

# RATES OF CHRONOMETERS

ON TRIAL

FOR PURCHASE BY THE BOARD OF ADMIRALTY,

AT THE

ROYAL OBSERVATORY, GREENWICH.

1859.

| NAME<br>or<br>MAKER.                | Num-<br>ber. | Whichever Day. | Construction of Escapement and<br>Balance,<br>from the description furnished<br>by the Maker. | (L)—WEEKLY SUMS OF DAILY RATES |               |               |                      |              |               |               |                      |              |               |               |                      | IN THE ORDER OF TIME. |               |                |                |                      |             |              |              |                     |              |               |               | NAME<br>or<br>MAKER. | Num-<br>ber. |              |               |                        |                          |       |
|-------------------------------------|--------------|----------------|-----------------------------------------------------------------------------------------------|--------------------------------|---------------|---------------|----------------------|--------------|---------------|---------------|----------------------|--------------|---------------|---------------|----------------------|-----------------------|---------------|----------------|----------------|----------------------|-------------|--------------|--------------|---------------------|--------------|---------------|---------------|----------------------|--------------|--------------|---------------|------------------------|--------------------------|-------|
|                                     |              |                |                                                                                               | Jan.<br>8-15                   | Jan.<br>15-22 | Jan.<br>22-29 | Jan. 29<br>to Feb. 5 | Feb.<br>5-12 | Feb.<br>12-19 | Feb.<br>19-26 | Feb. 26<br>to Mar. 5 | Mar.<br>5-12 | Mar.<br>12-19 | Mar.<br>19-26 | Mar. 26<br>to Apr. 2 | April<br>2-9          | April<br>9-16 | April<br>16-23 | April<br>23-30 | April 30<br>to May 7 | May<br>7-14 | May<br>14-21 | May<br>21-28 | May 28<br>to June 4 | June<br>4-11 | June<br>11-18 | June<br>18-25 | June 25<br>to July 2 | July<br>2-9  | July<br>9-16 | July<br>16-23 | July<br>23-30          |                          |       |
| Campbell.....                       | 887          | 2              | Ordinary construction of balance, with a slight alteration.                                   | + 10                           | + 20          | + 30          | + 40                 | + 33         | + 47          | + 50          | + 20                 | - 15         | - 29          | - 18          | - 02                 | 00                    | + 25          | + 19           | + 33           | + 28                 | + 24        | + 44         | + 30         | + 61                | + 19         | + 07          | + 34          | + 43                 | + 48         | + 44         | + 67          | + 58                   | Campbell.....            | 887   |
| Frosham & Baker.....                | 6188         | 2              | Auxiliary compensation to the balance (unpublished).                                          | - 63                           | - 54          | - 34          | - 16                 | - 08         | - 02          | - 05          | + 08                 | + 04         | + 05          | - 05          | - 41                 | - 70                  | - 19          | + 02           | 00             | + 14                 | - 11        | + 06         | - 03         | + 06                | + 28         | + 41          | + 26          | - 35                 | - 14         | + 07         | + 32          | - 04                   | Frosham and Baker.....   | 6188  |
| Keys.....                           | 225          | 2              | Extra compensation acting on the pendulum spring.                                             | .....                          | .....         | .....         | .....                | .....        | .....         | .....         | - 67                 | - 65         | - 129         | - 78          | - 63                 | - 76                  | - 35          | - 14           | - 18           | - 08                 | - 19        | - 02         | - 30         | - 104               | - 07         | + 08          | - 29          | - 43                 | - 52         | - 74         | - 56          | - 34                   | Keys.....                | 225   |
| Crisp.....                          | 130          | 2              | Effie's auxiliary to balance.                                                                 | .....                          | - 246         | - 278         | - 348                | - 240        | - 259         | - 279         | - 258                | - 276        | - 235         | - 204         | - 173                | - 217                 | - 150         | - 94           | - 159          | - 143                | - 158       | - 159        | - 161        | - 139               | - 155        | - 146         | - 114         | - 141                | - 138        | - 67         | - 93          | - 96                   | Crisp.....               | 130   |
| Poole.....                          | 2059         | 2              | Auxiliary compensation to the balance as in former years.                                     | - 103                          | - 128         | - 86          | - 50                 | - 50         | - 11          | - 56          | + 7                  | + 08         | - 13          | - 01          | + 01                 | + 03                  | + 22          | + 35           | + 24           | + 37                 | + 69        | + 49         | - 19         | - 09                | - 14         | - 30          | + 30          | + 34                 | + 26         | + 39         | + 71          | Poole.....             | 2059                     |       |
| Webb.....                           | 5380         | 2              | Auxiliary compensation to the balance as in former years.                                     | .....                          | - 131         | - 139         | - 129                | - 117        | - 143         | - 145         | - 96                 | - 70         | - 12          | - 07          | - 26                 | - 40                  | + 01          | + 20           | 00             | + 03                 | + 14        | + 21         | + 17         | + 43                | + 63         | + 32          | + 77          | + 65                 | + 71         | + 96         | + 115         | + 109                  | Webb.....                | 5380  |
| Frosham & Baker.....                | 6149         | 2              | Auxiliary compensation to the balance (unpublished).                                          | - 164                          | - 155         | - 166         | - 190                | - 190        | - 163         | - 215         | - 242                | - 281        | - 259         | - 164         | - 191                | - 174                 | - 150         | - 176          | - 173          | - 168                | - 154       | - 134        | - 120        | - 178               | - 208        | - 209         | - 124         | - 149                | - 166        | - 120        | - 82          | Frosham and Baker..... | 6149                     |       |
| May.....                            | 2714         | 2              | May's centripetal balance (unpublished).                                                      | - 149                          | - 128         | - 102         | - 134                | - 91         | - 54          | - 41          | - 15                 | - 25         | + 31          | - 103         | - 24                 | - 33                  | - 12          | - 16           | + 09           | - 06                 | - 06        | + 05         | - 06         | + 16                | + 8          | + 106         | + 49          | + 10                 | + 05         | + 06         | - 13          | May.....               | 2714                     |       |
| Russell and Son.....                | 6064         | 2              | Hartnup's balance.                                                                            | .....                          | - 310         | - 283         | - 261                | - 238        | - 265         | - 328         | - 346                | - 365        | - 365         | - 269         | - 352                | - 273                 | - 236         | - 221          | - 315          | - 213                | - 213       | - 205        | - 297        | - 223               | - 270        | - 339         | - 177         | - 172                | - 178        | - 177        | - 163         | - 160                  | Russell and Son.....     | 6064  |
| Poole.....                          | 2714         | 2              | Auxiliary compensation to the balance, as in former years.                                    | - 55                           | - 65          | - 65          | - 40                 | - 49         | - 105         | - 105         | - 141                | - 158        | - 166         | - 43          | - 28                 | - 140                 | - 45          | + 05           | - 49           | - 53                 | - 116       | - 99         | - 127        | - 193               | - 186        | - 149         | - 187         | - 170                | - 170        | - 188        | - 171         | Poole.....             | 2714                     |       |
| Parkinson & Bouts.....              | 860          | 2              | Ordinary construction.                                                                        | - 215                          | - 69          | - 161         | - 199                | - 159        | - 190         | - 195         | - 230                | - 212        | - 212         | - 159         | - 121                | - 88                  | - 92          | - 138          | - 74           | - 83                 | - 45        | - 50         | - 32         | - 63                | - 135        | - 155         | - 42          | - 09                 | - 15         | - 39         | - 15          | + 09                   | Parkinson and Bouts..... | 860   |
| Hiant.....                          | 1946         | 2              | Hartnup's balance.                                                                            | - 20                           | - 64          | - 71          | - 46                 | - 89         | - 143         | - 200         | - 123                | - 149        | - 111         | - 02          | + 33                 | + 01                  | + 62          | + 86           | + 58           | + 58                 | + 24        | + 25         | + 09         | - 81                | - 78         | - 12          | + 42          | + 65                 | + 36         | + 28         | + 26          | + 43                   | Hiant.....               | 1946  |
| Reid and Sons.....                  | 1200         | 2              | Auxiliary compensation to the balance acting at low temperatures.                             | - 70                           | - 121         | - 99          | - 99                 | - 140        | - 61          | - 203         | - 292                | - 225        | - 247         | - 72          | - 94                 | - 143                 | - 93          | - 66           | - 112          | - 83                 | - 112       | - 108        | - 116        | - 89                | - 71         | - 189         | - 63          | - 66                 | - 64         | - 93         | - 80          | - 73                   | Reid and Sons.....       | 1200  |
| Porthouse.....                      | 7201         | 2              | Ordinary construction.                                                                        | - 107                          | - 70          | - 44          | - 58                 | - 91         | - 42          | - 08          | + 10                 | + 11         | + 44          | + 113         | + 122                | - 39                  | + 30          | + 69           | + 35           | + 111                | + 80        | + 39         | + 15         | + 30                | + 78         | + 33          | - 26          | + 66                 | + 11         | - 07         | + 11          | + 39                   | Porthouse.....           | 7201  |
| McGregor and Co.....                | 2760         | 2              | Auxiliary compensation.                                                                       | - 195                          | - 165         | - 148         | - 154                | - 203        | - 156         | - 114         | - 78                 | - 61         | - 44          | - 104         | - 71                 | - 49                  | + 85          | + 33           | + 72           | + 80                 | + 73        | + 91         | + 93         | + 67                | + 20         | - 62          | + 57          | + 121                | + 130        | + 144        | + 169         | McGregor and Co.....   | 2760                     |       |
| G. H. & C. Goward.....              | 3185         | 2              | Poole's auxiliary compensation.                                                               | - 189                          | - 188         | - 200         | - 200                | - 194        | - 203         | - 191         | - 220                | - 335        | - 338         | - 150         | - 134                | - 149                 | - 116         | - 96           | - 93           | - 167                | - 153       | - 136        | - 126        | - 171               | - 193        | - 183         | - 176         | - 165                | - 144        | - 171        | - 184         | - 79                   | G. H. & C. Goward.....   | 3185  |
| Lawson.....                         | 1318         | 8              | Lawson's auxiliary compensation to the balance.                                               | .....                          | - 118         | - 81          | - 72                 | - 61         | - 82          | - 130         | - 117                | - 124        | - 134         | - 28          | + 55                 | + 69                  | + 56          | + 49           | + 32           | + 40                 | + 112       | + 79         | + 80         | + 118               | + 13         | + 16          | + 125         | + 171                | - 205        | + 189        | + 204         | + 224                  | Lawson.....              | 1318  |
| Wood.....                           | 523          | 2              | Hartnup's balance.                                                                            | - 42                           | - 22          | - 11          | - 07                 | + 02         | + 20          | + 80          | + 137                | + 102        | + 250         | + 175         | + 301                | + 267                 | + 228         | + 258          | + 259          | + 262                | + 266       | + 278        | + 271        | + 225               | + 339        | + 443         | + 418         | + 428                | + 438        | + 474        | + 471         | Wood.....              | 523                      |       |
| Sewill.....                         | 1101         | 2              | Hartnup's balance.                                                                            | .....                          | + 52          | + 63          | + 65                 | + 74         | + 98          | - 02          | - 10                 | - 18         | - 47          | + 141         | + 146                | + 154                 | + 209         | + 210          | + 200          | + 215                | + 220       | + 200        | + 169        | + 136               | + 83         | + 121         | + 226         | + 253                | + 214        | + 221        | + 251         | + 256                  | Sewill.....              | 1101  |
| Barwise.....                        | 185          | 2              | Auxiliary compensation to the balance.                                                        | - 259                          | - 185         | - 149         | - 153                | - 155        | - 123         | - 23          | + 05                 | + 08         | + 30          | - 119         | - 104                | - 129                 | - 45          | + 05           | - 49           | - 72                 | - 82        | - 94         | - 81         | - 38                | + 58         | + 93          | - 81          | - 52                 | - 21         | + 39         | + 37          | - 17                   | Barwise.....             | 185   |
| Dent.....                           | 2711         | 2              | Dent's patent balance; see pamphlet, "On the Errors of Chronometers," p. 23.                  | .....                          | - 01          | - 08          | + 03                 | + 30         | - 106         | - 53          | - 37                 | - 53         | + 117         | + 107         | + 141                | + 173                 | + 166         | + 175          | + 166          | + 154                | + 164       | + 175        | + 131        | + 100               | + 143        | + 214         | + 286         | + 244                | + 192        | + 319        | + 234         | Dent.....              | 2711                     |       |
| Blackie.....                        | 500          | 2              | New auxiliary compensation (unpublished).                                                     | .....                          | - 54          | - 22          | - 48                 | - 25         | + 65          | + 31          | - 61                 | - 88         | - 124         | + 67          | + 87                 | + 193                 | + 87          | + 30           | + 114          | + 85                 | + 134       | + 161        | + 185        | + 221               | + 105        | + 21          | + 149         | + 185                | + 201        | + 235        | + 230         | Blackie.....           | 500                      |       |
| Sewill.....                         | 1857         | 8              | Auxiliary compensation acting at low temperatures.                                            | .....                          | - 245         | - 250         | - 230                | - 245        | - 200         | - 260         | - 278                | - 285        | - 311         | - 98          | - 57                 | - 53                  | - 53          | - 66           | - 32           | - 32                 | - 20        | - 09         | - 14         | - 69                | - 170        | - 184         | - 59          | + 05                 | + 43         | + 27         | + 63          | + 73                   | Sewill.....              | 1857  |
| Reid and Sons.....                  | 1204         | 2              | Auxiliary compensation to the balance, acting at low temperatures.                            | + 46                           | + 74          | + 121         | + 146                | + 181        | + 166         | + 33          | - 16                 | - 27         | - 48          | + 193         | + 228                | + 197                 | + 222         | + 235          | + 249          | + 230                | + 212       | + 243        | + 234        | + 191               | + 111        | + 97          | + 242         | + 247                | + 278        | + 280        | + 309         | + 319                  | Reid and Sons.....       | 1204  |
| Hevitt and Son.....                 | 2523         | 8              | A new auxiliary compensation (unpublished).                                                   | - 462                          | - 405         | - 444         | - 449                | - 443        | - 488         | - 462         | - 560                | - 274        | - 101         | - 329         | - 389                | - 314                 | - 251         | - 389          | - 303          | - 314                | - 267       | - 242        | - 334        | - 334               | - 132        | - 78          | - 190         | + 147                | - 189        | - 214        | - 173         | - 169                  | Hevitt and Son.....      | 2523  |
| Porthouse.....                      | 7230         | 2              | Auxiliary compensation.                                                                       | - 253                          | - 241         | - 204         | - 193                | - 205        | - 175         | - 231         | - 114                | - 50         | + 61          | - 276         | + 227                | + 202                 | + 249         | + 260          | + 300          | + 204                | + 256       | + 263        | + 266        | + 170               | + 163        | + 199         | + 243         | + 284                | + 287        | + 290        | + 293         | + 347                  | Porthouse.....           | 7230  |
| J. Muirhead.....                    | 3310         | 2              | Poole's auxiliary compensation.                                                               | - 120                          | - 89          | - 02          | + 11                 | - 27         | + 30          | - 283         | - 304                | - 258        | - 284         | - 67          | + 04                 | - 42                  | + 41          | + 08           | - 09           | - 14                 | - 40        | + 09         | + 02         | - 167               | - 210        | - 186         | - 114         | - 40                 | - 40         | - 73         | - 51          | - 12                   | J. Muirhead.....         | 3310  |
| Lister and Sons.....                | 587          | 2              | Poole's auxiliary compensation.                                                               | - 180                          | - 135         | - 126         | - 130                | - 134        | - 185         | - 445         | - 488                | - 532        | - 615         | - 362         | - 389                | - 331                 | - 329         | - 399          | - 376          | - 353                | - 281       | - 326        | - 298        | - 345               | - 489        | - 497         | - 385         | - 531                | - 370        | - 389        | - 363         | - 340                  | Lister and Sons.....     | 587   |
| G. H. & C. Goward.....              | 3165         | 2              | Auxiliary compensation.                                                                       | + 1                            | + 1           | + 07          | + 05                 | - 02         | + 60          | - 72          | - 54                 | - 53         | - 59          | + 193         | + 219                | + 241                 | + 264         | + 275          | + 298          | + 297                | + 305       | + 314        | + 317        | + 232               | + 122        | + 140         | + 220         | + 293                | + 288        | + 376        | + 398         | + 444                  | G. H. & C. Goward.....   | 3165  |
| Moore.....                          | 3062         | 2              | Poole's auxiliary compensation.                                                               | - 106                          | - 98          | - 86          | - 96                 | - 110        | - 121         | - 139         | - 200                | - 327        | - 396         | - 75          | - 63                 | - 73                  | - 27          | - 34           | - 30           | - 19                 | - 06        | - 24         | - 21         | - 19                | - 107        | - 221         | - 68          | - 17                 | - 15         | - 19         | + 01          | + 12                   | Moore.....               | 3062  |
| Davis and Son.....                  | 471          | 2              | May's centripetal balance.                                                                    | - 356                          | - 243         | - 267         | - 384                | - 383        | - 359         | - 45          | - 83                 | - 61         | - 101         | - 285         | - 287                | - 274                 | - 283         | - 269          | - 372          | - 285                | - 275       | - 280        | - 301        | - 81                | - 63         | + 09          | + 06          | - 165                | - 160        | - 140        | - 124         | - 137                  | Davis and Son.....       | 471   |
| Clark and Son.....                  | 3056         | 2              | Poole's auxiliary compensation.                                                               | - 271                          | - 308         | - 10          | + 114                | + 78         | + 167         | + 49          | + 15                 | - 30         | - 77          | - 20          | - 08                 | + 66                  | + 09          | - 61           | - 09           | - 35                 | + 04        | 00           | + 34         | + 97                | - 10         | - 59          | + 21          | + 109                | + 119        | + 91         | + 89          | + 90                   | Clark and Son.....       | 3056  |
| J. French.....                      | 7005         | 2              | Improved patent compensation for extreme ranges of temperature.                               | .....                          | .....         | .....         | + 51                 | + 30         | - 16          | - 166         | - 194                | - 255        | - 345         | + 113         | + 09                 | + 129                 | + 144         | + 45           | + 133          | + 90                 | + 40        | + 63         | + 29         | + 16                | - 111        | - 152         | + 27          | + 90                 | + 13         | + 19         | + 43          | + 76                   | J. French.....           | 7005  |
| Crisp.....                          | 285          | 2              | Effie's auxiliary to balance.                                                                 | .....                          | .....         | + 71          | + 46                 | + 87         | + 23          | + 275         | + 418                | + 427        | + 612         | + 113         | + 158                | + 133                 | + 204         | + 209          | + 166          | + 181                | + 164       | + 180        | + 178        | + 202               | + 485        | + 605         | + 333         | + 232                | + 242        | + 362        | + 360         | + 282                  | Crisp.....               | 285   |
| Chronometrical<br>Thermometer.....  | .....        | .....          | .....                                                                                         | .....                          | .....         | .....         | + 12330              | + 18330      | + 9074        | - 22049       | - 26741              | - 27919      | - 33714       | + 7030        | + 9202               | + 9981                | + 7714        | + 11775        | + 7177         | + 8084               | + 4186      | + 5533       | + 3829       | - 16140             | - 26260      | - 29073       | - 16758       | - 4467               | - 7010       | - 10389      | - 8976        | - 4345                 | .....                    | ..... |
| Extraneous of Tempe-<br>rature..... | .....        | .....          | .....                                                                                         | .....                          | .....         | .....         | .....                | .....        | .....         | .....         | .....                | .....        | .....         | .....         | .....                | .....                 | .....         | .....          | .....          | .....                | .....       | .....        | .....        | .....               | .....        | .....         | .....         | .....                | .....        | .....        | .....         | .....                  | .....                    | ..... |
| .....                               | .....        | .....          | .....                                                                                         | .....                          | .....         | .....         | .....                | .....        | .....         | .....         | .....                | .....        | .....         | .....         | .....                | .....                 | .....         | .....          | .....          | .....                | .....       | .....        | .....        | .....               | .....        | .....         | .....         | .....                | .....        | .....        | .....         | .....                  | .....                    | ..... |

\* During these weeks the Chronometers were exposed to the external air outside a North window. By inadvertence the Chronometrical Thermometer was not placed with the Chronometers on trial during the first three weeks.  
† During these weeks the Chronometers were placed in the chamber of a stove heated by gas.  
The rate given by the first five days of trial is in every case omitted, excepting for Lawson 1318, where the rate for one day only is omitted.

The order of arrangement of the Chronometers in these Tables is determined solely by consideration of their irregularities of rate, as expressed in the columns "Difference between the Greatest and Least" and "Greatest Difference between one Week and the next," without reference to the duration of the trial; the position of Keys 225 is therefore not accurately correct.  
Three Chronometers which became deranged, evidently from some accidental cause, are entirely omitted.

| NAME<br>or<br>MAKER.                                                      | Num-<br>ber. | Whether on<br>Days | Construction of Escapement and<br>Balance,<br>from the description furnished<br>by the Maker. | (II)—WEEKLY SUMS OF DAILY RATES IN THE ORDER OF TEMPERATURE. |                         |              |               |               |                |                          |               |                         |               |               |  |
|---------------------------------------------------------------------------|--------------|--------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------|-------------------------|--------------|---------------|---------------|----------------|--------------------------|---------------|-------------------------|---------------|---------------|--|
|                                                                           |              |                    |                                                                                               | Jan.<br>8-15                                                 | Jan. 20<br>to<br>Feb. 5 | Feb.<br>5-12 | Jan.<br>15-22 | Jan.<br>22-29 | April<br>16-23 | Mar. 26<br>to<br>April 2 | Feb.<br>12-19 | April 30<br>to<br>May 7 | Mar.<br>19-26 | April<br>9-16 |  |
| Campbell                                                                  | 837          | 2                  | Ordinary construction of balance, with a slight alteration.                                   | + 10                                                         | + 30                    | + 33         | + 20          | + 50          | + 19           | - 02                     | + 47          | + 58                    | - 18          | + 23          |  |
| Prossham & Baker                                                          | 6188         | 2                  | Auxiliary compensation to the balance (compulsified).                                         | - 63                                                         | - 16                    | - 08         | - 24          | - 34          | - 02           | - 41                     | - 02          | - 14                    | - 53          | - 19          |  |
| Keys                                                                      | 225          | 2                  | Extra compensation acting on the pendulum spring.                                             | .....                                                        | .....                   | .....        | .....         | .....         | + 14           | - 03                     | .....         | - 08                    | - 78          | - 35          |  |
| Crip                                                                      | 130          | 2                  | Edif's auxiliary to balance.                                                                  | .....                                                        | - 248                   | - 240        | - 246         | - 278         | - 94           | - 173                    | - 239         | - 143                   | - 204         | - 130         |  |
| Poole                                                                     | 2009         | 2                  | Auxiliary compensation to the balance as in former years.                                     | - 103                                                        | - 50                    | - 128        | - 86          | + 22          | + 01           | - 11                     | + 34          | + 01                    | + 43          |               |  |
| Webb                                                                      | 5380         | 2                  | Auxiliary compensation to the balance, as in former years.                                    | .....                                                        | - 129                   | - 117        | - 131         | - 159         | - 20           | - 26                     | - 145         | + 05                    | - 97          | + 01          |  |
| Prossham & Baker                                                          | 6149         | 2                  | Auxiliary compensation to the balance (compulsified).                                         | - 164                                                        | - 190                   | - 190        | - 192         | - 166         | - 176          | - 191                    | - 162         | - 168                   | - 164         | - 150         |  |
| May                                                                       | 527          | 2                  | May's centrifugal balance (unpublished).                                                      | - 149                                                        | - 184                   | - 91         | - 128         | - 102         | - 16           | - 24                     | - 54          | - 06                    | - 53          | - 12          |  |
| Russell and Son                                                           | 6064         | 2                  | Hartman's balance.                                                                            | .....                                                        | - 261                   | - 258        | - 310         | - 286         | - 221          | - 252                    | - 265         | - 213                   | - 369         | - 236         |  |
| Poole                                                                     | 2714         | 2                  | Auxiliary compensation to the balance, as in former years.                                    | - 55                                                         | - 40                    | - 49         | - 63          | - 65          | - 63           | - 28                     | - 105         | - 53                    | - 43          | - 45          |  |
| Parkinson & Bouts                                                         | 800          | 2                  | Ordinary construction.                                                                        | - 215                                                        | - 199                   | - 159        | - 169         | - 161         | - 138          | - 121                    | - 126         | - 85                    | - 139         | - 92          |  |
| Hatt                                                                      | 1946         | 2                  | Hartman's balance.                                                                            | - 20                                                         | - 46                    | - 89         | - 64          | - 71          | + 86           | + 33                     | - 143         | + 38                    | - 02          | + 62          |  |
| Reid and Sons                                                             | 1200         | 2                  | Auxiliary compensation to the balance, acting at low temperatures.                            | - 70                                                         | - 99                    | - 140        | - 121         | - 99          | - 66           | - 94                     | - 61          | - 83                    | - 72          | - 93          |  |
| Porthouse                                                                 | 7201         | 2                  | Ordinary construction.                                                                        | - 107                                                        | - 58                    | - 91         | - 70          | - 44          | + 69           | + 122                    | - 42          | + 111                   | + 113         | + 30          |  |
| McGregor and Co.                                                          | 2760         | 2                  | Auxiliary compensation.                                                                       | - 195                                                        | - 154                   | - 203        | - 165         | - 148         | - 33           | - 71                     | - 156         | + 80                    | - 04          | + 85          |  |
| G.H. & C. Goward                                                          | 3185         | 2                  | Poole's auxiliary compensation.                                                               | - 189                                                        | - 209                   | - 194        | - 186         | - 200         | - 96           | - 134                    | - 303         | - 157                   | - 150         | - 116         |  |
| Lawson                                                                    | 1318         | 2                  | Lawson's auxiliary compensation to the balance.                                               | .....                                                        | - 72                    | - 61         | - 118         | - 81          | + 49           | + 55                     | - 82          | + 40                    | - 28          | + 56          |  |
| Wood                                                                      | 5383         | 2                  | Hartman's balance.                                                                            | - 42                                                         | - 07                    | - 02         | - 22          | - 11          | + 258          | + 201                    | + 20          | + 262                   | + 173         | + 228         |  |
| Sevill                                                                    | 1101         | 2                  | Hartman's balance.                                                                            | .....                                                        | + 63                    | + 74         | + 53          | + 63          | + 210          | + 146                    | + 98          | + 215                   | + 141         | + 209         |  |
| Barwise                                                                   | 2715         | 2                  | Auxiliary compensation to the balance.                                                        | - 259                                                        | - 153                   | - 135        | - 185         | - 149         | - 50           | - 104                    | - 128         | - 72                    | - 139         | - 86          |  |
| Dent                                                                      | 2711         | 2                  | Dent's patent balance; see pamphlet "On the Errors of Chronometers," p. 23.                   | .....                                                        | + 93                    | + 30         | - 01          | - 08          | + 166          | + 157                    | - 34          | + 166                   | + 117         | + 173         |  |
| Blackie                                                                   | 500          | 2                  | New auxiliary compensation (unpublished).                                                     | .....                                                        | - 48                    | - 25         | - 34          | - 22          | + 30           | + 87                     | + 63          | + 85                    | + 67          | + 87          |  |
| Sevill                                                                    | 1857         | 2                  | Auxiliary compensation, acting at low temperatures.                                           | .....                                                        | - 250                   | - 245        | - 245         | - 250         | - 66           | - 57                     | - 200         | - 32                    | - 98          | - 53          |  |
| Reid and Sons                                                             | 1204         | 2                  | Auxiliary compensation to the balance, acting at low temperatures.                            | + 46                                                         | + 146                   | + 181        | + 74          | + 121         | + 256          | + 228                    | + 166         | + 230                   | + 193         | + 232         |  |
| Hewitt and Son                                                            | 2523         | 2                  | A new auxiliary compensation (unpublished).                                                   | - 462                                                        | - 439                   | - 443        | - 463         | - 444         | - 389          | - 289                    | - 488         | - 314                   | - 320         | - 251         |  |
| Porthouse                                                                 | 7230         | 2                  | Auxiliary compensation.                                                                       | - 253                                                        | - 193                   | - 205        | - 241         | - 204         | + 260          | + 227                    | - 175         | - 264                   | + 176         | + 249         |  |
| J. Muirhead                                                               | 2510         | 2                  | Poole's auxiliary compensation.                                                               | - 129                                                        | + 11                    | - 27         | - 83          | - 02          | - 08           | + 04                     | + 30          | - 14                    | - 07          | + 41          |  |
| Lister and Sons                                                           | 587          | 2                  | Poole's auxiliary compensation.                                                               | - 180                                                        | - 130                   | - 134        | - 135         | - 125         | - 398          | - 339                    | - 185         | - 353                   | - 362         | - 329         |  |
| G.H. & C. Goward                                                          | 7195         | 2                  | Auxiliary compensation.                                                                       | + 11                                                         | + 95                    | - 02         | + 10          | + 07          | + 275          | + 219                    | + 60          | + 297                   | + 193         | + 264         |  |
| Moore                                                                     | 3062         | 2                  | Poole's auxiliary compensation.                                                               | - 106                                                        | - 96                    | - 110        | - 98          | - 86          | - 34           | - 63                     | - 121         | - 19                    | - 75          | - 37          |  |
| Davis and Sons                                                            | 471          | 2                  | May's centrifugal balance.                                                                    | - 356                                                        | - 384                   | - 383        | - 343         | - 367         | - 269          | - 287                    | - 352         | - 285                   | - 285         | - 283         |  |
| Clark and Son                                                             | 3056         | 2                  | Poole's auxiliary compensation.                                                               | - 271                                                        | + 114                   | + 78         | - 308         | - 10          | - 61           | - 08                     | + 167         | - 35                    | - 20          | + 09          |  |
| J. French                                                                 | 7005         | 2                  | Improved patent compensation for extreme ranges of temperature.                               | .....                                                        | + 51                    | + 30         | .....         | .....         | + 45           | + 09                     | - 16          | + 30                    | + 113         | + 144         |  |
| Crip                                                                      | 285          | 2                  | Edif's auxiliary to balance.                                                                  | .....                                                        | + 46                    | + 87         | .....         | + 71          | + 209          | + 158                    | + 23          | + 181                   | + 113         | + 204         |  |
| Chronometrical<br>Thermometer                                             | .....        | .....              | .....                                                                                         | .....                                                        | + 19230                 | + 18330      | .....         | .....         | + 11775        | + 9202                   | + 9074        | + 8084                  | + 7933        | + 7714        |  |
| Extremes of Temper-<br>ature shown by the Self-Registering<br>Thermometer | .....        | .....              | .....                                                                                         | 31-49                                                        | 33-50                   | 30-50        | 35-52         | 39-50         | 45-54          | 45-58                    | 48-55         | 51-61                   | 48-57         | 48-64         |  |

\* During these weeks the Chronometers were exposed to the external air about a North wind. By inadvertence the Chronometrical Thermometer was not placed with the Chronometers on trial during the first three weeks.

† During these weeks the Chronometers were placed in the chamber of a stove heated by gas.

The rate given by the first five days of trial is in every case omitted, excepting for Lawson 1318, where the rate for one day only is omitted.

## AS DETERMINED GENERALLY BY THE CHRONOMETRICAL THERMOMETER.

| NAME<br>or<br>MAKER. |              |             |              |              |               |                         |             |               |              |                        |              |              |               |                         |              |               |               | Num-<br>ber.         |      |
|----------------------|--------------|-------------|--------------|--------------|---------------|-------------------------|-------------|---------------|--------------|------------------------|--------------|--------------|---------------|-------------------------|--------------|---------------|---------------|----------------------|------|
| April<br>23-30       | May<br>14-21 | May<br>7-14 | April<br>2-9 | May<br>21-28 | July<br>23-30 | June 25<br>to<br>July 2 | July<br>2-9 | July<br>16-23 | July<br>9-16 | May 28<br>to<br>June 4 | June<br>4-11 | Feb.<br>4-11 | June<br>11-18 | Feb. 26<br>to<br>Mar. 5 | Mar.<br>5-12 | June<br>11-18 | Mar.<br>12-19 |                      |      |
| + 33                 | + 44         | + 24        | + 00         | + 30         | + 58          | + 43                    | + 48        | + 67          | + 44         | + 61                   | + 34         | + 30         | + 19          | + 20                    | - 15         | - 07          | - 29          | Campbell             | 837  |
| - 00                 | + 06         | - 11        | - 70         | - 03         | - 00          | - 35                    | - 14        | + 32          | + 07         | + 60                   | + 36         | - 05         | + 28          | + 08                    | + 04         | + 41          | + 03          | Prossham and Baker.  | 6188 |
| - 18                 | - 02         | - 19        | - 76         | - 20         | - 34          | - 43                    | - 52        | - 56          | - 74         | - 101                  | - 23         | .....        | - 07          | - 67                    | - 63         | - 48          | - 129         | Keys                 | 225  |
| - 159                | - 159        | - 158       | - 217        | - 161        | - 96          | - 141                   | - 188       | - 93          | - 67         | - 139                  | - 114        | - 279        | - 135         | - 258                   | - 257        | - 146         | - 235         | Crip                 | 130  |
| + 53                 | + 60         | + 37        | + 05         | + 49         | + 71          | + 30                    | + 34        | + 39          | + 26         | + 19                   | + 30         | + 36         | + 00          | + 16                    | + 08         | - 29          | - 16          | Poole                | 2009 |
| - 00                 | + 21         | + 14        | - 40         | + 17         | + 109         | + 65                    | + 71        | + 115         | + 96         | + 43                   | + 77         | - 145        | + 65          | - 96                    | - 70         | - 52          | - 12          | Webb.                | 5380 |
| - 173                | - 154        | - 154       | - 174        | - 120        | - 82          | - 124                   | - 149       | - 120         | - 166        | - 178                  | - 201        | - 215        | - 208         | - 242                   | - 281        | - 220         | - 239         | Prossham and Baker.  | 6149 |
| + 09                 | + 05         | - 06        | - 33         | - 06         | - 13          | + 10                    | - 06        | + 06          | + 03         | + 16                   | + 49         | + 41         | + 80          | + 15                    | + 106        | + 31          | May           | 527                  |      |
| - 215                | - 205        | - 215       | - 273        | - 207        | - 160         | - 172                   | - 178       | - 163         | - 177        | - 223                  | - 177        | - 228        | - 270         | - 346                   | - 365        | - 293         | - 305         | Russell and Son      | 6064 |
| - 49                 | - 99         | - 115       | - 147        | - 127        | - 171         | - 179                   | - 170       | - 188         | - 191        | - 193                  | - 187        | - 165        | - 186         | - 141                   | - 158        | - 149         | - 166         | Poole                | 2714 |
| - 74                 | - 50         | - 45        | - 88         | - 52         | + 09          | - 09                    | - 15        | - 15          | - 39         | - 63                   | - 42         | - 195        | - 193         | - 230                   | - 212        | - 155         | - 212         | Parkinson and Bouts. | 800  |
| + 58                 | + 25         | + 24        | + 01         | + 09         | + 45          | + 65                    | + 36        | + 28          | + 81         | + 42                   | + 200        | - 78         | - 125         | - 149                   | - 12         | - 113         | Hatt          | 1946                 |      |
| - 112                | - 108        | - 112       | - 143        | - 116        | - 75          | - 66                    | - 64        | - 80          | - 93         | - 89                   | - 63         | - 203        | - 174         | - 202                   | - 225        | - 189         | - 247         | Reid and Sons        | 1200 |
| + 55                 | + 39         | + 80        | - 39         | + 15         | + 39          | + 06                    | + 11        | + 11          | + 07         | + 30                   | - 26         | - 08         | + 78          | + 10                    | + 1          | + 23          | + 44          | Porthouse            | 7201 |
| + 72                 | + 91         | + 73        | + 49         | + 93         | + 169         | + 97                    | + 121       | + 164         | + 139        | + 67                   | - 63         | - 114        | + 20          | - 78                    | + 61         | + 20          | - 44          | McGregor and Co.     | 2760 |
| - 93                 | - 136        | - 133       | - 149        | - 126        | - 79          | - 165                   | - 144       | - 184         | - 171        | - 171                  | - 176        | - 321        | - 193         | - 320                   | - 335        | - 183         | - 338         | G. H. & C. Goward.   | 3185 |
| + 32                 | + 79         | + 112       | + 68         | + 80         | + 234         | + 171                   | + 203       | + 304         | + 189        | + 118                  | + 123        | - 130        | + 13          | - 117                   | - 124        | - 16          | - 134         | Lawson               | 1318 |
| + 259                | + 278        | + 266       | + 207        | + 271        | + 471         | + 428                   | + 458       | + 474         | + 455        | + 325                  | + 418        | + 80         | + 399         | + 137                   | + 192        | + 443         | + 250         | Wood.                | 5383 |
| + 200                | + 200        | + 222       | + 154        | + 169        | + 256         | + 255                   | + 214       | + 210         | + 221        | + 126                  | + 226        | - 02         | + 83          | + 10                    | - 18         | + 121         | - 47          | Sevill               | 1101 |
| - 82                 | - 94         | - 82        | - 129        | - 81         | - 17          | - 92                    | - 21        | - 37          | - 39         | + 38                   | + 21         | - 28         | + 58          | + 05                    | + 08         | + 83          | + 30          | Barwise              | 2715 |
| + 175                | + 164        | + 124       | + 141        | + 175        | + 354         | + 366                   | + 244       | + 219         | + 192        | + 131                  | + 214        | - 106        | + 100         | - 33                    | - 37         | + 143         | - 39          | Dent                 | 2711 |
| + 114                | + 161        | + 134       | + 183        | + 185        | + 230         | + 185                   | + 201       | + 235         | + 194        | + 221                  | + 149        | - 31         | + 105         | - 61                    | - 88         | + 21          | - 124         | Blackie              | 500  |
| - 32                 | - 09         | - 20        | - 53         | - 14         | + 72          | + 03                    | + 43        | + 63          | + 27         | - 69                   | - 39         | - 260        | - 170         | - 278                   | - 285        | - 184         | - 311         | Sevill               | 1857 |
| + 249                | + 243        | + 217       | + 234        | + 310        | + 347         | + 278                   | + 305       | + 280         | + 191        | + 242                  | + 33         | + 111        | - 16          | - 27                    | + 97         | - 48          | - 101         | Reid and Son         | 1204 |
| - 265                | - 242        | - 267       | - 314        | - 244        | - 160         | - 147                   | - 189       | - 175         | - 214        | - 334                  | - 190        | - 42         | - 132         | - 360                   | - 274        | - 78          | - 101         | Hewitt and Son.      | 2523 |
| + 300                | + 263        | + 256       | + 202        | + 266        | + 347         | + 284                   | + 287       | + 323         | + 290        | + 170                  | + 243        | - 251        | + 163         | - 114                   | - 30         | + 199         | + 61          | Porthouse            | 7230 |
| - 09                 | + 09         | - 40        | - 42         | + 02         | - 12          | - 40                    | - 40        | - 51          | + 75         | - 167                  | - 114        | - 283        | - 210         | - 234                   | - 268        | - 186         | - 284         | J. Muirhead          | 2510 |
| - 376                | - 326        | - 381       | - 311        | - 298        | - 304         | - 351                   | - 370       | - 365         | - 385        | - 385                  | - 444        | - 489        | - 488         | - 532                   | - 497        | - 615         | - 615         | Lister and Sons.     | 587  |
| + 293                | + 314        | + 303       | + 241        | + 317        | + 444         | + 395                   | + 388       | + 398         | + 376        | + 252                  | + 330        | - 72         | + 122         | - 34                    | - 35         | + 140         | - 59          | G. H. & C. Goward.   | 7195 |
| - 20                 | - 26         | - 06        | - 73         | - 21         | + 12          | - 17                    | - 15        | - 01          | - 16         | - 81                   | - 68         | - 319        | - 197         | - 300                   | - 327        | - 221         | - 396         | Moore                | 3062 |
| - 272                | - 280        | - 275       | - 274        | - 261        | - 197         | - 163                   | - 160       | - 124         | - 140        | - 81                   | + 66         | - 45         | - 63          | - 83                    | - 61         | + 09          | - 101         | Davis and Sons.      | 471  |
| - 09                 | + 00         | + 04        | + 66         | + 54         | + 90          | + 109                   | + 119       | + 89          | + 91         | + 97                   | + 51         | + 49         | + 10          | - 15                    | - 30         | - 59          | - 73          | Clark and Son        | 3056 |
| + 135                | + 65         | + 40        | + 129        | + 29         | + 76          | + 90                    | + 13        | + 43          | + 19         | + 16                   | + 27         | - 166        | - 111         | - 194                   | - 235        | - 122         | - 345         | J. French            | 700  |
| + 166                | + 180        | + 164       | + 133        | + 178        | + 282         | + 232                   | + 242       | + 360         | + 362        | + 202                  | + 330        | + 275        | + 485         | + 418                   | + 427        | + 693         | + 614         | Crip                 | 21   |
|                      |              |             |              |              |               |                         |             |               |              |                        |              |              |               |                         |              |               |               |                      |      |
| + 7177               | + 5533       | + 4186      | + 2981       | + 2895       | - 4345        | - 4467                  | - 7010      | - 8976        | - 10389      | - 16140                | - 16738      | - 22049      | - 36265       | - 26741                 | - 27910      | - 29073       | - 53714       |                      |      |
|                      |              |             |              |              |               |                         |             |               |              |                        |              |              |               |                         |              |               |               |                      |      |
| 51-60                | 52-63        | 57-64       | 50-71        | 54-68        | 65-79         | 65-75                   | 68-78       | 71-84         | 73-84        | 84-87                  | 84-76        | 93-77        | 103-78        | 104-80                  | 104-80       | 101-89        | 105-84        | 102                  |      |

| NAME<br>OF<br>MAKER.  | Number. | Whether<br>or<br>Days. | ADDRESS<br>OF<br>MAKER.                               | Construction of Escapement and<br>Balance,<br>from the description furnished<br>by the Maker. | (III)—ABSTRACT OF THE                    |                                        |                     |                         | PRINCIPAL CHANGES OF RATE.                      |                         |                     |                                                        |                                                                |                               |                           | NAME<br>OF<br>MAKER. | Number. |
|-----------------------|---------|------------------------|-------------------------------------------------------|-----------------------------------------------------------------------------------------------|------------------------------------------|----------------------------------------|---------------------|-------------------------|-------------------------------------------------|-------------------------|---------------------|--------------------------------------------------------|----------------------------------------------------------------|-------------------------------|---------------------------|----------------------|---------|
|                       |         |                        |                                                       |                                                                                               | First Day of<br>First Week of<br>Rating. | Last Day of<br>Last Week of<br>Rating. | Number of<br>Weeks. | Least<br>Weekly<br>Sum. | In what Week.                                   | Greatest<br>Weekly Sum. | In what Week.       | Difference<br>between<br>the<br>Greatest<br>and Least. | Greatest<br>Difference<br>between one<br>Week and the<br>next. | Before and after<br>what Day. |                           |                      |         |
| Campbell .....        | 837     | 2                      | 7, South Castle Street, Liverpool.                    | Ordinary construction of balance, with a slight alteration.                                   | January 8                                | July 30                                | 29                  | - 2.9                   | March 12 to 19†                                 | + 6.7                   | July 16 to 23       | 9.6                                                    | 4.7                                                            | † June 18 †                   | Campbell.....             | 837                  |         |
| Froddham and Baker    | 6188    | 2                      | 31, Gracechurch Street, London.                       | Auxiliary compensation to the balance (unpublished).                                          | January 8                                | July 30                                | 29                  | - 7.0                   | April 2 to 9                                    | + 6.0                   | May 28 to June 23   | 13.9                                                   | 9.1                                                            | † June 23                     | Froddham and Baker.....   | 6188                 |         |
| Keys .....            | 225     | 2                      | 14, Craven Street, Strand, London.                    | Extra compensation acting on the pendulum spring.                                             | February 26                              | July 30                                | 22                  | - 12.9                  | March 12 to 19†                                 | + 0.8                   | June 11 to 18†      | 13.7                                                   | 9.4                                                            | † June 4 †                    | Keys .....                | 225                  |         |
| Crisp .....           | 130     | 2                      | 81, St. John Street Road, London.                     | Edie's auxiliary to balance.                                                                  | January 15                               | July 30                                | 28                  | - 27.9                  | February 19 to 26†                              | - 6.7                   | July 9 to 16        | 21.2                                                   | 7.1                                                            | July 9                        | Crisp .....               | 130                  |         |
| Poole .....           | 2059    | 2                      | 57, Fenchurch Street, London.                         | Auxiliary compensation to the balance, as in former years.                                    | January 8                                | July 30                                | 29                  | - 12.8                  | January 15 to 22*                               | + 7.6                   | Feb. 26 to March 5† | 20.4                                                   | 8.9                                                            | † June 25                     | Poole .....               | 2059                 |         |
| Webb.....             | 5380    | 2                      | 4, Pullen's Row, Islington, London.                   | Auxiliary compensation to the balance, as in former years.                                    | January 15                               | July 30                                | 28                  | - 14.5                  | { February 12 to 19 }<br>{ February 19 to 26† } | + 11.5                  | July 16 to 23       | 26.0                                                   | 9.8                                                            | † March 12 †                  | Webb .....                | 5380                 |         |
| Froddham and Baker    | 6149    | 2                      | 31, Gracechurch Street, London.                       | Auxiliary compensation to the balance (unpublished).                                          | January 8                                | July 30                                | 29                  | - 28.1                  | March 5 to 12†                                  | - 8.2                   | July 23 to 30       | 19.9                                                   | 9.5                                                            | † March 19                    | Froddham and Baker.....   | 6149                 |         |
| May.....              | 6064    | 2                      | 15, Upper Charles Street, Northampton Square, London. | May's centrifugal balance (unpublished).                                                      | January 8                                | July 30                                | 29                  | - 14.9                  | January 8 to 15*                                | + 10.6                  | June 11 to 18†      | 23.5                                                   | 8.4                                                            | † March 19                    | May.....                  | 6064                 |         |
| Russell and Son       | 6064    | 2                      | 30 and 32, Slater Street, Liverpool.                  | Hartnup's balance.                                                                            | January 15                               | July 30                                | 28                  | - 36.5                  | { March 5 to 12† }<br>{ March 12 to 19† }       | - 16.0                  | July 23 to 30       | 20.5                                                   | 11.6                                                           | † June 18 †                   | Russell and Son .....     | 6064                 |         |
| Poole .....           | 2714    | 2                      | 57, Fenchurch Street, London.                         | Auxiliary compensation to the balance, as in former years.                                    | January 8                                | July 30                                | 29                  | - 19.3                  | May 28 to June 4†                               | + 0.5                   | April 16 to 23      | 19.8                                                   | 12.3                                                           | † March 19                    | Poole .....               | 2714                 |         |
| Parkinson and Bouts   | 800     | 2                      | 59, Gracechurch Street, London.                       | Ordinary construction.                                                                        | January 8                                | July 30                                | 29                  | - 23.0                  | February 26 to March 5†                         | + 0.9                   | July 23 to 30       | 22.9                                                   | 11.3                                                           | † June 18 †                   | Parkinson and Bouts ..... | 800                  |         |
| Hlitt .....           | 1946    | 2                      | 5, Bath Street, Liverpool.                            | Hartnup's balance.                                                                            | January 8                                | July 30                                | 29                  | - 20.0                  | February 19 to 26†                              | + 8.6                   | April 16 to 23      | 28.6                                                   | 10.9                                                           | † March 19                    | Hlitt .....               | 1946                 |         |
| Reid and Sons         | 1200    | 2                      | 41, Grey Street, Newcastle-upon-Tyne.                 | Auxiliary compensation to the balance, acting at low temperatures.                            | January 8                                | July 30                                | 29                  | - 24.7                  | March 12 to 19†                                 | - 6.1                   | February 12 to 19   | 18.6                                                   | 17.5                                                           | † March 19                    | Reid and Sons .....       | 1200                 |         |
| Perthouse .....       | 7201    | 2                      | 16, Northampton Square, London.                       | Ordinary construction of balance.                                                             | January 8                                | July 30                                | 29                  | - 10.7                  | January 8 to 15*                                | + 12.2                  | Mar. 26 to April 2  | 22.9                                                   | 16.1                                                           | April 2                       | Perthouse .....           | 7201                 |         |
| McGregor and Co.      | 2760    | 2                      | 38, Clyde Place, Glasgow, and Greenock.               | Auxiliary compensation.                                                                       | January 8                                | July 30                                | 29                  | - 20.3                  | February 5 to 12*                               | + 16.4                  | July 16 to 23       | 36.7                                                   | 12.0                                                           | April 2                       | McGregor and Co. ....     | 2760                 |         |
| G. H. & C. Gowland    | 3183    | 2                      | Sunderland.                                           | Poole's auxiliary compensation.                                                               | January 8                                | July 30                                | 29                  | - 53.8                  | March 12 to 19†                                 | - 7.9                   | July 23 to 30       | 23.9                                                   | 18.8                                                           | † March 19                    | G. H. & C. Gowland .....  | 3183                 |         |
| Lawson .....          | 1318    | 2                      | 19, York Place, City Road, London.                    | Lawson's auxiliary compensation to the balance.                                               | January 15                               | July 30                                | 28                  | - 13.4                  | March 12 to 19†                                 | + 22.4                  | July 23 to 30       | 51.8                                                   | 14.1                                                           | † June 18 †                   | Lawson .....              | 1318                 |         |
| Wood .....            | 523     | 2                      | 69, Lord Street, Liverpool.                           | Hartnup's balance.                                                                            | January 8                                | July 30                                | 29                  | - 4.2                   | January 8 to 15*                                | + 4.4                   | July 16 to 23       | 51.6                                                   | 7.5                                                            | † March 19                    | Wood .....                | 523                  |         |
| Sewill.....           | 1101    | 2                      | 61, South Castle Street, Liverpool.                   | Hartnup's balance.                                                                            | January 15                               | July 30                                | 28                  | - 4.7                   | March 12 to 19†                                 | + 25.6                  | July 23 to 30       | 30.3                                                   | 18.8                                                           | † March 19                    | Sewill .....              | 1101                 |         |
| Barwise .....         | 2711    | 2                      | 60, Piccadilly, London.                               | Auxiliary compensation to the balance.                                                        | January 8                                | July 30                                | 29                  | - 25.9                  | January 8 to 15*                                | + 8.3                   | June 11 to 18†      | 34.2                                                   | 16.9                                                           | † March 19                    | Barwise .....             | 2711                 |         |
| Dent .....            | 500     | 2                      | 61, Strand, London.                                   | Dent's patent balance; see pamphlet, "On the Errors of Chronometers," p. 23.                  | January 15                               | July 30                                | 28                  | - 10.6                  | February 19 to 26†                              | + 26.6                  | June 25 to July 2   | 37.2                                                   | 15.9                                                           | † March 19                    | Dent.....                 | 500                  |         |
| Blackie .....         | 1857    | 2                      | 44, Anwell Street, London.                            | A new auxiliary compensation (unpublished).                                                   | January 15                               | July 30                                | 28                  | - 12.4                  | March 12 to 19†                                 | + 23.5                  | July 16 to 23       | 53.9                                                   | 19.1                                                           | † March 19                    | Blackie .....             | 1857                 |         |
| Sewill .....          | 1857    | 2                      | 61, South Castle Street, Liverpool.                   | Auxiliary compensation, acting at low temperatures.                                           | January 15                               | July 30                                | 28                  | - 31.1                  | March 12 to 19†                                 | + 7.2                   | July 23 to 30       | 38.3                                                   | 21.3                                                           | † March 19                    | Sewill .....              | 1857                 |         |
| Reid and Sons         | 1204    | 2                      | 41, Grey Street, Newcastle-upon-Tyne.                 | Auxiliary compensation to the balance, acting at low temperatures.                            | January 8                                | July 30                                | 29                  | - 4.8                   | March 12 to 19†                                 | + 31.0                  | July 23 to 30       | 23.8                                                   | 24.1                                                           | † March 19                    | Reid and Sons .....       | 1204                 |         |
| Hewitt and Son        | 2323    | 2                      | 12, John Street, Midway Park, Kingsland, London.      | A new auxiliary compensation (unpublished).                                                   | January 8                                | July 30                                | 29                  | - 25.5                  | February 12 to 19                               | - 7.8                   | June 11 to 18†      | 40.2                                                   | 13.7                                                           | † February 26 †               | Hewitt and Son .....      | 2323                 |         |
| Perthouse .....       | 7230    | 2                      | 16, Northampton Square, London.                       | Auxiliary compensation.                                                                       | January 8                                | July 30                                | 29                  | - 25.5                  | January 8 to 15*                                | + 34.7                  | July 23 to 30       | 61.0                                                   | 19.7                                                           | † February 26 †               | Perthouse .....           | 7230                 |         |
| J. Muirhead .....     | 2310    | 2                      | Glasgow.                                              | Poole's auxiliary compensation.                                                               | January 8                                | July 30                                | 29                  | - 28.4                  | March 12 to 19†                                 | + 4.1                   | April 9 to 16       | 32.5                                                   | 31.5                                                           | February 19 †                 | J. Muirhead .....         | 2310                 |         |
| Lister and Sons ..... | 387     | 2                      | Newcastle-upon-Tyne.                                  | Poole's auxiliary compensation.                                                               | January 8                                | July 30                                | 29                  | - 61.5                  | March 12 to 19†                                 | - 12.6                  | January 22 to 29*   | 48.9                                                   | 26.0                                                           | February 19 †                 | Lister and Sons .....     | 387                  |         |
| G. H. & C. Gowland    | 7195    | 2                      | Sunderland.                                           | Auxiliary compensation.                                                                       | January 8                                | July 30                                | 29                  | - 7.2                   | February 19 to 26†                              | + 44.4                  | July 23 to 30       | 51.6                                                   | 35.2                                                           | † March 19                    | G. H. & C. Gowland .....  | 7195                 |         |
| Moore .....           | 3062    | 2                      | 114, High Street, Belfast.                            | Poole's auxiliary compensation.                                                               | January 8                                | July 30                                | 29                  | - 29.6                  | March 12 to 19†                                 | + 1.2                   | July 23 to 30       | 45.8                                                   | 32.1                                                           | † March 19                    | Moore .....               | 3062                 |         |
| Davis and Sons .....  | 471     | 2                      | 84, King William Street, City, London.                | May's centrifugal balance.                                                                    | January 8                                | July 30                                | 29                  | - 38.4                  | January 29 to February 5*                       | + 6.6                   | June 18 to 25†      | 40.0                                                   | 30.7                                                           | February 19 †                 | Davis and Sons .....      | 471                  |         |
| Clark and Son .....   | 3056    | 2                      | Greenock.                                             | Poole's auxiliary compensation.                                                               | January 8                                | July 30                                | 29                  | - 30.8                  | January 15 to 22*                               | + 16.7                  | February 12 to 19   | 47.5                                                   | 29.8                                                           | * January 22 *                | Clark and Son .....       | 3056                 |         |
| J. French .....       | 7093    | 2                      | 62, Cornhill, London.                                 | Improved patent compensation for extreme ranges of temperature.                               | January 22                               | July 30                                | 26                  | - 34.5                  | March 12 to 19†                                 | + 14.4                  | April 9 to 16       | 48.9                                                   | 45.8                                                           | † March 19                    | J. French .....           | 7093                 |         |
| Crisp .....           | 285     | 2                      | 81, St. John Street Road, London.                     | Edie's auxiliary to balance.                                                                  | January 22                               | July 30                                | 27                  | + 2.3                   | February 12 to 19                               | + 69.5                  | June 11 to 18†      | 67.2                                                   | 49.9                                                           | † March 19                    | Crisp .....               | 285                  |         |

\* During these weeks the Chronometers were exposed to the external air outside a North window.

† During these weeks the Chronometers were placed in the chamber of a stove heated by gas.

The rate given by the first five days of trial is in every case omitted, excepting for Lawson 1318, where the rate for one day only is omitted.

The order of arrangement of the Chronometers in these Tables is determined solely by consideration of their irregularities of rate, as expressed in the columns "Difference between the Greatest and Least" and "Greatest Difference between one Week and the next," without reference to the duration of the trial, the position of Keys 225 is therefore not necessarily correct.

Three Chronometers which became damaged, evidently from some accidental cause, are entirely omitted.