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International Seismological Centre

THE GOVERNMENT OF THE PHILIPPINE ISLANDS

WEATHER BUREAU

MANILA CENTRAL OBSERVATORY

MONTHLY BULLETIN, 1925

PREPARED UNDER THE DIRECTION OF

REV. MIGUEL SELGA, S. J.

DIRECTOR OF THE WEATHER BUREAU

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BULLETIN FOR JANUARY, 1925

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SEISMOLOGICAL BULLETIN FOR JANUARY, 1925

By Rev. MIGUEL SADERRA MASÓ, S. J.
Chief, Seismic and Magnetic Divisions, Weather Bureau

EARTHQUAKES FELT IN THE PHILIPPINES[1]

1, 18h 00m [2, 2h 00m]. **Basco** (Batan Island). Earthquake of intensity III–IV.

2, 19h 37m 00s* [3, 3h 37m 00s]. **Visayan Islands.** Earthquake of intensity IV originated near southern Negros and felt through this island, Cebu, Bohol, and Panay. At 19h 49m 57s* [3, 3h 49m 57s] it repeated with the same intensity and similar extension. A third very light aftershock felt only in southern Negros occurred at 20h 03m [3, 4h 03m].

4, 5h 18m [4, 13h 18m]. **Romblon Island.** Light shock of intensity II–III.

4, 16h 12m 32s* [5, 0h 12m 32s]. **Calatagan** (SW Luzon). Earthquake shock of intensity III.

6, 15h 58m [6, 23h 58m]. **Talacogon** (E Mindanao). Earthquake shock of intensity III. Recorded at Butuan.

7, 8h 46m 19s* [7, 16h 46m 19s]. **Calatagan** (SW Luzon). Earthquake of intensity III. Origin in the China Sea SW of Manila.

7, 20h 52m 49s* [8, 4h 52m 49s]. **SE Luzon.** Earthquake felt with intensity III in the Provinces of Albay and Sorsogon. Origin in the Pacific.

8, 1h 53m [8, 9h 53m]. **Butuan** (N Mindanao). Earthquake of intensity III–IV felt in the northern part of the Agusan Valley. Origin in the Butuan Bay.

9, 4h 24m [9, 12h 24m]. **Dumaguete** (SE Negros). Earthquake of intensity III. Recorded at Butuan.

9, 13h 00m [9, 21h 00m]. **Talacogon** (E Mindanao). Very light local shock of intensity II–III.

9, 16h 04m [10, 0h 04m]. **Dalaguete** (SE Cebu). Local shock of intensity III.

16, 0h 11m [16, 8h 11m]. **Baguio** (W Luzon). Earthquake shock of intensity II–III.

22, 13h 22m [22, 23h 22m]. **Guam** (Mariana Islands). Light shock of intensity III.

24, 0h 51m 55s* [24, 8h 51m 55s]. **Pasuquin** (NW Luzon). Earthquake shock of intensity III.

25, 14h 59m [25, 22h 59m]. **Talacogon** (E Mindanao). Light shock of intensity III. Recorded at Butuan.

25, 16h 47m [26, 0h 47m]. **Cotabato** (SW Mindanao). Earthquake of intensity III; origin in the Pulangui River Valley, recorded at Butuan.

28, 19h 00m [29, 3h 00m]. **Lais** (SE Mindanao). Light shock of intensity III.

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[1] The intensity of earthquakes 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 registered by them. This fact is denoted by an asterisk (*). Otherwise the time is that noted by the observer who sent the report. All time indications are in Greenwich mean time (midnight=0 h), insular time being added in brackets for the convenience of Philippine readers.

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RECORDS OF THE MICROSEISMOGRAPH

[Time: Greenwich mean. Midnight=0^h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: T_o=3.01 ϵ=1.390, $\frac{r}{T_o^2}$=0.168, V=180; A_E: T_o=2.86, ϵ=1.865, $\frac{r}{T_o^2}$=0.267, V=160. 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	7 18 15				
			L	19 02				
			F	27				
2	1	Iv	eP	15 46 50				
			F	55				
3	2	Iv	eP	19 37 00				Visayan Islands. F overtaken by following quake.
			L	38 10				
4	2	Iv	eP	19 49 57				Visayan Islands.
			F	20 06				
5	3	I	e	8 28				Near Japan.
			F	9 08				
6	3	IIv	eP	16 03 42				
			iL	04 00				
			M_E	04 03	2		91	
			M_N	04 20	3	81		
			F	16				
7	4	I	e	8 42				
			F	57				
8	4	Iv	eP	16 12 32				Southwestern Luzon.
			iL	12 50				
			F	20				
9	5	I	e	14 08				
			F	43				
10	5	Iv	eP	21 59 41				
			F	22 03				
11	5	I	e	22 09				
			F	31				
12	6	Iv	eP	23 04 50				
			iL	05 32				
			F	13				
13	7	Iv	iP	8 46 19				SW Luzon.
			iL	46 39				
			M_N	46 47	2	84		
			M_E	46 56	2		81	
			F	55				
14	7	Iv	eP	17 28 31				
			F	31				
15	7	Iv	eP	20 52 49				SE Luzon.
			iL	53 42				
			F	21 02				
16	9	Iv	eP	7 03 12				
			iL	04 05				
			F	12				
17	9	Iv	eP	9 29 58				
			iL	30 10				
			F	33				
18	9	I	e	17 57				
			F	18 13				
19	9	I	e	18 21				
			F	43				
20	14	I	eL	10 56				
			F	11 11				
21	15	Ir	eP	16 55 18				
			iL	59 22				
			F	17 26				
22	18	IIr	iP	12 13 40				Near Kurile Islands.
			iL	29 40				
			F	14 08				

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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.*			
23	18	IIr	iP	20	18	55				
			iL		23	00				
			M_E		23	03	5		199	
			M_N		23	54	5	168		
			F		58					
24	19	Iv	eP	18	19	18				
			iL		19	40				
			F		26					
25	20	Ir	eP	11	04	45				
			L		06	46				
			F		19					
26	21	I	e	18	33					
			F	19	02					
27	23	Iv	eP	5	58	52				
			iL		59	50				
			F	6	10					
28	24	Iv	eP	0	51	55				Northern Luzon.
			L		52	39				
			F	1	00					
29	26	Iv	eP	19	21	22				
			L		23	04				
			F		52					
30	27	Iv	eP	17	27	40				
			iL		27	57				
			F		30					
31	28	IIr	e	4	12	45				
			iL		20	22				
			M_N		21	46	7	84		
			M_E		21	51	7		84	
			F	6	32					
32	28	I	e	18	25					
			F	19	08					
33	29	I	e	8	52					
			F	9	09					
34	30	Iv	eP	6	17	30				
			F		21					
35	30	Iv	eP	17	41	18				End overtaken by following quake.
			iL		41	37				
36	30	I	e?	17	42					
			F	18	37					

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TEMBLORES DE TIERRA SENTIDOS EN FILIPINAS[1]

1, 18h 00m [2, 2h 00m]. **Basco** (Islas Batanes). Temblor de tierra de intensidad III–IV.

2, 19h 37m 00s* [3, 3h 37m 00s]. **Islas Visayas.** Temblor de tierra de intensidad IV originado cerca de la costa sur de Negros y sentido en toda esta isla y en las de Cebú, Bohol y Panay. A 19h 49m 57s* [3, 3h 49m 57s] repitió con la misma intensidad y semejante extensión. A 20h 03m [3, 4h 03m] ocurrió una tercera sacudida sentida solamente en la parte meridional de Negros.

4, 5h 18m [4, 13h 18m]. **Isla de Romblón.** Ligero temblor de intensidad II–III.

4, 16h 12m 32s* [5, 0h 12m 32s]. **Calatagán** (SW de Luzón). Temblor de tierra de intensidad III.

6, 15h 58m [6, 23h 58m]. **Talacogon** (E de Mindanao). Temblor de tierra de intensidad III. Registrado en Butúan.

7, 8h 46m 19s* [7, 16h 46m 19s]. **Calatagán** (SW de Luzón). Temblor de tierra de intensidad III. Origen en el Mar de la China al SW de Manila.

7, 20h 52m 49s* [8, 4h 52m 49s]. **SE de Luzón.** Temblor de tierra sentido con intensidad III en las Provincias de Albay y Sorsogón. Origen al E en el Pacífico.

8, 1h 53m [8, 9h 53m]. **Butúan** (N de Mindanao). Temblor de tierra de intensidad III–IV sentido en la parte N del Valle del Agusan. Origen en la bahía de Butúan.

9, 4h 24m [9, 12h 24m]. **Dumaguete** (SE de Negros). Temblor de tierra de intensidad III. Registrado en Butúan.

9, 13h 00m [9, 21h 00m]. **Talacogon** (E de Mindanao). Ligera sacudida local de intensidad II–III.

9, 16h 04m [10, 0h 04m]. **Dalaguete** (SE de Cebú). Temblor de tierra local de intensidad III.

16, 0h 11m [16, 8h 11m]. **Baguio** (W de Luzón). Ligera sacudida de intensidad II–III.

22, 13h 22m [22, 23h 22m]. **Guam** (Islas Marianas). Ligero temblor de intensidad III.

24, 0h 51m 55s* [24, 8h 51m 55s]. **Pasuquin** (NW de Luzón). Temblor de intensidad III.

25, 14h 59m [25, 22h 59m]. **Talacogon** (E de Mindanao). Temblor de tierra de intensidad III. Registrado en Butúan.

25, 16h 47m [26, 0h 47m]. **Cotabato** (SW de Mindanao). Temblor de tierra de intensidad III originado en el Valle del Río Pulangui. Registrado en Butúan.

28, 19h 00m [29, 3h 00m]. **Lais** (SE de Mindanao.) Temblor de tierra local de intensidad III.

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[1] La intensidad de los terremotos se indica conforme a la conocida escala de Rossi-Forel. Cuanto a la hora de su ocurrencia, 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 apuntada por los observadores que nos envían las notas. Todas las indicaciones del tiempo se refieren al medio de Greenwich (medianoche=0h). Para conveniencia de los lectores de Filipinas se añade también la hora insular.

International Seismological Centre

BULLETIN FOR FEBRUARY, 1925

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SEISMOLOGICAL BULLETIN FOR FEBRUARY, 1925

By Rev. Miguel Saderra Masó, S. J.

Chief, Seismic and Magnetic Divisions, Weather Bureau

EARTHQUAKES FELT IN THE PHILIPPINES[1]

1, $5^h\ 16^m$ [1, $13^h\ 16^m$]. **Dumaguete** (SE Negros). Light shock of intensity II–III.

2, $9^h\ 40^m$ [2, $17^h\ 40^m$]. **Baguio** (W Luzon). Local earthquake shock of intensity II–III.

3, $18^h\ 21^m\ 00^s$* [4, $2^h\ 21^m\ 00^s$]. **W Mindanao and Sulu.** Earthquake of intensity IV felt through the Province of Zamboanga and the Sulu Archipelago. Origin not far in the Celebes Sea. Recorded at Butuan.

4, $8^h\ 40^m$ [4, $16^h\ 40^m$]. **SE Mindanao.** Earthquake felt with intensity III–IV through west Davao Province and south Agusan; its origin seemingly lay in the Apo range. Recorded at Butuan, where about two hours later two light aftershocks originated at at the same distance were recorded.

5, $0^h\ 30^m$ [5, $8^h\ 30^m$]. **Cateel** (E Mindanao). Light shock of intensity III. Recorded at Butuan.

5, $1^h\ 58^m$ [5, $9^h\ 58^m$]. **Dumaguete** (SE Negros). Earthquake shock of intensity III. Recorded at Butuan.

5, $20^h\ 00^m$ [6, $4^h\ 00^m$]. **Sulu Island.** Earthquake shock of intensity III–IV.

6, $11^h\ 07^m$ [6, $19^h\ 07^m$]. **Talacogon** (E Mindanao). Local earthquake of intensity III. Recorded at Butuan.

8, $5^h\ 45^m\ 41^s$* [8, $13^h\ 45^m\ 41^s$]. **E Mindanao.** Earthquake of intensity IV–V felt in the Provinces of Davao, Agusan and S Surigao. Origin in the Pacific, Philippine Deep.

9, $8^h\ 09^m$ [9, $16^h\ 09^m$]. **Butuan** (N Mindanao). Light local shock of intensity II–III.

12, $7^h\ 08^m$ [12, $15^h\ 08^m$]. **E Mindanao.** Earthquake of intensity IV felt in the Agusan Valley and south part of the Surigao Province.

13, $13^h\ 34^m\ 34^s$* [13, $21^h\ 34^m\ 34^s$]. **E Visayas.** Earthquake of intensity IV–V felt through Samar, Leyte and NE Mindanao. Origin in the Philippine Deep, E of south Samar.

15, $23^h\ 33^m$ [16, $7^h\ 33^m$]. **Butuan** (N Mindanao). Earthquake shock of intensity III; near origin.

21, $18^h\ 06^m\ 04^s$* [22, $2^h\ 06^m\ 04^s$]. **Benguet** (W Luzon). Earthquake of intensity III–IV felt in the Province of Benguet.

22, $4^h\ 13^m$ [22, $12^h\ 13^m$]. **E Mindanao.** Earthquake shock felt with intensity III–IV in the south part of the Agusan Valley and eastwards to the Pacific coast.

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[1] The intensity of earthquakes 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 registered by them. This fact is denoted by an asterisk (*). Otherwise the time is that noted by the observer who sent the report. All time indications are in Greenwich mean time (midnight=0^h), insular time being added in brackets for the convenience of Philippine readers.

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23, 19h 25m [24, 3h 25m]. Leyte, Bohol, and Cebu Islands. Earthquake felt with intensity IV in south Leyte and II–III in Bohol and E part of Cebu Island. Recorded at Butuan.

27, 0h 51m 16s* [27, 8h 51m 16s]. NE Mindanao. Earthquake felt with intensity IV in Surigao and near islands of Dinagat and Siargao. Origin in the Philippine Deep. Recorded at Butuan.

28, 9h 11m [28, 17h 11m]. Baguio (W Luzon). Local earthquake shock of intensity III–IV.

RECORDS OF THE MICROSEISMOGRAPH

[Time: Greenwich mean. Midnight=0h. Instrument: Wiechert seismograph; 1,000 kilograms. AN: T_0=6.04, ϵ=1.895, $\frac{r}{T_0^2}$=0.052, V=184; A_E: T_0=5.56, ϵ=1.987, $\frac{r}{T_0^2}$=0.067, V=212. 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.*			
37	1	Iu	eP	5 31 15				Kurile Islands.
			iS	38 42				
			iL	47 25				
			M_N	48 45	15	9		
			M_E	49 36	15		10	
			F	6 55				
38	1	Iv	eP	18 04 00				
			iL	04 29				
			F	26				
39	2	IIr	eP	13 36 50				Pacific, near Japan.
			iL	48 20				
			M_N	54 28	13	12		
			M_E	55 37	18		16	
			F	14 58				
40	2	IIr	eP	19 54 05				Pacific, near Japan.
			iL	20 05 30				
			M_N	09 39	13	14		
			M_E	09 41	14		22	
			F	21 15				
41	3	IIr	eP	18 21 00				Celebes Sea. Felt at Zamboanga and Jolo.
			iL	24 00				
			M_E	25 00	11		66	
			M_N	25 52	10	58		
			F	19 04				
42	4	I	e?	10 14 42				
			F	29				
43	7	Iv	eP	18 12 34				Pacific, E Mindanao. End overtaken by following earthquake.
			L	14 29				
44	7	Ir	e	18 21 07				Near NE Formosa.
			iL	24 02				
			F	19 31				
45	7	Iv	eP	20 31 43				
			L	32 20				
			F	43				
46	8	Ir	eP	5 45 41				Pacific, Philippine Deep.
			L	47 40				
			F	58				
47	9	Ir	eP	14 20 10				
			iL	28 14				
			F	15 25				
48	12	Iv	eP	7 23 41				
			F	32				
49	13	Iv	eP	13 34 34				Pacific, Philippine Deep. End overtaken by following earthquake.
			iL	36 05				
			M_N	36 57	6	44		
			M_E	37 50	6		46	
50	13	Iv	e	14 00 35				
			L	01 50				
			F	39				
51	16	I	e	18 08 36				
			F	52				
52	16	Iv	eP	18 29 35				
			F	32				

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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.*			
53	20	IIr	eP	1 09 53				Pacific, near Bonin Island.
			iL	17 32				
			M_E	18 36	7		58	
			M_N	18 42	8	55		
			F	2 44				
54	20	Iv	eP	16 49 21				
			F	52				
55	20	Iv	eP	16 56 01				
			F	58				
56	21	Iv	eP	9 40 00				
			iL	41 37				
			F	58				
57	21	Iv	eP	18 06 04				Western Luzon.
			F	12				
58	21	I	e	19 07				
			F	33				
59	22	Iv	eP	15 57 22				
			F	16 00				
60	24	Iu	iP	0 06 00				Alaska?
			iL?	36 44				
			F	1 19				
61	25	I	e	22 08 11				
			F	43				
62	25	Iv	eP	23 00 35				
			iL	01 47				
			F	13				
63	27	Iv	eP	0 51 16				Philippine Deep. Felt at Surigao.
			iL	52 39				
			F	1 02				

International Seismological Centre

TEMBLORES DE TIERRA SENTIDOS EN FILIPINAS[1]

1, 5h 16m [2, 13h 16m]. **Dumaguete** (SE de Negros). Ligera sacudida de intensidad II–III.

2, 9h 40m [2, 17h 40m]. **Baguio** (W de Luzón). Temblor de tierra local de intensidad II–III.

3, 18h 21m 00s* [4, 2h 21m 00s]. **W de Mindanao y Joló.** Temblor de tierra de intensidad IV sentido en la Provincia de Zamboanga y en el Archipiélago de Joló. Origen cercano en el Mar de Célebes. Registrado en Butúan.

4, 8h 40m [4, 16h 40m]. **SE de Mindanao.** Temblor de tierra sentido con intensidad III–IV en la parte W de la Provincia de Dávao y S de la de Agusan. Su origen aparentemente estaba en la cordillera del Apo. Registrado en Butúan donde unas dos horas después se registraron otras dos sacudidas originadas a la misma distancia.

5, 0h 30m [5, 8h 30m]. **Cateel** (E de Mindanao). Ligera sacudida de intensidad III. Registrada en Butúan.

5, 1h 58m [5, 9h 58m]. **Dumaguete** (SE de Negros). Temblor de tierra de intensidad III. Registrado en Butúan.

5, 20h 00m [6, 4h 00m]. **Isla de Joló.** Temblor de tierra de intensidad III–IV.

6, 11h 07m [6, 19h 07m]. **Talacogon** (E de Mindanao). Temblor de tierra local de intensidad III. Registrado en Butúan.

8, 5h 45m 41s* [8, 13h 45m 41s]. **E de Mindanao.** Temblor de tierra de intensidad IV–V sentido en las provincias de Dávao, Agusan y parte S de Surigao. Origen en el Abismo de Filipinas en el Pacífico.

9, 8h 09m [9, 16h 09m]. **Butúan** (N de Mindanao). Sacudida local de intensidad II–III.

12, 7h 08m [12, 15h 08m]. **E de Mindanao.** Temblor de tierra de intensidad IV sentido en el Valle del Agusan y parte sur de la Provincia de Surigao.

13, 13h 34m 34s* [13, 21h 34m 34s]. **Visayas Orientales.** Temblor de tierra de intensidad IV–V sentido en Sámar, Leyte y extremo NE de Mindanao. Origen al E del sur de Sámar en el Abismo de Filipinas.

15, 23h 33m [16, 7h 33m]. **Butúan** (N de Mindanao). Sacudida de intensidad III; origen muy cercano.

21, 18h 06m 04s* [22, 2h 06m 04s]. **Benguet** (W de Luzón). Temblor de tierra sentido con intensidad III–IV en toda la Provincia de Benguet.

22, 4h 13m [22, 12h 13m]. **E de Mindanao.** Temblor de tierra sentido con intensidad III–IV en la parte sur del Valle del Agusan y hacia el E hasta la costa del Pacífico.

23, 19h 25m [24, 3h 25m]. **Islas de Leyte, Bohol y Cebú.** Temblor de tierra sentido con intensidad IV en el sur de Leyte y II–III en Bohol y parte oriental de Cebú. Registrado en Butúan.

27, 0h 51m 16s* [27, 8h 51m 16s]. **NE de Mindanao.** Temblor de tierra sentido con intensidad IV en Surigao, Dinagat y Siargao. Origen cercano en el Abismo de Filipinas. Registrado en Butúan.

28, 9h 11m [28, 17h 11m]. **Baguio** (W de Luzón). Temblor de tierra local de intensidad III–IV.

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[1] La intensidad de los terremotos se indica conforme a la conocida escala de Rossi-Forel. Cuanto a la hora de su occurencia, 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 apuntada por los observadores que nos envían las notas. Todas las indicaciones del tiempo se refieren al medio de Greenwich (medianoche=0h. Para conveniencia de los lectores de Filipinas se añade también la hora insular.

International Seismological Centre

BULLETIN FOR MARCH, 1925

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SEISMOLOGICAL BULLETIN FOR MARCH, 1925

By Rev. MIGUEL SADERRA MASÓ, S. J.
Chief, Seismic and Magnetic Divisions, Weather Bureau

EARTHQUAKES FELT IN THE PHILIPPINES[1]

5, 1h 15m [5, 9h 15m]. **Romblon** (Romblon Island). Local shock of intensity II–III.

6, 0h 35m [6, 8h 35m]. **Cotabato** (SW Mindanao). Earthquake shock of intensity II–III.

6, 11h 30m [6, 19h 30m]. **Managok** (Central Mindanao). Earthquake shock of intensity III.

6, 12h 45m 00s* [6, 20h 45m 00s]. **Malabang** (W Mindanao). Earthquake of intensity IV. Origin in the northern part of the Celebes Sea. Recorded at Batavia.

6, 15h 00m [6, 23h 00m]. **Lais** (SE Mindanao). Local shock of intensity III.

6, 23h 52m [7, 7h 52m]. **Catbalogan** (W Samar). Earthquake of intensity III.

7, 15h 28m [8, 1h 28m]. **Guam** (Mariana Islands). Earthquake of intensity III. Origin outside of the island.

9, 8h 51m [9, 16h 51m]. **E Mindanao.** Earthquake felt with intensity IV on the east coast and III in the southern part of the Agusan Valley. Recorded at Butuan.

11, 22h 09m 58s* [12, 6h 09m 58s]. **SE Luzon.** Earthquake of intensity IV felt in the Province of Albay and in Catanduanes Island. Origin to the E in the Philippine Deep.

14, 18h 29m 02s* [15, 2h 29m 02s]. **Aparri** (NE Luzon). Earthquake of intensity III.

22, 2h 53m [22, 10h 53m]. **Butuan** (N Mindanao). Earthquake of intensity III. At 10h 27m an instrumental shock originated at the same distance had been recorded.

23, 1h 30m [23, 9h 30m]. **Romblon** (Romblon Island). Earthquake shock of intensity III.

25, 15h 25m [25, 23h 25m]. **Sinait** (NW Luzon). Local shock of intensity II–III.

26, 10h 27m 45s* [26, 18h 27m 45s]. **SE Mindanao.** Earthquake felt with intensity IV–V in the Province of Davao; origin to the E in the Philippine Deep. Recorded in the Far East.

29, 14h 13m [29, 22h 13m]. **Butuan** (N Mindanao). Earthquake shock of intensity II–III. Two very light aftershocks were recorded during the next hour and nineteen minutes.

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[1] The intensity of earthquakes 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 registered by them. This fact is denoted by an asterisk (*). Otherwise the time is that noted by the observer who sent the report. All time indications are in Greenwich mean time (midnight=0h), insular time being added in brackets for the convenience of Philippine readers.

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RECORDS OF THE MICROSEISMOGRAPH

[Time: Greenwich mean. Midnight=0h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: T_o=6.04, =1.895, $\frac{r}{T_o^2}$=0.052, V=184; A_E: T_o=5.56, ϵ=1.987, $\frac{r}{T_o^2}$=0.067, V=212. 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.			
64	1	Iv	e?	2 39				Canada earthquake.
			M	3 33				
			F	58				
65	1	I	iP	12 27 45				
			F	13 31				
66	3	Iv	eP	17 11 37				
			F	14				
67	6	Iv	eP	12 45 00				Northern part of Celebes Sea.
			F	59				
68	11	Iv	eP	9 02 34				
			F	05				
69	11	Iv	eP	14 12 11				
			F	14				
70	11	Iv	eP	22 09 58				Pacific, SE Luzon.
			iL	10 49				
			F	19				
71	14	Ir	eP	14 39 45				
			iL	41 50				
			F	15 16				
72	14	Iv	eP	18 29 02				NE Luzon.
			iL	29 54				
			F	42				
73	15	I	e	13 52 04				
			F	14 23				
74	15	Ir	eP	15 46 57				
			iL	51 30				
			F	16 28				
75	15	I	L	23 39				
	16		F	0 11				
76	16	Ir	eP	14 14 25				End overtaken by following earthquake.
			iL	18 40				
77	16	IIIr	eP	14 47 16				Yun-nan, China.
			iL	52 16				
			M_N	55 26	12	438		
			M_E	57 35	12		349	
			F	16 49				
78	16	Ir	eP	23 56 00				
	17		L	0 03 12				
			F	31				
79	18	Ir	eP	14 09 09				
			L	14 36				
			F	15 17				
80	19	Ir	eP	15 44 15				End overtaken by following earthquake.
			eL	50 00				
81	19	Iv	eP	16 07 25				
			F	21				
82	19	I	e	17 39				
			F	18 04				
83	19	Iv	eP	21 54 12				
			F	59				
84	20	I	e	5 54				
			F	6 20				
85	20	Ir	e	12 24 00				
			L	29 30				
			F	13 19				
86	21	I	e	8 27				
			F	9 21				
87	22	IIu	eP	8 51 48				New Hebridas? End overtaken by following earthquake.
			iS	59 38				
			iL	9 09 26				
			M_N	12 25	15	23		
			M_E	14 56	2		14	

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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.*			
88	22	Ir	e	9 49	-------	-------	-------	
			F	10 53	-------	-------	-------	
89	22	Ir	eP	14 10 54	-------	-------	-------	
			iL	15 32	-------	-------	-------	
			F	15 13	-------	-------	-------	
90	24	Iv	eP	6 39 36	-------	-------	-------	
			iL	39 54	-------	-------	-------	
			F	46	-------	-------	-------	
91	25	Iv	eP	6 29 20	-------	-------	-------	
			F	34	-------	-------	-------	
92	25	I	e	12 10	-------	-------	-------	
			F	42	-------	-------	-------	
93	26	IIr	eP	10 27 45	-------	-------	-------	Pacific, SE Mindanao.
			iL	30 32	-------	-------	-------	
			M_E	31 39	7	-------	63	
			M_N	31 47	7	79	-------	
			F	12 00	-------	-------	-------	
94	27	I	eP	4 21 07	-------	-------	-------	
			F	5 02	-------	-------	-------	
95	27	Iv	eP	19 52 45	-------	-------	-------	
			F	56	-------	-------	-------	
96	29	I	e	21 32 36	-------	-------	-------	
			F	22 08	-------	-------	-------	
97	31	Iv	eP	22 05 50	-------	-------	-------	
			iL	06 44	-------	-------	-------	
			F	15	-------	-------	-------	

International Seismological Centre

TEMBLORES DE TIERRA SENTIDOS EN FILIPINAS[1]

5, 1h 15m [5, 9h 15m]. **Isla de Romblón.** Sacudida local de intensidad II–III.

6, 0h 35m [6, 8h 35m]. **Cotabato** (SW de Mindanao). Temblor de tierra de intensidad II–III.

6, 11h 30m [6, 19h 30m]. **Managok** (Centro de Mindanao). Temblor de tierra de intensidad III.

6, 12h 45m 00s* [6, 20h 45m 00s]. **Malabang** (W de Mindanao). Temblor de tierra de intensidad IV. Origen en la parte N del Mar de Célebes. Registrado en Batavia.

6, 15h 00m [6, 23h 00m]. **Lais** (SE de Mindanao). Temblor de tierra local de intensidad III.

6, 23h 52m [7, 7h 52m]. **Catbalogan** (W de Sámar). Temblor de tierra de intensidad III.

7, 15h 28m [8, 1h 28m]. **Guam** (Islas Marianas). Temblor de tierra de intensidad III. Origen fuera de la isla.

9, 8h 51m [9, 16h 51m]. **E de Mindanao.** Temblor de tierra sentido con intensidad IV en la costa del Pacífico y III en la parte sur del Valle del Agusan. Registrado en Butúan.

11, 22h 09m 58s* [12, 6h 09m 58s]. **SE de Luzón.** Temblor de tierra de intensidad IV sentido en las Provincias de Albay y Catanduanes. Origen hacia el E en el Abismo de Filipinas.

14, 18h 29m 02s* [15, 2h 29m 02s]. **Aparri** (NE de Luzón). Temblor de tierra de intensidad III.

22, 2h 53m [22, 10h 53m]. **Butúan** (N de Mindanao). Temblor de tierra de intensidad III. A 10h 27m se había registrado un choque instrumental originado a la misma distancia.

23, 1h 30m [23, 9h 30m]. **Isla de Romblón.** Temblor de tierra local de intensidad III.

25, 15h 25m [25, 23h 25m]. **Sinait** (NW de Luzón). Sacudida local de intensidad II–III.

26, 10h 27m 45s* [26, 18h 27m 45s]. **SE de Mindanao.** Temblor de tierra sentido con intensidad IV–V en la Provincia de Dávao. Origen hacia el E en el Abismo de Filipinas. Registrado en el Extremo Oriente.

29, 14h 13m [29, 22h 13m]. **Butúan** (N de Mindanao). Temblor de tierra de intensidad II–III; durante la siguiente hora y 19 minutos se registraron tres réplicas.

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[1] La intensidad de los terremotos se indica conforme a la conocida escala de Rossi-Forel. Cuanto a la hora de su ocurrencia, 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 apuntada por los observadores que nos envían las notas. Todas las indicaciones del tiempo se refieren al medio de Greenwich (medianoche=0 h. Para conveniencia de los lectores de Filipinas se añade también la hora insular.

International Seismological Centre

BULLETIN FOR APRIL, 1925

International Seismological Centre

SEISMOLOGICAL BULLETIN FOR APRIL, 1925

By Rev. MIGUEL SADERRA MASÓ, S. J.
Chief, Seismic and Magnetic Divisions, Weather Bureau

EARTHQUAKES FELT IN THE PHILIPPINES[1]

5, 5h 56m 51s* [5, 13h 56m 51s]. **Calatagan** (SW Luzon). Earthquake shock of intensity III.

5, 17h 45m [6, 1h 45m]. **Cateel** (E Mindanao). Local earthquake of intensity III.

6, 18h 29m [7, 2h 29m]. **Talacogon** (E Mindanao). Local shock of intensity II–III.

7, 4h 10m [7, 12h 10m]. **Veruela** (E Mindanao). Earthquake of intensity III.

7, 10h 57m [7, 19h 57m]. **Yap** (Western Carolines). Earthquake of intensity III–IV felt in the whole island and preceded by rumbling noises.

7, 18h 07m 53s* [8, 2h 07m 53s]. **E Mindanao.** Earthquake felt with intensity IV–V through east Mindanao. Origin somewhat distant in the Pacific in or near the Philippine Deep. Recorded all over the World.

12, 22h 49m [13, 6h 49m]. **NE Mindanao.** Earthquake of intensity III felt in the central and northern part of the Agusan Valley. Origin within the valley.

13, 16h 27m [14, 2h 27m]. **Guam** (Mariana Islands). Earthquake of intensity III. It repeated with intensity III–IV twenty minutes later. Origin outside of the island.

14, 15h 50m [14, 23h 50m]. **Ormoc** (W Leyte). Earthquake shock of intensity II–III.

16, 19h 54m 24s* [17, 3h 54m 24s]. **Batan Islands.** Earthquake of intensity V. Originated in the Pacific to the ENE of these islands near to the meridian 125° E and the parallel 21° N. Recorded all over the World.

17, 11h 07m 21s* [17, 19h 07m 21s]. **SE Mindanao.** Earthquake of intensity V–VI felt in the Province of Davao, S Surigao, and Agusan. Origin in the northeast part of the Davao Province.

17, 18h 12m 00s* [18, 2h 12m 00s]. **NE Mindanao.** Earthquake of intensity III. Somewhat distant origin to the E in the Pacific.

20, 20h 05m [21h 4h 05m]. **Talacogon** (E Mindanao). Earthquake shock of intensity II–III.

21, 13h 00m [21, 21h 00m]. **Cateel** (E Mindanao). Earthquake of intensity IV. Probably an aftershock of the earthquake occurred on the 17th.

22, 17h 53m 41s* [23, 1h 53m 41s]. **Samar Island.** Earthquake of intensity IV, felt chiefly in the W and NW part of the island. Seven light aftershocks were noticed during the following seventy-two minutes. Near origin to the west of the island under the sea which separates it from Masbate.

23, 19h 34m 58s* [24, 3h 34m 58s]. **SE Mindanao.** Extensive earthquake felt with intensity III–IV in the Provinces of Davao, Cotabato, Agusan, and S Surigao. Origin in the Pacific near the Davao Gulf.

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[1] The intensity of earthquakes 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 registered by them. This fact is denoted by an asterisk (*). Otherwise the time is that noted by the observer who sent the report. All time indications are in Greenwich mean time (midnight=0h), insular time being added in brackets for the convenience of Philippine readers.

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24, 10h 26m 00s* [24, 18h 26m 00s]. **NE Mindanao.** Earthquake of intensity IV felt in the northern portion of the Provinces of Surigao and Agusan. Near origin in the Philippine Deep.

24, 12h 24m 27s* [24, 20h 24m 27s]. **NW Samar.** Earthquake shock of intensity III. Aftershock of the earthquake felt on the 22nd.

30, 14h 55m [30, 22h 55m]. **Butuan (N Mindanao).** Earthquake of intensity II–III. Very near origin.

RECORDS OF THE MICROSEISMOGRAPH

[Time: Greenwich mean. Midnight=0h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: T_o=6.04, ϵ=1.895, $\frac{r}{T_o^2}$=0.052, V=184; A_E: T_o=5.56, ϵ=1.987, $\frac{r}{T_o^2}$=0.067, V=212. 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.*			
98	1	I	e	17 33				
			M	58				
			F	18 20				
99	1	Ir	eP	21 13 58				
			iL	15 52				
			F	25				
100	2	Iv	eP	13 30 00				
			F	34				
101	2	Ir	e	22 49 07				Northern Formosa.
			L	51 08				
			F	23 10				
102	5	Iv	eP	5 56 51				Southwestern part of Luzon Island.
			L	57 00				
			F	6 00				
103	7	IIIv	iP	18 07 53				Eastern coast of Mindanao Island.
			iL	09 37				
			M_N	12 29	9	378		
			M_E	12 30	9		305	
			F	20 27				
104	11	IIr	i	10 54 06				
			F	13 02				
105	15	I	L	13 25				
			F	38				
106	16	Ir	e	5 41 49				
			eL	44 21				
			F	6 16				
107	16	IIIr	iP	19 54 24				SE Formosa? Felt at Santo Domingo, Batanes Islands.
			iL	56 26				
			F	22 24				
108	17	Iv	eP	11 07 21				Southeastern coast of Mindanao.
			iL	09 09				
			F	52				
109	17	Ir	eP	18 12 00				Felt slightly at Talacogon, E Mindanao.
			L	14 00				
			F	27				
110	19	Ir	e	15 51 29				Japan.
			L	58 17				
			F	16 12				
111	20	Ir	eP	10 24 09				
			L	26 15				
			F	51				
112	21	Iv	eP	7 46 09				
			F	49				
113	21	Iv	eP	16 08 42				
			F	41				
114	22	Iv	eP	17 53 41				W Samar Island.
			L	54 31				
			F	18 03				
115	22	Iv	eP	21 09 56				
			F	12				

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Records of the Microseismograph—Continued

No.	Date	Character	Phase	Hour	Period	Amplitude		Remarks
						A_N μ	A_E μ	
				h. *m.* *s.*	*s.*			
116	22	IIr	iP	23 14 41				
			iS	18 00				
			iL	19 25				
			M_N	19 52	7	46		
			M_E	20 35	7		37	
	23		F	0 50				
117	23	IIr	iP	19 34 58				Southeastern Mindanao.
			iL	37 00				
			M_E	37 19	6		59	
			M_N	37 30	6	72		
			F	20 43				
118	24	Iv	eP	10 26 00				Northeastern Mindanao.
			L	27 22				
			F	38				
119	24	Iv	eP	12 24 27				Felt slightly at Calbayog, W Samar.
			L	25 29				
			F	37				
120	25	Ir	e	9 22 12				
			F	10 12				
121	25	Ir	eP	13 27 34				
			L?	35 15				
			F	14 52				
122	26	I	e	7 17				
			F	43				
123	26	I	e	8 36 42				
			F	9 45				
124	27	Iv	eP	2 06 28				
			L	07 12				
			F	25				
125	27	I	e	6 56				
			F	7 27				

International Seismological Centre

TEMBLORES DE TIERRA SENTIDOS EN FILIPINAS[1]

5, 5h 56m 51s* [5, 13h 56m 51s]. **Calatagan** (SW de Luzón). Temblor de tierra de intensidad III.

5, 17h 45m [6, 1h 45m]. **Cateel** (E de Mindanao). Temblor de tierra local de intensidad III.

6, 18h 29m [7, 2h 29m]. **Talacogon** (E de Mindanao). Sacudida local de intensidad II–III.

7, 4h 10m [7, 12h 10m]. **Veruela** (E de Mindanao). Temblor de tierra de intensidad. III.

7, 10h 57m [7, 19h 57m]. **Yap** (Carolinas Occidentales). Temblor de tierra de intensidad III–IV sentido en toda la isla y precedido de ruido subterráneo.

7, 18h 07m 53s* [8, 2h 07m 53s]. **E de Mindanao.** Temblor de tierra sentido con intensidad IV–V en toda la parte oriental de Mindanao. Origen algo distante en o cerca del Abismo de Filipinas. Registrado en todo el Globo.

12, 22h 49m [13, 6h 49m]. **NE de Mindanao.** Temblor de tierra de intensidad III sentido en la parte central y norte del Valle del Agusan. Origen dentro del valle.

13, 16h 27m [14, 2h 27m]. **Guam** (Islas Marianas). Temblor de tierra de intensidad III. Repitió con intensidad III–IV veinte minutos más tarde. Origen fuera de la isla.

14, 15h 50m [14, 23h 50m]. **Ormoc** (W de Leyte). Sacudida de intensidad II–III.

16, 19h 54m 24s* [17, 3h 54m 24s]. **Islas Batanes.** Temblor de tierra de intensidad V originado en el Pacífico al ENE de las islas cerca del meridiano 125° E y del paralelo 21° N. Registrado en todo el Globo.

17, 11h 07m 21s* [17, 19h 07m 21s]. **SE de Mindanao.** Temblor de tierra de intensidad V–VI sentido en toda la Provincia de Dávao y en la parte sur de las de Agusan y Surigao. Origen al parecer en la Parte NE de Dávao.

17, 18h 12m 00s* [18, 2h 12m 00s]. **NE de Mindanao.** Temblor de tierra de intensidad III. Origen algo distante en el Pacífico.

20, 20h 05m [21, 4h 05m]. **Tolacogon** (E de Mindanao). Sacudida local de intensidad II–III.

21, 13h 00m [21, 21h 00m]. **Cateel** (E de Mindanao). Temblor de tierra de intensidad IV. Probablemente una réplica del temblor ocurrido el 17.

22, 17h 53m 41s* [23, 1h 53m 41s]. **Isla de Sámar.** Temblor de tierra de intensidad IV sentido principalmente en la parte NW y W de la isla. Durante los 72 minutos siguientes se notaron siete réplicas de poca intensidad. Origen al W de la isla en el Mar que la separa de Masbate.

23, 19h 34m 58s* [24, 3h 34m 58s]. **SE de Mindanao.** Extenso temblor de tierra sentido con intensidad III–IV en las Provincias de Dávao, Cotabato, Agusan y parte S de Surigao. Origen en el Pacífico cerca del Golfo de Dávao.

24, 10h 26m 00s* [24, 18h 26m 00s]. **NE de Mindanao.** Temblor de tierra sentido con intensidad IV en la parte N de las provincias de Surigao y del Agusan. Origen cercano en el Abismo de Filipinas.

24, 12h 24m 27s* [24, 20h 24m 27s]. **NW de Sámar.** Temblor de tierra de intensidad III. Réplica del temblor del día 22.

30, 14h 55m [30, 22h 55m]. **Butúan** (N de Mindanao). Sacudida de intensidad II–III. Origen muy cercano.

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[1] La intensidad de los terremotos se indica conforme a la conocida escala de Rossi-Forel. Cuanto a la hora de su ocurrencia, 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 apuntada por los observadores que nos envían las notas. Todas las indicaciones del tiempo se refieren al medio de Greenwich (medianoche=0h). Para conveniencia de los lectores de Filipinas se añade también la hora insular.

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BULLETIN FOR MAY, 1925

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SEISMOLOGICAL BULLETIN FOR MAY, 1925

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Chief, Seismic and Magnetic Divisions, Weather Bureau

International Seismological Centre

EARTHQUAKES FELT IN THE PHILIPPINES[1]

5, 10h 07m 24s* [5, 18h 07m 24s]. **Visayas and N Mindanao.** Earthquake of intensity VIII–IX originated near southern Negros. Recorded all over the World. (See report at the end of the Bulletin).

7, 3h 30m [7, 11h 30m]. **Batanes Islands.** Earthquake of intensity III.

7, 12h 12m 50s* [7, 20h 12m 50s]. **SE Luzon, Samar and Leyte.** Earthquake of intensity V–VI felt in the Provinces of Camarines Norte, Camarines Sur, Albay, Sorsogon, Catanduanes, Samar, N Leyte, and Masbate. Origin in the Pacific in the Philippine Deep near 14.6° N and 127.0° E. Recorded in the Far East.

7, 14h 35m 17s* [7, 22h 35m 17s]. A second earthquake of the same origin, felt with intensity IV in the same provinces and islands. Recorded all over the World.

At 18h 41m 50s* [8, 2h 41m 50s] occurred an aftershock of intensity III–IV felt only in the easternmost part of Samar and SE Luzon. In the NE coast of Samar and E coast of Catanduanes nearest to the origin were noticed numerous light aftershocks mainly between the first and second shocks.

13, 8h 03m [13, 16h 03m]. **Talacogon** (E Mindanao). Local shock of intensity III. Recorded at Butuan.

14, 15h 43m [14, 23h 43m]. **Talacogon** (E Mindanao). Local earthquake shock of intensity III; recorded at Butuan.

15, 8h 38m 54s* [15, 16h 38m 54s]. **Aparri** (NE Luzon). Earthquake of intensity III.

15, 13h 35m [15, 21h 35m]. **Bacon** (SE Luzon). Local shock of intensity III.

16, 2h 26m 37s* [16, 10h 26m 37s]. **Benguet** (W Luzon). Earthquake of intensity III–IV, originated and chiefly felt in the Agno Valley.

16, 10h 05m [16, 18h 05m]. **Lais** (SE Mindanao). Local shock of intensity III.

17, 10h 00m [17, 18h 00m]. **Guinobatan** (SE Luzon). Earthquake shock of intensity III. Possibly of volcanic origin.

21, 20h 10m [22, 4h 10m]. **Talacogon** (E Mindanao). Local shock of intensity III.

25, 3h 43m 46s* [25, 11h 43m 46s]. **Tablas and Romblon Islands.** Extensive earthquake felt with intensity VI–VII in the Island of Tablas, V–VI in Romblon, Sibuyan and other near small islands, and with less to a distance of 200 kilometers from its submarine origin near south Tablas. A small earthquake wave developed and flooded some small low villages on the SE coast of Tablas. The steamer *Campeador* felt distinctly the shock while navigating SW of Romblon Island. Recorded in the Far East and Europe.

During the 25th and 26th occurred numerous aftershocks and several to the end of June. The Manila seismographs recorded 13 aftershocks on the 25th and 26th, felt only in Tablas and Romblon Islands excepting the one on the last date at 4h 19m 28s* [12h 19m 28s] which was noticeable in a radius of 150 kilometers. Very near the origin in southern Tablas light aftershocks were presumably much more numerous.

31, 8h 38m 04s* [31, 16h 38m 04s]. **Tacloban** (NE Leyte). Earthquake of intensity II–III. Origin not far to the E in the Pacific.

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[1] The intensity of earthquakes 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 registered by them. This fact is denoted by an asterisk (*). Otherwise the time is that noted by the observer who sent the report. All time indications are in Greenwich mean time (midnight=0h), insular time being added in brackets for the convenience of Philippine readers.

International Seismological Centre

RECORDS OF THE MICROSEISMOGRAPH

[Time: Greenwich mean. Midnight=0h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: T_o=6.04, ϵ=1.895, $\frac{r}{T_o^2}$=0.052, V=184; A_E: T_o=5.56, ϵ=1.987, $\frac{r}{T_o^2}$=0.067, V=212. 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.			
126	1	I	e	3 55				
			F	4 34				
127	1	Iv	eP	10 33 02				
			F	36				
128	3	IIIr	iP	17 25 10				Pacific, SE Mindanao.
			iL	27 51				
			M_N	28 37	6	231		
			M_E	28 45	6		252	
			F	19 40				
129	3	I	e	23 11 00				
	4		F	1 26				
130	4	Iv	eP	4 03 57				
			iL	05 11				
			F	56				
131	4	Ir	eP	9 45 25				
			eL	47 32				
			F	10 14				
132	4	Ir	e	11 35 00				
			L	37 13				
			F	12 13				
133	5	IIIv	iP	10 07 24				S Negros Island; end overtaken by following earthquake.
			iL	08 30				
			M_N	08 54	6	462		
			M_E	09 00	6		396	
134	5	IIv	iP	10 42 00				Aftershock of the No. 133.
			iL	43 04				
135	5	Iv	iP	11 01 00				Do.
136	5	IIIv	iP	12 00 33				Do.
			iL	01 44				
137	5	Iv	iP	12 46 38				Do.
			iL	47 48				
			F	14 04				
138	5	Iv	eP	16 24 58				Do.
			F	17 06				
139	5	Iv	eP	18 17 48				Do.
			F	19 12				
140	5	IIv	e	23 22 44				
			eP	23 33				
			eL	24 36				
	6		F	1 08				
141	6	Iv	eP	5 01 55				
			F	54				
142	6	Iv	eP	8 47 56				
			F	9 22				
143	6	Iv	eP	9 56 39				
			F	10 17				
144	6	Iv	eP	16 00 42				Do.
			F	23				
145	6	Iv	eP	16 27 43				Do.
			F	47				
146	6	Iv	eP	17 05 37				Do.
			F	29				
147	6	Iv	eP	19 07 38				Do.
			F	21				
148	7	IIIv	iP	12 12 50				Philippine Deep.
			iL	13 55				
			M_E	14 58	5		193	
			M_N	15 29	5	250		
			F	13 55				

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.*			
149	7	IIIv	iP	14 35 17				Philippine Deep.
			iL	36 47				
			M_E	37 24	6		289	
			M_N	37 52	6	435		
			F	16 52				
150	7	Iv	eP	18 41 50				Pacific.
			F	19 05				
151	8	Iv	eP	10 23 08				Aftershock of the No. 133.
			F	11 07				
152	8	Iv	eP	13 44 22				Do.
			F	14 09				
153	8	Iv	eP	22 48 25				
			F	23 10				
154	9	Iv	eP	3 41 10				
			F	4 33				
155	9	Iv	eP	15 29 11				Do.
			F	52				
156	10	Iv	eP	3 04 44				
			F	26				
157	13	Iv	eP	8 14 37				
			iL	15 53				
			F	36				
158	14	Ir	eP	0 00 21				
			eL	10 00				
			F	42				
159	14	Iv	iP	15 21 51				
			iL	23 05				
			F	16 11				
160	14	Iv	eP	16 24 58				
			F	46				
161	15	Iv	eP	8 38 54				NE Luzon.
			F	46				
162	16	Iv	eP	2 26 37				Western part of Luzon.
			F	33				
163	16	Iv	eP	10 34 47				
			L	36 05				
			F	11 09				
164	17	Iv	eP	1 18 48				
			F	33				
165	17	Iv	eP	21 09 25				
			F	15				
166	18	Iv	eP	6 21 02				
			F	27				
167	19	Ir	e	5 35 43				
			F	7 04				
168	19	Iv	eP	23 11 25				
			iL	12 20				
			F	32				
169	20	Ir	eP	11 10 28				Near Japan.
			iL	16 00				
			F	12 45				
170	20	I	e	22 52 50				
			F	23 46				
171	22	Ir	eP	9 45 57				
			iL	52 03				
			F	10 54				
172	23	IIr	eP	2 15 00				Japan.
			iS	19 28				
			iL	21 34				
			M_N	22 06	7	51		
			F	3 54				
173	23	Iv	eP	6 30 52				
			F	44				

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.*			
174	23	Iv	eP	7 37 34				Near Formosa.
			F	56				
175	23	Ir	eP	21 58 43				
			F	22 21				
176	24	IIr	eP	1 26 51				
			F	2 24				
177	24	Iv	eP	21 01 44				
			F	06				
178	25	IIId	eP	3 43 46				Near S Tablas Island. Maxima and end lost by the force of the shock.
			iL	44 17				
179	25	Iv	eP	5 03 39				Aftershock of the No. 178.
180	25	Iv	eP	5 07 44				
			F	17				
181	25	Iv	eP	5 18 02				
			F	25				
182	25	Iv	eP	9 53 03				Aftershock of the No. 133.
			F	10 01				
183	25	Ir	eP	16 27 49				Near Osaka.
			F	17 06				
184	25	Iv	eP	17 08 32				
			F	16				
185	25	Iv	eP	18 29 00				Aftershock of the No. 178.
			F	36				
186	25	Iv	eP	18 38 25				Do.
			F	43				
187	26	IIv	eP	4 19 28				Do.
			iL	19 59				
			F	43				
188	26	Iv	eP	9 10 25				
			F	17				
189	26	Iv	eP	15 04 31				Do.
190	26	Iv	eP	15 07 44				Do.
191	26	IIv	iP	15 08 49				Do.
			iL	09 20				
			F	34				
192	26	Ir	eP	15 39 16				Formosa.
			iL	42 20				
			F	17 04				
193	26	Iv	eP	16 12 45				Aftershock of the No. 178.
			eL	13 13				
194	26	Iv	eP	16 27 09				Do.
			eL	27 38				
195	26	Iv	eP	18 46 02				
			F	52				
196	26	Iv	eP	20 11 03				Do.
			F	16				
197	27	Ir	eP	2 35 00				Near Japan. End overtaken by following earthquake.
			iL	38 58				
198	27	I	eP	3 17 27				
			F	52				
199	27	Iv	eP	12 45 41				
			F	50				
200	28	Ir	e	6 07 18				
			F	7 24				
201	28	Iv	eP	23 47 21				
			F	51				
202	31	Iv	eP	8 38 04				Pacific.
			F	53				

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TEMBLORES DE TIERRA SENTIDOS EN FILIPINAS[1]

5, 10h 07m 24s* [5, 18h 07m 24s]. **Visayas y N de Mindanao.** Terremoto de intensidad VIII–IX originado cerca del sur de Negros. Registrado en todo el globo. (Véase su descripción al fin del Boletín).

7, 3h 30m [7, 11h 30m]. **Islas Batanes.** Temblor de tierra de intensidad III.

7, 12h 12m 50s* [7, 20h 12m 50s]. **Sudeste de Luzón, Sámar y Leyte.** Temblor de tierra de intensidad V–VI sentido en las Provincias de Camarines Norte y Sur, Albay, Catanduanes y Sorsogón, Sámar, parte N de Leyte y en Masbate. Origen en el Pacífico en el Abismo de Filipinas cerca de los 14.6° N y 127.0° E. Registrado en el Extremo Oriente.

7, 14h 35m 17s* [7, 22h 35m 17s]. Temblor de tierra de intensidad IV originado en el mismo sitio que el precedente y sentido en una extensión algo mayor. Registrado en todo el globo.

A 18h 41m 50s* [8, 2h 41m 50s] ocurrió una réplica de intensidad III–IV sentida solamente en la parte más oriental de Sámar y del SE de Luzón. En la costa NE de Sámar y en la oriental de Catanduanes que son las más cercanas al epicentro submarino se notaron frecuentes pero ligeras réplicas principalmente entre el primero y segundo temblor y algunas también después del segundo.

13, 8h 03m [13, 16h 03m]. **Talacogon** (E de Mindanao). Temblor de tierra local de intensidad III. Registrado en Butúan.

14, 15h 43m [14, 23h 43m]. **Talacogon** (E de Mindanao). Temblor de tierra local de intensidad III. Registrado en Butúan.

15, 8h 38m 54s* [15, 16h 38m 54s]. **Aparri** (NE de Luzón). Temblor de tierra de intensidad III.

15, 13h 35m [15, 21h 35m]. **Bacon** (SE de Luzón). Temblor de tierra local de intensidad III.

16, 2h 26m 37s* [16, 10h 26m 37s]. **Benguet** (W de Luzón). Temblor de tierra de intensidad III–IV, originado y sentido principalmente en el valle del Río Agno.

16, 10h 05m [16, 18h 05m]. **Lais** (SE de Mindanao). Temblor de tierra local de intensidad III.

17, 10h 00m [17, 18h 00m]. **Guinobatan** (SE de Luzón). Temblor de tierra local de intensidad III; posiblemente de origen volcánico.

21, 20h 10m [22, 4h 10m]. **Talacogon** (E de Mindanao). Temblor de tierra de intensidad III.

25, 3h 43m 46s* [25, 11h 43m 46s]. **Islas de Tablas y Romblón.** Extenso temblor de tierra sentido con intensidad VI–VII en la isla de Tablas V–VI en la de Romblón, Sibuyan y otras islitas cercanas y con menos hasta una distancia de más de 200 kilómetros alrededor del epicentro que se hallaba cerca del sur de Tablas. En el mar al SW de Romblón lo sintió el vapor *Campeador*. En un barrio situado en la costa ESE de Tablas se notó fuerte oleaje que penetró algo tierra adentro. Registrado en el Extremo Oriente y en Europa.

Hubo numerosas repeticiones durante todo el día 25 y el siguiente 26, y algunas pocas a largos intervalos hasta fin de junio. En el Observatorio se registraron trece los expresados días 25 y 26 sentidas solamente en Tablas y en Romblón, excepto la ocurrida el 26 a 4h 19m 28s* [12h, 19m 28s] la cual se sintió también dentro de un radio de 150 kilómetros. En el epicentro y en el sur de Tablas ocurrieron seguramente en mucho mayor número.

31, 8h 38m 04s* [31, 16h 38m 04s]. **Tacloban** (NE de Leyte). Temblor de tierra de intensidad II–III. Origen cercano al E en el Pacífico.

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[1] La intensidad de los terremotos se indica conforme a la conocida escala de Rossi-Forel. Cuanto a la hora de su ocurrencia, 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 apuntada por los observadores que nos envían las notas. Todas las indicaciones del tiempo se refieren al medio de Greenwich (medianoche=0h). Para conveniencia de los lectores de Filipinas se añade también la hora insular.

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SOUTHERN NEGROS EARTHQUAKE, MAY 5, 1925

Hour and epicenter.—It occurred $10^h\ 07^m\ 24^s$* [$18^h\ 07^m\ 24^s$]. Its origin lay under the sea near the south coast of Negros Island not far from 9.3° N and 122.7° E. About this position can not be reasonably doubted because the seismographic records of the two principal shocks and of numerous aftershocks recorded at Manila gave constantly a distance of about 630 kilometers. Moreover only the said south coast was invaded by the waves caused by the earthquake.

The Island of Negros had been during the past centuries quite free from tectonic earthquakes originated within its limits and near to its coasts, but there occurred occasional volcanic shocks of little intensity and extension attributed to the remnant activity of the volcanism which contributed to the present physiography of the Island. In the volcanic chain which runs along the Island only the called Canlaon Volcano shows at present some little exterior activity. Around the island specially east and south of it exist extraordinary tectonic features which reveal great earth's disturbances. Along its east coast stretches the Tañon Strait or trough separating Negros from Cebu, and to the south lies another short strait between Negros and north Mindanao where the earthquake had its epicenter.

On the 1st of March of 1922 occurred in the same region of southern Negros a violent earthquake just 37 hours after the destructive Cebu earthquake, February 28th 1922. During the two following years 1923 and 1924 very few and light shocks occurred, but on the 3rd of January, 1925, a series of moderately strong shocks took place; two similar series followed on the 9th of January and the 1st of February, which indicated the existence of accumulated strain.

Meisoseismic area and intensity of the earthquake.—The area of destruction was very irregular and conforming to the nature of the ground. It comprised the half southern part of the Island formed by the peninsula-like protuberance of Dumaguete extending to SE, and the real southern end of the Island inclined to SW. Within this extension the regions most violently shaken were those of Bais and Tanjay to the north of the peninsula, Tolong and Siaton lying to the WSW of it and the mountainous unhabited track extending between Bais and Tolong. The greatest part of the Dumaguete peninsula is volcanic and seems more recent than the rest of Negros. Its NW portion comprises the said track which runs in a SSW–NNE direction from Tolong to Bais and Tanjay. The very physiography of this track seems to reveal a line of weakness, because once admitted the different ages of the Negros Island and its SE volcanic peninsula it represents their junction or juxtaposition. The geological conditions of Negros shows that its oriental part consists of tertiary sediments older than the central volcanics which rest upon them. It seems logic to suppose that the original eastern coast of Negros extended like Cebu Island in a SSW–NNE direction before volcanism built the SE peninsula and covered the old tertiary SE coast. Consequently the primitive tertiaries exist along the said track thickly covered by volcanic tuffs. Very probably these old tertiaries appear again in the coast to the W and SW of the Tolong Valley. If this be the case, as it seems, the said track where the effects of the earthquake were most ruinously felt rests upon tertiary sedimentaries. Moreover in the Bais plain the constructions damaged had their foundations in the modern alluvium which is by and by covering the old surface and turning the sea shore swamps into cultivable land. These geological conditions easily explain the greater effects of the earthquake.

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It must be plainly added also that the conditions of the soil and the intensity of the earthquake were not the sole factors of the ruins, faulty construction in modern and want of repairs in old structures must bear a great part of the burden. Among the first, two Sugar Centrals sustained damages; in the Bais Central they were due to insufficient bracing of the tall steel columns supporting high heavy loads; the damages sustained by the Isabela Sugar Central were due to similar conditions. In the public school and municipal house of Siaton isolated high columns of reinforced concrete attached to wooden beams, floors and other structures were broken. The two said Sugar Centrals more damaged Bais and Isabela are about 55 and 125 kilometers distant respectively from the origin of the shocks. A reinforced concrete pier greatly damaged at Bais had its long supporting columns without any bracing and resting on wet soft mud.

The damaged old buildings, as churches and houses, were not fit to withstand violent vibrations on account of their faulty construction. The church of Siaton had the walls constructed of round river stones joined with much watered mortar. The convent of the same town and the convent and municipal building of Tanjay, had the timbers rotten and decayed after fifty or more years without substantial repairs so often necessary in tropical countries. Only because this region had not been visited by earthquakes like those felt in other parts of the Archipelago it can be understood how, for instance, the wide arched door of the church of Siaton made of ordinary mortar without real arch properties, with only a very thin facing (seven to eight centimeters) of cut stone to give good appearance, could last half a century. To the same reason can be attributed that the high and massive towers of Tanjay church, made of ordinary mortar covered by a thin cut stone facing and with four big wood posts imbedded to give more strength, but now completely rotten, stood for years and years.

The shocks caused also some destruction to a distance of 125 kilometers towards the north, consisting in a general ruin of small brick burnt chimneys of old sugar mills and the fall of weaker parts of old churches and convents. In other directions comprised within the same radious, as for instance, south Cebu, Siquijor Island, and NW Mindanao the shocks had less intensity. Such a fact can prove that the dislocation causing the earthquake took place in the western of the two old faults suggested to explain the Tañon Channel which separates Negros from Cebu.

As the Dumaguete peninsula is very mountainous landslides occurred on the sides of high peaks, narrow and deep valleys and along river courses; in places only cracks were produced but the land slid down late in July after heavy rains had soaked the soil. Roads were cracked longitudinally in portions built on mangrove inundated lands.

Nearly all personal injuries and deaths were caused by landslides and fissures. The report of the C. P. Senior Officer states that all the eighteen persons killed, excepting one, found their untimely end in such accidents. Later in July seven persons more were buried by the above-mentioned landslides.

Aftershocks.—All the reports received from the central area, comprising as it was said south Negros, south Cebu, and NW Mindanao, state that from the time of the first shock until about four o'clock in the following morning, aftershocks repeated so continuously that there was not even a minute of calm. At Manila during the same time only seven principal shocks were recorded. They continued to be frequent until the 9th of the month, and several occurred to the end of May. During the following months few were felt outside of the central area or rather outside of the nearest region of Siaton and Tolong.

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EL TERREMOTO DE LA ISLA DE NEGROS, MAYO 5, 1925

Hora y epicentro.—Ocurrió a $10^h\ 07^m\ 24^s$* [$18^h\ 07^m\ 24^s$]. Su origen se hallaba en el mar muy cerca de la costa S de la Isla de Negros, no lejos del paralelo 9.3° N y del meridiano 122.7° E. De esta posición no parece existir duda puesto que tanto los dos terremotos principales como las numerosas réplicas registradas en Manila dieron siempre una distancia alrededor de 630 kilómetros. Por otra parte el maremoto experimentado solamente en las costas del sur la confirman. La Isla de Negros se ha considerado durante los pasados siglos como libre de terremotos tectónicos o geológicos, pero algo sujeta a los volcánicos de poca intensidad y extensión, debidos a los volcanes antiguos en ella existentes, entre los cuales el Canlaon conserva aún en nuestros tiempos alguna actividad. Mas alrededor de ella principalmente de su parte E y S existen accidentes fisiográficos que revelan dislocaciones geológicas de mucha entidad y por consiguiente revoluciones sísmicas de grande importancia en épocas antiguas. Tales son por ejemplo el estrecho de Tañon entre Negros y Cebú y el que separa Negros de la costa NW de Mindanao, en el cual tuvo origen este terremoto.

Ya el 1.° de marzo de 1922, treinta y siete horas después del terremoto de Cebú, se originó en el mismo hipocentro un terremoto violento, pero con muy pocas réplicas. En los años siguientes 1923 y 1924 no ocurrieron sismos notables del mismo origen, mas el 3 de enero de este año 1925 se experimentó una serie de sacudidas ligeras, otras el 9 y luego el 1.° de febrero, las cuales indicaban acumulación de tensión o de desequilibrio en las capas profundas de la tierra.

Área mesosísmica e intensidad.—El área central o de destrucción fué, como suele suceder, muy irregular y conforme con la diferente naturaleza de los terrenos. Comprendió principalmente la mitad sur de la Isla de Negros, formada por una península casi circular que se desarrolla hacia el sudeste, y el extremo meridional de la Isla que tuerce hacia el W. Dentro de esta área irregular, las regiones más castigadas fueron la de Bais, al norte de la pequeña península y la de Tolong que está al W de ella, y en general toda la costa S. La península del SE, que es volcánica y al parecer de más reciente formación que el resto de la Isla, fué muy violentamente sacudida, pero de un modo extraordinario en su parte W por donde se junta a la masa general de la Isla. Esta parte W forma una faja de SSW a NNE que se extiende precisamente entre las dos regiones más castigadas Tolong y Bais. La misma configuración de esta región hace entrever una zona de mínima resistencia; además teniendo en cuenta la diferente edad geológica de la Isla y de la pequeña península de Dumaguete resulta que dicha faja representa la juxta-posición entre la primitiva Isla de Negros y la península volcánica que debió formarse mucho después. Por otra parte la geología de Negros nos demuestra que su parte oriental consta de sedimentos terciarios muy anteriores al volcanismo del centro de la Isla, el cual descansa sobre ellos. Parece lógico el suponer que la primitiva Isla de Negros era de forma alongada de NNE a SSW, a semejanza de su vecina la Isla de Cebú, con una ligera inclinación hacia el W en su extremo sur. Después el volcanismo le añadió la protuberancia o península que la prolonga hacia el SE. Debajo de la zona de unión entre esta moderna península volcánica y la isla primitiva, aunque cubiertos por materiales volcánicos, deben hallarse las formaciones terciarias de la antigua costa, las cuales seguramente aparecen otra vez al exterior al W de la región de Tolong. Tenemos pues que toda esta región de máximos efectos del terremoto o

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está constituída, como en Bais, o descansa sobre formaciones sedimentarias del fin del terciario. Éstas en todas partes se consideran como materiales de poquísima resistencia a las vibraciones sísmicas. Así se explican las anomalías observadas en los efectos del terremoto.

Mas es preciso hacer notar que no sólo las condiciones del suelo y la intensidad del terremoto fueron causa de las ruinas sino que en gran parte se debieron también a defectos de construcción en modernas construcciones y al descuido de reparaciones en las antiguas. Así entre las primeras, la Central Azucarera de Bais sufrió daños debidos a la falta de suficiente entramado en columnas altas que soportaban excesivas cargas. En la escuela pública y en el edificio municipal de Siaton se rompieron las altas y delgadas columnas de cemento armado que sostenían el piso, techos y cierres de madera. El embarcadero de cemento armado de Bais sufrió también grandes roturas por descansar sus largos postes o pilotes en barro.

Las paredes caídas de construcciones antiguas como en la Iglesia y el convento de Siaton estaban compuestas de guijarros lisos de río con argamasa muy aguada, mientras que en las construcciones de madera del citado convento de Siaton y del municipio y convento de Tanjay el maderamen estaba muy deteriorado después de medio siglo de existencia sin reparaciones substanciales tan necesarias en los países tropicales. Solamente por la circunstancia de no haber ocurrido terremotos fuertes en la Isla de Negros se comprende cómo el ancho portal de la Iglesia de Siaton, construído de mampostería ordinaria sin más que una arcada simulada con losas labradas de 2 a 3 pulgadas de espesor, pudiera mantenerse firme por muchos años. A la misma circunstancia puede atribuirse que las torres del templo de Tanjay, de simple mampostería recubierta de tablillas de piedra para darles apariencia, y con sendos pies derechos empotrados en sus ángulos pero pronto enteramente podridos, estuviese en pie años y años.

Este terremoto fué más o menos destructor hacia el norte, dentro de la Isla de Negros, hasta una distancia de poco más de 125 kilómetros, cayéndose principalmente las viejas chimeneas de piedra, ladrillo ordinario o mampostería floja de antiguos molinos de azúcar, y partes de iglesias y conventos generalmente antiguos. En otras direcciones, hacia el E, en el sur de Cebú y en la pequeña Isla de Siquijor y hacia el sur y sudeste, en el NW de Mindanao, comprendidas dentro del mismo radio no parece haber sido tan intenso o por lo menos sus efectos fueron menos desastrosos.

Como el terreno del sur de Negros es muy montañoso y quebrado, principalmente en la península volcánica de Dumaguete, los efectos en el suelo fueron muy extraordinarios, de tal manera que las desgracias personales se debieron a los derrumbes de laderas empinadas y a las grietas en los bancos de los ríos y torrentes. En la memoria minuciosa de los daños materiales y desgracias personales causadas por el terremoto presentada por el Jefe de la Constabularia de Negros Oriental, consta que todas las personas muertas por el terremoto, excepto una, perecieron de esta manera.

Repeticiones.—Todos los informantes del área central tanto en Negros como en el sur de Cebú y NW de Mindanao están contestes en que desde la hora del terremoto destructor hasta las 4 de la mañana del día siguiente o sea, durante 10 horas, la tierra no cesó de temblar a cada momento, varios de Mindanao y de Negros aseguran que no se pasó un minuto sin alguna sacudida. En Manila durante el mismo tiempo se registraron solamente seis principales. Fueron todavía frecuentes las réplicas hasta el día 9 del mes, disminuyó luego mucho su frecuencia hasta el fin de mayo y eran ya pocas en junio.

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BULLETIN FOR JUNE, 1925

International Seismological Centre

SEISMOLOGICAL BULLETIN FOR JUNE, 1925

By Rev. MIGUEL SADERRA MASÓ, S. J.
Chief, Seismic and Magnetic Divisions, Weather Bureau

EARTHQUAKES FELT IN THE PHILIPPINES[1]

1, $1^h\ 32^m$ [1, $9^h\ 32^m$]. **Tablas and Romblon Islands.** Light shock of intensity II–III. Aftershock of May 25th earthquake.

1, $20^h\ 30^m$ [2, $4^h\ 30^m$]. **Ormoc** (W Leyte). Earthquake shock of intensity III.

3, $22^h\ 36^m$ [4, $6^h\ 36^m$]. **E Mindanao.** Earthquake of intensity IV felt in the northern and central part of the Agusan Valley. Origin apparently in the Butuan Bay. Recorded in Camiguin Island at Mambajao.

8, $15^h\ 17^m$ [8, $23^h\ 17^m$]. **Tablas and Romblon Islands.** Aftershock of intensity II–III. Other aftershocks occurred on the 9th at $3^h\ 48^m$ [$11^h\ 48^m$] and $19^h\ 50^m$ [10, $3^h\ 50^m$].

9, $20^h\ 38^m\ 13^s$* [10, $4^h\ 38^m\ 13^s$]. **Dumaguete** (SE Negros). Earthquake of intensity III–IV felt in the southern part of Negros and Cebu Islands. Aftershock of the May 5th earthquake; another aftershock of intensity II–III took place at $14^h\ 31^m$ [10, $22^h\ 31^m$].

11, $17^h\ 40^m$ [12, $1^h\ 40^m$]. **Tablas and Romblon Islands.** Light aftershock of intensity II–III.

12, $22^h\ 00^m$ [13, $6^h\ 00^m$]. **Cateel** (E Mindanao). Local shock of intensity III. Recorded at Butuan.

15, $2^h\ 13^m$ [15, $10^h\ 13^m$]. **Butuan** (N Mindanao). Earthquake of intensity III; near origin. Instrumental aftershocks at $21^h\ 51^m$ [16, $5^h\ 51^m$] and $1^h\ 09^m$ [16, $9^h\ 09^m$].

15, $16^h\ 44^m$ [16, $0^h\ 44^m$]. **W Samar.** Earthquake felt with intensity IV in NW Samar and III along its W coast.

16, $16^h\ 41^m$ [17, $0^h\ 41^m$]. **Dumaguete** (SE Negros). Aftershock of intensity III. A second aftershock of intensity IV at $0^h\ 15^m$ [17, $8^h\ 15^m$] and a third much lighter at $1^h\ 13^m$ [17, $9^h\ 13^m$].

19, $8^h\ 08^m\ 50^s$* [19, $16^h\ 08^m\ 50^s$]. **SE Panay.** Earthquake felt with intensity III through the Iloilo Province.

20, $8^h\ 25^m$ [20, $16^h\ 25^m$]. **Butuan** (N Mindanao). Local shocks of intensity II–III.

22, $19^h\ 00^m$ [23, $3^h\ 00^m$]. **Guinobatan** (SE Luzon). Earthquake shock of intensity III.

22, $22^h\ 23^m\ 25^s$* [23, $6^h\ 23^m\ 25^s$]. **Talacogon.** (E Mindanao). Earthquake of intensity III. Recorded at Butuan. Distant origin in the Pacific.

28, $7^h\ 56^m\ 36^s$* [28, $15^h\ 56^m\ 36^s$]. **Tablas and Romblon Islands.** Earthquake of intensity IV, felt also lightly in NW Panay. Aftershocks of intensity II–III at $8^h\ 03^m\ 42^s$* [$16^h\ 03^m\ 42^s$] and $8^h\ 38^m\ 39^s$* [$16^h\ 38^m\ 39^s$].

28, $8^h\ 10^m$ [28, $16^h\ 10^m$]. **Talacogon** (E Mindanao). Earthquake shock of intensity II–III; near origin. It repeated ten minutes and again three hours forty minutes later.

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[1] The intensity of earthquakes 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 registered by them. This fact is denoted by an asterisk (*). Otherwise the time is that noted by the observer who sent the report. All time indications are in Greenwich mean time (midnight=0^h), insular time being added in brackets for the convenience of Philippine readers.

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The seismograph at Butuan recorded also three instrumental shocks at 16h 40m, 16h 45m and 19h 38m from the same origin.

29, 13h 55m [29, 21h 55m]. Bontoc (W Luzon). Local earthquake of intensity III–IV felt in the central part of the Mountain Province.

29, 17h 37m 01s* [30, 1h 37m 01s]. Tablas and Romblon Islands. Aftershock of intensity III.

30, 2h 15m 48s* [30, 10h 15m 48s]. E Mindanao. Earthquake of intensity IV, felt in the northern and central part of the Agusan Valley; regional origin.

RECORDS OF THE MICROSEISMOGRAPH

[Time: Greenwhich mean. Midnight=0h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: T_o=6.04, ϵ=1.895, $\frac{r}{T_o^2}$=0.052, V=184; A_E: T_o=5.56, ϵ=1.987, $\frac{r}{T_o^2}$=0.067, V=212. 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.			
203	2	I	e	5 25				
			F	6 05				
204	3	IIIv	iP	4 37 18				
			iL	38 52				
			M_N	38 55	5	262		
			M_E	39 07	5		255	
			F	6 34				
205	3	Iv	eP	6 58 54				
			iL	59 38				
			F	7 12				
206	4	Ir	eP	1 22 49				
			L?	28 00				
			F	2 08				
207	4	I	e	7 29				
			F	8 08				
208	4	I	e	12 30				
			F	13 06				
209	4	I	e	19 12				
			F	29				
210	8	I	e	0 02 30				
			F	38				
211	9	IIIr	iP	13 46 18				
			iS	49 38				
			iL	51 12				
			M_N	51 26	7	196		
			M_E	51 30	8		127	
			F	15 22				
212	9	Iv	eP	19 03 00				
			L	03 34				
			F	09				
213	9	Iv	eP	20 38 13				S. Negros Island.
			F	44				
214	11	Iv	eP	12 59 12				
			F	13 01				
215	11	Ir	eP	16 02 24				
			iL	07 42				
			F	51				
216	12	IIr	eP	11 04 29				
			iL	08 40				
			F	12 47				
217	13	Ir	eP	21 57 00				
			L	22 01 17				
			F	28				
218	14	Ir	e	5 41 00				
			L?	43 00				
			F	6 48				
219	14	I	e	6 53				
			F	7 22				
220	14	I	e	13 43				
			F	14 24				

Records of the Microseismograph—Continued

No.	Date	Character	Phase	Hour	Period	Amplitude A_N μ	Amplitude A_E μ	Remarks
				h. *m.* *s.*	*s.*			
221	14	Iv	eP	16 04 28				
			L	06 02				
			F	48				
222	15	I	e	9 17				
			F	48				
223	16	Iv	eP	2 34 41				
			F	39				
224	16	Iv	eP	14 18 43				
			F	30				
225	19	Iv	eP	8 08 50				Iloilo Province, Panay Island.
			L	09 32				
			F	42				
226	19	Iv	eP	9 54 00				
			L	54 40				
			F	10 18				
227	20	Ir	e	13 12 49				
			iL	19 37				
			F	58				
228	20	Iv	eP	19 53 27				
			F	20 00				
229	21	I	e	4 10 44				
			F	5 06				
230	22	I	e	22 23 25				Pacific.
			F	39				
231	24	Iv	eP	7 15 15				
			F	18				
232	27	Iv	eP	12 56 51				
			F	13 02				
233	28	Iu	e	1 35 38				Montana, U. S.
			eP	38 51				
			L?	2 18 45				
			M	24 30				
			F	3 44				
234	28	Ir	eP	6 17 55				Near Nagasaki.
			iL	23 14				
			F	7 08				
235	28	IIv	eP	7 56 36				Romblon Island. End overtaken by following earthquake.
			iL	57 06				
			M_E	57 14	3		79	
			M_N	57 33	3	77		
236	28	Iv	eP	8 03 42				Romblon Island.
			iL	04 13				
			F	28				
237	28	Iv	eP	8 38 39				Do.
			iL	39 10				
			F	53				
238	28	Ir	e	13 41 40				End overtaken by following earthquake.
			L?	56 45				
239	28	Iv	eP	14 02 52				
			iL	03 50				
			F	17				
240	29	Iu	e	15 00				California.
			L?	41 00				
			F	16 38				
241	29	Iv	eP	17 06 02				
			iL	06 12				
			F	12				
242	29	Iv	eP	17 37 01				Romblon Island.
			iL	37 36				
			F	45				
243	30	Iv	eP	2 15 48				Northern Agusan Valley.
			L	17 12				
			F	28				
244	30	Iv	eP	4 34 46				
			F	39				
245	30	Iv	eP	6 36 17				
			F	39				

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TEMBLORES DE TIERRA SENTIDOS EN FILIPINAS[1]

1, 1h 32m [1, 9h 32m]. **Islas de Tablas y Romblón.** Ligera sacudida de intensidad II–III. Réplica del terremoto del 25 de Mayo.

1, 20h 30m [2, 4h 30m]. **Ormoc** (W de Leyte). Temblor de tierra de intensidad III.

3, 22h 36m [4, 6h 36m]. **E de Mindanao.** Temblor de tierra de intensidad IV sentido en la parte norte y central del valle del Río Agusan. Su origen parece se hallaba en la bahía de Butúan. Registrado en Mambajao, Isla de Camiguin.

8, 15h 17m [8, 23h 17m]. **Islas de Tablas y Romblón.** Ligera réplica de intensidad II–III. Semejantes réplicas del terremoto del 25 de mayo ocurrieron el 9 a 3h 48m [11h 48m] y a 19h 50m [10, 3h 50m].

9, 20h 38m 13s* [10, 4h 38m 13s]. **Dumaguete** (SE de Negros). Temblor de tierra de intensidad III–IV sentido en toda la parte meridional de Negros y de Cebú. Réplica del terremoto de mayo; otra réplica de intensidad II–III ocurrió a 14h 31m [10, 22h 31m].

11, 17h 40m [12, 1h 40m]. **Islas de Tablas y Romblón.** Ligera réplica de intensidad II–III.

12, 22h 00m [13, 6h 00m]. **Cateel** (E de Mindanao). Temblor de tierra local de intensidad III. Registrado en Butúan.

15, 2h 13m [15, 10h 13m]. **Butúan.** (N de Mindanao). Temblor de tierra, de origen muy cercano, de intensidad III. Repeticiones instrumentales a 21h 51m [16, 5h 51m] y a 1h 09m [16, 9h 09m].

15, 16h 44m [16, 0h 44m]. **W de Sámar.** Temblor de tierra sentido con intensidad IV en la parte NW de Sámar y III a lo largo de su costa occidental.

16, 16h 41m [17, 0h 41m]. **Dumaguete** (SE de Negros). Temblor de tierra de intensidad III. Repitió con intensidad IV a 0h 15m [17, 8h 15m] y con mucha menos a 1h 13m [17, 9h 13m].

19, 8h 08m 50s* [19, 16h 08m 50s]. **SE de Panay.** Temblor de tierra sentido con intensidad III en la Provincia de Iloílo.

20, 8h 25m [20, 16h 25m]. **Butúan** (N de Mindanao). Temblor de tierra local de intensidad II–III.

22, 19h 00m [23, 3h 00m]. **Guinobatan** (SE de Luzón). Temblor de tierra local de intensidad III.

22, 22h 23m 25s* [23, 6h 23m 25s]. **Talacogon** (E de Mindanao). Temblor de tierra de intensidad III. Origen algo distante en el Pacífico. Registrado en Butúan.

28, 7h 56m 36s* [28, 15h 56m 36s]. **Islas de Tablas y Romblón.** Temblor de tierra de intensidad IV sentido también ligeramente en la parte NW de la isla de Panay. Repeticiones de intensidad II–III a 8h 03m 42s* [16, 03m 42s] y a 8h 38m 39s* [16h 38m 39s].

28, 8h 10m [28, 16h 10m]. **Talacogon** (E de Mindanao). Ligero temblor de tierra de intensidad II–III de origen muy cercano. Repitió con la misma intensidad a los diez minutos y otra vez después de tres horas y cuarenta minutos. El sismógrafo de Butúan registró además tres choques instrumentales, a 16h 40m, 16h 45m y a 19h 38m, del mismo origen.

29, 13h 55m [29, 21h 55m]. **Bontoc** (W de Luzón). Temblor de tierra de origen local en la parte central de la Provincia Montañosa, intensidad III–IV.

29, 17h 37m 01s* [30, 1h 37m 01s]. **Islas de Romblón y Tablas.** Temblor de tierra de intensidad III.

30, 2h 15m 48s* [30, 10h 15m 48s]. **E de Mindanao.** Temblor de tierra de intensidad IV sentido en la parte norte y central del valle del Agusan. Origen regional.

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[1] La intensidad de los terremotos se indica conforme a la conocida escala de Rossi-Forel. Cuando a la hora de su ocurrencia, 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 apuntada por los observadores que nos envían las notas. Todas las indicaciones del tiempo se refieren al medio de Greenwich (medianoche=0h). Para conveniencia de los lectores de Filipinas se añade también la hora insular.

International Seismological Centre

BULLETIN FOR JULY, 1925

International Seismological Centre

SEISMOLOGICAL BULLETIN FOR JULY, 1925

By Rev. MIGUEL SADERRA MASÓ, S. J.
Chief, Seismic and Magnetic Divisions, Weather Bureau

EARTHQUAKES FELT IN THE PHILIPPINES[1]

4, $14^h\ 35^m\ 58^s$* [4, $22^h\ 35^m\ 58^s$]. **Samar and Leyte Islands.** Earthquake of intensity IV–V felt through Samar and NE Leyte. Origin in the Philippine Deep, near the E coast of Samar.

7, $7^h\ 55^m$ [7, $15^h\ 55^m$]. **Dumaguete** (SE Negros). Earthquake of intensity III. Aftershock of the earthquake of May.

7, $10^h\ 03^m\ 18^s$* [7, $18^h\ 03^m\ 18^s$]. **Samar, Leyte and NE Mindanao.** Earthquake of intensity IV; same origin as that on the 4th.

8, $8^h\ 26^m\ 56^s$* [8, $16^h\ 26^m\ 56^s$]. **Samar and Leyte Islands.** Earthquake of intensity IV–V. Aftershocks of intensity III at $9^h\ 21^m$ and $9^h\ 45^m$ [$17^h\ 21^m$, $17^h\ 45^m$] recorded only at Butuan. Origin in the Philippine Deep.

8, $23^h\ 45^m\ 32^s$* [9, $7^h\ 45^m\ 32^s$]. **NW Luzon.** Earthquake of intensity IV–V felt through the Provinces of Ilocos Norte, Ilocos Sur, Abra, and Mountain. Origin in the China Sea W of Ilocos Norte.

12, $18^h\ 13^m$ [13, $2^h\ 13^m$]. **Ilocos Norte** (NW Luzon). Earthquake of intensity III.

15, $7^h\ 36^m\ 48^s$* [15, $15^h\ 36^m\ 48^s$]. **Eastern Visayas.** Earthquake felt with intensity III–IV in the Islands of Samar, Leyte, and Cebu. Origin near NW Leyte.

18, $8^h\ 10^m$ [18, $16^h\ 10^m$]. **Tablas and Romblon Islands.** Earthquake shock of intensity III.

20, $22^h\ 27^m$ [21, $6^h\ 27^m$]. **W Luzon.** Earthquake felt with intensity III through the subprovince of Benguet and central Union; local origin.

24, $13^h\ 24^m\ 21^s$* [24, $21^h\ 24^m\ 21^s$]. **Calatagan** (SW Luzon). Earthquake of intensity III. Origin in the China Sea.

26, $0^h\ 20^m$ [26, $8^h\ 20^m$]. **Talacogon** (E Mindanao). Earthquake shock of intensity III; recorded at Butuan.

29, $23^h\ 04^m$ [30, $8^h\ 04^m$]. **Yap** (Western Carolines). Earthquake shock of intensity III.

31, $7^h\ 48^m$ [31, $16^h\ 48^m$]. **Yap** (Western Carolines). Earthquake of intensity IV.

31, $16^h\ 25^m$ [August 1, $0^h\ 25^m$]. **Camp Kalaw** (E Mindanao). Earthquake shock of intensity III.

31, $17^h\ 15^m$ [August 1, $1^h\ 15^m$]. **SE Mindanao.** Earthquake of intensity III–IV in the eastern coast of Davao Gulf.

31, $20^h\ 08^m$ [August 1, $5^h\ 08^m$]. **Yap** (Western Carolines). Earthquake of intensity III–IV.

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[1] The intensity of earthquakes 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 registered by them. This fact is denoted by an asterisk (*). Otherwise the time is that noted by the observer who sent the report. All time indications are in Greenwich mean time (midnight=0^h), insular time being added in brackets for the convenience of Philippine readers.

RECORDS OF THE MICROSEISMOGRAPH

[Time: Greenwich mean. Midnight=0h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: T_o=6.04, ϵ=1.895, $\frac{r}{T_o^2}$=0.052, V=184; A_E: T_o=5.56, ϵ=1.987, $\frac{r}{T_o^2}$=0.067, V=212. Alluvium. 2.40 meters above sea level]

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No.	Date	Character	Phase	Hour	Period	Amplitude A_N μ	Amplitude A_E μ	Remarks
				h. m. s.	s.			
246	4	Ir	iP	9 17 43				
			iL?	23 30				
			F	10 00				
247	4	Iv	eP	14 35 58				Off E coast of Samar Island.
			F	45				
248	4	Ir	eP	22 20 30				
			iL	23 54				
			F	23 02				
249	7	Iv	eP	5 29 06				
			F	33				
250	7	Iv	iP	10 03 18				Off E coast of Samar Island.
			iL	04 26				
			F	21				
251	8	IIv	eP	8 26 56				Off E coast of Samar Island.
			iL	28 10				
			M_N	28 32	6	82		
			M_E	28 44	6		53	
			F	49				
252	8	IIIv	eP	23 45 32				Off W coast of Ilocos Sur.
			iL	46 20				
			M_N	46 37	3	128		
			M_E	47 00	4		200	
			F	58				
253	9	Iv	eP	23 31 49				
			iL	32 04				Heavy micros. on 11th and 12th.
			F	36				
254	15	Iv	eP	7 36 48				NW Leyte.
			iL	37 49				
			F	49				
255	15	Iv	eP	9 05 32				
			iL	06 40				
			F	15				
256	15	Iv	eP	9 52 23				
			F	56				
257	17	IIr	iP	3 18 38				Pacific.
			iL	23 53				
			M_N	25 00	6	49		
			M_E	25 38	8		34	
			F	5 08				
258	17	Iv	eP	12 18 18				
			F	22				
259	17	Ir	eP	17 05 00				
			L	10 07				
			F	53				
260	17	Ir	e	21 13 15				
			iL	18 08				
			F	22 30				
261	17	Ir	e	22 35 38				
			iL?	40 42				
	18		F	0 24				
262	18	I	e	13 19				
			F	42				
263	19	Iv	eP	8 55 00				
			F	9 01				
264	19	Ir	eP	20 34 42				NE Formosa.
			L	38 30				
			F	21 24				
265	19	Iv	eP	21 44 32				
			L	46 22				
			F	22 04				
266	20	Iv	eP	11 02 00				
			L	03 34				
			F	16				

Records of the Microseismograph—Continued

No.	Date	Character	Phase	Hour	Period	Amplitude		Remarks
						A_N μ	A_E μ	
				h. *m.* *s.*	*s.*			
267	22	Iv	eP	4 47 38				
			F	54				
268	22	Iv	eP	10 09 10				
			L	10 42				
			F	30				
269	24	IIv	iP	13 24 21				
			iL	24 43				
			F	34				
270	27	Iv	eP	0 03 49				
			iL	04 55				
			F	16				
271	28	Iv	eP	4 41 44				
			iL	42 35				
			F	5 09				

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TEMBLORES DE TIERRA SENTIDOS EN FILIPINAS[1]

International Seismological Centre

4, 14h 35m 58s* [4, 22h 35m 58s]. **Islas de Sámar y Leyte.** Temblor de tierra de intensidad IV–V sentido en toda la isla de Sámar y parte NE de Leyte. Origen al E del sur de Sámar en el Abismo de Filipinas.

7, 7h 55m [7, 15h 55m]. **Dumaguete** (SE de Negros). Temblor de tierra de intensidad III. Réplica del terremoto de mayo.

7, 10h 03m 18s* [7, 18h 03m 18s]. **Islas de Sámar, Leyte y NE Mindanao.** Temblor de tierra de intensidad IV del mismo origen que el del 4.

8, 8h 26m 56s* [8, 16h 26m 56s]. **Islas de Sámar y Leyte.** Temblor de tierra de intensidad IV–V. Repitió con intensidad III a 9h 21m y a 9h 45m [17h 21m, 17h 45m]. Estas repiticiones solamente se registraron en Butúan. Origen en el Abismo de Filipinas.

8, 23h 45m 32s* [9, 7h 45m 32s]. **NW de Luzón.** Temblor de tierra de intensidad IV–V sentido en las Provincias de Ilocos Norte, Ilocos Sur, Abra y la Montañosa. Origen en el mar de la China al W de Ilocos Norte.

12, 18h 13m [13, 2h 13m]. **Ilocos Norte** (NW de Luzón). Temblor de tierra de intensidad III. Réplica del precedente.

15, 7h 36m 48s* [15, 15h 36m 48s]. **Visayas Orientales.** Temblor de tierra sentido con intensidad III–IV en las islas de Sámar, Leyte y Cebú. Su origen se hallaba cerca del NW de Leyte.

18, 8h 10m [18, 16h 10m]. **Islas de Romblón y Tablas.** Temblor de tierra de intensidad III.

20, 22h 27m [21, 6h 27m]. **W de Luzón.** Temblor de tierra de intensidad III sentido en la subprovincia de Benguet y en las vecinas costas del mar de la China. Origen dentro de la subprovincia.

24, 13h 24m 21s* [24, 21h 24m 21s]. **Calatagan** (SW de Luzón). Temblor de tierra de intensidad III; origen en el mar de la China.

26, 0h 20m [26, 8h 20m]. **Talacogon** (E de Mindanao). Temblor de tierra local de intensidad III; registrado en Butúan.

29, 23h 04m [30, 8h 04m]. **Yap** (Carolinas Occidentales). Temblor de tierra de intensidad III.

31, 7h 48m [31, 16h 48m]. **Yap** (Carolinas Occidentales). Temblor de tierra de intensidad IV.

31, 16h 25m [agosto 1.º, 0h 25]. **Camp Kalaw** (E de Mindanao). Temblor de tierra de intensidad III.

31, 17h 15m [agosto 1.º, 1h 15m]. **SE de Mindanao.** Temblor de tierra de intensidad III–IV sentido en la costa oriental del golfo de Dávao.

31, 20h 08m [agosto 1.º, 5h 08m]. **Yap** (Carolinas Occidentales). Temblor de tierra de intensidad III–IV.

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[1] La intensidad de los terremotos se indica conforme a la conocida escala de Rossi-Forel. Cuanto a la hora de su ocurrencia, 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 apuntada por los observadores que nos envían las notas. Todas las indicaciones del tiempo se refieren al medio de Greenwich (medianoche=0h). Para conveniencia de los lectores de Filipinas se añade también la hora insular.

International Seismological Centre

BULLETIN FOR AUGUST, 1925

International Seismological Centre

SEISMOLOGICAL BULLETIN FOR AUGUST, 1925

By Rev. MIGUEL SADERRA MASÓ, S. J.
Chief, Seismic and Magnetic Divisions, Weather Bureau

EARTHQUAKES FELT IN THE PHILIPPINES[1]

1, 15h 28m 48s* [1, 23h 28m 48s]. **SE Mindanao.** Earthquake of intensity IV felt chiefly along the west coast of Davao Gulf. Near origin to the south of the gulf. About two hours earlier at 21h 27m a shock of intensity III had been felt at Lais, nearer to the origin than other stations. Recorded at Butuan.

8, 16h 37m 21s* [9, 0h 37m 21s]. **NW Luzon.** Earthquake felt with intensity III–IV in the Provinces of Abra and Ilocos Sur and eastwards in the central part of the Mountain Province. Origin apparently within the island.

9, 9h 08m 44s* [9, 17h 08m 44s]. **NW Luzon.** Earthquake of intensity III felt in the same region as the precedent.

16, 14h 55m [16, 22h 55m]. **Talacogon** (E Mindanao). Earthquake shock of intensity III. Recorded at Butuan.

20, 1h 36m [20, 11h 36m]. **Guam** (Mariana Islands). Earthquake of intensity III. Near origin outside of the island.

22, 6h 20m [22, 14h 20m]. **Legaspi** (SE Luzon). Local earthquake shock of intensity III–IV.

27, 4h 05m [27, 12h 05m]. **Talacogon** (E Mindanao). Local shock of intensity III.

28, 18h 45m [29, 2h 45m]. **W Luzon.** Earthquake shock of intensity III felt in the northern part of Benguet Subprovince.

30, 4h 41m [30, 12h 41m]. **SE Mindanao.** Earthquake felt with intensity III–IV around the Davao Gulf. Origin within the gulf. Recorded at Butuan.

31, 0h 24m [31, 8h 24m]. **Butuan** (N Mindanao). Earthquake shock of intensity III; near origin towards the bay.

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[1] The intensity of earthquakes 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 registered by them. This fact is denoted by an asterisk (*). Otherwise the time is that noted by the observer who sent the report. All time indications are in Greenwich mean time (midnight=0h), insular time being added in brackets for the convenience of Philippine readers.

RECORDS OF THE MICROSEISMOGRAPH

International Seismological Centre

[Time: Greenwich mean. Midnight =0h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: T_o=6.04, ϵ=1.895, $\frac{r}{T_o^2}$=0.052, V=184; A_E: T_o=5.56, ϵ=1.987, $\frac{r}{T_o^2}$=0.067, V=212. 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.			
272	1	Ir	eP	15 28 48				Pacific, SE Mindanao.
			L	31 17				
			F	47				
273	1	Iv	eP	22 16 43				
			F	19				
274	4	Iv	eP	23 11 15				
			F	17				
275	6	I	e	14 27 44				
			F	15 12				
276	7	I	e	8 12 25				
			F	9 31				
277	8	Iv	eP	3 00 14				
			F	14				
278	8	I	L	14 40				
			F	58				
279	8	Iv	eP	16 37 21				Western part of Luzon.
			L	37 51				
			F	52				
280	9	Iv	eP	9 08 44				NW Luzon.
			F	16				
281	9	I	e	12 41				
			F	13 08				
282	14	I	e	4 27				
			F	5 06				
283	14	Iv	eP	6 26 25				
			L?	28 22				
			F	48				
284	14	I	iP	9 21 00				
			F	44				
285	14	Iv	eP	13 27 47				
			F	31				
286	17	I	e	9 23 30				
			F	34				
287	19	IIIr	eP	12 17 05				Near Kamtchatka.
			iL	35 00				
			M_N	42 20		14	22	
			M_E	45 55		17		21
			F	13 58				
288	19	Iv	eP	18 07 09				
			iL	08 12				
			F	21				
289	19	Iv	eL?	20 54				
			F	21 02				
290	21	IIv	iP	20 15 28				
			iL	16 37				
			M_N	16 41		5	182	
			M_E	16 54		5		310
			F	46				
291	23	Iv	eP	8 01 03				
			iL	01 54				
			F	14				
292	30	Iv	eP	5 09 14				
			eL	09 58				
			F	18				
293	31	Ir	eP	10 12 40				
			eL?	17 00				
			F	39				

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TEMBLORES DE TIERRA SENTIDOS EN FILIPINAS[1]

1, 15h 28m 48s* [1, 23h 28m 48s]. **SE de Mindanao.** Temblor de tierra de intensidad IV sentido principalmente en la costa occidental del Golfo de Dávao. Origen cercano al sur del golfo. Unas dos horas antes a 21h 27m se había sentido en Lais, estación situada hacia el sur, un ligero choque de intensidad III.

8, 16h 37m 21s* [9, 0h 37m 21s]. **NW de Luzón.** Temblor de tierra de intensidad III–IV sentido en las Provincias de Abra, Ilocos Sur y hacia el E en la parte central de la Provincia Montañosa. El origen aparentemente se hallaba dentro de la isla.

9, 9h 08m 44s* [9, 17h 08m 44s]. **NW de Luzón.** Temblor de tierra de intensidad III sentido en la misma región que el precedente.

16, 14h 55m [16, 22h 55m]. **Talacogon** (E de Mindanao). Temblor de tierra local de intensidad III. Registrado en Butúan.

20, 1h 36m [20, 11h 36m]. **Guam** (Islas Marianas). Temblor de tierra de intensidad III. Origen cercano fuera de la isla.

22, 6h 20m [22, 14h 20m]. **Legaspi** (SE de Luzón). Temblor de tierra local de intensidad III–IV.

27, 4h 05m [27, 12h 05m]. **Talacogon** (E de Mindanao). Temblor de tierra local de intensidad III.

28, 18h 45m [29, 2h 45m]. **W de Luzón.** Temblor de tierra de intensidad III, sentido en la parte N de la Provincia de Benguet.

30, 4h 41m [30, 12h 41m]. **SE de Mindanao.** Temblor de tierra sentido al rededor del Golfo de Dávao con intensidad III–IV. Su origen se hallaba dentro del golfo.

31, 0h 24m [31, 8h 24m]. **Butúan** (N de Mindanao). Temblor de tierra de intensidad III, origen cercano hacia la bahía del mismo nombre.

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[1] La intensidad de los terremotos se indica conforme a la conocida escala de Rossi-Forel. Cuanto a la hora de su ocurrencia, 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 apuntada por los observadores que nos envían las notas. Todas las indicaciones del tiempo se refieren al medio de Greenwich (medianoche=0h). Para conveniencia de los lectores de Filipinas se añade también la hora insular.

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BULLETIN FOR SEPTEMBER, 1925

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International Seismological Centre

SEISMOLOGICAL BULLETIN FOR SEPTEMBER, 1925

By Rev. MIGUEL SADERRA MASÓ, S. J.
Chief, Seismic and Magnetic Divisions, Weather Bureau

EARTHQUAKES FELT IN THE PHILIPPINES[1]

2, $1^h\ 10^m$ [2, $9^h\ 10^m$]. **Camp Kalaw** (E Mindanao). Earthquake of intensity III; recorded at Butuan.

3, $12^h\ 00^m$ [3, $20^h\ 00^m$]. **Janiuay** (SE Panay). Local shock of intensity III.

6, $4^h\ 34^m\ 00^s$* [6, $12^h\ 34^m\ 00^s$]. **SE Mindanao.** Extensive earthquake felt with intensity IV–V in the Provinces of Davao, E Cotabato, and S Agusan. Origin in the Pacific S of the Davao Gulf. The record of Butuan places it at a distance of about 300 kilometers.

6, $20^h\ 20^m$ [7, $4^h\ 20^m$]. **Zamboanga** (W Mindanao). Earthquake of intensity III.

9, $2^h\ 22^m$ [9, $10^h\ 22^m$]. **Malita** (SE Mindanao). Earthquake shock of intensity III; an aftershock of the earthquake occurred on the 6th. Recorded at Butuan.

10, $22^h\ 19^m$ [11, $6^h\ 19^m$]. **Tuburan** (NE Cebu). Earthquake of intensity III. It repeated with the same intensity 5^h later. Near origin.

15, $20^h\ 55^m\ 04^s$* [16, $4^h\ 55^m\ 04^s$]. **Catbalogan.** (W Samar). Earthquake shock of intensity III. Distance origin to the E in the Pacific, consequently it was lightly felt through the whole island. Recorded also at Butuan.

18, $11^h\ 42^m\ 34^s$* [18, $19^h\ 42^m\ 34^s$]. **Catbalogan** (W Samar). Earthquake of intensity III. Origin in the Pacific as the preceding.

24, $4^h\ 05^m$ [24, $12^h\ 05^m$]. **Samar and Leyte Islands.** Earthquake felt with intensity III–IV through SW Samar and N Leyte. Shallow origin apparently in the volcanic region of Biliran Island, N of Leyte.

25, $19^h\ 38^m\ 54^s$* [26, $3^h\ 38^m\ 54^s$]. **Samar Island.** Earthquake of intensity III–IV. Origin to the E in the Philippine Deep. Recorded at Butuan.

26, $17^h\ 37^m\ 27^s$* [27, $1^h\ 37^m\ 27^s$]. **Samar and Leyte Islands.** Earthquake of intensity III–IV. Origin in the Philippine Deep. It repeated with the same intensity nine minutes and again fifteen minutes later. On the 27th at $5^h\ 40^m$ [$13^h\ 40^m$] occurred a lesser aftershock recorded only at Butuan.

30, $2^h\ 20^m\ 22^s$* [30, $10^h\ 20^m\ 22^s$]. **E Mindanao.** Earthquake of intensity V–VI felt along the Agusan Valley. Origin very likely within the valley. At Talacogon not far from the middle of the valley occurred a light aftershock thirty-eight minutes later.

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International Seismological Centre

RECORDS OF THE MICROSEISMOGRAPH

[Time: Greenwich mean. Midnight=0h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: T_o=6.04, ϵ=1.895, $\frac{r}{T_o^2}$=0.082, V=184; A_E: T_o=5.56, ϵ=1.987, $\frac{r}{T_o^2}$=0.067, V=212. 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			
294	5	I	e?	16 42				Heavy microseisms from 1st to 5th.
			F	17 22				
295	6	Iv	e	4 34 00				Southeastern part of Mindanao.
			F	44				
296	6	I	e	9 04				
			F	31				
297	7	Iv	eP	18 49 09				
			iL	49 52				
			F	19 06				
298	7	Ir	eP	19 29 51				
			iL	31 50				
			F	48				
299	8	Ir	eP	1 41 20				
			L	43 18				
			F	2 04				
300	9	I	e	0 56 11				
			F	1 11				
301	9	Ir	eP	22 43 32				
			iL	46 25				
			M_E	47 06	7		28	
			M_N	47 25	9	54		
			F	23 28				
302	10	Ir	eP	13 04 00				
			iL	09 17				
			F	47				
303	11	Ir	iP	5 11 42				
			iL	14 02				
			F	49				
304	11	I	L	23 49 18				
			F	58				
305	12	Iv	eP	6 47 45				
			iL	48 51				
			F	7 16				
306	13	I	e	7 06 50				
			F	24				
307	13	I	e	8 07				
			F	16				
308	15	IIv	eP	20 55 04				Pacific, Philippine Deep.
			iL	56 26				
			M_N	56 50	5	50		
			M_E	57 19	5		57	
			F	21 56				
309	17	IIIv	eP	22 47 12				China Sea.
			iL	48 04				
			M_N1	48 31	6	163		
			M_E1	48 39	6		112	
			M_E2	49 13	6		143	
			M_N2	50 11	6	231		
			M_E3	51 08	6		307	
			M_N3	51 13	5	288		
			F	23 13				
310	18	Iv	eP	11 42 34				Pacific. Felt slightly at Catbalogan.
			iL	43 47				
			F	12 16				
311	20	Ir	eP	7 22 33				
			L?	29 00				
			F	51				
312	21	Iv	eP	11 52 38				
			F	56				
313	22	Iv	eP	6 10 15				
			iL	11 36				
			M_E	12 13	4		32	
			M_N	12 24	6	19		
			M_N	12 24	6	19		
			F	41				

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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*			
314	25	Iv	e	8 51 13				End overtaken by following earthquake.
			L	52 25				
315	25	Ir	e	9 01				
			L?	03 31				
			F	10 03				
316	25	IIv	eP	19 38 54				Pacific, Philippine Deep.
			iL	40 25				
			M_E	40 36	7		42	
			M_N	41 30	6	64		
			F	20 42				
317	26	I	e	0 01 34				
			F	29				
318	26	Iv	eP	6 49 45				
			iL	51 00				
			F	7 38				
319	26	Iv	eP	11 35 56				
			F	56				
320	26	Iv	eP	17 37 27				Pacific, Philippine Deep. End overtaken by following earthquake.
321	26	IIv	eP	17 46 19				Do.
			iL	47 43				
			M_N	48 12	6	71		
			M_E	48 20	6		49	
322	26	Iv	eP	18 04 18				Aftershock of the No. 321. End overtaken by following earthquake.
			iL	05 37				
323	26	Iv	eP	18 17 00				Aftershock of the No. 321.
			iL	18 17				
			M_E	18 31	6		23	
			M_N	18 38	5	30		
			F	57				
324	28	IIv	eP	7 11 36				Western part of Luzon.
			iL	12 00				
			M_E	13 51	6		77	
			M_N	14 34	6	111		
			F	29				
325	29	IIIv	eP	18 09 29				Western part of Luzon. End overtaken by following earthquake.
			iL	10 04				
			$M_E{}^1$	10 29	5		153	
			$M_N{}^1$	11 14	4	163		
			$M_E{}^2$	11 41	4		189	
			$M_N{}^2$	12 31	4	285		
326	29	IIv	eP	18 23 39				Aftershock of the No. 325.
			iL	24 13				
			M_N	24 29	5	48		
			M_E	24 30	5		128	
			F	42				
327	29	Iv	eP	21 08 48				Do.
			iL	09 14				
			F	18				
328	30	Iv	eP	2 20 22				Agusan Valley.
			iL	21 45				
			M_N	22 59	5	20		
			M_E	23 02	5		19	
			F	44				

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TEMBLORES DE TIERRA SENTIDOS EN FILIPINAS[1]

2, 1h 10m [2, 9h 10m]. **Camp Kalaw** (E de Mindanao). Temblor de tierra de intensidad III; registrado en Butúan.

3, 12h 00m [3, 20h 00m]. **Janiuay** (SE de Panay). Temblor de tierra local de intensidad III.

6, 4h 34m 00s* [6, 12h 34m00s]. **SE de Mindanao.** Extenso temblor de tierra sentido con intensidad IV–V en las Provincias de Dávao, E de Cotabato y S de Agusan. El origen se hallaba en el Pacífico al sur del Golfo de Dávao. El registro de Butúan lo coloca a poco más de 300 kilómetros de distancia de dicha estación.

6, 20h 20m [7, 4h 20m]. **Zamboanga** (W de Mindanao). Temblor de tierra de intensidad III.

9, 2h 22m [9, 10h 22m]. **Malita** (SE de Mindanao). Temblor de tierra de intensidad III. Réplica del temblor del día 6. Registrado en Butúan.

10, 22h 19m [11, 6h 19m]. **Tuburan** (NE de Cebú). Temblor de tierra de intensidad III. Repitió con la misma intensidad 5 horas después. Origen muy cercano.

15, 20h 55m 04s* [16, 4h 55m 04s]. **Catbalogan** (W de Sámar). Temblor de tierra de intensidad III. Su origen se hallaba lejos en el Pacífico al E de Sámar; debió sentirse débilmente en toda la isla. Registrado también en Butúan.

18, 11h 42m 34s* [18, 19h 42m 34s]. **Catbalogan** (W de Sámar). Temblor de tierra de intensidad III. Origen en el Pacífico como el precedente.

24, 4h 05m [24, 12h 05m]. **Islas de Sámar y Leyte.** Temblor de tierra sentido en la parte N de Leyte y SW de Sámar con intensidad III–IV. Su origen poco profundo parece se hallaba en la región volcánica de Biliran.

25, 19h 38m 54s* [26, 3h 38m 54s]. **Isla de Sámar.** Temblor de tierra de intensidad III–IV. Origen al E algo lejos en el Abismo de Filipinas. Registrado en Butúan.

26, 17h 37m 27s* [27, 1h 37m 27s]. **Islas de Sámar y Leyte.** Temblor de tierra de intensidad III–IV. Origen al E en el Abismo de Filipinas. Repitió dos veces con casi igual intensidad y extensión 9 minutos y luego a 15m después. El 27 a 5h 40m [13h 40m] ocurrió otra réplica muy débil registrada solamente en Butúan.

30, 2h 20m 22s* [30, 10h 20m 22s]. **E de Mindanao.** Temblor de tierra sentido con intensidad V–VI a lo largo del Valle del Agusan. Su origen al parecer se hallaba dentro del mismo valle. En Talacogon situado hacia el centro de él cerca de los lagos que es la región más inestable ocurrió una repetición débil 38 minutos más tarde.

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[1] La intensidad de los terremotos se indica conforme a la conocida escala de Rossi-Forel. Cuanto a la hora de su ocurrencia, 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 apuntada por los observadores que nos envían las notas. Todas las indicaciones del tiempo se refieren al medio de Greenwich (medianoche=0h). Para conveniencia de los lectores de Filipinas se añade también la hora insular.



BULLETIN FOR OCTOBER, 1925

International Seismological Centre

SEISMOLOGICAL BULLETIN FOR OCTOBER, 1925

By Rev. Miguel Saderra Masó, S. J.
Chief, Seismic and Magnetic Divisions, Weather Bureau

EARTHQUAKES FELT IN THE PHILIPPINES [1]

1, $21^h\ 38^m$ [2, $5^h\ 38^m$]. **Samar and Leyte Islands.** Earthquake of intensity III–IV felt in SW Samar and N Leyte. It repeated with the same intensity and extension ten minutes later. Shallow origin in the volcanic region of Biliran Island. The first shock was recorded at Butuan.

3, $15^h\ 01^m\ 02^s$* [3, $23^h\ 01^m\ 02^s$]. **Basco** (Batan Island). Earthquake of intensity III; origin somewhat distant to the south.

4, $13^h\ 51^m\ 33^s$** [4, $21^h\ 51^m\ 33^s$]. **E Mindanao.** Earthquake felt with intensity III–IV along the Agusan Valley. Origin likely within the valley.

5, $0^h\ 05^m$ [5, $8^h\ 05^m$]. **Pasuquin** (NW Luzon). Local shock of intensity III.

6, $10^h\ 11^m$ [6, $18^h\ 11^m$]. **Butuan** (N Mindanao). Earthquake of intensity III; near origin.

7, $18^h\ 59^m$ [8, $2^h\ 59^m$]. **Cotabato** (SW Mindanao). Local shock of intensity III.

8, $10^h\ 01^m$ [8, $20^h\ 01^m$]. **Guam** (Mariana Islands). Earthquake of intensity III–IV; origin out of the island.

15, $18^h\ 03^m$ [16, $2^h\ 03^m$]. **E Mindanao.** Earthquake of intensity III in the northern part of the Agusan Valley; near origin.

18, $7^h\ 20^m$ [18, $15^h\ 20^m$]. **Laoag** (NW Luzon). Local shock of intensity II–III.

18, $8^h\ 29^m\ 00^s$** [18, $16^h\ 29^m\ 00^s$]. **E Mindanao.** Earthquake felt with intensity IV in the east coast of the island and central part of the Agusan Valley. Somewhat distant origin in the Pacific. Recorded around the Globe.

25, $0^h\ 24^m\ 13^s$** [25, $8^h\ 24^m\ 13^s$]. **E Mindanao.** Earthquake felt with intensity III–IV in the eastern coast and in the Agusan Valley. Origin in the Pacific. Recorded in the Far East and North America.

26, $5^h\ 15^m$ [26, $13^h\ 15^m$]. **Odiongan** (SW Tablas Island). Local shock of intensity III.

29, $8^h\ 53^m$ [29, $16^h\ 53^m$]. **Talacogon** (E Mindanao). Local shock of intensity II–III.

30, $3^h\ 38^m$ [30, $11^h\ 38^m$]. **Veruela** (E Mindanao). Earthquake of intensity IV. Recorded at Butuan.

30, $5^h\ 49^m\ 33^s$** [30, $13^h\ 49^m\ 33^s$]. **Tagudin** (W Luzon). Earthquake of intensity IV originated and felt in the W portion of Mountain Province.

30, $11^h\ 07^m\ 00^s$** [30, $19^h\ 07^m\ 00^s$]. **Zamboanga** (W Mindanao). Earthquake felt with intensity III. Origin in the Celebes Sea. Recorded in the Far East.

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International Seismological Centre

30, 11h 50m [30, 19h 50m]. **Lais (SE Mindanao).** Earthquake shock of intensity [illegible].

30, 20h 21m [31, 4h 21m]. **SE Mindanao.** Earthquake felt in the northern part of Davao, E of Cotabato and through Agusan Province. Its greatest intensity V–VI was experienced in northern Davao from the Agusan Valley to the Pacific coast. The origin apparently lay at a distance of 160 kilometers from Butuan Station in the mountainous region which separates the Agusan Valley from the Pacific coast near the parallel 7.5° N.

31, 20h 59m 55s* [Nov. 1, 4h 59m 55s]. **Panay and Negros Islands.** Earthquake of intensity III–IV felt in the NE part of Panay, N of Negros and very weakly in NW Cebu.

RECORDS OF THE MICROSEISMOGRAPH

[Time: Greenwich mean. Midnight=0h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: T_o=6.04, ϵ=1.895, $\frac{r}{T_o^2}$=0.052, V=184; A_E: T_o=5.56, ϵ=1.987, $\frac{r}{T_o^2}$=0.067, V=212. 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.			
329	1	IIv̇	eP	8 23 27				Western part of Luzon. End overtaken by following earthquake.
			iL	23 53				
			M_E^1	24 17	4		94	
			M_N^1	24 24	4	101		
			M_E^2	25 43	4		125	
			M_N^2	26 22	4	200		
330	1	Iv	eP	8 28 00				Western part of Luzon.
			iL	28 27				
			M_E	28 41	4		75	
			M_N	28 59	4	73		
			F	32				
331	1	Iv	eP	10 53 00				
			F	11 00				
332	2	Iv	eP	2 25 52				
			iL	26 38				
			F	36				
333	2	Iv	eP	4 39 14				
			iL	39 40				
			F	52				
334	2	Iv	eP	6 00 25				
			F	04				
335	3	Iv	eP	3 14 29				
			iL	14 45				
			F	19				
336	3	Iv	eP	15 01 02				Near Batanes Islands.
			eL	01 47				
			F	18				
337	4	Iv	eP	2 53 52				
			F	57				
338	4	Iv	eP	13 51 33				Agusan Valley.
			F	14 02				
339	4	Iv	eP	16 47 33				
			F	17 04				
340	5	I	e	4 28 26				Central America.
			F	5 21				
341	10	Iv	iP	10 13 46				Heavy microseisms on the 10th.
			iL	14 10				
			F	19				
342	11	Iv	eP	6 54 39				Heavy microseisms on the 11th.
			iL	55 02				
			F	59				
343	12	I	e	5 58				SE Madagascar. Heavy microseisms on the 12th.
			F	6 19				
344	12	IIv	iP	19 40 13				
			iL	40 37				
			M_N	40 39	3	113		
			M_E	40 40	3		66	
			F	45				

Records of the Microseismograph—Continued

No.	Date	Character	Phase	Hour			Period	Amplitude A_N μ	Amplitude A_E μ	Remarks
				h.	*m.*	*s.*	*s.*			
345	13	IIu	i	18	00	47				Atlantic Ocean.
			F	19	34					
346	14	I	e?	17	10	46				
			F		42					
347	15	Iv	eP	2	26	07				
			iL		26	22				
			F		31					
348	15	IIr	eP	12	41	32				
			iL		49	12				
			M_E		52	00		10	17	
			M_N		52	09		10	18	
			F	13	22					
349	15	Iv	eP	16	57	44				
			iL		58	06				
			F	17	02					
350	17	Iv	eP	22	04	23				
			F		10					
351	18	IIr	iP	8	29	00				Pacific.
			iL		31	24				
			M_E		31	30		6	73	
			M_N		31	32		7	96	
			F	10	02					
352	19	Iv	eP	15	12	01				
			F		15					
353	20	I	e	9	47	45				
			F	10	04					
354	20	Iv	eP	16	52	26				
			F	17	02					
355	22	Iv	eP	7	45	28				
			F		49					
356	22	IIr	eP	17	07	23				
			iS		10	46				
			iL		11	36				
			M_N		12	44		7	52	
			M_E		13	02		9	45	
			F	18	06					
357	23	IIr	eP	1	53	12				Heavy microseisms on the 23rd.
			iL?		55	56				
			iL?		56	19				
			M_N		57	41		6	31	
			M_E		57	43		6	23	
			F	2	36					
358	23	Iv	eP	11	52	30				Very heavy microseisms on the 24th.
			F		56					
359	25	IIr	eP	0	24	13				Pacific.
			iL?		26	53				
			F		57					
360	25	Iv	eP	5	27	00				Heavy microseisms on the 25th.
			F		29					
361	26	Iv	eP	23	25	06				
			F		28					
362	30	Iv	eP	5	49	33				Western part of Luzon. Microseisms on the 28th and 29th.
			F		52					
363	30	I	e?	11	07	00				Celebes Sea.
			F		26					
364	30	I	e?	15	00					Heavy microseisms on the 30th and 31st.
			F		22					
365	31	I	e?	19	39					
			F	20	02					
366	31	Iv	eP	20	59	55				Dumaguete (SE Negros).
			L	21	01	02				
			F		12					

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TEMBLORES DE TIERRA SENTIDOS EN FILIPINAS[1]

1, 21h 38m [2, 5h 38m]. **Islas de Sámar y Leyte.** Temblor de tierra de intensidad III–IV en toda la parte SW de Sámar y N de Leyte. Repitió con la misma intensidad y extensión 10 minutos más tarde. Su origen poco profundo parece se hallaba hacia la región volcánica de la Isla Biliran; solamente el primero se registró en Butúan.

3, 15h 01m 02s* [3, 23h 01m 02s]. **Basco** (Islas Batanes). Temblor de tierra de intensidad III; su origen parece se hallaba algo lejos hacia el sur.

4, 13h 51m 33s* [4, 21h 51m 33s]. **E de Mindanao.** Temblor de tierra sentido con intensidad III–IV a lo largo del Valle del Agusan. Origen dentro del mismo valle.

5, 0h 05m [5, 8h 05m]. **Pasuquin** (NW de Luzón). Temblor de tierra local de intensidad III.

6, 10h 11m [6, 18h 11m]. **Butúan** (N de Mindanao). Temblor de tierra de intensidad III; origen cercano.

7, 18h 59m [8, 2h 59m]. **Cotabato** (SW de Mindanao). Temblor de tierra local de intensidad III.

8, 10h 01m [8, 20h 01m]. **Guam** (Islas Marianas). Temblor de tierra de intensidad III–IV; origen fuera de la isla.

15, 18h 03m [16, 2h 03m]. **E de Mindanao.** Temblor de tierra de intensidad III, sentido en la parte N del Valle del Agusan; origen local.

18, 7h 20m [18, 15h 20m]. **Laoag** (NW de Luzón). Temblor de tierra local de intensidad II–III.

18, 8h 29m 00s* [18, 16h 29m 00s]. **E de Mindanao.** Temblor de tierra sentido con intensidad IV en la costa oriental y en el centro del Valle del Agusan. Origen algo lejano en el Pacífico. Registrado en todo el Globo.

25, 0h 24m 13s* [25, 8h 24m 13s]. **E de Mindanao.** Temblor de tierra sentido con intensidad III–IV en la costa oriental y en el Valle del Agusan. Origen al E en el Pacífico. Registrado en el Extremo Oriente y en la América del Norte.

26, 5h 15m [26, 13h 15m]. **Odiongan** (SW de la Isla de Tablas). Temblor de tierra local de intensidad III.

29, 8h 53m [29, 16h 53m]. **Talacogon** (E de Mindanao). Temblor de tierra local de intensidad II–III.

30, 3h 38m [30, 11h 38m]. **Veruela** (E de Mindanao). Temblor de tierra de intensidad IV, registrado en Butúan.

30, 5h 49m 33s* [30, 13h 49m 33s]. **Tagudín** (W de Luzón). Temblor de tierra de intensidad IV, originado y sentido en la parte W de la Provincia Montañosa.

30, 11h 07m 00s* [30, 19h 07m 00s]. **Zamboanga** (W de Mindanao). Temblor de tierra sentido con intensidad III. El origen se hallaba en el Mar de Célebes; registrado en el Extremo Oriente.

30, 11h 50m [30, 19h 50m]. **Lais** (SE de Mindanao). Temblor de tierra de intensidad III.

30, 20h 21m [31, 4h 21m]. **SE de Mindanao.** Temblor de tierra sentido en la parte N de la Provincia de Dávao, E de Cotabato y gran parte de la de Agusan. Su mayor intensidad fué de V–VI en la parte N de Dávao desde el Agusan hasta la costa del Pacífico. Su origen se hallaba a unos 160 kilómetros de Butúan hacia la zona montañosa que separa el Valle del Agusan de la costa del Pacífico cerca del paralelo 7.5° N.

31, 20h 59m 55s* [1.° Nov. 4h 59m 55s]. **Islas de Panay y Negros.** Temblor de tierra de intensidad III–IV sentido en la parte NE de la Isla de Panay, N de la de Negros y muy débilmente al NW de la de Cebú.

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[1] La intensidad de los terremotos se indica conforme a la conocida escala de Rossi-Forel. Cuanto a la hora de su ocurrencia, 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 apuntada por los observadores que nos envían las notas. Todas las indicaciones del tiempo se refieren al medio de Greenwich (medianoche=0h). Para conveniencia de los lectores de Filipinas se añade también la hora insular.

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SEISMIC PERIOD IN BENGUET, MOUNTAIN PROVINCE

(September 17—October 22, 1925)

On September 17 at 12^h began a seismic period with a shock of intensity III felt only in the neighbourhood of Bokod, an Igorot town in the ENE part of the Benguet Subprovince and near to the Agno River on an eastern important affluent. On the 18 at 6^h 47^m 12^s* occurred an earthquake classed as violent (VI–VII) at Bokod where two series of violent shocks were distinguished during about ninety seconds. It was felt with intensity IV–V at the towns of Baguio and Kapangan 28 kilometers distant respectively to the WSW and NW. At Manila about 211 kilometers distant to the south it was recorded as a distant very strong earthquake.

Aftershocks felt only at Bokod occurred at 7^h 05^m, 7^h 10^m, 8^h 05^m, 8^h 57^m, 9^h 33^m, 10^h 00^m, 10^h 40^m, 15^h 30^m and 23^h 35^m, the last two being classed as strong (V); then followed several days of calm.

Again on the 27 at 19^h 20^m a minor shock was felt, on the 28 at 15^h 11^m 36^s* occurred a second very violent earthquake at Bokod, felt not only through the Subprovince of Benguet but also in the near Province of Nueva Vizcaya to which belong the high peaks which form the eastern boundary of the Agno Valley. Only two aftershocks were noticed one at 18^h 08^m and a second at 21^h 15^m considered as strong and felt to a distance of about 18 kilometers.

The 30th dawned with two violent earthquakes originated in the Bokod center at 2^h 09^m and 2^h 24^m, felt all over the Subprovince and recorded at Manila. Only one aftershock followed at 6^h 10^m.

On the 1st of October a strong shock occurred at 16^h 25^m 27^s*; excessively large movements were observed at Bokod. This had greater extension than the preceding, as it was felt not only in Nueva Vizcaya but also towards the NW in the Subprovinces of Lepanto and Amburayan and as far as Ilocos Sur. At 16^h 28^m 00^s* it repeated with less intensity and extension being only felt within the Benguet Subprovince. Minor local aftershocks occurred 16^h 50^m, 19^h 05^m and 20^h 40^m. On the 2nd of October occurred a shock at 10^h 35^m and two aftershocks at 11^h 51^m and 15^h 45^m.

During the following six days there were no perceptible shocks; on the 9th one was noticed at Bokod at 9^h 51^m; a similar one took place on the 10th at 15^h 00^m, one on the 12th at 16^h 45^m and the two final shocks during the night between the 21st and 22nd.

The total number of shocks of this seismic period was thirty one, of which twenty four were local, felt only at Bokod and thereabouts within a radius of some 20 kilometers, seven made themselves felt at distances of 35 kilometers and one was perceptible at a distance of 85 kilometers in the NW direction. All these seven principal shocks were recorded at Manila, but none outside of the Archipelago.

As it was previously said, the region of Bokod is located within the deep valley or gorge of the Agno River which starts in the Data Mountain 2,670 meters high runs southward between two branches of the Central Cordillera, the Benguet branch to the W and the Nueva Vizcaya branch to the E. Along this eastern branch rise the following highest peaks of Luzon: the Tabayoc 2,842 meters; the Pulog 2,924 meters; the Pauadan

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2,346 meters, at the SW foot of which and very near lies Bokod; others extend farther southwards all forming a wall over 2,000 meters high which runs from the Data to the plains of Central Luzon.

In this rough region which comprises the Subprovince of Benguet and the Western portion of Nueva Vizcaya occurred in the past similar periods of shocks of rather shallow origin. One of the longest and more known periods occurred in western Nueva Vizcaya in 1881 and more recently in Benguet August–September 1913 and October 1920.

It seems quite certain that the shallow origin of the shocks lay very near the town of Bokod; it certainly can not be far from there to any direction. If the origin would be in the eastern mountains, Nueva Vizcaya would have felt more of the shocks and the same may be said if it is supposed to lay far to the S, SW, W or N because more shocks would have been noticed at the stations of Itogon, Baguio, Kapangan or Bontoc located in those directions. Therefore the origin lay within the valley not far from Bokod, presumably a little to WSW in the Agno gorge, where it opens somewhat to receive the waters of the affluent running through Bokod and two other affluents coming from NW and WSW.

The origin or hypocenter evidently was not deep and the shocks may be classified as rockfall, caused by subsidences or settlings in the interior layers resulting from dissolution of rocks by subterranean waters and other causes. The other said similar periods occurred in the same region were also attributed to the same cause, even the one of Nueva Vizcaya in 1881.[1] Superficial sinkings and subsidences caused by dissolution of underlying limestone are frequent in the same region.[2]

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[1] The relation of Seismic Disturbances in the Philippines to Geologic structure, by M. Saderra Masó and W. D. Smith. The Phil. Journal of Science, Vol. VIII, No. 4, Sec. A. p. 215.

[2] Geology and Mineral Resources in the Philippine Islands by W. D. Smith, Manila 1924, p. 27.

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PERÍODO SÍSMICO DE BENGUET, PROVINCIA MONTAÑOSA OESTE DE LUZÓN

(Septiembre 17—Octubre 22, 1925)

El 17 de septiembre a $12^h\ 00^m$ (hora insular) comenzó este período sísmico con un temblor de intensidad III sentido solamente en las cercanías de Bokod, pueblo situado en la parte ENE de la subprovincia de Benguet, dentro del Valle del gran Río Agno, junto a uno de sus afluentes orientales. El día 18 $6^h\ 47^m\ 12^s$* ocurrió un terremoto que el aviso de Bokod califica de violento (VI–VII); consistió en dos series de choques violentos en el espacio de tiempo de un minuto y medio. Sintióse con intensidad IV–V en gran parte de la subprovincia hasta las estaciones de Baguio y Kapangan distantes unos 28 kilómetros al WSW y NW respectivamente. Registróse en Manila que dista unos 211 kilómetros hacia el sur como terremoto distante muy fuerte. Siguiéronse réplicas sentidas tan sólo en Bokod a $7^h\ 05^m$, $7^h\ 10^m$, $8^h\ 05^m$, $8^h\ 57^m$, $9^h\ 33^m$, $10^h\ 00^m$, $10^h\ 40^m$, $15^h\ 30^m$ y $23^h\ 35^m$; las dos últimas calificadas de fuertes (V). Reinó calma por algunos días. El 27 a $19^h\ 20^m$ ocurrió otro ligero temblor. El 28 a $15^h\ 11^m\ 36^s$* tuvo lugar un segundo terremoto violento en Bokod, el cual se sintió no sólo en toda la subprovincia de Benguet sino también en la vecina Provincia de Nueva Vizcaya a la cual pertenecen las altas montañas que limitan el Valle del Agno por el E. A este terremoto sucedieron solamente dos réplicas sentidas en Bokod, una a $18^h\ 08^m$ y otra a $21^h\ 15^m$ calificada de fuerte y sentida a distancias de 18 kilómetros.

El día 30 amaneció con dos terremotos violentos en Bokod a $2^h\ 09^m$ y $2^h\ 24^m$ sentidos en gran parte de la subprovincia y registrados en Manila. No se notó en Bokod más repetición que una a $6^h\ 10^m$.

El primer temblor de octubre ocurrió el uno a $16^h\ 25^m\ 27^s$*. La nota de Bokod dice que los vaivenes eran muy grandes; tuvo mucha mayor extensión que los precedentes puesto que no sólo se sintió en Nueva Vizcayya sino que se extendió mucho hacia el NW en las subprovincias de Lepanto y Amburayan, llegando a ser débilmente perceptible en la parte meridional de Ilocos Sur. A los pocos minutos, a $16^h\ 28^m\ 00^s$* repitió con menor intensidad y extensión, sintiéndose solamente en la subprovincia de Benguet. Réplicas sentidas solamente en Bokod ocurrieron a $16^h\ 50^m$, $19^h\ 05^m$ y $20^h\ 40^m$; a las $10^h\ 35^m$ del día 2 ocurrió otro temblor con dos repeticiones a $11^h\ 51^m$ y $15^h\ 45^m$. Los seis días siguientes fueron de calma hasta el 9 en que se sintió un temblorcito en Bokod a $9^h\ 51^m$; el 10 ocurrió otro semejante a $15^h\ 00^m$, otro el 12 a $16^h\ 45^m$ y los últimos dos durante la noche del 21 al 22.

El número total de choques anotados en Bokod fué de 31 de los cuales 24 fueron locales sentidos dentro de un radio de unos 20 kilómetros, los 7 restantes llegaron a ser perceptibles en un radio de 35 kilómetros y uno fué perceptible en dirección al NW a una distancia de 85 kilómetros. Todos estos siete temblores principales se registraron en Manila pero ninguno fuera del Archipiélago.

Como se indicó antes la región de Bokod está en el profundo Valle del Río Agno el cual arrancando del Monte Data de 2,670 metros de altura se dirige al sur encajonado entre dos ramas de la Cordillera Central del N de Luzón, la de Benguet al W y la de

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Nueva Vizcaya al E. A lo largo de ésta se encuentran los picos más empinados de la isla el Tabayoc de 2,842, el Pulog 2,924 y el Pauadan, a cuyo pie está Bokod, 2,346. Siguen otros menos importantes de manera que la altura de esta cordillera que cierra el valle por el E se mantiene sobre los 2,000 en una longitud de unos 60 kilómetros hasta que el río se acerca a la llanura central de Luzón. Dentro de la región montañosa que comprende la subprovincia de Benguet y la parte occidental de la de Nueva Vizcaya se han dado ya otros casos de períodos sísmicos de origen muy poco profundo. Famoso es el ocurrido en la parte occidental de Nueva Vizcaya en 1881 y los más recientes de agosto y septiembre de 1913 y octubre de 1920 en la misma subprovincia de Benguet.

Apenas puede dudarse de que el origen de estos temblores se hallaba muy cerca de la Estación de Bokod, ciertamente que si se hallara mucho más al E las estaciones de Nueva Vizcaya habrían sido más afectadas, si mucho más al N, hacia el Datá, los temblores se hubieron sentido en Bontoc. Suponemos pues que si no se hallaba en las cercanías de Bokod estaría en el centro del valle cerca del Río Agno al WSW de Bokod donde el valle se abre algo por desaguar en el río el afluente que pasa por Bokod y otros dos importantes que vienen del NW y del WSW.

Los temblores de este período sísmico tuvieron evidentemente un origen muy poco profundo y así tal vez pueden clasificarse como temblores de hundimiento debidos a la existencia a cierta profundidad de espacios no precisamente huecos pero debilitados y enrarecidos por el poder disolvente de las aguas sobre algunos elementos de las rocas. A esta clase se atribuyeron los otros períodos citados ocurridos en la misma región y aun el de Nueva Vizcaya de 1881.[1] Hundimientos superficiales atribuídos a la disolución de las capas calizas interiores son frecuentes en esta region.[2]

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[1] The relation of Seismic Disturbances in the Philippines to Geologic structure, by M. Saderra Masó and W. D. Smith. The Philippine Journal of Science, Vol. VIII, No. 4, Sec. A, p. 215.

[2] Geology and Mineral Resources in the Philippine Islands by W. D. Smith, Manila 1924, p. 27.

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SEISMOLOGICAL BULLETIN FOR NOVEMBER, 1925

By Rev. MIGUEL SADERRA MASÓ, S. J.
Chief, Seismic and Magnetic Divisions, Weather Bureau

EARTHQUAKES FELT IN THE PHILIPPINES[1]

1, 8h 00m [1, 16h 00m]. **Hinigaran** (W Negros). Local shock of intensity III.

2, 1h 10m [2, 9h 10m]. **Janiuay** (SE Panay). Earthquake of intensity III; local shallow origin.

3, 2h 10m [3, 10h 10m]. **Ormoc** (W Leyte). Earthquake of intensity V. Known and near submarine shallow origin to the SW.

4, 11h 05m [4, 19h 05m]. **Baras** (SE Catanduanes Island). Earthquake of intensity III.

4, 15h 10m [4, 23h 10m]. **Basco** (Batan Island). Earthquake of intensity IV; it repeated at 17h 30m [5, 1h 30m] with intensity V.

8, 12h 06m [8, 20h 06m]. **Guinobatan** (SE Luzon). Local shock of intensity III; origin probably volcanic.

8, 13h 04m [8, 21h 04m]. **Baras** (SE Catanduanes Island). Earthquake of intensity III; aftershock forty minutes later.

11, 7h 19m 15s* [11, 15h 19m 15s]. **Calatagan** (SW Luzon). Earthquake of intensity IV; origin in the China Sea, NW of Mindoro.

11, 23h 05m [12, 7h 05m]. **Malita** (SE Mindanao). Local shock of intensity III.

15, 10h 35m [15, 18h 35m]. **Cebu** (E Cebu Island). Local shock of intensity II–III.

16, 0h 44m 00s* [16, 8h 44m 00s]. **Cebu Island**. Earthquake felt with intensity III in the half northern part of Cebu Island and very lightly at Catbalogan, W Samar. Origin apparently toward SE of Masbate Island.

17, 4h 30m 14s* [17, 12h 30m 14s]. **Calatagan** (SW Luzon). Earthquake of intensity III; origin in the China Sea NW of Mindoro.

26, 18h 08m [27, 2h 08m]. **Lais** (SE Mindanao). Local shock of intensity III.

29, 14h 14m [29, 22h 14m]. **Cabo Bojeador** (NW Luzon). Earthquake felt with intensity III in the NW end of Luzon and very weakly at Laoag, Ilocos Norte.

29, 19h 49m 41s* [30, 3h 49m 41s]. **NW Luzon**. Earthquake of intensity IV felt through the Province of Ilocos Norte. Origin in the China Sea close to the NW end of the island.

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[1] The intensity of earthquakes 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 registered by them. This fact is denoted by an asterisk (*). Otherwise the time is that noted by the observer who sent the report. All time indications are in Greenwich mean time (midnight=0h), insular time being added in brackets for the convenience of Philippine readers.

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RECORDS OF THE MICROSEISMOGRAPH

[Time: Greenwich mean. Midnight=0h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: T_o=6.04, ϵ=1.895, $\frac{r}{T_o^2}$=0.067, V=181; A_E: T_o=5.56, ϵ=1.987, $\frac{r}{T_o^2}$=0.067, V=212. 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.			
367	3	I	e	1 02 47				
			F	16				
368	3	Iv	eP	17 15 58				Microseisms on the 1st, 2nd, and 3rd.
			F	21				
369	5	Ir	eP	12 09 21				
			iL?	15 00				
			M_N	15 35	13	8		
			M_E	15 55	12		6	
			F	13 03				
370	6	Iv	eP	17 20 27				
			iL	21 21				
			F	27				
371	9	I	e	22 50				
			F	23 17				
372	10	Iv	eP	10 56 51				
			iL	57 26				
			F	11 02				
373	10	III	i(P)	13 54 46				
			F	17 51				
374	11	Iv	eP	3 00 00				
			F	11				
375	11	IIv	eP	7 19 15				SW Luzon.
			iL	19 35				
			M_E	19 39	3		50	
			M_N	19 49	3	53		
			F	32				
376	13	IIId	iP	12 16 01				Pacific, NE Samar Island. Maxima and end lost by the force of the shock.
			iL	16 57				
377	13	Iv	iP	12 40 54				Aftershock of the No. 376.
378	13	Iv	iP	12 43 14				Do.
379	13	IIv	iP	12 45 42				Do.
380	13	Iv	iP	12 59 00				Do.
381	13	Iv	iP	13 26 51				Do.
382	13	Iv	iP	13 38 27				Do.
383	13	Iv	iP	13 50 07				Do.
			iL	51 16				
384	13	IIv	iP	14 02 08				Do.
			iL	03 07				
385	13	Iv	iP	15 24 59				Do.
386	13	IIv	iP	15 52 46				Do.
			iL	53 49				
387	13	IIv	iP	16 08 16				Do.
			iL	09 16				
388	13	Iv	eP	16 40 27				Do.
			F	52				
389	13	Iv	eP	16 59 34				Do.
			F	17 16				
390	13	Iv	eP	18 42 29				Do.
			F	53				
391	13	Iv	eP	22 47 01				Do.
			F	54				
392	13	Iv	eP	23 31 31				Do.
			F	46				
393	14	Iv	eP	0 14 24				
			iL	15 43				
			F	33				

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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.*			
394	14	IIv	eP	1 07 41				Aftershock of the No. 376
			iL	08 48				
			F	48				
395	14	Iv	eP	1 23 47				Do.
			eL	24 44				
396	14	Iv	eP	3 01 31				Do.
			F	09				
397	14	Iv	eP	3 54 04				Do.
			iL	55 11				
			F	4 21				
398	14	Iv	eP	5 47 08				Do.
			F	6 08				
399	14	Iv	eP	7 44 13				Do.
			F	51				
400	14	IIIv	iP	8 12 00				Do.
			iL	13 14				
			M_E	14 18	6		259	
			M_N	14 20	6	356		
401	14	Iv	iP	8 57 57				Do.
			iL	59 04				
402	14	IIIv	iP	10 04 44				Do.
			iL	05 54				
403	14	Iv	eP	10 39 37				Do.
			eL	40 31				
404	14	IIIv	iP	14 38 15				Do.
			iL	39 26				
			M_N	39 51	5	288		
			M_E	39 56	5		245	
405	14	Iv	eP	15 34 25				Do.
			iL	35 24				
406	14	Iv	eP	15 51 09				Do.
			eL	52 09				
407	14	Iv	eP	16 39 56				Do.
			iL	41 00				
			F	17 02				
408	14	Iv	eP	19 01 13				Do.
			F	08				
409	14	Iv	eP	20 18 09				Do.
			F	26				
410	15	Iv	eP	6 28 00				Do.
			iL	29 05				
411	15	Iv	eP	6 33 55				Do.
			F	40				
412	15	Iv	eP	6 51 30				Do.
			iL	52 35				
			F	7 05				
413	15	Iv	iP	8 04 12				Do.
			iL	05 16				
			F	29				
414	15	Iv	eP	14 02 55				Do.
			F	10				
415	15	Iv	eP	14 37 00				Do.
			F	46				
416	15	Iv	eP	15 39 13				Do.
			F	48				
417	16	Iv	eP	0 10 29				Do.
			F	32				
418	16	Iv	e	0 44 00				S Masbate Island.
			F	58				
419	16	Iv	eP	4 37 56				Aftershock of the No. 376.
			F	49				
420	16	Iv	eP	5 46 25				Do.
			F	6 01				

Records of the Microseismograph—Continued

International Seismological Centre

No.	Date	Character	Phase	Hour	Period	Amplitude A_N μ	Amplitude A_E μ	Remarks
				h. *m.* *s.*	*s.*			
421	16	Iv	eP	8 19 06				Aftershock of the No. 376.
			F	30				
422	16	Iv	eP	12 15 02				SE Negros Island.
			eL	16 13				
423	16	I	e?	12 25				Near Central America.
			M	56				
			F	14 02				
424	16	Iv	eP	19 09 36				Aftershock of the No. 376.
			F	19				
425	17	I	e	0 38				
			F	1 16				
426	17	Iv	eP	4 30 14				China Sea, NW Mindoro Island.
			F	37				
427	17	Iv	eP	5 20 34				Aftershock of the No. 376.
			F	27				
428	17	Iv	eP	5 54 12				Do.
			F	6 01				
429	17	Iv	eP	8 07 31				Do.
			eL	08 38				
			F	38				
430	17	Iv	eP	17 16 14				
			iL	17 28				
			F	35				
431	17	Iv	eP	23 14 55				Do.
			iL	16 00				
			F	38				
432	18	Iv	eP	11 48 32				Do.
			iL	49 37				
			F	12 04				
433	18	Iv	eP	13 45 40				Do.
			iL	46 42				
			F	14 05				
434	18	Iv	eP	15 20 00				Do.
			F	38				
435	19	Ir	eP	14 10 28				
			iL	14 00				
			F	15 56				
436	19	Iv	eP	19 23 46				Do.
			iL	24 45				
			F	45				
437	21	Iv	eP	6 00 15				Do.
			F	13				
438	21	Iv	eP	23 16 41				
			iL	18 00				
			F	43				
439	22	IIv	eP	0 07 00				Do.
			iL	08 09				
			M_E	09 14	4		108	
			M_N	09 37	4	86		
			F	1 11				
440	22	Iv	eP	1 15 27				Do.
			F	29				
441	22	Iv	eP	4 23 46				Do.
			F	30				
442	22	Iv	eP	20 36 50				Do.
			F	21 02				
443	23	Iv	eP	9 34 02				
			F	37				
444	23	Iv	eP	17 59 28				Do.
			F	18 07				
445	23	Iv	eP	23 06 55				Do.
			F	17				
446	24	Iv	eP	6 08 19				Do.
			F	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.*			
447	24	Iv	eP	15 24 38				
			iL	25 58				
			F	42				
448	24	Iv	eP	17 22 19				
			iL	23 28				
			F	35				
449	24	Iv	eP	17 42 46				
			F	51				
450	25	IIv	eP	12 18 50				Aftershock of the No. 376.
			iL	19 56				
			M_N	20 04	4	81		
			M_E	20 07	5		81	
			F	13 04				
451	25	Iv	eP	14 11 48				
			F	18				
452	26	Iv	eP	11 58 00				Do.
			F	12 05				
453	26	Iv	e	15 57				Near Japan?
			F	16 08				
454	27	Iv	eP	8 39 29				Aftershock of the No. 376.
			L	40 37				
455	27	Iv	eP	8 48 19				Do.
			F	55				
456	27	Iv	eP	10 22 57				Do.
			F	42				
457	28	Iv	eP	4 47 35				
			F	50				
458	28	Iv	eP	5 49 18				
			L	50 30				
			F	6 12				
459	28	Ir	eP	16 22 59				
			iL?	31 00				
			F	17 27				
460	28	Iv	eP	17 47 46				
			F	52				
461	29	Iv	eP	19 49 41				NW Luzon.
			F	54				
462	30	Iv	eP	12 05 53				
			F	16				
463	30	Ir	eP	17 50 25				
			L	53 29				
			F	18 21				

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TEMBLORES DE TIERRA SENTIDOS EN FILIPINAS[1]

1, 8h 00m [1, 16h 00m]. **Hinigaran** (W de Negros). Temblor de tierra local de intensidad III.

2, 1h 10m [2, 9h 10m]. **Janiuay** (SE de Panay). Temblor de tierra local de intensidad III.

3, 2h 10m [3, 10h 10m]. **Ormoc** (W de Leyte). Temblor de tierra de intensidad V; pequeña área, origen poco profundo ya conocido al SW.

4, 11h 05m [4, 19h 05]. **Barás** (SE de Catanduanes). Temblor de tierra de intensidad III.

4, 15h 10m [4, 23h 10m]. **Basco** (Islas Batanes). Temblor de tierra de intensidad IV. Repitió a 17h 30m [5, 1h 30m] con intensidad V.

8, 12h 06m [8, 20h 06m]. **Guinobatan** (SE de Luzón). Temblor de tierra local de intensidad III; probablemente de carácter volcánico.

8, 13h 04m [8, 21h 04m]. **Barás** (SE de Catanduanes). Temblor de tierra de intensidad III. Repetición a los cuarenta minutos.

11, 7h 19m 15s* [11, 15h 19m 15s]. **Calatagán** (SW de Luzón). Temblor de tierra de intensidad IV; origen en el Mar de la China al NW de Mindoro.

11, 23h 05m [12, 7h 05m]. **Malita** (SE de Mindanao). Temblor de tierra de intensidad III.

15, 10h 35m [15, 18h 35m]. **Cebú** (E de la Isla de Cebú). Temblor de tierra local de intensidad II–III.

16, 0h 44m 00s* [16, 8h 44m 00s]. **Isla de Cebú.** Temblor de tierra de intensidad III sentido en toda la parte norte de la isla y débilmente en Catbalogan al W de Sámar. Su origen parece se hallaba hacia el SE de la Isla de Masbate.

17, 4h 30m 14s* [17, 12h 30m 14s]. **Calatagán** (SW de Luzón). Temblor de tierra de intensidad III; origen en el Mar de la China, NW de Mindoro.

26, 18h 08m [27, 2h 08m]. **Lais** (SE de Mindanao). Temblor de tierra local de intensidad III.

29, 14h 14m [29, 22h 14m]. **Cabo Bojeador** (NW de Luzón). Temblor de tierra de intensidad III, sentido en el extremo NW de Luzón y muy débilmente en Laoag, Ilocos Norte.

29, 19h 49m 41s* [30, 3h 49m 41s]. **NW de Luzón.** Temblor de tierra de intensidad IV sentido en toda la Provincia de Ilocos Norte. El origen se hallaba cerca del extremo NW de la isla, en el Mar de la China.

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[1] La intensidad de los terremotos se indica conforme a la conocida escala de Rossi-Forel. Cuanto a la hora de su ocurrencia, 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 apuntada por los observadores que nos envían las notas. Todas las indicaciones del tiempo se refieren al medio de Greenwich (medianoche=0h). Para conveniencia de los lectores de Filipinas se añade también la hora insular.

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THE SAMAR EARTHQUAKE

(November 13, 12^h 16^m 01^s* [13, 20^h 16^m 01^s])

Origin and intensity.—This earthquake originated in the Philippine Deep, NE of Samar Island, near 125.5° E and 13.0° N. It was perceptible in a radius of 600 kilometers comprising SE and S Luzon, all the Visayas Islands and NE Mindanao. The nearest lands were the small islets of Batag and Laoang and the NE coast of Samar Island, at distances between 50 and 60 kilometers from the origin. On Batag Island, the lighthouse, a modern concrete construction, was fissured and the optical and mechanical parts of the lantern damaged. In the soil cracks opened and the low shores were flooded by the waves caused by the earthquake; many fishermen lost their fishing boats and several were drowned. Numerous native houses on this and on Laoang Island were destroyed. On the coast of Samar not only native houses but also several more substantial constructions suffered considerable damage. Many persons suffered injuries. The intensity of the shocks presumably reached grade VIII or IX. The shocks repeated many times with varying intensity during several minutes and thus contributed to increase the damages.

The isoseismal V–VI ran at a distance of about 300 kilometers from the center, encircling SE Luzon and the Islands of Masbate, N Cebu and Leyte. At Manila, a little more than 500 kilometers distant to the NW, only few persons at rest felt the earthquake, such an effect depending much on the condition of the houses and soil. The movements were gentle and slow, nevertheless as a result of some kind of resonance of the natural oscillation of the mass of water and the vibration of the seismic wave two large storage tanks 25 and 22 meters in diameter in the Gass Works spilled the water in a SE–NW direction, the movement and spilling lasting several minutes; other smaller tanks not spilling any water. Nobody in the factory felt the shock, but their attention was attracted by the rhymic noise of the water falling from the big tanks. This earthquake was recorded all over the Globe.

Aftershocks.—They were so frequent during the first hours that is seemed as if the earth were in continuous trembling which was the impression given to the people in NE and central Samar Island. At Manila not less than fourteen aftershocks were recorded up to midnight, that is in less than four hours. During the 14th our seismographs recorded nineteen, ten on the 15th and so on; the total number until the end of the month being sixty. Such a number a distance of more than 500 kilometers means a tremendous frequency near the epicenter. There were in reality two periods in the frequency of aftershocks comprising the days 13–18 and 22–24; practically the shocks ceased at the end of the month. Only two aftershocks occurred on the 14th at 18^h 15^m and 22^h 38^m which were very strong and were recorded all over the World.

International Seismological Centre

TERREMOTO DE SÁMAR

(Noviembre 13, 12^h 16^m 01^s* [13, 20^h 16^m 01^s])

Origen e intensidad.—Este terremoto originado en el Abismo de Filipinas al NE de la de Sámar cerca del meridiano 125.5° E y del paralelo 13.0° N, se hizo sentir en un radio de 600 kilómetros que cromprendía el sud y sudeste de Luzón, todas las Islas Visayas y el NE de Mindanao. Las tierras más cercanas al origen submarino eran las pequeñas Islas de Batag y Laoang y la costa NE de Sámar que distan de él de 50 a 60 kilómetros. En la primera de dichas islas quedó con grietas la torre del faro, de construcción moderna, se soltaron algunos arcos de los que forman las lentes de la linterna y todo el aparato sufrió daños de consideración. En el suelo de la pequeña isla se abrieron muchas grietas y la mar retrocedió y luego avanzó con furia causando con esto la pérdida de muchas barcas pequeñas y la muerte de algunos pescadores. Numerosas casitas de materiales ligeros quedaron destruídas tanto en las dos citadas islas como en la costa NE de Sámar donde también sufrieron desperfectos algunas construcciones modernas de cemento. Recibieron heridas varias personas. La intensidad del terremoto estaría comprendida en estos sitios entre el grado VIII y IX. Contribuyeron sin duda mucho al daño las continuas repeticiones que se sucedían por minutos. La isosisma V–VI estaba a una distancia de unos 300 kilómetros del origen y encerraba casi todo el SE de Luzón y las Islas de Masbate, N de Cebú y Leyte. En Manila que dista del origen poco más de 500 kilómetros hacia el NW solamente sintieron este terremoto varias personas en reposo, dependiendo mucho de la solidez de las casas en que se hallaban y de la calidad del suelo. Los movimientos observados eran lentas de vaivén; ocurrió sin embargo un caso singular y fué que en dos grandes gasómetros de 25 y 22 metros de diámetro, el agua se puso a oscilar con tanta amplitud que se estuvo derramando largo rato; en otros pequeños no adquirió el líquido tanta amplitud; nadie con todo en los varios edificios de la Fábrica del Gas notó el temblor. Es sin duda éste un caso típico de resonancia. Este terremoto se registró en todo el Globo.

Réplicas.—Fueron en tanto número que las primeras horas parecía que la tierra estaba en continua efervecencia, tal era la impresión causada en gran parte del centro y nordeste de Sámar. Con estar tan distante Manila se registraron catorce réplicas hasta la medianoche o sea en menos de cuatro horas. En todo el día 14 se registraron diez y nueve, diez el 15 y así sucesivamente, de tal manera que hasta el fin del mes pasaron de 60; lo cual a más de 500 kilómetros de distancia supone mucho mayor número cerca del epicentro. Su frecuencia sin embargo disminuyó mucho desde el 18; del 22 al 24 volvió a aumentar algo y también el 27, terminando prácticamente con el mes de noviembre las réplicas de alguna importancia. De todas las repeticiones ocurridas después del 13 solamente dos del día 14 a 18^h 15^m y 22^h 38^m fueron muy fuertes y se registraron en los Observatorios de todo el Globo.

International Seismological Centre

BULLETIN FOR DECEMBER, 1925

International Seismological Centre

SEISMOLOGICAL BULLETIN FOR DECEMBER, 1925

By Rev. MIGUEL SADERRA MASÓ, S. J.
Chief, Seismic and Magnetic Divisions, Weather Bureau

EARTHQUAKES FELT IN THE PHILIPPINES[1]

1, $7^h\ 10^m\ 29^s$* [1, $15^h\ 10^m\ 29^s$]. **Samar Island.** Earthquake of intensity III–IV. Aftershock of the November 13th earthquake.

4, $3^h\ 16^m\ 15^s$* [4, $11^h\ 16^m\ 15^s$]. **Ilagan** (E Luzon). Earthquake of intensity IV. Light repetitions at $15^h\ 00^m$ and $19^h\ 46^m$. Somewhat distant origin to the E in the Pacific near parallel 17° N.

4, $4^h\ 34^m\ 25^s$* [4, $12^h\ 34^m\ 25^s$]. **E Samar and NE Leyte.** Earthquake of intensity IV. Probably an aftershock.

5, $7^h\ 28^m\ 55^s$* [5, $15^h\ 28^m\ 55^s$]. **Panay and Cuyo Islands.** Earthquake felt with intensity IV–V in the Island of Cuyo and W and S Panay. Origin in the Sulu Sea to the S of Cuyo.

8, $22^h\ 16^m\ 23^s$* [9, $6^h\ 16^m\ 23^s$]. **Aparri** (NE Luzon). Earthquake of intensity III; origin to the NE in the Pacific.

10, $5^h\ 30^m$ [10, $13^h\ 30^m$]. **Bogo** (N Cebu). Local shock of intensity III.

10, $12^h\ 02^m$ [10, $22^h\ 02^m$]. **Guam** (Mariana Islands). Earthquake of intensity III.

10, $19^h\ 09^m\ 35^s$* [11, $3^h\ 09^m\ 35^s$]. **Calapan** (NE Mindoro). Earthquake of intensity IV.

11, $6^h\ 02^m$ [11, $14^h\ 02^m$]. **Zamboanga** (W Mindanao). Earthquake shock of intensity III. Recorded at Butuan.

11, $16^h\ 55^m\ 00^s$* [12, $0^h\ 55^m\ 00^s$]. **Laoag** (NW Luzon). Earthquake shock felt with intensity III. Origin in the China Sea.

15, $0^h\ 15^m$ [15, $8^h\ 15^m$]. **Malita** (SE Mindanao). Earthquake of intensity III. Recorded at Butuan.

16, $3^h\ 39^m$ [16, $13^h\ 39^m$]. **Guam** (Mariana Islands). Earthquake of intensity III. Origin outside of the island.

18, $0^h\ 05^m$ [18, $8^h\ 05^m$]. **Glan** (S Mindanao). Local shock of intensity III.

18, $23^h\ 40^m$ [19, $7^h\ 40^m$]. **Bugasong** (W Panay). Local shock of intensity III.

19, $2^h\ 05^m$ [19, $10^h\ 05^m$]. **E Mindanao.** Earthquake of intensity III–IV felt in the N part of the Agusan Valley.

26, $18^h\ 25^m\ 33^s$* [27, $2^h\ 25^m\ 33^s$]. **E Mindanao and Visayas.** Earthquake of intensity VII in NE Mindanao, and perceptible through the whole eastern portion of this island and through Leyte, Samar, Bohol, and Cebu Islands; an extension of over 800 kilometers in a NNW–SSE direction, and about 400 kilometers in the E–W within the Archipelago.

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[1] The intensity of earthquakes 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 registered by them. This fact is denoted by an asterisk (*). Otherwise the time is that noted by the observer who sent the report. All time indications are in Greenwich mean time (midnight=0^h), insular time being added in brackets for the convenience of Philippine readers.

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The origin lay in the Philippine Deep towards the meridian 127.0° E and the parallel 9.9° N. Recorded in the Far East.

Perceptible aftershocks were noticed on the 27 at $3^h\ 09^m$, $11^h\ 20^m$, $12^h\ 23^m$ and $16^h\ 11^m$; on the 28 at $7^h\ 23^m$, $10^h\ 00^m$ and $14^h\ 14^m$ (insular time).

At $19^h\ 04^m\ 30^s$* [29, $3^h\ 04^m\ 30^s$] occurred a repetition of the earthquake with intensity IV–V, felt at distances of 300 kilometers in the SSE and NNW directions. An aftershock felt only in the northern part of Surigao and Agusan Provinces took place at $15^h\ 01^m$. Minor aftershocks were more numerous; at Butuan more than 150 kilometers distant from the origin were recorded twenty-nine on the 27th, fifty-three on the 28th and 29th, seven on the 30th and only four on the 31st.

31, $13^h\ 50^m$ [31, $21^h\ 50^m$]. **SE Mindanao.** Earthquake of intensity IV felt through the whole Province of Davao. Its origin apparently lay not far to the SE of Davao Gulf.

RECORDS OF THE MICROSEISMOGRAPH

[Time: Greenwich mean. Midnight=0h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: T_o=6.04, ϵ=1.895, $\frac{r}{T_o^2}$=0.052, V=184; A_E: T_o=5.56, ϵ=1.987, $\frac{r}{T_o^2}$=0.067, V=212. 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.*			
464	1	Iv	eP	7 10 29				Aftershock of the No. 376.
			iL	11 30				
			F	19				
465	2	Iv	eP	4 59 18				
			F	5 03				
466	3	Iv	eP	4 06 30				
			iL	06 46				
			F	10				
467	4	Iv	eP	3 16 15				Pacific.
			iL	17 11				
			F	22				
468	4	Iv	eP	4 34 25				Aftershock of the No. 376.
			iL	35 24				
			F	40				
469	5	IIv	eP	7 28 55				Sulu Sea.
			iL	30 00				
			M_E	30 11	5		52	
			M_N	30 43	6	47		
			F	50				
470	6	Iv	eP	19 06 02				
			iL	06 53				
			F	15				
471	6	Iv	eP	23 54 34				
			iL	55 30				
	7		F	0 08				
472	7	I	e	8 49				Trace only.
			F	59				
473	7	I	e	9 02 28				
			F	22				
474	8	Iv	eP	22 16 23				NE Luzon.
			iL	17 24				
			F	28				
475	9	Iv	eP	2 41 21				
			F	46				
476	9	Iv	eP	19 00 09				
			iL	01 00				
			F	11				
477	10	I	e	14 36				Central America.
			F	16 38				
478	10	Iv	eP	19 09 35				
			iL	09 53				
			F	17				Trace only.

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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.*			
479	11	I	e	0 57				
			F	1 08				
480	11	I	e	16 55 00				China Sea. Trace only.
			F	17 05				
481	11	Iv	eP	19 27 00				
			L	28 00				
			F	43				
482	12	Iv	eP	8 40 29				
			iL	41 23				
			F	58				
483	13	IIv	eP	5 21 32				
			iL	21 46				
			M_E	21 52	6		288	
			M_N	22 14	7	236		
			F	48				
484	13	I	e	23 03				
			F	12				Trace only.
485	14	I	eP	7 10 23				
			F	44				Trace only. Microseisms on the 15th, strong on the 16th, heavy on the 17th, very heavy on the 18th and 19th, heavy on the 20th and lightly on the 21st.
486	22	IIr	iP	5 10 08				
			iS	13 27				
			iL	14 22				
			$M_N{}^1$	14 26	7	106		
			$M_E{}^1$	15 00	7		71	
			$M_E{}^2$	19 36	9		81	
			$M_N{}^2$	19 39	9	122		
			F	6 32				
487	23	I	eP	23 12 35				
			L?	15 02				
			F	39				
488	25	Iv	eP	13 08 22				
			iL	08 47				
			F	14				
489	26	IIIv	iP	18 25 33				NE Mindanao.
			iL	27 00				
			$M_N{}^1$	27 52	6	250		
			$M_E{}^1$	27 53	6		203	
			$M_E{}^2$	29 16	8		222	
			$M_N{}^2$	29 17	9	334		
			F	20 02				
490	27	IIr	eP	10 31 37				
			iL	36 00				
			F	11 55				
491	28	IIr	eP	19 04 30				Pacific?
			iL	06 23				
			M_E	07 18	6		79	
			M_N	08 12	8	99		
			F	20 22				
492	29	I	e?	2 12				Trace only.
			F	56				
493	29	Iv	e	7 01				
			F	09				
494	29	Iv	e	8 08				
			F	20				
495	29	Iv	eP	12 00 16				
			iL	00 41				
			F	07				
496	29	Iv	eP	13 01 20				
			iL	01 40				
			F	09				
497	29	IIr	iP	16 07 58				
			iL	11 00				
			M_N	11 19	5	182		
			M_E	11 19	4		144	
			F	17 03				
498	31	I	e	13 50				Trace only. Microseisms on the 29th, 30th, and 31st.
			F	14 02				

International Seismological Centre

TEMBLORES DE TIERRA SENTIDOS EN FILIPINAS[1]

1, 7h 10m 29s* [1, 15h 10m 29s]. **Isla de Sámar.** Temblor de tierra de intensidad III–IV. Réplica del terremoto del 13 de noviembre.

4, 3h 16m 15s* [4, 11h 16m 15s]. **Ilagan** (E de Luzón). Temblor de tierra de intensidad IV; repitió con menos intensidad a 15h 00m y 19h 46m. Su origen parece se hallaba algo lejos en el Pacífico cerca del paralelo 17° N.

4, 4h 34m 25s* [4, 12h 34m 25s]. **E de Sámar y NE de Leyte.** Temblor de tierra de intensidad IV. Probablemente una réplica.

5, 7h 28m 55s* [5, 15h 28m 55s]. **Islas de Panay y Cuyo.** Temblor de tierra sentido con intensidad IV–V, en la Isla Cuyo y en la parte W y S de la de Panay; el epicentro se hallaba en el Mar de Joló hacia el sur de Cuyo.

8, 22h 16m 23s* [9, 6h 16m 23s]. **Aparri** (NE de Luzón). Temblor de tierra de intensidad III; origen hacia el NE en el Pacífico.

10, 5h 30m [10, 13h 30m]. **Bogo** (N de Cebú). Temblor de tierra local de intensidad III.

10, 12h 02m [10, 22h 02m]. **Guam** (Islas Marianas). Temblor de tierra de intensidad III.

10, 19h 09m 35s* [11, 3h 09m 35s]. **Calapan** (NE de Mindoro). Temblor de tierra de intensidad IV.

11, 6h 02m [11, 14h 02m]. **Zamboanga** (W de Mindanao). Temblor de tierra de intensidad III. Registrado en Butúan.

11, 16h 55m 00s* [12, 0h 55m 00s]. **Laoag** (NW de Luzón). Temblor de tierra de intensidad II–III. Origen en el Mar de la China.

15, 0h 15m [15, 8h 15m]. **Malita** (SE de Mindanao). Temblor de tierra de intensidad III. Registrado en Butúan.

16, 3h 39m [16, 13h 39m]. **Guam** (Islas Marianas). Temblor de tierra de intensidad III. Origen fuera de la isla.

18, 0h 05m [18, 8h 05m]. **Glan** (S de Mindanao). Temblor de tierra local de intensidad III.

18, 23h 40m [19, 7h 40m]. **Bugasong** (W de Panay). Temblor de tierra local de intensidad III.

19, 2h 05m [19, 10h 05m]. **E de Mindanao.** Temblor de tierra de intensidad III–IV sentido en la parte N del Valle del Agusan.

26, 18h 25m 33s* [27, 2h 25m 33s]. **E de Mindanao y Visayas.** Temblor de tierra sentido con intensidad VII en la parte NE de Mindanao, perceptible en toda la parte oriental de esta isla y en las de Leyte, Sámar, Bohol y Cebú, en una extensión de NNW a SSE de más de 800 kilómetros y cosa de 400 hacia el W dentro del Archipiélago. Su origen se hallaba en el Abismo de Filipinas no lejos del meridiano 127.0° E y del paralelo 9.9° N. Registrado en el Extremo Oriente.

Ocurrieron réplicas muy perceptibles a 3h 09m, 11h 20m, 12h 23m y 16h 11m del mismo día 27 y a 7h 23m, 10h 00m, y 14h 14m del 28 (hora insular).

El 28 a 19h 04m 30s* [29, 3h 04m 30s], hubo una repetición de intensidad IV–V sentida a distancias de 300 kilómetros hacia el NNW y SSE. Otra repetición sentida solamente en la parte N de Surigao y Agusan tuvo lugar a 15h 01m.

Las repeticiones menores en el epicentro fueron muy numerosas; el sismógrafo de Butúan a más de 150 kilómetros de distancia registró 29 el mismo día 27, 53 el 28 y 29, 7 el 30 y 4 solamente el 31.

31, 13h 50m [31, 21h 50m]. **SE de Mindanao.** Temblor de tierra de intensidad IV sentido en toda la Provincia de Dávao. El origen parece se hallaba no lejos al SE del golfo del mismo nombre.

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[1] La intensidad de los terremotos se indica conforme a la conocida escala de Rossi-Forel. Cuanto a la hora de su ocurrencia, 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 apuntada por los observadores que nos envían las notas. Todas las indicaciones del tiempo se refieren al medio de Greenwich (medianoche=0h). Para conveniencia de los lectores de Filipinas se añade también la hora insular.

International Seismological Centre

APPENDIX TO THE MONTHLY BULLETINS FOR 1925

International Seismological Centre

ANNUAL SUMMARY OF METEOROLOGICAL DATA FOR MANILA DEDUCED FROM TWENTY-FOUR DAILY OBSERVATIONS DURING THE YEAR 1925

Month	Pressure		Air temperature									
	Mean	Departure from normal	Mean	Departure from normal	Mean maximum	Departure from normal	Mean minimum	Departure from normal	Absolute maximum	Day	Absolute minimum	Day
	mm.	*mm.*	*°C.*	*°C.*	*°C.*	*°C.*	*°C.*	*°C.*	*°C.*		*°C.*	
January	759.68	−1.47	25.2	+0.4	31.1	+1.0	21.2	+0.8	33.2	24	18.4	16
February	59.89	−1.23	25.4	+ .2	30.6	− .3	22	+1.7	32.9	25	19.8	5
March	59.91	− .58	26.5	0	32.7	+ .2	22.1	+ .8	35.1	20, 26	20	10
April	59.70	+ .36	27.8	− .3	34.1	+ .1	23	+ .3	35.4	5	20	26
May	57.95	− .32	28.1	− .3	33.3	− .4	24.1	+ .2	36	7, 30	21.8	2
June	57.39	− .40	26.8	−1	31.3	−1.1	23.9	− .1	34.4	16	22.7	23, 25
July	57.31	+ .18	26.7	− .3	30.9	− .1	23.7	0	33.3	16	22.2	17
August	56.09	−1.12	26.8	− .2	31.1	+ .4	24	+ .2	32.9	11, 13	22.9	7, 20
September	58.07	+ .60	26.5	− .3	30.7	0	23.7	0	33	22	22.3	17
October	58.48	− .15	25.6	−1	30.2	− .9	22.8	− .2	33.4	4	20.2	28
November	60.86	+1.52	25.3	− .5	31.1	+ .6	21.8	− .4	32.8	24	19.2	7
December	61.94	+1.62	23.9	−1.1	30.3	+ .3	19.9	−1.3	32.7	31	16	22, 23
Annual	758.94	−0.08	26.2	−0.4	31.4	0.0	22.7	+0.2	36.0	V, 7, 30	16.0	XII, 22, 23

Month	Wind					Relative humidity		Vapor pressure		Cloudiness	
	Prevailing direction	Velocity			Direction at the time of the maximum velocity	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal
		Total	Departure from normal	Hourly maximum							
		Km.	*Km.*	*Km.*		*Per ct.*	*Per ct.*	*mm.*	*mm.*	*0–10*	*0–10*
January	E quad.	4,283.0	− 798.5	25.0	ESE	77.7	−0.4	18.3	+0.3	4.9	−0.6
February	NE quad.	4,041.5	−1,200.1	23	NE, NNE	75.5	+1.4	18	+ .5	7	+2
March	E quad.	5,261.5	−1,348.9	24	ESE, SE	72.3	+ .7	18.2	+ .1	5.6	+1.1
April	SE	5,805.5	− 924.8	26	SW	69.9	+ .1	19	+ .3	4.1	+ .1
May	S quad.	6,612.5	− 125.4	35.5	WSW	77.6	+1.5	21.6	0	5.7	− .1
June	S quad.	7,090	+ 427.1	52	W	85	+3.7	22.1	− .2	7.8	+ .7
July	SW	8,197	− 96.3	51	SW	84.2	− .8	21.8	− .5	6.9	−1
August	SW	9,357	− 354.9	47	WSW	85.3	+ .1	22.2	− .2	7.4	− .5
September	SW	7,601	+ 61.1	47	SW	86	+ .3	22	− .3	7.1	− .6
October	E quad.	4,047	−1,055.6	28	SW	84.4	+ .5	20.5	−1	7.4	+ .7
November	NE	3,137.5	−1,598.8	18.5	NE	81.8	−1.1	19.5	.8	5.5	− .9
December	NE	3,835.5	− 811.4	23	ENE	77.3	−4.1	16.9	−2.2	5.3	− .9
Annual		69,269.0	−7,826.5	52.0		79.8	+0.2	20.0	−0.4	6.2	0.0

Month	Evaporation		Sunshine		Rainfall					
	Free exposure, total	Under shelter, total	Total	Departure from normal	Total	Departure from normal	Greatest in a single day	Day	Rainy days	Departure from normal
	mm.	*mm.*	*h.* *m.*	*h.* *m.*	*mm.*	*mm.*	*mm.*			
January	110.8	83.3	182 50	+ 3 35	5.3	− 19.8	2.5	30	6	+ 1
February	110.2	77.9	107 50	− 85 31	18	+ 6.7	5.2	8	8	+ 5
March	162	115.4	165 25	− 64 26	19.3	+ .4	16.5	8	5	+ 2
April	183.5	125.2	229 25	− 31 15	8.8	− 23	4.7	28	2	− 2
May	137.6	96.5	198 00	− 28 13	121.9	+ 8.2	38	13	16	+ 6
June	68.1	55.4	91 05	− 71 45	606.6	+359.9	100.3	24	23	+ 7
July	83	62.8	130 40	− 5 07	554.3	+134.3	124.5	12	22	0
August	77.9	60.2	126 55	− 7 45	546.5	+130	57.7	16	24	+ 2
September	73.2	56.3	117 25	− 14 41	323.6	− 37.9	111.9	13	19	− 2
October	70.8	53.9	91 25	− 70 29	244.1	+ 55.9	46.6	8	18	+ 1
November	75.4	58.2	146 10	− 9 40	71.3	− 68.5	28.7	23	15	+ 2
December	99.9	77.1	148 40	− 2 37	8.9	− 53.2	4	14	6	− 3
Annual	1,252.4	922.2	1,735 50	−387 54	2,528.6	+493.0	124.5	VII, 12	164	+19

International Seismological Centre

CATALOGUE OF THE PHILIPPINE EARTHQUAKES, 1925[a]

Date		Time of occurrence. (Greenwich mean time)		Place	Probable origin or epicenter		Approximate extension of the shaken area		Intensity (Rossi-Forel)	Remarks
		h.	m.		φ	λ	Longer axis	Shorter axis		
					°	°	Km.	Km.		
Jan.	1	18	00	Basco (Batanes Islands)					III–IV	
	2	19	37	Visayan Islands	9.3 N	122.7 E	400	400	IV	Registered at Manila. Light aftershock at 20h 03m.
	4	5	18	Romblon Island					II–III	
	4	16	13	Calatagan (SW Luzon, Batangas).					III	Registered at Manila.
	6	15	58	Talacogon (E Mindanao, Agusan).					III	Registered at Butuan.
	7	8	46	Calatagan (SW Luzon, Batangas).					III	Registered at Manila.
	7	20	53	SE Luzon			200	200	III	Registered at Manila. Origin Philippine Deep.
	8	1	53	Butuan (N Mindanao, Agusan).					III–IV	
	9	4	24	Dumaguete (SE Negros)					III	Registered at Butuan.
	9	13	00	Talacogon (E Mindanao, Agusan).					II–III	
	9	16	04	Dalaguete (SE Cebu)					III	
	16	0	11	Baguio (W Luzon, Benguet)					II–III	
	22	13	22	Guam (Mariana Islands)					III	
	24	0	52	Pasuquin (NW Luzon, Ilocos Norte).					III	Registered at Manila.
	25	14	59	Talacogon (E Mindanao, Agusan).					III	Registered at Butuan.
	25	16	47	Cotabato (SW Mindanao, Cotabato).					III	Do.
	28	19	00	Lais (SE Mindanao, Davao)					III	
Feb.	1	5	16	Dumaguete (SE Negros)					II–III	
	2	9	40	Baguio (W Luzon, Benguet)					II–III	
	3	18	21	W Mindanao and Sulu					IV	Registered in the Far East. Origin Celebes Sea.
	4	8	40	SE Mindanao					III–IV	Insular origin. Registered at Butuan.
	5	0	30	Cateel (E Mindanao, Davao)					III	Registered at Butuan.
	5	1	58	Dumaguete (SE Negros)					III	Do.
	5	20	00	Jolo Island					III–IV	
	6	11	07	Talacogon (E Mindanao, Agusan).					III	Do.
	8	5	46	E Mindanao	8.3 N	127.5 E	500	200	IV–V	Registered at Manila.
	9	8	09	Butuan (N Mindanao, Agusan)					II–III	
	12	7	08	E Mindanao					IV	Origin, Philippine Deep.
	13	13	35	E Visayas	11.2 N	126.5 E	450	200	IV–V	Registered at Manila.
	15	23	33	Butuan (N Mindanao, Agusan)					III	
	21	18	06	Benguet (W Luzon)					III–IV	Do.
	22	4	13	E Mindanao					III–IV	Origin, Philippine Deep.
	23	19	25	Visayan Islands	10.2 N	124.7 E	350	350	IV	Registered at Butuan.
	27	0	51	NE Mindanao					IV	Near origin, Philippine Deep. Registered at Manila.
	28	9	11	Benguet (W Luzon)					III–IV	
Mar.	5	1	15	Romblon Island					II–III	
	6	0	35	Cotabato (SW Mindanao, Cotabato)					II–III	
	6	11	30	Managok (Central Mindanao, Bukidnon).					III	
	6	12	45	Malabang (W Mindanao, Lanao).					IV	Origin N Celebes Sea. Registered at Manila and Batavia.
	6	15	00	Lais (SE Mindanao, Davao)					III	
	6	23	52	Catbalogan (W Samar)					III	
	7	15	28	Guam (Mariana Islands)					III	
	9	8	51	E Mindanao					IV	Near origin, Philippine Deep. Registered at Butuan.
	11	22	10	SE Luzon	13.6 N	125.0 E			IV	Registered at Manila.
	14	18	29	Aparri (NE Luzon, Cagayan)					III	Do.
	22	2	53	Butuan (N Mindanao, Agusan)					III	
	23	1	30	Romblon Island					III	
	25	15	25	Sinait (NW Luzon, Ilocos Sur)					II–III	
	26	10	28	SE Mindanao	6.0 N	126.5 E			IV–V	Registered in the Far East.
	29	14	13	Butuan (N Mindanao, Agusan)					II–III	
April	5	5	57	Calatagan (SW Luzon, Batangas).					III	Registered at Manila.
	5	17	45	Cateel (E Mindanao, Davao)					III	
	6	18	29	Talacogon (E Mindanao, Agusan).					II–III	
	7	4	10	Veruela (E Mindanao, Agusan)					III	

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

Catalogue of the Philippine earthquakes, 1925—Continued

Day	Time of occurrence. (Greenwich mean-time)	Place	Probable origin or epicenter		Approximate extention of the shaken area		Intensity (Rossi-Forel)	Remarks
			ϕ	λ	Longer axis	Shorter axis		
	h. *m.*		°	°	*Km.*	*Km.*		
April 7	18 08	E Mindanao	8.1 N	127.5 E	500	350	IV–V	Registered over the world.
12	22 49	NE Mindanao					III	Origin within the Agusan Valley.
13	16 27	Guam (Mariana Islands)					III	Repetition, III–IV at 16h 48m.
14	15 50	Ormoc (W Leyte)					II–III	
16	19 54	Batanes Islands	21.0 N	124.0 E			V	Registered over the world.
17	11 07	SE Mindanao			250	200	V–VI	Insular origin. Registered at Manila.
17	18 12	NE Mindanao					III	Distant origin, Philippine Deep. Registered at Manila.
20	20 05	Talacogon (E Mindanao, Agusan).					II–III	
21	13 00	Cateel (E Mindanao, Davao)					IV	
22	17 54	Samar Island	11.9 N	124.5 E			IV	Registered at Manila.
23	19 35	SE Mindanao	6.0 N	126.2 E	340	340	III–IV	Do.
24	10 26	NE Mindanao					IV	Origin, Philippine Deep. Registered at Manila.
24	12 24	W Samar					III	Aftershock of the one felt on the 22nd.
30	14 55	Butuan (N Mindanao, Agusan)					II–III	
May 5	10 07	Visayan Islands and N Mindanao.	9.3 N	122.7 E	550	400	VIII–IX	Registered over the world. Very numerous aftershocks until the end of the month.
7	3 30	Batanes Islands					III	
7	12 13	SE Luzon, Samar and Leyte	14.6 N	127.0 E	450	230	V–VI	Registered in the Far East.
7	14 35	SE Luzon, Samar and Leyte	14.6 N	127.0 E	450	230	V–VI	Registered in the Far East. Repetition, III–IV at 18h 42m.
13	8 03	Talacogon (E Mindanao, Agusan).					III	Registered at Butuan.
14	15 43	Talacogon (E Mindanao, Agusan).					III	Do.
15	8 39	Aparri (NE Luzon, Cagayan)					III	Registered at Manila.
15	13 35	Bacon (SE Luzon, Sorsogon)					III	
16	2 27	Benguet (W Luzon)					III–IV	Do.
16	10 05	Lais (SE Mindanao, Davao)					III	
17	10 00	Guinobatan (SE Luzon, Albay)					III	
21	20 10	Talacogon (E Mindanao, Agusan).					III	
25	3 44	Tablas and Romblon Islands	12.2 N	122.1 E	350	300	VI–VII	Registered in the Far East and Europe. Numerous aftershocks to the end of the month.
26	4 19	Tablas and Romblon Islands	12.2 N	122.1 E	200	200	IV–V	Registered at Manila.
31	8 38	Tacloban (NE Leyte)					II–III	Registered at Manila. Origin, Philippine Deep.
June 1	1 32	Tablas and Romblon Islands					II–III	Aftershock, May 25th.
1	20 30	Ormoc (W Leyte)					III	
3	22 36	Agusan Valley (E Mindanao)					IV	
8	15 17	Tablas and Romblon Islands					II–III	Other aftershocks on the 9th at 3h 48m and 19h 50m.
9	20 38	Southern Negros	9.3 N	122.7 E			III–IV	Registered at Manila.
11	17 40	Tablas and Romblon Islands					III	
12	22 00	Cateel (E Mindanao, Davao)					III	Registered at Butuan.
15	2 13	Butuan (N Mindanao, Agusan)					III	
15	16 44	W Samar					IV	
16	16 41	Southern Negros					III	Aftershock.
17	0 15	Southern Negros					IV	Repetition at 1h 13m
19	8 09	SE Panay, Iloilo					III	Registered at Manila.
20	8 25	Butuan (N Mindanao, Agusan)					II–III	
22	19 00	Guinobatan (SE Luzon, Albay)					III	
22	22 23	Talacogon (E Mindanao, Agusan).					III	Distant origin in the Pacific.
28	7 57	Tablas and Romblon Islands					IV	Aftershocks at 8h 04m and 8h 39m. Registered at Manila.
28	8 10	Talacogon (E Mindanao, Agusan).					III	Repetitions at 8h 20m and 11h 03m.
29	13 55	Bontoc (W Luzon)					III–IV	
29	17 37	Tablas and Romblon Islands					III	Aftershock. Registered at Manila.
30	2 16	E Mindanao, Agusan					IV	Registered at Manila.
July 4	14 36	Samar and Leyte Islands					IV–V	Origin, Philippine Deep. Registered at Manila.
7	7 55	Southern Negros					III	Aftershock.
7	10 03	Samar, Leyte and NE Mindanao.	12.0 N	126.5 E	500	200	IV	
8	8 27	Samar, Leyte and NE Mindanao.	12.0 N	126.5 E	500	200	IV–V	Registered at Manila. Aftershocks at 9h 21m and 9h 45m.
8	23 45	NW Luzon	18.6 N	120.0 E	250	120	IV–V	Registered at Manila.
12	18 13	Ilocos Norte (NW Luzon)					III	
15	7 37	Eastern Visayas	11.6 N	124.7 E	360	360	III–IV	Do.
18	8 10	Tablas and Romblon Islands					III	Aftershock.
20	22 27	W Luzon, La Union and Benguet.					III	
24	13 24	Calatagan (SW Luzon, Batangas).					III	

International Seismological Centre

Catalogue of the Philippine earthquakes, 1925—Continued

Day	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.*		
July 26	0 20	Talacogon (E Mindanao, Agusan).					III	Registered at Butuan.
31	16 25	Camp Kalaw (E Mindanao, Davao).					III	
31	17 15	SE Mindanao, E Davao					III–IV	
Aug. 1	15 29	SE Mindanao, Davao					IV	Registered at Manila. Foreshock, III at 13h 27m.
8	16 37	Ilocos Sur and Abra (NW Luzon).					III–IV	Insular origin. Registered at Manila.
9	9 09	Ilocos Sur and Abra (NW Luzon).					III	Aftershock. Registered at Manila.
16	14 55	Talacogon (E Mindanao, Agusan).					III	Registered at Butuan.
20	1 36	Guam (Mariana Islands)					III	
22	6 20	Legaspi (SE Luzon, Albay)					III–IV	
27	4 05	Talacogon (E Mindanao, Agusan).					III	
28	18 45	Benguet (W Luzon)					III	
30	4 41	SE Mindanao, Davao					III–IV	Do.
31	0 24	Butuan (N Mindanao, Agusan)					III	
Sept. 2	1 10	Camp Kalaw (E Mindanao, Davao).					III	Do.
3	12 00	Janiuay (SE Panay, Iloilo)					III	
6	4 34	SE Mindanao	5.6 N	125.9 E	340	200	IV–V	Registered at Manila.
6	20 20	Zamboanga (W Mindanao)					III	
9	2 22	Malita (SE Mindanao, Davao)					III	Aftershock. Registered at Butuan.
10	22 19	Tuburan (NW Cebu)					III	Aftershock, 11th, at 3h.
15	20 55	Samar Island					III	Origin, Philippine Deep. Registered at Manila.
17	12 00	Benguet (W Luzon)					III	
17	22 47	Benguet (W Luzon)	16.5 N	120.8 E	60	60	VI–VII	Registered at Manila. Numerous aftershocks in the epicenter.
18	11 42	Samar Island					III	Origin, Philippine Deep. Registered at Manila.
24	4 05	S Samar and N Leyte Islands					III–IV	Insular origin.
25	19 39	Samar Island					III–IV	Origin, Philippine Deep. Registered at Manila.
26	17 37	Samar and Leyte Islands	11.8 N	127.0 E			III–IV	Registered at Manila.
26	17 46	Samar and Leyte Islands	11.8 N	127.0 E			IV	Aftershocks at 18h 04m and 18h 17m. Registered at Manila. Minor aftershock on the 27th at 5h 40m.
28	7 12	Benguet (W Luzon)	16.5 N	120.8 E	85	85	VII	Registered at Manila. Aftershocks at 10h 00m and 11h 24m.
28	13 09	Benguet (W Luzon)	16.5 N	120.8 E	85	85	VI	
29	18 09	Benguet (W Luzon)					VI	Repetition at 18h 24m. Aftershock at 21h 09m. Registered at Manila.
30	2 20	Agusan Valley (E Mindanao)					V–VI	Registered at Manila. Light Aftershock at 2h 56m.
Oct. 1	8 23	Benguet (W Luzon)	16.5 N	120.8 E	160	85	V	Repetition at 8h 28m. Registered at Manila. Minor aftershocks at 18h 50m, 11h 05m and 12h 40m.
1	21 38	Samar and Leyte Islands	11.6 N	124.7 E			III–IV	Repetition 10 minutes later.
2	2 35	Benguet (W Luzon)					III	Aftershocks at 3h 51m and 7h 45m.
3	15 01	Basco (Batanes Islands)					III	Registered at Manila.
4	13 52	Agusan Valley (E Mindanao)					III–IV	Origin in the Valley. Registered at Manila.
5	0 05	Pasuquin (NW Luzon, Ilocos Norte).					III	
6	10 11	Butuan (N Mindanao, Agusan)					III	
7	18 59	Cotabato (SW Mindanao)					III	
8	10 01	Guam (Mariana Islands)					III–IV	
9	1 51	Benguet (W Luzon)					III	
10	7 00	Benguet (W Luzon)					III	
12	8 45	Benguet (W Luzon)					III	
15	18 03	Butuan (N Mindanao, Agusan)					III	
18	7 20	Laoag (NW Luzon, Ilocos Norte).					II–III	
18	8 29	E Mindanao					IV	Origin in the Pacific. Registered over the world.
25	0 24	E Mindanao					III–IV	Do.
26	5 15	Odiongan (SW Tablas Island)					III	
29	8 53	Talacogon (E Mindanao, Agusan).					II–III	
30	3 38	Veruela (E Mindanao, Agusan)					IV	Registered at Butuan.
30	5 40	Tagudin (W Luzon, Amburayan).					IV	
30	11 07	Zamboanga (W Mindanao)					III	Celebes Sea. Registered in the Far East.
30	11 50	Lais (SE Mindanao, Davao)					III	
30	20 21	SE Mindanao	7.5 N	126.0 E	300	300	V–VI	
31	21 00	Panay and Negros Islands	11.1 N	123.2 E	200	200	III–IV	Registered at Manila.

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Catalogue of the Philippine earthquakes, 1925—Continued

Day	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.*		
Nov. 1	8 00	Hinigaran (W Coast Negros)					III	
2	1 10	Janiuay (SE Panay, Iloilo)					III	
3	2 10	Ormoc (W Leyte)					V	Very small area. Registered at Butuan.
4	11 05	Baras (SE Catanduanes Island)					III	
4	15 10	Basco (Batanes Islands)					IV	Repetition, V at 17h 30m.
8	12 06	Guinobatan (SE Luzon, Albay)					III	
8	13 04	Baras (SE Catanduanes Island)					III	Aftershock at 13h 44m.
11	7 19	Calatagan (SW Luzon, Batangas).					IV	Registered at Manila.
11	23 05	Malita (SE Mindanao, Davao)					III	
13	12 16	SE Luzon and Eastern Visayas	13.0 N	125.5 E	900	480	VIII–IX	Numerous aftershocks until the end of the month. Registered over the world.
14	10 05	SE Luzon and Eastern Visayas	13.0 N	125.5 E	420	150	IV–V	Registered over the world.
14	14 38	SE Luzon and Eastern Visayas	13.0 N	125.5 E	420	150	III–IV	Do.
15	10 35	Cebu (Cebu Island)					III	
16	0 44	N Cebu Island and W Samar					III	Registered at Manila.
17	4 30	Calatagan (SW Luzon, Batangas).					III	Do.
26	18 08	Lais (SE Mindanao, Davao)					III	
29	14 14	Ilocos Norte (NW Luzon)					III	
29	19 50	Ilocos Norte (NW Luzon)	18.8 N	120.3 E			IV	Do.
Dec. 1	7 10	Samar Island					III–IV	Aftershock. Registered at Manila.
4	3 16	Ilagan (E Luzon, Isabela)					III–IV	Registered at Manila. Light aftershocks at 7h 16m and 11h 46m
4	4 34	Samar and NE Leyte Island					IV	Registered at Manila.
5	7 29	Panay and Cuyo Islands					IV–V	Origin N Sulu Sea. Registered at Manila.
8	22 16	Aparri (NE Luzon, Cagayan)					III	Registered at Manila.
10	5 30	Bogo (N Cebu Island)					III	
10	12 02	Guam (Mariana Islands)					III	
10	19 10	NE Mindoro Island					IV	Do.
11	6 02	Zamboanga (W Mindanao)					III	Registered at Butuan.
11	16 55	Laoag (NW Luzon, Ilocos Norte).					III	Registered at Manila.
15	0 15	Malita (SE Mindanao, Davao)					III	Registered at Butuan.
16	3 39	Guam (Mariana Islands)					III	
18	0 05	Glan (S Mindanao, Cotabato)					III	
18	23 40	Bugasong (W Panay, Antique)					III	
19	2 05	N Agusan Valley (E Mindanao)					III–IV	
26	18 26	E Mindanao and Visayas	9.9 N	127.0 E	800	320	VII	Registered in the Far East. Several aftershocks on the 27th and 28th.
28	19 04	E Mindanao and Visayas			300	180	V	Registered at Manila.
31	13 50	Davao, S Agusan and S Surigao (SE Mindanao).					IV	Do.

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NUMBER OF EARTHQUAKES FELT IN THE PHILIPPINES, FROM 1903 TO 1925

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

The number of violent and distructive earthquakes (VII to X) during these years was. In 1913 occurred 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, and 1916, 1. Their monthly distribution is the following: January 4, February 2, March 6, April 7, May 6, June 0, July 3, August 4, September 7, October 3, November 9 and December 6.

NUMBER OF SEISMIC DISTURBANCES RECORDED AT MANILA, FROM 1903 TO 1925

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

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

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Depressions and typhoons	12	40	68	97	126	160	192	224	256	288	324	358
Notas generales del tiempo	13	41	69	98	127	163	196	227	259	292	326	361
Depresiones y tifones	13	41	69	98	127	163	196	227	259	292	326	361
Meteorological data for Manila	14	42	70	99	128	165	198	229	261	294	327	362
Meteorological data for Baguio	15	43	21	106	129	172	199	236	268	295	334	363
Daily rainfall at the stations of the Weather Bureau	16	44	72	100	130	166	200	230	262	296	328	364
Maximum and minimum temperatures at the stations of the Weather Bureau	22	50	78	107	136	173	206	237	269	302	335	370
Seismological Bulletin by Rev. Miguel Saderra Masó, S. J.:												
Earthquakes felt in the Philippines	33	61	89	119	147	185	217	249	281	313	347	381
Records of the microseismographs	34	62	90	120	148	186	218	250	282	314	348	382
Temblores de tierra sentidos en Filipinas	36	64	92	122	151	188	220	251	284	316	352	384

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Ref 2678

Year 1925, No. 1. January 1st to 6th, 1925.

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	3.01	180	1.390	0.168
A_E	2.86	160	1.865	0.267

No.	Date	Character	Phase	Greenwich mean time h. m. s.	Period. s.	Amplitude A_N μ	Amplitude A_E μ	Distance. Km.	Remarks.
1	1	I_V	eP	7 18 15					
			L	19 02				430	
			F	27					
2	1	I_V	eP	15 46 50					
			F	55				130	
3	2	I_V	eP	19 37 00					
			L	38 10				640	Felt at Dumaguete and Tagbilaran.
4	2	I_V	eP	19 49 57					F overtaken by following quake,
			F	20 06				630	Felt at Dumaguete.
5	3	I	e	8 28					
			F	9 08					Near Japan.
6	3	II_V	eP	16 03 42					
			iL	04 00				60	
			M_E	04 03	2		91		
			M_N	04 20	3	81			
			F	16					
7	4	I	e	8 42					
			F	57					
8	4	I_V	eP	16 12 32					
			iL	12 50				60	Southwestern Luzon
			F	20					
9	5	I	e	14 08					
			F	43					
10	5	I_V	eP	21 59 41					
			F	22 03				310	
11	5	I	e	22 09					
			F	31					
12	6	I_V	eP	23 04 50					
			iL	05 32				380	
			F	13					

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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	Kms.	
13	7	I_V	iP	8 46 19				180	SW Luzon.
			iL	46 39					
			M_N	46 47	2	84			
			M_E	46 56	2		82		
			F	55					
14	7	I_V	eP	17 28 31				125	
			F	31					
15	7	I_V	eP	20 52 49				480	SE Luzon.
			iL	53 42					
			F	21 02					
16	9	I_V	eP	7 03 12				480	
			iL	04 05					
			F	12					
17	9	I_V	eP	9 29 58				110	
			iL	30 10					
			F	33					
18	9	I	e	17 57					
			F	18 13					
19	9	I	e	18 21					
			F	43					
20	14	I	eL	10 56					
			F	11 11					
21	15	I_r	eP	16 55 18					
			iL	59 22					
			F	17 26					
22	18	II_r	iP	12 13 40				5760	Near Kurile Is.
			iL	29 40					
			F	14 08					
23	18	II_r	iP	20 18 55					
			iL	23 00					
			M_E	23 03	5		199		
			M_N	23 54	5	168			
			F	58					
24	19	I_V	eP	18 19 18				200	
			iL	19 40					
			F	26					
25	20	I_r	eP	11 04 45					
			L	06 46					
			F	19					
26	21	I	e	18 33					
			F	19 02					

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Year 1925, No. 3. January 23rd to 31st, 1925.

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 ″	Amplitude A_E ″	Distance Km.	
27	23	I_V	eP	5 58 52				530	
			iL	59 50					
			F	6 10					
28	24	I_V	eP	0 51 55				400	Northern Luzon.
			L	52 39					
			F	1 00					
29	26	I_V	eP	19 21 22				940	
			L	23 04					
			F	52					
30	27	I_V	eP	17 27 40				150	
			iL	27 57					
			F	30					
31	28	II_r	e	4 12 45					
			iL	20 22					
			MN	21 46	7	84			
			ME	21 51	7		84		
			F	6 32					
32	28	I	e	18 25					
			F	19 08					
33	29	I	e	8 52					
			F	9 09					
34	30	I_V	eP	6 17 30				150	
			F	21					
35	30	I_V	eP	17 41 18				170	End overtaken by following quake.
			iL	41 37					
36	30	I	e?	17 42					
			F	18 37					

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Year 1925, No. 4. February 1st to 7th, 1925.

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	6.04	184	1.895	0.052
A_E	5.56	212	1.987	0.067

No.	Date	Character	Phase	Greenwich mean time h. m. s.	Period. s.	Amplitude A_N μ	Amplitude A_E μ	Distance. Km.	Remarks
37	1	I_u	eP	5 31 15				5790	Kurile Islands.
			iS	38 42					
			iL	47 25					
			M_N	48 45	15	9			
			M_E	49 36	15		10		
			F	6 55					
38	1	I_v	eP	18 04 00			260		
			iL	04 29					
			F	26					
39	2	II_r	eP	13 36 50			4380		Pacific, near Japan.
			iL	48 20					
			M_N	54 28	13	12			
			M_E	55 37	18		16		
			F	14 58					
40	2	II_r	eP	19 54 05				4360	Pacific, Near Japan.
			iL	20 05 30					
			M_N	09 39	13	14			
			M_E	09 41	14		22		
			F	21 15					
41	3	II_r	eP	18 21 00				1320	Felt at Zamboanga and Jolo. N Celebes Sea.
			iL	24 00					
			M_E	25 00	11		66		
			M_N	25 52	10	58			
			F	19 04					
42	4	I	e?	10 14 42					
			F	29					
43	7	I_v	eP	18 12 34				900	Pacific, E Mindanao. End overtaken by following earthquake,
			L	14 29					
44	7	I_r	e	18 21 07					
			iL	24 02					
			F	19 31					
45	7	I_v	eP	20 31 43				330	
			L	32 20					
			F	43					

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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.
46	8	I_r	eP	5 45 41				1110	Pacific.
			L	47 40					
			F	58					
47	9	I_r	eP	14 20 10					
			iL	28 14					
			F	15 25					
48	12	I_v	eP	7 23 41				300	
			F	32					
49	13	I_v	eP	13 34 34				840	Pacific, NE Mindanao. End overtaken by following earthquake.
			iL	36 05					
			M_N	36 57					
			M_E	37 50					
50	13	I_v	e	14 00 35				680	
			L	01 50					
			F	39					
51	16	I	e	18 08 36					
			F	52					
52	16	I_v	eP	18 29 35				120	
			F	32					
53	20	II_r	eP	1 09 53				3150	Pacific, near Bonin Island.
			iL	17 32					
			M_E	18 36	7		58		
			M_N	18 42	8	55			
			F	2 44					
54	20	I_v	eP	16 49 21				70	
			F	52					
55	20	I_v	eP	16 56 01				80	
			F	58					
56	21	I_v	eP	9 40 00				890	
			iL	41 37					
			F	58					
57	21	I_v	eP	18 06 04				230	Western Luzon.
			F	12					
58	21	I	e	19 07					
			F	33					
59	22	I_v	eP	15 57 22				120	
			F	16 00					
60	24	I_u	iP	0 06 00				10000?	Alaska?
			iL?	36 44					
			F	1 19					

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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.	
61	25	I	e	22 08 11					
			F	43					
62	25	I_V	eP	23 00 35				660	
			iL	01 47					
			F	13					
63	27	I_V	eP	0 51 16				760	Felt at Surigao.
			iL	52 39					
			F	1 02					

M A R C H , 1 9 2 5.

64	1	I_u	e?	2 39					Canada earthquake.
			M	3 33					
			F	58					
65	1	I	iP	12 27 45					
			F	13 31					
66	3	I_V	eP	17 11 37				60	
			F	14					
67	6	I_V	eP	12 45 00				545	
			iL	46 00					
			F	59					
68	11	I_V	eP	9 02 34				60	
			F	05					
69	11	I_V	eP	14 12 11				160	
			F	14					
70	11	I_V	eP	22 09 58				460	Pacific, SE Luzon.
			iL	10 49					
			F	19					
71	14	I_r	eP	14 39 45				1060	
			iL	41 50					
			F	15 16					
72	14	I_V	eP	18 29 02				470	NE Luzon.
			iL	29 54					
			F	42					
73	15	I	e	13 52 04					
			F	14 23					
74	15	I_r	eP	15 46 57				1980	
			iL	51 30					
			F	16 28					

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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.	
75	15	I	L	23 39					
	16		F	0 11					
76	16	Ir	eP	14 14 25					End overtaken by following quake.
			iL	18 40					
77	16	II Ir	eP	14 47 16				2190	Yun-nan, China.
			iL	52 16					
			MN	55 26	12	438			
			ME	57 35	12		349		
			F	16 49					
78	16	Ir	eP	23 56 00					
	17		L	0 03 12					
			F	31					
79	18	Ir	eP	14 09 09					
			L	14 36					
			F	15 17					
80	19	Ir	eP	15 44 15					End overtaken by following quake.
			eL	50 00					
81	19	Iv	eP	16 07 25				170	
			F	21					
82	19	I	e	17 39					
			F	18 04					
83	19	Iv	eP	21 54 12				100	
			F	59					
84	20	I	e	5 54					
			F	6 20					
85	20	Ir	e	12 24 00					
			L	29 30					
			F	13 19					
86	21	I	e	8 27					
			F	9 21					
87	22	IIu	eP	8 51 48				6050	New Hebridas? End overtaken by following earthquake.
			iS	59 38					
			iL	9 09 26					
			MN	12 25	15	23			
			ME	14 56	22		14		
88	22	Ir	e	9 49					
			F	10 53					
89	22	Ir	eP	14 10 54					
			iL	15 32					
			F	15 13					

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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.	
90	24	I_V	eP	6 39 36				160	
			iL	39 54					
			F	46					
91	25	I_V	eP	6 29 20				160	
			F	34					
92	25	I	e	12 10					
			F	42					
93	26	II_r	eP	10 27 45				1430	Pacific, SE Mindanao.
			iL	30 32					
			ME	31 39	7		63		
			MN	31 47	7	79			
			F	12 00					
94	27	I	eP	4 21 07					
			F	5 02					
95	27	I_V	eP	19 52 45				200	
			F	56					
96	29	I	e	21 32 36					
			F	22 08					
97	31	I_V	eP	22 05 50				490	
			iL	06 44					
			F	15					

A P R I L , 1 9 2 5 .

98	1	I	e	17 33					
			M	58					
			F	18 20					
99	1	I_r	eP	21 13 58				1020	
			iL	15 52					
			F	25					
100	2	I_V	eP	13 30 00				135	
			F	34					
101	2	I_r	e	22 49 07				1010	Northern Formosa.
			L	51 08					
			F	23 10					
102	5	I_V	eP	5 56 51				80	Southwestern part of Luzon Island.
			L	57 00					
			F	6 00					
103	7	III_V	iP	18 07 53				950	Eastern coast of Mondanao Island.
			iL	09 37					
			MN	12 29	9	378			
			ME	12 30	9		305		
			F	20 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.	
104	11	II_r	iP	10 54 06					
			MN	11 04 03	7	21			
			ME	05 17	6		36		
			F	13 02					
105	15	I	L	13 25					
			F	38					
106	16	I_r	eP	5 41 49				1140	
			eL	44 21					
			F	6 16					
107	16	$II I_r$	iP	19 54 24				1230	E Formosa? Felt at Santo Domingo, Batanes Islands.
			iL	56 26					
			F	22 24					
108	17	I_v	eP	11 07 21				920	Southaestern coast of Mindanao.
			iL	09 09					
			F	52					
109	17	I_r	eP	18 12 00				1020	Felt slightly at Talacogon, E Mindanao.
			L	14 00					
			F	27					
110	19	I_r	e	15 51 29					
			L	58 07					
			F	16 12					
111	20	I_r	eP	10 24 09				1070	
			L	26 15					
			F	51					
112	21	I_v	eP	7 46 09				140	
			F	49					
113	21	I_v	eP	16 08 42				135	
			F	41					
114	22	I_v	eP	17 53 41				450	
			L	54 31					W Samar Island.
			F	18 03					
115	22	I_v	eP	21 09 56				190	
			F	12					
116	22	II_r	iP	23 14 41				2050	
			iS	18 00					
			iL	19 25					
			MN	19 52	7	46			
			ME	20 35	7		37		
	23		F	0 50					

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.
117	23	II_r	iP	19 34 58				1040	Southeastern Mindanao.
			iL	37 00					
			ME	37 19	6		59		
			MN	37 30	6	72			
			F	20 43					
118	24	I_v	eP	10 26 00				750	Northeastern Mindanao.
			L	27 22					
			F	38					
119	24	I_v	eP	12 24 27				560	Felt slightly at Calbayog.
			L	25 29					
			F	37					
120	25	I_r	e	9 22 12					
			F	10 12					
121	25	I_r	eP	13 27 34					
			L?	35 15					
			F	14 52					
122	26	I	e	7 17					
			F	43					
123	26	I	e	8 36 42					
			F	9 45					
124	27	I_v	eP	2 06 28				400	
			L	07 12					
			F	25					
125	27	I	e	6 56					
			F	7 27					

International Seismological Centre From the ISC collection scanned by SISMOS

Year 1925, No. 11. May 1st to 5th, 1925.

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.

	T_o	V	ε	$\frac{r}{T_o^2}$
A_N	6.04	184	1.895	0.052
A_E	5.56	212	1.987	0.067

No.	Date	Character	Phase	Greenwich mean time	Period.	Amplitude A_N	Amplitude A_E	Distance.	Remarks.
				h. m. s.	s.	μ	μ	Km.	
126	1	I	e	3 55					
			F	4 34					
127	1	I_V	eP	10 33 02				120	
			F	36					
128	3	II I_r	iP	17 25 10				1220	Pacific, SE Mindanao.
			iL	27 51					
			M_N	28 37	6	231			
			M_E	28 45	6		252		
			F	19 40					
129	3	I	e	23 11 00					
	4		F	1 26					
130	4	I_V	eP	4 03 57				675	
			iL	05 11					
			F	56					
131	4	I_r	eP	9 45 25					
			eL	47 32					
			F	10 14					
132	4	I_r	e	11 35 00					
			L	37 13					
			F	12 13					
133	5	III$_V$	iP	10 07 24				600	S Negros Island; end Overtaken by following earthquake.
			iL	08 30					
			M_N	08 54	6	462			
			M_E	09 00	6		396		
134	5	II$_V$	iP	10 42 00				580	Aftershock of the No. 133.
			iL	43 04					
135	5	I_V	iP	11 01 00				580	Do.
136	5	III$_V$	iP	12 00 33				650	Do.
			iL	01 44					
137	5	I_V	iP	12 46 38				640	Do.
			iL	47 48					
			F	14 04					
138	5	I_V	eP	16 24 58				590	Do.
			F	17 06					
139	5	I_V	eP	18 17 48				580	Do.
			F	19 12					

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.
140	5	II_V	e	23 22 44				570	
			eP	23 33					
			eL	24 36					
	6		F	1 08					
141	6	I_V	eP	5 01 55				580	
			F	54					
142	6	I_V	eP	8 47 56				910	
			F	9 22					
143	6	I_V	eP	9 56 39				390	
			F	10 17					
144	6	I_V	eP	16 00 42				590	Aftershock of the No. 133.
			F	23					
145	6	I_V	eP	16 27 43				580	Do.
			F	47					
146	6	I_V	eP	17 05 37				580	Do.
			F	29					
147	6	I_V	eP	19 07 38				630	Do.
			F	21					
148	7	III_V	iP	12 12 50				600	Pacific, E of SE Luzon Island.
			iL	13 55					
			ME	14 58	5		193		
			MN	15 29	5	250			
			F	13 55					
149	7	III_V	iP	14 35 17				770	Pacific, E of SE Luzon Island.
			iL	36 47					
			ME	37 24	6		289		
			MN	37 52	6	435			
			F	16 52					
150	7	I_V	eP	18 41 50				640	Pacific, E of SE Luzon Island.
			F	19 05					
151	8	I_V	eP	10 23 08				660	Aftershock of the No. 133.
			F	11 07					
152	8	I_V	eP	13 44 22				630	Do.
			F	14 09					
153	8	I_V	eP	22 48 25				800	
			F	23 10					
154	9	I_V	eP	3 41 10				580	
			F	4 33					
155	9	I_V	eP	15 29 11				660	Do.
			F	52					
156	10	I_V	eP	3 04 44				500	
			F	26					
157	13	I_V	eP	8 14 37				690	
			iL	15 53					
			F	36					
158	14	I_r	eP	0 00 21					
			eL	10 00					
			F	42					

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.
159	14	Iv	iP	15 21 51					
			iL	23 05				675	
			F	16 11					
160	14	Iv	eP	16 24 58					
			F	46				730	
161	15	Iv	eP	8 38 54					
			F	46				490	NE Luzon.
162	16	Iv	eP	2 26 37					
			F	33				210	Western part of Luzon.
163	16	Iv	eP	10 34 47					
			L	36 05				710	
			F	11 09					
164	17	Iv	eP	1 18 48					
			F	33				660	
165	17	Iv	eP	21 09 25					
			F	15				315	
166	18	Iv	eP	6 21 02					
			F	27				160	
167	19	Ir	e	5 35 43					
			F	7 04					
168	19	Iv	eP	23 11 25					
			iL	12 20				500	
			F	32					
169	20	Ir	eP	11 10 28					
			iL	16 00				2370	Near Japan.
			F	12 45					
170	20	I	e	22 52 50					
			F	23 46					
171	22	Ir	eP	9 45 57					
			iL	52 03					
			F	10 54					
172	23	IIr	eP	2 15 00					
			iS	19 28				2820	Japan.
			iL	21 34					
			MN	22 06	7	51			
			F	3 54					
173	23	Iv	eP	6 30 52					
			F	44					
174	23	Iv	eP	7 37 34					
			F	56					Near Formosa.
175	23	Ir	eP	21 58 43					
			F	22 21					
176	24	IIr	eP	1 26 51					
			F	2 24					
177	24	Iv	eP	21 01 44					
			F	06				280	

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.
178	25	IIId	eP	3 43 46				280	Tablas Island. Maxima & end lost by the force of the shock.
			iL	44 17					
179	25	Iv	eP	5 03 39				240	Aftershock of the No. 178.
180	25	Iv	eP	5 07 44				250	
			F	17					
181	25	Iv	eP	5 18 02				250	
			F	25					
182	25	Iv	eP	9 53 03				660	Aftershock of the No. 133.
			F	10 01					
183	25	Ir	eP	16 27 49				2670	Near Osaka.
			F	17 06					
184	25	Iv	eP	17 08 32				260	
			F	16					
185	25	Iv	eP	18 29 00				235	Aftershock of the No. 178.
			F	36					
186	25	Iv	eP	18 38 25				240	Do.
			F	43					
187	26	IIv	eP	4 19 28				280	Do.
			iL	19 59					
			F	43					
188	26	Iv	eP	9 10 25				260	
			F	17					
189	26	Iv	eP	15 04 31				230	Do.
190	26	Iv	eP	15 07 44				280	
191	26	IIv	iP	15 03 49				280	Do.
			iL	09 20					
			F	34					
192	26	Ir	eP	15 39 16				1380	Formosa.
			iL	42 20					
			F	17 04					
193	26	Iv	eP	16 12 45				250	Aftershock of the No. 178.
			eL	13 13					
194	26	Iv	eP	16 27 09				260	Do.
			eL	27 33					
195	26	Iv	eP	18 46 02				290	
			F	52					
196	26	Iv	eP	20 11 03				240	Do.
			F	16					
197	27	Ir	eP	2 35 00				1770	Near Japan. End overtaken by following quake.
			iL	38 58					
			F						
198	27	I	eP	3 17 27				480	
			F	52					
199	27	Iv	eP	12 45 41				130	
			F	50					
200	28	Ir	e	6 07 18					
			F	7 24					
201	28	Iv	eP	23 47 21				110	
			F	51					
202	31	Iv	eP	8 38 04				500	Felt at Tacloban (NE Leyte).
			F	53					

International Seismological Centre From the ISC collection scanned by SISMOS

Year 1925, No. 15 June 1st to 11th, 1925.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

ϕ=14° 34' 41" N. λ=121° 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	6.04	184	1.895	0.052
A_E	5.56	212	1.937	0.067

No.	Date	Character	Phase	Greenwich mean time	Period.	Amplitude A_N	Amplitude A_E	Distance.	Remarks.
				h. m. s.	s.	μ	μ	Km.	
203	2	[illegible]	e	5 25					
			F	6 05					
204	3	III$_V$	iP	4 37 18				870	
			iL	38 52					
			M_N	38 55	5	262			
			M_E	39 07	5		255		
			F	6 34					
205	3	I$_V$	eP	6 58 54				400	
			iL	59 38					
			F	7 12					
206	4	I$_r$	eP	1 22 49					
			L?	28 00					
			F	2 08					
207	4	I	e	7 29					
			F	8 08					
208	4	I	e	12 30					
			F	13 06					
209	4	I	e	19 12					
			F	29					
210	8	I	e	0 02 30					
			F	38					
211	9	III$_r$	iP	13 46 18					
			iS	49 38					
			iL	51 12					
			M_N	51 26	7	196			
			M_E	51 30	8		127		
			F	15 22					
212	9	I$_V$	eP	19 03 00				310	Felt in Romblon I.
			L	03 34					
			F	09					
213	9	I$_V$	eP	20 38 13				330	Felt in Romblon I.
			F	44					
214	11	I$_V$	eP	12 59 12				140	
			F	13 01					

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.	
215	11	I_r	eP	16 02 24					
			iL	07 42					
			F	51					
216	12	II_r	eP	11 04 29					
			iL	08 40					
			F	12 47					
217	13	I_r	eP	21 57 00					
			L	22 01 17					
			F	28					
218	14	I_r	eP	5 41 00					
			L?	43 00					
			F	6 48					
219	14	I	e	6 53					
			F	7 22					
220	14	I	e	13 43					
			F	14 24					
221	14	I_V	eP	16 04 28				880	
			L	06 02					
			F	48					
222	15	I	e	9 17					
			F	48					
223	16	I_V	eP	2 34 41				125	
			F	39					
224	16	I_V	eP	14 18 43				705	
			F	30					
225	19	I_V	eB	8 08 50				380	Panay Island.
			L	09 32					
			F	42					
226	19	I_V	eP	9 54 00				360	
			L	54 40					
			F	10 18					
227	20	I_r	e	13 12 49					
			iL	19 37					
			F	58					
228	20	I_V	eP	19 53 27				210	
			F	20 00					
229	21	I	e	4 10 44					
			F	5 06					
230	22	I	e	22 23 25					
			F	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 h. m. s.	Period. s.	Amplitude A_N μ	Amplitude A_E μ	tance. Km.	Remarks.
231	24	I_V	eP	7 15 15				180	
			F	18					
232	27	I_V	eP	12 56 51				190	
			F	13 02					
233	28	I_U	e	1 35 38				13000?	
			eP	38 51					
			L?	2 18 45					
			M	24 30					
			F	3 44					
234	28	I_r	eP	6 17 55					
			iL	23 14					
			F	7 08					
235	28	II_V	eP	7 56 36				270	Romblon Island. End overtaken by following earthquake.
			iL	57 06					
			M_E	57 14	3		79		
			M_N	57 33	3	77			
236	28	I_V	eP	8 03 42				280	Romblon Island.
			iL	04 13					
			F	28					
237	28	I_V	eP	8 38 39				280	Near Romblon I.
			iL	39 10					
			F	53					
238	28	I_r	eP	13 41 40					End overtaken by following quake.
			L?	56 45					
239	28	I_V	eP	14 02 52				530	
			iL	03 50					
			F	17					
240	29	I_U	e	15 00				12000?	California.
			L?	41 00					
			F	16 38					
241	29	I_V	eP	17 06 02				90	
			iL	0$ 12					
			F	12					
242	29	I_V	eP	17 37 01				315	Felt in Romblon I.
			iL	37 36					
			F	45					
243	30	I_V	eP	2 15 48				770	Northern Agusan Valley.
			L	17 12					
			F	28					
244	30	I_V	eP	4 34 46				150	
			F	39					
245	30	I_V	eP	6 36 17				140	
			F	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.	
246	4	I_r	iP	9 17 43					
			iL?	23 30					
			F	10 00					
247	4	I_V	eP	14 35 58				620	Off E coast of Samar Island.
			F	45					
248	4	I_r	eP	22 20 30					
			iL	23 54					
			F	23 02					
249	7	I_V	eP	5 29 06				225	
			F	33					
250	7	I_V	iP	10 03 18				620	Off E coast of Samar Island.
			iL	04 26					
			F	21					
251	8	II_V	eP	8 26 56				675	Off E coast of Samar Island.
			iL	28 10					
			MN	28 32	6	32			
			ME	28 44	6		53		
			F	49					
252	8	III_V	eP	23 45 32				435	Off W coast of Ilocos Sur.
			iL	46 20					
			MN	46 37	3	128			
			ME	47 00	4		200		
			F	58					
253	9	I_V	eP	23 31 49				130	
			iL	32 04					
			F	36					
254	15	I_V	eP	7 36 48				550	Heavy micros. on 11th and 12th. Samar Island.
			iL	37 49					
			F	49					
255	15	I_V	eP	9 05 32				620	
			iL	06 40					
			F	15					
256	15	I_V	eP	9 52 23				260	
			F	56					
257	17	I_r	iP	3 18 38					Pacific.
			iL	23 53					
			MN	25 00	6	49			
			ME	25 38	8		34		
			F	5 08					
258	17	I_V	eP	12 18 18				160	
			F	22					
259	17	I_r	eP	17 05 00					
			L	10 07					
			F	53					
260	17	I_r	iP	21 13 15					
			iL	18 08					
			F	22 30					

International Seismological Centre From the ISC collection scanned by SISMOS

Year 1925, No. 19. July 17th to 31st, 1925.

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.	
261	17	I_r	eP	22 35 38					
			iL?	40 42					
	18		F	0 24					
262	18	I	e	13 19					
			F	42					
263	19	I_v	eP	8 55 00				160	
			F	9 01					
264	19	I_r	e	20 34 42					
			L?	38 30					
			F	21 24					
265	19	I_v	eP	21 44 32				945	
			L	46 22					
			F	22 04					
266	20	I_v	eP	11 02 00				870	
			L	03 34					
			F	16					
267	22	I_v	eP	4 47 38				125	
			F	54					
268	22	I_v	eP	10 09 10				850	
			L	10 42					
			F	30					
269	24	II_v	iP	13 24 21				200	
			iL	24 43					
			F	34					
270	27	I_v	eP	0 03 49				600	
			iL	04 55					
			F	16					
271	28	I_v	eP	4 41 44				460	
			iL	42 35					
			F	5 09					

International Seismological Centre From the ISC collection scanned by SISMOS

Year 1925, No. 20. August 1st to 18th, 1925..

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

ϕ=14° 34' 41" N. λ=121° 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	6.04	184	1.895	0.052
A_E	5.56	212	1.987	0.067

No.	Date	Character	Phase	Greenwich mean time h. m. s.	Period. s.	Amplitude A_N μ	Amplitude A_E μ	Distance. Km.	Remarks.
272	1	I_r	eP	15 28 48				1140	Pacific, SE Mindanao.
			L	31 17					
			F	47					
273	1	I_V	eP	22 16 43				110	
			F	19					
274	4	I_V	eP	23 11 15				130	
			F	17					
275	6	I	e	14 27 44					
			F	15 12					
276	7	I	e	8 12 25					
			F	9 31					
277	8	I_V	eP	3 00 14				650	
			F	14					
278	8	I	L	14 40					
			F	58					
279	8	I_V	eP	16 37 21				270	Western part of Luzon.
			L	37 51					
			F	52					
280	9	I_V	eP	9 08 44				240	
			F	16					
281	9	I	e	12 41					
			F	13 08					
282	14	I	e	4 27					
			F	5 06					
283	14	I_V	eP	6 26 25				990?	
			L?	28 22					
			F	48					
284	14	I	iP	9 21 00					
			F	44					
285	14	I_V	eP	13 27 47				130	
			F	31					
286	17	I	e	9 23 30					
			F	34					

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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.
287	19	III_r	eP	12 17 05				2880	Near Japan?
			iL	24 00					
			M_E	26 07	9		39		
			M_N	26 58	3	40			
			F	12 58					
288	19	I_V	eP	18 07 09				570	
			iL	08 12					
			F	21					
289	19	I	eL?	20 54					
			F	21 02					
290	21	II_V	iP	20 15 28				630	
			iL	16 37					
			M_N	16 41	5	182			
			M_E	16 54	5		310		
			F	46					
291	23	I_V	eP	8 01 03				460	
			iL	01 54					
			F	14					
292	30	I_V	eP	5 09 14				400	
			eL	09 58					
			F	18					
293	3L	I_r	eP	10 12 40					
			eL?	17 00					
			F	39					

S E P T E M B E R , 1 9 2 5 .

294	5	I	e?	16 42					From Sept. 1st to 5th heavy micros.
			F	17 22					
295	6	I_V	e	4 34					Southeastern part of Mindanao.
			F	44					
296	6	I	e	9 04					
			F	31					
297	7	I_V	eP	18 49 09				390	
			iL	49 52					
			F	19 06					
298	7	I_r	eP	19 29 51				1010	
			iL	31 50					
			F	48					
299	8	I_r	eP	1 41 20				1000	
			L	43 18					
			F	2 04					

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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.
300	9	I	e	0 56 11					
			F	1 11					
301	9	I_r	eP	22 43 32				1320	
			iL	46 25					
			M_E	47 06	7		28		
			M_N	47 25	9	54			
			F	23 28					
302	10	I_r	eP	13 04 00					
			iL	09 17					
			F	47					
303	11	I_r	iP	5 11 42				1080	
			iL	14 02					
			F	49					
304	11	I	L	23 49 18					
			F	58					
305	12	I_V	eP	6 47 45				580	
			iL	48 51					
			F	7 16					
306	13	I	e	7 06 50					
			F	24					
307	13	I	e	8 07					
			F	16					
308	15	II_V	eP	20 55 04				750	Pacific, Philippine Deep.
			iL	56 26					
			M_N	56 50	5	50			
			M_E	57 19	5		57		
			F	21 56					
309	17	III_V	eP	22 47 12				470	China Sea.
			iL	48 04					
			M_{N1}	48 31	6	163			
			M_{E1}	48 39	6		112		
			M_{E2}	49 13	6		143		
			M_{N2}	50 11	6	231			
			M_{E3}	51 08	6		307		
			M_{N3}	51 13	5	288			
			F	23 13					
310	18	I_V	eP	11 42 34				570	Felt slightly at Catbalogan.
			iL	43 37					
			F	12 16					
311	20	I_r	eP	7 22 33					
			L?	29 00					
			F	51					
312	21	I_V	eP	11 52 38				50	
			F	56					

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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.mm. s.	Period s.	Amplitude A_N μ	Amplitude A_E μ	Distance Km.	Remarks.
313	22	I_V	eP	6 10 15				740	
			iL	11 36					
			M_E	12 13	4		32		
			M_N	12 24	6	19			
			F	41					
314	25	I_V	eP	8 51 13				660	End overtaken by following quake.
			L	52 25					
315	25	I_r	eP	9 01					
			L?	03 31					
			F	10 08					
316	25	II_V	eP	19 38 54				840	
			iL	40 25					
			M_E	40 36	7		42		
			M_N	41 30	6	64			
			F	20 42					
317	26	I	e	0 01 34					
			F	29					
318	26	I_V	eP	6 49 45				680	
			iL	51 00					
			F	7 38					
319	26	I_V	eP	11 35 56				590	
			F	56					
320	26	I_V	eP	17 37 27				710	Pacific, Philippine Deep. End overtaken by following quake.
321	26	II_V	eP	17 46 19				770	Pacific, Philippine Deep. End overtaken by following quake.
			iL	47 43					
			M_N	48 12	6	71			
			M_E	48 20	6		49		
322	26	I_V	eP	18 04 18				720	Aftershock of the No. 321. End overtaken by following quake.
			iL	05 37					
323	26	I_V	eP	18 17 00				705	Aftershock of the No. 321.
			iL	18 17					
			M_E	18 31	6		23		
			M_N	18 38	5	30			
			F	57					
324	28	II_V	eP	7 11 36				220	Western part of Luzon.
			iL	12 00					
			M_E	13 51	6		77		
			M_N	14 34	6	111			
			F	29					

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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.
325	29	III$_V$	eP	18 09 29				315	Western part of Luzon. End overtaken by following earthquake.
			iL	10 04					
			M_E1	10 29	5		153		
			M_N1	11 14	4	163			
			M_E2	11 41	4		189		
			M_N2	12 31	4	285			
326	29	II$_V$	eP	18 23 39				310	Aftershock of the No. 325.
			iL	24 13					
			M_N	24 29	5	48			
			M_E	24 30	5		128		
			F	42					
327	29	I$_V$	eP	21 08 48				230	Aftershock of the No. 325.
			iL	09 14					
			F	18					
328	30	I$_V$	eP	2 20 22				760	Northeastern coast of Mindanao.
			iL	21 45					
			M_N	22 59	5	20			
			M_E	23 02	5		19		
			F.	44					

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Year 1925, No. 25. October 1st to 9th, 1925.

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_0	V	ξ	$\frac{V}{T_0 2}$
A_N	6.04	184	1.895	0.052
A_E	5.56	212	1.987	0.067

No.	Date	Character	Phase	Greenwich mean time h. m. s.	Period s.	Amplitude A_N μ	Amplitude A_E μ	Distance. Km.	Remarks.
329	1	II_V	eP	8 23 27				230	Western part of Luzon. End overtaken by following earthquake.
			iL	23 53					
			M_E1	24 17	4		94		
			M_N1	24 24	4	101			
			M_E2	25 43	4		125		
			M_N2	26 22	4	200			
330	1	I_V	eP	8 28 00				240	Western part of Luzon.
			iL	28 27					
			M_E	28 41	4		75		
			M_N	28 59	4	78			
			F	52					
331	1	I_V	eP	10 53 00				270	
			F	11 00					
332	2	I_V	eP	2 25 52				420	
			iL	26 38					
			F	36					
333	2	I_V	eP	4 39 14				320	
			iL	39 50					
			F	52					
334	2	I_V	eP	6 00 25				210	
			F	04					
335	3	I_V	eP	3 14 29				140	
			iL	14 45					
			F	19					
336	3	I_V	eP	15 01 02				410	
			eL	01 47					
			F	18					
337	4	I_V	eP	2 53 52				90	
			F	57					
338	4	I_V	eP	13 51 33				790	Butuan Bay.
			F	14 02					
339	4	I_V	eP	16 47 33				510	
			F	17 04					
340	5	I	e	4 28 26					Central America.
			F	5 21					

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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
341	10	I_V	iP	10 13 46					
			iL	14 10				220	
			F	19					Heavy micros. on 10th.
342	11	I_V	eP	6 54 39					
			iL	55 02				210	
			F	59					Heavy micros. on 11th.
343	12	I	e	5 58					SE Madagascar.
			F	6 19					Heavy micros. on 12th.
344	12	II_V	iP	19 40 13					
			iL	40 37				220	
			MN	40 39	3	113			
			ME	40 40	3		66		
			F	45					
345	13	II	i	18 00 47					
			F	19 34					Atlantic Ocean.
346	14	I	e?	17 10 46					
			F	42					
347	15	I_V	eP	2 26 07					
			iL	26 22				130	
			F	31					
348	15	II_r	eP	12 41 32					
			iL	49 12					
			ME	52 00	10		17		
			MN	52 09	10	18			
			F	13 22					
349	15	I_V	eP	16 57 44					
			iL	58 06				200	
			F	17 02					
350	17	I_V	eP	22 04 23					
			F	10				120	
351	18	II_r	iP	8 29 00					
			iL	31 24				1120	Pacific.
			ME	31 30	6		73		
			MN	31 32	7	96			
			F	10 02					
352	19	I_V	eP	15 12 01					
			F	15				120	
353	20	I	e	9 47 45					
			F	10 04					
354	20	I_V	eP	16 52 26					
			F	17 02				435	
355	22	I_V	eP	7 45 28					
			F	49				230	

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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.
356	22	II_r	eP	17 07 23					
			iS	10 46					
			iL	11 56					
			MN	12 44	7	52			
			ME	13 02	9		45		
			F	18 06					
357	23	II_r	eP	1 53 12					
			iL?	55 56					
			iL?	56 19					
			MN	57 41	6	31			
			ME	57 43	6		23		Heavy micros. on 23rd.
			F	2 36					
358	23	I_V	eP	11 52 30				110	Very heavy micros. on 24th.
			F	56					
359	25	II_r	eP	0 24 13					
			iL?	26 53					
			F	57					
360	25	I_V	eP	5 27 00				90	Heavy micros. on 25th.
			F	29					
361	26	Iv	eP	23 25 06				120	
			F	28					
362	30	I_V	eP	5 49 33				90	Micros. on 28th and 29th.
				52					
363	30	I	e?	11 07					Slightly felt at Zamboanga.
			F	26					
364	30	I	e?	15 00					Heavy micros. on 30th and 31st.
			F	22					
365	31	I	e?	19 39					
			F	20 02					
366	31	Iv	eP	20 59 55				610	Dumaguete (SE Negros).
			L	21 01 02					
			F	12					

N O V E M B E R , 1 9 2 5 .

367	3	I	e	1 02 47					
			F	16					
368	3	I_V	eP	17 15 58				320	Micros. on the 1st, 2nd and 3rd.
			F	21					
369	5	Ir	eP	12 09 21					
			iL?	15 00					
			MN	15 35	13	8			
			ME	15 55	12		6		
			F	13 03					

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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.	
370	6	Iv	eP	17 20 27				400	
			iL	21 21					
			F	27					
371	9	I	e	22 50					
			F	23 17					
372	10	Iv	eP	10 56 51				315	
			iL	57 26					
			F	11 02					
373	10	I II	i(P)	13 54 46					
			F	17 51					
374	11	Iv	eP	3 00 00				370	
			F	11					
375	11	IIv	eP	7 19 15				180	SW Luzon.
			iL	19 35					
			ME	19 39	3		50		
			MN	19 49	3	53			
			F	32					
376	13	IIId	iP	12 16 01				510	Pacific, NE Samar Island. Maxima and end lost by the force of the shock.
			iL	16 57					
377	13	Iv	iP	12 40 54				510	Aftershock of the No. 376.
378	13	Iv	iP	12 43 14				510	Do.
379	13	IIv	iP	12 45 42				510	Do.
380	13	Iv	iP	12 59 00				510	Do.
381	13	Iv	iP	13 26 51				510	Do.
382	13	Iv	iP	13 38 27				510	Do.
383	13	Iv	iP	13 50 07				620	Do.
			iL	51 16					
384	13	IIv	iP	14 02 08				540	Do.
			iL	03 07					
385	13	Iv	iP	15 24 59				530	Do.
386	13	IIv	iP	15 52 46				570	Do.
			iL	53 49					
387	13	IIv	iP	16 08 16				550	Do.
			iL	09 16					
388	13	Iv	eP	16 40 27				560	Do.
			F	52					
389	13	Iv	eP	16 59 34				560	Do.
			F	17 16					
390	13	Iv	eP	18 42 29				510	Do.
			F	53					

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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.	
391	13	Iv	eP	22 47 01				520	Aftershock of the
			F	54					No. 376.
392	13	Iv	eP	23 31 31				530	Do.
			F	46					
393	14	Iv	eP	0 14 24				720	
			iL	15 43					
			F	33					
394	14	IIv	eP	1 07 41				610	Do.
			iL	08 48					
			F	48					
395	14	Iv	eP	1 23 47				520	Do.
			eL	24 44					
396	14	Iv	eP	3 01 31				530	Do.
			F	09					
397	14	Iv	eP	3 54 04				610	Do.
			iL	55 11					
			F	4 21					
398	14	Iv	eP	5 47 08				540	Do.
			F	6 08					
399	14	Iv	eP	7 44 13				540	Do.
			F	51					
400	14	IIIv	iP	8 12 00				675	Do.
			iL	13 14					
			ME	14 18	6		259		
			MN	14 20	6	356			
401	14	Iv	iP	8 57 57				610	Do.
			iL	59 04					
402	14	IIIv	iP	10 04 44				640	Do.
			iL	05 54					
403	14	Iv	eP	10 39 37				490	Do.
			eL	40 31					
404	14	IIIv	iP	14 38 15				640	Do.
			iL	39 26					
			MN	39 51	5	288			
			ME	39 56	5		245		
405	14	Iv	eP	15 34 25				540	Do.
			iL	35 24					
406	14	Iv	eP	15 51 09				550	Do.
			eL	52 09					
407	14	Iv	eP	16 39 56				580	Do.
			iL	41 00					
			F	17 02					
408	14	Iv	eP	19 01 13				530	Do.
			F	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 h. m. s.	Period. s.	Amplitude A_N μ	Amplitude A_E μ	Distance. Km.	Remarks.
409	14	I_V	eP F	20 18 09 26				550	Aftershock of the No. 376.
410	15	I_V	eP iL	6 28 00 29 05				590	Do.
411	15	I_V	eP F	6 38 55 40				600	Do.
412	15	I_V	eP iL F	6 51 30 52 35 7 05				590	Do.
413	15	I_V	iP iL F	8 04 12 05 16 29				580	Do.
414	15	I_V	eP F	14 02 55 10				540	Do.
415	15	I_V	eP F	14 37 00 46				540	Do.
416	15	I_V	eP F	15 39 13 48				570	Do.
417	16	I_V	eP F	0 10 29 32				580	Do.
418	16	I_V	e F	0 44 58					
419	16	I_V	eP F	4 37 56 49				600	Do.
420	16	I_V	eP F	5 46 25 6 01				590	Do.
421	16	I_V	eP F	8 19 06 30				610	Do.
422	16	I_V	eP eL	12 15 02 16 13				650	SE Negros Island.
423	16	I	e? M F	12 25 56 14 02					Near Central America.
424	16	I_V	eP F	19 09 36 19				570	Afershock of the No. 376.
425	17	I	e F	0 38 1 16					
426	17	I_V	eP F	4 30 14 37				150	
427	17	I_V	eP F	5 20 34 27				590	Do.
428	17	I_V	eP F	5 54 12 6 01				550	Do.
429	17	I_V	eP eL F	8 07 31 08 38 38				610	Do.

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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.	
430	17	I_V	eP	17 16 14				675	
			iL	17 28					
			F	35					
431	17	I_V	eP	23 14 55				590	Aftershock of the No. 376.
			iL	15 00					
			F	38					
432	18	I_V	eP	11 48 32				590	Do.
			iL	49 37					
			F	12 04					
433	18	I_V	eP	13 43 40				560	Do.
			iL	46 42					
			F	14 05					
434	18	I_V	eP	15 20 00				570	Do.
			F	38					
435	19	I_r	eP	14 10 28				1560	
			iL	14 00					
			F	15 56					
436	19	I_V	eP	19 23 46				540	Do.
			iL	24 45					
			F	45					
437	21	I_V	eP	6 00 15				550	Do.
			F	13					
438	21	I_V	eP	23 16 41				720	
			iL	18 00					
			F	43					
439	22	$I I_V$	eP	0 07 00				630	Do.
			iL	08 09					
			ME	09 14	4		108		
			MN	09 37	4	86			
			F	1 11					
440	22	I_V	eP	1 15 27				590	Do.
			F	29					
441	22	I_V	eP	4 23 46				520	Do.
			F	30					
442	22	I_V	eP	20 36 50				560	Do.
			F	21 02					
443	23	I_V	eP	9 34 02				240	
			F	37					
444	23	I_V	eP	17 59 28				530	Do.
			F	18 07					
445	23	I_V	eP	23 06 55				540	Do.
			F	17					
446	24	I_V	eP	6 08 19				570	Do.
			F	15					
447	24	I_V	eP	15 24 38				730	
			iL	25 58					
			F	42					

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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.
448	24	I_V	eP	17 22 19				630	
			iL	23 28					
			F	35					
449	24	I_V	eP	17 42 46				150	
			F	51					
450	25	II_V	eP	12 18 50				600	Aftershock of the No. 376.
			iL	19 56					
			MN	20 04	4	81			
			ME	20 07	5		81		
			F	13 04					
451	25	I_V	eP	14 11 48				180	
			F	18					
452	26	I_V	eP	11 58 00				510	Do.
			F	12 05					
453	26	I_V	e	15 57					Near Japan?
			F	16 08					
454	27	I_V	eP	8 39 29				620	Aftershock of the No. 376.
			L	40 37					
455	27	I_V	eP	8 48 19				600	Do.
			F	55					
456	27	I_V	eP	10 22 57				570	Do.
			F	42					
457	28	I_V	eP	4 47 35				180	
			F	50					
458	28	I_V	eP	5 49 18				660	
			L	50 30					
			F	6 12					
459	28	I_r	eP	16 22 59					
			iL?	31 00					
			F	17 27					
460	28	I_V	eP	17 47 46				220	
			F	52					
461	29	I_V	eP	19 49 41				350	NW Luzon.
			F	54					
462	30	I_V	eP	12 05 53				610	
			F	16					
463	30	I_r	eP	17 50 25					
			L	53 29					
			F	18 21					

D E C E M B E R , 1 9 2 5 .

No.	Date	Character	Phase	Greenwich mean time h. m. s.	Period. s.	Amplitude A_N μ	Amplitude A_E μ	Distance. Km.	Remarks.
464	1	I_V	eP	7 10 29				550	Aftershock of the No. 376.
			iL	11 30					
			F	19					
465	2	I_V	eP	4 59 18				190	
			F	5 03					
466	3	I_V	eP	4 06 30				140	
			iL	06 46					
			F	10					

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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.	
467	4	I_V	eP	3 16 15				510	
			iL	17 11					
			F	22					
468	4	I_V	eP	4 34 25				540	Aftershock of the No. 376.
			iL	35 24					
			F	40					
469	5	II_V	eP	7 28 55				590	Sulu Sea.
			iL	30 00					
			ME	30 11	5		52		
			MN	30 43	6	47			
			F	50					
470	6	I_V	eP	19 06 02				480	
			iL	06 53					
			F	15					
471	6	I_V	eP	23 54 34				510	
			iL	55 30					
	7		F	0 08					
472	7	I	e	8 49					Trace only.
			F	59					
473	7	I	e	9 02 28					
			F	22					
474	8	I_V	eP	22 16 23				550	NE Luzon.
			iL	17 24					
			F	28					
475	9	I_V	eP	2 41 21				480	
			F	46					
476	9	I_V	eP	19 00 09				460	
			iL	01 00					
			F	11					
477	10	I	e	14 36					Central America.
			F	16 38					
478	10	I_V	eP	19 09 35				160	
			iL	09 53					
			F	17					
479	11	I	e	0 57					Trace only.
			F	1 08					
480	11	I	e	16 55					Trace only.
			F	17 05					
481	11	I_V	eP	19 27 00				550	
			L	28 00					
			F	43					
482	12	I_V	eP	8 40 29				490	
			iL	41 23					
			F	58					

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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.
483	13	II_V	eP	5 21 32				125	
			iL	21 46					
			M_E	21 52	6		288		
			M_N	22 14	7	236			
			F	48					
484	13	I	e	23 03					Trace only.
			F	12					
485	14	I	eP	7 10 23					Trace only. Microseism on 15th, strong on 16th, heavy on 17th, very heavy on 18th and 19th, heavy on 20th and lightly on 21st.
			F	44					
486	22	II_r	iP	5 10 08				1900	
			iS	13 27					
			iL	14 22					
			M_N1	14 26	7	106			
			M_E1	15 00	7		71		
			M_E2	19 36	9		81		
			M_N2	19 39	9	122			
			F	6 32					
487	23	I	eP	23 12 35					
			L?	15 02					
			F	39					
488	25	I_V	eP	13 08 22				225	
			iL	08 47					
			F	14					
489	26	III_V	iP	18 25 33				760	NE Mindanao.
			iL	27 00					
			M_N1	27 52	6	250			
			M_E1	27 53	6		203		
			M_E2	29 16	8		222		
			M_N2	29 17	9	334			
			F	20 02					
490	27	II_r	eP	10 31 37				1930	
			iL	36 00					
			F	11 55					
491	28	II_r	eP	19 04 30				1050	Pacific?
			iL	06 23					
			M_E	07 18	6		79		
			M_N	08 12	8	99			
			F	20 22					
492	29	I	e?	2 12					Trace only.
			F	56					

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Year 1925, No. 35. December 29th to 31st, 1925.

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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.
493	29	I_V	e	7 01					
			F	09					
494	29	I_V	e	8 08					
			F	20					
495	29	I_V	eP	12 00 16				225	
			iL	00 41					
			F	07					
496	29	I_V	eP	13 01 20				180	
			iL	01 40					
			F	09					
497	29	IIr	iP	16 07 58				1380	
			iL	11 00					
			MN	11 19	5	182			
			ME	11 19	4		144		
			F	17 03					
498	31	I	e	13 50					Trace only.
			F	14 02					
									Microseism on the 29th, 30th and 31.

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