# The International Seismological Summary.

## 1934 October, November, December.

FORMERLY THE BULLETIN OF THE BRITISH ASSOCIATION SEISMOLOGY COMMITTEE.

There are 112 epicentres in the quarter, 59 of these are new and 53 repetitions of old epicentres.

These are classified as follows :—

| | | |
|---|---|---|
| N.1=12 | R.1=6 | X=41 |
| N.2=15 | R.2=2 | |
| N.3=32 | R.3=4 | |

There are 7 cases of abnormal focal depth :—

| | Date. d. | h. | m. | s. | Epicentre. ° | ° | Focal Depth. Below Normal. |
|---|---|---|---|---|---|---|---|
| Oct. | 10 | 15 | 42 | 10 | 23·2S. | 179·4W. | +0·080 |
| | 21 | 17 | 53 | 48 | 18·5N. | 146·0E. | +0·035 |
| | 26 | 14 | 44 | 34 | 6·0S. | 123·8E. | +0·075 |
| | 29 | 17 | 23 | 1 | 41·3N. | 140·3E. | +0·020 |
| Nov. | 18 | 3 | 21 | 23 | 36·2N. | 70·7E. | +0·020 |
| Dec. | 4 | 17 | 24 | 42 | 19·5S. | 69·6W. | +0·015 |
| | 15 | 19 | 14 | 30 | 23·0S. | 179·0W. | +0·075 |

UNIVERSITY OBSERVATORY,
OXFORD.

1942, July 1.

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.

# 1934 OCTOBER, NOVEMBER, DECEMBER.

Oct. 1d. 2h. Readings for which no determination has been made :—

Sucre eP? =49m.42s., L =62m.0s.
La Paz eP =49m.44s.k, S =56m.4s., L =63m.0s., M =68m.30s.
San Juan e =50m.35s., e =55m.25s., eL =60m.30s.
Stuttgart e =51m.30s., e =59m.48s., eL =72m.0s.
Tashkent i =58m.58s., e =59m.40s., e =68m., e =88m., M =98m.30s.
Oxford S =59m.9s., eL =66m.30s., M =71m.54s.
Paris e =59m.9s., L =68m.
Uccle e =59m.28s., eL =66m.
De Bilt eS =59m.47s., eL =67m.
Huancayo e =61m.10s., e =64m.8s.
Pulkovo e =62m.57s., e =67m.40s., L =77m.
Long waves were recorded at Baku, Copenhagen, Strasbourg, and Trieste.

Oct. 1d. 3h. Readings from some European and American stations at similar times

Ravensburg $eS_g$ =40m.35s.
Zurich $iP_g$ =40m.39s., $iS_g$ =40m.49s.
Ebingen e =40m.39s., $iS_g$ =40m.52s.
Stuttgart e =41m.10s.

Lick $iP_gEN$ =40m.35s.
Branner $eP_gE$ =40m.46s., eEN =40m.48s., $iS_gEN$ =40m.54s., eN =40m.56s.
iN =41m.2s.
Berkeley $eP_gZ$ =40m.48s., iZ =40m.49s., iSZ =40m.57s.

Oct. 1d. Readings also at 0h. (Berkeley, Branner, Lick, Mount Wilson, Pasadena, Riverside, San Francisco, and Tinemaha), 4h. (Santiago), 12h. (Tananarive), 16h. (Sverdlovsk and Tashkent), 17h. (Agra, Baku, Calcutta, Lick, Sverdlovsk, and Tashkent), 18h. (Berkeley, Branner, Lick, and Manila), 21h. (Christchurch, Glenmuick, Manila, and Wellington).

Oct. 2d. 20h. 20m. 39s. (I)
20h. 30m. 44s. (II)
22h. 8m. 8s. (III)
22h. 14m. 9s. (IV)
} Epicentre 37°·8N. 122°·6W. N.3. X. X. X.

A = −·426, B = −·666, C = +·613 ; D = −·843, E = +·539 ;
G = −·330, H = −·516, K = −·790.

| | | Δ | Az. | P. | O−C. | S. | O−C. |
|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. |
| I | San Francisco | 0·1 | 125 | i 0 1 | 0 | — | — |
| II | | 0·1 | 125 | i 0 0 | − 1 | — | — |
| III | | 0·1 | 125 | i 0 1 | 0 | — | — |
| IV | | 0·1 | 125 | i 0 1 | 0 | e 0 2 | − 1 |
| I | Berkeley | 0·2 | 65 | i 0 4 | + 1 | i 0 9 | + 4 |
| II | | 0·2 | 65 | i 0 4 | + 1 | i 0 8 | + 3 |
| III | | 0·2 | 65 | i 0 4 | + 1 | e 0 8 | + 3 |
| IV | | 0·2 | 65 | e 0 4 | + 1 | i 0 7 | + 2 |
| I | Branner | 0·5 | 137 | i 0 6 | − 1 | i 0 14 | + 1 |
| II | | 0·5 | 137 | i 0 6 | − 1 | i 0 13 | 0 |
| III | | 0·5 | 137 | e 0 7 | 0 | i 0 14 | + 1 |
| IV | | 0·5 | 137 | e 0 7 | 0 | i 0 16 | + 3 |
| I | Lick | 0·9 | 119 | i 0 14 | + 1 | i 0 25 | + 2 |
| II | | 0·9 | 119 | i 0 13 | 0 | i 0 24 | + 1 |
| III | | 0·9 | 119 | e 0 14 | + 1 | i 0 26 | $S_g$ |
| IV | | 0·9 | 119 | e 0 14 | + 1 | e 0 25 | $S_g$ |

**Additional readings :—**
III Berkeley $iP_g$ = +5s., $iS_g$ = +9s.
III Branner eE = +12s., IV iN = +13s.

Oct. 2d. Readings also at 0h. (Baku, Christchurch (2), De Bilt, Paris, Prato, Stuttgart, Sverdlovsk, Tashkent, and Wellington (2) ), 1h. (Copenhagen and Ukiah), 5h. (Nagasaki), 6h. (Hong Kong), 7h. (De Bilt), 10h. (Mount Wilson, Pasadena, Riverside, and Tinemaha), 11h. (Tyosi and Wellington), 14h. (Tyosi), 15h. (La Paz and Santiago), 21h. (Kobe, Mizusawa, Nagoya, Tyosi (2), Prato, and Sverdlovsk), 22h. (Nagoya, Tyosi (3), and Tashkent).

Oct. 3d. Readings at 1h. (Sumoto), 3h. (Lick and Tiflis), 4h. (Tiflis), 5h. (Mizusawa), 6h. (Berkeley, Branner, Lick, Nagoya, San Francisco, and Tyosi), 7h. (Tyosi (2) ), 8h. (Tyosi and Tiflis), 11h. (Nagasaki), 13h. (La Paz), 15h. (Wellington), 16h. (Mizusawa), 17h. (Tiflis), 19h. (Balboa Heights), 20h. (Berkeley, Branner, and Lick), 22h. (Nagoya, and Sumoto).

Oct. 4d. 8h. Readings which apparently belong to more than one shock :—

Mizusawa eP =4m.37s., eS =5m.8s.
Chiufeng e =5m.42s., eL =22m.7s.

Adelaide eP =4m.37s., i =5m.38s., eS =9m.49s., eL =13m.24s., MN =16m.18s.
Melbourne e =6m.33s., e =8m.35s., L =13m.15s., M =16m.30s.
Christchurch iPE =6m.52s., SN =14m.6s., $L_q$ =17m.58s., LR? =21m.18s.
Riverview eN =7m.18s., eE =8m.0s., eL =12m.42s., ME =16m.40s.
Wellington 8m.22s.
Perth P =15m.0s., i =18m.5s.

Tashkent e =9m.38s., e =19m.2s., e =24m.37s., eL =36m.0s., M =52m.30s.
Samarkand e =9m.40s.
Vladivostok e =12m.29s., e =12m.51s., e =15m.38s.
Baku L =43m.
Sverdlovsk L =45m.

Oct. 4d. Readings also at 1h. (Wellington), 2h. (Tyosi (2) ), 4h. (La Paz), 5h. (Paris), 6h. (Branner), 9h. (Riverview), 13h. (Mizusawa and Tyosi), 14h. (Tiflis), 16h. (Erevan, Frunse, Samarkand, Tiflis, and Tchimkent), 17h. (Manila), 18h. (Frunse, Samarkand, Tananarive (2), and Tchimkent), 19h. (Tananarive (2) and Triest), 21h. (Medan), 23h. (Berkeley and La Paz).

Oct. 5d. 8h. Readings from more than one epicentre :—

Philadelphia e =6m.29s., e =10m.8s., eL =12m.37s.
La Jolla eZ =9m.31s.
Pasadena eZ =9m.34s., eZ =10m.28s.
Tinemaha eENZ =9m.36s.
Riverside eZ =9m.36s.
Santa Barbara eZ =9m.54s.
Stuttgart eZ =13m.6s., e =48m.30s., eE =54m.12s., e =55m.38s.

Reykjavik eP? =40m.6s., S =42m.1s.
Bidston e =48m.0s.
Triest e =50m.13s., eM =55m.36s.
Tashkent e =56m.0s., eL =69m., M =74m.24s.
Tiflis eE =56m.23s., eLEN =67m.0s., MN =72m.30s.
Long waves were also recorded at Baku, Copenhagen, De Bilt, Ivigtut, Paris, Pulkovo, Scoresby Sund, Strasbourg, and Uccle.

**Oct. 5d. 16h. 5m. 44s.** Epicentre 35°·7N. 134°·8E. (as on 1934 Sept. 17d.). X.

A = −·572, B = +·576, C = +·584.

| | Δ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Toyooka | 0·2 | 175 | 0 1 | − 2 | 0 5 | 0 | 0·1 |
| Kobe | 1·1 | 163 | 0 17 | + 1 | 0 31 | S* | 0·5 |
| Sumoto | 1·4 | 177 | e 0 24 | $P_g$ | 0 41 | S* | 0·7 |
| Nagoya | 1·8 | 107 | 0 29 | P* | 0 53 | $S_g$ | — |

Oct. 5d. 20h. 25m. 58s. Epicentre 41°·6N. 143°·4E. N.1.
(Given by the Japanese stations).

A = −·600, B = +·446, C = +·664; D = +·596, E = +·803;
G = −·533, H = +·396, K = −·748.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Kusiro | 1·6 | 27 | 0 20 | − 3 | 0 50 | $S_g$ | — | — |
| Muroran | 1·9 | 293 | 0 28 | 0 | 0 56 | S* | — | — |
| Hakodate | 2·0 | 271 | 0 29 | 0 | 0 56 | S* | — | — |
| Aomori | 2·1 | 251 | 0 33 | P* | 1 19 | ? | — | — |
| Sapporo | 2·1 | 316 | 0 32 | + 2 | 0 59 | S* | — | — |
| Miyako | 2·2 | 210 | 0 31 | 0 | 1 1 | S* | — | — |
| Asahigawa | 2·3 | 341 | 0 33 | 0 | 1 4 | S* | — | — |
| Nemuro | 2·4 | 42 | 0 30 | − 4 | 0 54 | − 8 | — | — |
| Morioka | 2·6 | 224 | 0 41 | P* | 1 12 | S* | — | — |
| Haboro | 3·0 | 337 | 0 24 | −19 | 0 55 | $P_g$ | — | — |
| Mizusawa | 3·0 | 216 | i 0 47 | P* | i 1 22 | + 5 | — | — |
| Akita | 3·2 | 235 | 0 49 | + 3 | 1 27 | + 5 | — | — |
| Isinomaki | 3·5 | 208 | 0 45 | − 5 | 1 17 | $P_g$ | — | — |
| Sendai | 3·9 | 212 | 0 56 | 0 | 2 2 | $S_g$ | — | — |
| Yamagata | 4·1 | 216 | 1 2 | + 4 | 2 0 | S* | — | — |
| Hukusima | 4·5 | 211 | 1 4 | 0 | 1 57 | + 2 | — | — |
| Mito | 5·7 | 205 | 1 24 | + 3 | 2 43 | S* | — | — |
| Tukubasan | 5·9 | 207 | 1 26 | + 2 | 2 32 | + 1 | — | — |
| Kakioka | 6·0 | 206 | 1 26 | + 1 | 2 34 | + 1 | — | — |
| Maebasi | 6·2 | 214 | 1 30 | + 2 | — | — | — | — |
| Tyosi | 6·2 | 199 | e 1 30 | + 2 | 2 36 | − 2 | — | 3·7 |
| Kumagaya | 6·3 | 211 | 1 31 | + 1 | 2 42 | + 1 | — | — |
| Nagano | 6·4 | 221 | 1 34 | + 3 | 2 59 | S* | — | — |
| Wazima | 6·5 | 232 | 1 36 | + 4 | 2 51 | + 5 | — | — |
| Tokyo | 6·6 | 207 | 1 37 | + 3 | 2 49 | + 1 | — | — |
| Yokohama | 6·8 | 207 | 1 46 | P* | 2 56 | + 3 | — | — |
| Toyama | 6·9 | 226 | 1 40 | + 2 | 3 34 | $S_g$ | — | — |
| Hunatu | 7·1 | 212 | 1 42 | + 1 | 3 29 | S* | — | — |
| Kohu | 7·1 | 214 | 1 45 | + 4 | 3 1 | 0 | — | — |
| Mera | 7·3 | 204 | 1 58 | P* | 3 29 | S* | — | — |
| Misima | 7·4 | 209 | 1 48 | + 3 | 3 28 | S* | — | — |
| Numadu | 7·4 | 210 | 2 4 | P* | — | — | — | — |
| Omaesaki | 8·1 | 211 | 2 18 | P* | 3 54 | S* | — | — |
| Gihu | 8·1 | 222 | 1 58 | + 3 | 3 49 | S* | — | — |
| Hamamatu | 8·2 | 215 | 2 28 | P* | 3 50 | S* | — | — |
| Nagoya | 8·2 | 220 | e 2 1 | + 5 | 4 8 | S* | — | 5·5 |
| Hikone | 8·5 | 224 | 2 3 | + 3 | 4 3 | S* | — | — |
| Kameyama | 8·7 | 221 | 2 5 | + 2 | 3 55 | +14 | — | — |
| Hatidyozima | 8·9 | 199 | 2 20 | P* | 3 42 | − 4 | — | — |
| Toyooka | 9·0 | 231 | 2 10 | + 3 | 5 4 | ? | 5·5 | 6·5 |
| Osaka | 9·3 | 224 | 2 13 | + 2 | 4 44 | S* | — | — |
| Kobe | 9·5 | 226 | 2 25 | +11 | i 5 24 | $S_g$ | — | 6·5 |
| Sumoto | 9·9 | 226 | 2 2 | −17 | 4 28 | +17 | — | 6·7 |
| Koti | 11·2 | 227 | e 2 36 | − 1 | 5 56 | $S_g$ | 7·8 | 6·1 |
| Matuyama | 11·4 | 231 | 2 9 | −31 | 6 28 | $S_g$ | — | — |
| Simidu | 12·1 | 226 | 2 49 | − 1 | 5 46 | S* | — | — |
| Husan | 13·0 | 245 | e 3 11 | + 9 | e 4 26 | ? | — | — |
| Keizyo | 13·2 | 258 | 3 6 | + 1 | — | — | 6·9 | 7·8 |
| Zinsen | 13·5 | 258 | e 3 10 | + 1 | — | — | e 7·2 | — |
| Heizyo | 13·6 | 266 | 3 13 | + 3 | — | — | — | — |
| Nagasaki | 13·9 | 235 | 3 8 | − 6 | e 6 23 | ? | — | — |
| Chiufeng | 20·6 | 275 | i 4 34 | − 2 | 8 19 | + 1 | 10·7 | 13·6 |
| Manila | 33·3 | 222 | 7 4 | +30 | 12 2 | + 7 | — | — |
| Almata | 47·7 | 296 | e 8 47 | +13 | e 15 44 | +15 | e 29·5 | — |
| Calcutta | 49·4 | 266 | e 8 46 | − 1 | — | — | — | — |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Frunse | 49·5 | 296 | e 9 21 | +34 | e 16 31 | +37 | e 29·5 | — |
| Sverdlovsk | 52·6 | 317 | i 9 17 | + 6 | i 16 52 | +15 | 26·2 | 34·9 |
| Tashkent | 53·7 | 296 | i 9 18 | − 1 | i 17 0 | + 8 | 27·7 | 33·7 |
| Agra | 54·6 | 276 | i 9 26 | 0 | 16 57 | − 7 | — | — |
| Samarkand | 56·0 | 296 | e 9 37 | + 1 | — | — | e 31·0 | — |
| Bombay | 63·2 | 272 | i 10 30 | + 3 | e 19 2? | + 5 | — | 40·9 |
| Pulkovo | 65·0 | 329 | 10 33 | − 6 | e 19 17 | − 3 | 32·0 | 39·9 |
| Kodaikanal | 65·3 | 262 | e −1 23 | ? | — | — | — | — |
| Colombo | 65·8 | 257 | 19 21 | S | (19 21) | − 9 | — | 40·2 |
| Helsingfors | 66·5 | 331 | — | — | e 19 50 | PS | e 30·0 | — |
| Baku | 66·6 | 304 | 10 49 | 0 | e 20 2 | PS | 34·0 | 42·3 |
| Tiflis | 69·1 | 308 | 11 2 | − 3 | e 20 8 | − 2 | e 34·0 | 43·6 |
| Tinemaha | 71·7 | 56 | i 11 17 | − 4 | — | — | — | — |
| Theodosia | 72·1 | 315 | e 11 20 | − 3 | e 20 39 | − 7 | 40·0 | — |
| Santa Barbara | 72·4 | 59 | i 11 32 | + 7 | — | — | — | — |
| Haiwee | 72·5 | 57 | e 11 23 | − 3 | — | — | — | — |
| Simferopol | 72·8 | 316 | 11 24 | − 4 | 20 51 | − 3 | 45·0 | — |
| Yalta | 73·1 | 316 | 11 24 | − 5 | 20 48 | −10 | — | — |
| Sebastopol | 73·4 | 316 | e 12 15 | +44 | — | — | — | — |
| Pasadena | 73·6 | 59 | e 11 27 | − 5 | — | — | — | — |
| Mount Wilson | 73·8 | 58 | e 11 27 | − 6 | — | — | — | — |
| Riverside | 74·2 | 58 | i 11 31 | − 5 | — | — | — | — |
| Copenhagen | 74·4 | 334 | 11 32 | − 5 | 21 2 | −11 | 35·0 | — |
| Hamburg | 76·7 | 334 | i 11 47 | − 3 | — | — | e 37·0 | 43·0 |
| Ivigtut | 76·7 | 6 | — | — | 21 30 | − 9 | 40·0 | — |
| Perth | 77·8 | 204 | 25 2 | ? | — | — | — | — |
| Budapest | 78·2 | 325 | 11 59 | + 1 | — | — | e 43·0 | 50·0 |
| Vienna | 78·7 | 327 | i 11 55 | − 6 | — | — | e 46·0 | — |
| Ksara | 79·4 | 306 | 12 3 | − 2 | 22 5 | − 4 | 47·4 | 51·5 |
| De Bilt | 79·5 | 335 | i 12 3 | − 2 | 22 16 | + 6 | e 38·0 | 42·8 |
| Graz | 80·0 | 327 | e 12 8 | 0 | e 22 22 | + 6 | e 44·0 | 58·7 |
| Uccle | 80·7 | 335 | e 12 10 | − 2 | e 22 14 | − 9 | e 38·0 | — |
| Stuttgart | 81·0 | 332 | 12 10 | − 3 | e 22 28 | + 2 | e 42·0 | — |
| Kew | 81·7 | 338 | e 12 13 | − 4 | e 22 11 | −23 | e 42·0 | 47·5 |
| Strasbourg | 81·7 | 332 | e 12 14k | − 3 | e 22 41 | + 7 | e 38·0 | — |
| Triest | 81·8 | 327 | e 11 54 | −23 | 22 25 | −10 | e 38·0 | 45·3 |
| Zurich | 82·5 | 331 | e 12 30 | + 9 | — | — | — | — |
| Basle | 82·7 | 332 | e 12 18 | − 4 | — | — | — | — |
| Paris | 83·2 | 335 | e 12 20 | − 4 | — | — | 44·0 | 47·0 |
| Piacenza | 83·8 | 329 | — | — | 43 2 | ? | 47·0 | 54·3 |
| Helwan | 85·0 | 306 | i 12 30 | − 3 | 22 52 | −16 | — | — |
| Oak Ridge | 90·2 | 25 | i 12 59 | + 1 | e 23 45 | −13 | e 58·0 | — |

Additional readings :—
Kobe iE = +3m.0s., iN = +3m.3s., eN = +4m.34s. =S* −7s.
Sumoto ePN = +2m.5s., eZ = +2m.18s., SN = +4m.32s., SZ = +4m.38s.
Agra ePP = +11m.27s., PS =17m.35s.
Baku SS = +24m.44s., e = +27m.44s.
Tiflis PPPN = +15m.26s., eN = +19m.56s., SKSN = +21m.2s., eN = +28m.44s.
Pasadena iENZ = +11m.38s.
Riverside iNZ = +11m.41s.
Vienna iEN = +12m.38s., eN = +14m.7s.
Stuttgart e = +14m.2s. ; $T_o$ =20h.25m.50s.
Strasbourg e = +14m.2s.?
Triest eSL = +29m.23s., eSM = +31m.57s.
Oak Ridge eZ = +13m.11s., eEN = +36m.10s., +43m.2s., and +47m.2s.
Long waves were also recorded at Bidston, Stonyhurst, Durham, Honolulu, Hong Kong, Phu-Lien, Ottawa, and other European stations.

Oct. 5d. 21h. Readings for which no determination has been made, but De Bilt suggests 33°S. 178°W. :—

Wellington P = 23m., S = 25m., i = 31m.24s., $S_cS$? = 37m.10s.
New Plymouth 23m.
Christchurch P? = 23m.58s., eENZ = 26m.12s., iNZ = 27m.4s., iE = 27m.21s.
Sydney e = (26)m.45s., L = 34m.0s., M = 36m.8s.
Riverview PE = 26m.59s., eSN = 31m.36s., eL = 34m., ME = 35m.
Huancayo e = 30m.18s., e = 44m.30s., i = 47m.23s., e = 52m.35s., eL = 65m.42s.
Melbourne S = 32m.42s., L = 35m.12s., M = 38m.12s.
Santa Barbara eZ = 34m.11s.
Pasadena iZ = 34m.15s., iENZ = 34m.29s.
Tinemaha eZ = 34m.24s.
Riverside iZ = 34m.29s.
Haiwee eE = 34m.31s.
Adelaide e = 35m.14s., L = 37m.30s., M = 43m.18s.
Ksara e = 38m.23s., e = 41m.9s.
Sverdlovsk P = 40m.43s., e = 44m.28s., L = 92m.
Long waves were recorded at Kew, Bombay, San Juan, and other European stations.

Oct. 5d. Readings also at 3h. (Lick), 4h. (Mizusawa), 5h. (Wellington, Tucson, Tinemaha, Santa Barbara, Riverside, Pasadena, and La Jolla), 6h. (Huancayo), 9h. (Apia, Branner, Ivigtut (2), Pasadena, Reykjavik, Riverside, Tinemaha, and Scoresby Sund), 10h. (Baku, Calcutta, and Tashkent), 12h. (Ivigtut), 14h. (La Paz), 16h. (Philadelphia), 17h. (Tiflis (2) ), 19h. (Baku and Erevan), 20h. (Ksara and Granada), 23h. (Stuttgart and Tiflis).

Oct. 6d. 0h. 19m. 25s. Epicentre 65°·5N. 31°·5W. (as on 1933 Sept. 12d.). X.

A = +·354, B = −·217, C = +·910.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Reykjavik | 4·3 | 104 | 1 25 | $P_g$ | 3 29 | ? | 3·6 | — |
| Durham | 18·1 | 112 | — | — | 7 21 | − 6 | — | 10·6 |
| Bidston | 18·5 | 117 | — | — | 7 17 | −19 | 8·6 | 11·4 |
| Oxford | 20·5 | 117 | — | — | i 8 4 | −12 | e 9·3 | 11·2 |
| Kew | 21·1 | 116 | e 4 38 | − 3 | i 8 17 | −11 | e 9·6 | 11·4 |
| De Bilt | 22·7 | 108 | i 5 4 | + 6 | i 9 1 | + 2 | e 10·6 | 12·9 |
| Copenhagen | 23·0 | 94 | — | — | 9 41 | SS | — | — |
| Uccle | 23·4 | 111 | 5 7 | + 2 | i 9 11 | − 1 | 10·6 | — |
| Hamburg | 23·5 | 100 | e 5 22 | PP | — | — | e 13·6 | 18·6 |
| Paris | 24·3 | 117 | e 5 12 | − 1 | — | — | 11·6 | 13·6 |
| Strasbourg | 26·5 | 110 | e 5 53 | +19 | e 10 14 | + 7 | e 11·6 | — |
| Stuttgart | 26·9 | 108 | e 5 54 | +17 | — | — | e 12·6 | 17·8 |
| Piacenza | 30·2 | 111 | — | — | e 11 35 | +28 | — | 17·4 |
| Triest | 31·3 | 107 | e 8 10 | ? | e 12 45 | SS | — | — |
| Sverdlovsk | 41·2 | 56 | — | — | e 10 48 | ? | 22·6 | — |

Additional readings :—
De Bilt iZ = +5m.13s. = PP − 6s.
Triest e = +16m.35s.
Long waves were also recorded at Edinburgh, Stonyhurst, Ivigtut, and other European stations.

Oct. 6d. 2h. Readings for a local American shock :—

Berkeley $iP_g$ = 17m.8s., $iS_g$ = 17m.9s., iSE = 17m.10s.
San Francisco iPE = 17m.20s.
Branner eSN = 17m.29s., iN = 17m.37s., iN = 17m.40s.
Lick $iS^*E$ = 17m.33s., $iS^*N$ = 17m.34s., $iS_gE$ = 17m.35s., iEN = 17m.47s., iE = 17m.50s.

Oct. 6d. 3h. 2m. 58s. Epicentre 39°·5N. 145°·0E. (as on 1933 March 23d.). X.

A = −·632, B = +·443, C = +·636.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Mizusawa | 3·0 | 263 | i 0 50 | P* | i 1 34 | $S_g$ | — | — |
| Tyosi | 5·0 | 222 | e 1 36 | $P_g$ | 2 39 | $S_g$ | — | 3·4 |
| Nagoya | 7·7 | 239 | e 2 7 | P* | e 3 48 | S* | — | 4·3 |
| Sverdlovsk | 55·0 | 318 | i 9 21 | − 8 | — | — | 31·0 | — |
| Tashkent | 55·8 | 298 | — | — | e 17 23 | + 3 | 27·1 | 35·0 |
| Tinemaha | 71·9 | 56 | e 11 21 | − 1 | — | — | — | — |
| Mount Wilson | 73·7 | 58 | e 11 32 | − 1 | — | — | — | — |
| Pasadena | 73·8 | 58 | e 11 40 | + 7 | — | — | — | — |
| Riverside | 74·3 | 58 | e 11 43 | + 7 | — | — | — | — |
| La Jolla | 74·8 | 60 | e 11 52 | +13 | — | — | — | — |

Additional readings :—
Tashkent e = +17m.42s.
Mount Wilson eZ = +11m.41s.
Long waves were recorded at other European stations.

Oct. 6d. 12h. 48m. 42s. Epicentre 1°·0N. 27°·3W. N.3.

A = +·888, B = −·459, C = +·017 ; D = −·459, E = −·889 ;
G = +·016, H = −·008, K = −1·000.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m |
| San Fernando | 40·5 | 27 | — | — | 9 24 | PPP | 20·3 | — |
| San Juan | 41·9 | 297 | e 7 47 | − 1 | e 14 7 | + 2 | e 17·9 | — |
| Sucre | 42·3 | 240 | e 8 3 | +12 | 14 23 | +13 | 21·3 | — |
| La Paz | 43·9 | 245 | e 8 5k | + 1 | i 14 42 | + 8 | 22·0 | 25·7 |
| Algiers | 45·5 | 35 | e 8 18 | + 1 | 14 18? | −39 | 24·3 | 31·3 |
| Huancayo | 49·4 | 253 | — | — | e 15 53 | + 1 | e 24·7 | — |
| Paris | 54·3 | 24 | e 10 18? | (−14) | (17 18?) | +19 | 17·3 | 29·3 |
| Piacenza | 54·8 | 32 | — | — | e 16 38 | −28 | 27·8 | 37·9 |
| Oxford | 55·3 | 19 | — | — | i 17 13 | 0 | e 23·5 | 28·0 |
| Kew | 55·4 | 20 | — | — | e 17 15 | 0 | e 23·3 | 26·7 |
| Cape Town | 55·4 | 134 | 9 35 | + 3 | — | — | 24·4 | — |
| Bidston | 56·2 | 17 | — | — | e 17 32 | + 7 | e 23·8 | — |
| Strasbourg | 56·3 | 27 | e 9 18? | −20 | 17 18? | − 9 | e 23·3 | — |
| Uccle | 56·6 | 23 | e 9 36 | − 4 | — | — | e 28·3 | — |
| Stonyhurst | 56·8 | 17 | — | — | i 17 34 | 0 | 24·0 | 26·6 |
| Oak Ridge | 57·3 | 322 | i 9 44 | − 1 | e 17 39 | − 1 | e 23·6 | — |
| Stuttgart | 57·7 | 28 | e 9 43 | − 5 | e 17 37 | − 9 | 24·3 | 32·3 |
| Durham | 57·8 | 16 | — | — | 17 52 | + 5 | — | 27·8 |
| De Bilt | 57·9 | 23 | — | — | 17 51 | + 3 | e 24·3 | 30·2 |
| Hamburg | 61·0 | 24 | e 10 12 | + 1 | — | — | e 27·3 | 32·3 |
| Ottawa | 61·4 | 323 | — | — | e 18 36 | + 2 | e 25·3 | — |
| Helwan | 62·6 | 56 | e 10 28 | + 6 | e 18 43 | − 7 | 32·0 | 39·4 |
| Copenhagen | 63·5 | 24 | 10 34 | + 5 | 19 6 | + 5 | 29·3 | — |
| Königsberg | 66·4 | 28 | — | — | e 25 38 | ? | e 28·9 | 33·0 |
| Ksara | 68·5 | 54 | e 10 49 | −12 | e 19 51 | −12 | — | — |
| Yalta | 69·4 | 42 | e 11 3 | − 4 | — | — | — | — |
| Simferopol | 69·5 | 42 | e 11 13. | + 5 | — | — | — | — |
| Scoresby Sund | 69·6 | 2 | — | — | 20 23 | + 7 | 29·3 | — |
| Sebastopol | 69·7 | 42 | e 10 37 | −32 | — | — | — | — |
| Theodosia | 70·3 | 43 | e 11 17 | + 4 | — | — | — | — |
| Helsingfors | 71·4 | 25 | — | — | e 21 36 | PS | e 31·3 | — |
| Pulkovo | 73·5 | 26 | e 11 27 | − 5 | e 20 57 | − 6 | 34·3 | 38·5 |
| Tiflis | 76·1 | 47 | 11 52 | + 5 | 21 27 | − 6 | e 38·4 | 50·1 |
| Baku | 79·7 | 49 | 13 12 | +66 | 22 12 | 0 | 38·3 | 46·8 |
| Sverdlovsk | 88·1 | 33 | e 12 54 | + 6 | e 24 4 | PS | 41·3 | 51·5 |
| Mount Wilson | 90·0 | 304 | e 13 5 | + 8 | — | — | — | — |
| Tinemaha | 90·2 | 306 | e 13 3 | + 5 | — | — | — | — |
| Riverside | 90·6 | 304 | i 13 1 | + 1 | — | — | — | — |
| Pasadena | 91·0 | 304 | e 13 4 | + 2 | — | — | e 47·3 | — |
| Tashkent | 94·3 | 48 | e 17 11 | PP | e 24 32 | − 4 | — | 60·7 |

*For Notes see next page.*

NOTES TO OCT. 6d. 12h. 48m. 42s.

Additional readings :—
San Juan e = +8m.7s.
La Paz iPZ = +8m.8s., iSSN = +17m.54s., iSSE = +18m.7s.
Huancayo e = +19m.32s. and +23m.18s.
Cape Town +12m.45s. =PPP +8s., +13m.56s., +15m.33s., +16m.11s., and +18m.11s.
Oak Ridge i = +9m.50s., eNW = +19m.23s. =$S_cS$ −10s. ; $T_0$ =12h.48m.49s.
Stuttgart ePPP = +13m.12s. ; $T_0$ =12h.48m.27s.
Simferopol e = +12m.1s.
Helsingfors e?N = +24m.36s.
Tiflis ePPPE = +16m.18s., PSE = +22m.9s., eSSE = +26m.30s., eSSSE = +30m.0s.
Baku SS = +27m.12s.
Long waves were also recorded at Edinburgh, Christchurch, La Plata, Chiufeng, Ivigtut, and other European and American stations.

Oct. 6d. 14h. Readings for which no determination has been made :—
Almata eP =6m.48s., eS =9m.42s., eL =11m.
Frunse eP =7m.9s., eL =12m.18s.
Calcutta e =7m.30s.
Tashkent eP =8m.10s., S =11m.53s., iL =14m., M =15m.
Tchimkent eL =14m.18s.
Bombay M =20m.15s.
Tiflis eE =22m.38s., eLE =27m.12s., ME =30m.48s.
Pulkovo e =26m.18s.
Copenhagen L =32m.
Stuttgart eL =38m.

Oct. 6d. Readings also at 1h. (Chiufeng, Mizusawa, Nagoya, Tyosi, and Sverdlovsk), 2h. (Berkeley and Tashkent), 3h. (Nagoya and Wellington), 5h. (Balboa Heights, Wellington, Christchurch, Granada, La Paz, and San Juan), 6h. (Granada and La Paz), 7h. (Mizusawa), 8h. (La Paz), 9h. (Santiago and Wellington), 10h. (Sebastopol, Simferopol, Theodosia, and Yalta), 11h. (Batavia, Hastings, and Malabar), 14h. (Chiufeng and Algiers), 15h. (Branner), 17h. (Baku, Basle, Ksara, Tashkent, Tiflis, and Sverdlovsk), 18h. (La Paz), 19h. (Erevan, Ksara, and Tiflis), 20h. (Branner, Berkeley, and Lick).

Oct. 7d. 2h. 47m. 2s. Epicentre 37°·8N. 122°·6W. (as on 2d.). X.

A = −·426, B = −·666, C = +·613.

| | Δ | Az. | P. | O−C. | S. | O−C. |
|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. |
| San Francisco | 0·1 | 125 | i −0 1 | − 4 | — | — |
| Berkeley | 0·2 | 65 | e 0 4 | + 1 | i 0 8 | + 3 |
| Branner | 0·5 | 137 | e 0 7 | 0 | i 0 14 | + 1 |
| Lick | 0·9 | 119 | e 0 13 | 0 | e 0 24 | + 1 |
| Tinemaha | 3·3 | 102 | i 0 53 | P* | — | — |
| Haiwee | 4·0 | 113 | i 0 56 | − 1 | — | — |
| Mount Wilson | 5·1 | 133 | i 0 59 | −14 | — | — |
| Pasadena | 5·2 | 133 | i 1 0 | −14 | — | — |
| Riverside | 5·7 | 131 | i 1 1 | −20 | — | — |

Additional readings :—
Branner iN = +12s.
Lick $iS_eN$ = +26s. =S* +1s., iN = +29s.

Oct. 7d. 13h. Readings for a local American shock :—

Riverside iPZ = 27m.38s., iZ = 28m.47s.
Pasadena iPENZ = 27m.43s.
Mount Wilson iPENZ = 27m.43s., iZ = 28m.50s.
Haiwee iPNZ = 27m.44s.
Tinemaha iPENZ = 27m.46s.
Santa Barbara iPZ = 27m.52s.

Oct. 7d. Readings also at 0h. (Tashkent), 2h. (Batavia and Medan), 3h. (Nagoya, Sumoto, and Strasbourg), 7h. (La Paz and Nagasaki), 8h. (Christchurch, Glenmuick, and Wellington), 10h. (Ivigtut, Reykjavik, and Uccle), 11h. (Baku, Bidston, Copenhagen, Edinburgh, Kew, Paris, Piacenza, Pulkovo, Scoresby Sund, Strasbourg, Stuttgart, and Sverdlovsk), 12h. (Karenko and Nagoya), 13h. (Huancayo, La Paz, and San Juan), 15h. (Balboa Heights, Malabar, Nagoya (2), and Tananarive), 16h. (Tananarive), 17h. (Malabar), 18h. (Nagasaki), 19h. (Reykjavik), 23h. (Hastings, New Plymouth, Tuai, and Wellington). -

Oct. 8d. 8h. 42m. 3s. Epicentre 37°·8N. 122°·6W. (as on 7d. 2h.). X.

| | △ | Az. | P. | O − C. | S. | O − C. |
|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. |
| San Francisco | 0·1 | 125 | i 0 0 | − 1 | — | — |
| Berkeley | 0·2 | 65 | e 0 4 | + 1 | i 0 8 | + 3 |
| Branner | 0·5 | 137 | e 0 7 | 0 | i 0 14 | + 1 |
| Lick | 0·9 | 119 | i 0 12 | − 1 | i 0 23 | 0 |

Branner iEN = +12s. =S* − 1s.
Lick iPN = +13s.

Oct. 8d. Readings also at 0h. (Christchurch and Reykjavik), 3h. (Frunse and Mizusawa), 4h. (Samarkand and Tashkent), 5h. (Batavia and Medan), 6h. (La Paz, Mount Wilson, Oak Ridge, Pasadena, Riverside, Samarkand, Tinemaha, and Tashkent), 7h. (Edinburgh, Ivigtut, Kew, La Paz, Mount Wilson, Pasadena, Paris, Reykjavik, Riverside, Scoresby Sund, Stuttgart, Strasbourg, Stonyhurst, Tinemaha, and Uccle), 8h. (Almata and Frunse), 12h. (Mineo, Trenta, and La Paz), 13h. (Almata, Frunse, and Tchimkent), 16h. (Frunse, Samarkand, Tchimkent, and Tashkent), 21h. (Oak Ridge).

Oct. 9d. 19h. Readings for an Italian shock :—

Trenta eP = 49m.4s., S? = 49m.41s.
Treviso eP? = 49m.20s., eS = 54m.0s.
Mineo P = 49m.46s.
Triest eP = 50m.3s., iS = 52m.2s., SS = 53m.9s., i = 53m.23s., i = 55m.39s.
Capodimonte eP = 50m.22s., eS = 51m.32s.

Naples eP = 50m.22s., eS = 51m.32s.
Prato eP = 50m.49s., S = 52m.32s., M = 53m.18s.
Strasbourg eL = 52m.
Helsingfors e?N = 53m.15s.
Paris 55m.
Stuttgart eL = 56m.
Piacenza ME = 57m.48s.
De Bilt e = 58m.

Oct. 9d. Readings also at 1h. (Frunse and Samarkand), 7h. (Batavia and Tyosi) 18h. (Mizusawa and Zurich), 20h. (Yalta), 21h. (Strasbourg).

Oct. 10d. 15h. 42m. 10s. Epicentre 23°·2S. 179°·4W. N.1.

A = −·919, B = −·010, C = −·394; D = −·011, E = +1·000; G = +·394, H = +·004, K = −·919.

A *depth* of focus 0·080 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 | −2·2 | 11·8 | 39 | e 2 43 | +27 | i 4 56 | +53 | e 5·5 | — |
| Arapuni | −2·3 | 15·5 | 195 | 3 20 | +15 | 5 35 | + 3 | — | — |
| Hastings | −2·6 | 16·7 | 190 | — | — | 6 4 | SS | — | — |
| New Plymouth | −2·6 | 16·8 | 198 | (3 20) | + 2 | (6 5) | + 9 | — | — |
| Wellington | −3·1 | 18·7 | 194 | 3 40 | + 4 | 6 40 | +11 | — | — |
| Christchurch | −3·4 | 21·4 | 196 | i 3 58 | − 9 | i 7 16 | − 9 | — | — |
| Sydney | −4·6 | 27·8 | 241 | e 4 40 | −23 | i 7 35 | ? | 12·8 | 20·6 |
| Riverview | −4·6 | 27·9 | 241 | e 5 3 | − 1 | i 9 4 | − 6 | — | — |
| Melbourne | −5·3 | 33·8 | 236 | e 5 50 | − 2 | 10 35 | − 5 | 13·6 | — |
| Adelaide | −5·8 | 38·2 | 242 | e 6 37 | + 9 | i 11 35 | − 6 | 13·4 | 15·8 |
| Honolulu | −7·0 | 49·2 | 27 | i 8 10 | +20 | i 14 34 | +25 | 20·8 | — |
| Palau | −7·5 | 54·5 | 299 | 8 33 | + 4 | — | — | — | — |
| Perth | −7·7 | 57·3 | 246 | 7 55 | −53 | i 16 2 | + 7 | 26·8 | — |
| Titizima | −8·0 | 62·5 | 321 | 9 28 | + 3 | — | — | — | — |
| Manila | −8·4 | 69·5 | 297 | i 10 13k | + 1 | 18 36 | + 6 | 29·7 | — |
| Tyosi | −8·5 | 69·9 | 327 | e 10 21 | + 7 | (e 18 41) | + 7 | e 18·7 | — |
| Misima | −8·5 | 70·4 | 325 | 10 19 | + 1 | 18 48 | + 7 | — | — |
| Tokyo | −8·5 | 70·4 | 326 | 10 21 | + 3 | 18 52 | +11 | — | — |
| Numadu | −8·5 | 70·5 | 325 | 10 16 | − 2 | 18 48 | + 6 | — | — |
| Omaesaki | −8·5 | 70·5 | 324 | 10 14 | − 4 | 18 46 | + 4 | — | — |
| Kakioka | −8·5 | 70·6 | 326 | 10 20 | + 1 | 18 50 | + 7 | — | — |
| Tukubasan | −8·5 | 70·7 | 326 | 10 19 | − 1 | 18 50 | + 5 | — | — |
| Hunatu | −8·6 | 70·8 | 325 | 10 21 | + 1 | 18 51 | + 6 | — | — |
| Sionisaki | −8·6 | 70·9 | 321 | 10 22 | + 2 | 18 53 | + 7 | — | — |
| Kohu | −8·6 | 71·1 | 325 | 10 23 | + 1 | 18 54 | + 6 | — | — |
| Naha | −8·6 | 71·2 | 311 | 10 24 | + 2 | 18 57 | + 7 | — | — |
| Nake | −8·6 | 71·3 | 314 | 10 24 | + 1 | 18 59 | + 8 | — | — |
| Nagoya | −8·6 | 71·5 | 325 | 10 27 | + 2 | — | — | 19·0 | 19·1 |
| Kameyama | −8·6 | 71·6 | 323 | 10 26 | + 1 | 19 0 | + 5 | — | — |
| Oiwake | −8·6 | 71·6 | 325 | 10 26 | + 1 | 19 2 | + 7 | — | — |
| Malabar | −8·6 | 71·6 | 264 | i 10 27 | + 2 | i 18 55 | 0 | — | — |
| Yagi | −8·6 | 71·7 | 322 | 10 27 | + 1 | 19 2 | + 6 | — | — |
| Hukusima | −8·6 | 71·7 | 328 | 10 25 | − 1 | 18 57 | + 1 | — | — |
| Muroto | −8·6 | 71·7 | 320 | 10 30 | + 4 | 19 6 | +10 | — | — |
| Wakayama | −8·6 | 71·9 | 322 | 10 27 | 0 | 19 4 | + 5 | — | — |
| Nagano | −8·6 | 72·0 | 325 | 10 29 | + 1 | 19 8 | + 8 | — | — |
| Sumoto | −8·6 | 72·1 | 322 | i 10 27 | − 2 | i 19 7 | + 6 | — | 19·2 |
| Kobe | −8·6 | 72·2 | 322 | i 10 29 | 0 | e 19 3 | + 1 | — | — |
| Koti | −8·6 | 72·3 | 320 | i 10 29 | − 1 | i 19 10 | + 6 | — | — |
| Mizusawa | −8·6 | 72·4 | 330 | i 10 31 | 0 | i 19 8 | + 3 | — | — |
| Miyazaki | −8·6 | 72·4 | 318 | 10 32 | + 1 | 19 14 | + 9 | — | — |
| Toyama | −8·7 | 72·5 | 325 | 10 33 | + 2 | 19 13 | + 8 | — | — |
| Husiki | −8·7 | 72·7 | 325 | 10 33 | + 1 | 19 18 | +11 | — | — |
| Batavia | −8·7 | 72·7 | 271 | i 10 30k | − 2 | i 19 9 | + 2 | e 36·8 | — |
| Morioka | −8·7 | 72·9 | 329 | 10 33 | − 1 | 19 15 | + 5 | — | — |
| Toyooka | −8·7 | 73·0 | 323 | 10 34 | 0 | 19 17 | + 6 | — | — |
| Wazima | −8·7 | 73·2 | 325 | 10 35 | 0 | 19 18 | + 4 | — | — |
| Unzendake | −8·7 | 73·7 | 318 | 10 39 | 0 | 19 25 | + 5 | — | — |
| Nagasaki | −8·7 | 74·0 | 317 | i 10 38 | − 3 | 19 25 | 0 | — | — |
| Hukuoka | −8·7 | 74·2 | 318 | 10 40 | − 2 | 19 28 | + 2 | — | — |
| Hukuoka B | −8·7 | 74·2 | 318 | 10 39 | − 3 | 19 28 | + 2 | — | — |
| Taihoku | −8·8 | 74·8 | 306 | 10 44 | − 1 | 19 32 | 0 | — | — |
| Muroran | −8·8 | 75·1 | 331 | 10 47 | 0 | 19 42 | + 6 | — | — |
| Sapporo | −8·8 | 75·5 | 332 | 10 50 | 0 | 19 47 | + 6 | — | — |
| Asahigawa | −8·8 | 75·6 | 333 | 10 53 | + 2 | 19 51 | + 8 | — | — |

*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. |
| Husan | −8·8 | 76·4 | 319 | e 10 49 | − 7 | 19 54 | + 2 | 31·1 | — |
| Taikyu | −8·9 | 76·8 | 319 | 10 55 | − 3 | 20 0 | + 4 | — | — |
| Ootomari | −9·0 | 77·8 | 334 | 11 10 | + 7 | 20 15 | + 8 | — | — |
| Zi-ka-wei | −9·1 | 78·6 | 312 | 11 4 | − 4 | i 20 18 | + 3 | — | 47·6 |
| Keizyo | −9·1 | 78·9 | 320 | i 11 7 | − 2 | 20 20 | + 1 | — | 20·4 |
| Hong Kong | −9·1 | 79·0 | 301 | 11 9 | − 1 | 20 19 | − 1 | — | — |
| Zinsen | −9·1 | 79·2 | 319 | i 11 7 | − 4 | 20 23 | + 1 | — | 20·5 |
| Heizyo | −9·2 | 80·6 | 320 | 11 13 | − 6 | 20 40 | + 2 | — | — |
| Santa Barbara | −9·2 | 80·8 | 46 | i 11 22a | + 2 | e 19 54 | −46 | — | — |
| Branner | −9·2 | 81·0 | 43 | i 13 22 | ? | 20 54 | + 9 | — | — |
| San Francisco | −9·2 | 81·1 | 42 | i 11 24 | + 2 | e 20 55 | +11 | — | — |
| Berkeley | −9·2 | 81·3 | 43 | i 11 25 | + 2 | i 20 55 | + 9 | — | — |
| Lick | −9·2 | 81·4 | 43 | i 11 25 | + 1 | e 20 57 | +10 | — | — |
| Ukiah | −9·2 | 81·4 | 41 | i 11 28 | + 4 | i 20 57 | +10 | — | — |
| La Jolla | −9·2 | 81·6 | 49 | i 11 25 | 0 | e 20 58 | + 8 | — | — |
| Pasadena | −9·2 | 81·7 | 47 | i 11 26a | 0 | i 20 58 | + 7 | — | — |
| Ferndale | −9·2 | 81·8 | 39 | e 11 39 | +13 | i 21 12 | +20 | — | — |
| Mount Wilson | −9·2 | 81·8 | 47 | i 11 27a | + 1 | i 21 3 | +11 | — | — |
| Haiwee | −9·3 | 82·9 | 46 | i 11 33 | + 1 | 21 7 | + 3 | — | — |
| Dairen | −9·3 | 83·0 | 318 | 11 26 | − 7 | 20 53 | −12 | — | — |
| Tinemaha | −9·3 | 83·3 | 46 | i 11 35a | 0 | i 21 20 | +12 | — | — |
| Medan | −9·3 | 84·0 | 276 | 11 35 | − 4 | i 21 6 | −11 | — | — |
| Tucson | −9·4 | 85·7 | 52 | i 11 47 | − 1 | i 21 44 | + 9 | e 34·3 | — |
| Chiufeng | −9·5 | 87·2 | 316 | i 11 48k | −12 | i 21 23 | −28 | 29·7 | 35·4 |
| Victoria | −9·5 | 87·4 | 33 | 13 55 | ? | 21 31 | −22 | 27·7 | 28·1 |
| Sitka | −9·5 | 88·3 | 24 | — | — | i 22 2 | − 1 | — | — |
| Bozeman | −9·7 | 92·6 | 41 | — | — | e 22 45 | − 1 | — | — |
| Huancayo | −9·9 | 97·8 | 107 | i 12 48 | + 1 | i 22 32 | − 3 | e 41·2 | — |
| La Plata N. | −9·9 | 99·6 | 134 | 17 8 | ? | 23 15 | [−68] | — | — |
| Calcutta | −9·9 | 100·6 | 290 | 14 54 | ? | 22 39 | ? | e 31·8 | — |
| La Paz | — | 101·9 | 114 | i 13 4a | P | i 22 50 | [−105] | 42·1 | — |
| Balboa Heights | — | 102·4 | 85 | 15 50? | ? | — | — | — | — |
| Colombo | — | 102·6 | 272 | e 14 55 | ? | 31 8 | ? | 47·2 | 54·4 |
| Sucre | — | 103·1 | 117 | i 16 20 | ? | i 23 4 | [−97] | 42·4 | — |
| Florissant | — | 103·6 | 53 | e 14 42 | ? | i 23 24 | [−79] | — | — |
| St. Louis | — | 103·6 | 53 | e 13 15 | P | i 23 41 | [−62] | — | — |
| Kodaikanal | — | 106·0 | 275 | 12 29 | ? | e 24 21 | {−77} | 48·9 | 62·5 |
| Chicago | — | 106·5 | 51 | — | — | e 24 41 | {−61} | — | — |
| Hyderabad | — | 107·6 | 282 | −12 10 | ? | 19 50 | ? | 20·3 | 23·0 |
| Columbia | — | 109·3 | 60 | — | — | e 25 10 | {−52} | — | — |
| Ann Arbor | — | 109·5 | 51 | e 18 32 | PP | i 25 32 | {−31} | e 37·3 | — |
| Charlottesville | — | 112·3 | 57 | — | — | e 25 34 | {−49} | — | — |
| Toronto | — | 112·8 | 50 | — | — | i 25 35 | {−52} | e 51·8 | — |
| Bombay | — | 113·1 | 282 | e 18 20 | ? | i 24 36 | [−51] | — | — |
| Georgetown | — | 113·6 | 56 | i 17 44 | [−44] | i 24 49 | [−37] | — | — |
| Ithaca | — | 114·6 | 52 | e 20 50? | ? | e 26 2 | {−37} | — | — |
| Philadelphia | — | 115·2 | 55 | — | — | e 27 46 | ? | e 48·7 | — |
| Almata | — | 115·4 | 308 | e 17 51 | [−43] | — | — | — | — |
| Ottawa | — | 115·6 | 49 | i 19 2 | PP | i 26 4 | {−42} | e 47·8 | — |
| Frunse | — | 117·0 | 308 | e 18 17 | [−21] | — | — | — | — |
| Tananarive | — | 117·8 | 231 | e 19 0 | PP | 26 7 | {−54} | — | — |
| San Juan | — | 117·9 | 81 | e 17 4 | ? | e 23 52 | ? | e 37·8 | — |
| Oak Ridge | — | 118·3 | 53 | i 17 47 | [−54] | i 26 28 | {−37} | — | — |
| Cape Town | — | 120·4 | 197 | 15 8 | P | 26 20 | {−60} | — | 53·4 |
| Tchimkent | — | 120·6 | 307 | e 18 50 | ? | — | — | — | — |
| Tashkent | — | 120·7 | 305 | — | — | e 30 50 | ? | 48·8 | 51·1 |
| Samarkand | — | 122·3 | 303 | e 17 8 | ? | — | — | — | — |
| Sverdlovsk | — | 125·5 | 324 | e 18 1 | [−57] | — | — | 56·8 | 72·6 |
| Ivigtut | — | 129·6 | 28 | — | — | 27 56 | {−23} | — | — |
| Scoresby Sund | — | 130·9 | 10 | — | — | 26 43 | ? | — | — |

*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 |
| Pulkovo | — | 138·0 | 338 | i 18 24 | [−55] | 27 44 | {−88} | 54·8 | 61·6 |
| Helsingfors | — | 139·3 | 342 | e 18 29 | [−52] | e 26 32 | ? | — | — |
| Erevan | — | 139·5 | 305 | e 18 25 | [−56] | — | — | — | — |
| Upsala | — | 141·5 | 346 | e 21 19 | ? | — | — | e 51·8 | — |
| Königsberg | — | 145·1 | 340 | e 18 41 | [−53] | i 28 0 | ? | e 53·0 | 74·3 |
| Simferopol | — | 145·2 | 317 | e 20 52 | ? | — | — | — | — |
| Yalta | — | 145·2 | 316 | e 20 42 | ? | — | — | — | — |
| Sebastopol | — | 145·7 | 317 | e 20 53 | ? | — | — | — | — |
| Copenhagen | — | 146·4 | 348 | i 18 39 | [−57] | e 28 10 | ? | — | — |
| Edinburgh | — | 147·2 | 4 | i 18 46 | [−52] | i 29 8 | {−58} | — | — |
| Ksara | — | 147·4 | 297 | i 18 46 | [−52] | 24 35 | ? | — | — |
| Durham | — | 148·4 | 3 | 18 48 | [−52] | — | — | — | — |
| Hamburg | — | 148·8 | 349 | e 18 43 | [−57] | e 40 50? | ? | 53·8 | — |
| Stonyhurst | — | 149·2 | 4 | i 18 53 | [−48] | i 41 1 | ? | 43·8 | 63·2 |
| Bidston | — | 149·6 | 4 | i 18 48 | [−53] | — | — | e 45·8 | — |
| Leipzig | — | 150·4 | 345 | e 18 50 | [−52] | e 28 32 | ? | e 45·8 | — |
| Göttingen | — | 150·8 | 348 | e 18 47 | [−56] | e 41 12 | ? | — | — |
| De Bilt | — | 150·9 | 354 | i 18 46 | [−57] | — | — | — | — |
| Jena | — | 151·0 | 346 | e 18 45 | [−58] | e 28 28 | ? | e 45·8 | — |
| Prague | — | 151·1 | 342 | e 18 43 | [−60] | e 28 35 | ? | e 54·8 | 78·8 |
| Oxford | — | 151·4 | 3 | e 18 56 | [−48] | i 29 39 | {−51} | — | — |
| Cheb | — | 151·6 | 344 | e 18 51 | [−53] | e 29 2 | ? | e 39·8 | 51·8 |
| Budapest | — | 151·6 | 333 | 18 46 | [−58] | 28 30 | ? | 41·8 | — |
| Kew | — | 151·7 | 1 | i 18 47a | [−57] | i 28 40 | ? | e 49·8 | 54·3 |
| Helwan | — | 151·8 | 290 | 18 50 | [−54] | i 21 5 | ? | — | 24·7 |
| Vienna | — | 152·0 | 337 | i 18 47 | [−57] | 28 39 | ? | — | 38·8 |
| Uccle | — | 152·1 | 355 | 18 44 | [−61] | i 29 22 | {−72} | 40·8 | 47·9 |
| Belgrade | — | 153·0 | 328 | 19 38 | ? | e 29 34 | {−66} | e 36·1 | — |
| Graz | — | 153·3 | 337 | i 18 45 | [−61] | e 28 40 | ? | 46·8 | 50·8 |
| Karlsruhe | — | 153·5 | 349 | e 18 50 | [−56] | i 28 50 | ? | — | — |
| Stuttgart | — | 153·6 | 347 | i 18 50 | [−56] | i 28 46 | ? | e 57·8 | — |
| Strasbourg | — | 153·9 | 349 | 18 49 | [−58] | i 25 50 | ? | e 39·8 | 42·8 |
| Zagreb | — | 154·2 | 335 | e 18 52 | [−55] | e 28 52 | ? | — | — |
| Paris | — | 154·3 | 358 | 18 52 | [−55] | i 28 55 | ? | e 40·8 | 41·8 |
| Zurich | — | 155·0 | 347 | e 18 52 | [−54] | — | — | — | — |
| Triest | — | 155·2 | 338 | 18 51a | [−57] | i 28 51 | ? | — | 51·1 |
| Treviso | — | 155·7 | 340 | e 18 56 | [−53] | i 29 3 | ? | 67·8 | — |
| Venice | — | 155·8 | 340 | e 19 8 | [−41] | i 28 51 | ? | — | — |
| Piacenza | — | 156·9 | 343 | 18 58a | [−52] | 28 13 | ? | 42·4 | — |
| Pavia | — | 157·0 | 344 | 19 18 | [−32] | — | — | — | — |
| Prato | — | 157·6 | 340 | i 18 54 | [−57] | i 26 27 | ? | — | — |
| Rome | — | 158·8 | 335 | 18 58 | [−54] | — | — | — | — |
| Trenta | — | 159·1 | 324 | e 18 57 | [−56] | — | — | — | — |
| Naples | — | 159·1 | 331 | e 19 9 | [−44] | e 26 14 | ? | 38·8 | — |
| Capodimonte | — | 159·1 | 330 | e 19 9 | [−44] | e 26 14 | ? | 38·8 | — |
| Serra do Pilar | — | 160·5 | 21 | 19 10 | [−44] | i 29 30 | ? | 42·5 | — |
| Mineo | — | 161·5 | 322 | 19 1 | [−54] | — | — | — | — |
| Barcelona | — | 161·7 | 355 | e 20 4 | {−48} | e 29 33 | ? | e 33·2 | 49·7 |
| Toledo | — | 162·9 | 12 | 19 3 | [−54] | 29 43 | ? | — | — |
| Tunis | — | 164·1 | 331 | e 19 7 | [−51] | i 30 25 | {−76} | 42·8 | — |
| Alicante | — | 164·8 | 4 | e 19 6 | [−53] | 29 46 | ? | e 43·9 | — |
| San Fernando | — | 165·5 | 23 | 19 7 | [−53] | 29 53 | ? | 43·8 | — |
| Granada | — | 165·6 | 14 | i 19 0 | [−60] | — | — | 76·8 | 95·8 |
| Malaga | — | 165·8 | 17 | i 18 59 | [−61] | — | — | — | — |
| Almeria | — | 166·1 | 10 | i 19 4 | [−56] | 29 43 | ? | e 39·9 | — |
| Algiers | — | 166·2 | 352 | e 19 2 | [−58] | i 29 41 | ? | 42·8 | — |

Additional readings and note :—
Apia iP = +2m.49s.
Hastings i = +5m.50s. =S − 3s.
New Plymouth readings have been *increased* by 1m.
Wellington i = +5m.56s., $P_cP$ = +8m.40s., $P_cS$ = +11m.12s., $S_cS$ = +14m.14s.
Christchurch iP = +4m.1s., i = +4m.7s. and +5m.27s., isP = +6m.26s., i = +6m.33s., $S_cS$ = +14m.24s.

*Continued on next page.*

**Riverview** eE = +6m.25s., iE = +9m.9s., iN = +12m.0s., iE = +12m.4s., iN = +14m.51s., iE = +14m.54s.
**Melbourne** iP = +5m.54s., e = +7m.27s., i = +15m.20s.
**Adelaide** e = +7m.48s., i = +9m.2s., +11m.44s., +11m.58s., and +12m.13s.
**Perth** $P_gP$ = +8m.50s., PP = +10m.45s., PPP = +12m.15s., PPPP = +13m.21s., PS = +16m.17s., iSS = +19m.22s., SSS = +21m.50s. and +23m.20s.
**Tyosi** eS = +10m.38s.
**Nagoya** PP? = +13m.17s.
**Malabar** i = +12m.29s. =PP − 8s.
**Sumoto** PKP,PKP = +38m.11s.
**Kobe** iPZ = +10m.32s., eE = +11m.19s., eN = +11m.52s., eZ = +12m.26s., eEZ = +13m.22s., iS = +19m.7s., iN = +19m.51s., iE = +19m.59s., iPKP, PKPZ = +38m.9s., ePKP, PKPE? = +38m.49s.
**Koti** pPZ = +12m.22s., sPZ = +13m.17s., eZ = +38m.10s.
**Batavia** iP = +10m.34s., i = +11m.16s. and +12m.24s.
**Toyooka** iZ = +10m.37s., PKP, PKP?N = +38m.10s.
**Husan** PP = +13m.44s.
**Taikyu** PP = +13m.56s.
**Zi-ka-wei** iZ = +11m.12s., +13m.4s., +14m.14s., +20m.48s., and +32m.26s.
**Keizyo** iPKP, PKP = +41m.34s.
**Hong Kong** PP = +13m.3s., ? = +20m.35s., SS = +25m.14s., SSS? = +28m.57s., ? = +32m.4s.
**Zinsen** iPPZ = +13m.9s., iPKP,PKP = +41m.33s.
**Heizyo** PP? = +15m.46s.
**Santa Barbara** epPZ = +13m.29s.
**Branner** iE = +13m.32s.
**Ukiah** epP = +13m.28s., iSS = +26m.35s., e = +61m.22s.
**Pasadena** ipPZ = +13m.26s., iPKP,PKPZ = +37m.58s., iSKP,PKPZ = +40m.34s., ePKP,PKP,PKPZ = +58m.11s.
**Haiwee** ipPZ = +13m.44s., iPKP,PKPZ = +37m.59s., eSKP,PKPZ = +40m.31s. ePKP,PKP,PKPZ = +58m.10s.
**Tinemaha** epPZ = +13m.42s., iPKP,PKPZ = +37m.57s., eSKP,PKPZ = +40m.29s., ePKP,PKP,PKPZ = +58m.15s.
**Medan** i = +13m.40s. and +15m.11s.
**Tucson** e = +14m.56s., eSKS = +21m.26s., esP = +22m.58s., e = +27m.42s., eSS = +27m.54s., eSSS = +31m.8s.
**Chiufeng** pP = +12m.35s., PP? = +13m.49s.
**Sitka** iSKS = +21m.40s., ePS = +22m.49s., isS = +25m.35s., iSS = +28m.4s, iSSS = +31m.50s.
**Bozeman** eSKS = +22m.5s., eSS = +29m.13s., eSSS = +32m.20s., e = +34m.50s.
**Huancayo** ePP = +15m.50s., iPS = +26m.14s., i = +27m.20s., iSS = +30m.30s.
**La Plata** PKPE = +16m.56s., PPN = +17m.8s., PPPN = +19m.50s.?, SKSE = +22m.26s., N = +22m.39s., PSE = +26m.25s., sPSE = +28m.44s., sPSN = +28m.50s., SSSN = +34m.56s., EN = +38m.14s., N = +41m.32s. and +53m.50s.?
**Calcutta** SSS = +27m.59s.
**La Paz** ipP = +15m.6s., sP = +16m.0s., iPP = +17m.24s., ipPP = +18m.24s., iPPP = +20m.8s., iSKS = +22m.56s., isSE = +26m.44s., isSN = +26m.48s., iSS = +30m.52s.
**Colombo** iP = +22m.37s., PP = +26m.40s.
**St. Louis** eE = +16m.29s. and +17m.29s., iN = +24m.25s. =SKKS − 55s. and +26m.59s., eEN = +31m.42s., iEN = +38m.0s.
**Kodaikanal** PP = +16m.35s., PPP = +18m.56s., SKS = +23m.3s., SKKS = +23m.52s., PS = +25m.58s., PPS = +26m.56s., SS = +31m.53s., SSS = +36m.19s.
**Chicago** eS = +26m.35s., ePS = +28m.26s., eSS = +32m.25s., e = +35m.25s. and +36m.34s.
**Columbia** eSP = +27m.15s., ePS = +28m.10s., eSS = +33m.4s., e = +34m.10s., eSSS = +37m.20s.
**Ann Arbor** iE = +28m.20s., eE = +30m.38s., iN = +33m.20s., eE = +37m.14s.
**Charlottesville** e = +27m.26s., +30m.50s., +33m.34s., and +37m.10s.
**Toronto** e = +27m.35s. and +28m.28s., i = +29m.17s., i = +33m.50s. and +37m.31s.
**Bombay** e = +20m.21s., i = +23m.28s., +25m.27s. =SKKS − 62s. and +27m.2s.
**Georgetown** iSKKS = +25m.39s., ePS = +27m.32s., iSS = +34m.1s.
**Ithaca** eE = +31m.14s., e = +34m.14s.
**Philadelphia** esP = +25m.56s., eSS = +34m.18s.
**Ottawa** eE = +23m.50s.?, eEZ = +28m.2s., eN = +29m.50s., eE = +31m.32s., iN = +34m.28s., e = +37m.50s.
**Tananarive** N = +19m.9s., PPPE = +20m.55s., N = +29m.48s., SSE = +34m.33s., E = +36m.53s.
**San Juan** ePPP = +19m.15s. =PP − 39s., PS = +25m.4s. =SKS − 39s., SS = +30m.3s., SSS = +34m.26s.
**Oak Ridge** iZ = +17m.51s., +18m.1s., +18m.13s., +18m.21s., and +18m.36s., PPZ = +19m.15s., PPPEN = +22m.24s., eSKSEN = +23m.58s., iSKKSEN = +25m.24s., eSNW = +26m.22s., eZ = +28m.9s., ePSEN = +29m.10s., eSS = +34m.55s., iSSEN = +35m.6s.

*Continued on next page.*

Cape Town N = +10m.48s., EN = +19m.27s., N = +21m.13s. and +22m.19s., E = +22m.24s., N = +23m.18s., +27m.49s., +28m.6s., and +29m.17s., E = +30m.2s., N = +30m.49s., E = +31m.34s., N = +31m.59s., E =, +32m.13s., N = +33m.17s. and +34m.42s., E = +35m.8s., N = +35m.22s., E = +38m.3s., N = +41m.57s., E = +46m.17s. and +49m.7s., N = +49m.27s.
Tashkent PP = +19m.26s., i = +19m.30s., e = +21m.16s. and +37m.50s.?
Sverdlovsk iPP = +18m.9s., i = +19m.44s., +19m.56s., +20m.52s., +21m.49s., +22m.37s., and +28m.18s.
Ivigtut +37m.8s.
Scoresby Sund e = +20m.40s., i = +20m.51s., e = +23m.44s., +24m.38s., and +29m.56s., i = +37m.29s.
Pulkovo i = +20m.34s., PP = +21m.6s., i = +23m.59s. and +27m.11s., SS = +39m.56s.
Helsingfors e?Z = +20m.30s., iPPENZ = +21m.4s., iPKSE = +22m.6s. = PP −11s., PPPEN = +24m.12s., eSKKSEN = +27m.23s., eSKSPEN = +31m.35s., ePSEN = +31m.57s., e?E = +34m.14s., eSSEN = +39m.37s., eSSSEN = +45m.28s., e?N = +48m.20s.
Königsberg iPPE = +20m.16s., eN = +20m.46s., ePPPEN = +21m.30s., eN = +24m.3s., iSKSE = +26m.15s., eE = +34m.5s., eSSSN = +39m.45s.
Simferopol e = +21m.27s.
Yalta e = +21m.21s.
Sebastopol e = +21m.29s.
Copenhagen i = +18m.45s., e = +20m.45s., and +21m.38s.; +22m.10s., +23m.52s., e = +24m.2s., +25m.35s., and +31m.35s., eE = +33m.26s., eN = +34m.2s., e = +39m.26s., +40m.32s.
Edinburgh i = +18m.50s., +21m.0s., and +40m.34s.
Ksara ipP = +20m.54s., PP = +22m.23s., PPS = +34m.58s.
Durham ? = +20m.53s.
Hamburg i = +20m.50s.
Bidston i = +21m.3s., +28m.30s., +35m.30s., and +40m.55s.
Leipzig i = +18m.57s., iN = +20m.59s., e = +21m.12s., iN = +22m.2s., e = +22m.24s., +32m.2s., and +41m.2s.
Göttingen e = +21m.4s.
De Bilt iZ = +20m.52s., e = +21m.8s., iZ = +26m.5s., e = +28m.36s., eE = +41m.20s., eN = +42m.5s., eE = +47m.13s.
Jena eP = +18m.50s., iP = +18m.57s., iPPN = +21m.4s., iPPE = +21m.12s.
Prague ePKP = +21m.12s., ePP = +23m.42s., eSKP = +24m.31s., eSKSP = +34m.33s., ePS = +35m.40s., eSS = +42m.4s., eSSS = +47m.5s.
Oxford e = +21m.4s., eN = +32m.46s., iE = +41m.26s.
Cheb e = +21m.7s., +26m.27s., and +33m.3s.
Budapest M = +21m.30s.
Kew i = +18m.51s. and +19m.10s., e = +20m.55s., +32m.11s. and +34m.52s., i = +41m.26s. and +42m.4s., e = +45m.50s. and +47m.14s.
Vienna PP = +21m.6s., SKP = +22m.8s., SKS = +25m.58s.
Uccle i = +18m.51s., +19m.13s., +20m.58s., +22m.46s., +23m.29s., +24m.37s., and +26m.13s., iN = +28m.44s., +32m.20s., and +35m.1s.
Belgrade e = +20m.5s. and +21m.59s.
Karlsruhe i = +20m.50s.
Stuttgart eZ = +19m.13s., i = +19m.18s., e = +20m.50s., i = +21m.3s., ePP = +22m.53s., $ePPP_2$ = +32m.10s., eSKSP = +32m.50s., ePS = +35m.1s., eZ = +37m.5s., eSS = +41m.26s., esSS = +45m.2s.; $T_0$ = 15h.42m.0s.
Strasbourg $ipKP_2$ = +19m.1s., i = +19m.19s. and +19m.29s., ipPKP = +21m.4s., iPPN = +22m.35s., iN = +22m.56s., iE = +26m.38s., iPS = +28m.49s., iSPN = +29m.40s., iN = +31m.59s., iE = +33m.16s., iSSN = +35m.19s.
Zagreb eE = +18m.59s., e = +19m.21s., eE = +20m.36s., e = +21m.4s., +21m.34s., +35m.12s., +41m.31s., +51m.16s., and +85m.22s.
Paris PKP = +19m.22s., PP = +21m.5s.
Zurich e = +19m.20s. and +21m.15s.
Triest ipP = +18m.54s., e = +19m.19s., iPP? = +21m.5s., i = +21m.27s. and +28m.55s., iPS = +29m.36s., i = +32m.34s., +33m.18s. and +35m.17s.
Treviso PP = +19m.31s.
Piacenza PP = +20m.30s., PPP = +22m.6s., SP = +29m.10s., SS = +30m.50s. SSS = +33m.38s.
Toledo $PKP_2$ = +20m.1s., PP = +23m.48s.
Tunis e = +28m.26s. and +32m.59s.
Alicante PPP = +24m.13s.
San Fernando PS = +29m.59s.
Granada $PKP_2$ = +20m.8s., PP = +23m.56s., SS = +45m.20s.
Malaga $iPKP_2$ = +20m.10s., pPKP = +21m.2s., $ipPKP_2$ = +22m.12s., iPP = +23m.58s., e = +25m.51s., +30m.8s., and +36m.38s., SS = +43m.33s.
Almeria PPP = +22m.50s.
Algiers iPP = +22m.18s., i = +26m.7s., SS = +33m.41s.

Oct. 10d. Readings also at 0h. (Erevan), 2h. (Wellington), 3h. (Nagasaki and Soengei Langka), 5h. (San Juan), 8h. (Samarkand), 9h. (Calcutta), 10h. (Baku, Christchurch, Sverdlovsk, and Tashkent), 13h. (Kodaikanal), 15h. (Glenmuick), 16h. (Batavia, La Paz, Medan, and Nagoya), 18h. (Balboa Heights), 22h. (Samarkand).

Oct. 11d. 12h. 22m. 23s. Epicentre 24°·2N. 121°·8E. (as on 1934 Aug. 11d.). X.

A = −·481, B = +·775, C = +·410.

| | △ | Az. | P. | O−C. | S. | O−C. |
|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. |
| Karenko | 0·3 | 218 | 0 4 | 0 | 0 10 | + 2 |
| Taihoku | 0·9 | 343 | 0 12 | − 1 | 0 22 | − 1 |
| Arisan | 1·2 | 230 | 0 19 | + 2 | 0 30 | − 1 |

Oct. 11d. 17h. Readings from more than one epicentre :—

Santiago P = 4m.0s., S = 4m.23s.
La Paz P = 4m.33s., iS = 7m.42s., LN = 8m.33s., M = 10m.30s.
Sucre iP = 5m.32s.
Tiflis ME = 14m.42s.

Batavia P = 36m.9s., iN = 41m.36s., iE = 41m.40s.
Manila iP = 36m.50s. a, S = 40m.4s.
Frunse e = 43m.17s.
Adelaide eP = 43m.31s., iS = 44m.51s., eL = 46m.15s., M = 48m.6s.
Tashkent iP = 43m.50s., iS = 52m.42s., eL = 69m.30s., M = 70m.6s.
Melbourne e = 43m.50s., i = 45m.16s., L = 47m.20s., M = 49m.54s.
Samarkand e = 43m.53s., e = 44m.23s.
Sverdlovsk e = 44m.24s.
Riverview e = 45m.36s., eL = 49m.30s.
Baku e = 55m.12s.

Oct. 11d. Readings also at 0h. (Tyosi), 1h. (Sumoto), 6h. (Santiago), 7h. (Perth and Malabar), 9h. (Samarkand), 12h. (Apia), 16h. (Mizusawa), 17h. (Balboa Heights), 19h. (Malabar), 21h. (Wellington).

Oct. 12d. 1h. 46m. 38s. Epicentre 24°·8N. 122°·2E. (as on Sept. 1d. 7h.). X.

| | △ | Az. | P. | O−C. | S. | O−C. |
|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. |
| Taihoku | 0·6 | 295 | 0 10 | + 1 | 0 21 | + 6 |
| Karenko | 1·0 | 210 | e 0 14 | 0 | 0 32 | S* |
| Arisan | 1·8 | 220 | e 0 25 | − 1 | 0 48 | + 2 |

Oct. 12d. 7h. Readings for which no determination has been made :—

Mount Wilson iPZ = 34m.24s.
Pasadena iPNZ = 34m.25s., iZ = 36m.23s.
Riverside iPZ = 34m.28s., iZ = 36m.24s.
Haiwee iPZ = 34m.32s.
Tinemaha ePEZ = 34m.33s., eZ = 36m.33s.
Sebastopol P = 41m.37s.
Yalta P = 41m.39s.
Ksara eP = 41m.47s., eS = 43m.22s.

Oct. 12d. Readings also at 1h. (Branner and Lick), 6h. (Santiago), 7h. (Malabar, New Plymouth, and Wellington), 8h. (Samarkand), 19h. (Frunse, Samarkand and Tashkent).

Oct. 13d. 9h. 7m. 2s. (I)
10h. 17m. 3s. (II)
15h. 8m. 43s. (III)
Epicentre 37°·8N. 122°·6W. (as at 8d. 8h.) X. X. X.

| | Δ | Az. | P. | O−C. | S. | O−C. |
|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. |
| I San Francisco | 0·1 | 125 | i 0 0 | − 1 | i 0 2 | − 1 |
| II | 0·1 | 125 | i 0 1 | 0 | i 0 3 | 0 |
| III | 0·1 | 125 | i 0 1 | 0 | i 0 2 | − 1 |
| I Berkeley | 0·2 | 65 | e 0 3 | 0 | i 0 7 | + 2 |
| II | 0·2 | 65 | e 0 4 | + 1 | i 0 8 | + 3 |
| III | 0·2 | 65 | i 0 4 | + 1 | i 0 8 | + 3 |
| I Branner | 0·5 | 137 | e 0 7 | 0 | i 0 15 | + 2 |
| II | 0·5 | 137 | e 0 7 | 0 | i 0 15 | + 2 |
| III | 0·5 | 137 | e 0 7 | 0 | i 0 15 | + 2 |
| I Lick | 0·9 | 119 | i 0 13 | 0 | e 0 24 | + 1 |
| II | 0·9 | 119 | i 0 14 | + 1 | i 0 25 | S* |
| III | 0·9 | 119 | i 0 14 | + 1 | i 0 25 | S* |

Oct. 13d. Readings also at 1h. (La Plata, La Paz, and Santiago), 3h. (Berkeley, Branner, and Lick), 6h. (Tyosi), 9h. (Tiflis), 10h. (Wellington), 12h. (Batavia, Malabar, and Wellington), 13h. (Sumoto), 14h. (Sumoto), 15h. (Wellington), 16h. (Frunse and Samarkand), 18h. (Santiago), 23h. (La Paz and Tananarive).

Oct. 14d. Readings at 0h. (Mizusawa, Nagoya, Tyosi, and Berkeley), 1h. (Nagasaki), 3h. (Mount Wilson, Pasadena, and Tinemaha), 4h. (La Paz), 5h. (Honolulu, La Jolla, Mount Wilson, and Pasadena), 10h. (Berkeley), 11h. (Tiflis, Erevan, and Wellington), 12h. (Apia, Baku, Christchurch, Sverdlovsk, and Wellington), 14h. (Samarkand), 17h. (La Paz), 21h. (Mizusawa), 23h. (Frunse, Samarkand, Sverdlovsk, and Tashkent).

Oct. 15d. 0h. and 1h. Readings for which Belgrade gives the epicentre as 44°12′N., 19°22′E. :—

Zagreb eP =34m.1s., eS =34m.35s.
Belgrade $iP_g$ =34m.20s., i =34m.22s., iPP =34m.25s., isPP =34m.31s., $S_g$ = 34m.33s., M =34m.38s.
Triest e =34m.27s., eS =35m.2s., iSSS =35m.22s.

Zagreb eP =40m.18s., eS =41m.0s., e =41m.20s., eE =41m.29s.
Triest eP =40m.21s., $iS_g$ =41m.22s., iSSS? =41m.41s., i =42m.11s.
Graz iP =40m.29s., iS =41m.34s., M =42m.7s.
Belgrade $P_g$ =40m.38s., P =40m.39s., $iS_g$ =40m.51s., iS =40m.52s., M =40m.57s.
Vienna eNE =41m.23s., iNE =41m.58s.

Oct. 15d. 8h. Readings from more than one epicentre :—

Chiufeng eP?Z =20m.49s., eP?EN =20m.51s., eSNZ =23m.9s., L =23m.57s., M =24m.18s.
Heizyo eP? =25m.42s., S =26m.50s.
Keizyo eNE =27m.10s., iE =27m.40s., M =28m.35s.
Zinsen eN =27m.10s., eSN =27m.26s., iE =27m.39s., ME =28m.21s.
Kobe eN =27m.48s., eLE =30m.38s., ME =31m.57s.
Taikyu P? =28m.30s., S? =29m.42s.
Husan P =28m.51s., S =29m.21s.
Hukuoka e =29m.56s.
Hukuoka B, eP? =30m.1s.
Nagasaki eP =30m.4s., eS =30m.59s.

Almata eP =23m.2s., e =29m.25s., S =30m.14s.
Frunse eP =23m.20s., eS =31m.8s.
Sverdlovsk iP =23m.53s., S =28m.49s., $L_q$ =32m.54s., LR =36m.42s., M =37m
Tashkent e =23m.53s., iS =29m.17s., e =29m.57s.
Samarkand e =25m.42s., e =35m.12s.
Pulkovo e =27m.2s., e =35m.38s., L =40m., M =43m.54s.
Pasadena e =30m.29s.
Mount Wilson eZ =30m.30s.
Agra eE =30m.59s.
Tashkent iP =31m.54s., e =32m.59s., iL =33m.11s., M =34m.36s.

*Continued on next page.*

Bombay e =32m., e =37m., M =46m.52s.
Calcutta e =32m.1s.
Stuttgart eE =36m.25s., eL =50m.30s., M =52m.12s.
Tiflis eZ =36m.26s., eN =38m.8s., eN =39m.43s., LN =42m.0s., MN =43m.30s.
Triest e =43m.0s., eLE =49m.30s.
Ksara e =43m.50s., L =50m.20s.
Hamburg e =44m.49s., 52m.
Medan P =45m.0s.
Cheb e =46m., M =51m.
Batavia 50m.
Toledo e =56m.0s.
Almeria e =56m.56s.
Alicante e =59m.15s.
Long waves were also recorded at Copenhagen, De Bilt, Granada, Göttingen, Helsingfors, Hong Kong, Jena, Koti, Leipzig, Paris, Phu-Lien, Prague, Scoresby Sund, Strasbourg, Toyooka, and Uccle.

Oct. 15d. Readings also at 4h. (Batavia, La Paz, Nagoya, Sverdlovsk, and Tashkent), 8h. (Nagasaki), 9h. (Medan), 10h. (Erevan, Ksara, and Tiflis), 11h. (Branner), 13h. (Trenta), 17h. (San Juan).

Oct. 16d. Readings at 5h. (Wellington), 6h. (Apia, Mount Wilson, Pasadena, Riverside, Tinemaha, and Tiflis (2) ), 8h. (Batavia, Malabar, Pasadena, Soengei Langka, and Tinemaha), 10h. (Mount Wilson, Pasadena, Riverside, and Tinemaha), 11h. (Frunse, Samarkand, and Tashkent), 13h. (Tiflis and Wellington), 14h. (Tiflis), 15h. (Victoria), 17h. (Manila), 18h. (Tiflis), 19h. (Branner, Berkeley, Lick, and Tiflis), 23h. (Berkeley and Lick).

Oct. 17d. 5h. Readings for which no determination has been made :—
Samarkand eP =12m.15s., e =13m.35s., M =14m.1s.
Tashkent eP =12m.27s., iS =13m.24s., eL =13m.26s., M =13m.42s.
Frunse e$S_g$ =14m.13s.

Vladivostok eL =30m.30s., M =33m.48s.
Sverdlovsk P =37m.44s., L =56m.0s.
Tashkent eL =57m.24s., M =61m.36s.

Oct. 17d. 15h. 28m. 29s. Epicentre 40°·2N. 142°·4E. (as on 1934 Aug. 3d.). X.

A = −·605, B = +·466, C = +·645.

| | △ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Mizusawa | 1·4 | 223 | i 0 20 | 0 | i 0 38 | + 2 | — |
| Tyosi | 4·6 | 196 | e 1 8 | + 2 | 2 11 | S* | 2·5 |
| Nagoya | 6·6 | 222 | e 1 32 | − 2 | e 3 27 | $S_g$ | 3·9 |

Oct. 17d. Readings also at 7h. (Mizusawa), 12h. (New Plymouth).

Oct. 18d. 7h. 48m. 29s. Epicentre 10°·5S. 165°·3E. N.2.

A = −·951, B = +·250, C = −·182 ; D = +·254, E = +·967 ;
G = +·176, H = −·047, K = −·983.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Apia | 22·7 | 101 | i 4 59 | + 1 | 8 45 | −14 | 10·5 | 11·3 |
| Riverview | 26·7 | 207 | i 5 33 • | − 2 | i 10 21 | −11 | e 13·0 | 16·3 |
| Sydney | 26·7 | 207 | i 5 38 | + 3 | i 10 31 | +21 | 15·5 | 17·6 |
| Arapuni | 29·1 | 163 | — | — | 11 1 | +11 | — | — |
| Wellington | 31·9 | 166 | 7 24 | +62 | 11 46 | +12 | 13·3 | 18·5 |
| Melbourne | 32·9 | 212 | 6 29 | − 2 | 11 52 | + 3 | 16·1 | 18·6 |
| Christchurch | 33·6 | 169 | i 6 28 | −11 | i 11 52 | − 8 | $14·1_q$ | — |
| Adelaide | 34·5 | 221 | i 6 44 | − 1 | i 12 10 | − 4 | 14·7 | 18·5 |
| Palau | 35·5 | 299 | 6 53 | 0 | — | — | — | — |
| Honolulu | 48·2 | 47 | — | — | e 15 31 | − 5 | e 19·5 | — |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Perth | 50·3 | 238 | e 8 51 | − 3 | 16 1 | − 4 | 24·5 | 28·5 |
| Manila | 50·6 | 300 | i 8 56 | 0 | 16 23 | +14 | 24·9 | 29·5 |
| Tyosi | 51·6 | 335 | e 16 23 | S | (e 16 23) | 0 | 22·6 | — |
| Siomisaki | 52·1 | 329 | 8 44 | −23 | 16 30 | 0 | — | — |
| Tokyo | 52·1 | 334 | 9 11 | + 4 | 16 29 | − 1 | — | — |
| Nagoya | 52·9 | 331 | e 7 50 | ? | e 9 17 | P | — | — |
| Miyazaki | 53·3 | 324 | 9 19 | + 3 | 16 34 | −12 | — | — |
| Sumoto | 53·3 | 329 | 9 16 | 0 | 16 44 | − 2 | — | 17·1 |
| Kobe | 53·4 | 329 | 9 17 | 0 | 16 48 | + 1 | e 23·1 | 25·2 |
| Koti | 53·4 | 327 | 9 18 | + 1 | 16 49 | + 2 | — | — |
| Nagano | 53·6 | 332 | 9 20 | + 2 | 16 37 | −13 | — | — |
| Nagasaki | 54·9 | 324 | 9 28 | 0 | 17 9 | + 1 | — | — |
| Batavia | 57·9 | 270 | i 9 46 | − 4 | e 18 24 | +36 | — | — |
| Zi-ka-wei | 59·2 | 317 | 9 57 | − 2 | — | — | 27·5 | 34·0 |
| Hong Kong | 59·9 | 304 | 18 18 | S | 24 51 | ? | 29·2 | 32·8 |
| Keizyo | 60·0 | 326 | 10 2 | − 2 | 18 15 | − 1 | — | 18·5 |
| Zinsen | 60·1 | 325 | e 10 5 | 0 | e 18 17 | 0 | — | — |
| Medan | 67·8 | 278 | 10 57 | 0 | e 20 2 | PS | — | — |
| Chiufeng | 68·0 | 321 | 10 56k | − 2 | i 19 55 | − 2 | 28·6 | 42·3 |
| Calcutta | 82·2 | 295 | 12 18 | − 1 | 22 37 | − 2 | e 39·7 | 46·6 |
| Ukiah | 82·7 | 48 | — | — | e 22 40 | − 4 | e 37·6 | — |
| Berkeley | 82·9 | 50 | e 22 16 | ? | e 22 56 | +10 | — | — |
| Sitka | 83·1 | 28 | — | — | e 22 55 | + 7 | e 37·1 | — |
| Pasadena | 85·0 | 54 | i 12 32a | − 1 | e 23 42 | PS | e 38·8 | — |
| Mount Wilson | 85·1 | 54 | i 12 32 | − 2 | — | — | — | — |
| La Jolla | 85·4 | 55 | e 12 23 | −12 | — | — | — | — |
| Riverside | 85·6 | 54 | i 12 35 | − 1 | — | — | — | — |
| Tinemaha | 85·8 | 51 | e 12 35 | − 2 | — | — | — | — |
| Victoria | 85·9 | 39 | 12 27 | −11 | 23 9 | [+ 3] | 39·4 | 44·6 |
| Seattle | 86·2 | 40 | — | — | e 28 54 | SS | e 33·8 | — |
| Colombo | 86·8 | 278 | 12 41 | − 1 | 23 6 | [− 6] | 47·3 | 61·9 |
| Kodaikanal | 89·7 | 281 | e 12 55 | − 1 | 23 25 | [− 6] | 48·1 | 56·1 |
| Tucson | 90·5 | 57 | e 13 5 | + 5 | e 23 59 | − 2 | e 41·6 | — |
| Agra | 92·4 | 297 | e 13 12 | + 3 | 23 56 | {+ 2} | — | — |
| Bozeman | 93·1 | 44 | e 23 56 | SKKS | (e 23 56) | {− 4} | e 37·8 | — |
| Bombay | 95·6 | 288 | e 13 0 | −23 | — | — | — | 59·3 |
| Almata | 95·9 | 313 | e 13 31 | + 6 | — | — | — | — |
| Tashkent | 101·4 | 310 | i 17 39 | PP | 25 26 | −13 | 42·0 | 62·0 |
| Samarkand | 103·0 | 308 | e 0 49 | ? | — | — | — | — |
| Little Rock | 106·0 | 57 | e 18 32 | PP | i 24 47 | [− 8] | e 49·0 | — |
| Sverdlovsk | 106·7 | 327 | e 14 29 | +14 | 26 0 | {+17} | 45·5 | 67·8 |
| Florissant | 107·7 | 53 | e 18 46 | PP | — | — | 50·0 | 54·5 |
| St. Louis | 107·8 | 53 | e 18 44 | PP | e 24 52 | [−11] | i 49·2 | — |
| Chicago | 109·7 | 49 | e 17 35 | ? | e 27 1 | ? | e 43·5 | — |
| Toronto | 115·5 | 46 | — | — | e 25 5 | [−30] | e 51·5 | — |
| Huancayo | 115·7 | 109 | — | — | e 25 36 | [ 0] | e 54·8 | — |
| Ottawa | 117·6 | 44 | e 19 51 | PP | e 25 35 | [− 8] | e 48·5 | — |
| Philadelphia | 119·2 | 50 | — | — | e 25 40 | [− 8] | 56·1 | — |
| Tiflis | 119·6 | 312 | 19 6 | [+22] | e 30 2 | PS | 56·5 | 74·3 |
| Scoresby Sund | 119·9 | 3 | — | — | 30 4 | PS | 59·5 | — |
| Pulkovo | 120·5 | 336 | — | — | 27 38 | {+18} | 56·5 | 72·8 |
| La Paz | 120·7 | 116 | e 20 18 | PP | i 31 3 | ? | 57·5 | 66·5 |
| Oak Ridge | 121·3 | 46 | — | — | e 30 13 | PS | e 59·1 | — |
| Helsingfors | 122·3 | 338 | — | — | e 31 13 | ? | e 60·5 | — |
| Ivigtut | 123·7 | 19 | — | — | 37 26 | SS | 59·5 | — |
| Cape Town | 125·5 | 214 | — | — | 38 4 | ? | 58·0 | 64·0 |
| Ksara | 128·3 | 305 | e 21 8 | PP | e 38 24 | SS | — | — |
| San Juan | 129·7 | 75 | e 21 15 | PP | e 28 3 | {−17} | e 33·5 | — |
| Copenhagen | 130·0 | 340 | 21 37 | PP | e 38 49 | SS | 59·5 | — |
| Hamburg | 132·5 | 340 | e 21 48 | PP | — | — | e 56·5 | 79·5 |

*Continued on next page.*

| | Δ ° | Az. ° | P. m. s. | O−C. s. | S. m. s. | O−C. s. | L. m. | M. m. |
|---|---|---|---|---|---|---|---|---|
| Prague | 133·7 | 334 | e 17 6 | ? | e 39 31 | SS | e 62·5 | 77·5 |
| Vienna | 134·1 | 331 | e 21 43 | PP | e 39 47 | SS | e 63·5 | — |
| Cheb | 134·5 | 336 | — | — | e 41 31? | ? | — | 83·5 |
| De Bilt | 135·4 | 343 | i 19 25 | [+10] | — | — | e 65·5 | 92·0 |
| Stonyhurst | 135·5 | 350 | — | — | e 27 31 | ? | 67·5 | — |
| Bidston | 136·0 | 350 | e 23 11 | PKS | — | — | e 67·5 | — |
| Uccle | 136·8 | 342 | e 19 31 | [+14] | — | — | e 39·5 | — |
| Stuttgart | 136·9 | 337 | e 19 31 | [+13] | — | — | e 64·5 | 85·5 |
| Oxford | 137·3 | 348 | e 22 22 | PP | — | — | e 57·5 | 83·2 |
| Triest | 137·3 | 331 | e 13 37 | ? | — | — | 73·5 | — |
| Kew | 137·4 | 348 | e 20 12 | [+54] | — | — | e 63·5 | 94·9 |
| Strasbourg | 137·5 | 338 | e 19 31? | [+13] | e 26 21 | SKS | e 40·5 | — |
| Paris | 139·0 | 343 | e 19 30 | [+10] | — | — | 68·5 | 93·5 |
| Piacenza | 139·5 | 333 | 21 49 | PP | — | — | — | 89·5 |
| Toledo | 149·1 | 344 | e 19 48 | [+ 8] | — | — | — | — |
| Alicante | 149·3 | 338 | e 24 23 | ? | — | — | e 81·3 | — |
| Granada | 151·4 | 341 | 19 51 | [+ 7] | 26 55 | SKS | 81·3 | 85·9 |
| San Fernando | 152·9 | 345 | 20 13 | {+ 1} | 36 6 | ? | — | — |

Additional readings :—

**Apia** PP = +5m.8s., SS = +9m.14s. ; $T_0$ = 7h.48m.48s.
**Riverview** PPN = +6m.13s., iE = +10m.32s.
**Sydney** e = +4m.1s.
**Melbourne** i = +6m.41s., SS = +14m.8s.
**Christchurch** LR = +16·4m.
**Adelaide** iPP = +8m.11s., $iP_cP$ = +9m.21s., i = +12m.54s.
**Perth** $P_cS$ = +13m.56s., SP = +16m.21s., SS = +20m.31s., SSS = +22m.6s.
**Sumoto** PN = +9m.20s.
**Kobe** PPN = +10m.33s. = $P_cP$ + 4s., PPE = +10m.38s., eSZ = +16m.54s.
**Batavia** iE = +11m.20s.
**Hong Kong** PP = +19m.51s. = $S_cS$ + 0s., ? = +22m.35s.
**Medan** iN = +12m.33s.
**Chiufeng** SZ = +20m.21s. = PS + 10s., SSE = +23m.49s.
**Ukiah** e = +28m.7s. = SS + 13s.
**Berkeley** eEN = +32m.41s.
**Sitka** e = +23m.57s. = PS + 19s.
**Seattle** e = +22m.38s.
**Kodaikanal** PP = +16m.55s., SKKS = +24m.18s., S = +24m.51s. = PS + 3s., PS = +26m.2s., PPS = +26m.54s.
**Tucson** ePP = +16m.31s., eSKS = +23m.29s., ePS = +25m.3s.
**Agra** ePP = +16m.36s., ePPP = +18m.38s., SKS = +23m.32s., PS = +25m.2s., PPS = +25m.26s., SS = +30m.2s., SSS? = +33m.52s.
**Bozeman** e = +25m.31s. = PS + 3s.
**Bombay** e = +13m.7s.
**Tashkent** i = +17m.56s. = PP + 3s. and +19m.15s., SKS = +24m.26s., PS = +27m.0s., SS = +32m.43s.
**Little Rock** eSKKSE = +25m.35s., ePSE = +27m.46s.
**Sverdlovsk** PP = +18m.40s., SKS = +24m.55s., PPS = +29m.0s., SS = +33m.43s.
**Florissant** e = −0m.36s., eSS = +27m.54s. = PS − 11s., eSSS = +37m.31s.?
**St. Louis** iSKKSE = +25m.47s., iPSE = +28m.8s.
**Toronto** e = +29m.19s. = PS − 2s.
**Huancayo** e = +29m.37s. = PS + 12s., +36m.38s., and +46m.46s.
**Ottawa** e = +29m.39s. = PS − 1s., eE = +36m.1s. = SS + 1s.
**Philadelphia** i = +29m.48s. = PS − 8s., e = +35m.12s., +41m.18s., and +50m.16s.
**Tiflis** eEN = +20m.24s., eZ = +21m.33s., ePPSEN = +31m.14s., eSSNE = +36m.40s.
**Scoresby Sund** +36m.49s. = SS + 18s.
**Pulkovo** PP = +20m.24s., PPP = +23m.26s., PS = +30m.2s., PPS = +31m.42s., SS = +36m.19s.
**Oak Ridge** i = −6m.37s. and −6m.30s., e = +36m.55s. = SS + 6s.
**Helsingfors** e?N = +34m.43s., +37m.19s. = SS + 17s., and +40m.13s.
**Cape Town** N = +40m.24s.
**Ksara** e = +32m.46s.
**San Juan** ePP = +22m.30s. = PKS, ePPP = +25m.30s.
**Copenhagen** +22m.43s. = PKS + 10s.
**Prague** ePKP = +20m.31s., ePP = +22m.46s. = PKS − 3s., eSSS = +44m.25s.
**Vienna** eEN = +21m.51s.
**De Bilt** iZ = +21m.58s. = PP + 6s., e = +22m.48s. = PKS − 7s.
**Uccle** e = +22m.2s. = PP + 1s., i = +22m.54s. = PKS − 6s.
**Stuttgart** ePP = +22m.9s., ePKS = +22m.40s., eSS = +40m.1s., eE = +42m.13s.

*Continued on next page.*

Triest i = +23m.7s. =PKS+6s.
Kew ePP = +23m.10s. =PKS+8s.
Strasbourg iPP? = +22m.20s.
Granada $PKP_2$ = +20m.29s., PP = +23m.47s., PPP = +27m.49s.
San Fernando PN = +20m.20s., E = +20m.41s.
Long waves were also recorded at Edinburgh, Durham, Dakar, La Plata, Tananarive, and other European and American stations.

Oct. 18d. Readings also at 2h. (Prato), 3h. (Tiflis), 4h. (Hukuoka B, Nagasaki, and Nagoya), 5h. (Arisan, Nagoya (2), and Tainan), 7h. (La Plata, La Paz, Manila, and Santiago), 8h. (Nagoya), 9h. (Erevan, Ksara, Tananarive, and Tiflis), 12h. (Mizusawa), 17h. (Wellington), 19h. (Wellington), 22h. (Kobe, Koti, and Sumoto).

Oct. 19d. 20h. 58m. 20s. Epicentre 33°·6N. 82°·0E. N.3.

A = +·116, B = +·825, C = +·553 ; D = +·990, E = −·139 ;
G = +·077, H = +·548, K = −·833.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Agra | 7·3 | 209 | i 1 49 | + 5 | 2 49 | ? | — | — |
| Frunse | 11·0 | 330 | e 3 10 | ? | e 6 26 | ? | — | 6·8 |
| Calcutta | 12·4 | 152 | 2 56 | + 2 | 5 38 | +25 | 6·5 | 9·7 |
| Tashkent | 12·7 | 311 | 2 57 | − 1 | e 5 5 | −15 | e 5·8 | 7·7 |
| Tchimkent | 13·1 | 314 | e 3 1 | − 2 | 5 57 | +28 | — | — |
| Samarkand | 13·5 | 301 | e 3 5 | − 4 | e 4 55 | −44 | — | 6·2 |
| Hyderabad | 16·4 | 192 | 3 43 | − 3 | 6 45 | − 3 | 8·5 | 9·7 |
| Bombay | 16·8 | 212 | i 3 53 | + 1 | i 6 51 | − 6 | 7·9 | 9·4 |
| Kodaikanal | 23·7 | 191 | i 5 9 | + 2 | e 9 19 | + 1 | 11·1 | 13·1 |
| Phu-Lien | 25·2 | 114 | 4 40? | −42 | — | — | — | — |
| Baku | 26·4 | 294 | e 5 37 | + 4 | 10 11 | + 6 | 13·3 | 24·0 |
| Colombo | 26·8 | 185 | 9 40 | ? | 11 30 | ? | 14·1 | 14·9 |
| Sverdlovsk | 27·4 | 334 | i 5 43 | + 1 | e 10 23 | + 1 | $15·1_q$ | 17·9 |
| Chiufeng | 27·9 | 67 | e 5 46 | 0 | e 10 24 | − 6 | — | 17·1 |
| Tiflis | 30·3 | 296 | 6 9 | + 1 | e 11 13 | + 4 | e 13·1 | 17·1 |
| Hong Kong | 30·4 | 103 | 11 21 | S | (11 21) | +10 | — | 17·2 |
| Zi-ka-wei | 33·2 | 83 | — | — | e 16 46 | (−16) | — | 21·6 |
| Ksara | 38·0 | 284 | e 7 19 | + 4 | e 13 16 | +10 | 18·4 | — |
| Vladivostok | 39·7 | 61 | e 7 30 | + 1 | — | — | 16·4 | 22·6 |
| Pulkovo | 42·5 | 324 | 7 51 | − 2 | — | — | $20·7_q$ | 25·1 |
| Prague | 51·5 | 311 | 19 6 | $S_eS$ | — | — | 28·2 | 29·7 |
| Triest | 52·3 | 305 | 9 11 | + 2 | i 16 33 | 0 | e 25·7 | — |
| Cheb | 52·4 | 311 | — | — | e 24 40? | ? | — | 29·7 |
| Hamburg | 53·3 | 315 | — | — | e 21 40? | SSS | — | — |
| Stuttgart | 54·7 | 310 | e 9 25 | − 1 | e 17 10 | + 5 | e 28·7 | 35·2 |
| Piacenza | 55·2 | 305 | 17 18 | S | (17 18) | + 6 | — | 40·4 |
| Strasbourg | 55·6 | 309 | e 9 30 | − 3 | — | — | e 21·7 | — |
| De Bilt | 56·4 | 314 | i 9 42 | + 3 | e 17 32 | + 4 | e 29·7 | 32·2 |
| Uccle | 57·2 | 313 | e 9 43 | − 2 | — | — | e 29·7 | — |

Additional readings :—
Agra eN = +2m.1s. =P* −1s., $S_g$EN = +3m.29s. =S* −3s.
Calcutta P* = +3m.28s., $P_g$ = +3m.48s., S = +4m.58s., SS = +5m.20s., $S_g$ = +6m.12s. =S* +5s.
Bombay SSE = +6m.16s., SSN = +7m.20s.
Kodaikanal SS = +10m.4s. =SSS +0s.
Chiufeng iE = +10m.55s.
Tiflis eN = +6m.54s. =PP +7s. and +12m.0s.
Hong Kong S? = +13m.20s.
Zi-ka-wei iZ = +20m.32s.
Ksara ePP = +8m.58s. =PPP +6s., eSSS = +15m.55s.
Vladivostok e = +9m.3s. =PP +7s.
Pulkovo LR = +24·7m.
Prague eS? = +23m.16s.
Long waves were also recorded at Edinburgh, Kew, and other European stations.

Oct. 19d. Readings also at 0h. (Sverdlovsk and Tashkent), 1h. (Mizusawa), 2h. (Algiers and Sumoto), 6h. (Apia and Wellington), 8h. (Prague), 9h. (Tyosi), 11h. (Manila and Santiago), 12h. (Apia, Chiufeng, Christchurch, Hong Kong, La Jolla, Mount Wilson, Pasadena, Riverside, Tinemaha, and Wellington), 13h. (Victoria), 17h. (Yalta), 19h. (Medan), 20h. (Berkeley), 21h. (Manila), 23h. (Christchurch and Wellington).

Oct. 20d. 8h. Readings for which no determination has been made :—

Almata eP =13m.33s.
Tashkent iP =14m.31s., e =15m.3s., e =15m.51s., eL =16m.12s., M =16m.24s.
Tchimkent eP =14m.35s., e =16m.4s.
Semipalatinsk eP =15m.0s., eS =18m.36s., eL =19m.36s.
Sverdlovsk P =17m.18s., S =21m.14s., $L_q$ =22m.48s., LR =24m.30s., M = 25m.30s.
Tiflis eEN =18m.47s., eE =22m.43s., LE =27m.24s., M =37m.18s.
Agra e =19m.52s.
Bombay e =21m., M =26m.30s.
Calcutta e =21m.14s.
Baku e =21m.30s., eL =25m.42s.
Pulkovo e =29m.36s., e =31m.52s., L =33m., M =34m.18s.
Helsingfors e?N =35m.
Copenhagen 40m.
Hamburg e =40m.
Strasbourg eL =40m.
Stuttgart eL =42m.42s.
De Bilt e =43m.
Paris 44m.

Oct. 20d. Readings also at 4h. (Calcutta), 6h. (La Paz), 10h. (Tyosi and Tiflis), 12h. (Wellington (2) ), 14h. (Tashkent), 15h. (Sumoto), 22h. (Sumoto and Algiers), 23h. (San Juan).

Oct. 21d. 17h. 53m. 48s. Epicentre 18°·5N. 146°·0E. N.2.

A = −·786, B = +·530, C = +·317 ; D = +·559, E = +·829 ; G = −·263, H = +·177, K = −·948.

A *depth* of focus 0·035 has been assumed.

| | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | ° | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Tyosi | −1·2 | 17·8 | 346 | e 3 51 | + 2 | 7 3 | +11 | — | 7·2 |
| Nagoya | −1·2 | 18·5 | 336 | 4 0 | + 2 | e 5 2 | ? | — | — |
| Sumoto | −1·3 | 18·7 | 330 | 3 59 | 0 | e 7 15 | + 4 | — | 12·5 |
| Koti | −1·3 | 18·7 | 326 | 3 59 | 0 | 7 14 | + 3 | — | — |
| Kobe | −1·3 | 18·8 | 331 | e 4 7 | + 7 | (7 27) | +14 | — | 7·5 |
| Toyooka | −1·3 | 19·7 | 332 | e 4 22 | PP | e 7 36 | + 3 | — | — |
| Nagasaki | −1·4 | 20·3 | 317 | 4 14 | − 3 | e 7 17 | −27 | — | — |
| Hukuoka | −1·4 | 20·5 | 320 | e 4 16 | − 4 | e 7 34 | −14 | — | — |
| Hukuoka B | −1·4 | 20·5 | 320 | (4 51) | +31 | 4 51 | P | — | — |
| Mizusawa | −1·5 | 21·1 | 349 | i 4 24 | − 1 | i 8 4 | + 6 | — | — |
| Husan | −1·6 | 22·4 | 321 | e 4 34 | − 4 | e 6 4 | ? | — | — |
| Taikyu | −1·7 | 23·2 | 322 | 5 21 | ? | 8 35 | − 1 | — | — |
| Manila | −1·7 | 24·3 | 264 | 4 52 | − 5 | 10 12 | ? | 12·9 | — |
| Keizyo | −1·8 | 25·3 | 323 | 5 0 | − 5 | 9 16 | + 2 | e 14·6 | — |
| Zinsen | −1·8 | 25·5 | 322 | e 5 18 | +11 | e 9 16 | − 2 | — | — |
| Zi-ka-wei | −1·8 | 25·6 | 304 | 5 3 | − 5 | 8 51 | −28 | 10·7 | — |
| Vladivostok | −2·0 | 27·9 | 338 | e 5 25 | − 3 | i 9 54 | − 3 | i 11·0 | 17·1 |
| Hong Kong | −2·2 | 30·0 | 283 | 5 44 | − 1 | 10 24 | − 4 | — | 14·1 |
| Phu-Lien | −2·8 | 37·0 | 280 | e 6 49 | + 7 | 12 12? | + 3 | — | — |
| Batavia | −3·2 | 45·8 | 241 | i 7 55a | + 2 | 15 37 | +82 | — | — |

*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. |
| Medan | −3·4 | 48·6 | 258 | i 8 27 | +13 | 15 6 | +12 | — | — |
| Honolulu | −3·7 | 52·6 | 77 | — | — | i 16 12 | +27 | — | — |
| Riverview | −3·7 | 52·6 | 175 | e 8 42 | − 1 | — | — | e 28·5 | — |
| Calcutta | −3·7 | 53·8 | 285 | 9 0 | + 8 | 15 21 | −41 | 21·0 | — |
| Adelaide | −3·8 | 53·9 | 187 | i 8 51 | − 1 | — | — | — | — |
| Melbourne | −4·0 | 56·3 | 181 | e 11 50 | PPP | i 16 52 | +19 | 26·7 | 30·0 |
| Perth | −4·0 | 58·1 | 210 | 7 17? | ? | — | — | — | — |
| Almata | −4·1 | 62·3 | 310 | e 9 51 | − 1 | e 18 1 | + 9 | — | — |
| Agra | −4·1 | 62·5 | 292 | i 9 55 | + 2 | — | — | — | — |
| Hyderabad | −4·2 | 63·9 | 282 | 10 16 | +14 | 13 46 | ? | — | 19·8 |
| Fr.nse | −4·2 | 64·1 | 309 | e 11 1 | (− 8) | — | — | — | — |
| Colombo | −4·2 | 65·2 | 270 | 10 13 | + 2 | 18 41 | +12 | 32·5 | 37·9 |
| Andijan | −4·2 | 65·9 | 307 | e 10 42 | +26 | 19 32 | PS | — | — |
| Kodaikanal | −4·2 | 66·9 | 274 | i 10 21 | − 2 | e 19 45 | PS | 33·4 | — |
| Tchimkent | −4·3 | 67·8 | 309 | e 11 12 | (−12) | — | — | — | — |
| Tashkent | −4·3 | 68·4 | 309 | i 10 34 | + 1 | i 19 14 | + 5 | e 33·7 | 39·2 |
| Sitka | −4·3 | 68·4 | 34 | e 11 24 | (− 3) | i 19 22 | +13 | — | — |
| Bombay | −4·3 | 68·7 | 274 | i 10 38 | + 3 | i 19 21 | + 9 | — | — |
| Sverdlovsk | −4·3 | 72·1 | 326 | i 10 58 | + 1 | 20 1 | + 7 | 33·2 | 42·7 |
| Berkeley | −4·5 | 80·0 | 53 | i 11 45 | + 2 | — | — | — | — |
| Branner | −4·6 | 80·3 | 54 | e 11 47 | + 3 | — | — | — | — |
| Lick | −4·6 | 80·7 | 52 | e 11 48 | + 1 | — | — | — | — |
| Santa Barbara | −4·7 | 83·0 | 56 | i 12 1 | + 2 | i 22 3 | + 6 | — | — |
| Tinemaha | −4·7 | 83·4 | 53 | i 12 3 | + 2 | i 22 11 | + 9 | — | — |
| Pasadena | −4·7 | 84·4 | 56 | i 12 7a | + 1 | i 22 9 | − 3 | — | — |
| Mount Wilson | −4·7 | 84·5 | 56 | i 12 8 | + 1 | i 22 10 | − 4 | — | — |
| Riverside | −4·7 | 85·0 | 56 | i 12 10 | + 1 | i 22 12 | − 7 | — | — |
| La Jolla | −4·7 | 85·4 | 57 | i 12 14 | + 2 | i 22 16 | − 7 | — | — |
| Tiflis | −4·7 | 85·8 | 313 | 12 10 | − 4 | e 23 26 | PS | 35·7 | 55·0 |
| Pulkovo | −4·7 | 86·1 | 332 | e 12 10 | − 5 | 22 11 | −20 | 43·2 | 56·5 |
| Erevan | −4·7 | 86·6 | 311 | e 12 12 | − 6 | e 22 12 | −24 | — | — |
| Theodosia | −4·9 | 90·8 | 319 | e 12 32 | − 6 | 22 45 | −32 | — | — |
| Scoresby Sund | −4·9 | 90·6 | 357 | 12 36 | − 1 | e 23 10 | − 5 | — | — |
| Tucson | −4·9 | 90·7 | 55 | e 12 48 | +11 | e 23 21 | + 5 | — | — |
| Yalta | −4·9 | 91·7 | 319 | e 12 36 | − 6 | 22 49 | −36 | — | — |
| Sebastopol | −4·9 | 91·7 | 319 | — | — | e 22 55 | −30 | — | — |
| Ksara | — | 95·4 | 308 | — | — | 23 16 | [−47] | — | — |
| Copenhagen | — | 96·1 | 335 | — | — | 23 12 | [−54] | 48·2 | — |
| Ivigtut | — | 99·6 | 8 | — | — | 23 31 | [−52] | — | — |
| De Bilt | — | 101·6 | 337 | e 17 37 | PP | e 23 43 | [−50] | e 48·2 | 52·5 |
| St. Louis | — | 102·4 | 41 | — | — | e 23 46 | [−51] | — | — |
| Stuttgart | — | 102·6 | 333 | e 13 24 | −31 | e 26 22 | PS | e 52·2 | 64·2 |
| Triest | — | 102·7 | 328 | e 13 14 | −42 | i 23 43 | [−56] | e 39·2 | 54·9 |
| Uccle | — | 103·0 | 336 | — | — | e 23 49 | [−51] | e 47·2 | — |
| Strasbourg | — | 103·3 | 333 | i 17 50a | PP | i 26 35 | PS | e 33·2 | — |
| Paris | — | 105·2 | 336 | — | — | e 26 55 | PS | 33·2 | — |
| Toronto | — | 105·2 | 32 | — | — | e 23 46 | [−65] | — | — |
| Ottawa | — | 105·7 | 28 | — | — | e 24 0 | [−53] | e 46·2 | — |
| Philadelphia | — | 110·1 | 32 | — | — | e 24 15 | [−59] | e 46·6 | — |
| Alicante | — | 115·1 | 332 | e 17 21 | [−72] | — | — | — | — |
| Granada | — | 117·4 | 333 | i 19 33 | PP | i 28 45 | PS | 58·5 | 66·1 |
| San Juan | — | 131·5 | 42 | e 21 52 | PP | e 27 36 | {−55} | — | — |
| La Paz | — | 147·4 | 92 | i 19 15a | [−23] | — | — | — | — |

Additional readings :—
Sumoto PEN = +4m.4s. = PP − 1s.
Kobe ePE = +4m.12s., eE = +4m.21s., iN = +4m.36s., eN = +5m.10s.
Keizyo e = +5m.42s.
Zi-ka-wei iZ = +5m.43s.
Hong Kong PP = +6m.31s., ? = +6m.48s., SS = +11m.52s.
Medan i = +9m.11s. and +21m.43s.
Riverview eE = +22m.36s.
Melbourne i = +18m.7s. and +25m.29s.
Almata e = +10m.45s. = $P_cP$ − 17s.

*Continued on next page.*

Kodaikanal PS = +20m.17s., SS = +24m.34s., SSS = +27m.25s.
Sitka e = +19m.52s., i = +20m.17s.
Bombay PS = +20m.15s., SS = +23m.49s.
Berkeley iPEN = +11m.48s., iZ = +12m.36s.
Branner eN = +12m.40s., eE = +12m.43s.
Lick eEN = +12m.40s.
Santa Barbara iENZ = +12m.52s.
Tinemaha iEZ = +12m.56s.
Pasadena iENZ = +12m.58s., eZ = +23m.5s. =PS −39s.
Mount Wilson iSEZ = +12m.59s.
Riverside iENZ = +13m.1s.
La Jolla iENZ = +13m.5s.
Tiflis PPNZ = +16m.8s., eENZ = +22m.15s. =S −12s., SSN = +29m.20s.
Scoresby Sund +22m.44s.
Tucson eSKS = +22m.52s., ePS = +24m.45s., eSS = +29m.34s.
Ksara ePP = +17m.26s., PS = +26m.54s.
Ivigtut +31m.18s.
De Bilt iZ = +26m.20s. =PS −42s., e = +31m.54s.
St. Louis eEN = +24m.26s. =SKKS −45s. and +26m.34s. =PS −37s.
Stuttgart ePP = +17m.37s., e = +18m.45s. and +18m.51s., eSKS = +23m.44s., eSS = +33m.12s. ; $T_0$ =17h.52m.30s.
Triest e = +26m.26s. =PS −48s.
Uccle i = +26m.34s. =PS −47s., eN = +32m.0s.
Strasbourg iPP = +18m.33s., i = +19m.13s.
Toronto i = +24m.0s. and +24m.47s., e = +26m.42s.
Ottawa eN = +24m.48s., +27m.6s., +31m.48s., and +39m.24s.
Philadelphia e = +27m.27s., +33m.18s., and +39m.33s.
Granada PP = +20m.45s., SKS = +26m.39s., SS = +36m.17s., SSS = +42m.9s.
San Juan e = +22m.12s.
La Paz iZ = +20m.12s.
Long waves were recorded at Kew, Helsingfors, Piacenza, Prague, San Fernando, and Ukiah.

Oct. 21d. 18h. Readings for which Nagoya gives the epicentre as 36°·8N. 141°·3E.
Tyosi eP =33m.3s., P* =33m.9s., S =33m.20s., S* =33m.23s., M =33m.26s.
Nagoya P =33m.46s., S =34m.32s., M =35m.23s.
Sumoto iE =35m.23s., iN =35m.27s.
Kobe eN =35m.23s., eEN =35m.35s., eZ =35m.37s., and 35m.48s., eME = 37m.46s.
Mizusawa eP =33m.16s., iS =33m.42s.

Oct. 21d. Readings also at 1h. (Tyosi), 2h. (La Paz), 3h. (Sumoto), 7h. (Tyosi), 10h. (Hastings), 11h. (Tiflis), 12h. (Ksara and Stuttgart), 18h. (Tiflis and Mizusawa), 19h. (Agra and Calcutta), 20h. (La Paz and Tyosi).

Oct. 22d. 1h. Readings for which no determination has been made :—
Tashkent e =3m.25s., e =7m.3s., e =8m.36s., eL =8m.54s., M =10m.0s.
Samarkand eP =4m.30s.
Agra eE =5m.9s., eN =5m.15s., S?E =5m.29s.
Almata e =5m.13s.
Frunse e =5m.15s.
Bombay e =7m.
Calcutta eP =10m.4s., L =11m.12s.
Kodaikanal e =10m.22s.
Tiflis LE =17m.0s., MEN =18m.6s.
Sverdlovsk M =18m.

Oct. 22d. Readings also at 0h. (Balboa Heights), 1h. (Tyosi), 2h. (Batavia), 3h. (Tyosi, Nagoya, and Mizusawa), 4h. (Tyosi, Frunse, Almata, Lick, Berkeley, and Branner), 7h. (Tiflis), 13h. (Branner, Christchurch, and Wellington), 16h. (Mizusawa and Tyosi), 18h. (Triest), 21h. (Frunse, Samarkand, and Tashkent), 22h. (Sverdlovsk).

Oct. 23d. 7h. 46m. 18s. Epicentre 32°·7N. 131°·9E. (as on 1931 Sept. 22d.). X.

A = −·562, B = +·626, C = +·540.

| | Δ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Hukuoka | 1·5 | 305 | 0 23 | + 2 | 0 42 | S* | — |
| Hukuoka B | 1·5 | 305 | 0 22 | + 1 | 0 41 | + 2 | — |
| Koti | 1·6 | 58 | i 0 37 | S | i 1 0 | ? | 1·0 |
| Nagasaki | 1·7 | 271 | 0 20 | − 4 | i 0 39 | − 5 | — |
| Sumoto | 3·0 | 56 | e 1 23 | S | 1 32 | $S_g$ | 1·5 |
| Nagoya | 4·8 | 58 | — | — | e 2 15 | S* | — |

Oct. 23d. 22h. 23m. 47s. Epicentre 41°·0N. 142°·5E. N.3.

Given by Nagoya.

A = −·599, B = +·459, C = +·656; D = +·609, E = +·793;
G = −·521, H = +·399, K = −·755.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Mizusawa | 2·2 | 209 | i 0 28 | − 3 | i 0 53 | − 4 | — | — |
| Tyosi | 5·4 | 194 | e 1 16 | − 1 | 2 30 | S* | — | 3·0 |
| Nagoya | 7·3 | 219 | 1 45 | + 1 | 3 4 | − 2 | — | 4·0 |
| Vladivostok | 8·1 | 289 | (e 1 55) | 0 | e 2 28 | P* | e 1·9 | 4·3 |
| Kobe | 8·6 | 225 | — | — | 4 37 | $S_g$ | — | — |
| Chiufeng | 20·0 | 276 | e 4 36 | + 6 | e 8 28 | SS | — | 12·0 |
| Tinemaha | 72·6 | 55 | e 11 15 | −11 | — | — | — | — |
| Mount Wilson | 74·5 | 58 | i 11 47 | +10 | — | — | — | — |
| Pasadena | 74·5 | 58 | i 11 45 | + 8 | — | — | — | — |

Additional readings :—
Tyosi P* = +1m.27s.
Kobe eN = +5m.33s., eE = +5m.37s.
Tinemaha iZ = +11m.34s.
Long waves were also recorded at Baku and Tashkent.

Oct. 23d. Readings also at 7h. (Malabar), 8h. (Prato), 10h. (Alicante), 12h. (Christchurch), 16h. (Tyosi), 17h. (San Juan), 20h. (Sumoto and Nagoya), 21h. (Berkeley, Branner, Lick, and San Francisco), 23h. (Christchurch, New Plymouth, and Wellington).

Oct. 24d. 2h. Readings for which no determination has been made :—
Santiago P = 10m.55s., S = 11m.55s., M = 12m.4s.
La Paz P = 13m.36s.
La Plata SE = 15m.0s., N = 15m.24s., LEN = 16m.0s., ME = 16m.31s., MN = 16m.39s.
Tinemaha iPZ = 21m.39s., iZ = 21m.55s.
Riverside iPZ = 21m.39s., iZ = 22m.17s.
Mount Wilson ePZ = 21m.41s.
Pasadena iPZ = 21m.42s.

Oct. 24d. 6h. Readings for which no determination has been made :—
Christchurch eP = 4m.31s., S = 10m.36s., $L_q$ = 13m.38s., LR = 15m.40s.
Manila P = 12m.59s., iS = 13m.14s.
Sydney e = 24m.10s., L = 28m.0s., M = 29m.30s.
Riverview e = 24m.30s., eL = 27m.18s.
Sverdlovsk e = 29m.0s., i = 43m.51s., L = 73m.
Baku e = 38m.0s., e = 42m.0s., e = 46m.58s., e = 53m.29s., eL = 76m., M = 102m.48s.
Pasadena eLZ = 38m.
Tucson eL = 39m.0s.

Oct. 24d. Readings also at 0h. (Mizusawa), 4h. (Oak Ridge and Sydney), 7h. (Andijan, Frunse, Samarkand, and Wellington), 8h. (Sitka and Tashkent), 13h. (Tyosi), 21h. (Strasbourg), 22h. (Siena), 23h. (Branner).

Oct. 25d. 1h. Readings for which no determination has been made :—

**Agra ePE = 34m.49s., eN = 36m.41s., iSE = 36m.43s., $S_gEN$ = 37m.51s.**
**Calcutta eP = 35m.54s., S = 37m.9s., L = 38m.1s.**
**Andijan eP = 36m.4s.**
**Frunse eP = 36m.20s.**
**Tashkent P = 36m.39s., eS = 40m.9s., L = 42m.54s., M = 45m.24s.**
**Samarkand e = 36m.40s.**
**Bombay e = 40m.19s., i = 42m.43s., M = 44m.47s.**
**Chiufeng e = 41m.47s., M = 46m.12s.**
**Kodaikanal eP = 42m.18s., eS = 45m.5s., SS = 45m.34s., L = 46m.10s., M = 47m.**
**Baku eL = 44m.**
**Sverdlovsk e = 46m.27s., L = 49m.30s., M = 50m.18s.**
**Tiflis LE = 52m.**
**Pulkovo eL = 57m.**

Oct. 25d. 3h. 20m. 22s. Epicentre 37°·8N. 122°·6W. (as on 13d.). X.

A = −·426, B = −·666, C = +·613.

| | Δ | Az. | P. | O−C. | S. | O−C. |
|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. |
| San Francisco | 0·1 | 125 | i 0 0 | − 1 | — | — |
| Berkeley | 0·2 | 65 | i 0 4 | + 1 | i 0 8 | + 3 |
| Branner | 0·5 | 137 | e 0 7 | 0 | i 0 8 | − 5 |
| Lick | 0·9 | 119 | i 0 14 | + 1 | i 0 25 | + 2 |

Branner iEN = +13s. and +16s.

Oct. 25d. 6h. 21m. 48s. Epicentre 38°·2N. 121°·8W. N.3.

A = −·414, B = −·668, C = +·618 ; D = −·850, E = +·527 ;
G = −·326, H = −·526, K = −·786.

| | Δ | Az. | P. | O−C. | S. | O−C. |
|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. |
| Berkeley | 0·5 | 228 | e 0 7 | 0 | i 0 13 | 0 |
| San Francisco | 0·7 | 230 | i 0 11 | + 1 | i 0 20 | + 2 |
| Branner | 0·9 | 201 | e 0 13 | 0 | i 0 23 | 0 |

Berkeley iE = +11s.

Oct. 25d. 8h. Readings for which no determination has been made :—

**Victoria P = 53m.37s., LE = 54m.56s., ME = 55m.42s.**
**Tinemaha eZ = 56m.2s., iZ = 56m.9s.**
**Seattle eL = 56m.32s.**
**Mount Wilson eZ = 56m.34s., iZ = 56m.37s.**
**Pasadena iZ = 56m.37s.**
**Riverside eZ = 56m.39s., iZ = 56m.44s.**
**Ukiah e = 57m.35s.**
**Bozeman e = 59m.34s.**
**Philadelphia e = 59m.36s.**
**Toronto eN = 64m.45s., L? = 69m.23s.**
**Ottawa eE = 65m., eL = 70m.**
**Honolulu e = 67m.0s.**
**Chicago eL = 67m.12s.**
**Ann Arbor eN = 69m.36s., eLN = 70m.18s., eE = 70m.24s., eLE = 72m.18s.**
**Columbia e = 72m.0s.**
**Oak Ridge eL = 72m.**
**Pulkovo eL = 88m.**
**Sverdlovsk L = 91m.**
**Tashkent eL = 91m., M = 110m.24s.**
**Baku eL = 93m.**

Oct. 25d. 10h. 20m. 28s. Epicentre 36°·7N. 72°·2E. N.3.

Given by Frunse.

A = +·245, B = +·763, C = +·598 ; D = +·952, E = −·306 ;
G = +·183, H = +·569, K = −·802.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Andijan | 4·1 | 2 | e 1 6 | P* | 1 46 | + 1 | — | 2·7 |
| Samarkand | 5·0 | 308 | 1 11 | 0 | e 2 9 | + 1 | — | — |
| Tashkent | 5·1 | 335 | i 1 11 | − 2 | i 2 9 | − 1 | 2·4 | 3·1 |
| Frunse | 6·4 | 16 | e 1 34 | + 3 | e 2 46 | + 3 | — | 3·7 |

Additional readings :—
Andijan $P_g$ = +1m.16s., e = +1m.49s., $eS_g$ = +2m.2s. =S* +2s.
Samarkand $iP_g$ = +1m.25s. =P* +3s., $eS_g$ = +2m.25s. =S* −2s., i = +2m.46s.
Frunse $P_g$ = +2m.8s., e = +2m.53s.
Long waves were also recorded at Agra, Baku, and Tiflis.

Oct. 25d. 10h. 23m. 24s. Epicentre 54°·0S. 160°·0E. N.3.

A = −·552, B = +·201, C = −·809 ; D = +·342, E = +·940 ;
G = +·760, H = −·277, K = −·588.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Christchurch | 13·4 | 43 | i 3 6 | − 1 | 5 42 | SS | 5·9$_q$ | — |
| Wellington | 16·1 | 44 | 3 45 | + 2 | 6 46 | + 5 | 7·6 | 9·6 |
| New Plymouth | 17·7 | 39 | 2 36? | ? | — | — | — | — |
| Melbourne | 19·2 | 321 | i 4 20 | − 1 | e 7 47 | − 3 | 9·4 | 10·0 |
| Riverview | 21·1 | 339 | i 4 27 | −14 | i 8 39 | +11 | 9·0 | 10·9 |
| Adelaide | 24·2 | 313 | — | — | i 9 36 | + 9 | e 11·4 | 13·4 |

Additional readings :—
Christchurch LR = +7·1m.
Melbourne i = +7m.48s. and +8m.36s.
Riverview i?N = +1m.44s. and +4m.23s.

Oct. 25d. 11h. 5m. 38s. Epicentre 40°·9S. 176°·0E. (as on 1934 March 10d. 7h.) X.

A = −·754, B = +·053, C = −·655.

| | Δ | Az. | P. | O−C. | S. | O−C. |
|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. |
| Bunnythorp | 0·7 | 334 | −0 38 | −47 | −0 27 | −45 |
| Dannevirke | 0·7 | 7 | 0 9 | − 1 | 0 19 | + 1 |
| Wellington | 1·0 | 248 | 0 11 | − 3 | 0 25 | − 1 |
| Hastings | 1·4 | 28 | (0 22?) | + 2 | (0 41) | S* |
| New Plymouth | 2·3 | 321 | (0 35?) | + 2 | (1 2) | + 3 |
| Takaka | 2·4 | 271 | 0 22 | −12 | 0 52 | −10 |
| Arapuni | 2·8 | 355 | — | — | 1 22? | S* |
| Glenmuick | 2·9 | 229 | 1 12 | S | 1 55 | ? |
| Christchurch | 3·6 | 222 | e 0 58 | P* | 1 38 | + 6 |

Additional readings and notes :—
Hastings readings have been *diminished* by 1m.
New Plymouth readings have been *increased* by 1m.
Glenmuick e = +1m.29s. =$S_g$ −1s.
Christchurch e = +1m.8s. =$P_g$ +2s., i = +2m.8s.

Oct. 25d. 11h. Readings for which no determination has been made :—
Victoria PE =13m.3s., LE =14m.30s.
Seattle e =14m.24s., eL =16m.4s.
Tinemaha eZ =15m.18s., iZ =15m.23s.
Santa Barbara eZ =15m.43s.
Pasadena iZ =15m.50s.
Mount Wilson iZ =15m.51s.
Riverside iZ =15m.55s.

Oct. 25d. Readings also at 0h. (Branner (2) ), 4h. (Philadelphia), 5h. (Christchurch), 6h. (Baku and Tashkent), 11h. (Granada, Philadelphia, and Wellington (2) ), 13h. (New Plymouth and Wellington), 14h. (Andijan, Branner, New Plymouth, Samarkand, and Wellington), 16h. (Malabar), 18h. (Christchurch), 22h. (Mizusawa, Nagoya (2), Sumoto, and Tyosi), 23h. (Mineo, Tashkent, and Sverdlovsk).

Oct. 26d. 14h. 44m. 34s. Epicentre 6°·0S. 123°·8E. N.1.

"Provisional Catalogue of deep-focus Earthquakes in the Netherlands East Indies 1918-1936," Berlage, suggests epicentre as 6°S. 124°E. 500km. deep.

$A = -\cdot553$, $B = +\cdot826$, $C = -\cdot105$; $D = +\cdot831$, $E = +\cdot556$; $G = +\cdot058$, $H = -\cdot087$, $K = -\cdot995$.

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. |
| Malabar | −2·0 | 16·1 | 265 | i 3 19 | + 2 | i 6 3 | +10 | — | — |
| Batavia | −2·2 | 16·9 | 269 | i 3 21 | − 4 | i 6 16 | + 8 | — | — |
| Palau | −2·4 | 17·1 | 39 | 3 32 | + 7 | 6 17 | + 9 | — | — |
| Manila | −3·0 | 20·8 | 353 | 3 48 | −16 | 7 20 | 0 | — | — |
| Medan | −3·9 | 26·9 | 290 | i 4 55 | − 6 | i 8 54 | −11 | — | — |
| Perth | −3·9 | 26·9 | 195 | 7 51 | ? | — | — | — | — |
| Hong Kong | −4·6 | 29·9 | 342 | 5 21 | − 2 | 9 39 | − 7 | 12·6 | 14·3 |
| Phu-Lien | −4·7 | 31·7 | 329 | e 5 38 | 0 | i 10 11 | − 4 | — | — |
| Adelaide | −4·8 | 32·0 | 156 | i 5 28 | −12 | i 9 52 | −26 | — | 13·1 |
| Melbourne | −5·3 | 37·1 | 152 | i 7 59 | ? | e 11 12 | −20 | 57·4 | — |
| Riverview | −5·4 | 37·6 | 141 | 6 16 | − 8 | 11 22 | −16 | — | — |
| Sydney | −5·4 | 37·6 | 141 | e 6 26 | + 2 | i 12 26 | +48 | 14·7 | 15·4 |
| Titizima | −5·4 | 37·6 | 27 | 6 21 | − 3 | — | — | — | — |
| Miyazaki | −5·5 | 38·7 | 10 | 6 33 | − 1 | 11 44 | −10 | — | — |
| Nagasaki | −5·6 | 39·2 | 8 | 6 35 | − 2 | 11 49 | −11 | — | — |
| Hukuoka B | −5·7 | 40·1 | 9 | (e 6 44) | 0 | e 6 44 | P | — | — |
| Koti | −5·7 | 40·7 | 13 | i 6 49 | 0 | i 12 27 | + 6 | — | — |
| Matuyama | −5·7 | 40·8 | 11 | 6 50 | 0 | 12 16 | − 7 | — | — |
| Husan | −5·8 | 41·4 | 6 | 6 55 | + 1 | e 8 1 | PP | — | — |
| Sumoto | −5·8 | 41·7 | 14 | 6 57 | 0 | 12 30 | − 5 | — | 12·6 |
| Wakayama | −5·8 | 41·7 | 14 | 6 55 | − 2 | 12 29 | − 6 | — | — |
| Kobe | −5·8 | 42·1 | 14 | e 6 56 | − 4 | i 12 37 | − 4 | — | — |
| Kyoto | −5·9 | 42·6 | 14 | 7 4 | 0 | 12 42 | − 5 | — | — |
| Kameyama | −5·9 | 42·6 | 15 | 7 4 | 0 | 12 44 | − 3 | — | — |
| Toyooka | −5·9 | 42·8 | 13 | e 7 8 | + 2 | 12 47 | − 3 | — | — |
| Hikone | −5·9 | 42·9 | 15 | 7 8 | + 2 | 12 48 | − 3 | — | — |
| Nagoya | −6·0 | 43·1 | 16 | 7 6 | − 1 | (12 51) | − 2 | 12·7 | — |
| Gihu | −6·0 | 43·2 | 15 | 7 10 | + 2 | 12 50 | − 4 | — | — |
| Misima | −6·1 | 43·5 | 15 | 7 11 | + 1 | 12 56 | − 1 | — | — |
| Zinsen | −6·1 | 43·6 | 3 | i 7 13 | + 2 | i 12 59 | 0 | — | — |
| Keizyo | −6·1 | 43·6 | 4 | 7 13 | + 2 | i 13 0 | + 1 | — | 13·0 |
| Kohu | −6·1 | 43·9 | 17 | 7 12 | − 1 | 12 58 | − 5 | — | — |
| Tokyo | −6·1 | 44·3 | 17 | 7 17 | 0 | 13 17 | + 8 | — | — |
| Toyama | −6·1 | 44·5 | 15 | 7 20 | + 2 | 13 12 | 0 | — | — |
| Oiwake | −6·1 | 44·6 | 16 | 7 17 | − 2 | 13 10 | − 4 | — | — |
| Nagano | −6·1 | 44·7 | 17 | 7 17 | − 3 | 13 12 | − 3 | — | — |
| Maebasi | −6·1 | 44·7 | 18 | 7 19 | − 1 | 13 20 | + 5 | — | — |
| Tyosi | −6·1 | 44·7 | 20 | e 7 21 | + 1 | 13 13 | − 2 | — | 13·4 |
| Kakioka | −6·2 | 44·9 | 19 | 7 21 | 0 | 13 14 | − 3 | — | — |
| Calcutta | −6·2 | 44·9 | 311 | 7 27 | + 6 | i 13 26 | + 9 | 18·0 | — |
| Wazima | −6·2 | 45·1 | 15 | 7 24 | + 1 | 13 20 | 0 | — | — |
| Takada | −6·2 | 45·2 | 16 | 7 28 | + 4 | 13 22 | + 1 | — | — |
| Mito | −6·2 | 45·2 | 19 | 7 28 | + 4 | 13 21 | 0 | — | — |
| Colombo | −6·2 | 45·7 | 286 | 7 28 | 0 | 12 13 | −76 | 16·8 | 17·1 |
| Hukusima | −6·3 | 46·4 | 18 | 7 33 | 0 | 13 38 | 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. |
| Chiufeng | −6·3 | 46·6 | 352 | 7 36k | + 1 | 13 37 | − 4 | — | — |
| Mizusawa | −6·4 | 47·9 | 17 | e 7 43 | − 1 | i 13 59 | 0 | — | — |
| Akita | −6·5 | 48·1 | 17 | 7 48 | + 3 | 14 4 | + 4 | — | — |
| Kodaikanal | −6·6 | 49·0 | 290 | 7 51 | − 1 | i 14 15 | + 4 | 20·6 | — |
| Aomori | −6·6 | 49·4 | 17 | 7 56 | + 1 | 14 19 | + 1 | — | — |
| Sapporo | −6·9 | 51·6 | 16 | 8 14 | + 4 | 14 51 | + 5 | — | — |
| Agra | −7·2 | 55·3 | 309 | i 8 35 | − 2 | i 15 34 | 0 | — | — |
| Bombay | −7·2 | 56·0 | 298 | 8 34 | − 8 | i 15 41 | − 3 | — | — |
| Christchurch | −7·2 | 56·8 | 138 | i 8 39 | − 9 | i 15 45 | −10 | — | — |
| Wellington | −7·2 | 57·4 | 135 | 8 26? | −27 | i 15 46 | −18 | — | — |
| Frunse | −7·7 | 66·2 | 323 | e 9 43 | −11 | 17 52 | − 4 | — | — |
| Andijan | −7·7 | 66·4 | 320 | e 9 49 | − 6 | 17 53 | − 6 | — | — |
| Semipalatinsk | −7·9 | 67·8 | 332 | e 10 56 | +52 | e 19 3 | +48 | — | — |
| Tashkent | −8·0 | 68·6 | 320 | e 11 0 | (−28) | i 17 26 | −58 | e 33·4 | 41·6 |
| Tchimkent | −8·0 | 68·9 | 320 | e 9 14 | −57 | e 17 31 | −57 | — | — |
| Samarkand | −8·0 | 69·4 | 316 | e 10 18 | + 4 | — | — | — | — |
| Sverdlovsk | −8·7 | 80·9 | 330 | i 11 11 | −13 | i 20 27 | −20 | 32·4 | — |
| Baku | −8·8 | 81·8 | 312 | e 11 8 | −21 | 20 43 | −14 | 36·4 | — |
| Erevan | −8·9 | 85·8 | 311 | (11 50) | − 1 | (21 23) | −19 | — | — |
| Tiflis | −8·9 | 85·8 | 313 | i 11 36 | −15 | e 21 4 | −38 | e 30·7 | — |
| Ksara | −9·2 | 91·6 | 303 | e 12 19 | − 1 | 22 20 | −21 | — | — |
| Theodosia | −9·2 | 93·1 | 315 | — | — | e 21 46 | ? | — | — |
| Yalta | −9·2 | 93·9 | 314 | — | — | e 21 48 | ? | — | — |
| Sebastopol | −9·2 | 94·5 | 315 | — | — | e 21 52 | ? | — | — |
| Helwan | −9·3 | 95·2 | 299 | e 14 36 | ? | i 21 54 | ? | — | — |
| Pulkovo | −9·3 | 97·0 | 329 | e 19 42 | ? | i 22 2 | −92 | — | — |
| Copenhagen | — | 107·0 | 327 | — | — | 23 2 | ? | — | — |
| Triest | — | 108·3 | 316 | — | — | i 22 56 | ? | — | — |
| Stuttgart | — | 110·6 | 321 | e 19 37 | PP | e 26 42 | ? | — | — |
| Strasbourg | — | 111·6 | 321 | (e 20 26?) | ? | — | — | e 20·4 | — |
| De Bilt | — | 112·1 | 325 | — | — | i 26 58 | ? | — | — |
| Paris | — | 114·8 | 321 | 20 26? | ? | — | — | — | — |
| Santa Barbara | — | 115·2 | 54 | i 17 33 | [−60] | — | — | — | — |
| Tinemaha | — | 115·8 | 52 | e 17 29 | [−66] | e 28 6 | PS | — | — |
| Pasadena | — | 116·5 | 55 | i 17 32k | [−65] | i 28 11 | PS | — | — |
| Mount Wilson | — | 116·6 | 54 | i 17 34 | [−63] | — | — | — | — |
| Riverside | — | 117·2 | 55 | e 17 31 | [−67] | — | — | — | — |
| La Jolla | — | 117·5 | 56 | e 17 34 | [−65] | — | — | — | — |
| St. Louis | — | 135·2 | 39 | e 18 11 | [−64] | — | — | — | — |
| Little Rock | — | 136·0 | 44 | e 18 12 | [−64] | e 21 42 | PP | — | — |
| Ottawa | — | 137·1 | 20 | e 21 49 | PP | — | — | — | — |
| Oak Ridge | — | 141·1 | 18 | e 18 15 | [−78] | — | — | — | — |
| Georgetown | — | 142·1 | 27 | i 18 19k | [−65] | i 24 25 | ? | — | — |
| La Paz | — | 154·6 | 152 | e 18 43 | [−65] | — | — | — | — |

Additional readings and note :—
**Batavia** iE = +4m.29s.
**Perth** i = +8m.46s. and +16m.26s.
**Hong Kong** ? = +6m.56s. and +7m.24s.
**Adelaide** e = +7m.38s., i = +8m.35s.
**Melbourne** e = +13m.48s., i = +14m.19s.
**Riverview** iENZ = +8m.1s., iE = +14m.32s.
**Kobe** iN = +7m.1s., iNZ = +7m.6s., pP? = +8m.38s., eN = +9m.53s., SZ = +12m.40s., SP? = +12m.55s., iZ = +13m.52s., $S_cSE$? = +14m.19s., $S_cSN$? = +14m.22s.
**Toyooka** PZ = +7m.24s., SZ = +12m.44s.
**Calcutta** PP = +8m.37s.
**Colombo** SS = +13m.28s.
**Chiufeng** PP = +8m.54s., PPP = +9m.25s., $P_cP$ = +10m.28s., iSN = +13m.41s.
**Mizusawa** iPE = +7m.46s.
**Kodaikanal** PP = +9m.9s., PPP = +9m.53s., SS = +17m.7s.
**Agra** PPP = +11m.5s., iN = +15m.31s., SS = +18m.51s.
**Bombay** i = +17m.29s., SS = +19m.18s.
**Christchurch** ipPEZ = +10m.47s., isS = +19m.37s., EN = +22m.48s.
**Wellington** i = +23m.6s.
**Erevan readings** have been *diminished* by 5m.

*Continued on next page.*

Tiflis eENZ = +13m.50s., eZ = +17m.6s., eE = +18m.46s., iEN = +21m.24s., eN = +25m.24s. and +27m.28s.
Ksara PS = +23m.38s.
Yalta e = +25m.41s.
Pulkovo i = +22m.56s. and +24m.26s., e = +26m.42s. and +30m.52s.
Copenhagen +26m.2s.
Triest i = +23m.52s. and +26m.39s., e = +32m.20s.
Stuttgart e = +30m.41s.
Santa Barbara iZ = +18m.42s., eZ = +20m.9s.
Tinemaha eZ = +18m.46s. and +30m.12s.
Pasadena iZ = +18m.48s., +20m.9s., and +20m.59s., e = +30m.25s.
Riverside iZ = +18m.51s. and +20m.12s.
St. Louis eSEN = +21m.41s.
Little Rock epPN = +18m.17s., esS = +21m.50s.
La Jolla iZ = +19m.4s. and +20m.12s.
Ottawa e = +24m.6s.
Oak Ridge i = +18m.17s., +18m.49s., and +20m.52s.
Georgetown ePP = +20m.42s., iSKP = +22m.2s.; $T_o$ = 14h.43m.20s.
La Paz PP? = +22m.8s.
Long waves were recorded at Alicante.

Oct. 26d. 17h. 11m. 12s. Epicentre 29°·2N. 131°·3E. (as on 1932 May 28d.). R.1.

A = −·576, B = +·656, C = +·488; D = +·751, E = +·660; G = −·322, H = +·367, K = −·873.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Nake | 1·8 | 243 | 0 32 | $P_g$ | 0 51 | S* | — | — |
| Kagosima | 2·5 | 345 | 0 40 | P* | 1 6 | + 2 | — | — |
| Unzendake | 3·6 | 346 | 0 54 | + 3 | 1 47 | S* | — | — |
| Nagasaki | 3·7 | 341 | i 0 54 | + 1 | 1 37 | + 2 | — | 2·7 |
| Kumamoto | 3·7 | 351 | 0 54 | + 1 | 1 34 | − 1 | — | — |
| Simidu | 3·9 | 21 | 0 54 | − 2 | 1 32 | − 8 | — | — |
| Ooita | 4·0 | 4 | 0 51 | − 6 | 1 36 | − 6 | — | — |
| Uwazima | 4·2 | 15 | 0 56 | − 4 | 1 40 | − 8 | — | — |
| Naha | 4·4 | 228 | 1 7 | + 4 | 1 57 | − 4 | — | — |
| Hukuoka | 4·4 | 350 | 1 6 | + 3 | 1 56 | + 3 | — | 4·1 |
| Hukuoka B | 4·4 | 350 | i 1 4 | + 1 | 2 5 | S* | — | 3·8 |
| Matuyama | 4·8 | 15 | 1 9 | + 1 | 1 58 | − 5 | — | — |
| Simonoseki | 4·8 | 357 | 1 10 | + 2 | 1 56 | − 7 | — | — |
| Koti | 4·8 | 23 | i 1 7 | − 1 | i 1 55 | − 8 | 2·2 | — |
| Hirosima | 5·3 | 10 | 1 18 | + 3 | — | — | — | — |
| Siomisaki | 5·7 | 37 | 1 20 | − 1 | 2 41 | S* | — | — |
| Wakayama | 6·0 | 32 | 1 24 | − 1 | — | — | — | — |
| Sumoto | 6·0 | 30 | i 1 25 | 0 | 2 27 | − 6 | e 3·5 | 3·8 |
| Husan | 6·2 | 342 | i 1 30 | + 2 | 2 30 | − 8 | — | 4·6 |
| Kobe | 6·4 | 29 | 1 32 | + 1 | e 2 38 | − 5 | e 3·2 | 4·2 |
| Osaka | 6·6 | 32 | 1 32 | − 2 | 2 55 | + 7 | — | — |
| Kyoto | 6·9 | 32 | 1 37 | − 1 | — | — | — | — |
| Taikyu | 7·0 | 343 | 1 43 | + 4 | 3 42 | $S_g$ | — | — |
| Toyooka | 7·0 | 25 | 1 39 | 0 | 2 54 | − 5 | 3·9 | 4·8 |
| Kameyama | 7·2 | 36 | 1 40 | − 2 | 2 53 | −11 | — | — |
| Hikone | 7·3 | 34 | 1 43 | − 1 | 3 0 | − 6 | — | — |
| Nagoya | 7·6 | 37 | 1 49 | + 1 | 3 17 | + 3 | — | 3·3 |
| Gihu | 7·7 | 35 | 1 55 | + 6 | 3 16 | 0 | — | — |
| Omaesaki | 8·0 | 45 | 1 53 | 0 | 3 55 | S* | — | — |
| Hatidyozima | 8·3 | 60 | 1 57 | − 1 | 3 58 | S* | — | — |
| Numadu | 8·7 | 45 | 2 3 | 0 | 4 6 | S* | — | — |
| Misima | 8·8 | 46 | 2 1 | − 4 | 4 52 | $S_g$ | — | — |
| Zi-ka-wei | 8·8 | 285 | e 2 8 | + 3 | 2 34 | P* | 6·0 | 6·4 |
| Kohu | 8·9 | 42 | 2 6 | 0 | 5 41 | ? | — | — |
| Hunatu | 8·9 | 43 | 2 5 | − 1 | 3 38 | − 8 | — | — |
| Toyama | 8·9 | 32 | 2 9 | + 3 | 4 45 | $S_g$ | — | — |
| Matumoto | 9·0 | 37 | 2 8 | + 1 | 4 36 | S* | — | — |
| Keizyo | 9·1 | 338 | i 2 10 | + 1 | 4 8 | +17 | 4·9 | 6·2 |
| Mera | 9·2 | 50 | 2 39 | +29 | 4 37 | S* | — | — |
| Zinsen | 9·2 | 335 | i 2 11 | + 1 | i 3 57 | + 3 | i 5·0 | 6·2 |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Nagano | 9·4 | 36 | 2 14 | + 1 | 5 5 | $S_g$ | — | — |
| Wazima | 9·4 | 28 | 2 16 | + 3 | 3 52 | − 7 | — | — |
| Yokohama | 9·4 | 46 | 2 14 | + 1 | 4 6 | + 7 | — | — |
| Tokyo | 9·6 | 45 | 2 18 | + 2 | 4 40 | S* | — | — |
| Taihoku | 9·6 | 246 | e 2 24 | + 8 | ·5 21 | $S_g$ | — | — |
| Kumagaya | 9·7 | 42 | 2 18 | + 1 | 5 46 | $S_g$ | — | — |
| Maebasi | 9·7 | 40 | 2 17 | 0 | 5 35 | $S_g$ | — | — |
| Titizima | 9·8 | 99 | 2 15 | − 3 | — | — | — | — |
| Kakioka | 10·2 | 44 | 2 23 | − 1 | 5 9 | S* | — | — |
| Tyosi | 10·4 | 48 | 2 29 | + 3 | e 5 30 | $S_g$ | — | 5·8 |
| Heizyo | 10·9 | 337 | 2 37 | + 4 | 4 40 | + 4 | 5·9 | 6·2 |
| Arisan | 11·0 | 241 | e 2 37 | + 2 | 4 38 | 0 | — | — |
| Hukusima | 11·5 | 39 | 2 43 | + 1 | 4 58 | + 8 | — | — |
| Dairen | 12·6 | 323 | 2 59 | + 3 | 6 50 | $S_g$ | — | — |
| Mizusawa | 12·8 | 36 | e 3 2 | + 3 | 6 46 | $S_g$ | — | — |
| Morioka | 13·3 | 35 | 3 9 | + 3 | 7 15 | $S_g$ | — | — |
| Sinkyo | 15·5 | 344 | 3 51 | +16 | 6 52 | +25 | — | — |
| Sapporo | 16·1 | 27 | 3 46 | + 3 | 8 50 | ? | — | — |
| Chiufeng | 16·5 | 315 | i 3 50k | + 2 | 6 58 | + 8 | — | 12·1 |
| Hong Kong | 16·8 | 250 | 3 51 | − 1 | 7 15 | SS | 9·0 | 11·7 |
| Manila | 17·5 | 215 | i 4 4a | + 4 | 7 19 | + 6 | 8·9 | — |
| Phu-Lien | 23·8 | 255 | 5 14 | + 6 | 9 33 | +14 | 11·8 | 17·0 |
| Calcutta | 39·0 | 270 | 7 28 | + 4 | 13 32 | +11 | 16·5 | 30·3 |
| Medan | 40·1 | 237 | i 7 38 | + 5 | i 13 51 | +13 | e 24·8 | — |
| Batavia | 42·5 | 218 | 7 52a | − 1 | 14 14 | + 1 | e 23·8 | — |
| Semipalatinsk | 43·5 | 314 | e 8 47 | +46 | e 15 12 | +44 | e 25·3 | — |
| Dehra Dun | 45·8 | 286 | 17 58 | SS | 22 58 | ? | 27·1 | 29·8 |
| Agra | 46·6 | 281 | i 8 25 | − 1 | 15 12 | − 1 | — | 32·4 |
| Frunse | 47·3 | 303 | 8 32 | + 1 | 15 23 | 0 | e 29·3 | — |
| Andijan | 48·7 | 300 | 8 45 | + 4 | 15 52 | + 9 | e 27·3 | — |
| Hyderabad | 49·5 | 269 | 8 49 | + 2 | 16 3 | + 9 | 24·6 | 34·7 |
| Tashkent | 51·0 | 302 | i 8 59 | 0 | i 16 15 | 0 | 26·8 | 34·5 |
| Samarkand | 52·9 | 300 | 9 23 | +10 | 16 47 | + 6 | — | — |
| Colombo | 53·2 | 256 | 9 13 | − 2 | 16 45 | 0 | 26·2 | 36·9 |
| Kodaikanal | 53·6 | 262 | i 9 21 | + 3 | 16 51 | + 1 | 25·3 | 36·8 |
| Bombay | 53·8 | 273 | i 9 18 | − 2 | i 16 51 | − 2 | e 25·8 | 37·4 |
| Sverdlovsk | 55·5 | 322 | i 9 36 | + 4 | i 17 18 | + 2 | $26·2_q$ | 36·2 |
| Honolulu | 63·7 | 80 | — | — | i 19 2 | − 2 | e 26·8 | — |
| Adelaide | 64·6 | 173 | e 10 31 | − 5 | i 19 3 | −12 | e 30·3 | 37·8 |
| Baku | 65·5 | 304 | 10 44 | + 2 | i 19 29 | + 3 | 32·8 | 38·9 |
| Riverview | 65·8 | 162 | — | — | i 19 27 | − 3 | e 29·8 | 36·1 |
| Sydney | 65·8 | 162 | e 19 18 | S | (e 19 18) | −12 | 33·8 | 34·8 |
| Sitka | 67·5 | 36 | e 10 51 | − 4 | i 19 46 | − 5 | e 32·5 | — |
| Melbourne | 68·2 | 168 | — | — | 19 54 | − 5 | 30·2 | 39·8 |
| Tiflis | 68·7 | 307 | 11 0 | − 3 | i 20 7 | + 2 | e 35·8 | 45·5 |
| Erevan | 69·4 | 305 | (11 10) | + 3 | (20 22) | + 8 | — | — |
| Pulkovo | 70·3 | 329 | 11 8 | − 5 | 20 19 | − 6 | 35·8 | 44·1 |
| Helsingfors | 72·5 | 331 | e 11 24 | − 2 | 20 44 | − 7 | e 34·8 | — |
| Theodosia | 73·6 | 312 | 11 32 | 0 | 21 5 | + 1 | 43·8 | — |
| Yalta | 74·6 | 312 | 11 39 | + 1 | 21 12 | − 3 | 40·8 | — |
| Sebastopol | 75·0 | 313 | e 11 40 | 0 | — | — | — | — |
| Upsala | 75·8 | 332 | e 11 48 | + 3 | e 21 17 | −12 | e 40·8 | 45·4 |
| Königsberg | 77·2 | 326 | i 11 57 | + 4 | e 21 41 | − 4 | e 43·7 | 47·4 |
| Victoria | 77·9 | 41 | 11 48 | − 9 | 21 44 | − 9 | 37·1 | — |
| Lemberg | 78·1 | 322 | e 40 48 | L | — | — | (e 40·8) | 50·1 |
| Ksara | 78·2 | 302 | 11 59 | + 1 | i 21 57 | + 1 | — | — |
| Scoresby Sund | 78·5 | 351 | — | — | 22 0 | + 1 | 36·8 | — |
| Copenhagen | 80·4 | 330 | 12 10 | 0 | 22 14 | − 6 | 36·8 | — |
| Wellington | 81·2 | 148 | — | — | i 22 8 | −20 | 37·8 | — |
| Christchurch | 82·0 | 151 | i 12 14 | − 4 | i 22 22 | −15 | e $33·5_q$ | — |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Budapest | 82·2 | 320 | 11 59 | −20 | 22 9 | −30 | 45·3 | 52·8 |
| Belgrade | 82·9 | 318 | e 12 22 | − 1 | e 22 38 | − 8 | e 50·8 | — |
| Hamburg | 82·9 | 329 | i 12 24a | + 1 | — | — | e 42·8 | 47·8 |
| Prague | 83·1 | 325 | e 12 24 | 0 | e 22 23 | [−22] | e 44·3 | 47·3 |
| Leipzig | 83·2 | 327 | — | — | e 22 44 | [− 1] | e 39·8 | 46·8 |
| Vienna | 83·2 | 322 | e 12 24 | 0 | e 22 46 | [+ 1] | e 45·8 | 48·8 |
| Branner | 83·5 | 50 | e 12 17 | − 9 | — | — | — | — |
| Helwan | 83·6 | 301 | i 12 25 | − 1 | i 22 46 | [− 2] | — | 57·1 |
| Jena | 83·9 | 326 | i 12 25 | − 3 | e 22 48 | [− 3] | e 39·8 | 47·3 |
| Cheb | 84·1 | 325 | e 12 20 | − 9 | e 22 46 | [− 6] | 46·8 | 55·3 |
| Göttingen | 84·3 | 328 | i 12 28 | − 2 | e 22 54 | [ 0] | e 44·8 | 47·4 |
| Graz | 84·4 | 325 | i 12 32 | + 2 | i 22 55 | [ 0] | e 45·8 | 54·5 |
| Lick | 84·7 | 50 | e 12 29 | − 3 | — | — | — | — |
| Zagreb | 84·8 | 320 | e 12 33 | + 1 | e 23 2 | [+4] | — | 47·5 |
| De Bilt | 86·1 | 330 | i 12 38 | − 1 | e 23 10 | [+ 3] | e 40·8 | 47·2 |
| Triest | 86·2 | 322 | 12 36a | − 3 | i 23 11 | [+ 3] | e 40·8 | 52·9 |
| Stuttgart | 86·6 | 326 | e 12 38 | − 3 | e 23 8 | [− 3] | e 44·8 | 48·8 |
| Treviso | 87·0 | 323 | e 12 43 | 0 | e 23 19 | [+ 6] | — | 55·8 |
| Venice | 87·1 | 322 | i 12 14 | −30 | i 23 20 | [+ 6] | — | — |
| Tinemaha | 87·1 | 48 | e 12 41 | − 3 | — | — | — | — |
| Uccle | 87·3 | 330 | i 12 43 | − 2 | i 23 21 | [+ 6] | 40·8 | 57·1 |
| Strasbourg | 87·4 | 326 | i 12 42a | − 3 | i 23 23 | [+ 7] | e 43·8 | 56·3 |
| Santa Barbara | 87·6 | 51 | e 12 46 | 0 | — | — | — | — |
| Stonyhurst | 87·8 | 335 | — | — | e 22 8 | [−71] | 42·8 | 58·8 |
| Zurich | 87·8 | 325 | e 12 50 | + 3 | 23 29 | − 6 | — | — |
| Basle | 88·1 | 326 | e 12 48 | 0 | — | — | — | — |
| Oxford | 88·3 | 333 | — | — | i 22 57 | [−25] | e 40·0 | 60·6 |
| Piacenza | 88·7 | 323 | 12 18 | −33 | i 22 40 | [−44] | 45·8 | 52·1 |
| Trenta | 88·7 | 315 | e 12 50 | − 1 | — | — | — | — |
| Prato | 88·7 | 321 | e 12 32 | −19 | e 23 16 | [− 8] | 44·5 | — |
| Naples | 88·8 | 318 | e 13 28 | +36 | e 23 58 | +13 | — | — |
| Neuchatel | 88·8 | 325 | e 12 50 | − 2 | — | — | — | — |
| Kew | 88·8 | 332 | i 12 50 | − 2 | i 23 37 | − 8 | e 42·8 | 48·4 |
| Pavia | 88·9 | 323 | e 12 46 | − 6 | — | — | — | — |
| Capodimonte | 88·9 | 317 | e 13 28 | +36 | e 23 58 | +12 | — | — |
| Pasadena | 88·9 | 51 | i 12 48 | − 4 | — | — | e 39·8 | — |
| Mount Wilson | 88·9 | 51 | e 12 48 | − 4 | — | — | — | — |
| Siena | 89·1 | 321 | 12 48 | − 5 | — | — | — | — |
| Rome | 89·3 | 319 | 12 42 | −12 | — | — | — | — |
| Riverside | 89·4 | 51 | e 12 52 | − 3 | — | — | — | — |
| Paris | 89·6 | 329 | 12 55 | − 1 | 24 48 | PS | 47·8 | 49·8 |
| Ivigtut | 89·6 | 0 | — | — | 23 18 | [−12] | 42·8 | — |
| La Jolla | 90·2 | 51 | i 12 56 | − 2 | — | — | — | — |
| Tananarive | 93·9 | 251 | — | — | 23 49 | [− 6] | 46·5 | — |
| Barcelona | 95·1 | 325 | — | — | e 25 51 | PS | e 52·3 | 54·4 |
| Algiers | 98·1 | 321 | e 17 48 | PP | e 24 2 | [−14] | 54·8 | — |
| Alicante | 98·9 | 324 | e 18 48 | ? | — | — | e 54·2 | — |
| Toledo | 99·4 | 326 | e 13 41 | 0 | — | — | e 49·1 | 64·8 |
| Almeria | 100·9 | 325 | e 18 39 | ? | — | — | e 55·0 | — |
| Granada | 101·2 | 325 | — | — | e 25 54 | +17 | 49·0 | 68·5 |
| Ottawa | 101·4 | 19 | — | — | e 24 23 | [−10] | e 45·8 | — |
| Malaga | 102·1 | 324 | e 13 28 | −25 | e 25 10 | {+ 1} | 52·8 | — |
| San Fernando | 103·2 | 326 | 18 26 | PP | 32 57 | SS | 55·8 | 62·2 |
| Philadelphia | 106·6 | 21 | e 17 24 | ? | e 24 39 | [−18] | e 48·1 | — |
| Cape Town | 123·6 | 247 | — | — | 30 21 | PS | 58·8 | 64·3 |
| San Juan | 129·5 | 21 | e 22 23 | PKS | — | — | 62·8 | — |
| Huancayo | 149·9 | 60 | e 19 43 | [+ 1] | — | — | e 70·8 | — |
| La Paz | 158·2 | 59 | e 20 0 | [+ 8] | i 31 39 | {+30} | 76·6 | 90·4 |

**Additional readings and note :—**
**Sumoto eZ = +1m.40s. =P* +1s., eEN = +1m.48s. =$P_g$ −6s.**
**Kobe $S_gZ$ = +2m.44s., $S_gE$ = +2m.46s.**
**Toyooka SE = +2m.59s.**
**Nagoya $P_g$ = +1m.52s.**

*Continued on next page.*

Zi-ka-wei iE = +2m.20s., iZ = +4m.0s.
Tyosi PMN = +3m.3s., PME = +3m.8s.
Mizusawa iPE = +3m.6s.
Hong Kong ? = +3m.56s. = PP − 2s., SS = +7m.41s.
Calcutta PP = +8m.46s., PPP = +9m.13s., SS = +15m.53s.
Batavia iP = +7m.57s.
Agra PPE = +10m.12s., PPPE = +10m.53s., iN = +15m.14s., SSE = +18m.21s., SSSE = +19m.45s.
Kodaikanal PP = +11m.13s., SS = +20m.16s., SSS = +21m.48s.?
Sverdlovsk LR = +34·3m.
Adelaide i = +11m.21s. = $P_cP$ + 10s.
Riverview iE = +20m.41s. = $S_cS$ + 8s.
Sydney iS = +26m.38s.
Melbourne i = +24m.11s. = SS − 4s., e = +27m.28s. = SSS + 29s.
Tiflis PPN = +14m.4s., PPPZ = +15m.26s., PSE = +20m.24s., e$S_c$SEN = +20m.58s.
Erevan readings have been *diminished* by 5m.
Helsingfors ePPE = +13m.58s., eSSE = +25m.36s., eSSSEN = +29m.8s.
Königsberg ePPZ = +14m.23s., e?N = +19m.15s., eSSE = +27m.30s., eSSSE = +30m.56s.
Ksara SS = +27m.14s.
Scoresby Sund +27m.0s. = SS + 15s.
Copenhagen +27m.24s. = SS + 5s.
Christchurch eEN = +24m.18s., SSN = +27m.44s., SSE = +27m.58s., SSSE = +31m.26s., eLR = +35·5m.
Prague eSS = +28m.12s.
Vienna iP = +12m.26s., $P_cP$ = +12m.45s., eE = +23m.15s.
Jena iP = +12m.29s.
Göttingen e = +15m.48s. = PP + 8s.
Lick eN = +12m.33s.
Zagreb e = +13m.32s., +23m.36s., and +23m.53s. = PS + 4s.
De Bilt e = +24m.6s. = PS + 1s.
Triest i$P_cP$ = +12m.42s., SKS = +22m.58s., iSKKS = +23m.22s., iE = +23m.32s., iPS = +24m.6s.
Stuttgart i$P_cP$ = +12m.51s., ePP = +16m.12s., ePS = +24m.10s., eSS = +28m.48s. ; $T_0$ = 17h.11m.10s.
Treviso PP = +13m.4s.
Tinemaha eZ = +16m.12s. = PP + 10s.
Uccle iPP = +16m.22s., i = +24m.22s. = PS + 3s., e = +30m.27s.
Strasbourg ipP? = +13m.1s., iPPE = +16m.22s., eE = +23m.37s. = S + 6s., iSKKS = +23m.42s., PS = +24m.23s., eSSN = +29m.1s., eSSSN = +34m.48s.
Kew iPP = +16m.31s., iPS = +24m.48s., e = +34m.24s.
Pasadena iZ = +13m.6s., +16m.30s. = PP + 13s. and +38m.37s.
Riverside eZ = +16m.39s.
Paris PP = +16m.40s.
Ivigtut +24m.36s. = PS − 11s., SS = +29m.54s.
La Jolla iZ = +16m.48s. = PP + 21s.
Tananarive PPE = +16m.55s.
Toledo PP = +17m.57s.
Granada iPP = +18m.12s., PPP = +20m.27s., SKS = +24m.52s., SKKS = +25m.31s., PS = +27m.6s., SS = +32m.50s.
Ottawa eN = +26m.56s. = PS − 4s. and +36m.18s. = SSS + 9s., eE = +40m.48s.
Malaga e = +18m.12s. = PP + 13s., +27m.6s. = PS − 2s., and +40m.20s.
Philadelphia e = +27m.48s. = PS − 6s. and +34m.38s.
Cape Town E = +37m.46s.
La Paz PP = +23m.0s., iN = +29m.24s.
Long waves were also recorded at Durham, Edinburgh, Besancon, Bergen, Charlottesville, and Tucson.

Oct. 26d. 20h. 51m. 11s. Epicentre 30°·0N. 132°·5E. (as on Sept. 12d.). X.

A = −·585, B = +·638, C = +·500.

| | Δ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Nagasaki | 3·6 | 321 | 0 50 | − 1 | 1 32 | 0 | — | — |
| Koti | 3·7 | 14 | 1 10 | P$_g$ | 1 50 | S* | — | — |
| Hukuoka | 4·0 | 334 | 1 5 | P* | 1 52 | S* | — | — |
| Hukuoka B | 4·0 | 334 | 0 57 | 0 | 1 49 | + 7 | — | — |
| Sumoto | 4·8 | 24 | 1 21 | P* | 2 20 | S* | — | 2·4 |
| Kobe | 5·2 | 24 | 1 27 | P* | 2 34 | S* | — | 2·6 |
| Husan | 5·9 | 331 | 1 0 | ? | e 2 23 | − 8 | — | — |
| Nagoya | 6·3 | 38 | 1 44 | P* | e 2 47 | + 6 | — | — |
| Chiufeng | 16·7 | 312 | e 3 50 | 0 | e 7 5 | SS | — | 11·5 |
| Sverdlovsk | 55·5 | 321 | e 9 30 | − 2 | — | — | 31·8 | — |

Kobé gives also iN = eZ = +1m.43s., iEN = +2m.32s. = S* − 1s., iZ = +2m.36s.
Long waves were recorded at Baku and Pulkovo.

Oct. 26d. Readings also at 3h. (Mount Wilson, Pasadena, Riverside, Santa Barbara, Tinemaha, and Triest), 4h. (Andijan, Frunse, and Malabar), 5h. (Wellington), 6h. (Branner), 9h. (Christchurch and Wellington), 10h. (Baku, De Bilt, Sverdlovsk, Strasbourg, Stuttgart, and Tashkent), 13h. (Christchurch), 15h. (Wellington), 17h. (Tyosi and Berkeley), 19h. (Berkeley, Kobe, and Nagoya), 23h. (Lick).

Oct. 27d. 4h. 57m. 43s. Epicentre 37°·0N. 71°·0E. (as on 1931 Oct. 5d.). X.

$A = +\cdot260$, $B = +\cdot755$, $C = +\cdot602$.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Andijan | 3·9 | 17 | e 1 2 | P* | 1 54 | S* | — | 2·0 |
| Samarkand | 4·5 | 309 | (1 5) | + 1 | (1 51) | − 4 | — | (2·1) |
| Tashkent | 4·5 | 341 | i 1 7 | + 3 | — | — | i 2·1 | 2·5 |
| Tchimkent | 5·4 | 349 | e 1 34 | P* | i 2 33 | S* | — | — |
| Frunse | 6·5 | 25 | e 1 34 | + 2 | i 2 57 | +11 | — | — |
| Almata | 7·7 | 36 | 1 45 | − 4 | 3 21 | + 5 | — | 3·6 |

Additional readings and note :—
Samarkand $S_g = (+2m.6s.) = S^* - 6s.$ ; all readings have been *increased* by 1m.

Oct. 27d. 10h. The following readings must be for more than one shock ; no determination could be found.

La Plata PE = 3m.6s., PPN = 5m., PPPE = 5m.6s., SE = 9m.12s., SSN = 11m.48s., LE = 13m.0s., LN = 13m.6s., LZ = 16m.42s., ME = 17m.35s., MN = 20m.22s.
La Paz eP = 3m.46s., PP = 6m.7s., iSN = 10m.58s., LN = 18m.36s., M = 19m.58s.
Sucre P = 3m.46s., iS = 10m.58s.
Christchurch PE? = 4m.16s., iN = 4m.48s., iS = 10m.38s., $L_Q$? = 14m.14s., LR = 16m.56s.
Riverside eZ = 7m.17s.
Mount Wilson eZ = 7m.18s.
Pasadena ePNZ = 7m.18s., eLNZ = 34m.
Santa Barbara eZ = 7m.21s.
Tinemaha eEZ = 7m.34s.
Wellington i = 10m.40s., e = 15m., L = 17m.
Huancayo e = 10m.43s., e = 14m.30s., eL = 16m.0s.
Tyosi P = 12m.57s., S = 13m.2s.
Triest PKP = 14m.41s., e = 19m.4s., eM = 92m.20s.
Melbourne i = 14m.49s., e = 19m.22s., L = 26m.30s., M = 33m.0s.
Tiflis eZ = 14m.54s., eZ = 36m.0s., eLN = 84m., MNE = 101m.30s.
Sydney e = 14m.55s., L = 27m.36s., M = 31m.30s.
Ksara eP = 14m.59s., e = 24m.40s.
Riverview eN = 15m.0s., eL = 26m.18s., ME = 29m.16s.
Arapuni i = 18m.30s.
Ukiah e = 18m.32s., e = 24m.40s., eL = 36m.18s.
Apia e = 19m.19s., L = 21m.27s., M = 24m.10s.
Ottawa e = 20m.6s., e = 27m.12s., eL = 37m.
Sverdlovsk e = 20m.50s., e = 24m.19s., e = 41m.21s., e = 42m.16s., e = 51m.20s., L = 66m., M = 90m.48s.
Baku e = 21m.15s., e = 24m.1s., e = 40m.37s., L = 65m., M = 96m.48s.
Tashkent e = 28m., e = 40m.0s., e = 51m.30s., eL = 67m., M = 81m.36s.
Adelaide e = 29m.25s., M = 33m.42s.
Honolulu e = 30m.0s., eL = 54m.0s.
Kodaikanal e = 32m.27s.
Nagasaki P = 39m.49s., S = 40m.0s.
Hukuoka B 39m.51s., iS = 40m.2s.
Seattle e = 44m.0s.
Long waves were recorded at the following stations, which have been arranged according to increase of time : Cape Town, Tucson, Oak Ridge, Sitka, Tananarive, Strasbourg, De Bilt, Chiufeng, Paris, Kew, Stuttgart, Bombay, Copenhagen, San Juan, and Helsingfors.

Oct. 27d. Readings also at 0h. (Nagasaki), 2h. (Christchurch), 3h. (Wellington), 5h. (Nagasaki and Sumoto), 6h. (Berkeley), 9h. (Berkeley), 11h. (Mount Wilson, Riverside, Pasadena, Perth, Pulkovo, Tashkent, and Tinemaha), 12h. (Hukuoka, Hukuoka B, Nagasaki, and Wellington), 15h. (Andijan, Almata, Frunse, Mount Wilson, Pasadena, Tinemaha, and Tiflis), 16h. (Hukuoka and Hukuoka B), 17h. (Berkeley, Hukuoka, Hukuoka B, and Nagasaki), 20h. (Andijan, Almata, Frunse, and Samarkand), 21h. (St. Louis).

Oct. 28d. 14h. Readings for which no determination has been made :—

Huancayo e = 47m.17s., iL = 48m.8s.
La Paz iP = 47m.17s.a, iS = 48m.7s., L = 48m.30s., M = 48m.44s.
Oak Ridge i = 56m.22s. and 56m.38s.
Tinemaha ePZ = 56m.58s., iZ = 57m.32s.
Riverside ePZ = 57m.13s.
Mount Wilson eZ = 57m.18s.
Pasadena ePZ = 57m.20s.

Oct. 28d. 23h. 36m. 15s. Epicentre 23°·5N. 123°·2E. N.3.

A = −·501, B = +·767, C = +·399 ; D = +·837, E = +·548 ;
G = −·218, H = +·334, K = −·917.

| | △ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Karenko | 1·5 | 290 | e 0 25 | P* | 0 42 | S* | — | — |
| Arisan | 2·1 | 272 | 0 50 | S | 1 7 | $S_g$ | — | — |
| Taihoku | 2·1 | 315 | 0 34 | P* | 0 59 | S* | — | — |
| Tainan | 2·7 | 261 | 0 49 | $P_g$ | 1 23 | $S_g$ | — | — |
| Takao | 2·8 | 249 | 1 17 | S | 1 51 | ? | — | — |
| Hokoto | 3·3 | 270 | 0 43 | − 4 | 2 9 | ? | — | — |
| Zi-ka-wei | 7·8 | 349 | e 1 50 | − 1 | 3 19 | 0 | — | 5·2 |
| Hong Kong | 8·3 | 277 | 2 17 | P* | 3 54 | S* | 4·9 | 5·4 |
| Manila | 9·2 | 194 | 2 5 | − 5 | 4 11 | +17 | — | — |
| Nagasaki | 10·9 | 31 | e 2 33 | 0 | e 4 59 | +23 | — | — |
| Husan | 12·6 | 22 | 2 57 | + 1 | e 5 22 | + 5 | — | — |
| Taikyu | 13·2 | 20 | e 3 4 | − 1 | e 6 32 | S* | — | — |
| Koti | 13·5 | 40 | e 3 21 | +12 | — | — | — | — |
| Zinsen | 14·3 | 11 | e 2 59 | −20 | e 5 51 | − 7 | — | — |
| Keizyo | 14·4 | 12 | 3 19 | − 2 | 7 27 | ? | — | — |
| Heizyo | 15·7 | 7 | 3 21 | −17 | 8 2 | ? | — | — |
| Nagoya | 16·7 | 43 | e 3 45 | PP | — | — | — | — |
| Chiufeng | 17·6 | 342 | i 4 1a | − 1 | 7 22 | + 7 | e 9·4 | — |
| Vladivostok | 20·9 | 18 | e 4 40 | + 1 | e 8 46 | SS | 10·7 | 16·7 |
| Almata | 42·6 | 309 | e 9 45 | (− 5) | — | — | — | — |
| Frunse | 44·3 | 309 | e 8 19 | +12 | — | — | — | — |
| Andijan | 45·6 | 305 | e 8 22 | + 4 | — | — | — | — |
| Tashkent | 48·0 | 306 | i 6 37 | ? | i 14 31 | −62 | e 23·4 | 30·5 |
| Samarkand | 49·6 | 302 | e 8 25 | −23 | — | — | — | — |
| Tiflis | 66·2 | 308 | 10 48 | + 1 | e 19 31 | − 4 | 38·7 | 43·9 |
| Pulkovo | 71·2 | 328 | i 11 16 | − 2 | e 21 17 | PS | 37·7 | 44·9 |
| Theodosia | 72·0 | 313 | e 11 22 | − 1 | e 20 35 | −10 | — | — |
| Yalta | 73·0 | 312 | e 11 29 | 0 | e 20 52 | − 5 | — | — |
| Sebastopol | 73·4 | 313 | e 11 22 | − 9 | — | — | — | — |
| Ksara | 75·0 | 301 | e 11 43 | + 3 | e 21 23 | + 3 | — | — |
| Triest | 85·8 | 319 | 12 38a | + 1 | e 21 45 | ? | — | 51·8 |
| Trenta | 87·2 | 312 | e 12 53 | + 9 | — | — | — | — |

Additional readings :—
Nagasaki iP = +2m.36s.
Zinsen eSE = +7m.33s.
Tiflis e = +32m.27s.
Long waves were also recorded at Kew, Scoresby Sund, and other European stations.

Oct. 28d. Readings also at 1h. (Sebastopol, Theodosia, and Yalta), 2h. (Baku), 3h. (Almata, Andijan, Frunse, Samarkand, and Tashkent), 6h. (Branner and Lick), 7h. (Mizusawa and Samarkand), 8h. (Tiflis), 9h. (New Plymouth and Wellington), 17h. (Hukuoka B and Tiflis), 18h. (Mount Wilson, Pasadena, and Tinemaha), 21h. (Wellington), 22h. (Branner, Berkeley, Glenmuick. Lick, Smarkand, and Wellington).

Oct. 29d. 2h. 34m. 41s. Epicentre 25°·5N. 110°·0W. N.3.

A = −·309, B = −·848, C = +·431; D = −·940, E = +·342;
G = −·147, H = −·405, K = −·903.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Tucson | 6·8 | 354 | e 1 29 | − 8 | i 3 12 | S* | i 3·3 | — |
| La Jolla | 9·7 | 321 | e 2 17 | 0 | i 4 51 | S* | — | — |
| Riverside | 10·6 | 325 | e 2 29 | 0 | i 5 15 | S* | — | — |
| Pasadena | 11·1 | 323 | e 2 27 | − 9 | (i 4 37) | − 4 | i 4·6 | — |
| Mount Wilson | 11·1 | 323 | e 2 36 | 0 | — | — | — | — |
| Santa Barbara | 12·3 | 319 | e 3 4 | +12 | — | — | — | — |
| Tinemaha | 13·5 | 331 | i 3 5 | − 4 | — | — | — | — |
| Denver | 14·8 | 15 | 3 26 | 0 | — | — | e 7·3 | 7·9 |
| Lick | 15·4 | 323 | e 3 41 | PP | — | — | e 7·4 | — |
| Branner | 15·8 | 322 | e 3 42 | + 3 | — | — | e 7·6 | — |
| Berkeley | 16·2 | 323 | i 3 45 | + 1 | e 6 42 | − 1 | — | — |
| Ukiah | 17·6 | 324 | — | — | e 7 19 | + 4 | e 8·1 | — |
| Little Rock | 17·8 | 55 | e 4 14 | PP | e 7 40 | SS | e 9·1 | 10·7 |
| Bozeman | 20·2 | 358 | e 4 30 | − 2 | e 8 19 | + 9 | e 10·4 | — |
| St. Louis | 21·2 | 47 | e 4 48 | PP | e 8 39 | + 9 | e 10·8 | 11·5 |
| Florissant | 21·3 | 46 | e 4 49 | + 6 | e 8 52 | SS | i 10·3 | — |
| Seattle | 24·2 | 339 | (5 19) | + 7 | (e 9 11) | −16 | (e 12·5) | — |
| Chicago | 24·7 | 43 | — | — | e 11 25 | ? | e 14·8 | — |
| Victoria | 25·1 | 339 | 9 53 | S | (9 53) | +10 | 12·4 | 15·6 |
| Ann Arbor | 28·0 | 45 | — | — | e 10 43 | +11 | e 14·1 | 15·2 |
| Charlottesville | 29·4 | 57 | — | — | e 11 11 | +16 | e 14·9 | — |
| Toronto | 30·8 | 46 | — | — | i 11 19? | + 2 | 15·1 | — |
| Philadelphia | 32·4 | 55 | — | — | e 11 49 | + 8 | i 17·0 | — |
| Ottawa | 33·9 | 45 | — | — | e 14 37 | ? | e 17·3 | — |
| Oak Ridge | 35·7 | 52 | i 7 2 | + 7 | e 12 29 | − 3 | e 16·5 | 17·9 |
| Sitka | 36·4 | 337 | — | — | e 12 39 | − 3 | 15·5 | — |
| Honolulu | 43·8 | 275 | — | — | e 19 19 | ? | — | — |
| Huancayo | 50·6 | 134 | — | — | e 19 19 | SS | — | — |
| Uccle | 84·4 | 35 | — | — | e 23 7 | + 5 | e 34·3 | — |
| Stuttgart | 88·0 | 35 | — | — | e 22 25 | [−55] | e 45·3 | — |
| Prague | 89·9 | 32 | — | — | 47 19? | L | e 51·0 | 54·3 |
| Triest | 92·4 | 36 | e 9 16 | ? | e 24 26 | + 8 | e 38·3 | 47·4 |
| Sverdlovsk | 97·1 | 4 | — | — | e 24 15 | [+ 3] | — | — |
| Tiflis | 108·8 | 26 | — | — | e 29 40 | ? | e 48·8 | 69·4 |
| Baku | 111·5 | 16 | — | — | e 30 28 | ? | 51·3 | 68·0 |
| Tashkent | 113·2 | 1 | — | — | e 48 19? | ? | e 54·3 | 70·7 |

Additional readings and notes :—
Tucson i = +3m.7s.
Pasadena i = +2m.40s., iZ = +5m.45s.
Mount Wilson iEZ = +2m.42s.
Denver eE = +3m.44s. and +6m.29s.
Lick eN = +3m.51s.
Berkeley iZ = +6m.37s., eE = +8m.17s., eZ = +8m.27s.
Little Rock ePPE = +4m.34s.
St. Louis ePPE = +5m.11s., eSSN = +9m.34s.; $T_s$ = 2h.34m.47s.
Seattle readings have been *diminished* by 4m.
Chicago e = +14m.9s.; all readings given as for 3h.
Ann Arbor e?N = +8m.1s., e?E = +8m.31s. and +12m.19s.
Charlottesville e = +12m.19s. = SS +4s.
Philadelphia e = +14m.9s. and +15m.36s.
Oak Ridge i = +7m.9s. and +7m.13s.
Sverdlovsk e = +26m.31s.
Long waves were also recorded at Edinburgh, Kew, Stonyhurst, Ivigtut, Ithaca, San Francisco, San Juan, La Paz, and other European stations.

Oct. 29d. 4h. Readings for which no determination has been made :—
Tucson eP = 3m.28s., e = 6m.39s., e = 8m.15s.
La Jolla ePNZ = 3m.58s.
Riverside iPZ = 4m.10s.
Pasadena iPNZ = 4m.15s.
Mount Wilson iP = 4m.15s.
Santa Barbara ePZ = 4m.17s.
Tinemaha ePEZ = 4m.38s.

Oct. 29d. 16h. 15m. 51s. Epicentre 40°·5N. 48°·7E. N.2.

A = +·502, B = +·571, C = +·649; D = +·751, E = −·660;
G = +·429, H = +·488, K = −·760.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Baku | 0·9 | 96 | i 0 16 | + 3 | — | — | — | — |
| Erevan | 3·2 | 262 | i 0 51 | P* | — | — | — | — |
| Tiflis | 3·2 | 292 | 0 45 | − 1 | — | — | 1·5 | — |
| Grozny | 3·6 | 323 | e 1 23 | ? | i 2 9 | ? | — | — |
| Theodosia | 10·7 | 299 | e 2 35 | + 4 | e 4 42 | +11 | e 6·6 | — |
| Yalta | 11·4 | 295 | e 2 43 | + 3 | e 5 1 | +13 | — | — |
| Sebastopol | 11·9 | 295 | e 2 50 | + 3 | — | — | — | — |
| Ksara | 12·1 | 241 | 2 53 | + 3 | 5 26 | ? | — | — |
| Samarkand | 14·0 | 88 | e 3 16 | + 1 | 5 31 | −20 | — | — |
| Tashkent | 15·6 | 80 | i 3 32 | − 4 | i 6 40 | +11 | 8·4 | 11·6 |
| Helwan | 17·7 | 238 | 4 2 | − 1 | i 8 45 | ? | — | 22·9 |
| Andijan | 17·9 | 81 | e 4 2 | − 3 | e 7 23 | + 1 | — | — |
| Sverdlovsk | 18·1 | 21 | i 4 2 | − 6 | i 7 26 | − 1 | i 9·7$_a$ | 13·1 |
| Frunse | 19·4 | 73 | e 4 21 | − 2 | 8 19 | SS | — | — |
| Budapest | 22·3 | 298 | 4 20 | −34 | 8 35 | −17 | — | 10·1 |
| Pulkovo | 22·4 | 335 | i 4 54 | − 1 | i 8 59 | + 6 | 12·1 | 13·9 |
| Königsberg | 23·5 | 317 | e 7 55 | ? | e 9 46 | SS | e 12·7 | 16·7 |
| Taranto | 23·7 | 280 | 5 39 | PP | 10 9 | SS | — | — |
| Vienna | 24·1 | 300 | i 5 9 | − 2 | i 9 44 | +19 | — | — |
| Zagreb | 24·2 | 293 | e 5 14 | + 2 | e 16 19 | (+ 7) | — | — |
| Helsingfors | 24·5 | 331 | e 5 10 | − 5 | i 9 42 | +10 | e 12·1 | — |
| Trenta | 24·7 | 278 | e 5 21 | + 4 | 9 43 | + 7 | — | — |
| Prague | 25·7 | 303 | e 5 31 | + 5 | e 10 12 | +19 | e 13·1 | 24·1 |
| Dehra Dun | 25·8 | 104 | 4 59 | −28 | 10 29 | ? | 15·7 | 18·1 |
| Triest | 25·8 | 293 | i 5 27 | 0 | i 10 13 | +18 | e 13·1 | 17·6 |
| Naples | 25·9 | 283 | e 5 35 | + 7 | e 9 55 | − 2 | — | — |
| Capodimonte | 26·0 | 282 | e 5 35 | + 6 | e 9 55 | − 2 | — | — |
| Cheb | 26·9 | 303 | e 7 0 | ? | e 11 45 | ? | e 15·1 | 16·1 |
| Leipzig | 27·1 | 306 | — | — | e 11 9 | SS | e 15·7 | 18·0 |
| Upsala | 27·3 | 324 | — | — | e 11 9? | SS | — | 17·9 |
| Jena | 27·4 | 305 | e 5 46 | + 4 | — | — | e 10·9 | 16·6 |
| Agra | 27·6 | 110 | i 5 42 | − 2 | i 10 27 | + 2 | 13·5 | — |
| Siena | 27·7 | 288 | 5 54 | +10 | 10 9 | −18 | 18·1 | — |
| Prato | 27·8 | 289 | e 5 57 | +12 | 9 23 | −65 | — | 12·5 |
| Göttingen | 28·6 | 306 | — | — | e 8 9? | ? | — | 17·1 |
| Piacenza | 28·7 | 292 | 6 37 | PP | 10 48 | + 5 | 15·1 | 21·3 |
| Stuttgart | 29·0 | 301 | e 5 39 | −17 | e 10 51 | + 3 | e 15·1 | 20·1 |
| Hamburg | 29·0 | 310 | e 6 9? | +13 | e 12 9? | SS | 17·1 | — |
| Zurich | 29·3 | 297 | e 6 59 | 0 | — | — | — | — |
| Bombay | 29·9 | 129 | 6 5 | + 1 | 11 22 | +19 | — | — |
| Strasbourg | 29·9 | 300 | (i 6 1k) | − 3 | (e 11 7) | + 4 | (e 15·1) | — |
| Basle | 30·0 | 297 | e 6 3 | − 2 | — | — | — | — |
| De Bilt | 31·6 | 307 | — | — | e 12 33 | + 4 | e 16·1 | 19·2 |
| Uccle | 32·1 | 304 | e 6 39 | +15 | e 11 9? | −28 | 15·1 | — |
| Bergen | 33·1 | 322 | 4 9? | ? | — | — | — | — |
| Paris | 33·3 | 300 | e 3 9? | ? | — | — | 16·1 | 20·1 |
| Hyderabad | 34·5 | 123 | 6 43 | − 2 | 12 31 | +17 | 16·6 | 25·0 |
| Kew | 35·0 | 305 | e 6 9? | −40 | — | — | e 17·1 | 20·2 |
| Alicante | 37·6 | 283 | — | — | e 15 56 | SSS | — | — |
| Calcutta | 37·9 | 106 | 7 10 | − 4 | 13 8 | + 3 | e 18·2 | 29·4 |
| Granada | 40·2 | 283 | e 7 31 | − 3 | e 13 43 | + 4 | 18·9 | 30·3 |
| San Fernando | 42·5 | 283 | — | — | 14 30 | +17 | 25·1 | — |
| Colombo | 43·6 | 132 | 9 45 | (− 9) | — | — | — | 29·1 |
| Scoresby Sund | 45·9 | 335 | — | — | 15 9? | + 6 | 20·1 | — |
| Chiufeng | 50·1 | 67 | 8 51$_a$ | − 1 | e 16 7 | + 5 | — | 28·7 |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Hong Kong | 57·4 | 87 | 17 51 | S | (17 51) | + 9 | — | 38·4 |
| Zi-ka-wei | 58·0 | 74 | e 9 49 | − 1 | — | — | 37·8 | 47·1 |
| Vladivostok | 59·4 | 57 | e 9 50 | −10 | — | — | e 19·1 | 38·5 |
| Husan | 61·4 | 67 | — | — | e 17 54 | −40 | — | — |
| Nagoya | 66·8 | 63 | e 10 50 | − 1 | — | — | — | — |
| Batavia | 70·8 | 115 | e 12 21 | +65 | — | — | — | — |
| Cape Town | 79·4 | 205 | — | — | 22 1 | − 8 | — | 41·1 |

Additional readings and note :—
Tiflis iNZ = +0m.54s. =P* +2s.
Grozny i = +1m.51s. =P +0s.
Ksara SS = +6m.22s. =$S_g$ −11s.
Helwan i = +7m.26s. =SS −4s.
Sverdlovsk iLR = +12·1m.
Vienna iEZ = +5m.38s. =PP +0s., iE = +11m.57s.
Zagreb e = +5m.30s. =PP −9s.
Helsingfors PPEN = +5m.45s., SSE = +10m.39s., eSSSN = +11m.1s.
Triest i = +5m.41s. and +6m.2s., iPP = +6m.5s., i = +10m.28s. and +10m.48s., iSS = +11m.26s., i = +13m.5s., i = +13m.17s., +13m.34s. and +14m.30s.
Upsala iE = +12m.15s.
Jena eE = +6m.39s.
Agra ePP = +6m.26s., eN = +10m.22s., iN = +11m.10s., SS = +11m.50s.
Stuttgart e = +7m.9s. and +11m.41s., eZ = +12m.48s. ; $T_o$ =16h.15m.0s.
Strasbourg e =(+8m.7s.), eE =(+11m.32s.), eSSN =(+12m.26s.); all readings have been *diminished* by 1m.
Calcutta PP = +8m.21s., PPP = +8m.56s., SS = +15m.19s., SSS = +16m.0s.
Hong Kong S? = +24m.41s.
Cape Town EN = +24m.35s.
Long waves were recorded at Stonyhurst, Ivigtut, Copenhagen, Koti, Zinsen, Phu-Lien, and Tananarive.

Oct. 29d. 17h. 23m. 1s. Epicentre 41°·3N. 140°·3E. N.1.

Given by Tokyo.

A = −·578, B = +·480, C = +·660 ; D = +·639, E = +·769 ; G = −·508, H = +·422, K = −·751.

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. |
| Aomori | +0·6 | 0·6 | 145 | 0 22 | + 5 | 0 39 | + 8 | — | — |
| Hakodate | +0·6 | 0·8 | 32 | 0 23 | + 3 | 0 43 | + 7 | — | — |
| Muroran | +0·5 | 1·1 | 25 | 0 28 | + 5 | 0 47 | + 6 | — | — |
| Akita | +0·5 | 1·6 | 186 | 0 32 | + 2 | 0 55 | + 1 | — | — |
| Morioka | +0·5 | 1·7 | 157 | 0 32 | − 1 | 0 55 | − 4 | — | — |
| Miyako | +0·5 | 2·1 | 140 | 0 33 | − 4 | 1 2 | − 5 | — | — |
| Urakawa | +0·5 | 2·1 | 67 | 0 35 | − 2 | 1 3 | − 4 | — | — |
| Mizusawa | +0·4 | 2·3 | 163 | i 0 36 | − 3 | i 1 5 | − 4 | — | — |
| Obihiro | +0·3 | 2·7 | 53 | 0 46 | + 3 | 1 18 | + 1 | — | — |
| Asahigawa | +0·3 | 2·9 | 32 | 0 50 | + 4 | 1 23 | + 1 | — | — |
| Isinomaki | +0·3 | 3·0 | 163 | 0 40 | − 7 | 1 14 | −11 | — | — |
| Sendai | +0·2 | 3·1 | 172 | 0 46 | − 1 | 1 22 | − 3 | — | — |
| Yamagata | +0·2 | 3·1 | 178 | 0 45 | − 2 | 1 21 | − 4 | — | — |
| Kusiro | +0·2 | 3·5 | 60 | 0 47 | − 6 | 1 24 | −11 | — | — |
| Niigata | +0·2 | 3·5 | 196 | 1 1 | + 8 | 1 35 | 0 | — | — |
| Hukusima | +0·2 | 3·6 | 177 | 0 53 | − 1 | 1 33 | − 4 | — | — |
| Nemuro | +0·1 | 4·4 | 62 | 1 3 | − 1 | 1 49 | − 6 | — | — |
| Takada | +0·1 | 4·5 | 201 | 1 7 | + 1 | 2 1 | + 3 | — | — |
| Utunomiya | +0·1 | 4·7 | 184 | 1 9 | + 1 | 1 57 | − 6 | — | — |
| Wazima | +0·1 | 4·7 | 215 | 1 18 | +10 | 2 7 | + 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. |
| Mito | +0·1 | 4·9 | 182 | 1 9 | − 2 | 1 54 | −14 | — | — |
| Nagano | +0·1 | 4·9 | 200 | 1 15 | + 4 | 2 8 | 0 | — | — |
| Maebasi | 0·0 | 5·0 | 191 | 1 14 | + 3 | 2 10 | + 2 | — | — |
| Kakioka | 0·0 | 5·1 | 181 | 1 10 | − 3 | 2 5 | − 5 | — | — |
| Kumagaya | 0·0 | 5·2 | 188 | 1 14 | 0 | 2 12 | − 1 | — | — |
| Toyama | 0·0 | 5·2 | 209 | 1 21 | + 7 | 2 14 | + 1 | — | — |
| Tokyo | 0·0 | 5·6 | 184 | 1 21 | + 1 | 2 21 | − 2 | — | — |
| Tyosi | 0·0 | 5·6 | 175 | e 1 18 | − 2 | 2 15 | − 8 | — | 2·3 |
| Kohu | 0·0 | 5·8 | 194 | 1 24 | + 2 | 2 26 | − 2 | — | — |
| Yokohama | 0·0 | 5·9 | 185 | 1 28 | + 4 | 2 28 | − 3 | — | — |
| Misima | 0·0 | 6·2 | 190 | 1 30 | + 2 | 2 41 | + 3 | — | — |
| Numadu | 0·0 | 6·3 | 191 | 1 53 | +23 | 2 43 | + 2 | — | — |
| Vladivostok | 0·0 | 6·4 | 289 | i 1 35 | + 4 | i 2 54 | +11 | e 4·9 | 9·6 |
| Gihu | 0·0 | 6·5 | 206 | 1 34 | + 2 | 2 49 | + 3 | — | — |
| Nagoya | 0·0 | 6·7 | 204 | e 1 36 | + 1 | 2 51 | 0 | — | 3·3 |
| Hikone | 0·0 | 6·8 | 209 | 1 38 | + 1 | 2 53 | 0 | — | — |
| Osaka | −0·1 | 7·6 | 211 | 1 48 | + 2 | 3 7 | − 7 | — | — |
| Kobe | −0·1 | 7·8 | 213 | e 2 28 | ? | 3 17 | + 1 | — | — |
| Hatidyozima | −0·1 | 8·2 | 183 | 1 53 | − 2 | 3 17 | − 9 | — | — |
| Koti | −0·2 | 9·4 | 217 | e 2 59? | ? | — | — | — | — |
| Chiufeng | −0·7 | 18·3 | 275 | 4 2a | 0 | 7 21 | + 6 | — | — |
| Sverdlovsk | −2·1 | 51·2 | 316 | e 8 48 | + 4 | — | — | — | — |
| Tinemaha | −2·6 | 73·8 | 54 | i 11 18 | 0 | — | — | — | — |
| Santa Barbara | −2·6 | 74·6 | 57 | i 11 23 | 0 | — | — | — | — |
| Mount Wilson | −2·6 | 75·8 | 57 | i 11 29 | − 1 | — | — | — | — |
| Pasadena | −2·6 | 75·8 | 57 | e 11 29 | − 1 | — | — | — | — |
| Riverside | −2·6 | 76·4 | 56 | e 11 32 | − 1 | — | — | — | — |

Kobe gives also eE = +4m.52s.
Chiufeng SZ = +7m.26s.

Oct. 29d. 23h. Readings for which 5°S. 79°·5W. $T_0$ 23h.25m.22s. has been suggested.

Balboa Heights 28m.
La Paz iP = 29m.15s., iS = 32m.21s., iSN = 32m.23s., iN = 33m.34s., M = 35m.6s.
Sucre P = 29m.56s., iS = 33m.35s.
Port au Prince e = 30m.28s., i = 30m.39s., 31m.48s. and 33m.8s., e = 34m.21s., i = 35m. 3s. and 35m.31s.
San Juan iP = 30m.59s., iS = 34m.49s. and 35m.29s., eL = 37m.0s.
La Plata iP = 32m.24s., pPE = 32m.42s., E = 33m.12s., iSE = 38m.1s., sSE = 38m.32s., L = 45m., M = 47m.10s.
Oak Ridge i = 33m.42s.
La Jolla iP = 34m.30s., iZ = 34m.55s.
Riverside iP = 34m.35s., iZ = 34m.59s.
Pasadena iP = 34m.39s., iZ = 35m.4s. and 35m.45s.
Mount Wilson iP = 34m.40s.
Santa Barbara eZ = 34m.48s.
Tinemaha iP = 34m.53s., iZ = 35m.17s., eZ = 35m.47s.
Berkeley iZ = 35m.13s. and 36m.4s.
Granada e = 37m.24s.
Stuttgart e = 38m.18s.
Triest eP = 38m.33s., e = 43m.55s., iS = 49m.49s., e = 50m.17s.
Sverdlovsk L = 55m.

Oct. 29d. Readings also at 0h. (Tiflis), 2h. (Andijan, Berkeley, Samarkand, and Tashkent), 5h. (Malabar), 7h. (Tyosi), 10h. (Santiago), 11h. (Tucson), 12h. (Tyosi), 14h. (La Jolla, Mount Wilson, Pasadena, Riverside, and Tinemaha), 16h. (Strasbourg), 17h. (Husan, La Paz, Sotchi, and Theodosia), 20h. (Baku, Mizusawa, Oak Ridge, and Tashkent), 21h. (Almata, Andijan, Balboa Heights, Frunse, La Paz, Mizusawa, Samarkand, and Tashkent), 22h. (Andijan, Baku (2), Frunse, Samarkand, and Tashkent (2) ), 23h. (Baku),

Oct. 30d. 6h. Readings for which no determination has been made :—

Triest $P_g$ =25m.20s., $iS_g$ =25m.25s.
Samarkand eP =32m.55s., i =33m.40s., M =34m.24s.
Tashkent P =33m.11s., iL =34m.42s., M =35m.48s.
Andijan eP =33m.29s., e =34m.39s., e =35m.25s.
Frunse e =34m.34s., i =35m.43s., eS =36m.56s.
Almata e =35m.0s.
Sverdlovsk e =36m.31s., e =40m.18s., L =42m.40s.
Baku e =40m.3s., e =42m.45s., L =45m.
Tiflis eN =43m.0s.

Oct. 30d. 20h. 53m. 0s. Epicentre 7°·2N. 126°·0E. N.3.

A = −·583, B = +·803, C = +·125 ; D = +·809, E = +·588 ;
G = −·074, H = +·101, K = −·992.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Manila | 8·9 | 327 | 2 4a | − 2 | 3 50 | + 4 | — | 5·2 |
| Hong Kong | 18·9 | 324 | 4 9 | − 8 | 7 36 | − 8 | 9·5 | 12·2 |
| Phu-Lien | 23·2 | 308 | 5 0? | − 3 | — | — | — | — |
| Batavia | 23·3 | 235 | i 5 5k | + 1 | 9 45 | SS | — | — |
| Medan | 27·4 | 264 | 9 10 | (+ 8) | 10 23 | + 1 | — | — |
| Nagoya | 29·7 | 18 | e 5 53 | − 9 | — | — | — | — |
| Chiufeng | 34·1 | 346 | e 6 41 | 0 | 11 46 | −22 | — | — |
| Vladivostok | 36·3 | 7 | e 6 36 | −24 | e 12 21 | −20 | — | 17·1 |
| Andijan | 58·2 | 314 | e 9 2 | −50 | — | — | — | — |
| Tashkent | 60·6 | 314 | 10 13 | + 4 | e 18 8 | −16 | e 27·0 | 38·9 |
| Samarkand | 61·7 | 311 | e 10 20 | + 4 | — | — | — | — |
| Sverdlovsk | 70·6 | 328 | 11 14 | 0 | e 20 6 | −22 | 32·0 | — |
| Baku | 74·8 | 310 | e 13 57 | PP | e 24 9 | ? | 40·2 | 53·3 |
| Tiflis | 78·7 | 311 | e 12 30 | +29 | e 21 44 | −18 | e 43·7 | 50·1 |
| Pulkovo | 86·7 | 330 | — | — | e 22 53 | [−19] | 45·9 | — |

Additional readings :—
Hong Kong PP = +4m.26s.
Batavia i = +6m.33s.
Tiflis eEN = +32m.24s.
Long waves were also recorded at De Bilt, Strasbourg, and Uccle.

Oct. 30d. Readings also at 0h. (Baku and Tiflis), 1h. (Berkeley), 2h. (Baku, Columbia, Little Rock, and St. Louis), 4h. (Baku and Samarkand), 5h. (La Paz, La Jolla, Mount Wilson, Pasadena, Riverside, and Tinemaha), 7h. (Baku), 8h. (Florissant), 10h. (Andijan, Frunse, and Samarkand), 14h. (Baku), 16h. (Algiers), 17h. (Nagasaki), 18h. (Samarkand, Sebastopol, Theodosia, and Yalta (2) ), 20h. (Baku and St. Louis), 21h. (Sumoto), 23h. (Almata, Andijan, Baku, Frunse, and Tucson).

Oct. 31d. 19h. 35m. 49s. (I) } Epicentre 24°·4N. 122°·2E. N.3.
19h. 46m. 12s. (II) } X.
23h. 6m. 40s. (III) } X.

A = −·485, B = +·771, C = +·413 ; D = +·846, E = +·533 ;
G = −·220, H = +·350, K = −·911.

| | Δ | Az. | P. | O−C. | S. | O−C. |
|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. |
| I Karenko | 0·6 | 228 | e 0 9 | 0 | 0 14 | − 1 |
| II | 0·6 | 228 | e 0 8 | − 1 | 0 17 | S* |
| III | 0·6 | 228 | e 0 8 | − 1 | 0 14 | − 1 |
| I Taihoku | 0·9 | 316 | e 0 14 | + 1 | 0 23 | 0 |
| II | 0·9 | 316 | e 0 14 | + 1 | 0 22 | − 1 |
| III | 0·9 | 316 | e 0 15 | + 2 | 0 23 | 0 |
| I Arisan | 1·5 | 230 | 0 22 | + 1 | 0 38 | − 1 |
| II | 1·5 | 230 | 0 22 | + 1 | 0 38 | − 1 |
| III | 1·5 | 230 | 0 9 | −12 | 0 35 | − 4 |
| I Tainan | 2·3 | 230 | 0 32 | − 1 | 0 54 | − 5 |
| II | 2·3 | 230 | e 0 37 | P* | 1 0 | + 1 |

Oct. 31d. Readings also at 6h. (Nagoya), 8h. (Tyosi), 9h. (Baku, Sverdlovsk, Tashkent (2), and Tananarive), 10h. (Baku), 12h. (Mizusawa), 13h. (Branner), 15h. (St. Louis and Wellington), 17h. (Erevan and Tiflis), 23h. (Tashkent).

Nov. 1d. 0h. Readings for which no determination has been made :—

Tyosi iP =17m.55s., S =18m.28s.
Nagoya eP =18m.13s., eS =19m.24s.
Mizusawa eS =19m.46s.

Nov. 1d. 12h. 13m. 19s. Epicentre 41°·5S. 171°·9E. (as on 1932 Oct. 4d.). X.
Wellington gives 41°·3S. 171°·9E.

A = −·741, B = +·106, C = −·663.

| | Δ | Az. | P. | O−C. | S. | O−C. |
|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. |
| Glenmuick | 1·7 | 146 | 0 26 | P* | 0 45 | + 1 |
| Christ Church | 2·1 | 165 | 0 28 | − 2 | 0 53 | − 1 |
| Wellington | 2·2 | 84 | 0 32 | + 1 | 0 57 | 0 |
| New Plymouth | 3·0 | 34 | −0 9 | −52 | 0 17 | −60 |

Nov. 1d. Readings also at 0h. (Sverdlovsk and Tashkent), 1h. (Baku and Mizusawa), 4h. (Santiago), 6h. (Baku (2), Erevan (2), and Tiflis), 7h. (Toyooka), 9h. (Mizusawa), 10h. (Florence and Sumoto), 14h. (La Paz), 17h. (Pasadena, Mount Wilson, and Tinemaha), 18h. (Baku), 19h. (Grozny), 21h. (Baku and Grozny), 22h. (Samarkand).

Nov. 2d. 2h. 27m. 13s. Epicentre 24°·2N. 121°·8E. (as on Oct. 11d.). X.

A = −·481, B = +·775, C = +·410.

| | Δ | Az. | P. | O−C. | S. | O−C. |
|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. |
| Karenko | 0·3 | 218 | e 0 2 | − 2 | 0 6 | − 2 |
| Taihoku | 0·9 | 343 | e 0 13 | 0 | 0 20 | − 3 |
| Arisan | 1·2 | 230 | 0 17 | 0 | 0 31 | 0 |
| Tainan | 1·9 | 232 | e 0 38 | $P_g$ | 1 2 | $S_g$ |

Nov. 2d. 15h. Readings for which no determination has been made :—

Frunse eP =19m.48s.
Calcutta P =20m.59s., S =21m.54s., L =22m.22s.
Agra e =21m.51s.
Samarkand e =21m.52s.
Sverdlovsk e =22m.19s., e =28m.13s., L =32m.
Chiufeng eP? =25m.1s., eL =27m.58s., M =30m.27s.
Hong Kong P? =25m.30s., S? =29m.9s., M =30m.20s.
Bombay e =27m.
Kodaikanal e =29m.0s.
Baku eL =37m.

Nov. 2d. 16h. 41m. 59s. Epicentre 41°·0N. 41°·6E. N.3.

A = +·564, B = +·501, C = +·656; D = +·664, E = −·748; G = +·491, H = +·436, K = −·755.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Erevan | 2·3 | 110 | e 0 26 | − 7 | 0 54 | − 5 | — | 1·1 |
| Sotchi | 2·9 | 332 | e 0 54 | $P_g$ | 1 43 | $S_g$ | — | 1·9 |
| Grozny | 3·8 | 51 | e 1 9 | $P_g$ | — | — | — | — |
| Theodosia | 6·1 | 313 | e 1 36 | P* | — | — | — | — |
| Baku | 6·3 | 92 | e 1 54 | $P_g$ | 3 14 | $S_g$ | 3·9 | 5·4 |
| Yalta | 6·4 | 306 | e 1 42 | P* | 2 58 | S* | — | — |
| Ksara | 8·5 | 214 | e 2 7 | + 7 | 4 23 | S* | — | — |
| Samarkand | 19·3 | 87 | e 4 37 | PP | e 6 25 | ? | — | — |
| Sverdlovsk | 20·6 | 32 | i 4 35 | − 1 | 8 30 | SS | 10·0 | 12·6 |
| Andijan | 23·1 | 80 | e 5 5 | + 3 | — | — | — | — |
| Frunse | 24·4 | 74 | e 5 14 | 0 | — | — | — | — |

Additional readings :—
Erevan $eP_g$ = +28s., PP = +33s.
Sotchi PsP = +1m.4s., PsS = +1m.24s. = S* −1s.
Ksara SS = +4m.49s. = $S_g$ +14s.

Nov. 2d. 19h. 0m. Reading for which no determination has been made :—
Zurich $iP_g$ = 18s., $iS_g$ = 25s.
Basle $eP_g$ = 31s., $eS_g$ = 48s.
Ravensburg $eS_g$ = 36s.
Neuchatel $eP_g$ = 45s., $eS_g$ = 55s.
Stuttgart eE = 1m.1s.

Nov. 2d. 22h. 6m. 11s. Epicentre 39°·9N. 49°·3E. N.3.

A = +·500, B = +·582, C = +·641; D = +·758, E = −·652; G = +·418, H = +·486, K = −·767.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Baku | 0·7 | 49 | e 0 21 | S | (e 0 21) | + 3 | i 0·6 | — |
| Erevan | 3·7 | 275 | e 0 57 | + 4 | e 1 43 | S* | — | 2·1 |
| Tiflis | 3·9 | 299 | 0 53 | − 3 | — | — | i 1·6 | — |
| Grozny | 4·4 | 324 | e 1 3 | 0 | 1 53 | 0 | — | 2·4 |
| Theodosia | 11·5 | 301 | e 2 42 | 0 | — | — | — | — |
| Yalta | 12·1 | 297 | e 2 49 | − 1 | e 4 45 | −20 | — | — |
| Ksara | 12·3 | 245 | e 3 5 | +13 | e 5 35 | +25 | — | — |
| Samarkand | 13·6 | 86 | e 3 52 | +42 | — | — | — | — |
| Andijan | 17·5 | 80 | e 4 10 | +10 | — | — | — | — |
| Sverdlovsk | 18·5 | 20 | 4 12 | − 1 | i 7 35 | − 1 | 10·0 | — |
| Frunse | 19·1 | 73 | e 4 29 | + 9 | — | — | — | — |
| Pulkovo | 23·2 | 335 | e 4 59 | − 4 | e 9 3 | − 5 | 11·8 | — |

Additional readings :—
Erevan $eP_g$ = +1m.4s. = P* +4s., PP = +1m.9s. = $P_g$ +1s.
Tiflis eEN = +1m.1s. = P* −3s., iE = +2m.19s.
Grozny P* = +1m.9s., $eP_g$ = +1m.14s., PP = +1m.20s. = $P_g$ −2s., PsP = +1m.45s., $S_g$ = +2m.6s. = S* −3s.
Ksara SS = +5m.55s.
Pulkovo iP = +5m.3s.

Nov. 2d. 22h. Readings for which no determination has been made :—

Grozny e =24m.25s.
Zagreb eP =31m.16s., e =31m.29s., eS =32m.16s., e =32m.23s.
Triest eP =31m.17s., iPPsP =31m.35s., iS =32m.24s., i =32m.25s., iSSsS = 32m.54s., iSSsS =33m.2s., i =33m.7s., i =33m.16s., e =35m.4s.
Trenta eP =31m.22s.
Neuchatel e =32m.19s.
Zurich e =32m.47s.
Prato eP =32m.52s., eS =33m.35s., M =34m.0s.
Venice eP =33m.5s.
Ravensburg e =34m.20s.
Stuttgart e =34m.42s., e =35m.18s.

Nov. 2d. Readings also at 0h. (Erevan, Grozny, and Manila), 3h. (Mizusawa), 7h. (Baku, Pulkovo, Sverdlovsk, and Tashkent), 8h. (Tiflis), 11h. (Granada and Almeria), 12h. (Tyosi), 13h. (Andijan and Mizusawa), 14h. (Tashkent and Sverdlovsk), 15h. (Balboa Heights, Nagoya, and Mizusawa), 17h. (Arisan, Karenko, and Taihoku), 18h. (Pasadena and Tucson).

Nov. 3d. 6h. Readings for which no determination has been made :—

Calcutta eP =48m.41s., S =49m.31s., L =50m.0s.
Andijan eP =49m.14s.
Samarkand eP =50m.7s.
Almata eP =50m.39s.
Phu-Lien 51m.
Hong Kong M =54m.30s.
Bombay e =56m.
Long waves at Baku and Sverdlovsk.

Nov. 3d. 15h. 5m. 19s. Epicentre 34°·4N. 134°·8E. (as on 1934 July 8d.). X.

A = − ·581, B = + ·585, C = + ·565.

| | △ | Az. | P. | O − C. | S. | O − C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Sumoto | 0·1 | 128 | i 0 0 | − 1 | i 0 5 | + 2 | 0·1 |
| Kobe | 0·4 | 48 | 0 6 | 0 | 0 14 | + 4 | 0·2 |
| Nagoya | 1·9 | 67 | 0 29 | + 1 | 0 53 | S* | 0·9 |

Nov. 3d. Readings also at 2h. (Perth and Wellington), 3h. (Algiers, Kobe, La Paz, and Sumoto), 7h. (Mizusawa), 10h. (Rome), 11h. (Batavia, Malabar, and La Paz), 12h. (Oak Ridge), 13h. (Agra, Andijan, Calcutta, and Erevan), 14h. (La Plata, Manila, Seattle, and Victoria), 15h. (Haiwee, La Plata, Mount Wilson, Pasadena, Riverside, Tinemaha, and Tiflis), 16h. (Tucson), 23h. (Berkeley)

Nov. 4d. 1h. 53m. 44s. Epicentre 22°·0S. 174°·8E. N.2.

A = − ·923, B = + ·083, C = − ·375 ; D = + ·091, E = + ·996 ;
G = + ·373, H = − ·034, K = − ·927.

| | △ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Arapuni | 16·1 | 177 | 4 16 | ? | 6 52 | SS | 7·7 | — |
| Wellington | 19·3 | 180 | 4 19 | − 3 | 7 58 | + 6 | 9·6 | 11·3 |
| Christchurch | 21·6 | 184 | 4 16? | −30 | — | — | — | — |
| Sydney | 23·9 | 235 | e 5 16 | + 7 | i 9 36 | +15 | 11·3 | 13·5 |
| Riverview | 24·0 | 235 | e 5 6 | − 4 | i 9 29 | + 6 | e 11·3 | 14·3 |
| Melbourne | 30·1 | 232 | e 6 5 | − 1 | 11 9 | + 3 | 13·1 | 17·5 |
| Adelaide | 34·1 | 240 | e 6 59 | +18 | i 12 19 | +11 | i 14·4 | 18·6 |
| Manila | 64·3 | 300 | 10 39 | + 5 | 18 40 | −31 | 30·3 | — |
| Tokyo | 66·6 | 329 | 11 0 | +11 | 19 39 | − 1 | — | — |
| Kohu | 67·1 | 329 | 10 55 | + 3 | — | — | — | — |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Batavia | 67·4 | 272 | 10 52 | − 2 | e 20 39 | (− 7) | e 33·3 | — |
| Maebasi | 67·4 | 330 | 10 59 | + 5 | 20 7 | PS | — | — |
| Nagoya | 67·5 | 330 | e 10 54 | − 1 | — | — | — | — |
| Oiwake | 67·7 | 329 | 10 57 | + 1 | 20 1 | PS | — | — |
| Sumoto | 67·8 | 325 | e 10 54 | − 3 | 19 55 | + 1 | — | 20·3 |
| Kobe | 68·1 | 326 | e 10 55 | − 4 | 20 8 | PS | — | — |
| Miyazaki | 68·1 | 321 | 10 53 | − 6 | 19 43 | −15 | — | — |
| Nagasaki | 69·5 | 321 | 11 3 | − 5 | 20 12 | − 3 | — | — |
| Hong Kong | 73·9 | 303 | 11 46 | +12 | 21 18 | +11 | — | 31·8 |
| Zi-ka-wei | 73·9 | 314 | e 11 24 | −10 | — | — | — | 44·6 |
| Keizyo | 74·7 | 322 | 11 50 | +11 | 21 13 | − 4 | — | — |
| Vladivostok | 76·1 | 330 | (e 11 27) | −20 | (e 21 18) | −15 | (24·3) | — |
| Chiufeng | 82·7 | 319 | e 12 25 | + 3 | 22 34 | −10 | 33·2 | — |
| Branner | 83·9 | 46 | e 12 45 | +17 | — | — | — | — |
| Santa Barbara | 83·9 | 49 | e 12 29 | + 1 | — | — | — | — |
| Berkeley | 84·1 | 45 | i 12 30 | + 1 | i 12 49? | ? | — | — |
| Lick | 84·2 | 46 | e 12 50 | +21 | — | — | — | — |
| Ukiah | 84·2 | 44 | — | — | e 23 12 | +12 | e 39·1 | — |
| Pasadena | 84·8 | 51 | i 12 33 | + 1 | — | — | e 39·4 | — |
| La Jolla | 84·9 | 51 | i 12 34 | + 1 | — | — | — | — |
| Mount Wilson | 84·9 | 50 | i 12 34 | + 1 | — | — | — | — |
| Riverside | 85·3 | 51 | i 12 34 | − 1 | — | — | — | — |
| Haiwee | 86·0 | 48 | e 12 43 | + 5 | — | — | — | — |
| Tinemaha | 86·3 | 47 | i 12 41 | + 1 | — | — | — | — |
| Sitka | 89·3 | 25 | — | — | e 23 36 | [+ 8] | e 41·3 | — |
| Tucson | 89·3 | 55 | — | — | e 28 35 | ? | e 41·3 | — |
| Bozeman | 95·2 | 42 | — | — | e 26 16 | PS | e 45·5 | — |
| Calcutta | 95·2 | 292 | e 18 0 | ? | — | — | — | — |
| Colombo | 97·2 | 274 | 16 30 | ? | — | — | 52·8 | 54·5 |
| Kodaikanal | 100·6 | 278 | e 17 50 | PP | i 24 33 | [+ 4] | — | 59·0 |
| Hyderabad | 102·1 | 284 | 25 44 | S | 37 14 | ? | 57·3 | 67·3 |
| Huancayo | 103·2 | 109 | — | — | e 25 54 | − 1 | — | — |
| Agra | 105·6 | 294 | e 18 34 | PP | e 27 39 | PS | — | — |
| La Paz | 107·3 | 118 | e 19 8 | [+59] | — | — | 60·5 | 70·3 |
| Bombay | 107·7 | 284 | i 18 59 | PP | — | — | — | 59·8 |
| Chicago | 109·9 | 52 | — | — | e 48 16 | ? | — | — |
| Ottawa | 118·9 | 50 | — | — | i 29 52 | PS | e 50·3 | — |
| Philadelphia | 118·9 | 55 | — | — | e 30 1 | PS | e 56·3 | — |
| Cape Town | 119·6 | 203 | — | — | 28 19 | ? | 49·7 | 64·3 |
| San Juan | 123·0 | 82 | e 19 51 | [+58] | — | — | — | — |
| Baku | 130·4 | 305 | 21 37 | PP | 31 51 | PS | 59·3 | — |
| Scoresby Sund | 130·5 | 7 | 21 40 | PP | e 31 58 | PS | 60·3 | — |
| Grozny | 133·1 | 309 | e 19 21 | [+ 9] | — | — | — | — |
| Kucino | 133·7 | 328 | e 22 0 | PP | — | — | e 51·8 | 63·0 |
| Pulkovo | 134·8 | 336 | 20 23 | [+68] | — | — | 60·3 | 77·0 |
| Helsingfors | 136·4 | 340 | — | — | e 40 4 | SS | e 66·3 | — |
| Yalta | 140·7 | 314 | e 20 51 | ? | — | — | — | — |
| Ksara | 142·2 | 295 | e 23 11 | PKS | — | — | 73·3 | 81·3 |
| Copenhagen | 143·9 | 342 | 19 52 | [+21] | 41 16? | SS | 66·3 | — |
| Hamburg | 146·4 | 344 | e 19 40 | [+ 4] | — | — | e 78·3? | — |
| Helwan | 146·4 | 290 | e 19 36 | [ 0] | e 31 7 | ? | — | 85·5 |
| Vienna | 148·7 | 332 | i 19 43 | [+ 3] | — | — | — | — |
| De Bilt | 148·9 | 348 | e 19 46 | [+ 6] | — | — | e 71·3 | 75·4 |
| Oxford | 150·1 | 355 | — | — | e 42 48 | SS | e 70·9 | — |
| Uccle | 150·3 | 348 | e 20 4 | {+ 4} | — | — | e 42·3 | — |
| Zagreb | 150·7 | 329 | e 19 46 | [+ 3] | — | — | — | — |
| Stuttgart | 151·1 | 340 | e 19 58 | [+15] | — | — | e 81·3 | — |
| Strasbourg | 151·6 | 342 | e 20 3 | {− 3} | — | — | e 54·3 | — |
| Triest | 151·8 | 331 | — | — | e 37 22 | ? | e 73·3 | 90·6 |
| Paris | 152·5 | 349 | e 20 16? | {+ 6} | — | — | 72·3 | 87·3 |
| Florence | 154·4 | 332 | — | — | (36 16) | ? | 36·3 | — |
| Toledo | 162·2 | 357 | e 21 0 | {+ 6} | — | — | — | — |
| San Fernando | 165·6 | 3 | 28 50 | PPP | 35 40 | SKSP | 83·3 | 109·3 |

*For Notes see next page.*

NOTES TO NOV. 4d. 1h. 53m. 44s.

Additional readings and note :—
Wellington PP = +4m.36s., SS = +8m.37s.
Riverview eN = +5m.10s., iE = +9m.46s., iSSEN = +10m.2s.
Melbourne iP = +6m.16s., i = +7m.41s., e = +10m.51s., i = +12m.46s.
Adelaide e = +7m.46s. = PP − 3s.
Manila P = +10m.6s., S = +16m.59s.
Kobe PZ = +11m.10s., PE = +11m.19s. = $P_cP$ − 7s., eZ = +17m.57s., eSN = +20m.15s. = PS + 2s.
Hong Kong PP = +14m.31s., ? = +21m.51s. = PS + 21s., SS = +25m.57s.
Vladivostok e = (+11m.47s.), PP = (+14m.13s.), PPP = (+17m.13s.); all readings have been *diminished* by 21m.
Chiufeng $P_cP$ = +12m.43s., pPEZ = +13m.12s., sP = +13m.24s., PPZ = +15m.26s., SN = +22m.37s., $S_cS$ = +23m.26s. = PS + 3s., sSEN = +24m.30s., SS = +27m.56s.
Lick eN = +12m.53s., eN = +14m.1s.
Ukiah e = +35m.26s.
Pasadena iZ = +12m.42s., iPPZ = +15m.50s.
La Jolla iPPZ = +16m.17s.
Mount Wilson ePPZ = +15m.51s.
Riverside ePPEZ = +16m.2s.
Sitka e = +25m.14s. and +37m.31s.
Huancayo e = +33m.28s. and +48m.21s.
Ottawa eE = +25m.52s. = SKS + 5s.
Cape Town N = +31m.58s., E = +32m.19s. and +36m.46s. = SS + 19s., N = +36m.55s., E = +41m.3s. and +41m.49s.
San Juan e = +20m.55s. = PP + 25s. and +37m.56s.
Baku PPP = +23m.35s.
Scoresby Sund +22m.56s. = PKS + 20s., SS = +38m.58s.
Kucino e = +33m.1s. and +43m.35s.
Pulkovo PP = +22m.30s., i = +23m.8s., ePPS = +34m.6s., SS = +39m.52s., SSS = +44m.52s.
Yalta e = +23m.12s. = PKS + 2s.
Hamburg e = +33m.16s. = SKSP + 2s.
De Bilt eN = +33m.52s. = SKSP + 21s.
Stuttgart ePZ = +15m.52s., $ePPP_2$ = +32m.40s.; $T_0$ = 1h.53m.30s.
Strasbourg eSKP = +23m.54s., e = +37m.16s.?, +43m.16s.? = SS + 18s. and +48m.16s.? = SSS − 9s.
Paris e = +27m.16s.? = PPP + 23s.
San Fernando PSPS = +42m.37s., SS = +42m.58s.
Long waves were also recorded at Charlottesville, Columbia, Durham, Göttingen, Graz, Ivigtut, Jena, Kew, Leipzig, Medan, Phu-Lien, Oak Ridge, Stonyhurst, Tananarive, and Upsala.

Nov. 4d. 3h. 14m. 21s. Epicentre 22°·0S. 174°·8E. (as at 1h.). R.3.

A = −·923, B = +·083, C = −·375; D = +·091, E = +·996; G = +·373, H = −·034, K = −·927.

| | Δ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Arapuni | 16·1 | 177 | 4 15 | +28 | 7 0 | SS | 7·6 | — |
| Wellington | 19·3 | 180 | 4 20 | − 2 | 7 59 | + 7 | 9·6 | 10·6 |
| Christchurch | 21·6 | 184 | 3 39? | −67 | — | — | — | — |
| Sydney | 23·9 | 235 | e 5 4 | − 5 | i 9 24 | + 3 | 11·1 | 13·3 |
| Riverview | 24·0 | 235 | i 5 8 | − 2 | i 9 27 | + 4 | 11·8 | 14·1 |
| Melbourne | 30·1 | 232 | 7 6 | PP | 11 52 | +46 | 15·2 | 17·6 |
| Adelaide | 34·1 | 240 | e 6 31 | −10 | i 12 7 | − 1 | i 13·9 | 18·5 |
| Honolulu | 50·9 | 35 | — | — | i 16 45 | +32 | 20·6 | — |
| Perth | 52·9 | 245 | 10 39 | (+12) | 16 9 | −32 | 23·2 | 30·6 |
| Manila | 64·3 | 300 | 10 21 | −13 | 19 25 | +14 | — | — |
| Batavia | 67·4 | 272 | 10 59 | + 5 | 19 45 | − 5 | e 34·6 | — |
| Nagoya | 67·5 | 330 | e 11 4 | + 9 | — | — | — | — |
| Sumoto | 67·8 | 325 | 11 0 | + 3 | 19 58 | + 4 | — | 20·1 |
| Kobe | 68·1 | 326 | e 11 0 | + 1 | i 20 2 | + 4 | — | 34·4 |
| Mizusawa | 68·8 | 334 | e 11 16 | +13 | e 20 2 | − 5 | — | — |
| Nagasaki | 69·5 | 321 | 11 7 | − 1 | 20 7 | − 8 | — | — |
| Hong Kong | 73·9 | 303 | 11 50 | +16 | 21 7 | 0 | — | 49·1 |
| Zi-ka-wei | 73·9 | 314 | e 11 31 | − 3 | — | — | — | 44·6 |
| Keizyo | 74·7 | 322 | 11 36 | − 3 | 21 14 | − 3 | — | 21·4 |
| Zinsen | 74·8 | 322 | — | — | e 21 14 | − 4 | — | — |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Medan | 78·6 | 279 | 16 30 | PPP | — | — | e 42·6 | — |
| Chiufeng | 82·7 | 319 | — | — | i 22 41 | − 3 | 34·0 | — |
| Santa Barbara | 83·9 | 49 | i 12 36 | + 8 | — | — | — | — |
| Lick | 84·2 | 46 | e 12 40 | +11 | — | — | — | — |
| Ukiah | 84·2 | 44 | e 18 3 | ? | e 35 14 | ? | e 38·8 | — |
| Pasadena | 84·8 | 51 | i 12 32 | 0 | — | — | e 41·6 | — |
| La Jolla | 84·9 | 51 | i 12 45 | +12 | — | — | — | — |
| Mount Wilson | 84·9 | 40 | e 12 32 | − 1 | — | — | — | — |
| Riverside | 85·3 | 51 | i 12 37 | + 2 | — | — | — | — |
| Haiwee | 86·0 | 48 | e 12 40 | + 2 | — | — | — | — |
| Tinemaha | 86·3 | 47 | e 12 39 | − 1 | — | — | — | — |
| Sitka | 89·3 | 25 | — | — | e 23 27 | [− 1] | e 41·2 | — |
| Tucson | 89·3 | 55 | — | — | e 23 31 | [+ 3] | e 42·1 | — |
| Victoria | 89·4 | 37 | — | — | 23 14 | [−15] | 37·0 | 51·9 |
| Calcutta | 95·2 | 292 | — | — | e 24 37 | − 7 | — | — |
| Huancayo | 103·2 | 109 | — | — | e 26 7 | +12 | e 43·3 | — |
| La Plata | 104·2 | 138 | — | — | 25 39 | {+14} | 50·6 | 57·9 |
| Agra | 105·6 | 294 | — | — | i 26 6 | − 6 | — | — |
| La Paz | 107·3 | 118 | e 9 7 | ? | i 26 43 | S | 59·6 | 63·6 |
| Chicago | 109·9 | 52 | e 22 57 | PPPP | — | — | e 51·6 | — |
| Columbia | 113·1 | 61 | — | — | e 29 14 | PS | e 56·9 | — |
| Andijan | 113·4 | 306 | e 19 24 | PP | — | — | — | — |
| Tananarive | 114·2 | 236 | — | — | e 29 5 | PS | e 55·8 | 65·9 |
| Tchimkent | 115·7 | 308 | e 19 57 | PP | — | — | — | — |
| Charlottesville | 116·1 | 58 | — | — | e 49 39 | ? | e 56·6 | — |
| Ottawa | 118·9 | 50 | 27 19 | SKKS | (e 27 19) | {+10} | e 52·6 | — |
| Philadelphia | 118·9 | 55 | — | — | e 29 24 | SKSP | 59·6 | — |
| Cape Town | 119·6 | 203 | — | — | 28 22 | ? | 49·6 | 56·6 |
| San Juan | 123·0 | 82 | e 20 45 | PP | — | — | — | — |
| Scoresby Sund | 130·5 | 7 | 21 33 | PP | — | — | 57·6 | — |
| Grozny | 133·1 | 309 | e 22 44 | PKS | — | — | — | — |
| Kucino | 133·7 | 328 | — | — | e 44 37 | SSS | e 58·9 | 62·6 |
| Helsingfors | 136·4 | 340 | — | — | e 40 15 | SS | e 62·6 | — |
| Ksara | 142·2 | 295 | e 20 6 | [+42] | — | — | — | 81·1 |
| Edinburgh | 146·1 | 357 | e 23 39? | PKS | — | — | — | — |
| Hamburg | 146·4 | 344 | i 19 45k | [+ 9] | e 36 39? | ? | e 72·6 | 78·6 |
| Vienna | 148·7 | 332 | i 19 46 | [+ 6] | — | — | — | — |
| De Bilt | 148·9 | 348 | e 19 52 | [+12] | — | — | e 70·6 | 75·3 |
| Uccle | 150·3 | 348 | i 19 53 | [+11] | — | — | — | 24·4 |
| Zagreb | 150·7 | 329 | e 19 52 | [+ 9] | — | — | — | 84·6 |
| Stuttgart | 151·1 | 340 | e 20 8 | {+ 4} | — | — | e 82·6 | — |
| Strasbourg | 151·6 | 342 | e 20 6 | { 0} | — | — | — | — |
| Triest | 151·8 | 331 | e 19 34 | [−10] | e 44 32 | ? | e 60·6 | 73·1 |
| Toledo | 162·2 | 357 | e 10 15 | ? | — | — | — | — |
| Alicante | 163·2 | 347 | e 16 26 | ? | — | — | e 96·4 | — |
| Almeria | 165·0 | 352 | e 8 10 | ? | — | — | e 93·7 | — |

Additional readings and note :—
Wellington PP = +4m.38s., SS = +8m.34s.
Riverview iSN = +9m.31s., iE = +9m.39s.
Melbourne i = +8m.7s., e = +13m.53s.
Adelaide e = +7m.51s. =PP +2s. and +10m.13s.
Perth PP = +11m.59s., $P_cP$ = +12m.19s., PPP = +12m.39s., PPPP = +13m.11s.
$P_cS$ = +15m.39s., PS = +16m.39s., i = +16m.54s.
Kobe PZ = +11m.3s., PEZ = +11m.6s., eE = +11m.57s., eENZ = +12m.10s., SN = +19m.58s., iE = +21m.11s., iEN = +21m.43s.
Mizusawa P is recorded as eS for another shock.
Hong Kong SS = +24m.29s., ? = +31m.29s.
Chiufeng i = +23m.30s. =PS +7s., iSS? = +28m.6s., iSSS? = +31m.30s.
Lick eEN = +13m.12s.
Pasadena iPPZ = +15m.53s.
Mount Wilson ePPZ = +15m.47s.
Riverside iPPZ = +15m.55s.
Sitka e = +23m.54s. =S +5s., +24m.59s. =PS +16s., +26m.51s. and +37m.17s.
Tucson eS = +24m.6s., ePS = +25m.2s.
La Plata PPS = +28m.45s., SS = +33m.15s., SSS = +38m.33s.

*Continued on next page.*

La Paz iN = +34m.21s.
Tananarive SSN = +34m.53s.
Ottawa e = +29m.51s. =PS −1s., eE? = +32m.27s., e = +36m.41s.
Philadelphia e = +47m.15s.
Cape Town E = +29m.40s. =SKSP −11s., N = +29m.51s. =PS −8s., N = +36m.39s., E = +36m.51s. =SS +24s., E = +39m.42s., N = +41m.39s., E = +43m.29s.
Scoresby Sund +22m.47s. =PKS +11s.
Helsingfors e?N = +48m.33s. =SSSS +3s., e?EN = +55m.21s.
Ksara ePP = +22m.59s.
Strasbourg eSKP = +23m.44s., ePPP = +26m.59s.
Long waves were also recorded at Durham, Stonyhurst, Kew, Hyderabad, Colombo, Ann Arbor, Oak Ridge, Seattle, and other European stations.

Nov. 4d. 6h. 18m. 52s. Epicentre 41°·0N. 142°·5E. (as on Oct. 23d. 22h.). X.

A = −·599, B = +·459, C = +·656.

| | △ | Az. | P. | O −C. | S. | O −C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Mizusawa | 2·2 | 209 | i 0 35 | P* | i 1 0 | + 3 | — |
| Tyosi | 5·4 | 194 | e 1 17 | 0 | 2 42 | S* | 3·0 |
| Nagoya | 7·3 | 219 | e 1 42 | − 2 | e 3 32 | S* | — |

Nov. 4d. 7h. Readings for which no determination has been made :—
Erevan eP = 10m.4s., eS = 11m.20s., M = 11m.37s.
Baku e = 10m.32s., e = 11m.45s., L = 12m.36s.
Ksara eP = 10m.57s., S = 13m.20s.
Tiflis eE = 11m.29s., eE = 12m.5s., eLE = 12m.42s.
Tashkent iP = 12m.6s., S = 16m.41s., eL = 19m.36s., M = 22m.30s.
Andijan eP = 13m.17s., $iS_g$ = 13m.43s.
Samarkand P = 13m.30s., e = 14m.10s., M = 14m.40s.
Frunse e = 14m.51s.

Nov. 4d. 10h. 37m. 58s. Epicentre 36°·9N. 139°·8E. (as on 1929 Aug. 16d.). X.

A = −·611, B = +·516, C = +·600.

| | △ | Az. | P. | O −C. | S. | O −C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Tokyo | 1·2 | 182 | 0 17 | 0 | 0 32 | + 1 | 0·6 |
| Tyosi | 1·4 | 142 | i 0 19 | − 1 | 0 35 | − 1 | 0·6 |
| Mizusawa | 2·5 | 25 | e 0 45 | $P_g$ | i 1 17 | $S_g$ | — |
| Nagoya | 2·9 | 233 | 0 43 | + 2 | 1 20 | S* | — |

Tyosi gives also $P_g$ +24s.

Nov. 4d. 16h. Readings for which no determination has been made :—
Wellington P = 32m.3s., S = 35m.40s., L = 37m.
Riverview ePE = 32m.56s., iSN = 37m.10s., iE = 37m.16s., eL = 39m.36s., MN = 41m.24s.
Melbourne e = 34m.42s., i = 38m.43s., i = 43m.50s.
Adelaide e = 37m.58s., e = 39m.40s., e = 41m.44s., L = 43m.33s., M = 46m.30s.
Pasadena ePZ = 40m.24s., iZ = 40m.29s.
Mount Wilson ePZ = 40m.26s.
Riverside ePZ = 40m.30s.
Tinemaha ePZ = 40m.36s.
Haiwee ePE = 40m.36s.
Perth P = 52m.0s.

Nov. 4d. 18h. Readings for which no determination has been made :—
Wellington e = 28m.
Adelaide e = 31m.41s., i = 32m.12s., e = 37m.25s., MN = 39m.18s.
Pasadena iPZ = 33m.11s.
Mount Wilson ePZ = 33m.12s.
Riverside ePZ = 33m.15s.
Tinemaha eZ = 33m.17s.
Haiwee ePZ = 33m.18s.

Nov. 4d. Readings also at 1h. (Casamicciolo and Rome), 2h. (Hastings and Wellington), 3h. (Piacenza, Prague, and Uccle), 4h. (Haiwee, Mount Wilson, Pasadena (2), Riverside (2), Santiago, and Tinemaha (2)), 5h. (Andijan and Samarkand), 6h. (Pasadena, Riverside, and Tinemaha), 7h. (Baku), 11h. (Ksara and Tiflis), 12h. (Mizusawa), 13h. (Adelaide, Riverview, Riverside, Pasadena, Tinemaha, and Wellington), 14h. (Adelaide, Melbourne, Riverview, and Wellington), 15h. (Manila, Mount Wilson, Riverside, and Pasadena), 17h. (Baku, Nagasaki, and Sverdlovsk), 19h. (Hukuoka B (2), Mizusawa, and Nagasaki (2)), 21h. (Wellington), 22h. (Branner, Berkeley, and Lick), 23h. (Alicante, Branner, Berkeley, New Plymouth, and Lick).

Nov. 5d. 6h. Readings for which no determination has been made :—

Santa Barbara iPZ = 1m.9s.
Berkeley $eP_g$ = 1m.10s., iZ = 1m.11s.
Pasadena iP = 1m.13s.a, iZ = 1m.36s., 3m.23s. and 4m.21s.
La Jolla iP = 1m.14s.
Mount Wilson iP = 1m.14s.
Riverside iPEZ = 1m.15s., iZ = 3m.25s. and 4m.24s.
Haiwee iP = 1m.20s., iEZ = 3m.30s.
Tinemaha iP = 1m.21s., iZ = 3m.31s.
Vladivostok e = 3m.54s.
Kobe eN = 8m.21s., eE = 8m.26s., iEN = 10m.1s.
De Bilt iZ = 8m.51s., eZ = 12m.10s.
Stuttgart eZ = 8m.56s.
Taihoku eP = 10m.13s., S = 10m.18s.
San Juan e = 13m.56s.
Tashkent e = 16m.18s., 20m.3s., 24m.49s., and 27m.36s., M = 32m.0s.
Sverdlovsk e = 16m.40s. and 25m.57s., L = 39m.
Baku eL = 33m.

Nov. 5d. 23h. 2m. 28s. Epicentre 52°·0N. 175°·7W. N.1.

A = −·614, B = −·046, C = +·788 ; D = −·075, E = +·997 ; G = −·786, H = −·059, K = −·616.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Sitka | 23·6 | 62 | i 5 6 | 0 | i 9 26 | +10 | e 11·4 | — |
| Sapporo | 29·8 | 270 | 6 21 | +18 | 11 14 | +13 | — | — |
| Victoria | 33·0 | 75 | 6 51 | +19 | 11 49 | − 2 | 15·7 | — |
| Honolulu | 34·7 | 150 | e 6 46 | 0 | i 12 0 | −17 | 14·5 | — |
| Tokyo | 35·3 | 260 | 6 44 | − 8 | 12 54 | +28 | — | — |
| Vladivostok | 35·6 | 277 | i 7 6 | +12 | i 12 37 | + 7 | 16·1 | 26·2 |
| Yokohama | 35·6 | 260 | i 6 48 | − 6 | 12 37 | + 7 | — | — |
| Nagoya | 37·3 | 262 | e 7 13 | + 4 | 8 32? | PP | — | — |
| Kameyama | 37·9 | 262 | 7 13 | − 1 | 13 6 | + 1 | — | — |
| Ukiah | 38·0 | 88 | e 7 20 | + 5 | e 13 4 | − 2 | e 17·2 | — |
| Osaka | 38·5 | 263 | 7 6 | −13 | 13 12 | − 2 | — | — |
| Kobe | 38·8 | 263 | 7 23 | + 1 | 13 22 | + 4 | e 18·1 | 18·5 |
| Wakayama | 39·1 | 263 | 7 17 | − 7 | 13 26 | + 4 | — | — |
| Sumoto | 39·2 | 263 | 7 23 | − 2 | e 13 29 | + 5 | e 17·5 | — |
| Berkeley | 39·4 | 89 | e 7 25 | − 2 | e 13 52 | +25 | — | — |
| Branner | 39·7 | 90 | e 7 28 | − 1 | — | — | — | — |
| Lick | 40·1 | 89 | 7 34 | + 1 | — | — | — | — |
| Bozeman | 41·6 | 72 | — | — | e 13 57 | − 3 | e 20·1 | — |
| Keizyo | 41·9 | 272 | 7 50 | + 2 | 14 5 | 0 | — | — |
| Zinsen | 42·2 | 273 | e 7 51 | + 1 | e 14 13 | + 4 | — | — |
| Husan | 42·3 | 269 | 7 53 | + 2 | 14 15 | + 5 | e 20·5 | — |
| Tinemaha | 42·3 | 87 | i 7 49 | − 2 | — | — | — | — |
| Miyazaki | 42·9 | 263 | 7 54 | − 2 | 14 15 | − 4 | — | — |
| Haiwee | 43·1 | 88 | i 7 58 | 0 | — | — | — | — |
| Santa Barbara | 43·1 | 91 | i 7 47 | −11 | — | — | — | — |
| Nagasaki | 43·3 | 266 | i 8 1 | + 2 | 14 30 | + 5 | — | 14·8 |
| Mount Wilson | 44·3 | 90 | i 8 5 | − 2 | — | — | — | — |
| Pasadena | 44·3 | 90 | i 8 4 | − 3 | — | — | e 20·3 | — |
| Riverside | 44·9 | 90 | i 8 8 | − 4 | — | — | — | — |
| La Jolla | 45·7 | 91 | i 8 17 | − 1 | — | — | — | — |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Chiufeng | 46·9 | 284 | i 8 29a | + 1 | i 15 19 | + 2 | 22·3 | 29·0 |
| Zi-ka-wei | 49·6 | 271 | 8 48 | 0 | 15 58 | + 3 | 25·0 | 31·4 |
| Tucson | 50·1 | 86 | e 8 57 | + 5 | e 17 4 | +62 | e 23·2 | — |
| Scoresby Sund | 56·1 | 10 | 9 39 | + 2 | 18 2 | ? | 27·5 | — |
| Chicago | 57·2 | 62 | — | — | e 17 42 | + 3 | e 27·5 | 32·9 |
| St. Louis | 58·0 | 67 | e 9 46 | − 4 | i 17 46 | − 3 | e 28·2 | — |
| Florissant | 58·1 | 67 | e 9 44 | − 7 | i 20 43 | ? | — | — |
| Ann Arbor | 59·0 | 60 | e 10 14 | +17 | e 18 14 | +11 | e 29·7 | — |
| Ivigtut | 59·3 | 26 | — | — | e 18 44 | +37 | 33·5 | — |
| Little Rock | 59·5 | 72 | e 9 48 | −13 | e 17 56 | −13 | — | 33·9 |
| Toronto | 60·3 | 56 | i 10 9 | + 2 | i 18 22 | + 2 | 29·4 | — |
| Hong Kong | 60·5 | 269 | 10 5 | − 3 | 18 23 | 0 | 31·4 | 34·5 |
| Ottawa | 60·9 | 52 | e 10 9 | − 2 | e 18 20 | − 8 | e 28·5 | — |
| Manila | 62·2 | 258 | 10 17a | − 3 | 18 50 | + 5 | 28·3 | — |
| Ithaca | 62·7 | 55 | e 10 20 | − 3 | e 18 44 | − 7 | — | — |
| Charlottesville | 64·9 | 60 | e 10 40 | + 2 | e 19 16 | − 3 | e 30·5 | — |
| Georgetown | 64·9 | 58 | i 11 37 | +59 | i 20 17 | +58 | e 31·5 | — |
| Oak Ridge | 65·0 | 52 | e 10 34 | − 5 | e 19 17 | − 3 | 36·5 | — |
| Philadelphia | 65·2 | 56 | e 10 35 | − 5 | e 19 4 | −18 | e 31·6 | — |
| Phu-Lien | 66·3 | 275 | e 10 48 | + 1 | e 19 16 | −20 | — | — |
| Pulkovo | 66·3 | 346 | 10 51 | + 4 | 20 1 | +25 | 33·5 | 42·1 |
| Columbia | 66·5 | 64 | e 9 57 | ? | e 19 36 | − 3 | e 33·5 | — |
| Helsingfors | 66·6 | 350 | e 10 49 | 0 | e 19 43 | + 3 | e 29·5 | — |
| Frunse | 67·4 | 312 | e 10 57 | + 3 | — | — | 39·0 | — |
| Upsala | 67·6 | 355 | — | — | e 20 27 | PS | e 34·5 | 39·1 |
| Kucino | 68·8 | 341 | — | — | e 20 10 | + 3 | e 25·0 | 34·5 |
| Tchimkent | 70·1 | 314 | e 10 36 | −35 | — | — | — | — |
| Andijan | 70·2 | 312 | e 11 7 | − 5 | e 20 40 | PS | 36·5 | — |
| Tashkent | 71·1 | 315 | i 10 46 | −31 | 20 35 | + 1 | 33·5 | 44·2 |
| Edinburgh | 71·9 | 5 | e 12 2 | +40 | i 21 41 | PS | e 28·5 | — |
| Copenhagen | 72·1 | 355 | 11 24 | + 1 | 20 50 | + 4 | 36·5 | — |
| Samarkand | 73·4 | 314 | e 11 40 | + 9 | e 22 10 | ? | — | — |
| Stonyhurst | 74·0 | 5 | — | — | e 29 32 | ? | 41·5 | 52·0 |
| Hamburg | 74·3 | 358 | e 11 37 | + 1 | — | — | e 37·5 | — |
| Calcutta | 75·9 | 289 | 11 42 | − 3 | 21 57 | PS | 38·5 | — |
| De Bilt | 75·9 | 0 | e 11 46 | + 1 | e 21 34 | + 4 | e 36·5 | 52·9 |
| Oxford | 76·1 | 4 | e 11 41 | − 6 | e 21 33 | 0 | e 38·0 | 52·8 |
| Leipzig | 76·4 | 355 | e 17 32? | ? | — | — | — | — |
| Kew | 76·5 | 3 | e 11 48 | − 1 | i 22 44 | + 7 | e 37·5 | 51·7 |
| Jena | 76·8 | 356 | — | — | e 21 32 | − 9 | — | — |
| Uccle | 77·2 | 2 | e 11 51 | − 2 | e 21 49 | + 4 | 37·5 | — |
| Prague | 77·6 | 353 | e 11 58 | + 3 | e 21 51 | + 2 | e 40·5 | 50·0 |
| Cheb | 77·7 | 354 | — | — | e 21 32? | −19 | — | — |
| Grozny | 78·2 | 331 | e 12 4 | + 6 | e 22 47 | PS | — | — |
| Agra | 78·6 | 299 | i 11 59 | − 1 | 21 51 | − 9 | — | — |
| Paris | 79·2 | 2 | 12 6 | + 2 | 22 4 | − 3 | 31·5 | 54·5 |
| Stuttgart | 79·2 | 357 | e 12 4 | 0 | e 21 52 | −15 | e 41·5 | 53·5 |
| Strasbourg | 79·4 | 358 | 12 6a | + 1 | e 22 25 | PS | e 37·5 | 54·5 |
| Budapest | 79·8 | 350 | e 11 32? | −35 | e 22 32? | PS | e 46·5 | 55·5 |
| Tiflis | 79·9 | 332 | 12 8 | + 1 | e 22 17 | + 2 | e 40·5 | 54·7 |
| Yalta | 80·2 | 339 | e 12 24 | +15 | e 22 37 | +19 | 41·4 | — |
| Graz | 80·4 | 352 | e 12 25 | +15 | e 22 17 | − 3 | e 42·5 | 58·3 |
| Zurich | 80·6 | 358 | e 12 14 | + 3 | e 22 13 | − 9 | — | — |
| Erevan | 81·4 | 330 | e 12 15 | 0 | e 22 32 | + 1 | e 45·6 | — |
| Zagreb | 81·7 | 353 | e 10 32? | ? | e 22 32? | − 2 | e 44·5 | 48·5 |
| Triest | 82·0 | 354 | i 12 19a | + 1 | i 22 37 | 0 | e 42·1 | 47·8 |
| Piacenza | 82·8 | 356 | 12 44 | +22 | i 22 45 | 0 | — | 55·5 |
| Florence | 84·0 | 358 | e 12 32 | + 4 | 23 2 | + 4 | 42·5 | 49·5 |
| Medan | 84·5 | 269 | 12 30 | − 1 | 22 51 | −12 | — | — |
| Hyderabad | 85·7 | 294 | 12 41 | + 4 | 22 59 | [− 5] | 40·2 | 52·7 |

*Continued on next page.*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| San Juan | | 87·0 | 64 | e 12 42 | − 1 | e 23 2 | [−11] | e 40·5 | — |
| Batavia | | 87·3 | 256 | 12 48 | + 3 | 23 18 | [+ 3] | — | — |
| Bombay | | 87·6 | 298 | i 12 48 | + 2 | i 23 42 | + 9 | — | 55·0 |
| Toledo | | 87·9 | 7 | e 12 47 | 0 | e 23 16 | [− 3] | e 48·8 | 62·5 |
| Alicante | | 89·5 | 5 | e 12 58 | + 3 | e 23 19 | [−11] | e 56·0 | — |
| Ksara | | 89·8 | 334 | e 12 45 | − 9 | 23 31 | [ 0] | — | 51·5 |
| Granada | | 90·5 | 8 | i 12 58 | − 2 | e 23 46 | {+ 7} | 42·2 | 56·8 |
| Riverview | | 90·6 | 208 | e 15 32 | ? | i 23 24 | [−12] | — | 25·8 |
| Almeria | | 91·0 | 5 | — | — | e 25 58 | PS | e 55·6 | — |
| Malaga | | 91·0 | 7 | e 13 5 | + 3 | e 22 35 | [−64] | 45·1 | — |
| San Fernando | | 91·1 | 9 | — | — | 23 59 | [+20] | 51·5 | — |
| Kodaikanal | | 92·0 | 290 | e 13 6 | − 1 | i 23 34 | [−10] | — | 59·9 |
| Wellington | | 93·3 | 187 | i 14 32 | +79 | i 23 31 | [−21] | 44·5 | — |
| Adelaide | | 95·6 | 217 | e 15 17 | ? | e 23 49 | [−15] | — | 30·8 |
| Perth | | 103·0 | 234 | 25 32 | SKKS | (25 32) | {+16} | — | — |
| Huancayo | | 105·9 | 90 | — | — | e 24 42 | [−12] | e 49·5 | — |
| La Paz | | 113·7 | 86 | e 19 37 | PP | — | — | 56·4 | 69·4 |
| Santiago | | 124·5 | 102 | 18 22 | [−34] | 18 33 | ? | — | — |
| La Plata | E. | 133·3 | 94 | — | — | 22 56 | PKS | 56·5 | 73·2 |
| | N. | 133·3 | 94 | — | — | 22 46 | PKS | 67·5 | 74·7 |
| Cape Town | | 159·3 | 325 | 11 38 | ? | 24 54 | PP | — | — |

Additional readings :—
Sitka e = +5m.20s. and +8m.40s.
Ukiah e = +15m.59s. = SSS + 3s.
Kobe eN = +9m.18s., eSZ = +13m.18s., iN = +13m.37s., iE = +13m.41s., iN = +17m.52s.
Sumoto eN = +8m.59s. = PP + 8s.
Berkeley iZ = +7m.38s. and +7m.47s., iN = +8m.7s., and +12m.27s., eN = +16m.12s., eZ = +19m.7s.
Branner iN = +8m.10s.
Lick eE = +8m.40s., eN = +8m.50s.
Bozeman e = +17m.20s. = SSS − 4s. ; $T_0$ = 23h.2m.23s., 51°·5N. 175°·5W.
Zinsen ePPN = +9m.39s.
Tinemaha iPPZ = +9m.44s., iZ = +9m.58s. and +13m.30s.
Haiwee iZ = +9m.47s. = $P_cP$ − 5s. and +13m.51s.
Pasadena ePPN = +10m.0s. = $P_cP$ + 4s., iZ = +13m.55s.
Zi-ka-wei iZ = +8m.52s. and +9m.16s., PP = +10m.54s., PPP = +11m.36s., iZ = +16m.24s., SS = +20m.2s.
Scoresby Sund +13m.8s. = PPPP + 5s., +21m.32s.
St. Louis epPE = +10m.0s., ePPE = +12m.16s., esSEN = +18m.6s., eE = +19m.32s. = $S_cS$ − 6s., eSSE = +21m.53s. ; $T_0$ = 23h.2m.28s.
Florissant ipP = +9m.58s., iPP = +12m.14s., isS = +21m.3s., eSS = +21m.52s.
Ann Arbor eN = +17m.38s., e = +19m.50s. = $S_cS$ + 5s.
Little Rock ipP = +10m.2s., esS = +17m.56s., eE = +19m.56s. = $S_cS$ + 7s.
Toronto ePPN = +12m.10s. ; $T_0$ = 23h.2m.40s.
Hong Kong ? = +19m.22s., SS = +21m.22s.
Ottawa SSSN = +23m.32s.? ; $T_0$ = 23h.2m.42s.
Manila iN = +10m.23s., PS = +19m.6s.
Charlottesville e = +10m.50s. and +20m.32s. = $S_cS$ + 5s.
Oak Ridge i = +10m.37s., +10m.45s., +10m.47s., +10m.50s., and +11m.14s. = $P_cP$ + 1s. ; $T_0$ = 23h.2m.33s.
Philadelphia iS = +19m.14s., i = +20m.32s. = $S_cS$ + 3s., e = +24m.8s.
Columbia e = +20m.52s.
Helsingfors e$P_cPN$ = +11m.38s., ePPN = +14m.4s., ePPPN = +15m.33s., ePSN = +20m.13s., e$S_cSN$ = +20m.42s., eSSN = +25m.37s., eSSSN = +28m.0s. ; $T_0$ = 23h.2m.32s.
Kucino e = +15m.9s. and +23m.53s.
Tashkent PP = +13m.46s., eSS = +25m.14s.
Copenhagen +21m.38s. and +25m.56s.
De Bilt eN = +22m.30s.
Kew e = +30m.34s. and +34m.32s.
Uccle eN = +27m.26s. and +31m.8s.
Prague eSS = +27m.32s.
Agra SS = +27m.17s.
Stuttgart ePPZ = +15m.19s., ePPPZ = +17m.2s., ePS = +22m.50s., eE = +26m.32s., eNZ = +27m.44s., eSSSS = +33m.44s. ; $T_0$ = 23h.2m.30s.
Strasbourg ePP = +15m.21s., ePPP = +17m.0s., eSKS = +22m.10s., ePS = +23m.10s.
Tiflis eEN = +18m.6s., eN = +22m.43s. = PS − 4s., eSSN = +27m.52s.
Zagreb e = +35m.32s.

*Continued on next page.*

Triest i = +23m.7s. =PS −7s., e = +23m.35s., = +23m.45s., SL = +28m.28s., SM = +32m.4s., e = +34m.36s.
San Juan iS = +23m.18s., ePS = +24m.17s., eSS = +28m.57s., e = +36m.2s.
Bombay SKS = +23m.6s., SKKS = +23m.35s., SS = +29m.52s.
Granada $P_cP$ = +13m.14s., PP = +16m.35s., PPP = +18m.31s., PS = +24m.32s., PPS = +25m.4s., SS = +30m.0s., SSS = +33m.43s.
Riverview eN = +21m.26s.
Malaga e = +14m.52s., +27m.53s., +31m.52s., and +44m.37s.
San Fernando SN = +24m.3s.
Kodaikanal PS = +25m.32s.
Huancayo eSS = +33m.32s., eSSS = +37m.32s., e = +41m.26s.
Cape Town N = +20m.55s., E = +21m.38s., N = +21m.54s., E = +29m.2s., N = +44m.32s.?, E = +49m.44s.
Long waves were also recorded at Durham and other European stations.

Nov. 5d. 23h. Readings for which no determination has been made :—
Pasadena iPNZ =25m.23s.
Mount Wilson iPZ =25m.24s.
Riverside iPZ =25m.25s.
Tinemaha iPZ =25m.30s.
Branner $eP_g$ =34m.30s., $iS_g$ =34m.35s.
Lick $eP_g$ =34m.31s., $iS_g$ =34m.46s.
Berkeley iP* =34m.38s., iS* =34m.48s.
Chicago e =35m.23s.
Riverview eL =43m.12s.
Dehra Dun P =44m.10s., S =46m.50s., L =51m.40s., M =53m.
Balboa Heights eP =53m.42s., iS =54m.26s.
Cape Town E =57m., 59m., and 24h.12m., N =26m., M =35m.

Nov. 5d. Readings also at 1h. (Adelaide (2), La Paz, Riverview, and Wellington), 3h. (Glenmuick (3), Haiwee (2), La Plata, Mizusawa, Mount Wilson (2), Pasadena (2), Riverside, and Tinemaha (2) ), 4h. (Mizusawa), 5h. (Adelaide, Chiufeng, Melbourne, Riverview, and Wellington), 10h. (Tananarive and Tyosi), 11h. (Sverdlovsk), 13h. (Batavia, Manila, Nagoya, Tashkent, Tyosi, and Vladivostok), 14h. (Sverdlovsk and Tyosi), 15h. (Seattle), 16h. (Sumoto), 19h. (Branner, Berkeley, La Paz, and San Francisco), 21h. (Andijan, Frunse, Samarkand, Tashkent, and Tchimkent), 22h. (Tucson).

Nov. 6d. 8h. Readings for which Nagoya gives the epicentre as 37°·0N. 141°·7E.
Tyosi eP =10m.59s., S =11m.16s., $S_g$ =11m.22s., M =11m.32s.
Mizusawa iP =11m.9s., eSN =11m.25s., iSE =11m.28s.
Nagoya P =11m.43s., S =12m.41s., M =13m.7s.

Nov. 6d. Readings also at 1h. (Wellington), 2h. (Andijan and Tchimkent), 3h. (Christchurch, New Plymouth, Wellington, and Taihoku), 4h. (Andijan, Frunse, Mizusawa, Samarkand, and Wellington), 7h. (Koti), 9h. (Wellington), 10h. (Triest), 11h. (Karenko and Nagoya), 12h. (Strasbourg and Sumoto), 13h. (Adelaide, Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, and Wellington), 14h. (La Paz, Mount Wilson, Pasadena, Riverside, and Tinemaha, 16h. (Wellington), 19h. (Mizusawa), 20h. (Mizusawa and Tyosi), 21h. (Berkeley), 23h. (Koti).

Nov. 7d. 9h. 32m. 52s. Epicentre 17°·5N. 94°·5W. (as on 1932 Nov. 12d.). X.

Tucson gives 17°·5N. 95°·0W.

A = −·075, B = −·951, C = +·301; D = −·997, E = +·078;
G = −·024, H = −·300, K = −·954.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Tucson | 20·9 | 318 | e 4 44 | + 5 | e 8 20 | − 4 | e 11·4 |
| St. Louis | 21·4 | 9 | i 4 46 | + 2 | 8 40 | + 6 | — |
| Florissant | 21·6 | 9 | i 4 47 | + 1 | i 8 39 | + 1 | — |
| La Jolla | 25·6 | 311 | i 5 24 | − 1 | — | — | — |
| Riverside | 26·2 | 313 | i 5 29 | − 2 | — | — | — |
| Mount Wilson | 26·8 | 313 | i 5 35 | − 1 | — | — | — |
| Pasadena | 26·8 | 313 | i 5 35k | − 1 | — | — | — |
| Haiwee | 27·9 | 317 | e 5 47 | + 1 | — | — | — |
| Santa Barbara | 28·2 | 312 | e 5 58 | + 9 | — | — | — |
| Tinemaha | 28·6 | 318 | i 5 51 | − 2 | — | — | — |
| Triest | 89·6 | 42 | — | — | i 23 39 | [+ 9] | — |

Additional readings:—
Tucson e = +6m.57s.; $T_0$ = 9h.32m.53s.
Florissant esS = +8m.43s.
La Jolla eZ = +6m.21s.
Riverside iZ = +6m.11s. = PP + 5s., +8m.53s.. = $P_cP$ − 6s., and +9m.27s.
Pasadena iZ = +6m.20s. and +8m.55s. = $P_cP$ − 5s.
Tinemaha iZ = +9m.0s. = $P_cP$ − 6s. and +12m.30s.
Triest e = +28m.42s.

Nov. 7d. 14h. 33m. 44s. Epicentre 37°·0N. 2°·3E. N.3.

A = +·798, B = +·032, C = +·602; D = +·040, E = −·999;
G = +·601, H = +·024, K = −·799.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Algiers | 0·7 | 127 | i 0 33 | ? | i 0 50 | ? | — | — |
| Alicante | 2·5 | 303 | 0 37 | + 1 | i 1 9 | + 5 | — | — |
| Almeria | 3·7 | 269 | i 0 16 | −37 | i 0 26 | −69 | — | — |
| Barcelona | 4·4 | 358 | i 1 13 | P* | i 1 58 | + 5 | — | — |
| Granada | 4·7 | 274 | e 1 8 | + 1 | i 1 50 | −10 | — | — |
| Malaga | 5·4 | 269 | e 1 15 | − 2 | i 2 18 | 0 | — | — |
| Toledo | 5·7 | 303 | 1 19 | − 2 | 2 42 | S* | — | — |
| San Fernando | 6·9 | 268 | 2 59 | S | (2 59) | + 3 | — | — |
| Florence | 9·6 | 42 | e 1 46 | −30 | (4 16) | +13 | — | 4·3 |
| Strasbourg | 12·2 | 17 | e 3 5 | +14 | — | — | e 6·3 | — |
| De Bilt | 15·2 | 7 | e 3 34 | + 3 | — | — | 7·3 | — |
| Prague | 15·7 | 30 | e 3 37 | − 1 | e 5 31 | ? | — | 10·3 |
| Stonyhurst | 17·2 | 351 | e 7 16 | SS | — | — | — | 9·8 |

Additional readings:—
Alicante iPP = +55s., iSS = +1m.14s. = S* + 1s.
Granada iPP = +1m.43s., sSS = +2m.7s.
Malaga i = +1m.56s., +2m.9s., sSS? = +2m.40s. = S* − 1s., sSSS? = +2m.52s. = $S_s$ + 0s.
Toledo iPP = +2m.9s., iSS = +2m.48s. = S* + 0s.
San Fernando S = +4m.27s.
Long waves were also recorded at Kew, Edinburgh, and other European stations.

Nov. 7d. 15h. 30m. 19s. Epicentre 26°·5N. 112°·5W. N.3.

Given by Tucson.

A = −·343, B = −·827, C = +·446; D = −·924, E = +·383;
G = −·171, H = −·412, K = −·895.

| | △ | Az. | P. | O−C. | S. | O−C. | L. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Tucson | 6·0 | 14 | — | — | e 2 28 | − 5 | e 3·5 |
| La Jolla | 7·6 | 329 | i 1 46 | − 2 | i 3 12 | − 2 | — |
| Riverside | 8·6 | 332 | i 2 2 | 0 | i 3 38 | − 1 | — |
| Pasadena | 9·0 | 329 | e 2 8 | + 1 | i 3 57 | + 8 | — |
| Mount Wilson | 9·1 | 330 | e 2 9 | 0 | — | — | — |
| Haiwee | 10·7 | 336 | e 2 45 | PP | — | — | — |
| Tinemaha | 11·7 | 337 | e 2 48 | + 4 | — | — | — |

Long waves were also recorded at Tashkent and La Paz.

Nov. 7d. 21h. 17m. 36s. Epicentre 39°·4N. 69°·3E. N.3.

A = +·273, B = +·723, C = +·635; D = +·935, E = −·354;
G = +·224, H = +·594, K = −·773.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Samarkand | 1·8 | 278 | e 0 43 | S | (e 0 43) | − 3 | — | 1·5 |
| Tashkent | 1·9 | 0 | i 0 51 | S | (i 0 51) | + 2 | e 1·3 | 2·0 |
| Andijan | 2·6 | 62 | e 0 35 | − 2 | 1 28 | $S_g$ | — | — |
| Tchimkent | 2·9 | 4 | e 0 42 | + 1 | — | — | — | — |
| Frunse | 5·3 | 46 | e 1 15 | 0 | e 2 7 | − 8 | — | 1·9 |

Additional readings:—
Samarkand i = +58s. = $S_g$ +5s., e = +1m.22s.
Andijan i = +39s.
Frunse e = +2m.36s. = S* +0s.
Long waves were recorded at Sotchi.

Nov. 7d. Readings also at 0h. (Berkeley, Branner, and San Francisco), 1h. (Branner), 8h. (Little Rock), 10h. (Batavia and Malabar), 11h. (Kobe, La Jolla, Mizusawa, Nagoya, Pasadena, Riverside, Sumoto, Tinemaha, and Tyosi (2)), 12h. (Tyosi), 13h. (Sotchi), 15h. (La Paz), 21h. (Baku and Tashkent), 22h. (Zagreb and Sverdlovsk).

Nov. 8d. 3h. 25m. 49s. Epicentre 37°·3N. 138°·0E. N.2.

Given by Koti.

A = −·591, B = +·532, C = +·606; D = +·669, E = +·743;
G = −·450, H = +·406, K = −·796.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Nagoya | 2·3 | 203 | i 0 35 | + 2 | 1 4 | + 5 | — | 1·9 |
| Tyosi | 2·8 | 124 | 0 46 | P* | 1 20 | S* | — | 1·5 |
| Mizusawa | 3·0 | 50 | e 0 51 | P* | i 1 36 | $S_g$ | — | — |
| Toyooka | 3·1 | 236 | 0 58 | $P_g$ | e 1 33 | S* | — | 2·0 |
| Kobe | 3·5 | 222 | i 0 46 | − 4 | 1 45 | S* | — | 2·1 |
| Sumoto | 3·9 | 221 | e 1 3 | P* | e 1 52 | S* | — | 2·2 |
| Koti | 5·2 | 226 | e 1 53 | ? | 2 50 | $S_g$ | — | 3·2 |
| Nagasaki | 8·1 | 239 | e 4 2 | S* | — | — | — | — |
| Chiufeng | 17·2 | 286 | e 4 4 | PP | 7 25 | SS | — | 12·8 |
| Hong Kong | 25·4 | 240 | — | — | 10 17 | SS | 14·8 | — |

*Continued on next page.*

| | △ ° | Az. ° | P. m. s. | O−C. s. | S. m. s. | O−C. s. | L. m. | M. m. |
|---|---|---|---|---|---|---|---|---|
| Tashkent | 51·9 | 293 | e 10 3 | (−20) | e 16 37 | +10 | e 28·7 | 36·0 |
| Sverdlovsk | 52·9 | 318 | 9 16 | + 3 | — | — | 27·2 | — |
| Baku | 65·6 | 303 | e 10 40 | − 2 | e 19 34 | + 7 | 35·0 | 43·3 |
| Tinemaha | 77·6 | 52 | i 11 55 | 0 | — | — | — | — |
| Haiwee | 78·3 | 53 | e 11 58 | − 3 | — | — | — | — |
| Prague | 79·5 | 327 | — | — | e 44 35 | ? | e 46·2 | 50·7 |
| Mount Wilson | 79·5 | 55 | i 12 5 | 0 | — | — | — | — |
| Pasadena | 79·5 | 55 | i 12 5 | 0 | — | — | — | — |
| Triest | 83·1 | 324 | — | — | e 24 48 | ? | 45·8 | 52·9 |

Additional readings :—
Tyosi PP = +52s. = $P_g$ + 2s., SE = +1m.23s. = $S_g$ − 3s.
Kobe eZ = +1m.1s. = $P_g$ − 3s., SN = +1m.47s. = $S_g$ − 3s.
Sumoto ePZ = +1m.11s. = $P_g$ − 1s.
Chiufeng SEZ = +7m.28s.
Tashkent e = +21m.11s. and +27m.46s.
Long waves were also recorded at Keizyo, Phu-Lien, and other European stations.

Nov. 8d. Readings also at 0h. (Mizusawa, Nagoya, and Tyosi), 1h. (Mizusawa, Nagoya, and Tyosi), 3h. (Vladivostok), 4h. (Mizusawa, Nagoya, and Tyosi), 7h. (Tiflis), 9h. (Santiago), 10h. (Tiflis), 12h. (Ferndale), 13h. (Berkeley, Branner, Baku, Lick, Samarkand, San Francisco, Sverdlovsk, and Wellington), 14h. (Copenhagen), 18h. (Sebastopol and Yalta), 19h. (Malabar), 22h. (Samarkand).

Nov. 9d. 3h. Readings for which no determination has been made :—
Perth 33m.0s.
Wellington eL = 36m.
Mount Wilson ePZ = 36m.51s.
Pasadena iPZ = 36m.53s.
Tinemaha ePZ = 37m.1s.
Haiwee ePE = 37m.2s.
Riverside ePZ = 37m.4s.
Chiufeng eP = 38m.10s., S = 48m.41s., iEN = 49m.1s.
Tashkent e = 44m.10s., e = 45m.22s., e = 46m.18s., i = 47m.38s., i = 51m.34s., e = 53m.3s., e = 65m.30s.
Andijan eP = 45m.0s.
Stuttgart ePZ = 45m.12s.
Samarkand eP = 45m.32s., e = 46m.25s.
Tchimkent eP = 46m.0s.
Sverdlovsk e = 46m.14s., e = 51m.36s.
Adelaide eE = 47m.24s., LE = 50m.54s., ME = 54m.18s.
Baku e = 48m.22s., e = 60m.39s., e = 70m.43s., e = 94m.35s., eL = 99m.
Hong Kong M = 48m.10s.
Huancayo e = 49m.22s.
Pulkovo L = 107m.

Nov. 9d. 3h. 59m. 0s. Epicentre 14°·0S. 174°·0W. (as on 1928 Sept. 22d.). R.3.
A = −·965, B = −·101, C = −·242 ; D = −·105, E = +·995 ; G = +·241, H = +·025, K = −·970.

| | △ ° | Az. ° | P. m. s. | O−C. s. | S. m. s. | O−C. s. | L. m. | M. m. |
|---|---|---|---|---|---|---|---|---|
| Apia | 2·2 | 86 | i 0 47 | +16 | i 1 23 | +26 | — | — |
| Wellington | 29·0 | 198 | 5 25 | −31 | 9 31 | −77 | — | — |
| Riverview | 37·2 | 232 | e 6 54 | −14 | — | — | e 15·8 | — |
| Santa Barbara | 70·7 | 45 | i 11 15 | 0 | — | — | — | — |
| Berkeley | 70·9 | 41 | i 11 20 | + 4 | — | — | — | — |
| La Jolla | 71·6 | 47 | e 11 18 | − 2 | — | — | — | — |
| Pasadena | 71·6 | 46 | i 11 21 | + 1 | — | — | — | — |
| Mount Wilson | 71·8 | 46 | i 11 22 | 0 | — | — | — | — |
| Riverside | 72·1 | 46 | i 11 24 | + 1 | — | — | — | — |
| Haiwee | 72·9 | 44 | i 11 30 | + 2 | — | — | — | — |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Tinemaha | 73·2 | 43 | i 11 30 | 0 | — | — | — | — |
| Vladivostok | 75·5 | 322 | — | — | e 17 25 | ? | — | — |
| Tucson | 76·0 | 51 | e 11 33 | −13 | e 21 33 | + 1 | — | — |
| Batavia | 78·0 | 267 | i 11 49 | − 8 | 21 37 | −17 | — | — |
| Chiufeng | 84·3 | 313 | i 12 33a | + 3 | i 22 51 | [− 3] | — | — |
| Huancayo | 95·3 | 103 | — | — | i 23 42 | [−20] | — | — |
| La Paz | 100·7 | 110 | e 17 13 | ? | i 24 7 | [−22] | — | — |
| San Juan | 111·1 | 76 | — | — | e 24 53 | [−25] | — | — |
| Agra | 112·1 | 294 | e 19 9 | PP | — | — | — | — |
| Tashkent | 119·1 | 310 | — | — | i 25 44 | [− 3] | — | 61·0 |
| Sverdlovsk | 120·6 | 329 | e 18 45 | [− 2] | i 25 42 | [−10] | 49·0 | — |
| Scoresby Sund | 120·9 | 10 | — | — | 37 0 | SS | — | — |
| Pulkovo | 130·9 | 344 | e 21 33 | PP | e 26 55 | [+33] | 39·0 | 44·3 |
| Helsingfors | 131·8 | 349 | — | — | (e 41 0) | ? | e 41·0 | — |
| Grozny | 135·1 | 320 | e 14 34 | ? | — | — | — | — |
| Copenhagen | 138·0 | 353 | — | — | 40 0? | SS | — | — |
| De Bilt | 141·9 | 1 | — | — | e 42 18 | ? | — | — |
| Uccle | 143·2 | 3 | e 19 30 | [+ 2] | — | — | — | — |
| Paris | 145·1 | 356 | e 19 38 | [+ 4] | — | — | 45·0 | — |
| Stuttgart | 145·2 | 356 | e 19 34 | [ 0] | — | — | — | — |
| Strasbourg | 145·4 | 358 | e 19 35 | [+ 1] | — | — | e 41·0 | — |
| Triest | 147·4 | 350 | e 19 45 | [+ 7] | — | — | — | — |

Additional readings :—
Wellington $S_eS$ = +16m.10s.
Santa Barbara iZ = +11m.43s.
Pasadena iZ = +12m.2s. and +14m.4s.
Tinemaha iZ = +12m.27s.
Tucson e = +22m.0s. =PS +2s.
Huancayo e = −9m.38s., i = +24m.28s. and +25m.52s. ; $T_0$ =3h.59m.0s.
San Juan e = +28m.24s. =PS −15s.
Tashkent i = +27m.11s.
Sverdlovsk i = +20m.26s. =PP +13s., e = +26m.27s.
Pulkovo i = +22m.33s. =PKS −4s. and +23m.15s.
Uccle i = +19m.33s. and +20m.1s.
Paris i = +20m.8s.
Stuttgart eZ = +24m.36s., eSS = +41m. ; $T_0$ =3h.59m.12s.
Strasbourg i = +19m.41s., e = +20m.5s., eN = +20m.28s. and +20m.36s., eE = +20m.42s. and +20m.48s.
Triest i = +20m.10s., e = +35m.40s. and +42m.24s.
Long waves were also recorded at Hong Kong.

Nov. 9d. 13h. 40m. 56s. Epicentre 37°·0N. 26°·0E. (as on 1919 Oct. 25d.). R.1.

A = +·718, B = +·350, C = +·602 ; D = +·438, E = −·899 ;
G = +·541, H = +·263, K = −·799.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Taranto | 7·6 | 300 | 1 48 | 0 | 3 4 | −10 | — | 3·4 |
| Trenta | 7·9 | 290 | (i 1 53) | + 1 | (i 3 20) | − 1 | — | — |
| Messina | 8·3 | 281 | 2 0 | + 2 | 3 21 | −10 | — | — |
| Helwan | 8·3 | 146 | i 1 56 | − 2 | i 3 17 | −14 | — | 3·4 |
| Ksara | 8·7 | 108 | e 2 5 | + 2 | i 3 37 | − 4 | — | — |
| Mineo | 9·0 | 275 | 1 42 | −25 | 2 48 | −61 | — | — |
| Sebastopol | 9·5 | 34 | 2 17 | + 3 | — | — | — | — |
| Yalta | 9·7 | 37 | 2 26 | + 9 | 4 26 | +20 | — | — |
| Benevento | 10·0 | 298 | e 2 4 | −17 | 3 24 | −49 | — | 6·6 |
| Theodosia | 10·7 | 38 | 2 45 | +14 | 4 51 | +20 | — | — |
| Zagreb | 11·5 | 323 | e 2 44 | + 2 | e 4 32 | −18 | — | 6·2 |
| Budapest | 11·6 | 337 | i 2 0 | −43 | 4 6 | −47 | 6·1 | 9·1 |
| Triest | 12·6 | 317 | 2 55k | − 1 | i 5 12 | − 5 | 6·1 | 6·7 |
| Graz | 12·7 | 326 | e 2 56 | − 2 | e 6 32 | S* | — | 9·2 |
| Siena | 12·8 | 304 | 2 49 | −10 | — | — | — | — |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Florence | 13·1 | 306 | i 3 4a | + 1 | 5 45 | +16 | — | 7·3 |
| Prato | 13·2 | 306 | i 3 4 | − 1 | i 7 4 | Sg | — | — |
| Vienna | 13·2 | 331 | i 3 9 | + 4 | i 6 59 | Sg | — | 8·1 |
| Venice | 13·2 | 314 | e 2 54 | −11 | 6 39 | S* | — | — |
| Padova | 13·5 | 313 | e 3 17 | + 8 | 6 39 | S* | — | — |
| Pavia | 14·4 | 310 | e 3 37 | PP | — | — | — | — |
| Piacenza | 14·6 | 309 | 3 26a | + 3 | 4 4 | ? | — | 9·1 |
| Erevan | 14·7 | 72 | e 3 14 | −11 | e 15 16 | ? | — | — |
| Prague | 15·5 | 331 | i 3 40 | + 5 | — | — | e 7·1 | 9·6 |
| Grozny | 16·3 | 61 | e 4 2 | +17 | e 7 20 | ? | — | — |
| Cheb | 16·3 | 328 | e 3 50 | + 5 | e 6 59 | SS | — | 9·1 |
| Zurich | 16·5 | 315 | e 3 48 | 0 | e 6 46 | − 4 | — | — |
| Stuttgart | 16·9 | 319 | i 3 55 | + 2 | e 7 8 | + 9 | e 7·7 | 10·0 |
| Neuchatel | 17·2 | 311 | e 3 57 | 0 | e 7 8 | + 2 | — | — |
| Jena | 17·3 | 328 | i 4 0 | + 2 | — | — | — | — |
| Leipzig | 17·3 | 330 | i 3 59 | + 1 | e 10 4 | ? | — | — |
| Karlsruhe | 17·5 | 319 | e 4 4? | + 4 | — | — | — | 9·9 |
| Strasbourg | 17·6 | 317 | i 4 2k | 0 | e 7 17 | + 2 | e 19·1 | — |
| Besançon | 17·9 | 311 | i 4 5 | 0 | — | — | — | — |
| Königsberg | 18·2 | 350 | e 4 12 | + 3 | e 7 32 | + 3 | e 10·4 | — |
| Algiers | 18·3 | 276 | i 4 4 | − 6 | — | — | — | — |
| Göttingen | 18·4 | 327 | i 4 14 | + 3 | — | — | — | — |
| Baku | 18·9 | 72 | e 4 31 | +14 | — | — | 9·9 | — |
| Barcelona | 18·9 | 291 | i 4 12 | − 5 | i 7 39 | − 5 | — | — |
| Hamburg | 19·9 | 332 | i 4 28k | − 1 | — | — | — | — |
| Kucino | 20·4 | 20 | e 4 19 | −15 | e 8 29 | +15 | 9·9 | 13·0 |
| Uccle | 20·7 | 319 | i 4 36k | − 1 | i 8 22 | + 2 | 11·1 | — |
| Paris | 20·7 | 312 | i 4 34 | − 3 | e 11 25 | ? | 12·1 | 12·1 |
| Copenhagen | 20·8 | 338 | i 4 38 | 0 | — | — | — | — |
| Alicante | 20·9 | 282 | e 4 32 | − 7 | i 8 20 | − 4 | e 9·9 | — |
| De Bilt | 21·0 | 322 | i 4 38 | − 2 | e 8 31 | + 5 | e 11·1 | 12·6 |
| Almeria | 22·6 | 278 | e 4 53 | − 4 | i 8 47 | −10 | e 9·8 | — |
| Pulkovo | 22·9 | 6 | e 5 1 | + 1 | 9 2 | − 1 | 10·6 | 11·7 |
| Helsingfors | 23·2 | 359 | i 5 1 | − 2 | e 9 7 | − 1 | e 11·1 | — |
| Granada | 23·5 | 280 | i 4 58 | − 7 | i 8 58 | PcP | 10·6 | 12·0 |
| Upsala | 23·5 | 350 | i 5 4 | − 1 | i 9 11 | − 3 | — | — |
| Kew | 23·5 | 316 | i 5 4k | − 1 | — | — | e 13·1 | — |
| Toledo | 23·6 | 287 | 5 1 | − 5 | 9 4 | −12 | e 11·3 | — |
| Oxford | 24·2 | 316 | i 5 12 | 0 | — | — | — | — |
| Malaga | 24·2 | 279 | i 5 8 | − 4 | e 8 59 | PcP | — | — |
| San Fernando | 25·7 | 279 | 5 26 | 0 | 9 35 | −18 | — | — |
| Edinburgh | 27·2 | 323 | — | — | e 10 4? | −14 | — | — |
| Sverdlovsk | 30·3 | 38 | i 6 10 | + 2 | i 11 6 | − 3 | — | — |
| Samarkand | 32·0 | 72 | e 6 19 | − 4 | 11 21 | −14 | — | — |
| Tashkent | 33·5 | 69 | i 6 47 | +11 | i 12 3 | + 5 | — | — |
| Tchimkent | 33·6 | 67 | e 6 4 | −33 | e 11 22 | −38 | — | — |
| Andijan | 35·9 | 69 | e 7 0 | + 3 | e 12 34 | − 1 | — | — |
| Frunse | 37·2 | 65 | e 7 9 | + 1 | i 12 54 | 0 | — | — |
| Scoresby Sund | 41·8 | 338 | 7 45 | − 2 | — | — | — | — |
| Agra | 44·6 | 86 | — | — | i 14 33 | −11 | — | — |
| Oak Ridge | 70·8 | 309 | i 11 9 | − 7 | — | — | — | — |
| Tinemaha | 98·8 | 332 | i 13 34 | − 4 | — | — | — | — |
| Haiwee | 99·6 | 331 | e 13 38 | − 4 | — | — | — | — |
| Riverside | 101·2 | 330 | i 13 42 | − 7 | — | — | — | — |
| Mount Wilson | 101·3 | 330 | e 13 44 | − 6 | — | — | — | — |
| Pasadena | 102·1 | 330 | i 13 54 | + 1 | — | — | — | — |

Additional readings and note :—
Trenta readings have been *increased* by 1m.
Zagreb e = +3m.8s., eNW = +3m.48s., e = +5m.25s. and +5m.46s. =S* +6s.
Triest iPP = +2m.59s., i = +3m.6s., +3m.22s., +3m.33s., and +5m.5s., iSS = +5m.32s., iSSsS = +6m.21s., i = +7m.5s., +7m.20s., and +7m.33s.
Graz iP = +3m.1s.
Vienna PP = +3m.18s., PcP = +7m.9s., SS = +7m.49s.

*Continued on next page.*

Zurich e = +15m.31s.
Stuttgart ePP = +4m.23s., eN = +6m.58s., eE = +7m.23s. ; $T_o$ = 13h.40m.50s.
Strasbourg iPPPP = +4m.28s., i = +4m.38s. and +5m.24s., iSS = +7m.36s., i = +8m.52s., +9m.47s., and +10m.42s.
Besançon PP? = +7m.27s.
Königsberg eE = +4m.49s., eN = +8m.17s.
Algiers PP = +7m.19s., i = +15m.39s.
Baku i = +5m.15s., e = +7m.15s.
Hamburg e = +8m.40s., +8m.52s., and +9m.58s.
Uccle i = +5m.17s., iSN = +8m.26s., SS = +9m.3s.
Paris iPP = +8m.26s. = S + 6s.
Copenhagen i = +5m.3s., +5m.19s., e = +9m.5s.
De Bilt eZ = +9m.12s.
Helsingfors i?N = +5m.12s., iPPNZ = +5m.27s., iPPPNZ = +5m.39s., e?NE = +9m.15s. = S + 7s., iSSE = +9m.55s. ; $T_o$ = 13h.40m.42s.
Granada PP = +5m.25s.
Oxford iN = +3m.7s.
Malaga e = +5m.39s. = PP + 0s. and +5m.51s., eSS? = +9m.50s.
Oak Ridge i = +11m.38s.
Tinemaha eZ = +18m.35s.
Riverside eZ = +17m.49s. = PP − 3s.
Mount Wilson iZ = +17m.58s. = PP + 6s.
Pasadena iZ = +17m.55s. = PP − 4s.

Nov. 9d. 16h. Readings for which no determination has been made :—
Balboa Heights iP = 12m.5s., iS = 12m.23s., eL = 12m.29s., M = 12m.32s.
San Juan e = 15m.37s., e = 19m.2s., eL = 21m.30s.
Huancayo e = 15m.38s., e = 19m.58s., e = 23m.37s.
La Paz eP = 17m.12s., LN = 27m.2s., M = 30m.20s.
La Jolla iPZ = 19m.41s.
Riverside iZ = 19m.46s.
Mount Wilson iPZ = 19m.51s.
Pasadena iPZ = 19m.51s., iZ = 22m.36s.
Tinemaha ePZ = 19m.58s., iZ = 20m.3s.
Haiwee iPZ = 19m.59s.

Nov. 9d. Readings also at 0h. (Branner and Lick), 1h. (Lick), 2h. (Tiflis), 3h. (Adelaide, Andijan, Perth, and Samarkand), 9h. (Tchimkent), 11h. (Haiwee, La Jolla, Mount Wilson, Pasadena, Riverside, Santa Barbara, Tinemaha, and Wellington), 12h. (Granada), 13h. (Karenko, Nagoya, Triest, Theodosia, and Yalta), 14h. (Granada), 17h. (Tashkent, Sverdlovsk, and Balboa Heights) 19h. (Triest and Zagreb), 21h. (Baku, Grozny (2), Erevan (2), Scoresby Sund, Sverdlovsk, Tiflis (2), and Wellington), 23h. (Karenko and Trenta).

Nov. 10d. 8h. Readings for which no determination has been made :—
Adelaide e = 3m.10s., e = 7m.30s., iL = 10m.24s., M = 11m.24s.
Riverview eN = 4m.12s., eLE = 6m.42s., ME = 8m.0s.
Melbourne e = 4m.54s., L = 6m.11s., M = 9m.24s.
Perth P = 14m.0s.
Sverdlovsk i = 13m.27s., i = 14m.7s., e = 36m.0s., L = 54m.
Tashkent e = 16m.16s., eL = 56m.0s., M = 62m.54s.
Cape Town 32m.
De Bilt e = 64m., eL = 81m.
Long waves were also recorded at Baku, Copenhagen, Paris, Scoresby Sund, Stuttgart, and Strasbourg.

Nov. 10d. 15h. 39m. 58s. Epicentre 56°·1N. 33°·5W. N.2.
A = +·465, B = −·308, C = +·830 ; D = −·552, E = −·834 ;
G = +·692, H = −·458, K = −·558.

| | Δ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Edinburgh | 16·8 | 78 | i 3 50 | − 2 | — | — | 8·0 | 10·8 |
| Stonyhurst | 17·8 | 84 | i 4 2 | − 2 | — | — | 8·0 | 12·6 |
| Oxford | 19·3 | 89 | i 4 17 | − 5 | e 8 12 | SS | e 9·0 | 11·0 |
| Kew | 20·0 | 89 | e 4 27 | − 3 | — | — | 9·0 | 10·7 |
| De Bilt | 22·8 | 84 | i 4 59 | 0 | 9 11 | +10 | e 10·5 | 13·7 |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Paris | 22·8 | 93 | 5 · 0 | + 1 | 9 17 | +16 | 11·0 | 14·0 |
| Uccle | 22·8 | 87 | 4 58 | − 1 | 9 9 | + 8 | e 10·8 | — |
| Hamburg | 24·8 | 77 | e 5 18k | 0 | e 9 42 | + 5 | e 12·0 | 15·0 |
| Toledo | 25·2 | 118 | e 5 29 | + 7 | — | — | e 12·3 | — |
| Copenhagen | 25·3 | 71 | 5 22 | − 1 | 9 57 | +11 | 12·0 | — |
| Neuchatel | 26·3 | 93 | e 5 41 | + 9 | — | — | — | 26·0 |
| Stuttgart | 26·6 | 87 | e 5 33 | − 2 | e 10 8 | − 1 | e 13·0 | 15·5 |
| Cheb | 27·7 | 83 | e 6 2 | +18 | e 10 29 | + 2 | e 14·5 | 16·5 |
| Oak Ridge | 27·8 | 257 | e 5 50 | + 5 | e 10 48 | +20 | e 14·5 | — |
| Alicante | 28·1 | 115 | e 7 44 | ? | — | — | e 15·8 | — |
| Ottawa | 28·3 | 266 | — | — | e 10 50 | +13 | e 14·0 | — |
| Prague | 28·8 | 82 | — | — | e 10 2? | −43 | e 15·0 | 18·0 |
| Piacenza | 29·0 | 94 | — | — | e 9 46 | −62 | — | 18·4 |
| Venice | 30·2 | 92 | e 6 18 | +11 | i 11 18 | +11 | — | — |
| Florence | 30·7 | 94 | 6 17 | + 6 | 11 2 | −14 | 15·8 | 17·5 |
| Triest | 30·9 | 90 | 6 14 | + 1 | i 11 22 | + 4 | — | 17·5 |
| Algiers | 31·1 | 113 | 4 36 | ? | 11 23 | + 2 | 20·0 | — |
| Pulkovo | 32·7 | 57 | — | — | e 11 43 | − 3 | 15·0 | 18·8 |
| Kucino | 38·2 | 60 | — | — | e 13 12 | + 3 | e 17·6 | 21·5 |
| Tiflis | 50·5 | 71 | e 9 12 | +17 | e 16 34 | +26 | 26·2 | 32·9 |
| Ksara | 51·3 | 85 | e 9 4 | + 3 | e 16 28 | + 9 | — | — |
| Baku | 54·1 | 69 | e 9 27 | + 5 | 17 2 | + 5 | 27·8 | 34·6 |
| Tinemaha | 57·3 | 299 | e 9 46 | + 1 | — | — | — | — |
| Riverside | 59·1 | 286 | e 9 57 | − 1 | — | — | — | — |
| Mount Wilson | 59·3 | 287 | e 9 59 | − 1 | — | — | — | — |
| Pasadena | 59·3 | 287 | i 9 58 | − 2 | — | — | — | — |
| Tashkent | 63·0 | 55 | i 10 34 | + 9 | 19 4 | PS | e 29·0 | 49·6 |

Additional readings :—
Uccle SN = +9m.15s.
Triest e = +10m.14s.
Kucino e = +15m.40s. = SS + 2s.
Ksara PS = +17m.2s.
Long waves were recorded at Durham, Ivigtut, Reykjavik, Scoresby Sund, Chicago, Bozeman, and other European stations.

Nov. 10d. 16h. Readings for which no determination has been made :—
Wellington i = 7m., i = 10m.
Riverview eE = 8m.9s., eN = 12m.23s., eL = 15m.18s., MN = 16m.37s.
Pasadena iPZ = 15m.27s.
Mount Wilson iPZ = 15m.27s.
Riverside iPZ = 15m.29s.
Haiwee ePEZ = 15m.33s.
Tinemaha ePEN = 15m.36s.
Adelaide eL = 20m.20s., M = 21m.12s.

Nov. 10d. 17h. 14m. 40s. Epicentre 24°·5N. 122°·2E. (as on 1934 Sept. 30d.) X.
A = − ·485, B = + ·770, C = + ·415.

| | Δ | Az. | P. | O−C. | S. | O−C. |
|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. |
| Karenko | 0·7 | 227 | e 0 10 | 0 | 0 19 | + 1 |
| Taihoku | 0·8 | 311 | 0 12 | + 1 | 0 19 | − 2 |
| Arisan | 1·6 | 233 | 0 23 | 0 | 0 39 | − 2 |

Nov. 10d. 23h. Readings for which no determination has been made :—
Andijan eP = 40m.34s., P* = 40m.39s., $P_g$ = 40m.44s., $S_g$ = 41m.11s., M = 41m.41s.
Frunse eP = 41m.2s., $S_g$ = 41m.43s., S* = 41m.57s.
Tchimkent eP = 41m.5s.
Almata e = 41m.34s., eS = 42m.14s.
Tashkent eP = 41m.36s., iL = 42m.40s., M = 43m.42s.
Samarkand eP = 41m.55s.

Nov. 10d. Readings also at 0h. (Taranto, Trenta, and Trieste), 7h. (Christchurch and Wellington), 10h. (Samarkand and Tashkent), 11h. (Mizusawa, Nagoya, and Tyosi (3) ), 12h. (Glenmuick, Mount Wilson, Pasadena, Riverside, Tinemaha, and Tyosi), 13h. (La Paz, Pasadena, Riverside, Mount Wilson, Tinemaha, and Wellington), 15h. (La Paz), 16h. (Kobe, Mizusawa, and Tyosi (2) ), 17h. (La Paz), 20h. (Hukuoka and Hukuoka B), 23h. (Riverview, Melbourne, and Balboa Heights).

Nov. 11d. 21h. 17m. 23s. Epicentre 24°·5N. 122°·0E. (as on 1934 Aug. 10d.). X.

$A = -\cdot482$, $B = +\cdot772$, $C = +\cdot415$; $D = +\cdot848$, $E = +\cdot530$; $G = -\cdot220$, $H = +\cdot352$, $K = -\cdot910$.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Karenko | 0·6 | 212 | e 0 9 | 0 | 0 15 | 0 | — | — |
| Taihoku | 0·6 | 321 | i 0 10 | + 1 | 0 19 | + 4 | — | — |
| Taityu | 1·2 | 256 | 0 14 | − 3 | 0 28 | − 3 | — | — |
| Arisan | 1·5 | 223 | 0 16 | − 5 | 0 36 | − 3 | — | — |
| Tainan | 2·2 | 225 | e 0 29 | − 2 | 0 58 | + 1 | — | — |
| Takao | 2·4 | 223 | e 0 48 | $P_g$ | 1 24 | ? | — | — |
| Zi-ka-wei | 6·7 | 356 | e 1 37 | + 2 | e 3 2 | S* | — | 4·8 |
| Hong Kong | 7·5 | 255 | 1 48 | + 2 | 3 13 | + 2 | 4·0 | 4·8 |
| Manila | 10·0 | 186 | 2 44 | +23 | 6 23 | ? | 8·3 | — |
| Nagasaki | 10·7 | 38 | e 5 17 | S* | — | — | — | — |
| Husan | 12·2 | 28 | e 3 18 | ? | e 7 5 | ? | e 9·0 | — |
| Taikyu | 12·7 | 25 | e 6 56 | $S_g$ | — | — | — | — |
| Zinsen | 13·6 | 16 | — | — | e 7 27 | $S_g$ | e 9·3 | — |
| Phu-Lien | 14·7 | 258 | 2 37? | −48 | — | — | 8·6 | — |
| Chiufeng | 16·3 | 344 | e 3 49 | + 4 | e 7 0 | SS | — | — |
| Vladivostok | 20·7 | 22 | e 5 7 | PP | — | — | — | — |
| Calcutta | 30·8 | 273 | — | — | e 12 51 | SS | — | — |
| Tashkent | 46·4 | 305 | — | — | e 19 3 | ? | e 24·0 | 30·5 |
| Sverdlovsk | 54·1 | 324 | 9 23 | + 1 | e 17 5 | PS | 26·6 | — |

Additional readings :—
Zi-ka-wei iZ = +4m.28s.
Tashkent e = +19m.59s.
Long waves were also recorded at Copenhagen, Stuttgart, and Strasbourg.

Nov. 11d. Readings also at 0h. (Nagoya), 2h. (Balboa Heights, Paris, and Samarkand), 3h. (Balboa Heights, Nagoya, and Tyosi), 4h. (Andijan, Almata, Agra, Batavia, Calcutta, Samarkand, Soengei Langka, and Tyosi), 5h. (Kobe), 7h. (Balboa Heights, La Jolla, Mount Wilson, Nagoya, Riverside, Pasadena, and Tinemaha), 10h. (Riverview), 11h. (Batavia, Mount Wilson, Pasadena, Riverside, and Tinemaha), 15h. (Almata, Balboa Heights, Frunse, and Semipalatinsk), 17h. (Tashkent), 18h. (Branner), 19h. (Medan, Sverdlovsk, Taihoku, and Tashkent), 20h. (Tyosi), 21h. (Balboa Heights), 22h. (Mount Wilson, Pasadena, Riverside, Tinemaha, and Zagreb), 23h. (Manila and Zagreb).

Nov. 12d. 1h. Readings for which no determination has been made :—

Graz iP = 9m.28s., iS = 10m.15s., M = 10m.34s.
Triest iP = 9m.29s., $iS_g$ = 10m.8s.
Vienna eP* = 10m.24s., $iP_g$ = 10m.29s., 10m.43s., S = iL = 11m.3s.
Basle e = 10m.28s.
Prato eP = 10m.29s., iS = 11m.11s.
Venice eP = 10m.39s., eS = 11m.7s.
Neuchatel e = 10m.41s., e = 12m.52s.
Florence eP = 10m.46s., S = 11m.21s.
Padova P? = 10m.48s.
Zurich e = 11m.0s.
Ravensburg e = 11m.30s.
Stuttgart e = 11m.40s., e = 12m.38s., e = 12m.43s.
Strasbourg e = 12m.5s., e = 13m.0s., e = 13m.13s., e = 13m.22s.

Nov. 12d. 7h. 19m. 16s. Epicentre 38°·1N. 41°·0E. N.1.

A = +·594, B = +·516, C = +·617; D = +·656, E = −·755; G = +·466, H = +·405, K = −·787.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Erevan | 3·4 | 52 | e 0 53 | P* | 1 47 | $S_g$ | — | 2·3 |
| Tiflis | 4·6 | 38 | 1 6 | 0 | — | — | i 2·3 | — |
| Ksara | 5·9 | 226 | e 1 42 | P* | i 2 48 | S* | — | — |
| Baku | 7·3 | 69 | 1 53 | P* | i 3 5 | − 1 | — | — |
| Yalta | 8·2 | 324 | e 1 48 | − 8 | i 3 26 | − 3 | — | 3·5 |
| Sebastopol | 8·6 | 322 | 2 0 | − 2 | 3 39 | 0 | — | — |
| Simferopol | 8·6 | 326 | e 1 57 | − 5 | 3 36 | − 3 | — | — |
| Helwan | 11·5 | 227 | i 2 51 | + 9 | 6 39 | ? | — | 8·5 |
| Belgrade | 16·7 | 300 | e 3 50 | 0 | e 7 3 | SS | e 9·5 | 11·0 |
| Lemberg | 16·8 | 319 | e 7 2 | SS | — | — | — | 13·7 |
| Taranto | 18·4 | 285 | 6 54 | ? | — | — | — | — |
| Budapest | 18·5 | 307 | 3 31 | −42 | 6 50 | −46 | 10·7 | 11·7 |
| Trenta | 19·2 | 281 | e 4 28 | PP | 7 45 | SS | — | — |
| Zagreb | 20·0 | 301 | e 4 28 | − 2 | e 8 32 | SS | e 11·3 | 13·4 |
| Samarkand | 20·2 | 78 | 4 29 | − 3 | — | — | e 12·9 | — |
| Vienna | 20·5 | 308 | i 4 35 | 0 | 8 16 | 0 | — | 14·7 |
| Benevento | 20·7 | 287 | e 4 44 | PP | 8 24 | + 4 | — | 14·2 |
| Graz | 20·7 | 304 | i 4 37 | 0 | e 8 22 | + 2 | e 10·7 | 13·7 |
| Casamicciola | 21·0 | 284 | 5 23 | +43 | 9 26 | +60 | 14·0 | — |
| Triest | 21·5 | 299 | i 4 44 | − 1 | i 8 48 | $P_cP$ | 9·7 | 12·2 |
| Tashkent | 21·9 | 73 | i 5 0 | PP | i 8 59 | SS | 11·4 | 17·5 |
| Prague | 22·3 | 311 | e 4 52 | − 2 | e 9 2 | +10 | e 11·0 | 14·7 |
| Venice | 22·4 | 298 | e 5 0 | + 5 | e 9 10 | +17 | — | 10·7 |
| Treviso | 22·6 | 299 | i 4 56 | − 1 | e 9 10 | +13 | — | — |
| Pulkovo | 22·7 | 346 | e 4 52 | − 6 | e 8 50 | − 9 | 11·7 | 13·4 |
| Sverdlovsk | 22·8 | 28 | e 4 56 | − 3 | i 8 59 | − 2 | 15·1R | 15·9 |
| Padova | 22·8 | 298 | e 5 6 | + 7 | i 9 2 | + 1 | — | — |
| Siena | 22·9 | 293 | 4 59 | − 1 | 7 14 | ? | 9·2 | — |
| Florence | 22·9 | 294 | i 5 1a | + 1 | 9 14 | +11 | — | 11·7 |
| Prato | 23·1 | 294 | i 5 7 | + 5 | i 9 12 | + 5 | 12·7 | 15·3 |
| Cheb | 23·5 | 310 | e 5 5 | 0 | e 9 19 | + 5 | e 13·7 | 14·7 |
| Livorno | 23·7 | 293 | 5 6 | − 1 | 9 12 | − 6 | — | — |
| Leipzig | 24·0 | 313 | e 5 14 | + 4 | e 9 28 | + 5 | — | 15·2 |
| Andijan | 24·2 | 74 | 5 22 | PP | — | — | — | — |
| Piacenza | 24·2 | 297 | 5 16 | + 4 | i 9 36 | + 9 | 14·1 | 16·7 |
| Helsingfors | 24·3 | 340 | i 5 11 | − 2 | e 9 25 | − 3 | 12·0 | — |
| Pavia | 24·6 | 297 | e 5 25 | + 9 | — | — | — | — |
| Jena | 24·6 | 311 | e 5 14 | − 2 | e 9 28 | − 6 | e 11·7 | 15·2 |
| Stuttgart | 25·2 | 305 | e 5 22 | 0 | 9 44 | 0 | e 12·7 | 14·9 |
| Zurich | 25·3 | 302 | e 5 22 | − 1 | e 9 43 | − 3 | — | — |
| Karlsruhe | 25·7 | 306 | e 5 36 | +10 | 10 2 | + 9 | 14·9 | — |
| Frunse | 25·8 | 68 | 5 44 | +17 | e 9 51 | − 4 | — | — |
| Copenhagen | 25·9 | 322 | 5 29 | + 1 | 9 57 | 0 | — | — |
| Basle | 26·0 | 302 | e 5 30 | + 1 | e 10 0 | + 2 | — | — |
| Strasbourg | 26·1 | 305 | e 5 33 | + 3 | i 10 10 | +10 | e 14·7 | 15·7 |
| Neuchatel | 26·3 | 301 | e 5 32 | 0 | e 10 1 | − 2 | — | — |
| Hamburg | 26·9 | 317 | e 5 29 | − 8 | e 10 12 | − 2 | e 14·4 | 18·7 |
| Upsala | 26·9 | 334 | 5 31 | − 6 | 10 4 | −10 | e 11·7 | 18·9 |
| Besançon | 27·0 | 301 | e 5 44? | + 6 | 10 19 | + 4 | 14·7 | — |
| Almata | 27·6 | 68 | 5 53 | + 9 | — | — | — | — |
| De Bilt | 28·4 | 311 | 5 52 | + 1 | 10 39 | + 1 | e 12·7 | 17·4 |
| Uccle | 28·7 | 308 | 5 54 | + 1 | 10 42 | − 1 | 12·7 | 17·7 |
| Paris | 29·5 | 304 | 6 9 | + 8 | e 11 47 | ? | 13·7 | 17·7 |
| Dehra Dun | 31·4 | 93 | 13 34 | ? | 16 14 | ? | 21·2 | 23·7 |
| Bergen | 31·5 | 327 | e 7 14 | PP | e 12 18 | ? | — | — |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Kew | 31·6 | 309 | e 7 44? | ? | — | — | 16·7 | 19·7 |
| Alicante | 32·3 | 284 | e 7 31 | PP | e 12 51 | ? | e 14·1 | — |
| Oxford | 32·3 | 310 | — | — | e 11 27 | −13 | i 14·1 | 19·9 |
| Agra | 32·8 | 97 | e 6 47 | +17 | e 12 2 | +14 | 15·9 | 18·8 |
| Stonyhurst | 33·4 | 313 | — | — | e 11 44? | −13 | 17·7 | 25·2 |
| Bombay | 33·7 | 115 | i 6 56 | +18 | i 12 27 | +26 | i 17·1 | 22·1 |
| Edinburgh | 34·1 | 315 | — | — | e 12 14 | + 6 | 19·7 | 24·9 |
| Almeria | 34·2 | 282 | e 6 44 | + 2 | e 12 8 | − 1 | e 15·0 | — |
| Toledo | 34·7 | 287 | e 6 47 | + 1 | e 12 7 | −10 | — | — |
| Granada | 35·0 | 282 | e 6 16 | −33 | e 12 26 | + 4 | 15·5 | 23·2 |
| Malaga | 35·7 | 283 | e 7 58 | PP | e 12 32 | 0 | e 21·9 | — |
| San Fernando | 37·2 | 283 | 7 8 | 0 | 12 59 | + 5 | 16·8 | — |
| Hyderabad | 38·7 | 111 | 9 14 | $P_cP$ | 13 44 | +27 | 16·2 | 22·9 |
| Kodaikanal | 42·9 | 118 | — | — | i 14 48 | +29 | e 19·7 | 27·2 |
| Scoresby Sund | 45·5 | 335 | — | — | 17 44? | SS | — | — |
| Colombo | 47·0 | 122 | 15 38 | S | (15 38) | +19 | — | 31·6 |
| Chiufeng | 56·5 | 62 | e 9 52 | +13 | 17 44 | +14 | — | 35·0 |
| Hong Kong | 63·6 | 80 | 19 14 | PS | — | — | — | 41·1 |
| Manila | 73·3 | 83 | 11 34 | + 3 | 21 11 | PS | 30·8 | — |
| Oak Ridge | 78·8 | 316 | — | — | e 21 57 | − 6 | e 36·2 | — |
| Ottawa | 79·0 | 320 | — | — | e 22 8 | + 3 | e 37·7 | — |
| San Juan | 91·4 | 295 | — | — | e 23 59 | −10 | e 46·7 | — |
| Huancayo | 118·0 | 277 | — | — | e 50 44 | ? | e 70·9 | — |

Additional readings :—
Erevan P* = +1m.1s., $P_g$ = +1m.5s., PP = +1m.9s., $S_g$ = +2m.0s.
Tiflis eEN = +1m.24s. = $P_g$ − 2s.
Ksara iSS = +3m.23s.
Baku e = +3m.59s. = $S_g$ + 4s.
Helwan iP = +5m.19s.
Belgrade e = +4m.30s.
Zagreb e = +8m.11s. = S + 5s., e = +12m.26s.
Vienna PP = +4m.59s., $P_cP$ = +8m.42s., $P_cS$ = +12m.15s.
Triest iE = +4m.52s., iN = +5m.6s. = PP + 3s., iPP = +5m.12s., iPPP = +5m.19s., i = +8m.42s. = S + 6s., iE = +8m.51s., iN = +8m.56s., iE = +9m.8s., iN = +9m.21s., iSS = +9m.37s., i = +11m.10s., +11m.50s., +13m.6s., and +13m.34s.
Venice eP = +5m.12s.? = PP − 3s.
Treviso SS = +14m.0s.
Sverdlovsk $L_g$ = +12·5m.
Stuttgart iEZ = EN = +5m.27s., iS = +9m.53s., e = +10m.11s.; $T_0$ = 7h.18m.52s.
Strasbourg i = +6m.41s., +10m.18s., +10m.38s., and +11m.38s.
Besançon i = +11m.11s. = SS − 7s.
Agra PPP = +8m.11s.
Granada PP = +7m.41s., iPPP = +8m.11s.
Malaga e = +9m.2s., +14m.38s. = SS − 4s. and +20m.51s.
Kodaikanal SS? = +17m.58s. = SSS + 3s.
Hong Kong S? = +26m.1s.
Long waves were also recorded at Durham, Algiers, Barcelona, Göttingen, Husan, Ivigtut, La Paz, Phu-Lien, Tucson, Vladivostok, and Cape Town.

Nov. 12d. 8h. 32m. 10s. Epicentre 37°·8N. 7°·8W. (given by Malaga). N.3.

A = +·783, B = −·107, C = +·613; D = −·136, E = −·991; G = +·607, H = −·083, K = −·790.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| San Fernando | 1·9 | 136 | 0 17 | −11 | 0 47 | − 2 | — |
| Malaga | 2·9 | 111 | 0 40 | − 1 | 1 20 | S* | 5·1 |
| Granada | 3·4 | 100 | i 0 50 | + 1 | i 1 37 | S* | — |
| Serra do Pilar | 3·4 | 350 | 0 51 | + 2 | 1 38 | S* | 1·7 |
| Toledo | 3·6 | 54 | i 0 55 | P* | 1 49 | $S_g$ | — |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Almeria | 4·4 | 102 | 1 42 | ? | i 2 30 | ? | — |
| Alicante | 5·7 | 83 | 2 34 | ? | i 3 45 | ? | — |
| Basle | 14·9 | 44 | e 4 31 | ? | e 8 53 | ? | — |
| Uccle | 15·6 | 30 | e 3 42 | + 6 | — | — | e 7·8 |
| Strasbourg | 15·6 | 41 | e 3 31 | − 5 | e 7 42 | ? | e 9·8 |
| Stuttgart | 16·4 | 43 | e 3 50 | + 4 | — | — | e 9·7 |
| Oak Ridge | 47·8 | 297 | i 8 20 | −15 | — | — | — |
| Tinemaha | 81·5 | 311 | i 12 3 | −13 | — | — | — |
| Mount Wilson | 83·2 | 309 | e 12 11 | −13 | — | — | — |
| Pasadena | 83·3 | 309 | i 12 11 | −14 | — | — | — |

Additional readings :—
Malaga sSS = +44s. = P* − 2s., iPSS = +1m.8s., i = +1m.21s. and +1m.26s. = S* +1s., e = +1m.50s.
Toledo $P_g$ = +1m.2s., iSS = +2m.10s.
Almeria $iP_g$ = +1m.49s., iPP = +2m.9s., iSS = +2m.35s.
Alicante iPP = +3m.25s., iSSS = +4m.12s.
Pasadena iZ = +12m.46s.
Long waves were also recorded at De Bilt, Hamburg, Paris, Piacenza, Prague, and Zurich.

Nov. 12d. 17h. Readings for which no determination has been made :—
Erevan eP = 5m.25s., P* = 5m.32s., PsP = 5m.37s., eS = 6m.15s.
Tiflis ePEN = 5m.45s., eEN = 6m.25s., eE = 6m.50s., MN = 8m.12s.
Grozny e = 6m.12s.
Ksara eP = 6m.19s., SS = 8m.3s.
Sverdlovsk P = 9m.30s., S = 13m.37s., L = 15m.
Tashkent e = 13m.31s., i = 16m.31s., eL = 17m.42s., M = 22m.30s.

Nov. 12d. 23h. Readings for which no determination has been made :—
Chiufeng eP = 29m.34s., eS = 33m.18s.
Vladivostok e = 30m.35s., M = 35m.12s.
Heizyo eP = 33m.29s.
Keizyo P? = 34m.19s.
Zinsen ePE = 34m.26s., eSE? = 37m.50s.
Taikyu eP = 34m.44s.
Chiufeng eP = 35m.16s., P* = 35m.20s., $iP_g$ = 35m.30s., iS = 35m.40s., M = 36m.58s. local.
Sverdlovsk e = 42m.10s., $L_q$ = 47m.18s., LR = 51m.6s.
Frunse eP = 46m.41s.
Andijan eP = 47m.2s.
Samarkand e = 51m.22s.
Tiflis eN = 52m.30s., M = 60m.42s.
Long waves were recorded at Copenhagen, De Bilt, Pulkovo, Stuttgart, Strasbourg, Tashkent, and Uccle.

Nov. 12d. Readings also at 0h. (Triest (2) ), 1h. (Triest), 3h. (Manila and Mizusawa), 4h. (Balboa Heights), 6h. (Algiers, Berkeley (2), Branner (2), and Lick (2) ), 7h. (Ksara and Tiflis), 8h. (Ksara (2) and Tiflis (2) ), 10h. (Nagoya), 11h. (Apia, Berkeley, Haiwee, La Jolla, Riverside, Pasadena, Mount Wilson, and Tinemaha), 13h. (Apia and De Bilt), 14h. (Nagoya, Strasbourg, St. Louis, and Tyosi), 15h. (Jena, Riverside, Pasadena, and Tinemaha), 18h. (Tyosi), 22h. (Frunse, Manila (2), Samarkand, Tashkent, and Wellington), 23h. (Sverdlovsk).

Nov. 13d. Readings at 0h. (Andijan), 4h. (Grozny, Ksara, and Tyosi), 5h. (Lick and Tyosi), 7h. (Lick), 9h. (Frunse, Semipalatinsk, Sotchi, and Tyosi), 11h. (Bombay), 12h. (Baku, Sverdlovsk, and Tashkent), 13h. (Andijan (2), Samarkand (2), and Wellington), 14h. (Tainan), 16h. (Mizusawa, Tyosi, and Tashkent), 17h. (La Paz and Tashkent), 18h. (Apia), 20h. (Batavia, Haiwee, Malabar, Medan, Pasadena, Riverside, and Santiago), 23h. (Andijan and La Paz).

Nov. 14d. 2h. Readings for two shocks from which no determinations have been made :—

Andijan $P_g$ =9m.58s., $iS_g$ =10m.4s., M =10m.20s.
Tashkent P =10m.47s., i =10m.54s., iL =10m.49s.
Frunse e =11m.0s.
Samarkand e =11m.39s.

Andijan $P_g$ =55m.4s., i =55m.28s., $iS_g$ =55m.30s., M =55m.38s.
Tashkent iP =55m.17s., eL =55m.45s., M =56m.18s.
Samarkand eP =55m.50s., eS* =56m.26s., M =56m.45s.
Almata e =56m.40s.
Frunse e =56m.58s., epicentre 39°·2N. 70°·6E.

Nov. 14d. Readings also at 3h. (Nagoya and Tyosi), 4h. (Vienna), 5h. (Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, and Wellington), 6h. (Sebastopol, Theodosia, and Yalta), 7h. (Algiers), 12h. (Hukuoka B and Nagasaki), 13h. (Reykjavik), 14h. (Andijan, Reykjavik (2), Samarkand, Tashkent, and Vladivostok), 16h. (Andijan, Almata, and Frunse), 17h. (Baku and Tashkent), 18h. (Ksara and Phu-Lien), 19h. (Baku, Ksara, and Tashkent), 20h. (Almata, Apia, and Samarkand).

Nov. 15d. 23h. 14m. 48s. Epicentre 36°·3N. 71°·0E. N.3.

A = +·263, B = +·762, C = +·592 ; D = +·946, E = −·326 ;
G = +·193, H = +·560, K = −·806.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Andijan | 4·6 | 14 | 1 4 | − 2 | 1 56 | − 2 | — | 2·4 |
| Samarkand | 4·6 | 319 | 1 10 | + 4 | i 1 53 | − 5 | — | 2·5 |
| Tashkent | 5·2 | 346 | (i 1 12) | − 2 | — | — | (i 1·9) | (3·2) |
| Frunse | 7·1 | 22 | 1 42 | + 1 | 2 58 | − 3 | — | 3·6 |
| Almata | 8·3 | 31 | 1 59 | + 1 | 3 24 | − 7 | — | 4·5 |
| Agra | 11·0 | 145 | i 2 33 | − 2 | i 4 23 | −15 | — | — |
| Semipalatinsk | 15·6 | 22 | e 3 29 | − 7 | e 6 27 | − 2 | e 8·0 | 8·4 |
| Baku | 17·0 | 290 | e 3 54 | 0 | i 7 15 | SS | 9·1 | — |
| Bombay | 17·5 | 174 | 4 1 | + 1 | 7 17 | + 4 | e 8·2 | — |
| Hyderabad | 20·0 | 159 | 4 29 | − 1 | 8 11 | + 5 | 9·8 | 14·1 |
| Calcutta | 20·4 | 128 | 4 44 | PP | 8 30 | SS | e 10·1 | — |
| Grozny | 20·5 | 298 | e 4 40 | + 5 | e 8 25 | + 9 | — | — |
| Tiflis | 21·0 | 293 | 4 42 | + 2 | e 8 40 | $P_cP$ | — | — |
| Erevan | 21·1 | 289 | e 4 45 | + 4 | e 8 45 | $P_cP$ | — | — |
| Sverdlovsk | 21·7 | 345 | i 4 42 | − 6 | 8 32 | − 8 | $11·3_q$ | 14·2 |
| Kodaikanal | 26·7 | 166 | e 5 29 | − 6 | 10 1 | − 9 | 12·4 | 14·5 |
| Theodosia | 28·1 | 299 | e 5 53 | + 5 | — | — | — | — |
| Ksara | 28·7 | 276 | e 6 1 | + 8 | e 11 9 | +26 | — | — |
| Yalta | 28·9 | 298 | e 6 6 | +11 | e 12 3 | SS | — | — |
| Simferopol | 29·0 | 299 | e 5 56 | 0 | e 12 0 | SS | — | — |
| Sebastopol | 29·4 | 297 | — | — | 12 12 | SS | — | — |
| Kucino | 29·6 | 322 | — | — | e 11 12 | +14 | 15·4 | 19·8 |
| Pulkovo | 35·0 | 324 | 6 47 | − 2 | i 12 10 | −11 | 17·2 | — |
| Helsingfors | 37·6 | 326 | e 7 36 | +24 | i 12 50 | −10 | 17·2 | — |
| Prague | 42·4 | 307 | e 9 38 | $P_cP$ | — | — | — | 17·5 |
| Triest | 43·3 | 301 | i 7 48 | −11 | i 14 23 | − 2 | — | — |
| Copenhagen | 43·4 | 316 | 8 2 | + 2 | 14 25 | − 2 | — | — |
| Hamburg | 44·9 | 312 | e 8 12 | 0 | e 22 12? | L | (e 22·2) | — |
| Stuttgart | 45·9 | 306 | e 8 18 | − 2 | e 14 57 | − 6 | — | — |
| De Bilt | 47·9 | 312 | — | — | 15 27 | − 4 | e 27·2 | — |
| Paris | 50·2 | 307 | 5 12? | ? | — | — | — | — |

Additional readings and note :—
Andijan S* = +1m.45s.
Samarkand $P_g$ = +1m.24s., S* = +2m.4s., $S_g$ = +2m.18s.
Tashkent readings have been *increased* by 3m.
Almata i = +3m.2s.
Agra P*E = +3m.3s., eSN = +4m.29s., iS*E = +5m.3s.
Bombay PPP = +4m.25s.

*Continued on next page.*

Erevan ePP = +4m.57s.
Kodaikanal iSS = +11m.11s.
Kucino e = +8m.30s. and +13m.51s.
Pulkovo PP = +8m.24s., PS = +12m.43s., SS = +14m.0s.
Helsingfors ePPNE = +8m.30s., iSSNE = +13m.47s.; $T_0$ = 23h.15m.32s.
Triest e = +17m.42s.
Copenhagen +9m.48s. = $P_cP$ −5s. and +17m.42s.
Stuttgart eEZ = +8m.51s., e = +18m.30s.
De Bilt eE = +19m.24s.
Long waves were also recorded at Chiufeng.

Nov. 15d. Readings also at 1h. (Hastings, Taranto, and Triest), 2h. (Mizusawa and Tyosi), 5h. (Haiwee, Mount Wilson, Pasadena, Riverside, Tucson, Tinemaha, and Triest), 6h. (Zagreb), 7h. (La Paz), 10h. (Almata and Mizusawa), 11h. (Frunse and Samarkand), 12h. (Haiwee, La Jolla, Mount Wilson, Pasadena, Riverside, Tinemaha, and Wellington), 14h. (Tyosi), 16h. (La Paz), 18h. (Tashkent), 19h. (La Plata), 21h. (Andijan, Frunse, and Samarkand), 22h. (La Paz, La Plata (2), Medan, Santiago, Strasbourg, and Sumoto).

Nov. 16d. 5h. 23m. 27s. Epicentre 45°·7N. 8°·0E. (as on 1931 Sept. 14d.). X.

A = +·692, B = +·097, C = +·716.

| | △ | Az. | P. | O−C. | S. | O−C. |
|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. |
| Sion | 0·7 | 323 | e 0 9 | − 1 | e 0 12 | P* |
| Neuchatel | 1·5 | 331 | e 0 22 | + 1 | i 0 38 | − 1 |
| Zurich | 1·7 | 14 | e 0 29 | $P_g$ | e 0 50 | S* |
| Basle | 1·9 | 349 | e 0 30 | P* | e 0 49 | 0 |

Nov. 16d. 5h. 36m. 30s. Epicentre 40°·75N. 124°·5W. (as on 1932 June 6d.). X.

A = −·429, B = −·624, C = +·653.

| | △ | Az. | P. | O−C. | S. | O−C. | L. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Ferndale | 0·3 | 139 | i 0 19 | ? | i 0 36 | ? | — |
| Ukiah | 1·9 | 149 | e 0 36 | $P_g$ | — | — | e 1·7 |
| San Francisco | 3·4 | 153 | e 0 55 | P* | — | — | — |
| Berkeley | 3·4 | 148 | i 0 56 | P* | i 1 39 | S* | — |
| Branner | 3·8 | 151 | e 1 1 | P* | i 1 48 | S* | — |
| Lick | 4·1 | 145 | e 1 6 | P* | e 1 56 | S* | — |

Lick eN = +1m.59s.

Nov. 16d. 10h. Readings for which no determination has been made :—
La Paz ePN = 7m.20s., iSN = 14m.45s., L = 26m.42s., M = 39m.40s.
Huancayo e = 16m.24s., e = 26m.0s.
Riverside ePZ = 16m.58s.
Haiwee ePZ = 17m.5s.
Tinemaha ePZ = 17m.5s., eZ = 18m.49s.
Tashkent e = 19m.0s., e = 23m.0s., e = 29m.46s., eL = 52m.0s., M = 62m.30s.
San Juan e = 20m.48s., eL = 34m.50s.
Florence e = 25m.0s., M = 58m.0s.
Pulkovo e = 25m.56s., L = 62m., M = 70m.42s.
Triest e = 26m.32s., eL = 49m.21s., eM = 57m.28s.
De Bilt eZ = 27m., e = 37m.18s., eL = 52m., M = 65m.1s.
Ksara e = 28m., M = 58m.
Kodaikanal e = 49m.0s.
Long waves were also recorded at Edinburgh, Kew, Baku, Copenhagen, Paris, Tiflis, San Fernando, Strasbourg, Stuttgart, Scoresby Sund, and Uccle.

Nov. 16d. 12h. Readings for which no determination has been made :—
Riverview eE = 13m.6s., eN = 17m.48s., eL = 19m.48s., ME = 25m.25s.
Hong Kong P? = 14m.8s., S? = 20m.30s., M = 26m.15s.
Adelaide e = 14m.23s., e = 18m.53s., eL = 21m.44s., M = 25m.18s.
Chiufeng eP = 15m.30s., eS? = 23m.2s., M = 34m.48s.
Melbourne e = 17m.55s., L = 21m.58s., M = 24m.30s.
Sydney e = 18m.20s., L = 22m.0s., M = 23m.0s.
Sverdlovsk e = 19m.18s., e = 22m.56s., e = 29m.54s., L = 42m.0s., M = 52m.0s.
Vladivostok e = 22m.8s.
Medan P? = 22m.34s.
Wellington e = 24m.
Tashkent e = 29m.9s., e = 30m.55s., eL = 45m.42s., M = 54m.6s.
Kucino e = 44m.18s., eL = 53m.12s., M = 58m.24s.
Long waves at Baku, De Bilt, Copenhagen, Pulkovo, Paris, Strasbourg, and Stuttgart.

Nov. 16d. 13h. 43m. 0s. (I) } Epicentre 4°·8S. 147°·2E. N.3· R.2·
13h. 43m. 15s. (II) }

A = −·838, B = +·540, C = −·084 ; D = +·542, E = +·841 ;
G = +·070, H = −·045, K = −·997.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| II Palau | 17·6 | 314 | 4 9 | + 7 | 7 39 | +24 | — | — |
| I Riverview | 29·3 | 173 | e 6 46 | PP | 11 4 | +11 | e 13·7 | 19·5 |
| II | 29·3 | 173 | — | — | i 10 55 | + 2 | — | — |
| I Sydney | 29·3 | 173 | (e 6 0) | + 1 | — | — | (14·4) | (17·9) |
| II | 29·3 | 173 | — | — | (i 10 57) | + 4 | — | — |
| I Adelaide | 31·2 | 194 | — | — | i 11 20 | − 3 | 13·7 | 19·6 |
| II | 31·2 | 194 | e 6 13 | − 3 | i 11 24 | + 1 | — | — |
| II Manila | 32·5 | 308 | 6 30 | + 3 | 11 2 | −41 | 13·9 | — |
| I Melbourne | 33·1 | 184 | — | — | 11 57 | + 5 | 16·4 | 23·8 |
| II | 33·1 | 184 | e 6 37 | + 4 | — | — | — | — |
| I Siomisaki | 39·8 | 345 | 7 30 | 0 | 13 32 | − 1 | — | — |
| II Perth | 40·0 | 223 | 13 35 | S | (13 35) | − 1 | 20·7 | 23·2 |
| I Batavia | 40·2 | 268 | 9 22 | PPP | — | — | — | — |
| II | 40·2 | 268 | 9 19 | PPP | — | — | — | — |
| I Sumoto | 40·8 | 344 | e 7 58 | +19 | — | — | 17·6 | 18·5 |
| II | 40·8 | 344 | e 7 51 | +12 | 13 49 | + 1 | — | — |
| II Nagasaki | 41·0 | 339 | e 7 39 | − 1 | e 11 59 | ? | e 15·7 | — |
| I Nagoya | 41·1 | 347 | e 7 41 | 0 | — | — | — | — |
| I Kobe | 41·1 | 345 | e 7 36 | − 5 | — | — | e 18·7 | 21·2 |
| II | 41·1 | 345 | e 7 41 | 0 | e 14 4 | +11 | — | — |
| I Hong Kong | 42·2 | 311 | 7 19 | −31 | 12 30 | ? | 16·1 | 19·0 |
| II | 42·2 | 311 | 7 55 | + 5 | 14 14 | + 5 | — | — |
| I Husan | 43·4 | 338 | 13 47 | ? | 17 41 | ? | — | — |
| I Zi-ka-wei | 43·6 | 327 | e 7 44 | −18 | — | — | — | 22·5 |
| II Wellington | 44·1 | 149 | 8 5 | − 1 | 15 2 | +25 | 20·7 | — |
| II Mizusawa | 44·3 | 355 | (e 8 39) | +32 | e 8 39 | P | — | — |
| II Keizyo | 46·4 | 339 | — | — | e 15 7 | − 3 | — | — |
| II Zinsen | 46·5 | 338 | — | — | e 12 20 | ? | — | — |
| II Phu-Lien | 47·4 | 304 | e 8 32 | 0 | e 15 17 | − 7 | 20·7 | — |
| II Medan | 49·2 | 279 | e 8 53 | + 8 | 15 26 | −24 | e 34·7 | — |
| II Vladivostok | 49·9 | 347 | 8 49 | − 2 | (15 51) | − 8 | 15·8 | 25·9 |
| I Chiufeng | 53·2 | 330 | — | — | e 16 47 | + 2 | — | — |
| II | 53·2 | 330 | e 9 11 | − 4 | — | — | 24·6 | 28·5 |
| I Honolulu | 59·9 | 62 | — | — | e 24 45 | ? | — | — |
| II Calcutta | 63·6 | 298 | e 10 35 | + 6 | 19 3 | + 1 | e 30·1 | — |
| II Colombo | 68·2 | 279 | 11 44 | (+18) | — | — | — | 40·1 |
| II Kodaikanal | 71·1 | 284 | e 11 17 | 0 | 21 0 | PS | 35·2 | 41·9 |
| I Agra | 74·0 | 300 | e 11 43 | + 8 | i 21 9 | + 1 | — | — |
| I Bombay | 76·9 | 291 | — | — | i 21 39 | − 3 | — | — |
| II | 76·9 | 291 | e 11 45? | − 6 | — | — | — | 72·1 |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| II Tashkent | 84·3 | 313 | 12 30 | 0 | 22 54 | [ 0] | e 37·7 | 46·1 |
| II Sitka | 87·3 | 33 | — | — | e 23 25 | − 5 | e 39·1 | — |
| I Sverdlovsk | 92·1 | 328 | — | — | 24 22 | + 6 | 41·2 | 51·7 |
| II | 92·1 | 328 | 13 3 | − 4 | — | — | — | — |
| I Tiflis | 102·4 | 312 | e 17 26 | PP | 25 52 | + 6 | e 46·0 | 73·3 |
| I Pulkovo | 107·4 | 332 | 18 10 | [ 0] | — | — | 50·0 | 64·7 |
| II | 107·4 | 332 | — | — | 25 4 | [+ 3] | — | — |
| II Helsingfors | 110·0 | 334 | — | — | e 28 57 | PS | e 51·7 | — |
| II Scoresby Sund | 113·9 | 357 | — | — | 35 45? | SS | 58·7 | — |
| II Copenhagen | 117·7 | 333 | 19 45? | PP | — | — | 52·7 | — |
| I Cape Town | 118·0 | 228 | — | — | 26 7 | [+23] | 49·3 | 55·8 |
| II | 118·0 | 228 | — | — | 27 40 | {+37} | 50·9 | 77·0 |
| II Prague | 119·9 | 327 | — | — | e 37 45 | ? | e 54·7 | 72·7 |
| II Hamburg | 120·1 | 332 | — | — | e 30 45? | PS | e 58·7 | — |
| II Triest | 122·6 | 324 | i 26 14 | SKS | (i 26 14) | [+16] | e 54·0 | 60·5 |
| II De Bilt | 123·3 | 333 | e 21 45? | ? | — | — | e 59·7 | 60·5 |
| I Stuttgart | 123·6 | 328 | e 23 0 | PPP | — | — | e 57·0 | e 73·5 |
| II Strasbourg | 124·3 | 329 | e 20 45? | PP | — | — | e 50·7 | — |
| I Florence | 125·1 | 322 | — | — | e 26 0 | [− 5] | — | 62·0 |
| II Piacenza | 125·3 | 324 | — | — | e 32 57 | ? | — | 79·2 |
| II Paris | 126·7 | 332 | — | — | e 32 45? | ? | 63·7 | 65·7 |
| II Kew | 126·8 | 335 | — | — | e 33 13 | ? | e 58·7 | 65·1 |
| II Philadelphia | 128·2 | 39 | — | — | e 53 15 | ? | e 66·3 | — |
| I Oak Ridge | 129·0 | 36 | — | — | e 38 40 | SS | 52·0 | — |
| I Huancayo | 134·5 | 112 | e 24 0 | PPP | — | — | e 82·2 | — |
| I La Paz | 139·1 | 122 | e 20 48 | ? | — | — | 75·0 | 82·4 |
| I San Fernando | 140·1 | 326 | — | — | 49 7 | SSSS | 68·0 | — |
| I San Juan | 144·7 | 64 | e 20 30 | ? | — | — | e 60·5 | — |

Additional readings and note :—
Riverview I eZ = +6m.50s. = PP + 2s.
Sydney II SS = (+12m.40s.); all readings have been *diminished* by 2m.
Adelaide I iPP = +7m.17s., II e = +9m.30s. = $P_cP$ +16s., I e = +12m.56s. = SS − 2s.
Melbourne II i = +15m.17s.
Perth II PP = +13m.50s., II PPP = +14m.15s., II S = +18m.5s., II SS = +19m.5s., II SSS = +19m.25s., II SSSS = +19m.40s., II $P_cS$ = +20m.25s.
Batavia II iN = +10m.44s., II iE = +11m.45s.
Sumoto II SE = +13m.54s.
Kobe II ePZ = +7m.46s., II eE = +8m.33s., II eZ = +11m.3s.
Wellington II SS = +18m.6s. = $S_cS$ − 1s.
Vladivostok II e = +12m.30s.
Calcutta II SS = +23m.14s.
Kodaikanal II PS = +21m.36s., II SS = +25m.56s.
Tashkent II SSS = +35m.15s.
Sitka II e = +28m.55s. = SS − 6s., II e = +35m.27s.
Sverdlovsk I SKS = +23m.48s., II PS = +26m.9s., II SSS = +37m.34s.
Tiflis II ePPN = +18m.33s., II PPSN = +29m.56s.
Pulkovo II PP = +19m.29s., II PPS = +30m.56s., II SSS = +41m.15s.
Helsingfors II e?E = +31m.27s.
Cape Town I E = +27m.13s., I E = +32m.25s., I E = +40m.3s., I N = 40m.18s.
Triest II e = +34m.6s., II e = +35m.6s., II e = +37m.53s.
Huancayo I e = +40m.20s. and +64m.15s.
Long waves were also recorded at Arapuni, Edinburgh, Göttingen, Graz, Honolulu, Leipzig, and Uccle.

Nov. 16d. Readings also at 1h. (Andijan and Samarkand), 2h. (Andijan, Samarkand, and Tashkent), 3h. (Upsala), 4h. (Ebingen), 5h. (Tyosi), 6h. (Tucson), 7h. (Paris), 9h. (Apia, Andijan, Cape Town, Frunse, Samarkand, Sverdlovsk, Tashkent, and Wellington), 13h. (Kucino, Paris, Stuttgart, and Uccle), 14h. (Santiago), 23h. (Sumoto and Upsala).

Nov. 17d. 11h. Readings for which no determination has been made :—
Andijan eP = 13m.16s., $eS_g$ = 13m.58s., M = 14m.10s.
Tashkent e = 13m.39s., iS = 14m.12s., M = 14m.30s.
Frunse eP = 13m.49s., iS = 15m.5s., e = 15m.47s.
Almata eP = 14m.58s., e = 16m.6s.

Nov. 17d. 13h. 45m. 47s. Epicentre 36°·5N. 141°·3E. (as on 1934 June 26d.). X.

A = −·627, B = +·503, C = +·595.

| | Δ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Tyosi | 0·8 | 205 | e 0 11 | 0 | 0 29 | + 8 | 0·6 |
| Mizusawa | 2·6 | 357 | e 0 37 | 0 | e 1 7 | 0 | — |
| Nagoya | 3·7 | 249 | e 1 8 | $P_g$ | 1 47 | S* | — |

Tyosi SN = +34s.

Nov. 17d. 17h. 41m. 54s. Epicentre 40°·0N. 123°·9W. N.3.

A = −·427, B = −·636, C = +·643; D = −·830, E = +·558.
G = −·359, H = −·534, K = −·766.

| | Δ | Az. | P. | O−C. | S. | O−C. |
|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. |
| Ferndale | 0·6 | 334 | i 0 7 | − 2 | i 0 13 | − 2 |
| Berkeley | 2·5 | 149 | i 0 41 | P* | i 1 14 | S* |
| San Francisco | 2·5 | 154 | i 0 42 | P* | i 1 15 | S* |
| Branner | 2·9 | 151 | i 0 47 | P* | e 1 24 | S* |
| Lick | 3·2 | 145 | i 0 53 | P* | i 1 34 | S* |

Ukiah gives iL only.

Nov. 17d. Readings also at 0h. (Almeria and Granada), 1h. (Tucson), 2h. (Tashkent), 4h. (Tyosi), 10h. (Ksara and Tyosi), 11h. (Mizusawa and Tyosi), 16h. (Prague), 18h. (Prague), 19h. (Samarkand), 21h. (Erevan, Grozny, and Ksara), 22h. (Nagoya).

Nov. 18d. 3h. 21m. 23s. Epicentre 36°·2N. 70°·7E. N.1.

A = +·267, B = +·762, C = +·591; D = +·944, E = −·331;
G = +·195, H = +·558, K = −·807.

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. |
| Samarkand | +0·1 | 4·5 | 321 | − i 0 8 | −74 | — | — | — | — |
| Andijan | 0·0 | 4·7 | 16 | i 1 8 | + 1 | 1 44 | −16 | — | — |
| Tashkent | 0·0 | 5·2 | 349 | i 1 16 | + 2 | — | — | 1·9 | 2·1 |
| Almata | −0·1 | 8·5 | 32 | i 1 57 | − 2 | 3 19 | −15 | — | — |
| Agra | −0·3 | 11·0 | 143 | i 2 32 | + 1 | 3 49 | ? | — | — |
| Baku | −0·6 | 16·8 | 291 | i 3 51 | + 7 | i 7 1 | +18 | — | — |
| Bombay | −0·6 | 17·4 | 173 | i 3 52 | 0 | e 7 2 | + 5 | e 8·6 | 9·5 |
| Hyderabad | −0·8 | 20·0 | 158 | 4 20 | − 1 | 7 43 | − 7 | — | 12·7 |
| Grozny | −0·8 | 20·4 | 298 | i 4 7 | −18 | 8 16 | SS | — | — |
| Calcutta | −0·8 | 20·6 | 127 | 4 26 | − 1 | 8 9 | + 7 | e 9·8 | — |
| Tiflis | −0·8 | 20·8 | 293 | e 5 4 | ? | e 9 13 | ? | — | — |
| Erevan | −0·8 | 20·9 | 289 | 4 30 | − 1 | i 8 31 | +23 | — | 8·6 |
| Sverdlovsk | −0·9 | 21·7 | 345 | i 4 32 | − 6 | i 8 12 | −10 | — | — |
| Kodaikanal | −1·2 | 26·7 | 165 | e 6 25 | +60 | i 10 49 | +59 | — | 15·2 |
| Theodosia | −1·3 | 28·0 | 299 | e 5 39 | + 4 | e 11 56 | ? | — | — |
| Ksara | −1·3 | 28·5 | 276 | 5 42 | + 2 | 10 20 | + 2 | — | — |
| Yalta | −1·3 | 28·8 | 298 | e 5 41 | − 2 | e 12 21 | ? | — | — |
| Sebastopol | −1·3 | 29·2 | 298 | e 5 47 | + 1 | e 11 51 | SS | — | — |
| Colombo | −1·4 | 30·5 | 162 | 6 0 | + 3 | 12 3 | SS | 20·2 | 21·5 |
| Helwan | −1·5 | 33·4 | 271 | e 6 20 | − 2 | 11 32 | − 2 | — | 24·2 |

*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. |
| Phu-Lien | −1·6 | 34·9 | 106 | e 6 36 | + 2 | e 11 51 | − 4 | 14·6 | — |
| Pulkovo | −1·6 | 35·0 | 325 | i 6 33 | − 2 | e 11 47 | −10 | 14·6 | 15·5 |
| Chiufeng | −1·6 | 35·6 | 70 | 6 40a | 0 | 12 0 | − 6 | — | 18·3 |
| Helsingfors | −1·6 | 37·6 | 324 | i 6 56 | − 2 | i 12 31 | − 5 | i 15·2 | — |
| Belgrade | −1·7 | 38·6 | 299 | e 7 8 | + 2 | e 12 54 | + 4 | — | — |
| Königsberg | −1·7 | 38·7 | 315 | i 7 9 | + 3 | e 12 40 | −11 | — | 27·4 |
| Budapest | −1·7 | 39·3 | 304 | i 6 47 | −25 | e 12 37? | −23 | e 15·6 | — |
| Hong Kong | −1·7 | 40·0 | 98 | 7 20 | + 2 | 13 7 | − 4 | 16·3 | — |
| Vienna | −1·7 | 41·1 | 305 | i 7 26 | − 1 | 13 15 | −12 | — | 10·6 |
| Upsala | −1·7 | 41·1 | 322 | i 7 25 | − 2 | i 13 25 | − 2 | — | 19·9 |
| Zagreb | −1·8 | 41·5 | 301 | e 7 29 | 0 | — | — | — | — |
| Medan | −1·8 | 41·6 | 135 | i 7 37 | + 7 | 13 28 | − 5 | — | — |
| Graz | −1·8 | 41·7 | 302 | i 7 33 | + 2 | i 13 39 | + 4 | e 15·6 | 17·6 |
| Zi-ka-wei | −1·8 | 42·0 | 82 | i 8 30 | +56 | 13 21 | −18 | — | 30·1 |
| Prague | −1·8 | 42·2 | 308 | e 7 35 | 0 | e 13 48 | + 6 | — | — |
| Trenta | −1·8 | 42·5 | 291 | i 7 43 | + 5 | — | — | — | — |
| Triest | −1·8 | 43·1 | 301 | i 7 44 | + 1 | i 13 55 | − 1 | — | — |
| Copenhagen | −1·8 | 43·3 | 316 | i 7 46 | + 2 | 13 59 | 0 | — | — |
| Cheb | −1·8 | 43·5 | 308 | e 7 45 | − 1 | e 10 43 | ? | — | 22·6 |
| Leipzig | −1·8 | 43·5 | 309 | e 7 45 | − 1 | e 14 5 | + 3 | e 15·6 | 17·6 |
| Casamicciola | −1·9 | 43·9 | 300 | 7 0 | −49 | 9 14 | PP | 11·6 | — |
| Jena | −1·9 | 44·0 | 309 | i 7 49 | 0 | e 14 7 | − 1 | e 15·6 | 18·1 |
| Venice | −1·9 | 44·1 | 301 | i 7 58 | + 8 | 14 0 | − 9 | — | — |
| Keizyo | −1·9 | 44·4 | 70 | e 7 54 | + 1 | 14 9 | − 4 | — | — |
| Padova | −1·9 | 44·5 | 302 | e 7 55 | + 2 | 10 52 | ? | — | — |
| Rome | −1·9 | 44·7 | 296 | 8 2 | + 7 | — | — | — | — |
| Hamburg | −1·9 | 44·8 | 314 | i 7 56a | 0 | e 14 23 | + 4 | — | 18·3 |
| Göttingen | −1·9 | 44·9 | 310 | i 7 58 | + 1 | e 18 5 | (+ 5) | — | — |
| Florence | −1·9 | 45·2 | 300 | 7 58a | − 1 | 14 27 | + 2 | — | 15·6 |
| Siena | −1·9 | 45·2 | 298 | 7 47 | −12 | 10 7 | ? | — | — |
| Prato | −1·9 | 45·3 | 299 | i 8 3 | + 3 | i 13 8 | ? | — | 19·6 |
| Stuttgart | −1·9 | 45·7 | 307 | 8 4 | + 1 | i 14 33 | 0 | e 16·8 | 19·4 |
| Livorno | −1·9 | 45·9 | 299 | 8 14 | + 9 | 11 4 | ? | — | — |
| Piacenza | −2·0 | 46·0 | 302 | e 8 6k | + 1 | i 14 41 | + 5 | — | 19·6 |
| Karlsruhe | −2·0 | 46·2 | 307 | i 8 9 | + 3 | i 14 44 | + 5 | 20·6 | — |
| Pavia | −2·0 | 46·4 | 301 | e 8 22 | +14 | — | — | — | — |
| Zurich | −2·0 | 46·4 | 305 | e 8 9 | + 1 | e 14 37 | − 4 | — | — |
| Strasbourg | −2·0 | 46·7 | 307 | i 8 10a | 0 | i 14 51 | + 5 | e 18·6 | 18·7 |
| Basle | −2·0 | 47·0 | 305 | e 8 13 | 0 | — | — | — | — |
| Bergen | −2·0 | 47·2 | 323 | e 8 28 | +14 | e 15 1 | + 7 | — | — |
| Neuchatel | −2·0 | 47·5 | 305 | e 8 17 | 0 | e 14 37 | −20 | — | — |
| De Bilt | −2·0 | 47·8 | 311 | i 8 21k | + 3 | 15 7 | + 5 | e 25·6 | 29·2 |
| Tunis | −2·0 | 47·9 | 290 | 8 25 | + 5 | i 16 4 | +61 | — | — |
| Nagasaki | −2·0 | 48·2 | 76 | e 8 55 | +33 | (e 15 5) | − 2 | e 15·1 | — |
| Uccle | −2·0 | 48·5 | 310 | 8 25 | 0 | i 15 15 | + 3 | — | — |
| Manila | −2·1 | 49·6 | 102 | 8 36a | + 4 | 15 31 | + 5 | 23·1 | 26·9 |
| Miyazaki | −2·1 | 49·7 | 76 | 8 34 | + 1 | 15 12 | −15 | — | — |
| Paris | −2·1 | 50·1 | 307 | i 8 38 | + 2 | 15 34 | + 1 | 19·6 | 20·6 |
| Kew | −2·1 | 51·3 | 311 | i 8 46a | + 1 | i 15 52 | + 2 | — | 30·9 |
| Kobe | −2·1 | 51·5 | 71 | 8 51 | + 4 | e 17 10 | ? | — | — |
| Sumoto | −2·1 | 51·5 | 70 | 8 50 | + 3 | e 15 54 | + 2 | — | — |
| Oxford | −2·1 | 51·8 | 312 | i 8 47 | − 2 | i 16 1 | + 4 | — | — |
| Edinburgh | −2·1 | 52·1 | 317 | i 8 55 | + 4 | i 16 2 | + 1 | e 19·6 | 21·0 |
| Stonyhurst | −2·1 | 52·1 | 315 | i 7 50 | −61 | i 16 0 | − 1 | e 19·6 | 21·6 |
| Barcelona | −2·1 | 52·3 | 300 | e 8 50 | − 3 | e 16 5 | + 1 | — | — |
| Toyama | −2·1 | 52·3 | 68 | 8 57 | + 4 | 16 3 | − 1 | — | — |
| Siomisaki | −2·1 | 52·4 | 73 | 8 54 | 0 | 16 4 | − 1 | — | — |
| Kameyama | −2·2 | 52·5 | 71 | 8 57 | + 3 | 16 3 | − 2 | — | — |
| Nagoya | −2·2 | 52·8 | 70 | e 9 0 | + 4 | — | — | — | — |
| Algiers | −2·2 | 53·2 | 292 | e 8 56 | − 3 | e 16 12 | − 3 | e 20·6 | — |

*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. |
| Sapporo | −2·2 | 53·2 | 59 | 9 25 | +26 | — | — | — | — |
| Oiwake | −2·2 | 53·5 | 68 | 9 4 | + 3 | 16 22 | + 3 | — | — |
| Batavia | −2·2 | 54·3 | 134 | i 10 6 | +59 | 13 48 | ? | — | — |
| Misima | −2·2 | 54·3 | 70 | 9 7 | 0 | 16 30 | 0 | — | — |
| Hukusima | −2·3 | 54·4 | 66 | 9 11 | + 4 | 17 15 | +45 | — | — |
| Mizusawa | −2·3 | 54·4 | 64 | e 9 4 | − 3 | e 16 42 | +12 | — | — |
| Tokyo | −2·3 | 54·7 | 68 | 9 9 | 0 | 17 9 | +35 | — | — |
| Tukubasan | −2·3 | 54·7 | 68 | 9 8 | − 1 | 16 34 | 0 | — | — |
| Alicante | −2·3 | 55·2 | 295 | e 9 18 | + 5 | e 16 50 | + 9 | e 22·1 | — |
| Scoresby Sund | −2·3 | 57·1 | 337 | — | — | e 20 37 | SS | — | — |
| Almeria | −2·3 | 57·2 | 295 | e 9 30 | + 2 | e 17 8 | 0 | e 25·4 | — |
| Toledo | −2·3 | 57·2 | 299 | e 9 28 | 0 | i 17 14 | + 6 | — | — |
| Granada | −2·4 | 57·9 | 296 | e 9 25 | − 7 | i 17 20 | + 4 | 25·3 | 27·3 |
| San Fernando | −2·4 | 60·2 | 296 | e 9 50 | + 1 | 17 55 | + 8 | — | — |
| Perth | −2·7 | 80·2 | 142 | 11 37 | −18 | i 21 37 | −11 | — | — |
| Sitka | −2·7 | 84·2 | 13 | e 12 0 | −16 | i 22 17 | −15 | — | — |
| Cape Town | −2·7 | 85·5 | 221 | 12 22 | 0 | 23 49 | PS | 30·9 | 48·6 |
| Oak Ridge | −2·8 | 94·1 | 333 | i 12 58 | − 5 | — | — | — | — |
| Melbourne | −2·9 | 100·9 | 129 | i 17 44 | PP | 23 44 | ? | — | — |
| Tinemaha | −2·9 | 106·3 | 9 | i 18 19 | PP | — | — | — | — |
| Pasadena | −3·0 | 109·2 | 9 | i 18 47 | PP | — | — | — | — |
| La Paz | — | 138·6 | 287 | i 19 6k | [−14] | — | — | 80·0 | — |
| Huancayo | — | 141·0 | 300 | e 19 7 | [−16] | — | — | — | — |

Additional readings and note :—
Andijan $P_g$ = +1m.14s., $S_g$ = +1m.54s.
Almata i = +2m.1s.
Agra $P_gN$ = +3m.22s., S*N = +4m.26s., $S_gN$ = +4m.56s.
Bombay iP* = +4m.54s., $P_g$ = +5m.39s., SS = +7m.40s.
Grozny i = +4m.53s.
Calcutta PP = +4m.47s., SS = +8m.52s.
Erevan PP = +4m.46s., e = +5m.32s.
Kodaikanal iSS = +11m.54s.
Theodosia i = +6m.35s.
Ksara pP = +6m.30s., sS = +11m.38s., SS = +12m.2s.
Yalta i = +6m.31s.
Sebastopol i = +6m.45s.
Chiufeng i = +7m.21s., $iP_cP$ = +8m.49s., iSS = +14m.17s.
Helsingfors iPP = +7m.6s., iPPP = +7m.30s., $iP_cPZ$ = +9m.26s., iSSEN = +13m.41s., $iS_cSEN$ = +15m.47s.; $T_o$ = 3h.21m.1s.
Belgrade e = +7m.53s., +8m.40s., and +16m.6s.
Königsberg $eP_cPZ$ = +7m.51s., ePPN = +8m.55s., iEN = +12m.51s., eEN = +15m.28s.
Budapest M = +9m.37s.
Hong Kong PP = +8m.24s., ? = +9m.17s. and +9m.59s., S? = +12m.41s., SS = +14m.18s., ? = +14m.46s.
Vienna iNZ = +7m.16s., PP = +8m.36s., PPP = +9m.6s., $P_cP$ = +9m.50s., iEN = +10m.50s., $P_cS$ = +13m.33s.
Upsala iPPE = +9m.12s., iPPPE = +10m.9s., iSSE = +16m.41s.
Zagreb e = +8m.47s., +10m.1s., and +10m.22s.
Medan i = +8m.13s., +8m.51s., and +14m.32s.
Graz i = +7m.38s., eS = +11m.34s.
Zi-ka-wei eZ = +5m.35s., iZ = +5m.39s., +6m.25s., +6m.47s., +11m.43s., +15m.13s., and +16m.11s.
Prague i = +8m.52s. and +10m.31s., e = +14m.52s.
Triest ipP = +8m.56s., i = +10m.37s., and +10m.42s., isS = +15m.13s., i = +17m.20s. and +18m.27s.
Copenhagen iEZ = +8m.58s., e = +9m.37s., iEZ = +10m.40s., SN = +14m.4s., +15m.19s., eN = +17m.7s., eE = +17m.17s. and +17m.37s.
Cheb ePP = +9m.0s., eSS? = +14m.2s., e = +17m.52s.
Leipzig eE = +8m.57s. and +9m.47s., iE = +10m.37s., eE = +10m.49s.
Jena iZ = +9m.0s., iE = +9m.5s., eE = +10m.47s.
Venice P = +7m.39s., ePE = +7m.48s., S = +14m.19s.
Keizyo iE = +10m.55s.
Hamburg iZ = +9m.2s., iN = +10m.49s., iE = +11m.2s., iN = +12m.55s., eE = +17m.49s.
Göttingen i = +9m.9s., e = +11m.1s.
Stuttgart eEZ = +8m.29s., epPZ = +8m.50s., eE = +8m.53s., isP = +9m.17s., epPP = +10m.30s., e = +13m.5s., esS = +15m.52s.
Zurich e = +9m.20s. and +18m.21s.

*Continued on next page,*

Strasbourg ipP = +9m.22s., iPP = +10m.17s., $iP_cP$? = +10m.44s., ipPP = +11m.14s., isS? = +16m.11s., eSS = +18m.18s.
De Bilt iZ = +9m.9s., +9m.31s., and +9m.33s.
Uccle i = +9m.10s. and +9m.39s., iE = +11m.9s., i = +11m.27s., iE = +16m.40s., i = +19m.16s.
Manila iZ = +9m.48s.
Paris pP = +9m.50s., PP = +11m.43s.
Kew i = +9m.59s. and +11m.37s., eE = +17m.11s. and +19m.44s.
Kobe $eP_cPENZ$ = +9m.37s., iE = +9m.41s., eN = +15m.53s., eE = +15m.55s., eS = +17m.30s., eN = +18m.16s., eEN = +18m.18s.
Sumoto eS = +15m.57s., eN = +17m.17s., eE = +17m.34s.
Edinburgh i = +10m.10s. and +17m.31s.
Algiers PP = +10m.47s., PPP = +11m.32s., PPPP = +11m.56s.
Mizusawa eSN = +9m.53s., eSE = +9m.57s.; the S in the table is given as eP for a second shock; the eSE for this being +18m.3s.
Toledo iP = +9m.35s., i = +10m.15s. and +18m.31s.
Granada i = +9m.33s., $P_cP$ = +10m.24s., $P_cS$ = +14m.17s.
Sitka ePS = +23m.49s., eSS = +27m.55s.
Cape Town N = +9m.19s., +11m.34s., +12m.18s., and +13m.12s., E = +15m.24s., N = +15m.45s., E = +20m.28s., N = +20m.54s.?, E = +22m.26s., N = +22m.33s., +24m.5s., and +24m.50s., E = +28m.24s.
Melbourne i = +18m.47s., +22m.50s., +26m.20s., +28m.5s., and +31m.59s.
La Paz iPP = +22m.2s.
Huancayo e = +22m.15s., +40m.37s., and +50m.7s.; $T_o$ = 3h.21m.23s.
Long waves were recorded at Durham.

Nov. 18d. 9h. 18m. 36s. Epicentre 54°·0N. 161°·0E. (as on 1933 May 17d.). R.1.

A = −·556, B = +·191, C = +·809; D = +·326, E = +·946; G = −·765, H = +·263, K = −·588.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Mizusawa | 20·1 | 230 | e 4 32 | + 1 | e 8 13 | + 5 | — | — |
| Sendai | 20·9 | 229 | 4 39 | 0 | 8 26 | + 2 | — | — |
| Hukusima | 21·5 | 229 | 4 52 | + 7 | 8 51 | SS | — | — |
| Vladivostok | 21·9 | 252 | e 4 26 | −24 | e 9 26 | SS | e 43·0 | — |
| Tukubasan | 23·0 | 228 | 5 0 | − 1 | 9 7 | + 2 | — | — |
| Tyosi | 23·0 | 226 | (5 4) | + 3 | 5 4 | P | — | — |
| Maebasi | 23·2 | 230 | 5 4 | + 1 | 9 11 | + 3 | — | — |
| Tokyo | 23·4 | 227 | 5 9 | + 4 | 9 35 | +23 | — | — |
| Wazima | 23·5 | 234 | 5 8 | + 3 | 9 16 | + 2 | — | — |
| Oiwake | 23·5 | 230 | 5 9 | + 4 | 9 20 | + 6 | — | — |
| Hunatu | 24·1 | 229 | 5 13 | + 2 | 9 34 | + 9 | — | 6·2 |
| Nagoya | 25·2 | 231 | 5 25 | + 3 | — | — | — | — |
| Toyooka | 25·9 | 235 | 5 29 | + 1 | — | — | — | — |
| Kobe | 26·5 | 234 | i 5 33 | − 1 | e 10 4 | − 3 | — | — |
| Sumoto | 26·9 | 234 | 5 37 | 0 | — | — | — | — |
| Nagasaki | 30·6 | 240 | 6 12 | + 2 | — | — | — | — |
| Chiufeng | 32·9 | 266 | 6 29a | − 2 | e 11 39 | −10 | 15·5 | 21·9 |
| Sitka | 34·8 | 60 | e 6 54 | + 7 | i 12 22 | + 4 | e 18·4 | — |
| Manila | 50·3 | 234 | i 8 54a | 0 | 16 4 | − 1 | — | — |
| Sverdlovsk | 51·7 | 318 | e 9 1 | − 3 | e 16 16 | − 8 | 27·1 | 33·6 |
| Tinemaha | 55·7 | 71 | i 9 38 | + 4 | — | — | — | — |
| Santa Barbara | 56·7 | 74 | i 9 58 | +17 | — | — | — | — |
| Andijan | 57·4 | 296 | e 10 12 | +26 | — | — | — | — |
| Pasadena | 57·9 | 76 | i 9 52 | + 2 | — | — | 29·4 | — |
| Mount Wilson | 57·9 | 76 | i 9 53 | + 3 | — | — | — | — |
| Riverside | 58·4 | 76 | i 9 55 | + 2 | — | — | — | — |
| Tashkent | 58·7 | 300 | i 9 54 | − 1 | e 17 52 | − 7 | — | 36·5 |
| La Jolla | 59·3 | 76 | i 10 3 | + 3 | — | — | — | — |
| Pulkovo | 59·6 | 335 | 10 2 | 0 | e 17 56 | −15 | 32·4 | 36·6 |
| Kucino | 60·8 | 328 | — | — | e 18 21 | − 5 | e 28·9 | 36·3 |
| Samarkand | 61·1 | 298 | e 10 11 | − 1 | — | — | — | — |
| Calcutta | 61·9 | 272 | e 14 5? | ? | — | — | — | — |
| Agra | 64·4 | 281 | — | — | e 19 26 | PS | — | — |
| Grozny | 68·2 | 315 | e 10 58 | − 1 | e 20 50 | (− 2) | — | — |
| Baku | 68·8 | 311 | e 10 50 | −13 | e 19 59 | − 8 | 19·4 | 45·3 |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Florissant | 68·8 | 54 | i 11 5 | + 2 | i 20 8 | + 1 | — | — |
| St. Louis | 69·1 | 54 | i 11 5 | 0 | i 20 8 | − 2 | — | — |
| Tiflis | 69·9 | 315 | 11 10 | 0 | e 20 33 | PS | 40·4 | 47·3 |
| Theodosia | 70·7 | 323 | e 11 15 | 0 | — | — | — | — |
| Medan | 71·2 | 250 | 11 17 | − 1 | — | — | — | — |
| Erevan | 71·2 | 313 | e 11 8 | −10 | — | — | — | — |
| Little Rock | 71·2 | 56 | i 11 18 | 0 | e 20 43 | + 8 | — | — |
| Simferopol | 71·3 | 323 | e 11 14 | − 5 | — | — | — | — |
| Yalta | 71·6 | 323 | e 11 19 | − 1 | — | — | — | — |
| Sebastopol | 71·7 | 324 | e 11 21 | 0 | — | — | — | — |
| De Bilt | 72·0 | 346 | i 11 24 | + 1 | — | — | e 40·4 | 42·4 |
| Oak Ridge | 73·2 | 31 | i 11 34 | + 4 | — | — | — | — |
| Uccle | 73·4 | 347 | i 11 30 | − 1 | — | — | e 39·4 | — |
| Vienna | 73·5 | 338 | e 11 30 | − 2 | — | — | — | — |
| Bombay | 73·8 | 281 | e 11 27 | − 6 | — | — | — | 47·2 |
| Stuttgart | 74·5 | 341 | 11 37 | 0 | — | — | e 44·4 | — |
| Strasbourg | 75·0 | 344 | i 11 53a | +13 | — | — | e 31·4 | — |
| Batavia | 75·2 | 238 | i 11 37a | − 4 | i 21 35 | PS | — | — |
| Paris | 75·6 | 347 | i 11 43 | − 1 | — | — | e 47·4 | — |
| Basle | 76·0 | 342 | e 11 45 | − 1 | — | — | — | — |
| Zurich | 76·0 | 341 | e 11 44 | − 2 | — | — | — | — |
| Triest | 76·5 | 337 | i 11 47 | − 2 | i 21 56 | PS | — | — |
| Neuchatel | 76·6 | 342 | e 11 48 | − 1 | — | — | — | — |
| Prato | 78·8 | 338 | e 12 2 | + 1 | i 22 16 | PS | — | — |
| Ksara | 80·3 | 318 | e 12 5 | − 4 | e 22 39 | PS | 41·4 | — |
| Casamicciola | 81·1 | 335 | 11 17 | −57 | — | — | — | 11·4 |
| Trenta | 81·9 | 333 | e 12 10 | − 8 | — | — | — | — |

Additional readings :—
Kobe iN = +5m.36s., eZ = +5m.53s., eE = +5m.58s.
Sumoto PE = +5m.40s.
Chiufeng i = +7m.50s., iZ = +8m.18s.
Sitka e = +15m.4s. ; $T_o$ = 9h.18m.35s.
Tinemaha ePKP,PKPZ = +39m.7s.
Pasadena iPKP,PKPZ = +39m.19s.
Riverside ePKP,PKPZ = +39m.37s.
Kucino e = +14m.5s. and +20m.49s.
Samarkand e = +11m.4s.
Tiflis eSKKSN = +21m.27s., SSSN = +28m.24s.
Erevan e = +11m.54s.
Yalta e = +11m.55s.
Oak Ridge i = +11m.47s. and +11m.55s.
Triest i = +15m.40s.
Casamiccola S = +11m.20s.
Long waves were also recorded at Copenhagen, Florence, Helsingfors, and Hong Kong.

Nov. 18d. 10h. Readings for which no determination has been made :—
Andijan eP = 22m.20s., $S_E$ = 22m.51s., M = 22m.55s.
Tashkent iP = 22m.28s., iL = 23m.6s., M = 23m.42s.
Samarkand eP = 22m.44s., S* = 23m.22s., M = 23m.34s.
Frunse eP = 23m.17s., eS = 24m.9s.
Almata e = 24m.30s.

Nov. 18d. 15h. Readings for which no determination has been made :—
Ukiah e = 1m.2s., e = 11m.47s., eL = 14m.52s.
Tucson e = 6m.7s., e = 7m.28s., iL = 7m.48s.
La Jolla ePZ = 6m.13s.
Riverside ePENZ = 6m.29s.
Mount Wilson ePENZ = 6m.37s.
Pasadena iPENZ = 6m.38s., eLEN = 9m.6s.
Haiwee ePENZ = 7m.0s., eSE = 10m.5s.
Tinemaha ePNZ = 7m.10s., eSEN = 10m.17s.
Little Rock eP = 7m.45s., iM = 13m.17s.
Florissant iP = 8m.25s., S = 12m.22s.

*Continued on next page.*

St. Louis ePE =8m.26s., eSE =12m.22s., iMEN =14m.53s.
Oak Ridge eP? =10m.42s., eEN =22m., eLZ =24m.
Philadelphia i =11m.1s., i =11m.43s.
Bozeman eS =12m.30s., eL =14m.0s.
Columbia e =13m.52s., eL =19m.35s.
Chicago e =14m.10s., eL =17m.20s.
Victoria PE =14m.15s., ME =20m.40s.
Ann Arbor e?N =16m.42s., eN =17m.36s., eE =18m.6s., eE =18m.24s., eL?E = 18m.30s., MN =19m.30s.
Ottawa e =16m., eL =20m.
Toronto eE =16m., eLE =19m.30s.
Ithaca e =21m.
Strasbourg e =32m., eL =45m.
Kew e =36m., eL =42m.
Scoresby Sund 36m.
Stonyhurst e =49m.15s.
Edinburgh e =49m.
Long waves at Copenhagen, De Bilt, Paris, Prague, Pulkovo, Sverdlovsk, Stuttgart, Tashkent, Uccle, Denver, San Juan, Seattle, and Sitka.

Nov. 18d. 22h. 40m. 16s. Epicentre 4°·3S. 153°·0E. (as on 1934 Feb. 9d.). R.1.

A = −·889, B = +·453, C = −·075; D = +·454, E = +·891; G = +·067, H = −·034, K = −·997.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Palau | | 21·7 | 302 | 4 57 | + 9 | 9 25 | SS | — | — |
| Riverview | | 29·5 | 183 | e 6 0 | − 1 | i 10 48 | − 8 | e 14·3 | 19·5 |
| Sydney | | 29·5 | 183 | e 3 39 | ? | e 9 59 | −57 | 14·7 | 15·7 |
| Adelaide | | 33·4 | 201 | e 6 44 | + 9 | i 11 50 | − 7 | i 13·8 | 19·5 |
| Melbourne | | 34·3 | 192 | e 6 56 | +13 | 11 57 | −14 | 16·4 | 20·6 |
| Apia | | 36·0 | 108 | e 7 16 | +18 | — | — | 16·7 | — |
| Manila | | 36·9 | 301 | i 7 9a | + 3 | 10 19 | ? | 11·7 | — |
| Misima | | 41·6 | 343 | 7 36 | − 9 | — | — | — | — |
| Miyazaki | | 41·6 | 332 | 7 47 | + 2 | — | — | — | — |
| Wellington | | 41·8 | 155 | i 9 43 | (− 5) | i 13 44 | −19 | 16·7 | — |
| Tokyo | | 41·9 | 344 | 7 46 | − 2 | — | — | — | — |
| Kameyama | | 42·1 | 340 | 7 53 | + 4 | 17 50 | (− 4) | — | — |
| Nagoya | | 42·2 | 340 | e 7 51 | + 1 | — | — | — | — |
| Sumoto | | 42·2 | 338 | e 7 52 | + 2 | 17 50 | (− 5) | — | — |
| Tukubasan | | 42·3 | 344 | 7 49 | − 2 | 17 30 | SSS | — | — |
| Kobe | | 42·4 | 339 | 7 51 | − 1 | 17 42 | (−14) | e 20·3 | 20·4 |
| Christchurch | | 42·9 | 159 | 6 44? | −72 | — | — | — | — |
| Nagasaki | | 43·0 | 331 | i 7 56 | − 1 | e 13 11 | −70 | e 17·6 | — |
| Hamada | | 43·9 | 335 | 8 3 | − 1 | 18 1 | (− 4) | — | |
| Perth | | 44·4 | 227 | e 9 59 | (+ 3) | 14 41 | 0 | 17·9 | 20·7 |
| Mizusawa | N. | 44·7 | 347 | i 8 4 | − 6 | 14 34 | −12 | 18·3 | — |
| Malabar | | 45·3 | 264 | 8 20 | + 5 | — | — | — | — |
| Batavia | | 45·9 | 266 | 8 18 | − 2 | i 15 3 | 0 | e 21·7 | — |
| Hong Kong | | 46·3 | 307 | 8 24 | + 1 | 15 22 | +13 | 21·6 | 24·1 |
| Keizyo | | 48·3 | 332 | i 8 40 | + 2 | 15 38 | + 1 | — | — |
| Zinsen | | 48·4 | 331 | i 8 41 | + 2 | e 15 36 | − 2 | — | — |
| Vladivostok | | 51·1 | 340 | i 9 6 | + 6 | e 16 18 | + 2 | 22·2 | — |
| Honolulu | | 54·5 | 60 | e 9 30 | + 5 | i 17 1 | − 1 | e 23·7 | — |
| Chiufeng | | 55·8 | 326 | i 9 35a | + 1 | 17 8 | −12 | 24·2 | 29·9 |
| Calcutta | | 68·5 | 296 | 11 2 | + 1 | 20 2 | − 1 | e 32·4 | — |
| Colombo | | 73·9 | 279 | 11 33 | − 1 | — | — | — | 39·8 |
| Hyderabad | | 76·7 | 289 | 12 2 | +12 | 21 24 | −15 | 36·3 | 43·3 |
| Kodaikanal | | 76·7 | 282 | i 12 48 | +58 | i 22 32 | +53 | 37·9 | 44·4 |
| Agra | | 78·7 | 299 | i 11 59 | − 2 | i 21 49 | −13 | — | — |
| Bombay | | 82·1 | 290 | i 12 17 | − 2 | e 22 49 | +11 | e 40·3 | — |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Almata | 82·9 | 315 | e 12 26 | + 3 | — | — | — | — |
| Sitka | 83·8 | 31 | — | — | e 22 34 | −21 | e 34·7 | — |
| Frunse | 84·5 | 314 | e 12 39 | + 8 | e 23 7 | + 4 | — | — |
| Andijan | 85·8 | 311 | e 12 39 | + 2 | e 22 59 | [− 6] | — | — |
| Ukiah | 87·9 | 51 | — | — | e 23 24 | [+ 5] | e 40·0 | — |
| Tashkent | 88·2 | 312 | i 12 49 | 0 | i 23 31 | − 8 | 35·9 | 49·3 |
| Victoria | 88·9 | 41 | 17 7 | ? | 25 16 | ? | 37·3 | 45·1 |
| Samarkand | 89·7 | 310 | 12 54 | − 2 | — | — | — | — |
| Pasadena | 91·4 | 56 | i 13 1 | − 3 | — | — | e 41·1 | — |
| Mount Wilson | 91·5 | 56 | e 13 1 | − 3 | — | — | — | — |
| Tinemaha | 91·6 | 53 | e 13 3 | − 2 | — | — | — | — |
| Haiwee | 91·7 | 54 | e 13 7 | + 2 | — | — | — | — |
| La Jolla | 92·1 | 57 | e 13 3 | − 4 | — | — | — | — |
| Riverside | 92·1 | 56 | e 13 4 | − 3 | — | — | — | — |
| Sverdlovsk | 94·9 | 327 | i 13 13 | − 7 | i 24 15 | {+ 1} | 39·7 | 47·7 |
| Tucson | 97·4 | 58 | e 17 27 | PP | e 31 52 | SS | e 40·7 | — |
| Baku | 102·8 | 311 | e 13 59 | + 3 | 25 10 | {− 4} | 44·7 | 55·4 |
| Grozny | 105·5 | 319 | — | — | e 24 44 | [− 8] | — | — |
| Tiflis | 106·4 | 313 | 14 13 | 0 | 24 47 | [− 9] | 54·0 | 57·6 |
| Kucino | 107·5 | 328 | — | — | 24 58 | [− 4] | 44·2 | 54·4 |
| Pulkovo | 109·7 | 333 | — | — | 24 58 | [−14] | 46·7$_q$ | 63·2 |
| Helsingfors | 111·7 | 336 | — | — | e 25 20 | [− 1] | e 53·7 | — |
| Theodosia | 112·3 | 318 | e 19 5 | PP | i 25 12 | [−11] | — | — |
| Little Rock | 112·6 | 54 | e 19 38 | PP | e 25 12 | [−13] | | — |
| Simferopol | 113·1 | 318 | e 19 17 | PP | i 25 18 | [− 9] | — | — |
| Yalta | 113·3 | 317 | e 19 13 | PP | i 25 14 | [−13] | — | — |
| Scoresby Sund | 113·7 | 358 | — | — | 30 32 | ? | 61·7 | — |
| Sebastopol | 113·7 | 318 | — | — | i 25 20 | [− 9] | — | — |
| Ksara | 114·8 | 305 | — | — | 25 26 | [− 7] | — | — |
| Helwan | 119·4 | 309 | e 20 5 | PP | i 25 37 | [−11] | — | — |
| Copenhagen | 119·7 | 336 | 20 8 | PP | 29 56 | PS | 55·7 | — |
| Ottawa | 121·0 | 38 | — | — | e 25 44? | [−10] | e 50·7 | — |
| Hamburg | 122·3 | 336 | e 18 52 | [+ 1] | — | — | e 60·7 | 68·7 |
| Prague | 122·5 | 330 | e 20 7 | PP | e 30 26 | PS | e 61·7 | 70·7 |
| Cape Town | 122·6 | 225 | — | — | 25 55 | [− 3] | 58·5 | 68·0 |
| Vienna | 122·6 | 327 | e 18 54 | [+ 2] | — | — | — | — |
| Cheb | 123·5 | 330 | — | — | e 25 52 | [− 9] | e 60·7 | — |
| Graz | 123·7 | 326 | e 25 51 | SKS | e 31 58 | ? | e 62·7 | 72·0 |
| Philadelphia | 123·9 | 43 | — | — | e 51 14 | ? | e 62·7 | — |
| Zagreb | 124·2 | 325 | e 18 56 | [+ 1] | e 25 54 | [− 9] | e 62·7 | — |
| Edinburgh | 125·0 | 344 | — | — | e 30 44? | PS | — | — |
| Oak Ridge | 125·1 | 39 | e 18 56 | [− 1] | e 37 44? | SS | e 67·7 | — |
| De Bilt | 125·3 | 337 | i 18 58 | [ 0] | — | — | e 55·7 | 62·3 |
| Triest | 125·6 | 326 | e 18 59 | [+ 1] | — | — | e 54·7 | 62·4 |
| Stuttgart | 126·0 | 331 | i 18 58 | [− 1] | e 28 14 | {+18} | e 61·7 | 69·7 |
| Stonyhurst | 126·6 | 342 | — | — | e 31 29 | PS | e 62·7 | 76·0 |
| Uccle | 126·6 | 337 | i 19 0 | [ 0] | — | — | e 55·7 | — |
| Padova | 126·7 | 327 | e 18 50 | [−10] | 36 44 | ? | — | — |
| Strasbourg | 126·8 | 332 | i 19 0$_a$ | [− 1] | e 28 15 | {+14} | e 52·7 | 69·7 |
| Zurich | 127·2 | 330 | e 19 1 | [ 0] | — | — | — | — |
| Basle | 127·5 | 331 | e 19 2 | [ 0] | — | — | — | — |
| Kew | 127·9 | 339 | i 19 1$_a$ | [− 2] | e 28 20 | {+12} | e 55·7 | 69·0 |
| Oxford | 128·0 | 340 | e 21 4 | PP | — | — | e 59·7 | 68·5 |
| Florence | 128 1 | 325 | i 19 1 | [− 2] | — | — | 59·7 | — |
| Prato | 128·1 | 325 | e 19 5 | [+ 2] | i 22 19 | ? | — | — |
| Neuchatel | 128·2 | 331 | e 19 2 | [− 1] | — | — | — | — |
| Piacenza | 128·2 | 328 | e 19 16 | [+13] | 30 44 | SKSP | 61·7 | 75·2 |
| Siena | 128·3 | 325 | e 18 44 | [−20] | 24 44 | ? | — | — |
| Rome | 128·5 | 323 | 19 6 | [+ 2] | — | — | — | — |
| Paris | 128·9 | 336 | i 19 4 | [− 1] | — | — | 63·7 | 75·7 |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Huancayo | 129·3 | 110 | e 21 30 | PP | e 38 36 | SS | e 61·4 | — |
| La Plata | 131·2 | 146 | 22 26 | PKS | 28 8 | {−21} | 65·7 | 66·5 |
| La Paz | 134·4 | 119 | i 19 16k | [+ 2] | — | — | 63·7 | 72·9 |
| Algiers | 137·4 | 324 | e 19 15 | [− 3] | — | — | — | — |
| Alicante | 138·3 | 329 | e 19 25 | [+ 6] | — | — | e 64·9 | — |
| Toledo | 138·9 | 333 | e 19 15 | [− 5] | — | — | — | — |
| San Juan | 139·2 | 65 | — | — | e 40 49 | SS | e 59·0 | — |
| Almeria | 140·4 | 329 | e 19 23 | [+ 1] | — | — | 67·3 | — |
| Granada | 140·8 | 331 | e 19 14 | [− 8] | 26 7 | ? | $69·6_Q$ | 84·1 |
| Malaga | 141·6 | 331 | e 19 18 | [− 5] | — | — | — | — |
| San Fernando | 142·6 | 333 | 19 28 | [+ 2] | — | — | 73·7 | — |

Additional readings :—
**Adelaide** i = +7m.44s. = PP + 4s.
**Melbourne** i = +7m.55s. = PP + 3s. and +14m.12s. = SS + 2s.
**Sumoto** SE = +18m.33s.
**Kobe** e = +9m.39s., eE = +10m.42s., eN = +10m.47s., iZ = +13m.32s., eN = +13m.38s.
**Mizusawa** iPE = +8m.13s.
**Batavia** iN = +11m.6s.
**Hong Kong** PP = +10m.3s., SS = +18m.17s., ? = +18m.44s.
**Honolulu** iP = +9m.48s. ; $T_0$ = 22h.40m.26s.
**Chiufeng** PS = +17m.41s.
**Calcutta** PS = +20m.33s.
**Kodaikanal** iPS = +23m.2s.
**Agra** ePP = +14m.52s., PS = +22m.29s., SS = +27m.11s., SSS = +30m.16s.
**Bombay** PP = +15m.34s., SKS = +22m.26s., SS = +28m.32s.
**Sitka** e = +19m.34s.
**Ukiah** e = +21m.34s., +29m.19s. = SS + 9s. and +36m.39s.
**Tashkent** PS = +24m.0s., PPS = +24m.59s., SS = +29m.44s.
**Sverdlovsk** PP = +17m.7s., SKS = +23m.43s., iPPS = +26m.3s., SS = +31m.26s.
**Tucson** e = +35m.26s.
**Baku** PP = +18m.7s., PS = +27m.22s.
**Tiflis** PPN = +18m.35s., ePPSN = +28m.13s., PKKPN = +29m.49s., SSN = +34m.1s.
**Kucino** e = +25m.27s. = SKKS − 21s., PS = +28m.18s., SS = +34m.8s., SSS = +38m.56s.
**Pulkovo** PP = +18m.46s., PS = +28m.20s., SS = +34m.32s., LR = +52·7m.
**Helsingfors** e?EN = +28m.32s. = PS − 13s. and +35m.20s., e?E = +40m.14s.
**Little Rock** eSKS = +23m.18s. = PPPP + 4s., eSS = +40m.9s.
**Ksara** PP = +19m.40s., PS = +29m.20s., PPS = +30m.28s.
**Helwan** i = +27m.7s. = SKKS − 5s., e = +27m.36s.
**Ottawa** eE = +29m.44s.?, e = +36m.44s. ?
**Cape Town** PN = +27m.15s., N = +28m.31s. and +30m.4s. = SKSP − 11s., E = +30m.8s., N = +31m.49s., E = +31m.53s., +34m.40s., and +36m.38s., N = +37m.15s., E = +37m.56s., N = +40m.2s., EN = +50m.20s.
**Zagreb** e = +20m.45s. = PP + 7s. and +30m.57s. = PS + 17s.
**De Bilt** eZ = +20m.48s. = PP + 2s., iZ = +20m.52s.
**Triest** i = +20m.52s. = PP + 4s. and +22m.15s., iPPP(SKS?) = +25m.57s., i = +31m.1s. = PS + 8s., PSKS? = +33m.39s.
**Stuttgart** ePP = +20m.53s., ePSEN = +30m.50s., ePPS = +32m.50s., eEN = +33m.44s., eSS = +37m.56s.
**Uccle** i = +21m.0s. = PP + 6s. and +22m.12s.
**Strasbourg** iPP? = +21m.16s., e = +22m.9s. and +29m.48s.
**Kew** ePP = +21m.10s., iPKS = +22m.16s.
**Piacenza** iP = +22m.24s.
**Paris** PP = +21m.14s., PPP = +22m.21s.
**Huancayo** e = +34m.16s.
**La Plata** N = +22m.56s.
**La Paz** iPP = +22m.25s.
**Algiers** e = +22m.8s. = PP + 3s. and +22m.50s. = PKS − 12s.
**Alicante** PP = +22m.59s.
**Toledo** iP = +19m.23s., i = +19m.59s.
**Almeria** PP = +22m.59s.
**Granada** iPKP = +19m23s., PP = +22m.24s., SKP = +22m.49s., PPP = +25m.39s., SKSP = +32m.25s., PPS = +35m.10s., LR = +77·8m.
**Malaga** e = +22m.18s. = PP − 13s., +23m.0s. = PKS − 13s., +28m.36s., and +41m.44s.?
**San Fernando** PN = +19m.31s., PPS = +38m.10s.
**Long waves** were also recorded at Arapuni, Ann Arbor, Jena, Koti, Leipzig, and Upsala.

Nov. 18d. Readings also at 1h. (Trenta), 2h. (La Paz, La Plata, Mizusawa, and Santiago), 3h. (Baku, Tashkent, and Tyosi), 4h. (La Paz, Sverdlovsk, and Tashkent), 7h. (Santiago), 11h. (Algiers, Florence, and Samarkand), 12h. (Ferndale, Nagoya, Tyosi, and Tokyo), 13h. (Cape Town and La Paz), 14h. (Baku and Sverdlovsk), 15h. (Tashkent), 16h. (Almata, Andijan, Baku, Branner, Frunse, and Lick), 17h. (Baku and Tashkent), 18h. (Sverdlovsk), 21h. (Riverview and Sydney), 22h. (Adelaide, Grozny, Melbourne, Perth, and Oak Ridge).

Nov. 19d. 7h. Readings for which no determination has been made :—

Sucre eP =20m.40s., L =36m.12s.
La Paz iP =20m.50s., S =28m.30s., L =36m.0s., M =50m.6s.
Cape Town E =24m.36s., N =28m.16s.
Sverdlovsk e =29m.59s., e =34m.12s., L =106m.
La Jolla ePZ =30m.21s.
Riverside iPZ =30m.25s., iZ =34m.4s.
Mount Wilson iPZ =30m.26s., iZ =34m.5s.
Pasadena iPNZ =30m.28s.a, iZ =34m.3s.
Haiwee iPZ =30m.29s., eZ =34m.9s.
Tinemaha iPZ =30m.31s., iZ =34m.9s.
Tashkent e =30m.34s., e =34m.42s., eL =68m.42s., M =85m.30s.
Tiflis eE =37m.21s., LE =69m.42s., MN =85m.0s.
Kodaikanal e =61m.0s.
Pulkovo e =66m.36s., L =79m.
De Bilt e =67m., eL =71m., M =72m.1s.
Stuttgart e =68m., eL =70m.30s.
Samarkand eP =75m.40s.
Long waves were recorded at Baku, Copenhagen, Paris, Strasbourg, and Uccle.

Nov. 19d. 10h. Readings for which no determination has been made :—

Glenmuick M =2m.36s.
Wellington P =3m.13s., S =3m.40s.
Christchurch 3m.
Agra e =3m.35s., i =4m.15s.
Andijan eP =3m.50s.
Agra i =4m.15s., given as a separate shock.
Samarkand e =5m.2s.
Bombay e =6m.
Frunse e =6m.35s.
Calcutta e =9m.43s.

Nov. 19d. 21h. Readings for which no determination has been made :—

Semipalatinsk eP =35m.20s.
Frunse eP =36m.57s., $S_g$ =37m.47s.
Almata P =37m.0s., $iS_g$ =37m.38s., M =37m.42s.
Andijan P =37m.1s., $S_g$ =37m.53s., M =37m.55s.
Tashkent e =38m.7s., e =38m.23s., eL =39m.6s., M =39m.48s.
Samarkand eP =38m.44s., e =40m.4s., epicentre 40°·6N. 76°·8E.

Nov. 19d. Readings also at 2h. (Bombay and Tananarive), 3h. (Göttingen and Sotchi), 4h. (Batavia, Granada (2), Helsingfors, Malabar, Manila, Oak Ridge, Samarkand, and Sverdlovsk), 5h. (Berkeley, Haiwee, La Jolla, La Paz, Mount Wilson, Pasadena, Riverside, Santa Barbara, Tinemaha, Triest, and Tucson), 6h. (Baku, Huancayo, Riverside, Sverdlovsk, and Tashkent), 7h. (Riverview), 8h. (Tyosi and Samarkand), 9h. (Christchurch, Glenmuick, and Wellington), 10h. (Mizusawa and Tananarive), 13h. (Tyosi), 15h. (Tyosi), 16h. (Samarkand), 17h. (Tyosi), 21h. (Pulkovo).

Nov. 20d. Readings for which no determination has been made :—

Zurich $eP_g$ =14h.55m.55s., $eS_g$ =56m.12s.
Basle $eP_g$ =14h.55m.58s., $eS_g$ =56m.29s.
Neuchatel $eP_g$ =14h.56m.8s., e =56m.10s., e =56m.30s., eS? =56m.33s.
Ravensburg $eS_g$ =14h.56m.16s.

Andijan P =15h.17m.50s., $S_g$ =18m.20s., M =18m.30s.
Tashkent iP =15h.17m.59s., iL =18m.37s., M =18m.54s.
Samarkand P =15h.18m.3s., S* =18m.48s., M =19m.35s.
Frunse eP =15h.18m.38s., e =19m.26s.
Almata e =15h.20m.31s.

Nov. 20d. Readings also at 0h. (Nagoya, Mizusawa, and Tyosi), 2h. (Andijan, Almata, Frunse, and Malabar), 3h. (Kobe), 6h. (Tyosi), 8h. (Samarkand), 9h. (Livorno), 13h. (Medan), 17h. (Amboina), 18h. (Adelaide, Melbourne, Riverview, Batavia, Soengei Langka, and Trenta), 22h. (Baku, Samarkand, and Tashkent).

Nov. 21d. 10h. 25m. 23s. Epicentre 44°·5N. 11°·5E. (as on 1930 Nov. 12d.). X.

A = +·699, B = +·142, C = +·701; D = +·199, E = −·980;
G = +·687, H = +·139, K = −·713.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Florence | 0·7 | 194 | i 0 12 | + 2 | 0 24 | + 6 | — |
| Prato | 0·7 | 202 | i 0 10 | 0 | i 0 17 | − 1 | — |
| Padova | 0·9 | 16 | 0 40 | ? | 1 12 | ? | — |
| Siena | 1·2 | 185 | 0 17 | 0 | — | — | 0·8 |
| Pavia | 1·8 | 291 | i 0 33 | $P_g$ | — | — | — |
| Triest | 2·0 | 56 | 0 58 | S* | — | — | — |
| Zagreb | 3·4 | 66 | e 1 36 | S* | e 2 47 | ? | — |
| Zurich | 3·5 | 325 | e 1 4 | $P_g$ | — | — | — |
| Ravensburg | 3·6 | 339 | e 1 13 | $P_g$ | — | — | — |
| Neuchatel | 4·0 | 310 | e 1 0 | + 3 | — | — | — |
| Basle | 4·1 | 320 | e 1 6 | P* | e 1 49 | + 4 | — |
| Stuttgart | 4·5 | 340 | e 1 37 | $P_g$ | — | — | — |
| Strasbourg | 4·8 | 329 | e 1 53 | ? | — | — | — |
| Vienna | 5·0 | 41 | — | — | e 2 41 | $S_g$ | — |

Additional readings:—
Triest S = +1m.26s., i$S_g$N = +1m.32s.
Ravensburg e = +2m.16s. and +2m.20s.
Stuttgart eNZ = +1m.41s., eE = +2m.49s. and +3m.8s.
Strasbourg eE = +2m.57s. and +3m.2s., e = +3m.8s.
Vienna eZ = +2m.54s., eEN = +3m.29s.
Long waves were recorded at Venice.

Nov. 21d. 20h. Readings for which no determination has been made:—
Neuchatel e = 10m.44s.
Tashkent iP = 18m.6s., iL = 18m.44s., M = 19m.18s.
Samarkand P = 18m.8s., S* = 18m.54s., M = 19m.22s.
Andijan P = 18m.30s., S* = 19m.2s., $S_g$ = 19m.12s., M = 19m.19s.
Almata eP = 19m.31s., e = 20m.29s., eS = 20m.43s., M = 20m.53s.; epicentre given as 38°·4N. 71°·0E.

Nov. 21d. 21h. Readings for which no determination has been made:—
Zurich e$P_g$? = 52m.49s., e$S_g$ = 52m.55s.
Ebingen e$S_g$ = 52m.49s.
Basle e$P_g$ = 52m.52s., eS = 53m.3s.
Stuttgart e$S_g$ = 53m.10s.

Nov. 21d. 22h. 26m. 19s. Epicentre 33°·3N. 25°·9E. N.2.

A = +·752, B = +·365, C = +·549; D = +·437, E = −·900;
G = +·494, H = +·240, K = −·836.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Helwan | 5·8 | 124 | 1 32 | P* | 2 38 | +10 | — | 7·4 |
| Ksara | 8·4 | 85 | e 2 0 | + 1 | e 3 35 | + 1 | — | — |
| Trenta | 9·7 | 311 | e 2 16 | − 1 | 3 49 | −17 | — | — |
| Mineo | 9·9 | 297 | 2 13 | − 6 | — | — | — | — |
| Taranto | 9·9 | 319 | 4 53 | S* | — | — | — | — |
| Belgrade | 12·3 | 342 | 2 55 | + 3 | 6 11 | S* | e 8·0 | — |
| Yalta | 12·9 | 30 | e 3 3 | + 2 | — | — | — | — |
| Simferopol | 13·3 | 25 | e 3 10 | + 4 | — | — | 10·5 | — |
| Theodosia | 13·8 | 29 | e 2 58 | −15 | — | — | — | — |
| Zagreb | 14·6 | 334 | e 2 57 | −26 | e 6 11 | + 6 | — | — |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Triest | 15·5 | 328 | i 3 47 | +12 | i 6 56 | ? | — | — |
| Padova | 16·2 | 324 | e 8 0 | ? | 10 38 | ? | — | — |
| Erevan | 16·4 | 61 | e 3 45 | − 1 | — | — | — | — |
| Vienna | 16·6 | 338 | e 3 43 | − 6 | e 10 34 | ? | — | — |
| Piacenza | 17·1 | 318 | — | — | e 7 25 | SS | — | 12·9 |
| Tiflis | 17·1 | 55 | e 3 52 | − 3 | e 7 2 | − 2 | e 10·0 | 11·5 |
| Grozny | 18·4 | 52 | e 4 21 | PP | — | — | — | — |
| Prague | 18·9 | 337 | — | — | e 10 54 | ? | — | 13·2 |
| Zurich | 19·2 | 322 | e 4 19 | − 2 | e 7 51 | + 1 | — | — |
| Basle | 19·8 | 321 | e 4 25 | − 2 | — | — | — | — |
| Stuttgart | 19·9 | 327 | e 3 53 | −36 | e 8 13 | + 9 | e 11·2 | 13·4 |
| Strasbourg | 20·4 | 324 | e 4 40 | + 6 | e 8 25 | +11 | e 10·7 | — |
| Baku | 20·4 | 62 | e 4 39 | + 5 | i 8 17 | + 3 | 11·6 | 15·2 |
| Göttingen | 21·6 | 333 | — | — | e 8 41 | + 3 | — | 14·8 |
| Uccle | 23·5 | 325 | e 5 6 | + 1 | i 9 14 | 0 | 12·7 | — |
| De Bilt | 24·0 | 329 | e 5 10 | 0 | e 9 24 | + 1 | e 12·7 | 15·9 |
| Kew | 26·3 | 323 | — | — | e 10 3 | 0 | e 16·7 | — |
| Pulkovo | 26·6 | 5 | 5 30 | − 5 | 10 12 | + 3 | 15·2 | 16·4 |
| Helsingfors | 26·9 | 358 | e 6 41? | ? | — | — | e 15·6 | — |
| Sverdlovsk | 33·4 | 35 | 6 29 | − 6 | 11 39 | −18 | 17·7 | — |
| Samarkand | 33·4 | 66 | e 6 29 | − 6 | — | — | — | — |
| Andijan | 37·4 | 65 | e 7 12 | + 2 | — | — | — | — |
| Oak Ridge | 73·0 | 310 | i 11 33 | + 4 | — | — | — | — |

Additional readings :—
Belgrade e = +3m.40s.
Zagreb e = +8m.42s. and +9m.10s.
Triest i = +8m.42s., +9m.5s., +9m.46s., +10m.33s., and +11m.19s.
Tiflis eE = +5m.50s.
Stuttgart ePP = +4m.25s., eSS = +9m.20s. ; $T_o$ = 22h.24m.35s.
Strasbourg eSS = +9m.5s.
Long waves were recorded at Cheb, Copenhagen, Budapest, Paris, and Tashkent.

Nov. 21d. Readings also at 2h. (Helsingfors), 4h. (Amboina and Wellington), 6h. (Adelaide, Melbourne, and Riverview), 8h. (Santiago), 12h. (Christchurch, Sumoto, Sydney, and Wellington), 14h. (Andijan), 17h. (Andijan, Arisan, Karenko, Samarkand, and Tainan), 19h. (Arisan, Almata, Frunse (2), Karenko, Samarkand, and Tainan), 22h. (Tiflis), 23h. (Cape Town).

Nov. 22d. 3h. Readings for which no determination has been made :—
Batavia iP = 30m.33s., S? = 34m.9s.
Manila P = 31m.10s., S = 35m.1s., L = 37m.11s.
Adelaide i = 38m.27s., e = 40m.15s., eL = 44m.2s., M = 44m.36s.
Melbourne i = 38m.48s., e = 45m.50s.

Nov. 22d. 22h. Readings for which 14°·0N. 120°·0E. is the suggested epicentre :—
Manila iP = 25m.19s.a, iS = 27m.6s.
Amboina iP = 25m.45s., iS = 27m.52s.
Kodaikanal e = 29m.0s.
Chiufeng eP = 29m.9s., e = 30m.51s., i = 33m.53s.
Calcutta P = 29m.40s., S = 34m.44s., L = 38m.18s.
Batavia iP = 30m.29s.
Bombay e = 31m., iE = 31m.18s.
Almata eP = 31m.50s.
Andijan eP = 31m.52s., S = 39m.8s.
Frunse eP = 32m.0s., eS = 39m.6s.
Tashkent iP = 32m.20s., iS = 39m.39s., M = 49m.12s.
Samarkand eP = 32m.51s., S = 40m.21s.
Sverdlovsk iP = 33m.21s., iS = 41m.40s., L = 49m.
Baku e = 33m.43s.
Grozny eP = 34m.1s.
Tiflis ePE = 34m.8s., eSE = 43m.11s.
Erevan eP = 34m.9s.
Ksara eP = 34m.47s., e = 44m.11s., eS = 44m.50s.
Long waves were recorded at Hong Kong and Vladivostok.

Nov. 22d. Readings also at 1h. (Erevan), 3h. (Kobe), 6h. (Almata, Andijan, and Samarkand), 7h. (Nagasaki), 16h. (Balboa Heights and Hastings), 18h. (Tashkent), 19h. (Kobe, Nagoya, Paris, and Siena), 20h. (Tiflis), 21h. (Mizusawa, Nagoya, and Tyosi), 22h. (Oak Ridge).

Nov. 23d. 17h. Readings for two separate shocks from which no determinations have been made :—

Sverdlovsk eP = 17m.32s., L = 27m.
Almata eP = 18m.3s., e = 19m.7s.
Semipalatinsk eP = 19m.19s.
Frunse e = 20m.6s.
Tashkent e = 21m.39s., e = 22m.37s., e = 22m.57s., eL = 23m.0s., i = 24m.22s., M = 26m.30s.
Vladivostok eL = 27m.

Santa Barbara iPZ = 49m.13s., eZ = 50m.7s.
Pasadena iP = 49m.18s.a, iZ = 50m.23s., iZ = 51m.55s., eZ = 54m.12s.
Riverside ePZ = 49m.19s., eZ = 49m.51s.
Mount Wilson iPZ = 49m.19s.a.
Haiwee iPEZ = 49m.26s., eEZ = 49m.57s.
Tinemaha iPEZ = 49m.28s.a, iZ = 49m.59s., eZ = 52m.28s.
Vladivostok eL = 59m.30s.
Tashkent eL = 73m.0s., M = 79m.0s.
Sverdlovsk e = 74m.42s., L = 87m.

Nov. 23d. Readings also at 0h. (Siena (2) ), 1h. (Berkeley), 3h. (Siena), 4h. (Manila), 5h. (Erevan), 7h. (Paris), 8h. (Samarkand), 9h. (Bombay and Calcutta), 12h, (Glenmuick, Mizusawa, and Tyosi), 13h. (Christchurch, New Plymouth, and Wellington), 14h. (Triest), 16h. (Almata, Frunse, Samarkand, and Tashkent), 17h. (Apia and Chiufeng), 18h. (Tiflis), 22h. (Nagoya and Tyosi), 23h. (Little Rock).

Nov. 24d. 12h. 34m. 7s. Epicentre 57°·0S. 146°·0E. N.3.

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

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Melbourne | 19·2 | 358 | i 4 24 | + 3 | 8 3 | SS | 9·3 | 10·4 |
| Christchurch | 21·5 | 63 | 5 53? | +68 | — | — | — | — |
| Adelaide | 22·6 | 344 | i 5 2 | + 5 | i 9 23 | SS | i 10·8 | 12·3 |
| Riverview | 23·4 | 11 | i 5 5 | 0 | i 9 28 | +16 | 11·5 | 14·1 |
| Sydney | 23·4 | 11 | e 5 53 | ? | i 9 21 | + 9 | 11·9 | 12·9 |
| Wellington | 24·2 | 62 | 5 11 | − 1 | 9 39 | +12 | 11·9 | — |
| New Plymouth | 25·6 | 58 | 7 53? | ? | — | — | — | — |
| Chatham Ils. | 26·7 | 77 | — | — | 9 53 | −17 | 12·9 | 13·9 |
| Perth | 32·5 | 307 | e 6 13 | −14 | i 12 3 | +20 | 18·2 | — |
| Amboina | 55·2 | 336 | 9 31 | + 1 | 17 15 | + 3 | e 26·4 | — |
| Batavia | 59·3 | 313 | 10 15 | +15 | 18 23 | PS | — | — |
| Medan | 71·6 | 313 | — | — | e 21 1 | PS | e 37·9 | — |
| Manila | 74·6 | 336 | i 11 39k | + 1 | i 21 20 | + 5 | 35·9 | — |
| Cape Town | 78·9 | 222 | — | — | 22 22 | +18 | — | 44·1 |
| Colombo | 83·2 | 294 | 22 57 | S | (22 57) | + 8 | — | — |
| Hong Kong | 83·7 | 331 | 15 38 | PP | 22 55 | + 1 | — | 34·7 |
| Zi-ka-wei | 90·6 | 340 | e 12 50 | −10 | — | — | — | 53·3 |
| Kobe | 92·1 | 351 | e 13 8 | + 1 | e 24 15 | − 2 | — | — |
| Calcutta | 93·0 | 309 | e 14 12 | +61 | e 24 27 | + 3 | e 41·5 | — |
| Bombay | 97·0 | 294 | e 16 53? | ? | — | — | — | — |
| Chiufeng | 100·2 | 338 | e 17 57 | PP | 24 29 | [+ 2] | — | — |
| Vladivostok | 100·7 | 350 | e 15 20 | ? | — | — | e 49·5 | — |
| La Paz | 101·2 | 149 | — | — | i 24 32 | [ 0] | 47·5 | 51·2 |
| Agra | 101·5 | 303 | — | — | e 24 35 | [+ 2] | — | — |
| Huancayo | 102·9 | 138 | — | — | e 27 18 | PS | — | — |

*Continued on next page.*

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Baku | 125·9 | 292 | — | — | 26 15 | [+ 7] | 55·7 | — |
| Tiflis | 129·5 | 288 | e 22 39 | ? | e 33 38 | ? | e 64·4 | 80·3 |
| Sverdlovsk | 132·6 | 313 | — | — | e 26 16 | [−10] | 59·9 | — |
| Simferopol | 137·4 | 284 | — | — | e 25 39 | ? | — | — |
| Kucino | 142·0 | 300 | — | — | e 41 11 | SS | e 62·9 | — |
| Pulkovo | 147·5 | 304 | 19 47 | [+ 9] | 30 9 | {+ 1} | 76·9 | 85·6 |
| Granada | 151·8 | 239 | e 20 23 | {+16} | — | — | e 76·4 | 89·2 |
| Ottawa | 151·9 | 96 | — | — | e 32 53 | ? | e 72·9 | — |
| Oak Ridge | 152·3 | 105 | e 19 53 | [+ 8] | — | — | e 73·9 | — |
| Stuttgart | 153·2 | 270 | e 20 2 | {−11} | — | — | 88·9 | — |
| Copenhagen | 154·7 | 287 | — | — | 43 53? | SS | 85·1 | — |
| Paris | 156·8 | 265 | e 25 53? | ? | — | — | 84·9 | — |
| De Bilt | 157·1 | 275 | — | — | e 44 23 | SS | e 81·9 | 95·7 |

Additional readings :—
Melbourne e = +3m.27s., i = +4m.40s.
Adelaide i = +5m.40s., +8m.36s. = $P_cP$ −12s. and +10m.21s.
Riverview eZ = +5m.8s., iE = +5m.16s.
Amboina i? = +7m.58s.
Manila iEN = +26m.9s.
Cape Town E = +25m.43s., N = +27m.6s. = SS +10s., E = +30m.43s., N = +37m.5s., E = +37m.35s.
Hong Kong SS? = +27m.37s.
Zi-ka-wei iZ = +16m.26s. = PP −4s.
Kobe eS?E = +24m.19s., eZ = +24m.43s.
Huancayo e = +22m.8s., +27m.53s., +33m.3s., and +42m.53s.; $T_0$ = 12h.34m.5s.
Baku SKS = +31m.12s., SKKS = +33m.16s., PPS = +38m.5s., SS = +44m.5s.
Sverdlovsk e = +28m.34s. = SKKS −4s., +31m.47s. = PS −7s. and +40m.16s.
Kucino e = +46m.59s.
Pulkovo PPS = +36m.8s.
Granada i = +24m.11s.
Ottawa e = +47m.53s.?
Stuttgart ePP = +24m.11s., $ePPP_2$ = +32m.8s.; $T_0$ = 12h.34m.0s.
Copenhagen +50m.5s.
Long waves were also recorded at Kew, Philadelphia, Sitka, San Fernando, Strasbourg, Toledo, Triest, and Uccle.

Nov. 24d. 17h. 50m.16s. Epicentre 47°·5N. 8°·2E. N.3.

A = +·669, B = +·096, C = +·737; D = +·143, E = −·990; G = +·730, H = +·105, K = −·676.

| | △ | Az. | P. | O−C. | S. | O−C. |
|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. |
| Zurich | 0·3 | 104 | e 0 5 | + 1 | i 0 8 | 0 |
| Basle | 0·4 | 279 | e 0 8 | + 2 | e 0 15 | + 5 |
| Ebingen | 0·9 | 40 | e 0 10 | − 3 | e 0 19 | − 4 |
| Neuchatel | 0·9 | 200 | e 0 21 | S | (e 0 21) | − 2 |
| Ravensburg | 1·0 | 69 | — | — | e 0 24 | − 2 |
| Stuttgart | 1·4 | 27 | — | — | e 0 41 | S* |

Additional readings :—
Ebingen e = +18s. and +20s.
Neuchatel e = +30s. and +33s.

Nov. 24d. Readings also at 1h. (Balboa Heights), 3h. (Erevan), 5h. (Erevan, Ksara, and Mizusawa), 8h. (Kobe, Nagoya, and New Plymouth), 10h. (Nagasaki), 11h. (Hyderabad and Wellington), 12h. (Mizusawa), 14h. (Alicante, Edinburgh, Kew, Stonyhurst, and New Plymouth (2)), 15h. (Amboina), 19h. (Melbourne), 20h. (Samarkand).

Nov. 25d. 0h. Readings for which no determination has been made :—
Sydney e = 22m.6s., L = 35m.15s., M = 36m.20s.
Riverview eN = 27m.36s., eN = 32m.6s., eL = 34m.12s., MN = 38m.33s.
Adelaide e = 27m.41s., e = 30m.23s., i = 31m.51s., eL = 33m.20s., M = 34m.48s.
Melbourne i = 30m.30s., L = 31m.30s., M = 33m.6s.
Perth eP = 32m.0s.
Long waves at Wellington.

Nov. 25d. 9h. Readings for which no determination has been made :—

Samarkand e =18m.46s.
Strasbourg $eP_g$ =22m.0s., $iS_g$ =22m.4s.
Stuttgart $eS_g$ =22m.16s.
Ebingen $eS_g$ =22m.20s.
Basle $eS_g$ =22m.36s.
Zurich $eS_g$ =22m.49s.

Nov. 25d. Readings also at 0h. (Amboina and Samarkand), 3h. (Santiago), 8h. (Lick and Tucson), 9h. (Balboa Heights), 10h. (Kodaikanal and Wellington), 11h. (Santiago), 12h. (Batavia, Malabar, and Soengei Langka), 13h. (Medan), 16h. (Samarkand), 19h. (Balboa Heights and Malabar), 20h. (Malabar), 23h. (New Plymouth and Wellington).

Nov. 26d. 0h. Readings for which no determination has been made, probably more than one shock :—

Bunnythorp P =12m.0s., $P_g$ =12m.6s., $S_g$ =12m.17s.
New Plymouth P =12m.18s., S =12m.35s.
Wellington P =12m.32s., $P_g$? =12m.36s., S =12m.52s.
Hastings $P_g$ =13m.0s., $S_g$ =13m.11s.
Arapuni P =13m.12s., S =13m.27s.
Christchurch P* =13m.23s., $P_g$ =13m.30s., S? =13m.55s.
Glenmuick P =13m.42s., $P_g$ =14m.6s., S? =14m.35s., e =14m.38s.

Nov. 26d. 8h. Readings for which no determination has been made :—

New Plymouth P =32m.35s.
Wellington P =33m.0s., i =33m.16s., S =33m.29s.
Hastings $P_g$ =33m.0s., $S_g$ =33m.6s.
Tuai $P_g$ =33m.0s., $S_g$ =33m.8s.
Christchurch P? =33m.40s., S =34m.38s.
Glenmuick P =34m.18s., $P_g$ =34m.44s., e =40m.18s.
Arapuni S? =34m.20s.
Sydney e =42m.40s., L =44m.48s., M =46m.0s.
Bunnythorp 50m.

Nov. 26d. 12h. 9m. 16s. Epicentre 14°·2N. 120°·2E. N.1.

Felt at Lubang Island. Felt by " Empress of Asia," 30 miles north of the epicentre. Given by Manila.

A = −·488, B = +·838, C = +·245 ; D = +·864, E = +·503 ; G = −·123, H = +·212, K = −·969.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Manila | 0·8 | 62 | i 0 19k | + 8 | — | — | — | — |
| Arisan | 9·3 | 4 | 2 18 | + 7 | 3 44 | −12 | — | — |
| Karenko | 9·9 | 8 | 2 24 | + 5 | — | — | — | — |
| Hong Kong | 10·0 | 326 | 2 24 | + 3 | 4 26 | +13 | 5·1 | 6·8 |
| Isigakizima | 10·8 | 20 | 2 35 | + 3 | 4 12 | −21 | — | — |
| Taihoku | 10·9 | 6 | 2 40 | + 7 | 4 40 | + 4 | — | — |
| Phu-Lien | 14·4 | 299 | e 3 30 | + 9 | e 6 23 | +22 | 7·3 | — |
| Palau | 15·6 | 115 | 3 35 | − 1 | — | — | — | — |
| Nake | 16·6 | 30 | 3 50 | + 1 | 7 5 | SS | — | — |
| Zi-ka-wei | 17·1 | 4 | i 3 57a | + 2 | 7 2 | − 2 | 8·8 | 9·4 |
| Amboina | 19·5 | 156 | i 4 14 | −10 | i 7 49 | − 7 | — | — |
| Nagasaki | 20·5 | 24 | i 4 33 | − 2 | e 8 33 | SS | — | — |
| Hukuoka | 21·5 | 24 | 4 46 | + 1 | 8 35 | − 1 | — | — |
| Hukuoka B | 21·5 | 24 | (4 45) | 0 | 4 45 | P | — | — |
| Husan | 22·4 | 19 | i 4 53 | − 2 | i 9 0 | + 7 | — | — |
| Koti | 22·9 | 30 | 4 59 | − 1 | 9 10 | + 7 | — | — |
| Taikyu | 23·0 | 18 | 5 2 | + 1 | 9 10 | + 5 | — | — |
| Medan | 23·7 | 246 | (i 5 15) | + 8 | (i 9 19) | + 1 | — | — |
| Siomisaki | 23·9 | 34 | 5 8 | − 1 | 9 31 | +10 | — | — |
| Zinsen | 24·0 | 12 | i 5 9 | − 1 | i 9 28 | + 5 | — | — |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Sumoto | 24·1 | 31 | 5 10 | − 1 | e 9 39 | +14 | e 12·9 | — |
| Keizyo | 24·2 | 13 | 5 11 | − 1 | 9 22 | − 5 | — | — |
| Titizima | 24·2 | 54 | 5 7 | − 5 | 9 24 | − 3 | — | — |
| Malabar | 24·8 | 213 | 5 17 | − 1 | — | — | — | — |
| Batavia | 24·3 | 214 | i 5 11k | − 2 | 9 25 | − 3 | — | — |
| Kobe | 24·5 | 33 | e 5 15 | 0 | e 10 6 | SS | — | 16·4 |
| Toyooka | 25·1 | 29 | 5 22 | + 1 | 10 37 | SS | — | — |
| Kameyama | 25·3 | 33 | 5 21 | − 2 | 9 29 | −17 | — | — |
| Chiufeng | 26·2 | 353 | i 5 30 | − 1 | 9 54 | − 8 | 10·5 | 13·2 |
| Nagano | 27·6 | 32 | 5 46 | + 2 | 10 50 | +25 | — | — |
| Kumagaya | 27·9 | 35 | 5 38 | − 8 | 10 39 | + 9 | — | — |
| Tyosi | 28·4 | 37 | e 6 39 | PP | — | — | — | — |
| Sendai | 30·2 | 33 | 6 5 | − 2 | — | — | — | — |
| Vladivostok | 30·6 | 17 | i 6 10 | 0 | e 11 30 | +16 | 15·2 | 31·1 |
| Mizusawa | 31·0 | 33 | e 6 14 | 0 | e 7 14 | PP | — | — |
| Calcutta | 31·3 | 290 | 6 21 | + 4 | 11 24 | 0 | e 14·9 | 21·2 |
| Colombo | 40·3 | 264 | 7 38 | + 3 | 13 33 | − 8 | — | 23·7 |
| Agra | 41·3 | 295 | i 7 40 | − 3 | i 13 27 | −29 | — | — |
| Bombay | 45·5 | 283 | 8 19 | + 2 | i 14 55 | − 2 | e 22·3 | — |
| Perth | 46·3 | 187 | e 8 15 | − 8 | i 14 54 | −15 | — | — |
| Almata | 47·0 | 318 | e 8 31 | + 2 | — | — | — | — |
| Frunse | 48·5 | 316 | e 8 44 | + 4 | e 15 44 | + 4 | — | — |
| Semipalatinsk | 48·6 | 333 | e 8 42 | + 1 | e 15 40 | − 1 | — | — |
| Andijan | 49·3 | 312 | e 8 48 | + 2 | e 15 53 | + 2 | — | — |
| Tashkent | 51·6 | 312 | e 8 57 | − 6 | i 16 14 | − 9 | 30·2 | 32·7 |
| Adelaide | 52·1 | 161 | e 8 55 | −12 | e 15 57 | −33 | — | — |
| Riverview | 56·3 | 149 | e 9 50 | +12 | e 17 8 | −19 | — | 28·3 |
| Sydney | 56·4 | 149 | e 10 14 | +35 | (17 24) | − 4 | 17·4 | 29·2 |
| Melbourne | 56·9 | 156 | e 10 4 | +22 | i 17 19 | −16 | — | — |
| Baku | 66·0 | 309 | e 10 45 | 0 | 19 33 | + 1 | 33·0 | 41·8 |
| Grozny | 69·1 | 311 | e 11 5 | 0 | e 20 5 | − 4 | — | — |
| Tiflis | 69·8 | 310 | 11 6 | − 3 | 20 9 | −10 | e 35·2 | 43·5 |
| Erevan | 70·1 | 308 | e 11 9 | − 2 | e 20 9 | −13 | — | — |
| Kucino | 74·0 | 326 | — | — | 20 59 | − 9 | 31·2 | 41·9 |
| Wellington | 74·9 | 140 | — | — | e 20 44? | ? | 36·7 | — |
| Theodosia | 76·4 | 314 | 11 46 | − 2 | 21 25 | −11 | — | — |
| Simferopol | 77·3 | 314 | 11 52 | − 2 | e 21 34 | −12 | — | — |
| Yalta | 77·3 | 313 | 11 52 | − 2 | e 21 34 | −12 | — | — |
| Ksara | 77·5 | 302 | e 11 58 | + 3 | 21 47 | − 1 | — | — |
| Sebastopol | 77·7 | 314 | e 11 55 | − 1 | — | — | — | — |
| Pulkovo | 77·8 | 329 | i 11 51 | − 6 | 21 36 | −16 | 37·7 | 46·8 |
| Tananarive | 78·9 | 248 | — | — | e 21 31 | −33 | — | — |
| Helsingfors | 80·3 | 331 | e 11 52 | −17 | e 21 48 | −31 | e 41·7 | — |
| Helwan | 82·1 | 299 | i 12 14 | − 5 | 22 27 | −11 | — | — |
| Copenhagen | 88·0 | 329 | — | — | 23 8 | [−12] | 44·7 | — |
| Vienna | 88·4 | 320 | e 12 46 | − 4 | e 23 7 | [−16] | — | — |
| Prague | 89·0 | 323 | — | — | e 23 14 | [−12] | e 50·7 | 52·7 |
| Zagreb | 89·4 | 318 | e 12 54 | − 1 | e 23 15 | [−14] | e 50·7 | — |
| Hamburg | 90·1 | 327 | — | — | i 23 22 | [−11] | e 47·7 | — |
| Cheb | 90·2 | 322 | — | — | e 23 44? | −14 | e 46·7 | — |
| Triest | 90·9 | 318 | e 12 57 | − 5 | i 23 21 | [−17] | e 45·1 | 51·0 |
| Venice | 92·0 | 318 | — | — | i 23 31 | [−13] | — | — |
| Padova | 92·3 | 319 | e 23 2 | SKS | (e 23 2) | [−44] | — | — |
| Stuttgart | 92·6 | 322 | e 13 6 | − 3 | e 24 4 | −16 | e 48·7 | — |
| Florence | 93·3 | 317 | e 16 44 | PP | 23 35 | [−17] | 52·7 | 56·7 |
| De Bilt | 93·4 | 327 | 13 13 | 0 | 23 39 | [−13] | e 42·7 | 57·5 |
| Strasbourg | 93·5 | 323 | e 13 12a | − 2 | i 24 9 | −19 | e 44·7 | — |
| Zurich | 93·5 | 322 | e 13 11 | − 3 | e 23 36 | [−17] | — | — |
| Piacenza | 93·8 | 319 | 23 36 | SKS | (23 36) | [−18] | — | 58·6 |
| Basle | 94·1 | 321 | e 13 13 | − 3 | — | — | — | — |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| **Uccle** | 94·4 | 326 | e 13 12 | − 6 | 24 25 | −12 | e 45·7 | — |
| **Neuchatel** | 94·7 | 321 | e 13 15 | − 4 | e 24 19 | −20 | — | — |
| **Paris** | 96·4 | 324 | e 13 23 | − 4 | 23 54 | [−14] | 40·7 | 58·7 |
| **Oxford** | 96·9 | 328 | — | — | i 23 53 | [−17] | e 46·9 | 63·0 |
| **Tinemaha** | 104·9 | 46 | — | — | e 30 2 | ? | — | — |
| **Toledo** | 105·2 | 319 | e 13 19 | ? | — | — | — | — |
| **Granada** | 106·3 | 317 | 18 14 | [+ 8] | 28 45 | ? | — | — |
| **Pasadena** | 106·4 | 47 | e 17 19 | [−47] | e 29 53 | ? | — | — |
| **Riverside** | 107·1 | 47 | — | — | e 29 49 | ? | — | — |
| **San Fernando** | 108·5 | 318 | 18 12 | [− 1] | 28 2 | PS | — | — |
| **Ottawa** | 118·7 | 14 | e 20 2 | PP | e 29 44? | PS | e 49·7 | — |
| **Huancayo** | 164·7 | 84 | — | — | e 45 9 | SS | e 83·7 | — |
| **La Paz** | 171·6 | 107 | e 20 43 | [+39] | — | — | 83·7 | 92·6 |

**Additional readings and note :—**
**Zi-ka-wei** iZ = +4m.26s.
**Medan** readings have been *increased* by 1m.
**Kobe** iZ = +5m.32s., iN = +5m.34s., +5m.48s. =PP+5s., +6m.18s., and +6m.59s., iEZ = +7m.1s., eZ = +10m.16s.
**Chiufeng** PP?N = +5m.58s., $P_cP$ = +9m.0s., SSEN = +10m.56s.
**Calcutta** SS = +12m.52s.
**Agra** eN = +9m.51s. =$P_cP$+5s.
**Bombay** PP = +9m.59s., SS = +17m.55s.
**Adelaide** e = +7m.55s.
**Riverview** iN = +18m.1s.
**Melbourne** i = +21m.9s. =SS−10s.
**Tiflis** ePPZ = +13m.48s., eSKKSE = +21m.13s. =$S_cS$+9s., eSSE = +24m.45s., eE = +29m.44s.
**Kucino** SSS = +29m.8s.
**Ksara** epP = +12m.28s., e = +16m.31s. =PPP+9s., esS = +22m.31s., eSS = +27m.9s.
**Tananarive** eSN = +21m.48s., eE = +21m.52s., PSEN = +22m.4s., SSN = +25m.53s.
**Helsingfors** ePSN = +22m.20s., e?N = +32m.56s. ; $T_0$ =12h.9m.13s.
**Vienna** PP = +16m.18s.
**Prague** e = +46m.20s.
**Zagreb** ePP = +16m.27s., e = +18m.44s.?, +23m.38s., and +23m.55s. =S+5s.
**Cheb** e = +22m.44s.?
**Triest** iN = +16m.24s., iPPE = +16m.39s., iN = +23m.48s., iSKKSE = +23m.50s. =SKS−5s., iE = +25m.15s. and +25m.35s. =PS−2s.
**Stuttgart** ePP = +16m.49s., e = +17m.20s., eSKS = +23m.23s., ePS = +25m.13s.
**De Bilt** PPZ = +17m.5s., eZ = +25m.26s. =PS−5s.
**Strasbourg** epP = +13m.45s., iPP = +17m.0s., ipPP = +17m.34s., iSKS = +23m.39s., iPS = +25m.24s., e = +27m.44s., eSS = +30m.39s., eSSSS = +38m.6s.
**Zurich** ePP = +17m.1s.
**Basle** e = +16m.53s. =PP−5s.
**Uccle** iPP = +17m.6s., iSKSE = +23m.42s., SS = +30m.53s.
**Neuchatel** e = +23m.26s.
**Paris** PP = +17m.22s.
**Granada** PP = +18m.44s.
**San Fernando** PP = +22m.39s. =PPPP+2s.
**Ottawa** e = +36m.2s. =SS−13s., eE = +41m.44s.
**Huancayo** e = +40m.36s. and +52m.44s. ; $T_0$ =12h.9m.24s.
**La Paz** PP = +25m.29s.
**Long waves** were also recorded at **Durham, Edinburgh, Stonyhurst, Kew, Göttingen, San Juan, and Philadelphia.**

**Nov. 26d. Readings also at 0h. (New Plymouth and Wellington), 3h. (Balboa Heights, Mizusawa (2), Nagoya, and Tyosi), 4h. (Samarkand), 6h. (Mount Wilson, Pasadena, Riverside, and Tinemaha), 8h. (Tananarive), 10h. (Berkeley, Nagoya, and Tyosi), 14h. (Sverdlovsk and Tashkent), 19h. (Apia and Paris), 21h. (Melbourne), 22h. (Berkeley).**

Nov. 27d. 1h. Readings for which no determination has been made :—

Manila iP = 15m.37s.a.
Hong Kong P = 17m.42s., S = 19m.50s., L = 20m.37s., M = 23m.0s.
Nagoya e = 19m.49s.
Chiufeng P = 20m.19s.a, S = 25m.0s.
Frunse eP = 24m.0s.
Andijan eP = 24m.1s.
Samarkand eP = 24m.17s.
Tashkent P = 24m.26s., S = 32m.8s., eL = 38m.6s., M = 46m.30s.
Sverdlovsk iP = 25m.4s., S = 33m.42s., L = 45m., M = 50m.48s.
Tiflis PZ = 26m.5s., eSE = 35m.37s., eSSE = 40m.33s., eLE = 57m.30s., ME = 64m.30s.
Baku e = 26m.56s., e = 36m.50s., L = 51m.48s., M = 53m.36s.
Mizusawa eP = 28m.57s., iS = 29m.15s.
Bombay e = 30m.
Tyosi eP = 33m.49s., S = 34m.3s.
Long waves at De Bilt, Paris, Pulkovo, Strasbourg, Stuttgart, and Uccle.

Nov. 27d. 5h. 50m. 0s. Epicentre 35°·6N. 140°·8E. (as on 1934 July 20d.). R.3.

Given by Nagoya.

A = −·630, B = +·514, C = +·582 ; D = +·632, E = +·775 ;
G = −·451, H = +·368, K = −·813.

| | △ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Tyosi | 0·2 | 17 | i 0 5 | + 2 | 0 10 | + 5 | 0·3 |
| Tokyo | 0·9 | 276 | 0 12 | − 1 | 0 23 | 0 | 0·5 |
| Nagoya | 3·2 | 262 | 0 41 | − 5 | 1 46 | $S_g$ | 1·8 |
| Mizusawa | 3·5 | 4 | e 0 52 | + 2 | i 1 34 | + 4 | — |
| Kobe | 4·7 | 260 | e 1 5 | − 2 | e 2 14 | S* | 2·7 |
| Toyooka | 4·8 | 271 | 1 9 | + 1 | 2 28 | $S_g$ | 2·7 |
| Sumoto | 5·0 | 257 | e 1 3 | − 8 | 2 25 | S* | 2·9 |
| Koti | 6·3 | 256 | e 2 0? | $P_g$ | — | — | — |
| Nagasaki | 9·5 | 256 | — | — | e 3 57 | − 4 | — |
| Vladivostok | 10·1 | 320 | e 2 15 | − 7 | — | — | — |
| Berkeley | 73·8 | 55 | — | — | i 22 37 | +91 | — |
| Tinemaha | 76·8 | 53 | e 11 47 | − 3 | — | — | — |
| Haiwee | 77·5 | 54 | e 11 52 | − 3 | — | — | — |
| Mount Wilson | 78·6 | 56 | e 11 59 | − 1 | — | — | — |
| Pasadena | 78·6 | 56 | e 11 58 | − 2 | — | — | — |
| Riverside | 79·2 | 56 | e 12 8 | + 4 | — | — | — |

Additional readings :—
Nagoya $P_g$ = +55s.
Kobe ePN = +1m.9s., iZ = +1m.15s., iE = +1m.17s. = P* +0s., eSZ = +2m.17s. = S* −1s.
Sumoto ePE = +1m.7s., ePZ = +1m.10s., SZ = +2m.28s.
Berkeley iE = +28m.37s. = SSS −5s.
Pasadena eZ = +11m.48s.
Long waves were recorded at Hong Kong and Tashkent.

Nov. 27d. 6h. 14m. 16s. Epicentre 2°·3N. 127°·2E. (as on 1931 Nov. 17d.). R.1.

A = −·604, B = +·796, C = +·040 ; D = +·797, E = +·605 ;
G = −·024, H = +·032, K = −·999.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Amboina | 6·0 | 170 | i 1 25 | 0 | i 2 34 | + 1 | — | — |
| Palau | 8·8 | 55 | 2 12 | + 7 | 3 43 | − 1 | — | — |
| Manila | 13·8 | 334 | i 3 18a | + 5 | i 5 59 | SS | 7·2 | — |
| Takao | 21·4 | 342 | e 4 51 | + 7 | 7 45 | ? | — | — |
| Tainan | 21·8 | 342 | e 4 55 | + 6 | 5 14 | PP | — | — |
| Malabar | 21·8 | 244 | i 4 57 | + 8 | i 8 50 | + 8 | — | — |
| Batavia | 22·0 | 246 | i 4 51 | 0 | i 8 54 | + 8 | — | — |
| Arisan | 22·1 | 344 | 4 53 | + 1 | 6 20 | ? | — | — |
| Isigakizima | 22·2 | 353 | 4 56 | + 3 | 8 55 | + 5 | — | — |
| Karenko | 22·4 | 347 | 4 54 | − 1 | 5 28 | ? | — | — |

*Continued on next page.*

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Hokoto | 22·5 | 341 | 5 3 | + 7 | 5 31 | ? | — | — |
| Soengei Langka | 23·3 | 251 | 4 40 | −24 | — | — | — | — |
| Taihoku | 23·4 | 347 | 5 8 | + 3 | 9 16 | + 4 | — | — |
| Hong Kong | 23·7 | 329 | 5 9 | + 2 | 9 15 | − 3 | — | — |
| Naha | 24·0 | 2 | 5 14 | + 4 | 9 27 | + 4 | — | — |
| Phu-Lien | 27·3 | 314 | e 5 43 | + 2 | e 10 17 | − 3 | 11·7 | — |
| Medan | 28·5 | 273 | i 5 58 | + 6 | i 10 43 | + 3 | — | — |
| Titizima | 28·6 | 29 | 5 53 | 0 | 10 34 | − 8 | — | — |
| Zi-ka-wei | 29·6 | 350 | e 6 2 | + 1 | 10 55 | + 3 | — | 14·9 |
| Miyazaki | 29·9 | 7 | 6 6 | + 2 | 10 48 | −15 | — | — |
| Nagasaki | 30·5 | 5 | i 6 10 | + 1 | e 11 2 | −10 | — | — |
| Kumamoto | 30·7 | 6 | 6 11 | 0 | 11 11 | − 5 | — | — |
| Hukuoka B | 31·4 | 6 | 6 18 | + 1 | — | — | e 14·2 | — |
| Koti | 31·8 | 10 | i 6 22 | + 1 | 11 44? | +12 | 13·2 | — |
| Matuyama | 31·9 | 9 | 6 24 | + 2 | 11 33 | − 1 | — | — |
| Siomisaki | 32·2 | 14 | 6 23 | − 1 | 11 32 | − 6 | — | — |
| Sumoto | 32·8 | 13 | i 6 27 | − 3 | e 11 40 | − 8 | e 14·0 | — |
| Wakayama | 32·8 | 12 | 6 30 | 0 | 11 43 | − 5 | — | — |
| Husan | 32·8 | 3 | i 6 31 | + 1 | 11 43 | − 5 | 15·8 | — |
| Kobe | 33·2 | 13 | i 6 35 | + 1 | e 11 50 | − 4 | e 16·0 | 16·7 |
| Taikyu | 33·6 | 2 | 6 37 | 0 | 11 58 | − 2 | — | — |
| Toyooka | 34·0 | 11 | 6 42 | + 2 | 12 0 | − 6 | 13·4 | — |
| Nagoya | 34·1 | 15 | i 6 39 | − 2 | 12 3 | − 5 | — | 12·2 |
| Hunatu | 34·9 | 17 | 6 47 | − 1 | 12 10 | −10 | — | — |
| Zinsen | 35·2 | 0 | i 6 51 | 0 | e 12 19 | − 5 | e 16·2 | — |
| Tokyo | 35·3 | 19 | 6 55 | + 3 | — | — | — | — |
| Keizyo | 35·3 | 0 | i 6 52 | 0 | i 12 22 | − 4 | 16·2 | — |
| Toyama | 35·6 | 14 | 6 55 | + 1 | 12 27 | − 3 | — | — |
| Oiwake | 35·7 | 15 | 6 53 | − 2 | 12 24 | − 8 | — | — |
| Tyosi | 35·8 | 19 | e 6 57 | + 1 | — | — | — | — |
| Nagano | 35·8 | 15 | 6 57 | + 1 | 12 28 | − 5 | — | — |
| Perth | 35·9 | 197 | 6 58 | + 1 | 12 15 | −20 | 15·2 | 15·4 |
| Kakioka | 36·0 | 18 | 6 51 | − 7 | 12 23 | −13 | — | — |
| Heizyo | 36·8 | 358 | 7 4 | − 1 | e 12 47 | − 1 | — | — |
| Hukusima | 37·5 | 19 | 7 10 | − 1 | 12 54 | − 5 | — | — |
| Sendai | 38·1 | 19 | 7 15 | − 1 | 13 4 | − 4 | — | — |
| Adelaide | 38·8 | 166 | i 7 12 | −10 | i 12 59 | −19 | i 16·0 | 18·4 |
| Mizusawa | 39·0 | 19 | e 7 24 | 0 | i 13 17 | − 4 | — | — |
| Chiufeng | 39·1 | 347 | i 7 25k | + 1 | 11 59 | ? | 12·9 | 22·1 |
| Morioka | 39·6 | 17 | 7 28 | − 1 | 13 30 | 0 | — | — |
| Vladivostok | 41·0 | 6 | i 7 41 | + 1 | i 13 43 | − 8 | 15·7 | 34·0 |
| Riverview | 42·6 | 150 | 7 45 | − 8 | i 14 1 | −14 | e 22·9 | 25·7 |
| Sydney | 42·6 | 150 | e 7 44 | − 9 | i 14 9 | − 6 | 22·0 | 22·3 |
| Sapporo | 42·7 | 14 | 7 57 | + 3 | 14 15 | − 1 | — | — |
| Calcutta | 42·7 | 303 | 7 56 | + 2 | 14 21 | + 5 | e 20·2 | — |
| Melbourne | 43·3 | 160 | i 7 54 | − 5 | 14 15 | −10 | 21·8 | 26·4 |
| Colombo | 47·4 | 278 | 8 33 | + 1 | 16 21 | ? | 26·4 | 31·7 |
| Kodaikanal | 50·0 | 282 | 8 47 | − 4 | i 15 48 | −13 | 23·6 | 29·2 |
| Hyderabad | 50·2 | 291 | 8 56 | + 3 | 16 28 | +24 | 24·9 | 35·2 |
| Agra | 53·1 | 304 | i 9 13 | − 2 | i 16 39 | − 4 | — | — |
| Dehra Dun | 54·3 | 308 | 16 54 | S | (16 54) | − 5 | — | — |
| Bombay | 55·7 | 292 | 9 28 | − 6 | i 17 16 | − 3 | 26·5 | 32·8 |
| Arapuni | 60·2 | 137 | — | — | e 18 44 | +25 | 26·7 | — |
| Wellington | 61·3 | 141 | 10 4 | −10 | 18 14 | −19 | 26·7 | 33·7 |
| Frunse | 61·9 | 320 | e 10 26 | + 8 | 18 44 | + 3 | — | — |
| Semipalatinsk | 62·3 | 334 | e 10 23 | + 3 | e 18 43 | − 3 | — | — |
| Andijan | 62·4 | 316 | 10 19 | − 2 | 19 42 | +55 | — | — |
| Tashkent | 64·8 | 316 | i 10 34 | − 3 | i 19 13 | − 4 | 35·9 | — |
| Samarkand | 65·9 | 315 | 10 24 | −21 | 19 26 | − 5 | — | — |
| Honolulu | 75·2 | 69 | i 11 40 | − 1 | i 21 18 | − 4 | 33·7 | — |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Baku | 78·9 | 312 | i 12 4 | + 2 | i 21 58 | − 6 | 36·5 | 44·1 |
| Tananarive | 81·0 | 251 | e 12 8 | − 5 | e 22 10 | −16 | e 40·5 | — |
| Grozny | 82·2 | 313 | 12 19 | 0 | 22 27 | −12 | — | — |
| Tiflis | 82·8 | 312 | 12 19 | − 3 | 22 33 | −12 | e 40·7 | 63·0 |
| Erevan | 82·9 | 310 | 12 22 | − 1 | 22 36 | −10 | — | — |
| Theodosia | 89·6 | 316 | e 13 28 | +32 | e 23 15 | [−15] | — | — |
| Ksara | 89·8 | 305 | e 12 56 | 0 | 23 47 | − 7 | — | — |
| Yalta | 90·5 | 316 | e 13 30 | +30 | e 23 21 | [−15] | — | — |
| Simferopol | 90·6 | 316 | e 13 30 | +30 | e 23 21 | [−15] | — | — |
| Sebastopol | 91·0 | 315 | — | — | e 23 26 | [−13] | — | — |
| Pulkovo | 91·5 | 330 | 13 0 | − 4 | 23 54 | [+13] | 42·7 | 51·4 |
| Sitka | 92·1 | 33 | — | — | i 24 2 | −14 | e 36·7 | — |
| Helwan | 93·9 | 300 | e 13 16 | + 1 | 23 38 | [−17] | — | — |
| Helsingfors | 94·0 | 331 | — | — | e 23 35 | [−20] | e 42·7 | — |
| Budapest | 100·4 | 320 | 17 44? | PP | e 24 14 | [−14] | e 52·7 | — |
| Victoria | 101·0 | 40 | — | — | 24 23 | [− 8] | 42·7 | 50·1 |
| Copenhagen | 101·7 | 330 | 18 38 | ? | 24 22 | [−12] | 45·7 | — |
| Vienna | 101·9 | 320 | e 13 45 | − 7 | i 24 24 | [−11] | — | — |
| Prague | 102·6 | 323 | e 18 9 | PP | i 24 28 | [−10] | e 51·7 | 56·7 |
| Zagreb | 102·9 | 319 | e 18 17 | PP | e 24 25 | [−15] | — | — |
| Leipzig | 103·3 | 325 | — | — | e 24 26 | [−16] | e 50·7 | — |
| Ukiah | 103·6 | 49 | — | — | e 24 30 | [−13] | e 42·9 | — |
| Cheb | 103·8 | 322 | e 17 44 | ? | i 24 30 | [−14] | e 49·7 | 60·7 |
| Hamburg | 103·8 | 327 | i 18 18a | PP | i 24 33 | [−11] | e 53·7 | — |
| Jena | 103·9 | 323 | e 18 14 | PP | — | — | — | — |
| Triest | 104·4 | 319 | e 13 51 | −13 | i 25 41 | −24 | e 49·7 | 54·6 |
| Padova | 105·9 | 319 | e 16 47 | ? | 18 35 | PP | — | — |
| Stuttgart | 106·2 | 324 | e 14 24 | +12 | 24 38 | [−18] | e 50·7 | 65·7 |
| Cape Town | 106·7 | 236 | 17 40 | ? | 24 47 | [−11] | 33·7 | 53·9 |
| Florence | 106·7 | 318 | 18 8 | [+ 1] | 24 42 | [−16] | — | 55·7 |
| Prato | 106·8 | 318 | e 18 4 | [− 3] | i 24 40 | [−18] | — | — |
| De Bilt | 107·1 | 326 | e 18 43 | PP | e 24 47 | [−13] | e 50·7 | 56·7 |
| Strasbourg | 107·2 | 323 | e 17 9 | [−60] | 24 45 | [−15] | e 38·7 | — |
| Piacenza | 107·3 | 320 | 18 44 | PP | i 24 44 | [−17] | — | 70·6 |
| Basle | 107·7 | 322 | e 18 30 | PP | — | — | — | — |
| Tinemaha | 107·9 | 51 | e 14 15 | − 6 | — | — | — | — |
| Uccle | 108·2 | 325 | e 18 26 | [+14] | i 26 21 | {+27} | 48·7 | — |
| Neuchatel | 108·3 | 320 | e 17 45 | ? | — | — | — | — |
| Haiwee | 108·4 | 50 | i 18 22 | [+ 9] | — | — | — | — |
| Pasadena | 108·9 | 51 | i 14 20 | − 6 | — | — | e 50·7 | — |
| Mount Wilson | 108·9 | 52 | e 14 21 | − 5 | — | — | — | — |
| Edinburgh | 109·2 | 333 | — | — | e 28 54 | PS | e 52·7 | — |
| Riverside | 109·5 | 53 | e 14 21 | − 8 | — | — | — | — |
| Bozeman | 109·8 | 39 | — | — | e 25 50 | {−15} | — | — |
| La Jolla | 109·9 | 54 | e 18 29 | [+12] | — | — | — | — |
| Stonyhurst | 110·0 | 331 | — | — | i 25 1 | [−12] | 54·7 | 63·1 |
| Paris | 110·1 | 324 | e 19 5 | PP | e 29 2 | ? | 46·7 | 62·7 |
| Kew | 110·3 | 329 | — | — | e 25 0 | [−15] | e 48·7 | 60·0 |
| Oxford | 110·7 | 329 | e 19 34 | PP | e 24 53 | [−24] | e 48·7 | 60·2 |
| Tucson | 115·2 | 53 | e 19 47 | PP | e 26 34 | {−10} | — | — |
| Ivigtut | 116·4 | 358 | — | — | e 25 22 | [−17] | 51·7 | — |
| Alicante | 117·0 | 315 | e 19 52 | PP | — | — | e 57·6 | — |
| Toledo | 118·7 | 319 | e 19 14 | [+32] | 25 34 | [−12] | — | — |
| Almeria | 119·0 | 316 | e 20 11 | PP | — | — | — | — |
| Granada | 119·7 | 315 | i 20 12 | PP | 25 36 | [−13] | 62·5 | — |
| San Fernando | 121·9 | 314 | 21 1 | ? | 36 8 | ? | 65·7 | — |
| Florissant | 126·3 | 36 | e 18 59 | [− 1] | i 25 53 | [−16] | — | — |
| St. Louis | 126·5 | 37 | e 18 55 | [− 5] | i 25 51 | [−18] | e 63·7 | — |
| Little Rock | 127·6 | 40 | e 18 54 | [− 8] | e 21 59 | ? | e 64·7 | — |
| Ottawa | 128·2 | 19 | e 21 8 | PP | e 26 0 | [−14] | e 53·7 | — |

*Continued on next page.*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Toronto | | 128·2 | 24 | — | — | i 25 55 | [−19] | — | — |
| Oak Ridge | | 132·1 | 18 | i 19 8 | [− 2] | i 26 12 | [−13] | 55·7 | — |
| Philadelphia | | 133·1 | 22 | e 21 57 | PP | e 28 15 | {−26} | e 55·2 | — |
| Georgetown | | 133·1 | 26 | e 19 10 | [− 2] | i 26 12 | [−16] | e 66·7 | — |
| La Plata | N. | 147·1 | 172 | 19 41 | [+ 4] | 29 38 | {−28} | 68·7 | 73·4 |
| Balboa Heights | | 150·9 | 68 | 19 44? | [+ 1] | — | — | — | — |
| San Juan | | 155·5 | 32 | — | — | e 35 44 | ? | — | — |
| Huancayo | | 155·6 | 116 | e 19 54 | [+ 5] | — | — | e 63·7 | — |
| La Paz | | 159·3 | 134 | i 19 54a | [+ 1] | i 30 41 | {−34} | 76·7 | 83·4 |
| Sucre | | 159·3 | 145 | 20 38 | {− 3} | 31 31 | {+16} | — | — |

Additional readings :—
Amboina $S_cS$ = +15m.17s.
Malabar i = +16m.0s. = $S_cS$ +1s.
Batavia P = +4m.56s., iN = +6m.5s.
Hong Kong PP = +5m.28s., ? = +10m.16s.
Medan i = +7m.15s.
Zi-ka-wei iZ = +6m.24s. and +6m.40s., iN = +6m.46s. = PP − 6s., iZ = +11m.20s.
Sumoto eZ = +11m.56s., iE = +16m.49s.
Kobe iE = +7m.43s., iN = +7m.58s., eZ = +8m.30s., iE = +8m.34s., eZ = +9m.8s. = $P_cP$ −12s. and +9m.49s., eSZ = +12m.14s., eSN = +12m.25s., iZ = +16m.53s., iEN = +16m.55s. = $S_cS$ − 7s., eN = +18m.7s., eE = +20m.5s.
Taikyu i = +16m.58s. = $S_cS$ − 6s.
Zinsen ePPZ = +8m.24s.
Perth PP = +8m.16s., PPP = +8m.24s., $P_cS$ = +13m.5s., SS = +14m.25s., SSS = +14m.39s., SSSS = +15m.4s.
Adelaide iPP = +8m.31s., i = +9m.34s. = $P_cP$ −4s. and +13m.39s.
Chiufeng iEN = +7m.45s., PP = +7m.58s., PPP = +8m.27s.
Riverview iENZ = +7m.48s. and +9m.26s. = PP − 1s., iE = +17m.10s. = SS + 5s.
Sydney SS = +17m.34s.
Calcutta SSS = +17m.51s.
Melbourne PP = +9m.32s., i = +14m.40s. and +14m.54s., SS = +16m.58s.
Kodaikanal PP = +10m.30s., iPPP = +11m.14s., iSS = +18m.35s. = $S_cS$ − 10s., iSSS = +20m.6s.
Agra ePN = +9m.6s., PP = +11m.13s., PPP = +12m.17s., PS = +17m.17s., SS = +20m.19s., SSS = +22m.7s.
Bombay SS = +21m.18s.
Wellington i = +12m.23s. = PP + 1s. and +19m.44s., SS = +22m.45s.
Tananarive E = +12m.44s., e = +22m.21s., PSEN = +22m.45s.
Tiflis eSSE = +28m.2s., eE = +33m.32s.
Ksara e = +13m.32s., PPP = +18m.30s., e = +25m.12s.
Pulkovo PP = +16m.42s., SKS = +23m.41s., PPS = +25m.32s., SS = +30m.8s.
Sitka iSKS = +23m.29s., e = +24m.34s., iPS = +24m.59s.
Helsingfors e?EN = +24m.30s. = S − 3s., e?E = +28m.57s.
Copenhagen e = +27m.38s., SS = +32m.56s.
Vienna eEN = +18m.4s. = PP + 7s., iE = +27m.51s.
Prague e = +27m.44s.
Zagreb e = +16m.44s.?, +19m.15s., +54m.28s., and +75m.44s.?
Ukiah ePS = +27m.47s., eSS = +32m.50s.
Jena eZ = +18m.18s. = PP + 6s.
Triest e = +18m.17s. = PP + 1s., i = +18m.55s., +20m.39s., +24m.32s. = SKS − 15s., +28m.16s., and +33m.25s.
Stuttgart ePKP = +18m.19s. = PP − 10s., iPP = +18m.37s., eEZ = +18m.56s., eSKKS = +26m.4s., ePSZ = +27m.38s., ePS = +27m.56s., ePPS = +29m.8s., eSSEN = +33m.50s., eSSSEN = +38m.14s. ; $T_0$ = 6h.14m.15s.
Cape Town E = +18m.57s., +25m.17s., and +26m.48s., N = +26m.5s., E = +27m.47s.
De Bilt eE = +28m.35s.
Strasbourg e = +18m.3s. = PKP − 6s., iPP = +18m.44s., i = +19m.19s., iPPP = +20m.16s., i = +21m.0s., iPS = +26m.12s., ePPS = +28m.9s.
Tinemaha ePKPZ = +18m.10s., iPPZ = +18m.46s., iPKKPZ = +29m.48s.
Haiwee iPPZ = +18m.48s., ePKKPZ = +29m.46s.
Uccle i = +18m.50s. = PP + 6s. and +24m.50s., iE = +27m.59s. = PS − 11s.
Neuchatel e = +18m.50s. = PP + 5s.
Pasadena iPKPNZ = +18m.24s., iPPZ = +18m.45s., iPKKPZ = +29m.44s., eZ = +35m.3s.
Mount Wilson iPKPZ = +18m.25s.
Riverside iPKPZ = +18m.25s., iPPZ = +18m.55s., ePKKPZ = +29m.26s.
Bozeman eSKS = +24m.53s., ePS = +27m.54s. ; $T_0$ = 6h.14m.7s.
Paris PP = +24m.58s.
Kew ePP = +19m.6s., eSP = +28m.21s.
Tucson e = +27m.24s., ePS = +29m.9s., e = +30m.16s.
Ivigtut +29m.20s. = PS − 9s.

*Continued on next page.*

Toledo i = +20m.2s. = PP + 2s. and +21m.20s.
Granada PPP = +22m.30s., SKKS = +26m.42s.
San Fernando PE = +21m.5s.
Florissant ePP = +20m.51s., iSKKS = +27m.40s., PPS = +32m.24s., iSS = +37m.59s.; $T_0$ = 6h.14m.16s.
St. Louis ePPE = +20m.51s., iSKKSE = +27m.41s., ePPSE = +32m.25s., eSSE = +38m.2s.; $T_0$ = 6h.14m.16s.
Little Rock ePP = +20m.54s., eSKS = +25m.54s., eSS = +38m.3s.
Ottawa e = +27m.44s., +30m.32s., and +37m.44s.?
Toronto ePPN = +21m.7s., i = +27m.52s., eSS = +38m.7s.
Oak Ridge i = +19m.14s., e = +19m.31s., iNW = +21m.30s. = PP − 1s., iSE = +21m.54s., iPPZ = +22m.1s., e = +22m.25s., iSKP = +22m.28s., eZ = +22m.59s., eNW = +23m.4s., ePPPZ = +24m.11s., iSKKSSW = +28m.18s., iPPPPP = +29m.18s., eNE = +31m.12s., eNW = +31m.38s., ePPSNW = +33m.26s., ePPP = +34m.30s., ePPPP = +38m.4s., e = +39m.11s., SPS = +40m.40s., ePPSS = +41m.0s., ePPPPP = +41m.52s., eSSS = +44m.2s., e = +45m.52s., ePPSS = +46m.32s.
Philadelphia i = +22m.39s. = PP + 1s., e = +33m.27s. and +39m.3s. = SS − 15s.
Georgetown iPP = +21m.36s., iSKP = +23m.10s., iSS = +39m.51s.
La Plata PKPE = +19m.36s., EZ = +20m.8s., N = +20m.14s., SSSN = +46m.44s.?
Huancayo i = +20m.39s. = $PKP_2$ + 15s., eSS = +43m.32s., e = +57m.9s.
La Paz $iPKP_2$ = +20m.15s., pPZ = +21m.27s., sPN = +22m.20s., PPZ = +24m.21s., SKSP = +34m.39s., iSSN = +44m.23s., iSSS = +50m.33s.
Sucre ipP = +22m.48s., SS = +46m.6s.
Long waves were also recorded at Durham, Kucino, Sverdlovsk, Scoresby Sund, and Upsala.

Nov. 27d. 15h. 56m. 43s. Epicentre 36°·1N. 140°·0E. (as on 1934 Sept. 17d.). 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 | 0·3 |
| Tyosi | 0·8 | 118 | i 0 10 | − 1 | 0 21 | 0 | 0·6 |
| Nagoya | 2·7 | 249 | 0 37 | − 2 | 1 11 | + 2 | 1·5 |
| Mizusawa | 3·0 | 16 | 0 46 | + 3 | i 1 22 | + 5 | — |
| Kobe | 4·3 | 251 | e 1 11 | P* | e 2 2 | S* | 2·4 |

Nov. 27d. 18h. Readings for which no determination has been made :—
Taranto P = 35m.34s.
Trenta eP = 36m.9s., S? = 36m.43s.
Capodimonte eP = 36m.28s., eS = 37m.12s.
Naples eP = 36m.28s., eS = 37m.12s.
Triest eP = 37m.28s., PPsP = 37m.41s., SSsS = 38m.31s., i = 38m.44s.

Nov. 27d. Readings also at 3h. (Triest), 5h. (Perth), 7h. (Hong Kong, Manila, and San Juan), 14h. (Ksara), 15h. (Grozny, Haiwee, La Jolla, Medan, Mount Wilson, Mizusawa, Pasadena, Riverside, Santa Barbara, and Tinemaha), 19h. (Calcutta and Zagreb), 21h. (Oak Ridge and Siena), 22h. (Riverview and Siena), 23h. (Neuchatel and Zurich).

Nov. 28d. 5h. Readings for which no determination has been made :—
Montezuma iP = 49m.10s., iS = 49m.22s.
Tinemaha ePZ = 49m.44s.
Riverside eZ = 50m.2s.
Haiwee eZ = 50m.2s.
La Paz iP = 50m.12s.a, iS = 50m.56s., iL = 51m.17s., M = 51m.48s.
La Plata PN = +51m.36s., PE = 51m.48s., N = 52m.52s., LE = 55m.36s., M = 58m.21s.
Huancayo e = 54m.0s.

Nov. 28d. 6h. Readings for which no determination has been made :—
La Jolla iPZ = 0m.0s., eZ = 0m.26s.
Riverside iPZ = 0m.4s., iZ = 0m.27s.
Mount Wilson iPZ = 0m.8s.
Pasadena iPZ = 0m.9s., iZ = 0m.31s.
Haiwee ePZ = 0m.15s., eZ = 0m.38s.
Tinemaha iPZ = 0m.19s., iENZ = 0m.43s.

Nov. 28d. 18h. 32m. 47s. Epicentre 35°·6N. 140°·8E. (as on 1934 July 20d.). X.
Tokyo gives 35°·9N. 140°·8E.

A = −·630, B = +·514, C = +·582.

| | Δ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Tyosi | 0·2 | 17 | i 0 2 | − 1 | 0 6 | + 1 | 0·1 |
| Tokyo | 0·9 | 276 | 0 13 | 0 | 0 30 | + 7 | 0·6 |
| Nagoya | 3·2 | 262 | 0 48 | + 2 | 1 47 | $S_g$ | 2·0 |
| Mizusawa | 3·5 | 4 | e 0 42 | − 8 | e 1 24 | − 6 | — |

Mizusawa eSN = +1m.30s.

Nov. 28d. Readings also at 1h. (Samarkand), 2h. (Andijan, Almata, Frunse, Samarkand, Wellington, and Koti), 3h. (Mizusawa), 6h. (Columbia and Upsala), 8h. (Mizusawa and Tyosi), 9h. (Amboina, Tyosi, and Wellington), 10h. (Wellington), 11h. (Helsingfors, Riverview, and Wellington), 12h. (Mizusawa and Phu-Lien), 13h. (Nagoya and Tyosi), 14h. (Andijan, Nagoya, Manila, and Samarkand), 15h. (La Paz and Tiflis), 16h. (Manila), 17h. (La Paz (2) ), 18h. (Tiflis and Wellington), 19h. (Wellington), 20h. (Wellington).

Nov. 29d. 5h. Readings for which no determination has been made :—
Sitka iP = 13m.45s., iL = 14m.8s.
Tinemaha eZ = 18m.44s., iZ = 19m.41s.
Haiwee eZ = 18m.52s.
Mount Wilson eZ = 19m.6s., iZ = 19m.11s.
Pasadena iZ = 19m.10s.
La Jolla iZ = 19m.24s.
Seattle e = 20m.47s.
Ukiah e = 22m.40s., e = 27m.15s.
Bozeman e = 24m.6s., e = 24m.20s., e = 26m.24s.
Ann Arbor e = 32m.6s., eLN = 33m.6s.
Philadelphia e = 35m.0s.
Long waves at Oak Ridge.

Nov. 29d. 12h. 55m. 2s. Epicentre 34°·0N. 141°·5E. (as on 1933 Oct. 21d.). X.

A = −·649, B = +·516, C = +·559.

| | Δ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Tyosi | 1·8 | 343 | e 0 38 | $P_g$ | 1 3 | ? | 1·5 |
| Nagoya | 4·0 | 288 | 0 57 | 0 | 1 41 | − 1 | 2·5 |
| Mizusawa | 5·1 | 357 | e 1 23 | P* | i 2 26 | S* | — |
| Kobe | 5·3 | 279 | 1 13 | − 2 | e 2 34 | S* | 3·1 |
| Sumoto | 5·5 | 275 | 1 17 | − 1 | e 2 16 | − 4 | 2·5 |
| Toyooka | 5·7 | 288 | 1 27 | + 6 | — | — | — |

Additional readings :—
Tyosi SN = +1m.10s.
Kobe PE = +1m.15s., iE = +1m.27s. = P* − 1s., S?E = +2m.40s. = S* + 4s.
Sumoto eSN = +2m.19s.
Toyooka ePN = +1m.31s. = P* − 3s.

Nov. 29d. 22h. Readings for which no determination has been made :—
Tashkent e = 32m.42s., e = 36m.4s., e = 37m.53s., L = 43m.48s., M = 47m.12s.
Andijan eP = 37m.39s.
Samarkand eP = 38m.34s., e = 44m.49s.
Calcutta e = 39m.24s., e = 41m.22s., M = 44m.42s.
Frunse eP = 39m.31s.
Almata e = 41m.0s.
Kodaikanal e = 46m.0s.
Long waves at Baku, Bombay, and Sverdlovsk.

Nov. 29d. Readings also at 1h. (Nagoya), 9h. (Triest and Zagreb), 10h. (Tananarive), 11h. (Santiago), 13h. (Manila, Mount Wilson, Pasadena, Riverside, and Tinemaha), 17h. (Mineo), 18h. (La Paz and Tyosi), 22h. (Nagoya), 23h. (Amboina and Nagoya).

Nov. 30d. 0h. Readings for which no determination has been made :—

Almata eP =3m.6s.
Andijan eP =3m.30s., eS =11m.54s.
Samarkand P =3m.34s., eS =12m.34s.
Tashkent iS =3m.44s., e =3m.55s., M =4m.0s.
Tchimkent eP =3m.52s.
Sverdlovsk iP =4m.44s., S =14m.17s., L =32m.
Grozny eP =5m.29s.
Erevan eP =5m.31s.
Pasadena iPZ =11m.34s.
Mount Wilson eZ =11m.38s.

Nov. 30d. 2h. 5m. 16s. Epicentre 18°·2N. 105°·8W. N.1.

A = − ·259, B = − ·914, C = + ·312 ; D = − ·962, E = + ·272 ;
G = − ·085, H = − ·301, K = − ·950.

The residuals for stations in Azimuths near 40° negative for △s, up to 40°, and positive for △s over 80°, suggest shallow focus.

| | △ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Tucson | 14·8 | 343 | i 3 24 | − 2 | e 6 14 | + 4 | i 7·4 | — |
| La Jolla | 17·9 | 327 | i 4 5 | 0 | — | — | — | — |
| Riverside | 18·8 | 329 | i 4 17 | + 1 | i 8 6 | ? | — | — |
| Mount Wilson | 19·4 | 328 | i 4 24 | + 1 | i 8 30 | SSSS | — | — |
| Pasadena | 19·4 | 328 | i 4 23k | 0 | i 8 15 | SSS | i 9·4 | — |
| Little Rock | 20·4 | 33 | e 4 31 | − 3 | i 8 14 | 0 | — | 11·1 |
| Santa Barbara | 20·5 | 325 | e 4 35 | 0 | — | — | — | — |
| Haiwee | 21·0 | 331 | i 4 39 | − 1 | i 8 50 | SS | — | — |
| Denver | 21·5 | 2 | e 4 43 | − 2 | e 8 39 | + 3 | i 10·1 | 11·1 |
| Tinemaha | 21·8 | 332 | i 4 49 | 0 | i 8 59 | +17 | — | — |
| Lick | 23·7 | 327 | i 5 9 | + 2 | e 9 29 | +11 | e 11·4 | 13·7 |
| Branner | 24·0 | 327 | e 5 12 | + 2 | e 9 36 | +13 | — | — |
| Berkeley | 24·3 | 327 | i 5 16 | + 3 | i 9 44 | +16 | — | — |
| San Francisco | 24·4 | 327 | e 5 18 | + 4 | e 9 36 | + 6 | — | — |
| St. Louis | 24·5 | 30 | e 5 9 | − 6 | i 9 27 | − 5 | e 11·2 | 12·7 |
| Florissant | 24·6 | 30 | e 5 10 | − 6 | i 9 28 | − 6 | e 11·2 | 12·6 |
| Ukiah | 25·8 | 328 | e 5 30 | + 3 | i 10 8 | +13 | e 12·6 | — |
| Balboa Heights | 27·1 | 106 | e 5 56 | +17 | e 10 44 | +27 | e 18·7 | — |
| Columbia | 27·2 | 50 | i 5 42 | + 2 | e 10 11 | − 7 | e 16·1 | — |
| Bozeman | 27·8 | 352 | i 5 49 | + 4 | e 10 26 | − 2 | e 14·7 | — |
| Chicago | 28·3 | 30 | — | — | e 10 29 | − 8 | e 14·4 | — |
| Ann Arbor | 30·7 | 33 | i 6 14 | + 3 | e 11 8 | − 8 | i 14·0 | 17·0 |
| Charlottesville | 31·0 | 45 | i 6 9 | − 5 | e 11 0 | −20 | e 14·7 | — |
| Pittsburgh | 31·5 | 40 | e 6 18 | 0 | i 11 28 | 0 | 15·6 | — |
| Port au Prince | 31·8 | 84 | i 6 16 | − 5 | i 11 27 | − 5 | e 14·8 | — |
| Seattle | 32·4 | 339 | e 6 28 | + 2 | 11 59 | +18 | 18·8 | — |
| Georgetown | 32·4 | 45 | e 6 19 | − 7 | e 11 40 | − 1 | — | — |
| Victoria | 33·4 | 339 | 6 39 | + 4 | 11 55 | − 2 | 16·7 | 19·5 |
| Toronto | 33·8 | 35 | i 6 36 | − 3 | i 11 55 | − 8 | i 14·2 | 18·6 |
| Saskatoon | 33·9 | 358 | i 5 59 | −40 | e 11 14 | −50 | e 14·7 | — |
| Philadelphia | 34·2 | 44 | i 6 38 | − 4 | i 11 59 | −10 | e 16·5 | — |
| Ithaca | 34·7 | 39 | i 6 14 | −32 | e 11 20 | −57 | — | — |
| Ottawa | 36·9 | 37 | i 7 2 | − 4 | i 12 44 | − 6 | e 17·7 | — |
| San Juan | 37·6 | 82 | i 7 14 | + 2 | i 12 53 | − 7 | e 16·0 | — |
| Weston | 37·9 | 43 | i 7 11 | − 3 | i 13 14 | + 9 | — | — |
| Oak Ridge | 37·9 | 42 | i 7 7 | − 7 | i 12 54 | −11 | e 17·2 | 20·7 |
| Huancayo | 42·7 | 132 | i 7 59 | + 5 | i 14 14 | − 2 | e 17·4 | — |
| Halifax | 43·9 | 43 | e 8 1 | − 3 | e 14 33 | − 1 | e 21·7 | — |
| Sitka | 44·6 | 339 | i 8 12 | + 2 | i 14 51 | + 7 | e 21·0 | — |
| Honolulu | 49·2 | 283 | — | — | i 16 11 | +21 | 20·7 | — |

*Continued on next page.*

| | | △ ° | Az. ° | P. m. s. | O−C. s. | S. m. s. | O−C. s. | L. m. | M. m. |
|---|---|---|---|---|---|---|---|---|---|
| La Paz | | 50·8 | 131 | i 8 57a | 0 | i 16 15 | + 3 | 23·6 | 27·7 |
| Sucre | | 54·5 | 130 | i 9 19 | − 6 | i 17 4 | + 2 | 25·6 | — |
| Ivigtut | | 58·7 | 29 | 9 55 | 0 | 17 55 | − 4 | 26·7 | — |
| Santiago | | 61·7 | 147 | 10 24 | + 8 | 18 45 | PS | — | — |
| La Plata | E. | 69·9 | 140 | 11 7 | − 3 | i 20 18 | − 2 | 33·5 | 35·0 |
| | N. | 69·9 | 140 | 11 10 | 0 | 20 21 | + 1 | 34·3 | 36·2 |
| Scoresby Sund | | 70·9 | 22 | i 11 6 | 0 | i 20 26 | − 6 | 29·7 | — |
| Apia | | 72·5 | 248 | e 19 35 | ? | i 26 41 | ? | 34·7 | 37·7 |
| Edinburgh | | 82·5 | 34 | i 12 21 | 0 | i 22 38 | − 4 | 38·7 | 50·0 |
| Stonyhurst | | 83·0 | 35 | i 12 27 | + 4 | i 22 45 | [+ 1] | 35·7 | 47·4 |
| Durham | | 83·2 | 35 | 12 29 | + 5 | 22 45 | [ 0] | — | 41·7 |
| Serra do Pilar | | 83·4 | 48 | 12 29 | + 4 | 22 53 | + 2 | 41·6 | — |
| Bergen | | 84·2 | 28 | (12 7) | −22 | (i 22 51) | [− 1] | (39·1) | — |
| Oxford | | 84·4 | 37 | i 12 33 | + 3 | i 22 52 | [− 2] | — | 48·5 |
| Kew | | 85·1 | 37 | i 12 37 | + 3 | i 23 1 | [+ 1] | e 34·7 | 42·4 |
| San Fernando | | 86·7 | 53 | 12 47 | + 5 | 23 10 | [− 1] | 40·7 | — |
| Toledo | | 87·1 | 50 | e 12 44 | 0 | 23 28 | 0 | 36·2 | 45·6 |
| Paris | | 87·9 | 39 | i 12 51 | + 4 | 23 15 | [− 4] | 37·7 | 43·7 |
| De Bilt | | 88·0 | 35 | i 12 50 | + 2 | e 23 18 | [− 2] | e 37·7 | 43·7 |
| Malaga | | 88·0 | 51 | 12 54 | + 6 | 23 37 | 0 | 41·7 | — |
| Uccle | | 88·1 | 38 | e 12 48a | 0 | i 23 19 | [− 2] | 35·7 | 44·6 |
| Granada | | 88·4 | 51 | i 12 52 | + 2 | i 23 25 | [+ 2] | 40·7 | 49·4 |
| Almeria | | 89·4 | 51 | e 12 57 | + 2 | e 23 47 | − 3 | e 42·2 | — |
| Upsala | | 89·6 | 25 | — | — | e 23 21 | [− 9] | 36·7 | 45·5 |
| Copenhagen | | 89·7 | 30 | 13 0 | + 4 | 23 58 | + 5 | 42·7 | — |
| Hamburg | | 89·7 | 33 | e 12 56k | 0 | e 23 26 | [− 5] | e 38·7 | 47·7 |
| Alicante | | 90·2 | 50 | i 13 0 | + 2 | i 23 55 | − 3 | e 42·7 | 47·1 |
| Besançon | | 90·6 | 39 | e 16 0 | PP | — | — | e 42·7 | — |
| Göttingen | | 90·6 | 35 | i 13 3 | + 3 | i 23 34 | [− 2] | e 38·7 | 48·7 |
| Barcelona | | 90·8 | 45 | e 12 43 | −18 | 23 58 | − 6 | e 38·3 | 47·4 |
| Strasbourg | | 91·0 | 37 | i 13 3k | + 1 | i 24 5 | 0 | e 39·7 | 45·6 |
| Karlsruhe | | 91·2 | 37 | 13 8 | + 5 | 23 44 | [+ 4] | e 40·7 | — |
| Neuchatel | | 91·3 | 39 | e 13 3 | 0 | e 24 8 | 0 | — | — |
| Basle | | 91·4 | 38 | e 13 4 | 0 | e 24 18 | + 9 | — | — |
| Stuttgart | | 91·7 | 38 | e 13 6 | + 1 | e 24 8 | − 4 | e 40·7 | 46·7 |
| Jena | | 92·0 | 35 | e 12 52 | −15 | e 24 1 | −14 | e 45·7 | 48·0 |
| Marseilles | | 92·1 | 43 | e 16 44? | PP | — | — | 39·7 | — |
| Zurich | | 92·1 | 39 | e 13 7 | 0 | — | — | — | — |
| Leipzig | | 92·2 | 34 | e 16 44 | PP | e 23 38 | [− 8] | e 37·7 | 46·7 |
| Helsingfors | | 92·2 | 23 | i 13 10 | + 2 | e 24 12 | − 5 | 40·3 | — |
| Arapuni | | 92·5 | 231 | — | — | 23 17 | [−30] | 43·0 | — |
| Cheb | | 92·8 | 34 | e 13 13 | + 3 | e 23 42 | [− 7] | e 39·7 | 47·7 |
| Algiers | | 93·4 | 49 | e 13 10 | − 3 | e 24 21 | − 7 | e 42·7 | — |
| Piacenza | | 93·9 | 40 | 13 44 | +29 | i 24 0 | {− 6} | 40·7 | — |
| Prague | | 93·9 | 34 | e 17 4 | PP | e 24 10 | {+ 4} | e 40·7 | 52·7 |
| Wellington | | 94·2 | 228 | 13 24 | + 7 | 24 4 | {− 4} | 43·4 | — |
| Pulkovo | | 94·3 | 20 | e 13 8 | − 9 | e 23 52 | [− 5] | 37·7 | 48·2 |
| Padova | | 95·0 | 38 | i 13 23 | + 3 | i 24 5 | [+ 4] | — | — |
| Treviso | | 95·1 | 38 | i 13 26 | + 5 | i 24 5 | [+ 3] | 45·1 | — |
| Prato | | 95·4 | 40 | e 13 21 | − 1 | 24 0 | [− 2] | 46·2 | — |
| Venice | | 95·4 | 38 | 12 44? | −38 | — | — | — | — |
| Florence | | 95·5 | 41 | 13 25 | + 2 | 24 14 | {− 4} | 44·7 | — |
| Siena | | 95·8 | 41 | 13 54 | +30 | — | — | — | — |
| Triest | | 96·0 | 38 | i 13 28 | + 3 | i 24 2 | [− 4] | i 43·7 | 47·5 |
| Vienna | | 96·0 | 36 | i 13 26 | + 1 | 23 59 | [− 7] | e 45·0 | — |
| Graz | | 96·2 | 37 | i 13 54 | +28 | e 24 35 | {+12} | e 29·7 | 50·8 |
| Zagreb | | 97·2 | 38 | e 13 30 | − 1 | e 24 8 | [− 4] | e 41·6 | — |
| Rome | | 97·3 | 41 | 13 42 | + 9 | — | — | — | — |
| Budapest | | 97·9 | 35 | 13 47 | +13 | 24 13 | [− 3] | e 35·7 | 49·2 |
| Capodimonte | | 98·9 | 42 | e 13 44 | + 6 | e 17 44 | PP | — | |
| Naples | | 99·0 | 41 | e 13 44 | + 5 | e 17 44 | PP | — | — |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Belgrade | 100·2 | 36 | e 13 48 | + 4 | 24 26 | [− 1] | — | 64·3 |
| Taranto | 100·9 | 40 | 17 2 | ? | 24 32 | [+ 2] | — | — |
| Sumoto | 102·0 | 313 | — | — | e 38 34 | ? | — | — |
| Sverdlovsk | 104·2 | 8 | i 14 1 | − 2 | i 24 35 | [−11] | 45·8$_q$ | 60·0 |
| Taikyu | 105·3 | 317 | — | — | 24 52 | [+ 1] | — | — |
| Keizyo | 105·5 | 318 | — | — | e 27 41 | PS | — | 71·4 |
| Husan | 105·6 | 316 | e 27 47 | PS | e 33 18 | SS | — | — |
| Zinsen | 105·6 | 318 | — | — | e 44 53 | ? | e 72·0 | — |
| Nagasaki | 106·4 | 313 | e 18 20 | PP | — | — | — | — |
| Simferopol | 107·1 | 29 | e 17 49 | [−20] | — | — | e 54·2 | — |
| Sebastopol | 107·1 | 29 | e 17 44 | [−25] | — | — | e 52·1 | — |
| Yalta | 107·5 | 28 | e 17 51 | [−19] | — | — | e 52·2 | — |
| Theodosia | 107·7 | 27 | e 18 4 | [− 6] | — | — | e 47·7 | — |
| Chiufeng | 109·8 | 327 | 19 8k | PP | i 28 32 | PS | 38·4 | 77·7 |
| Sydney | 110·5 | 239 | — | — | i 54 32 | ? | 58·3 | 60·7 |
| Riverview | 110·6 | 239 | — | — | e 25 32 | [+16] | e 51·4 | 58·7 |
| Zi-ka-wei | 113·1 | 317 | e 19 44 | PP | 29 15 | PS | 53·2 | 83·5 |
| Grozny | 113·2 | 23 | e 19 11 | PP | — | — | — | — |
| Tiflis | 114·2 | 24 | e 18 53 | [+23] | e 29 7 | PS | e 45·6 | 77·4 |
| Erevan | 115·4 | 24 | e 16 16 | ? | e 29 14 | PS | — | — |
| Melbourne | 116·0 | 236 | i 19 51 | PP | i 25 30 | [− 7] | 53·4 | 67·6 |
| Ksara | 116·5 | 36 | 19 51 | PP | 29 31 | PS | 53·7 | 61·4 |
| Helwan | 116·6 | 41 | 18 6 | [−31] | 29 38 | PS | — | 70·9 |
| Baku | 117·4 | 20 | e 19 58 | PP | 29 51 | PS | — | — |
| Frunse | 119·0 | 0 | e 19 55 | PP | — | — | e 64·0 | — |
| Tchimkent | 119·4 | 3 | e 20 10 | PP | — | — | e 63·7 | — |
| Tashkent | 120·2 | 4 | e 15 8 | P | 25 53 | [+ 2] | e 53·0 | 52·4 |
| Andijan | 120·9 | 2 | e 19 10 | [+22] | — | — | e 56·7 | — |
| Adelaide | 121·0 | 240 | — | — | e 38 58 | ? | 62·1 | 75·6 |
| Samarkand | 121·8 | 7 | e 19 28 | [+38] | — | — | e 61·7 | — |
| Manila | 123·4 | 302 | 15 44? | P | 37 59 | SS | 58·7 | — |
| Hong Kong | 123·7 | 314 | 20 2 | PP | 30 44 | PS | 57·9 | 79·1 |
| Cape Town | 128·2 | 120 | 15 19 | P | 28 18 | {+ 8} | 51·3 | 59·6 |
| Agra | 134·6 | 355 | e 19 21 | [+ 7] | 30 4 | ? | 58·9 | 73·6 |
| Calcutta | 137·0 | 341 | e 19 42 | [+24] | — | — | e 65·2 | 75·5 |
| Perth | 140·1 | 242 | 23 4 | PKS | 41 4 | SS | 69·9 | — |
| Bombay | 142·9 | 2 | e 19 30 | [+ 3] | 22 52 | PP | — | — |
| Malabar | 145·7 | 285 | 19 46 | [+11] | — | — | — | — |
| Batavia | 146·0 | 286 | i 19 39a | [+ 3] | — | — | — | — |
| Medan | 147·4 | 310 | 19 50 | [+12] | — | — | 94·7 | — |
| Kodaikanal | 151·4 | 354 | 19 57 | {− 8} | — | — | e 72·0 | 84·0 |
| Colombo | 154·3 | 347 | 20 4 | {−14} | — | — | 66·7 | 85·4 |
| Tananarive | 154·7 | 96 | 20 29 | {+ 9} | 34 8 | SKSP | e 74·9 | 81·6 |

Additional readings and note :—
Little Rock iP = +4m.37s., iPP = +4m.50s., iSS = +9m.0s. ; $T_o$ = 2h.5m.12s.
Denver eP = +4m.48s., ipP = +4m.50s., iPP = +5m.0s., iN = +5m.29s., isS = +8m.44s. ; $T_o$ = 2h.5m.12s.
Lick eSN = +9m.37s.
Branner iE = +8m.57s. = $P_cP$ +5s., eSN = +9m.40s.
San Francisco eSE = +9m.44s., eN = +9m.53s., and +11m.15s., eE = +12m.40s., eN = +12m.51s. , eE = +14m.20s.
St. Louis iPEN = +5m.14s., iPPE = +5m.33s., iE = +6m.21s., iEN = +9m.17s., iSSEN = +10m.2s., ; $T_o$ = 2h.5m.12s.
Florissant iPP = +5m.34s., iSS = +10m.3s. ; $T_o$ = 2h.5m.12s.
Ukiah i = +5m.36s., ePP = +6m.20s., i = +9m.40s. and +11m.18s.
Chicago iS = +10m.2s.
Ann Arbor ePP = +7m.2s., eSS = +12m.26s. ; $T_o$ = 2h.5m.30s.
Charlottesville i = +6m.58s., iPP = +7m.0s., e = +10m.32s., eSS = +13m.24s.
Pittsburgh e = +7m.8s., i = +7m.14s. = PP − 2s. and +13m.34s.
Port au Prince PP = +7m.13s., PPP = +7m.25s., SS = +12m.52s.
Seattle e = +6m.55s., +7m.38s., +8m.7s., +11m.28s., and +17m.14s.
Georgetown iPP = +7m.18s. ; $T_o$ = 2h.4m.35s.
Victoria SE = +11m.1s. ; $T_o$ = 2h.6m.37s.
Toronto iPP = +7m.19s. ; $T_o$ = 2h.5m.20s.
Philadelphia eP = +6m.29s., iPP = +7m.40s., eS = +11m.40s., e = +13m.55s., i = +15m.37s.

*Continued on next page.*

Ithaca iPP = +7m.14s., eSSS = +13m.26s.
Ottawa iPP = +8m.19s., SSS = +15m.16s. =SS +7s.; $T_0$ =2h.5m.18s.
San Juan i = +8m.29s. =PP −4s.
Oak Ridge iZ = +7m.10s., iNW = +7m.14s., iPPNE = +8m.36s., iNE = +9m.38s. =$P_cP$ +3s., +10m.18s., and +11m.22s., eSSS = +15m.24s. = SS −8s., iNW = +15m.26s. and +16m.58s.
Sitka iPP = +10m.0s. =$P_cP$ +3s., iSS = +17m.32s., iSSS = +18m.21s.
La Paz iPP = +10m.35s., PS = +16m.57s., iN = +18m.53s. =$S_cS$ +3s., iSSN = +20m.19s.
Ivigtut eE = +10m.38s., +11m.4s., +13m.18s. =PPP +3s. and +19m.32s.
La Plata N = +12m.38s., E = +13m.8s., PP = +14m.2s., N = +22m.38s., SSE = +24m.20s., SSN = +24m.32s., SSSN = +28m.8s., SSSE = +28m.20s., E = +30m.20s., N = +30m.38s.
Scoresby Sund +20m.57s. =PS +7s.
Apia PP = +21m.38s., PPP = +22m.13s., SS = +30m.33s., SSS = +31m.33s.
Edinburgh i = +12m.37s. and +27m.42s. =SS −12s.
Stonyhurst iPP = +15m.35s., PS = +23m.32s., i = +23m.55s.
Bergen readings have been *increased* by 1m.
Kew i = +12m.39s., e = +13m.55s., eSKS = +22m.58s., eSS = +28m.29s.
San Fernando SE = +23m.15s.
Toledo iP = +12m.47s., PP = +16m.10s., SKS = +24m.13s. =PS −4s.
Paris PP = +17m.24s.
De Bilt iPPZ = +16m.16s., eSSE = +29m.20s.
Malaga P = +13m.10s., PP = +16m.7s. and +16m.18s., SKS = +23m.20s., $S_2$ = +23m.45s., PS = +24m.35s., +24m.48s., SS = +29m.26s.
Uccle i = +12m.51s., iPP = +16m.12s., iSS = +29m.23s., SSS = +32m.45s.
Granada $P_cP$ = +13m.5s., iPP = +16m.25s., iPPP = +18m.37s., PPS = +24m.55s.
Copenhagen +16m.29s. =PP +6s., +23m.29s. =SKS −2s.
Hamburg iPP = +16m.10s., e = +16m.20s.
Strasbourg iPP = +16m.34s., ePPPN = +18m.47s., e = +20m.41s., iSKS = +23m.33s., SS = +29m.59s., eSSSS = +36m.38s.
Neuchatel ePP? = +16m.27s.
Stuttgart iP = +13m.10s., eEZ = +13m.56s., iPP = +16m.40s., e = +18m.14s., eSKSEN = +23m.39s., eSS = +30m.5s., eSSS = +33m.44s.; $T_0$ =2h.5m.14s.
Jena iP = +12m.56s., eZ = +16m.30s. =PP −11s.
Zurich ePP = +16m.47s.
Leipzig e = +25m.14s. =PS −3s.
Helsingfors iPPEZ = +16m.44s., ePPPZ = +19m.12s., eSKSEN = +23m.43s., e?N = +27m.42s., eSSN = +30m.10s.; $T_0$ =2h.5m.17s.
Arapuni PS? = +25m.44s.
Cheb ePP = +16m.52s.
Algiers PP = +16m.44s., SKS = +23m.44s.
Piacenza PP = +17m.8s.
Prague e = +25m.44s. =PS +7s.
Wellington PP = +17m.14s., PS? = +26m.4s.
Pulkovo PPS = +25m.30s., eSS = +29m.50s.
Triest iP$_c$P = +13m.46s., iPP = +17m.19s., i = +24m.37s., iSKKS? = +24m.44s. =S −7s., iS? = +24m.59s., i = +25m.51s., +25m.58s. =PS −4s. and +46m.10s.
Vienna PP = +17m.18s., iN = +25m.5s., PS = +25m.59s.
Graz iPP = +18m.0s.
Zagreb eP = +13m.33s., e = +13m.35s., eNW = +17m.26s. =PP +5s., e = +24m.58s. =S −4s., +31m.22s. =SS −1s., +44m.8s., +46m.25s., +47m.28s. and +48m.52s., eZ = +58m.34s. and +66m.16s.
Belgrade e = +17m.45s. =PP +1s.
Sumoto eE = +38m.45s.
Sverdlovsk PP = +18m.5s., S = +25m.44s., SS = +33m.2s., SSS = +38m.14s., LR = +53m.14s.
Chiufeng $P_cP$ = +19m.45s., PP = +21m.52s., PPP?N = +23m.30s., PPPPEN = +24m.59s., PS = +29m.6s., SKS = +29m.38s., iE = +32m.19s., SSEN = +34m.35s.
Riverview e = +29m.50s.
Zi-ka-wei PSZ = +29m.41s., iZ = +36m.1s.
Tiflis eZ = +19m.23s. =PP −5s. and +21m.10s., eE = +27m.21s., and +35m.13s. =SS +1s.
Melbourne i = +21m.32s., +29m.43s., +36m.28s., and +37m.27s.
Ksara SS = +35m.53s.
Helwan e = +17m.10s., ePP = +19m.37s., iPPP = +25m.43s.
Baku e = +21m.51s., SS = +36m.2s.
Tashkent PKP = +18m.54s., PS = +30m.1s., SS = +36m.14s.
Adelaide i = +52m.31s.
Hong Kong PP? = +24m.4s., SS = +37m.59s., SSS = +42m.14s.
Cape Town SKPE = +21m.14s. =PP +9s., SKPN = +21m.23s., SKSE = +25m.8s., E = +28m.21s., EN = +31m.15s., N = +33m.59s., e = +34m.9s., SSE = +37m.38s., N = +38m.29s. =SS +12s., E = +38m.33s. and +42m.38s. =SSS −13s., N = +43m.2s.

*Continued on next page.*

Agra eN = +19m.34s., PKPE = +23m.7s., PKP = +23m.11s., PP = +24m.4s., PPP = +26m.27s., SS = +39m.34s.
Perth PP = +26m.49s., PPP = +30m.34s., SS = +47m.34s.
Bombay PP = +22m.20s., +25m.44s.?, SS = +40m.54s.
Medan i = +20m.29s.
Kodaikanal SS = +42m.45s., iSSS = +48m.44s.
Tananarive PPE = +23m.55s., E = +39m.9s., SS = +42m.6s.
Long waves were also recorded at Chatham Ils., Hukuoka B, Königsberg, Phu-Lien, and Tyosi.

Nov. 30d. 2h. 58m. 19s. Epicentre 44°·1N. 14°·0E. N.2.
As given by P. Coloi, "Il terremoto Adriatico" del 30 Nov. 1934, Boll. della Soc. Seismo. Italiana Vol. XXXV, fasc 3-4, 1937.

A = +·697, B = +·174, C = +·696; D = +·241, E = −·970; G = +·675, H = +·168, K = −·718.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Triest | 1·6 | 349 | i 0 25 | + 2 | i 0 55 | $S_g$ | — | — |
| Venice | 1·8 | 318 | i 0 33 | $P_g$ | i 1 7 | $S_g$ | — | — |
| Florence | 2·0 | 261 | i 0 30k | + 1 | 1 1 | $S_g$ | — | — |
| Laibach | 2·0 | 11 | i 0 36 | $P_g$ | i 1 0 | S* | — | 1·2 |
| Padova | 2·0 | 310 | i 0 30 | + 1 | 1 5 | $S_g$ | — | — |
| Siena | 2·1 | 247 | 0 46 | +16 | 1 16 | ? | — | — |
| Prato | 2·1 | 264 | i 0 32 | + 2 | i 1 10 | $S_g$ | — | — |
| Treviso | 2·1 | 320 | i 0 37 | $P_g$ | 1 11 | $S_g$ | — | 1·3 |
| Zagreb | 2·2 | 40 | i 0 35k | P* | i 1 1 | + 4 | — | 1·2 |
| Casamari | 2·5 | 191 | i 1 38 | ? | — | — | — | — |
| Rome | 2·5 | 207 | 0 39 | + 3 | — | — | — | — |
| Livorno | 2·7 | 258 | 0 24 | −15 | 0 55 | −14 | — | — |
| Benevento | 3·0 | 174 | e 0 41 | − 2 | i 1 1 | $P_g$ | — | 1·7 |
| Graz | 3·2 | 19 | i 1 16 | S | i 2 6 | ? | — | 2·3 |
| Naples | 3·2 | 176 | e 0 44 | − 2 | 1 5 | $P_g$ | — | 3·2 |
| Piacenza | 3·2 | 288 | 0 48 | + 2 | i 1 21 | − 1 | i 1·9 | 2·2 |
| Casamicciolo | 3·3 | 181 | 0 44 | − 3 | i 1 52 | $S_g$ | 3·2 | — |
| Capodimonte | 3·4 | 176 | e 0 44 | − 5 | 1 5 | $P_g$ | — | 3·1 |
| Bari | 3·6 | 143 | 0 22 | −29 | 0 53 | P | 1·2 | — |
| Pavia | 3·6 | 287 | i 0 54 | + 3 | — | — | — | — |
| Taranto | 4·3 | 145 | 0 59 | − 2 | — | — | — | 2·5 |
| Vienna | 4·5 | 21 | i 1 6 | + 2 | 2 25 | $S_g$ | 2·5 | 2·8 |
| Belgrade | 4·6 | 79 | 1 13 | P* | 2 31 | $S_g$ | — | 3·2 |
| Ravensburg | 4·8 | 321 | i 1 9 | + 1 | e 1 53 | −10 | — | — |
| Budapest | 4·9 | 44 | 1 20 | P* | (2 16) | +11 | 2·3 | — |
| Zurich | 5·0 | 313 | e 1 12 | + 1 | e 2 38 | $S_g$ | — | — |
| Sion | 5·1 | 298 | e 1 11 | − 2 | e 2 8 | − 2 | — | — |
| Trenta | 5·1 | 159 | e 1 29 | P* | 1 57 | −13 | — | — |
| Ebingen | 5·3 | 321 | e 1 17 | + 2 | e 2 12 | − 3 | — | — |
| Basle | 5·7 | 310 | e 1 20 | − 1 | — | — | — | — |
| Neuchatel | 5·7 | 303 | e 1 21 | 0 | e 2 23 | − 2 | — | — |
| Stuttgart | 5·7 | 326 | i 1 21 | 0 | e 2 20 | − 5 | — | — |
| Prague | 5·9 | 3 | e 1 25 | + 1 | e 2 32 | + 1 | — | 3·7 |
| Cheb | 6·1 | 350 | e 1 25 | − 2 | e 2 46 | +10 | e 3·3 | 3·7 |
| Karlsruhe | 6·2 | 324 | 1 31 | + 3 | 2 55 | S* | 3·5 | — |
| Strasbourg | 6·2 | 318 | i 1 27k | − 1 | e 2 44 | + 6 | — | — |
| Marseilles | 6·3 | 266 | i 0 38 | −52 | — | — | — | — |
| Besançon | 6·4 | 302 | i 1 30 | − 1 | e 2 36 | − 7 | — | — |
| Mineo | 6·9 | 175 | 1 9 | −29 | — | — | — | — |
| Jena | 7·0 | 347 | i 1 21 | −18 | — | — | e 3·2 | 4·2 |
| Göttingen | 7·9 | 342 | i 1 52 | 0 | i 4 25 | $S_g$ | — | — |
| Paris | 9·2 | 305 | e 2 9 | − 1 | e 5 11 | $S_g$ | — | — |
| Uccle | 9·3 | 319 | e 2 11 | 0 | i 5 0 | $S_g$ | — | — |
| Hamburg | 9·8 | 344 | e 2 16 | − 2 | — | — | — | — |
| De Bilt | 10·0 | 327 | i 2 22 | + 1 | — | — | e 5·2 | 5·8 |

*Continued on next page.*

| | Δ ° | Az. ° | P. m. s. | O−C. s. | S. m. s. | O−C. s. | L. m. | M. m. |
|---|---|---|---|---|---|---|---|---|
| Kew | 12·1 | 312 | i 2 47 | − 3 | i 5 53 | S* | — | — |
| Toledo | 14·0 | 259 | e 3 17 | + 2 | e 5 46 | − 5 | — | — |
| Granada | 15·0 | 248 | e 4 32 | ? | — | — | — | — |
| Helsingfors | 17·1 | 19 | e 4 47 | ? | — | — | e 9·3 | — |
| Ksara | 19·8 | 114 | e 4 26 | − 1 | 8 10 | + 8 | — | — |
| Tiflis | 22·5 | 85 | e 5 0 | + 4 | — | — | — | — |
| Grozny | 22·8 | 81 | e 5 16 | PP | — | — | — | — |
| Erevan | 22·9 | 90 | e 5 3 | + 3 | — | — | — | — |
| Oak Ridge | 59·3 | 301 | i 10 1 | + 1 | — | — | — | — |

Additional readings :—
Triest $iP_g = +29s.$, iPPsP = +39s. =S − 2s., iPPPsP = +53s.
Laibach i = +42s., iPsSP = +1m.5s.
Treviso PP = +47s.
Zagreb i = +44s. and +53s., $iS_g = +1m.14s.$
Vienna P* = +1m.9s., PPsP = +1m.32s., PPsS = +2m.9s. =S* − 3s., $S_g$ = +2m.38s., SSsS = +2m.44s.
Belgrade i = +1m.29s. $=P_g$ + 3s. and +1m.34s., iPPsS = +2m.19s. =S* + 4s.
Ravensburg eP* = +1m.16s., $eP_g$ = +1m.22s., e = +1m.38s., +1m.43s., and +2m.0s., eS* = +2m.7s., $iS_g$ = +2m.15s.
Zurich $eP_g = +1m.29s.$
Ebingen eP* = +1m.27s., i = +2m.16s., eS* = +2m.27s., $iS_g = +2m.34s.$
Basle e = +1m.52s. $=P_g$ + 4s.
Neuchatel $eP_g = +1m.36s.$, $eS_g = +2m.31s.$
Stuttgart eP* = +1m.33s., $eP_g$ = +1m.40s., e = +1m.54s. and +2m.32s., iS* = +2m.36s., $iS_g$ = +2m.48s. ; $T_0 = 2h.58m.30s.$
Strasbourg PPsP = +2m.1s., e = +2m.35s., PSsP = +3m.4s., iSSsS = +3m.29s., i = +3m.47s. and +4m.15s.
Marseilles SSsS = +2m.35s. =S − 6s.
Besançon ? = +3m.37s.
Jena iPE = +1m.25s.
Kew i = +6m.40s. $=S_g$ + 7s. and +8m.26s.

Nov. 30d. Readings for which no determination has been made :—
Karenko iP = 9h.23m.25s., iS = 23m.27s.
Arisan P = 9h.23m.34s., S = 23m.46s.
Taihoku eP = 9h.23m.46s., S = 23m.59s.
Tainan eP = 9h.23m.55s., S = 24m.19s.

Karenko P = 16h.21m.24s., S = 21m.26s.
Arisan P = 16h.21m.32s., S − 21m.44s.
Taihoku eP = 16h.21m.43s., S = 21m.57s.
Tainan eP = 16h.22m.0s., S = 22m.24s.

Nov. 30d. 21h. Readings for which no determination has been made :—
Andijan eP = 35m.15s., i = 35m.42s., i = 36m.30s., i = 36m.42s.
Almata P = 35m.31s., e = 37m.16s., i = 37m.28s., M = 37m.32s.
Frunse eP = 35m.33s., e = 36m.47s., e = 37m.35s., M = 37m.45s.
Samarkand eP = 35m.52s., e = 37m.47s., M = 38m.17s.
Tashkent eP = 35m.52s., iS = 37m.42s., eL = 37m.48s., M = 38m.24s.
Sverdlovsk e = 42m.55s., L = 46m.
Kodaikanal e = 46m.0s.
L waves at Bombay.

Nov. 30d. 23h. Readings for which no determination has been made. Reported by B.M.S. " Rangitata " as 4°40′N. 82°4′W.
Balboa Heights i = 56m.53s., i = 57m.18s., e = 57m.47s.
La Paz P = 60m.59s., iP = 61m.3s., iPP = 61m.55s., iSN = 65m.42s., LN = 69m.23s., M = 71m.57s.
La Jolla iPZ = 63m.23s.
Riverside iPZ = 63m.28s.
Mount Wilson iPZ = 63m.33s.
Pasadena iPNZ = 63m.33s.
Haiwee ePZ = 63m.42s.
Santa Barbara iPZ = 63m.46s.
Tinemaha iP = 63m.47s.
La Plata $P_eS$? = 68m.48s., L = 84m.12s., M = 86m.0s.
Philadelphia e = 69m.30s.
Long waves at De Bilt, Paris, Tiflis, Stuttgart, Strasbourg, and Uccle.

Nov. 30d. Readings also at 0h. (Baku and Tashkent), 1h. (Andijan), 2h. (Dehra Dun), 3h. (Graz), 9h. (Karenko), 11h. (La Paz, Paris, and Sucre), 12h. (San Francisco), 13h. (Haiwee, Pasadena, Mount Wilson, Riverside, Tananarive, and Tinemaha), 14h. (Karenko), 16h. (Karenko), 19h. (Berkeley, Branner, and Lick), 21h. (Baku, De Bilt, Stuttgart, Strasbourg, Sverdlovsk, Tashkent, and Uccle), 22h. (Kobe and Nagoya), 23h. (Kobe, Koti, Nagoya, La Paz, Sumoto, and Tyosi).

Dec. 1d. 11h. Readings for which no determination has been made, probably two or more shocks :—

Pasadena eZ = 8m.20s., eLZ = 37m.
Mount Wilson eZ = 8m.22s.
Tinemaha eZ = 8m.26s.
Haiwee eEZ = 8m.30s.
Huancayo e = 22m.37s., e = 23m.46s., e = 24m.15s., e = 27m.43s., eL = 49m.15s.
Ukiah e = 28m.10s.
Perth P = 30m.0s.
La Paz eP = 42m.58s., LN = 47m.0s., M = 48m.36s.
L waves at Wellington.

Dec. 1d. 13h. Nagoya gives epicentre as 36°·7N. 141°·0E.

Tyosi P = 31m.43s., S = 31m.56s., ME = 31m.58s.
Mizusawa eP = 32m.4s., iSEN = 32m.32s.
Nagoya P = 32m.29s., S = 33m.18s., M = 33m.25s.

Dec. 1d. 14h. Epicentre about 6°·1S. 108°·1E.

Malabar iP = 57m.34s., iS = 57m.51s.
Batavia iP = 57m.35s., iS = 57m.52s.
Soengei Langka iP = 57m.53s., S = 58m.18s.

Dec. 1d. 19h. Readings for which no determination has been made :—

Uccle eP = 51m.53s., eS = 55m.48s., L = 57m.
Stuttgart eP = 52m., eS = 57m.0s., eL = 59m.0s., M = 61m.24s.
Kew e = 53m.
Granada e = 54m.30s., e = 57m.12s., L = 58m.42s.
Triest eP = 55m.8s., eS = 59m.10s., eL = 61m., M = 62m.6s.
De Bilt eSN = 55m.53s., eL = 57m., M = 59m.27s.
Alicante e = 55m.56s.
San Fernando 56m.0s.
Prague e = 59m.36s., M = 62m.
Cheb e = 60m.
Long waves at Durham, Edinburgh, Stonyhurst, Huancayo, Ukiah, and other European stations.

Dec. 1d. Readings also at 2h. (Andijan, Branner, Berkeley, Frunse, San Francisco, and Samarkand), 3h. (Tyosi), 10h. (Apia), 11h. (Mizusawa), 13h. (Branner, Granada, Lick, Mount Wilson, Pasadena, Riverside, and Tinemaha), 14h. (Granada), 20h. (Baku, Sverdlovsk, and Tashkent).

Dec. 2d. Readings for which no determination has been made :—

Tucson e = 14h.59m.36s., eL = 15h.3m.18s.
La Jolla iPZ = 15h.0m.5s.
Riverside iP = 15h.0m.15s.
Mount Wilson ePEZ = 15h.0m.18s., iNZ = 15h.0m.24s.
Pasadena iPNZ = 15h.0m.22s.k, eSEN = 15h.4m.8s., eLZ = 15h.5m.24s.
Little Rock eP = 15h.0m.28s., iL = 15h.8m.5s.
Haiwee eP = 15h.0m.38s.
Tinemaha iPZ = 15h.0m.47s.
St. Louis ePEN = 15h.1m.7s., eLE = 15h.8m.40s., ME = 15h.10m.4s.
Florissant ePZ = 15h.1m.8s., eS = 15h.5m.20s., eL = 15h.8m.30s.
Long waves at Baku, Bozeman, Chicago, Granada, and Sverdlovsk.

Dec. 2d. 16h. Readings for which no determination has been made :—
Lick ePN = 7m.40s., ePEN = 7m.43s., iSE = 8m.1s., eSEN = 8m.8s.
Branner eP = 7m.46s., iSEN = 8m.20s.
Berkeley iPZ = 7m.49s., eEN = 7m.54s., iZ = 8m.1s., iEZ = 8m.35s., iN = 8m.40s.

Dec. 2d. 16h. Readings for which no determination has been made :—
Batavia iP = 43m.31s., iS = 44m.29s.
Malabar iP = 43m.31s., iS = 44m.28s.
Medan iP = 45m.22s., iS = 47m.55s., i = 48m.20s., iNS = 50m.6s.
Soengei Langka iP = 45m.22s., i = 45m.52s., iS = 46m.5s.
Bombay i = 49m.16s., iE = 53m.40s., i = 55m.11s.
Perth P = 51m.0s.
Andijan eP = 51m.9s., eS = 58m.25s.
Almata eP = 51m.14s.
Frunse eP = 51m.22s., S = 58m.59s.
Semipalatinsk eP = 51m.40s., eS = 59m.18s.
Erevan e = 53m.0s.
Grozny e = 53m.13s., e = 61m.57s.
Theodosia e = 53m.42s.
Yalta e = 53m.47s., e = 63m.23s.
Simferopol e = 53m.48s.
Agra e = 55m.27s.
Sebastopol e = 63m.27s.

Dec. 2d. Readings also at 0h. (Mount Wilson, Pasadena, Tucson, and Triest), 4h. (Andijan, Almata, Frunse, and Triest), 9h. (Granada), 10h. (Granada), 11h. (Granada), 12h. (Granada, Kobe, and Sumoto), 13h. (Granada and Sumoto), 14h. (Philadelphia), 18h. (Mizusawa (2)), 22h. (Messina, Mineo, Trenta, Taranto, Trenta (2), and Sumoto), 23h. (Pasadena, Riverside, and Tinemaha)

Dec. 3d. 1h. 35m. 37s. Epicentre 14°·5N. 88°·7W. (as on 1926 July 21d.). R.3.

A = +·022, B = −·968, C = +·250 ; D = −1·000, E = −·023 ;
G = +·006, H = −·250, K = −·968.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Balboa Heights | 10·5 | 121 | 2 23? | − 5 | — | — | — | — |
| Little Rock | 20·5 | 352 | i 4 34 | − 1 | e 8 21 | + 5 | — | — |
| St. Louis | 24·2 | 356 | i 5 11 | − 1 | i 9 31 | + 4 | — | — |
| Florissant | 24·4 | 356 | i 5 22 | + 8 | i 9 34 | + 4 | — | — |
| Charlottesville | 25·2 | 19 | e 5 23 | + 1 | e 9 55 | +11 | e 13·4 | — |
| Georgetown | 26·5 | 20 | i 5 35k | + 1 | 10 8 | + 1 | e 14·4 | — |
| Tucson | 26·9 | 315 | 6 53 | ? | 10 30 | +16 | 14·7 | — |
| Pittsburgh | 27·1 | 15 | e 8 53 | (− 8) | i 9 29 | ? | — | — |
| Philadelphia | 28·1 | 22 | — | — | e 10 36 | + 2 | — | — |
| Ann Arbor | 28·2 | 8 | — | — | e 11 5 | ? | e 16·6 | — |
| Toronto | 30·2 | 13 | e 5 56 | −11 | 10 39 | ? | 13·4 | — |
| Oak Ridge | 31·7 | 24 | i 6 21 | + 1 | e 11 34 | + 3 | e 18·4 | — |
| Riverside | 32·4 | 312 | e 6 26 | 0 | — | — | — | — |
| Mount Wilson | 33·0 | 312 | i 6 34 | + 2 | — | — | — | — |
| Pasadena | 33·1 | 312 | i 6 34 | + 1 | — | — | — | — |
| Tinemaha | 34·7 | 317 | e 6 46 | 0 | — | — | — | — |
| La Paz | 37·0 | 146 | e 7 43 | ? | — | — | 20·1 | 23·6 |
| Ukiah | 39·1 | 316 | — | — | e 16 31 | SSS | e 20·8 | — |

Additional readings :—
Little Rock iN = +5m.51s.
Florissant ipPZ = +5m.28s., isS = +9m.44s. ; $T_0$ = 1h.45m.52s.
Pittsburgh e = +11m.30s. = SSS + 2s.
Philadelphia e = +13m.17s.
Ann Arbor eE = +12m.35s.
Pasadena iZ = +9m.18s. = $P_cP$ − 2s.
Tinemaha iZ = +9m.24s. = $P_cP$ − 1s.
Long waves at Baku, Huancayo, Pulkovo, Tashkent, Sitka, and Sverdlovsk.

Dec. 3d. 1h. Readings for which no determination has been made :—
Branner $iP_gEN$ = 54m.50s., iN = 55m.4s., $iS_gEN$ = 55m.8s.
Lick ePEN = 54m.55s., iSN = 55m.17s.
San Francisco ePEN = 55m.4s., eN = 55m.12s., iN = 55m.17s., iE = 55m.35s., iN = 55m.45s.
Berkeley $ePgEN$ = 55m.6s., $iS_gZ$ = 55m.40s., iSEN = 55m.44s., iZ = 56m.4s.

Dec. 3d. 2h. 38m. 33s. Epicentre 14°·5N. 88°·7W. (as at 1h.). R.1.

A = +·022, B = −·968, C = +·250 ; D = −1·000, E = −·023 ;
G = +·006, H = −·250, K = −·968.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Balboa Heights | | 10·5 | 121 | i 3 51 | ? | e 5 6 | S* | — | 5·9 |
| Port au Prince | | 16·2 | 73 | i 3 44 | 0 | i 6 54 | +11 | i 7·9 | 9·2 |
| Little Rock | | 20·5 | 352 | e 4 32 | − 3 | i 8 23 | + 7 | — | — |
| Columbia | | 20·7 | 18 | e 4 34 | − 3 | — | — | e 9·7 | — |
| San Juan | | 22·0 | 77 | e 4 57 | + 6 | i 9 3 | SS | e 10·0 | — |
| St. Louis | | 24·2 | 356 | e 5 8 | − 4 | i 9 30 | + 3 | — | — |
| Florissant | | 24·4 | 356 | i 5 9 | − 5 | e 9 30 | 0 | — | — |
| Charlottesville | | 25·2 | 19 | i 5 19 | − 3 | e 9 39 | − 5 | e 13·5 | — |
| Georgetown | | 26·5 | 20 | i 5 33k | − 1 | i 10 8 | + 1 | e 13·5 | — |
| Tucson | | 26·9 | 315 | e 5 37 | 0 | e 10 21 | + 7 | e 14·7 | — |
| Pittsburgh | | 27·1 | 15 | e 4 26 | ? | i 9 26 | ? | 15·7 | — |
| Philadelphia | | 28·1 | 22 | i 5 47 | − 1 | e 10 28 | − 6 | e 13·6 | — |
| Ann Arbor | | 28·2 | 8 | e 5 51 | + 2 | e 10 27 | − 8 | e 14·6 | 19·6 |
| Huancayo | | 29·7 | 153 | e 6 11 | + 9 | i 11 24 | +25 | — | — |
| Ithaca | | 29·9 | 18 | e 6 3 | − 1 | e 10 51 | −12 | — | — |
| Toronto | | 30·2 | 13 | i 6 5 | − 2 | i 11 5 | − 2 | 14·2 | — |
| Oak Ridge | | 31·7 | 24 | i 6 19 | − 1 | e 11 22 | − 9 | 16·5 | — |
| Weston | | 31·7 | 25 | i 6 20 | 0 | e 11 32 | + 1 | — | — |
| La Jolla | | 31·8 | 310 | i 6 21 | 0 | — | — | — | — |
| Riverside | | 32·4 | 312 | e 6 26 | 0 | — | — | — | — |
| Ottawa | | 32·8 | 18 | i 6 28 | − 2 | 11 43 | − 5 | e 15·9 | — |
| Mount Wilson | | 33·0 | 312 | i 6 30 | − 2 | — | — | — | — |
| Pasadena | | 33·1 | 312 | i 6 31a | − 2 | e 11 49 | − 3 | e 16·2 | — |
| Haiwee | | 34·0 | 315 | e 6 38 | − 2 | — | — | — | — |
| Santa Barbara | | 34·4 | 311 | e 6 46 | + 2 | — | — | — | — |
| Tinemaha | | 34·7 | 317 | i 6 43 | − 3 | — | — | — | — |
| Bozeman | | 36·5 | 333 | — | — | e 12 48 | + 4 | e 22·5 | — |
| La Paz | | 37·0 | 146 | i 7 14k | + 8 | i 13 2 | +11 | 18·4 | 19·4 |
| Lick | | 37·1 | 314 | e 7 5 | − 2 | — | — | — | — |
| Branner | | 37·5 | 314 | e 7 15 | + 4 | — | — | — | — |
| Berkeley | | 37·8 | 314 | i 7 11 | − 2 | i 13 1 | − 2 | — | — |
| Ukiah | | 39·1 | 316 | e 7 27 | + 3 | e 13 27 | + 5 | e 19·6 | — |
| Saskatoon | | 40·3 | 343 | e 6 57 | −38 | 12 51 | −50 | — | — |
| Sucre | | 40·7 | 145 | i 7 39 | + 1 | e 13 46 | − 1 | 21·1 | — |
| Seattle | | 43·3 | 327 | — | — | e 14 31 | + 6 | e 24·7 | — |
| Victoria | | 44·3 | 330 | 8 4 | − 3 | 14 42 | + 2 | 22·4 | 24·4 |
| La Plata | E. | 57·3 | 150 | 9 45 | 0 | 17 51 | +11 | 29·5 | 30·5 |
| | N. | 57·3 | 150 | 9 50 | + 5 | 17 57 | PS | 31·0 | 37·6 |
| San Fernando | | 75·5 | 56 | 11 45 | + 2 | 21 20 | − 6 | 35·0 | — |
| Toledo | | 76·8 | 52 | e 11 50 | 0 | 21 35 | − 6 | e 31·5 | — |
| Malaga | | 76·9 | 55 | 12 5 | +14 | 21 43 | + 1 | 35·5 | — |
| Granada | | 77·4 | 55 | i 11 50 | − 4 | i 21 47 | 0 | 37·8 | 46·1 |
| Kew | | 77·7 | 39 | e 11 54 | − 2 | — | — | e 39·5 | 49·6 |
| Almeria | | 78·5 | 55 | e 11 58 | − 2 | e 21 56 | − 3 | e 42·4 | — |
| Alicante | | 79·7 | 53 | e 12 9 | + 3 | e 22 11 | − 1 | e 39·2 | — |
| Uccle | | 80·7 | 40 | i 12 12 | 0 | — | — | e 33·5 | — |
| De Bilt | | 80·9 | 39 | i 12 11 | − 2 | — | — | e 41·5 | 43·4 |
| Stuttgart | | 84·2 | 41 | 12 30 | + 1 | — | — | e 43·5 | 50·5 |
| Copenhagen | | 84·3 | 32 | 12 31 | + 1 | — | — | 45·5 | — |
| Piacenza | | 85·6 | 44 | — | — | 22 27 | [−36] | — | 51·1 |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Triest | 88·1 | 43 | i 12 49 | + 1 | i 23 20 | [− 1] | — | 70·4 |
| Zagreb | 89·5 | 42 | e 12 56 | + 1 | e 24 5 | +14 | — | — |
| Pulkovo | 91·2 | 26 | e 13 8 | + 5 | e 25 18 | PS | 40·5 | 53·3 |
| Yalta | 101·5 | 38 | — | — | e 27 5 | PS | — | — |
| Sverdlovsk | 104·3 | 18 | — | — | e 27 29 | PS | — | — |
| Wellington | 104·4 | 230 | — | — | e 24 27? | [−20] | 47·5 | — |
| Ksara | 108·5 | 46 | — | — | e 28 23 | PS | — | — |
| Cape Town | 112·1 | 121 | 9 2 | ? | 26 27 | {+ 5} | 53·5 | 71·6 |
| Tashkent | 120·6 | 19 | i 20 17 | PP | — | — | e 52·8 | 63·0 |
| Melbourne | 127·4 | 233 | — | — | e 31 32 | PS | 59·5 | 61·5 |
| Bombay | 142·0 | 29 | i 19 27? | [+ 3] | — | — | — | — |
| Kodaikanal | 151·7 | 30 | e 19 26 | [−18] | — | — | — | — |
| Batavia | 162·6 | 297 | i 20 0 | [+ 4] | — | — | — | — |

Additional readings :—
Balboa Heights e = +5m.36s. = $S_g$ − 5s. ; $T_0$ = 2h.38m.36s.
Port au Prince PP = +3m.55s., PPP = +4m.0s., SS = +7m.26s.
Little Rock iN = +5m.34s., iSSE = +9m.16s. ; $T_0$ = 2h.38m.23s.
Columbia i = +6m.34s.
San Juan ePP = +5m.59s.
St. Louis ePPE = +5m.38s., $eP_cPEN$ = +8m.52s., iSSEN = +10m.28s., iSSSEN = +10m.48s. ; $T_0$ = 2h.38m.23s.
Florissant ipPN = +5m.13s., iPPZ = +5m.38s., i = +9m.39s., iSS = +10m.27s., iSSS = +10m.49s. ; $T_0$ = 2h.38m.23s.
Charlottesville e = +11m.39s.
Georgetown iPP = +6m.18s. ; $T_0$ = 2h.38m.5s.
Pittsburgh e = +5m.18s., i = +6m.4s., e = +8m.40s., i = +11m.51s.
Philadelphia ePP = +6m.19s.
Ann Arbor eE = +8m.39s., eN = +10m.51s. and +13m.51s.
Huancayo iP = +6m.14s., i = +6m.27s., e = +9m.16s. = $P_cP$ + 7s. and +10m.18s.
Ithaca ePP = +6m.45s.
Toronto iSSN = +12m.33s.
Oak Ridge eSEN = +11m.25s., eZ = +13m.45s., eEN = +14m.45s.
La Jolla $iP_cPZ$ = +9m.15s.
Riverside $iP_cPZ$ = +9m.15s.
Mount Wilson $iP_cPZ$ = +9m.18s.
Pasadena iPPZ = +7m.25s., $iP_cPZ$ = +9m.17s., iN = +14m.39s. = SS − 3s., $iS_cSN$ = +16m.45s. ; $T_0$ = 2h.38m.20s.
Haiwee $iP_cPZ$ = +9m.19s.
Tinemaha $iP_cPZ$ = +9m.21s.
Bozeman ePP = +8m.33s., eSS = +16m.34s.
La Paz iPP = +8m.42s., iPPZ = +8m.48s., iSSE = +16m.0s.
Branner eE = +7m.17s. and +7m.27s., iN = +7m.29s.
Berkeley eN = +7m.14s., eE = +7m.18s., iZ = +7m.43s., +7m.51s., and +8m.15s., iSZ = +9m.32s. = $P_cP$ − 3s., iSE = +12m.51s.
Ukiah ePP = +8m.55s., eSS = +16m.32s.
Saskatoon PP = +8m.27s. ; $T_0$ = 2h.38m.18s.
Seattle eSS = +17m.41s.
La Plata PPN = +11m.51s., PPE = +11m.57s., SSN = +21m.39s., N = +27m.37s.
San Fernando PN = +11m.48s.
Toledo PP = +14m.48s., PS = +22m.10s.
Malaga PP = +14m.47s., PPP = +16m.35s., PPPP? = +17m.35s., PS = 22m.15s., e = +23m.31s., SS = +26m.31s.
Stuttgart ePS = +23m.57s.
Copenhagen +15m.44s. = PP + 4s.
Triest i = +13m.10s., +23m.59s. = S + 21s., +24m.32s. = PS + 3s., and +27m.48s., e = +28m.30s.
Zagreb e = +13m.4s. and +52m.9s.
Pulkovo ePP = +16m.15s.
Ksara ePP = +18m.58s., ePPS = +29m.19s.
Cape Town E = +9m.2s., PPE = +19m.32s., E = +23m.50s., S? = +27m.27s., PS = +29m.1s., PPS = +30m.13s., SS = +34m.27s., SSS = +38m.34s.
Tashkent ePPS = +31m.38s., e = +38m.6s., +45m.26s., and +48m.39s.
Melbourne e = +38m.46s.
Batavia eN = +22m.27s., eE = +24m.32s. = PP + 3s.
Long waves were also recorded at Edinburgh, Stonyhurst, Ivigtut, Chiufeng, Hong Kong, Tananarive, Sydney, Sitka, and other European stations.

Dec. 3d. Readings also at 3h. (Hukuoka B, Kodaikanal, Nagasaki, Perth, and Stuttgart), 4h. (Nagasaki), 5h. (Andijan), 6h. (La Paz and Trenta), 7h. (Andijan), 9h. (La Paz), 11h. (Batavia, Malabar, and Oak Ridge), 15h. (Mount Wilson, Pasadena, and Tinemaha), 16h. (Hong Kong), 17h. (Sverdlovsk and Tashkent), 20h. (Ithaca and Triest), 21h. (Triest and Tyosi).

Dec. 4d. 17h. 24m. 42s. Epicentre 19°·5S. 69°·6W. N.1.

A = +·329, B = −·883, C = −·334; D = −·937, E = −·349; G = −·116, H = +·313, K = −·943.

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

| | Corr. for Focus | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | ° | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Montezuma | +0·2 | 3·2 | 168 | i 0 46 | − 3 | i 1 23 | − 4 | — | — |
| La Paz | +0·2 | 3·3 | 25 | i 0 50a | 0 | i 1 34 | + 4 | — | — |
| Sucre | +0·1 | 4·1 | 83 | i 0 57 | − 3 | i 1 48 | 0 | — | — |
| Huancayo | −0·1 | 9·3 | 322 | i 2 13 | + 3 | i 2 26 | ? | i 4·0 | — |
| Santiago | −0·3 | 14·0 | 184 | 3 14 | + 3 | 6 8 | ? | — | — |
| La Plata E. | −0·5 | 18·5 | 148 | i 4 4a | − 3 | 7 30 | + 5 | 9·4 | 10·8 |
| N. | −0·5 | 18·5 | 148 | i 4 7 | 0 | 7 35 | +10 | 10·2 | 11·0 |
| Balboa Heights | −1·0 | 30·1 | 340 | 6 18? | +21 | — | — | — | — |
| San Juan | −1·2 | 38·0 | 6 | e 7 0 | − 5 | i 12 45 | − 3 | e 17·4 | — |
| Port au Prince | −1·2 | 38·2 | 356 | e 7 4 | − 2 | e 12 45 | − 6 | — | — |
| Columbia | −1·6 | 54·6 | 349 | e 9 41 | +27 | e 16 42 | 0 | e 26·5 | — |
| Charlottesville | −1·7 | 58·1 | 352 | e 9 38 | − 1 | e 17 26 | − 2 | e 23·6 | — |
| Little Rock | −1·7 | 58·4 | 338 | e 9 43 | + 2 | i 17 33 | + 1 | — | — |
| Georgetown | −1·7 | 58·8 | 353 | i 9 45a | + 1 | i 17 42 | + 4 | e 28·3 | — |
| Pittsburgh | −1·8 | 60·8 | 351 | i 9 55 | − 2 | i 17 59 | − 4 | 25·1 | — |
| St. Louis | −1·8 | 61·2 | 342 | e 10 3 | + 3 | i 18 9 | + 1 | — | — |
| Florissant | −1·8 | 61·5 | 342 | i 10 4 | + 2 | i 18 11 | − 1 | — | — |
| Oak Ridge | −1·8 | 62·1 | 358 | i 10 5 | − 2 | i 18 22 | + 2 | — | — |
| Ann Arbor | −1·8 | 63·2 | 348 | e 10 36 | +22 | i 18 36 | + 2 | e 34·3 | — |
| Chicago | −1·8 | 63·6 | 345 | — | — | i 18 37 | − 2 | e 29·3 | — |
| Toronto | −1·8 | 63·8 | 351 | i 10 22 | + 4 | i 18 44 | + 2 | 29·5 | — |
| Tucson | −1·9 | 65·1 | 322 | e 10 29 | + 2 | e 19 2 | + 5 | 27·3 | — |
| Ottawa | −1·9 | 65·2 | 355 | e 10 26 | − 1 | i 19 1 | + 2 | e 30·3 | — |
| La Jolla | −1·9 | 69·4 | 319 | i 10 56 | + 1 | — | — | — | — |
| Riverside | −2·0 | 70·2 | 319 | i 11 0 | + 1 | i 20 9 | +10 | — | — |
| Mount Wilson | −2·0 | 70·8 | 319 | e 11 2 | − 1 | i 20 14 | + 7 | — | — |
| Pasadena | −2·0 | 70·8 | 319 | i 11 4k | + 1 | i 20 15 | + 8 | e 34·0 | — |
| Santa Barbara | −2·0 | 72·0 | 320 | i 11 12 | + 1 | e 20 27 | + 6 | — | — |
| Haiwee | −2·0 | 72·1 | 321 | i 11 12 | + 1 | i 20 29 | + 7 | — | — |
| Tinemaha | −2·0 | 72·8 | 321 | i 11 16 | 0 | i 20 37 | + 6 | — | — |
| Lick | −2·0 | 75·0 | 319 | e 11 30 | + 1 | e 21 3 | + 6 | — | — |
| Bozeman | −2·0 | 75·2 | 331 | — | — | 20 53 | − 6 | — | — |
| Branner | −2·0 | 75·4 | 319 | e 11 33 | + 2 | e 21 7 | + 6 | — | — |
| Berkeley | −2·0 | 75·7 | 319 | i 11 34 | + 1 | i 21 24 | +19 | — | — |
| Ukiah | −2·0 | 77·2 | 320 | — | — | i 21 26 | + 4 | — | — |
| Cape Town | −2·0 | 77·7 | 122 | 11 0 | −44 | — | — | 32·2 | 40·3 |
| San Fernando | −2·1 | 81·9 | 47 | 12 0 | − 7 | 22 20 | + 6 | 51·8 | — |
| Ivigtut | −2·1 | 82·5 | 10 | — | — | 22 17 | − 3 | 41·3 | — |
| Victoria | −2·1 | 83·1 | 328 | 13 24 | ? | (22 16) | −10 | 22·2 | — |
| Malaga | −2·1 | 83·2 | 47 | 12 17 | + 3 | 22 39 | +12 | 40·1 | — |
| Granada | −2·1 | 84·1 | 47 | i 12 19 | + 1 | e 22 19 | −18 | 40·0 | 42·7 |
| Almeria | −2·1 | 84·7 | 48 | e 12 20 | − 1 | e 22 38 | − 5 | e 43·9 | — |
| Toledo | −2·1 | 85·1 | 44 | 12 22 | − 1 | i 22 46 | − 1 | $34·6_Q$ | 44·9 |
| Alicante | −2·1 | 86·7 | 47 | e 12 34 | + 3 | e 23 2 | − 2 | 44·0 | — |
| Algiers | −2·1 | 88·6 | 50 | e 12 41 | 0 | 23 2 | [−22] | 33·3 | 47·3 |
| Oxford | −2·1 | 92·6 | 35 | — | — | i 23 24 | [−24] | 39·8 | 50·2 |
| Kew | −2·1 | 93·1 | 36 | — | — | e 24 1 | − 5 | e 43·3 | 49·1 |
| Stonyhurst | −2·1 | 93·1 | 33 | — | — | i 23 28 | [−23] | e 46·3 | 48·3 |
| Paris | −2·1 | 93·5 | 39 | e 15 18? | ? | e 23 30 | [−23] | 44·3 | 49·3 |
| Edinburgh | −2·1 | 93·7 | 31 | — | — | i 23 35 | [−19] | 44·3 | — |
| Durham | −2·1 | 94·0 | 32 | 24 8 | S | (24 8) | − 6 | — | — |
| Sitka | −2·1 | 94·1 | 330 | — | — | e 24 8 | − 7 | e 43·6 | — |
| Wellington | −2·2 | 95·0 | 225 | 13 38 | +28 | 24 9 | −13 | 43·3 | — |
| Uccle | — | 95·4 | 37 | — | — | i 23 42 | [−21] | 42·3 | — |
| Scoresby Sund | — | 95·8 | 14 | — | — | 23 47 | [−18] | 45·3 | — |

*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. |
| De Bilt | — | 96·4 | 37 | e 13 36 | + 9 | e 23 48 | [−20] | e 45·3 | 49·6 |
| Piacenza | — | 96·5 | 44 | — | — | 23 52 | [−16] | — | 53·7 |
| Strasbourg | — | 96·5 | 41 | e 13 10 | −17 | e 23 43 | [−25] | e 35·3 | — |
| Florence | — | 97·0 | 45 | i 17 0a | PP | i 23 50 | [−21] | 46·3 | 51·3 |
| Stuttgart | — | 97·5 | 41 | e 13 43 | +11 | 24 27 | {− 7} | e 48·3 | 51·3 |
| Venice | — | 98·3 | 44 | 13 33 | − 3 | (23 59) | [−18] | 24·0 | — |
| Triest | — | 99·3 | 45 | e 13 34 | − 6 | 24 56 | −24 | e 47·2 | 51·1 |
| Hamburg | — | 99·6 | 36 | e 17 32 | PP | 24 7 | [−16] | e 49·3 | 51·3 |
| Cheb | — | 99·9 | 40 | e 14 2 | +19 | e 24 8 | [−17] | e 50·3 | 53·3 |
| Prague | — | 101·1 | 41 | — | — | e 24 14 | [−17] | e 50·3 | 58·3 |
| Graz | — | 101·1 | 44 | e 13 13 | −36 | i 24 9 | [−22] | e 48·3 | 53·1 |
| Copenhagen | — | 101·6 | 35 | 17 50 | PP | 24 18 | [−15] | 47·3 | — |
| Budapest | — | 103·4 | 44 | — | — | e 24 18? | [−24] | e 51·3 | — |
| Upsala | — | 105·4 | 31 | — | — | i 24 28 | [−24] | e 50·3 | — |
| Königsberg | — | 105·9 | 37 | — | — | e 24 32 | [−22] | — | 54·4 |
| Tananarive | — | 107·3 | 118 | — | — | e 24 45 | [−16] | 57·1 | 65·3 |
| Helwan | — | 108·7 | 64 | e 18 38 | PP | 28 38 | PS | — | 65·3 |
| Helsingfors | — | 109·1 | 32 | — | — | e 24 43 | [−26] | e 50·3 | — |
| Pulkovo | — | 111·4 | 32 | e 14 28 | − 9 | 25 29 | {−48} | 48·3 | 58·6 |
| Sebastopol | — | 112·8 | 49 | e 19 47 | PP | — | — | — | — |
| Ksara | — | 113·2 | 61 | — | — | e 28 55 | PS | — | — |
| Yalta | — | 113·2 | 49 | e 19 38 | PP | e 28 55 | PS | — | — |
| Melbourne | — | 114·1 | 209 | e 19 51 | PP | i 29 4 | PS | — | — |
| Kucino | — | 115·8 | 37 | — | — | 25 51 | {−57} | e 39·6 | 63·8 |
| Erevan | — | 120·6 | 54 | e 19 24 | ? | — | — | — | — |
| Tiflis | — | 120·8 | 52 | e 20 7 | PP | e 25 33 | [−20] | e 59·3 | 66·8 |
| Grozny | — | 121·5 | 51 | e 20 35 | PP | — | — | — | — |
| Baku | — | 124·7 | 54 | — | — | e 25 51 | [−13] | 58·3 | 68·4 |
| Perth | — | 128·3 | 186 | 32 18 | ? | — | — | — | — |
| Tashkent | — | 138·9 | 49 | e 19 3 | [−17] | 28 54 | {−23} | 63·3 | 80·5 |
| Andijan | — | 141·2 | 48 | e 19 38 | [+15] | — | — | — | — |
| Frunse | — | 141·9 | 44 | e 20 41 | ? | — | — | — | — |
| Almata | — | 143·2 | 42 | e 19 34 | [+ 6] | — | — | — | — |
| Bombay | — | 144·6 | 85 | 19 2 | [−31] | 29 32 | {−19} | — | — |
| Kodaikanal | — | 146·9 | 101 | e 19 29 | [− 8] | — | — | — | — |
| Mizusawa | — | 147·1 | 313 | e 19 21 | [−16] | e 20 3 | ? | — | — |
| Vladivostok | — | 150·3 | 327 | e 19 42 | [ 0] | — | — | 42·3 | 90·5 |
| Amboina | — | 151·0 | 219 | 19 37 | [− 6] | 23 20 | PP | — | — |
| Nagoya | — | 151·9 | 309 | e 19 44 | [ 0] | — | — | — | — |
| Batavia | — | 154·0 | 172 | e 20 37 | {+20} | — | — | — | — |
| Chiufeng | — | 158·9 | 348 | e 19 46 | [− 6] | — | — | e 81·4 | — |
| Calcutta | — | 159·2 | 78 | e 20 7 | [+14] | i 31 19 | {+ 5} | — | — |

Additional readings :—
Montezuma i = +1m.5s.
La Plata pPE = +4m.30s., pPN = +4m.36s., E = +4m.54s. and +7m.15s., SS?N = +7m.50s., SSS?N = +8m.12s., SSS?E = +8m.18s., Z = +8m.54s.
San Juan ePP = +8m.35s., i = +8m.58s. and +13m.16s., iSS = +15m.36s.
Columbia e = +17m.13s., $eS_cS$ = +18m.56s., e = +19m.33s.
Charlottesville eP = +9m.42s., e = +19m.18s.
Little Rock epP = +10m.32s., ipS = +18m.5s., esS = +19m.5s.
Pittsburgh iS = +18m.5s., i = +22m.7s.
St. Louis ipPN = +10m.51s., ipSEN = +18m.41s., esSE = +19m.41s.
Florissant ipPZ = +10m.52s., iPP = +12m.17s., isP = +18m.41s., ipS = +19m.41s., isS = +20m.23s. ; $T_0$ = 17h.24m.53s.
Oak Ridge iZ = +10m.7s., +10m.9s., +10m.12s., +10m.15s., +10m.19s., +10m.21s., and +10m.25s., eZ = +10m.32s., iZ = +10m.50s., +11m.2s., +11m.8s., and +11m.12s., iPSNE = +18m.49s., iPSNW = +18m.55s., iNE = +20m.24s., iNW = +20m.28s.
Ann Arbor i = +19m.6s., +20m.0s., and +20m.36s.
Chicago e = +13m.48s. and +15m.48s.
Toronto PSN = +19m.19s.
Tucson iPS = +19m.35s., $eS_cS$ = +20m.14s., e = +20m.37s., eSS = +23m.18s.
Ottawa PS = +19m.30s. ; $T_0$ = 17h.24m.48s.
Pasadena iZ = +11m.22s. and +11m.53s., eZ = +12m.43s., iEN = +21m.7s., ePKP,PKPZ = +39m.22s.

*Continued on next page.*

Lick eSE = +21m.6s.
Bozeman ePP = +15m.6s., ePS = +21m.32s., eSS = +25m.55s.
Berkeley ePE = +11m.37s., iPZ = +11m.44s., iZ = +11m.54s., +12m.6s., and +12m.8s., iN = +21m.9s., iE = +21m.12s., eE = +21m.39s., iN = +21m.44s.
Ukiah ePS = +21m.58s., e = +25m.8s.
Cape Town PP = +13m.14s., PPP = +15m.21s., PSN = +21m.34s., PSE = +21m.38s., SS = +24m.39s., SSS = +27m.44s.
Ivigtut +22m.31s., eN = +22m.50s.
Victoria PN = +13m.34s.
Malaga e = +12m.37s., PP = +15m.31s., $S_cS$ = +23m.5s., PS = +23m.29s., $S_cS_cS$ = +35m.37s.
Toledo iP = +12m.43s., PP = +15m.18s., PS = +23m.18s., PPS = +24m.0s., LR = +38m.21s.
Kew eSKS = +23m.26s., ePS = +25m.16s.
Edinburgh i = +26m.0s.
Sitka eSS = +30m.20s., eSSS = +34m.32s.
Wellington SKS = +23m.39s.
Uccle ePPE = +16m.59s., iSKKS = +24m.16s., iPSE = +25m.37s.
Scoresby Sund +24m.18s., e = +30m.48s.
De Bilt ePPZ = +17m.6s.
Piacenza e = +15m.18s.
Strasbourg ePP = +17m.7s., e = +17m.35s., ePS = +26m.1s.
Stuttgart ePPZ = +17m.16s., e = +17m.38s., SKS = +23m.52s., ePS = +26m.12s.
Venice S = +17m.27s. =PP −3s.
Triest iPP = +17m.30s., i = +17m.58s., iSKS = +24m.2s., iSKKS = +24m.36s., i = +25m.31s., iPS = +26m.20s., i = +26m.30s., iPPS = +26m.59s., e = +31m.9s., eSS = +31m.35s.
Cheb ePP = +17m.38s.
Prague e = +26m.36s. =PS −19s.
Copenhagen e = +24m.54s., =SKKS −11s., +26m.54s. =PS −8s.
Budapest e = +17m.18s.?
Upsala iE = +25m.2s. =SKKS −31s., iPS = +27m.25s.
Königsberg e = +25m.6s. =SKKS −31s.
Tananarive eSKKS = +25m.26s., PPSE = +28m.28s., SSEN = +33m.47s.
Helwan i = +24m.46s. =SKS −21s. and +25m.22s. =SKKS −36s.
Helsingfors ePP = +18m.42s., eSKKSE = +25m.19s., ePSE = +28m.7s., ePPSNE = +29m.20s., eSSNE = +33m.54s., eSSSNE = +37m.42s.
Pulkovo ePKP = +18m.48s., SKKS = +26m.26s., PS = +28m.25s., SS = +34m.30s.
Ksara ePP = +19m.18s., ePPS = +30m.0s.
Kucino iPP = +20m.33s., SKKS = +26m.33s., SS = +35m.36s.
Tiflis eZ = +30m.1s., eE = +34m.34s., eE = +37m.37s. and +45m.31s.
Baku PP = +20m.34s., eS = +28m.6s.
Tashkent PP = +21m.53s., PKS = +23m.11s., PPS = +34m.18s.
Almata i = +20m.38s.
Bombay PP = +23m.2s.
Chiufeng iZ = +23m.43s., iE = +43m.38s.
Long waves were also recorded at Barcelona, Leipzig, Seattle, Hong Kong, Phu-Lien, and Arapuni.

Dec. 4d. Readings also at 0h. (Tananarive), 2h. (Tananarive), 4h. (Berkeley, Branner, Lick, and San Francisco), 6h. (Berkeley, Branner, Lick, San Franciso, and Tucson), 7h. (Mount Wilson, Pasadena, Riverside, and Tinemaha), 8h. (Grozny), 10h. (Almata), 15h. (La Paz), 17h. (Lick), 18h. (Erevan and Lick), 19h. (Andijan, Almata, and Tchimkent), 21h. (Wellington), 22h. (La Paz).

Dec. 5d. 19h. Readings for which no determination has been made :—
Adelaide e = 8m.39s., e = 11m.40s., e = 14m.56s., eL = 18m.0s., MN 23m.24s.
Vladivostok eP = 10m.46s.
Melbourne i = 14m.23s., i = 15m.50s., L = 21m.24s., M = 24m.12s.
Tashkent P. = 14m.30s., PP = 17m.36s., eS = 24m.46s., PS = 25m.38s., eL = 41m.54s., M = 48m.30s.
Andijan eP = 14m.22s.
Riverview e = 15m.12s., eL = 19m.12s., M = 22m.55s.
Wellington 30m.
Phu-Lien 52m.
Vladivostok e = 61m.50s.
Long waves were also recorded at Chiufeng, Baku, Helsingfors, Paris, Pulkovo, and Strasbourg.

Dec. 5d. 21h. Readings for which no determination has been made :—

Kodaikanal e =31m.18s.
Andijan eP =34m.46s., eS =41m.2s.
Tashkent e =34m.51s., i =35m.11s., e =41m.3s., e =42m.3s., M =54m.18s.
Almata eP =34m.53s.
Frunse eP =35m.4s.
Bombay e =38m.18s.
Vladivostok e =55m.50s.
Little Rock iP =57m.38s., iN =57m.41s., eS =61m.19s.
St. Louis iP =58m.14s., eS =62m.32s.
Oak Ridge eZ =59m.24s.
La Jolla iPZ =59m.24s.
Pasadena iPNZ =59m.36s.
Tinemaha iPZ =59m.49s., iZ =62m.27s.
San Juan e =62m.4s., eL =64m.10s.
Huancayo e =64m.18s.
Tucson e =67m.38s.
Long waves were also recorded at Baku, Colombo, and Hong Kong.

Dec. 5d. Readings also at 2h. (Prato), 3h. (Sumoto), 8h. (Colombo, Grozny, and Kodaikanal), 9h. (La Paz), 10h. (Perth), 13h. (Batavia and Malabar), 14h. (Huancayo), 17h. (Sydney and Triest), 19h. (Chiufeng).

Dec. 6d. 2h. Readings for which no determination has been made :—

Samarkand eP =4m.57s., e =5m.58s.
Tashkent e =5m.24s., e =6m.12s., e =9m.54s., e =10m.36s., iL =10m.42s., M =13m.30s.
Andijan eP =6m.25s., eS =12m.19s.
Baku e =8m.25s., e =9m.59s.
Frunse eS =12m.32s.

Dec. 6d. Readings also at 0h. (Cheb), 1h. (Strasbourg), 5h. (Oak Ridge), 10h. (Baku, Samarkand, and Tashkent), 11h. (Wellington), 12h. (Wellington), 13h. (Mount Wilson, Pasadena, Tinemaha, and Scoresby Sund), 15h. (Trenta, Triest, Tashkent, and Samarkand), 16h. (De Bilt, Mineo, Stuttgart, Taranto, and Tyosi (2) ), 17h. (Berkeley, Branner, and Lick), 20h. (Andijan, Baku, Tashkent, and Samarkand), 21h. (Baku, Branner, Medan, Samarkand, and Tashkent), 23h. (Sitka).

Dec. 7d. 1h. 6m. 51s. Epicentre 34°·3N. 136°·8E. N.2.

A = −·602, B = +·565, C = +·564 ; D = +·685, E = +·729 ; G = −·411, H = +·386, K = −·826.

| | Δ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Nagoya | 0·8 | 9 | i 0 12 | + 1 | 0 21 | 0 | 0·4 |
| Kobe | 1·4 | 286 | 0 20 | 0 | 0 35 | − 1 | 0·6 |
| Sumoto | 1·6 | 272 | e 0 24 | + 1 | e 0 40 | − 1 | 0·9 |
| Toyooka | 2·0 | 307 | 0 19 | −10 | 0 35 | $P_g$ | 0·6 |

Sumoto eZ = +36s.

Dec. 7d. These readings are for more than one shock, but are insufficient to locate the epicentres ; they are therefore given in chronological order :—

Nagasaki eP =10h.45m.13s.
Sumoto eN =10h.45m.43s., eSN =48m.11s., eSE =48m.38s.
Zi-ka-wei eN? =10h.45m.52s., iN =47m.22s., iN =47m.29s., iN =47m.31s., iN = 47m.36s., iN =47m.40s.
Taikyu eP =10h.47m.25s.
Zinsen eS? =10h.47m.47s.
Keizyo e =10h.48m.34s., eL? =49m.41s.
Chiufeng L =10h.51m.34s., M =55m.12s.
Vladivostok e =10h.52m.2s.
Hong Kong M =10h.53m.50s.
Helsingfors e?E =11h.6m.48s., eL =34m.

*Continued on next page.*

Tashkent eL = 11h.9m.48s., M = 16m.24s.
Wellington P = 11h.13m.34s., S = 17m.14s., ScS = 24m.41s.
Melbourne e = 11h.21m.0s., i = 24m.20s.
Santa Barbara iPNZ = 21m.2s.
Mount Wilson eZ = 11h.21m.4s.
Berkeley iPZ = 11h.21m.4s.
La Jolla ePENZ = 11h.21m.5s.
Pasadena iPENZ = 11h.21m.5s.
Riverside iPZ = 11h.21m.7s.
Tinemaha iPEZ = 11h.21m.15s., eEN = 31m.30s.
Riverview eL = 11h.21m.36s., MN = 24m.45s.
Chiufeng eP = 11h.21m.48s., S? = 32m.6s.
Pulkovo eL = 11h.23m.
Perth P = 11h.27m.0s.
Tiflis eNZ = 11h.27m.46s., eZ = 28m.24s., eNZ = 31m.50s.
Sebastopol e = 11h.28m.14s.
Simferopol e = 11h.28m.35s.
Theodosia e = 11h.28m.35s.
Yalta e = 11h.28m.35s.
Copenhagen 11h.28m.36s., L = 30m.
Stuttgart eP = 11h.29m.9s., eS = 32m.40s., eL = 37m.30s.
Strasbourg eL = 11h.29m.
Scoresby Sund 11h.31m.21s.
Pulkovo i = 11h.31m.43s.
De Bilt eL = 11h.32m.
Tashkent i = 11h.34m.40s., i = 36m.18s.
Arapuni 11h.52m.
Sverdlovsk L = 12h.0m.

Dec. 7d. Readings also at 1h. (Mizusawa and Trenta), 3h. (Kodaikanal), 4h. (Agra and Theodosia), 5h. (Kodaikanal), 7h. (Andijan, Frunse, Prague, and Samarkand), 8h. (Chiufeng and Tiflis), 10h. (Wellington), 13h. (La Paz (2)), 14h. (Nagoya, San Juan, and Tiflis), 15h. (Batavia, Nagoya, Mizusawa, Tyosi, and Soengei Langka), 17h. (Balboa Heights, Andijan, Samarkand, and Tashkent), 18h. (Frunse and Sverdlovsk), 20h. (La Paz), 21h. (Tucson).

Dec. 8d. 9h. 35m. 11s. Epicentre 16°·0N. 104°·3W. N.3.

A = −·237, B = −·931, C = +·276; D = −·969, E = +·247;
G = −·068, H = −·267, K = −·961.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Tucson | 17·4 | 341 | e 3 53 | − 6 | e 6 46 | ? | e 8·1 | — |
| La Jolla | 20·5 | 327 | i 4 35 | 0 | — | — | — | — |
| Little Rock | 21·5 | 28 | e 4 47 | + 2 | — | — | — | 13·2 |
| Riverside | 21·5 | 329 | i 4 44a | − 1 | e 8 41 | + 5 | — | — |
| Mount Wilson | 22·0 | 329 | i 4 52 | + 1 | e 8 54 | + 8 | — | — |
| Pasadena | 22·0 | 328 | i 4 51a | 0 | i 8 48 | + 2 | i 12·1 | — |
| Santa Barbara | 23·1 | 326 | e 5 2 | 0 | — | — | — | — |
| Haiwee | 23·5 | 331 | e 5 6 | + 1 | — | — | — | — |
| Denver | 23·7 | 359 | e 7 17 | ? | — | — | — | 11·5 |
| Tinemaha | 24·4 | 332 | i 5 15 | + 1 | — | — | — | — |
| St. Louis | 25·7 | 26 | e 5 40 | +14 | e 10 21 | +28 | — | 14·2 |
| Florissant | 25·8 | 25 | e 5 21 | − 6 | i 9 55 | 0 | i 15·0 | — |
| Lick | 26·3 | 328 | e 5 35 | + 3 | — | — | — | — |
| Branner | 26·6 | 327 | i 5 39 | + 4 | — | — | — | — |
| Berkeley | 27·0 | 328 | i 5 42 | + 4 | — | — | — | — |
| Columbia | 27·5 | 45 | — | — | e 10 23 | − 1 | e 17·8 | — |
| Ukiah | 28·4 | 328 | — | — | e 10 37 | − 1 | e 12·4 | — |
| Chicago | 29·6 | 26 | — | — | e 11 22 | +24 | — | — |
| Bozeman | 30·2 | 350 | — | — | e 11 29 | +22 | e 15·3 | — |
| Ann Arbor | 31·6 | 30 | — | — | e 13 43 | ? | e 18·1 | — |
| San Juan | 36·4 | 81 | e 7 16 | +15 | e 12 49 | + 7 | e 22·1 | — |
| Huancayo | 40·1 | 133 | — | — | e 14 16 | +38 | — | — |
| Sverdlovsk | 106·1 | 8 | — | — | 25 6 | [+11] | 48·8 | 63·9 |

*For Notes see next page.*

NOTES TO DEC. 8d. 9h. 35m. 11s.

Additional readings :—
Tucson e = +4m.59s.
Little Rock iN = +5m.2s. =PP +1s., e = +11m.11s.
St. Louis iE = +13m.29s.
Branner iN = +6m.12s. =PP +0s., eE = +16m.49s. =$S_eS$ +24s.
Ukiah e = +9m.39s.
Chicago i = +11m.39s., e = +16m.14s., i = +17m.49s., e = +22m.4s.
Ann Arbor e?E = +15m.25s., eN = +16m.37s., eE = +18m.7s.
San Juan e = +17m.58s.
Huancayo e = +21m.49s.
Long waves were also recorded at Edinburgh, Kew, Stonyhurst, Chiufeng, Toronto, and other European and American stations.

Dec. 8d. Readings also at 1h. (Nagoya and Tyosi), 3h. (La Paz), 4h. (Philadelphia), 10h. (Berkeley and Triest), 11h. (Tyosi and Triest), 13h. (Karenko), 14h. (Oak Ridge, Tiflis, and Triest), 16h. (Mizusawa), 18h. (Nagoya and Tyosi), 20h. (Christchurch, Melbourne, New Plymouth, Riverview, and Wellington).

Dec. 9d. 11h. 19m. 2s. Epicentre 7°·6S. 106°·0E. N.3.

Given by Berlage, "Prov. Cat. of deep-focus earthquakes in the Ned. East Indies, 1918-1936."

A = −·273, B = +·953, C = −·132 ; D = +·961, E = +·276 ;
G = +·037, H = −·127, K = −·991.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Batavia | 1·6 | 31 | i 0 33k | $P_g$ | i 0 54 | $S_g$ | — | — |
| Malabar | 1·6 | 77 | i 0 31 | $P_g$ | i 0 52 | $S_g$ | — | — |
| Soengei Langka | 2·3 | 339 | i 0 43 | $P_g$ | i 1 17 | $S_g$ | — | — |
| Medan | 13·4 | 327 | 3 7 | 0 | i 7 8 | ? | — | — |
| Amboina | 22·5 | 81 | 4 55 | − 1 | i 8 55 | 0 | — | — |
| Perth | 26·0 | 161 | 9 58 | S | (9 58) | 0 | 12·9 | — |
| Manila | 26·7 | 34 | 6 19 | PP | — | — | 17·9 | — |
| Colombo | 29·8 | 298 | 1 3 | ? | — | — | — | 17·0 |
| Calcutta | 34·7 | 330 | — | — | e 11 53 | −24 | — | 26·9 |
| Bombay | 42·1 | 309 | e 7 34 | −15 | 14 4 | − 4 | e 21·3 | — |
| Agra | 44·0 | 324 | 8 5 | 0 | 14 31 | − 5 | e 20·6 | — |
| Melbourne | 46·4 | 137 | — | — | i 15 23 | +13 | 24·4 | 26·5 |
| Chiufeng | 48·6 | 12 | e 8 42 | + 1 | e 15 19 | −22 | e 24·9 | 30·9 |
| Riverview | 49·2 | 129 | — | — | e 26 4 | ? | e 31·2 | — |
| Sydney | 49·2 | 129 | — | — | e 27 28 | ? | 33·0 | 34·1 |
| Vladivostok | 55·9 | 23 | e 9 35 | 0 | — | — | — | — |
| Andijan | 57·4 | 330 | 9 46 | 0 | 16 35 | −67 | — | — |
| Tashkent | 59·3 | 328 | i 11 0 | +60 | i 18 1 | − 6 | e 28·3 | 34·2 |
| Samarkand | 59·4 | 326 | 10 13 | +13 | 17 55 | −13 | — | — |
| Sverdlovsk | 74·3 | 335 | i 11 39 | + 3 | e 21 19 | + 7 | 34·9 | 43·9 |
| Tiflis | 74·4 | 317 | 11 38 | + 1 | 21 6 | − 7 | — | — |
| Grozny | 74·5 | 319 | e 11 42 | + 5 | e 21 8 | − 6 | — | — |
| Tinemaha | 130·2 | 47 | e 19 15 | [+ 8] | — | — | — | — |
| Pasadena | 131·5 | 50 | i 19 16 | [+ 7] | — | — | — | — |
| Mount Wilson | 131·6 | 50 | e 19 16 | [+ 6] | — | — | — | — |
| Riverside | 132·2 | 50 | e 19 12 | [+ 1] | — | — | — | — |
| Oak Ridge | 145·0 | 357 | i 19 37 | [+ 3] | — | — | — | — |
| La Paz | 155·2 | 193 | e 20 50 | [+62] | — | — | — | — |

Additional readings :—
Malabar i = +2m.0s. and +2m.31s.
Manila i = +12m.25s.
Bombay SS = +17m.4s., SSS = +17m.11s.
Agra SSS = +18m.13s.
Sverdlovsk i = +11m.50s., e = +20m.54s.
Tinemaha iEZ = +22m.33s. =PKS −1s.
Pasadena iNZ = +22m.36s. =PKS −4s.
Mount Wilson iEZ = +22m.37s. =PKS −3s.
Riverside eZ = +22m.33s. =PKS −10s.
Long waves were recorded at Baku, Pulkovo, Hong Kong, Phu-Lien, and Wellington.

Dec. 9d. Readings also at 0h. (Lick), 1h. (Messina), 2h. (Koti), 3h. (Granada, Kobe, Nagoya, and Sumoto), 5h. (Sumoto and Yalta), 9h. (Mizusawa), 11h. (Theodosia), 12h. (Amboina, Batavia, and Malabar), 13h. (Andijan and Samarkand), 15h. (Wellington), 16h. (Mizusawa and Tyosi), 17h. (Andijan, Frunse, Mount Wilson, Pasadena, Riverside, Samarkand, and Tinemaha), 18h. (La Paz), 20h. (Batavia and Malabar), 21h. (Batavia and Malabar), 22h. (Baku, Calcutta, Chiufeng, Hong Kong, Medan, Phu-Lien, Tashkent, and Vladivostok), 23h. (Mizusawa (2) and Tyosi).

Dec. 10d. 0h. 22m. 9s. Epicentre 39°·4N. 141°·9E. N.2.

Given by Japan.

A = −·608, B = +·477, C = +·635; D = +·617, E = +·787; G = −·499, H = +·392, K = −·773.

| | △ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Miyako | 0·2 | 21 | 0 6 | + 3 | 0 14 | + 9 | — |
| Morioka | 0·6 | 300 | 0 11 | + 2 | 0 21 | + 6 | — |
| Mizusawa | 0·7 | 251 | i 0 11 | + 1 | i 0 21 | + 3 | — |
| Isinomaki | 1·1 | 203 | 0 11 | − 5 | 0 16 | P | — |
| Akita | 1·4 | 284 | 0 20 | 0 | 0 35 | − 1 | — |
| Sendai | 1·4 | 216 | 0 20 | 0 | 0 35 | − 1 | — |
| Aomori | 1·7 | 330 | 0 22 | − 2 | 0 41 | − 3 | — |
| Yamagata | 1·7 | 228 | 0 24 | 0 | 0 46 | + 2 | — |
| Hukusima | 2·0 | 213 | 0 30 | + 1 | 0 47 | − 4 | — |
| Hakodate | 2·5 | 340 | 0 49 | $P_g$ | 1 13 | S* | — |
| Niigata | 2·7 | 239 | 0 53 | $P_g$ | 1 24 | $S_g$ | — |
| Urakawa | 2·8 | 13 | 0 39 | − 1 | 1 4 | − 8 | — |
| Muroran | 3·0 | 346 | 0 44 | + 1 | 1 12 | − 5 | — |
| Mito | 3·2 | 200 | 0 48 | + 2 | 1 24 | + 2 | — |
| Tukubasan | 3·5 | 205 | 0 49 | − 1 | 1 29 | − 1 | — |
| Kakioka | 3·5 | 203 | 0 50 | 0 | 1 15 | −15 | — |
| Obihiro | 3·6 | 4 | 0 55 | + 4 | 1 44 | S* | — |
| Maebasi | 3·7 | 217 | 0 55 | + 2 | 1 41 | + 6 | — |
| Kumagaya | 3·8 | 212 | 0 52 | − 2 | 1 45 | S* | — |
| Tyosi | 3·8 | 192 | e 0 55 | + 1 | 1 53 | S* | 2·0 |
| Oiwake | 4·0 | 222 | 1 0 | + 3 | 1 48 | + 6 | — |
| Nagano | 4·0 | 228 | 1 5 | P* | 1 52 | S* | — |
| Tokyo | 4·1 | 205 | 0 54 | − 4 | 1 59 | S* | — |
| Asahigawa | 4·4 | 5 | 0 50 | −13 | 1 50 | − 3 | — |
| Yokohama | 4·4 | 205 | 1 8 | P* | 1 59 | + 6 | — |
| Wazima | 4·4 | 245 | 1 4 | + 1 | 1 50 | − 3 | — |
| Hunatu | 4·6 | 214 | 1 8 | + 2 | 2 5 | + 7 | — |
| Toyama | 4·6 | 235 | 1 6 | 0 | 1 54 | − 4 | — |
| Kohu | 4·6 | 214 | 1 10 | + 4 | — | — | — |
| Misima | 4·9 | 209 | 1 14 | + 4 | 2 10 | + 5 | — |
| Nagoya | 5·8 | 224 | 1 24 | + 2 | 2 32 | + 4 | — |
| Ibukisan | 5·9 | 229 | 1 26 | + 2 | 2 42 | +11 | — |

Tyosi gives also P = +1m.42s. =S +5s.

Dec. 10d. 9h. 56m. 40s. Epicentre 1°·2N. 127°·1E. N.3.

A = −·603, B = +·797, C = +·021; D = +·798, E = +·603; G = −·013, H = +·018, K = −1·000.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Amboina | 5·0 | 167 | i 1 12 | + 1 | i 2 16 | + 8 | — | — |
| Palau | 9·6 | 50 | 2 45 | ? | 5 46 | ? | — | — |
| Manila | 14·7 | 336 | i 3 21a | − 4 | 6 12 | + 4 | — | — |
| Batavia | 21·6 | 250 | i 4 46 | 0 | — | — | — | — |
| Karenko | 23·4 | 347 | 5 2 | − 3 | — | — | — | — |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Hong Kong | 24·6 | 331 | 5 4 | −12 | 9 9 | −25 | 10·5 | 11·4 |
| Phu-Lien | 28·0 | 316 | 5 20? | −27 | — | — | — | — |
| Medan | 28·5 | 275 | i 5 54 | + 2 | i 10 36 | − 4 | — | — |
| Nagasaki | 31·6 | 4 | 6 18 | − 1 | e 11 18 | −11 | — | — |
| Koti | 32·9 | 10 | 6 30 | − 1 | 11 47 | − 2 | — | — |
| Husan | 33·9 | 3 | 10 20 | ? | 18 41 | ? | — | — |
| Sumoto | 33·9 | 12 | 6 39 | 0 | e 11 59 | − 5 | — | — |
| Kobe | 34·3 | 12 | i 6 43 | 0 | e 12 7 | − 4 | — | — |
| Nagoya | 35·2 | 14 | e 6 51 | 0 | — | — | — | — |
| Hunatu | 36·0 | 16 | 6 58 | 0 | 12 39 | + 3 | — | — |
| Oiwake | 36·7 | 16 | 7 3 | − 1 | 12 47 | 0 | — | — |
| Nagano | 36·9 | 15 | 7 6 | 0 | 12 52 | + 2 | — | — |
| Hukusima | 38·5 | 17 | 7 20 | + 1 | 13 13 | − 1 | — | — |
| Mizusawa | 40·0 | 17 | 6 48 | ? | e 7 34 | P | — | — |
| Chiufeng | 40·1 | 347 | e 7 23 | −10 | i 13 18 | −20 | — | — |
| Vladivostok | 42·1 | 6 | e 3 59 | ? | — | — | — | — |
| Frunse | 62·6 | 319 | 10 32 | +10 | 18 32 | −18 | — | — |
| Andijan | 63·2 | 316 | 10 41 | +14 | 18 48 | − 9 | — | — |
| Tashkent | 65·5 | 316 | 10 32 | −10 | i 18 48 | −38 | — | 34·2 |
| Samarkand | 66·6 | 313 | e 10 52 | + 3 | — | — | — | — |
| Sverdlovsk | 76·3 | 329 | 11 20 | −28 | 20 50 | −45 | 38·3 | — |
| Ksara | 90·4 | 304 | e 12 43 | −16 | e 22 58 | −62 | — | — |
| Pasadena | 109·5 | 53 | e 18 50 | PP | — | — | — | — |
| Riverside | 110·2 | 53 | e 18 53 | PP | — | — | — | — |

Additional readings :—
Hong Kong PP = +5m.30s., SS = +9m.34s.
Husan PP = +13m.15s.
Sumoto iENZ = +8m.3s., iE = +8m.6s.
Kobe iNZ = +8m.7s., iN = +8m.9s., eN = +9m.49s., eE = +9m.51s.
Chiufeng i = +7m.52s. and +9m.1s. =PP +1s., S? = +12m.59s.
Long wave at Theodosia.

Dec. 10d. Readings also at 2h. (Mizusawa), 3h. (Tashkent), 4h. (Baku, Melbourne and Wellington), 5h. (Mount Wilson, Pasadena, Sverdlovsk, Riverside, Tashkent, Tinemaha, and Wellington), 7h. (La Paz), 9h. (Nagoya and Tyosi), 10h. (Batavia, La Jolla, Medan, Mount Wilson, Pasadena, Riverside, Santa Barbara, Tinemaha, and Tucson), 11h. (Theodosia), 15h. (Nagoya and Tyosi), 19h. (Mizusawa and Tyosi), 20h. (Andijan, Frunse, Tashkent, Tyosi, and Samarkand), 21h. (Tiflis).

Dec. 11d. 2h. Readings for which no determination has been made :—
Erevan eP = 51m.53s., i = 52m.9s. and 53m.7s.
Grozny eP = 51m.53s., e = 54m.18s.
Tiflis ePNZ = 52m.16s., eN = 52m.42s., eNE = 53m.2s., eLE = 53m.19s., MNE = 54m.36s.
Ksara eP = 53m.0s., eS = 54m.26s., sSS = 55m.11s.
Theodosia e = 54m.24s.
Yalta e = 54m.26s.
Simferopol e = 54m.37s.
Samarkand e = 55m.38s.

Dec. 11d. 14h. Readings for which no determination has been made :—
La Paz P = 49m.24s., iS = 51m.21s., L = 51m.50s., M = 52m.6s.
Riverside ePZ = 57m.22s., iZ = 57m.54s.
Mount Wilson iPZ = 57m.33s., iZ = 58m.6s.
Pasadena iPZ = 57m.33s., iZ = 58m.4s.
Tinemaha iPZ = 57m.47s., iZ = 58m.18s., eZ = 58m.55s.

Dec. 11d. Readings also at 0h. (Tyosi), 2h. (Ksara and Tiflis), 3h. (Nagoya, Mizusawa, Mount Wilson, Pasadena, Tinemaha, Tyosi, and Sitka), 4h. (Andijan (2) Nagoya, Samarkand, La Paz (2), Sucre, Tyosi, Balboa Heights, Huancayo, Mount Wilson, Pasadena, Riverside, and San Juan), 5h. (La Paz), 6h. (Amboina, Ferndale, and Trenta), 8h. (Erevan, Ksara, and Tiflis), 9h. (Strasbourg), 10h. (Erevan, Grozny, and Tiflis), 11h. (Theodosia), 15h. (Arisan, Karenko, Nagoya, Taihoku, Tainan, and Manila, 20h. (Erevan, Grozny, and Tiflis (2)), 21h. (Koti, Kobe, Nagoya, Sumoto, Ksara, and Tiflis).

Dec. 12d. 2h. Readings for which no determination has been made :—

Baku e =56m.10s., eL =59m.18s.
Tashkent e =56m.20s., eL =57m.12s., M =60m.18s.
Ksara eP =57m.23s., eS =62m.13s.

3h.
Andijan P =16m.41s., $iP_g$ =16m.44s., $S_g$ =17m.9s., M =17m.15s.
Tashkent iP =17m.7s., iS =17m.44s., iL =17m.49s., M =18m.12s.
Samarkand P =17m.17s., iP* =17m.21s., S* =17m.43s., $S_g$ =18m.7s., M =18m.32s.
Frunse P =18m.0s., $iP_g$ =18m.15s., i =18m.58s., $S_g$ =19m.17s., M =19m.23s.
Tchimkent eP =18m.16s.; epicentre 39°·4N. 70°·8E.
Sverdlovsk e =20m.42s., $L_q$ =26m.42s., LR =27m.0s., M =27m.36s.
Grozny e =20m.52s.
Tiflis PN =20m.55s., eNE =26m.32s., eLN =29m.0s.
Erevan e =21m.11s.
Agra e =21m.52s., e =22m.25s., $S_g$ =23m.36s.

Dec. 12d. 8h. Readings for which no determination has been made :—

Wellington P =44m.16s., S =46m.50s., $S_cS$ =54m.47s.
New Plymouth P =44m.53s., S =47m.23s.
Chatham Ils 45m.
Adelaide eP =46m.54s., iS =51m.56s., iL =54m.34s., MN =60m.30s.
Riverview eZ =47m.4s., iE =48m.8s., iE =49m.21s., iNE =55m.24s.
Sydney e =48m.8s., L =49m.25s., M =50m.15s.
Amboina iP =48m.9s., S =54m.59s.
Melbourne i =49m.11s., i =50m.31s., i =54m.0s.
Manila iP =50m.58s.k, S =58m.45s.
Batavia iP =51m.13s., iS =59m.41s.
Nagoya e =51m.16s.
Nagasaki P =51m.28s.
Vladivostok e =51m.57s., M =127m.18s.
Santa Barbara iP =52m.21s., eZ =54m.23s.
Berkeley iP =52m.22s., iZ =52m.33s., iZ =52m.54s.
Mount Wilson eP =52m.24s.
Pasadena iP =52m.24s.k, iZ =54m.29s., iSE =61m.54s.
La Jolla iP =52m.25s.
Tinemaha iPEZ =52m.32s., eZ =54m.39s., iSE =62m.3s.
Haiwee iPNE =52m.32s., eSN =62m.3s.
Medan iP =52m.35s., S =61m.11s.
Chiufeng iP =52m.37s.k, S =62m.8s.
Sverdlovsk e =58m.41s., e =61m.57s., e =64m.53s., L =85m.
Tiflis eZ =59m.4s., eZ =59m.12s.
Theodisa e =59m.25s.
Simferopol e =59m.26s.
Yalta e =59m.26s.
Ksara eP =59m.33s., eS =62m.45s.
Bombay eE =59m., e =61m.
Baku e =61m.33s., e =71m.58s., L =80m.
Tucson iS =62m.50s.
Huancayo i =63m.20s., e =63m.53s., e =64m.4s., e =67m.16s.
San Juan e =64m.37s., e =65m.51s., e =66m.55s., e =67m.10s., e =71m.18s.

Dec. 12d. Readings also at 0h. (Glenmuick), 2h. (Pasadena), 3h. (Mizusawa), 5h. (Samarkand), 9h. (Tiflis (2) and Victoria), 10h. (Chiufeng, Keizyo, Zinsen, Baku, Granada, Sverdlovsk, and Tashkent), 12h. (Nagoya and Tyosi), 13h. (New Plymouth and Wellington), 14h. (Baku and San Juan), 19h. (Tiflis), 21h. (Andijan, Samarkand (2), Tchimkent, and Karenko), 23h. (Nagasaki).

Dec. 13d. 1h. Readings for which no determination has been made :—

Calcutta eP =7m.9s., S =10m.52s., eL =12m.21s., M =14m.18s.
Phu-Lien 9m., L =10m.
Bombay e =12m.
Medan e =12m.54s.
Hong Kong M =14m.8s.
Tashkent e =15m.18s., eL =23m.18s., M =24m.48s.
Chiufeng e =15m.28s.
Vladivostok e =25m.29s.
Sverdlovsk L =29m.

Dec. 13d. 2h. Readings for which no determination has been made, probably two local American shocks :—

Port au Prince iP =9m.12s.
Santa Barbara iPZ =13m.35s.
Pasadena iPNEZ =13m.36s.k.
Mount Wilson iPNEZ =13m.37s.
La Jolla iPZ =13m.40s.
Haiwee iPNZ =13m.41s.
Tinemaha iPEZ =13m.45s.k, eEZ =23m.48s.
San Juan e =13m.45s.

San Francisco i$P_g$EN =29m.36s., i$S_g$E =29m.37s.
Berkeley i$P_g$NEZ =29m.39s., i$S_g$EN =29m.43s.
Branner i$P_g$N =29m.43s., i$S_g$NE =29m.51s.
Lick i$P_g$EN =29m.49s., i$S_g$EN =30m.0s.

Dec. 13d. Readings also at 2h. (Nagoya and Wellington), 8h. (Medan and Port au Prince), 10h. (Almata, Andijan, Frunse, Samarkand, and Wellington), 11h. (Amboina), 14h. (La Paz and Samarkand), 23h. (Andijan).

Dec. 14d. Readings for several shocks recorded by the New Zealand stations; no determinations have been made :—

Glenmuick 8h.12m.2s., e =12m.26s., e =12m.45s.
New Plymouth P =8h.14m.22s., S =14m.44s.
Takaka P =8h.14m.23s., S =14m.38s.
Wellington $P_g$ =8h.14m.27s., $S_g$ =14m.32s.
Christchurch P =8h.14m.59s., $P_g$? =15m.13s., S =15m.27s.
Arapuni 8h.16m.
Bunnythorp P =8h.16m.0s., S =16m.16s.
Hastings P =8h.16m.0s., S =16m.27s., $S_g$ =16m.37s.
Wellington $P_g$ =8h.17m.37s., $S_g$ =17m.42s.
Wellington $P_g$ =8h.26m.32s., $S_g$ =26m.38s.

Dec. 14d. 14h. Readings for which no determination has been made :—

Samarkand P =19m.52s., $S_g$ =20m.22s.
Andijan eP =20m.42s.
Frunse e =22m.22s., S =23m.0s.
Almata S =23m.10s.
Little Rock iP =33m.40s., i =33m.46s., i =34m.37s., i =34m.55s., M =37m.5s.
Riverside ePZ =35m.21s., iZ =35m.59s., iZ =36m.17s.
Mount Wilson iPZ =35m.32s., iNEZ =36m.12s., iZ =36m.34s.
Pasadena iPNZ =35m.32s., iNEZ =36m.11s., iZ =36m.33s.
Tinemaha iPNEZ =35m.47s., iZ =36m.26s., iZ =36m.50s., iZ =38m.36s.
La Jolla iZ =36m.2s., iZ =36m.25s.
Wellington 38m.

Dec. 14d. 20h. Readings for which no determination has been made :—

Pasadena eZ? =12m.19s., iZ =12m.47s.
Mount Wilson eZ =12m.48s.
Riverside eZ =12m.49s.
Tinemaha eENZ =12m.59s., eZ =13m.35s.

Dec. 14d. 20h. 42m. 36s. Epicentre 31°·3N. 88°·8E. N.3.

A = +·018, B = +·854, C = +·520; D = +1·000, E = −·021
G = +·011, H = +·519, K = −·855.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Calcutta | 8·8 | 182 | e 2 18 | +13 | 3 53 | + 7 | 4·8 | 7·1 |
| Dehra Dun | 9·3 | 267 | 5 24 | ? | 6 4 | ? | — | 6·4 |
| Agra | 10·3 | 249 | 2 25 | 0 | i 4 21 | 0 | — | 7·4 |
| Andijan | 16·3 | 310 | e 3 57 | PP | i 7 15 | ? | e 9·3 | — |
| Hyderabad | 16·8 | 216 | 3 58 | PP | 7 11 | SS | 9·0 | 12·3 |
| Tashkent | 18·5 | 308 | i 4 18 | + 5 | i 7 49 | SS | 10·7 | 12·0 |
| Bombay | 19·0 | 233 | e 4 13 | − 6 | e 7 44 | − 2 | e 9·4 | 10·9 |
| Phu-Lien | 19·1 | 119 | e 4 19 | − 1 | e 7 53 | + 5 | 9·4 | — |
| Chiufeng | 23·7 | 61 | 5 7k | 0 | 9 28 | +10 | e 12·1 | 13·3 |
| Hong Kong | 24·3 | 105 | 5 13 | 0 | 9 32 | + 4 | 12·9 | 14·6 |
| Zi-ka-wei | 27·8 | 81 | e 5 47 | + 2 | 10 41 | +13 | — | 16·4 |
| Sverdlovsk | 32·1 | 331 | i 6 27 | + 3 | e 11 52 | +15 | 17·0 | 18·1 |
| Manila | 33·8 | 112 | e 6 54 | +15 | 14 54 | ? | — | — |

Additional readings:—
Agra S* = +4m.57s., $iS_g$ = +5m.31s.
Bombay iP = +4m.28s. = PP + 0s., iS = +8m.0s., SS = +8m.38s., SSS? = +8m.55s.
Long waves were also recorded at Copenhagen, De Bilt, Paris, Pulkovo, and Strasbourg.

Dec. 14d. 22h. Readings for which no determination has been made; 38°N. 40°E. has been suggested:—
Erevan eP = 54m.19s., i = 58m.8s.
Tiflis ePE = 54m.37s., eSE = 55m.49s.
Ksara eP = 55m.5s., eS = 56m.17s., isSS = 56m.53s.
Grozny eP = 55m.20s.
Theodosia eP = 55m.30s., S = 56m.40s.
Yalta eP = 55m.32s., eS = 56m.44s.
Pulkovo e = 56m.0s.
Sverdlovsk P = 58m.16s., S = 62m.19s., L = 64m.
Tashkent P = 58m.24s., S = 62m.24s., eL = 67m.54s., M = 71m.6s.

Dec. 14d. Readings also at 2h. (Tiflis), 7h. (Christchurch, New Plymouth, and Wellington), 8h. (Glenmuick, New Plymouth, and Wellington (4)), 9h. (Almata, Frunse, Christchurch, Samarkand, Wellington, and Mizusawa (2)), 11h. (Calcutta, Hong Kong, Medan, and Phu-Lien), 13h. (Erevan, Grozny (2), Nagoya, and Tyosi), 14h. (Wellington), 15h. (Wellington), 16h. (Grozny), 17h. (Andijan, Ithaca, Nagoya, and Tyosi), 19h. (Koti), 20h. (Apia, Triest, and Wellington), 21h. (Nagoya and Tyosi), 23h. (Erevan).

Dec. 15d. 1h. 57m. 44s. Epicentre 31°·5N. 89°·0E. N.1.

A = +·015, B = +·852, C = +·523; D = +1·000, E = −·018;
G = +·009, H = +·522, K = −·853.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Calcutta | 9·0 | 184 | 2 11 | + 4 | 3 51 | + 2 | 4·6 | — |
| Dehra Dun | 9·5 | 266 | 4 16 | S | 6 6 | ? | — | 6·3 |
| Agra | 10·5 | 249 | i 2 28 | 0 | i 4 24 | − 2 | 4·9 | — |
| Almata | 15·1 | 325 | 3 30 | 0 | 6 40 | +23 | 8·1 | — |
| Andijan | 16·3 | 310 | 3 50 | + 5 | 7 14 | ? | 9·3 | — |
| Hyderabad | 17·0 | 216 | 3 51 | − 3 | 6 43 | −19 | 8·1 | 11·4 |
| Tashkent | 18·6 | 307 | i 4 20 | PP | — | — | — | — |
| Phu-Lien | 19·1 | 120 | i 4 15 | − 5 | i 7 42 | − 6 | 9·3 | 13·2 |
| Bombay | 19·3 | 233 | i 4 17 | − 5 | i 7 48 | − 4 | 9·4 | — |
| Samarkand | 19·6 | 301 | 4 42 | +17 | 8 29 | ? | 9·8 | — |

*Continued on next page.*

| | | △ ° | Az. ° | P. m. s. | O−C. s. | S. m. s. | O−C. s. | L. m. | M. m. |
|---|---|---|---|---|---|---|---|---|---|
| Semipalatinsk | | 20·0 | 345 | 4 32 | + 2 | 8 20 | SS | 10·1 | — |
| Chiufeng | | 23·5 | 61 | 5 4a | − 1 | i 9 23 | +11 | 11·9 | — |
| Kodaikanal | | 23·8 | 209 | i 5 6 | − 2 | i 9 19 | 0 | 11·5 | 25·2 |
| Hong Kong | | 24·2 | 106 | 5 10 | − 2 | 9 26 | − 1 | 12·5 | 13·5 |
| Colombo | | 26·1 | 201 | 5 41 | +11 | 9 59 | − 1 | 19·2 | 20·4 |
| Dairen | | 27·5 | 65 | 5 50 | + 7 | 10 26 | + 2 | — | — |
| Zi-ka-wei | | 27·6 | 82 | e 5 42 | − 2 | 10 27 | + 2 | 13·7 | 19·3 |
| Tainan | | 28·9 | 99 | e 5 16 | −39 | 11 16? | +31 | — | — |
| Arisan | | 29·2 | 98 | e 5 57 | − 1 | 11 2 | +11 | — | — |
| Taihoku | | 29·3 | 95 | e 6 2 | + 3 | 10 52 | − 1 | — | — |
| Medan | | 29·4 | 160 | 5 59 | − 1 | i 11 11 | +16 | e 53·3 | — |
| Heizyo | | 30·7 | 65 | 6 12 | + 1 | 11 14 | − 2 | 15·6 | 17·6 |
| Zinsen | | 31·3 | 68 | e 6 12 | − 5 | i 11 23 | − 1 | i 15·9 | 17·3 |
| Keizyo | | 31·7 | 63 | 6 25 | + 5 | 11 27 | − 4 | — | 17·5 |
| Sverdlovsk | | 32·0 | 331 | i 6 21 | − 2 | i 11 33 | − 2 | 15·8 | — |
| Taikyu | | 33·0 | 71 | e 6 34 | + 2 | 11 53 | + 2 | — | — |
| Husan | | 33·4 | 74 | i 6 37 | + 2 | 11 46 | −11 | 18·8 | — |
| Manila | | 33·6 | 113 | 6 35a | − 2 | 12 6 | + 6 | 16·1 | 19·8 |
| Nagasaki | | 34·4 | 77 | 6 44 | 0 | e 12 5 | − 7 | e 14·4 | 19·2 |
| Hukuoka | | 34·7 | 75 | e 6 50 | + 4 | e 12 20 | + 3 | 17·1 | 19·5 |
| Hukuoka B | | 34·7 | 75 | e 6 45 | − 1 | 12 20 | + 3 | 17·4 | 19·3 |
| Unzendake | | 34·8 | 77 | 6 53 | + 6 | 12 24 | + 6 | — | — |
| Kagosima | | 35·2 | 79 | 6 57 | + 6 | 12 31 | + 7 | — | — |
| Grozny | | 35·9 | 302 | 7 4 | + 7 | i 12 46 | +11 | — | — |
| Miyazaki | | 35·9 | 78 | 6 56 | − 1 | 12 29 | − 6 | — | — |
| Tiflis | | 36·5 | 300 | e 7 3 | + 1 | e 12 52 | + 8 | — | — |
| Erevan | | 36·7 | 298 | 7 10 | + 6 | e 13 2 | +15 | e 18·3 | — |
| Koti | | 37·3 | 73 | 7 11 | + 2 | 12 55 | − 1 | 18·6 | 20·8 |
| Toyooka | | 38·1 | 72 | e 7 18 | + 2 | 15 55 | SSS | e 19·4 | 22·0 |
| Sumoto | | 38·3 | 72 | 7 13 | − 5 | 13 25 | +14 | 15·9 | 21·5 |
| Kobe | | 38·4 | 73 | e 7 18 | 0 | 13 11 | − 1 | 19·3q | 21·5 |
| Gihu | | 39·7 | 73 | 7 27 | − 2 | 13 31 | − 1 | — | — |
| Nagoya | | 39·9 | 70 | 7 30 | − 1 | — | — | 19·5 | 22·7 |
| Oiwake | | 41·0 | 69 | 7 41 | + 1 | 14 9 | +18 | — | — |
| Hunatu | | 41·2 | 70 | 7 41 | − 1 | 13 58 | + 4 | — | — |
| Batavia | | 41·4 | 152 | 7 40 | − 4 | 14 19 | +22 | e 21·3 | — |
| Kumagaya | | 41·6 | 69 | 7 46 | + 1 | 14 13 | +13 | — | — |
| Tokyo | | 42·0 | 69 | 7 52 | + 3 | — | — | — | — |
| Mito | | 42·5 | 68 | 7 47 | − 6 | 14 14 | + 1 | — | — |
| Mizusawa | E. | 42·6 | 65 | e 7 45 | − 8 | e 14 23 | + 8 | — | — |
| | N. | 42·6 | 65 | e 7 31 | −22 | e 14 16 | + 1 | 20·2 | — |
| Malabar | | 42·7 | 151 | 9 24 | PP | 17 49 | SSS | 25·3 | — |
| Kucino | | 42·8 | 319 | 7 33 | −22 | e 13 37 | ? | 16·3 | 23·9 |
| Tyosi | | 42·9 | 68 | 7 58 | + 2 | 14 21 | + 2 | 21·0 | 25·7 |
| Theodosia | | 43·3 | 304 | e 8 2 | + 3 | 14 32 | + 7 | 23·3 | — |
| Ksara | | 44·2 | 288 | e 8 15 | + 9 | 14 55 | +16 | — | 25·8 |
| Yalta | | 44·2 | 303 | e 8 8 | + 2 | 14 40 | + 1 | 23·3 | — |
| Titizima | | 46·1 | 79 | 8 22 | + 1 | 15 8 | + 2 | — | — |
| Pulkovo | | 47·6 | 324 | 8 34 | + 1 | i 15 34 | + 7 | 22·3 | 32·3 |
| Helwan | | 49·0 | 284 | i 8 49 | + 5 | 15 46 | − 1 | — | 32·2 |
| Helsingfors | | 50·2 | 326 | 8 55 | + 2 | 16 14 | +10 | e 22·3 | — |
| Lemberg | | 50·7 | 312 | e 9 10 | +13 | e 20 12 | ? | e 28·3 | 32·4 |
| Amboina | | 51·3 | 126 | 8 57 | − 4 | 15 44 | −34 | i 20·3 | — |
| Königsberg | | 52·6 | 319 | i 9 5 | − 6 | i 16 38 | + 1 | e 28·6 | 32·3 |
| Belgrade | | 53·9 | 305 | 9 29 | + 8 | e 17 2 | + 8 | 30·9 | 34·7 |
| Upsala | | 53·9 | 324 | i 9 21 | 0 | i 17 1 | + 7 | e 27·3 | 30·9 |
| Budapest | | 54·3 | 309 | 9 24 | + 1 | i 17 7 | + 8 | 21·3 | 34·3 |
| Vienna | | 55·9 | 310 | i 9 37 | + 2 | 17 38 | +17 | — | 33·3 |
| Zagreb | | 56·7 | 308 | e 9 41 | 0 | e 17 27 | − 5 | — | 34·4 |
| Graz | | 56·8 | 309 | e 9 46 | + 4 | i 17 41 | + 7 | e 28·3 | 36·3 |
| Prague | | 56·9 | 312 | 9 49 | + 7 | i 17 45 | +10 | e 28·3 | 33·8 |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Copenhagen | 57·1 | 320 | 9 46 | + 2 | e 17 43 | + 5 | — | — |
| Taranto | 57·1 | 301 | 9 44 | 0 | 17 44 | + 6 | 27·3 | 41·3 |
| Laibach | 57·7 | 308 | — | — | e 16 52 | −54 | e 34·0 | — |
| Cheb | 58·1 | 313 | e 9 47 | − 4 | e 17 36 | −15 | e 30·3 | 35·9 |
| Trenta | 58·1 | 300 | e 9 57 | + 6 | e 18 6 | +15 | 34·5 | 46·3 |
| Triest | 58·3 | 307 | 9 52 | 0 | i 17 57 | + 4 | e 27·3 | 32·6 |
| Jena | 58·4 | 312 | e 9 55 | + 2 | e 18 2 | + 7 | e 28·3 | 42·8 |
| Hamburg | 58·8 | 317 | i 9 57k | + 1 | i 18 11 | +11 | e 29·7 | 35·3 |
| Messina | 59·0 | 299 | 10 0 | + 3 | 18 13 | +10 | — | — |
| Naples | 59·2 | 302 | e 8 38 | ? | e 18 41 | +36 | — | 21·3 |
| Göttingen | 59·3 | 316 | i 10 0 | 0 | i 18 15 | + 8 | e 26·3$_q$ | 35·3 |
| Treviso | 59·3 | 307 | i 10 2 | + 2 | i 18 15 | + 8 | 33·6 | 44·3 |
| Padova | 59·6 | 308 | e 10 6 | + 4 | i 18 18 | + 7 | — | — |
| Bergen | 59·9 | 325 | i 9 59 | − 5 | i 18 15 | 0 | e 28·3 | 34·3 |
| Rome | 60·2 | 302 | 9 53 | −12 | — | — | — | — |
| Florence | 60·5 | 306 | i 10 9k | + 1 | 18 24 | + 1 | 29·3 | 35·3 |
| Prato | 60·5 | 306 | i 10 8 | 0 | i 18 31 | + 8 | 23·6 | 35·6 |
| Stuttgart | 60·5 | 311 | e 10 9 | + 1 | i 18 32 | + 9 | e 31·3 | 35·9 |
| Siena | 60·6 | 305 | 9 36 | +27 | 19 16? | (−40) | 35·3 | — |
| Karlsruhe | 60·9 | 311 | e 9 47 | +36 | 18 38 | +10 | e 33·3 | 35·9 |
| Livorno | 61·2 | 306 | 14 26 | ? | 22 36 | SS | — | — |
| Piacenza | 61·2 | 309 | 10 16 | + 3 | i 18 38 | + 6 | i 25·6 | 40·1 |
| Zurich | 61·2 | 310 | e 10 13 | 0 | e 18 25 | − 7 | — | — |
| Strasbourg | 61·5 | 312 | i 10 14k | − 1 | i 18 40 | + 4 | e 27·3 | 35·8 |
| Basle | 61·8 | 310 | e 10 17 | 0 | e 18 48 | PS | — | — |
| De Bilt | 62·0 | 316 | i 10 23 | + 5 | i 18 52 | PS | e 30·3 | 34·7 |
| Neuchatel | 62·4 | 311 | e 10 21 | 0 | e 18 51 | + 4 | — | — |
| Besançon | 62·9 | 312 | 10 32 | + 7 | 19 8 | PS | 26·3 | — |
| Uccle | 62·9 | 316 | e 10 24 | − 1 | i 19 1 | PS | 28·3 | 37·8 |
| Tananarive | 64·2 | 224 | 10 26 | − 8 | i 19 5 | − 5 | e 26·3 | 30·6 |
| Paris | 64·7 | 314 | e 10 33 | − 4 | i 19 21 | + 5 | 24·3 | 37·3 |
| Marseilles | 64·7 | 308 | e 9 48 | −49 | e 19 22 | + 6 | 27·3 | — |
| Durham | 65·0 | 321 | — | — | 19 24 | + 4 | — | 35·3 |
| Kew | 65·4 | 317 | e 10 41 | 0 | e 19 27 | + 2 | e 30·3 | 36·4 |
| Edinburgh | 65·4 | 323 | e 10 52 | +11 | i 19 35 | PS | 31·3 | 41·3 |
| Stonyhurst | 65·8 | 320 | e 10 47 | + 3 | e 19 38 | + 8 | 33·3 | 36·0 |
| Oxford | 65·9 | 317 | — | — | i 19 38 | + 7 | i 26·8 | 39·3 |
| Scoresby Sund | 67·0 | 339 | — | — | 19 58 | PS | 32·3 | — |
| Barcelona | 67·6 | 307 | e 10 55 | − 1 | 19 54 | + 2 | e 30·9 | 39·8 |
| Bagneres | 68·3 | 308 | 10 48 | −12 | 19 37 | −24 | 26·3 | — |
| Perth | 68·4 | 156 | 10 16 | −45 | 18 56 | ? | — | 17·3 |
| Algiers | 68·8 | 301 | e 11 1 | − 2 | i 20 12 | + 5 | 28·3 | 36·3 |
| Alicante | 70·7 | 305 | e 11 20 | + 5 | i 20 36 | + 6 | e 33·2 | 44·2 |
| Toledo | 72·5 | 307 | 11 22 | − 4 | 20 52 | + 1 | 29·9$_q$ | — |
| Almeria | 72·8 | 303 | i 11 26 | − 2 | i 20 46 | − 8 | e 34·1 | 51·0 |
| Granada | 73·4 | 305 | e 11 36 | + 5 | i 21 0 | − 1 | 42·2 | 46·4 |
| Malaga | 74·2 | 305 | 11 36 | 0 | 21 13 | + 2 | 34·9 | — |
| San Fernando | 75·6 | 304 | 11 56 | +12 | 21 26 | − 1 | 39·8 | — |
| Adelaide | 81·2 | 141 | e 15 26 | PP | i 22 15 | −13 | e 29·5 | 44·7 |
| Johannesburg | 81·9 | 232 | — | — | 22 34 | − 2 | 33·3 | 37·8 |
| Sitka | 83·8 | 23 | e 12 29 | + 2 | e 22 50 | [ 0] | e 38·5 | — |
| Melbourne | 86·8 | 139 | — | — | i 23 23 | − 2 | 37·3 | 50·7 |
| Riverview | 87·7 | 133 | e 12 13 | ? | e 23 23 | [+ 5] | 40·3 | 44·8 |
| Sydney | 87·8 | 133 | — | — | e 22 51 | [−28] | 46·8 | 49·8 |
| Cape Town | 93·2 | 232 | — | — | 23 52 | [+ 1] | 47·0 | — |
| Victoria | 95·0 | 21 | 17 11 | PP | 24 48 | + 6 | 44·1 | — |
| Honolulu | 97·1 | 60 | — | — | e 31 43 | SS | e 45·3 | — |
| Bozeman | 100·7 | 14 | — | — | e 26 55 | PS | e 49·4 | — |
| Ottawa | 101·9 | 349 | e 18 4 | PP | e 24 34 | [− 1] | e 50·3 | — |
| Ukiah | 103·3 | 24 | e 18 18 | PP | — | — | e 45·3 | — |

*Continued on next page.*

| | | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Oak Ridge | | 103·8 | 345 | — | — | e 27 33 | PS | 45·3 | — |
| Toronto | | 104·1 | 351 | i 18 21 | PP | e 24 42 | [− 3] | 51·3 | — |
| Berkeley | | 104·7 | 25 | i 18 25 | PP | i 24 50 | [+ 2] | — | — |
| Chicago | | 106·5 | 358 | — | — | e 32 31 | ? | e 44·2 | — |
| Tinemaha | | 106·8 | 22 | e 18 50 | PP | — | — | — | — |
| Philadelphia | | 107·0 | 345 | e 18 45 | PP | e 27 58 | PS | e 50·5 | — |
| Pittsburgh | | 107·2 | 351 | — | — | e 32 46 | ? | e 53·7 | — |
| Denver | | 107·6 | 10 | — | — | e 50 16? | ? | e 57·3 | 63·3 |
| Georgetown | | 108·4 | 349 | e 18 57 | PP | 28 18 | PS | e 51·3 | — |
| Charlottesville | | 109·4 | 350 | — | — | e 25 52 | {−11} | e 44·8 | — |
| Mount Wilson | | 109·5 | 24 | i 19 8 | PP | — | — | — | — |
| Florissant | | 109·6 | 359 | e 18 43 | PP | 22 52 | PPPP | — | — |
| Pasadena | | 109·6 | 24 | i 18 56 | PP | e 28 29 | PS | e 51·0 | — |
| St. Louis | | 109·8 | 359 | — | — | e 28 30 | PS | e 47·4 | 56·4 |
| Tucson | | 113·5 | 18 | — | — | e 25 1 | [−27] | e 53·5 | — |
| Little Rock | | 113·7 | 0 | e 18 58 | [+29] | e 28 45 | PS | e 49·3 | 60·9 |
| Columbia | | 113·8 | 351 | e 19 29 | PP | e 27 9 | {+35} | e 48·3 | — |
| San Juan | | 124·6 | 331 | — | — | e 27 6 | {−41} | e 50·5 | — |
| La Plata | N. | 152·2 | 254 | 19 46 | [+ 1] | — | — | 64·8 | 95·6 |
| Sucre | | 153·7 | 292 | e 19 51 | [+ 5] | — | — | 62·3 | — |
| La Paz | | 154·4 | 300 | 19 47 | [ 0] | — | — | $72·2_q$ | 91·8 |
| Huancayo | | 155·7 | 320 | e 20 25 | { 0} | e 34 26 | SKSP | e 66·6 | — |

Additional readings :—

**Bombay** iPP = +4m.35s., P* = +5m.33s., $P_g$ = +6m.20s., SS = +8m.26s.
**Chiufeng** iP = +5m.8s.
**Hong Kong** PP = +5m.55s.
**Colombo** SS = +14m.15s.
**Zi-ka-wei** iZ = +5m.51s. and +6m.7s., PP = +6m.31s., PPP = +6m.43s., PPPP? = +6m.55s., iZ = +10m.45s., SS = +12m.5s., SSS = +12m.33s., SSSS = +12m.45s.
**Zinsen** iPPE = +7m.11s., iSSE = +13m.0s.
**Husan** PP = +7m.40s.
**Hukuoka B** iPE = +6m.49s., eSN = +12m.50s.
**Grozny** i = +7m.13s.
**Sumoto** SEN = +13m.7s.
**Kobe** PEZ = +7m.22s., iEZ = +8m.55s. =PPP − 2s., SSEN = +15m.58s., iZ = +16m.11s., iN = +16m.16s., iE = +16m.19s., iN = +18m.41s., eLRZ = +21·4m.
**Batavia** P = +7m.44s.
**Kucino** e = +9m.13s.
**Ksara** e = +10m.7s. =$P_cP$ +11s., i = +18m.21s. =$S_cS$ +14s.
**Helwan** PP = +10m.47s., SS = +19m.57s.
**Helsingfors** ePPE = +10m.57s., ePPPE = +12m.0s., SSE = +20m.0s., eSSSE = +21m.30s. ; $T_o$ =1h.57m.21s.
**Amboina** iS = +16m.20s.
**Königsberg** i$P_cPZ$ = +9m.36s., ePPZ = +11m.37s., iSSEN = +20m.58s., eZ = +27m.24s.
**Belgrade** eSNW = +17m.10s., SS = +21m.23s.
**Upsala** iSSN = +21m.22s., iSSSN = +23m.1s.
**Budapest** i = +9m.29s.
**Vienna** $P_cP$ = +10m.48s., PP = +11m.59s., PPP = +12m.56s., $P_cS$ = +14m.30s., PS = +17m.48s., $S_cS$ = +19m.22s., SS = +21m.46s., SSS = +23m.23s.
**Zagreb** e = +9m.47s. and +9m.55s., ePP = +11m.47s., +12m.38s. and +13m.31s., e = +18m.9s., eE = +19m.28s. =$S_cS$ − 1s. and +21m.49s., e = +22m.30s., +22m.55s., +23m.50s., +25m.5s., +29m.53s., and +32m.5s.
**Graz** iP = +9m.50s., ipP = +12m.0s., iSSS = +23m.14s.
**Prague** eSS = +21m.40s., eSSS = +24m.16s.
**Copenhagen** $P_cP$ = +10m.53s., PP = +12m.4s., PPP = +13m.16s., iSN = +17m.48s., SS = +21m.46s.
**Cheb** ePP = +11m.48s., ePPP = +12m.48s., eSS? = +21m.29s.
**Triest** i = +9m.59s. and +11m.58s. =PP + 3s., PP = +12m.15s., PPP = +13m.18s., i = +13m.31s., and +13m.39s., iPS = +18m.24s., iN = +20m.35s., iSS = +21m.57s., i = +22m.58s., iN = +24m.30s. and +24m.59s., i = +25m.17s., iN = +25m.30s.
**Jena** eE = +12m.12s., eSN = +18m.6s., eE = +21m.55s.
**Hamburg** ePP = +12m.46s., ePPP = +13m.30s., iSS = +22m.33s., eSSS = +24m.33s.
**Göttingen** ePPP = +13m.31s., e = +22m.10s., iSSS = +24m.20s.

*Continued on next page.*

Treviso SS = +24m.41s., SSS = +27m.51s.
Bergen SS = +22m.15s., SSS = +24m.24s.
Florence PP = +12m.40s., PPP = +13m.52s., PS = +18m.56s., SS = +22m.56s.
Stuttgart iP = +10m.15s., $iP_cP$ = +10m.46s., ePP = +12m.21s., ePPP = +13m.50s., eSS = +22m.35s., eSSS = +25m.6s.
Piacenza PP = +13m.56s. = PPP + 14s., PS = +19m.4s., SS = +20m.24s., SSS = +21m.16s.
Strasbourg i = +10m.18s., iPP = +12m.37s., iPPP = +14m.13s., iPPPP = +14m.57s., i = +15m.29s., iPS = +19m.2s., iSS = +23m.13s., SSS = +25m.16s.
De Bilt iZ = +10m.25s. and +14m.16s.
Besançon e = +14m.36s. = PPPP + 5s., SS = +23m.32s.
Uccle iSS = +23m.18s., iSSS = +25m.51s.
Tananarive e = +20m.28s. = $S_cS$ + 6s., eSS = +22m.41s., SS = +24m.0s., e = +24m.23s.
Paris PKP = +10m.43s.
Marseilles SS? = +23m.40s.
Kew iP = +10m.47s., iS = +19m.32s., iPS = +19m.38s., eSS = +24m.9s., iN = +26m.19s. = SSS + 3s., iEN = +26m.43s., iZ = +26m.50s., iEN = +26m.56s.
Edinburgh i = +19m.43s. = PS + 6s., +23m.56s., +27m.26s., and +27m.58s.
Stonyhurst i = +15m.38s., iS = +19m.44s. = PS + 3s., i = +27m.15s. = SSSS − 1s.
Oxford iPPN = +16m.36s.
Scoresby Sund +24m.22s. and +27m.16s.
Barcelona SS = +24m.31s., SSS = +28m.18s.
Algiers e? = +15m.34s.
Toledo iS = +21m.1s. = PS − 10s., LR = +35·3m.
Granada $P_cP$ = +11m.56s., PP = +14m.48s., SS = +26m.11s., SSS = +29m.48s.
Malaga PP = +14m.16s., e = +16m.49s. and +19m.2s., SS = +26m.13s., e = +29m.52s.
Johannesburg +24m.22s. and +29m.52s.
Sitka e = +15m.41s., ePP = +16m.19s., ePPP = +18m.29s., ePS = +23m.51s., e = +25m.48s., eSS = +28m.21s., eSSS = +33m.24s.
Melbourne e = +23m.9s. = SKS − 3s., i = +35m.26s.
Riverview eE = +23m.26s.
Cape Town E = +19m.54s., N = +20m.53s., E = +22m.47s., +23m.44s., and +24m.4s. = SKKS + 3s., N = +24m.15s. and +25m.55s., E = +26m.40s., +28m.43s. and +29m.37s., N = +29m.40s. and +30m.39s., E = +30m.58s., N = +31m.57s., E = +32m.1s. and +32m.30s., N = +33m.2s., E = +33m.57s., N = + 36m.58s., E = +37m.0s., N = +39m.34s., E = +39m.46s., N = +42m.58s., E = +44m.28s.
Honolulu e = +30m.19s., +33m.58s., +35m.16s. = SSS + 13s. and +36m.19s.
Bozeman e = +32m.26s.; $T_o$ = 1h.57m.39s.
Ottawa e = +31m.40s., eE = +41m.58s., e = +44m.16s.?
Ukiah e = +30m.2s., eSS = +33m.21s., e = +43m.16s.
Oak Ridge e = +28m.16s. and +31m.16s., eNE = +32m.43s., eNW = +33m.10s.
Toronto iN = +34m.37s.
Berkeley eE = +18m.40s., eN = +20m.45s., eZ = +21m.35s.
Tinemaha eZ = +17m.17s.
Philadelphia e = +33m.16s., +38m.19s. and +43m.15s.
Pittsburgh i = +38m.53s., e = +45m.49s.
Georgetown PPS = +29m.17s., SS = +33m.32s.; $T_o$ = 1h.57m.30s.
Charlottesville e = +26m.39s. and +34m.36s.
Florissant eP = +21m.50s., PP = +22m.31s., SS = +38m.28s. = SSS + 15s.
Pasadena eZ = +17m.36s. and +23m.4s.
St. Louis eE = +26m.42s., ePSE = +32m.24s., eSSE = +38m.21s. = SSS + 5s.
Tucson ePP = +19m.35s., ePPP = +20m.49s., ePS = +29m.8s., eSS = +35m.23s.
Columbia ePS = +29m.4s., eSS = +35m.26s.
San Juan e = +29m.4s., eSS = +37m.46s., eSSS = +42m.0s.
La Plata SSE = +42m.46s., SSN = +43m.4s., N = +57m.16s.? and +61m.16s.?
Sucre SS = +43m.58s.
La Paz PPN = +23m.25s., iPPZ = +23m.50s., SSE = +43m.19s., SSS = +48m.52s., LRE = +74m.52s., LRZ = +76m.31s.
Huancayo ePP = +23m.59s., e = +37m.20s., eSS = +43m.36s., eSSS = +49m.36s.
Long waves were also recorded at Arapuni, Ivigtut, Reykjavik, Tunis, and Wellington.

Dec. 15d. 16h. Readings for which no determination has been made :—

Belgrade iP = 6m.0s., i = 6m.3s., iS = 6m.50s., M = 7m.4s.
Triest eP = 6m.9s., e = 7m.3s., i = 7m.30s., iSS = 9m.9s., i = 9m.19s., i = 9m.27s., i = 9m.30s., i = 9m.59s.
Zagreb eP = 6m.37s., eS = 8m.24s., M = 8m.47s.
Vienna ePZ = 6m.58s., eNZ = 9m.35s.

Dec. 15d. 17h. Readings from two epicentres for which no determinations have been made :—

Ferndale $iP_gE$ =0m.17s., $iS_gE$ =0m.19s.
Berkeley eE =0m.20s., eEN =0m.52s., eSZ =1m.10s., iZ =1m.21s., iN =1m.55s., iZ =2m.2s., eE =2m.10s., iSZ =2m.22s.
Ukiah e =0m.33s.
Branner ePEN =0m.58s., iEN =1m.7s., iE =1m.19s., iN =1m.22s., iN =2m.2s., iE =2m.5s.
Lick iE =1m.1s.
Tinemaha ePN =1m.48s., eNZ =3m.24s., eZ =5m.6s.
Pasadena iP =2m.2s.a
Mount Wilson eP =2m.3s.
Riverside iPNZ =2m.9s.

Calcutta e =55m.14s.
Samarkand eP =56m.17s., e =56m.36s.
Almata e =56m.58s.
Tashkent iP =57m.17s., iS =61m.0s., eL =63m.18s., M =65m.48s.
Bombay e =57m.20s., e =60m.57s., M =65m.17s.
Agra eS =57m.23s., S =58m.28s.
Andijan e =57m.26s.
Hyderabad M =63m.48s.

Dec. 15d. 18h. Readings from more than one epicentre for which no determinations have been made :—

Adelaide i =3m.26s., e =8m.13s., MN =12m.42s.
Riverview ePE =3m.30s., iSE =7m.22s., iN =7m.26s., eL =9m.36s., ME =11m.20s.
Sydney e =4m.22s., L =10m.20s., M =11m.36s.
Chiufeng eL? =5m.30s., M =7m.0s.
Hong Kong M =6m.15s.
Vladivostok e =6m.33s.
Baku e =7m.55s., L =12m.
Wellington 7m.
Sverdlovsk 8m.
Melbourne e =9m.8s., L =12m.3s.
Pasadena iPZ =11m.34s.
Riverside iPZ =11m.36s.
Tinemaha iP =11m.39s.
Malabar e =16m.9s.
Pulkovo eL =18m.
Vienna ePZ =18m.18s.
Jena e =18m.20s.
Zagreb e =18m.27s.
Basle e =18m.40s.
Grozny $iP_g$ =25m.14s., $S_g$ =25m.20s., M =25m.25s.
Tashkent e =26m.20s.
Baku e =27m.29s.
Grozny $eP_g$ =34m.10s., $eS_g$ =34m.16s.

Dec. 15d. 19h. 14m. 30s. Epicentre 23°·0S. 179°·0W. N.2.

A = −·920, B = −·016, C = −·391 ; D = −·018, E = +1·000 ;
G = +·391, H = +·007, K = −·921.

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. |
| Arapuni | −2·0 | 15·7 | 196 | — | — | i 5 57 | SS | — | — |
| New Plymouth | −2·4 | 17·1 | 199 | 2 38 | −47 | 5 27 | ? | — | — |
| Wellington | −2·9 | 19·0 | 195 | 3 44 | + 1 | 6 43 | + 2 | — | — |
| Chatham Ils. | −3·1 | 21·0 | 175 | e 4 30 | +25 | i 7 24 | + 2 | — | — |
| Christchurch | −3·1 | 21·7 | 197 | i 4 23 | + 9 | — | — | — | — |
| Sydney | −4·3 | 28·2 | 241 | e 4 10 | −59 | — | — | 14·7 | 16·1 |
| Riverview | −4·3 | 28·3 | 241 | e 5 4 | − 6 | i 9 7 | −16 | e 17·0 | 18·6 |
| Melbourne | −5·0 | 34·1 | 236 | — | — | i 10 40 | −10 | 17·6 | 20·6 |
| Adelaide | −5·6 | 38·6 | 241 | e 5 30 | −62 | i 11 40 | −11 | i 17·7 | 22·0 |
| Amboina | −7·1 | 54·5 | 282 | 8 31 | − 1 | i 15 29 | + 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. |
| Palau | −7·1 | 54·7 | 298 | 8 40 | + 7 | — | — | — | — |
| Manila | −8·0 | 69·7 | 297 | 10 17k | + 1 | 18 47 | + 9 | 26·5 | — |
| Mera | −8·0 | 69·8 | 325 | 10 18 | + 1 | 18 43 | + 4 | — | — |
| Yokohama | −8·1 | 70·4 | 325 | 10 19 | − 1 | 18 51 | + 5 | — | — |
| Misima | −8·1 | 70·5 | 323 | 10 21 | 0 | 18 50 | + 3 | — | — |
| Tokyo | −8·1 | 70·5 | 324 | 10 27 | + 6 | 18 57 | +10 | — | — |
| Numadu | −8·1 | 70·5 | 324 | 10 23 | + 2 | 18 58 | +11 | — | — |
| Kakioka | −8·1 | 70·7 | 327 | 10 21 | − 1 | 18 53 | + 3 | — | — |
| Tukubasan | −8·1 | 70·7 | 325 | 10 22 | 0 | 18 55 | + 5 | — | — |
| Kohu | −8·2 | 71·1 | 325 | 10 26 | + 1 | 19 1 | + 7 | — | — |
| Nagoya | −8·2 | 71·6 | 324 | 10 31 | + 3 | 19 9 | + 9 | — | — |
| Oiwake | −8·2 | 71·6 | 326 | 10 30 | + 2 | 19 9 | + 9 | — | — |
| Kameyama | −8·2 | 71·6 | 323 | 10 30 | + 2 | 19 8 | + 8 | — | — |
| Malabar | −8·2 | 71·9 | 270 | i 10 30 | 0 | — | — | — | — |
| Wakayama | −8·2 | 72·0 | 321 | 10 30 | − 1 | 19 8 | + 3 | — | — |
| Sumoto | −8·2 | 72·1 | 323 | 10 29 | − 2 | 19 9 | + 3 | — | — |
| Kobe | −8·2 | 72·2 | 322 | 10 33 | + 1 | 19 13 | + 6 | — | — |
| Miyazaki | −8·2 | 72·5 | 317 | 10 34 | 0 | 19 17 | + 6 | — | — |
| Mizusawa | −8·3 | 72·6 | 328 | e 10 33 | − 1 | e 19 16 | + 5 | — | — |
| Toyama | −8·3 | 72·6 | 325 | 10 37 | + 3 | 19 20 | + 9 | — | — |
| Batavia | −8·3 | 73·0 | 270 | i 10 32k | − 5 | i 19 12 | − 4 | — | — |
| Wazima | −8·3 | 73·3 | 325 | 10 42 | + 3 | 19 25 | + 5 | — | — |
| Kumamoto | −8·3 | 73·6 | 318 | 10 39 | − 2 | 19 25 | + 1 | — | — |
| Nagasaki | −8·4 | 74·1 | 316 | 10 42 | − 1 | 19 27 | − 2 | — | — |
| Husan | −8·4 | 76·2 | 318 | (e 10 51) | − 6 | e 19 56 | + 2 | — | — |
| Zi-ka-wei | −8·5 | 78·7 | 311 | e 11 6 | − 6 | i 21 10 | +46 | — | — |
| Hong Kong | −8·6 | 79·2 | 300 | 11 10 | − 4 | 20 24 | − 4 | — | — |
| Vladivostok | −8·7 | 80·1 | 325 | i 11 27 | + 8 | 20 38 | + 1 | — | — |
| Santa Barbara | −8·7 | 80·4 | 46 | 11 21 | 0 | — | — | — | — |
| Branner | −8·7 | 80·6 | 42 | i 11 24 | + 2 | — | — | — | — |
| Berkeley | −8·7 | 80·9 | 43 | i 11 24 | 0 | i 20 56 | + 9 | — | — |
| Lick | −8·7 | 81·0 | 43 | i 11 26 | + 1 | — | — | — | — |
| La Jolla | −8·7 | 81·2 | 48 | i 11 26 | 0 | — | — | — | — |
| Pasadena | −8·7 | 81·3 | 47 | i 11 27a | + 1 | i 21 3 | +11 | — | — |
| Mount Wilson | −8·7 | 81·4 | 47 | i 11 28 | + 1 | 20 58 | + 5 | — | — |
| Riverside | −8·7 | 81·7 | 48 | e 11 29 | 0 | — | — | — | — |
| Tinemaha | −8·8 | 82·9 | 45 | i 11 35 | 0 | i 21 8 | − 2 | — | — |
| Medan | −8·8 | 84·3 | 276 | 11 38 | − 5 | i 21 8 | −18 | — | — |
| Phu-Lien | −8·8 | 84·7 | 295 | 11 30? | −14 | — | — | — | — |
| Tucson | −8·9 | 85·4 | 51 | e 11 48 | − 1 | e 21 30 | − 7 | — | — |
| Chiufeng | −9·0 | 87·3 | 316 | 11 51k | − 8 | 21 26 | −31 | — | — |
| Sitka | −9·1 | 88·0 | 22 | — | — | i 22 3 | − 1 | — | — |
| La Plata | −9·4 | 99·6 | 134 | — | — | 22 30 | ? | — | — |
| Calcutta | — | 100·9 | 291 | e 14 49 | +61 | 22 44 | ? | e 32·3 | — |
| La Paz | — | 101·7 | 113 | 17 4 | ? | i 26 34 | PS | — | — |
| Colombo | — | 103·0 | 271 | 17 19 | ? | 22 49 | ? | 29·8 | 31·6 |
| Kodaikanal | — | 106·3 | 275 | e 17 23 | [−43] | — | — | — | — |
| Agra | — | 111·2 | 291 | e 18 6 | [−15] | i 24 21 | [−58] | — | — |
| Bombay | — | 113·5 | 281 | i 23 36 | ? | i 24 42 | [−46] | — | — |
| Almata | — | 115·6 | 309 | e 18 20 | [−14] | — | — | — | — |
| Oak Ridge | — | 117·9 | 53 | i 17 48 | [−52] | — | — | — | — |
| Andijan | — | 118·6 | 305 | e 18 36 | [− 6] | — | — | — | — |
| Tashkent | — | 120·9 | 306 | 13 42 | ? | 25 30 | [−23] | — | 54·2 |
| Sverdlovsk | — | 125·6 | 325 | 17 58 | [−60] | 24 13 | ? | — | — |
| Baku | — | 135·6 | 304 | e 21 5 | PP | e 23 59 | ? | 50·5 | — |
| Pulkovo | — | 137·9 | 339 | i 21 9 | ? | — | — | 36·5 | — |
| Grozny | — | 138·1 | 310 | e 18 26 | [−53] | — | — | — | — |
| Helsingfors | — | 139·2 | 343 | e 24 6 | ? | — | — | — | — |
| Theodosia | — | 144·5 | 317 | e 18 38 | [−55] | — | — | — | — |
| Yalta | — | 145·4 | 318 | e 18 44 | [−50] | — | — | — | — |

*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. |
| Copenhagen | — | 146·3 | 350 | 20 47 | ? | — | — | — | — |
| Ksara | — | 147·7 | 297 | e 18 57 | [−41] | — | — | — | — |
| Hamburg | — | 148·7 | 349 | e 18 46 | [−54] | — | — | — | — |
| Jena | — | 150·9 | 346 | e 17 56 | [−107] | — | — | — | — |
| Vienna | — | 152·0 | 338 | i 18 50 | [−54] | — | — | — | — |
| Helwan | — | 152·1 | 291 | 20 58 | ? | 28 41 | ? | — | — |
| Stuttgart | — | 153·6 | 349 | e 18 54 | [−52] | — | — | — | — |
| Strasbourg | — | 153·9 | 350 | e 18 30? | [−77] | — | — | e 45·5 | — |
| Zagreb | — | 154·2 | 336 | e 18 54 | [−53] | — | — | — | — |
| Triest | — | 155·1 | 339 | — | — | e 28 30 | ? | — | — |

Additional readings and notes :—
Wellington i = +5m.52s., $S_cS$ = +14m.12s.
Christchurch i = +2m.7s.
Riverview iE = +6m.34s. and +11m.55s., iNE = +14m.52s.
Melbourne i = +7m.28s., +13m.50s., and +15m.20s.
Adelaide i = +7m.50s., e = +13m.19s., i = +15m.39s.
Kobe SN = +19m.17s.
Mizusawa eS = +11m.1s. ; S in the table is given as for another shock.
Batavia i = +12m.26s. and +14m.8s.
Husan eP = +10m.1s. ; P in the table is given as S, and S as e.
Zi-ka-wei iZ = +12m.59s. and +14m.10s.
Santa Barbara iZ = +13m.32s.
Branner i = +11m.26s. and +11m.30s., iE = +11m.38s.
Berkeley iZ = +12m.23s. and +13m.13s., eE = +21m.46s. and +22m.11s.
La Jolla iZ = +12m.0s.
Pasadena ipPZ = +13m.26s., isPZ = +14m.42s., ePKPPKPZ = +37m.58s., iZ = +40m.37s.
Tinemaha iZ = +13m.17s. and +13m.36s.
Tucson i = +21m.45s., e = +24m.58s.
Chiufeng i = +13m.47s., PPZ = +14m.39s., iEZ = +15m.20s., PS = +21m.48s.
La Plata $S_cSN$? = +22m.35s., SP = +25m.36s., N = +26m.25s., sSN = +27m.42s. SSN = +31m.0s.
Calcutta SS = +26m.35s.
La Paz PKPN = +17m.10s., iEN = +22m.54s.
Tashkent PPS = +28m.33s., SS = +33m.54s., SSS = +38m.12s.
Sverdlovsk PPP = +20m.46s., SS = +39m.0s.
Baku e = +30m.21s. and +35m.40s.
Pulkovo i = +24m.5s., e = +27m.17s., +28m.59s., +30m.53s., and +33m.9s.
Helsingfors e?NE = +24m.48s. and +27m.24s.
Theodosia e = +21m.34s.
Yalta e = +21m.30s.
Ksara pPKP = +20m.55s., ePP = +22m.3s., SS = +40m.41s.
Hamburg i = +20m.52s.
Jena e = +21m.0s.
Vienna iNE = +20m.57s.
Helwan i = +32m.6s.
Stuttgart eZ = +21m.0s., e = +31m.48s., eE = +41m.48s.
Strasbourg e = +21m.5s.
Zagreb e = +21m.9s.
Triest i = +28m.57s, and +31m.30s.
Long waves were recorded at Hyderabad.

**Dec. 15d. Readings also at 1h. (Grozny, Erevan, and Ksara), 6h. (Bombay and Calcutta), 7h. (Bombay (2) and Calcutta (2) ), 8h. (Almata, Andijan, and Frunse), 9h. (Bombay), 10h. (Bombay, Calcutta, Kodaikanal, Tananarive, Tashkent, and Sverdlovsk), 12h. (Grozny), 13h. (Camerino, Prato, Rome, Siena, and Triest), 16h. (Branner and Lick), 18h. (Basle), 19h. (Göttingen, Husan, Kobe (2), Nagoya, and Sumoto), 20h. (Husan).**

**Dec. 16d. 16h. Readings for which no determination has been made ; probably two epicentres.**

**Tashkent S = 7m.42s., eL = 21m.18s., M = 23m.18s.**
**Calcutta e = 14m.26s.**
**Agra e = 15m.3s., e = 16m.13s.**
**Bombay e = 18m.58s., M = 22m.48s.**
**Kodaikanal e = 20m.0s.**
**Chiufeng eLN = 23m.28s.**
**Sverdlovsk L = 27m.**

*Continued on next page.*

Montezuma iP = 32m.34s., iS = 32m.39s., iL = 32m.43s.
Sucre iP = 32m.41s., iS = 33m.52s., L = 35m.12s.
La Paz iP = 33m.2s., iZ = 33m.33s., iZ = 33m.50s., SZ = 34m.25s., LZ = 35m.17s., M = 36m.36s.
Huancayo e = 34m.28s., e = 36m..38s., e = 37m.1s.
La Plata SSSN = 37m.36s.. E = 38m.18s., LE = 39m.12s., LN = 39m.24s., M = 39m.53s.
Oak Ridge i = 41m.56s., i = 42m.23s.
La Jolla iPZ = 42m.41s., iZ = 43m..7s., eZ = 43m.49s.
Riverside iPENZ = 42m.45s., iZ = 43m.12s., iZ = 43m.24s.
Pasadena iPZ = 42m.49s.k, iZ = 43m.16s., iZ = 43m.28s.
Mount Wilson iPNZ = 42m.49s.k, iZ = 43m.29s.
Santa Barbara iZ = 42m.55s.
Tinemaha iPENZ = 43m.1s., eZ = 43m.31s., iZ = 43m.41s.

Dec. 16d. Readings also at 0h. (Chiufeng, Calcutta, Bombay, Hyderabad, Kodaikanal, Pulkovo, Sverdlovsk, Tashkent, Vladivostok, and Yalta), 1h. (Grozny), 2h. (Wellington, Mount Wilson, Pasadena, Riverside, Seattle, and Tinemaha), 3h. (Huancayo), 5h. (Nagasaki), 7h. (Manila, Nagoya, and Mineo), 8h. (Nagoya, Mizusawa, and Tyosi), 9h. (Andijan, Frunse, Samarkand, and Manila), 10h. (Wellington), 11h. (Manila), 13h. (Andijan (2), Frunse, and Tyosi), 19h. (Agra, Bombay, Calcutta, Sverdlovsk, Tashkent, and Wellington), 20h. (Agra, Baku, Calcutta, Chiufeng, Kodaikanal, Sverdlovsk, and Tashkent (2) ), 23h. (Chiufeng, Agra, Bombay, Calcutta, Hyderabad, Kodaikanal, Sverdlovsk, and Tashkent).

Dec. 17d. 3h. Readings for which no determination has been made :—
Ivigtut 12m.
Samarkand eP = 21m.50s.
Andijan P = 22m.11s., $S_g$ = 22m.56s.
Tashkent e = 22m.40s., eL = 23m.6s., M = 23m.42s.
Almata e = 24m.16s.
Frunse e = 25m.0s.
Long waves at Pulkovo and Sverdlovsk.

Dec. 17d. 3h. 36m. 13s. Epicentre 24°·2N. 121°·8E. (as on Nov. 2d.). X.

A = −·481, B = +·775, C = +·410.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Karenko | 0·3 | 218 | e 0 0 | − 4 | 0 2 | − 6 | — | — |
| Taihoku | 0·9 | 343 | 0 13 | 0 | 0 25 | + 2 | — | — |
| Taityu | 1·0 | 268 | 0 15 | + 1 | 0 28 | S* | — | — |
| Arisan | 1·2 | 230 | 0 15 | − 2 | 0 25 | − 6 | — | — |
| Tainan | 1·9 | 232 | 0 29 | + 1 | 0 57 | $S_g$ | — | — |
| Hokoto | 2·2 | 252 | 0 23 | − 8 | 0 25 | ? | — | — |
| Hong Kong | 7·3 | 257 | 2 19 | $P_g$ | 3 0 | − 6 | 3·4 | 3·9 |
| Manila | 9·6 | 184 | 2 34 | +18 | 4 43 | S* | 6·4 | — |
| Nagasaki | 11·1 | 38 | 2 36 | 0 | — | — | — | — |
| Husan | 12·5 | 28 | (2 56) | + 1 | 2 56 | P | 7·0 | — |
| Zinsen | 13·9 | 16 | — | — | e 7 27 | $S_g$ | — | — |
| Keizyo | 14·1 | 17 | 3 17 | 0 | 7 47 | $S_g$ | — | — |
| Phu-Lien | 14·4 | 259 | — | — | 6 47? | S* | — | — |
| Chiufeng | 16·6 | 345 | e 4 1 | PP | e 6 56 | + 4 | 9·0 | — |
| Vladivostok | 20·6 | 21 | e 4 41 | + 5 | — | — | — | — |
| Bombay | 45·6 | 275 | — | — | e 17 47? | SS | — | — |
| Tashkent | 46·6 | 304 | — | — | e 15 25 | +12 | e 23·1 | 28·0 |

Tashkent gives also e = +18m.40s. and +20m.5s.
Long waves were also recorded at Calcutta, Edinburgh, Ivigtut, Scoresby Sund, and other European stations.

Dec. 17d. 11h. Readings for which no determination has been made :—
Lick iPE = 10m.47s., eE = 10m.58s.
Branner iPEN = 10m.50s., iN = 10m.59s., iEN = 11m.4s., iEN = 11m.7s.
Berkeley iPEZ = 10m.55s., eN,iZ = 11m.13s., iN = 11m.27s., iZ = 11m.42s., iE = 11m.51s., iZ = 11m.53s., iN = 11m.59s.
Ukiah e = 12m.40s., e = 13m.33s., e = 14m.41s.
Tucson e = 13m.48s., eL = 14m.25s.

Dec. 17d. 15h. 52m. 44s. Epicentre 2°·3S. 148°·9E. N.2.

A = −·856, B = +·516, C = −·040 ; D = +·517, E = +·856 ;
G = +·034, H = −·021, K = −·999.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Palau | | 17·3 | 304 | 3 58 | 0 | 7 16 | SS | — | — |
| Amboina | | 20·7 | 266 | 4 25 | −12 | 8 9 | −11 | 10·3 | 15·0 |
| Riverview | | 31·6 | 176 | 6 22 | + 3 | e 11 9 | −20 | e 14·0 | 20·3 |
| Sydney | | 31·6 | 176 | e 8 1 | ? | e 13 51 | ? | 16·8 | 17·9 |
| Manila | | 32·4 | 302 | i 6 26 | 0 | 11 42 | + 1 | 14·6 | — |
| Adelaide | | 34·0 | 195 | e 6 37 | − 3 | i 11 54 | −12 | e 13·4 | 23·3 |
| Melbourne | | 35·7 | 185 | e 7 2? | + 7 | e 12 13 | −19 | 15·1 | 21·7 |
| Miyazaki | | 38·0 | 336 | 7 17 | + 2 | 13 4 | − 2 | — | — |
| Koti | | 38·7 | 339 | 7 21 | 0 | 13 21 | + 4 | — | — |
| Tokyo | | 38·9 | 348 | 7 28 | + 5 | — | — | — | — |
| Sumoto | | 38·9 | 341 | 7 16 | − 7 | 12 50 | ? | — | — |
| Nagoya | | 39·1 | 344 | e 7 33 | + 9 | — | — | — | — |
| Kobe | | 39·2 | 342 | 7 30 | + 5 | e 13 28 | + 4 | — | 24·6 |
| Nagasaki | | 39·4 | 334 | 7 27 | 0 | e 12 53 | ? | e 16·6 | — |
| Hukuoka B | | 39·9 | 336 | e 7 33 | + 2 | 16 50 | ? | — | — |
| Toyooka | | 40·0 | 342 | e 7 36 | + 4 | — | — | — | — |
| Husan | | 41·8 | 335 | 7 36 | −11 | 13 55 | − 8 | 20·1 | — |
| Hong Kong | | 41·9 | 308 | 7 45 | − 3 | 14 8 | + 3 | — | 21·6 |
| Mizusawa | E. | 42·0 | 351 | e 8 2 | +13 | e 12 49 | ? | 17·4 | — |
| | N. | 42·0 | 351 | e 7 56 | + 7 | e 12 54 | ? | 17·9 | — |
| Batavia | | 42·2 | 263 | i 7 46 | − 4 | — | — | — | — |
| Zi-ka-wei | | 42·5 | 325 | 7 50 | − 3 | 14 18 | + 5 | 20·2 | 22·4 |
| Perth | | 43·0 | 223 | e 9 31 | PP | i 14 11 | −10 | e 18·9 | 23·8 |
| Arapuni | | 43·4 | 149 | — | — | 14 36 | + 9 | 20·3 | — |
| Keizyo | | 44·8 | 335 | 8 11 | 0 | 14 53 | + 6 | — | — |
| Zinsen | | 44·8 | 335 | e 8 5 | − 6 | e 14 50 | + 3 | e 21·5 | — |
| Wellington | | 45·4 | 153 | 8 36 | +20 | 14 46 | −10 | 21·8 | 23·3 |
| Phu-Lien | | 47·4 | 302 | e 8 30 | − 2 | 15 24 | 0 | 22·3 | — |
| Vladivostok | | 47·9 | 344 | e 8 35 | 0 | i 15 41 | +10 | 20·4 | 34·7 |
| Medan | | 50·6 | 277 | 8 59 | + 3 | i 16 2 | − 7 | — | — |
| Chiufeng | | 51·9 | 328 | i 9 4a | − 2 | i 16 21 | − 6 | 24·0 | 29·5 |
| Honolulu | | 57·2 | 63 | — | — | e 17 30 | − 9 | e 26·4 | — |
| Calcutta | | 64·0 | 296 | e 10 34 | + 2 | 19 11 | + 4 | — | — |
| Colombo | | 69·6 | 278 | 11 11 | + 3 | 20 10 | − 6 | 35·3 | 41·4 |
| Hyderabad | | 72·2 | 289 | 11 30 | + 6 | 20 37 | −10 | 33·4 | 46·6 |
| Kodaikanal | | 72·3 | 282 | e 11 22 | − 3 | 20 44 | − 4 | e 34·3 | — |
| Agra | | 74·2 | 299 | 11 29 | − 7 | i 21 3 | − 8 | — | — |
| Bombay | | 77·6 | 290 | e 11 49 | − 6 | i 21 41 | − 8 | e 36·3 | — |
| Almata | | 78·6 | 315 | e 11 54 | − 6 | — | — | — | — |
| Frunse | | 80·2 | 314 | e 12 46 | +37 | e 23 8 | PS | — | — |
| Andijan | | 81·4 | 312 | 12 20 | + 5 | e 22 31 | 0 | — | — |
| Tashkent | | 83·8 | 312 | 12 34 | + 7 | 24 19 | ? | e 42·6 | 49·9 |
| Sitka | | 84·2 | 32 | e 17 4 | PPP | e 23 1 | + 1 | e 38·6 | — |
| Samarkand | | 85·3 | 314 | e 12 41 | + 6 | — | — | — | — |
| Ukiah | | 89·8 | 51 | — | — | e 30 6 | SS | e 37·1 | — |
| Sverdlovsk | | 91·0 | 327 | e 12 56 | − 6 | i 24 2 | − 3 | 45·6 | 53·7 |
| Tinemaha | | 93·6 | 53 | e 12 43 | −31 | — | — | — | — |
| Pasadena | | 93·7 | 56 | e 13 13 | − 1 | — | — | e 43·0 | — |
| Mount Wilson | | 93·7 | 56 | e 17 9 | PP | — | — | — | — |
| Baku | | 98·3 | 311 | e 15 4 | ? | 24 20 | [+ 3] | 47·3 | 59·0 |
| Tucson | | 99·8 | 57 | — | — | e 26 57 | PS | e 42·3 | — |
| Grozny | | 101·1 | 314 | e 18 6 | PP | — | — | — | — |
| Tiflis | | 102·0 | 312 | e 13 45 | − 8 | e 24 47 | [+12] | e 50·7 | 67·9 |
| Pulkovo | | 106·0 | 332 | — | — | 24 51 | [− 4] | 47·3 | 60·1 |
| Helsingfors | | 108·2 | 334 | e 16 20 | ? | — | — | e 52·3 | — |

*Continued on page next.*

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Yalta | 109·0 | 317 | e 18 49 | PP | e 27 56 | PS | — | — |
| Ksara | 110·3 | 306 | e 18 27 | [+ 8] | e 28 35 | PS | — | — |
| Upsala | 111·4 | 336 | — | — | e 34 16? | SS | e 57·3 | 68·4 |
| Scoresby Sund | 111·5 | 357 | — | — | e 25 16? | [− 4] | 49·3 | — |
| Copenhagen | 116·4 | 334 | 19 10 | [+34] | e 26 46 | {− 6} | 45·3 | — |
| Budapest | 117·5 | 323 | e 19 46 | PP | — | — | 59·3 | 63·3 |
| Hamburg | 118·6 | 333 | e 20 16? | PP | — | — | e 59·3 | 69·3 |
| Prague | 118·7 | 329 | — | — | e 25 46 | [ 0] | e 57·8 | 61·3 |
| Cheb | 119·7 | 329 | e 19 16? | [+31] | e 29 16? | PS | e 61·3 | 71·3 |
| Graz | 119·8 | 325 | — | — | e 48 43 | ? | e 59·3 | 69·2 |
| Triest | 121·6 | 325 | e 17 10 | ? | e 27 7 | {−20} | e 57·3 | 65·6 |
| Ottawa | 121·8 | 36 | — | — | e 27 16? | {−12} | e 50·3 | — |
| De Bilt | 121·8 | 335 | — | — | e 30 38 | PS | e 57·3 | 63·4 |
| Edinburgh | 121·9 | 342 | — | — | e 24 16? | PPPP | e 64·3 | — |
| Stuttgart | 122·2 | 330 | e 18 46 | [− 5] | e 30 16 | PS | e 64·3 | 72·3 |
| Strasbourg | 123·0 | 330 | e 20 36 | PP | (e 30 16?) | PS | e 30·3 | 74·3 |
| Uccle | 123·0 | 335 | — | — | e 27 34 | {− 2} | 58·3 | 74·4 |
| Florence | 124·1 | 324 | e 19 16 | [+21] | — | — | — | 68·3 |
| Piacenza | 124·2 | 326 | — | — | e 34 16 | ? | — | 62·7 |
| Philadelphia | 124·8 | 41 | — | — | e 37 52 | SS | e 58·0 | — |
| Paris | 125·3 | 333 | e 22 16? | ? | e 38 16? | ? | 63·3 | 75·3 |
| Oak Ridge | 125·9 | 36 | — | — | e 37 46 | SS | e 63·3 | — |
| Huancayo | 133·8 | 109 | e 22 32 | PKS | e 39 36 | SS | e 70·5 | — |
| Granada | 136·9 | 327 | — | — | e 69 16? | ? | 77·3 | 82·5 |
| La Paz | 138·9 | 119 | i 19 33k | [+13] | 25 51 | ? | 65·9 | 109·8 |

Additional readings :—
Amboina iP = +4m.34s.
Melbourne i = +14m.55s. =SSS − 5s.
Kobe PN = +7m.35s., SSE = +16m.37s., eZ = +16m.42s.
Toyooka PEN = +7m.44s.
Husan PP = +9m.23s.
Hong Kong PP = +9m.22s., PPP = +9m.46s., ? = +11m.57s., SS = +17m.19s.
Batavia i = +9m.25s. =PP + 2s.
Zi-ka-wei iZ = +8m.32s., PP = +9m.32s., PPP = +9m.58s., iZ = +10m.47s. and +15m.20s., SS? = +17m.24s.
Perth PP = +10m.26s., e = +12m.31s., SS = +16m.41s.
Zinsen ePPN = +9m.29s., ePPPN = +10m.16s., eSSN = +17m.53s.
Wellington PP = +10m.42s., SS = +18m.37s.
Chiufeng $P_cPN$ = +10m.31s., PPZ = +10m.51s., PSEN = +16m.57s., SS?Z = +20m.7s.
Honolulu i = +17m.43s. =PS − 2s., +17m.56s., and +20m.23s.
Calcutta PPP = +14m.11s., SSS = +25m.45s.
Kodaikanal PP = +14m.16s., PS = +21m.16s., SS = +25m.39s., SSS = +28m.24s.
Agra eN = +21m.0s., PS = +21m.46s., SS = +26m.13s.?, SSS = +29m.5s.?
Bombay PP = +14m.56s., PPP = +16m.33s., PS = +22m.26s., SS = +26m.47s., SSS = +29m.56s.
Tashkent PP = +16m.10s.
Sitka e = +34m.41s.
Sverdlovsk PP = +16m.41s., SKS = +23m.30s., PS = +25m.9s., SS = +30m.10s.
Pasadena eZ = +17m.12s. =PP + 17s.
Baku PP = +17m.39s., SS = +32m.4s.
Tiflis eZ = +17m.46s., ePPE = +18m.5s., eN = +31m.47s.
Pulkovo PP = +18m.41s., PS = +27m.45s., SS = +34m.16s.
Helsingfors e?EN = +16m.31s.
Ksara ePP = +19m.33s.
Scoresby Sund +35m.16s.
Copenhagen e = +29m.28s. =PS − 1s., +30m.34s., and +35m.46s. =SS + 2s.
Prague e = +36m.3s. and +39m.40s.
Triest e = +20m.31s. and +27m.22s., i = +41m.22s. =SSS + 10s.
Ottawa e = +37m.28s.
Edinburgh e = +53m.16s.
Stuttgart ePP = +20m.22s., ePPP = +23m.40s., e = +49m.52s.
Strasbourg e = +25m.16s.?
Uccle e = +30m.34s. =PS + 5s., i = +37m.34s., iN = +41m.53s. =SSS + 20s.
Philadelphia e = +47m.55s. and +51m.50s.
Oak Ridge e = +38m.56s. and +40m.42s.
Huancayo e = +55m.8s., +55m.33s., and +63m.3s.
Long waves were also recorded at Cape Town, Durham, Kew, Stonyhurst, Ivigtut, Göttingen, Jena, Bozeman, San Juan, Tananarive, and Tyosi.

Dec. 17d. Readings also at 1h. (Koti), 3h. (Edinburgh, Copenhagen, De Bilt, Florence, Paris, Scoresby Sund, Strasbourg, Stuttgart, and Uccle), 4h. (Andijan, Copenhagen, De Bilt, Frunse, Helsingfors, Paris, Pulkovo, Stuttgart, Tiflis, and Uccle), 5h. (Baku, Belgrade, Florence, Tashkent, Triest, Tiflis, Sverdlovsk, and Zagreb), 6h. (Agra, Bombay, Calcutta, Kodaikanal, Tashkent, Theodosia, Yalta, Chiufeng, and Wellington), 7h. (Sverdlovsk), 8h. (Andijan, Frunse, Samarkand, and Tucson), 9h. (Agra, Bombay, Calcutta, Hyderabad, Kodaikanal, Baku, Tashkent, Sverdlovsk, and Chiufeng), 14h. (Agra, Bombay, Calcutta, Kodaikanal, Sverdlovsk, Tashkent, and Chiufeng), 18h. (Manila), 19h. (Samarkand), 20h. (Batavia and Soengei Langka), 21h. (Calcutta, Mount Wilson, Pasadena, and Tinemaha), 22h. (Agra, Bombay, Sverdlovsk, Tashkent, Karenko, Taihoku, and Chiufeng), 23h. (Agra and Kobe).

Dec. 18d. 11h. 22m. 24s. Epicentre 30°·9N. 89°·1E. N.3.

$A = +\cdot013$, $B = +\cdot858$, $C = +\cdot514$; $D = +1\cdot000$, $E = -\cdot016$; $G = +\cdot008$, $H = +\cdot514$, $K = -\cdot858$.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Calcutta | 8·4 | 184 | e 2 4 | + 5 | 3 39 | + 5 | 4·5 | — |
| Dehra Dun | 9·6 | 269 | 4 26 | ? | 5 16 | $S_g$ | — | 5·6 |
| Agra | 10·5 | 252 | 2 23 | − 5 | i 4 19 | − 7 | — | — |
| Hyderabad | 16·6 | 218 | 3 45 | − 4 | 7 9 | SS | 8·8 | 10·8 |
| Frunse | 16·7 | 319 | 4 26 | ? | — | — | — | — |
| Andijan | 16·8 | 311 | 3 52 | 0 | 7 12 | SS | — | — |
| Phu-Lien | 18·7 | 119 | e 4 8 | − 7 | 7 36? | − 4 | — | — |
| Bombay | 19·0 | 234 | i 4 20 | + 1 | i 7 57 | SS | 9·4 | 12·3 |
| Tchimkent | 19·3 | 313 | 4 24 | + 2 | — | — | — | — |
| Samarkand | 20·0 | 302 | e 4 38 | + 8 | — | — | — | — |
| Semipalatinsk | 20·6 | 346 | — | — | e 9 31 | ? | — | — |
| Kodaikanal | 23·4 | 211 | i 5 5 | 0 | i 9 18 | + 6 | e 11·9 | 14·3 |
| Chiufeng | 23·7 | 60 | i 5 4a | − 3 | e 9 16 | − 2 | 12·5 | 13·3 |
| Hong Kong | 23·9 | 105 | 5 16 | + 7 | 9 25 | + 4 | 12·8 | 14·4 |
| Colombo | 25·6 | 202 | 10 1 | S | 14 16 | ? | 22·0 | 22·7 |
| Zi-ka-wei | 27·6 | 81 | — | — | e 10 35 | +10 | — | 16·3 |
| Medan | 28·8 | 160 | e 7 29 | ? | — | — | — | — |
| Sverdlovsk | 32·6 | 331 | 6 24 | − 4 | 11 38 | − 7 | 16·1 | 19·8 |
| Baku | 33·0 | 300 | e 6 34 | + 2 | 11 45 | − 6 | 17·4 | 21·4 |
| Manila | 33·4 | 112 | 6 36 | + 1 | 11 59 | + 2 | — | 15·6 |
| Vladivostok | 35·8 | 58 | e 8 16 | PP | — | — | — | 23·5 |
| Grozny | 36·3 | 302 | e 7 3 | + 3 | — | — | — | — |
| Tiflis | 36·9 | 301 | e 7 9 | + 3 | e 12 54 | + 4 | e 21·1 | 34·4 |
| Batavia | 40·8 | 152 | — | — | e 14 19 | +31 | — | — |
| Pulkovo | 48·1 | 325 | 8 34 | − 3 | 15 23 | −11 | 24·6 | 29·5 |
| Triest | 58·8 | 307 | — | — | e 24 39 | ? | e 29·7 | 34·0 |

Additional readings:—
Agra S* = +4m.50s., $iS_g$ = +5m.17s. = S* +7s.
Bombay SS = +8m.37s.
Chiufeng iS = +9m.25s.
Zi-ka-wei SZ = +14m.48s.
Tiflis eN = +15m.19s.
Long waves were recorded at Scoresby Sund, Husan, Taikyu, Zi-ka-wei, and other European stations.

Dec. 18d. Readings also at 3h. (Berkeley, Branner, and Lick), 4h. (Malabar), 5h. (Taikyu), 6h. (Taikyu), 9h. (La Paz), 11h. (Nagasaki), 13h. (Nagoya), 14h. (Manila), 20h. (Nagasaki), 21h. (Tiflis), 22h. (Arisan, Karenko, and Taihoku).

Dec. 19d. Readings at 2h. (Andijan, Samarkand, and Sverdlovsk), 3h. (Andijan, Tashkent, Agra, Bombay, Calcutta, Hyderabad, Kodaikanal, Chiufeng, Toyooka, and Vladivostok), 4h. (Mount Wilson (2), Riverside (2), Pasadena (2), and Tinemaha (2)), 6h. (Nagasaki, Triest, and Zagreb), 7h. (Samarkand), 8h. (Hukuoka B), 9h. (Berkeley (2), Mizusawa, Nagoya, and Tyosi), 12h. (Triest), 13h. (Malabar), 14h. (Wellington), 15h. (Wellington), 16h. (Manila), 17h. (Erevan, Mount Wilson, Pasadena, and Tinemaha), 20h. (Lick), 22h. (Branner), 23h. (Tyosi).

Dec. 20d. 0h. 24m. 23s. Epicentre 38°·8N. 71°·2E. (as on 1934 Sept. 4d.). X.

A = +·251, B = +·738, C = +·627.

| | △ | Az. | P. | O−C. | S. | O−C. |
|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. |
| Andijan | 2·1 | 25 | 0 30 | 0 | 0 59 | S* |
| Samarkand | 3·4 | 285 | 0 56 | P* | e 1 46 | $S_g$ |
| Frunse | 4·8 | 31 | 1 49 | $P_g$ | 2 59 | $S_g$ |
| Almata | 6·2 | 42 | — | — | 2 56 | S* |

Frunse $P_g$ = +2m.1s. = S − 2s.

Dec. 20d. Readings also at 0h. (Tashkent and Tananarive), 9h. (Prato), 13h. (Sebastopol, Simferopol, and Yalta), 14h. (Andijan and Apia), 22h. (Mount Wilson, Pasadena, Riverside, and Tinemaha).

Dec. 21d. 6h. 34m. 42s. Epicentre 30°·9N. 89°·1E. (as on 18d. 11h.). X.

A = +·013, B = +·858, C = +·514; D = +1·000, E = −·016.
G = +·008, H = +·514, K = −·858.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Calcutta | 8·4 | 184 | e 2 2 | + 3 | 3 42 | + 8 | 4·5 | 5·4 |
| Dehra Dun | 9·6 | 269 | 5 28 | $S_g$ | 6 28 | ? | — | — |
| Agra | 10·5 | 252 | e 2 27 | − 1 | 4 25 | − 1 | — | — |
| Almata | 15·7 | 331 | e 3 16 | −22 | — | — | — | — |
| Hyderabad | 16·6 | 218 | 6 38 | S | (6 38) | −14 | 9·2 | 10·9 |
| Andijan | 16·8 | 311 | e 3 55 | + 3 | e 7 14 | SS | — | — |
| Tashkent | 19·0 | 313 | e 4 19 | 0 | i 9 0 | ? | i 11·6 | 13·5 |
| Bombay | 19·0 | 234 | e 4 26 | + 7 | i 8 0 | SS | e 9·3 | 12·3 |
| Samarkand | 20·0 | 302 | e 3 36 | −54 | — | — | — | — |
| Kodaikanal | 23·4 | 211 | — | — | i 9 27 | +15 | 12·3 | 14·5 |
| Chiufeng | 23·7 | 60 | i 9 26k | S | (i 9 26k) | + 8 | e 12·6 | 15·2 |
| Hong Kong | 23·9 | 105 | 5 9 | 0 | 9 36 | +15 | 12·9 | 14·5 |
| Medan | 28·8 | 160 | — | — | 10 48 | + 3 | — | — |
| Sverdlovsk | 32·6 | 331 | e 6 25 | − 3 | — | — | 16·3 | 18·2 |
| Baku | 33·0 | 300 | — | — | e 13 57 | SS | 17·7 | — |
| Vladivostok | 35·8 | 58 | — | — | e 12 58 | +25 | — | 20·6 |

Additional readings :—
Agra $P_g$ = +3m.35s., S* = +4m.56s., $S_g$ = +5m.30s.
Hyderabad S = +8m.20s.
Tashkent e = +2m.17s., i = +9m.15s. and +9m.51s.
Bombay SS = +8m.38s.?
Sverdlovsk e = +14m.5s.
Long waves were also recorded at Copenhagen, De Bilt, and Pulkovo.

Dec. 21d. 12h. 39m. 7s. Epicentre 31°·5N. 89°·0E. (as on 15d. 1h.). X.

A = +·015, B = +·852, C = +·523; D = +1·000, E = −·018;
G = +·009, H = +·522, K = −·853.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Calcutta | 9·0 | 184 | e 2 7 | 0 | 3 45 | − 4 | 4·4 | 6·1 |
| Dehra Dun | 9·5 | 266 | 4 53 | S* | 5 43 | ? | 6·2 | 6·9 |
| Agra | 10·5 | 249 | 2 26 | − 2 | 4 26 | 0 | — | 7·4 |
| Almata | 15·1 | 325 | 3 23 | − 5 | 8 53 | ? | — | — |
| Frunse | 16·1 | 319 | e 4 15 | ? | — | — | — | — |

*Continued on next page.*

| | △ ° | Az. ° | P. m. s. | O−C. s. | S. m. s. | O−C. s. | L. m. | M. m. |
|---|---|---|---|---|---|---|---|---|
| Andijan | 16·3 | 310 | e 3 56 | PP | — | — | — | — |
| Hyderabad | 17·0 | 216 | 4 6 | +12 | 7 6 | + 4 | 9·1 | 11·6 |
| Phu-Lien | 19·1 | 120 | e 4 19 | − 1 | — | — | 10·9 | — |
| Bombay | 19·3 | 233 | i 4 24 | + 2 | i 8 1 | + 9 | e 9·9 | 12·1 |
| Chiufeng | 23·5 | 61 | 5 5k | 0 | i 9 28 | +14 | e 12·6 | 13·3 |
| Kodaikanal | 23·8 | 209 | i 5 7 | − 1 | i 9 27 | + 8 | 12·2 | 14·7 |
| Hong Kong | 24·2 | 106 | 5 12 | 0 | 9 28 | + 1 | 13·1 | 14·6 |
| Zi-ka-wei | 27·6 | 82 | — | — | e 10 39 | +14 | 15·3 | 18·1 |
| Medan | 29·4 | 160 | — | — | e 11 10 | +15 | — | — |
| Sverdlovsk | 32·0 | 331 | 6 25 | + 2 | e 11 42 | + 7 | $17·4_q$ | 20·4 |
| Baku | 32·6 | 298 | — | — | e 11 57 | +12 | 17·2 | — |
| Manila | 33·6 | 113 | 6 39a | + 2 | 13 28 | ? | 19·3 | 22·9 |
| Vladivostok | 35·6 | 57 | e 7 31 | +37 | — | — | — | 23·7 |
| Batavia | 41·4 | 152 | e 7 43 | − 1 | — | — | — | — |
| Theodosia | 43·3 | 304 | e 8 26 | +27 | — | — | — | — |
| Simferopol | 44·2 | 305 | e 8 11 | + 5 | e 14 20 | −19 | — | — |
| Yalta | 44·2 | 303 | e 8 13 | + 7 | — | — | — | — |
| Sebastopol | 44·6 | 304 | e 8 4 | − 6 | — | — | — | — |
| Pulkovo | 47·6 | 324 | i 8 34 | + 1 | e 15 33 | + 4 | 23·9 | 30·3 |
| Copenhagen | 57·1 | 320 | 9 47 | + 3 | — | — | 29·9 | — |
| Stuttgart | 60·5 | 311 | 10 12 | + 4 | — | — | e 34·9 | — |

Additional readings :—
Agra $P_g$ = +3m.28s., S* = +5m.9s., $iS_g$ = +5m.28s.
Andijan e = +8m.59s.
Bombay SS = +8m.41s.
Zi-ka-wei iZ = +10m.53s.
Sverdlovsk e = +9m.10s. = $P_eP$ −6s., LR = +20·2m.
Long waves were also recorded at Kew, De Bilt, Paris, Strasbourg, and Uccle.

Dec. 21d. 17h. Readings for which no determination has been made :—
Berkeley iPZ = ePN = 33m.33s., iSZ = 33m.39s.
Pasadena iP = 33m.41s.a, iZ = 34m.50s.
Mount Wilson iP = 33m.42s., iZ = 34m.51s.
Riverside iP = 33m.44s.a, iZ = 34m.52s.
La Jolla iPNZ = 33m.44s., iNZ = 34m.52s.
Santa Barbara ePE = 33m.45s., eE = 34m.54s.
Tinemaha iPZ = 33m.46s.a, iZ = 34m.16s., iZ = 34m.55s.

18h.
Tucson eS = 46m.50s., eL = 50m.43s.
La Jolla eP = 47m.29s.
Riverside iP = 47m.41s.
Pasadena iP = 47m.46s.a, iSN = 51m.26s., eLZ = 54m.0s.
Mount Wilson iP = 47m.48s.
Santa Barbara ePZ = 47m.56s.
Little Rock eP = 48m.0s., M = 55m.0s.
Tinemaha iP = 48m.12s.
St. Louis eP = 48m.40s., ME = 56m.40s.
Huancayo e = 51m.43s., e = 57m.40s., eL = 61m.10s.
La Paz eP = 52m.18s., L = 69m.6s., M = 73m.27s.
Chicago e = 58m.34s.

Dec. 21d. Readings also at 1h. (Grozny, Nagoya, and Tyosi), 2h. (Apia, Kobe, Nagoya, and Tyosi), 4h. (Samarkand (2) ), 6h. (Kobe, Nagoya, and Sumoto), 7h. (Ukiah), 8h. (Tyosi), 12h. (Husan and Nagasaki), 13h. (Berkeley, Branner, and Lick), 14h. (Almeria and Granada), 16h. (Almata, Andijan, Frunse, and Ferndale), 17h. (Batavia and Manila), 18h. (Baku, Sverdlovsk, Manila, and Tyosi), 19h. (Amboina, Baku, De Bilt, Sverdlovsk, and Scoresby Sund), 20h. (La Paz), 21h. (Christchurch and La Paz), 22h. (Apia).

Dec. 22d. 10h. Readings for which no determination has been made :—

Colombo P = 54m.25s., S = 56m.47s., L = 60m.33s., M = 61m.33s.
Kodaikanal iP = 56m.26s., S = 60m.40s., SS = 61m.33s., eL = 62m.35s.
Bombay eP = 57m.33s., PPP = 58m.39s., S = 62m.35s., SS = 63m.59s., eL = 65m.33s.
Hyderabad P = 57m.40s., PP = 58m.32s., S = 61m.52s., SS = 62m.40s., L = 64m.12s., M = 65m.48s.
Agra eE = 59m.37s., eN = 64m.59s.
Calcutta eP = 59m.59s., S = 65m.49s., L = 70m.54s., M = 73m.29s.
Medan P = 60m.35s., S? = 66m.55s.
Batavia P = 60m.48s.
Andijan eP = 60m.53s.
Tashkent e = 61m.0s., e = 62m.12s., e = 63m.4s., iS = 67m.18s., i = 68m.6s., e = 70m.36s., eL = 73m.24s., M = 80m.24s.
Frunse eP = 61m.30s.
Baku eP = 62m.39s., S = 71m.16s., L = 76m.18s., M = 82m.18s. ; probable epicentre 27°·5N. 130°·0E.
Manila P = 62m.54s., S = 66m.11s., M = 70m.26s.
Zi-ka-wei eZ = 63m.44s., LZ = 85m.34s., MZ = 91m.36s.
Chiufeng eZ = 63m.45s., eEN = 71m.20s., eL? = 88m.42s., M = 94m.4s.
Pulkovo eP = 63m.46s., eS = 72m.57s., L = 87m.
Hong Kong S? = 70m.2s., M = 89m.0s.
Cape Town 70m.18s., 70m.54s., 73m.38s., 75m.53s., 77m.13s., 77m.29s. LE = 79m.6s., ME = 85m.56s.
Tinemaha eNZ = 72m.19s., iZ = 73m.14s., eZ = 76m.6s.
Pasadena eNZ = 72m.26s., eZ = 73m.14s.
Riverside eZ = 72m.26s., eZ = 73m.11s.
Santa Barbara eZ = 72m.27s., eZ = 73m.20s.
La Jolla eZ = 72m.33s.
Vladivostok e = 73m.28s.
La Paz ePKP? = 79m.2s., LZ = 123m.6s., M = 130m.45s.
Long waves at Copenhagen and Tananarive.

Dec. 22d. 14h. 29m. 36s. Epicentre 11°·1N. 86°·9W. N.2.

A = + ·053, B = − ·980, C = + ·193 ; D = − ·999, E = − ·054 ; G = + ·010, H = − ·192, K = − ·981.

| | △ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Balboa Heights | 7·6 | 105 | e 1 50 | + 2 | e 3 21 | + 7 | — | 4·4 |
| Port au Prince | 15·9 | 61 | e 3 41 | + 1 | i 6 49 | SS | e 7·4 | 9·2 |
| San Juan | 21·3 | 68 | i 4 42 | − 1 | e 8 38 | + 6 | — | — |
| Little Rock | 24·1 | 349 | e 5 11 | 0 | i 9 46 | +21 | e 13·1 | — |
| Huancayo | 25·9 | 153 | e 5 33 | + 5 | i 10 1 | + 4 | — | — |
| St. Louis | 27·7 | 354 | e 5 41 | − 3 | e 10 50 | +23 | e 14·1 | 16·8 |
| Charlottesville | 27·9 | 14 | — | — | e 9 59 | −31 | e 11·2 | — |
| Florissant | 27·9 | 354 | e 5 43 | − 3 | e 10 53 | +23 | — | 16·7 |
| Georgetown | 29·1 | 16 | i 5 58a | + 1 | i 11 13 | +23 | e 14·4 | — |
| Philadelphia | 30·6 | 18 | e 6 7 | − 3 | i 11 49 | +33 | e 13·0 | — |
| Tucson | 30·6 | 318 | e 6 37 | +27 | — | — | e 15·4 | — |
| Chicago | 30·8 | 358 | — | — | e 10 43 | −34 | — | — |
| Ann Arbor | 31·3 | 5 | e 6 12 | − 5 | e 11 42 | +18 | e 15·8 | 18·9 |
| Toronto | 33·2 | 10 | e 6 37 | + 3 | i 12 14 | +20 | 16·5 | — |
| La Paz | 33·3 | 146 | i 6 36a | + 2 | i 11 59 | + 4 | 15·5 | 24·7 |
| Oak Ridge | 34·1 | 19 | i 6 38 | − 3 | i 12 40 | +32 | e 16·9 | — |
| La Jolla | 35·3 | 312 | e 6 53 | + 1 | — | — | — | — |
| Ottawa | 35·6 | 11 | e 6 54 | 0 | e 13 0 | +30 | e 15·4 | — |
| Riverside | 36·0 | 312 | e 6 56 | − 2 | e 13 23 | ? | — | — |
| Pasadena | 36·6 | 314 | e 7 3 | 0 | — | — | e 18·2 | — |
| Mount Wilson | 36·6 | 314 | e 6 57 | − 6 | e 13 25 | +40 | — | — |
| Sucre | 36·9 | 144 | 7 16 | +10 | i 12 57 | + 7 | 17·8 | — |
| Santa Barbara | 37·9 | 311 | e 7 21 | + 7 | — | — | — | — |
| Tinemaha | 38·3 | 316 | e 7 13 | − 5 | e 13 27 | +16 | — | — |
| Lick | 41·0 | 316 | e 7 41 | + 1 | e 7 56 | ? | — | — |

*Continued on next page.*

| | | △ ° | Az. ° | P. m. s. | O−C. s. | S. m. s. | O−C. s. | L. m. | M. m. |
|---|---|---|---|---|---|---|---|---|---|
| Branner | | 41·1 | 315 | e 7 49 | + 8 | — | — | — | — |
| Berkeley | | 41·4 | 316 | i 7 47 | + 3 | e 18 5 | (+15) | — | — |
| Ukiah | | 42·7 | 318 | e 8 18 | +24 | e 14 32 | +16 | e 18·0 | — |
| Victoria | | 48·1 | 328 | — | — | 16 23 | ? | 22·4 | — |
| La Plata | E. | 53·6 | 150 | 9 24 | + 6 | i 16 47 | − 3 | 30·8 | 31·5 |
| | N. | 53·6 | 150 | 9 21 | + 3 | 16 48 | − 2 | 30·4 | 31·7 |
| San Fernando | | 76·0 | 54 | — | — | 22 4 | PS | 34·9 | — |
| Edinburgh | | 77·3 | 35 | — | — | e 22 24? | PS | e 36·4 | 49·0 |
| Malaga | | 77·4 | 55 | e 12 14 | +20 | e 22 5 | PS | 36·4 | — |
| Bidston | | 77·5 | 37 | — | — | e 22 39 | PS | e 33·4 | 44·2 |
| Toledo | | 77·5 | 52 | e 12 15 | +20 | e 22 24 | PS | e 32·4$_q$ | 42·9 |
| Stonyhurst | | 77·8 | 36 | — | — | e 23 1 | ? | 36·4 | 38·9 |
| Granada | | 78·0 | 54 | e 11 28 | −29 | e 21 21 | −33 | 36·6 | 40·2 |
| Oxford | | 78·5 | 39 | — | — | e 22 31 | PS | e 33·4 | 43·3 |
| Almeria | | 79·0 | 55 | e 12 35 | +32 | e 22 35 | PS | e 36·9 | — |
| Kew | | 79·2 | 39 | — | — | e 22 45 | PS | e 35·4 | 40·6 |
| Alicante | | 80·3 | 53 | e 12 0 | − 9 | e 22 19 | 0 | e 39·2 | — |
| Paris | | 81·4 | 42 | e 11 24? | −51 | e 22 24? | − 7 | 28·4 | 39·4 |
| Uccle | | 82·2 | 41 | e 12 20 | + 1 | e 23 0 | PS | 33·4 | 42·4 |
| De Bilt | | 82·5 | 38 | e 12 24? | + 3 | 22 36 | − 6 | e 36·4 | 39·1 |
| Neuchatel | | 84·5 | 43 | e 12 50 | +19 | — | — | — | — |
| Basle | | 84·8 | 43 | e 12 53 | +21 | — | — | — | — |
| Strasbourg | | 84·8 | 41 | e 12 24? | − 9 | e 23 24? | +18 | e 28·4 | 47·9 |
| Hamburg | | 85·1 | 36 | e 12 30 | − 4 | — | — | e 39·4 | 48·4 |
| Stuttgart | | 85·5 | 41 | e 12 34 | − 2 | e 23 30 | +17 | e 37·4 | 47·4 |
| Copenhagen | | 86·0 | 35 | 12 39 | + 1 | 23 24 | + 6 | — | — |
| Zurich | | 86·2 | 42 | e 13 7 | +28 | — | — | — | — |
| Piacenza | | 86·7 | 45 | 23 48 | PS | — | — | 39·4 | 46·7 |
| Cheb | | 87·4 | 39 | — | — | e 23 49 | +18 | e 40·4 | 47·9 |
| Upsala | | 87·6 | 28 | — | — | e 24 24? | PS | e 41·4 | 52·5 |
| Prague | | 88·7 | 39 | — | — | e 23 49 | + 5 | — | 48·4 |
| Triest | | 89·4 | 43 | e 13 29 | +34 | i 23 58 | + 8 | — | 43·2 |
| Vienna | | 90·4 | 40 | e 13 26 | +27 | — | — | e 42·4 | — |
| Zagreb | | 90·9 | 42 | e 13 30 | +28 | e 24 21 | +17 | e 41·8 | — |
| Helsingfors | | 91·0 | 27 | e 16 24 | PP | e 24 6 | + 1 | e 44·4 | — |
| Pulkovo | | 93·4 | 27 | 13 12 | − 1 | 24 17 | −11 | 40·4 | 50·0 |
| Yalta | | 103·1 | 39 | e 20 31 | PPP | — | — | 53·9 | — |
| Wellington | | 103·5 | 230 | — | — | e 30 24? | ? | 49·4 | — |
| Sverdlovsk | | 107·0 | 17 | 19 9 | ? | 25 8 | [+ 9] | 43·4 | 61·5 |
| Cape Town | | 108·8 | 122 | — | — | 25 14 | [+ 6] | — | 56·6 |
| Vladivostok | | 115·2 | 330 | — | — | e 25 32 | [− 2] | — | — |
| Chiufeng | | 124·5 | 339 | e 19 0 | [+ 4] | — | — | e 55·8 | 70·8 |
| Andijan | | 124·7 | 18 | 19 49 | ? | — | — | — | — |
| Melbourne | | 126·7 | 232 | — | — | e 38 24? | SS | 64·4 | — |
| Zi-ka-wei | | 129·7 | 328 | e 19 12 | [+ 6] | — | — | 71·5 | 89·4 |
| Agra | | 139·0 | 20 | e 22 59 | PKS | — | — | — | — |
| Hong Kong | | 140·7 | 329 | 23 4 | PKS | 40 33 | SS | — | 91·7 |
| Manila | | 142·3 | 313 | 19 9k | [−16] | — | — | 67·4 | 77·4 |
| Bombay | | 143·9 | 32 | e 19 24? | [− 7] | — | — | — | 78·9 |
| Amboina | | 144·4 | 279 | 19 39 | [+ 7] | — | — | — | — |
| Calcutta | | 146·0 | 6 | e 19 50 | [+14] | — | — | — | 87·5 |
| Hyderabad | | 147·7 | 26 | 19 43 | [+ 5] | — | — | — | 92·3 |
| Kodaikanal | | 153·5 | 37 | e 19 24 | [−22] | — | — | — | — |
| Colombo | | 157·7 | 38 | 18 58 | [−53] | — | — | — | 90·7 |
| Medan | | 164·2 | 340 | 20 18 | [+20] | — | — | e 96·4 | — |
| Batavia | | 165·6 | 289 | i 20 45 | {−25} | e 31 24? | {−25} | e 94·4 | — |

Additional readings :—
Balboa Heights e = +1m.52s. ; $T_s$ = 14h.29m.37s.
Port au Prince PP = +3m.54s., PPP = +3m.59s., SS = +7m.5s.
San Juan eP = +4m.32s., i = +5m.7s. = PP +7s. and +9m.4s., e = +9m.27s.
Huancayo i = +5m.41s., e = +8m.37s.
Florissant eSS = +12m.16s.
Chicago e = +14m.24s.

*Continued on next page.*

Ann Arbor eE = +10m.18s. and +13m.48s.
Toronto iPPPN = +8m.7s.
La Paz iE = +14m.8s.
Oak Ridge e = +8m.10s.; $T_0$ = 14h.28m.54s.
La Jolla iZ = +13m.25s.
Ottawa ePPPN = +8m.30s.; $T_0$ = 14h.29m.6s.
Riverside iZ = +7m.11s.
Pasadena iZ = +9m.29s. = $P_cP$ − 2s., iENZ = +13m.41s.
Mount Wilson iZ = +7m.5s.
Tinemaha iENZ = +7m.19s., iZ = +9m.35s. = $P_cP$ − 1s. and +9m.51s.
Branner iN = +7m.53s., iE = +7m.57s., +8m.5s., +8m.11s., +8m.22s., iN = +8m.50s.
Berkeley iPE = +7m.25s., eN = +7m.49s., iZ = +7m.51s., +7m.57s., and +9m.45s., eE = +13m.20s., iE = +19m.15s.
Ukiah ePP = +10m.14s.
La Plata PZ = +9m.28s., E = +9m.30s., $S_cSN$ = +19m.24s., E = +19m.42s., SSN = +20m.18s., SSSN = +23m.42s.
Malaga e = +15m.0s., +16m.56s., and +22m.44s., SS = +27m.5s.
Bidston e = +27m.39s. and +31m.6s.
Toledo eLR = +36m.49s.
Granada PS = +21m.57s.
Kew e = +27m.40s. and +31m.1s.
Uccle e = +12m.42s., eE = +15m.36s. = PP +14s., i = +23m.43s., iSS = +28m.16s.
De Bilt eN = +27m.54s. = SS +4s., eE = +28m.24s.
Strasbourg e = +15m.24s.? = PP − 20s.
Hamburg e = +15m.52s. = PP +6s.
Stuttgart ePS = +24m.29s., eSS = +28m.54s.
Copenhagen +29m.18s.
Cheb e = +18m.24s.?
Prague e = +30m.12s.
Triest iPS = +24m.47s., i = +25m.7s., eN = +33m.35s.
Helsingfors e?EN = +24m.54s. = PS − 9s. and +34m.24s.?
Pulkovo PP = +17m.19s., PS = +25m.48s., SS = +31m.12s., SSS = +34m.18s.
Sverdlovsk e = +28m.0s. = PS + 2s., SS = +34m.30s.
Cape Town PPP = +21m.31s., PS = +27m.58s., PPS = +28m.54s., SS = +33m.56s., SSSN = +38m.9s., SSSE = +39m.2s., N = +45m.36s., E = +46m.54s.
Zi-ka-wei iZ = +22m.56s.
Manila PPE = +21m.54s.
Long waves were also recorded at Durham, Algiers, Scoresby Sund, Ivigtut, Bozeman, Pittsburgh, Seattle, Sitka, Riverview, Sydney, Phu-Lien, Tananarive, and other European stations.

Dec. 22d. Readings also at 0h. (Koti and Sumoto), 1h. (Berkeley, Branner, Lick, and San Francisco), 2h. (Phu-Lien), 4h. (Amboina), 5h. (Bombay and Nagoya), 8h. (Andijan and Samarkand), 10h. (Balboa Heights), 11h. (Perth), 13h. (Perth), 15h. (Dehra Dun, Granada (2), Perth, and Triest), 19h. (Malaga (2))

Dec. 23d. 9h. 52m. 24s. Epicentre 21°·0S. 68°·0W. N.2.

A = +·350, B = −·866, C = −·358; D = −·927, E = −·375; G = −·135, H = +·332, K = −·934.

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Montezuma | | 1·8 | 206 | i 0 26 | 0 | — | — | i 0·7 | — |
| Sucre | | 3·2 | 51 | i 1 14 | S | (i 1 14) | − 8 | — | — |
| La Paz | | 4·5 | 358 | i 1 22 | $P_g$ | i 2 18 | S* | 2·8 | 4·5 |
| Huancayo | | 11·3 | 320 | e 2 45 | + 6 | e 4 40 | − 5 | i 5·1 | — |
| Santiago | | 12·7 | 191 | 3 2 | + 4 | 5 44 | +24 | — | — |
| La Plata | E. | 16·5 | 150 | 3 52 | + 4 | 6 48 | − 2 | 8·7 | 10·6 |
| | N. | 16·5 | 150 | 3 54 | + 6 | 6 52 | + 2 | 10·6 | 10·9 |
| Balboa Heights | | 32·1 | 340 | 5 36? | ? | — | — | — | — |
| San Juan | | 39·4 | 3 | e 7 51 | +24 | i 14 0 | +33 | — | — |
| Little Rock | | 60·4 | 338 | e 10 7 | 0 | e 18 8 | −13 | — | — |
| Georgetown | | 60·5 | 352 | 10 3 | − 5 | 18 13 | −10 | e 29·6 | — |
| Philadelphia | | 61·3 | 356 | — | — | e 19 6 | PS | e 25·6 | — |
| Pittsburgh | | 62·5 | 351 | e 10 20 | − 2 | i 19 25 | +37 | e 25·2 | — |
| St. Louis | | 63·1 | 341 | e 10 26 | 0 | i 18 42 | −14 | — | — |
| Florissant | | 63·4 | 341 | e 10 26 | − 2 | i 18 47 | −13 | — | — |

*Continued on next page.*

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Oak Ridge | 63·4 | 359 | i 10 28 | 0 | e 18 46 | −14 | — | — |
| Ithaca | 63·9 | 354 | — | — | i 18 54 | −12 | — | — |
| Toronto | 65·5 | 352 | e 10 18 | −24 | i 19 13 | −13 | 30·9 | — |
| Ottawa | 66·7 | 355 | e 11 18 | (− 2) | i 19 31 | −10 | e 28·6 | — |
| Tucson | 67·2 | 322 | e 10 48 | − 5 | e 20 20 | PS | e 27·9 | — |
| La Jolla | 71·5 | 318 | i 11 27 | + 7 | e 20 27 | −12 | — | — |
| Riverside | 72·3 | 319 | i 11 21 | − 4 | e 20 36 | −12 | — | — |
| Mount Wilson | 72·9 | 318 | i 11 25 | − 3 | i 20 45 | −11 | — | — |
| Pasadena | 72·9 | 320 | i 11 26k | − 2 | i 20 45 | −11 | — | — |
| Santa Barbara | 74·1 | 320 | i 11 33 | − 2 | e 21 1 | − 9 | — | — |
| Tinemaha | 74·9 | 320 | i 11 37 | − 3 | i 21 8 | −11 | — | — |
| Lick | 77·2 | 320 | e 11 52 | − 1 | e 22 32 | PS | — | — |
| Berkeley | 77·8 | 319 | e 11 55 | − 2 | — | — | — | — |
| Ukiah | 79·2 | 320 | — | — | e 21 51 | −16 | e 44·8 | — |
| Granada | 84·0 | 47 | — | — | e 22 50 | [− 2] | — | — |
| Alicante | 86·7 | 47 | — | — | e 23 10 | [− 1] | — | — |
| Algiers | 88·4 | 49 | e 18 20 | PPP | i 23 11 | [−12] | 37·6 | — |
| Bidston | 93·0 | 34 | — | — | e 23 44 | [− 6] | — | — |
| Kew | 93·4 | 35 | — | — | e 23 41 | [−11] | e 43·6 | — |
| Paris | 93·6 | 40 | e 17 36? | PP | e 26 36? | PS | 45·6 | — |
| Edinburgh | 94·2 | 32 | — | — | e 23 50 | [− 6] | — | — |
| Wellington | 94·9 | 223 | — | — | e 22 36? | ? | 39·6 | — |
| Neuchatel | 95·5 | 42 | e 13 24 | + 1 | e 23 55 | [− 8] | — | — |
| Uccle | 95·6 | 38 | — | — | i 24 1 | [− 3] | e 37·6 | — |
| Basle | 96·1 | 42 | e 13 24 | − 2 | e 23 56 | [−10] | — | — |
| De Bilt | 96·6 | 36 | — | — | e 24 0 | [− 9] | e 39·6 | 50·2 |
| Strasbourg | 96·6 | 41 | e 17 51 | PP | i 25 3 | + 7 | e 37·6 | — |
| Zurich | 96·7 | 43 | e 13 27 | − 1 | e 23 58 | [−11] | — | — |
| Scoresby Sund | 96·9 | 14 | — | — | 24 2 | [− 8] | — | — |
| Stuttgart | 97·6 | 42 | e 13 26 | − 6 | 24 51 | −14 | e 31·3 | — |
| Triest | 99·3 | 45 | e 14 45 | ? | i 25 13 | − 7 | e 42·8 | — |
| Hamburg | 99·9 | 37 | e 17 45 | PP | e 24 17 | [− 8] | — | — |
| Cheb | 100·0 | 40 | e 24 17 | SKS | (e 24 17) | [− 9] | — | — |
| Zagreb | 100·9 | 45 | e 17 47 | PP | e 24 21 | [− 9] | — | — |
| Prague | 101·2 | 40 | — | — | e 24 24 | [− 8] | — | 46·6 |
| Copenhagen | 102·0 | 35 | 18 9 | PP | 24 35 | [ 0] | 43·6 | — |
| Helsingfors | 109·5 | 32 | e 18 6 | [−10] | e 26 36 | {+33} | e 46·6 | — |
| Pulkovo | 112·1 | 33 | 18 58 | PP | 25 5 | [−18] | 46·6 | 59·4 |
| Ksara | 112·6 | 61 | e 19 18 | PP | e 28 47 | PS | — | — |
| Simferopol | 113·0 | 48 | — | — | e 25 13 | [−13] | — | — |
| Tiflis | 120·5 | 54 | e 20 21 | PP | e 30 11 | PS | e 58·6 | 75·8 |
| Grozny | 121·2 | 52 | e 20 16 | PP | — | — | — | — |
| Sverdlovsk | 128·2 | 33 | 19 2 | [− 1] | 27 55 | {−15} | 60·6 | 71·0 |
| Samarkand | 137·4 | 54 | e 21 28 | ? | — | — | — | — |
| Tchimkent | 138·6 | 49 | 19 53 | [+33] | — | — | — | — |
| Tashkent | 138·7 | 50 | 19 48 | [+28] | 32 28 | PS | e 54·9 | 86·5 |
| Andijan | 141·1 | 50 | e 19 38 | [+15] | — | — | — | — |
| Frunse | 141·9 | 46 | 20 2 | [+39] | — | — | — | — |
| Bombay | 143·2 | 86 | i 19 20 | [− 8] | — | — | — | 87·1 |
| Kodaikanal | 145·1 | 102 | e 17 36 | P | — | — | — | — |
| Agra | 148·5 | 72 | e 19 45 | [+ 5] | — | — | — | — |
| Amboina | 150·7 | 215 | 19 35 | [− 8] | e 24 37 | ? | — | — |
| Vladivostok | 152·3 | 328 | e 22 47 | PP | — | — | — | — |
| Batavia | 152·4 | 169 | 19 44 | [− 1] | — | — | — | — |
| Calcutta | 158·0 | 82 | e 20 41 | {+ 6} | — | — | — | — |
| Medan | 158·3 | 141 | e 20 4 | [+12] | — | — | — | — |
| Chiufeng | 160·6 | 351 | e 19 57 | [+ 3] | — | — | — | — |
| Zi-ka-wei | 166·7 | 322 | e 20 36 | [+35] | — | — | — | 85·6 |
| Manila | 169·6 | 234 | 20 53 | [+50] | 25 38 | PP | 28·6 | 36·2 |
| Phu-Lien | 174·9 | 92 | 21 36? | {−16} | — | — | — | — |

*For Notes see next page.*

NOTES TO DEC. 23d. 9h. 52m. 24s.

Additional readings :—
Montezuma eP = +16s., i = +30s. = $P_g$ +0s.
La Paz iPE = +1m.26s., iN = +1m.50s. = S −5s.
Huancayo i = +2m.51s. ; $T_0$ = 9h.52m.30s.
La Plata PZ = +4m.0s., PPP +4m.12s., +4m.36s., SSZ = +7m.0s., SSE = +7m.4s., SSS = +7m.24s.
San Juan e = +9m.26s. = $P_cP$ −14s. and +11m.41s., i = +13m.13s.
Little Rock esS = +18m.55s.
Georgetown PS = +18m.55s., SS = +22m.56s. ; $T_0$ = 9h.52m.20s.
Philadelphia eSKS = +18m.25s. = S −8s., ePS = +20m.52s.
Pittsburgh e = +10m.51s., iSKS = +18m.39s. = S −9s., ePS = +21m.1s.
St. Louis epPEN = +10m.54s., iE = +11m.6s. = $P_cP$ +1s., isSEN = +19m.29s., eE = +20m.54s. ; $T_0$ = 9h.52m.53s.
Florissant isP = +19m.35s., ipS = +20m.19s. = $S_cS$ +2s., isS = +21m.8s.
Oak Ridge i = +10m.33s., e = +10m.41s., i = +10m.56s. and +11m.39s., eNW = +23m.36s.? ; $T_0$ = 9h.52m.51s.
Ithaca iE = +19m.48s. and +21m.6s.
Toronto iPPN = +13m.4s., iPSE = +19m.57s.
Ottawa i = +20m.26s. = $S_cS$ −15s., e = +25m.6s.
Tucson e = +11m.33s. = $P_cP$ +11s., +14m.24s., and +16m.14s., eSKS = +19m.36s., iPS = +21m.36s.
Riverside eE = +21m.28s. = PS +19s.
Pasadena iZ = +11m.53s., iNZ = +11m.59s., iNE = +12m.13s., iNEZ = +21m.41s.
Santa Barbara eE = +21m.35s. = PS +2s.
Berkeley iZ = +12m.1s. and +12m.31s.
Ukiah e = +22m.46s. = PS +7s., +26m.24s., +28m.6s., and +31m.49s.
Bidston i = +24m.43s.
Kew i = +23m.46s., iN = +24m.43s., eZ = +25m.42s. = PS +11s.
Edinburgh i = +24m.46s. = S +11s.
Uccle iE = +24m.57s. = S +9s.
De Bilt e = +24m.48s. = S −8s.
Strasbourg e = +23m.43s., SKS = +24m.0s., ePS = +26m.4s.
Stuttgart ePP = +17m.17s., SKS = +24m.2s., ePS = +26m.9s.
Triest ePP? = +17m.41s., i = +24m.11s. = SKS −11s. and +24m.18s., iSKKS = +25m.5s., ePS = +26m.38s., e = +27m.18s. and +32m.1s.
Cheb eS = +32m.11s.
Prague e = +25m.27s. = S −10s.
Copenhagen i = +25m.31s. = S −13s.
Helsingfors e?E = +28m.6s., e?N = +34m.6s.
Pulkovo SKKS = +26m.8s., S = +26m.52s., PS = +28m.28s., SS = +34m.30s.
Sverdlovsk PP = +21m.12s., PKS = +22m.14s., PS = +31m.3s., SS = +38m.24s.
Tashkent PP = +22m.18s., PPS = +34m.54s., SS = +40m.6s.
Bombay i = +19m.59s. and +22m.36s. = PP −5s., e = +41m.36s.? = SS +16s.
Agra e = +23m.13s. = PP +1s.
Batavia iN = +21m.34s.
Chiufeng iZ = +24m.21s. = PP +2s., iE = +44m.23s. = SS −15s.
Zi-ka-wei iZ = +25m.48s.
Long waves also at Hong Kong, San Fernando, and Victoria.

Dec. 23d. 23h. Shock felt in San Miguel Island, for which the following stations have recorded :—
Angra do Heroismo P = 39m.7s., S = 39m.33s.
Ponta Delgada 39m.46s.
Granada eP = 42m.50s., eS = 45m.56s., L = 47m.15s., M = 59m.44s.
Sverdlovsk eP = 48m.4s., eS = 56m.8s., L = 67m.
Bidston e = 48m.45s.
Kew e = 48m.
Stonyhurst e = 49m.
Hamburg e = 50m.
Pulkovo e = 52m.48s., L = 58m.30s., M = 61m.54s.
Tiflis eE = 54m.58s., eE = 59m.19s., eL = 69m.24s., M = 74m.24s.
Baku e = 55m.54s., L = 71m.
Tashkent e = 62m.10s., i = 63m.25s., eL = 75m.24s., M = 80m.30s.
Long waves also at La Plata and other European stations.

Dec. 23d. Readings also at 0h. (Berkeley, Branner, Lick, San Franciso, and Soengei Langka), 2h. (Amboina, Batavia, and Manila), 6h. (Theodosia and Yalta), 7h. (Hukuoka B, Nagasaki, New Plymouth, and Wellington), 10h. (La Paz), 11h. (Granada), 12h. (La Paz), 13h. (Granada, Mount Wilson, Pasadena, and Tinemaha), 15h. (Amboina), 16h. (Malabar), 17h. (Granada), 21h. (Andijan, Frunse, Samarkand, and Tchimkent)

Dec. 24d. 14h. 35m. 41s. Epicentre 14°·5N. 91°·0W. (as on 1934 July 27d.). X.

A = −·017, B = −·968, C = +·250; D = −1·000, E = +·017;
G = −·004, H = −·250, K = −·968.

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Balboa Heights | 12·5 | 115 | 2 19? | −36 | — | — | — | — |
| Little Rock | 20·3 | 357 | e 4 33 | 0 | i 8 26 | +14 | — | — |
| Columbia | 21·5 | 23 | e 4 43 | − 2 | (e 8 47) | +11 | e 8·8 | — |
| St. Louis | 24·2 | 4 | e 5 11 | − 1 | i 9 40 | +13 | — | — |
| San Juan | 24·2 | 77 | e 5 19 | + 7 | e 10 19 | SS | e 12·3 | — |
| Florissant | 24·4 | 2 | e 5 12 | − 2 | e 9 42 | +12 | — | — |
| Tucson | 25·4 | 318 | e 5 39 | +15 | e 9 55 | + 7 | i 13·4 | — |
| Charlottesville | 26·0 | 23 | — | — | e 9 59 | + 1 | 12·3 | — |
| Pittsburgh | 27·7 | 18 | e 6 28 | PP | — | — | e 9·9 | — |
| Ann Arbor | 28·5 | 12 | — | — | e 10 13 | −27 | e 14·3 | — |
| Philadelphia | 29·0 | 25 | — | — | e 10 42 | − 6 | — | — |
| La Jolla | 30·1 | 312 | i 6 7 | + 1 | — | — | — | — |
| Toronto | 30·8 | 17 | — | — | i 11 15 | − 2 | 16·2 | — |
| Huancayo | 30·8 | 149 | (e 6 8) | − 4 | (e 11 2) | −15 | (e 11·0) | — |
| Riverside | 30·8 | 314 | i 6 11 | − 1 | i 12 44 | SS | — | — |
| Pasadena | 31·4 | 314 | i 6 18k | + 1 | i 11 35 | + 9 | e 19·3 | — |
| Mount Wilson | 31·4 | 314 | i 6 19 | + 2 | e 12 48 | SS | — | — |
| Haiwee | 32·4 | 317 | i 6 27 | + 1 | e 12 50 | SS | — | — |
| Oak Ridge | 32·7 | 27 | i 6 26 | − 3 | e 11 44 | − 2 | e 14·8 | — |
| Tinemaha | 33·1 | 318 | e 6 32 | − 1 | i 12 55 | +63 | — | — |
| Ottawa | 33·5 | 20 | e 6 55 | +19 | e 11 55 | − 3 | e 16·3 | — |
| Ukiah | 37·5 | 317 | — | — | e 13 5 | + 6 | e 18·7 | — |
| La Paz | 38·3 | 143 | i 7 11k | − 7 | i 14 1 | +50 | 18·7 | 22·0 |
| Sucre | 42·0 | 142 | e 7 47 | − 2 | 14 38 | +32 | 22·7 | — |
| Sverdlovsk | 104·9 | 14 | — | — | e 24 33 | [−16] | 47·3 | — |

Additional readings and note:—
Little Rock i = +6m.1s., isS = +8m.59s.
St. Louis epPEN = +5m.34s., isSE = +10m.26s.
Ann Arbor eE = +13m.25s.
Philadelphia e = +23m.28s.
Huancayo readings have been *increased* by 10m.
Pasadena iZ = +8m.21s. and +12m.47s.
Ottawa eE = +13m.55s. =SS +3s.
Ukiah e = +16m.7s. and +17m.44s.
Long waves were also recorded at Stonyhurst, Chiufeng, Hong Kong, Phu-Lien, Wellington, Scoresby Sund, and other European stations.

Dec. 24d. 15h. Readings for a shock felt in Terceira and St. Miguel Isl.

Angro do Heroismo P = 10m.53s., S = 11m.20s.
Ponta Delgada 11m.6s.
Baku e = 12m.14s., e = 20m.20s., e = 27m.30s., eL = 32m., M = 47m.42s.
Granada eP = 13m.52s., i = 15m.1s., eS = 16m.49s., L = 18m.21s., M = 21m.26s.
Copenhagen 18m.
Kucino e = 19m.51s., eL = 30m.36s., M = 36m.36s.
Stuttgart eE = 20m.22s., eL = 24m.24s.
Hamburg e = 22m.
De Bilt eL = 22m., MN = 23m.19s.
Tiflis eN = 26m.42s., eLN = 40m.24s., MN = 42m.54s.
Helsingfors eL = 28m.
Vladivostok e = 48m.17s.
Long wave at San Fernando.

Dec. 24d. 15h. 53m. 4s. Epicentre 39°·0N. 20°·6W. N.3.

A = +·727, B = −·273, C = +·629; D = −·352, E = −·936;
G = +·589, H = −·221, K = −·777.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Ponta Delgada | 4·2 | 253 | 1 2 | + 2 | — | — | — | — |
| Angro do Heroismo | 5·2 | 269 | 0 30 | ? | 0 56 | ? | — | — |
| Toledo | 12·8 | 81 | e 3 22 | +23 | e 6 4 | S* | e 7·0 | 9·1 |
| Malaga | 12·9 | 95 | e 3 14 | +13 | e 6 41 | S* | — | — |
| Granada | 13·5 | 94 | 3 8 | − 1 | i 5 35 | − 4 | 6·4 | 11·0 |
| Almeria | 14·4 | 93 | e 3 22 | + 1 | — | — | e 8·4 | — |
| Alicante | 15·6 | 86 | e 3 47 | PP | — | — | e 10·5 | — |
| Barcelona | 17·5 | 75 | — | — | e 4 8 | PP | e 8·9 | 11·9 |
| Oxford | 18·5 | 41 | — | — | e 8 20 | SS | i 9·8 | — |
| Algiers | 18·7 | 89 | e 4 11 | − 4 | e 7 27 | −13 | e 12·9 | — |
| Kew | 18·8 | 42 | — | — | e 7 41 | − 1 | — | 11·4 |
| Bidston | 18·8 | 34 | — | — | e 6 38 | ? | — | 10·6 |
| Stonyhurst | 19·4 | 34 | e 5 50 | ? | i 8 25 | SS | 9·9 | 11·3 |
| Uccle | 21·1 | 48 | i 4 46 | + 5 | i 9 12 | SS | 9·7 | — |
| De Bilt | 22·6 | 44 | — | — | e 9 32 | SS | e 11·4 | 12·9 |
| Stuttgart | 23·4 | 56 | e 5 26 | PP | e 9 44 | SS | e 11·9 | 15·4 |
| Hamburg | 25·4 | 45 | e 4 56? | −28 | — | — | e 13·9 | 14·9 |
| Triest | 26·0 | 64 | e 5 31 | + 2 | i 10 38 | +40 | — | — |
| Prague | 27·0 | 53 | — | — | e 10 46 | +31 | — | 16·1 |
| Upsala | 31·7 | 35 | — | — | e 14 20 | ? | — | 20·2 |
| Pulkovo | 37·7 | 39 | e 6 56 | −16 | e 13 26 | +26 | 18·9 | 22·0 |
| Kucino | 41·5 | 47 | — | — | e 16 45 | SS | 24·3 | 28·4 |
| Tiflis | 48·6 | 65 | e 8 45 | + 4 | e 16 6 | +25 | e 24·7 | 32·1 |
| Baku | 52·7 | 64 | e 8 1 | −11 | i 17 6 | +28 | 27·2 | 35·8 |
| Tashkent | 65·4 | 55 | i 10 38 | − 3 | i 19 43 | PS | e 34·2 | 41·4 |
| Bombay | 80·8 | 73 | — | — | e 22 11 | −13 | — | — |

Additional readings:—
Angro do Heroismo PP = +36s., SS = +1m.4s.
Malaga e = +3m.31s., +3m.57s., +5m.17s., +6m.4s., +6m.30s., +10m.29s., and +11m.44s.
Granada iPP = +3m.13s.
Kew iN = +9m.37s., i = +9m.49s. and +10m.12s.
Bidston i = +8m.28s.
Triest e = +13m.17s., i = +17m.13s., +18m.6s., +18m.26s., +18m.45s., +19m.24s., and +22m.54s.
Kucino e = +19m.58s.
Long waves were also recorded at Edinburgh, Durham, Hong Kong, Ivigtut, Scoresby Sund, and other European stations.

Dec. 24d. Readings also at 3h. (Arisan, Tainan, Taito, and Takao), 4h. (Batavia, Haiwee, Mount Wilson, Pasadena, Perth, Riverside, and Tinemaha), 5h. (Baku, Bombay, Sverdlovsk, Santiago, and Tashkent), 6h. (Malabar and Perth), 7h. (Sverdlovsk, Tashkent, Pasadena (2), Riverside (2), Mount Wilson (2), and Tinemaha), 9h. (Christchurch and Wellington), 10h. (Amboina, Batavia, Manila, Medan, and Upsala), 11h. (Perth and Tiflis), 13h. (La Paz, Sucre, and Wellington), 15h. (La Paz, Manila, Nagoya (2), Cheb, Kobe, Hong Kong, Pasadena, Mount Wilson, Tinemaha, Riverside, and Tiflis), 16h. (Branner, Berkeley, Huancayo, Lick, San Juan, San Francisco, and Tucson), 17h. (Granada), 18h. (Ann Arbor, Husan, Nagasaki, and Tiflis), 20h. (Batavia, Malabar, Medan, Soengei Langka, and Wellington), 22h. (Ere van).

Dec. 25d. 6h. 27m. 24s. Epicentre 18°·3N. 146°·8E. (as on 1934 April 25d.). R.2.

Japan gives 18°·0N. 146°·0E.

A = −·794, B = +·520, C = +·314; D = +·548, E = +·837; G = −·263, H = +·172, K = −·949.

| | | △ ° | Az. ° | P. m. s. | O−C. s. | S. m. s. | O−C. s. | L. m. | M. m. |
|---|---|---|---|---|---|---|---|---|---|
| Titizima | | 9·8 | 335 | 2 18 | 0 | 4 3 | − 5 | — | — |
| Palau | | 16·2 | 229 | 4 12 | +28 | — | — | — | — |
| Misima | | 18·2 | 339 | 4 12 | + 3 | 7 34 | + 5 | — | — |
| Tyosi | | 18·2 | 345 | e 3 58 | −11 | e 7 18 | −11 | e 10·0 | — |
| Yokohama | | 18·3 | 341 | 4 10 | 0 | 7 34 | + 3 | — | — |
| Tokyo | | 18·4 | 342 | 4 15 | + 4 | 7 48 | +15 | — | — |
| Kohu | | 18·8 | 340 | 4 20 | + 4 | 7 50 | + 8 | — | — |
| Kameyama | | 18·9 | 333 | 4 18 | + 1 | 7 49 | + 5 | — | — |
| Nagoya | | 19·0 | 335 | 4 14 | − 5 | 8 2 | SS | — | 8·3 |
| Sumoto | | 19·2 | 329 | 4 19 | − 2 | 7 50 | 0 | 10·6 | 11·7 |
| Koti | | 19·3 | 325 | 4 23 | + 1 | i 7 59 | + 7 | 9·6 | — |
| Miyazaki | | 19·4 | 317 | 4 26 | + 3 | 8 14 | SS | — | — |
| Kobe | | 19·4 | 330 | e 4 23 | 0 | e 7 55 | + 1 | — | 12·1 |
| Oiwake | | 19·4 | 340 | 4 22 | − 1 | 7 57 | + 3 | — | — |
| Nagano | | 19·8 | 339 | 4 28 | + 1 | 8 6 | + 4 | — | — |
| Toyooka | | 20·2 | 331 | e 3 48 | ? | (e 8 36) | SS | e 8·6 | — |
| Toyama | | 20·2 | 335 | 4 35 | + 3 | 8 15 | + 5 | — | — |
| Kumamoto | | 20·5 | 318 | 4 38 | + 3 | 8 22 | + 6 | — | — |
| Nagasaki | | 21·0 | 317 | e 4 31 | − 9 | e 8 30 | + 4 | — | — |
| Hukuoka B | | 21·1 | 319 | e 4 50 | + 9 | 8 37 | + 9 | 13·5 | — |
| Mizusawa | E. | 21·4 | 348 | e 4 47 | + 3 | 8 39 | + 5 | — | — |
| | N. | 21·4 | 348 | e 4 42 | − 2 | 8 57 | SS | 11·7 | — |
| Husan | | 23·0 | 320 | e 9 10 | S | (e 9 10) | + 5 | 13·3 | — |
| Taikyu | | 23·8 | 321 | e 3 44 | ? | e 9 21 | + 2 | — | — |
| Manila | | 25·0 | 265 | 5 28 | + 8 | 10 11 | +30 | 13·3 | — |
| Sapporo | | 25·2 | 353 | 5 41 | +19 | — | — | — | — |
| Zinsen | | 26·1 | 321 | e 9 10 | (+12) | — | — | e 14·3 | — |
| Vladivostok | | 27·8 | 336 | e 5 47 | + 2 | — | — | — | 21·9 |
| Chiufeng | | 34·2 | 318 | e 6 42 | 0 | i 12 1 | − 8 | e 15·7 | 20·6 |
| Phu-Lien | | 37·9 | 282 | — | — | 15 36? | SS | — | — |
| Batavia | | 46·4 | 243 | e 8 54 | +30 | e 15 40 | +30 | — | — |
| Riverview | | 52·3 | 176 | — | — | e 16 48 | +15 | e 24·1 | 30·5 |
| Sydney | | 52·3 | 176 | — | — | e 16 16 | −17 | 30·4 | 31·1 |
| Melbourne | | 56·1 | 182 | — | — | i 17 36 | +12 | 26·6 | 27·4 |
| Agra | | 63·3 | 293 | e 10 17 | −10 | — | — | — | — |
| Frunse | | 64·8 | 310 | e 10 6 | −31 | — | — | — | — |
| Andijan | | 66·5 | 309 | e 10 58 | + 9 | 20 2 | PS | — | — |
| Kodaikanal | | 67·3 | 275 | e 10 56 | + 2 | — | — | — | — |
| Tashkent | | 68·8 | 310 | 11 11 | + 8 | e 19 58 | − 9 | e 31·0 | 44·5 |
| Bombay | | 69·5 | 285 | e 9 36? | ? | — | — | — | — |
| Sverdlovsk | | 72·6 | 326 | i 11 24 | − 2 | i 20 46 | − 6 | 32·6 | 40·7 |
| Ukiah | | 79·3 | 51 | — | — | e 21 55 | −13 | e 34·0 | — |
| Santa Barbara | | 82·5 | 56 | e 12 26 | + 5 | — | — | — | — |
| Tinemaha | | 82·9 | 53 | e 12 21 | − 2 | — | — | — | — |
| Haiwee | | 83·4 | 53 | e 12 25 | 0 | — | — | — | — |
| Mount Wilson | | 83·9 | 55 | e 12 27 | − 1 | — | — | — | — |
| Pasadena | | 83·9 | 55 | i 12 26 | − 2 | — | — | e 41·6 | — |
| Riverside | | 84·5 | 55 | e 12 29 | − 2 | — | — | — | — |
| Grozny | | 85·2 | 314 | e 12 30 | − 4 | e 22 58 | [− 3] | — | — |
| Tiflis | | 86·4 | 313 | 12 45 | + 5 | 23 17 | − 4 | e 42·9 | 57·8 |
| Pulkovo | | 86·7 | 334 | — | — | e 23 9 | [− 2] | 41·6 | 52·9 |
| Triest | | 103·2 | 330 | — | — | e 23 36? | [−65] | e 50·6 | 62·6 |
| Granada | | 117·9 | 334 | — | — | e 25 36 | [− 7] | — | — |
| Huancayo | | 140·3 | 87 | e 23 17 | PKS | e 41 8 | SS | e 66·4 | — |
| La Paz | | 146·7 | 90 | i 19 45k | [+ 8] | — | — | 72·7 | 83·1 |

*For Notes see next page.*

NOTES TO DEC. 25d. 6h. 27m. 24s.

Additional readings :—
Kobe ePE = +4m.25s., eN = +8m.22s.
Chiufeng iS = +12m.6s.
Riverview eN = +15m.42s.
Ukiah e = +24m.56s. and +27m.46s.
Tiflis SKSE = +23m.7s., ePSE = +24m.7s., eN = +26m.24s.
Pulkovo e = +28m.46s. = SS − 6s., +30m.9s., and +32m.31s.
Granada i = +37m.36s.
Huancayo e = +24m.21s.
Long waves were also recorded at Hong Kong, Honolulu, Wellington, and other European stations.

Dec. 25d. 7h. Readings for more than one shock for which no determinations have been made :—

Haiwee eZ = 13m.19s., iZ = 13m.52s.
Pasadena eZ = 13m.21s., iZ = 13m.54s.
Mount Wilson eZ = 13m.52s.
Tucson e = 17m.30s.
Soengei Langka P = 17m.48s., iS = 18m.12s.
Batavia P = 18m.27s., iS = 19m.11s.
Malabar eP = 18m.54s., eS = 19m.46s.
Medan iP = 20m.23s., iS = 22m.43s.
La Paz PE = 20m.44s.
Philadelphia e = 27m.0s.
Mount Wilson eZ = 39m.49s.
Haiwee eZ = 39m.50s.
Pasadena eZ = 39m.54s., iZ = 40m.17s.

Dec. 25d. 12h. 46m. 46s. Epicentre 18°·5N. 147°·0E. N.3.

A = −·795, B = +·519, C = +·317 ; D = +·545, E = +·839 ;
G = −·266, H = +·173, K = −·948.

| | Δ | Az. | P. | O − C. | S. | O − C. | L. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Titizima | 9·7 | 334 | 2 19 | + 2 | 3 59 | − 7 | — |
| Misima | 18·0 | 338 | 4 7 | 0 | 7 25 | 0 | — |
| Nagoya | 18·9 | 334 | e 4 19 | + 2 | — | — | — |
| Maebasi | 19·2 | 339 | 4 17 | − 4 | — | — | — |
| Nagasaki | 21·0 | 316 | e 7 46 | ? | — | — | — |
| Husan | 23·0 | 320 | e 8 9 | ? | 9 9 | + 4 | — |
| Manila | 25·2 | 265 | 6 26 | +64 | 10 56 | +72 | 13·7 |
| Chiufeng | 34·2 | 316 | — | — | e 12 2 | − 7 | — |

Additional readings :—
Nagasaki eP = +15m.7s.
Long waves were also recorded at Phu-Lien, Baku, Tiflis, Tashkent, and Sverdlovsk.

Dec. 25d. 12h. Readings for which no determination has been made :—

Tinemaha ePZ = 59m.0s., iZ = 59m.39s.
Haiwee ePZ = 59m.4s., eZ = 59m.56s.
Pasadena iPZ = 59m.6s., iZ = 60m.3s.
Mount Wilson iPZ = 59m.7s., eZ = 60m.7s.
Riverside ePZ = 59m.9s.

13h.
Riverside eZ = 22m.42s., eZ = 22m.52s.
Tinemaha iPZ = 22m.45s.
Haiwee ePZ = 22m.49s.
Pasadena iPZ = 22m.51s.
Mount Wilson iPZ = 22m.52s.

Dec. 25d. Readings also at 0h. (Ksara and Tiflis), 1h. (Koti), 2h. (Batavia, Manila, Andijan (2), Granada, and Samarkand), 3h. (Mizusawa), 5h. (Adelaide, Apia, Haiwee, Mount Wilson, Pasadena, Riverside, Riverview, Sydney, Tinemaha, and Wellington), 6h. (Haiwee and Pasadena), 7h. (Chiufeng, Cheb, Manila, Nagoya, and Nagasaki), 8h. (Granada, Haiwee, Koti, La Paz, Mount Wilson, Pasadena, Phu-Lien, Tashkent, Tinemaha, Tiflis, and Sverdlovsk), 9h. (Messina and Trenta), 10h. (Andijan, Frunse, Semipalatinsk, Sverdlovsk, and Tashkent), 11h. (Santiago), 12h. (Arapuni), 13h. (La Paz and Nagoya), 15h. (Sebastopol), 16h. (Oak Ridge), 22h. (Amboina), 23h. (Grozny and Sotchi)

Dec. 26d. 0h. 25m. 30s. Epicentre 44°·2N. 34°·2E. N.3.

A = +·593, B = +·403, C = +·697 ; D = +·562, E = −·827 ;
G = +·577, H = +·392, K = −·717.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Yalta | 0·3 | 324 | i 0 3 | − 1 | i 0 6 | − 2 | — | 0·1 |
| Sebastopol | 0·6 | 312 | i 0 19 | S | (i 0 19) | + 4 | — | 0·5 |
| Simferopol | 0·8 | 358 | i 0 8 | − 3 | — | — | — | — |
| Theodosia | 1·2 | 45 | i 0 18 | + 1 | 0 33 | + 2 | — | — |
| Tiflis | 8·1 | 105 | e 1 58 | + 3 | e 3 26 | 0 | — | — |
| Grozny | 8·4 | 91 | i 2 28 | P* | — | — | — | — |
| Pulkovo | 15·8 | 352 | e 5 56 | ? | e 7 47 | ? | 8·5 | 9·7 |

Additional readings :—
Sebastopol $S_g$ = +28s.
Tiflis eE = +7m.48s. and +21m.18s., eN = +38m.12s.
Long waves were also recorded at Copenhagen, Kucino, and Sverdlovsk.

Dec. 26d. 22h. 55m. 21s. Epicentre 34°·2N. 134°·3E. N.3.

A = −·578, B = +·592, C = +·562 ; D = +·716, E = +·698 ;
G = −·393, H = +·402, K = −·827.

| | Δ | Az. | P. | O−C. | S. | O−C. | M. |
|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. |
| Sumoto | 0·5 | 77 | 0 5 | − 2 | 0 10 | − 3 | 0·2 |
| Kobe | 0·8 | 55 | 0 13 | + 2 | 0 24 | S* | 0·5 |
| Koti | 0·9 | 222 | 0 14 | + 1 | 0 25 | S* | — |
| Nagoya | 2·4 | 65 | e 0 44 | $P_g$ | 1 11 | S* | — |

Dec. 26d. Readings also at 0h. (Amboina), 1h. (Theodosia and Yalta), 2h. (Andijan, Frunse, Samarkand, Sebastopol, Theodosia, and Yalta), 3h. (Sebastopol and Yalta), 5h. (Stuttgart and Wellington), 14h. (Manila), 17h. (Erevan, Grozny, and Tiflis), 20h. (Tiflis), 21h. (Mizusawa), 22h. (Tananarive).

Dec. 27d. 13h. 37m. 27s. Epicentre 35°·1N. 70°·9E. N.3.

A = +·268, B = +·773, C = +·575 ; D = +·945, E = −·327 ;
G = +·188, H = +·543, K = −·818.

| | Δ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Samarkand | 5·5 | 327 | 1 18 | 0 | 1 58 | −22 | — | — |
| Andijan | 5·8 | 11 | e 1 22 | 0 | 2 18 | −10 | — | 3·0 |
| Tchimkent | 7·3 | 352 | e 1 39 | − 5 | — | — | — | — |
| Frunse | 8·3 | 19 | −0 10 | ? | 1 11 | ? | — | — |
| Agra | 10·0 | 141 | 2 26 | + 5 | 3 44 | ? | — | — |
| Bombay | 16·3 | 173 | i 4 0 | PP | e 7 3 | SS | 8·3 | — |
| Baku | 17·4 | 294 | e 4 2 | + 3 | 7 16 | + 5 | — | — |
| Hyderabad | 18·9 | 157 | 4 30 | PP | 8 20 | SS | 9·8 | 10·9 |
| Calcutta | 19·8 | 125 | e 4 41 | PP | 8 18 | +16 | 9·8 | 11·6 |
| Grozny | 21·0 | 300 | e 4 44 | + 4 | e 8 51 | SS | — | — |
| Erevan | 21·4 | 291 | e 4 42 | − 2 | — | — | — | — |
| Tiflis | 21·4 | 296 | 4 44 | 0 | e 8 37 | + 3 | 10·3 | 12·2 |
| Kodaikanal | 25·6 | 165 | — | — | e 10 33 | SS | — | — |
| Pulkovo | 35·9 | 326 | i 6 55 | − 2 | e 14 38 | SS | 17·6 | — |

Additional readings :—
Samarkand i = +1m.46s. = $P_g$ +2s., $S_g$ = +2m.10s.
Andijan $S_g$ = +2m.32s.
Frunse e = +49s.
Agra $P_g$ = +3m.9s., eN = +3m.38s., $iS_g$ = +4m.23s.?, iN = +4m.29s.
Bombay PP = +4m.31s., SS = +7m.45s.
Baku e = +4m.56s.
Tiflis eEZ = +4m.49s.
Pulkovo e = +9m.51s.
Long waves were recorded at Vladivostok.

Dec. 27d. 16h. Readings for which no determination has been made :—
Rome P =11m.22s.
Trenta eP =12m.22s., S =13m.5s.
Taranto P =12m.27s.
Naples eP =12m.54s., eS =15m.44s., L =16m.49s.
Zagreb e =13m.20s., e =15m.32s.
Triest eP =13m.51s., i =15m.4s., i =16m.6s.
Long waves at Baku and Sverdlovsk.

Dec. 27d. Readings also at 2h. (Batavia and Malabar), 8h. (Manila), 12h. (Agra, Bombay, Calcutta, Chiufeng, Hong Kong, Medan, and Phu-Lien), 13h. (La Paz and Triest), 16h. (Pulkovo), 17h. (Chiufeng, Hong Kong, Manila, and Sverdlovsk), 18h. (Baku, Manila, and Tyosi), 19h. (Prato), 20h. (Erevan and Tiflis).

Dec. 28d. 4h. Readings for which no determination has been made :—
Baku eP =3m.59s., S =9m.8s., L =12m.18s.
Tiflis ePN =5m.22s., eSE =10m.14s., eNE =12m.5s., LN =12m.54s., MN =13m.54s.
Frunse e =6m.6s.
Samarkand P =7m.7s., S =10m.7s.
Erevan eP =7m.11s.
Grozny eP =7m.18s., e =10m.45s.
Ksara eP =7m.38s., S =10m.50s., M =14m.
Andijan eP =8m.15s., eS =11m.36s., e =14m.54s.

Dec. 28d. 11h. Readings for which no determination has been made :—
Apia eP =26m.35s., eL =29m.
Sydney eP =29m.0s., eS =34m.30s., L =38m.30s., M =40m.25s.
Wellington P =29m.18s., S =31m.20s., L =32m., M =32m.
Arapuni iS? =30m.
Riverview ePE =30m.28s., iE =33m.33s., eL =37m.24s., ME =40m.0s.
Melbourne S =31m.44s., SS =36m.6s., L =40m.21s., M =46m.18s.
Adelaide e =33m.30s., e =39m.16s., eL =42m.35s., M =48m.0s.
Manila P =34m.54s., S =44m.49s., L =60m., M =66m.
Pasadena eZ =35m.32s., eE =43m.28s., eLNZ =61m.
Riverside ePZ =35m.34s.
Haiwee ePZ =35m.38s.
Tinemaha iPZ =35m.40s., iZ =35m.57s.
Vladivostok e =35m.57s.
Chiufeng eP =36m.21s., eS =46m.52s., eL =69m.12s., M =76m.54s.
La Paz ePKP =37m.11s., SKSN =47m.39s., SN =48m.31s., SSN =55m.30s., LN =72m.24s., M =74m.54s.
Perth eP =37m.30s., e =53m.25s., M =61m.0s.
Medan eP =42m.1s., eL =76m.
Tiflis eE =42m.46s., eE =46m.0s., eE =55m.55s., eE =64m.42s., eLNE =97m.6s., ME =101m.42s.
Pulkovo e =43m.5s., e =46m.2s., e =55m.48s., e =57m.24s., e =60m.40s., e =68m.50s., e =73m.4s., L =95m., M =108m.24s.
Calcutta eP =43m.50s., eL =76m.45s.
Ukiah e =45m.50s., e =53m.0s., e =56m.30s., e =60m.25s., e =63m.23s., eL =66m.40s.
Baku e =46m.6s., e =52m.8s., e =58m.35s., e =69m.45s., L =90m., M =115m.12s.
Tucson e =46m.20s., eL =63m.19s.
Batavia P =46m.25s., L =67m.
Kodaikanal e =49m.29s.
Ottawa eE? =52m.36s., eE =59m., eL =74m.
Oak Ridge e =59m.20s., eL =85m.
Cape Town N =60m.20s., E =63m.36s., E =75m.50s., ME =90m.42s.
Paris e =60m.25s., L =108m.
De Bilt e =67m., eL =105m., ME =115m.52s.
Chicago e =77m.15s.
Tananarive E =79m.29s., L =82m.13s., M =90m.55s.
Philadelphia e =82m.24s.
Kew e =110m.
Long waves at Copenhagen, Granada, Helsingfors, Piacenza, San Fernando, Scoresby Sund, Sverdlovsk, Stuttgart, Strasbourg, Uccle, Upsala, Bombay, Hong Kong, Honolulu, Tucson, Amboina, and New Plymouth.

Dec. 28d. Readings also at 0h. (Sebastopol, Yalta, and Tyosi), 2h. (Arapuni and Wellington), 3h. (Tashkent), 5h. (Granada, La Paz, Serra do Pilar, Toledo, and Tyosi), 6h. (Grozny and Tiflis), 7h. (Baku, Copenhagen, Granada, Pulkovo, Stuttgart, Sverdlovsk, Triest, Nagoya, and Tyosi), 8h. (Tiflis), 10h. (Tashkent), 11h. (Sverdlovsk), 12h. (Triest), 13h. (Cheb), 18h. (Andijan and Samarkand), 23h. (La Paz).

Dec. 29d. 4h. Readings for which no determination has been made :—

Granada e = 36m.0s.
Balboa Heights eP = 39m.19s., eS = 40m.13s. ; $T_0$ = 4h.38m.12s.
Huancayo iP = 42m.24s., e = 42m.53s., i = 42m.57s., e = 45m.58s., eL = 47m.5s.
San Juan e = 42m.41s., e = 46m.30s.
La Paz ePN = 43m.34s., SN = 48m.18s., LN = 51m.58s., M = 54m.24s.
Riverside iPZ = 46m.0s.
Pasadena iPZ = 46m.6s.
Mount Wilson ePZ = 46m.6s.
Tinemaha ePZ = 46m.18s.
Philadelphia e = 54m.0s.
Chicago e = 54m.33s.
Long waves at Tashkent, Sverdlovsk, and Tucson.

Dec. 29d. Readings also at 1h. (Malabar), 4h. (La Paz and Phu-Lien), 9h. (Manila), 13h. (Batavia and Malabar), 14h. (Granada), 17h. (Messina and Trenta (2) ), 18h. (Granada), 23h. (Andijan, Agra, Frunse, and Samarkand).

Dec. 30d. 13h. 52m. 19s. Epicentre 32°·2N. 115°·5W. N.2.

Given by the American stations.

A = − ·364, B = − ·764, C = + ·533 ; D = − ·903, E = + ·431 ;
G = − ·229, H = − ·481, K = − ·846.

| | △ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| La Jolla | 1·7 | 293 | i 0 21 | − 3 | — | — | — | — |
| Riverside | 2·4 | 322 | i 0 29 | − 5 | — | — | — | — |
| Mount Wilson | 2·9 | 315 | e 0 37 | − 4 | — | — | — | — |
| Pasadena | 2·9 | 312 | i 0 38a | − 3 | i 1 20 | + 6 | — | — |
| Tucson | 3·9 | 89 | i 0 52 | − 4 | — | — | — | — |
| Santa Barbara | 4·2 | 304 | e 0 59 | − 1 | — | — | — | — |
| Haiwee | 4·5 | 334 | e 0 57 | − 7 | i 2 17 | S* | — | — |
| Tinemaha | 5·4 | 336 | e 1 9 | − 8 | — | — | — | — |
| Lick | 7·2 | 318 | e 1 41 | − 1 | i 3 14 | +10 | — | — |
| Branner | 7·6 | 316 | e 1 49 | + 1 | i 3 10 | − 4 | — | — |
| Berkeley | 7·9 | 318 | e 1 49 | − 3 | i 3 14 | − 7 | — | — |
| San Francisco | 7·9 | 316 | e 0 1 | ? | i 1 27 | ? | — | — |
| Ukiah | 9·3 | 320 | e 2 11 | 0 | 4 28 | S* | — | — |
| Ferndale | 10·9 | 323 | e 4 2 | ? | e 6 18 | ? | — | — |
| Denver | 11·3 | 46 | i 2 40 | PP | i 5 0 | +12 | i 5·7 | 6·0 |
| Bozeman | 13·9 | 13 | 3 13 | − 1 | e 6 9 | ? | i 7·4 | — |
| Seattle | 16·3 | 343 | e 3 59 | PP | e 6 21 | −24 | i 8·1 | — |
| Victoria | 17·2 | 342 | 3 58 | + 1 | 7 9 | + 3 | 8·1 | — |
| Little Rock | 19·4 | 76 | e 4 20 | − 3 | i 8 3 | + 9 | i 9·9 | — |
| Florissant | 21·4 | 65 | e 4 41 | − 3 | i 8 37 | + 3 | — | — |
| St. Louis | 21·5 | 66 | e 4 45 | 0 | i 8 39 | + 3 | — | 11·3 |
| Chicago | 24·1 | 58 | e 5 6 | − 5 | i 9 36 | +11 | i 12·5 | — |
| Ann Arbor | 27·0 | 59 | e 5 47 | + 9 | i 10 35 | +20 | e 13·0 | 15·0 |
| Sitka | 28·4 | 337 | e 5 33 | −18 | e 10 37 | − 1 | e 12·7 | — |
| Columbia | 28·8 | 77 | e 10 41 | S | (e 10 41) | − 4 | i 15·4 | — |
| Toronto | 30·4 | 57 | e 5 45 | −24 | i 11 5 | − 5 | 15·0 | — |
| Charlottesville | 30·6 | 69 | — | — | e 12 35 | SS | i 15·5 | — |
| Georgetown | 31·7 | 65 | e 6 24 | + 4 | i 11 29 | − 2 | — | — |
| Ithaca | 32·3 | 59 | — | — | e 11 41 | + 1 | — | — |
| Ottawa | 33·2 | 55 | e 6 36 | + 2 | e 11 53 | − 1 | e 16·7 | — |

*Continued on next page.*

| | Δ ° | Az. ° | P. m. s. | O−C. s. | S. m. s. | O−C. s. | L. m. | M. m. |
|---|---|---|---|---|---|---|---|---|
| Philadelphia | 33·2 | 62 | — | — | e 11 51 | − 3 | e 16·6 | — |
| Oak Ridge | 35·9 | 60 | e 6 59 | + 2 | e 12 37 | + 2 | e 15·2 | — |
| Honolulu | 39·1 | 265 | e 7 41 | +17 | e 13 40 | +18 | e 16·7 | — |
| Port au Prince | 41·0 | 99 | e 7 47 | + 7 | — | — | e 21·2 | 24·6 |
| San Juan | 46·3 | 93 | e 8 28 | + 5 | i 15 7 | − 2 | e 22·1 | — |
| Ivigtut | 51·3 | 35 | — | — | 16 29 | +10 | 23·7 | — |
| Huancayo | 58·6 | 131 | e 9 57 | + 2 | i 17 55 | − 2 | e 25·0 | — |
| Scoresby Sund | 61·0 | 22 | — | — | 18 35 | + 6 | 27·7 | — |
| La Paz | 66·5 | 130 | i 10 52k | + 3 | 19 34 | − 5 | 30·9 | 37·4 |
| Sucre | 70·3 | 129 | e 11 21 | + 8 | i 20 32 | + 7 | 36·7 | — |
| Edinburgh | 74·9 | 33 | e 12 41? | +61 | i 21 56 | PS | 37·7 | 46·4 |
| Stonyhurst | 76·4 | 34 | — | — | e 21 34 | − 2 | 34·7 | 43·3 |
| Bidston | 76·4 | 35 | e 20 26 | ? | i 30 27 | ? | e 34·7 | — |
| Oxford | 78·3 | 35 | — | — | e 21 52 | − 5 | e 32·3 | 44·9 |
| Kew | 78·9 | 36 | — | — | e 28 23 | ? | 35·7 | 44·3 |
| Upsala | 80·2 | 22 | — | — | e 22 9 | − 9 | e 39·7 | 46·9 |
| De Bilt | 81·1 | 32 | i 12 18 | + 4 | e 22 26 | − 1 | e 37·7 | 45·1 |
| Copenhagen | 81·6 | 27 | 12 18 | + 2 | 22 31 | − 2 | 33·7 | — |
| Uccle | 81·6 | 34 | i 12 20 | + 4 | e 22 25 | − 8 | e 35·7 | 42·5 |
| Paris | 82·0 | 37 | e 12 41? | +23 | e 24 41? | ? | 34·7 | 45·7 |
| Hamburg | 82·1 | 30 | e 12 5 | −14 | e 22 41 | + 3 | e 38·7 | 51·7 |
| Helsingfors | 82·1 | 19 | e 12 18 | − 1 | e 22 30 | − 8 | e 38·7 | — |
| Vladivostok | 82·7 | 317 | — | — | e 22 59 | +15 | — | — |
| Pulkovo | 83·8 | 17 | i 12 29 | + 2 | 22 46 | − 9 | 39·7 | 49·4 |
| Toledo | 84·1 | 46 | e 12 29 | 0 | e 23 1 | + 2 | 34·7q | 42·3 |
| Strasbourg | 84·7 | 33 | i 12 32a | 0 | 23 8 | + 3 | e 37·7 | 47·3 |
| San Fernando | 84·8 | 50 | 13 16 | +44 | 23 4 | − 2 | 40·2 | — |
| Königsberg | 85·2 | 23 | e 15 38 | PP | — | — | e 47·6 | 62·0 |
| Stuttgart | 85·2 | 33 | e 12 36 | + 2 | e 23 10 | 0 | e 39·7 | 47·7 |
| Basle | 85·3 | 36 | e 12 38 | + 3 | — | — | — | — |
| Neuchatel | 85·4 | 35 | e 12 34 | − 1 | — | — | — | — |
| Cheb | 85·7 | 31 | e 14 59 | ? | e 23 18 | + 3 | e 41·7 | 47·7 |
| Malaga | 85·7 | 49 | i 12 46 | + 9 | 23 6 | − 9 | 40·2 | — |
| Granada | 86·0 | 48 | e 12 42 | + 4 | e 23 29 | +11 | 39·4 | 53·0 |
| La Plata E. | 86·2 | 136 | — | — | 23 29 | +10 | 45·7 | 59·1 |
| N. | 86·2 | 136 | — | — | 23 5 | [− 3] | 47·9 | 58·6 |
| Prague | 86·6 | 30 | — | — | e 23 24 | + 1 | e 39·7 | 46·7 |
| Alicante | 87·1 | 46 | — | — | e 23 32 | + 4 | e 40·2 | — |
| Zurich | 87·4 | 35 | e 12 41 | − 4 | — | — | — | — |
| Piacenza | 88·1 | 36 | — | — | 23 45 | + 7 | 71·7 | 84·2 |
| Almeria | 88·2 | 48 | — | — | e 29 28 | SS | e 38·7 | 43·7 |
| Treviso | 88·8 | 33 | e 23 31 | S | (e 23 31) | −14 | 50·2 | 51·7 |
| Vienna | 88·8 | 30 | e 12 52 | 0 | — | — | e 44·7 | — |
| Padova | 88·9 | 34 | e 23 50 | S | (e 23 50) | + 4 | e 46·1 | — |
| Venice | 89·1 | 36 | e 13 23 | +30 | 23 6 | [−21] | 49·1 | 60·0 |
| Kucino | 89·2 | 15 | — | — | 24 6 | +18 | e 40·8 | 51·0 |
| Graz | 89·3 | 32 | — | — | 23 47 | − 2 | e 45·7 | 53·8 |
| Triest | 89·6 | 34 | e 13 24 | +28 | 23 48 | − 4 | e 37·7 | 55·0 |
| Budapest | 90·5 | 30 | — | — | e 24 11 | +10 | e 45·2 | 59·2 |
| Zagreb | 90·5 | 32 | — | — | e 23 55 | − 6 | e 43·7 | — |
| Sverdlovsk | 90·9 | 3 | i 13 5 | + 3 | e 23 48 | {+ 6} | 39·7q | 52·4 |
| Rome | 91·8 | 36 | 15 58 | ? | — | — | — | — |
| Chiufeng | 93·4 | 323 | 13 17a | + 4 | e 23 54 | [+ 2] | e 42·1 | 53·2 |
| Zi-ka-wei | 96·8 | 314 | e 17 25 | PP | — | — | 47·9 | 50·3 |
| Wellington | 97·6 | 226 | — | — | i 25 19 | +14 | 40·7 | — |
| Tiflis | 103·9 | 15 | e 17 44 | PP | e 24 49 | [+ 4] | 52·7 | 63·4 |
| Frunse | 104·3 | 353 | e 17 15 | ? | — | — | — | — |
| Tashkent | 106·4 | 356 | — | — | e 24 3 | S | 48·7 | 63·4 |
| Andijan | 106·7 | 353 | e 18 50 | PP | — | — | 52·7 | — |
| Hong Kong | 107·7 | 312 | 25 11 | S | (25 11) | [+ 8] | — | 64·3 |
| Manila | 108·5 | 302 | 18 46 | PP | 28 19 | PS | 50·0 | 60·0 |

*Continued on next page.*

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Ksara | 108·7 | 25 | e 18 54 | PP | e 25 6 | [− 1] | 50·7 | — |
| Sydney | 109·7 | 242 | — | — | e 41 36 | SSSS | 59·2 | 61·2 |
| Riverview | 109·7 | 242 | — | — | e 41 53 | SSSS | e 52·0 | 57·8 |
| Dehra Dun | 116·2 | 347 | 60 1 | ? | — | — | 72·3 | 76·7 |
| Adelaide | 119·7 | 245 | — | — | e 30 27 | PS | — | 67·8 |
| Calcutta | 120·7 | 334 | e 20 0 | PP | 32 15 | ? | 58·3 | 67·3 |
| Bombay | 128·3 | 349 | e 20 41? | PP | — | — | — | 79·4 |
| Hyderabad | 128·6 | 343 | 20 50 | PP | — | — | 64·0 | 79·6 |
| Medan | 131·7 | 311 | 22 39 | PKS | — | — | e 69·7 | — |
| Batavia | 132·8 | 294 | 22 8 | PP | — | — | e 73·7 | — |
| Colombo | 138·3 | 337 | 26 41 | SKS | — | — | — | 84·1 |
| Cape Town | 141·7 | 105 | 25 18 | PPP | 32 56 | SKSP | 64·0 | 72·4 |
| Tananarive | 159·7 | 53 | — | — | 60 46 | ? | e 75·7 | 92·7 |

Additional readings :—
Pasadena iNEZ = +51s. = $P_g$ − 1s.
Tucson i = +1m.7s. = P* +3s.
Haiwee iNZ = +1m.20s. = $P_g$ − 4s.
Lick iN = +2m.21s. = $P_g$ + 3s.
Berkeley PE = +1m.54s., ePZ = +1m.59s., iSZ = +3m.24s., iSE = +3m.26s.
San Francisco ePN = +0m.4s.
Ukiah e = +2m.58s. and +3m.11s.
Denver iPP = +2m.46s., iEN = +3m.10s., +3m.31s., and +4m.41s., iSS = +5m.22s.
Bozeman i = +7m.21s. ; $T_0$ = 13h.52m.16s.
Seattle e = +3m.7s. and +7m.33s.
Victoria SE = +7m.16s. ; $T_0$ = 13h.52m.17s.
Little Rock i = +4m.26s., iSS = +7m.51s.
Florissant iPP = +5m.6s., iSS = +9m.23s.
St. Louis iEN = +4m.47s. ; $T_0$ = 13h.52m.11s.
Chicago iP = +5m.16s., i = +9m.41s., e = +11m.53s.
Ann Arbor eSS = +11m.53s. ; $T_0$ = 13h.52m.12s.
Sitka e = +8m.34s. and +9m.36s.
Columbia e = +13m.27s. and +14m.51s.
Toronto SSE = +12m.55s.
Charlottesville e = +9m.41s., +10m.53s., and +14m.39s.
Ithaca eSS?E = +14m.17s.
Philadelphia eSS = +13m.42s.
Oak Ridge ePZ = +6m.57s., eNE = +14m.53s. = SS +6s., eNW = +15m.25s., eNE = +16m.7s., eZ = +18m.13s., iNE = +18m.25s., iNW = +18m.27s.
Honolulu ePP = +9m.38s. = $P_cP$ − 1s.
San Juan e = +9m.32s., ePP = +10m.36s., iSS = +19m.6s.
Huancayo ePP = +12m.1s., eS = +17m.48s., e = +19m.56s. = $S_cS$ +14s., and +21m.31s. = SS − 15s.
Scoresby Sund +22m.29s. = SS + 3s.
La Paz PPN = +13m.56s., iSN = +19m.42s., SS = +24m.6s.
Edinburgh i = +32m.55s.
Bidston i = +21m.30s. = S − 6s. and +28m.16s.
Kew eZ = +32m.33s.
Copenhagen +22m.43s., SS = +27m.41s.
Helsingfors ePSNE = +23m.34s., eSSNE = +26m.31s., eSSSNE = +31m.17s., e?N = +37m.29s. ; $T_0$ = 13h.52m.30s.
Pulkovo PP = +15m.39s., SS = +28m.11s., SSS = +31m.41s.
Toledo LR = +38m.23s.
Strasbourg i = +12m.47s., ePP = +16m.19s., ePPP = +17m.47s., cPPPP = +20m.2s., PS = +24m.2s., eSSS = +32m.16s., eSSSS = +34m.44s.
Königsberg eZ = +15m.57s. = PP +10s.
Stuttgart e = +14m.5s., ePP = +16m.16s., e = +19m.13s., eSKS = +23m.0s., ePS = +24m.0s., e = +27m.11s., eSS = +32m.23s., e = +37m.53s.
Malaga e = +13m.8s., +15m.57s. = PP + 6s. and +17m.40s. = PPP + 4s., SKKS = +23m.12s. = SKS + 8s., PS = +24m.5s., SS = +29m.0s., e = +31m.51s. = SSS − 13s.
La Plata SSN = +28m.53s., N = +43m.23s.
Treviso S? = +33m.41s., SS = +42m.31s.
Kucino e = +32m.54s. and +38m.5s.
Triest e = +23m.7s. and +23m.31s. = SKS + 1s., iS = +24m.20s., cPS = +25m.29s., i = +27m.48s., e = +30m.50s.
Zagreb e = +20m.29s.
Sverdlovsk PP = +16m.54s., SKS = +23m.34s., PS = +25m.6s., SS = +30m.23s., SSS = +33m.41s., LR = +51·7m.
Chiufeng PP? = +17m.1s.
Tiflis ePPSN = +27m.27s., eSSN = +32m.41s., eSSSN = +37m.5s., eN = +40m.23s.

*Continued on next page.*

Tashkent e = +26m.13s., +30m.26s., +32m.41s., and +43m.29s.
Hong Kong S? = +34m.16s.
Ksara PS = +28m.16s., PPS = +29m.14s.
Adelaide e = +36m.46s. = SS + 18s., +39m.1s., +46m.3s., +57m.7s., and +60m.53s.
Calcutta SS = +40m.5s.
Cape Town N = +26m.10s., E = +31m.22s., +37m.54s., +40m.24s., +41m.35s. = SS + 32s., +46m.4s. = SSS − 2s., and +49m.57s. = SSSS + 7s.
Long waves were also recorded at Algiers, Bergen, Phu-Lien, Apia, Amboina, Perth, and other European stations.

Dec. 30d. Readings also at 6h. (Granada and Tananarive), 7h. (Granada), 8h. (Kobe and Santiago), 11h. (Santiago), 12h. (Kobe, Sumoto, and Tifiis), 13h. (Berkeley, Branner, and Lick), 14h. (Berkeley, Branner, Lick, and Medan), 15h. (Andijan, Erevan, Frunse, Berkeley (2), Branner (2), Lick (2), and San Francisco), 16h. (Riverview and Tifiis), 19h. (Berkeley, Branner, Lick, and Riverivew), 20h. (Tifiis), 22h. (Pasadena and Tinemaha), 23h. (Erevan).

Dec. 31d. 6h. Readings for which no epicentre has been made :—
La Paz iP = 37m.52s.k, iS = 38m.54s., M = 39m.28s.
Sucre iP = 38m.9s., iS = 39m.21s.
Huancayo eP = 38m.40s., iP = 38m.42s., e = 40m.2s., iL = 40m.20s.
Santiago P = 40m.23s., S = 44m.18s.
La Plata iP = 40m.47s., SE = 44m.5s., SN = 44m.14s., SZ = 44m.18s., SS = 44m.25s., SSSE = 44m.46s., LE = 46m.30s., LN = 46m.36s., MN = 47m.36s., ME = 48m.11s.
San Juan e = 43m.49s., i = 46m.40s., e = 49m.50s.
Oak Ridge e = 45m.10s., e = 45m.28s., i = 47m.15s.
La Jolla ePNZ = 46m.26s.
Riverside iPNEZ = 46m.35s.k.
Pasadena iPNEZ = 46m.37s.k, iSNE = 54m.58s.
Mount Wilson iPNEZ = 46m.40s.
Haiwee iPNEZ = 46m.41s.k.
Tinemaha iPNEZ = 46m.45s.k.
Santa Barbara ePNE = 46m.45s.
Berkeley iPZ = 47m.6s., iZ = 47m.10s.
Tucson e = 49m.4s.

Dec. 31d. 18h. 45m. 50s. Epicentre 31°·2N. 116°·9W. N.1.

A = −·387, B = −·763, C = +·518 ; D = −·892, E = +·452 ;
G = −·234, H = −·462, K = −·855.

| | △ | Az. | P. | O − C. | S. | O − C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| La Jolla | 1·7 | 349 | i 0 26 | + 2 | — | — | — | — |
| Riverside | 2·8 | 351 | e 0 35 | − 5 | — | — | — | — |
| Pasadena | 3·1 | 340 | e 0 45a | + 1 | i 1 36 | $S_g$ | — | — |
| Mount Wilson | 3·2 | 342 | i 0 44 | − 2 | — | — | — | — |
| Haiwee | 5·1 | 350 | e 1 5 | − 8 | — | — | — | — |
| Tucson | 5·2 | 76 | e 0 40 | −34 | — | — | — | — |
| Tinemaha | 6·0 | 349 | i 1 17 | − 8 | — | — | — | — |
| Branner | 7·6 | 326 | e 2 0 | P* | i 3 3 | −11 | — | — |
| Berkeley | 8·0 | 328 | e 2 0 | + 7 | e 4 4 | S* | — | — |
| San Francisco | 8·0 | 327 | e 1 40 | −13 | e 3 33 | + 9 | — | — |
| Ukiah | 9·5 | 328 | 2 27 | +13 | e 4 10 | + 9 | — | — |
| Ferndale | 11·1 | 329 | e 3 10 | ? | e 6 20 | $S_g$ | — | — |
| Denver | 12·9 | 45 | e 2 35 | −26 | i 4 49 | −36 | i 5·6 | 6·0 |
| Bozeman | 15·2 | 16 | e 3 16 | −15 | i 6 0 | −20 | e 7·1 | — |
| Victoria | 17·9 | 346 | 4 5 | 0 | 7 50 | +28 | 10·8 | 11·6 |
| Little Rock | 20·8 | 74 | i 4 19 | −19 | i 8 4 | −18 | e 9·8 | — |
| Saskatoon | 22·2 | 17 | e 4 30 | −23 | i 8 30 | −20 | — | — |
| Florissant | 22·9 | 63 | i 4 39 | −21 | i 8 37 | −26 | — | — |
| St. Louis | 23·0 | 64 | e 4 43 | −18 | i 8 37 | −28 | e 10·0 | 11·0 |
| Chicago | 25·7 | 57 | i 5 22 | − 4 | (i 9 40) | −13 | i 9·7 | — |

*Continued on next page.*

| | | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Ann Arbor | | 28·6 | 58 | e 5 46 | − 7 | i 10 40 | − 2 | i 13·1 | 15·1 |
| Sitka | | 28·8 | 339 | e 5 58 | + 4 | i 10 54 | + 9 | e 13·0 | — |
| Columbia | | 30·2 | 75 | e 6 53 | PP | e 11 10 | + 3 | i 15·4 | — |
| Toronto | | 31·9 | 55 | i 6 28 | + 6 | i 12 11 | +37 | 16·2 | 20·2 |
| Charlottesville | | 32·1 | 67 | e 6 18 | − 6 | 11 14 | −23 | 13·7 | — |
| Georgetown | | 33·2 | 65 | i 6 32 | − 2 | i 11 40 | −14 | — | — |
| Ithaca | | 33·9 | 59 | e 6 52 | +13 | i 11 46 | −18 | — | — |
| Philadelphia | | 34·7 | 63 | e 6 45 | − 1 | e 11 52 | −25 | e 13·7 | — |
| Ottawa | | 34·8 | 54 | i 6 54 | + 7 | 12 32 | +14 | e 16·8 | — |
| Oak Ridge | | 37·5 | 60 | e 6 58 | −13 | e 12 27 | −32 | e 17·7 | — |
| Honolulu | | 37·8 | 265 | e 7 38 | +25 | e 13 58 | +55 | e 16·9 | — |
| Balboa Heights | | 41·2 | 115 | 7 10? | −32 | — | — | — | — |
| Port au Prince | | 42·1 | 97 | e 7 51 | + 2 | e 14 21 | +13 | e 21·6 | — |
| San Juan | | 47·4 | 93 | e 8 15 | −17 | i 15 13 | −11 | e 21·9 | — |
| Ivigtut | | 52·9 | 34 | 9 52 | +39 | 16 21 | −20 | — | — |
| Huancayo | | 58·8 | 131 | i 9 53 | − 3 | i 18 0 | 0 | i 24·7 | — |
| Scoresby Sund | | 62·4 | 22 | 10 15 | − 6 | 18 34 | −13 | — | — |
| La Paz | | 66·8 | 128 | e 10 43a | − 8 | i 19 49 | + 7 | i 30·2 | 31·0 |
| Apia | | 69·3 | 238 | — | — | e 20 10? | − 3 | e 33·2 | — |
| Sucre | | 70·6 | 128 | i 11 13 | − 1 | i 21 26 | +58 | 32·4 | — |
| Edinburgh | | 76·3 | 33 | i 11 58 | +10 | i 21 25 | −10 | 32·2 | 42·8 |
| Bergen | | 77·0 | 25 | e 13 4 | ? | — | — | — | — |
| Durham | | 77·8 | 33 | — | — | 21 37 | −15 | — | 41·7 |
| Bidston | | 77·9 | 35 | 12 30 | +33 | 21 35 | −18 | 31·2 | 43·7 |
| Stonyhurst | | 77·9 | 35 | e 12 23 | +26 | i 21 43 | −10 | 32·2 | 45·7 |
| Santiago | | 78·0 | 143 | 12 14 | +17 | 22 25 | PS | — | — |
| Oxford | | 79·8 | 36 | — | — | i 22 50 | PS | e 32·2 | 44·2 |
| Kew | | 80·4 | 34 | e 12 18 | + 8 | i 22 12 | − 8 | 32·2 | 43·6 |
| Upsala | | 81·6 | 23 | e 12 16 | 0 | i 22 18 | −15 | e 33·2 | 48·6 |
| Serra do Pilar | | 82·1 | 46 | 12 58 | +39 | 22 53 | +15 | 37·7 | 39·3 |
| De Bilt | | 82·6 | 32 | i 12 24 | + 3 | 22 31 | −12 | 40·2 | 43·1 |
| Vladivostok | | 82·7 | 316 | e 12 28 | + 6 | e 23 6 | PS | — | 59·8 |
| Copenhagen | | 83·0 | 26 | 12 24 | + 1 | 22 35 | −12 | 33·2 | — |
| Uccle | | 83·1 | 34 | i 11 29 | −55 | i 22 29 | −19 | 37·2 | 42·8 |
| Helsingfors | | 83·4 | 19 | 12 19 | − 6 | 22 37 | [−10] | e 34·2 | — |
| Paris | | 83·5 | 37 | e 12 28 | + 2 | 22 55 | + 3 | 32·2 | 45·2 |
| Hamburg | | 83·6 | 29 | e 12 30 | + 4 | i 22 46 | [− 2] | e 35·2 | 45·2 |
| Göttingen | | 84·5 | 32 | e 12 35 | + 4 | e 22 58 | [+ 3] | e 40·2 | 44·8 |
| Pulkovo | | 85·2 | 16 | 12 35 | + 1 | i 22 59 | [− 2] | 39·2 | 50·7 |
| Toyooka | | 85·3 | 309 | — | — | e 22 31 | −40 | — | — |
| Kobe | | 85·6 | 309 | — | — | i 23 39 | +25 | e 44·4 | — |
| Toledo | | 85·6 | 47 | e 12 31 | − 5 | 23 1 | [− 2] | e 34·3q | 43·3 |
| Bagnères | | 86·0 | 42 | 12 47 | + 9 | 23 8 | [+ 2] | 39·2 | — |
| Jena | | 86·2 | 31 | e 12 40 | + 1 | e 23 10 | [+ 2] | e 40·2 | 45·7 |
| Karlsruhe | | 86·2 | 34 | e 13 2 | +23 | e 23 23 | + 4 | e 42·2 | 54·2 |
| Strasbourg | | 86·2 | 34 | 12 41a | + 2 | i 23 4 | [− 4] | e 37·2 | 47·2 |
| La Plata | E. | 86·3 | 135 | 12 48k | + 8 | 23 18 | − 2 | 40·0 | 43·0 |
| | N. | 86·3 | 135 | e 12 40 | 0 | 23 10 | [+ 2] | 35·5 | 48·7 |
| San Fernando | | 86·3 | 49 | 12 49 | + 9 | 23 11 | [+ 3] | 39·2 | — |
| Königsberg | | 86·6 | 24 | — | — | e 23 5 | [− 6] | e 39·0 | 52·1 |
| Stuttgart | | 86·7 | 33 | e 12 38 | − 4 | e 23 10 | [− 1] | e 42·2 | 54·2 |
| Basle | | 86·8 | 37 | e 12 41 | − 1 | — | — | — | — |
| Neuchatel | | 86·9 | 36 | e 12 40 | − 3 | e 23 17 | [+ 4] | — | — |
| Cheb | | 87·2 | 31 | e 13 51 | +67 | e 23 18 | [+ 3] | e 42·2 | 48·2 |
| Malaga | | 87·2 | 48 | i 12 48 | + 4 | 23 31 | + 2 | 39·3 | — |
| Granada | | 87·5 | 48 | i 12 56 | +11 | i 23 19 | [+ 2] | 51·7R | 61·8 |
| Zurich | | 87·5 | 35 | e 12 46 | + 1 | e 23 17 | [ 0] | — | — |
| Prague | | 88·1 | 30 | e 12 40 | − 8 | e 23 26 | [+ 5] | e 36·2 | 51·7 |
| Barcelona | | 88·2 | 42 | — | — | e 23 28 | [+ 7] | e 36·1 | 46·6 |
| Almeria | | 88·4 | 48 | e 13 11 | +21 | i 23 32 | [+ 9] | e 36·4 | 44·5 |

*Continued on next page.*

| | △ | Az. | P. | O−C. | S. | O−C. | L. | M. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | m. s. | s. | m. s. | s. | m. | m. |
| Alicante | 88·7 | 45 | e 13 6 | +15 | i 23 38 | − 6 | e 37·6 | 43·8 |
| Piacenza | 89·6 | 36 | 13 42 | +48 | i 23 43 | − 9 | 39·2 | 54·1 |
| Vienna | 90·2 | 30 | e 12 51 | − 7 | i 23 51 | − 7 | e 45·2 | 49·2 |
| Padova | 90·4 | 34 | e 13 1 | + 2 | 23 49 | −11 | e 46·2 | — |
| Treviso | 90·4 | 33 | e 13 10? | +11 | i 23 49 | −11 | 42·3 | 55·2 |
| Kucino | 90·5 | 14 | 13 34 | +34 | 23 50 | −11 | e 35·2 | 48·2 |
| Venice | 90·6 | 35 | — | — | 23 50 | −12 | 50·2 | 53·3 |
| Graz | 90·8 | 32 | e 16 8 | PP | — | — | 49·6 | — |
| Triest | 91·1 | 33 | e 13 2 | − 1 | 23 39 | [ 0] | e 38·0 | 45·2 |
| Prato | 91·2 | 36 | e 13 5 | + 2 | e 23 54 | {+ 9} | 36·2 | 50·0 |
| Florence | 91·3 | 36 | e 12 45 | −18 | 23 50 | {+ 5} | — | — |
| Siena | 91·7 | 36 | 13 55 | +50 | 25 55 | PS | 52·2 | — |
| Algiers | 91·8 | 45 | e 13 40 | +34 | e 23 58 | [+15] | e 36·2 | 56·2 |
| Budapest | 91·9 | 29 | 12 10? | −56 | 22 50 | ? | e 40·2 | 47·2 |
| Lemberg | 91·9 | 24 | e 22 10 | ? | — | — | — | 55·7 |
| Sverdlovsk | 92·0 | 2 | i 13 7 | 0 | i 24 9 | − 6 | 41·2$_a$ | 56·1 |
| Zagreb | 92·0 | 31 | e 13 12 | + 5 | e 23 56 | {+ 5} | — | 55·4 |
| Rome | 93·3 | 36 | 14 25 | ? | — | — | — | — |
| Chiufeng | 93·4 | 322 | e 13 23 | +10 | 23 59 | [+ 7] | e 37·8 | 59·7 |
| Belgrade | 94·7 | 30 | e 13 24 | + 5 | e 24 12 | { 0} | e 50·7 | — |
| Naples | 94·9 | 36 | e 15 5 | ? | e 24 55 | +14 | 45·9 | 60·2 |
| Wellington | 96·0 | 226 | — | — | 24 24 | {+ 1} | 40·2 | 57·2 |
| Zi-ka-wei | 96·6 | 313 | e 13 46 | +18 | — | — | — | 67·8 |
| Taranto | 96·7 | 35 | 16 10 | ? | 24 10 | [+ 1] | — | — |
| Sebastopol | 99·6 | 24 | — | — | e 25 34 | +11 | 40·2 | — |
| Theodosia | 99·8 | 22 | — | — | e 25 10 | −15 | 42·8 | — |
| Yalta | 99·8 | 20 | e 17 55 | PP | — | — | 40·2 | — |
| Frunse | 105·2 | 353 | e 17 35 | [−27] | — | — | — | — |
| Tiflis | 105·2 | 14 | e 18 24 | [+22] | e 24 53 | [+ 2] | 53·2 | 63·9 |
| Manila | 107·0 | 301 | 18 10 | [+ 2] | 28 10 | PS | 50·2 | 58·7 |
| Tashkent | 107·3 | 355 | e 14 26 | + 8 | 25 8 | [+ 7] | 52·6 | 63·5 |
| Baku | 107·4 | 13 | 18 34 | PP | i 24 9 | [−52] | — | — |
| Andijan | 107·5 | 355 | e 18 55 | PP | e 29 49 | ? | e 56·1 | — |
| Hong Kong | 107·5 | 311 | 11 20 | ? | 25 13 | [+11] | — | 77·3 |
| Sydney | 108·2 | 241 | e 19 0 | PP | — | — | 51·2 | 60·0 |
| Ksara | 110·1 | 26 | — | — | e 25 35 | [+21] | 53·7 | 61·2 |
| Helwan | 111·9 | 30 | e 19 4 | PP | 30 53 | ? | 34·7 | 64·8 |
| Amboina | 113·0 | 282 | e 19 15 | PP | — | — | e 52·2 | — |
| Melbourne | 114·4 | 239 | e 19 58 | PP | e 29 53 | PS | 54·2 | 60·2 |
| Adelaide | 118·2 | 247 | — | — | e 25 36 | [− 9] | 50·4 | 78·4 |
| Calcutta | 121·1 | 336 | 20 34 | PP | e 33 48 | ? | 65·2 | 75·1 |
| Bombay | 129·0 | 348 | — | — | 26 18 | [+ 2] | e 64·0 | 79·9 |
| Medan | 131·4 | 312 | 22 45 | PKS | — | — | e 67·2 | — |
| Batavia | 132·1 | 292 | 18 9 | [−61] | — | — | e 63·2 | — |
| Perth | 135·5 | 255 | e 24 30 | PPP | — | — | 70·5 | — |
| Colombo | 138·7 | 334 | 20 40 | ? | — | — | 67·7 | 78·7 |
| Cape Town E. | 142·6 | 106 | 19 30 | [+ 4] | 29 17 | {−22} | 66·6 | 74·2 |
| N. | 142·6 | 106 | 19 46 | [+20] | 29 39 | { 0} | 67·8 | 73·9 |
| Tananarive | 161·3 | 53 | e 40 31 | ? | — | — | 66·7 | 92·2 |

Additional readings :—
Pasadena iNE = +1m.2s. = $P_g$ +6s.
Tucson iP = +49s.
Branner iN = +2m.20s. = $P_g$ −6s. and +2m.32s., iE = +2m.39s., +2m.58s., and +4m.2s.
Berkeley ePEZ = +2m.5s., eSE = +4m.5s.
Ukiah e = +3m.1s., i = +3m.14s., iS = +5m.0s. = $S_g$ −8s.
Denver eE = +2m.46s., iEN = +2m.48s., iN = +4m.13s., iE = +4m.15s., eEN = +5m.0s., iE = +5m.19s. and +5m.32s.
Bozeman iP = +3m.23s.
Victoria SEN = +8m.3s. ; $T_o$ = 18h.45m.57s.
Little Rock iPP = +4m.44s., eSS = +8m.46s. ; $T_o$ = 18h.45m.38s.
St. Louis iPEN = +4m.46s., iPPEN = +5m.10s., iPPPEN = +5m.18s., iSSEN = +9m.27s. ; $T_o$ = 18h.45m.38s.
Chicago i = +5m.44s.

*Continued on next page.*

Ann Arbor ePP = +6m.28s., iSS = +11m.52s. ; $T_0$ = 18h.45m.36s.
Columbia e = +10m.28s. and +11m.44s.
Toronto iPPN = +7m.45s., iSSN = +14m.11s.
Charlottesville e = +7m.42s., +9m.46s., and +12m.10s.
Philadelphia e = +7m.13s.
Ottawa PPP = +8m.16s., SS = +14m.34s. ; $T_0$ = 18h.45m.48s.
Oak Ridge eNE = +7m.27s.
Honolulu ePP = +9m.28s. = $P_cP$ − 7s.
Port au Prince PP = +9m.26s., PPP = +10m.6s.
San Juan i = +8m.43s., +19m.0s., and +19m.18s.
Ivigtut +11m.40s., SE = +16m.31s.
Huancayo i = +10m.10s., +17m.40s., and +20m.10s.
Scoresby Sund $P_cP$ = +11m.4s., $P_cS$ = +14m.52s., $S_cS$ = +20m.22s., SS = +22m.34s., SSS = +25m.10s.
La Paz iP = +10m.45s., iPPZ = +13m.55s., iPPP = +15m.39s., iSN = +19m.57s., PSN = +20m.53s. = $S_cS$ + 12s., iE = +23m.41s. = SS − 13s., SSN = +25m.22s. SSE = +25m.43s., SSS = +27m.22s., iE = +28m.33s.
Edinburgh i = +15m.16s., +26m.32s., and +32m.10s.
Stonyhurst ePP = +15m.25s., i = +17m.13s., and +22m.18s. = PS − 4s.
Kew ePP = +15m.48s., eSKS = +22m.7s., eSP = +23m.14s., eSS = +26m.58s.
De Bilt iZ = +12m.27s.
Vladivostok e = +17m.29s.
Uccle iN = +11m.53s., iSSN = +27m.38s.
Helsingfors ePPN = +16m.10s., ePPN = +18m.41s., ePSNE = +23m.24s., ePPSE = +24m.19s., eSSNE = +27m.57s., eSSSNE = +31m.45s.
Hamburg eN = +32m.34s.
Toyooka eN = +22m.47s. = SKS − 14s.
Kobe eZ = +45m.10s.
Toledo PS = +23m.55s., eLR = +38m.25s.
Bagnères SS?N = +27m.41s.
Strasbourg i = +13m.0s., iPP = +16m.48s., ePPP = +17m.57s., ePPPP = +19m.45s., iPS = +23m.50s., eSS = +28m.48s., iSSS = +32m.30s., iSSSS = +35m.2s.
La Plata E = +14m.15s., eZ = +14m.28s., PPE = +15m.58s., PPPN = +17m.52s., PPPE = +18m.4s., PPPZ = +18m.10s., PSN = +24m.10s., eZ = +26m.28s., PSN = +26m.34s., SSE = +28m.43s., SSN = +29m.10s., SSSE = +32m.4s., SSSN = +33m.10s., N = +36m.22s., PPPE($\Delta > 180°$) +37m.28s., E = +38m.58s.
Königsberg eN = +25m.25s.
Stuttgart e = +13m.30s., ePS = +23m.58s., e = +28m.31s., eSS = +29m.46s., e = +35m.10s.
Malaga e = +13m.0s., i = +13m.18s., PP = +16m.15s., e = +18m.23s., +23m.7s. = SKS − 8s. and +23m.42s., PS = +24m.15s., SS = +29m.9s.
Granada $P_cP$ = +13m.3s., PP = +16m.22s., PPP = +18m.31s., SS = +28m.39s., $L_Q$ = +48m.15s.
Zurich ePP = +17m.14s.
Treviso SS = +24m.41s.
Kucino PP = +17m.4s.
Triest e = +23m.22s. and +23m.32s., iSKKS = +23m.54s., iE = +24m.20s., i = +24m.29s., +24m.39s., and +27m.43s., iSS? = +29m.29s., i = +30m.49s.
Algiers ePP = +16m.53s.
Sverdlovsk iPP = +16m.49s., iSKS = +23m.40s., iPS = +25m.20s., SS = +29m.58s., LR = +46·2m.
Zagreb ePP = +16m.52s., eNW = +25m.39s. = PS + 24s., eNE = +45m.54s.
Chiufeng PPE = +17m.5s.
Belgrade e = +13m.45s. and +26m.24s.
Wellington PP = +17m.42s., PS = +25m.26s., SS = +29m.55s., i = +32m.0s.
Tiflis PPNEZ = +18m.48s., ePSSN = +34m.5s., eN = +37m.37s. = SSS + 32s.
Manila P = +14m.53s., PP = +18m.53s., iNZ = +19m.25s.
Tashkent PP = +18m.40s., iPS = +28m.5s., SS = +34m.4s.
Baku i = +31m.26s.
Ksara ePP = +19m.15s., PS = +28m.45s.
Melbourne i = +30m.30s.
Adelaide eE = +25m.52s., e = +29m.50s. = PS + 4s. and +36m.12s. = SS + 4s., i = +37m.10s. and +39m.49s.
Calcutta PPS = +37m.17s., SSS = +48m.7s.
Bombay PP = +21m.48s., SKP = +22m.48s., PPP = +24m.46s., PPS = +33m.56s., SS = +39m.42s.
Batavia eP = +21m.41s.
Perth PKP = +26m.50s. = PPPP + 13s., PP = +30m.20s., SP = +40m.35s.
Cape Town P?E = +17m.33s., PPE = +22m.41s., PPN = +22m.46s., SKPN = +23m.49s., SKPE = +23m.58s., PPPE = +25m.21s., N = +26m.37s., E = +27m.0s., S? = +30m.32s., PSKSN = +32m.31s., PSKSE = +32m.44s., PPS = +34m.51s., N = +40m.42s., E = +41m.1s.
Tananarive SS = +43m.46s., SSS = +49m.55s., e = +56m.4s.
Long waves were also recorded at Hyderabad, Reykjavik, Phu-Lien, Arapuni, and other European stations.

Dec. 31d. Readings also at 0h. (Malabar), 1h. (Pasadena), 2h. (Tyosi), 3h. (Andijan and Frunse), 5h. (Berkeley, Branner, and San Francisco), 6h. (Granada), 9h. (Amboina, Granada, Manila, and Paris), 10h. (Nagoya and Tyosi), 11h. (Erevan and Tiflis), 12h. (Paris), 15h. (Christchurch), 16h. (Nagoya, Christchurch, New Plymouth, Tuai, and Wellington), 18h. (Santiago and Dehra Dun), 19h. (Nagasaki), 20h. (Hyderabad and Tucson), 21h. (Mizusawa, Nagoya, Pasadena, Tinemaha, and Tucson (2) ), 22h. (Tucson).

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.

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.