

# RATES OF CHRONOMETERS

ON TRIAL

FOR PURCHASE BY THE BOARD OF ADMIRALTY,

AT THE

ROYAL OBSERVATORY, GREENWICH,

FROM 1895 JULY 6 TO 1896 JANUARY 25.

| NAME OF MAKER.                                                             | No.  | Days of the Week. | Construction of Receptment and Balance, from the Description furnished by the Maker. | (1.) WEEKLY RATES |            |            |                  |           |            |            |            |                    |            |             |             |
|----------------------------------------------------------------------------|------|-------------------|--------------------------------------------------------------------------------------|-------------------|------------|------------|------------------|-----------|------------|------------|------------|--------------------|------------|-------------|-------------|
|                                                                            |      |                   |                                                                                      | July 6-13         | July 13-20 | July 20-27 | July 27 to Aug 3 | 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 |
| Kullberg.....                                                              | 5512 | 2                 | Ordinary balance; palladium spring.                                                  | + 1.1             | - 1.1      | - 1.0      | - 1.3            | - 0.9     | - 1.5      | - 0.8      | + 0.2      | - 1.6              | - 2.8      | - 1.3       | - 0.6       |
| Uhrig.....                                                                 | 603  | 2                 | Uhrig's continually acting auxiliary; bright steel spring.                           | + 0.8             | + 1.0      | + 0.1      | - 3.4            | - 2.4     | - 4.1      | - 5.2      | - 3.4      | - 3.0              | 0.0        | + 0.4       | - 2.0       |
| Uhrig.....                                                                 | 612  | 2                 | Uhrig's continually acting auxiliary; bright steel spring.                           | - 4.4             | - 4.0      | - 4.8      | - 0.1            | - 0.6     | - 7.0      | - 8.0      | - 7.6      | - 0.7              | - 3.9      | - 3.1       | - 3.1       |
| Gardner.....                                                               | 5750 | 2                 | Compensation for extremes; reversed detent; palladium spring.                        | +13.2             | +14.2      | +13.8      | +11.5            | +11.6     | +11.1      | +11.7      | +12.8      | +12.8              | +10.2      | + 9.3       | + 8.5       |
| Webb.....                                                                  | 5512 | 2                 | Reversed detent; short palladium spring.                                             | -0.6              | -23.9      | -0.6       | -26.1            | -25.0     | -28.2      | -30.5      | -30.1      | -28.6              | -30.4      | -28.3       | -28.5       |
| Isaac.....                                                                 | 1941 | 2                 | Accessory to balance; palladium spring.                                              | + 2.9             | + 3.6      | + 2.1      | + 1.4            | + 3.3     | + 4.8      | + 6.3      | + 6.0      | + 4.1              | + 4.7      | + 5.8       | + 2.8       |
| Isaac.....                                                                 | 2001 | 2                 | Accessory to balance; palladium spring.                                              | + 1.5             | + 3.8      | + 3.0      | + 1.9            | + 1.8     | + 0.8      | + 1.8      | + 2.0      | + 1.8              | + 3.5      | + 5.8       | + 4.6       |
| Webb.....                                                                  | 5501 | 2                 | Reversed detent; short palladium spring.                                             | -0.7              | -28.3      | -0.6       | -28.0            | -27.0     | -28.5      | -30.0      | -29.0      | -28.0              | -28.4      | -28.4       | -28.4       |
| W. Dent & Co.....                                                          | 4726 | 2                 | Compensation for extremes; reversed detent; bright steel spring.                     | +11.0             | +10.6      | +11.0      | +10.9            | +10.9     | +10.9      | +10.9      | +10.9      | +10.9              | +10.9      | +10.9       | +10.9       |
| W. Dent & Co.....                                                          | 4726 | 2                 | Dent's balance; bright steel spring.                                                 | + 2.3             | + 1.6      | - 1.0      | - 1.6            | - 2.1     | - 2.5      | - 0.4      | - 3.6      | - 5.1              | - 4.3      | - 2.8       | - 3.5       |
| Kullberg.....                                                              | 5547 | 2                 | Accessory balance; reversed detent; palladium spring.                                | - 0.6             | + 0.4      | - 0.1      | - 0.9            | - 0.6     | + 0.2      | 0.0        | + 0.6      | + 0.7              | + 0.9      | - 0.4       | - 0.4       |
| Kullberg.....                                                              | 5548 | 2                 | Accessory balance; reversed detent; palladium spring.                                | - 0.4             | + 0.9      | + 0.1      | + 0.1            | + 0.6     | + 0.9      | + 1.1      | + 1.2      | + 1.4              | + 0.9      | + 1.1       | + 0.9       |
| Kullberg.....                                                              | 5549 | 2                 | Accessory balance; reversed detent; palladium spring.                                | - 0.4             | + 0.5      | 0.0        | - 1.5            | - 0.9     | - 1.5      | - 2.0      | - 2.7      | - 3.3              | - 3.6      | - 4.0       | - 4.0       |
| Kullberg.....                                                              | 5550 | 2                 | Accessory balance; reversed detent; palladium spring.                                | - 1.0             | + 1.4      | + 2.0      | + 1.0            | + 2.5     | + 2.6      | + 3.0      | + 3.4      | + 1.9              | + 1.5      | + 0.9       | + 3.0       |
| Kullberg.....                                                              | 5551 | 2                 | Accessory balance; reversed detent; palladium spring.                                | - 1.8             | + 0.6      | + 0.3      | - 1.3            | - 0.9     | - 1.8      | + 0.8      | + 0.6      | + 0.4              | + 0.5      | + 0.6       | + 5.2       |
| Pullington & Bate.....                                                     | 2280 | 2                 | Improved balance; bright steel spring.                                               | - 7.9             | - 7.0      | - 8.5      | - 8.5            | - 7.8     | - 7.7      | - 8.6      | - 2.6      | - 5.8              | - 4.1      | - 2.8       | - 4.4       |
| Johannsen & Co.....                                                        | 4499 | 2                 | Accessory compensation; palladium spring.                                            | + 0.8             | + 1.9      | + 0.9      | - 3.2            | - 3.4     | - 3.5      | - 2.4      | + 1.5      | + 4.3              | + 5.2      | + 4.6       | + 1.6       |
| Johannsen & Co.....                                                        | 4500 | 2                 | Accessory compensation; palladium spring.                                            | - 0.5             | + 0.7      | + 0.0      | - 3.0            | - 3.5     | - 3.8      | + 4.5      | + 5.5      | + 6.5              | + 7.8      | + 8.9       | + 9.0       |
| Johannsen & Co.....                                                        | 5546 | 2                 | Accessory balance; reversed detent; palladium spring.                                | - 1.4             | - 0.7      | + 1.0      | - 3.8            | - 4.1     | - 4.3      | - 0.9      | - 2.4      | - 1.7              | - 4.9      | - 5.0       | - 4.5       |
| Haswell & Sons.....                                                        | 2919 | 2                 | Non-magnetic balance and spring.                                                     | - 2.3             | - 3.0      | - 4.6      | - 6.3            | - 5.4     | - 7.1      | - 9.4      | - 10.7     | - 4.9              | - 4.9      | - 6.5       | - 12.3      |
| Kullberg.....                                                              | 5507 | 2                 | Accessory balance; reversed detent; palladium spring.                                | - 1.4             | - 1.2      | - 3.6      | - 0.0            | - 5.3     | - 7.0      | - 5.8      | - 6.4      | - 8.6              | - 9.6      | - 8.1       | - 7.3       |
| Kullberg.....                                                              | 5508 | 2                 | Accessory balance; reversed detent; palladium spring.                                | + 0.3             | + 0.4      | - 0.4      | - 0.3            | - 1.1     | - 0.5      | 0.0        | - 0.6      | - 0.8              | - 0.8      | - 0.8       | - 0.8       |
| Johannsen & Co.....                                                        | 4501 | 2                 | Accessory compensation; palladium spring.                                            | - 0.0             | - 6.1      | - 4.9      | - 3.8            | - 5.6     | - 5.9      | - 6.0      | - 3.7      | - 1.5              | - 3.8      | - 3.8       | - 3.8       |
| Johannsen & Co.....                                                        | 4502 | 2                 | Accessory compensation; palladium spring.                                            | + 2.6             | + 2.8      | - 1.8      | - 1.8            | - 2.0     | - 2.7      | - 2.0      | - 1.2      | + 4.8              | + 7.6      | + 5.0       | + 1.9       |
| Johannsen & Co.....                                                        | 4503 | 2                 | Accessory balance; reversed detent; palladium spring.                                | 0.0               | + 0.5      | - 0.8      | - 1.6            | - 2.0     | - 1.7      | - 1.2      | - 3.1      | - 3.6              | - 1.5      | - 2.1       | - 2.1       |
| Johannsen & Co.....                                                        | 4504 | 2                 | Accessory compensation; palladium spring.                                            | + 2.3             | + 4.7      | + 4.6      | + 5.0            | - 0.6     | - 1.3      | + 3.6      | + 0.8      | + 5.8              | + 3.8      | + 8.1       | + 7.9       |
| Kullberg.....                                                              | 5505 | 2                 | Accessory balance; reversed detent; palladium spring.                                | - 2.0             | - 1.6      | - 1.9      | - 3.2            | - 1.9     | - 2.0      | - 2.0      | - 2.0      | - 2.0              | - 2.0      | - 2.0       | - 2.0       |
| Lasing.....                                                                | 5506 | 2                 | Compensation for extremes; reversed detent; bright steel spring.                     | + 4.0             | + 6.1      | + 7.2      | + 6.8            | + 7.9     | + 7.3      | + 7.6      | + 5.0      | + 6.0              | + 9.0      | + 10.0      | + 9.1       |
| Webb.....                                                                  | 5506 | 2                 | Reversed detent; short palladium spring.                                             | - 2.1             | - 3.3      | - 3.2      | - 3.8            | - 6.2     | - 6.4      | - 7.6      | - 7.0      | - 6.0              | - 4.1      | - 5.4       | + 0.5       |
| Johannsen & Co.....                                                        | 4505 | 2                 | Accessory compensation; palladium spring.                                            | + 1.6             | + 0.6      | + 4.6      | + 4.8            | + 3.6     | + 4.1      | + 0.4      | + 0.8      | + 7.1              | + 6.8      | + 9.5       | + 9.9       |
| Webb.....                                                                  | 5508 | 2                 | Reversed detent; short palladium spring.                                             | -13.3             | -18.4      | -17.4      | -17.9            | -10.7     | -10.7      | -10.7      | -20.2      | -21.3              | -18.5      | -12.9       | -15.1       |
| Johannsen & Co.....                                                        | 4509 | 2                 | Accessory compensation; palladium spring.                                            | + 2.0             | + 2.0      | + 2.7      | + 1.7            | + 4.7     | + 3.8      | + 4.7      | + 5.8      | + 4.8              | + 3.0      | + 2.9       | + 4.7       |
| Johannsen & Co.....                                                        | 4510 | 2                 | Accessory compensation; palladium spring.                                            | + 0.2             | + 1.0      | + 0.0      | - 0.7            | - 0.3     | - 0.5      | - 0.4      | + 0.1      | + 0.0              | + 7.4      | + 8.9       | + 0.4       |
| Johannsen & Co.....                                                        | 4511 | 2                 | Accessory compensation; palladium spring.                                            | + 0.1             | + 1.0      | + 0.0      | - 0.3            | - 2.1     | - 2.0      | + 0.9      | + 4.2      | + 4.9              | + 5.0      | + 6.0       | + 5.5       |
| Chronometrical Thermometer.....                                            |      |                   |                                                                                      | -100.6            | - 0.6      | + 74.1     | + 290.4          | + 373.9   | + 198.9    | - 200.2    | - 169.1    | - 253.2            | - 4.6      | - 1641.8    | + 0.7.8     |
| Mean Weekly Temperature.....                                               |      |                   |                                                                                      | 68.7              | 67.6       | 66.6       | 64.6             | 63.7      | 65.4       | 70.1       | 84.3       | 90.0               | 97.5       | 85.4        | 65.8        |
| Extremes of Temperature as shown by the self-Registering Thermometers..... |      |                   |                                                                                      | 94.9-79.7         | 64.4-70.4  | 61.1-69.0  | 63.0-68.0        | 62.0-66.0 | 62.4-67.9  | 69.5-73.8  | 80.0-87.9  | 88.0-95.7          | 92.7-102.3 | 85.8-98.0   | 60.0-71.8   |

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 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 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.

| NAME OF MAKER.                                                             | No.  | Days of the Week. | Construction of Receptment and Balance, from the Description furnished by the Maker. | IN ORDER OF TIME.  |           |            |            |                   |           |           |            |            |                   |           |            |
|----------------------------------------------------------------------------|------|-------------------|--------------------------------------------------------------------------------------|--------------------|-----------|------------|------------|-------------------|-----------|-----------|------------|------------|-------------------|-----------|------------|
|                                                                            |      |                   |                                                                                      | Sept. 28 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 | Nov. 23-30 | Nov. 30 to Dec. 7 | Dec. 7-14 | Dec. 14-21 |
| Kullberg.....                                                              | 5512 | 2                 | Ordinary balance; palladium spring.                                                  | - 0.8              | - 0.4     | - 3.0      | - 3.6      | - 4.4             | - 2.6     | + 1.1     | - 0.8      | - 0.8      | + 1.1             | - 2.0     | - 1.6      |
| Uhrig.....                                                                 | 603  | 2                 | Uhrig's continually acting auxiliary; bright steel spring.                           | - 0.8              | - 0.4     | - 3.0      | - 3.6      | - 4.4             | - 2.6     | + 1.1     | - 0.8      | - 0.8      | + 1.1             | - 2.0     | - 1.6      |
| Uhrig.....                                                                 | 612  | 2                 | Uhrig's continually acting auxiliary; bright steel spring.                           | - 1.8              | - 0.9     | - 4.7      | - 7.9      | - 8.0             | - 6.1     | - 3.9     | - 3.8      | - 4.3      | - 3.1             | - 3.8     | - 3.5      |
| Gardner.....                                                               | 5750 | 2                 | Compensation for extremes; reversed detent; palladium spring.                        | + 7.6              | + 7.8     | + 4.9      | + 5.6      | + 5.4             | + 6.3     | + 7.2     | + 8.0      | + 13.1     | + 13.4            | + 10.2    | + 11.5     |
| Webb.....                                                                  | 5512 | 2                 | Reversed detent; short palladium spring.                                             | -27.4              | -23.4     | -26.1      | -24.1      | -26.7             | -30.6     | -29.0     | -29.1      | -26.0      | -24.0             | -22.0     | -22.0      |
| Isaac.....                                                                 | 1941 | 2                 | Accessory to balance; palladium spring.                                              | + 2.5              | + 3.4     | + 2.6      | + 0.5      | + 1.1             | + 5.4     | + 5.2     | + 7.3      | + 6.6      | + 7.1             | + 4.8     | + 1.6      |
| Isaac.....                                                                 | 2001 | 2                 | Accessory to balance; palladium spring.                                              | + 6.1              | + 5.0     | + 3.8      | + 2.3      | + 1.0             | + 3.4     | + 3.9     | + 4.3      | + 3.7      | + 3.3             | - 0.4     | + 0.6      |
| Webb.....                                                                  | 5501 | 2                 | Reversed detent; short palladium spring.                                             | + 8.5              | + 10.2    | + 6.9      | + 10.2     | + 8.0             | + 7.4     | + 2.8     | + 2.1      | + 3.9      | + 7.3             | + 8.2     | + 7.5      |
| W. Dent & Co.....                                                          | 4726 | 2                 | Dent's balance; bright steel spring.                                                 | - 2.3              | - 2.8     | - 3.5      | - 4.2      | - 0.9             | - 3.5     | - 3.7     | - 5.6      | - 5.8      | - 0.8             | - 3.3     | - 5.0      |
| Kullberg.....                                                              | 5547 | 2                 | Accessory balance; reversed detent; palladium spring.                                | - 1.7              | - 2.7     | - 5.5      | - 5.6      | - 7.0             | - 6.0     | - 9.9     | - 9.7      | - 0.7      | - 0.2             | - 2.4     | - 4.8      |
| Kullberg.....                                                              | 5548 | 2                 | Accessory balance; reversed detent; palladium spring.                                | + 0.7              | + 0.4     | + 0.7      | + 0.8      | + 0.5             | + 7.6     | + 11.5    | + 14.0     | + 13.1     | + 14.7            | + 13.2    | + 11.6     |
| Kullberg.....                                                              | 5549 | 2                 | Accessory balance; reversed detent; palladium spring.                                | - 0.4              | - 3.7     | - 5.8      | - 6.0      | - 7.3             | - 4.4     | - 4.8     | - 8.4      | - 8.7      | - 6.0             | - 8.5     | - 10.0     |
| Kullberg.....                                                              | 5550 | 2                 | Accessory balance; reversed detent; palladium spring.                                | + 5.0              | + 5.3     | + 4.3      | + 4.4      | + 4.8             | + 5.2     | + 9.7     | + 10.4     | + 11.7     | + 10.0            | + 6.1     | + 5.5      |
| Pullington & Bate.....                                                     | 2280 | 2                 | Improved balance; bright steel spring.                                               | - 2.8              | - 2.7     | - 4.5      | - 2.8      | + 1.0             | - 0.4     | - 2.7     | + 4.0      | + 5.3      | + 5.0             | + 3.1     | + 5.8      |
| Johannsen & Co.....                                                        | 4499 | 2                 | Accessory compensation; palladium spring.                                            | + 2.6              | + 2.1     | + 1.0      | + 2.4      | + 3.4             | - 1.8     | + 5.4     | + 3.6      | + 3.1      | + 4.4             | + 0.4     | + 0.9      |
| Johannsen & Co.....                                                        | 4500 | 2                 | Accessory compensation; palladium spring.                                            | + 1.5              | + 0.5     | + 12.5     | + 11.1     | + 8.6             | + 10.2    | + 0.2     | + 7.0      | + 7.4      | + 6.2             | + 4.9     | + 4.1      |
| Johannsen & Co.....                                                        | 5546 | 2                 | Accessory balance; reversed detent; palladium spring.                                | + 4.1              | - 4.5     | - 0.4      | - 2.6      | - 0.8             | - 0.2     | - 5.9     | - 6.0      | - 6.0      | - 6.0             | - 6.0     | - 6.0      |
| Haswell & Sons.....                                                        | 2919 | 2                 | Non-magnetic balance and spring.                                                     | -11.9              | - 9.4     | -10.1      | - 6.4      | - 0.8             | - 0.9     | -14.8     | -13.2      | -12.6      | -15.6             | -15.0     | -15.1      |
| Kullberg.....                                                              | 5507 | 2                 | Accessory balance; reversed detent; palladium spring.                                | - 7.1              | - 7.5     | -11.1      | -11.5      | -12.9             | -11.7     | -11.3     | -12.6      | -11.1      | - 8.6             | -15.7     | -13.8      |
| Kullberg.....                                                              | 5508 | 2                 | Accessory balance; reversed detent; palladium spring.                                | - 0.9              | - 0.5     | - 1.3      | - 1.8      | - 3.3             | - 3.0     | - 4.1     | - 4.8      | - 4.1      | - 0.7             | -10.1     | -14.0      |
| Johannsen & Co.....                                                        | 4501 | 2                 | Accessory compensation; palladium spring.                                            | - 0.0              | - 1.1     | - 5.4      | - 4.2      | - 4.8             | - 4.5     | - 4.5     | - 4.5      | - 4.5      | - 4.5             | - 4.5     | - 4.5      |
| Johannsen & Co.....                                                        | 4502 | 2                 | Accessory compensation; palladium spring.                                            | - 1.3              | - 3.0     | - 4.1      | - 0.9      | - 1.7             | - 0.9     | - 2.1     | + 0.1      | + 1.8      | + 0.9             | + 0.8     | + 0.8      |
| Johannsen & Co.....                                                        | 4503 | 2                 | Accessory balance; reversed detent; palladium spring.                                | - 1.3              | - 3.1     | - 6.0      | - 6.7      | - 7.9             | - 5.3     | - 1.0     | - 3.3      | - 4.8      | - 1.2             | - 3.8     | - 8.6      |
| Johannsen & Co.....                                                        | 4504 | 2                 | Accessory compensation; palladium spring.                                            | + 9.9              | + 3.8     | + 1.3      | + 0.1      | + 6.9             | + 4.0     | + 10.4    | + 10.6     | + 12.6     | + 13.3            | + 9.3     | + 7.2      |
| Kullberg.....                                                              | 5505 | 2                 | Accessory balance; reversed detent; palladium spring.                                | + 1.1              | + 1.1     | + 7.8      | + 10.7     | + 13.3            | + 15.3    | + 15.1    | + 15.9     | + 16.9     | + 16.0            | + 14.6    | + 13.7     |
| Lasing.....                                                                | 5506 | 2                 | Compensation for extremes; reversed detent; bright steel spring.                     | + 4.8              | + 8.5     | + 0.0      | + 6.0      | + 4.2             | + 2.3     | + 1.5     | - 2.0      | - 5.9      | + 1.2             | + 7.3     | + 6.5      |
| Webb.....                                                                  | 5506 | 2                 | Reversed detent; short palladium spring.                                             | - 0.8              | - 2.4     | + 1.3      | + 3.4      | + 4.2             | + 2.7     | - 8.4     | - 2.3      | - 1.3      | - 1.2             | + 3.5     | + 7.4      |
| Johannsen & Co.....                                                        | 4505 | 2                 | Accessory compensation; palladium spring.                                            | + 7.8              | + 9.4     | + 9.8      | + 3.8      | + 7.3             | + 4.3     | + 9.1     | + 9.3      | + 11.3     | + 14.0            | + 11.5    | + 10.1     |
| Webb.....                                                                  | 5508 | 2                 | Reversed detent; short palladium spring.                                             | -14.8              | -17.5     | -19.1      | -20.4      | -21.7             | -17.9     | -14.8     | -12.8      | -12.1      | -11.3             | -10.8     | -10.0      |
| Johannsen & Co.....                                                        | 4509 | 2                 | Accessory compensation; palladium spring.                                            | + 8.1              | + 8.1     | + 8.1      | + 8.1      | + 8.1             | + 8.1     | + 8.1     | + 8.1      | + 8.1      | + 8.1             | + 8.1     | + 8.1      |
| Johannsen & Co.....                                                        | 4510 | 2                 | Accessory compensation; palladium spring.                                            | + 1.7              | + 0.8     | - 1.9      | + 0.3      | + 1.4             | 0.0       | + 2.1     | + 0.2      | + 0.8      | + 6.7             | + 7.7     | + 4.4      |
| Johannsen & Co.....                                                        | 4511 | 2                 | Accessory compensation; palladium spring.                                            | + 3.9              | + 4.1     | - 0.9      | - 0.0      | - 0.9             | - 3.8     | + 0.9     | + 0.2      | + 0.2      | + 0.2             | + 0.2     | + 0.2      |
| Chronometrical Thermometer.....                                            |      |                   |                                                                                      | +148.0             | + 787.0   | + 370.6    | + 1228.1   | + 1485.4          | + 1037.6  | - 1060.2  | - 2147.8   | - 2138.7   | - 1080.5          | + 1359.9  | + 1500.6   |
| Mean Weekly Temperature.....                                               |      |                   |                                                                                      | 60.3               | 55.1      | 57.1       | 52.5       | 50.6              | 54.8      | 78.4      | 89.5       | 89.3       | 78.9              | 50.1      | 51.8       |
| Extremes of Temperature as shown by the self-Registering Thermometers..... |      |                   |                                                                                      | 97.7-71.1          | 54.2-61.4 | 53.0-60.0  | 47.9-56.9  | 46.9-59.4         | 50.4-59.9 | 78.5-74.1 | 87.0-93.0  | 92.9-99.0  | 85.1-97.7         | 46.7-57.8 | 46.9-59.4  |

The

| NAME<br>OF<br>MAKER.                                                               | No.   | Days<br>to Days. | Construction of Beasement<br>and Balance, from the Description<br>furnished by the Maker. | (L) WEEKLY RATES |               |               |                      |              |               |               |               |                       |               |                |                |
|------------------------------------------------------------------------------------|-------|------------------|-------------------------------------------------------------------------------------------|------------------|---------------|---------------|----------------------|--------------|---------------|---------------|---------------|-----------------------|---------------|----------------|----------------|
|                                                                                    |       |                  |                                                                                           | July<br>6-13     | July<br>13-20 | July<br>20-27 | July 27<br>to Aug. 3 | Aug.<br>3-10 | Aug.<br>10-17 | Aug.<br>17-24 | Aug.<br>24-31 | Aug. 31<br>to Sept. 7 | Sept.<br>7-14 | Sept.<br>14-21 | Sept.<br>21-28 |
| Johannsen & Co.                                                                    | 4497  | 2                | Auxiliary compensation; [spring]                                                          | + 3.6            | + 4.3         | + 3.1         | + 1.1                | - 0.2        | - 0.9         | + 2.1         | + 0.9         | + 5.0                 | + 8.0         | + 5.5          | + 9.3          |
| Kullberg                                                                           | 5492  | 2                | Auxiliary balance reversed detent; palladium spring                                       | - 2.5            | - 1.6         | - 2.0         | - 3.6                | - 4.8        | - 6.1         | - 4.4         | - 5.4         | - 4.1                 | - 3.6         | - 4.4          | - 4.8          |
| Johannsen & Co.                                                                    | 4347  | 2                | Auxiliary compensation; palladium spring                                                  | - 0.6            | - 2.3         | - 4.9         | - 5.5                | - 11.0       | - 11.6        | - 10.8        | - 6.1         | - 7.6                 | - 7.5         | - 1.9          | + 0.5          |
| Johannsen & Co.                                                                    | 4541  | 2                | Auxiliary compensation; palladium spring                                                  | + 0.6            | + 2.3         | + 4.9         | + 5.5                | + 11.0       | + 11.6        | + 10.8        | + 6.1         | + 7.6                 | + 7.5         | + 1.9          | + 0.5          |
| Kullberg                                                                           | 5511  | 2                | Auxiliary balance; reversed detent; [palladium spring]                                    | - 0.6            | - 2.3         | - 4.9         | - 5.5                | - 11.0       | - 11.6        | - 10.8        | - 6.1         | - 7.6                 | - 7.5         | - 1.9          | + 0.5          |
| E. Dent & Co.                                                                      | 4787  | 2                | Dent's balance; bright steel spring.                                                      | + 4.8            | + 0.0         | + 4.0         | + 1.5                | + 2.8        | + 0.8         | + 1.9         | + 10.8        | + 13.2                | + 10.4        | + 15.1         | + 10.4         |
| Gardner                                                                            | 4582  | 2                | Compensation for extremes, reversed detent; bright steel spring.                          | - 8.1            | - 7.9         | - 11.0        | - 14.8               | - 12.8       | - 17.5        | - 17.6        | - 16.8        | - 15.1                | - 10.7        | - 18.1         | - 14.6         |
| Isaac                                                                              | 1918  | 2                | Improved ordinary balance; bright steel                                                   | + 0.6            | + 5.3         | + 7.6         | + 0.2                | + 6.4        | + 5.1         | + 3.5         | + 3.8         | + 4.4                 | + 8.6         | + 9.1          | + 0.1          |
| J.B. Dent & Sons                                                                   | 6585  | 2                | Ordinary balance; palladium spring.                                                       | - 0.6            | - 0.8         | - 0.8         | - 1.0                | - 0.4        | - 0.8         | - 0.9         | + 1.0         | + 0.4                 | + 0.5         | + 1.0          | + 0.1          |
| Keys                                                                               | 9770  | 2                | Auxiliary compensation; bright steel [spring]                                             | + 0.6            | + 0.3         | + 0.8         | + 0.1                | + 0.0        | + 0.5         | + 12.0        | + 12.0        | + 3.2                 | + 1.8         | + 0.5          | + 8.6          |
| E. Dent & Co.                                                                      | 46755 | 2                | Dent's balance; bright steel spring.                                                      | + 5.1            | + 0.7         | + 6.1         | + 4.3                | + 6.0        | + 3.7         | + 4.7         | + 3.5         | + 2.7                 | + 0.9         | + 2.7          | + 5.9          |
| Johannsen & Co.                                                                    | 4532  | 2                | Auxiliary compensation; palladium spring.                                                 | - 2.5            | - 1.6         | - 2.0         | - 3.6                | - 4.8        | - 6.1         | - 4.4         | - 5.4         | - 4.1                 | - 3.6         | - 4.4          | - 4.8          |
| Kendall & Dent.                                                                    | 6585  | 2                | Auxiliary acting in heat and cold; blue steel spring.                                     | - 11.5           | - 10.5        | - 10.7        | - 11.5               | - 10.9       | - 9.6         | - 0.6         | - 0.1         | - 7.1                 | - 6.0         | - 9.1          | - 6.5          |
| Usher & Cole                                                                       | 8172  | 2                | Auxiliary to balance acting in extremes; blue steel spring.                               | - 1.0            | - 1.5         | - 3.1         | - 3.5                | - 1.1        | - 1.3         | + 1.4         | - 1.6         | - 4.6                 | - 1.0         | + 5.0          | + 5.3          |
| Kullberg                                                                           | 5487  | 2                | Auxiliary balance; reversed detent; [palladium spring]                                    | - 1.0            | - 1.1         | - 1.3         | - 1.9                | - 1.6        | - 2.1         | - 1.5         | + 0.5         | - 1.0                 | - 1.7         | - 3.9          | - 5.8          |
| Johannsen & Co.                                                                    | 4514  | 2                | Auxiliary compensation; palladium [spring]                                                | + 2.8            | + 2.0         | + 0.3         | - 4.4                | - 4.6        | - 5.9         | - 6.2         | + 2.1         | + 5.9                 | + 8.0         | + 8.6          | + 8.6          |
| Johannsen & Co.                                                                    | 4518  | 2                | Auxiliary compensation; palladium spring.                                                 | + 2.1            | + 5.0         | + 7.4         | + 0.0                | + 5.1        | + 5.5         | + 5.5         | + 4.5         | + 5.4                 | + 4.7         | + 4.7          | + 4.7          |
| Johannsen & Co.                                                                    | 4556  | 2                | Auxiliary compensation; palladium spring.                                                 | + 4.4            | + 5.0         | + 2.0         | + 1.9                | + 3.0        | + 0.9         | + 0.5         | + 0.4         | + 8.9                 | + 10.3        | + 10.5         | + 10.5         |
| Schoof                                                                             | 6559  | 2                | Resilient lever escapement; auxiliary acting in cold; blue steel spring.                  | - 15.4           | - 15.1        | - 13.7        | - 10.2               | - 14.5       | - 16.0        | - 12.5        | - 15.4        | - 23.1                | - 27.5        | - 19.8         | - 16.7         |
| Johannsen & Co.                                                                    | 4509  | 2                | Auxiliary compensation; palladium [spring]                                                | + 0.6            | + 1.0         | - 1.9         | - 8.0                | - 10.0       | - 9.3         | - 4.5         | + 4.0         | + 0.6                 | + 1.3         | - 1.9          | - 8.5          |
| Freyt                                                                              | 9500  | 2                | Improved ordinary balance; bright steel                                                   | + 7.6            | + 0.7         | + 9.3         | + 1.8                | + 2.2        | + 2.7         | + 4.4         | + 12.0        | + 4.0                 | + 7.6         | + 14.3         | + 3.6          |
| Johannsen & Co.                                                                    | 4509  | 2                | Auxiliary compensation; palladium spring                                                  | - 7.6            | - 7.4         | - 9.3         | - 14.7               | - 9.3        | - 15.1        | - 12.9        | - 9.1         | - 0.5                 | - 0.5         | + 0.2          | + 4.5          |
| Webb                                                                               | 8008  | 2                | Reversed detent; short palladium spring                                                   | + 8.4            | + 0.1         | + 10.1        | + 8.5                | + 7.8        | + 9.3         | + 5.3         | + 10.0        | + 2.1                 | + 4.1         | + 15.5         | + 14.0         |
| Bishop & Sons.                                                                     | 8171  | 2                | Auxiliary acting in extremes; blue steel spring.                                          | + 8.4            | + 0.1         | + 10.1        | + 8.5                | + 7.8        | + 9.3         | + 5.3         | + 10.0        | + 2.1                 | + 4.1         | + 15.5         | + 14.0         |
| Kendall & Dent.                                                                    | 6585  | 2                | Auxiliary acting in extremes; blue steel spring.                                          | + 8.4            | + 0.1         | + 10.1        | + 8.5                | + 7.8        | + 9.3         | + 5.3         | + 10.0        | + 2.1                 | + 4.1         | + 15.5         | + 14.0         |
| Isaac                                                                              | 1944  | 2                | Palladium spring.                                                                         | + 10.7           | + 12.0        | + 10.0        | + 1.1                | + 0.5        | + 6.0         | + 3.8         | + 1.2         | - 4.5                 | + 7.3         | + 1.5          | + 1.5          |
| Keys                                                                               | 982   | 2                | Auxiliary compensation; bright steel                                                      | - 3.4            | - 3.3         | - 2.5         | - 2.4                | - 2.0        | - 0.3         | - 0.1         | + 5.5         | - 2.6                 | + 2.1         | + 12.0         | + 10.5         |
| Webb                                                                               | 8008  | 2                | Reversed detent; short palladium spring                                                   | - 5.1            | - 9.0         | - 20.3        | - 25.2               | - 25.3       | - 25.3        | - 25.3        | - 25.3        | - 17.9                | - 12.6        | - 14.3         | - 14.3         |
| Haswell & Sons                                                                     | 3232  | 2                | Non-magnetic balance and spring.                                                          | + 10.7           | + 13.8        | + 11.9        | + 10.1               | + 3.0        | + 7.5         | + 4.9         | + 1.3         | + 4.7                 | + 7.7         | + 9.0          | + 9.0          |
| Chronometrical Ther-<br>mometer                                                    | ..... | .....            | .....                                                                                     | - 106.0          | - 9.6         | + 74.1        | + 326.4              | + 373.9      | + 133.9       | - 302.2       | - 1598.1      | - 2852.4              | - 2729.6      | - 1641.8       | + 97.8         |
| Mean Weekly Tempera-<br>ture                                                       | ..... | .....            | .....                                                                                     | 68.7             | 67.6          | 66.6          | 64.5                 | 63.7         | 65.4          | 70.1          | 84.3          | 98.0                  | 97.5          | 85.4           | 65.8           |
| Extremes of Tempera-<br>ture as shown by the<br>Self-Registering Ther-<br>mometers | ..... | .....            | .....                                                                                     | 54.0-72.6        | 54.7-70.4     | 64.1-69.3     | 58.0-65.3            | 62.0-68.4    | 67.3-69.5     | 72.8-80.6     | 87.9-95.9     | 103.3-127.0           | 123.8-127.0   | 85.8-100.0     | 71.1-71.8      |

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

IN ORDER OF TIME.

| TEMPERATURE RECORD FOR THE MONTH OF SEPTEMBER, 1887. |                                        |                                        |                                        |                                        |                                        |                                        |                                        |                                        |                                        |                                        |                                        |                                        |                                        |                                        |                                        |                                        |                 |      | NAME OF MAKER. |  | No. |
|------------------------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|-----------------|------|----------------|--|-----|
| Sept. 28 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                             | Nov. 23-30                             | Nov. 30 to Dec. 7                      | Dec. 7-14                              | Dec. 14-21                             | Dec. 21-28                             | Dec. 28 to Jan. 4                      | Jan. 4-11                              | Jan. 11-18                             | Jan. 18-25                             |                 |      |                |  |     |
| +10.9<br>-13.3<br>-1.3<br>-0.4<br>-0.1               | + 9.4<br>-13.8<br>-1.3<br>-0.4<br>-0.1 | + 5.4<br>-15.8<br>-1.4<br>-0.4<br>-0.1 | +10.0<br>-15.4<br>-1.4<br>-0.4<br>-0.1 | + 9.8<br>-16.1<br>-1.4<br>-0.4<br>-0.1 | + 3.0<br>-14.1<br>-1.3<br>-0.4<br>-0.1 | + 3.4<br>-14.5<br>-1.3<br>-0.4<br>-0.1 | + 7.3<br>-15.8<br>-1.0<br>-0.4<br>-0.1 | +10.4<br>-16.5<br>-1.2<br>-0.4<br>-0.1 | + 8.7<br>-14.8<br>-1.5<br>-0.4<br>-0.1 | +10.3<br>-17.8<br>-1.5<br>-0.4<br>-0.1 | + 8.6<br>-15.9<br>-1.0<br>-0.4<br>-0.1 | + 9.3<br>-14.0<br>-1.0<br>-0.4<br>-0.1 | - 0.1<br>-17.6<br>-1.5<br>-0.4<br>-0.1 | + 1.0<br>-10.9<br>-1.4<br>-0.4<br>-0.1 | + 2.1<br>-11.6<br>-1.4<br>-0.4<br>-0.1 | + 1.2<br>-10.2<br>-1.4<br>-0.4<br>-0.1 | Johannsen & Co. | 4497 |                |  |     |
| +10.9<br>-13.3<br>-1.3<br>-0.4<br>-0.1               | + 9.4<br>-13.8<br>-1.3<br>-0.4<br>-0.1 | + 5.4<br>-15.8<br>-1.4<br>-0.4<br>-0.1 | +10.0<br>-15.4<br>-1.4<br>-0.4<br>-0.1 | + 9.8<br>-16.1<br>-1.4<br>-0.4<br>-0.1 | + 3.0<br>-14.1<br>-1.3<br>-0.4<br>-0.1 | + 3.4<br>-14.5<br>-1.3<br>-0.4<br>-0.1 | + 7.3<br>-15.8<br>-1.0<br>-0.4<br>-0.1 | +10.4<br>-16.5<br>-1.2<br>-0.4<br>-0.1 | + 8.7<br>-14.8<br>-1.5<br>-0.4<br>-0.1 | +10.3<br>-17.8<br>-1.5<br>-0.4<br>-0.1 | + 8.6<br>-15.9<br>-1.0<br>-0.4<br>-0.1 | + 9.3<br>-14.0<br>-1.0<br>-0.4<br>-0.1 | - 0.1<br>-17.6<br>-1.5<br>-0.4<br>-0.1 | + 1.0<br>-10.9<br>-1.4<br>-0.4<br>-0.1 | + 2.1<br>-11.6<br>-1.4<br>-0.4<br>-0.1 | + 1.2<br>-10.2<br>-1.4<br>-0.4<br>-0.1 | Johannsen & Co. | 4497 |                |  |     |
| +10.9<br>-13.3<br>-1.3<br>-0.4<br>-0.1               | + 9.4<br>-13.8<br>-1.3<br>-0.4<br>-0.1 | + 5.4<br>-15.8<br>-1.4<br>-0.4<br>-0.1 | +10.0<br>-15.4<br>-1.4<br>-0.4<br>-0.1 | + 9.8<br>-16.1<br>-1.4<br>-0.4<br>-0.1 | + 3.0<br>-14.1<br>-1.3<br>-0.4<br>-0.1 | + 3.4<br>-14.5<br>-1.3<br>-0.4<br>-0.1 | + 7.3<br>-15.8<br>-1.0<br>-0.4<br>-0.1 | +10.4<br>-16.5<br>-1.2<br>-0.4<br>-0.1 | + 8.7<br>-14.8<br>-1.5<br>-0.4<br>-0.1 | +10.3<br>-17.8<br>-1.5<br>-0.4<br>-0.1 | + 8.6<br>-15.9<br>-1.0<br>-0.4<br>-0.1 | + 9.3<br>-14.0<br>-1.0<br>-0.4<br>-0.1 | - 0.1<br>-17.6<br>-1.5<br>-0.4<br>-0.1 | + 1.0<br>-10.9<br>-1.4<br>-0.4<br>-0.1 | + 2.1<br>-11.6<br>-1.4<br>-0.4<br>-0.1 | + 1.2<br>-10.2<br>-1.4<br>-0.4<br>-0.1 | Johannsen & Co. | 4497 |                |  |     |
| +10.9<br>-13.3<br>-1.3<br>-0.4<br>-0.1               | + 9.4<br>-13.8<br>-1.3<br>-0.4<br>-0.1 | + 5.4<br>-15.8<br>-1.4<br>-0.4<br>-0.1 | +10.0<br>-15.4<br>-1.4<br>-0.4<br>-0.1 | + 9.8<br>-16.1<br>-1.4<br>-0.4<br>-0.1 | + 3.0<br>-14.1<br>-1.3<br>-0.4<br>-0.1 | + 3.4<br>-14.5<br>-1.3<br>-0.4<br>-0.1 | + 7.3<br>-15.8<br>-1.0<br>-0.4<br>-0.1 | +10.4<br>-16.5<br>-1.2<br>-0.4<br>-0.1 | + 8.7<br>-14.8<br>-1.5<br>-0.4<br>-0.1 | +10.3<br>-17.8<br>-1.5<br>-0.4<br>-0.1 | + 8.6<br>-15.9<br>-1.0<br>-0.4<br>-0.1 | + 9.3<br>-14.0<br>-1.0<br>-0.4<br>-0.1 | - 0.1<br>-17.6<br>-1.5<br>-0.4<br>-0.1 | + 1.0<br>-10.9<br>-1.4<br>-0.4<br>-0.1 | + 2.1<br>-11.6<br>-1.4<br>-0.4<br>-0.1 | + 1.2<br>-10.2<br>-1.4<br>-0.4<br>-0.1 | Johannsen & Co. | 4497 |                |  |     |
| +10.9<br>-13.3<br>-1.3<br>-0.4<br>-0.1               | + 9.4<br>-13.8<br>-1.3<br>-0.4<br>-0.1 | + 5.4<br>-15.8<br>-1.4<br>-0.4<br>-0.1 | +10.0<br>-15.4<br>-1.4<br>-0.4<br>-0.1 | + 9.8<br>-16.1<br>-1.4<br>-0.4<br>-0.1 | + 3.0<br>-14.1<br>-1.3<br>-0.4<br>-0.1 | + 3.4<br>-14.5<br>-1.3<br>-0.4<br>-0.1 | + 7.3<br>-15.8<br>-1.0<br>-0.4<br>-0.1 | +10.4<br>-16.5<br>-1.2<br>-0.4<br>-0.1 | + 8.7<br>-14.8<br>-1.5<br>-0.4<br>-0.1 | +10.3<br>-17.8<br>-1.5<br>-0.4<br>-0.1 | + 8.6<br>-15.9<br>-1.0<br>-0.4<br>-0.1 | + 9.3<br>-14.0<br>-1.0<br>-0.4<br>-0.1 | - 0.1<br>-17.6<br>-1.5<br>-0.4<br>-0.1 | + 1.0<br>-10.9<br>-1.4<br>-0.4<br>-0.1 | + 2.1<br>-11.6<br>-1.4<br>-0.4<br>-0.1 | + 1.2<br>-10.2<br>-1.4<br>-0.4<br>-0.1 | Johannsen & Co. | 4497 |                |  |     |
| +10.9<br>-13.3<br>-1.3<br>-0.4<br>-0.1               | + 9.4<br>-13.8<br>-1.3<br>-0.4<br>-0.1 | + 5.4<br>-15.8<br>-1.4<br>-0.4<br>-0.1 | +10.0<br>-15.4<br>-1.4<br>-0.4<br>-0.1 | + 9.8<br>-16.1<br>-1.4<br>-0.4<br>-0.1 | + 3.0<br>-14.1<br>-1.3<br>-0.4<br>-0.1 | + 3.4<br>-14.5<br>-1.3<br>-0.4<br>-0.1 | + 7.3<br>-15.8<br>-1.0<br>-0.4<br>-0.1 | +10.4<br>-16.5<br>-1.2<br>-0.4<br>-0.1 | + 8.7<br>-14.8<br>-1.5<br>-0.4<br>-0.1 | +10.3<br>-17.8<br>-1.5<br>-0.4<br>-0.1 | + 8.6<br>-15.9<br>-1.0<br>-0.4<br>-0.1 | + 9.3<br>-14.0<br>-1.0<br>-0.4<br>-0.1 | - 0.1<br>-17.6<br>-1.5<br>-0.4<br>-0.1 | + 1.0<br>-10.9<br>-1.4<br>-0.4<br>-0.1 | + 2.1<br>-11.6<br>-1.4<br>-0.4<br>-0.1 | + 1.2<br>-10.2<br>-1.4<br>-0.4<br>-0.1 | Johannsen & Co. | 4497 |                |  |     |
| +10.9<br>-13.3<br>-1.3<br>-0.4<br>-0.1               | + 9.4<br>-13.8<br>-1.3<br>-0.4<br>-0.1 | + 5.4<br>-15.8<br>-1.4<br>-0.4<br>-0.1 | +10.0<br>-15.4<br>-1.4<br>-0.4<br>-0.1 | + 9.8<br>-16.1<br>-1.4<br>-0.4<br>-0.1 | + 3.0<br>-14.1<br>-1.3<br>-0.4<br>-0.1 | + 3.4<br>-14.5<br>-1.3<br>-0.4<br>-0.1 | + 7.3<br>-15.8<br>-1.0<br>-0.4<br>-0.1 | +10.4<br>-16.5<br>-1.2<br>-0.4<br>-0.1 | + 8.7<br>-14.8<br>-1.5<br>-0.4<br>-0.1 | +10.3<br>-17.8<br>-1.5<br>-0.4<br>-0.1 | + 8.6<br>-15.9<br>-1.0<br>-0.4<br>-0.1 | + 9.3<br>-14.0<br>-1.0<br>-0.4<br>-0.1 | - 0.1<br>-17.6<br>-1.5<br>-0.4<br>-0.1 | + 1.0<br>-10.9<br>-1.4<br>-0.4<br>-0.1 | + 2.1<br>-11.6<br>-1.4<br>-0.4<br>-0.1 | + 1.2<br>-10.2<br>-1.4<br>-0.4<br>-0.1 | Johannsen & Co. | 4497 |                |  |     |
| +10.9<br>-13.3<br>-1.3<br>-0.4<br>-0.1               | + 9.4<br>-13.8<br>-1.3<br>-0.4<br>-0.1 | + 5.4<br>-15.8<br>-1.4<br>-0.4<br>-0.1 | +10.0<br>-15.4<br>-1.4<br>-0.4<br>-0.1 | + 9.8<br>-16.1<br>-1.4<br>-0.4<br>-0.1 | + 3.0<br>-14.1<br>-1.3<br>-0.4<br>-0.1 | + 3.4<br>-14.5<br>-1.3<br>-0.4<br>-0.1 | + 7.3<br>-15.8<br>-1.0<br>-0.4<br>-0.1 | +10.4<br>-16.5<br>-1.2<br>-0.4<br>-0.1 | + 8.7<br>-14.8<br>-1.5<br>-0.4<br>-0.1 | +10.3<br>-17.8<br>-1.5<br>-0.4<br>-0.1 | + 8.6<br>-15.9<br>-1.0<br>-0.4<br>-0.1 | + 9.3<br>-14.0<br>-1.0<br>-0.4<br>-0.1 | - 0.1<br>-17.6<br>-1.5<br>-0.4<br>-0.1 | + 1.0<br>-10.9<br>-1.4<br>-0.4<br>-0.1 | + 2.1<br>-11.6<br>-1.4<br>-0.4<br>-0.1 | + 1.2<br>-10.2<br>-1.4<br>-0.4<br>-0.1 | Johannsen & Co. | 4497 |                |  |     |
| +10.9<br>-13.3<br>-1.3<br>-0.4<br>-0.1               | + 9.4<br>-13.8<br>-1.3<br>-0.4<br>-0.1 | + 5.4<br>-15.8<br>-1.4<br>-0.4<br>-0.1 | +10.0<br>-15.4<br>-1.4<br>-0.4<br>-0.1 | + 9.8<br>-16.1<br>-1.4<br>-0.4<br>-0.1 | + 3.0<br>-14.1<br>-1.3<br>-0.4<br>-0.1 | + 3.4<br>-14.5<br>-1.3<br>-0.4<br>-0.1 | + 7.3<br>-15.8<br>-1.0<br>-0.4<br>-0.1 | +10.4<br>-16.5<br>-1.2<br>-0.4<br>-0.1 | + 8.7<br>-14.8<br>-1.5<br>-0.4<br>-0.1 | +10.3<br>-17.8<br>-1.5<br>-0.4<br>-0.1 | + 8.6<br>-15.9<br>-1.0<br>-0.4<br>-0.1 | + 9.3<br>-14.0<br>-1.0<br>-0.4<br>-0.1 | - 0.1<br>-17.6<br>-1.5<br>-0.4<br>-0.1 | + 1.0<br>-10.9<br>-1.4<br>-0.4<br>-0.1 | + 2.1<br>-11.6<br>-1.4<br>-0.4<br>-0.1 | + 1.2<br>-10.2<br>-1.4<br>-0.4<br>-0.1 | Johannsen & Co. | 4497 |                |  |     |
| +10.9<br>-13.3<br>-1.3<br>-0.4<br>-0.1               | + 9.4<br>-13.8<br>-1.3<br>-0.4<br>-0.1 | + 5.4<br>-15.8<br>-1.4<br>-0.4<br>-0.1 | +10.0<br>-15.4<br>-1.4<br>-0.4<br>-0.1 | + 9.8<br>-16.1<br>-1.4<br>-0.4<br>-0.1 | + 3.0<br>-14.1<br>-1.3<br>-0.4<br>-0.1 | + 3.4<br>-14.5<br>-1.3<br>-0.4<br>-0.1 | + 7.3<br>-15.8<br>-1.0<br>-0.4<br>-0.1 | +10.4<br>-16.5<br>-1.2<br>-0.4<br>-0.1 | + 8.7<br>-14.8<br>-1.5<br>-0.4<br>-0.1 | +10.3<br>-17.8<br>-1.5<br>-0.4<br>-0.1 | + 8.6<br>-15.9<br>-1.0<br>-0.4<br>-0.1 | + 9.3<br>-14.0<br>-1.0<br>-0.4<br>-0.1 | - 0.1<br>-17.6<br>-1.5<br>-0.4<br>-0.1 | + 1.0<br>-10.9<br>-1.4<br>-0.4<br>-0.1 | + 2.1<br>-11.6<br>-1.4<br>-0.4<br>-0.1 | + 1.2<br>-10.2<br>-1.4<br>-0.4<br>-0.1 | Johannsen & Co. | 4497 |                |  |     |
| +10.9<br>-13.3<br>-1.3<br>-0.4<br>-0.1               | + 9.4<br>-13.8<br>-1.3<br>-0.4<br>-0.1 | + 5.4<br>-15.8<br>-1.4<br>-0.4<br>-0.1 | +10.0<br>-15.4<br>-1.4<br>-0.4<br>-0.1 | + 9.8<br>-16.1<br>-1.4<br>-0.4<br>-0.1 | + 3.0<br>-14.1<br>-1.3<br>-0.4<br>-0.1 | + 3.4<br>-14.5<br>-1.3<br>-0.4<br>-0.1 | + 7.3<br>-15.8<br>-1.0<br>-0.4<br>-0.1 | +10.4<br>-16.5<br>-1.2<br>-0.4<br>-0.1 | + 8.7<br>-14.8<br>-1.5<br>-0.4<br>-0.1 | +10.3<br>-17.8<br>-1.5<br>-0.4<br>-0.1 | + 8.6<br>-15.9<br>-1.0<br>-0.4<br>-0.1 | + 9.3<br>-14.0<br>-1.0<br>-0.4<br>-0.1 | - 0.1<br>-17.6<br>-1.5<br>-0.4<br>-0.1 | + 1.0<br>-10.9<br>-1.4<br>-0.4<br>-0.1 | + 2.1<br>-11.6<br>-1.4<br>-0.4<br>-0.1 | + 1.2<br>-10.2<br>-1.4<br>-0.4<br>-0.1 | Johannsen & Co. | 4497 |                |  |     |
| +10.9<br>-13.3<br>-1.3<br>-0.4<br>-0.1               | + 9.4<br>-13.8<br>-1.3<br>-0.4<br>-0.1 | + 5.4<br>-15.8<br>-1.4<br>-0.4<br>-0.1 | +10.0<br>-15.4<br>-1.4<br>-0.4<br>-0.1 | + 9.8<br>-16.1<br>-1.4<br>-0.4<br>-0.1 | + 3.0<br>-14.1<br>-1.3<br>-0.4<br>-0.1 | + 3.4<br>-14.5<br>-1.3<br>-0.4<br>-0.1 | + 7.3<br>-15.8<br>-1.0<br>-0.4<br>-0.1 | +10.4<br>-16.5<br>-1.2<br>-0.4<br>-0.1 | + 8.7<br>-14.8<br>-1.5<br>-0.4<br>-0.1 | +10.3<br>-17.8<br>-1.5<br>-0.4<br>-0.1 | + 8.6<br>-15.9<br>-1.0<br>-0.4<br>-0.1 | + 9.3<br>-14.0<br>-1.0<br>-0.4<br>-0.1 | - 0.1<br>-17.6<br>-1.5<br>-0.4<br>-0.1 | + 1.0<br>-10.9<br>-1.4<br>-0.4<br>-0.1 | + 2.1<br>-11.6<br>-1.4<br>-0.4<br>-0.1 | + 1.2<br>-10.2<br>-1.4<br>-0.4<br>-0.1 | Johannsen & Co. | 4497 |                |  |     |
| +10.9<br>-13.3<br>-1.3<br>-0.4<br>-0.1               | + 9.4<br>-13.8<br>-1.3<br>-0.4<br>-0.1 | + 5.4<br>-15.8<br>-1.4<br>-0.4<br>-0.1 | +10.0<br>-15.4<br>-1.4<br>-0.4<br>-0.1 | + 9.8<br>-16.1<br>-1.4<br>-0.4<br>-0.1 | + 3.0<br>-14.1<br>-1.3<br>-0.4<br>-0.1 | + 3.4<br>-14.5<br>-1.3<br>-0.4<br>-0.1 | + 7.3<br>-15.8<br>-1.0<br>-0.4<br>-0.1 | +10.4<br>-16.5<br>-1.2<br>-0.4<br>-0.1 | + 8.7<br>-14.8<br>-1.5<br>-0.4<br>-0.1 | +10.3<br>-17.8<br>-1.5<br>-0.4<br>-0.1 | + 8.6<br>-15.9<br>-1.0<br>-0.4<br>-0.1 | + 9.3<br>-14.0<br>-1.0<br>-0.4<br>-0.1 | - 0.1<br>-17.6<br>-1.5<br>-0.4<br>-0.1 | + 1.0<br>-10.9<br>-1.4<br>-0.4<br>-0.1 | + 2.1<br>-11.6<br>-1.4<br>-0.4<br>-0.1 | + 1.2<br>-10.2<br>-1.4<br>-0.4<br>-0.1 | Johannsen & Co. | 4497 |                |  |     |
| +10.9<br>-13.3<br>-1.3<br>-0.4<br>-0.1               | + 9.4<br>-13.8<br>-1.3<br>-0.4<br>-0.1 | + 5.4<br>-15.8<br>-1.4<br>-0.4<br>-0.1 | +10.0<br>-15.4<br>-1.4<br>-0.4<br>-0.1 | + 9.8<br>-16.1<br>-1.4<br>-0.4<br>-0.1 | + 3.0<br>-14.1<br>-1.3<br>-0.4<br>-0.1 | + 3.4<br>-14.5<br>-1.3<br>-0.4<br>-0.1 | + 7.3<br>-15.8<br>-1.0<br>-0.4<br>-0.1 | +10.4<br>-16.5<br>-1.2<br>-0.4<br>-0.1 | + 8.7<br>-14.8<br>-1.5<br>-0.4<br>-0.1 | +10.3<br>-17.8<br>-1.5<br>-0.4<br>-0.1 | + 8.6<br>-15.9<br>-1.0<br>-0.4<br>-0.1 | + 9.3<br>-14.0<br>-1.0<br>-0.4<br>-0.1 | - 0.1<br>-17.6<br>-1.5<br>-0.4<br>-0.1 | + 1.0<br>-10.9<br>-1.4<br>-0.4<br>-0.1 | + 2.1<br>-11.6<br>-1.4<br>-0.4<br>-0.1 | + 1.2<br>-10.2<br>-1.4<br>-0.4<br>-0.1 | Johannsen & Co. | 4497 |                |  |     |
| +10.9<br>-13.3<br>-1.3<br>-0.4<br>-0.1               | + 9.4<br>-13.8<br>-1.3<br>-0.4<br>-0.1 | + 5.4<br>-15.8<br>-1.4<br>-0.4<br>-0.1 | +10.0<br>-15.4<br>-1.4<br>-0.4<br>-0.1 | + 9.8<br>-16.1<br>-1.4<br>-0.4<br>-0.1 | + 3.0<br>-14.1<br>-1.3<br>-0.4<br>-0.1 | + 3.4<br>-14.5<br>-1.3<br>-0.4<br>-0.1 | + 7.3<br>-15.8<br>-1.0<br>-0.4<br>-0.1 | +10.4<br>-16.5<br>-1.2<br>-0.4<br>-0.1 | + 8.7<br>-14.8<br>-1.5<br>-0.4<br>-0.1 | +10.3<br>-17.8<br>-1.5<br>-0.4<br>-0.1 | + 8.6<br>-15.9<br>-1.0<br>-0.4<br>-0.1 | + 9.3<br>-14.0<br>-1.0<br>-0.4<br>-0.1 | - 0.1<br>-17.6<br>-1.5<br>-0.4<br>-0.1 | + 1.0<br>-10.9<br>-1.4<br>-0.4<br>-0.1 | + 2.1<br>-11.6<br>-1.4<br>-0.4<br>-0.1 | + 1.2<br>-10.2<br>-1.4<br>-0.4<br>-0.1 | Johannsen & Co. | 4497 |                |  |     |
| +10.9<br>-13.3<br>-1.3<br>-0.4<br>-0.1               | + 9.4<br>-13.8<br>-1.3<br>-0.4<br>-0.1 | + 5.4<br>-15.8<br>-1.4<br>-0.4<br>-0.1 | +10.0<br>-15.4<br>-1.4<br>-0.4<br>-0.1 | + 9.8<br>-16.1<br>-1.4<br>-0.4<br>-0.1 | + 3.0<br>-14.1<br>-1.3<br>-0.4<br>-0.1 | + 3.4<br>-14.5<br>-1.3<br>-0.4<br>-0.1 | + 7.3<br>-15.8<br>-1.0<br>-0.4<br>-0.1 | +10.4<br>-16.5<br>-1.2<br>-0.4<br>-0.1 | + 8.7<br>-14.8<br>-1.5<br>-0.4<br>-0.1 | +10.3<br>-17.8<br>-1.5<br>-0.4<br>-0.1 | + 8.6<br>-15.9<br>-1.0<br>-0.4<br>-0.1 | + 9.3<br>-14.0<br>-1.0<br>-0.4<br>-0.1 | - 0.1<br>-17.6<br>-1.5<br>-0.4<br>-0.1 | + 1.0<br>-10.9<br>-1.4<br>-0.4<br>-0.1 | + 2.1<br>-11.6<br>-1.4<br>-0.4<br>-0.1 | + 1.2<br>-10.2<br>-1.4<br>-0.4<br>-0.1 | Johannsen & Co. | 4497 |                |  |     |
| +10.9<br>-13.3<br>-1.3<br>-0.4<br>-0.1               | + 9.4<br>-13.8<br>-1.3<br>-0.4<br>-0.1 | + 5.4<br>-15.8<br>-1.4<br>-0.4<br>-0.1 | +10.0<br>-15.4<br>-1.4<br>-0.4<br>-0.1 | + 9.8<br>-16.1<br>-1.4<br>-0.4<br>-0.1 | + 3.0<br>-14.1<br>-1.3<br>-0.4<br>-0.1 | + 3.4<br>-14.5<br>-1.3<br>-0.4<br>-0.1 | + 7.3<br>-15.8<br>-1.0<br>-0.4<br>-0.1 | +10.4<br>-16.5<br>-1.2<br>-0.4<br>-0.1 | + 8.7<br>-14.8<br>-1.5<br>-0.4<br>-0.1 | +10.3<br>-17.8<br>-1.5<br>-0.4<br>-0.1 | + 8.6<br>-15.9<br>-1.0<br>-0.4<br>-0.1 | + 9.3<br>-14.0<br>-1.0<br>-0.4<br>-0.1 | - 0.1<br>-17.6<br>-1.5<br>-0.4<br>-0.1 | + 1.0<br>-10.9<br>-1.4<br>-0.4<br>-0.1 | + 2.1<br>-11.6<br>-1.4<br>-0.4<br>-0.1 | + 1.2<br>-10.2<br>-1.4<br>-0.4<br>-0.1 | Johannsen & Co. | 4497 |                |  |     |
| +10.9<br>-13.3<br>-1.3<br>-0.4<br>-0.1               | + 9.4<br>-13.8<br>-1.3<br>-0.4<br>-0.1 | + 5.4<br>-15.8<br>-1.4<br>-0.4<br>-0.1 | +10.0<br>-15.4<br>-1.4<br>-0.4<br>-0.1 | + 9.8<br>-16.1<br>-1.4<br>-0.4<br>-0.1 | + 3.0<br>-14.1<br>-1.3<br>-0.4<br>-0.1 | + 3.4<br>-14.5<br>-1.3<br>-0.4<br>-0.1 | + 7.3<br>-15.8<br>-1.0<br>-0.4<br>-0.1 | +10.4<br>-16.5<br>-1.2<br>-0.4<br>-0.1 | + 8.7<br>-14.8<br>-1.5<br>-0.4<br>-0.1 | +10.3<br>-17.8<br>-1.5<br>-0.4<br>-0.1 | + 8.6<br>-15.9<br>-1.0<br>-0.4<br>-0.1 | + 9.3<br>-14.0<br>-1.0<br>-0.4<br>-0.1 | - 0.1<br>-17.6<br>-1.5<br>-0.4<br>-0.1 | + 1.0<br>-10.9<br>-1.4<br>-0.4<br>-0.1 | + 2.1<br>-11.6<br>-1.4<br>-0.4<br>-0.1 | + 1.2<br>-10.2<br>-1.4<br>-0.4<br>-0.1 | Johannsen & Co. | 4497 |                |  |     |
| +10.9<br>-13.3<br>-1.3<br>-0.4<br>-0.1               | + 9.4<br>-13.8<br>-1.3<br>-0.4<br>-0.1 | + 5.4<br>-15.8<br>-1.4<br>-0.4<br>-0.1 | +10.0<br>-15.4<br>-1.4<br>-0.4<br>-0.1 | + 9.8<br>-16.1<br>-1.4<br>-0.4<br>-0.1 | + 3.0<br>-14.1<br>-1.3<br>-0.4<br>-0.1 | + 3.4<br>-14.5<br>-1.3<br>-0.4<br>-0.1 | + 7.3<br>-15.8<br>-1.0<br>-0.4<br>-0.1 | +10.4<br>-16.5<br>-1.2<br>-0.4<br>-0.1 | + 8.7<br>-14.8<br>-1.5<br>-0.4<br>-0.1 | +10.3<br>-17.8<br>-1.5<br>-0.4<br>-0.1 | + 8.6<br>-15.9<br>-1.0<br>-0.4<br>-0.1 | + 9.3<br>-14.0<br>-1.0<br>-0.4<br>-0.1 | - 0.1<br>-17.6<br>-1.5<br>-0.4<br>-0.1 | + 1.0<br>-10.9<br>-1.4<br>-0.4<br>-0.1 | + 2.1<br>-11.6<br>-1.4<br>-0.4<br>-0.1 | + 1.2<br>-10.2<br>-1.4<br>-0.4<br>-0.1 | Johannsen & Co. | 4497 |                |  |     |
| +10.9<br>-13.3<br>-1.3<br>-0.4<br>-0.1               | + 9.4<br>-13.8<br>-1.3<br>-0.4<br>-0.1 | + 5.4<br>-15.8<br>-1.4<br>-0.4<br>-0.1 | +10.0<br>-15.4<br>-1.4<br>-0.4<br>-0.1 | + 9.8<br>-16.1<br>-1.4<br>-0.4<br>-0.1 | + 3.0<br>-14.1<br>-1.3<br>-0.4<br>-0.1 | + 3.4<br>-14.5<br>-1.3<br>-0.4<br>-0.1 | + 7.3<br>-15.8<br>-1.0<br>-0.4<br>-0.1 | +10.4<br>-16.5<br>-1.2<br>-0.4<br>-0.1 | + 8.7<br>-14.8<br>-1.5<br>-0.4<br>-0.1 | +10.3<br>-17.8<br>-1.5<br>-0.4<br>-0.1 | + 8.6<br>-15.9<br>-1.0<br>-0.4<br>-0.1 | + 9.3<br>-14.0<br>-1.0<br>-0.4<br>-0.1 | - 0.1<br>-17.6<br>-1.5<br>-0.4<br>-0.1 | + 1.0<br>-10.9<br>-1.4<br>-0.4<br>-0.1 | + 2.1<br>-11.6<br>-1.4<br>-0.4<br>-0.1 | + 1.2<br>-10.2<br>-1.4<br>-0.4<br>-0.1 | Johannsen & Co. | 4497 |                |  |     |
| +10.9<br>-13.3<br>-1.3<br>-0.4<br>-0.1               | + 9.                                   |                                        |                                        |                                        |                                        |                                        |                                        |                                        |                                        |                                        |                                        |                                        |                                        |                                        |                                        |                                        |                 |      |                |  |     |

The Chronometers are placed in

| NAME<br>of<br>MAKER.                                                               | No.   | Days<br>of<br>Trial. | Construction of Equipment<br>and Balance, from the Description<br>furnished by the Maker. | (1) WEEKLY RATES IN |              |               |               |                         |              |                         |               |               |             |               |              |
|------------------------------------------------------------------------------------|-------|----------------------|-------------------------------------------------------------------------------------------|---------------------|--------------|---------------|---------------|-------------------------|--------------|-------------------------|---------------|---------------|-------------|---------------|--------------|
|                                                                                    |       |                      |                                                                                           | Dec.<br>21-28       | Jan.<br>4-11 | Jan.<br>11-18 | Dec.<br>14-21 | Oct. 26<br>to<br>Nov. 2 | Dec.<br>7-14 | Dec. 28<br>to<br>Jan. 4 | Jan.<br>18-25 | Jan.<br>18-26 | Nov.<br>2-9 | Oct.<br>12-19 | Oct.<br>5-12 |
| Kullberg.....                                                                      | 5513  | 2                    | Ordinary balance; palladium spring.                                                       | - 3.9               | - 4.5        | - 3.5         | - 1.9         | - 4.4                   | - 2.0        | - 3.6                   | - 3.7         | - 3.6         | - 2.5       | - 3.0         | - 0.4        |
| Uhlig.....                                                                         | 6108  | 2                    | Uhlig's continually acting auxiliary;<br>bright steel spring.                             | - 4.3               | - 0.4        | - 3.7         | - 1.8         | - 4.3                   | - 1.7        | - 4.1                   | - 3.6         | - 4.8         | - 4.3       | - 0.9         | - 0.4        |
| Uhlig.....                                                                         | 613   | 2                    | Uhlig's continually acting auxiliary;<br>bright steel spring.                             | - 0.0               | - 0.6        | - 0.5         | - 3.5         | - 8.0                   | - 3.8        | - 3.4                   | - 3.6         | - 7.9         | - 6.1       | - 4.7         | - 0.9        |
| Gardner.....                                                                       | 5750  | 2                    | Compensation for extremes; reversed<br>detent; palladium spring.                          | + 7.9               | + 8.1        | + 7.0         | +11.5         | + 5.4                   | +10.2        | + 9.0                   | + 8.6         | + 5.8         | + 6.3       | + 4.9         | + 7.8        |
| Webb.....                                                                          | 5559  | 2                    | Reversed detent; short palladium spring.                                                  | - 28.0              | - 23.5       | - 24.8        | - 22.2        | - 24.1                  | - 24.0       | - 24.4                  | - 23.8        | - 23.0        | - 25.7      | - 23.1        | - 32.4       |
| Isaac.....                                                                         | 1941  | 2                    | Auxiliary to balance; palladium spring.                                                   | + 0.3               | - 1.1        | + 2.0         | + 1.6         | + 1.1                   | + 4.5        | + 0.9                   | + 2.9         | + 0.5         | + 5.4       | + 3.0         | + 4.3        |
| Isaac.....                                                                         | 2011  | 2                    | Auxiliary to balance; palladium spring.                                                   | + 3.8               | - 3.3        | - 2.0         | + 0.0         | + 1.0                   | + 0.4        | - 1.4                   | + 3.3         | + 3.4         | + 3.2       | + 3.0         | + 3.0        |
| Webb.....                                                                          | 5601  | 2                    | Reversed detent; short palladium spring.                                                  | - 42.5              | - 42.7       | - 42.5        | - 42.7        | - 42.5                  | - 42.7       | - 42.5                  | - 42.7        | - 42.5        | - 42.7      | - 42.5        | - 42.7       |
| W. Dent & Co.<br>E. Dent & Co.                                                     | 47324 | 2                    | Detent's balance; bright steel spring.                                                    | - 5.5               | - 7.0        | - 4.7         | - 5.0         | - 6.9                   | - 3.3        | - 2.9                   | - 3.1         | - 4.2         | - 3.5       | - 2.6         | - 2.8        |
| Kullberg.....                                                                      | 5447  | 2                    | [palladium spring.]                                                                       | - 7.7               | - 7.1        | - 6.9         | - 4.8         | - 7.0                   | - 3.4        | - 7.9                   | - 5.6         | - 5.6         | - 5.6       | - 5.6         | - 5.6        |
| Johannsen & Co.                                                                    | 4552  | 2                    | Auxiliary compensation; palladium spring.                                                 | +11.7               | + 9.2        | + 9.7         | +11.0         | + 8.5                   | +12.3        | + 9.7                   | +11.8         | + 9.8         | + 7.6       | + 9.7         | + 8.4        |
| Johannsen & Co.                                                                    | 4543  | 2                    | Auxiliary compensation; palladium spring.                                                 | +10.3               | +11.6        | +11.0         | - 9.0         | - 7.8                   | - 8.5        | - 11.9                  | - 6.5         | - 4.4         | - 5.8       | - 3.7         | - 3.7        |
| Johannsen & Co.                                                                    | 4548  | 2                    | Auxiliary compensation; palladium spring.                                                 | - 2.1               | - 4.0        | - 4.1         | - 1.9         | - 2.6                   | - 1.0        | - 7.0                   | - 3.0         | - 1.1         | - 4.3       | - 1.7         | - 0.9        |
| Johannsen & Co.                                                                    | 4505  | 2                    | Auxiliary compensation; palladium<br>[spring.]                                            | + 0.4               | + 7.5        | + 8.7         | + 0.5         | + 4.8                   | + 0.1        | + 8.0                   | + 4.8         | + 5.2         | + 4.3       | + 5.3         | + 5.3        |
| Pennington & Bates<br>Johannsen & Co.                                              | 2250  | 2                    | Improved balance; bright steel spring.                                                    | + 3.3               | + 4.1        | + 6.2         | + 4.6         | + 1.0                   | + 3.1        | + 4.6                   | + 6.7         | - 2.8         | - 0.4       | - 4.5         | - 2.7        |
| Johannsen & Co.                                                                    | 4449  | 2                    | Auxiliary compensation; palladium spring.                                                 | + 5.0               | - 2.6        | - 2.9         | + 0.0         | + 3.4                   | - 0.4        | - 0.5                   | - 2.8         | + 2.4         | + 1.8       | + 1.0         | + 2.1        |
| Johannsen & Co.                                                                    | 4502  | 2                    | Auxiliary compensation; palladium spring.                                                 | - 4.1               | - 2.5        | - 2.9         | - 4.9         | +11.1                   | - 6.3        | + 0.4                   | - 4.3         | +12.4         | + 8.6       | +12.6         | +12.6        |
| Kullberg.....                                                                      | 5546  | 2                    | Auxiliary balance; reversed detent;<br>bright steel spring.                               | -11.2               | -12.3        | - 9.3         | - 9.5         | - 8.8                   | - 10.0       | - 9.3                   | - 10.2        | - 6.2         | - 6.4       | - 6.5         | - 6.5        |
| Hawell & Sons                                                                      | 5219  | 2                    | Non-magnetic balance and spring.                                                          | -14.5               | -14.9        | -14.1         | -13.1         | - 9.8                   | -15.0        | -14.8                   | -13.5         | - 6.4         | - 9.9       | -10.1         | - 9.4        |
| Kullberg.....                                                                      | 5507  | 2                    | [palladium spring.]                                                                       | -16.8               | -16.5        | -14.5         | -13.8         | -12.9                   | -13.7        | -14.4                   | -15.5         | -11.5         | -11.7       | -11.1         | - 7.5        |
| Johannsen & Co.                                                                    | 4528  | 2                    | Auxiliary compensation; palladium spring.                                                 | -14.0               | -10.5        | - 8.5         | -10.1         | - 3.3                   | - 9.7        | - 8.0                   | - 4.6         | - 1.2         | - 2.5       | - 1.8         | + 3.1        |
| Johannsen & Co.                                                                    | 4528  | 2                    | Auxiliary compensation; palladium spring.                                                 | - 0.0               | - 8.3        | - 7.8         | - 0.1         | - 1.3                   | - 1.2        | - 8.8                   | - 7.9         | - 4.1         | - 4.8       | - 5.4         | - 1.1        |
| Kullberg.....                                                                      | 5503  | 2                    | Auxiliary compensation; palladium spring.                                                 | -12.5               | -11.6        | - 9.9         | - 8.4         | - 7.9                   | + 3.8        | - 5.1                   | + 2.1         | - 2.9         | - 4.9       | - 4.1         | - 3.0        |
| Kullberg.....                                                                      | 5503  | 2                    | Auxiliary balance; reversed detent;<br>[palladium spring.]                                | -12.5               | -11.6        | - 9.9         | - 8.4         | - 7.9                   | + 3.8        | - 5.1                   | + 2.1         | - 2.9         | - 4.9       | - 4.1         | - 3.0        |
| Johannsen & Co.                                                                    | 4556  | 2                    | [spring.]                                                                                 | + 8.7               | +10.6        | +11.3         | + 7.2         | + 6.9                   | + 9.3        | + 4.5                   | +10.5         | + 6.1         | + 4.0       | + 1.3         | + 8.8        |
| Kullberg.....                                                                      | 4521  | 2                    | Auxiliary balance; reversed detent; palladium spring.                                     | -13.5               | -13.7        | -13.2         | -12.9         | -14.1                   | -13.8        | -14.2                   | -13.0         | -11.7         | -12.8       | -10.6         | -10.6        |
| Laing.....                                                                         | 5515  | 2                    | Compensation for extremes; reversed<br>detent; bright steel spring.                       | + 9.1               | + 3.2        | + 3.0         | + 4.4         | +10.2                   | + 13.0       | + 10.7                  | +13.9         | + 7.8         | +11.1       | + 6.0         | + 8.5        |
| Webb.....                                                                          | 5566  | 2                    | Reversed detent; short palladium spring.                                                  | + 7.4               | + 4.0        | + 6.7         | + 7.4         | + 4.2                   | + 5.3        | + 6.7                   | + 4.9         | + 3.4         | + 2.7       | + 1.3         | + 2.4        |
| Johannsen & Co.                                                                    | 4468  | 2                    | Auxiliary compensation; [spring.]                                                         | + 9.0               | + 4.0        | + 1.0         | +10.1         | + 7.3                   | +11.5        | + 1.8                   | + 1.1         | + 9.3         | + 4.3       | + 9.8         | + 4.0        |
| Webb.....                                                                          | 5508  | 2                    | Reversed detent; short palladium spring.                                                  | - 21.0              | -17.8        | -14.9         | -10.9         | - 31.7                  | - 21.5       | - 16.5                  | - 14.5        | - 17.9        | -19.1       | -17.5         | -17.5        |
| Johannsen & Co.                                                                    | 4500  | 2                    | Auxiliary compensation; palladium spring.                                                 | + 4.0               | + 3.9        | + 4.3         | + 7.6         | + 11.8                  | + 10.6       | + 11.4                  | + 10.7        | + 10.6        | + 10.6      | + 10.6        | + 11.1       |
| Johannsen & Co.                                                                    | 4555  | 2                    | Auxiliary compensation; palladium spring.                                                 | + 4.6               | + 2.3        | + 0.8         | + 4.4         | + 1.4                   | + 7.7        | + 0.1                   | + 4.0         | + 9.3         | - 0.0       | - 1.9         | - 0.8        |
| Johannsen & Co.                                                                    | 4484  | 2                    | Auxiliary compensation; [spring.]                                                         | - 4.5               | - 6.0        | - 3.1         | - 3.5         | - 9.9                   | - 3.4        | - 6.6                   | - 3.1         | - 6.6         | - 3.8       | - 5.0         | + 4.1        |
| Chronometrical<br>Thermometer.                                                     |       |                      |                                                                                           | +1378.3             | +1609.4      | +1610.0       | +1600.6       | +1435.4                 | +1399.5      | +1384.8                 | +1363.9       | +1288.1       | +1207.5     | +879.0        | +787.0       |
| Mean Weekly Tempera-<br>ture.                                                      |       |                      |                                                                                           | 47.0                | 51.8         | 53.5          | 51.8          | 50.6                    | 50.1         | 53.8                    | 54.5          | 53.5          | 54.8        | 57.1          | 58.1         |
| Extremes of Tempera-<br>ture as shown by the<br>Self-Registering Ther-<br>mometer. |       |                      |                                                                                           | 42.1-55.9           | 47.5-57.3    | 49.0-59.2     | 46.9-59.5     | 46.2-59.4               | 45.7-57.3    | 46.2-58.8               | 49.9-59.4     | 47.9-59.0     | 49.4-59.1   | 49.4-59.0     | 46.4-61.4    |

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

John G. Wolbach Library, Harvard-Smithsonian Center for

## ORDER OF TEMPERATURE AS DETERMINED GENERALLY BY THE CHRONOMETRICAL THERMOMETER.

| Aug.<br>3-10 | July 27<br>to<br>Aug. 3 | Aug.<br>10-17 | Sept. 28<br>to<br>Oct. 5 | Sept.<br>21-28 | July<br>20-27 | July<br>13-20 | July<br>6-13 | Aug.<br>17-24 | Nov.<br>9-16 | Nov. 30<br>to<br>Dec. 7 | Aug.<br>24-31 | Sept.<br>14-21 | Nov.<br>23-30 | Nov.<br>16-23 | Sept.<br>7-14 | Aug. 31<br>to<br>Sept. 7 |
|--------------|-------------------------|---------------|--------------------------|----------------|---------------|---------------|--------------|---------------|--------------|-------------------------|---------------|----------------|---------------|---------------|---------------|--------------------------|
| s            | s                       | s             | s                        | s              | s             | s             | s            | s             | s            | s                       | s             | s              | s             | s             | s             | s                        |
| - 0.4        | - 0.4                   | - 1.5         | - 0.8                    | - 0.6          | - 1.0         | - 1.1         | - 1.1        | - 0.8         | + 1.1        | + 1.1                   | + 0.2         | - 1.3          | - 0.3         | - 0.9         | - 0.9         | - 2.6                    |
| - 0.4        | - 0.4                   | - 4.1         | - 4.0                    | - 2.0          | + 0.1         | + 1.0         | + 0.8        | - 3.0         | - 3.4        | - 3.4                   | - 3.4         | + 0.4          | - 1.3         | - 0.9         | - 0.0         | - 2.0                    |
| - 0.6        | - 6.1                   | - 7.0         | - 1.8                    | - 3.1          | - 4.3         | - 4.0         | - 4.4        | - 8.0         | - 3.0        | - 3.1                   | - 5.0         | - 3.9          | - 4.3         | - 3.8         | - 0.7         | - 7.5                    |
| +11.6        | +11.5                   | +11.1         | + 7.0                    | + 8.3          | +13.8         | +14.3         | +13.2        | +11.7         | + 7.2        | +13.4                   | +13.8         | + 9.3          | +12.1         | + 4.9         | +10.2         | +13.5                    |
| - 28.0       | - 28.1                  | - 28.2        | - 27.4                   | - 25.5         | - 24.5        | - 23.9        | - 24.6       | - 30.5        | - 30.6       | - 29.9                  | - 30.1        | - 28.3         | - 29.1        | - 30.0        | - 30.4        | - 28.5                   |
| + 3.2        | + 1.4                   | + 4.5         | + 3.5                    | + 3.6          | + 3.0         | + 2.9         | + 2.9        | + 6.3         | + 5.2        | + 7.1                   | + 5.0         | + 5.8          | + 6.6         | + 7.3         | + 4.7         | + 4.3                    |
| + 1.2        | + 1.0                   | + 0.9         | + 0.1                    | + 0.4          | + 3.8         | + 1.5         | + 1.3        | + 3.0         | + 2.8        | + 3.0                   | + 5.8         | + 3.7          | + 4.2         | + 3.5         | + 3.8         | + 3.0                    |
| +11.6        | +11.6                   | +11.6         | +11.6                    | +11.6          | +11.6         | +11.6         | +11.6        | +11.6         | +11.6        | +11.6                   | +11.6         | +11.6          | +11.6         | +11.6         | +11.6         | +11.6                    |
| - 2.1        | - 1.6                   | - 2.5         | - 2.3                    | - 3.5          | - 1.0         | + 1.5         | + 2.8        | - 0.4         | - 3.7        | - 0.8                   | - 3.6         | - 2.8          | - 5.8         | - 5.6         | - 4.3         | - 6.1                    |
| - 0.6        | - 0.9                   | + 0.2         | - 1.7                    | - 0.4          | - 0.1         | + 0.4         | - 0.5        | - 0.0         | - 0.9        | - 0.2                   | + 2.3         | + 0.8          | - 0.7         | - 0.7         | + 0.7         | + 0.6                    |
| + 2.9        | + 6.1                   | + 6.9         | + 0.7                    | + 0.0          | + 0.3         | + 4.8         | + 4.8        | + 4.8         | + 4.8        | + 4.8                   | + 4.8         | + 4.8          | + 4.8         | + 4.8         | + 4.8         | + 4.8                    |
| - 0.9        | - 1.5                   | - 1.5         | - 4.6                    | - 4.0          | + 0.0         | + 0.5         | - 0.4        | - 2.0         | - 4.0        | - 0.8                   | - 3.7         | - 6.0          | - 8.7         | - 8.4         | - 8.6         | - 7.3                    |
| + 2.9        | + 1.9                   | + 2.6         | + 2.4                    | + 3.0          | + 2.0         | + 1.4         | + 1.0        | + 3.9         | + 1.1        | + 3.4                   | + 3.0         | + 3.6          | + 3.0         | + 2.6         | + 1.7         | + 1.6                    |
| - 0.9        | - 1.3                   | - 1.8         | - 0.6                    | + 0.2          | + 0.3         | + 0.6         | - 1.8        | + 0.3         | + 9.7        | +10.0                   | + 3.6         | + 5.6          | + 8.7         | +10.4         | + 5.4         | + 3.0                    |
| - 7.5        | - 8.5                   | - 7.7         | - 2.3                    | - 4.4          | - 8.8         | - 7.0         | - 7.9        | - 4.6         | + 3.7        | + 5.0                   | - 2.6         | - 2.8          | - 4.3         | + 4.0         | - 4.1         | - 5.3                    |
| - 3.4        | - 2.3                   | - 3.5         | + 2.6                    | + 1.6          | + 0.9         | + 1.9         | + 0.8        | - 2.4         | + 5.4        | + 4.4                   | + 1.5         | + 4.6          | + 3.1         | + 3.6         | + 0.2         | + 4.3                    |
| + 3.9        | + 2.0                   | + 4.6         | + 9.2                    | + 8.9          | + 6.7         | + 4.6         | + 4.5        | +10.2         | + 7.4        | + 3.8                   | + 7.8         | - 7.0          | + 0.9         | - 8.2         | + 0.8         | + 0.8                    |
| - 4.1        | - 2.8                   | - 4.3         | - 4.1                    | - 4.5          | + 1.0         | - 0.7         | - 1.4        | + 0.0         | - 6.0        | - 3.4                   | - 5.0         | - 6.0          | - 6.4         | - 4.9         | - 1.7         | - 0.9                    |
| - 6.4        | - 5.3                   | - 7.1         | -11.6                    | -12.3          | - 4.6         | - 3.0         | - 3.3        | - 9.4         | -14.9        | -15.6                   | -10.7         | - 6.6          | -12.6         | -13.2         | - 4.9         | - 4.9                    |
| - 6.3        | - 5.0                   | - 7.0         | - 7.1                    | - 7.3          | - 3.6         | - 1.2         | - 1.4        | - 5.9         | -11.2        | - 8.6                   | - 6.4         | - 8.1          | -11.1         | -12.6         | - 0.6         | - 8.6                    |
| + 5.4        | + 5.3                   | + 4.9         | + 4.6                    | + 4.9          | + 6.1         | + 5.0         | + 4.8        | + 4.8         | + 4.8        | + 4.8                   | + 4.8         | + 4.8          | + 4.8         | + 4.8         | + 4.8         | + 4.8                    |
| - 4.6        | - 4.6                   | - 3.7         | - 1.8                    | - 1.0          | - 1.6         | - 2.8         | - 2.6        | - 3.1         | + 0.9        | + 1.2                   | + 0.9         | + 1.8          | + 0.1         | - 7.5         | + 4.4         | + 3.0                    |
| - 1.9        | - 1.8                   | - 2.0         | - 1.3                    | - 2.1          | - 0.9         | - 0.6         | - 0.0        | - 1.7         | - 1.0        | - 1.8                   | - 1.2         | - 1.5          | - 4.8         | - 3.2         | - 3.0         | - 3.1                    |
| - 0.6        | + 2.0                   | - 1.3         | + 9.9                    | + 7.9          | + 4.6         | + 4.7         | + 2.8        | + 3.6         | +10.4        | +13.3                   | + 6.8         | + 8.1          | +12.6         | +10.6         | + 3.8         | + 6.3                    |
| - 1.8        | - 2.2                   | - 2.1         | -11.8                    | -10.3          | - 1.9         | - 1.4         | - 2.6        | - 1.6         | -11.0        | -13.8                   | - 7.9         | -11.1          | -14.4         | -14.4         | -16.9         | -13.6                    |
| + 7.9        | + 6.8                   | + 7.3         | + 4.6                    | + 6.0          | + 7.2         | + 3.1         | + 4.0        | + 7.6         | + 1.5        | + 1.2                   | + 5.0         | + 3.0          | + 2.0         | - 4.5         | - 0.0         | + 8.0                    |
| - 6.2        | - 5.8                   | - 6.4         | - 0.5                    | + 0.5          | - 3.3         | - 2.3         | - 2.1        | - 7.6         | - 3.4        | - 1.2                   | - 7.9         | - 5.4          | - 1.2         | - 2.3         | - 4.1         | - 6.0                    |
| + 2.6        | + 4.8                   | + 4.1         | + 7.6                    | + 9.9          | + 4.6         | + 0.6         | + 1.6        | + 4.4         | + 9.3        | +14.9                   | + 0.8         | + 9.5          | +11.8         | + 9.3         | + 0.8         | + 8.1                    |
| -17.7        | -17.9                   | -19.7         | -16.8                    | -19.1          | -17.4         | -18.4         | -18.9        | -19.0         | -19.3        | -11.8                   | -20.6         | -19.9          | -19.1         | -19.1         | -19.6         | -18.5                    |
| + 4.7        | + 3.2                   | + 4.0         | +11.1                    | + 9.1          | + 3.4         | + 2.0         | + 1.3        | + 6.9         | +10.1        | +10.0                   | + 3.4         | +10.6          | +10.7         | +10.9         | +10.9         | +10.9                    |
| - 0.3        | - 0.7                   | - 0.5         | + 1.7                    | + 0.4          | + 8.0         | +11.0         | + 9.3        | + 4.0         | + 2.1        | + 4.7                   | + 6.1         | + 8.9          | - 0.6         | + 0.8         | + 7.4         | + 5.0                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4.3         | + 5.0          | + 5.2         | + 5.0         | + 5.0         | + 4.6                    |
| - 3.1        | - 2.3                   | - 3.0         | + 3.9                    | + 3.5          | + 0.0         | + 1.0         | + 0.1        | + 0.9         | + 5.0        | + 5.2                   | + 4           |                |               |               |               |                          |

| NAME<br>OF<br>MAKER.                                                                    | No.                           | Whether<br>on<br>Days. | Construction of Escapement<br>and Balance, from the Description<br>Furnished by the Maker.                                                    | (II.) WEEKLY RATES IN |              |               |               |                         |              |                         |               |               |             |               |              | ORDER OF TEMPERATURE AS DETERMINED GENERALLY BY THE CHRONOMETRICAL THERMOMETER. |                         |               |                          |                |               |               |              |               |              |                         |               |                |               | NAME<br>OF<br>MAKER. | No.        |               |                                                                                     |                          |       |
|-----------------------------------------------------------------------------------------|-------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------|---------------|---------------|-------------------------|--------------|-------------------------|---------------|---------------|-------------|---------------|--------------|---------------------------------------------------------------------------------|-------------------------|---------------|--------------------------|----------------|---------------|---------------|--------------|---------------|--------------|-------------------------|---------------|----------------|---------------|----------------------|------------|---------------|-------------------------------------------------------------------------------------|--------------------------|-------|
|                                                                                         |                               |                        |                                                                                                                                               | Dec.<br>21-28         | Jan.<br>4-11 | Jan.<br>11-18 | Dec.<br>14-21 | Oct. 26<br>to<br>Nov. 2 | Dec.<br>7-14 | Dec. 28<br>to<br>Jan. 4 | Jan.<br>18-25 | Oct.<br>19-26 | Nov.<br>2-9 | Oct.<br>12-19 | Oct.<br>6-12 | Aug.<br>3-10                                                                    | July 27<br>to<br>Aug. 3 | Aug.<br>10-17 | Sept. 28<br>to<br>Oct. 5 | Sept.<br>21-28 | July<br>20-27 | July<br>13-20 | July<br>6-13 | Aug.<br>17-24 | Nov.<br>9-16 | Nov. 30<br>to<br>Dec. 7 | Aug.<br>24-31 | Sept.<br>14-21 | Nov.<br>23-30 |                      |            | Nov.<br>16-23 | Sept.<br>7-14                                                                       | Aug. 31<br>to<br>Sept. 7 |       |
| Johannes & Co.<br>Kullberg.....                                                         | 4497<br>5489                  | 2                      | Auxiliary compensation; [spring]<br>palladium spring.                                                                                         | +9.3                  | +1.0         | +2.1          | +8.6          | +9.8                    | +10.3        | -0.1                    | +1.2          | +10.0         | +9.0        | +5.4          | +9.4         | +0.2                                                                            | +1.1                    | -0.9          | +10.9                    | +9.8           | +3.1          | +4.3          | +3.6         | +2.1          | +3.4         | +8.7                    | +6.9          | +5.5           | +10.4         | +7.2                 | +8.0       | +5.0          | Johannes & Co.                                                                      | 4497                     |       |
| Johannes & Co.<br>Kullberg.....                                                         | 4498<br>5490                  | 2                      | Auxiliary balance; reversed detent;<br>[palladium spring.]                                                                                    | -19.0                 | -10.9        | -10.9         | -15.9         | -18.1                   | -17.8        | -17.6                   | -18.0         | -18.4         | -14.1       | -15.2         | -12.6        | -4.6                                                                            | -3.8                    | -5.2          | -13.3                    | -13.2          | -0.8          | -1.6          | -2.2         | -6.6          | -14.4        | -14.8                   | -5.4          | -13.3          | -15.0         | -15.8                | -14.1      | -11.9         | Kullberg.....                                                                       | 5489                     |       |
| Johannes & Co.<br>Kullberg.....                                                         | 4499<br>5491                  | 2                      | Auxiliary compensation; palladium spring.                                                                                                     | +4.0                  | +1.4         | +1.3          | +4.0          | +3.6                    | +1.6         | +0.6                    | +1.1          | +3.0          | +0.8        | +0.8          | +0.2         | +0.2                                                                            | +11.6                   | +11.6         | +1.3                     | +0.5           | +4.0          | +3.3          | +0.6         | +1.6          | +4.0         | +1.6                    | +0.1          | +1.9           | +3.3          | +3.6                 | +7.6       | +7.6          | Johannes & Co.                                                                      | 5490                     |       |
| Johannes & Co.<br>Kullberg.....                                                         | 4500<br>5492                  | 2                      | Auxiliary compensation; palladium spring.                                                                                                     | +11.9                 | +8.6         | +9.9          | +9.8          | +1.6                    | +10.0        | +3.6                    | +10.2         | +0.7          | +1.3        | +2.0          | +2.2         | +5.3                                                                            | +10.6                   | +8.6          | +0.4                     | +5.6           | +10.2         | +9.3          | +8.9         | +7.2          | +12.0        | +11.9                   | +12.7         | +10.0          | +10.0         | +10.0                | +10.0      | +10.0         | Johannes & Co.                                                                      | 5491                     |       |
| Johannes & Co.<br>Kullberg.....                                                         | 4501<br>5493                  | 2                      | Auxiliary balance; reversed detent;<br>[palladium spring.]                                                                                    | -15.9                 | -21.6        | -20.2         | -14.0         | -6.9                    | -11.9        | -17.6                   | -19.2         | -8.9          | -8.1        | -10.6         | -7.9         | +5.3                                                                            | +8.9                    | +5.9          | +6.1                     | +0.1           | +0.8          | +0.8          | +2.0         | +9.2          | +11.6        | +8.2                    | +1.4          | +7.8           | +6.6          | +0.9                 | +6.9       | +6.4          | Kullberg.....                                                                       | 5492                     |       |
| E. Dent & Co.<br>Gardner.....                                                           | 47587<br>7371                 | 2                      | Dent's balance; bright steel spring.<br>Compensation for extremes; reversed<br>detent; bright steel spring.                                   | +11.0                 | +7.0         | +9.6          | +11.9         | +8.3                    | +13.3        | +10.0                   | +9.0          | +11.3         | +10.1       | +9.3          | +10.1        | +2.8                                                                            | +1.4                    | +0.8          | +12.2                    | +10.4          | +4.0          | +4.8          | +1.9         | +12.3         | +13.8        | +15.1                   | +14.5         | +14.7          | +14.7         | +14.7                | +14.7      | +13.1         | E. Dent & Co.                                                                       | 47587                    |       |
| Isaac<br>J. D. Dent & Sons<br>Keys.....                                                 | 1918<br>5858<br>970           | 2                      | Improved ordinary balance; [spring]<br>palladium spring.                                                                                      | -3.5                  | -3.8         | -5.0          | -2.1          | -2.6                    | -1.7         | -5.1                    | -3.0          | -4.4          | -4.3        | -3.7          | -2.9         | +6.4                                                                            | +6.2                    | +5.1          | +0.9                     | -0.1           | +7.6          | +5.3          | +6.2         | +3.5          | +0.2         | +6.3                    | +3.8          | +9.1           | +7.1          | +6.1                 | +8.6       | +8.4          | Isaac<br>J. D. Dent & Sons                                                          | 1918                     |       |
| Isaac<br>J. D. Dent & Sons<br>Keys.....                                                 | 5858<br>970                   | 2                      | Auxiliary compensation; bright steel<br>[spring.]                                                                                             | -7.6                  | -8.0         | -1.6          | -4.1          | -3.7                    | -4.4         | -2.1                    | -1.6          | -3.6          | -1.9        | -2.6          | +0.7         | +0.4                                                                            | +1.0                    | +0.3          | +1.6                     | +0.1           | +0.8          | +0.8          | +0.6         | +0.4          | +3.4         | +5.7                    | +1.9          | +1.9           | +1.9          | +1.9                 | +1.9       | +1.9          | Keys.....                                                                           | 970                      |       |
| Isaac<br>J. D. Dent & Sons<br>Keys.....                                                 | 5858<br>970                   | 2                      | Auxiliary compensation; bright steel<br>[spring.]                                                                                             | +13.5                 | +13.2        | +10.4         | +15.2         | +13.9                   | +13.3        | +14.3                   | +13.9         | +13.6         | +13.7       | +10.6         | +10.8        | +9.0                                                                            | +8.1                    | +9.6          | +9.6                     | +8.6           | +8.6          | +9.3          | +8.9         | +13.9         | +14.3        | +12.0                   | +9.6          | +13.3          | +13.2         | +1.3                 | +2.3       | +2.3          | Keys.....                                                                           | 970                      |       |
| E. Dent & Co.<br>Johannes & Co.<br>Kendall & Dent.<br>Usher & Cole.....                 | 46755<br>4532<br>5858<br>8172 | 2                      | Dent's balance; bright steel spring.<br>Auxiliary compensation; palladium spring.<br>Auxiliary action in heat and cold;<br>blue steel spring. | -4.8                  | -10.5        | -10.4         | -4.4          | -4.0                    | -4.0         | -9.3                    | -9.8          | -6.5          | -9.9        | -8.7          | -5.5         | +0.6                                                                            | +4.3                    | +3.7          | +4.8                     | +1.9           | +1.6          | +0.8          | +1.6         | +1.6          | +1.6         | +1.6                    | +1.6          | +1.6           | +1.6          | +1.6                 | +1.6       | +1.6          | +1.6                                                                                | E. Dent & Co.            | 46755 |
| E. Dent & Co.<br>Johannes & Co.<br>Kendall & Dent.<br>Usher & Cole.....                 | 4532<br>5858<br>8172          | 2                      | Auxiliary compensation; palladium spring.                                                                                                     | +14.8                 | +8.9         | +12.3         | +10.9         | +2.0                    | +10.0        | +10.0                   | +10.0         | +10.0         | +10.0       | +10.0         | +10.0        | +10.0                                                                           | +10.0                   | +10.0         | +10.0                    | +10.0          | +10.0         | +10.0         | +10.0        | +10.0         | +10.0        | +10.0                   | +10.0         | +10.0          | +10.0         | +10.0                | +10.0      | +10.0         | +10.0                                                                               | Johannes & Co.           | 4532  |
| E. Dent & Co.<br>Johannes & Co.<br>Kendall & Dent.<br>Usher & Cole.....                 | 5858<br>8172                  | 2                      | Auxiliary action in heat and cold;<br>blue steel spring.                                                                                      | -0.4                  | -7.3         | -10.9         | -10.9         | -6.0                    | -10.9        | -14.1                   | -9.2          | -7.4          | -18.8       | -14.7         | -11.9        | +1.1                                                                            | +1.1                    | +1.1          | +1.1                     | +1.1           | +1.1          | +1.1          | +1.1         | +1.1          | +1.1         | +1.1                    | +1.1          | +1.1           | +1.1          | +1.1                 | +1.1       | +1.1          | +1.1                                                                                | Kendall & Dent.          | 5858  |
| E. Dent & Co.<br>Johannes & Co.<br>Kendall & Dent.<br>Usher & Cole.....                 | 8172                          | 2                      | Auxiliary to balance acting in ex-<br>tremes; blue steel spring.                                                                              | +13.3                 | +13.3        | +13.3         | +10.9         | +11.2                   | +8.0         | +13.8                   | +13.1         | +10.4         | +11.3       | +8.4          | +10.0        | -1.1                                                                            | -5.3                    | -1.3          | +6.3                     | +5.3           | -3.1          | -1.6          | +1.4         | +11.9         | +14.3        | -1.6                    | +6.0          | +11.3          | +10.8         | -1.0                 | -4.6       | Usher & Cole. | 8172                                                                                |                          |       |
| E. Dent & Co.<br>Johannes & Co.<br>Kendall & Dent.<br>Usher & Cole.....                 | 5487                          | 2                      | Auxiliary balance; reversed detent;<br>[palladium spring.]                                                                                    | -18.5                 | -18.6        | -16.4         | -14.4         | -12.9                   | -14.9        | -16.6                   | -17.1         | -10.6         | -11.6       | -9.0          | -7.4         | -1.6                                                                            | -1.6                    | -2.1          | -6.4                     | -5.6           | -1.3          | -1.1          | -1.0         | -1.6          | -5.6         | -6.6                    | +0.6          | -8.9           | -6.8          | -0.8                 | -1.7       | -1.0          | Kullberg.....                                                                       | 5487                     |       |
| Johannes & Co.<br>Johannes & Co.<br>Kendall & Dent.<br>School.....                      | 4514<br>4513<br>4499<br>9059  | 2                      | Auxiliary compensation; palladium<br>spring.                                                                                                  | +13.1                 | +9.6         | +9.3          | +12.8         | +9.8                    | +8.3         | +8.9                    | +9.7          | +10.7         | +9.7        | +8.3          | +10.3        | +12.1                                                                           | +9.0                    | +12.1         | +10.3                    | +15.6          | +10.1         | +10.3         | +10.3        | +10.3         | +10.3        | +10.3                   | +10.3         | +10.3          | +10.3         | +10.3                | +10.3      | +10.3         | +10.3                                                                               | Johannes & Co.           | 4514  |
| Johannes & Co.<br>Johannes & Co.<br>Kendall & Dent.<br>School.....                      | 4513<br>4499<br>9059          | 2                      | Auxiliary compensation; palladium spring.                                                                                                     | +12.7                 | +8.0         | +9.1          | +10.3         | +15.6                   | +15.6        | +10.1                   | +10.1         | +10.1         | +10.1       | +10.1         | +10.1        | +10.1                                                                           | +10.1                   | +10.1         | +10.1                    | +10.1          | +10.1         | +10.1         | +10.1        | +10.1         | +10.1        | +10.1                   | +10.1         | +10.1          | +10.1         | +10.1                | +10.1      | +10.1         | +10.1                                                                               | Johannes & Co.           | 4499  |
| Johannes & Co.<br>Johannes & Co.<br>Kendall & Dent.<br>School.....                      | 4499<br>9059                  | 2                      | Auxiliary compensation; palladium spring.                                                                                                     | +10.2                 | +7.9         | +8.1          | +10.7         | +11.4                   | +10.1        | +7.1                    | +9.9          | +11.3         | +10.3       | +12.0         | +12.0        | +10.2                                                                           | +7.9                    | +8.1          | +10.7                    | +11.4          | +10.1         | +7.1          | +9.9         | +11.3         | +10.3        | +12.0                   | +12.0         | +10.2          | +7.9          | +8.1                 | +10.7      | +11.4         | +10.1                                                                               | Johannes & Co.           | 9059  |
| Johannes & Co.<br>Johannes & Co.<br>Kendall & Dent.<br>School.....                      | 9059                          | 2                      | Auxiliary compensation; palladium spring.                                                                                                     | -13.0                 | -8.9         | -10.2         | -10.1         | -10.3                   | -9.4         | -14.8                   | -6.3          | -9.8          | -13.3       | -11.9         | -9.2         | -10.0                                                                           | -8.0                    | -9.0          | -8.7                     | -8.5           | -1.9          | +1.0          | +1.0         | +1.0          | +1.0         | +1.0                    | +1.0          | +1.0           | +1.0          | +1.0                 | +1.0       | +1.0          | +1.0                                                                                | School.....              | 9059  |
| Prot<br>Johannes & Co.<br>Kendall & Dent.<br>School.....                                | 960<br>4490<br>8171<br>1944   | 2                      | Improved ordinary balance; bright<br>steel spring.                                                                                            | +0.8                  | -1.9         | -1.3          | +0.0          | -0.7                    | +4.4         | -0.0                    | -2.0          | -1.8          | -1.7        | -2.3          | -2.2         | +2.8                                                                            | +1.8                    | +2.7          | -0.3                     | +4.8           | +9.3          | +6.7          | +7.5         | +4.4          | +10.3        | +13.0                   | +14.3         | +14.3          | +14.3         | +14.3                | +14.3      | +14.3         | Prot                                                                                | 960                      |       |
| Prot<br>Johannes & Co.<br>Kendall & Dent.<br>School.....                                | 4490<br>8171<br>1944          | 2                      | Auxiliary compensation; palladium spring.                                                                                                     | +7.8                  | +1.7         | +2.1          | +5.9          | +1.7                    | +6.1         | +1.6                    | +2.4          | +1.9          | +1.5        | +1.7          | +4.9         | +2.8                                                                            | +1.7                    | +1.7          | +1.7                     | +1.7           | +1.7          | +1.7          | +1.7         | +1.7          | +1.7         | +1.7                    | +1.7          | +1.7           | +1.7          | +1.7                 | +1.7       | +1.7          | +1.7                                                                                | Johannes & Co.           | 4490  |
| Prot<br>Johannes & Co.<br>Kendall & Dent.<br>School.....                                | 8171<br>1944                  | 2                      | Auxiliary action in extremes; blue steel<br>spring.                                                                                           | +0.7                  | +0.0         | +11.8         | +10.3         | +4.8                    | +9.4         | +8.8                    | +12.6         | +7.4          | +6.9        | +8.3          | +11.1        | +10.5                                                                           | +1.7                    | +1.7          | +1.7                     | +1.7           | +1.7          | +1.7          | +1.7         | +1.7          | +1.7         | +1.7                    | +1.7          | +1.7           | +1.7          | +1.7                 | +1.7       | +1.7          | +1.7                                                                                | Kendall & Dent.          | 8171  |
| Prot<br>Johannes & Co.<br>Kendall & Dent.<br>School.....                                | 1944                          | 2                      | Reversed detent; short palladium spring.<br>Non-magnetic balance and spring.                                                                  | -12.0                 | -13.8        | -13.0         | -18.7         | -14.0                   | -13.8        | -14.1                   | -13.5         | -14.7         | -16.6       | -16.3         | -16.2        | -16.5                                                                           | +1.7                    | +1.7          | +1.7                     | +1.7           | +1.7          | +1.7          | +1.7         | +1.7          | +1.7         | +1.7                    | +1.7          | +1.7           | +1.7          | +1.7                 | +1.7       | +1.7          | +1.7                                                                                | School.....              | 1944  |
| Keys<br>Webb<br>Hawell & Sons                                                           | 965<br>5858<br>960            | 2                      | Auxiliary compensation; [spring]<br>palladium spring.                                                                                         | +9.8                  | +12.6        | +13.0         | +16.1         | +22.4                   | +12.7        | +11.1                   | +13.1         | +12.1         | +15.5       | +13.4         | +19.5        | -2.0                                                                            | -2.4                    | -0.3          | +16.0                    | +10.6          | -2.5          | -2.3          | -2.4         | -0.1          | +11.3        | +9.7                    | +5.5          | +12.0          | +7.8          | +9.5                 | +2.1       | -3.6          | Keys.....                                                                           | 965                      |       |
| Keys<br>Webb<br>Hawell & Sons                                                           | 5858<br>960                   | 2                      | Reversed detent; short palladium spring.<br>Non-magnetic balance and spring.                                                                  | -1.0                  | -1.0         | -3.1          | -5.8          | -7.8                    | -6.0         | -6.0                    | -8.9          | -5.1          | -12.9       | -9.3          | -8.1         | -20.2                                                                           | -20.2                   | -20.2         | -12.8                    | -14.3          | -30.3         | -9.0          | -5.1         | -37.6         | -19.1        | -6.0                    | -22.0         | -15.6          | -14.3         | -14.3                | -17.9      | -22.2         | Webb.....                                                                           | 5858                     |       |
| Keys<br>Webb<br>Hawell & Sons                                                           | 960                           | 2                      | Auxiliary compensation; [spring]<br>palladium spring.                                                                                         | -4.4                  | -9.0         | -8.0          | -5.6          | -0.6                    | -7.6         | -12.9                   | -6.3          | +2.1          | -3.7        | +0.2          | -3.1         | +9.3                                                                            | +10.1                   | +7.2          | +4.0                     | +6.0           | +11.9         | +13.8         | +10.7        | +4.9          | +9.0         | -19.0                   | +1.8          | +7.7           | -11.0         | -19.9                | +4.7       | +9.3          | Hawell & Sons                                                                       | 960                      |       |
| Chronometrical<br>Thermometer.....                                                      |                               |                        |                                                                                                                                               | +1078.8               | +1089.4      | +1016.0       | +1050.6       | +1485.4                 | +1399.6      | +1395.0                 | +1382.4       | +1238.1       | +1087.8     | +878.6        | +787.0       | +1078.8                                                                         | +1090.4                 | +1089.4       | +1089.4                  | +1089.4        | +1089.4       | +1089.4       | +1089.4      | +1089.4       | +1089.4      | +1089.4                 | +1089.4       | +1089.4        | +1089.4       | +1089.4              | +1089.4    | +1089.4       | Chronometrical<br>Thermometer.                                                      |                          |       |
| Mean Weekly Tempera-<br>ture.....                                                       |                               |                        |                                                                                                                                               | 47.0                  | 51.8         | 53.5          | 51.8          | 50.6                    | 50.1         | 53.8                    | 54.2          | 52.5          | 54.5        | 57.1          | 58.1         | 63.7                                                                            | 64.6                    | 66.4          | 66.3                     | 66.8           | 66.6          | 67.6          | 68.7         | 70.1          | 78.4         | 79.9                    | 84.3          | 84.4           | 89.3          | 89.5                 | 97.6       | 98.0          | Mean Weekly Tempera-<br>ture.                                                       |                          |       |
| Extremes of Tempera-<br>ture as shown by the<br>Self-Registering Ther-<br>mometers..... |                               |                        |                                                                                                                                               | 42.1-65.9             | 47.8-57.6    | 46.0-59.9     | 48.9-59.6     | 46.2-59.4               | 46.7-57.6    | 46.4-58.9               | 49.6-59.4     | 47.5-59.0     | 44.7-59.0   | 46.5-59.4     | 48.1-59.4    | 63.0-66.9                                                                       | 63.8-67.6               | 65.4-67.6     | 66.7-71.1                | 66.0-71.1      | 66.1-69.0     | 65.4-70.6     | 66.0-73.7    | 66.5-78.9     | 73.8-89.9    | 80.0-88.1               | 80.6-87.9     | 82.3-89.0      | 79.3-89.0     | 74.1-97.0            | 92.7-102.8 | 96.9-102.8    | Extremes of Tempera-<br>ture as shown by the<br>Self-Registering Ther-<br>mometers. |                          |       |

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

Only those Chronometers have been included in this list for which the Greatest Difference between one week and the next, did not exceed 12".

| NAME OF MAKER.             | No.  | Whether on Day or Night. | ADDRESS OF MAKER.                               | Construction of Escapement and Balance, from the Description furnished by the Maker.          | (III.) ABSTRACT OF |                          |  |
|----------------------------|------|--------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------|--------------------------|--|
|                            |      |                          |                                                 |                                                                                               | Least Weekly Sum.  | Extremes of Temperature. |  |
| Kullberg .....             | 5518 | 2                        | 105, Liverpool Road, N.                         | Ordinary balance; palladium spring.                                                           | - 4                | 47° 8' - 57° 8'          |  |
| Uhrig .....                | 6028 | 2                        | 8, Quadrant Road, Essex Road, N.                | Uhrig's continually acting auxiliary; bright steel spring.                                    | - 1                | 47° 8' - 57° 8'          |  |
| Uhrig .....                | 613  | 3                        | 8, Quadrant Road, Essex Road, N.                | Uhrig's continually acting auxiliary; bright steel spring.                                    | - 8                | 55° 5' - 75° 8'          |  |
| Gardner .....              | 4735 | 2                        | 20, Lloyd's Square, W.C.                        | Compensation for extremes; reversed detent; palladium spring.                                 | + 4                | 55° 5' - 75° 8'          |  |
| Webb .....                 | 5559 | 2                        | 90, High Street, Islington, N.                  | Reversed detent; short palladium spring.                                                      | - 30               | 45° 4' - 55° 5'          |  |
| Inac .....                 | 1941 | 2                        | 10, Spencer Street, Clerkenwell, E.C.           | Auxiliary to balance; palladium spring.                                                       | - 1                | 47° 8' - 57° 8'          |  |
| Isaac .....                | 3011 | 2                        | 10, Spencer Street, Clerkenwell, E.C.           | Auxiliary to balance; palladium spring.                                                       | - 3                | 42° 1' - 55° 5'          |  |
| Webb .....                 | 5561 | 2                        | 90, High Street, Islington, N.                  | Reversed detent; short palladium spring.                                                      | + 23               | 42° 1' - 55° 5'          |  |
| W. & J. Thomson & Co. .... | 4735 | 2                        | Salute Home Buildings, 144, Bromfield, Glasgow. | Compensation for extremes; reversed detent; bright steel Dent's balance; bright steel spring. | - 2                | 45° 4' - 55° 5'          |  |
| Kullberg .....             | 5447 | 2                        | 105, Liverpool Road, N.                         | Auxiliary balance; reversed detent; palladium spring.                                         | - 7                | 44° 9' - 58° 8'          |  |
| Johannsen & Co. ....       | 4558 | 2                        | 149, Minories, E.C.                             | Auxiliary compensation; palladium spring.                                                     | + 4                | 54° 0' - 73° 7'          |  |
| Kullberg .....             | 5459 | 2                        | 105, Liverpool Road, N.                         | Auxiliary balance; reversed detent; palladium spring.                                         | - 11               | 49° 5' - 59° 4'          |  |
| Kullberg .....             | 5459 | 2                        | 105, Liverpool Road, N.                         | Auxiliary balance acting in cold; palladium spring.                                           | - 7                | 44° 9' - 58° 8'          |  |
| Johannsen & Co. ....       | 4554 | 2                        | 149, Minories, E.C.                             | Auxiliary compensation; palladium spring.                                                     | - 1                | 53° 4' - 67° 6'          |  |
| Penlington & Batty .....   | 2250 | 2                        | 2, St. George's Crescent, Liverpool.            | Improved balance; bright steel spring.                                                        | - 8                | 54° 1' - 69° 5'          |  |
| Johannsen & Co. ....       | 4499 | 2                        | 149, Minories, E.C.                             | Auxiliary compensation; palladium spring.                                                     | - 3                | 53° 0' - 67° 6'          |  |
| Johannsen & Co. ....       | 4558 | 2                        | 149, Minories, E.C.                             | Auxiliary compensation; palladium spring.                                                     | - 3                | 54° 0' - 73° 7'          |  |
| Kullberg .....             | 5460 | 2                        | 105, Liverpool Road, N.                         | Auxiliary balance; reversed detent; palladium spring.                                         | - 13               | 57° 5' - 57° 8'          |  |
| Haswell & Sons .....       | 2919 | 2                        | 49 & 50, Spencer Street, Clerkenwell, E.C.      | Non-magnetic balance and spring.                                                              | - 15               | 60° 9' - 55° 1'          |  |
| Kullberg .....             | 5507 | 2                        | 105, Liverpool Road, N.                         | Auxiliary balance; reversed detent; palladium spring.                                         | - 10               | 48° 1' - 55° 5'          |  |
| Kullberg .....             | 5504 | 2                        | 105, Liverpool Road, N.                         | Auxiliary balance; reversed detent; palladium spring.                                         | - 10               | 48° 1' - 55° 5'          |  |
| Johannsen & Co. ....       | 4558 | 2                        | 149, Minories, E.C.                             | Auxiliary compensation; palladium spring.                                                     | - 10               | 48° 1' - 55° 5'          |  |
| Johannsen & Co. ....       | 4558 | 2                        | 149, Minories, E.C.                             | Auxiliary compensation; palladium spring.                                                     | - 6                | 49° 5' - 58° 8'          |  |
| Kullberg .....             | 5508 | 2                        | 105, Liverpool Road, N.                         | Auxiliary balance; reversed detent; palladium spring.                                         | - 12               | 48° 1' - 55° 5'          |  |
| Johannsen & Co. ....       | 4556 | 2                        | 149, Minories, E.C.                             | Auxiliary compensation; palladium spring.                                                     | - 1                | 53° 4' - 67° 6'          |  |
| Kullberg .....             | 4490 | 2                        | 105, Liverpool Road, N.                         | Auxiliary balance; reversed detent; palladium spring.                                         | - 10               | 48° 1' - 55° 5'          |  |
| Johannsen & Co. ....       | 4501 | 2                        | 149, Minories, E.C.                             | Auxiliary compensation; palladium spring.                                                     | + 1                | 54° 0' - 73° 7'          |  |
| Laing .....                | 4735 | 2                        | 53, Brunswick Street, Glasgow.                  | Compensation for extremes; reversed detent; bright steel                                      | - 5                | 70° 2' - 99° 0'          |  |
| Webb .....                 | 5566 | 2                        | 90, High Street, Islington, N.                  | Reversed detent; short palladium spring.                                                      | - 7                | 80° 6' - 87° 9'          |  |
| Johannsen & Co. ....       | 4458 | 2                        | 149, Minories, E.C.                             | Auxiliary compensation; palladium spring.                                                     | + 0                | 55° 4' - 70° 4'          |  |
| Webb .....                 | 5559 | 2                        | 90, High Street, Islington, N.                  | Reversed detent; short palladium spring.                                                      | - 21               | 46° 2' - 59° 4'          |  |
| Johannsen & Co. ....       | 4500 | 2                        | 149, Minories, E.C.                             | Auxiliary compensation; palladium spring.                                                     | + 1                | 54° 1' - 69° 5'          |  |
| Johannsen & Co. ....       | 4556 | 2                        | 149, Minories, E.C.                             | Auxiliary compensation; palladium spring.                                                     | - 1                | 55° 4' - 60° 0'          |  |
| Johannsen & Co. ....       | 4454 | 2                        | 149, Minories, E.C.                             | Auxiliary compensation; palladium spring.                                                     | - 0                | 47° 8' - 57° 8'          |  |
| Johannsen & Co. ....       | 4497 | 2                        | 149, Minories, E.C.                             | Auxiliary compensation; palladium spring.                                                     | - 0                | 53° 4' - 67° 6'          |  |
| Kullberg .....             | 5459 | 2                        | 105, Liverpool Road, N.                         | Auxiliary balance; reversed detent; palladium spring.                                         | - 19               | 47° 8' - 57° 8'          |  |
| Johannsen & Co. ....       | 4457 | 2                        | 149, Minories, E.C.                             | Auxiliary compensation; palladium spring.                                                     | - 11               | 47° 8' - 57° 8'          |  |
| Johannsen & Co. ....       | 4551 | 2                        | 149, Minories, E.C.                             | Auxiliary compensation; palladium spring.                                                     | - 9                | 55° 4' - 60° 0'          |  |
| Kullberg .....             | 5511 | 2                        | 105, Liverpool Road, N.                         | Auxiliary balance; reversed detent; palladium spring.                                         | - 21               | 47° 8' - 57° 8'          |  |

The sign + indicates that the rate is gaining.

## THE PRINCIPAL CHANGES OF RATE DURING THE 29 WEEKS.

| Mean Temperature. | Greatest Weekly Sum. | Extremes of Temperature. | Mean Temperature. | Difference between the Greatest and Least. | Greatest Difference between one Week and the next. | Mean Temperature for these two Weeks. | Trial No. a + 2 b. | NAME OF MAKER.             | No.  |
|-------------------|----------------------|--------------------------|-------------------|--------------------------------------------|----------------------------------------------------|---------------------------------------|--------------------|----------------------------|------|
| 5                 | +                    | 78° 4' - 85° 3'          | 78° 4'            | 8                                          | 8                                                  | 84° 8' - 78° 4'                       | 18-3               | Kullberg .....             | 5518 |
| 31-8              | + 1-1                | 80° 0' - 85° 1'          | 78° 9'            | 7                                          | 3                                                  | 84° 8' - 78° 4'                       | 14-4               | Uhrig .....                | 6028 |
| 21-1              | + 1-0                | 80° 0' - 85° 1'          | 78° 9'            | 7                                          | 3                                                  | 84° 8' - 78° 4'                       | 14-4               | Uhrig .....                | 613  |
| 70-8              | - 0-9                | 84° 2' - 84° 4'          | 88° 1'            | 7-1                                        | 3-8                                                | 88° 1' - 87° 1'                       | 14-7               | Gardner .....              | 4735 |
| 37-1              | + 14-2               | 85° 4' - 70° 4'          | 67° 6'            | 9-3                                        | 8                                                  | 61° 8' - 47° 0'                       | 15-5               | Webb .....                 | 5559 |
| 78-4              | - 22-0               | 46° 8' - 59° 5'          | 51° 8'            | 8-6                                        | 4-0                                                | 50° 8' - 45° 1'                       | 16-6               | Isaac .....                | 1941 |
| 61-8              | + 7-3                | 74° 1' - 57° 0'          | 69° 5'            | 8-4                                        | 4-3                                                | 80° 8' - 54° 8'                       | 17-0               | Isaac .....                | 3011 |
| 47-0              | + 6-4                | 60° 0' - 71° 8'          | 65° 8'            | 10-2                                       | 4-4                                                | 61° 8' - 47° 0'                       | 19-0               | Webb .....                 | 5561 |
| 47-0              | + 34-9               | 60° 0' - 71° 8'          | 65° 8'            | 11-3                                       | 4-4                                                | 61° 8' - 47° 0'                       | 19-0               | W. & J. Thomson & Co. .... | 4735 |
| 59-3              | + 12-5               | 65° 4' - 70° 4'          | 67° 6'            | 10-4                                       | 4-6                                                | 64° 8' - 78° 4'                       | 19-9               | Kullberg .....             | 5447 |
| 61-8              | + 2-3                | 64° 0' - 73° 7'          | 68° 7'            | 10-9                                       | 4-6                                                | 64° 8' - 78° 4'                       | 21-7               | Johannsen & Co. ....       | 4558 |
| 53-8              | + 2-3                | 80° 6' - 87° 9'          | 84° 3'            | 10-1                                       | 5-1                                                | 64° 8' - 78° 4'                       | 20-3               | Kullberg .....             | 5459 |
| 68-7              | + 15-1               | 76° 2' - 99° 0'          | 89° 3'            | 10-6                                       | 5-0                                                | 64° 8' - 78° 4'                       | 20-6               | Kullberg .....             | 5459 |
| 54-2              | + 0-5                | 80° 6' - 87° 9'          | 84° 3'            | 12-4                                       | 4-5                                                | 64° 8' - 78° 4'                       | 21-7               | Johannsen & Co. ....       | 4554 |
| 53-8              | + 3-9                | 80° 6' - 87° 9'          | 84° 3'            | 10-9                                       | 4-6                                                | 64° 8' - 78° 4'                       | 21-7               | Kullberg .....             | 5459 |
| 65-4              | + 11-7               | 76° 2' - 99° 0'          | 89° 3'            | 13-5                                       | 4-5                                                | 64° 8' - 78° 4'                       | 22-8               | Johannsen & Co. ....       | 4554 |
| 68-7              | + 11-7               | 76° 2' - 99° 0'          | 89° 3'            | 13-5                                       | 4-5                                                | 64° 8' - 78° 4'                       | 22-8               | Penlington & Batty .....   | 2250 |
| 65-6              | + 6-7                | 49° 5' - 59° 4'          | 54° 2'            | 15-2                                       | 3-8                                                | 52° 5' - 50° 6'                       | 22-8               | Johannsen & Co. ....       | 4499 |
| 64-6              | + 5-4                | 74° 8' - 85° 3'          | 78° 4'            | 8-9                                        | 7-8                                                | 84° 8' - 78° 4'                       | 23-3               | Johannsen & Co. ....       | 4558 |
| 54-2              | + 12-6               | 85° 4' - 60° 0'          | 67° 1'            | 13-9                                       | 4-0                                                | 70° 1' - 84° 3'                       | 24-9               | Kullberg .....             | 5460 |
| 70-9              | - 2-3                | 80° 6' - 87° 9'          | 84° 3'            | 14-7                                       | 5-1                                                | 84° 8' - 78° 4'                       | 24-9               | Haswell & Sons .....       | 2919 |
| 65-6              | + 1-8                | 85° 4' - 70° 4'          | 67° 6'            | 15-6                                       | 5-1                                                | 76° 9' - 50° 1'                       | 25-8               | Kullberg .....             | 5507 |
| 47-0              | + 1-1                | 80° 6' - 87° 9'          | 84° 3'            | 15-7                                       | 5-0                                                | 76° 9' - 50° 1'                       | 25-8               | Kullberg .....             | 5504 |
| 53-8              | + 1-9                | 80° 6' - 87° 9'          | 84° 3'            | 10-7                                       | 8-0                                                | 76° 9' - 50° 1'                       | 26-7               | Johannsen & Co. ....       | 4558 |
| 53-8              | + 7-5                | 80° 6' - 87° 9'          | 84° 3'            | 12-8                                       | 7-1                                                | 84° 8' - 78° 4'                       | 26-8               | Johannsen & Co. ....       | 4558 |
| 47-0              | + 0-5                | 85° 4' - 70° 4'          | 67° 6'            | 13-0                                       | 7-1                                                | 76° 9' - 50° 1'                       | 27-3               | Kullberg .....             | 5508 |
| 65-4              | + 13-3               | 80° 6' - 87° 9'          | 70° 9'            | 14-6                                       | 0-4                                                | 54° 8' - 78° 4'                       | 27-4               | Johannsen & Co. ....       | 4556 |
| 53-8              | - 1-4                | 85° 4' - 70° 4'          | 67° 6'            | 14-0                                       | 6-8                                                | 70° 1' - 84° 3'                       | 27-5               | Kullberg .....             | 4490 |
| 68-7              | + 8-2                | 80° 6' - 87° 9'          | 84° 3'            | 9-9                                        | 0-7                                                | 84° 8' - 78° 4'                       | 27-9               | Johannsen & Co. ....       | 4501 |
| 89-3              | + 7-9                | 80° 6' - 87° 9'          | 84° 3'            | 13-8                                       | 7-1                                                | 89° 3' - 79° 9'                       | 38-0               | Laing .....                | 4735 |
| 84-3              | + 7-4                | 80° 6' - 87° 9'          | 84° 3'            | 15-3                                       | 0-0                                                | 80° 6' - 87° 9'                       | 38-3               | Webb .....                 | 5566 |
| 67-6              | + 14-9               | 80° 6' - 87° 9'          | 75° 9'            | 14-3                                       | 7-2                                                | 47° 0' - 53° 8'                       | 38-7               | Johannsen & Co. ....       | 4458 |
| 50-0              | - 11-8               | 80° 6' - 87° 9'          | 75° 9'            | 9-9                                        | 0-7                                                | 76° 9' - 50° 1'                       | 39-3               | Webb .....                 | 5559 |
| 66-6              | + 14-6               | 80° 6' - 87° 9'          | 75° 9'            | 12-0                                       | 8-7                                                | 89° 3' - 79° 9'                       | 39-3               | Johannsen & Co. ....       | 4500 |
| 64-6              | + 11-0               | 85° 4' - 70° 4'          | 67° 6'            | 12-8                                       | 8-7                                                | 66° 6' - 64° 6'                       | 39-3               | Johannsen & Co. ....       | 4556 |
| 51-8              | + 5-9                | 74° 8' - 85° 3'          | 78° 4'            | 11-9                                       | 9-2                                                | 64° 8' - 78° 4'                       | 39-3               | Johannsen & Co. ....       | 4454 |
| 65-4              | + 10-9               | 59° 7' - 71° 1'          | 65° 3'            | 11-8                                       | 9-4                                                | 47° 0' - 53° 8'                       | 39-6               | Johannsen & Co. ....       | 4497 |
| 51-8              | - 1-6                | 85° 4' - 70° 4'          | 67° 6'            | 15-3                                       | 0-5                                                | 84° 8' - 78° 4'                       | 31-3               | Kullberg .....             | 5459 |
| 63-7              | + 3-6                | 40° 2' - 59° 4'          | 50° 6'            | 18-2                                       | 8-2                                                | 50° 6' - 44° 8'                       | 31-6               | Johannsen & Co. ....       | 4457 |
| 57-1              | + 12-7               | 83° 8' - 80° 6'          | 85° 4'            | 14-7                                       | 8-6                                                | 64° 8' - 78° 4'                       | 31-7               | Johannsen & Co. ....       | 4551 |
| 61-8              | - 0-8                | 85° 4' - 70° 4'          | 67° 6'            | 20-7                                       | 8-6                                                | 64° 8' - 78° 4'                       | 31-9               | Kullberg .....             | 5511 |

The Chronometers are placed in order of merit, their respective positions being determined by consideration of the irregularities of rate exhibited in the Table above. The Trial No. a + 2 b is taken as a measure of the irregularity of rate. Johannsen & Co. 4502. The mainspring of this chronometer broke during the 3rd week of the trial. It was sent to the maker and returned the next week.

| NAME<br>OF<br>MAKER.    | No.   | Weather<br>or<br>Days. | ADDRESS<br>OF<br>MAKER.                    | Construction of Escapement and Balance,<br>from the<br>Description furnished by the Maker. | (III.) ABSTRACT OF      |                                |  |
|-------------------------|-------|------------------------|--------------------------------------------|--------------------------------------------------------------------------------------------|-------------------------|--------------------------------|--|
|                         |       |                        |                                            |                                                                                            | Least<br>Weekly<br>Sum. | Extremes<br>of<br>Temperature. |  |
| E. Dent & Co. ....      | 47587 | 2                      | 61, Strand, W.C.                           | Dent's balance; bright steel spring.                                                       | + 0.8                   | 63.4 — 67.6                    |  |
| Gardner .....           | 47588 | 2                      | 20, Lloyd's Square, W.C.                   | Compensation for extremes; reversed detent; bright steel                                   | — 20.6                  | 46.2 — 68.6                    |  |
| Isaac .....             | 1918  | 2                      | 10, Spencer Street, Clerkenwell, E.C.      | Improved ordinary balance; bright steel spring.                                            | — 6.6                   | 46.6 — 67.6                    |  |
| J. B. Dent & Sons ..... | 5658  | 2                      | 180, Blackfriars Road, E.C.                | Ordinary balance; palladium spring.                                                        | + 7.6                   | 45.1 — 68.5                    |  |
| Keys .....              | 970   | 2                      | 31, Piccadilly, W.                         | Auxiliary compensation; bright steel spring.                                               | + 1.8                   | 66.7 — 102.3                   |  |
| E. Dent & Co. ....      | 46755 | 2                      | 61, Strand, W.C.                           | Dent's balance; bright steel spring.                                                       | — 10.5                  | 47.8 — 67.3                    |  |
| Johannsen & Co. ....    | 4533  | 2                      | 149, Minories, E.C.                        | Auxiliary compensation; palladium spring.                                                  | + 3.5                   | 64.0 — 73.7                    |  |
| Kendal & Dent .....     | 5685  | 2                      | 106, Chapsdale, E.C.                       | Auxiliaries acting in heat and cold; blue steel spring.                                    | — 18.5                  | 74.1 — 67.0                    |  |
| Usher & Cole .....      | 8173  | 2                      | 106, St. John Street Road, E.C.            | Auxiliary to balance, acting in extremes; blue steel spring.                               | — 5.3                   | 63.0 — 68.6                    |  |
| Kullberg .....          | 5487  | 2                      | 105, Liverpool Road, N.                    | Auxiliary balance; reversed detent; palladium spring.                                      | — 15.5                  | 44.2 — 68.9                    |  |
| Johannsen & Co. ....    | 4514  | 2                      | 149, Minories, E.C.                        | Auxiliary compensation; palladium spring.                                                  | — 6.2                   | 66.5 — 73.8                    |  |
| Johannsen & Co. ....    | 4513  | 2                      | 149, Minories, E.C.                        | Auxiliary compensation; palladium spring.                                                  | + 2.1                   | 64.0 — 73.7                    |  |
| Johannsen & Co. ....    | 4460  | 2                      | 149, Minories, E.C.                        | Auxiliary compensation; palladium spring.                                                  | + 0.9                   | 63.4 — 67.6                    |  |
| Schoof .....            | 6550  | 2                      | 99, St. John Street Road, E.C.             | Resilient lever escapement; auxiliary acting in cold; blue                                 | — 27.5                  | 92.7 — 102.3                   |  |
| Johannsen & Co. ....    | 4535  | 2                      | 149, Minories, E.C.                        | Auxiliary compensation; palladium spring. [steel spring.                                   | — 14.6                  | 62.8 — 68.9                    |  |
| Fryett .....            | 990   | 2                      | 74, West India Dock Road, E.               | Improved ordinary balance; bright steel spring.                                            | — 2.3                   | 55.4 — 60.0                    |  |
| Johannsen & Co. ....    | 4400  | 2                      | 149, Minories, E.C.                        | Auxiliary compensation; palladium spring.                                                  | — 15.1                  | 63.4 — 67.6                    |  |
| Bishop & Sons .....     | 8171  | 2                      | 6, Fore Street, Trowbridge.                | Auxiliaries acting in extremes; blue steel spring.                                         | + 2.1                   | 86.9 — 105.3                   |  |
| Kendal & Dent .....     | 5664  | 2                      | 106, Chapsdale, E.C.                       | Reversed detent; short palladium spring.                                                   | — 29.0                  | 76.2 — 69.0                    |  |
| Isaac .....             | 1944  | 2                      | 10, Spencer Street, Clerkenwell, E.C.      | Palladium spring.                                                                          | + 4.5                   | 92.7 — 102.3                   |  |
| Keys .....              | 969   | 2                      | 31, Piccadilly, W.                         | Auxiliary compensation; bright steel spring.                                               | — 2.6                   | 86.9 — 106.3                   |  |
| Webb .....              | 5656  | 2                      | 30, High Street, Islington, N.             | Reversed detent; short palladium spring.                                                   | — 27.5                  | 66.5 — 73.8                    |  |
| Hawell & Sons .....     | 5290  | 2                      | 49 & 51, Spencer Street, Clerkenwell, E.C. | Non-magnetic balance and spring.                                                           | — 19.0                  | 69.9 — 85.1                    |  |

The sign + indicates that the rate is gaining.

## THE PRINCIPAL CHANGES OF RATE DURING THE 29 WEEKS.

| Mean<br>Temperature. | Greatest<br>Weekly<br>Sum. | Extremes<br>of<br>Temperature. | Mean<br>Temperature. | Difference<br>between the<br>Greatest and<br>Least.<br>(a) | Greatest<br>Difference<br>between one<br>Week and the<br>next.<br>(b) | Mean<br>Temperature<br>for these<br>two Weeks. | Trial No.<br>+ 2 h. | NAME<br>OF<br>MAKER.    | No.   |
|----------------------|----------------------------|--------------------------------|----------------------|------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------|---------------------|-------------------------|-------|
|                      |                            |                                |                      |                                                            |                                                                       |                                                |                     |                         |       |
| 65.4                 | + 15.1                     | 83.3 — 85.0                    | 85.4                 | 14.3                                                       | 8.9                                                                   | 70.1 — 84.3                                    | 32.1                | E. Dent & Co. ....      | 47587 |
| 63.8                 | — 7.9                      | 65.4 — 70.4                    | 67.6                 | 21.7                                                       | 6.7                                                                   | 47.0 — 69.8                                    | 23.1                | Gardner .....           | 47588 |
| 65.5                 | + 9.1                      | 83.3 — 85.0                    | 85.4                 | 14.7                                                       | 9.2                                                                   | 85.4 — 65.8                                    | 33.1                | Isaac .....             | 1918  |
| 47.0                 | + 5.7                      | 69.9 — 85.1                    | 76.9                 | 12.3                                                       | 10.1                                                                  | 76.0 — 82.1                                    | 33.5                | J. B. Dent & Sons ..... | 5658  |
| 97.5                 | + 16.0                     | 66.6 — 99.2                    | 82.5                 | 14.2                                                       | 9.8                                                                   | 84.3 — 98.0                                    | 33.8                | Keys .....              | 970   |
| 61.6                 | + 6.7                      | 65.4 — 70.4                    | 67.6                 | 17.3                                                       | 8.8                                                                   | 65.4 — 65.8                                    | 34.4                | E. Dent & Co. ....      | 46755 |
| 66.7                 | + 24.8                     | 42.1 — 55.9                    | 47.0                 | 21.3                                                       | 6.9                                                                   | 54.8 — 78.4                                    | 35.1                | Johannsen & Co. ....    | 4533  |
| 89.5                 | + 0.1                      | 82.3 — 88.0                    | 85.4                 | 15.0                                                       | 6.4                                                                   | 78.4 — 80.8                                    | 35.4                | Kendal & Dent .....     | 5685  |
| 64.6                 | + 18.1                     | 49.0 — 69.4                    | 64.2                 | 23.4                                                       | 6.2                                                                   | 76.9 — 80.1                                    | 35.8                | Usher & Cole .....      | 8173  |
| 47.0                 | + 0.5                      | 80.6 — 87.9                    | 84.3                 | 19.0                                                       | 8.4                                                                   | 76.9 — 80.1                                    | 35.8                | Kullberg .....          | 5487  |
| 61.6                 | + 13.1                     | 45.1 — 55.9                    | 47.0                 | 19.3                                                       | 8.3                                                                   | 70.1 — 84.3                                    | 35.9                | Johannsen & Co. ....    | 4514  |
| 70.1                 | + 21.9                     | 40.0 — 69.4                    | 64.2                 | 19.8                                                       | 8.2                                                                   | 64.8 — 78.4                                    | 36.2                | Johannsen & Co. ....    | 4513  |
| 65.4                 | + 18.3                     | 82.3 — 88.0                    | 85.4                 | 17.4                                                       | 9.4                                                                   | 97.5 — 85.4                                    | 36.2                | Johannsen & Co. ....    | 4460  |
| 70.1                 | — 9.2                      | 55.4 — 60.0                    | 57.1                 | 18.3                                                       | 9.8                                                                   | 47.0 — 53.8                                    | 36.7                | Schoof .....            | 6550  |
| 52.8                 | + 3.0                      | 74.1 — 67.0                    | 69.5                 | 17.8                                                       | 9.5                                                                   | 64.8 — 78.4                                    | 37.4                | Johannsen & Co. ....    | 4535  |
| 57.1                 | + 14.3                     | 82.3 — 88.0                    | 85.4                 | 16.6                                                       | 10.7                                                                  | 55.4 — 65.8                                    | 38.0                | Fryett .....            | 990   |
| 64.4                 | + 7.6                      | 42.1 — 55.9                    | 47.0                 | 22.9                                                       | 8.7                                                                   | 84.3 — 98.0                                    | 40.3                | Johannsen & Co. ....    | 4400  |
| 98.0                 | + 20.1                     | 69.9 — 85.1                    | 76.9                 | 18.0                                                       | 11.4                                                                  | 97.5 — 85.4                                    | 40.8                | Bishop & Sons .....     | 8171  |
| 82.3                 | — 4.0                      | 64.0 — 73.7                    | 65.7                 | 21.0                                                       | 10.0                                                                  | 79.9 — 50.1                                    | 41.0                | Kendal & Dent .....     | 5664  |
| 67.2                 | + 15.9                     | 65.4 — 70.4                    | 67.6                 | 17.4                                                       | 11.8                                                                  | 97.5 — 85.4                                    | 41.0                | Isaac .....             | 1944  |
| 98.0                 | + 22.4                     | 46.2 — 59.4                    | 59.5                 | 25.0                                                       | 9.9                                                                   | 97.5 — 85.4                                    | 44.8                | Keys .....              | 969   |
| 70.1                 | — 1.0                      | 42.1 — 55.9                    | 47.0                 | 26.5                                                       | 11.3                                                                  | 67.6 — 66.6                                    | 45.1                | Webb .....              | 5656  |
| 76.9                 | + 18.8                     | 65.4 — 70.4                    | 67.6                 | 22.3                                                       | 11.5                                                                  | 76.9 — 50.1                                    | 50.8                | Hawell & Sons .....     | 5290  |

The Chronometers are placed in order of merit, their respective positions being determined by consideration of the irregularities of rate exhibited in the Table above. The trial number + 2h is taken as a measure of the irregularities of rate. Only those Chronometers have been included in this list for which the greatest Difference between one week and the next, did not exceed 12".