</i>	<i>d.</i>	<i>e.</i>								
- 9.3	- 0.8	- 0.8	+ 4.0	+ 3.1	+ 0.8	- 1.1	19.0	10.8	+ 3.7	+ 5.9	+ 3.6	40.6	44.1	Carley & Clémence, Ltd.	51619	1			
+ 11.7	+ 10.8	+ 9.9	+ 12.9	+ 14.0	+ 23.1	+ 14.2	18.3	9.5	- 13.6	- 29.8	- 1.0	37.3	50.9	S. Alexander & Sons.....	138977	2			
+ 14.7	+ 10.2	+ 11.1	+ 20.2	+ 23.7	+ 24.0	+ 20.0	29.9	9.1	+ 3.6	- 15.7	- 6.1	48.1	53.5	V. Kullberg.....	8646	3			
+ 8.7	+ 11.3	+ 12.5	+ 10.3	+ 14.9	+ 15.8	+ 19.9	31.9	9.1	- 6.3	- 4.7	- 2.3	50.1	54.5	Carley & Clémence, Ltd.	51620	4			
+ 20.3	+ 14.9	+ 15.9	+ 20.8	+ 29.6	+ 17.8	+ 11.0	27.0	12.7	- 25.1	- 51.8	- 6.3	54.4	76.7	S. Smith & Son, Ltd.....	19345	5			
<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>													
88.5	59.2	58.0	59.3	60.3	62.0	57.4	Mean Weekly Temperature.												
86.8	57.3	57.0	57.5	58.6	60.4	53.6	Extremes of Temperature as shown by the Self-Registering Thermometer.												
90.0	61.7	59.2	60.7	62.2	64.0	67.0													

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