# The International Seismological Summary.

## 1933 July, August, September.

FORMERLY THE BULLETIN OF THE
BRITISH ASSOCIATION SEISMOLOGY COMMITTEE.

There are 169 epicentres in this quarter of the Summary, 68 being new and 101 repetitions of old ones. The quality of the material is as follows :—

| | | |
|---|---|---|
| N.1=20 | R.1=9 | X.=61 |
| N.2=25 | R.2=13 | |
| N.3=23 | R.3=18 | |

Cases of abnormal focus are as follows :—

| Date | | | | Epicentre. | | Focal Depth. (Below Normal). |
|---|---|---|---|---|---|---|
| | d. | h. | m. s. | ° | ° | |
| July | 11 | 8 | 28 12 | 30·0N. | 140·4E. | +0·060 |
| July | 14 | 1 | 38 50 | 20·5S. | 170·0E. | +0·065 |
| July | 14 | 16 | 3 36 | 43·8N. | 132·5E. | +0·060 |
| July | 20 | 23 | 14 4 | 38·5N. | 144·8E. | +0·007 |
| July | 24 | 8 | 37 56 | 43·0N. | 132·0E. | +0·065 |
| July | 30 | 17 | 15 43 | 13·0S. | 166·8E. | +0·020 |
| Aug. | 9 | 23 | 2 48 | 15·4S. | 68·5W. | +0·020 |
| Aug. | 29 | 14 | 52 37 | 11·0S. | 69·5W. | +0·085 |
| Sept. | 2 | 16 | 41 19 | 30·3N. | 139·4E. | +0·070 |
| Sept. | 6 | 14 | 5 21 | 34·4N. | 137·8E. | +0·045 |
| Sept. | 6 | 22 | 8 26 | 21·3S. | 178·6W. | +0·075 |
| Sept. | 9 | 5 | 2 31 | 45·4N. | 131·5E. | +0·070 |
| Sept. | 9 | 21 | 20 10 | 12·4S. | 167·2E. | +0·020 |
| Sept. | 15 | 13 | 53 48 | 33·1N. | 141·2E. | +0·015 |
| Sept. | 20 | 3 | 56 38 | 34·1N. | 136·6E. | +0·060 |

UNIVERSITY OBSERVATORY,
OXFORD.

1939 January 25.

# 1933 JULY, AUGUST, SEPTEMBER.

July 1d. Readings at 0h. (Mizusawa and near La Paz), 1h. (near Nagoya), 6h. (La Paz, La Plata, and near Santiago), 7h. (Mizusawa, Haiwee, Mount Wilson (2), Pasadena (2), and Riverside), 8h. (Ann Arbor and Chicago), 9h. (Ann Arbor), 10h. (near Batavia and Soengei Langka), 14h. (Andijan, Frunse, and Mizusawa), 16h. (near Taihoku and near Santiago), 19h. (near Medan), 20h. (Baku, Ekaterinburg, Tashkent, Tiflis, Kucino, Pulkovo, Vladivostok, Chiufeng, Hong Kong, Copenhagen, Triest, Granada, Sitka, Haiwee, Mount Wilson, and Pasadena), 21h. (De Bilt, Paris, Strasbourg, Stuttgart, Uccle, Ekaterinburg, Tashkent, Kucino, and near Wellington).

July 2d. 12h. 19m. 17s. Epicentre 37°·5N. 23°·0E. (as on 1931 Sept. 11d.). R.3.

A = +·730, B = +·310, C = +·609; D = +·391, E = −·921; G = +·560, H = +·238, K = −·793.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Trenta | | 5·5 | 293 | e 1 43 | $P_g$ | 2 43 | S* | — | — |
| Belgrade | | 7·5 | 347 | e 1 50 | + 4 | e 2 46 | −25 | — | 3·1 |
| Zagreb | | 9·8 | 330 | e 2 14 | − 4 | e 4 28 | S* | — | 5·0 |
| Budapest | | 10·4 | 346 | 3 53 | ? | 4 30 | + 7 | 5·2 | — |
| Triest | | 10·7 | 323 | 2 27 | − 4 | — | — | — | 5·5 |
| Florence | | 10·9 | 309 | 2 56 | +23 | 6 1 | $S_g$ | — | 6·7 |
| Prato | | 11·0 | 309 | e 3 1 | +26 | 5 43 | $S_g$ | — | 6·0 |
| Vienna | | 11·8 | 338 | e 2 41 | − 5 | 4 53 | − 5 | — | 6·7 |
| Piacenza | | 12·5 | 311 | e 2 43 | −12 | — | — | — | 10·6 |
| Zurich | | 14·5 | 318 | e 3 23 | + 1 | — | — | — | — |
| Cheb | | 14·7 | 332 | e 4 43? | +78 | — | — | e 7·2 | 7·4 |
| Stuttgart | | 15·1 | 323 | e 3 25 | − 5 | e 4 49 | ? | e 7·4 | 8·9 |
| Neuchatel | | 15·1 | 314 | e 3 32 | + 2 | e 7 27 | L | (e 7·5) | — |
| Tiflis | N. | 17·2 | 69 | e 4 16 | +19 | — | — | e 9·2 | 10·6 |
| Paris | | 18·6 | 314 | e 4 43? | +29 | — | — | 11·7 | — |
| Uccle | | 18·8 | 321 | e 4 20 | + 4 | — | — | e 8·7 | — |
| De Bilt | | 19·2 | 325 | e 4 28 | + 7 | e 7 25 | −25 | e 9·7 | 10·3 |
| Pulkovo | | 22·7 | 10 | 4 54 | − 4 | e 8 41 | −18 | 11·7 | — |
| Ekaterinburg | | 31·4 | 40 | e 6 19 | + 2 | e 11 51 | +25 | 15·5 | — |

Additional readings:—
Belgrade e = +2m.15s. = P* +10s.
Triest i = +2m.46s. and +3m.0s., PP? = +3m.5s., i = +5m.11s., SS = +5m.18s. = S* +2s., SSS = +5m.24s.
Vienna SSS = +5m.31s.
Pulkovo e = +7m.40s.
Long waves were also recorded at Ksara, Baku, Kucino, Tashkent, and at other European stations.

July 2d. 16h. 48m. 20s. Epicentre 40°·1N. 142°·8E. N.2.
(given by the Japanese stations).

A = −·609, B = +·462, C = +·644; D = +·605, E = +·797; G = −·513, H = +·389, K = −·765.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Miyako | 0·8 | 234 | 0 11a | 0 | 0 21 | 0 | — | — |
| Morioka | 1·4 | 252 | 0 15k | − 5 | 0 35 | − 1 | — | — |
| Mizusawa | 1·6 | 233 | i 0 22 | − 1 | i 0 43 | + 2 | — | — |
| Aomori | 1·7 | 295 | 0 24a | 0 | 0 48 | + 4 | — | — |
| Sendai | 2·4 | 219 | 0 31a | − 3 | 1 3 | + 1 | — | — |

*Continued on next page.*

| | △ ° | Az. ° | P. m. s. | O−C. s. | S. m. s. | O−C. s. | L. m. | M. m. |
|---|---|---|---|---|---|---|---|---|
| Muroran | 2·6 | 328 | 0 36 | − 1 | 1 8 | + 1 | — | — |
| Obihiro | 2·8 | 6 | 0 47 | P* | 1 36 | $S_g$ | — | — |
| Kusiro | 3·1 | 23 | 0 46 | + 2 | 1 19 | − 1 | — | — |
| Sapporo | 3·1 | 340 | 0 46 | + 2 | 1 25 | + 5 | — | — |
| Nemuro | 3·9 | 32 | 1 20 | $P_g$ | 2 1 | S* | — | — |
| Mito | 4·2 | 206 | 0 58 | − 2 | 1 45 | − 3 | — | — |
| Kakioka | 4·4 | 209 | 0 58 | − 5 | 2 0 | + 7 | — | — |
| Tukubasan | 4·5 | 209 | 1 1 | − 3 | 1 53 | − 2 | — | — |
| Tyosi | 4·6 | 199 | e 1 8 | + 2 | 1 30 | $P_g$ | — | — |
| Maebasi | 4·7 | 219 | 1 5 | − 2 | 2 3 | + 3 | — | — |
| Kumagaya | 4·8 | 215 | 1 5 | − 3 | 2 16 | S* | — | — |
| Nagano | 5·0 | 228 | 1 11 | 0 | 2 30 | S* | — | — |
| Tokyo | 5·1 | 210 | 1 9 | − 4 | 2 7 | − 3 | — | — |
| Yokohama | 5·3 | 209 | 1 21 | + 6 | 2 37 | S* | — | — |
| Wazima | 5·4 | 241 | 1 19 | + 2 | 3 8 | $S_g$ | — | — |
| Kohu | 5·6 | 218 | 1 18 | − 2 | 2 31 | + 8 | — | — |
| Gihu | 6·7 | 227 | 1 37 | + 2 | 2 57 | + 6 | — | — |
| Nagoya | 6·8 | 225 | e 1 47 | +10 | 3 18 | S* | — | — |
| Kameyama | 7·3 | 226 | 1 49 | + 5 | 3 28 | S* | — | — |
| Sumoto | 8·5 | 230 | e 2 13 | +13 | e 3 53 | +17 | — | 4·4 |
| Vladivostok | 8·7 | 295 | 7 26 | ? | — | — | i 10·1 | 11·0 |
| Ekaterinburg | 53·4 | 318 | e 9 13 | − 4 | — | — | 30·7 | — |

Additional readings :—
Sumoto SE = +3m.56s.
Long waves were also recorded at Chiufeng, Tashkent, Kucino, Copenhagen, De Bilt, Paris, and Stuttgart.

July 2d. 17h. 11m. 50s. Epicentre 10°·0N. 127°·5E. X.
(given by Manila and as on 1927 Aug. 6d.).

A = −·600, B = +·781, C = +·174 ; D = +·793, E = +·609 ;
G = −·106, H = +·138, K = −·985.

| | | △ ° | Az. ° | P. m. s. | O−C. s. | S. m. s. | O−C. s. | L. m. | M. m. |
|---|---|---|---|---|---|---|---|---|---|
| Manila | | 7·9 | 307 | i 1 53 | + 1 | i 3 41 | S* | — | — |
| Phu-Lien | | 22·8 | 301 | 4 10? | −49 | — | — | — | — |
| Nanking | N. | 23·5 | 341 | 5 7 | + 2 | e 9 27 | +13 | — | — |
| Batavia | | 26·3 | 232 | 5 32 | 0 | 9 58 | − 5 | — | — |
| Chiufeng | | 31·7 | 344 | e 6 20 | 0 | — | — | — | — |
| Tashkent | | 59·7 | 314 | — | — | e 18 18 | + 6 | 29·9 | 37·4 |
| Ekaterinburg | | 69·1 | 327 | i 11 0 | − 5 | — | — | 35·2 | — |

Additional readings :—
Batavia i = +5m.54s.
Long waves were also recorded at Hong Kong, Copenhagen, and De Bilt.

July 2d. Readings also at 0h. (Mizusawa), 1h. (Tananarive and Fort de France), 2h. (San Juan), 3h. (near Mizusawa), 4h. (Wellington, near Batavia and Soengei Langka), 6h. (Baku, Tiflis, Ekaterinburg, and Tashkent), 7h. (Chicago), 11h. (near Tyosi), 12h. (Kew, Mizusawa, and near Tyosi), 13h. (Frunse), 15h. (Tiflis, near Andijan (2), and Tchimkent), 16h. (Frunse and Mizusawa), 17h. (near Batavia and Soengei Langka (2) ), 18h. and 19h. (near Mizusawa), 21h. (Columbia and near Tiflis), 22h. (Apia).

July 3d. 15h. 9m. 10s. Epicentre 19°·0N. 96°·0E. N.3.

A = −·099, B = +·940, C = +·326; D = +·995, E = +·105; G = −·034, H = +·324, K = −·946.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Calcutta | | 7·9 | 298 | e 2 20 | P* | 5 1 | ? | 6·5 | — |
| Phu-Lien | | 10·2 | 78 | — | — | e 4 34 | +16 | 5·3 | — |
| Medan | | 15·7 | 170 | e 4 15 | +37 | i 7 37 | +66 | i 8·1 | — |
| Agra | E. | 18·4 | 300 | 4 11 | 0 | — | — | — | — |
| Dehra Dun | | 19·8 | 308 | 7 40 | S | (7 40) | −22 | — | 13·8 |
| Bombay | | 21·9 | 274 | e 9 0 | S | (e 9 0) | +16 | 15·6 | 16·3 |
| Nanking | | 24·2 | 53 | e 5 10 | − 2 | e 12 44 | L | (e 12·7) | — |
| Manila | | 24·3 | 97 | 5 0 | −13 | 9 26 | − 2 | 12·0 | 14·4 |
| Zi-ka-wei | Z. | 26·0 | 57 | — | — | e 9 57 | − 1 | i 14·2 | 16·4 |
| Chiufeng | | 27·2 | 35 | 10 46k | S | (10 46) | +28 | 15·0 | 17·5 |
| Batavia | | 27·4 | 156 | — | — | e 10 25 | + 3 | i 13·3 | — |
| Andijan | | 29·7 | 322 | e 6 24 | +22 | — | — | — | — |
| Tashkent | | 31·8 | 320 | i 6 22 | + 1 | e 11 31 | − 1 | e 12·2 | 20·7 |
| Tchimkent | | 32·3 | 322 | e 6 26 | + 1 | — | — | — | — |
| Baku | | 44·7 | 308 | e 8 13 | + 3 | e 14 51 | + 5 | 25·8 | 31·8 |
| Tiflis | | 48·8 | 309 | 8 44 | + 2 | 15 50 | + 6 | e 27·0 | 32·0 |

Additional readings:—
Phu-Lien S = +5m.5s. = S* +4s.
Bombay S = +14m.2s.
Chiufeng eS? = +13m.3s.
Baku e = +18m.32s.
Tiflis eE = +24m.45s.
Long waves were also recorded at Taihoku, Sumoto, Zinsen, Keizyo, Vladivostok, Kucino, Pulkovo, Hyderabad, and several European stations.

July 3d. Readings also at 0h. (near Mizusawa), 1h. (Christchurch, near Nagoya (2), Tyosi (2), and near Triest), 2h. (near Wellington), 7h. (Pittsburgh, Port au Prince, St. Louis, and near San Juan), 8h. (Frunse), 10h. (Ksara), 12h. (Haiwee, La Jolla, Mount Wilson, Pasadena, Riverside, Tinemaha, Chiufeng, and Nanking), 14h. (Nagasaki), 19h. (near Mizusawa), 20h. (Ravensburg, Strasbourg, Stuttgart, near Neuchatel, and near Lick), 22h. (Tucson).

July 4d. Readings at 3h. (Baku, Ekaterinburg, Tashkent, Tiflis, Bombay, Hyderabad, Stuttgart, and near Ksara), 4h. (De Bilt, Stuttgart, and Triest), 7h. (Chiufeng, Vladivostok, Ekaterinburg, Tashkent, Bombay, near Nagasaki (2), and near Amboina), 8h. (near Tananarive (2)), 9h. (near Amboina), 14h. (near Soengei Langka), 15h. (Batavia and near Soengei Langka), 17h. (Nagoya, near Port au Prince, and San Juan), 20h. (near Mizusawa).

July 5d. Readings at 1h. (near Tyosi), 2h. (near Amboina), 3h. (near Branner and Lick), 4h. (Baku, Ekaterinburg, Tashkent, Tiflis, Ksara, and Granada), 5h. (Andijan), 8h. (Edinburgh), 9h. (Sucre and near La Paz), 11h. (Wellington and near Santiago), 13h. (Strasbourg), 15h.. (Chiufeng, Vladivostok, Mizusawa, Tyosi, and Nagoya), 16h. (Tashkent), 18h. (Tchimkent and near Andijan), 19h. (Andijan, Tchimkent, and Mizusawa), 22h. ( near Branner).

July 6d. 1h. 59m. 41s. Epicentre 35°·5N. 140°·0E. (as on 1932 April 26d.). R.2.

A = −·624, B = +·523, C = +·581.

| | Δ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Tokyo | 0·3 | 312 | (0 5k) | + 1 | (0 13) | + 5 | (0·3) |
| Tyosi | 0·7 | 72 | i 0 9 | − 1 | 0 20 | + 2 | 0·4 |
| Susaki | 1·2 | 225 | 0 16 | − 1 | 0 31 | 0 | — |
| Nagoya | 2·5 | 262 | 0 37a | + 1 | 1 0 | − 4 | 1·2 |
| Mizusawa | 3·7 | 14 | e 0 52 | − 1 | i 1 31 | − 4 | — |
| Osaka | 3·8 | 259 | 0 53 | − 1 | 1 49 | S* | 2·2 |
| Kobe | 4·1 | 266 | e 1 1 | + 3 | e 1 53 | + 8 | 2·1 |
| Toyooka | 4·2 | 273 | e 1 0 | 0 | 2 0 | S* | 2·1 |
| Sumoto | 4·4 | 256 | e 1 7 | + 4 | 1 52 | − 1 | 2·3 |

Additional readings and notes:—
Tokyo readings have been *increased* by 3m.
Kobe eSE = +1m.56s. = S* −4s.
Toyooka ePN = +1m.4s., PZ = +1m.13s. = P* +4s.

July 6d. Readings also at 0h. (near Sumoto), 1h. (Baku, Ekaterinburg and near Sumoto), 4h. (Mount Wilson, Pasadena, and Riverside), 5h. (Mount Wilson, Pasadena, Riverside, near Batavia, and Soengei Langka), 7h. (Mount Wilson, Pasadena, and Riverside), 8h. (Edinburgh), 13h. (La Paz and Mizusawa), 14h. (Ekaterinburg, Tashkent, Vladivostok, Nagoya, Tyosi (2), and near Mizusawa), 17h. (Cheb), 19h. (Glenmuick). 20h. (Stuttgart, Triest, and near Trenta), 23h. (near Nagoya).

July 7d. 7h. 30m. 57s. Epicentre 24°·0N. 64°·5E. N.3.

A = +·393, B = +·825, C = +·407; D = +·903, E = −·431; G = +·175, H = +·367, K = −·914.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Agra | E. | 12·5 | 73 | 2 54 | − 1 | — | — | — | — |
| Tashkent | | 17·7 | 12 | i 4 4 | + 1 | i 7 32 | +15 | e 11·0 | 12·8 |
| Andijan | | 18·0 | 20 | e 4 5 | − 2 | 7 31 | + 6 | — | — |
| Tchimkent | | 18·8 | 12 | 4 14 | − 2 | 7 52 | +10 | — | — |
| Baku | | 20·5 | 327 | e 4 52 | +17 | 8 34 | +18 | 11·8 | 16·2 |
| Frunse | | 20·7 | 21 | e 4 45 | + 8 | 8 37 | +17 | — | — |
| Ksara | | 26·8 | 298 | e 5 43? | + 7 | e 10 37? | +25 | — | — |
| Ekaterinburg | | 32·9 | 356 | i 6 32 | + 1 | e 11 5 | −44 | 17·0 | 19·8 |
| Pulkovo | | 43·0 | 335 | 7 57 | 0 | e 14 34 | +13 | e 21·0 | 29·6 |
| Chiufeng | | 45·9 | 56 | e 8 20 | 0 | — | — | e 28·0 | — |
| Copenhagen | | 49·3 | 324 | 8 48 | + 2 | 16 4 | +13 | 35·0 | — |

Long waves were also recorded at Vladivostok, Calcutta, Hyderabad, and other European stations.

July 7d. Readings also at 3h. (near Mizusawa, near Tyosi, and near Sumoto), 4h. (Christchurch, near Mizusawa (2), and Tyosi (2)), 5h. (Baku), 6h. (Tashkent and near Tananarive), 8h. (near Amboina and near Tchimkent), 11h. (Mizusawa and Vladivostok), 12h. (Baku, Ekaterinburg, Batavia, and near Stonyhurst), 14h. (Mizusawa), 15h. (La Paz and near Manila), 16h. (Irkutsk, Nagoya, Kobe, and near Toyooka), 21h. (Balboa Heights).

July 8d. 7h. 57m. 26s. Epicentre 34°·3N. 139°·7E. (as on 1930 May 9d.) X.

A = −·630, B = +·534, C = +·564; D = +·647, E = +·763; G = −·430, H = +·364, K = −·826.

| | | Δ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. |
| Tokyo | | 1·3 | 2 | 0 21 | + 3 | 0 41 | + 8 | 0·7 |
| Tyosi | | 1·7 | 33 | 0 24 | 0 | 0 48 | + 4 | 1·0 |
| Nagoya | | 2·4 | 291 | 0 44 | $P_g$ | 1 19 | $S_g$ | — |
| Osaka | | 3·5 | 277 | 0 48 | − 2 | 1 43 | S* | 2·5 |
| Kobe | | 3·8 | 277 | e 1 2 | P* | 1 48 | S* | 2·5 |
| Sumoto | | 4·0 | 272 | 0 53 | − 4 | 2 2 | S* | 2·2 |
| Mizusawa | E. | 4·9 | 13 | e 1 14 | + 4 | e 2 5 | 0 | — |

Additional readings:—
Tyosi $P_g$ = +39s.
Kobe eZ = +1m.22s., SE = +1m.52s., eSZ = +2m.5s.
Sumoto PN = +56s.

July 8d. Readings also at 3h. (Mizusawa), 4h. (near Tyosi), 7h. (Mizusawa), 8h. (Bombay, Calcutta, Hyderabad, Baku, Ekaterinburg, Tashkent, and near Taihoku), 11h. (Tyosi, Andijan, near Tchimkent, Tashkent, and near Amboina), 13h. (near Granada), 18h. (near Sumoto), 19h. (Alicante, La Paz, Branner, near Lick, and near Nagasaki), 22h. (Pasadena, Mount Wilson, Tinemaha, Tucson, St. Louis, Bozeman, Oak Ridge, San Juan, near Branner, and near Lick, these readings are not all of one shock).

July 9d. 1h. 30m. 7s. Epicentre 45°·0N. 150°·0E. N.1.

Probable error of epicentre ±0°·25.

The theoretical position as calculated from the above preliminary is 45°·0N. 149°·9E. Not sufficiently distinct to justify recalculating all the distances.

$A = -\cdot612$, $B = +\cdot354$, $C = +\cdot707$; $D = +\cdot500$, $E = +\cdot866$; $G = -\cdot612$, $H = +\cdot354$, $K = -\cdot707$.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Nemuro | 3·5 | 243 | 0 51 | + 1 | 1 30 | 0 | — | — |
| Kusiro | 4·5 | 245 | 0 58 | − 6 | 1 51 | − 4 | — | — |
| Ootomari | 5·3 | 291 | 1 51 | +36 | 3 23 | +68 | — | 5·1 |
| Obihiro | 5·3 | 249 | 1 24 | + 9 | 2 29 | +14 | — | — |
| Urakawa | 5·9 | 245 | 1 20 | − 4 | 2 44 | +13 | — | — |
| Haboro | 5·9 | 266 | 1 23a | − 1 | 3 12 | $S_g$ | — | — |
| Sikka | 6·3 | 314 | 4 38 | ? | 4 57 | ? | — | 7·3 |
| Sapporo | 6·5 | 255 | 1 36a | + 4 | 3 12 | S* | — | — |
| Muroran | 7·0 | 250 | 1 43 | + 4 | 3 17 | S* | — | — |
| Aomori | 7·9 | 242 | 1 50 | − 2 | 3 21 | 0 | — | — |
| Morioka | 8·4 | 234 | 1 58a | − 1 | 3 24 | −10 | — | — |
| Mizusawa | 8·8 | 231 | e 2 1 | − 4 | i 3 33 | −11 | — | — |
| Akita | 9·0 | 238 | 2 5 | − 2 | 4 37 | S* | — | — |
| Sendai | 9·6 | 228 | 2 9 | − 7 | 3 49 | −14 | — | — |
| Mito | 11·2 | 223 | 2 27 | −10 | 4 17 | −26 | — | — |
| Tyosi | 11·5 | 220 | e 2 45 | + 3 | 4 41 | − 9 | — | 8·8 |
| Tukubasan | 11·5 | 224 | 2 48 | + 6 | 4 34 | −16 | — | — |
| Kakioka | 11·5 | 224 | 2 36 | − 6 | 4 44 | − 6 | — | — |
| Kumagaya | 11·9 | 226 | 2 40 | − 7 | 4 45 | −15 | — | — |
| Maebasi | 11·9 | 228 | 2 44 | − 3 | 4 50 | −10 | — | — |
| Tokyo | 12·1 | 223 | 2 47 | − 3 | 4 46 | −19 | — | — |
| Nagano | 12·2 | 231 | 2 49 | − 2 | 5 18 | +10 | — | — |
| Wazima | 12·4 | 237 | 2 51 | − 3 | 5 5 | − 8 | — | — |
| Yokohama | 12·4 | 223 | 2 55 | + 1 | 5 2 | −11 | — | — |
| Kohu | 12·7 | 227 | 2 58 | 0 | 5 10 | −10 | — | — |
| Mera | 12·7 | 221 | 3 4 | + 6 | 8 54 | ? | — | — |
| Toyama | 12·7 | 234 | 3 1 | + 3 | 8 0 | ? | — | — |
| Numadu | 13·0 | 224 | 3 4 | + 2 | 5 23* | − 4 | — | — |
| Omaesaki | 13·7 | 225 | 3 26 | +15 | 7 18 | ? | — | — |
| Hamamatu | 13·9 | 227 | 2 41 | −33 | 5 41 | − 8 | — | — |
| Gihu | 13·9 | 231 | 3 9 | − 5 | 5 49 | 0 | — | — |
| Nagoya | 14·0 | 230 | 3 18 | + 3 | 5 50 | − 1 | — | — |
| Hatidyozima | 14·2 | 217 | 3 17 | − 1 | 5 40 | −16 | — | — |
| Hikone | 14·3 | 232 | 3 16 | − 3 | — | — | — | — |
| Kameyama | 14·5 | 230 | 3 32 | +10 | 7 30 | L | (7·5) | — |
| Osaka | 15·1 | 232 | 3 23 | − 7 | 6 14 | − 3 | 10·1 | — |
| Osaka B. | 15·1 | 232 | 3 42 | +12 | 6 42 | +25 | — | — |
| Kobe | 15·3 | 233 | e 3 29 | − 3 | — | — | e 7·3 | 10·6 |
| Wakayama | 15·6 | 232 | 3 37a | + 1 | 7 49 | L | (7·8) | — |
| Sumoto | 15·7 | 232 | 3 27 | −11 | 7 9 | +38 | 8·2 | 10·7 |
| Siomisaki | 15·9 | 228 | 3 40 | 0 | 6 51 | +15 | — | — |
| Muroto | 16·9 | 231 | e 3 38 | −15 | e 6 57 | − 2 | e 8·4 | — |
| Koti | 17·0 | 234 | e 3 50 | − 4 | e 7 14 | +12 | e 8·5 | 10·7 |
| Hamada | 17·0 | 240 | 3 53a | − 1 | 7 11 | + 9 | — | — |
| Matuyama | 17·3 | 236 | 3 57 | − 1 | — | — | — | — |
| Simidu | 17·9 | 233 | 4 4 | − 1 | 10 54 | ? | — | — |
| Taikyu | 18·5 | 248 | 4 13 | 0 | 7 33 | − 3 | e 9·1 | — |
| Keizyo | 18·7 | 255 | 4 15 | 0 | 7 24 | −16 | 9·9 | 11·5 |
| Heizyo | 18·8 | 260 | 4 16 | 0 | 8 6 | +24 | — | — |
| Hukuoka | 18·9 | 240 | 4 16 | − 1 | e 7 42 | − 2 | e 9·6 | 13·4 |
| Hukuoka B. | 18·9 | 240 | 4 15 | − 2 | 7 50 | + 6 | — | — |
| Titizima | 19·0 | 202 | 4 13 | − 6 | 7 23 | −23 | — | — |
| Zinsen | 19·0 | 255 | 4 2 | −17 | — | — | — | — |
| Kumamoto | 19·2 | 237 | 4 18 | − 3 | 8 4 | +14 | — | — |
| Miyazaki | 19·4 | 234 | 4 21 | − 2 | 8 5 | +11 | — | — |
| Nagasaki | 19·8 | 240 | 4 27a | 0 | 8 20 | +18 | e 10·5 | 14·1 |

*Continued on next page.*

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Tomie | | 20·5 | 240 | 4 32a | − 3 | 10 51 | L | (10·9) | — |
| Nake | | 23·2 | 231 | 5 7 | + 4 | 9 20 | +12 | — | — |
| Chiufeng | | 25·2 | 271 | i 5 24a | + 2 | i 9 54 | +10 | e 12·4 | 15·7 |
| Nanking | | 27·4 | 253 | 5 43k | + 1 | e 10 24 | + 2 | 13·5 | 18·5 |
| Taihoku | | 30·4 | 239 | e 6 39 | +30 | — | — | — | — |
| Irkutsk | | 30·5 | 301 | 6 10 | + 1 | 11 30 | +18 | 16·9 | 19·7 |
| Hong Kong | | 36·9 | 244 | 7 5 | − 1 | 12 53 | + 3 | 17·3 | 22·4 |
| Manila | | 39·0 | 227 | 7 20 | − 4 | 13 17 | − 4 | 18·8 | — |
| Phu-Lien | | 43·0 | 250 | e 7 52 | − 7 | 14 33 | +12 | 20·9 | — |
| Sitka | | 46·0 | 47 | 8 27 | + 6 | — | — | e 22·0 | — |
| Honolulu T.H. | | 48·7 | 101 | — | — | e 15 43 | 0 | e 21·9 | — |
| Almata | | 50·6 | 296 | e 8 58 | + 2 | — | — | — | — |
| Ekaterinburg | | 53·4 | 317 | i 9 16 | − 1 | 16 53 | + 6 | 32·0 | 34·6 |
| Calcutta | | 54·4 | 267 | 9 14 | −10 | 17 4 | + 3 | e 30·9 | — |
| Andijan | | 54·8 | 295 | e 9 20 | − 7 | e 17 3 | − 3 | 27·9 | — |
| Tchimkent | | 55·7 | 299 | e 9 31 | − 3 | e 17 31 | +12 | — | — |
| Victoria | | 56·2 | 53 | e 8 39 | −58 | i 16 32 | −53 | e 27·0 | 29·6 |
| Tashkent | | 56·4 | 298 | i 9 39 | 0 | i 17 28 | 0 | e 27·9 | 35·6 |
| Samarkand | | 58·8 | 297 | e 9 57 | + 1 | e 18 1 | + 1 | — | — |
| Agra | N. | 58·9 | 278 | e 9 57 | 0 | 17 59 | − 2 | — | — |
| Medan | | 60·9 | 243 | e 10 18 | + 7 | — | — | 32·9 | — |
| Ukiah | | 61·5 | 62 | — | — | e 18 38 | + 2 | e 26·0 | — |
| Berkeley | | 62·9 | 63 | i 10 28 | + 3 | i 18 41 | −13 | — | — |
| Batavia | | 64·1 | 229 | i 10 29 | − 4 | i 19 0 | − 9 | — | — |
| Kucino | | 64·2 | 325 | i 10 31 | − 3 | 19 19 | + 9 | 29·5 | 36·8 |
| Pulkovo | | 64·2 | 331 | 10 35 | + 1 | 19 11 | + 1 | 30·9 | 38·0 |
| Bozeman | | 64·6 | 50 | e 10 41 | + 5 | 19 15 | 0 | — | — |
| Hyderabad | | 64·8 | 270 | 10 37 | 0 | 19 19 | + 2 | 31·3 | 45·4 |
| Tinemaha | E. | 65·9 | 62 | i 10 43 | − 2 | e 19 30 | − 1 | — | — |
| Santa Barbara | Z. | 66·6 | 65 | e 10 50 | + 1 | — | — | — | — |
| Haiwee | | 66·6 | 62 | e 10 54 | + 5 | e 19 41 | + 1 | — | — |
| Pasadena | | 67·8 | 64 | e 10 55 | − 2 | e 19 53 | − 1 | — | — |
| Bombay | | 67·8 | 275 | 10 53 | − 4 | 20 0 | + 6 | 34·3 | 44·1 |
| Mount Wilson | | 67·9 | 64 | e 10 55 | − 3 | e 19 51 | − 5 | — | — |
| Upsala | | 68·2 | 337 | 10 55 | − 4 | e 19 53 | − 6 | e 35·9 | 44·3 |
| Riverside | Z. | 68·4 | 64 | i 11 5 | + 4 | — | — | — | — |
| Baku | | 68·7 | 307 | i 11 5 | + 2 | i 20 13 | + 8 | 34·1 | 44·9 |
| La Jolla | | 69·2 | 65 | e 11 1 | − 5 | e 20 1 | −10 | — | — |
| Tiflis | | 70·6 | 311 | 11 14 | 0 | i 20 31 | + 3 | 40·1 | 45·8 |
| Ivigtut | | 72·8 | 10 | i 11 27 | − 1 | i 20 53 | − 1 | 35·9 | — |
| Theodosia | | 73·0 | 318 | 11 30 | + 1 | 21 0 | + 3 | 38·2 | — |
| Copenhagen | | 73·1 | 337 | i 11 28 | − 1 | 20 55 | − 3 | 35·9 | — |
| Tucson | | 73·6 | 61 | e 11 35 | + 3 | 21 1 | − 3 | e 32·5 | — |
| Simferopol | | 73·6 | 319 | i 11 33 | + 1 | e 21 3 | − 1 | 39·3 | — |
| Sebastopol | | 74·2 | 319 | 11 41 | + 5 | e 22 9 | − 2 | 42·9 | — |
| Hamburg | | 75·7 | 338 | i 11 43 | − 1 | e 21 23 | − 5 | e 36·9 | 45·9 |
| Potsdam | | 75·8 | 336 | i 11 41 | − 4 | e 22 23 | PS | e 42·9 | 49·9 |
| Edinburgh | | 76·6 | 346 | e 12 3 | +14 | i 21 35 | − 3 | e 37·9 | 50·0 |
| Leipzig | | 76·9 | 334 | e 11 47 | − 4 | e 21 53? | +11 | e 41·9 | 44·9 |
| Durham | | 77·4 | 344 | 11 53 | − 1 | 21 43 | − 4 | — | 52·4 |
| Jena | | 77·5 | 334 | e 11 53 | − 2 | e 21 53 | + 5 | 39·9 | 45·4 |
| Göttingen | | 77·5 | 336 | i 11 52 | − 3 | e 21 35 | −13 | e 36·9 | 50·9 |
| Cheb | | 78·0 | 334 | e 11 53 | − 4 | e 22 3 | + 9 | e 42·9 | 45·2 |
| Budapest | | 78·0 | 329 | 11 57 | 0 | 21 53 | − 1 | e 42·9 | 48·4 |
| De Bilt | | 78·3 | 339 | i 11 59a | 0 | 21 54 | − 3 | e 36·9 | 49·1 |
| Vienna | | 78·3 | 331 | e 11 57 | − 2 | 21 59 | + 2 | e 39·4 | 52·9 |
| Stonyhurst | | 78·4 | 345 | e 12 2 | + 3 | e 21 58 | 0 | 41·9 | 49·9 |
| Riverview | | 78·8 | 179 | e 12 11 | +10 | e 21 53 | −10 | e 39·3 | 48·9 |
| Liverpool | | 78·9 | 345 | i 12 5 | + 3 | i 22 5 | + 1 | e 25·4 | 50·1 |
| Chicago | | 79·1 | 41 | — | — | e 21 59 | − 7 | e 38·6 | — |

*Continued on next page.*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Graz | | 79·6 | 331 | e 12 7 | + 1 | e 22 3 | − 8 | e 40·9 | 50·4 |
| Uccle | | 79·7 | 340 | e 12 5a | − 1 | e 22 10 | − 2 | 36·9 | 53·9 |
| Oxford | | 80·1 | 343 | 12 8a | 0 | 22 8 | − 9 | e 38·1 | 51·1 |
| Florissant | | 80·2 | 44 | i 12 10 | + 1 | e 22 12 | − 6 | e 38·0 | 43·9 |
| Stuttgart | | 80·2 | 335 | i 12 9a | 0 | e 22 8 | −10 | 39·9 | 54·9 |
| Kew | | 80·2 | 343 | i 12 9a | 0 | e 22 14 | − 4 | e 34·9 | 44·8 |
| Karlsruhe | | 80·2 | 337 | e 11 15 | −54 | — | — | e 45·9 | — |
| Ann Arbor | N. | 80·4 | 38 | — | — | e 22 17 | − 3 | e 44·4 | — |
| St. Louis | | 80·4 | 44 | e 12 5 | − 5 | e 22 5 | −15 | e 36·9 | — |
| Zagreb | | 80·5 | 330 | e 12 12 | + 2 | e 22 15 | − 6 | e 40·9 | 43·9 |
| Strasbourg | | 80·8 | 336 | i 12 12a | 0 | e 22 17 | − 7 | e 36·9 | 53·4 |
| Ottawa | | 81·0 | 31 | e 12 13 | 0 | e 22 16 | −10 | e 38·9 | — |
| Ksara | | 81·1 | 310 | 12 16 | + 2 | 22 29 | + 2 | — | — |
| Toronto | | 81·1 | 34 | e 12 45 | +31 | 22 48 | +21 | 38·5 | — |
| Triest | | 81·4 | 332 | i 12 15a | 0 | i 22 24 | − 7 | e 39·9 | 43·9 |
| Zurich | | 81·6 | 336 | e 12 6 | −10 | e 22 36 | + 3 | — | — |
| Paris | | 82·0 | 340 | i 12 19 | + 1 | 22 29 | − 8 | 32·9 | 51·9 |
| Neuchatel | | 82·4 | 336 | e 12 21 | + 1 | e 22 28 | −14 | — | — |
| Melbourne | | 82·9 | 184 | — | — | i 22 38 | − 8 | — | 64·6 |
| Piacenza | | 83·3 | 334 | 12 29 | + 4 | 22 49 | − 1 | — | 48·2 |
| Pittsburgh | | 83·6 | 37 | e 12 26 | 0 | i 22 42 | −11 | e 44·9 | — |
| Florence | | 83·9 | 332 | i 13 30 | +62 | i 23 53 | PS | 31·9 | 46·4 |
| Puy de Dôme | | 84·7 | 338 | 12 34 | + 2 | — | — | e 35·9 | — |
| Oak Ridge | | 85·0 | 30 | e 12 34 | + 1 | e 22 59 | [ 0] | e 39·0 | — |
| Rome | | 85·2 | 330 | e 12 39 | + 5 | e 23 3 | [+ 2] | — | — |
| Fordham | | 85·6 | 32 | e 12 35 | − 1 | e 23 5 | [+ 2] | 43·9 | — |
| Georgetown | | 86·0 | 35 | i 12 38 | 0 | i 23 11 | [+ 5] | e 41·9 | — |
| Trenta | | 86·0 | 326 | e 12 48 | +10 | — | — | — | — |
| Arapuni | | 86·2 | 160 | — | — | e 22 53 | [−15] | 43·9 | — |
| Helwan | | 86·7 | 310 | 12 43 | + 1 | i 23 2 | [− 9] | — | 68·5 |
| Barcelona | | 88·9 | 337 | e 23 20 | SKS | (e 23 20) | [− 6] | e 47·1 | 52·0 |
| Wellington | | 89·1 | 162 | — | — | 22 48 | [−39] | 42·9 | — |
| Tortosa | N. | 89·9 | 338 | e 12 56 | − 1 | 23 28 | [− 4] | e 33·9 | 62·3 |
| Christchurch | | 90·8 | 164 | e 12 55 | − 6 | e 23 57 | − 7 | e 43·6 | 50·9 |
| Toledo | | 92·0 | 341 | e 13 8 | + 1 | e 23 40 | [− 4] | e 42·9 | 55·0 |
| Alicante | | 92·5 | 338 | e 13 17 | + 8 | e 24 19 | 0 | e 48·9 | — |
| Granada | | 94·4 | 340 | i 13 17a | − 1 | e 23 53 | [− 5] | 42·3 | 61·5 |
| Malaga | | 95·1 | 341 | e 13 16 | − 5 | e 24 19 | {+ 3} | e 42·9 | — |
| San Fernando | | 95·8 | 342 | 23 59 | SKS | (23 59) | [− 6] | 52·9 | 59·4 |
| San Juan | | 108·6 | 37 | e 19 2 | PP | e 26 24 | {+27} | e 44·6 | — |
| La Paz | | 137·3 | 61 | e 18 14 | [−64] | — | — | — | — |
| Sucre | | 141·0 | 60 | e 19 41 | [+18] | — | — | 73·9 | — |

Additional readings :—
Osaka i = +3m.36s. =PP +2s. and +14m.3s.
Kobe P = +3m.37s. =PP +0s., iEZ = +3m.52s.
Sumoto PEN = +3m.30s.
Taikyu SN = +7m.57s., SE = +8m.4s.
Keizyo eE = +8m.4s.
Chiufeng PP? = +6m.3s., i = +10m.14s.
Nanking SN = +10m.35s., iN = +10m.55s.
Hong Kong PP? = +8m.33s.
Sitka ePP = +10m.28s. =PPP −10s., iSS = +18m.33s.
Honolulu T.H. e = +19m.57s. =SSS −13s.
Ekaterinburg $L_q$ = +27·6m.
Victoria ePN = +8m.42s.
Berkeley iE = +10m.51s., eE = +18m.13s., eZ = +18m.19s.
Batavia e = +9m.8s.
Bozeman eSS = +26m.16s.
Upsala iN = +20m.54s., =$S_eS$ +2s.
Tiflis iE = +11m.18s., eSSSZ = +28m.46s.
Ivigtut +11m.39s. and +21m.31s. =PS +16s.
Copenhagen +11m.42s.
Tucson e = +29m.23s.
Leipzig e = +29m.53s.?
Liverpool i = +12m.20s. and +22m.18s.

*Continued on next page.*

Chicago e = +22m.22s. =PS −15s., eSS = +27m.23s.
Graz iP = +12m.19s.
Uccle e = +23m.27s. and +26m.32s.
Florissant ePPZ = +15m.15s., iPSEN = +22m.52s., eSSEN = +27m.13s., eSSSEN = +30m.23s.; $T_0$ = 1h.30m.15s.
Stuttgart iZ = +12m.22s., $ePcP$ = +12m.41s., ePP = +15m.16s., ePS = +22m.48s., eSSS = +30m.53s.
Zagreb eNW = +22m.33s.
Strasbourg PP = +15m.23s., ePS = +23m.3s.
Ottawa ePPN = +15m.21s.; $T_0$ = 1h.30m.12s.
Toronto ePP = +15m.53s. ?
Neuchatel e = +22m.43s.
Melbourne i = +28m.50s., e = +34m.26s.
Pittsburgh ePP = +15m.37s., i = +23m.1s. =S +8s., +23m.15s., and +23m.35s. =PS +1s., eSS = +28m.30s.
Wellington SS = +28m.53s.?
Toledo PS = +24m.7s. =S −8s.
Granada $PcP$ = +13m.32s., PP = +17m.6s.
Malaga PPP = +19m.5s., SKS = +23m.51s., PPS = +25m.56s., SSS = +34m.26s. =SSS −6s.
San Fernando PN = +24m.3s., SN = +35m.35s.
San Juan eSS = +34m.10s.
Long waves were also recorded at Vladivostok, Belgrade, Bergen, Almeria, Columbia, Denver, Charlottesville, Cape Town, and Huancayo.

July 9d. 5h. 34m. 25s. Epicentre 17°·5N. 104°·9W. N.2.

A = −·245, B = −·922, C = +·301; D = −·966, E = +·257; G = −·077, H = −·291, K = −·954.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Tucson | | 15·7 | 341 | i 3 36 | − 2 | i 6 33 | + 2 | 7·7 | — |
| La Jolla | | 19·0 | 327 | e 4 11k | − 8 | e 7 48 | + 2 | — | — |
| Riverside | | 19·9 | 328 | e 4 29k | 0 | e 8 20 | +16 | — | — |
| Pasadena | | 20·4 | 327 | i 4 34k | 0 | e 8 34 | +20 | i 10·6 | — |
| Mount Wilson | | 20·4 | 327 | i 4 33 | − 1 | e 8 30 | +16 | — | — |
| Santa Barbara | | 21·5 | 325 | i 4 45k | 0 | i 8 41 | + 5 | — | — |
| Haiwee | | 22·0 | 331 | i 4 53 | + 2 | e 9 3 | +17 | — | — |
| Tinemaha | | 22·8 | 332 | e 4 59 | 0 | — | — | — | — |
| Lick | N. | 24·6 | 327 | e 5 18 | + 2 | — | — | — | — |
| St. Louis | | 24·7 | 28 | i 5 14 | − 3 | e 9 35 | − 1 | e 11·9 | 14·5 |
| Florissant | | 24·8 | 28 | i 5 18 | 0 | i 9 44 | + 7 | i 12·6 | 12·9 |
| Berkeley | | 25·4 | 327 | i 5 23 | − 1 | i 8 57 | −51 | i 12·4 | — |
| Ukiah | | 26·8 | 327 | e 5 44 | + 8 | e 10 20 | + 8 | — | — |
| Columbia | | 26·9 | 48 | e 5 41 | + 4 | 10 24 | +10 | e 17·6 | — |
| Chicago | | 28·4 | 28 | — | — | 10 36 | − 2 | e 14·9 | — |
| Bozeman | | 28·7 | 351 | e 5 51 | − 2 | 10 41 | − 2 | e 15·7 | — |
| Ann Arbor | N. | 30·6 | 32 | — | — | e 11 11 | − 3 | i 16·5 | 17·0 |
| Charlottesville | | 30·8 | 43 | — | — | e 11 21 | + 4 | 16·7 | — |
| Pittsburgh | | 31·4 | 38 | 6 16 | − 1 | i 11 21 | − 5 | e 15·6 | — |
| Georgetown | | 32·3 | 43 | i 6 27 | + 2 | i 11 44 | + 4 | e 15·6 | — |
| Seattle | | 33·4 | 339 | — | — | e 11 57 | 0 | e 18·4 | — |
| Toronto | | 33·8 | 34 | e 8 24 | ? | 14 23 | SSS | 18·7 | — |
| Victoria | | 34·3 | 338 | e 6 5 | −38 | e 11 30 | −41 | e 18·8 | 19·3 |
| Fordham | | 35·4 | 42 | i 6 54 | + 1 | e 12 27 | 0 | 18·6 | — |
| San Juan | | 36·7 | 83 | e 7 16 | +12 | e 12 53 | + 6 | e 16·8 | — |
| Ottawa | | 37·0 | 35 | e 7 5 | − 1 | e 12 50 | − 1 | 18·6 | — |
| Oak Ridge | | 37·8 | 42 | e 7 13 | 0 | e 13 3 | 0 | e 18·8 | — |
| Huancayo | | 41·8 | 133 | — | — | e 14 7 | + 4 | 17·7 | — |
| Sitka | | 45·6 | 338 | — | — | i 15 3 | + 4 | e 23·2 | — |
| La Paz | | 49·6 | 130 | i 8 56 | + 8 | — | — | — | — |
| Honolulu T.H. | | 49·8 | 284 | — | — | e 16 15 | +17 | e 22·0 | — |
| Sucre | | 53·4 | 131 | e 9 17 | 0 | — | — | — | — |
| Ivigtut | | 58·9 | 29 | 9 35? | −22 | 18 5 | + 4 | 28·6 | — |
| Edinburgh | | 81·9 | 34 | — | — | e 22 35? | − 1 | e 41·6 | — |
| Liverpool | | 82·8 | 36 | — | — | i 22 45 | 0 | — | — |

*Continued on next page.*

| | Δ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Stonyhurst | 83·0 | 35 | — | — | e 22 58 | +11 | — | 46·6 |
| Kew | 85·1 | 37 | e 12 34 | 0 | e 23 2 | − 7 | e 36·6 | — |
| Malaga | 87·6 | 52 | e 12 54 | + 8 | e 23 35 | + 2 | — | — |
| Paris | 87·8 | 40 | e 13 35? | +48 | — | — | 42·6 | 49·6 |
| De Bilt | 87·9 | 35 | e 13 12 | +25 | e 23 24 | −12 | e 38·6 | 45·4 |
| Uccle | 88·0 | 37 | — | — | e 23 37 | 0 | e 38·6 | — |
| Granada | 88·1 | 52 | e 12 47 | − 1 | e 23 32 | − 6 | 41·7 | — |
| Hamburg | 89·8 | 33 | e 16 29 | PP | — | — | e 45·6 | — |
| Copenhagen | 89·9 | 30 | 14 35? | ? | 23 53 | − 2 | 43·6 | — |
| Strasbourg | 91·0 | 38 | e 16 35? | PP | e 24 22 | +17 | e 42·6 | — |
| Stuttgart | 91·7 | 37 | e 13 6 | + 1 | e 24 13 | + 1 | e 44·6 | — |
| Piacenza | 93·8 | 40 | — | — | e 23 55 | [+ 1] | — | 57·1 |
| Pulkovo | 94·6 | 21 | e 29 5 | ? | 30 59 | SS | e 39·6 | 51·0 |
| Triest | 96·0 | 38 | e 17 5 | PP | i 24 12 | [+ 6] | e 43·6 | 55·1 |
| Ekaterinburg | 104·7 | 8 | e 18 29 | PP | e 25 57 | −11 | 42·6 | 59·1 |
| Tashkent | 121·0 | 5 | e 20 35 | PP | e 30 5 | PS | e 58·6 | 75·2 |

Additional readings :—
Tucson i = +7m.33s.
Lick eE = +5m.21s.
St. Louis iPP = +5m.46s., iPPP = +6m.1s., e? = +8m.26s., $ePcP$ = +8m.57s., iS = +9m.39s., iSS = +10m.24s., $ePcS$ = +12m.41s., $eScS$ = +16m.17s.
Florissant ePPZ = +5m.50s., $ePcPZ$ = +8m.54s., iSSEN = +10m.40s., iSSSEN = +10m.50s. ; $T_0$ = 5h.34m.20s.
Berkeley iZ = +5m.26s., iN = +5m.41s., iZ = +5m.44s., iE = +5m.57s., iZ = +6m.9s. and +6m.31s., iSZ = +9m.10s., iN = +9m.33s.
Ukiah e = +9m.59s.
Chicago eSS = +11m.51s.
Ann Arbor eN = +13m.41s.
Charlottesville eSS = +12m.55s.
Pittsburgh ePP = +7m.46s.
Toronto i = +12m.39s.
Victoria eS?N = +11m.15s. ; $T_0$ = 5h.33m.52s.
Ottawa ePPE = +8m.20s. ; $T_0$ = 5h.34m.30s.
Oak Ridge ePPNE = +8m.35s., eSNE = +13m.7s. ; $T_0$ = 5h.34m.32s.
Huancayo iS? = +14m.18s.
Sitka i = +18m.35s. = $ScS$ + 19s.
La Paz i = +9m.19s.
Liverpool +28m.5s. = SS + 11s.
Malaga PP = +16m.20s., iSKKS = +23m.42s., PS = +24m.34s.
Strasbourg e = +25m.9s. = PS + 6s.
Stuttgart ePP = +16m.41s., ePKKP = +30m.7s. = SS + 2s.
Ekaterinburg e = +33m.15s. = SS + 9s.
Long waves were also recorded at Wellington, Alicante, San Fernando, Cheb, Kucino, Tiflis, and Vladivostok.

July 9d. 8h. 58m. 58s. Epicentre 45°·0N. 150°·0E. (as at 1h.). X.

| | Δ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Ootomari | 5·3 | 291 | e 2 2 | S | (e 2 2) | −13 | — | — |
| Mizusawa | 8·8 | 231 | e 2 7 | + 2 | i 3 30 | −14 | — | — |
| Tyosi | 11·5 | 220 | — | — | 4 35 | −15 | — | — |
| Vladivostok | 13·0 | 269 | 3 5 | + 3 | e 5 44 | +17 | 7·0 | — |
| Nagoya | 14·0 | 230 | e 4 2 | +47 | — | — | — | — |
| Chiufeng | 25·2 | 271 | e 5 20? | − 2 | e 9 49 | + 5 | — | 15·4 |
| Ekaterinburg | 53·4 | 317 | e 8 15 | −62 | — | — | 28·0 | — |
| Tashkent | 56·4 | 298 | i 9 39 | 0 | e 17 30 | + 2 | e 28·0 | 35·7 |
| Tiflis | 70·6 | 311 | 11 15 | + 1 | e 20 40 | PS | e 36·5 | 44·0 |
| Neuchatel | 82·4 | 336 | e 12 20 | 0 | — | — | — | — |

Additional readings :—
Ekaterinburg SSS = +20m.50s.
Tiflis eSSSE = +28m.27s.
Long waves were also recorded at Berkeley.

July 9d. 9h. 28m. 5s. Epicentre 45°·0N. 150°·0E. (as at 8h.). R.1.

Probable error of epicentre ±0°·25.

A = −·612, B = +·354, C = +·707; D = +·500, E = +·866;
G = −·612, H = +·354, K = −·707.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Ootomari | | 5·3 | 291 | e 1 53 | $P_g$ | 7 23 | ? | — | — |
| Sikka | | 6·3 | 314 | 4 32 | ? | 6 16 | ? | — | 7·3 |
| Mizusawa | | 8·8 | 231 | e 1 59 | − 6 | i 3 25 | −19 | — | — |
| Tyosi | | 11·5 | 220 | e 2 45 | + 3 | 4 33 | −17 | 5·5 | — |
| Vladivostok | | 13·0 | 269 | 3 1 | − 1 | e 5 43 | +16 | 6·6 | 7·8 |
| Nagoya | | 14·0 | 230 | e 3 14 | − 1 | 6 5 | +14 | — | — |
| Toyooka | E. | 14·9 | 236 | e 3 35 | + 8 | — | — | 8·6 | 10·9 |
| | N. | 14·9 | 236 | e 3 32 | + 5 | — | — | e 8·0 | 11·4 |
| Osaka | | 15·1 | 232 | 3 40 | +10 | 6 32 | +15 | 9·3 | 9·6 |
| Kobe | | 15·3 | 233 | e 3 30 | − 2 | e 7 20 | ? | — | 10·4 |
| Sumoto | | 15·7 | 232 | 3 35 | − 3 | 7 23 | ? | 8·2 | 10·7 |
| Muroto | | 16·9 | 231 | e 3 33 | −20 | — | — | e 9·6 | — |
| Koti | | 17·0 | 234 | 3 55 | + 1 | — | — | — | — |
| Simidu | | 17·9 | 233 | e 4 4 | − 1 | — | — | 9·8 | — |
| Taikyu | | 18·5 | 248 | e 4 16 | + 3 | 7 57 | +21 | 10·4 | — |
| Keizyo | E. | 18·7 | 255 | 4 14 | − 1 | 7 37 | − 3 | 9·9 | 11·5 |
| Hukuoka | | 18·9 | 240 | 4 17 | 0 | — | — | 10·3 | 13·5 |
| Zinsen | | 19·0 | 255 | 4 21 | + 2 | e 8 6 | +20 | e 9·9 | — |
| Nagasaki | | 19·8 | 240 | 4 24 | − 3 | 8 17 | +15 | 10·7 | 13·6 |
| Chiufeng | | 25·2 | 271 | 5 20?a | − 2 | 9 53 | + 9 | e 12·3 | 15·7 |
| Nanking | | 27·4 | 253 | e 5 40 | − 2 | e 10 35 | +13 | 13·9 | — |
| Taihoku | | 30·4 | 239 | e 10 55? | ? | (e 10 55?) | −15 | — | — |
| Irkutsk | | 30·5 | 301 | e 6 13 | + 4 | 11 30 | +18 | 16·9 | 19·8 |
| Hong Kong | | 36·9 | 244 | 7 6 | 0 | 12 46 | − 4 | — | 22·9 |
| Manila | | 39·0 | 227 | 7 35 | +11 | 13 6 | −15 | 17·6 | 20·6 |
| Phu-Lien | | 43·0 | 250 | — | — | (13 55?) | −26 | 13·9 | — |
| Sitka | | 46·0 | 47 | e 8 26 | + 5 | i 15 10 | + 6 | e 22·1 | — |
| Honoluiu T.H. | | 48·7 | 101 | — | — | e 15 43 | 0 | e 22·2 | — |
| Almata | | 50·6 | 296 | e 9 30 | +34 | — | — | 28·9 | — |
| Ekaterinburg | | 53·4 | 317 | i 9 14 | − 3 | 16 53 | + 6 | 33·1 | 34·3 |
| Andijan | | 54·8 | 295 | e 9 15 | −12 | — | — | 28·9 | — |
| Tchimkent | | 55·7 | 299 | e 9 24 | −10 | — | — | 28·9 | — |
| Victoria | E. | 56·2 | 53 | i 16 29 | S | (i 16 29) | −56 | e 28·7 | 32·2 |
| Tashkent | | 56·4 | 298 | i 9 37 | − 2 | 17 23 | − 5 | e 29·6 | 35·7 |
| Samarkand | | 58·8 | 297 | e 9 55 | − 1 | e 17 58 | − 2 | 29·9 | — |
| Ukiah | | 61·5 | 62 | — | — | e 18 38 | + 2 | e 25·9 | — |
| Pulkovo | | 64·2 | 331 | 10 39 | + 5 | e 19 17 | + 7 | 28·9 | 38·4 |
| Kucino | | 64·2 | 325 | e 10 39 | + 5 | 19 9 | − 1 | e 33·9 | 35·9 |
| Bozeman | | 64·6 | 50 | — | — | e 19 15 | 0 | e 36·5 | — |
| Tinemaha | E. | 65·9 | 62 | e 10 44 | − 1 | — | — | — | — |
| Haiwee | E. | 66·6 | 62 | e 10 50 | + 1 | — | — | — | — |
| Bombay | | 67·8 | 275 | e 10 48 | − 9 | 19 58 | + 4 | 36·2 | 48·3 |
| Pasadena | Z. | 67·8 | 64 | e 10 50 | − 7 | — | — | — | — |
| Mount Wilson | Z. | 67·9 | 64 | i 10 54 | − 4 | — | — | — | — |
| Riverside | Z. | 68·4 | 64 | e 10 58 | − 3 | — | — | — | — |
| La Jolla | | 69·2 | 65 | e 11 0 | − 6 | — | — | — | — |
| Tiflis | | 70·6 | 311 | 11 11 | − 3 | e 20 30 | + 2 | e 39·9 | 43·9 |
| Ivigtut | | 72·8 | 10 | 11 25 | − 3 | 20 55 | + 1 | 31·9 | — |
| Copenhagen | | 73·1 | 337 | 11 26 | − 3 | 21 5 | + 7 | 37·9 | — |
| Tucson | | 73·6 | 61 | e 11 45 | +13 | e 20 59 | − 5 | e 33·3 | — |
| Hamburg | | 75·7 | 338 | e 11 41 | − 3 | e 31 57 | ? | e 38·9 | 48·9 |
| Edinburgh | | 76·6 | 346 | e 12 1 | +12 | e 21 40 | + 2 | e 39·9 | 50·2 |
| Jena | | 77·5 | 334 | e 11 55 | 0 | — | — | e 41·9 | 49·4 |
| Göttingen | | 77·5 | 336 | e 11 55 | 0 | e 21 49 | + 1 | e 39·9 | 50·7 |
| Budapest | | 78·0 | 329 | 11 57 | 0 | (19 55?) | ? | 19·9 | — |
| Cheb | | 78·0 | 334 | e 15 55? | ? | e 21 55? | + 1 | e 32·9 | 34·9 |
| Vienna | | 78·3 | 331 | i 11 57k | − 2 | e 22 9 | +12 | — | 54·9 |
| De Bilt | | 78·3 | 339 | 12 1k | + 2 | 21 57 | 0 | e 36·9 | 49·3 |
| Liverpool | | 78·9 | 345 | — | — | i 23 25 | ? | — | — |
| Uccle | | 79·7 | 340 | 12 9k | + 3 | e 22 10 | − 2 | 36·9 | — |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Oxford | 80·1 | 343 | e 12 9 | + 1 | 22 13 | − 4 | e 41·9 | 49·6 |
| Kew | 80·2 | 343 | — | — | e 22 17 | − 1 | e 41·9 | — |
| Stuttgart | 80·2 | 335 | e 12 6k | − 3 | e 22 19 | + 1 | e 39·9 | — |
| Florissant | 80·2 | 44 | i 12 9 | 0 | e 22 7 | −11 | e 38·9 | — |
| St. Louis | 80·4 | 44 | e 12 13 | + 3 | e 22 15 | − 5 | e 36·9 | — |
| Zagreb | 80·5 | 330 | e 12 13 | + 3 | — | — | e 41·9 | — |
| Strasbourg | 80·8 | 336 | 12 15k | + 3 | e 22 16 | − 8 | — | — |
| Ksara | 81·1 | 310 | e 12 17 | + 3 | 22 33 | + 6 | — | — |
| Toronto | 81·1 | 34 | i 12 50 | +36 | 23 11 | PS | 39·3 | — |
| Triest | 81·4 | 332 | e 12 17 | + 2 | e 22 24 | − 7 | e 41·4 | 50·6 |
| Zurich | 81·6 | 336 | e 12 17 | + 1 | e 22 32 | − 1 | — | — |
| Paris | 82·0 | 340 | e 22 41? | S | (e 22 41?) | + 4 | 44·9 | 53·9 |
| Neuchatel | 82·4 | 336 | e 12 18 | − 2 | e 22 33 | − 8 | — | — |
| Piacenza | 83·3 | 334 | 12 25 | 0 | 22 59 | + 9 | — | 53·5 |
| Oak Ridge | 85·0 | 30 | — | — | e 22 59 | [ 0] | e 39·1 | — |
| Fordham | 85·6 | 32 | e 12 38 | + 2 | e 22 59 | [− 4] | 43·9 | — |
| Georgetown | 86·0 | 35 | i 12 39 | + 1 | i 23 7 | [+ 1] | e 40·9 | — |
| Wellington | 89·1 | 162 | — | — | 23 32 | −15 | 42·9 | — |
| Malaga | 95·1 | 341 | 18 10 | ? | e 27 0 | ? | 43·9 | — |
| San Fernando | 95·8 | 342 | 23 30 | SKS | (23 30) | [−35] | 53·4 | 70·9 |
| San Juan | 108·6 | 37 | — | — | e 33 31 | SS | e 44·7 | — |

Additional readings :—
Mizusawa eSN = +3m.29s.
Kobe iE = +9m.21s., eZ = +9m.28s.
Sumoto ePZ = +2m.39s., SN = +7m.31s.
Sitka e = +11m.18s., iSS = +18m.8s.
Ekaterinburg $L_q$ = +28·0m.
Tiflis iN = +11m.15s.
Copenhagen +11m.31s.
Stuttgart iP = +12m.11s.
Florissant $eP_ePZ$ = +12m.33s., ePSEN = +22m.49s., eSSEN = +27m.31s.
Triest e = +31m.44s.
Paris eS = +32m.31s.
Malaga ePPP = +20m.29s.
San Fernando SN = +35m.34s.
San Juan e = +33m.47s. = SS − 9s.
Long waves have also been recorded at Ann Arbor, Chicago, Columbia, Pittsburgh, Tashkent, Christchurch, and other European stations.

July 9d. 9h. 48m. 27s. Epicentre 46°·0N. 148°·0E. N.2.

A = −·589, B = +·368, C = +·719 ; D = +·530, E = +·848 ;
G = −·610, H = +·381, K = −·695.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Ootomari | | 3·7 | 282 | e 1 50 | S* | — | — | — | — |
| Sikka | | 4·6 | 316 | 2 37 | $S_g$ | 5 36 | ? | — | 7·8 |
| Mizusawa | | 8·5 | 219 | e 1 53 | − 7 | i 3 18 | −18 | — | — |
| Tyosi | | 11·6 | 210 | e 3 4 | +21 | 4 48 | − 5 | — | — |
| Vladivostok | | 11·8 | 261 | 3 13 | +27 | e 5 55 | S* | 7·1 | 7·9 |
| Nagoya | | 13·7 | 222 | e 3 18 | + 7 | 5 42 | − 2 | — | — |
| Osaka | | 14·7 | 224 | 3 18 | − 7 | 6 16 | + 8 | 8·4 | — |
| Kobe | | 14·9 | 225 | 3 28 | + 1 | e 6 36 | +23 | — | 10·2 |
| Sumoto | | 15·3 | 225 | e 3 24 | − 8 | e 8 0 | ? | 9·4 | 10·5 |
| Koti | | 16·6 | 227 | e 3 45 | − 4 | — | — | — | — |
| Simidu | | 17·5 | 226 | e 3 47 | −13 | — | — | 10·4 | — |
| Taikyu | | 17·7 | 242 | 4 7 | + 4 | 7 53 | +36 | 10·3 | — |
| Keizyo | E. | 17·7 | 249 | 4 8 | + 5 | e 6 37 | −40 | — | — |
| Zinsen | | 18·0 | 250 | 4 11 | + 4 | e 8 1 | +36 | e 9·9 | — |
| Hukuoka | | 18·3 | 234 | 4 9 | − 1 | 7 45 | +14 | — | — |
| Nagasaki | | 19·2 | 233 | 4 16 | − 5 | 8 9 | +19 | 10·3 | — |
| Nanking | | 26·4 | 249 | 5 37 | + 4 | e 10 41 | +36 | e 14·6 | 17·5 |
| Irkutsk | | 28·8 | 299 | — | — | 10 12 | −33 | 16·5 | 19·6 |
| Tashkent | | 54·8 | 295 | i 9 31 | + 4 | — | — | — | 35·6 |
| Tinemaha | E. | 66·6 | 61 | e 10 49 | 0 | — | — | — | — |

*Continued on next page.*

| | | △ ° | Az. ° | P. m. s. | O−C. s. | S. m. s. | O−C. s. | L. m. | M. m. |
|---|---|---|---|---|---|---|---|---|---|
| Santa Barbara | Z. | 67·3 | 63 | e 10 55 | + 1 | — | — | — | — |
| Haiwee | E. | 67·3 | 61 | e 10 57 | + 3 | — | — | — | — |
| Pasadena | | 68·6 | 62 | i 11 2 | 0 | e 17 19 | ? | — | — |
| Mount Wilson | | 68·6 | 62 | i 11 0 | − 2 | e 17 15 | ? | — | — |
| Tiflis | | 68·9 | 309 | i 11 6 | + 2 | e 20 19 | +11 | — | — |
| Riverside | | 69·1 | 62 | e 11 4 | − 1 | — | — | — | — |
| Copenhagen | | 71·6 | 336 | 11 20 | 0 | — | — | — | — |
| Ivigtut | | 72·0 | 8 | 11 18 | − 5 | — | — | 35·6 | — |
| Budapest | | 76·4 | 327 | 11 56 | + 8 | (22 3) | PS | 22·1 | 27·1 |
| Vienna | | 76·7 | 329 | i 11 51k | + 1 | — | — | — | 53·6 |
| De Bilt | | 76·8 | 338 | 11 50a | 0 | e 21 50 | + 9 | — | 51·6 |
| Uccle | | 78·2 | 338 | 11 58 | 0 | — | — | — | — |
| Stuttgart | | 78·7 | 334 | i 12 1a | 0 | — | — | — | — |
| Kew | Z. | 78·8 | 340 | e 12 2 | + 1 | — | — | — | — |
| Zagreb | | 78·9 | 328 | e 12 3 | + 1 | — | — | — | — |
| Strasbourg | | 79·3 | 335 | 12 5a | + 1 | — | — | e 19·6 | 26·6 |
| Neuchatel | | 80·9 | 335 | e 12 22 | + 9 | — | — | — | — |

Additional readings :—
Osaka i = +4m.15s.
Vienna PPP? = +17m.37s.
Long waves were recorded at Leipzig.

July 9d. 11h. 21m. 40s. Epicentre 45°·0N. 150°·0E. (as at 9h. 28m.). R.3.

| | | △ ° | Az. ° | P. m. s. | O−C. s. | S. m. s. | O−C. s. | L. m. | M. m. |
|---|---|---|---|---|---|---|---|---|---|
| Mizusawa | | 8·8 | 231 | e 2 5 | 0 | i 3 34 | −10 | — | — |
| Vladivostok | | 13·0 | 269 | 3 2 | 0 | e 5 44 | +17 | 6·8 | 7·9 |
| Nagoya | | 14·0 | 230 | e 3 34 | +19 | e 6 29 | +38 | — | — |
| Osaka | | 15·1 | 232 | 3 42 | +12 | 6 22 | + 5 | 9·5 | — |
| Kobe | | 15·3 | 233 | e 3 36 | + 4 | — | — | e 8·8 | 10·4 |
| Keizyo | E. | 18·7 | 255 | e 3 57 | −18 | e 7 58 | SSS | e 11·2 | — |
| Zinsen | | 19·0 | 255 | e 3 55 | −24 | e 8 11 | SSSS | e 11·6 | — |
| Chiufeng | | 25·2 | 271 | 5 22?a | 0 | e 9 32 | −12 | — | 15·6 |
| Nanking | | 27·4 | 253 | e 5 42 | 0 | 10 43 | +21 | — | — |
| Irkutsk | | 30·5 | 301 | e 6 20 | +11 | e 11 18 | + 6 | 17·3 | 19·7 |
| Manila | | 39·0 | 227 | 7 37 | +13 | 13 23 | + 2 | — | — |
| Almata | | 50·6 | 296 | e 9 10 | +14 | — | — | — | — |
| Ekaterinburg | | 53·4 | 317 | i 9 16 | − 1 | — | — | 28·3 | 36·1 |
| Tchimkent | | 55·7 | 299 | e 4 29 | ? | — | — | — | — |
| Tashkent | | 56·4 | 298 | i 9 37 | − 2 | i 17 35 | + 7 | e 29·3 | 35·6 |
| Samarkand | | 58·8 | 297 | e 10 8 | +12 | — | — | — | — |
| Pulkovo | | 64·2 | 331 | e 7 48 | ? | e 20 30 | (+ 8) | e 26·3 | 38·7 |
| Tinemaha | | 65·9 | 62 | e 11 12 | (− 5) | — | — | — | — |
| Haiwee | E. | 66·6 | 62 | e 11 1 | +12 | — | — | — | — |
| Pasadena | Z. | 67·8 | 64 | e 10 54 | − 3 | — | — | — | — |
| Tiflis | | 70·6 | 311 | i 11 15 | + 1 | e 20 32 | + 4 | e 40·5 | 44·0 |
| Copenhagen | | 73·1 | 337 | 11 26 | − 3 | — | — | 38·3 | — |
| De Bilt | | 78·3 | 339 | 11 59 | 0 | — | — | e 37·3 | 52·2 |
| Vienna | Z. | 78·3 | 331 | e 11 58 | − 1 | — | — | — | — |
| Uccle | | 79·7 | 340 | e 12 5 | − 1 | — | — | e 39·3 | — |
| Kew | Z. | 80·2 | 343 | e 12 7 | − 2 | — | — | — | — |
| Stuttgart | | 80·2 | 335 | e 12 9 | 0 | — | — | e 50·3 | — |
| Strasbourg | | 80·8 | 336 | e 11 20? | −52 | — | — | — | — |
| Triest | | 81·4 | 332 | 12 11 | − 4 | 22 32 | + 1 | e 40·3 | 44·3 |

Additional readings :—
Kobe eZ = +3m.53s.
Chiufeng S = +9m.55s.
Irkutsk ePPP = +7m.24s.
Ekaterinburg SS = +20m.38s.
Pulkovo e = +14m.58s.
Stuttgart e = +15m.46s.
Long waves were also recorded at Perth, Ivigtut, Cheb, Edinburgh, and Oak Ridge.

July 9d. 12h. 30m. 43s. Epicentre 44°·7N. 150°·2E. N.1.

Probable error of epicentre ±0°·23.

A = −·617, B = +·353, C = +·703; D = +·497, E = +·868; G = −·610, H = +·350, K = −·711.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Nemuro | | 3·6 | 249 | 0 49 | − 2 | 1 31 | − 1 | — | — |
| Kusiro | | 4·5 | 250 | 0 51 | −13 | 1 44 | −11 | — | — |
| Ootomari | | 5·6 | 291 | 1 52 | $P_g$ | 3 56 | ? | — | 4·8 |
| Asahigawa | | 5·7 | 264 | 1 27 | + 6 | 2 57 | $S_g$ | — | — |
| Sapporo | | 6·6 | 259 | 1 37 | + 3 | 3 1 | S* | — | — |
| Sikka | | 6·6 | 314 | 4 23 | ? | 5 39 | ? | — | 10·9 |
| Hakodate | | 7·5 | 250 | 1 56 | +10 | 3 48 | S* | — | — |
| Miyako | | 7·9 | 233 | 2 14 | P* | 6 18 | ? | — | — |
| Morioka | | 8·4 | 234 | 1 55a | − 4 | 3 21 | −13 | — | — |
| Mizusawa | | 8·8 | 231 | e 2 2 | − 3 | i 3 44 | 0 | — | — |
| Akita | | 9·0 | 238 | 2 7 | 0 | — | — | — | — |
| Sendai | | 9·5 | 231 | 2 8a | − 6 | 3 50 | −11 | — | — |
| Kakioka | | 11·4 | 226 | 2 35 | − 5 | 4 34 | −14 | — | — |
| Tukubasan | | 11·4 | 226 | 2 39 | − 1 | 4 40 | − 8 | — | — |
| Tyosi | | 11·4 | 222 | e 2 49 | + 9 | 4 42 | − 6 | 5·2 | 9·2 |
| Maebasi | | 11·8 | 230 | 2 40 | − 6 | 4 51 | − 7 | — | — |
| Kumagaya | | 11·9 | 228 | 2 39 | − 8 | 4 50 | −10 | — | — |
| Tokyo | | 12·0 | 225 | 2 53 | + 5 | 5 50 | S* | — | — |
| Nagano | | 12·1 | 233 | 2 51 | + 1 | 5 37 | +32 | — | — |
| Yokohama | | 12·3 | 225 | 3 15 | +23 | 5 25 | +15 | — | — |
| Wazima | | 12·4 | 239 | 2 54 | 0 | 5 18 | + 5 | — | — |
| Mera | | 12·6 | 223 | 2 55 | − 1 | 6 15 | S* | — | — |
| Hunatu | | 12·7 | 228 | 2 57 | − 1 | 5 15 | − 5 | — | — |
| Toyama | | 12·7 | 236 | 2 50 | − 8 | — | — | — | — |
| Kohu | | 12·7 | 229 | 2 59 | + 1 | 5 23 | + 3 | — | — |
| Misima | | 12·9 | 226 | 3 5 | + 4 | 5 17 | − 8 | — | — |
| Vladivostok | | 13·2 | 270 | i 3 5 | 0 | i 5 43 | +11 | i 6·9 | 7·9 |
| Omaesaki | | 13·7 | 227 | 3 12 | + 1 | 6 46 | L | (6·8) | — |
| Hamamatu | | 13·8 | 228 | 2 37 | −36 | 5 15 | −31 | — | — |
| Gihu | | 13·8 | 232 | 3 13 | 0 | 5 50 | + 4 | — | — |
| Nagoya | | 13·9 | 231 | 3 23 | + 9 | e 5 50 | + 1 | 7·2 | — |
| Hikone | | 14·2 | 233 | 3 14k | − 4 | 7 6 | L | (7·1) | — |
| Kameyama | | 14·4 | 231 | 3 20 | − 1 | 6 47 | +46 | — | — |
| Kyoto | | 14·7 | 234 | 3 17 | − 8 | — | — | — | — |
| Toyooka | | 14·9 | 237 | 3 26 | − 1 | e 6 29 | +16 | e 7·8 | 11·0 |
| Osaka | | 15·1 | 233 | 3 26 | − 4 | 6 22 | + 5 | 9·4 | 10·4 |
| Osaka B. | | 15·1 | 233 | 3 35 | + 5 | 6 58 | +41 | — | — |
| Kobe | | 15·3 | 234 | e 3 27 | − 5 | 6 39 | +17 | 7·4 | 10·6 |
| Wakayama | | 15·6 | 233 | 3 39 | + 3 | 6 49 | +20 | — | — |
| Sumoto | | 15·7 | 234 | 3 34k | − 4 | 6 45 | +14 | 7·6 | 10·7 |
| Siomisaki | | 15·8 | 229 | 3 34 | − 5 | 6 50 | +16 | — | — |
| Muroto | | 16·9 | 232 | e 3 28 | −25 | e 6 51 | − 8 | e 8·3 | — |
| Koti | | 17·0 | 235 | e 3 50 | − 4 | e 7 12 | +10 | — | — |
| Hamada | | 17·0 | 241 | 3 52 | − 2 | 7 16 | +14 | — | — |
| Matuyama | | 17·3 | 237 | 3 56 | − 2 | 9 9 | L | (9·2) | — |
| Simidu | | 17·9 | 234 | 4 5 | 0 | e 7 34 | +12 | e 10·6 | 12·3 |
| Taikyu | | 18·6 | 249 | 4 15 | + 1 | e 7 46 | + 8 | 9·5 | — |
| Titizima | | 18·7 | 203 | 4 10 | − 5 | 7 16 | −24 | — | — |
| Keizyo | E. | 18·8 | 256 | 4 14 | − 2 | 8 11 | +29 | 10·2 | 11·7 |
| Hukuoka | | 18·9 | 241 | 4 15 | − 2 | 7 56 | +12 | 10·1 | 13·7 |
| Hukuoka B. | | 18·9 | 241 | 4 16 | − 1 | 7 54 | +10 | — | — |
| Heizyo | | 19·0 | 261 | 4 23 | + 4 | 8 17 | SS | 10·1 | — |
| Zinsen | | 19·1 | 256 | 4 16 | − 4 | 8 3 | SS | 9·5 | 10·3 |
| Kumamoto | | 19·2 | 238 | 4 23 | + 2 | 8 9 | SS | — | — |
| Miyazaki | | 19·4 | 235 | 4 24a | + 1 | 8 5 | SS | — | — |

*Continued on next page.*

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Nagasaki | | 19·8 | 241 | i 4 27a | 0 | 8 12 | +10 | 10·8 | 14·0 |
| Nake | | 23·2 | 232 | 5 5 | + 2 | 9 23 | +15 | — | — |
| Chiufeng | | 25·4 | 271 | i 5 24a | 0 | i 9 55 | + 7 | 12·9 | 16·0 |
| Zi-ka-wei | N. | 26·2 | 249 | 5 33 | + 2 | 10 6 | + 4 | 14·5 | 19·9 |
| Nanking | | 27·4 | 253 | i 5 40 | − 2 | i 10 31 | + 9 | 13·2 | 16·5 |
| Taihoku | | 30·4 | 239 | e 6 26 | +17 | 12 11 | +61 | 17·3 | 19·3 |
| Irkutsk | | 30·8 | 301 | 6 11 | − 1 | 11 30 | +13 | 17·3 | 19·6 |
| Hong Kong | | 37·0 | 244 | 7 7 | + 1 | 12 54 | + 3 | 18·1 | 22·3 |
| Manila | | 39·0 | 227 | 7 24 | 0 | 13 20 | − 1 | 18·7 | 22·3 |
| Phu-Lien | | 43·0 | 250 | e 7 55 | − 2 | 14 17? | − 4 | 19·3 | 26·5 |
| Sitka | | 46·1 | 47 | i 8 26 | + 5 | i 15 9 | + 3 | i 22·2 | — |
| Honolulu T.H. | | 48·4 | 101 | e 8 39 | 0 | i 15 41 | + 3 | e 20·7 | — |
| Almata | | 50·9 | 296 | 9 9 | +11 | 16 58 | +45 | 24·3 | — |
| Amboina | | 52·3 | 208 | 9 5 | − 4 | 16 15 | −18 | 21·3 | — |
| Frunse | | 52·6 | 296 | 9 11 | 0 | — | — | 29·3 | — |
| Ekaterinburg | | 53·7 | 317 | i 9 17 | − 2 | i 16 55 | + 3 | 33·3 | 34·4 |
| Calcutta | | 54·6 | 267 | 10 29 | +63 | 18 20 | +76 | 31·8 | — |
| Andijan | | 55·1 | 295 | 9 31 | + 1 | 17 19 | + 8 | 26·3 | — |
| Tchimkent | | 56·0 | 299 | 9 31 | − 5 | 17 17 | − 6 | 26·3 | — |
| Victoria | | 56·3 | 53 | i 8 41 | −57 | i 16 29 | −58 | e 27·2 | 38·2 |
| Tashkent | | 56·8 | 298 | i 9 40 | − 2 | i 17 32 | − 2 | e 24·3 | 35·0 |
| Dehra Dun | | 57·1 | 282 | 9 57 | +13 | 17 57 | +19 | 30·8 | 33·3 |
| Seattle | | 57·3 | 53 | e 10 15 | +30 | e 17 31 | − 9 | — | — |
| Samarkand | | 59·1 | 297 | 10 7 | + 9 | 18 17 | +13 | — | — |
| Agra | N. | 59·1 | 278 | 9 59 | + 1 | 18 8 | + 4 | e 31·2 | 38·0 |
| Medan | | 60·9 | 243 | e 10 11 | 0 | i 18 30 | + 2 | 29·8 | 37·1 |
| Ukiah | | 61·5 | 62 | e 10 22 | + 7 | 18 41 | + 5 | 25·8 | — |
| Berkeley | | 62·9 | 63 | e 10 26 | + 1 | i 18 44 | −10 | 27·5 | 29·9 |
| Lick | | 63·6 | 63 | e 10 47 | +18 | — | — | — | — |
| Batavia | | 64·0 | 229 | 10 29 | − 3 | i 19 2 | − 5 | e 36·0 | — |
| Pulkovo | | 64·6 | 331 | i 10 39 | + 3 | e 19 5 | −10 | 29·3 | 38·3 |
| Bozeman | | 64·7 | 50 | e 10 38 | + 1 | 19 18 | + 2 | e 35·2 | — |
| Hyderabad | | 65·0 | 270 | 10 57 | +18 | 19 38 | +18 | 34·5 | 46·0 |
| Tinemaha | | 65·9 | 62 | e 10 44 | − 1 | e 19 32 | + 1 | e 39·8 | — |
| Haiwee | E. | 66·6 | 62 | e 10 51 | + 2 | e 19 43 | + 3 | e 39·8 | — |
| Santa Barbara | | 66·6 | 65 | i 10 50a | + 1 | — | — | e 39·9 | — |
| Pasadena | | 67·8 | 64 | i 10 54a | − 3 | i 19 53 | − 1 | e 38·9 | — |
| Mount Wilson | | 67·8 | 64 | i 10 56 | − 1 | e 19 54 | 0 | e 39·5 | — |
| Suva | | 67·9 | 152 | e 16 41 | ? | i 20 29 | PS | 34·3 | — |
| Bombay | | 68·0 | 275 | 10 54 | − 4 | 20 2 | + 5 | 36·3 | 44·1 |
| Riverside | | 68·4 | 64 | e 11 0a | − 1 | e 20 0 | − 2 | e 39·5 | — |
| Upsala | | 68·5 | 337 | e 10 58 | − 3 | e 20 3 | 0 | e 34·3 | 40·5 |
| La Jolla | | 69·2 | 65 | e 11 2 | − 4 | e 20 6 | − 5 | e 39·4 | — |
| Kodaikanal | | 70·6 | 265 | 11 13 | − 1 | 20 17 | −11 | 40·5 | 49·7 |
| Tiflis | | 71·0 | 311 | 11 14 | − 3 | 20 36 | + 3 | 39·5 | 44·1 |
| Bergen | | 71·1 | 343 | 12 34 | +77 | 21 21 | +47 | e 59·3 | — |
| Colombo | | 71·4 | 261 | 11 34 | +15 | 20 29 | − 9 | 36·2 | 51·6 |
| Ivigtut | | 73·1 | 10 | i 11 28 | − 1 | i 20 55 | − 3 | 35·3 | — |
| Theodosia | | 73·4 | 318 | e 11 32 | + 1 | e 21 6 | + 5 | 39·3 | — |
| Copenhagen | | 73·5 | 337 | i 11 29 | − 3 | 20 59 | − 4 | 35·3 | — |
| Tucson | | 73·6 | 61 | e 11 37 | + 5 | 20 59 | − 5 | e 32·3 | — |
| Sebastopol | | 74·6 | 319 | e 11 37 | − 1 | 21 19 | + 4 | 38·3 | — |
| Hamburg | | 76·0 | 338 | i 11 44 | − 2 | e 21 29 | − 3 | e 37·3 | 48·3 |
| Potsdam | | 76·2 | 336 | e 11 41 | − 6 | e 21 29 | − 5 | e 29·3 | 49·3 |
| Edinburgh | | 76·9 | 346 | e 12 2 | +11 | i 21 36 | − 6 | 37·3 | 50·3 |
| Leipzig | | 77·3 | 334 | e 11 52 | − 2 | e 21 42 | − 4 | e 36·8 | 44·8 |
| Durham | | 77·7 | 344 | 11 52 | − 4 | 21 43 | − 8 | — | — |
| Prague | | 77·8 | 333 | e 12 57 | +60 | e 22 38? | +46 | e 39·3 | 44·3 |
| Jena | | 77·9 | 334 | e 11 53 | − 4 | e 21 46 | − 7 | e 35·3 | 45·3 |
| Göttingen | | 77·9 | 336 | i 11 55 | − 2 | e 21 44 | − 9 | e 37·3 | 45·6 |

*Continued on next page.*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Cheb | | 78·4 | 334 | e 11 57 | − 2 | e 21 59 | + 1 | e 42·3 | 45·3 |
| Budapest | | 78·4 | 329 | 11 59 | 0 | 21 55 | − 3 | e 40·8 | 51·3 |
| Riverview | | 78·5 | 179 | e 12 53 | +53 | e 21 51 | − 8 | e 32·8 | 36·9 |
| Sydney | | 78·5 | 179 | i 22 47 | S | (i 22 47) | +48 | 48·9 | 52·6 |
| De Bilt | | 78·6 | 339 | i 11 59a | − 1 | 21 55 | − 5 | e 36·3 | 48·4 |
| Vienna | | 78·7 | 331 | e 11 59k | − 2 | 22 4 | + 2 | e 40·3 | 55·3 |
| Stonyhurst | | 78·7 | 345 | e 12 6 | + 5 | e 21 47 | −15 | — | 59·3 |
| Liverpool | | 79·3 | 345 | i 12 4 | 0 | i 22 4 | − 4 | e 32·3 | 53·8 |
| Belgrade | | 80·0 | 326 | e 12 8a | 0 | e 22 19 | + 3 | e 45·4 | — |
| Graz | | 80·0 | 331 | e 12 5 | − 3 | e 22 3 | −13 | e 40·3 | 44·1 |
| Uccle | | 80·0 | 340 | e 12 7a | − 1 | 22 12 | − 4 | 37·3 | 53·0 |
| Adelaide | | 80·3 | 190 | i 12 22 | +13 | i 22 13 | − 6 | 38·3 | 47·0 |
| Florissant | | 80·3 | 44 | e 12 8 | − 1 | i 22 11 | − 8 | e 39·1 | 43·6 |
| St. Louis | | 80·5 | 44 | i 12 8 | − 2 | i 22 14 | − 7 | e 37·3 | 43·3 |
| Oxford | | 80·5 | 343 | i 12 8a | − 2 | 22 12 | − 9 | e 38·3 | 48·8 |
| Karlsruhe | | 80·5 | 337 | 11 18 | −52 | 21 33 | +12 | 45·3 | — |
| Kew | | 80·5 | 343 | i 12 9a | − 1 | i 22 16 | − 5 | 41·3 | 44·8 |
| Ann Arbor | N. | 80·6 | 38 | e 12 47 | +36 | e 22 17 | − 5 | e 44·2 | — |
| Stuttgart | | 80·6 | 335 | i 12 10a | − 1 | 22 18 | − 4 | e 39·3 | 51·3 |
| Zagreb | | 80·9 | 330 | e 12 11 | − 2 | e 22 17? | − 8 | e 40·3 | — |
| Strasbourg | | 81·1 | 336 | i 12 13a | − 1 | e 22 18 | − 9 | 32·3 | 47·3 |
| Toronto | | 81·2 | 34 | e 13 7 | +53 | e 23 7 | +39 | 40·0 | — |
| Ottawa | | 81·2 | 31 | e 12 17 | + 3 | e 22 21 | − 7 | e 36·3 | — |
| Ksara | | 81·5 | 310 | 12 18? | + 2 | 22 39? | + 7 | — | — |
| Triest | | 81·8 | 332 | i 12 15a | − 2 | i 22 23 | −12 | e 38·3 | 43·5 |
| Zurich | | 82·0 | 336 | e 12 17 | − 1 | e 22 34 | − 3 | — | — |
| Paris | | 82·3 | 340 | i 12 18 | − 2 | i 22 41 | + 1 | 32·3 | 52·3 |
| Treviso | | 82·4 | 332 | e 12 17 | − 3 | 22 37 | − 4 | 43·8 | 45·3 |
| Melbourne | | 82·6 | 184 | 18 25 | PPPP | i 22 30 | −13 | — | 44·9 |
| Padova | | 82·7 | 332 | e 12 23 | + 1 | i 22 41 | − 3 | — | — |
| Neuchatel | | 82·8 | 336 | e 12 21 | − 1 | e 22 54 | + 9 | — | — |
| Piacenza | | 83·7 | 334 | 12 27 | 0 | i 22 51 | − 3 | 31·3 | 48·1 |
| Pittsburgh | | 83·7 | 37 | i 12 24 | − 3 | 22 44 | −10 | 40·2 | — |
| Naples | E. | 84·8 | 328 | e 12 56 | +24 | e 23 21 | +15 | 33·3 | 49·3 |
| Puy de Dôme | | 85·0 | 338 | e 12 22 | −11 | e 23 6 | − 2 | e 43·3 | — |
| Oak Ridge | | 85·1 | 30 | e 12 33 | − 1 | i 23 1 | [+ 1] | e 31·3 | — |
| Rome | | 85·5 | 330 | e 12 38 | + 2 | e 23 4 | [+ 1] | — | — |
| Fordham | | 85·8 | 32 | e 12 36 | − 1 | — | — | 43·3 | — |
| Arapuni | | 85·9 | 160 | — | — | e 23 50 | PS | 43·3 | — |
| Trenta | | 86·4 | 326 | e 13 2 | +22 | e 23 12 | [+ 3] | 49·3 | — |
| Charlottesville | | 86·4 | 37 | — | — | e 23 13 | [+ 4] | — | — |
| Helwan | | 87·0 | 310 | 12 43 | 0 | i 23 4 | [− 9] | — | 58·6 |
| Catania | | 88·4 | 326 | 14 22 | +92 | 23 34 | − 7 | 39·2 | 56·5 |
| Columbia | | 88·6 | 41 | — | — | e 23 33 | −10 | e 42·3 | — |
| Wellington | | 88·7 | 162 | — | — | 23 13 | [−11] | 43·3 | 48·3 |
| Barcelona | | 89·2 | 337 | e 13 28 | +34 | 23 23 | [− 5] | 30·1 | 51·7 |
| Tortosa | N. | 90·3 | 338 | 12 2 | −57 | 22 30 | [−64] | e 41·3 | 51·6 |
| Christchurch | | 90·5 | 164 | i 13 1 | + 1 | i 24 13 | +12 | e 44·5 | 52·0 |
| Toledo | | 92·4 | 341 | e 13 6 | − 3 | e 24 13 | − 5 | e 43·6 | 54·3 |
| Alicante | | 92·8 | 338 | e 13 4 | − 6 | e 23 47 | [− 2] | e 47·4 | — |
| Algiers | | 93·3 | 334 | — | — | e 24 12 | {+11} | e 45·3 | — |
| Granada | | 94·8 | 340 | i 13 20a | 0 | 24 5 | [+ 5] | 44·3 | — |
| Malaga | | 95·4 | 341 | e 13 26 | + 4 | e 24 56 | +10 | 42·3 | 53·3 |
| San Fernando | | 96·1 | 342 | 23 26 | SKS | (23 26) | [−40] | 50·3 | 62·3 |
| San Juan | | 108·7 | 37 | i 18 57 | PP | e 26 27 | {+29} | e 44·3 | — |
| Tananarive | | 112·1 | 266 | — | — | 29 8 | PS | 58·5 | 66·3 |
| Huancayo | | 129·4 | 65 | — | — | e 34 2 | ? | 61·0 | — |
| La Paz | | 137·2 | 61 | 19 31 | [+13] | — | — | 71·3 | — |
| Sucre | | 141·0 | 60 | e 19 44 | [+21] | — | — | 69·3 | — |
| Cape Town | | 141·8 | 271 | e 21 37 | ? | — | — | 76·8 | 88·3 |

*For Notes see next page.*

NOTES TO JULY 9d. 12h. 30m. 43s.

Additional readings :—
Osaka i = +3m.52s.
Kobe eE = +3m.40s., eN = +3m.55s., SZ = +6m.43s., SSN = +6m.50s.
Taikyu eN = +7m.18s., SN = +8m.1s.
Keizyo eE = +7m.40s.
Zinsen eN = +7m.40s., SE = +8m.8s.
Zi-ka-wei iN = +10m.33s.
Nanking iPPP = +6m.38s., iN = +12m.24s.
Hong Kong SS = +15m.46s.
Sitka i = +15m.17s., +18m.7s. = SS − 4s. and +18m.40s.
Ekaterinburg $L_g$ = +29·1m.
Berkeley iPEN = +10m.28s., eEN = +10m.34s., iZ = +10m.59s., iSE = +18m.51s.
Batavia i = +18m.35s. and +20m.33s. = $S_cS$ +12s.
Bozeman e = +26m.43s.
Tiflis iN = +11m.18s.
Copenhagen +21m.36s. and +25m.11s.
Tucson ePP = +14m.20s., eSS = +25m.52s., eSSS = +29m.11s.
Edinburgh i = +21m.49s.
Leipzig e = +30m.47s.
Prague ePS = +23m.25s.
Jena iPEZ = +11m.57s., eN = +30m.17s.
Göttingen eN = +30m.35s.
Cheb e = +14m.18s. and +19m.4s.
Sydney iS = +31m.59s.
Vienna $P_cP$ = +12m.19s., iN = +13m.5s., and +14m.32s., PP? = +16m.3s., PPS? = +23m.23s., iN = +26m.5s.
Belgrade i = +12m.29s.
Graz iPS = +22m.23s., eSSS = +31m.9s.
Uccle SN = +22m.7s.
Adelaide i = +23m.51s.
Florissant iPZ = +12m.13s., i$P_cPZ$ = +12m.28s., ePPZ = +15m.27s., iPSEN = +22m.53s., i$S_cSEN$ = +23m.11s., iSSEN = +27m.40s. ; $T_0$ = 12h.30m.49s.
St. Louis ePP = +15m.13s., isS = +22m.24s., ePS = +22m.56s., eSS = +27m.38s.
Ann Arbor eN = +34m.23s.
Zagreb e = +12m.32s.
Toronto ePP = +16m.15s., iS = +23m.22s. = PS − 42s.
Ksara SSS = +31m.37s.
Triest iE = +22m.37s., iPSE = +23m.7s., e = +28m.17s., i = +31m.17s.
Melbourne e = +28m.2s. and +34m.17s.
Pittsburgh ePP = +15m.33s., iPS = +23m.40s., SS = +28m.28s.
Puy de Dôme e = +12m.50s.
Columbia e = +29m.18s. and +36m.8s.
Barcelona PS = +23m.43s.
Christchurch eSKS = +23m.19s.
Toledo PS = +24m.13s.
Granada iPP = +17m.14s., PPS = +25m.43s.
Malaga e = +17m.3s. = PP − 5s., SKPS = +23m.54s., ePPS = +26m.34s., SSS = +35m.20s.
San Fernando PE = +23m.56s. = SKS − 10s., PN = +24m.3s. = SKS − 3s., SN = +35m.23s.
San Juan i = +19m.35s., e = +31m.42s., iSS = +34m.8s.
Tananarive SS = +35m.17s.?
Huancayo eSS = +38m.40s., e = +43m.18s.
Cape Town iPKP = +22m.42s., +23m.13s., +28m.5s., +33m.47s., PPS? = +41m.17s., SS = +46m.37s., SSS = +55m.5s.
Long waves were also recorded at Chicago.

July 9d. 13h. 27m. 39s. Epicentre 46°·0N. 148°·0E. (as at 9h.48m.). X.

| | | △ | Az. | P. | O − C. | S. | O − C. |
|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. |
| Ootomari | | 3·7 | 282 | e 2 27 | ? | — | — |
| Mizusawa | | 8·5 | 219 | e 1 58 | − 2 | e 3 29 | − 7 |
| Tinemaha | E. | 66·6 | 61 | e 10 53 | + 4 | — | — |
| Haiwee | E. | 67·3 | 61 | e 11 0 | + 6 | — | — |
| Pasadena | Z. | 68·6 | 62 | i 10 55 | − 7 | — | — |
| Mount Wilson | Z. | 68·6 | 62 | i 10 49 | −13 | — | — |
| Tiflis | | 68·9 | 309 | e 11 10 | + 6 | e 20 12 | + 4 |
| Neuchatel | | 80·9 | 335 | e 12 17 | + 4 | — | — |

Tiflis gives also iPN = +11m.13s.
Long waves were also recorded at Zagreb.

July 9d. 16h. 7m. 9s. Epicentre 45°·0N. 150°·0E. (as at 11h.). R.1.

Probable error of epicentre ±0°·25.

A = −·612, B = +·354, C = +·707 ; D = +·500, E = +·866 ;
G = −·612, H = +·354, K = −·707.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Ootomari | | 5·3 | 291 | e 1 54 | $P_g$ | — | — | — | — |
| Sikka | | 6·3 | 314 | 4 6 | ? | 6 19 | ? | — | 8·4 |
| Mizusawa | | 8·8 | 231 | e 2 0 | − 5 | i 3 34 | −10 | — | — |
| Tyosi | | 11·5 | 220 | e 4 39 | S | 6 28 | $S_g$ | — | — |
| Vladivostok | | 13·0 | 269 | i 3 7 | + 5 | e 5 47 | +20 | 7·1 | 8·1 |
| Nagoya | | 14·0 | 230 | e 3 29 | +14 | e 6 51 | +60 | — | — |
| Toyooka | | 14·9 | 236 | e 3 54 | +27 | — | — | 9·2 | 10·9 |
| Osaka | | 15·1 | 232 | 3 30 | 0 | 5 55 | −22 | 9·5 | — |
| Kobe | | 15·3 | 233 | e 3 51 | +19 | — | — | — | 10·3 |
| Sumoto | E. | 15·7 | 232 | e 4 8 | +30 | e 7 36 | +65 | — | 11·0 |
| | N. | 15·7 | 232 | e 4 15 | +37 | e 7 31 | +60 | — | 11·2 |
| Koti | | 17·0 | 234 | e 3 51 | − 3 | — | — | e 9·9 | — |
| Taikyu | | 18·5 | 248 | e 4 14 | + 1 | e 8 0 | +24 | — | — |
| Keizyo | E. | 18·7 | 255 | e 4 19 | + 4 | e 8 11 | +31 | e 10·6 | — |
| Zinsen | | 19·0 | 255 | e 4 10 | − 9 | e 8 1 | +15 | e 10·1 | — |
| Nagasaki | | 19·8 | 240 | 4 28a | + 1 | 8 21 | +19 | 11·0 | — |
| Chiufeng | | 25·2 | 271 | i 5 24a | + 2 | 9 58 | +14 | e 12·6 | 15·7 |
| Nanking | | 27·4 | 253 | e 5 43 | + 1 | e 10 33 | +11 | e 13·9 | 17·8 |
| Irkutsk | | 30·5 | 301 | e 6 0 | − 9 | e 11 12 | 0 | 17·9 | 19·9 |
| Hong Kong | | 36·9 | 244 | — | — | 12 51 | + 1 | — | 22·8 |
| Manila | | 39·0 | 227 | 7 41 | +17 | 13 23 | + 2 | 18·4 | — |
| Phu-Lien | | 43·0 | 250 | — | — | (13 51?) | −30 | 13·8 | — |
| Sitka | | 46·0 | 47 | — | — | i 15 11 | + 7 | 22·1 | — |
| Ekaterinburg | | 53·4 | 317 | i 9 17 | 0 | 16 51 | + 4 | 33·4 | 37·4 |
| Andijan | | 54·8 | 295 | e 9 30 | + 3 | e 17 22 | +16 | e 28·9 | — |
| Tchimkent | | 55·7 | 299 | e 9 29 | − 5 | — | — | — | — |
| Tashkent | | 56·4 | 298 | i 9 39 | 0 | e 17 23 | − 5 | e 27·9 | 34·7 |
| Kucino | | 64·2 | 325 | e 10 37 | + 3 | — | — | e 26·8 | 30·4 |
| Pulkovo | | 64·2 | 331 | 10 39 | + 5 | 19 15 | + 5 | 26·9 | 38·1 |
| Tinemaha | | 65·9 | 62 | e 10 59 | +14 | — | — | — | — |
| Haiwee | | 66·6 | 62 | e 10 55 | + 6 | — | — | — | — |
| Santa Barbara | | 66·6 | 65 | e 10 40 | − 9 | — | — | — | — |
| Bombay | | 67·8 | 275 | e 11 51 | +54 | — | — | — | 44·9 |
| Pasadena | z. | 67·8 | 64 | e 10 53 | − 4 | — | — | — | — |
| Mount Wilson | z. | 67·9 | 64 | e 10 56 | − 2 | — | — | — | — |
| Upsala | | 68·2 | 337 | e 10 58 | − 1 | — | — | e 37·9 | 44·4 |
| Baku | | 68·7 | 307 | e 11 8 | + 5 | 20 16 | +11 | 35·8 | 42·8 |
| La Jolla | z. | 69·2 | 65 | e 11 4 | − 2 | — | — | — | — |
| Tiflis | | 70·6 | 311 | e 11 16 | + 2 | 20 34 | + 6 | e 38·2 | 45·7 |
| Ivigtut | | 72·8 | 10 | 11 27 | − 1 | 20 57 | + 3 | 34·9 | — |
| Copenhagen | | 73·1 | 337 | 11 29 | 0 | 21 3 | + 5 | 34·9 | — |
| Hamburg | | 75·7 | 338 | e 11 44 | 0 | — | — | e 39·9 | — |
| Edinburgh | | 76·6 | 346 | — | — | e 21 39 | + 1 | e 44·8 | — |
| Budapest | | 78·0 | 329 | e 11 51? | − 6 | 21 51? | − 3 | e 41·3 | 50·3 |
| Vienna | | 78·3 | 331 | 11 59 | 0 | 21 57 | 0 | e 41·9 | 52·9 |
| De Bilt | | 78·3 | 339 | 11 59 | 0 | e 22 1 | + 4 | e 36·9 | 48·5 |
| Uccle | | 79·7 | 340 | e 12 5 | − 1 | e 22 12 | 0 | 40·9 | — |
| Oxford | | 80·1 | 343 | — | — | 22 16 | − 1 | e 45·7 | 56·2 |
| Stuttgart | | 80·2 | 335 | e 12 9 | 0 | e 22 11 | − 7 | e 42·9 | — |
| Kew | | 80·2 | 343 | e 12 10 | + 1 | e 22 16 | − 2 | e 40·9 | — |
| St. Louis | | 80·4 | 44 | e 12 9 | − 1 | e 22 11 | − 9 | e 49·9 | — |
| Zagreb | | 80·5 | 330 | e 12 15 | + 5 | e 21 28 | −53 | 43·9 | — |
| Strasbourg | | 80·8 | 336 | 12 12a | 0 | e 16 51? | PP | e 42·9 | — |
| Triest | | 81·4 | 332 | e 12 13 | − 2 | e 22 24 | − 7 | e 39·9 | 43·5 |
| Paris | | 82·0 | 340 | — | — | e 22 42 | + 5 | 48·9 | 54·9 |
| Neuchatel | | 82·4 | 336 | e 12 21 | + 1 | — | — | — | — |
| Piacenza | | 83·3 | 334 | e 12 6 | −19 | e 22 51 | + 1 | — | 71·5 |
| Pittsburgh | | 83·6 | 37 | — | — | e 22 43 | −10 | 47·9 | — |
| Oak Ridge | | 85·0 | 30 | — | — | e 22 59 | − 9 | e 38·9 | — |
| Fordham | | 85·6 | 32 | e 12 37 | + 1 | e 23 5 | − 9 | 39·9 | — |

*For Notes see next page.*

NOTES TO JULY 9d. 16h. 7m. 9s.

Additional readings:—
Osaka i = +3m.58s.
Taikyu eS?N = +8m.4s.
Sitka iSS = +18m.41s.
Ekaterinburg $L_q$ = +29·2m.
Kucino e = +14m.51s.
Tiflis iPN = +11m.20s.
Triest e = +31m.29s.
Long waves were also recorded at Muroto, Heizyo, Bozeman, and other European stations.

July 9d. 16h. 56m. 2s. Epicentre 34°·0N. 131°·0E. (as on 1929 Aug. 31d.). X.

A = −·544, B = +·626, C = +·559; D = +·755, E = +·656; G = −·367, H = +·422, K = −·829.

| | | △ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. |
| Hukuoka | | 0·6 | 229 | 0 14k | + 5 | 0 25 | +10 | 0·5 |
| Nagasaki | | 1·6 | 216 | 0 23 | 0 | 0 43 | + 2 | — |
| Simidu | | 2·0 | 127 | 0 23k | − 6 | 0 53 | + 2 | — |
| Koti | | 2·2 | 102 | e 0 34 | + 3 | e 0 53 | − 4 | — |
| Muroto | | 2·8 | 106 | e 1 49 | +69 | — | — | — |
| Sumoto | | 3·3 | 83 | e 0 45 | − 2 | 1 36 | S* | 1·7 |
| Kobe | z. | 3·5 | 83 | — | — | e 1 43 | S* | — |
| Osaka | | 3·8 | 83 | 1 11 | $P_g$ | 2 2 | $S_g$ | 2·6 |
| Nagoya | | 5·0 | 75 | e 0 53 | −18 | e 2 37 | $S_g$ | — |

Kobe eEN = +1m.47s. = $S_g$ − 3s., eN = +2m.6s.

July 9d. 17h. 51m. 47s. Epicentre 46°·0N. 148°·0E. (as at 13h.). R.3.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Ootomari | | 3·7 | 282 | e 2 16 | $S_g$ | — | — | — | — |
| Mizusawa | | 8·5 | 219 | e 2 3 | + 3 | i 3 28 | − 8 | — | — |
| Vladivostok | | 11·8 | 261 | 2 57 | +11 | e 5 35 | S* | 7·2 | 7·7 |
| Nagoya | | 13·7 | 222 | e 3 6 | − 5 | e 5 3 | −41 | — | — |
| Osaka | | 14·7 | 224 | 3 22 | − 3 | 6 13 | + 5 | — | — |
| Koti | | 16·6 | 227 | — | — | e 6 13? | −39 | — | — |
| Taikyu | | 17·7 | 242 | — | — | e 7 48 | +31 | — | — |
| Keizyo | E. | 17·7 | 249 | e 4 0 | − 3 | e 8 1 | +44 | e 10·4 | — |
| Zinsen | | 18·0 | 250 | e 4 19 | +12 | — | — | — | — |
| Nagasaki | | 19·2 | 233 | e 3 58 | −23 | 8 11 | +21 | — | — |
| Chiufeng | | 23·9 | 267 | 5 14 | + 5 | e 9 50 | +29 | e 12·2 | 15·4 |
| Nanking | | 26·4 | 249 | e 5 32 | − 1 | e 10 22 | +17 | e 15·2 | — |
| Manila | | 38·7 | 224 | 7 16 | − 5 | 13 11 | − 6 | — | — |
| Sitka | | 46·3 | 47 | — | — | i 14 59 | −10 | e 27·5 | — |
| Ekaterinburg | | 51·7 | 316 | 9 7 | + 3 | e 16 49 | +25 | 28·0 | 33·8 |
| Tchimkent | | 54·0 | 297 | (e 9 20) | − 1 | — | — | — | — |
| Tashkent | | 54·8 | 295 | i 9 29 | + 2 | e 17 19 | +13 | e 27·7 | 35·5 |
| Pulkovo | | 62·7 | 330 | e 10 31 | + 8 | (19 13)? | +22 | 19·2 | 38·4 |
| Tinemaha | | 66·6 | 61 | e 11 2 | +13 | — | — | — | — |
| Baku | | 67·0 | 305 | e 10 56 | + 4 | 20 14 | +29 | 35·2 | 44·4 |
| Mount Wilson | z. | 68·6 | 62 | e 11 3 | + 1 | — | — | — | — |
| Pasadena | z. | 68·6 | 62 | i 11 1 | − 1 | — | — | — | — |
| Tiflis | | 68·9 | 309 | e 11 4 | 0 | e 20 22 | +14 | e 40·4 | 45·5 |
| Copenhagen | | 71·6 | 336 | 11 18 | − 2 | — | — | 38·2 | — |
| Edinburgh | | 75·2 | 343 | — | — | e 24 13? | ? | — | — |

*Continued on next page.*

| | △ ° | Az. ° | P. m. s. | O−C. s. | S. m. s. | O−C. s. | L. m. | M. m. |
|---|---|---|---|---|---|---|---|---|
| De Bilt | 76·8 | 338 | e 11 48 | − 2 | — | — | e 39·2 | 52·0 |
| Uccle | 78·2 | 338 | e 11 56 | − 2 | — | — | e 40·2 | — |
| Stuttgart | 78·7 | 334 | e 11 56 | − 5 | — | — | e 40·2 | — |
| Kew | 78·8 | 340 | e 12 2 | + 1 | — | — | e 46·2 | — |
| Strasbourg | 79·3 | 335 | e 12 0 | − 4 | — | — | 41·2 | — |
| Triest | 79·9 | 330 | e 12 4 | − 3 | e 22 28 | +13 | e 34·2 | 43·0 |
| St. Louis | 80·6 | 42 | e 11 52 | −19 | e 22 0 | −22 | — | — |
| Neuchatel | 80·9 | 335 | e 12 10 | − 3 | — | — | — | — |

Additional readings and note :—
Sitka iSS = +18m.30s.
Tchimkent reading has been *increased* by 5m.
Tiflis iP = +11m.8s.
Long waves were also recorded at Kobe, Hong Kong, Phu-Lien, Ivigtut, Kucino, and other European stations.

July 9d. 19h. 18m. 55s. Epicentre 45°·0N. 150°·0E. (as at 16h.). X.

A = −·612, B = +·354, C = +·707 ; D = +·500, E = +·866 ;
G = −·612, H = +·354, K = −·707.

| | △ ° | Az. ° | P. m. s. | O−C. s. | S. m. s. | O−C. s. | L. m. | M. m. |
|---|---|---|---|---|---|---|---|---|
| Mizusawa | 8·8 | 231 | e 2 7 | + 2 | i 3 33 | −11 | — | — |
| Tyosi | 11·5 | 220 | e 4 42 | S | (e 4 42) | − 8 | (6·4) | — |
| Vladivostok | 13·0 | 269 | e 3 7 | + 5 | — | — | 7·6 | — |
| Nagoya | 14·0 | 230 | e 3 38 | +23 | e 6 9 | +18 | — | — |
| Chiufeng | 25·2 | 271 | e 5 22 | 0 | e 10 1 | +17 | — | 15·5 |
| Ekaterinburg | 53·4 | 317 | e 9 16 | − 1 | — | — | 28·1 | — |
| Tchimkent | 55·7 | 299 | (e 9 29) | − 5 | — | — | — | — |
| Tiflis | 70·6 | 311 | i 11 14 | 0 | e 20 30 | + 2 | e 42·1 | — |
| Neuchatel | 82·4 | 336 | e 12 19 | − 1 | — | — | — | — |

Additional readings and notes :—
Mizusawa eSN = +3m.39s.
Tyosi gives S as P and L as S.
Tchimkent reading has been *increased* by 5m.
Long waves were also recorded at Tashkent, Baku, Kucino, and at other European stations.

July 9d. 21h. 42m. 43s. Epicentre 37°·0N. 20°·5E. (as on 1923 July 3d.). R.3.

A = +·748, B = +·280, C = +·602 ; D = +·350, E = −·937 ;
G = +·564, H = +·211, K = −·799.

| | | △ ° | Az. ° | P. m. s. | O−C. s. | S. m. s. | O−C. s. | L. m. | M. m. |
|---|---|---|---|---|---|---|---|---|---|
| Trenta | | 4·0 | 306 | e 1 2 | + 5 | i 1 42 | 0 | — | — |
| Messina | | 4·1 | 288 | 0 57 | − 1 | 3 17 | ? | — | — |
| Catania | | 4·3 | 279 | 1 26 | $P_g$ | — | — | — | 4·5 |
| Mineo | | 4·6 | 275 | 0 59 | − 7 | — | — | — | — |
| Naples | E. | 6·2 | 311 | e 1 48 | P* | — | — | — | — |
| Rome | | 7·9 | 311 | e 2 53 | +61 | — | — | — | — |
| Zagreb | | 9·4 | 341 | e 2 3 | −10 | e 3 44 | −15 | — | 7·0 |
| Triest | | 10·0 | 332 | e 2 25 | + 4 | i 3 52 | −21 | — | 6·1 |
| Budapest | | 10·5 | 355 | e 4 17? | S | (e 4 17?) | − 9 | 6·8 | 7·3 |
| Padova | | 10·6 | 325 | e 4 39 | S | e 6 15 | L | (e 6·2) | — |
| Treviso | | 10·7 | 327 | e 2 27 | − 4 | 5 17? | S* | 6·3 | — |
| Piacenza | | 11·4 | 318 | — | — | e 4 53 | + 5 | — | 9·7 |
| Vienna | | 11·6 | 346 | e 3 28 | +43 | 7 5 | ? | — | 8·2 |
| Ksara | N. | 12·9 | 99 | e 3 39 | +38 | — | — | — | 9·7 |
| Zurich | | 13·6 | 324 | e 3 14 | + 4 | — | — | — | — |
| Stuttgart | | 14·4 | 329 | e 3 23 | + 2 | — | — | — | — |
| Strasbourg | | 14·9 | 326 | e 3 17? | −10 | e 6 17? | + 4 | e 7·3 | — |
| Karlsruhe | | 14·9 | 328 | 5 17? | ? | — | — | — | — |
| Jena | | 15·3 | 338 | e 3 47 | +15 | — | — | e 8·3 | 10·3 |
| Leipzig | | 15·5 | 341 | — | — | e 6 17? | −10 | — | — |

*Continued on next page.*

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Potsdam | N. | 16·2 | 344 | e 3 47 | + 3 | e 6 41 | − 2 | e 10·3 | — |
| Uccle | | 18·0 | 325 | e 4 3 | − 4 | e 7 18 | − 7 | e 9·3 | — |
| Hamburg | | 18·1 | 340 | e 3 59 | − 9 | — | — | — | 10·3 |
| De Bilt | | 18·5 | 330 | 4 13 | 0 | 7 35 | − 1 | e 9·3 | 13·0 |
| Granada | | 19·2 | 278 | 4 20a | − 1 | — | — | e 14·9 | — |
| Tiflis | | 19·2 | 68 | 4 25 | + 4 | 8 14 | SS | e 11·3 | 13·3 |
| Copenhagen | | 19·4 | 346 | 4 19 | − 4 | 7 47 | − 7 | 11·3 | — |
| Malaga | | 19·9 | 277 | e 4 29 | 0 | e 7 34 | −30 | 8·7 | — |
| Oxford | | 21·3 | 321 | e 4 22 | −21 | 8 28 | − 4 | e 10·3 | 14·5 |
| Kucino | | 22·1 | 27 | (e 4 51) | − 1 | (e 8 45) | − 3 | (e 11·4) | — |
| Upsala | E. | 22·9 | 357 | — | — | e 9 2 | − 1 | e 13·3 | — |
| Baku | | 23·1 | 72 | e 5 24 | +22 | e 11 10 | L | 14·3 | — |
| Pulkovo | | 23·6 | 12 | i 5 9 | + 3 | 9 17 | + 1 | 13·3 | 16·2 |
| Edinburgh | | 24·7 | 328 | — | — | e 9 35 | − 1 | — | — |
| Ekaterinburg | | 33·1 | 40 | i 6 31 | − 2 | 11 47 | − 5 | 20·6 | 21·2 |
| Tashkent | | 37·6 | 68 | e 8 53 | PP | e 27 5 | ? | — | 30·5 |

Additional readings and notes :—
Zagreb e = +4m.57s. = $S_g$ +7s.
Triest e = +4m.39s., iSSS = +4m.54s. = S* −1s.
Vienna i = +5m.12s. and +5m.57s., SS = +7m.29s.
Tiflis (e) = +3m.56s.
Malaga e = +4m.37s.
Kucino readings have been *increased* by 6m.
Long waves were also recorded at Göttingen, Paris, Kew, and Liverpool.

July 9d. 22h. 14m. 57s. Epicentre 45°·0N. 150°·0E. (as at 19h.). R.2.

A = −·612, B = +·354, C = +·707 ; D = +·500, E = +·866 ;
G = −·612, H = +·354, K = −·707.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Mizusawa | | 8·8 | 231 | e 2 3 | − 2 | e 3 31 | −13 | — | — |
| Vladivostok | | 13·0 | 269 | 3 5 | + 3 | e 6 13 | S* | 7·4 | 8·8 |
| Nagoya | | 14·0 | 230 | e 3 33 | +18 | e 5 55 | + 4 | — | — |
| Sumoto | | 15·7 | 232 | e 3 27 | −11 | — | — | e 9·2 | — |
| Taikyu | | 18·5 | 248 | — | — | e 7 47 | +11 | — | — |
| Keizyo | | 18·7 | 255 | e 4 16 | + 1 | e 8 35 | +55 | 11·3 | — |
| Zinsen | | 19·0 | 255 | — | — | e 7 27 | −19 | — | — |
| Chiufeng | | 25·2 | 271 | 5 22a | 0 | e 9 54 | +10 | 12·6 | 22·7 |
| Manila | | 39·0 | 227 | 7 29 | + 5 | 13 23 | + 2 | — | — |
| Sitka | | 46·0 | 47 | — | — | i 15 6 | + 2 | e 24·0 | — |
| Ekaterinburg | | 53·4 | 317 | i 9 17 | 0 | 16 54 | + 7 | 35·8 | 37·4 |
| Tchimkent | | 55·7 | 299 | (e 9 27) | − 7 | — | — | — | — |
| Tashkent | | 56·4 | 298 | i 9 37 | − 2 | 17 29 | + 1 | e 27·1 | 35·7 |
| Kucino | | 64·2 | 325 | — | — | i 13 25 | ? | e 26·1 | 30·7 |
| Pulkovo | | 64·2 | 331 | e 10 39 | + 5 | e 19 18 | + 8 | 27·5 | 38·5 |
| Baku | | 68·7 | 307 | 11 5 | + 2 | 20 14 | + 9 | 36·1 | 45·3 |
| Tiflis | | 70·6 | 311 | 11 14 | 0 | 20 32 | + 4 | e 40·1 | 44·6 |
| Copenhagen | | 73·1 | 337 | 11 28 | − 1 | 20 57 | − 1 | 39·1 | — |
| Edinburgh | | 76·6 | 346 | — | — | e 21 45 | + 7 | — | — |
| De Bilt | | 78·3 | 339 | 11 58 | − 1 | e 21 56 | − 1 | e 38·0 | — |
| Vienna | Z. | 78·3 | 331 | e 11 56 | − 3 | — | — | — | — |
| Uccle | | 79·7 | 340 | e 12 6 | 0 | e 22 11 | − 1 | e 40·1 | — |
| Stuttgart | | 80·2 | 335 | e 12 3 | − 6 | — | — | e 46·1 | — |
| Strasbourg | | 80·8 | 336 | e 12 9 | − 3 | — | — | e 45·1 | — |
| Triest | | 81·4 | 332 | e 12 15 | 0 | e 22 23 | − 8 | e 41·1 | 48·7 |
| Neuchatel | | 82·4 | 336 | e 12 20 | 0 | — | — | — | — |
| Piacenza | | 83·3 | 334 | e 11 37 | −48 | 22 38 | −12 | — | 53·7 |

Additional readings and note :—
Sumoto ePN = +3m.36s.
Sitka eSS = +18m.15s.
Ekaterinburg $L_g$ = +29·2m.
Tchimkent reading has been *increased* by 5m.
Triest e = +32m.3s. ?
Long waves were also recorded at Kobe, Nanking, Hong Kong, Phu-Lien, Bombay, Upsala, Kew, Stonyhurst, Alicante, Granada, Ivigtut, and Oak Ridge,

July 9d. Readings also at 1h. (Mizusawa), 2h. (Mizusawa, near Sebastopol, Simferopol, Theodosia, and near Tananarive), 3h. (Ann Arbor and Mizusawa), 4h. (Edinburgh, Tyosi, and near Mizusawa), 5h. (Tananarive), 6h. (near Amboina), 9h. (near Mizusawa), 10h. (Cape Town, Neuchatel, Toledo, and Tiflis), 11h. (Nagoya, Mizusawa, near Kobe, Osaka, and Sumoto), 13h. (near Lick), 14h. (Mizusawa (2) and Taihoku), 17h. (Simidu, near Hukuoka (2), Nagasaki and near Tiflis), 20h. (near Tiflis), 21h. (Nagoya and near Malaga), 22h. (Mizusawa and Balboa Heights), 23h. (Belgrade, Nanking, and near Taihoku).

July 10d. 0h. 21m. 37s. Epicentre 39°·1N. 144°·7E. (as on 1933 March 14d.) R.1.

Probable error of epicentre ±0°·12.

A = −·633, B = +·448, C = +·631 ; D = +·578, E = +·816 ;
G = −·515, H = +·364, K = −·776.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Miyako | 2·1 | 284 | 0 41a | Pg | 0 57 | + 3 | — | — |
| Morioka | 2·8 | 282 | 0 44 | + 4 | 1 14 | + 2 | — | — |
| Mizusawa | 2·8 | 271 | i 0 43 | + 3 | i 1 13 | + 1 | — | — |
| Sendai | 3·1 | 254 | 0 47k | + 3 | 1 18 | − 2 | — | — |
| Urakawa | 3·4 | 334 | 0 52a | + 3 | 1 31 | + 4 | — | — |
| Yamagata | 3·5 | 257 | 0 50k | 0 | 1 27 | − 3 | — | — |
| Hukusima | 3·6 | 249 | 0 52k | + 1 | 1 30 | − 2 | — | — |
| Akita | 3·6 | 281 | 0 56 | P* | 1 35 | + 3 | — | — |
| Onahama | 3·7 | 236 | 0 51k | − 2 | 1 29 | − 6 | — | — |
| Kusiro | 3·9 | 357 | 0 57 | + 1 | 1 39 | − 1 | — | — |
| Nemuro | 4·2 | 9 | 1 3 | + 3 | 1 47 | − 1 | — | — |
| Mito | 4·3 | 232 | 1 3k | + 2 | 2 0 | S* | — | — |
| Tyosi | 4·6 | 221 | i 1 4 | − 2 | 1 55 | − 3 | — | 3·2 |
| Kakioka | 4·6 | 233 | 1 6 | 0 | 1 54 | − 4 | — | — |
| Tukubasan | 4·7 | 234 | 1 6k | − 1 | 1 56 | − 4 | — | — |
| Sapporo | 4·7 | 330 | 1 11a | + 4 | 2 4 | + 4 | — | — |
| Tokyo | 5·2 | 230 | 1 14k | 0 | 2 7 | − 6 | — | — |
| Kumagaya | 5·2 | 237 | 1 14k | 0 | 2 7 | − 6 | — | — |
| Maebasi | 5·2 | 240 | 1 15k | + 1 | 2 13 | 0 | — | — |
| Yokohama | 5·5 | 230 | 1 18 | 0 | 2 20 | 0 | — | — |
| Mera | 5·8 | 224 | 1 21 | − 1 | 2 46 | S* | — | — |
| Hunatu | 5·9 | 235 | 1 24 | 0 | 2 32 | + 1 | — | — |
| Kohu | 6·0 | 237 | 1 26 | + 1 | 2 28 | − 5 | — | — |
| Misima | 6·1 | 232 | 1 27 | 0 | 2 36 | 0 | — | — |
| Wazima | 6·4 | 257 | 1 31 | 0 | 2 37 | − 6 | — | — |
| Toyama | 6·4 | 250 | 1 32k | + 1 | 2 37 | − 6 | — | — |
| Hamamatu | 7·1 | 235 | 1 42k | + 1 | 4 9 | +68 | — | — |
| Hatidyozima | 7·2 | 215 | 1 40k | − 2 | 2 53 | −11 | — | — |
| Gihu | 7·3 | 243 | 1 44 | 0 | 3 0 | − 6 | — | — |
| Nagoya | 7·3 | 240 | i 1 44k | 0 | 3 32 | S* | — | — |
| Hikone | 7·8 | 243 | 1 50k | − 1 | — | — | — | — |
| Kameyama | 7·8 | 239 | 1 51k | 0 | 2 31 | Pg | — | — |
| Kyoto | 8·3 | 242 | 1 56 | − 2 | — | — | — | — |
| Toyooka | 8·6 | 248 | i 2 2k | 0 | e 4 15 | S* | — | 6·0 |
| Osaka | 8·6 | 242 | 2 2 | 0 | 4 9 | S* | — | 5·4 |
| Osaka B. | 8·6 | 242 | 2 3 | + 1 | 3 4 | −35 | — | — |
| Kobe | 8·8 | 243 | e 2 4k | − 1 | e 4 25 | S* | — | — |
| Wakayama | 9·1 | 241 | 2 9a | 0 | 3 47 | − 4 | — | — |
| Siomisaki | 9·2 | 235 | 2 7k | − 3 | 4 37 | S* | — | — |
| Sumoto | 9·2 | 242 | 2 7k | − 3 | e 4 47 | Sg | — | — |
| Sikka | 10·2 | 354 | 4 15 | S | 6 40 | ? | — | 7·3 |
| Muroto | 10·3 | 239 | e 2 5 | −20 | e 4 59 | S* | — | — |
| Vladivostok | 10·4 | 297 | i 2 31 | + 5 | i 4 29 | + 6 | i 4·9 | 6·0 |
| Koti z. | 10·6 | 242 | e 2 29 | 0 | — | — | — | — |
| Hamada | 10·9 | 251 | 2 33k | 0 | 4 55 | +19 | — | — |
| Simidu | 11·4 | 240 | 2 38k | − 2 | — | — | — | — |

*Continued on next page.*

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Titizima | | 12·2 | 191 | 2 48 | − 3 | 4 48 | −20 | — | — |
| Hukuoka | | 12·8 | 249 | 2 55 | − 4 | 5 48 | +26 | — | — |
| Hukuoka B. | | 12·8 | 249 | 2 58 | − 1 | 5 50 | +28 | — | — |
| Miyazaki | | 12·9 | 240 | 3 1k | 0 | 4 57 | −27 | — | — |
| Kumamoto | | 12·9 | 245 | 2 59k | − 2 | 4 32 | ? | — | — |
| Taikyu | | 13·1 | 261 | 3 6k | + 3 | e 5 36 | + 7 | — | — |
| Nagasaki | | 13·6 | 247 | i 3 8k | − 2 | e 5 50 | + 9 | 7·9 | — |
| Keizyo | | 13·9 | 269 | e 3 15 | + 1 | e 5 52 | + 3 | e 7·6 | — |
| Zinsen | | 14·2 | 269 | 3 23 | + 5 | 6 1 | + 5 | e 7·6 | — |
| Heizyo | | 14·7 | 277 | 3 25 | 0 | e 6 6 | − 2 | e 7·5 | — |
| Nake | | 16·6 | 234 | 3 46 | − 3 | — | — | — | — |
| Chiufeng | | 22·0 | 282 | i 4 50a | − 1 | e 8 45 | − 1 | e 10·8 | 13·5 |
| Nanking | | 22·1 | 260 | i 4 51 | − 1 | i 8 59 | +11 | e 12·2 | 14·4 |
| Isigakizima | | 22·8 | 236 | 4 56 | − 3 | 9 1 | 0 | — | — |
| Taihoku | | 24·0 | 241 | e 5 13 | + 3 | e 10 11 | SS | — | — |
| Irkutsk | | 30·6 | 309 | 6 14 | + 4 | 11 15 | + 1 | 16·4 | — |
| Hong Kong | | 30·9 | 246 | 6 23 | +10 | 11 14 | − 4 | — | 20·9 |
| Manila | | 32·2 | 226 | i 6 34 | +10 | 11 58 | +20 | 15·9 | — |
| Sitka | | 52·9 | 41 | — | — | i 16 49 | + 8 | e 24·5 | — |
| Andijan | | 53·8 | 296 | 9 20 | 0 | 16 53 | 0 | — | — |
| Ekaterinburg | | 55·1 | 318 | 9 30 | 0 | e 17 13 | + 2 | 35·1 | 36·7 |
| Tchimkent | | 55·1 | 299 | e 9 49 | +19 | 17 17 | + 6 | — | — |
| Tashkent | | 55·7 | 298 | i 9 34 | 0 | i 17 17 | − 2 | e 24·4 | 30·1 |
| Samarkand | | 58·0 | 297 | e 9 55 | + 5 | — | — | — | — |
| Bombay | N. | 64·4 | 273 | e 10 23 | −12 | — | — | — | 40·0 |
| Kucino | | 66·7 | 324 | 10 49 | − 1 | 19 39 | − 2 | 35·2 | 42·8 |
| Pulkovo | | 67·4 | 330 | i 11 1 | + 7 | 19 55 | + 5 | 35·8 | 41·4 |
| Baku | | 68·9 | 305 | e 11 6 | + 2 | 20 10 | + 2 | 32·6 | 45·3 |
| Tiflis | | 71·4 | 309 | 11 18 | − 1 | e 20 34 | − 4 | e 37·1 | 46·6 |
| Upsala | | 71·9 | 335 | e 11 21 | − 1 | — | — | e 40·4 | — |
| Tinemaha | | 72·3 | 56 | e 11 26 | + 1 | e 20 50 | + 2 | — | — |
| Santa Barbara | Z. | 72·8 | 59 | i 11 29 | + 1 | — | — | — | — |
| Haiwee | | 73·0 | 56 | e 11 30 | + 1 | — | — | — | — |
| Pasadena | | 74·1 | 58 | i 11 35 | 0 | i 21 7 | − 3 | — | — |
| Mount Wilson | | 74·1 | 58 | i 11 35a | 0 | e 21 7 | − 3 | — | — |
| Riverside | | 74·6 | 58 | i 11 38a | 0 | e 21 12 | − 3 | — | — |
| Theodosia | | 74·7 | 316 | e 11 38 | − 1 | — | — | — | — |
| La Jolla | Z. | 75·4 | 59 | e 11 41 | − 2 | — | — | — | — |
| Sebastopol | | 75·9 | 317 | e 11 46 | + 1 | — | — | — | — |
| Copenhagen | | 76·9 | 335 | i 11 50 | − 1 | 21 37 | − 5 | 38·4 | — |
| Ivigtut | | 79·1 | 6 | i 12 3 | 0 | 22 2 | − 4 | 44·4 | — |
| Hamburg | | 79·4 | 335 | i 12 5 | 0 | — | — | 41·4 | — |
| Tucson | | 80·0 | 56 | — | — | e 21 52 | −24 | — | — |
| Jena | | 81·0 | 331 | e 12 11 | − 2 | — | — | e 44·4 | 54·9 |
| Edinburgh | | 81·1 | 342 | — | — | e 22 23? | − 4 | — | — |
| Vienna | Z. | 81·4 | 328 | e 12 14k | − 1 | — | — | — | — |
| De Bilt | | 82·2 | 336 | 12 19 | 0 | e 22 34 | − 5 | e 40·4 | 44·7 |
| Zagreb | | 83·4 | 326 | e 12 23? | − 2 | — | — | — | — |
| Uccle | | 83·6 | 337 | i 12 26a | 0 | e 22 59 | + 6 | e 40·4 | — |
| Stuttgart | | 83·7 | 332 | e 12 27a | 0 | — | — | e 41·4 | — |
| Strasbourg | | 84·4 | 333 | i 12 30a | 0 | e 22 55 | [ 0] | e 42·4 | — |
| Kew | | 84·4 | 338 | e 12 30 | 0 | — | — | e 46·4 | — |
| Triest | | 84·5 | 328 | i 12 29a | − 2 | e 22 51 | [− 4] | e 42·4 | 45·8 |
| Zurich | | 85·1 | 332 | e 12 37 | + 3 | — | — | — | — |
| Neuchatel | | 86·0 | 332 | e 12 38 | 0 | — | — | — | — |
| Piacenza | | 86·6 | 330 | e 12 23 | −18 | 22 35 | [−36] | — | 50·9 |
| Florissant | | 87·1 | 40 | i 12 42 | − 2 | e 23 24 | − 4 | — | — |
| St. Louis | | 87·4 | 40 | (e 12 47) | + 2 | (e 23 8) | [− 8] | — | — |
| Livorno | | 87·6 | 328 | 13 3 | +17 | — | — | — | — |
| Puy de Dôme | | 88·4 | 334 | e 11 6 | −104 | — | — | — | — |
| Pittsburgh | | 90·6 | 32 | — | — | i 23 55 | − 7 | — | — |
| Oak Ridge | | 92·0 | 26 | — | — | e 23 59 | {+ 8} | 46·9 | — |
| Fordham | | 92·6 | 28 | e 13 10 | + 1 | e 23 41 | [− 7] | — | — |
| Granada | | 98·3 | 335 | i 11 38a | ? | — | — | e 47·5 | — |
| Malaga | | 99·0 | 335 | e 14 53 | +74 | e 27 13 | PS | — | — |
| La Paz | Z. | 143·5 | 60 | e 19 26 | [− 3] | — | — | — | — |

*For Notes see next page.*

NOTES TO JULY 10d. 0h. 21m. 37s.

Additional readings and note :—
Mizusawa iSN = +1m.12s.
Tyosi M = +1m.6s.
Toyooka i = +2m.14s.
Osaka i = +2m.23s.
Kobe eE = +1m.59s., iE = +2m.16s., eN = +4m.48s., eE = +5m.18m., iN = +6m.7s.
Sumoto eZ = +4m.56s., eE = +5m.38s., eNZ = +6m.14s.
Chiufeng iS = +8m.49s., SS? = +9m.19s., i = +9m.49s.
Sitka eSS = +20m.35s.
Ekaterinburg $L_q$ = +27·9m.
Bombay eE = +10m.34s.
Tiflis PS = +20m.50s.
Pasadena iZ = +13m.1s.
Copenhagen +14m.44s. =PP +6s. and +16m.33s. =PPP +16s., e = +21m.54s. = PS −15s.
Hamburg eZ = +15m.6s. =PP +7s.
Tucson e = +22m.13s.
Jena eE = +12m.14s.
De Bilt ePPZ = +15m.32s.
Stuttgart ePP = +15m.40s.
Strasbourg e = +17m.23s.? =PPP −1s.
Florissant eEN = +24m.22s. =PS +5s.
St. Louis iS =(+23m.26s.) =S −5s., $e_gS$ =(+23m.44s.); $T_0$ =(0h.21m.43s.). All readings have been *increased* by 30m.
Malaga e = +39m.45s.
Long waves were also recorded at Liverpool, Stonyhurst, and Paris.

July 10d. 3h. 22m. 10s. Epicentre 19°·1N. 103°·6W. N.1.

Probable error of epicentre ±0°·18.

A = −·222, B = −·918, C = +·327; D = −·972, E = +·235; G = −·077, H = −·318, K = −·945.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Tucson | | 14·7 | 335 | i 3 26 | + 1 | i 6 22 | +14 | i 7·8 | — |
| La Jolla | z. | 18·4 | 321 | e 4 9 | − 2 | — | — | — | — |
| Riverside | | 19·3 | 323 | i 4 23a | + 1 | e 8 14 | +22 | — | — |
| Mount Wilson | | 19·8 | 322 | i 4 28a | + 1 | e 8 22 | +20 | — | — |
| Pasadena | | 19·8 | 322 | i 4 26a | − 1 | i 8 22 | +20 | — | — |
| Denver | | 20·6 | 357 | e 4 50 | +14 | e 8 52 | +34 | i 10·8 | — |
| Santa Barbara | | 21·0 | 320 | e 4 39 | − 1 | e 8 33 | + 7 | — | — |
| Haiwee | | 21·2 | 326 | i 4 43 | + 1 | e 8 49 | +19 | — | — |
| Tinemaha | | 22·1 | 328 | e 4 51 | − 1 | — | — | — | — |
| Florissant | | 22·4 | 27 | i 5 1 | + 6 | i 9 17 | SS | i 11·6 | 13·4 |
| St. Louis | | 22·7 | 28 | e 4 59 | + 1 | e 9 24 | +25 | i 11·9 | 14·2 |
| Lick | | 24·1 | 323 | e 5 13 | + 2 | e 8 0 | ? | — | — |
| Branner | | 24·6 | 323 | i 5 16 | 0 | — | — | — | — |
| Berkeley | | 24·8 | 323 | i 5 23 | + 5 | i 9 43 | + 6 | i 11·7 | 13·3 |
| Columbia | | 25·0 | 49 | i 5 23 | + 3 | 10 5 | +24 | 14·4 | — |
| Ukiah | | 26·3 | 324 | 5 32 | 0 | e 10 12 | + 9 | 14·8 | — |
| Chicago | | 26·6 | 27 | 5 32 | − 3 | i 10 29 | +20 | i 14·3 | — |
| Madison | | 26·9 | 24 | e 5 32 | − 5 | e 10 30 | +16 | — | — |
| Bozeman | | 27·4 | 348 | e 6 2 | +20 | 11 5 | +43 | i 14·8 | — |
| Ann Arbor | | 28·7 | 32 | e 5 56 | + 3 | e 11 14 | +31 | i 16·7 | 18·6 |
| Charlottesville | | 28·9 | 44 | e 6 34 | PP | e 10 55 | + 8 | e 16·3 | — |
| Pittsburgh | | 29·5 | 39 | e 5 59 | − 2 | 11 10 | +14 | e 14·4 | — |
| Georgetown | | 30·4 | 44 | i 6 8 | − 1 | 11 24 | +14 | e 15·8 | — |
| Toronto | | 31·9 | 34 | i 3 6 | ? | i 7 10 | ? | e 10·1 | — |
| Victoria | | 33·4 | 336 | i 5 34 | −61 | i 11 15 | −42 | e 16·5 | 19·4 |
| Fordham | | 33·5 | 43 | e 6 35 | − 1 | i 12 21 | +23 | 18·8 | — |
| Ottawa | | 35·0 | 36 | e 6 51 | + 2 | e 12 24 | + 3 | e 19·8 | — |
| San Juan | | 35·4 | 85 | i 6 53 | 0 | i 12 30 | + 3 | 15·8 | — |
| Oak Ridge | | 35·8 | 42 | e 6 55 | − 1 | i 12 55 | +22 | e 18·2 | 23·5 |
| Huancayo | | 41·8 | 137 | 7 47 | 0 | 13 51 | −12 | 17·6 | — |

*Continued on next page.*

| | △ ° | Az. ° | P. m. s. | O−C. s. | S. m. s. | O−C. s. | L. m. | M. m. |
|---|---|---|---|---|---|---|---|---|
| Sitka | 44·7 | 336 | i 8 9 | − 1 | 14 50 | + 4 | i 21·0 | — |
| La Paz | 49·8 | 133 | 8 53 | + 3 | 15 58 | 0 | 25·8 | 30·3 |
| Sucre | 53·6 | 133 | i 9 16 | − 2 | i 16 50 | 0 | — | — |
| Ivigtut | 57·0 | 29 | 9 39 | − 4 | 17 44 | + 8 | 31·8 | — |
| Edinburgh | 79·9 | 34 | i 12 7 | 0 | 22 15 | 0 | 38·8 | 50·2 |
| Liverpool | 80·9 | 37 | — | — | e 22 50 | +25 | e 41·8 | 48·5 |
| Stonyhurst | 81·0 | 36 | i 12 14 | + 1 | e 22 30 | + 4 | 40·8 | 48·8 |
| Oxford | 82·4 | 38 | e 12 20a | 0 | e 22 37 | − 4 | e 37·8 | 49·7 |
| Kew | 83·1 | 38 | i 12 23a | − 1 | e 22 35 | −13 | e 39·8 | 49·8 |
| San Fernando | 84·5 | 54 | 12 37 | + 6 | 22 52 | [− 3] | 43·8 | 53·8 |
| Toledo | 84·9 | 50 | i 12 33 | 0 | e 22 59 | [+ 1] | e 37·2 | 52·1 |
| Malaga | 85·7 | 53 | 12 40 | + 3 | 23 23 | + 8 | 41·8 | 48·2 |
| Paris | 85·8 | 40 | — | — | e 22 57? | [− 8] | 45·8 | 51·8 |
| De Bilt | 85·9 | 36 | i 12 38a | 0 | e 23 14 | − 3 | e 42·8 | 51·7 |
| Uccle | 86·0 | 37 | 12 37a | − 1 | e 23 7 | [+ 1] | e 40·8 | 50·8 |
| Granada | 86·2 | 52 | i 12 39a | 0 | 23 29 | +10 | e 38·8 | 59·3 |
| Hamburg | 87·8 | 33 | e 12 46 | − 1 | e 23 15 | [− 3] | e 45·8 | 52·8 |
| Copenhagen | 87·9 | 30 | 12 45 | − 2 | 23 14 | [− 5] | 43·8 | — |
| Upsala | 87·9 | 26 | e 12 44 | − 3 | e 23 16 | [− 3] | e 48·8 | 54·3 |
| Alicante | 88·0 | 50 | e 12 50 | + 2 | e 23 34 | − 3 | e 50·2 | — |
| Strasbourg | 89·0 | 38 | i 12 52a | − 1 | e 23 28 | [+ 2] | e 37·8 | 54·3 |
| Neuchatel | 89·3 | 39 | e 12 54 | 0 | e 23 51 | + 2 | — | — |
| Stuttgart | 89·7 | 37 | e 12 54a | − 2 | e 23 29 | [− 2] | e 44·8 | — |
| Zurich | 90·0 | 39 | e 13 7 | +10 | — | — | — | — |
| Algiers | 91·2 | 51 | 14 50? | +107 | — | — | e 53·8 | — |
| Piacenza | 91·8 | 40 | e 13 0 | − 6 | 23 38 | [− 5] | — | 58·5 |
| Pulkovo | 92·7 | 22 | i 13 16 | + 6 | 23 52 | [+ 4] | 46·8 | 55·9 |
| Treviso | 93·0 | 39 | 12 50? | −21 | 23 50 | [ 0] | 54·8 | 56·8 |
| Vienna | 94·0 | 35 | i 13 16k | 0 | — | — | e 48·8 | 54·8 |
| Triest | 94·0 | 39 | i 13 14a | − 2 | i 23 51 | [− 4] | e 41·8 | 56·5 |
| Zagreb | 95·2 | 38 | e 13 21 | 0 | e 23 58 | [− 4] | e 46·8 | — |
| Kucino | 98·4 | 22 | 16 38 | ? | e 23 16 | [−62] | 44·5 | 58·1 |
| Vladivostok | 99·6 | 322 | 17 44 | PP | e 24 32 | [+ 9] | 55·8 | 67·8 |
| Ekaterinburg | 102·9 | 9 | i 13 55 | − 2 | i 24 34 | [− 6] | — | 64·8 |
| Irkutsk | 104·6 | 343 | e 13 59 | − 6 | e 24 38 | [−10] | 50·8 | — |
| Chiufeng | 110·2 | 329 | e 14 28 | − 4 | — | — | e 56·4 | 73·8 |
| Tiflis | 112·5 | 25 | e 14 52 | + 9 | e 25 30 | [+ 6] | e 51·8 | 68·8 |
| Baku | 115·6 | 22 | e 19 43 | PP | (29 32) | PS | 29·5 | — |
| Tashkent | 119·2 | 6 | 19 51 | PP | i 25 42 | [− 6] | e 57·8 | 75·1 |
| Andijan | 120·1 | 3 | e 19 1 | [+15] | — | — | — | — |
| Bombay | 141·8 | 6 | — | — | e 22 50 | PP | — | 90·3 |

Additional readings :—
Florissant iPPZ = +5m.32s., iPPPZ = +5m.43s., iPPPPZ = +5m.46s., $iP_cPZ$ = +8m.49s., iSSE = +9m.58s., iSSSN = +10m.5s., $iP_cSN$ = +12m.17s., $iS_cSEN$ = +17m.3s. ; $T_0$ = 3h.22m.2s.
St. Louis iP = +5m.2s., iPP = +5m.31s., iPPP = +5m.42s., iS = +9m.27s. = SS − 6s., iSS = +10m.11s., iSSS = +11m.17s., $iP_cP$ = +13m.50s., $iP_cS$ = +17m.47s., $eS_cS$ = +21m.33s. ; $T_0$ = 3h.21m.47s.
Berkeley iEZ = +5m.26s., iSZ = +9m.52s., iSE = +9m.58s.
Ukiah eSS = +11m.58s.
Bozeman eSS = +12m.49s.
Ann Arbor iPP = +6m.44s., eSSN = +13m.20s., i = +15m.44s.
Pittsburgh i = +6m.45s. =PP − 5s., e = +12m.28s. =SS +10s.
Toronto iPE = +3m.10s.
Victoria iSN = +11m.2s.
Ottawa ePP = +8m.7s., eSN = +13m.2s.
Oak Ridge iE = +8m.22s., iNE = +8m.28s. =PP +17s., eNE = +11m.59s.
Huancayo iSSS = +17m.19s.
Sitka i = +17m.46s. =SS +2s.
Ivigtut +13m.14s.
Liverpool e = +32m.20s.
San Fernando SN = +23m.3s.
Malaga SKS = +23m.3s., PS = +24m.11s.
De Bilt ePPZ = +15m.55s.
Uccle PPE = +15m.59s., PPPE = +17m.57s., SN = +23m.16s., eSSE = +29m.18s., eSSSE = +32m.51s.
Granada $P_cP$ = +13m.2s., PP = +16m.5s.

*Continued on next page.*

Copenhagen +24m.44s. =PS +17s.
Upsala PP = +16m.12s.
Strasbourg PP = +16m.22s., SS = +29m.32s.
Neuchatel eSKS = +23m.26s.
Stuttgart ePP = +16m.22s.
Pulkovo PP = +16m.58s., PPS = +25m.50s., SS = +30m.32s.
Triest i = +17m.2s. =PP +5s.
Zagreb e = +13m.28s. and +35m.50s. ?
Kucino PS = +23m.30s., eSS = +31m.2s.
Ekaterinburg iPP = +18m.7s., iPS = +27m.20s.
Irkutsk ePP = +18m.10s., PS = +27m.34s., eSS = +33m.14s.
Chiufeng ePP? = +18m.59s.
Tiflis ePPN = +19m.15s., ePSE = +28m.58s., eSSE = +35m.30s.
Tashkent eSKKS = +27m.13s., ePS = +29m.51s., ePPS = +31m.23s., SS = +36m.50s.
Long waves were also recorded at Honolulu T.H., Christchurch, Wellington, Sydney, Hong Kong, Phu-Lien, and other European stations.

July 10d. 10h. 33m. 16s. Epicentre 6°·1S. 133°·8E. N.1.

Probable error of epicentre ±0°·20.

A = −·688, B = +·718, C = −·106; D = +·722, E = +·692; G = +·074, H = −·077, K = −·994.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Amboina | | 6·1 | 293 | i 1 13 | −14 | i 2 17 | −19 | — | — |
| Palau | | 13·5 | 3 | 3 13 | + 4 | 5 44 | + 5 | — | — |
| Manila | | 24·2 | 328 | i 5 14 | + 2 | i 9 31 | + 4 | 12·2 | — |
| Adelaide | | 29·2 | 172 | i 5 57 | − 1 | i 10 57 | + 6 | i 13·2 | 18·0 |
| Perth | | 30·8 | 211 | — | — | e 11 44 | +27 | — | 16·7 |
| Riverview | | 32·1 | 152 | i 6 24 | 0 | 11 44 | + 7 | 16·3 | 18·4 |
| Sydney | | 32·1 | 152 | e 7 14 | PP | e 14 44 | ? | 17·5 | 18·0 |
| Melbourne | | 33·3 | 164 | e 6 37 | + 3 | 11 55 | 0 | 15·5 | 18·4 |
| Hong Kong | | 34·3 | 327 | 6 43 | 0 | 12 4 | − 7 | — | 17·2 |
| Phu-Lien | | 37·8 | 316 | e 7 13 | 0 | e 12 58 | − 5 | — | — |
| Miyazaki | | 38·1 | 357 | 7 17 | + 1 | 12 54 | −14 | — | — |
| Nagasaki | | 39·0 | 355 | 7 24 | 0 | 13 18 | − 3 | 16·0 | — |
| Zi-ka-wei | Z. | 39·1 | 344 | i 7 29k | + 5 | 13 28 | + 6 | 19·3 | 22·1 |
| Koti | | 39·6 | 0 | e 7 29 | 0 | e 13 29 | − 1 | — | — |
| Hukuoka | B. | 39·8 | 356 | 7 29 | − 1 | 13 29 | − 4 | — | — |
| Sumoto | | 40·4 | 2 | 7 35k | 0 | e 13 39 | − 3 | e 20·2 | — |
| Nanking | | 40·7 | 340 | i 7 38 | 0 | i 13 43 | − 4 | — | — |
| Osaka | | 40·8 | 2 | i 7 39 | 0 | 13 47 | − 1 | 15·7 | 17·5 |
| Kobe | | 40·8 | 2 | 7 39k | 0 | 13 42 | − 6 | — | — |
| Kameyama | | 41·0 | 4 | 7 42 | + 2 | 13 48 | − 3 | — | — |
| Nagoya | | 41·3 | 5 | e 7 45 | + 2 | 8 45 | ? | — | — |
| Gihu | | 41·6 | 5 | 7 45 | 0 | 13 56 | − 4 | — | — |
| Toyooka | E. | 41·6 | 2 | e 7 46 | + 1 | e 13 57 | − 3 | — | — |
| Taikyu | | 42·2 | 354 | 7 49 | − 1 | (14 3) | − 6 | 14·1 | — |
| Tyosi | • | 42·3 | 9 | e 7 57 | + 6 | — | — | — | — |
| Oiwake | | 42·7 | 7 | 7 56 | + 2 | 14 10 | − 6 | — | — |
| Zinsen | | 44·0 | 352 | 8 4 | − 1 | (14 32) | − 4 | 14·5 | — |
| Keizyo | | 44·1 | 353 | 8 7k | + 1 | 14 35 | − 2 | — | — |
| Hukusima | | 44·3 | 9 | 8 7 | 0 | 14 40 | 0 | — | — |
| Sendai | | 44·9 | 9 | 8 13 | + 1 | 14 52 | + 3 | — | — |
| Mizusawa | | 45·7 | 9 | e 8 19 | + 1 | i 14 58 | − 2 | — | — |
| Chiufeng | | 48·9 | 342 | i 8 43k | 0 | i 15 42 | − 3 | e 23·8 | — |
| Vladivostok | | 49·2 | 358 | i 8 48 | + 3 | i 15 50 | 0 | — | — |
| Arapuni | | 49·6 | 136 | — | — | e 15 44 | −11 | i 27·7 | — |
| Christchurch | | 50·6 | 144 | 8 57 | + 1 | 16 14 | + 5 | 24·6 | — |
| Wellington | | 50·6 | 140 | 10 54 | PP | 16 21 | +12 | 25·7 | 30·7 |
| Irkutsk | | 63·5 | 341 | 10 29 | 0 | i 18 59 | − 2 | 30·7 | — |
| Bombay | | 65·0 | 294 | e 10 44 | + 5 | — | — | — | — |
| Almata | | 71·2 | 320 | e 11 29 | +11 | — | — | — | — |
| Honolulu T.H. | | 72·4 | 66 | e 11 30 | + 5 | i 20 53 | + 3 | e 33·7 | — |

*Continued on next page.*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Andijan | | 73·1 | 316 | e 11 28 | − 1 | e 21 52 | +54 | — | — |
| Tashkent | | 75·4 | 316 | i 11 39 | − 4 | i 21 15 | −10 | e 34·7 | 50·9 |
| Tchimkent | | 75·6 | 317 | e 11 34 | −10 | e 21 12 | −15 | — | — |
| Ekaterinburg | | 86·0 | 328 | i 12 37 | − 1 | i 23 4 | [− 2] | 36·7 | — |
| Baku | | 89·3 | 311 | e 12 57 | + 3 | i 23 45 | − 4 | 43·4 | 54·0 |
| Tiflis | | 93·3 | 312 | 13 16 | + 3 | e 24 20 | − 7 | 46·7 | — |
| Sitka | | 95·6 | 33 | e 17 9 | PP | i 23 58 | [− 6] | e 43·3 | — |
| Kucino | | 98·3 | 325 | e 17 1 | PP | 24 34 | [+17] | e 31·5 | 62·2 |
| Ksara | | 99·9 | 302 | e 13 24 | −19 | e 26 2 | PS | — | — |
| Pulkovo | | 102·0 | 329 | e 13 48 | − 5 | 25 20 | {+12} | 39·7 | 61·7 |
| Tinemaha | | 108·0 | 53 | e 18 38 | PP | — | — | — | — |
| Pasadena | z. | 108·3 | 56 | e 14 16 | − 7 | — | — | — | — |
| Mount Wilson | z. | 108·4 | 56 | e 14 33 | +10 | — | — | — | — |
| Riverside | | 109·0 | 56 | e 18 56 | PP | — | — | — | — |
| Copenhagen | | 112·3 | 328 | 19 21 | PP | 25 11 | [−12] | 56·7 | — |
| Tucson | | 114·6 | 57 | e 19 28 | PP | e 29 14 | PS | e 54·0 | — |
| Triest | | 115·1 | 318 | i 18 42 | [+ 9] | 26 40 | {− 2} | e 57·7 | 67·7 |
| Stuttgart | | 116·9 | 322 | e 18 44? | [+ 6] | — | — | — | — |
| De Bilt | | 117·7 | 327 | 20 0 | PP | — | — | e 61·7 | 70·8 |
| Strasbourg | | 117·8 | 323 | e 19 49? | PP | e 29 32? | PS | e 56·7 | — |
| Piacenza | | 117·9 | 319 | 19 12 | [+31] | 29 44 | PS | — | 74·2 |
| Uccle | | 118·8 | 327 | e 20 2 | PP | — | — | e 59·7 | — |
| Edinburgh | | 119·6 | 333 | — | — | e 35 44? | SS | e 63·7 | — |
| Paris | | 120·8 | 324 | i 20 22 | PP | — | — | 66·7 | 79·7 |
| Kew | | 120·9 | 328 | e 20 20 | PP | — | — | e 66·7 | — |
| Florissant | | 128·5 | 45 | i 21 11 | PP | e 28 3 | {− 9} | 34·7 | — |
| St. Louis | | 128·7 | 45 | e 21 15 | PP | e 31 5 | PS | 53·7 | — |
| Granada | | 130·3 | 315 | i 21 22a | PS | — | — | — | — |
| Ottawa | | 133·1 | 28 | e 21 39 | PP | e 26 24 | [− 4] | e 58·7 | — |
| Pittsburgh | | 134·3 | 36 | e 21 47 | PP | — | — | e 66·7 | — |
| Oak Ridge | N.E. | 137·2 | 27 | — | — | e 28 52 | {−14} | e 68·7 | — |
| Fordham | | 137·3 | 31 | e 22 6 | PP | 32 14 | SKSP | 66·7 | — |
| Huancayo | | 145·9 | 122 | i 19 58 | [+22] | — | — | e 70·3 | — |
| La Paz | | 148·7 | 137 | 19 50 | [+10] | — | — | — | — |
| San Juan | | 157·1 | 56 | e 23 21 | PKS | e 34 18 | ? | e 74·7 | — |

Additional readings :—
Amboina i = +1m.16s.
Adelaide i = +10m.46s. and +11m.33s.
Sydney eP = +10m.26s.
Melbourne PP = +7m.47s., i = +12m.10s.
Zi-ka-wei iZ = +16m.34s.
Nanking iN = +7m.55s., eN = +16m.53s.
Kobe PPN = +8m.56s., eSZ = +13m.46s.
Toyooka PZ = +7m.37s.
Keizyo eE = +17m.48s. =SS +15s.
Chiufeng i = +9m.2s., PP = +10m.16s., i = +15m.57s., e = +19m.50s.
Tiflis PPN = +17m.5s., PKSE = +23m.45s.
Kucino SKKS = +24m.12s., PS = +26m.2s.
Pulkovo PP = +18m.12s., SKS = +24m.26s.
Pasadena i = +18m.47s. =PP +2s.
Mount Wilson e = +18m.53s. =PP +8s.
Copenhagen +28m.47s. =PS −3s. and +34m.50s. =SS +0s.
Triest e = +17m.0s., eSKKS = +29m.5s. =PS −12s., eSS = +39m.49s. = SSS +14s.
Strasbourg eSS = +34m.44s. ?
Florissant $P_gPEN$ = +22m.26s.
St. Louis epP = +22m.32s., esS = +33m.18s.
Pittsburgh e = +22m.45s. =PKS −6s., ePPS = +33m.44s.
Oak Ridge eNE = +32m.32s. =PS −3s. and +40m.16s. =SS +8s.
Fordham e = +40m.14s. =SS +14s.
San Juan e = +23m.59s. =PP −1s. and +35m.24s., eSS = +43m.54s., e = +48m.52s.
Long waves were also recorded at Amboina, Palau, Chicago, Cape Town, Ivigtut, and San Fernando.

July 10d. 13h. 30m. 6s. Epicentre 45°·7N. 142°·0E. (as on 1929 Oct. 5d.). X.

A = −·550, B = +·430, C = +·716; D = +·616, E = +·788;
G = −·564, H = +·441, K = −·698.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Mizusawa | E. | 6·6 | 186 | e 1 36 | + 2 | e 2 57 | + 9 | — | — |
| Chiufeng | | 19·7 | 263 | e 4 46 | +20 | e 9 22 | ? | — | 15·1 |
| Ekaterinburg | | 48·9 | 316 | e 8 40 | − 3 | e 20 16 | ? | 26·9 | — |
| Tashkent | | 51·1 | 294 | 9 2 | + 2 | 17 7 | +51 | — | 35·0 |
| Tiflis | N. | 65·7 | 307 | e 10 41 | − 2 | — | — | — | — |

Long waves were also recorded at Baku, Copenhagen, De Bilt, and Stuttgart.

July 10d. Readings also at 1h. (La Paz, Sucre, Tchimkent, and near Tananarive), 4h. (near New Plymouth), 5h. (Pasadena, Mount Wilson, and near Wellington), 6h. (Ekaterinburg, Tashkent, Chiufeng, Vladivostok, Nagoya (2), near Mizusawa, and near Tyosi), 7h. (Copenhagen, De Bilt, and Sitka), 8h. (Mount Wilson, Pasadena, Riverside, Tinemaha, Ukiah, Victoria, Honolulu T.H., and Pittsburgh), 9h. (De Bilt and Oak Ridge), 11h. (Nagoya and Tyosi), 12h. (Ekaterinburg, Pulkovo, Copenhagen, Edinburgh, Kew, Almeria, and Tortosa), 14h. (Andijan), 15h. (Edinburgh), 18h. (Mizusawa, Nagoya, and near Tyosi), 19h. (Ekaterinburg, near Andijan, Tchimkent, Tashkent, near Apia, and near Tyosi), 20h. (Tashkent, near Tiflis, Mizusawa, Nagoya, and near Tyosi), 21h. (Ekaterinburg and Columbia), 22h. (near Batavia (2) and Soengei Langka (2)), 23h. (Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, Ekaterinburg, Tashkent, Nagoya, Mizusawa, and Tyosi (2)).

July 11d. 5h. 59m. 40s. Epicentre 34°·0N. 142°·5E. (as on 1930 Sept. 10d.) X.

A = −·658, B = +·505, C = +·559; D = +·609, E = +·793;
G = −·444, H = +·340, K = −·829.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Tyosi | | 2·2 | 322 | e 0 24 | − 7 | 0 34 | P* | — | 0·6 |
| Nagoya | | 4·7 | 286 | e 1 13 | + 6 | e 2 19 | S* | — | 2·7 |
| Mizusawa | E. | 5·2 | 348 | 1 24 | P* | e 2 31 | S* | — | — |
| | N. | 5·2 | 348 | 1 17 | + 3 | e 2 23 | +10 | — | — |
| Osaka | | 5·9 | 279 | 1 25 | + 1 | 2 27 | − 4 | — | 2·9 |
| Kobe | | 6·1 | 279 | e 1 26 | − 1 | e 2 32 | − 4 | — | 3·3 |
| Sumoto | | 6·3 | 275 | 1 42 | P* | 3 19 | $S_g$ | — | 3·5 |
| Toyooka | | 6·5 | 286 | e 1 40 | + 8 | e 3 0 | +14 | — | 3·2 |
| Koti | | 7·4 | 269 | e 2 20? | $P_g$ | — | — | — | — |
| Nagasaki | | 10·6 | 267 | e 4 55 | S | (e 4 55) | S* | — | — |
| Vladivostok | | 12·3 | 321 | e 2 46 | − 6 | — | — | 5·3 | 6·7 |
| Keizyo | E. | 13·1 | 291 | e 3 0 | − 3 | — | — | e 7·4 | — |
| Nanking | | 19·9 | 270 | e 3 12 | −77 | — | — | e 10·9 | — |
| Chiufeng | | 21·8 | 294 | e 4 51 | + 2 | e 8 36 | − 6 | — | 13·9 |
| Tashkent | | 56·7 | 300 | — | — | e 18 23 | +51 | e 29·0 | 35·6 |
| Ekaterinburg | | 57·8 | 320 | e 10 3 | +14 | e 17 42 | − 5 | — | — |

**Additional readings:—**
**Kobe ePN = +1m.29s., eSE = +2m.43s.**
**Toyooka SE = +3m.6s. = S* −6s.**
**Tashkent e = +24m.12s.**
**Long waves were also recorded at Zinsen, Hong Kong, and Stuttgart.**

July 11d. 6h. 50m. 3s. Epicentre 35°·0N. 142°·0E. (as on 1931 July 20d.). X.

A = −·646, B = +·504, C = +·574 ; D = +·616, E = +·788 ;
G = −·452, H = +·353, K = −·819.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Tyosi | | 1·2 | 308 | e 0 16 | − 1 | 0 27 | − 4 | — | 0·5 |
| Mizusawa | E. | 4·2 | 351 | e 1 7 | P* | i 2 9 | $S_g$ | — | — |
| Nagoya | | 4·2 | 274 | e 1 0 | 0 | 1 56 | S* | — | 2·4 |
| Osaka | | 5·4 | 268 | 1 19 | + 2 | 2 22 | + 4 | — | 3·4 |
| Kobe | | 5·7 | 268 | e 1 14 | − 7 | e 2 21 | − 4 | — | 3·9 |
| Toyooka | | 5·9 | 283 | e 1 33 | P* | e 3 12 | $S_g$ | — | 3·2 |
| Sumoto | | 5·9 | 265 | 1 22 | − 2 | 2 42 | +11 | — | 3·6 |
| Koti | Z. | 7·2 | 261 | e 1 37 | − 5 | — | — | — | — |
| Nagasaki | | 10·4 | 261 | e 2 30 | + 4 | — | — | — | — |
| Taikyu | | 10·9 | 278 | 2 37 | + 4 | — | — | e 6·9 | — |
| Vladivostok | | 11·3 | 320 | 2 39 | 0 | (4 57?) | +12 | 4·9 | 7·6 |
| Keizyo | E. | 12·4 | 286 | 2 56? | + 2 | — | — | 7·1 | — |
| Zinsen | | 12·6 | 286 | e 2 57 | + 1 | — | — | e 6·6 | — |
| Nanking | | 19·6 | 268 | e 4 44 | +19 | — | — | e 10·0 | — |
| Chiufeng | | 21·1 | 292 | e 4 34 | − 7 | e 8 27 | − 1 | e 11·2 | 14·2 |
| Tashkent | | 55·9 | 301 | e 9 32 | − 3 | e 17 14 | − 7 | e 25·9 | 34·4 |
| Ekaterinburg | | 56·8 | 320 | e 10 16 | +34 | e 17 32 | − 2 | 25·9 | 35·9 |
| Pulkovo | | 70·0 | 331 | — | — | e 20 21 | 0 | e 30·9 | 43·5 |
| Tinemaha | E. | 76·4 | 55 | e 12 8 | +20 | — | — | — | — |
| Pasadena | Z. | 78·1 | 57 | i 12 11 | +13 | — | — | — | — |
| Riverside | Z. | 78·7 | 57 | e 12 6 | + 5 | — | — | — | — |
| Copenhagen | | 79·7 | 335 | — | — | 22 3 | − 9 | 39·9 | — |
| Triest | | 86·8 | 328 | — | — | e 23 16 | [+ 4] | — | 48·9 |

Additional readings :—
Mizusawa eSN = +2m.13s. = $S_g$ +0s.
Kobe eSZ = +2m.25s.
Toyooka eE = +1m.43s.
Long waves were also recorded at Hong Kong, Baku, Tiflis, Kucino, and at other European stations.

July 11d. 7h. 46m. 30s. Epicentre 40°·5N. 96°·0E. N.3.
(as given by the Russian stations).

A = −·079, B = +·756, C = +·649 ; D = +·995, E = +·105 ;
G = −·068, H = +·646, K = −·760.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Frunse | 16·1 | 286 | e 5 16 | ? | — | — | — | — |
| Andijan | 17·9 | 279 | e 4 55 | +50 | — | — | — | — |
| Tashkent | 20·1 | 281 | i 4 25 | − 6 | 8 3 | − 5 | e 11·5 | 13·9 |
| Ekaterinburg | 28·0 | 318 | e 5 54 | + 7 | e 10 40 | + 8 | 15·5 | — |
| Tiflis | 38·0 | 289 | e 7 16 | + 1 | — | — | — | — |
| Pulkovo | 44·0 | 319 | e 8 1 | − 4 | e 14 6 | −30 | e 20·5 | — |

Additional readings and note :—
Tiflis PN = +3m.9s., eN = +6m.54s., eSN = +7m.5s., eL = +8m.7s.; possibly associated with the readings for Ksara and Helwan relegated to the notes for 11d.
Pulkovo e = +17m.18s. = SS −14s.

July 11d. 8h. 28m. 12s. Epicentre 30°·0N. 140°·4E. N.3.

A = −·667, B = +·552, C = +·500 ; D = +·637, E = +·771 ;
G = −·385, H = +·319, K = −·866.

A *depth* of focus 0·060 is assumed on the evidence of the Pasadena P reading. This assumption is justified by the existence of numerous shocks of similar depth which have been known to occur in the immediate neighbourhood.

| | | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | ° | m. s. | s. | m. s. | s. | m. |
| Tyosi | | +0·4 | 5·7 | 4 | e 2 43 | S | (e 2 43) | + 7 | — |
| Nagoya | | +0·3 | 5·9 | 332 | e 1 34 | + 6 | 2 38 | 0 | — |
| Osaka | | +0·2 | 6·2 | 320 | 1 28 | − 3 | 2 40 | − 3 | 3·0 |
| Sumoto | | +0·2 | 6·4 | 314 | — | — | e 2 38 | −10 | 2·7 |
| Kobe | | +0·2 | 6·4 | 318 | — | — | e 2 38 | −10 | 3·6 |
| Toyooka | | 0·0 | 7·2 | 321 | 1 38 | − 4 | 2 59 | − 5 | 3·0 |
| Mizusawa | | −0·5 | 9·1 | 3 | — | — | e 3 52 | +13 | — |
| Tinemaha | E. | −7·2 | 80·5 | 53 | e 11 29 | − 2 | — | — | — |
| Pasadena | Z. | −7·3 | 82·0 | 55 | i 11 43a | + 4 | — | — | — |
| Mount Wilson | Z. | −7·3 | 82·1 | 55 | e 11 45a | + 6 | — | — | — |

Additional readings :—
Tyosi S = +2m.53s.
Kobe eSNZ = +2m.41s.

July 11d. Readings also at 0h. (near Manila), 1h. (Trenta, Koti, Nagoya, and near Osaka), 3h. and 4h. (2) (Tyosi), 6h. (Haiwee, La Jolla, Mount Wilson, Pasadena, Riverside, Tinemaha, Baku, Pulkovo, Copenhagen, Cheb, Hamburg, De Bilt, Paris, Strasbourg, Stuttgart, Vienna, Padova, Piacenza, Triest, Zagreb, near Nagoya, and near Tyosi (3) ), 7h. (Helwan, Ksara, Mizusawa, near Nagoya, Osaka, and Tyosi (7) ), 8h. (Chiufeng and Copenhagen), 9h. (Ekaterinburg, Tashkent, Pasadena, Riverside, Tinemaha, Kobe, Nagoya, Osaka, Mizusawa, and near Tyosi), 10h. (Nagoya), 13h. (Strasbourg, near Toyooka, and near Tyosi), 15h. (Stuttgart and Triest), 16h. (Alicante and near Apia), 18h. (Baku and Tashkent), 21h. (Ekaterinburg, Vladivostok, Nagoya, Kobe, Osaka, Mizusawa, and near Tyosi), 22h. (Mizusawa), 23h. (Trenta).

July 12d. 12h. 34m. 53s. Epicentre 40°·8N. 34°·2E. (as on 1928 Aug. 24d.). R.3.

A = +·625, B = +·427, C = +·653 ; D = +·564, E = −·826 ;
G = +·540, H = +·368, K = −·757.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Sebastopol | 3·9 | 351 | i 0 57 | + 1 | (1 42) | + 2 | 1·7 | — |
| Theodosia | 4·3 | 10 | e 1 6 | + 5 | — | — | i 2·2 | — |
| Ksara | 7·0 | 169 | e 1 44 | + 5 | 3 53 | $S_E$ | — | — |
| Baku | 11·8 | 87 | — | — | e 5 34 | $S^*$ | 7·3 | — |
| Kucino | 15·2 | 7 | e 3 28 | − 3 | e 6 23 | + 3 | e 7·5 | 12·3 |
| Triest | 15·7 | 295 | e 3 40 | + 2 | i 6 39 | + 8 | — | — |
| Potsdam | 18·5 | 316 | e 4 19 | + 6 | e 7 31 | − 5 | e 11·1 | — |
| Pulkovo | 19·1 | 354 | 4 23 | + 3 | e 7 59 | +11 | 11·8 | 14·6 |
| Stuttgart | 19·5 | 303 | e 4 20 | − 4 | e 7 57 | + 1 | e 10·5 | — |
| Strasbourg | 20·3 | 301 | e 4 7? | −26 | e 8 7? | − 5 | e 12·1 | — |
| Copenhagen | 20·7 | 323 | 4 36 | − 1 | — | — | — | — |
| Hamburg | 20·8 | 316 | e 4 7? | −31 | — | — | — | — |
| Uccle | 23·0 | 306 | e 5 13 | +12 | — | — | e 13·1 | — |
| Ekaterinburg | 23·4 | 38 | i 5 9 | + 4 | e 9 25 | +13 | 12·1 | — |
| Paris | 23·8 | 301 | e 3 7? | ? | — | — | 14·1 | 18·1 |

Additional readings :—
Triest i = +8m.19s., iSSS = +8m.33s., i = +8m.50s.
Long waves were also recorded at other European stations.

July 12d. 14h. 46m. 23s. Epicentre 28°·5N. 131°·0E. (as on 1930 March 7d.). X.

A = −·577, B = +·663, C = +·477.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Nagasaki | | 4·4 | 348 | e 0 58 | − 5 | 1 33 | $P_g$ | — | 1·9 |
| Koti | Z. | 5·5 | 23 | — | — | e 2 1 | −19 | — | — |
| Sumoto | | 6·7 | 29 | e 2 11 | $P_g$ | e 3 8 | S* | — | 3·5 |
| Osaka | | 7·3 | 31 | 1 43 | − 1 | 3 15 | + 9 | — | 4·2 |
| Nagoya | | 8·4 | 36 | e 2 5 | + 6 | e 4 33 | $S_g$ | — | — |

Long waves were also recorded at Ekaterinburg, Vladivostok and Chiufeng.

July 12d. 18h. 53m. 14s. Epicentre 35°·0N. 142°·0E. (as on 11d.). X.

A = −·646, B = +·504, C = +·574; D = +·616, E = +·788;
G = −·452, H = +·353, K = −·819.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Tyosi | | 1·2 | 308 | i 0 18a | + 1 | 0 30 | − 1 | — | 0·6 |
| Mizusawa | | 4·2 | 351 | e 1 6 | P* | e 2 21 | $S_g$ | — | — |
| Nagoya | | 4·2 | 274 | e 1 0 | 0 | e 2 1 | S* | — | 2·5 |
| Osaka | | 5·4 | 268 | 1 27 | P* | 2 31 | S* | — | 3·5 |
| Kobe | E. | 5·7 | 268 | e 1 29 | P* | e 2 35 | +10 | — | 4·3 |
| | N. | 5·7 | 268 | e 1 25 | + 4 | e 2 49 | S* | — | 3·4 |
| Sumoto | | 5·9 | 265 | e 1 33 | P* | e 2 44 | S* | — | 3·8 |
| Vladivostok | | 11·3 | 320 | e 2 38 | − 1 | e 5 8 | +23 | e 6·0 | 7·9 |

Additional readings:—
Mizusawa iSE = +2m.24s.
Sumoto eN = +2m.31s. = S +0s.
Long waves were also recorded at Stuttgart, Ekaterinburg, and Tashkent.

July 12d. Readings also at 3h. (Haiwee, Mount Wilson, Pasadena, and Riverside), 4h. (near Tananarive), 9h. (Mizusawa, near Nagoya, Tyosi, and near Samarkand), 11h. (Cape Town, Ekaterinburg, Kucino, De Bilt, Strasbourg, and Stuttgart), 12h. (near Nagoya), 14h. (Kew, near Tananarive and near Nagoya), 15h. (Paris and Stuttgart), 16h. (Honolulu T.H., Tashkent, Wellington, Suva, Stuttgart, near Mizusawa, near Keizyo, and Zinsen), 17h. (Ekaterinburg and Kucino), 18h. (near Sumoto), 20h. (Almata, near Andijan, Tchimkent, and Samarkand), 22h. (near Tyosi).

July 13d. 7h. 57m. 40s. Epicentre 42°·4N. 138°·7E. N.2.
(given by the Japanese stations).

A = −·555, B = +·487, C = +·674; D = +·660, E = +·751;
G = −·507, H = +·445, K = −·738.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Hakodate | 1·6 | 113 | −0 7k | −30 | 0 22 | −19 | — | — |
| Sapporo | 2·1 | 71 | 0 28 | − 2 | 0 50 | − 4 | — | — |
| Aomari | 2·2 | 135 | 0 29k | − 2 | 1 14 | $S_g$ | — | — |
| Akita | 2·9 | 159 | 0 39 | − 2 | 1 5 | − 9 | — | — |
| Urakawa | 3·0 | 95 | 0 42 | − 1 | 1 29 | S* | — | — |

*Continued on next page.*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Morioka | | 3·2 | 145 | 0 44 | − 2 | 1 35 | S* | — | — |
| Obihiro | | 3·3 | 81 | 0 47 | 0 | 1 36 | S* | — | — |
| Mizusawa | E. | 3·7 | 149 | e 0 58 | + 5 | i 1 44 | S* | — | — |
| | N. | 3·7 | 149 | e 1 0 | + 7 | i 1 47 | S* | — | — |
| Sendai | | 4·5 | 158 | 1 6 | + 2 | 2 51 | $S_g$ | — | — |
| Vladivostok | | 5·0 | 281 | i 1 15 | + 4 | 2 14 | + 6 | i 2·5 | 4·3 |
| Wazima | | 5·2 | 196 | 1 33 | $P_g$ | 2 7 | − 6 | — | — |
| Nagano | | 5·7 | 184 | 1 30 | + 9 | 2 43 | S* | — | — |
| Maebasi | | 6·0 | 177 | 1 35 | P* | 2 43 | +10 | — | — |
| Mito | | 6·2 | 167 | 1 26 | − 2 | 2 40 | + 2 | — | — |
| Kakioka | | 6·3 | 169 | 1 30 | 0 | 3 18 | $S_g$ | — | — |
| Kumagaya | | 6·3 | 174 | 1 35 | + 5 | 2 57 | +16 | — | — |
| Tukubasan | | 6·3 | 170 | 1 30 | 0 | 2 43 | + 2 | — | — |
| Tokyo | | 6·8 | 173 | 1 43 | + 6 | — | — | — | — |
| Tyosi | | 6·8 | 165 | e 1 44 | + 7 | 3 42 | $S_g$ | — | — |
| Gihu | | 7·1 | 193 | 1 53 | P* | 3 25 | S* | — | — |
| Nagoya | | 7·3 | 191 | e 1 54 | P* | e 3 22 | S* | — | — |
| Toyooka | E. | 7·5 | 205 | — | — | e 3 33 | S* | — | — |
| Kameyama | | 7·8 | 194 | 2 11 | P* | 3 38 | S* | — | — |
| Osaka | | 8·1 | 199 | 2 1 | + 6 | 3 48 | S* | — | 4·2 |
| Kobe | | 8·2 | 201 | e 2 11 | +15 | e 3 39 | +10 | — | 5·3 |
| Sumoto | | 8·6 | 201 | 2 20 | P* | 5 4 | ? | — | 6·3 |
| Wakayama | | 8·6 | 200 | 2 12 | +10 | 4 6 | S* | — | — |
| Hamada | | 9·1 | 217 | 2 57 | +48 | 5 37 | ? | — | — |
| Siomisaki | | 9·2 | 195 | 2 22 | +12 | — | — | — | — |
| Koti | N. | 9·7 | 206 | — | — | e 4 20? | +14 | — | — |
| Keizyo | | 10·2 | 246 | e 2 28 | + 4 | — | — | e 4·8 | 6·3 |
| Taikyu | | 10·2 | 233 | e 2 25 | + 1 | — | — | e 4·7 | — |
| Zinsen | | 10·5 | 246 | e 2 34 | + 6 | — | — | e 4·7 | — |
| Chiufeng | | 17·1 | 267 | i 4 1a | + 6 | i 7 26 | +22 | e 9·9 | 13·5 |
| Zi-ka-wei | Z. | 17·8 | 237 | 4 9 | + 5 | 7 35 | +15 | 10·5 | 14·3 |
| Nanking | | 18·9 | 243 | 4 20 | + 3 | e 7 59 | +15 | — | 11·1 |
| Irkutsk | | 25·0 | 305 | e 5 46 | +26 | e 10 20 | SS | 15·3 | 16·5 |
| Manila | | 31·7 | 214 | 6 46 | +26 | 11 34 | + 3 | 15·9 | 18·7 |
| Tashkent | | 50·2 | 294 | e 9 17 | +24 | e 16 9 | + 5 | e 26·3 | 32·1 |
| Kucino | | 61·3 | 321 | e 10 10 | − 4 | e 18 34 | + 1 | 31·7 | 36·6 |
| Pulkovo | | 62·0 | 328 | e 10 22 | + 4 | e 18 48 | + 6 | — | 39·4 |
| Baku | | 63·4 | 302 | — | — | e 19 9 | + 9 | 34·6 | 38·8 |
| Tinemaha | | 74·1 | 54 | e 11 38 | + 3 | — | — | — | — |
| Potsdam | | 74·3 | 329 | — | — | e 21 8 | − 4 | e 39·3 | 42·3 |
| Santa Barbara | Z. | 74·3 | 57 | e 11 39 | + 3 | — | — | — | — |
| Hamburg | | 74·5 | 332 | e 11 36 | − 1 | — | — | e 39·3 | — |
| Haiwee | | 74·9 | 54 | e 11 40 | 0 | — | — | — | — |
| Pasadena | | 76·1 | 56 | i 11 45a | − 2 | — | — | — | — |
| Mount Wilson | Z. | 76·2 | 56 | i 11 45a | − 2 | — | — | — | — |
| Riverside | Z. | 76·6 | 56 | i 11 47a | − 2 | — | — | — | — |
| De Bilt | | 77·4 | 333 | e 11 56 | + 2 | — | — | e 41·3 | — |
| La Jolla | Z. | 77·6 | 57 | e 11 59 | + 4 | — | — | — | — |
| Stuttgart | | 78·7 | 329 | e 12 0a | − 1 | — | — | e 41·3 | — |

Additional readings and note :—
Toyooka eN = +3m.37s.
Kobe SN = +3m.48s.
Sumoto ePE = +2m.28s.
Zinsen eN = +2m.46s.
Chiufeng $iP_2$ = +4m.58s., $eS_2$ = +8m.22s., suggesting two shocks.
Nanking iSZ = +8m.5s.
Tashkent e = +19m.49s. and +22m.44s.
Baku e = +26m.21s.
Potsdam eE = +21m.56s.
Long waves were also recorded at Hong Kong, Bombay, and other European stations.

July 13d. 14h. 23m. 25s. Epicentre 7°·7S. 106°·5E. (as on 1930 April 27d.). R.3.

A = −·281, B = +·950, C = −·134; D = +·959, E = +·284; G = +·048, H = −·128, K = −·991.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Malabar | | 1·2 | 66 | i 0 18 | + 1 | i 0 34 | + 3 | — | — |
| Batavia | | 1·5 | 12 | i 0 34k | +13 | i 1 2 | +23 | — | — |
| Soengei Langka | | 2·6 | 331 | 0 23 | −14 | i 1 3 | − 4 | — | — |
| Medan | | 13·7 | 325 | e 3 14 | + 3 | i 8 37 | ? | — | — |
| Amboina | | 22·0 | 80 | e 4 48 | − 3 | i 8 56 | +10 | — | — |
| Manila | | 26·5 | 33 | 5 35 | + 1 | 10 46 | SS | — | 17·0 |
| Bombay | | 42·5 | 310 | e 7 35 | −18 | — | — | — | — |
| Chiufeng | | 48·6 | 10 | e 8 38 | − 3 | — | — | e 25·0 | 32·6 |
| Andijan | | 57·7 | 330 | e 9 50 | + 2 | e 17 47 | + 1 | — | — |
| Tashkent | | 59·7 | 328 | i 10 2 | 0 | e 18 10 | − 2 | e 28·6 | 35·3 |
| Samarkand | | 59·8 | 327 | e 10 15 | +12 | — | — | — | — |
| Tchimkent | | 60·3 | 329 | e 10 2 | − 5 | 18 16 | − 4 | — | — |
| Ekaterinburg | | 74·6 | 336 | i 11 38 | 0 | i 21 15 | 0 | 33·6 | — |
| Theodosia | | 82·4 | 318 | 12 23 | + 3 | — | — | — | — |
| Simferopol | | 83·2 | 317 | 12 26 | + 2 | — | — | — | — |
| Sebastopol | | 83·5 | 317 | 12 29 | + 3 | — | — | — | — |
| Pulkovo | | 89·8 | 331 | e 12 55 | − 1 | e 23 49 | − 5 | 35·6 | 57·4 |
| Stuttgart | | 100·6 | 318 | e 17 52 | PP | — | — | e 61·6 | — |
| Tinemaha | | 130·0 | 48 | e 22 30 | PKS | — | — | — | — |
| Pasadena | z. | 131·2 | 51 | i 19 9a | [ 0] | — | — | — | — |
| Riverside | z. | 131·9 | 51 | e 22 32 | PKS | — | — | — | — |

Additional readings:—
Medan i = +4m.21s. and +8m.21s.
Pulkovo eSKS = +23m.23s.
Pasadena i = +22m.29s. = PKS − 10s.
Long waves were also recorded at Melbourne, Hong Kong, Vladivostok, Baku, Kucino, Copenhagen, De Bilt, and Strasbourg.

July 13d. 23h. Earthquake probably in Assam.
Calcutta eP = 23h.11m.8s., S = 11m.43s., L = 11m.56s.
Andijan eP = 23h.13m.44s.
Tchimkent eP = 23h.13m.51s.
Chiufeng e = 23h.13m.58s. and 18m.4s.
Tashkent iP = 23h.14m.7s., eS = 18m.27s., eL = 21m.42s., M = 25m.30s.
Ekaterinburg e = 23h.16m.42s. and 24m.44s., L = 28m.30s.
Bombay eP = 23h.16m.58s., S = 18m.38s.
Vladivostok e = 23h.17m.15s.
Pulkovo e = 23h.24m.46s., L = 34m.30s.
Lick ePEN = 23h.28m.4s.
Long waves were also recorded at Kucino and Copenhagen.

July 13d. Readings also at 2h. (near Apia), 3h. (Nagoya), 4h. (Copenhagen, De Bilt, Stuttgart, Piacenza, Triest, and Zagreb), 6h. (near Tyosi, near Berkeley, Branner, and Lick), 10h. (Strasbourg, Nagoya (2), Mizusawa (2), and near Tyosi (4)), 13h. (Alicante), 14h. (near St. Louis), 15h. (near Trenta), 17h. (near Apia), 20h. (Paris).

July 14d. 1h. 38m. 50s. Epicentre 20°·5S. 170°·0E. (as on 1932 May 1d.). X.

A = −·923, B = +·163, C = −·350; D = +·174, E = +·985; G = +·345, H = −·061, K = −·937.

A depth of focus 0·065 has been assumed, although this position was not previously associated with abnormal focus.

| | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | ° | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Suva | −0·3 | 8·3 | 75 | i 1 58 | + 5 | — | — | — | 2·2 |
| Apia | −2·4 | 18·6 | 72 | 2 21 | ? | 3 42 | P | — | 4·1 |
| Wellington | −2·8 | 21·2 | 170 | 4 28 | +17 | 8 10 | +37 | 9·0 | — |
| Riverview | −2·8 | 21·4 | 227 | i 4 10 | − 4 | i 8 3 | +25 | — | — |
| Melbourne | −3·7 | 27·8 | 226 | i 5 58 | +47 | e 9 41 | +16 | 15·2 | 16·7 |

*Continued on next page.*

| | | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Adelaide | | −4·1 | 31·1 | 235 | i 6 35 | PP | i 10 25 | +10 | e 12·4 | 14·4 |
| Honolulu T.H. | | −6·1 | 52·3 | 39 | e 9 14 | +52 | 16 37 | +90 | 23·2 | — |
| Manila | | −6·6 | 59·6 | 303 | 9 21 | + 7 | 17 0 | +18 | — | — |
| Batavia | | −6·8 | 62·7 | 275 | e 9 59 | +24 | i 17 55 | +34 | — | — |
| Nagoya | | −6·8 | 63·9 | 330 | e 9 42 | − 2 | — | — | — | — |
| Oiwake | | −6·9 | 64·2 | 333 | 10 5 | +20 | 18 23 | +43 | — | — |
| Mizusawa | | −6·9 | 65·5 | 336 | (e 10 10) | +15 | e 10 10 | P | — | — |
| Nagasaki | | −6·9 | 65·6 | 324 | 9 54 | − 1 | — | — | — | — |
| Sapporo | | −7·1 | 68·8 | 339 | 10 15 | − 1 | — | — | — | — |
| Hong Kong | | −7·2 | 69·2 | 305 | 19 10 | S | (19 10) | +28 | — | 23·7 |
| Chiufeng | | −7·6 | 78·6 | 322 | 11 13a | − 4 | — | — | — | — |
| Branner | E. | −7·9 | 86·1 | 47 | e 11 59 | + 1 | — | — | — | — |
| Santa Barbara | | −7·9 | 86·4 | 51 | i 12 0a | 0 | — | — | — | — |
| Pasadena | | −8·0 | 87·4 | 51 | i 12 5a | 0 | e 24 30 | PS | — | — |
| Mount Wilson | | −8·0 | 87·5 | 52 | i 12 5a | 0 | — | — | — | — |
| Riverside | | −8·0 | 87·9 | 52 | i 12 8a | + 1 | — | — | — | — |
| Haiwee | | −8·0 | 88·5 | 50 | e 12 11 | + 1 | — | — | — | — |
| Tinemaha | | −8·0 | 88·7 | 49 | e 12 13 | + 1 | — | — | — | — |
| Tucson | | −8·1 | 92·2 | 56 | — | — | e 23 16 | +17 | — | — |
| Tashkent | | — | 111·2 | 308 | e 18 44 | PP | i 25 51 | {−24} | — | 37·8 |
| Ekaterinburg | | — | 117·5 | 324 | i 18 0 | [−39] | e 26 47 | {−12} | 45·2 | — |
| Baku | | — | 125·7 | 306 | e 22 0 | ? | e 26 58 | ? | 50·2 | — |
| Kucino | | — | 129·9 | 326 | e 21 47 | PP | e 28 37 | ? | e 56·7 | — |
| Pulkovo | | — | 131·4 | 335 | 17 22 | ? | — | — | — | — |
| Copenhagen | | — | 141·0 | 340 | i 18 45 | [−38] | — | — | — | — |
| Potsdam | | — | 143·4 | 336 | i 18 42 | [−47] | — | — | — | — |
| De Bilt | Z. | — | 146·3 | 341 | i 18 55 | [−41] | — | — | — | — |
| Zagreb | | — | 146·9 | 326 | e 18 53 | [−44] | — | — | — | — |
| Uccle | | — | 147·6 | 342 | e 18 57 | [−41] | — | — | — | — |
| Stuttgart | | — | 147·8 | 335 | 18 57a | [−42] | — | — | — | — |
| Kew | Z. | — | 148·1 | 349 | e 19 21 | [−17] | — | — | — | — |
| Triest | | — | 148·2 | 329 | i 18 58a | [−41] | e 26 20 | SKS | e 60·2 | — |
| Strasbourg | | — | 148·5 | 339 | i 19 1a | [−39] | — | — | e 41·2 | — |
| Zurich | | — | 149·2 | 334 | e 19 2 | [−38] | — | — | — | — |
| Padova | | — | 149·3 | 330 | e 19 10 | [−31] | — | — | — | — |
| Paris | | — | 149·9 | 344 | i 19 4 | [−38] | — | — | — | — |
| Neuchatel | | — | 150·1 | 336 | e 19 10 | [−32] | — | — | — | — |
| Camerino | | — | 150·2 | 325 | 19 8 | [−34] | — | — | — | — |
| Piacenza | | — | 150·5 | 331 | 19 16 | [−26] | — | — | — | — |
| Trenta | | — | 150·6 | 316 | e 18 35 | [−68] | — | — | — | — |
| Rome | | — | 151·4 | 324 | e 19 18 | [−25] | — | — | — | — |
| Granada | | — | 162·4 | 343 | e 24 10 | PP | — | — | — | — |

Additional readings :—
**Melbourne** i = +11m.30s.
**Batavia** i = +18m.55s.
**Hong Kong** S? = +20m.10s.
**Santa Barbara** iZ = +12m.39s.
**Pasadena** iZ = +12m.34s. and +15m.30s.
**Riverside** iZ = +12m.37s. and +15m.35s.
**Tashkent** i = +24m.11s., +25m.13s. and +27m.39s., e = +28m.30s. and +33m.16s.
**Ekaterinburg** e = +35m.0s. and +37m.52s.
**Baku** e = +31m.34s. and +35m.51s.
**Kucino** e = +36m.46s., +37m.47s., +40m.15s., and +48m.40s.
**Pulkovo** i = +20m.48s.
**Copenhagen** +22m.22s. =PP−7s.
**Potsdam** eN = +21m.10s.
**De Bilt** iZ = +22m.20s. =PP+39s.
**Zagreb** iNW = +18m.58s.
**Uccle** iZ = +18m.59s. and +19m.28s.
**Stuttgart** iZ = +19m.29s.
**Triest** i = +19m.1s. and +19m.32s., iPP = +22m.34s., eSS = +40m.54s.
**Strasbourg** $iPKP_2$ = +19m.31s., SKP = +22m.30s.

July 14d. 4h. 41m. 13s. Epicentre 42°·9N. 56°·5E. N.3.

A = +·404, B = +·611, C = +·681 ; D = +·834, E = −·552 ;
G = +·376, H = +·568, K = −·733.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Baku | 5·6 | 245 | e 1 18 | − 2 | e 2 34 | S* | 4·5 | 7·0 |
| Samarkand | 8·5 | 109 | 2 17 | +17 | 4 5 | S* | — | — |
| Tchimkent | 9·6 | 90 | 2 16 | 0 | 4 1 | − 2 | — | — |
| Tashkent | 9·6 | 95 | e 1 59 | −17 | i 3 42 | −21 | 4·7 | 7·2 |
| Andijan | 12·0 | 95 | e 2 49 | + 1 | e 4 8 | −55 | — | — |
| Frunse | 13·2 | 84 | e 3 11 | + 6 | e 5 37 | + 5 | 6·8 | — |
| Almata | 14·8 | 82 | e 3 25 | − 1 | — | — | — | — |
| Kucino | 17·6 | 324 | — | — | e 8 44 | ? | e 13·6 | 17·2 |
| Ksara | 18·5 | 248 | e 3 42? | −31 | 7 8 | −28 | — | — |
| Pulkovo | 23·2 | 326 | e 5 3 | 0 | 9 21 | +13 | e 14·8 | 17·5 |

Additional readings :—
Baku e = +3m.32s.
Pulkovo e = +12m.11s.
Long waves were also recorded at Copenhagen and Chiufeng.

July 14d. 16h. 3m. 36s. Epicentre 43°·8N. 132°·5E. N.2.

A = −·488, B = +·532, C = +·692 ; D = +·737, E = +·676 ;
G = −·468, H = +·510, K = −·722.

A *depth* of focus 0·060 has been assumed.

| | | Corr. for Focus | ⊿ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Vladivostok | | +2·3 | 0·8 | 210 | i 1 8 | S | (i 1 8) | −12 | i 1·9 | 2·0 |
| Heizyo | | −0·1 | 6·9 | 229 | 1 39 | + 2 | 2 58 | + 5 | — | — |
| Keizyo | | −0·2 | 7·5 | 216 | i 1 43a | − 1 | i 3 7 | + 1 | — | — |
| Zinsen | | −0·2 | 7·7 | 217 | i 1 45a | − 1 | 3 10 | − 1 | — | — |
| Mizusawa | | −0·3 | 7·9 | 123 | i 2 1 | +13 | i 3 36 | +22 | — | — |
| Taikyu | | −0·4 | 8·4 | 202 | 1 55a | + 2 | 3 27 | + 3 | — | — |
| Toyooka | | −0·4 | 8·4 | 167 | e 1 57 | + 4 | 2 31 | −53 | — | 2·6 |
| Kobe | | −0·6 | 9·3 | 167 | i 2 7a | + 4 | e 3 45 | + 4 | — | 3·8 |
| Nagoya | | −0·6 | 9·3 | 157 | e 2 9 | + 6 | 3 49 | + 8 | — | — |
| Osaka | | −0·6 | 9·4 | 165 | 1 56 | − 9 | 3 51 | + 7 | — | 5·2 |
| Sumoto | | −0·6 | 9·6 | 168 | 2 9a | + 2 | 3 53 | + 4 | — | 3·9 |
| Koti | Z. | −0·7 | 10·2 | 175 | i 2 15 | + 1 | i 4 3 | + 2 | — | — |
| Tyosi | | −0·7 | 10·3 | 139 | 2 22 | + 6 | 4 8 | + 5 | — | 4·2 |
| Chiufeng | | −1·2 | 12·7 | 259 | i 2 37k | − 5 | i 4 44 | − 6 | i 6·5 | — |
| Nanking | | −1·7 | 15·9 | 227 | i 3 6 | −12 | i 5 47 | − 9 | — | — |
| Irkutsk | | −2·5 | 20·5 | 305 | e 4 2 | − 5 | i 7 16 | − 9 | — | — |
| Hong Kong | | −3·2 | 26·3 | 221 | 8 48 | S | (8 48) | −19 | 12·0 | 13·3 |
| Manila | | −3·8 | 30·8 | 202 | 6 59 | +81 | 9 41 | −34 | — | — |
| Baku | | −6·1 | 58·8 | 299 | — | — | e 16 31 | − 7 | e 23·9 | — |
| Tiflis | N. | −6·3 | 61·2 | 302 | e 17 0 | S | (e 17 0) | − 8 | — | — |
| Tinemaha | | −7·1 | 76·8 | 52 | e 11 8 | − 1 | e 20 21 | + 3 | — | — |
| Haiwee | | −7·1 | 77·6 | 52 | e 11 15 | + 1 | e 20 31 | + 4 | — | — |
| Santa Barbara | Z. | −7·1 | 77·9 | 54 | e 11 13a | − 3 | — | — | — | — |
| Mount Wilson | | −7·2 | 79·0 | 53 | i 11 18a | − 4 | e 20 40 | − 3 | — | — |
| Pasadena | | −7·2 | 79·0 | 53 | i 11 18a | − 4 | i 20 40 | − 3 | — | — |
| Riverside | | −7·2 | 79·5 | 53 | e 11 20a | − 5 | — | — | — | — |
| La Jolla | | −7·2 | 80·5 | 54 | e 11 32a | + 1 | e 21 3 | + 3 | — | — |
| St. Louis | | −7·5 | 89·0 | 33 | e 12 18 | + 2 | e 21 58 | −34 | — | — |

Additional readings :—
Kobe eEN = +3m.26s., iSE = +3m.48s.
Hong Kong S? = +11m.6s.
Tiflis eN = +19m.13s.
Pasadena iZ = +13m.13s.

July 14d. Readings also at 4h. (Ottawa, Strasbourg, and Stuttgart), 5h. (Vladivostok), 6h. (Strasbourg, Mizusawa, Nanking, Taihoku, Nagoya, and near Tyosi), 7h. (near Tyosi), 8h. (Paris), 9h. (Strasbourg), 10h. (Tiflis and near Tyosi), 12h. (Strasbourg and near Sumoto), 13h. (Tashkent and near Tiflis), 15h. (Alicante), 18h. (near Batavia and Malabar), 19h. (Mizusawa and near Branner), 21h. (Chiufeng, Hong Hong, Tashkent, Vladivostok, and near Mizusawa).

July 15d. 3h. 55m. 38s. Epicentre 36°·1N. 140°·0E. (as on 1933 June 3d.). X.

A = −·619, B = +·519, C = +·589; D = +·643, E = +·766; G = −·451, H = +·379, K = −·808.

| | △ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Tyosi | 0·8 | 118 | 0 10 | − 1 | 0 20 | − 1 | 0·6 |
| Nagoya | 2·7 | 249 | 0 37 | − 2 | 1 10 | + 1 | 1·6 |
| Mizusawa | 3·0 | 16 | e 0 46 | + 3 | e 1 22 | + 5 | — |
| Osaka | 3·9 | 250 | 1 0 | + 4 | 1 55 | S* | 2·2 |
| Kobe | 4·3 | 251 | 1 11 | P* | e 1 58 | + 8 | 2·4 |

Additional readings:—
Tyosi $P_g$ = +18s.
Kobe eSE = +2m.4s. = S* − 2s.

July 15d. 9h. 2m. 44s. Epicentre 39°·7S. 178°·8E. (as on 1932 Sept. 28d.). X.

A = −·769, B = +·016, C = −·639; D = +·021, E = +1·000; G = +·639, H = −·013, K = −·769.

| | △ | Az. | P. | O−C. | S. | O−C. |
|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. |
| Hastings | 1·5 | 273 | 0 16? | − 5 | 0 52 | +13 |
| Wellington | 3·5 | 242 | 0 52 | + 2 | 1 50 | $S_g$ |
| Glenmuick | 5·3 | 233 | 1 33 | P* | e 2 12 | − 3 |
| Christchurch | 6·0 | 229 | 1 28 | + 3 | 2 50 | S* |

Additional readings:—
Wellington $S_g$? = +1m.52s.
Glenmuick e = +2m.7s.

July 15d. 22h. 21m. 36s. Epicentre 36°·6N. 77°·8E. N.3. (as given by the stations).

A = +·170, B = +·785, C = +·596; D = +·977, E = −·211; G = +·126, H = +·583, K = −·803.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Andijan | 5·9 | 316 | e 1 15 | − 9 | e 2 25 | − 6 | — | — |
| Almata | 6·7 | 354 | e 1 38 | + 3 | e 2 57 | + 6 | — | — |
| Frunse | 6·8 | 339 | e 2 56 | S | (e 2 56) | + 3 | — | — |
| Tashkent | 8·1 | 308 | i 1 23 | −32 | — | — | i 2·4 | 4·1 |
| Tchimkent | 8·5 | 314 | e 1 5 | ? | 2 10 | P | — | 2·8 |
| Baku | 22·1 | 289 | e 6 3 | ? | — | — | e 8·9 | — |
| Ekaterinburg | 23·3 | 336 | — | — | e 9 14 | + 4 | 13·6 | — |

Additional readings:—
Andijan $S_g$ = +2m.58s. = S* +4s.
Almata S* = +2m.19s. = $P_g$ +11s.
Tchimkent $S_g$ = +2m.35s.
Long waves were also recorded at Copenhagen and Vladivostok.

July 15d. Readings also at 0h. (near Samarkand), 1h. (near Lick), 4h. (near Tiflis), 5h. (Tiflis and near Nagasaki (2)), 10h. (near Amboina), 11h. (Koti), 12h. (near Tyosi), 13h. (Ekaterinburg and Manila), 14h. (Haiwee, Mount Wilson, Pasadena, Riverside, and Tinemaha), 17h. (near Mizusawa), 18h. (Baku, Ekaterinburg, Tashkent, Kucino, and Mizusawa), 19h. (Baku, Ekaterinburg, Pulkovo, Tashkent, Chiufeng, Vladivostok, and near Mizusawa), 20h. (Copenhagen), 22h. (Pulkovo, Tashkent, and near Mizusawa (2)).

July 16d. Readings at 1h. (Tyosi), 3h. (near Mizusawa (2)), 4h. (near Manila and near Amboina), 6h. (Vladivostok and near Mizusawa), 7h. (Baku, Copenhagen, Stuttgart, Ekaterinburg, near Mizusawa (2), Nagoya, and Tyosi), 8h. (Mizusawa), 13h. (near Apia), 14h. (near Sumoto), 15h. (Nagoya and near Sumoto), 18h. (La Paz), 21h. (Lick), 23h. (Bombay).

July 17d. Readings at 0h. (San Francisco, near Berkeley, Branner, and Lick), 2h. (La Paz), 6h. (near Tyosi), 7h. (Alicante), 9h. (Apia), 10h. (Ksara, Paris, Strasbourg, Stuttgart, Triest, Copenhagen, Pulkovo, Ekaterinburg, near Batavia, and Malabar), 13h. (near Tyosi), 15h. (near Mizusawa), 18h. (Baku, Vladivostok, Ekaterinburg, near Mizusawa, Nagoya, Tyosi, near Almeria, Granada, and Toledo), 19h. (Stuttgart), 20h. (San Francisco, near Berkeley, Branner and Lick), 21h. (Tucson), 22h. (Glenmuick and near Medan).

July 18d. 6h. 4m. 45s. Epicentre 36°·0N. 5°·0W. (as on 1926 Nov. 5d.). X.

A = +·806, B = −·071, C = +·588; D = −·087, E = −·996; G = +·585, H = −·051, K = −·809.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Malaga | 0·9 | 32 | i 0 13 | 0 | 0 23 | 0 | — | — |
| San Fernando | 1·0 | 296 | 0 20 | + 6 | 0 36 | +10 | — | 0·8 |
| Granada | 1·6 | 43 | i 0 29 | + 6 | i 0 45 | + 4 | — | — |
| Almeria | 2·3 | 67 | 0 29 | − 4 | i 0 56 | − 3 | — | — |
| Toledo | 3·9 | 11 | i 0 57 | + 1 | i 1 57 | S* | — | — |
| Alicante | 4·3 | 56 | 0 59 | − 2 | 2 11 | S* | — | — |
| Coimbra | 5·0 | 329 | e 1 10 | − 1 | 2 0 | − 8 | — | — |
| Algiers | 6·5 | 80 | i 2 38 | S | (i 2 38) | − 8 | — | — |
| Tortosa | 6·5 | 40 | 0 28 | −64 | 1 44 | −62 | — | — |
| Paris | 14·0 | 21 | e 4 15? | +60 | — | — | — | 8·2 |
| Strasbourg | 15·7 | 33 | e 4 15? | +37 | e 6 15? | −16 | e 8·2 | — |
| Stuttgart | 16·4 | 35 | — | — | e 6 55 | + 7 | e 10·6 | — |
| De Bilt | 17·6 | 21 | — | — | e 7 21 | + 6 | e 9·2 | — |
| Potsdam | 20·8 | 32 | — | — | e 8 15 | − 7 | e 12·8 | — |

Additional readings:—
**Malaga** PP = +18s., PS = +28s., +31s., and +36s., PSS = +43s.
**Granada** PP = +33s., SS = +1m.3s.
**Almeria** $P_g$ = +31s., PP = +42s. = $P_g$ + 2s. and +49s., SS = +1m.8s. = S* + 1s., SSS = +1m.30s.
**Toledo** i$P_g$ = +1m.5s. = P* + 1s., PP = +1m.7s., PPP = +1m.16s. = $P_g$ + 4s., PPSS = +1m.43s., SS = +2m.12s.
**Alicante** PP = +1m.18s. = $P_g$ − 2s., PS = +2m.2s., SS = +2m.27s.
**Algiers** iPP = +2m.46s., eS = +5m.13s. = S* + 1s.
**Tortosa** P = +31s.
**Potsdam** eN = +10m.9s. and +11m.27s.
Long waves were also recorded at Copenhagen and Uccle.

July 18d. 11h. 25m. 8s. Epicentre 29°·6N. 128°·6E. (as on 1931 Oct. 5d.). R.2.

A = −·542, B = +·680, C = +·494 ; D = +·782, E = +·624 ;
G = −·308, H = +·386, K = −·869.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Nagasaki | | 3·3 | 19 | i 0 58k | $P_g$ | i 1 43 | $S_g$ | — | 1·8 |
| Hukuoka | | 4·3 | 21 | 1 5 | + 4 | 2 7 | S* | — | — |
| Simidu | | 5·0 | 49 | 1 11 | 0 | 2 4 | − 4 | — | — |
| Koti | | 5·8 | 46 | i 1 24 | + 2 | i 2 30 | + 2 | — | — |
| Muroto | | 6·0 | 52 | i 1 26k | + 1 | 2 33 | 0 | — | — |
| Taikyu | | 6·3 | 0 | e 1 37 | + 7 | 2 56 | +15 | — | — |
| Zi-ka-wei | Z. | 6·4 | 286 | 1 38 | + 7 | i 3 2 | S* | — | 4·0 |
| Sumoto | | 7·2 | 47 | 1 42 | 0 | 3 25 | S* | — | 3·5 |
| Kobe | | 7·5 | 46 | e 1 45 | − 1 | e 3 9 | − 2 | — | 3·7 |
| Taihoku | | 7·7 | 235 | 1 47 | − 2 | — | — | — | — |
| Osaka | | 7·8 | 48 | 1 40 | −11 | 3 44 | S* | — | 4·4 |
| Toyooka | | 7·9 | 41 | 1 53 | + 1 | 3 20 | − 1 | — | — |
| Keizyo | E. | 8·1 | 350 | e 2 2 | + 7 | e 3 27 | + 1 | e 3·8 | — |
| Zinsen | E. | 8·1 | 348 | — | — | e 3 36 | +10 | — | — |
| Nanking | | 8·8 | 289 | e 2 4a | − 1 | e 4 8 | S* | e 4·4 | 4·8 |
| Nagoya | | 9·0 | 50 | 2 7 | 0 | 3 49 | 0 | — | 4·0 |
| Heizyo | N. | 9·7 | 347 | (e 2 26?) | + 9 | e 2 26? | P | — | — |
| Tyosi | | 12·0 | 56 | e 2 52 | + 4 | — | — | — | — |
| Vladivostok | | 13·8 | 12 | 3 18 | + 5 | 6 2 | +16 | e 7·9 | — |
| Mizusawa | E. | 14·1 | 44 | (e 3 37) | +20 | e 3 37 | P | — | — |
| Chiufeng | | 14·6 | 319 | i 3 18k | − 5 | 6 12 | + 7 | — | — |
| Hong Kong | | 14·8 | 244 | 4 2 | +36 | — | — | — | 10·3 |
| Manila | | 16·6 | 207 | 3 37 | −12 | 6 36 | −16 | 7·9 | — |
| Ekaterinburg | | 53·7 | 321 | 9 47 | +28 | — | — | 23·9 | — |
| Tinemaha | | 88·6 | 47 | e 12 39 | −12 | — | — | — | — |
| Santa Barbara | Z. | 89·2 | 50 | e 12 39 | −15 | — | — | — | — |
| Pasadena | Z. | 90·4 | 49 | i 12 43a | −16 | — | — | — | — |
| Riverside | Z. | 91·0 | 49 | e 12 45a | −17 | — | — | — | — |
| La Jolla | | 91·8 | 50 | e 12 49 | −17 | — | — | — | — |

Additional readings :—
Hukuoka i = +1m.10s. =P* +0s.
Sumoto e = +3m.3s., SEZ = +3m.29s.
Kobe eSZ = +3m.12s.
Toyooka SE = +3m.23s.
Vladivostok i = +4m.2s.
Long waves were also recorded at Tashkent and Kucino.

July 18d. 17h. 59m. 31s. Epicentre 35°·5N. 133°·5E. (as on 1932 July 27d.). X.

A = −·560, B = +·591, C = +·581 ; D = +·725, E = +·688 :
G = −·400, H = +·421, K = −·814.

| | Δ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Toyooka | 1·1 | 88 | 0 20 | + 4 | 0 38 | +10 | 0·6 |
| Kobe | 1·6 | 120 | e 0 25 | + 2 | 0 45 | + 4 | 0·8 |
| Sumoto | 1·7 | 135 | 0 22 | − 2 | 0 43 | − 1 | 0·8 |
| Osaka | 1·9 | 118 | 0 35 | + 7 | 0 58 | + 9 | 1·0 |
| Koti | 2·0 | 179 | i 0 23 | − 6 | i 0 45 | − 6 | — |
| Muroto | 2·4 | 166 | e 0 52 | $P_g$ | 1 1 | − 1 | — |
| Simidu | 2·7 | 189 | e 0 37 | − 2 | — | — | — |
| Nagoya | 2·9 | 97 | e 1 8 | S | (e 1 8) | − 6 | — |
| Hukuoka | 3·2 | 234 | e 0 44 | − 2 | 1 24 | + 2 | — |

Additional reading :—
Nagoya eS? = +1m.31s.

July 18d. 19h. 5m. 26s. Epicentre 11°·5N. 140°·0E. N.2.

A = −·751, B = +·630, C = +·199; D = +·643, E = +·766;
G = −·153, H = +·128, K = −·980.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Manila | | 18·8 | 282 | i 4 7 | − 9 | 8 12 | +30 | 10·6 | — |
| Amboina | | 19·2 | 218 | 2 48 | ? | i 6 21 | ? | — | — |
| Karenko | | 21·5 | 308 | 4 38 | − 7 | 8 41 | + 5 | — | — |
| Taihoku | | 22·1 | 310 | e 4 54 | + 2 | — | — | — | — |
| Simidu | | 22·3 | 344 | e 4 55 | + 1 | — | — | — | — |
| Muroto | | 22·4 | 347 | e 4 43 | −12 | e 8 55 | + 2 | e 10·8 | — |
| Koti | N. | 22·9 | 346 | e 5 1 | + 1 | e 9 12 | + 9 | — | — |
| Nagasaki | | 23·2 | 338 | 5 2 | − 1 | 9 14 | + 6 | 11·4 | 21·9 |
| Wakayama | | 23·2 | 350 | 5 5 | + 2 | 9 22 | +14 | — | — |
| Sumoto | | 23·6 | 350 | 4 48a | −18 | 9 27 | +11 | 11·8 | 12·0 |
| Kobe | | 23·6 | 350 | e 5 6a | 0 | e 9 49 | SS | — | 12·4 |
| Osaka | | 23·6 | 351 | 5 8 | + 2 | 10 27 | +71 | — | — |
| Hukuoka B. | | 23·7 | 340 | 5 9 | + 2 | 9 33 | +15 | — | — |
| Nagoya | | 23·8 | 355 | 5 14 | + 6 | (9 35) | +16 | 9·6 | — |
| Tokyo | | 24·2 | 0 | 5 9 | − 3 | — | — | — | — |
| Nagano | | 25·2 | 356 | 5 27 | + 5 | 10 31 | SS | — | — |
| Zi-ka-wei | Z. | 26·2 | 322 | 5 31 | 0 | 10 3 | + 1 | — | 28·7 |
| Taikyu | | 26·5 | 339 | e 5 32 | − 2 | e 10 10 | + 3 | e 13·3 | — |
| Hong Kong | | 26·9 | 297 | 5 38 | + 1 | 10 5 | − 9 | 12·5 | 12·9 |
| Nanking | | 28·3 | 320 | e 5·47k | − 3 | e 10 33 | − 4 | e 13·9 | 20·4 |
| Keizyo | E. | 28·6 | 338 | e 6 53 | +60 | e 12 19 | +97 | e 16·5 | — |
| Zinsen | | 28·6 | 338 | e 4 52 | −61 | — | — | — | — |
| Vladivostok | | 32·4 | 349 | 6 30 | + 4 | — | — | 14·6 | 16·5 |
| Chiufeng | | 35·5 | 327 | i 6 52a | − 1 | 11 30 | −59 | 15·1 | 24·4 |
| Batavia | | 37·5 | 244 | i 7 11 | 0 | — | — | — | — |
| Riverview | | 46·5 | 167 | — | — | e 14 34 | −38 | e 23·0 | 28·6 |
| Melbourne | | 49·5 | 174 | — | — | e 19 20 | SS | 26·8 | — |
| Irkutsk | | 49·9 | 332 | 8 51 | 0 | e 15 59 | 0 | 25·6 | — |
| Bombay | | 65·0 | 285 | — | — | e 18 34 | −46 | — | — |
| Andijan | | 65·7 | 309 | e 10 47 | + 4 | — | — | — | — |
| Tchimkent | | 67·9 | 311 | e 10 16? | −42 | — | — | — | — |
| Tashkent | | 68·0 | 310 | i 10 53 | − 5 | i 19 46 | −11 | e 31·6 | 45·4 |
| Samarkand | | 69·7 | 307 | e 11 6 | − 3 | — | — | — | — |
| Ekaterinburg | | 74·6 | 326 | i 11 35 | − 3 | i 21 5 | −10 | 43·2 | 49·7 |
| Sitka | | 77·5 | 34 | i 11 59 | + 4 | i 21 57 | + 9 | e 33·1 | — |
| Baku | | 82·7 | 310 | e 12 26 | + 4 | e 23 11 | PS | 41·6 | 55·6 |
| Kucino | | 87·2 | 326 | e 13 28 | +44 | 23 17 | −12 | 38·1 | 52·3 |
| Pulkovo | | 89·7 | 331 | i 12 55 | − 1 | i 23 23 | [− 8] | 36·6 | 52·9 |
| Santa Barbara | Z. | 91·8 | 55 | e 13 15 | + 9 | — | — | — | — |
| Tinemaha | | 92·2 | 52 | e 13 19 | +11 | — | — | — | — |
| Pasadena | Z. | 93·1 | 54 | i 13 20a | + 8 | — | — | — | — |
| Riverside | Z. | 93·8 | 54 | e 13 24 | + 9 | — | — | — | — |
| La Jolla | | 94·2 | 55 | e 13 25 | + 8 | — | — | — | — |
| Potsdam | | 101·6 | 330 | e 13 52 | + 1 | e 23 58 | [−35] | e 50·6 | 66·6 |
| Triest | | 105·2 | 324 | e 22 2 | PPPP | e 24 28 | [−23] | e 50·6 | 61·6 |
| De Bilt | | 105·5 | 333 | e 18 34? | PP | e 27 37 | PS | e 50·6 | 66·2 |
| Edinburgh | | 105·9 | 339 | e 18 44 | PP | e 27 54 | PS | e 51·6 | — |
| Stuttgart | | 105·9 | 329 | e 14 10 | − 1 | — | — | e 52·6 | — |
| Strasbourg | | 106·7 | 329 | e 18 40 | PP | e 28 3 | PS | e 49·6 | — |
| Uccle | | 106·7 | 333 | — | — | e 24 55 | [− 3] | e 51·6 | — |
| Kew | | 108·3 | 335 | e 18 49 | PP | — | — | e 52·6 | — |
| Paris | | 109·0 | 332 | e 18 34? | PP | — | — | 58·6 | 72·6 |
| Florissant | | 111·2 | 40 | e 19 17 | PP | e 28 47 | PS | — | 48·6 |
| St. Louis | | 111·4 | 40 | e 19 17 | PP | e 28 48 | PS | — | — |
| La Paz | Z. | 152·2 | 104 | e 20 0 | [+16] | — | — | — | — |

*For Notes see next page,*

NOTES TO JULY 18d. 19h. 5m. 26s.

Additional readings :—
Kobe eN = +5m.27s. = PP − 4s. and +6m.25s.
Zi-ka-wei iZ = +5m.39s., +11m.3s. = SS + 4s., +13m.47s., and +17m.7s.
Vladivostok i = +7m.38s.
Melbourne i = +20m.27s. = SSS − 3s.
Ekaterinburg $L_g$ = +33·1m.
Sitka SS = +25m.37s., e = +27m.28s.
Kucino PP = +16m.11s., SKS = +23m.4s., SS = +28m.52s.
Pulkovo PP = +16m.35s., PPP = +18m.33s., ePS = +24m.46s.
Potsdam eZ = +15m.4s., eEZ = +17m.58s. = PP + 3s. and +20m.4s., eE = +27m.10s. = PS + 8s.
Triest eE = +25m.40s. = SKKS + 8s. and +27m.28s. = PS − 12s., SE? = +32m.15s.
Stuttgart PP = +18m.34s.
Strasbourg e = +28m.49s.
Florissant ePSEN = +29m.19s., $eS_cSEN$ = +30m.6s.
Long waves were also recorded at Honolulu T.H. and at other European stations.

July 18d. Readings also at 1h. (near Apia (2) ), 3h. (Christchurch, near Glenmuick, and Wellington), 4h. (Chiufeng), 5h. (Ekaterinburg, Tashkent, Hong Kong, Nanking, and near Taihoku), 6h. (Toledo, Alicante, near Granada, Strasbourg, and near Samarkand), 7h. (near Husan), 9h. (Frunse, Medan, Chiufeng, Branner, near Berkeley, Lick, and near Mizusawa), 10h. (Mizusawa, Vladivostok, Tashkent, Almata, near Andijan, Tchimkent, and Samarkand), 11h. (Haiwee, La Jolla, Pasadena, Tinemaha, Baku, Tashkent, Kucino, Pulkovo, Paris, Stuttgart, and near Amboina (2) ), 12h. (Frunse, Andijan, Ekaterinburg, near Tchimkent, and Samarkand), 18h. (near Berkeley, Branner, and Lick), 19h. (Nagoya, Mizusawa (2), and near Tyosi), 21h. (Cheb, Wellington, Chiufeng, near Branner, and near La Paz), 22h. (Alicante, Toledo, Vladivostok, and near Lick), 23h. (Ekaterinburg, Tashkent, near Batavia, and Malabar).

July 19d. 2h. 28m. 28s. Epicentre 34°·0N. 134°·8E. (as on 1933 Jan. 20d.). R.3.

A = −·584, B = +·588, C = +·559.

| | Δ | Az. | P. | O − C. | S. | O − C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Sumoto | 0·4 | 11 | i 0 6k | 0 | 0 13 | + 3 | 0·2 |
| Kobe | 0·7 | 25 | 0 11 | + 1 | i 0 19 | + 1 | 0·4 |
| Osaka | 0·9 | 38 | 0 8 | − 5 | 0 18 | − 5 | 0·3 |
| Nagoya | 2·1 | 57 | e 0 31 | + 1 | e 0 53 | − 1 | — |

Kobe gives also SZ = +22s.

July 19d. 5h. 6m. 44s. Epicentre 43°·8N. 126°·8W. (as on 1932 June 20d.). R.3.

A = −·432, B = −·578, C = +·692 ; D = −·801, E = +·599 ;
G = −·415, H = −·554, K = −·722.

| | | Δ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Seattle | | 5·0 | 37 | e 1 22 | P* | — | — | 3·2 | — |
| Victoria | N. | 5·2 | 27 | e 1 26 | P* | — | — | e 3·8 | 6·8 |
| Ukiah | | 5·4 | 149 | e 1 8 | − 9 | (2 9) | − 9 | 2·2 | — |
| Berkeley | | 6·8 | 148 | e 1 31 | − 6 | (i 3 2) | + 9 | i 3·0 | 4·7 |
| Branner | E. | 7·2 | 149 | e 1 39 | − 3 | — | — | — | — |
| Tinemaha | | 9·3 | 133 | e 2 15 | + 4 | — | — | e 8·9 | — |
| Haiwee | | 10·2 | 136 | e 2 23 | − 1 | — | — | — | — |
| Santa Barbara | Z. | 10·8 | 147 | i 2 38 | + 6 | — | — | — | — |
| Bozeman | | 11·3 | 75 | e 2 44 | + 5 | e 5 34 | S* | e 6·4 | — |
| Mount Wilson | | 11·7 | 142 | e 2 41a | − 3 | — | — | — | — |
| Pasadena | | 11·8 | 142 | i 2 40a | − 6 | — | — | e 6·1 | — |
| Riverside | | 12·2 | 140 | e 2 47 | − 4 | — | — | — | — |
| La Jolla | Z. | 13·2 | 142 | e 3 14 | + 9 | — | — | — | — |
| Sitka | | 14·3 | 341 | i 3 20 | + 1 | i 6 12 | +14 | i 6·3 | — |
| Tucson | | 17·0 | 127 | e 3 54 | 0 | 7 12 | SS | e 8·5 | — |

*Continued on next page.*

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Florissant | | 27·6 | 88 | e 6 44 | +60 | e 10 32 | + 7 | e 13·8 | — |
| St. Louis | | 27·7 | 88 | i 5 44 | 0 | e 10 26 | − 1 | — | 15·6 |
| Chicago | | 28·5 | 80 | — | — | e 10 46 | + 6 | — | — |
| Toronto | | 33·7 | 74 | e 8 29 | ? | e 12 45 | +44 | 17·9 | — |
| Ottawa | | 35·8 | 69 | e 8 20 | PPP | e 12 42 | + 9 | e 19·3 | — |
| Columbia | | 36·4 | 89 | — | — | e 16 22 | ? | — | — |
| Georgetown | | 37·0 | 80 | e 7 1 | − 5 | e 12 59 | + 8 | e 19·3 | — |
| Fordham | | 38·5 | 76 | e 8 55 | PP | e 13 28 | +14 | 20·8 | — |
| Oak Ridge | N.W. | 39·5 | 72 | e 8 54 | PP | e 13 37 | + 8 | e 20·5 | — |
| Edinburgh | | 69·5 | 30 | — | — | e 28 41 | SSSS | e 38·3 | — |
| De Bilt | | 75·6 | 28 | — | — | e 21 34 | + 7 | e 30·3 | — |
| Ekaterinburg | | 79·2 | 356 | e 12 1 | − 3 | e 22 5 | − 2 | 30·3 | — |
| Tashkent | | 93·7 | 348 | e 20 16? | PPPP | e 23 16? | [−38] | e 49·3 | 60·1 |

Additional readings :—
Ukiah i = +1m.15s., e = +1m.24s. = P* − 5s., i = +1m.36s. = $P_g$ − 6s.
Bozeman e = +5m.51s.
Sitka e = +6m.5s. = SS +0s.
Tucson e = +6m.50s.
Florissant eSSE = +11m.42s. ; $T_o$ = 5h.6m.37s.
St. Louis i?E = +10m.53s. ; $T_o$ = 5h.6m.45s.
Oak Ridge eNW = +9m.2s.
Long waves were also recorded at Honolulu T.H., Charlottesville, Ann Arbor, San Juan, Ivigtut, Baku, and at other European stations.

July 19d. 10h. 45m. 35s. Epicentre 51°·8N. 174°·1W. N.2.
(See determination of shocks at 13h. and 14h.).

A = −·615, B = −·064, C = +·786 ; D = −·103, E = +·995 ;
G = −·782, H = −·081, K = −·618.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Sitka | | 22·8 | 63 | i 5 5 | + 6 | i 9 18 | +17 | i 11·8 | — |
| Victoria | N. | 32·0 | 75 | e 7 32 | +69 | — | — | e 22·6 | 24·7 |
| Honolulu T.H. | | 33·0 | 150 | — | — | e 12 37 | +46 | e 14·7 | — |
| Vladivostok | | 36·6 | 277 | 7 3 | 0 | 12 48 | + 3 | 16·4 | 22·3 |
| Ukiah | | 37·0 | 89 | — | — | e 13 0 | + 9 | e 16·9 | — |
| Bozeman | | 40·7 | 72 | — | — | e 17 37 | (− 9) | — | — |
| Tinemaha | | 41·3 | 88 | e 7 40 | − 3 | e 16 9 | SS | — | — |
| Haiwee | | 42·1 | 89 | e 7 50 | + 1 | e 16 18 | SS | — | — |
| Santa Barbara | z. | 42·1 | 92 | e 7 50 | + 1 | — | — | — | — |
| Mount Wilson | z. | 43·3 | 91 | i 8 0a | + 1 | — | — | — | — |
| Pasadena | | 43·3 | 91 | e 7 58 | − 1 | — | — | e 18·6 | — |
| Riverside | z. | 43·9 | 91 | e 8 2 | − 2 | — | — | — | — |
| La Jolla | z. | 44·6 | 92 | e 8 10 | 0 | — | — | — | — |
| Irkutsk | | 47·4 | 304 | e 8 32 | 0 | e 15 46 | +22 | 23·4 | 27·8 |
| Tucson | | 49·0 | 87 | — | — | e 15 55 | + 8 | e 21·9 | — |
| Florissant | | 56·9 | 68 | e 9 41 | − 1 | e 17 38 | + 3 | e 27·1 | — |
| St. Louis | | 57·2 | 68 | i 9 42 | − 3 | i 17 40 | + 1 | — | — |
| Ekaterinburg | | 62·5 | 330 | 10 21 | − 1 | — | — | 32·4 | 41·9 |
| Georgetown | | 64·2 | 59 | i 10 31 | − 3 | 18 58 | −12 | e 30·4 | — |
| Oak Ridge | | 64·4 | 53 | e 10 35 | 0 | e 19 15 | + 3 | e 31·9 | — |
| Fordham | | 64·4 | 56 | e 10 35 | 0 | e 19 17 | + 5 | 35·4 | — |
| Pulkovo | | 66·7 | 347 | e 10 49 | − 1 | e 20 13 | +32 | e 27·9 | 43·6 |
| Tashkent | | 71·9 | 315 | i 11 20 | − 2 | e 20 55 | +11 | e 31·4 | 52·9 |
| Edinburgh | | 72·0 | 6 | e 17 45 | ? | — | — | — | — |
| Hamburg | | 74·6 | 358 | e 11 40 | + 2 | — | — | e 45·4 | — |
| Potsdam | | 75·7 | 356 | e 14 25? | PP | — | — | e 38·4 | 56·4 |
| De Bilt | | 76·1 | 0 | 11 48 | + 1 | — | — | e 39·4 | 53·4 |
| Uccle | | 77·4 | 2 | e 11 54 | 0 | — | — | e 30·4 | — |
| Paris | | 79·3 | 3 | e 12 5 | + 1 | e 20 33 | ? | 48·4 | 57·4 |
| Stuttgart | | 79·4 | 358 | e 12 2 | − 3 | e 22 25 | +16 | e 41·4 | — |

*Continued on next page.*

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Strasbourg | | 79·6 | 359 | e 12 6 | 0 | e 20 44 | ? | e 34·4 | — |
| Baku | | 80·2 | 328 | i 12 14 | + 5 | 22 46 | PS | 40·4 | 55·0 |
| Neuchatel | | 81·2 | 359 | e 12 14 | 0 | — | — | — | — |
| Triest | | 82·3 | 355 | e 12 10 | −10 | — | — | e 37·4 | 52·2 |
| San Juan | | 86·1 | 64 | e 12 25? | −14 | i 23 14 | − 4 | — | — |
| Bombay | | 88·6 | 299 | — | — | e 23 25 | [+ 1] | — | — |

Additional readings :—
Sitka e = +5m.23s. = PP + 3s.
Ekaterinburg e = +27m.34s.
Bozeman e = +17m.44s.
Triest e = +14m.37s.
Long waves were also recorded at Seattle, Ann Arbor, Ivigtut, and other European stations.

July 19d. 10h. 54m. 1s. Epicentre 51°·8N. 174°·1W. (as at 10h. 45m.). R.2.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Vladivostok | | 36·6 | 277 | 7 5 | + 2 | e 12 51 | + 6 | — | 20·2 |
| Nagoya | | 38·2 | 264 | e 7 21 | + 4 | — | — | — | — |
| Bozeman | | 40·7 | 72 | — | — | e 13 28 | −19 | e 17·8 | — |
| Santa Barbara | z. | 42·1 | 92 | i 8 53 | +64 | — | — | — | — |
| Mount Wilson | z. | 43·3 | 91 | i 7 59 | 0 | — | — | — | — |
| Pasadena | z. | 43·3 | 91 | i 7 59 | 0 | — | — | — | — |
| Riverside | z. | 43·9 | 91 | e 8 1 | − 3 | — | — | — | — |
| La Jolla | z. | 44·6 | 92 | e 8 11 | + 1 | — | — | — | — |
| Chicago | | 56·5 | 63 | e 9 24 | −15 | e 17 29 | − 1 | e 23·1 | — |
| Florissant | | 56·9 | 68 | i 9 43 | + 1 | i 17 36 | + 1 | — | — |
| St. Louis | | 57·2 | 68 | i 9 44 | − 1 | i 17 37 | − 2 | — | — |
| Toronto | | 59·6 | 57 | e 9 21 | −41 | e 18 13 | + 2 | — | — |
| Ottawa | | 60·2 | 53 | e 9 59 | − 7 | e 18 19 | 0 | 31·0 | — |
| Hong Kong | | 61·5 | 270 | 10 9 | − 6 | 18 40 | + 4 | — | 35·4 |
| Ekaterinburg | | 62·5 | 330 | 10 21 | − 1 | — | — | — | 42·1 |
| Charlottesville | | 64·1 | 61 | e 10 49 | +16 | e 19 15 | + 6 | e 28·0 | — |
| Georgetown | | 64·2 | 59 | 10 32 | − 2 | — | — | — | — |
| Oak Ridge | | 64·4 | 53 | e 10 49 | +14 | e 19 3 | − 9 | e 28·0 | — |
| Edinburgh | | 72·0 | 6 | — | — | e 26 39 | ? | e 34·0 | — |
| Copenhagen | | 72·4 | 356 | 11 59? | +34 | — | — | 30·0 | — |
| De Bilt | z. | 76·1 | 0 | 11 48 | + 1 | — | — | — | 53·4 |
| Paris | | 79·3 | 3 | e 12 7 | + 3 | — | — | — | — |
| Stuttgart | | 79·4 | 358 | — | — | e 21 59? | −10 | — | — |
| Strasbourg | | 79·6 | 359 | e 12 18 | +12 | — | — | — | — |
| Baku | | 80·2 | 328 | 12 13 | + 4 | 22 48 | PS | — | 54·6 |
| Neuchatel | | 81·2 | 359 | e 12 14 | 0 | — | — | — | — |
| Triest | | 82·3 | 355 | i 12 35 | +15 | — | — | — | — |
| Piacenza | | 83·1 | 358 | e 11 59 | −25 | — | — | — | 57·0 |

Additional readings :—
Bozeman e = +9m.18s. = PP + 11s.
Florissant iEN = +17m.56s. ; $T_o$ = 10h.54m.9s.
St. Louis iEN = +17m.52s. = PS + 9s. ; $T_o$ = 10h.54m.10s.
Ottawa e = +25m.5s. = SSSS + 1s.
Oak Ridge eNW = +12m.15s., eNE = +19m.10s. = PS − 12s.
Long waves were also recorded at Ukiah and stations as for the shock at 10h.45m.

July 19d. 13h. 32m. 27s. Epicentre 51°·8N. 174°·1W. (as at 10h.). R.1.

Probable error of epicentre ±0°·20.

A = −·615, B = −·064, C = +·786; D = −·103, E = +·995; G = −·782, H = −·081, K = −·618.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Sitka | | 22·8 | 63 | i 5 5 | + 6 | i 9 19 | +18 | i 10·7 | — |
| Victoria | N. | 32·0 | 75 | e 11 49 | S | (e 11 49) | +14 | e 16·5 | 16·7 |
| Seattle | | 33·0 | 76 | — | — | e 11 33? | −18 | — | — |
| Tokyo | | 36·3 | 262 | 6 54 | − 6 | — | — | — | — |
| Oiwake | | 36·5 | 264 | 7 5 | + 3 | 13 0 | +16 | — | — |
| Vladivostok | | 36·6 | 277 | i 7 5 | + 2 | 12 49 | + 4 | 15·6 | 21·0 |
| Ukiah | | 37·0 | 89 | — | — | e 12 59 | + 8 | — | — |
| Nagoya | | 38·2 | 264 | e 7 23 | + 6 | — | — | — | — |
| Osaka | | 39·5 | 265 | 7 5 | −23 | 13 33 | + 4 | — | — |
| Kobe | | 39·8 | 265 | e 7 30 | 0 | e 13 41 | + 8 | — | — |
| Bozeman | | 40·7 | 72 | — | — | e 13 52 | + 5 | — | — |
| Tinemaha | | 41·3 | 88 | e 7 44 | + 1 | e 14 5 | + 9 | — | — |
| Koti | | 41·5 | 265 | e 7 46 | + 2 | — | — | — | — |
| Haiwee | E. | 42·1 | 89 | e 7 53 | + 4 | e 13 56 | −12 | — | — |
| Santa Barbara | E. | 42·1 | 92 | e 8 6 | +17 | — | — | — | — |
| Keizyo | E. | 42·9 | 274 | e 7 57 | + 1 | e 14 28 | + 9 | — | — |
| Taikyu | | 43·0 | 271 | e 7 57 | 0 | e 14 21 | 0 | — | — |
| Zinsen | | 43·2 | 275 | e 8 0 | + 2 | — | — | — | — |
| Mount Wilson | Z. | 43·3 | 91 | i 8 2 | + 3 | — | — | — | — |
| Pasadena | | 43·3 | 91 | i 8 0 | + 1 | i 14 47 | +22 | e 18·8 | — |
| Riverside | Z. | 43·9 | 91 | e 7 55 | − 9 | — | — | — | — |
| Nagasaki | | 44·3 | 267 | 8 8 | + 1 | e 14 39 | − 1 | — | — |
| La Jolla | | 44·6 | 92 | e 8 20 | +10 | e 15 16 | +32 | — | — |
| Irkutsk | | 47·4 | 304 | e 8 32 | 0 | — | — | 24·6 | 30·0 |
| Chiufeng | | 48·0 | 285 | i 8 36a | 0 | e 15 35 | + 2 | 19·3 | 28·8 |
| Tucson | | 49·0 | 87 | e 9 9 | +25 | e 15 56 | + 9 | e 21·6 | — |
| Zi-ka-wei | Z. | 50·6 | 272 | 8 59 | + 3 | 16 15 | + 6 | — | 31·4 |
| Nanking | | 51·6 | 275 | 9 2k | − 1 | — | — | — | — |
| Florissant | | 56·9 | 68 | i 9 43 | + 1 | i 17 37 | + 2 | — | — |
| St. Louis | | 57·2 | 68 | i 9 44 | − 1 | i 17 38 | − 1 | — | — |
| Ann Arbor | | 58·3 | 60 | — | — | e 26 51 | ? | e 35·6 | — |
| Toronto | | 59·6 | 57 | — | — | i 18 13 | + 2 | 28·8 | — |
| Ottawa | | 60·2 | 53 | e 10 7 | + 1 | e 18 19 | 0 | e 30·6 | — |
| Hong Kong | | 61·5 | 270 | — | — | 18 38 | + 2 | — | 42·5 |
| Ekaterinburg | | 62·5 | 330 | i 10 22 | 0 | 18 51 | + 3 | 29·6 | 41·8 |
| Georgetown | | 64·2 | 59 | i 10 34 | 0 | i 19 11 | + 1 | e 29·6 | — |
| Fordham | | 64·4 | 56 | e 10 34 | − 1 | e 19 16 | + 4 | 31·2 | — |
| Oak Ridge | | 64·4 | 53 | e 10 33 | − 2 | e 19 15 | + 3 | e 26·6 | — |
| Pulkovo | | 66·7 | 347 | e 10 51 | + 1 | e 19 48 | + 7 | e 31·6 | 43·0 |
| Upsala | N. | 67·9 | 354 | — | — | e 24 33? | SS | e 37·6 | — |
| Andijan | | 71·0 | 313 | e 12 46 | ? | — | — | — | — |
| Tchimkent | | 71·0 | 315 | e 10 35? | ? | — | — | — | — |
| Tashkent | | 71·9 | 315 | i 11 19 | − 3 | 20 41 | − 3 | e 37·6 | 47·2 |
| Edinburgh | | 72·0 | 6 | — | — | e 20 49 | + 4 | e 40·6 | — |
| Copenhagen | | 72·4 | 356 | 11 26 | + 1 | 20 51 | + 1 | 39·6 | — |
| Samarkand | | 74·3 | 315 | e 11 33 | − 3 | — | — | — | — |
| Hamburg | | 74·6 | 358 | e 11 39 | + 1 | — | — | e 40·6 | — |
| Potsdam | | 75·7 | 356 | e 11 57 | +13 | 22 27 | PS | e 37·6 | 46·6 |
| De Bilt | | 76·1 | 0 | i 11 48a | + 1 | e 21 35 | + 2 | e 37·6 | 52·4 |
| Oxford | | 76·2 | 4 | — | — | e 22 1 | PS | e 37·6 | 53·0 |
| Kew | | 76·6 | 4 | e 11 51 | + 2 | — | — | e 42·6 | — |
| Uccle | | 77·4 | 2 | e 11 55 | + 1 | e 21 45 | − 2 | e 26·6 | — |
| Cheb | | 78·0 | 356 | — | — | e 21 55 | + 1 | e 41·6 | 47·6 |
| Paris | | 79·3 | 3 | i 12 4 | 0 | — | — | 40·6 | 54·6 |
| Stuttgart | | 79·4 | 358 | e 12 6 | + 1 | e 22 9 | 0 | e 36·6 | — |

*Continued on next page.*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Strasbourg | | 79·6 | 359 | i 12 6a | 0 | e 22 7 | − 4 | e 27·6 | — |
| Vienna | | 79·6 | 353 | e 12 7 | + 1 | — | — | — | 52·6 |
| Baku | | 80·2 | 328 | 11 33 | −36 | 22 35 | +17 | 41·0 | 54·0 |
| Zurich | | 80·8 | 359 | e 12 13 | + 1 | — | — | — | — |
| Neuchatel | | 81·2 | 359 | e 12 15 | + 1 | — | — | — | — |
| Triest | | 82·3 | 355 | 14 6 | ? | e 24 54 | ? | — | 41·6 |
| Piacenza | | 83·1 | 358 | e 12 33 | + 9 | — | — | — | 51·4 |
| San Juan | | 86·1 | 64 | e 12 43 | + 4 | i 23 4 | [− 3] | e 40·6 | — |
| Tortosa | N. | 87·2 | 4 | e 36 17 | ? | e 45 33? | L | (e 45·6) | 85·3 |

Additional readings :—
Sitka e = +5m.21s. =PP +1s. and +6m.45s.
Ukiah e = +15m.53s.
Osaka i = +9m.20s. and +11m.18s.
Kobe eZ = +7m.48s., eE = +14m.8s.
Bozeman e = +16m.57s.
Keizyo eE = +17m.30s.
Taikyu eN = +14m.25s.
Pasadena i = +8m.21s.
Iskutsk ePP = +10m.28s., PS = +15m.42s.
Chiufeng i = +8m.50s., PP = +10m.33s.
Zi-ka-wei iZ = +9m.15s.
Florissant ipPZ = +9m.56s., iSSEN = +17m.55s. ; $T_0$ = 13h.32m.44s.
St. Louis i = +16m.54s. ; $T_0$ = 13h.32m.44s.
Ann Arbor eN = +27m.15s., e = +31m.9s.
Oak Ridge ePSNE = +20m.11s. = $S_0S$ −13s. ; $T_0$ = 13h.32m.31s.
Copenhagen +11m.40s.
De Bilt eZ = +16m.46s.
Uccle iZ = +12m.10s.
Strasbourg i = +12m.22s.
Long waves were also recorded at Honolulu T.H., Ivigtut, Charlottesville, Columbia, Bombay, Hyderabad, and other European stations.

July 19d. 14h. 59m. 57s. Epicentre 51°·8N. 174°·1W. (as at 13h.). R.1.

Probable error of epicentre ±0°·19. For Modification of $T_0$ see page 461.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Sitka | | 22·8 | 62 | i 5 6 | + 7 | i 9 17 | +16 | i 11·3 | — |
| Sapporo | | 30·9 | 272 | 6 22 | + 9 | — | — | — | — |
| Honolulu T.H. | | 33·0 | 150 | e 6 33 | + 1 | e 11 43 | − 8 | — | — |
| Mizusawa | | 33·3 | 265 | (e 6 38) | + 4 | e 6 38 | P | — | — |
| Akita | | 33·5 | 266 | 6 39 | + 3 | 12 3 | + 5 | — | — |
| Oiwake | | 36·5 | 264 | 7 5 | + 3 | 12 48 | + 4 | — | — |
| Vladivostok | | 36·6 | 277 | i 7 7 | + 4 | 12 53 | + 8 | 16·4 | 22·6 |
| Ukiah | | 37·0 | 89 | — | — | e 12 57 | + 6 | e 15·8 | — |
| Nagoya | | 38·2 | 264 | e 7 19 | + 2 | — | — | — | — |
| Berkeley | | 38·4 | 90 | e 7 19 | + 1 | — | — | — | — |
| Branner | E. | 38·6 | 91 | e 7 23 | + 3 | — | — | — | — |
| Toyooka | E. | 39·4 | 266 | e 7 25 | − 2 | — | — | — | — |
| Osaka | | 39·5 | 265 | 5 39 | ? | 12 20 | −69 | — | — |
| Kobe | | 39·8 | 265 | 7 31a | + 1 | e 13 37 | + 4 | — | — |
| Bozeman | | 40·7 | 72 | e 7 43 | + 5 | e 13 51 | + 4 | e 17·2 | — |
| Tinemaha | | 41·3 | 88 | e 7 44 | + 1 | e 14 1 | + 5 | — | — |
| Haiwee | | 42·1 | 89 | e 7 53 | + 4 | e 14 0 | − 8 | — | — |
| Santa Barbara | | 42·1 | 92 | i 7 52 | + 3 | e 14 16 | + 8 | — | — |
| Keizyo | | 42·9 | 274 | 7 57 | + 1 | e 14 25 | + 6 | e 22·0 | — |
| Taikyu | | 43·0 | 271 | e 7 58 | + 1 | e 14 22 | + 1 | — | — |
| Zinsen | | 43·2 | 275 | 7 59 | + 1 | 14 27 | + 3 | — | — |
| Mount Wilson | | 43·3 | 91 | i 8 1k | + 2 | e 14 27 | + 2 | — | — |
| Pasadena | | 43·3 | 91 | i 8 0k | + 1 | i 14 29 | + 4 | — | — |
| Riverside | | 43·9 | 91 | i 8 3k | − 1 | e 14 35 | + 1 | — | — |
| Nagasaki | | 44·3 | 267 | 8 6a | − 1 | e 14 40 | 0 | — | — |
| La Jolla | | 44·6 | 92 | e 8 18 | + 8 | e 14 54 | +10 | — | — |
| Irkutsk | | 47·4 | 304 | 8 34 | + 2 | — | — | 24·0 | 29·6 |
| Chiufeng | | 48·0 | 285 | i 8 38a | + 2 | e 15 33 | 0 | e 19·8 | 29·2 |
| Tucson | | 49·0 | 87 | 8 53 | + 9 | 15 52 | + 5 | e 22·0 | — |
| Zi-ka-wei | Z. | 50·6 | 272 | i 8 59a | + 3 | 16 5 | − 4 | — | 34·2 |

*Continued on next page.*

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Nanking | | 51·6 | 275 | i 9 2a | − 1 | — | — | i 27·0 | — |
| Chicago | | 56·5 | 63 | e 9 28 | −11 | i 17 31 | + 1 | e 26·6 | — |
| Florissant | | 56·9 | 68 | i 9 43 | + 1 | i 17 37 | + 2 | — | — |
| St. Louis | | 57·2 | 68 | i 9 43 | − 2 | i 17 36 | − 3 | — | — |
| Ann Arbor | | 58·3 | 60 | e 17 51 | S | (e 17 51) | − 2 | e 34·8 | — |
| Ivigtut | | 59·1 | 27 | 10 0 | + 2 | — | — | 24·0 | — |
| Toronto | | 59·6 | 57 | i 10 10 | + 8 | i 18 16 | + 5 | 28·6 | 33·0 |
| Ottawa | | 60·2 | 53 | i 10 7 | + 1 | e 18 19 | 0 | e 31·0 | — |
| Hong Kong | | 61·5 | 270 | 10 12 | − 3 | 18 54 | +18 | — | 42·5 |
| Ekaterinburg | | 62·5 | 330 | i 10 23 | + 1 | e 18 46 | − 2 | 32·0 | 42·0 |
| Manila | | 63·2 | 259 | i 10 26 | − 1 | 19 3? | + 6 | — | — |
| Charlottesville | | 64·1 | 61 | — | — | e 19 13 | + 4 | e 33·0 | — |
| Georgetown | | 64·2 | 59 | i 10 34 | 0 | i 19 11 | + 1 | e 32·0 | — |
| Fordham | | 64·4 | 56 | i 10 36 | + 1 | e 19 14 | + 2 | 31·6 | — |
| Oak Ridge | | 64·4 | 53 | i 10 35 | 0 | e 19 14 | + 2 | e 34·0 | — |
| Columbia | | 65·6 | 65 | — | — | e 19 31 | + 4 | e 32·2 | — |
| Pulkovo | | 66·7 | 347 | 10 50 | 0 | e 19 41 | 0 | e 28·0 | 42·2 |
| Upsala | | 67·9 | 354 | e 11 11 | +13 | e 20 14 | +18 | e 37·0 | 50·6 |
| Kucino | | 69·2 | 342 | e 11 5 | − 1 | — | — | e 34·0 | 47·8 |
| Andijan | | 71·0 | 313 | 10 44 | −33 | 20 3 | −30 | — | — |
| Tchimkent | | 71·0 | 315 | i 10 40? | −37 | — | — | — | — |
| Tashkent | | 71·9 | 315 | i 11 22 | 0 | 20 40 | − 4 | e 38·0 | 44·6 |
| Edinburgh | | 72·0 | 6 | — | — | e 21 8 | PS | e 30·0 | — |
| Copenhagen | | 72·4 | 356 | i 11 26 | + 1 | 20 56 | + 6 | 36·0 | — |
| Samarkand | | 74·3 | 315 | 11 43 | + 7 | 21 13 | + 1 | — | — |
| Hamburg | | 74·6 | 358 | e 11 40 | + 2 | — | — | e 40·0 | — |
| Potsdam | | 75·7 | 356 | i 11 46 | + 2 | e 21 21 | − 7 | e 38·0 | 52·0 |
| De Bilt | | 76·1 | 0 | i 11 49a | + 2 | e 16 39 | PPP | e 37·0 | 53·4 |
| Oxford | | 76·2 | 4 | 11 49a | + 2 | — | — | — | — |
| Kew | | 76·6 | 4 | e 11 50 | + 1 | — | — | e 40·0 | — |
| Göttingen | | 76·6 | 357 | i 11 51 | + 2 | — | — | — | 43·0 |
| Jena | E. | 77·2 | 356 | e 11 55 | + 2 | — | — | — | — |
| Uccle | | 77·4 | 2 | i 11 56a | + 2 | e 22 5 | PS | e 32·0 | — |
| Cheb | | 78·0 | 356 | — | — | e 22 3? | + 9 | e 40·0 | 52·0 |
| Paris | | 79·3 | 3 | i 12 6 | + 2 | e 22 3? | − 5 | 42·0 | 59·0 |
| Stuttgart | | 79·4 | 358 | e 12 7a | + 2 | e 22 9 | 0 | e 40·0 | — |
| Strasbourg | | 79·6 | 359 | i 12 7a | + 1 | i 22 29 | +18 | e 30·0 | — |
| Vienna | | 79·6 | 353 | i 12 6k | 0 | — | — | — | 55·0 |
| Budapest | | 80·1 | 351 | 13 12 | +64 | — | — | e 46·6 | 55·6 |
| Baku | | 80·2 | 328 | 12 15 | + 6 | 22 37 | +19 | 41·6 | 55·4 |
| Zurich | | 80·8 | 359 | e 12 14 | + 2 | — | — | — | — |
| Neuchatel | | 81·2 | 359 | e 12 16 | + 2 | e 22 28 | 0 | — | — |
| Triest | | 82·3 | 355 | e 12 22 | + 2 | 22 39 | − 1 | e 36·0 | 45·0 |
| Piacenza | | 83·1 | 358 | 12 27 | + 3 | 22 47 | − 1 | — | 51·6 |
| San Juan | | 86·1 | 64 | e 12 47 | + 8 | i 23 14 | − 4 | e 35·6 | — |
| Trenta | | 88·5 | 351 | e 12 48 | − 2 | — | — | — | — |
| Granada | | 90·6 | 8 | i 13 0a | 0 | 23 48 | −14 | 43·7 | 54·0 |

**Additional readings :—**

**Honolulu T.H.** ePP = +7m.52s.
**Branner** eN = +7m.40s.
**Pasadena** iZ = +10m.6s. = PPP +3s.
**Irkutsk** PP = +10m.29s., ePS = +15m.42s., e = +18m.26s. = SS − 9s. and +19m.17s.
**Chiufeng** PP = +10m.33s.
**Zi-ka-wei** iZ = +9m.15s.
**Florissant** ipPZ = +9m.51s., iZ = +9m.56s., ePPEN = +12m.28s., isSEN = +17m.55s., iPSEN = +18m.18s. ; $T_0$ = 15h.0m.11s.
**St. Louis** ipPE = +10m.0s., isSE = +17m.54s. ; $T_0$ = 15h.0m.11s.
**Ann Arbor** eN = +21m.33s. = SS − 8s. and +30m.21s., eE = +31m.9s.
**Toronto** i = +19m.50s. = $S_cS$ +1s.
**Manila** ePEN = +10m.29s.
**Oak Ridge** ePSNE = +20m.23s. = $S_cS$ − 1s., eLNE = +26m.3s. ; $T_0$ = 15h.0m.9s.
**Kucino** PP = +13m.59s., PPP = +15m.27s., SS = +25m.9s.
**Potsdam** iSE = +21m.28s., iE = +21m.48s. = PS − 6s., eSSN = +26m.33s.
**Stuttgart** e = +27m.51s.
**Baku** SS = +27m.51s.
**Neuchatel** e = +19m.51s.
**San Juan** e = +13m.15s., eSKS = +23m.2s., eSS = +28m.44s.
**Granada** PP = +16m.39s., PPP = +19m.6s.
**Long waves were also recorded at Seattle, Victoria, San Fernando, Toledo, Alicante, Bombay, Hyderabad, and Wellington.**

**July 19d. 20h. 7m. 10s. Epicentre 38°·0N. 29°·5E. (as on 1929 Aug. 19d.). R.1.**

Probable error of epicentre ±0°·18.

A = +·686, B = +·388, C = +·616; D = +·492, E = −·870; G = +·536, H = +·303, K = −·788.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Ksara | | 6·6 | 127 | e 1 35 | + 1 | i 3 3 | S* | — | — |
| Sebastopol | | 7·2 | 23 | 1 38 | − 4 | e 3 18 | +14 | e 12·0 | — |
| Simferopol | | 7·7 | 25 | e 2 6 | P* | — | — | — | — |
| Theodosia | | 8·3 | 30 | e 1 53 | − 5 | e 3 54 | S* | e 10·9 | — |
| Helwan | | 8·3 | 169 | 1 58 | 0 | 3 27 | − 4 | 12·5 | — |
| Belgrade | | 9·6 | 318 | 2 19a | + 3 | e 4 47 | S* | — | 5·4 |
| Bari | | 10·2 | 292 | 4 28 | S | 5 9 | S* | 6·0 | — |
| Trenta | | 10·3 | 281 | e 2 25 | 0 | 4 40 | +19 | — | — |
| Catania | | 11·4 | 272 | e 3 58 | +78 | — | — | — | 8·8 |
| Budapest | | 12·1 | 324 | 3 52 | +62 | 6 49 | $S_g$ | 7·8 | 10·3 |
| Tiflis | E. | 12·3 | 68 | e 3 17 | +25 | — | — | e 7·0 | — |
| Lemberg | E. | 12·4 | 344 | e 2 54 | 0 | — | — | — | 8·1 |
| Zagreb | | 12·7 | 312 | e 2 59 | + 1 | e 5 27 | + 7 | — | 7·3 |
| Laibach | | 13·7 | 311 | e 4 27 | ? | 5 12 | −32 | — | 5·4 |
| Graz | | 13·7 | 316 | i 3 9 | − 2 | e 5 58 | +14 | 7·0 | 7·8 |
| Triest | | 14·0 | 308 | e 3 13a | − 2 | 6 0 | + 9 | i 7·8 | 8·3 |
| Vienna | | 14·0 | 322 | e 3 14 | − 1 | 5 57 | + 6 | — | 8·1 |
| Treviso | | 15·0 | 306 | 3 20 | − 8 | 8 25 | ? | — | 8·8 |
| Padova | | 15·1 | 305 | e 3 29 | − 1 | 6 29 | +12 | — | — |
| Livorno | | 15·5 | 297 | 3 10 | −25 | — | — | — | — |
| Baku | | 16·0 | 75 | 3 40 | − 1 | 6 55 | +17 | 9·0 | 12·2 |
| Prague | | 16·1 | 323 | 3 46 | + 3 | e 7 1 | +20 | e 8·6 | 10·3 |
| Piacenza | | 16·4 | 302 | 5 0 | +74 | 7 6 | +18 | 8·8 | 10·5 |
| Pavia | | 16·8 | 302 | e 4 13 | +21 | — | — | — | — |
| Cheb | | 17·1 | 320 | e 3 57 | + 2 | e 7 18 | +14 | e 8·3 | 9·8 |
| Ravensburg | | 17·5 | 310 | e 4 2 | + 2 | e 7 27 | +14 | e 9·5 | — |
| Zurich | | 17·9 | 308 | e 4 8 | + 3 | e 7 33 | +11 | — | — |
| Leipzig | | 18·0 | 323 | e 4 7 | 0 | e 7 38 | +13 | e 9·3 | 12·6 |
| Zena | | 18·0 | 321 | e 4 8 | + 1 | e 7 37 | +12 | e 8·8 | 12·6 |
| Stuttgart | | 18·1 | 313 | i 4 9a | + 1 | i 7 40 | +13 | e 9·6 | 10·5 |
| Potsdam | | 18·4 | 327 | e 4 9 | − 2 | i 7 32 | − 1 | e 9·3 | 11·8 |
| Kucino | | 18·6 | 15 | 4 1 | −13 | 7 43 | + 5 | 8·3 | 11·5 |
| Neuchatel | | 18·8 | 305 | e 4 17 | + 1 | e 7 52 | +10 | — | — |
| Strasbourg | | 18·9 | 311 | i 4 19a | + 2 | i 7 54 | +10 | e 9·8 | 11·1 |
| Göttingen | | 19·2 | 321 | i 4 21 | 0 | i 7 58 | + 8 | e 9·8 | 13·4 |
| Hamburg | | 20·5 | 326 | e 4 33 | − 2 | e 8 27 | +11 | e 10·8 | 14·5 |
| Algiers | | 21·0 | 275 | i 4 43 | + 3 | 6 43 | ? | 8·9 | — |
| Copenhagen | | 21·1 | 332 | i 4 39 | − 2 | 8 32 | + 4 | 10·8 | — |
| Barcelona | | 21·2 | 288 | — | — | e 6 34 | ? | e 10·9 | 14·4 |
| Pulkovo | | 21·8 | 1 | i 4 46 | − 3 | i 8 44 | + 2 | 10·6 | 13·2 |
| Uccle | | 21·9 | 314 | 4 51a | + 1 | e 8 29 | −15 | 9·8 | 12·5 |
| De Bilt | | 22·1 | 318 | 4 52 | 0 | 8 57 | + 9 | e 10·8 | 12·7 |
| Paris | | 22·2 | 308 | i 4 54 | + 1 | 9 1 | +11 | 11·8 | 11·8 |
| Tortosa | | 22·5 | 287 | 5 2 | + 6 | 9 16 | +21 | e 11·8 | 16·2 |
| Upsala | | 23·1 | 345 | 5 1 | − 1 | 9 11 | + 4 | — | 13·2 |
| Alicante | | 23·5 | 280 | e 5 9 | + 4 | — | — | e 14·9 | — |
| Kew | | 24·8 | 312 | e 5 19 | + 1 | e 9 47 | +10 | 10·8 | 14·1 |
| Almeria | | 25·3 | 278 | e 5 26 | + 3 | — | — | — | — |
| Oxford | | 25·5 | 313 | i 5 21a | − 4 | 9 48 | − 2 | 13·6 | 14·7 |
| Toledo | | 26·0 | 285 | e 5 29 | 0 | e 10 5 | + 7 | — | — |
| Granada | | 26·2 | 278 | i 5 31a | 0 | e 9 55 | − 7 | 12·4 | 18·8 |
| Durham | | 26·8 | 318 | 5 37 | + 1 | 10 32 | +20 | 15·1 | 18·2 |
| Stonyhurst | | 26·9 | 316 | — | — | e 10 13 | − 1 | 13·8 | 18·5 |
| Ekaterinburg | | 27·8 | 37 | i 5 41 | − 4 | i 10 38 | +10 | 19·0 | 19·9 |
| Edinburgh | | 28·1 | 320 | e 5 52 | + 4 | i 10 59 | +25 | 14·8 | 20·4 |

*Continued on next page.*

| | △ ° | Az. ° | P. m. s. | O−C. s. | S. m. s. | O−C. s. | L. m. | M. m. |
|---|---|---|---|---|---|---|---|---|
| Samarkand | 29·1 | 76 | e 6 0 | + 3 | 10 50 | 0 | — | — |
| Tashkent | 30·5 | 71 | i 6 6 | − 3 | e 11 18 | + 6 | e 12·8 | 22·1 |
| Tchimkent | 30·6 | 69 | e 7 32 | PP | — | — | — | — |
| Andijan | 33·0 | 72 | e 7 50 | PP | — | — | — | — |
| Irkutsk | 52·2 | 48 | e 9 5 | − 3 | e 16 26 | − 5 | e 27·8 | — |
| Chiufeng | 64·4 | 58 | 10 30 | − 5 | — | — | — | — |
| Vladivostok | 72·8 | 49 | 11 24 | − 4 | — | — | 42·8 | 60·5 |
| Florissant | 85·4 | 317 | e 13 15 | +40 | e 23 44 | PS | — | — |
| St. Louis | 85·5 | 317 | e 13 15 | +39 | e 23 44 | PS | — | — |

Additional readings :—
Belgrade e = +3m.5s. and +4m.25s.
Lemberg eN = +3m.0s.
Zagreb eNE = +6m.0s., eZ = +6m.12s. = $S^*$ − 4s., iNE = +6m.22s., eZ = +6m.26s., i = +6m.34s., e = +6m.46s. = $S_g$ − 8s.
Laibach e = +4m.39s.
Graz iPP = +3m.12s., eSS = +6m.11s.
Triest i = +6m.16s., iSSS = +7m.41s.
Vienna $P^*$ = +3m.42s., $P_g$ = +4m.6s., d = +4m.41s., $S^*$ = +5m.4s., SS = +6m.24s., iNZ = +6m.36s., iE = +7m.2s., iN = +7m.22s.
Treviso PP = +7m.50s.
Stuttgart ePP = +4m.30s., eSS = +8m.20s.
Potsdam iPN = +4m.12s., iPPEN = +4m.20s., iSEN = +7m.44s., iSSN = +8m.8s.
Hamburg eE = +9m.50s.?
Copenhagen +5m.5s. = PP +8s.
Kew eZ = +9m.56s.
Granada PP = +6m.25s.
Long waves were also recorded at Ivigtut and San Fernando.

July 19d. 20h. 48m. 33s. Epicentre 27°·5N. 98°·5E. (as on 1931 Aug. 11d.). X.

A = −·131, B = +·877, C = +·462 ; D = +·989, E = +·148 ;
G = −·068, H = +·457, K = −·887.

| | | △ ° | Az. ° | P. m. s. | O−C. s. | S. m. s. | O−C. s. | L. m. | M. m. |
|---|---|---|---|---|---|---|---|---|---|
| Calcutta | | 10·4 | 242 | e 2 22 | − 4 | 4 23 | − 1 | 5·4 | — |
| Nanking | | 18·1 | 72 | 4 4 | − 4 | e 9 50 | ? | e 10·3 | 11·5 |
| Chiufeng | | 19·2 | 45 | 4 26 | + 5 | — | — | — | 12·5 |
| Zi-ka-wei | Z. | 20·3 | 74 | e 4 33 | 0 | — | — | — | 13·0 |
| Medan | | 23·9 | 179 | — | — | e 8 26 | −55 | — | — |
| Bombay | | 25·0 | 255 | e 5 27? | + 7 | — | — | — | — |
| Andijan | | 25·2 | 308 | e 6 43 | +81 | — | — | — | — |
| Zinsen | | 25·8 | 60 | — | — | e 11 47 | ? | — | — |
| Keizyo | E. | 26·0 | 60 | — | — | e 10 28 | +30 | e 15·8 | — |
| Tchimkent | | 27·7 | 310 | e 6 10 | +26 | — | — | — | — |
| Samarkand | | 28·7 | 303 | e 5 57 | + 4 | 10 49 | + 6 | — | — |

Additional readings :—
Medan i = +11m.36s., +12m.38s., +13m.3s., and +13m.20s.
Long waves were also recorded at Taihoku, Taikyu, Hong Kong, Copenhagen, De Bilt, and Uccle.

July 19d. Readings also at 0h. (Baku, Ekaterinburg, Tashkent, near Lick, and near Manila), 4h. (near Andijan, Samarkand, Tchimkent, near Batavia, Malabar, and Soengei Langka), 5h. (Ekaterinburg and Medan), 7h. (Trenta, near La Paz, and near Apia), 8h. (Pasadena and Riverside), 10h. (Triest), 11h. (Haiwee, La Jolla, Mount Wilson, Pasadena, Santa Barbara, Riverside, Tinemaha, and Vladivostok), 12h. (Cheb and near Tyosi), 14h. (Koti, near Tyosi, and near Tucson), 16h. (Tchimkent, Andijan, and near Apia), 18h. (near Amboina), 20h. (Mizusawa, near Batavia, and Malabar), 21h. (near Santiago), 22h. (near Taihoku, and near La Paz), 23h. (Oak Ridge).

July 20d. 4h. 19m. 33s. Epicentre 37°·7N. 69°·8E. (as on 1932 March 23d.). X.

A = +·273, B = +·742, C = +·612; D = +·938, E = −·345; G = +·211, H = +·574, K = −·791.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Samarkand | 2·9 | 312 | e 0 47 | P* | 1 47 | $S_g$ | — | — |
| Tashkent | 3·6 | 354 | e 0 51 | 0 | e 1 38 | +6 | i 1·7 | 2·6 |
| Andijan | 3·6 | 33 | e 0 48? | −3 | 1 30 | −2 | — | — |
| Tchimkent | 4·6 | 359 | 1 31? | $P_g$ | 2 36 | $S_g$ | — | — |

Andijan gives also $S_g$ = +1m.48s. =S* +3s.
Tchimkent S = +2m.31s.

July 20d. 23h. 14m. 4s. Epicentre 38°·5N. 144°·8E. N.1.
(given by Japanese stations).

A = −·640, B = +·451, C = +·623; D = +·576, E = +·817; G = −·509, H = +·359, K = −·783.

A *depth* of focus 0·007 has been assumed.

| | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | ° | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Miyako | +0·1 | 2·5 | 297 | 0 40a | +3 | 1 8 | +1 | — | — |
| Mizusawa | +0·1 | 3·0 | 283 | i 0 43k | −1 | i 1 14 | −6 | — | — |
| Morioka | +0·1 | 3·1 | 293 | 0 44k | −2 | 1 18 | −4 | — | — |
| Sendai | +0·1 | 3·1 | 266 | 0 44k | −2 | 1 19 | −3 | — | — |
| Hukusima | +0·1 | 3·5 | 259 | 0 50k | −1 | 1 28 | −4 | — | — |
| Yamagata | +0·1 | 3·5 | 269 | 0 48k | −3 | 1 25 | −7 | — | — |
| Akita | 0·0 | 3·9 | 290 | 0 58k | +2 | 1 40 | 0 | — | — |
| Aomori | 0·0 | 3·9 | 309 | 0 54k | −2 | 1 34 | −6 | — | — |
| Urakawa | 0·0 | 4·0 | 337 | 0 55a | −2 | 1 38 | −4 | — | — |
| Tyosi | 0·0 | 4·2 | 230 | i 1 0k | 0 | 1 46 | −2 | — | 1·9 |
| Kakioka | 0·0 | 4·4 | 241 | 1 1k | −2 | 1 47 | −6 | — | — |
| Tukubasan | 0·0 | 4·4 | 241 | 1 2k | −1 | 1 50 | −3 | — | — |
| Kusiro | 0·0 | 4·5 | 356 | 1 0 | −4 | 1 45 | −10 | — | — |
| Nemuro | 0·0 | 4·8 | 6 | 1 2 | −6 | 1 51 | −12 | — | — |
| Kumagaya | 0·0 | 4·9 | 244 | 1 10k | 0 | 2 4 | −1 | — | — |
| Maebasi | 0·0 | 5·0 | 247 | 1 13k | +2 | 2 8 | 0 | — | — |
| Tokyo | 0·0 | 5·0 | 237 | 1 11k | 0 | 2 4 | −4 | — | 2·2 |
| Sapporo | 0·0 | 5·2 | 332 | 1 6a | −8 | 1 58 | −15 | — | — |
| Yokohama | 0·0 | 5·2 | 234 | 1 15 | +1 | 2 8 | −5 | — | — |
| Mera | 0·0 | 5·4 | 230 | 1 19 | +2 | 2 17 | −1 | — | — |
| Nagano | 0·0 | 5·6 | 253 | 1 21k | +1 | 2 23 | 0 | — | — |
| Kohu | 0·0 | 5·8 | 243 | 1 21k | −1 | 2 24 | −4 | — | — |
| Misima | 0·0 | 5·8 | 237 | 1 27 | +5 | 2 25 | −3 | — | — |
| Numadu | 0·0 | 5·9 | 237 | 1 24 | 0 | 2 35 | +4 | — | — |
| Toyama | 0·0 | 6·3 | 255 | 1 31k | +1 | 2 46 | +5 | — | — |
| Wazima | 0·0 | 6·4 | 262 | 1 30k | −1 | 2 36 | −7 | — | — |
| Omaesaki | 0·0 | 6·6 | 236 | 1 36 | +2 | 2 54 | +6 | — | — |
| Hatidyozima | 0·0 | 6·7 | 219 | 1 37 | +2 | 2 46 | −5 | — | — |
| Hamamatu | 0·0 | 6·8 | 239 | 1 41 | +4 | 2 52 | −1 | — | — |
| Nagoya | 0·0 | 7·1 | 245 | 1 41 | 0 | 3 2 | +1 | — | 3·4 |
| Gihu | 0·0 | 7·1 | 247 | 1 42k | +1 | 2 59 | −2 | — | — |
| Hikone | 0·0 | 7·6 | 247 | 1 47 | −1 | 3 8 | −6 | — | — |
| Kameyama | 0·0 | 7·6 | 244 | 1 50 | +2 | 3 24 | +10 | — | — |
| Ootomari | 0·0 | 8·3 | 350 | e 1 51 | −7 | e 3 17 | −14 | — | — |
| Osaka | 0·0 | 8·4 | 246 | 1 57 | −2 | 3 58 | +24 | — | 4·4 |
| Osaka B. | 0·0 | 8·5 | 246 | 1 58 | −2 | 3 52 | +16 | — | — |
| Toyooka | 0·0 | 8·5 | 253 | 1 59k | −1 | 3 31 | −5 | — | 4·5 |
| Kobe | 0·0 | 8·6 | 247 | e 2 1 | −1 | e 3 34 | −5 | e 4·8 | 5·8 |
| Wakayama | −0·1 | 8·9 | 244 | 2 5a | 0 | 4 13 | +29 | — | — |
| Siomisaki | −0·1 | 8·9 | 239 | 2 4k | −1 | 5 1 | ? | — | — |
| Sumoto | −0·1 | 9·0 | 246 | 2 7a | +1 | 4 11 | +25 | — | 4·2 |

*Continued on next page.*

| | | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Koti | | −0·1 | 10·4 | 245 | e 2 24 | − 1 | e 4 20 | − 1 | — | — |
| Hamada | | −0·1 | 10·8 | 255 | 2 31 | 0 | 4 59 | +28 | — | — |
| Vladivostok | | −0·1 | 10·8 | 300 | i 2 29 | − 2 | 4 30 | − 1 | 4·9 | 6·9 |
| Titizima | | −0·1 | 11·6 | 192 | 2 41 | − 1 | 4 41 | − 9 | — | — |
| Hukuoka | | −0·1 | 12·6 | 252 | e 2 56 | + 1 | e 5 57 | +42 | — | — |
| Hukuoka B. | | −0·1 | 12·6 | 252 | 2 56 | + 1 | 5 51 | +36 | — | — |
| Miyazaki | | −0·1 | 12·7 | 243 | 2 53 | − 3 | 5 58 | +41 | — | — |
| Taikyu | | −0·1 | 13·2 | 264 | 3 4 | + 1 | — | — | — | — |
| Nagasaki | | −0·1 | 13·5 | 249 | 3 5 | − 2 | 5 45 | + 8 | e 6·9 | — |
| Keizyo | E. | −0·1 | 14·0 | 271 | 3 14 | 0 | 6 40 | +51 | 8·0 | — |
| Zinsen | | −0·2 | 14·4 | 273 | 3 18 | 0 | — | — | e 8·3 | — |
| Heizyo | | −0·2 | 14·8 | 278 | 3 24 | + 1 | — | — | — | — |
| Nanking | | −0·3 | 22·1 | 261 | i 4 49k | 0 | 8 28 | −14 | 13·0 | 14·8 |
| Chiufeng | | −0·3 | 22·2 | 283 | 4 49k | − 1 | i 8 49 | + 5 | e 11·3 | 14·4 |
| Hong Kong | | −0·5 | 30·8 | 247 | 6 25 | +17 | 11 26 | +17 | — | 17·4 |
| Manila | | −0·5 | 31·9 | 227 | 6 24 | + 7 | 11 44 | +18 | 14·9 | 17·4 |
| Almata | | −0·7 | 50·1 | 299 | e 9 25 | +38 | — | — | — | — |
| Sitka | | −0·7 | 53·3 | 42 | i 9 12 | + 1 | i 16 36 | − 1 | e 25·5 | — |
| Andijan | | −0·7 | 54·2 | 297 | e 9 17 | − 1 | 16 53 | + 4 | — | — |
| Tchimkent | | −0·8 | 55·5 | 300 | e 9 20 | − 6 | — | — | — | — |
| Ekaterinburg | | −0·8 | 55·6 | 319 | i 9 29 | + 2 | i 17 12 | + 6 | 23·9 | — |
| Tashkent | | −0·8 | 56·1 | 299 | i 9 32 | + 1 | i 17 22 | + 9 | e 23·9 | 38·3 |
| Samarkand | | −0·8 | 58·4 | 298 | e 9 26? | −21 | 17 6 | −38 | — | — |
| Kucino | | −0·9 | 67·3 | 324 | e 10 47 | − 1 | 19 39 | + 2 | 32·7 | 38·0 |
| Pulkovo | | −0·9 | 68·0 | 330 | i 10 51 | − 1 | 19 46 | 0 | e 34·3 | 40·5 |
| Baku | | −0·9 | 69·4 | 306 | e 11 24 | +23 | e 20 10 | + 7 | 32·2 | 38·5 |
| Tinemaha | | −0·9 | 72·6 | 56 | e 11 22 | + 1 | — | — | — | — |
| Upsala | | −0·9 | 72·6 | 336 | e 11 19 | − 2 | e 20 39 | − 2 | — | — |
| Haiwee | | −0·9 | 73·3 | 57 | e 11 26 | + 1 | — | — | — | — |
| Mount Wilson | | −0·9 | 74·4 | 59 | i 11 32a | 0 | — | — | — | — |
| Pasadena | | −0·9 | 74·4 | 59 | i 11 31a | − 1 | — | — | — | — |
| Riverside | | −0·9 | 74·9 | 59 | i 11 34a | − 1 | — | — | — | — |
| Theodosia | | −0·9 | 75·2 | 316 | e 11 38 | + 2 | — | — | — | — |
| Simferopol | | −0·9 | 76·0 | 317 | e 11 40 | − 1 | — | — | — | — |
| Sebastopol | | −0·9 | 76·4 | 317 | e 11 42 | − 1 | — | — | — | — |
| Copenhagen | | −0·9 | 77·5 | 335 | i 11 49 | 0 | 21 36 | − 2 | 39·9 | — |
| Ivigtut | | −0·9 | 79·8 | 7 | i 12 2 | 0 | — | — | — | — |
| Potsdam | | −0·9 | 80·0 | 333 | e 11 56? | − 7 | i 22 1 | − 5 | e 42·9 | 45·9 |
| Hamburg | | −0·9 | 80·0 | 335 | e 12 3 | 0 | e 22 2 | − 4 | e 40·9 | — |
| Edinburgh | | −0·9 | 81·8 | 342 | e 12 16 | + 3 | e 22 24 | − 1 | e 44·9 | — |
| De Bilt | | −0·9 | 82·9 | 336 | i 12 19 | + 1 | 22 33 | − 4 | e 38·9 | 44·8 |
| Uccle | | −0·9 | 84·2 | 337 | 12 25 | 0 | e 22 47 | − 3 | e 38·9 | — |
| Stuttgart | | −1·0 | 84·4 | 333 | e 12 25a | 0 | e 22 46 | − 5 | e 41·9 | — |
| Kew | | −1·0 | 85·0 | 339 | e 12 30 | + 2 | e 22 51 | − 7 | e 39·9 | — |
| Triest | | −1·0 | 85·1 | 328 | 12 28a | − 1 | 22 49 | −10 | e 39·9 | 47·1 |
| Oxford | | −1·0 | 85·1 | 340 | 12 29a | 0 | 22 47 | −12 | — | 48·9 |
| Strasbourg | | −1·0 | 85·2 | 333 | 12 30a | + 1 | e 22 56? | − 4 | e 43·9 | — |
| Zurich | | −1·0 | 85·7 | 333 | e 12 32 | 0 | e 22 59 | − 6 | — | — |
| Paris | | −1·0 | 86·5 | 336 | i 12 36 | 0 | — | — | 48·9 | 52·9 |
| Neuchatel | | −1·0 | 86·6 | 333 | e 12 37 | + 1 | e 23 0 | −14 | — | — |
| Piacenza | | −1·0 | 87·3 | 331 | e 12 56 | +16 | 23 19 | − 1 | — | 56·4 |
| Ottawa | | −1·0 | 88·6 | 27 | e 12 45 | − 1 | e 23 9 | [−15] | 47·9 | — |
| Fordham | | −1·0 | 93·1 | 28 | e 13 4 | − 3 | e 23 47 | [−14] | 45·9 | — |
| Granada | | −1·0 | 98·9 | 335 | i 17 38 | PP | — | — | e 50·4 | — |

Additional readings :—
Kobe eZ = +4m.3s. and +4m.27s.
Nanking iN = +4m.53s., iE = +8m.59s. = SS − 15s.
Sitka SS = +20m.16s.
Baku SS = +25m.14s., e = +28m.8s.
Haiwee eE = +14m.17s. = PP + 18s.
Copenhagen +14m.43s. = PP + 8s.
Potsdam ePPEN = +14m.56s.?
De Bilt PPZ = +15m.31s.
Stuttgart ePPP = +17m.34s.
Strasbourg e = +17m.42s.
Ottawa e = +16m.16s. = PP + 10s.
Long waves were also recorded at Oak Ridge and San Fernando.

July 20d. Readings also at 3h. (Theodosia), 4h. (Baku, Ekaterinburg, Kucino, Tashkent, Florissant, and St. Louis), 5h. (near Tananarive and near Malabar), 15h. (Frunse, near Tchimkent, Samarkand, and Andijan), 16h. (Suva, Vladivostok, Mizusawa, near Tyosi, Nagoya, and near Tananarive), 18h. (Florissant, St. Louis, Taihoku, and near Amboina), 20h. (Tchimkent and near Andijan), 22h. (Bombay).

July 21d. 7h. 29m. 5s. Epicentre 18°·8N. 69°·1W. N.2.

$A = +\cdot338$, $B = -\cdot884$, $C = +\cdot322$; $D = -\cdot934$, $E = -\cdot357$; $G = +\cdot115$, $H = -\cdot301$, $K = -\cdot947$.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| San Juan | 2·8 | 98 | i 0 41 | + 1 | i 0 56 | −16 | i 1·2 | — |
| Port au Prince | 3·1 | 265 | i 0 55 | $P_g$ | — | — | i 1·9 | 2·9 |
| Georgetown | 21·3 | 342 | i 4 44 | + 1 | i 8 39 | + 7 | e 12·9 | — |
| Fordham | 22·5 | 350 | e 4 56 | 0 | e 8 57 | + 2 | 11·9 | — |
| Pittsburgh | 23·6 | 339 | e 5 6 | 0 | i 9 24 | + 8 | — | — |
| Oak Ridge | 23·8 | 356 | i 5 8 | 0 | e 9 20 | + 1 | e 12·9 | — |
| Riverside | 45·4 | 300 | e 8 16a | 0 | e 14 56 | 0 | — | — |
| Mount Wilson | 46·0 | 300 | e 8 22 | + 1 | — | — | — | — |
| Pasadena | 46·1 | 300 | i 8 21a | 0 | — | — | — | — |
| Haiwee | 46·2 | 305 | e 8 22 | 0 | e 15 9 | + 2 | — | — |
| Tinemaha | 46·5 | 304 | e 8 26 | + 1 | e 15 14 | + 2 | — | — |
| Santa Barbara | 47·4 | 300 | i 8 32 | 0 | — | — | — | — |
| Edinburgh | 61·1 | 37 | — | — | e 17 55? | −35 | — | — |
| Paris | 64·0 | 45 | — | — | 18 55? | −12 | — | — |
| Uccle | 65·1 | 42 | — | — | (e 25 55?) | SSS | e 25·9 | — |
| De Bilt | 65·7 | 40 | — | — | e 19 15 | −14 | e 33·9 | — |
| Strasbourg | 67·4 | 45 | — | — | e 18 55? | −55 | — | — |
| Copenhagen | 69·8 | 36 | — | — | 20 6 | −13 | — | — |
| Pulkovo | 78·4 | 31 | e 11 39 | −20 | — | — | 42·1 | — |
| Tashkent | 108·6 | 33 | — | — | e 27 55? | ? | e 57·9 | 62·3 |

Additional readings:—
Pittsburgh i = +5m.46s., +9m.40s., +15m.58s., and +16m.56s.
Copenhagen +20m.58s. = $S_eS$ − 6s.
Pulkovo e = +12m.31s.
Long waves were also recorded at Baku.

July 21d. 20h. 6m. 51s. Epicentre 56°·0S. 25°·0W. (as on 1930 April 21d.). X.

$A = +\cdot507$, $B = -\cdot236$, $C = -\cdot829$; $D = -\cdot423$, $E = -\cdot906$; $G = -\cdot751$, $H = +\cdot350$, $K = -\cdot559$.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Cape Town | | 36·9 | 72 | 8 3 | +57 | 13 1 | +11 | 18·2 | 20·6 |
| Sucre | | 47·7 | 305 | 8 36 | + 2 | i 15 36 | + 7 | 22·2 | 27·3 |
| Johannesburg | | 48·1 | 75 | — | — | 15 9? | −25 | — | — |
| Huancayo | | 58·5 | 298 | i 9 54 | 0 | e 17 57 | + 1 | e 24·2 | — |
| Tananarive | E. | 64·7 | 86 | 10 47 | +10 | e 19 23 | + 7 | 29·2 | 33·8 |
| | N. | 64·7 | 86 | 11 1 | (− 1) | e 19 26 | +10 | 30·6 | 33·0 |
| Christchurch | | 79·4 | 193 | i 11 58 | − 7 | e 22 10 | + 1 | e 38·3 | 44·9 |
| Wellington | | 81·3 | 195 | 12 11 | − 4 | 22 30 | 0 | 40·2 | 47·2 |
| San Juan | | 82·1 | 321 | e 12 19 | 0 | 22 25 | −13 | e 39·0 | — |
| Arapuni | | 84·3 | 196 | — | — | 33 9? | ? | — | — |
| Melbourne | | 85·8 | 172 | — | — | i 23 11 | − 5 | 43·0 | 54·8 |
| Perth | | 86·0 | 148 | — | — | e 36 9? | ? | 42·2 | 49·2 |
| Adelaide | | 88·0 | 167 | e 12 49 | + 1 | i 23 26 | −11 | 45·2 | 50·2 |
| Riverview | | 90·1 | 177 | — | — | e 23 57 | 0 | e 47·4 | 51·2 |
| San Fernando | | 93·8 | 15 | 13 50 | +35 | 23 56 | [+ 2] | 41·2 | 54·2 |
| Malaga | | 94·4 | 17 | e 13 18 | 0 | 23 49 | [− 9] | 41·6 | 47·6 |
| Almeria | | 94·9 | 18 | e 13 55 | +35 | e 23 59 | [− 1] | e 48·9 | |
| Granada | | 94·9 | 17 | i 13 19k | − 1 | 23 57 | [− 3] | 44·4 | 52·0 |
| Alicante | | 96·6 | 20 | e 13 56 | +28 | e 24 19 | [+10] | e 39·8 | — |
| Toledo | | 97·5 | 16 | e 13 26 | − 6 | i 24 9 | [− 5] | e 42·5 | — |
| Helwan | | 98·2 | 47 | e 18 25 | ? | 24 12 | [− 5] | — | 57·2 |

*Continued on next page.*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Tortosa | | 99·2 | 20 | e 14 18 | +38 | 24 20 | [− 2] | e 35·2 | 53·4 |
| Catania | | 99·5 | 31 | e 18 19 | ? | 29 9 | ? | e 48·9 | 55·7 |
| Columbia | | 101·8 | 315 | — | — | e 25 32 | −10 | e 49·2 | — |
| Ksara | | 103·6 | 48 | — | — | 24 39 | [− 4] | — | — |
| Georgetown | | 104·7 | 321 | e 14 2 | − 3 | — | — | e 50·2 | — |
| Piacenza | | 105·1 | 22 | e 12 41 | ? | 24 37 | [−13] | — | 62·0 |
| Fordham | | 105·3 | 324 | e 18 21 | PP | — | — | 52·2 | — |
| Oak Ridge | | 106·1 | 327 | e 14 9 | − 3 | e 24 47 | [− 8] | e 42·2 | — |
| Neuchatel | | 106·4 | 22 | e 18 38 | PP | — | — | — | — |
| Triest | | 106·7 | 27 | e 18 6 | [− 1] | e 24 45 | [−13] | e 42·2 | 54·8 |
| Zurich | | 107·1 | 23 | e 18 40 | PP | e 28 26 | PS | — | — |
| Pittsburgh | | 107·1 | 319 | e 18 35 | PP | e 24 51 | [− 9] | e 53·2 | — |
| Paris | | 107·3 | 17 | e 14 21 | + 3 | e 18 47 | PP | 46·2 | 58·2 |
| Strasbourg | | 108·0 | 20 | e 14 23 | + 2 | e 27 39 | ? | 46·2 | — |
| Stuttgart | | 108·5 | 20 | e 14 25 | + 1 | 25 3 | [− 3] | e 43·2 | 60·2 |
| Graz | | 108·5 | 28 | e 25 30 | SKS | (e 25 30) | [+24] | e 60·2 | 65·1 |
| Kew | | 109·4 | 15 | e 14 22 | − 6 | e 26 49 | {+46} | e 45·2 | 61·8 |
| Uccle | | 109·5 | 18 | e 18 57 | PP | e 25 38 | [+27] | e 45·2 | — |
| Oxford | | 109·5 | 14 | e 18 50 | PP | e 25 55 | {− 8} | e 50·8 | 61·6 |
| St. Louis | | 109·5 | 311 | e 17 56 | [−20] | e 25 34 | {−29} | — | — |
| Toronto | | 109·7 | 321 | e 18 52 | PP | i 24 58 | [−14] | 52·2 | — |
| Florissant | | 109·8 | 311 | e 17 56 | [−21] | e 25 34 | [+22] | — | — |
| Budapest | | 109·8 | 30 | — | — | e 23 9? | PPPP | e 29·2 | 62·2 |
| Vienna | | 109·8 | 28 | e 19 9 | PP | e 28 35 | PS | e 53·2 | 70·2 |
| Bombay | | 109·9 | 84 | e 18 37 | PP | 28 37 | PS | 53·2 | 57·9 |
| Ottawa | | 110·0 | 325 | e 18 14 | [− 4] | e 25 10 | [− 3] | e 54·2 | — |
| Ann Arbor | | 110·1 | 317 | e 24 27 | ? | e 25 21 | [+ 7] | e 52·6 | — |
| Cheb | | 110·5 | 24 | e 28 49 | PS | — | — | e 54·2 | 63·2 |
| De Bilt | | 110·9 | 19 | e 14 37 | + 2 | — | — | — | 57·8 |
| Chicago | | 111·2 | 315 | e 18 52 | PP | e 26 52 | {+37} | e 55·0 | — |
| Göttingen | | 111·3 | 21 | — | — | e 28 9? | PS | — | 61·2 |
| Stonyhurst | | 111·4 | 13 | — | — | e 26 59 | {+42} | 47·2 | 60·2 |
| Hyderabad | | 111·8 | 88 | 24 39 | SKS | (24 39) | [−42] | 44·2 | 57·0 |
| Durham | | 112·4 | 15 | e 19 20 | PP | 29 5 | PS | — | 58·6 |
| Potsdam | | 112·8 | 23 | e 19 33 | PP | e 28 57 | PS | e 56·2 | 63·2 |
| Hamburg | | 113·3 | 20 | e 19 27 | PP | e 29 9? | PS | e 56·2 | 63·2 |
| Edinburgh | | 113·3 | 11 | e 13 27 | −80 | 27 19 | {+49} | e 52·2 | 68·3 |
| Tucson | | 114·1 | 292 | e 19 35 | PP | e 25 25 | [− 5] | e 55·4 | — |
| Baku | | 115·2 | 52 | e 18 49 | [+16] | 29 51 | PS | 51·2 | 67·2 |
| Copenhagen | | 115·8 | 21 | 19 45 | PP | 25 27 | [− 9] | — | — |
| Ivigtut | | 118·6 | 347 | 20 46 | ? | 30 9 | PS | 53·2 | — |
| Riverside | Z. | 118·9 | 288 | e 20 37 | ? | — | — | — | — |
| Mount Wilson | Z. | 119·4 | 288 | e 20 15 | PP | — | — | — | — |
| Pasadena | Z. | 119·4 | 288 | e 18 43 | [− 1] | e 20 10 | PP | — | — |
| Santa Barbara | E. | 120·5 | 287 | e 18 57 | [+10] | — | — | — | — |
| Upsala | N. | 120·7 | 23 | — | — | e 31 9? | ? | — | 70·9 |
| Calcutta | | 121·5 | 94 | 27 3 | SKKS | (27 3) | {−23} | 61·6 | — |
| Tinemaha | | 121·7 | 290 | 18 37 | [−12] | — | — | — | — |
| Pulkovo | | 123·7 | 29 | e 15 24 | ? | e 25 39 | [−22] | e 55·2 | 67·8 |
| Berkeley | Z. | 124·4 | 289 | i 20 42 | PP | — | — | — | — |
| Bozeman | | 124·5 | 303 | e 20 24 | PP | e 25 59 | [− 5] | e 62·6 | — |
| Tashkent | | 125·3 | 67 | e 18 57 | [− 1] | e 26 15 | [+ 9] | 58·2 | 76·6 |
| Ukiah | | 125·8 | 289 | e 20 49 | PP | — | — | e 65·4 | — |
| Phu-Lien | | 129·9 | 114 | 22 9? | PKS | — | — | — | — |
| Manila | | 131·1 | 132 | i 19 19 | [+10] | i 26 54 | [+32] | — | — |
| Ekaterinburg | | 132·1 | 45 | i 19 9 | [− 1] | i 28 28 | {− 7} | 62·2 | 78·8 |
| Victoria | E. | 132·4 | 298 | i 21 42 | PP | — | — | e 68·6 | 81·9 |
| Hong Kong | | 134·9 | 121 | 22 19 | PP | — | — | — | 83·1 |
| Sitka | | 143·3 | 302 | e 19 26 | [− 2] | — | — | e 59·2 | — |
| Nanking | | 145·3 | 118 | 19 27 | [− 8] | — | — | e 75·2 | 90·4 |
| Zi-ka-wei | Z. | 145·9 | 122 | 19 37 | [+ 1] | — | — | 71·4 | 78·7 |
| Chiufeng | | 150·1 | 105 | 19 41a | [− 1] | — | — | e 72·6 | — |
| Vladivostok | | 160·4 | 122 | 19 56 | [+ 2] | — | — | — | — |

*For Notes, see next page.*

NOTES TO JULY 21d. 20h. 6m. 51s.

Additional readings :—
Cape Town +9m.11s., +16m.4s., and +17m.18s. =$S_cS$ −5s.
Sucre PPN = +10m.18s., SS = +19m.1s.
Huancayo iPPP = +13m.26s.
Tananarive PPEN = +13m.15s., PSN = +19m.59s., SKS = +20m.41s. =$S_cS$ +15s., SSN = +23m.28s., SSE = +23m.35s., N = +27m.14s., E = +27m.55s.
Christchurch PP = +16m.1s.
San Juan e = +16m.5s., eSS = +27m.40s., e = +31m.55s.
Melbourne e = +28m.59s. =SS + 20s., i = +35m.39s., e = +39m.27s.
San Fernando S = +23m.15s.
Malaga PPP = +18m.36s., SKS? = +23m.21s., SKKS = +24m.2s., PS = +24m.36s., SS = +29m.55s., e = +39m.32s.
Granada $P_cP$ = +13m.40s., PP = +17m.15s.
Ksara PPS = +27m.39s. =PS +16s.
Georgetown ePKP = +17m.49s., iPP = +18m.24s., ePS = +27m.36s.
Oak Ridge eNE = +17m.39s., eNW = +18m.29s. =PP +1s., eNE = +18m.33s., +19m.37s. and +26m.16s., eNW = +27m.41s. =PS −8s.
Triest e = +25m.45s. =SKKS +2s., iS = +28m.22s., iPS = +29m.5s., e = +30m.33s., eSS = +33m.45s., i = +34m.46s.
Pittsburgh e = +30m.59s.
Strasbourg ePP = +18m.32s., SS = +33m.9s.?
Stuttgart ePP = +18m.21s., e = +28m.9s. =PS −4s. and +34m.9s. =SS +11s.
Graz eS = +24m.26s.
Kew ePPZ = +18m.32s., eZ = +28m.15s., ePSN = +28m.33s., ePPSE = +29m.12s., eSSN = +34m.40s.
Uccle e = +28m.38s. =PS +15s.
Oxford eE = +26m.38s., iN = +28m.28s. =PS +5s.
Toronto e = +28m.29s. =PS +4s., iE = +40m.21s.
Bombay SS = +34m.57s.
Ottawa e = +28m.27s. =PS −1s., eE = +33m.27s.
Ann Arbor eN = +28m.57s. =PS +29s.
Cheb eS? = +38m.47s. =SSS +20s.
De Bilt eZ = +18m.37s. =PKP +17s., eE = +27m.1s., eNZ = +28m.43s. = PS +7s., eEN = +34m.39s. =SS +8s.
Chicago ePS = +28m.27s., eSS = +33m.46s., eSSS = +38m.42s.
Hyderabad S = +34m.25s. =SS −18s.
Potsdam ePPPEN = +25m.3s. =SKS −22s., eEN = +26m.9s. =SKKS −18s., eSSEN = +35m.9s.?, eE = +38m.9s.?, eSSSN = +40m.9s.?, eN = +42m.39s., and +48m.9s.?
Edinburgh e = +39m.19s. =SSS +10s.
Tucson ePS = +29m.11s.
Baku ePP = +19m.55s.
Calcutta S = +38m.24s.
Pulkovo PKP = +18m.53s., ePP = +20m.39s., ePS = +30m.41s., ePPS = +32m.43s., eSS = +37m.21s., eSSS = +41m.39s.
Bozeman e = +32m.44s.
Tashkent iPP = +20m.58s., eSKKS = +27m.29s., ePS = +31m.0s., PPS = +32m.35s., SS = +37m.57s., SSS = +42m.51s.
Ukiah e = +32m.34s. and +38m.49s.
Manila iPKPN = +22m.26s., iN = +22m.37s., eN = +23m.15s., iE = +23m.38s.
Ekaterinburg PP = +21m.36s., iSS = +39m.3s., eSSS = +44m.15s.
Sitka ePP = +23m.11s. =PKS −5s., i = +42m.16s., eSSS = +47m.9s.
Zi-ka-wei iZ = +20m.7s.
Chiufeng i = +23m.11s. =PP −10s. and +28m.27s.
Vladivostok iPP = +24m.24s.
Long waves were also recorded at La Plata, Charlottesville, Algiers, Barcelona, Jena, Tiflis, Sydney, and Honolulu T.H.

July 21d. Readings also at 0h. (near Tananarive and near Tyosi), 2h. (Ekaterinburg and Sitka), 3h. (Baku, Tashkent, Oak Ridge, Tucson, near Berkeley, Branner and Lick (2) ), 4h. (Mizusawa, near Berkeley, Branner, and Lick (3) ), 7h. (Florissant (2) and St. Louis (2) ), 8h. (Almata and near Sumoto), 9h. (near Amboina), 10h. (Tananarive), 12h. and 15h. (near Amboina), 17h. (near Zurich), 20h. (La Plata, Nagoya, Almata, and near Malabar), 21h. (near Berkeley, Branner (2), and Lick (2) ), 22h. (Tortosa).

July 22d. 6h. 31m. 30s. Epicentre 40°·2N. 144°·7E. (as on 1933 June 8d.). X.

A = −·623, B = +·441, C = +·645; D = +·578, E = +·816;
G = −·527, H = +·373, K = −·764.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Mizusawa | 3·0 | 249 | 0 43 | 0 | i 1 20 | + 3 | — | — |
| Tyosi | 5·3 | 215 | e 1 14 | − 1 | 2 14 | − 1 | — | — |
| Nagoya | 7·9 | 233 | e 1 59 | + 7 | e 3 17 | − 4 | — | — |
| Vladivostok | 9·9 | 291 | 2 20 | + 1 | e 5 26 | $S_g$ | 6·1 | 7·7 |
| Chiufeng | 21·7 | 279 | — | — | e 8 48 | + 8 | — | — |
| Irkutsk | 30·0 | 308 | e 6 7 | + 2 | e 11 3 | − 1 | e 16·5 | — |
| Ekaterinburg | 54·3 | 318 | e 9 19 | − 4 | e 17 6 | + 7 | 24·5 | — |

Long waves were also recorded at Baku, Tashkent, Copenhagen, and Paris.

July 22d. 20h. 55m. 20s. Epicentre 52°·9N. 169°·3W. N.1.

Probable error of epicentre ±0°·21.

A = −·593, B = −·112, C = +·798; D = −·186, E = +·983;
G = −·784, H = −·148, K = −·603.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Sitka | | 19·7 | 64 | i 4 28 | + 2 | i 7 29 | −31 | i 8·2 | — |
| Victoria | | 28·9 | 80 | i 5 59 | + 4 | i 10 43 | − 4 | — | 15·0 |
| Ootomari | | 31·0 | 278 | 6 16 | + 2 | (11 36) | +16 | 11·6 | 22·5 |
| Honolulu T.H. | | 32·8 | 160 | i 6 29 | − 1 | i 11 47 | − 1 | i 15·4 | — |
| Ukiah | | 34·1 | 95 | e 6 51 | +10 | 12 11 | + 3 | 14·8 | — |
| Berkeley | | 35·5 | 96 | i 6 54 | + 1 | i 12 23 | − 6 | i 15·0 | 16·5 |
| Morioka | | 35·8 | 269 | 6 59 | + 3 | 12 34 | + 1 | — | — |
| Branner | | 35·8 | 97 | e 7 2 | + 6 | — | — | — | — |
| Lick | | 36·2 | 96 | e 6 40 | −20 | — | — | — | — |
| Akita | | 36·4 | 269 | 7 2 | + 1 | 12 45 | + 3 | — | — |
| Saskatoon | | 36·9 | 67 | 6 59 | − 7 | 12 42 | − 8 | — | — |
| Hukusima | | 37·5 | 267 | 7 12 | + 1 | 13 6 | + 7 | — | — |
| Bozeman | | 37·6 | 77 | 7 12 | 0 | i 12 59 | − 1 | 18·2 | — |
| Tinemaha | | 38·4 | 93 | e 7 19 | + 1 | e 13 16 | + 4 | — | — |
| Tyosi | | 38·5 | 264 | e 7 23 | + 4 | 13 16 | + 2 | 17·8 | 23·4 |
| Haiwee | | 39·2 | 94 | e 7 23 | − 2 | e 13 19 | − 5 | — | — |
| Maebasi | | 39·2 | 267 | 7 27 | + 2 | 13 21 | − 3 | — | — |
| Santa Barbara | | 39·2 | 98 | e 7 31 | + 6 | e 13 31 | + 7 | — | — |
| Nagano | | 39·5 | 268 | 7 29 | + 1 | 13 32 | + 3 | — | — |
| Yokohama | | 39·5 | 265 | 7 30 | + 2 | 13 34 | + 5 | — | — |
| Wazima | | 39·9 | 270 | 7 33 | + 2 | 13 38 | + 3 | — | — |
| Pasadena | | 40·4 | 97 | e 7 26 | − 9 | i 13 45 | + 3 | i 16·7 | — |
| Mount Wilson | | 40·5 | 97 | e 7 35 | − 1 | e 13 48 | + 4 | — | — |
| Hatidyozima | | 41·0 | 262 | 7 39 | − 1 | 13 51 | 0 | — | — |
| Riverside | | 41·0 | 97 | e 7 37 | − 3 | e 13 47 | − 4 | — | — |
| Hamamatu | | 41·1 | 265 | 7 46 | + 5 | 13 58 | + 5 | — | — |
| La Jolla | | 41·8 | 98 | e 7 49 | + 2 | e 14 5 | + 2 | — | — |
| Toyooka | | 42·3 | 269 | 7 51 | 0 | 14 13 | + 3 | e 17·6 | 23·5 |
| Osaka | | 42·5 | 267 | 7 54 | + 1 | 13 54 | −19 | 19·5 | — |
| Kobe | | 42·7 | 267 | e 7 54a | 0 | e 14 14 | − 2 | e 17·1 | 23·6 |
| Sumoto | | 43·1 | 267 | 8 1k | + 3 | 14 23 | + 1 | 18·0 | 23·0 |
| Muroto | | 44·3 | 267 | e 8 6 | − 1 | e 14 32 | − 8 | e 20·2 | — |
| Koti | z. | 44·4 | 268 | e 8 9 | + 1 | e 14 43 | + 2 | — | — |
| Heizyo | | 45·5 | 280 | e 8 20 | + 3 | e 14 54 | − 3 | — | — |
| Taikyu | | 45·8 | 274 | 8 19 | 0 | 15 8 | + 6 | e 21·8 | — |
| Zinsen | E. | 45·9 | 278 | e 8 19 | − 1 | e 15 0 | − 3 | — | — |
| | z. | 45·9 | 278 | e 8 14 | − 6 | e 15 6 | + 3 | e 22·4 | — |
| Tucson | | 46·1 | 93 | i 8 23 | + 2 | i 15 8 | + 2 | 19·7 | — |
| Hukuoka | | 46·3 | 270 | 8 23 | 0 | 15 12 | + 3 | 22·1 | 26·7 |
| Hukuoka B. | | 46·3 | 270 | 8 23 | 0 | 15 11 | + 2 | — | — |

*Continued on next page,*

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Nagasaki | | 47·2 | 270 | 8 28k | − 2 | 15 25 | + 4 | 19·4 | — |
| Irkutsk | | 49·1 | 306 | i 8 47 | + 3 | 16 10 | +22 | 24·7 | 32·3 |
| Chiufeng | | 50·4 | 288 | i 8 55a | + 1 | i 15 59 | − 7 | 23·2 | 33·8 |
| Chicago | | 53·3 | 68 | 9 14 | − 2 | i 16 40 | − 6 | e 24·1 | — |
| Zi-ka-wei | z. | 53·4 | 275 | i 9 20a | + 3 | 16 56 | + 9 | 25·9 | 30·6 |
| Florissant | | 53·8 | 72 | i 9 18 | − 2 | i 16 50 | − 3 | i 24·4 | 27·7 |
| St. Louis | | 54·0 | 72 | i 9 19 | − 2 | i 16 53 | − 3 | e 25·2 | 29·7 |
| Nanking | | 54·4 | 278 | i 9 22a | − 2 | i 16 59 | − 2 | 21·4 | 28·7 |
| Ann Arbor | | 55·2 | 64 | e 9 34 | + 4 | e 17 10 | − 2 | e 26·2 | 35·6 |
| Toronto | | 56·5 | 60 | i 9 35 | − 4 | i 17 23 | − 7 | 26·9 | 31·2 |
| Ivigtut | | 56·7 | 30 | i 9 41 | 0 | 17 35 | + 3 | 24·7 | — |
| Ottawa | | 57·2 | 57 | e 9 43 | − 2 | e 17 39 | 0 | e 28·7 | — |
| Taihoku | | 57·8 | 270 | 9 56 | + 7 | 17 50 | + 3 | — | 32·7 |
| Pittsburgh | | 58·5 | 64 | 9 50 | − 4 | e 17 52 | − 4 | e 28·7 | — |
| Vermont | | 59·1 | 57 | i 10 0 | + 2 | i 18 0 | − 4 | — | — |
| Charlottesville | | 61·0 | 65 | e 10 13 | + 2 | e 18 27 | − 2 | e 25·6 | — |
| Georgetown | | 61·1 | 63 | i 10 10 | − 2 | 18 27 | − 3 | e 27·7 | — |
| Oak Ridge | | 61·3 | 56 | i 10 11 | − 3 | i 18 33 | 0 | 29·8 | — |
| Fordham | | 61·4 | 59 | e 10 12 | − 2 | i 18 36 | + 2 | 29·7 | — |
| Columbia | | 62·5 | 69 | e 10 22 | 0 | e 18 28 | −20 | e 25·8 | — |
| Ekaterinburg | | 62·9 | 332 | i 10 25 | 0 | 19 15 | +21 | 41·2 | 42·8 |
| Hong Kong | | 64·3 | 274 | 10 32 | − 2 | 19 10 | − 1 | — | 39·8 |
| Manila | | 66·2 | 263 | 10 44 | − 3 | i 19 24 | −11 | 31·0 | 36·2 |
| Pulkovo | | 66·2 | 349 | i 10 47 | 0 | i 19 45 | +10 | 32·7 | 42·1 |
| Bergen | | 66·6 | 3 | — | — | 19 40? | 0 | 34·7 | — |
| Upsala | | 67·1 | 357 | 10 51 | − 1 | 19 46 | 0 | e 30·7 | 40·6 |
| Almata | | 68·3 | 314 | e 11 48 | +48 | — | — | — | — |
| Kucino | | 69·0 | 345 | i 11 8 | + 3 | 20 30 | PS | 31·6 | 38·2 |
| Phu-Lien | | 70·0 | 279 | e 11 9 | − 2 | 20 18 | − 3 | 31·7 | 41·7 |
| Edinburgh | | 70·6 | 9 | e 11 18 | + 4 | 20 32 | + 4 | 38·7 | 46·4 |
| Copenhagen | | 71·4 | 359 | i 11 20 | + 1 | i 20 33 | − 5 | 30·7 | — |
| Durham | | 71·8 | 8 | 11 21 | − 1 | 20 43 | 0 | — | 42·7 |
| Suva | | 71·9 | 192 | e 16 10? | ? | 22 58 | ? | 34·7 | — |
| Tchimkent | | 72·2 | 319 | e 10 28 | −56 | — | — | — | — |
| Stonyhurst | | 72·6 | 9 | 11 33 | + 7 | e 21 0 | + 8 | 35·7 | 46·3 |
| Liverpool | | 73·1 | 10 | i 11 32 | + 3 | e 20 55 | − 3 | — | 48·5 |
| Tashkent | | 73·1 | 318 | i 11 30 | + 1 | i 21 20 | PS | 36·0 | 44·3 |
| Hamburg | | 73·5 | 2 | i 11 32 | 0 | e 21 24 | PS | e 34·7 | 49·7 |
| Potsdam | | 74·7 | 0 | i 11 39 | 0 | e 21 10 | − 7 | e 34·7 | 45·7 |
| Oxford | | 74·8 | 9 | i 11 37a | − 2 | i 21 17 | − 1 | e 27·2 | 51·1 |
| De Bilt | | 74·9 | 4 | i 11 40a | 0 | 21 19 | 0 | e 32·7 | 46·1 |
| Kew | | 75·2 | 8 | e 11 42a | + 1 | e 21 23 | + 1 | e 31·7 | 51·3 |
| Prague | | 75·4 | 357 | e 15 40? | ? | — | — | e 25·7 | 42·7 |
| Göttingen | | 75·6 | 1 | e 11 44 | 0 | e 21 28 | + 1 | e 34·7 | 42·7 |
| Leipzig | | 75·8 | 0 | e 11 40 | − 5 | e 21 28 | − 1 | e 34·7 | 46·7 |
| Uccle | | 76·1 | 5 | i 11 47 | 0 | e 21 38 | + 5 | 32·7 | 49·1 |
| Jena | | 76·2 | 0 | e 11 40 | − 7 | e 21 28 | − 6 | e 26·7 | 34·7 |
| Amboina | | 76·9 | 245 | 11 17 | −34 | i 21 3 | −39 | 31·7 | — |
| Cheb | | 77·0 | 359 | e 11 56 | + 4 | e 21 45 | + 2 | e 39·7 | 51·2 |
| Paris | | 78·0 | 7 | i 11 57 | 0 | e 22 7? | +13 | 30·7 | 42·7 |
| Karlsruhe | | 78·1 | 3 | 12 2 | + 4 | e 22 16 | PS | e 44·7 | — |
| Dehra Dun | | 78·3 | 305 | 11 40 | −19 | 22 20 | PS | 40·2 | 51·7 |
| Stuttgart | | 78·3 | 2 | 11 59a | 0 | e 21 57 | 0 | e 32·7 | 47·7 |
| Strasbourg | | 78·5 | 3 | i 12 0a | 0 | 21 58 | − 1 | 32·7 | 37·2 |
| Vienna | | 78·7 | 357 | e 12 0a | − 1 | 21 56 | − 6 | i 31·6 | 47·7 |
| Calcutta | | 79·2 | 293 | 11 20 | −44 | 21 19 | −48 | 40·5 | 49·1 |
| Budapest | | 79·4 | 355 | 12 48 | +43 | 22 48 | +39 | e 30·7 | 50·7 |
| Zurich | | 79·7 | 3 | e 12 6 | 0 | e 22 9 | − 3 | — | — |
| Theodosia | | 79·8 | 343 | e 12 10 | + 3 | e 22 21 | + 7 | 32·7 | — |
| Graz | | 79·9 | 358 | i 12 7 | 0 | i 22 13 | − 2 | e 40·7 | 49·3 |

*Continued on next page.*

| | | △ ° | Az. ° | P. m. s. | O−C. s. | S. m. s. | O−C. s. | L. m. | M. m. |
|---|---|---|---|---|---|---|---|---|---|
| Neuchatel | | 80·1 | 3 | e 12 8 | 0 | e 22 13 | − 4 | — | — |
| Simferpol | | 80·1 | 344 | — | — | (e 22 25) | + 8 | e 22·4 | 27·7 |
| Sebastopol | | 80·5 | 345 | i 12 13 | + 3 | e 22 28 | + 7 | 30·7 | — |
| Baku | | 80·8 | 331 | i 12 15 | + 3 | i 22 48 | PS | 39·7 | — |
| Tiflis | | 80·9 | 335 | i 12 13 | 0 | 22 32 | + 7 | e 41·2 | 56·5 |
| Agra | | 81·0 | 303 | 11 52 | −21 | 22 3 | −23 | — | 50·8 |
| Puy de Döme | | 81·1 | 6 | 12 16 | + 2 | — | — | e 40·7 | — |
| Zagreb | | 81·2 | 357 | e 12 15 | + 1 | e 22 26 | − 2 | e 40·5 | — |
| Treviso | | 81·4 | 359 | i 12 16 | + 1 | 22 34 | + 3 | 49·7 | 55·2 |
| Triest | | 81·4 | 358 | i 12 15 | 0 | i 22 27 | − 4 | 35·5 | 41·1 |
| Padova | | 81·7 | 359 | e 12 18 | + 1 | e 22 37 | + 3 | e 45·7 | 55·7 |
| Belgrade | | 81·9 | 353 | — | — | e 22 41 | + 5 | e 44·1 | 50·8 |
| Pavia | | 81·9 | 2 | e 12 12 | − 6 | — | — | — | — |
| Piacenza | | 82·0 | 2 | 12 20 | + 2 | 22 40 | + 3 | 34·7 | 52·4 |
| San Juan | | 83·0 | 69 | 12 25 | + 2 | e 22 44 | − 3 | e 34·5 | — |
| Livorno | | 83·5 | 0 | 13 10 | +44 | — | — | — | — |
| Camerino | | 83·9 | 359 | 12 54 | +26 | — | — | — | — |
| Barcelona | | 85·4 | 7 | e 12 47 | +12 | 23 22 | +10 | e 43·2 | 53·7 |
| Tortosa | E. | 85·9 | 8 | 12 37 | − 1 | 23 12 | − 5 | e 35·9 | 54·6 |
| | N. | 85·9 | 8 | i 12 40 | + 2 | 23 0 | [− 6] | e 38·7 | 60·3 |
| Toledo | | 86·4 | 12 | i 12 40 | 0 | i 23 5 | [− 4] | e 40·3 | 56·4 |
| Trenta | | 87·7 | 356 | e 12 40 | − 6 | 24 20 | PS | 45·7 | — |
| Alicante | | 88·2 | 10 | e 12 55 | + 6 | e 23 37 | − 2 | e 42·5 | — |
| Medan | | 88·3 | 274 | e 11 37 | −72 | — | — | 48·7 | — |
| Hyderabad | | 88·8 | 298 | 12 52 | 0 | 23 22 | [− 3] | 42·6 | 55·2 |
| Messina | | 88·8 | 357 | 13 45 | +53 | — | — | — | — |
| Granada | | 89·1 | 12 | i 12 54 | + 1 | 23 42 | − 5 | 40·7 | 56·7 |
| Malaga | | 89·4 | 12 | 12 58 | + 3 | 23 25 | [− 4] | 45·0 | — |
| Almeria | | 89·5 | 11 | e 13 3 | + 8 | e 23 22 | [− 8] | e 36·8 | 55·9 |
| Catania | | 89·5 | 357 | e 13 29 | +34 | — | — | e 41·3 | 54·7 |
| San Fernando | | 89·5 | 14 | 12 44 | −11 | 23 31 | [+ 1] | 43·2 | 69·7 |
| Algiers | | 90·1 | 7 | i 12 59 | + 1 | e 23 29 | [− 4] | e 41·7 | 60·2 |
| Bombay | | 90·5 | 303 | 12 58 | − 2 | 23 30 | [− 6] | e 44·7 | 58·3 |
| Ksara | | 90·5 | 340 | 13 1 | + 1 | 23 33 | [− 3] | — | — |
| Batavia | | 91·3 | 261 | e 12 52k | −11 | i 23 29 | [−11] | 33·9 | — |
| Riverview | | 93·3 | 212 | — | — | i 23 42 | [−10] | e 30·5 | 44·7 |
| Sydney | | 93·3 | 212 | — | — | (24 0) | {− 1} | 24·0 | 47·2 |
| Wellington | | 95·2 | 192 | 13 35 | +14 | 23 43 | [−19] | 40·7 | 47·7 |
| Helwan | | 95·3 | 342 | 13 21 | − 1 | 23 57 | [− 5] | — | 68·1 |
| Kodaikanal | | 95·3 | 295 | 24 0 | S | (24 0) | [− 2] | 47·3 | 59·6 |
| Chatham Is. | | 97·0 | 186 | (19 40?) | ? | — | — | 19·7 | — |
| Christchurch | | 97·7 | 193 | i 13 43 | +10 | 24 7 | [− 8] | 45·6 | 52·6 |
| Adelaide | | 98·8 | 221 | — | — | i 24 6 | [−14] | 46·3? | 49·8 |
| Melbourne | | 99·0 | 215 | — | — | e 24 12 | [− 9] | 47·7 | 51·9 |
| Huancayo | | 102·0 | 96 | e 18 10 | PP | i 24 12 | [−23] | e 43·2 | — |
| Sucre | | 113·5 | 91 | e 16 30 | ? | — | — | 52·2 | 57·7 |
| Tananarive | | 135·7 | 306 | 12 48 | ? | — | — | 62·7 | 77·2 |
| Cape Town | | 160·3 | 341 | 41 7 | ? | 53 43 | ? | 82·9 | 89·9 |

**Additional readings :—**
**Honolulu T.H.** i = +13m.35s. =SS −1s.
**Berkeley** eEN = +7m.6s., iZ = +7m.10s., S = +12m.29s.
**Branner** iN = +7m.11s., eN = +15m.25s., eE = +16m.46s.
**Lick** eE = +6m.58s., eN = +15m.36s., eE = +16m.58s.
**Bozeman** PP = +8m.50s., e = +15m.50s.
**Pasadena** eSEN = +13m.40s.
**Toyooka** eSN = +14m.29s.
**Osaka** i = +10m.0s. =$P_eP$ +10s. and +11m.26s.
**Kobe** i = +7m.57s., PPE = +9m.30s., eN = +12m.52s., eE = +13m.31s., SEZ = +14m.17s.
**Heizyo** eSSE? = +18m.21s. =$S_cS$ +6s.
**Taikyu** eSS = +18m.7s., eSSS = +20m.21s.
**Zinsen** eSSN = +18m.2s., eSSE = +18m.12s., eSSSN = +20m.11s.
**Tucson** e = +13m.52s., SS = +18m.34s.
**Chiufeng** i = +9m.11s., iPP = +10m.55s., i = +12m.7s.

*Continued on next page,*

Chicago e = +17m.58s., eSS = +20m.28s.
Zi-ka-wei iZ = +9m.40s. and +10m.37s. = $P_cP$ +8s., PPZ +11m.24s., SSZ = +20m.56s., SSSZ? = +22m.36s.
Florissant ipPZ = +9m.37s., i$P_cPZ$ = +10m.54s., iPPZ = +11m.27s., i$P_cSE$ = +14m.41s., isSE = +17m.25s. ; $T_0$ = 20h.55m.18s.
St. Louis ipP = +9m.39s., e$P_cP$ = +11m.4s., ePPE = +11m.44s., e$P_cSN$ = +14m.28s., i? = +17m.6s., isS = +17m.15s., iPS = +17m.26s., i$S_cSN$ = +19m.30s., eSS = +20m.39s. ; $T_0$ = 20h.55m.18s.
Nanking iN = +14m.29s. and +19m.7s. = $S_cS$ − 6s.
Ann Arbor eSS = +21m.4s. ; $T_0$ = 20h.55m.12s.
Toronto ePP = +11m.45s., iE = +19m.11s., iN = +19m.26s. = $S_cS$ − 1s., SS = +21m.42s., SSE = +21m.58s. ; $T_0$ = 20h.55m.27s.
Ottawa ePP = +11m.58s., e = +19m.28s. = $S_cS$ − 4s., eSSE = +22m.10s.
Pittsburgh i = +18m.10s. = PS + 9s., e = +19m.34s. = $S_cS$ − 8s.
Oak Ridge ePPNW = +12m.33s., ePPPNW = +13m.57s., ePSNE = +19m.49s. = $S_cS$ + 7s., eSSNE = +22m.33s., eSSNW = +23m.17s., eSSSNE = +25m.33s. ; $T_0$ = 20h.55m.26s.
Fordham ePP = +12m.32s.
Columbia eSS = +23m.21s.
Ekaterinburg $L_0$ = +30m.40s. ?
Hong Kong ? = +20m.20s. = $S_cS$ − 3s.
Upsala SSN = +24m.33s.?, SSSN = +27m.16s.
Copenhagen PPPN = +15m.45s., eN = +20m.47s. = PS − 10s. and +21m.26s., PSN = +21m.30s., SSN = +25m.16s.
Durham PS = +21m.26s.
Liverpool PP = +16m.24s., SS = +25m.50s. ; $T_0$ = 20h.55m.35s.
Hamburg eNZ = +25m.40s.? = SS + 5s.
Potsdam eSS = +26m.16s., eSSSNZ = +30m.28s.
Kew eSSN = +26m.24s., eSSSN = +30m.17s., ePKKPZ = +30m.29s.
Göttingen eSSN = +26m.34s., eSSSEN = +30m.52s.
Leipzig e = +26m.40s. and +30m.58s. = SSSS − 5s.
Uccle PPZ = +14m.40s., iN = +27m.19s.
Jena ePE = +11m.43s., eE = +11m.51s.
Stuttgart i$P_cPZ$ = +12m.18s., e = +14m.20s., ePP = +15m.0s., eSS = +27m.16s.
Strasbourg PP = +14m.49s., PPP = +17m.2s., SS = +27m.0s.
Vienna iPZ = +12m.3s.
Graz e$S_cS$ = +22m.36s., iPS = +23m.12s.
Baku e = +15m.12s. = PP + 1s. and +19m.8s.
Tiflis eZ = +18m.47s., PSZ = +23m.26s., eZ = +32m.14s.
Agra PE = +11m.55s.
Zagreb e = +23m.32s. = PS − 28s., +28m.10s., +31m.52s., +34m.34s., and +36m.54s.
Treviso PP = +12m.19s.
Triest i = +15m.49s., +23m.0s. = PS − 7s., and +23m.38s., iN = +28m.16s., iE = +34m.15s.
San Juan e = +21m.51s., i = +22m.33s., +22m.40s., and +26m.49s., e = +33m.35s. = SSSS + 9s.
Toledo i = +12m.43s. and +23m.9s.
Medan i = +12m.55s. = P + 6s., +13m.32s., and +13m.52s.
Granada $P_cP$ = +13m.12s., PP = +16m.25s., SKS = +23m.24s., SS = +29m.24s., SSS = +33m.23s.
Malaga PP = +16m.27s., SKKS = +23m.46s., S = +23m.50s., PS = +24m.54s.
San Fernando PN = +13m.1s., PE = +13m.11s., SN = +23m.40s.
Bombay PPE = +16m.36s., PSN = +25m.5s., SSN = +30m.21s., SSE = +30m.28s.
Batavia iZ = +12m.59s., i = +16m.39s. = PP + 3s., +23m.50s. = SKKS + 5s., and +25m.10s. = PS + 3s.
Sydney eS = +21m.40s.
Kodaikanal S = +30m.55s. = SS − 1s.
Christchurch iPP = +17m.31s., iPS = +26m.7s., PPS = +26m.47s.
Adelaide i = +27m.15s., e = +31m.13s.
Melbourne S = +25m.1s., SS = +31m.43s., SSS = +35m.20s., SSSS = +41m.14s.
Huancayo iSS = +32m.35s., eSSS = +36m.34s.
Tananarive PP = +22m.3s., SKPN = +22m.48s., SKPE = +22m.54s., EN = +34m.9s., SSE = +39m.55s., SSN = +40m.20s., SSSEN = +45m.30s.
Cape Town PKP? = +45m.10s., PP = +45m.59s., +47m.4s., and +52m.31s., PS = +55m.50s., PPS = +56m.49s., SS = +61m.38s., SSS = +66m.23s.
Long waves were also recorded at Keizyo, Perth, La Plata, Lemberg, and Marseilles.

July 22d. Readings also at 6h. (Baku, Ekaterinburg, and Copenhagen), 8h. (Nagoya and near Mizusawa), 14h. (Baku, Ekaterinburg, and Tashkent), 18h. (near Tyosi), 21h. (Mizusawa), 22h. (Tiflis), 23h. (Wellington and Uccle).

July 23d. 4h. 13m. 9s. Epicentre 15°·4S. 75°·3W. N.2.

A = +·245, B = −·932, C = −·266 ; D = −·967, E = −·254 ;
G = −·067, H = +·257, K = −·964.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Huancayo | | 3·4 | 359 | i 0 58 | P* | i 1 43 | $S_g$ | — | — |
| La Paz | | 6·9 | 100 | i 1 18 | −20 | i 2 40 | −16 | 3·2 | 4·8 |
| Sucre | z. | 10·2 | 112 | i 2 26 | + 2 | — | — | — | — |
| La Plata | | 25·0 | 145 | 5 21 | + 1 | 9 45 | + 4 | 12·4 | — |
| San Juan | | 35·0 | 16 | e 7 0 | +11 | e 12 11 | −10 | 16·5 | — |
| Georgetown | | 54·4 | 359 | i 9 24 | 0 | i 17 2 | + 1 | e 25·8 | — |
| Pittsburgh | | 56·1 | 356 | e 9 27 | −10 | e 17 21 | − 3 | — | — |
| Florissant | | 56·1 | 344 | i 9 36 | − 1 | i 17 21 | − 3 | — | — |
| Fordham | | 56·3 | 0 | e 9 37 | − 1 | e 17 26 | − 1 | 24·8 | — |
| Oak Ridge | | 58·1 | 3 | e 9 50 | − 1 | e 17 46 | − 5 | e 28·8 | — |
| Tucson | | 58·6 | 325 | e 9 59 | + 4 | e 18 1 | + 4 | e 31·0 | — |
| Ottawa | | 60·8 | 359 | e 10 10 | 0 | e 18 27 | + 1 | 31·8 | — |
| Riverside | z. | 63·6 | 321 | e 10 29 | 0 | — | — | — | — |
| Mount Wilson | z. | 64·2 | 321 | e 10 38 | + 5 | — | — | — | — |
| Pasadena | z. | 64·2 | 321 | e 10 36 | + 3 | — | — | — | — |
| Tinemaha | E. | 66·3 | 323 | e 10 36 | −11 | — | — | — | — |
| Ivigtut | | 79·6 | 13 | 12 4 | − 2 | 22 6 | − 5 | — | — |
| Malaga | | 84·6 | 50 | e 12 33 | + 2 | e 23 6 | + 2 | — | — |
| Granada | | 85·4 | 50 | e 12 37 | + 2 | e 23 0 | −12 | e 40·5 | — |
| Toledo | | 86·1 | 47 | e 12 39 | 0 | e 23 8 | [+ 1] | — | — |
| Sitka | | 87·8 | 332 | — | — | e 23 34 | − 1 | e 51·6 | — |
| Alicante | | 88·1 | 49 | — | — | e 23 38 | 0 | e 51·8 | — |
| Oxford | | 92·5 | 37 | — | — | 23 38 | [− 9] | — | — |
| Kew | | 93·0 | 37 | e 13 1 | −10 | e 23 43 | [− 7] | e 43·8 | — |
| Edinburgh | | 93·1 | 33 | — | — | e 23 57 | [+ 6] | — | — |
| Uccle | | 95·5 | 39 | — | — | e 24 1 | [− 2] | e 45·8 | — |
| Neuchatel | | 96·1 | 43 | e 13 24 | − 2 | — | — | — | — |
| De Bilt | | 96·4 | 38 | 13 27 | 0 | e 24 6 | [− 2] | e 47·8 | 57·4 |
| Strasbourg | | 97·0 | 41 | e 12 51? | −39 | (e 25 51?) | PS | e 25·8 | — |
| Piacenza | | 97·4 | 45 | e 17 51 | PP | — | — | — | 54·4 |
| Stuttgart | | 98·0 | 41 | e 13 33 | − 1 | — | — | e 51·8 | — |
| Triest | | 100·3 | 45 | e 17 8 | ? | i 24 27 | [ 0] | e 47·8 | 52·8 |
| Copenhagen | | 101·4 | 35 | 16 51? | ? | 24 33 | [ 0] | 46·8 | — |
| Pulkovo | | 111·1 | 31 | e 19 8 | PP | e 28 44 | PS | — | — |
| Baku | | 126·5 | 51 | — | — | e 22 51? | ? | — | — |
| Ekaterinburg | | 127·0 | 29 | e 21 20 | PP | — | — | 51·8 | — |
| Tashkent | | 140·0 | 43 | e 19 14 | [− 7] | — | — | — | 97·8 |

Additional readings :—
Huancayo i = +1m.8s. = $P_g$ +6s. and +1m.58s.
San Juan e = +14m.43s. = SSS +0s., i = +14m.51s. = SSSS +1s.
Oak Ridge ePPPNW = +12m.2s. = PP +9s., ePSNE = +19m.48s. = $S_cS$ +9s., eSSNE = +21m.36s., eSSNW = +21m.52s., eSSSNE = +23m.44s., eNW = +25m.2s. ; $T_o$ = 4h.13m.21s.
Malaga e = +12m.46s.
De Bilt PPZ = +17m.23s., eN = +24m.53s. = S −2s.
Stuttgart ePP = +17m.21s., ePS = +26m.33s.
Triest S = +26m.52s. = PS +3s.
Ekaterinburg e = +30m.51s. = SKSP +2s., +33m.24s., and +38m.6s. = SS +4s.
Tashkent e = +19m.27s., +20m.9s., +22m.9s. = PP −12s., +27m.55s., +32m.28s. = SKSP +0s., +33m.33s., and +34m.45s.
Long waves were also recorded at San Fernando, Stonyhurst, Cheb, Vladivostok, and Tananarive.

**July 23d. 9h. 37m. 54s.** Epicentre 32°·5N. 40°·1W. N.2.

A = + ·645, B = − ·543, C = + ·537 ; D = − ·644, E = − ·765 ;
G = + ·411, H = − ·346, K = − ·843.

| | | Δ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Oak Ridge | | 26·8 | 301 | e 5 31 | − 5 | e 10 7 | − 5 | e 13·2 | — |
| San Juan | | 27·3 | 245 | e 5 41 | 0 | (e 11 6) | SS | e 11·1 | — |
| Fordham | | 28·3 | 297 | e 5 52 | + 2 | e 10 40 | + 3 | 13·1 | — |
| Ivigtut | | 29·3 | 352 | 6 46 | PP | 11 0 | + 7 | 12·1 | — |
| Georgetown | | 30·6 | 293 | i 6 10 | 0 | 11 17 | + 3 | e 14·1 | — |
| Pittsburgh | | 32·8 | 296 | e 6 34 | + 4 | — | — | e 16·3 | — |
| Oxford | | 34·0 | 44 | e 6 42 | 0 | — | — | e 15·9 | 17·9 |
| Kew | | 34·6 | 45 | e 6 47 | + 1 | — | — | e 16·1 | — |
| Edinburgh | | 34·7 | 37 | e 2 6? | ? | — | — | e 17·1 | — |
| Paris | | 35·6 | 51 | i 6 54 | 0 | e 12 36? | + 6 | 17·1 | 19·1 |
| Uccle | | 37·2 | 47 | e 7 11 | + 3 | e 13 3 | + 9 | e 16·1 | — |
| De Bilt | | 38·0 | 45 | 7 17 | + 2 | e 13 17 | +11 | e 18·1 | 19·9 |
| Strasbourg | | 39·0 | 51 | 7 22 | − 2 | 13 28 | + 7 | 20·1 | — |
| Stuttgart | | 39·9 | 51 | e 7 33 | + 2 | e 13 45 | +10 | e 18·1 | — |
| Florissant | | 40·8 | 293 | i 7 38 | − 1 | e 13 53 | + 5 | — | — |
| Cheb | | 42·2 | 50 | e 7 6? | −44 | e 14 6? | − 3 | e 22·1 | — |
| Potsdam | | 42·8 | 46 | e 8 54 | +59 | e 14 6 | −12 | — | 22·1 |
| Pulkovo | | 52·7 | 37 | e 9 14 | + 2 | e 16 28 | −10 | e 22·6 | 28·4 |
| Tinemaha | | 62·5 | 298 | e 10 22 | 0 | — | — | — | — |
| Haiwee | | 62·6 | 297 | e 10 21 | − 1 | — | — | — | — |
| Riverside | z. | 63·0 | 295 | e 10 23 | − 2 | — | — | — | — |
| Mount Wilson | z. | 63·4 | 295 | e 10 31 | + 3 | — | — | — | — |
| Pasadena | z. | 63·5 | 295 | i 10 27 | − 2 | — | — | — | — |
| Ekaterinburg | | 68·7 | 36 | i 11 0 | − 3 | e 20 11 | + 6 | 31·1 | — |
| Tashkent | | 81·7 | 46 | 12 14 | − 3 | 22 33 | − 1 | e 40·1 | 47·8 |

Additional readings :—
Oak Ridge eNE = +5m.35s. and + 9m.47s., eNW = +12m.1s.
Pittsburgh e = +7m.42s. = PP + 9s.
Uccle eE = +8m.39s. = PP + 11s.
Strasbourg PP = +8m.48s., SS = +16m.25s.
Cheb e = +9m.6s.? and +18m.6s.? = $S_cS$ + 11s.
Tashkent ePS = +23m.20s.
Long waves were also recorded at Copenhagen and Kucino.

**July 23d.** Readings also at 0h. (near Taihoku), 1h. (near Taihoku, near Nagoya, and Sumoto), 3h. (Tyosi), 5h. (Taihoku and near Mizusawa), 8h. (Copenhagen, Ekaterinburg, Tashkent, De Bilt, Paris, Edinburgh, near Huancayo, and near Mizusawa), 23h. (near Göttingen and near Tiflis).

**July 24d. 8h. 37m. 56s.** Epicentre 43°·0N. 132°·0E. N.2.

A = − ·489, B = + ·544, C = + ·682 ; D = + ·743, E = + ·669 ;
G = − ·456, H = + ·507, K = − ·731.

**A depth of focus 0·065 has been assumed.**

| | | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Heizyo | | +0·4 | 6·1 | 232 | 1 33 | + 1 | 2 49 | + 3 | — | — |
| Keizyo | E. | +0·2 | 6·6 | 217 | i 1 37a | 0 | 3 24 | +31 | 4·3 | — |
| Zinsen | | +0·2 | 6·8 | 218 | 1 38a | − 1 | 2 58 | − 1 | — | — |
| Taikyu | | −0·1 | 7·6 | 201 | 1 46a | 0 | 3 11 | 0 | — | — |
| Toyooka | | −0·1 | 7·8 | 163 | 1 54 | + 5 | 3 18 | + 2 | — | 3·4 |

*Continued on next page.*

| | | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Mizusawa | | −0·2 | 7·9 | 117 | i 2 0 | +11 | i 3 27 | + 6 | — | — |
| Kobe | E. | −0·4 | 8·7 | 163 | — | — | e 3 35 | + 4 | — | — |
| Osaka | | −0·4 | 8·8 | 160 | 1 42 | −17 | 3 39 | + 5 | — | 4·2 |
| Nagoya | | −0·4 | 8·8 | 152 | 2 3 | + 4 | e 3 38 | + 4 | — | — |
| Hukuoka | | −0·6 | 9·5 | 188 | 2 2 | − 4 | 3 47 | + 1 | — | — |
| Tyosi | | −0·7 | 10·0 | 134 | e 2 15 | + 4 | 4 3 | + 7 | — | — |
| Nagasaki | | −0·8 | 10·4 | 190 | i 2 14 | − 2 | — | — | — | — |
| Chiufeng | | −1·2 | 12·2 | 261 | i 2 35k | 0 | i 4 42 | + 4 | — | — |
| Nanking | | −1·8 | 15·1 | 228 | 2 59 | − 7 | 5 27 | − 7 | — | — |
| Tchimkent | | −5·4 | 44·8 | 291 | e 7 32 | + 5 | — | — | — | — |
| Tashkent | | −5·5 | 45·4 | 290 | 7 42 | +11 | — | — | — | — |
| Ekaterinburg | | −5·5 | 45·6 | 315 | i 7 36 | + 3 | i 13 40 | + 2 | — | — |
| Kucino | | −6·5 | 57·7 | 319 | — | — | e 16 19 | + 1 | — | — |
| Baku | | −6·5 | 58·8 | 299 | — | — | e 16 33 | 0 | e 18·4 | — |
| Pulkovo | | −6·5 | 59·0 | 325 | — | — | i 16 38 | + 3 | e 32·7 | — |
| Tiflis | | −6·7 | 61·3 | 303 | 9 24 | − 2 | 17 2 | − 2 | — | — |
| Copenhagen | | −7·2 | 68·9 | 330 | — | — | 18 38 | 0 | — | — |
| De Bilt | | −7·5 | 74·4 | 331 | e 9 52 | −59 | 19 41 | − 2 | e 38·1 | — |
| Haiwee | Z. | −7·6 | 78·5 | 50 | e 11 13a | − 3 | — | — | — | — |
| Santa Barbara | Z. | −7·6 | 78·7 | 53 | i 11 8 | − 9 | — | — | — | — |
| Mount Wilson | | −7·7 | 79·8 | 52 | i 11 22a | − 1 | — | — | — | — |
| Pasadena | | −7·7 | 79·9 | 52 | i 11 19a | − 5 | — | — | — | — |
| La Jolla | | −7·8 | 81·3 | 52 | e 11 28 | − 4 | — | — | — | — |
| Strasbourg | | −7·8 | 81·9 | 326 | — | — | e 22 4? | +54 | e 44·1 | — |

Additional readings :—
Kobe eZ = +3m.44s.
Tyosi iP = +2m.22s.
Tashkent i = +9m.44s., L = +9m.52s. = $P_cP$ −8s.
Kucino e = +17m.51s. = PS +1s. and +23m.41s.
Pulkovo e = +20m.40s. and +24m.14s.
Haiwee eE = +13m.12s.
Mount Wilson iZ = +13m.21s.
Pasadena i = +13m.18s.

July 24d. 9h. 41m. 10s. Epicentre 46°·6N. 14°·7E. N.3.

A = +·665, B = +·174, C = +·727 ; D = +·254, E = −·967 ;
G = +·703, H = +·184, K = −·687.

| | Δ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Graz | 0·7 | 47 | i 0 9 | − 1 | i 0 16 | − 2 | 0·3 |
| Triest | 1·2 | 215 | i 0 17 | 0 | i 0 29 | − 2 | 0·5 |
| Zagreb | 1·2 | 127 | e 0 18 | + 1 | i 0 35 | + 4 | 0·6 |
| Treviso | 2·0 | 242 | e 0 10 | −19 | i 0 56 | + 5 | — |
| Vienna | 2·0 | 34 | 0 36 | $P_g$ | 1 3 | $S_g$ | 1·4 |
| Padova | 2·3 | 239 | e 1 8 | S | (e 1 8) | S* | — |
| Ravensburg | 3·6 | 290 | e 0 56 | P* | e 1 50 | S* | — |
| Zurich | 4·2 | 283 | e 1 0 | 0 | — | — | — |
| Stuttgart | 4·3 | 302 | 1 15 | P* | e 2 12 | $S_g$ | — |
| Jena | 4·8 | 335 | e 1 8 | 0 | — | — | 2·6 |
| Strasbourg | 5·1 | 295 | — | — | e 2 35 | S* | — |
| Neuchatel | 5·2 | 277 | e 1 16 | + 2 | — | — | — |
| De Bilt | 8·2 | 315 | — | — | e 4 20 | $S_g$ | — |

Additional readings :—
Triest i = +21s., iPP = +23s., i = +1m.31s.
Treviso SS = +1m.32s.
Vienna P* = +40s., PP = +42s., PS = +47s., PSS = +1m.2s., S = +1m.9s., $S_g$ = +1m.13s.
Strasbourg i = +2m.46s., +2m.56s., and +3m.9s.

July 24d. 18h. 55m. 36s. Epicentre 16°·0S. 173°·5W. N.2.

A = −·955, B = −·109, C = −·276; D = −·113, E = +·994; G = +·274, H = +·031, K = −·961.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Apia | | 2·8 | 37 | 0 24? | −16 | — | — | — | — |
| Suva | | 8·0 | 253 | 1 54 | + 1 | 3 34 | +10 | 4·4 | 5·4 |
| Arapuni | | 24·0 | 201 | 5 6 | − 4 | 10 4 | SS | 13·4 | 14·4 |
| Wellington | | 27·2 | 200 | 5 46 | + 6 | — | — | 14·4 | 15·4 |
| Christchurch | | 30·0 | 200 | i 6 21 | +16 | 11 25 | +21 | 14·8 | — |
| Riverview | | 36·4 | 235 | e 8 0 | PP | — | — | e 15·6 | 19·4 |
| Sydney | | 36·4 | 235 | i 6 54 | − 7 | i 13 12 | +30 | 18·0 | 21·1 |
| Honolulu T.H. | | 40·3 | 23 | e 7 35 | 0 | e 13 38 | − 3 | e 16·4 | — |
| Melbourne | | 42·5 | 232 | 8 7? | +14 | 14 54 | +41 | 20·7 | 26·4 |
| Adelaide | | 46·7 | 237 | — | — | e 14 39 | −35 | e 23·6 | 31·3 |
| Amboina | | 58·6 | 276 | e 10 44 | (− 4) | 17 9 | −48 | e 32·4 | — |
| Mizusawa | E. | 69·5 | 324 | e 20 25 | S | (e 20 25) | +10 | 32·4 | — |
| | N. | 69·5 | 324 | e 20 15 | S | (e 20 15) | 0 | 31·7 | — |
| Berkeley | | 72·2 | 41 | e 11 23 | − 1 | i 20 43 | − 4 | i 32·1 | — |
| Ukiah | | 72·4 | 39 | e 11 33 | + 8 | e 20 41 | − 9 | 29·6 | — |
| La Jolla | | 72·6 | 47 | e 11 25 | − 1 | — | — | — | — |
| Pasadena | | 72·7 | 46 | i 11 24k | − 3 | e 20 41 | −12 | i 32·6 | — |
| Mount Wilson | | 72·8 | 46 | i 11 27 | − 1 | — | — | — | — |
| Riverside | | 73·1 | 46 | i 11 27 | − 2 | — | — | — | — |
| Haiwee | | 73·9 | 45 | e 11 32 | − 2 | — | — | — | — |
| Tinemaha | | 74·3 | 44 | i 11 34 | − 2 | e 21 42 | PS | — | — |
| Tucson | | 76·9 | 50 | e 11 54 | + 3 | i 21 37 | − 5 | e 33·9 | — |
| Keizyo | E. | 77·4 | 316 | e 12 37 | +43 | e 21 57 | +10 | e 36·7 | — |
| Vladivostok | | 77·4 | 323 | 10 58 | −56 | i 20 46 | −61 | 34·4 | 39·2 |
| Victoria | E. | 78·3 | 32 | e 11 59 | 0 | i 21 49 | − 8 | e 35·1 | 37·0 |
| Sitka | | 79·7 | 21 | i 12 4 | − 2 | i 22 1 | −11 | 32·6 | — |
| Hong Kong | | 80·5 | 297 | 12 34 | +24 | 22 34 | +13 | — | 42·7 |
| Nanking | | 80·7 | 307 | — | — | i 20 43 | ? | e 37·4 | — |
| Bozeman | | 83·9 | 39 | e 12 33 | + 5 | e 22 41 | −15 | e 37·9 | — |
| Chiufeng | | 86·0 | 314 | 12 41a | + 3 | e 22 55 | [−11] | e 37·3 | 42·5 |
| Huancayo | | 94·4 | 104 | i 16 20 | ? | — | — | e 39·3 | — |
| Florissant | | 94·8 | 52 | e 13 19 | − 1 | e 24 52 | +12 | — | — |
| St. Louis | | 94·8 | 52 | e 14 24 | +64 | e 25 38 | +58 | e 44·4 | 51·4 |
| Chicago | | 97·6 | 49 | — | — | e 24 9 | [− 5] | e 44·8 | — |
| Cincinnati | | 99·2 | 52 | i 12 1a | −99 | — | — | — | — |
| Columbia | | 100·8 | 57 | — | — | e 24 29 | [− 1] | e 47·9 | — |
| Toronto | | 103·9 | 48 | e 18 24? | PP | e 24 39 | [− 6] | — | 44·9 |
| Georgetown | | 104·9 | 52 | e 14 19 | +13 | i 24 48 | [− 1] | e 48·4 | — |
| Ottawa | | 106·7 | 46 | e 18 42 | PP | e 24 52 | [− 6] | e 47·4 | — |
| Fordham | | 107·6 | 52 | — | — | e 25 1 | [− 1] | 50·4 | — |
| San Juan | | 111·1 | 76 | — | — | e 25 14 | [− 4] | e 51·6 | — |
| Bombay | | 117·1 | 283 | — | — | e 25 40 | [− 1] | 48·6 | 77·0 |
| Ivigtut | | 120·6 | 27 | — | — | 30 0 | PS | 52·4 | — |
| Tashkent | | 120·9 | 309 | e 15 12 | P | i 25 39 | [−14] | 53·4 | 66·9 |
| Ekaterinburg | | 122·6 | 328 | 18 59 | [+ 7] | i 25 59 | [+ 1] | 61·4 | 75·4 |
| Pulkovo | | 133·0 | 343 | 19 18 | [+ 6] | 26 30 | [+ 2] | 49·4 | 92·0 |
| Kucino | | 133·6 | 336 | e 21 42 | PP | e 26 26 | [− 3] | 65·4 | 79·3 |
| Baku | | 135·3 | 312 | e 19 45 | [+30] | — | — | 61·4 | 75·6 |
| Upsala | | 135·5 | 353 | e 21 18 | PP | — | — | e 63·4 | 76·8 |
| Tiflis | | 138·3 | 316 | 19 32 | [+13] | e 29 7 | {− 7} | e 67·4 | 78·7 |
| Edinburgh | | 139·4 | 8 | — | — | e 25 24? | PPP | e 65·4 | 77·6 |
| Copenhagen | | 140·1 | 355 | 19 31 | [+10] | — | — | 64·4 | — |
| Durham | | 140·8 | 7 | e 22 35 | PP | — | — | — | 74·4 |
| Stonyhurst | | 141·5 | 9 | — | — | e 42 24? | ? | 70·4 | 78·0 |
| Hamburg | | 142·4 | 357 | e 19 38 | [+13] | — | — | e 67·4 | 78·4 |
| Potsdam | | 143·3 | 354 | e 19 24? | [− 4] | 29 24? | {−19} | e 68·4 | 83·4 |
| Oxford | | 143·8 | 8 | e 19 43 | [+13] | e 29 37 | {−10} | e 65·4 | 79·6 |
| De Bilt | | 143·9 | 2 | e 19 33 | [+ 2] | — | — | e 67·4 | 73·9 |
| Kew | | 144·1 | 7 | e 19 35 | [+ 4] | e 29 41 | {− 8} | e 66·4 | 79·4 |
| Uccle | | 145·2 | 4 | 19 39 | [+ 5] | 33 13 | SKSP | 58·4 | — |

*Continued on next page.*

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Cheb | | 145·6 | 353 | — | — | e 36 24? | ? | e 68·4 | 85·4 |
| Vienna | | 146·8 | 348 | 19 44 | [+ 7] | 29 23 | {−41} | e 65·4 | 80·4 |
| Budapest | | 146·9 | 344 | 20 24? | [+47] | — | — | e 71·4 | 88·4 |
| Paris | | 147·1 | 5 | e 19 43 | [+ 6] | — | — | 70·3 | 82·4 |
| Stuttgart | | 147·2 | 357 | 19 44k | [+ 7] | e 30 0 | {− 6} | e 68·9 | 82·4 |
| Strasbourg | | 147·5 | 358 | i 19 42k | [+ 4] | 26 54 | ? | 68·4 | — |
| Graz | | 148·0 | 348 | i 19 43 | [+ 4] | e 43 19 | ? | e 74·4 | 80·8 |
| Ksara | | 148·2 | 308 | e 19 44 | [+ 5] | — | — | — | — |
| Zurich | | 148·6 | 358 | e 19 46 | [+ 6] | — | — | — | — |
| Neuchatel | | 149·0 | 359 | e 19 34 | [− 6] | — | — | — | — |
| Zagreb | | 149·2 | 347 | e 19 46 | [+ 6] | — | — | e 71·4 | — |
| Triest | | 149·8 | 350 | i 19 50 | [+ 8] | i 30 12 | {− 9} | e 69·4 | 74·6 |
| Piacenza | | 150·9 | 355 | 19 56 | [+13] | 30 24 | {− 3} | — | 87·4 |
| Florence | | 152·0 | 353 | 19 57 | [+13] | 26 34 | PPP | 69·4 | — |
| Toledo | | 154·5 | 19 | e 19 45 | [− 3] | — | — | — | 79·6 |
| Tortosa | N. | 154·7 | 11 | e 23 3 | PP | — | — | e 59·4 | 79·1 |
| San Fernando | | 156·7 | 27 | 21 52 | ? | 37 28 | ? | 80·4 | 115·9 |
| Alicante | | 156·8 | 14 | e 27 10 | PPP | — | — | e 76·0 | — |
| Granada | | 157·0 | 21 | i 19 55 | [+ 5] | — | — | 71·6 | 82·0 |
| Malaga | | 157·1 | 23 | 20 30 | [+40] | 25 47 | ? | — | 78·4 |

Additional readings :—
Sydney e = +2m.54s.
Honolulu T.H. ePP = +9m.8s.
Melbourne SS = +17m.56s. = $S_cS$ − 1s.
Adelaide e = +21m.20s.
Mizusawa eSE = +26m.40s., eSN = +27m.0s.
Keizyo eE = +27m.45s.
Sitka ePP = +15m.32s., iSS = +27m.31s.
Chiufeng PS = +23m.19s. = SKS +13s.
Huancayo i = +16m.51s. and +16m.58s. = PP − 2s., iPS = +24m.46s. = S +9s.
Florissant iSKSEN = +23m.56s., iSKKSE = +24m.35s. ; $T_0$ = 18h.55m.35s.
St. Louis iSKS = +24m.58s., eSKKSN = +25m.13s. ; $T_0$ = 18h.55m.36s.
Cincinnati e = +13m.47s. = P +7s.
Columbia eSS = +32m.18s.
Toronto eE = +27m.29s. = PS +3s.
Georgetown ePPEZ = +18m.25s., PSE = +26m.30s. = S +20s. ; $T_0$ = 18h.55m.40s.
Ottawa eN = +21m.42s., eE = +27m.56s. = PS +1s., e = +33m.36s. = SS +2s.
Fordham ePS = +27m.59s.
San Juan e = +26m.57s. and +28m.33s. = PS − 6s., eSS = +34m.20s., eSSS = +38m.44s.
Bombay e = +36m.51s.
Tashkent ePP = +20m.8s., eSKSP = +30m.26s. = PS +16s., SS = +36m.48s., eSSS = +41m.12s.
Ekaterinburg ePP = +20m.41s., SKKS = +27m.28s., ePS = +30m.23s., eSS = +37m.0s., $L_g$ = +50·4m.
Pulkovo PP = +21m.36s., PKS = +22m.46s., SKKS = +28m.34s., PS = +32m.8s., SS = +39m.24s.
Kucino ePKS = +22m.46s., eSKKS = +28m.38s., ePS = +32m.2s., eSS = +39m.12s.
Baku e = +22m.58s. = PKS +3s. and +30m.31s., PPS = +34m.48s., eSS = +40m.0s.
Upsala PKSN = +22m.51s.
Tiflis PKSZ = +23m.2s., eE = +31m.28s., ePPSZ = +34m.46s.
Copenhagen +23m.5s. = PKS − 4s.
Potsdam iPPZ = +22m.43s., iPPN = +22m.49s., ePPPNZ = +26m.6s., eEZ = +32m.24s.?, iPPPN(△ >180°) = +33m.3s. = SKSP +11s., eSSN = +40m.54s.
Oxford e = +22m.45s. = PP +1s.
De Bilt eZ = +22m.46s. = PP +1s., eN = +29m.41s. = SKKS − 6s.
Kew ePPNZ = +23m.1s.
Uccle eZ = +23m.4s.
Stuttgart ePPZ = +23m.48s., ePPPN(△ >180°) = +33m.24s.
Strasbourg ePP = +23m.12s., SKP = +23m.41s., SKKS = +29m.57s.
Ksara PP = +23m.24s.
Zagreb eP = +19m.50s.
Triest e = +33m.58s., eSS = +42m.54s.
Florence PP = +23m.30s., i = +24m.19s., PPP = +26m.24s., SSS = +48m.24s.
Granada PP = +24m.10s., i = +33m.0s., PPS = +38m.25s.
Malaga e = +20m.45s. = $PKP_2$ +14s., SKP = +21m.52s., PPP = +23m.9s., e = +24m.27s., SKKS = +27m.32s. = PPP +5s., e = +35m.14s.
Long waves were also recorded at Perth, Cape Town, Tyosi, Tananarive, Charlottesville, Oak Ridge, Almeria, Barcelona, and Göttingen.

July 24d. Readings also at 0h. (La Jolla, Mount Wilson, and Pasadena), 1h. (Neuchatel), 3h. (Helwan), 7h. (Koti), 9h. (Sucre, near Huancayo, and near Laibach), 10h. (Huancayo, Kew, and Paris), 11h. (Huancayo), 14h. (Jena), 16h. (Trenta and Triest), 18h. (Nagoya, near Tokyo, and Tyosi), 19h. (near Apia (2)), 21h. (Zi-ka-wei and near Apia (2)), 22h. (near Apia (2)), 23h. (Apia (2), Mizusawa, and Trenta).

July 25d. 13h. 38m. 23s. Epicentre 37°·5N. 70°·5E. (as on 1932 Feb. 14d.). X.

A = +·265, B = +·748, C = +·609; D = +·943, E = −·334;
G = +·203, H = +·574, K = −·793.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Samarkand | 3·4 | 310 | 1 2 | $P_g$ | 1 42 | S* | — | — |
| Andijan | 3·6 | 24 | 0 54 | + 3 | 1 25 | − 7 | — | — |
| Tashkent | 3·9 | 347 | i 0 53 | − 3 | (i 1 38) | − 2 | i 1·6 | 1·9 |
| Tchimkent | 4·9 | 352 | 1 7 | − 3 | 1 53 | −12 | — | — |
| Baku | 16·2 | 287 | e 3 57 | +13 | 7 7 | +24 | 10·8 | — |
| Tiflis | 20·2 | 290 | e 4 30 | − 2 | e 8 23 | +13 | e 10·1 | 11·0 |
| Ekaterinburg | 20·4 | 345 | i 4 20 | −14 | i 8 5 | − 9 | 10·6 | — |
| Pulkovo | 33·8 | 324 | e 6 35 | − 4 | e 11 15 | −48 | e 25·4 | — |

Additional readings:—
Andijan $P_g$ = +57s. = P* − 1s.
Pulkovo e = +7m.55s.
Long waves were also recorded at Copenhagen.

July 25d. Readings also at 3h. (Kew), 4h. (Taihoku and near Sumoto), 5h. (Kew and near Apia), 6h. (Tiflis, Ksara, and near Helwan), 7h. (Baku, Ekaterinburg, and near Tyosi), 10h. (Ekaterinburg), 11h. (Baku and Tiflis), 12h. (Balboa Heights), 13h. (near Apia, near Andijan, and Samarkand), 14h. (Medan and near Samarkand), 15h. (Ekaterinburg, Tashkent, and near Apia), 21h. (Tiflis), 23h. (Christchurch, Glenmuick, Wellington, and near Takaka).

July 26d. 4h. 57m. 32s. Epicentre 63°·2N. 147°·3W. (as on 1931 Oct. 17d.). X.

A = −·379, B = −·244, C = +·893; D = −·540, E = +·842;
G = −·751, H = −·482, K = −·451.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Sitka | | 8·5 | 131 | i 1 51 | − 9 | i 3 42 | + 6 | i 4·3 | — |
| Victoria | E. | 19·8 | 127 | e 4 34 | + 7 | — | — | e 9·6 | 10·5 |
| Seattle | | 20·8 | 127 | — | — | e 8 38 | +16 | e 10·8 | — |
| Ukiah | | 28·0 | 138 | — | — | e 10 58 | +26 | e 14·8 | — |
| Berkeley | z. | 29·5 | 137 | — | — | e 13 16 | ? | e 16·0 | — |
| Haiwee | z. | 32·4 | 132 | i 6 26 | 0 | — | — | — | — |
| Pasadena | z. | 34·2 | 135 | i 6 35 | − 7 | — | — | — | — |
| Chicago | | 40·1 | 95 | — | — | e 16 7 | SS | e 20·5 | — |
| Oak Ridge | | 46·7 | 79 | — | — | e 15 2 | −12 | e 22·8 | — |
| Fordham | | 47·0 | 83 | — | — | e 18 46 | SS | 21·5 | — |
| Georgetown | | 47·2 | 86 | 15 21 | S | (15 21) | 0 | e 22·5 | — |
| Columbia | | 49·5 | 94 | — | — | e 23 13 | ? | e 25·5 | — |
| Ekaterinburg | | 58·0 | 344 | e 9 50 | 0 | 17 52 | + 3 | 27·5 | — |
| De Bilt | | 62·7 | 19 | — | — | e 18 54 | + 3 | e 29·5 | — |
| Tashkent | | 71·6 | 333 | — | — | e 25 34 | SS | e 33·6 | 44·6 |

Additional readings:—
Sitka e = +3m.55s.
Seattle e = +8m.56s. = SS + 10s.
Oak Ridge eS? = +18m.30s. = SS + 8s.
Georgetown S = +18m.41s. = SS + 10s.
Columbia e = +23m.43s.
Tashkent e = +30m.10s. and +33m.13s.
Long waves were also recorded at Ivigtut, Baku, Tiflis, Vladivostok, and other American and European stations.

July 26d. Readings also at 2h. (Baku, Tashkent, and Tiflis), 4h. (Baku, Tashkent, Ekaterinburg, Tiflis, Tchimkent, Chiufeng, Nagoya, and near Tyosi), 6h. (Nagoya and near Tyosi), 10h. (Tucson), 14h. (near Batavia), 15h. (near Sumoto and near Trenta), 18h. (near Batavia, Soengei Langka, near Balboa Heights, near Mizusawa, and Tyosi (2)), 19h. (Trenta, near Batavia, and Manila), 20h. (Sucre and near La Paz), 22h. (Sitka).

July 27d. 1h. 3m. 5s. Epicentre 38°·3N. 20°·0E. (as on 1918 Sept. 1d.). R.3.

A = +·737, B = +·268, C = +·620; D = +·342, E = −·940; G = +·582, H = +·212, K = −·785.

| | | △ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Taranto | | 3·0 | 316 | 0 50 | + 7 | 1 28 | S* | — | 2·2 |
| Trenta | | 3·0 | 289 | e 0 35 | − 8 | 1 3 | −14 | — | — |
| Camerino | | 7·1 | 315 | 2 26 | +45 | — | — | — | — |
| Zagreb | | 8·0 | 340 | 1 54 | + 1 | e 3 28 | + 4 | — | 3·8 |
| Florence | | 8·5 | 313 | 2 15 | +15 | e 4 11 | S* | — | 5·4 |
| Prato | | 8·7 | 313 | e 2 14 | +11 | i 4 31 | $S_g$ | — | 4·9 |
| Triest | | 8·7 | 330 | 1 56 | − 7 | i 3 17 | −24 | — | 5·0 |
| Padova | | 9·3 | 322 | e 5 7 | $S_g$ | — | — | — | — |
| Vienna | z. | 10·2 | 346 | e 3 0 | +36 | — | — | — | — |
| Chur | | 11·5 | 322 | e 2 38 | − 4 | — | — | — | — |
| Ravensburg | | 12·1 | 325 | e 3 55? | +65 | — | — | e 6·2 | — |
| Zurich | | 12·3 | 321 | e 2 45 | − 7 | — | — | — | — |
| Stuttgart | | 13·0 | 327 | e 3 55? | +53 | — | — | e 6·4 | — |
| Strasbourg | | 13·5 | 323 | — | — | e 6 23 | S* | — | — |
| Pulkovo | | 22·4 | 14 | e 4 57 | + 2 | — | — | e 12·4 | — |

Additional readings:—
Triest i = +2m.13s., iPP = +2m.33s., SS = +4m.11s., SSS = +4m.22s., i = +4m.25s., and +4m.58s.
Padova eS = +6m.48s.
Strasbourg e = +7m.13s., +7m.44s., +8m.40s., and +9m.4s.
Long waves were also recorded at Cheb, De Bilt, Copenhagen, and Kucino.

July 27d. 21h. 30m. 51s. Epicentre 3°·5N. 122°·5E. (as on 1932 June 6d.). X.

A = −·536, B = +·842, C = +·061; D = +·843, E = +·537; G = −·033, H = +·051, K = −·998.

| | | △ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Manila | | 11·2 | 352 | i 2 36 | − 1 | i 6 20 | $S_g$ | i 8·3 | 10·2 |
| Hong Kong | | 20·5 | 337 | 4 45 | +10 | — | — | — | 14·7 |
| Chiufeng | | 37·2 | 353 | e 7 10 | + 2 | — | — | e 20·2 | — |
| Tashkent | | 60·7 | 318 | (e 10 3) | − 6 | — | — | e 10·0 | — |
| Ekaterinburg | | 72·0 | 330 | 11 18 | − 5 | 20 40 | − 5 | 35·2 | — |
| Tiflis | z. | 78·5 | 312 | e 12 3 | + 3 | — | — | — | — |
| Pulkovo | | 88·1 | 330 | — | — | e 23 24 | [+ 3] | — | — |

Additional readings:—
Chiufeng e = +8m.26s. = PP − 2s.
Long waves were also recorded at Copenhagen and De Bilt.

July 27d. Readings also at 0h. (Sumoto), 1h. (Ekaterinburg, Tashkent, Honolulu T.H., Ukiah, La Paz, Wellington, and near Sumoto), 2h. (Baku (2), Kucino, Ekaterinburg, Tashkent, Pulkovo, Copenhagen, Paris, and Columbia), 6h. (San Francisco), 8h. (Samarkand), 9h. (near Nagasaki), 10h. (near Apia), 11h. (San Francisco), 12h. (Almeria), 14h. (Sumoto), 18h. (near Mizusawa and near Suva), 19h. (Mizusawa), 20h. (La Paz, near Andijan (2), Tchimkent, near Fort de France, and near Prato), 21h. (Piacenza), 22h. (Apia).

**July 28d. 11h. 48m. 8s. Epicentre 52°·6N. 168°·7W. (as on 1932 Aug. 15d.). X.**

A = −·596, B = −·119, C = +·794; D = −·196, E = +·981;
G = −·779, H = −·156, K = −·607.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. |
|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. |
| Sitka | | 19·5 | 64 | i 4 16 | − 8 | i 7 40 | −16 | — |
| Tinemaha | | 38·1 | 95 | e 7 17 | + 1 | — | — | — |
| Haiwee | z. | 38·8 | 95 | i 7 20 | − 2 | — | — | — |
| Santa Barbara | z. | 38·9 | 98 | e 7 40 | +17 | — | — | — |
| Pasadena | z. | 40·1 | 97 | i 7 32 | − 1 | — | — | — |
| La Jolla | z. | 41·5 | 98 | e 7 43 | − 1 | — | — | — |
| St. Louis | | 53·8 | 74 | e 8 2 | −78 | i 15 21 | −92 | — |
| Ekaterinburg | | 63·4 | 334 | i 10 33 | + 5 | e 18 58 | − 2 | 29·9 |
| Tiflis | z. | 81·4 | 337 | e 12 22 | + 7 | — | — | — |

Additional readings:—
Sitka PP = +4m.40s.
Long waves were also recorded at Baku and Strasbourg.

**July 28d. 16h. 43m. 31s. Epicentre 34°·2N. 135°·0E. N.1.**
(given by the Japanese stations).

Probable error of epicentre ±0°·14.

A = −·585, B = +·585, C = +·562; D = +·707, E = +·707;
G = −·397, H = +·397, K = −·827.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Wakayama | 0·1 | 76 | 0 0a | − 1 | 0 4 | + 1 | — | — |
| Sumoto | 0·2 | 327 | i 0 0a | − 3 | 0 6 | + 1 | — | 0·1 |
| Tokusima | 0·3 | 249 | 0 7k | + 3 | 0 15 | + 7 | — | — |
| Kobe | 0·5 | 17 | i 0 7a | 0 | 0 18 | + 5 | — | 0·3 |
| Osaka | 0·7 | 44 | 0 8 | − 2 | 0 19 | + 1 | — | 0·6 |
| Osaka B. | 0·7 | 50 | 0 5 | − 5 | 0 15 | − 3 | — | — |
| Yagi | 0·8 | 65 | 0 10 | − 1 | 0 19 | − 2 | — | — |
| Kyoto | 1·0 | 36 | 0 15a | + 1 | 0 29 | + 3 | — | — |
| Siomisaki | 1·0 | 140 | 0 7k | − 7 | 0 17 | − 9 | — | — |
| Muroto | 1·2 | 216 | 0 13k | − 4 | 0 28 | − 3 | — | 0·5 |
| Kameyama | 1·4 | 62 | 0 18 | − 2 | 0 40 | + 4 | — | — |
| Koti | 1·4 | 242 | e 0 18 | − 2 | 0 36 | 0 | — | 0·7 |
| Toyooka | 1·4 | 354 | 0 21a | + 1 | 0 44 | S* | — | 0·8 |
| Hikone | 1·5 | 44 | 0 22 | + 1 | 0 47 | $S_g$ | — | — |
| Matuyama | 1·9 | 259 | 0 24 | − 4 | 0 52 | + 3 | — | — |
| Gihu | 1·9 | 50 | 0 26a | − 2 | 0 55 | S* | — | — |
| Nagoya | 1·9 | 59 | 0 27 | − 1 | 0 56 | S* | — | 1·0 |
| Hamamatu | 2·2 | 77 | 0 40 | $P_g$ | 1 15 | $S_g$ | — | — |
| Simidu | 2·2 | 230 | 0 35 | + 4 | e 0 57 | 0 | — | 1·2 |
| Hamada | 2·5 | 286 | 0 37a | + 1 | 1 18 | $S_g$ | — | — |
| Omaesaki | 2·7 | 81 | 0 39 | 0 | 1 21 | $S_g$ | — | — |
| Hunatu | 3·3 | 67 | 0 49 | + 2 | 1 7 | −18 | — | — |
| Kohu | 3·3 | 64 | 0 47 | 0 | 1 37 | S* | — | — |
| Numadu | 3·3 | 74 | 0 48 | + 1 | 1 37 | S* | — | — |
| Misima | 3·4 | 73 | 0 46 | − 3 | 1 40 | S* | — | — |
| Wazima | 3·5 | 24 | 0 52 | + 2 | 1 47 | $S_g$ | — | — |
| Nagano | 3·6 | 46 | 0 50 | − 1 | 1 47 | S* | — | — |
| Miyazaki | 3·7 | 234 | 1 1a | P* | 1 55 | $S_g$ | — | — |
| Kumamoto | 3·8 | 251 | 0 58 | + 4 | 1 58 | $S_g$ | — | — |
| Hukuoka | 3·8 | 261 | 0 53 | − 1 | 1 56 | $S_g$ | — | 2·0 |
| Hukuoka B. | 3·9 | 261 | 0 54 | − 2 | 1 55 | $S_g$ | — | — |
| Maebasi | 4·0 | 55 | 0 57 | 0 | 1 56 | S* | — | — |
| Yokohama | 4·0 | 70 | 1 5 | P* | 2 1 | S* | — | — |
| Mera | 4·1 | 80 | 1 15 | $P_g$ | 2 22 | $S_g$ | — | — |
| Kumagaya | 4·1 | 60 | 1 0 | + 2 | 1 58 | S* | — | — |
| Tokyo | 4·2 | 68 | 1 13 | P* | 2 5 | S* | — | — |

*Continued on next page.*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Hatidyozima | | 4·2 | 104 | 0 55 | − 5 | 1 38 | −10 | — | — |
| Nagasaki | | 4·5 | 253 | 1 20 | $P_g$ | 2 18 | S* | — | 2·4 |
| Tukubasan | | 4·6 | 62 | 1 18 | P* | 2 30 | $S_g$ | — | — |
| Kakioka | | 4·7 | 66 | 1 5 | − 2 | — | — | — | — |
| Mito | | 5·0 | 63 | 1 14 | + 3 | 2 31 | S* | — | — |
| Tyosi | | 5·1 | 71 | e 1 34 | $P_g$ | 2 40 | $S_g$ | — | 3·0 |
| Taikyu | | 5·5 | 290 | e 1 30 | P* | e 2 24 | + 4 | — | — |
| Tomie | | 5·5 | 255 | 1 35 | P* | 2 41 | S* | — | — |
| Hukusima | | 5·7 | 50 | 1 29 | P* | 3 2 | $S_g$ | — | — |
| Sendai | | 6·2 | 48 | 1 34 | + 6 | 3 13 | $S_g$ | — | — |
| Mizusawa | E. | 7·0 | 43 | e 1 45 | + 6 | i 3 44 | $S_g$ | — | — |
| | N. | 7·0 | 43 | 1 33 | − 6 | e 3 42 | $S_g$ | — | — |
| Keizyo | | 7·3 | 300 | e 3 9 | S | (e 3 9) | + 3 | — | — |
| Zinsen | Z. | 7·5 | 299 | e 3 19 | S | (e 3 19) | + 8 | — | — |
| Heizyo | E. | 8·8 | 306 | e 4 4 | S | (e 4 4) | S* | — | — |
| Chiufeng | | 16·1 | 297 | e 3 46 | + 3 | e 6 59 | +18 | — | 10·8 |
| Tashkent | | 51·2 | 298 | — | — | e 15 35 | −43 | e 26·6 | 29·1 |

Additional readings :—
Kobe i = +9s.
Toyooka $P_gZ$ = +24s.
Hukuoka i = +1m.9s.
Keizyo iN = +4m.6s. and +4m.40s., eN = +5m.5s., eE = +5m.14s.
Zinsen eSZ? = +5m.1s.
Heizyo eSE? = +6m.36s.
Long waves were also recorded at Nanking, Vladivostok, Baku, Pulkovo, Kucino, and at European stations.

July 28d. Readings also at 2h. (Hastings), 4h. (near Apia), 9h. (Suva), 11h. (near Samarkand and near Manila), 12h. (near Andijan, near Tchimkent, Samarkand, and near Taihoku), 15h. (Alicante, near Tiflis, near Andijan, Tchimkent, and Samarkand), 16h. (near Samarkand), 17h. (Andijan, near Tchimkent, and near Sumoto), 19h. (near Apia), 20h. (near Mizusawa), 23h. (near Apia).

July 29d. Readings at 0h. (near Amboina), 4h. (near Apia and near Tyosi), 5h. (near Wellington), 11h. (near Amboina), 12h. (Strasbourg), 16h. (near Lick), 19h. (near Sumoto), 20h. (Nanking and near Samarkand), 21h. (Mizusawa and near Samarkand).

July 30d. 17h. 15m. 43s. Epicentre 13°·0S. 166°·8E. (as on 1932 Nov. 29d.). X.

A = −·949, B = +·222, C = −·225; D = +·228, E = +·974;
G = +·219, H = −·051, K = −·974.

A *depth* of focus 0·020 has been assumed.

| | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | ° | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Suva | −0·3 | 12·2 | 116 | 2 38 | − 9 | 4 32 | −28 | — | 5·3 |
| Riverview | −1·1 | 25·2 | 213 | i 4 58 | −13 | e 9 1 | −24 | — | — |
| Sydney | −1·1 | 25·2 | 213 | e 5 3 | − 8 | (9 17) | − 8 | 9·3 | 10·9 |
| Wellington | −1·3 | 29·1 | 167 | i 1 2 | ? | (11 17) | +49 | 11·3 | — |
| Christchurch | −1·4 | 31·0 | 170 | i 5 32 | −29 | e 11 20 | +22 | — | — |
| Melbourne | −1·5 | 31·5 | 214 | i 5 52 | −13 | 11 47 | +43 | — | 13·9 |
| Adelaide | −1·5 | 33·6 | 224 | i 6 13 | −11 | i 11 17 | −20 | — | 15·6 |
| Honolulu T.H. | −2·0 | 48·8 | 46 | — | — | e 15 31 | +15 | e 19·8 | — |
| Perth | −2·1 | 50·3 | 239 | e 15 22 | S | (e 15 22) | −14 | — | 25·3 |
| Manila | −2·2 | 53·2 | 300 | 7 49 | −70 | (14 17) | ? | 14·3 | 16·5 |

*Continued on next page.*

| | | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Nagoya | | −2·3 | 55·9 | 331 | e 9 28 | +10 | — | — | — | — |
| Koti | | −2·3 | 56·4 | 326 | e 8 11 | −71 | e 18 24 | ? | — | — |
| Batavia | | −2·4 | 59·4 | 270 | e 8 59 | −44 | i 18 17 | +41 | — | — |
| Hong Kong | | −2·4 | 62·5 | 304 | — | — | (23 17?) | ? | — | 23·3 |
| Nanking | | −2·5 | 64·4 | 315 | 10 21k | + 3 | e 18 38 | − 3 | — | — |
| Vladivostok | | −2·5 | 64·5 | 332 | i 10 26 | + 8 | 19 2 | +20 | 20·2 | — |
| Chiufeng | | −2·6 | 70·9 | 321 | 11 2a | + 2 | e 20 15 | +14 | — | — |
| Ukiah | | −2·7 | 83·3 | 47 | — | — | e 22 17 | − 5 | e 34·6 | — |
| Berkeley | E. | −2·7 | 83·5 | 49 | — | — | i 22 18 | − 6 | — | — |
| Irkutsk | | −2·7 | 84·5 | 327 | e 12 16 | − 1 | 22 28 | − 7 | e 41·3 | — |
| Sitka | | −2·7 | 84·6 | 27 | e 12 7 | −11 | i 22 27 | − 9 | e 35·5 | — |
| Pasadena | Z. | −2·7 | 85·3 | 52 | i 12 14a | − 7 | — | — | — | — |
| Mount Wilson | | −2·7 | 85·4 | 52 | i 12 15 | − 7 | — | — | — | — |
| Tinemaha | | −2·7 | 86·2 | 49 | i 12 20 | − 6 | — | — | — | — |
| Bombay | E. | − | 97·9 | 286 | — | — | e 23 17 | [−59] | — | — |
| Tashkent | | — | 104·2 | 310 | e 18 1 | [ 0] | i 24 10 | [−36] | e 43·3 | 58·9 |
| Samarkand | | — | 105·7 | 308 | e 18 14 | [+10] | — | — | — | — |
| Florissant | | — | 108·0 | 53 | e 17 45 | [−26] | e 23 48 | ? | — | — |
| Ekaterinburg | | — | 109·7 | 326 | e 14 49 | +19 | 25 34 | −31 | e 44·3 | — |
| Baku | | — | 118·8 | 308 | e 20 36 | PP | e 29 39 | PS | 42·0 | — |
| Oak Ridge | | — | 121·9 | 48 | — | — | e 36 33 | SS | e 53·3 | — |
| Kucino | | — | 122·0 | 329 | e 20 15 | PP | e 26 59 | −31 | 50·5 | 61·6 |
| Tiflis | | — | 122·4 | 311 | e 17 52 | [−59] | (e 40 17?) | SS | e 40·3 | — |
| Pulkovo | | — | 123·4 | 336 | 18 33 | [−21] | e 25 27 | [−33] | 38·3 | 58·8 |
| Ksara | | — | 131·0 | 303 | e 19 10 | [+ 1] | — | — | — | — |
| Copenhagen | | — | 132·9 | 341 | 22 11 | ? | — | — | 62·3 | — |
| Vienna | | — | 137·1 | 331 | e 22 30 | PP | — | — | — | — |
| De Bilt | | — | 138·2 | 343 | i 19 7 | [−12] | — | — | e 62·3 | — |
| Uccle | | — | 139·6 | 343 | e 19 5 | [−16] | e 22 45 | PP | e 44·3 | — |
| Stuttgart | | — | 139·8 | 336 | e 19 1 | [−20] | — | — | e 69·3 | — |
| Oxford | | — | 140·0 | 349 | e 22 9 | PP | — | — | — | — |
| Triest | | — | 140·2 | 331 | e 20 39 | ? | — | — | — | — |
| Strasbourg | | — | 140·4 | 338 | e 18 17? | ? | — | — | — | — |
| Chur | | — | 141·1 | 336 | e 19 7 | [−16] | — | — | — | — |
| Zurich | | — | 141·1 | 336 | e 19 5 | [−18] | — | — | — | — |
| Paris | | — | 141·9 | 345 | e 19 7 | [−17] | e 23 0 | PKS | — | — |
| Neuchatel | | — | 142·0 | 339 | e 19 7 | [−17] | — | — | — | — |
| Piacenza | | — | 142·5 | 334 | 19 25 | [− 1] | — | — | — | — |
| Florence | | — | 142·8 | 330 | e 19 12 | [−14] | — | — | — | — |
| Prato | | — | 142·8 | 334 | i 19 12 | [−14] | — | — | — | — |
| Trenta | | — | 143·1 | 320 | e 19 27 | [ 0] | — | — | — | — |
| Tortosa | N. | — | 149·7 | 338 | 19 37 | [− 4] | — | — | — | — |
| Toledo | | — | 152·0 | 345 | e 19 32 | [−12] | — | — | — | — |
| Alicante | | — | 152·2 | 338 | — | — | e 27 42 | ? | e 41·7 | — |
| Granada | | — | 154·3 | 342 | e 19 20 | [−27] | e 23 56 | PP | e 84·3 | — |

Additional readings :—
Suva i = +3m.47s.
Riverview iEN = +5m.45s. = PP − 6s. and +9m.5s., iE = +9m.46s.
Wellington S? = +6m.17s.
Christchurch iZ = +14m.19s.
Melbourne i = +6m.44s. = PP − 13s. and +13m.43s.
Adelaide i = +13m.23s. and +14m.42s.
Honolulu T.H. e = +16m.31s.
Manila S?EN = +11m.54s.
Koti ePPZ = +9m.7s.
Batavia i = +17m.43s., iS = +18m.44s.
Nanking iZ = +10m.59s.
Chiufeng i = +11m.39s.
Ukiah e = +23m.27s. and +28m.47s.
Irkutsk ePP = +16m.2s., eSS = +28m.35s.
Sitka e = +12m.52s., SS = +27m.24s.
Pasadena iZ = +12m.55s.
Bombay eN = +24m.17s.
Tashkent i = +18m.29s. = PP + 15s., +25m.24s., +26m.29s., and +28m.9s., e = +29m.15s., and +32m.49s. = SS − 11s.

*Continued on next page.*

Ekaterinburg ePKP = +18m.39s. =PP −16s., ePPS = +28m.49s., eSS = +33m.59s.
Kucino eSKKS = +28m.7s., ePS = +30m.43s., eSS = +36m.35s.
Tiflis eEZ = +20m.9s. =PP −17s.
Pulkovo SKKS = +26m.39s., SKSP = +30m.5s. =PS −28s.
Ksara ePP = +22m.42s. =PKS +4s.
De Bilt eZ = +22m.2s. =PP −8s., eEN = +22m.41s. =PKS −23s.
Stuttgart ePPZ = +19m.43s., ePPP = +22m.46s. =PKS −22s.
Triest i = +22m.45s. =PP +22s., +23m.27s. =PKS +18s., and +28m.45s.
Strasbourg e = +21m.17s.?, +22m.17s.? =PP −7s., and +23m.17s.? =PKS +7s.
Neuchatel ePP = +19m.51s.
Toledo i = +19m.46s. =PKP −22s., e = +25m.2s.
Long waves were also recorded at Tyosi, Arapuni, Ivigtut, and San Fernando.

July 30d. Readings also at 0h. (Lick and near Mizusawa), 4h. (La Paz), 8h. (near Sumoto), 12h. (Wellington), 15h. (Zagreb), 16h. (Suva), 17h. (near Mizusawa (3) ), 21h. (La Paz), 23h. (Medan, near Batavia, and Soengei Langka).

July 31d. 2h. 56m. 15s. Epicentre 28°·5N. 141°·5E. (as on 1933 June 18d.). X.

A = −·688, B = +·547, C = +·477 ; D = +·622, E = +·783 ;
G = −·373, H = +·297, K = −·879.

| | | Δ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. |
| Tyosi | | 7·2 | 356 | 3 11 | S | (3 11) | + 7 | — |
| Nagoya | | 7·7 | 331 | 1 53 | + 4 | 3 17 | + 1 | — |
| Osaka | | 8·1 | 321 | 1 55 | 0 | 3 22 | − 4 | 4·2 |
| Sumoto | | 8·1 | 318 | e 1 51 | − 4 | 3 18 | − 8 | 3·4 |
| Kobe | | 8·2 | 320 | 1 55 | − 1 | 3 24 | − 5 | 4·2 |
| Toyooka | | 9·1 | 323 | e 1 59 | −10 | 3 40 | −11 | 3·7 |
| Mizusawa | | 10·6 | 358 | — | — | e 4 31 | + 3 | — |
| Tinemaha | z. | 80·6 | 54 | e 11 39 | −32 | — | — | — |
| Pasadena | z. | 82·1 | 56 | i 11 45a | −34 | — | — | — |

Tyosi gives also S = +3m.21s. =S* −11s.
If Tinemaha and Pasadena readings are for the P of this shock they suggest a deep focus. There is however, no confirmatory evidence.

July 31d. 9h. 2m. 58s. Epicentre 34°·7N. 139°·8E. (as on 1932 April 26d.). X.

Nagoya gives epicentre 34°·5N. 139°·8E.

A = −·628, B = +·531, C = +·569 ; D = +·645, E = +·764 ;
G = −·435, H = +·367, K = −·822.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Tyosi | | 1·4 | 40 | 0 13 | − 7 | 0 31 | − 5 | — | 0·6 |
| Nagoya | | 2·3 | 281 | 0 31 | − 2 | 0 58 | − 1 | — | 1·3 |
| Osaka | | 3·5 | 271 | 0 54 | + 4 | 1 49 | $S_f$ | — | 2·0 |
| Kobe | | 3·8 | 271 | e 1 27 | S | (e 1 27) | −10 | — | 4·0 |
| Mizusawa | E. | 4·6 | 13 | e 1 10 | + 4 | e 1 55 | − 3 | — | — |
| Ekaterinburg | | 55·9 | 319 | — | — | e 22 15 | ? | 28·0 | — |

Kobe gives also eN = +1m.52s. =P* +1s., eZ = +2m.26s., eSN = +2m.58s., eSE = +3m.1s.
Long waves were also recorded at Baku.

**July 31d. 11h. 35m. 40s. Epicentre 53°·2N. 35°·4W. N.2.**

A = +·488, B = −·347, C = +·801; D = −·579, E = −·815; G = +·653, H = −·464, K = −·599.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Edinburgh | | 18·7 | 69 | i 4 8 | − 7 | — | — | 9·3 | 10·8 |
| Kew | | 21·3 | 80 | i 4 46 | + 3 | — | — | 10·3 | 12·3 |
| Paris | | 23·9 | 85 | e 4 33 | −36 | — | — | 11·3 | 13·3 |
| De Bilt | | 24·3 | 76 | e 5 14 | + 1 | — | — | e 11·3 | 14·3 |
| Uccle | | 24·3 | 80 | e 5 8 | − 5 | — | — | e 11·3 | — |
| Toledo | | 25·0 | 109 | e 4 56 | −24 | e 9 17 | −24 | e 11·4 | 13·3 |
| Oak Ridge | N.E. | 26·2 | 261 | e 5 31 | 0 | e 9 57 | − 5 | e 12·8 | — |
| Hamburg | | 26·6 | 71 | e 5 30 | − 5 | — | — | e 13·3 | 14·3 |
| Ottawa | | 27·0 | 268 | e 5 38 | 0 | e 10 22 | + 7 | e 14·3 | — |
| Strasbourg | | 27·1 | 82 | — | — | e 9 25 | −52 | — | — |
| Göttingen | | 27·3 | 75 | — | — | e 10 20? | 0 | e 14·9 | — |
| Copenhagen | | 27·4 | 65 | 5 43 | + 1 | 10 14 | − 8 | 13·3 | — |
| Neuchatel | | 27·5 | 86 | e 5 44 | + 1 | — | — | — | — |
| Stuttgart | | 27·9 | 81 | e 5 50 | + 4 | — | — | e 13·3 | 16·6 |
| Almeria | | 28·0 | 112 | e 4 40 | −67 | — | — | — | — |
| Alicante | | 28·1 | 108 | — | — | e 8 23 | ? | e 13·0 | — |
| Zurich | | 28·2 | 83 | e 10 20? | S | (e 10 20?) | −15 | — | — |
| Chur | | 29·0 | 84 | e 6 4 | + 8 | — | — | — | — |
| Cheb | | 29·3 | 76 | — | — | e 10 20? | −33 | e 16·3 | 18·3 |
| Piacenza | | 30·1 | 85 | e 5 40 | −26 | — | — | — | 19·7 |
| Florence | | 31·7 | 87 | 5 50 | −30 | — | — | — | 15·3 |
| Georgetown | | 31·7 | 262 | e 6 25 | + 5 | e 11 33 | + 2 | e 16·3 | — |
| Triest | | 32·2 | 82 | e 6 11 | −13 | — | — | — | 17·1 |
| Pittsburgh | | 32·4 | 267 | — | — | e 14 44 | ? | e 16·8 | — |
| Pulkovo | | 35·3 | 52 | e 6 53 | + 1 | e 12 20? | − 6 | 16·3 | 18·8 |
| Florissant | | 39·6 | 272 | e 7 30 | + 1 | e 13 42 | +12 | e 18·3 | 22·6 |
| Kucino | | 40·6 | 56 | e 9 8 | PP | 13 36 | − 9 | e 15·6 | 24·1 |
| Ekaterinburg | | 50·5 | 44 | 8 40 | −15 | e 15 59 | − 9 | 24·3 | — |
| Sitka | | 52·0 | 318 | e 16 29 | S | (e 16 29) | + 1 | e 28·2 | — |
| Tiflis | z. | 52·5 | 68 | e 9 9 | − 1 | e 16 44 | + 9 | e 29·7 | 35·8 |
| Baku | | 56·2 | 66 | e 9 36 | − 1 | i 17 31 | + 6 | 27·4 | 34·9 |
| Tashkent | | 65·5 | 53 | e 10 35 | − 7 | — | — | e 34·0 | 38·6 |

Additional readings:—
Sitka iS = +20m.15s., SSS = +24m.40s.
Tashkent e = +14m.26s. = PPP − 1s., +23m.12s. = SS − 22s., and +33m.26s.
Long waves were also recorded at Ivigtut and other American and European stations.

**July 31d. 15h. 23m. 3s. Epicentre 15°·3S. 75°·8W. (as on 1931 Feb. 9d.). R.3.**

A = +·237, B = −·935, C = −·264; D = −·969, E = −·245; G = −·065, H = +·256, K = −·965.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Huancayo | | 3·3 | 8 | i 0 54 | P* | — | — | — | — |
| La Paz | | 7·4 | 100 | i 1 47 | + 2 | i 3 30 | S* | 3·9 | 4·9 |
| Sucre | | 10·7 | 112 | i 2 27 | − 4 | i 4 49 | +18 | — | — |
| La Plata | | 25·3 | 144 | 5 21 | − 2 | 10 3 | +17 | 12·8 | — |
| San Juan | | 35·0 | 16 | e 6 47 | − 2 | e 12 6 | −15 | — | — |
| Florissant | | 55·8 | 347 | i 9 34 | 0 | i 17 13 | − 7 | — | — |
| Fordham | | 56·2 | 1 | e 9 37 | 0 | e 17 22 | − 3 | 24·0 | — |
| Oak Ridge | | 58·0 | 4 | — | — | e 18 46 | +57 | e 31·0 | — |
| Chicago | | 58·1 | 349 | — | — | e 17 40 | −11 | e 27·2 | — |
| Riverside | z. | 63·3 | 322 | i 10 25 | − 2 | — | — | — | — |

*Continued on next page.*

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Pasadena | z. | 63·8 | 322 | i 10 32 | + 1 | — | — | — | — |
| Tinemaha | z. | 65·9 | 324 | i 10 45 | 0 | — | — | — | — |
| Sitka | | 87·5 | 333 | — | — | e 23 29 | − 3 | e 48·4 | — |
| Triest | | 100·6 | 46 | — | — | e 25 17 | −15 | e 44·0 | 52·0 |
| Copenhagen | | 101·6 | 35 | — | — | 24 27 | [− 6] | 49·0 | — |
| Ekaterinburg | | 127·1 | 28 | e 20 55 | PP | e 23 3 | ? | 55·0 | — |
| Tashkent | | 140·2 | 41 | e 19 14 | [− 7] | — | — | e 59·0 | 82·0 |

Additional readings :—
Huancayo $iP^* = +1m.11s. = S - 14s.$, $iP_g = +1m.40s. = S^* + 3s.$, $i = +1m.49s. = S_g + 6s.$
San Juan $e = +14m.21s. = SS - 5s.$ and $+14m.48s. = SSSS - 2s.$
Chicago $e = +19m.38s. = S_cS - 1s.$ and $+24m.2s. = SSSS - 12s.$
Tashkent $i = +19m.26s.$, $+22m.18s. = PP - 5s.$, and $+23m.4s. = PKS - 5s.$, $e = +42m.33s.$
Long waves were also recorded at Baku, Pulkovo, and other European stations.

July 31d. Readings also at 2h. (Ekaterinburg and Tashkent), 9h. (Port au Prince, Oak Ridge, Ivigtut, Paris, and Strasbourg), 11h. (near Padova), 12h. (Andijan, Tchimkent, Samarkand, and near Apia (3) ), 13h. (Berkeley), 16h. (near Santiago, near Huancayo, and La Paz), 18h. (La Paz and near Huancayo), 20h. (near Apia, near Malabar, and near Samarkand), 21h. (Kucino and Pulkovo), 22h. (Tashkent and Tucson), 23h. (Columbia).

Aug. 1d. Readings at 1h. (Huancayo (3), Samarkand, and Sumoto), 2h. (Florence, Huancayo, La Paz, and Sumoto), 3h. (near Malabar), 5h. (Pasadena, Riverside, Tinemaha, Tucson, Messina, Mineo, near Catania, and Trenta), 6h. (Ekaterinburg and Tiflis), 7h. (Baku (2), Ekaterinburg, Tiflis, and Tashkent (2) ), 8h. (La Paz and near Tyosi), 10h. (near Lick), 11h. (Ekaterinburg, Tashkent, Tiflis, Pulkovo, Copenhagen, Strasbourg, Stuttgart, Uccle, and near Apia), 12h. (Baku, Pasadena, Tinemaha, Oak Ridge, and near Mizusawa), 13h. (near Apia, near Batavia, and Malabar), 14h. (La Paz), 15h. (Huancayo, near Tyosi, near Hukuoka, and Nagasaki (4) ), 18h. (Catania), 19h. (Frunse), 21h. (Pasadena, Riverside, Santa Barbara, and Tinemaha),

Aug. 2d. Readings at 0h. (Mizusawa, near Glenmuick, and Wellington), 1h. (Taihoku), 2h. (Andijan and Tashkent), 4h. (Lick, Tiflis, and near Ksara), 7h. (Mizusawa), 8h. (Ravensburg, Neuchatel, Zurich, and near Chur), 9h. (Pasadena, Tinemaha, and near Apia), 11h. (Ekaterinburg and Tashkent), 12h. (Nagoya, near Mizusawa, Tyosi, and near Tiflis), 13h. (Pasadena and Riverside), 18h. (near Sumoto), 20h. and 22h. (Mizusawa).

Aug. 3d. Readings at 2h. (Graz, Triest, and near Zagreb), 5h. (Baku, Ekaterinburg, Tashkent, Batavia, Tiflis, Medan, and near Amboina (2) ), 6h. (Amboina, La Plata, and near Lick), 7h. (Baku, Ekaterinburg, Tashkent, Tiflis, Batavia, Medan, and Hong Kong), 8h. (Puy de Dôme), 9h. (near La Paz), 10h. (near Sumoto), 11h. (near Taihoku), 12h. (near Lick), 14h. (near Sumoto), 15h. (Edinburgh), 19h. (De Bilt, Stuttgart, Chur, Neuchatel, Zurich, La Jolla, Mount Wilson, Pasadena, Riverside, Santa Barbara, and Tinemaha), 20h. (Mizusawa), 21h. (Tiflis), 22h. (near Casamicciola, near Mizusawa, and near Tiflis), 23h. (Casamicciola).

**Aug. 4d. 17h. 32m. 40s.** Epicentre 25°·5N. 98°·0E. (as on 1931 Feb. 10d.). R.3.

A = −·126, B = +·894, C = +·431; D = +·990, E = +·139; G = −·060, H = +·426, K = −·903.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Phu-Lien | | 9·2 | 119 | e 2 4 | − 6 | — | — | 4·7 | — |
| Calcutta | | 9·3 | 254 | (e 1 47) | −24 | (e 3 38) | −18 | (e 4·4) | — |
| Hong Kong | | 15·1 | 99 | 6 32 | S | (6 32) | +15 | 8·7 | 9·0 |
| Dehra Dun | | 18·3 | 290 | 7 40 | S | (7 40) | + 9 | 12·8 | 16·3 |
| Nanking | | 19·3 | 65 | 4 22k | 0 | — | — | e 9·8 | 11·1 |
| Hyderabad | | 19·9 | 250 | — | — | 8 27 | +23 | 12·7 | 15·0 |
| Manila | | 24·1 | 112 | 5 12 | + 1 | 9 40 | +15 | 12·5 | — |
| Bombay | N. | 24·2 | 259 | — | — | e 9 45 | +18 | — | — |
| Frunse | | 25·9 | 318 | e 5 34 | + 6 | 10 16 | +19 | — | — |
| Irkutsk | | 27·2 | 8 | e 5 39 | − 1 | e 10 23 | + 5 | 14·6 | — |
| Keizyo | E. | 27·3 | 57 | — | — | e 10 33 | + 13 | e 14·9 | — |
| Tashkent | | 28·5 | 311 | 5 49 | − 3 | 10 35 | − 5 | e 16·1 | 18·4 |
| Samarkand | | 29·5 | 306 | e 6 4 | + 3 | e 10 59 | + 3 | — | — |
| Vladivostok | | 32·7 | 49 | — | — | e 15 8 | ? | e 17·2 | 19·3 |
| Ekaterinburg | | 41·1 | 330 | 7 38 | − 3 | e 13 59 | + 6 | 21·3 | — |
| Baku | | 42·5 | 305 | e 9 43 | (− 7) | e 14 22 | + 9 | 22·3 | — |
| Stuttgart | | 70·4 | 317 | — | — | e 20 20? | − 6 | e 39·3 | — |
| De Bilt | | 71·8 | 320 | e 11 20? | − 2 | — | — | e 38·3 | 40·7 |

Additional readings and notes:—
Calcutta readings have been *diminished* by 4m.
Hong Kong S = +8m.10s.
Dehra Dun S = +10m.0s.
Long waves were also recorded at Medan, Zinsen, Kucino, Pulkovo, and at other European stations.

**Aug. 4d.** Readings also at 2h. (Suva), 3h. (Casamicciola and Triest), 4h. (near Florissant and St. Louis), 6h. (near Manila and near Triest), 9h. (Pasadena, Riverside, Tinemaha, La Paz, and near Huancayo), 10h. (near Tiflis), 16h. (near Manila), 18h. (near Branner (2) and Lick (2)), 21h. (Columbia).

**Aug. 5d. 0h. 44m. 19s.** Epicentre 8°·8S. 157°·4E. N.2.

A = −·912, B = +·380, C = −·153; D = +·384, E = +·923; G = +·141, H = −·059, K = −·988.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Suva | | 22·5 | 117 | i 6 6 | ? | — | — | — | 9·7 |
| Riverview | | 25·6 | 192 | i 5 25 | 0 | i 9 57 | + 6 | 12·7 | 15·7 |
| Sydney | | 25·6 | 192 | e 6 17 | PP | (9 59) | + 8 | 10·0 | 14·1 |
| Palau | | 28·0 | 305 | 5 49 | + 2 | — | — | — | — |
| Melbourne | | 31·1 | 199 | 6 18 | + 3 | 11 33 | +12 | 14·5 | 17·2 |
| Adelaide | | 31·3 | 210 | i 6 16 | − 1 | i 11 24 | 0 | 15·1 | 21·0 |
| Wellington | | 36·0 | 158 | 7 31 | +33 | 12 53 | +17 | 18·6 | 21·7 |
| Christchurch | | 37·2 | 162 | i 7 5 | − 3 | i 13 0 | + 6 | e 18·5 | — |
| Manila | | 43·0 | 302 | i 7 57 | 0 | 14 21 | 0 | 21·7 | 25·1 |
| Perth | | 44·9 | 233 | — | — | e 14 46 | − 3 | 23·0 | 26·4 |
| Miyazaki | | 47·7 | 329 | 8 34 | 0 | 15 30 | + 1 | — | — |
| Nagoya | | 48·0 | 338 | 8 36 | 0 | (15 38) | + 5 | 15·6 | — |
| Sumoto | | 48·1 | 335 | e 8 36 | − 1 | e 15 27 | − 7 | — | — |
| Koti | Z. | 48·1 | 332 | e 8 34 | − 3 | — | — | — | — |
| Gihu | | 48·3 | 338 | 8 38 | 0 | — | — | — | — |
| Kobe | | 48·3 | 335 | e 8 28 | −10 | e 14 42 | −55 | — | 26·4 |
| Nagano | | 48·9 | 340 | 8 47 | + 4 | 15 13 | −32 | — | — |
| Batavia | | 50·1 | 268 | e 7 53 | −59 | i 16 5 | + 3 | — | — |
| Hong Kong | | 52·5 | 307 | 9 12 | + 2 | 16 50 | +15 | 26·4 | 27·4 |
| Honolulu T.H. | | 53·3 | 54 | — | — | e 16 46 | 0 | e 23·2 | — |

*Continued on next page.*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Sapporo | | 53·9 | 346 | 9 19 | − 2 | — | — | — | — |
| Zinsen | | 54·5 | 330 | e 16 23 | S | (e 16 23) | −39 | e 29·0 | — |
| Vladivostok | | 56·8 | 338 | 9 47 | + 5 | i 17 43 | + 9 | 26·5 | — |
| Phu-Lien | | 58·0 | 301 | e 9 51 | + 1 | e 17 55 | + 6 | 28·7 | — |
| Irkutsk | | 76·0 | 329 | e 11 42 | − 4 | 21 28 | − 4 | e 34·7 | — |
| Hyderabad | | 82·2 | 289 | — | — | (22 53) | +14 | — | 22·9 |
| Ukiah | | 87·5 | 50 | e 15 54 | PP | e 23 12 | [− 5] | e 36·8 | — |
| Santa Barbara | | 89·2 | 55 | i 12 53 | − 1 | — | — | — | — |
| Pasadena | | 90·4 | 55 | i 12 57k | − 2 | e 23 53 | − 7 | 40·8 | — |
| Mount Wilson | | 90·5 | 55 | i 13 0 | 0 | — | — | — | — |
| Frunse | | 90·8 | 313 | 13 16 | +15 | — | — | — | — |
| Tinemaha | z. | 90·8 | 53 | i 12 59 | − 2 | — | — | — | — |
| Riverside | | 91·0 | 55 | i 13 2 | 0 | — | — | — | — |
| Tashkent | | 94·4 | 311 | e 13 10 | − 8 | i 24 29 | − 8 | e 43·7 | 54·8 |
| Bozeman | | 97·4 | 45 | e 16 41? | PP | — | — | — | — |
| Ekaterinburg | | 101·0 | 326 | e 13 43 | − 5 | e 25 21 | −14 | 43·2 | 59·2 |
| Baku | | 109·0 | 310 | e 18 51 | PP | 28 26 | PS | 52·7 | 58·5 |
| Kucino | | 113·6 | 328 | — | — | e 26 31 | {− 1} | e 50·7 | 57·8 |
| Chicago | | 114·4 | 48 | — | — | e 29 35 | PS | e 56·9 | — |
| Pulkovo | | 115·6 | 334 | e 19 42 | PP | e 26 28 | {−18} | e 45·7 | 67·1 |
| Copenhagen | | 125·6 | 337 | 20 53 | PP | 37 59 | SS | 57·7 | — |
| Vienna | | 128·7 | 328 | e 19 6 | [+ 2] | — | — | — | — |
| Edinburgh | | 130·4 | 346 | e 22 41? | PKS | i 32 5 | PS | e 60·7 | — |
| De Bilt | | 131·1 | 338 | e 19 17 | [+ 8] | e 22 41 | PKS | e 57·7 | 72·9 |
| Triest | | 131·7 | 327 | e 19 6 | [− 4] | i 27 42 | {−50} | e 62·9 | 72·1 |
| Stuttgart | | 132·0 | 333 | e 21 27 | PP | e 22 41 | PKS | e 64·7 | — |
| Uccle | | 132·4 | 338 | e 19 14 | [+ 3] | — | — | e 57·7 | — |
| Strasbourg | | 132·8 | 334 | e 19 19 | [+ 7] | e 31 47 | PS | — | — |
| Kew | | 133·5 | 342 | e 19 41? | [+28] | — | — | e 59·7 | — |
| Oxford | | 133·6 | 343 | e 22 50 | PKS | — | — | — | — |
| Piacenza | | 134·3 | 330 | e 22 41 | PKS | — | — | — | 77·2 |
| Florence | | 134·3 | 326 | e 20 56 | ? | 22 31 | PKS | 54·7 | 65·7 |
| Prato | | 134·3 | 326 | e 19 13 | [− 1] | i 22 7 | PP | — | — |
| Paris | | 134·8 | 337 | e 21 44 | PP | — | — | 68·7 | — |
| San Juan | | 136·8 | 71 | e 22 54 | PKS | — | — | e 64·7 | — |
| Alicante | | 144·4 | 331 | e 19 37 | [+ 5] | — | — | e 83·2 | — |
| Toledo | | 144·8 | 335 | e 19 26 | [− 7] | — | — | — | — |
| Almeria | | 146·5 | 332 | e 20 3 | [+27] | — | — | — | — |
| Granada | | 146·8 | 334 | i 19 39 | [+ 2] | — | — | e 70·8 | — |

Additional readings :—
Riverview iZ = +5m.28s., iE = +10m.8s.
Melbourne SS = +12m.59s.
Perth e = +17m.31s. =SS − 17s.
Kobe eZ = +11m.22s.
Zinsen eE = +16m.43s., eN = +16m.47s., eE = +17m.5s., eN = +25m.12s.
Ukiah e = +16m.6s. =PP + 1s.
Pasadena eSKSE = +23m.25s., ePSE = +24m.45s.
Tashkent ePP = +17m.3s., SKS = +23m.47s., ePS = +25m.41s.
Ekaterinburg ePP = +17m.51s., eSKS = +24m.24s., ePS = +26m.57s.
Baku eSS = +34m.35s., eSSS = +39m.23s.
Kucino PS = +28m.47s., SS = +35m.23s., SSS = +39m.41s.
Pulkovo eSS = +35m.41s.
Triest iPKP = +22m.34s., i = +24m.39s., ePS = +33m.57s., eSS = +40m.46s.
Uccle e = +21m.40s. =PP + 7s.
Strasbourg ePP = +21m.29s., eSS = +39m.11s.
Paris e = +22m.47s. =PKS − 6s. and +25m.14s.
San Juan e = +23m.26s. =PKS + 26s.
Granada PKP = +22m.47s.
Long waves were also recorded at Stonyhurst, San Fernando, Berkeley, Seattle, Keizyo, and Christchurch.

**Aug. 5d.** Readings also at 0h. (near Glenmuick), 1h. (Strasbourg, near Taihoku, near Christchurch, Hastings, and Wellington), 2h. (Wellington and Bombay), 3h. (Pasadena, Tinemaha, Cape Town, and La Paz), 4h. (Baku, Ekaterinburg, Tashkent, De Bilt, Uccle, Strasbourg, and San Juan), 5h. (Frunse), 7h., 9h., and 10h. (near Tyosi), 13h. (Messina and near Tyosi), 14h. (near Tiflis), 18h. (Mizusawa, near Lick, and near Triest), 20h. (La Plata, near Santiago, and near St. Louis), 21h. (Prato),

Aug. 6d. 2h. 54m. 47s. Epicentre 10°·5S. 74°·8W. N.3.

A = +·258, B = −·949, C = −·182; D = −·965, E = −·262; G = −·048, H = +·176, K = −·983.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Huancayo | | 1·7 | 198 | i 0 26 | + 2 | i 0 43 | − 1 | — | — |
| La Paz | E. | 8·8 | 133 | i 2 2a | − 3 | i 4 2 | +18 | 4·7 | 5·5 |
| Sucre | | 12·6 | 134 | 2 53 | − 3 | — | — | — | — |
| San Juan | | 30·1 | 16 | e 6 13? | + 7 | i 12 18 | SS | e 14·2 | — |
| Fordham | | 51·4 | 1 | e 9 10 | + 8 | e 16 42 | +22 | — | — |
| Riverside | | 60·1 | 319 | i 10 5k | 0 | — | — | — | — |
| Mount Wilson | | 60·7 | 319 | i 10 8k | − 1 | — | — | — | — |
| Pasadena | | 60·7 | 319 | i 10 9k | 0 | — | — | — | — |
| Santa Barbara | Z. | 61·9 | 318 | i 10 16 | − 2 | — | — | — | — |
| Tinemaha | | 62·6 | 322 | i 10 22k | 0 | — | — | — | — |
| Granada | | 81·8 | 49 | e 12 25 | + 8 | i 22 51 | +16 | e 45·2 | — |
| De Bilt | | 92·2 | 37 | — | — | e 24 19 | + 2 | e 40·2 | — |

Additional readings:—
San Juan e = +7m.31s., i = +11m.31s., e = +13m.31s.
Long waves were also recorded at Tucson, Paris, Stuttgart, Ekaterinburg, and Tashkent.

Aug. 6d. Readings also at 2h. (near Santiago), 4h. (La Plata), 5h. (La Paz), 6h. (Mizusawa), 8h. (Tucson, Pasadena, Riverside, and Tinemaha), 10h. (Nanking and Taihoku), 11h. (near Kobe and Sumoto), 12h. (Huancayo and Wellington), 14h. (Pasadena, near Branner, Lick, and near Batavia), 17h. (Wellington, Tyosi, and near Tokyo), 19h. (Tyosi and near La Paz), 20h. (Mizusawa (2)), 23h. (near Medan).

Aug. 7d. 0h. 41m. 55s. Epicentre 39°·4N. 144°·7E. (given by Tokyo). N.1.

Probable error of epicentre ±0°·18.

A = −·631, B = +·447, C = +·635; D = +·578, E = +·816; G = −·518, H = +·367, K = −·773.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Miyako | 2·1 | 276 | 0 36a | + 6 | 0 54 | 0 | — | — |
| Morioka | 2·8 | 276 | 0 38k | − 2 | 1 6 | − 6 | — | — |
| Mizusawa | 2·8 | 265 | 0 40 | 0 | i 1 11 | − 1 | — | — |
| Urakawa | 3·1 | 332 | 0 44a | 0 | 1 15 | − 5 | — | — |
| Sendai | 3·2 | 249 | 0 46 | 0 | 1 20 | − 2 | — | — |
| Aomori | 3·4 | 297 | 0 46 | − 3 | 1 20 | − 7 | — | — |
| Akita | 3·6 | 277 | 0 51 | 0 | 1 32 | 0 | — | — |
| Kusiro | 3·6 | 357 | 0 47 | − 4 | 1 22 | −10 | — | — |
| Hukusima | 3·7 | 245 | 0 52k | − 1 | 1 33 | − 2 | — | — |
| Obihiro | 3·7 | 343 | 0 56 | + 3 | 1 41 | + 6 | — | — |
| Nemuro | 4·0 | 9 | 0 50 | − 7 | 1 28 | −14 | — | — |
| Sapporo | 4·4 | 327 | 0 59a | − 4 | 1 47 | − 6 | — | — |
| Mito | 4·5 | 229 | 1 3 | − 1 | 1 53 | − 2 | — | — |
| Tyosi | 4·7 | 221 | 1 8 | + 1 | 2 2 | + 2 | — | — |
| Kakioka | 4·8 | 230 | 1 7k | − 1 | 2 1 | − 2 | — | — |
| Tukubasan | 4·8 | 231 | 1 8k | 0 | 2 2 | − 1 | — | — |
| Maebasi | 5·3 | 238 | 1 17k | + 2 | 2 19 | + 4 | — | — |
| Kumagaya | 5·3 | 234 | 1 16 | + 1 | 2 17 | + 2 | — | — |
| Tokyo | 5·4 | 228 | 1 16 | − 1 | 2 18 | 0 | — | — |
| Yokohama | 5·6 | 227 | 1 24 | + 4 | 2 26 | + 3 | — | — |
| Nagano | 5·8 | 244 | 1 24 | + 2 | 2 22 | − 6 | — | — |
| Mera | 5·9 | 222 | 1 31 | + 7 | 3 6 | S$_e$ | — | — |
| Kohu | 6·2 | 235 | 1 29 | + 1 | 2 33 | − 5 | — | — |
| Misima | 6·2 | 229 | 1 31 | + 3 | 2 40 | + 2 | — | — |
| Numadu | 6·3 | 229 | 1 31 | + 1 | 2 36 | − 5 | — | — |

*Continued on next page.*

| | | △ ° | Az. ° | P. m. s. | O−C. s. | S. m. s. | O−C. s. | L. m. | M. m. |
|---|---|---|---|---|---|---|---|---|---|
| Wazima | | 6·4 | 255 | 1 33 | + 2 | 2 46 | + 3 | — | — |
| Omaesaki | | 7·1 | 229 | 1 44 | + 3 | 2 55 | − 6 | — | — |
| Hamamatu | | 7·2 | 232 | 1 17 | −25 | 2 33 | −31 | — | — |
| Hatidyozima | | 7·4 | 214 | 1 49 | + 4 | 2 56 | −13 | — | — |
| Gihu | | 7·4 | 240 | 1 44 | − 1 | 3 4 | − 5 | — | — |
| Nagoya | | 7·4 | 238 | 1 49 | + 4 | e 3 10 | + 1 | — | — |
| Hikone | | 7·9 | 241 | 1 52 | 0 | 3 15 | − 6 | — | — |
| Kameyama | | 8·0 | 238 | 1 59 | + 6 | 3 42 | +18 | — | — |
| Osaka | | 8·7 | 240 | 2 7 | + 4 | 4 13 | S* | — | 4·4 |
| Sumoto | | 9·3 | 240 | e 1 55 | −16 | e 4 31 | S* | — | 4·6 |
| Siomisaki | | 9·3 | 233 | 2 8 | − 3 | 3 16 | −40 | — | — |
| Vladivostok | | 10·2 | 295 | 2 24 | 0 | 4 18 | 0 | 5·8 | 6·6 |
| Chiufeng | | 21·9 | 281 | e 4 44 | − 6 | e 8 39 | − 5 | — | 13·4 |
| Nanking | | 22·2 | 259 | i 4 54 | + 1 | e 9 11 | +21 | — | — |
| Ekaterinburg | | 54·9 | 318 | i 9 21 | − 7 | e 17 3 | − 5 | 27·1 | — |
| Tashkent | | 55·6 | 298 | i 9 27 | − 6 | e 17 7 | −10 | e 29·6 | 33·9 |
| Tiflis | | 71·2 | 309 | e 11 11 | − 7 | e 20 7 | −28 | e 38·5 | 47·2 |
| Tinemaha | z. | 72·2 | 57 | i 11 28 | + 4 | — | — | — | — |
| Pasadena | z. | 74·0 | 59 | i 11 27 | − 8 | — | — | — | — |
| Riverside | z. | 74·5 | 59 | e 11 30 | − 7 | — | — | — | — |

Additional readings :—
Sumoto eSE = +4m.23s. =S* −12s.
Long waves were also recorded at Kucino, Baku, and other European stations.

Aug. 7d. 3h. 2m. 50s. Epicentre 12°·7N. 97°·8W. N.2.

A = −·132, B = −·967, C = +·220 ; D = −·991, E = +·136 ;
G = −·030, H = −·218, K = −·975.

| | | △ ° | Az. ° | P. m. s. | O−C. s. | S. m. s. | O−C. s. | L. m. | M. m. |
|---|---|---|---|---|---|---|---|---|---|
| Tucson | | 23·0 | 331 | 5 2 | + 1 | e 9 10 | + 5 | e 10·8 | — |
| Columbia | | 26·1 | 33 | e 5 30 | 0 | e 9 53 | − 7 | — | — |
| La Jolla | | 26·8 | 322 | i 5 34 | − 2 | — | — | — | — |
| St. Louis | | 26·8 | 13 | e 6 35 | +59 | e 11 10 | +58 | — | — |
| Florissant | | 26·9 | 14 | e 5 35 | − 2 | e 10 10 | − 4 | — | — |
| Riverside | z. | 27·8 | 324 | i 5 45 | 0 | — | — | — | — |
| Mount Wilson | z. | 28·2 | 323 | i 5 51 | + 2 | — | — | — | — |
| Pasadena | | 28·2 | 322 | i 5 50k | + 1 | e 10 42 | + 7 | — | — |
| Chicago | | 30·4 | 15 | — | — | e 11 8 | − 2 | — | — |
| Tinemaha | | 30·4 | 327 | i 6 9 | 0 | — | — | — | — |
| San Juan | | 31·0 | 76 | e 6 20 | + 6 | e 11 22 | + 2 | e 15·2 | — |
| Berkeley | z. | 33·8 | 324 | — | — | i 14 47 | SSSS | — | — |
| Ukiah | | 34·7 | 325 | e 10 28 | ? | e 12 24 | + 7 | e 19·2 | — |
| Toronto | | 34·7 | 24 | e 6 48 | + 2 | e 12 2 | −15 | 21·2 | — |
| Bozeman | | 34·8 | 344 | — | — | e 12 16 | − 2 | e 18·2 | — |
| Fordham | | 35·1 | 33 | e 6 47 | − 3 | e 12 13 | −10 | — | — |
| Oak Ridge | | 37·4 | 33 | e 6 58? | −12 | e 12 52? | − 5 | e 24·2 | — |
| Ottawa | | 37·6 | 26 | e 7 10 | − 2 | e 12 56 | − 4 | e 20·2 | — |
| La Paz | z. | 41·3 | 135 | e 7 41 | − 2 | — | — | — | — |
| Victoria | E. | 41·5 | 335 | e 17 23 | S | (e 17 23) | (−28) | e 21·6 | 22·9 |
| Edinburgh | | 82·0 | 35 | — | — | e 27 10? | SS | — | — |
| Kew | | 84·7 | 39 | e 12 29 | − 3 | e 22 58 | [+ 1] | e 38·2 | — |
| Toledo | | 84·7 | 51 | e 12 26 | − 6 | — | — | e 30·7 | — |
| Granada | | 85·6 | 53 | 12 37 | + 1 | e 23 36 | +22 | 40·8 | — |
| Paris | | 87·1 | 41 | e 12 10? | −34 | — | — | 39·2 | — |
| Uccle | | 87·7 | 38 | e 12 49 | + 3 | e 23 20 | [+ 2] | e 40·2 | — |
| De Bilt | | 87·8 | 37 | 12 47 | 0 | e 23 27 | [+ 8] | e 36·2 | — |
| Strasbourg | | 90·4 | 40 | e 12 10? | −49 | e 23 10? | [−25] | e 54·2 | — |
| Copenhagen | | 90·5 | 32 | — | — | 23 34 | [− 2] | 39·2 | — |
| Stuttgart | | 91·3 | 40 | e 13 3 | 0 | e 23 46 | [+ 6] | e 47·2 | — |
| Triest | | 95·3 | 42 | — | — | e 24 10? | [+ 8] | e 46·2 | — |
| Tiflis | | 115·6 | 31 | — | — | e 29 56 | PS | e 45·6 | — |
| Baku | | 119·1 | 28 | — | — | e 30 6 | PS | 54·2 | 65·8 |
| Tashkent | | 124·7 | 12 | e 20 44 | PP | — | — | e 57·2 | 73·3 |

*For Notes see next page.*

NOTES TO AUGUST 7d. 3h. 2m. 50s.

Additional readings :—
St. Louis eN = +6m.57s.
Florissant $ePcP$ = +9m.44s. ; $T_o$ = 3h.2m.51s.
Pasadena i = +9m.5s. = $PcP$ +1s.
Tinemaha i = +9m.10s. = $PcP$ −1s.
San Juan ePP = +7m.12s., e = +7m.27s.
Berkeley iZ = +20m.23s.
Uccle eSS = +29m.10s.
Baku e = +36m.35s. = SS + 15s. and +47m.4s.
Tashkent e = +21m.2s. and +30m.40s. = PS − 4s.
Long waves were also recorded at Seattle, Kucino, and Alicante.

Aug. 7d. 12h. 34m. 39s. Epicentre 10°·0N. 127°·5E. (as on July 2d.) X.

A = −·600, B = +·781, C = +·174 ; D = +·793, E = +·609 ;
G = −·106, H = +·138, K = −·985.

| | △ ° | Az. ° | P. m. s. | O−C. s. | S. m. s. | O−C. s. | L. m. | M. m. |
|---|---|---|---|---|---|---|---|---|
| Manila | 7·9 | 307 | 1 52 | 0 | 3 19 | − 2 | — | 6·0 |
| Hong Kong | 17·7 | 315 | — | — | 7 27 | +10 | — | 9·6 |
| Nanking | 23·5 | 341 | e 5 14 | + 9 | e 9 27 | +13 | — | — |
| Batavia | 26·3 | 232 | e 6 38 | +66 | i 10 14 | +11 | — | — |
| Chiufeng | 31·7 | 344 | e 6 24 | + 4 | e 11 15 | −16 | — | — |
| Tashkent | 59·7 | 314 | e 9 57 | − 5 | e 17 21? | −51 | e 24·4 | 45·0 |
| Ekaterinburg | 69·1 | 327 | 11 2 | − 3 | 20 1 | − 9 | 33·4 | — |
| Baku | 74·2 | 309 | e 11 51 | +15 | e 21 19 | + 8 | 37·0 | 41·7 |
| Tiflis | 78·0 | 311 | e 11 55 | − 2 | e 22 0 | + 6 | e 40·8 | 50·8 |
| Pulkovo | 85·0 | 330 | — | — | e 22 54 | [− 5] | 35·4 | 47·2 |
| De Bilt | 100·8 | 328 | — | — | e 34 36 | ? | e 50·4 | — |

Additional readings :—
Tashkent e = +13m.53s. and +23m.21s. ?
Tiflis $ePcP$ = +12m.18s., ePSN = +22m.48s.
Long waves were also recorded at other European stations.

Aug. 7d. Readings also at 1h. (near Batavia and Soengei Langka), 4h. (La Paz, La Plata, near Kobe, Osaka, and Sumoto), 5h. (Frunse, near Andijan, Samarkand, and Tashkent), 8h. (Chiufeng, Nanking, Phu-Lien, Tashkent, Ekaterinburg, Pulkovo, and Edinburgh), 9h. (near Apia), 10h. (Tiflis, near Tyosi, and near La Paz), 11h. (Wellington, Nagoya, and near Mizusawa), 12h. (near Tananarive), 13h. (Tiflis), 16h. (Andijan and near Tashkent), 19h. (Mizusawa), 20h. (near Amboina), 22h. (Phu-Lien), 23h. (near Amboina).

Aug. 8d. Readings at 0h. (Baku, Ekaterinburg, Tashkent, Chiufeng, Vladivostok, Nanking, and near Phu-Lien), 4h. (Melbourne, Christchurch, and Wellington), 6h. (Ekaterinburg, Tashkent, Tyosi, near Mizusawa, and near Nagoya), 8h. (near Tyosi (2), near Casamicciola, and near Wellington), 9h. (Wellington), 10h. (Triest, Tashkent, Frunse, near Andijan, and Samarkand), 11h. (Hastings), 12h. (Wellington), 14h. (Nanking and near Taihoku), 15h. (Alicante and Toledo), 16h. (Fort de France), 18h. (Andijan and La Paz), 19h. (La Paz, San Juan, Huancayo, Pasadena, Tinemaha, near Santiago, and Tiflis), 20h. (La Paz, Sucre, and La Plata), 21h. (Tiflis).

**Aug. 9d. 23h. 2m. 46s.** Epicentre 15°·4S. 68°·5W. N.2.

A = +·353, B = −·897, C = −·266; D = −·930, E = −·367
G = −·097, H = +·247, K = −·964.

A *depth* of focus 0·020 has been assumed.

| | | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| La Paz | N. | +0·5 | 1·1 | 162 | i 0 30k | + 7 | — | — | i 0·8 | 1·1 |
| Sucre | | 0·0 | 4·8 | 140 | i 1 7 | − 1 | i 1 58 | − 5 | — | — |
| Huancayo | | −0·1 | 7·4 | 296 | 1 44 | 0 | i 2 27 | −39 | i 2·8 | — |
| La Plata | | −0·9 | 21·7 | 156 | 4 28 | −10 | 8 4 | −18 | — | 11·7 |
| San Juan | | −1·5 | 33·9 | 5 | e 6 27 | + 1 | i 11 45 | + 4 | e 14·5 | — |
| La Jolla | | −2·5 | 67·1 | 317 | i 10 35 | − 1 | — | — | — | — |
| Riverside | z. | −2·6 | 67·8 | 317 | i 10 42 | + 2 | — | — | — | — |
| Pasadena | | −2·6 | 68·4 | 317 | i 10 45a | + 1 | — | — | — | — |
| Mount Wilson | z. | −2·6 | 68·4 | 317 | i 10 45 | + 1 | — | — | — | — |
| Tinemaha | | −2·6 | 70·3 | 320 | i 10 56 | 0 | e 21 56 | ? | — | — |
| De Bilt | | −2·8 | 92·5 | 36 | — | — | e 23 17 | [−30] | e 55·2 | — |
| Stuttgart | | −2·8 | 93·7 | 40 | — | — | e 23 20 | [−34] | — | — |
| Copenhagen | | −2·9 | 97·7 | 33 | — | — | 23 50 | [−25] | — | — |
| Tashkent | | — | 135·4 | 45 | i 20 44 | ? | e 32 13 | PS | — | 81·5 |

Additional readings :—
La Plata eSZ = +8m.8s.
San Juan iPP = +7m.14s., eSS = +13m.3s.
La Jolla iNZ = +11m.19s. = $P_cP$ −2s.
Riverside iZ = +11m.26s. = $P_cP$ +2s.
Pasadena iZ = +11m.30s. = $P_cP$ +6s.
Mount Wilson iEZ = +11m.30s. = $P_cP$ +3s.
Tinemaha iZ = +11m.40s. = $P_cP$ +7s.
Tashkent i = +21m.19s.
Long waves were also recorded at Ekaterinburg.

Aug. 9d. Readings also at 1h. (Chiufeng, Ekaterinburg, Kucino, Pulkovo, and Vladivostok), 3h. (Mount Wilson, Pasadena, Riverside, Tinemaha, and near Apia), 4h. (Nagoya, Tyosi, and near Mizusawa), 6h. (near Toyooka), 10h. (near Batavia and Malabar), 12h. (Baku, Ekaterinburg, Chiufeng, near Andijan, Frunse, and Samarkand), 15h. (near Tiflis), 19h. (Pulkovo, Tashkent, and near Santiago), 20h. (near Amboina), 21h. (Manila), 22h. (La Paz), 23h. (near Tiflis).

**Aug. 10d. 4h. 42m. 6s.** Epicentre 9°·0S. 105°·0E. N.3.

A = −·256, B = +·954, C = −·156; D = +·966, E = +·259;
G = +·040, H = −·151, K = −·988.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Malabar | | 3·1 | 55 | i 0 44 | 0 | i 1 16 | − 4 | — | — |
| Batavia | | 3·3 | 33 | i 0 53 | + 6 | i 1 34 | + 9 | — | — |
| Medan | | 14·1 | 333 | e 3 27 | +10 | i 6 19 | +26 | — | — |
| Perth | | 25·1 | 158 | 9 54 | S | (9 54) | +11 | — | — |
| Chiufeng | | 50·1 | 12 | e 8 51 | − 1 | — | — | e 34·5 | — |
| Andijan | | 58·1 | 331 | e 9 49 | − 2 | — | — | — | — |
| Frunse | | 58·9 | 334 | e 9 57 | 0 | — | — | — | — |
| Samarkand | | 60·0 | 327 | e 9 54 | −10 | — | — | — | — |
| Tashkent | | 60·0 | 330 | i 10 7 | + 3 | i 18 21 | + 5 | e 34·9 | 44·1 |
| Tiflis | z. | 74·8 | 318 | 11 40 | + 1 | — | — | — | — |
| Ekaterinburg | | 75·2 | 337 | i 11 41 | 0 | e 21 26 | + 4 | 33·9 | — |
| Pasadena | z. | 133·2 | 51 | i 19 14 | [+ 2] | — | — | — | — |

Medan gives also i = +11m.17s.

Aug. 10d. Readings also at 0h. (near Manila), 6h. (Simferopol), 7h. (near Tiflis (2)), 9h. (Sebastopol, Simferopol, and Triest), 12h. (San Juan and near Tyosi), 13h. (De Bilt, Paris, Strasbourg, Stuttgart, Ekaterinburg, and Tashkent), 15h. (near Fort de France), 16h. (Suva and Wellington), 23h. (Mizusawa, Branner, near Berkeley, and Lick).

Aug. 11d. 8h. 54m. 7s. Epicentre 26°·0N. 98°·4E. N.1.

Probable error of epicentre ±0°·20.

A = −·131, B = +·889, C = +·438; D = +·989, E = +·146; G = −·064, H = +·434, K = −·899.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Calcutta | E. | 9·7 | 251 | 0 18 | −119 | 2 42 | −84 | 3·7 | 5·4 |
| | N. | 9·7 | 251 | −0 16 | −153 | 2 38 | −88 | 3·7 | 5·4 |
| Hong Kong | | 14·9 | 101 | 3 27 | 0 | 6 25 | +12 | 7·4 | 9·0 |
| Agra | | 18·2 | 278 | 4 7 | − 2 | 7 37 | + 8 | 9·8 | — |
| Dehra Dun | | 18·4 | 288 | 4 33 | +22 | 8 3 | +30 | 10·4 | 11·9 |
| Nanking | | 18·8 | 66 | i 4 20a | + 4 | i 7 4 | −38 | 10·1 | — |
| Hyderabad | | 20·3 | 249 | 4 38 | + 5 | 8 20 | + 8 | 9·8 | 15·3 |
| Chiufeng | | 20·4 | 42 | i 4 36k | + 2 | i 8 34 | SS | 9·9 | 13·2 |
| Arisan | | 20·5 | 91 | 4 38 | + 3 | 8 45 | SS | — | — |
| Zi-ka-wei | | 20·8 | 70 | 4 40 | + 2 | 8 42 | SS | — | 12·4 |
| Taihoku | | 20·9 | 88 | e 4 45 | + 6 | e 8 53 | SS | 11·3 | 13·1 |
| Medan | | 22·4 | 179 | i 4 52 | − 3 | i 9 55 | ? | i 11·4 | — |
| Isigakizima | | 23·4 | 88 | 5 4 | − 1 | 9 23 | +11 | — | — |
| Manila | | 24·0 | 114 | e 5 10 | 0 | i 9 39 | +16 | i 12·5 | 16·0 |
| Bombay | | 24·6 | 259 | 5 18 | + 2 | e 9 50 | +16 | e 12·3 | — |
| Kodaikanal | | 25·3 | 235 | i 5 23 | 0 | i 9 52 | + 6 | 15·1 | — |
| Frunse | | 25·8 | 317 | 5 31 | + 4 | 10 17 | +22 | — | — |
| Colombo | | 26·0 | 226 | 5 29 | 0 | 10 1 | + 3 | — | — |
| Andijan | | 26·1 | 311 | 5 35 | + 5 | 10 23 | +23 | — | — |
| Heizyo | | 26·4 | 53 | 5 14 | −19 | 9 24 | −41 | 13·6 | — |
| Zinsen | | 26·5 | 57 | e 5 33 | − 1 | e 10 24 | +17 | e 13·8 | 15·0 |
| Keizyo | | 26·8 | 57 | 5 37 | + 1 | 10 21 | + 9 | — | 17·2 |
| Taikyu | | 27·6 | 62 | e 5 47 | + 3 | 10 52 | +27 | 13·3 | — |
| Nagasaki | | 28·1 | 69 | e 5 49 | + 1 | e 10 52 | +18 | e 15·0 | — |
| Tashkent | | 28·4 | 310 | i 5 51 | 0 | 10 33 | − 5 | 15·9 | 18·5 |
| Hukuoka | | 28·8 | 67 | 5 54 | 0 | 10 58 | +13 | e 14·3 | 18·8 |
| Samarkand | | 29·5 | 305 | e 5 59 | − 2 | 11 6 | +10 | — | — |
| Hamada | | 30·2 | 66 | 6 9 | + 2 | 11 13 | + 6 | — | — |
| Simidu | | 30·8 | 68 | — | — | e 16 21 | ? | — | — |
| Koti | | 31·3 | 67 | — | — | e 11 53? | +29 | e 15·7 | — |
| Vladivostok | | 32·2 | 50 | i 6 26 | + 2 | 11 42 | + 4 | e 15·9 | 19·5 |
| Sumoto | | 32·5 | 66 | e 12 59 | SS | — | — | — | 19·7 |
| Toyooka | | 32·6 | 64 | 6 28 | 0 | — | — | 18·1 | 19·5 |
| Kobe | | 32·7 | 66 | — | — | e 15 25 | ? | e 15·9 | 18·9 |
| Osaka | | 33·0 | 66 | 6 56 | +24 | 13 53 | SS | 17·6 | 18·5 |
| Batavia | | 33·2 | 164 | i 6 28 | − 6 | — | — | i 16·9 | — |
| Nagoya | | 34·2 | 65 | 6 43 | + 1 | — | — | 18·7 | — |
| Nagano | | 35·4 | 63 | 6 54 | + 1 | 12 30 | + 3 | — | — |
| Oiwake | | 35·6 | 64 | 6 55 | + 1 | 12 33 | + 3 | — | — |
| Tokyo | | 36·6 | 65 | 6 50 | −13 | — | — | — | — |
| Tyosi | | 37·5 | 65 | e 7 14 | + 3 | — | — | e 18·9 | — |
| Sendai | | 37·7 | 60 | 7 11 | − 1 | — | — | — | — |
| Mizusawa | E. | 38·0 | 59 | e 7 15 | 0 | 13 34? | +28 | 19·3 | — |
| | N. | 38·0 | 59 | e 7 7 | − 8 | 14 50? | ? | 19·4 | — |
| Ekaterinburg | | 40·9 | 330 | i 7 42 | + 2 | i 13 55 | + 5 | i 21·4 | 27·3 |
| Baku | | 42·5 | 303 | e 7 55 | + 2 | i 14 22 | + 9 | 22·6 | 32·3 |
| Tiflis | | 46·4 | 305 | 8 25 | + 1 | 15 11 | + 1 | 18·6 | 33·3 |
| Kucino | | 52·3 | 322 | 9 21 | +12 | 16 51 | +18 | e 25·9 | 31·2 |
| Ksara | | 53·9 | 294 | e 9 23 | + 2 | 17 3 | + 9 | — | — |
| Pulkovo | | 56·8 | 327 | i 9 43 | + 1 | i 17 38 | + 4 | 27·9 | 34·4 |
| Helwan | | 58·5 | 291 | 9 55 | + 1 | 18 0 | + 4 | — | 39·0 |
| Upsala | E. | 63·2 | 326 | e 10 26 | − 1 | 19 2 | + 5 | e 32·9 | 35·5 |
| Budapest | | 64·2 | 313 | 10 32 | − 2 | — | — | e 27·4 | 38·4 |
| Vienna | | 65·8 | 314 | 10 42 | − 2 | 19 27 | − 3 | e 35·9 | 42·9 |
| Copenhagen | | 66·5 | 323 | 10 49 | 0 | 19 40 | + 1 | 35·9 | — |

*Continued on next page,*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Prague | | 66·6 | 317 | e 11 6? | +17 | e 19 43 | + 3 | — | 36·9 |
| Zagreb | | 66·6 | 312 | e 10 49 | 0 | e 19 43 | + 3 | e 37·4 | — |
| Potsdam | | 66·9 | 319 | i 10 51 | 0 | i 19 50 | + 7 | e 35·9 | 38·9 |
| Leipzig | | 67·6 | 318 | — | — | e 19 53 | + 1 | e 35·9 | 38·9 |
| Cheb | | 67·9 | 317 | e 10 57 | − 1 | e 20 2 | + 6 | e 35·9 | 38·9 |
| Trenta | | 68·1 | 304 | 10 23 | −36 | — | — | — | — |
| Jena | | 68·2 | 318 | e 10 59 | 0 | e 19 53 | − 6 | e 35·9 | 37·9 |
| Triest | | 68·2 | 312 | i 10 55k | − 4 | i 19 58 | − 1 | e 35·9 | 39·7 |
| Hamburg | | 68·4 | 321 | e 11 0 | − 1 | i 20 9 | + 7 | e 35·9 | 37·9 |
| Göttingen | | 69·0 | 319 | i 11 3 | − 2 | e 20 11 | + 2 | e 37·2 | 38·7 |
| Bergen | | 69·1 | 329 | — | — | e 19 57 | −13 | i 34·0 | — |
| Catania | | 69·5 | 303 | e 13 20 | PP | 20 14 | − 1 | — | — |
| Padova | | 69·5 | 312 | e 11 4 | − 4 | — | — | — | — |
| Rome | | 70·1 | 309 | 11 6 | − 5 | — | — | — | — |
| Stuttgart | | 70·3 | 316 | 11 13k | 0 | e 20 27 | + 2 | e 36·9 | — |
| Florence | | 70·4 | 310 | i 11 20 | + 7 | i 20 22 | − 4 | 33·9 | 39·9 |
| Prato | | 70·5 | 310 | i 11 9 | − 5 | 20 29 | + 2 | — | 38·9 |
| Chur | | 70·6 | 315 | e 11 12 | − 2 | e 20 8 | −20 | — | — |
| Piacenza | | 71·1 | 313 | 11 19 | + 2 | 20 23 | −11 | — | 44·6 |
| Zurich | | 71·1 | 315 | e 11 17 | 0 | e 20 33 | − 1 | — | — |
| Strasbourg | | 71·2 | 317 | i 11 15k | − 3 | i 20 39 | + 4 | e 35·9 | — |
| De Bilt | | 71·7 | 321 | i 11 21k | 0 | 20 48 | + 7 | e 38·9 | 40·4 |
| Adelaide | | 71·9 | 146 | — | — | e 26 43? | ? | e 34·4? | 42·8 |
| Neuchatel | | 72·2 | 315 | e 11 18 | − 6 | e 20 38 | − 9 | — | — |
| Uccle | | 72·6 | 320 | i 11 25k | − 1 | — | — | e 34·9 | 40·7 |
| Paris | | 74·4 | 317 | i 11 36 | − 1 | e 21 16 | + 3 | 29·9 | 48·9 |
| Edinburgh | | 74·8 | 326 | e 12 3 | −36 | e 21 18 | 0 | 39·9 | 42·3 |
| Kew | | 75·0 | 322 | i 11 40 | 0 | e 21 22 | + 2 | e 36·9 | 41·6 |
| Stonyhurst | | 75·3 | 324 | i 11 45 | + 3 | 21 57 | PS | — | 41·9 |
| Oxford | | 75·5 | 322 | i 11 43a | 0 | 21 27 | + 1 | e 36·9 | 46·6 |
| Melbourne | | 77·4 | 144 | — | — | e 21 35? | −12 | 36·4 | 46·9 |
| Riverview | | 78·0 | 138 | — | — | e 22 35 | PS | e 41·5 | — |
| Tortosa | | 78·8 | 310 | 12 3 | + 2 | — | — | e 27·9 | 44·0 |
| Alicante | | 80·6 | 308 | e 12 14 | + 3 | e 22 30 | + 8 | e 39·8 | — |
| Toledo | | 82·4 | 311 | e 12 19 | − 1 | e 22 39 | − 2 | e 39·4 | — |
| Almeria | | 82·7 | 308 | e 12 20 | − 2 | e 22 48 | + 4 | e 48·3 | — |
| Granada | | 83·3 | 309 | i 12 23 | − 2 | e 23 34 | PS | — | — |
| Sitka | | 85·5 | 26 | e 12 36 | 0 | e 23 21 | + 8 | e 41·2 | — |
| Tinemaha | z. | 108·1 | 31 | i 18 51 | PP | — | — | — | — |
| Ottawa | | 108·4 | 356 | e 19 56 | ? | e 28 35 | PS | e 53·9 | — |
| Toronto | | 110·3 | 358 | e 18 53? | PP | e 28 34 | PS | — | — |
| Mount Wilson | z. | 110·6 | 32 | i 19 7 | PP | — | — | — | — |
| Pasadena | z. | 110·6 | 32 | i 19 8 | PP | — | — | e 66·9 | — |
| Oak Ridge | | 110·8 | 351 | e 19 16 | PP | 28 40 | PS | e 49·9 | — |
| La Jolla | z. | 112·1 | 32 | i 19 19 | PP | — | — | — | — |
| Fordham | | 112·7 | 354 | e 21 48 | PPP | e 29 7 | PS | 48·9 | — |
| San Juan | | 133·1 | 340 | e 19 18 | [+ 6] | e 32 58 | ? | — | — |
| La Paz | z. | 164·3 | 305 | 20 1 | [+ 3] | — | — | — | — |
| Huancayo | | 164·9 | 336 | e 20 4 | [+ 5] | 30 53 | PPPP | — | — |

Additional readings :—
Hong Kong PP = +3m.39s.
Agra ePN = +4m.17s.
Nanking iE = +4m.27s. = PP +2s. and +4m.44s.
Chiufeng i = +5m.19s.
Zi-ka-wei iE = +4m.50s. = PP −3s.
Manila iEN = +5m.13s.
Zinsen eE = +10m.33s.
Taikyu eE = +10m.13s.
Sumoto eE = +13m.45s., eZ = +14m.17s., SN = +17m.17s., SEZ = +17m.41s.
Toyooka PN = +6m.37s.
Kobe eZ = +17m.58s.
Batavia i = +6m.31s. and +7m.40s. = PP +2s.
Tiflis eN = +8m.36s., PPE = +10m.21s., eSSE = +18m.20s.
Helwan PP = +13m.30s.
Vienna i = +12m.37s., PP = +13m.29s., PPP = +14m.52s., i = +16m.54s., $S_cS$ = +20m.26s., i = +21m.23s.

*Continued on next page.*

Copenhagen +14m.56s. and +24m.5s.
Zagreb ePP = +13m.23s., ePPP = +15m.29s.
Potsdam $iP_cPN$ = +11m.16s., $iP_cPE$ = +11m.19s., eN = +12m.59s., iPPE = +13m.24s., iPPP = +15m.17s., iPSE = +20m.0s., iE = +20m.24s., eEN = +20m.53s. = $S_cS$ +11s., eSSE = +23m.41s., eSSSEN = +27m.11s.
Cheb ePPP = +15m.13s.
Jena eP = +11m.5s., eSE = +20m.1s., and +20m.4s.
Triest iPP = +13m.32s., iPPP = +15m.11s., iPSE = +20m.24s., i = +21m.5s. = $S_cS$ +13s.
Göttingen iE = +15m.27s.
Stuttgart $eP_cPZ$ = +11m.37s., ePP = +13m.46s., ePPP = +15m.37s., eSS = +25m.5s.; $T_0$ = 8h.54m.0s.
Florence PP = +13m.58s.
Strasbourg PP = +15m.48s., SS = +28m.53s.?
De Bilt iPPZ = +14m.2s.
Neuchatel e = +20m.47s.
Uccle PP = +15m.59s., SS = +25m.32s.
Edinburgh i = +26m.13s. and +30m.0s.
Kew ePPZ = +14m.34s., eSSSE = +30m.1s.
Stonyhurst SSS = +31m.10s.
Melbourne e = +30m.46s.
Granada PP = +15m.41s.
Sitka ePP = +15m.59s., eSS = +29m.11s.
Mount Wilson eZ = +17m.48s.
San Juan e = +18m.39s. and +21m.58s., i = +22m.48s. = PKS +1s., e = +33m.48s.
Huancayo e = +33m.23s.
Long waves were also recorded at Muroto, Cape Town, San Fernando, Ivigtut, Pittsburgh, Chicago, and Bozeman.

Aug. 11d. 13h. 49m. 49s. Epicentre 31°·2N. 70°·3E. (as on 1927 Jan. 30d.). X.

A = +·288, B = +·805, C = +·518; D = +·941, E = −·337; G = +·175, H = +·488, K = −·855.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Andijan | 9·7 | 9 | e 2 14 | − 3 | — | — | — | — |
| Tashkent | 10·1 | 355 | 2 22 | 0 | — | — | e 3·7 | 5·4 |
| Frunse | 12·2 | 15 | e 2 49 | − 2 | e 4 55 | −13 | — | — |
| Ekaterinburg | 26·5 | 348 | e 5 41 | + 7 | — | — | 14·7 | — |

Additional readings:—
Tashkent e = +2m.31s., i = +3m.38s.?, and +3m.42s.?
Ekaterinburg $L_q$ = +12·6m.

Aug. 11d. Readings also at 0h. (Florence), 1h. (Hastings, Tyosi, Stuttgart, Naples, Trenta, Messina, near Catania, and near Apia), 2h. (Ekaterinburg, Tashkent, Manila, and Medan), 8h. (Edinburgh), 11h. (De Bilt, Potsdam, Stuttgart, Ekaterinburg, Tashkent, Tiflis, Medan, Vladivostok, Nanking, Hong Kong, Bombay, Chiufeng, and near Nagoya), 14h. (near Medan and near Mizusawa), 16h. (La Paz and Sucre), 17h. (near Manila), 18h. (near Malabar and near Triest).

Aug. 12d. 7h. 29m. 10s. Epicentre 26°·0N. 98°·4E. (as on 11d.). X.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Agra | E. | 18·2 | 278 | — | — | e 7 37 | + 8 | — | 12·7 |
| Nanking | | 18·8 | 66 | — | — | e 8 41 | +59 | i 10·9 | — |
| Chiufeng | | 20·4 | 42 | e 4 32 | − 2 | e 8 33 | +19 | i 11·8 | — |
| Manila | | 24·0 | 114 | i 5 6 | − 4 | 9 38 | +15 | i 13·3 | 16·2 |
| Frunse | | 25·8 | 317 | e 5 34 | + 7 | — | — | — | — |
| Tashkent | | 28·4 | 310 | — | — | e 10 26 | −12 | 15·5 | 17·7 |
| Ekaterinburg | | 40·9 | 330 | — | — | e 13 51 | + 1 | 20·8 | — |

Additional readings:—
Tashkent e = +10m.50s., +11m.56s. = SS +4s., +12m.36s., and +12m.56s.
Ekaterinburg e = +16m.51s. and +19m.28s.
Long waves were also recorded at Batavia, Medan, Hong Kong, Vladivostok, Copenhagen, De Bilt, and Potsdam.

Aug. 12d. 9h. 4m. 59s. Epicentre 14°·5N. 94°·0W. (as on 1924 July 2d.). X.

A = −·068, B = −·966, C = +·250; D = −·998, E = +·070;
G = −·017, H = −·249, K = −·968.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Tucson | 23·5 | 322 | 5 11 | + 6 | e 10 3 | +49 | 12·8 |
| Florissant | 24·6 | 8 | e 5 4 | −12 | e 9 22 | −12 | — |
| San Juan | 27·0 | 78 | e 5 35 | − 3 | (e 10 43) | +28 | e 10·7 |
| La Jolla | 28·0 | 315 | i 5 49 | + 2 | — | — | — |
| Pittsburgh | 28·8 | 23 | — | — | e 10 45 | 0 | e 14·2 |
| Mount Wilson | 29·2 | 318 | i 6 2k | + 4 | — | — | — |
| Pasadena | 29·3 | 316 | i 6 2k | + 3 | — | — | — |
| Tinemaha | 31·2 | 320 | i 6 12k | − 4 | — | — | — |
| Huancayo | 32·4 | 144 | e 6 25 | − 1 | — | — | e 13·0 |
| Oak Ridge | 34·1 | 30 | — | — | e 11 36 | −32 | — |

Additional readings:—
San Juan e = +5m.46s.
Pittsburgh e = +13m.9s.
Long waves were also recorded at Berkeley and Ekaterinburg.

Aug. 12d. 9h. 56m. 57s. Epicentre 46°·7N. 7°·2E. (as on 1931 Aug. 8d.). R.2.

A = +·680, B = +·086, C = +·728; D = +·125, E = −·992;
G = +·722, H = +·091, K = −·686.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Neuchatel | 0·3 | 331 | i 0 1 | − 3 | i 0 7 | − 1 | — | — |
| Sion | 0·5 | 165 | e 0 1 | − 6 | e 0 9 | − 4 | — | — |
| Basle | 0·9 | 17 | i 0 14 | + 1 | i 0 29 | + 6 | — | — |
| Zurich | 1·1 | 55 | e 0 19 | + 3 | e 0 39 | +11 | — | — |
| Chur | 1·6 | 85 | i 0 28 | + 5 | e 0 57 | +16 | — | — |
| Ebingen | 1·9 | 39 | e 0 29 | + 1 | 0 46 | − 3 | 1·4 | — |
| Ravensberg | 1·9 | 57 | 0 37 | + 9 | e 1 7 | $S_g$ | 1·3 | — |
| Strasbourg | 1·9 | 12 | 0 31 | + 3 | 1 6 | $S_g$ | — | — |
| Pavia | 2·1 | 138 | i 1 15 | ? | — | — | — | — |
| Piacenza | 2·4 | 134 | e 0 45 | $P_g$ | — | — | — | 1·9 |
| Karlsruhe | 2·4 | 19 | (0 46) | $P_g$ | (1 8) | S* | (1·4) | — |
| Stuttgart | 2·4 | 33 | e 0 43 | $P_g$ | e 1 9 | S* | — | — |
| Puy de Dôme | 3·1 | 253 | e 0 47 | + 3 | 1 22 | + 2 | — | — |
| Padova | 3·5 | 110 | e 1 57 | $S_g$ | 3 6 | ? | — | — |
| Paris | 3·8 | 306 | 1 2 | P* | 1 52 | S* | 2·0 | 2·0 |
| Prato | 4·0 | 135 | 1 21 | $P_g$ | i 2 1 | S* | — | 2·5 |
| Florence | 4·1 | 134 | e 1 27 | $P_g$ | 2 17 | $S_g$ | — | 3·0 |
| Uccle | 4·5 | 337 | e 1 26 | $P_g$ | i 2 18 | $S_g$ | — | — |
| Triest | 4·6 | 100 | e 1 29 | $P_g$ | e 2 36 | $S_g$ | — | — |
| Göttingen | 5·1 | 19 | (e 1 35) | $P_g$ | (2 44) | $S_g$ | — | — |
| Jena E. | 5·1 | 30 | (e 1 33) | $P_g$ | (e 2 42) | $S_g$ | — | (3·8) |
| De Bilt | 5·4 | 345 | — | — | e 2 59 | $S_g$ | 3·2 | 3·3 |
| Graz | 5;7 | 84 | e 1 45 | $P_g$ | i 3 7 | $S_g$ | — | 3·5 |
| Vienna | 6·4 | 73 | e 2 44 | S | (e 2 44) | + 1 | — | 4·1 |
| Potsdam | 6·8 | 32 | i 3 40 | $S_g$ | — | — | — | — |
| Hamburg E. | 7·1 | 13 | e 3 39 | $S_g$ | — | — | — | — |

Additional readings and notes:—
Ebingen $eP_g$ = +32s., eS* = +52., $eS_g$ = +59s.
Strasbourg $P_g$ = +33s., PP = +38s.
Karlsruhe readings have been *increased* by 1m.
Stuttgart $eS_g$ = +1m.19s., iEN = +1m.24s., i = +1m.36s. and +1m.51s.
Puy de Dôme i = +1m.9s.
Göttingen $iP_gN$ = (+1m.42s.), $iS_gN$ = (+2m.50s.) readings have been *increased* by 8m.
Jena eE = (+2m.47s.) readings have been *increased* by 1m.
Vienna S = +3m.30s., S* = +3m.42s.
Potsdam iE = +3m.43s. and +3m.49s., iEN = +3m.55s., iN = +4m.0s., iEN = +4m.10s., iE = +4m.16s. and +4m.23s., iN = +4m.54s.
Long waves were also recorded at Copenhagen and Tashkent.

Aug. 12d. Readings also at 2h. (Sucre, near La Paz, and near Medan), 4h. (Triest), 6h. (Frunse, Ekaterinburg, and Tashkent), 7h. (Calcutta, Frunse, Andijan, and near Samarkand), 8h. (Lick), 10h. (Vienna and near Balboa Heights), 12h. (Mount Wilson, Pasadena, Riverside, Mizusawa, near Tananarive (2), and near Tiflis), 13h. (near Tiflis and near Wellington), 15h. (Strasbourg), 17h. (Andijan, Samarkand, Tashkent, Tiflis, Bombay, Calcutta, Dehra Dun, Hyderabad, Baku, Kucino, Pulkovo, Copenhagen, Stuttgart, and Chiufeng), 18h. (Strasbourg), 19h. (near Branner), 22h. (Mizusawa), 23h. (Mizusawa and near Neuchatel).

Aug. 13d. 9h. 28m. 4s. Epicentre 34°·0S. 57°·0E. (as on 1933 Feb. 28d.). R.1.

Probable error of epicentre ±0°·24.

A = +·452, B = +·695, C = −·559; D = +·839, E = −·545;
G = −·305, H = −·469, K = −·829.

| | | △ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Tananarive | | 17·3 | 329 | e 3 58 | 0 | i 7 11 | + 2 | 7·5 | 7·9 |
| Cape Town | | 31·7 | 262 | 11 39 | S | (11 39) | + 8 | 15·4 | 20·5 |
| Kodaikanal | | 48·3 | 26 | i 8 38 | 0 | 15 41 | + 4 | 20·0 | — |
| Batavia | | 53·7 | 70 | 9 18 | − 1 | 16 49 | − 3 | — | — |
| Medan | | 54·4 | 55 | 9 28 | + 4 | 16 55 | − 6 | — | — |
| Bombay | | 55·0 | 19 | 9 24 | − 5 | 17 2 | − 7 | 24·5 | 30·2 |
| Hyderabad | | 55·4 | 25 | 12 1 | ? | 17 18 | + 3 | 20·6 | 28·0 |
| Calcutta | | 63·9 | 33 | 10 21 | −10 | 18 51 | −15 | 32·9 | — |
| Agra | E. | 64·3 | 22 | 10 30 | − 4 | 18 56 | −15 | — | — |
| | N. | 64·3 | 22 | e 10 37 | + 3 | e 19 5 | − 6 | — | — |
| Ksara | | 70·6 | 341 | 11 14 | 0 | e 20 43 | +15 | 34·9 | — |
| Sydney | | 74·9 | 121 | e 34 2 | ? | — | — | 37·9 | 40·0 |
| Andijan | | 76·1 | 13 | e 11 45 | − 2 | e 21 23 | −10 | 37·9 | — |
| Tashkent | | 76·1 | 10 | i 11 43 | − 4 | i 21 24 | − 9 | e 37·2 | 42·9 |
| Tiflis | | 76·5 | 351 | 11 47 | − 2 | e 21 34 | − 3 | e 34·4 | 44·8 |
| Manila | | 77·8 | 64 | i 11 54 | − 3 | i 21 41 | −11 | i 36·1 | 41·9 |
| Hong Kong | | 78·3 | 53 | 12 5 | + 6 | 21 46 | −11 | — | 44·8 |
| Frunse | | 78·6 | 14 | e 11 58 | − 2 | e 21 47 | −13 | — | — |
| Trenta | | 82·3 | 330 | e 11 56? | −24 | — | — | — | — |
| Rome | | 86·2 | 329 | e 12 48 | + 9 | — | — | — | — |
| Nanking | | 88·0 | 48 | 12 51a | + 3 | i 23 27 | −10 | — | 49·4 |
| Florence | | 88·2 | 330 | 11 56 | −53 | 21 56 | ? | 32·9 | 48·9 |
| Zi-ka-wei | Z. | 89·0 | 50 | 12 49 | − 4 | 16 17 | PP | 46·2 | 54·1 |
| Padova | | 89·2 | 331 | e 11 56 | −58 | 17 31 | PPP | — | — |
| Vienna | | 89·8 | 335 | i 12 57a | + 1 | 23 52 | − 2 | — | — |
| Almeria | | 89·8 | 318 | e 12 59 | + 3 | e 23 54 | 0 | e 50·9 | — |
| Alicante | | 89·8 | 320 | e 13 5 | + 9 | e 23 43 | −11 | e 46·5 | — |
| Piacenza | | 89·9 | 329 | 12 58 | + 1 | 23 38 | [+ 6] | — | 75·9 |
| Granada | | 90·8 | 317 | e 13 4 | + 3 | e 23 48 | {+ 7} | — | — |
| Malaga | | 90·9 | 317 | 13 3 | + 1 | 24 27 | +23 | — | 89·4 |
| Ekaterinburg | | 90·9 | 3 | i 13 1 | − 1 | i 23 53 | {+11} | 36·9 | 52·7 |
| Kucino | | 91·2 | 350 | 13 3 | 0 | 24 10 | + 3 | 37·9 | 51·0 |
| Chur | | 91·4 | 330 | e 13 4 | 0 | — | — | — | — |
| Chiufeng | | 92·0 | 41 | i 13 3k | − 4 | 25 13 | PS | e 42·4 | 49·2 |
| Zurich | | 92·2 | 330 | e 13 9 | + 1 | e 24 17 | 0 | — | — |
| Neuchatel | | 92·6 | 329 | e 13 9 | 0 | e 23 54 | {− 2} | — | — |
| Toledo | | 92·8 | 319 | e 13 12 | + 2 | e 23 56 | {− 1} | e 42·2 | — |
| Stuttgart | | 93·0 | 331 | 13 13k | + 2 | e 24 26 | + 2 | e 48·9 | 61·9 |
| Strasbourg | | 93·5 | 330 | i 13 15k | + 1 | 24 35 | + 7 | 48·9 | — |
| Potsdam | | 94·5 | 335 | e 13 20 | + 2 | i 24 4 | {− 7} | e 43·9 | 63·9 |
| Irkutsk | | 95·6 | 27 | e 13 20 | − 3 | 25 47 | PS | 49·9 | — |
| Paris | | 95·9 | 329 | e 13 23 | − 2 | — | — | 20·9 | 63·9 |
| Pulkovo | | 96·3 | 348 | 16 57 | PP | 23 59 | [− 9] | e 42·9 | 55·5 |
| Hamburg | | 96·5 | 335 | e 17 26 | PP | — | — | e 52·9 | — |
| Uccle | | 96·6 | 330 | e 13 30 | + 2 | — | — | e 37·9 | — |

*Continued on next page.*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| De Bilt | | 97·3 | 332 | i 13 32k | + 1 | e 24 20 | [+ 7] | e 47·9 | 60·8 |
| Copenhagen | | 97·4 | 338 | 13 31 | − 1 | 24 20 | [+ 7] | 49·9 | — |
| Kew | | 99·1 | 328 | e 13 42 | + 3 | — | — | e 49·9 | — |
| Oxford | | 99·7 | 328 | — | — | i 24 29 | [+ 5] | e 51·9 | 64·9 |
| Vladivostok | | 103·0 | 47 | 13 54 | − 3 | e 24 38 | [− 2] | e 54·9 | 61·5 |
| Edinburgh | | 103·4 | 330 | e 18 26 | PP | — | — | e 56·9 | — |
| Huancayo | | 115·4 | 234 | e 22 56 | ? | e 25 32 | [− 3] | e 46·9 | — |
| San Juan | | 127·3 | 268 | — | — | e 22 27 | ? | e 63·9 | — |
| Oak Ridge | | 139·3 | 298 | e 22 24 | PP | e 40 45 | SS | e 73·9 | — |
| Fordham | | 140·9 | 294 | e 19 20 | [− 3] | e 41 8 | SS | 66·9 | — |
| Ottawa | | 142·5 | 302 | e 19 28 | [+ 3] | e 38 2 | ? | e 71·9 | — |
| Georgetown | | 143·1 | 291 | i 19 31k | [+ 4] | e 22 49 | PP | — | — |
| Pittsburgh | | 145·4 | 294 | i 19 37 | [+ 2] | — | — | — | — |
| Florissant | | 153·4 | 290 | i 19 47 | [+ 1] | — | — | e 61·9 | — |
| Sitka | | 155·4 | 16 | e 20 17 | {− 6} | e 34 8 | SKSP | e 78·4 | — |
| Tucson | | 169·7 | 264 | e 24 35 | PP | e 31 56 | {−14} | 77·3 | — |
| Ukiah | | 174·9 | 2 | e 25 32 | PP | — | — | — | — |
| La Jolla | z. | 175·0 | 258 | i 20 11 | [+ 5] | — | — | — | — |
| Tinemaha | | 175·0 | 311 | i 20 12 | [+ 6] | — | — | — | — |
| Riverside | z. | 175·3 | 271 | i 20 11 | [+ 5] | — | — | — | — |
| Mount Wilson | z. | 175·9 | 274 | i 20 11 | [+ 4] | — | — | — | — |
| Pasadena | | 176·0 | 273 | i 20 10k | [+ 3] | — | — | e 85·9 | — |
| Berkeley | | 176·1 | 352 | i 19 58a | [− 9] | i 25 31 | PP | — | — |

Additional readings :—
Tananarive iEN = +4m.5s. =PP +0s. and +4m.13s., eE = +6m.32s., i = +7m.14s.
Cape Town +13m.3s. and S? = +13m.47s.
Medan i = +18m.16s.
Tiflis ePP = +14m.47s., ePPPE = +16m.50s., eSKSN = +22m.15s. =PS +11s., eE = +23m.0s., eSSZ = +26m.52s., eSSSZ = +29m.56s.
Manila iPEN = +11m.57s.
Hong Kong SS = +26m.56s.
Zi-ka-wei iZ = +16m.29s. =PP +12s.
Vienna i = +13m.52s., PP = +16m.34s.
Malaga PP = +16m.47s. and +18m.49s. =PPP +26s., PPPP? = +20m.17s., PS = +25m.11s.
Ekaterinburg iPP = +16m.37s., iSKS = +23m.39s., iPS = +25m.11s.
Kucino PP = +16m.37s., SKS = +23m.37s., PS = +25m.13s., SS = +29m.56s., SSS = +33m.32s.
Chiufeng PP = +16m.42s., PPP? = +18m.35s.
Zurich e = +23m.50s. =SKS +4s.
Neuchatel eSKS = +23m.33s.
Stuttgart iP$_e$PZ = +13m.24s., ePP = +17m.2s., e = +20m.50s., eSN = +23m.32s.
Strasbourg PP = +17m.11s., e = +20m.50s., PS = +25m.36s., SS = +31m.11s.
Potsdam iE = +15m.56s. and +17m.24s., iN = +24m.45s. =S +7s., eEN = +25m.50s. =PS +6s.
Irkutsk PP = +16m.43s., PPP = +19m.32s., SS = +31m.20s.
Paris e = +17m.32s. =PP +21s.
Pulkovo PPP = +19m.27s.
De Bilt eEN = +23m.1s.
Copenhagen +25m.8s. =S +4s. and +26m.1s. =PS −16s.
Kew ePPZ = +17m.45s.
Vladivostok ePP = +18m.6s.
Huancayo ePPS = +30m.53s., eSS = +35m.59s.
San Juan eSS = +38m.6s.
Oak Ridge eNE = +34m.51s.
Fordham i = +22m.32s. =PP +5s.
Ottawa eE = +22m.45s. =PP +8s.
Pittsburgh e = +22m.51s. =PP −2s. and +23m.15s. =PKS −5s.
Sitka e = +23m.46s. =PKS +14s., +23m.54s. =PP +3s. and +34m.31s. = SKSP +17s.
Tucson ePP = +25m.27s.
Ukiah e = +29m.11s., ePPP = +29m.12s.
Riverside iZ = +25m.42s. =PP +9s. and +28m.52s.
Pasadena iZ = +21m.50s. =PKP$_2$ −7s. and +25m.45s. =PP +9s., eZ = +26m.40s., iZ = +28m.53s., and +29m.57s. =PPP +12s.
Berkeley iZ = +21m.47s. =PKP$_2$ −10s., iE = +25m.54s. =PP +18s., iZ = +28m.52s. and +32m.44s.
Long waves were also recorded at Melbourne, Wellington, Ivigtut, Chicago, Dehra Dun, and other European stations.

Aug. 13d. Readings also at 0h. (Huancayo, San Juan, Berkeley, and near Branner), 3h. (near Neuchatel), 4h. (Andijan and near Neuchatel), 7h. (Mizusawa), 10h. (Tiflis and near Batavia), 11h. (Edinburgh, Paris, Strasbourg, Ukiah), 12h. (Neuchatel, La Jolla, Mount Wilson, Pasadena, Riverside, Tinemaha, and Suva), 13h. (Alicante (2) ), 14h. (near Tyosi), 15h. (Huancayo), 16h. (La Jolla, Mount Wilson, Pasadena, Riverside, Tinemaha, La Paz, and Samarkand), 18h. (near Tyosi), 19h. (near Mizusawa and near Samarkand), 20h. (near Glenmuick), 21h. (2) and 23h. (near Tyosi).

Aug. 14d. 22h. Epicentre in China, but no determination possible.

Tashkent P = 22h.15m.2s., iS = 19m.4s., eL = 20m., M = 22m.36s.
Calcutta P = 22h.18m.33s., S = 23m.41s., L = 27m.52s.
Chiufeng P = 22h.19m.32s., S = 22m.21s., L = 23m.40s., M = 25m.12s.
Phu-Lien 22h.20m.
Frunse eP = 22h.20m.19s., S = 25m.26s.
Agra PE = 22h.20m.40s.
Andijan eP = 22h.20m.41s.
Zinsen eE = 22h.21m.7s.
Keizyo eP = 22h.21m.12s., eS? = 25m.33s., eL? = 30m.18s.
Samarkand eP = 22h.21m.19s.
Ekaterinburg e = 22h.22m.20s. and 27m.59s., $L_q$ = 32m.30s., $L_r$ = 34m.6s.
Hong Kong P = 22h.25m.0s., S = 28m.9s., L = 29m.26s., M = 30m.15s.
Stuttgart eZ? = 22h.26m.23s., eL = 53m.
Bombay e = 22h.27m.0s., M = 35m.10s.
Pulkovo e = 22h.31m.20s., 35m.50s., and 38m.24s., eL = 41m., M = 45m.12s.
Tiflis eZ = 22h.32m.14s., 35m.10s., and 37m.51s., eLE = 41m.42s., ME = 45m.12s.
Mizusawa eS = 22h.32m.19s.
Baku e = 22h.32m.42s., eL = 37m.42s.
Florence eP = 22h.33m.0s., eS? = 40m.0s., M = 51m.0s.
Strasbourg e = 22h.37m.27s., 46m.13s., 51m.17s., 53m.47s., and 58m.16s., eL = 23h.0m.
De Bilt e = 22h.46m., eL = 50m., M = 55m.11s.
Long waves were also recorded at Hyderabad and other European stations.

Aug. 14d. Readings also at 0h. (Sitka and near Samarkand), 1h. (Tyosi), 2h. (La Paz), 3h. (near Samarkand (2) ), 6h. (near Mizusawa), 11h. (Huancayo), 12h. (Ukiah), 14h. (Nanking and near Taihoku), 18h. (Bombay, Andijan, and Samarkand), 20h. (Andijan, Chiufeng, De Bilt, and Stuttgart), 21h. (Hohenheim, Stuttgart, Ravensburg, near Chur and Zurich), 22h. (San Juan and Strasbourg).

Aug. 15d. 0h. 45m. 12s. Epicentre 38°·2N. 26°·4W. N.2.

Epicentre given by J. Agostinho in the report on the earthquake by the Meteorological Service of the Azores.

A = +·704, B = −·349, C = +·618; D = −·445, E = −·896; G = +·554, H = −·275, K = −·786.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Angra do Heroismo | | 0·8 | 305 | (0 9) | − 2 | (0 19) | − 2 | — | — |
| Toledo | | 17·4 | 78 | e 3 55 | − 4 | (e 7 54) | +43 | e 7·9 | — |
| Malaga | | 17·5 | 89 | i 3 58 | − 2 | 7 26 | +13 | 8·6 | — |
| Granada | | 18·0 | 88 | 4 8 | + 1 | 7 49 | +24 | 9·3 | — |
| Almeria | | 19·0 | 88 | e 4 21 | + 2 | e 7 58 | +12 | e 9·7 | — |
| Alicante | | 20·2 | 82 | e 4 37 | + 5 | e 8 31 | +21 | e 9·8 | — |
| Tortosa | N. | 20·8 | 75 | — | — | e 8 34 | +12 | — | 30·0 |
| Oxford | | 22·1 | 44 | e 4 43 | − 9 | i 9 4 | +16 | 11·1 | 12·7 |
| Kew | | 22·6 | 47 | e 4 56 | − 1 | e 9 7 | +10 | e 9·8 | — |
| Paris | | 22·9 | 53 | e 5 6 | + 6 | — | — | 9·8 | 10·8 |
| Durham | | 23·5 | 37 | — | — | 9 29 | +15 | — | 13·1 |
| Edinburgh | | 23·5 | 34 | i 5 13 | + 8 | i 9 31 | +17 | — | — |
| Uccle | | 25·0 | 50 | e 5 22 | + 2 | e 9 48 | + 7 | 11·8 | — |
| Neuchatel | | 25·8 | 59 | e 5 28 | + 1 | — | — | — | — |
| De Bilt | | 25·9 | 47 | e 5 35 | + 7 | e 10 3 | + 6 | e 11·8 | 13·9 |
| Strasbourg | | 26·6 | 56 | e 5 22 | −13 | e 10 0 | − 9 | e 12·8 | — |
| Ivigtut | | 26·7 | 337 | — | — | 10 28 | +18 | 11·8 | — |
| Piacenza | | 27·6 | 64 | e 6 18 | PP | 10 26 | + 1 | — | 20·1 |
| Stuttgart | | 27·6 | 56 | e 5 42 | − 2 | e 10 26 | + 1 | — | — |
| Florence | | 28·7 | 67 | e 5 58 | + 5 | — | — | — | 10·8 |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Hamburg | 29·2 | 46 | — | — | e 10 48? | − 3 | — | 18·8 |
| Cheb | 29·8 | 54 | e 3 48? | ? | e 10 48? | −13 | — | — |
| Triest | 30·4 | 63 | e 6 1 | − 8 | e 11 11 | + 1 | — | — |
| Potsdam | 30·6 | 49 | e 6 48? | +38 | e 11 12 | − 2 | — | 19·8 |
| Copenhagen | 31·1 | 43 | — | — | 11 25 | + 4 | 14·8 | — |
| Oak Ridge | 34·3 | 292 | e 6 33 | −10 | e 12 11 | 0 | e 15·8 | — |
| Ottawa | 36·9 | 298 | e 7 6 | 0 | e 12 12 | −38 | e 17·8 | — |
| San Juan | 39·8 | 251 | — | — | e 16 30 | SSS | — | — |
| Pulkovo | 41·3 | 40 | e 7 42 | − 1 | e 14 0 | + 4 | e 20·8 | 27·0 |
| Kucino | 45·3 | 47 | e 8 18 | + 3 | 15 54 | +59 | e 21·4 | 26·2 |
| Ekaterinburg | 57·4 | 41 | e 9 47 | + 1 | 17 41 | − 1 | 26·8 | — |
| Tashkent | 69·5 | 54 | e 11 6 | − 2 | e 15 18 | PPP | e 24·8 | 36·5 |

Additional readings and note :—
Angra do Heroismo readings have been *diminished* by 1m.
Malaga PPP = +4m.20s., e = +4m.54s.
Strasbourg PP = +5m.59s.
Potsdam eN = +12m.48s.? = SS + 4s.
Oak Ridge eNE = +7m.52s. = PP + 0s., eNW = +7m.56s. = PPP − 6s.
San Juan e = +18m.24s.
Long waves were also recorded at San Fernando, Göttingen, and Zurich.

Aug. 15d. 2h. 57m. 57s. Epicentre 29°·2N. 144°·0E. N.1.
(as given by the Japanese stations).

Probable error of epicentre ±0°·15.

A = −·706, B = +·513, C = +·488 ; D = +·588, E = +·809 ;
G = −·395, H = +·287, K = −·873.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Titizima | 2·7 | 217 | 0 34a | − 5 | 1 0 | − 9 | — | — |
| Hatidyozima | 5·3 | 319 | 1 16 | + 1 | 2 15 | 0 | — | — |
| Mera | 6·7 | 330 | 1 37 | + 2 | 2 50 | − 1 | — | — |
| Susaki | 6·9 | 324 | 1 40a | + 2 | 2 56 | 0 | — | — |
| Tyosi | 7·0 | 340 | e 1 40 | + 1 | 2 55 | − 4 | — | 3·3 |
| Yokohama | 7·2 | 331 | 1 44a | + 2 | 3 2 | − 2 | — | — |
| Numadu | 7·3 | 325 | 1 45 | + 1 | 2 58 | − 8 | — | — |
| Omaesaki | 7·3 | 320 | 1 45a | + 1 | 4 10 | $S_g$ | — | — |
| Tokyo | 7·4 | 332 | 1 45 | 0 | 3 3 | − 6 | — | — |
| Mito | 7·7 | 339 | 1 39 | −10 | 2 23 | $P_g$ | — | — |
| Kakioka | 7·7 | 337 | 1 49 | 0 | 3 13 | − 3 | — | — |
| Hunatu | 7·7 | 327 | 1 49 | 0 | 3 6 | −10 | — | — |
| Hamamatu | 7·7 | 318 | 1 51 | + 2 | 3 11 | − 5 | — | — |
| Tukubasan | 7·7 | 336 | 1 50 | + 1 | 3 15 | − 1 | — | — |
| Kumagaya | 7·9 | 332 | 1 53k | + 1 | 3 13 | − 8 | — | — |
| Kohu | 7·9 | 326 | 1 52 | 0 | 3 21 | 0 | — | — |
| Siomisaki | 8·2 | 303 | 1 55 | − 1 | 3 24 | − 5 | — | — |
| Maebasi | 8·3 | 331 | 1 53 | − 5 | 3 27 | − 4 | — | — |
| Nagoya | 8·4 | 320 | 2 1 | + 2 | 3 42 | + 8 | — | 3·7 |
| Kameyama | 8·5 | 313 | 2 1k | + 1 | 3 32 | − 4 | — | — |
| Gihu | 8·7 | 317 | 2 3k | 0 | 3 40 | − 1 | — | — |
| Hikone | 8·9 | 315 | 2 8 | + 2 | 3 48 | + 2 | — | — |
| Nagano | 8·9 | 328 | 2 6 | 0 | 3 45 | − 1 | — | — |
| Osaka | 9·0 | 310 | 2 8k | + 1 | 3 58 | + 9 | — | 4·3 |
| Osaka B. | 9·0 | 310 | 2 9 | + 2 | 3 49 | 0 | — | — |
| Hukusima | 9·0 | 342 | 2 6k | − 1 | 3 45 | − 4 | — | — |
| Wakayama | 9·0 | 306 | 2 9 | + 2 | 3 49 | 0 | — | — |
| Kyoto | 9·1 | 312 | 2 9k | 0 | — | — | — | — |
| Kobe | 9·3 | 309 | 2 11 | 0 | — | — | e 5·6 | 7·4 |
| Sumoto | 9·3 | 306 | 2 11k | 0 | e 5 24 | ? | — | 7·6 |
| Sendai | 9·4 | 345 | 2 12k | − 1 | 3 53 | − 6 | — | — |
| Toyama | 9·4 | 324 | 2 15 | + 2 | 4 6 | + 7 | — | — |
| Koti | 9·9 | 299 | i 2 21 | + 2 | (4 52) | S* | 4·9 | — |
| Toyooka | 9·9 | 312 | 2 21k | + 2 | — | — | e 5·6 | 8·2 |
| Wazima | 10·1 | 326 | 2 23 | + 1 | — | — | — | — |

*Continued on next page.*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Mizusawa | | 10·2 | 347 | i 2 24 | 0 | i 4 12 | − 6 | — | — |
| Morioka | | 10·8 | 348 | 2 30 | − 2 | 4 27 | − 6 | — | — |
| Akita | | 11·0 | 344 | 3 32 | +57 | 5 30 | +52 | — | — |
| Miyazaki | | 11·1 | 288 | 2 43k | + 7 | 4 45 | + 4 | — | — |
| Hamada | | 11·6 | 303 | 2 43 | 0 | 4 57 | + 4 | — | — |
| Hukuoka | | 12·4 | 294 | e 2 55 | + 1 | e 5 14 | + 1 | — | — |
| Hukuoka B. | | 12·4 | 294 | 2 54 | 0 | 5 12 | − 1 | — | — |
| Nagasaki | | 12·6 | 290 | e 2 57k | + 1 | e 5 19 | + 2 | e 8·6 | — |
| Nake | | 12·7 | 270 | 3 0 | + 2 | 6 2 | S* | — | — |
| Sapporo | | 14·0 | 353 | 3 16 | + 1 | — | — | — | — |
| Taikyu | | 14·5 | 301 | 3 23 | + 1 | 6 18 | SS | — | — |
| Keizyo | | 16·4 | 306 | 3 47k | + 1 | 6 46? | − 2 | 9·2 | — |
| Zinsen | | 16·7 | 304 | i 3 51k | + 1 | 7 3? | SS | e 9·5 | — |
| Heizyo | E. | 18·0 | 308 | i 4 8 | + 1 | e 7 30 | + 5 | — | — |
| Isigakizima | | 18·4 | 259 | 4 5 | − 6 | 7 30 | − 3 | — | — |
| Zi-ka-wei | Z. | 19·6 | 282 | 4 21 | − 4 | 7 59 | + 1 | — | 9·8 |
| Taihoku | | 20·4 | 263 | 4 39 | + 5 | 8 4 | −10 | — | — |
| Nanking | | 21·8 | 284 | i 4 49 | 0 | i 8 48 | + 6 | — | — |
| Chiufeng | | 25·1 | 303 | i 5 22k | + 1 | e 9 46 | + 3 | e 13·1 | 17·8 |
| Manila | | 25·8 | 240 | 5 23 | − 4 | i 9 49 | − 6 | 12·5 | 14·9 |
| Hong Kong | | 27·6 | 263 | 5 44 | 0 | 10 39 | +14 | 13·4 | 17·7 |
| Irkutsk | | 37·2 | 319 | e 7 11 | + 3 | e 12 31 | −23 | 20·0 | — |
| Calcutta | | 50·0 | 276 | e 8 49 | − 2 | 16 2 | + 1 | 25·6 | — |
| Frunse | | 56·2 | 304 | 9 28 | − 9 | 16 58 | −27 | — | — |
| Andijan | | 58·2 | 302 | e 8 51? | −61 | e 16 59? | −53 | — | — |
| Tashkent | | 60·4 | 303 | i 10 4 | − 3 | i 18 14 | − 7 | e 27·1 | 35·2 |
| Sitka | | 60·9 | 38 | e 10 8 | − 3 | 18 29 | + 1 | e 29·1 | — |
| Ekaterinburg | | 62·4 | 322 | i 10 20 | − 1 | 18 48 | + 1 | 29·1 | — |
| Samarkand | | 62·5 | 302 | e 10 17 | − 5 | 18 42 | − 6 | — | — |
| Bombay | | 64·8 | 278 | e 10 32 | − 5 | e 19 13 | − 4 | — | — |
| Kucino | | 74·5 | 326 | — | — | e 20 8 | −66 | 34·7 | 39·6 |
| Berkeley | E. | 75·2 | 55 | — | — | e 21 20 | − 2 | — | — |
| Pulkovo | | 75·8 | 331 | e 11 44 | − 1 | 21 24 | − 5 | e 30·0 | 41·7 |
| Tiflis | | 77·3 | 311 | e 11 52 | − 2 | e 22 4 | PS | 41·5 | 48·6 |
| Tinemaha | | 78·5 | 54 | i 12 0 | 0 | — | — | — | — |
| Pasadena | | 79·9 | 56 | i 12 7a | 0 | — | — | — | — |
| Mount Wilson | E. | 80·0 | 56 | i 12 6 | − 2 | — | — | — | — |
| Riverside | Z. | 80·5 | 56 | i 12 8 | − 2 | — | — | — | — |
| La Jolla | | 81·2 | 57 | i 12 10 | − 4 | — | — | — | — |
| Copenhagen | | 85·6 | 334 | — | — | 23 3 | [ 0] | 44·1 | — |
| Potsdam | | 87·9 | 332 | — | — | e 23 9 | [−10] | e 46·1 | 52·1 |
| Cheb | | 89·8 | 331 | — | — | e 23 3? | [−29] | — | 50·1 |
| De Bilt | | 91·1 | 336 | — | — | e 23 32 | [− 7] | 43·1 | 49·8 |
| Stuttgart | | 92·2 | 332 | e 16 45 | PP | e 23 35 | [−11] | e 48·1 | — |
| Florence | | 95·2 | 327 | e 16 28 | PP | e 23 53 | [− 9] | 45·1 | 49·1 |
| Ottawa | | 97·0 | 27 | — | — | e 24 3? | [− 8] | 46·0 | — |
| Oak Ridge | N.W. | 101·1 | 26 | — | — | e 24 24 | [− 7] | e 54·1 | — |
| La Paz | Z. | 147·9 | 73 | 19 44 | [+ 5] | — | — | — | — |

**Additional readings :—**
**Tyosi $P_g$ = +1m.46s., $S_g$ = +3m.1s.**
**Osaka i = +2m.24s.**
**Kobe iE = +2m.18s. and +2m.24s.**
**Sumoto iE = +3m.52s. =S −4s.**
**Toyooka PZ = +2m.24s.**
**Nanking iPP = +5m.3s., iSS = +8m.56s.**
**Chiufeng PP? = +6m.6s., i = +10m.1s.**
**Manila iZ = +5m.28s., iEN = +5m.35s.**
**Irkutsk PP = +8m.37s., eSS = +15m.27s.**
**Kucino e = +26m.26s. and +28m.45s. =SSS −9s.**
**Berkeley eE = +26m.16s. =SS −15s. and +34m.52s.**
**Tiflis eEZ = +14m.50s. =PP +9s., eE = +24m.0s.**
**De Bilt e = +25m.5s. =PS +1s.**
**Stuttgart ePS = +25m.14s.**
**Ottawa eE = +31m.39s. =SS +19s.**
**Oak Ridge eNW = +32m.14s. =SS −3s.**
**Long waves were also recorded at Honolulu T.H., Ukiah, Baku, and other European stations.**

Aug. 15d. 20h. Shock near West Indies. The recorded phases are as follows :—
San Juan eP = 20h.5m.35s., iS = 9m.10s., L = 10m.7s.
St. Louis eP = 20h.7m.25s., eS = 14m.5s.
La Paz PZ = 20h.8m.35s.
Oak Ridge eNW = 20h.9m.9s. and 13m.19s., eLNW = 17m.0s.
Riverside iZ = 20h.11m.56s.
La Jolla i = 20h.12m.0s.
Pasadena eP = 20h.12m.0s.
Santa Barbara eZ = 20h.12m.10s.
Stuttgart eZ = 20h.14m.0s., eL = 28m.
De Bilt e = 20h.18m.30s., eL = 27m.
Tashkent e = 20h.32m.52s., eL = 49m., M = 59m.42s.
With long waves at Pulkovo, Kucino, and other European stations.

Aug. 15d. Readings also at 2h. (Ksara and near Santiago), 4h. (near Algiers), 6h. (Amboina and near Santiago), 10h. (Ekaterinburg, Tashkent, Hong Kong, Chiufeng, and near Manila), 11h. (Copenhagen, Pulkovo, De Bilt, Paris, Strasbourg, and Stuttgart), 13h. (near Lick), 14h. (Susaki and Wellington), 16h. (De Bilt), 20h. (near Mizusawa), 23h. (Berkeley, Ukiah, Pasadena, Tucson, St. Louis, Chicago, Pittsburgh, and Oak Ridge).

Aug. 16d. Readings at 0h. (near Amboina), 1h. (Medan), 4h. (Sumoto, Simidu, near Hukuoka, and Nagasaki), 7h. (Ekaterinburg and Tashkent (2) ), 8h. (Frunse), 16h. (Triest and Vladivostok), 17h. (La Paz), 18h. (near Samarkand), 22h. (near Tananarive), 23h. (Baku, Tiflis, and Tashkent).

Aug. 17d. 6h. 24m. 40s. Epicentre 37°·0N. 28°·7E. (as on 1927 Feb. 19d.). R.2.
A = +·700, B = +·383, C = +·602 ; D = +·480, E = −·877 ;
G = +·528, H = +·289, K = −·799.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Ksara | 6·7 | 116 | e 1 38 | + 3 | 3 2 | +11 | — | — |
| Yalta | 8·5 | 27 | e 1 58 | − 2 | — | — | — | — |
| Simferopol | 8·9 | 25 | e 2 4 | − 2 | — | — | — | — |
| Belgrade | 9·9 | 324 | — | — | e 5 2 | S* | — | 5·9 |
| Budapest | 12·6 | 329 | 6 59 | $S_g$ | — | — | — | — |
| Tiflis | 13·3 | 64 | e 3 10 | + 4 | — | — | e 7·3 | 8·9 |
| Triest | 14·1 | 313 | e 3 30 | +13 | — | — | e 7·2 | i 9·3 |
| Vienna | 14·4 | 325 | e 3 20? | − 1 | — | — | — | 8·8 |
| Prato | 15·0 | 303 | i 3 32 | + 4 | — | — | — | — |
| Padova | 15·1 | 309 | e 3 44 | +14 | — | — | — | — |
| Piacenza | 16·4 | 306 | e 3 50 | + 4 | — | — | — | 13·0 |
| Baku | 16·8 | 72 | — | — | e 8 1 | ? | e 9·5 | — |
| Cheb | 17·5 | 323 | e 3 20? | −40 | — | — | e 8·3 | 11·3 |
| Stuttgart | 18·4 | 316 | e 4 11 | 0 | e 7 48 | +15 | e 10·3 | 12·2 |
| Potsdam | 18·8 | 329 | e 4 14 | − 2 | e 7 56 | +14 | e 10·3 | 11·1 |
| Strasbourg | 19·1 | 314 | e 3 20? | −60 | e 8 9 | +21 | — | — |
| Copenhagen | 21·6 | 335 | 4 45 | − 1 | 8 56 | +18 | 13·3 | — |
| Uccle | 22·1 | 316 | e 4 52 | 0 | e 8 56 | + 8 | e 12·3 | — |
| De Bilt | 22·4 | 320 | — | — | e 9 6 | +13 | e 11·8 | 13·1 |
| Pulkovo | 22·7 | 4 | i 4 57 | − 1 | 9 14 | +15 | 12·8 | — |
| Kew | 25·0 | 315 | — | — | e 9 20? | −21 | — | — |
| Oxford | 25·7 | 315 | — | — | 10 40 | SS | 14·9 | — |
| Ekaterinburg | 29·0 | 37 | e 5 56 | 0 | e 10 46 | − 2 | — | — |
| Tashkent | 31·5 | 69 | — | — | e 12 56 | SS | e 18·3 | 22·5 |

Additional readings :—
Belgrade e = +5m.22s.
Potsdam iE = +4m.21s. = PP − 4s.
Strasbourg e = +11m.5s.
Long waves were also recorded at Edinburgh and Paris.

Aug. 17d. Readings also at 0h. (Baku, Ekaterinburg (2), Tashkent, and Tiflis), 2h. (La Paz), 5h. (Ekaterinburg and Tashkent), 7h. (near Nagasaki), 9h. (near Tananarive and near Wellington), 10h. (Pulkovo, Ekaterinburg, and Tiflis), 12h. (Andijan and near Samarkand), 13h. (near Apia), 16h. (near Apia and near Wellington), 18h. (near St. Louis), 19h. (Ekaterinburg and Tashkent), 23h. (near Taihoku).

Aug. 18d. 8h. 19m. 40s. Epicentre 28°·5N. 130°·0E. N.3.

A = − ·565, B = + ·673, C = + ·477 ; D = + ·766, E = + ·643 ;
G = − ·307, H = + ·366, K = − ·879.

| | | △ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Nagasaki | | 4·3 | 358 | e 1 1 | 0 | 1 47 | − 3 | — | — |
| Simidu | | 5·0 | 30 | e 1 17 | + 6 | 2 14 | + 6 | — | — |
| Hukuoka | | 5·1 | 4 | e 1 10 | − 3 | e 2 5 | − 5 | — | — |
| Koti | | 5·9 | 30 | e 1 50 | $P_g$ | — | — | — | — |
| Sumoto | | 7·2 | 34 | 1 36 | − 6 | 3 29 | S* | — | 4·0 |
| Kobe | | 7·6 | 34 | e 1 57 | + 9 | e 3 17 | + 3 | — | 4·0 |
| Osaka | | 7·8 | 36 | 1 46 | − 5 | 3 40 | S* | — | 4·8 |
| Toyooka | | 8·1 | 29 | e 1 56 | + 1 | 3 42 | +16 | — | 4·3 |
| Nagoya | | 8·9 | 40 | 2 2 | − 4 | e 4 37 | $S_g$ | — | — |
| Keizyo | E. | 9·4 | 345 | e 2 42 | +29 | (4 23) | S* | 4·4 | — |
| Zinsen | E. | 9·5 | 343 | e 2 54 | +40 | e 4 2 | + 1 | — | — |
| Nanking | | 10·3 | 293 | i 2 34 | + 9 | e 6 5 | ? | — | — |
| Manila | | 16·2 | 213 | e 4 8 | +24 | 7 21 | +38 | 9·0 | — |
| Chiufeng | | 16·3 | 319 | e 3 48 | + 3 | e 6 52 | + 7 | 9·0 | 11·6 |
| Ekaterinburg | | 55·3 | 323 | i 9 32 | + 1 | — | — | 30·3 | 35·6 |

Additional readings :—
Toyooka ePN = +2m.1s.
Long waves were also recorded at Hong Kong, Baku, Kucino, Tashkent, Pulkovo, Copenhagen, De Bilt, Paris, and Strasbourg.

Aug. 18d. Readings also at 3h. (La Paz and near Huancayo), 4h. (near Mizusawa), 9h. (near Santiago), 13h. (near Tananarive), 15h. (near La Paz (2) ), 16h, (near Nagoya), 18h. (near St. Louis and near Hukuoka), 22h. (Columbia), 23h. (near Taihoku).

Aug. 19d. Readings at 0h. (Huancayo), 1h. (near Tyosi), 2h. (La Paz), 4h. (near Sumoto and near Tyosi), 6h. (Chiufeng, Ekaterinburg, Tashkent, and near Samarkand), 7h. (Fort de France and near Tyosi), 10h. (Bozeman), 15h. (near Mizusawa, near Berkeley, Branner, and Lick), 17h. (Port au Prince), 18h. (near Nagoya), 21h. (near Apia (2) ), 22h. (Trenta), 23h. (La Paz, La Plata, and near Santiago).

Aug. 20d. 11h. 45m. 11s. Epicentre 13°·0N. 124°·7E. (as on 1932 July 11d.). R.1.

Probable error of epicentre ±0°·26.

A = − ·555, B = + ·801, C = + ·225 ; D = + ·822, E = + ·569 ;
G = − ·128, H = + ·185, K = − ·974.

| | | △ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Manila | | 4·0 | 294 | i 1 1 | + 4 | i 1 53 | S* | — | — |
| Palau | | 11·1 | 119 | 2 38 | + 2 | 4 33 | − 8 | — | — |
| Taihoku | | 12·4 | 346 | e 3 5 | +11 | — | — | — | — |
| Hong Kong | | 13·7 | 314 | 3 9 | − 2 | 5 24 | −20 | 6·0 | 8·3 |
| Nake | | 16·0 | 16 | 3 40 | − 1 | 6 51 | +13 | — | — |
| Zi-ka-wei | z. | 18·4 | 351 | 4 15 | + 4 | i 7 38 | + 5 | 9·3 | 21·6 |
| Phu-Lien | | 19·0 | 297 | 4 18 | − 1 | 7 49 | + 3 | 8·8 | — |
| Nanking | | 19·8 | 345 | e 4 30 | + 3 | e 8 1 | − 1 | i 10·7 | — |
| Miyazaki | | 19·9 | 17 | 4 25 | − 4 | 7 47 | −17 | — | — |
| Nagasaki | | 20·3 | 13 | e 4 32 | − 1 | e 8 19 | + 7 | — | — |

*Continued on next page.*

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Simidu | | 21·2 | 19 | 4 43 | + 1 | e 8 36 | + 6 | — | — |
| Muroto | | 22·0 | 22 | e 4 45 | − 6 | e 8 25 | −21 | — | — |
| Koti | | 22·1 | 20 | e 4 57 | + 5 | e 8 54 | + 6 | — | — |
| Taikyu | | 23·1 | 11 | 4 57 | − 5 | 9 11 | + 4 | 11·6 | — |
| Sumoto | | 23·2 | 22 | 5 2 | − 1 | 9 10 | + 2 | 11·5 | 12·2 |
| Kobe | | 23·6 | 22 | e 5 3 | − 3 | e 8 44 | −32 | e 9·2 | 12·9 |
| Osaka | | 23·8 | 22 | 3 29 | ? | 8 32 | −47 | — | — |
| Toyooka | E. | 24·4 | 20 | 5 27 | +13 | 9 33 | + 3 | — | — |
| | N. | 24·4 | 20 | 5 16 | + 2 | 9 31 | + 1 | — | — |
| Zinsen | E. | 24·6 | 4 | e 4 53 | −23 | e 9 31 | − 3 | — | — |
| Nagoya | | 24·8 | 24 | 5 19 | + 1 | 9 42 | + 5 | — | — |
| Batavia | | 26·2 | 224 | e 6 53 | +82 | i 11 26 | +84 | 17·4 | — |
| Tokyo | | 26·4 | 28 | 5 45 | +12 | — | — | — | — |
| Oiwake | | 26·5 | 26 | 5 39 | + 5 | 9 50 | −17 | — | — |
| Medan | | 27·4 | 252 | e 5 47 | + 5 | i 10 41 | +19 | 14·8 | — |
| Chiufeng | | 28·1 | 346 | 5 45a | − 3 | i 11 7 | +33 | e 14·8 | 17·9 |
| Mizusawa | E. | 29·9 | 26 | 5 49 | −15 | 16 31 | (−12) | — | — |
| | N. | 29·9 | 26 | 6 8 | + 4 | 16 5 | (−38) | — | — |
| Calcutta | | 35·8 | 290 | e 10 14 | ? | 16 17 | ? | 22·2 | 25·7 |
| Irkutsk | | 42·6 | 344 | e 7 51 | − 2 | e 14 7 | − 8 | 22·8 | 26·3 |
| Colombo | | 44·6 | 268 | 8 0 | −10 | — | — | — | 28·8 |
| Hyderabad | | 44·8 | 283 | — | — | 14 56 | + 9 | 18·4 | 27·8 |
| Perth | | 45·7 | 190 | e 13 49 | ? | — | — | — | — |
| Dehra Dun | | 46·3 | 300 | 15 39 | S | 20 19 | ? | 28·1 | 34·8 |
| Kodaikanal | | 46·3 | 274 | 8 25 | + 2 | 15 14 | + 5 | 23·2 | — |
| Adelaide | | 49·7 | 166 | — | — | e 24 20 | ? | — | — |
| Bombay | | 50·1 | 285 | i 8 57 | + 5 | i 16 5 | + 3 | — | 32·4 |
| Frunse | | 52·4 | 315 | e 9 18 | + 9 | 16 51 | +17 | — | — |
| Riverview | | 53·2 | 152 | i 16 44 | S | (i 16 44) | − 1 | e 29·0 | — |
| Andijan | | 53·3 | 312 | e 10 23 | (− 5) | — | — | — | — |
| Melbourne | | 54·2 | 161 | i 12 42 | PPPP | i 16 59 | + 1 | 29·3? | 38·1 |
| Tashkent | | 55·4 | 313 | i 9 31 | − 1 | i 17 17 | + 2 | e 26·8 | 32·3 |
| Ekaterinburg | | 65·1 | 328 | i 10 35 | − 4 | i 19 14 | − 7 | 37·3 | 39·0 |
| Baku | | 70·2 | 310 | 11 15 | + 3 | i 20 38 | +14 | 33·0 | 42·4 |
| Wellington | | 71·3 | 143 | — | — | e 20 32 | − 5 | — | — |
| Honolulu T.H. | | 73·9 | 71 | — | — | e 21 7 | 0 | — | — |
| Tiflis | | 73·9 | 311 | 11 32 | − 2 | e 21 9 | + 2 | e 35·3 | 46·6 |
| Theodosia | | 80·4 | 314 | e 12 12 | + 2 | — | — | — | — |
| Pulkovo | | 81·0 | 330 | 12 11 | − 2 | i 22 15 | −11 | 39·8 | 46·8 |
| Simferopol | | 81·3 | 315 | e 12 13 | − 2 | — | — | — | — |
| Ksara | | 81·9 | 304 | 12 22 | + 4 | 22 35 | − 1 | — | — |
| Tananarive | E. | 82·4 | 248 | — | — | e 26 58 | ? | e 39·3 | 46·4 |
| Sitka | | 84·4 | 32 | — | — | i 22 51 | [− 4] | i 39·2 | — |
| Helwan | | 86·4 | 300 | e 12 38 | − 2 | e 23 1 | [− 8] | — | 57·5 |
| Upsala | | 87·1 | 331 | — | — | e 23 1 | [−13] | e 42·8 | 49·1 |
| Copenhagen | | 91·3 | 329 | 13 7 | + 4 | 23 33 | [− 7] | — | — |
| Vienna | | 92·1 | 322 | i 13 6k | − 1 | — | — | e 47·8 | 54·8 |
| Potsdam | | 92·4 | 326 | e 16 49? | PP | e 23 19 | [−28] | e 44·8 | 51·8 |
| Hamburg | | 93·5 | 327 | — | — | e 23 49? | [− 4] | e 47·8 | 58·8 |
| Cheb | | 93·7 | 325 | — | — | e 36 55 | SSSS | e 55·8 | 59·3 |
| Triest | | 94·8 | 319 | e 13 28 | + 8 | e 24 46 | + 6 | e 42·8 | 52·9 |
| Stuttgart | | 96·2 | 324 | e 12 49? | −37 | e 24 49 | − 4 | e 48·8 | — |
| Strasbourg | | 97·1 | 325 | e 12 49? | −41 | e 25 55 | PS | e 39·8 | — |
| Florence | | 97·1 | 319 | 13 27 | − 3 | 24 1 | [−11] | 45·8 | 52·8 |
| Prato | | 97·2 | 318 | e 13 38 | + 7 | 24 3 | [− 9] | 47·8 | — |
| Piacenza | | 97·6 | 321 | e 10 25 | ? | 24 9 | [− 5] | — | 70·9 |
| Ukiah | | 98·2 | 47 | — | — | e 25 7 | − 4 | e 47·5 | — |
| Edinburgh | | 98·6 | 333 | — | — | e 26 49? | PS | e 47·8 | 61·6 |
| Berkeley | E. | 99·3 | 47 | — | — | e 24 17 | [− 5] | e 45·3 | — |
| Paris | | 99·9 | 326 | e 17 53 | PP | — | — | 40·8 | 61·8 |
| Alicante | | 107·6 | 319 | — | — | e 39 55 | ? | e 59·1 | — |
| Ottawa | | 118·7 | 14 | — | — | e 26 49? | (−19) | 47·8 | — |
| Oak Ridge | | 122·1 | 12 | — | — | e 30 22 | PS | e 48·8 | — |
| Huancayo | | 160·4 | 90 | e 19 55 | [+ 1] | i 35 1 | SKSP | e 65·9 | — |
| La Paz | | 167·1 | 107 | 20 17 | [+16] | — | — | 92·8 | 99·8 |

*For Notes see next page.*

NOTES TO AUGUST 20d. 11h. 45m. 11s.

Additional readings :—
Manila $iS_gEN = +2m.7s.$
Zi-ka-wei i = +4m.34s. and +7m.56s.
Nanking e = +7m.15s.
Sumoto PEN = +5m.5s.
Kobe ePEZ = +5m.6s., PPN = +5m.18s., PPZ = +5m.21s., PPPN = +5m.30s., iSN = +8m.50s.
Zinsen eE = +5m.39s. = PP − 6s., +6m.55s., and +7m.20s.
Medan i = +6m.39s.
Chiufeng i = +8m.58s. = $P_cP$ − 6s.
Melbourne i = +20m.39s. = SS + 5s.
Ekaterinburg $L_q = +30m.7s.$
Tiflis ePPZ = +14m.23s.
Tananarive eE = +27m.46s. = PP − 2s.
Sitka i = +27m.57s. = SS − 21s.
Copenhagen +24m.19s. = S + 11s.
Potsdam eEN = +32m.49s.? and +37m.19s.
Triest eSKS = +23m.48s., ePS = +25m.58s., eSS = +31m.14s.
Stuttgart e = +21m.49s.?
Strasbourg e = +14m.49s., +16m.55s., and +34m.34s.
Ukiah eSKS = +24m.13s., eSS = +31m.54s.
Berkeley eE = +26m.40s. = PS + 2s., iE = +32m.12s. = SS + 20s.
Ottawa e = +34m.49s. ?
Oak Ridge eNE = +30m.26s. = PS + 5s. and +37m.0s. = SS + 2s., eNW = +37m.10s.
Huancayo e = +20m.53s. = $PKP_2$ + 7s. and +26m.27s., ePPS = +38m.7s., eSS = +45m.2s.
Long waves were also recorded at Cape Town, Ivigtut, Tucson, Pasadena, San Juan, and other European stations.

**Aug. 20d. 12h. 6m. 7s. Epicentre 13°·0N. 124°·7E. (as at 11h.). X.**

| | | △ | Az. | P. | O − C. | S. | O − C. | L. |
|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. |
| Manila | | 4·0 | 294 | 1 13 | $P_g$ | 2 6 | $S_g$ | — |
| Nanking | | 19·8 | 345 | e 4 22 | − 5 | e 7 56 | − 6 | — |
| Nagasaki | | 20·3 | 13 | e 4 32 | − 1 | e 8 18 | + 6 | — |
| Taikyu | | 23·1 | 11 | 5 2 | 0 | 9 15 | + 8 | — |
| Sumoto | | 23·2 | 22 | 5 4 | + 1 | 9 11 | + 3 | — |
| Kobe | | 23·6 | 22 | e 4 55 | −11 | e 8 45 | −31 | e 9·1 |
| Osaka | | 23·8 | 22 | 2 38 | ? | 7 53 | ? | — |
| Kameyama | | 24·3 | 24 | 5 20 | + 7 | 9 34 | + 6 | — |
| Toyooka | | 24·4 | 20 | e 5 11 | − 3 | 9 33 | + 3 | — |
| Hamamatu | | 24·7 | 26 | 5 22 | + 5 | 9 39 | + 3 | — |
| Nagoya | | 24·8 | 24 | 5 20 | + 2 | 9 43 | + 6 | — |
| Mizusawa | E. | 29·9 | 26 | (e 6 9) | + 5 | e 6 9 | P | — |
| Tiflis | Z. | 73·9 | 311 | e 11 29 | − 5 | — | — | — |
| Simferopol | | 81·3 | 315 | e 12 14 | − 1 | (e 24 5) | ? | e 24·1 |

Additional readings :—
Sumoto ePZ = +5m.9s.
Kobe PPN = +5m.14s.

**Aug. 20d. 22h. 59m. 22s. Epicentre 9°·3S. 79°·0W. (as on 1931 April 3d.). X.**

A = +·188, B = −·969, C = −·162 ; D = −·982, E = −·191 ;
G = −·031, H = +·159, K = −·987.

| | | △ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Huancayo | | 4·6 | 126 | e 1 1 | − 5 | (i 1 47) | −11 | i 1·8 | — |
| La Paz | | 12·8 | 125 | e 3 0 | + 1 | i 5 29 | + 7 | 6·6 | 7·2 |
| Sucre | | 16·5 | 127 | 3 50 | + 2 | e 7 13 | +23 | — | — |
| Mount Wilson | z. | 57·1 | 322 | e 10 9 | +25 | — | — | — | — |
| Pasadena | z. | 57·1 | 322 | e 10 6 | +22 | — | — | — | — |
| Tinemaha | z. | 59·2 | 325 | i 9 53 | − 6 | — | — | — | — |

Additional readings :—
Huancayo i = +1m.6s., +1m.9s., +1m.12s. = P* − 4s. and +1m.20s. = $P_g$ − 6s.
La Paz i = +6m.14s. = S* − 5s.

Aug. 20d. Readings also at 1h. (Ukiah), 2h. (near Soengei Langka), 4h. (near Manila), 5h. (Samarkand, Tashkent, near Andijan, and Frunse), 6h. (Baku), 7h. (Hastings), 8h. (near Santiago), 10h. (La Paz, La Plata, and near Santiago), 12h. (near Manila), 17h. (near Berkeley, Branner, and Lick), 18h. (near Kobe), 20h. (Mount Wilson, Riverside, and near Soengei Langka), 21h. (Mount Wilson, Pasadena, Riverside, Tinemaha, and Nagoya).

Aug. 21d. Readings at 0h. (Ekaterinburg, Andijan, Tashkent, and near Samarkand), 1h. (near Wellington), 2h. (Andijan and near Samarkand), 5h. (near Samarkand), 9h. (near Lick, near Ksara, and near Tiflis), 11h. (Frunse, near Tashkent, and near Manila), 12h. (Ekaterinburg and Tashkent), 18h. (near Takaka, Wellington, and near Taihoku), 19h. (near Wellington), 20h. (near Berkeley and Lick), 21h. (Huancayo), 23h. (Tiflis).

Aug. 22d. 9h. 50m. 0s. Epicentre 9°·3S. 79°·0W. (as on 20d.). X.

| | | △ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Huancayo | | 4·6 | 126 | i 1 5 | − 1 | i 1 51 | − 7 | — | — |
| La Paz | E. | 12·8 | 125 | 3 0 | + 1 | i 5 51 | +29 | 6·8 | 7·8 |
| Sucre | | 16·5 | 127 | 3 38 | −10 | — | — | 8·5 | — |
| Riverside | Z. | 56·6 | 322 | i 10 3 | +23 | — | — | — | — |
| Mount Wilson | Z. | 57·1 | 322 | i 10 10 | +26 | — | — | — | — |
| Pasadena | | 57·1 | 322 | i 10 10a | +26 | — | — | — | — |
| Tinemaha | | 59·2 | 325 | i 10 23 | +24 | — | — | — | — |

No additional readings.

Alternative solution suiting the P observation at the Californian stations.

Aug. 22d. 9h. 50m. 4s. Epicentre 13°·8S. 80°·2W. N.3.

A = +·165, B = −·957, C = −·239; D = −·985, E = −·170; G = −·041, H = +·235, K = −·971.

| | | △ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Huancayo | | 5·1 | 71 | i 1 1 | −12 | i 1 47 | −23 | — | — |
| La Paz | E. | 12·0 | 105 | 2 56 | + 8 | i 5 47 | S* | 6·8 | 7·8 |
| Sucre | | 15·3 | 112 | 3 34 | + 2 | — | — | 8·4 | — |
| Riverside | Z. | 59·5 | 324 | i 9 59 | − 2 | — | — | — | — |
| Pasadena | | 60·0 | 324 | i 10 6a | + 2 | — | — | — | — |
| Mount Wilson | Z. | 60·1 | 324 | i 10 6 | + 1 | — | — | — | — |
| Tinemaha | | 62·2 | 326 | i 10 19 | − 1 | — | — | — | — |

No additional readings.

Aug. 22d. 11h. Shock with epicentre in the South Indian Ocean.

Toledo e = 11h.0m.12s.
Alicante e = 11h.1m.25s., eL = 46m.13s.
Cape Town P = 11h.1m.58s., PP = 2m.20s., 4m.25s., S = 5m.34s., L = 6m.25s., M = 8m.54s.
Tananarive eE = 11h.3m.6s., ePE = 3m.28s., ePN = 4m.29s., EN = 5m.54s., SE = 8m.36s., SSN = 10m.15s., SSE = 10m.19s., E = 12m.45s., eLE = 13m.6s., M = 16m.0s.
Ksara eP = 11h.10m.0s., eS = 20m.34s., L = 40m.20s.
Huancayo e = 11h.10m.18s., 21m.12s., and 26m.39s.
Almeria e = 11h.10m.37s., eL = 46m.31s.
Bombay, e = 11h.11m.4s., M = 40m.15s.
Pulkovo e = 11h.11m.47s., e = 22m.34s., 26m.11s., and 32m.26s., L = 55m., M = 12h.6m.30s.
Strasbourg e = 11h.13m.27s., 15m., and 17m., eL = 48m.
Tiflis eNZ = 11h.14m.38s., eLNZ = 44m.30s., M = 44m.42s.
Tashkent e = 11h.14m.59s., 21m.48s., 22m.28s., and 38m.59s., eL = 39m., M = 56m.30s.
Stuttgart eNZ = 11h.15m.29s., e = 23m.17s. and 29m.58s., eL = 50m.

*Continued on next page.*

Paris e = 11h.15m.36s. and 25m.52s., L = 48m., M = 53m.
Uccle e = 11h.15m.49s., 25m.12s., and 30m.36s., eL = 49m.
De Bilt e = 11h.15m.59s., eL = 48m., M = 57m.22s.
Copenhagen 11h.16m.
Riverside iPZ = 11h.17m.2s., iZ = 17m.11s.
Pasadena iPZ = 11h.17m.6s., iZ = 17m.16s.
Mount Wilson iPZ = 11h.17m.13s.
Santa Barbara eP = 11h.17m.15s.
Tinemaha eP = 11h.17m.15s.
Ekaterinburg e = 11h.19m.41s., 32m.4s., 35m.25s., L = 42m., M = 52m.24s.
Cheb e = 11h.21m., eS? = 31m.9s., eL = 52m., M = 54m.24s.
Baku e = 11h.21m.19s. and 29m.26s., L = 40m.42s., M = 47m.12s.
San Fernando S = 11h.21m.57s., L = 44m.0s., M = 54m.0s.
Potsdam eN = 11h.22m.12s., eE = 23m.12s. and 28m.30s., eL = 48m., M = 12h.0m.
Triest e = 11h.23m.3s. and 39m.8s., eL = 42m.49s., M = 52m.4s.
Florence eP = 11h.24m.0s., eS = 36m.0s., L = 48m.0s., M = 51m.0s.
Perth eP = 11h.24m.50s., M = 27m.40s.
Edinburgh e = 11h.33m., eL = 53m.
Seattle e = 11h.34m.55s.
Long waves were also recorded at Riverview, Wellington, Hong Kong, Chiufeng, Algiers, and at other European stations.

Aug. 22d. 13h. 13m. 2s. Epicentre 13°·0N. 124°·7E. (as on 20d.). R.3.

A = −·555, B = +·801, C = +·225.

| | | △ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Manila | | 4·0 | 294 | i 1 0 | + 3 | i 1 53 | S* | — | 2·4 |
| Hong Kong | | 13·7 | 314 | 3 9 | − 2 | 6 18 | ? | — | 7·9 |
| Phu-Lien | | 19·0 | 297 | e 4 18 | − 1 | e 8 4 | SS | 9·0 | — |
| Nanking | | 19·8 | 345 | e 4 32 | + 5 | e 8 13 | +11 | — | 16·1 |
| Miyazaki | | 19·9 | 17 | 4 39 | +10 | 8 8 | + 4 | — | — |
| Nagasaki | | 20·3 | 13 | e 4 34 | + 1 | e 8 16 | + 4 | — | — |
| Koti | | 22·1 | 20 | e 4 52 | 0 | e 7 46 | −62 | — | — |
| Taikyu | | 23·1 | 11 | — | — | e 8 49 | PcP | — | — |
| Kobe | | 23·6 | 22 | e 5 9 | + 3 | e 8 42 | PcP | e 9·3 | — |
| Osaka | | 23·8 | 22 | 4 15 | −53 | 8 17 | −62 | — | — |
| Kameyama | | 24·3 | 24 | 5 19 | + 6 | 9 33 | + 5 | — | — |
| Nagoya | | 24·8 | 24 | 5 17 | − 1 | 9 41 | + 4 | — | — |
| Oiwake | | 26·5 | 26 | 5 41 | + 7 | — | — | — | — |
| Chiufeng | | 28·1 | 346 | 5 44a | − 4 | i 10 35 | + 1 | — | — |
| Irkutsk | | 42·6 | 344 | e 7 48 | − 5 | 14 9 | − 6 | 23·0 | — |
| Bombay | N. | 50·1 | 285 | — | — | e 16 14 | +12 | — | 32·4 |
| Frunse | | 52·4 | 315 | e 9 8 | − 1 | — | — | — | — |
| Tashkent | | 55·4 | 313 | i 9 31 | − 1 | i 17 27 | +12 | 29·0 | 37·0 |
| Ekaterinburg | | 65·1 | 328 | i 10 35 | − 4 | i 19 16 | − 5 | 32·0 | 36·6 |
| Tiflis | | 73·9 | 311 | 11 32 | − 2 | e 20 59 | − 8 | 40·5 | 47·0 |
| Pulkovo | | 81·0 | 330 | e 12 9 | − 4 | e 22 14 | −12 | 40·0 | 47·5 |
| Copenhagen | | 91·3 | 329 | — | — | 23 58 | −10 | 47·0 | — |

Tiflis eSSN = +25m.44s.
Long waves were also recorded at Vladivostok and other European stations.

Aug. 22d. Readings also at 2h. (Andijan), 3h. (Manila, Ekaterinburg, and Tashkent), 5h. (Andijan, Tashkent, Ekaterinburg, and Pulkovo), 6h. (Copenhagen, De Bilt, and near Frunse), 8h. (near Berkeley, Branner, and Lick), 9h. (Lick and San Fernando), 10h. (Wellington), 13h. (Paris, Strasbourg, and Stuttgart), 14h. (near Manila), 15h. (Huancayo), 18h. (near Malabar), 19h. (near Branner and Lick), 20h. (near Nagoya), 21h. (Baku, Ekaterinburg, Tiflis, Tashkent, Pulkovo, Copenhagen, Bombay, and near Nagoya).

Aug. 23d. Readings at 0h. (near Nagoya), 6h. (Mizusawa, De Bilt, Strasbourg, and Stuttgart), 7h. (Baku, Ekaterinburg, and Copenhagen), 11h. (Mizusawa and near Apia), 12h. (Wellington, Mount Wilson, Pasadena, near Manila, and near Nagoya), 13h. (Chiufeng, Honolulu T.H., Sitka, Mount Wilson, Pasadena, and Tinemaha), 17h. (Branner and near Lick), 19h. (Santiago), 22h. (Branner), 23h. (near Mizusawa).

Aug. 24d. 0h. 30m. 22s. Epicentre 35°·2N. 136°·3E. (as on 1931 Aug. 20d.). X.

A = −·591, B = +·565, C = +·576.

| | △ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Nagoya | 0·5 | 93 | 0 7 | 0 | 0 15 | + 2 | — |
| Osaka | 0·8 | 232 | 0 9 | − 2 | 0 20 | − 1 | 0·3 |
| Kobe | 1·1 | 240 | e 0 18 | + 2 | — | — | 0·5 |
| Sumoto | 1·4 | 234 | — | — | e 0 38 | + 2 | 0·7 |

Sumoto eSEN = +41s. =S* +1s.

Aug. 24d. 0h. 40m. 8s. Epicentre 35°·0N. 134°·4E. (as on 1933 Feb. 18d.). X.

A = −·573, B = +·586, C = +·574.

| | △ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Kobe | 0·7 | 117 | 0 8 | − 2 | i 0 13 | − 5 | 0·2 |
| Toyooka | 0·7 | 32 | 0 11 | + 1 | 0 19 | + 1 | 0·3 |
| Sumoto | 0·8 | 148 | i 0 14a | + 3 | 0 24 | + 3 | 0·4 |
| Osaka | 1·0 | 110 | 0 12 | − 2 | 0 20 | − 6 | 0·3 |
| Nagoya | 2·2 | 85 | e 0 29 | − 2 | 0 49 | − 8 | — |

Osaka i = +14s.

Aug. 24d. 6h. 29m. 33s. Epicentre 34°·0N. 134°·8E. (as on July 19d.). X.

A = −·584, B = +·588, C = +·559.

| | △ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Sumoto | 0·4 | 11 | 0 4 | − 2 | 0 7 | − 3 | 0·1 |
| Kobe | 0·7 | 25 | e 0 9 | − 1 | 0 18 | 0 | 0·4 |
| Nagoya | 2·1 | 57 | e 0 32 | + 2 | 0 57 | + 3 | — |

Aug. 24d. 9h. 39m. 0s. Epicentre 36°·0N. 21°·0E. (as on 1918 Aug. 14d.). X.

A = +·755, B = +·290, C = +·588; D = +·358, E = −·934;
G = +·549, H = +·211, K = −·809.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Messina | 4·8 | 298 | 1 14 | + 6 | 1 59 | − 4 | — | — |
| Catania | 4·9 | 290 | 1 54 | S | (1 54) | −11 | — | — |
| Trenta | 4·9 | 314 | e 1 0 | −10 | 1 50 | −15 | — | — |
| Mineo | 5·2 | 287 | 1 6 | − 8 | — | — | — | — |
| Taranto | 5·3 | 328 | 1 13 | − 2 | 2 37 | S* | — | 3·7 |
| Belgrade | 8·8 | 358 | e 2 42 | +37 | e 4 29 | S* | — | 5·0 |
| Zagreb | 10·5 | 341 | e 2 54 | +26 | e 4 49 | +23 | — | — |
| Florence | 10·8 | 319 | e 3 30 | +58 | 4 25 | − 8 | — | 5·0 |
| Triest | 11·1 | 333 | e 2 58 | +22 | e 4 22 | −19 | i 6·1 | — |
| Ksara | 12·4 | 96 | e 3 0? | + 6 | e 5 44 | +31 | — | 8·3 |
| Piacenza | 12·5 | 320 | — | — | e 5 25 | +10 | — | 11·0 |
| Vienna | 12·7 | 346 | — | — | (e 5 0?) | −20 | e 5·0 | 8·5 |
| Chur | 13·8 | 326 | e 3 20 | + 7 | — | — | — | — |
| Zurich | 14·6 | 325 | e 4 0 | +37 | — | — | — | — |
| Neuchatel | 15·1 | 321 | e 3 30 | 0 | — | — | — | — |
| Stuttgart | 15·4 | 330 | e 3 43 | + 9 | — | — | e 8·6 | — |
| Potsdam | 17·3 | 344 | — | — | e 7 0? | − 9 | e 9·0 | 10·5 |
| Hamburg | 19·2 | 340 | — | — | e 7 0? | −50 | — | 11·0 |
| Tiflis | 19·3 | 66 | e 4 27 | + 5 | e 7 58 | + 6 | e 9·8 | 12·6 |
| De Bilt | 19·6 | 330 | e 4 30 | + 5 | e 8 6 | + 8 | e 10·5 | 12·8 |
| Copenhagen | 20·5 | 346 | 4 31 | − 4 | — | — | 11·0 | — |
| Baku | 23·0 | 70 | — | — | e 10 13 | +68 | 13·8 | — |
| Pulkovo | 24·5 | 11 | 5 13 | − 2 | e 9 23 | − 9 | 12·0 | 14·7 |

Additional readings:—
Zagreb eNE = +3m.14s., eNW = +3m.35s.
Long waves were also recorded at Cheb, Uccle, Strasbourg, and Tashkent.

Aug. 24d. 16h. 45m. 41s. Epicentre 37°·6N. 2°·8W. (as on 1932 March 5d.). X.

A = +·791, B = −·039, C = +·610; D = −·049, E = −·999; G = +·609, H = −·030, K = −·792.

| | △ | Az. | P. | O−C. | S. | O−C. |
|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. |
| Granada | 0·7 | 238 | e 0 9 | − 1 | e 0 18 | 0 |
| Almeria | 0·8 | 160 | 0 8 | − 3 | 0 19 | − 2 |
| Malaga | 1·6 | 236 | 0 25 | + 2 | 0 50 | + 9 |
| Alicante | 2·0 | 68 | 0 42 | $P_g$ | 1 14 | $S_g$ |
| Toledo | 2·4 | 338 | 0 46 | $P_g$ | 1 21 | $S_g$ |
| Tortosa | N. 4·1 | 38 | 1 53 | S | (1 53) | + 8 |

Additional readings:—
Granada PP = +13s., iSS = +23s., SP = +26s., PPP = +31s.
Almeria PP = +13s.
Malaga PP = +29s., PPP = +39s., PPPP = +49s., PPPS = +51s., SSS = +1m.29s.
Alicante PP = +1m.5s.
Toledo $P_g$ = +51s., PPS = +1m.9s., SS = +1m.34s.
Tortosa ePE = +2m.0s.

Aug. 24d. 17h. 25m. 2s. Epicentre 37°·6N. 2°·8W. (as at 16h.). X.

| | △ | Az. | P. | O−C. | S. | O−C. |
|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. |
| Granada | 0·7 | 238 | i 0 9 | − 1 | i 0 12 | − 6 |
| Almeria | 0·8 | 160 | 0 39 | S | (0 39) | +18 |
| Malaga | 1·6 | 236 | 0 24 | + 1 | 0 36 | − 5 |
| Alicante | 2·0 | 68 | — | — | e 0 57 | + 6 |
| Toledo | 2·4 | 388 | — | — | 1 37 | $S_g$ |

Malaga gives also PP = +30s., PS = +39s., SS = +45s.

Aug. 24d. Readings also at 0h. (Baku, Tiflis, Ekaterinburg, Tashkent, Samarkand, Ksara, and near Tyosi), 7h. (Huancayo), 8h. (Huancayo, Tucson, and near Apia), 9h. (Mount Wilson, Pasadena, Riverside, and Tinemaha), 11h. (near Lick), 14h. (near Granada and Malaga), 16h. (Tyosi and near Mizusawa), 18h. (near Trenta), 20h. (Wellington), 22h. (Baku, Tashkent, Bombay, near St. Louis, and near Trenta), 23h. (Baku, Tashkent, and near Branner).

Aug. 25d. 7h. 50m. 33s. Epicentre 31°·7N. 103°·4E. N.1.

Probable error of epicentre ±0°·19.

A = −·197, B = +·828, C = +·525; D = +·973, E = +·232; G = −·122, H = +·511, K = −·851.

| | △ | Az. | P. | O.−C. | S | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Phu-Lien | 11·3 | 164 | −0 27? | −186 | — | — | — | — |
| Nanking | 13·0 | 84 | i 3 0k | − 2 | e 5 38 | +11 | i 6·5 | — |
| Chiufeng | 13·3 | 47 | 2 59a | − 7 | 5 42 | + 8 | 6·5 | — |
| Hong Kong | 13·4 | 132 | 3 2 | − 5 | 5 32 | − 5 | — | 9·5 |
| Zi-ka-wei | 15·4 | 87 | 3 31 | − 3 | 6 42 | +18 | — | 12·4 |
| Calcutta | 16·2 | 239 | 4 21 | +37 | 7 36 | +53 | 9·1 | — |
| Hokoto | 16·4 | 116 | e 3 48 | + 2 | e 7 12 | +24 | e 8·5 | 10·9 |
| Taityu | 17·0 | 112 | 3 53 | − 1 | 7 18 | +16 | — | — |
| Tainan | 17·2 | 116 | 3 56 | − 1 | 7 27 | +21 | — | — |
| Taihoku | 17·3 | 108 | 3 58 | 0 | 7 21 | +12 | 9·3 | 11·3 |
| Karenko | 17·8 | 111 | 4 5 | + 1 | 7 44 | +24 | — | — |
| Heizyo | 19·6 | 62 | 4 24 | − 1 | 8 3 | + 5 | 10·7 | 11·3 |
| Isigakizima | 19·7 | 107 | 4 27 | + 1 | 8 9 | + 9 | — | — |
| Zinsen | 19·9 | 67 | e 4 25 | − 4 | 8 14 | +10 | 10·2 | 12·2 |
| Keizyo | 20·2 | 67 | 4 31 | − 1 | 8 16 | + 6 | 10·4 | 12·8 |

*Continued on next page,*

| | | △ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Irkutsk | | 20·6 | 2 | i 4 35 | − 1 | 8 17 | − 1 | 11·6 | — |
| Taikyu | | 21·3 | 72 | 4 44k | + 1 | 8 37 | + 5 | 10·9 | 15·0 |
| Husan | | 21·6 | 74 | — | — | e 9 27? | SS | 14·4 | — |
| Dehra Dun | | 21·7 | 273 | 5 17 | +29 | 8 57 | +17 | 12·3 | 13·4 |
| Nagasaki | | 22·4 | 80 | 4 54a | − 1 | 9 0 | + 7 | e 12·0 | 14·4 |
| Agra | N. | 22·5 | 265 | 4 56 | 0 | 9 9 | +14 | 11·9 | — |
| Hukuoka | | 22·8 | 78 | 5 0 | + 1 | 9 17 | +16 | 12·2 | 15·3 |
| Hukuoka B. | | 22·8 | 78 | 4 57 | − 2 | 9 5 | + 4 | — | — |
| Kumamoto | | 23·1 | 80 | 5 3 | + 1 | 9 14 | + 7 | — | — |
| Manila | | 23·4 | 133 | i 5 9 | + 4 | i 9 21 | + 9 | i 11·9 | 14·4 |
| Almata | | 23·8 | 307 | 6 10? | +62 | 10 41 | +82 | — | — |
| Simidu | | 25·0 | 80 | 5 16 | − 4 | i 9 40 | − 1 | 13·2 | 16·0 |
| Vladivostok | | 25·2 | 55 | i 5 23 | + 1 | 9 47 | + 3 | 12·4 | 18·4 |
| Frunse | | 25·4 | 305 | 5 27 | + 3 | 10 9 | +21 | — | — |
| Koti | | 25·4 | 77 | e 5 22 | − 2 | i 9 49 | + 1 | e 11·9 | 16·6 |
| Muroto | | 25·9 | 78 | 5 28 | 0 | 9 46 | −11 | e 12·4 | 17·7 |
| Toyooka | E. | 26·4 | 73 | e 5 31 | − 2 | i 10 5 | 0 | e 14·2 | 17·5 |
| | N. | 26·4 | 73 | 5 37 | + 4 | 10 14 | + 9 | 13·6 | 18·2 |
| Sumoto | | 26·4 | 76 | 5 32 | − 1 | 9 59 | − 6 | — | 10·5 |
| Andijan | | 26·5 | 299 | 5 39 | + 5 | e 10 34 | +27 | 14·4 | — |
| Hyderabad | | 26·6 | 244 | 5 35 | 0 | 10 19 | +10 | — | 17·6 |
| Kobe | | 26·6 | 75 | 5 35 | 0 | i 10 12 | + 3 | e 13·1 | 18·8 |
| Wakayama | | 26·7 | 76 | 5 38 | + 3 | 10 5 | − 5 | — | — |
| Osaka | | 27·0 | 75 | 5 42 | + 4 | 10 36 | +21 | 14·6 | 14·7 |
| Kyoto | | 27·1 | 74 | 5 42 | + 3 | 10 30 | +13 | — | — |
| Gihu | | 28·0 | 73 | 5 45 | − 2 | 10 23 | − 9 | — | — |
| Nagoya | | 28·1 | 74 | 5 49 | + 1 | 10 54 | +20 | 15·0 | — |
| Medan | | 28·3 | 190 | 5 51 | + 1 | 10 44 | + 7 | i 16·4 | — |
| Tashkent | | 28·8 | 299 | i 5 57 | + 3 | — | — | 16·9 | 19·8 |
| Kohu | | 29·4 | 73 | 6 0 | 0 | 11 2 | + 7 | — | — |
| Susaki | | 29·8 | 75 | 5 58 | − 5 | 10 58 | − 3 | 14·5 | 17·2 |
| Bombay | N. | 30·3 | 253 | 6 12 | + 4 | 11 18 | + 9 | 15·1 | 17·0 |
| Tokyo (Univ.) | | 30·4 | 72 | 6 9 | 0 | 11 8 | − 2 | 14·3 | 17·2 |
| Tokyo (Meteor'cal) | | 30·4 | 72 | 6 11 | + 2 | 11 17 | + 7 | — | — |
| Tyosi | | 31·3 | 72 | e 6 20 | + 3 | 11 45 | +21 | 14·9 | 18·2 |
| Mizusawa | E. | 31·4 | 65 | e 6 16 | − 1 | i 11 6 | −20 | 14·4 | — |
| | N. | 31·4 | 65 | e 6 21 | + 4 | e 11 17 | − 9 | 14·7 | — |
| Kodaikanal | | 32·1 | 235 | i 6 27 | + 3 | i 11 50 | +13 | 16·8 | 23·7 |
| Urakawa | | 32·9 | 59 | 6 36 | + 5 | 11 50 | + 1 | — | — |
| Colombo | | 33·1 | 227 | 6 36 | + 3 | 11 57 | + 5 | 15·4 | 19·4 |
| Ootomari | | 33·6 | 52 | 6 38 | + 1 | 12 2 | + 2 | 16·0 | 18·6 |
| Titizima | | 34·0 | 88 | 6 37 | − 3 | 12 0 | − 6 | — | — |
| Sikka | | 34·4 | 48 | 8 31 | +107 | 13 40 | +88 | 16·4 | 21·7 |
| Nemuro | | 35·0 | 58 | 6 46 | − 3 | 12 13 | − 8 | — | — |
| Palau | | 37·8 | 124 | 7 15 | + 2 | 13 7 | + 4 | — | — |
| Batavia | | 38·0 | 175 | i 7 17 | + 2 | 13 7 | + 1 | 39·0 | — |
| Ekaterinburg | | 38·6 | 324 | i 7 19 | − 1 | i 13 17 | + 2 | — | — |
| Malabar | | 39·1 | 174 | 7 38 | +14 | 13 34 | +12 | e 20·4 | 22·9 |
| Amboina | | 42·5 | 142 | 7 4 | −49 | i 13 27 | −46 | — | — |
| Baku | | 43·4 | 298 | i 8 5 | + 5 | — | — | — | — |
| Tiflis | | 47·1 | 300 | 8 31 | + 2 | i 15 32 | +12 | e 24·4 | — |
| Simferopol | | 54·2 | 306 | e 9 24 | + 1 | — | — | 25·4 | — |
| Yalta | | 54·3 | 305 | 9 17 | − 6 | e 16 59 | 0 | 26·4 | — |
| Pulkovo | | 54·7 | 324 | i 9 25 | − 1 | e 17 1 | − 4 | 28·4 | 32·4 |
| Sebastopol | | 54·8 | 305 | 9 27 | 0 | e 17 11 | + 5 | 29·4 | — |
| Ksara | | 55·7 | 291 | i 9 37 | + 3 | i 17 34 | +15 | — | — |
| Lemberg | E. | 59·8 | 313 | e 10 16 | +13 | e 18 2 | −11 | e 29·9 | 40·4 |
| | N. | 59·8 | 313 | e 10 11 | + 8 | e 18 21 | + 8 | e 29·4 | 33·2 |
| Helwan | | 60·7 | 289 | i 10 10 | + 1 | i 18 38 | +13 | — | 42·0 |
| Upsala | | 60·9 | 325 | i 10 9 | − 2 | i 18 29 | + 1 | e 27·4 | 33·8 |
| Budapest | | 63·6 | 311 | 10 48 | +19 | 19 33 | +31 | 30·9 | 42·9 |
| Belgrade | | 63·6 | 308 | e 10 28 | − 1 | e 23 39 | SS | e 36·1 | 44·2 |
| Perth | | 64·7 | 169 | 10 47 | +10 | 19 26 | +10 | 34·3 | 34·4 |
| Copenhagen | | 64·8 | 322 | 10 35 | − 2 | 19 22 | + 5 | 27·4 | — |
| Vienna | | 65·1 | 313 | 10 36 | − 3 | 19 13 | − 8 | i 32·0 | 36·0 |

*Continued on next page.*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Potsdam | | 65·6 | 319 | i 10 43 | + 1 | i 19 32 | + 5 | e 28·4 | 36·9 |
| Prague | | 65·6 | 316 | — | — | e 18 27? | −60 | e 27·4 | 36·0 |
| Graz | | 66·1 | 312 | i 10 45 | − 1 | i 19 39 | + 5 | e 30·4 | 36·4 |
| Zagreb | | 66·2 | 311 | e 10 45 | − 2 | e 19 41 | + 6 | e 31·5 | 37·6 |
| Leipzig | | 66·4 | 317 | i 10 47 | − 1 | e 19 42 | + 5 | e 29·4 | 36·4 |
| Bergen | | 66·5 | 329 | 10 28 | −21 | 19 41 | + 2 | 32·4 | 36·4 |
| Cheb | | 66·8 | 316 | e 10 49 | − 2 | — | — | e 31·4 | 36·4 |
| Hamburg | | 66·9 | 321 | i 10 49a | − 2 | e 19 53 | +10 | e 32·4 | 41·4 |
| Jena | | 67·0 | 317 | e 10 50 | − 2 | e 19 48 | + 3 | e 30·4 | 41·4 |
| Hof | | 67·1 | 317 | e 10 50 | − 2 | e 19 57 | +11 | e 31·4 | 35·4 |
| Laibach | | 67·1 | 312 | 10 40 | −12 | — | — | e 35·0 | — |
| Taranto | | 67·4 | 305 | 10 50 | − 4 | 19 57 | + 7 | 35·4 | 43·3 |
| Triest | | 67·7 | 311 | 10 54a | − 2 | e 19 59 | + 6 | e 32·0 | 38·1 |
| Göttingen | | 67·7 | 319 | i 10 55a | − 1 | e 20 2 | + 9 | e 29·2 | 37·0 |
| Trenta | | 68·6 | 304 | i 11 2 | 0 | e 20 14 | +10 | 36·2 | — |
| Treviso | | 68·7 | 312 | i 11 1 | − 2 | i 20 15 | +10 | 33·4 | 38·4 |
| Venice | | 68·7 | 312 | i 11 5 | + 2 | — | — | 34·9 | 46·0 |
| Padova | | 69·0 | 312 | i 11 7 | + 2 | — | — | e 35·4 | — |
| Feldberg | | 69·1 | 318 | i 11 6 | + 1 | — | — | — | 42·6 |
| Stuttgart | | 69·3 | 316 | i 11 5a | − 1 | i 20 14 | + 1 | e 32·4 | 38·4 |
| Naples | E. | 69·3 | 306 | e 11 36 | +30 | e 16 35 | ? | 29·4 | 55·4 |
| Messina | | 69·5 | 303 | 11 6 | − 2 | 20 24 | + 9 | — | — |
| Karlsruhe | | 69·6 | 317 | 11 9 | + 1 | 20 55 | PS | e 37·4 | 43·0 |
| Chur | | 69·9 | 315 | e 11 8 | − 2 | — | — | e 34·6 | — |
| De Bilt | | 70·1 | 321 | 11 11 | 0 | 20 30 | + 8 | e 33·4 | 38·0 |
| Florence | | 70·1 | 310 | i 11 10 | − 1 | i 20 27 | + 5 | 31·4 | 39·4 |
| Prato | | 70·1 | 310 | i 11 12 | + 1 | i 20 34 | +12 | e 28·4 | 38·8 |
| Catania | | 70·1 | 303 | 11 12 | + 1 | 20 30 | + 8 | 38·6 | 47·2 |
| Rome | | 70·1 | 308 | 10 32 | −39 | — | — | — | — |
| Zurich | | 70·2 | 315 | e 11 11 | − 1 | e 20 33 | + 9 | — | — |
| Strasbourg | | 70·2 | 316 | i 11 12a | 0 | i 20 34 | +10 | 34·4 | 38·4 |
| Mineo | | 70·5 | 303 | 11 17 | + 3 | — | — | — | — |
| Piacenza | | 70·5 | 313 | 11 15 | + 1 | 20 39 | +12 | 32·9 | 39·1 |
| Livorno | | 70·8 | 310 | 11 9 | − 7 | — | — | — | — |
| Pavia | | 70·9 | 313 | e 11 18 | + 2 | — | — | — | — |
| Uccle | | 71·2 | 319 | i 11 16a | − 2 | i 20 41 | + 6 | 29·8 | 46·8 |
| Neuchatel | | 71·4 | 315 | e 11 17 | − 2 | e 20 43 | + 5 | — | — |
| Durham | | 72·4 | 324 | 11 23 | − 2 | 20 49 | − 1 | — | 41·4 |
| Edinburgh | | 72·6 | 326 | i 11 24 | − 2 | 20 50 | − 2 | 34·4 | 40·0 |
| Paris | | 73·2 | 317 | i 11 27 | − 3 | i 21 6 | + 7 | 34·4 | 48·4 |
| Stonyhurst | | 73·3 | 324 | i 11 31 | 0 | i 21 7 | + 7 | 36·4 | 42·9 |
| Kew | | 73·4 | 322 | e 11 29a | − 2 | e 21 11 | +10 | 33·2 | 45·2 |
| Tananarive | | 73·6 | 235 | e 11 23 | − 9 | 21 3 | − 1 | 32·3 | 41·4 |
| Oxford | | 73·8 | 322 | i 11 31a | − 2 | 20 59 | − 7 | e 32·4 | 46·9 |
| Tunis | | 74·0 | 304 | 11 49 | +14 | — | — | — | — |
| Puy de Dôme | | 74·4 | 314 | e 11 37 | 0 | 21 17 | + 4 | — | — |
| Adelaide | | 74·4 | 151 | i 11 36 | − 1 | i 21 13 | 0 | i 34·8 | 46·1 |
| Barcelona | | 77·1 | 311 | 11 51 | − 2 | 21 54 | +10 | 27·1 | 42·7 |
| Sitka | | 78·4 | 29 | i 11 57 | − 2 | 21 47 | −11 | i 35·1 | — |
| Tortosa | N. | 78·5 | 311 | — | — | 25 18 | ? | 29·5 | 37·2 |
| Algiers | | 79·0 | 306 | i 12 5 | + 2 | i 22 6 | + 1 | e 38·4 | — |
| Riverview | | 79·5 | 141 | i 12 5k | 0 | i 22 8 | − 2 | 36·0 | — |
| Sydney | | 79·5 | 141 | i 22 15 | S | (i 22 15) | + 5 | 33·2 | 39·8 |
| Melbourne | | 79·6 | 147 | e 12 0 | − 6 | 22 9 | − 2 | 37·4? | 43·0 |
| Alicante | | 80·5 | 310 | e 12 9 | − 1 | e 22 23 | + 2 | e 38·2 | 50·2 |
| Toledo | | 81·9 | 313 | i 12 18 | 0 | i 22 38 | + 2 | e 38·4 | 45·5 |
| Almeria | | 82·6 | 309 | e 12 20 | − 1 | e 22 45 | + 2 | e 33·0 | 51·2 |
| Granada | | 83·2 | 310 | e 12 28 | + 4 | e 23 54 | PS | 40·4 | — |
| Malaga | | 84·0 | 310 | i 12 29 | + 1 | 22 59 | + 1 | 39·4 | 42·4 |
| Ivigtut | | 84·3 | 347 | 12 30 | 0 | 23 1 | 0 | — | — |
| Coimbra | | 84·4 | 315 | 12 31 | + 1 | 22 57 | − 5 | — | — |
| San Fernando | E. | 85·3 | 311 | 12 27 | − 8 | 23 27 | +16 | 40·4 | 48·4 |
| | N. | 85·3 | 311 | 12 32 | − 3 | 23 32 | +21 | 43·4 | 58·4 |
| Honolulu T.H. | | 86·0 | 67 | i 12 39 | + 1 | i 23 13 | − 5 | e 36·0 | — |
| Suva | | 87·4 | 113 | 12 30? | −15 | 23 3 | [−13] | 41·4 | — |

*Continued on next page.*

| | | △ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Victoria | | 89·7 | 29 | i 12 59 | + 3 | i 23 33 | [+ 2] | e 39·9 | 48·6 |
| Seattle | | 90·7 | 29 | e 13 3 | + 2 | 23 32 | [− 5] | e 45·6 | — |
| Saskatoon | | 92·2 | 18 | 13 8 | 0 | 24 13 | − 4 | — | — |
| Apia | | 92·9 | 105 | 13 31 | +20 | 25 45 | PS | 44·9 | — |
| Bozeman | | 96·6 | 23 | e 13 29 | + 1 | e 24 51 | − 5 | e 42·6 | — |
| Arapuni | | 96·9 | 131 | — | — | e 23 57 | [−13] | — | 62·4 |
| Ukiah | | 97·0 | 34 | e 13 40 | +10 | 25 0 | 0 | 40·4 | — |
| Christchurch | | 98·2 | 137 | i 13 37 | + 2 | i 25 11 | 0 | e 44·4 | — |
| Wellington | | 98·2 | 134 | 13 44 | + 9 | 26 35 | PS | 42·4 | — |
| Berkeley | | 98·5 | 34 | 13 35 | − 2 | i 24 19 | [ 0] | i 41·5 | — |
| Branner | N. | 98·9 | 35 | e 17 41 | PP | e 24 9 | [−11] | — | — |
| Lick | N. | 99·2 | 34 | e 13 48 | + 8 | e 24 22 | [ 0] | e 46·2 | — |
| Tinemaha | | 101·0 | 32 | i 13 49 | + 1 | — | — | — | — |
| Santa Barbara | | 102·4 | 34 | e 18 14 | PP | — | — | — | — |
| Ottawa | | 102·9 | 358 | e 13 57 | 0 | 24 38 | [− 2] | e 45·4 | — |
| Cape Town | | 103·3 | 238 | 24 56 | S | 33 6 | SS | 49·6 | 56·4 |
| Mount Wilson | Z. | 103·5 | 33 | e 13 59 | − 1 | i 27 25 | PS | — | — |
| Pasadena | | 103·5 | 33 | i 13 57 | − 3 | e 24 29 | [−14] | e 44·6 | — |
| Toronto | | 104·6 | 1 | e 14 2 | − 3 | i 25 57 | −10 | 48·8 | 56·4 |
| Ann Arbor | N. | 105·7 | 5 | e 18 15 | [+11] | e 24 51 | [− 2] | e 52·9 | 64·0 |
| Oak Ridge | | 105·7 | 355 | e 14 9 | − 1 | 26 9 | S | e 44·1 | — |
| Chicago | | 105·7 | 8 | e 18 42 | PP | i 26 9 | S | e 47·2 | — |
| Fordham | | 107·4 | 357 | e 14 17 | − 1 | i 25 0 | [− 1] | 53·4 | — |
| Pittsburgh | | 107·8 | 2 | e 14 15 | − 5 | i 24 59 | [− 4] | 48·2 | — |
| Tucson | | 108·3 | 30 | e 14 21 | − 2 | e 26 36 | S | e 44·3 | — |
| Florissant | | 108·4 | 11 | e 14 23 | 0 | i 26 35 | S | e 50·4 | 59·0 |
| St. Louis | | 108·6 | 11 | e 14 26 | + 2 | i 27 9 | ? | — | — |
| Georgetown | | 109·4 | 0 | i 14 26 | − 2 | 28 28 | PS | e 59·4 | — |
| Charlottesville | | 110·3 | 1 | e 18 27 | [+ 8] | e 26 49 | S | e 47·6 | — |
| San Juan | | 128·9 | 347 | e 19 5 | [ 0] | i 22 21 | ? | 54·4 | — |
| Port au Prince | | 129·6 | 353 | e 19 15 | [+ 9] | 28 6 | {−13} | 72·6 | — |
| Huancayo | | 160·4 | 356 | 19 58 | [+ 4] | e 34 28 | SKSP | 69·4 | — |
| La Paz | E. | 163·0 | 331 | i 20 3k | [+ 6] | 27 5 | ? | 80·1 | 100·4 |
| Sucre | | 163·7 | 319 | i 20 5 | [+ 7] | 27 6 | ? | 74·5 | — |
| La Plata | E. | 164·1 | 253 | 20 2 | [+ 4] | 31 31 | {− 9} | 66·4 | 81·8 |
| | N. | 164·1 | 253 | e 20 15 | [+17] | — | — | 67·2 | 83·1 |

Additional readings :—
Nanking PP = +3m.9s., eSN = +5m.41s.
Chiufeng iP = +3m.4s., iSE = +5m.53s.
Zi-ka-wei PPE = +3m.44s., PPPE = +3m.47s., PPPPE = +3m.52s., iN = +6m.48s., iE = +6m.55s., SSE = +7m.4s.
Taihoku iSS = +7m.34s.
Agra PE = +4m.53s.
Hukuoka PP = +5m.27s.
Muroto PP = +6m.1s.
Sumoto SZ = +10m.8s., SN = +10m.15s.
Kobe iPZ = +5m.38s., eN =iZ = +5m.41s., iE = +5m.44s., eZ = +10m.9s., iZ = +10m.22s., iSZ = +10m.25s.
Nagoya P = +5m.54s.
Medan iP = +5m.55s.
Tashkent iPP = +6m.39s., iPPP = +7m.11s., e = +13m.13s.
Susaki PP = +7m.0s., SS = +13m.33s.
Bombay PPN = +7m.0s., SSN = +12m.50s.
Batavia i = +22m.57s.
Amboina iP = +7m.11s., i = +16m.47s. =SS − 16s.
Tiflis iE = +8m.42s., SSE = +18m.31s., SSSE = +19m.15s., iZ = +19m.31s.
Pulkovo $L_q$ = +25·4m.
Ksara PP = +11m.47s., SS = +21m.30s.
Helwan i = +11m.7s. = $P_cP$ +11s., +12m.29s. =PP +13s., +13m.58s. =PPPP −5s., and +22m.47s. =SS +18s.
Upsala iPP = +12m.29s., SSE = +22m.33s.
Budapest i = +15m.12s.
Belgrade i = +12m.52s., iPP = +14m.46s., e = +26m.18s.
Perth SS = +26m.57s., SSS = +29m.22s.
Copenhagen +12m.59s. =PP +7s. and +23m.57s. =SS +34s.
Vienna $P_cP$ = +11m.9s., iZ = +12m.5s., PP = +13m.5s., PPP = +14m.53s., PS? = +20m.15s., $S_cS$ = +20m.43s., iN = +23m.15s., SS = +23m.50s., iE = +25m.45s., SSS = +26m.49s., iN = +28m.56s.

*Continued on next page.*

**Potsdam** iPPE = +13m.19s., iPPPE = +15m.4s., iN = +19m.37s. = PS − 2s. and +20m.11s., iPSN = +20m.19s. = $S_cS$ − 13s., iN = +21m.5s., iSSN = +24m.10s., eEN = +26m.27s. ?
**Graz** i$P_cP$ = +11m.19s., iPPP = +15m.4s., i = +15m.17s., iSS = +24m.11s.
**Zagreb** i = +11m.3s. = $P_cP$ − 15s., iNE = +11m.51s., eZ = +12m.9s. and +13m.8s. = PP + 3s., i = +13m.37s., eNW = +14m.14s., e = +14m.58s., eNE = +16m.41s., eNW = +20m.48s. = $S_cS$ +12s., eNE = +24m.11s., e = +27m.1s., +28m.48s.
**Leipzig** i = +11m.10s. = $P_cP$ − 9s., eN = +14m.2s. and +15m.11s. = PPPP − 5s. e = +24m.15s.
**Jena** iPE = +10m.53s., eZ = +12m.10s. and +13m.59s., eN = +24m.16s. = SS +19s., eEN = +26m.57s. = SSS + 20s.
**Hof** e = +15m.7s.
**Laibach** e = +15m.1s.
**Triest** ePP = +13m.26s., iPPP = +14m.52s., i = +20m.26s. = PS +19s.
**Göttingen** ePPEZ = +13m.30s., ePPP = +15m.11s., eSSE = +24m.20s., eSSSEN = +27m.41s.
**Treviso** SS = +20m.53s.
**Feldberg** eN = +11m.9s., iE = +11m.12s., eE = +14m.12s., eN = +24m.33s. = SS +4s., eE = +25m.3s.
**Stuttgart** eS = +19m.47s., eSSS = +27m.57s.
**De Bilt** iPPP = +15m.40s., eE = +20m.33s.
**Florence** PP = +13m.27s., PPP = +15m.40s., PS = +20m.55s., SS = +25m.0s., SSS = +28m.10s.
**Zurich** ePP = +13m.46s.
**Strasbourg** $P_cP$ = +11m.55s., PP = +14m.6s., PPP = +16m.9s. = PPPP + 5s., $S_cS$ = +21m.55s.
**Uccle** i = +11m.26s. and +11m.34s., PP = +13m.52s., iPPP = +15m.48s., iSE = +20m.46s., SS = +25m.29s., SSS = +28m.21s.
**Edinburgh** i = +21m.1s. and +21m.17s. = PS + 4s., SS = +25m.30s., i = +31m.57s.
**Stonyhurst** PS? = +21m.26s., SS = +25m.59s.
**Kew** eSSEN = +25m.54s., eSSSEN = +28m.57s.
**Tananarive** ePN = +10m.26s., E = +11m.31s., PP = +14m.15s., PPP = +15m.45s., PSE = +21m.44s., PSN = +21m.48s., SS = +25m.57s., SSS = +29m.15s., E = +31m.25s., N = +31m.35s.
**Adelaide** i = +11m.43s., iPS = +21m.53s., iSS = +26m.38s., iSSS = +29m.48s.
**Barcelona** PP = +14m.55s.
**Sitka** iPP = +15m.3s., iS = +21m.54s., iSS = +27m.8s., iSSS = +30m.7s.
**Melbourne** i = +12m.29s., PS = +24m.37s., SS = +27m.32s.?, SSS = +31m.30s.
**Alicante** iP = +11m.17s., PP = +15m.35s., PPP = +17m.17s.
**Toledo** PP = +15m.35s., PPP = +17m.27s., PPS = +23m.27s., SS = +28m.18s., SSS = +31m.27s., SSSS = +33m.57s.
**Almeria** PP = +15m.33s., PPP = +17m.39s.
**Granada** e = +15m.37s. = +6s.
**Malaga** iPP = +15m.43s., PPP = +17m.44s., i = +20m.4s., PS = +23m.42s., i = +24m.20s., SS = +28m.44s., SSS = +32m.7s., SSSS = +34m.1s.
**Ivigtut** i = +15m.45s. = PP + 5s. and +28m.27s.
**San Fernando** SN = +23m.18s.
**Honolulu T.H.** ePP = +16m.7s., ePS = +24m.17s., eSS = +28m.42s.
**Suva** SS = +29m.15s., SSS = +32m.21s.
**Seattle** eSS = +29m.57s.
**Bozeman** e = +15m.54s., ePP = +17m.18s., eSKS = +24m.9s., ePS = +26m.17s., eSS = +31m.14s., eSSS = +35m.27s.
**Arapuni** SSS = +32m.57s.
**Ukiah** ePP = +17m.36s., iSKS = +24m.13s., PS = +26m.29s., SS = +31m.31s., SSS = +35m.39s.
**Christchurch** iPP = +17m.38s., PPS = +27m.5s., iSS = +31m.41s.
**Wellington** i = +24m.20s. = SKS + 3s., SS = +31m.35s., SSS = +36m.16s., i = +39m.42s.
**Berkeley** ePE = +13m.38s., iZ = +17m.16s. = PP − 15s., eE = +17m.21s., iN = +17m.41s., iZ = +17m.46s., iE = +17m.49s., iN = +21m.58s., eE = +23m.59s., iE = +24m.1s., i = +25m.12s. = S − 1s.
**Sydney** iS = +27m.27s. = SS + 22s.
**Branner** eE = +25m.8s. = S − 9s.
**Lick** eN = +17m.47s. = PP + 10s.
**Tinemaha** i = +17m.54s. = PP + 3s.
**Ottawa** PP = +18m.7s., SKKS = +25m.19s., SS = +32m.39s. ; $T_0$ = 7h.50m.30s.
**Cape Town** PPE = +27m.36s., PPPE = +29m.6s., SSS = +40m.36s., without phase +37m.2s., +39m.54s., +43m.19s., and +47m.55s.
**Pasadena** ePKPZ = +17m.50s., iPPNZ = +18m.22s., iSKKSN = +25m.15s., iPSNZ = +27m.25s., eSSN = +33m.27s.
**Toronto** ePP = +18m.3s., i = +18m.32s., ePPP = +20m.42s., iSKS = +24m.48s., iSN = +26m.5s., iPPS = +28m.4s., iSS = +33m.27s.? ; $T_0$ = 7h.50m.35s.
**Ann Arbor** eE = +19m.3s. and +26m.3s., e = +32m.9s., eN = +33m.45s.

*Continued on next page.*

**Oak Ridge** ePP = +18m.27s., eN = +18m.35s., eE = +18m.51s., eSKSNW = +24m.41s., iSKSNE = +25m.7s., iSKKS = +25m.39s., iPS = +27m.48s., ePPSNE = +28m.41s., eNW = +32m.15s., eNE = +32m.33s., eSSNE = +33m.39s., eSSNW = +34m.7s., eNE = +39m.41s., and +41m.5s., eNW = +41m.13s.; $T_0$ = 7h.50m.18s.
**Chicago** e = +24m.57s. = SKS +4s., eSS = +33m.15s., eSSS = +37m.32s.
**Fordham** ePP = +18m.42s.
**Pittsburgh** iPP = +18m.35s., ePPP = +21m.7s., ePS = +28m.7s.
**Tucson** iPP = +18m.47s., iSKS = +25m.8s., PS = +28m.27s., SS = +34m.11s.
**Florissant** ePKPN = +18m.18s. = PKP +5s., iPP = +18m.56s., iPPP = +21m.12s., iSKS = +25m.6s., iSKKS = +25m.58s., $iS_0S$ = +26m.43s., iPS = +28m.18s., i(?) = +28m.45s., iPPS = +29m.24s., PKKPN = +30m.0s. iSSN = +34m.25s., SKKS'N = +37m.18s., iPPP'N = +37m.42s., eSSSN = +38m.17s., i?N = +40m.4s., iPPPP'N = +42m.33s.; $T_0$ = 7h.50m.36s.
**St. Louis** ePKP = +18m.11s., iPPP = +18m.55s., iSKS = +25m.6s., iSKKS = +26m.34s.; $T_0$ = 7h.50m.36s.
**Georgetown** iPP = +18m.55s.; $T_0$ = 7h.50m.0s.
**Charlottesville** eSKKS = +25m.59s., eSS = +34m.49s.
**San Juan** ePP = +21m.20s., e = +39m.22s., eSSS = +43m.30s.
**Port au Prince** PP = +21m.20s., SKP = +22m.35s., PPP = +24m.17s.
**Huancayo** iPP = +24m.19s., ePPP = +30m.26s., SS = +44m.11s., eSSS = +50m.39s. and +51m.59s.
**La Paz** $iPKP_2$ = +21m.4s., ipP = +22m.5s., SKP = +23m.35s., PSKS = +37m.27s., PPS = +38m.7s., SS? = +42m.45s., i = +45m.45s., SSS = +47m.35s., SSSS = +51m.59s., $L_q$ = +74·9m.
**Sucre** PP = +24m.10s.
**La Plata** Z = +20m.57s. = $PKP_2$ −6s., eN = +24m.19s., PPE = +24m.33s., EZ = +24m.45s., N = +25m.10s., SKSP = +35m.27s. E = +37m.51s., SSSE = +51m.45s., E = +60m.28s.
**Long waves** were also recorded at Bagnères.

**Aug. 25d. 9h. 25m. 15s. Epicentre 1°·7S. 122°·7E. (as on 1929 Nov. 13d.). X**

A = −·540, B = +·841, C = −·030; D = +·842, E = +·540;
G = +·016, H = −·025, K = −1·000.

| | | Δ | Az. | P. | O−C. | S. | O−C. |
|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. |
| **Amboina** | | 5·8 | 110 | 1 45 | $P_g$ | i 3 22 | $S_g$ |
| **Malabar** | | 16·0 | 249 | 3 41 | 0 | i 5 59 | −39 |
| **Batavia** | | 16·5 | 253 | i 3 45 | − 3 | — | — |
| **Medan** | | 24·6 | 283 | 5 17 | + 1 | e 9 39 | + 5 |
| **Andijan** | | 62·4 | 318 | e 10 38 | +17 | e 18 26 | −21 |
| **Samarkand** | | 65·5 | 315 | e 18 45 | S | (e 18 45) | −41 |
| **Ekaterinburg** | | 76·7 | 330 | i 11 53 | + 3 | — | — |
| **Tiflis** | | 82·2 | 313 | i 12 16 | − 3 | e 21 37 | −62 |
| **Pasadena** | z. | 114·8 | 53 | i 18 26k | [− 6] | — | — |
| **Mount Wilson** | | 114·9 | 53 | i 18 24k | [− 9] | — | — |

Additional readings and notes:—
**Batavia** iP = +3m.48s., i = +4m.48s. and +6m.8s., iZ = +6m.15s. and +8m.5s.
Andijan readings are given as P's of separate shocks.
**Tiflis** i = +21m.51s.

**Aug. 25d. 11h. 38m. 53s. Epicentre 31°·7N. 103°·4E. (as at 7h.). X.**

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| **Nanking** | 13·0 | 84 | 3 0 | − 2 | 5 53 | +26 | 6·9 | 7·1 |
| **Chiufeng** | 13·3 | 47 | e 3 10 | + 4 | e 6 12 | +38 | 6·7 | 7·9 |
| **Irkutsk** | 20·6 | 2 | e 4 34 | − 2 | 8 25 | + 7 | 10·6 | — |
| **Vladivostok** | 25·2 | 55 | e 5 23 | + 1 | e 9 47 | + 3 | e 13·4 | 15·1 |
| **Tashkent** | 28·8 | 299 | e 6 31 | PP | — | — | e 16·1 | 19·4 |
| **Bombay** | 30·3 | 253 | e 5 7 | −61 | — | — | — | — |
| **Ekaterinburg** | 38·6 | 324 | i 7 18 | − 2 | — | — | 20·1 | — |

Additional readings:—
**Nanking** iN = +6m.38s. = S* +13s.
**Long waves** were also recorded at Taihoku, Hong Kong, Pulkovo, Potsdam, Copenhagen, and De Bilt.

**Aug. 25d.** Readings also at 0h. (near Santiago), 1h. (Wellington, near Neuchatel, and Zurich), 4h. (Andijan, Tashkent, Samarkand, and Bombay), 5h. (Bombay), 9h. (Tiflis), 11h. (Nagasaki, Nagoya, Sumoto, Chiufeng, and near Lick (2) ), 15h. (Chiufeng), 16h. (near Wellington), 18h. (Hong Kong, Chiufeng (2), Nanking (2), Vladivostok, Tashkent, Baku, Ekaterinburg, Pulkovo, Copenhagen, De Bilt, and Stuttgart), 19h. (Huancayo and La Paz), 21h. (Kew), 23h. (Montezuma, Chiufeng, Ekaterinburg, Tashkent, Sumoto, and near Nagasaki).

**Aug. 26d. 1h. 30m. 32s.** Epicentre 28°·0N. 130°·0E. (as on 1929 Dec. 13d.). X.

A = −·568, B = +·676, C = +·470 ; D = +·766, E = +·643 ;
G = −·302, H = +·360, K = −·883.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Nagasaki | | 4·7 | 359 | e 1 7 | 0 | e 2 8 | + 8 | — | — |
| Hukuoka | | 5·6 | 3 | 1 18 | − 2 | e 2 21 | − 2 | — | — |
| Koti | z. | 6·3 | 28 | e 2 13 | $P_g$ | — | — | — | — |
| Sumoto | | 7·5 | 32 | 1 20 | −26 | 3 37 | S* | — | 4·4 |
| Kobe | | 7·9 | 32 | e 2 23 | $P_g$ | — | — | — | 4·7 |
| Osaka | | 8·1 | 33 | 1 53 | − 2 | 3 58 | S* | — | 4·7 |
| Nagoya | | 9·2 | 38 | e 2 9 | − 1 | e 4 29 | S* | — | — |
| Chiufeng | | 16·6 | 320 | e 3 57 | + 8 | e 7 14 | +22 | e 10·0 | 11·9 |
| Ekaterinburg | | 55·7 | 323 | i 9 40 | + 6 | — | — | 30·5 | 35·7 |

Additional readings :—
Sumoto eZ = +1m.49s. = P +3s., SE = +3m.43s.
Kobe eZ = +2m.45s., eN = +3m.45s., eZ = +3m.50s. = S* −3s., eE = +3m.57s.
Long waves were also recorded at Hong Kong and other European and Russian stations.

**Aug. 26d. 3h. 6m. 20s.** Epicentre 20°·5N. 124°·0E. N.3.

A = −·524, B = +·777, C = +·350 ; D = +·829, E = +·559 ;
G = −·196, H = +·290, K = −·937.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Hokoto | 5·1 | 308 | e 1 18 | + 5 | e 1 31 | $P_g$ | — | — |
| Taihoku | 5·1 | 334 | e 1 11 | − 2 | e 1 49 | $P_g$ | — | — |
| Manila | 6·5 | 207 | i 1 31 | − 1 | i 2 43 | − 3 | — | — |
| Hong Kong | 9·3 | 283 | 1 41 | −30 | 4 48 | $S_g$ | 5·7 | 5·8 |
| Nanking | 12·5 | 339 | — | — | e 5 27 | +12 | — | — |
| Nagoya | 18·6 | 35 | e 4 14 | 0 | e 7 38 | 0 | — | — |
| Tashkent | 50·4 | 307 | e 10 53 | PP | e 16 12 | + 6 | e 24·7 | 32·5 |
| Ekaterinburg | 58·5 | 325 | e 9 30 | −24 | e 18 14 | +18 | 23·7 | — |

Additional readings :—
Manila iN = +3m.13s. = S* +1s., iEN = +3m.43s.
Tashkent e = +15m.19s., +17m.40s., +20m.0s., and +23m.46s.
Ekaterinburg e = +20m.5s.
Long waves were also recorded at De Bilt and Copenhagen.

**Aug. 26d. 20h. 19m. 32s.** Epicentre 52°·0N. 32°·0W. (as on 1926 Dec. 19d.). R.3.

A = +·522, B = −·326, C = +·788 ; D = −·530, E = −·848 ;
G = +·668, H = −·418, K = −·616.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Edinburgh | 17·3 | 65 | e 3 58 | 0 | e 7 18 | + 9 | — | 11·9 |
| Stonyhurst | 17·8 | 72 | i 4 5 | + 1 | i 7 32 | +12 | — | — |
| Durham | 18·2 | 69 | e 7 36 | S | (e 7 36) | + 7 | — | 10·0 |
| Oxford | 18·8 | 78 | e 4 14 | − 2 | 7 49 | + 7 | — | 11·1 |
| Kew | 19·5 | 79 | e 4 24 | 0 | e 8 1 | + 5 | 8·9 | 9·6 |

*Continued on next page.*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Paris | | 22·0 | 84 | e 4 52 | + 1 | — | — | 10·5 | 11·5 |
| Uccle | | 22·5 | 78 | e 4 56 | 0 | 8 59 | + 4 | 10·5 | 12·3 |
| De Bilt | | 22·6 | 75 | 4 59 | + 2 | 9 3 | + 6 | e 10·0 | 12·7 |
| Toledo | | 22·7 | 111 | e 4 54 | − 4 | e 9 7 | + 8 | e 10·5 | — |
| Tortosa | N. | 24·8 | 104 | e 5 13 | − 5 | 9 46 | + 9 | 12·0 | 12·8 |
| Hamburg | | 25·1 | 70 | e 5 21 | 0 | — | — | e 11·9 | 13·5 |
| Strasbourg | | 25·3 | 82 | e 5 34 | +11 | i 10 4 | +18 | e 13·5 | 16·1 |
| Neuchatel | | 25·5 | 85 | e 5 25 | 0 | e 9 59 | + 9 | — | — |
| Copenhagen | | 26·0 | 64 | 5 34 | + 5 | 10 1 | + 3 | 12·5 | — |
| Stuttgart | | 26·1 | 80 | e 5 31 | + 1 | e 10 1 | + 1 | e 12·5 | 14·0 |
| Zurich | | 26·3 | 84 | e 5 34 | + 2 | — | — | — | — |
| Jena | | 26·8 | 75 | — | — | (e 10 28?) | +16 | e 10·5 | — |
| Chur | | 27·1 | 84 | e 5 40 | + 1 | — | — | — | — |
| Potsdam | | 27·2 | 71 | — | — | e 8 28? | −110 | e 11·5 | 15·5 |
| Cheb | | 27·5 | 76 | e 5 53 | +10 | e 10 43 | +19 | e 14·5 | 15·5 |
| Oak Ridge | | 28·1 | 266 | — | — | (e 10 58) | +24 | e 16·0 | — |
| Piacenza | | 28·1 | 86 | e 4 28 | −80 | — | — | — | 16·4 |
| Venice | | 29·5 | 85 | e 4 30 | −91 | i 13 44 | ? | — | — |
| Triest | | 30·2 | 84 | e 5 56 | −11 | e 10 47 | −20 | e 14·3 | 16·0 |
| Ekaterinburg | | 49·9 | 46 | e 8 50 | − 1 | e 15 57 | − 2 | 21·5 | 27·0 |
| Baku | | 54·8 | 68 | e 9 50 | +23 | e 17 14 | + 8 | 27·0 | 32·1 |
| Tashkent | | 64·4 | 55 | e 13 34 | ? | e 19 8 | − 4 | e 30·5 | 41·7 |
| Frunse | | 65·0 | 51 | e 9 46 | −53 | — | — | — | — |
| Andijan | | 66·5 | 54 | e 8 5 | ? | — | — | — | — |

Additional readings and notes :—
Oak Ridge readings are both given as eL.
Tashkent e = +20m.10s. = $S_cS$ − 14s. and +26m.34s. = SSSS − 10s.
Long waves were also recorded at Pulkovo and other European stations.

Aug. 26d. Readings also at 0h. (Baku, Pulkovo, Paris, and Stuttgart), 1h. (Nagasaki), 2h. (La Paz), 3h. (near Samarkand), 4h. (La Paz), 5h. (Baku, Ekaterinburg, Tashkent, Chiufeng, Vladivostok, Nagoya, and near Mizusawa), 6h. (Copenhagen, De Bilt, Paris, and near Taihoku), 7h. (Suva), 8h. (Mount Wilson, Pasadena, Tinemaha, Hong Kong, Nanking, and near Taihoku), 9h. (Ekaterinburg and Tashkent), 10h. (Hong Kong, Nanking, and near Taihoku (2), 11h. (Bombay and near Lick), 13h. (Bombay, Nagoya, and near Tyosi), 14h. (Hong Kong), 15h. (Alicante and Taihoku), 17h. (near Mizusawa), 18h. (near Nagoya), 19h. (Hong Kong), 21h. (Chiufeng), 22h. (Taihoku, Christchurch, Glenmuick, New Plymouth, near Bunnythorp, and Wellington), 23h. (Pasadena, Mount Wilson, Sydney, and Wellington).

Aug. 27d. Readings at 0h. (Chiufeng, Ekaterinburg, Tashkent, and near La Paz), 1h. (Copenhagen, De Bilt, Paris, Stuttgart, and near La Paz), 2h. (Tashkent, near Andijan, and Samarkand), 4h. (Tyosi and near Nagoya), 6h. (Simferopol and Yalta), 7h. (near Tiflis), 9h. (Simferopol and Yalta), 14h. and 15h. (Tucson), 17h. (Tucson and near Nagoya), 18h. (Mount Wilson, Pasadena, Riverside, Tinemaha, Sebastopol, Simferopol, and Yalta), 21h. (San Juan, near Nagoya and Tyosi), 23h. (near Taikyu).

Aug. 28d. 8h. 47m. 32s. Epicentre 43°·0N. 148°·5E. (as on 1933 March 11d.). X.

A = −·624, B = +·382, C = +·682 ; D = +·522, E = +·853 ;
G = −·582, H = +·356, K = −·731.

| | | Δ | Az. | P. | O−C. | S. | O−C. |
|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. |
| Mizusawa | | 6·8 | 303 | e 1 32 | − 5 | 2 37 | −16 |
| Tyosi | | 9·3 | 221 | e 2 14 | + 3 | 3 46 | −10 |
| Nagoya | | 11·9 | 233 | e 2 42 | − 5 | — | — |
| Tinemaha | | 67·8 | 59 | i 10 59a | + 2 | — | — |
| Mount Wilson | Z. | 69·7 | 62 | i 11 11 | + 2 | — | — |
| Pasadena | | 69·7 | 62 | i 11 9a | 0 | — | — |
| Riverside | Z. | 70·2 | 62 | i 11 14 | + 2 | — | — |

Additional readings :—
Tinemaha i = +11m.31s. = $P_cP$ + 7s.
Pasadena iZ = +11m.40s. = $P_cP$ + 8s.

Aug. 28d. 22h. 19m. 44s. Epicentre 59°·0S. 25°·0W. N.2.

A = +·467, B = −·218, C = −·857; D = −·423, E = −·906;
G = −·777, H = +·362, K = −·515.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| La Plata | 32·3 | 304 | 6 26 | + 1 | 11 40 | 0 | 13·6 | — |
| Cape Town | 37·9 | 68 | 7 20 | + 6 | 13 4 | − 1 | — | 15·9 |
| Santiago | 39·4 | 289 | 7 22 | − 5 | 13 42 | +15 | 19·9 | — |
| Montezuma | 47·7 | 300 | e 8 34 | 0 | e 15 35 | + 6 | e 19·8 | — |
| Johannesburg | 49·0 | 72 | 5 4 | ? | 16 16 | +29 | 20·7 | — |
| La Paz | 52·8 | 305 | 9 14 | + 2 | i 16 56 | +17 | 26·3 | 29·4 |
| Huancayo | 59·9 | 299 | i 10 5 | + 1 | i 18 24 | + 9 | — | — |
| Tananarive | 64·9 | 85 | 10 36 | − 2 | i 19 31 | +12 | — | 32·6 |
| Dakar | 73·9 | 8 | e 11 24 | −10 | i 21 0 | − 7 | — | 39·8 |
| Christchurch | 76·4 | 193 | i 11 46 | − 2 | 21 46 | +10 | 31·3 | — |
| Glenmuick | 77·0 | 193 | e 11 52 | 0 | e 21 34 | − 9 | e 38·7 | 58·8 |
| Wellington | 78·4 | 195 | 11 59 | 0 | 21 48 | −10 | 36·6 | 42·3 |
| Fort de France | 79·2 | 325 | (12 26) | +22 | (22 18) | +11 | (32·3) | — |
| Arapuni | 81·4 | 196 | — | — | 22 34 | + 3 | 38·3 | 44·3 |
| Melbourne | 82·9 | 172 | e 12 26 | + 3 | 22 45 | − 1 | — | — |
| Perth | 83·5 | 147 | 12 16 | −10 | 21 16 | −96 | — | — |
| San Juan | 84·4 | 321 | e 12 26 | − 4 | i 22 46 | [− 9] | i 34·3 | — |
| Adelaide | 85·1 | 166 | i 12 33 | − 1 | i 22 53 | [− 7] | 40·4 | 48·3 |
| Port au Prince | 86·6 | 316 | i 12 42 | + 1 | i 23 22 | − 1 | e 36·9 | 42·8 |
| Riverview | 87·1 | 176 | i 12 40a | − 4 | 23 7 | [− 7] | 40·8 | 47·3 |
| Sydney | 87·1 | 176 | e 12 34 | −10 | i 23 40 | +12 | 42·3 | 54·5 |
| San Fernando | 96·7 | 15 | 13 23 | − 5 | 24 16 | [+ 7] | — | 59·8 |
| Malaga | 97·2 | 16 | e 13 34 | + 3 | 24 24 | [+12] | 44·3 | — |
| Almeria | 97·7 | 18 | e 13 39 | + 6 | e 24 3 | [−12] | e 32·0 | 41·7 |
| Granada | 97·8 | 17 | e 13 48 | +15 | e 24 13 | [− 2] | 42·2 | — |
| Algiers | 98·6 | 23 | e 13 47 | +10 | i 25 38 | +24 | 45·3 | 56·3 |
| Alicante | 99·5 | 19 | e 13 33 | − 8 | i 24 19 | [− 4] | e 31·6 | 54·5 |
| Coimbra | 100·1 | 13 | 12 41 | −63 | 24 17 | [− 9] | — | — |
| Helwan | 100·3 | 48 | e 13 51 | + 6 | i 25 41 | +12 | 41·9 | 63·9 |
| Toledo | 100·4 | 20 | e 13 43 | − 2 | i 24 30 | [+ 2] | e 42·9 | 57·4 |
| Suva | 100·5 | 202 | 13 40 | − 6 | 24 40 | [+12] | 51·3 | — |
| Carloforte E. | 101·9 | 26 | e 14 59 | +67 | e 24 23 | [−12] | — | — |
| N. | 101·9 | 26 | e 14 52 | +60 | e 25 13 | {+ 6} | — | — |
| Tortosa E. | 102·0 | 19 | e 14 2 | + 9 | 25 2 | {− 6} | e 41·3 | 62·0 |
| N. | 102·0 | 19 | 13 53 | 0 | 24 33 | [− 2] | e 42·3 | 56·0 |
| Catania | 102·1 | 31 | e 14 13 | +20 | 23 17 | [−79] | 50·7 | 64·3 |
| Apia | 102·3 | 214 | 18 13 | PP | i 28 1 | PS | 42·4 | 68·8 |
| Messina | 102·8 | 31 | 18 10 | PP | 24 45 | [+ 6] | — | — |
| Barcelona | 102·9 | 20 | 18 18 | PP | 24 36 | [− 4] | 36·9 | 56·7 |
| Colombo | 103·5 | 99 | e 14 12 | +12 | — | — | 52·0 | 68·5 |
| Bagnères | 104·0 | 18 | e 19 17 | ? | 24 45 | [ 0] | 45·3 | — |
| Trenta | 104·1 | 31 | e 17 16 | ? | e 24 36 | [− 9] | 33·3 | 62 3 |
| Batavia | 104·4 | 130 | e 14 53 | +49 | e 18 28 | PP | 48·1 | — |
| Kodaikanal | 105·2 | 95 | 18 0 | [− 2] | 27 46 | PS | 48·7 | 58·7 |
| Taranto | 105·5 | 31 | 19 0 | [+57] | 26 22 | {+48} | 49·4 | — |
| Ksara | 105·6 | 48 | e 14 15 | + 6 | 28 3 | PS | — | — |
| Charlottesville | 106·6 | 318 | i 18 36 | PP | 24 56 | [− 1] | 44·5 | — |
| Livorno | 106·6 | 26 | 14 21 | + 7 | 26 41 | S | — | — |
| Georgetown | 107·0 | 320 | i 14 15 | − 1 | i 24 52 | [− 7] | e 46·3 | — |
| Florence | 107·0 | 26 | e 14 16 | 0 | 24 16 | [−43] | 49·3 | 58·3 |
| Prato | 107·1 | 26 | e 14 16 | − 1 | i 28 16 | PS | e 32·5 | 54·3 |
| Puy de Dôme | 107·2 | 20 | e 17 55 | [−14] | 26 42 | {+55} | — | — |
| Fordham | 107·7 | 323 | e 14 18 | − 2 | i 28 40 | PS | 50·3 | — |
| Pavia | 107·9 | 23 | e 18 8 | [− 3] | — | — | — | — |
| Piacenza | 107·9 | 23 | e 14 32 | +11 | 28 21 | PS | 49·3 | 60·3 |
| Oak Ridge | 108·5 | 325 | e 14 3 | −21 | e 26 25 | {+28} | i 45·0 | — |
| Padova | 108·7 | 26 | e 19 1 | PP | — | — | — | — |
| Venice | 108·8 | 26 | e 17 54 | [−20] | i 29 38 | PS | 34·3 | 58·3 |
| Treviso | 109·0 | 25 | e 18 52 | PP | 28 36 | PS | 55·3 | 62·3 |
| Neuchatel | 109·2 | 22 | e 14 34 | + 7 | e 25 6 | [− 4] | — | — |

*Continued on next page.*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Pittsburgh | | 109·4 | 318 | e 14 36 | + 8 | i 24 56 | [−15] | e 44·3 | — |
| Triest | | 109·4 | 27 | e 14 26k | − 2 | i 28 36 | PS | — | 60·8 |
| Chur | | 109·6 | 23 | e 14 33 | + 4 | — | — | — | — |
| Cincinnati | z. | 109·8 | 314 | i 14 28a | − 2 | — | — | — | — |
| Laibach | | 109·9 | 28 | 19 21 | PP | e 26 22 | {+16} | e 56·4 | — |
| Zurich | | 109·9 | 23 | e 14 46 | +15 | — | — | — | — |
| Medan | | 109·9 | 118 | e 18 37 | [+19] | — | — | 52·4 | 80·3 |
| Bombay | N. | 110·1 | 86 | e 14 42 | +11 | 25 16 | [+ 2] | 52·6 | 81·6 |
| Paris | | 110·1 | 18 | e 14 32 | + 1 | e 27 14 | {+66} | 34·3 | 64·3 |
| Zagreb | | 110·1 | 29 | e 14 34 | + 3 | e 28 16? | PS | e 52·3 | — |
| Belgrade | | 110·3 | 32 | 19 3 | PP | e 28 38 | PS | e 63·2 | — |
| Strasbourg | | 110·8 | 21 | e 14 34 | 0 | e 24 26 | [−51] | 47·3 | 66·4 |
| Graz | | 111·1 | 28 | e 18 23 | [+ 2] | i 28 51 | PS | e 49·3 | 63·3 |
| Stuttgart | | 111·3 | 23 | e 14 35a | − 2 | e 26 57 | {+41} | e 47·3 | 60·8 |
| Karlsruhe | | 111·4 | 22 | 19 12 | PP | 29 1 | PS | e 55·3 | — |
| St. Louis | | 111·5 | 310 | e 14 10 | −28 | i 25 46 | [+26] | e 44·3 | 56·3 |
| Florissant | | 111·7 | 310 | i 14 34 | − 5 | 24 46 | [−35] | 50·3 | 58·3 |
| Hyderabad | | 111·8 | 92 | 14 46 | + 7 | 25 21 | [ 0] | 38·9 | 59·9 |
| Toronto | | 112·0 | 320 | e 14 34 | − 6 | i 25 9 | [−13] | 53·3 | 60·8 |
| Ann Arbor | | 112·3 | 316 | e 18 16 | [− 9] | e 25 16 | [− 7] | e 48·3 | 53·3 |
| Kew | | 112·3 | 15 | e 14 39 | − 3 | i 27 24 | {+61} | e 45·3 | 62·7 |
| Ottawa | | 112·4 | 323 | e 14 34 | − 8 | e 24 56 | [−28] | e 45·3 | — |
| Oxford | | 112·4 | 15 | 19 30 | PP | i 29 6 | PS | e 45·9 | 67·3 |
| Vienna | | 112·4 | 27 | e 18 14 | [−11] | 28 51 | PS | 35·6 | 68·3 |
| Uccle | | 112·4 | 18 | e 14 40 | − 2 | e 25 23 | [− 1] | 47·3 | 51·3 |
| Budapest | | 112·4 | 30 | 19 43 | [+78] | 29 35 | PS | 36·3 | 66·3 |
| Feldberg | | 112·5 | 22 | e 19 43 | [+78] | e 29 4 | PS | — | 60·2 |
| Chicago | | 113·2 | 313 | e 18 34 | [+ 6] | e 25 27 | [ 0] | e 46·8 | — |
| Cheb | | 113·2 | 24 | e 19 9? | PP | e 29 13 | PS | e 60·3 | 75·3 |
| Prague | | 113·7 | 26 | e 17 16? | [−73] | e 29 17 | PS | e 45·3 | 58·3 |
| De Bilt | | 113·7 | 18 | e 14 49 | 0 | e 25 32 | [+ 3] | e 48·3 | 51·9 |
| Amboina | | 113·9 | 150 | e 14 31 | −19 | — | — | 25·3 | 42·3 |
| Jena | | 113·9 | 24 | e 19 35 | PP | e 26 27 | {− 7} | e 45·3 | 55·3 |
| Göttingen | | 114·1 | 22 | e 18 53 | [+23] | i 29 24 | PS | e 55·1 | 67·9 |
| Sebastopol | | 114·2 | 41 | 20 16 | ? | — | — | — | — |
| Stonyhurst | | 114·3 | 14 | e 19 17 | PP | i 27 43 | ? | 56·3 | 71·3 |
| Leipzig | | 114·4 | 24 | e 19 30 | PP | i 29 27 | PS | — | 55·3 |
| Yalta | | 114·4 | 42 | e 18 53 | [+22] | e 29 13 | PS | 62·3 | — |
| Simferopol | | 114·8 | 41 | 18 16? | [−16] | — | — | — | — |
| Madison | | 115·0 | 313 | e 15 2 | + 7 | e 29 11 | PS | e 46·2 | — |
| Tucson | | 115·2 | 291 | e 18 56 | [+23] | e 25 32 | [− 2] | 48·3 | — |
| Durham | | 115·3 | 15 | 15 19 | +22 | 29 40 | PS | — | 62·3 |
| Potsdam | | 115·5 | 24 | e 14 52 | − 6 | i 25 32 | [− 3] | e 52·3 | 65·3 |
| Tiflis | | 115·9 | 51 | e 14 55 | − 5 | i 29 39 | PS | 48·6 | 73·7 |
| Hamburg | | 116·0 | 22 | e 14 58 | − 2 | e 25 22 | [−15] | e 49·1 | 50·3 |
| Edinburgh | | 116·2 | 13 | e 19 16? | PP | i 29 50 | PS | 46·3 | 84·6 |
| Baku | | 116·9 | 55 | e 15 15 | +10 | — | — | — | — |
| Copenhagen | | 118·5 | 22 | 15 16 | + 4 | 28 10 | ? | 50·3 | — |
| La Jolla | | 118·8 | 286 | i 18 51 | [+ 8] | — | — | — | — |
| Riverside | z. | 119·8 | 286 | i 18 45k | [ 0] | — | — | — | — |
| Mount Wilson | z. | 120·3 | 286 | i 18 46 | [− 1] | — | — | — | — |
| Pasadena | | 120·3 | 286 | i 18 47k | [ 0] | i 25 52 | [+ 1] | e 51·5 | — |
| Calcutta | | 121·2 | 98 | 20 10 | PP | 33 20 | ? | 60·0 | 62·0 |
| Santa Barbara | | 121·3 | 285 | i 18 57 | [+ 8] | — | — | — | — |
| Ivigtut | | 121·5 | 347 | i 18 55 | [+ 6] | e 27 27 | { 0} | — | — |
| Bergen | | 121·7 | 16 | i 19 14? | [+25] | 29 29 | SKSP | 46·3 | 46·7 |
| Dehra Dun | | 122·2 | 84 | 20 36 | PP | 29 56 | PS | 41·6 | 51·3 |
| Tinemaha | | 122·7 | 288 | i 18 51 | [− 1] | — | — | — | — |
| Upsala | | 123·4 | 23 | 20 30 | PP | 30 45 | PS | e 53·3 | 63·5 |
| Samarkand | | 124·1 | 68 | e 19 4 | [+ 9] | — | — | — | — |

*Continued on next page.*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Lick | N. | 124·6 | 286 | e 18 56 | [ 0] | — | — | e 62·4 | — |
| Branner | | 124·9 | 285 | e 18 57 | [ 0] | e 27 53 | {+ 5} | — | — |
| Kucino | | 125·2 | 37 | e 19 41 | [+44] | 28 1 | {+11} | e 37·8 | 72·9 |
| Berkeley | | 125·3 | 287 | i 19 2 | [+ 4] | e 27 45 | {− 6} | — | — |
| Bozeman | | 126·0 | 300 | e 19 21 | [+22] | — | — | e 52·7 | — |
| Palau | | 126·1 | 154 | 19 17 | [+18] | — | — | — | — |
| Pulkovo | | 126·3 | 30 | e 15 50 | + 1 | e 27 56 | {− 6} | 60·3 | 70·4 |
| Ukiah | | 126·7 | 286 | e 19 23 | [+23] | i 26 18 | [+ 8] | e 54·3 | — |
| Andijan | | 127·6 | 71 | e 18 32 | [−30] | — | — | — | — |
| Manila | | 129·0 | 136 | i 19 23 | [+18] | — | — | — | — |
| Honolulu T.H. | | 129·6 | 243 | e 19 36 | [+30] | e 26 12 | [− 6] | 60·6 | — |
| Frunse | | 130·3 | 71 | e 19 13 | [+ 5] | — | — | — | — |
| Almata | | 131·7 | 72 | e 18 59 | [−11] | — | — | — | — |
| Seattle | | 132·6 | 294 | e 19 10 | [− 1] | — | — | e 60·0 | — |
| Hong Kong | | 133·4 | 123 | — | — | 22 59 | PKS | — | 40·5 |
| Ekaterinburg | | 134·1 | 49 | e 16 22 | − 6 | i 28 50 | {+ 2} | 57·3 | — |
| Taihoku | | 138·8 | 131 | e 19 35 | [+15] | — | — | — | — |
| Isigakizima | | 139·2 | 134 | 19 26 | [+ 6] | — | — | — | — |
| Nanking | | 143·9 | 121 | 19 29 | [− 2] | 30 50 | {+63} | 66·8 | 73·8 |
| Sitka | | 144·7 | 298 | e 19 31 | [− 2] | e 32 36 | SKSP | i 61·8 | — |
| Titizima | | 146·8 | 159 | 19 33 | [− 4] | — | — | — | — |
| Nagasaki | Z. | 148·9 | 136 | 19 41 | [+ 1] | — | — | — | — |
| Chiufeng | | 149·2 | 109 | e 19 43 | [+ 3] | 23 18 | PP | — | — |
| Hukuoka | | 149·8 | 136 | e 19 46 | [+ 4] | e 33 40 | SKSP | — | — |
| Hukuoka B. | | 149·8 | 136 | 19 48 | [+ 6] | — | — | — | — |
| Simidu | | 150·0 | 141 | e 19 49 | [+ 7] | 22 6 | ? | — | — |
| Muroto | | 150·8 | 143 | 19 51 | [+ 8] | — | — | — | — |
| Koti | | 150·9 | 141 | e 19 50 | [+ 7] | — | — | — | — |
| Taikyu | | 151·2 | 132 | 19 52 | [+ 9] | 23 25 | PKS | 30·6 | — |
| Irkutsk | | 151·3 | 80 | e 19 46 | [+ 3] | e 29 40 | {−50} | 67·3 | 77·6 |
| Zinsen | | 151·8 | 127 | 19 44 | [ 0] | — | — | — | 94·6 |
| Sumoto | | 152·0 | 323 | 19 51 | [+ 7] | e 26 25 | PPP | e 39·2 | 62·8 |
| Keizyo | E. | 152·0 | 128 | 19 49 | [+ 5] | e 25 42 | ? | — | — |
| Kobe | | 152·4 | 143 | e 19 49 | [+ 4] | — | — | e 62·7 | 63·8 |
| Osaka | | 152·5 | 144 | 19 44 | [− 1] | 35 55 | ? | 62·3 | 90·5 |
| Osaka B. | | 152·5 | 144 | 19 50 | [+ 5] | — | — | — | — |
| Heizyo | | 152·8 | 124 | 16 54 | ? | — | — | — | — |
| Toyooka | | 153·1 | 142 | 19 48 | [+ 2] | — | — | e 63·0 | 86·7 |
| Nagoya | | 153·4 | 146 | 20 4 | {−10} | 25 25 | ? | — | — |
| Tokyo | | 154·6 | 150 | 19 56 | [+ 8] | — | — | — | — |
| Tyosi | | 155·0 | 152 | e 20 4 | {−17} | 25 35 | ? | — | — |
| Mizusawa | E. | 158·3 | 150 | e 20 6 | [+15] | e 24 24 | PP | — | — |
| | N. | 158·3 | 150 | e 20 22 | [+31] | e 24 23 | PP | — | — |
| Vladivostok | | 158·7 | 128 | e 19 54 | [+ 2] | — | — | e 50·5 | 92·6 |

**Additional readings and notes :—**
**La Plata PPP = +7m.40s., SN = +11m.45s., Z = +13m.6s. =SS − 17s.**
**Cape Town +8m.48s. =PPP + 2s.**
**Montezuma eSS = +18m.57s.**
**La Paz PPPN = +12m.14s., PSN = +17m.19s., SSN = +19m.47s., $L_q$ = +24·6m.**
**Huancayo i = +10m.11s. and +10m.43s. =$P_cP$ − 10s., iSS = +20m.44s.**
**Tananarive EN = +10m.44s. and +11m.0s., N = +11m.31s., EN = +14m.44s., eE = +19m.20s., N = +19m.28s., +20m.37s. =$S_cS$ +10s. and +23m.10s., E = +23m.35s. =SS +11s., N = +26m.25s., E = +26m.30s., +28m.34s., and +30m.4s., N = +30m.23s.**
**Dakar ePS = +21m.40s.**
**Christchurch PPZ = +14m.51s., iPSZ = +22m.34s.**
**Glenmuick esP? = +22m.16s. =PS +7s., eSS = +26m.43s.**
**Wellington i = +12m.8s., +12m.16s., and +12m.30s., pP = +12m.47s., PP = +15m.44s., PPP = +16m.58s., $S_cS$? = +22m.1s., i = +22m.40s. =PS +11s., SS = +27m.6s., SSS = +32m.53s.**
**Fort de France readings have been *diminished* by 5m.**
**Arapuni SS = +28m.16s.?, i = +34m.16s.**
**Melbourne i = +17m.15s. =PPP +3s., +22m.16s.?, +27m.38s. =SS − 18s., +31m.28s. =SSS +10s. and +33m.4s. =SSSS − 20s.**
**Perth PP = +15m.41s., PPP = +17m.47s., PPPP = +18m.47s., S = +23m.1s., PS = +23m.16s., PPS = +23m.36s., SS = +28m.21s., SSS = +34m.16s.**

*Continued on next page.*

San Juan i = +13m.59s., iPP = +15m.59s., e = +24m.27s.
Adelaide i = +13m.16s., iPP = +15m.47s., iPS = +23m.24s., i = +23m.48s. and +34m.51s.
Port au Prince PP = +16m.4s., PPP = +17m.50s., PS = +24m.17s.
Riverview iE = +23m.34s. = S +6s., iSSE? = +29m.13s., iSSSSE? = +35m.17s.
Sydney SS = +29m.16s., SSS = +35m.16s.
Almeria PP = +17m.27s.
Granada PP = +17m.41s.
Malaga e = +13m.53s., PP = +16m.58s., PPP = +19m.4s., e = +25m.12s. = S −4s., iPS = +25m.22s., PPS = +25m.58s., SS = +31m.42s., SSS = +35m.34s.
Algiers PP = +17m.51s., SKS = +24m.16s., PS = +26m.55s., PPS = +29m.16s.
Alicante PP = +17m.49s., PPP = +19m.33s., PS = +25m.5s.
Helwan ePP = +17m.39s., SKS = +24m.32s.
Toledo i = +17m.52s. = PP +6s., PPP = +19m.16s., SS = +24m.28s., PS = +25m.25s. = S −5s., i = +27m.1s. = PS +11s., SSS = +30m.37s.
Suva PP = +17m.16s.?, PPP = +19m.58s., SS = +31m.16s., SSS = +35m.16s. ?
Apia SS = +33m.12s.; $T_0$ = 22h.19m.52s.
Colombo iPKP = +18m.17s. = PP +8s.
Bagnères PS = +27m.39s., SS = +33m.30s.
Ksara PP = +18m.40s.
Charlottesville ePS = +27m.55s., eSSS = +33m.36s. = eSS +4s.
Georgetown iPPNZ = +18m.52s., iN = +19m.49s., iPSN = +27m.53s.
Florence PP = +18m.41s., PPP = +21m.16s., PS = +27m.46s., SS = +32m.31s., SSS = +39m.16s.
Fordham iPP = +19m.0s., iPPP = +21m.24s.
Oak Ridge eNE = +14m.33s., e = +17m.58s. = PKP −15s., ePP = +18m.35s., eNE = +20m.5s. and +21m.43s., iSKSNE = +25m.1s., eSNW = +25m.51s., eNE = +27m.23s., eSSNE = +28m.3s., iSSNW = +28m.8s., eSSN = +28m.16s. = PS +3s., iSSSNW = +30m.32s., e = +33m.34s., eSSSSNW = +34m.12s.; $T_0$ = 22h.19m.46s.
Venice eP = +18m.54s. = PP +6s., iS = +28m.33s. = PS +17s.
Treviso SS = +29m.42s.
Neuchatel ePKP = +18m.12s., ePP = +19m.4s.
Pittsburgh e = +17m.36s., ePP = +19m.14s., eSS = +34m.40s.
Triest iPP = +19m.6s., iPPS = +29m.32s., iSS = +34m.41s., e = +38m.6s. = SSS −4s.
Chur ePP = +19m.6s.
Cincinnati i = +14m.41s., +18m.44s., and +19m.6s.
Laibach e = +29m.11s.
Zurich ePKP = +18m.53s., ePP = +19m.8s., eSS = +34m.46s.
Medan i = +19m.6s. = PP +10s., +20m.6s., +20m.31s., +28m.31s. = PS +4s., and +29m.31s.
Bombay PPN = +19m.10s., PSN = +28m.42s., PPSN = +29m.41s., SSN = +34m.41s.
Paris PP = +19m.14s., PS = +28m.43s.
Zagreb e = +19m.10s. = PP +12s., +24m.47s., +34m.12s. = SS −8s., +37m.10s., +45m.16s. ? and +47m.44s.
Belgrade e = +19m.22s. = PP +22s. and +21m.35s. = PPP +22s., eL = +34m.58s.
Strasbourg iPP = +19m.16s., SKKS = +26m.20s., iPS = +28m.38s., iPPS = +29m.45s., eSS = +35m.16s.
Graz i$P_0$P = +19m.19s. = PP +14s., iSS = +35m.9s., i = +36m.3s.
Stuttgart ePP = +19m.4s., iPP = +19m.20s., ePPP = +22m.10s., eSKS = +25m.16s., eSKKS = +26m.16s., ePS = +28m.52s., e = +34m.22s., eSS = +35m.6s.; $T_0$ = 22h.19m.15s.
St. Louis ePP = +19m.55s., iPS = +29m.9s.; $T_0$ = 22h.19m.52s.
Florissant iPKPZ = +18m.28s. = PKP +5s., iPPZ = +19m.19s., iPPPZ = +21m.46s., SKKSN = +25m.46s., SN = +26m.27s., $S_0$SN = +26m.39s., iPSN = +28m.52s., iPPSN = +29m.51s., iPKKPZ = +30m.39s., iSSN = +34m.34s., iSKKS′ = +37m.38s., iPPP′Z = +37m.50s., iSSSN = +38m.47s. iPPPP′Z = +41m.3s.; $T_0$ = 22h.19m.46s.
Toronto ePE = +14m.37s., PKP = +18m.16s. ?, PPE = +19m.1s., PP = +19m.9s., i = +19m.25s., iPS = +28m.37s., iSS = +35m.1s.
Ann Arbor ePPPN = +22m.10s., iPS = +29m.5s., eSS = +35m.10s., iSSS = +39m.46s.; $T_0$ = 22h.19m.36s.
Kew ePKP = +18m.37s., ePPZ = +19m.35s., iSKSEN = +25m.19s., iPSEN = +29m.7s., iSPZ = +29m.11s., eSSEN = +35m.7s., eSSSN = +38m.43s., eSSSSN = +42m.31s.
Ottawa PKP = +18m.16s., PP = +19m.22s., PS = +28m.40s., SS = +33m.44s.
Oxford eN = +26m.30s. = SKKS +6s., eE = +27m.16s., i = +35m.28s.
Vienna iN = +19m.20s. = PP +5s., iE = +19m.41s., +20m.38s., and +21m.30s. = PPP −1s., PPP = +25m.33s. = SKS +9s., SKKS = +29m.24s., iN = +30m.32s., PS = +31m.59s., PPS? = +33m.58s., iE = +34m.37s. = SS −11s.
Uccle ePKP = +18m.36s., iPP = +19m.23s., i = +27m.25s., iPSZ = +29m.9s., iSS = +35m.22s., iSSSE = +39m.25s.
Feldberg eE = +29m.28s. and +35m.18s. = SS +43s.
Chicago ePP = +19m.38s., iPS = +28m.58s., e = +36m.16s.
Cheb e = +19m.31s. = PP +11s. and +26m.34s. = SKKS +4s., eSS = +34m.38s., e = +35m.36s.

*Continued on next page.*

Prague ePP = +19m.31s., eSSS = +35m.4s. =SS −4s.
De Bilt ePPZ = +19m.22s., eEN = +27m.38s.
Amboina i = +16m.6s.
Jena ePKP = +19m.38s., eE = +19m.58s., eN = +20m.7s., eE = +20m.10s., eN = +21m.40s., eZ = +21m.46s. =PPP +2s., eNZ = +26m.30s., e = +29m.16s. =PS +10s., eEN = +35m.16s. =SS +5s., eZ = +37m.34s.
Göttingen iPNZ = +19m.41s. =PP +14s., iPSEN = +30m.31s., iSSN = +35m.47s., eSSSN = +39m.16s. ?, $eL_g$ = +48·3m.
Stonyhurst iPS? = +29m.41s., iSS? = +35m.48s., iSSS? = +39m.44s.
Leipzig i = +19m.55s. and +35m.52s. =SS +34s., e = +46m.46s.
Madison ePP = +19m.48s., eSS = +35m.4s.
Tucson PP = +19m.40s., e = +25m.11s., PS = +29m.16s., eSS = +35m.46s.
Durham +19m.19s. =PP −16s., +24m.46s. and +36m.13s.
Potsdam eEZ = +18m.46s. =PKP +12s., iPKPZ = +19m.27s. =PP −10s., iPKPN = +19m.31s., eN = +19m.34s., ePPN = +19m.46s., iPPE = +19m.49s. and +19m.53s., iZ = +20m.1s., iE = +22m.26s. =PPP +28s., eE = +23m.46s. =PPPP +6s., iSKSN = +25m.35s., iSKKSN = +26m.28s., iPS = +29m.35s., iSKSPN = +29m.58s., iZ = +30m.39s., iPPS = +30m.54s., iPPP(△ >180°) = +35m.6s., eSSE = +35m.16s.?, iSSN = +35m.42s., eZ = +36m.10s., iPSSN = +36m.20s., eSSSN = +39m.46s.
Tiflis ePKPEN = +18m.51s., iPPNZ = +19m.53s., eN = +29m.21s. =PS −3s., eEZ = +29m.25s., eSSSN = +39m.58s.
Hamburg ePKPZ = +18m.27s., iPPZ = +20m.6s., PS = +29m.43s., ePPSZ = +30m.48s., eSSN = +36m.10s.
Edinburgh = +27m.43s., +36m.10s., and +49m.10s.
Baku iPP = +20m.3s.
Copenhagen Z = +18m.52s. =PKS +10s., eZ = +19m.32s., PP = +20m.11s., eN = +25m.4s., eEN = +25m.44s., SKKS = +27m.15s., iPS = +30m.1s., eN = +31m.28s., SS = +36m.16s. ?
Pasadena iPPZ = +20m.16s., iPPPZ = +23m.19s., iPSN = +30m.6s., iSSN = +37m.4s.
Santa Barbara iPPZ = +20m.49s.
Ivigtut iZ = +19m.7s., ePP = +20m.23s., PS = +30m.22s., SS = +36m.58s.
Upsala SS = +37m.32s.
Lick eN = +19m.37s.
Kucino PP = +20m.57s., PPS = +33m.4s.
Berkeley ePKPE = +19m.10s., iN = +21m.0s., iEZ = +21m.3s.
Bozeman ePP = +21m.0s., ePPP = +24m.30s., eSS = +38m.16s., eSSS = +42m.52s.
Pulkovo ePKP = +18m.58s., PP = +21m.1s., ePKS = +22m.16s., ePS = +30m.40s., SS = +38m.10s., eSSS = +42m.4s.
Ukiah PP = +21m.12s., i = +22m.40s., iPS = +31m.18s., i = +33m.58s., SS = +38m.24s.
Manila P = +16m.28s.
Honolulu T.H. iPP = +21m.27s., e = +22m.26s., ePS = +31m.39s., eSS = +38m.36s.
Seattle ePP = +21m.48s., i = +22m.50s. =PKS +5s., e = +25m.34s.
Ekaterinburg ePKP = +19m.8s., PP = +21m.41s., iPKS = +22m.48s.
Nanking iZ = +20m.37s., PKP = +23m.11s. =PKS −7s., PPP = +27m.35s., S = +33m.11s.
Sitka iPKP = +19m.34s., iPP = +22m.23s., eSKP = +22m.56s., e = +46m.46s. =SSS −2s.
Taikyu e = +20m.42s.
Irkutsk ePKS = +23m.10s., SKSP = +33m.32s., PPS = +36m.13s., eSS = +43m.28s., eSSS = +48m.16s.
Zinsen $eP_1E$ = +19m.50s., $P_2Z$ = +19m.53s., $eP_2E$ = +20m.0s., $P_2Z$ = +20m.6s., eN = +23m.38s. =PP +7s., eZ = +23m.40s., +26m.50s. =PPP +3s. and +36m.48s.
Sumoto PZ = +19m.54s., eSE = +26m.49s. =PPP +0s.
Keizyo eE = +38m.31s.
Kobe ePKPEN = +19m.53s., eZ = +19m.55s., iNZ = +20m.7s. =$PKP_2$ −3s., iE = +22m.7s., PPZ = +23m.43s., iN = +24m.35s., eN = +32m.41s., eE = +33m.1s., SSE = +43m.2s., SSN = +43m.5s.
Heizyo eE = +21m.32s. and +23m.19s. =PP −17s.
Toyooka PN = +19m.56s., PE = +20m.4s. =$PKP_2$ −9s.
Tyosi e = +64m.32s. and +84m.35s.
Mizusawa L?N = +27m.42s., L?E = +27m.58s.
Vladivostok i = +20m.10s. and +20m.32s. =$PKP_2$ −6s., e = +24m.26s. = PP +17s.
Long waves were also recorded at Balboa Heights and Phu-Lien.

Aug. 28d. Readings also at 0h. (near Manila), 3h. (Nagoya), 4h. (Huancayo), 6h. (near Sumoto), 8h. (Samarkand), 10h. (near Taihoku), 12h. (Mizusawa and near Tyosi), 13h. (Mount Wilson, Pasadena, Riverside, Tinemaha, Ekaterinburg, Huancayo, and near Tiflis (2)), 14h. (Hong Kong and Stuttgart), 16h. (La Paz), 17h. (near Taihoku), 20h. (Mount Wilson, Pasadena, Tinemaha, and near Sumoto), 21h. (Huancayo), 22h. (Kodaikanal, La Paz, near Branner, and Lick).

**Aug. 29d. 12h. 31m. 26s.** Epicentre 37°·8N. 142°·0E. N.1.
(Japanese stations give 37°·7N. 141°·4E.).

Probable error of epicentre ±0°·16.

A = −·623, B = +·486, C = +·613; D = +·616, E = +·788;
G = −·483, H = +·377, K = −·790.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Sendai | | 1·0 | 298 | 0 15k | + 1 | 0 26 | 0 | — | — |
| Onahama | | 1·2 | 225 | 0 18k | + 1 | 0 30 | − 1 | — | — |
| Hukusima | | 1·2 | 268 | 0 18k | + 1 | 0 31 | 0 | — | — |
| Yamagata | | 1·4 | 289 | 0 17k | − 3 | 0 32 | − 4 | — | — |
| Mizusawa | | 1·5 | 333 | 0 23 | + 2 | 0 42 | + 1 | — | — |
| Miyako | | 1·8 | 0 | 0 26a | 0 | 0 52 | + 6 | — | — |
| Mito | | 1·9 | 221 | 0 26k | − 2 | 0 45 | − 4 | — | — |
| Morioka | | 2·0 | 341 | 0 31k | + 2 | 1 23 | ? | — | — |
| Kakioka | | 2·2 | 223 | 0 28 | − 3 | 0 48 | − 9 | — | — |
| Tukubasan | | 2·2 | 224 | 0 32a | + 1 | 0 52 | − 5 | — | — |
| Tyosi | | 2·3 | 204 | e 0 33 | 0 | 1 1 | + 2 | — | 1·3 |
| Akita | | 2·4 | 322 | 0 39a | + 5 | 1 11 | + 9 | — | — |
| Kumagaya | | 2·7 | 232 | 0 38 | − 1 | 1 10 | + 1 | — | — |
| Maebasi | | 2·8 | 239 | 0 39k | − 1 | 1 7 | − 5 | — | — |
| Tokyo | | 2·8 | 220 | 0 38 | − 2 | 1 10 | − 2 | — | 1·2 |
| Yokohama | | 3·0 | 218 | 0 44 | + 1 | 1 18 | + 1 | — | — |
| Nagano | | 3·3 | 249 | 0 47k | 0 | 1 35 | S* | — | — |
| Mera | | 3·4 | 211 | 0 48 | − 1 | 1 51 | S* | — | — |
| Hunatu | | 3·5 | 231 | 0 45 | − 5 | 1 26 | − 4 | — | — |
| Kohu | | 3·5 | 233 | 0 50k | 0 | 1 43 | S* | — | — |
| Misima | | 3·7 | 222 | 0 52k | − 1 | 1 27 | − 8 | — | — |
| Numadu | | 3·7 | 223 | 0 56 | + 3 | 1 38 | + 3 | — | — |
| Toyama | | 4·0 | 254 | 0 59 | + 2 | 1 49 | + 7 | — | — |
| Wazima | | 4·1 | 265 | 1 2 | + 4 | 1 53 | S* | — | — |
| Omaesaki | | 4·5 | 223 | 1 24 | $P_g$ | 2 11 | S* | — | — |
| Muroran | | 4·6 | 350 | 1 11 | + 5 | 2 8 | S* | — | — |
| Hamamatu | | 4·6 | 230 | 1 7 | + 1 | 1 56 | − 2 | — | — |
| Gihu | | 4·9 | 241 | 1 9 | − 1 | 2 6 | + 1 | — | — |
| Nagoya | | 4·9 | 238 | 1 10 | 0 | 2 7 | + 2 | — | 2·8 |
| Hikone | | 5·3 | 242 | 1 18k | + 3 | 2 15 | 0 | — | — |
| Sapporo | | 5·3 | 355 | 1 28 | +13 | 2 44 | $S_g$ | — | — |
| Kameyama | | 5·4 | 236 | 1 19 | + 2 | 2 36 | S* | — | — |
| Osaka | | 6·1 | 241 | 1 18 | − 9 | 2 42 | + 6 | — | 3·6 |
| Nemuro | | 6·1 | 26 | 1 14 | −13 | 2 18 | −18 | — | — |
| Toyooka | | 6·2 | 250 | 1 29 | + 1 | 2 42 | + 4 | — | 3·7 |
| Kobe | | 6·4 | 242 | e 1 31 | 0 | e 2 54 | +11 | — | 3·4 |
| Wakayama | | 6·6 | 240 | 1 34 | 0 | 3 11 | S* | — | — |
| Sumoto | | 6·7 | 241 | 1 39 | + 4 | 2 52 | + 1 | — | 3·8 |
| Muroto | | 7·9 | 237 | e 2 56 | $P_g$ | e 3 49 | S* | — | — |
| Koti | | 8·1 | 241 | 2 4 | + 9 | — | — | — | 4·1 |
| Hamada | | 8·5 | 253 | — | — | 3 35 | − 1 | — | — |
| Vladivostok | | 9·3 | 308 | 2 14 | + 3 | e 4 4 | + 8 | 4·7 | 5·1 |
| Hukuoka B. | | 10·3 | 249 | 2 29 | + 4 | 4 34 | +13 | — | — |
| Taikyu | | 10·9 | 264 | 2 33 | 0 | — | — | — | — |
| Nagasaki | | 11·2 | 246 | 2 37 | 0 | 5 16 | S* | — | — |
| Chiufeng | | 20·2 | 285 | e 4 42 | +10 | i 8 38 | +28 | — | — |
| Andijan | | 52·6 | 297 | e 9 9 | − 2 | — | — | — | — |
| Ekaterinburg | | 54·7 | 319 | i 9 24 | − 2 | e 17 21 | +16 | 32·6 | 35·0 |
| Samarkand | | 56·8 | 297 | e 9 34 | − 8 | — | — | — | — |
| Tiflis | | 70·6 | 308 | e 11 11 | − 3 | — | — | — | — |
| Tinemaha | | 74·7 | 55 | i 11 40 | + 1 | — | — | — | — |
| Pasadena | z. | 76·6 | 57 | e 11 45a | − 4 | — | — | — | — |
| Mount Wilson | z. | 76·6 | 57 | i 11 48 | − 1 | — | — | — | — |
| Riverside | z. | 77·2 | 57 | i 11 51 | − 2 | — | — | — | — |
| La Paz | z. | 146·0 | 59 | 19 37 | [+ 1] | — | — | — | — |

*For Notes see next page.*

NOTES TO AUGUST 29d. 12h. 31m. 26s.

Additional readings :—
Tyosi iP = +41s. = $P_g$ +1s.
Kobe eSZ = +2m.57s.
Sumoto SE = +2m.55s.
Hamada +4m.19s. = S* +8s.
Ekaterinburg $L_q$ = +25·6m.
Pasadena iZ = +12m.0s.
Long waves were also recorded at Hong Kong, Kucino, Pulkovo, and other European stations.

Aug. 29d. 14h. 52m. 37s. Epicentre 11°·0S. 69°·5W. N.2.

A = +·344, B = −·919, C = −·191 ; D = −·937, E = −·350 ;
G = −·067, H = +·179, K = −·982.

A *depth* of focus 0·085 has been assumed. The readings do not fit in with this assumption very well, and it seems probable that the shock is multiple and that the focal depth is still greater. Records from such shocks would not be expected to come into line under a standardised method of treatment.

| | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | ° | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| La Paz | +0·9 | 5·6 | 167 | i 1 43 | +11 | i 3 10 | +24 | — | 3·4 |
| Huancayo | +0·8 | 5·8 | 259 | i 1 37 | + 3 | i 2 37 | −11 | i 2·9 | — |
| Montezuma | −1·4 | 11·6 | 177 | — | — | i 4 33 | +15 | — | — |
| Santiago | −3·8 | 22·4 | 183 | 4 11 | − 3 | 7 31 | − 7 | — | — |
| La Plata | −4·4 | 26·1 | 158 | 4 44 | − 4 | 8 28 | −12 | 11·3 | 12·2 |
| Fort de France | −4·6 | 27·0 | 18 | 5 46 | +51 | 10 28 | ? | 13·0 | — |
| San Juan | −5·2 | 29·6 | 7 | i 5 17 | + 3 | i 9 27 | − 3 | i 12·3 | — |
| Port au Prince | −5·2 | 29·7 | 355 | i 5 23 | + 8 | i 9 36 | + 4 | e 12·6 | — |
| Charlottesville | −7·6 | 49·8 | 351 | e 7 55 | + 5 | i 14 17 | + 8 | e 17·8 | — |
| Georgetown | −7·6 | 50·5 | 353 | i 8 0 | + 4 | i 14 23 | + 4 | — | — |
| Fordham | −7·8 | 52·1 | 356 | i 8 13 | + 6 | i 14 48 | + 8 | — | — |
| Cincinnati | −7·8 | 52·1 | 346 | i 8 11a | + 4 | i 14 44 | + 4 | — | — |
| Pittsburgh | −7·8 | 52·4 | 351 | i 8 14 | + 4 | i 14 51 | + 7 | — | — |
| St. Louis | −7·9 | 53·3 | 340 | i 8 21 | + 5 | i 15 2 | + 6 | — | — |
| Florissant | −7·9 | 53·5 | 340 | i 8 21 | + 3 | i 15 2 | + 3 | — | — |
| Oak Ridge | −7·9 | 53·6 | 359 | e 8 22 | + 4 | e 15 0 | 0 | — | — |
| Toronto | −8·1 | 55·4 | 352 | 8 31 | 0 | i 15 20 | − 3 | 22·4 | — |
| Ottawa | −8·2 | 56·7 | 355 | e 8 45 | + 5 | i 15 47 | + 7 | e 24·4 | — |
| Tucson | −8·3 | 58·6 | 319 | e 8 56 | + 2 | i 16 8 | + 3 | — | — |
| La Jolla | −8·6 | 63·2 | 316 | i 9 27k | + 1 | i 17 7 | + 3 | — | — |
| Riverside | −8·6 | 64·0 | 317 | i 9 30k | − 2 | — | — | — | — |
| Mount Wilson | −8·6 | 64·5 | 317 | i 9 35k | 0 | e 17 23 | + 2 | e 38·1 | — |
| Pasadena | −8·6 | 64·6 | 317 | i 9 34k | − 2 | i 17 21 | − 2 | e 38·0 | — |
| Santa Barbara | −8·7 | 65·8 | 316 | i 9 42k | − 2 | i 18 34 | ? | — | — |
| Tinemaha | −8·7 | 66·4 | 319 | i 9 47k | − 1 | i 17 48 | + 2 | e 38·0 | — |
| Bozeman | −8·8 | 67·9 | 330 | — | — | 18 4 | 0 | — | — |
| Branner | −8·9 | 69·1 | 317 | i 10 3 | − 3 | e 18 19 | 0 | — | — |
| Berkeley | −8·9 | 69·4 | 318 | i 10 5a | − 3 | i 18 22 | − 1 | — | — |
| Ivigtut | −9·2 | 74·2 | 11 | i 10 33 | − 6 | i 19 15 | − 5 | — | — |
| Seattle | −9·2 | 75·0 | 326 | — | — | i 19 19? | −11 | — | — |
| San Fernando | −9·3 | 76·0 | 48 | 13 5 | PP | 19 51 | +10 | — | — |
| Coimbra | −9·3 | 76·1 | 44 | e 11 6 | +15 | i 19 45 | + 3 | — | — |
| Malaga | −9·3 | 77·4 | 48 | 10 58 | − 1 | i 20 2 | + 4 | — | — |
| Granada | −9·5 | 78·2 | 48 | e 11 7 | + 4 | 20 5 | 0 | — | — |
| Almeria | −9·5 | 78·9 | 49 | e 11 4 | − 3 | e 20 14 | 0 | — | — |
| Toledo | −9·5 | 79·0 | 45 | i 11 6 | − 2 | i 20 13 | − 2 | — | — |
| Alicante | −9·6 | 80·9 | 48 | e 11 13 | − 6 | i 20 31 | − 6 | e 32·6 | — |
| Tortosa | −9·7 | 82·6 | 46 | i 13 36 | pP | 20 44 | −12 | — | — |
| Algiers | −9·8 | 83·0 | 51 | i 11 47 | +17 | i 20 44 | −15 | — | — |
| Bidston | −9·9 | 85·4 | 33 | i 13 50 | pP | 20 58 | [−124] | — | — |

*Continued on next page.*

| | | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Oxford | | −9·9 | 85·7 | 35 | e 13 47a | pP | i 20 58 | [−126] | — | — |
| Stonyhurst | | −9·9 | 85·9 | 33 | i 13 53 | pP | i 21 23 | − 9 | — | — |
| Puy de Dôme | | −10·0 | 86·0 | 42 | i 12 23 | ? | i 19 38 | ? | — | — |
| Kew | | −10·0 | 86·1 | 36 | i 13 53 | sP | i 21 22 | −11 | e 37·4 | — |
| Edinburgh | | −10·0 | 86·4 | 31 | e 13 53 | pP | i 21 3 | [−126] | e 39·4 | — |
| Sitka | | −10·0 | 86·6 | 330 | — | — | i 21 3 | [−128] | — | — |
| Durham | | −10·0 | 86·7 | 32 | 13 58 | pP | 21 4 | [−127] | — | — |
| Paris | | −10·0 | 86·8 | 39 | i 13 57 | pP | i 21 6 | [−126] | 27·4 | 27·4 |
| Uccle | | −10·1 | 88·6 | 37 | e 11 49 | ? | i 21 18 | [−126] | 37·4 | — |
| Neuchatel | | −10·1 | 89·0 | 41 | e 11 53 | − 9 | e 21 22 | [−124] | — | — |
| De Bilt | | −10·2 | 89·5 | 36 | i 11 54a | −10 | i 21 24 | [−126] | — | — |
| Strasbourg | | −10·2 | 90·0 | 40 | e 12 2 | − 5 | 21 48 | [−105] | 42·4 | — |
| Zurich | | −10·2 | 90·2 | 42 | e 11 57 | −11 | e 21 29 | [−125] | — | — |
| Karlsruhe | | −10·2 | 90·5 | 40 | 14 20 | sP | 21 33 | [−123] | — | — |
| Chur | | −10·2 | 90·7 | 42 | e 14 13 | sP | e 21 29 | [−128] | — | — |
| Stuttgart | | −10·2 | 90·9 | 40 | e 12 1 | −11 | e 22 3 | −20 | — | — |
| Florence | | −10·2 | 91·0 | 46 | i 14 18 | sP | i 21 29 | [−130] | — | — |
| Prato | | −10·2 | 91·0 | 46 | e 12 3 | − 9 | i 14 19 | sP | — | — |
| Göttingen | | −10·2 | 92·2 | 37 | i 14 22 | sP | 21 42 | [−124] | — | — |
| Venice | | −10·2 | 92·2 | 44 | i 14 27 | sP | i 21 43 | [−123] | — | — |
| Catania | | −10·2 | 92·5 | 52 | e 14 16 | sP | 21 43 | [−124] | — | — |
| Naples | E. | −10·2 | 92·5 | 48 | e 14 36 | sP | — | — | — | — |
| Hamburg | | −10·3 | 92·7 | 36 | i 14 25a | sP | i 21 44 | [−124] | e 35·4 | — |
| Jena | | −10·3 | 93·0 | 39 | e 14 23 | sP | i 21 45 | [−125] | — | — |
| Triest | | −10·3 | 93·2 | 44 | i 14 28a | sP | i 21 44 | [−127] | — | — |
| Cheb | | −10·3 | 93·3 | 40 | e 14 29 | sP | i 21 47 | [−125] | — | — |
| Potsdam | | −10·3 | 94·2 | 37 | (i 14 33) | sP | (i 21 52) | [−124] | e 37·4 | — |
| Copenhagen | | −10·3 | 94·6 | 34 | i 14 34 | sP | i 21 53 | [−126] | — | — |
| Prague | | −10·3 | 94·6 | 40 | e 14 39 | sP | e 21 55 | [−124] | — | — |
| Zagreb | | −10·3 | 94·8 | 45 | e 14 34 | sP | e 21 55 | [−125] | — | — |
| Vienna | | −10·3 | 95·5 | 42 | i 14 38k | sP | — | — | — | — |
| Budapest | | −10·3 | 97·1 | 43 | e 16 53 | ? | — | — | — | — |
| Upsala | | −10·4 | 98·1 | 30 | — | — | i 22 4 | [−132] | — | — |
| Pulkovo | | — | 104·4 | 30 | e 15 17 | ? | 22 37 | [−130] | 33·4 | — |
| Ksara | | — | 108·8 | 58 | e 18 36 | PP | i 27 56 | PS | — | — |
| Kucino | | — | 108·9 | 35 | 18 2 | PP | 26 40 | ? | e 36·5 | 40·7 |
| Tiflis | | — | 115·3 | 48 | e 18 20 | PP | i 23 26 | [−129] | — | — |
| Ekaterinburg | | — | 120·4 | 29 | i 19 16 | PP | 25 12 | {−127} | — | — |
| Riverview | | — | 120·8 | 219 | 20 23? | PP | — | — | — | — |
| Samarkand | | — | 132·1 | 46 | e 20 28 | PP | — | — | — | — |
| Tashkent | | — | 132·9 | 42 | i 17 13 | [−119] | i 24 8 | [−139] | e 56·2 | 74·4 |
| Andijan | | — | 135·2 | 41 | e 18 14 | [−61] | — | — | — | — |
| Frunse | | — | 135·4 | 38 | e 16 25 | ? | — | — | — | — |
| Almata | | — | 136·5 | 35 | e 18 5 | [−72] | — | — | — | — |
| Irkutsk | | — | 138·4 | 5 | e 18 19 | [−60] | e 27 5 | {−129} | 39·4 | — |
| Bombay | N. | — | 142·8 | 73 | e 17 46 | [−100] | e 27 34 | {−126} | — | — |
| Vladivostok | | — | 142·9 | 333 | i 18 23 | [−64] | — | — | — | — |
| Tyosi | | — | 143·0 | 317 | (18 22) | [−65] | 18 22 | PKP | — | — |
| Agra | E. | — | 145·5 | 57 | e 18 27 | [−68] | — | — | — | — |
| Nagoya | | — | 145·9 | 319 | 18 30 | [−66] | e 19 6 | ? | — | — |
| Osaka | | — | 147·1 | 320 | 18 33 | [−64] | 19 51 | ? | — | — |
| Kobe | | — | 147·4 | 320 | e 18 30 | [−68] | — | — | — | — |
| Sumoto | | — | 147·8 | 320 | e 18 32 | [−67] | — | — | — | — |
| Hyderabad | | — | 148·3 | 75 | 20 36 | ? | 26 36 | SKS | 31·1 | 40·0 |
| Koti | Z. | — | 149·1 | 320 | e 18 34 | [−66] | — | — | — | — |
| Chiufeng | | — | 150·5 | 351 | i 18 37k | [−65] | i 20 59 | ? | — | — |
| Hukuoka | | — | 150·9 | 324 | e 18 38 | [−65] | e 19 44 | $PKP_3$ | — | — |
| Nagasaki | Z. | — | 151·9 | 324 | 18 38 | [−66] | — | — | — | — |
| Calcutta | | — | 155·8 | 59 | 20 35 | {+10} | 28 50 | {−125} | 41·8 | — |
| Batavia | | — | 162·4 | 167 | e 19 19 | [−37] | — | — | — | — |
| Hong Kong | | — | 168·2 | 343 | — | — | 29 43 | {−139} | — | — |
| Manila | | — | 169·2 | 291 | i 18 57 | [−66] | — | — | — | — |

*For Notes see next page.*

NOTES TO AUGUST 29d. 14h. 52m. 37s.

Additional readings and notes :—

Huancayo i = +1m.53s.
Montezuma i = +4m.39s., e = +4m.50s.
La Plata SSE = +9m.5s.
San Juan e = +9m.17s.
Port au Prince PP = +5m.43s., PPP = +6m.16s., iNW = +7m.18s., +7m.32s., and +10m.16s., SS = +10m.59s.
Charlottesville ePP = +9m.47s.
Georgetown iNZ = +9m.54s. = PPP − 4s., iN = +16m.42s. = SS − 28s. and +17m.59s. = $S_cS$ − 49s.
Cincinnati ipP = +9m.14s., e = +10m.4s. = PPP − 12s., i = +11m.30s. and +12m.10s., e = +14m.21s.
Pittsburgh iPP = +10m.8s., eSS = +18m.13s.
St. Louis ipP = +9m.20s., iPP = +10m.18s., iSP = +15m.15s., isS = +17m.5s.
Florissant ipPEZ = +9m.21s., iPPZ = +10m.17s., iSPEN = +15m.12s., isSE = +17m.3s. ; $T_0$ = 14h.52m.38s.
Oak Ridge i = +10m.20s., iNW = +15m.8s., eNW = +17m.0s., iNE = +17m.4s., eNW = +18m.16s. = SS +12s., eNE = +18m.28s., eNW = +21m.10s.
Toronto iPP = +10m.23s., i = +17m.5s., SSS = +19m.57s.
Ottawa iN = +10m.43s. = PP +17s., i = +17m.26s. and +19m.23s. = SS +28s., iE = +21m.36s., eN = +23m.3s.
Tucson isS = +17m.39s.
La Jolla esP = +11m.28s., $iS_cSEN$ = +18m.14s.
Riverside $iP_cPZ$ = +9m.59s., isPZ = +11m.34s., $iS_cSNZ$ = +18m.19s.
Pasadena $iP_cPZ$ = +10m.2s., eZ = +10m.43s., isPZ = +11m.37s., iPPZ = +12m.39s., $iS_cS$ = +18m.20s.
Bozeman e = +21m.41s. = SS − 13s.
Berkeley iZ = +12m.11s. = PP − 3s.
Ivigtut i = +12m.42s. = PP +12s.
San Fernando PE = +13m.17s. = PP +8s., S = +19m.27s.
Malaga PP = +13m.8s., e = +16m.23s., +19m.9s., +20m.34s., and +23m.20s.
Granada PP = +13m.15s.
Almeria PP = +13m.22s.
Toledo i = +13m.14s. = PP − 20s.
Alicante PP = +13m.33s.
Algiers iPPP? = +13m.40s. = PP − 26s.
Bidston i = +21m.13s. = S − 12s.
Stonyhurst ipPP? = +15m.8s., iSKS = +21m.0s., isS = +22m.28s.
Kew iSKSEN = +21m.11s., iSP = +22m.29s.
Edinburgh i = +21m.25s. = S − 11s.
Sitka i = +25m.15s.
Durham ? = +21m.32s. = S − 7s.
Uccle iPPZ = +14m.5s., iPSE = +22m.57s.
Neuchatel esP = +14m.8s.
De Bilt iZ = +14m.10s., eZ = +15m.37s., eEZ = +23m.6s.
Strasbourg i = +14m.11s., e = +20m.43s., S = +23m.7s., i = +26m.29s. = SS − 40s.
Zurich esP = +14m.13s.
Stuttgart sP = +14m.18s., ePPEZ = +15m.35s., esPP = +17m.56s., iEN = eZ = +21m.32s., iSPEZ = +23m.23s.
Hamburg iZ = +16m.2s.
Jena iE = +22m.23s. = S − 21s.
Triest iPP = +16m.7s., i = +22m.7s., iPS = +22m.24s.
Potsdam iPPN = +14m.36s., epPP = +15m.23s., iPPPEN = +16m.17s., ipPPP = +17m.27s., iE = +18m.6s. and +18m.41s., iPS or pS = +22m.32s., esSN = +23m.5s., isSPN = +23m.57s., iSSE = +25m.2s., eSSS = +30m.59s., isSSSN or SSSS = +32m.2s. ; the readings entered as P and S are given as iPPE and iSP.
Copenhagen iZ = +16m.19s., i = +22m.39s.
Zagreb e = +16m.16s.
Upsala iE = +22m.37s. and +23m.5s. = S − 29s.
Pulkovo PPP = +18m.37s., iS = +23m.23s., PPS = +25m.45s., SSS = +34m.53s.
Ksara iE = +23m.3s. = SKS − 125s. and +24m.2s.
Kucino e = +20m.2s., +21m.8s., and +22m.53s., i = +23m.50s. = SKKS − 129s., e = +27m.34s. and +31m.23s.
Tiflis eEZ = +18m.44s., eZ = +27m.10s. and +28m.33s., eN = +34m.42s., eE = +37m.51s.
Ekaterinburg PPP = +21m.57s., i = +25m.28s.
Tashkent iPKS = +20m.38s.
Irkutsk iPP = +20m.51s., e = +23m.19s.
Vladivostok iPP = +21m.3s.
Kobe iZ = +18m.33s., eEN = +18m.35s., iZ = +20m.55s.
Sumoto ePE = +18m.35s.
Chiufeng iS = +21m.6s.
Batavia i = +20m.24s. and +23m.18s.
Hong Kong S = +33m.53s.
Manila iN = +19m,39s., iE = +20m,26s., iEN = +23m,59s., iN = +27m,37s,

Aug. 29d. 16h. 27m. 33s. Epicentre 34°·5N. 135°·0E. (as on 1932 June 4d.). X.

A = −·583, B = +·583, C = +·566.

| | Δ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Sumoto | 0·2 | 214 | e 0 3 | 0 | 0 6 | + 1 | 0·1 |
| Kobe | 0·2 | 39 | i 0 2 | − 1 | i 0 6 | + 1 | 0·1 |
| Osaka | 0·4 | 67 | 0 6 | 0 | 0 13 | + 3 | 0·2 |
| Toyooka | 1·1 | 352 | 0 17 | + 1 | 0 30 | + 2 | 0·5 |
| Muroto | 1·4 | 209 | e 0 34 | S | (e 0 34) | − 2 | — |
| Koti | 1·5 | 232 | i 0 27 | $P_g$ | i 0 48 | S* | — |
| Nagoya | 1·7 | 67 | e 0 30 | $P_g$ | 0 52 | $S_g$ | — |

Muroto gives also S = +45s. =S* +5s.

Aug. 29d. Readings also at 0h. (Sikka), 1h. (La Paz and Taihoku), 4h. (Hong Kong), 5h. (Sumoto), 6h. (Riverview, near Santiago, and near Nagasaki), 7h. (Batavia and La Paz), 10h. (De Bilt and Paris), 12h. (near Soengei Langka), 13h. (near Sumoto), 14h. (Tucson and near Sumoto), 19h. (near Tiflis and near Branner), 20h. (near Berkeley, Branner, Lick, and near Mizusawa).

Aug. 30d. 16h. 40m. 7s. Epicentre 37°·5N. 136°·0E. N.3.

A = −·571, B = +·551, C = +·609; D = +·695, E = +·719;
G = −·438, H = +·423, K = −·793.

| | | Δ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. |
| Nagoya | | 2·5 | 161 | e 0 41 | P* | 1 12 | S* | — |
| Osaka | | 2·9 | 188 | 0 41 | 0 | 1 18 | + 4 | 1·3 |
| Kobe | | 2·9 | 194 | i 0 44 | + 3 | 1 16 | + 2 | 1·3 |
| Sumoto | | 3·3 | 196 | 0 46 | − 1 | e 1 23 | − 2 | 1·4 |
| Tyosi | | 4·3 | 112 | e 1 0 | − 1 | 1 44 | − 6 | 1·8 |
| Mizusawa | E. | 4·3 | 67 | e 1 52 | S | (e 1 52) | + 2 | — |

Mizusawa gives also eSE = +2m.19s. =$S_g$ +3s.

Aug. 30d. Readings also at 3h. (Hong Kong, Nanking, Tashkent, Ekaterinburg, Florence, and Tucson), 4h. (near Santiago), 5h. (near Taihoku), 6h. (near Nanking), 11h. (Huancayo, La Paz, Mount Wilson, Pasadena, Riverside, and Tinemaha), 14h. (near Lick), 19h. (Andijan and Tucson), 21h. (near Tyosi and near Lick).

Aug. 31d. 2h. 51m. 48s. Epicentre 59°·8N. 137°·5W. N.2.

A = −·371, B = −·340, C = +·864; D = −·676, E = +·737;
G = −·637, H = −·584, K = −·503.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Sitka | | 2·9 | 158 | i 0 38 | − 3 | i 1 12 | − 2 | — | — |
| Victoria | E. | 14·0 | 138 | e 3 19 | + 4 | — | — | e 7·8 | 8·2 |
| Seattle | | 15·0 | 137 | — | — | e 7 0 | +45 | e 8·2 | — |
| Bozeman | | 21·1 | 120 | — | — | e 8 40 | +12 | i 11·1 | — |
| Ukiah | | 22·5 | 150 | — | — | e 9 12 | +17 | — | — |
| Berkeley | | 24·0 | 149 | i 5 7 | − 3 | i 9 39 | +16 | — | 14·3 |
| Tinemaha | | 25·8 | 143 | e 5 26 | − 1 | — | — | e 14·7 | — |
| Santa Barbara | z. | 27·8 | 147 | e 5 46 | + 1 | — | — | — | — |
| Mount Wilson | z. | 28·6 | 145 | e 5 48 | − 5 | — | — | — | — |
| Pasadena | | 28·6 | 145 | e 5 48 | − 5 | — | — | e 17·2 | — |
| Riverside | z. | 29·0 | 144 | i 5 58 | + 2 | — | — | — | — |
| Chicago | | 35·2 | 98 | — | — | e 14 28 | SS | e 17·6 | — |
| Toronto | | 38·0 | 87 | — | — | e 15 20 | SS | 19·5 | — |
| Ottawa | | 38·5 | 83 | — | — | e 13 24 | +10 | e 19·2 | — |
| Cincinnati | z. | 38·7 | 97 | i 15 45a | SS | — | — | i 19·1 | — |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Pittsburgh | 40·0 | 92 | — | — | e 18 30 | ? | i 20·4 | — |
| Honolulu T.H. | 41·1 | 209 | — | — | e 17 18 | SSS | e 19·3 | — |
| Georgetown | 42·6 | 91 | e 17 30 | SSS | 21 22 | L | e 25·2 | — |
| Fordham | 42·8 | 86 | — | — | e 14 31 | +13 | 20·2 | — |
| Pulkovo | 60·1 | 7 | e 11 6 | +61 | e 19 24 | +67 | 33·2 | 38·4 |
| Copenhagen | 62·1 | 18 | — | — | 23 12? | ? | 36·2 | — |
| Ekaterinburg | 62·5 | 348 | i 10 21 | − 1 | 18 53 | + 5 | 26·2 | — |
| Oxford | 63·0 | 29 | — | — | e 18 49 | − 6 | — | — |
| Kew | 63·5 | 28 | — | — | e 18 12? | −49 | e 31·2 | — |
| De Bilt | 64·2 | 24 | e 10 34 | 0 | 19 18 | + 8 | e 31·2 | 39·6 |
| Kucino | 64·4 | 3 | — | — | e 19 14 | + 2 | e 26·7 | 34·4 |
| Paris | 66·6 | 27 | e 10 46 | − 3 | — | — | 36·2 | — |
| Stuttgart | 68·1 | 23 | e 11 0 | + 1 | e 20 12 | +14 | e 37·2 | — |

Additional readings :—
Ottawa e = +15m.36s. =SS − 8s.
Cincinnati i = +16m.12s. and +16m.48s.
Georgetown i = +21m.57s.
Fordham e = +17m.14s. =SS + 5s.
Long waves were also recorded at Ivigtut, Vladivostok, Hong Kong, Baku, and at other American and European stations.

Aug. 31d. Readings also at 0h. (Tiflis), 1h. (Riverview), 2h. (Tucson and near Tiflis), 3h. (Andijan, near Nagasaki, and Nagoya), 5h. (Ukiah), 6h. (near Tiflis), 7h. (near Mizusawa and near Sebastopol (2) ), 8h. (Frunse), 10h. (near Tiflis), 12h. (Hong Kong, Suva, Wellington, Christchurch, Riverview, Melbourne, Honolulu T.H., Berkeley, Mount Wilson, Pasadena, Riverside, Tinemaha, and Ekaterinburg), 13h. (Baku, Kucino, Pulkovo, Copenhagen, De Bilt, Paris, and Stuttgart), 15h. (Algiers), 17h. (near Andijan and Tashkent), 18h. (Bagnères and Zurich), 19h. (near Manila), 23h. (near Andijan and Tashkent).

Sept. 1d. 19h. 25m. 15s. Epicentre 43°·0N. 79°·6E. N.3.
(as given by the station of Central Asia).

A = +·132, B = +·719, C = +·682 ; D = +·984, E = −·181 ;
G = +·123, H = +·671, K = −·731.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Almata | 1·9 | 278 | 0 25 | − 3 | 0 53 | + 4 | — | — |
| Frunse | 3·7 | 269 | 0 54 | + 1 | 1 39 | + 4 | — | — |
| Andijan | 5·8 | 249 | 1 45 | $P_g$ | 3 7 | $S_g$ | — | — |
| Tashkent | 7·8 | 261 | e 2 50 | $P_g$ | e 3 47 | S* | e 4·0 | 4·6 |
| Samarkand | 10·0 | 254 | e 4 12 | S | (e 4 12) | − 1 | — | — |
| Ekaterinburg | 18·3 | 326 | e 3 12 | −58 | — | — | — | — |

Additional readings :—
Almata $P_g$ = +27s. = P* − 2s.
Tashkent e = +3m.51s.
Ekaterinburg e = +8m.13s. and +8m.27s., i = +8m.36s. and +8m.44s.
Long waves were also recorded at Pulkovo, Copenhagen, and De Bilt.

Sept. 1d. Readings also at 0h. (near Samarkand), 2h. (near Malabar), 3h. (Riverview), 5h. (Ekaterinburg (2), Tashkent (2), Kucino, and Mizusawa), 6h. (La Paz, Tyosi, and near Lick), 7h. (Tyosi), 11h. (near Nagasaki), 14h. (Andijan and Tashkent), 16h. (Malabar), 17h. (near Soengei Langka), 19h. (Adelaide, Melbourne, Riverview, Sydney, Wellington, Mount Wilson, Pasadena, Santa Barbara, Tinemaha, Ekaterinburg, Chur, Stuttgart, and Mizusawa), 21h. (near Batavia), 22h. (Tashkent and near Andijan), 23h. (Ekaterinburg, Manila, and Mizusawa).

Sept. 2d. 16h. 41m. 19s. Epicentre 30°·3N. 139°·4E. N.1.

Epicentre given by the Japanese stations.

A = −·656, B = +·562, C = +·505; D = +·651, E = +·759; G = −·383, H = +·328, K = −·863.

A depth of focus 0·070 has been assumed.

| | Corr. for Focus | Δ | Az. | P. | | O−C. | S. | | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ° | ° | ° | m. | s. | s. | m. | s. | s. | m. | m. |
| Hatidyozima | +1·9 | 2·8 | 7 | 1 | 1k | − 6 | 1 | 51 | − 9 | — | — |
| Titizima | +1·3 | 4·0 | 142 | 1 | 8a | − 7 | 2 | 5 | −10 | — | — |
| Omaesaki | +1·1 | 4·4 | 348 | 1 | 16k | − 2 | 2 | 19 | − 1 | — | — |
| Siomisaki | +1·1 | 4·4 | 317 | 1 | 14k | − 4 | 2 | 12 | − 8 | — | — |
| Mera | +1·0 | 4·6 | 5 | 1 | 16 | − 4 | 2 | 20 | − 3 | — | — |
| Hamamatu | +0·9 | 4·7 | 343 | 1 | 18 | − 2 | 2 | 21 | − 2 | — | — |
| Numadu | +0·9 | 4·8 | 355 | 1 | 20k | − 1 | 2 | 23 | − 2 | — | — |
| Misima | +0·9 | 4·8 | 356 | 1 | 20k | − 1 | 2 | 22 | − 3 | — | — |
| Yokohama | +0·8 | 5·1 | 2 | 1 | 24k | 0 | 2 | 30 | − 1 | — | — |
| Hunatu | +0·7 | 5·2 | 354 | 1 | 25k | + 1 | 2 | 32 | + 1 | — | — |
| Kameyama | +0·7 | 5·2 | 333 | 1 | 23k | − 1 | 2 | 30 | − 1 | — | — |
| Muroto | +0·7 | 5·2 | 305 | i 1 | 24a | 0 | i 2 | 31 | 0 | — | — |
| Nagoya | +0·7 | 5·3 | 338 | i 1 | 25k | 0 | e 2 | 31 | − 2 | — | 2·6 |
| Wakayama | +0·7 | 5·3 | 319 | 1 | 24k | − 1 | 2 | 28 | − 5 | — | — |
| Kohu | +0·6 | 5·4 | 353 | 1 | 26k | + 1 | 2 | 38 | + 5 | — | — |
| Tokyo | +0·6 | 5·4 | 3 | 1 | 25 | 0 | 1 | 52 | $P_g$ | — | 1·9 |
| Gihu | +0·6 | 5·5 | 337 | 1 | 28k | + 1 | 2 | 35 | − 1 | — | — |
| Osaka | +0·6 | 5·5 | 325 | 1 | 26 | − 1 | 2 | 33 | − 3 | — | 2·9 |
| Osaka B | +0·6 | 5·5 | 325 | 1 | 29a | + 2 | 2 | 38 | + 2 | — | — |
| Sumoto | +0·6 | 5·5 | 318 | i 1 | 24k | − 3 | 2 | 32 | − 4 | — | 2·7 |
| Tyosi | +0·6 | 5·6 | 12 | 1 | 27k | − 1 | 2 | 37 | − 1 | — | 2·7 |
| Hikone | +0·6 | 5·6 | 333 | 1 | 28k | 0 | 2 | 39 | + 1 | — | — |
| Kobe | +0·6 | 5·6 | 322 | i 1 | 26k | − 2 | i 2 | 36 | − 2 | — | 2·8 |
| Kyoto | +0·6 | 5·6 | 329 | 1 | 28k | 0 | 2 | 34 | − 4 | — | — |
| Kakioka | +0·4 | 5·9 | 6 | 1 | 29k | − 1 | 2 | 38 | − 3 | — | — |
| Tukubasan | +0·4 | 5·9 | 6 | 1 | 29k | − 1 | 2 | 28 | −13 | — | — |
| Koti | +0·4 | 6·0 | 304 | e 1 | 29k | − 2 | e 2 | 39 | − 4 | — | — |
| Simidu | +0·4 | 6·0 | 296 | 1 | 29k | − 2 | i 2 | 45 | + 2 | — | — |
| Mito | +0·4 | 6·1 | 8 | 1 | 33k | + 1 | 2 | 43 | − 3 | — | — |
| Maebasi | +0·4 | 6·1 | 358 | 1 | 30k | − 2 | 2 | 46 | 0 | — | — |
| Nagano | +0·3 | 6·4 | 351 | 1 | 36 | + 1 | 2 | 56 | + 5 | — | — |
| Toyooka | +0·3 | 6·4 | 325 | e 1 | 36a | + 1 | 2 | 54 | + 3 | — | 3·1 |
| Toyama | +0·2 | 6·6 | 344 | 1 | 40 | + 3 | 3 | 0 | + 7 | — | — |
| Matuyama | +0·2 | 6·6 | 304 | 1 | 35 | − 2 | 2 | 56 | + 3 | — | — |
| Miyazaki | +0·1 | 7·0 | 285 | 1 | 42a | + 1 | 3 | 0 | − 1 | — | — |
| Wazima | 0·0 | 7·4 | 344 | 1 | 46a | + 1 | 3 | 7 | − 2 | — | — |
| Hukusima | 0·0 | 7·5 | 8 | 1 | 49k | + 3 | 3 | 14 | + 3 | — | — |
| Hamada | −0·1 | 7·7 | 308 | 1 | 50a | + 2 | 3 | 18 | + 4 | — | — |
| Kumamoto | −0·1 | 7·8 | 291 | 1 | 54a | + 5 | 3 | 25 | + 9 | — | — |
| Sendai | −0·2 | 8·0 | 9 | 1 | 55k | + 4 | 3 | 27 | + 8 | — | — |
| Hukuoka | −0·3 | 8·3 | 296 | i 1 | 55a | + 2 | i 3 | 29 | + 5 | — | 3·6 |
| Hukuoka B | −0·3 | 8·3 | 296 | 1 | 56 | + 3 | 3 | 30 | + 6 | — | — |
| Nagasaki | −0·4 | 8·5 | 289 | i 1 | 58k | + 3 | i 3 | 33 | + 7 | — | 3·6 |
| Nake | −0·4 | 8·8 | 261 | 1 | 59 | 0 | 3 | 31 | − 3 | — | — |
| Mizusawa | −0·5 | 8·9 | 9 | i 2 | 7 | + 8 | i 3 | 46 | +12 | — | — |
| Akita | −0·6 | 9·4 | 3 | 2 | 11a | + 6 | 4 | 0 | +16 | — | — |
| Tomie | −0·6 | 9·4 | 287 | 2 | 5k | 0 | 3 | 50 | + 6 | — | — |
| Morioka | −0·6 | 9·5 | 8 | 2 | 12a | + 6 | 3 | 58 | +12 | — | — |
| Husan | −0·8 | 10·0 | 301 | 1 | 38 | ? | 3 | 30 | −24 | — | — |
| Taikyu | −1·0 | 10·6 | 305 | 2 | 14 | − 2 | 4 | 15 | +12 | — | 4·6 |
| Keizyo E. | −1·4 | 12·6 | 309 | i 2 | 45k | + 8 | e 4 | 55 | +12 | — | 5·3 |
| Zinsen | −1·5 | 12·8 | 308 | 2 | 45 | + 6 | 4 | 58 | +13 | — | — |
| Sapporo | −1·5 | 12·8 | 7 | 2 | 49a | +10 | 5 | 6 | +21 | — | — |
| Vladivostok | −1·7 | 14·1 | 336 | i 3 | 1 | + 7 | i 5 | 29 | +16 | 6·7 | 9·1 |
| Heizyo | −1·7 | 14·2 | 312 | 3 | 3 | + 8 | 5 | 28 | +13 | — | — |

*Continued on next page.*

| | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | ° | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Isigakizima | −1·9 | 14·8 | 250 | 3 2 | + 1 | 5 34 | + 9 | — | — |
| Ootomari | −2·2 | 16·6 | 9 | 3 15 | − 6 | (6 17) | +16 | 6·3 | 6·4 |
| Taihoku | −2·2 | 16·6 | 256 | 3 24 | + 3 | 6 10 | + 9 | — | — |
| Dairen | −2·3 | 16·9 | 305 | 2 28 | −55 | 5 16 | −49 | — | — |
| Nanking | −2·4 | 17·7 | 281 | i 3 35 | + 3 | i 6 32 | +10 | e 8·2 | — |
| Arisan | −2·5 | 17·9 | 252 | 3 35k | + 1 | 6 32 | + 8 | — | — |
| Chiufeng | −3·1 | 21·3 | 304 | 4 11 | + 2 | 6 4 | −85 | e 7·4 | 7·8 |
| Manila | −3·4 | 23·1 | 231 | 4 23k | − 3 | 8 9 | + 9 | — | — |
| Palau | −3·4 | 23·4 | 192 | 4 29 | − 1 | 8 7 | + 1 | — | — |
| Hong Kong | −3·5 | 23·9 | 257 | 4 31 | − 3 | 8 15 | + 1 | 10·6 | 10·7 |
| Phu-Lien | −4·4 | 30·8 | 259 | 5 35 | + 2 | 10 7 | + 2 | 12·2 | — |
| Amboina | −4·8 | 35·5 | 199 | i 7 21 | +70 | i 12 28 | +72 | — | — |
| Medan | −5·9 | 46·7 | 244 | i 7 47 | + 8 | i 13 58 | +10 | — | — |
| Batavia | −6·0 | 48·0 | 226 | i 7 51k | + 2 | 14 13 | + 7 | — | — |
| Almata | −6·2 | 50·5 | 304 | e 8 27 | +20 | 15 11 | +31 | — | — |
| Frunse | −6·4 | 52·2 | 303 | e 8 19 | 0 | 14 53 | − 9 | — | — |
| Tashkent | −6·8 | 56·4 | 302 | i 8 58 | +10 | i 16 10 | +15 | — | 39·6 |
| Honolulu T.H. | −6·8 | 56·5 | 83 | 9 2 | +13 | i 16 28 | +31 | 26·1 | — |
| Hyderabad | −6·8 | 56·5 | 272 | 8 58 | + 9 | 16 19 | +22 | 22·0 | 34·7 |
| Samarkand | −6·9 | 58·5 | 300 | e 9 8 | + 5 | 16 36 | +13 | — | — |
| Ekaterinburg | −6·9 | 59·0 | 321 | i 9 16 | + 9 | i 16 46 | +16 | 34·7 | 40·7 |
| Kodaikanal | −7·0 | 60·7 | 265 | i 14 26 | ? | — | — | — | — |
| Bombay | −7·0 | 60·8 | 275 | i 9 26 | + 6 | i 17 8 | +15 | — | — |
| Sitka | −7·1 | 62·4 | 38 | i 9 45 | +14 | i 17 43 | +30 | — | — |
| Riverview | −7·3 | 65·1 | 169 | i 9 52 | + 3 | i 17 58 | +11 | e 31·2 | — |
| Adelaide | −7·3 | 65·3 | 181 | i 9 50 | 0 | i 18 1 | +12 | — | — |
| Perth | −7·4 | 66·1 | 202 | i 9 41 | −14 | i 18 11 | +12 | — | — |
| Melbourne | −7·6 | 68·3 | 175 | i 9 51 | −18 | i 18 36 | +11 | — | — |
| Baku | −7·7 | 70·6 | 306 | e 10 31 | + 6 | i 19 8 | +14 | 32·7 | 47·3 |
| Victoria | −7·8 | 72·2 | 44 | i 10 48 | +13 | (i 19 33) | +21 | i 19·6 | — |
| Pulkovo | −7·9 | 72·9 | 330 | i 10 43 | + 4 | i 19 30 | +10 | 38·7 | 40·4 |
| Seattle | −7·9 | 73·2 | 44 | e 10 53? | +12 | 19 45? | +21 | — | — |
| Ukiah | −8·1 | 76·5 | 52 | e 11 8 | + 7 | e 20 22 | +20 | e 31·9 | — |
| Berkeley | −8·1 | 77·8 | 53 | e 11 13a | + 4 | i 20 32 | +14 | — | — |
| Upsala | −8·1 | 78·0 | 334 | i 11 10 | 0 | i 20 27 | + 7 | — | 52·7 |
| Branner | −8·1 | 78·1 | 54 | e 11 16 | + 5 | — | — | — | — |
| Lick N. | −8·1 | 78·5 | 53 | e 11 12 | − 1 | e 20 44 | +18 | — | — |
| Wellington | −8·1 | 78·7 | 154 | — | — | i 20 31 | + 3 | — | — |
| Simferopol | −8·1 | 78·7 | 316 | e 11 16 | + 2 | i 20 36 | + 8 | — | — |
| Yalta | −8·2 | 78·9 | 315 | e 11 51? | +36 | — | — | — | — |
| Sebastopol | −8·2 | 79·3 | 316 | e 11 23 | + 6 | i 20 45 | +11 | — | — |
| Bozeman | −8·2 | 80·8 | 42 | e 11 31 | + 5 | i 21 7 | +15 | — | — |
| Tinemaha | −8·2 | 80·9 | 53 | i 11 32 | + 5 | i 21 10 | +17 | — | — |
| Santa Barbara | −8·3 | 81·3 | 55 | i 11 32 | + 3 | — | — | — | — |
| Mount Wilson | −8·3 | 82·6 | 54 | i 11 39 | + 3 | e 21 23 | +11 | — | — |
| Pasadena | −8·3 | 82·6 | 54 | i 11 38 | + 2 | i 21 18 | + 6 | — | — |
| Copenhagen | −8·3 | 82·9 | 333 | i 11 37 | − 1 | i 21 15 | 0 | 42·7 | — |
| Riverside | −8·3 | 83·2 | 54 | i 11 38 | − 2 | e 21 20 | + 1 | — | — |
| Ksara | −8·3 | 83·5 | 305 | 11 40 | − 1 | i 21 22 | 0 | — | — |
| La Jolla | −8·3 | 83·9 | 55 | i 11 45 | + 1 | i 21 28 | + 1 | — | — |
| Potsdam | −8·4 | 85·0 | 331 | i 11 46 | − 3 | i 21 28 | [−91] | e 46·7 | — |
| Hamburg | −8·4 | 85·4 | 333 | e 11 51 | − 1 | e 21 31 | [−91] | e 46·7 | — |
| Budapest | −8·4 | 85·6 | 324 | e 12 41? | pP | i 21 25 | [−98] | e 45·7 | 56·7 |
| Vienna | −8·5 | 86·4 | 326 | i 11 54k | − 3 | i 21 40 | [−89] | e 44·7 | 56·7 |
| Jena | −8·5 | 86·6 | 329 | e 11 56 | − 2 | e 21 41 | [−90] | — | — |
| Göttingen | −8·5 | 86·9 | 331 | e 13 26 | pP | e 22 53 | PS | e 43·7 | 54·7 |
| Cheb | −8·5 | 86·9 | 329 | e 13 25 | pP | i 21 42 | [−91] | e 40·7 | 51·7 |
| Graz | −8·5 | 87·6 | 325 | e 11 42 | −21 | i 21 48 | [−89] | 51·7 | 56·8 |
| Edinburgh | −8·5 | 88·1 | 340 | e 13 41? | ? | i 21 48 | [−93] | e 40·7 | — |
| Ivigtut | −8·5 | 88·3 | 4 | 13 41 | ? | 21 50 | [−92] | — | — |

*Continued on next page.*

| | Cosr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | ° | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Zagreb | −8·6 | 88·3 | 324 | e 11 58 | − 8 | e 21 50 | [−92] | e 50·7 | — |
| De Bilt | −8·5 | 88·4 | 334 | i 12 4 | − 3 | i 21 54 | [−89] | e 45·7 | 57·9 |
| Durham | −8·5 | 88·6 | 338 | 13 49 | pP | 21 51 | [−93] | — | — |
| Tucson | −8·5 | 88·7 | 53 | i 12 11 | + 2 | i 22 3 | [−81] | e 35·1 | — |
| Helwan | −8·5 | 88·9 | 304 | i 12 6 | − 4 | i 21 53 | [−93] | — | — |
| Stuttgart | −8·6 | 89·3 | 330 | e 12 8a | − 4 | 22 20 | [−68] | — | 58·7 |
| Karlsruhe | −8·6 | 89·5 | 331 | 22 41? | S | (22 41?) | PS | e 51·7 | — |
| Triest | −8·6 | 89·5 | 326 | e 13 38 | pP | i 21 56 | [−94] | e 35·0 | 42·9 |
| Stonyhurst | −8·6 | 89·6 | 339 | e 13 52 | pP | i 22 2 | [−88] | — | — |
| Uccle | −8·6 | 89·7 | 334 | e 12 9 | − 5 | i 21 58 | [−93] | e 45·7 | — |
| Bidston | −8·6 | 90·1 | 339 | 13 41 | pP | 21 56 | [−97] | — | — |
| Strasbourg | −8·6 | 90·1 | 330 | e 12 13 | − 3 | 21 53 | [−100] | e 48·7 | — |
| Chur | −8·6 | 90·6 | 329 | e 12 14 | − 4 | i 22 2 | [−94] | — | — |
| Padova | −8·6 | 90·6 | 326 | 14 56 | PP | i 22 4 | [−92] | — | — |
| Zurich | −8·6 | 90·6 | 329 | e 12 15 | − 3 | i 22 3 | [−93] | — | — |
| Kew | −8·6 | 90·9 | 336 | e 12 15 | − 5 | i 22 32 | [−66] | e 28·7 | 58·3 |
| Oxford | −8·6 | 91·0 | 337 | e 13 50 | pP | i 22 5 | [−94] | e 44·7 | — |
| Neuchatel | −8·6 | 91·6 | 330 | e 12 18 | − 5 | e 22 9 | [−93] | — | — |
| Piacenza | −8·6 | 91·8 | 327 | e 12 53 | pP | i 22 13 | [−90] | — | 56·5 |
| Paris | −8·6 | 92·0 | 333 | i 12 22 | − 3 | i 22 14 | [−90] | 37·7 | 57·7 |
| Florence | −8·6 | 92·0 | 325 | e 12 22 | − 3 | i 22 3 | [−101] | 33·7 | 41·7 |
| Prato | −8·6 | 92·0 | 324 | e 14 3 | pP | i 22 10 | [−94] | — | — |
| Trenta | −8·6 | 92·6 | 319 | — | — | e 21 51 | [−117] | — | — |
| Catania | −8·7 | 94·5 | 319 | — | — | 22 34 | [−84] | — | — |
| Chicago | −8·7 | 95·8 | 34 | e 16 40 | PP | 22 31 | [−94] | e 35·8 | — |
| Florissant | −8·7 | 96·8 | 37 | i 12 16 | −32 | i 22 40 | [−90] | — | — |
| St. Louis | −8·7 | 97·0 | 37 | i 12 37 | −12 | i 22 40 | [−91] | — | — |
| Ann Arbor | −8·7 | 97·3 | 31 | — | — | i 22 41 | [−92] | — | — |
| Ottawa | −8·8 | 97·9 | 24 | e 10 53 | −120 | i 22 43 | [−93] | — | — |
| Toronto | −8·8 | 98·0 | 27 | e 15 8 | ? | i 23 39 | [−97] | — | — |
| Tortosa N. | −8·8 | 99·3 | 329 | e 13 59 | pP | e 22 50 | [−92] | e 44·7 | 62·7 |
| Cincinnati | −8·8 | 99·4 | 33 | i 14 35a | pP | i 22 53 | [−90] | — | — |
| Pittsburgh | −8·8 | 100·4 | 29 | e 16 59 | PP | — | — | — | — |
| Alicante | −8·8 | 101·8 | 329 | e 23 2 | SKS | (e 23 2) | [−92] | e 56·1 | — |
| Oak Ridge | −8·8 | 101·8 | 22 | — | — | i 23 6 | [−88] | — | — |
| Toledo | −8·8 | 102·1 | 332 | — | — | (23 5) | [−91] | e 62·7 | — |
| Fordham | −8·8 | 102·4 | 25 | i 17 31 | PP | i 23 7 | [−90] | — | — |
| Georgetown | −8·9 | 102·9 | 28 | i 17 26 | PP | i 23 11 | [−89] | — | — |
| Almeria | −8·9 | 103·9 | 329 | i 22 59 | SKS | (i 22 59) | [−106] | e 63·5 | — |
| Granada | −8·9 | 104·2 | 330 | e 18 31 | PPP | i 24 1 | {−84} | 60·7 | — |
| Columbia | −8·9 | 105·2 | 34 | — | — | e 23 20 | [−91] | — | — |
| San Fernando | −8·9 | 105·9 | 332 | 17 39 | PP | 31 46 | SS | — | 69·7 |
| San Juan | — | 125·5 | 30 | e 20 12 | PP | e 26 20 | {−92} | — | — |
| Fort de France | — | 131·0 | 26 | — | — | e 25 46 | ? | — | — |
| Huancayo | — | 143·1 | 68 | e 18 43 | [−44] | — | — | — | — |
| La Paz | — | 151·4 | 67 | 19 2 | [−41] | i 28 57 | {−93} | — | — |

Additional readings and notes :—
Kobe i = +1m.29s.
Koti i = +1m.32s., eSN = +2m.43s., $iS_cSEN$ = +14m.6s.
Zinsen SS? = +5m.18s., SSS? = +5m.37s., $P_cS$? = +14m.12s.
Heizyo i = +14m.20s.
Nanking iE = +6m.45s.
Hong Kong ? = +6m.33s.
Medan i = +16m.55s.
Batavia isP = +7m.55s.
Honolulu T.H. epP = +10m.27s., e = +12m.5s., i = +18m.11s., e = +20m.20s., and +22m.43s.
Sitka ipP = +11m.11s., i = +13m.41s., and +18m.56s., e = +21m.51s.
Riverview iEN = +19m.10s.
Adelaide i = +19m.10s. and +20m.36s.
Perth i = +20m.31s.
Melbourne i = +19m.36s., +21m.15s., +22m.31s., and +28m.18s.
Berkeley ePZ = +11m.16s., iZ = +12m.45s., +13m.34s. = PP −1s. and +14m.16s.
Upsala i = +12m.49s., iPP = +14m.14s., SS = +25m.10s.

*Continued on next page.*

**Lick** iPN = +11m.20s.
**Tinemaha** iZ = +40m.46s.
**Mount Wilson** eZ = +40m.42s
**Pasadena** $eP_cPZ$ = +11m.59s., ipPZ = +13m.8s., esPZ = +13m.59s., iZ = +26m.12s., SKP·PKP = +36m.3s., ePKP·PKPZ = +38m.3s., iZ = +40m.42s.
**Copenhagen** pP = +13m.9s., +14m.57s., i = +24m.10s.
**Riverside** iZ = +40m.38s.
**Ksara** SSN = +26m.24s.
**La Jolla** iZ = +40m.39s.
**Potsdam** ipPNZ = +13m.21s., iNZ = +13m.29s., iPPNZ = +15m.15s., ipPP = +16m.41s., esPP = +17m.23s., iSKSNZ = +21m.31s., iNZ = +21m.41s., iZ = +22m.20s., eN = +22m.35s., iSPZ = +22m.38s., iPS = +24m.11s., eE = +24m.23s., iN = +24m.28s., isSPN = +25m.20s., esSPEZ = +25m.23s., eSSE = +27m.23s., iSSN = +27m.27s., iSSSN = +30m.46s.
**Hamburg** eZ = +13m.26s., iN = +21m.34s.
**Vienna** iN = +14m.4s., PP = +14m.47s., iZ = +15m.25s. and +15m.51s., PS = +22m.35s.
**Jena** ePEN = +11m.59s., eZ = +13m.33s., eEN = +13m.36s., eE = +22m.56s. = PS − 74s.
**Göttingen** ePKPEZ = +16m.53s., ePPP = +21m.43s.
**Graz** iPPS = +23m.6s.
**Edinburgh** i = +22m.11s. and +25m.3s.
**Ivigtut** +22m.18s.
**Zagreb** ePKP = +13m.45s. = pP.
**De Bilt** iZ = +13m.38s. = pP, +15m.41s., and +17m.7s., e = +23m.16s. = PS − 77s.
**Tucson** epP = +13m.45s., e = +15m.11s. = PP + 5s., iPP = +15m.47s., i = +22m.25s., e = +23m.41s. = PS − 55s.
**Helwan** iSS = +25m.4s.
**Stuttgart** pP = +13m.44s., iZ = +13m.51s., ePP = +15m.48s., epPP = +17m.17s., e = +19m.21s., SKS = +21m.56s., SP = +23m.26s., esSEN = +25m.5s., esSZ = +25m.59s., eSSEN = +28m.19s., esSS = +31m.5s.
**Triest** i = +16m.21s., iPS = +22m.16s. = S − 9s. and +22m.19s., i = +23m.30s. = PS − 76s.
**Stonyhurst** i = +15m.53s., e = +19m.41s., i = +22m.19s. = S − 7s., +23m.35s. = PS − 72s., +25m.17s., +25m.37s., and +28m.35s., e = +35m.50s.
**Uccle** i = +13m.46s. and +15m.50s., e = +17m.9s., +23m.34s. = PS − 74s. and +28m.31s.
**Bidston** i = +22m.29s. = S − 3s., +23m.38s. = PS − 75s., +26m.26s., and +28m.51s.
**Strasbourg** i = +13m.49s. = pP, iPP = +15m.51s., i = +19m.33s., PS = +23m.31s., i = +26m.17s.
**Chur** e = +13m.51s. = pP.
**Zurich** e = +13m.54s. = pP, and +23m.43s. = PS − 76s.
**Kew** ipPNZ = +13m.52s., iSKSEN = +22m.5s., iSP = +23m.49s.
**Oxford** e = +16m.3s., i = +28m.52s.
**Neuchatel** e = +13m.53s. = pP.
**Paris** PP = +16m.8s., SS = +29m.6s.
**Florissant** ipPZ = +13m.47s., i?Z = +13m.53s., iPPZ = +16m.48s., iSPEN = +23m.13s., iPSEN = +23m.32s., ipSEN = +24m.57s., isSEN = +25m.32s., iSSEN = +29m.21s.; $T_0$ = 16h.41m.12s.
**St. Louis** ipP = +14m.21s., ePP = +16m.48s.; $T_0$ = 16h.41m.12s.
**Ottawa** i = +16m.54s.
**Toronto** i = +16m.57s.
**Tortosa** eE = +22m.53s.
**Cincinnati** i = +23m.24s. = SKKS − 85s. and +23m.57s.
**Oak Ridge** eNW = +24m.21s. = S − 3s.
**Toledo** PPP = +25m.44s.; SKS is given as PP.
**Fordham** i = +23m.49s., +24m.19s. = S − 10s. and +25m.54s.
**Georgetown** iEN = +23m.55s. and +26m.12s. = PS − 64s.
**Granada** i = +28m.3s.
**Columbia** ePS = +26m.25s.
**San Fernando** PP = +22m.47s.
**San Juan** eSKP = +21m.18s., e = +21m.59s., +32m.1s. and +35m.11s.
**Huancayo** i = +18m.56s., ePP = +21m.46s., eSS = +40m.12s.
**Long waves were also recorded at Christchurch.**

**Sept. 2d. 21h. 13m. 54s. Epicentre 43°·5N. 150°·0E. N.3.**

A = −·628, B = +·363, C = +·688; D = +·500, E = +·866; G = −·596, H = +·344, K = −·725.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Mizusawa | | 7·9 | 239 | e 1 51 | − 1 | i 3 19 | − 2 | — | — |
| Vladivostok | | 13·1 | 274 | e 3 4 | + 1 | — | — | 7·1 | 7·9 |
| Chiufeng | E. | 25·3 | 274 | 6 4 | PP | e 9 49 | + 3 | e 13·6 | 16·0 |
| Ekaterinburg | | 54·5 | 318 | e 9 26 | + 1 | e 21 2 | ? | 34·1 | 34·6 |
| Tashkent | | 57·2 | 298 | e 11 54 | PP | e 17 27 | −12 | — | 36·3 |

Additional readings :—
Ekaterinburg $L_q$ = +28·1m.
Tashkent e = +21m.24s. =SS +1s. and +26m.54s.
Long waves were also recorded at Hong Kong, Kucino, Pulkovo, and several European stations.

Sept. 2d. Readings also at 0h. (near Mizusawa), 1h. (Wellington, near Mizusawa, and Tyosi), 2h. (Ekaterinburg, Tashkent, and Mizusawa), 5h. (Prato), 6h. (Tucson), 11h. (near Manila), 14h. (near Trenta), 15h. (near Taihoku and near Medan), 16h. (near Nanking), 20h. (Mount Wilson, Pasadena, Santa Barbara, Tinemaha, Sebastopol, Simferopol, De Bilt, Paris, Strasbourg, Granada, and near Algiers), 22h. (Suva).

**Sept. 3d. 3h. 46m. 7s. Epicentre 3°·0N. 126°·0E. (as on 1928 May 17d.). X.**

A = −·587, B = +·808, C = +·052; D = +·809, E = +·588; G = −·031, H = +·042, K = −·999.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Palau | | 9·5 | 62 | 2 8 | − 6 | 3 50 | −11 | — | — |
| Manila | | 12·6 | 337 | i 3 5a | + 9 | i 5 13 | − 4 | i 6·4 | 7·6 |
| Hong Kong | | 22·5 | 330 | 9 2 | S | (9 2) | + 7 | — | — |
| Nagoya | | 33·8 | 16 | (6 35) | − 4 | 6 35 | P | — | — |
| Kohu | | 34·7 | 20 | 6 41 | − 5 | — | — | — | — |
| Nagano | | 35·5 | 19 | 6 50 | − 3 | 11 32 | −57 | — | — |
| Chiufeng | E. | 38·2 | 348 | 13 5 | S | (13 5) | − 4 | — | — |
| Mizusawa | E. | 38·7 | 21 | (e 7 31) | +10 | e 7 31 | P | — | — |
| Vladivostok | | 40·5 | 7 | e 7 37 | + 1 | — | — | — | — |
| Andijan | | 61·2 | 315 | e 10 23 | +10 | — | — | — | — |
| Tashkent | | 63·5 | 315 | — | — | i 18 56 | − 5 | — | — |
| Ekaterinburg | | 74·2 | 329 | e 11 29 | − 7 | i 21 2 | − 9 | 38·9 | 45·0 |
| Tiflis | | 81·5 | 312 | 12 10 | − 6 | 22 23 | − 9 | e 31·9 | — |
| Kucino | | 86·5 | 326 | e 12 41 | 0 | 23 12 | −10 | e 44·6 | 51·3 |
| Ksara | | 88·4 | 304 | e 12 51 | + 1 | i 23 38 | − 3 | — | — |
| Pulkovo | | 90·3 | 330 | e 13 18 | +19 | i 23 52 | − 7 | — | — |
| Copenhagen | | 100·5 | 329 | — | — | 24 17 | [−11] | 55·9 | — |
| Paris | | 108·8 | 325 | — | — | e 27 53? | PS | 62·9 | — |

Additional readings :—
Chiufeng S = +17m.22s. = $S_cS$ − 9s.
Tiflis e = +12m.22s.
Long waves were also recorded at Wellington, Baku, De Bilt, Uccle, Potsdam, and Stuttgart.

Sept. 3d. Readings also at 0h. (La Paz), 2h. (near Amboina and near Apia), 4h. near Lick), 5h. (near Branner and Lick), 9h. (near Lick), 11h. (Apia, Tyosi, and near Zagreb (3)), 12h. and 14h. (near Apia), 16h. (near Trenta), 18h. (Baku and Ekaterinburg), 21h. (Huancayo), 23h. (near Nagoya, Kobe, and Sumoto).

Sept. 4d. Readings at 1h. (La Jolla, Mount Wilson, Pasadena, Riverside, Tinemaha, and Tucson), 2h. (Ekaterinburg and Tashkent), 4h. (near Mizusawa), 11h. (Tucson), 13h. (Kobe), 14h. (Sumoto), 17h. (Simferopol), 19h. (Huancayo and near Mizusawa), 20h. (Tyosi and near Ksara), 23h. (Baku, Ekaterinburg, Vladivostok, Pulkovo, Copenhagen, Potsdam, De Bilt, Uccle, Paris, Stuttgart, Strasbourg, Florence, Triest, Tyosi, and Mizusawa).

Sept. 5d. Readings at 0h. (Adelaide, Melbourne, Riverview, Wellington, and near Lick), 1h. (Baku, Ekaterinburg, Lick, near La Paz, and Sucre), 2h. (Huancayo), 4h. (Andijan, Frunse, Samarkand, Stuttgart, Ekaterinburg, Vladivostok, and near Mizusawa), 5h. (Hong Kong, Ekaterinburg, Pulkovo, Copenhagen, Potsdam, De Bilt, Paris, Strasbourg, Triest, and Granada), 7h. (near Mizusawa), 13h. (Huancayo, near La Paz, and near Sumoto), 14h. and 15h. (near Sumoto), 16h. (Baku, Ekaterinburg, and Tashkent), 17h. (Alicante), 18h. (Ekaterinburg, Kucino, Tashkent, Stuttgart, Hong Kong, Manila, Riverview, and near Mizusawa), 21h. (near Wellington).

Sept. 6d. 1h. 15m. 54s. Epicentre 58°·2S. 146°·4E. N.3.

$A = -\cdot439$, $B = +\cdot292$, $C = -\cdot850$; $D = +\cdot553$, $E = +\cdot833$; $G = +\cdot708$, $H = -\cdot470$, $K = -\cdot527$.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Melbourne | | 20·4 | 357 | i 4 53 | PP | 8 2 | −12 | 9·1 | 10·6 |
| Christchurch | | 21·9 | 59 | i 4 49 | − 1 | i 8 40 | − 4 | — | 11·6 |
| Adelaide | | 23·8 | 344 | i 5 8 | 0 | i 9 27 | + 8 | i 11·0 | 12·4 |
| Riverview | | 24·6 | 10 | e 5 13k | − 3 | e 9 34 | 0 | — | 14·7 |
| Sydney | | 24·6 | 10 | e 5 36 | PP | i 9 24 | −10 | 12·3 | 13·3 |
| Wellington | | 24·6 | 59 | 5 16 | 0 | 9 26 | − 8 | 11·1 | 12·1 |
| Chatham Is. | | 26·8 | 74 | — | — | e 11 36? | SSS | i 14·1 | 15·1 |
| Batavia | | 60·3 | 313 | e 10 0 | − 7 | i 18 32 | +12 | — | — |
| Bombay | N. | 97·7 | 294 | — | — | e 24 6 | [− 9] | — | — |
| Tashkent | | 118·2 | 304 | — | — | e 25 18 | [−27] | e 56·3 | 67·0 |
| Baku | | 126·6 | 290 | e 22 22? | — | e 34 12 | ? | 59·1 | 70·1 |
| Ekaterinburg | | 133·6 | 311 | e 21 46 | PP | e 22 52 | PKS | 62·1 | — |
| Kucino | | 142·8 | 298 | — | — | e 27 42 | PPPP | e 67·1 | 79·3 |
| Granada | | 151·3 | 236 | e 16 6? | ? | — | — | 54·1 | — |
| Stuttgart | | 153·4 | 267 | e 20 30 | {+16} | e 43 36 | SS | e 89·1 | — |

Additional readings:—
Melbourne i = +8m.48s.
Christchurch PP = +5m.27s., $iP_cP$ = +8m.52s., $P_cSE$ = +12m.56s., $S_cSN$ = +17m.0s.
Riverview iSSN = +10m.36s., eSSS = +11m.6s., $S_cS$? = +16m.6s.
Bombay eE = +33m.6s.
Tashkent e = +36m.14s. =SS +6s.
Baku e = +41m.2s.
Kucino e = +44m.42s.
Long waves were also recorded at Perth and other European stations.

Sept. 6d. 9h. 58m. 5s. Epicentre 43°·5N. 150°·0E. (as on 2d.). R.3.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Mizusawa | E. | 7·9 | 239 | e 1 52 | 0 | i 3 20 | − 1 | — | — |
| Vladivostok | | 13·1 | 274 | e 3 4 | + 1 | e 6 0 | +31 | 6·8 | 7·9 |
| Sitka | | 47·0 | 46 | e 7 31 | −58 | e 15 31 | +12 | e 25·9 | — |
| Ekaterinburg | | 54·5 | 318 | 9 24 | − 1 | e 17 4 | + 2 | 34·1 | 34·9 |
| Tashkent | | 57·2 | 298 | e 9 41 | − 4 | e 17 34 | − 5 | e 28·1 | 35·7 |
| Triest | | 82·8 | 331 | e 12 35 | +13 | e 23 11 | PS | e 39·9 | — |

Additional readings:—
Sitka e = +18m.35s. =SS +7s.
Ekaterinburg $L_q$ = +29·4m.
Long waves were also recorded at Kobe, Sumoto, Hong Kong, Bombay, Pulkovo, and other European stations.

Sept. 6d. 14h. 5m. 21s. Epicentre 34°·4N. 137°·8E. N.2.
(given by the Japanese stations).

A = −·611, B = +·554, C = +·565; D = +·672, E = +·741;
G = −·419, H = +·380, K = −·825.

A depth of focus 0·045 has been assumed.

| | | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | ° | m. s. | s. | m. s. | s. | m. |
| Omaesaki | | +1·6 | 0·4 | 60 | 0 28 | − 1 | 1 6 | +15 | — |
| Nagoya | | +1·4 | 1·0 | 318 | e 0 38 | + 4 | 1 9 | + 7 | — |
| Numadu | | +1·4 | 1·1 | 51 | 0 38 | + 2 | 1 10 | + 6 | — |
| Ito | | +1·4 | 1·2 | 62 | 0 23 | −14 | 0 56 | −11 | — |
| Misima | | +1·4 | 1·2 | 53 | 0 39 | + 2 | 1 11 | + 4 | — |
| Kameyama | | +1·4 | 1·2 | 292 | 0 40 | + 3 | 1 10 | + 3 | — |
| Gihu | | +1·4 | 1·3 | 320 | 0 39 | 0 | 1 10 | + 1 | — |
| Hunatu | | +1·4 | 1·3 | 36 | 0 39 | 0 | 1 12 | + 3 | — |
| Kohu | | +1·3 | 1·4 | 27 | 0 41a | + 2 | 1 13 | + 4 | — |
| Hikone | | +1·3 | 1·5 | 304 | 0 41 | + 1 | 1 13 | + 1 | — |
| Mera | | +1·2 | 1·7 | 73 | 0 42 | + 1 | 1 16 | + 2 | — |
| Yokohama | | +1·2 | 1·8 | 56 | 0 45 | + 2 | 1 19 | + 2 | — |
| Osaka | | +1·1 | 1·9 | 278 | 0 43 | 0 | 1 18 | + 1 | 1·3 |
| Tokyo | | +1·1 | 2·0 | 51 | 0 42 | − 2 | 1 20 | 0 | — |
| Wakayama | | +1·1 | 2·2 | 266 | 0 42 | − 5 | 1 21 | − 4 | — |
| Maebasi | | +1·1 | 2·2 | 27 | 0 46a | − 1 | 1 20 | − 5 | — |
| Nagano | | +1·0 | 2·3 | 8 | 0 48 | + 1 | 1 17 | − 8 | — |
| Kakioka | | +0·9 | 2·6 | 47 | 0 50 | 0 | 1 28 | − 2 | — |
| Tukubasan | | +0·9 | 2·6 | 46 | 0 48 | − 2 | 1 25 | − 5 | — |
| Mito | | +0·9 | 2·9 | 47 | 0 53 | − 1 | 1 33 | − 4 | — |
| Tyosi | | +0·9 | 2·9 | 62 | e 0 53 | − 1 | 1 34 | − 3 | 1·6 |
| Hukusima | | +0·5 | 4·0 | 33 | 1 3 | − 1 | 1 52 | − 3 | — |
| Mizusawa | E. | +0·1 | 5·4 | 29 | — | — | e 2 17 | − 3 | — |

No additional readings.

Sept. 6d. 22h. 8m. 26s. Epicentre 21°·3S. 178°·6W. N.1.

A = −·931, B = −·023, C = −·363; D = −·024, E = +1·000;
G = +·363, H = +·009, K = −·932.

A *depth* of focus 0·075 has been assumed.

| | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | ° | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Apia | −0·8 | 9·9 | 42 | i 2 32 | +23 | 4 2 | +11 | 4·3 | 4·6 |
| Arapuni | −2·5 | 17·5 | 195 | 3 34 | + 6 | 6 1 | −14 | 6·4 | — |
| Hastings | −2·8 | 18·7 | 191 | i 6 34 | S | (6 34) | − 2 | — | — |
| Wellington | −3·0 | 20·8 | 194 | i 3 59 | − 5 | 6 37 | −43 | 7·0 | — |
| Glenmuick | −3·4 | 22·7 | 196 | e 3 45? | −37 | e 6 45 | −67 | e 6·9 | — |
| Chatham Is. | −3·4 | 22·7 | 176 | 5 10? | +48 | 7 52 | 0 | — | — |
| Riverview | −4·6 | 29·5 | 238 | i 5 17k | − 2 | i 9 26 | −13 | i 12·5 | 14·9 |
| Sydney | −4·6 | 29·5 | 238 | i 5 22 | + 3 | i 8 16 | −83 | 9·6 | 10·6 |
| Melbourne | −5·1 | 35·5 | 234 | i 6 9 | 0 | i 10 59 | −11 | — | — |
| Adelaide | −5·7 | 39·8 | 240 | i 6 47 | + 6 | i 11 59 | − 9 | i 15·1 | 15·8 |
| Honolulu T.H. | −6·4 | 47·2 | 27 | i 7 52 | +13 | i 14 5 | +17 | — | — |
| Palau | −7·1 | 54·2 | 297 | 8 35 | + 6 | 15 28 | + 8 | — | — |
| Amboina | −7·1 | 54·6 | 281 | i 9 29 | +57 | i 16 28 | +62 | — | — |
| Perth | −7·4 | 58·7 | 244 | e 9 14 | +13 | 16 34 | +15 | — | — |
| Titizima | −7·5 | 61·5 | 321 | 9 24 | + 3 | 16 50 | − 6 | — | — |

*Continued on next page*

| | | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Tyosi | | −8·0 | 68·7 | 326 | i 10 10k | + 1 | 18 32 | + 7 | — | 19·0 |
| Tokyo | | −8·0 | 69·3 | 325 | 10 16 | + 2 | 18 39 | + 6 | — | — |
| Omaesaki | | −8·0 | 69·3 | 323 | 10 14 | 0 | 0 18 38 | + 5 | — | — |
| Manila | | −8·0 | 69·3 | 296 | i 10 12k | − 2 | 18 31 | − 2 | — | — |
| Numadu | | −8·1 | 69·4 | 325 | 10 13 | − 1 | 18 35 | + 2 | — | — |
| Kakioka | | −8·1 | 69·5 | 326 | 10 15 | + 1 | 18 38 | + 4 | — | — |
| Kohu | | −8·1 | 69·9 | 325 | 10 17 | 0 | 18 43 | + 4 | — | — |
| Kameyama | | −8·1 | 70·5 | 323 | 10 22 | + 1 | 18 50 | + 3 | — | — |
| Nagoya | | −8·1 | 70·5 | 323 | 10 8 | −13 | (18 50) | + 3 | 18·8 | — |
| Hukusima | | −8·1 | 70·5 | 326 | 10 20 | − 1 | 18 48 | + 1 | — | — |
| Muroto | | −8·1 | 70·7 | 319 | 10 23 | + 1 | 18 51 | + 1 | 26·0 | — |
| Nagano | | −8·2 | 70·9 | 325 | 10 23 | 0 | 18 55 | + 4 | — | — |
| Osaka | | −8·2 | 70·9 | 321 | 10 24 | + 1 | 18 58 | + 7 | — | 20·7 |
| Sumoto | | −8·2 | 71·1 | 321 | 10 24k | − 1 | e 18 50 | − 4 | — | 19·0 |
| Kobe | | −8·2 | 71·2 | 321 | 10 25k | 0 | 18 56 | + 1 | e 26·7 | — |
| Simidu | | −8·2 | 71·2 | 319 | i 10 24k | − 1 | e 18 56 | + 1 | — | — |
| Mizusawa | | −8·2 | 71·2 | 328 | e 10 26 | + 1 | i 18 56 | + 1 | e 23·7 | — |
| Koti | | −8·2 | 71·3 | 319 | i 10 29k | + 3 | e 19 1 | + 5 | e 23·6 | — |
| Morioka | | −8·2 | 71·7 | 329 | 10 27 | − 2 | 19 1 | 0 | — | — |
| Toyooka | | −8·2 | 71·9 | 322 | 10 26k | − 4 | 19 3 | − 1 | — | — |
| Malabar | | −8·2 | 72·3 | 269 | i 10 32 | − 1 | i 19 1 | − 8 | — | — |
| Nagasaki | | −8·3 | 73·1 | 317 | 10 34k | − 3 | 19 16 | − 1 | — | — |
| Hukuoka | | −8·3 | 73·3 | 318 | 10 37 | − 2 | — | — | — | — |
| Batavia | | −8·3 | 73·4 | 270 | i 10 34k | − 5 | i 19 12 | − 9 | e 38·5 | — |
| Taihoku | | −8·4 | 74·3 | 305 | 10 42 | − 3 | 19 28 | − 3 | 25·4 | — |
| Taikyu | | −8·4 | 75·9 | 319 | e 10 51 | − 4 | 19 48 | − 3 | — | — |
| Zi-ka-wei | Z. | −8·6 | 77·9 | 311 | i 11 2k | − 4 | — | — | — | — |
| Keizyo | N. | −8·6 | 78·0 | 319 | e 11 3 | − 4 | e 20 10 | − 4 | — | — |
| Zinsen | | −8·6 | 78·2 | 318 | 11 4 | − 4 | e 20 11 | − 5 | e 28·3 | — |
| Hong Kong | | −8·6 | 78·7 | 299 | 11 4 | − 7 | (20 13) | − 9 | 20·2 | 20·4 |
| Vladivostok | | −8·6 | 78·8 | 325 | i 11 9 | − 3 | i 20 23 | − 1 | 31·9 | 38·5 |
| Santa Barbara | | −8·7 | 78·9 | 46 | i 11 14 | + 2 | i 20 31 | + 7 | — | — |
| Branner | | −8·7 | 79·1 | 42 | e 11 14 | + 1 | e 20 32 | + 6 | — | — |
| Berkeley | | −8·7 | 79·4 | 42 | e 11 16 | + 1 | e 20 33 | + 3 | — | — |
| Lick | | −8·7 | 79·4 | 42 | e 11 17 | + 2 | e 20 37 | + 7 | — | — |
| Ukiah | | −8·7 | 79·5 | 40 | i 11 19 | + 3 | i 20 34 | + 3 | — | — |
| Heizyo | | −8·7 | 79·7 | 319 | 11 13 | − 4 | — | — | — | — |
| La Jolla | | −8·7 | 79·7 | 48 | i 11 18 | + 1 | i 20 45 | +12 | — | — |
| Pasadena | | −8·7 | 79·8 | 47 | i 11 18 | + 1 | i 20 44 | +10 | — | — |
| Mount Wilson | | −8·7 | 79·9 | 47 | i 11 18 | 0 | e 20 42 | + 7 | — | — |
| Nanking | | −8·7 | 80·2 | 310 | i 11 15k | − 5 | i 20 34 | − 5 | e 32·6 | — |
| Riverside | | −8·7 | 80·3 | 47 | i 11 30 | +10 | e 20 55 | +15 | — | — |
| Haiwee | | −8·7 | 81·1 | 45 | i 11 25 | 0 | i 20 54 | + 4 | — | — |
| Tinemaha | | −8·8 | 81·4 | 45 | i 11 22 | − 4 | i 20 51 | − 1 | — | — |
| Tucson | | −8·9 | 84·0 | 52 | i 11 42 | + 1 | i 21 24 | + 3 | — | — |
| Phu-Lien | | −8·9 | 84·3 | 294 | i 11 34 | − 9 | i 21 1 | −24 | 33·6 | — |
| Medan | | −8·9 | 84·5 | 273 | i 11 38 | − 6 | 22 30 | +63 | — | — |
| Victoria | E. | −8·9 | 85·3 | 34 | e 11 50 | + 2 | (i 21 11) | −25 | i 21·2 | — |
| Seattle | | −8·9 | 85·4 | 35 | e 11 50 | + 1 | e 21 20 | −17 | — | — |
| Sitka | | −9·0 | 86·3 | 22 | i 11 49 | − 5 | i 21 37 | − 9 | — | — |
| Chiufeng | | −9·0 | 86·3 | 316 | 11 46 | − 8 | i 21 11 | −25 | — | — |
| Bozeman | | −9·2 | 90·6 | 40 | e 12 17 | + 2 | i 22 21 | −10 | — | — |
| Huancayo | | — | 97·7 | 106 | e 12 44 | −49 | i 23 34 | [−41] | — | — |
| La Plata | E. | — | 100·5 | 134 | i 17 6 | PP | 22 28 | [−120] | 37·9 | 42·3 |
| | N. | — | 100·5 | 134 | 17 9 | PP | i 22 32 | [−116] | 38·0 | — |
| Calcutta | | — | 100·6 | 290 | e 13 9 | −37 | 17 22 | PP | 22·7 | — |
| Florissant | | — | 101·8 | 53 | i 13 2 | −50 | 22 37 | [−117] | — | — |
| St. Louis | | — | 101·9 | 53 | i 13 2 | −50 | 23 57 | [−38] | — | — |
| La Paz | N. | — | 102·1 | 113 | e 13 9 | −44 | i 24 6 | [−30] | 38·0 | — |
| Colombo | | — | 103·2 | 272 | e 13 16 | −42 | 22 52 | ? | 30·4 | — |

*Continued on next page.*

| | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | ° | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Madison | — | 103·8 | 48 | 15 22 | ? | 24 3 | [−41] | — | — |
| Chicago | — | 104·7 | 51 | e 17 40 | PP | e 23 39 | [−69] | e 39·6 | — |
| Cincinnati | — | 106·3 | 54 | e 13 20 | −53 | i 26 30 | PS | — | — |
| Kodaikanal | — | 106·6 | 275 | i 13 20 | −54 | 17 29 | PKP | — | — |
| Ann Arbor | — | 107·6 | 51 | e 21 4 | ? | e 24 4 | [−58] | 36·8 | — |
| Columbia | — | 107·7 | 60 | e 18 6 | PP | i 24 6 | [−57] | — | — |
| Hyderabad | — | 108·0 | 282 | 15 18 | ? | 23 48 | [−76] | 32·3 | 49·3 |
| Pittsburgh | — | 110·0 | 53 | i 18 16 | PP | i 24 19 | [−54] | — | — |
| Charlottesville | — | 110·6 | 56 | e 18 26 | PP | e 25 16 | {−55} | — | — |
| Toronto | — | 111·0 | 50 | e 14 59 | +24 | e 27 20 | PS | 55·0 | 64·1 |
| Georgetown | — | 111·9 | 56 | i 21 33 | ? | i 23 23 | [−119] | e 46·6 | — |
| Bombay | — | 113·5 | 282 | 14 1 | −47 | 27 31 | PS | — | 72·0 |
| Ottawa | — | 113·8 | 48 | e 16 10 | ? | i 24 45 | [−44] | e 37·6 | — |
| Fordham | — | 114·6 | 54 | e 18 53 | PP | i 24 51 | [−41] | — | — |
| Frunse | — | 116·4 | 308 | e 14 7 | −55 | — | — | — | — |
| Oak Ridge | — | 116·5 | 52 | e 17 16 | [−81] | e 24 47 | [−52] | — | — |
| San Juan | — | 116·9 | 80 | i 19 6 | PP | i 24 59 | [−41] | — | — |
| Andijan | — | 117·9 | 305 | e 17 47 | [−53] | — | — | — | — |
| Tashkent | — | 120·2 | 306 | 14 14 | −65 | — | — | — | 35·4 |
| Fort de France | — | 120·5 | 86 | 0 16 | ? | — | — | — | — |
| Samarkand | — | 121·9 | 303 | e 17 39 | [−71] | — | — | — | — |
| Cape Town | — | 122·4 | 197 | 24 46 | SKS | 35 33 | SS | 55·6 | — |
| Ekaterinburg | — | 124·4 | 325 | e 14 39 | −61 | i 26 4 | {−101} | 43·6 | 45·1 |
| Ivigtut Z. | — | 127·5 | 27 | i 18 3k | [−59] | — | — | — | — |
| Pulkovo | — | 136·4 | 339 | e 18 1 | [−76] | i 25 7 | [−90] | 51·6 | 58·8 |
| Tiflis E. | — | 138·3 | 309 | e 19 4 | [−15] | — | — | — | — |
| Upsala | — | 139·8 | 347 | 18 15 | [−66] | — | — | — | — |
| Bergen | — | 140·8 | 357 | 17 34 | ? | — | — | — | — |
| Simferopol | — | 144·2 | 319 | i 18 35 | [−57] | 27 51 | ? | 47·8 | — |
| Yalta | — | 144·4 | 318 | 18 32 | [−60] | — | — | — | — |
| Copenhagen | — | 144·6 | 349 | i 18 36 | [−57] | e 27 54 | ? | — | — |
| Sebastopol | — | 144·7 | 319 | i 18 42 | [−51] | — | — | — | — |
| Edinburgh | — | 145·1 | 4 | e 18 42 | [−52] | i 40 8 | ? | e 48·6 | — |
| Durham | — | 146·4 | 3 | 18 44 | [−52] | 32 24 | SKSP | — | — |
| Hamburg | — | 147·1 | 352 | 18 40? | [−57] | — | — | 74·6 | — |
| Ksara | — | 147·1 | 299 | 18 43 | [−54] | — | — | — | — |
| Stonyhurst | — | 147·3 | 4 | i 18 44 | [−54] | — | — | e 58·9 | — |
| Potsdam | — | 147·6 | 347 | i 18 44 | [−54] | 25 34? | SKS | e 49·6 | — |
| Leipzig | — | 148·7 | 345 | e 18 50 | [−50] | — | — | e 51·6 | — |
| De Bilt | — | 149·0 | 355 | i 18 43k | [−57] | — | — | e 50·6 | 50·8 |
| Göttingen | — | 149·0 | 350 | i 18 41 | [−59] | — | — | e 51·6 | 54·6 |
| Jena | — | 149·2 | 346 | i 18 43 | [−57] | — | — | — | — |
| Oxford | — | 149·5 | 3 | e 18 46 | [−55] | — | — | — | — |
| Kew | — | 149·7 | 2 | i 18 43 | [−58] | e 28 21 | {−119} | 39·6 | — |
| Cheb | — | 149·9 | 345 | e 18 38 | [−64] | e 28 25 | {−116} | — | — |
| Budapest | — | 150·2 | 336 | 18 46 | [−56] | — | — | e 44·6 | — |
| Uccle | — | 150·3 | 356 | i 18 45k | [−57] | — | — | e 50·6 | — |
| Vienna | — | 150·5 | 339 | e 18 44 | [−58] | 30 35 | ? | e 46·6 | 51·6 |
| Belgrade | — | 151·7 | 331 | e 18 50 | [−54] | — | — | e 51·6 | — |
| Graz | — | 151·7 | 340 | i 18 50 | [−54] | e 35 58 | ? | 36·6 | 41·5 |
| Karlsruhe | — | 151·7 | 350 | 18 53 | [−51] | — | — | — | — |
| Stuttgart | — | 151·8 | 349 | e 18 47 | [−57] | 33 7 | SKSP | e 50·6 | — |
| Helwan | — | 151·8 | 291 | 18 47 | [−57] | 32 1 | ? | — | — |
| Strasbourg | — | 152·2 | 351 | i 18 47k | [−57] | 26 5 | PPP | e 51·6 | — |
| Paris | — | 152·4 | 358 | i 18 46 | [−59] | e 33 8 | SKSP | 38·6 | 46·6 |
| Zagreb | — | 152·7 | 337 | e 18 48 | [−57] | e 27 59 | ? | — | — |
| Zurich | — | 153·3 | 349 | e 18 48 | [−58] | — | — | — | — |
| Chur | — | 153·6 | 347 | e 18 49 | [−58] | — | — | — | — |
| Triest | — | 153·6 | 340 | 18 50a | [−57] | i 28 39 | {−124} | — | — |
| Neuchatel | — | 153·9 | 351 | e 18 50 | [−57] | — | — | — | — |

*Continued on next page.*

| | | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Treviso | | — | 154·1 | 343 | i 18 52 | [−55] | e 28 46 | {−120} | 55·6 | — |
| Padova | | — | 154·4 | 343 | e 18 56 | [−51] | — | — | — | — |
| Pavia | | — | 155·3 | 347 | e 19 2 | [−46] | — | — | — | — |
| Piacenza | | — | 155·3 | 346 | e 19 19 | [−29] | 33 26 | SKSP | 50·6 | 83·5 |
| Puy de Dôme | | — | 155·5 | 357 | 18 53 | [−56] | — | — | e 50·6 | — |
| Prato | | — | 156·0 | 343 | e 18 55 | [−54] | i 23 17 | ? | — | — |
| Florence | | — | 156·1 | 342 | i 18 43 | [−66] | 22 3 | ? | — | — |
| Benevento | | — | 157·4 | 334 | 18 4 | ? | 25 34? | ? | 30·6 | 35·2 |
| Naples | E. | — | 157·6 | 334 | e 18 56 | [−55] | e 30 46 | ? | — | — |
| Trenta | | — | 158·0 | 328 | e 18 59 | [−52] | — | — | — | — |
| Messina | | — | 159·2 | 327 | 18 47 | [−55] | — | — | — | — |
| Coimbra | | — | 159·3 | 22 | e 19 3 | [−50] | 27 57 | ? | — | — |
| Barcelona | | — | 159·8 | 358 | e 19 3 | [−51] | e 33 20 | SKSP | — | — |
| Catania | | — | 159·9 | 327 | 19 4 | [−50] | — | — | — | — |
| Tortosa | N. | — | 160·4 | 2 | 19 1 | [−53] | 33 36 | SKSP | e 47·6 | — |
| Toledo | | — | 160·9 | 13 | e 18 58 | [−57] | 33 40 | SKSP | e 73·1 | — |
| Tunis | | — | 162·7 | 336 | 19 21 | [−36] | — | — | — | — |
| Alicante | | — | 162·9 | 5 | e 19 4 | [−53] | 26 28 | ? | e 48·4 | — |
| Granada | | — | 163·6 | 14 | i 19 25k | [−33] | — | — | — | — |
| Malaga | | — | 163·8 | 17 | e 18 50 | [−68] | — | — | — | — |
| Almeria | | — | 164·1 | 11 | i 18 59 | [−59] | 29 19 | SKS | e 43·8 | — |
| San Fernando | N. | — | 164·3 | 22 | 19 5 | [−53] | 26 39 | ? | 41·1 | 48·6 |
| Algiers | | — | 164·4 | 355 | 19 9 | [−49] | i 32 27 | ? | 49·6 | — |

Additional readings :—
Hastings i = +6m.41s. and +6m.56s.
Wellington i = +4m.4s., $S_cS$ = +14m.14s., i = +18m.29s.
Glenmuick e = +3m.51s., +6m.41s., and +7m.6s.
Chatham Is. i = +11m.16s.
Riverview iE = +6m.55s. and +8m.17s.
Melbourne i = +7m.44s., +8m.56s., +14m.32s., +15m.4s., and +15m.21s.
Adelaide i = +14m.24s. and +15m.42s.
Honolulu T.H. e = +10m.44s., +12m.44s., +16m.38s., and +19m.46s.
Perth PP = +11m.19s., e = +17m.44s., SS = +20m.4s.
Tyosi PE = +10m.33s., PN = +10m.36s.
Nagoya pP = +10m.20s.
Sumoto eSE = +14m.42s., eSN = +15m.27s., eN = +18m.53s.
Kobe P = +10m.28s., PPZ = +13m.9s., eSZ = +19m.1s., eN = +20m.28s., and +22m.37s., eE = +23m.28s.
Simidu PP? = +12m.29s.
Mizusawa eSN = +18m.36s.
Koti ePPZ = +12m.30s.
Toyooka PEN = +10m.28s., iZ = +10m.31s., and +10m.36s.
Taikyu e = +12m.52s.
Zi-ka-wei SZ? = +13m.7s. =PP −35s., iZ = +14m.7s., +21m.3s., +25m.13s., +26m.7s., +29m.17s., +30m.26s., +30m.47s., +32m.11s., and +35m.15s.
Zinsen ePP?= +13m.16s., ePPP? = +14m.19s., eSE = +20m.18s., eSS? = +23m.58s.
Hong Kong S? = +16m.44s.
Santa Barbara iPKP, PKPZ = +38m.4s., iZ = +40m.28s.
Branner eN = +13m.23s. =PP −19s., iSE = +20m.37s.
Berkeley iZ = +13m.21s. =PP −23s., eSZ = +20m.42s.
Lick eN = +11m.26s.
Ukiah ePP = +14m.38s., ePPP = +17m.26s., esS = +24m.20s., i = +25m.0s., esSS = +31m.26s.
La Jolla iPKP, PKPZ = +38m.3s., iZ = +40m.34s.
Pasadena ipPZ = +13m.25s., isPZ = +14m.37s., iPPZ = +15m.23s., eSKSE = +20m.35s., iPSZ = +21m.35s., isSN = +24m.31s., iPKP,PKPZ = +38m.6s., iZ = +40m.27s.
Mount Wilson ePKP,PKPZ = +37m.56s.
Nanking iN = +11m.22s., iZ = +13m.23s. =PP −28s., iN = +14m.28s., iZ = +21m.26s., eN = +29m.22s., i = +40m.25s.
Riverside iPKP,PKPZ = +38m.14s., iZ = +40m.44s.
Haiwee iPKP,PKP = +38m.3s., iZ = +40m.31s.
Tinemaha iPKP,PKPZ = +37m.56s., iZ = +40m.27s.
Tucson ipP = +13m.51s., i = +21m.10s., eSP = +22m.21s., e = +23m.16s., i = +25m.27s., e = +31m.28s. and +33m.46s.
Seattle SP = +22m.44s.?
Sitka e = +14m.51s. and +25m.29s., i = +27m.4s., iSS = +27m.34s., e = +31m.1s.

*Continued on next page.*

Bozeman ipP = +14m.23s., ePPP = +18m.45s., i = +21m.48s., esS = +26m.16s.
Huancayo e = +14m.39s. and +14m.55s., iPP = +16m.51s., i = +22m.15s., +22m.25s., +24m.41s., and +24m.50s., e = +29m.4s.
La Plata iPPE = +17m.45s., PSEN = +25m.16s., PSZ = +25m.22s., PPSEN = +26m.35s., SSN = +30m.42s., SSE = +30m.52s., SSSN = +34m.4s.
Florissant ipPZ = +15m.27s., iPKPZ = +17m.21s., iPPZ = +17m.27s., iPPPZ = +20m.31s., iSKKSEN = +23m.25s., iSEN = +23m.57s., iSPEN = +26m.17s., iPSEN = +26m.27s., ipSEN = +27m.1s., isSEN = +28m.0s., iSSEN = +31m.17s. ; $T_0$ = 22h.8m.29s.
St. Louis ipP = +15m.27s., iPKP = +17m.21s., iPP = +17m.27s., iPPP = +20m.31s., iSKS = +22m.37s., iSKKS = +23m.25s., iSP = +26m.17s., iPS = +26m.27s., ipS = +27m.31s., isS = +28m.0s., iSS = +31m.17s.
La Paz PPPN = +17m.37s., iSKS? = +22m.44s.
Colombo iP = +17m.29s. = PP − 28s.
Madison PP = +17m.36s., iSKS = +22m.38s., iSKKS = +23m.36s., SP = +26m.1s., sS = +28m.12s., SS = +31m.44s.
Chicago e = +20m.43s., i = +22m.37s., and +24m.20s., eSP = +26m.1s., e = +28m.15s., and +34m.34s.
Cincinnati epP = +15m.33s., iPP = +17m.54s., iPPP = +21m.0s.
Ann Arbor eN = +21m.34s., iN = +24m.52s., eE = +26m.28s., eN = +28m.52s., e = +32m.40s., eE = +36m.34s.
Columbia ePPP = +20m.59s., i = +23m.9s., +24m.44s., and +26m.58s., e = +27m.27s., eSS = +32m.21s.
Pittsburgh i = +20m.49s., +23m.16s., and +25m.6s., SP = +27m.13s., i = +29m.4s.
Charlottesville eSP = +27m.7s., ePS = +28m.14s., e = +29m.12s. and +30m.52s., eSS = +33m.14s.
Toronto e = +15m.50s., i = +18m.57s., iSKKS = +25m.19s., i = +29m.12s. and +33m.19s., SS? = +35m.47s. ; $T_0$ = 22h.8m.29s.
Georgetown iPPPEZ = +21m.37s., iSKSN = +25m.24s., iPS = +27m.21s.
Ottawa eE = +18m.44s., e = +21m.58s., iE = +23m.32s., iN = +25m.38s., iE = +27m.34s., eN = +29m.40s., iN = +33m.54s.
Fordham i = +23m.35s., +25m.47s., e = +27m.32s., i = +29m.50s., +31m.29s., +34m.10s., and +40m.19s.
Oak Ridge eNE = +16m.19s., eE = +17m.43s., eN = +17m.51s., eNE = +19m.1s., eE = +19m.4s., iNW = +19m.7s., eNW = +21m.22s., eNE = +21m.52s., i = +23m.43s., eNW = +24m.33s., eE = +24m.51s., iNE = +26m.0s., i = +26m.4s., eNE = +27m.44s., +28m.0s., eN = +28m.29s., iNE = +30m.5s., eNW = +30m.8s., eNE = +31m.34s., e = +31m.47s., iNE = +34m.25s., iNW = +34m.32s., eE = +34m.43s., eNW = +37m.31s., eN = +37m.51s.
San Juan epPP = +21m.10s., i = +23m.42s., and +26m.8s., iSP = +28m.2s., iPS = +28m.34s., e = +30m.4s., iSS = +34m.34s., e = +37m.46s.
Tashkent e = +17m.47s., iPKP = +17m.52s., ePP = +18m.24s., i = +19m.14s., +20m.26s., +20m.45s., and +23m.48s.
Cape Town +26m.33s., PP = +28m.27s., PPP = +30m.9s., PS? = +36m.39s., +38m.16s., SS = +41m.9s.
Ekaterinburg e = +16m.0s., +17m.10s., i = +17m.59s., +19m.48s., +21m.8s., +21m.55s., +22m.44s., and +24m.7s., iPS = +28m.25s., PPS = +30m.1s., iSS = +34m.46s.
Ivigtut iZ = +18m.8s., PPZ = +20m.16s., eEN = +21m.28s.
Pulkovo i = +18m.16s. and +20m.57s., iSKKS = +26m.59s.
Tiflis eN = +21m.52s.
Upsala PP = +21m.12s., i = +21m.19s., SKP = +22m.7s.
Bergen PP = +21m.14s., e = +38m.14s.
Copenhagen eZ = +21m.13s., eEN = iZ = +22m.2s., eN = +25m.7s., eZ = +25m.16s.
Hamburg iZ = +20m.59s. and +22m.14s., eE = +40m.34s., eEN = +49m.34s.?
Ksara PP = +22m.26s., iPPPP = +28m.10s., SS = +42m.0s.
Stonyhurst i = +18m.55s., +19m.53s., +22m.30s., +36m.18s., +40m.35s., +44m.37s., and +46m.25s., e = +49m.49s.
Potsdam iPKP$_3$N = +19m.9s., iN = +20m.2s., eN = +21m.10s., iPPEN = +22m.16s., iN = +23m.8s., eEN = +27m.28s., iSKKSN = +28m.16s., iE = +29m.17s., iEN = +29m.27s., iE = +30m.16s., and +31m.28s., iN = +31m.59s., and +32m.11s., eN = +32m.34s.?, iPPSN = +35m.45s., eN = +36m.52s., iN = +37m.41s., iSSN = +40m.38s.
Leipzig i = +18m.58s. and +21m.10s., eN = +22m.6s., e = +32m.42s., eE = +40m.46s.
De Bilt iZ = +21m.5s. and +22m.5s., iN = +22m.40s., eN = +28m.23s., eZ = +29m.2s. and +35m.57s., eE = +40m.46s.
Göttingen iP = +18m.45s., iPKP = +21m.4s., ePKP$_3$ = +22m.5s., eEN = +40m.50s.
Jena iPE = +18m.47s., iP = +18m.49s., iPP?Z = +21m.5s., iPP?N = +21m.19s., iPP?E = +21m.28s., iPPPZ = +22m.10s., iPPP?N = +22m.22s.
Oxford i = +21m.19s. and +22m.30s., e = +32m.7s., iE = +40m.56s.
Kew ipPKPZ = +21m.8s.
Cheb e = +19m.6s., +21m.28s., +25m.53s., +32m.51s., and +35m.46s.

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Uccle iN = +20m.14s., iZ = +21m.10s., iSKPN = +22m.2s., iPPN = +22m.36s., iPPPZ = +26m.2s., iN = +28m.27s., iZ = +31m.58s., +34m.45s., iN = +35m.57s., iE = +41m.2s., +44m.51s., and +47m.10s.
Vienna iPZ = +18m.57s., iZ = +21m.5s., iN = +21m.16s., PKP = +22m.37s., PPP = +25m.56s., PS = +32m.50s., iN = +37m.50s.
Belgrade e = +19m.19s., +22m.13s., and +25m.54s., eL = +41m.43s.
Karlsruhe i = +21m.22s.
Stuttgart iN = +19m.12s., epPKPEN = +20m.43s., eZ = +21m.6s., i = +21m.24s., iPP = +22m.17s., epPP = +25m.49s., ePPPEN = +28m.34s., ePS = +36m.19s., e = +37m.56s., eEN = +41m.26s.
Helwan i = +22m.38s., +26m.11s., and +28m.29s.
Strasbourg i = +21m.9s., SKP = +22m.13s., iPP = +22m.39s., PSKS = +28m.20s., SKPS = +28m.51s., e = +32m.58s., i = +41m.13s.
Paris PP = +22m.42s.
Zagreb i = +19m.4s. and +19m.15s., eZ = +21m.14s., iZ = +21m.30s., iNW = +21m.43s., e = +22m.20s., iNE = +23m.4s., iNW = +23m.17s., iNE = +25m.0s., eZ = +26m.2s., eNE = +28m.31s., eZ = +29m.9s., e = +29m.55s., +41m.4s., +47m.5s., and +51m.13s.
Triest iPKP$_2$ = +19m.12s., eZ = +21m.22s., i = +21m.26s., iPP? = +22m.54s., i = +22m.59s., iSKS? = +26m.2s., i = +33m.10s., iSS? = +37m.44s., e? = +41m.44s.
Neuchatel e = +19m.15s., +21m.26s., and +25m.11s.
Puy de Dôme e = +22m.53s.
Barcelona i = +19m.48s., PP = +23m.26s.
Toledo iPKP$_2$ = +19m.49s., PP = +23m.39s., PPP = +26m.58s., SKP = +29m.19s., S = +36m.13s., SS = +43m.1s., SSS = +51m.31s.
Alicante i = +20m.14s., SKSP? = +33m.58s.
Granada iPKP = +20m.26s., SKP = +24m.13s.
Malaga i = +19m.7s. and +20m.6s., iPKP$_2$ = +20m.15s., epP? = +23m.2s., PP = +23m.49s., i = +31m.28s., and +38m.58s., iSS = +43m.35s., i = +44m.8s., eSSS = +50m.14s.
Almeria i = +23m.39s., SKSP? = +34m.47s.
San Fernando PE = +19m.15s., PPN = +23m.35s., and +24m.8s.
Algiers iP = +20m.8s., iPP = +23m.54s., SKS = +29m.39s., PS = +33m.49s., SS? = +37m.59s.

Sept. 6d. Readings also at 0h. (Ekaterinburg, Tashkent, Andijan, Frunse, and Samarkand), 1h. (Christchurch and near Manila), 2h. (Huancayo), 7h. (near Mizusawa), 8h. (Huancayo (4) and La Paz), 12h. (near Tananarive), 16h. (Ekaterinburg, Tashkent, and Vladivostok), 17h. (Cape Town, Tananarive, Batavia, Bombay, Kodaikanal, Melbourne, Riverview, Sydney, Wellington, Baku (2), Ekaterinburg, and Tashkent), 18h. (San Fernando, Paris, Strasbourg, Stuttgart, De Bilt, Kew, Copenhagen, Pulkovo, Vladivostok, and Hong Kong), 19h. (Huancayo and near Tyosi), 21h. (La Paz and Huancayo), 22h. (near Hastings), 23h. (Medan and near Santiago).

Sept. 7d. 8h. 56m. 30s. Epicentre 35°·5N. 25°·0E. (as on 1931 July 10d.). X.

A = +·738, B = +·344, C = +·581; D = +·423, E = −·906; G = +·526, H = +·245, K = −·814.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Mineo | 8·5 | 285 | 2 50 | +50 | — | — | — | — |
| Ksara | 9·1 | 97 | e 2 4 | − 5 | e 3 21 | −30 | — | — |
| Triest | 13·2 | 323 | e 3 24 | +19 | — | — | i 7·2 | 8·2 |
| Florence | 13·4 | 312 | e 2 13 | −54 | — | — | — | 7·8 |
| Vienna | 14·2 | 336 | e 4 30? | +72 | — | — | 8·5 | 11·5 |
| Piacenza | 15·0 | 314 | e 3 10 | −18 | 6 30 | +15 | — | 13·8 |
| Tiflis | 16·6 | 62 | — | — | 6 46 | − 6 | 8·8 | 11·2 |
| Stuttgart | 17·6 | 323 | e 4 30? | +28 | e 7 36 | +21 | e 9·5 | — |
| Neuchatel | 17·7 | 316 | e 4 2 | − 1 | — | — | — | — |
| Strasbourg | 18·2 | 321 | e 4 30? | +21 | e 7 30? | + 1 | e 10·5 | — |
| Uccle | 21·3 | 322 | e 4 48 | + 5 | — | — | e 10·5 | — |
| De Bilt | 21·8 | 326 | — | — | e 8 54 | +12 | e 11·0 | 12·8 |
| Kucino | 22·1 | 20 | — | — | e 8 39 | − 9 | e 10·8 | 11·9 |
| Pulkovo | 24·5 | 6 | e 5 18 | + 3 | — | — | 12·5 | 14·7 |
| Ekaterinburg | 32·0 | 37 | — | — | e 11 20 | −15 | 15·5 | — |
| Tashkent | 34·8 | 67 | e 10 24 | P$_c$P | e 13 51 | SS | — | 22·8 |

**Additional readings:—**
**Triest SS = +6m.53s.**
**Long waves were also recorded at Vladivostok and other European stations.**

Sept. 7d. 17h. 53m. 35s. Epicentre 6°·5N. 126°·0E. (as on 1929 Nov. 17d.). X.

A = −·584, B = +·804, C = +·113; D = +·809, E = +·588;
G = −·066, H = +·092, K = −·994.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Palau | | 8·4 | 82 | 2 7 | + 8 | 3 34 | 0 | — | — |
| Manila | | 9·5 | 330 | i 2 15k | + 1 | i 4 13 | +12 | — | — |
| Amboina | | 10·4 | 168 | i 3 11 | +45 | — | — | — | — |
| Hong Kong | | 19·5 | 326 | 4 31 | + 7 | 7 59 | + 3 | 9·3 | — |
| Batavia | | 22·9 | 237 | 4 50 | −10 | 8 51 | −12 | — | — |
| Miyazaki | | 25·9 | 11 | e 5 36 | + 8 | 9 53 | − 4 | — | — |
| Nanking | | 26·4 | 346 | i 5 31 | − 2 | e 10 16 | +11 | — | — |
| Nagoya | | 30·4 | 18 | e 5 25? | −44 | — | — | — | — |
| Gihu | | 30·6 | 18 | 6 5 | − 5 | — | — | — | — |
| Nagano | | 32·3 | 19 | 6 19 | − 6 | 11 27 | −13 | — | — |
| Sendai | | 34·5 | 20 | 6 40 | − 5 | 12 16 | + 2 | — | — |
| Vladivostok | | 37·0 | 7 | e 7 1 | − 5 | i 12 47 | − 4 | e 18·9 | — |
| Kodaikanal | | 48·2 | 278 | 8 44 | + 6 | 15 19 | −17 | — | — |
| Bombay | N. | 53·2 | 289 | — | — | e 14 25 | −140 | — | — |
| Andijan | | 58·5 | 315 | e 9 54 | 0 | — | — | — | — |
| Tashkent | | 61·1 | 316 | e 10 13 | + 1 | i 18 11 | −19 | e 27·4 | 36·4 |
| Ekaterinburg | | 71·2 | 330 | e 11 24 | + 6 | — | — | 34·4 | — |
| Tiflis | | 79·1 | 313 | 11 50 | −13 | e 21 42 | −24 | — | — |
| Kucino | | 83·6 | 326 | e 15 43 | PP | e 22 31 | [−17] | e 39·3 | 46·4 |
| Pulkovo | | 87·2 | 331 | e 12 46 | + 2 | e 23 2 | [−13] | 48·4 | 55·1 |
| Huancayo | | 158·3 | 106 | e 19 46 | [− 5] | — | — | — | — |

Additional readings:—
Hong Kong PP = +4m.42s.
Batavia iSN = +8m.57s.
Nanking iZ = +5m.38s.
Tashkent i = +10m.52s. = $P_cP$ −6s., e = +12m.35s. = PP +15s., +18m.50s., +22m.17s. = SS −9s., +24m.49s. = SSS +7s., and +27m.57s.
Kucino e = +27m.47s. = SS −19s. and +32m.55s.
Long waves were also recorded at Copenhagen, De Bilt, Stuttgart, and Kew.

Sept. 7d. 22h. 39m. 24s. Epicentre 61°·7N. 177°·5E. N.3.

A = −·474, B = +·021, C = +·880; D = +·044, E = +·999;
G = −·880, H = +·038, K = −·474.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Sitka | | 24·0 | 79 | e 4 17 | −53 | e 7 56 | ? | e 11·9 | — |
| Vladivostok | | 32·5 | 256 | e 5 55 | −32 | — | — | 9·8 | 19·8 |
| Seattle | | 36·0 | 85 | — | — | (e 11 6) | ? | e 11·1 | — |
| Ukiah | | 42·0 | 95 | — | — | e 12 18 | ? | e 18·7 | — |
| Bozeman | | 42·7 | 78 | — | — | (e 14 18) | + 2 | e 14·3 | — |
| Tinemaha | | 46·0 | 92 | i 8 21 | 0 | — | — | — | — |
| Haiwee | | 46·9 | 92 | i 8 19 | − 9 | — | — | — | — |
| Mount Wilson | | 48·4 | 94 | i 8 40 | + 1 | — | — | — | — |
| Pasadena | | 48·4 | 94 | i 8 39 | 0 | — | — | — | — |
| Ekaterinburg | | 51·7 | 322 | i 9 10 | + 6 | e 16 17 | − 7 | 26·2 | 36·1 |
| Pulkovo | | 56·0 | 341 | e 9 33 | − 3 | e 17 13 | −10 | 29·6 | 34·6 |
| Ann Arbor | | 57·4 | 61 | — | — | e 22 0 | SS | e 31·0 | — |
| Ottawa | | 58·0 | 53 | e 9 36? | −14 | e 17 54 | + 5 | e 30·6 | — |
| Toronto | | 58·0 | 57 | e 9 59 | + 9 | e 21 49 | SS | i 31·6 | — |
| Kucino | | 58·4 | 336 | e 9 48 | − 5 | — | — | 28·6 | 37·6 |
| Frunse | | 58·6 | 304 | — | — | e 18 13 | +16 | — | — |
| Cincinnati | z. | 59·7 | 64 | i 11 58 | PP | — | — | — | — |
| Pittsburgh | | 60·5 | 59 | — | — | e 23 47 | ? | e 32·0 | — |
| Andijan | | 61·3 | 304 | e 10 33 | +19 | — | — | — | — |
| Tashkent | | 62·0 | 307 | e 10 18 | 0 | i 18 46 | + 4 | e 32·9 | 34·9 |

*Continued on next page.*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Copenhagen | | 62·0 | 352 | 10 18 | 0 | 18 45 | + 3 | 26·6 | — |
| Oak Ridge | | 62·0 | 52 | e 17 16 | ? | e 18 33 | − 9 | e 32·5 | — |
| Edinburgh | | 62·4 | 1 | — | — | e 26 36? | ? | — | — |
| Hamburg | | 64·3 | 353 | e 10 32 | − 2 | — | — | e 40·6 | — |
| Potsdam | | 65·3 | 351 | — | — | e 19 24 | 0 | e 30·6 | 43·6 |
| Columbia | | 65·6 | 64 | — | — | e 26 17 | SSS | e 35·1 | — |
| De Bilt | | 66·1 | 355 | e 10 48 | + 2 | e 19 41 | + 7 | e 30·6 | 45·9 |
| Stuttgart | | 69·2 | 352 | e 11 2 | − 4 | e 20 8 | − 3 | e 28·6 | — |
| Paris | | 69·4 | 358 | e 10 36? | −31 | — | — | 35·6 | — |
| Strasbourg | | 69·5 | 353 | e 11 5 | − 3 | e 14 36? | ? | e 30·6 | — |
| Tiflis | | 69·8 | 325 | e 11 22 | +13 | e 20 23 | + 4 | e 32·6 | 48·4 |
| Triest | | 71·9 | 350 | e 10 53 | −29 | e 20 44 | 0 | e 30·6 | 38·6 |
| Florence | | 74·0 | 351 | e 11 35 | 0 | 21 26 | +18 | 34·6 | 39·6 |
| Bombay | N. | 80·1 | 292 | — | — | e 34 36 | ? | — | 44·5 |
| Granada | | 81·2 | 2 | i 12 45a | +31 | e 22 45 | +17 | 41·6 | — |
| Kodaikanal | | 85·7 | 284 | 38 46 | ? | — | — | — | — |

Additional readings and note :—
Sitka eS = +22h.40m.9s., too early to be a true phase of this earthquake ; the times entered are recorded e's only.
Ekaterinburg e = +8m.0s. and +11m.41s. =PPP −10s.
Ottawa e = +21m.54s. =SS − 18s.
Cincinnati i = +12m.57s.
Oak Ridge eNW = +19m.2s. =PS +12s. and +22m.47s. =SS +7s., eNE = +23m.54s., eNW = +26m.19s. and +27m.28s.
Tiflis eSSE = +25m.46s.
Granada PP = +16m.6s.
Long waves were also recorded at Tucson, Charlottesville, San Juan, Huancayo, Ivigtut, Hong Kong, Nanking, Hyderabad, and at other European stations.

**Sept. 7d.** Readings also at 3h. (Andijan), 4h. (Nanking and near Taihoku), 5h. (Tiflis), 7h. (near Frunse), 8h. (Ksara), 9h. (Ekaterinburg, Tashkent, Huancayo, and Mizusawa), 10h. (Copenhagen and near Amboina), 12h. (Andijan and near Apia), 13h. (Huancayo), 14h. (Mizusawa, near Ksara, and Medan), 15h. (Ekaterinburg, Tashkent, and Ksara), 18h. (near Ksara), 19h. (near Amboina), 20h. (near Mizusawa), 22h. (Tiflis).

**Sept. 8d. 15h. 10m. 2s.** Epicentre 43°·4N. 19°·2E. (as on 1925 June 28d.). X.

A = +·686, B = +·239, C = +·687 ; D = +·329, E = −·944 ;
G = +·649, H = +·226, K = −·727.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Zagreb | 3·3 | 317 | e 0 45 | − 2 | e 1 46 | $S_g$ | — | — |
| Triest | 4·5 | 302 | i 1 1 | − 3 | i 1 46 | − 9 | — | — |
| Trenta | 4·7 | 209 | e 1 8 | + 1 | 1 38 | $P_g$ | — | — |
| Vienna | 5·2 | 339 | e 2 29 | S* | — | — | i 3·2 | 4·0 |
| Treviso | 5·5 | 297 | 1 24 | + 6 | 2 54 | $S_g$ | — | — |
| Padova | 5·6 | 294 | e 3 17 | ? | — | — | — | — |
| Prato | 5·8 | 278 | e 1 58 | $P_g$ | 6 42 | ? | — | — |
| Chur | 7·7 | 301 | e 3 4 | S | (e 3 4) | −12 | — | — |
| Ravensburg | 8·0 | 307 | — | — | e 3 52 | S* | — | — |
| Stuttgart | 8·8 | 311 | — | — | e 4 10 | S* | — | — |

Additional readings :—
Zagreb = +2m.11s.
Triest iSS = +2m.12s. =S* +0s., SSS = +2m.18s., i = +2m.25s. =$S_g$ +2s.
Treviso $P_g$ = +1m.49s.
Stuttgart e = +4m.43s. =$S_g$ −2s.
Long waves were also recorded at Strasbourg and De Bilt.

**Sept. 8d.** Readings also at 0h. (Lick, Frunse, near Andijan, and Samarkand), 1h. (Haiwee, Mount Wilson, Pasadena, Tinemaha, near Apia, and near Medan), 2h. (Mizusawa), 3h. (Ekaterinburg, Tashkent, Vladivostok, Hong Kong, Copenhagen, and Oak Ridge), 4h. (Chicago), 6h. (Ekaterinburg, De Bilt, Stuttgart, Oak Ridge, San Juan, and La Paz), 7h. (Tashkent, Copenhagen, Edinburgh, Kew, Paris, Strasbourg, Granada, San Fernando, and near Triest), 8h. (Batavia), 9h. (near Apia), 10h. (near Tananarive), 11h. (Huancayo, near Berkeley, Lick, Branner, San Francisco, near Malabar, and near Sumoto), 12h. (Huancayo), 15h. (near Mizusawa), 16h. (Manila, near Andijan, and Tashkent), 17h. (Ekaterinburg, Tashkent, Ksara, and Triest), 18h. (near Berkeley, Branner, and Lick), 19h. and 20h. (Tiflis), 21h. (near Lick (2), near Batavia, and Malabar), 22h. (near Tiflis (2) ).

**Sept. 9d. 5h. 2m. 31s.** Epicentre 45°·4N. 131°·5E. N.1.

$A = -\cdot 465$, $B = +\cdot 526$, $C = +\cdot 712$; $D = +\cdot 749$, $E = +\cdot 663$; $G = -\cdot 472$, $H = +\cdot 533$, $K = -\cdot 702$.

A *depth* of focus 0·070 has been assumed.

| | | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Vladivostok | | +2·1 | 2·3 | 172 | i 1 14 | +11 | i 2 12 | +22 | — | 2·3 |
| Heizyo | | 0·0 | 7·6 | 216 | 1 47 | − 1 | 3 14 | 0 | — | 3·4 |
| Keizyo | | −0·3 | 8·5 | 205 | i 1 56 | 0 | i 3 29 | 0 | — | 3·7 |
| Zinsen | | −0·4 | 8·7 | 206 | 1 58 | 0 | i 3 32 | + 1 | — | — |
| Mizusawa | | −0·6 | 9·5 | 128 | e 2 14 | + 8 | i 3 58 | +12 | — | — |
| Taikyu | | −0·7 | 9·8 | 194 | 2 9 | 0 | 3 53 | + 2 | — | — |
| Toyooka | | −0·8 | 10·2 | 164 | 2 16k | + 3 | 4 6 | + 7 | — | 4·2 |
| Nagoya | | −1·0 | 11·0 | 156 | e 2 26 | + 5 | 4 19 | + 6 | — | — |
| Kobe | | −1·0 | 11·1 | 164 | 2 23 | + 1 | 4 20 | + 4 | — | 4·5 |
| Osaka | | −1·1 | 11·2 | 162 | 2 26 | + 4 | 4 22 | + 6 | — | 5·3 |
| Sumoto | | −1·1 | 11·4 | 166 | 2 23 | − 2 | 4 23 | + 2 | — | 4·7 |
| Hukuoka | | −1·2 | 11·8 | 185 | 2 34 | + 5 | 4 30 | + 2 | — | — |
| Koti | | −1·2 | 11·9 | 172 | 2 30 | − 1 | 4 31 | 0 | — | — |
| Tyosi | | −1·2 | 12·0 | 140 | e 2 38 | + 6 | 4 38 | + 5 | — | 4·9 |
| Muroto | | −1·3 | 12·4 | 170 | 4 40 | S | (4 40) | − 1 | — | — |
| Chiufeng | | −1·3 | 12·4 | 250 | e 2 31 | − 5 | i 4 33 | − 8 | — | — |
| Nagasaki | | −1·4 | 12·7 | 186 | e 2 41 | + 2 | e 4 46 | + 1 | — | — |
| Zi-ka-wei | z. | −2·1 | 16·2 | 213 | 3 12 | − 5 | 5 49 | − 4 | — | 7·7 |
| Nanking | | −2·2 | 16·6 | 221 | i 3 14k | − 7 | i 5 49 | −12 | — | — |
| Taihoku | | −3·1 | 21·9 | 205 | e 4 8 | − 8 | 6 54 | −48 | — | — |
| Hong Kong | | −3·9 | 27·0 | 217 | 7 34 | ? | 11 19 | ? | 13·0 | 13·6 |
| Manila | | −4·5 | 32·1 | 199 | e 5 34 | −10 | i 10 2 | −23 | 12·8 | 15·1 |
| Calcutta | | −5·5 | 41·7 | 251 | (7 21) | +21 | 7 21 | P | 16·7 | — |
| Andijan | | −5·6 | 42·5 | 286 | e 6 51 | −15 | — | — | — | — |
| Ekaterinburg | | −5·7 | 43·8 | 312 | i 7 22 | + 6 | i 13 13 | + 5 | 18·5 | — |
| Tashkent | | −5·7 | 44·3 | 288 | i 7 23 | + 3 | i 13 11 | − 4 | e 15·3 | 17·2 |
| Kucino | | −6·7 | 55·7 | 317 | e 8 54 | +10 | i 16 3 | +16 | e 23·1 | — |
| Pulkovo | | −6·8 | 56·9 | 324 | i 8 55 | + 3 | e 16 9 | + 7 | 23·5 | — |
| Tiflis | | −7·0 | 59·7 | 301 | e 9 15 | + 3 | 16 41 | + 3 | e 23·3 | — |
| Simferopol | | −7·2 | 64·0 | 309 | e 9 40 | − 2 | — | — | — | — |
| Sebastopol | | −7·3 | 64·4 | 309 | e 8 51 | −53 | — | — | — | — |
| Copenhagen | | −7·4 | 66·6 | 328 | 10 0 | + 1 | 18 10 | + 5 | 33·5 | — |
| Potsdam | | −7·6 | 68·9 | 326 | — | — | i 18 42 | + 9 | e 33·5 | 42·5 |
| Ksara | | −7·7 | 70·2 | 298 | e 10 39 | +17 | 19 28 | +40 | — | — |
| De Bilt | | −7·8 | 72·2 | 329 | e 10 31 | − 4 | 19 12 | 0 | — | — |
| Stuttgart | | −7·9 | 73·3 | 325 | e 10 36 | − 5 | 19 24 | − 1 | e 42·5 | — |
| Uccle | | −7·9 | 73·5 | 329 | e 10 40 | − 2 | e 19 26 | − 1 | — | — |
| Triest | | −7·9 | 73·7 | 320 | 10 39 | − 5 | i 19 25 | − 5 | e 28·5 | — |
| Strasbourg | | −7·9 | 74·0 | 326 | e 10 41 | − 5 | e 19 32 | − 2 | e 28·5 | — |
| Neuchatel | | −8·0 | 75·6 | 325 | e 10 51 | − 5 | — | — | — | — |

*Continued on next page.*

| | | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Paris | | −8·0 | 75·8 | 328 | e 12 29? | ? | — | — | 44·5 | 47·5 |
| Prato | | −8·0 | 76·2 | 320 | e 10 58 | − 1 | 19 57 | − 2 | — | — |
| Tinemaha | | −8·0 | 76·4 | 51 | i 11 2 | + 1 | e 20 7 | + 5 | — | — |
| Haiwee | | −8·1 | 77·2 | 51 | i 11 7 | + 2 | — | — | — | — |
| Santa Barbara | | −8·1 | 77·5 | 54 | i 11 7 | 0 | — | — | — | — |
| Mount Wilson | | −8·1 | 78·6 | 53 | i 11 13 | − 1 | e 20 29 | + 2 | — | — |
| Pasadena | | −8·1 | 78·6 | 53 | i 11 12 | − 2 | e 20 30 | + 3 | — | — |
| Riverside | | −8·2 | 79·1 | 53 | i 11 16 | 0 | — | — | — | — |
| La Jolla | | −8·2 | 80·1 | 53 | i 11 22 | 0 | i 20 49 | + 5 | — | — |
| Granada | | −8·5 | 88·0 | 326 | e 14 43 | PP | e 24 20 | PS | — | — |
| St. Louis | | −8·5 | 88·0 | 31 | e 20 52 | ? | e 24 59 | PS | — | — |
| Cincinnati | z. | −8·6 | 89·5 | 27 | i 11 4a | −59 | — | — | — | — |
| Pittsburgh | | −8·6 | 89·6 | 24 | — | — | e 22 9 | −17 | — | — |
| Oak Ridge | | −8·6 | 89·7 | 17 | — | — | e 21 42 | −45 | — | — |
| Huancayo | | — | 139·6 | 43 | e 18 23 | [−58] | — | — | — | — |
| La Paz | z. | — | 146·8 | 35 | 18 45 | [−52] | — | — | — | — |

Additional readings and notes :—
Kobe eN = +3m.59s.
Tyosi $P_g$ = +2m.43s.
Zi-ka-wei iZ = +3m.17s. =PP − 3s. and +6m.3s. =SS +3s.
Nanking iSEZ = +5m.52s.
Manila SSSE = +11m.40s.
Tiflis eSSE = +20m.4s.
Simferopol S is given as eP of another shock.
Sebastopol S is given as eP of another shock.
Copenhagen +21m.35s. =SS − 20s.
Potsdam eEN = +18m.29s.? iN = +19m.14s., eN = +20m.47s., eEN = +22m.5s., eN = +23m.5s.
De Bilt eZ = +12m.35s. =PP − 14s., eSS = +22m.46s.
Stuttgart e = +12m.37s. =PP − 21s., ePS = +19m.53s., e = +22m.53s.
Strasbourg eSS = +23m.0s.
Mount Wilson eZ = +13m.14s. =PP − 29s.
Pasadena iZ = +13m.13s. =PP − 30s.
Granada e = +17m.51s. =PPP − 2s.
Cincinnati i = +11m.12s. and +13m.14s.
Pittsburgh e = +25m.58s.
Oak Ridge eNE = +22m.12s., e = +22m.22s., eNW = +25m.52s., eNE = +25m.55s., +27m.58s., and +28m.52s., eNW = +31m.42s., and +35m.26s., eNE = +38m.25s.
Huancayo e = +21m.11s.
Long waves were also recorded at San Fernando.

Sept. 9d. 8h. 32m. 0s. Epicentre 41°·6N. 13°·4E. (as on 1931 Oct. 21d.). X.

A = +·727, B = +·173, C = +·664 ; D = +·232, E = −·973 ; G = +·646, H = +·154, K = −·748.

| | Δ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Florence | 2·7 | 322 | e 0 31 | − 8 | — | — | 1·2 |
| Prato | 2·8 | 324 | e 0 38 | − 2 | i 1 0 | −12 | 1·3 |
| Padova | 3·9 | 344 | e 1 11 | $P_g$ | — | — | — |
| Triest | 4·0 | 4 | e 0 55 | − 2 | e 1 37 | − 5 | — |
| Treviso | 4·1 | 348 | 1 0 | + 2 | 1 50 | + 5 | — |
| Piacenza | 4·3 | 321 | — | — | e 1 45 | − 5 | 2·7 |
| Zurich | 6·7 | 331 | e 1 49 | P* | — | — | — |
| Neuchatel | 7·0 | 322 | e 1 40 | + 1 | — | — | — |
| Stuttgart | 7·7 | 339 | — | — | e 3 54 | S* | — |
| Strasbourg | 8·0 | 332 | — | — | e 4 0? | S* | — |

Triest gives also SS = +1m.49s., SSS = +2m.3s. =$P_g$ − 3s.

Sept. 9d. 19h. 34m. 18s. Epicentre 40°·0N. 71°·0E. (as on 1931 July 23d.). **X.**

The stations of Central Asia give epicentre as 41°18′N. 71°24′E. and the Russian Stations (U.R.S.S.) 40°·6N. 71°·1E.

$A = +\cdot249$, $B = +\cdot724$, $C = +\cdot643$; $D = +\cdot946$, $E = -\cdot326$; $G = +\cdot209$, $H = +\cdot608$, $K = -\cdot766$.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Andijan | 1·3 | 54 | 0 18 | 0 | 0 29 | $P_g$ | — | — |
| Tashkent | 1·8 | 323 | i 0 34 | $P_g$ | i 0 50 | S* | i 0·9 | 1·1 |
| Samarkand | 3·1 | 264 | 0 41 | − 3 | 1 29 | S* | — | — |
| Almata | 5·5 | 52 | 1 20 | + 2 | 2 16 | − 4 | — | — |
| Ekaterinburg | 18·1 | 342 | — | — | e 8 4 | ? | 10·5 | — |

Additional readings :—
Almata $P^* = +1$m.30s., $P_g = +1$m.37s., $S_g = +2$m.40s.
Ekaterinburg i = +9m.15s. and +9m.35s.

Sept. 9d. 21h. 20m. 10s. Epicentre 12°·4S. 167°·2E. **N.2.**

$A = -\cdot952$, $B = +\cdot216$, $C = -\cdot215$; $D = +\cdot222$, $E = +\cdot975$; $G = +\cdot209$, $H = -\cdot048$, $K = -\cdot977$.

A *depth* of focus 0·020 has been assumed.

| | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | ° | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Suva | −0·3 | 12·2 | 119 | 2 20 | −27 | 4 2 | −58 | 4·6 | 4·8 |
| Apia | −0·8 | 20·5 | 96 | i 4 33 | + 7 | — | — | — | — |
| Riverview | −1·1 | 25·9 | 212 | i 5 14 | − 4 | i 9 34 | − 3 | — | — |
| Sydney | −1·1 | 25·9 | 212 | e 5 26 | + 8 | i 9 32 | − 5 | 10·8 | 15·3 |
| Arapuni | −1·1 | 26·8 | 165 | — | — | e 10 17 | +24 | — | 14·8 |
| Wellington | −1·3 | 29·7 | 168 | e 3 50? | ? | i 10 50? | +12 | 13·8 | — |
| Melbourne | −1·4 | 32·2 | 215 | 6 8 | − 4 | 11 10 | − 7 | 14·0 | 16·3 |
| Adelaide | −1·5 | 34·3 | 224 | i 6 28 | − 2 | i 11 45 | − 3 | 15·3 | 21·7 |
| Amboina | −1·7 | 39·6 | 280 | 8 32 | PP | i 14 50 | L | (i 14·8) | — |
| Titizima | −1·9 | 46·4 | 329 | 8 6 | − 3 | — | — | — | — |
| Honolulu T.H. | −2·0 | 48·1 | 45 | e 8 25 | + 4 | — | — | e 27·1 | — |
| Perth | −2·1 | 50·9 | 239 | 15 50 | S | (15 50) | + 6 | — | 23·8 |
| Manila | −2·2 | 53·2 | 299 | i 8 58a | − 1 | i 16 4 | −11 | 23·8 | — |
| Tokyo | −2·2 | 54·7 | 333 | 9 12 | + 2 | — | — | — | — |
| Nagoya | −2·3 | 55·6 | 331 | e 9 14 | − 2 | — | — | — | — |
| Oiwake | −2·3 | 55·8 | 332 | 9 18 | 0 | 16 52 | + 3 | — | — |
| Sumoto | −2·3 | 55·9 | 329 | 9 19 | + 1 | — | — | — | — |
| Osaka | −2·3 | 55·9 | 329 | 8 50 | −28 | 16 28 | −22 | — | — |
| Miyazaki | −2·3 | 56·0 | 323 | 9 14 | − 5 | 16 56 | + 4 | — | — |
| Kobe | −2·3 | 56·1 | 329 | e 9 17 | − 3 | e 16 20 | −33 | — | — |
| Sendai | −2·3 | 56·3 | 336 | 9 21 | 0 | 16 59 | + 3 | — | — |
| Mizusawa E. | −2·3 | 57·0 | 336 | (e 9 30) | + 4 | e 9 30 | P | — | — |
| Batavia | −2·4 | 59·8 | 270 | i 8 45 | −61 | 16 41 | −61 | — | — |
| Soengei Langka | −2·4 | 61·6 | 270 | e 8 54 | −65 | — | — | — | — |
| Zi-ka-wei Z. | −2·4 | 61·9 | 316 | i 9 57a | − 4 | — | — | — | 63·0 |
| Hong Kong | −2·4 | 62·5 | 304 | 10 0 | − 5 | (18 22) | + 5 | 18·4 | 23·2 |
| Nanking | −2·4 | 64·2 | 315 | 10 16 | − 1 | 18 44 | + 5 | e 22·6 | — |
| Vladivostok | −2·4 | 64·2 | 332 | 10 18 | + 1 | i 18 46 | + 7 | 30·8 | — |
| Phu-Lien | −2·5 | 68·1 | 299 | e 10 42 | 0 | 19 28 | + 1 | — | — |
| Medan | −2·6 | 69·9 | 279 | 10 57 | + 3 | 19 51 | + 3 | — | — |
| Ukiah | −2·7 | 82·6 | 47 | e 12 8 | + 1 | 22 18 | + 3 | e 37·1 | — |
| Berkeley | −2·7 | 82·8 | 49 | i 12 8 | 0 | i 23 39 | +82 | e 37·6 | 44·4 |
| Santa Barbara Z. | −2·7 | 83·5 | 53 | i 12 13 | + 1 | — | — | — | — |
| Pasadena | −2·7 | 84·6 | 53 | i 12 17 | − 1 | — | — | e 38·6 | — |
| Mount Wilson | −2·7 | 84·7 | 53 | i 12 18 | 0 | — | — | — | — |

*Continued on next page.*

| | | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Calcutta | | −2·7 | 84·7 | 294 | e 12 13 | − 5 | 15 53 | PP | e 19·9 | — |
| La Jolla | Z. | −2·7 | 84·9 | 55 | e 12 23 | + 4 | — | — | — | — |
| Riverside | | −2·7 | 85·2 | 53 | i 12 20 | − 1 | — | — | — | — |
| Haiwee | | −2·7 | 85·4 | 51 | i 12 21 | − 1 | — | — | — | — |
| Tinemaha | | −2·7 | 85·5 | 51 | e 12 23 | + 1 | — | — | — | — |
| Victoria | E. | −2·7 | 86·2 | 39 | e 12 27 | + 1 | (e 22 55) | + 3 | e 22·9 | 47·8 |
| Seattle | | −2·7 | 86·5 | 40 | — | — | e 21 20 | −95 | — | — |
| Tucson | | −2·8 | 89·9 | 57 | 12 46 | + 2 | e 23 27 | − 1 | e 41·0 | — |
| Kodaikanal | | −2·8 | 92·0 | 280 | 23 14 | S | (23 14) | −34 | — | — |
| Hyderabad | | −2·8 | 92·5 | 287 | — | — | 16 15 | PP | 26·8 | 39·8 |
| Bozeman | | −2·8 | 93·2 | 44 | — | — | e 23 26 | −34 | e 41·8 | — |
| Tashkent | | — | 104·1 | 309 | 14 0 | − 2 | 25 29 | −33 | e 41·8 | 57·2 |
| Madison | | — | 108·2 | 48 | e 17 31 | [−41] | e 28 0 | PS | — | — |
| Ekaterinburg | | — | 109·4 | 326 | e 14 10 | −18 | 24 44 | [−27] | 41·8 | 54·0 |
| Chicago | | — | 109·5 | 50 | e 18 56 | PP | e 26 14 | ? | — | — |
| Cincinnati | | — | 111·9 | 52 | e 17 39 | [−45] | e 28 59 | PS | e 42·8 | — |
| Ann Arbor | | — | 112·4 | 49 | — | — | e 28 44 | PS | e 51·2 | — |
| Huancayo | | — | 113·3 | 109 | e 19 40 | PP | e 28 42 | PS | — | — |
| Columbia | | — | 114·8 | 58 | — | — | e 26 35 | {− 6} | e 53·8 | — |
| Pittsburgh | | — | 115·3 | 51 | e 19 24 | PP | e 29 2 | PS | e 55·4 | — |
| Toronto | | — | 115·4 | 47 | e 19 19 | PP | e 27 8 | ? | e 44·8 | — |
| Georgetown | | — | 117·7 | 52 | e 18 25 | [−15] | e 25 10 | [−33] | e 54·8 | — |
| Ottawa | | — | 117·7 | 45 | e 21 14 | ? | e 29 32 | PS | e 53·8 | — |
| La Paz | Z. | — | 118·1 | 117 | e 18 50 | [+ 9] | — | — | — | — |
| Fordham | | — | 119·8 | 50 | e 18 32 | [−13] | e 29 38 | PS | 55·8 | — |
| Oak Ridge | | — | 121·2 | 48 | e 20 3 | PP | e 25 9 | [−45] | e 53·1 | — |
| Kucino | | — | 121·7 | 329 | e 20 7 | PP | e 26 55 | {−33} | 56·8 | 69·3 |
| Pulkovo | | — | 123·0 | 336 | e 18 42 | [−11] | 25 40 | [−19] | 59·8 | 65·8 |
| San Juan | | — | 128·4 | 76 | e 20 56 | PP | e 32 50 | PPS | e 60·8 | — |
| Simferopol | | — | 128·7 | 319 | 18 50 | [−14] | — | — | — | — |
| Sebastopol | | — | 129·1 | 319 | 18 54 | [−11] | — | — | — | — |
| Ksara | | — | 130·9 | 303 | e 18 58 | [−11] | — | — | — | — |
| Copenhagen | | — | 132·5 | 341 | 18 56 | [−15] | — | — | — | — |
| Hamburg | | — | 135·0 | 341 | e 19 2 | [−13] | — | — | 66·8 | — |
| Edinburgh | | — | 135·8 | 352 | e 22 50? | PKS | — | — | e 66·8 | — |
| Budapest | | — | 136·0 | 329 | e 19 50? | [+34] | — | — | — | — |
| Vienna | | — | 136·7 | 331 | i 19 5k | [−12] | — | — | — | — |
| Göttingen | | — | 136·8 | 340 | i 19 3 | [−15] | — | — | e 63·8 | 70·8 |
| Cheb | | — | 137·1 | 336 | e 19 15? | [− 3] | — | — | — | — |
| Stonyhurst | | — | 137·7 | 351 | e 19 50? | [+31] | — | — | — | — |
| De Bilt | | — | 137·8 | 343 | i 19 6a | [−13] | — | — | e 63·8 | 75·0 |
| Uccle | | — | 139·1 | 344 | i 19 9 | [−11] | — | — | e 63·8 | — |
| Stuttgart | | — | 139·4 | 338 | 19 2 | [−18] | 34 8 | PPS | e 65·8 | — |
| Oxford | | — | 139·6 | 349 | e 19 5 | [−16] | — | — | — | — |
| Kew | | — | 139·6 | 348 | i 19 9 | [−12] | — | — | e 62·8 | — |
| Triest | | — | 139·8 | 331 | 19 8a | [−13] | — | — | e 61·8 | 71·4 |
| Strasbourg | | — | 140·0 | 339 | e 19 3 | [−18] | — | — | e 39·8 | — |
| Chur | | — | 140·7 | 337 | e 19 6 | [−16] | — | — | — | — |
| Zurich | | — | 140·7 | 337 | e 19 6 | [−16] | — | — | — | — |
| Paris | | — | 141·4 | 344 | e 19 7 | [−16] | — | — | 35·8 | 78·8 |
| Neuchatel | | — | 141·6 | 337 | e 19 7 | [−17] | — | — | — | — |
| Piacenza | | — | 142·1 | 334 | 19 10 | [−14] | — | — | 76·8 | — |
| Prato | | — | 142·4 | 331 | i 19 14 | [−11] | i 22 50 | PP | — | — |
| Florence | | — | 142·4 | 331 | 19 19 | [− 6] | 22 18 | PP | 44·8 | 50·8 |
| Trenta | | — | 142·8 | 322 | e 19 20 | [− 6] | — | — | — | — |
| Catania | | — | 144·6 | 320 | 19 23 | [−10] | 20 17 | ? | — | 23·1 |
| Mineo | | — | 145·0 | 320 | 18 22 | [−72] | — | — | — | — |
| Tortosa | N. | — | 149·3 | 340 | i 15 32 | ? | — | — | e 37·8 | — |
| Toledo | | — | 151·5 | 346 | e 19 29 | [−15] | e 30 41 | ? | e 49·1 | — |
| Algiers | | — | 151·8 | 332 | i 19 34 | [−10] | 26 50? | SKS | — | — |
| Alicante | | — | 151·8 | 339 | e 19 35 | [− 9] | — | — | e 34·0 | — |
| Granada | | — | 153·8 | 343 | i 20 8k | {− 8} | — | — | 60·3 | 84·5 |
| Almeria | | — | 153·8 | 341 | e 19 35 | [−12] | — | — | — | — |
| San Fernando | | — | 155·2 | 347 | 20 4 | {−18} | 31 7 | ? | — | 112·8 |

*For Notes see next page*

NOTES TO SEPT. 9d. 21h. 20m. 10s.

Additional readings :—
Riverview iSSN = +10m.36s.
Melbourne PP = +7m.13s.
Adelaide i = +16m.10s.
Honolulu T.H. i = +8m.58s., +16m.10s., and +16m.16s., SS = +19m.12s. = SSS −12s.
Perth i = +20m.30s.
Kobe ePEN = +9m.20s., eN = +14m.18s., and +16m.38s.
Zi-ka-wei iZ = +10m.23s.
Hong Kong S = +14m.59s.
Nanking iPS = +19m.21s.
Medan i = +11m.30s., +20m.40s., +20m.56s., and +22m.19s.
Ukiah e = +15m.58s. = PP +58s., ePS = +23m.2s.
Berkeley iZ = +12m.33s. and +15m.47s., iE = +22m.19s.
Pasadena iZ = +12m.39s., +13m.0s., +13m.20s., and +15m.30s. = PP −12s., eE = +22m.9s. and +23m.54s., eZ = +24m.1s., eE = +24m.17s.
Bozeman e = +25m.53s.
Tashkent PP = +17m.50s., SKS = +24m.21s., ePS = +26m.58s., eSS = +32m.56s.
Madison iSS = +32m.7s.
Ekaterinburg PS = +27m.32s.
Cincinnati iPPP = +19m.3s. = PP −8s., i = +19m.40s.
Huancayo eSS = +35m.12s.
Columbia e = +29m.8s. = PS −6s.
Pittsburgh e = +36m.14s.
Toronto e = +28m.59s. = PS −21s.
Georgetown PPEZ = +19m.38s., PSEN = +29m.18s., eSSEN = +35m.50s.
La Paz ePZ = +20m.10s. = PP +15s.
Fordham iPPP = +19m.58s. = PP −9s.
Oak Ridge eNW = +20m.9s., eNE = +20m.45s., eNW = +26m.3s., eNE = +26m.7s., eNW = +29m.41s. = PS −32s. and +37m.1s. = SS +13s., eNE = +44m.37s. = SSSS +2s.
Kucino ePS = +30m.21s., ePPS = +31m.52s., eSS = +36m.38s., eSSS = +41m.20s.
Pulkovo PS = +29m.47s., SS = +36m.26s.
San Juan iSKP = +22m.8s.
Ksara ePP = +21m.31s., iSKP = +22m.23s.
Copenhagen i = +22m.16s. = PKS −28s.
Hamburg eZ = +21m.34s. = PP −16s., eN = +43m.50s.?
Vienna i = +22m.31s. = PKS −28s.
Göttingen iZ = +21m.46s. = PP −15s., eZ = +22m.31s. = PKS −29s.
Cheb e = +22m.38s. = PKS −23s.
De Bilt iZ = +21m.55s. = PP −13s., eEN = +22m.43s. = PKS −20s.
Uccle iNZ = +22m.3s. = PP −13s., iN = +22m.46s. = PKS −20s.
Stuttgart iZ = +19m.9s., eZ = +19m.36s., ePP = +21m.57s., ePKS = +22m.24s.,
Oxford eE = +20m.2s., iN = +22m.45s. = PKS −23s.
Kew ePKSEN = +22m.42s.
Triest iPPNE = +22m.43s., iPPNW = +22m.46s., e = +40m.8s. = SS −32s.
Strasbourg i = +19m.10s. and +22m.9s. = PP −12s., SKP = +22m.50s.?
Paris e = +21m.17s.
Neuchatel ePP = +22m.11s.
Toledo PPZ = +23m.17s., i = +23m.23s., PPP? = +26m.46s.
Granada PKP = +23m.32s., PP = +24m.44s., PPP = +27m.26s.
San Fernando PE = +20m.23s. = $PKP_2$ +0s.
Long waves were also recorded at Cape Town, Sitka, Ivigtut, and Upsala.

Sept. 9d. Readings also at 1h. (Vladivostok, Frunse, Almata, Tashkent, Ekaterinburg, and Bombay), 2h. (Tiflis), 3h. (Frunse and Tiflis), 4h. (Bombay, Ekaterinburg, Tashkent, and Tiflis), 5h. (Mizusawa, Ekaterinburg, Sebastopol, Simferopol, and Yalta), 6h. (Nagoya (2) and near Tyosi), 7h. (La Paz), 8h. (near Soengei Langka), 10h. (near Santiago), 11h. (near Tananarive), 14h. (near La Paz), 17h. (near Osaka), 19h. (Huancayo (2)), 22h. (near Apia), 23h. (near Tyosi).

Sept. 10d. Readings at 2h. (near Prato, near Mizusawa, Nagoya, and Tyosi), 4h. (near Apia), 6h. (La Paz), 8h. (Ekaterinburg, Tashkent, De Bilt, Paris, Strasbourg, and Stuttgart), 9h. (Hastings), 10h. (near Naples), 11h. (Nagoya), 12h. (near Nanking and near Tyosi), 13h. (near Neuchatel), 19h. (near Lick).

Sept. 11d. 11h. 20m. 9s. Epicentre 10°·8S. 178°·5E. N.3.

A = −·982, B = +·026, C = −·187 ; D = +·026, E = +1·000 ;
G = +·187, H = −·005, K = −·982.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. |
|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. |
| Apia | | 10·0 | 109 | 2 18 | − 3 | 3 39 | −34 | — |
| Amboina | | 50·4 | 274 | — | — | i 16 10 | + 4 | — |
| Vladivostok | | 68·5 | 325 | 20 2 | S | (20 2) | − 1 | — |
| Santa Barbara | | 73·9 | 50 | i 11 37 | + 3 | — | — | — |
| Pasadena | | 74·9 | 50 | i 11 40 | 0 | — | — | i 43·6 |
| La Jolla | | 75·1 | 52 | i 11 37 | − 4 | — | — | — |
| Mount Wilson | | 75·1 | 50 | i 11 42 | + 1 | — | — | — |
| Riverside | | 75·5 | 50 | e 11 41 | − 2 | — | — | i 43·6 |
| Haiwee | | 75·9 | 48 | i 11 49 | + 4 | — | — | — |
| Tinemaha | | 76·1 | 47 | i 11 48 | + 1 | — | — | i 43·7 |
| Ekaterinburg | | 114·0 | 328 | — | — | e 26 39 | {+ 4} | — |
| De Bilt | z. | 138·3 | 354 | 19 24 | [+ 5] | e 21 3 | ? | — |
| Uccle | z. | 139·7 | 355 | e 19 24 | [+ 3] | i 21 9 | ? | — |
| Stuttgart | z. | 141·0 | 348 | e 19 31 | [+ 8] | e 21 10 | ? | — |
| Strasbourg | | 141·4 | 350 | e 19 12 | [−11] | e 21 15 | ? | — |
| Paris | | 141·8 | 356 | e 20 51? | ? | — | — | — |
| Neuchatel | | 143·1 | 349 | e 19 29 | [+ 2] | — | — | — |

Sept. 11d. Readings also at 1h. (La Paz and near Tananarive), 2h. (Huancayo), 5h. (near Sumoto), 6h. (near Fort de France), 7h. (Pasadena, Riverside, Tinemaha, and Huancayo), 8h. (Ekaterinburg, Tashkent, De Bilt, Strasbourg, Stuttgart, Paris, and La Paz), 11h. (near Sumoto), 12h. (Amboina and Neuchatel), 16h. (near Nagoya), 18h. (Sebastopol, Simferopol, and Yalta), 19h. (Huancayo (2) ).

Sept. 12d. 5h. 5m. 29s. Epicentre 39°·7N. 143°·7E. (as on 1933 April 23d.). X.
Nagoya gives 39°·6N. 143°·6E.

A = −·620, B = +·455, C = +·639 ; D = +·592, E = +·806 ;
G = −·515, H = +·378, K = −·769.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Mizusawa | | 2·1 | 254 | i 0 28 | − 2 | i 0 53 | − 1 | — | — |
| Tyosi | | 4·6 | 210 | e 0 53 | −13 | 1 59 | + 1 | — | 2·4 |
| Nagoya | | 7·2 | 233 | e 1 24 | −18 | 2 55 | − 9 | — | — |
| Toyooka | | 8·2 | 242 | 1 55 | − 1 | — | — | — | — |
| Osaka | | 8·3 | 235 | 2 0 | + 2 | 3 47 | +16 | — | 4·7 |
| Kobe | | 8·5 | 237 | e 2 38 | +38 | e 3 52 | +16 | — | 5·2 |
| Sumoto | N. | 8·8 | 235 | — | — | e 4 6 | S* | — | — |
| Vladivostok | | 9·4 | 295 | 2 19 | + 6 | e 4 39 | S* | 5·1 | 6·3 |
| Ekaterinburg | | 54·1 | 319 | i 9 24 | + 2 | e 17 15 | +18 | 27·5 | 35·3 |

Additional readings :—
Kobe eN = +3m.55s., eE = +4m.11s. = S* +0s.
Sumoto eSN = +4m.51s. = $S_g$ +6s.
Long waves were also recorded at De Bilt, Uccle, Paris, Strasbourg, and Stuttgart.

Sept. 12d. 12h. 31m. 59s. Epicentre 65°·5N. 31°·5W. (as on 1922 Feb. 14d.). R.3.

$A = +\cdot354$, $B = -\cdot217$, $C = +\cdot910$; $D = -\cdot522$, $E = -\cdot853$; $G = +\cdot776$, $H = -\cdot475$, $K = -\cdot415$.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m |
| Edinburgh | | 16·6 | 112 | — | — | e 7 1? | + 9 | — | — |
| Kew | | 21·1 | 116 | e 4 43 | + 2 | — | — | e 10·0 | — |
| De Bilt | | 22·7 | 108 | e 4 58 | 0 | — | — | e 10·0 | — |
| Uccle | | 23·4 | 111 | e 5 5 | 0 | e 9 10 | − 2 | e 11·0 | — |
| Feldberg | N. | 25·5 | 107 | — | — | e 9 39 | −11 | e 11·6 | 16·0 |
| Strasbourg | | 26·5 | 110 | e 5 1? | −33 | e 10 1? | − 6 | e 13·0 | — |
| Stuttgart | | 26·9 | 108 | e 5 34 | − 3 | e 10 7 | − 7 | e 13·0 | 16·5 |

Long waves were also recorded at Copenhagen and Paris.

Sept. 12d. 12h. 53m. 33s. Epicentre 7°·3N. 47°·5W. N.3.

$A = +\cdot670$, $B = -\cdot731$, $C = +\cdot127$; $D = -\cdot737$, $E = -\cdot676$; $G = +\cdot086$, $H = -\cdot094$, $K = -\cdot992$.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| La Paz | | 31·4 | 220 | 6 21 | + 4 | 11 33 | + 7 | 14·6 | 19·8 |
| Sucre | | 31·6 | 214 | e 6 14 | − 5 | 10 59 | −30 | — | — |
| Huancayo | | 33·8 | 236 | 6 50 | +11 | — | — | — | — |
| La Plata | | 43·3 | 192 | 7 11 | −48 | (14 27) | + 2 | 16·4 | 17·8 |
| Paris | | 59·1 | 36 | — | — | e 21 27? | SS | 58·4 | — |
| Mount Wilson | z. | 69·8 | 304 | e 11 6 | − 3 | — | — | — | — |
| Pasadena | z. | 69·9 | 304 | e 11 8 | − 2 | — | — | — | — |
| Tinemaha | z. | 70·3 | 307 | i 11 17 | + 4 | — | — | — | — |

Additional readings and note :—
Huancayo e = +5m.40s., +10m.27s., and +14m.24s.
La Plata gives S as LN.
Long waves were also recorded at San Juan and other European stations.

Sept. 12d. Readings also at 4h. (Huancayo and near Granada), 6h. (near Nagoya (2) and near Taihoku), 8h. (Huancayo and near Manila), 11h. (near Lick), 12h. (De Bilt), 15h. (Ekaterinburg, Tashkent, and near Ksara), 16h. (near Branner), 19h. (near Tiflis), 20h. (Ksara), 23h. (Sitka (2) ).

Sept. 13d. Readings at 0h. (near Manila and near La Paz), 3h. (Lick and near Tyosi), 4h. (Ekaterinburg, Tashkent, and Tananarive), 5h. (San Fernando), 8h. (near Santiago), 10h. (La Plata, La Paz, and Sucre), 11h. (La Paz), 13h. (Bombay, Melbourne, Riverview, Perth, near Wellington, near Sumoto, and near Tiflis), 14h. (Adelaide), 17h. (Suva), 22h. (Huancayo), 23h. (Branner).

Sept. 14d. 3h. Shock in Asia, for which readings are as follows :—

Sebastopol eP = 3h.0m.26s.
Simferopol eP = 3h.0m.33s.
Ksara eP = 3h.0m.42s., S = 2m.38s.
Yalta P = 3h.1m.7s.
Tashkent eP = 3h.2m.57s., eS = 5m.29s., M = 15m.42s.
Ekaterinburg eP = 3h.4m.9s., eS = 8m.3s., L = 11m.
Kucino e = 3h.7m.

Sept. 14d. 6h. 26m. 21s. Epicentre 35°·5N. 141°·0E. (as on 1932 Oct. 16d.). X.

A = −·633, B = +·512, C = +·581; D = +·629, E = +·777;
G = −·451, H = +·365, K = −·814.

| | Δ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Tyosi | 0·2 | 332 | i 0 2a | − 1 | 0 5 | 0 | 0·1 |
| Nagoya | 3·4 | 265 | 0 59 | P* | 1 41 | S* | — |
| Mizusawa | 3·6 | 1 | e 0 52 | + 1 | e 1 37 | + 5 | — |
| Osaka | 4·6 | 261 | 1 33 | $P_g$ | 2 37 | $S_g$ | 2·8 |

No additional readings.

Sept. 14d. 7h. 59m. 22s. Epicentre 18°·8S. 70°·5W. (as on 1932 July 29d.). R.3.

A = +·316, B = −·892, C = −·322; D = −·943, E = −·334;
G = −·108, H = +·304, K = −·947.

| | | Δ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. |
| La Paz | | 3·2 | 45 | i 0 47 | + 1 | i 1 30 | S* | 2·0 |
| Montezuma | | 4·2 | 158 | e 0 56 | − 4 | i 1 50 | + 2 | — |
| Sucre | | 5·0 | 92 | i 1 11 | 0 | i 1 57 | −11 | — |
| Huancayo | | 8·2 | 326 | e 2 8 | P* | e 4 19 | $S_g$ | — |
| Riverside | z. | 69·1 | 320 | i 11 4 | − 1 | — | — | — |
| Pasadena | z. | 69·6 | 320 | i 11 9 | + 1 | — | — | — |
| Mount Wilson | z. | 69·7 | 320 | e 11 9 | 0 | — | — | — |
| Tinemaha | z. | 71·7 | 322 | i 11 21 | 0 | — | — | — |

Additional readings:—
La Paz iPE = +1m.4s., iE = +1m.36s.
Montezuma i = +1m.57s. = S* − 6s. and +2m.8s. = $S_g$ − 5s.
Huancayo e = +2m.47s.
Pasadena iZ = +11m.33s. = $P_cP$ +1s.

Sept. 14d. Readings also at 1h. (Alicante, near Ksara, and near Tiflis), 2h. (near Tiflis, near Mizusawa, and Sumoto), 3h. (Haiwee, La Jolla, Mount Wilson, Pasadena, Riverside, Tinemaha, Ksara, and near Tiflis), 6h. (near Tyosi (7)), 7h. (near Tyosi and near Santiago), 9h. (Strasbourg and near Tashkent), 10h. (near La Paz), 11h. (near Nagoya and near Malabar), 12h. (near Sumoto (2) and near Tashkent), 13h. (Strasbourg and near Manila), 14h. (near Malabar), 15h. (Huancayo and near Tyosi), 17h. (Strasbourg and near Taihoku), 20h. (La Paz), 21h. (near Tiflis), 22h. (Bombay), 23h. (Huancayo and Tiflis).

Sept. 15d. 13h. 53m. 48s. Epicentre 33°·1N. 141°·2E. (as on 1929 Feb. 27d.). R.2.

The Japanese stations give epicentre 33°·5N. 141°·2E.

A = −·653, B = +·525, C = +·546; D = +·627, E = +·779;
G = −·426, H = +·342, K = −·838.

A *depth* of focus 0·015 has been assumed.

| | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|---|
| | ρ | ° | ° | m. s. | s. | m. s. | s. | m. |
| Hatidyozima | +0·3 | 1·1 | 270 | 0 18k | − 2 | 0 33 | − 3 | — |
| Mera | +0·2 | 2·1 | 328 | 0 32 | − 1 | 1 0 | + 1 | — |
| Susaki | +0·2 | 2·4 | 311 | 0 33a | − 4 | 1 4 | − 3 | — |
| Ito | +0·1 | 2·6 | 317 | 0 36 | − 3 | 1 8 | − 1 | — |
| Misima | +0·1 | 2·7 | 317 | 0 40a | 0 | 1 15 | + 3 | — |
| Tyosi | +0·1 | 2·7 | 354 | e 0 41 | + 1 | 1 11 | − 1 | 1·2 |
| Yokohama | +0·1 | 2·7 | 331 | 0 39 | − 1 | 1 13 | + 1 | — |
| Numadu | +0·1 | 2·8 | 316 | 0 40 | − 1 | 1 14 | 0 | — |
| Tokyo | +0·1 | 2·8 | 335 | 0 41 | 0 | 1 15 | + 1 | — |
| Omaesaki | +0·1 | 2·9 | 301 | 0 42a | − 1 | 1 18 | + 1 | — |

*Continued on next page.*

| | | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | ° | m. s. | s. | m. s. | s. | m. |
| Hunatu | | +0·1 | 3·2 | 320 | 0 46 | − 1 | 1 24 | − 1 | — |
| Kakioka | | +0·1 | 3·2 | 345 | 0 48 | + 1 | 1 25 | 0 | — |
| Hamamatu | | +0·1 | 3·3 | 299 | 1 6 | +17 | 1 37 | +10 | — |
| Mito | | +0·1 | 3·3 | 350 | 0 50 | + 1 | 1 28 | + 1 | — |
| Kumagaya | | 0·0 | 3·4 | 335 | 0 51 | + 2 | 1 31 | + 4 | — |
| Maebasi | | 0·0 | 3·7 | 333 | 0 57 | + 4 | 1 38 | + 3 | — |
| Matumoto | | 0·0 | 4·1 | 320 | 1 8 | +10 | 1 51 | + 6 | — |
| Nagoya | | 0·0 | 4·1 | 302 | e 1 0 | + 2 | 1 46 | + 1 | — |
| Gihu | | 0·0 | 4·3 | 303 | 1 3a | + 2 | 1 52 | + 2 | — |
| Nagano | | 0·0 | 4·3 | 326 | 1 6 | + 5 | 1 52 | + 2 | — |
| Kameyama | | 0·0 | 4·3 | 296 | 1 2 | + 1 | 1 51 | + 1 | — |
| Siomisaki | | 0·0 | 4·5 | 276 | 1 2 | − 2 | 1 53 | − 2 | — |
| Hukusima | | 0·0 | 4·7 | 352 | 1 6 | − 1 | 1 59 | − 1 | — |
| Osaka | | 0·0 | 5·0 | 291 | 1 12 | + 1 | 2 15 | + 7 | 2·5 |
| Wakayama | | 0·0 | 5·2 | 286 | 1 12 | − 2 | 1 58 | −15 | — |
| Sendai | | 0·0 | 5·2 | 357 | 1 13 | − 1 | 2 9 | − 4 | — |
| Kobe | | 0·0 | 5·2 | 290 | e 0 59 | −15 | e 2 19 | + 6 | 2·6 |
| Sumoto | | 0·0 | 5·4 | 285 | 1 15a | − 2 | e 2 15 | − 3 | 2·3 |
| Mizusawa | E. | 0·0 | 6·0 | 359 | — | — | i 2 32 | − 1 | — |
| Morioka | | −0·1 | 6·6 | 0 | 1 31 | − 1 | 2 44 | − 2 | — |
| Akita | | −0·1 | 6·7 | 353 | 1 56 | +22 | — | — | — |
| Tiflis | | −2·0 | 72·9 | 309 | e 12 19 | +63 | — | — | — |
| Tinemaha | | −2·1 | 78·1 | 54 | i 11 48 | + 2 | — | — | — |
| Haiwee | z. | −2·1 | 78·8 | 54 | i 11 49 | − 1 | — | — | — |
| Mount Wilson | z. | −2·1 | 79·8 | 56 | i 11 57 | + 1 | — | — | — |
| Pasadena | z. | −2·1 | 79·8 | 56 | i 11 56 | 0 | — | — | — |
| Riverside | z. | −2·1 | 80·3 | 56 | i 11 58 | 0 | — | — | — |

Additional readings :—
Kobe iE = +1m.25s.
Sumoto eSE = +2m.4s.
Mizusawa eSN = +2m.37s.
Tiflis e = +12m.42s.

Sept. 15d. 16h. 19m. 50s. Epicentre 28°·1N. 132°·0E. N.2.

A = −·590, B = +·656, C = +·471 ; D = +743, E = +·669 ;
G = −·315, H = +·350, K = −·882.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Simidu | | 4·8 | 10 | 1 7 | − 1 | 1 59 | − 4 | — | — |
| Nagasaki | | 5·0 | 339 | e 1 7k | − 4 | e 1 59 | − 9 | — | — |
| Muroto | | 5·4 | 19 | 1 20 | + 3 | 2 20 | + 2 | — | — |
| Koti | | 5·6 | 13 | i 1 19k | − 1 | e 2 21 | − 2 | — | — |
| Sumoto | | 6·7 | 20 | i 1 36 | + 1 | e 2 48 | − 3 | — | 4·8 |
| Kobe | | 7·1 | 21 | e 1 39 | − 2 | e 2 59 | − 2 | — | — |
| Osaka | | 7·2 | 24 | 1 43 | + 1 | 3 19 | +15 | — | 5·1 |
| Nagoya | | 8·3 | 30 | e 1 59 | + 1 | 3 40 | + 9 | — | — |
| Nanking | | 12·1 | 292 | i 2 42k | − 8 | — | — | 7·4 | — |
| Vladivostok | | 15·0 | 0 | i 6 35 | S | (i 6 35) | +20 | 9·0 | 10·5 |
| Chiufeng | | 17·7 | 314 | e 4 6 | + 3 | e 7 27 | +10 | e 8·7 | 12·7 |
| Tashkent | | 52·1 | 302 | e 8 20 | −47 | e 16 14 | −16 | 24·2 | 33·4 |
| Bombay | N. | 54·6 | 274 | — | — | e 14 10 | ? | — | — |
| Ekaterinburg | | 56·7 | 322 | e 9 42 | + 1 | 17 34 | + 2 | 36·2 | — |
| Florence | | 89·9 | 321 | (18 10?) | PPP | — | — | 18·2 | 42·2 |

Additional readings :—
Sumoto eSN = +3m.45s. = $S_g$ +10s.
Kobe ePN = +1m.42s., eE = +2m.56s., eN = +3m.59s. = $S_g$ +11s. and +5m.57s.
Vladivostok e = +8m.7s.
Ekaterinburg $L_g$ = +26·2m.
Long waves were also recorded at Hong Kong, Pulkovo, Kucino, and at European stations.

Sept. 15d. Readings also at 0h. (Andijan), 2h. (Sumoto (2) ), 3h. (Amboina), 4h. (near Manila), 5h. (near La Paz and near Lick), 6h. (Ekaterinburg, near Andijan, and Tashkent), 7h. (Huancayo, near La Paz, and near Mizusawa), 14h. (Christchurch, near Wellington, and near Taihoku), 15h. (Nanking), 16h. (Venice), 17h. (near Batavia, Soengei Langka, and near Triest), 18h. (near Apia), 20h. (Bombay), 22h. (near Berkeley, Branner, and Lick), 23h. (Mount Wilson, Pasadena, Tinemaha, Christchurch, Wellington (2), Riverview, and Sydney).

Sept. 16d. 17h. 29m. 13s. Epicentre 36°·1N. 140°·0E. (as on 1933 July 15d.). X.

A = − ·619, B = + ·519, C = + ·589.

| | Δ | Az. | P. | O − C. | S. | O − C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Tokyo | 0·5 | 206 | 0 7 | 0 | 0 14 | + 1 | — |
| Tyosi | 0·8 | 118 | 0 11 | 0 | 0 23 | + 2 | 0·5 |
| Nagoya | 2·7 | 249 | e 0 38 | − 1 | 1 18 | S* | — |

No additional readings.

Sept. 16d. Readings also at 0h. (Ekaterinburg, Tashkent, Feldberg, Paris, and Stuttgart), 1h. (Huancayo and Ukiah), 2h. (Christchurch), 3h. (Adelaide, Melbourne, Riverview, Sydney, Perth, Wellington, Ekaterinburg, Tashkent and Algiers), 7h. (Mizusawa and near Tiflis), 10h. (Mount Wilson, Pasadena, Riverside, and Tinemaha), 11h. (Wellington and near La Paz), 13h. (near Taihoku), 17h. (near Manila), 18h. (Amboina and Huancayo), 19h. (Sebastopol, Simferopol, Yalta, Branner, near Berkeley, Lick, and near Mizusawa), 20h. (Huancayo), 22h. and 23h. (near Tiflis).

Sept. 17d. 3h. 59m. 21s. Epicentre 41°·6N. 144°·3E. (as on 1932 Dec. 20d.). X.

A = − ·607, B = + ·436, C = + ·664 ; D = + ·584, E = + ·812 ;
G = − ·539, H = + ·387, K = − ·748.

| | | Δ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Mizusawa | | 3·5 | 226 | i 0 43 | − 7 | i 1 4 | $P_g$ | — | — |
| Tyosi | | 6·4 | 206 | e 1 25 | − 6 | 2 25 | −18 | — | 2·9 |
| Nagoya | | 8·6 | 224 | e 2 3 | + 1 | e 3 38 | − 1 | — | — |
| Vladivostok | | 9·2 | 284 | 2 24 | +14 | e 4 24 | S* | i 4·9 | 5·8 |
| Osaka | | 9·8 | 228 | 2 26 | + 8 | 4 21 | +13 | — | 5·4 |
| Kobe | | 10·0 | 229 | e 2 23 | + 2 | 3 37 | −36 | — | 5·1 |
| Sumoto | | 10·4 | 229 | 2 25 | − 1 | 4 57 | S* | — | — |
| Chiufeng | z. | 21·3 | 276 | e 4 47 | + 4 | e 8 23 | − 9 | — | 13·2 |
| Tashkent | | 54·3 | 296 | — | — | e 21 45 | ? | e 28·0 | 34·8 |
| Tiflis | | 69·7 | 308 | e 11 20 | +11 | — | — | e 42·6 | — |
| Florence | | 84·7 | 328 | e 22 32 | S | (e 22 32) | [−25] | 38·6 | 47·6 |

Additional readings :—
Mizusawa iSN = +1m.8s.
Tyosi iP = +1m.38s., $S_g$ = +2m.43s.
Kobe eSN = +3m.42s.
Sumoto PE = +2m.33s.
Long waves were also recorded at Hong Kong, Ekaterinburg, Pulkovo, and other European stations.

Sept. 17d. 4h. 8m. 39s. Epicentre 46°·1N. 7°·3E. (as on 1931 Feb. 5d.). X.

A = + ·688, B = + ·088, C = + ·721.

| | Δ | Az. | P. | O − C. | S. | O − C. |
|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. |
| Neuchatel | 0·9 | 344 | e 0 10 | − 3 | e 0 18 | − 5 |
| Zurich | 1·5 | 34 | e 0 21 | 0 | e 0 39 | 0 |
| Chur | 1·7 | 64 | e 0 28 | + 4 | e 0 49 | + 5 |
| Strasbourg | 2·5 | 7 | — | — | e 1 4 | 0 |
| Stuttgart | 2·9 | 26 | e 0 39 | − 2 | — | — |

Strasbourg eSS = +1m.38s.

Sept. 17d. Readings also at 0h. (near Tiflis), 1h. (near Apia), 6h. (La Jolla, Mount Wilson, Pasadena, Riverside, Tinemaha, and Wellington), 7h. (near Apia), 8h. (2) and 9h. (Amboina), 11h. (Wellington and near Apia), 13h. (Huancayo), 15h. (near Malabar), 17h. (Huancayo), 18h. (Andijan, Frunse, Tashkent, Sebastopol, and Yalta), 19h. (Ekaterinburg, La Paz, and near Apia), 22h. (Honolulu T.H., Wellington, Pasadena, Huancayo (2), La Plata, and Ekaterinburg), 23h. (Baku, Tashkent, Kucino, De Bilt, Feldberg, Uccle, Stuttgart, and Ukiah).

Sept. 18d. Readings at 0h. (near Mizusawa), 5h. (La Paz and near Mizusawa), 8h. (Amboina), 9h. (near Huancayo), 11h. and 12h. (Amboina), 13h. (Huancayo and near Nagasaki), 18h. (Amboina), 22h. (La Paz), 23h. (Andijan, Frunse, and Wellington).

Sept. 19d. 23h. 39m. 30s. Epicentre 59°·0N. 142°·0W. N.3.

A = − ·406, B = − ·317, C = + ·857 ; D = − ·616, E = + ·788 ;
G = − ·675, H = − ·528, K = − ·515.

| | | △ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Sitka | | 4·0 | 116 | i 0 48 | − 9 | i 1 21 | −21 | — | — |
| Victoria | E. | 15·2 | 126 | e 3 33 | + 2 | e 6 28 | + 8 | — | 8·6 |
| Bozeman | | 22·8 | 112 | e 4 55 | − 4 | e 8 59 | − 2 | e 11·3 | — |
| Ukiah | | 23·2 | 141 | — | — | e 9 30 | SS | — | — |
| Berkeley | | 24·7 | 140 | (i 5 19a) | + 2 | (i 9 42) | + 6 | (i 12·0) | (14·4) |
| Tinemaha | | 26·7 | 134 | i 5 39 | + 4 | — | — | — | — |
| Mount Wilson | Z. | 29·4 | 137 | e 6 1 | + 1 | — | — | — | — |
| Pasadena | | 29·4 | 137 | e 6 5 | + 5 | e 9 59 | −56 | e 16·1 | — |
| Riverside | Z. | 29·9 | 136 | i 6 5 | + 1 | — | — | — | — |
| Ann Arbor | | 39·0 | 87 | — | — | e 17 30 | (− 6) | e 22·1 | 22·5 |
| Toronto | | 40·3 | 83 | — | — | e 13 36 | − 5 | 19·5 | — |
| Ottawa | | 40·9 | 79 | — | — | e 13 48 | − 2 | e 17·5 | — |
| Ivigtut | | 42·8 | 45 | — | — | (18 30?) | (+31) | 18·5 | — |
| Oak Ridge | | 45·1 | 78 | — | — | e 18 2 | SS | e 21·5 | — |
| Pulkovo | | 61·1 | 5 | e 10 12 | 0 | — | — | 31·5 | 38·4 |
| Ekaterinburg | | 62·8 | 346 | i 10 41 | +17 | 19 16 | PS | 30·5 | — |
| Kucino | | 65·2 | 1 | — | — | e 19 37 | PS | 33·7 | 44·6 |
| Uccle | | 66·8 | 23 | — | — | e 23 30? | SS | e 31·5 | — |
| Feldberg | | 68·2 | 20 | — | — | e 24 35 | SS | — | 41·1 |
| Paris | | 68·3 | 25 | — | — | e 20 30? | PS | 34·5 | 35·5 |
| Strasbourg | | 69·6 | 21 | — | — | e 23 30? | ? | 34·5 | — |
| Stuttgart | | 69·7 | 20 | — | — | e 16 30? | ? | e 37·5 | — |
| Tashkent | | 76·4 | 336 | e 11 31 | −17 | i 20 56 | −40 | e 36·5 | 45·1 |
| Tiflis | E. | 79·2 | 355 | — | — | e 23 4 | PS | e 41·5 | 50·4 |
| Baku | | 80·1 | 351 | e 16 15 | ? | e 22 50 | PS | 45·7 | 55·0 |

Additional readings and notes :—
Berkeley iPN =(+5m.23s.), iSE =(+9m.51s.)., readings have been *diminished* by 5m.
Ann Arbor e = +19m.24s., i = +20m.6s., iE = +21m.18s.
Kucino eS = +20m.41s. = $S_cS$ +12s., e = +23m.59s.
Baku e = +32m.28s.
Long waves were also recorded at Seattle, Tucson, Pittsburgh, San Juan, Vladivostok, Chiufeng, Hong Kong, Bombay, and other European stations.

Sept. 19d. Readings also at 0h. (Columbia and Strasbourg), 1h. (Amboina (2) and near Tokyo), 3h. (Strasbourg and Stuttgart, Chur, near Neuchatel and Zurich), 4h. (near Vladivostok), 5h. (Ekaterinburg, Huancayo, near Amboina, and near Malabar), 6h. (near Tyosi), 7h. (near Andijan, Frunse, and near Ekaterinburg), 8h. (Kucino), 9h. (near Tyosi), 10h. (Christchurch, Wellington, Berkeley, Mount Wilson, Pasadena, Riverside, and Tinemaha), 11h. and 12h. (near Amboina), 13h. (Taihoku), 14h. and 18h. (near Amboina), 19h. (Columbia), 23h. (Florence).

Sept. 20d. 3h. 56m. 38s. Epicentre 34°·1N. 136°·6E. N.1.
(as given by the Japanese stations).

A = −·602, B = +·569, C = +·561; D = +·687, E = +·727;
G = −·407, H = +·385, K = −·828.

A *depth* of focus 0·060 has been assumed.

| | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | ° | m. s. | s. | m. s. | s. | m. |
| Kameyama | +2·3 | 0·7 | 352 | 0 48a | + 5 | 1 26 | + 9 | — |
| Yagi | +2·3 | 0·8 | 302 | 0 46 | + 2 | 1 25 | + 5 | — |
| Siomisaki | +2·2 | 1·0 | 227 | i 0 44a | − 2 | 1 22 | 0 | — |
| Hamamatu | +2·1 | 1·1 | 56 | 0 47 | + 1 | 1 26 | + 4 | — |
| Kyoto | +2·1 | 1·1 | 322 | 0 46 | 0 | — | — | — |
| Osaka | +2·1 | 1·1 | 302 | 0 41 | − 5 | 1 10 | −12 | 1·8 |
| Nagoya | +2·1 | 1·1 | 16 | 0 49 | + 3 | 1 28 | + 6 | 1·5 |
| Hikone | +2·1 | 1·2 | 346 | 0 52 | + 5 | 1 32 | + 7 | — |
| Wakayama | +2·1 | 1·2 | 276 | 0 50a | + 3 | 1 20 | − 5 | — |
| Ibukisan | +2·0 | 1·3 | 352 | 0 50a | + 3 | 1 30 | + 5 | — |
| Kobe | +2·0 | 1·3 | 297 | 0 50k | + 3 | i 1 30 | + 5 | 1·5 |
| Omaesaki | +2·0 | 1·4 | 69 | 0 48k | − 1 | 1 29 | + 2 | — |
| Sumoto | +2·0 | 1·4 | 280 | i 0 49 | 0 | 1 29 | + 2 | 1·5 |
| Susaki | +1·8 | 2·0 | 74 | 0 50k | − 4 | 1 33 | − 4 | — |
| Toyooka | +1·8 | 2·0 | 314 | 0 54 | 0 | 1 38 | + 1 | 1·7 |
| Numada | +1·7 | 2·1 | 62 | 0 53 | − 1 | 1 37 | 0 | — |
| Hunatu | +1·7 | 2·2 | 52 | 0 53k | − 3 | 1 38 | − 2 | — |
| Kohu | +1·7 | 2·2 | 47 | 0 55 | − 1 | 1 39 | − 1 | — |
| Misima | +1·7 | 2·2 | 62 | 0 52 | − 4 | 1 35 | − 5 | — |
| Koti | +1·5 | 2·6 | 258 | i 0 58a | 0 | i 1 45 | 0 | — |
| Toyama | +1·5 | 2·6 | 11 | 1 14 | +16 | 1 48 | + 3 | — |
| Mera | +1·4 | 2·8 | 73 | 0 53 | − 7 | 1 42 | − 6 | — |
| Nagano | +1·4 | 2·8 | 27 | 1 1 | + 1 | 1 48 | 0 | — |
| Yokohama | +1·4 | 2·8 | 62 | 0 58 | − 2 | 1 45 | − 3 | — |
| Kumagaya | +1·3 | 3·0 | 48 | 0 59 | − 2 | 1 47 | − 3 | — |
| Maebasi | +1·3 | 3·0 | 41 | 1 0 | − 1 | 1 47 | − 3 | — |
| Tokyo | +1·3 | 3·0 | 63 | 0 59 | − 2 | 2 8 | +18 | — |
| Matuyama | +1·3 | 3·2 | 265 | 1 2 | − 2 | 1 53 | − 2 | — |
| Tukubasan | +1·1 | 3·5 | 51 | 1 3a | − 3 | 1 52 | − 6 | — |
| Kakioka | +1·1 | 3·6 | 53 | 1 3k | − 4 | 1 52 | − 8 | — |
| Mito | +1·0 | 3·9 | 54 | 1 5 | − 5 | 1 56 | − 9 | — |
| Tyosi | +1·0 | 3·9 | 64 | e 1 8 | − 2 | 1 59 | − 6 | 2·1 |
| Hukusima | +0·6 | 4·8 | 39 | 1 17 | 0 | 2 17 | − 1 | — |
| Mizusawa | +0·2 | 6·2 | 34 | e 1 36 | + 5 | i 2 45 | + 2 | — |
| Morioka | +0·1 | 6·6 | 31 | 1 37 | + 2 | 2 57 | + 6 | — |
| Tinemaha | −7·2 | 80·5 | 52 | i 11 32 | + 1 | — | — | — |
| Mount Wilson | −7·3 | 82·3 | 54 | i 11 40 | 0 | — | — | — |
| Pasadena z. | −7·3 | 82·3 | 54 | i 11 39 | − 1 | — | — | — |
| Huancayo | — | 143·5 | 61 | e 18 50 | [−39] | — | — | — |

Tyosi $P_g$ = +1m.12s., $S_g$ = +2m.3s.

**Sept. 20d. 23h. 33m. 40s.** Epicentre 13°·3N. 120°·4E. (as on 1933 June 6d.). R.2.

A = −·492, B = +·839, C = +·230; D = +·863, E = +·506; G = −·116, H = +·198, K = −·973.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Manila | | 1·4 | 24 | i 0 27a | + 7 | i 0 47 | +11 | — | — |
| Hong Kong | | 10·8 | 328 | 2 39 | + 7 | 5 18 | S* | 6·0 | 9·3 |
| Phu-Lien | | 15·1 | 302 | e 3 34 | + 4 | e 6 33 | +16 | 7·3 | — |
| Zi-ka-wei | Z. | 17·9 | 3 | 4 8 | + 3 | — | — | 10·6 | 13·3 |
| Amboina | | 18·7 | 155 | e 4 7 | − 8 | e 7 31 | − 9 | — | — |
| Nanking | | 18·8 | 356 | i 4 20k | + 4 | — | — | i 10·8 | 13·3 |
| Nagasaki | | 21·3 | 23 | 4 45 | + 2 | — | — | — | — |
| Medan | | 23·5 | 248 | i 5 7 | + 2 | 9 24 | +10 | — | — |
| Koti | | 23·6 | 29 | e 5 5a | − 1 | e 9 40 | SS | — | — |
| Batavia | | 23·7 | 215 | 5 4 | − 3 | 10 18 | SS | — | — |
| Sumoto | | 24·8 | 30 | e 5 18 | 0 | 5 49 | PP | — | — |
| Nagoya | | 26·5 | 32 | — | — | 5 50 | PP | — | — |
| Chiufeng | | 27·1 | 352 | i 5 38k | − 1 | e 10 9 | − 8 | 15·9 | 19·1 |
| Vladivostok | | 31·5 | 16 | e 6 15 | − 3 | 11 44 | +16 | 14·3 | 17·9 |
| Mizusawa | E. | 31·6 | 31 | (6 21) | + 2 | 6 21 | P | — | — |
| Hyderabad | | 40·6 | 282 | — | — | 13 53 | + 8 | 21·8 | 29·1 |
| Bombay | | 46·0 | 284 | 8 23 | + 2 | i 15 8 | + 4 | — | 31·6 |
| Frunse | | 49·2 | 316 | e 9 12 | +27 | — | — | — | — |
| Andijan | | 50·0 | 313 | e 5 20 | ? | e 16 32 | +31 | — | — |
| Tashkent | | 52·4 | 313 | i 9 8 | − 1 | i 16 37 | + 3 | e 25·5 | 34·9 |
| Ekaterinburg | | 62·6 | 328 | i 10 24 | + 2 | i 18 54 | + 4 | 31·3 | 38·1 |
| Tiflis | | 70·5 | 311 | e 11 11 | − 3 | e 20 22 | − 5 | e 40·6 | 48·8 |
| Kucino | | 74·8 | 325 | e 11 35 | − 4 | 21 15 | − 3 | 35·2 | 44·8 |
| Simferopol | | 78·0 | 314 | 11 56 | − 1 | — | — | — | — |
| Yalta | | 78·0 | 313 | 11 56 | − 1 | — | — | — | — |
| Ksara | | 78·1 | 302 | 12 0 | + 2 | 21 57 | + 2 | — | — |
| Sebastopol | | 78·5 | 314 | 11 56 | − 4 | — | — | — | — |
| Pulkovo | | 78·6 | 329 | 11 57 | − 3 | 21 52 | − 8 | 38·3 | 47·1 |
| Copenhagen | | 88·8 | 328 | — | — | 23 38 | − 7 | 44·3 | — |
| Vienna | Z. | 89·1 | 320 | i 12 53k | 0 | — | — | — | — |
| Potsdam | | 89·7 | 325 | e 16 20? | PP | i 23 48 | − 5 | e 47·3 | 51·3 |
| Triest | | 91·7 | 318 | e 13 37 | +32 | i 24 5 | − 7 | e 44·3 | 56·3 |
| Feldberg | | 93·2 | 324 | — | — | i 24 23 | − 3 | — | 53·1 |
| Stuttgart | | 93·4 | 322 | e 13 8 | − 5 | — | — | e 52·3 | — |
| Florence | | 94·1 | 317 | e −0 20 | ? | (23 20) | [−36] | 23·3 | 50·3 |
| De Bilt | | 94·2 | 326 | — | — | e 24 20? | −15 | e 47·3 | 52·5 |
| Strasbourg | | 94·3 | 322 | 13 20? | + 3 | e 29 20? | ? | e 50·3 | — |
| Uccle | | 95·2 | 325 | e 17 13 | PP | e 31 8 | SS | e 48·3 | — |
| Paris | | 97·3 | 324 | e 13 20? | −11 | — | — | 52·3 | — |
| La Paz | Z. | 171·2 | 113 | e 20 4 | [ 0] | — | — | — | — |

Additional readings :—
Nanking iN = +4m.47s., eZ = +8m.46s.
Medan i = +6m.23s., iS = +9m.48s. =SS −5s.
Sumoto eEZ = +5m.31s. =PP −16s., eE = +5m.34s., eZ = +5m.47s., eN = +6m.3s.
Tiflis ePPZ = +13m.59s.
Potsdam ePPPE = +18m.2s., ePSEN = +24m.50s.
Triest i = +15m.44s.
Feldberg eN = +30m.43s.
Stuttgart ePS = +39m.20s.?
Strasbourg e = +16m.20s.?
Long waves were recorded at Edinburgh, Upsala, San Fernando, and Cheb.

**Sept. 20d.** Readings also at 0h. (near Sumoto), 1h. (near Lick), 3h. (Taihoku), 4h. (La Paz, Huancayo (2), Haiwee, Mount Wilson, Pasadena, Riverside, and Tinemaha), 5h. (Ekaterinburg and near Mizusawa), 6h. (Amboina, La Paz, Huancayo, and Vladivostok), 9h. (near Ksara), 10h. (near Taihoku), 13h. (Chicago), 15h. (Huancayo), 17h. (Amboina), 19h. (Andijan and Frunse), 21h. (near Manila).

Sept. 21d. 3h. 14m. 32s. Epicentre 37°·1N. 137°·0E. N.1.
(given by the Japanese stations).

Probable error of epicentre ±0°·23.

A = −·583, B = +·544, C = +·603; D = +·682, E = +·731;
G = −·441, H = +·411, K = −·798.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Husiki | | 0·3 | 173 | 0 0a | − 4 | 0 6 | − 2 | — | — |
| Wazima | | 0·3 | 344 | 0 0 | − 4 | 0 5 | − 3 | — | — |
| Toyama | | 0·4 | 159 | 0 1k | − 5 | 0 8 | − 2 | — | — |
| Takada | | 1·0 | 90 | 0 12k | − 2 | 0 26 | 0 | — | — |
| Takayama | | 1·0 | 168 | 0 2k | −12 | 0 14 | −12 | — | — |
| Nagano | | 1·1 | 114 | 0 12k | − 4 | 0 28 | 0 | — | — |
| Matumoto | | 1·2 | 138 | 0 20k | + 3 | 0 35 | + 4 | — | — |
| Hukui | | 1·2 | 209 | 0 10 | − 7 | 0 29 | − 2 | — | — |
| Oiwake | | 1·5 | 122 | 0 19k | − 2 | 0 40 | + 1 | — | — |
| Iida | | 1·7 | 157 | 0 25k | + 1 | 0 47 | + 3 | — | — |
| Gihu | | 1·7 | 186 | 0 21a | − 3 | 0 43 | − 1 | — | — |
| Maebasi | | 1·8 | 113 | 0 25k | − 1 | 0 50 | + 4 | — | — |
| Niigata | | 1·8 | 63 | 0 25 | − 1 | 0 50 | + 4 | — | — |
| Ibukisan | | 1·8 | 196 | 0 24a | − 2 | 0 50 | + 4 | — | — |
| Kohu | | 1·9 | 139 | 0 27k | − 1 | 0 53 | + 4 | — | — |
| Nagoya | | 1·9 | 181 | e 0 25 | − 3 | 0 50 | + 1 | — | 2·0 |
| Hikone | | 2·0 | 198 | 0 28a | − 1 | 0 55 | + 4 | — | — |
| Miyadu | | 2·1 | 223 | 0 31 | + 1 | 1 1 | S* | — | — |
| Hunatu | | 2·1 | 138 | 0 30 | 0 | 0 55 | + 1 | — | — |
| Kumagaya | | 2·1 | 116 | 0 32 | + 2 | 1 1 | S* | — | — |
| Kyoto | | 2·3 | 206 | 0 34a | + 1 | 1 7 | S* | — | — |
| Toyooka | | 2·3 | 228 | 0 32a | − 1 | 1 5 | S* | — | 1·2 |
| Kameyama | | 2·3 | 191 | 0 30 | − 3 | 1 4 | S* | — | — |
| Hamamatu | | 2·4 | 166 | 0 40 | P* | 1 16 | $S_g$ | — | — |
| Numadu | | 2·5 | 143 | 0 37 | + 1 | 1 14 | S* | — | — |
| Misima | | 2·6 | 141 | 0 38k | + 1 | 1 9 | + 2 | — | — |
| Tokyo | | 2·6 | 122 | 0 40 | P* | 1 16 | S* | — | — |
| Tukubasan | | 2·6 | 110 | 0 39 | + 2 | 1 11 | + 4 | — | — |
| Osaka | | 2·7 | 206 | 0 40 | + 1 | 1 21 | S* | — | 2·3 |
| Osaka B | | 2·7 | 206 | 0 40k | + 1 | 1 21 | S* | — | — |
| Yokohama | | 2·7 | 232 | 0 41 | + 2 | 1 18 | + 9 | — | — |
| Omaesaki | | 2·7 | 159 | 0 43 | + 4 | 1 24 | S* | — | — |
| Kakioka | | 2·7 | 109 | 0 37 | − 2 | 1 14 | + 5 | — | — |
| Kobe | | 2·8 | 207 | i 0 40a | 0 | i 1 19 | S* | — | 2·6 |
| Hukusima | | 2·9 | 77 | 0 39k | − 2 | 1 15 | + 1 | — | — |
| Mito | | 2·9 | 104 | 0 42 | + 1 | 1 23 | S* | — | — |
| Susaki | | 2·9 | 147 | 0 40k | − 1 | 1 18 | + 4 | — | — |
| Sumoto | | 3·2 | 213 | e 0 44a | − 2 | 1 34 | S* | — | 2·0 |
| Wakayama | | 3·2 | 208 | 0 45a | − 1 | 1 33 | S* | — | — |
| Mera | | 3·2 | 133 | 0 48 | + 2 | 1 40 | $S_g$ | — | — |
| Sendai | | 3·3 | 68 | 0 47k | 0 | 1 34 | S* | — | — |
| Tyosi | | 3·4 | 112 | e 0 51 | + 2 | 1 46 | $S_g$ | — | 2·1 |
| Akita | | 3·6 | 41 | 0 51 | 0 | 1 43 | S* | — | — |
| Siomisaki | | 3·8 | 197 | 0 57 | + 3 | 1 49 | S* | — | — |
| Mizusawa | | 3·8 | 56 | i 0 55 | + 1 | i 1 47 | S* | — | — |
| Morioka | | 4·2 | 50 | 0 57a | − 3 | 1 59 | S* | — | — |
| Muroto | | 4·5 | 212 | e 1 11 | + 7 | 2 12 | S* | — | 2·6 |
| Koti | | 4·5 | 220 | e 1 5 | + 1 | 2 21 | $S_g$ | e 2·2 | 2·5 |
| Matuyama | | 4·8 | 229 | 1 6 | − 2 | 2 17 | S* | — | — |
| Simidu | | 5·4 | 219 | i 1 16k | − 1 | i 2 43 | S* | — | 2·9 |
| Hukuoka | | 6·4 | 239 | 1 30 | − 1 | 3 1 | S* | — | 4·1 |
| Hukuoka B | | 6·4 | 239 | 1 37 | + 6 | 2 52 | + 9 | — | — |
| Kumamoto | | 6·6 | 232 | 1 34 | 0 | 2 59 | +11 | — | — |
| Taikyu | | 6·8 | 262 | e 1 40 | + 3 | 3 3 | +10 | — | — |
| Sapporo | | 6·8 | 29 | 1 42 | + 5 | 3 6 | +13 | — | — |
| Miyazaki | | 6·9 | 223 | 1 39 | + 1 | 3 1 | + 5 | — | — |
| Vladivostok | | 7·1 | 329 | e 1 41 | 0 | e 3 5 | + 4 | 3·3 | 4·8 |
| Nagasaki | | 7·3 | 236 | 1 48 | + 4 | 3 29 | S* | — | 4·0 |
| Keizyo | E. | 7·9 | 276 | e 1 57 | + 5 | e 3 28 | + 7 | — | 5·6 |
| Tomie | | 8·1 | 239 | 1 43 | −12 | 4 12 | $S_g$ | — | — |

*Continued on next page.*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Zinsen | | 8·3 | 277 | e 1 56 | − 2 | e 3 46 | +15 | 4·6 | — |
| Heizyo | | 9·0 | 286 | 2 14 | + 7 | 4 12 | S* | 5·4 | 6·7 |
| Nake | | 10·8 | 218 | 2 34 | + 2 | 5 9 | S* | — | — |
| Zi-ka-wei | z. | 14·1 | 250 | 3 28 | +11 | 6 14 | +21 | — | 9·8 |
| Nanking | | 15·8 | 257 | 3 40 | + 1 | e 7 51 | ? | 9·8 | 11·2 |
| Chiufeng | | 16·5 | 287 | e 3 50 | + 2 | i 7 12 | SS | 8·7 | 11·4 |
| Taihoku | | 17·9 | 232 | e 7 39 | SS | — | — | — | — |
| Hong Kong | | 24·6 | 239 | 5 17 | + 1 | 9 44 | +10 | 14·4 | 16·0 |
| Manila | | 26·6 | 217 | 5 29 | − 6 | 9 51 | −18 | 12·5 | 15·0 |
| Amboina | | 41·6 | 192 | 7 35 | −10 | — | — | — | — |
| Andijan | | 49·3 | 295 | e 9 18 | +32 | — | — | — | — |
| Tashkent | | 51·3 | 297 | e 9 30 | +29 | 16 15 | − 4 | e 25·6 | 31·9 |
| Ekaterinburg | | 52·5 | 318 | i 9 12 | + 2 | 16 38 | + 3 | 33·5 | 35·9 |
| Bombay | | 58·3 | 271 | e 9 50 | − 2 | — | — | — | 37·1 |
| Kucino | | 64·7 | 322 | 10 30 | − 7 | 19 13 | − 3 | 30·4 | 36·0 |
| Pulkovo | | 66·0 | 328 | e 10 41 | − 4 | e 19 31 | − 1 | 34·5 | 40·1 |
| Tiflis | z. | 67·8 | 306 | e 10 51 | − 6 | e 19 48 | − 6 | e 39·3 | 43·3 |
| Simferopol | | 72·5 | 314 | 11 21 | − 5 | — | — | — | — |
| Yalta | | 72·7 | 313 | 11 23 | − 4 | — | — | — | — |
| Sebastopol | | 73·0 | 314 | 11 24 | − 5 | — | — | — | — |
| Copenhagen | | 75·9 | 332 | i 11 42 | − 3 | 21 28 | − 2 | 39·5 | — |
| Ksara | | 78·0 | 303 | e 11 59 | + 2 | e 21 59 | + 5 | — | — |
| Potsdam | | 78·1 | 329 | e 15 28? | PP | e 21 28? | −27 | e 41·5 | 51·5 |
| Tinemaha | | 78·4 | 52 | i 11 56 | − 3 | — | — | — | — |
| Mount Wilson | | 80·3 | 54 | e 12 6 | − 3 | — | — | — | — |
| Pasadena | | 80·3 | 54 | i 12 6 | − 3 | — | — | — | — |
| Riverside | z. | 80·8 | 54 | i 12 12 | 0 | — | — | — | — |
| De Bilt | | 81·4 | 332 | 12 13 | − 2 | — | — | e 41·5 | 55·7 |
| La Jolla | | 81·6 | 55 | i 12 13 | − 3 | — | — | — | — |
| Feldberg | | 81·6 | 330 | — | — | e 22 29 | − 4 | 40·3 | 47·7 |
| Stuttgart | | 82·6 | 328 | e 12 17 | − 4 | — | — | e 42·5 | 55·5 |
| Uccle | | 82·7 | 332 | e 12 18 | − 4 | e 22 22 | −22 | e 42·5 | — |
| Triest | | 82·8 | 324 | — | — | e 23 28? | PS | — | 43·5 |
| Strasbourg | | 83·2 | 329 | e 11 59 | −25 | e 22 19 | −30 | e 42·5 | — |
| Kew | | 83·9 | 335 | — | — | e 32 28? | ? | e 44·5 | — |
| Neuchatel | | 84·8 | 329 | e 13 22 | +50 | — | — | — | — |
| Paris | | 85·1 | 332 | e 11 28? | −66 | — | — | 45·5 | 58·5 |
| Florence | | 85·3 | 324 | e 12 25 | −10 | 23 7 | − 4 | 35·5 | 43·5 |
| La Paz | z. | 149·7 | 53 | 19 50 | [+ 9] | — | — | — | — |

Additional readings :—
Toyooka i = +38s. = $P_g$ − 1s.
Osaka i = +45s. = P* + 2s. and +1m.13s. = S + 6s.
Kobe iEN = +46s. = P* + 1s., iZ = +48s., iEN = +52s. = $P_g$ + 2s.
Chiufeng iPZ = +3m.53s.
Tashkent e = +10m.4s. = $P_cP$ − 17s., ePP = +11m.31s., eSS = +20m.16s.
Ekaterinburg $L_q$ = +28·3m.
Bombay eE = +10m.10s.
Pasadena iZ = +12m.28s.
Feldberg eN = +33m.5s.
Stuttgart e = +19m.46s.
Strasbourg i = +12m.22s., ePS = +23m.4s.
Long waves were also recorded at Medan, Phu-Lien, and other European stations.

Sept. 21d. 4h. A shock from an epicentre in Persia, for which no determination is possible. The readings are as follows :—
Ksara eP = 4h.24m.7s., iS = 28m.9s., M = 32m.
Simferopol P = 4h.24m.50s., S = 28m.52s.
Tashkent eP = 4h.24m.54s., S = 28m.20s., L = 30m.6s., M = 34m.0s.
Sebastopol P = 4h.25m.11s.
Andijan eP = 4h.25m.53s.
Bombay e = 4h.26m.0s.
Tiflis eZ = 4h.26m.10s., 27m.1s. and 27m.32s., M = 28m.25s.
Ekaterinburg e = 4h.26m.46s.
Florence e = 4h.27m.0s., L = 35m.0s., M = 38m.0s.
Yalta e = 4h.28m.28s.
Kucino e = 4h.30m.45s., eL = 36m.54s.
Copenhagen 4h.33m.30s., L = 42m.
Taihoku eP = 4h.34m.32s.
Long waves were also recorded at De Bilt.

Sept. 21d. 9h. 47m. 59s. Epicentre 38°·8N. 143°·8E. (as on 1933 March 3d.). R.1.

The Japanese stations give epicentre as 39°·3N. 143°·0E.

Probable error of epicentre ±0°·21.

A = −·629, B = +·460, C = +·627; D = +·591, E = +·807; G = −·506, H = +·370, K = −·779.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Miyako | | 1·6 | 306 | 0 36a | +13 | 0 50 | + 9 | — | — |
| Mizusawa | | 2·1 | 279 | i 0 31 | + 1 | i 1 10 | $S_g$ | — | — |
| Morioka | | 2·3 | 298 | 0 34a | + 1 | 0 59 | 0 | — | — |
| Sendai | | 2·4 | 254 | 0 33k | − 1 | 0 55 | − 7 | — | — |
| Onahama | | 3·0 | 231 | 0 42k | − 1 | 1 24 | S* | — | — |
| Akita | | 3·0 | 291 | 0 45a | + 2 | 1 28 | S* | — | — |
| Aomori | | 3·1 | 316 | 0 47 | + 3 | 1 47 | $S_g$ | — | — |
| Mito | | 3·5 | 226 | 0 48 | − 2 | 1 41 | S* | — | — |
| Hakodate | | 3·8 | 322 | 1 6 | $P_g$ | 1 56 | $S_g$ | — | — |
| Kakioka | | 3·9 | 230 | 0 53a | − 3 | 1 35 | − 5 | — | — |
| Tyosi | | 3·9 | 217 | e 0 55 | − 1 | 1 47 | + 7 | — | 2·3 |
| Kumagaya | | 4·4 | 234 | 1 2 | − 1 | 1 45 | − 8 | — | — |
| Maebasi | | 4·5 | 238 | 1 2a | − 2 | 1 46 | − 9 | — | — |
| Tokyo | | 4·5 | 226 | 1 3 | − 1 | 2 9 | S* | — | — |
| Sapporo | | 4·6 | 338 | 1 14 | P* | 2 7 | + 9 | — | — |
| Yokohama | | 4·8 | 225 | 1 6 | − 2 | 2 8 | + 5 | — | — |
| Nagano | | 5·0 | 245 | 1 11k | 0 | 2 20 | S* | — | — |
| Mera | | 5·1 | 220 | 1 15 | + 2 | 2 42 | $S_g$ | — | — |
| Hunatu | | 5·2 | 232 | 1 13 | − 1 | 2 4 | − 9 | — | — |
| Kohu | | 5·3 | 234 | 1 14a | − 1 | 2 22 | + 7 | — | — |
| Misima | | 5·4 | 225 | 1 17k | 0 | 2 25 | + 7 | — | — |
| Wazima | | 5·6 | 257 | 1 18 | − 2 | 2 26 | + 3 | — | — |
| Susaki | | 5·7 | 224 | 1 18a | − 3 | 2 27 | + 2 | — | — |
| Toyama | | 5·7 | 250 | 1 20 | − 1 | 2 41 | S* | — | — |
| Omaesaki | | 6·2 | 228 | 1 28 | 0 | 2 44 | + 6 | — | — |
| Hamamatu | | 6·3 | 231 | 1 39 | P* | — | — | — | — |
| Hatidyozima | | 6·5 | 210 | 1 45 | P* | — | — | — | — |
| Gihu | | 6·5 | 241 | 1 32 | 0 | 2 36 | −10 | — | — |
| Nagoya | | 6·6 | 238 | e 1 34 | 0 | 3 0 | +12 | — | 3·7 |
| Hikone | | 7·0 | 242 | 1 42 | + 3 | 3 2 | + 3 | — | — |
| Kameyama | | 7·1 | 238 | 1 42 | + 1 | 3 21 | S* | — | — |
| Kyoto | | 7·5 | 242 | 1 46 | 0 | — | — | — | — |
| Osaka | | 7·8 | 241 | 1 48 | − 3 | 3 35 | +16 | — | 4·6 |
| Osaka B. | | 7·8 | 241 | 2 9 | P* | 3 40 | +21 | — | — |
| Toyooka | | 7·9 | 248 | 1 50 | − 2 | 3 28 | + 7 | — | 4·5 |
| Ootomari | | 7·9 | 355 | 0 57 | −55 | 3 30 | + 9 | — | — |
| Kobe | E. | 8·1 | 242 | e 1 55 | 0 | e 3 20 | − 6 | — | 4·8 |
| | Z. | 8·1 | 242 | e 1 53 | − 2 | e 3 18 | − 8 | — | 5·0 |
| Wakayama | | 8·3 | 239 | 2 1 | + 3 | 3 23 | − 8 | — | — |
| Siomisaki | | 8·4 | 232 | 1 49 | −10 | — | — | — | — |
| Sumoto | | 8·4 | 240 | 1 57 | − 2 | 4 17 | S* | — | 4·8 |
| Muroto | | 9·6 | 237 | — | — | e 4 11 | + 8 | — | — |
| Koti | Z. | 9·8 | 241 | 2 25 | + 7 | — | — | — | 4·9 |
| Vladivostok | | 9·9 | 300 | i 2 15 | − 4 | e 3 49 | −22 | 4·3 | 5·5 |
| Matuyama | | 10·2 | 244 | 2 21 | − 3 | 5 7 | S* | — | — |
| Hamada | | 10·2 | 251 | 2 22 | − 2 | 3 44 | −34 | — | — |
| Simidu | | 10·6 | 239 | — | — | e 3 57 | −31 | — | — |
| Hukuoka | | 12·0 | 248 | e 2 47 | − 1 | e 5 21 | +18 | — | — |
| Hukuoka B. | | 12·0 | 248 | 2 48 | 0 | 5 10 | + 7 | — | — |
| Miyazaki | | 12·2 | 239 | 2 49 | − 2 | 5 56 | S* | — | — |
| Taikyu | | 12·4 | 261 | 2 52 | − 2 | — | — | — | — |
| Nagasaki | | 12·8 | 246 | e 3 0 | + 1 | e 5 51 | +29 | e 6·8 | — |
| Keizyo | | 13·3 | 270 | e 3 4 | − 2 | — | — | e 6·9 | 8·3 |
| Zinsen | | 13·6 | 269 | e 3 8 | − 2 | — | — | e 7·1 | — |
| Heizyo | | 14·0 | 280 | 3 5 | −10 | 4 59 | −52 | 7·1 | 9·0 |

*Continued on next page.*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Zi-ka-wei | | 19·8 | 254 | e 4 27 | 0 | — | — | 11·5 | 15·4 |
| Chiufeng | | 21·3 | 282 | i 4 40a | − 3 | 8 34 | + 2 | 10·6 | 13·5 |
| Nanking | | 21·4 | 259 | e 4 43 | − 1 | e 8 40 | + 6 | — | 15·4 |
| Hong Kong | | 30·2 | 245 | 6 6 | − 1 | 11 6 | − 1 | — | 18·5 |
| Manila | | 31·5 | 225 | i 6 18a | 0 | 11 6 | −22 | 14·6 | 17·0 |
| Amboina | | 44·9 | 202 | 14 41 | S | (14 41) | − 8 | — | — |
| Frunse | | 51·0 | 298 | e 8 40 | −19 | — | — | — | — |
| Andijan | | 53·4 | 296 | e 10 15 | (−13) | — | — | — | — |
| Sitka | | 53·6 | 42 | — | — | e 17 12 | +22 | — | — |
| Ekaterinburg | | 54·9 | 318 | i 9 35 | + 7 | i 17 15 | + 7 | 34·2 | 35·5 |
| Tashkent | | 54·9 | 298 | e 9 16 | −12 | 16 14 | −54 | 29·7 | 33·7 |
| Hyderabad | | 60·2 | 269 | 17 36 | S | (17 36) | −43 | — | 37·0 |
| Bombay | | 63·7 | 273 | 10 33 | + 3 | e 19 23 | +19 | 34·2 | 41·5 |
| Kucino | | 66·5 | 324 | e 10 53 | + 4 | 19 41 | + 2 | e 31·2 | 42·4 |
| Pulkovo | | 67·4 | 330 | i 10 55 | + 1 | e 19 50 | 0 | 35·0 | 42·3 |
| Tiflis | | 71·0 | 309 | e 11 18 | + 1 | e 20 27 | − 6 | e 38·3 | 45·2 |
| Upsala | | 71·9 | 336 | — | — | e 20 55 | +11 | e 41·0 | — |
| Tinemaha | z. | 73·0 | 56 | i 11 36 | + 7 | — | — | — | — |
| Pasadena | | 74·8 | 58 | e 11 47 | + 8 | — | — | — | — |
| Mount Wilson | z. | 74·9 | 58 | i 11 47 | + 7 | — | — | — | — |
| Simferopol | | 75·1 | 317 | e 11 39 | − 2 | — | — | 43·5 | — |
| Yalta | | 75·3 | 316 | e 11 47 | + 5 | — | — | 48·0 | — |
| Riverside | z. | 75·4 | 58 | i 11 52 | + 9 | — | — | — | — |
| Sebastopol | | 75·6 | 317 | 11 48 | + 4 | — | — | 44·0 | — |
| La Jolla | z. | 76·2 | 59 | e 12 2 | +15 | — | — | — | — |
| Copenhagen | | 76·8 | 335 | 11 54 | + 4 | 21 41 | 0 | 39·0 | — |
| Potsdam | | 79·3 | 333 | e 12 1? | − 3 | i 22 6 | − 2 | e 42·0 | 50·0 |
| Hamburg | | 79·4 | 335 | e 12 10 | + 5 | — | — | e 43·0 | 46·0 |
| Budapest | | 80·7 | 326 | e 12 31 | +19 | e 22 31 | + 8 | 44·0 | 51·0 |
| Edinburgh | | 80·8 | 342 | — | — | e 22 31 | + 7 | e 46·0 | — |
| Vienna | | 81·3 | 328 | e 12 19 | + 4 | 22 31 | + 1 | e 46·0 | 52·0 |
| Ksara | | 81·4 | 306 | e 12 17 | + 2 | 22 42 | +11 | — | 47·5 |
| De Bilt | | 82·2 | 336 | 12 23 | + 4 | 22 38 | − 1 | e 40·0 | 48·0 |
| Feldberg | | 82·7 | 333 | e 15 31 | PP | e 22 48 | + 4 | — | 53·8 |
| Uccle | | 83·6 | 336 | e 12 25 | − 1 | e 22 54 | + 1 | e 40·0 | — |
| Stuttgart | | 83·7 | 332 | e 12 30a | + 3 | — | — | e 45·0 | — |
| Strasbourg | | 84·4 | 333 | e 12 34 | + 4 | 22 57 | [+ 2] | e 43·0 | — |
| Triest | | 84·4 | 328 | e 12 40 | +10 | 22 50 | [− 5] | — | 46·5 |
| Oxford | | 84·5 | 340 | — | — | e 23 15 | +12 | 49·3 | 58·0 |
| Neuchatel | | 86·0 | 332 | e 12 41 | + 3 | — | — | — | — |
| Paris | | 86·0 | 336 | e 12 1? | −37 | — | — | 47·0 | 54·0 |
| Piacenza | | 86·5 | 330 | e 13 53 | +72 | — | — | — | 46·0 |
| Ottawa | | 88·6 | 27 | — | — | e 23 49 | + 6 | e 42·0 | — |
| Alicante | | 96·2 | 336 | — | — | e 34 38 | SSS | e 63·1 | — |
| La Paz | E. | 144·3 | 60 | 19 55 | [+23] | — | — | 74·5 | 83·6 |

Additional readings :—
Mizusawa iSE = +1m.17s.
Tyosi SN = +1m.56s. =S* +2s.
Nanking iN = +4m.54s., eZ = +9m.42s.
Ekaterinburg $L_q$ = +28·1m.
Tashkent e = +9m.30s. and +14m.34s., e = +17m.14s., i = +17m.27s., e = +21m.19s. and +27m.26s.
Tiflis ePSE = +20m.51s.
Copenhagen +14m.49s. =PP +12s.
Potsdam eEN = +15m.19s. and +18m.1s.?, iEN = +22m.21s., iE = +22m.39s., iN = +22m.50s.
Vienna PP = +15m.23s.
Feldberg eN = +30m.49s.
Stuttgart ePP = +15m.49s.
Triest i = +22m.53s.
Ottawa eE = +29m.37s. =SS +17s.
Long waves were also recorded at Taihoku, Kodaikanal, Medan, Honolulu T.H., Huancayo, Phu-Lien, Algiers, and at other European stations.

**Sept. 21d. 13h. 42m. 25s.** Epicentre 39°·4N. 143°·2E. (as on 1933 April 23d.). R.2.

The Japanese stations give epicentre 39°·4N. 143°·3E.

A = −·619, B = +·463, C = +·635; D = +·599, E = +·801; G = −·508, H = +·380, K = −·773.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Mizusawa | | 1·6 | 261 | i 0 27 | + 4 | i 0 59 | +18 | — | — |
| Tyosi | | 4·1 | 207 | e 0 53 | − 5 | 1 47 | + 2 | — | 2·0 |
| Nagoya | | 6·5 | 232 | e 1 38 | + 6 | 3 5 | S* | — | 3·2 |
| Osaka | | 7·7 | 235 | 1 49 | 0 | 3 37 | S* | — | 4·8 |
| Toyooka | | 7·7 | 243 | 1 46 | − 3 | 3 15 | − 1 | — | — |
| Kobe | E. | 8·0 | 237 | e 1 49 | − 4 | e 3 34 | +10 | — | 4·9 |
| | N. | 8·0 | 237 | e 1 54 | + 1 | 3 46 | S* | — | 4·7 |
| | Z. | 8·0 | 237 | e 1 52 | − 1 | e 3 35 | +11 | — | 5·2 |
| Sumoto | | 8·3 | 236 | e 1 50 | − 8 | 3 49 | +18 | — | 4·7 |
| Vladivostok | | 9·3 | 298 | i 2 11 | 0 | e 3 41 | −15 | 4·1 | 5·5 |
| Koti | | 9·7 | 236 | — | — | 3 35? | −31 | — | — |
| Keizyo | E. | 12·8 | 266 | e 2 48 | −11 | e 7 0 | L | (e 7·0) | — |
| Zinsen | | 13·1 | 267 | e 2 38 | −25 | — | — | e 7·7 | — |
| Chiufeng | | 20·7 | 281 | 4 36a | − 1 | e 8 26 | + 6 | e 10·7 | 14·0 |
| Manila | | 31·6 | 224 | i 7 18 | PP | 11 54 | +25 | 15·3 | — |
| Ekaterinburg | | 54·1 | 318 | i 9 31 | + 9 | 17 9 | +12 | 34·1 | 35·7 |
| Tashkent | | 54·6 | 299 | i 10 11 | (−22) | e 17 17 | +13 | e 29·2 | 35·4 |
| Pulkovo | | 66·6 | 330 | e 10 51 | + 2 | e 19 54 | PS | 35·6 | 41·5 |
| Tiflis | | 70·3 | 308 | e 10 50 | −23 | e 19 48 | −37 | e 36·9 | 48·5 |
| Simferopol | | 74·3 | 316 | e 11 40 | + 4 | — | — | — | — |
| Yalta | | 74·6 | 315 | e 11 41 | + 3 | — | — | — | — |
| Sebastopol | | 74·9 | 316 | e 12 23? | +43 | — | — | — | — |
| Mount Wilson | Z. | 74·9 | 58 | e 12 40 | +60 | — | — | — | — |
| Pasadena | Z. | 74·9 | 58 | i 12 46 | +66 | — | — | — | — |
| Copenhagen | | 76·1 | 335 | 11 50 | + 3 | — | — | 41·6 | — |
| Triest | | 83·6 | 327 | e 18 47 | ? | — | — | e 41·6 | — |

Additional readings:—
Mizusawa iSE = +1m.4s.
Toyooka ePNZ = +1m.49s., SE = +3m.19s., eSZ = +3m.24s.
Sumoto SEZ = +3m.54s.
Ekaterinburg $L_g$ = +26·6m.
Tashkent e = +17m.31s., +21m.11s., and +29m.47s.
Tiflis eZ = +11m.7s.
Long waves were also recorded at Hong Kong, Phu-Lien, Bombay, and other European stations.

**Sept. 21d. 19h. 43m. 32s.** Epicentre 38°·5N. 144°·5E. (as on 1930 June 8d.). R.2.

A = −·637, B = +·455, C = +·623; D = +·581, E = +·814; G = −·507, H = +·361, K = −·783.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Miyako | | 2·2 | 300 | 0 38 | + 7 | 0 58 | + 1 | — | — |
| Mizusawa | N. | 2·7 | 283 | i 0 37 | − 2 | i 1 12 | + 3 | — | — |
| Sendai | | 2·8 | 266 | 0 39a | − 1 | 1 0 | −12 | — | — |
| Morioka | | 2·9 | 295 | 0 41a | 0 | 1 7 | − 7 | — | — |
| Hukusima | | 3·2 | 257 | 0 45 | − 1 | 1 20 | − 2 | — | — |
| Akita | | 3·6 | 292 | 0 51 | 0 | 1 32 | 0 | — | — |
| Aomori | | 3·7 | 311 | 0 57 | + 4 | 1 49 | S* | — | — |
| Mito | | 3·8 | 238 | 0 55 | + 1 | 1 43 | + 6 | — | — |
| Urakawa | | 3·9 | 342 | 1 11 | $P_g$ | 2 9 | $S_g$ | — | — |
| Tyosi | | 4·0 | 228 | e 0 59 | + 2 | 1 52 | S* | — | 2·2 |

*Continued on next page.*

| | Δ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Kakioka | 4·1 | 238 | 0 58 | 0 | 1 45 | 0 | — | — |
| Tukubasan | 4·2 | 238 | 0 59 | − 1 | 1 52 | + 4 | — | — |
| Kusiro | 4·5 | 0 | 0 46 | −18 | 1 26 | −29 | — | — |
| Kumagaya | 4·7 | 242 | 1 6 | − 1 | 1 52 | − 8 | — | — |
| Tokyo | 4·7 | 235 | 1 9 | + 2 | 2 11 | S* | — | — |
| Maebasi | 4·8 | 246 | 1 8 | 0 | 1 54 | − 9 | — | — |
| Nemuro | 4·9 | 9 | 1 22 | P* | 2 17 | +12 | — | — |
| Yokohama | 4·9 | 234 | 1 15 | + 5 | 2 14 | + 9 | — | — |
| Sapporo | 5·2 | 334 | 1 41 | $P_g$ | 2 34 | S* | — | — |
| Nagano | 5·3 | 251 | 1 16 | + 1 | 2 29 | S* | — | — |
| Hunatu | 5·5 | 540 | 1 19 | + 1 | 2 16 | − 4 | — | — |
| Kohu | 5·5 | 241 | 1 20 | + 2 | 2 26 | + 6 | — | — |
| Misima | 5·6 | 234 | 1 25 | + 5 | 2 31 | + 8 | — | — |
| Susaki | 5·8 | 231 | 1 16 | − 6 | 2 18 | −10 | — | — |
| Toyama | 6·1 | 255 | 1 29 | + 2 | 2 54 | S* | — | — |
| Wazima | 6·1 | 262 | 1 26 | − 1 | 2 33 | − 3 | — | — |
| Gihu | 6·8 | 246 | 1 39 | + 2 | 2 55 | + 2 | — | — |
| Nagoya | 6·9 | 243 | e 1 50 | P* | 3 3 | + 7 | — | 3·5 |
| Hikone | 7·3 | 247 | 1 48 | + 4 | 3 5 | − 1 | — | — |
| Kameyama | 7·4 | 243 | 1 55a | +10 | 3 36 | S* | — | — |
| Osaka | 8·2 | 245 | 2 9 | P* | 3 44 | S* | — | 4·6 |
| Osaka B. | 8·2 | 245 | 2 14 | P* | 4 10 | S* | — | — |
| Toyooka | 8·3 | 253 | 1 59 | + 1 | 3 30 | − 1 | — | — |
| Kobe | 8·4 | 246 | e 1 59 | 0 | e 3 52 | +18 | — | 5·0 |
| Wakayama | 8·6 | 244 | 2 12 | +10 | 3 57 | +18 | — | — |
| Sumoto | 8·8 | 245 | e 2 25 | +20 | 4 3 | S* | — | 4·8 |
| Vladivostok | 10·5 | 300 | i 2 21 | − 7 | e 3 53 | −33 | 4·3 | 6·0 |
| Hukuoka B. | 12·4 | 251 | 2 10 | −44 | 4 30 | −43 | — | — |
| Chiufeng | 21·9 | 283 | 4 48a | − 2 | e 8 44 | 0 | — | 14·2 |
| Ekaterinburg | 55·4 | 320 | i 9 41 | + 9 | 17 23 | + 8 | 27·1 | 35·7 |
| Tashkent | 55·9 | 300 | e 5 28 | ? | e 17 22 | + 1 | e 33·8 | 35·2 |
| Kucino | 67·1 | 325 | — | — | e 18 52 | −54 | e 34·4 | 44·1 |
| Pulkovo | 67·9 | 330 | e 10 45 | −13 | — | — | 36·5 | 37·9 |
| Tiflis | 71·6 | 310 | 11 24 | + 4 | e 19 9 | −91 | e 39·8 | 49·9 |

Additional readings :—
Mizusawa iSE = +1m.15s.
Kobe SZ = +4m.4s.
Sumoto eZ = +2m.32s.
Tashkent e = +8m.28s., +9m.4s., +17m.12s., +21m.18s. = SS +16s., and +27m.36s.
Kucino e = +25m.10s.
Long waves were also recorded at Hong Kong, Baku, and the European stations.

Sept. 21d. Readings also at 1h. (Kew, San Juan, La Paz, Sucre, and near Huancayo), 3h. (Zagreb, near Laibach, and near Triest), 4h. (near Lick), 5h. (Apia), 6h. (Amboina, La Paz, and near Huancayo), 9h. (Hong Kong, Nanking, Taihoku, Mizusawa, Ekaterinburg, and Tashkent), 10h. (Amboina, San Fernando, Medan, and near Batavia), 12h. (Huancayo), 14h. (Mizusawa), 15h. (Hyderabad, Nanking, near Taihoku, and Hokoto), 16h. (Medan, Mizusawa, and Toledo), 17h. (near Nagoya and Tyosi), 18h. (Andijan), 19h. (Bombay and St. Louis), 20h. (Koti and near Tyosi), 21h. (Ravensburg, Stuttgart, Strasbourg, Sion, near Neuchatel, Zurich, near Apia, near Mizusawa, and Tyosi), 23h. (Mizusawa (2) and near Santiago).

**Sept. 22d. 11h. 37m. 36s.** Epicentre 16°·5S. 174°·0E. (as on 1930 June 5d.). R.3.

A = −·954, B = +·100, C = −·284; D = +·105, E = +·995; G = +·282, H = −·030, K = −·959.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Suva | | 4·5 | 112 | 0 57 | − 7 | 1 48 | − 7 | 2·0 | — |
| Apia | | 14·0 | 81 | e 3 12 | − 3 | (e 5 41) | −10 | e 5·7 | 8·8 |
| Arapuni | | 21·7 | 176 | — | — | i 8 48 | + 8 | — | 9·4 |
| Wellington | | 24·8 | 178 | i 5 19 | + 1 | i 9 24 | −13 | — | — |
| Riverview | | 26·9 | 226 | e 5 43 | + 6 | e 10 26 | +12 | e 13·6 | 16·4 |
| Sydney | | 26·9 | 226 | e 6 6 | +29 | i 10 42 | +28 | 14·2 | 15·7 |
| Christchurch | | 27·1 | 182 | i 5 44 | + 5 | 10 6 | −11 | 12·5 | — |
| Melbourne | | 33·3 | 225 | e 8 0 | +86 | 12 6 | +11 | 16·1 | 17·8 |
| Adelaide | | 36·6 | 234 | e 6 54? | − 9 | i 12 53 | + 8 | e 17·1 | 22·0 |
| Amboina | | 46·8 | 280 | 8 33 | + 6 | — | — | — | — |
| Perth | | 54·6 | 242 | 17 24 | S | (17 24) | +20 | e 28·8 | 31·4 |
| Manila | | 60·9 | 299 | i 10 17 | + 6 | (17 49) | −39 | 17·8 | — |
| Vladivostok | | 71·0 | 330 | e 10 48 | −29 | — | — | e 28·3 | — |
| Chiufeng | | 78·1 | 319 | 12 0 | + 2 | i 22 8 | PS | — | — |
| Pasadena | | 82·0 | 51 | i 12 14 | − 4 | — | — | — | — |
| Mount Wilson | z. | 82·1 | 51 | e 12 15 | − 4 | — | — | — | — |
| La Jolla | | 82·1 | 53 | i 12 15 | − 4 | — | — | — | — |
| Riverside | z. | 82·5 | 51 | e 12 17 | − 4 | — | — | — | — |
| Haiwee | | 83·0 | 49 | e 12 22 | − 1 | — | — | — | — |
| Tinemaha | | 83·2 | 48 | i 12 25 | + 1 | — | — | — | — |
| Huancayo | | 105·8 | 108 | — | — | e 33 38 | SS | e 49·4 | — |
| Ottawa | | 115·8 | 45 | — | — | e 26 48 | { 0} | e 54·4 | — |
| Ekaterinburg | | 116·5 | 326 | e 18 47 | [+10] | — | — | 50·4 | 66·0 |
| Kucino | | 128·5 | 331 | e 22 28 | ? | e 29 18 | ? | e 53·1 | 71·0 |
| Pulkovo | | 129·4 | 338 | i 22 28 | PKS | — | — | — | — |
| Tiflis | | 129·9 | 311 | e 19 8 | [+ 1] | e 22 24? | PKS | e 61·7 | 76·4 |
| Copenhagen | | 138·3 | 345 | e 22 24? | PP | — | — | 70·4 | — |
| Potsdam | | 141·1 | 341 | e 22 24? | PP | — | — | e 76·4 | — |
| Vienna | z. | 143·3 | 336 | i 19 34k | [+ 6] | — | — | — | — |
| De Bilt | | 143·8 | 348 | 19 41 | [+11] | — | — | e 71·4 | — |
| Uccle | | 144·7 | 350 | e 19 34 | [+ 1] | e 41 51 | SS | e 69·4 | — |
| Kew | | 144·7 | 355 | e 19 34 | [+ 1] | — | — | e 78·4 | — |
| Stuttgart | | 145·4 | 343 | e 19 37a | [+ 2] | — | — | e 80·4 | — |
| Strasbourg | | 146·0 | 344 | 19 38a | [+ 2] | — | — | e 54·4 | — |
| Paris | | 146·9 | 350 | e 19 38 | [+ 1] | — | — | 78·4 | — |
| Zurich | | 146·9 | 340 | e 19 40 | [+ 3] | — | — | — | — |
| Neuchatel | | 147·7 | 343 | e 19 43 | [+ 5] | — | — | — | — |

Additional readings:—
Riverview eZ = +5m.45s., eN = +5m.50s.
Manila SEN? = +14m.50s.
Huancayo e = +44m.15s.
Ottawa eE = +35m.42s. = SS + 6s.
Ekaterinburg e = +20m.8s. = PP + 24s., +29m.51s. = PS + 21s., and +36m.53s.
Kucino e = +32m.6s.
De Bilt eZ = +21m.10s.
Kew iZ = +19m.47s., eN = +23m.27s. = PKS + 8s.
Stuttgart eZ = +19m.51s.
Paris P = +19m.56s.
Long waves were also recorded at Hong Kong, Edinburgh, Feldberg, and San Fernando.

**Sept. 22d.** Readings also at 1h. (near Nagoya), 2h. (Christchurch and near Wellington), 3h. (near Mizusawa, Nagoya, and Tyosi), 4h. (Ekaterinburg, near Mizusawa, Nagoya, and Tyosi), 5h. (Vladivostok), 7h. (near Taihoku), 8h. (Zurich and near Tyosi), 9h. (near Tyosi), 10h. (San Juan), 11h. (Almata, Frunse, Ekaterinburg, Kucino, Tashkent, Tiflis, and Pulkovo), 13h. (near Zurich), 14h. (near Nagoya, Tyosi (2), and near Neuchatel), 16h. (Balboa Heights, and Huancayo), 19h. (near Batavia and Malabar), 20h. (Huancayo, Tashkent, and near Andijan).

Sept. 23d. 0h. 29m. 42s. Epicentre 4°·0N. 144°·0E. (as on 1923 Nov. 7d.). X.

A = −·807, B = +·586, C = +·070 ; D = +·588, E = +·809 ;
G = −·056, H = +·041, K = −·998.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Manila | N. | 25·0 | 297 | 5 23 | + 3 | 9 48 | + 7 | 10·4 | — |
| Mizusawa | E. | 35·2 | 358 | (e 7 2) | +11 | e 7 2 | P | — | — |
| Chiufeng | | 44·0 | 329 | e 7 38 | −27 | — | — | — | — |
| Tashkent | | 75·9 | 312 | — | — | 21 2 | −28 | e 35·4 | 48·6 |
| Ekaterinburg | | 83·0 | 327 | i 12 19 | − 4 | 21 53 | −54 | 35·3 | — |
| Tinemaha | | 93·7 | 53 | i 13 10 | − 4 | — | — | — | — |
| Pasadena | Z. | 94·2 | 56 | i 13 12 | − 5 | — | — | — | — |
| Mount Wilson | Z. | 94·3 | 56 | i 13 13 | − 4 | — | — | — | — |
| La Paz | Z. | 146·1 | 114 | 20 20 | [+44] | — | — | — | — |

Additional readings :—
Chiufeng e = +9m.6s.
Tashkent e = +32m.24s.
Long waves were also recorded at Kucino and Stuttgart.

Sept. 23d. Readings also at 2h. (Ekaterinburg, near Andijan, Tashkent, and near Huancayo (2) ), 4h. (near Lick (2) ), 6h. (Amboina), 7h. (La Plata, near Santiago, and near Tiflis), 8h. (Huancayo), 10h. (Ekaterinburg and Tashkent), 12h. (Trenta, Ekaterinburg, and near Amboina), 13h. (near Medan), 14h. (Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, and Wellington), 15h. (Alicante), 16h. (Huancayo, Tyosi, and near Apia (2) ), 18h. (near Manila, and near Tyosi), 19h. (Mizusawa), 20h. (near Tiflis), 21h. (La Jolla, Mount Wilson, Pasadena, Riverside, Tinemaha, and Tucson), 23h. (Mizusawa).

Sept. 24d. 13h. 21m. 15s. Epicentre 35°·5N. 27°·6E. (as on 1932 Oct. 23d.). R.2.

A = +·722, B = +·377, C = +·581 ; D = +·463, E = −·886 ;
G = +·515, H = +·269, K = −·814.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Helwan | 6·5 | 150 | 2 35 | S | (2 35) | −11 | — | — |
| Ksara | 7·0 | 101 | e 1 37 | − 2 | e 3 1 | + 2 | — | — |
| Trenta | 9·7 | 296 | e 2 15 | − 2 | 3 55 | −11 | — | — |
| Sebastopol | 10·2 | 24 | e 2 31 | + 7 | — | — | — | — |
| Yalta | 10·3 | 27 | e 2 25 | 0 | — | — | — | — |
| Simferopol | 10·7 | 26 | e 2 28 | − 3 | — | — | — | — |
| Budapest | 13·5 | 335 | e 3 15 | + 6 | — | — | 7·8 | — |
| Zagreb | 13·5 | 323 | — | — | e 5 39 | 0 | e 7·2 | — |
| Triest | 14·6 | 318 | e 2 42 | −41 | i 6 13 | + 8 | — | 7·3 |
| Tiflis | 14·9 | 60 | e 3 25 | − 2 | e 6 28 | SS | e 8·0 | 11·2 |
| Vienna | 15·2 | 330 | e 3 48 | +17 | 8 49 | ? | — | 11·2 |
| Piacenza | 16·6 | 310 | e 5 1 | +72 | — | — | — | 12·8 |
| Chur | 17·7 | 316 | e 4 11 | + 8 | e 7 28 | +11 | — | — |
| Cheb | 18·3 | 328 | — | — | e 7 45? | SS | e 9·5 | 10·8 |
| Zurich | 18·5 | 316 | e 4 8 | − 5 | — | — | — | — |
| Stuttgart | 18·9 | 320 | e 4 45? | +28 | e 7 45? | + 1 | e 9·8 | — |
| Neuchatel | 19·2 | 313 | e 4 13 | − 8 | — | — | — | — |
| Potsdam | 19·8 | 333 | e 4 45? | PP | — | — | e 8·8 | 13·8 |
| Copenhagen | 22·7 | 337 | — | — | 8 51 | − 8 | 11·8 | — |
| Pulkovo | 24·3 | 3 | e 5 12 | − 1 | e 9 24 | − 4 | 13·8 | 15·2 |
| Ekaterinburg | 30·8 | 36 | e 9 4 | (− 8) | — | — | 17·8 | — |
| Tashkent | 32·9 | 67 | e 5 51 | −40 | i 10 49 | −60 | e 18·0 | 19·0 |

Additional readings :—
Vienna PPP = +5m.6s., $P_cP$? = +7m.9s.
Tashkent e = +15m.9s.
Long waves were also recorded at Hamburg, Feldberg, De Bilt, Göttingen, Paris, and Strasbourg.

**Sept. 24d. 15h. 19m. 41s. Epicentre 52°·0N. 176°·9W. N.1.**

**Probable error of epicentre ±0°·22.**

$A = -·615$, $B = -·033$, $C = +·788$; $D = -·054$, $E = +·999$; $G = -·787$, $H = -·043$, $K = -·616$.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Sitka | | 24·3 | 62 | i 5 19 | + 6 | i 9 37 | + 9 | e 12·3 | — |
| Sapporo | | 29·0 | 269 | 6 4 | + 8 | — | — | — | — |
| Mizusawa | E. | 31·5 | 263 | e 6 15 | − 3 | 11 29 | + 1 | — | — |
| | N. | 31·5 | 263 | e 6 20 | + 2 | 11 45 | +17 | — | — |
| Victoria | E. | 33·7 | 75 | i 6 43 | + 5 | i 12 9 | + 8 | i 16·0 | 16·7 |
| Honolulu T.H. | | 34·1 | 147 | e 6 55 | +14 | i 12 2 | − 6 | e 17·8 | — |
| Maebasi | | 34·5 | 262 | 6 45 | 0 | 12 21 | + 7 | — | — |
| Seattle | | 34·6 | 76 | — | — | 12 11 | − 4 | e 16·5 | — |
| Oiwake | | 34·8 | 262 | 6 51 | + 4 | 12 44 | +26 | — | — |
| Vladivostok | | 34·9 | 276 | i 6 33 | −15 | i 12 1 | −19 | 14·9 | 19·1 |
| Nagoya | | 36·6 | 262 | (e 7 5) | + 2 | e 7 5 | P | — | — |
| Osaka | | 37·8 | 263 | 7 17 | + 4 | 13 32 | +29 | 17·5 | — |
| Kobe | E. | 38·0 | 263 | e 7 6 | − 9 | e 13 3 | − 3 | — | — |
| | N. | 38·0 | 263 | e 7 15 | 0 | e 13 6 | 0 | e 17·7 | 22·3 |
| | Z. | 38·0 | 263 | e 7 16a | + 1 | e 13 9 | + 3 | — | 21·0 |
| Sumoto | | 38·4 | 263 | 7 21k | + 3 | e 11 45 | ? | — | — |
| Ukiah | | 38·7 | 88 | — | — | i 13 19 | + 2 | — | — |
| Titizima | | 39·4 | 247 | 7 27 | 0 | 13 4 | −23 | — | — |
| Koti | | 39·8 | 263 | e 7 32 | + 2 | e 13 25 | − 8 | — | — |
| Berkeley | | 40·1 | 89 | e 7 34 | + 1 | e 13 37 | − 1 | e 18·7 | 19·9 |
| Branner | | 40·4 | 89 | e 7 38 | + 3 | e 13 44 | + 2 | — | — |
| Lick | N. | 40·8 | 89 | e 7 40 | + 1 | e 13 50 | + 2 | — | — |
| Keizyo | E. | 41·1 | 273 | e 7 42 | + 1 | e 13 53 | 0 | e 16·9 | — |
| Taikyu | | 41·2 | 270 | e 7 43 | + 1 | 13 27 | −27 | — | — |
| Zinsen | | 41·4 | 274 | e 7 44 | 0 | e 13 59 | + 2 | — | — |
| Bozeman | | 42·3 | 72 | e 7 50 | − 1 | i 14 8 | − 2 | e 20·5 | — |
| Nagasaki | | 42·6 | 265 | e 7 53 | 0 | e 14 18 | + 3 | — | — |
| Tinemaha | | 43·0 | 87 | e 7 54 | − 3 | i 14 24 | + 3 | — | — |
| Haiwee | | 43·8 | 87 | e 8 2 | − 1 | e 14 34 | + 1 | — | — |
| Santa Barbara | | 43·8 | 91 | e 8 2 | − 1 | e 14 34 | + 1 | — | — |
| Pasadena | | 45·0 | 90 | e 8 11 | − 2 | e 14 47 | − 3 | i 19·8 | — |
| Mount Wilson | | 45·1 | 90 | e 8 13 | − 1 | e 14 49 | − 3 | — | — |
| Riverside | | 45·6 | 90 | e 8 16 | − 2 | i 14 56 | − 3 | — | — |
| Chiufeng | | 46·2 | 284 | i 8 24a | + 2 | i 15 8 | + 1 | 20·9 | 27·7 |
| La Jolla | | 46·4 | 90 | i 8 25 | + 1 | e 15 9 | − 1 | — | — |
| Nanking | | 49·8 | 274 | i 7 50a | −60 | e 14 58 | −60 | — | 25·0 |
| Tucson | | 50·8 | 86 | e 8 58 | + 1 | i 16 14 | + 2 | e 24·3 | — |
| Madison | | 56·1 | 62 | i 9 35 | − 2 | i 17 20 | − 4 | i 26·4 | — |
| Chicago | | 57·9 | 63 | e 9 48 | − 2 | i 17 38 | −10 | e 27·3 | — |
| Florissant | | 58·5 | 67 | i 9 53 | − 1 | i 17 53 | − 3 | — | — |
| St. Louis | | 58·7 | 67 | i 9 54 | − 1 | i 17 53 | − 6 | — | — |
| Ann Arbor | | 59·7 | 59 | e 10 7 | + 5 | e 18 13 | + 1 | e 31·6 | — |
| Ivigtut | | 59·7 | 27 | 10 3 | + 1 | 18 13 | + 1 | 28·3 | — |
| Hong Kong | | 59·7 | 289 | 9 59 | − 3 | 18 15 | + 3 | — | 40·9 |
| Toronto | | 61·0 | 56 | i 10 12 | + 1 | — | — | i 32·0 | 35·7 |
| Ekaterinburg | | 61·4 | 330 | i 10 19 | + 5 | i 19 1 | +27 | 39·6 | 40·2 |
| Cincinnati | | 61·5 | 63 | i 10 13a | − 2 | i 20 5 | (+ 2) | e 33·8 | — |
| Manila | | 61·5 | 257 | i 10 14a | − 1 | 18 56 | PS | 28·8 | — |
| Ottawa | | 61·5 | 52 | e 10 11 | − 4 | 18 29 | − 7 | e 28·6 | — |
| Buffalo | | 61·8 | 56 | i 10 19 | + 2 | i 18 42 | + 3 | e 31·3 | 35·6 |
| Pittsburgh | | 63·0 | 59 | i 10 24 | − 1 | 18 51 | − 4 | e 33·7 | — |
| Charlottesville | | 65·5 | 60 | 10 43 | + 1 | i 19 25 | − 1 | e 31·8 | — |
| Phu-Lien | | 65·5 | 273 | e 10 42 | 0 | 19 26 | 0 | — | — |
| Georgetown | | 65·6 | 58 | i 10 41 | − 1 | i 19 25 | − 2 | e 31·3 | — |
| Fordham | | 65·8 | 55 | i 10 42 | − 2 | i 19 24 | − 6 | 31·3 | — |

*Continued on next page.*

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Pulkovo | | 66·1 | 346 | i 10 46 | 0 | e 20 0 | PS | 32·3 | 42·6 |
| Columbia | | 67·2 | 64 | e 10 52 | − 1 | i 19 42 | − 5 | e 32·3 | — |
| Upsala | | 67·5 | 354 | 10 54 | − 1 | 19 49 | − 2 | e 34·3 | 39·8 |
| Bergen | | 67·6 | 0 | e 15 19 | PPPP | — | — | e 33·3 | — |
| Andijan | | 69·6 | 312 | e 11 9 | + 1 | — | — | — | — |
| Suva | | 70·2 | 186 | — | — | e 18 19? | ? | — | — |
| Edinburgh | | 72·0 | 5 | e 10 27 | −56 | 20 45 | 0 | e 34·3 | 44·3 |
| Copenhagen | | 72·0 | 355 | 11 23 | 0 | 20 47 | + 2 | 34·3 | — |
| Durham | | 73·2 | 4 | 11 29 | − 1 | 20 53 | − 6 | — | 40·3 |
| Stonyhurst | | 74·0 | 5 | — | — | i 21 11 | + 3 | e 37·3 | 44·3 |
| Hamburg | | 74·3 | 357 | i 11 36a | 0 | e 21 14 | + 2 | e 35·3 | 38·3 |
| Bidston | | 74·5 | 5 | 11 34 | − 3 | 21 19 | + 5 | e 30·3 | 50·0 |
| Calcutta | | 75·2 | 288 | 12 27 | +46 | 22 1 | +39 | 42·1 | — |
| Potsdam | | 75·3 | 355 | i 11 43 | + 1 | i 21 16 | − 8 | e 36·3 | 41·3 |
| De Bilt | | 75·9 | 0 | i 11 47a | + 2 | e 21 29 | − 1 | e 32·3 | 38·5 |
| Oxford | | 76·2 | 4 | e 11 52 | + 5 | 21 30 | − 4 | e 32·7 | 48·3 |
| Göttingen | | 76·3 | 357 | e 11 48 | 0 | 21 34 | − 1 | e 37·9 | 39·8 |
| Kew | | 76·5 | 3 | e 11 43 | − 6 | e 21 33 | − 4 | e 30·3 | 42·2 |
| Jena | | 76·8 | 355 | e 11 51 | + 1 | e 21 37 | − 4 | e 37·3 | — |
| Prague | | 77·5 | 353 | e 11 19? | −36 | e 20 19? | ? | — | 40·3 |
| Agra | E. | 77·5 | 298 | 11 54 | − 1 | 22 3 | +15 | 41·9 | 50·3 |
| Cheb | | 77·6 | 355 | e 10 59 | −56 | e 21 56 | + 7 | e 38·3 | 51·3 |
| Feldberg | | 77·7 | 357 | i 11 56 | 0 | i 21 50 | − 1 | — | 44·6 |
| Uccle | | 78·3 | 1 | i 11 53a | − 6 | i 21 43 | −14 | 37·3 | — |
| Vienna | | 79·1 | 352 | e 12 4 | + 1 | 22 16 | +10 | e 42·3 | 49·8 |
| Stuttgart | | 79·1 | 357 | 12 3a | 0 | e 21 56 | −10 | e 36·3 | 43·3 |
| Paris | | 79·2 | 2 | e 11 54 | −10 | 22 5 | − 2 | 31·3 | 57·3 |
| Strasbourg | | 79·4 | 358 | i 11 48a | −17 | i 22 5 | − 4 | e 33·3 | 43·8 |
| Simferopol | | 79·4 | 340 | e 12 8 | + 3 | e 22 14 | + 5 | — | — |
| Budapest | | 79·6 | 350 | e 11 19? | −47 | e 22 19? | + 8 | e 38·3 | 49·8 |
| Tiflis | Z. | 79·6 | 331 | i 12 5 | − 1 | e 22 30 | +19 | 39·6 | 53·3 |
| Yalta | | 79·8 | 339 | e 11 54 | −13 | e 22 9 | − 5 | — | — |
| Sebastopol | | 79·9 | 340 | e 12 12 | + 5 | e 22 16 | + 1 | — | — |
| Graz | | 80·4 | 352 | e 12 33 | +23 | e 22 19 | − 1 | e 39·3 | 57·0 |
| Zurich | | 80·5 | 356 | e 12 10 | 0 | e 22 20 | − 1 | — | — |
| Neuchatel | | 81·0 | 358 | e 12 13 | 0 | e 22 22 | − 4 | — | — |
| Zagreb | | 81·6 | 352 | e 12 18 | + 2 | e 22 38 | + 5 | e 42·3 | — |
| Triest | | 81·9 | 354 | 12 4 | −14 | 22 16 | −20 | e 41·3 | 48·3 |
| Belgrade | | 82·0 | 348 | — | — | e 22 53 | +16 | e 50·8 | — |
| Padovo | | 82·3 | 355 | 10 30 | ? | — | — | — | — |
| Puy de Dôme | | 82·3 | 2 | e 22 40 | S | (e 22 40) | 0 | e 49·3 | — |
| Venice | | 82·3 | 355 | 11 49 | −32 | 21 43 | −57 | — | — |
| Piacenza | | 82·8 | 356 | 12 11 | −11 | 22 53 | + 8 | 41·3 | 59·6 |
| Medan | | 83·7 | 269 | e 12 25 | − 2 | e 22 48 | − 6 | 50·3 | — |
| Prato | | 83·9 | 355 | e 12 30 | + 2 | i 22 54 | − 2 | 41·3 | 58·0 |
| Port au Prince | | 84·1 | 68 | e 13 25 | +56 | i 22 47 | −12 | — | — |
| Batavia | | 86·5 | 256 | i 12 36 | − 5 | 23 8 | [− 2] | — | — |
| Bombay | | 86·9 | 298 | 12 40 | − 3 | 23 2 | [−11] | e 44·3 | 54·6 |
| Tortosa | N. | 87·2 | 2 | e 12 44 | 0 | e 22 36 | −53 | e 45·3 | 61·5 |
| San Juan | | 87·6 | 63 | e 12 43 | − 3 | i 23 6 | [−11] | e 43·1 | — |
| Toledo | | 87·9 | 7 | 12 49 | + 2 | e 18 9 | PPP | e 36·0 | 42·5 |
| Ksara | | 89·5 | 334 | e 12 56 | + 1 | 23 22 | [− 8] | — | — |
| Alicante | | 89·6 | 4 | e 13 18 | +22 | e 23 38 | [+ 8] | e 43·6 | — |
| Riverview | | 90·3 | 207 | e 13 22 | +23 | i 23 24 | [−10] | e 24·5 | — |
| Sydney | | 90·3 | 207 | e 18 31 | PPP | (23 19) | [−15] | 23·3 | 25·3 |
| Granada | | 90·6 | 7 | i 13 20a | +20 | — | — | 39·6 | 49·6 |
| Malaga | | 91·0 | 7 | e 12 57 | − 5 | e 24 1 | − 4 | 40·3 | — |
| Almeria | | 91·0 | 6 | e 12 53 | − 9 | e 23 21 | [−18] | e 44·0 | — |
| Algiers | | 91·2 | 1 | — | — | 23 19? | [−21] | 50·3 | — |
| San Fernando | | 91·2 | 9 | 13 19 | +16 | 23 21 | [−19] | 44·3 | 68·8 |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Kodaikanal | 91·3 | 289 | 15 55 | PP | 23 51 | −17 | 47·6 | — |
| Wellington | 93·6 | 187 | — | — | i 23 35 | [−18] | e 45·3 | — |
| Helwan | 94·5 | 336 | e 16 44 | PP | e 23 48 | [−10] | — | 65·9 |
| Adelaide | 95·2 | 216 | e 18 49 | PPP | i 23 34 | [−28] | 26·9 | 28·7 |
| Melbourne | 95·7 | 210 | e 20 43 | PPPP | i 24 36 | −12 | — | — |
| Christchurch | 96·0 | 188 | e 13 16 | − 9 | e 24 32 | −19 | 44·6 | — |
| Perth | 102·4 | 234 | — | — | e 25 34 | −14 | — | — |
| Huancayo | 106·6 | 89 | e 18 32 | PP | e 26 7 | S | e 50·6 | — |
| La Paz | 114·5 | 86 | e 20 2 | ? | i 30 56 | ? | 55·9 | 69·3 |
| Sucre | 118·2 | 86 | e 19 22 | [+41] | — | — | 52·3 | — |
| Cape Town | 158·9 | 323 | — | — | 40 19? | — | 83·3 | 88·3 |

**Additional readings :—**

**Honolulu T.H.** e = +8m.23s., SS = +13m.49s., e = +14m.49s.
**Nagoya** eP? = +4m.58s.
**Kobe** iPEZ = +7m.19s., PPN = +8m.55s., PPPN = +9m.16s., eZ = +9m.28s. = $P_cP$ −7s., and +15m.53s. =SS +19s., eN = +16m.36s.
**Ukiah** iSSS = +16m.19s.
**Berkeley** iEZ = +11m.39s.
**Bozeman** eSS = +17m.26s. = $S_cS$ − 30s.
**Chiufeng** iPPZ = +10m.13s., SSE = +18m.9s., SSZ = +19m.0s.
**Nanking** eN = +12m.58s.
**Tucson** e = +11m.10s.
**Madison** i$P_cP$ = +10m.22s., e$P_cS$ = +14m.24s., iPS = +18m.1s., i$S_cS$ = +19m.21s., eSS = +21m.30s.
**Florissant** ipPZ = +10m.4s., i$P_cPZ$ = +10m.48s., iPPZ = +12m.16s., iPPPZ = +13m.9s., isSEN = +18m.12s., iPSEN = +18m.42s., i$S_cSEN$ = +20m.27s., iSSEN = +29m.13s. ; $T_g$ =15h.19m.50s.
**St. Louis** epP = +10m.6s., isS = +18m.12s., iPS = +18m.21s., i$S_cS$ = +20m.17s.
**Ann Arbor** i = +19m.55s. =$S_cS$ +5s., eN = +26m.45s., eE = +29m.49s.
**Ekaterinburg** $L_g$ = +30·7m.
**Cincinnati** ipP = +10m.33s., i$P_cP$ = +10m.55s., ePP = +12m.15s., e$P_cS$ = +14m.37s., e = +25m.49s. ; $T_g$ =15h.19m.50s.
**Ottawa** iN = +19m.58s. =$S_cS$ − 5s., SSN = +23m.31s., SSS = +25m.11s.
**Buffalo** PS = +20m.2s. =$S_cS$ − 3s.
**Pittsburgh** i = +20m.15s. =$S_cS$ +1s.
**Upsala** ePPN = +13m.36s., ePPPN = +15m.17s.
**Copenhagen** +14m.4s. =PP +8s. and +16m.5s., SS = +25m.49s.
**Hamburg** iPPZ = +14m.35s., iPPPZ = +16m.32s., eSSZ = +30m.31s.
**Potsdam** eN = +11m.55s., iPPN = +14m.38s., eN = +14m.43s., iPPEN = +16m.46s., eN = +21m.18s., iSE = +21m.22s., iE = +21m.37s., iN = +21m.43s., eSSN = +25m.13s., eN = +26m.43s. and +29m.19s.?
**De Bilt** ePPZ = +14m.45s., eZ = +16m.45s.
**Göttingen** ePPN = +14m.25s., ePPPN = +16m.43s., eSSN = +26m.37s.
**Feldberg** eN = +14m.52s. =PP +6s. and +27m.30s.
**Uccle** PPZ = +14m.41s.
**Vienna** PKP = +15m.5s. =PP +9s., SKP = +18m.28s., i = +23m.43s., SKKS = +24m.2s., i = +24m.47s.
**Stuttgart** ePPNZ = +14m.43s., ePS = +22m.59s., eSSN = +27m.13s., eZ = +33m.43s.
**Strasbourg** iPP = +15m.5s., SKS = +22m.27s., ePS = +23m.2s., SSS = +31m.17s.
**Tiflis** eZ = +15m.13s. =PP +12s. and +17m.13s.
**Triest** e = +23m.38s. =PS +25s.
**Port au Prince** iEN = +23m.17s., e = +23m.57s. =PS +17s.
**Batavia** i = +29m.14s.
**Bombay** SN = +23m.32s.
**Ksara** PP = +16m.34s.
**Riverview** e = +19m.0s.
**Granada** PP = +16m.40s.
**Malaga** ePP = +16m.33s., ePS = +24m.53s., eSS = +30m.12s.
**San Fernando** PN = +13m.26s., SE = +23m.24s., SN = +23m.33s.
**Helwan** e = +26m.14s. and +30m.21s.
**Adelaide** i = +24m.41s. =S − 3s.
**Melbourne** +22m.8s., i = +24m.59s.
**Huancayo** eSKS = +24m.45s., ePS = +27m.49s., eSS = +33m.19s.
**La Paz** PKPE? = +20m.5s., SKS = +29m.35s.

Sept. 24d. 16h. 5m. 43s. Epicentre 38°·8N. 143°·8E. (as on 21d.). X.

| | | Δ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. |
| Mizusawa | E. | 2·1 | 279 | i 0 27 | − 3 | i 1 3 | S* | — |
| Tyosi | | 3·9 | 217 | 0 58 | + 2 | 1 58 | S* | 2·6 |
| Nagoya | | 6·6 | 238 | e 1 46 | P* | 2 56 | + 8 | — |
| Osaka | | 7·8 | 241 | 3 6 | ? | 4 48 | ? | 4·9 |

Mizusawa iSN = +1m.7s. = $S_g$ +4s.

Sept. 24d. 23h. 55m. 5s. Epicentre 46°·4N. 8°·1E. N.2.

A = +·683, B = +·097, C = +·724 ; D = +·141, E = −·990 ;
G = +·717, H = +·102, K = −·690.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Neuchatel | | 1·0 | 306 | e 0 12 | − 2 | e 0 26 | 0 | — | — |
| Zurich | | 1·0 | 19 | i 0 12 | − 2 | i 0 26 | 0 | — | — |
| Chur | | 1·1 | 65 | e 0 13 | − 3 | e 0 28 | 0 | — | — |
| Piacenza | | 1·7 | 141 | e 0 27 | + 3 | — | — | — | — |
| Ravensburg | | 1·8 | 37 | e 0 26 | 0 | i 0 50 | + 4 | — | — |
| Ebingen | | 1·9 | 18 | e 0 25 | − 3 | i 0 55 | + 6 | — | — |
| Pavia | | 1·9 | 148 | e 0 21 | − 7 | — | — | — | — |
| Grenoble | | 2·0 | 234 | 0 7 | −22 | 0 38 | −13 | — | — |
| Strasbourg | | 2·2 | 354 | e 0 33 | + 2 | 1 4 | + 7 | — | — |
| Stuttgart | | 2·5 | 18 | e 0 32 | − 4 | e 1 4 | 0 | — | — |
| Karlsruhe | | 2·6 | 5 | 1 8 | S | 1 21 | $S_g$ | — | — |
| Padova | | 2·8 | 109 | e 1 14 | S | (e 1 14) | + 2 | — | — |
| Treviso | | 2·9 | 103 | i 0 47 | P* | — | — | — | — |
| Venice | | 3·1 | 107 | e 0 49 | P* | i 1 32 | S* | — | 2·0 |
| Prato | | 3·3 | 139 | e 0 55 | P* | i 1 28 | + 3 | — | 2·2 |
| Puy de Dôme | | 3·6 | 261 | e 1 2 | $P_g$ | i 1 48 | S* | — | — |
| Triest | | 4·0 | 99 | e 0 58 | + 1 | i 1 42 | 0 | — | — |
| Paris | | 4·5 | 306 | e 0 55? | − 9 | — | — | — | — |
| Cheb | | 4·7 | 36 | e 1 21 | P* | — | — | — | 2·5 |
| Jena | E. | 5·1 | 26 | e 1 28 | P* | — | — | i 2·5 | 2·8 |
| Uccle | E. | 5·1 | 332 | — | — | e 2 30 | S* | — | — |
| Göttingen | | 5·3 | 13 | e 1 21 | + 6 | e 2 42 | S* | — | 2·8 |
| Vienna | | 5·9 | 69 | e 1 22 | − 2 | — | — | 3·0 | 3·4 |
| De Bilt | | 6·0 | 343 | — | — | e 2 55? | S* | — | — |
| Potsdam | | 6·8 | 26 | — | — | e 3 34 | $S_g$ | — | — |

Additional readings :—
Sion (Δ = 0°·5) gives $S_g - P_g$ = 7s.
Neuchatel e = +15s.
Zurich e = +14s.
Ravensburg e = +31s. = $P_g$ +1s., i = +52s. = S* +0s.
Ebingen e$P_g$ = +29s.
Strasbourg $P_g$ = +35s., i = +1m.8s. = S* +4s., +1m.17s. = $S_g$ +10s. and +1m.26s.
Stuttgart e = +40s. = P* +0s., i$P_g$ = +42s., eEN = +58s., eS*EN = +1m.12s., i$S_g$ = +1m.17s.
Treviso $P_g$ = +1m.17s. = S +3s.
Venice eP = +55s. = $P_g$ −1s., iS = +1m.37s.? = $S_g$ +1s.
Triest SS = +1m.58s. = S* +1s.
Cheb e = +1m.24s. = $P_g$ −4s. and +2m.22s. = S* +4s.
Jena iE = +1m.34s. = $P_g$ +2s.
Uccle eE = +2m.40s. = $S_g$ −2s.
Göttingen e = +1m.33s. = P* +5s., e$P_g$ = +1m.35s.
Potsdam iN = +3m.38s. and +3m.52s., iE = +3m.59s., iN = +4m.14s., iE = +4m.24s.

Sept. 24d. Readings also at 0h. (near Tyosi), 2h. (Andijan), 5h. (Apia and Tashkent), 8h. (Ekaterinburg, Tashkent, near Manila, and near Sumoto), 12h. (Graz and near Apia), 13h. (near Koti, Simidu, Matuyama, Uwazima, and Sumoto), 15h. (Mount Wilson, Pasadena, Riverside, Tinemaha, and near Tyosi), 16h. (Mizusawa and near Lick (4) ), 19h. (Amboina), 22h. (Amboina and La Paz).

Sept. 25d. 9h. 46m. 50s. Epicentre 37°·0N. 35°·5E. (as on 1932 Dec. 26d.). X.

A = +·650, B = +·464, C = +·602; D = +·581, E = −·814;
G = +·490, H = +·349, K = −·799.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Ksara | 3·2 | 174 | e 0 53 | + 7 | i 1 53 | $S_g$ | — | — |
| Yalta | 7·6 | 353 | e 3 44 | S* | — | — | — | — |
| Sebastopol | 7·7 | 349 | e 3 23 | S | (e 3 23) | + 7 | — | — |
| Tiflis | 8·5 | 55 | 2 13 | +13 | e 3 45 | + 9 | 4·0 | 4·6 |
| Triest | 18·4 | 305 | i 4 2 | − 9 | e 7 56 | +23 | — | 12·0 |
| Stuttgart | 22·4 | 310 | e 5 10? | +15 | e 9 16 | +23 | e 13·2 | — |
| Pulkovo | 23·0 | 353 | 4 58 | − 3 | e 9 13 | + 8 | 12·2 | 14·2 |
| Strasbourg | 23·3 | 309 | — | — | e 9 39 | +29 | e 13·2 | — |
| Feldberg | 23·4 | 313 | — | — | e 9 33 | +21 | e 14·5 | 17·9 |
| Copenhagen | 24·3 | 328 | — | — | 10 10? | +48 | 13·2 | — |
| Ekaterinburg | 25·9 | 32 | i 5 21 | − 7 | 9 45 | −12 | 13·2 | — |
| De Bilt | 26·1 | 315 | e 6 0 | +30 | e 10 28 | +28 | e 13·2 | — |
| Paris | 26·6 | 307 | 9 10? | (+10) | — | — | — | — |

Tiflis gives also eZ = +3m.55s.
Long waves were also recorded at Potsdam.

Sept. 25d. 13h. 45m. 49s. Epicentre 5°·6N. 126°·3E. (as on 1931 March 18d.). R.2.

A = −·589, B = +·802, C = +·098; D = +·806, E = +·592;
G = −·058, H = +·079, K = −·995.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Amboina | | 9·5 | 169 | 2 22 | + 8 | 4 18 | +17 | 7·4 | — |
| Manila | | 10·4 | 330 | i 2 30a | + 4 | 7 23 | +180 | 10·7 | 13·5 |
| Hong Kong | | 20·4 | 326 | 4 30 | − 4 | 8 16 | + 2 | 9·8 | 13·1 |
| Batavia | | 22·7 | 239 | i 5 2 | + 4 | i 9 15 | +16 | — | — |
| Zi-ka-wei | Z. | 25·9 | 350 | 5 29 | + 1 | 9 59 | + 2 | — | — |
| Nanking | | 27·4 | 346 | e 4 42 | −60 | e 9 32 | −50 | e 12·8 | — |
| Medan | | 27·6 | 267 | e 6 9 | PP | i 11 36 | SS | i 13·7 | — |
| Koti | | 28·7 | 13 | e 6 11? | +18 | — | — | e 12·2 | — |
| Sumoto | | 29·8 | 14 | e 6 59 | PP | — | — | — | — |
| Kobe | E. | 30·2 | 15 | e 7 3 | PP | e 12 31 | SS | — | — |
| | N. | 30·2 | 15 | e 7 4 | PP | e 12 29 | SS | e 14·6 | — |
| | Z. | 30·2 | 15 | e 6 57 | PP | e 12 48 | SS | — | — |
| Vladivostok | | 37·8 | 6 | e 7 14 | + 1 | 12 58 | − 5 | 19·2 | 23·7 |
| Perth | | 38·9 | 193 | — | — | i 13 22 | + 2 | — | — |
| Adelaide | | 42·2 | 165 | e 7 55 | + 5 | i 14 18 | + 9 | — | — |
| Riverview | | 45·9 | 150 | e 8 20 | 0 | e 15 11 | + 8 | e 26·7 | 35·4 |
| Sydney | | 45·9 | 150 | — | — | e 14 35 | −28 | 18·7 | 19·7 |
| Melbourne | | 46·8 | 160 | e 8 41 | +14 | e 15 21 | + 5 | 29·5? | — |
| Hyderabad | | 48·2 | 290 | 8 51 | +13 | 15 47 | +11 | 21·1 | 32·4 |
| Kodaikanal | | 48·6 | 279 | 8 42 | + 1 | 15 44 | + 3 | 24·0 | — |
| Agra | E. | 50·6 | 301 | 8 52 | − 4 | — | — | — | — |
| Bombay | | 53·7 | 290 | e 9 18 | − 1 | e 16 52 | 0 | e 28·6 | — |
| Arapuni | | 63·3 | 138 | — | — | 19 11? | +12 | — | — |
| Wellington | | 64·5 | 142 | — | — | (23 11?) | SS | 23·2 | — |
| Ekaterinburg | | 72·1 | 329 | i 11 21 | − 2 | i 20 42 | − 4 | 64·2 | 71·6 |
| Tiflis | | 79·9 | 312 | 12 7 | 0 | e 22 14 | − 1 | e 33·2 | 53·1 |
| Pulkovo | | 88·2 | 330 | i 12 47 | − 2 | e 23 26 | −13 | 43·2 | 52·3 |
| Copenhagen | | 98·4 | 330 | 13 37 | + 1 | 24 11 | [− 7] | 50·2 | — |
| Potsdam | | 99·3 | 326 | e 20 11? | ? | — | — | e 47·2 | 59·2 |
| Triest | | 101·4 | 320 | e 14 9 | +19 | e 24 27 | [− 6] | e 46·2 | 54·2 |
| Feldberg | | 102·9 | 326 | — | — | e 25 41 | −11 | — | 57·1 |
| Stuttgart | | 103·0 | 324 | e 18 11? | PP | — | — | e 54·2 | — |
| De Bilt | | 103·8 | 327 | e 14 11? | +10 | e 24 41 | [− 3] | e 53·2 | 56·7 |
| Strasbourg | | 104·0 | 324 | e 20 11? | PPP | e 28 11? | ? | e 41·2 | — |
| Uccle | | 104·9 | 327 | — | — | e 24 44 | [− 5] | e 49·2 | — |
| Edinburgh | | 105·9 | 333 | — | — | e 25 11? | [+17] | e 46·2 | — |
| Paris | | 106·9 | 326 | — | — | e 28 11? | PS | e 59·2 | 66·2 |
| Ottawa | | 125·3 | 17 | — | — | e 37 59 | SS | e 56·2 | — |
| Huancayo | | 157·7 | 108 | e 20 1 | [+10] | e 31 3 | {− 2} | — | — |
| La Paz | | 162·2 | 129 | 20 18 | [+22] | — | — | 78·2 | — |

*For Notes see next page.*

NOTES TO SEPT. 25d. 13h. 45m. 49s.

Additional readings :—
Hong Kong PP = +4m.49s.
Zi-ka-wei iZ = +5m.48s. =PP −14s.
Sumoto ePN = +7m.4s.
Adelaide i = +14m.32s., iSS = +17m.16s.
Riverview e = +18m.33s. =$S_cS$ +15s.
Melbourne i = +18m.47s. =$S_cS$ +23s.
Copenhagen +27m.11s.
Triest e = +36m.27s. =SSS +18s.
Feldberg eN = +38m.53s. and +43m.9s.
Huancayo e = +44m.51s. =SS +45s.
Long waves were also recorded at Christchurch, Tashkent, Ivigtut, and other European stations.

Sept. 25d. 18h. 51m. 29s. Epicentre 38°·3N. 86°·8E. N.1.

Probable error of the epicentre ±0°·28.

A = +·044, B = +·783, C = +·620 ; D = +·998, E = −·056 ;
G = +·035, H = +·619, K = −·785.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Almata | | 8·9 | 309 | e 2 11 | + 5 | 4 4 | +18 | 4·5 | 5·4 |
| Frunse | | 10·3 | 301 | e 4 40 | S | (e 4 40) | +19 | — | — |
| Dehra Dun | | 10·8 | 225 | (2 41) | + 9 | 2 41 | P | 5·8 | 6·5 |
| Andijan | | 11·4 | 287 | e 2 42 | + 2 | 4 32 | −16 | 6·0 | 8·3 |
| Agra | | 13·4 | 216 | 3 5 | − 2 | — | — | — | — |
| Tashkent | | 13·8 | 288 | 3 9 | − 4 | i 5 51 | + 5 | i 7·8 | 12·5 |
| Calcutta | | 15·9 | 175 | 2 37 | −63 | 5 35 | −61 | 7·6 | 9·8 |
| Hyderabad | | 22·1 | 201 | 4 50 | − 2 | 8 42 | − 6 | 18·2 | 23·0 |
| Chiufeng | | 22·7 | 76 | e 4 55 | − 3 | e 9 11 | +12 | e 11·7 | — |
| Bombay | | 22·9 | 216 | 5 0 | 0 | 9 11 | + 8 | 11·4 | 22·8 |
| Ekaterinburg | | 25·3 | 326 | i 5 24 | + 1 | i 9 58 | +12 | 15·6 | — |
| Nanking | | 26·7 | 94 | 4 43 | −52 | e 9 28 | −42 | e 13·4 | — |
| Hong Kong | | 28·4 | 117 | 5 50 | − 1 | 10 31 | − 7 | 13·2 | 17·4 |
| Zi-ka-wei | z. | 29·2 | 94 | 5 54 | − 4 | 10 49 | − 2 | — | 18·6 |
| Kodaikanal | | 29·3 | 199 | 10 44 | S | (10 44) | − 9 | 24·6 | 27·1 |
| Heizyo | | 30·2 | 76 | 6 10 | + 3 | 11 22 | +15 | 15·9 | — |
| Zinsen | | 31·2 | 79 | e 6 12 | − 4 | 12 40 | SS | 19·4 | 20·6 |
| Keizyo | | 31·9 | 78 | e 6 13 | − 9 | e 11 47 | +13 | e 16·3 | 20·8 |
| Tiflis | | 32·1 | 290 | e 6 22 | − 2 | 11 54 | +17 | 18·9 | 26·9 |
| Colombo | | 32·1 | 193 | 7 39 | PP | 17 45 | ? | 30·3 | 34·5 |
| Taihoku | | 32·2 | 103 | 11 35 | S | (11 35) | − 3 | (e 17·5) | 20·4 |
| Taikyu | | 33·2 | 81 | e 11 11 | S | (e 11 11) | −43 | 21·5 | — |
| Vladivostok | | 34·2 | 67 | i 6 42 | 0 | i 12 13 | + 4 | 17·1 | — |
| Nagasaki | | 35·2 | 85 | e 12 22 | S | (e 12 22) | − 2 | e 18·9 | — |
| Hukuoka | | 35·4 | 84 | e 7 38 | +45 | — | — | 18·8 | 22·7 |
| Hukuoka B. | | 35·4 | 84 | 6 54 | + 1 | 12 32 | + 5 | — | — |
| Medan | | 36·4 | 160 | 7 40 | +39 | — | — | — | 24·9 |
| Kucino | | 36·6 | 314 | 7 1 | − 2 | 12 59 | +14 | e 17·5 | 20·0 |
| Simidu | | 37·6 | 84 | 12 45 | S | (12 45) | −15 | — | — |
| Koti | | 37·8 | 83 | 7 8 | − 5 | — | — | 19·6 | 21·6 |
| Toyooka | | 38·1 | 78 | 7 27 | +11 | — | — | 20·3 | 24·9 |
| Manila | | 38·4 | 118 | 7 14k | − 4 | 13 15 | + 3 | 18·9 | 22·0 |
| Muroto | | 38·4 | 83 | e 15 34 | SS | e 20 52 | ? | e 23·2 | — |
| Sumoto | | 38·5 | 79 | 7 14a | − 5 | e 13 21 | + 7 | e 20·8 | 25·0 |
| Kobe | | 38·6 | 79 | e 7 9 | −11 | e 13 3 | −12 | e 20·1 | 25·4 |
| Osaka | | 38·9 | 79 | 7 36 | +13 | 13 12 | − 8 | 21·2 | 25·3 |
| Simferopol | | 39·2 | 298 | e 7 30 | + 5 | — | — | e 21·5 | — |
| Yalta | | 39·2 | 296 | e 7 37 | +12 | — | — | e 21·5 | — |
| Sebastopol | | 39·7 | 297 | e 7 47 | +18 | — | — | e 25·5 | — |
| Nagoya | | 39·8 | 78 | e 7 30 | 0 | 21 17 | ? | 24·3 | — |

*Continued on next page.*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Ksara | | 40·9 | 279 | 7 40 | 0 | 14 13 | +23 | — | 23·8 |
| Pulkovo | | 41·1 | 321 | i 7 39 | − 2 | 14 15 | +22 | 22·5 | 25·0 |
| Ootomari | | 41·3 | 59 | 19 2 | ? | 22 22 | L | (22·4) | 23·0 |
| Tokyo | | 41·8 | 76 | 8 1 | +14 | — | — | — | — |
| Mizusawa | E. | 41·8 | 70 | e 7 47 | 0 | 18 19 | (+26) | 25·6 | — |
| | N. | 41·8 | 70 | e 7 17 | −30 | 17 15 | SS | 25·4 | — |
| Tyosi | | 42·7 | 76 | e 7 59 | + 5 | 14 24 | + 8 | e 21·6 | — |
| Lemberg | | 45·2 | 306 | — | — | e 18 13 | ( 0) | — | 30·0 |
| Helwan | | 46·0 | 276 | 8 19 | − 2 | 15 22 | +18 | — | 35·4 |
| Upsala | | 47·4 | 320 | 8 37 | + 5 | 15 31 | + 7 | e 24·5 | 30·3 |
| Batavia | | 48·3 | 153 | e 8 46 | + 8 | 15 50 | +13 | e 27·3 | 30·7 |
| Belgrade | | 48·7 | 300 | — | — | e 18 24 | (−12) | e 27·5 | — |
| Vienna | | 50·4 | 305 | e 8 52 | − 2 | 16 44 | +38 | e 25·5 | 33·5 |
| Copenhagen | | 50·9 | 316 | 8 58 | 0 | 16 35 | +22 | 26·5 | — |
| Prague | | 51·1 | 309 | e 9 0 | 0 | e 16 32 | +16 | e 29·5 | 33·7 |
| Potsdam | | 51·3 | 312 | i 9 1 | 0 | i 16 29 | +10 | e 20·5 | 32·5 |
| Zagreb | | 51·4 | 302 | e 9 2 | 0 | — | — | e 27·2 | 31·6 |
| Graz | | 51·4 | 304 | i 9 10 | + 8 | e 24 12 | ? | e 26·5 | 34·2 |
| Leipzig | | 52·0 | 309 | e 8 31? | −35 | e 16 55 | +27 | e 25·5 | 33·5 |
| Cheb | | 52·3 | 308 | e 9 9 | 0 | e 16 51 | +18 | e 28·5 | 33·5 |
| Taranto | | 52·3 | 295 | 9 1 | − 8 | 16 51 | +18 | — | — |
| Jena | | 52·6 | 309 | e 9 7 | − 4 | e 16 46 | + 9 | e 24·5 | 33·8 |
| Hamburg | | 52·7 | 314 | i 9 11a | − 1 | e 16 50 | +12 | e 36·1 | 34·5 |
| Triest | | 52·9 | 303 | e 9 9 | − 4 | i 16 52 | +11 | e 28·5 | 31·5 |
| Bergen | | 53·3 | 324 | e 8 47 | −29 | 16 22 | −24 | — | 28·5 |
| Göttingen | | 53·3 | 311 | e 8 49 | −27 | e 17 1 | +15 | e 26·5 | 34·5 |
| Trenta | | 53·5 | 294 | e 9 31 | +13 | 18 51 | (−17) | 32·5 | — |
| Treviso | | 54·0 | 303 | e 9 18 | − 3 | — | — | 35·5 | — |
| Benevento | | 54·1 | 298 | e 9 31 | + 9 | 21 36 | ? | 32·2 | 37·1 |
| Feldberg | | 54·7 | 310 | e 9 31 | + 5 | i 18 12 | +67 | — | 33·2 |
| Stuttgart | | 54·8 | 308 | 9 26a | − 1 | e 17 25 | +19 | e 27·5 | 35·5 |
| Catania | | 55·0 | 293 | — | — | 12 24 | PPP | e 34·6 | 40·3 |
| Karlsruhe | | 55·1 | 309 | 9 31? | + 1 | 15 31? | ? | 30·5 | — |
| Chur | | 55·2 | 307 | e 9 29 | − 1 | — | — | — | — |
| Florence | | 55·2 | 302 | e 8 31? | −59 | — | — | — | 32·5 |
| Prato | | 55·3 | 302 | e 9 36 | + 5 | 15 55 | −78 | 21·8 | 33·4 |
| Zurich | | 55·6 | 307 | e 9 30 | − 3 | — | — | — | — |
| Strasbourg | | 55·7 | 308 | i 9 33a | − 1 | e 17 31 | +12 | e 27·5 | 36·4 |
| Piacenza | | 55·8 | 304 | 9 31 | − 3 | 17 31 | +11 | 32·7 | 41·0 |
| Livorno | | 55·9 | 302 | 9 51 | +16 | 15 59 | ? | — | — |
| De Bilt | | 56·0 | 313 | i 9 35a | − 1 | e 17 31 | + 8 | e 28·5 | 31·7 |
| Amboina | | 56·8 | 127 | e 9 47 | + 5 | e 17 16 | −18 | 23·6 | — |
| Neuchatel | | 56·8 | 307 | e 9 39 | − 3 | e 17 11 | −23 | — | — |
| Uccle | | 56·9 | 312 | 9 40a | − 2 | e 17 42 | + 7 | 27·5 | 36·8 |
| Grenoble | | 58·3 | 305 | e 8 22 | −90 | — | — | 32·5 | — |
| Durham | | 58·7 | 318 | 10 1 | + 6 | 18 16 | PS | — | 33·5 |
| Paris | | 58·8 | 310 | e 9 45 | −11 | — | — | 28·5 | 38·5 |
| Edinburgh | | 59·1 | 319 | 9 55 | − 3 | 18 41 | PS | 29·5 | 37·3 |
| Kew | | 59·3 | 314 | e 9 58a | − 2 | e 18 12 | + 5 | e 27·5 | 38·3 |
| Stonyhurst | | 59·5 | 317 | e 10 4 | + 3 | e 18 49 | +40 | 31·5 | 39·5 |
| Puy de Dôme | | 59·8 | 306 | e 10 15 | +12 | — | — | e 32·0 | — |
| Oxford | | 59·8 | 314 | e 10 3 | 0 | 18 18 | + 5 | e 29·1 | 38·9 |
| Bidston | | 60·1 | 317 | i 10 11 | + 6 | e 18 31 | +14 | e 22·5 | 39·4 |
| Barcelona | | 62·3 | 303 | e 10 16 | − 4 | e 18 53 | + 7 | 34·1 | 42·0 |
| Tortosa | | 63·6 | 302 | e 10 34 | + 5 | — | — | 33·5 | 42·0 |
| Algiers | | 63·9 | 297 | e 10 1 | −30 | e 18 31? | −35 | e 31·5 | — |
| Alicante | | 65·6 | 300 | e 10 24 | −18 | e 19 32 | + 5 | e 35·2 | 43·1 |
| Toledo | | 67·1 | 303 | 9 48 | −64 | e 18 32 | −74 | e 30·5 | 49·5 |
| Almeria | | 67·6 | 299 | e 10 51 | − 5 | e 19 29 | −23 | e 36·3 | — |
| Granada | | 68·3 | 300 | e 11 17 | +17 | e 20 45 | (− 7) | e 35·8 | 48·1 |
| Malaga | | 69·1 | 300 | e 10 55 | −10 | e 20 9 | − 1 | 44·5 | — |

*Continued on next page.*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| San Fernando | | 70·4 | 302 | 10 38 | −35 | 20 37 | +11 | 33·0 | 48·5 |
| Ivigtut | | 74·0 | 339 | i 11 41 | + 6 | 21 11 | + 3 | 38·5 | — |
| Perth | | 75·3 | 155 | — | — | i 21 12 | −12 | — | 65·9 |
| Sitka | | 78·3 | 22 | — | — | e 21 57 | 0 | e 37·5 | — |
| Adelaide | | 87·6 | 140 | — | — | e 22 57 | [−20] | 47·0 | 51·2 |
| Victoria | | 89·2 | 20 | e 13 11 | +17 | i 23 36 | [+ 8] | e 47·9 | 52·4 |
| Seattle | | 90·2 | 19 | — | — | e 23 43 | [+ 9] | 49·9 | — |
| Melbourne | | 93·1 | 137 | — | — | i 23 36 | [−15] | — | 64·8 |
| Riverview | | 93·6 | 131 | — | — | e 23 43 | [−10] | e 43·6 | 61·3 |
| Bozeman | | 94·5 | 12 | — | — | e 24 31 | − 7 | e 49·5 | — |
| Ottawa | | 94·8 | 347 | e 17 19 | PP | e 23 55 | [− 5] | e 42·5 | — |
| Cape Town | | 96·1 | 231 | 24 42 | S | (24 42) | −10 | 44·3 | — |
| Toronto | | 97·1 | 350 | e 17 13 | PP | e 23 50 | [−22] | e 45·5 | — |
| Ukiah | | 97·8 | 22 | e 17 45 | PP | e 26 38 | PS | e 47·4 | — |
| Fordham | | 98·8 | 345 | e 13 42 | + 4 | e 24 9 | [−11] | 45·5 | — |
| Ann Arbor | | 98·9 | 353 | — | — | e 27 43 | ? | e 56·6 | 63·7 |
| Chicago | | 99·6 | 356 | e 17 53 | PP | e 24 26 | [+ 3] | e 49·8 | — |
| Pittsburgh | | 100·3 | 349 | 17 52 | PP | e 26 51 | PS | e 47·0 | — |
| Georgetown | | 101·1 | 346 | e 18 3 | PP | e 24 21 | [−10] | e 50·5 | — |
| Tinemaha | z. | 101·1 | 20 | i 13 53 | + 4 | — | — | — | — |
| Cincinnati | | 102·1 | 353 | i 18 2a | PP | — | — | e 40·4 | — |
| Pasadena | | 103·9 | 20 | e 13 59 | − 2 | — | — | e 48·6 | — |
| Mount Wilson | z. | 103·9 | 20 | i 14 7 | + 6 | — | — | — | — |
| Riverside | z. | 104·3 | 20 | i 13 21 | −42 | — | — | — | — |
| Columbia | | 106·8 | 349 | e 14 15 | 0 | e 27 55 | PS | e 56·2 | — |
| San Juan | | 117·8 | 330 | e 14 51 | −17 | e 29 14 | PS | e 56·0 | — |
| Sucre | | 149·0 | 300 | e 19 28 | [−12] | — | — | 78·5 | — |
| La Paz | | 149·0 | 307 | 18 38 | [−62] | 35 45 | ? | 72·9 | 84·3 |
| Huancayo | | 149·2 | 323 | e 19 41 | [+ 1] | e 33 21 | SKSP | e 70·0 | — |

Additional readings and note :—
Frunse S = +6m.41s.
Bombay SSE = +10m.6s., SSN = +10m.11s.
Ekaterinburg $L_g$ = +13·6m.
Nanking iN = +10m.37s.
Zi-ka-wei i = +6m.3s. and +11m.33s., SSS = +12m.49s., SSSS = +13m.17s.
Kodaikanal iS = +15m.35s.
Zinsen $P_cP$? = +11m.15s. = S − 8s., SS? = +16m.37s. = $S_cS$ + 14s., SSS? = +17m.40s., SSSS? = +18m.44s.
Tiflis eZ = +6m.32s. and +12m.55s., iE = +13m.28s. = SS + 9s. and +14m.57s.
Taihoku gives S as P and L as S.
Taikyu S = +17m.49s.
Nagasaki eS? = +16m.30s.
Medan iE = +22m.26s., iN = +23m.3s.
Simidu S? = +20m.6s.
Sumoto eEN = +17m.2s.
Kobe iPNZ = +7m.18s., eN = +17m.31s., eZ = +17m.37s., eE = +17m.43s. = $S_cS$ + 10s.
Ksara SS = +16m.57s.
Pulkovo $L_q$ = +20·5m.
Helwan PP = +8m.33s., PPP = +10m.19s., SS = +19m.4s. = SSS − 4s.
Upsala PPE = +10m.30s., SSN = +19m.11s., iE = +19m.28s.
Vienna $P_cP$ = +9m.45s., PP = +10m.58s., PPP = +12m.0s., SS = +20m.35s. = SSS − 16s., iN = +21m.41s., SSS = +22m.52s., iN = +24m.4s., +24m.40s., and +27m.3s.
Copenhagen +11m.1s., $eP_cS$ = +14m.19s., SNZ = +16m.20s., SE = +16m.35s.
Potsdam ePEN = +9m.7s., iN = +9m.23s., iPPN = +11m.10s., ePPE = +11m.13s., iPPPN = +11m.45s., $eP_cSN$ = +12m.36s., iE = +17m.44s., $iS_cSE$ = +19m.10s., iSSE = +20m.22s., iSSN = +20m.26s., iN = +21m.57s.
Zagreb e = +9m.8s., eE = +9m.12s., ePPE = +11m.15s., eZ = +12m.0s., eE = +14m.15s., e = +20m.31s.?
Graz $iP_cP$ = +9m.23s.
Leipzig eE = +11m.15s. and +21m.7s.
Cheb ePP = +11m.15s., eSS? = +21m.26s.
Jena eE = +11m.19s.
Hamburg ePPZ = +11m.17s., eSSE = +20m.49s.
Triest PP = +11m.22s., PPP = +12m.20s., eSS = +20m.50s., SSS = +22m.33s.
Bergen SS = +23m.31s.?
Göttingen ePE = +8m.52s., ePPEZ = +11m.19s., eSSSEN = +21m.7s.

*Continued on next page.*

Stuttgart i = +9m.38s., ePP = +11m.33s., ePPP = +12m.41s., eSS = +21m.19s.
Strasbourg i = +9m.42s., ePP = +11m.42s., ePS = +17m.48s., eSS = +22m.12s.
De Bilt i = = +9m.47s., ePPZ = +11m.51s., eEZ = +22m.46s. =SSS −13s.
Uccle iZ = +9m.53s., ePPE = +11m.58s., SSE = +21m.52s.
Durham ? = +13m.37s. and +23m.38s.
Paris P = +10m.6s., PP = +13m.32s.? =PPPP −6s.
Edinburgh i = +10m.8s., PPP = +13m.42s. =PPPP +0s., SS = +22m.56s.
Kew iZ = +10m.10s., ePP = +12m.12s., ePPP = +13m.36s., eZ = +23m.52s.
Stonyhurst PP = +12m.19s., PPP = +13m.31s., eSSS? = +23m.59s.
Puy de Dôme e = +33m.58s. and +37m.48s.
Oxford iP = +10m.13s., e = +13m.31s. =PPP +4s., iSN = +18m.25s.
Bidston e = +13m.51s. =PPPP −4s.
Algiers PP? = +10m.31s., SS? = +21m.56s.
Toledo i = +15m.46s.
Malaga iPPP? = +17m.38s.
San Fernando PN = +11m.23s., S = +20m.48s. =PS +5s.
Ivigtut +29m.49s.
Perth S? = +44m.31s., i = +64m.6s. and +64m.31s.
Melbourne i = +25m.23s., e = +30m.26s. =SS +2s. and +43m.1s.
Cape Town PP = +27m.27s., +28m.38s., S = +33m.15s., PS? = +33m.39s., SS = +37m.15s. =SSSS −19s.
Ukiah e = +27m.11s.
Fordham e = +17m.47s. =PP +19s. and +26m.54s. =PS +30s.
Ann Arbor eN = +47m.55s., e?E = +49m.1s., eE = +53m.13s.
Chicago ePS = +27m.1s.
Georgetown ePSEN = +27m.16s.
Tinemaha iZ = +17m.45s. =PP −6s.
Pasadena eZ = +17m.38s. =PP −24s.
Mount Wilson iZ = +17m.58s. =PP −14s.
Columbia e = +17m.37s. =PKP −30s.
San Juan ePP = +19m.59s.
La Paz PPE = +22m.21s.
Huancayo iPKP = +19m.55s., e = +24m.37s. and +37m.41s.
Long waves were also recorded at Hof, Marseilles, Tucson, Honolulu T.H. Christchurch, and Wellington.

Sept. 25d. Readings also at 0h. (Wellington and near Tyosi), 4h. (near Santiago), 5h. (near Ksara), 6h. (Tyosi, La Paz, and near Huancayo), 7h. (Naples and near Sumoto), 8h. (near Berkeley, Branner, and Lick), 10h. (near Apia), 11h. (Medan), 12h. (near Tyosi (2) ), 13h. (Alicante, near Manila, and near Andijan), 14h. (Mizusawa), 15h. (Berkeley, near Santiago, and near Tananarive), 16h. (Perth, near Apia, and near Algiers), 18h. (La Paz), 19h. (Adelaide, Sydney, Amboina, Andijan, and Mizusawa), 20h. (Berkeley), 21h. (Huancayo), 23h. (near Apia).

Sept. 26d. 2h. 10m. 54s. Epicentre 42°·0N. 14°·2E. X.

(A fore-runner of the shock at 3h.).

A = +·720, B = +·182, C = +·669; D = +·245, E = −·969;
G = +·649, H = +·164, K = −·743.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Casamari | | 0·7 | 239 | 0 23 | S | (0 23) | + 5 | — | — |
| Benevento | | 0·9 | 175 | i 0 11 | − 2 | — | — | — | — |
| Naples | E. | 1·2 | 176 | e 0 40 | +23 | e 0 55 | +24 | — | — |
| Casamicciolo | | 1·3 | 190 | 0 2 | −16 | 0 17 | −16 | 0·5 | — |
| Camerino | | 1·4 | 324 | 1 6 | ? | — | — | — | — |
| Prato | | 2·9 | 310 | e 0 41 | 0 | i 1 16 | + 2 | — | 1·5 |
| Trenta | | 3·2 | 150 | e 1 21 | S | (e 1 21) | − 1 | — | — |
| Triest | | 3·6 | 354 | 0 52 | + 1 | 1 33 | + 1 | — | — |
| Zagreb | | 4·0 | 18 | e 0 57 | 0 | e 1 26 | −16 | — | 1·9 |
| Piacenza | | 4·5 | 315 | — | — | e 1 44 | −11 | — | 2·8 |
| Vienna | | 6·4 | 13 | 3 39 | $S_g$ | — | — | — | — |
| Neuchatel | | 7·1 | 316 | e 1 20 | −21 | — | — | — | — |

Zagreb gives also eP = +38s.
Long waves were also recorded at Stuttgart and De Bilt.

Sept. 26d. 3h. 33m. 29s. Epicentre 42°·0N. 14°·2E. N.2.

A = +·720, B = +·182, C = +·669 ; D = +·245, E = −·969 ;
G = +·649, H = +·164, K = −·743.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Benevento | | 0·9 | 175 | i 0 16 | + 3 | 0 25 | + 2 | — | 0·6 |
| Naples | E. | 1·2 | 176 | i 0 0 | −17 | e 0 15 | −16 | — | 0·5 |
| Casamicciola | | 1·3 | 190 | 0 16 | − 2 | 0 36 | + 3 | — | 1·0 |
| Bari | | 2·2 | 113 | 0 23 | − 8 | 0 50 | − 7 | 1·0 | — |
| Florence | | 2·8 | 309 | e 0 41 | + 1 | — | — | — | 1·5 |
| Prato | | 2·9 | 310 | i 0 42 | + 1 | i 1 16 | + 2 | — | 1·6 |
| Livorno | | 3·2 | 298 | 0 21 | −25 | 1 0 | $P_g$ | — | — |
| Trenta | | 3·2 | 150 | i 0 51 | + 5 | i 1 41 | $S_g$ | — | — |
| Triest | | 3·6 | 354 | e 0 49 | − 2 | — | — | — | — |
| Venice | | 3·6 | 339 | i 0 53 | + 2 | i 1 13 | $P_g$ | 2·0 | 2·5 |
| | | 3·6 | 339 | i 1 7 | P* | i 1 16 | $P_g$ | 2·0 | 2·5 |
| Padova | | 3·8 | 334 | e 0 56 | + 2 | 1 25 | −12 | — | — |
| Treviso | | 3·9 | 338 | i 0 55 | − 1 | i 2 8 | $S_g$ | — | 4·4 |
| Messina | | 4·0 | 165 | 1 1 | + 4 | 1 51? | + 9 | — | — |
| Zagreb | | 4·0 | 18 | e 0 56 | − 1 | i 1 47 | + 5 | — | 3·0 |
| Laibach | | 4·0 | 3 | e 0 27 | −30 | i 1 15 | $P_g$ | — | 2·1 |
| Piacenza | | 4·5 | 315 | e 1 1 | − 3 | 1 53 | − 2 | 2·2 | 3·1 |
| Catania | | 4·6 | 167 | e 1 8 | + 2 | 2 3 | + 5 | 3·2 | 3·5 |
| Mineo | | 4·8 | 175 | 0 21 | ? | — | — | — | — |
| Pavia | | 4·8 | 313 | e 0 52 | −16 | — | — | — | — |
| Graz | | 5·2 | 9 | i 1 13 | − 1 | i 2 19 | + 6 | — | 2·9 |
| Belgrade | | 5·3 | 56 | 1 17 | + 2 | i 2 29 | S* | — | 3·7 |
| Carloforte | | 5·3 | 239 | 1 10 | − 5 | 2 13 | − 2 | 2·9 | — |
| Chur | | 5·9 | 327 | e 1 20 | − 4 | e 2 31 | 0 | — | — |
| Vienna | | 6·4 | 13 | i 1 30k | − 1 | 2 47 | + 4 | — | 4·2 |
| Ravensburg | | 6·6 | 332 | e 1 39 | + 5 | e 3 31 | $S_g$ | e 3·7 | — |
| Zurich | | 6·7 | 325 | e 1 31 | − 4 | — | — | — | — |
| Grenoble | | 6·9 | 300 | e 1 19 | −19 | e 4 1 | ? | — | — |
| Neuchatel | | 7·1 | 316 | e 1 39 | − 2 | e 3 7 | + 6 | — | — |
| Stuttgart | | 7·6 | 334 | e 1 44k | − 4 | e 3 11 | − 3 | i 4·4 | 4·8 |
| Strasbourg | | 8·0 | 328 | i 1 49a | − 4 | e 3 26 | + 2 | — | 6·5 |
| Prague | | 8·0 | 1 | e 1 55? | + 2 | e 3 22 | − 2 | e 3·7 | 4·7 |
| Cheb | | 8·1 | 352 | e 0 49 | −66 | e 2 19 | P* | e 3·4 | 5·0 |
| Karlsruhe | | 8·1 | 332 | 1 59 | + 4 | 3 47 | S* | 4·7 | 5·3 |
| Hof | | 8·5 | 350 | e 1 31 | −29 | — | — | e 4·0 | 5·3 |
| Puy de Dôme | | 8·9 | 299 | e 2 7 | + 1 | — | — | e 5·1 | — |
| Barcelona | | 9·0 | 270 | — | — | e 3 42 | − 7 | — | 7·1 |
| Jena | | 9·1 | 349 | e 2 19 | +10 | i 3 48 | − 3 | i 4·2 | 5·5 |
| Feldberg | | 9·1 | 336 | e 2 3 | − 6 | — | — | — | 6·6 |
| Leipzig | | 9·4 | 354 | e 2 14 | + 1 | e 4 5 | + 6 | — | 5·7 |
| Göttingen | | 9·9 | 345 | i 2 18 | − 1 | e 4 7 | − 4 | e 4·6 | 6·0 |
| Algiers | | 10·1 | 243 | i 2 20 | − 2 | e 4 10 | − 6 | 5·5 | 6·5 |
| Tortosa | N. | 10·3 | 269 | — | — | 4 38 | +17 | 5·0 | 6·7 |
| Potsdam | | 10·4 | 356 | e 2 55 | +29 | i 4 17 | − 6 | e 4·8 | 6·1 |
| Lemberg | E. | 10·4 | 37 | e 1 37 | ? | — | — | — | 6·1 |
| Paris | | 10·6 | 314 | e 2 43? | +14 | 5 20? | S* | 5·5 | 6·5 |
| Uccle | | 11·1 | 326 | e 2 42 | + 6 | — | — | 6·0 | — |
| Alicante | | 11·8 | 257 | e 3 1 | +15 | e 5 55 | S* | e 7·8 | 8·2 |
| De Bilt | | 11·8 | 332 | e 2 47 | + 1 | e 5 5 | + 7 | e 6·0 | 7·5 |
| Hamburg | | 11·9 | 348 | e 2 44 | − 3 | — | — | e 6·2 | 8·2 |
| Kew | | 13·6 | 319 | e 2 37 | −33 | e 6 48? | S* | i 7·7 | — |
| Copenhagen | | 13·7 | 356 | 3 11 | 0 | 6 1 | +17 | 6·5 | — |
| Almeria | | 13·8 | 254 | e 2 59 | −14 | e 5 55 | + 9 | e 8·3 | — |
| Toledo | | 13·9 | 267 | e 2 9 | −65 | e 4 57 | −52 | e 6·0 | 14·3 |
| Oxford | | 14·3 | 318 | e 3 0 | −19 | 6 21 | +23 | — | 8·5 |
| Sebastopol | | 14·3 | 73 | 3 18 | − 1 | — | — | — | — |

*Continued on next page.*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Granada | | 14·5 | 256 | i 3 35k | +13 | e 6 40 | +37 | — | — |
| Simferopol | | 14·7 | 72 | 2 55 | −30 | — | — | — | — |
| Yalta | | 14·7 | 73 | e 3 23 | − 2 | — | — | — | — |
| Malaga | | 15·3 | 256 | e 3 32 | 0 | — | — | 7·8 | — |
| Stonyhurst | | 16·2 | 324 | — | — | e 6 56 | +13 | 9·2 | 9·8 |
| Durham | | 16·4 | 326 | 3 47 | + 1 | 6 56 | + 8 | — | — |
| San Fernando | | 16·7 | 257 | 3 53 | + 3 | 6 37 | −18 | 8·0 | 9·5 |
| Edinburgh | | 17·9 | 327 | e 4 7 | + 2 | e 7 34 | +12 | — | — |
| Upsala | | 18·0 | 5 | e 4 4 | − 3 | e 7 26 | + 1 | — | 10·2 |
| Ksara | | 18·9 | 109 | 4 18 | + 1 | 7 56 | +12 | — | — |
| Pulkovo | | 20·3 | 24 | i 4 33 | 0 | i 8 17 | + 5 | 10·5 | 13·8 |
| Kucino | | 20·6 | 40 | 4 36 | 0 | 8 25 | + 7 | 10·5 | 13·7 |
| Tiflis | z. | 22·7 | 79 | 4 58 | 0 | e 9 10 | +11 | — | — |
| Baku | | 26·7 | 82 | e 5 39 | + 4 | (10 13) | + 3 | 10·2 | 15·5 |
| Ekaterinburg | | 32·8 | 47 | 6 29 | − 1 | 11 46 | − 2 | 20·2 | — |
| Tashkent | | 40·4 | 72 | e 7 25 | −10 | 13 31 | −11 | e 25·5 | 29·6 |

Additional readings :—
Triest PPP = +1m.11s., iSS = +1m.52s. = $S_g$ −1s., iSSS = +2m.9s., i = +2m.22s. and +2m.30s.
Treviso $P_g$ = +1m.38s. = S −2s., $S_g$ = +3m.51s.
Zagreb i = +1m.2s. = P* −3s., +1m.8s., +1m.14s. = $P_g$ +0s., +1m.59s. = S* +2s., and +2m.13s. = $S_g$ +7s.
Laibach i$P_g$ = +40s., i = +45s., iPS = +1m.2s. = P* −3s., i = +1m.34s. = S −8s.
Piacenza P = +1m.21s. = $P_g$ −3s.
Graz iP* = +1m.16s. and +1m.25s. = P* −1s., i$P_g$ = +1m.31s., iPP = +1m.39s.
Belgrade i = +1m.37s. = $P_g$ −3s., +1m.52s., +2m.18s. = S +3s., +2m.37s. = S* +1s., and +2m.56s.
Carloforte N = +3m.2s., E = +3m.10s.
Vienna P = +1m.32s., iEN = +1m.37s., iNZ = +1m.40s., P* = +1m.47s., iE = +1m.51s. and +1m.57s., $P_g$ = +2m.5s., iZ = +2m.8s., iE? = +2m.11s., iN = +2m.21s. and +2m.36s., PS = +2m.45s., iE = +3m.10s., S* = +3m.15s., $S_g$ = +3m.30s., SS = +3m.41s.
Stuttgart e = +2m.0s., eP* = +2m.4s., e = +3m.16s., and +3m.24s., i = +3m.29s., e = +3m.34s., eS* = +3m.45s., i = +3m.50s.
Strasbourg eSS = +4m.18s. = $S_g$ +0s., eSSS = +4m.24s.
Jena iEZ = +4m.6s.
Feldberg eN = +2m.37s., iN = +4m.15s., and +4m.59s. = $S_g$ +4s.
Leipzig i = +4m.45s.
Göttingen eNZ = +2m.24s. = PP +4s., eEN = +4m.18s.
Potsdam eN = +4m.1s., iN = +4m.14s.
Lemberg eN = +2m.19s.
Uccle iZ = +6m.17s.
Oxford i = +3m.56s.
Granada PP = +3m.42s., PPP = +3m.50s., SS = +6m.49s., SSS = +7m.2s., $P_cP$ = +8m.45s.
Malaga PP = +3m.38s., PPP = +3m.46s., SS = +6m.46s., $S_cS$ = +15m.58s.
San Fernando SN = +7m.17s.
Ekaterinburg $L_q$ = +16·9m.
Long waves were also recorded at Bidston.

Sept. 26d. 15h. 59m. 0s. Epicentre 32°·9N. 130°·8E. (as on 1933 March 25d.). X.

A = −·549, B = +·636, C = +·543 ; D = +·757, E = +·653 ; G = −·355, H = +·411, K = −·840.

| | Δ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Hukuoka | 0·8 | 335 | i 0 10a | − 1 | i 0 21 | 0 | 0·4 |
| Nagasaki | 0·8 | 258 | e 0 10k | − 1 | i 0 26 | + 5 | — |
| Simidu | 1·8 | 94 | 0 26 | 0 | 0 39 | − 7 | — |
| Koti | 2·4 | 74 | e 0 36 | + 2 | — | — | 1·4 |
| Sumoto | 3·7 | 65 | e 1 33 | S | (e 1 33) | − 2 | 2·5 |

Sumoto gives also ePN = +1m,36s., eS = +2m,26s.

Sept. 26d. Readings also at 1h. (Mizusawa and near Tiflis (2) ), 4h. (near Mizusawa, Nagoya, Tyosi, and near Fort de France), 6h. (Apia and near Barcelona), 7h. (Tiflis (2) and near Amboina), 8h. (Riverview and Tiflis (2) ), 10h. (Huancayo), 11h. (near Apia), 12h. (Huancayo and near Sumoto), 15h. (Ekaterinburg, Tashkent, near Mizusawa, and near Prato), 16h. (Huancayo), 17h. (near Apia, near Koti, Nagoya, and Simidu), 19h. (Ekaterinburg, Tashkent, Vladivostok, Mizusawa, and Kucino), 20h. (Baku and Huancayo).

Sept. 27d. 21h. 41m. 36s. Epicentre 4°·6S. 151°·3E. N.3.

A = −·874, B = +·479, C = −·080 ; D = +·480, E = +·877 ;
G = +·070, H = −·038, K = −·997.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Amboina | | 23·1 | 271 | 4 57 | − 5 | e 9 4 | − 3 | — | — |
| Riverview | | 29·2 | 180 | e 6 2 | + 4 | e 10 26 | −25 | e 14·9 | 16·7 |
| Sydney | | 29·2 | 180 | e 0 54 | ? | — | — | 12·9 | 15·6 |
| Adelaide | | 32·5 | 200 | i 6 21 | − 6 | i 11 15 | −28 | i 16·6 | 19·1 |
| Melbourne | | 33·7 | 189 | — | — | i 11 31 | −30 | 16·9 | 19·6 |
| Manila | | 35·6 | 303 | i 6 52k | − 2 | i 12 11 | −19 | 16·2 | 19·6 |
| Sumoto | | 41·9 | 340 | 7 49 | + 1 | — | — | — | — |
| Kobe | | 42·1 | 341 | e 7 41 | − 8 | e 13 34 | −34 | — | — |
| Wellington | | 42·3 | 154 | i 9 43 | PP | — | — | 22·4 | — |
| Perth | | 43·0 | 226 | e 11 16 | ? | i 16 44 | ? | — | — |
| Christchurch | | 43·3 | 158 | 8 24 | +25 | 14 58 | +33 | 22·9 | — |
| Batavia | | 44·2 | 266 | e 8 9 | + 3 | — | — | — | — |
| Hong Kong | | 45·2 | 308 | 10 49 | ? | 14 44 | −10 | — | 23·2 |
| Nanking | | 47·9 | 322 | 8 35a | 0 | — | — | — | 25·9 |
| Vladivostok | | 50·8 | 342 | 8 55 | − 2 | e 16 13 | + 1 | e 21·8 | — |
| Medan | | 53·2 | 278 | e 9 52 | +37 | e 16 59 | +14 | — | — |
| Chiufeng | | 55·1 | 328 | 10 4a | +34 | e 18 8 | +57 | — | 32·9 |
| Bombay | | 80·7 | 290 | e 12 0 | −12 | — | — | — | — |
| Frunse | | 83·5 | 314 | e 12 46 | +20 | — | — | — | — |
| Tashkent | | 87·1 | 312 | e 17 13 | ? | e 23 6 | −22 | e 43·5 | 54·5 |
| Pasadena | | 93·0 | 56 | i 13 13 | + 2 | — | — | — | — |
| Tinemaha | z. | 93·1 | 53 | i 13 12 | 0 | — | — | — | — |
| La Jolla | z. | 93·7 | 57 | i 13 12 | − 2 | — | — | — | — |
| Riverside | z. | 93·7 | 56 | i 13 17 | + 3 | — | — | — | — |
| Ekaterinburg | | 94·2 | 327 | i 13 29 | +12 | e 23 37 | [−19] | 45·9 | 54·6 |
| Tiflis | | 105·3 | 312 | e 18 18 | PP | e 24 36 | [−15] | e 53·4 | 66·7 |
| Kucino | | 106·8 | 327 | — | — | (e 25 0) | [+ 2] | e 45·5 | 61·0 |
| Pulkovo | | 109·1 | 332 | 18 57 | PP | 28 13 | PS | 57·4 | 64·9 |
| Copenhagen | | 119·3 | 335 | — | — | 24 24? | PPPP | 60·4 | — |
| Feldberg | | 124·7 | 331 | — | — | e 33 12 | ? | e 61·7 | 76·6 |
| Triest | | 124·8 | 325 | e 21 37 | PP | — | — | e 63·4 | — |
| De Bilt | | 124·9 | 335 | e 20 42 | PP | — | — | e 66·4 | 70·9 |
| Stuttgart | | 125·4 | 330 | e 18 54 | [− 4] | — | — | e 66·4 | 74·4 |
| Strasbourg | | 126·2 | 331 | e 20 24? | PP | — | — | e 63·4 | — |
| Paris | | 128·4 | 334 | e 21 11 | PP | — | — | 69·4 | — |
| Huancayo | | 130·8 | 110 | e 19 7 | [− 2] | — | — | — | — |
| La Paz | | 135·7 | 119 | 19 19 | [+ 3] | i 25 21 | ? | — | — |

Additional readings and note :—
Kobe PZ = +7m.51s.
Perth e = +11m.49s.
Nanking i = +8m.46s.
Tashkent e = +26m.58s., +28m.30s. = SS − 28s., +33m.30s., +34m.30s. = SSSS − 16s., and +40m.0s.
Ekaterinburg iPP = +17m.4s., ePPP = +19m.3s., ePS = +25m.59s., eSS = +31m.54s.
Tiflis eE = +27m.41s. = PS + 0s.
Kucino e = +28m.0s. = PS + 4s., ePS = +34m.6s., e = +38m.18s., SKS is given as PP.
Pulkovo eSS = +34m.54s., eSSS = +38m.48s.
Strasbourg e = +32m.24s.? and +35m.24s.?
Huancayo i = +22m.33s. = PKS − 4s. and +22m.39s.
Long waves were also recorded at Ukiah, Berkeley, Oak Ridge, La Plata, and at other European stations.

**Sept. 27d. 22h. 40m. 47s. Epicentre 24°·6S. 111°·4W. N.3.**

A = −·332, B = −·847, C = −·416; D = −·931, E = +·365; G = +·152, H = +·388, K = −·909.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. |
|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. |
| Huancayo | | 36·3 | 76 | e 3 43 | ? | e 12 46 | + 5 | e 17·0 |
| La Paz | | 41·1 | 87 | 7 41 | 0 | i 13 53 | 0 | 19·9 |
| La Jolla | z. | 57·7 | 356 | e 9 47 | − 1 | — | — | — |
| Riverside | z. | 58·8 | 355 | i 9 56 | 0 | — | — | — |
| Pasadena | | 59·1 | 355 | e 10 0 | + 2 | — | — | e 29·9 |
| Haiwee | | 61·1 | 355 | i 10 13 | + 1 | — | — | — |
| Tinemaha | | 62·0 | 355 | i 10 16 | − 2 | — | — | — |

Huancayo gives also e = +8m.16s. = PP − 1s. and +15m.40s.
Long waves were also recorded at Tucson, Ukiah, Wellington, Kew, De Bilt, Kucino, Ekaterinburg, Pulkovo, and Tashkent.

Sept. 27d. Readings also at 1h. (Huancayo and Toronto), 2h. (Huancayo and near Santiago), 3h. (near Santiago (2) and near Tyosi), 4h. (Amboina, Huancayo (2), and near La Paz), 5h. (Huancayo, near Amboina (2), and near Manila), 6h. (Apia, Huancayo, and La Paz), 7h. (Huancayo), 8h. (near Mizusawa and Tyosi), 9h. (Oak Ridge), 10h. (near Tyosi), 11h. (Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, near Nagoya, and Tyosi), 12h. (near Sumoto and near Tyosi), 16h. (near Amboina), 17h. (near Wellington), 18h. (Ekaterinburg), 19h. (Tashkent), 20h. (Feldberg and near Apia), 22h. (Amboina, Glenmuick, and near Wellington (2)), 23h. (near Mizusawa).

**Sept. 28d. 0h. 27m. 58s. Epicentre 7°·0N. 127°·5E. N.3.**

A = −·604, B = +·787, C = +·122; D = +·793, E = +·609; G = −·074, H = +·097, K = −·993.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Manila | 9·9 | 320 | i 2 26$_a$ | + 7 | i 4 23 | +12 | — | — |
| Amboina | 10·7 | 176 | e 2 32 | + 1 | — | — | — | — |
| Hong Kong | 20·0 | 321 | 4 33 | + 3 | 8 28 | SS | — | — |
| Batavia | 24·5 | 238 | e 5 13 | − 2 | i 9 21 | −11 | — | — |
| Medan | 28·9 | 265 | e 5 50 | − 5 | — | — | — | — |
| Tashkent | 61·7 | 314 | — | — | e 24 2? | ? | e 37·0 | 43·1 |
| Ekaterinburg | 71·6 | 328 | e 11 15 | − 5 | e 20 36 | − 4 | 40·0 | — |
| Pulkovo | 87·6 | 330 | — | — | i 23 23 | −10 | 49·0 | — |

Additional readings:—
Batavia i = +5m.17s.
Medan e = +8m.35s. and +11m.30s.
Long waves were also recorded at Vladivostok, Copenhagen, Paris, and Stuttgart.

**Sept. 28d. 11h. 52m. 45s. Epicentre 40°·0N. 126°·2W. (as on 1932 Sept. 16d.). R.2.**

A = −·452, B = −·618, C = +·643; D = −·807, E = +·591; G = −·380, H = −·519, K = −·766.

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. |
|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. |
| Ukiah | | 2·5 | 111 | i 0 31 | − 5 | i 1 9 | + 5 | — |
| Berkeley | | 3·7 | 124 | i 1 15? | P$_g$ | — | — | — |
| San Francisco | | 3·7 | 127 | i 0 50 | − 3 | i 1 26 | − 9 | — |
| Branner | | 4·0 | 128 | e 0 57 | 0 | — | — | — |
| Tinemaha | | 6·8 | 113 | i 1 38 | + 1 | i 3 4 | +11 | — |
| Haiwee | | 7·5 | 118 | i 1 47 | + 1 | — | — | — |
| Santa Barbara | | 7·5 | 134 | i 1 50 | + 4 | — | — | — |
| Mount Wilson | E. | 8·7 | 129 | i 2 2 | − 1 | i 3 40 | − 1 | — |
| Pasadena | | 8·7 | 130 | i 2 0 | − 3 | i 3 38 | − 3 | e 4·2 |
| Riverside | | 9·2 | 128 | i 2 9 | − 1 | i 3 49 | − 5 | — |
| Tucson | | 14·6 | 117 | e 3 26 | + 3 | — | — | 7·9 |

*For Notes see next page.*

NOTES TO SEPT. 28d. 11h. 52m. 45s.

Additional readings :—
Ukiah i = +1m.41s.
San Francisco iE = +1m.18s.
Branner iN = +1m.5s. =P* +0s. and +1m.23s.
Tinemaha iZ = +1m.44s.
Long waves were also recorded at Bozeman, Copenhagen, and Feldberg.

Sept. 28d. 18h. 57m. 17s. Epicentre 13°·3N. 120°·4E. (as on 20d.). R.3.

A = −·492, B = +·839, C = +·230 ; D = +·863, E = +·506 ;
G = −·116, H = +·198, K = −·973.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Manila | 1·4 | 24 | i 0 31k | +11 | 0 50 | +14 | — | — |
| Amboina | 18·7 | 155 | e 4 12 | − 3 | e 7 35 | − 5 | e 9·8 | — |
| Nanking | 18·8 | 356 | i 4 18k | + 2 | — | — | — | — |
| Nagasaki | 21·3 | 23 | 4 42 | − 1 | — | — | — | — |
| Medan | 23·5 | 248 | 5 16 | +11 | i 9 23 | + 9 | — | — |
| Koti | 23·6 | 29 | i 5 6k | 0 | e 9 23 | + 7 | — | — |
| Batavia | 23·7 | 215 | e 4 15 | −52 | — | — | — | — |
| Nagoya | 26·5 | 32 | e 4 55 | −39 | e 5 54 | P | — | — |
| Chiufeng | 27·1 | 352 | e 5 37 | − 2 | — | — | — | — |
| Tashkent | 52·4 | 313 | 9 9 | 0 | 16 22 | −12 | e 28·4 | 30·8 |
| Ekaterinburg | 62·6 | 328 | i 10 21 | − 1 | 18 38 | −12 | 32·2 | — |

Additional readings :—
Medan i = +10m.33s.
Batavia e = +7m.28s. and +10m.21s.
Long waves were also recorded at Hong Kong, Vladivostok, and Feldberg.

Sept. 28d. Readings also at 0h. (Tiflis (2), Camerino, Graz, Triest, near Casamicciolo, and Prato), 1h. (Mizusawa, Tashkent, Ekaterinburg, Kucino, and Pulkovo), 2h. (Copenhagen, Feldberg, and Tiflis), 5h. (near Tyosi), 6h. (Apia and near Amboina), 7h. (Christchurch), 9h. (Frunse), 10h. (Tiflis (2), Sucre, and near La Paz), 15h. (near Huancayo (2) ), 16h. (near Sumoto), 18h. (Huancayo, Mineo, and Mizusawa), 19h. (Ekaterinburg), 20h. (New Plymouth (2), near Christchurch (2), Glenmuick (2), and Wellington (2) ), 23h. (Messina).

Sept. 29d. Readings at 2h. (Benevento, Camerino, Casamari, Triest, near Naples, and Prato), 5h. (Frunse and Benevento), 6h. (Hastings, New Plymouth, and Wellington), 9h. (Tiflis), 10h. (Huancayo, Tiflis, and Simferopol), 11h. (Ekaterinburg, Nagoya, Tyosi, and near Mizusawa), 12h. (Malabar, near Tiflis, near Huancayo, near Mizusawa, Nagoya, Tyosi, and Tokyo), 13h. (Mizusawa, Simidu, near Hukuoka, Nagasaki, and near Manila), 14h. (near Tyosi), 15h. (Messina, Camerino, Benevento, Triest, near Naples, Prato, and near Apia), 16h. (Tyosi and near Triest).

Sept. 30d. 14h. 21m. 10s. Epicentre 2°·0S. 138°·5E. N.1.

Probable error of epicentre ±0°·26.

A = −·748, B = +·662, C = −·035 ; D = +·663, E = +·749 ;
G = +·026, H = −·023, K = −·999.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Palau | 10·2 | 337 | 2 25 | + 1 | 4 20 | + 2 | — | — |
| Amboina | 10·4 | 260 | e 2 20 | − 6 | i 5 13 | S* | 6·8 | — |
| Manila | 24·0 | 314 | e 5 14 | + 4 | 9 34 | +11 | 12·1 | — |
| Taihoku | 31·6 | 330 | e 11 27 | S | (e 11 27) | − 2 | — | — |
| Batavia | 31·8 | 262 | e 6 19 | − 2 | — | — | e 21·8 | — |

*Continued on next page.*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Adelaide | | 32·9 | 181 | e 6 33 | + 2 | i 11 46 | − 3 | i 14·2 | 20·9 |
| Hong Kong | | 34·0 | 317 | 6 48 | + 8 | 12 1 | − 5 | 14·5 | 17·3 |
| Riverview | | 34·0 | 162 | e 6 38 | − 2 | 12 3 | − 3 | e 16·8 | 22·2 |
| Sydney | | 34·0 | 162 | e 6 38 | − 2 | i 12 32 | +26 | 18·3 | 21·8 |
| Miyazaki | | 34·6 | 350 | 6 47 | + 1 | 12 5 | −10 | — | — |
| Simidu | | 35·2 | 352 | 6 56 | + 5 | 15 1 | ? | — | — |
| Nagasaki | | 35·7 | 348 | 6 54k | − 1 | e 12 30 | − 2 | e 16·4 | — |
| Koti | | 35·9 | 352 | e 6 53 | − 4 | e 12 30 | − 5 | e 16·2 | — |
| Melbourne | | 36·3 | 171 | 12 46 | S | (12 46) | + 5 | 18·8 | 21·1 |
| Hukuoka B. | | 36·4 | 349 | 6 59 | − 2 | 12 37 | − 5 | — | — |
| Sumoto | | 36·5 | 356 | 7 0k | − 2 | 12 29 | −15 | 15·4 | 18·2 |
| Perth | | 36·7 | 214 | 9 35 | ? | 15 48 | ? | 21·5 | 24·8 |
| Osaka | | 36·8 | 356 | 7 1 | − 4 | 12 47 | − 1 | 15·9 | — |
| Kobe | | 36·8 | 356 | e 7 1 | − 4 | 11 41 | −67 | e 13·7 | 18·7 |
| Kameyama | | 36·9 | 358 | 7 6 | 0 | 12 53 | + 3 | — | — |
| Nagoya | | 37·2 | 359 | e 2 45 | ? | 7 8 | P | — | — |
| Oiwake | | 38·4 | 0 | 7 17 | − 1 | 13 9 | − 3 | — | — |
| Phu-Lien | | 38·6 | 307 | e 7 19 | − 1 | 12 50? | −25 | 16·8 | — |
| Nanking | | 38·9 | 333 | i 7 22k | − 1 | i 13 20 | 0 | e 19·2 | 22·7 |
| Medan | | 40·2 | 278 | e 7 32 | − 2 | i 13 38 | − 1 | e 29·8 | — |
| Keizyo | | 41·0 | 346 | e 7 39 | − 1 | e 13 51 | 0 | — | — |
| Mizusawa | E. | 41·2 | 3 | 7 42 | 0 | 13 44 | −10 | 19·5 | — |
| | N. | 41·2 | 3 | 7 40 | − 2 | 13 52 | − 2 | 18·9 | — |
| Suva | | 42·4 | 115 | e 8 50? | +58 | — | — | — | 28·8 |
| Vladivostok | | 45·5 | 354 | i 8 16 | − 1 | 15 0 | + 3 | 19·3 | 23·2 |
| Chiufeng | | 46·8 | 337 | i 8 25a | − 2 | i 15 16 | 0 | e 20·8 | 27·5 |
| Wellington | | 51·0 | 145 | i 8 58 | − 1 | i 16 13 | − 2 | 23·8 | 27·8 |
| Christchurch | | 51·4 | 149 | i 9 6 | + 4 | i 16 20 | 0 | 25·2 | — |
| Calcutta | | 54·6 | 299 | 8 52 | −34 | 16 27 | −37 | 28·6 | — |
| Colombo | | 59·2 | 280 | 10 13 | +14 | — | — | — | 35·4 |
| Kodaikanal | | 62·0 | 283 | 10 23 | + 5 | 18 38 | − 4 | 29·6 | — |
| Hyderabad | | 62·2 | 291 | 10 25 | + 5 | 18 40 | − 5 | 28·6 | 38·1 |
| Agra | E. | 65·0 | 301 | 10 51 | +12 | 20 27 | (− 1) | 33·4 | — |
| Honolulu T.H. | | 66·4 | 66 | — | — | e 19 40 | + 3 | — | — |
| Bombay | | 67·8 | 291 | i 10 50 | − 7 | — | — | — | 41·5 |
| Andijan | | 73·5 | 313 | e 11 30 | − 2 | 20 59 | − 4 | — | — |
| Tashkent | | 75·9 | 314 | i 11 45 | 0 | i 21 24 | − 6 | 36·8 | 47·2 |
| Ekaterinburg | | 85·0 | 327 | i 12 33 | 0 | i 23 0 | − 8 | 39·2 | 49·4 |
| Sitka | | 89·5 | 33 | — | — | e 23 50 | − 1 | e 41·2 | — |
| Tiflis | | 94·2 | 312 | e 13 13 | − 4 | e 23 48 | [− 8] | e 46·8 | 67·7 |
| Berkeley | E. | 98·6 | 52 | — | — | e 28 56 | ? | — | 57·2 |
| Pulkovo | | 100·8 | 331 | — | — | e 27 56 | ? | 47·8 | 68·7 |
| Ksara | | 101·5 | 303 | 18 14 | PP | 24 37 | [+ 4] | — | — |
| Bozeman | | 105·7 | 43 | — | — | e 25 32 | {− 4} | — | — |
| Cheb | | 113·9 | 326 | — | — | e 27 39 | ? | e 58·8 | 75·8 |
| Triest | | 115·1 | 321 | — | — | e 25 50 | [−44] | e 59·8 | — |
| Feldberg | | 116·0 | 327 | — | — | e 37 8 | ? | — | 79·0 |
| Stuttgart | | 116·4 | 325 | 19 52 | PP | e 37 56 | ? | e 57·8 | 71·8 |
| De Bilt | | 116·7 | 330 | e 19 59 | PP | e 30 3 | ? | e 53·8 | 70·3 |
| Strasbourg | | 117·3 | 326 | e 19 50? | PP | e 29 50? | PS | e 61·8 | — |
| Stonyhurst | | 119·0 | 335 | — | — | e 30 56 | ? | 61·8 | 68·2 |
| Kew | | 119·7 | 331 | e 20 19 | PP | — | — | e 55·8 | 74·3 |
| Paris | | 120·0 | 327 | e 19 50? | PP | e 27 50? | {+34} | 56·8 | 72·8 |
| Florissant | | 122·3 | 44 | e 20 34 | PP | e 30 24 | PS | — | — |
| Ottawa | | 127·3 | 30 | e 22 20 | ? | e 29 50? | ? | e 53·8 | — |
| Pittsburgh | | 128·2 | 36 | e 21 10 | PP | e 31 6 | PS | e 61·8 | — |
| Toledo | | 129·2 | 323 | e 24 20 | PPP | — | — | e 58·9 | 80·6 |
| Granada | | 130·5 | 320 | e 21 44 | PP | — | — | 67·7 | — |
| Georgetown | | 130·9 | 36 | e 21 29 | PP | e 31 20 | SKSP | e 55·8 | — |
| Fordham | | 131·4 | 33 | e 22 33 | PKS | — | — | 58·8 | — |
| Oak Ridge | | 131·4 | 29 | e 22 14 | PKS | e 37 50 | ? | e 54·5 | — |
| San Fernando | | 132·6 | 321 | 19 50 | [+39] | 37 40 | ? | 67·8 | 71·8 |
| Huancayo | | 143·6 | 114 | e 19 30 | [+ 1] | e 42 4 | ? | e 67·6 | — |
| La Paz | Z. | 147·8 | 126 | 19 46 | [+ 7] | — | — | — | — |
| San Juan | | 150·8 | 54 | e 20 5 | {+ 3} | e 42 50 | SS | e 72·2 | — |

*For Notes see next page.*

NOTES TO SEPT. 30d. 14h. 21m. 10s.

Additional readings :—
Amboina i = +8m.12s.
Manila PPN = +5m.49s.
Batavia ePE = +6m.44s., ePN = +6m.50s., eE = +7m.38s., eN = +7m.51s.
Adelaide i = +12m.54s. and +15m.37s.
Sydney SS = +15m.38s.
Melbourne i = +15m.39s., S = +16m.44s.
Sumoto SN = +12m.35s.
Perth PP = +10m.50s., PS = +14m.35s., SS = +18m.25s.
Osaka i = +10m.42s.
Kobe eE = +8m.0s., PPE = +9m.26s.
Nanking eSS = +16m.5s.
Medan i = +9m.34s. = $P_cP$ − 8s., iN = +17m.52s. = $S_cS$ + 9s.
Christchurch $L_q$ = +23·2m.
Honolulu T.H. e = +27m.50s.
Tiflis ePPZ = +16m.57s., eE = +23m.59s., ePPSE = +26m.5s.
Ksara PS = +27m.22s.
Triest e = +30m.44s.
Stuttgart e = +33m.50s.?
Ottawa eE = +35m.50s.
Pittsburgh eSKP = +22m.22s., eSS = +38m.48s.
Granada PP = +26m.54s., PS = +36m.43s.
Georgetown ePPEN = +24m.37s., ePSEN = +33m.50s., eSSE = +38m.50s.
Oak Ridge e = +44m.41s., eNW = +47m.36s.
Long waves were also recorded at Arapuni, Cape Town, Tyosi, Ivigtut, and at other American and European stations.

Sept. 30d. Readings also at 2h. (near Huancayo (2) and near Mizusawa), 3h. (near Mizusawa and Tyosi), 4h. (Mizusawa), 10h. (Vienna), 11h. (near Branner), 13h. (Feldberg), 14h. (Andijan), 15h. (near Mizusawa), 16h. (Batavia, Ekaterinburg, Pulkovo, and Huancayo), 17h. (near Santiago), 18h. (near Manila), 21h. (near Tiflis), 22h. (Nanking, near Chiufeng, near Andijan, and Frunse), 23h. (Oak Ridge, Pittsburgh, Tucson, and Hong Kong).

When the Earthquake for July 19d. 14h. was in print it was noticed that the $T_0$ should have been increased by 2s. and all the readings decreased by 2s.

Original bulletins of the International Seismological Summary (ISS) have been obtained thanks to funding provided by the US National Science Foundation through grant EAR-9725140 (Villaseñor et al., 1997) and have been scanned and collected by SGA Storia Geofisica Ambiente (Bologna) thanks to funding provided by the Istituto Nazionale di Geofisica e Vulcanologia (Rome), in the frame of the EUROSEISMOS project.

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