



The Seismographic Station

ANNUAL REPORT
OF THE
METEOROLOGICAL
AND THE
SEISMOLOGICAL OBSERVATIONS
MADE AT THE
INTERNATIONAL LATITUDE OBSERVATORY
OF MIZUSAWA
FOR
THE YEAR 1921.

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LATITUDE 39° 8' N., LONGITUDE 141° 8' E.,  
HEIGHT ABOVE MEAN SEA LEVEL 61 METRES.

—•••••—  
PUBLISHED BY THE INTERNATIONAL LATITUDE OBSERVATORY  
OF MIZUSAWA.

1922.

正 誤 表

| 頁  | 欄                                                                | 月又八日  | 時  | 誤                                                         | 正                                                       |
|----|------------------------------------------------------------------|-------|----|-----------------------------------------------------------|---------------------------------------------------------|
| 5  | REMARKS                                                          | 8     |    | —                                                         | -☒-                                                     |
| 5  | "                                                                | 9     |    |                                                           | -☒-                                                     |
| 5  | Evaporation (in the Shelter)                                     | 3     |    | * 0.2                                                     | + 0.2                                                   |
| 9  | AMOUNT(0-10)AND FORMS OF CLOUDS                                  | 25    | 14 | 0 sk                                                      | 8 sk                                                    |
| 9  | REMARKS                                                          | 18    |    | ☐ 22                                                      | ☐ 22                                                    |
| 14 | TENSION OF THE VAPOUR                                            | 8     | 6  | 9.0                                                       | 9.0                                                     |
| 14 | " "                                                              | 8     | 22 | 10.2                                                      | 10.2                                                    |
| 15 | REMARKS                                                          | 30    |    | ∞ 2                                                       | ∞ 2                                                     |
| 18 | AIR PRESSURE (700mm + )                                          | 2     | 14 | 33.3                                                      | 53.3                                                    |
| 20 | TENSION OF THE VAPOUR                                            | 11    | 10 | 13.3                                                      | 14.3                                                    |
| 22 | DIRECTION AND VELOCITY(m.p.s).....                               | 1     | 14 | N 1.7                                                     | N 0.7                                                   |
| 25 | Day                                                              | 31    |    | 21                                                        | 31                                                      |
| 26 | TENSION OF THE VAPOUR                                            | Dec.  | 22 | 3.4                                                       | 3.5                                                     |
| 27 | MONTHLY MAXIMUM (WITH DATE) MINIMUM (WITH DATE)AND.... Max. Date | Sept. |    | 19.9<br>7                                                 | 20.2<br>26                                              |
| 27 | " " Range                                                        | Sept. |    | 11.0                                                      | 11.3                                                    |
| 27 | MONTHLY MINIMUM (WITH DATE) OF RERATIVE HUMIDITY Date            | Mar.  |    | 13                                                        | 31                                                      |
| 28 | VELOCITY(m.p.s)OF THE WIND Maximum Date                          | June  |    | 11                                                        | 12                                                      |
| 29 | DIRECTION AND INTENSITY(m.p.s)OF THE....                         | Feb.  | 6  | N5°W                                                      | N51°W                                                   |
| 29 | NUMBER OF DAYS WITH PRECIPITATION (Separated by Amount) 0.1-1    | May   |    | 2                                                         | 3                                                       |
| 29 | " " 5-10                                                         | May   |    | 4                                                         | 3                                                       |
| 29 | " " 0.1-1 Annual                                                 |       |    | 66                                                        | 67                                                      |
| 29 | " " 5-10 Annual                                                  |       |    | 21                                                        | 20                                                      |
| 31 | GENERAL REMARKS Max. Number of Days in Succession without....    |       |    | { from Apr. 2<br>to Apr. 10<br>from Apr. 16<br>to Apr. 24 | from June 2<br>to June 10<br>from June 16<br>to June 24 |
| 31 | " "                                                              |       |    | "                                                         | "                                                       |
| 38 | Character of Motion No. 226                                      | Dec.  | 13 |                                                           | Slow                                                    |

The present report gives the results of the meteorological and seismological observations made at the observatory during the year 1921. No alteration has been made in the nature and methods of observation. The observations and the calculations were made by Messrs. K. Torihata, S. Satô and I. Kumagai.

The following are to be noted with respect to the meteorological observations:

*Hours of observations.*— *Japanese Central Standard Time* (i. e. mean time of the meridian 9h east from Greenwich) is adopted.

*Air Pressure.*—The barometric readings in millimetres are reduced to the freezing point of water; the corrections to sea level and to standard gravity are given at the bottom of the page for each month.

*Air and Earth Temperatures.*—The degrees are given in Centigrade.

*Wind.*—The velocity is expressed in metres per second. The direction was observed relative to the sixteen points of the compass.

*Cloud.*—The amount is estimated by the scale 0-10, the forms are those of the *International classification*, and the direction of motion is indicated relative to the eight points of the compass.

*Tension of Water Vapour.*—is given in millimetres.

*Relative Humidity.*—is given in percentages.

*Precipitation.*—The amount is given in millimetres. In the total number of days only those, on which the amount is 0.1 mm or more in the day, are reckoned. But all days, on which snow, hail, or graupel fell, are included without reference to the amount.

*Clear and Cloudy Days.*—i. e. the amount of cloud is less than 2 exclusive for the former, and more than 8 inclusive for the latter.

*Duration of Sunshine.*—is recorded by a Jordan sunshine-recorder.

*Amount of Evaporation.*—is given in millimetres, for each day,— that is from 10h of the preceding day to 10h of the day in question, according to the instruction of the Central Meteorological Observatory in Tôkyô.

In recording *meteorological phenomena* the following *symbols* are used:—

|   |                           |   |                          |    |                |
|---|---------------------------|---|--------------------------|----|----------------|
| ● | Rain                      | + | Snow drift               | c  | Cirrus         |
| * | Snow                      | ← | Ice crystals             | cs | Cirro-stratus  |
| ⌘ | Thunder storm             | ⊙ | Solar corona             | ck | Cirro-cumulus  |
| ⌞ | Thunder without lightning | ⊕ | Solar halo               | ke | Cumulo-cirrus  |
| < | Lightning without thunder | ∩ | Lunar corona             | sc | Strato-cirrus  |
| △ | Graupel                   | ∪ | Lunar halo               | sk | Strato-cumulus |
| ▲ | Hail                      | ⚡ | Gales                    | n  | Nimbus         |
| ≡ | Mist, fog                 | ∩ | Rainbow                  | k  | Cumulus        |
| ⌊ | Hoar frost                | ⚡ | Aurora                   | kn | Cumulo-nimbus  |
| ⌞ | Dew                       | ∞ | Dust haze                | s  | Stratus        |
| ∨ | Silver thaw               | ⊠ | Snow Lying               | ~  | Wave cloud     |
| ~ | Glazed frost              | ⌊ | Ice Column in the ground | ☾  | Zodiacal light |

The descriptions of the meteorological instruments are found in the annual reports for the years 1902, 1904, 1905, 1910, and 1916.

The seismological instruments in use are two Omori's horizontal pendulums, of the same type as that described in p. 8 of No. 5, "Publication of the Earthquake Investigation Committee in Foreign Language," one serving to register the EW component, and the other the NS component, of seismological movements. The instrumental constants are as follows:

|                                                                             | EW Component    | NS Component    |
|-----------------------------------------------------------------------------|-----------------|-----------------|
|                                                                             | Apparatus       | Apparatus       |
| Period of free oscillation                                                  | 16 seconds      | 37 seconds      |
| Multiplication of the pointer                                               | 100 times       | 20 times        |
| Weight of heavy cylinder                                                    | 45.0 kilograms  | 17.6 kilograms  |
| Horizontal distance of the centre of the cylinder from the point of support | 20 centimetres  | 75 centimetres  |
| Vertical distance between the points of support and of suspension           | 104 centimetres | 104 centimetres |

The time adopted in the observations is the Japanese Central Standard Time reckoned from midnight.

April, 1922.

Y. Ueta.

Observer of the International Latitude Observatory  
of Mizusawa.

**SEISMOLOGICAL OBSERVATIONS.**

## TABLE A.

(Earthquakes)

| No. | Date<br>1921 | Time of Occurrence |      |    |      | Beginning of<br>the Principal portion |    |    |     | Duration<br>of<br>Total<br>Earthquake<br>(mean) | Maximum<br>Range of Motion |      | Character<br>of<br>Motion | Intensity | Remarks |        |      |
|-----|--------------|--------------------|------|----|------|---------------------------------------|----|----|-----|-------------------------------------------------|----------------------------|------|---------------------------|-----------|---------|--------|------|
|     |              | E                  | W    | N  | S    | E                                     | W  | N  | S   |                                                 | E                          | W    |                           |           |         | N      | S    |
| 1   | Jan. 1       | 0                  | 44   | 34 | ?    | ?                                     | 0  | 45 | 14  | 45                                              | 15                         | 4.4  | 0.01                      | 0.02      | Slow    | Feeble |      |
| 2   | 2            | 16                 | 08   | 38 | 08   | 38                                    | 16 | 10 | 09  | 10                                              | 13                         | 12.9 | 0.59                      | 1.20      | "       | "      |      |
| 3   | 6            | 21                 | 08   | 34 | 08   | 15                                    | 21 | 15 | 21* | 15                                              | 13*                        | 34.1 | ?                         | 0.01      | "       | "      |      |
| 4   | 8            | 4                  | 10   | 22 | —    | —                                     | 4  | 10 | 52  | —                                               | —                          | 4.7  | 0.02                      | —         | "       | "      |      |
| 5   | 10           | 3                  | 56   | 47 | 56   | 50                                    | 3  | 57 | 33  | 57                                              | 37                         | 19.3 | 0.29                      | 0.35      | "       | "      |      |
| 6   | 19           | 23                 | 59   | 55 | 00   | 02                                    | 24 | 01 | 48  | 01                                              | 48                         | 40.4 | ?                         | 0.15      | "       | "      |      |
| 7   | 20           | 3                  | 03   | 02 | 03   | 08                                    | 3  | 04 | 56  | 04                                              | 57                         | 21.5 | ?                         | 0.03      | "       | "      |      |
| 8   | 25           | 8                  | 22   | 15 | 22.5 |                                       | 8  | 22 | 51  | 22                                              | 54                         | 3.7  | 0.01                      | 0.01      | "       | "      |      |
| 9   | 25           | 19                 | 28   | 32 | 28   | 33                                    | 19 | 29 | 13  | 29                                              | 13                         | 9.3  | 0.10                      | 0.10      | "       | "      |      |
| 10  | 28           | 2                  | 08   | 11 | 08   | 12                                    | 2  | 08 | 22  | 08                                              | 23                         | 4.1  | 0.03                      | 0.02      | "       | "      | Felt |
| 11  | 28           | 3                  | 00   | 53 | ?    |                                       | 2  | 02 | 20  | 02                                              | 22                         | 6.0  | 0.01                      | ?         | "       | "      |      |
| 12  | Feb. 10      | 16                 | 49   | 41 | 49.7 |                                       | 16 | 49 | 46  | 49.8                                            |                            | 1.7  | 0.02                      | ?         | "       | "      |      |
| 13  | 11           | 8                  | 58   | 41 | 58   | 39                                    | 9  | 02 | 41  | 02                                              | 26                         | 21.2 | 0.20                      | 0.35      | "       | "      |      |
| 14  | 14           | 10                 | 08   | 06 | 08   | 05                                    | 10 | 13 | 44* | 13                                              | 44*                        | ?    | ?                         | ?         | "       | "      |      |
| 15  | 14           | 12                 | 01   | 31 | 01   | 29                                    | 12 | 02 | 17  | 02                                              | 20                         | 12.9 | 0.15                      | 0.20      | "       | "      |      |
| 16  | 20           | 3                  | 22   | 26 | 22   | 18                                    | 3  | 28 | 37* | 28                                              | 33*                        | 42.0 | 0.00                      | 0.05      | "       | "      |      |
| 17  | 22           | 8                  | 18   | 22 | 18.6 |                                       | 8  | 18 | 44  | 18                                              | 44                         | 2.4  | 0.01                      | 0.01      | "       | "      |      |
| 18  | 22           | 19                 | 25   | 03 | ?    |                                       | 19 | 25 | 33  | 25.5                                            |                            | 4.9  | 0.01                      | 0.01      | "       | "      |      |
| 19  | 26           | 0                  | 33.8 |    | —    | —                                     | ?  |    |     | —                                               | —                          | 3.5? | 0.00                      | —         | "       | "      |      |
| 20  | 26           | 8                  | 14.0 |    | —    | —                                     | 8  | 14 | 13  | —                                               | —                          | 1.3? | 0.00                      | —         | "       | "      |      |
| 21  | 28           | 3                  | 35   | 00 | 34   | 59                                    | 3  | 44 | 22* | 44                                              | 22*                        | 58.9 | 0.09                      | 0.70      | "       | "      |      |
| 22  | Mar. 1       | 11                 | 21   | 07 | —    | —                                     | 11 | 21 | 24  | —                                               | —                          | 3.0  | 0.01                      | —         | "       | "      |      |
| 23  | 3            | 12                 | 02   | 46 | 02   | 47                                    | 12 | 03 | 05  | 03                                              | 18                         | 49.2 | ?                         | ?         | Quick   | Weak   | Felt |
| 24  | 3            | 17                 | 30   | 26 | 30   | 25                                    | 17 | 28 | 06* | 38                                              | 11*                        | 35.0 | ?                         | ?         | Slow    | Feeble |      |
| 25  | 4            | 10                 | 20   | 23 | 20.7 |                                       | 10 | 21 | 14  | 21                                              | 33                         | 11.5 | 0.07                      | 0.08      | "       | "      |      |
| 26  | 4            | 21                 | 53   | 14 | 53   | 14                                    | 21 | 55 | 02  | 55                                              | 01                         | 15.2 | 0.31                      | 0.22      | "       | "      |      |
| 27  | 6            | 10                 | 31   | 45 | 39   | 45                                    | 10 | 40 | 10  | 40                                              | 07                         | ?    | 0.20                      | 0.49      | "       | "      |      |
| 28  | 6            | 10                 | 43.8 |    | 41.0 |                                       | 10 | 44 | 13  | 44                                              | 18                         | 5.9? | 0.05                      | 0.06      | "       | "      |      |
| 29  | 11           | 18                 | 29.7 |    | ?    |                                       | 18 | 29 | 55  | 30                                              | 01                         | 2.4? | 0.02                      | 0.02      | "       | "      |      |
| 30  | 12           | 6                  | 34   | 29 | 34   | 35                                    | 6  | 34 | 43  | 34                                              | 52                         | 2.9  | 0.01                      | 0.01      | "       | "      |      |
| 31  | 14           | 0                  | 02   | 54 | —    | —                                     | 0  | 03 | 08  | —                                               | —                          | 2.0  | 0.01                      | —         | "       | "      |      |
| 32  | 15           | 13                 | 33   | 12 | 33.4 |                                       | 13 | 34 | 23  | 34                                              | 36                         | 6.3  | 0.05                      | 0.07      | "       | "      |      |
| 33  | 19           | 17                 | 25   | 20 | 25   | 23                                    | 17 | 29 | 42* | 29                                              | 51*                        | 47.2 | 0.00                      | 0.04      | "       | "      |      |
| 34  | 24           | 7                  | 52   | 52 | 53   | 08                                    | 7  | 59 | 18  | 59                                              | 23                         | ?    | ?                         | ?         | "       | "      |      |
| 35  | 24           | 23                 | 45   | 54 | 45   | 53                                    | 23 | 49 | 04  | 49                                              | 04                         | 39.5 | 0.07                      | 0.26      | "       | "      |      |
| 36  | 30           | 7                  | 14   | 07 | 14   | 11                                    | 7  | 18 | 48  | 18                                              | 51                         | 59.7 | 0.05                      | 0.19      | "       | "      |      |
| 37  | 31           | 0                  | 10   | 36 | 10   | 37                                    | 0  | 17 | 21* | 07                                              | 21*                        | 39.4 | ?                         | 0.03      | "       | "      |      |
| 38  | 31           | 16                 | 51   | 04 | 51   | 07                                    | 16 | 51 | 26  | 51                                              | 28                         | 3.9  | 0.02                      | 0.03      | "       | "      |      |
| 39  | 31           | 20                 | 27   | 22 | —    | —                                     | ?  |    |     | —                                               | —                          | 4.2  | ?                         | —         | "       | "      |      |
| 40  | Apr. 1       | 13                 | 16   | 01 | 16   | 36                                    | 13 | 22 | 59* | 23                                              | 26*                        | 55.3 | 0.03                      | 0.26      | "       | "      |      |
| 41  | 1            | 21                 | 09   | 59 | 10   | 02                                    | 21 | 17 | 35* | 17                                              | 38*                        | 59.3 | ?                         | 0.03      | "       | "      |      |
| 42  | 2            | 18                 | 41   | 25 | 41   | 28                                    | 18 | 45 | 14  | 45                                              | 15                         | 36.6 | 0.07                      | 0.30      | "       | "      |      |
| 43  | 8            | 13                 | 52   | 45 | 52   | 46                                    | 13 | 53 | 08  | 53                                              | 12                         | 9.9  | 0.35                      | 0.55      | "       | "      |      |
| 44  | 8            | 23                 | 35   | 17 | 35   | 17                                    | 23 | 35 | 41  | 35                                              | 42                         | 9.1  | 0.42                      | 0.55      | "       | "      |      |
| 45  | 11           | 2                  | 52   | 03 | ?    |                                       | 2  | 52 | 11  | 52                                              | 10                         | 3.3  | 0.02                      | 0.02      | "       | "      |      |
| 46  | 11           | 21                 | 03   | 39 | —    | —                                     | 21 | 04 | 33  | —                                               | —                          | 4.1  | 0.01                      | —         | "       | "      |      |
| 47  | 12           | 23                 | 27.9 |    | —    | —                                     | 23 | 28 | 15  | —                                               | —                          | 1.6? | 0.01                      | —         | "       | "      |      |
| 48  | 19           | 2                  | 03   | 42 | ?    |                                       | 2  | 04 | 08  | 04                                              | 07                         | 3.2  | 0.01                      | 0.01      | "       | "      |      |
| 49  | 19           | 9                  | 17   | 22 | —    | —                                     | 9  | 18 | 28  | —                                               | —                          | 9.6  | 0.02                      | —         | "       | "      |      |
| 50  | 19           | 20                 | 07   | 43 | ?    |                                       | 20 | 08 | 22  | 08                                              | 27                         | 6.7  | 0.02                      | 0.04      | "       | "      |      |
| 51  | 20           | 18                 | 26   | 42 | —    | —                                     | 18 | 26 | 53  | —                                               | —                          | 5.3  | 0.01                      | —         | "       | "      |      |
| 52  | 21           | 0                  | 53.0 |    | —    | —                                     | 0  | 54 | 53  | —                                               | —                          | 7.5? | 0.01                      | —         | "       | "      |      |
| 53  | 21           | 1                  | 40   | 12 | —    | —                                     | 1  | 40 | 28  | —                                               | —                          | 3.4  | 0.01                      | —         | "       | "      |      |
| 54  | 21           | 4                  | 51   | 42 | 51   | 45                                    | 4  | 52 | 10  | —                                               | —                          | 6.6  | 0.05                      | 0.10      | "       | "      |      |
| 55  | 25           | 16                 | 25   | 23 | 25   | 38                                    | 16 | 25 | 54  | ?                                               |                            | 4.0  | 0.02                      | 0.03      | "       | "      |      |

\* Commence Time of the 2nd preliminary tremor.

SEISMOLOGICAL OBSERVATIONS AT MIZUSAWA.

TABLE A.

(Earthquakes)

| No. | Date<br>1921 | Time of Occurrence |      |    |      | Beginning of the<br>Principal portion |    |    |     | Duration<br>of<br>Total<br>Earthquake<br>(mean) | Maximum<br>Range of Motion |      | Character<br>of<br>Motion | Intensity | Remarks |        |      |
|-----|--------------|--------------------|------|----|------|---------------------------------------|----|----|-----|-------------------------------------------------|----------------------------|------|---------------------------|-----------|---------|--------|------|
|     |              | E                  | W    | N  | S    | E                                     | W  | N  | S   |                                                 | E                          | W    |                           |           |         | N      | S    |
| 56  | May 3        | 8                  | 50   | 11 | 50   | 08                                    | 8  | 50 | 37  | 50                                              | 36                         | 6.4  | 0.04                      | 0.10      | Slow    | Feeble |      |
| 57  | 9            | 3                  | 57   | 28 | 57   | 29                                    | 3  | 57 | 46  | 57                                              | 48                         | 5.5  | 0.07                      | 0.10      | "       | "      |      |
| 58  | 11           | 0                  | 35   | 36 | 35.7 |                                       | 0  | 36 | 13  | 36                                              | 14                         | 4.0  | 0.01                      | 0.01      | "       | "      |      |
| 59  | 11           | 20                 | 07   | 58 | ?    |                                       | 20 | 08 | 37  | ?                                               |                            | 5.6  | 0.01                      | 0.01      | "       | "      |      |
| 60  | 11           | 21                 | 29   | 57 | 29   | 59                                    | 21 | 30 | 14  | 30                                              | 16                         | 5.3  | 0.05                      | 0.07      | "       | "      |      |
| 61  | 13           | 20                 | 54   | 18 | 54.5 |                                       | 20 | 55 | 19  | 55                                              | 19                         | 5.2  | 0.01                      | 0.02      | "       | "      |      |
| 62  | 14           | 20                 | 25   | 53 | 25   | 57                                    | 20 | 32 | 14* | 32                                              | 21*                        | 27.4 | ?                         | ?         | "       | "      |      |
| 63  | 15           | 7                  | 01   | 37 | ?    |                                       | 7  | 02 | 02  | 02                                              | 03                         | 3.3  | 0.01                      | 0.01      | "       | "      |      |
| 64  | 16           | 5                  | 40   | 27 | 40   | 24                                    | 5  | 43 | 02  | 43                                              | 01                         | 6.3  | 0.03                      | 0.02      | "       | "      |      |
| 65  | 18           | 6                  | 19   | 01 | 19   | 02                                    | 6  | 19 | 23  | 19                                              | 25                         | 7.4  | 0.11                      | 0.18      | "       | "      |      |
| 66  | 18           | 10                 | 21   | 20 | 21.3 |                                       | 10 | 21 | 29  | 21                                              | 30                         | 2.1  | 0.04                      | 0.04      | Quick   | Weak   | Felt |
| 67  | 23           | 8                  | 12   | 17 | ?    |                                       | 8  | 13 | 23  | 13                                              | 22                         | 6.2  | 0.03                      | 0.04      | Slow    | Feeble |      |
| 68  | 24           | 6                  | 15   | 15 | 15.3 |                                       | 6  | 15 | 41  | 15                                              | 39                         | 3.1? | 0.02                      | 0.01      | "       | "      |      |
| 69  | 24           | 6                  | 31   | 55 | ?    |                                       | 6  | 32 | 29  | 32                                              | 21                         | ?    | 0.03                      | 0.04      | "       | "      |      |
| 70  | 24           | 6                  | 38   | 03 | —    | —                                     | 6  | 38 | 32  | —                                               | —                          | 3.0  | 0.00                      | —         | "       | "      |      |
| 71  | 24           | 7                  | 00   | 05 | ?    |                                       | 7  | 00 | 32  | 00                                              | 33                         | 5.8  | 0.03                      | 0.03      | "       | "      |      |
| 72  | 24           | 12                 | 07   | 05 | 07.2 |                                       | 12 | 07 | 29  | 07.5                                            |                            | 4.9  | 0.03                      | 0.04      | "       | "      |      |
| 73  | 24           | 18                 | 18   | 42 | 18.7 |                                       | 18 | 18 | 52  | 18                                              | 52                         | 2.8  | 0.02                      | 0.04      | "       | "      |      |
| 74  | 24           | 21                 | 13   | 40 | 13   | 41                                    | 21 | 14 | 06  | 14                                              | 07                         | 7.3  | 0.19                      | 0.20      | "       | "      |      |
| 75  | 25           | 2                  | 21   | 40 | 21   | 39                                    | 2  | 22 | 24  | 22                                              | 27                         | 6.1  | 0.14                      | 0.15      | "       | "      |      |
| 76  | 27           | 7                  | 28   | 15 | —    | —                                     | 7  | 28 | 26  | —                                               | —                          | 3.8  | 0.04                      | —         | "       | "      |      |
| 77  | 31           | 15                 | 21   | 55 | ?    |                                       | 15 | 22 | 11  | 22                                              | 13                         | 3.4  | 0.01                      | 0.01      | "       | "      |      |
| 78  | June 2       | 4                  | 40   | 14 | 40   | 10                                    | 4  | 43 | 35  | 43                                              | 35                         | 7.3  | 0.05                      | 0.04      | "       | "      |      |
| 79  | 3            | 21                 | 18   | 22 | 18.5 |                                       | 21 | 18 | 43  | 18                                              | 44                         | 3.4  | 0.03                      | 0.03      | Quick   | Weak   | Felt |
| 80  | 4            | 23                 | 50   | 22 | ?    |                                       | 23 | 50 | 33  | 50                                              | 34                         | 3.2  | 0.02                      | ?         | Slow    | Feeble |      |
| 81  | 8            | 0                  | 03   | 46 | 03.8 |                                       | 0  | 03 | 57  | 03                                              | 59                         | 2.9  | 0.01                      | 0.01      | "       | "      |      |
| 82  | 9            | 10                 | 02   | 20 | 02.4 |                                       | 10 | 02 | 40  | 02                                              | 47                         | 8.4  | 0.05                      | 0.06      | "       | "      |      |
| 83  | 14           | 13                 | 47   | 32 | 47   | 32                                    | 13 | 47 | 58  | 47                                              | 58                         | 9.4  | 0.26                      | 0.45      | "       | "      |      |
| 84  | 14           | 17                 | 49   | 03 | 49   | 00                                    | 17 | 52 | 31  | ?                                               |                            | 9.3  | 0.01                      | 0.01      | "       | "      |      |
| 85  | 19           | 8                  | 22   | 44 | 22.9 |                                       | 8  | 23 | 25  | ?                                               |                            | 6.9  | 0.03                      | 0.03      | "       | "      |      |
| 86  | 21           | 12                 | 08   | 01 | 08.0 |                                       | 12 | 08 | 33  | 08                                              | 34                         | 5.2  | 0.01                      | 0.02      | "       | "      |      |
| 87  | 22           | 20                 | 24   | 16 | 24.3 |                                       | 20 | 25 | 03  | 25                                              | 03                         | 17.8 | 0.24                      | 0.21      | "       | "      |      |
| 88  | 24           | 3                  | 24   | 59 | 24   | 58                                    | 20 | ?  |     | 27                                              | 48                         | 14.0 | 0.00                      | 0.04      | "       | "      |      |
| 89  | 26           | 0                  | 32   | 29 | ?    |                                       | 0  | 33 | 35  | 33                                              | 36                         | 6.6? | 0.12                      | 0.01      | "       | "      |      |
| 90  | 26           | 0                  | 46.3 |    | —    | —                                     | 0  | 47 | 38  | —                                               | —                          | 4.7? | 0.01                      | —         | "       | "      |      |
| 91  | 27           | 1                  | 11   | 36 | —    | —                                     | 1  | 12 | 46  | —                                               | —                          | 5.6  | 0.02                      | —         | "       | "      |      |
| 92  | 27           | 1                  | 37.7 |    | —    | —                                     | 1  | 38 | 44  | —                                               | —                          | 2.8? | 0.01                      | —         | "       | "      |      |
| 93  | 28           | 7                  | 55   | 33 | 55   | 33                                    | 7  | 55 | 50  | 55                                              | 51                         | 4.2  | 0.07                      | 0.07      | Quick   | "      |      |
| 94  | 28           | 23                 | 11   | 16 | 11   | 11                                    | 23 | 14 | 32* | 14                                              | 16*                        | 38.5 | ?                         | 0.03      | Slow    | "      |      |
| 95  | 30           | 22                 | 28   | 10 | ?    |                                       | 22 | 28 | 37  | 28                                              | 37                         | 3.5  | 0.01                      | 0.01      | "       | "      |      |
| 96  | July 2       | 4                  | 55.0 |    | —    | —                                     | 4  | 55 | 34  | —                                               | —                          | 3.0  | 0.01                      | —         | "       | "      |      |
| 97  | 2            | 23                 | 44   | 40 | —    | —                                     | 23 | 45 | 18  | —                                               | —                          | 3.4? | 0.00                      | —         | "       | "      |      |
| 98  | 3            | 13                 | 48   | 21 | ?    |                                       | 13 | 48 | 47  | 48.8                                            |                            | 4.0  | 0.01                      | 0.01      | "       | "      |      |
| 99  | 4            | 23                 | 21   | 20 | 21   | 21                                    | 23 | 23 | 58  | 24                                              | 04                         | ?    | 0.45                      | 0.40      | "       | "      |      |
| 100 | 4            | ?                  |      |    | ?    |                                       | 23 | 33 | 27* | 33                                              | 26*                        | ?    | ?                         | 0.01      | "       | "      |      |
| 101 | 6            | 12                 | 05   | 17 | 05.4 |                                       | 12 | 05 | 59  | ?                                               |                            | 6.2  | 0.02                      | 0.01      | "       | "      |      |
| 102 | 7            | 10                 | 22.2 |    | ?    |                                       | 10 | ?  |     | 22                                              | 17                         | 0.6? | 0.01                      | 0.01      | "       | "      |      |
| 103 | 12           | 3                  | 21   | 07 | 21   | 07                                    | 3  | 21 | 23  | 21                                              | 25                         | 2.1  | 0.01                      | ?         | "       | "      |      |
| 104 | 12           | 5                  | 07   | 16 | 07.5 |                                       | 5  | 07 | 53  | 07                                              | 54                         | 4.7  | 0.01                      | 0.01      | "       | "      |      |
| 105 | 16           | 3                  | 13   | 34 | 13   | 36                                    | 3  | 19 | 25* | 19                                              | 16*                        | 1.8? | ?                         | ?         | "       | "      |      |
| 106 | 17           | 19                 | 22.5 |    | 23.4 |                                       | 19 | 23 | 45  | ?                                               |                            | 4.9? | 0.00                      | ?         | "       | "      |      |
| 107 | 20           | 13                 | 44   | 47 | —    | —                                     | 13 | 45 | 03  | —                                               | —                          | 2.3  | ?                         | —         | "       | "      |      |
| 108 | 22           | 17                 | 44   | 52 | —    | —                                     | 17 | 45 | 20  | —                                               | —                          | 3.2  | 0.00                      | —         | "       | "      |      |
| 109 | 23           | 14                 | 55   | 52 | 55   | 54                                    | 14 | 56 | 14  | 56                                              | 16                         | 5.3  | 0.06                      | 0.07      | "       | "      |      |
| 110 | 26           | 7                  | 46   | 27 | —    | —                                     | 7  | 47 | 08  | —                                               | —                          | 3.0  | 0.01                      | —         | "       | "      |      |

\* Commence Time of the 2nd preliminary tremor.

TABLE A.

(Earthquakes)



| No. | Date<br>1921 |    | Time of Occurrence |      |    |      | Beginning of<br>the Principal portion |    |     |    | Duration<br>of<br>Total<br>Earthquake<br>(mean) | Maximum<br>Range of Motion |      |      |       | Character<br>of<br>Motion | Intensity | Remarks |
|-----|--------------|----|--------------------|------|----|------|---------------------------------------|----|-----|----|-------------------------------------------------|----------------------------|------|------|-------|---------------------------|-----------|---------|
|     |              |    | E                  | W    | N  | S    | E                                     | W  | N   | S  |                                                 | E                          | W    | N    | S     |                           |           |         |
| 111 | July         | 26 | 19                 | 40   | 06 | ?    | 19                                    | 41 | 58* | 42 | 01*                                             | 7.2                        | ?    | 0.02 | Slow  | Feeble                    |           |         |
| 112 |              | 28 | 2                  | 20   | 37 | 20   | 2                                     | 21 | 52  | 21 | 30                                              | 7.7                        | 0.08 | 0.14 | "     | "                         |           |         |
| 113 | Aug.         | 9  | 17                 | 37   | 29 | —    | 17                                    | 37 | 59  | —  | —                                               | 6.3                        | 0.02 | —    | "     | "                         |           |         |
| 114 |              | 9  | 19                 | 39   | 30 | —    | 19                                    | 40 | 29  | —  | —                                               | 17.3                       | 0.36 | —    | "     | "                         |           |         |
| 115 |              | 10 | 14                 | 17   | 39 | 17   | 14                                    | 18 | 09  | 18 | 08                                              | 4.6                        | 0.03 | 0.03 | "     | "                         |           |         |
| 116 |              | 11 | 21                 | 41   | 31 | 41   | 21                                    | 41 | 50  | 41 | 50                                              | 4.2                        | 0.01 | ?    | "     | "                         |           |         |
| 117 |              | 14 | 22                 | 55   | 34 | —    | 22                                    | 55 | 57  | —  | —                                               | 2.2                        | 0.00 | —    | "     | "                         |           |         |
| 118 |              | 16 | 7                  | 12   | 18 | —    | ?                                     | —  | —   | —  | —                                               | 2.8                        | 0.00 | —    | "     | "                         |           |         |
| 119 |              | 16 | 13                 | 00   | 00 | 00   | 13                                    | 00 | 22  | ?  | —                                               | 4.4                        | 0.02 | 0.10 | "     | "                         |           |         |
| 120 |              | 16 | 14                 | 19   | 33 | 19   | 14                                    | 20 | 16  | 20 | 12                                              | 9.1                        | 0.04 | 0.15 | "     | "                         |           |         |
| 121 |              | 16 | 23                 | 28   | 08 | 28   | 23                                    | 23 | 20  | 28 | 20                                              | 2.9                        | 0.08 | 0.06 | Quick | "                         | Felt      |         |
| 122 |              | 17 | 7                  | 39   | 12 | 39   | 7                                     | 39 | 45  | ?  | —                                               | 3.4                        | 0.01 | 0.01 | Slow  | "                         |           |         |
| 123 |              | 17 | 10                 | 25.0 | —  | —    | 10                                    | 25 | 19  | —  | —                                               | 1.1?                       | —    | —    | "     | "                         |           |         |
| 124 |              | 17 | 16                 | 16.8 | —  | —    | ?                                     | —  | —   | —  | —                                               | 2.0?                       | 0.00 | —    | "     | "                         |           |         |
| 125 |              | 20 | 0                  | 32   | 23 | 32   | 0                                     | 33 | 25  | 33 | 24                                              | 3.0                        | 0.00 | ?    | "     | "                         |           |         |
| 126 |              | 21 | 16                 | 17   | 43 | 17   | 16                                    | 18 | 10  | 18 | 12                                              | 5.0                        | 0.04 | 0.06 | "     | "                         |           |         |
| 127 |              | 22 | 11                 | 52.0 | —  | —    | 11                                    | 52 | 22  | —  | —                                               | 2.5?                       | ?    | —    | "     | "                         |           |         |
| 128 |              | 22 | 13                 | 05   | 58 | 05   | 13                                    | 06 | 41  | ?  | —                                               | 19.6                       | 0.53 | 0.40 | "     | "                         |           |         |
| 129 |              | 22 | 19                 | 21   | 54 | —    | 19                                    | 22 | 12  | —  | —                                               | 2.8                        | 0.01 | —    | "     | "                         |           |         |
| 130 |              | 23 | 2                  | 39   | 02 | 39   | 2                                     | 39 | 20  | 39 | 22                                              | 6.7                        | 0.12 | 0.15 | Quick | "                         | Felt      |         |
| 131 |              | 24 | 19                 | 16   | 04 | 16.1 | 19                                    | 16 | 43  | 16 | 41                                              | 5.0                        | 0.01 | 0.01 | Slow  | "                         |           |         |
| 132 |              | 28 | 20                 | 24   | 20 | 24   | 20                                    | 24 | 52  | 24 | 50                                              | 7.5                        | 0.10 | 0.15 | "     | "                         |           |         |
| 133 | Sept.        | 1  | 5                  | 07   | 12 | 07.3 | 5                                     | 07 | 38  | 07 | 38                                              | 4.2                        | 0.06 | 0.06 | "     | "                         |           |         |
| 134 |              | 1  | 7                  | 8    | 12 | 08   | 7                                     | 09 | 49  | 09 | 54                                              | 5.1                        | 0.04 | 0.06 | "     | "                         |           |         |
| 135 |              | 3  | 17                 | 59   | 35 | 59   | 18                                    | 00 | 43  | 00 | 50                                              | 44.7                       | 0.16 | 0.14 | "     | "                         |           |         |
| 136 |              | 4  | 6                  | 02.3 | —  | —    | 6                                     | 03 | 56  | —  | —                                               | 4.7?                       | 0.01 | —    | "     | "                         |           |         |
| 137 |              | 5  | 21                 | 29   | 51 | 29   | 21                                    | 30 | 37  | 30 | 35                                              | 4.0                        | 0.03 | 0.03 | "     | "                         |           |         |
| 138 |              | 6  | 4                  | 59   | 38 | 59   | 5                                     | 02 | 53  | 02 | 47                                              | 104.9                      | 0.72 | 1.28 | "     | "                         |           |         |
| 139 |              | 6  | 18                 | 32.7 | —  | —    | 18                                    | 33 | 07  | —  | —                                               | 3.6?                       | 0.01 | —    | "     | "                         |           |         |
| 140 |              | 6  | 20                 | 33   | 41 | 33   | 20                                    | 33 | 56  | 33 | 58                                              | 4.4                        | 0.04 | 0.05 | "     | "                         |           |         |
| 141 |              | 8  | 7                  | 30   | 06 | ?    | 7                                     | 31 | 16  | 31 | 17                                              | 4.4                        | 0.03 | 0.03 | "     | "                         |           |         |
| 142 |              | 9  | 11                 | 21   | 01 | 21   | 11                                    | 21 | 35  | 21 | 40                                              | 4.2                        | 0.03 | 0.06 | "     | "                         |           |         |
| 143 |              | 9  | 18                 | 10   | 31 | 10   | 18                                    | 11 | 07  | 11 | 04                                              | 8.8                        | 0.05 | 0.06 | "     | "                         |           |         |
| 144 |              | 11 | 13                 | 11   | 26 | 11   | 13                                    | 19 | 13* | 19 | 13*                                             | 104.6                      | ?    | 0.28 | "     | "                         |           |         |
| 145 |              | 12 | 4                  | 02   | 42 | 02   | 4                                     | 03 | 04  | ?  | —                                               | 3.3                        | 0.02 | 0.03 | "     | "                         |           |         |
| 146 |              | 12 | 14                 | 05   | 19 | —    | 14                                    | 05 | 57  | —  | —                                               | 3.5                        | 0.01 | —    | "     | "                         |           |         |
| 147 |              | 12 | 23                 | 24   | 59 | 24   | 23                                    | 25 | 10  | 25 | 09                                              | 3.0                        | 0.02 | 0.02 | "     | "                         |           |         |
| 148 |              | 13 | 8                  | 28   | 18 | 28   | 8                                     | 31 | 55* | 31 | 53*                                             | 18.6                       | ?    | 0.01 | "     | "                         |           |         |
| 149 |              | 14 | 23                 | 31   | 35 | ?    | 23                                    | 31 | 58  | 32 | 01                                              | 2.3                        | 0.00 | ?    | "     | "                         |           |         |
| 150 |              | 15 | 1                  | 57   | 38 | ?    | 1                                     | 57 | 53  | 57 | 54                                              | 1.7                        | 0.01 | ?    | "     | "                         |           |         |
| 151 |              | 18 | 13                 | 54   | 21 | 54   | 13                                    | 54 | 44  | 54 | 42                                              | 2.9                        | 0.01 | 0.01 | "     | "                         |           |         |
| 152 |              | 21 | 5                  | 29   | 48 | ?    | 5                                     | 36 | 34* | 38 | 42*                                             | ?                          | ?    | ?    | "     | "                         |           |         |
| 153 |              | 21 | 8                  | 44   | 40 | 44   | 8                                     | 46 | 16  | 46 | 13                                              | 4.4                        | 0.02 | 0.01 | "     | "                         |           |         |
| 154 |              | 26 | 8                  | 46   | 34 | 46   | 8                                     | 46 | 57  | 46 | 59                                              | 5.2                        | 0.06 | 0.10 | "     | "                         |           |         |
| 155 |              | 27 | 6                  | 16   | 55 | 16   | 6                                     | 18 | 33  | 18 | 35                                              | 5.3                        | 0.12 | 0.20 | "     | "                         |           |         |
| 156 |              | 28 | 1                  | 12   | 54 | —    | 1                                     | 13 | 16  | —  | —                                               | 3.5                        | 0.02 | —    | "     | "                         |           |         |
| 157 |              | 28 | 1                  | 21   | 33 | 21   | 1                                     | ?  | —   | 21 | 51                                              | 18.3                       | ?    | 0.71 | "     | "                         |           |         |
| 158 |              | 28 | 1                  | 44   | 55 | —    | ?                                     | —  | —   | —  | —                                               | 1.5                        | ?    | —    | "     | "                         |           |         |
| 159 |              | 28 | 1                  | 47   | 32 | 47   | 1                                     | ?  | —   | 47 | 49                                              | ?                          | 0.16 | 0.20 | "     | "                         |           |         |
| 160 |              | 28 | 1                  | ?    | —  | 52.1 | ?                                     | ?  | —   | ?  | —                                               | 5.2?                       | 0.18 | 0.12 | "     | "                         |           |         |
| 161 |              | 28 | 15                 | 02   | 31 | ?    | 15                                    | 02 | 56  | 02 | 57                                              | 2.8                        | 0.01 | 0.01 | "     | "                         |           |         |
| 162 |              | 29 | 22                 | 12   | 36 | 12   | 22                                    | 14 | 58  | 15 | 00                                              | 13.3                       | 0.04 | 0.05 | "     | "                         |           |         |
| 163 |              | 30 | 19                 | 48   | 57 | 49   | 19                                    | 49 | 19  | ?  | —                                               | 3.2                        | 0.02 | 0.01 | "     | "                         |           |         |
| 164 | Oct.         | 2  | 23                 | 59   | 05 | 59   | 23                                    | 59 | 44  | 59 | 44                                              | 6.6                        | 0.04 | 0.05 | "     | "                         |           |         |
| 165 |              | 3  | 9                  | 32   | 33 | 32   | 9                                     | 32 | 47  | 32 | 47                                              | 6.0                        | 0.08 | 0.10 | "     | "                         |           |         |

\* Commence Time of the 2nd preliminary tremor.





## TABLE A.

(Earthquakes)

| No. | Date<br>1921 | Time of Occurrence |      |    |      | Beginning of<br>the Principal portion |    |    |    | Duration<br>of<br>Total<br>Earthquake<br>(mean) | Maximum<br>Range of Motion |      |      | Character<br>of<br>Motion | Intensity | Remarks |      |
|-----|--------------|--------------------|------|----|------|---------------------------------------|----|----|----|-------------------------------------------------|----------------------------|------|------|---------------------------|-----------|---------|------|
|     |              | E                  | W    | N  | S    | E                                     | W  | N  | S  |                                                 | E                          | W    | N    |                           |           |         | S    |
| 221 | Dec. 11      | 18                 | 59   | 56 | 59   | 58                                    | 19 | 00 | 36 | ?                                               | 4.1                        | 0.02 | 0.01 | Slow                      | Feeble    |         |      |
| 222 | 12           | 8                  | 03   | 58 | —    | —                                     | ?  | —  | —  | —                                               | 4.0                        | 0.00 | —    | "                         | "         |         |      |
| 223 | 12           | 9                  | 29   | 11 | 29   | 11                                    | 9  | 29 | 52 | 29                                              | 52                         | ?    | 0.14 | 0.22                      | "         | "       |      |
| 224 | 12           | 9                  | 35.2 |    | ?    |                                       | ?  |    |    | ?                                               | 11.6?                      | 0.05 | 0.05 | "                         | "         |         |      |
| 225 | 12           | 20                 | 02   | 35 | 02   | 35                                    | 20 | 02 | 59 | 02                                              | 57                         | 9.6  | 0.15 | 0.26                      | Quick     | "       | Felt |
| 226 | 13           | 1                  | 16.3 |    | —    | —                                     | ?  |    |    | —                                               | —                          | 3.0? | 0.01 | —                         | "         | "       |      |
| 227 | 16           | 10                 | 26   | 50 | —    | —                                     | 10 | 27 | 13 | 27.7                                            | —                          | 3.2  | 0.02 | 0.02                      | "         | "       |      |
| 228 | 19           | 0                  | 47   | 43 | 47   | 45                                    | 0  | 50 | 19 | 50                                              | 20                         | 24.5 | 0.04 | 0.03                      | "         | "       |      |
| 229 | 19           | 20                 | 12   | 07 | ?    |                                       | 20 | 12 | 17 | 12                                              | 17                         | 2.4  | 0.01 | ?                         | "         | "       |      |
| 230 | 20           | 17                 | 04   | 51 | 04   | 51                                    | 17 | 05 | 15 | 05                                              | 15                         | 17.5 | 0.65 | 1.05                      | Quick     | Weak    | Felt |
| 231 | 26           | 22                 | 15   | 56 | 15.7 |                                       | 22 | 16 | 41 | 16                                              | 40                         | 4.3  | 0.01 | 0.02                      | Slow      | Feeble  |      |
| 232 | 27           | 0                  | 08   | 00 | 08   | 00                                    | 0  | 08 | 33 | 08                                              | 33                         | 3.3  | 0.01 | 0.01                      | "         | "       |      |
| 233 | 28           | 1                  | 11.7 |    | ?    |                                       | 1  | 12 | 02 | 12                                              | 02                         | 3.6? | 0.01 | 0.01                      | "         | "       |      |
| 234 | 29           | 8                  | 02   | 43 | ?    |                                       | 8  | 03 | 22 | 03                                              | 23                         | 5.1  | 0.01 | 0.01                      | "         | "       |      |

\* Commence Time of the 2nd preliminary tremor.

TABLE B.

(Pulsatory Oscillations EW Component.)

| Beginning    |                               | Ending                         |                                | Maximum      |                                                  |                                              |
|--------------|-------------------------------|--------------------------------|--------------------------------|--------------|--------------------------------------------------|----------------------------------------------|
| Date<br>1921 | Hour                          | Date<br>1921                   | Hour                           | Date<br>1921 | Hour                                             | Double<br>Amplitude                          |
|              | h                             |                                | h                              |              | h h                                              |                                              |
| January      | 2<br>9<br>11<br>14<br>20      | 3<br>10<br>13<br>17<br>25      | 14<br>16<br>19<br>19<br>18     | January      | 2<br>10<br>12<br>15<br>21                        | 0.01<br>0.00<br>0.02<br>0.01<br>0.03         |
|              | 3                             |                                |                                |              | 20-23<br>10-12<br>10-12<br>18-20<br>5-6          |                                              |
| February     | 29<br>2<br>4<br>12<br>17      | 1<br>3<br>5<br>16<br>19        | 18<br>19<br>12<br>6<br>20      | February     | 30<br>2<br>4<br>12<br>18                         | 0.01<br>0.01<br>0.01<br>0.02<br>0.04         |
|              | 7<br>5<br>2<br>4<br>1         |                                |                                |              | 12-14<br>13-16<br>14-15<br>12-15<br>14-19        |                                              |
| March        | 23<br>27                      | 24<br>3                        | 19<br>7                        | March        | 23<br>28<br>2<br>13<br>21                        | 0.00<br>0.01<br>0.01<br>0.03<br>0.02         |
|              | 9<br>10                       |                                |                                |              | 13-14<br>11-13<br>11-12<br>17-19<br>7-9          |                                              |
| April        | 25<br>28<br>1<br>7<br>11      | 27<br>30<br>6<br>9<br>16       | 18<br>21<br>22<br>21<br>21     | April        | 26<br>28<br>4<br>8<br>12                         | 0.02<br>0.01<br>0.03<br>0.01<br>0.01         |
|              | 18<br>9<br>2<br>11<br>8       |                                |                                |              | 6-8<br>18-20<br>7-10<br>3-5<br>9-11              |                                              |
| May          | 22<br>27<br>3<br>18<br>29     | 24<br>29<br>11<br>21<br>31     | 23<br>20<br>10<br>15<br>18     | May          | 23<br>28<br>8<br>19<br>30                        | 0.01<br>0.01<br>0.01<br>0.01<br>0.01         |
|              | 21<br>8<br>8<br>5<br>9        |                                |                                |              | 14-15<br>21-22<br>10-12<br>13-14<br>13-14        |                                              |
| June         | 2<br>12<br>25<br>30           | 5<br>13<br>27                  | 6<br>14<br>8                   | June         | 3<br>12<br>26                                    | 0.01<br>0.01<br>0.01                         |
|              | 9<br>2<br>11<br>9             |                                |                                |              | 14-16<br>16-17<br>4-7                            |                                              |
| July         | 7                             | 9                              | 10                             | July         | 1<br>8                                           | 0.01<br>0.03                                 |
|              | 13                            |                                |                                |              | 2-3<br>6-9                                       |                                              |
| August       | 23<br>14<br>21<br>25<br>31    | 26<br>19<br>22<br>29           | 20<br>10<br>23<br>1            | August       | 24<br>16<br>22<br>27                             | 0.00<br>0.01<br>0.00<br>0.02                 |
|              | 9<br>1<br>6<br>5<br>11        |                                |                                |              | 17-18<br>17-18<br>16-17<br>14-15<br>9-11         |                                              |
| September    | 5<br>8<br>19<br>23<br>30      | 7<br>12<br>21<br>28            | 7<br>19<br>15<br>20            | September    | 5<br>8<br>19-20<br>25                            | 0.01<br>0.01<br>0.03<br>0.02                 |
|              | 6<br>7<br>6<br>6<br>5         |                                |                                |              | 15-16<br>17-18<br>23-2<br>15-16<br>13-14         |                                              |
| October      | 6<br>21<br>25<br>28           | 11<br>23<br>27<br>1            | 23<br>16<br>22<br>22           | October      | 7<br>10<br>22<br>27<br>31                        | 0.01<br>0.02<br>0.00<br>0.00<br>0.02         |
|              | 8<br>9<br>2<br>8              |                                |                                |              | 16-17<br>22-23<br>9-10<br>10-11<br>8-10          |                                              |
| November     | 3<br>8<br>11                  | 6<br>10<br>13                  | 17<br>17<br>20                 | November     | 4<br>5<br>8<br>9<br>12                           | 0.01<br>0.01<br>0.01<br>0.01<br>0.00         |
|              | 10<br>8<br>7                  |                                |                                |              | 15-16<br>13-14<br>18-19<br>15-16<br>15-17        |                                              |
| December     | 17<br>20<br>25<br>29<br>1     | 20<br>23<br>26<br>30<br>4      | 2<br>17<br>22<br>17<br>15      | December     | 18<br>21<br>26<br>29<br>2                        | 0.01<br>0.00<br>0.01<br>0.01<br>0.01         |
|              | 9<br>8<br>2<br>9<br>11        |                                |                                |              | 11-12<br>11-12<br>1-3<br>17-18<br>1-2            |                                              |
|              | 21<br>13<br>8<br>1<br>8<br>29 | 6<br>12<br>16<br>18<br>20<br>1 | 17<br>22<br>14<br>19<br>5<br>9 |              | 5<br>11<br>15<br>18<br>19<br>31                  | 0.01<br>0.01<br>0.01<br>0.02<br>0.00<br>0.01 |
|              |                               |                                |                                |              | 16-17<br>11-12<br>13-16<br>4-8<br>12-13<br>13-14 |                                              |