

THE GOVERNMENT OF THE PHILIPPINE ISLANDS
DEPARTMENT OF AGRICULTURE AND COMMERCE



WEATHER BUREAU

MANILA CENTRAL OBSERVATORY

SEISMOLOGICAL BULLETIN FOR 1935 JANUARY-JUNE

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MANILA
BUREAU OF PRINTING
1936

INTRODUCTION

SEISMIC STATIONS

The following is the list and data of stations equipped with seismographs.

| Name | Islands | North latitude | East longitude | Elevation | Equipment | Substructure |
|----------|----------|----------------|----------------|-----------|---|---|
| Manila | Luzon | 14 35 | 120 59 | 3 0 | Galitzin-Wilip, 3 components. Wiechert Inverted Pendulum, mass 1,000 kg. Two Horizontal Pendulums, mass 118 kg. each. | Alluvium and pyroclastics to unknown depth. |
| Baguio | Luzon | 16 25 | 120 35 | 1,512 | Vicentini, 3 components. Wiechert Inverted Pendulum, mass 200 kg. | Limestone. |
| Ambulong | Luzon | 14 05 | 121 03 | 10 5 | Vicentini, 3 components | Soil underlaid by tuff. |
| Butuan | Mindanao | 8 56 | 125 32 | 2 0 | Wiechert Inverted Pendulum, mass 200 kg. | Alluvium. |
| Agana | Guam | 13 28 | 144 45 | 5 0 | do | Coral. |

All meteorological stations, official and coöperative, have instructions to report all perceptible earthquakes.

SEISMIC RECORDS

The instrumental record is that obtained from the seismographs in the Manila Observatory. It is that of the Galitzin-Wilip instruments except when stated otherwise.

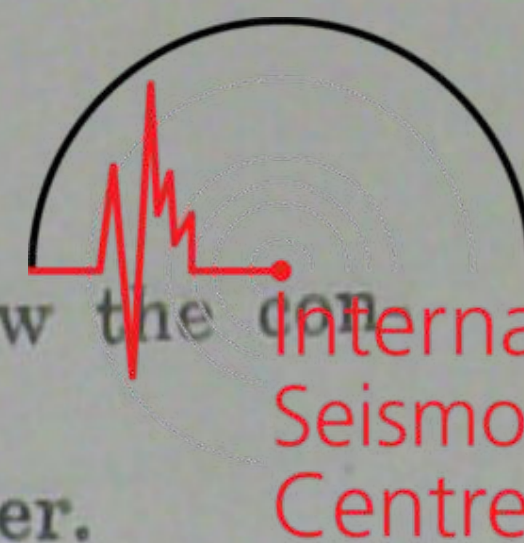
The time of occurrence given in the macroseismic records is that indicated by the seismographs of the Manila Observatory whenever the disturbance has been recorded by them. This fact is denoted by an asterisk in the macroseismic record. Otherwise the time is that given by the meteorological observer who reports the earthquake. Greenwich Mean time is given and insular time is added in brackets.

Intensity is given according to the Rossi-Forel scale as adapted by Rev. W. C. Repetti, S. J., Chief of the Seismic Division, for use in the Philippine Islands.

ROSSI-FOREL SCALE OF EARTHQUAKE INTENSITIES (Adapted)

- I. *Microseismic shock*.—Felt only by an experienced observer under favorable conditions.
- II. *Extremely feeble shock*.—Felt by a small number of persons at rest.
- III. *Very feeble shock*.—Felt by several persons at rest. Duration and direction may be perceptible. Sometimes dizziness or nausea experienced.
- IV. *Feeble shock*.—Felt generally indoors; outdoors by a few. Hanging objects swing slightly. Creaking of frames of houses.
- V. *Shock of moderate intensity*.—Felt generally by everyone. Hanging objects swing freely. Overturn of tall vases and unstable objects. Light sleepers awakened.
- VI. *Fairly strong shock*.—General awakening of those asleep. Some frightened persons leave their houses. Stopping of pendulum clocks. Oscillation of hanging lamps. Slight damage in very old or poorly built structures.
- VII. *Strong shock*.—Overturn of movable objects. General alarm, all run outdoors. Damage slight in well-built houses, considerable in old or poorly built structures, old walls, etc. Some landslides from hills and steep banks. Cracks in road surfaces.
- VIII. *Very strong shock*.—People panicky. Trees shaken strongly. Changes in flow of springs and wells. Sand and mud ejected from fissures in soft ground. Small landslides. Slides in river banks.
- IX. *Extremely strong shock*.—Panic general. Partial or total destruction of some buildings. Fissures in ground. Landslides and rock falls.

SYMBOLS AND ABBREVIATIONS



- P Normal first preliminary tremors; longitudinal waves which have passed below the continental layer.
- \bar{P} Upper first preliminary tremors whose path lies wholly in the continental layer.
- P' Longitudinal waves that have traversed the earth's core.
- PRn Longitudinal waves reflected "n" times at the earth's surface.
- P_cP Longitudinal waves reflected from the outer surface of the earth's core.
- S Normal second preliminary tremors; transverse waves that have passed below the continental layer.
- \bar{S} Second preliminary tremors whose path lies entirely in the continental layer.
- PS Waves transformed from longitudinal to transverse oscillations or vice versa through one reflection at the earth's crust.
- SRn Normal transverse waves reflected "n" times at the earth's surface.
- S_cS Normal transverse waves reflected from the outer surface of the earth's core.
- $\overline{S-P}$ Waves which start with transverse vibrations but on refraction into the core are changed to longitudinal, or starting as longitudinal are refracted out as transverse.
- L Long waves of irregular form at the beginning of the surface or main phase.
- M Shorter and more regular waves of large amplitude in the surface group which travel more slowly than the L waves.
- Mn Individual waves of relatively large amplitude in the surface phase and usually in the M group.
- F Finis. End discernible movement.
- i Impetus. Impulsive and sharply defined beginning of a phase.
- e Emersio. Poorly defined emergency of a phase.
- m Maximum wave in any phase.
- T Period of waves.
- O Time of earthquake at the epicenter.
- H Time of earthquake at focus.
- h Focal depth.
- Δ Arcual distance from station to epicenter.
- To Free or undamped period of the seismograph.
- V Static magnification.
- ϵ Ratio of successive damped amplitudes.
- r Friction constant.
- J. S. A. Jesuit Seismological Association. Central Office at St. Louis University, St. Louis, Missouri, U. S. A.
- U. S. C. G. S. United States Coast and Geodetic Survey, Washington, D. C., U. S. A.
- C. M. O. Central Meteorological Observatory, Tokyo, Japan.

CONSTANTS OF THE WIECHERT INVERTED PENDULUM

| Date | N-S component. | | | | E-W component. | | | |
|---------------|----------------|-----|------------|-------------------|----------------|-----|------------|-------------------|
| | T_o | V | ϵ | $\frac{r}{T_o^2}$ | T_o | V | ϵ | $\frac{r}{T_o^2}$ |
| 1935 | | | | | | | | |
| January..... | 4.5 | 197 | 2.3 | 0.041 | 4.8 | 188 | 2.7 | 0.038 |
| February..... | 4.5 | 194 | 2.3 | 0.036 | 4.8 | 201 | 2.7 | 0.036 |
| March..... | 4.6 | 187 | 2.2 | 0.030 | 4.8 | 204 | 2.7 | 0.037 |
| April..... | 4.5 | 197 | 2.3 | 0.034 | 4.9 | 199 | 2.7 | 0.041 |
| May..... | 4.5 | 191 | 2.3 | 0.039 | 4.8 | 200 | 2.7 | 0.040 |
| June..... | 4.5 | 195 | 2.3 | 0.040 | 4.8 | 203 | 2.8 | 0.040 |

CONSTANTS OF THE GALITZIN-WILIP SEISMOMETERS

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| PERMANENT CONSTANTS | | | |
|---------------------------------|---------------|---------------|-----------|
| | N-S | E-W | Z |
| Galvanometer periods..... | 12.3s..... | 11.8s..... | 11.0s. |
| Galvanometers to drums..... | 100.5 cm..... | 100.5 cm..... | 100.5 cm. |
| Telescope to seismographs..... | 500 cm..... | 492 cm..... | 450 cm. |
| Reduced pendulum lengths..... | 11.52 cm..... | 11.40 cm..... | 14.82 cm. |
| TEMPORARY CONSTANTS | | | |
| Seismograph period, T^1 | 12.59 | 11.90 | 9.0 |
| Coefficient of damping..... | | | |
| Transmission factor, k..... | | | |

SEISMOLOGICAL BULLETIN FOR 1935

JANUARY, 1935

MACROSEISMIC RECORD

3, 4^h 27^m [3, 12^h 27^m P. M.] **Butuan, Agusan.** Earthquake of intensity IV and 12 seconds duration.

3, 9^h 16^m 26^{s*} [3, 5^h 16^m 26^s P. M.] **Central Luzon.** Earthquake of 30 seconds duration in Tarlac. Center in the Zambales mountains in the western part of Tarlac Province. Felt slightly in Manila and Baguio.

8, ————— **Cotabato, Cotabato.** Earthquake of intensity III at daybreak.

8, 12^h 52^m 08^{s*} [8, 8^h 52^m 08 P. M.] **NW Luzon.** Earthquake felt in Laoag and Vigan. The municipal building in Laoag suffered some damage.

9, 17^h 46^m 07^s [10, 3^h 46^m 07^s A. M.] **Agaña, Guam.** Earthquake recorded and felt.

10, 6^h 30^m [10, 2^h 30^m P. M.] **Masbate, Masbate.** Earthquake of intensity II.

11, 0^h 09^m 26^{s*} [11, 8^h 09^m 26^s A. M.] **N. Luzon.** Earthquake having its center in the China Sea was reported from Lubuagan, Laoag and Aparri.

13, 6^h 31^m 05^{s*} [13, 2^h 31^m 05^s P. M.] **NE Mindanao.** An earthquake having its center in the Philippine Deep was reported from Butuan and Hinatuan.

14, 2^h 07^m 05^{s*} [14, 10^h 07^m 05^s A. M.] **Davao, Davao.** An earthquake felt in Davao with intensity II. The center was in the southern part of the Philippine Deep.

14, 15^h 08^m 21^{s*} [15, 1^h 08^m 21^s A. M.] **Agaña, Guam.** Earthquake of intensity IV recorded and felt.

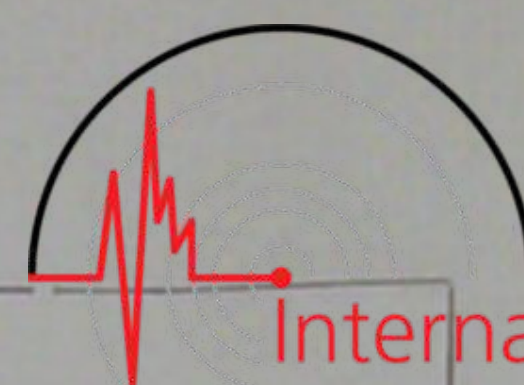
15, 12^h 30^m 41^{s*} [15, 8^h 30^m 41^s P. M.] **Cateel, Davao.** Slight earthquake felt.

24, 5^h 03^m [24, 1^h 03^m P. M.] **Davao, Davao.** Earthquake of intensity I reported.

25, 2^h 02^m [25, 10^h 02^m A. M.] **Daet, Camarines Norte.** Earthquake of intensity V reported.

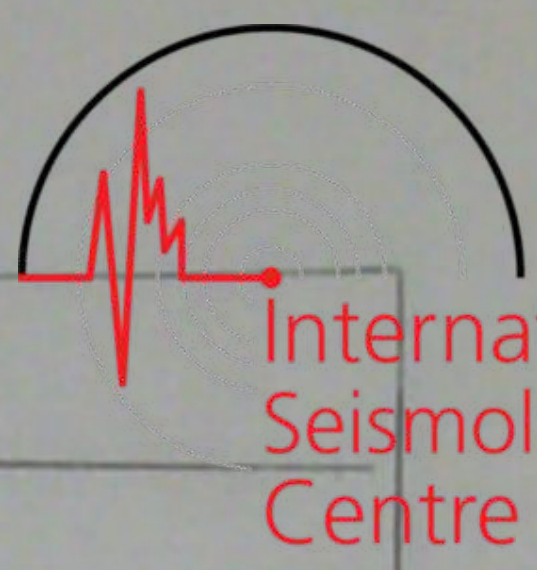
31, 21^h 10^m [Feb. 1, 5^h 10^m A. M.] **Romblon, Romblon.** Strong earthquake with slight repetition about five minutes later. Another shock at 4.55 A. M. on the 2nd.

INSTRUMENTAL RECORD

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| No. | Date | Phase | Time | | | Δ Km. | Remarks |
|-----|------|-------|------|----|----|-----------------|---|
| | | | h. | m. | s. | | |
| 3 | 1 | iPNEZ | 13 | 31 | 46 | 7,380 | Compression. Approximately 18° S: 179° W by Manila, Riverview, Adelaide, Hong Kong. |
| | | iN | | | 52 | | |
| | | SNEZ | | 40 | 40 | | |
| | | LNE | | 52 | ca | | |
| | | MN | | 58 | ca | | |
| | | F | 15 | 40 | | | |
| 10 | 3 | iPNEZ | 1 | 56 | 58 | 3,810 | Compression. In region of 32° N: 88° 45' E by Manila, Hong Kong, Bombay, Ksara. |
| | | iSNE | 2 | 02 | 22 | | |
| | | LNE | | 06 | 50 | | |
| | | MN | | 10 | ca | | |
| | | F | 3 | 45 | | | |
| 11 | 3 | iPNEZ | 9 | 16 | 26 | 120 | Compression. Felt at Tarlac, Manila and Baguio. 15° 30' N: 120° 20' E by Manila and Baguio. |
| | | iSNE | | | 41 | | |
| | | F | | 36 | | | |
| 14 | 4 | PNEZ | 0 | 16 | 11 | 2,155 | Deeper than normal. |
| | | iSNE | | 19 | 44 | | |
| | | F | 1 | 05 | | | |
| 15 | 4 | PNEZ | 10 | 04 | 54 | 95 | |
| | | SNEZ | | 05 | 06 | | |
| | | F | | 08 | | | |
| 16 | 4 | PNEZ | 14 | 53 | 45 | 9,170 | 40.8° N: 28.3° E according to Strasbourg. |
| | | iz | | 54 | 03 | | |
| | | PPE | | 57 | 05 | | |
| | | SNEZ | 15 | 04 | 12 | | |
| | | SSN | | 09 | 55 | | |
| | | LNE | | 20 | 30 | | |
| | | MNE | | 26 | 30 | | |
| | | | | | | | |
| 17 | 4 | PNEZ | 16 | 32 | 38 | 9,170 | No. 16 still recording. Same epicenter as No. 16. |
| | | SNE | | 43 | 01 | | |
| | | LNE | 17 | 00 | 00 | | |
| | | F | 18 | 05 | | | |
| 18 | 5 | PNEZ | 10 | 12 | 53 | 2,990 | |
| | | SN | | 17 | 24 | | |
| | | MNE | | 22 | 50 | | |
| | | F | | 45 | | | |
| 21 | 8 | iPNZ | 12 | 52 | 08 | 360 | Compression. Felt at Laoag with intensity IV. Baguio, $\Delta = 160$ km. |
| | | ePE | | | 08 | | |
| | | SNEZ | | | 54 | | |
| | | F | 13 | 45 | | | |
| 27 | 11 | PNEZ | 0 | 09 | 26 | 480 | Dilatation. 19° N: 120° E by Manila, Hong Kong, Zikawei. |
| | | SNEZ | | 10 | 23 | | |
| | | F | 1 | 15 | | | |
| 29 | 13 | iPNEZ | 6 | 31 | 05 | 865 | Dilatation. 10° 10' N: 126° 30' E by Manila and Butuan. |
| | | SNEZ | | 32 | 38 | | |
| | | F | | 50 | | | |
| 30 | 14 | PNEZ | 2 | 07 | 05 | 1,195 | Dilatation. In region of 5° 45' N: 127° E by Manila, Hong Kong, Chiu-feng, Butuan. |
| | | SNE | | 09 | 09 | | |
| | | LNEZ | | 10 | ca | | |
| | | F | 3 | 30 | | | |
| 32 | 14 | PNEZ | 15 | 08 | 20 | 2,510 | Felt at Agaña, Guam. |
| | | SNE | | 12 | 38 | | |
| | | F | 16 | 03 | | | |
| 33 | 14 | PE | 22 | 29 | 56 | 1,190 | In southern part of the Philippine Deep. |
| | | SNE | | 32 | 00 | | |
| | | LNE | | 34 | ca | | |
| | | F | 23 | 50 | | | |
| 38 | 17 | PNEZ | 2 | 18 | 17 | 6,090 | |
| | | SNEZ | | 26 | 00 | | |
| | | LNE | | 35 | 20 | | |
| | | MNE | | 40 | ca | | |
| | | F | 3 | 50 | | | |
| 40 | 18 | PNEZ | 17 | 13 | 50 | 3,455 | Disturbed by microseisms. |
| | | SNE | | 18 | 52 | | |
| | | LN | | 22 | 30 | | |
| | | F | 18 | 45 | | | |
| 41 | 18 | PNE | 17 | 18 | 13 | 70 | Small earthquake superimposed on No. 40. |
| | | SNE | | | 22 | | |
| 42 | 18 | PNE | 20 | 35 | 52 | 3,900 | Disturbed by microseisms. |
| | | SNE | | 41 | 22 | | |
| | | LE | | 45 | 20 | | |
| | | F | 21 | 22 | | | |

INSTRUMENTAL RECORD—Continued



| No. | Date | Phase | Time | | | Δ Km. | Remarks |
|-----|------|-------|------|----|------|-----------------|---|
| | | | h. | m. | s. | | |
| 48 | 21 | PNEZ | 17 | 56 | 00 | 40 | |
| | | SNEZ | | | 06 | | |
| | | F | 18 | 01 | | | |
| 50 | 21 | PNE | 22 | 18 | 15 | 70 | |
| | | SNE | | | 24 | | |
| | | F | | 21 | | | |
| 51 | 22 | PNEZ | 1 | 35 | 54 | 85 | |
| | | SNEZ | | | 05 | | |
| | | F | | 41 | | | |
| 52 | 22 | iPz | 15 | 02 | 10 | 3,035 | Compression. Approximately 2° S; 141° E by Manila and Riverview. Subject to correction for depth of focus. |
| | | PNE | | | 13 | | |
| | | SNEZ | | 06 | 44 | | |
| | | LN | | 09 | 50 | | |
| | | MN | | 12 | 10 | | |
| | | F | 16 | 35 | | | |
| 54 | 23 | iPNEZ | 7 | 34 | 52 | 7,300 | Compression from the north. |
| | | SNE | | | 43 | | |
| | | LNE | | | 56 | | |
| | | MNE | 8 | 01 | ca | | |
| | | F | 10 | 40 | | | |
| | | | | | | | |
| 55 | 23 | iPNEZ | 20 | 17 | 01 | 160 | Compression from SE. Deep focus. Baguio $\Delta=240$ Km. Distances subject to correction for depth of focus. |
| | | iSNEZ | | | 17 | | |
| | | F | | | 32 | | |
| 65 | 30 | PNEZ | 0 | 51 | 35 | 2,855 | |
| | | SNE | | | 55 | | |
| | | LNE | | | 58 | | |
| | | MNE | 1 | 01 | ca | | |
| | | F | | 14 | | | |
| 67 | 31 | PNEZ | 0 | 17 | 35 | 1,670 | |
| | | SE | | | 20 | | |
| | | LN | | | 22 | | |
| | | MNE | | | 23 | | |
| | | F | | | 40 | | |
| 69 | 31 | iPz | 17 | 55 | 02 | 5,820 | Dilatation. Region of New Hebrides by Manila, Chiufeng, Wellington and Riverview. |
| | | PNE | | | 02 | | |
| | | SNEZ | 18 | 02 | 24 | | |
| | | MNE | | 16 | 20ca | | |
| | | F | 19 | 25 | | | |
| 71 | 31 | PNEZ | 22 | 47 | 27 | 190 | |
| | | SNEZ | | | 47 | | |
| | | F | | | 53 | | |

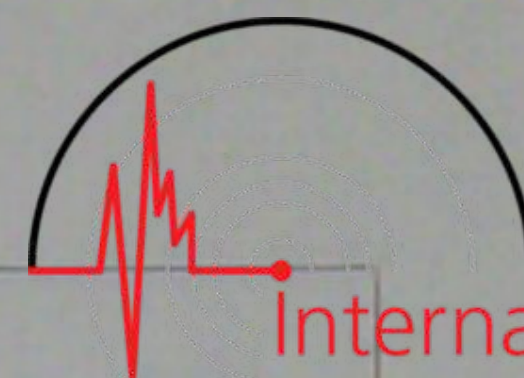
Forty-three minor seismic disturbances on the following days of January: 1st(5), 2nd (3), 3rd(2), 5th, 6th, 9th(2), 10th(3), 11th, 14th, 15th(3), 16th, 18th, 19th(2), 20th(3), 21st, 23rd, 26th(2), 27th(4), 28th(2), 29th, 30th, and 31st(2).

FEBRUARY, 1935

MACROSEISMIC RECORD

- 1, 21^h 28^m 38^{s*} [2, 5^h 28^m 38^s A. M.] **W. Luzon.** Felt at Iba with intensity IV and in Manila with intensity II. Center in the China Sea.
- 4, 7^h 04^m [4, 3^h 04^m P. M.] **Butuan, Agusan.** Feeble earthquake felt.
- 4, 22^h 20^m 04^{s*} [5, 6^h 20^m 04^s A. M.] **S. Luzon.** Felt in Manila with intensity III. Also felt at Ambulong, Batangas.
- 5, 16^h 15^m [6, 0^h 15^m A. M.] **Odiongan, Tablas.** Earthquake of intensity II.
- 7, 14^h 07^m 51^{s*} [7, 10^h 07^m 51^s P. M.] **Romblon, Romblon.** Slight earthquake felt.
- 7, 17^h 29^m 40^{s*} [8, 1^h 29^m 40^s A. M.] **S. and SE Luzon.** Very strong earthquake in the neighborhood of Romblon. Felt over an area of about 250 kilometers radius. Intensity III and duration about five seconds in Manila.
- 11, 17^h 32^m 35^{s*} [12, 1^h 32^m 35^s A. M.] **Vigan, Ilocos Sur.** Earthquake of intensity II and six seconds duration.
- 13, 23^h 46^m 07^{s*} [14, 7^h 46^m 07^s A. M.] **Aparri, Cagayan.** Earthquake of intensity IV and eight seconds duration.
- 18, 3^h 59^m 01^{s*} [18, 11^h 59^m 01^s A. M.] **Calbayog, Samar.** Earthquake of intensity II and of short duration.
- 18, 20^h 06^m 58^s [19, 6^h 06^m 58^s A. M.] **Agaña, Guam.** Severe earthquake recorded and felt. Center probably in the Nero Deep.
- 21, 23^h 56^m 20^{s*} [22, 7^h 56^m 20^s A. M.] **Vigan, Ilocos Sur.** Earthquake of intensity II and about forty seconds duration.
- 28, 5^h 28^m 08^{s*} [28, 1^h 28^m 08^s P. M.] **Legaspi, Albay.** Felt with intensity III for about twenty seconds.

INSTRUMENTAL RECORD

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| No. | Date | Phase | Time | | | Δ Km. | Remarks |
|-----|------|--------------------------------------|------|----|----------------------------------|-----------------|---|
| | | | h. | m. | s. | | |
| 73 | 1 | PNEZ SNE MN F | 13 | 26 | 07 17 ca 42 | 1,260 | |
| 74 | 1 | \bar{P} NEZ \bar{S} NEZ F | 21 | 28 | 38 58 42 | 160 | Felt at Iba with intensity IV and at Manila slightly. Dilatation. |
| 77 | 3 | PNEZ iz ie iSNZ iSE F | 2 | 19 | 22 10 21 27 28 20 | 5,490 | Compression from NW. Deep focus. |
| 78 | 3 | PNEZ S?NE F | 16 | 40 | 52 11 30 | 2,810 | Conspicuous group of about 18 seconds period waves on E component from 17:01 to 17:06. |
| 81 | 4 | PNEZ SNE MNE F | 7 | 53 | 22 26 ca 30 | 3,500 | Deeper than normal. |
| 82 | 4 | PNEZ SNE LNE ME F | 17 | 36 | 01 00 ca ca 15 | 8,590 | 22° S; 169° W by Wellington and Manila. |
| 83 | 4 | iPEZ ePN iNEZ | 21 | 10 | 47 47 26 | 1,535 | Dilatation. In region of Taluad Island, N. E. I. by Manila, Hongkong and Chiufeng. |
| 84 | 4 | \bar{P} NEZ \bar{S} NE F | 20 | 20 | 04 21 42 | 135 | Dilatation from the SE. Felt in Manila with intensity III. \bar{S} from the Wiechert and Horizontal Pendulums. No. 83 still recording. |
| 89 | 7 | \bar{P} NZ \bar{S} NZ F | 14 | 07 | 51 21 23 | 220 | Felt at Romblon. No time marks on Galitzin E Component. |
| 90 | 7 | iPNZ \bar{S} N F | 17 | 29 | 40 08 40 | 220 | Compression. \bar{S} from the Wiechert. Reported as violent in Romblon. Felt in S. and SE Luzon. 12° 40' N; 121° 50' E by Manila and Baguio. h=about 60 Km. No. 91 to No. 95 are aftershocks of No. 90. |
| 96 | 8 | \bar{P} NZ \bar{S} N F | 0 | 15 | 35 51 17 | 125 | |
| 98 | 9 | PNEZ SNE F | 19 | 22 | 11 09 40 | 1,135 | Region of 24° 6' N; 121° 9' E by Taihoku. |
| 107 | 13 | \bar{P} NEZ \bar{S} NE F | 13 | 52 | 08 29 01 | 165 | In the Caraballo Mountains by Manila and Baguio. About 16° 05' N; 121° 10' E. |
| 116 | 18 | PNEZ SNE F | 3 | 59 | 01 53 13 | 430 | Felt at Calbayog with intensity II. Butuan, $\Delta = 370$ Km. |
| 122 | 19 | ePNZ \bar{S} NZ F | 19 | 01 | 23 53 36 | 230 | About 16° 10' N; 122° 30' E by Manila and Baguio. |
| 123 | 19 | ePNEZ SN LN F | 20 | 16 | 36 25 30 58 | 2,365 | |
| 124 | 20 | PNEZ SNE F | 18 | 18 | 51 55 44 | 1,195 | Dilatation. Approximately 10° N; 111° E by Manila and Butuan. |
| 126 | 20 | PNEZ \bar{S} NE F | 23 | 17 | 36 04 23 | 215 | Baguio, $\Delta = 200$ Km. |
| 127 | 21 | ePNEZ \bar{S} NE F | 10 | 48 | 23 00 56 | 260 | |
| 130 | 21 | ePNEZ SNE LNE MNE F | 18 | 44 | 27 55 30 ca 20 | 2,090 | In SW China by Manila and Phulien. |

INSTRUMENTAL RECORD—Continued

| No. | Date | Phase | Time | | | Δ Km. | Remarks |
|-----|------|------------------|------|------|------------|-----------------|--|
| | | | h. | m. | s. | | |
| 131 | 21 | PNEZ | 23 | 56 | 20 | 300 | Dilatation. Deep focus. Felt at Vigan with intensity II. Baguio, Δ =160 Km. |
| | 22 | SNEZ F | 0 | 24 | | | |
| 132 | 22 | PEZ | 8 | 57 | 47 | 1,200? | 24.2° N; 121.8° E according to Taihoku. Felt at Karenko. |
| | | S?NEZ F | 10 | 30 | | | |
| 133 | 22 | ePNEZ | 17 | 15 | 52 | 6,470 | Data after S from the Wiechert. 50.5° N; 176.6° E. H=17:05:59 by J. S. A. 52° N; 175° E; 0=17:06.2 by U. S. C. G. S. |
| | | SNEZ | 23 | 52 | | | |
| | | L?N | 34 | 21ca | | | |
| | | MNE F | 20 | 10 | | | |
| 135 | 23 | PNEZ | 13 | 00 | 01 | 255 | |
| | | SNEZ F | | 17 | 37 | | |
| 136 | 23 | ePNE | 20 | 55 | 18 | 1,115? | Felt at Karenko, Taiwan. 24.1° N; 121.6° E according to Taihoku. |
| | | S?NE | | 57 | 13 | | |
| | | LNE | 21 | 02 | 25ca | | |
| | | F | 22 | 00 | | | |
| 138 | 24 | PNE | 0 | 05 | 51 | 250 | |
| | | SNEZ | | 06 | 26 | | |
| 140 | 24 | PNE | 0 | 08 | 58 | 300 | From the Wiechert. Galitzin records lost in changing paper. 16° 52' N; 122° 25' E. Earthquakes rare in this locality. Baguio, Δ =200 Km. No. 141 to 145 small aftershocks of No. 140. |
| | | SNE | | 09 | 38 | | |
| 146 | 24 | PNEZ | 4 | 31 | 34 | 300 | Similar to No. 140 No. 147 small aftershock. |
| | | SNE | | 32 | 14 | | |
| | | F | | 54 | | | |
| 148 | 24 | PNEZ | 5 | 56 | 22 | 300 | Similar to No. 140. |
| | | SNEZ | | 57 | 02 | | |
| | | F | 6 | 37 | | | |
| 151 | 24 | PNEZ | 11 | 12 | 27 | 7,535 | |
| | | SN | | 21 | 31 | | |
| | | MN | | 39 | 09 | | |
| | | F | 12 | 30 | | | |
| 152 | 24 | PNEZ | 13 | 47 | 26 | 300 | Similar to No. 140. S from the Wiechert. |
| | | SNE | | 48 | 06 | | |
| | | F | 14 | 45 | | | |
| 153 | 25 | ePNEZ | 3 | 04 | 26 | 9,690 | 35.5° N; 24° E Strasbourg. Crete. |
| | | S _K S | | 14 | 33 | | |
| | | SNE | | 15 | 04 | | |
| | | i | | 17 | 20 | | |
| | | LNE | | 29 | ca | | |
| | | F | 4 | 35 | | | |
| 154 | 27 | PNEZ | 9 | 12 | 35 | 1,670 | Compression from the SE. Netherlands East Indies by Manila, Hong Kong, Chiufeng. Butuan, Δ =9.5°. |
| | | iNEZ | | | 37 | | |
| | | SNE | | 15 | 28 | | |
| | | F | 10 | 45 | | | |
| 159 | 28 | PNEZ | 5 | 28 | 08 | 350 | Compression from the SE. Felt at Legaspi with intensity III. |
| | | SNE F | | | 53 6 23 | | |

Fifty-six minor seismic disturbances on the following days of February: 1st(2), 2nd, 3rd(2), 5th, 6th(3), 7th(5), 8th, 10th(5), 11th, 12th(2), 13th(2), 14th(2), 15th, 16th, 17th, 18th(4), 19th(2), 20th, 21st(2), 23rd, 24th(10), 27th(3), and 28th(3).



MARCH, 1935

MACROSEISMIC RECORD

- 4, 17^h 06^m 28^s [5, 3^h 06^m 28^s A. M.] **Agaña, Guam.** Light earthquake recorded and felt.
- 6, 7^h 47^m 17^{s*} [6, 3^h 47^m 17^s P. M.] **Luzon.** Felt lightly in Manila and Baler. Center in the Pacific off the coast of Tayabas.
- 11, 17^h 01^m 08^{s*} [12, 1^h 01^m 08^s A. M.] **S. Luzon.** Felt lightly in Lucban, Lucena and Santa Cruz. Repetition at Lucban at 6.33 P. M.
- 13, 17^h 46^m 57^{s*} [14, 1^h 46^m 57^s A. M.] **Baguio, Benguet.** Very light earthquake felt.
- 13, 23^h 00^m [14, 7^h 00 A. M.] **Hinatuan, Surigao.** Slight earthquake followed by another at 4.30 P. M.
- 19, 1^h 00^m [19, 9^h 00^m A. M.] **San Ramon, Zamboanga.** Earthquake felt at the prison colony.
- 19, 14^h 19^m 51^s [20, 0^h 19^m 51^s A. M.] **Agaña, Guam.** Earthquake recorded and felt.
- 20, 13^h 45^m 13^{s*} [20, 9^h 45^m 13^s P. M.] **Mindanao.** Earthquake felt slightly in Davao and Hinatuan. Center in the Philippine Deep.
- 24, 23^h 36^m 11^{s*} [25, 7^h 36^m 11^s A. M.] **Mindanao.** Another earthquake felt in Davao and Hinatuan as on the 20th.
- 27, 2^h 15^m [27, 10^h 15^m A. M.] **Glan, Cotabato.** Slight earthquake felt.
- 28, 6^h 37^m [28, 2^h 37^m P. M.] **Tacloban, Leyte.** Earthquake of intensity IV and of twenty seconds duration. Center probably in the gulf of Leyte.
- 30, 14^h 06^m 02^s [31, 0^h 06^m 02^s A. M.] **Agaña, Guam.** Earthquake recorded and felt.

INSTRUMENTAL RECORD

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| No. | Date | Phase | Time | | | Δ Km. | Remarks |
|-----|------|-------------------------|----------------|----|------------------------|-----------------|--|
| | | | h. | m. | s. | | |
| 163 | 2 | PEZ SN LN F | 11 | 00 | 47 25 41 22 | 1,520 | |
| 164 | 2 | PNEZ SNEZ F | 16 | 13 | 37 49 30 | 640 | |
| 170 | 5 | eNEZ F | 9 | 35 | 52 55 | | Trace. |
| 171 | 5 | PNEZ SNE MNE F | 10 11 | 45 | 24 21 ca 44 | 4,330 | |
| 172 | 5 | PNEZ SNE F | 2 23 | 23 | 33 52 40 | 7,630 | |
| 173 | 6 | PNEZ SNE F | 7 8 | 47 | 17 36 50 | 150 | Compression at Manila and Baguio. $15^{\circ} 30' N$; $122^{\circ} E$ by Manila and Baguio. Felt at Baler and Manila with intensity III. \bar{S} from the Wiechert. |
| 174 | 6 | PNEZ SNEZ F | 9 | 40 | 19 38 56 | 150 | Aftershock of No. 173. |
| 176 | 7 | PNEZ SNEZ F | 0 | 17 | 17 07 30 | 340 | |
| 184 | 9 | PNEZ SNE F | 14 15 | 50 | 27 24 14 | 2,490 | |
| 187 | 11 | PNEZ SNE MNE F | 11 12 | 25 | 38 54 30ca 52 | 1,310? | About $25^{\circ} N$; $124^{\circ} E$ by Manila and Taihoku. Disturbed by microseisms. |
| 189 | 11 | PNEZ SNE F | 17 | 01 | 08 23 40 | 115 | Dilatation. Felt at Lucena and Santa Cruz, Laguna, with intensity III. \bar{S} from the Wiechert. Disturbed by microseisms. |
| 190 | 11 | PNEZ SNE F | 19 20 | 53 | 28 43 41 | 1,300? | Disturbed by microseisms. |
| 191 | 12 | PNEZ SNE F | 10 | 33 | 08 20 50 | 95 | Compression from SW. \bar{S} from the Wiechert. |
| 195 | 13 | PNEZ SNE F | 17 18 | 46 | 57 36 38 | 290 | Felt in Baguio, Luzon. |
| 196 | 13 | iPEZ PN SNE F | 18 19 | 44 | 39 40 46 35 | 4,490 | Compression. In region of Bougainville Island by Riverview, Manila, Hong Kong, Chiufeng. |
| 200 | 14 | PNEZ SNE LNE F | 15 16 17 | 44 | 09 27 00 18 | 9,020 | |
| 203 | 16 | iPEZ PNE SNE F | 7 8 | 54 | 47 48 27 56 | 2,240 | Compression. |
| 205 | 17 | PN SN F | 20 | 09 | 26 03 40 | 2,200 | |
| 209 | 19 | iPEZ PNE SNE F | 13 14 | 47 | 53 54 46 19 | 2,435 | Compression. |
| 211 | 20 | PNEZ SNE F | 13 14 | 45 | 13 11 04 | 1,000 | Felt at Davao and Hinatuan. Epicenter in Philippine Deep by Manila and Butuan (200 Km.) |
| 212 | 20 | iPEZ PN iSNE | 23 11 | 05 | 13 13 36 | 4,780 | Dilatation. Approximately $4^{\circ} 30' S$; $159^{\circ} E$ by Manila Riverview, and Wellington. $7^{\circ} S$; $158^{\circ} E$ according to Wellington. |

INSTRUMENTAL RECORD—Continued

International
Seismological
Centre

| No. | Date | Phase | Time | | | Δ Km. | Remarks |
|-----|------|-------|------|----|------|-----------------|--|
| | | | h. | m. | s. | | |
| 213 | 21 | PNEZ | 0 | 10 | 18 | 6,125 | No. 212 still recording. |
| | | SNE | | 17 | 59 | | |
| | | LNE | | 27 | 31 | | |
| | | F | 1 | 25 | | | |
| 214 | 21 | PNZ | 19 | 37 | 52 | 370 | |
| | | SNE | | 38 | 39 | | |
| | | F | | 51 | | | |
| 218 | 24 | iPNEZ | 14 | 28 | 46 | 1,645 | Compression. 23° 30' N; 132° 30' E by Manila and Taihoku. |
| | | SNE | | 31 | 37 | | |
| | | LN | | 32 | 45ca | | |
| | | MNE | | 34 | 30ca | | |
| | | F | 15 | 30 | | | |
| 219 | 24 | PNEZ | 17 | 44 | 30 | 140 | |
| | | SNE | | | 48 | | |
| | | F | 18 | 10 | | | |
| 221 | 24 | iPz | 23 | 36 | 11 | 1,120 | Compression. Approximately 6° 30' N; 127° E by Manila and Butuan (320 Km.) Felt at Davao and Hinatuan. |
| | | PNEZ | | | 11 | | |
| | | SNEZ | | 38 | 08 | | |
| | | F | | 59 | | | |
| 227 | 27 | iPz | 14 | 32 | 30 | 6,830 | Dilatation. Focus deeper than normal. |
| | | PNE | | | 30 | | |
| | | SNE | | 40 | 52 | | |
| | | F | 15 | 26 | | | |
| 228 | 27 | PNEZ | 19 | 22 | 04 | 1,465 | |
| | | SNEZ | | 24 | 36 | | |
| | | LNE | | 26 | 00ca | | |
| | | F | 20 | 20 | | | |
| 229 | 28 | iPz | 23 | 53 | 15 | 2,845 | Dilatation. Deep focus. N-S cylinder stopped at 22:29. Chiufeng, Hong Kong, Manila indicate epicenter in region of Tyosen. |
| | | ePE | | | 15 | | |
| | | SE | | 57 | 35 | | |
| | | F | 0 | 30 | | | |
| 230 | 29 | iPNEZ | 12 | 35 | 55 | 8,346 | Compression. In region of 40° S; 175° W by Manila and Riverview. In vicinity of 25° S; 167° W according to Wellington. |
| | | iz | | 43 | 10 | | |
| | | iz | | 43 | 15 | | |
| | | iSNE | | 45 | 41 | | |
| | | LN | 13 | 00 | ca | | |
| | | F | 15 | 40 | | | |
| 231 | 29 | PNEZ | 23 | 00 | 18 | 165 | Very small. |
| | | SNE | | | 39 | | |
| | | F | | 03 | | | |
| 234 | 30 | PNEZ | 21 | 25 | 41 | 4,680 | Dilatation. In region of Kurile Islands by Chiufeng, Hong Kong, Manila. |
| | | SNE | | 31 | 58 | | |
| | | LNE | | 38 | ca | | |
| | | MNE | | 41 | 30ca | | |
| | | F | 23 | 20 | | | |
| 235 | 31 | PNEZ | 7 | 27 | 40 | 1,345 | In the region of 4° N; 127° E by Manila and Butuan (630 Km.) |
| | | SNE | | 30 | 00 | | |
| | | LNE | | 31 | 10 | | |
| | | F | 8 | 46 | | | |

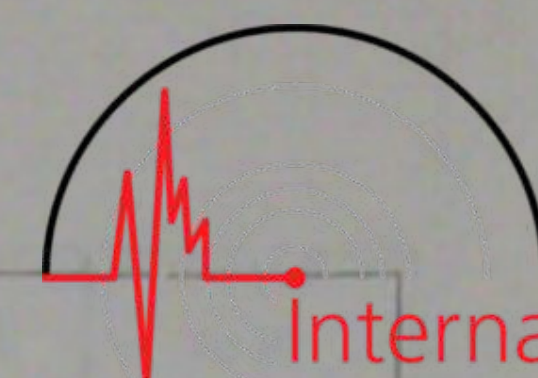
Forty-two minor seismic disturbances on the following days on March: 2nd(2), 3rd(2), 4th(2), 6th, 7th(2), 8th(2), 9th(4), 10th, 11th, 12th(2), 13th, 14th(4), 15th, 17th(2), 18th, 19th(2), 22nd, 23rd, 24th(2), 25th(2), 26th(2), 27th, 29th(2), and 31st.

APRIL, 1935

MACROSEISMIC RECORD

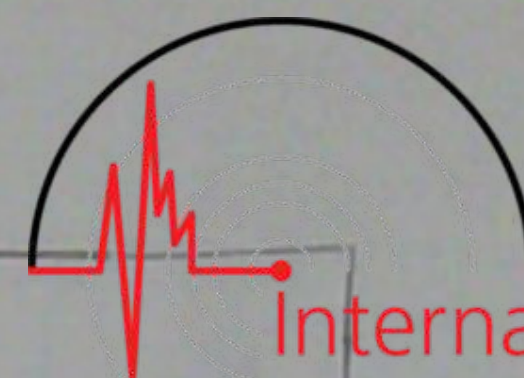
- 2, 10^h 00^m [2, 6^h 00^m P. M.] **Baguio, Benguet.** Light earthquake felt.
- 3, 11^h 11^m 29^s* [3, 7^h 11^m 29^s P. M.] **Leyte and Samar.** Earthquake felt with intensity VII-VIII in Tacloban. Vertical motion. The center was in the gulf of Leyte, Felt throughout southern Samar and eastern Leyte. An aftershock at 7.10 P. M. was felt in Tacloban and Borongan.
- 7, 12^h 22^m 22^s* [7, 8^h 22^m 22^s P. M.] **Baguio, Benguet.** Light earthquake felt.
- 9, 2^h 30^m [9, 10^h 30^m A. M.] **Masbate, Masbate.** Earthquake of intensity II.
- 10, 7^h 21^m 58^s [10, 5^h 21^m 58^s P. M.] **Agaña, Guam.** Earthquake recorded and felt.
- 14, 11^h 20^m [14, 7^h 20^m P. M.] **Hinatuan, Surigao.** Light earthquake felt.
- 19, 6^h 01^m 14^s [19, 4^h 01^m 14^s P. M.] **Agaña, Guam.** Earthquake recorded and felt.
- 20, 2^h 10^m [20, 10^h 10^m A. M.] **Ormoc, Leyte.** Earthquake of intensity II and twenty seconds duration. One minute later there was another shock of the same intensity.
- 20, 11^h 10^m 50^s [20, 9^h 10^m 50^s P. M.] **Agaña, Guam.** Earthquake recorded and felt. The center was in the Nero Deep.
- 24, 0^h 34^m 04^s* [24, 8^h 34^m 04^s A. M.] **W. Luzon.** Earthquake felt over western Luzon from Baguio to Manila. The center was probably in the China Sea.

INSTRUMENTAL RECORD

International
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| No. | Date | Phase | Time | | | Δ Km. | Remarks |
|---|------|-------|------|----|------|-----------------|---|
| | | | h. | m. | s. | | |
| 238 | 3 | P?NE | 6 | 54 | 07 | 3,600? | Disturbed by microseisms. |
| | | SE | | 59 | 18 | | |
| | | LN | 7 | 03 | 27 | | |
| | | ME | | 06 | 40ca | | |
| | | F | | 30 | | | |
| 239 | 3 | PEZ | 11 | 11 | 29 | 595 | Disturbed by microseisms. |
| | | SNE | | 12 | 37 | | |
| | | F | | 50 | | | |
| On April 4th the N-S Galitzin-Wilip was temporarily discontinued and its recording drum used for an experimental Wood-Anderson. | | | | | | | |
| 242 | 7 | PE | 3 | 25 | 45 | 160 | |
| | | SE | | 26 | 05 | | |
| | | F | | 30 | | | |
| 244 | 7 | PEZ | 12 | 22 | 22 | 140 | Felt in Baguio. |
| | | SNEZ | | | 40 | | |
| | | F | | 27 | | | |
| 245 | 8 | PNEZ | 17 | 57 | 23 | 1,535 | Compression. |
| | | SE | 18 | 00 | 02 | | |
| | | ME | | 02 | 42ca | | |
| | | F | | 30 | | | |
| 246 | 9 | PEZ | 2 | 53 | 17 | 1,630 | Probably in N. E. I. |
| | | SE | | 56 | 06 | | |
| | | LZ | | 57 | 32 | | |
| | | F | 3 | 42 | | | |
| 251 | 9 | Pz | 22 | 58 | 56 | 3,680 | From the SE. |
| | | SE | 23 | 04 | 12 | | |
| | | F | 0 | 08 | | | |
| 252 | 10 | PEZ | 7 | 33 | 22 | 160 | Baguio (120 Km.) |
| | | SEZ | | | 42 | | |
| | | F | | 38 | | | |
| 253 | 10 | PEZ | 9 | 59 | 40 | 2,855 | |
| | | SE | 10 | 04 | 02 | | |
| | | LE | | 07 | 02 | | |
| | | F | | 45 | | | |
| 257 | 11 | PEZ | 1 | 23 | 22 | 3,055 | In vicinity of 15° N; 92° E by Phulien, Hong Kong, Manila, Z wei, Chiufeng. |
| | | SE | | 27 | 57 | | |
| | | LE | | 30 | 40ca | | |
| | | ME | | 34 | ca | | |
| | | F | 2 | 40 | | | |
| 259 | 11 | PNEZ | 14 | 53 | 29 | 220 | Compression. |
| | | SNEZ | | | 59 | | |
| | | F | 15 | 10 | | | |
| 261 | 11 | iPz | 17 | 28 | 25 | 1,515 | Compression. 4° N; 128° E by Manila and Pelew. |
| | | SE | | 31 | 02 | | |
| | | F | 18 | 12 | | | |
| 264 | 11 | iPEZ | 23 | 25 | 17 | 7,545 | Compression. 37.2° N; 53.5° E, H = 23:14:51 J. S. A. |
| | | SE | | 34 | 22 | | |
| | | LEZ | | 47 | ca | | |
| | | MNE | | 53 | ca | | |
| | | F | 2 | 10 | | | |
| 266 | 12 | Pz | 19 | 23 | 03 | 2,300 | |
| | | SE | | 26 | 47 | | |
| | | F | 20 | 20 | | | |
| 268 | 13 | PNEZ | 20 | 24 | 22 | 1,570? | |
| | | S?E | | 27 | 05 | | |
| | | F | | 58 | | | |
| 272 | 15 | PNEZ | 11 | 20 | 18 | 4,235 | Inconsistent with Osaka and Chiufeng. May be two records superimposed. |
| | | IEZ | | 21 | 08 | | |
| | | IEZ | | 24 | 33 | | |
| | | SEZ | | 26 | 08 | | |
| | | LE | | 29 | 33ca | | |
| | | F | 12 | 00 | | | |
| 274 | 16 | PNEZ | 20 | 36 | 53 | 2,470 | From the SE. |
| | | SNEZ | | 40 | 48 | | |
| | | MN | | 42 | 06 | | |
| | | F | 21 | 44 | | | |
| | | | | | | | |
| 280 | 18 | PE | 3 | 13 | 25 | 250 | |
| | | SE | | 14 | 00 | | |
| | | F | | 27 | | | |

INSTRUMENTAL RECORD—Continued

International
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| No. | Date | Phase | Time | | | Δ Km. | Remarks |
|-----|------|-------|------|----|------|-----------------|--|
| | | | h. | m. | s. | | |
| 284 | 19 | PEZ | 15 | 36 | 50 | 8,735 | 32° N; 15° E, H=15:23:32 J. S. A. |
| | | iZ | | 40 | 51 | | |
| | | iZ | | 42 | 50 | | |
| | | iSEZ | | 46 | 55 | | |
| | | F | 19 | 50 | | | |
| 286 | 20 | PEZ | 5 | 27 | 23 | 5,480 | From the NW. |
| | | SE | | 34 | 23 | | |
| | | LE | | 41 | 33 | | |
| | | F | 7 | 10 | | | |
| 290 | 20 | PEZ | 11 | 10 | 50 | 2,640 | In the Nero Deep by Manila and Guam. |
| | | SE | | 14 | 58 | | |
| | | L?E | | 17 | 07 | | |
| | | F | 12 | 35 | | | |
| 291 | 20 | iPZ | 22 | 04 | 16 | 1,170 | Compression. Formosa. Data after P from the Wiechert. 24° 21' N; 120° 40' E by Hukuoka. |
| | | iPE | | | 19 | | |
| | | iSNE | | 06 | 17 | | |
| | | LNE | | 07 | 50 | | |
| | | IN | | 09 | 07 | | |
| | | MNE | | 09 | 10ca | | |
| | | F | 0 | 30 | | | |
| 293 | 21 | iPEZ | 7 | 30 | 40 | 2,580 | Dilatation. Deep focus. In Netherlands East Indies. |
| | | iSE | | 34 | 43 | | |
| | | LE | | 36 | 55 | | |
| | | F | 9 | 20 | | | |
| 296 | 21 | PEZ | 19 | 16 | 08 | 1,090 | Formosa. |
| | | SE | | 18 | 03 | | |
| | | F | 20 | 13 | | | |
| 297 | 21 | PE | 22 | 26 | 52 | 1,455 | |
| | | SE | | 29 | 23 | | |
| | | F | 23 | 00 | | | |
| 302 | 23 | iPEZ | 16 | 51 | 12 | 3,420 | Dilatation. In vicinity of 24° N; 90° E by Phulien, Hong Kong, Manila, Chiufeng, Zikawei. |
| | | iSE | | 56 | 12 | | |
| | | LE | 17 | 00 | 24 | | |
| | | ME | | 02 | 39 | | |
| | | F | 18 | 10 | | | |
| 303 | 24 | iPNEZ | 0 | 34 | 04 | 135 | Dilatation. Felt at Manila, Olongapo, Baguio, Mt. Arayat. \bar{S} from the Wiechert and Horizontal Pendulums. |
| | | iSNE | | 34 | 21 | | |
| | | F | | 57 | | | |
| 305 | 24 | PEZ | 16 | 01 | 06 | 5,235 | |
| | | SE | | 07 | 56 | | |
| | | ME | | 19 | 45ca | | |
| | | F | 17 | 23 | | | |
| 307 | 26 | iPNEZ | 1 | 53 | 46 | 90 | Dilatation. |
| | | iSNEZ | | | 58 | | |
| | | F | | 59 | | | |
| 313 | 29 | iPEZ | 11 | 43 | 51 | 2,865 | Compression. |
| | | SEZ | | 48 | 14 | | |
| | | F | 12 | 40 | | | |
| 314 | 29 | iPEZ | 23 | 57 | 30 | 125 | |
| | | iSEZ | | | 46 | | |
| 315 | 30 | P?EZ | 0 | 00 | 08 | 500? | |
| | | SEZ | | 01 | 26 | | |
| | | F | | 14 | | | |
| 316 | 30 | PEZ | 5 | 48 | 10 | 2,210 | |
| | | SEZ | | 51 | 48 | | |
| | | LE | | 53 | 00 | | |
| | | F | 6 | 12 | | | |

Forty-seven minor seismic disturbances on the following days of April: 1st, 3rd, 6th, 7th, 9th(4), 10th(2), 11th(5), 12th(2), 13th, 14th, 15th, 16th, 17th(5), 18th(2), 19th(2), 20th(3), 21st(3), 22nd(3), 23rd, 24th, 25th, 26th, 28th(3), and 29th.

MAY, 1935

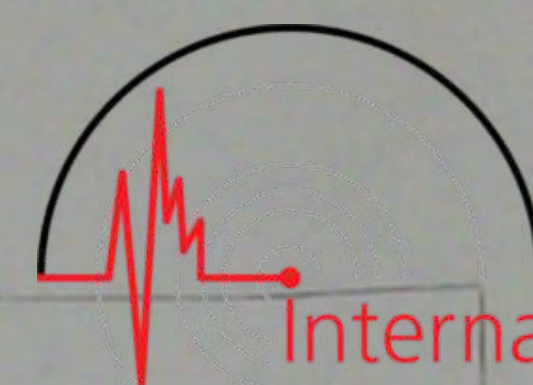
MACROSEISMIC RECORD

- 4, 21^h 20^m* [5, 5^h 20^m A. M.] **Manila.** Earthquake of intensity II.
- 5, 5^h 35^m 33^s* [5, 1^h 35^m 33^s P. M.] **Davao, Davao.** Earthquake of intensity II.
- 7, 5^h 57^m [7, 1^h 57^m P. M.] **Davao, Davao.** Earthquake of intensity II.
- 11, 23^h 51^m 14^s* [12, 7^h 51^m 14^s A. M.] **Davao, Davao.** Very light earthquake. The center was in the Netherlands East Indies.
- 12, 10^h 23^m [12, 6^h 23^m P. M.] **Calbayog, Samar.** Earthquake of intensity II and of short duration.
- 13, 11^h 10^m [13, 7^h 10^m P. M.] **Davao, Davao.** Very light earthquake.
- 18, 22^h 06^m [19, 6^h 06^m A. M.] **Cagayan, Oriental Misamis.** Earthquake of intensity V lasting about four seconds.
- 24, 5^h 37^m 51^s* [24, 1^h 37^m 51^s P. M.] **E. Visayas and Mindanao.** Very strong earthquake having its epicenter in the Philippine Deep. Felt with intensity VI-VII in Guian, Borongan and Tacloban. It caused general panic in the last named towns where it was perceptible for about two minutes and damaged some houses. The earthquake was felt over an area of about 450 kilometers radius.
- Perceptible aftershocks were reported at 1.55; 2.35; 10.20; 11.05 and 11.10 P. M. on the 24th. On the 25th there were aftershocks at 3.10, 8.20, and 8.30 A. M. and at 11.15 P. M.
- On the 27th there were perceptible shocks reported at 4.30, 6.05 and 9.30 A. M.

INSTRUMENTAL RECORD

| No. | Date | Phase | Time | | | Δ Km. | Remarks |
|-----|------|---------------------------|------|----|------|-----------------|--|
| | | | h. | m. | s. | | |
| 317 | 1 | PEZ | 10 | 36 | 07 | 7,845 | Disturbed by microseisms. 38° N; 43° E, Strasbourg. 40.7° N; 42.6° E, (J. S. A.) |
| | | SE | | 45 | 28 | | |
| | | ME | 11 | 06 | ca | | |
| | | F | | 48 | | | |
| 322 | 4 | $\overline{\text{PEZ}}$ | 21 | 07 | 46 | 110 | Dilatation. |
| | | $\overline{\text{SE}}$ | | 08 | 00 | | |
| 323 | 4 | PEZ | 23 | 05 | 01 | 1,180 | Formosa. |
| | | SEZ | | 07 | 03 | | |
| | | LE | | 08 | 15 | | |
| | | F | 0 | 35 | | | |
| 324 | 5 | PEZ | 5 | 35 | 33 | 905 | Felt at Davao with intensity II. |
| | | iz | | | 39 | | |
| | | SE | | 37 | 10 | | |
| | | iz | | | 31 | | |
| | | F | | 54 | | | |
| 325 | 5 | $\overline{\text{iPNEZ}}$ | 18 | 20 | 38 | 125 | Dilatation. |
| | | $\overline{\text{SNEZ}}$ | | | 54 | | |
| | | F | | 34 | | | |
| 328 | 5 | PEZ | 18 | 16 | 30 | 2,170 | |
| | | SE | | 20 | 04 | | |
| | | ME | | 23 | 55ca | | |
| | | F | 19 | 27 | | | |
| 329 | 6 | PEZ | 17 | 43 | 07 | 1,180 | Formosa. |
| | | SE | | 45 | 09 | | |
| | | F | 18 | 20 | | | |
| 330 | 7 | $\overline{\text{iPNEZ}}$ | 5 | 58 | 01 | 1,290 | Compression. Felt at Davao with intensity II. P in minute gap. |
| | | $\overline{\text{iSNE}}$ | 6 | 00 | 15 | | |
| | | LN | 6 | 01 | 20 | | |
| | | F | 7 | 50 | | | |

INSTRUMENTAL RECORD—Continued

International
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| No. | Date | Phase | Time | | | Δ Km. | Remarks |
|-----|------|-------|------|------|------|-----------------|---|
| | | | h. | m. | s. | | |
| 336 | 9 | PNEZ | 4 | 47 | 13 | 1,900 | In region of 27° N; 133° E by Manila and Chiufeng. |
| | | SNE | | 50 | 25 | | |
| | | LE | | 52 | 03 | | |
| | | F | 6 | 04 | | | |
| 342 | 10 | PNEZ | 17 | 09 | 17 | 2,335 | Deep focus. |
| | | SNE | | 13 | 04 | | |
| | | LN | | 15 | 25ca | | |
| | | ME | | 17 | 34 | | |
| | | F | 18 | 20 | | | |
| 345 | 11 | iPNEZ | 18 | 47 | 45 | 1,585 | Dilatation from SE. |
| | | SNEZ | | 50 | 29 | | |
| | | F | 19 | 40 | | | |
| 347 | 11 | PNE | 23 | 51 | 14 | 1,345 | P in Z component lost in changing record. Felt in Davao, Mindanao. |
| | | SNE | | 53 | 35 | | |
| | LNE | | 56 | 50ca | | | |
| | F | 1 | 15 | | | | |
| 349 | 12 | PEZ | 19 | 52 | 41 | 4,220 | From the SE. |
| | | SNE | | 58 | 43 | | |
| | | LNE | 20 | 04 | 50ca | | |
| | | MN | | 08 | 10ca | | |
| | | F | 21 | 10 | | | |
| 356 | 13 | iPz | 19 | 58 | 11 | 2,410 | In vicinity of 20° N; 100° E by Hong Kong, Manila, Zikawei, Chiufeng. |
| | | ePNE | | | 12 | | |
| | | iSNEZ | 20 | 02 | 02 | | |
| | | LNE | | 04 | ca | | |
| | | MNE | | 07 | ca | | |
| | | F | 22 | 00 | | | |
| 358 | 13 | PEZ | 23 | 14 | 37 | 2,880 | |
| | | SNEZ | | 19 | 01 | | |
| | | F | | 50 | | | |
| 359 | 13 | P?NEZ | 23 | 54 | 35 | 3,835? | |
| | | SN | 0 | 00 | 01 | | |
| | MNE | | 04 | 15ca | | | |
| | F | 1 | 10 | | | | |
| 361 | 14 | PEZ? | 23 | 42 | 08 | | South Atlantic. 25° W; 59° S, (Vicinity). H=23:23:00 J. S. A. Long period waves at 0:15:ca. |
| | | iz | | 45 | 18 | | |
| | iE | | 48 | 09 | | | |
| | eNE | 0 | 15 | ca | | | |
| 362 | 15 | LNE | | 21 | ca | | |
| | | Pz | 2 | 10 | 45 | | |
| | | PN | | 11 | 01 | | |
| | | SNEZ | | 18 | 00 | | |
| | | LNE | | 26 | 25 | | |
| 376 | 20 | MN | | 30 | 40 | 5,680 | Focus deeper than normal. Region of Quetta, Beluchistan, according to Strasbourg. |
| | | F | 3 | 20 | | | |
| | | PNEZ | 5 | 24 | 34 | | |
| | | SNE | | 27 | 02 | | |
| | | LN | | 28 | 20 | | |
| 383 | 21 | F | 7 | 20 | | 1,420 | Compression from SE, Netherlands East Indies. |
| | | PNEZ | 4 | 29 | 22 | | |
| | | SNE | | 34 | 06 | | |
| | | MN | | 39 | 40 | | |
| 385 | 21 | F | 5 | 00 | | 3,180 | From NW. |
| | | iPz | 6 | 58 | 09 | | |
| | | ePNE | | | 09 | | |
| | | SN | 7 | 03 | 23 | | |
| | | LNE | | 07 | 30 | | |
| 387 | 21 | MNE | | 10 | 30ca | 3,655 | Compression. 4° S; 147° E by Riverview, Manila, Hong Kong, Chiu-feng, Wellington. |
| | | F | 8 | 35 | | | |
| | | iPz | 15 | 23 | 39 | | |
| | | PNE | | | 39 | | |
| 388 | 21 | SNE | | 27 | 17 | 2,210 | |
| | | PNEZ | 15 | 46 | 54 | | |
| | | SNEZ | | 47 | 26 | | |
| 397 | 24 | F | 16 | 22 | | 235 | No. 387 still recording. |
| | | iPEZ | 2 | 56 | 16 | | |
| | | ePN | | | 16 | | |
| | | SNEZ | | 57 | 41 | | |
| 398 | 24 | F | 4 | 15 | | 775 | |
| | | PEZ | 5 | 15 | 32 | | |
| | | SEZ | | 16 | 47 | | |
| 399 | 24 | F | | 30 | | 670 | |
| | | iPNEZ | 5 | 37 | 51 | | |
| | | iSNE | | 39 | 06 | 670 | Compression. 11° 15. N; 126° 05. E. 0=5:36:21— Felt in eastern Visayas with intensity VII. S from the Wiechert. |

INSTRUMENTAL RECORD—Continued

| No. | Date | Phase | Time | | | Δ Km. | Remarks |
|-----|------|----------------------------------|------|----|----|-----------------|--|
| | | | h. | m. | s. | | |
| 400 | 24 | PNE SNE F | 8 | 36 | 11 | 670 | Aftershock of the No. 399. From the Wiechert. Nos. 401 to 412 are aftershocks of No. 399. |
| 413 | 25 | iPNEZ SNE F | 0 | 09 | 13 | 670 | Compression. Similar to No. 399. Felt in eastern Visayas with intensity III. |
| 415 | 25 | PNEZ SNE F | 8 | 34 | 22 | 670 | Felt in eastern Visayas with intensity III. Similar to No. 399. Nos. 414, 416 to 423 are aftershocks of No. 399. |
| 425 | 26 | iPNEZ iSNZ | 22 | 05 | 14 | 440 | Felt at Borongan with intensity II. Compression. |
| 426 | 27 | PNEZ SE F | 0 | 04 | 06 | 670 | No. 425 still recording. |
| 427 | 27 | PE SNE F | 1 | 27 | 29 | 440 | Felt at Borongan with intensity II. |
| 429 | 27 | PNEZ SNE F | 5 | 38 | 14 | 840 | |
| 430 | 27 | PNEZ SNE F | 8 | 14 | 30 | 680 | |
| 431 | 27 | PNEZ SNE F | 8 | 39 | 18 | 895 | |
| 432 | 27 | PNEZ SNE F | 11 | 32 | 33 | 365 | |
| 433 | 27 | PNEZ SNE F | 11 | 43 | 50 | 780 | |
| 440 | 28 | PNEZ SNE F | 1 | 14 | 12 | 775 | |
| 443 | 28 | PNEZ SNE F | 14 | 17 | 36 | 895 | |
| 444 | 28 | PNEZ SNE F | 16 | 39 | 05 | 900 | |
| 445 | 29 | PNEZ SNE LNE MNE F | 19 | 45 | 04 | 1,200 | Formosa. |
| 446 | 30 | iPEZ ePN SNE LNE MNE | 21 | 42 | 07 | 6,145 | India. 29° N; 66° E; 0=21:35:00 by U. S. C. G. S. 29.5° N; 67° E; Strasbourg. 30.2° N; 66.9° E; H=21:32:58 (J. S. A.). |
| | 31 | F | 22 | 03 | 44 | | |
| 448 | 31 | PNEZ SNEZ F | 4 | 26 | 30 | 325 | |
| 449 | 31 | iPz ePNE SNE F | 8 | 24 | 52 | 1,635 | 37.3° N; 134.2° E (Vicinity). H=8:18:35;h= 480; J. S. A. |

Seventy-three minor seismic disturbances on the following days of May: 3rd(4), 5th(2), 7th(3), 8th, 9th(5), 10th, 11th(3), 12th, 13th(7), 14th, 15th(2), 16th(4), 17th, 18th(2), 19th(4), 20th(5), 21st(4), 22nd(4), 23rd(3), 26th, 27th(7), 28th(2), and 31st(6).



JUNE, 1935

MACROSEISMIC RECORD

1, 3^h 31^m 08^{s*} [1, 11^h 31^m 08^s A. M.] Legaspi, Albay. Earthquake of intensity III and seven seconds duration.

1, 14^h 42^m 02^{s*} [1, 10^h 42^m 02^s P. M.] Davao, Davao. Earthquake of intensity III.

1, 16^h 38^m [2, 0^h 38^m A. M.] Butuan, Agusan. Very light earthquake of fifteen seconds duration.

4, 8^h 36^m 17^{s*} [4, 4^h 36^m 17^s P. M.] Tacloban, Leyte. Earthquake of intensity V and forty seconds duration.

4, 15^h 14^m 06^{s*} [5, 1^h 14^m 06^s A. M.] Agaña, Guam. Earthquake recorded and felt.

8, 10^h 35^m 57^{s*} [8, 6^h 35^m 57^s P. M.] Jolo, Sulu. Very feeble earthquake of five seconds duration. Another shock occurred at 7.02 P. M.

8, 23^h 44^m 11^{s*} [9, 7^h 44^m 11^s A. M.] W. Luzon. Earthquake felt lightly in Manila, at Mt. Arayat and in Zambales.

9, 1^h 33^m 47^{s*} [9, 9^h 33^m 47^s A. M.] Basco, Batanes. Earthquake of intensity II and fourteen seconds duration.

9, 6^h 14^m [9, 2^h 14^m P. M.] Tacloban, Leyte. Earthquake of intensity III and thirty seconds duration.

18, 22^h 28^m 58^{s*} [19, 6^h 28^m 58^s A. M.] SE Luzon and Samar. Earthquake of intensity III felt in Legaspi, Borongan and Calbayog. The center was probably in the Philippine Deep.

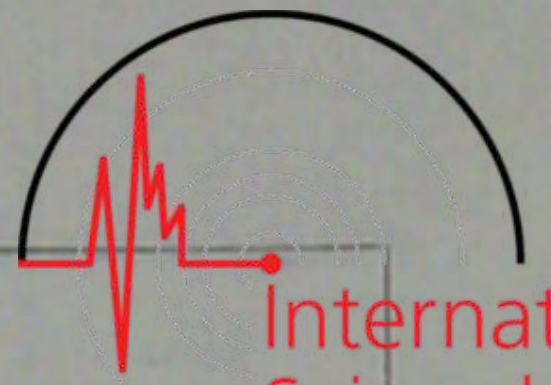
25, 13^h 28^m 58^s [25, 11^h 28^m 58^s P. M.] Agaña, Guam. Earthquake recorded and felt.

26, 8^h 45^m [26, 4^h 45^m P. M.] Guiuan, Samar. Moderate earthquake of fifteen seconds duration.

INSTRUMENTAL RECORD

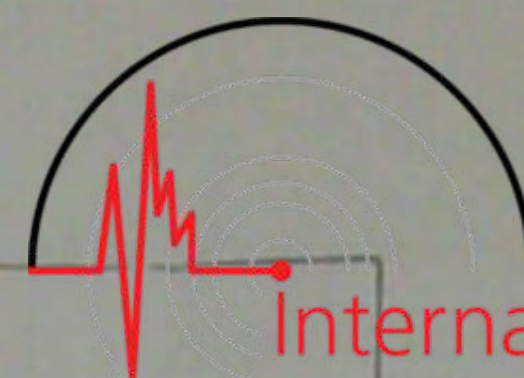
| No. | Date | Phase | Time | | | Δ Km. | Remarks |
|-----|------|-------|------|----|----|-----------------|--|
| | | | h. | m. | s. | | |
| 455 | 1 | PNEZ | 3 | 31 | 08 | 430 | Felt at Legaspi with intensity III. |
| | | SNEZ | | 32 | 14 | | |
| | | F | | 45 | | | |
| 456 | 1 | PNEZ | 4 | 12 | 17 | 610 | |
| | | SNEZ | | 13 | 26 | | |
| | | F | | 5 | 25 | | |
| 458 | 1 | iPNEZ | 14 | 42 | 02 | 1,255 | Compression from SE. Felt at Davao with intensity III. |
| | | SNE | | 44 | 12 | | |
| | | F | | 16 | 10 | | |
| 459 | 2 | PNZ | 4 | 43 | 50 | 680 | |
| | | SNE | | 45 | 06 | | |
| | | iN | | 46 | 06 | | |
| | | iZ | | | 54 | | |
| | | F | | 5 | 40 | | |
| 460 | 2 | iPz | 9 | 25 | 39 | 5,825 | India. Compression. 30.5° N; 66.5° E (Strasbourg). |
| | | PNE | | | 41 | | |
| | | SNE | | 33 | 02 | | |
| | | LNE | | 41 | 50 | | |
| | | MNE | | 47 | ca | | |
| | | F | | 11 | 20 | | |
| 461 | 2 | PNZ | 17 | 00 | 23 | 1,625 | |
| | | SNEZ | | 03 | 12 | | |
| | | F | | 38 | | | |
| 462 | 2 | PNEZ | 18 | 10 | 40 | 280 | |
| | | SNEZ | | 11 | 18 | | |
| | | F | | 27 | | | |

INSTRUMENTAL RECORD—Continued

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| No. | Date | Phase | Time | | | Δ Km. | Remarks |
|-----|------|-------|------|----|------|-----------------|---|
| | | | h. | m. | s. | | |
| 464 | 2 | PNEZ | 19 | 27 | 54 | 935 | |
| | | SNE | | 29 | 34 | | |
| | | MNE | | 30 | 30ca | | |
| | | F | 20 | 30 | | | |
| 466 | 2 | PNEZ | 22 | 19 | 26 | 590 | |
| | | SNE | | 20 | 33 | | |
| | | F | | 41 | | | |
| 467 | 2 | PNEZ | 23 | 45 | 21 | 640 | |
| | | SNE | | 47 | 03 | | |
| | 3 | F | 0 | 01 | | | |
| 468 | 3 | PNEZ | 2 | 36 | 02 | 2,420 | |
| | | SNE | | 39 | 54 | | |
| | | F | | 55 | | | |
| 469 | 3 | PNEZ | 10 | 10 | 48 | 540 | |
| | | SNE | | 12 | 13 | | |
| | | F | | 35 | | | |
| 473 | 4 | PNEZ | 8 | 04 | 26 | 235 | |
| | | SNE | | | 58 | | |
| | | F | | 30 | | | |
| 474 | 4 | PNEZ | 8 | 36 | 17 | 510 | Felt at Tacloban with intensity V. Butuan, $\Delta=260$ Km. |
| | | SNE | | 37 | 37 | | |
| | | F | 9 | 00 | | | |
| 478 | 5 | PNEZ | 6 | 40 | 38 | 360 | |
| | | SNE | | 41 | 24 | | |
| | | F | | 56 | | | |
| 480 | 5 | PNE | 19 | 47 | 16 | 75 | |
| | | SN | | | 26 | | |
| | | F | 20 | 05 | | | |
| 489 | 7 | PNEZ | 2 | 55 | 19 | 1,390 | 24.2° N; 120.6° E according to Taihoku. |
| | | SNE | | 57 | 43 | | |
| | | MNE | 3 | 00 | 20ca | | |
| | | F | | 30 | | | |
| 490 | 7 | iPz | 4 | 19 | 24 | 1,695 | |
| | | PNE | | | 24 | | |
| | | SNE | | 22 | 19 | | |
| | | F | 5 | 15 | | | |
| 494 | 8 | PNEZ | 1 | 19 | 03 | 165 | |
| | | SNE | | | 24 | | |
| | | F | | 38 | | | |
| 496 | 8 | PNEZ | 10 | 35 | 57 | 1,235 | Felt at Jolo with intensity II. |
| | | SNE | | 38 | 05 | | |
| | | F | | 51 | | | |
| 497 | 8 | PNE | 23 | 44 | 11 | 135 | Felt on west coast of Central Luzon and in Manila. Epicenter in China Sea. P in Z component lost in changing record. S from the Wiechert and Horizontal. Baguio, $\Delta=135$ Km. |
| | | SNE | | | 28 | | |
| | 9 | F | 0 | 02 | | | |
| 498 | 9 | PNEZ | 1 | 33 | 47 | 560 | Felt at Basco with intensity II. |
| | | SNE | | 35 | 15 | | |
| | | F | | 53 | | | |
| 499 | 9 | PNEZ | 6 | 35 | 21 | 830 | |
| | | SNZ | | 36 | 51 | | |
| | | F | 9 | 11 | | | |
| 500 | 9 | PNEZ | 8 | 19 | 56 | 555 | Earthquake superimposed on No. 499. |
| | | SNEZ | | 20 | 23 | | |
| 501 | 9 | PNEZ | 9 | 17 | 22 | 310 | |
| | | SNE | | 18 | 03 | | |
| | | F | | 35 | | | |
| 504 | 9 | PNEZ | 16 | 43 | 39 | 330 | |
| | | SNE | | 44 | 22 | | |
| | | F | 17 | 02 | | | |
| 507 | 10 | PNEZ | 7 | 42 | 03 | 455 | |
| | | SNEZ | | | 58 | | |
| | | F | | 57 | | | |
| 511 | 11 | PEZ | 2 | 05 | 52 | 770 | |
| | | SNEZ | | 07 | 16 | | |
| | | F | | 25 | | | |
| 520 | 15 | PNEZ | 8 | 10 | 16 | 810 | Butuan, $\Delta=200$ Km. |
| | | SNE | | 11 | 44 | | |
| | | F | 9 | 25 | | | |

INSTRUMENTAL RECORD—Continued

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| No. | Date | Phase | Time | | | Δ Km. | Remarks |
|-----|------|-------------------|------|----|----|-----------------|---|
| | | | h. | m. | s. | | |
| 521 | 15 | PNEZ | 14 | 32 | 05 | 820 | Butuan, $\Delta=245$ Km. (?) |
| | | SNE | | 33 | 34 | | |
| | | F | 15 | 30 | | | |
| 522 | 16 | PNEZ | 6 | 25 | 09 | 3,980? | |
| | | S [?] NE | | 30 | 44 | | |
| | | iN | | 32 | 45 | | |
| | | F | 7 | 30 | | | |
| 527 | 18 | PNEZ | 22 | 28 | 58 | 525 | Compression. Felt at Borongan and Legaspi with intensity III. |
| | | SNE | | 30 | 00 | | |
| | | F | 1 | 00 | | | |
| 529 | 19 | Pz | 22 | 23 | 28 | 5,155 | |
| | | PNE | | | 33 | | |
| | | SNE | | 30 | 13 | | |
| | | F | 23 | 35 | | | |
| 530 | 22 | PNEZ | 15 | 53 | 16 | 2,365 | Dilatation. Deep focus. Probably in Netherlands East Indies. |
| | | SNE | | 57 | 05 | | |
| | | iNE | | | 14 | | |
| | | F | 17 | 40 | | | |
| 535 | 23 | PNEZ | 9 | 29 | 41 | 2,890 | Deep focus. |
| | | SNE | | 34 | 06 | | |
| | | F | 10 | 10 | | | |
| 536 | 23 | PNEZ | 14 | 23 | 37 | 2,480 | |
| | | SNE | | 27 | 33 | | |
| | | F | | 53 | | | |
| 542 | 24 | iPEZ | 23 | 32 | 37 | 6,020 | Dilatation. Region, New Hebrides. 18° S; 165° E according to Wellington. 19° S; 168.5° E. H=23:23:06. h=140; J. S. A. |
| | | ePN | | | 37 | | |
| | | iSNE | | 40 | 12 | | |
| | Le | | 49 | 18 | | | |
| | 25 | F | 2 | 40 | | | |
| | | | | | | | |
| 544 | 25 | iPz | 12 | 41 | 17 | 4,435 | 14° S; 162° E; h=180 Km. by Wellington. |
| | | ePNE | | | 17 | | |
| | | SNE | | 47 | 20 | | |
| | | LNE | | 52 | 36 | | |
| | | F | 14 | 50 | | | |
| 545 | 26 | PNEZ | 6 | 46 | 44 | 895 | |
| | | SNE | | 48 | 20 | | |
| | | mE | | 49 | 08 | | |
| | | mN | | | 24 | | |
| | | F | 7 | 48 | | | |
| 547 | 27 | PNZ | 0 | 34 | 41 | 1,235 | |
| | | SNZ | | 36 | 49 | | |
| | | LN | | 38 | 06 | | |
| | | F | | 50 | | | |
| 549 | 28 | iPz | 2 | 20 | 19 | 1,755? | |
| | | ePE | | | 19 | | |
| | | S [?] NE | | 23 | 20 | | |
| | | F | 3 | 14 | | | |
| 551 | 29 | PNEZ | 7 | 09 | 32 | 13,930 | H=6:48:53. 18.2° N; 103.3° W; J. S. A. |
| | | MNE | | 47 | 30 | | |
| | | F | 9 | 30 | | | |

Fifty-eight minor seismic disturbances on the following days of June: 1st, 2nd(2), 3rd(3), 4th(2), 5th(5), 6th(5), 7th(3), 8th, 9th(2), 10th(4), 11th(3), 12th, 13th(3), 14th, 15th, 18th(4), 19th, 22nd(2), 23rd(6), 24th, 26th, 27th, 28th, 29th, and 30th(2).

No. 1.

January, 1935
International
Seismological
Centre

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY

$\phi=14^{\circ} 34' 42''$ N. $\lambda=120^{\circ} 58' 41''$ E. $h=2.40$ m. Alluvium.

GALITZIN-WILIP.

WIECHERT. M=1000 Kg.

January 1, 1935.

| | T_0 | D | T_1 | l | y^2 | K |
|-----|-------|-------|-------|------|--------|-----|
| N-S | 12.4 | 100.5 | 12.6 | 11.5 | 0.017 | 97 |
| E-W | 11.8 | 100.5 | 11.9 | 11.4 | -0.075 | 80 |
| Z | 11.6 | 100.5 | 9.0 | 14.8 | 1.250 | 200 |

| | T_0 | V | ϵ | $\frac{r}{T_0^2}$ |
|-----|-------|-----|------------|-------------------|
| N-S | 4.5 | 197 | 2.3 | 0.041 |
| E-W | 4.8 | 188 | 2.7 | 0.038 |

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|-----------------|---------------------------------------|---|--------------|--|
| 1935 January | | | | |
| No. 3 1st | iPNEZ iN SNEZ LNE MN F | 13 31 46 13 31 52 13 40 40 13 52 30ca 13 58 ca 15 40 | 7380 | Compression. 17° S; 174° W; $0=13:20:56$ by U.S.C.G.S. Approx. 18° S; 179° W by Manila, River- view and Adelaide. |
| No. 10 3rd | iPNEZ iSNE LNE MN F | 1 56 58 2 02 22 2 06 50ca 2 10 ca 3 45 | 3810 | Compression. In region of 33° N; 87° E, Tibet. |
| No. 11 3rd | iPNEZ iSNE F | 9 16 26 9 16 41 9 36 | 120 | Compression. Felt at Tarlac, Manila and Baguio. $15^{\circ} 50'$ N; $120^{\circ} 20'$ E by Manila and Baguio. |
| No. 14 4th | ePNEZ iSNEZ F | 0 16 11 0 19 44 1 05 | 2155 | Deeper than normal. |
| No. 15 4th | PNEZ SNEZ F | 10 04 54 10 05 06 10 08 | 95 | |
| No. 16 4th | PNEZ iZ SNEZ LNE MNE | 14 53 45 14 54 03 15 04 10 15 20 30ca 15 26 30ca | 9215 | |
| No. 17 4th | PNEZ SNE LNE F | 16 32 38 16 44 00 17 04 30ca 18 05 | 10650 | No. 16 still recording. |
| No. 18 5th | PNEZ SN MNE F | 10 12 53 10 17 24 10 22 50ca 10 45 | 2990 | |

| No. and Date | Phase. | Greenwich Time | | | Dist. Km. | Remarks. |
|----------------------------------|----------------------------------|-------------------|----|----|--------------|---|
| | | h. | m. | s. | | |
| 1935 January No. 21 8th | iPNZ ePE SNEZ F | 12 | 52 | 08 | 360 | Felt at Laoag with intensity IV. Compression. Baguio $\Delta=160$ Km. |
| No. 27 11th | PNEZ SNEZ F | 0 | 09 | 26 | 480 | Dilatation. Felt at Aparri with in- tensity IV. 19° N; 120° E by Manila and Hong Kong. Baguio $\Delta=270$ Km. |
| No. 29 13th | iPNEZ SNEZ F | 6 | 31 | 05 | 865 | Dilatation from SE. Felt at Butuan with intensity IV. $10^{\circ} 10'$ N; $126^{\circ} 30'$ E by Manila and Butuan. |
| No. 30 14th | PNEZ SNE LNEZ F | 2 | 07 | 05 | 1195 | Dilatation. Felt at Davao with inten- sity II. In region of $5^{\circ} 45'$ N; 127° E by Manila, Butuan, Hong Kong, Chiufeng. |
| No. 32 14th | PNEZ SNE LN F | 15 | 08 | 21 | 1190 | Felt at Agaña, Guam, with intensity IV. |
| No. 33 14th | PE SNE LNE F | 22 | 29 | 56 | 1190 | Same epicenter as No. 32. |
| No. 38 17th | ePNEZ SNEZ LNE MNE F | 2 | 18 | 17 | 6090 | 19° S; 165° E by Riverview, Manila, Hong Kong, Chiufeng. |
| No. 40 18th | PNEZ SNE LN F | 17 | 13 | 50 | 3455 | Disturbed by microseisms. |
| No. 41 18th | PNE SNE | 17 | 18 | 13 | 70 | Small earthquake superimposed on No. 40. |
| No. 42 18th | PNE SNE LE F | 20 | 35 | 52 | 3900 | Disturbed by microseisms. |
| No. 48 21st | PNEZ SNEZ F | 17 | 56 | 00 | 40 | |
| No. 50 21st | PNE SNE F | 22 | 18 | 15 | 70 | |

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



| No. and Date | Phase. | Greenwich Time | | | Dist. Km. | Remarks. |
|-----------------|---------------------|----------------|----|------|-----------|--|
| | | h. | m. | s. | | |
| 1935 January | | | | | | |
| No. 51 22nd | \overline{PNEZ} | 1 | 35 | 54 | 85 | |
| | \overline{SNEZ} | 1 | 36 | 05 | | |
| | F | 1 | 41 | | | |
| No. 52 22nd | iPZ | 15 | 02 | 10 | 3035 | Compression. Approx. $2^{\circ}S$; $141^{\circ}E$ by Manila and Riverview. Subject to correction for depth of focus. |
| | ePNE | 15 | 02 | 13 | | |
| | SNEZ | 15 | 06 | 44 | | |
| | LN | 15 | 09 | 50 | | |
| | LN | 15 | 12 | 10 | | |
| | F | 16 | 35 | | | |
| No. 54 23rd | iPNEZ | 7 | 34 | 52 | 7400 | Compression from north. |
| | SNE | 7 | 43 | 48 | | |
| | LINE | 7 | 56 | 10ca | | |
| | MNE | 8 | 01 | ca | | |
| | F | 10 | 40 | | | |
| No. 55 23rd | i \overline{PNEZ} | 20 | 17 | 01 | 160 | Compression from SE. Deep focus. Baguio $\Delta=240$ Km. Distances subject to correction for depth of focus. |
| | i \overline{SNEZ} | 20 | 17 | 21 | | |
| | F | 20 | 32 | | | |
| No. 65 30th | PNEZ | 0 | 51 | 35 | 2855 | |
| | SNE | 0 | 55 | 57 | | |
| | LINE | 0 | 58 | 36ca | | |
| | MNE | 1 | 01 | ca | | |
| | F | 1 | 14 | | | |
| No. 67 31st | PNEZ | 0 | 17 | 35 | 1670 | |
| | SE | 0 | 20 | 28 | | |
| | LN | 0 | 22 | 12ca | | |
| | MNE | 0 | 23 | 36ca | | |
| | F | 0 | 40 | | | |
| No. 69 31st | iPZ | 17 | 55 | 02 | 5820 | Dilatation. Approx. $2^{\circ}S$; $171^{\circ}E$ by Riverview and Manila. |
| | ePNE | 17 | 55 | 02 | | |
| | SNEZ | 18 | 02 | 24 | | |
| | MNE | 18 | 16 | 20ca | | |
| | F | 19 | 25 | | | |
| No. 71 31st | \overline{PNEZ} | 22 | 47 | 27 | 190 | |
| | \overline{SNEZ} | 22 | 47 | 51 | | |
| | F | 22 | 53 | | | |

Forty-three insignificant or undecipherable disturbances on the following days of January: 1st(5), 2nd(3), 3rd(2), 5th, 6th, 9th(2), 10th(3), 11th, 14th, 15th(3), 16th, 18th, 19th(2), 20th(3), 21st, 23rd, 26th(2), 27th(4), 28th(2), 29th, 30th, and 31st(2).

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY



$\phi=14^{\circ} 34' 42''$ N.

$\lambda=120^{\circ} 58' 41''$ E.

h=2.40 m.

Alluvium.

WIECHERT. M=1000 Kg.

February 2, 1935.

GALITZIN-WILIP.

| | T_0 | D | T_1 | δ | μ^2 | K |
|-----|-------|-------|-------|----------|---------|-----|
| N-S | 12.4 | 100.0 | 12.6 | 11.5 | 0.017 | 97 |
| E-W | 11.8 | 100.5 | 11.9 | 11.4 | -0.075 | 80 |
| Z | 11.6 | 100.5 | 9.0 | 14.8 | 1.250 | 200 |

| | T_0 | V | ϵ | $\frac{r}{T_0^2}$ |
|-----|-------|-----|------------|-------------------|
| N-S | 4.5 | 194 | 2.3 | 0.036 |
| E-W | 4.8 | 201 | 2.7 | 0.036 |

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|-----------------------------------|--------------------------------------|---|--------------|--|
| 1935 February No. 73 1st | PNEZ SNE MN F | 13 26 07 13 28 17 13 31 ca 13 42 | 1260 | |
| No. 74 1st | \bar{P} NEZ \bar{S} NEZ F | 21 28 38 21 28 58 21 42 | 160 | Felt at Iba with intensity IV and at Manila slightly. Dilatation. |
| No. 77 3rd | PNEZ iZ iE iSNZ iSE F | 2 19 22 2 20 10 2 21 21 2 26 27 2 26 28 3 20 | 5490 | Compression. Deep focus. |
| No. 78 3rd | PNEZ S?NE F | 16 40 52 16 45 11 17 30 | 2810 | Conspicuous group of about 18 seconds period waves on E component from 17:01 to 17:06. |
| No. 81 4th | PNEZ SNE MNE F | 7 53 22 7 58 26 8 04 53ca 8 30 | 3500 | Deeper than Normal? |
| No. 82 4th | PNEZ SNE LNE ME F | 17 36 01 17 45 01 17 56 ca 18 02 ca 19 15 | 7455 | |
| No. 83 4th | iPEZ ePN iSNEZ | 21 10 47 21 10 47 21 13 26 | 1535 | Dilatation. |
| No. 84 4th | \bar{P} NEZ \bar{S} NE F | 22 20 04 22 20 21 22 42 | 135 | Dilatation from the SE. Felt in Manila with intensity III. S from the Wiechert and Horizontal Pendulums. No. 83 still recording. |
| No. 89 7th | PNZ \bar{S} NZ F | 14 07 51 14 08 21 14 23 | 220 | Precursor of No. 90. No time marks on Galitzin E Component. |

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|-----------------------------------|---------------------------------|---|--------------|---|
| 1935 February No. 90 7th | 1PNZ SN F | 17 20 39 17 21 09 19 30 | 220 | Compression. Felt in southeastern part of Luzon with intensity IV and in Manila with intensity III. S from the Wiechert. No. 91 to No. 95 are aftershocks of No. 90. |
| No. 96 8th | PNZ SN F | 0 15 35 0 15 51 0 17 | 125 | |
| No. 98 9th | PNEZ SNE F | 19 22 11 19 24 09 20 40 | 1135 | Region of 24°6' N; 121°9' E by Taihoku. |
| No. 107 13th | PNZ SNE F | 13 52 08 13 52 29 14 01 | 165 | In the Caraballo Mountains by Manila and Baguio. About 16° 05' N; 121° 10' E. |
| No. 116 18th | PNEZ SNE F | 3 59 01 3 59 53 4 13 | 430 | Felt at Calbayog with intensity II. Butuan $\Delta=370$ Km. |
| No. 122 19th | ePNZ SNZ F | 19 01 23 19 01 53 19 36 | 230 | About 16° 10' N; 122° 30' E by Manila and Baguio. |
| No. 123 19th | ePNEZ SN LN F | 20 16 36 20 20 25 20 22 30 20 58 | 2365 | |
| No. 124 20th | PNEZ SNE F | 18 18 51 18 20 55 18 44 | 1195 | Dilatation. Approx. 10° N; 111° E by Manila and Butuan. |
| No. 126 20th | PNEZ SNE F | 23 17 36 23 18 04 23 23 | 215 | Baguio $\Delta=200$ Km. |
| No. 129 21st | ePNEZ SNE F | 10 48 23 10 49 00 10 56 | 260 | |
| No. 130 21st | ePNEZ SNE LNE MNE F | 18 44 27 18 44 55 18 49 30 18 51 ca 19 20 | 2090 | |
| No. 131 21st 22nd | PNEZ SNEZ F | 23 56 20 23 57 00 0 24 | 300 | Dilatation. Deep focus. Felt at Vigan with intensity II. Baguio $\Delta=160$ Km. |

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|------------------|----------------------------------|---|--------------|--|
| 1935 February | | | | |
| No. 132 22nd | PEZ S?NEZ F | 8 57 47 8 59 52 10 30 | 1200? | 24.2° N; 121.8° E according to Taihoku. Felt at Karenko. |
| No. 133 22nd | ePNEZ SNEZ L?N MNE F | 17 15 52 17 23 52 17 34 21ca 17 40 ca 20 10 | 6470 | Data after S from the Wiechert. 52° N; 175° E; O=17:06.2 by U.S.G.G.S |
| No. 135 23rd | PNEZ SNEZ F | 13 00 01 13 00 37 13 17 | 255 | |
| No. 136 23rd | ePNE S?NE LNE F | 20 55 18 20 57 13 21 02 25ca 22 00 | 1115? | Felt at Karenko, Taiwan. 24.1° N; 121.6° E according to Taihoku. |
| No. 138 24th | PNE SNEZ | 0 05 51 0 06 26 | 250 | |
| No. 140 24th | PNE SNE | 0 08 58 0 09 38 | 300 | From the Wiechert. Galitzin records lost in changing paper. 16° 52' N; 122° 25' E. Earthquakes rare in this locality. Baguio $\Delta=200$ Km. No. 141 to 145 small aftershocks of No. 140. |
| No. 146 24th | PNEZ SNE F | 4 31 34 4 32 14 4 54 | 300 | Similar to No. 140. No. 147 small aftershock. |
| No. 148 24th | PNEZ SNEZ F | 5 56 22 5 57 02 6 37 | 300 | Similar to No. 140. |
| No. 151 24th | PNEZ SN MN F | 11 12 27 11 21 31 11 39 09 12 30 | 7535 | |
| No. 152 24th | PNEZ SNE F | 13 47 26 13 48 06 14 45 | 300 | Similar to No. 140. S from the Wiechert. |
| No. 153 25th | ePNEZ eSNE LNE F | 3 04 26 3 14 25 3 28 ca 4 35 | 8610 | |
| No. 154 27th | PNEZ INEZ SNE F | 9 12 35 9 12 37 9 15 28 10 45 | 1670 | Compression from the SE Netherlands East Indies by Manila, Hong Kong, Chiufeng. Butuan $\Delta=9.5^\circ$. |



MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|------------------|------------------|----------------------------|--------------|---|
| 1935 February | | | | |
| No. 159 28th | PNEZ SNE F | 5 28 08 5 28 43 6 23 | 250 | Compression from the SE. Felt at Legaspi with intensity III. |

Fifty-six insignificant or undecipherable disturbances on the following days of February: 1st(2), 2nd, 3rd(2), 5th, 6th(3), 7th(5), 8th, 10th(5), 11th, 12th(2), 13th(2), 14th(2), 15th, 16th, 17th, 18th(4), 19th(2), 20th, 21st(2), 23rd, 24th(10), 27th(3), and 28th(3).

CORRECTION TO NO. 32

January 14, 1935.

S at 15:12:38 $\Delta = 2510$ Km.

CORRECTION TO NO. 33

Same epicenter as No. 30.

CORRECTION TO NO. 39

January 31, 1935.

Region of New Hebrides by Riverview, Wellington,
Manila, Chiufoeng.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY



$\phi = 14^{\circ} 34' 42''$ N.

$\lambda = 120^{\circ} 58' 41''$ E.

h=2.40 m.

Alluvium.

GALITZIN-WILIP

WIECHERT. M=1000 Kg.

March 5, 1935.

| | T_0 | D | T_1 | λ | M^2 | K |
|-----|-------|-------|-------|-----------|--------|-----|
| N-S | 12.4 | 100.5 | 12.6 | 11.5 | 0.017 | 97 |
| E-W | 11.8 | 100.5 | 11.9 | 11.4 | -0.075 | 80 |
| Z | 11.6 | 100.5 | 9.0 | 14.8 | 1.259 | 200 |

| | T_0 | V | ξ | $\frac{r}{T_0^2}$ |
|-----|-------|-----|-------|-------------------|
| N-S | 4.6 | 187 | 2.2 | 0.030 |
| E-W | 4.8 | 204 | 2.7 | 0.037 |

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|----------------|-------------------------------------|---|--------------|--|
| 1935 March | | | | |
| No. 162 2nd | PNEZ LNE MNE F | 6 10 47 6 15 22 6 17 00 6 28 | 1780 | There is no S. |
| No. 163 2nd | PEZ SN LN F | 11 00 47 11 03 25 11 04 41 11 23 | 1520 | |
| No. 164 2nd | PNEZ SNEZ F | 16 13 37 16 14 49 16 30 | 640 | |
| No. 170 5th | eNEZ F | 9 35 52 9 55 | | Trace. |
| No. 171 5th | PNEZ SNE MNE F | 10 45 24 10 51 21 11 02 ca 11 44 | 4330 | Disturbed by microseisms. |
| No. 172 5th | PNEZ SNE F | 22 23 33 22 32 52 23 40 | 7630 | Disturbed by microseisms. |
| No. 173 6th | \bar{P} NEZ SNE F | 7 47 17 7 47 36 8 50 | 150 | Compression at Manila and Baguio. $15^{\circ} 30' N$; $122^{\circ} E$ by Manila and Baguio. Felt at Baler and Manila with intensity III. S from the Wiechert. |
| No. 174 6th | \bar{P} NEZ \bar{S} NEZ F | 9 40 19 9 40 38 9 56 | 150 | Aftershock of No. 173. |
| No. 176 7th | PNEZ SNEZ F | 0 17 17 0 18 07 0 30 | 340 | |
| 184 h | PNEZ SNE F | 14 50 27 14 54 24 15 14 | 2490 | |

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks |
|-----------------|---------------------------------|---|--------------|--|
| 1935 March | | | | |
| No. 187 11th | P?NEZ S?NE MNE F | 11 25 38 11 27 54 11 30 30ca 12 52 | 1310? | About 25°N; 124°E by Manila and Taihoku. Disturbed by microseisms. |
| No. 189 11th | PNEZ SNE F | 17 01 08 17 01 23 17 40 | 115 | Dilatation. Felt at Lucena and Santa Cruz, Laguna, with intensity III. S from the Wiechert. Disturbed by microseisms. |
| No. 190 11th | P?NEZ SNE F | 19 53 28 19 55 43 20 41 | 1300? | Disturbed by microseisms. |
| No. 191 12th | PNEZ SNE F | 10 33 08 10 33 20 10 50 | 95 | Compression from SW. S from the Wiechert. |
| No. 195 13th | PNEZ SNE F | 17 46 57 17 47 36 18 38 | 290 | |
| No. 196 13th | iPEZ ePN SNE F | 18 44 39 18 44 40 18 50 46 19 35 | 4490 | Compression. In region of Bougainville Island by Riverview, Manila, Hong Kong, Chiufeng. |
| No. 198 14th | P?NEZ SNE F | 11 47 05 11 52 07 13 40 | 3470? | |
| No. 199 14th | P?NEZ SNEZ LNE MN F | 13 51 30 13 53 10 14 05 ca 14 09 05ca 14 59 | 5070? | |
| No. 200 14th | PNEZ SNE LNE F | 15 44 09 15 54 27 16 09 00 17 18 | 9020 | |
| No. 203 16th | iPZ ePNE SNE F | 7 54 47 7 54 48 7 58 27 8 56 | 2240 | Compression. |
| No. 205 17th | PN SN F | 20 09 26 20 15 03 20 40 | 2200 | |
| No. 209 19th | iPZ ePNE SNE F | 13 47 53 13 47 54 13 51 46 14 19 | 2435 | Compression. |
| No. 211 20th | PNEZ SNE F | 13 45 13 13 47 11 14 04 | 1000 | Felt at Davao with intensity I. Philippine Deep by Manila and Butuan (200 Km.) |

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SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|-------------------------|--------------------------------------|---|--------------|--|
| 1935 March | | | | |
| No. 212 20th | iPEZ ePN iSNE | 23 05 13 23 05 13 23 11 36 | 4780 | Dilatation. 5°S; 162°E by Riverview, Manila, Hong Kong. |
| No. 213 21st | PNEZ SNE LNE F | 0 10 18 0 17 59 0 27 31 1 25 | 6125 | No. 212 still recording. |
| No. 214 21st | PNZ SNE F | 19 37 52 19 38 39 19 51 | 370 | |
| No. 218 24th | iPNEZ SNE LN MNE F | 14 28 46 14 31 37 14 32 45ca 14 34 30ca 15 30 | 1645 | Compression from the SE. 23° 30' N; 132° 30' E by Manila and Tainoku. |
| No. 219 24th | PNEZ SNE F | 17 44 30 17 44 48 18 10 | 140 | |
| No. 221 24th | iPZ PNE SNEZ F | 23 36 11 23 36 11 23 38 08 23 59 | 1120 | Compression. Approx. 6° 30' N; 127° E by Manila and Butuan (320 Km.) Felt at Davao with intensity II. |
| No. 227 27th | iPZ ePNE SNE F | 14 32 30 14 32 30 14 40 52 15 26 | 6830 | Dilatation. Focus deeper than normal. |
| No. 228 27th | PNEZ SNEZ LNE F | 19 22 04 19 24 36 19 26 00ca 20 20 | 1465 | |
| No. 229 28th 29th | iPZ ePE SE F | 23 53 15 23 53 15 23 57 35 0 30 | 2845 | Dilatation. Deep focus. N-S cylinder stopped at 22:29. Chiufoeng, Hong Kong, Manila indicate epicenter in region of Tyosen. |
| No. 230 29th | iPNEZ iZ iZ iSNE LN F | 12 35 55 12 43 10 12 43 15 12 45 41 13 00 ca 15 40 | 8345 | Compression. In region of 40°S; 175° W by Manila and Riverview. |
| No. 231 29th | PNEZ SNE F | 23 00 18 23 00 39 23 00 | 165 | Very small. |
| No. 233 30th | P?NEZ SE F | 16 44 48 16 52 02 17 35 | 5655? | |

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.—Continued.

| No. and Date | Phase. | Greenwich Time | | | Dist. Km. | Remarks. |
|-----------------|--------|-------------------|----|------|--------------|---|
| | | h. | m. | s. | | |
| 1935 March | | | | | | |
| No. 234 30th | PNEZ | 21 | 25 | 41 | 4680 | Dilatation. In region of Kurile Islands by Chiufeng, Hong Kong, Manila. |
| | SNE | 21 | 31 | 58 | | |
| | LNE | 21 | 38 | ca | | |
| | MNE | 21 | 41 | 30ca | | |
| | F | 23 | 20 | | | |
| No. 235 31st | PNEZ | 7 | 27 | 40 | 1345 | In the region of 4°N; 127°E by Mani- la and Butuan (630 Km.) |
| | SNE | 7 | 30 | 00 | | |
| | LNE | 7 | 31 | 10 | | |
| | F | 8 | 46 | | | |

Thirty-eight insignificant or undecipherable disturbances on the following days of March: 2nd, 3rd(2), 4th(2), 6th, 7th(2), 8th(2), 9th(4), 10th, 11th, 12th(2), 13th, 14th(2), 15th, 17th(2), 18th, 19th(2), 22nd, 23rd, 24th(2), 25th(2), 26th(2), 27th, 30th, and 31st.

C O R R E C T I O N

Manila, February 4, 1935.

P= 17:36:01 Distance 8590 Km.

S= 17:46:00 22°S; 169°W by Wellington and Manila.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY



$\phi=14^{\circ} 34' 42''$ N.

$\lambda=120^{\circ} 58' 41''$ E.

$h=2.40$ m.

Alluvium.

GALITZIN-WILIP

| | T_0 | D | T_1 | λ | μ^2 | K |
|-----|-------|-------|-------|-----------|---------|-----|
| N-S | 12.4 | 100.5 | 12.6 | 11.5 | 0.017 | 97 |
| E-W | 11.8 | 100.5 | 11.9 | 11.4 | -0.075 | 80 |
| Z | 11.6 | 100.5 | 9.0 | 14.8 | 1.250 | 200 |

| | T_0 | V | ξ | $\frac{r}{T_0^2}$ |
|-----|-------|-----|-------|-------------------|
| N-S | 4.5 | 197 | 2.3 | 0.034 |
| E-W | 4.9 | 199 | 2.7 | 0.041 |

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks |
|---------------------------------|--|--|--------------|---------------------------|
| 1935 April No. 238 3rd | P?NE SE LN ME F | 6 54 07 6 59 18 7 03 27 7 06 40ca 7 30 | 3600? | Disturbed by microseisms. |
| No. 239 3rd | PEZ SNE F | 11 11 29 11 12 37 11 50 | 595 | Disturbed by microseisms. |
| No. 242 7th | \overline{PE} \overline{SE} F | 3 25 45 3 26 05 3 30 | 160 | |
| No. 243 7th | P?EZ SE F | 6 41 14 6 48 12 7 40 | 5390? | |
| No. 244 7th | \overline{PEZ} \overline{SNEZ} F | 12 22 22 12 22 40 12 27 | 140 | |
| No. 245 8th | PNEZ SE ME F | 17 57 23 18 00 02 18 02 42ca 18 30 | 1535 | Compression. |
| No. 246 9th | PEZ SE LZ F | 2 53 17 2 56 06 2 57 32 3 42 | 1630 | |
| No. 251 9th 10th | PZ SE F | 22 58 56 23 04 12 0 08 | 3680 | |

On April 4th the N-S Galitzin-Wilip was temporarily discontinued and its recording drum used for an experimental Wood-Anderson.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks |
|----------------------------------|--|---|--------------|-------------------------|
| 1935 April No. 252 10th | $\overline{\text{PEZ}}$ $\overline{\text{SEZ}}$ F | 7 33 22 7 33 42 7 38 | 160 | Baguio $\Delta=120$ Km. |
| No. 253 10th | PEZ SE LE F | 9 59 40 10 04 02 10 07 02 10 45 | 2855 | |
| No. 257 11th | PEZ SE LE ME F | 1 23 22 1 27 57 1 30 40ca 1 34 ca 2 40 | 3055 | |
| No. 259 11th | $\overline{\text{PNEZ}}$ $\overline{\text{SNEZ}}$ F | 14 53 29 14 53 59 15 10 | 220 | Compression. |
| No. 261 11th | $\overline{\text{IPZ}}$ SE F | 17 28 25 17 31 02 18 12 | 1515 | Compression. |
| No. 264 11th 12th | $\overline{\text{iPEZ}}$ SE LEZ MNE F | 23 25 17 23 34 22 23 47 ca 23 53 ca 2 10 | 7545 | Compression. |
| No. 266 12th | PZ SE F | 19 23 03 19 26 47 20 20 | 2300 | |
| No. 268 13th | $\overline{\text{PNEZ}}$ S?E F | 20 24 22 20 27 05 20 58 | 1570? | |
| No. 272 15th | $\overline{\text{PNEZ}}$ $\overline{\text{IEZ}}$ $\overline{\text{IEZ}}$ SEZ LE F | 11 20 18 11 21 08 11 24 33 11 26 08 11 29 53ca 12 00 | 4235 | |
| No. 274 16th | $\overline{\text{PNEZ}}$ $\overline{\text{SNEZ}}$ MN F | 20 36 53 20 40 48 20 42 06 21 44 | 2470 | |
| No. 280 18th | $\overline{\text{PE}}$ $\overline{\text{SE}}$ F | 3 13 25 3 14 00 3 27 | 250 | |

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



| No. and Date | Phase. | Greenwich Time | | | Dist. Km. | Remarks |
|-----------------------------|---|---------------------------------------|--|------------------------------------|-----------|--|
| | | h. | m. | s. | | |
| 1935 April | | | | | | |
| No. 284 19th | PEZ 1Z 1Z 1SEZ F | 15 15 15 15 19 | 36 40 42 46 50 | 50 51 50 55 | 8735 | |
| No. 286 20th | PEZ SE LE F | 5 5 5 7 | 27 34 41 10 | 23 23 33 | 5430 | |
| No. 290 20th | PEZ SE L?E F | 11 11 11 12 | 10 14 17 35 | 50 58 07 | 2640 | In the Nero Deep by Manila and Guam. |
| No. 291 20th 21st | 1PZ 1PE 1SNE LNE 1N MNE F | 22 22 22 22 22 22 0 | 04 04 06 07 09 09 30 | 16 19 17 50 07 10ca | 1170 | Compression. Formosa. Data after P from the Wiechert. |
| No. 293 21st | 1PEZ 1SE LE F | 7 7 7 9 | 30 34 36 20 | 40 43 55 | 2580 | Dilatation. |
| No. 296 21st | PEZ SE F | 19 19 20 | 16 18 13 | 08 03 | 1090 | |
| No. 297 21st | PE SE F | 22 22 23 | 26 29 00 | 52 23 | 1455 | |
| No. 302 23rd | 1PEZ 1SE LE ME F | 16 16 17 17 18 | 51 56 00 02 10 | 12 12 24 39 | 3420 | Dilatation. |
| No. 303 24th | 1PNEZ 1SNE F | 0 0 0 | 34 34 57 | 04 21 | 135 | Dilatation. Felt at Manila and Baguio with intensity II. S from the Wiechert and Horizontal Pendulums. |
| No. 305 24th | PEZ SE ME F | 16 16 16 17 | 01 07 19 23 | 06 56 45ca | 5235 | |

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|-----------------|-----------------------|---------------------------------------|--------------|-------------|
| 1935 April | | | | |
| No. 307 26th | PNEZ SNEZ F | 1 53 46 1 53 58 1 59 | 90 | Dilatation. |
| No. 313 29th | PEZ SEZ F | 11 47 57 11 48 14 12 40 | 2265 | Compression |
| No. 314 29th | PEZ SEZ | 23 57 30 23 57 46 | 125 | |
| No. 315 30th | P?EZ SEZ F | 0 00 08 0 01 26 0 14 | 500? | |
| No. 316 30th | PEZ SEZ LE F | 5 48 10 5 51 48 5 53 00 6 12 | 2210 | |

Forty-six insignificant or undecipherable disturbances on the following days of April: 1st, 3rd, 6th, 9th(4), 10th(2), 11th(5), 12th(2), 13th, 14th, 15th, 16th, 17th(5), 18th(2), 19th(2), 20th(3), 21st(3), 22nd(3), 23rd, 24th, 25th, 26th, 28th(3), and 29th.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY



$\phi=14^{\circ} 34' 42''$ N.

$\lambda=120^{\circ} 58' 41''$ E.

h=2.40 m.

Alluvium.

GALITZIN-WILIP.

WIECHERT. M=1000 Kg.

May 4, 1935.

| | T_0 | D | T_1 | L | μ^2 | K |
|-----|-------|-------|-------|------|---------|-----|
| N-S | 12.4 | 100.5 | 12.6 | 11.5 | 0.017 | 97 |
| E-W | 11.8 | 100.5 | 11.9 | 11.4 | -0.075 | 80 |
| Z | 11.6 | 100.5 | 9.0 | 14.8 | 1.250 | 200 |

| | T_0 | V | ϵ | $\frac{F}{T_0^2}$ |
|-----|-------|-----|------------|-------------------|
| N-S | 4.5 | 191 | 2.3 | 0.039 |
| E-W | 4.8 | 200 | 2.7 | 0.040 |

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|-------------------------------|----------------------------------|--|--------------|--|
| 1935 May No. 317 1st | PEZ SE ME F | 10 36 07 10 45 28 11 06 ca 11 48 | 7845 | Disturbed by microseisms. |
| No. 323 4th 5th | PEZ SEZ LE F | 23 05 01 23 07 03 23 08 15 0 35 | 1180 | |
| No. 324 5th | PEZ iZ SE iZ F | 5 35 33 5 35 39 5 37 10 5 37 31 5 54 | 905 | Felt at Davao with intensity II. |
| No. 325 5th | iPNEZ SNEZ F | 13 20 38 13 20 54 13 34 | 125 | |
| No. 328 5th | PEZ SE ME F | 18 16 30 18 20 04 18 23 55ca 19 27 | 2170 | |
| No. 329 6th | PEZ SE F | 17 43 07 17 45 09 18 20 | 1180 | Formosa. |
| No. 330 7th | iPNEZ iSNE IN MNEZ F | 5 58 01 6 00 34 6 01 49 6 03 15 7 50 | 1480 | Felt at Davao with intensity II. P in minute gap. |
| No. 336 9th | PNEZ SNE LE F | 4 47 13 4 50 25 4 52 03 6 04 | 1900 | |

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|-------------------------|--|---|--------------|---|
| 1935 May | | | | |
| No. 338 9th | PNEZ SNE F | 13 56 49 13 58 01 14 18 | 470 | |
| No. 342 10th | PNEZ SNE LN ME F | 17 09 17 17 13 04 17 15 25ca 17 17 34 18 20 | 2335 | Deep focus. |
| No. 345 11th | 1PNEZ PR1Z SNEZ MN F | 18 47 45 18 47 52 18 50 29 18 53 25ca 19 40 | 1585 | |
| No. 347 11th 12th | PNE SNE LNE F | 23 51 14 23 54 51 23 56 50ca 1 15 | 2200 | P in Z component lost in changing record. |
| No. 349 12th | PEZ SNE LNE MN F | 19 52 41 19 58 43 20 04 50ca 20 08 10ca 21 10 | 4220 | |
| No. 356 13th | 1PZ ePNE 1SNEZ LNE MNE F | 19 58 11 19 58 12 20 02 02 20 04 ca 20 07 ca 22 00 | 2410 | |
| No. 358 13th | PEZ SNEZ F | 23 14 37 23 19 01 23 50 | 2880 | |
| No. 359 13th 14th | P?NEZ EN MNE F | 23 54 35 24 00 01 0 04 15ca 1 10 | 3835? | |
| No. 361 14th 15th | PEZ 1Z 1E S?E LE MNE F | 23 42 08 23 45 18 23 48 09 23 51 10 23 59 20ca 0 04 ca 1 58 | 7490? | |

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued,



| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|-----------------|--|--|--------------|---------------------------|
| 1935 May | | | | |
| No. 362 15th | PZ PE PN SNEZ LNE MN F | 2 10 45 2 10 50 2 11 01 2 18 00 2 26 25 2 30 40 3 20 | 5680 | Focus deeper than normal. |
| No. 371 18th | PNEZ S?NE F | 21 46 24 21 48 41 22 19 | 1320? | |
| No. 372 19th | PNE SNE F | 2 01 37 2 02 33 2 10 | 370 | |
| No. 376 20th | PNEZ SNE LN MNE F | 5 24 34 5 27 02 5 28 32 5 29 42 7 20 | 1420 | |
| No. 383 21st | PNEZ SNE MN F | 4 29 22 4 34 06 4 39 40 5 00 | 3180 | |
| No. 385 21st | 1PZ ePNE SN LNE MNE F | 6 58 09 6 58 12 7 03 23 7 07 30 7 10 30ca 8 35 | 3655 | |
| No. 386 21st | PNEZ S?NE LN F | 13 12 42 13 17 57 13 21 55ca 14 20 | 3665? | |
| No. 387 21st | 1PZ PNE SNE | 15 23 39 15 23 39 15 27 17 | 2210 | Deep Focus. |
| No. 388 21st | PNEZ SNEZ F | 15 46 54 15 47 26 16 22 | 235 | No. 387 still recording. |
| No. 397 24th | 1PEZ ePN SNEZ F | 2 56 16 2 56 16 2 57 41 4 15 | 775 | Precurdor of No. 399. |

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|-----------------|-------------------|-------------------------------|--------------|--|
| 1935 May | | | | |
| No. 398 24th | PEZ SEZ F | 5 15 22 5 16 47 5 30 | 775 | Precursor of No. 399. |
| No. 399 24th | 1PNEZ 1SNE | 5 37 51 5 39 16 | 775 | Felt in eastern Visayas with intensity VII. S from the Wiechert. |
| No. 400 24th | PNE SNE F | 8 36 11 8 37 26 8 54 | 775 | Aftershock of No. 399. Number 401 to 412 are aftershocks of No. 399. From the Wiechert. |
| No. 413 25th | 1PNEZ SNE F | 0 09 13 0 10 39 2 20 | 780 | Similar to No. 399. S from the Wiechert, and Horizontal. |
| No. 415 25th | PNEZ SNE F | 8 34 22 8 35 47 10 35 | 775 | Similar to No. 399. Nos. 414, 416 to 423 are aftershocks of No. 399. |
| No. 425 26th | 1PNEZ 1SNE | 22 05 14 22 06 59 | 980 | Felt at Borongan with intensity II. |
| No. 426 27th | PNEZ SNEZ F | 0 04 06 0 05 31 0 24 | 775 | No. 425 still recording. |
| No. 427 27th | PNE SNEZ F | 1 27 19 1 28 44 2 40 | 775 | Felt at Borongan with intensity II. |
| No. 429 27th | PNEZ SNE F | 5 38 14 5 39 45 6 00 | 840 | |
| No. 430 27th | PNEZ SNE F | 8 14 30 8 15 46 8 38 | 680 | |
| No. 431 27th | PNEZ SNE F | 8 39 18 8 40 54 9 23 | 895 | |
| No. 432 27th | PNEZ SNE F | 11 32 33 11 33 28 11 39 | 365 | |
| No. 433 27th | PNEZ SNE F | 11 43 50 11 45 16 12 00 | 780 | |

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



| No. and Date | Phase. | Greenwich Time | | | Dist. Km. | Remarks. |
|-----------------|-------------------|----------------|----|----|-----------|---|
| | | h. | m. | s. | | |
| 1935 May | | | | | | |
| No. 398 24th | PEZ SEZ F | 5 | 15 | 22 | 775 | Precursor of No. 399. |
| | | 5 | 16 | 47 | | |
| | | 5 | 30 | | | |
| No. 399 24th | 1PNEZ 1SNE | 5 | 37 | 51 | 775 | Felt in eastern Visayas with intensity VII. S from the Wiechert. |
| | | 5 | 39 | 16 | | |
| No. 400 24th | PNE SNE F | 8 | 36 | 11 | 775 | Aftershock of No. 399. Number 401 to 412 are aftershocks of No. 399. From the Wiechert. |
| | | 8 | 37 | 26 | | |
| | | 8 | 54 | | | |
| No. 413 25th | 1PNEZ SNE F | 0 | 09 | 13 | 780 | Similar to No. 399. S from the Wiechert, and Horizontal. |
| | | 0 | 10 | 39 | | |
| | | 2 | 20 | | | |
| No. 415 25th | PNEZ SNE F | 8 | 34 | 22 | 775 | Similar to No. 399. Nos. 414, 416 to 423 are aftershocks of No. 399. |
| | | 8 | 35 | 47 | | |
| | | 10 | 35 | | | |
| No. 425 26th | 1PNEZ 1SNE | 22 | 05 | 14 | 980 | Felt at Borongan with intensity II. |
| | | 22 | 06 | 59 | | |
| No. 426 27th | PNEZ SNEZ F | 0 | 04 | 06 | 775 | No. 425 still recording. |
| | | 0 | 05 | 31 | | |
| | | 0 | 24 | | | |
| No. 427 27th | PNE SNEZ F | 1 | 27 | 19 | 775 | Felt at Borongan with intensity II. |
| | | 1 | 28 | 44 | | |
| | | 2 | 40 | | | |
| No. 429 27th | PNEZ SNE F | 5 | 38 | 14 | 840 | |
| | | 5 | 39 | 45 | | |
| | | 6 | 00 | | | |
| No. 430 27th | PNEZ SNE F | 8 | 14 | 30 | 680 | |
| | | 8 | 15 | 46 | | |
| | | 8 | 38 | | | |
| No. 431 27th | PNEZ SNE F | 8 | 39 | 18 | 895 | |
| | | 8 | 40 | 54 | | |
| | | 9 | 23 | | | |
| No. 432 27th | PNEZ SNE F | 11 | 32 | 33 | 365 | |
| | | 11 | 33 | 28 | | |
| | | 11 | 39 | | | |
| No. 433 27th | PNEZ SNE F | 11 | 43 | 50 | 780 | |
| | | 11 | 45 | 16 | | |
| | | 12 | 00 | | | |

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|-----------------|-------------------|-------------------------------|--------------|---|
| 1935 May | | | | |
| No. 398 24th | PEZ SEZ F | 5 15 22 5 16 47 5 30 | 775 | Precursor of No. 399. |
| No. 399 24th | 1PNEZ 1SNE | 5 37 51 5 39 16 | 775 | Felt in eastern Visayas with intensity ty VII. S from the Wiechert. |
| No. 400 24th | PNE SNE F | 8 36 11 8 37 26 8 54 | 775 | Aftershock of No. 399. Number 401 to 412 are aftershocks of No. 399. From the Wiechert. |
| No. 413 25th | 1PNEZ SNE F | 0 09 13 0 10 39 2 20 | 780 | Similar to No. 399. S from the Wiechert, and Horizontal. |
| No. 415 25th | PNEZ SNE F | 8 34 22 8 35 47 10 35 | 775 | Similar to No. 399. Nos. 414, 416 to 423 are aftershocks of No. 399. |
| No. 425 26th | 1PNEZ 1SNE | 22 05 14 22 06 59 | 980 | Felt at Borongan with intensity II. |
| No. 426 27th | PNEZ SNEZ F | 0 04 06 0 05 31 0 24 | 775 | No. 425 still recording. |
| No. 427 27th | PNE SNEZ F | 1 27 19 1 28 44 2 40 | 775 | Felt at Borongan with intensity II. |
| No. 429 27th | PNEZ SNE F | 5 38 14 5 39 45 6 00 | 840 | |
| No. 430 27th | PNEZ SNE F | 8 14 30 8 15 46 8 38 | 680 | |
| No. 431 27th | PNEZ SNE F | 8 39 18 8 40 54 9 23 | 895 | |
| No. 432 27th | PNEZ SNE F | 11 32 33 11 33 28 11 39 | 365 | |
| No. 433 27th | PNEZ SNE F | 11 43 50 11 45 16 12 00 | 780 | |

Please change the page number 19 of May, 1935 with this new one with corrections and additions.



NO. 100.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|-----------------|-------------------|-------------------------------|--------------|--|
| 1935 May | | | | |
| No. 398 24th | PEZ SEZ F | 5 15 32 5 16 47 5 30 | 670 | Precursor of No. 399. |
| No. 399 24th | 1PNEZ 1SNE | 5 37 51 5 39 06 | 670 | Compression. $11^{\circ} 15' N$; $128^{\circ} 05' E$. O=5:36:21. Felt in eastern Visayas with intensity VII. S from the Wiechert. |
| No. 400 24th | PNE SNE F | 8 36 11 8 37 26 8 54 | 670 | Aftershock of No. 399. From the Wiechert. Number 401 to 412 are aftershocks of No. 399. |
| No. 413 25th | 1PNEZ SNE F | 0 09 13 0 10 28 2 20 | 670 | Compression. Similar to No. 399. Felt in eastern Visayas with inten- sity III. |
| No. 415 25th | PNEZ SNE F | 8 34 22 8 35 36 10 35 | 670 | Similar to No. 399. Felt in eastern Visayas with intensity III. Nos. 414, 416 to 423 are aftershocks of No. 399. |
| No. 425 26th | 1PNEZ 1SNZ | 22 05 14 22 06 08 | 440 | Felt at Borongan with intensity II. Compression. |
| No. 426 27th | PNEZ SE F | 0 04 06 0 05 21 0 24 | 670 | No. 425 still recording. |
| No. 427 27th | PE SNE F | 1 27 29 1 28 23 2 40 | 440 | Felt at Borongan with intensity II. |
| No. 429 27th | PNEZ SNE F | 5 38 14 5 39 45 6 00 | 840 | |
| No. 430 27th | PNEZ SNE F | 8 14 30 8 15 46 8 38 | 680 | |
| No. 431 27th | PNEZ SNE F | 8 39 18 8 40 54 9 23 | 895 | |
| No. 432 27th | PNEZ SNE F | 11 32 33 11 33 28 11 39 | 365 | |
| No. 433 27th | PNEZ SNE F | 11 43 50 11 45 16 12 00 | 780 | |

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|-----------------|-------------------|-------------------------------|--------------|---|
| 1935 May | | | | |
| No. 398 24th | PEZ SEZ F | 5 15 22 5 16 47 5 30 | 775 | Precursor of No. 399. |
| No. 399 24th | 1PNEZ 1SNE | 5 37 51 5 39 16 | 775 | Felt in eastern Visayas with intensity VII. S from the Wiechert. |
| No. 400 24th | PNE SNE F | 8 36 11 8 37 26 8 54 | 775 | Aftershock of No. 399. Number 401 to 412 are aftershocks of No. 399. From the Wiechert. |
| No. 413 25th | 1PNEZ SNE F | 0 09 13 0 10 39 2 20 | 780 | Similar to No. 399. S from the Wiechert, and Horizontal. |
| No. 415 25th | PNEZ SNE F | 8 34 22 8 35 47 10 35 | 775 | Similar to No. 399. Nos. 414, 416 to 423 are aftershocks of No. 399. |
| No. 425 26th | 1PNEZ 1SNE | 22 05 14 22 06 59 | 980 | Felt at Borongan with intensity II. |
| No. 426 27th | PNEZ SNEZ F | 0 04 06 0 05 31 0 24 | 775 | No. 425 still recording. |
| No. 427 27th | PNE SNEZ F | 1 27 19 1 28 44 2 40 | 775 | Felt at Borongan with intensity II. |
| No. 429 27th | PNEZ SNE F | 5 38 14 5 39 45 6 00 | 840 | |
| No. 430 27th | PNEZ SNE F | 8 14 30 8 15 46 8 38 | 680 | |
| No. 431 27th | PNEZ SNE F | 8 39 18 8 40 54 9 23 | 895 | |
| No. 432 27th | PNEZ SNE F | 11 32 33 11 33 28 11 39 | 365 | |
| No. 433 27th | PNEZ SNE F | 11 43 50 11 45 16 12 00 | 780 | |

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.---Continued.

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|-----------------|----------------------------------|---|--------------|---|
| 1935 May | | | | |
| No. 440 28th | PNEZ SNE F | 1 14 12 1 15 37 2 05 | 775 | |
| No. 443 28th | PNEZ SNE F | 14 17 36 14 19 12 15 34 | 895 | |
| No. 444 28th | PNEZ SNE F | 16 39 05 16 40 42 17 30 | 900 | |
| No. 445 29th | PNEZ SNE LNE MNE F | 19 45 04 19 47 09 19 48 20ca 19 49 50ca 21 10 | 1200 | Formosa. |
| No. 446 30th | iPEZ oPN SNE LNE MNE | 21 42 07 21 42 07 21 49 49 21 59 13 22 03 44 | 6145 | India. |
| 31st | F | 2 00 | | 29°N; 66°E; $\phi=21:33:00$ by U.S.C.G.S. |
| No. 448 31st | PNEZ SNEZ F | 4 26 30 4 27 18 4 47 | 325 | |
| No. 449 31st | 1PZ ePNE SNE F | 8 24 52 8 24 52 8 27 42 9 26 | 1635 | |

Seventy insignificant or undecipherable disturbances on the following days of May: 3rd(4), 4th, 5th(2), 7th(3), 8th, 9th(4), 10th, 11th(3), 12th, 13th(7), 14th, 15th(2), 16th(4), 17th, 18th, 19th(3), 20th(5), 21st(3), 22nd(4), 23rd(3), 26th, 27th(7), 28th(2), and 31st(6).

The data in this month's Report has been prepared

By
Cesáreo Dulueña,
Asst. Seismologist.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY/.



$\phi=14^{\circ} 34' 42''$ N. $\lambda=120^{\circ} 58' 41''$ E. $h=2.40$ m. Alluvium.

GALITZIN-WILIP.

WIECHERT. $M=1000$ Kg.

June 3, 1935

| | T_0 | D | T_1 | λ | μ^2 | K |
|-----|-------|-------|-------|-----------|---------|-----|
| N-S | 12.4 | 100.5 | 12.6 | 11.5 | 0.017 | 97 |
| E-W | 11.8 | 100.5 | 11.9 | 11.4 | -0.075 | 80 |
| Z | 11.6 | 100.5 | 9.0 | 14.8 | 1.250 | 200 |

| | T_0 | V | ϵ | $\frac{F}{T_0^2}$ |
|-----|-------|-----|------------|-------------------|
| N-S | 4.5 | 195 | 2.3 | 0.040 |
| E-W | 4.8 | 203 | 2.8 | 0.040 |

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|-----------------------|--------------------------------------|--|--------------|---|
| 1935 June | | | | |
| No. 455 1st | PNEZ SNEZ F | 3 31 08 3 32 14 3 45 | 430 | Felt at Legaspi with intensity III. |
| No. 456 1st | PNEZ SNEZ F | 4 12 17 4 13 26 5 25 | 610 | |
| No. 458 1st | 1PNEZ SNE F | 14 42 02 14 44 12 16 10 | 1255 | Compression from SE. Felt at Davao with intensity III. |
| No. 459 2nd | PNZ SNE 1N 1Z F | 4 43 50 4 45 06 4 46 06 4 46 54 5 40 | 680 | |
| No. 460 2nd | 1PZ PNE SNE LNE MNE F | 9 25 39 9 25 41 9 33 02 9 41 50 9 47 ca 11 20 | 5825 | India. Compression. |
| No. 461 2nd | PNZ SNEZ F | 17 00 23 17 03 12 17 38 | 1625 | |
| No. 462 2nd | PNEZ SNEZ F | 18 10 40 18 11 18 18 27 | 280 | |
| No. 464 2nd | PNEZ SNE MNE F | 19 27 54 19 29 34 19 30 30ca 20 30 | 935 | |
| No. 466 2nd | PNEZ SNE F | 22 19 26 22 20 33 22 41 | 590 | |
| No. 467 2nd 3rd | PNEZ SNE F | 23 45 21 23 47 03 0 01 | 640 | |

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|-----------------------|-------------------------|---|--------------|---|
| 1935 June | | | | |
| No. 468 3rd | PNEZ SNE F | 2 36 02 2 39 54 2 55 | 2420 | |
| No. 469 3rd | PNEZ SNE F | 10 10 48 10 12 13 10 35 | 540 | |
| No. 473 4th | PNEZ SNE F | 8 04 26 8 04 58 8 30 | 235 | |
| No. 474 4th | PNEZ S NE F | 8 36 17 8 37 37 9 00 | 510 | Felt at Tacloban with intensity V. Butuan, $\Delta=260$ Km. |
| No. 478 5th | PNEZ SNE F | 6 40 38 6 41 24 6 56 | 360 | |
| No. 480 5th | PNE S N F | 19 47 16 19 47 26 20 05 | 75 | |
| No. 489 7th | PNEZ SNE MNE F | 2 55 19 2 57 43 3 00 20ca 3 30 | 1390 | |
| No. 490 7th | 1PZ PNE SNE F | 4 19 24 4 19 24 4 22 19 5 15 | 1695 | |
| No. 494 8th | PNEZ SNE F | 1 19 03 1 19 24 1 38 | 165 | |
| No. 496 8th | PNEZ SNE F | 10 35 57 10 38 05 10 51 | 1235 | Felt at Jolo with intensity II. |
| No. 497 8th 9th | PNE SNE F | 23 44 11 23 44 28 0 02 | 135 | Felt on west coast of Central Luzon and in Manila. Epicenter in China Sea. P in Z component lost in changing record. S from the Wiechert and Horizontal. Baguio, $\Delta=135$ Km. |
| No. 498 9th | PNEZ SNE F | 1 33 47 1 35 15 1 53 | 560 | Felt at Basco with intensity II. |
| No. 499 9th | PNEZ SNZ F | 6 35 21 6 36 51 9 11 | 830 | |

No. 23.

June, 1936,

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY,--Continued.

| No. and Date | Phase. | Greenwich Time | | | Dist. Km. | Remarks. |
|-------------------------|-------------------------|----------------|----|----------------------|-----------|---|
| | | H. | m. | s. | | |
| 1935 June | | | | | | |
| No. 500 9th | PNEZ SNEZ | 8 | 19 | 56 23 | 555 | Earthquake superimposed on No. 499. |
| No. 501 9th | PNEZ SNE F | 9 | 17 | 22 03 35 | 310 | |
| No. 504 9th | PNEZ SNE F | 16 | 43 | 39 22 02 | 330 | |
| No. 507 10th | PNEZ SNEZ F | 7 | 42 | 03 58 57 | 455 | |
| No. 511 11th | PEZ SNEZ F | 2 | 05 | 52 16 25 | 770 | |
| No. 520 15th | PNEZ SNE F | 8 | 10 | 16 44 25 | 810 | Butuan, $\Delta=200$ Km. |
| No. 521 15th | PNEZ SNE F | 14 | 32 | 05 34 30 | 820 | Butuan, $\Delta=245$ Km.(?). |
| No. 522 16th | PNEZ S?NE IN F | 6 | 25 | 09 44 45 30 | 3920? | |
| No. 527 18th 19th | PNEZ SNE F | 22 | 28 | 58 00 00 | 525 | Compression. Welt at Borongan and Legaspi with intensity III. |
| No. 529 19th | PZ PNE SNE F | 22 | 23 | 28 33 13 35 | 5155 | |
| No. 530 22nd | PNEZ SNE INE F | 15 | 53 | 16 05 14 40 | 2365 | Dilatation. Deep foc us. |
| No. 535 23rd | PNEZ SNE F | 9 | 29 | 41 06 10 | 2890 | Deep focus. |
| No. 536 23rd | PNEZ SNE F | 14 | 23 | 37 33 53 | 2480 | |

No. 24.

June, 1935.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|-----------------|--------|----------------------------|--------------|---|
| 1935 June | | | | |
| No. 542 24th | iPEZ | 23 32 37 | 6020 | Dilatation. Region New Hebrides. 18°S; 165°E according to Wellington. |
| | ePN | 23 32 37 | | |
| | iSNE | 23 40 12 | | |
| | LE | 23 49 18 | | |
| 25th | F | 2 40 | | |
| No. 544 25th | iPZ | 12 41 17 | 4435 | |
| | ePNE | 12 41 17 | | |
| | SNE | 12 47 20 | | |
| | LNE | 12 52 36 | | |
| | F | 14 50 | | |
| No. 545 26th | PNEZ | 6 46 44 | 895 | |
| | SNE | 6 48 20 | | |
| | mE | 6 49 08 | | |
| | mN | 6 49 24 | | |
| | F | 7 48 | | |
| No. 547 27th | PNZ | 0 34 41 | 1235 | |
| | SNZ | 0 36 49 | | |
| | LN | 0 38 06 | | |
| | F | 0 50 | | |
| No. 549 28th | iPZ | 2 20 19 | 1755? | |
| | ePE | 2 20 19 | | |
| | S?NE | 2 23 20 | | |
| | F | 3 14 | | |
| No. 551 29th | PNEZ | 7 09 32 | | |
| | MNE | 7 47 30 | | |
| | F | 9 30 | | |

Fifty-eight insignificant or undecipherable disturbances on the following days of June: 1st, 2nd(2), 3rd(3), 4th(2), 5th(5), 6th(5), 7th(3), 8th, 9th(2), 10th(4), 11th(3), 12th, 13th(3), 14th, 15th, 18th(4), 19th, 22nd(2), 23rd(6), 24th, 26th, 27th, 28th, 29th, and 30th(2),

No. 25.

July, 1935.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.



$\phi=14^{\circ} 34' 42''$ N.

$\lambda=120^{\circ} 58' 41''$ E.

h=2.40 m.

WIECHERT. M=1000 Kg.

GALITZIN-WILIP.

July 3, 1935.

| | T_0 | D | T_1 | λ | μ^2 | K |
|-----|-------|-------|-------|-----------|---------|-----|
| N-S | 12.4 | 100.5 | 12.6 | 11.5 | 0.017 | 37 |
| E-W | 11.8 | 100.5 | 11.9 | 11.4 | -0.075 | 80 |
| Z | 11.6 | 100.5 | 9.0 | 14.8 | 1.250 | 200 |

| | T_0 | V | ϵ | $\frac{F}{T_0^2}$ |
|-----|-------|-----|------------|-------------------|
| N-S | 4.6 | 190 | 2.3 | 0.038 |
| E-W | 4.8 | 203 | 2.8 | 0.048 |

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|----------------|---|---|--------------|---|
| 1935 July | | | | |
| No. 556 1st | \overline{PNEZ} \overline{SNEZ} F | 14 36 34 14 36 52 14 50 | 140 | |
| No. 558 1st | \overline{PNEZ} \overline{SNEZ} F | 17 01 56 17 02 11 17 11 | 120 | Compression. Felt in Manila with intensity II. |
| No. 561 3rd | \overline{PNEZ} \overline{SNEZ} F | 21 14 38 21 14 56 21 24 | 145 | |
| No. 562 3rd | PNEZ SNEZ F | 21 52 10 21 56 28 22 19 | 2800 | Deep focus. |
| No. 563 4th | \overline{PNEZ} \overline{SNEZ} F | 0 15 38 0 15 51 0 28 | 100 | Dilatation. |
| No. 569 5th | \overline{PNEZ} PN \overline{SNEZ} PNE MNE F | 18 02 17 18 02 17 18 09 45 18 18 40 18 23 ca 19 40 | 5910 | Compression. |
| No. 570 5th | \overline{PNEZ} \overline{SN} F | 20 04 09 20 04 31 20 18 | 175 | |
| No. 571 5th | \overline{PNEZ} \overline{SNE} F | 21 19 29 21 19 49 21 26 | 160 | |
| No. 572 6th | PNEZ SNE F | 4 49 49 4 50 53 5 15 | 550 | Butuan, $\Delta=380$ Km. |
| No. 574 6th | PNZ SN F | 21 53 10 21 58 16 22 25 | 3520 | E-W Cylinder stopped at 21:28. |

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|-----------------|--------------------------------|---|--------------|---|
| 1935 July | | | | |
| No. 575 7th | 1PNEZ SNE MN ME F | 13 24 20 13 25 24 13 28 09 13 29 56 15 00 | 430 | Compression from NW. Epicenter about 18° 20' N; 120° 10' E. Felt in northwestern part of Luzon with intensity IV and slightly in Manila. Data after P from the Wiechert. Baguio, $\Delta=230$ Km. |
| No. 576 8th | PNEZ SNE F | 3 42 46 3 43 20 3 57 | 245 | Disturbed by microseisms. |
| No. 577 8th | PNEZ SN F | 15 54 21 15 54 56 16 10 | 250 | Disturbed by microseisms. |
| No. 579 9th | ePNE SNE SN F | 0 49 12 0 50 14 0 50 36 1 25 | 540 | |
| No. 580 9th | ePEZ SNE SZ F | 2 11 50 2 12 53 2 13 15 2 50 | 540 | |
| No. 581 9th | PNEZ S?NE LE F | 4 40 16 4 44 52 4 48 00 5 40 | 3065 | |
| No. 582 9th | 1PZ PNE SNE SN F | 12 51 59 12 52 00 12 53 02 12 53 24 14 30 | 540 | Compression. |
| No. 583 9th | ePNEZ SNE F | 17 57 04 17 58 30 18 45 | 550 | |
| No. 584 9th | PNEZ SNEZ F | 21 12 53 21 16 30 22 08 | 2200 | |
| No. 588 11th | 1PZ ePNE SNEZ IN F | 8 30 20 8 30 20 8 34 57 8 38 20 ca 9 57 | 3080 | Destructive in Sizuoka Prefecture, Japan. |

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks, |
|-----------------|--------------------------------|---|--------------|--|
| 1935 July | | | | |
| No. 589 11th | ePNEZ SNE LN MNE F | 13 19 44 13 27 44 13 37 10 13 41 ca 14 32 | 6450 | Disturbed by microseisms. |
| No. 590 11th | PNEZ SNE F | 21 36 44 21 37 13 21 43 | 220 | |
| No. 591 11th | ePNE SN F | 23 06 24 23 10 44 23 42 | 2820 | |
| No. 592 12th | PNEZ SNEZ F | 0 25 31 0 26 01 0 37 | 220 | Dilatation. |
| No. 595 12th | PNEZ SE F | 19 47 00 19 49 32 20 15 | 1465 | |
| No. 597 12th | PNEZ SNE LNE F | 20 45 16 20 52 02 20 59 ca 21 58 | 7335? | S and L from the Wiechert. |
| No. 599 12th | PN S?NE | 23 39 46 23 41 58 | 1265? | P _E and P _Z lost in changing records. Disturbed by microseisms. |
| No. 600 13th | PNEZ SNE | 0 15 45 0 16 53 | 595 | No. 599 still recording. |
| No. 601 13th | PNE SNE | 0 28 50 0 30 09 | 505 | No. 600 still recording. |
| No. 602 13th | PNEZ SNE F | 0 34 27 0 38 26 1 30 | 2520 | No. 601 still recording. S from the Wiechert. |
| No. 603 13th | PNEZ SNE | 2 08 28 2 09 28 | 510 | |
| No. 604 13th | PNEZ SNE F | 2 30 44 2 31 50 3 19 | 580 | No. 603 still recording. |
| No. 605 13th | PNEZ SE | 3 52 56 3 56 30 | 2165 | S from the Wiechert. |

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks |
|-----------------|-------------------------|---|--------------|---|
| 1935 July | | | | |
| No. 607 13th | PNEZ SNE F | 8 33 50 8 35 44 8 50 | 1080 | |
| No. 608 13th | PNEZ SNE F | 20 03 42 20 04 25 20 16 | 330 | |
| No. 611 15th | iPZ iPNE SNE F | 14 23 45 14 23 48 14 27 10 15 08 | 2045 | Dilatation. |
| No. 613 16th | PNEZ SNE MNE F | 16 21 24 16 23 10 16 30 24 18 30 | 1000 | Dilatation. $24.4^{\circ}N$; $120.4^{\circ}E$ according to Taihoku. Data after P from the Wiechert. |
| No. 614 16th | iPNEZ SNE F | 20 03 57 20 05 30 21 28 | 860 | Dilatation, from SE , probably in the Philippine Deep. |
| No. 616 17th | P?NEZ SNE F | 2 22 29 2 23 56 2 40 | 555? | Disturbed by microseisms. |
| No. 617 17th | PZ PNE SNE F | 3 27 14 3 27 16 3 28 36 3 56 | 740 | |
| No. 618 17th | PNEZ SNE F | 9 29 15 9 29 35 9 48 | 160 | S from the Wiechert. |
| No. 619 17th | PNE S?NE F | 11 06 54 11 12 04 12 45 | 3590 | Disturbed by microseisms. |
| No. 622 19th | PNEZ SNE F | 0 55 51 1 02 04 2 40 | 4600 | Kasimanada, Japan. |
| No. 631 27th | PNEZ SNE F | 3 36 13 3 37 21 4 20 | 600 | Felt at Tacloban with intensity IV. Butuan, 240 Km. |

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks |
|-----------------|---------------------------|---------------------------------------|--------------|---|
| 1935 July | | | | |
| No. 632 28th | PNEZ SEZ SN F | 6 24 34 6 25 32 6 25 52 6 48 | 495 | Dilatation. Felt at Calbayog with intensity III. Butuan, 330 Km. |
| No. 634 29th | 1PNEZ 1SNE LNE F | 7 49 16 7 57 46 8 09 15 9 20 | 6965 | 18°S; 175°E by Manila and Riverview subject to some correction for depth of focus. Butuan, 6255 Km. 8 conspicuous. 23°S; 178°W; O=7:38:52; Δ=7930 Km. Depth of focus; Ab-out 500 Km. |
| No. 635 30th | PNEZ 1SNE LNE F | 5 49 59 5 54 20 5 57 ca 6 30 | 2845 | Dilatation. |

By U.S.C.G.S.

Thirty-five insignificant or undecipherable disturbances on the following days of July: 1st(2), 2nd, 3rd, 4th(4), 5th, 6th, 8th, 10th(3), 12th(4), 13th, 14th, 15th, 16th, 17th(2), 18th, 19th, 21st, 22nd, 23rd, 24th, 26th(3), 29th, and 30th.



SEISMOLOGICAL BULLETIN OF THE OBSERVATORY

$\phi=14^{\circ} 34' 42''$ N. $\lambda=120^{\circ} 58' 41''$ E. $h=2.40$ m. Alluvium.

GALITZIN-WILIP

WIECHERT. $M=1000$ Kg.

August 6, 1935

| | T_0 | D | T_1 | λ | μ^2 | K |
|-----|-------|-------|-------|-----------|---------|-----|
| N-S | 12.4 | 100.5 | 12.6 | 11.5 | 0.017 | 97 |
| E-W | 11.8 | 100.5 | 11.9 | 11.4 | -0.075 | 80 |
| Z | 11.6 | 100.5 | 9.0 | 14.8 | 1.250 | 200 |

| | T_0 | V | ϵ | $\frac{T}{T_0^2}$ |
|-----|-------|-----|------------|-------------------|
| N-S | 4.6 | 189 | 2.3 | 0.039 |
| E-W | 4.8 | 203 | 2.8 | 0.041 |

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks |
|-----------------|---------------------------------|---|--------------|---|
| 1935 August | | | | |
| No. 638 1st | iPEZ ePN SNE F | 14 07 59 59 09 03 15 58 | 770 | In the Philippine Deep, about $10^{\circ} 30'$ N; $126^{\circ} 25'$ E. Felt strongly in Samar. S from the Wiechert. Baguio, $\Delta=920$ Km. Butuan, $\Delta=200$ Km. |
| No. 639 1st | ePNEZ eSNEZ F | 17 31 21 33 21 18 18 | 1155 | |
| No. 641 2nd | ePNEZ SNE F | 10 10 26 12 04 11 05 | 870 | |
| No. 647 3rd | iPEZ ePN iSNE MNE F | 1 15 41 41 20 40 26 50ca 2 30 | 3410 | Compression. Probably in region of 10° N; 90° E by Manila, Phu-Lieu, Hong Kong. 5° N; 96° E by U.S.C.G.S. |
| No. 648 3rd | iPNEZ SNE MNEZ F | 11 46 52 48 25 49 40ca 13 22 | 860 | $11^{\circ} 15'$ N; $128^{\circ} 15'$ E by Manila, Hong Kong, Chiufeng. |
| No. 650 3rd | PNEZ SNE F | 17 18 56 20 40 18 10 | 975 | |
| No. 662 11th | PNEZ SNE F | 16 29 11 29 33 | 140 | |
| No. 664 11th | PNEZ SNE F | 19 38 36 43 01 20 30 | 2890 | |
| No. 665 12th | iPZ ePNE SNE F | 1 40 39 39 43 06 2 20 | 1415 | Compression from SE. |
| No. 671 13th | ePNEZ iSNE F | 8 21 34 25 51 40 | 2780 | Deep focus. |

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



| No. and Date | Phase. | Greenwich Time | | | Dist. Km. | Remarks. |
|-----------------|---|--|----|------|--|----------|
| | | h. | m. | s. | | |
| 1935 August | | | | | | |
| No. 672 16th | PNEZ SNEZ F | 1 44 29 45 15 55 | | 320 | 17° 15' N; 119° 52' E by Manila and Baguio, as on June 3, 1932. Felt at Vigan and Bangued with intensity II. | |
| No. 676 16th | PNEZ SE MNE F | 19 23 43 28 08 31 40 50 | | 2890 | | |
| No. 677 17th | PNEZ SNE SNEZ LNE MNEZ F | 1 54 52 52 2 03 44 16 00 21 00 5 30 | | 7335 | Compression. 20° S; 172° E by U.S.C.G.S. | |
| No. 679 17th | PNEZ SNE F | 20 27 32 28 26 21 30 | | 440 | Compression. About 18° 20' N; 120° 10' E as on March 19, 1931. Felt at Laoag with intensity III. Baguio, 240 Km. | |
| No. 680 18th | PNEZ SNEZ F | 0 49 06 50 11 1 08 | | 425 | | |
| No. 685 19th | PNEZ SNE F | 17 00 57 02 02 45 | | | | |
| No. 686 20th | PEZ SNEZ LNZ F | 16 46 23 50 31 52 48 17 42 | | 2645 | Deep Focus. | |
| No. 688 21st | PNEZ SNE F | 5 28 39 32 02 6 09 | | 2020 | | |
| No. 690 21st | PNEZ SNE F | 14 00 02 09 12 45 | | 7645 | | |
| No. 693 22nd | PNE SNEZ F | 13 10 17 36 23 | | 150 | | |
| No. 697 23rd | PNE SNE LNE MNE F | 14 03 24 08 46 13 ca 16 ca 15 10 | | 3770 | Compression. From the Wiechart. | |
| No. 698 24th | PNEZ SNE F | 10 00 12 01 56 32 | | 975 | | |
| No. 705 30th | PNEZ SNE F | 17 01 23 05 26 26 | | 2580 | | |



SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks |
|-----------------|--------------------|----------------------------|--------------|--|
| 1935 August | | | | |
| No. 706 31st | PEZ SNE F | 8 25 31 26 24 42 | 435 | |
| No. 707 31st | 1PEZ 1SNEZ F | 17 17 51 19 09 19 30 | 700 | Compression. Felt at Guiuan and Tacloban with intensity V. |

Forty-six insignificant or undecipherable disturbances on the following days of August: 1st, 2nd(5), 3rd(3), 6th, 8th, 9th(6), 10th, 11th(2), 12th(5), 16th(3), 17th, 18th(4), 20th, 21st(2), 22nd(2), 23rd(2), 25th, 26th(2), 27th, 29th, and 30th.

CORRECTION TO NO. 227, APRIL 15th, 1934.

P= 22:17:29 Distance, 1050 Km.

S= 22:19:20

Epicenter, 7° 15' N; 127° 05' E.

H= 22h 15m 10s

Twenty-seven observatories give P-O residuals less than 10 seconds.

CORRECTION TO NO. 90, FEBRUARY 7TH, 1935.

1PNZ= 17:29:40 Compression.

1PN = 17:30:08 S from the Wiechert,

12° 40' N; 121° 50' E by Manila and Baguio.

h about 60 Km.

Reported as violent in Romblon. Felt in southern and southeastern Luzon.

No. 33.

September, 1935



MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY

$\phi=14^{\circ} 34' 42''$ N.

$\lambda=120^{\circ} 58' 41''$ E.

h=3 m.

Alluvium

GALITZIN-WILIP.

WIECHERT. M=1000 Kg.

September 5, 1935.

| | T_0 | D | T_1 | l |
|-----|-------|-------|-------|------|
| N-S | 12.4 | 100.0 | 12.6 | 11.5 |
| E-W | 11.8 | 100.5 | 11.9 | 11.4 |
| Z | 11.6 | 100.5 | 9.0 | 14.8 |

| | T_0 | V | ϵ | $\frac{V}{T_0^2}$ |
|-----|-------|-----|------------|-------------------|
| N-S | 4.5 | 202 | 2.3 | 0.031 |
| E-W | 4.8 | 196 | 2.7 | 0.049 |

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks |
|-----------------------------|------------------------------|---|--------------|--|
| 1935 Sept. 708 1st | PNZ SNEZ MNE F | 0 30 10 31 28 32 50 1 40 | 700 | Felt at Guiuan with intensity IV. |
| 715 3rd | PNEZ S?NE F | 11 01 29 03 14 55 | 990? | |
| 716 4th | 1PNEZ 1SNE | 1 39 37 41 18 | 950 | Compression from N. $22^{\circ} 30' N$; $121^{\circ} 30' E$ according to Taihoku. Slight damage in Taito. |
| 717 4th | PNEZ SNEZ F | 3 30 09 31 51 4 55 | 950 | An aftershock of No. 716. No. 716 still recording. |
| 722 8th | PEZ SNEZ MN F | 17 05 08 06 22 07 22 18 19 | 660 | |
| 723 9th | 1PZ PNE 1SNE | 6 16 33 33 20 37 | 2600 | Dilatation. Probably same epicenter as No. 724. Guam, $\Delta = 6^{\circ}$. |
| 724 9th | 1PZ 1SZ | 6 21 55 26 00 | 2610 | Dilatation. $7^{\circ} N$; $143^{\circ} E$ by S-P inter- vals of Guam, Manila, Riverview, Adelaide. No. 723 still recording. |
| 726 10th | PNEZ SNEZ | 14 49 37 50 43 | 580 | Felt at Guiuan, Samar, and at Dulag, Leyte. Probably in the gulf of Leyte. |
| 728 11th | 1PZ 1SNE LN MN F | 11 57 03 12 06 43 21 ca 27 20 13 40 | 8230 | Compression. |

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|------------------------------|-------------------------------------|-------------------------------------|--------------|---|
| 1935 Sept. 729 11th | 1PNEZ 1SNE LNE F | 14 11 03 16 38 21 30 18 10 | 3980 | Compression. 42°N; 146°E by Manila, Zikawei, Adelaide, Riverview, Chiufeng. 45°N; 146°E by U.S.C.G.S. L from the Wiechert. |
| 731 12th | PNEZ SNE F | 16 14 28 19 36 51 | 3960 | |
| 732 12th | \bar{P} NEZ \bar{S} NEZ F | 18 30 04 20 40 | 125 | Dilatation from S or SW. |
| 733 13th | \bar{P} NE \bar{S} NE F | 0 14 02 23 17 | 165 | From the Wiechert. Galitzin-Wilip records being changed. |
| 741 20th | 1PNEZ SNE LNE F | 1 52 25 56 58 59 12 4 35 | 3050 | Compression from SE. 40°S; 141° 30'E by Guam, Manila, Riverview, Hong Kong, Zikawei, Chiufeng, Taihoku. Data after P from the Wiechert. Guam P at 1:50:39 G.M.T. Region of 1.5°S; 142°E by U.S.C.G.S. |
| 742 20th | 1PNEZ 1SNE LE F | 5 28 57 33 30 36 24 7 00 | 3020 | Compression. Data after P from the Wiechert. Probably an aftershock of No. 741. Guam, 17.5°. |
| 744 20th | \bar{P} NEZ SNE F | 17 02 19 39 11 | 160 | Felt in Bauan, Batangas (St). |
| 745 20th | P?Z SNE F | 21 10 03 16 44 22 05 | 5080? | Disturbed by microseisms. |
| 746 23rd | 1PNEZ SNEZ LNE MNE | 9 09 04 13 55 17 35 19 50 | 3290 | |
| 747 23rd | 1PNEZ S?NZ F | 9 24 10 30 19 11 12 | 4335? | Compression. No. 746 still recording. 1.5°S; 142°E by U.S.C.G.S. |
| 748 24th | PNEZ SNZ F | 5 06 55 12 03 42 | 3555 | |
| 750 24th | \bar{P} NEZ \bar{S} NE F | 20 17 18 28 21 | 75 | |



M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



| No. and Date | Phase. | Greenwich Time | | | Dist. Km. | Remarks. |
|---------------|-------------------------------|----------------|----|----|-----------|---|
| | | h. | m. | s. | | |
| 1935 Sept. | | | | | | |
| 752 25th | PNEZ SNE LNE F | 10 | 25 | 29 | 3290 | Compression. In vicinity of 2°S; 145°E by Manila, Adelaide, Hong Kong, Chiufeng. |
| 753 25th | PNEZ SNE F | 13 | 36 | 35 | 4055 | |
| 755 27th | PNEZ SNE LNE F | 3 | 29 | 59 | 2020 | Compression. |
| 756 27th | P?NE SNEZ LN MN F | 13 | 32 | 00 | 1220? | Felt at Lupon and Mati, province of Davao. |
| 758 27th | 1PEZ SNEZ | 17 | 06 | 59 | 455 | Dilatation from ESE. Felt in Virac, Catanduanes Island, Intensity IV-V. Also strong at Vigan. |
| 759 27th | PNE SNE | 17 | 19 | 11 | 455 | Aftershock of No. 758. From the Wiechert |
| 760 27th | PNE SNE F | 18 | 18 | 21 | 455 | Aftershock of No. 758. From the Wiechert. |
| 770 30th | 1PNEZ SNE LN F | 2 | 50 | 17 | 3345 | |
| 774 30th | 1PEZ 1SNE MNE | 23 | 51 | 15 | 1690 | Dilatation. Probably in west Caroline Islands by Manila and Hong Kong. |
| Oct. 1 | F | 1 | 05 | | | |

Thirty-seven insignificant or undecipherable disturbances on the following days of September: 1st(4), 2nd (2), 5th(2), 7th, 8th, 9th, 10th, 12th, 15th(4), 19th, 20th, 24th(2), 26th, 27th(2), 28th(2), 29th(5), and 30th(4).



MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY

$\phi=14^{\circ} 34' 42''$ N.

$\lambda=120^{\circ} 58' 41''$ E.

h=3 m.

Alluvium

GALITZIN-WILIP.

WIECHERT. M=1000 Kg.

September 5, 1935.

| | T_0 | D | T_1 | l |
|-----|-------|-------|-------|------|
| N-S | 12.4 | 100.0 | 12.6 | 11.5 |
| E-W | 11.8 | 100.5 | 11.9 | 11.4 |
| Z | 11.6 | 100.5 | 9.0 | 14.8 |

| | T_0 | V | ϵ | $\frac{I}{m_0^2}$ |
|-----|-------|-----|------------|-------------------|
| N-S | 4.5 | 202 | 2.3 | 0.031 |
| E-W | 4.8 | 196 | 2.7 | 0.049 |

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks |
|-----------------------------|------------------------------|---|--------------|--|
| 1935 Sept. 708 1st | PNZ SNEZ MNE F | 0 30 10 31 28 32 50 1 40 | 700 | Felt at Guiuan with intensity IV. |
| 715 3rd | PNEZ S?NE F | 11 01 29 03 14 55 | 990? | |
| 716 4th | iPNEZ iSNE | 1 39 37 41 18 | 950 | Compression from N. $22^{\circ} 30' N$; $121^{\circ} 30' E$ according to Taihoku. Slight damage in Taito. |
| 717 4th | PNEZ SNEZ F | 3 30 09 31 51 4 55 | 950 | An aftershock of No. 716. No. 716 still recording. |
| 722 8th | PEZ SNEZ MN F | 17 05 08 06 22 07 22 18 19 | 660 | |
| 723 9th | iPZ PNE iSNE | 6 16 33 33 20 37 | 2600 | Dilatation. Probably same epicenter as No. 724. Guam, $\Delta = 6^{\circ}$. |
| 724 9th | iPZ iSZ | 6 21 55 26 00 | 2610 | Dilatation. $7^{\circ} N$; $143^{\circ} E$ by S-P inter- vals of Guam, Manila, Riverview, Adelaide. No. 723 still recording. |
| 726 10th | PNEZ SNEZ | 14 49 37 50 43 | 580 | Felt at Guiuan, Samar, and at Dulag, Leyte. Probably in the gulf of Leyte. |
| 728 11th | iPZ iSNE LN MN F | 11 57 03 12 06 43 21 ca 27 20 13 40 | 8230 | Compression. |

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|------------------------------|-------------------------------------|-------------------------------------|--------------|---|
| 1935 Sept. 729 11th | 1PNEZ 1SNE LNE F | 14 11 03 16 38 21 30 18 10 | 3980 | Compression. 42° N; 146° E by Manila, Zikawei, Adelaide, Riverview, Chiufeng. 45° N; 146° E by U.S.C.G.S. L from the Wiechert. |
| 731 12th | PNEZ SNE F | 16 14 28 19 36 51 | 3960 | |
| 732 12th | \bar{P} NEZ \bar{S} NEZ F | 18 30 04 20 40 | 125 | Dilatation from S or SW. |
| 733 13th | \bar{P} NE \bar{S} NE F | 0 14 02 23 17 | 165 | From the Wiechert, Galitzin-Wilip records being changed. |
| 741 20th | 1PNEZ SNE LNE F | 1 52 25 56 58 59 12 4 35 | 3020 | Compression from SE. 4° S; $141^{\circ} 30'$ E by Guam, Manila, Riverview, Hong Kong, Zikawei, Chiufeng, Taihoku. Data after P from the Wiechert. Guam P at 1:50:39 G.M.T. Region of 1.5° S; 142° E by U.S.C.G.S. |
| 742 20th | 1PNEZ 1SNE LE F | 5 28 57 33 30 36 24 7 00 | 3020 | Compression. Data after P from the Wiechert. Probably an aftershock of No. 741. Guam, 17.5° . |
| 744 20th | \bar{P} NEZ \bar{S} NE F | 17 02 19 39 11 | 160 | Felt in Bauan, Batangas (St). |
| 745 20th | P?Z SNE F | 21 10 03 16 44 22 05 | 5080? | Disturbed by microseisms. |
| 746 23rd | \bar{P} NEZ SNEZ LNE MNE | 9 09 04 13 55 17 35 19 50 | 3290 | |
| 747 23rd | 1PNEZ S?NZ F | 9 24 10 30 19 11 12 | 4335? | Compression. No. 746 still recording. 1.5° S; 142° E by U.S.C.G.S. |
| 748 24th | PNEZ SNZ F | 5 06 55 12 03 42 | 3555 | |
| 750 24th | \bar{P} NEZ \bar{S} NE F | 20 17 18 28 21 | 75 | |

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



| No. and Date | Phase. | Greenwich Time | | | Dist. Km. | Remarks. |
|---------------|-------------------------------|----------------|----|----|-----------|--|
| | | h. | m. | s. | | |
| 1935 Sept. | | | | | | |
| 752 25th | PNEZ SNE LNE F | 10 | 25 | 29 | 3290 | Compression. In vicinity of 2°S; 145°E by Manila, Adelaide, Hong Kong, Chiufeng. |
| 753 25th | PNEZ SNE F | 13 | 36 | 35 | 4055 | |
| 755 27th | PNEZ SNE LNE F | 3 | 29 | 59 | 2020 | Compression. |
| 756 27th | P?NE SNEZ LN MN F | 13 | 32 | 00 | 1220? | Felt at Lupon and Mati, province of Davao. |
| 758 27th | 1PEZ SNEZ | 17 | 06 | 59 | 455 | Dilatation from ESE. Felt in Virao, Catanduanes Island, intensity IV-V. Also strong at Viga. |
| 759 27th | PNE SNE | 17 | 19 | 11 | 455 | Aftershock of No. 758. From the Wiechert |
| 760 27th | PNE SNE F | 18 | 18 | 21 | 455 | Aftershock of No. 758. From the Wiechert. |
| 770 30th | 1PNEZ SNE LN F | 2 | 50 | 17 | 3345 | |
| 774 30th | 1PEZ 1SNE MNE | 23 | 51 | 15 | 1690 | Dilatation. Probably in west Caroline Islands by Manila and Hong Kong. |
| Oct. 1 | F | 1 | 05 | | | |

Thirty-seven insignificant or undecipherable disturbances on the following days of September: 1st(4), 2nd (2), 5th(2), 7th, 8th, 9th, 10th, 12th, 15th(4), 19th, 20th, 24th(2), 26th, 27th(2), 28th(2), 29th(5), and 30th(4).

CORRECTION AND ADDITION TO NO. 575, JULY 7, 1935.

S at 13:25:14

\bar{S} at 13:25:27 Distance 435 Km.

18° 15' N; 119° 25' E as on June 13 1932.

H=13:23:19

- - - - -

NO. 614, JULY 16, 1935.

9° 10' N; 126° 40' E by Manila and Palau.

- - - - -

NO. 647, AUGUST 3rd, 1935

1S at 1:20:18

H=1h 10m 04s

Distance 2910 Km.

5.5° N; 96° E by Manila, Phu-Lien, Hong Kong, Taihoku, ~~Chiufang~~

- - - - -

NO. 665, AUGUST 12th, 1935.

S at 1:42:46 Distance 1220 Km.

5° N; 126° E by Palau and Manila.



MANILA OBSERVATORY
SPECIAL BULLETIN OF PRINCIPAL EARTHQUAKES

J U L Y , 1 9 3 5

| | | | |
|------|-------|----------|-------------------------------|
| 3rd | PNEZ | 21 52 10 | Compression. Deep focus. |
| | SNEZ | 21 56 28 | |
| 5th | 1PEZ | 18 02 17 | Compression. |
| | 1SNE | 18 09 45 | |
| 7th | 1PNEZ | 13 24 20 | Compression from NW. Felt in |
| | SNE | 13 25 24 | northwestern part of Luzon |
| | | | with intensity IV and slight- |
| | | | ly in Manila. |
| 9th | PNEZ | 4 40 16 | |
| | S?NE | 4 44 52 | |
| 9th | 1PZ | 12 51 59 | Compression. |
| | SNE | 12 53 02 | |
| 9th | PNEZ | 21 12 53 | |
| | SNEZ | 21 16 30 | |
| 11th | 1PZ | 8 30 20 | Dilatation. Japan, |
| | SNEZ | 8 34 57 | |
| 11th | ePNEZ | 13 18 44 | |
| | SN | 13 23 06 | |
| 11th | ePNE | 23 06 24 | |
| | SN | 23 10 44 | |
| 12th | PNEZ | 20 45 16 | |
| | S?NE | 20 54 08 | |
| 13th | PNEZ | 0 34 27 | |
| | S?NE | 0 41 14 | |
| 15th | 1PZ | 14 23 45 | |
| | SNE | 14 27 10 | |
| 16th | PNEZ | 16 21 24 | Dilatation. Formosa, |
| | SNE | 16 23 10 | |
| 29th | 1PNEZ | 7 49 16 | |
| | 1SNE | 7 57 46 | |

M A N I L A O B S E R V A T O R Y
SPECIAL BULLETIN OF PRINCIPAL EARTHQUAKES



A U G U S T , 1 9 3 5

| | | | |
|------|-------|----------|---------------------------------|
| 1st | 1PEZ | 14 07 59 | In the Philippine Deep, about |
| | SNE | 14 09 03 | 10° 30' N; 126° 25' E. |
| 3rd | 1PEZ | 1 15 41 | Compression. Probably in region |
| | 1SNE | 1 20 40 | of 10° N; 90° E by Manila and |
| | | | Phu-Lien. |
| 3rd | 1PNEZ | 11 46 52 | |
| | SNE | 11 48 25 | |
| 17th | 1PEZ | 1 54 52 | Compression. |
| | 1SNEZ | 2 03 44 | |
| 17th | PNEZ | 20 27 32 | Compression. Felt at Laoag with |
| | SNE | 20 28 26 | intensity III. |
| 21st | PNEZ | 14 00 02 | |
| | SNE | 14 09 12 | |
| 23rd | PNE | 14 03 24 | |
| | SNE | 14 08 46 | |
| 25th | P? | 5 21 36 | |
| | SE | 5 32 47 | |
| 30th | PNEZ | 17 01 23 | |
| | 1SNE | 17 05 26 | |
| 31st | 1PEZ | 17 17 51 | Felt at Guiuan, Samar, with in- |
| | SNE | 17 19 54 | tensity V. |

MANILA OBSERVATORY

SPECIAL BULLETIN OF PRINCIPAL EARTHQUAKES

SEPTEMBER, 1935

| | | | |
|------|---------------|----------------------|---|
| 1st | PNZ SNEZ | 0 30 10 31 28 | Felt at Guian with intensity IV. |
| 4th | iPNEZ iSNE | 1 39 37 41 18 | Compression from N. |
| 8th | PEZ SNEZ | 17 05 08 06 22 | |
| 9th | iPZ iSNE | 6 16 33 20 37 | Dilatation. Probably same epicenter as the next earthquake. Guam, $\Delta=6^{\circ}$. |
| 9th | iPZ iSZ | 6 21 55 26 00 | Dilatation. 5.5°N ; 142°E by Manila, Guam, Zikawei, Riverview. |
| 11th | iPZ iSNE | 11 57 03 12 06 43 | Compression. |
| 11th | iPNEZ iSNE | 14 11 03 16 38 | Compression. 42°N ; 146°E by Manila, Zikawei, Riverview. |
| 20th | iPNEZ SNE | 1 52 25 56 58 | Compression from SE. 3°S ; 141°E by Manila and Zikawei. |
| 20th | iPNEZ iSNE | 5 28 57 33 30 | Compression. |
| 23rd | iPNEZ SNZ | 9 24 10 30 19 | Compression. |
| 25th | PNEZ SNE | 11 25 29 30 20 | Compression. |
| 27th | iPEZ SNEZ | 17 06 59 07 54 | Dilatation from ESE. Felt in Virac, Catanduanes Island. |
| 30th | iPEZ SNE | 23 51 15 54 10 | Dilatation. |

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY

$\phi=14^{\circ} 34' 42''$ N.

$\lambda=120^{\circ} 58' 41''$ E.

h=3 m.

Alluvium

GALITZIN-WILIP

WIECHERT. M=1000 Kg.
October 2, 1935.

| | T_0 | D | T_1 | λ |
|-----|-------|-------|-------|-----------|
| N-S | 12.4 | 100.5 | 12.6 | 11.5 |
| E-W | 11.8 | 100.5 | 11.9 | 11.4 |
| Z | 11.6 | 100.5 | 9.0 | 14.8 |

| | T_0 | V | Δ | $\frac{P}{T_0^2}$ |
|-----|-------|-----|----------|-------------------|
| N-S | 4.6 | 197 | 2.2 | 0.048 |
| E-W | 4.8 | 206 | 2.5 | 0.059 |

| No. and Date | Phase. | Greenwich Time | | | Dist. Km. | Remarks |
|-----------------|------------------------------|----------------|----|------------------------------|-----------|--|
| | | h. | m. | s. | | |
| 1935 October | | | | | | |
| 775 1st | PEZ SEZ LEZ ME F | 3 | 29 | 41 | 1345 | Netherlands East Indies. Butuan, $8^{\circ}+$ No time marks on Galitzin N-S comp. |
| 777 2nd | PEZ SNE LN F | 5 | 40 | 11 45 35 50 15 7 25 | 3810 | Japan. 43.8° N; 146.5° E. H=5:33:06 by J.S.A. |
| 778 2nd | ePNZ SNZ mN F | 17 | 16 | 39 17 53 18 49 33 | 660 | Felt at Guiuan and Gandara, Samar, with intensity III, and at Tanauan, Dulag and Babatngon, Leyte. |
| 780 3rd | PNE SN F | 12 | 10 | 34 12 39 40 | 1200 | |
| 781 4th | PNEZ SNE F | 5 | 17 | 46 19 31 45 | 985 | Dilatation from SE. Deep focus. Probably $6^{\circ} 20'$ N; 125° E, h=400 Km., H=5:15:39 by Manila, Hong Kong, Chiufeng. Felt at Santa Cruz, Davao, and at Glan, Cotabato. |
| 782 5th | IPZ SNEZ F | 18 | 56 | 52 58 55 19 10 | 1190 | Felt at Santa Cruz, Davao, and at Glan, Cotabato. |
| 784 6th | PNEZ SNE F | 4 | 46 | 26 54 38 6 00 | 6670 | In vicinity of 25° S; 171° E by Manila, Riverview, Chiufeng. |
| 785 6th | PNEZ SNEZ F | 9 | 30 | 31 57 45 | 200 | Felt lightly at Santa Cruz, Marinduque. |



M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|---------------------|------------------------------|---|--------------|--|
| 1935 Oct. | | | | |
| 786 6th | PNE SN LN F | 14 57 17 15 05 03 14 21 40 | 6210 | |
| 787 7th | P?NEZ SE F | 35 17 40 20 48 42 | 1840 | |
| 790 8th | PNE SNE F | 3 23 12 31 31 | 150 | |
| 791 8th | PNZ SNE LE MNE F | 9 28 08 35 18 43 20 47 25 11 00 | 5590 | Dilatation. |
| 7923 8th | 1PNEZ 1SNE F | 20 05 37 57 34 | 160 | Dilatation. Felt at Iba with intensity III, also in other towns in Zambales, and slightly in Manila. 15° 10' N; 119° 32' E by Manila and Baguio. Data after P from the Wiechert. |
| 795 9th | P?NE SNE F | 1 32 54 34 21 59 | 800? | Felt at Placer and Cantilan, Surigao, and at Butuan with intensity IV. |
| 796 9th | PNEZ SNE F | 7 30 42 31 00 40 | 145 | Epicenter near the Coast of Zambales province, as on Nov. 13, 1933. Felt at Masinloc, Zambales. Baguio, 145 Km. |
| 798 9th | P?NE SNEZ F | 18 18 14 19 04 27 | 400? | Felt in Sorsogon, Bulan and Donsol, province of Sorsogon. |
| 800 10th | 1PEZ 1SNEZ mN | 12 34 01 35 10 36 40 | 600 | Compression. Felt at Tacloban with intensity IV, and at Dulag, Leyte, at Borongan III, and at Gandara and Oras, Samar. |
| 803 10th | 1PNEZ SNE SNE F | 20 09 42 10 56 11 26 22 10 | 660 | Compression. Felt at Guiuan with intensity III, Gandara and Dulag. Epicenter probably 11° 15' N; 126° 05' E as on May 24. |
| 807 11th 12th | PEZ SNE F | 22 21 58 27 00 0 40 | 3280 | Compression. From the southeast. In the vicinity of 1° N; 145° E by Manila, Hong Kong, Osaka. Data after P from the Wiechert. |

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY,--Continued.



| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|-----------------------------|-------------------------------|--|--------------|--|
| 1935 Oct. 808 12th | PNEZ SNE F | 3 40 22 41 40 4 15 | 700 | Felt at Guiuan with intensity III. |
| 809 12th | MNE F | 10 53 51 11 01 | | Long waves. |
| 810 12th | PNEZ SNE LNE MNE | 16 51 50 56 47 17 00 10 03 00 | 3320 | In vicinity of 37°N; 143°E by Hong Kong Manila, Phulien, Taihoku, Osaka. 43°N; 144°E. H=16:45:44 by J.S.A. |
| 811 12th | PEZ S?NE F | 18 21 24 26 28 20 40 | 3490? | Japan. No. 810 still recording. |
| 812 13th | PNEZ SN LNE MNE F | 2 03 59 09 21 13 ca 16 20ca 3 50 | 3780 | Japan. |
| 815 13th | PNEZ SE F | 12 50 11 53 43 13 20 | 2135 | |
| 819 14th | 1PNEZ SNE mN | 19 47 20 51 48 19 | 230 | Compression. Felt over western Luzon from Vigan, Ilocos Sur, to Manila. In- tensity VI at San Fernando, La Union. Epicenter in Lingayen Gulf. |
| 820 14th | PNE SNE F | 19 53 25 56 20 10 | 230 | Aftershock of No. 819. Felt in San Fer- nando and Agoo with intensity IV and in Dagupan with intensity II. |
| 823 15th | PNE SNE F | 13 10 34 14 14 35 | 2245 | |
| 824 15th | PNEZ SNEZ F | 14 41 19 44 19 15 18 | 1745 | |
| 826 15th | PNE SNE F | 21 49 42 50 05 53 | 180 | |
| 827 16th | PE SNE F | 5 20 26 37 22 | 85 | Z Cylinder stopped from 1:04 to 7:38. |

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|-----------------------------|--|---|--------------|---|
| 1935 Oct. 829 17th | 1PZ 1PE SNZ F | 3 57 40 43 58 13 4 13 | 240 | Compression. Felt at Daet with intensity IV. Also felt at Labo, Camarines Norte; at Tigaon, Camarines Sur; Viga, Albay. Epicenter probably in the Pacific. |
| 830 17th | PZ PNE SNE LNE F | 14 38 26 27 43 03 46 30 15 40 | 3080 | Japan. |
| 831 18th | 1PZ ePNE 1SNE LNE MNE F | 0 18 30 30 24 02 28 50 ca 32 ca 3 45 | 3945 | Compression. Japan. Data after S from the Wiechert. |
| 833 18th | 1PEZ SNE LNE F | 11 10 00 15 57 16 10 13 40 | 2490 | Data after P from the Wiechert. |
| 834 18th | 1PZ eSNE LE ME F | 15 00 24 05 46 09 40 13 ca 16 25 | 3780 | Compression. Japan. Data after S from the Wiechert. |
| 835 18th | PNEZ SNE LNE MN F | 21 58 10 22 03 57 07 ca 09 ca 23 30 | 3230 | Japan. |
| 837 19th | ePZ eSN LN F | 2 45 38 49 46 52 10 3 45 | 2645 | |
| 842 20th | PEZ S?NE F | 6 53 32 56 39 7 38 | 1835? | |
| 843 20th | PNEZ SN E F | 9 37 28 48 48 | 160 | |

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks. |
|-----------------------------|-------------------------|----------------------------------|--------------|--|
| 1935 Oct. 845 20th | PEZ SNEZ F | 13 02 14 03 55 55 | 950 | |
| 857 24th | 1PNEZ SNEZ F | 11 30 02 31 19 48 | 690 | Felt at Basco, Batanes, With intensity III. |
| 859 25th | P?Z S?EZ F | 0 04 26 11 41 1 20 | 5680? | The beginning lost on N and E components in changing papers. |
| 867 31st | 1PZ SNEZ L?E F | 23 00 16 04 19 06 30 40 | 2590 | Compression. |

Forty-nine insignificant or undecipherable disturbances on the following days of October: 1st, 3rd, 5th, 7th(2), 8th(2), 9th(2), 10th (3), 11th(2), 13th(5), 15th(3), 16th, 18th, 19th(4), 20th(5), 21st, 22nd(4), 23rd(3), 24th, 25th(2), 26th, 27th, 28th, 29th, and 31st.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY



$\phi=14^{\circ} 34' 42''$ N.

$\lambda=120^{\circ} 58' 31''$ E.

h=3 m.

Alluvium

GALITZIN-WILIP

| | T_0 | D | T_1 | l |
|-----|-------|-------|-------|------|
| N-S | 12.4 | 100.5 | 12.6 | 11.5 |
| E-W | 11.8 | 100.5 | 11.9 | 11.4 |
| Z | 11.6 | 100.5 | 9.0 | 14.8 |

WIECHERT SEISMOGRAPH IS OUT OF SERVICE.

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks |
|----------------------------|-------------------------------------|---|--------------|---|
| 1935 Nov. 868 1st | P?Z MNE F | 6 12 07 7 12 ca 8 30 | 13000? | Disturbed by microseisms. 46.4° N; 79.4° W; $O=6:03:45$ |
| 869 1st | 1PZ 1PNE SNE LNE F | 16 26 18 19 29 49 31 30 18 30 | 2120 | Compression. 21° N; 103° E by Phu-Lien, Hong Kong, Nanking, Manila, Taihoku, Chiufeng. Felt in Phu-Lien. |
| 871 3rd | PNEZ SNEZ F | 15 15 51 17 22 40 | 840 | |
| 873 4th | P?NEZ MNE F | 8 42 52 50 16 9 02 | 2165? | |
| 874 5th | PNEZ SNE LNE MNE F | 9 36 15 42 17 46 30 ca 51 15 ca 10 45 | 4410 | |
| 875 5th | \bar{P} NEZ \bar{S} NE F | 11 16 59 17 15 24 | 125 | Deeper than normal. Baguio, 130 Km. |
| 876 5th | \bar{P} NEZ \bar{S} NEZ F | 18 36 03 22 44 | 150 | |

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



| No. and Date | Phase. | Greenwich Time | | | Dist. Km. | Remarks. |
|---------------|-------------------------|----------------------|----------------------|----------------|-----------|---|
| | | h. | m. | s. | | |
| 1935. Nov. | | | | | | |
| 878 5th | iPNEZ iSNEZ F | 20 21 22 | 59 02 48 | 56 02 | 1135 | Compression. $5^{\circ} 45' N$; $126^{\circ} 12' E$ by Palau, Manila, Chiufeng, Hong Kong. Felt in eastern Mindanao. |
| 879 6th | ePNEZ SNEZ F | 9 35 10 | 31 40 48 | 13 40 | 3020 6 | |
| 881 6th | PNE SN F | 13 23 14 | 17 28 18 | 47 28 | 4065 | Disturbed by microseisms. |
| 882 6th | PNEZ SEZ LNE F | 21 50 51 22 | 48 04 03 40 | 05 04 03 | 1145 | Felt in southeastern Mindanao. |
| 883 7th | PNEZ SNE F | 10 29 50 | 28 45 50 | 04 45 | 940 | |
| 884 9th | PNE SE F | 10 52 11 | 51 03 03 | 03? 03 | 500 | Felt in Hinigaran and Kabankalan Occidental Negros. |
| 885 10th | iPNEZ LE MN F | 18 19 42 20 | 47 34 ca 50 | 36 30 | 16490 | $16.7^{\circ} N$; $62.2^{\circ} W$ by U.S.C.G.S. |
| 886 11th | PNEZ SNE LE F | 13 26 35 14 | 18 21 24 35 | 47 21 24 | 6010 | |
| 887 12th | PNEZ SNE F | 21 38 22 | 33 37 35 | 49 37 | 3245 | Deeper than normal. In region of $4^{\circ} N$; $95^{\circ} E$ by Phu-Lien, Manila, Nanking, Chiufeng. |
| 889 14th | PNEZ SNE LN F | 20 09 13 40 | 03 19 33 | 49 | 3910 | Disturbed by microseisms. $4.5^{\circ} S$; $137^{\circ} E$ by Riverview and Manila. |

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



| No. and Date | Phase. | Greenwich Time | | | Dist. Km. | Remarks. |
|--------------|-------------------------------|----------------|----|----|-----------|---|
| | | h. | m. | s. | | |
| 1935 Nov. | | | | | | |
| 890 16th | P?NEZ S?NEZ F | 5 | 51 | 44 | 530? | Disturbed by strong microseisms. Felt throughout southern Samar and eastern Leyte. Butuan, 270 Km. |
| 895 23rd | PNEZ F | 8 | 11 | 11 | 16560 | 1°N; 86°W by U.S.C.G.S. |
| 898 25th | PNEZ SNE LNE ME F | 10 | 08 | 57 | 3035 | Dilatation. In vicinity of 7°N; 94°E by Hong Kong, Manila, Taihoku, Chiufeng. |
| 902 26th | PNEZ SNE LNE MN F | 18 | 39 | 14 | 3045 | In vicinity of 7°N; 94°E by Hong Kong, Manila, Nanking, Chiufeng. |
| 903 27th | PNEZ SNEZ mNEZ F | 9 | 13 | 02 | 595 | Felt in southern part of Leyte and Samar. P in minute gap. |
| 908 29th | P?NE SN LNE F | 18 | 17 | 19 | 3580? | Disturbed by microseisms. |
| 909 29th | P?NE SNE MNE F | 19 | 44 | 38 | 2180? | Disturbed by microseisms. |
| 910 30th | PNEZ SNEZ F | 3 | 33 | 09 | 900 | Formosa. Disturbed by microseisms. |
| 911 30th | PNEZ F | 3 | 59 | 38 | 16680 | 10°N; 80°W; 0=3:39:45 by U.S.C.G.S. |
| 912 30th | PNEZ SNE F | 22 | 12 | 58 | 200 | Dilatation. Felt in southern Luzon. |

Nineteen insignificant or undecipherable disturbances on the following days of November: 1st, 3rd, 5th, 13th, 15th, 20th(2), 22nd, 23rd(2), 24th, 25th, 26th(2), 27th(2), and 28th(2).

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY

$\phi=14^{\circ} 34' 42''$ N.

$\lambda=120^{\circ} 58' 41''$ E.

h=3 m.

Alluvium

WIECHERT. M=955 Kg.

December 22, 1935.

GALITZIN-WILIP

| | T_0 | D | T_1 | λ |
|-----|-------|-------|-------|-----------|
| N-S | 12.4 | 100.5 | 12.6 | 11.5 |
| E-W | 11.8 | 100.5 | 11.9 | 11.4 |
| Z | 11.6 | 100.5 | 9.0 | 14.8 |

| | T_0 | V | ϵ | $\frac{r}{T_0^2}$ |
|-----|-------|-----|------------|-------------------|
| N-S | 4.0 | 211 | 2.4 | 0.058 |
| E-W | 4.1 | 275 | 2.8 | 0.053 |

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks |
|--------------|-------------------------------------|--|--------------|---|
| 1935 Dec. | | | | |
| 913 1st | PNEZ SNE LZ | 23 48 49 51 55 55 52 | 1820 | Dilatation? Probably in the Ryukyu Islands. |
| 2nd | F | 1 40 | | |
| 915 2nd | PNEZ SNE LNE F | 16 46 26 49 15 50 36 18 20 | 1625 | Compression? Probably in the Ryukyu Islands. |
| 917 5th | PNE SNEZ LNE MNEZ F | 18 03 28 11 17 21 ca 25 ca 19 10 | 6265 | |
| 918 7th | PEZ SN F | 11 52 42 56 17 12 15 | 2180 | |
| 919 8th | \bar{P} NEZ \bar{S} NE F | 5 16 08 26 40 | 75? | Compression. Felt in southern Luzon. Deeper than normal. S from the Wiechert and Horizontal Pendulums. |
| 921 8th | \bar{P} NEZ \bar{S} NEZ F | 6 25 17 39 30 | 175 | |
| 922 9th | PNZ S?NEZ F | 7 38 12 45 21 8 30 | 5565? | |
| 925 11th | PNEZ SNE F | 8 45 48 50 50 9 38 | 3455 | |



M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks |
|-----------------------------|---|--|--------------|---|
| 1935 Dec. 928 13th | PEZ SNEZ F | 7 14 19 17 03 40 | 1580 | S in minute gap. |
| 932 13th | PNEZ SNEZ | 17 00 11 01 40 | 820 | Near 9° 45' N; 126° 30' E by Butuan and Manila. Felt in Cantilan, Surigao. |
| 934 14th | PNEZ eE eNE F | 1 50 11 58 09 2 07 54 3 10 | 18100 | 6° S; 74° W by U.S.C.G.S. |
| 936 14th | PEZ SNE F | 12 52 10 56 32 13 50 | 2700 | Compression from east. In the northern part of Marianas Islands by Guam and Manila. Guam 12h 49m 12s. |
| 937 14th 15th | PNEZ PP SKP PPP LNE MNE F | 22 24 47 27 16 28 18 30 16 23 08 30 19 ca 0 40 | 15010 | Dilatation. 14° N; 94° W by U.S.C.G.S. |
| 939 15th | PNEZ SNEZ F | 1 44 51 45 56 2 20 | 430 | Felt in northern Luzon. Epicenter in the mountains of northern Luzon by Baguio (230 Km.) and Manila. |
| 940 15th | 1PNEZ 1SNE 1LNEZ 1MNE F | 7 16 19 23 21 30 55 34 40 10 50 | 5355 | Dilatation. 10° S; 162° 30' E by Riverview, Manila, Zikawei, Phu-Lien, Guam, Baguio (5455 Km.), Hong Kong, Nanking. |
| 945 17th | PNEZ SNE F | 13 25 18 32 40 14 20 | 5810 | |
| 946 17th | PNEZ SNE F | 19 19 43 21 23 22 00 | 940 | Compression. East of Formosa. Felt in northern Luzon. Felt on the 3rd floor of the Manila Observatory by Fr. Repetti. Baguio, 750 Km. Compression. |

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks |
|-----------------------------|-------------------------------|---|--------------|---|
| 1935 Dec. 951 18th | 1PEZ 1SNEZ LNE MN | 7 15 27 19 25 22 10ca 24 30ca | 2500 | Szechwan, Destructive at Ma-Pien; Szechwan, accord- ing to Nanking and Chiufeng 27.5°N; 102.5°E by Chiufeng. |
| 952 18th | PNE? SNE ME F | 8 09 22 13 20 18 10ca 42 | 2500 | No. 951 still recording. Probably aftershock of No. 951. |
| 955 18th | 1PNEZ SNE ME F | 17 04 26 08 23 12 50ca 18 00 | 2490 | Compression. Repetition of No. 951. |
| 957 19th | PNE S?N F | 9 56 01 58 39 10 17 | 1520? | Disturbed by microseisms. |
| 958 19th | P?NZ SNEZ F | 13 31 01 35 38 57 | 3080? | Disturbed by microseisms. Probably repetition of No. 951. |
| 959 19th 20th | P?NE SNE F | 23 39 06 45 29 1 00 | 4780? | Disturbed by microseisms. |
| 960 20th | 1PEZ 1SNE LN MN F | 18 45 22 52 11 59 30ca 19 03 20ca 20 20 | 5220 | Compression. In region of 9°S; 159°E by Manila, Hong Kong, Nanking, Chiufeng. |
| 962 22nd | 1PNZ 1SNE F | 12 26 11 27 25 48 | 660 | Felt in northeastern Mindanao and southeastern Leyte. |
| 963 24th | PEZ SNE F | 12 41 09 49 05 14 39 | 6300 | Disturbed by microseisms. |
| 964 24th | PNEZ SE F | 20 33 31 55 39 | 190 | |
| 965 25th | PNZ S NZ F | 12 29 04 30 27 48 | 530 | |
| 968 26th | PNEZ SNE F | 20 17 15 25 17 21 05 | 6380 | |

M A N I L A , P . I .

S EISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued



| No. and Date | Phase. | Greenwich Time h. m. s. | Dist. Km. | Remarks |
|-----------------------------|--|---|--------------|--|
| 1935 Dec. 972 28th | 1PNEZ PP 1 1 1SNE 1LNE 1MNE F | 2 41 05 49 42 40 54 46 09 49 50 ca 52 40 ca 7 30 | 3310 | Compression, Probably SW of Sumatra. Data after P from the Wiechert and Horizontals. Baguio, 3310 Km. |
| 974 28th | PNEZ SNEZ LNE MN F | 17 27 31 32 31 36 55 59 40 ca 18 50 | 3435 | |
| 980 29th | 1PNEZ S?E LN ME F | 23 41 50 45 34 49 30 52 ca 2 10 | 2235? | Compression from southeast. Probably in western New Guinea by Ma- nila, Hong Kong, Nanking, Chiufeng. Data after P from the Wiechert. |
| 983 30th | PNEZ SNE L?NE F | 4 16 10 22 31 26 20 ca 5 10 | 4735 | |
| 984 30th | PNEZ SNZ MN F | 6 14 12 17 47 21 50 ca 7 00 | 2180 | Disturbed by microseisms. |
| 986 30th | PNEZ SNEZ F | 22 06 36 07 12 20 | 250 | |
| 987 30th | P?EZ S?EZ | 22 07 52 08 11 | 150? | |
| 989 31st | PNEZ SNE LNE F | 1 35 06 40 25 45 ca 2 15 | 3735 | Dilatation. |

Forty insignificant or undecipherable disturbances on the following days of December: 2nd, 4th, 8th, 10th, 11th(2), 13th(3), 14th(2), 15th, 16th, 17th(3), 18th(4), 21st, 26th(2), 27th(3), 28th(2), 29th(4), and 30th(4).



MANILA OBSERVATORY
SPECIAL BULLETIN OF PRINCIPAL EARTHQUAKES

JANUARY, 1935

| | | | | |
|------|-------|----------|---|--------------|
| 1st | iPNEZ | 13 31 46 | Compression. | <i>7h00</i> |
| | SNEZ | 13 40 40 | Approx. 18°S : 179°W by Manila, River- view, and Adelaide. | |
| 3rd | iPNEZ | 1 56 58 | Compression. | <i>3800</i> |
| | iSNE | 2 02 22 | | |
| 4th | ePNEZ | 0 16 11 | Deeper than normal. | |
| | iSNEZ | 0 19 44 | | |
| 4th | PNEZ | 14 53 45 | | <i>9 200</i> |
| | SNEZ | 15 04 10 | | |
| 11th | PNEZ | 0 09 26 | Dilatation. Felt at Aparri with in- tensity IV. In the Babuyan Chamorro by Manila and Baguio. | |
| | SNEZ | 0 10 23 | | |
| 14th | PNEZ | 2 07 05 | Dilatation. Felt at Davao with in- tensity II. In the region of 5° $45'\text{N}$: 127°E by Manila and Butuan. | |
| | SNE | 2 09 09 | | |
| 14th | PE | 22 29 56 | | |
| | SNE | 22 32 00 | | |
| 17th | ePNEZ | 2 18 17 | | <i>6 167</i> |
| | SNEZ | 2 26 00 | | |
| 18th | PNEZ | 17 13 50 | | <i>3467</i> |
| | SNE | 17 18 52 | | |
| 22nd | iPZ | 15 02 10 | Compression. Deeper than normal. | |
| | SNEZ | 15 06 44 | | <i>3033</i> |
| 23rd | iPNEZ | 7 34 52 | Compression from north. | |
| | SNE | 7 43 48 | | <i>7411</i> |

MANILA OBSERVATORY



SPECIAL BULLETIN OF PRINCIPAL EARTHQUAKES

FEBRUARY, 1935

| | | | |
|------|-------|----------|--|
| 3rd | PNEZ | 2 19 22 | Compression. Deep focus. |
| | 1SNZ | 2 26 27 | |
| 4th | PNEZ | 7 53 22 | Deeper than normal? |
| | SNE | 7 58 26 | |
| 4th | PNEZ | 17 36 01 | |
| | SNE | 17 45 01 | |
| 4th | 1PEZ | 21 10 47 | Dilatation. |
| | 1SNEZ | 21 13 26 | |
| 9th | PNEZ | 19 22 11 | |
| | SNE | 19 24 42 | |
| 19th | ePNZ | 20 16 36 | |
| | SN | 20 20 25 | |
| 20th | PNEZ | 18 18 51 | Dilatation. Approx. 10° N; 111° E by |
| | SNE | 18 20 55 | Manila and Butuan. |
| 21st | ePNEZ | 18 44 27 | |
| | SNE | 18 47 55 | |
| 22nd | PEZ | 8 57 47 | |
| | S?NEZ | 9 03 11 | |
| 22nd | ePNEZ | 17 15 52 | |
| | SNEZ | 17 23 52 | |
| 23rd | ePNE | 20 55 18 | |
| | SNE | 20 59 41 | |
| 25th | ePNEZ | 3 04 26 | |
| | eSNE | 3 14 25 | |
| 27th | PNEZ | 9 12 35 | Compression from SE. |
| | SNE | 9 13 10 | |

17 05

MANILA OBSERVATORY

SPECIAL BULLETIN OF PRINCIPAL EARTHQUAKES

FEBRUARY, 1935

| | | | | |
|------|-------|----------|------------------------------------|-----------|
| 3rd | PNEZ | 2 19 22 | Compression. Deep focus. | 1720 |
| | 1SNZ | 2 26 27 | | |
| 4th | PNEZ | 7 53 22 | Deeper than normal? | 3290 |
| | SNE | 7 58 26 | | |
| 4th | PNEZ | 17 36 01 | 7600 | |
| | SNE | 17 45 01 | | |
| 4th | 1PEZ | 21 10 47 | Dilatation. | 1520 |
| | 1SNEZ | 21 13 26 | | |
| 9th | PNEZ | 19 22 11 | 1440 | |
| | SNE | 19 24 42 | | |
| 19th | ePNZ | 20 16 36 | 2300 | |
| | SN | 20 20 25 | | |
| 20th | PNEZ | 18 18 51 | Dilatation. Approx. 10°N; 111°E by | |
| | SNE | 18 20 55 | Manila and Butuan. | 1160 |
| 21st | ePNEZ | 18 44 27 | 2040 | |
| | SNE | 18 47 55 | | |
| 22nd | PEZ | 8 57 47 | 3600 | |
| | S?NEZ | 9 03 11 | | |
| 22nd | ePNEZ | 17 15 52 | 6410 | |
| | SNEZ | 17 23 52 | | |
| 23rd | ePNE | 20 55 18 | 2730 | |
| | SNE | 20 59 41 | | |
| 25th | ePNEZ | 3 04 26 | 8780 | |
| | eSNE | 3 14 25 | | |
| 27th | PNEZ | 9 12 35 | Compression from SE. | |
| | SNE | 9 13 10 | | 1705 2820 |

M A N I L A O B S E R V A T O R Y

SPECIAL BULLETIN OF PRINCIPAL EARTHQUAKES

M A R C H , 1 9 3 5

| | | | | |
|------|-------|----------|----------------------------------|------|
| 5th | PNEZ | 10 45 24 | | 4180 |
| | SNE | 10 51 21 | | |
| 5th | PNEZ | 22 23 33 | | 7990 |
| | SNE | 22 32 52 | | |
| 11th | P?NEZ | 11 25 38 | | 1280 |
| | S?NE | 11 27 54 | | |
| 13th | 1PEZ | 18 44 39 | Compression. | 4350 |
| | SNE | 18 50 46 | | |
| 14th | PNEZ | 15 44 09 | | 9150 |
| | SNE | 15 54 27 | | |
| 16th | 1PZ | 7 54 47 | Compression. | 2200 |
| | SNE | 7 58 27 | | |
| 19th | 1PZ | 13 47 53 | Compression. | 2350 |
| | SNE | 13 51 46 | | |
| 20th | 1PEZ | 23 05 13 | Dilatation. | 8350 |
| | 1SNE | 23 14 50 | | |
| 21st | PNEZ | 0 10 18 | | 6100 |
| | SNE | 0 17 59 | | |
| 24th | 1PNEZ | 14 28 46 | Compression from the NE. | 1650 |
| | SNE | 14 31 37 | | |
| 24th | 1PZ | 23 36 11 | Compression. | |
| | SNEZ | 23 38 08 | Felt at Davao with intensity II. | 1090 |
| 27th | 1PZ | 14 32 30 | Dilatation. | |
| | SNE | 14 40 52 | Focus deeper than normal. | 6860 |
| 28th | 1PZ | 23 53 15 | Dilatation. | 2590 |
| | SE | 23 57 35 | Deep focus. | |
| 29th | 1PNEZ | 12 35 55 | Compression. | 8570 |
| | 1SNE | 12 45 41 | | |
| 30th | PNEZ | 21 25 40 | | 4960 |
| | SNEZ | 21 31 58 | | |



MANILA OBSERVATORY

SPECIAL BULLETIN OF PRINCIPAL EARTHQUAKES.

APRIL, 1935

| | | | |
|------|------|----------|-----------------------|
| 9th | PEZ | 2 53 17 | 16 20 |
| | SE | 2 56 06 | |
| 9th | PZ | 22 58 56 | 3490 |
| | SE | 23 04 12 | |
| 11th | PEZ | 1 23 22 | 2890 |
| | SE | 1 27 57 | |
| 11th | 1PEZ | 23 25 17 | Compression. |
| | SE | 23 34 22 | 7700 |
| 15th | PNEZ | 11 20 18 | 4050 |
| | SEZ | 11 26 08 | |
| 16th | PNEZ | 20 36 53 | 3170 |
| | SNEZ | 20 40 48 | |
| 19th | PEZ | 15 36 50 | 8900 |
| | SEZ | 15 46 55 | |
| 20th | PEZ | 11 10 50 | In the Nero Deep by |
| | SE | 11 14 58 | Manila and Guam. 7770 |
| 20th | 1PZ | 22 04 16 | Compression. |
| | 1SNE | 22 06 17 | Formosa. 1130 |
| 21st | 1PEZ | 7 30 40 | Dilatation. 2270 |
| | 1SE | 7 34 43 | |
| 23rd | 1PEZ | 16 51 12 | Dilatation. 3270 |
| | 1SE | 16 56 12 | |

M A N I L A O B S E R V A T O R Y
SPECIAL BULLETIN OF PRINCIPAL EARTHQUAKES
JUNE, 1935

| | | | | |
|------|---------------|----------------------|--|------|
| 1st | iPNEZ S?NE | 14 42 02 14 44 12 | Felt at Davao with intensity III. | 1220 |
| 2nd | iPZ SNE | 9 25 39 9 33 02 | India. | 5750 |
| 7th | PNEZ SNE | 2 55 19 2 57 43 | | 1360 |
| 7th | PNEZ SNE | 20 41 26 20 44 23 | | 1710 |
| 8th | PNE SNE | 23 44 11 23 44 28 | Felt in Manila by some persons. | 130 |
| 9th | PNEZ SNE | 1 33 47 1 35 15 | Felt at Basco with intensity II. | 740 |
| 14th | PNEZ SNE | 21 15 49 21 20 43 | | 3170 |
| 18th | PNEZ SNE | 22 28 58 22 30 00 | Felt at Borongan and Legaspi with intensity III. | 760 |
| 22nd | PNEZ SNE | 15 53 16 15 57 05 | Focus deeper than normal. | 2300 |
| 23rd | PNEZ SNE | 9 29 41 9 34 06 | Deep focus. | 2760 |
| 24th | iPEZ iSNE | 23 32 37 23 40 12 | Region New Hebrides. | 5990 |
| 25th | iPZ SNE | 12 41 17 12 47 20 | | 4280 |
| 27th | PNZ SNE | 0 34 41 0 36 49 | | 1200 |

MANILA OBSERVATORY
SPECIAL BULLETIN OF PRINCIPAL EARTHQUAKES

JULY, 1935

| | | | | |
|------|-------|----------|--|------|
| 3rd | PNEZ | 21 52 10 | Compression. Deep focus. | 2660 |
| | SNEZ | 21 56 28 | | |
| 5th | iPEZ | 18 02 17 | Compression. | 5570 |
| | iSNE | 18 09 45 | | |
| 7th | iPNEZ | 13 24 20 | Compression from NW. Felt in | 580 |
| | SNE | 13 25 24 | northwestern part of Luzon with intensity IV and slight- ly in Manila. | |
| 9th | PNEZ | 4 40 16 | | 2900 |
| | S?NE | 4 44 52 | | |
| 9th | iPZ | 12 51 59 | Compression. | 570 |
| | SNE | 12 53 02 | | |
| 9th | PNEZ | 21 12 53 | | 2160 |
| | SNEZ | 21 16 30 | | |
| 11th | iPZ | 8 30 20 | Dilatation. Japan, | 2920 |
| | SNEZ | 8 34 57 | | |
| 11th | ePNEZ | 13 18 44 | | 2720 |
| | SN | 13 23 06 | | |
| 11th | ePNE | 23 06 24 | | 2690 |
| | SN | 23 10 44 | | |
| 12th | PNEZ | 20 45 16 | | 2450 |
| | S?NE | 20 54 08 | | |
| 13th | PNEZ | 0 34 27 | | 5270 |
| | S?NE | 0 41 14 | | |
| 15th | iPZ | 14 23 45 | | 2020 |
| | SNE | 14 27 10 | | |
| 16th | PNEZ | 16 21 24 | Dilatation. Formosa, | 980 |
| | SNE | 16 23 10 | | |
| 29th | iPNEZ | 7 49 16 | | 7020 |
| | iSNE | 7 57 46 | | |