



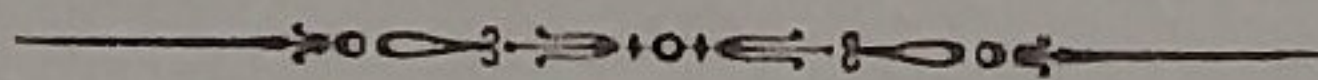
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SEISMOGRAPHIC STATION

SAN FRANCISCO, CALIFORNIA

ANNUAL REPORT
OF THE
METEOROLOGICAL
AND THE
SEISMOLOGICAL OBSERVATIONS
MADE AT THE
INTERNATIONAL LATITUDE OBSERVATORY
OF MIZUSAWA
FOR
THE YEAR 1918.

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LATITUDE 39° 8' N., LONGITUDE 141° 7' E.,  
HEIGHT ABOVE MEAN SEA LEVEL 61 METRES.



PUBLISHED BY THE INTERNATIONAL LATITUDE OBSERVATORY  
OF MIZUSAWA.

1919.

1918



The present report contains the results of the meteorological and the seismological observations in the observatory during the year 1918. No alteration is done in the kinds and the methods of observations. The observations and the computations were done by Messrs. K. Aoki, T. Gôukon and K. Kusano under the superintendence of Dr. M. Hashimoto.

The followings are to be generally noticed with respect to the meteorological observations :

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

*Air Pressure.*—The barometric readings in millimetres are reduced only to freezing point of water ; the corrections to sea level and to standard gravity are given at the bottoms of the respective pages.

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

*Wind.*—The velocity is expressed in metres per second. The direction is observed according to the sixteen cardinal points.

*Cloud.*—The amount is estimated by the scale 0-10, the forms are of the *International classification*, and the direction of motion is observed according to the eight cardinal points.

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

*Relative Humidity.*—It is given in percentages.

*Precipitation.*—The amount is given in millimetres. The number of days is counted only when the amount is 0.1 mm. or more in a day ; but for those days with either snow, hail, or graupel, the amount is not taken into consideration.

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

*Duration of Sunshine.*—It is recorded by a sunshine-recorder of *Jordan's* pattern.

*Amount of Evaporation.*—It is given in millimetres, the daily amount being, according to the instruction of the Central Meteorological Observatory in Tokyo, that which results from 10h of the preceding day till 10h of the day in question.

The occurrence of meteorological phenomena is recorded with the following *international symbols* :



|   |                           |   |                          |    |                |
|---|---------------------------|---|--------------------------|----|----------------|
| ● | Rain                      | ⊕ | Snow drift               | c  | Cirrus         |
| * | Snow                      | ← | Ice crystals             | cs | Cirro-stratus  |
| ⚡ | Thunder storm             | ⊙ | Solar corona             | ck | Cirro-cumulus  |
| ⚡ | Thunder without lightning | ⊕ | Solar halo               | kc | 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                                                         | 17 seconds      | 38 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 }<br>cylinder from the point of support } | 20 centimetres  | 75 centimetres  |
| Vertical distance between the points of }<br>support and of suspension }           | 104 centimetres | 104 centimetres |

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

April, 1919.

H. Kimura, *Rigakuhakushi*

Director of the International Latitude Observatory  
of Mizusawa.



**SEISMOLOGICAL OBSERVATIONS.**



TABLE A.

(Earthquakes)



| No. | Date<br>1918 | 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    |
|     |              | h                    | m  | s    | m  | s                                     | h  | m  | s    | m                                               | s                          | m   | m                         | m         | m       |        |      |
| 1   | Jan.         | 1                    | 16 | 33   | 48 | 33.8                                  | 16 | 34 | 05   | 34                                              | 06                         | 1.6 | 0.02                      | 0.01      | Slow    | Feeble |      |
| 2   |              | 10                   | 15 | 20   | 41 | 20.7                                  | 15 | 20 | 56   | —                                               | —                          | 1.8 | 0.02                      | 0.02      | "       | "      |      |
| 3   |              | 13                   | 14 | 48   | 50 | 48                                    | 51 | 14 | 48   | 58                                              | 48                         | 57  | 3.3                       | 0.02      | 0.02    | "      | "    |
| 4   |              | 14                   | 22 | 17   | 20 | 17                                    | 18 | 22 | 17   | 39                                              | 17                         | 32  | 3.1                       | 0.05      | 0.05    | "      | "    |
| 5   |              | 18                   | 19 | —    | —  | 48.0                                  | —  | 19 | 49   | 26                                              | 49                         | 26  | 5.8                       | 0.05      | 0.09    | "      | "    |
| 6   |              | 18                   | 21 | 42   | 50 | 42.8                                  | —  | 21 | 43   | 19                                              | 43                         | 19  | 3.6                       | 0.03      | 0.03    | "      | "    |
| 7   |              | 21                   | 8  | 35   | 49 | 35                                    | 49 | 8  | 36   | 01                                              | 36                         | 01  | 13.1                      | 0.16      | 0.26    | Quick  | Felt |
| 8   |              | 24                   | 21 | 15   | 07 | 15.1                                  | —  | 21 | 15   | 35                                              | 15                         | 35  | 7.8                       | 0.04      | 0.05    | Slow   | "    |
| 9   |              | 25                   | 10 | 51   | 30 | 51                                    | 33 | 10 | 51   | 55                                              | 52                         | 01  | 5.2                       | 0.04      | 0.05    | "      | "    |
| 10  |              | 31                   | 6  | 20   | 16 | 20                                    | 16 | 6  | —    | —                                               | 21                         | 35  | 73.7                      | ?         | 7.70    | Quick  | Felt |
| 11  | Feb.         | 6                    | 18 | 20   | 05 | —                                     | —  | 18 | 20   | 23                                              | —                          | —   | 1.8                       | 0.01      | —       | Slow   | "    |
| 12  |              | 7                    | 14 | 27   | 08 | 27                                    | 04 | 14 | 32   | 31*                                             | 32                         | 27* | 34.9                      | 0.12      | 0.51    | "      | "    |
| 13  |              | 9                    | 20 | 02   | 59 | —                                     | —  | 20 | 03   | 13                                              | —                          | —   | 3.1                       | 0.01      | —       | "      | "    |
| 14  |              | 10                   | 5  | 48   | 23 | 48                                    | 23 | 5  | 49   | 57                                              | 49                         | 58  | 10.9                      | 0.19      | 0.10    | "      | "    |
| 15  |              | 10                   | —  | —    | —  | —                                     | —  | 6  | 00   | 15                                              | —                          | —   | ?                         | 0.03      | —       | "      | "    |
| 16  |              | 11                   | 8  | 02   | 18 | 02                                    | 19 | 8  | 02   | 32                                              | 02                         | 34  | 4.3                       | 0.19      | 0.36    | Quick  | Felt |
| 17  |              | 11                   | 8  | 35   | 55 | —                                     | —  | 8  | 36   | 09                                              | 36                         | 10  | 1.9                       | 0.02      | 0.00    | Slow   | "    |
| 18  |              | 13                   | 15 | 12   | 45 | 12                                    | 44 | 15 | 17   | 13                                              | 17                         | 11  | 59.6                      | ?         | 9.95    | "      | "    |
| 19  |              | 14                   | 5  | 31   | 27 | 31                                    | 27 | 5  | 35   | 51                                              | 35                         | 51  | 21.4                      | 0.01      | 0.02    | "      | "    |
| 20  |              | 15                   | 15 | 32   | 40 | —                                     | —  | 15 | 32   | 46                                              | —                          | —   | 2.4                       | 0.02      | —       | "      | "    |
| 21  |              | 17                   | 2  | 22   | 38 | 22                                    | 38 | 2  | 23   | 10                                              | 23                         | 04  | 5.4                       | 0.04      | 0.06    | "      | "    |
| 22  |              | 17                   | 16 | 09   | 19 | 09.3                                  | —  | 16 | 11   | 02                                              | 11                         | 01  | 4.4                       | 0.02      | 0.02    | "      | "    |
| 23  |              | 19                   | 20 | 38   | 59 | —                                     | —  | 20 | 39   | 18                                              | 39                         | 15  | 2.9                       | 0.01      | 0.03    | "      | "    |
| 24  |              | 20                   | 0  | 42   | 30 | 42                                    | 34 | 0  | 43   | 23                                              | 43                         | 30  | 6.1                       | 0.04      | 0.06    | "      | "    |
| 25  |              | 20                   | 7  | 19   | 40 | —                                     | —  | 7  | 21.0 | —                                               | 20                         | 47  | 6.6                       | 0.01      | 0.01    | "      | "    |
| 26  | Mar.         | 21                   | 16 | 01.9 | —  | 02.5                                  | —  | 16 | 04   | 10                                              | 04                         | 08  | 7.7                       | 0.02      | 0.03    | "      | "    |
| 27  |              | 26                   | 19 | 19   | 02 | —                                     | —  | 19 | 19   | 16                                              | 19                         | 14  | 2.8                       | 0.02      | 0.02    | "      | "    |
| 28  |              | 3                    | 9  | 51   | 55 | 51                                    | 55 | 9  | 52   | 06                                              | 52                         | 06  | 2.6                       | 0.05      | 0.05    | "      | "    |
| 29  |              | 3                    | 22 | 25   | 00 | 25                                    | 00 | 22 | 25   | 34                                              | 25                         | 38  | 10.4                      | 0.16      | 0.17    | "      | "    |
| 30  |              | 4                    | 23 | 32   | 29 | —                                     | —  | 23 | 32   | 41                                              | 32                         | 42  | 3.3                       | 0.02      | ?       | "      | "    |
| 31  |              | 5                    | 9  | 25   | 35 | —                                     | —  | 9  | 25   | 46                                              | 25                         | 47  | 2.9                       | 0.01      | 0.01    | "      | "    |
| 32  |              | 8                    | 6  | 48   | 06 | 48.4                                  | —  | —  | —    | —                                               | —                          | —   | 4.6                       | 0.01      | 0.01    | "      | "    |
| 33  |              | 9                    | 17 | 56.1 | —  | ?                                     | —  | —  | —    | —                                               | —                          | —   | 3.4                       | 0.00      | —       | "      | "    |
| 34  |              | 9                    | 18 | 23   | 30 | —                                     | —  | 18 | 24   | 07                                              | 25.1                       | —   | 4.8                       | 0.00      | —       | "      | "    |
| 35  |              | 9                    | 18 | 53   | 57 | ?                                     | —  | 18 | 54   | 37                                              | —                          | —   | 5.6                       | 0.01      | —       | "      | "    |
| 36  |              | 12                   | 20 | 47   | 40 | 47.7                                  | —  | 20 | 48   | 07                                              | 48                         | 10  | 4.7                       | 0.03      | 0.03    | "      | "    |
| 37  |              | 14                   | 7  | 54   | 31 | 54.7                                  | —  | —  | —    | —                                               | —                          | —   | 4.7                       | 0.01      | 0.01    | "      | "    |
| 38  |              | 16                   | 22 | 55   | 57 | 56.0                                  | —  | —  | —    | —                                               | —                          | —   | 4.8                       | 0.01      | 0.02    | "      | "    |
| 39  |              | 22                   | 19 | 13   | 17 | 13                                    | 18 | 19 | 13   | 53                                              | 13                         | 54  | 6.6                       | 0.10      | 0.08    | "      | "    |
| 40  |              | 23                   | 9  | 14   | 17 | 14                                    | 17 | 9  | 16   | 11                                              | 16                         | 11  | 8.2                       | 0.08      | 0.08    | "      | "    |
| 41  |              | 25                   | 2  | 56   | 25 | 56                                    | 28 | 2  | 56   | 59                                              | 57                         | 06  | 6.1                       | 0.04      | 0.03    | "      | "    |
| 42  |              | 29                   | 7  | 38   | 09 | 38                                    | 10 | 7  | 38   | 36                                              | 38                         | 37  | 5.0                       | 0.10      | 0.07    | Quick  | Felt |
| 43  |              | 31                   | 2  | 41.8 | —  | ?                                     | —  | 2  | 42   | 08                                              | 42                         | 11  | 2.6                       | 0.02      | 0.04    | Slow   | "    |
| 44  | Apr.         | 10                   | 11 | 07   | 00 | 07                                    | 01 | 11 | 08   | 41                                              | 08                         | 42  | 20.6                      | ?         | 0.41    | "      | "    |
| 45  |              | 11                   | 20 | 45   | 39 | 45                                    | 40 | 20 | 45   | 49                                              | 45                         | 50  | 3.3                       | 0.03      | 0.05    | Quick  | Felt |
| 46  |              | 14                   | 1  | 11   | 18 | ?                                     | —  | 1  | 11   | 51                                              | —                          | —   | 3.1                       | 0.01      | —       | Slow   | "    |
| 47  |              | 17                   | 9  | 38   | 59 | —                                     | —  | 9  | 39   | 12                                              | 39                         | 12  | 2.7                       | 0.04      | 0.06    | Quick  | Felt |
| 48  |              | 19                   | 7  | 24   | 12 | 24                                    | 12 | 7  | 24   | 52                                              | 24                         | 51  | 5.2                       | 0.05      | 0.08    | Slow   | "    |
| 49  |              | 24                   | 13 | 00   | 29 | ?                                     | —  | 13 | 00   | 55                                              | —                          | —   | 4.0                       | 0.02      | 0.01    | "      | "    |
| 50  |              | 24                   | 13 | 33   | 26 | ?                                     | —  | 13 | 33   | 50                                              | ?                          | —   | 3.4                       | 0.03      | 0.03    | "      | "    |
| 51  |              | 29                   | 0  | 02   | 27 | ?                                     | —  | 0  | 03   | 37                                              | ?                          | —   | 4.2                       | 0.01      | ?       | "      | "    |
| 52  |              | 29                   | 14 | 14   | 27 | ?                                     | —  | 14 | 14   | 39                                              | ?                          | —   | 3.1                       | 0.01      | 0.01    | "      | "    |
| 53  | May          | 4                    | 15 | 11   | 37 | 11                                    | 41 | 15 | 16   | 03*                                             | 16                         | 26* | 28.8                      | 0.00      | 0.06    | "      | "    |
| 54  |              | 4                    | 20 | 21   | 59 | ?                                     | —  | 20 | 22   | 21                                              | —                          | —   | 3.7                       | 0.02      | —       | "      | "    |
| 55  |              | 4                    | 22 | 35   | 55 | ?                                     | —  | 22 | 36   | 27                                              | ?                          | —   | 5.8                       | 0.01      | —       | "      | "    |

† Japanese Central Standard Time (9th east from Greenwich), reckoned from midnight.

\* Commence Time of the 2nd preliminary tremor.



TABLE A.

(Earthquakes)

| No. | Date<br>1918 | 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      |
| 56  | May          | 4                    | 22 | 45   | 29 | ?                                     | ?  | 22 | 45 | 46                                              | ?                          | ?   | 1.9                       | 0.01      | —       | Slow | Feeble |
| 57  |              | 6                    | 8  | 54   | 43 | —                                     | —  | 8  | 55 | 04                                              | —                          | —   | 2.5                       | 0.01      | —       | "    | "      |
| 58  |              | 6                    | 23 | 10   | 19 | 10.6                                  | —  | 23 | 10 | 43                                              | —                          | —   | 3.6                       | 0.01      | 0.01    | "    | "      |
| 59  |              | 7                    | 15 | 29   | 39 | 29                                    | 42 | 19 | 30 | 20                                              | 30                         | 26  | 6.2                       | 0.03      | 0.04    | "    | "      |
| 60  |              | 7                    | 22 | 33   | 57 | ?                                     | ?  | 22 | 34 | 17                                              | ?                          | ?   | 3.1                       | 0.00      | —       | "    | "      |
| 61  |              | 8                    | 16 | 36   | 55 | 36.9                                  | —  | 16 | 37 | 07                                              | ?                          | ?   | 5.1                       | 0.01      | 0.01    | "    | "      |
| 62  |              | 11                   | 13 | 41.2 | —  | ?                                     | —  | 13 | 41 | 27                                              | ?                          | ?   | 0.9                       | 0.01      | —       | "    | "      |
| 63  |              | 12                   | 5  | 40   | 56 | ?                                     | —  | 5  | 41 | 11                                              | ?                          | ?   | 2.0                       | 0.01      | —       | "    | "      |
| 64  |              | 19                   | 0  | 35   | 59 | ?                                     | —  | 0  | 36 | 59                                              | 37                         | 00  | 4.2                       | 0.04      | 0.02    | "    | "      |
| 65  |              | 20                   | 2  | 37   | 49 | ?                                     | —  | 2  | 38 | 09                                              | ?                          | ?   | ?                         | 0.01      | —       | "    | "      |
| 66  |              | 20                   | 2  | 40.1 | —  | 39.9                                  | —  | 2  | 40 | 27                                              | 40                         | 29  | 3.4                       | 0.02      | 0.02    | "    | "      |
| 67  |              | 21                   | 3  | 11   | 37 | 11                                    | 38 | 3  | 18 | 00*                                             | 17                         | 54* | 29.7                      | 0.01      | 0.10    | "    | "      |
| 68  |              | 22                   | 12 | 45.4 | —  | ?                                     | —  | 12 | 45 | 55                                              | ?                          | ?   | 2.4                       | 0.00      | —       | "    | "      |
| 69  |              | 22                   | 15 | 41   | 47 | 41                                    | 52 | 15 | 44 | 06                                              | 44                         | 07  | 29.1                      | 0.02      | 0.00    | "    | "      |
| 70  |              | 26                   | 5  | 55   | 34 | 55                                    | 35 | 5  | 55 | 45                                              | 55                         | 46  | 2.3                       | 0.04      | 0.04    | "    | "      |
| 71  |              | 26                   | 7  | 21   | 01 | 21.2                                  | —  | 7  | 22 | 28                                              | ?                          | ?   | 8.5                       | 0.02      | 0.01    | "    | "      |
| 72  |              | 29                   | 1  | 53   | 45 | 53.8                                  | —  | 1  | 54 | 10                                              | 54                         | 13  | 5.0                       | 0.02      | 0.03    | "    | "      |
| 73  |              | 31                   | 11 | 59   | 58 | 00.2                                  | —  | 12 | 00 | 30                                              | ?                          | ?   | 6.0                       | 0.02      | 0.02    | "    | "      |
| 74  |              | 31                   | 14 | 06   | 17 | 06                                    | 18 | 14 | 06 | 50                                              | 06                         | 58  | 13.0                      | 0.18      | 0.31    | "    | "      |
| 75  |              | 31                   | 14 | 19   | 43 | 19                                    | 43 | 14 | 20 | 17                                              | 20                         | 23  | 17.8                      | 0.32      | 0.48    | "    | "      |
| 76  |              | 31                   | 17 | 48   | 15 | 48                                    | 14 | 17 | 49 | 35                                              | 49                         | 37  | 21.7                      | 0.52      | 0.70    | "    | "      |
| 77  |              | 31                   | 18 | 29   | 46 | ?                                     | —  | —  | —  | —                                               | —                          | —   | 4.5                       | 0.01      | —       | "    | "      |
| 78  |              | 31                   | 20 | 55   | 51 | 56.2                                  | —  | 20 | 56 | 51                                              | 56                         | 52  | 8.9                       | 0.05      | 0.06    | "    | "      |
| 79  | June         | 1                    | 2  | 01   | 31 | ?                                     | —  | —  | —  | —                                               | —                          | —   | 2.2                       | 0.00      | —       | "    | "      |
| 80  |              | 1                    | 2  | 24   | 09 | 24                                    | 09 | 2  | 24 | 35                                              | 24                         | 37  | 8.1                       | 0.09      | 0.14    | "    | "      |
| 81  |              | 1                    | 13 | 11   | 24 | ?                                     | —  | —  | —  | —                                               | —                          | —   | 2.3                       | 0.00      | —       | "    | "      |
| 82  |              | 1                    | 17 | 25   | 19 | 25                                    | 22 | 17 | 25 | 57                                              | 25                         | 58  | 16.7                      | 0.45      | 0.46    | "    | "      |
| 83  |              | 1                    | 22 | 42   | 32 | 43.1                                  | —  | 22 | 43 | 11                                              | —                          | —   | 3.4                       | 0.02      | 0.02    | "    | "      |
| 84  |              | 2                    | 2  | 33.5 | —  | 34.1                                  | —  | 2  | 34 | 11                                              | —                          | —   | 4.7                       | 0.01      | 0.01    | "    | "      |
| 85  |              | 2                    | 8  | 27   | 30 | 27                                    | 30 | 8  | 27 | 53                                              | 27                         | 54  | 7.0                       | 0.10      | 0.16    | "    | "      |
| 86  |              | 2                    | 14 | 45   | 24 | 45                                    | 24 | 14 | 46 | 01                                              | 46                         | 01  | 8.5                       | 0.09      | 0.11    | "    | "      |
| 87  |              | 3                    | 6  | 11   | 27 | —                                     | —  | 6  | 12 | 02                                              | —                          | —   | 3.5                       | 0.00      | —       | "    | "      |
| 88  |              | 4                    | 13 | 11   | 52 | 11                                    | 50 | 13 | 18 | 31*                                             | 18                         | 25* | 44.4                      | 0.00      | 0.05    | "    | "      |
| 89  |              | 5                    | 2  | 22   | 51 | 22                                    | 53 | 2  | 31 | 43*                                             | 31                         | 42* | 48.1                      | 0.00      | 0.05    | "    | "      |
| 90  |              | 5                    | 5  | 24   | 05 | ?                                     | —  | 5  | 25 | 22                                              | 25                         | 23  | 5.1                       | 0.03      | 0.02    | "    | "      |
| 91  |              | 9                    | 5  | 19   | 44 | 19                                    | 44 | 5  | 25 | 09*                                             | 25                         | 15* | 24.1                      | 0.00      | 0.00    | "    | "      |
| 92  |              | 11                   | 0  | 44   | 00 | 43                                    | 59 | 0  | 50 | 21*                                             | 50                         | 24* | 29.1                      | 0.01      | 0.01    | "    | "      |
| 93  |              | 12                   | 8  | 54   | 43 | —                                     | —  | 8  | 55 | 00                                              | —                          | —   | 3.7                       | 0.02      | —       | "    | "      |
| 94  |              | 21                   | 14 | 59   | 17 | 59                                    | 15 | 15 | 02 | 58                                              | 02                         | 55  | 7.4                       | 0.01      | 0.04    | "    | "      |
| 95  |              | 26                   | 22 | 47   | 10 | 47                                    | 09 | 22 | 48 | 01                                              | 48                         | 00  | 20.9                      | 0.43      | 0.36    | "    | "      |
| 96  |              | 30                   | 6  | 24   | 25 | 24.8                                  | —  | 6  | 24 | 56                                              | 25                         | 00  | 6.1                       | 0.01      | 0.01    | "    | "      |
| 97  | July         | 1                    | 15 | 15   | 06 | 15                                    | 06 | 15 | 20 | 15*                                             | 20                         | 24* | 10.3                      | 0.02      | 0.06    | "    | "      |
| 98  |              | 1                    | 17 | 10   | 00 | 10                                    | 00 | 17 | 10 | 11                                              | 10                         | 10  | 4.0                       | 0.04      | 0.04    | "    | "      |
| 99  |              | 3                    | 16 | 00   | 02 | 59                                    | 58 | 16 | 05 | 57*                                             | 06                         | 07* | 97.0                      | 0.70      | 1.85    | "    | "      |
| 100 |              | 3                    | 17 | 28.3 | —  | —                                     | —  | 17 | 28 | 47                                              | —                          | —   | 3.4                       | 0.01      | —       | "    | "      |
| 101 |              | 8                    | 19 | 30   | 20 | 30                                    | 21 | 19 | 36 | 54*                                             | 36                         | 41* | 26.5                      | 0.46      | 7.25    | "    | "      |
| 102 |              | 12                   | 9  | 18   | 08 | 18                                    | 11 | 9  | 18 | 47                                              | 18                         | 51  | 4.9                       | 0.02      | 0.10    | "    | "      |
| 103 |              | 12                   | 11 | 27   | 18 | ?                                     | —  | 11 | 27 | 28                                              | 27                         | 33  | 1.8                       | 0.01      | 0.00    | "    | "      |
| 104 |              | 15                   | 7  | 38   | 32 | 38                                    | 32 | 7  | 38 | 45                                              | 38                         | 46  | 2.1                       | 0.05      | 0.10    | "    | "      |
| 105 |              | 16                   | 1  | 43   | 53 | 43.9                                  | —  | 1  | 44 | 11                                              | 44                         | 13  | 3.6                       | 0.03      | 0.04    | "    | "      |
| 106 |              | 20                   | 5  | 36   | 10 | ?                                     | —  | 5  | 36 | 34                                              | ?                          | ?   | 2.6                       | 0.00      | —       | "    | "      |
| 107 |              | 21                   | 3  | 18   | 30 | 18.6                                  | —  | 3  | 18 | 55                                              | 18                         | 59  | 3.4                       | 0.04      | 0.05    | "    | "      |
| 108 |              | 21                   | 12 | 18   | 29 | 18                                    | 32 | 12 | 19 | 35                                              | 19                         | 37  | 13.5                      | 0.05      | 0.07    | "    | "      |
| 109 |              | 21                   | 15 | 18   | 28 | 18                                    | 24 | 15 | 25 | 23*                                             | 25                         | 27* | 103.7                     | 0.01      | 0.19    | "    | "      |
| 110 |              | 21                   | 18 | 53   | 20 | 53                                    | 59 | 19 | 00 | 51*                                             | 00                         | 37* | 48.8                      | 0.00      | 0.01    | "    | "      |

\* Commence Time of the 2nd preliminary tremor.



TABLE A.

(Earthquakes)



| No. | Date<br>1918 | 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 22      | h 4                  | m 32 | s 23 | ?    | ?                                     | 4  | 33 | 18  | ?                                               | ?                          | 6.1  | 0.01 | —                         | Slow      | Feeble  |      |
| 112 | 24           | 21                   | 15   | 20   | —    | —                                     | 21 | 16 | 02  | —                                               | —                          | 3.5  | 0.02 | —                         | "         | "       |      |
| 113 | 25           | 0                    | 54   | 43   | —    | —                                     | 0  | 55 | 25  | —                                               | —                          | 3.3  | 0.01 | —                         | "         | "       |      |
| 114 | 26           | 5                    | 51   | 04   | 51   | 04                                    | 5  | 51 | 52  | 51                                              | 52                         | 23.8 | ?    | 1.90                      | "         | "       |      |
| 115 | 26           | ?                    |      |      | —    | —                                     | 7  | 36 | 33  | —                                               | —                          | ?    | 0.01 | —                         | "         | "       |      |
| 116 | 27           | 12                   | 55   | 05   | 55   | 05                                    | 12 | 55 | 15  | 55                                              | 17                         | 5.0  | 0.13 | 0.22                      | "         | "       |      |
| 117 | 29           | 1                    | 09   | 39   | ?    | ?                                     | 1  | 10 | 16  | —                                               | —                          | 4.9  | 0.01 | —                         | "         | "       |      |
| 118 | 29           | 5                    | 49   | 20   | 49   | 25                                    | 5  | 50 | 02  | 50                                              | 06                         | 6.8  | 0.06 | 0.06                      | "         | "       |      |
| 119 | 30           | 1                    | 58   | 13   | 58   | 13                                    | 2  | 04 | 23* | 04                                              | 27*                        | 39.1 | 0.02 | 0.07                      | "         | "       |      |
| 120 | 30           | 3                    | 01   | 22   | 01.7 |                                       | 3  | 02 | 16  | ?                                               | ?                          | 5.3  | 0.01 | 0.01                      | "         | "       |      |
| 121 | 31           | 7                    | 20   | 25   | ?    | ?                                     | 7  | 20 | 53  | 20                                              | 54                         | 6.8  | 0.03 | 0.02                      | "         | "       |      |
| 122 | Aug. 7       | 0                    | 46   | 08   | 46.2 |                                       | 0  | 46 | 42  | 46                                              | 41                         | 7.2  | 0.07 | 0.08                      | "         | "       |      |
| 123 | 7            | 2                    | 21   | 12   | 21.3 |                                       | 2  | 21 | 49  | 21                                              | 50                         | 7.1  | 0.13 | 0.15                      | "         | "       |      |
| 124 | 7            | 15                   | 07   | 12   | ?    | ?                                     | 15 | 07 | 56  | ?                                               | ?                          | 8.2  | 0.04 | 0.02                      | "         | "       |      |
| 125 | 15           | 21                   | 25   | 11   | 25   | 11                                    | 21 | 30 | 51* | 30                                              | 51*                        | ?    | ?    | ?                         | "         | "       |      |
| 126 | 16           | 0                    | 33   | 27   | 33   | 30                                    | 0  | 39 | 11* | 39                                              | 08*                        | 53.3 | 0.01 | 0.09                      | "         | "       |      |
| 127 | 16           | 2                    | 37   | 13   | 37   | 15                                    | 2  | 42 | 57* | 42                                              | 53*                        | 52.7 | 0.02 | 0.18                      | "         | "       |      |
| 128 | 16           | 6                    | 34   | 56   | 35   | 21                                    | 6  | 35 | 57  | 36                                              | 01                         | 4.7  | 0.01 | 0.01                      | "         | "       |      |
| 129 | 18           | 11                   | 12   | 05   | 12.2 |                                       | 11 | 12 | 29  | —                                               | —                          | 3.2  | 0.01 | 0.01                      | "         | "       |      |
| 130 | 23           | 15                   | 46   | 11   | 46   | 12                                    | 15 | 53 | 44* | 53                                              | 43*                        | 59.8 | 0.06 | 0.21                      | "         | "       |      |
| 131 | 23           | 23                   | 11   | 03   | 11.1 |                                       | 23 | 11 | 28  | 11                                              | 26                         | 5.3  | 0.01 | 0.01                      | "         | "       |      |
| 132 | 23           | 23                   | 45   | 04   | 45   | 02                                    | 23 | 45 | 26  | 45                                              | 26                         | 5.0  | 0.05 | 0.05                      | "         | "       |      |
| 133 | 25           | 9                    | 16   | 24   | 16   | 32                                    | 9  | 16 | 58  | 17                                              | 06                         | 5.5  | 0.04 | 0.06                      | "         | "       |      |
| 134 | Sept. 3      | 15                   | 00   | 32   | 00.5 |                                       | 15 | 00 | 47  | 00                                              | 48                         | 3.6  | 0.04 | 0.05                      | "         | "       |      |
| 135 | 8            | 2                    | 18   | 45   | 18   | 46                                    | 2  | 20 | 45  | 21                                              | 04                         | ?    | ?    | ?                         | Quick     | "       | Felt |
| 136 | 8            | 4                    | —    | —    | 17   |                                       | —  | —  | —   | —                                               | —                          | —    | —    | —                         | Slow      | "       |      |
| 137 | 8            | 5                    | —    | —    | 22   |                                       | —  | —  | —   | —                                               | —                          | —    | —    | —                         | "         | "       |      |
| 138 | 8            | 5                    | —    | —    | 28.9 |                                       | 5  | —  | —   | 30                                              | 58                         | —    | —    | 0.39                      | "         | "       |      |
| 139 | 8            | 5                    | 51.8 |      | 49   |                                       | 5  | 51 | 07  | —                                               | —                          | —    | 0.13 | —                         | "         | "       |      |
| 140 | 8            | 6                    | 02   |      | —    |                                       | —  | —  | —   | —                                               | —                          | —    | —    | —                         | "         | "       |      |
| 141 | 8            | 6                    | 06   |      | —    |                                       | —  | —  | —   | —                                               | —                          | —    | —    | —                         | "         | "       |      |
| 142 | 8            | 6                    | 23   |      | —    |                                       | —  | —  | —   | —                                               | —                          | —    | —    | —                         | "         | "       |      |
| 143 | 8            | 7                    | 22   | 52   | —    |                                       | 7  | 25 | 24  | —                                               | —                          | 6.3  | 0.01 | —                         | "         | "       |      |
| 144 | 8            | 8                    | 13   |      | —    |                                       | —  | —  | —   | —                                               | —                          | —    | —    | —                         | "         | "       |      |
| 145 | 8            | 8                    | 32   |      | 36   |                                       | —  | —  | —   | —                                               | —                          | —    | —    | —                         | "         | "       |      |
| 146 | 8            | 9                    | 01   |      | —    |                                       | —  | —  | —   | —                                               | —                          | —    | —    | —                         | "         | "       |      |
| 147 | 8            | 9                    | 09   |      | —    |                                       | —  | —  | —   | —                                               | —                          | —    | —    | —                         | "         | "       |      |
| 148 | 8            | 9                    | 12   | 13   | 12   | 15                                    | 9  | 13 | 54  | 13                                              | 54                         | 26.3 | 0.29 | 0.20                      | "         | "       |      |
| 149 | 8            | 10                   | 54   |      | —    |                                       | —  | —  | —   | —                                               | —                          | —    | —    | —                         | "         | "       |      |
| 150 | 8            | 10                   | 59   |      | —    |                                       | —  | —  | —   | —                                               | —                          | —    | —    | —                         | "         | "       |      |
| 151 | 8            | 11                   | 10   |      | —    |                                       | —  | —  | —   | —                                               | —                          | —    | —    | —                         | "         | "       |      |
| 152 | 8            | 12                   | 24   |      | —    |                                       | —  | —  | —   | —                                               | —                          | —    | —    | —                         | "         | "       |      |
| 153 | 8            | 12                   | 42   |      | —    |                                       | —  | —  | —   | —                                               | —                          | —    | —    | —                         | "         | "       |      |
| 154 | 8            | 12                   | 55   |      | —    |                                       | —  | —  | —   | —                                               | —                          | —    | —    | —                         | "         | "       |      |
| 155 | 8            | 13                   | 40   |      | —    |                                       | —  | —  | —   | —                                               | —                          | —    | —    | —                         | "         | "       |      |
| 156 | 8            | 14                   | 43   | 01   | 43   | 01                                    | 14 | 44 | 32  | 44                                              | 42                         | 54.9 | 0.05 | 0.24                      | "         | "       |      |
| 157 | 8            | 15                   | 14   |      | —    |                                       | —  | —  | —   | —                                               | —                          | —    | —    | —                         | "         | "       |      |
| 158 | 8            | 15                   | 32   |      | —    |                                       | —  | —  | —   | —                                               | —                          | —    | —    | —                         | "         | "       |      |
| 159 | 8            | 15                   | 51   |      | —    |                                       | —  | —  | —   | —                                               | —                          | —    | —    | —                         | "         | "       |      |
| 160 | 8            | 16                   | 21   |      | —    |                                       | —  | —  | —   | —                                               | —                          | —    | —    | —                         | "         | "       |      |
| 161 | 8            | 17                   | 33   | 36   | 34   |                                       | 17 | 35 | 20  | —                                               | —                          | 9.9  | 0.02 | —                         | "         | "       |      |
| 162 | 8            | 18                   | 56   |      | —    |                                       | —  | —  | —   | —                                               | —                          | —    | —    | —                         | "         | "       |      |
| 163 | 8            | 19                   | —    |      | 00   |                                       | 19 | 00 | 08  | —                                               | —                          | 5.1  | —    | —                         | "         | "       |      |
| 164 | 8            | 19                   | 20   | 44   | —    |                                       | 19 | 23 | 26  | —                                               | —                          | —    | —    | —                         | "         | "       |      |
| 165 | 8            | 19                   | 38   |      | —    |                                       | —  | —  | —   | —                                               | —                          | —    | —    | —                         | "         | "       |      |

\* Commence Time of the 2nd preliminary Tremor.



TABLE A.

(Earthquakes)



| No. | Date |    | Time of Occurrence † |      |    |      | Beginning of the Principal Portion |    |    |     | Duration of Total Earthquake (mean) | Maximum Range of Motion |      |      | Character of Motion | Intensity | Remarks |
|-----|------|----|----------------------|------|----|------|------------------------------------|----|----|-----|-------------------------------------|-------------------------|------|------|---------------------|-----------|---------|
|     | 1918 |    | E                    | W    | N  | S    | E                                  | W  | N  | S   |                                     | E                       | W    | N    |                     |           |         |
|     |      |    | h                    | m    | s  | m    | s                                  | h  | m  | s   | m                                   | s                       | m    | m    | m                   |           |         |
| 166 | Sep. | 8  | 19                   | 41   | 03 | 41   |                                    | 19 | 42 | 42  | —                                   | —                       | 12.3 | 0.04 | —                   | Slow      | Feeble  |
| 167 |      | 8  | 20                   | 11   |    | —    | —                                  | —  | —  | —   | —                                   | —                       | —    | —    | —                   | "         | "       |
| 168 |      | 8  | 20                   | 38   | 48 | 39   |                                    | 20 | 40 | 25  | —                                   | —                       | 9.9  | 0.02 | —                   | "         | "       |
| 169 |      | 8  | 21                   | 17   |    | —    | —                                  | —  | —  | —   | —                                   | —                       | —    | —    | —                   | "         | "       |
| 170 |      | 8  | 22                   | 44   |    | —    | —                                  | —  | —  | —   | —                                   | —                       | —    | —    | —                   | "         | "       |
| 171 |      | 9  | 2                    | 19   |    | —    | —                                  | —  | —  | —   | —                                   | —                       | —    | —    | —                   | "         | "       |
| 172 |      | 9  | 5                    | 21   | 31 | —    | —                                  | 5  | 23 | 09  | —                                   | —                       | 11.1 | 0.02 | —                   | "         | "       |
| 173 |      | 9  | 8                    | 47   |    | —    | —                                  | —  | —  | —   | —                                   | —                       | —    | —    | —                   | "         | "       |
| 174 |      | 9  | 13                   | 43   |    | —    | —                                  | —  | —  | —   | —                                   | —                       | —    | —    | —                   | "         | "       |
| 175 |      | 9  | 15                   | 41   | 29 | 41   | 29                                 | 15 | 41 | 45  | 41                                  | 47                      | 3.9  | 0.05 | 0.05                | "         | "       |
| 176 |      | 9  | 19                   | 09   | 40 | —    | —                                  | 19 | 11 | 22  | —                                   | —                       | 4.8  | 0.01 | —                   | "         | "       |
| 177 |      | 9  | 20                   | 22   | 05 | —    | —                                  | 20 | 20 | 30  | —                                   | —                       | 6.5  | 0.01 | —                   | "         | "       |
| 178 |      | 9  | 20                   | 50   | 35 | —    | —                                  | 20 | 52 | 11  | —                                   | —                       | 5.9  | 0.01 | —                   | "         | "       |
| 179 |      | 9  | 23                   | 23   | 08 | 23.3 |                                    | —  | —  | —   | —                                   | —                       | 8.5  | 0.03 | 0.03                | "         | "       |
| 180 |      | 10 | 6                    | 46.7 |    | —    | —                                  | —  | —  | —   | —                                   | —                       | 2.7  | 0.00 | —                   | "         | "       |
| 181 |      | 10 | 12                   | 39.4 |    | —    | —                                  | —  | —  | —   | —                                   | —                       | 2.2  | 0.01 | —                   | "         | "       |
| 182 |      | 10 | 22                   | 53   | 21 | —    | —                                  | —  | —  | —   | —                                   | —                       | 5.1  | 0.01 | —                   | "         | "       |
| 183 |      | 11 | 0                    | 29.9 |    | —    | —                                  | —  | —  | —   | —                                   | —                       | 1.5  | 0.00 | —                   | "         | "       |
| 184 |      | 11 | 3                    | 35   | 51 | —    | —                                  | 3  | 36 | 18  | —                                   | —                       | 3.5  | 0.01 | —                   | "         | "       |
| 185 |      | 11 | 9                    | 01.1 |    | ?    |                                    | —  | —  | —   | —                                   | —                       | 2.3  | 0.00 | —                   | "         | "       |
| 186 |      | 11 | 10                   | 43   | 10 | ?    |                                    | —  | —  | —   | —                                   | —                       | 2.3  | 0.00 | —                   | "         | "       |
| 187 |      | 11 | 10                   | 52   | 10 | ?    |                                    | —  | —  | —   | —                                   | —                       | 1.0  | 0.00 | —                   | "         | "       |
| 188 |      | 11 | 11                   | 20   | 32 | ?    |                                    | —  | —  | —   | —                                   | —                       | 2.2  | 0.00 | —                   | "         | "       |
| 189 |      | 11 | 11                   | 30.0 |    | ?    |                                    | —  | —  | —   | —                                   | —                       | 5.0  | 0.00 | —                   | "         | "       |
| 190 |      | 11 | 13                   | 12   | 22 | ?    |                                    | —  | —  | —   | —                                   | —                       | 9.3  | 0.01 | —                   | "         | "       |
| 191 |      | 11 | 15                   | 00   | 34 | ?    |                                    | 15 | 02 | 12  | —                                   | —                       | 10.7 | 0.02 | —                   | "         | "       |
| 192 |      | 12 | 11                   | 14   |    | —    | —                                  | —  | —  | —   | —                                   | —                       | —    | —    | —                   | "         | "       |
| 193 |      | 12 | 22                   | 18   | 12 | 18.3 |                                    | 22 | 19 | 48  | 19                                  | 50                      | 15.9 | 0.06 | 0.04                | "         | "       |
| 194 |      | 12 | 23                   | 07   | 05 | 07   | 05                                 | 23 | 07 | 33  | 07                                  | 33                      | 10.0 | 0.38 | 0.50                | Quick     | Felt    |
| 195 |      | 12 | 23                   | 20   | 31 | —    | —                                  | 23 | 22 | 13  | —                                   | —                       | 6.6  | 0.01 | —                   | Slow      | "       |
| 196 |      | 13 | 4                    | 23   | 20 | —    | —                                  | 4  | 24 | 52  | —                                   | —                       | 4.9  | 0.00 | —                   | "         | "       |
| 197 |      | 13 | 9                    | 18   |    | —    | —                                  | —  | —  | —   | —                                   | —                       | —    | —    | —                   | "         | "       |
| 198 |      | 13 | 13                   | 20   |    | —    | —                                  | —  | —  | —   | —                                   | —                       | —    | —    | —                   | "         | "       |
| 199 |      | 13 | 13                   | 37.1 |    | —    | —                                  | —  | —  | —   | —                                   | —                       | 3.0  | 0.01 | —                   | "         | "       |
| 200 |      | 13 | 15                   | 02   | 16 | 03.8 |                                    | 15 | 04 | 13  | —                                   | —                       | 5.9  | 0.02 | 0.02                | "         | "       |
| 201 |      | 13 | 15                   | 59   | 40 | —    | —                                  | —  | —  | —   | —                                   | —                       | 5.8  | —    | —                   | "         | "       |
| 202 |      | 13 | 16                   | 55.7 |    | —    | —                                  | —  | —  | —   | —                                   | —                       | 3.3  | 0.02 | —                   | "         | "       |
| 203 |      | 13 | 18                   | 08   | 03 | 08   | 03                                 | 18 | 08 | 22  | 08                                  | 24                      | 14.5 | ?    | 3.00                | Quick     | Felt    |
| 204 |      | 13 | 18                   | 26   |    | —    | —                                  | —  | —  | —   | —                                   | —                       | —    | —    | —                   | Slow      | "       |
| 205 |      | 13 | 22                   | 50   |    | —    | —                                  | —  | —  | —   | —                                   | —                       | —    | —    | —                   | "         | "       |
| 206 |      | 14 | 0                    | 49   | 58 | 50.3 |                                    | 0  | 51 | 29  | 51                                  | 31                      | 5.6  | 0.07 | 0.09                | "         | "       |
| 207 |      | 14 | 3                    | 25   |    | —    | —                                  | —  | —  | —   | —                                   | —                       | —    | —    | —                   | "         | "       |
| 208 |      | 14 | 13                   | 42   |    | —    | —                                  | —  | —  | —   | —                                   | —                       | —    | —    | —                   | "         | "       |
| 209 |      | 14 | 18                   | 03   |    | —    | —                                  | —  | —  | —   | —                                   | —                       | —    | —    | —                   | "         | "       |
| 210 |      | 15 | 2                    | 07   | 17 | 07   | 20                                 | 2  | 08 | 56  | 08                                  | 56                      | 44.3 | 0.60 | 0.51                | "         | "       |
| 211 |      | 15 | 4                    | 34   |    | —    | —                                  | —  | —  | —   | —                                   | —                       | —    | —    | —                   | "         | "       |
| 212 |      | 16 | 9                    | 32   | 19 | ?    |                                    | 9  | 34 | 10  | —                                   | —                       | 6.3  | 0.01 | —                   | "         | "       |
| 213 |      | 16 | 9                    | 58   | 23 | 58.2 |                                    | 9  | 58 | 35  | 58                                  | 31                      | 3.5  | 0.02 | 0.02                | "         | "       |
| 214 |      | 16 | 13                   | 31   |    | —    | —                                  | —  | —  | —   | —                                   | —                       | —    | —    | —                   | "         | "       |
| 215 |      | 19 | 5                    | 34.1 |    | ?    |                                    | 5  | 34 | 47  | —                                   | —                       | 4.5  | 0.00 | —                   | "         | "       |
| 216 |      | 20 | 7                    | 06   | 41 | ?    |                                    | 7  | 07 | 02  | —                                   | —                       | 2.3  | 0.01 | —                   | "         | "       |
| 217 |      | 20 | 13                   | 40.7 |    | 41.4 |                                    | 13 | 42 | 25  | 42                                  | 22                      | 5.1  | 0.02 | 0.01                | "         | "       |
| 218 |      | 21 | 7                    | 12   | 52 | ?    |                                    | 7  | 13 | 06  | —                                   | —                       | 2.1  | 0.01 | —                   | "         | "       |
| 219 |      | 22 | 19                   | 04   | 31 | 04   | 31                                 | 19 | 12 | 09* | 12                                  | 01*                     | 48.3 | 0.00 | 0.01                | "         | "       |
| 220 |      | 22 | 22                   | 01   | 07 | 01   | 20                                 | 22 | 02 | 55  | 02                                  | 56                      | 9.4  | 0.03 | 0.03                | "         | "       |

\* Commence Time of the 2nd preliminary tremor.



TABLE A.

(Earthquakes)



| No. | Date<br>1918 | 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 | Sept. 22     | h                    | m    | s  | m    | s                                     | h  | m  | s   | m                                               | s                          | m     | m    | m                         | m         | Slow    | Feeble |
| 222 | 22           | 22                   | 51   | 30 | 51   | 30                                    | 22 | 53 | 10  | 53                                              | 10                         | 11.1  | 0.10 | 0.15                      | "         | "       |        |
| 223 | 22           | 23                   | 04   |    |      |                                       |    |    |     |                                                 |                            |       |      |                           | "         | "       |        |
| 224 | 23           | 2                    | 42   | 41 | 42   | 46                                    | 2  | 43 | 58  | 44                                              | 04                         | 4.7   | 0.03 | 0.03                      | "         | "       |        |
| 225 | 23           | 5                    | 51.4 |    |      |                                       |    |    |     |                                                 |                            | 3.0   | 0.01 |                           | "         | "       |        |
| 226 | 23           | 21                   | 24   | 53 | 24   | 50                                    | 21 | 26 | 33* | 26                                              | 27*                        | 19.5  | ?    | 0.01                      | "         | "       |        |
| 227 | 24           | 5                    | 59   | 57 |      |                                       | 6  | 01 | 02  | 01                                              | 02                         | 9.6   | 0.06 | 0.06                      | "         | "       |        |
| 228 | 25           | 18                   | 40   | 13 | 40   | 20                                    | 18 | 40 | 46  | 40                                              | 49                         | 4.7   | 0.06 | 0.05                      | "         | "       |        |
| 229 | 26           | 2                    | 12.4 |    | ?    |                                       | 2  | 13 | 18  | 13                                              | 20                         | 3.8   | 0.01 |                           | "         | "       |        |
| 230 | 27           | 9                    | 11   | 54 | 11   | 57                                    | 9  | 12 | 13  |                                                 |                            | 3.2   | 0.01 | 0.01                      | "         | "       |        |
| 231 | Oct. 1       | 1                    | 11   | 14 | 11.8 |                                       | 1  | 13 | 19* | 13                                              | 19*                        | ?     | ?    | 0.04                      | "         | "       |        |
| 232 | 1            | 3                    | 02   | 44 | 03.8 |                                       | 3  | 11 | 43* | 11                                              | 42*                        | 166.8 | ?    | 0.05                      | "         | "       |        |
| 233 | 2            | 9                    | 28   | 16 | 28   | 14                                    | 9  | 34 | 49* | 34                                              | 50*                        | ?     | ?    | 0.01                      | "         | "       |        |
| 234 | 3            | 10                   | 20   | 05 | 21.3 |                                       | 10 | 21 | 50  | 22                                              | 54                         | 7.1   | 0.01 | 0.01                      | "         | "       |        |
| 235 | 4            | 11                   | 57   | 13 | 57   | 13                                    | 11 | 57 | 53  | 57                                              | 54                         | 7.9   | 0.06 | 0.07                      | "         | "       |        |
| 236 | 7            | 5                    | 03   | 14 | 03.5 |                                       | 5  | 05 | 11* | 05                                              | 09*                        | 14.1  | 0.03 | 0.03                      | "         | "       |        |
| 237 | 8            | 15                   | 48   | 52 | ?    |                                       |    |    |     |                                                 |                            | 3.1   | 0.00 |                           | "         | "       |        |
| 238 | 8            | 17                   | 19   | 56 | 19   | 56                                    | 19 | 20 | 08  | 20                                              | 10                         | 4.0   | 0.07 | 0.14                      | Quick     | Felt    |        |
| 239 | 9            | 6                    | 38.1 |    | ?    |                                       | 6  | 38 | 24  |                                                 |                            | 2.6   | 0.01 |                           | Slow      | "       |        |
| 240 | 9            | 12                   | 37   | 23 |      |                                       | 12 | 37 | 34  |                                                 |                            | 2.1   | 0.00 |                           | "         | "       |        |
| 241 | 9            | 18                   | 26   | 51 | 27.0 |                                       | 18 | 33 | 57* | 33                                              | 56*                        | 32.3  | ?    | 0.01                      | "         | "       |        |
| 242 | 11           | 2                    | 57   | 23 | ?    |                                       | 2  | 58 | 38  | 58                                              | 38                         | 7.1   | 0.01 | 0.01                      | "         | "       |        |
| 243 | 14           | 10                   | 32   | 49 | 32.9 |                                       | 10 | 34 | 40  | 34                                              | 35                         | 11.0  | 0.02 | 0.02                      | "         | "       |        |
| 244 | 14           | 17                   | 10.5 |    | ?    |                                       | 17 | 12 | 33  |                                                 |                            | 7.5   | 0.01 |                           | "         | "       |        |
| 245 | 14           | 21                   | 11   | 39 | 11   | 40                                    | 21 | 21 | 06* | 21                                              | 03*                        | 50.4  | 0.00 | 0.05                      | "         | "       |        |
| 246 | 15           | 10                   | 45   | 24 |      |                                       |    |    |     |                                                 |                            | 5.9   | 0.02 |                           | "         | "       |        |
| 247 | 15           | 12                   | 30   | 28 | 30   | 28                                    | 12 | 31 | 13  | 31                                              | 12                         | 9.4   | 0.10 | 0.14                      | "         | "       |        |
| 248 | 15           | 13                   | 09.7 |    |      |                                       |    |    |     |                                                 |                            | 4.0   | 0.01 |                           | "         | "       |        |
| 249 | 15           | 13                   | 28.9 |    | 29.1 |                                       |    |    |     |                                                 |                            | 4.4   | 0.01 | 0.02                      | "         | "       |        |
| 250 | 15           | 22                   | 19.4 |    |      |                                       |    |    |     |                                                 |                            | 4.6   | 0.01 |                           | "         | "       |        |
| 251 | 16           | 4                    | 18   | 57 |      |                                       | 4  | 19 | 42  |                                                 |                            | 3.8   | 0.01 |                           | "         | "       |        |
| 252 | 17           | 5                    | 13   | 45 | 13   | 49                                    | 5  | 20 | 46  | 20                                              | 45                         | 26.6  | ?    | 0.02                      | "         | "       |        |
| 253 | 17           | 18                   | 59.0 |    |      |                                       |    |    |     |                                                 |                            | 4.2   | 0.00 |                           | "         | "       |        |
| 254 | 17           | 21                   | 41   | 31 |      |                                       | 21 | 41 | 42  |                                                 |                            | 4.1   | 0.00 |                           | "         | "       |        |
| 255 | 17           | 21                   | 54   |    |      |                                       |    |    |     |                                                 |                            |       |      |                           | "         | "       |        |
| 256 | 18           | 3                    | 25   |    |      |                                       |    |    |     |                                                 |                            |       |      |                           | "         | "       |        |
| 257 | 28           | 0                    | 36   | 31 | 36   | 35                                    | 0  | 43 | 51* | 43                                              | 56*                        | 63.5  | 0.02 | 0.24                      | "         | "       |        |
| 258 | 28           | 2                    | 14   | 29 | 14   | 29                                    | 2  | 20 | 17* | 20                                              | 17*                        | 92.7  | 0.24 | 2.25                      | "         | "       |        |
| 259 | 29           | 14                   | 48   | 13 | 48.3 |                                       | 14 | 48 | 55  | 48                                              | 55                         | 6.0   | 0.01 | 0.01                      | "         | "       |        |
| 260 | 31           | 17                   | 17   | 52 | ?    |                                       | 17 | 18 | 22  | 18                                              | 23                         | 5.2   | 0.02 | 0.02                      | "         | "       |        |
| 261 | Nov. 31      | 22                   | 49   | 46 | ?    |                                       | 22 | 51 | 00  | 51                                              | 00                         | 7.7   | 0.02 | 0.02                      | "         | "       |        |
| 262 | 1            | 5                    | 27   | 12 | 28.9 |                                       |    |    |     |                                                 |                            | 3.8   | 0.01 | 0.01                      | "         | "       |        |
| 263 | 1            | 10                   | 31   | 28 | ?    |                                       | 10 | 33 | 31  | 33                                              | 31                         | 5.5   | 0.01 | 0.01                      | "         | "       |        |
| 264 | 7            | 4                    | 49   | 15 | ?    |                                       | 4  | 50 | 41  | 50                                              | 44                         | 7.5   | 0.04 | 0.02                      | "         | "       |        |
| 265 | 8            | 6                    | 24   | 23 | 24   | 22                                    | 6  | 24 | 47  | 24                                              | 46                         | 4.3   | 0.03 | 0.04                      | "         | "       |        |
| 266 | 8            | 11                   | 28   | 58 | ?    |                                       | 11 | 29 | 41  | 29                                              | 42                         | 4.3   | 0.03 | 0.03                      | "         | "       |        |
| 267 | 8            | 13                   | 40   | 21 | 40   | 21                                    | 13 | 42 | 17  | 42                                              | 15                         | 201.5 | ?    | ?                         | Quick     | Felt    |        |
| 268 | 11           | 2                    | 59   | 13 | 59   | 13                                    | 3  | 00 | 07  | 00                                              | 10                         | 11.7  | 0.14 | 0.20                      | Slow      | "       |        |
| 269 | 11           | 3                    | 16.7 |    | ?    |                                       |    |    |     |                                                 |                            | 9.1   | 0.03 | 0.05                      | "         | "       |        |
| 270 | 11           | 16                   | 04   | 10 | 04   | 11                                    | 16 | 05 | 06  | 05                                              | 01                         | 24.3  | 0.89 | 0.70                      | "         | "       |        |
| 271 | 11           | 22                   | 23   | 36 | 23   | 38                                    | 22 | 25 | 55  | 25                                              | 56                         | 5.9   | 0.03 | 0.02                      | "         | "       |        |
| 272 | 12           | 0                    | 02   | 48 | ?    |                                       | 0  | 03 | 44  |                                                 |                            | 7.0   | 0.01 | 0.02                      | "         | "       |        |
| 273 | 16           | 14                   | 40   | 49 | ?    |                                       | 14 | 41 | 38  | 41                                              | 37                         | 2.9   | 0.01 | 0.01                      | "         | "       |        |
| 274 | 17           | 6                    | 19   | 13 | ?    |                                       | 6  | 20 | 06  |                                                 |                            | 3.3   | 0.01 |                           | "         | "       |        |
| 275 | 18           | 5                    | 44   | 59 | ?    |                                       | 5  | 45 | 37  | 45                                              | 42                         | 4.5   | 0.01 | 0.01                      | "         | "       |        |

\* Commence Time of the 2nd preliminary tremor.



## TABLE A.

(Earthquakes)

| No. | Date |    | Time of Occurrence † |      |     |      | Beginning of the Principal Portion |    |     |     | Duration of Total Earthquake (mean) | Maximum Range of Motion |       |      | Character of Motion | Intensity | Remarks |      |
|-----|------|----|----------------------|------|-----|------|------------------------------------|----|-----|-----|-------------------------------------|-------------------------|-------|------|---------------------|-----------|---------|------|
|     | 1918 |    | E                    | W    | N S |      | E                                  | W  | N S |     |                                     | E                       | W     | N S  |                     |           |         |      |
| 276 | Nov. | 18 | 5                    | 59   | 53  | ?    |                                    | 6  | 00  | 33  | 00                                  | 34                      | 3.6   | 0.01 | 0.01                | Slow      | Feeble  |      |
| 277 |      | 18 | 18                   | 33.2 |     | 33.6 |                                    | —  | —   | —   | —                                   | —                       | 2.3   | 0.01 | 0.01                | "         | "       |      |
| 278 |      | 18 | 22                   | 36   | 45  | 36   | 44                                 | 22 | 36  | 54  | 36                                  | 55                      | 2.4   | 0.10 | 0.09                | Quick     | "       | Felt |
| 279 |      | 19 | 3                    | 50   | 16  | 50   | 15                                 | 3  | 57  | 04* | 56                                  | 52*                     | 125.5 | 2.08 | ?                   | Slow      | "       |      |
| 280 |      | 21 | 15                   | 22   | 46  | 22   | 45                                 | 15 | 24  | 31  | 24                                  | 28                      | 6.1   | 0.02 | 0.04                | "         | "       |      |
| 281 |      | 23 | 0                    | 51   | 19  | 51   | 24                                 | 0  | 53  | 22  | 53                                  | 17                      | 24.1  | 0.07 | 0.06                | "         | "       |      |
| 282 |      | 23 | 14                   | 19.5 |     | ?    |                                    | 14 | 21  | 37  | 21                                  | 36                      | 5.3   | 0.02 | 0.01                | "         | "       |      |
| 283 |      | 23 | 14                   | 30   | 09  | ?    |                                    | —  | —   | —   | —                                   | —                       | 2.1   | 0.01 | —                   | "         | "       |      |
| 284 |      | 24 | 8                    | 06   | 11  | 06   | 14                                 | 8  | 12  | 47  | 12                                  | 50                      | ?     | 0.02 | 0.06                | "         | "       |      |
| 285 |      | 24 | 17                   | 54.9 |     | ?    |                                    | 17 | 55  | 18  | 55                                  | 17                      | 2.2   | 0.00 | 0.00                | "         | "       |      |
| 286 |      | 25 | 4                    | 57.5 |     | 57.6 |                                    | 4  | 58  | 30  | 58                                  | 27                      | 2.5   | 0.01 | 0.01                | "         | "       |      |
| 287 |      | 26 | 22                   | 44   | 44  | 44   | 41                                 | 22 | 45  | 05  | 45                                  | 05                      | 4.2   | 0.03 | 0.07                | "         | "       |      |
| 288 |      | 28 | 23                   | 48   | 25  | ?    |                                    | 23 | 50  | 13  | 50                                  | 13                      | 4.9   | 0.01 | 0.01                | "         | "       |      |
| 289 |      | 29 | 4                    | 03   | 59  | 03   | 59                                 | 4  | 04  | 43  | 04                                  | 43                      | 7.5   | 0.02 | 0.05                | "         | "       |      |
| 290 |      | 30 | 10                   | 38   | 05  | 38   | 05                                 | 10 | 41  | 43  | 41                                  | 44                      | 7.4   | 0.01 | 0.01                | "         | "       |      |
| 291 |      | 30 | 15                   | 55   | 13  | 55   | 10                                 | 16 | 00  | 26* | 00                                  | 28*                     | 37.8  | 0.01 | 0.15                | "         | "       |      |
| 292 |      | 30 | 18                   | 53   | 07  | ?    |                                    | 18 | 54  | 46  | 54                                  | 42                      | 7.1   | 0.01 | 0.02                | "         | "       |      |
| 293 |      | 30 | 19                   | 01   | 23  | ?    |                                    | 19 | 03  | 13  | 03                                  | 15                      | 6.7   | 0.02 | 0.01                | "         | "       |      |
| 294 | Dec. | 1  | 8                    | 11   | 22  | ?    |                                    | —  | —   | —   | —                                   | —                       | 3.2   | 0.01 | —                   | "         | "       |      |
| 295 |      | 2  | 20                   | 48   | 20  | ?    |                                    | —  | —   | —   | —                                   | —                       | 6.1   | 0.00 | —                   | "         | "       |      |
| 296 |      | 2  | 21                   | 25   | 29  | 25   | 29                                 | 21 | 25  | 44  | 25                                  | 41                      | 3.5   | 0.04 | 0.06                | "         | "       |      |
| 297 |      | 4  | 8                    | 12   | 19  | 12   | 20                                 | 8  | 16  | 39  | 16                                  | 34                      | 9.4   | 0.03 | 0.05                | "         | "       |      |
| 298 |      | 4  | 10                   | 45   | 15  | ?    |                                    | —  | —   | —   | —                                   | —                       | 1.0   | 0.01 | ?                   | "         | "       |      |
| 299 |      | 4  | 18                   | 10   | 52  | ?    |                                    | 18 | 12  | 39  | 12                                  | 38                      | 4.9   | 0.01 | 0.01                | "         | "       |      |
| 300 |      | 4  | 21                   | 07   | 43  | 07   | 45                                 | 21 | 30  | 32* | 30                                  | 38*                     | 152.6 | 0.48 | 0.26                | "         | "       |      |
| 301 |      | 7  | 7                    | 16   | 52  | ?    |                                    | —  | —   | —   | —                                   | —                       | 3.0   | 0.01 | —                   | "         | "       |      |
| 302 |      | 9  | 10                   | 14   | 34  | 14.7 |                                    | 10 | 16  | 15  | 16                                  | 16                      | 11.1  | 0.03 | 0.05                | "         | "       |      |
| 303 |      | 14 | 6                    | 38   | 37  | 38   | 37                                 | 6  | 39  | 16  | 39                                  | 15                      | 10.4  | 0.45 | 0.60                | Quick     | "       | Felt |
| 304 |      | 17 | 23                   | 34   | 03  | 34.1 |                                    | 23 | 34  | 29  | ?                                   |                         | 4.1   | 0.01 | 0.02                | Slow      | "       |      |
| 305 |      | 21 | 19                   | 42   | 37  | 42.5 |                                    | 19 | 43  | 20  | 43                                  | 18                      | 4.8   | 0.02 | 0.02                | "         | "       |      |
| 306 |      | 23 | 6                    | 02   | 30  | 02   | 31                                 | 6  | 02  | 44  | 02                                  | 44                      | 19.3  | 0.68 | 0.70                | Quick     | "       | Felt |
| 307 |      | 25 | 19                   | 29   | 06  | 29   | 06                                 | 19 | 35  | 19* | 35                                  | 19*                     | 21.8  | 0.01 | 0.02                | Slow      | "       |      |
| 308 |      | 27 | 18                   | 29   | 09  | ?    |                                    | —  | —   | —   | —                                   | —                       | 1.9   | 0.01 | —                   | "         | "       |      |
| 309 |      | 28 | 6                    | 46   | 03  | 46   | 03                                 | 6  | 46  | 15  | 46                                  | 16                      | 5.6   | 0.09 | 0.12                | Quick     | "       | Felt |
| 310 |      | 29 | 8                    | 46   | 56  | 46   | 59                                 | 8  | 47  | 08  | 47                                  | 10                      | 1.7   | 0.01 | 0.01                | Slow      | "       |      |
| 311 |      | 31 | 14                   | 31   | 24  | 31   | 24                                 | 14 | 32  | 32  | 32                                  | 32                      | 5.6   | 0.05 | 0.10                | "         | "       |      |

\* Commence Time of the 2nd preliminary tremor.



TABLE B.

(Pulsatory Oscillations EW Component.)

| Beginning    |      | Ending       |      | Maximum      |       |                     |      |
|--------------|------|--------------|------|--------------|-------|---------------------|------|
| Date<br>1918 | Hour | Date<br>1918 | Hour | Date<br>1918 | Hour  | Double<br>Amplitude |      |
| January      | 2    | January      | 11   | January      | 2-3   | 0.02                |      |
|              | 13   |              | 15   |              | 14    | 20-14               | 0.01 |
|              | 15   |              | 21   |              | 16    | 8-11                | 0.01 |
|              | 24   |              | 23   |              | 17    | 12-16               | 0.01 |
|              | 5    | 25           | 4    | 19-21        | 0.01  |                     |      |
|              | 8    |              | 20   | 24           | 10-11 | 0.00                |      |
| February     | 26   | February     | 28   | February     | 26    | 0.00                |      |
|              | 30   |              | 20   |              | 31    | 12-14               | 0.01 |
|              | 6    |              | 20   |              | 8     | 10-13               | 0.02 |
|              | 17   |              | 23   |              | 18    | 2-5                 | 0.01 |
|              | 21   | 18           | 12   | 21           | 2-4   | 0.01                |      |
|              | 7    | 23           | 11   | 22           | 0-3   | 0.01                |      |
|              |      |              |      |              | 17-18 | 0.01                |      |
| March        | 26   | March        | 28   | March        | 27    | 0.01                |      |
|              | 5    |              | 19   |              | 5     | 9-12                | 0.01 |
|              | 10   |              | 23   |              | 11    | 21-23               | 0.02 |
|              | 16   |              | 12   |              | 17    | 10-17               | 0.02 |
|              | 23   | 23           | 17   | 20           | 11-17 | 0.02                |      |
|              |      |              |      |              | 14-18 | 0.02                |      |
| April        | 25   | April        | 28   | April        | 26    | 0.01                |      |
|              | 30   |              | 8    |              | 27    | 7-9                 | 0.02 |
|              | 6    |              | 19   |              | 31    | 11-13               | 0.02 |
|              | 10   |              | 17   |              | 8     | 9-17                | 0.01 |
|              | 12   | 12           | 18   | 10           | 14-16 | 0.01                |      |
|              |      |              |      |              | 21-23 | 0.01                |      |
| May          | 15   | May          | 16   | May          | 15    | 0.00                |      |
|              | 17   |              | 17   |              | 20    | 15-16               | 0.01 |
|              | 23   |              | 23   |              | 24    | 1-2                 | 0.02 |
|              | 26   |              | 18   |              | 27    | 4-6                 | 0.02 |
| 1            | 8    | 4            | 1    | 2            | 21-22 | 0.01                |      |
|              |      |              |      |              | 9-15  | 0.01                |      |
| June         | 4    | June         | 6    | June         | 5     | 0.02                |      |
|              | 10   |              | 19   |              | 11    | 9-14                | 0.02 |
|              | 19   |              | 20   |              | 21    | 21-23               | 0.00 |
|              | 31   |              | 19   |              | 1     | 11-13               | 0.00 |
| 10           | 23   | 12           | 21   | 11           | 12-14 | 0.00                |      |
|              |      |              |      |              | 14-15 | 0.00                |      |
| July         | 23   | July         | 25   | July         | 24    | 0.01                |      |
|              | 12   |              | 18   |              | 14    | 13-15               | 0.02 |
|              | 28   |              | 20   |              | 28    | 5-9                 | 0.00 |
| August       | 5    | August       | 30   | August       | 28    | 0.01                |      |
|              | 17   |              | 1    |              | 8     | 13-15               | 0.01 |
|              | 23   | 10           | 6    | 19           | 18-19 | 0.01                |      |
|              | 20   | 20           | 9    |              | 5-6   | 0.01                |      |
| September    | 28   | September    | 29   | September    | 28    | 0.00                |      |
|              | 30   |              | 19   |              | 31    | 12-14               | 0.01 |
|              | 9    |              | 18   |              | 10    | 12-14               | 0.00 |
|              | 12   |              | 3    |              | 15    | 12-15               | 0.01 |
| 24           | 7    | 27           | 9    | 25           | 10-13 | 0.01                |      |
|              | 9    |              |      |              | 1-6   | 0.03                |      |
| October      | 28   | October      | 1    | October      | 29    | 0.01                |      |
|              | 8    |              | 12   |              | 9     | 14-16               | 0.00 |
|              | 11   |              | 22   |              | 12    | 14-15               | 0.01 |
|              | 18   |              | 13   |              | 19    | 7-9                 | 0.01 |
| 22           | 9    | 20           | 22   | 22           | 11-14 | 0.01                |      |
|              | 3    | 22           | 22   |              | 15-17 | 0.01                |      |
| November     | 23   | November     | 26   | November     | 24    | 0.01                |      |
|              | 1    |              | 5    |              | 3     | 15-16               | 0.02 |
|              | 5    |              | 23   |              | 6     | 14-22               | 0.02 |
|              | 14   |              | 1    |              | 15    | 11-16               | 0.03 |
| 17           | 11   | 17           | 9    | 18           | 9-15  | 0.01                |      |
|              | 23   | 20           | 20   |              | 16-18 | 0.01                |      |
| December     | 22   | December     | 26   | December     | 25    | 0.01                |      |
|              | 1    |              | 21   |              | 2     | 10-11               | 0.01 |
|              | 6    |              | 19   |              | 9     | 2-4                 | 0.01 |
|              | 12   |              | 7    |              | 12    | 20-23               | 0.01 |
|              | 0    | 17           | 16   | 15           | 10-12 | 0.01                |      |
|              |      |              |      |              | 7-8   | 0.01                |      |
| 29           | 7    | 31           | 12   | 29           | 12-15 | 0.00                |      |