

RATES OF CHRONOMETER WATCHES
ON TRIAL
FOR PURCHASE BY THE BOARD OF ADMIRALTY,
AT THE
ROYAL OBSERVATORY, GREENWICH,
FROM 1909 JULY 31 TO 1909 NOVEMBER 20.

Wt. 33155/387. Group xv.

(A)

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

(1) WEEKLY RATES IN ORDER OF TIME.

Order of Merit.	July 31 to Aug. 7.	Aug. 7-14.	Aug. 14-21.	Aug. 21-28.	Aug. 28 to Sept. 4.	Sept. 4-11.	Sept. 11-18.	Sept. 18-25.	Sept. 25-28.	Sept. 28 to Oct. 2.	Oct. 2-9.	Oct. 9-16.	Oct. 16-23.	Oct. 23-30.	Oct. 30 to Nov. 6.	Nov. 6-13.	Nov. 13-20.
	Watch Horizontal. Dial up.					Watch Vertical. Dial up.					Watch Horizontal. Dial up.						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	-6.6	-3.0	-1.3	+1.2	+0.7	-1.8	+3.6	+8.8	+5.8	+6.1	+5.1	+3.8	-4.0	-5.7	-3.7	-11.0	-9.0
2	-14.1	-13.0	-14.1	-14.8	-16.9	-18.2	-20.6	-22.1	-24.7	-10.0	-18.6	-25.2	-27.6	-28.5	-33.1	-31.7	-33.9
3	+9.7	+10.1	+10.4	+15.3	+14.4	+16.6	+12.0	+12.1	+4.7	+31.0	+19.3	+22.2	+20.0	+11.6	+11.6	+8.0	+11.7
4	+10.1	+15.0	+16.0	+15.9	+13.3	+14.1	+14.1	+14.5	-1.9	+10.3	+16.6	+20.3	+13.6	+16.7	+7.7	+11.8	+8.6
5	-11.0	-11.6	-11.9	-7.9	-7.6	-5.0	-7.9	+15.8	-15.2	-24.8	+22.6	-8.1	-5.4	-5.7	-4.4	-10.9	-9.2
6	+5.7	+9.7	+12.2	+14.6	+17.7	+16.6	+6.8	+10.5	-11.2	+27.8	+16.1	+18.9	+18.9	+16.6	+13.7	+13.1	+13.5
7	+7.9	+7.1	+5.0	+6.5	+4.2	+3.2	-2.7	-10.7	-7.9	-9.6	-9.3	-9.6	-2.6	-1.1	-7.2	-12.8	-4.0
8	+4.8	+8.9	+10.9	+9.0	+9.6	+8.0	+11.4	-0.8	-18.7	+2.6	+0.4	+16.8	+15.8	+12.6	+5.5	+4.0	+5.5
9	-8.1	-2.8	+1.0	-0.1	-2.9	-5.2	+0.3	+9.6	-13.3	-23.1	-19.3	-5.8	-13.9	-10.5	-15.9	-13.0	-17.4
10	-14.0	-14.9	-14.3	-14.2	-14.8	-16.1	-18.5	-1.9	-19.1	-27.5	+3.5	-20.2	-9.9	-14.0	-11.3	-10.0	-9.9
11	-18.3	-21.6	-26.7	-26.4	-25.1	-30.5	-21.5	+0.7	-17.5	-31.7	+1.1	-18.9	-26.9	-26.2	-25.7	-28.0	-28.1
12	-2.0	-1.0	-2.6	-7.4	-7.1	-14.2	-17.6	-9.8	-10.3	-9.8	-13.5	-13.8	-20.1	-24.7	-22.1	-21.4	-20.6
13	-0.1	-2.0	-2.1	-2.4	-0.6	-6.7	+3.5	+5.4	+13.5	+11.9	+14.7	+10.0	+6.7	-4.8	-2.1	-9.2	-6.4
14	+8.3	+9.9	+10.1	+9.6	+9.3	+5.8	+13.8	-2.8	-2.3	+43.4	+12.6	+15.9	+12.8	+15.8	+6.7	+5.8	+2.4
15	-23.0	-15.6	-11.4	-19.0	-14.8	-19.1	-22.0	-19.3	-30.8	-20.5	-20.0	-30.4	-22.2	-19.1	-21.7	-26.9	-31.5
16	-9.7	-8.2	-6.1	-10.9	-14.9	-16.7	-21.7	-19.1	-15.4	-18.2	-16.1	-5.3	-9.1	-6.8	-20.4	-13.0	-15.4
17	+22.4	+25.9	+27.5	+25.7	+27.0	+27.2	+33.9	+55.5	+26.8	+35.7	+50.1	+46.9	+42.7	+39.6	+35.0	+36.3	+31.4
18	+14.9	+14.9	+14.1	+21.0	+15.5	+22.1	+32.0	+38.3	+34.8	+40.8	+55.8	+30.6	+28.5	+27.8	+17.8	+23.4	+23.8
19	+11.1	+7.8	+6.0	+8.3	+8.6	+7.5	-2.1	-1.2	+17.3	+0.7	+6.8	+1.6	+15.3	+13.8	+12.1	+7.3	+5.8
20	-3.0	-3.7	-15.9	-9.3	-2.5	-15.8	-13.5	-12.4	-9.8	-7.7	-5.8	-0.2	-4.2	-11.6	-14.9	-17.9	-14.5
21	+12.5	+12.0	+9.6	+15.6	+17.6	+11.9	-17.0	+5.6	+21.7	-11.0	+17.7	+28.1	-3.8	+1.1	+1.0	-2.3	-2.0
22	+1.8	+0.0	+0.1	+5.8	+3.0	+5.7	-7.0	-21.2	-43.6	-18.0	-4.6	-10.4	-3.3	-3.1	+1.0	-2.3	-1.6
23	+15.0	+11.1	+9.7	+13.4	+13.6	+14.8	+24.8	-0.7	-8.6	+14.9	-3.0	+14.8	+16.9	+18.0	+19.5	+16.5	+10.5
24	-19.8	-16.9	-17.7	-14.1	-13.8	-14.9	-10.0	-20.5	-13.7	-3.8	-9.1	-4.0	-0.3	+8.6	-0.2	+5.7	-4.3
25	-9.2	-1.1	+0.5	-8.2	-10.3	-9.9	-18.7	-2.6	-0.2	-1.4	+4.4	-2.6	-4.2	-5.9	-15.3	-17.7	-22.7
67 ¹	71 ⁵	73 ⁹	66 ¹	68 ⁷	62 ⁸	66 ⁵	86 ⁸		90 ⁴	90 ³	63 ¹	62 ⁵	56 ³	55 ⁹	54 ⁵	53 ⁸	
61.0	69.2	68.5	61.7	60.6	59.0	76.0	85.0		88.9	88.8	61.7	61.8	61.0	51.6	53.1	59.8	
70.0	74.1	70.1	67.7	66.8	64.5	89.2	92.2		91.7	92.0	64.8	68.2	68.6	58.8	57.9	56.6	

* The Weekly Rates have been computed from the rates for three days.
During the period Sept. 1 to Oct. 9, 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.

ROYAL OBSERVATORY, GREENWICH, FROM 1909 JULY 31 TO 1909 NOVEMBER 20.

(2) ABSTRACT OF THE PRINCIPAL CHANGES OF RATES.

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. $a + 2b + \frac{1}{2}(c + d + e)$	NAME OF MAKER.	No.	ADDRESS OF MAKER.	
		Pendant up. -Dial up. c.	Pendant right Dial up. d.	Pendant left Dial up. e.					
14.8	7.8	+ 3.3	+ 2.1	+ 2.4	30.4	32.9	Thorneloe.....	61059	13 and 14 Stanton Street, Coventry.
20.9	4.6	+ 2.5	- 1.8	+12.9	30.1	33.9	J. Poyser & Son, Ltd.	36580	Belford Street, Coventry.
14.2	8.2	- 1.4	-12.4	+13.9	30.6	35.7	Kullberg.....	8227	105 Liverpool Road, London, N.
12.9	9.0	- 1.6	-19.1	- 6.9	30.9	36.0	H. White & Co.	1822	63 Chesapeake, London, E.C.
7.5	6.5	+27.2	-7.2	-16.5	20.5	38.1	Kullberg.....	8231	105 Liverpool Road, London, N.
13.2	9.8	+ 0.4	-24.1	+14.4	32.8	39.4	Bryer & Son.....	1854	53 and 54 Barbican, London, E.C.
20.7	8.8	- 3.9	- 1.8	- 3.5	38.3	41.2	S. Yeomans.....	93434	48 Spon Street, Coventry.
12.8	7.1	-14.2	-32.8	-11.5	27.0	41.5	Hallford & Sons.....	5201	41 Pall Mall, London, S.W.
21.2	7.5	- 2.1	-10.5	-20.3	36.2	42.4	J. Hewitt.....	1578	54 Holyhead Road, Coventry.
10.3	10.3	+20.2	+ 0.8	- 8.1	30.9	42.4	J. Hewitt.....	1888	54 Holyhead Road, Coventry.
12.2	9.0	+21.1	+ 2.7	-11.5	30.2	43.2	Ehrhardt.....	51898	Barr Street, Birmingham.
23.7	7.1	+ 6.3	+ 7.7	+ 8.2	37.9	43.7	Wales & M'Culloch.....	3523	20 Ludgate Hill, London, E.C.
18.2	11.0	+ 3.3	+ 6.7	+ 5.1	40.2	43.9	Melvin.....	51616	185 Union Street, Aberdeen.
13.5	9.1	- 9.7	-17.2	+28.5	31.7	44.2	Mumford.....	1850	1 Fen Court, Fenchurch Street, E.C.
23.5	8.2	+ 6.5	- 4.6	+ 5.7	39.9	44.9	Carley & Clemence.....	51784	30 Ely Place, Holburn Circus, E.C.
16.4	13.6	- 4.1	- 1.9	- 4.7	43.6	46.8	Birch & Gaydon.....	2567	153 Fenchurch Street, London, E.C.
24.5	6.7	+12.4	-18.6	- 4.7	37.9	47.2	Austin & Williams.....	1891	6 Conduit Street, London, W.
17.9	9.9	+15.8	+ 3.5	+ 9.5	37.7	47.8	J. Hewitt.....	60451	54 Holyhead Road, Coventry.
17.4	13.7	+ 3.1	+17.6	+ 1.0	44.8	49.5	Newsome & Co.....	145709	14 and 15 Butts, Coventry.
17.7	15.6	- 2.0	- 2.9	- 0.8	48.9	50.5	Kendal & Dent.....	100606	104 Chesapeake, London, E.C.
17.2	8.4	-28.8	- 9.2	+ 6.9	34.0	51.1	S. Yeomans.....	80985	48 Spon Street, Coventry.
16.2	12.7	- 4.2	-34.9	- 9.3	41.6	51.1	R. Jay.....	12870	365 Essex Road, Islington, N.
15.1	10.0	-21.7	-28.4	- 4.9	35.1	51.6	J. Hewitt.....	57681	54 Holyhead Road, Coventry.
26.1	10.0	- 7.8	- 6.7	+ 3.7	46.1	51.7	J. Hewitt.....	1888	54 Holyhead Road, Coventry.
24.4	9.4	+11.7	+10.5	+ 9.3	43.2	52.4	S. Yeomans.....	93431	48 Spon Street, Coventry.
Mean Weekly Temperature.						The sign + indicates a gaining rate. The quantities a, b, c, d, e , in the formula $a + 2b + \frac{1}{2}(c + d + e)$, are taken numerically, without regard to sign.			
Extremes of Temperature as shown by the Self-Registering Thermometer.									

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.

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

(1) WEEKLY RATES IN ORDER OF TIME.

Order of Merit.	July 31 to Aug. 7.	Aug. 7-14.	Aug. 14-21.	Aug. 21-28.	Aug. 28 to Sept. 4.	Sept. 4-11.	Sept. 11-18.	Sept. 18-25.	Sept. 25-28.	Sept. 28 to Oct. 5.	Oct. 5-12.	Oct. 12-19.	Oct. 19-26.	Oct. 26-30.	Oct. 30 to Nov. 6.	Nov. 6-13.	Nov. 13-20.
	Watch Horizontal. Dial up.				Watch Vertical. Pendant right.				Watch Vertical. Pendant left.				Watch Horizontal. Dial up.				
26	-21.0	-20.0	-21.7	-22.2	-28.0	-25.2	-16.1	-7.0	-12.8	-8.9	-8.1	-16.8	-20.9	-25.1	-30.9	-35.8	-22.1
27	+8.8	+8.4	+7.9	+4.2	+0.6	+5.1	+1.9	-10.2	-47.8	+43.9	-28.7	-0.3	+3.8	+2.1	+6.6	+8.2	+10.6
28	+6.3	+0.9	-2.0	-3.8	-5.1	-4.6	+6.7	+4.7	+11.2	+4.2	+2.3	+13.2	+6.0	-2.2	-6.0	-8.4	-9.3
29	+19.0	+11.1	+13.0	+19.1	+25.9	+28.5	+14.2	+20.7	+23.8	+21.0	+25.9	+16.4	+27.3	+15.7	+12.0	+6.6	+6.4
30	+1.8	+1.4	+0.2	+3.0	+2.7	+5.2	-4.1	+8.8	+22.9	+14.7	+14.2	+4.2	+10.2	+18.9	+9.2	+9.1	+0.5
31	+39.0	+40.8	+42.0	+44.8	+46.2	+48.2	+37.3	+32.6	+19.6	+31.0	+35.4	+52.0	+57.9	+57.1	+50.9	+46.1	+45.1
32	+3.3	+3.6	+3.8	+2.3	+1.7	+0.4	+1.8	+7.7	+19.1	+2.8	+13.0	+14.6	+1.0	-4.4	-1.8	-7.2	-6.4
33	+0.8	+0.5	+0.4	-2.1	-0.8	-5.3	-21.0	-17.9	-12.6	-14.0	-9.8	-5.2	-5.0	-19.3	-16.6	-17.7	-13.6
34	+8.6	+6.1	+0.0	+0.8	-2.0	-2.8	0.0	+12.1	+13.7	+12.8	+15.3	+19.6	+4.2	+5.2	+3.9	+2.6	+0.8
35	-11.4	-9.1	-9.4	-16.0	-7.7	-12.8	-2.8	+28.5	-7.5	+10.7	+24.0	-4.6	-14.7	-17.5	-14.2	-21.3	-21.3
36	+3.2	+5.7	+9.5	+5.6	+3.8	+3.8	+11.8	-4.2	+10.0	-16.3	-0.5	+22.2	+12.7	+8.3	+3.8	+1.6	+0.3
37	+13.8	+13.9	+20.3	+20.8	+22.3	+22.0	+21.9	+41.8	0.0	+38.3	+45.0	+28.9	+35.0	+36.8	+40.2	+39.5	+44.2
38	-9.0	-9.1	-9.5	-6.5	+1.1	-8.0	-5.2	+0.4	-17.5	+1.0	+11.9	+7.3	-9.2	-11.7	-8.1	-12.6	-12.4
39	+7.7	+7.9	+8.3	+10.5	+11.1	+12.4	+3.0	+34.8	+1.4	+8.2	+40.4	+10.8	+22.4	+21.6	+20.0	+20.2	+19.5
40	+72.9	+76.5	+79.7	+78.2	+77.0	+74.3	+80.6	+52.3	+55.8	+39.2	+55.6	+52.0	+85.0	+83.8	+80.0	+78.6	+79.9
41	+27.9	+32.0	+21.6	+36.9	+34.3	+20.0	+30.6	+48.1	+45.9	+45.0	+42.2	+38.3	+35.0	+38.4	+38.3	+42.4	+36.6
42	+17.1	+26.1	+29.6	+26.5	+25.3	+21.9	+30.8	+8.1	+21.5	+9.8	+10.9	+39.8	+31.7	+31.0	+25.9	+25.4	+26.9
43	-2.0	-2.5	-2.8	-1.0	-3.2	-5.4	-0.5	-3.2	-18.9	+21.0	-20.7	+11.7	-0.7	-0.6	-6.8	-7.3	-6.6
44	+17.9	+22.6	+24.6	+28.5	+21.0	+17.4	+10.5	+13.1	+9.8	+10.0	+11.4	+13.7	+12.0	+28.8	+14.5	+3.7	+10.7
45	-9.9	-12.8	-14.6	-18.6	-22.6	-24.7	-33.3	-28.4	-0.7	-34.1	-19.1	-36.3	-35.1	-40.0	-40.7	-42.2	-40.8
46	+14.1	+17.9	+16.3	+14.6	+10.2	+10.1	+0.6	+28.0	+24.8	+22.9	+59.3	+15.8	+8.0	+7.1	+11.3	+15.7	+7.9
47	+33.3	+36.9	+39.0	+38.2	+38.5	+38.9	+36.4	+0.4	+48.5	+32.0	+1.1	+46.8	+48.2	+39.0	+31.0	+25.0	+32.7
48	+146.2	+145.2	+142.2	+139.9	+148.0	+143.4	+138.5	+166.4	+128.4	+156.3	+149.6	+132.9	+139.3	+136.7	+149.2	+144.5	+154.9
49	+10.0	+12.0	+12.7	+12.6	+11.7	+12.2	+12.6	+70.5	+53.0	+61.8	+72.5	+60.8	+18.4	+19.6	+14.1	+17.2	+15.1
50	+0.8	+0.2	0.7	-2.4	-1.9	-4.9	-1.1	+6.5	+32.4	+7.0	+13.5	+4.7	+15.8	+22.5	+10.6	+3.5	-0.3
51	67.1	71.5	73.9	66.1	63.7	62.3	86.0	88.8	90.4	90.3	68.1	62.5	56.3	55.9	54.6	52.3	
52	61.0	69.2	68.5	61.7	60.6	59.0	76.0	85.0	88.9	88.8	61.7	61.8	51.0	51.6	53.1	50.8	
53	70.0	74.1	76.1	67.7	66.8	64.5	89.2	92.2	91.7	92.0	84.8	63.2	63.6	58.6	57.9	56.5	

* The Weekly Rates have been computed from the rates for three days.
 During the period Sept. 11 to Oct. 6, the watches were placed in an oven heated by jets of gas, the temperature being regulated by Kailber'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.

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ROYAL OBSERVATORY, GREENWICH, FROM 1909 JULY 31 TO 1909 NOVEMBER 20.

(2) ABSTRACT OF THE PRINCIPAL CHANGES OF RATES.

Difference between greatest and least Weekly Rates. Dial up. a.	Greatest difference between the next. Dial up. b.	Difference of Weekly Rates.			a + 2b	Trial Number. s + 2b + $\frac{1}{2}(\frac{a+b}{2})$	NAME OF MAKER.	No.	ADDRESS OF MAKER.
		Pendant up. c.	Pendant right. Dial up. d.	Pendant left. Dial up. e.					
19.7	13.7	+ 8.9	+ 8.7	+ 7.6	47.1	53.5	S. Yeomans	59430	48 Spon Street, Coventry.
16.7	6.4	-20.0	-48.3	+43.4	28.5	59.8	J. White & Sons	27663	Earlsdon, Coventry.
27.1	11.8	-6.5	+1.2	-5.8	49.7	54.2	J. Hewitt	1885	54 Holyhead Road, Coventry.
23.2	12.3	+8.0	+8.5	+5.7	47.8	54.2	C. J. Hill	149601	Russell House, Chapel Fields, Coventry.
23.0	9.7	+11.4	+22.8	+14.6	42.4	54.3	J. Hewitt	60023	54 Holyhead Road, Coventry.
20.6	10.9	-10.7	-25.1	-13.7	42.4	54.3	S. Yeomans	95992	48 Spon Street, Coventry.
23.7	13.6	+2.2	+10.9	-5.4	50.9	54.7	J. Hewitt	1877	54 Holyhead Road, Coventry.
23.1	15.7	-0.8	+0.5	-0.9	54.5	55.1	Chandler	57415	4 Victoria Terrace, Leamington.
22.4	15.4	+4.4	+3.9	+3.0	53.2	56.6	R. Jay	7349	366 Essex Road, Islington, N.
18.5	10.1	+30.0	-3.8	+14.4	38.7	56.7	J. Hewitt	1880	54 Holyhead Road, Coventry.
21.9	9.5	-19.4	-7.0	-33.3	40.9	57.3	Butt	12365	32 Eastgate Row, Chester.
30.4	6.1	+18.0	-25.4	+12.9	42.6	58.0	Phillips	1885	4 Finsbury Pavement, London, E.C.
19.9	16.5	+5.1	-18.6	+0.8	52.9	58.7	Sheffield Goldsmiths Co.	42243	11 Fargate and Chapel Walk, Sheffield.
19.4	11.6	+30.7	-5.5	+1.3	42.6	59.1	Lilley & Sons	1725	10 London Street, Fenchurch Street, E.C.
19.1	7.0	-27.3	-30.5	-47.1	33.1	59.7	S. Yeomans	95993	48 Spon Street, Coventry.
22.4	15.3	+6.7	+10.8	+10.5	53.0	60.0	Elhrhardt	51895	Barr Street, Birmingham.
22.7	9.0	-25.8	-13.8	-25.5	40.0	60.2	Beards & Co.	1851	Bedford Arcade, Plymouth.
19.9	12.4	-18.1	-25.0	+14.9	44.7	60.4	Watkins	1876	59 Carey Street, Chancery Lane, W.C.
27.3	16.3	+0.2	-2.3	-2.1	59.9	60.7	Outborth	37867	90 Norn Road, Scotland.
32.3	8.6	+11.0	+34.1	+0.7	49.5	60.8	J. Player & Son, Ltd.	36581	Belford Street, Coventry.
17.3	9.5	+35.5	+26.6	+14.7	36.3	61.0	J. Hewitt	1886	54 Holyhead Road, Coventry.
19.5	9.2	-41.8	+5.9	-10.6	37.9	61.6	F. G. Salfs	1844	19 Royal Hill, Greenwich.
22.0	12.5	+21.8	-7.3	+20.6	47.0	62.6	J. White & Sons	37865	Earlsdon, Coventry.
10.8	5.5	+54.7	+36.2	+45.0	21.8	62.7	Newsome	145708	14 and 15 Butts, Coventry.
29.6	11.9	+8.2	+30.6	+5.2	53.4	63.5	J. Hewitt	1881	54 Holyhead Road, Coventry.
Mean Weekly Temperature.							The sign + indicates a gaining rate. The quantities a, b, c, d, e, in the formula s + 2b + $\frac{1}{2}(\frac{a+b}{2})$, are taken numerically, without regard to sign.		
Extremes of Temperature as shown by the Self-Registering Thermometer.									

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.

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

(1) WEEKLY RATES IN ORDER OF TIME.

Order of Merit.	July 31 to Aug. 7.	Aug. 7-14.	Aug. 14-21.	Aug. 21-28.	Aug. 28 to Sept. 4.	Sept. 4-11.	Sept. 11-18.	Sept. 18-25.	Sept. 25-28.	Sept. 28 to Oct. 2.	Oct. 2-9.	Oct. 9-16.	Oct. 16-23.	Oct. 23-30.	Oct. 30 to Nov. 6.	Nov. 6-13.	Nov. 13-20.
	Watch Horizontal. Dial up.										Watch Horizontal. Dial up.						
	Watch Vertical. Pend. up.	Watch Vertical. Pend. right.	Watch Vertical. Pend. left.	Watch Vertical. Pend. up.	Watch Vertical. Pend. right.	Watch Vertical. Pend. left.	Watch Vertical. Pend. up.	Watch Vertical. Pend. right.	Watch Vertical. Pend. left.	Watch Vertical. Pend. up.	Watch Vertical. Pend. right.	Watch Vertical. Pend. left.	Watch Vertical. Pend. up.	Watch Vertical. Pend. right.	Watch Vertical. Pend. left.	Watch Vertical. Pend. up.	Watch Vertical. Pend. right.
51	+16.9	+18.8	+21.0	+24.2	+26.8	+23.0	+16.6	+26.8	+12.8	+9.8	+30.3	+16.6	+25.8	+27.6	+10.4	+14.0	+6.9
52	+1.8	-2.4	-4.2	-1.3	-2.1	-6.7	-7.1	-21.2	-16.6	-10.3	-8.6	+3.6	+11.9	+5.1	+7.8	+4.0	+18.1
53	+4.6	+6.7	+1.3	-1.0	-2.1	+1.9	+13.2	-9.8	-5.1	-8.9	-8.6	+15.0	+2.5	+1.3	-4.3	-4.1	-5.9
54	-12.8	-12.4	-11.1	-14.2	-19.1	-20.1	-11.0	-24.0	-30.1	-32.7	-30.1	-5.0	-5.9	-5.4	-19.6	-18.6	-24.3
55	+18.4	+22.6	+24.0	+22.8	+15.2	+16.5	+15.1	+0.4	-29.9	-27.1	+4.6	+26.3	+22.5	+18.5	+18.7	+15.7	+10.5
56	+13.2	+19.7	+18.4	+14.6	+20.0	+18.4	+25.4	+33.8	+34.5	-33.6	+36.1	+33.2	+17.0	+15.8	+13.6	+15.1	+10.7
57	+24.9	+25.8	+24.8	+27.2	+30.0	+29.3	+15.6	+4.0	+19.6	-14.7	+2.6	+22.5	+38.8	+29.5	+30.9	+29.3	+33.4
58	-11.2	-5.5	-2.4	-1.5	+1.8	-9.6	-17.1	-44.0	-72.8	-94.5	-17.9	-8.2	-15.9	-15.8	-18.3	-22.3	-20.4
59	+29.1	+33.2	+33.8	+29.3	+28.6	+26.7	+32.6	+84.2	+74.9	+91.9	+69.5	+35.3	+33.1	+30.1	+24.1	+23.4	+16.4
60	+4.0	+9.1	+10.0	+4.9	+3.4	-0.8	+2.7	-27.5	-29.2	-32.2	-23.1	+15.1	+6.7	+3.5	-2.5	-4.7	-3.8
61	+8.4	+11.7	+14.9	+23.1	+22.3	+24.1	+26.2	+18.6	-36.9	+79.8	+30.6	+42.2	+39.5	+36.5	+35.2	+33.2	+34.9
62	+5.6	-1.9	+1.2	+0.6	+1.5	+1.6	-14.4	-37.3	-47.4	-52.0	-38.7	-14.6	-1.1	-1.9	-3.0	-3.7	-4.9
63	-4.1	-5.7	-5.3	-7.6	-4.7	-10.0	-19.4	-47.6	-31.0	-3.3	-57.9	-11.4	-8.9	-24.8	-17.1	-17.4	-14.9
64	+12.8	+18.1	+18.6	+18.1	+17.2	+18.2	+18.3	-24.2	-92.6	-94.8	-20.0	+17.6	+18.6	+16.2	+3.0	+5.2	+6.2
65	+8.0	+13.7	+7.1	+6.5	+15.5	+0.1	+1.2	+41.1	+43.4	+46.9	+50.9	+21.7	+12.7	+4.9	+13.0	-1.4	+1.6
66	+18.8	+22.0	+18.0	+19.5	+25.8	+34.0	+36.7	+69.5	+65.3	+62.3	+68.6	+33.5	+15.4	+28.0	+26.0	+29.4	+24.8
67	-33.0	-23.8	-22.5	-20.8	-18.7	-18.0	-10.1	+21.2	-35.7	-23.9	+28.4	-5.0	-20.9	-20.8	-20.7	-28.7	-13.2
68	+10.2	+16.2	+13.8	+21.0	+22.5	+25.2	+11.2	-11.9	-40.6	-20.1	-32.9	+16.5	+27.4	+34.8	+30.1	+30.3	+31.4
69	-18.3	-19.7	-21.3	-22.9	-22.5	-27.9	-24.4	-7.0	0.0	+95.5	-92.1	-22.3	-31.9	-40.1	-49.3	-53.4	-53.2
70	+13.2	+17.1	+17.6	+15.2	+12.1	+11.9	+16.5	-47.3	-7.7	-60.9	-49.4	+21.2	+11.9	+12.1	+2.6	-0.2	+3.2
71	+34.3	+36.6	+38.6	+41.2	+41.8	+45.5	+55.0	-18.2	+39.7	+81.4	-3.7	+57.0	+42.1	+47.8	+43.1	+43.7	+41.4
72	+7.9	+2.9	+4.2	+7.9	+6.8	+5.1	-0.5	-54.6	+55.8	-51.1	-66.2	-5.2	+11.7	+8.5	+7.1	+4.1	-2.2
73	67.1	71.5	73.9	66.1	63.7	62.3	86.0	88.8	90.4	90.3	63.1	62.5	56.3	55.9	54.6	52.3	50.8
74	61.0	69.2	68.5	61.7	60.6	59.0	76.0	85.0	88.9	88.8	61.7	61.8	51.0	51.6	53.1	50.8	50.8
75	70.0	74.1	76.1	67.7	66.8	64.5	89.2	92.2	91.7	92.0	64.8	63.2	63.6	58.6	57.9	56.5	56.5

* The Weekly Rates have been computed from the rates for three days. During the period Sept. 11 to Oct. 9, the watches were placed in an oven heated by jets of gas, the temperature being regulated by Kallberg'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. 11 to Oct. 9, the watches were placed in an oven heated by jets of gas, the temperature being regulated by Kallberg'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 1909 JULY 31 TO 1909 NOVEMBER 20.

(2) ABSTRACT OF THE PRINCIPAL CHANGES OF RATES.

Difference between greatest and least Weekly Rates.		Difference of Weekly Rates.			a + 2b	Trial Number. a + 2b + $\frac{1}{2}(c + \frac{d+e}{3})$	NAME OF MAKER.	No.	ADDRESS OF MAKER.
Dial up. a.	Dial up. b.	Pendant right - Dial up. c.	Pendant right - Dial up. d.	Pendant left - Dial up. e.					
17.2	17.2	+11.7	-29.4	-6.8	51.6	63.5	Goddard.....	1859	202 Bishopgate Street Without, E.C.
25.2	14.3	-13.1	-14.8	-8.5	53.8	64.3	J. Player & Son.....	35206	Bedford Street, Coventry.
21.9	12.5	-23.8	-19.2	-23.0	46.9	65.6	Curley & Clemence.....	51782	30 Ely Place, Holborn Circus, E.C.
20.2	14.2	-19.1	-22.1	-24.7	48.6	66.0	J. Player & Son, Ltd.....	35412	Bedford Street, Coventry.
24.2	8.4	-18.2	-50.6	-47.8	41.0	66.5	Usher & Cole.....	28668	339 St John's Street, Clerkenwell.
22.5	16.2	+5.7	+5.2	-62.9	54.9	69.2	Le Cheminant.....	18722	81 Wigmore Street, Cavendish Square, W.
23.2	16.3	-15.8	+0.5	-33.8	55.8	69.4	L. Hall.....	1787	17 Mercer Row, Louth, Lincoln.
24.1	11.4	-18.3	-60.1	-21.8	46.9	69.7	Usher & Cole.....	30407	339 St John Street, Clerkenwell.
18.9	7.0	+42.9	+40.9	+57.9	32.9	70.9	Wright & Craighhead.....	8201	319 St John Street, Clerkenwell.
24.4	8.4	-34.2	-38.1	-41.1	41.2	71.5	Usher & Cole.....	30405	339 St John Street, Clerkenwell.
33.8	8.2	-9.6	-71.1	+45.6	50.2	74.5	Bryer & Son.....	1873	53 and 54 Barbican, London, E.C.
20.2	16.0	-23.5	-32.9	-37.5	52.2	75.7	Brown & Son.....	2138	65 Market Place, Sheffield.
20.7	16.0	-37.4	-15.6	+12.1	52.7	76.0	J. Hewitt.....	60448	54 Holyhead Road, Coventry.
14.1	8.2	-40.1	-110.6	-52.8	30.5	77.8	Chandler.....	1348	4 Victoria Terrace, Leamington.
23.1	15.4	+24.5	+31.9	+35.4	53.9	82.4	Dykes Bros.....	51615	11 Royal Exchange Square, Glasgow.
21.3	13.1	+34.0	+30.2	+27.2	57.5	84.1	Ehrhardt.....	51894	Barr Street, Birmingham.
23.0	15.9	+32.4	-28.1	-22.3	59.8	84.4	Birch & Gaydon.....	2540	153 Fenchurch Street, London, E.C.
24.6	14.0	-36.3	-54.5	-34.0	52.6	85.6	Garrard.....	11502	64 Eastgate, Louth, Lincolnshire.
35.1	9.6	-26.2	+23.4	+116.9	54.3	90.8	J. Player & Son, Ltd.....	36579	Bedford Street, Coventry.
21.4	9.5	-67.3	-26.6	-79.8	40.4	91.8	Bryer & Son.....	1855	53 and 54 Barbican, London, E.C.
22.7	14.9	-67.0	-16.3	+26.4	52.5	92.9	J. Hewitt.....	1879	54 Holyhead Road, Coventry.
16.9	16.9	-57.5	+58.7	-48.2	50.7	97.3	Newsome & Co.....	152373	14 and 15 Butts, Coventry.
Mean Weekly Temperature.							The sign + indicates a gaining rate. The quantities a, b, c, d, e, in the formula $a + 2b + \frac{1}{2}(c + \frac{d+e}{3})$, are taken numerically, without regard to sign.		
Extremes of Temperature as shown by the Self-Registering Thermometer.									
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.									