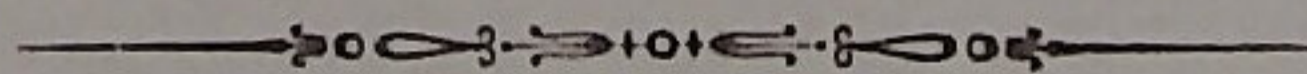


ANNUAL REPORT
OF THE
METEOROLOGICAL
AND THE
SEISMOLOGICAL OBSERVATIONS
MADE AT THE
INTERNATIONAL LATITUDE OBSERVATORY
OF MIZUSAWA
FOR
THE YEAR 1920.

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



PUBLISHED BY THE INTERNATIONAL LATITUDE OBSERVATORY  
OF MIZUSAWA.

1921.

The present report gives the results of the meteorological and seismological observations made at the observatory during the year 1920. No alteration has been made in the nature and methods of observation. The observations and the calculations were made by Messrs. K. Torihata, S. Satô and K. Kokuda under the superintendence of Dr. Y. Ueta.

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

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

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

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

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

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

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

*Relative Humidity.*—is given in percentages.

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

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

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

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

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

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

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

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

|                                                                                  | EW Component    | NS Component    |
|----------------------------------------------------------------------------------|-----------------|-----------------|
|                                                                                  | Apparatus       | Apparatus       |
| Period of free oscillation                                                       | 16 seconds      | 37 seconds      |
| Multiplication of the pointer                                                    | 100 times       | 20 times        |
| Weight of heavy cylinder                                                         | 45.0 kilograms  | 17.6 kilograms  |
| Horizontal distance of the centre of the<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, 1921.

H. Kimura, *Rigakuhakushi*

Director of the International Latitude Observatory  
of Mizusawa.

# SEISMOLOGICAL OBSERVATIONS.

TABLE A.

(Earthquakes)



| No. | Date<br>1920 | Time of Occurrence |    |      |    | Beginning of<br>the Principal portion |    |    |    | Duration<br>of<br>Total<br>Earthquake<br>(mean) | Maximum<br>Range of Motion |     | Character<br>of<br>Motion | Intensity | Remarks |       |        |      |
|-----|--------------|--------------------|----|------|----|---------------------------------------|----|----|----|-------------------------------------------------|----------------------------|-----|---------------------------|-----------|---------|-------|--------|------|
|     |              | E                  | W  | N    | S  | E                                     | W  | N  | S  |                                                 | E                          | W   |                           |           |         | N     | S      |      |
| 1   | Jan.         | 1                  | 3  | 30   | 52 | —                                     | —  | 3  | 31 | 55                                              | —                          | —   | 2.7                       | 0.01      | —       | Slow  | Feeble |      |
| 2   |              | 3                  | 9  | 51   | 42 | 51                                    | 41 | 9  | 51 | 53                                              | 51                         | 53  | 10.7                      | 0.36      | 0.36    | "     | "      |      |
| 3   |              | 3                  | 17 | 45   | 41 | 45                                    | 41 | 17 | 45 | 51                                              | 45                         | 51  | 15.4                      | 0.25      | 0.36    | "     | "      |      |
| 4   |              | 4                  | 0  | 09   | 00 | 09                                    | 03 | 0  | 09 | 11                                              | 09                         | 15  | 5.1                       | 0.03      | 0.02    | "     | "      |      |
| 5   |              | 6                  | 12 | 50   | 45 | 50                                    | 45 | 12 | 50 | 58                                              | 50                         | 59  | 11.5                      | 0.89      | 0.94    | Quick | "      | Felt |
| 6   |              | 6                  | 20 | 53   | 38 | 53.8                                  | —  | 20 | 53 | 50                                              | ?                          | —   | 5.0                       | 0.03      | 0.02    | Slow  | "      |      |
| 7   |              | 6                  | 22 | 11   | 37 | —                                     | —  | ?  | —  | —                                               | —                          | —   | 3.6                       | 0.01      | —       | "     | "      |      |
| 8   |              | 6                  | 23 | 32   | 29 | 32                                    | 31 | 23 | 32 | 36                                              | 32                         | 41  | 5.3                       | 0.06      | 0.03    | "     | "      |      |
| 9   |              | 7                  | 10 | 38.5 | —  | 38.5                                  | —  | ?  | —  | —                                               | ?                          | —   | 4.2                       | 0.02      | 0.02    | "     | "      |      |
| 10  |              | 8                  | 1  | 32   | 31 | —                                     | —  | 1  | 32 | 55                                              | —                          | —   | 3.5                       | 0.01      | —       | "     | "      |      |
| 11  |              | 8                  | 1  | 55   | 47 | —                                     | —  | ?  | —  | —                                               | —                          | —   | 4.5                       | 0.01      | —       | "     | "      |      |
| 12  |              | 8                  | 2  | 02.0 | —  | —                                     | —  | ?  | —  | —                                               | —                          | —   | 1.2                       | ?         | —       | "     | "      |      |
| 13  |              | 9                  | 21 | 56.5 | —  | 56.6                                  | —  | ?  | —  | —                                               | ?                          | —   | 4.6                       | 0.02      | 0.02    | "     | "      |      |
| 14  |              | 10                 | 15 | 02   | 23 | 02                                    | 24 | ?  | —  | —                                               | ?                          | —   | 4.3                       | 0.03      | 0.03    | "     | "      |      |
| 15  |              | 10                 | 18 | 05   | 59 | 05                                    | 59 | 18 | 06 | 13                                              | 06                         | 13  | 2.9                       | 0.04      | 0.04    | "     | "      |      |
| 16  |              | 11                 | 20 | 27.4 | —  | 27.7                                  | —  | ?  | —  | —                                               | ?                          | —   | 3.4                       | 0.01      | ?       | "     | "      |      |
| 17  |              | 12                 | 0  | 44   | 18 | 44.6                                  | —  | 0  | 45 | 38                                              | ?                          | —   | 8.5                       | 0.01      | 0.01    | "     | "      |      |
| 18  |              | 12                 | 22 | 43   | 40 | 43                                    | 40 | 22 | 50 | 14                                              | 50                         | 17  | 47.2                      | 0.06      | 0.15    | "     | "      |      |
| 19  |              | 13                 | 13 | 04   | 34 | 04                                    | 34 | 13 | 04 | 45                                              | 04                         | 45  | 2.6                       | 0.03      | 0.03    | Quick | "      | Felt |
| 20  |              | 14                 | 3  | 31   | 16 | 31                                    | 14 | 3  | 31 | 27                                              | 31                         | 29  | ?                         | ?         | 0.60    | "     | "      | Felt |
| 21  |              | 14                 | ?  | —    | —  | ?                                     | —  | ?  | —  | —                                               | ?                          | —   | ?                         | 0.13      | 0.14    | Slow  | "      |      |
| 22  |              | 14                 | 7  | 20   | 37 | 20                                    | 37 | 7  | 20 | 48                                              | 20                         | 48  | 4.1                       | 0.06      | 0.12    | "     | "      |      |
| 23  |              | 14                 | 11 | 25   | 53 | 25                                    | 52 | 11 | 26 | 00                                              | 26                         | 00  | 3.5                       | 0.05      | 0.11    | "     | "      |      |
| 24  |              | 14                 | 11 | ?    | —  | 30                                    | 06 | ?  | —  | —                                               | ?                          | —   | ?                         | 0.04      | 0.06    | "     | "      |      |
| 25  |              | 14                 | 12 | 13.2 | —  | 13.3                                  | —  | ?  | —  | —                                               | ?                          | —   | 4.9                       | 0.02      | 0.05    | "     | "      |      |
| 26  |              | 14                 | 14 | 16.4 | —  | 16.4                                  | —  | ?  | —  | —                                               | ?                          | —   | 3.5                       | 0.03      | 0.05    | "     | "      |      |
| 27  |              | 14                 | 15 | 57   | 53 | 57                                    | 53 | 15 | 58 | 02                                              | 58                         | 02  | 13.0                      | 0.34      | 0.40    | Quick | "      | Felt |
| 28  |              | 14                 | 16 | 20.2 | —  | ?                                     | —  | ?  | —  | —                                               | ?                          | —   | 2.0                       | 0.02      | 0.03    | Slow  | "      |      |
| 29  |              | 14                 | 18 | 05.7 | —  | 06.1                                  | —  | ?  | —  | —                                               | ?                          | —   | 2.9                       | 0.04      | 0.06    | "     | "      |      |
| 30  |              | 15                 | 0  | 20.0 | —  | 20.1                                  | —  | ?  | —  | —                                               | ?                          | —   | ?                         | 0.05      | 0.09    | "     | "      |      |
| 31  |              | 15                 | 0  | 26.2 | —  | 26.2                                  | —  | ?  | —  | —                                               | ?                          | —   | 5.1                       | 0.04      | 0.05    | "     | "      |      |
| 32  |              | 15                 | 3  | 32.9 | —  | —                                     | —  | ?  | —  | —                                               | —                          | —   | 1.5                       | 0.02      | —       | "     | "      |      |
| 33  |              | 15                 | 5  | 36   | —  | —                                     | —  | ?  | —  | —                                               | —                          | —   | ?                         | ?         | —       | "     | "      |      |
| 34  |              | 15                 | 10 | 38.8 | —  | —                                     | —  | ?  | —  | —                                               | —                          | —   | 2.3                       | 0.01      | —       | "     | "      |      |
| 35  |              | 15                 | 13 | 25   | 07 | 25.1                                  | —  | 13 | 25 | 12                                              | ?                          | —   | 1.6                       | 0.03      | ?       | "     | "      |      |
| 36  |              | 15                 | 21 | 42.9 | —  | —                                     | —  | 21 | 43 | 07                                              | —                          | —   | 1.3                       | 0.01      | —       | "     | "      |      |
| 37  |              | 16                 | 16 | 38.9 | —  | 39.0                                  | —  | ?  | —  | —                                               | ?                          | —   | 2.4                       | 0.01      | 0.02    | "     | "      |      |
| 38  |              | 17                 | 18 | 29.9 | —  | 30.0                                  | —  | ?  | —  | —                                               | ?                          | —   | 2.3                       | 0.01      | ?       | "     | "      |      |
| 39  |              | 18                 | 3  | 48   | 46 | 48                                    | 44 | 3  | 49 | 01                                              | 48                         | 59  | 25.0                      | ?         | 1.01    | Quick | Weak   | Felt |
| 40  |              | 18                 | 7  | 24.4 | —  | 24.5                                  | —  | ?  | —  | —                                               | ?                          | —   | 2.4                       | 0.01      | 0.01    | Slow  | Feeble |      |
| 41  |              | 18                 | 7  | 51.7 | —  | —                                     | —  | ?  | —  | —                                               | —                          | —   | 2.1                       | 0.01      | —       | "     | "      |      |
| 42  |              | 21                 | 15 | 14.9 | —  | ?                                     | —  | 15 | 15 | 12                                              | 15                         | 13  | 2.0                       | 0.01      | 0.01    | "     | "      |      |
| 43  | Feb.         | 1                  | 2  | 41.3 | —  | 41.3                                  | —  | ?  | —  | —                                               | ?                          | —   | 3.2                       | 0.01      | 0.01    | "     | "      |      |
| 44  |              | 1                  | 5  | 11   | 22 | 11                                    | 22 | 5  | 11 | 34                                              | 11                         | 34  | 2.9                       | 0.03      | 0.03    | Quick | "      | Felt |
| 45  |              | 1                  | 22 | 31.1 | —  | —                                     | —  | 22 | 32 | 18                                              | —                          | —   | ?                         | 0.01      | —       | Slow  | "      |      |
| 46  |              | 1                  | 22 | 36.7 | —  | 36.7                                  | —  | 22 | 38 | 08                                              | 38                         | 05  | 7.0                       | 0.07      | 0.05    | "     | "      |      |
| 47  |              | 2                  | 4  | 42   | 17 | —                                     | —  | 4  | 42 | 37                                              | —                          | —   | 2.0                       | 0.01      | —       | "     | "      |      |
| 48  |              | 2                  | 19 | 42   | 23 | 42                                    | 23 | 19 | 42 | 41                                              | ?                          | —   | 3.4                       | 0.05      | 0.04    | "     | "      |      |
| 49  |              | 2                  | 20 | 30   | 37 | 30                                    | 33 | 20 | 37 | 53*                                             | 37                         | 34* | 40.4                      | 0.49      | 2.69    | "     | "      |      |
| 50  |              | 4                  | 21 | 46   | 34 | 46                                    | 25 | 21 | 50 | 20*                                             | 50                         | 21* | 12.8                      | ?         | ?       | "     | "      |      |
| 51  |              | 8                  | 0  | 07   | 34 | 07                                    | 34 | 0  | 08 | 03                                              | 08                         | 03  | 19.6                      | 1.61      | 3.54    | Quick | Weak   | Felt |
| 52  |              | 8                  | 0  | 31.4 | —  | 31.7                                  | —  | 0  | 31 | 49                                              | ?                          | —   | 2.6                       | 0.01      | ?       | Slow  | Feeble |      |
| 53  |              | 10                 | 18 | 31.8 | —  | 29.8                                  | —  | ?  | —  | —                                               | ?                          | —   | 25.9                      | 0.00      | 0.03    | "     | "      |      |
| 54  |              | 10                 | 19 | 21.8 | —  | 22.8                                  | —  | ?  | —  | —                                               | ?                          | —   | 18.2                      | 0.03      | 0.04    | "     | "      |      |
| 55  |              | 10                 | 22 | 02   | 33 | 02                                    | 34 | 22 | 02 | 48                                              | 02                         | 48  | 5.2                       | 0.10      | 0.23    | Quick | "      | Felt |

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

\* Commence Time of the 2nd preliminary tremor.

TABLE A.

(Earthquakes)

| No. | Date<br>1920 |    | Time of Occurrence |      |    |      | Beginning of the<br>Principal portion |    |    |     | Duration<br>of<br>Total<br>Earthquake<br>(mean) | Maximum<br>Range of Motion |      | Character<br>of<br>Motion | Intensity | Remarks |      |      |
|-----|--------------|----|--------------------|------|----|------|---------------------------------------|----|----|-----|-------------------------------------------------|----------------------------|------|---------------------------|-----------|---------|------|------|
|     |              |    | E                  | W    | N  | S    | E                                     | W  | N  | S   |                                                 | E                          | W    |                           |           |         | N    | S    |
| 56  | Feb.         | 10 | 23                 | 38.7 |    | 39.3 | ?                                     |    |    | ?   |                                                 | 3.1                        | 0.01 | 0.01                      | Slow      | Feeble  | Felt |      |
| 57  |              | 11 | 15                 | 37   | 33 | 37   | 33                                    | 15 | 38 | 02  | 38                                              | 04                         | 5.9  | 0.04                      | 0.09      | Quick   | "    | Felt |
| 58  |              | 12 | 21                 | 30   | 24 | ?    |                                       | 21 | 30 | 38  | 30                                              | 39                         | 2.5  | 0.05                      | 0.04      | Slow    | "    |      |
| 59  |              | 18 | 19                 | 32   | 09 | 32.0 |                                       | 19 | 33 | 01  | 32                                              | 51                         | 3.4  | 0.03                      | 0.03      | "       | "    |      |
| 60  |              | 19 | 13                 | 49.2 |    | —    | —                                     | ?  |    | —   | —                                               | —                          | 5.2  | 0.01                      | —         | "       | "    |      |
| 61  |              | 19 | 14                 | 00.0 |    | —    | —                                     | 14 | 00 | 31  | —                                               | —                          | 5.8  | 0.02                      | —         | "       | "    |      |
| 62  |              | 19 | 16                 | 55   | 02 | 55.1 |                                       | 16 | 55 | 38  | 55                                              | 35                         | 6.5  | 0.02                      | 0.04      | "       | "    |      |
| 63  |              | 23 | 2                  | 37   | 53 | 37   | 53                                    | 2  | 38 | 31  | 38                                              | 31                         | 59.4 | 0.71                      | 1.56      | Quick   | "    | Felt |
| 64  |              | 25 | 8                  | 06   | 31 | 06   | 31                                    | 8  | 06 | 45  | 06                                              | 44                         | 1.8  | 0.02                      | 0.02      | Slow    | "    | Felt |
| 65  |              | 29 | 7                  | 27   | 36 | 27   | 36                                    | 7  | 27 | 50  | 27                                              | 50                         | 2.5  | 0.04                      | 0.04      | Quick   | "    | Felt |
| 66  | Mar.         | 3  | 11                 | 47   | 11 | 47   | 11                                    | 11 | 47 | 23  | 47                                              | 22                         | 2.6  | 0.05                      | 0.06      | Slow    | "    |      |
| 67  |              | 3  | 22                 | 13   | 33 | 13   | 35                                    | 22 | 13 | 54  | 13                                              | 55                         | 3.6  | 0.02                      | 0.03      | "       | "    |      |
| 68  |              | 8  | 14                 | 02   | 51 | 02   | 49                                    | 14 | 04 | 40  | 04                                              | 39                         | 3.9  | 0.01                      | 0.01      | "       | "    |      |
| 69  |              | 10 | 12                 | 31   | 19 | 31   | 19                                    | ?  |    | ?   |                                                 |                            | 3.7  | 0.02                      | 0.01      | "       | "    |      |
| 70  |              | 13 | 9                  | 07   | 26 | —    | —                                     | 9  | 08 | 10  | —                                               | —                          | 3.9  | 0.00                      | —         | "       | "    |      |
| 71  |              | 14 | 21                 | 31   | 54 | ?    |                                       | 21 | 32 | 05  | 32                                              | 06                         | 2.5  | 0.04                      | 0.04      | "       | "    |      |
| 72  |              | 15 | 3                  | 50   | 49 | 50   | 51                                    | 3  | 52 | 45  | 52                                              | 48                         | 4.9  | 0.03                      | 0.02      | "       | "    |      |
| 73  |              | 19 | 11                 | 08   | 20 | 08   | 20                                    | 11 | 08 | 44  | 08                                              | 44                         | 5.3  | 0.09                      | 0.18      | Quick   | "    | Felt |
| 74  |              | 21 | 1                  | 52   | 52 | 53.1 |                                       | 1  | 53 | 21  | 53                                              | 27                         | 3.2  | 0.02                      | 0.02      | Slow    | "    |      |
| 75  |              | 24 | 9                  | 08.6 |    | ?    |                                       | 9  | 09 | 23  | 09                                              | 23                         | 3.8  | 0.01                      | 0.01      | "       | "    |      |
| 76  |              | 24 | 10                 | 48   | 44 | 48   | 44                                    | 10 | 48 | 58  | ?                                               |                            | 2.7  | 0.01                      | ?         | "       | "    |      |
| 77  |              | 25 | 16                 | 59.1 |    | ?    |                                       | 17 | 00 | 33  | 00                                              | 34                         | 4.7  | 0.01                      | ?         | "       | "    |      |
| 78  |              | 27 | 19                 | 31   | 54 | 31   | 55                                    | 19 | 32 | 30  | ?                                               |                            | 3.9  | 0.02                      | 0.01      | "       | "    |      |
| 79  |              | 28 | 14                 | 03   | 18 | 03   | 20                                    | 14 | 04 | 19  | 04                                              | 19                         | 4.3  | 0.01                      | 0.01      | "       | "    |      |
| 80  | Apr.         | 3  | 12                 | 48   | 19 | 48   | 18                                    | 12 | 48 | 42  | 48                                              | 42                         | 2.6  | 0.01                      | 0.02      | "       | "    |      |
| 81  |              | 6  | 9                  | 25   | 10 | 25.2 |                                       | 9  | 25 | 30  | 25                                              | 29                         | 2.8  | 0.02                      | 0.01      | "       | "    |      |
| 82  |              | 7  | 4                  | 10   | 23 | 10   | 36                                    | ?  |    | ?   |                                                 |                            | ?    | ?                         | 0.02      | "       | "    |      |
| 83  |              | 7  | 5                  | 28.7 |    | 29.5 |                                       | 5  | 33 | 24* | 33                                              | 23*                        | ?    | ?                         | ?         | "       | "    |      |
| 84  |              | 9  | 17                 | 01   | 07 | 01.3 |                                       | 17 | 01 | 37  | 01                                              | 39                         | 5.2  | 0.01                      | 0.01      | "       | "    |      |
| 85  |              | 9  | 23                 | 37   | 18 | 37   | 12                                    | 23 | 41 | 23* | 41                                              | 23*                        | ?    | ?                         | ?         | "       | "    |      |
| 86  |              | 9  | 23                 | 45   | 11 | 45   | 13                                    | 23 | 45 | 30  | 45                                              | 31                         | 4.7  | 0.03                      | 0.03      | "       | "    |      |
| 87  |              | 10 | 19                 | 15   | 49 | 15.9 |                                       | 19 | 16 | 16  | 16                                              | 18                         | 7.0  | 0.02                      | 0.01      | "       | "    |      |
| 88  |              | 12 | 8                  | 06   | 35 | 06   | 35                                    | 8  | 08 | 49  | 8                                               | 44                         | 36.0 | 0.10                      | 0.10      | "       | "    |      |
| 89  |              | 12 | 23                 | 24   | 33 | 24.7 |                                       | ?  |    | ?   |                                                 |                            | 6.2  | 0.01                      | 0.02      | "       | "    |      |
| 90  |              | 13 | 2                  | 39   | 29 | 39   | 32                                    | 2  | 40 | 03  | ?                                               |                            | 6.3  | 0.01                      | 0.01      | "       | "    |      |
| 91  |              | 15 | 21                 | 15   | 04 | 15   | 04                                    | 21 | 16 | 18  | 16                                              | 18                         | 6.1  | 0.10                      | 0.15      | "       | "    |      |
| 92  |              | 16 | 5                  | 07   | 32 | 07.5 |                                       | 5  | 07 | 43  | ?                                               |                            | 2.4  | 0.01                      | 0.01      | "       | "    |      |
| 93  |              | 17 | 19                 | 20   | 31 | 20.8 |                                       | 19 | 21 | 53  | 21                                              | 54                         | 7.6  | 0.07                      | 0.08      | "       | "    |      |
| 94  |              | 20 | 19                 | 24   | 21 | 24.4 |                                       | 19 | 24 | 45  | 24                                              | 45                         | 5.2  | 0.01                      | 0.02      | "       | "    |      |
| 95  |              | 22 | 17                 | 05   | 54 | 05   | 49                                    | 17 | 06 | 08  | 06                                              | 06                         | 2.6  | 0.01                      | ?         | "       | "    |      |
| 96  |              | 22 | 21                 | 32   | 54 | 33.1 |                                       | 21 | 33 | 17  | 33                                              | 11                         | 7.4  | 0.02                      | 0.01      | "       | "    |      |
| 97  |              | 23 | 0                  | 20   | 25 | ?    |                                       | 0  | 21 | 33  | 21                                              | 30                         | 4.3  | 0.02                      | 0.05      | "       | "    |      |
| 98  |              | 23 | 9                  | 56   | 51 | 56.8 |                                       | 9  | 57 | 17  | ?                                               |                            | 5.4  | 0.06                      | 0.06      | "       | "    |      |
| 99  |              | 23 | 11                 | 49   | 53 | 49   | 52                                    | 11 | 50 | 18  | 50                                              | 18                         | 3.7  | 0.04                      | 0.05      | "       | "    |      |
| 100 |              | 23 | 20                 | 37   | 00 | 37   | 00                                    | 20 | 37 | 36  | 37                                              | 33                         | 5.0  | 0.07                      | 0.12      | "       | "    |      |
| 101 |              | 24 | 0                  | 08   | 54 | 09.2 |                                       | 0  | 09 | 48  | ?                                               |                            | 5.0  | 0.02                      | 0.03      | "       | "    |      |
| 102 |              | 26 | 11                 | 11   | 35 | 11   | 35                                    | 11 | 11 | 53  | 11                                              | 52                         | 5.5  | 0.21                      | 0.20      | "       | "    |      |
| 103 |              | 29 | 12                 | 31   | 40 | 31   | 40                                    | 12 | 32 | 27  | 32                                              | 30                         | 3.7  | 0.02                      | 0.01      | "       | "    |      |
| 104 |              | 29 | 23                 | 58.0 |    | ?    |                                       | 23 | ?  | ?   | 58                                              | 57                         | 7.7  | ?                         | 0.01      | "       | "    |      |
| 105 | May          | 5  | 15                 | 30   | 53 | 30   | 55                                    | 15 | 31 | 10  | 31                                              | 11                         | 3.9  | 0.04                      | 0.05      | "       | "    |      |
| 106 |              | 6  | 18                 | 42   | 34 | 42   | 36                                    | 18 | 44 | 13  | 44                                              | 10                         | 9.0  | 0.24                      | 0.22      | "       | "    |      |
| 107 |              | 7  | 7                  | 35   | 26 | —    | —                                     | 7  | 36 | 12  | —                                               | —                          | 2.8  | 0.01                      | —         | "       | "    |      |
| 108 |              | 7  | 14                 | 47   | 37 | 47   | 37                                    | 14 | 53 | 08* | 53                                              | 08*                        | 46.2 | 0.03                      | 0.16      | "       | "    |      |
| 109 |              | 8  | 6                  | 40   | 09 | 40   | 08                                    | 6  | 47 | 17* | 47                                              | 17*                        | 93.1 | ?                         | 1.45      | "       | "    |      |
| 110 |              | 11 | 3                  | 57   | 30 | 57   | 29                                    | 4  | 04 | 02* | 04                                              | 01*                        | 33.0 | 0.02                      | 0.06      | "       | "    |      |

\* Commence Time of the 2nd preliminary tremor.

TABLE A.

(Earthquakes)



| No. | Date<br>1920 |    | 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 | May          | 11 | h<br>15            | m<br>35 | s<br>34 | m<br>35 | s<br>37                               | h<br>15 | m<br>36 | s<br>07 | m<br>36                                         | s<br>11                    | m<br>3.7 | mm<br>0.04 | mm<br>0.05                | Slow      | Feeble  |      |
| 112 |              | 12 | 16                 | 08      | 58      | 08      | 58                                    | 16      | 09      | 17      | 09                                              | 17                         | 7.0      | 0.33       | 0.47                      | Quick     | "       | Felt |
| 113 |              | 13 | 6                  | 54      | 17      | 54      | 16                                    | 6       | 55      | 06      | 55                                              | 07                         | 18.5     | 0.26       | 0.37                      | Slow      | "       |      |
| 114 |              | 13 | 10                 | 56      | 34      | 56      | 34                                    | 11      | 02      | 52      | 02                                              | 56                         | 63.4     | 0.16       | 0.26                      | "         | "       |      |
| 115 |              | 18 | 12                 | 38      | 59      | 39.0    |                                       | 12      | 41      | 05      | 41                                              | 06                         | 5.3      | 0.06       | 0.06                      | "         | "       |      |
| 116 |              | 22 | 1                  | 39      | 15      | 39      | 22                                    | 1       | 40      | 26      | 40                                              | 31                         | 7.6      | 0.03       | 0.30                      | "         | "       |      |
| 117 |              | 23 | 2                  | 05      | 11      | 05      | 11                                    | 2       | 08      | 56*     | 08                                              | 56*                        | 31.0     | ?          | 0.01                      | "         | "       |      |
| 118 |              | 27 | 14                 | 56      | 32      | 56      | 32                                    | 15      | 03      | 10*     | 03                                              | 08*                        | 25.8     | ?          | 0.01                      | "         | "       |      |
| 119 |              | 29 | 21                 | 58      | 26      | ?       |                                       | 21      | 59      | 23      | 59                                              | 25                         | 3.7      | 0.02       | 0.01                      | "         | "       |      |
| 120 |              | 30 | 1                  | 53      | 40      | —       | —                                     | 1       | 54      | 19      | —                                               | —                          | 3.0      | 0.01       | —                         | "         | "       |      |
| 121 |              | 30 | 15                 | 17      | 58      | ?       |                                       | 15      | 18      | 35      | 18                                              | 34                         | 4.8      | 0.01       | ?                         | "         | "       |      |
| 122 | June         | 4  | 3                  | 07      | 27      | 07.5    |                                       | 3       | 07      | 45      | 07                                              | 47                         | 3.6      | 0.02       | 0.02                      | "         | "       |      |
| 123 |              | 4  | 5                  | 05.1    |         | 05.3    |                                       | 5       | 05      | 42      | 05                                              | 43                         | 4.0      | 0.01       | 0.02                      | "         | "       |      |
| 124 |              | 4  | 19                 | 22      | 41      | —       | —                                     | 19      | 23      | 36      | —                                               | —                          | 6.3      | 0.01       | ?                         | "         | "       |      |
| 125 |              | 5  | 10                 | 11      | 08      | ?       |                                       | 10      | 11      | 22      | 11                                              | 22                         | 2.8      | 0.04       | 0.02                      | "         | "       |      |
| 126 |              | 5  | 13                 | 26      | 24      | 26      | 25                                    | 13      | 30      | 30      | 30                                              | 55                         | 104.2    | ?          | ?                         | "         | "       |      |
| 127 |              | 5  | 15                 | 45.9    |         | —       | —                                     | ?       |         |         | —                                               | —                          | 3.4      | ?          | —                         | "         | "       |      |
| 128 |              | 5  | 19                 | 48      | 55      | —       | —                                     | ?       |         |         | —                                               | —                          | 2.8      | ?          | —                         | "         | "       |      |
| 129 |              | 9  | 12                 | 13      | 26      | —       | —                                     | 12      | 13      | 45      | —                                               | —                          | ?        | 0.01       | —                         | "         | "       |      |
| 130 |              | 9  | 12                 | 16      | 27      | —       | —                                     | ?       |         |         | —                                               | —                          | 2.9      | 0.01       | —                         | "         | "       |      |
| 131 |              | 9  | 20                 | 38      | 52      | 38      | 57                                    | 20      | 45      | 25*     | 45                                              | 32*                        | ?        | ?          | 0.04                      | "         | "       |      |
| 132 |              | 11 | 2                  | 56      | 13      | 56      | 15                                    | 2       | 58      | 12*     | 58                                              | 14*                        | 18.2     | ?          | 0.08                      | "         | "       |      |
| 133 |              | 11 | 5                  | 01      | 24      | ?       |                                       | 5       | 02      | 58      | 02                                              | 58                         | 7.2      | 0.01       | ?                         | "         | "       |      |
| 134 |              | 13 | 5                  | 56      | 56      | 57.2    |                                       | 5       | 57      | 33      | 57                                              | 38                         | 4.6      | 0.02       | 0.02                      | "         | "       |      |
| 135 |              | 13 | 6                  | 01.8    |         | —       | —                                     | 6       | 02      | 10      | —                                               | —                          | 3.6      | 0.00       | —                         | "         | "       |      |
| 136 |              | 14 | 23                 | 57      | 29      | —       | —                                     | 23      | 57      | 39      | —                                               | —                          | 3.0      | 0.01       | —                         | "         | "       |      |
| 137 |              | 20 | 22                 | 18      | 15      | —       | —                                     | 22      | 18      | 27      | —                                               | —                          | 1.9      | 0.00       | —                         | "         | "       |      |
| 138 |              | 22 | 17                 | 11      | 12      | 11      | 13                                    | 17      | 12      | 14      | 12                                              | 15                         | 10.5     | 0.02       | 0.02                      | "         | "       |      |
| 139 |              | 24 | 4                  | 13      | 12      | ?       |                                       | 4       | 13      | 44      | 13                                              | 43                         | 3.6      | 0.02       | 0.01                      | "         | "       |      |
| 140 |              | 25 | 19                 | 24      | 35      | 24      | 36                                    | 19      | 25      | 11      | 25                                              | 13                         | 12.1     | 0.18       | 0.19                      | "         | "       |      |
| 141 |              | 25 | 23                 | 44      | 35      | 44      | 36                                    | 23      | 44      | 53      | 44                                              | 55                         | 6.0      | 0.03       | 0.02                      | "         | "       | Felt |
| 142 |              | 26 | 22                 | 26      | 17      | 26.3    |                                       | 22      | 27      | 15      | 27                                              | 14                         | 4.6      | 0.02       | 0.02                      | "         | "       |      |
| 143 | July         | 2  | 4                  | 58      | 38      | 58      | 39                                    | 4       | 59      | 29      | 59                                              | 37                         | 5.1      | 0.01       | 0.02                      | "         | "       |      |
| 144 |              | 3  | 3                  | 48      | 40      | 48      | 39                                    | 3       | 55      | 27*     | 55                                              | 19*                        | 60.8     | ?          | 0.04                      | "         | "       |      |
| 145 |              | 3  | 6                  | 45      | 06      | 45      | 07                                    | 6       | 51      | 31*     | 51                                              | 33*                        | 39.2     | 0.00       | 0.04                      | "         | "       |      |
| 146 |              | 3  | 23                 | 20      | 04      | 20      | 05                                    | 23      | 20      | 42      | 20                                              | 42                         | 13.1     | 0.29       | 0.58                      | "         | "       |      |
| 147 |              | 4  | 13                 | 20      | 50      | 20      | 50                                    | 13      | 21      | 26      | 21                                              | 26                         | 5.7      | 0.05       | 0.06                      | "         | "       |      |
| 148 |              | 4  | 16                 | 58      | 20      | 58      | 21                                    | 16      | 58      | 30      | 58                                              | 33                         | 2.9      | 0.03       | 0.05                      | "         | "       | Felt |
| 149 |              | 4  | 19                 | 52      | 23      | 51      | 24                                    | 19      | 51      | 48      | 51                                              | 49                         | 7.7      | 0.11       | 0.12                      | "         | "       |      |
| 150 |              | 5  | 19                 | 18      | 13      | 18      | 12                                    | 19      | 18      | 40      | 18                                              | 41                         | 6.9      | 0.05       | 0.09                      | "         | "       |      |
| 151 |              | 6  | 12                 | 10      | 23      | 10      | 50                                    | 12      | 18      | 35*     | 18                                              | 49*                        | ?        | ?          | ?                         | "         | "       |      |
| 152 |              | 7  | 0                  | 10      | 21      | 10      | 23                                    | 0       | 11      | 02      | 11                                              | 08                         | 4.3      | 0.02       | 0.04                      | "         | "       |      |
| 153 |              | 10 | 21                 | 46      | 16      | ?       |                                       | 21      | 47      | 04      | 46                                              | 51                         | 5.1      | 0.01       | 0.01                      | "         | "       |      |
| 154 |              | 12 | 10                 | 35.4    |         | 35      | 40                                    | 10      | 36      | 34      | 36                                              | 43                         | 5.1      | 0.01       | 0.02                      | "         | "       |      |
| 155 |              | 12 | 12                 | 00      | 03      | 00      | 04                                    | 12      | 00      | 57      | 00                                              | 58                         | 9.2      | 0.07       | 0.04                      | "         | "       |      |
| 156 |              | 12 | 12                 | 51      | 43      | 51      | 30                                    | 12      | 53      | 06      | 53                                              | 08                         | 10.1     | 0.02       | 0.04                      | "         | "       |      |
| 157 |              | 13 | 17                 | 12      | 17      | 12      | 43                                    | 17      | 13      | 20      | 13                                              | 50                         | 11.5     | 0.03       | 0.02                      | "         | "       |      |
| 158 |              | 14 | 20                 | 01      | 22      | 01      | 23                                    | 20      | 01      | 44      | 01                                              | 43                         | 6.2      | 0.04       | 0.05                      | "         | "       |      |
| 159 |              | 18 | 21                 | 09      | 23      | —       | —                                     | 21      | 09      | 35      | —                                               | —                          | 2.6      | 0.01       | —                         | "         | "       |      |
| 160 |              | 19 | 7                  | 30      | 17      | 30      | 31                                    | 7       | 32      | 24      | 32                                              | 23                         | 14.8     | 0.02       | 0.02                      | "         | "       |      |
| 161 |              | 20 | 18                 | 36      | 22      | 36      | 23                                    | 18      | 37      | 06      | 37                                              | 07                         | 6.1      | 0.03       | 0.02                      | "         | "       |      |
| 162 |              | 20 | 21                 | 19      | 53      | 19      | 55                                    | 21      | 20      | 56      | 21                                              | 00                         | 19.8     | 0.19       | 0.15                      | "         | "       |      |
| 163 |              | 24 | 13                 | 07      | 23      | 07      | 25                                    | 13      | 07      | 49      | 07                                              | 55                         | 11.6     | 0.04       | 0.07                      | "         | "       |      |
| 164 |              | 24 | 18                 | 19      | 45      | ?       |                                       | 18      | 20      | 13      | 20                                              | 09                         | 2.9      | 0.01       | ?                         | "         | "       |      |
| 165 |              | 25 | 21                 | 57      | 03      | —       | —                                     | ?       |         |         | —                                               | —                          | 2.4      | 0.00       | —                         | "         | "       |      |

\* Commence Time of the 2nd preliminary tremor.

**TABLE A.**

(Earthquakes)



| No. | Date<br>1920 |    | 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    |
| 166 | July         | 26 | h<br>5             | m<br>15 | s<br>14 | m<br>15 | s<br>29                               | h<br>5 | m<br>15 | s<br>46 | m<br>?                                          | s<br>—                     | m<br>3.4 | mm<br>0.01 | mm<br>0.01                | Slow      | Feeble  |      |
| 167 |              | 26 | 5                  | 26      | 19      | —       | —                                     | ?      | —       | —       | —                                               | —                          | 2.6      | 0.01       | —                         | "         | "       |      |
| 168 |              | 27 | 0                  | 14      | 33      | —       | —                                     | 0      | 15      | 00      | —                                               | —                          | 2.4      | 0.00       | —                         | "         | "       |      |
| 169 |              | 27 | 1                  | 44      | 13      | ?       | —                                     | 1      | 45      | 17      | 45                                              | 17                         | 5.2      | 0.01       | 0.01                      | "         | "       |      |
| 170 |              | 28 | 11                 | 36      | 26      | 36      | 25                                    | 11     | 36      | 47      | 36                                              | 44                         | 4.3      | 0.01       | 0.01                      | "         | "       |      |
| 171 |              | 28 | 12                 | 37      | 19      | 37      | 20                                    | 12     | 37      | 40      | 37                                              | 39                         | 6.5      | 0.09       | 0.04                      | "         | "       |      |
| 172 |              | 31 | 16                 | 24      | 43      | 24      | 43                                    | 16     | 24      | 52      | 24                                              | 51                         | 5.5      | 0.06       | 0.08                      | "         | "       |      |
| 173 | Aug.         | 1  | 3                  | 53      | 57      | 53      | 59                                    | 3      | 54      | 15      | 54                                              | 15                         | 2.5      | 0.03       | 0.09                      | "         | "       |      |
| 174 |              | 3  | 12                 | 08      | 56      | 08      | 56                                    | 12     | 14      | 24*     | 14                                              | 01*                        | 26.8     | ?          | 0.03                      | "         | "       |      |
| 175 |              | 3  | 14                 | 17      | 03      | —       | —                                     | 14     | 17      | 43      | —                                               | —                          | 2.4      | 0.00       | —                         | "         | "       |      |
| 176 |              | 4  | 15                 | 54      | 20      | —       | —                                     | 15     | 54      | 30      | —                                               | —                          | 2.6      | 0.01       | —                         | "         | "       |      |
| 177 |              | 7  | 3                  | 33      | 10      | ?       | —                                     | ?      | —       | —       | ?                                               | —                          | 4.4      | 0.01       | 0.02                      | "         | "       |      |
| 178 |              | 10 | 14                 | 36      | 05      | ?       | —                                     | 14     | 36      | 23      | 36                                              | 21                         | 1.4      | 0.01       | ?                         | "         | "       |      |
| 179 |              | 12 | 18                 | 04      | 10      | 04      | 11                                    | 18     | 04      | 25      | 04                                              | 26                         | 3.9      | 0.13       | 0.05                      | "         | "       |      |
| 180 |              | 13 | ?                  | —       | —       | ?       | —                                     | 11     | 22.5    | —       | 22.6                                            | —                          | ?        | 0.01       | 0.02                      | "         | "       |      |
| 181 |              | 15 | 10                 | 57      | 04      | 57      | 04                                    | 10     | 57      | 30      | 57                                              | 32                         | ?        | 0.08       | 0.10                      | "         | "       |      |
| 182 |              | 15 | 11                 | 04.4    | —       | —       | —                                     | ?      | —       | —       | —                                               | —                          | 2.7      | ?          | —                         | "         | "       |      |
| 183 |              | 15 | 17                 | 26      | 05      | 26      | 04                                    | 17     | 33      | 41*     | 33                                              | 39*                        | 54.1     | 0.04       | 0.05                      | "         | "       |      |
| 184 |              | 17 | 16                 | 44      | 08      | 44      | 13                                    | 16     | 45      | 01      | 45                                              | 06                         | 13.3     | 0.21       | 0.24                      | "         | "       |      |
| 185 |              | 18 | 1                  | 40      | 37      | —       | —                                     | 1      | 41      | 10      | —                                               | —                          | 2.5      | 0.00       | —                         | "         | "       |      |
| 186 |              | 20 | 8                  | 37      | 31      | —       | —                                     | ?      | —       | —       | —                                               | —                          | 1.4      | 0.01       | —                         | "         | "       |      |
| 187 |              | 23 | 19                 | 28      | 34      | 28      | 34                                    | 19     | 28      | 51      | 28                                              | 50                         | 3.1      | 0.04       | 0.05                      | "         | "       |      |
| 188 |              | 24 | 1                  | 44      | 03      | 44      | 11                                    | 1      | 44      | 30      | 44                                              | 36                         | 3.5      | 0.02       | 0.02                      | "         | "       |      |
| 189 |              | 27 | 8                  | 07      | 05      | 07      | 04                                    | 8      | 12      | 47*     | 12                                              | 44*                        | 39.1     | ?          | 0.04                      | "         | "       |      |
| 190 | Sept.        | 5  | 8                  | 10.9    | —       | 11.1    | —                                     | 8      | 11      | 09      | ?                                               | —                          | 2.1      | 0.01       | ?                         | "         | "       |      |
| 191 |              | 6  | 13                 | 41      | 20      | 41.3    | —                                     | 13     | 41      | 53      | 41                                              | 47                         | 6.8      | 0.04       | 0.05                      | "         | "       |      |
| 192 |              | 7  | 8                  | 19      | 35      | 19      | 48                                    | 8      | 21      | 49      | 21                                              | 48                         | 29.2     | 0.01       | 0.02                      | "         | "       |      |
| 193 |              | 8  | 6                  | 55      | 22      | ?       | —                                     | 6      | 56      | 29      | 56                                              | 29                         | 5.9      | 0.02       | 0.02                      | "         | "       |      |
| 194 |              | 8  | 10                 | 57      | 18      | 57      | 18                                    | 11     | 16      | 24      | 16                                              | 23                         | 48.1     | 0.01       | 0.04                      | "         | "       |      |
| 195 |              | 9  | 1                  | 36      | 42      | —       | —                                     | 1      | 37      | 09      | —                                               | —                          | 3.1      | 0.00       | —                         | "         | "       |      |
| 196 |              | 10 | 4                  | 06      | 18      | 06      | 29                                    | 4      | 14      | 17*     | 13                                              | 57*                        | 31.0     | 0.01       | 0.12                      | "         | "       |      |
| 197 |              | 10 | 6                  | 30      | 50      | —       | —                                     | 6      | 30      | 58      | —                                               | —                          | 2.8      | 0.01       | —                         | "         | "       |      |
| 198 |              | 10 | 16                 | 23      | 51      | 23      | 51                                    | 16     | 24      | 24      | 24                                              | 26                         | 6.3      | 0.05       | 0.07                      | "         | "       |      |
| 199 |              | 16 | 20                 | 29.9    | —       | 30.0    | —                                     | ?      | —       | —       | ?                                               | —                          | 2.1      | 0.01       | —                         | "         | "       |      |
| 200 |              | 17 | 0                  | 08      | 51      | 08      | 51                                    | 0      | 09      | 22      | 09                                              | 24                         | 10.5     | 1.02       | 1.56                      | Quick     | Weak    | Felt |
| 201 |              | 20 | 23                 | 49      | 36      | 49      | 37                                    | 23     | 58      | 11      | 58                                              | 00                         | 124.2    | 1.47       | 5.30                      | Slow      | Feeble  |      |
| 202 |              | 21 | 5                  | 26      | 41      | 26      | 41                                    | 5      | 27      | 13      | 27                                              | 15                         | 2.2      | 0.73       | 1.25                      | Quick     | "       | Felt |
| 203 |              | 22 | 2                  | 44      | 43      | 44      | 44                                    | 2      | 46      | 32      | 46                                              | 35                         | 69.9     | 0.14       | 0.32                      | Slow      | "       |      |
| 204 |              | 23 | 14                 | 36      | 07      | 36      | 10                                    | 14     | 38      | 37      | 38                                              | 41                         | 12.5     | 0.02       | 0.02                      | "         | "       |      |
| 205 |              | 24 | 4                  | 40      | 35      | 40      | 38                                    | 4      | ?       | —       | 43                                              | 25                         | 10.2     | ?          | 0.06                      | "         | "       |      |
| 206 |              | 27 | 14                 | 30      | 58      | 30      | 58                                    | 14     | 32      | 00      | 32                                              | 02                         | 8.8      | 0.16       | 0.16                      | "         | "       |      |
| 207 |              | 27 | 19                 | 29      | 16      | ?       | —                                     | 19     | 30      | 22      | 30                                              | 26                         | 3.6      | 0.01       | ?                         | "         | "       |      |
| 208 |              | 28 | 6                  | 32      | 10      | —       | —                                     | 6      | 32      | 24      | —                                               | —                          | 2.6      | 0.01       | —                         | "         | "       |      |
| 209 |              | 2  | 21                 | 25      | 05      | 25      | 12                                    | ?      | —       | —       | ?                                               | —                          | 2.7      | 0.01       | ?                         | "         | "       |      |
| 210 | Oct.         | 13 | 8                  | 23      | 29      | 23.5    | —                                     | 8      | 23      | 54      | ?                                               | —                          | 2.6      | 0.02       | 0.01                      | "         | "       |      |
| 211 |              | 15 | 0                  | 18      | 56      | 18      | 55                                    | 0      | 19      | 10      | 19                                              | 10                         | 2.3      | 0.02       | 0.02                      | "         | "       |      |
| 212 |              | 16 | 0                  | 42      | 07      | —       | —                                     | 0      | 42      | 36      | —                                               | —                          | 2.8      | 0.01       | —                         | "         | "       |      |
| 213 |              | 18 | 14                 | 42.2    | —       | ?       | —                                     | 12     | 42      | 40      | 42                                              | 41                         | 2.9      | 0.01       | 0.02                      | "         | "       |      |
| 214 |              | 18 | 17                 | 13      | 47      | 13      | 48                                    | 17     | 15      | 17      | 15                                              | 21                         | 16.9     | ?          | 1.85                      | "         | "       |      |
| 215 |              | 20 | 3                  | 25      | 43      | 25      | 43                                    | 3      | 26      | 47      | 26                                              | 48                         | 8.3      | 0.08       | 0.10                      | "         | "       |      |
| 216 |              | 20 | 19                 | 07      | 13      | 07      | 42                                    | 19     | 11      | 09      | 11                                              | 10                         | 32.0     | 0.01       | 0.24                      | "         | "       |      |
| 217 |              | 22 | 20                 | 00.0    | —       | 00.5    | —                                     | ?      | —       | —       | ?                                               | —                          | 4.6      | 0.02       | ?                         | "         | "       |      |
| 218 |              | 22 | 21                 | 29.7    | —       | 29.8    | —                                     | ?      | —       | —       | ?                                               | —                          | 5.9      | 0.02       | ?                         | "         | "       |      |
| 219 |              | 22 | 23                 | 30      | 16      | ?       | —                                     | 23     | 30      | 51      | 30                                              | 46                         | 4.5      | 0.02       | 0.01                      | "         | "       |      |
| 220 |              | 23 | 5                  | 22      | 47      | 22.8    | —                                     | 5      | 23      | 15      | 23                                              | 09                         | 3.7      | 0.01       | 0.01                      | "         | "       |      |

\* Commence 'Time of the 2nd Preliminary tremor.



## TABLE A.

(Earthquakes)

| No. | Date<br>1920 |    | 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         |         |        |      |
| 221 | Oct.         | 24 | 21                 | 57   | 37 | 57   | 36                                    | 21 | 57   | 48  | 57                                              | 47                         | 7.4   | 0.95                      | 0.77      | Quick   | Feeble | Felt |
| 222 |              | 28 | 22                 | 09   | 54 | 10.0 |                                       | 22 | 10   | 24  | ?                                               |                            | 11.8  | 0.02                      | 0.03      | Slow    | "      |      |
| 223 | Nov.         | 1  | 20                 | 12   | 08 | ?    |                                       | 20 | 12   | 21  | 12                                              | 22                         | 3.6   | 0.01                      | ?         | "       | "      |      |
| 224 |              | 5  | 13                 | 36   | 49 | 36   | 50                                    | 13 | 37   | 16  | 37                                              | 16                         | 6.3   | 0.12                      | 0.19      | "       | "      |      |
| 225 |              | 6  | 10                 | 25   | 22 | 25   | 19                                    | 10 | 25   | 39  | 25                                              | 38                         | 2.9   | 0.03                      | 0.04      | "       | "      |      |
| 226 |              | 8  | 18                 | 11   | 16 | 11   | 24                                    | 18 | 12   | 25  | 12                                              | 25                         | 4.4   | 0.03                      | 0.06      | "       | "      |      |
| 227 |              | 9  | 2                  | 38   | 35 | 38   | 34                                    | 2  | 39   | 29  | 39                                              | 27                         | 20.6  | 0.56                      | 0.45      | "       | "      |      |
| 228 |              | 19 | 10                 | 16   | 38 | 16   | 37                                    | 10 | 17   | 13  | 17                                              | 13                         | 5.0   | 0.03                      | 0.05      | "       | "      |      |
| 229 |              | 23 | 15                 | 56   | 25 | 56   | 51                                    | 16 | 04   | 05  | ?                                               |                            | 10.4  | 0.01                      | ?         | "       | "      |      |
| 230 | Dec.         | 3  | 8                  | 40   | 43 | 40   | 43                                    | 8  | 41   | 19  | 41                                              | 26                         | ?     | 0.30                      | 0.39      | "       | "      |      |
| 231 |              | 3  | 8                  | 48   | 45 | ?    |                                       | 8  | 48   | 54  | 48                                              | 55                         | 3.2   | 0.02                      | 0.06      | "       | "      |      |
| 232 |              | 5  | 3                  | 46   | 20 | 46   | 19                                    | 3  | 47   | 07  | 47                                              | 06                         | 4.7   | 0.05                      | 0.09      | "       | "      |      |
| 233 |              | 8  | 11                 | 04   | 52 | 04   | 57                                    | 11 | 05   | 49  | 05                                              | 55                         | 5.3   | 0.04                      | 0.03      | "       | "      |      |
| 234 |              | 15 | 16                 | 38   | 34 | 38   | 41                                    | 16 | 39   | 48  | 39                                              | 49                         | 3.9   | 0.01                      | 0.02      | "       | "      |      |
| 235 |              | 16 | 21                 | 11   | 44 | 11   | 46                                    | 21 | 16   | 22  | 16                                              | 22                         | 205.6 | ?                         | ?         | "       | "      |      |
| 236 |              | 18 | 7                  | 58   | 54 | —    | —                                     | 7  | 59   | 06  | —                                               | —                          | 2.1   | 0.02                      | —         | "       | "      |      |
| 237 |              | 20 | 5                  | 11   | 19 | 11   | 15                                    | 5  | 11   | 41  | ?                                               |                            | 36.4  | ?                         | ?         | "       | "      | Felt |
| 238 |              | 22 | 5                  | 08   | 19 | 08   | 18                                    | 5  | 09   | 01  | 08                                              | 54                         | 5.2   | 0.08                      | 0.15      | "       | "      |      |
| 239 |              | 25 | 20                 | 39   | 18 | 39   | 18                                    | 20 | 43   | 44* | 44                                              | 32*                        | 48.4  | 1.90                      | 0.89      | "       | "      |      |
| 240 |              | 27 | 18                 | 21   | 55 | 22   | 09                                    | 18 | 23   | 14  | ?                                               |                            | 5.4   | 0.06                      | 0.06      | "       | "      |      |
| 241 |              | 28 | 11                 | 24.9 |    | ?    |                                       | 11 | 25.1 |     | 25                                              | 07                         | 3.0   | 0.04                      | 0.04      | "       | "      |      |
| 242 |              | 28 | 14                 | —    | —  | 28   | 41                                    | 14 | —    | —   | 30                                              | 05                         | 6.5   | 0.15                      | 0.15      | "       | "      |      |
| 243 |              | 30 | 11                 | 44.9 |    | ?    |                                       | 11 | 45   | 46  | 45                                              | 53                         | 3.7   | 0.01                      | 0.01      | "       | "      |      |
| 244 |              | 31 | 2                  | 56   | 13 | 56   | 36                                    | 2  | 57   | 08  | 57                                              | 32                         | 7.3   | 0.02                      | 0.03      | "       | "      |      |
| 245 |              | 31 | 3                  | 11   | 59 | 12   | 16                                    | 3  | 12   | 47  | 13                                              | 08                         | 6.2   | 0.03                      | 0.04      | "       | "      |      |

\* Commence Time of the 2nd preliminary tremor.

TABLE B.

(Pulsatory Oscillations EW Component.)

| Beginning    |      | Ending       |           | Maximum      |      |                     |    |       |      |
|--------------|------|--------------|-----------|--------------|------|---------------------|----|-------|------|
| Date<br>1920 | Hour | Date<br>1920 | Hour      | Date<br>1920 | Hour | Double<br>Amplitude |    |       |      |
|              | h    |              | h         |              | h h  |                     |    |       |      |
| December     | 31   | 8            | January   | 3            | 3    | January             | 2  | 1-4   | 0.01 |
| January      | 8    | 3            |           | 10           | 15   |                     | 9  | 5-6   | 0.02 |
|              | 12   | 21           |           | 17           | 15   |                     | 14 | 4-6   | 0.02 |
|              | 21   | 4            |           | 27           | 17   |                     | 23 | 9-15  | 0.01 |
|              |      |              |           |              |      |                     | 25 | 8-13  | 0.02 |
|              | 28   | 1            |           | 29           | 1    |                     | 28 | 12-14 | 0.01 |
| February     | 2    | 2            | February  | 4            | 12   | February            | 3  | 9-13  | 0.02 |
|              | 5    | 15           |           | 8            | 9    |                     | 6  | 13-15 | 0.02 |
|              | 10   | 19           |           | 15           | 14   |                     | 12 | 8-11  | 0.01 |
|              |      |              |           |              |      |                     | 13 | 12-13 | 0.01 |
| March        | 16   | 4            | March     | 17           | 20   | March               | 17 | 4-7   | 0.04 |
|              | 23   | 16           |           | 24           | 15   |                     | 24 | 2-4   | 0.01 |
|              | 30   | 21           | April     | 6            | 20   | April               | 1  | 0-3   | 0.01 |
| April        | 14   | 19           |           | 16           | 19   |                     | 15 | 10-11 | 0.01 |
|              | 27   | 2            |           | 29           | 18   |                     | 27 | 18-22 | 0.03 |
|              | 4    | 9            | May       | 11           | 23   | May                 | 8  | 12-14 | 0.02 |
| May          | 24   | 21           |           | 27           | 7    |                     | 26 | 11-15 | 0.01 |
| June         | 4    | 17           | June      | 8            | 9    | June                | 6  | 6-8   | 0.01 |
|              | 16   | 2            |           | 18           | 15   |                     | 16 | 11-12 | 0.01 |
|              | 28   | 9            |           | 29           | 20   |                     | 28 | 20-21 | 0.01 |
| July         | 30   | 22           | July      | 31           | 23   | July                | 31 | 5-6   | 0.01 |
| August       | 5    | 6            | August    | 8            | 1    | August              | 5  | 15-16 | 0.01 |
|              | 19   | 10           |           | 22           | 2    |                     | 20 | 12-14 | 0.01 |
|              | 26   | 3            |           | 26           | 22   |                     | 26 | 15-16 | 0.00 |
| September    | 16   | 3            | September | 18           | 18   | September           | 16 | 17-19 | 0.02 |
|              | 26   | 4            |           | 27           | 11   |                     | 26 | 17-18 | 0.01 |
|              | 30   | 5            | October   | 2            | 18   |                     | 31 | 3-15  | 0.03 |
| October      | 7    | 11           |           | 9            | 15   | October             | 8  | 3-5   | 0.02 |
|              | 13   | 1            |           | 17           | 5    |                     | 3  | 19-22 | 0.02 |
|              | 17   | 10           |           | 19           | 17   |                     | 18 | 11-12 | 0.00 |
|              | 22   | 5            |           | 23           | 18   |                     | 22 | 12-14 | 0.02 |
|              | 29   | 1            | November  | 1            | 9    |                     | 30 | 13-14 | 0.01 |
| November     | 5    | 9            |           | 11           | 11   | November            | 8  | 10-11 | 0.02 |
|              | 12   | 8            |           | 14           | 6    |                     | 10 | 9-11  | 0.01 |
|              |      |              |           |              |      |                     | 12 | 22-23 | 0.01 |
|              | 18   | 7            |           | 19           | 19   |                     | 18 | 20-22 | 0.02 |
|              | 20   | 8            |           | 22           | 17   |                     | 19 | 2-4   | 0.02 |
|              | 24   | 1            |           | 29           | 22   |                     | 21 | 15-16 | 0.01 |
|              |      |              |           |              |      |                     | 24 | 16-18 | 0.02 |
|              |      |              |           |              |      |                     | 28 | 7-9   | 0.02 |
| December     | 3    | 5            | December  | 5            | 19   | December            | 4  | 9-15  | 0.03 |
|              | 7    | 21           |           | 9            | 23   |                     | 8  | 14-15 | 0.01 |
|              | 10   | 22           |           | 11           | 18   |                     | 11 | 8-9   | 0.00 |
|              | 14   | 1            |           | 15           | 18   |                     | 14 | 10-11 | 0.00 |
|              | 18   | 5            |           | 21           | 16   |                     | 19 | 3-5   | 0.03 |
|              | 21   | 21           |           | 23           | 20   |                     | 22 | 13-15 | 0.01 |
|              | 25   | 1            |           | 30           | 19   |                     | 27 | 14-17 | 0.02 |