International Seismological Centre

THE GOVERNMENT OF THE PHILIPPINE ISLANDS

WEATHER BUREAU

MANILA CENTRAL OBSERVATORY

SEISMOLOGICAL BULLETIN FOR 1927
JANUARY--JUNE

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INTRODUCTION

The following is the list of the official seismological stations equipped with seismographs as they existed on January 1, 1927. Moreover, all the meteorological stations official and coöperative, above two hundred in number, have instructions to report about all perceptible earthquakes.

Name	Province	North latitude	East longitude	Equipment
		° ′	° ′	
Manila	Manila	14 35	120 59	Wiechert inverted pendulum, mass 1,000 Kg., two components. Vicentini microseismograph, mass 150 Kg., two components. Omori horizontal pendulum, two components.
Baguio	Benguet	16 25	120 35	Vicentini microseismograph, mass 100 Kg., two components.
Ambulong	Batangas	14 05	121 03	Vicentini microseismograph, mass 100 Kg., two components.
Butuan	Agusan	8 56	125 32	Wiechert inverted pendulum, mass 200 Kg., two components.
Agaña	Guam	13 24	144 38	Wiechert inverted pendulum, mas 200 Kg., two components.

The intensity of macroseisms is given in the notation known as the Rossi-Forel scale. The time is that indicated by the seismographs at the Central Observatory, whenever the disturbance has been recorded by them. This fact is denoted by an asterisk (*). Otherwise the time is that noted by the meteorological observers who report them. All time indications are in Greenwich mean time (midnight=0^h), insular time being added in brackets for the convenience of Philippine readers.

ROSSI-FOREL SCALE OF EARTHQUAKE INTENSITIES

I. *Microseismic shock:* recorded by a single seismograph or by seismographs of the same model, but not by several seismographs of different kinds; the shock felt by an experienced observer.
II. *Extremely feeble shock:* recorded by several seismographs of different kinds; felt by small number of persons at rest.
III. *Very feeble shock:* felt by several persons at rest; strong enough for the direction or duration to be appreciable.
IV. *Feeble shock:* felt by persons in motion; disturbances of movable objects, doors, windows, creaking of ceilings.
V. *Shock of moderate intensity:* felt generally by everyone; disturbance of furniture, beds, etc., ringing of swinging bells.
VI. *Fairly strong shock:* general awakening of those asleep; general ringing of house bells; oscillation of chandeliers; stopping of pendulum clocks; visible agitation of trees and shrubs; some startled persons leave their dweelings.
VII. *Strong shock:* overthrow of movable objects; fall of plaster; ringing of church bells; general panic, without damage to buildings.
VIII. *Very strong shock:* fall of chimneys, cracks in walls of buildings.
IX. *Extremely strong shock:* partial or total destruction of some buildings.
X. *Shock of extreme intensity:* great disaster, buildings ruined, disturbance of the strata, fissures in the ground, rock-falls from mountains.

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SEISMOLOGICAL BULLETIN FOR 1927

JANUARY, 1927

EARTHQUAKES FELT IN THE PHILIPPINES

1, 18h 53m 17s * [2, 2h 53m 17s]. **E Visayas and NE Mindanao.** Earthquake felt with intensity IV at Butuan, N Mindanao and III at Catbalogan, Samar, Recorded at Hongkong and Batavia. Its origin was in the Pacific Ocean and undoubtedly it was perceptible through Samar, Leyte, and eastern Mindanao but due to the nighttime of its occurrence and the stormy weather with strong winds, heavy rains, and floods prevailing it was unnoticed to most of the people.

2, 0h 19m 22s * [2, 8h 19m 22s]. **W Luzon.** Earthquake felt at Baguio, Benguet, with intensity II–III. Its origin lay in the China Sea some distance from the west coast of Luzon. Recorded at Hongkong.

4, 5h 10m [4, 13h 10m]. **Glan, Cotabato** (S Mindanao). Local shock of intensity III; recorded at Butuan.

5, 16h 25m 08s * [6, 0h 25m 08s]. **NW Luzon.** Earthquake felt with intensity IV through the Provinces of Ilocos Norte, Ilocos Sur, Abra, La Union and western part of the Mountain Province. Recorded at Hongkong and Zikawei. Origin in the China Sea at about 17.5° N and 119.2° E.

9, 1h 28m 53s * [9, 9h 28m 53s]. **Ormoc** (W Leyte). Earthquake felt with intensity VI. This shock was the strongest of one of the frequent series of local shocks which occur in the vicinity of Ormoc. There had been felt a foreshock at 1h 20m, and two aftershocks took place at 9h 29m and 9h 31m. None of the shocks was noticed in other stations of Leyte. The seismograph at Butuan about 240 kilometers distant recorded only the main shock; the same was also recorded at Manila about 560 kilometers distant. As it has been stated oftentimes the origin of the Ormoc shocks lies near-by in the bay close to the coast.

9, 19h 00m [10, 3h 00m]. **Glan, Cotabato** (S Mindanao). Local shock of intensity III.

10, 6h 02m 06s* [10, 14h 02m 06s]. **Batanes Islands.** Earthquake of intensity III. Its origin was at about 690 kilometers from Manila; seemingly to the W of the islands.

10, 7h 18m 41s * [10, 15h 18m 41s]. **Daet, Camarines Norte** (SE Luzon). Earthquake of intensity III. Aftershock of similar intensity three minutes later. Origín at about 230 kilometers from Manila in the sea off the north coast of Camarines.

10, 15h 44m 48s* [10, 23h 44m 48s]. **Samar Island.** Earthquake shock of intensity III. Origin in the Pacific near 12.8° N and 126.5° E.

11, 9h 20m [11, 17h 20m]. **Ormoc** (W Leyte.) Local shock of intensity III; repetition few minutes later.

12, 0h 05m 53s* [12, 8h 05m 53s]. **Central Luzon.** Earthquake felt through Central Luzon from 14° to 17.5° N and from coast to coast. Its greatest intensity IV–V was experienced along the Occidental Provinces of Zambales and Bataan. Origin in the China Sea at about 15.3° N and 119.5° E. Recorded at Hongkong. On the coast of Zambales nearest to the epicenter were noticed two light aftershocks at 2h 50m 51s * and 3h 22m 11s* [10h 50m 51s, 11h 22m 11s].

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16, 1h 50m [16, 9h 50m]. **Paracale, Camarines Norte** (SE Luzon). Local shock of intensity III.

21, 3h 00m 05s* [21, 11h 00m 05s]. **Ilagan, Isabela** (NE Luzon). Earthquake of intensity III. Origin in the Pacific, near 17° N and 124° E.

22, 14h 25m [22, 22h 25m]. **Talacogon, Agusan** (E Mindanao).—Earthquake of intensity III. Recorded at Butuan as distant, probably in the Pacific.

25, 8h 06m* [25, 16h 06m]. **NE Mindanao.**—Earthquake felt with intensity IV–V at Butuan and lightly to the NE at Surigao, and towards S at Talacogon. Origin probably in the southern part of Butuan Bay.

30, 7h 41m [30, 15h 41m]. **Butuan, Agusan** (N Mindanao).—Earthquake shock of intensity III. Origin somewhat distant to the south; it was very lightly felt at Talacogon, where a feeble shock had occurred twelve hours earlier.

RECORDS OF THE MICROSEISMOGRAPH

[Time: Greenwich mean. Midnight=0h. Instrument: Wiechert seismograph; 1,000 kilograms. AN: T_o=3.36, ϵ=2.199, $\frac{r}{T_o^2}$=0.182, V=182; A_E: T_o=3.47, ϵ=2.004, $\frac{r}{T_o^2}$=0.142, V=175. Alluvium. 2.40 meters above sea level]

No.	Date	Character	Phase	Hour	Period	Amplitude A_N μ	Amplitude A_E μ	Remarks
				h. *m.* *s.*	*s.*			
1	1	Iv	eP	18 53 17				Pacific, NE Mindanao. Microseisms on the 1st and 2nd.
			iL	18 54 54				
			F	19 06				
2	2	IIIv	iP	0 19 22				China Sea, off W coast of Luzon.
			iL	0 20 37				
			M_E	0 20 40	7		257	
			M_N	0 21 12	9	261		
			F	0 40				
3	2	Iv	eP	22 54 47				
			F	22 59				
4	2	Iv	eP	23 10 16				
			F	23 13				
5	3	Ir	eP	22 12 22				
			iL	22 15 54				
			F	22 51				
6	5	IIId	iP	16 25 08				China Sea, off NW coast of Luzon.
			iL	16 25 51				
			M_E	16 26 35	5		297	
			M_N	16 56 45	3	310		
			F	17 01				
7	9	Iv	eP	1 28 53				W Leyte.
			iL	1 29 57				
			F	1 46				
8	10	Iv	eP	4 31 17				
			F	4 34				
9	10	Iv	iP	6 02 06				Near Batanes Islands.
			iL	6 03 22				
			F	6 11				
10	10	Iv	eP	7 18 41				SE Luzon, off the north coast of Camarines Norte.
			F	7 20				
11	10	Iv	eP	7 21 50				
			F	7 24				
12	10	Iv	eP	15 44 48				Pacific, near Samar Island.
			iL	15 45 55				
			F	15 49				
13	12	IIId	iP	0 05 53				Western coast of Zambales in the China Sea.
			iL	0 06 13				
			F	0 44				
14	12	Iv	eP	2 50 51				Aftershock of the No. 13.
			F	2 54				
15	12	Iv	eP	3 22 11				Do.
			F	3 26				

Records of the Microseismograph—Continued

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No.	Date	Character	Phase	Hour	Period	Amplitude A_N μ	Amplitude A_E μ	Remarks
				h. *m.* *s.*	*s.*			
16	15	Iv	eP	14 39 22				
			L	14 40 14				
			F	14 47				
17	17	Ir	eP	22 04 35				
			L	22 12 12				
			F	22 32				
18	18	Iv	eP	10 07 35				
			F	10 10				
19	20	I	e	11 16 30				Trace only.
			F	11 49				
20	21	Iv	eP	3 00 05				Pacific, off NE Luzon.
			iL	3 00 52				
			M_N	3 00 53	4	58		
			M_E	3 00 54	3		38	
			F	3 18				
21	24	IIv	iP	0 20 35				
			iL	0 21 01				
			M_E	0 21 05	2		49	
			M_N	0 21 13	2	55		
			F	0 30				
22	24	IIu	iP	1 15 34				Near New Hebrides.
			iPR_N	1 16 35				
			iPR_E	1 16 56				
			eL?	1 34 32				
			F	2 43				
23	24	I	e	6 47				Trace only.
			F	7 24				
24	25	I	e	8 06				Trace only. NE Mindanao.
			F	8 25				
25	25	Ir	eP	23 20 28				
	26		F	0 32				
26	26	Ir	eP	15 46 25				
			eL	15 54 30				
			F	16 28				
27	28	Iv	eP	15 29 38				Microseisms on the 29th and 30th.
			F	15 33				

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FEBRUARY, 1927

2, 7h 24m 02s * [2, 15h 24m 02s]. **Eastern Visayas and NE Mindanao.** Earthquake felt with intensity III, through the whole oriental region comprising the Islands of Samar, Leyte, Cebu, Bohol, and NE Mindanao. Origin near 11° N and 127° E. Not recorded outside of the Philippine Islands.

5, 7h 38m 12s * [5, 15h 38m 12s]. **Samar Island.** Earthquake felt with intensity IV in the eastern part of the island. Origin in the Pacific at about 11.5° N and 126° E.

5, 21h 30m [6, 5h 30m]. **Bual, Cotabato** (SW Mindanao). Local shock of intensity III.

7, 6h 57m [7, 14h 57m]. **Butuan, Agusan** (N Mindanao). Earthquake of intensity III; aftershock three minutes later. Origin in the Pacific near the eastern coast.

14, 23h 00m [15, 7h 00m]. **Cateel, Davao** (E Mindanao). Earthquake of intensity IV–V. Recorded only at Butuan; origin in the Pacific near the coast at about 7.8° N.

16, 4h 14m 00s * [16, 12h 14m 00s]. **Samar Island.** Earthquake felt with intensity III. Origin somewhat distant in the Pacific; recorded also at Butuan.

16, 21h 00m [17, 5h 00m]. **Lais, Davao** (SE Mindanao). Local shock of intensity III.

16, 23h 52m [17, 7h 52m]. **Talacogon, Agusan** (E Mindanao). Earthquake shock of intensity III; recorded at Butuan.

17, 1h 58m [17, 9h 58m]. **Malita, Davao** (SE Mindanao). Local shock of intensity III.

17, 14h 00m [17, 22h 00m]. **Ormoc** (W Leyte). Local shock, intensity III.

18, 22h 59m 13s * [19, 6h 59m 13s]. **E Mindanao.** Earthquake felt with intensity IV–V through the eastern part comprising the Provinces of Surigao, Agusan, and Davao. Origin in the Pacific near 7.5° N and 128° E. Recorded at Batavia and in the Asiatic coast.

19, 19h 02m [20, 3h 02m]. **Batanes Islands.** Earthquake shock of intensity III.

20, 2h 02m 48s* [20, 10h 02m 48s]. **Panay and Negros Islands.** Earthquake felt with intensity III–IV in the eastern part of Panay and western Negros. Origin within the strait separating the two islands, near 10.6° N and 122.9° E. Recorded at Manila and Hongkong. About an hour later a light aftershock was noticed in several towns nearest to the epicenter on both Islands of Panay and Negros.

27, 23h 01m [28, 7h 01m]. **Agusan Province** (E Mindanao). Earthquake felt with intensity III. The instrumental record at Butuan shows that the origin was in the Pacific not far from the east coast of the island.

Pelew Island (W Carolines). Beginning on the 30th of January frequent shocks were felt in the Island of Pelew; several of them being rather strong. The one occurred on the 26th of February reached intensity VII and caused light damage. None of them was recorded neither in Manila nor at Butuan; this station is only about 1,000 kilometers distant.

RECORD OF THE MICROSEISMOGRAPH

[Time: Greenwich mean. Midnight=0h. Instrument: Wiechert seismograph; 1,000 kilograms. AN: T_o=3.36, ϵ=2.199, $\frac{r}{T_o^2}$=0.182, V= E: T_o=3.47, ϵ=2.004, $\frac{r}{T_o^2}$=0.142, V=175. Alluvium. 2.40 meters above sea level]

No.	Date	Character	Phase	Hour	Period	Amplitude A_N μ	Amplitude A_E μ	Remarks
				h. m. s.	s.			
28	1	IIr	iP	18 04 09				
			eL?	18 10 13				
			M_E	18 11 40	6		47	
			M_N	18 11 46	6	42		
			F	18 46				
29	2	Ir	iP	7 24 02				Pacific.
			L?	7 26 46				
			F	7 39				
30	2	Iv	eP	13 40 19				
			F	13 43				
31	3	Ir	eP	3 57 54				Felt at Shanghai.
			eL	4 02 27				
			F	4 41				
32	3	Ir	eP	4 56 48				Do.
			L	5 01 14				
			F	5 32				
33	4	Ir	eP	2 59 19				
			iL	3 06 49				
			F	3 34				
34	5	Iv	eP	6 31 00				
			F	6 33				
35	5	IIv	eP	7 38 12				Philippine Deep.
			iL	7 39 25				
			M_N	7 40 34	9	170		
			M_E	7 41 52	7		134	
			F	8 42				
36	6	Iv	eP	4 06 34				
			L	3 08 00				
			F	3 18				
37	6	Iv	iP	15 58 55				
			F	16 07				
38	7	Iv	eP	17 13 57				
			F	17 17				
39	9	Iv	eP	7 56 00				
			F	7 59				
40	13	Iv	eP	22 51 12				
			F	22 53				
41	14	I	e	11 57 32				Trace only.
			F	12 08				
42	16	IIIu	eP	1 43 19				Near Kamtchatka. End overtaken by following quake.
			iL?	2 05 26				
43	16	IIv	eP	4 14 00				Pacific.
			iL?	4 15 40				
			F	4 34				
44	18	IIr	eP	22 59 13				Pacific, off E Mindanao.
			iL	23 01 34				
			F	23 59				
45	20	Iv	eP	2 02 48				Panay and Negros.
			L	2 03 38				
			F	2 24				
46	21	IIr	iP	12 28 45				
			iL	12 35 00				
			M_E	12 35 41	9		19	
			M_N	12 37 51	9	16		
			F	13 31				
47	22	Ir	eP	19 59 28				
			iL	20 05 30				
			M_N	20 08 00	8	17		
			M_E	20 09 03	9		23	
			F	20 51				
48	23	Ir	eP	2 49 47				
			L	2 54 37				
			F	3 32				

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Records of the Microseismograph—Continued

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No.	Date	Character	Phase	Hour	Period	Amp'itude A_N μ	Amp'itude A_E μ	Remarks
				h. *m.* *s.*	*s.*			
49	25	Iv	eP	15 52 56				
			F	15 59				
50	25	Iv	eP	16 02 28				
			F	16 11				
51	26	I	e	2 15 19				
			F	2 52				
52	26	I	e	13 29 00				Near Japan?
			F	13 44				
53	26	I	e	14 07				
			F	14 48				
54	27	Iv	eP	3 56 29				
			L	3 57 14				
			F	4 17				
55	28	I	e	14 28				Near Chile? Trace only.
			F	16 18				

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MARCH, 1927

5, 16h 39m 52s* [6, 0h 39m 52s]. Benguet (W Luzon). Earthquake felt with intensity III in the southern part of the Benguet Subprovince and to the west in the portion of La Union Province contiguous to the Santo Tomas Mountain. Origin was about 210 kilometers from Manila seemingly near Santo Tomas.

6, 18h 45m [7, 2h 45m]. Naguilian, La Union (W Luzon). Local shock of intensity III.

9, 19h 02m [10, 3h 02m]. Talacogon, Agusan (E Mindanao). Earthquake shock of intensity III; recorded at Butuan.

11, 11h 30m [11, 19h 30m]. Cateel, Davao (E Mindanao). Earthquake of intensity III–IV. Recorded at Butuan; origin in the Pacific.

18, 21h 29m 42s* [19, 5h 29m 42s]. Lais, Davao (SE Mindanao). Earthquake felt with intensity III. Origin to the SE not far from the Davao Gulf. Recorded at Hongkong and Batavia.

26, 4h 25m [26, 12h 25m]. Batanes Islands. Earthquake shock of intensity III.

29, 11h 05m [29, 19h 05m]. Butuan, Agusan (N Mindanao). Earthquake of intensity III; near origin.

RECORDS OF THE MICROSEISMOGRAPH

[Time: Greenwich mean. Midnight=0h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: T_o=7.14, ϵ=2.638, $\frac{r}{T_o^2}$=0.032, V=197; A_E: T_o=7.43, ϵ=2.046, $\frac{r}{T_o^2}$=0.038, V=170. Alluvium. 2.40 meters above sea level]

No.	Date	Character	Phase	Hour	Period	Amplitude A_N μ	Amplitude A_E μ	Remarks
				h. *m.* *s.*	*s.*			
56	3	IIIr	iP	1 10 00				Near Timor Island.
			iS	1 14 58				
			iL	1 17 46				
			M_N	1 18 31	8	221		
			M_E	1 19 12	8		250	
			F	2 49				
57	3	I	e	16 58				Trace only.
			F	17 56				
58	5	Iv	eP	16 39 52				Western part of Luzon.
			iL	16 40 15				
			F	16 44				
59	7	IIIr	iP	9 32 58				Japan.
			iS	9 37 32				
			iL	9 41 23				
			M_N1	9 43 07	8	329		
			M_E1	9 43 41	9		470	
			M_E2	9 46 02	10		475	
			M_N2	9 47 36	11	419		
			F	11 57				
60	12	I	e	12 14				Trace only.
			F	12 46				
61	14	Ir	eP	15 25 37				
			L	15 29 39				
			F	15 55				
62	14	Ir	e	17 42 19				
			L	17 49 04				
			F	18 49				
63	15	Ir	e	17 02 28				
			L	17 08 00				
			F	17 35				

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Records of the Microseismograph—Continued

No.	Date	Character	Phase	Hour	Period	Amplitude A_N μ	Amplitude A_E μ	Remarks
				h. m. s.	*s.*			
64	15	Ir	eP	22 00 08				
			L	22 06 32				
			F	22 41				
65	16	Iv	eP	18 28 54				
			L	18 29 39				
			F	18 46				
66	18	Iv	eP	15 55 38				
			F	15 58				
67	18	Ir	eP	21 29 42				Southeastern part of Mindanao.
			L	21 31 30				
			F	22 14				
68	20	Iv	eP	21 17 00				
			L	21 18 24				
			F	21 43				
69	21	Ir	i	15 17 34				
			L?	15 27 00				
			F	15 56				
70	21	I	e	22 41				
			F	22 55				
71	22	I	e	7 44				Trace only.
			F	8 10				
72	23	Iv	eP	7 55 46				
			F	8 03				
73	23	I	L	9 41				Do.
			F	9 55				
74	24	Iv	eP	5 02 41				
			iL	5 03 13				
			M_N	5 03 18		3	26	
			F	5 16				
75	25	I	e	13 06 30				
			F	13 35				
76	25	Iv	eP	23 07 18				
			iL	23 07 33				
			F	23 13				
77	26	Iv	eP	20 15 17				
			F	20 21				
78	27	Iv	eP	16 55 02				
			F	16 59				
79	31	I	e	21 14 00				Do.
			F	21 55				

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APRIL, 1927

2, 23h 46m [3, 7h 46m]. **Talacogon, Agusan** (E Mindanao). Earthquake shock of inten-III; recorded at Butuan.

6, 21h 47m 46s* [7, 5h 47m 46s]. **NW Luzon.** Earthquake felt with intensity III, in Ilocos Norte. Origin in the China Sea at about 19° N and 119° E.

7, 4h 00m [7, 12h 00m]. **Camp Kalaw, Davao** (E Mindanao). Earthquake shock of intensity III.

7, 9h 00m [7, 17h 00m]. **Lais, Davao** (SE Mindanao). Local shock of intensity III.

7, 21h 19m 38s* [8, 5h 19m 38s]. **NW Luzon.** Earthquake felt with intensity III–IV through Ilocos Norte. Origin in the China Sea close to that of the shock occurred on the 6th.

9, 8h 59m 27s* [9, 16h 59m 27s]. **E Mindanao.** Earthquake felt with intensity III–IV along the eastern part of Mindanao. Origin in the Pacific near 7.5° N and 128.5° E. Recorded at Batavia.

11, 14h 49m 44s* [11, 22h 49m 44s]. **NW Luzon.** Earthquake felt with intensity IV–V through northern Luzon, chiefly in the NW end. Origin in the China Sea at about 19° N and 120.5° E.

13, 13h 44m 43s* [13, 21h 44m 43s]. **Central Luzon.** Extensive earthquake felt through the main portion of Luzon and W Mindoro between parallels 13.5° and 18° N. Its greatest intensity IV–V was experienced along the occidental coast. Origin in the China Sea at about 15.8° N and 119.4° E. Recorded around the Globe.

About half an hour earlier a light shock had been noticed in the Zambales coast. At 14h 33m 37s* [22h 33m 37s] occurred a repetition of intensity III–IV perceptible through nearly the whole area affected by the previous earthquake. Recorded in the Far East and very lightly in some European Stations.

15, 0h 02m [15, 8h 02m]. **Veruela, Agusan** (E Mindanao). Earthquake felt with intensity III through a great extension of the central part of the Agusan Valley. Recorded at Butuan.

16, 13h 06m 43s* [16, 21h 06m 43s]. **SE Mindanao.** Earthquake felt with intensity III in Davao and southern part of Agusan Province. Origin off the SE coast. Recorded at Batavia and Hongkong.

19, 17h 30m 42s* [20, 1h 30m 42s]. **Central Luzon.** Extensive earthquake felt chiefly, with intensity V–VI along the western Provinces of Luzon, Mindoro, and Calamianes, from the parallel 12° to 18° N. Origin in the China Sea near 14.5° and 119.5° E. Recorded around the Globe. There occurred two aftershocks felt only along the west coast at 18h 43m and 19h 02m [20, 2h 43m and 3h 02m].

23, 13h 21m 42s* [23, 21h 21m 42s]. **NW Luzon.** Earthquake felt with intensity VI–VII in the northwest part of Luzon in Ilocos Norte. Origin in the China Sea at about 18° N and 120° E. Recorded in Hongkong and Taihoku.

25, 2h 05m [25, 10h 05m]. **Talacogon, Agusan** (E Mindanao). Local shock of intensity III.

25, 5h 08m [25, 15h 08m]. **Guam** (Mariana Islands). Earthquake shock of intensity III.

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CANLAON VOLCANO ERUPTION, NEGROS ISLAND

Shortly after midnight, April 20, sounds were heard in some villages located on the slopes of the Canlaon Volcano, which rises in the northern part of the mountain chain running along the Island of Negros. With the daylight it was seen that the volcano had become active issuing a small column of white steam and possibly some ashes. At about eight o'clock the column was hundreds of meters high with the characteristic pine tree form. Later it was dispersed by the wind and the activity decreased gradually again. No fall of ashes was reported from the nearby towns.

This is a very old volcano and practically nearing to extinction. There is no record of any big eruption during the last four centuries. Short, light and harmless eruptions, like the last probably seasonal, occur rather frequently. Since the middle of the last century occurred in the following years: 1866, 1881, 1889, 1893, 1894, 1902, 1904, and 1927.

RECORDS OF THE MICROSEISMOGRAPH

[Time: Greenwich mean. Midnight = 0h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: $T_o = 7.14$, $\epsilon = 2.638$, $\frac{r}{T_o^2} = 0.032$, $V = 197$; A_E: $T_o = 7.43$, $\epsilon = 2.046$, $\frac{r}{T_o^2} = 0.038$, $V = 170$. Alluvium. 2.40 meters above sea level]

No.	Date	Character	Phase	Hour	Period	Amplitude A_N μ	Amplitude A_E μ	Remarks
				h. *m.* *s.*	*s.*			
80	1	IIr	eP	19 16 47				
			iL	19 25 20				
			M_E	19 26 00	8		88	
			M_N	19 26 05	8	49		
			F	20 12				
81	3	I	e	13 53				Trace only.
			F	14 05				
82	5	Iv	eP	5 21 14				
			L	5 23 19				
			F	5 46				
83	6	Iv	eP	21 47 46				China Sea, off NW Luzon.
			F	21 56				
84	7	Iv	eP	17 51 44				
			L	17 52 32				
			F	18 28				
85	7	Iv	eP	21 19 38				Northwestern coast of Luzon.
			L	21 20 21				
			F	21 38				
86	9	Ir	eP	8 59 27				Pacific, E Mindanao.
			L	9 02 00				
			F	9 31				
87	9	Iv	eP	15 48 00				
			L	15 49 46				
			F	16 12				
88	9	I	e	17 13				Trace only.
			F	17 35				
89	11	IIv	eP	14 49 44				China Sea, near northwestern coast of Luzon.
			iL	14 50 34				
			M_E	14 50 56	4		37	
			M_N	14 51 09	5	37		
			F	15 06				
90	12	Iv	eP	7 13 37				
			F	7 16				
91	12	I	e	23 23				Trace only.
			F	23 45				
92	13	IIId	iP	13 44 43				China Sea, near western coast of Luzon. Maxima and end lost by the force of the shock.
			iL	13 45 04				
93	13	IIId	iP	14 33 37				Do.
			iL	14 33 57				

Records of the Microseismograph—Continued

No.	Date	Character	Phase	Hour	Period	Amplitude A_N μ	Amplitude A_E μ	Remarks
				h. *m.* *s.*	*s.*			
94	14	Iu	e?	6 43 29				Chile.
			S?	7 01 00				
			F	7 29				
95	16	Iv	eP	8 05 33				
			F	8 11				
96	16	Iu	e	8 25 44				End in succeeding movement.
			S?	8 32 25				
			L?	8 40 21				
97	16	Ir	e	9 23 32				
			L?	9 33 00				
			F	10 15				
98	16	Ir	eP	13 06 43				Pacific, off the SE Mindanao.
			L	13 08 56				
			F	13 23				
99	17	Ir	eP	9 10 45				
			F	9 37				
100	18	Iv	eP	15 10 55				
			F	15 21				
101	18	Iv	eP	18 46 18				
			F	18 52				
102	19	IIId	iP	17 30 42				China Sea, off SW coast of Luzon. Maxima lost by the force of the shock.
			iL	17 31 00				
			F	18 27				
103	19	Iv	eP	18 42 49				Aftershock of the No. 102.
			F	18 47				
104	19	Iv	eP	19 02 21				Do.
			F	19 06				
105	20	Iv	eP	8 55 31				
			F	8 59				
106	20	Iv	eP	15 34 34				
			iL	15 35 17				
			F	15 42				
107	20	Iv	eP	20 04 41				
			F	20 08				
108	21	I	e	3 21				Trace only.
			F	3 50				
109	23	IIv	eP	13 21 42				China Sea, off NW coast of Luzon.
			iL	13 22 35				
			M_N	13 22 46	4	121		
			M_E	13 23 12	5		141	
			F	13 52				
110	25	Iv	eP	1 54 32				
			F	2 04				
111	27	I	e	3 01 00				Trace only.
			F	3 49				
112	27	Ir	eP	19 21 50				
			iL?	19 31 15				
			F	20 35				
113	27	Iv	eP	19 32 03				
			F	19 35				
114	28	Ir	eP	10 27 26				Felt in Taito district, eastern coast of Formosa.
			L	10 30 00				
			F	11 02				
115	30	Iu	e?	14 06 39				
			M	14 24				
			F	15 08				

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MAY, 1927

1, 14h 58m [2, 0h 58m]. **Guam (Mariana Islands).** Earthquake shock of intensity III.

5, 17h 06m [6, 1h 06m]. **Indang, Cavite (SW Luzon).** Earthquake shock of intensity III–IV.

11, 9h 50m 42s* [11, 17h 50m 42s]. **NW Luzon.** Earthquake felt with intensity III–IV in the Abra Province and northern portion of Ilocos Sur. Origin within the Abra River Valley; the area affected was narrow and much extended in the direction N–S of the valley. Light repetition at 20h 20m [12, 4h 20m].

13, 15h 13m 28s* [13, 23h 13m 28s]. **SW Luzon.** Extensive earthquake felt with a maximum intensity V–VI in SW Luzon and NW Mindoro. It was perceptible through the southern Provinces of Luzon to the parallel 16° and southwards as far as Calamianes Island near 11° N. The origin lay in the China Sea near 13.7° N and 120° E. It was recorded in the Far East and Europe.

There occurred only two light aftershocks felt in the western coasts of Cavite and NW Mindoro; one in the morning of the 14th at 2h 01m 59s* [10h 01m 59s] and a second at 16h 16m 32s* [15, 0h 16m 32s].

From the 13th of April to the 13th of May, exactly a month, there occurred three strong and extensive earthquakes which had their origin in the eastern portion of the China Sea contiguous to Luzon and limited by parallels 13.7° and 15.8° N and the meridians 119° and 120° E along a line directed from NNW to SSE. The first, April 13, had the origin near 15.8° N and 119.4° E, the second, April 19, near 14.5° and 119.5° E and the last, May 13, near 13.7° N and 120° E. After the strain was relieved by the first earthquake it accumulated a little farther south; it likewise was released by the second shock six days later, but it increased yet farther south on the same line or fault until it was released twenty-four days after by the third shock.

The seismic activity in this portion of the China Sea is well known; several of the strong and even destructive earthquakes which affect Manila have originated in this region. It is considered as one of the centers of seismic action dangerous for Manila. During the last period of sixty years 1867–1927 not less than 73 earthquakes of an intensity and extension as the last, and four somewhat destructive had the origin in this part of the China Sea. Minor shocks felt only along the western coasts of Zambales, Bataan, Cavite, and Batangas are very frequent.

This seems indeed to be the most unstable portion of the China Sea. Such condition is in accord with its geologic or physiographic nature. Recent sounding reveal that close to our coasts exist the steepest slopes towards its 6,000 meters deep basin which extends from 115° to 120° E and from 13° and 20° N. The steepest drop from 100 to 6,000 meters begins in our very coasts of Zambales, Bataan, and Cavite, roughly along meridian 120° E, and reaches the bottom along the meridian 119.2° E.

There exists another region with similar conditions near NW Luzon, between parallels 20° and 17.5° N and meridians 119.5° and 120.5° E, and this portion includes the origins of the earthquakes which affect the Ilocos Provinces. Towards N, W, and S the slopes of the basin are very gentle until the distant coasts of Asia are reached and the seismicity in these directions is very low. Consequently seismicity and bottom conditions agree as perfectly in the China Sea as in other regions of the world.

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This year was also of great activity in the unstable region near NW Luzon. There originated not less than eight earthquakes during the six months under review. It shows that extraordinary strain existed all along the eastern border of the China Sea Deep.

18, 21h 39m [19, 5h 39m]. **Butuan, Agusan** (N Mindanao). Local shock of intensity III.

19, 11h 45m [19, 19h 45m]. **Tubao, La Union** (W Luzon). Local shock of intensity III.

21, 22h 44m [22, 6h 44m]. **Batanes Islands.** Earthquake shock of intensity III.

22, 11h 58m 00s* [22, 19h 58m 00s]. **SE Luzon.** Earthquake felt with intensity III in the eastern part of the Albay and Sorsogon Provinces. Origin in the Pacific near 13.4° N and 125° E.

25, 10h 09m [25, 18h 09m]. **Bangued, Abra** (NW Luzon). Local shock of intensity III.

29, 2h 30m [29, 10h 30m]. **Davao** (SE Mindanao). Earthquake of intensity III.

30, 12h 31m [30, 20h 31m]. **Zamboanga** (W Mindanao). Earthquake shock of intensity III.

RECORDS OF THE MICROSEISMOGRAPH

[Time: Greenwich mean. Midnight=0h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: T_o=7.31, ϵ=2.814, $\frac{r}{T_o^2}$=0.023, V=105; A_E: T_o=7.11, ϵ=1.989, $\frac{r}{T_o^2}$=0.039, V=189. Alluvium. 2.40 meters above sea level]

No.	Date	Character	Phase	Hour	Period	Amplitude A_N μ	Amplitude A_E μ	Remarks
				h. *m.* *s.*	*s.*			
116	2	Ir	e	12 41 39				
			L?	12 50 00				
			F	13 16				
117	3	Ir	eP	13 48 00				
			L?	14 01 00				
			F	14 32				
118	4	IIv	eP	14 05 58				
			iL	14 06 20				
			M_E	14 06 25	4		244	
			M_N	14 06 43	5	398		
			F	14 28				
119	5	Ir	eP	18 53 28				
			iL	18 55 17				
			F	19 11				
120	6	Iv	eP	18 41 06				
			F	18 44				
121	9	I	e	16 19				Trace only.
			F	16 31				
122	10	Ir	eP	6 09 39				
			L?	6 19 00				
			F	7 04				
123	11	Ir	e	1 25 22				
			L?	1 32 00				
			F	1 48				
124	11	Iv	eP	9 50 42				Abra Province.
			iL	9 51 18				
			F	10 01				
125	11	I	e	10 45				Trace only.
			F	11 02				
126	12	I	e	4 10 55				Do.
			F	4 33				
127	13	IIId	iP	15 13 28				China Sea, near SW coast of Luzon. Maxima and end lost by the force of the shock.
			iL	15 13 43				
128	13	Iv	eP	18 28 20				
			iL	18 28 44				
			F	18 35				
129	13	I	e	23 16 03				Trace only.
			F	23 39				
130	14	Iv	eP	1 35 38				
			L	1 37 00				
			F	1 49				

Records of the Microseismograph—Continued

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No.	Date	Character	Phase	Hour	Period	Amplitude A_N μ	Amplitude A_E μ	Remarks
				h. *m.* *s.*	*s.*			
131	14	Iv	eP	2 01 59				China Sea, near SW coast of Luzon.
			iL	2 02 13				
			F	2 09				
132	14	Iv	eP	15 33 47				
			L	15 34 51				
			F	15 45				
133	14	Iv	eP	16 16 32				Do.
			iL	16 16 50				
			F	16 21				
134	15	I	e	3 36 39				Trace only.
			F	3 54				
135	16	Ir	eP	12 06 43				
			iL	12 12 00				
			F	13 22				
136	17	Ir	e	6 17 34				
			L	6 26 26				
			F	7 02				
137	17	Ir	e?	21 50 00				
			L?	21 54 06				
			F	22 24				
138	18	Iv	eP	7 37 34				
			iL	7 37 51				
			F	7 47				
139	18	Iv	eP	15 43 03				
			iL	15 43 19				
			F	15 51				
140	18	Iv	eP	16 41 13				
			F	16 44				
141	21	Ir	e	17 05 00				
			L?	17 13 52				
			F	17 41				
142	22	IIIv	eP	11 58 00				Pacific, felt SE end of Luzon.
			iL	11 58 51				
			M_E	12 01 47	7		293	
			F	13 21				
143	22	Iv	eP	12 09 15				
			L	12 10 21				
			F	12 15				
144	22	Iv	eP	20 38 26				
			L	20 39 25				
			F	20 58				
145	22	Ir	eP	21 49 45				
			L	22 01 13				
			F	22 33				
146	22	IIIr	iPE	22 38 38				Kansu, China.
			iSE	22 44 37				
			iLE	22 48 32				
	23		F	2 47				
147	23	Ir	eP	2 52 42				Aftershock of the No. 146.
			iL	3 01 48				
			F	3 32				
148	23	Ir	e	6 45				Do.
			L	6 53 00				
			F	7 20				
149	23	Ir	e	13 57 39				
			iL	14 07 32				
			F	14 38				
150	23	Ir	e	23 50 55				
	24		iL	0 02 00				
			F	0 33				
151	24	Ir	e	16 13 00				Microseisms on the 24th and 25th and moderate on the 26th, caused by a typhoon.
			F	16 34				
152	28	Iv	eP	23 15 28				
			F	23 18				
153	29	Iv	eP	14 52 30				Microseisms on the 27th, 28th, and 29th
			F	14 55				
154	31	Iv	eP	21 27 44				Microseisms on the 30th and 31st.
			F	21 31				

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JUNE, 1927

3, 7h 17m 13s* [3, 15h 17m 13s]. **Talacogon, Agusan** (E Mindanao). Earthquake shock of intensity II–III. Possibly this was the same occurred at the same hour in southern Moluccas and consequently it was also felt in SE Mindanao.

3, 19h 29m 39s* [4, 3h 29m 39s]. **NW Luzon.** Earthquake felt with intensity III in the central and southern part of Ilocos Sur Province. Origin in the China Sea.

6, 5h 37m 52s* [6, 13h 37m 52s]. **E Mindanao.** Earthquake felt with intensity IV–V, through the Provinces of Davao, Agusan and Surigao. Origin in the Philippine Deep near to 8° N and 127° E.

7, 9h 38m 30s* [7, 17h 38m 30s]. **Butuan, Agusan** (N Mindanao). Earthquake of intensity III. Distant origin in the Pacific.

9, 10h 44m 00s* [9, 20h 44m 00s]. **Guam** (Mariana Islands). Earthquake of intensity III–IV; near origin.

10, 20h 44m 56s* [11, 4h 44m 56s]. **NW Luzon.** Earthquake felt with intensity III through Ilocos Norte and north part of Ilocos Sur. Origin in the China Sea close to the NW coast of Luzon.

14, 9h 26m 29s* [14, 17h 26m 29s]. **E Mindanao.** Earthquake felt with intensity IV in the northern part of Davao Province through the Agusan and central and southern Surigao Provinces. Somewhat distant origin in the Pacific. Recorded in European Stations.

15, 10h 31m 14s* [15, 18h 31m 14s]. **Batanes Islands.** Earthquake of intensity III. Origin towards the Bashi Channel.

15, 10h 45m [15, 18h 45m]. **Cateel, Davao** (E Mindanao). Earthquake shock of intensity III.

18, 0h 57m 05s* [18, 8h 57m 05s]. **N Luzon.** Extensive earthquake felt with intensity VI–VII in the northern part of Ilocos Norte, preceded by rumbling sound. It had strong intensity in northern Ilocos Sur, Abra, Mountain and Cagayan, and was fairly perceptible southwards to the parallel 16° N. Origin in the China Sea near 18.5° N and 120.2° E. Recorded around the Globe.

18, 6h 47m 55s* [18, 14h 47m 55s]. **S Leyte.** Earthquake felt with intensity IV–V at Maasin, on the SW coast, and around the Sogod Gulf. The records of the Observatory place the origin at a distance of about 700 kilometers from Manila, and outside of Leyte; probably to the east in the Pacific not far from Dinagat Island.

19, 10h 24m 48s* [19, 18h 24m 48s]. **Legaspi, Albay** (SE Luzon). Earthquake shock of intensity III. Origin not far to the E in the Pacific.

21, 17h 55m [22, 1h 55m]. **Virac** (Catanduanes Island). Earthquake felt with intensity IV in the south and southeast coasts of the island. Two distinct shocks were noticed during about two minutes.

22, 5h 35m [22, 13h 35m]. **Atok, Benguet** (W Luzon). Local shock of intensity III. Recorded at Baguio, about 20 kilometers distant.

22, 7h 30m [22, 15h 30m]. **Cateel, Davao** (E Mindanao). Earthquake shock of intensity III.

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22, $23^h\ 37^m$ [23, $7^h\ 37^m$]. **Odiongan** (Tablas Island). Local shock of intensity III.

23, $7^h\ 00^m$ [23, $15^h\ 00^m$]. **Baras** (Catanduanes Island). Local shock of intensity II–III.

23, $7^h\ 46^m$ [23, $15^h\ 46^m$]. **Odiongan** (Tablas Ilands). Earthquake shock of intensity III.

23, $20^h\ 13^m\ 28^s$* [24, $4^h\ 13^m\ 28^s$]. **W Luzon.** Earthquake felt with intensity III through the southern part of Zambales Province. Origin to the W in the China Sea.

24, $20^h\ 24^m\ 36^s$* [25, $4^h\ 24^m\ 36^s$]. **Odiongan** (Tablas Island). Earthquake of intensity IV. This shock was the last of a series of light shocks which began on the 22nd. On the 24th light preliminary shocks occurred at $2^h\ 58^m$, $11^h\ 46^m$ and $19^h\ 27^m$. Their origin lay to the SW of the Island near 12° N and 121.6° E.

28, $1^h\ 43^m\ 28^s$* [28, $9^h\ 43^m\ 28^s$]. **E Visayas and NE Mindanao.** Earthquake felt with intensity IV in SE Samar; it was fairly perceptible southwards in NE and E Mindanao. Origin in the Pacific near 10.5° N and 127° E. Recorded at Batavia and other Observatories of the Far East.

28, $21^h\ 05^m$ [29, $5^h\ 05^m$]. **Catbalogan** (W Samar). Local shock of intensity III.

RECORDS OF THE MICROSEISMOGRAPH

[Time: Greenwich mean. Midnight=0^h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: T_o=6.52, ϵ=2.618, $\frac{r}{T_o^2}$=0.054 V=155; A_E: T_o=6.32, ϵ=1.865, $\frac{r}{T_o^2}$=0.046, V=202. Alluvium. 2.40 meters above sea level]

No.	Date	Character	Phase	Hour	Period	Amplitude A_N μ	Amplitude A_E μ	Remarks
				h. m. s.	*s.*			
155	1	Iv	iP	6 56 30				
			iL	6 56 48				
			F	7 06				
156	1	Ir	eP	7 29 29				
			iL	7 32 30				
			F	7 44				
157	1	Iv	eP	21 13 16				
			iL	21 13 32				
			F	21 16				
158	1	Iv	eP	22 23 11				
			iL	22 23 31				
			F	22 28				
159	2	I	M_N	17 00				
			F	17 13				
160	3	IIIr	iP	7 17 13				Felt at Darwin Port N Australia, according Sydney Observatory.
			$\overline{P}$	7 18 03				
			iL	7 25 41				
			F	9 02				
161	3	Iv	eP	19 29 39				Off W Luzon, China Sea.
			iL	19 30 13				
			F	19 38				
162	6	Ir	eP	5 37 52				Philippine Deep, off E Mindanao.
			iL	5 40 04				
			F	6 08				
163	6	I	e	12 36 00				Trace only.
			F	13 04				
164	6	I	e	18 35 51				Do.
			F	19 08				
165	7	Ir	eP	9 38 30				Pacific.
			iL	9 41 43				
			M_N	9 42 24		9	44	
			M_E	9 42 37		7	35	
			F	11 08				
166	7	I	e	11 52 38				Trace only.
			F	12 19				
167	7	Iv	eP	14 38 13				
			F	14 40				
168	9	Iv	eP	11 38 39				
			L	11 40 03				
			F	12 05				

Records of the Microseismograph—Continued

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No.	Date	Character	Phase	Hour	Period	Amplitude A_N μ	Amplitude A_E μ	Remarks
				h. *m.* *s.*	*s.*			
169	10	Iv	eP	20 44 56				China Sea, near NW coast of Luzon.
			F	20 48				
170	11	Ir	eP	2 36 26				End overtaken by following earthquake.
			iL?	2 41 18				
			M_E	2 43 28	7		38	
			M_N	2 44 30	9	19		
171	11	Ir	eP	2 53 43				
			iL	2 59 31				
			F	4 13				
172	11	I	e	12 59 00				
			F	13 16				
173	14	Ir	eP	9 26 29				Pacific.
			iL	9 30 08				
			F	10 54				
174	14	I	e	17 27 54				Trace only.
			F	18 30				
175	15	Iv	eP	10 31 14				Bashi Channel.
			F	10 44				
176	17	Iv	eP	9 36 19				
			F	9 39				
177	17	Iv	eP	10 33 19				
			iL	10 33 35				
			F	10 40				
178	18	IIIv	iP	0 57 05				China Sea near northwestern coast of Luzon.
			$\overline{P}$	0 57 13				
			iL	0 57 54				
			M_E	0 58 43	4		452	
			F	1 38				
179	18	Iv	eP	6 47 55				Pacific, near Dinagat Island.
			eL	6 49 16				
			F	7 08				
180	19	Iv	eP	10 24 48				Pacific, SE Luzon.
			F	10 31				
181	20	Iv	eP	7 32 22				
			F	7 39				
182	20	Iu	e	14 22 39				
			L?	14 41 00				
			F	15 19				
183	22	I	e	3 35 44				Trace only.
			F	3 51				
184	23	Iv	eP	20 13 28				China Sea, off W Luzon.
			iL	20 13 44				
			F	20 18				
185	23	I	e	23 53 00				
	24		M	0 00 00				
			F	0 22				
186	24	IIv	eP	20 24 36				SW Tablas Island.
			iL	20 25 09				
			M_N	20 25 12	3	121		
			M_E	20 25 13	3		74	
			F	20 42				
187	26	Iu	e?	11 43 00				Felt in Crimea Peninsula, according Kew Observatory.
			L?	12 08				
			F	12 37				
188	27	Iv	eP	12 35 12				
			F	12 40				
189	28	IIv	iP	1 43 28				Pacific, off SE Samar.
			iL	1 44 39				
			M_N	1 44 56	6	38		
			M_E	1 45 10	6		73	
			F	2 18				
190	28	Ir	eP	11 09 34				
			M	11 13 22				
			F	11 24				

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INTRODUCCIÓN

Damos en el texto inglés la lista de las estaciones sísmicas existentes en enero de 1927. Además todas las estaciones meteorológicas oficiales y voluntarias, cuyo número pasa de doscientas, tienen las instrucciones necesarias para dar cuenta de todos los temblores perceptibles.

La intensidad de los terremotos se indica conforme a la conocida escala de Rossi-Forel. Cuanto a la hora en que tuvieron lugar, adoptamos la indicada por los sismógrafos de este Observatorio siempre que los hayan registrado, distinguiéndola por medio de un asterisco (*). En caso contrario copiamos la hora apuntada por los observadores que nos envían las notas. Todas las horas se refieren a la hora media de Greenwich (medianoche=0^h). Para conveniencia de los lectores de Filipinas se añade también la hora insular.

ESCALA DE INTENSIDADES DE ROSSI-FOREL

I. *Temblor instrumental:* registrado tan solo por los sismógrafos.

II. *Temblor muy ligero:* sentido solamente por algunas personas en estado de reposo, especialmente en los pisos superiores de las casas, o por personas nerviosas y muy sensibles.

III. *Temblor ligero:* sentido por varias personas en reposo; bastante fuerte para apreciar su dirección y duración.

IV. *Temblor bien sensible:* sentido por muchas personas en movimiento.

V. *Temblor de regular intensidad:* sentido generalmente por todos. Movimientos de muebles y otros objetos no muy pesados; grandes oscilaciones de objetos suspendidos.

VI. *Temblor fuerte:* despiértanse los dormidos; tocan las pequeñas campanas; parada de relojes de péndulo; pánico y salida de las personas de sus viviendas.

VII. *Temblor muy fuerte:* movimientos sentidos por todos; espanto general; todos se precipitan a la calle; caída de objetos y del yeso de las paredes; desperfectos en algunos edificios poco sólidos.

VIII. *Temblor excesivamente fuerte, violento:* tocan las campanas, caen chimeneas, tejas de los tejados, etc., daños de poca consideración en muchos edificios.

IX. *Terremoto ruinoso:* ruina parcial de algunos edificios y desperfectos notables en los demás. Sin desgracias personales, fuera de algunos contusos y heridos.

X. *Terremoto desastroso:* ruina total o casi total de muchos edificios y grandes desperfectos en los demás; víctimas numerosas. Grietas y hundimientos en el suelo y derrumbes en los montes.

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ENERO, 1927

1, 18h 53m 17s* [2, 2h 53m 17s]. **E de Visayas y NE de Mindanao.** Temblor de tierra sentido en Butúan N de Mindanao con intensidad IV y en Catbalogan, Sámar, con intensidad III. Registrado en Manila, Hongkong y Batavia; origen en el Pacífico. Indudablemente este temblor fué perceptible en todas las islas de Sámar, Leyte y en gran parte de la región oriental de Mindanao, pero lo intempestivo de la hora y el mal tiempo reinante de fuerte nortada con incesantes lluvias e inundaciones, contribuyeron a que la gente no se diese cuenta de él sino en algunas localidades.

2, 0h 19m 22s* [2, 8h 19m 22s]. **W de Luzón.** Temblor de tierra sentido con intensidad II–III en Baguio, Benguet. Su origen se hallaba en el Mar de la China algo distante de la costa occidental de Luzón. Registróse en el Observatorio de Hongkong.

4, 5h 10m [4, 13h 10m]. **Glan, Cotabato** (S de Mindanao). Temblor de tierra de intensidad III. Registrado en Butúan.

5, 16h 25m 08s* [6, 0h 25m 08s]. **NW de Luzón.** Temblor de tierra sentido con intensidad IV en las provincias de Ilocos Norte y Sur, Abra, La Unión y gran parte de la provincia Montañosa, que se extiende al E de las citadas. Registróse en Hongkong y Zikawei; su origen se hallaba en el Mar de la China hacia los 17.5° N y 119.2° E.

9, 1h 28m 53s* [9, 9h 28m 53s]. **Ormoc** (W de Leyte). Temblor de tierra de intensidad VI. Éste fué el principal de una de las series de temblores locales que ocurren con frecuencia en las cercanías de Ormoc. Le había precedido una sacudida a 1h 20m de la madrugada y le siguieron dos repeticiones sucesivas a las 9h 29m y 9h 31m. Ninguna de las otras estaciones de la isla de Leyte se dió cuenta de él. El sismógrafo de Butúan distante solos 240 kilómetros no registró más que el temblor principal, registrado también en Manila que dista 560. El origen de las series de temblores locales de Ormoc parece estar situado, según se ha indicado muchas veces, en la bahía del mismo nombre y muy cerca de la costa.

9, 19h 00m [10, 3h 00m]. **Glan, Cotabato** (S de Mindanao). Temblor de tierra local de intensidad III.

10, 6h 02m 06s* [10, 14h 02m 06s]. **Islas Batanes.** Temblor de tierra de intensidad III. El origen distaba unos 690 kilómetros de Manila, al parecer al W de aquellas islas.

10, 7h 18m 41s* [10, 15h 18m 41s] **Daet, Camarines Norte** (SE de Lúzon). Temblor de tierra de intensidad III. Repitió 3 minutos más tarde con igual intensidad. El origen estaba a 230 kilómetros de Manila, en el mar al norte de Daet.

10, 15h 44m 48s* [10, 23h 44m 48s]. **Isla de Sámar.** Temblor de tierra sentido con intensidad III; originado en el Pacífico al E de la isla cerca de los 12.8° N y 126.5° E.

11, 9h 20m [11, 17h 20m]. **Ormoc** (W de Leyte.) Temblor de tierra local de intensidad III. Repetición pocos minutos después.

12, 0h 05m 53s* [12, 8h 05m 53s]. **Centro de Luzón.** Temblor de tierra sentido en toda la parte central de Luzón desde el paralelo 14° al 17.5° N y desde la costa occidental a la oriental. Su intensidad máxima no pasó de IV–V en las provincias de Zambales y Bataan. El origen se hallaba en el Mar de la China hacia los 15.3° N y 119.5° E. Registróse en Hongkong. En la costa de Zambales más próximas al epicentro se notaron dos réplicas de muy poca intensidad a 2h 50m 51s* y 3h 22m 11s* [10h 50m 51s, y 11h 22m 11h].

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16, 1h 50m [16, 9h 50m]. **Paracale, Camarines Norte** (SE de Luzón). Temblor local de intensidad III.

21, 3h 00m 05s* [21, 11h 00m 05s]. **Ilagan, Isabela** (NE de Luzón). Temblor de tierra de intensidad III. El origen de este temblor se hallaba a unos 340 kilómetros distante de Manila en el mar Pacífico cerca de los 17° N y 124° E.

22, 14h 25m [22, 22h 25m]. **Talacogon, Agusan** (E de Mindanao). Temblor de tierra de intensidad III. Registrado en Butúan como de origen algo lejano, probablemente en el Pacíficio.

25, 8h 06m* [25, 16h 06m]. **NE de Mindanao.** Temblor de tierra sentido con intensidad IV–V en la región de Butúan y muy débilmente hacia el NE en Surigao y hacia el S en Talacogon. Origen probable cerca de la desembocadura del Río Agusan en la bahía de Butúan.

30, 7h 41m [30, 15h 41m]. **Butúan, Agusan** (N de Mindanao). Temblor de tierra de intensidad III. El origen se hallaba algo distante hacia el sur; sintióse débilmente en Talacogon, donde se había notado un ligero movimiento doce horas antes.

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FEBRERO, 1927

2, 7h 24m 02s* [2, 15h 24m 02s]. **Visayas Orientales y NE de Mindanao.** Temblor de tierra sentido con intensidad III en toda la región oriental que comprende las islas de Sámar, Leyte, Cebú, Bohol y NE de Mindanao. Origen lejano en el Pacífico cerca del paralelo 11° N y más alla del meridiano 127° E. No se registró que sepamos fuera de Filipinas.

5, 7h 38m 12s* [5, 15h 38m 12s]. **Isla de Sámar.** Temblor de tierra sentido con intensidad IV en la parte oriental de la isla. Origen en el Pacífico hacia los 11.5° N y 126° E.

5, 21h 30m [6, 5h 30m]. **Bual, Cotabato** (SW de Mindanao). Temblor de tierra local de intensidad III.

7, 6h 57m [7, 14h 57m]. **Butúan, Agusan** (N de Mindanao). Temblor de tierra de intensidad III. Repitió tres minutos más tarde. Origen en el Pacífico cerca de la costa oriental de la isla.

14, 23h 00m [15, 7h 00m]. **Cateel, Dávao** (E de Mindanao). Temblor de tierra de intensidad IV–V. Registrado solo en Butúan; origen en el Pacífico no lejos de la costa en el paralelo 7.8° N.

16, 4h 14m 00s* [16, 12h 14m 00s]. **Isla de Sámar.** Temblor de tierra sentido con intensidad III; origen algo lejano hacia el E en el Pacífico. Registrado también en Butúan.

16, 21h 00m [17, 5h 00m]. **Lais, Dávao** (SE de Mindanao). Temblor de tierra local de intensidad III.

16, 23h 52m [17, 7h 52m]. **Talacogon, Agusan** (E de Mindanao). Temblor de tierra de intensidad III; registrado en Butúan.

17, 1h 58m [17, 9h 58m]. **Malita, Dávao** (SE de Mindanao). Temblor de tierra local de intensidad III.

17, 14h 00m [17, 22h 00m]. **Ormoc** (W de Leyte). Temblor de tierra local de intensidad III.

18, 22h 59m 13s* [19, 6h 59m 13s]. **E de Mindanao.** Temblor de tierra sentido con intensidad IV–V en la parte oriental de Mindanao que comprende las provincias de Surigao, Agusan y Dávao. Origen en el Pacífico hacia los 7.5° N y 128° E. Registrado en Batavia y en la costa asiática.

19, 19h 02m [20, 3h 02m]. **Islas Batanes.** Temblor de tierra de intensidad III.

20, 2h 02m 48s* [20, 10h 02m 48s]. **Isla de Panay y Negros.** Temblor de tierra sentido con intensidad III–IV en la parte oriental de Panay y occidental de Negros. El epicentro parece se hallaba dentro del estrecho que separa estas dos islas, cerca de los 10.6° N y 122.9° E. Registrado en Manila y Hongkong. Una hora más tarde se notó en algunos pueblos tanto de Negros como de Panay más cercanos al estrecho una réplica de poca intensidad.

27, 23h 01m [28, 7h 01m]. **Agusan** (E de Mindanao). Temblor de tierra de intensidad III sentido en gran parte del valle del Agusan. Su origen, según el registro de Butúan, parece se hallaba en el Pacífico cerca de la costa oriental de la isla.

Palaos (Carolinas Occidentales). Desde el 30 de enero se dejaron sentir en la Isla de Palaos repetidos temblores de tierra, algunos de los cuales como el del 26 de febrero llegaron a la intensidad VII y causaron ligeros desperfectos. A pesar de estar las costas orientales de Mindanao a unos 900 kilómetros solamente de distancia ninguna indicación dió de ellos el sismógrafo de Butúan ni los de Manila.

International Seismological Centre

MARZO, 1927

5, 16h 39m 52s* [6, 0h 39m 52s]. **Benguet** (W de Luzón). Temblor de tierra sentido con intensidad III en toda la parte sur de la subprovincia de Benguet y en la porción contigua de La Unión más cercana al macizo montañoso de Santo Tomás. Su origen se hallaba a cosa de 210 kilómetros de Manila al parecer cerca de dicho monte.

6, 18h 45m [7, 2h 45m]. **Naguilian, La Unión** (W de Luzón). Temblor de tierra local de intensidad III.

9, 19h 02m [10, 3h 02m]. **Talacogon, Agusan** (E de Mindanao). Temblor de tierra de intensidad III; registrado en Butúan.

11, 11h 30m [11, 19h 30m]. **Cateel, Dávao** (E de Mindanao). Temblor de tierra de intensidad III–IV. Registrado en Butúan; origen cercano en el Pacífico.

18, 21h 29m 42s* [19, 5h 29m 42s]. **Lais, Dávao** (SE de Mindanao). Temblor de tierra de intensidad III. El origen de este temblor se hallaba en el Pacífico no lejos del Golfo de Dávao. Registrado también en Hongkong y en Batavia.

26, 4h 25m [26, 12h 25m]. **Islas Batanes.** Temblor de tierra de intensidad III.

29, 11h 05m [29, 19h 05m]. **Butúan, Agusan** (N de Mindanao). Temblor de tierra de intensidad III; origen cercano.

International Seismological Centre

ABRIL, 1927

2, 23^h 46^m [3, 7^h 46^m]. **Talacogon, Agusan** (E de Mindanao). Temblor de intensidad III; registrado en Butúan.

6, 21^h 47^m 46^s* [7, 5^h 47^m 46^s]. **NW de Luzón.** Temblor de tierra sentido con intensidad III en Ilocos Norte. Su origen se hallaba en el Mar de la China cerca de los 19° N y 119.3° E.

7, 4^h 00^m [7, 12^h 00^m]. **Camp Kalaw, Dávao** (E de Mindanao). Temblor de tierra de intensidad III.

7, 9^h 00^m [7, 17^h 00^m]. **Lais, Dávao** (SE de Mindanao). Temblor de tierra de intensidad III.

7, 21^h 19^m 38^s* [8, 5^h 19^m 38^s]. **NW de Luzón.** Temblor de tierra de intensidad III–IV sentido en Ilocos Norte. Origen en el Mar de la China cercano al del anterior ocurrido el día 6.

9, 8^h 59^m 27^s* [9, 16^h 59^m 27^s]. **E de Mindanao.** Temblor de tierra sentido con intensidad III–IV en la parte oriental de Mindanao. Su origen se hallaba lejos en el Pacífico hacia los 7.5° N y 128.5° E. Registrado en Batavia.

11, 14^h 49^m 44^s* [11, 22^h 49^m 44^s]. **NW de Luzón.** Temblor de tierra sentido con intensidad IV–V en la parte N de Luzón, principalmente en la provincia de Ilocos Norte. Origen en el Mar de la China cerca de los 19° N y 120.5° E.

13, 13^h 44^m 43^s* [13, 21^h 44^m 43^s]. **Centro de Luzón.** Extenso temblor de tierra sentido en gran parte de la isla desde el paralelo 13.5° al 18° N. Desplegó su máxima intensidad IV–V a lo largo de la costa de Zambales. El epicentro se hallaba en el Mar de la China cerca de los 15.8° N y 119.4° E. Registrado en todo el globo.

Cosa de una hora antes a 21^h 12^m se había sentido en la costa de Zambales un ligero temblor. A 14^h 33^m 37^s* [22^h 33^m 37^s] ocurrió una repetición de intensidad III–IV, que fué perceptible en casi toda el área de perceptibilidad del temblor precedente. Esta repetición se registró en el Extremo Oriente y muy débilmente en algunos Observatorios europeos.

15, 0^h 02^m [15, 8^h 02^m]. **Veruela, Agusan** (E de Mindanao). Temblor de tierra de intensidad III sentido en toda la parte central del Agusan. Registrado en Butúan.

16, 13^h 06^m 43^s* [16, 21^h 06^m 43^s]. **SE de Mindanao.** Temblor de tierra sentido con intensidad III en la provincia de Dávao y parte sur de Agusan. Origen no lejano de la costa SE de la isla. Registrado en Batavia y Hongkong.

19, 17^h 30^m 42^s* [20, 1^h 30^m 42^s]. **Centro de Luzón.** Extenso temblor de tierra de intensidad máxima V–VI, sentido principalmente a lo largo de las provincias occidentales de Luzón y en las islas de Mindoro y Calamianes desde el paralelo 12° al 18° N. Su origen se hallaba en el Mar de la China cerca de los 14.5° N 119.5° E. Registrado en todo el globo. Ocurrieron dos réplicas muy ligeras apenas sentidas en la costa a 18^h 43^m y 19^h 02^m [20, 2^h 43^m y 3^h 02^m].

23, 13^h 21^m 42^s* [23, 21^h 21^m 42^s]. **NW de Luzón.** Temblor de tierra sentido con intensidad VI–VII en el extremo noreste de Luzón en Ilocos Norte. Su epicentro se hallaba en el Mar de la China cerca de los 18° N y 120° E. Registróse solamente en Hongkong y Taihoku.

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25, 2^h 05^m [25, 10^h 05^m]. **Talacogon, Agusan** (E de Mindanao). Temblor de tierra local de intensidad III.

25, 5^h 08^m [25, 15^h 08^m]. **Guam** (Islas Marianas). Temblor de tierra de intensidad III.

ERUPCIÓN DEL VOLCÁN CANLAON, ISLA DE NEGROS

Poco después de la medianoche del 20 de abril, parece que en algunos barrios más cercanos al Volcán Canlaon, el cual se levanta en la parte norte de la cordillera que corre a lo largo de la isla de Negros, se oyeron ruídos subterráneos. Con la luz del día se vió que el volcán había entrado en actividad emitiendo una columna blanca de vapor y tal vez alguna ceniza, la cual a las ocho de la mañana se elevaba a cientos de metros de altura. Más tarde fué desapareciendo sin ulteriores consecuencias; no se sabe cayese ceniza fuera de la montaña en los poblados.

Este volcán es muy antiguo y parece acercarse a su total extinción. No se conoce ninguna erupción importante histórica. Ocurren sin embargo con alguna frecuencia erupciones cortas e innocuas. Desde mediados de siglo pasado las hubo en los años siguientes: 1866, 1881, 1889, 1893, 1894, 1899, 1902, 1904 y la última de 1927.

International Seismological Centre

MAYO, 1927

1, 14h 58m [2, 0h 58m]. **Guam** (Islas Marianas). Temblor de tierra de intensidad III.

5, 17h 06m [6, 1h 06m]. **Indang, Cavite** (SW de Luzón). Temblor de tierra de intensidad III–IV.

11, 9h 50m 42s* [11, 17h 50m 42s]. **NW de Luzón.** Temblor de tierra sentido con intensidad III–IV en la provincia de Abra y en la parte norte de Ilocos Sur. Origen dentro del valle; fué sentido principalmente a lo largo del mismo en una estrecha zona prolongada de N a S. Repetición de poca intensidad y extensión a 20h 20m [12, 4h 20m].

13, 15h 13m 28s* [13, 23h 13m 28s]. **SW de Luzón.** Extenso temblor de tierra sentido con una intensidad máxima V–VI en la costa SW de Luzón y NW de Mindoro; fué perceptible en todas las provincias meridionales de Luzón hasta el paralelo 16° N y en toda la isla de Mindoro y adyacentes hasta el sur de las Calamianes cerca del paralelo 11° N. Su origen se hallaba en los 13.7° N y 120° E. Registróse en el Extremo Oriente y muy débilmente en Europa.

Tan sólo se sintieron en las costas más cercanas del W de Cavite y NW de Mindoro dos ligeras réplicas que tuvieron lugar el 14 a 2h 01m 59s* [10h 01m 59s] y 16h 16m 32s* [15, 0h 16m 32s].

En el espacio de un mes, del 13 de abril al 13 de mayo, se originaron en la misma región oriental del Mar de la China tres temblores de tierra de mucha intensidad y extensión. Los tres tuvieron su epicentro en el área limitada por los meridianos 119° y 120° E y los paralelos 13.7° y 15.8° N en una línea o falla dirigida de NNW a SSE. El del 13 de abril se originó cerca de los 15.8° N y 119.4° E, el del 19 del mismo mes cerca de los 14.5° N y 119.5° E y el del 13 de mayo en los 13.7° N y 120° E. El desequilibrio geológico comenzó por el norte y se propagó hacia el sur puesto que las latitudes respectivas de los tres sismos fueron disminuyendo como si cada temblor al restablecer el equilibrio en una parte de la falla dejase en estado violento la inmediata del sur.

La actividad sísmica de esta zona oriental del Mar de la China no es ciertamente nueva; desde que se conocen las Islas Filipinas han tenido origen en ella numerosos y fuertes terremotos, y se considera esta línea sísmica como una de las peligrosas para Manila por afectarla mucho las ondas violentas originadas en ella. En el período de 1867 a 1927 han tenido origen en esta zona 73 temblores de intensidad y extensión semejantes a las de los tres últimos, y cuatro algo destructores. Los temblores de pequeña intensidad y extensión sentidos solamente en las costas occidentales de Cavite, Bataan y Zambales son mucho más frecuentes. Parece que esta parte oriental del Mar de la China es de todo él donde existe mayor sismicidad. Esta propiedad concuerda perfectamente con sus condiciones geológicas.

Es en efecto esta parte donde existen las mayores profundidades y declives submarinos hasta ahora encontrados en este mar. El abismo del Mar de la China con profundidades de 5,000 y 6,000 metros se extiende principalmente entre los meridianos 115° y 120° E y los paralelos 13° y 20° N. Su máxima profundidad de 6,000 metros se alcanza a lo largo del meridiano 119.2° y entre los 13° y 16° N, existiendo por consi-

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guiente cerca de las costas de Zambales, Bataan y Cavite los más acentuados declives de dicho abismo puesto que las profundidades pasan rápidamente desde los 100 metros en el meridiano 120° E a los 6,000 metros en los 119.2° E.

Existe otro declive muy acentuado aunque no tanto como el descrito cerca de la costa NW de Luzón entre los paralelos 20° y 17.5° N y los meridianos 119.5° y 120.5° con un desnivel máximo de 5,000 metros solamente. También es en esta zona grande la sismicidad, la cual afecta a las provincias de Ilocos. Al N, W y S del Abismo o cuenca del Mar de la China las profundidades disminuyen con una gradación muy lenta hacia las lejanas costas del Asia.

En la zona descrita como inestable cerca de la costa NW de Luzón hubo también gran actividad sísmica durante estos seis meses; se originaron en ella ocho diferentes temblores de tierra, esto demuestra que existía grande desequilibrio a lo largo de toda la parte oriental del abismo del Mar de la China.

18, 21^h 39^m [19, 5^h 39^m]. **Butúan, Agusan** (N de Mindanao). Temblor de tierra local de intensidad III.

19, 11^h 45^m [19, 19^h 45^m]. **Tubao, La Unión** (W de Luzón). Temblor de tierra local de intensidad III.

21, 22^h 44^m [22, 6^h 44^m]. **Islas Batanes.** Temblor de tierra de intensidad III.

22, 11^h 58^m 00^s* [22, 19^h 58^m 00^s]. **SE de Luzón.** Temblor de tierra sentido con intensidad III en la parte oriental de las provincias de Albay y Sorsogón. Origen en el Pacífico cerca de los 13.4° N y 125° E.

25, 10^h 09^m [25, 18^h 09^m]. **Bangued, Abra** (NW de Luzón). Temblor de tierra local de intensidad III.

29, 2^h 30^m [29, 10^h 30^m]. **Dávao** (SE de Mindanao). Temblor de tierra de intensidad III.

30, 12^h 31^m [30, 20^h 31^m]. **Zamboanga** (W de Mindanao). Temblor de tierra de intensidad III.

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JUNIO, 1927

3, 7h 17m 13s* [3, 15h 17m 13s]. **Talacogon, Agusan** (E de Mindanao). Temblor de tierra de intensidad II–III. El origen de este temblor se hallaba muy lejos al sur; posiblemente era el que tuvo lugar a la misma hora al sur de las Molucas. Debió sentirse también muy débilmente en la provincia de Dávao al SE de la isla.

3, 19h 29m 39s* [4, 3h 29m 39s]. **NW de Luzón.** Temblor de tierra sentido con intensidad III en la parte central y sur de la provincia de Ilocos Sur. Origen en el Mar de la China cerca de la costa de Luzón.

6, 5h 37m 52s* [6, 13h 37m 52s]. **E de Mindanao.** Temblor de tierra sentido con intensidad IV–V en la región oriental de Mindanao que comprende la parte norte de la provincia de Dávao, Agusan y parte central y sur de Surigao. Origen en el Abismo del Pacífico cerca del paralelo 8° N y del meridiano 127° E.

7, 9h 38m 30s* [7, 17h 38m 30s]. **Butúan, Agusan** (N de Mindanao). Temblor de tierra de intensidad III. Origen lejano en el Pacífico.

9, 10h 44m 00s* [9, 20h 44m 00s]. **Guam** (Islas Marianas). Temblor de tierra de intensidad III–IV. Origen cercano.

10, 20h 44m 56s* [11, 4h 44m 56s]. **NW de Luzón.** Temblor de tierra sentido con intensidad III en toda la provincia de Ilocos Norte y en la parte septentrional de Ilocos Sur. El origen parece se hallaba muy cerca de la costa NW de la isla.

14, 9h 26m 29s* [14, 17h 26m 29s]. **E de Mindanao.** Temblor de tierra sentido con intensidad IV en la parte N de la provincia de Dávao, en Agusan y parte central y sur de Surigao. El origen estaba muy lejos en el Pacífico. Registrado en Europa.

15, 10h 31m 14s* [15, 18h 31m 14s]. **Islas Batanes.** Temblor de tierra de intensidad III. Origen submarino hacia el Canal de Bashi.

15, 10h 45m [15, 18h 45m]. **Cateel, Dávao** (E de Mindanao). Temblor de tierra de intensidad III.

18, 0h 57m 05s* [18, 8h 57m 05s]. **N de Luzón.** Extenso temblor de tierra sentido con intensidad VI–VII en la parte N de la provincia de Ilocos Norte; precedido de fuertes ruídos. Fué también fuerte al N de Ilocos Sur, Abra, Provincia Montañosa y Cagayán, y bien perceptible en las otras provincias hacia el sur hasta el paralelo 16° N. Su origen se hallaba en el Mar de la China cerca del paralelo 18.5° N y del meridiano 120.2° E. Registrado en todo el globo.

18, 6h 47m 55s* [18, 14h 47m 55s]. **S de Leyte.** Temblor de tierra sentido con intensidad IV–V en Maasin, situado en la costa SW, y al rededor de la profunda bahía de Sogod. Los sismógramas del observatorio colocan el epicentro a unos 700 kilómetros de distancia de Manila, por consiguiente fuera de la isla de Leyte, probablemente hacia el E cerca de la isla de Dinagat en el Pacífico.

19, 10h 24m 48s* [19, 18h 24m 48s]. **Legaspi, Albay** (SE de Luzón). Temblor de tierra de intensidad III. Origen cercano al E en el Pacífico.

21, 17h 55m [22, 1h 55m]. **Virac** (Isla de Catanduanes). Temblor de intensidad IV sentido en la parte sur y sudeste de la isla. Se notaron dos choques sucesivos en el espacio de unos dos minutos.

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22, 5h 35m [22, 13h 35m]. **Atok, Benguet** (W de Luzón). Temblor de tierra local de intensidad III. Registrado por los sismógrafos de la estación de Baguio, distante poco más de 20 kilómetros.

22, 7h 30m [22, 15h 30m]. **Cateel, Dávao** (E de Mindanao). Temblor de tierra de intensidad III.

22, 23h 37m [23, 7h 37m]. **Odiongan** (Isla de Tablas). Temblor de tierra de intensidad III.

23, 7h 00m [23, 15h 00m]. **Barás** (Isla de Catanduanes). Temblor de tierra local de intensidad II–III.

23, 7h 46m [23, 15h 46m]. **Odiongan** (Isla de Tablas). Temblor de tierra de intensidad III.

23, 20h 13m 28s* [24, 4h 13m 28s]. **W de Luzón.** Temblor de tierra sentido con intensidad III en la parte sur de la provincia y costa de Zambales. Origen al W en el Mar de la China.

24, 20h 24m 36s* [25, 4h 24m 36s]. **Odiongan** (Isla de Tablas). Temblor de tierra de intensidad IV. Este temblor fué como el término de un período sísmico que comenzó el día 22. Además de los choques apuntados arriba, de los días 22 y 23, ocurrieron otros el 24 a 2h 58m, 11h 46m y 19h 27m [10h 58m, 19h 46m y 25, 3h 27m]. El epicentro se hallaba en la región ya conocida como inestable al SW de la isla de Tablas cerca del paralelo 12° N y del meridiano 121.6° E.

28, 1h 43m 28s* [28, 9h 43m 28s]. **E de Visayas y NE de Mindanao.** Temblor de tierra sentido con intensidad IV al SE de Sámar y bien perceptible hacia el sur en toda la parte NE y E de Mindanao. Origen en el Abismo del Pacífico cerca de los 10.5° N y 127° E. Registrado en Batavia y otros observatorios del Extremo Oriente.

28, 21h 05m [29, 5h 05m]. **Catbalogan** (W de Sámar). Temblor de tierra local de intensidad III.

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SEISMOLOGICAL BULLETIN FOR 1927

JULY, 1927

EARTHQUAKES FELT IN THE PHILIPPINES

2, $9^h\ 33^m\ 21^s$* [2, $17^h\ 33^m\ 21^s$]. **Catanduanes Island.** Earthquake of intensity III–IV. Origin to the east in the Pacific.

3, $8^h\ 17^m\ 38^s$* [3, $16^h\ 17^m\ 38^s$]. **Catanduanes and Samar Islands and SE Luzon.** Earthquake felt with intensity VI in Catanduanes, and fairly perceptible through the Provinces of Albay, Camarines Norte and Sur and Sorsogon, in SE Luzon, and in Samar Island. Its origin lay in the northern portion of the Philippine Deep, near to the meridian 126° E and the parallel 14° N, where the preceding shock had also its origin. Recorded around the Globe.

8, $0^h\ 29^m\ 19^s$* [8, $8^h\ 29^m\ 19^s$]. **Aparri, Cagayan** (NE Luzon). Earthquake shock of intensity IV. Origin in the Pacific at about 123° E and 18.8° N. Recorded at Hongkong.

9, $1^h\ 15^m$ [9, $9^h\ 15^m$]. **Cape Bojeador, Ilocos Norte** (NW Luzon). Local shock of intensity III.

10, $14^h\ 00^m$ [10, $22^h\ 00^m$]. **Veruela, Davao** (E Mindanao). Earthquake of intensity III–IV. Recorded at Butuan.

13, $20^h\ 30^m\ 00^s$* [14, $4^h\ 30^m\ 00^s$]. **SE Luzon.** Earthquake felt with intensity III–IV in the southern portion of the Provinces of Camarines Norte and Sur. Origin in the sea NW of Burias Island.

16, $13^h\ 15^m$ [16, $21^h\ 15^m$]. **Bacon, Sorsogon** (SE Luzon). Local shock of intensity III.

18, $2^h\ 30^m$ [18, $10^h\ 30^m$]. **Talacogon, Agusan** (E Mindanao). Local shock of intensity III. Recorded at Butuan.

19, $20^h\ 40^m$ [20, $4^h\ 40^m$]. **Cebu Island.** Earthquake shock felt with intensity III through the northern half of the Island. Insular origin.

23, $9^h\ 05^m$ [23, $17^h\ 05^m$]. **Butuan, Agusan** (N Mindanao). Earthquake felt with intensity IV–V and long duration. Aftershock at $17^h\ 22^m$. It seems that the origin of this earthquake was near, and rather shallow. Probably it lay to the north in the Butuan Bay where frequently shocks of great intensity but every limited area occur.

28, $6^h\ 30^m$ [28, $14^h\ 30^m$]. **Odiongan, Tablas Island.** Local shock of intensity III.

28, $13^h\ 40^m$ [28, $21^h\ 40^m$]. **Benguet** (W Luzon). Earthquake felt with intensity III through the central portion of this subprovince. It had shallow origin like many which occur in this high region.

International Seismological Centre

RECORDS OF THE MICROSEISMOGRAPH

[Time: Greenwich mean. Midnight=0^h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: T_o=6.52, ϵ=2.618, $\frac{r}{T_o^2}$=0.064, V=155; A_E: T_o=6.32, ϵ=1.865, $\frac{r}{T_o^2}$=0.046, V=202. Alluvium. 2.40 meters above sea level]

No.	Date	Character	Phase	Hour	Period	Amplitude A_N μ	Amplitude A_E μ	Remarks
				h. *m.* *s.*	*s.*			
191	1	Ir	e	8 31 45				
			S	8 42 05				
			F	9 37				
192	1	Iv	eP	23 06 53				
			F	23 11				
193	2	Iv	eP	9 33 21				Pacific, off SE coast of Luzon.
			L	9 34 12				
			F	9 42				
194	2	Ir	e	20 44 53				
			M	20 53 19				
			F	21 17				
195	3	IIIv	iP	8 17 38				Do.
			iL	8 18 43				
			M_N	8 18 45	4	490		
			M_E	8 18 46	4		408	
			F	9 42				
196	3	I	e	10 49 17				
			F	11 33				
197	4	Iv	eP	7 17 43				
			L	7 18 05				
			F	7 22				
198	7	Ir	eP	20 16 09				
			L	20 30 29				
			F	20 51				
199	8	IIv	eP	0 29 19				NE Luzon.
			iL	0 30 13				
			M_N	0 31 23	4	61		
			M_E	0 31 30	4		67	
			F	0 51				
200	10	Iv	eP	10 43 28				
			F	10 46				
201	11	Iu	eP	13 16 15				Palestine.
			S	13 25 36				
			L	13 42 40				
			M_E	13 53 00	24		1	
			F	14 27				
202	12	Ir	iP	21 14 55				Kurile Islands.
			iS	21 22 00				
			F	22 16				
203	13	Iv	eP	15 35 00				
			iL	15 35 15				
			F	15 39				
204	13	IIv	iP	20 30 00				Southeastern part of Luzon.
			iL	20 30 34				
			M_E	20 30 36	2		181	
			F	20 45				
205	14	Ir	eP	23 22 00				Near Moluccas.
			iL	23 26 12				
			M_N	23 26 22	4	88		
			M_E	23 26 52	5		79	
			F	23 56				
206	17	Ir	eP	8 53 03				Carolines Islands.
			M_E	9 00 26	5		10	
			F	9 14				
207	18	Ir	e	11 31 32				Microseisms on the 17th and 18th.
			M_E	11 41 42	7		12	
			F	11 56				
208	21	Iv	eP	9 56 51				
			L	9 57 05				
			F	10 01				
209	21	Iv	eP	10 04 26				Microseisms on the 19th, 20th, and 21st.
			F	10 07				

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Records of the Microseismograph—Continued

No.	Date	Character	Phase	Hour	Period	Amplitude A_N μ	Amplitude A_E μ	Remarks
				h. *m.* *s.*	*s.*			
210	21	Iv	eP	10 41 33				
			F	10 43				
211	22	Iu	e(P)	4 06				Phases very indefinite and disturbed by microseisms.
			iS	4 14 14				
			L?	4 31 00				
			M_N	4 35 00	22	5		
			M_E	4 36 24	20		9	
			F?	5 53				
212	23	Iv	eP	6 12 51				
			iL	6 13 03				
			F	6 16				
213	23	Iv	e?	12 04 22				
			L?	12 05 31				
			F	12 15				
214	23	I	L?	20 58				
			F	21 12				
215	23	I	L?	23 21.5				Moderate microseisms on the 22nd and 23rd.
			F	23 33				
216	24	Iv	eP	19 33 18				
			F	19 38				
217	25	Iv	eP	10 36 42				Microseisms on the 24th and 25th.
			F	10 39				
218	27	I	e	14 58 19				Trace only.
			F	15 16				
219	28	Iv	eP	10 03 32				
			iL	10 03 54				
			F	10 10				
220	28	I	e	16 29				Do.
			F	16 57				
221	29	Ir	e	0 09 48				
			M	0 23 00				
			F	0 53				
222	29	Iv	eP	9 15 56				
			iL	9 16 50				
			F	9 28				
223	29	Iv	eP	11 28 18				
			F	11 37				
224	30	Ir	eP	14 25 51				
			L?	14 32 00				
			F	14 52				
225	30	Iv	eP	15 42 09				
			F	15 46				
226	31	Iv	eP	23 37 46				
			L	23 38 17				
			F	23 45				

International Seismological Centre

AUGUST, 1927

1, 11h 49m* [1, 19h 49m]. **Surigao** (NE Mindanao). Earthquake shock of intensity III. Somewhat distant origin in the Pacific; recorded at Butuan.

4, 1h 18m 00s* [4, 9h 18m 00s]. **Romblon Island.** Local shock of intensity III.

6, 14h 34m 00s* [6, 22h 34m 00s]. **Eastern Visayas and NE Mindanao.** Earthquake felt with intensity IV–V in the northern part of the Provinces of Surigao and Agusan and fairly perceptible through the islands of Samar, Leyte, Bohol and Cebu and in eastern Mindanao. Origin in the Pacific at about 126° E and 10° N. Recorded in the Far East.

6, 19h 45m [7, 3h 45m]. **Tacloban** (NE Leyte). Local shock of intensity III.

7, 11h 00m [7, 19h 00m]. **Solsona, Ilocos Norte** (NW Luzon). Local shock of intensity II–III.

7, 15h 05m [7, 23h 05m]. **Veruela, Davao** (E Mindanao). Earthquake shock of intensity III. Recorded at Butuan.

13, 11h 38m [13, 19h 38m]. **Catbalogan** (W Samar). Local shock of intensity II–III.

31, 3h 00m [31, 11h 00m]. **Calbayog** (NW Samar). Local shock of intensity II–III.

RECORDS OF THE MICROSEISMOGRAPH

[Time: Greenwich mean. Midnight=0h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: T_o=6.52, ϵ=2.618, $\frac{r}{T_o^2}$=0.054, V=155; A_E: T_o=6.32, ϵ=1.865, $\frac{r}{T_o^2}$=0.046, V=202. Alluvium. 2.40 meters above sea level]

No.	Date	Character	Phase	Hour	Period	Amplitude A_N μ	Amplitude A_E μ	Remarks
				h. m. s.	s.			
227	1	I	e	11 49				Trace only.
			F	12 33				
228	1	I	e	19 03				Feeble movements.
			F	19 51				
229	3	Iv	eP	6 07 23				
			iL	6 08 19				
			F	6 29				
230	3	I	e	7 17 33				
			M	7 22 00				
			F	7 37				
231	4	IIv	iP	1 18 00				Romblon Island.
			iL	1 18 29				
			M_E	1 18 42		2	126	
			M_N	1 18 43		2	180	
			F	1 36				
232	4	I	e	15 52 20				
			F	16 26				
233	4	Iv	eP	16 32 54				
			F	16 36				
234	5	IIr	iP	21 19 06				Japan.
			$iPR2_N$	21 20 30				
			PS_E	21 23 46				
			iS_E	21 23 52				
			iS_N	21 24 43				
			$iSR1_E$	21 26 28				
			$iSR1_N$	21 26 34				
			iL_N	21 28 54				
			iL_E	21 29 05				
			M_N	21 31 09		13	33	
			M_E	21 31 15		8	37	
			F	22 59				
235	6	Iv	eP	14 34 00				Pacific, off NE Mindanao.
			L	14 35 40				
			F	14 52				
236	7	Iv	eP	16 08 20				Microseisms on the 6th and 7th.
			L	16 09 02				
			F	16 15				

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Records of the Microseismograph—Continued

No.	Date	Character	Phase	Hour	Period	Amplitude A_N μ	Amplitude A_E μ	Remarks
				h. *m.* *s.*	*s.*			
237	8	Ir	e	1 06 29				
			iL?	1 12 30				
			F	1 31				
238	8	Iv	eP	10 28 45				
			L	10 29 03				
			F	10 35				
239	8	Ir	i	18 48 00				
			L	18 50 55				
			F	19 14				
240	10	IIIr	iP	11 40 31				Near New Guinea.
			iPS_E	11 42 39				
			iPS_N	11 42 44				
			iS_E	11 44 14				
			iL_E	11 45 31				
			M_E1	11 45 47	8		415	
			M_E2	11 48 49	11		376	
			F	14 06				
241	10	Iv	eP	18 59 37				
			F	19 02				
242	12	Ir	eP	0 38 13				
			iL?	0 42 00				
			F	1 42				
243	12	I	e?	10 31				
			F	11 23				
244	13	Ir	eP	11 47 58				
			iL	11 51 00				
			M_E	11 51 42	7		64	
			F	12 56				
245	18	I	e?	10 05				Moderate microseisms on the 18th, from 6th to 15th due to a typhoon.
			F?	10 27				
246	18	Ir	(e)	19 34 36				Initial phases badly masked by strong microseisms.
			(iL)	19 42 00				
			F	20 58				
247	20	I	e?	21 45				Strong microseisms on the 19th and moderate on the 20th.
			F	22 22				
248	21	I	i	0 14				
			F	1 51				
249	21	Iv	eP	5 30 00				
			F	5 33				
250	23	Ir	eP	6 35 49				
			eS	6 41 15				
			iL	6 45 05				
			M_N	6 46 19	12	12		
			M_E	6 48 02	11		19	
			F	8 07				
251	24	I	eP	9 02 17				Trace only.
			F	10 10				
252	24	IIv	iP	18 11 04				Formosa.
			iL	18 12 06				
			M_N	18 16 10	12	60		
			F	19 32				
253	25	Iv	eP	12 32 17				
			F	12 43				
254	25	Ir	eP	16 56 01				
			iL	16 58 40				
			F	17 53				
255	25	I	e	22 47				
			M	23 12				
			F	23 29				
256	26	Iv	eP	12 39 48				
			iL	12 40 32				
			F	12 51				
257	27	Iv	eP	11 43 18				Microseisms on the 21, 22, 24, 25, 26, and 27.
			F	11 46				
258	31	Iv	eP	8 59 38				
			F	9 02				

SEPTEMBER, 1927

4, 14h 35m [4, 22h 35m]. **Catbalogan** (W Samar). Local shock of intensity III.

4, 20h 00m [5, 4h 00m]. **Lais, Davao** (SE Mindanao). Local shock of intensity III.

9, 19h 55m [10, 3h 55m]. **Capiz** (N Panay). Local shock of intensity II–III.

11, 11h 45m [11, 19h 45m]. **Tubao, La Union** (W Luzon). Local shock of intensity II–III.

12, 13h 25m [12, 21h 25m]. **Basco Batan Island.** Earthquake of intensity IV; near origin under the sea.

14, 4h 31m [14, 12h 31m]. **Surigao** (NE Mindanao). Earthquake of intensity III. Recorded at Butuan.

18, 4h 00m [18, 12h 00m]. **Cateel, Davao** (E Mindanao). Earthquake of intensity III. Recorded at Butuan.

24, 22h 35m [25, 6h 35m]. **Cotabato** (SW Mindanao). Local shock of intensity II–III.

26, 4h 21m 00s* [26, 12h 21m 00s]. **Tubao, La Union** (W Luzon). Earthquake of intensity III.

26, 18h 03m [27, 2h 03m]. **Ormoc** (W Leyte). Local shock of intensity III.

International Seismological Centre

RECORDS OF THE MICROSEISMOGRAPH

[Time: Greenwich mean. Midnight=0^h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: T_o=7.1, ϵ=2.774, $\frac{r}{T_o^2}$=0.023, V=141; A_E: T_o=8.3, ϵ=1.804, $\frac{r}{T_o^2}$=0.041, V=183. Alluvium. 240 meters above sea level]

No.	Date	Character	Phase	Hour	Period	Amplitude A_N μ	Amplitude A_E μ	Remarks
				h. *m.* *s.*	*s.*			
259	2	I	e	2 16 44				
			F	2 34				
260	7	I	e	20 10				Feeble movements.
			F	20 51				
261	8	I	e	17 18 00				
			F	18 13				
262	8	I	e	23 28 26				W Java. Trace only.
	9		F	0 19				
263	9	Iv	eP	3 46 29				
			iL	3 46 45				
			F	3 54				
264	10	I	e	16 40 48				
			F	17 04				
265	11	Iu	eP	22 27 57				Crimea.
			S_N	22 37 32				
			S_E	22 37 34				
			$iSR1_E$	22 43 04				
			$iSR1_N$	22 43 05				
			eL	22 54 43				
			M_N	22 58 45	33	6		
			M_E	22 59 00	33		9	
	12		F	0 12				
266	13	Ir	eP	10 25 39				
			L?	10 33 05				
			F	10 57				
267	16	I	e	15 55 24				Trace only.
			F	16 43				
268	17	Ir	eP	0 50 13				Strong microseisms on the 17th from 14^h to 17,^{h} due to a typhoon.
			F	1 41				
269	18	I	eP	17 15 23				Microseisms on the 18th.
			iL	17 16 39				
			F	17 27				
270	19	I	e	8 39 00				Trace only.
			F	9 08				
271	22	I	e	12 00 00				Very small movements.
			F	12 56				
272	23	Iu	eP	14 02 13				
			L?	14 16 37				
			F	15 05				
273	25	I	e	0 24 51				Trace only.
			F	0 46				
274	26	Iv	eP	4 21 00				
			iL	4 21 22				
			F	4 25				

International Seismological Centre

OCTOBER, 1927

3, $8^h\ 00^m$ [3, $16^h\ 00^m$]. **Baras, Catanduanes Island.** Local shock of intensity III.

5, $22^h\ 50^m$ [6, $6^h\ 50^m$]. **Butuan, Agusan** (N Mindanao). Earthquake of intensity III.

9, $18^h\ 08^m\ 29^s$* [10, $2^h\ 08^m\ 29^s$]. **Panay and Negros Islands.** Earthquake felt with intensity IV in the central part of Panay Island and very perceptible through its northern portion and in NW Negros. Very likely the origin was insular along the mountain chain between the Provinces of Iloilo and Capiz. Its affected area was extremely long in the E–W direction along the parallel 11° N.

16, $6^h\ 20^m\ 00^s$* [16, $14^h\ 20^m\ 00^s$]. **Camarines Sur and Catanduanes Island.** Earthquake of intensity III. Origin in the Pacific N of Catanduanes.

23, $20^h\ 50^m\ 08^s$* [24, $4^h\ 50^m\ 08^s$]. **Guiuan, SE Samar.** Earthquake shock of intensity III. Near origin in the Pacific.

24, $19^h\ 33^m\ 48^s$* [25, $3^h\ 33^m\ 48^s$]. **Panay Island.** Earthquake felt with intensity IV along the western part of the island and quite perceptible eastward as far as the northwest coast of Negros Island. Origin west of that of the earthquake occurred on the 9th. In the stations located near the west coast and about the parallel 11° N, light aftershocks were noticed during the early hours and a more noticeable one on the 27th at $5^h\ 00^m$ [$13^h\ 00^m$].

26, $18^h\ 30^m$ [27, $2^h\ 30^m$]. **Lais, Davao** (SE Mindanao). Local shock, intensity III.

27, $19^h\ 43^m\ 30^s$* [28, $3^h\ 43^m\ 30^s$]. **SW Mindanao.** Earthquake felt with intensity IV–V along the northern coast of the Illana Bay, where 30^m later a light aftershock was noticed, and intensity III in the western part of Cotabato and eastern Zamboanga Provinces. The origin lay in the Celebes Sea south of the said Bay. Recorded at Batavia and in Europe.

29, $5^h\ 38^m\ 09^s$* [29, $13^h\ 38^m\ 09^s$]. **Panay Island.** Earthquake felt with intensity IV–V along the western coast; it was very perceptible in the rest of the island and on the western coast of Negros Island. Its origin was the same of the earthquake occurred on the 24th not far from the Antique coast; possibly under the mountain chain which separates the Provinces of Antique and Iloilo. In two coastal stations near the parallel 11° N were noticed on the 31st light aftershocks.

International Seismological Centre

SEISMOLOGICAL BULLETIN FOR 1927

RECORDS OF THE MICROSEISMOGRAPH

[Time: Greenwich mean. Midnight=0^h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: T_o=7.1, ϵ=2.774, $\frac{r}{T_o^2}$=0.023, V=141; A_E: T_o=8.3, ϵ=1.804, $\frac{r}{T_o^2}$=0.041, V=183. Alluvium. 2.40 meters above sea level]

No.	Date	Character	Phase	Hour	Period	Amplitude A_N μ	Amplitude A_E μ	Remarks
				h. *m.* *s.*	*s.*			
275	4	I	M	2 21				
			F	3 02				
276	4	Iv	eP	19 49 15				Microseisms on the 5th; strong on the 6th and 7th
			F	19 51				
277	8	I	e	12 36				Microseisms on the 8th.
			F	12 57				
278	9	I	e	4 54				Moderate microseisms on the 9th.
			F	5 11				
279	9	Iv	eP	18 08 29				
			F	18 12				
280	10	I	e	17 55				Trace only. Microseisms on the 10th.
			F	18 21				
281	11	I	e	3 07 33				Trace only.
			M	3 11 37				
			F	3 33				
282	11	I	e	4 30 29				Very small movements.
			M	4 33 00				
			F	5 00				
283	11	I	e	17 37 00				Trace only.
			F	17 55				
284	11	Iv	eP	23 28 52				Microseisms on the 11th.
			F	23 33				
285	12	I	e	6 31 20				
			M_N	6 36 24	18	8		
			M_E	6 36 43	9		21	
			F	7 16				
286	12	I	e	7 58 56				
			M	8 05 50				
			F	8 32				
287	12	Iv	eP	10 49 47				
			F	10 54				
288	14	Iv	eP	12 04 58				
			iL	12 06 48				
			F	12 19				
289	15	I	e	6 31				Trace only.
			F	6 57				
290	16	Iv	iP	6 20 00				Pacific, SE Luzon.
			iL	6 20 42				
			F	6 37				
291	17	Iv	eP	16 22 36				
			F	16 25				
292	19	Iv	eP	7 18 32				
			F	7 26				
293	20	Iv	eP	16 29 47				
			F	16 36				
294	21	Iv	eP	17 49 39				
			L	17 50 40				
			F	18 04				
295	21	Iv	eP	18 09 35				
			F	18 16				
296	21	Iv	eP	22 55 46				
			F	23 04				
297	21	Iv	eP	23 06 12				
			F	23 17				
298	23	Iv	eP	20 50 08				Southeastern part of Samar.
			L	20 51 17				
			F	21 00				
299	24	IIu	e?	16 33 39				Near Alaska.
			L?	16 52 00				
			F	18 11				

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NOVEMBER, 1927

1, $18^h\ 05^m$ [2, $2^h\ 05^m$]. **Malita, Davao** (SE Mindanao). Earthquake shock of intensity III. Recorded at Butuan.

2, $6^h\ 05^m\ 55^s$* [2, $14^h\ 05^m\ 55^s$]. **Agusan Province** (E Mindanao). Earthquake felt with intensity III–IV in the central part of the Agusan Valley which comprises the northern portion of Davao and southern of Agusan Provinces. Its origin seems to have been in the Pacific E of Mindanao.

3, $4^h\ 40^m$ [3, $12^h\ 40^m$]. **Legaspi, Albay** (SE Luzon). Local shock of intensity II–III.

3, $6^h\ 19^m\ 02^s$* [3, $14^h\ 19^m\ 02^s$]. **Candon, Ilocos Sur** (NW Luzon). Earthquake shock of intensity III. Origin to the W in the China Sea.

7, $3^h\ 39^m\ 20^s$* [7, $11^h\ 39^m\ 20^s$]. **NW Luzon.** Earthquake felt with intensity III–IV in the northern part of Ilocos Sur and through Ilocos Norte. Near origin in the China Sea.

10, $13^h\ 10^m$ [10, $21^h\ 10^m$]. **Bacon, Sorsogon** (SE Luzon). Local shock of intensity III.

10, $22^h\ 38^m$ [11, $6^h\ 38^m$]. **Zamboanga** (W Mindanao). Earthquake of intensity III–IV, preceded by subterranean noise. Recorded at Butuan.

12, $6^h\ 16^m$ [12, $14^h\ 16^m$]. **Veruela, Agusan** (E Mindanao). Local shock of intensity III.

16, $21^h\ 12^m\ 16^s$* [17, $5^h\ 12^m\ 16^s$]. **SE Mindanao.** Very extensive earthquake felt in the Provinces of Davao, Cotabato, Lanao, Cagayan, Bukidnon and southern part of Agusan and Surigao. Its intensity reached grade VI–VII in the Province of Davao, chiefly in the SE peninsula of San Agustin. Its epicenter lay in the Pacific at a distance of more than 500 kilometers, from Mindanao, some place E or ENE of north Moluccas Islands. It was recorded around the world; about the exact position of its epicenter was in the beginning some doubt, but as it was felt in SE Mindanao and in the Sanguir Group it can not be located towards Borneo but somewhere E of the 126° E meridian.

On the 17th at $6^h\ 35^m$ [17, $14^h\ 35^m$] a shock of intensity III occurred in the eastern part of Davao, which probably was an aftershock.

17, $22^h\ 37^m$* [18, $6^h\ 37^m$]. **SE Mindanao.** Earthquake felt with intensity III–IV through the same provinces affected by the preceding earthquake. Recorded at Batavia. Its epicenter was located in the same region E or ENE of Moluccas but very likely farther north.

18, $3^h\ 26^m\ 31^s$* [18, $11^h\ 26^m\ 31^s$]. **Eastern Visayas and Mindanao.** Extensive earthquake felt through the islands of Samar, Leyte, Bohol, Cebu and the eastern part of Mindanao. Its greatest intensity V–VI was experienced in the NE end of Mindanao. The origin seems to be located in the Pacific Deep, near meridian 127° E and 10° N. Recorded around the Globe.

18, $20^h\ 30^m$ [19, $4^h\ 30^m$]. **Davao** (SE Mindanao). Earthquake felt with intensity III through the south and east part of the province. Probably an aftershock of the 16th earthquake.

19, $3^h\ 35^m$ [19, $11^h\ 35^m$]. **Pasuquin, Ilocos Norte** (NW Luzon). Local shock of intensity III.

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19, 11h 00m [19, 19h 00m]. **Ganassi, Lanao** (W Mindanao). Local shock of intensity III.

19, 23h 35m [20, 7h 35m]. **Surigao** (NE Mindanao). Earthquake shock of intensity III; aftershock of the 18th earthquake.

20, 1h 40m [20, 9h 40m]. **Malita, Davao** (SE Mindanao). Earthquake of intensity III. Aftershock of the 16th earthquake. Similar light aftershocks were noticed in one or more of the stations situated around the Davao Gulf on the 21st, 22nd and 23rd.

23, 14h 30m [23, 22h 30m]. **Veruela, Agusan** (E Mindanao). Earthquake of intensity III–IV felt in the central part of the Agusan Valley. Recorded at Butuan.

28, 2h 27m 11s* [28, 10h 27m 11s]. **Albay and Catanduanes Island** (SE Luzon). Earthquake of intensity IV. Near origin in the Pacific south of Catanduanes.

28, 22h 35m [29, 6h 35m]. **Legaspi, Albay** (SE Luzon). Earthquake shock of intensity III. Aftershock of the preceding.

30, 21h 52m [Dec. 1, 5h 52m]. **Guiuan** (SE Samar). Earthquake shock of intensity III–IV. Near origin.

RECORDS OF THE MICROSEISMOGRAPH

[Time: Greenwich mean. Midnight=0h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: T_o=6.58, ϵ=2.288, $\frac{r}{T_o^2}$= 0.039, V=198; A_E: T_o=7.77, ϵ=1.487, $\frac{r}{T_o^2}$=0.049, V=198. Alluvium. 2.40 meters above sea level]

No.	Date	Character	Phase	Hour	Period	Amplitude A_N μ	Amplitude A_E μ	Remarks
				h. m. s.	*s.*			
308	2	Iv	eP	5 11 17				
			F	5 13				
309	2	Ir	e	6 05 55				
			L?	6 08 53				
			F	6 19				
310	2	Ir	e	21 12 13				Very small.
			M	21 25 00				
			F	21 49				
311	2	I	e	23 00 29				Trace only.
			F	23 32				
312	3	IIv	eP	6 19 02				
			iL	6 19 37				
			F	6 32				
313	4	Iu	e	14 02				
			L?	14 30				
			F	15 44				
314	5	Ir	eP	6 40 55				Near NE Formosa.
			iL	6 43 41				
			F	7 19				
315	6	Ir	eP	15 39 24				
			iL	15 44 37				
			F	16 06				
316	7	Iv	eP	3 39 20				Northwestern part of Luzon.
			L	3 40 03				
			F	3 46				
317	8	I	e	3 22 24				Trace only. F overtaken by following earthquake.
318	8	I	e	3 42 43				Very small movements.
			F	4 05				
319	8	Iv	eP	9 14 19				
			F	9 18				
320	9	Ir	(e)	1 13				Initial phases masked by microseisms.
			i(L)	1 20 00				
			F	2 07				
321	10	Ir	e	3 06 00				
			L	3 08 19				
			F	3 25				
322	12	Iv	eP	20 04 00				
			iL	20 04 17				
			F	20 08				

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Records of the Microseismograph—Continued

No.	Date	Character	Phase	Hour	Period	Amplitude A_N μ	Amplitude A_E μ	Remark
				h. *m.* *s.*	*s.*			
323	14	Iu	eP	0 21 12				
			PS_E	0 30 06				
			S_E	0 30 26				
			eL_E	0 44 35				
			M_N	0 46 50	18	4		
			M_E	0 47 21	16		17	
			F	1 36				
324	14	Iu	eP	5 05 58				
			eS	5 14 28				
			eL	5 26 14				
			M_N	5 30 25	17	7		
			M_E	5 31 21	16		40	
			F	6 52				
325	14	Iu	eP	7 39 23				Near Chile.
			eS?	7 55 38				
			eL	8 35 47				
			F	9 41				
326	14	Iv	eP	7 45 27				End missed by movements of the preceding quake.
327	14	Ir	eP	19 49 18				
			iS	19 53 27				
			iL	19 56 00				
			F	21 12				
328	15	Ir	e	8 39 47				
			iL	8 47 54				
			F	9 14				
329	16	IIIr	iP	21 12 16				At Mati SE Mindanao it caused some light damage. Epicenter near Moluccas.
			iS	21 15 36				
			iL	21 16 48				
			M_E	21 17 17	7		283	
			M_N	21 17 18	7	275		
			F	23 25				
330	17	Ir	e?	13 42				
			L?	13 49				
			F?	14 10				
331	17	Ir	e?	22 37				Felt at Davao, SE Mindanao. Aftershock of the No. 329.
			F	23 11				
332	18	IIIv	iP	3 26 31				Pacific, E Visayas and Mindanao.
			iS	3 27 43				
			iL	3 28 05				
			M_N	3 29 37	6	290		
			M_E	3 29 50	6		354	
			F	4 57				
333	19	Iv	eP	2 59 44				
			F	3 03				
334	20	Ir	eP	17 17 54				
			L?	17 25 56				
			F	17 38				
335	21	Iv	eP	23 31 43				Moderate microseisms on the 21st and 22nd due a typhoon in the Pacific.
			iL	23 32 21				
			F	23 46				
336	24	Iv	e	2 19 45				Microseisms on the 23rd.
			L	2 21 14				
			F	2 36				
337	24	Iv	eP	15 20 38				
			iL	15 21 17				
			F	15 27				
338	26	I	e	13 13 55				
			F	13 52				
339	28	Iv	eP	2 27 11				Pacific, near SE Luzon.
			iL	2 27 54				
			F	2 35				

International Seismological Centre

DECEMBER, 1927

1, 18h 15m [2, 2h 15m]. **Lais, Davao** (SE Mindanao). Earthquake shock of intensity III.

1, 20h 20m [2, 4h 20m]. **Talacogon, Agusan** (E Mindanao). Local shock of intensity III. Recorded at Butuan.

2, 21h 25m [3, 5h 25m]. **Davao** (SE Mindanao). Earthquake of intensity III. This shock, the above one at Lais and another felt at Malita on the 3rd at 8h 00m [16h 00m] very likely corresponded to aftershocks of the 16th November earthquake.

8, 1h 52m [8, 9h 52m]. **Surigao** (NE Mindanao). Earthquake shock of intensity III. Recorded at Butuan.

11, 17h 29m 27s* [12, 1h 29m 27s]. **Butuan, Agusan** (N Mindanao). Earthquake of intensity IV. Distant origin in the Pacific to the SE of Mindanao not far from the place of the earthquake of the 17th of November. Local conditions of the soil in Butuan rendered it more easily perceptible than in other places of Mindanao nearer to the epicenter. Recorded in the Far East.

14, 9h 06m 43s* [14, 17h 06m 43s]. **Central Luzon.** Earthquake felt with intensity III–IV in Nueva Vizcaya and III in the Subprovince of Benguet. Its origin lay in the Agno River Valley.

16, 22h 00m [17, 6h 00m]. **Surigao** (NE Mindanao). Earthquake shock of intensity III. Recorded at Butuan.

18, 19h 50m [19, 3h 50m]. **Bontoc, Mountain Province** (N Luzon). Local shock of intensity III. Light aftershock few minutes later.

19, 6h 13m 30s* [19, 14h 13m 30s]. **Manila.** Earthquake shock of intensity II–III. Origin at a distance of 180 kilometers to the ENE in the Pacific.

23, 6h 09m [23, 14h 09m]. **Surigao** (NE Mindanao). Earthquake shock of intensity III. Recorded at Butuan.

International Seismological Centre

RECORDS OF THE MICROSEISMOGRAPH

[Time: Greenwich mean. Midnight = 0^h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: $T_o = 6.58$, $\epsilon = 2.288$, $\frac{r}{T_o^2} = 0.039$, $V = 198$; A_E: $T_o = 7.77$, $\epsilon = 1.487$, $\frac{r}{T_o^2} = 0.049$, $V = 198$. Alluvium. 2.40 meters above sea level]

No.	Date	Character	Phase	Hour	Period	Amplitude A_N μ	Amplitude A_E μ	Remarks
				h. m. s.	*s.*			
340	1	IIr	iP	4 41 05				According Batavia, epicenter was in Central Celebes; small destructions at Paloe and Donggala. Tsunami in Paloe Bay.
			iS	4 44 42				
			iL	4 45 51				
			M_E	4 46 45	8		23	
			M_N	4 46 48	4	16		
			F	5 44				
341	2	I	eP	20 08 12				Small movements.
			F	20 22				
342	11	Ir	i	17 29 27				Pacific, SE Mindanao.
			iL	17 33 00				
			M_E	17 33 09	5		54	
			M_N	17 33 28	4	24		
			F	18 05				
343	14	Iv	eP	9 06 43				Central Luzon.
			F	9 11				
344	15	Ir	eP	16 17 24				
			iL	16 21 47				
			F	16 56				
345	19	Ir	eP	5 43 44				
			eL	5 47 52				
			F	6 02				
346	19	IId	eP	6 13 30				Pacific, ENE Manila.
			iL	6 13 50				
			M_E	6 13 52	3		242	
			F	6 24				
347	19	Iv	eP	12 31 07				
			iL	12 31 23				
			F	12 34				
348	22	Ir	eP	13 56 45				
			L	14 02 42				
			F	14 12				
349	22	Iv	eP	21 00 54				
			L	21 01 12				
			F	21 04				
350	28	Iu	e	9 03 43				Very small movements.
			F	9 58				
351	28	IIu	eP_{NE}	18 29 33				
			PS_E	18 37 11				
			iS_{NE}	18 37 35				
			$iSR1_{NE}$	18 42 09				
			iL_{NE}	18 47 38				
			M_N1	18 49 33	18	8		
			M_E1	18 49 57	17		11	
			M_N2	18 54 01	16	12		
			M_E2	18 55 00	15		14	
			F	21 03				
352	30	Ir	e	6 05 34				
			iL	6 09 35				
			F	6 23				

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RÉSUMÉ

The seismic activity this year has manifested itself principally along two stripes located respectively to the west of Luzon Island in the China Sea and to the east of Visayas and Mindanao Islands in the Pacific. There occurred in each place some very strong tectonic shocks recorded around the Globe, but none caused any damage in the nearest Philippine lands because the epicenters lay under the sea and at some distance from the coasts.

The stripe in the China Sea had two separated sections. One was located between the parallels 17° and 20° N and 119° and 120° E; the other between 13° and 15.5° N and the same meridians 119° and 120° E. Both sections correspond to the deepest eastern part of the China Sea interrupted by a submarine chain which between the degrees 15.5° N and 17° N starts from the Luzon coasts in a NW direction.

In the first or northern section occurred during the first quarter of the year three earthquakes, which affected north Luzon. In the second section occurred two in April and one in May. These three shocks had the origin within the said meridians 119° and 120° E but in each successive one the origin shifted about a degree southwards; the first was close to 15.5° N, the second at about 14.8° N and the last near 13.7° N.

Along the stripe in the Pacific occurred eleven principal shocks. In the shocks occurred on the days 16, 17, 18 of November, the center shifted successively northwards. Nearly whole this Pacific region where the shocks had their origin is comprised within the limits of the great Pacific Deep which borders the eastern coast of Visayas and Mindanao Islands. It extended itself from 14° N to about 2° N and was approximately limited by the 126° and 128° E.

The Island of Panay experienced also several shocks of insular origin. There occurred four rather extensive but not very strong; one in February and three in October. None of them was recorded outside of the Archipelago as usually it happens with the shock originated within this island, which are of local character and have a shallow origin located near 10.9° N and 122.4° E. Moreover the rather scanty reports received about the three shocks occurred in October show that their origin must be located a little farther north of the above position and that it was successively shifting to the west.

The total number of shocks occurred this year was 153. Most of them were of a local character.

International Seismological Centre

JULIO, 1927

2, 9h 33m 21s* [2, 17h 33m 21s]. **Isla de Catanduanes.** Temblor de tierra de intensidad III–IV. Origen al E en el Pacífico.

3, 8h 17m 38s* [3, 16h 17m 38s]. **Islas de Catanduanes y Sámar y SE de Luzón.** Temblor de tierra sentido con intensidad VI en la isla de Catanduanes y muy perceptible en las provincias del SE de Luzón, Albay, Sorsogón y Camarines Norte y Sur, y en la isla de Sámar. Su origen se hallaba en el Pacífico en la parte norte del Abismo de Filipinas cerca del meridiano 126° E y del paralelo 14° N. El del día precedente se originó cerca del mismo sitio. Registrado en todo el Globo.

8, 0h 29m 19s* [8, 8h 29m 19s]. **Aparri, Cagayán** (NE de Luzón). Temblor de tierra sentido con intensidad IV. Origen en el Pacífico cerca del meridiano 123° E y 18.8° N. Registrado en Hongkong.

9, 1h 15m [9, 9h 15m]. **Cabo Bojeador, Ilocos Norte** (NW de Luzón). Temblor de tierra local de intensidad III.

10, 14h 00m [10, 22h 00m]. **Veruela, Dávao** (E de Mindanao). Temblor de tierra de intensidad III–IV. Registrado en Butúan.

13, 20h 30m 00s* [14, 4h 30m 00s]. **SE de Luzón.** Temblor de tierra sentido con intensidad III–IV en la parte sur de las provincias de Camarines Norte y Sur. Origen en el mar al NW de la isla de Burias.

16, 13h 15m [16, 21h 15m]. **Bacon, Sorsogón** (SE de Luzón). Temblor de tierra local de intensidad III.

18, 2h 30m [18, 10h 30m]. **Talacogon, Agusan** (E de Mindanao). Temblor de tierra local de intensidad III. Registrado en Butúan.

19, 20h 40m [20, 4h 40m]. **Isla de Cebú.** Temblor de tierra sentido con intensidad III en toda la mitad norte de la isla; origen al parecer insular.

23, 9h 05m [23, 17h 05m]. **Butúan, Agusan** (N de Mindanao). Temblor de tierra de intensidad IV–V y de larga duración. Ligera réplica a 17h 22m. Parece que este temblor fué de origen muy cercano y de carácter muy local; seguramente su origen se hallaba a pocos kilómetros de distancia al N en la bahía de Butúan donde con frecuencia se originan temblores que llegan a ser destructores sin que sean perceptibles a distancias de cuarenta y cincuenta kilómetros.

28, 6h 30m [28, 14h 30m]. **Odiongan, Isla de Tablas.** Temblor de tierra local de intensidad III.

28, 13h 40m [28, 21h 40m]. **Benguet** (W de Luzón.) Temblor de tierra sentido con intensidad III en toda la parte central de la subprovincia de Benguet. Debió ser de origen poco profundo como los que suelen ocurrir en dicha elevada región.

International Seismological Centre

AGOSTO, 1927

1, 11h 49m* [1, 19h 49m]. **Surigao** (NE de Mindanao). Temblor de tierra sentido con intensidad III. Origen algo distante en el Pacífico. Registrado en Butúan.

4, 1h 18m 00s* [4, 9h 18m 00s]. **Isla de Romblón.** Temblor de tierra local de intensidad III.

6, 14h 34m 00s* [6, 22h 34m 00s]. **Visayas Orientales y NE de Mindanao.** Temblor de tierra sentido con intensidad IV–V en la parte norte de las provincias de Surigao y Agusan y bien perceptible en las islas de Sámar, Leyte, Bohol y Cebú. Origen en el Pacífico hacia el meridiano 126° E y el paralelo 10° N. Registrado en el Extremo Oriente.

6, 19h 45m [7, 3h 45m]. **Tacloban** (NE de Leyte). Temblor de tierra local de intensidad III.

7, 11h 00m [7, 19h 00m]. **Solsona, Ilocos Norte** (NW de Luzón). Temblor de tierra local de intensidad II–III.

7, 15h 05m [7, 23h 05m]. **Veruela, Dávao** (E de Mindanao). Temblor de tierra de intensidad III. Registrado en Butúan.

13, 11h 38m [13, 19h 38m]. **Catbalogan** (W de Sámar). Temblor de tierra local de intensidad II–III.

31, 3h 00m [31, 11h 00m]. **Calbayog** (NW de Sámar). Temblor de tierra local de intensidad II–III.

International Seismological Centre

SEPTIEMBRE, 1927

4, 14h 35m [4, 22h 35m]. **Catbalogan** (W de Sámar). Temblor de tierra local de intensidad III.

4, 20h 00m [5, 4h 00m]. **Lais, Dávao** (SE de Mindanao). Temblor de tierra local de intensidad III.

9, 19h 55m [10, 3h 55m]. **Cápiz** (N de Panay). Temblor de tierra local, intensidad II–III.

11, 11h 45m [11, 19h 45m]. **Tubao, La Unión** (W de Luzón). Sacudida local de intensidad II–III.

12, 13h 25m [12, 21h 25m]. **Basco, Islas Batanes.** Temblor de tierra de intensidad IV, origen muy cercano en el mar.

14, 4h 31m [14, 12h 31m]. **Surigao** (NE de Mindanao). Temblor de tierra de intensidad III. Registrado en Butúan.

18, 4h 00m [18, 12h 00m]. **Cateel, Dávao** (E de Mindanao). Temblor de tierra de intensidad III. Registrado en Butúan.

24, 22h 35m [25, 6h 35m]. **Cotabato** (SW de Mindanao). Temblor de tierra local de intensidad II–III.

26, 4h 21m 00s* [26, 12h 21m 00s]. **Tubao, La Unión** (W de Luzón). Temblor de tierra de intensidad III.

26, 18h 03m [27, 2h 03m]. **Ormoc** (W de Leyte). Temblor de tierra local de intensidad III.

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3, 8h 00m [3, 16h 00m]. **Barás** (Isla de Catanduanes). Temblor de tierra local de intensidad III.

5, 22h 50m [6, 6h 50m]. **Butúan, Agusan** (N de Mindanao). Temblor de tierra de intensidad III.

9, 18h 08m 29s* [10, 2h 08m 29s]. **Islas de Panay y Negros.** Temblor de tierra sentido con intensidad IV en la parte central de la isla de Panay y perceptible en toda la parte norte de esta isla y en la noroeste de la de Negros. El origen parece fué insular en la cordillera que separa la provincia de Iloílo de la de Cápiz. El área afectada era muy prolongada de E a W a lo largo del paralelo 11° N.

16, 6h 20m 00s* [16, 14h 20m 00s]. **Camarines Sur y Catanduanes.** Temblor de tierra sentido con intensidad III. Su origen se hallaba en el mar hacia el norte de Catanduanes.

23, 20h 50m 08s* [24, 4h 50m 08s]. **Guiuan** (SE de Sámar). Temblor de tierra de intensidad III. Origen no lejano en el Pacífico.

24, 19h 33m 48s* [25, 3h 33m 48s]. **Isla de Panay.** Temblor de tierra sentido con intensidad IV en la parte oeste de la isla y algo perceptible también en la costa NW de la de Negros. El origen se hallaba al W del ocurrido el día 9; en las estaciones más occidentales de la isla situadas en los alrededores del paralelo 11° N se notaron algunas réplicas durante la misma madrugada y otra el 27 a 5h 00m [13h 00m].

26, 18h 30m [27, 2h 30m]. **Lais, Dávao** (SE de Mindanao). Temblor de tierra local de intensidad III.

27, 19h 43m 30s* [28, 3h 43m 30s]. **SW de Mindanao.** Temblor de tierra sentido con intensidad IV–V en la costa norte de la Bahía Illana, donde se notó una réplica media hora después, y con intensidad III en la parte occidental de la provincia de Cotabato y parte este de la de Zamboanga. El origen se hallaba en el Mar de Célebes al sur de la expresada bahía de Mindanao. Registrado en Batavia y débilmente en Europa.

29, 5h 38m 09s* [29, 13h 38m 09s]. **Isla de Panay.** Temblor de tierra sentido con intensidad IV–V en la costa occidental y muy perceptible en todo el resto de la isla de Panay y en algunas de las estaciones costeras del W de Negros. Originóse en el mismo sitio que el del día 24 no lejos de la costa occidental de Antique probablemente dentro de la isla en la cordillera que separa la provincia de Antique de la de Iloilo. En dos estaciones occidentales muy cercanas al paralelo 11° N, se notaron ligeras réplicas el día 31.

International Seismological Centre

NOVIEMBRE, 1927

1, 18h 05m [2, 2h 05m]. **Malita, Dávao** (SE de Mindanao). Temblor de tierra de intensidad III. Registrado en Butúan.

2, 6h 05m 55s* [2, 14h 05m 55s]. **Provincia del Agusan** (E de Mindanao). Temblor de tierra sentido con intensidad III–IV en la parte central del valle del Agusan, que comprende la parte N de la de Dávao y sur de la del Agusan. Registrado también en Butúan. Su origen parece se hallaba en el Pacífico al E de Mindanao.

3, 4h 40m [3, 12h 40m]. **Legaspi, Albay** (SE de Luzón). Temblor de tierra local de intensidad II–III.

3, 6h 19m 02s* [3, 14h 19m 02s]. **Candón, Ilocos Sur** (NW de Luzón). Temblor de tierra sentido con intensidad III. Origen al W en el mar de la China.

7, 3h 39m 20s* [7, 11h 39m 20s]. **NW de Luzón.** Temblor de intensidad III–IV; sentido en Ilocos Norte y en la parte N de Ilocos Sur. Origen cercano en el mar de la China.

10, 13h 10m [10, 21h 10m]. **Bacon, Sorsogón** (SE de Luzón). Temblor de tierra local de intensidad III.

10, 22h 38m [11, 6h 38m]. **Zamboanga** (W de Mindanao). Temblor de tierra de intensidad III–IV; precedióle ruido subterráneo. Registrado en Butúan.

12, 6h 16m [12, 14h 16m]. **Veruela, Agusan** (E de Mindanao). Temblor de tierra local de intensidad III.

16, 21h 12m 16s* [17, 5h 12m 16s]. **SE de Mindanao.** Extensísimo temblor de tierra sentido en las provincias de Dávao, Cotabato, Lánao, Cagayán, Bukidnon y parte sur de Agusan y Surigao. Tuvo intensidad VI–VII en la provincia de Dávao, especialmente en la costa oriental de la cuasi-península que termina en el cabo de San Agustín. Su epicentro se hallaba en el Pacífico a más de 500 kilómetros de distancia de Mindanao hacia el E o ENE de las Molucas. Siendo en realidad un grande y muy extenso terremoto lo registraron todos los sismógrafos del Globo. La exacta posición del epicentro costó de determinar por presentar los sismogramas de Europa y América algunas irregularidades. Sin embargo el haberse sentido tan intensamente en la parte SE de Mindanao y algo también en las islas de Sanguir obliga a ponerlo ciertamente en el Pacífico y al E del meridiano 126° E.

A 6h 35m del día 17 [17, 14h 35m] ocurrió en la parte oriental de la provincia de Dávao otro temblor de intensidad III que parece ser una réplica del precedente.

17, 22h 37m* [18, 6h 37m]. **SE de Mindanao.** Temblor de tierra sentido con intensidad III–IV en las mismas provincias que el del día 16. Su epicentro estaba en la misma región al E o ENE de las islas Molucas, pero al parecer algo más al Norte. Registrado en Batavia.

18, 3h 26m 31s* [18, 11h 26m 31s]. **E de Visayas y Mindanao.** Extensísimo temblor de tierra sentido en las islas de Sámar, Leyte, Bohol, Cebú y en toda la mitad oriental de la isla de Mindanao. Su mayor intensidad V–VI se experimentó en la parte NE de la isla de Mindanao. Su origen se hallaba en el Pacífico, en el Abismo de Filipinas, no lejos del meridiano 127° y del paralelo 10° N. Registrado en todo el Globo.

18, 20h 30m [19, 4h 30m]. **Dávao** (SE de Mindanao). Temblor de tierra sentido con intensidad III en gran parte de la provincia. Al parecer era una réplica del terremoto del día 16.

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19, 3h 35m [19, 11h 35m]. **Pasuquin, Ilocos Norte** (NW de Luzón). Temblor de tierra local de intensidad III.

19, 11h 00m [19, 19h 00m]. **Ganassi, Lánao** (W de Mindanao). Temblor de tierra local de intensidad III.

19, 23h 35m [20, 7h 35m]. **Súrigao** (NE de Mindanao). Temblor de tierra de intensidad III. Probablemente una réplica del temblor del 18.

20, 1h 40m [20, 9h 40m]. **Malita, Dávao** (SE de Mindanao). Temblor de tierra de intensidad III. Réplica del terremoto del 16. Semejantes réplicas de poca intensidad se sintieron en algunas estaciones del Golfo de Dávao, los días 21, 22 y 23.

23, 14h 30m [23, 22h 30m]. **Veruela, Agusan** (E de Mindanao). Temblor de tierra de intensidad III–IV sentido en la parte central del valle del Agusan; origen local. Registrado en Butúan.

28, 2h 27m 11s* [28, 10h 27m 11s]. **Albay y Catanduanes** (SE de Luzón). Temblor de tierra sentido con intensidad IV. Origen poco distante en el Pacífico, al sur de la isla de Catanduanes.

28, 22h 35m [29, 6h 35m]. **Legaspi, Albay** (SE de Luzón). Temblor de tierra de intensidad III. Parece una réplica del precedente.

30, 21h 52m [1.° diciembre 5h 52m]. **Guiuan** (SE de Sámar). Temblor de tierra de intensidad III–IV; origen muy cercano.

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DICIEMBRE, 1927

1, 18h 15m [2, 2h 15m]. **Lais, Dávao** (SE de Mindanao). Temblor de tierra de intensidad III.

1, 20h 20m [2, 4h 20m]. **Talacogon, Agusan** (E de Mindanao). Temblor de tierra local de intensidad III. Registrado en Butúan.

2, 21h 25m [3, 5h 25m]. **Dávao** (SE de Mindanao). Temblor de tierra de intensidad III. Tanto este pequeño temblor como el del día 2 de Lais y el ocurrido el mismo día 3 en Malita a 8h 00m [16h 00m] son sin duda réplicas del terremoto del día 16 de noviembre.

8, 1h 52m [8, 9h 52m]. **Surigao** (NE de Mindanao). Temblor de tierra de intensidad III. Registrado en Butúan.

11, 17h 29m 27s* [12, 1h 29m 27s]. **Butúan, Agusan** (N de Mindanao). Temblor de tierra de intensidad IV. Origen lejano al SE en el Pacífico, cerca del epicentro del temblor del día 17. Las condiciones locales de la estación de Butúan contribuyeron a que allí se sintiese bien, no dándose cuenta de él las estaciones del SE de Mindanao. Registrado en el Extremo Oriente.

14, 9h 06m 43s* [14, 17h 06m 43s]. **Centro de Luzón.** Temblor de tierra sentido con intensidad III–IV en Nueva Vizcaya y III en la subprovincia de Benguet. Su origen se hallaba hacia el valle del Río Agno.

16, 22h 00m [17, 6h 00m]. **Surigao** (NE de Mindanao). Temblor de tierra de intensidad III. Registrado en Butúan.

18, 19h 50m [19, 3h 50m]. **Bontoc, Provincia Montañosa** (N de Luzón). Temblor de tierra local de intensidad III. Repetición de menos intensidad a los pocos minutos.

19, 6h 13m 30s* [19, 14h 13m 30s]. **Manila.** Temblor oscilatorio de intensidad II–III. Origen a 180 kilómetros de distancia al ENE en el Pacífico.

23, 6h 09m [23, 14h 09m]. **Surigao** (NE de Mindanao). Temblor de tierra de intensidad II–III. Registrado en Butúan.

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RESUMEN

La actividad sísmica de este año se manifestó principalmente a lo largo de dos fajas o zonas estrechas situadas, una al W de Luzón en el Mar de la China y otra al E de las islas Visayas y Mindanao en el Mar Pacífico. Aunque ocurrieron en ambas fajas terremotos muy fuertes, registrados en todo el Globo, no causaron sin embargo daños en tierras filipinas por hallarse sus epicentros en el mar algo distantes de las costas. La faja del Mar de la China estaba dividida en dos secciones; una situada entre los paralelos 17° y 20° N y los meridianos 119° y 120° E, la otra dentro de los mismos meridianos pero en más bajos paralelos, entre los 13° y 15.5° N. Estas secciones corresponden a la región oriental más profunda del Mar de la China, la cual entre los 15.5° y 17° N está interrumpida por una cordillera submarina que arrancando de la costa de Luzón se dirige al NW.

En la primera de dichas secciones se originaron en los primeros cuatro meses del año tres temblores que afectaron toda la parte N de Luzón. En la segunda tuvieron lugar dos en abril y uno en mayo. Fué cosa notable que manteniéndose sus orígenes entre los meridianos 119° y 120° E se fueron trasladando sucesivamente hacia el sur. El primero de abril estuvo cerca del paralelo 15.5° N, el segundo cerca de 14.8° N, y el de mayo cerca de 13.7° N.

La faja del Pacífico se extiende desde los 14° a los 2° N y próximamente entre los meridianos 126° y 128° E. En ella se originaron once temblores principales bien determinados. En su cambio de latitud no se notó sistema ninguno de variación, excepto en los de los días 16, 17 y 18 de noviembre cuyo origen se fué trasladando sucesivamente hacia el norte. Esta faja o zona del Pacífico está casi toda ella dentro de los límites del grande abismo submarino que bordea las costas de Visayas y Mindanao.

Otro centro de extraordinaria actividad estaba situado dentro de la isla de Panay. Ocurrieron cuatro temblores algo extensos pero no fuertes; uno en febrero y tres en octubre. Ninguno fué de carácter tectónico, puesto que no llegaron a registrarse fuera de los límetes de Filipinas. Su origen probablemente se hallaba en el ya conocido centro profundo, situado cerca de los 10.9° y 122.4° E. De los datos recibidos, no muy completos, parecía que esta vez el origen estaba algo más al norte y que en los temblores de octubre se fué sucesivamente trasladando algo hacia el oeste.

Los otros temblores de este año, que suman un total de 153, fueron generalmente de carácter local y no merecen especial consideración.

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CATALOGUE OF THE PHILIPPINE EARTHQUAKES, 1927[a]

Date	Time of occurrence. (Greenwich mean-time)	Place	Probable origin or epicenter		Approximate extension of the shaken area		Intensity (Rossi-Forel)	Remarks
			ϕ	λ	Longer axis	Shorter axis		
	h. *m.*		°	°	*Km.*	*Km.*		
Jan. 1	18 53	E Visayas and NE Mindanao	10.0 N	127.0 E	500	250	IV	Recorded in the Far East.
2	0 19	W Luzon					III	Origin in the China Sea.
4	5 10	Glan, Cotabato (S Mindanao)					III	Recorded at Butuan.
5	16 25	NW Luzon	17.5 N	119.2 E	350	350	IV	Recorded in the Far East.
9	1 29	Ormoc (W Leyte)					VI	Foreshock at 1h 20m, aftershocks 1h 30m and 1h 31m. Recorded at Manila and Butuan.
9	19 00	Glan, Cotabato (S Mindanao)					III	
10	6 02	Batanes Islands					III	Recorded at Manila.
10	7 19	Daet, Camarines Norte (SE Luzon)					III	Recorded at Manila. Aftershock at 7h 22m.
10	15 45	Samar Island	12.8 N	126.5 E			III	Recorded at Manila.
11	9 20	Ormoc (W Leyte)					III	Repetition a few minutes later.
12	0 06	Central Luzon	15.3 N	119.5 E	450	200	IV–V	Aftershocks at 2h 51m and 3h 22m. Recorded at Hongkong.
16	1 50	Paracale, Camarines Norte (SE Luzon)					III	
21	3 00	Ilagan, Isabela (NE Luzon)	17.0 N	124.0 E			III	
22	14 25	Talacogon, Agusan (E Mindanao)					III	Recorded at Butuan as distant.
25	8 06	NE Mindanao					IV–V	Origin, Butuan Bay. Recorded at Manila.
30	7 41	Butuan, Agusan (N Mindanao)					III	Origin, Agusan Valley.
Feb. 2	7 24	Eastern Visayas and NE Mindanao	11.0 N	127.0 E	500	250	III	Recorded at Manila.
5	7 38	Samar Island	11.5 N	126.0 E			IV	
5	21 30	Bual, Cotabato (SW Mindanao)					III	
7	6 57	Butuan, Agusan (N Mindanao)					III	Aftershock at 7h 00m. Origin in the Pacific.
14	23 00	Cateel, Davao (E Mindanao)	7.8 N	126.7 E			IV–V	Recorded at Butuan.
16	4 14	Samar Island					III	Origin in the Pacific. Recorded at Manila and Butuan.
16	21 00	Lais, Davao (SE Mindanao)					III	
16	23 52	Talacogon, Agusan (E Mindanao)					III	Recorded at Butuan.
17	1 58	Malita, Davao (SE Mindanao)					III	
17	14 00	Ormoc (W Leyte)					III	
18	22 59	E Mindanao	7.5 N	128.0 E	400	200	IV–V	Recorded in the Far East.
19	19 02	Batanes Islands					III	
20	2 03	Panay and Negros Islands	10.6 N	122.9 E	200	200	IV	Recorded in the Far East. Light aftershock at 3h 03m.
27	23 01	Agusan Province					III	
Mar. 5	16 40	Benguet (W Luzon)	16.1 N	120.6 E			III	Recorded at Manila.
6	18 45	Naguilian, La Union (W Luzon)					III	
9	19 02	Talacogon, Agusan (E Mindanao)					III	Recorded at Butuan.
11	11 30	Cateel, Davao (E Mindanao)					III–IV	Recorded at Butuan.
18	21 30	Lais, Davao (SE Mindanao)	5.7 N	126.5 E			III	Recorded in the Far East.
26	4 25	Batanes Islands					III	
29	11 05	Butuan, Agusan (N Mindanao)					III	
April 2	23 46	Talacogon, Agusan (E Mindanao)					III	Recorded at Butuan.
6	21 48	NW Luzon	19.0 N	119.3 E			III	Recorded at Manila.
7	4 00	Camp Kalaw, Davao (E Mindanao)					III	
7	9 00	Lais, Davao (SE Mindanao)					III	
7	21 20	NW Luzon	19.0 N	119.3 E			III–IV	
9	8 59	E Mindanao	7.5 N	128.5 E			III–IV	Recorded at Manila and Batavia.
11	14 50	NW Luzon	19.0 N	120.0 E	300	200	IV–V	Recorded at Manila.
13	13 45	Central Luzon	15.8 N	119.4 E	500	200	IV–V	Recorded around the world. Foreshock at 12h 50m. Repetition, III–IV at 14h 34m; recorded in the Far East and Europe.
15	0 02	Veruela, Agusan (E Mindanao)					III	
16	13 07	SE Mindanao	5.5 N	127.0 E			III	Recorded at Butuan.
19	17 31	Central Luzon	14.5 N	119.5 E	700	300	V–VI	Recorded in the Far East. Recorded around the world. Light aftershocks at 18h 43m and 19h 02m.
23	13 22	NW Luzon	18.0 N	120.0 E	300	250	VI–VII	Recorded in the Far East.
25	2 05	Talacogon, Agusan (E Mindanao)					III	
25	5 08	Guam (Mariana Islands)					III	

[a] See explanation in Monthly Bulletin of the Weather Bureau for December 1910, page 445.

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Catalogue of the Philippine Earthquakes, 1927—Continued

Date	Time of occurrence. (Greenwich mean-time)	Place	Probable origin or epicenter		Approximate extension of the shaken area		Intensity (Rossi-Forel)	Remarks
			ϕ	λ	Longer axis	Shorter axis		
	h. *m.*		°	°	*Km.*	*Km.*		
May 1	14 58	Guam (Mariana Islands)					III	
5	17 06	Indang, Cavite (SW Luzon)					III–IV	
11	9 51	NW Luzon	17.3 N	120.6 E			III–IV	Recorded at Manila. Aftershock at 20h 20m.
13	15 13	SW Luzon	13.7 N	120.0 E	500	250	V–VI	Recorded in the Far East and Europe. Aftershocks on the 14th at 2h 02m and 16h 16m.
18	21 39	Butuan, Agusan (N Mindanao)					III	
19	11 45	Tubao, La Union (W Luzon)					III	
21	22 44	Batanes Islands					III	
22	11 58	SE Luzon	13.4 N	125.0 E	150	100	III	Recorded at Manila.
25	10 09	Bangued, Abra (NW Luzon)					III	
29	2 30	Davao (SE Mindanao)					III	
30	12 31	Zamboanga (W Mindanao)					III	
June 3	7 17	Talacogon, Agusan (E Mindanao)					II–III	
3	19 30	Ilocos Sur (NW Luzon)					III	Recorded at Manila. Origin in the China Sea.
6	5 38	E Mindanao	8.0 N	127.0 E	450	200	IV–V	Recorded at Manila.
7	9 38	Butuan, Agusan (N Mindanao)					III	Distant origin in the Pacific. Recorded at Manila.
9	10 44	Guam (Mariana Islands)					III–IV	Recorded at Manila.
10	20 45	NW Luzon	18.5 N	120.3 E	200	150	III	Recorded at Manila.
14	9 26	E Mindanao			300	200	IV	Origin in the Pacific. Recorded in the Far East and Europe.
15	10 31	Batanes Islands					III	Recorded at Manila. Origin in the Bashi Channel.
15	10 45	Cateel, Davao (E Mindanao)					III	
18	0 57	N Luzon	18.5 N	120.2 E	300	200	VI–VII	Recorded around the world.
18	6 48	S Leyte Island	10.1 N	125.2 E			IV–V	Recorded at Manila.
19	10 25	Legaspi, Albay (SE Luzon)					III	Recorded at Manila. Origin in the Pacific.
21	17 55	Virac (Catanduanes Island)					IV	
22	5 35	Atok, Benguet (W Luzon)					III	Recorded at Baguio.
22	7 30	Cateel, Davao (E Mindanao)					III	
22	23 37	Odiongan (Tablas Island)					III	
23	7 00	Baras (Catanduanes Island)					II–III	
23	7 46	Odiongan (Tablas Island)					III	
23	20 13	SW Luzon					III	Recorded at Manila. Origin near Zambales coast.
24	20 25	Odiongan (Tablas Island)	12.0 N	121.6 E			IV	A series of light shocks began on the 22nd. Recorded at Manila.
28	1 43	E Visayas and NE Mindanao	10.5 N	127.0 E	400	200	IV	Recorded in the Far East.
28	21 05	Catbalogan (W Samar)					III	
July 2	9 33	Catanduanes Island					III–IV	Origin in the Pacific. Recorded at Manila.
3	8 18	Catanduanes and Samar Islands and SE Luzon	14.0 N	126.0 E	500	300	VI	Recorded around the world.
8	0 29	Aparri, Cagayan (NE Luzon)	18.8 N	123.0 E			IV	Recorded at Hongkong.
9	1 15	Cabo Bojeador, Ilocos Norte (NW Luzon)					III	
10	14 00	Veruela, Davao (E Mindanao)					III–IV	Recorded at Butuan.
13	20 30	SE Luzon	13.5 N	123.0 E	200	150	III–IV	Recorded at Manila.
16	13 15	Bacon, Sorsogon (SE Luzon)					III	
18	2 30	Talacogon, Agusan (E Mindanao)					III	Recorded at Butuan.
19	20 40	Cebu Island					III	
23	9 05	Butuan, Agusan (N Mindanao)	9.2 N	125.3 E			IV	Aftershock at 9h 22m.
28	6 30	Odiongan (Tablas Island)					III	
28	13 40	Benguet (W Luzon)					III	
Aug. 1	11 49	Surigao (NE Mindanao)					III	Origin in the Pacific. Recorded at Manila and Butuan.
4	1 18	Romblon Island					III	Recorded at Manila.
6	14 34	Eastern Visayas and NE Mindanao	10.0 N	126.0 E	450	300	IV–V	Recorded in the Far East.
6	19 45	Tacloban (NE Leyte)					III	
7	11 00	Solsona, Ilocos Norte (NW Luzon)					II–III	
7	15 05	Veruela, Davao (E Mindanao)					III	Recorded at Butuan.
13	11 38	Catbalogan (W Samar)					II–III	
31	3 00	Calbayog (NW Samar)					II–III	
Sept. 4	14 35	Catbalogan (W Samar)					III	
4	20 00	Lais, Davao (SE Mindanao)					III	
9	19 55	Capiz (N Panay)					II–III	
11	11 45	Tubao, La Union (W Luzon)					II–III	
12	13 25	Batanes Islands					IV	
14	4 31	Surigao (NE Mindanao)					III	Recorded at Butuan.
18	4 00	Cateel, Davao (E Mindanao)					III	Recorded at Butuan.
24	22 35	Cotabato (SW Mindanao)					II–III	
26	4 21	Tubao, La Union (W Luzon)					III	Recorded at Manila.
26	18 03	Ormoc (W Leyte)					III	

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Catalogue of the Philippine Earthquakes, 1927—Continued

Date	Time of occurrence. (Greenwich mean-time)	Place	Probable origin or epicenter		Approximate extension of the shaken area		Intensity (Rossi-Forel)	Remarks
			ϕ	λ	Longer axis	Shorter axis		
	h. *m.*		°	°	*Km.*	*Km.*		
Oct. 3	8 00	Baras (Catanduanes Island)					III	
5	22 50	Butuan, Agusan (N Mindanao)					III	
9	18 08	Panay and Negros Islands	11.0 N	122.5 E	200	200	IV	Recorded at Manila.
16	6 20	Camarines Sur and Catanduanes Island	14.5 N	124.3 E			III	Recorded at Manila.
23	20 50	Guiuan (SE Samar)					III	Recorded at Manila. Near origin in the Pacific.
24	19 34	Panay and Negros Islands	11.0 N	122.3 E	200	200	IV	Light aftershocks. Recorded at Manila.
26	18 30	Lais, Davao (SE Mindanao)					III	
27	19 43	SW Mindanao	6.5 N	123.0 E	350	200	IV–V	Recorded in the Far East and Europe.
29	5 38	Panay and Negros Islands	11.0 N	122.3 E	200	200	IV–V	Recorded at Manila. Light aftershocks.
Nov. 1	18 05	Malita, Davao (SE Mindanao)					III	Recorded at Butuan.
2	6 05	Central Agusan (E Mindanao)					III–IV	Origin in the Pacific. Recorded at Manila.
3	4 40	Legaspi, Albay (SE Luzon)					II–III	
3	6 19	Candon, Ilocos Sur (NW Luzon)					III	Origin, China Sea. Recorded at Manila.
7	3 39	NW Luzon	18.7 N	120.0 E			III–IV	Registered at Manila.
10	13 10	Bacon, Sorsogon (SE Luzon)					III	
10	22 38	Zamboanga (W Mindanao)					III–IV	Recorded at Butuan.
12	6 16	Veruela, Agusan (E Mindanao)					III	
16	21 12	SE Mindanao	3.0 N	132.0 E	450	450	VI–VII	Recorded around the world. Aftershock on 17th at 6h 35m.
17	22 37	SE Mindanao	4.0 N	132.0 E	400	400	III–IV	Recorded at Manila and Batavia.
18	3 27	Eastern Visayas and Mindanao	10.0 N	127.0 E	500	300	V–VI	Recorded around the world.
18	20 30	Davao (SE Mindanao)					III	
19	3 35	Pasuquin, Ilocos Norte (NW Luzon)					III	
19	11 00	Ganassi, Lanao (W Mindanao)					III	
19	23 35	Surigao (NE Mindanao)					III	
20	1 40	Malita, Davao (SE Mindanao)					III	
23	14 30	Veruela, Agusan (E Mindanao)					III–IV	Recorded at Butuan.
28	2 27	Albay and Catanduanes Island (SE Luzon)					IV	Near origin in the Pacific. Recorded at Manila.
28	22 35	Legaspi, Albay (SE Luzon)					III	
30	21 52	Guiuan (SE Samar)					III–IV	
Dec. 1	18 15	Lais, Davao (SE Mindanao)					III	
1	20 20	Talacogon, Agusan (E Mindanao)					III	Recorded at Butuan.
2	21 25	Davao (SE Mindanao)					III	
8	1 52	Surigao (NE Mindanao)					III	Recorded at Butuan.
11	17 29	Agusan (E Mindanao)					IV	Distant origin to the SE of Mindanao. Recorded in the Far East.
14	9 07	Central Luzon	16.5 N	120.8 E			III–IV	Recorded at Manila.
16	22 00	Surigao (NE Mindanao)					III	Recorded at Butuan.
18	19 50	Bontoc, Mountain Province (N Luzon)					III	Light aftershock a few minutes later.
19	6 13	Manila, S Luzon					II–III	
23	6 09	Surigao (NE Mindanao)					III	

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NUMBER OF EARTHQUAKES FELT IN THE PHILIPPINES, FROM 1903 TO 1927

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1903	12	5	8	8	15	13	9	24	10	12	17	8	141
1904	22	10	10	9	6	8	11	5	11	15	4	6	117
1905	14	8	12	11	10	8	12	10	11	16	8	12	132
1906	13	6	5	12	6	11	9	9	9	11	5	7	103
1907	13	7	10	14	22	17	14	16	5	5	15	7	145
1908	17	6	11	6	13	9	5	11	8	10	15	11	122
1909	11	8	9	13	12	5	12	12	14	10	5	9	120
1910	13	13	14	12	23	18	22	8	12	21	23	17	196
1911	12	14	21	13	17	15	13	27	29	19	16	18	214
1912	14	21	28	16	15	18	22	15	15	14	12	12	202
1913	9	18	25	5	15	15	12	13	11	7	8	10	148
1914	15	17	12	10	5	11	14	12	13	10	13	14	146
1915	11	14	12	11	14	15	18	12	12	14	12	14	159
1916	13	15	12	7	8	8	15	18	20	15	7	5	143
1917	6	11	13	12	11	11	7	12	12	17	21	13	146
1918	12	17	8	12	19	11	16	14	11	13	20	14	167
1919	12	11	16	8	8	16	17	15	13	11	11	13	151
1920	19	11	12	7	15	10	8	18	8	18	12	9	147
1921	9	7	10	7	20	16	16	13	17	19	15	15	164
1922	15	12	16	13	21	15	13	14	11	14	17	11	172
1923	6	9	20	17	10	6	18	10	19	16	25	14	170
1924	11	12	15	14	15	8	13	14	15	13	7	12	149
1925	17	18	15	18	15	20	13	10	18	24	18	18	204
1926	23	16	11	13	13	4	13	12	7	18	10	18	158
1927	16	14	7	14	11	22	12	8	10	9	20	10	153

The number of violent and destructive earthquakes (VII to X) during these years was 58. In 1913 ocurred 6; 1907, 5; 1915, 1919, 1923 and 1925, 4; 1910, 1917, 1918, 1920, 1921 and 1922, 3; 1904, 1905, 1912 and 1924, 2; 1903, 1909, 1911, 1916, and 1926, 1. Their monthly distribution is the following January 4, February 2, March 6, April 7, May 6, June 0, July 3, August 5, September 7, October 3, November 9 and December 6.

NUMBER OF SEISMIC DISTURBANCES RECORDED AT MANILA, FROM 1903 TO 1927

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1903	21	20	13	15	16	6	16	16	8	13	9	14	167
1904	15	19	11	19	17	35	25	18	16	26	18	18	237
1905	30	23	18	22	22	29	28	9	24	26	14	29	274
1906	30	17	22	27	13	35	11	14	14	86	21	26	316
1907	16	12	21	32	35	17	19	15	21	14	43	14	259
1908	16	14	23	15	20	12	14	15	9	108	25	24	295
1909	21	24	24	22	25	14	26	15	20	6	13	7	217
1910	20	17	20	17	17	21	19	11	12	18	15	29	216
1911	16	19	30	22	24	30	31	35	30	28	28	22	315
1912	27	16	30	24	23	35	27	35	20	20	31	34	322
1913	44	20	37	61	42	25	22	41	36	24	13	6	371
1914	22	35	30	48	25	23	24	20	22	26	32	22	329
1915	27	19	21	32	38	33	28	28	30	24	27	31	338
1916	37	46	43	38	37	28	31	28	31	39	22	17	397
1917	31	27	27	35	47	34	39	33	27	43	38	25	406
1918	62	35	32	30	22	37	64	68	45	34	48	53	530
1919	37	31	42	44	47	45	42	23	48	20	24	17	420
1920	30	35	17	25	48	40	30	34	32	47	15	19	372
1921	19	23	37	20	80	35	42	25	40	19	24	27	391
1922	41	25	20	41	50	33	33	46	39	32	24	37	421
1923	16	42	34	31	49	20	38	35	46	30	53	22	416
1924	24	31	27	48	74	26	33	30	59	24	20	23	419
1925	36	27	34	28	77	43	26	22	35	38	97	35	498
1926	30	20	32	23	29	41	27	52	34	38	29	22	377
1927	27	28	24	36	39	36	36	32	16	33	32	13	352

Since April 1911 a more sensitive Wiechert's seismograph has been in use.

Ref 2691

Year 1927, No. 1. January 1st to 11th, 1927.

M A N I L A ? P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY

ϕ=14° 34' 41" N. =120° 58' 33" E. h=2.40 ms. Alluvium.

Instrument: Wiechert's astatic pendulum (1,000 Kg.)

	T_o	V		$\frac{r}{T_o^2}$
A_N	3.36	182	2.199	0.182
A_E	3.47	175	2.004	0.142

No.	Date	Character	Phase	Greenwich mean time	Period.	Amplitude A_N	Amplitude A_E	Distance.	Remarks.
				h. m. s.	s.	μ	μ	Km.	
1	1	I_V	eP	18 53 17				890	NE Mindanao. Microseisms on the 1st and 2nd.
			iL	54 54					
			F	19 06					
2	2	III_V	iP	0 19 22				680	Felt slightly at Baguio.
			iL	20 37					
			M_E	20 40	7		257		
			M_N	21 12	9	261			
			F	40					
3	2	I_V	eP	22 54 47				180	
			F	59					
4	2	I_V	eP	23 10 16				220	
			F	13					
5	3	I_r	eP	22 12 22					
			iL	15 54					
			F	51					
6	5	III_d	iP	16 25 08				390	Ilocos Sur and Mountain Provinces.
			iL	25 51					
			M_E	26 35	5		297		
			M_N	26 45	3	310			
			F	17 01					
7	9	I_V	eP	1 28 53				580	W Leyte.
			iL	29 57					
			F	46					
8	10	I_V	eP	4 31 17				170	
			F	34					
9	10	Iv	iP	6 02 06				690	Near Batanes Islands.
			iL	03 22					
			F	11					
10	10	I_V	eP	7 18 41				250	
			F	20					
11	10	I_V	eP	7 21 50				210	SE Luzon.
			F	24					
12	10	I_V	eP	15 44 48				610	Near Samar Island.
			iL	45 55					
			F	49					

International Seismological Centre From the ISC collection scanned by SISMOS

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Greenwich mean time	Period.	Amplitude A_N	Amplitude A_E	Distance.	Remarks.
				h. m. s.	s.	μ	μ	Km.	
13	12	III_d	iP	0 05 53				180	Western coast of Zambales in the China Sea.
			iL	06 13					
			F	44					
14	12	I_v	eP	2 50 51				190	Aftershock of the No. 13.
			F	54					
15	12	Iv	eP	3 22 11				170	Aftershock of the No. 13.
			F	26					
16	15	I_v	eP	14 39 22				470	
			L	40 14					
			F	47					
17	17	I_r	eP	22 04 35					
			L	11 00					
			F	32					
18	18	I_v	eP	10 07 35				130	
			F	10					
19	20	I	e	11 16 30					Trace only.
			F	49					
20	21	I_v	eP	3 00 05				430	NE Luzon.
			iL	00 52					
			M_N	00 53	4	58			
			M_E	00 54	3		38		
			F	18					
21	24	II_v	iP	0 20 35				230	
			iL	21 01					
			M_E	21 05	2		49		
			M_N	21 13	2	55			
			F	30					
22	24	II_r	iP	1 15 34					
			iPR_N	16 35					
			iPR_E	16 56					
			eS	20 05					
			iSR_N	21 55					
			eL	23 09					
			M_E	24 29	6		106		
			M_N	24 56	7	44			
			F	2 43					
23	24	I	e	6 47					Trace only.
			F	7 24					
24	25	I	e	8 06					Trace only. NE Mindanao.
			F	25					
25	25	I_r	eP	23 20 28					
			eL?	30 2o					
			F	0 32					

International Seismological Centre From the ISC collection scanned by SISMOS

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Greenwich mean time	Period	Amplitude A_N	Amplitude A_E	Distance.	Remarks.
				h. m. s.	s.	μ	μ	Km.	
26	26	I_r	eP	15 46 25					
			eL	54 30					
			F	16 28					
27	28	I_v	eP	15 29 38				140	Microseisms on the 29th and 30th.
			F	33					

FEBRUARY, 1927.

28	1	II_r	iP	18 04 09					
			iL?	10 13					
			M_E	11 40	6		47		
			M_N	11 46	6	42			
			F	46					
29	2	I_r	iP	7 24 02					NE Mindanao.
			L?	26 46					
			F	39					
30	2	I_v	eP	13 40 19				140	
			F	43					
31	3	I_r	eP	3 57 54				1980	Felt at Shanghai.
			eL	4 02 27					
			F	41					
32	3	I_r	eP	4 56 48				1950	Felt at Shanghai.
			L	5 01 14					
			F	32					
33	4	I_r	eP	2 59 19					
			iL	3 06 49					
			F	34					
34	5	I_v	eP	6 31 00				45	
			F	33					
35	5	II_v	eP	7 38 12				670	Philippine Deep.
			iL	39 25					
			M_N	40 34	9	170			
			M_E	41 52	7		134		
			F	8 42					
36	6	I_v	eP	3 06 34				790	
			L	08 00					
			F	18					
37	6	I_v	iP	15 58 55				70	
			F	16 07					
38	7	I_v	eP	17 13 57				90	
			F	17					
39	9	I_v	eP	7 56 00				110	
			F	59					

International Seismological Centre From the ISC collection scanned by SISMOS

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Greenwich Mean time	Period	Amplitude A_N	Amplitude A_E	Distance	Remarks.
				h. m. s.	s.	$)^u$	$)^u$	Km.	
40	13	I_V	eP	22 51 12				125	
			F	53					
41	14	I	e	11 57 32					Trace only.
			F	12 08					
42	16	III_u	eP	1 43 19					End overtaken by following quake,
			iL?	2 05 26					
43	16	II_V	eP	4 14 00					
			iL?	15 40					
			F	34					
44	18	II_r	eP	22 59 13					E Mindanao.
			iL	23 01 34					
			F	59					
45	20	I_V	eP	2 02 48				450	SE Panay.
			L	03 38					
			F	24					
46	21	II_r	iP	12 28 45					
			iL	35 00					
			ME	35 41	9		19		
			MN	37 51	9	16			
			F	13 31					
47	22	I_r	eP	19 59 28					
			iL	20 05 30					
			MN	08 00	8	17			
			ME	09 03	9		23		
			F	51					
48	23	I_r	eP	2 49 47					
			L	54 37					
			F	3 32					
49	25	I_V	eP	15 52 56				270	
			F	59					
50	25	I_V	eP	16 02 28				230	
			F	11					
51	26	I	e	2 15 19					
			F	52					
52	26	I	e	13 29 00					
			F	44					
53	26	I	e	14 07					
			F	48					
54	27	I_V	eP	3 56 29				410	
			L	57 14					
			F	4 17					
55	28	I	e	14 28					Trace only.
			F	16 18					

From the ISC collection scanned by SISMOS

Year 1927, No. 3. March 1st to 18th, 1927.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

ϕ=14° 34' 41" N. λ=120° 58' 33" E. h=2.40 ms. Alluvium.

Instrument: Wiechert's astatic pendulum (1,000 Kg.)

	T_o	V	ε	$\frac{r}{T_o^2}$
A_N	7.14	197	2.638	0.032
A_E	7.43	170	2.046	0.038

No.	Date	Character	Phase	Greenwich mean time h. m. s.	Period. s.	Amplitude A_N μ	Amplitude A_E μ	Distance. Km.	Remarks.
56	3	III_r	iP	1 10 00				3180	
			iS	14 58					
			iL	17 46					
			M_N	18 31	8	221			
			M_E	19 12	8		250		
			F	2 49					
57	3	I	e	16 58					Trace only.
			F	17 56					
58	5	I_V	eP	0 39 52				210	Western part of LUzon.
			iL	40 15					
			F	44					
59	7	III_r	iP	9 32 58				2880	Japan.
			iS	37 32					
			iL	41 23					
			M_{N1}	43 07	8	329			
			M_{E1}	43 41	9		470		
			M_{E2}	46 02	10		475		
			M_{N2}	47 36	11	419			
			F	11 57					
60	12	I	e	12 14					Trace only.
			F	46					
61	14	I_r	eP	15 25 37					
			L	29 39					
			F	55					
62	14	I_r	eP	17 42 19					
			L	49 04					
			F	18 49					
63	15	I_r	eP	17 02 28					
			L	08 00					
			F	35					
64	15	I_r	eP	22 00 08					
			L	06 32					
			F	41					
65	16	I_V	eP	18 28 54				410	
			L	29 39					
			F	46					
66	18	I_V	eP	15 55 38				125	
			F	58					

International Seismological Centre From the ISC collection scanned by SISMOS

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Greenwich mean time h. m. s.	Period. s.	Amplitude A_N μ	Amplitude A_E μ	Distance. Km.	Remarks.
67	18	Ir	eP	21 29 42					
			L	31 30					
			F	22 14					
68	20	Iv	eP	21 17 00				770	
			L	18 24					
			F	43					
69	21	Ir	i	15 17 34					
			L?	27 00					
			F	56					
70	21	I	e	22 41					
			F	55					
71	22	I	e	7 44					Trace only.
			F	8 10					
72	23	Iv	eP	7 55 46				330	
			F	8 03					
73	23	I	L	9 41					Trace only.
			F	55					
74	24	Iv	eP	5 02 41				290	
			iL	03 13					
			MN	03 18	3	26			
			F	16					
75	25	I	e	13 06 30					
			F	35					
76	25	Iv	eP	23 07 18				130	
			iL	07 33					
			F	13					
77	26	Iv	eP	2o 15 17				310	
			F	21					
78	27	Iv	eP	16 55 02				120	
			F	59					
79	31	I	e	21 14 00					Trace only.
			F	55					

A P R I L , 1 9 2 7 .

80	1	IIr	eP	19 16 47					
			iL	25 20					
			ME	26 00	8		88		
			MN	26 05					
			F	20 12					
81	3	I	e	13 53					Trace only.
			F	14 05					
82	5	Iv	eP	5 21 14					
			L	23 19					
			F	46					
83	6	Iv	eP	21 47 46				530	
			F	56					

International Seismological Centre From the ISC collection scanned by SISMOS

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Greenwich mean time h. m. s.	Period. s.	Amplitude A_N μ	Amplitude A_E μ	Distance. Km.	Remarks.
84	7	I_v	eP	17 51 44				435	
			L	52 32					
			F	18 28					
85	7	I_v	eP	21 19 38				390	Northwestern coast of Luzon.
			L	20 21					
			F	38					
86	9	I_r	eP	8 59 27					E Mindanao.
			L	9 02 00					
			F	31					
87	9	I_v	eP	15 48 00				920	
			L	49 46					
			F	16 12					
88	9	I	e	17 13					Trace only.
			F	35					
89	11	II_v	eP	14 49 44				450	
			iL	50 34					
			ME	50 56	4		37		
			MN	51 09	5	37			
			F	15 06					
90	12	I_v	eP	7 13 37				140	
			F	16					
91	12	I	e	23 23					Trace only.
			F	45					
92	13	III_d	iP	13 44 43				190	China Sea, near western coast of Luzon. Maxima and end lost by the force of the shock
			iL	45 04					
93	13	III_d	iP	14 33 37				200	Do.
94	14	I_u	e?	6 43 29				17000?	Chile?
			S?	7 01 00					
			F	29					
95	16	Iv	eP	8 06 33				190	
			F	11					
96	16	I_u	eP	8 25 44					End in succeeding movement.
			S?	32 25					
			L?	40 21					
97	16	I_r	eP	9 23 32					
			L?	33 00					
			F	10 15					
98	16	I_r	eP	13 06 43					E Mindanao.
			L	08 56					
			F	23					
99	17	I_r	eP	9 10 45					
			L	14 36					
			F	37					
100	18	I_v	eP	15 10 55				630	
			F	21					

International Seismological Centre From the ISC collection scanned by SISMOS

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Greenwich mean time	Period.	Amplitude A_N	Amplitude A_E	Distance.	Remarks.
				h. m. s.	s.	μ	μ	Km.	
101	18	I_V	eP	18 46 18				400	
			F	52					
102	19	III_d	iP	17 30 42				160	China Sea. Maxima lost by the force of the shock.
			iL	31 00					
			F	18 27					
103	19	I_V	eP	18 42 49				155	Repetition of the No. 102.
			F	47					
104	19	I_V	eP	19 02 21				170	Repetition of the No. 102.
			F	06					
105	20	I_V	eP	8 55 31				180	
			F	59					
106	20	I_V	eP	15 34 34				390	
			iL	35 17					
			F	42					
107	20	I_V	eP	20 04 41				70	
			F	08					
108	21	I	e	3 21					Trace only.
			F	50					
109	23	II_V	eP	13 21 42				480	China Sea?
			iL	22 35					
			M_N	22 46	4	121			
			M_E	23 12	5		141		
			F	52					
110	25	I_V	eP	1 54 32				220	
			F	2 04					
111	27	I	e	3 01 00					Trace only.
			F	49					
112	27	I_r	eP	19 21 50					
			iL?	31 15					
			F	20 35					
113	27	I_V	eP	19 32 03				100	
			F	35					
114	28	I_r	eP	10 27 26					
			L?	30 00					
			F	11 02					
115	30	I_u	e?	14 06 39					
			M	24					
			F	15 08					

International Seismological Centre From the ISC collection scanned by SISMOS

Year 1927, No. 9. May 1st to 12th, 1927.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

ϕ=14° 34' 41" N. λ=120° 58' 33" E. h=2.40 ms. Alluvium.

Instrument: Wiechert's astatic pendulum (1,000 Kg.)

	T_o	V	ε	$\frac{r}{T_o^2}$
A_N	7.31	105	2.814	0.023
A_E	7.11	189	1.989	0.039

No.	Date	Character	Phase	Greenwich mean time	Period.	Amplitude A_N	Amplitude A_E	Distance.	Remarks.
				h. m. s.	s.	μ	μ	Km.	
116	2	I_r	e	12 41 39					
			L?	12 50 00					
			F	13 16					
117	3	I_r	eP	13 48 00					
			L?	14 01 00					
			F	14 32					
118	4	II_v	eP	14 05 58				200	
			iL	14 06 20					
			M_E	14 06 25	4		244		
			M_N	14 06 43	5	398			
			F	14 28					
119	5	I_r	eP	18 53 28				1000	
			iL	18 55 17					
			F	19 11					
120	6	I_v	eP	18 41 06				80	
			F	18 44					
121	9	I	e	16 19					Trace only.
			F	16 32					
122	10	I_r	eP	6 09 39					
			L?	6 19 00					
			F	7 04					
123	11	I_r	e	1 25 22					
			L?	1 32 00					
			F	1 48					
124	11	I_v	eP	9 50 42				320	Abra Province.
			iL	9 51 18					
			F	10 01					
125	11	I	e	10 45					Trace only.
			F	11 02					
126	12	I	e	4 10 55					Trace only.
			F	4 33					

International Seismological Centre From the ISC collection scanned by SISMOS

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Greenwich mean time	Period.	Amplitude A_N	Amplitude A_E	Distance.	Remarks.
				h. m. s.	s.	μ	μ	Km.	
127	13	III_d	iP	15 33 28				130	China Sea, near SW coast of Luzon. Maxima and end lost by the force of the shock.
			iL	15 33 43					
128	13	I_v	eP	18 28 20				220	
			iL	18 28 44					
			F	18 35					
129	13	I	e	23 16 03					Trace only.
			F	23 39					
130	14	I_v	eP	1 35 38				750	
			L	1 37 00					
			F	1 49					
131	14	I_v	eP	2 01 59				125	China Sea, near SW coast of Luzon.
			iL	2 02 13					
			F	2 09					
132	14	I_v	eP	15 33 47				580	
			L	15 34 51					
			F	15 45					
133	14	I_v	eP	16 16 32				160	
			iL	16 16 50					
			F	16 21					
134	15	I	e	3 36 39					Trace only.
			F	3 54					
135	16	I_r	eP	12 06 43					
			iL	12 12 00					
			F	13 22					
136	17	I_r	e	6 17 34					
			L	6 26 26					
			F	7 02					
137	17	I_r	e?	21 50 00					
			L?	21 54 06					
			F	22 24					
138	18	I_v	eP	7 37 34				150	
			iL	7 37 51					
			F	7 47					
139	18	I_v	eP	15 43 03				140	
			iL	15 43 19					
			F	15 51					
140	18	I_v	eP	16 41 13				140	
			F	16 44					
141	21	I_r	e	17 05 00					
			L?	17 13 52					
			F	17 41					

International Seismological Centre From the ISC collection scanned by SISMOS

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Greenwich mean time h. m. s.	Period. s.	Amplitude A_N μ	Amplitude A_E μ	Distance. Km.	Remarks.
142	22	III_V	eP	11 58 00				490	Pacific, felt SE end of Luzon.
			iL	11 58 51					
			ME	12 01 47	7		293		
			F	13 21					
143	22	I_V	eP	12 09 15				600	Aftershock of the No. 142.
			L	12 10 21					
			F	12 15					
144	22	I_V	eP	20 38 26				540	Aftershock of the No. 142.
			L	20 39 25					
			F	20 58					
145	22	I_r	eP	21 49 25					
			L	22 01 13					
			F	22 23					
146	22	III_r	iP_E	22 38 38			P-L =	3900	Kansu, China.
			iS_E	22 44 37			P-S =	2580	
			iL_E	22 48 32					
	23		F	2 47					
147	23	I_r	eP	2 52 42				3640	Aftershock of the No. 146.
			iL	3 01 48					
			F	3 32					
148	23	I_r	e	6 45					Aftershock of the No. 146.
			L	6 53 00					
			F	7 20					
149	23	I_r	e	13 57 39					
			iL	14 07 32					
			F	14 38					
150	23	I_r	eP	23 50 55					
	24		iL	0 02 00					
			F	0 33					
151	24	I_r	e	16 13 00					Micros. on the 24 and 25 and moderate on the 26, caused by a typhoon.
			eL	16 19 00					
			F	16 34					
152	28	I_V	eP	23 15 28				270	
			F	23 18					
153	29	I_V	eP	14 52 30				190	Micros. on the 27, 28 and 29.
			F	14 55					
154	31	I_V	eP	21 27 44				240	Micros. on the 30 and 31.
			F	21 31					

International Seismological Centre From the ISC collection scanned by SISMOS

Year 1927, No. 12. June 1st to 7th, 1927.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

$\phi = 14^{\circ}\ 34'\ 41''$ N. $\lambda = 120^{\circ}\ 58'\ 33''$ E. h=2.40 ms. Alluvium.

Instrument: Wiechert's astatic pendulum (1,000 Kg.)

	T_o	V	ε	$\frac{r}{T_o^2}$
A_N	6.52	155	2.618	0.054
A_E	6.32	202	1.865	0.046

No.	Date	Character	Phase	Greenwich mean time	Period.	Amplitude A_N	Amplitude A_E	Distance.	Remarks.
				h. m. s.	s.	μ	μ	Km.	
155	1	I_V	iP	6 56 30				160	
			iL	6 56 48					
			F	7 06					
156	1	I_r	eP	7 29 29					
			iL	7 32 30					
			F	7 44					
157	1	I_V	eP	21 13 16				140	
			iL	21 13 32					
			F	21 16					
158	1	I_V	eP	22 23 11				180	
			iL	22 23 31					
			F	22 28					
159	2	I	M_N	17 00					
			F	17 13					
160	3	III_r	iP	7 17 13				3400	Felt at Darwin Port, N Australia, according Sydney Observatory.
			P	7 18 03					
			iL	7 25 41					
			F	9 02					
161	3	I_V	eP	19 29 39				310	W Luzon.
			iL	19 30 13					
			F	19 38					
162	6	I_r	eP	5 37 52				1020	E Mindanao.
			iL	5 40 04					
			F	6 08					
163	6	I	e	12 36 00					Trace only.
			F	13 04					
164	6	I	e	18 35 51					Trace only.
			F	19 08					
165	7	I_r	eP	9 38 30				1440	Pacific.
			iL	9 41 43					
			M_N	9 42 24	9	44			
			M_E	9 42 37	7		35		
			F	11 08					

International Seismological Centre From the ISC collection scanned by SISMOS

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Greenwich mean time h. m. s.	Period. s.	Amplitude A_N μ	Amplitude A_E μ	Distance. Km.	Remarks.
166	7	I	e	11 52 38					Trace only.
			F	12 19					
167	7	I_V	eP	14 38 13				115	
			F	14 40					
168	9	I_V	eP	11 38 39				770	
			L	11 40 03					
			F	12 05					
169	10	I_V	eP	20 44 56				150	NW Luzon.
			F	20 48					
170	11	I_r	eP	2 36 26					End overtaken by following earthquake.
			iL?	2 41 18					
			M_E	2 43 28	7		38		
			M_N	2 44 30	9	19			
171	11	I_r	eP	2 53 43					
			iL	2 59 31					
			F	4 13					
172	11	I	e	12 59 00					
			F	13 16					
173	14	I_r	eP	9 26 29					Pacific.
			iL	9 30 08					
			F	10 54					
174	14	I.	e	17 27 54					Trace only.
			F	18 30					
175	15	I_V	eP	10 31 14				810	Bashi Channel.
			F	10 44					
176	17	I_V	eP	9 36 19				40	
			F	9 39					
177	17	I_V	eP	10 33 19				140	
			iL	10 33 35					
			F	10 40					
178	18	III_V	iP	0 57 05				440	China Sea near northwestern part of Luzon.
			P	0 57 13					
			iL	0 57 54					
			ME	0 58 43	4		452		
			F	1 38					
179	18	I_V	eP	6 47 55				740	Pacific, near Dinagat Island.
			eL	6 49 16					
			F	7 08					
180	19	I_V	eP	10 24 48				370	Pacific, SE Luzon.
			F	10 31					
181	20	I_V	eP	7 32 22				250	
			F	7 39					

International Seismological Centre From the ISC collection scanned by SISMOS

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Greenwich mean time	Period.	Amplitude A_N	Amplitude A_E	Distance.	Remarks.
				h. m. s.	s.	μ	μ	Km.	
182	20	I_u	e	14 22 39					
			L?	14 41 00					
			F	15 19					
183	22	I	e	3 35 44					Trace only.
			F	3 51					
184	23	I_v	eP	20 13 28				140	W Luzon.
			iL	20 13 44					
			F	20 18					
185	23	I	e	23 53 00					
	24		M	0 00 00					
			F	0 22					
186	24	II_v	eP	20 24 36				300	SW Tablas Island.
			iL	20 25 09					
			M_N	20 25 12	3	121			
			M_E	20 25 13	3		74		
			F	20 42					
187	26	I_u	e?	11 43 00				8370?	Felt in Crimea Peninsula, according Kew Observatory.
			L?	12 08					
			F	12 37					
188	27	I_v	eP	12 35 12				120	
			F	12 40					
189	28	II_v	iP	1 43 28				650	Off SE Samar.
			iL	1 44 39					
			M_N	1 44 56	6	38			
			M_E	1 45 10	6		73		
			F	2 18					
190	28	I_r	eP	11 09 34				1530	
			M	11 13 22					
			F	11 24					

International Seismological Centre From the ISC collection scanned by SISMOS

Year 1927, No. 15. July 1st to 11th, 1927.

M A N I L A , .P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

ϕ=14° 34' 41" N. λ=120° 58' 33" E. h=2.40 ms. Alluvium.

Instrument: Wiechert's astatic pendulum (1,000Kg.)

	T_o	V	ε	$\frac{r}{T_o^2}$
A_N	6.52	155	2.618	0.054
A_E	6.32	202	1.865	0.046

No.	Date	Character	Phase	Greenwich mean time	Period.	Amplitude A_N	Amplitude A_E	Distance.	Remarks.
				h. m. s.	s.	μ	μ	Km.	
191	1	I_r	e	8 31 45				9300	
			S	8 42 05					
			F	9 37					
192	1	I_v	eP	23 06 53				160	
			F	23 11					
193	2	I_v	eP	9 33 21				460	Pacific, off SE coast of Luzon.
			L	9 34 12					
			F	9 42					
194	2	I_r	e	20 44 53					
			M	20 53 19					
			F	21 17					
195	3	III_v	iP	8 17 38				590	Pacific,off SE coast of Luzon.
			iL	8 18 43					
			M_N	8 18 45	4	490			
			M_E	8 18 46	4		408		
			F	9 42					
196	3	I	e	10 49 17					
			F	11 33					
197	4	I_v	eP	7 17 43				200	
			L	7 18 05					
			F	7 22					
198	7	I_r	eP	20 16 09				5260	
			L	20 30 29					
			F	20 51					
199	8	II_v	eP	0 29 19				490	NE Luzon.
			iL	0 30 13					
			M_N	0 31 23	4	61			
			M_E	0 31 30	4		67		
			F	0 51					
200	10	I_v	eP	10 43 28				150	
			F	10 46					
201	11	I_u	eP	13 16 15				8400	Palestine.
			S	13 25 36					
			L	13 42 40					
			M_E	13 53 00	24		1		
			F	14 27					

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M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Greenwich mean time	Period.	Amplitude A_N	Amplitude A_E	Distance.	Remarks.
				h. m. s.	s.	μ	μ	Km.	
202	12	I_r	iP	21 14 55				5400	Kurile Islands.
			iS	21 22 00					
			F	22 16					
203	13	I_v	eP	15 35 00				130	
			iL	15 35 15					
			F	15 39					
204	13	II_v	iP	20 30 00				310	Southeastern part of Luzon.
			iL	20 30 34					
			M_E	20 30 36	2		181		
			F	20 45					
205	14	I_r	eP	23 22 00					
			iL	23 26 12					
			M_N	23 26 22	4	88			
			M_E	23 26 52	5		79		
			F	23 56					
206	17	I_r	eP	8 53 03					
			M_E	9 00 26	5		10		
			F	9 14					
207	18	I_r	e	11 31 32					Microseisms on the 17th and 18th.
			M_E	11 41 42	7		12		
			F	11 56					
208	21	I_v	eP	9 56 51				125	
			L	9 57 05					
			F	10 01					
209	21	I_v	eP	10 04 26				100	Microseisms on the 19th, 20th and 21st
			F	10 07					
210	21	I_v	eP	10 41 33				90	
			F	10 43					
211	22	I_u	e(P)	4 06					Phases very indefinite and disturbed by microseisms.
			iS	4 14 14					
			L?	4 31 00					
			M_N	4 35 00	22	5			
			M_E	4 36 24	20		9		
			F?	5 53					
212	23	I_v	eP	6 12 51				110	
			iL	6 13 03					
			F	6 16					
213	23	I_v	e?	12 04 22					
			L?	12 05 31					
			F	12 15					
214	23	I	L?	20 58					
			F	21 12					

International Seismological Centre From the ISC collection scanned by SISMOS

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Greenwich mean time	Period.	Amplitude A_N	Amplitude A_E	Distance.	Remarks.
				h. m. s.	s.	μ	μ	Km.	
215	23	I	L?	23 21.5					Moderate microseisms on the 22nd and 23rd.
			F	23 33					
216	24	I_V	eP	19 33 18				220	
			F	19 38					
217	25	I_V	eP	10 36 42				140	Microseisms on the 24th and 25th.
			F	10 39					
218	27	I	e	14 58 19					Trace only.
			F	15 16					
219	28	I_V	eP	10 03 32				200	
			iL	10 03 54					
			F	10 10					
220	28	I	e	16 29					Trace only.
			F	16 57					
221	29	I_r	e	0 09 48					
			M	0 23 00					
			F	0 53					
222	29	I_V	eP	9 15 56				490	
			iL	9 16 50					
			F	9 28					
223	29	I_V	eP	11 28 18				260	
			F	11 37					
224	30	I_r	eP	14 25 51					
			L?	14 32 00					
			F	14 52					
225	30	I_V	eP	15 42 09				240	
			F	15 46					
226	31	I_V	eP	23 37 46				280	
			L	23 38 17					
			F	23 45					

International Seismological Centre From the ISC collection scanned by SISMOS

Year 1927, No. 18. August 1st to 7th, 1927.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

ϕ=14° 34' 41" N. λ=120° 58' 33" E. h=2.40 ms. Alluvium.

Instrument: Wiechert's astatic pendulum (1,000 Kg.)

	T_o	V	ε	$\frac{r}{T_o^2}$
A_N	6.52	155	2.618	0.054
A_E	6.32	202	1.865	0.046

No.	Date	Character	Phase	Greenwich mean time	Period.	Amplitude A_N	Amplitude A_E	Distance.	Remarks.
				h. m. s.	s.	μ	μ	Km.	
227	1	I	e	11 49.5					Trace only.
			F	12 33					
228	1	I	e	19 03					Feeble movements.
			F	19 51					
229	3	I_V	eP	6 07 23				510	
			iL	6 08 19					
			F	6 29					
230	3	I	e	7 17 33					
			M	7 22 00					
			F	7 37					
231	4	II_V	iP	1 18 00				260	Romblon Island.
			iL	1 18 29					
			M_E	1 18 42	2		126		
			M_N	1 18 43	2	180			
			F	1 36					
232	4	I	e	15 52 20					
			F	16 26					
233	4	I_V	eP	16 32 54				100	
			F	16 36					
234	5	II_r	iP	21 19 06				3900	Japan.
			iPR_{N2}	21 20 30					
			PS_E	21 23 46					
			iS_E	21 23 52					
			iS_N	21 24 43					
			iSR_{E1}	21 26 28					
			iSR_{N1}	21 26 34					
			iL_N	21 28 54					
			iL_E	21 29 05					
			M_N	21 31 09	13	33			
			M_E	21 31 15	8		37		
			F	22 59					
235	6	I_V	eP	14 34 00				920	Pacific, off NE Mindanao.
			L	14 35 40					
			F	14 52					
236	7	I_V	eP	16 08 20				380	Microseisms on the 6th and 7th.
			L	16 09 02					
			F	16 15					

From the ISC collection scanned by SISMOS

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Greenwich mean time h. m. s.	Period. s.	Amplitude A_{NN} μ	Amplitude A_E μ	Distance. Km.	Remarks.
237	8	I_r	e	1 06 29					
			L?	1 12 30					
			F	1 31					
238	8	I_v	eP	10 28 45				160	
			L	10 29 03					
			F	10 35					
239	8	I_r	iP	18 48 00					
			L	18 50 55					
			F	19 14					
240	10	III_r	iP	11 40 31				2300	Near New Guinea.
			iPS_E	11 42 39					
			iPS_N	11 42 44					
			iS_E	11 44 14					
			iL_E	11 45 31					
			M_{E1}	11 45 47					
			M_{E2}	11 48 49					
			F	14 06					
241	10	I_v	eP	18 59 37				100	
			F	19 02					
242	12	I_r	eP	0 38 13					
			iL?	0 42 00					
			F	1 42					
243	12	I	e?	10 31					
			F	11 23					
244	13	I_r	eP	11 47 58				1350	
			iL	11 51 00					
			M_E	11 51 42	7		64		
			F	12 56					
245	18	I	e?	10 05					Moderate microseisms on the 18th, from 6h to 15h due to typhoon.
			F?	10 27					
246	18	I_r	(e)	19 34 36					Initial phases badly masked by strong microseisms.
			(iL)	19 42 00					
			F	20 58					
247	20	I	e?	21 45					Strong microseisms on the 19th and moderate on the 20th.
			F	22 22					
248	21	I	i	0 14					
			F	1 51					
249	21	I_v	eP	5 30 00				130	
			F	5 33					
250	23	I_r	eP	6 35 49					
			eS	6 41 15					
			iL	6 45 05					
			MN	6 46 19	12	12			
			ME	6 48 02	11		19		
			F	8 07					
251	24	I	eP	9 02 17					Trace only.
			F	10 10					

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MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Greenwich mean time	Period.	Amplitude A_N	Amplitude A_E	Distance.	Remarks.
				h. m. s.	s.	μ	μ	Km.	
252	24	II_V	iP	18 11 04				940	Formosa.
			iL	18 12 06					
			MN	18 16 10	12	60			
			F	19 32					
253	25	I_V	eP	12 32 17				630	
			F	12 43					
254	25	I_r	eP	16 56 01				1200	
			iL	16 58 40					
			F	17 53					
255	25	I	e	22 47					
			M	23 12					
			F	23 29					
256	26	I_V	eP	12 39 48				400	
			iL	12 40 32					
			F	12 51					
257	27	I_V	eP	11 43 18				110	Microseisms on the 21, 22, 24, 25, 26 and 27.
			F	11 46					
258	31	I_V	eP	8 59 38				100	
			F	9 02					

SEPTEMBER, 1927.

	T_o	V	ε	$\frac{r}{T_o^2}$
A_N	7.1	141	2.774	0.023
A_E	8.3	133	1.804	0.041

259	2	I	e	2 16 44					
			F	2 34					
260	7	I	e	20 10					Feeble movements.
			F	20 51					
261	8	I	e	17 18 00					
			F	18 13					
262	8	I	e	23 28 26					Trace only.
	9		F	0 19					
263	9	I_V	eP	3 46 29				140	
			iL	3 46 45					
			F	3 54					
264	10	I	e	16 40 48					
			F	17 04					

International Seismological Centre From the ISC collection scanned by SISMOS

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Greenwich mean time h. m. s.	Period. s.	Amplitude A_N μ	Amplitude A_E μ	Distance. Km.	Remarks.
265	11	I_u	eP	22 27 57					Asia Minor.
			SN	22 37 32					
			SE	22 37 34					
			iSRE1	22 43 04					
			iSRN1	22 43 05					
			eL	22 54 43					
			MN	22 58 45	33	6			
			ME	22 59 00	33		9		
	12		F	0 12					
266	13	I_r	eP	10 25 39					
			L?	10 33 05					
			F	10 57					
267	16	I	e	15 58 24					Trace only.
			F	16 43					
268	17	I_r	eP	0 50 13					Strong microseisms on the 17th from 14^h to 17^h, due to a typhoon.
			F	1 41					
269	18	Iv	eP	17 15 23					
			iL	17 16 39				690	Microseisms on the 18th.
			F	17 27					
270	19	I	e	8 39 00					Trace only.
			F	9 08					
271	22	I	e	12 00 00					Very small movements.
			F	12 56					
272	23	I_u	eP	14 02 13					
			L?	14 16 37					
			F	15 05					
273	25	I	e	0 24 51					Trace only.
			F	0 46					
274	26	I_v	eP	4 21 00					
			iL	4 21 22				200	
			F	4 25					

International Seismological Centre From the ISC collection scanned by SISMOS

Year 1927, No. 22. October 1st to 13th, 1927.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

ϕ=14° 34' 41" N. λ=120° 58' 33" E. h=2.40 ms. Alluvium.

Instrument: Wiechert's astatic pendulum (1,000 Kg.)

	T_o	V	ε	$\frac{r}{T_o^2}$
A_N	7.1	141	2.774	0.023
A_E	8.3	183	1.804	0.041

No.	Date	Character	Phase	Greenwich mean time	Period.	Amplitude A_N	Amplitude A_E	Distance.	Remarks.
				h. m. s.	s.	μ	μ	Km.	
275	4	I	M	2 21					
			F	3 02					
276	4	I_V	eP	19 49 15				80	Microseisms on the 5th, and strong on the 6th and 7th. Microseisms on the 8th.
			F	19 51					
277	8	I	e	12 36					
			F	12 57					
278	9	I	e	4 54					Moderate microseisms on the 9th.
			F	5 11					
279	9	I_V	eP	18 08 29				430	
			F	18 12					
280	10	I	e	17 55					Microseisms on the 10th. Trace only.
			F	18 21					
281	11	I	e	3 07 33					Trace only.
			M	3 11 37					
			F	3 33					
282	11	I	e	4 30 29					Very small movements.
			M	4 33 00					
			F	5 00					
283	11	I	e	17 37 00					Trace only.
			F	17 55					
284	11	I_V	eP	23 28 52				170	Microseisms on the 11th.
			iL	23 33					
285	12	I	e	6 31 20					
			M_N	6 36 24	18	8			
			M_E	6 36 43	9		21		
			F	7 16					
286	12	I	e	7 58 56					
			M	8 05 50					
			F	8 32					
287	12	I_V	eP	10 49 47				230	
			F	10 54					

International Seismological Centre From the ISC collection scanned by SISMOS

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Greenwich mean time	Period.	Amplitude A_N	Amplitude A_E	Distance.	Remarks.
				h. m. s.	s.	μ	μ	Km.	
288	14	I_V	eP	12 04 58				900	
			iL	12 06 48					
			F	12 19					
289	15	I	e	6 31					Trace only.
			F	6 57					
290	16	I_V	iP	6 20 00				380	Pacific, SE Luzon.
			iL	6 20 42					
			F	6 37					
291	17	I_V	eP	16 22 36				110	
			F	16 25					
292	19	I_V	eP	7 18 32				690	
			F	7 26					
293	20	I_V	eP	16 29 47				710	
			F	16 36					
294	21	I_V	eP	17 49 39				550	
			L	17 50 40					
			F	18 04					
295	21	I_V	eP	18 09 35				350	
			F	18 16					
296	21	I_V	eP	22 55 46				510	
			F	23 04					
297	21	I_V	eP	23 06 12				620	
			F	23 17					
298	23	I_V	eP	2o 50 08				630	Southeastern part of Samar.
			L	20 51 17					
			F	21 00					
299	24	II_u	e?	16 33 39				12500?	
			L?	16 52 00					
			F	18 11					
300	24	I_r	e	19 14 35					
			L	19 21 00					
			F	19 54					
301	24	I_V	eP	19 33 48				490	South Panay Island. Microseisms on the 24th and strong on the 25th and 26th.
			L	19 34 42					
			F	19 37					

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M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Greenwich mean time	Period.	Amplitude A_N	Amplitude A_E	Distance.	Remarks.
				h. m. s.	s.	μ	μ	Km.	
302	27	I_V	eP	19 43 30				990	North Celebes Sea.
			L	19 45 17					Microseisms on the
			F	20 05					27th.
303	28	I	e	15 30					
			F	15 54					
304	29	I_V	eP	5 38 09				490	S Panay Island.
			iL?	5 39 03					
			F	5 48					
305	30	I_V	eP	2 10 32				350	
			F	2 15					
306	30	I_V	eP	6 42 23				720?	
			iL?	6 43 42					
			F	7 00					
307	31	I_V	eP	17 36 35				150	
			F	17 40					

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Year 1927, No. 25. November 1st to 13th, 1927.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

ϕ=14° 34' 41" N. λ=120° 58' 33" E. h=2.40 ms. Alluvium.

Instrument: Wiechert's astatic pendulum (1,000 Kg.)

	T_o	V	ε	$\frac{r}{T_o^2}$
A_N	6.58	198	2.288	0.039
A_E	7.77	198	1.487	0.049

No.	Date	Character	Phase	Greenwich mean time h. m. s.	Period. s.	Amplitude A_N μ	Amplitude A_E μ	Distance. Km.	Remarks.
308	2	I_V	eP	5 11 17				80	
			F	5 13					
309	2	I_r	e	6 05 55					
			L?	6 08 53					
			F	6 19					
310	2	I_r	e	21 12 13					Very small.
			M	21 25 00					
			F	21 49					
311	2	I	e	23 00 29					Trace only.
			F	23 32					
312	3	II_V	eP	6 19 02				315	
			iL	6 19 37					
			F	6 32					
313	4	I_u	e	14 02					
			L?	14 30					
			F	15 44					
314	5	I_r	eP	6 40 55				1240	Near NE Formosa.
			iL	6 43 41					
			F	7 19					
315	6	I_r	eP	15 39 24					
			iL	15 44 37					
			F	16 06					
316	7	I_V	eP	3 39 20				390	Northwestern part of Luzon.
			L	3 40 03					
			F	3 46					
317	8	I	e	3 22 24					Trace only. F overtaken by following earthquake,
318	8	I	e	3 42 43					Very small movements
			F	4 05					
319	8	I_V	eP	9 14 19				140	
			F	9 18					
320	9	I_r	(e)	1 13					Initial phases masked by microseisms
			i(L)	1 20 00					
			F	2 07					
321	10	I_r	e	3 06 00					
			L	3 08 19					
			F	3 25					
322	12	I_V	eP	20 04 00				150	
			iL	20 04 17					
			F	20 08					

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M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Greenwich mean time	Period.	Amplitude A_N	Amplitude A_E	Distance.	Remarks.
				h. m. s.	s.	μ	μ	Km.	
323	14	I_u	eP	0 21 12					
			PS_E	0 30 06					
			S_E	0 30 26					
			eL_E	0 44 35					
			M_N	0 46 50	18	4			
			M_E	0 47 21	16		17		
			F	1 36					
324	14	I_u	eP	5 05 58					
			eS	5 14 28					
			eL	5 26 14					
			M_N	5 30 25	17	7			
			M_E	5 31 21	16		40		
			F	6 52					
325	14	I_u	eP	7 39 23					Near Chile?
			eS?	7 55 38					
			eL	8 35 47					
			F	9 41					
326	14	I_v	eP	7 45 27				140	End missed by movements of the preceding quake.
327	14	I_r	eP	19 49 18					
			iS	19 53 27					
			iL	19 56 00					
			F	21 12					
328	15	I_r	e	8 39 47					
			iL	8 47 54					
			F	9 14					
329	16	III_r	iP	21 12 16				1980	At Mati SE Mindanao it caused some light Damage.
			iS	21 15 36					
			iL	21 16 48					
			M_E	21 17 17	7		283		Epicenter near Moluccas.
			M_N	21 17 18	7	275			
			F	23 25					
330	17	I_r	e?	13 42					
			L?	13 49					
			F?	14 10					
331	17	I_r	e?	22 37					Felt at Davao SE Mindanao. Aftershock of the No. 329.
			F	23 11					

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M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Greenwich mean time	Period.	Amplitude A_N	Amplitude A_E	Distance.	Remarks.
				h. m. s.	s.	μ	μ	Km.	
332	18	III_V	iP	3 26 31				870	Felt in eastern and Northeastern Mindanao, Leyte and Samar Islands and very lightly in Cebu and Bohol.
			iS	3 27 43					
			iL	3 28 05					
			MN	3 29 37	6	290			
			ME	3 29 50	6		354		
			F	4 57					
333	19	I_V	eP	2 59 44				140	
			F	3 03					
334	20	I_r	eP	17 17 54					
			L?	17 25 56					
			F	17 38					
335	21	I_V	eP	23 31 43				340	Moderate microseisms on the 21st and 22nd due a typhoon in the Pacific.
			iL	23 32 21					
			F	23 46					
336	24	I_V	e	2 19 45				820	Microseisms on the 23rd.
			L	2 21 14					
			F	2 36					
337	24	I_V	eP	15 20 38				350	
			iL	15 21 17					
			F	15 27					
338	26	I	e	13 13 55					
			F	13 52					
339	28	I_V	eP	2 27 11				390	Pacific, near SE Luzon.
			iL	2 27 54					
			F	2 35					

International Seismological Centre From the ISC collection scanned by SISMOS

Year 1927, No. 28. December 1st to 22nd, 1927.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

ϕ=14° 34' 41" N. λ=120° 58' 33" E. h=2.40 ms. Alluvium.

Instrument: Wiechert's astatic pendulum (1,000 Kg.)

	T_o	V	ε	$\frac{r}{T_o^2}$
A_N	6.58	198	2.288	0.039
A_E	7.77	198	1.487	0.049

No.	Date	Character	Phase	Greenwich mean time h. m. s.	Period. s.	Amplitude A_N μ	Amplitude A_E μ	Distance. Km.	Remarks.
340	1	II_r	iP	4 41 05				2060	According Batavia, epicenter was in Central Celebes; small destructions at Paloe and Donggala. Tsunami in Paloe Bay.
			iS	4 44 42					
			iL	4 45 51					
			M_E	4 46 45	8		23		
			M_N	4 46 48	4	16			
			F	5 44					
341	2	I	eP	20 08 12					Small movements.
			F	20 22					
342	11	I_r	i	17 29.27				1520	Felt at Butuan, intensity IV.
			iL	17 33 00					
			M_E	17 33 09	5		54		
			M_N	17 33 28	4	24			
			F	18 05					
343	14	I_v	eP	9 06 43				230	
			F	9 11					
344	15	I_r	eP	16 17 24					
			iL	16 21 47					
			F	16 56					
345	19	I_r	eP	5 43 44					
			eL	5 47 52					
			F	6 02					
346	19	II_d	eP	6 13 30				180	Felt at Manila with intensity II.
			iL	6 13 50					
			M_E	6 13 52	3		242		
			F	6 24					
347	19	I_v	eP	12 31 07				140	
			iL	12 31 23					
			F	12 34					
348	22	I_r	eP	13 56 45					
			L	14 02 42					
			F	14 12					

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Year 1927, No. 28. December 1st to 22nd, 1927.

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SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

ϕ=14° 34' 41" N. λ=120° 58' 33" E. h=2.40 ms. Alluvium.

Instrument: Wiechert's astatic pendulum (1,000 Kg.)

	T_o	V	ε	$\frac{r}{T_o^2}$
A_N	6.58	198	2.288	0.039
A_E	7.77	198	1.487	0.049

No.	Date	Character	Phase	Greenwich mean time h. m. s.	Period. s.	Amplitude A_N μ	Amplitude A_E μ	Distance. Km.	Remarks.
340	1	II_r	iP	4 41 05				2060	According Batavia, epicenter was in Central Celebes; small destructions at Paloe and Donggala. Tsunami in Paloe Bay.
			iS	4 44 42					
			iL	4 45 51					
			M_E	4 46 45	8		23		
			M_N	4 46 48	4	16			
			F	5 44					
341	2	I	eP	20 08 12					Small movements.
			F	20 22					
342	11	I_r	i	17 29 27				1520	Felt at Butuan, intensity IV.
			iL	17 33 00					
			M_E	17 33 09	5		54		
			M_N	17 33 28	4	24			
			F	18 05					
343	14	I_v	eP	9 06 43				230	
			F	9 11					
344	15	I_r	eP	16 17 24					
			iL	16 21 47					
			F	16 56					
345	19	I_r	eP	5 43 44					
			eL	5 47 52					
			F	6 02					
346	19	II_d	eP	6 13 30				180	Felt at Manila with intensity II.
			iL	6 13 50					
			M_E	6 13 52	3		242		
			F	6 24					
347	19	I_v	eP	12 31 07				140	
			iL	12 31 23					
			F	12 34					
348	22	I_r	eP	13 56 45					
			L	14 02 42					
			F	14 12					

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M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued,

No.	Date	Character	Phase	Greenwich mean time h. m. s.	Period. s.	Amplitude A_N μ	Amplitude A_E μ	Distance. Km.	Remarks.
349	22	I_v	eP	21 00 54				160	
			L	21 01 12					
			F	21 04					
350	28	I_u	eP	9 03 43					Very small movements.
			F	9 58					
351	28	II_u	ePNE	18 29 33				6370	
			PSE	18 37 11					
			iSNE	18 37 35					
			iSR_1 NE	18 42 09					
			iLNE	18 47 38					
			M_N1	18 49 33	18	8			
			M_E1	18 49 57	17		11		
			M_N2	18 54 01	16	12			
			M_E2	18 55 00	15		14		
			F	21 03					
352	30	I_r	e	6 05 34					
			iL	6 09 35					
			F	6 23					

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Year 1927, No. 29. December 22nd to 31st, 1927.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued,

No.	Date	Character	Phase	Greenwich mean time	Period.	Amplitude A_N	Amplitude A_E	Distance.	Remarks.
				h. m. s.	s.	μ	μ	Km.	
349	22	I_v	eP	21 00 54				160	
			L	21 01 12					
			F	21 04					
350	28	I_u	eP	9 03 43					Very small movements.
			F	9 58					
551	28	II_u	ePNE	18 29 33				6370	
			PSE	18 37 11					
			iSNE	18 37 35					
			iSR_1 NE	18 42 09					
			iLNE	18 47 38					
			M_N1	18 49 33	18	8			
			M_E1	18 49 57	17		11		
			M_N2	18 54 01	16	12			
			M_E2	18 55 00	15		14		
			F	21 03					
352	30	I_r	e	6 05 34					
			iL	6 09 35					
			F	6 23					

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