

RATES OF CHRONOMETER WATCHES
ON TRIAL
FOR PURCHASE BY THE BOARD OF ADMIRALTY,
AT THE
ROYAL OBSERVATORY, GREENWICH,
FROM 1906 AUGUST 4 TO 1906 NOVEMBER 24.

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(1) WEEKLY RATES IN ORDER OF TIME.

[illegible]

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

During the period Sept. 15 to Oct. 13, 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 of four days.

gas, the temperature being regulated by Kullberg's automatic governor, none of the injurious products of combustion can enter.

(2) ABSTRACT OF THE PRINCIPAL CHANGES OF RATES

Difference between highest and lowest Weekly Dial up. a.	Greatest difference on one week and the next. Dial up. b.	Difference of Weekly Rates.			a + 2b	Trial Number. a + 2b + c (+ $\frac{a+b}{2}$)	NAME MAKER.	No.	ADDRESS MAKER.
		Pendant up. -Dial up.	Pendant right -Dial up.	Pendant left -Dial up.					
		c.	d.	e.					
25-1	11-3	+18-8	+18-8	+14-6	47-7	63-7	Chandler.....	56987	4 Victoria Terrace, Royal Lambington Spa.
25-2	11-8	+18-8	+18-8	+14-6	47-7	63-7	Wright & Craghead.....	8201	339 St John's Street, Clerkenwell, E.C.
25-7	13-2	-10-7	-9-7	-8-3	54-1	63-7	L. Hall.....	1778	17 Mercer Row, Leinth, Lincolnshire.
25-10	10-0	-9-7	-15-1	-12-4	54-0	63-7	Thornloe.....	78803	Stanton House, Coventry.
25-13	7-9	+20-0	+20-7	+20-4	41-7	68-8	Wright & Craghead.....	8260	319 St John's Street, Clerkenwell, E.C.
25-4	13-7	- 0-2	-22-9	-22-2	51-8	64-1	Grant & Sons.....	34573	66 King Street, South Shields.
25-8	15-1	+ 4-7	- 0-4	-27-6	57-0	65-1	Usher & Cole.....	31110	339 St John's Street, Clerkenwell.
25-12	6-5	+24-0	+26-8	+28-6	45-2	65-6	Chandler.....	56189	4 Victoria Terrace, Royal Lambington Spa.
25-18	13-1	+23-0	+24-6	+21-7	47-0	68-8	G. Sims.....	65351	9 Green Terrace, Rosebery Avenue, Clerkenwell.
25-15	10-5	+22-3	+22-1	+24-5	47-5	68-5	J. Player & Son.....	31186	Bedford Street, Coventry.
15-6	7-8	-27-0	+82-2	-34-5	32-2	68-8	Richardson.....	17780	7 Sussex Street, Middleborough.
24-8	10-4	-24-4	-24-3	-29-9	45-6	68-8	J. Player & Son.....	35297	Bedford Street, Coventry.
25-8	16-9	+11-1	+10-2	+11-1	59-6	68-8	Chandler.....	57415	4 Victoria Terrace, Royal Lambington Spa.
25-5	12-8	-12-6	-27-9	-11-8	56-1	68-9	H. White & Co.....	1650	63 Chesapeake, London, E.C.
24-9	13-1	+23-5	+19-9	+21-4	51-1	70-8	Newsome & Co.....	151090	14 and 15 The Butts, Coventry.
41-1	9-8	+10-8	+14-4	+11-9	60-7	70-5	Chandler.....	56466	4 Victoria Terrace, Royal Lambington Spa.
41-2	9-8	+10-4	+17-9	+27-1	45-5	71-0	Usher & Cole.....	31129	339 St John's Street, Clerkenwell.
41-7	13-3	+13-3	+19-5	+28-3	58-3	71-0	Newsome & Co.....	145700	14 and 15 The Butts, Coventry.
41-2	9-2	+14-2	+14-4	+13-8	68-9	71-0	J. Player & Son.....	30610	Bedford Street, Coventry.
25-7	11-4	+20-3	+27-8	+21-3	46-5	71-0	Kullberg.....	6013	105 Liverpool Road, London, N.
31-0	11-9	-21-0	-20-3	-24-3	54-8	72-6	Armstrong Bros.....	1469	88 and 90 Deansgate, Manchester.
31-1	20-3	- 8-8	-12-2	- 5-6	68-7	73-6	J. Player & Son.....	35291	Bedford Street, Coventry.
31-2	17-6	+10-0	+17-4	+10-4	59-4	73-6	Carley & Clemens.....	51610	30 Ely Place, Holborn Circus.
31-8	14-7	+20-5	+20-3	+23-8	54-7	73-6	G. Sims.....	65120	2 Green Terrace, Rosebery Avenue, Clerkenwell.
32-5	13-6	+17-9	+19-0	-11-0	60-8	73-6	Carroll.....	11245	20 London Street, London, E.C.
32-2	12-2	+ 9-7	+30-9	+48-3	56-6	73-9	M. F. Dent.....	32582	34 Cockspur Street, Charing Cross, London, S.W.
32-9	22-9	- 7-5	- 7-7	- 8-8	69-7	75-3	Carroll.....	6984	20 London Street, London, E.C.
32-2	10-7	+10-0	+17-4	+10-4	59-4	73-6	Carley & Clemens.....	51610	30 Ely Place, Holborn Circus.
32-5	9-9	+18-4	+28-3	+23-3	43-3	75-6	J. Player & Son.....	33987	Bedford Street, Coventry.
28-4	20-3	+ 8-6	+23-6	+23-6	64-0	75-6	Reed.....	1752	54 Strand, London, W.C.
32-2	19-5	+17-2	+ 6-6	- 9-5	69-2	76-5	Reid & Sons.....	87693	41 Grey Street, Newcastle-on-Tyne.
32-2	15-5	- 9-4	- 6-6	- 8-9	69-2	76-5	S. Lyon, Junr.....	57494	8, 10 and 27 Church Street, Blackpool.
28-4	10-0	+22-7	+ 7-8	- 2-1	59-9	76-5	Snorro.....	14657	King Street, Newcastle-on-Tyne.
28-4	14-4	+23-1	+23-1	+23-1	64-0	76-5	J. Player & Son.....	33913	Bedford Street, Coventry.
28-4	8-0	+48-2	+48-2	+40-3	42-4	78-6	Father & Ashworth.....	14071	4 Cambridge Crescent, Harrogate.
Mean Weekly Temperature.									
The sign + indicates a gaining rate.									
The quantities a, b, c, d, e, in the formula a + 2b + c (+ $\frac{a+b}{2}$), are taken numerically, without regard to signs.									
Extremes of Temperature as shown by the Self-Registering Thermometer.									
Only those watches have been included in this list for which the trial number did not exceed 100.									

The sign + indicates a gaining rate

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

Mean Weekly Temperature

Extremes of Temperature as shown by the Self-Registering Thermometer

Only those watches have been included in this list for which the trial number did not exceed 100.

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

(1) WEEKLY RATES IN ORDER OF TIME.

Order of Merit.	Aug. 4-11.	Aug. 11-18.	Aug. 18-25.	Aug. 25 to Sept. 1.	Sept. 1-8.	Sept. 8-15.	Sept. 15-22.	Sept. 22-29.	Sept. 29 to Oct. 5.	Oct. 5-12.	Oct. 12-19.	Oct. 19-26.	Oct. 26 to Nov. 2.	Nov. 2-9.	Nov. 9-16.	Nov. 16-23.
	Watch Horizontal. Dial up.								Watch Vertical. Pendul. right. Dial up.	Watch Vertical. Pendul. right. Dial up.	Watch Vertical. Pendul. left. Dial up.	Watch Vertical. Pendul. left. Dial up.	Watch Horizontal. Dial up.			
71	+ 1.4	- 13.9	- 16.4	- 15.2	- 17.1	- 17.1	- 17.5	- 10.0	- 43.6	+ 1.2	- 6.0	- 21.4	- 0.5	- 0.9	- 7.7	- 10.1
72	+ 0.5	- 4.8	- 4.8	- 13.0	- 13.0	- 13.0	- 22.1	- 22.1	- 22.9	+ 20.2	- 22.9	- 22.9	- 22.9	- 22.9	- 22.9	- 22.9
73	+ 2.6	+ 9.2	+ 7.0	+ 8.6	+ 8.6	+ 7.8	+ 13.8	+ 3.2	+ 11.2	- 0.7	+ 4.0	+ 8.0	+ 5.9	+ 18.4	+ 10.7	+ 9.8
74	+ 7.8	+ 10.1	+ 18.0	+ 10.3	+ 8.6	+ 10.2	+ 12.7	+ 7.4	+ 1.9	+ 10.5	- 7.9	+ 18.4	+ 17.4	+ 27.4	+ 28.6	+ 14.4
75	- 28.5	- 20.2	- 31.0	- 30.4	- 22.9	- 17.8	- 13.3	0.4	+ 1.6	0.0	+ 0.6	- 6.0	- 27.9	- 26.5	- 29.8	- 20.1
76	- 9.0	- 10.2	- 9.9	- 9.1	- 6.1	+ 0.6	- 3.0	- 4.6	- 2.3	- 0.0	+ 2.1	+ 0.5	+ 12.1	- 6.9	- 17.2	- 30.7
77	- 9.1	- 4.4	- 9.5	- 10.3	- 28.4	- 28.4	- 22.7	- 33.8	- 12.8	- 31.0	- 37.1	- 10.1	- 27.1	- 67.0	- 38.4	- 41.8
78	+ 1.0	- 18.4	- 22.8	+ 20.1	+ 1.7	- 6.5	- 13.8	- 13.1	- 9.2	- 5.8	- 20.4	+ 19.7	+ 12.1	+ 23.1	+ 20.2	+ 17.7
79	+ 15.0	- 18.2	+ 17.7	+ 10.9	+ 8.1	+ 4.9	+ 12.7	+ 14.2	+ 11.2	+ 18.0	+ 15.6	+ 17.9	+ 38.9	+ 18.9	+ 15.7	+ 12.8
80	+ 15.0	- 18.2	+ 17.7	+ 10.9	+ 8.1	+ 4.9	+ 12.7	+ 14.2	+ 11.2	+ 18.0	+ 15.6	+ 17.9	+ 38.9	+ 18.9	+ 15.7	+ 12.8
81	+ 12.1	+ 6.4	+ 3.9	- 6.1	- 7.6	- 5.4	+ 16.8	+ 13.5	- 13.5	- 7.9	+ 15.6	+ 21.8	+ 9.0	+ 10.9	+ 0.4	- 1.1
82	+ 13.9	+ 13.5	+ 14.8	+ 8.3	+ 7.4	+ 5.9	+ 5.8	- 13.8	- 11.0	- 12.4	- 8.8	- 7.8	- 3.0	- 8.9	- 20.0	- 21.3
83	+ 1.0	- 18.4	- 22.8	+ 20.1	+ 1.7	- 6.5	- 13.8	- 13.1	- 9.2	- 5.8	- 20.4	+ 19.7	+ 12.1	+ 23.1	+ 20.2	+ 17.7
84	- 0.9	- 1.9	- 1.0	- 5.4	+ 1.1	+ 9.6	+ 8.9	+ 43.6	+ 39.2	+ 37.6	+ 44.5	+ 14.8	+ 26.2	+ 20.8	+ 26.1	+ 36.9
85	- 0.9	- 1.9	- 1.0	- 5.4	+ 1.1	+ 9.6	+ 8.9	+ 43.6	+ 39.2	+ 37.6	+ 44.5	+ 14.8	+ 26.2	+ 20.8	+ 26.1	+ 36.9
86	+ 14.9	+ 14.9	+ 15.0	+ 7.4	+ 3.6	+ 8.9	- 6.7	+ 8.6	+ 6.4	+ 10.3	- 5.1	- 8.9	- 13.8	+ 17.8	- 6.2	+ 12.5
87	+ 11.7	+ 9.3	+ 9.7	+ 10.3	+ 10.3	+ 20.7	+ 45.0	+ 46.4	+ 50.4	+ 28.2	+ 28.2	+ 28.2	+ 31.1	+ 28.6	+ 43.1	+ 26.8
88	- 15.8	- 15.8	- 15.8	- 11.3	- 6.7	- 8.3	- 9.9	+ 5.8	+ 4.4	+ 5.0	+ 0.2	- 17.2	- 36.6	- 39.6	- 42.6	- 37.7
89	- 9.5	- 10.8	- 12.6	- 14.6	- 15.5	- 13.0	- 36.0	- 43.4	- 36.7	- 40.1	- 42.7	- 36.7	- 37.4	- 4.6	- 10.7	- 13.5
90	- 18.5	- 26.2	- 19.9	- 18.9	+ 15.7	+ 17.4	+ 8.3	+ 25.9	+ 38.1	+ 12.5	+ 14.2	- 8.7	+ 30.7	+ 10.9	+ 3.1	+ 35.8
91	+ 9.4	+ 8.7	+ 10.5	+ 13.4	+ 18.4	+ 23.4	+ 18.0	- 28.7	- 1.6	- 18.4	- 10.9	+ 24.3	+ 6.6	+ 10.9	+ 4.1	+ 1.9
92	+ 14.1	+ 5.1	+ 10.5	+ 13.4	+ 18.4	+ 23.4	+ 18.0	- 28.7	- 1.6	- 18.4	- 10.9	+ 24.3	+ 6.6	+ 10.9	+ 4.1	+ 1.9
93	+ 9.0	+ 4.4	- 8.4	- 6.1	- 10.2	- 12.9	- 10.3	- 36.7	- 31.3	- 3.8	- 6.8	- 3.8	- 5.8	- 19.5	- 21.0	- 30.1
94	- 0.9	- 9.8	- 19.1	- 21.6	- 20.5	- 25.2	- 14.5	+ 19.6	+ 20.9	+ 22.8	- 26.8	- 6.7	- 22.9	- 31.6	- 31.1	- 29.1
95	- 4.1	- 9.8	- 19.1	- 21.6	- 20.5	- 25.2	- 14.5	+ 19.6	+ 20.9	+ 22.8	- 26.8	- 6.7	- 22.9	- 31.6	- 31.1	- 29.1
96	- 1.4	+ 0.8	+ 9.8	+ 2.7	+ 6.6	+ 12.5	- 0.6	- 21.7	- 20.4	- 23.5	- 24.2	- 31.3	- 21.1	- 22.8	- 34.2	- 43.5
97	+ 8.2	+ 11.1	+ 13.1	+ 8.6	+ 9.8	- 5.7	+ 7.8	+ 11.6	- 36.7	- 14.7	- 1.8	+ 14.6	- 5.8	- 9.0	- 21.0	- 21.5
98	+ 25.3	+ 14.9	+ 12.8	+ 9.8	+ 15.2	- 5.9	+ 7.5	+ 3.6	+ 4.4	+ 9.8	+ 1.1	+ 0.1	+ 6.9	+ 13.0	+ 20.1	+ 14.7
99	+ 15.9	+ 16.9	+ 18.3	+ 18.8	+ 23.1	+ 26.9	+ 12.8	- 40.6	+ 18.5	- 35.0	- 36.7	+ 87.9	+ 88.9	+ 45.5	+ 47.0	+ 46.7
100	+ 15.0	+ 0.8	- 5.7	- 10.8	- 9.1	+ 17.6	- 6.4	- 0.2	+ 7.5	+ 14.5	+ 15.1	+ 19.9	+ 22.7	+ 24.2	+ 22.6	+ 33.0
101	- 19.4	- 19.6	- 16.2	- 14.9	- 8.0	- 13.4	+ 0.8	- 11.0	+ 17.7	+ 23.7	+ 0.5	+ 6.8	- 18.0	- 19.9	- 26.2	- 27.8
102	- 3.4	- 10.8	- 14.9	- 18.8	- 11.8	- 17.2	- 11.8	- 26.8	- 28.9	- 27.5	- 27.7	- 89.1	- 89.1	- 89.1	- 89.1	- 89.1
72 ^a	68 ^b	69 ^c	70 ^d	74 ^e	67 ^f	87 ^g	87 ^h	87 ⁱ	88 ^j	89 ^k	60 ^l	60 ^m	60 ⁿ	60 ^o	60 ^p	60 ^q
70 ^r	66 ^s	66 ^t	68 ^u	68 ^v	70 ^w	64 ^x	79 ^y	81 ^z	81 ^{aa}	81 ^{ab}	81 ^{ac}	81 ^{ad}	81 ^{ae}	81 ^{af}	81 ^{ag}	81 ^{ah}
74 ^{ai}	61 ^{aj}	71 ^{ak}	78 ^{al}	70 ^{am}	80 ^{an}	72 ^{ao}	80 ^{ap}	81 ^{aq}	81 ^{ar}	81 ^{as}	81 ^{at}	81 ^{au}	81 ^{av}	81 ^{aw}	81 ^{ax}	81 ^{ay}

* The Weekly Rates have been computed from the rates of three days.
 During the period Sept. 15 to Oct. 19, the watches were placed in an oven heated by jets of gas, the temperatures 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 of four days.

ROYAL OBSERVATORY, GREENWICH, FROM 1906 AUGUST 4 TO 1906 NOVEMBER 24.

(2) ABSTRACT OF THE PRINCIPAL CHANGES OF RATES.

Difference between greatest and least Weekly Rates.	Greatest difference between one week and next.	Difference of Weekly Rates.			Trial Number. $a + 2b + \frac{1}{2}(c + \frac{d}{2})$	NAME OF MAKER.	No.	ADDRESS OF MAKER.
Dial up. a.	Dial up. b.	Pendul. right. Dial up. c.	Pendul. left. Dial up. d.	Pendul. left. Dial up. e.				
23.6	20.9	+11.5	-24.1	+20.7	65.4	J. Hewitt.	60448	Holyhead Road, Coventry.
38.4	16.6	+1.8	-41.5	-11.8	71.6	Parkinson & Frodham.	7272	2 Bridge Row, Cannon Street, London, E.C.
27.2	21.6	-12.0	-10.8	+ 7.7	70.4	Newcome & Co.	14523	14 and 15 The Butts, Coventry.
27.2	21.6	-12.0	-10.8	+ 7.7	70.4	Hylands, Ltd.	57361	32 Chesapeake, London, E.C.
28.5	21.0	+12.2	+11.2	+ 9.6	71.6	Newcome & Co.	15138	14 and 15 The Butts, Coventry.
42.8	19.0	- 0.0	- 1.0	+ 1.3	81.2	Yeomans.	93431	48 Spon Street, Coventry.
37.4	17.0	-17.8	+ 8.6	- 6.6	71.4	Usher & Cole.	30098	239 St John's Street, Clerkenwell.
37.9	26.2	- 1.1	- 9.8	- 35.0	81.0	Yeomans.	80585	48 Spon Street, Coventry.
38.3	20.3	-23.0	-18.6	-21.0	66.9	Hylands, Ltd.	57363	32 Chesapeake, London, E.C.
39.3	11.8	-22.8	-29.0	-27.1	62.9	Ritchie.	50445	25 Leith Street, Edinburgh.
42.4	21.7	- 4.5	-39.6	-27.0	72.8	J. Hewitt.	57680	Holyhead Road, Coventry.
36.1	17.1	-17.9	-17.6	-17.1	70.3	G. Sims.	65148	2 Green Terrace, Rosebery Avenue, Clerkenwell.
27.4	20.9	+20.3	+10.0	-37.9	69.2	Newcome & Co.	15134	14 and 15 The Butts, Coventry.
37.5	20.0	+ 4.7	-10.0	-27.5	77.6	Yeomans.	80683	48 Spon Street, Coventry.
38.8	11.4	+32.2	+27.8	+25.7	61.6	Yeomans.	93439	48 Spon Street, Coventry.
23.2	22.7	+14.7	+14.3	+18.1	74.8	M. F. Dent.	32117	31 Cockspur Street, Charing Cross, London, S.W.
39.8	9.5	-14.7	-73.9	-81.9	89.7	J. Player & Son.	30812	Bedford Street, Coventry.
35.9	19.4	+10.6	+18.0	+20.1	74.7	J. Hewitt.	58449	Holyhead Road, Coventry.
34.2	22.0	-14.2	+17.1	+ 6.2	78.2	J. Hewitt.	60022	Holyhead Road, Coventry.
25.6	17.7	-41.0	-23.8	-39.6	61.0	Davis.	1779	25 Stratford Bargate, Boston.
37.5	15.2	+49.7	+ 9.5	- 7.6	89.8	J. Hewitt.	60328	Holyhead Road, Coventry.
40.8	16.2	-17.6	-32.5	-43.0	77.7	Thornhill.	71613	Stanton House, Coventry.
36.1	16.2	+32.2	+31.4	+36.7	68.6	Lister & Sons.	51612	9 Grey Street, Newcastle-on-Tyne.
36.2	17.7	-13.2	-39.3	-36.2	63.6	Newcome & Co.	14570	14 and 15 The Butts, Coventry.
62.2	13.1	- 7.0	-19.4	-12.5	88.4	Bonnicksen.	57496	16 Norfolk Street, Coventry.
41.2	19.9	- 6.3	-48.1	-25.9	81.0	Chandler.	1298	4 Victoria Terrace, Royal Leamington Spa.
46.5	20.8	-10.9	- 9.8	-24.0	87.1	Ed & Son.	37659	41 Grey Street, Newcastle-on-Tyne.
30.1	10.7	- 0.7	-15.4	-37.7	51.5	Yeomans.	80585	48 Spon Street, Coventry.
49.8	26.7	+ 9.7	+ 0.7	+ 7.7	97.2	Brown & Sons.	45050	65 Market Place, Sheffield.
41.8	22.8	- 9.0	+14.0	+29.0	87.4	Yeomans.	82315	48 Spon Street, Coventry.
42.7	21.6	-17.5	-18.0	-16.6	85.9	Newcome & Co.	14573	14 and 15 The Butts, Coventry.
Mean Weekly Temperature.						The sign + indicates a gaining rate.		
Extremes of Temperature as shown by the Self-Registering Thermometer.						The quantities a, b, c, d, e , in the formula $a + 2b + \frac{1}{2}(c + \frac{d}{2})$, are taken numerically, without regard to sign.		

Only those watches have been included in this list for which the trial number did not exceed 100.