Ref 2694.

Year 1929, No. 1. January 1st to 13th, 1929.

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.)

	V	T_o	ε	$\frac{r}{T_o^2}$
A_N	169	6.30	2.592	0.031
A_E	200	6.44	1.889	0.034

No.	Date	Character	Phase	Greenwich mean time	Period	Amplitude A_N	Amplitude A_E	Distance	Remarks.
				h. m. s.	s.	μ	μ	Km.	
1	1	II_V	ePNE	8 35 22				140	Central Luzon.
			iLNE	8 35 38					
			M_N	8 36 19	4	60			
			M_E	8 36 19	4		28		
			F	8 47					
2	2	I	ePNE	2 29 39					
			F	2 59					
3	7	I_r	ePNE	14 49 29					
			iLNE	14 52 21					
			MN	14 52 26	6	30			
			ME	14 52 57	4		6		
			F	15 07					
4	8	I	ePNE	7 35 41					
			F	7 53					
5	9	I_V	ePNE	18 56 52				230	
			eLNE	18 57 18					
			F	18 59					
6	9	I_V	ePNE	19 54 34				315	SE Luzon.
			iLNE	19 55 09					
			F	19 58					
7	10	I	eE	2 49 36					Traces only.
			F	3 02					
8	12	I_V	ePNE	14 25 09				160	
			iLNE	14 25 27					
			F	14 29					
9	13	III_r	iPNE	0 11 16				1844	Distance 16°.6.
			iN	0 11 23					0=0:07:22. Origin
			iPR_1E	0 11 28					ca. 29° N, 129° E.
			iPR_2N	0 11 37					
			iPR_3N	0 11 41					
			iSE	0 14 25					
			iSR_1N	0 15 19					
			iSR_2N	0 15 28					
			PcP	0 15 30					
			iSR_3N	0 15 32					
			iLNE	0 15 55					
			PcS	0 19 15					
			F	2 56					

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.	
29	17	I_V	ePNE	1 23 11				210	Aftershock.
30	17	I_V	ePNE	6 48 56				315	
			SNE	6 49 31					
			F	6 57					
31	17	I_V	ePNE	10 48 32				210	Do.
			F	10 59					
32	17	I	M_E	13 26.7					Traces only
			F	13 53					
33	17	I_V	ePE	13 54 19				210	SE Luzon.
			F	13 57					
34	17	I_V	ePE	15 03 45				210	SE Luzon.
			F	15 08					
35	17	I_V	ePE	16 14 20				170	
			F	16 17					
36	17	I_V	ePE	19 50 22				200	
			SNE	19 50 48					
			F	19 56					
37	17	I_V	ePE	21 36 14				225	
			F	21 43					
38	17	I_V	ePE	21 53 41				840	
			iLE	21 55 32					
			F	21 59					
39	17	I_T	ePE	22 33 32					
			S	22 38 51					
			F	23 47					
40	18	II_V	ePNE	1 06 25				230	
			iLNE	1 06 51					
			M_N	1 08 46	5	92			
			M_E	1 09 43	6		111		
			F	1 19					
41	18	I_V	ePNE	6 47 34				230	
			F	6 54					
42	18	I_V	ePNE	7 13 08				230	
			F	7 19					
43	18	II_V	ePNE	11 03 11				250	
			iLNE	11 03 39					
			F	11 14					
44	18	I_V	ePNE	12 56 53				220	
			F	13 01					
45	19	I_V	iPNE	0 44 47				920?	
			iLE	0 46 45					
			F	1 09					
46	19	I	eNE	11 28					Small movements.
			F	11 51					

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Greenwich mean time	Period.	Amplitude AN	Amplitude AE	Distance	Remarks.
				h. m. s.	s.	μ	μ	Km.	
47	19	Iv	ePNE	22 06 09				210	
			F	22 14					
48	20	Iv	ePNE	3 17 18				190	
			F	3 23					
49	20	Iv	ePNE	3 38 47				225	
			F	3 44					
50	20	Iv	ePNE	5 26 12				210	
			F	5 33					
51	20	IIr	iPNE	14 57 54		7	5	2056	Distance 18°.5. At 15:00:50 a second shock.
			PR_1	14 58 11					
			PR_2	14 53 14					
			iSNE	15 01 20					
			SR_1	15 01 51					
			PcP	15 02 22					
			L	15 02 57					
			PcS	15 09 35					
			F	16 20					
52	20	Iv	ePNE	23 08 11				230	
			F	23 12					
53	21	I	eE	5 07					
			F	5 51					
54	21	Iv	ePNE	8 58 46				200	
			iSNE	8 59 09					
			F	9 04					
55	21	Iu	eE	10 42				8222	Distance 74°, Fairbanks, Alaska.
			eLNE	10 56 24					
			M	11 12 12					
			F	11 53					
56	24	Iu	ePNE	2o 55 59				15522	Distance 139°.7. South of Guatemala in the Pacific.
			eLE	21 42 49					
			M_E	21 53 19					
			F	22 52					
57	25	I	iNE	2 06 23					Disturbed by microseisms.
			F	2 42 ca.					
58	25	Iv	ePNE	8 09 24				270	
			F	8 15					
59	25	Ir	eNE	8 4o 23					Disturbed by microseisms.
			F	9 03					

Year 1929, No. 5. January 26th to 31st, 1929.

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.	
60	26	I_V	iPNE	6 35 38				240	
			iSNE	6 36 12					
			F	6 49					
61	26	I_V	iPNE	13 55 14				180	
			iSNE	13 55 34					
			F	13 59					
62	26	I_V	iPNE	2o 50 10				190	
			iSNE	20 50 31					
			F	20 55					
63	29	I	eE	2 30					
			F	3 03					
64	30	I_V	ePNE	11 12 39				125	
			LE	11 12 53					
			F	11 18					
65	30	Ir	ePNE	16 57 23				3178	Distance 28°6.
			PRgE	16 58 11					0=16:51:10.
			PRgN	16 58 24					
			iSNE	17 02 07					
			iLNE	17 05 27					
			F	18 14					
66	30	I_V	ePNE	22 32 56				180	
			F	22 35					
67	31	I	eE	14 49					
			F	15 51					

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Year 1929, No. 6. February 1st to 8th, 1929.

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	6.31	186	3.834	0.035
A_E	6.29	216	2.970	0.046

No.	Date	Character	Phase	Greenwich mean time	Period	Amplitude A_N	Amplitude A_E	Distance	Remarks.
				h. m. s.	s.	μ	μ	Km.	
68	1	I_v	ePNE	6 05 00				170	
			iLNE	6 05 19					
			F	6 19					
69	1	II_u	iPNE	17 23 00				5200	Distance 46°.8. North of Lahore India in Himalaya Mountain?
			iSNE	17 29 48					
			PS	17 29 55					
			F	19 04					
70	2	I	ePNE	0 20 16					
			iScPcPNE	0 23 53					
			iNE	0 25 35					
			eNE	1 43 00	19				Trains of long waves at intervals until 2h 32m.
			F	2 45 ca.					
71	2	I_r	ePNE	14 47 02					
			iLE	14 51 51					
			F	15 23					
72	3	I_r	iPNE	2 48 23					
			iLNE	2 51 34					
			F	3 29					
73	4	I_v	ePNE	2 10 42				100	From Vicentini seismograph.
			F	2 14					
74	6	I	iPNE	6 67 00					
			iSNE	7 03 15					
			F	7 34					
75	7	I_v	ePNE	2 22 44				200	
			F	2 29					
76	7	I_v	ePNE	5 54 16				220	
			F	6 01					
77	8	I_r	ePNE	7 45 32					
			F	8 12					

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.	
78	8	I_V	ePNE	20 11 40				90	
			F	20 14					
79	9	I	eLE	2 05					
			F	3 06 ca.					
80	10	I	eE	16 01					
			PR_4E	16 07 23					
			PSE	16 10 52					
			F	17 54 ca.					
81	11	I	eE	13 14					Traces only.
			F	13 38					
82	13	I	iNE	17 13					Traces only.
			F	17 43					
83	14	I_V	ePNE	11 42 20				225	
			iSNE	11 42 45					
			F	11 51					
84	14	I_r	ePNE	14 43 00					
			PR_2NE	14 43 37					
			iSNE	14 46 06					
			iLNE	14 49 21					
			F	15 53					
85	15	II_r	iPNE	5 43 13		8	9	1100	Condensation. Distance 9°.9. Probable epicenter 9°.5 N., 130° E.
			iSNE	5 45 05					
			iSR_1E	5 45 16					
			iLE	5 46 10					
			F	7 19					
86	16	I	eE	19 43					
			ME	20 23					
			F	20 46					
87	17	I	e	21 02					Traces only.
			F	21 32					
88	18	I_V	iPNE	4 47 12				80	
			iSNE	4 47 20					
			F	4 53					
89	18	I_V	ePNE	7 14 45				130	Central Luzon.
			iSNE	7 15 00					
			F	7 21					
90	19	I_V	ePNE	17 12 45				330	
			iSNE	17 13 22					
			F	17 22					
91	20	I_V	ePNE	4 34 54				130	
			iSNE	4 35 09					
			F	4 41					
92	20	I_V	ePNE	12 04 52				120	
			iSNE	12 05 05					
			F	12 10					

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.	
93	20	I	iNE	21 14 41					Small and weak record.
			F	22 08					
94	21	Iv	ePNE	4 17 54				200	
			iSNE	4 18 16					
			F	4 25					
95	22	Iv	ePNE	11 29 16				60	Felt at Los Baños and Santa Cruz, La Laguna Province.
			iSNE	11 29 23					
			F	11 33					
96	22	Iv	ePNE	13 41 08				70	
			iSNE	13 41 16					
			F	13 45					
97	22	Iu	iP'NE	21 01 46				16689	Distance 150°.2. O=20:41:36.
			iNE	21 03 46					
			iScPcPNE	21 05 17					
			iPP'NE	21 05 24					
			iPP$_2$NE	21 08 31					
			iPP$_3$NE	21 15 43					
			iPSNE?	21 16 44					
			eLNE	21 49 15					
			eMNE	22 04 21					
			MNE	22 09 43	18	73	66		
			F	23 30					
98	23	Iv	ePNE	1 19 54				80	
			iSNE	1 20 03					
			F	1 23					
99	23	Iv	ePNE	10 42 41				40	
			iSNE	10 42 45					
			F	10 45					
100	23	Iv	ePNE	15 42 47				170	
			iSNE	15 43 06					
			F	15 46					
101	24	I	eE	22 03					Traces only.
			F	22 31					
102	25	I	eLNE	2 00					
			F	2 19					

Year 1929, No. 9. February 26th to 28th, 1929.

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.	
103	26	I_V	ePNE	3 31 38				230	
			iSNE	3 32 04					
			F	3 35					
104	26	I_u	eNE	3 39 54					
			iSNE	3 48 01					
			F	4 09					
105	26	I_u	O	9 00 44					
			PNE	9 12 (?)	In minute	gap.		7822	Distance 70°.4.
			iPcPNE	9 12 35					
			iNE	9 12 54					
			iSNE	9 21 11					
			iPSNE	9 21 38					
			iNE	9 23 37					
			eME?	9 49 00					
			F	10 44					
106	27	I_V	iPNE	8 18 58				160	
			iSNE	8 19 16					
			F	8 26					
107	28	I	eNE	0 15 ca.					
			F	0 56					

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BULLETINS RECEIVED

FEBRUARY

1929

We thankfully acknowledge the receipt of the following and hope for their continuance in the future.

STATIONS.	BULLETINS/
Santiago.....	Bol. Seis. Serv. XVII.
Sverdlovsk.....	Nov.-Dec., 1927.
Makeevka.....	Oct.-Dec., 1927.
Tashkent.....	Sept.-Dec., 1927.
Kucino.....	Sept.-Dec., 1927.
Baku.....	Oct.-Dec., 1927.
Pulkovo.....	Nov.-Dec., 1927.
Nagasaki.....	Aug.-Oct., 1928.
Paris	Ann. d. l'Inst. Phy. d G. 1926
Batavia.....	July-Sept., 1928. Seis. Bull. 1928.
Copenhagen.....	Seis. Bull. i Scoresby-Sund.
Hongkong.....	Oct.-Nov., 1928.
Taihoku.....	Nos. 21-22-23-24.
Granada.....	Sept.-Oct., 1928.
Kew	Nov., 1928.
St Louis Jes. Seis. Soc	Prelim. Bull. Dec. 1st, 1928.
La Paz	July-Aug., 1928.
Barcelona	Nos. 126-127-128.
Ottawa	Nov., 1928. Including Halifax and Saskatoon.
Harvard	Nos. 11-12.
San Fernando	July, 1928.
Georgetown	July, 1928. Seis. Dec.-Oct., 1928.
U.S.C.G.S.	Chicago-Honolulu-Tucson-Sitka-U. of Va. Oct., 1928. Radio Reports Jan.21-Jan.24.
Paris	Oct., 1928.
Strasbourg	Prelim. Reports, Oct., 1928. Station Report Oct., 1928. Central Bur. Bull. Oct., 1928.

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BULLETINS RECEIVED

FEBRUARY

1929

We thankfully acknowledge the receipt of the following and hope for their continuance in the future.

STATIONS.	BULLETINS.
La Plata	October, 1928.
Zi-ka-wei	June 28th to December 27th, 1928.
Strasbourg	Preliminary Reports, November and December, 1928.
Strasbourg	Station Report, November and December, 1928.
Strasbourg	Central Bureau Bulletin, Novem. and Decem., 1928.
Toledo	May and June, 1928.
Almeria	May and June, 1928.
Malaga	May and June, 1928.
Alicante	May and June, 1928.
Batavia	Advance Seismological Report, December, 1928.
Georgetown	August to November, 1928.
U.S. C. and G. S.	Radio Report, February 2nd and 10th, 1929.
Kew	December, 1928.
Saint Louis	Preliminary Bulletin, January 13, 17 and 24, 1929.
Oxford	Inter. Seism. Summary for 1925 April, May, June.
Hamburg	October, November and December, 1928.
Hohenheim	October, November and December, 1928.
Ravensburg	October, November and December, 1928.
Riverview	April, May and June, 1926.
Phu-Lien	January, 1928.
Taihoku	January 1st to February 3rd, 1929.
Apia	July - September, 1928.
U.S. C. and G. S.	Chicago, Honolulu, Tucson, Sitka & Virginia, November, 1928.

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Year 1929, No. 9. March 1st to 8th, 1929.

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 m. Alluvium.

Instrument: Wiechert Inverted Pendulum (1000 Kg.)

	T_o	V	ε	$\frac{r}{T_o^2}$
N-S	6.40	213	3.172	0.068
E-W	6.32	232	3.152	0.068

No.	Date	Character	Phase	Greenwich Time h. m. s.	Period s.	Amplitude N μ	Amplitude E μ	Dist. Km.	Remarks.
108	1	I	eNE	7 54					Traces only.
			F	8 15					
109	4	I_V	iPNE	14 42 18				270	
			iSNE	14 42 48					
			F	14 48					
110	4	I_V	ePNE	17 23 04				200	
			iSNE	17 23 26					
			F	17 27					
111	7	II_u	ePEN	1 45 23				7350	Aleutian Islands.
			iPEN	1 45 27					
			iPcPEN	1 46 16	7				
			M_N	1 46 24	7	42			
			iPR_1EN	1 48 16	?	50			
			iPR_2EN	1 49 29	9.5				
			iS_{EN}	1 54 16					
			ME	1 54 28	8.5		175		
			$iPPPS_{EN}$	1 55 05					
			ME	1 55 12	7.8		80		
			$iScS_{EN}$	1 56 +	in minute gap				
			iEN	1 56 14					
			MEN	1 56 22	8.5	105	175		
			SR[illegible]EN	1 59 00					
			PPS?]						
			ME	1 59 15	8		95		
			M_N	1 59 15	11	220			
			iSR_2EN	2 01 50					
			iEN	2 03 55					
			iLEN	2 06 47					
			MEN	2 11 50					
			F	5 21					
112	7	I	ePNE	11 12 36					Traces only.
			F	11 58					
113	8	I	eNE	10 59 ca.					Small movements.
			F	11 40					

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Green. Time h. m. s.	Per. s.	Amplitude N μ	Amplitude E μ	Dist. Km.	Remarks.
114	9	II_r	iPNE	2 16 55					
			iSNE	2 21 31					
			iLNE	2 24 31					
			F	3 51					
115	9	I_u	iPE	11 02 12					
			iSNE	11 11 40					
			iLNE	11 25 40					
			F	12 55					
116	10	I	ePNE	0 56					
			F	1 06					
117	10	I_r	iPNE	14 39 49					
			iSNE	14 43 40					
			iLNE	14 45 46					
			F	15 56					
118	13	I	eNE	11 10					Small movements.
			F	11 42					
119	13	I_v	ePNE	14 10 34				60	
			F	14 13					
120	14	I	eNE	18 42 14					
			F	19 29					
121	15	I	eNE	2 07 00					
			F	2 41					
122	15	I	ePNE	8 30 11					
			F	9 22					
123	16	I_r	ePNE	6 09 53					
			eSNE	6 14 14					
			iLNE	6 16 51					
			F	6 49					
124	16	I_r	ePNE	22 39 28				900?	
			iSNE	23 01 08					
			F	23 33					
125	18	I_r	ePNE	0 50 51				1010	
			iSNE	0 52 40					
			F	1 09					
126	18	I_r	ePNE	1 48 30					
			iSNE	1 52 55					
			F	2 54					
127	18	I	eNE	23 27 51					
	19		F	0 12					
128	19	I	eNE	21 13 55					
			iN	21 16 54					
			F	21 46					

M A N I L A , P . I .

SEISMOLOGICAL BULIETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Green. Time h. m. s.	Per. s.	Amplitude N μ	Amplitude E μ	Dist. Km.	Remarks.
129	20	I	ePNE	12 13 32					
			F	12 32					
130	20	II_v	ePNE	21 11 48				445	NE Luzon.
			iSNE	21 12 37					
			M_N	21 13 17	4				
			M_E	21 13 27	5				
			F	22 17					
131	21	I	eP'NE	2 57.					
			F	3 28					
132	22	I_r	ePNE	3 08 38					
			iSNE	3 12 40					
			iLNE	3 14 52					
			F	3 52					
133	23	II_r	iPNE	20 03 53					
			iSNE	20 06 43					
			iLNE	20 08 07					
			F	21 56					
134	24	I_v	ePNE	1 06 17				140	
			F	1 12					
135	24	I	eNE	5 51					Traces only.
			F	6 02					
136	24	I_v	ePNE	7 33 06				130	
			F	7 38					
137	24	I_v	ePNE	16 13 15				410	
			F	16 24					
138	25	I	eNE	4 00					
			F	4 22					
139	25	I	eLNE	8 40 19					
			F	8 57					
140	25	I	eNE	15 01					
			F	15 37					
141	26	I	eNE	4 18 49					
			F	4 53					
142	26	I	eN	10 43 ca.					
			F	11 03					
143	26	I	eNE	13 30 49					
			F	13 47					

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Green. Time h. m. s.	Per. s.	Amplitude N	Amplitude E	Dist. Km.	Remarks.
						)l	)u		
144	26	I	eNE	19 57 42					
			F	20 41					
145	28	I_v	ePNE	13 01 46				45	
			F	13 04					
146	28	I_r	ePNE	20 37 20					
			eSNE	20 41 40					
			F	21 14					
147	28	I	eE	21 37					
			F	21 52					
150	30	I_v	ePNE	10 03 29				190	
			F	10 08					
151	31	I_r	ePNE	5 30 53					
			eSNE	5 35 50					
			eLN	5 39 20					
			F	6 38					
152	31	I_v	ePNE	9 31 27				460	
			eSNE	9 32 18					
			F	9 38					
153	31	I_v	ePNE	9 40 05				460	
			F	9 49					
154	31	I_v	ePNE	14 27 51				440	
			F	14 50					
155	31	I_r	ePNE	2o 24 35					
			eSNE	20 28 47					
			F	21 16					

BULLETINS RECEIVED

MARCH, 1929.

We thankfully acknowledge the receipt of the following and hope for their continuance in the future,

STATIONS.	BULLETINS.
Chicago (Loyola)	April 27 to December 28,1928.
Cincinnati	September 21 to December 19, 1928.
Melbourne	October 9 to December 31, 1928.
Toledo	July and August, 1928.
Almeria	July and August, 1928.
Malaga	July and August, 1928.
Alicante	July and August, 1928.
U.S. C. and G. S.	Radio Report, March 1, 1929.
Hukuoka, Japan	January, 1927 to December, 1928.
Ottawa	December, 1928 and January, 1929.
St.Louis,Jes.Seis.Soc.	Prel.Bull. Jan.21 and 31,and Feb. 1,2,10,13 and 15, 1929.
Honolulu	Prel. Determination, Feb. 15, 1929.
Zinsen, Tyosen (Korea)	April 14 to Nov. 28, 1928.
La Plata	December, 1928.
Georgetown	December, 1928.
Kew	January, 1929.
Batavia	October, November and December, 1928, and Catalogue of Earthquakes in East Indies, 1927.
Tananarive	July 7 to August 24, 1928.
Zikawei	November 29 to January 14, 1929.
San Fernando	November and December, 1928 and January,1929.

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Cesáreo Dulueña,
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Year 1929, No. 13. April 1st to 4th, 1929.

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 m. Alluvium.

Instrument: Wiechert Inverted Pendulum (1000 Kg.)

	T_o	V	ε	$\frac{r}{T_o^2}$
N-S	6.10	206	2.939	0.050
E-W	6.57	200	2.708	0.050

No.	Date	Character	Phase	Green. Time h. m. s.	Per. s.	Amplitude N μ	Amplitude E μ	Dist. Km.	Remarks.
156	1	I_r	eNE	5 28 30					
			eSNE	5 32 33					
			F	5 58					
157	2	I	eNE	3 33					
			M_E	3 46 30					
			F	4 12					
158	2	III_d	iPNE	6 12 32				150	China Sea, near Zambales coast.
			iS_{NE}	6 12 49					
			m_N	6 12 50	2.3	104			
			M_E	6 13 12	1.8		134		
			F	6 37					
159	2	I_V	ePNE	6 19 00				150	Aftershock of the preceding quake.
160	2	I_V	ePNE	6 40 20				150	Do.
161	2	I	eNE	6 42 00					Distant earthquake.
			F	7 28					
162	2	I_V	ePNE	20 49 22				150	Aftershock of the No. 158.
			F	20 54					
163	2	I_V	ePNE	21 56 45				150	Do.
			F	21 59					
164	2	III_d	iPNE	23 27 31				150	Another repetition of the No. 158.
			iS_{NE}	23 27 48					
			M_E	23 28 42	4.5		89		
			M_N	23 28 54	3.8	96			
	3		F	1 02					
165	3	I_V	ePNE	0 58 22				150	Aftershock of the No. 158.
			iS_{NE}	0 58 39					
			F	1 02					
166	4	I_V	ePNE	17 04 40				150	Do.
			iS_{NE}	17 04 57					
			F	17 13					

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Green. Time h. m. s.	Per. s.	Amplitude N. μ	Amplitude E. μ	Dist. Km.	Remarks.
167	4	I_V	eP_{NE}	19 09 01				150	Aftershock of the No. 158.
			F	19 12					
168	4	I_V	eP_{NE}	22 19 32				150	Do.
			F	22 24					
169	5	I_V	eP_{NE}	8 28 03				630	Near Batanes Islands.
			iS_N	8 29 09					
			iS_E	8 29 11					
			F	9 13					
170	5	I_V	eP_{NE}	14 34 25				630	Aftershock of the preceding quake.
			eS_{NE}	14 35 34					
			F	14 55					
171	8	II_V	iP_{NE}	10 18 50				870	Lanao, Mindanao.
			iS_{NE}	10 20 24					
			m_N	10 20 31					
			m_E	10 20 33	7.5		178		Pen went to limit of its swing 73.0 mm.
			m_E	10 20 40	6.6		135		
			M_E	10 21 43	7.8		96		
			F	11 57					
172	8	I_V	eNE	17 57 20					
			F	18 19					
173	9	I_r	eNE	4 04 44					
			S_N	4 10 00					
			eL_{NE}	4 14 00					
			F	5 05					
174	10	I	eNE	6 11 ca.					Small movements.
			F	6 56					

Constants found on April 13th, 1929.

	T_o	V	ε	$\frac{r}{T_o^2}$
N-S	6.08	162	3.3	0.017
E-W	5.93	196	3.2	0.022

175	13	I	eP_{NE}	9 20 06					
			F	9 46					
176	13	I	eNE	21 27					Traces only.
			F	21 51					
177	15	I	eNE	16 24					Do.
			F	16 58					
178	16	I	eNE	0 59					Do.
			F	1 27					

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Green. Time h. m. s.	Per. s.	Amplitude N	Amplitude E	Dist. Km.	Remarks.
						μ	μ		
179	18	I_r	iPNE	3 41 16				1090	N Celebes Sea, near SW coast of Min-
			iSNE	3 43 12					
			iLNE	3 44 26					
			F	4 32					
180	19	I	ePNE	13 55 39					
			F	14 10					
181	20	I	ePN	6 27 ca					Distant quake.
			F	8 31					
182	20	I_r	ePNE	10 03 38					
			iSNE	10 05 48					
			F	10 37					
183	22	I_v	ePNE	15 55 39				125	
			F	15 58					
184	23	II_v	iPNE	18 25 54				140	S Luzon.
			iSNE	18 26 10					
			mE	18 26 13					Pen went to limit
			mN	18 26 22	1.2	165			of its swing, 73
			F	18 47					mm.
185	25	I_v	ePNE	10 41 30				250	
			iSNE	10 41 58					
			F	10 48					
186	27	I_r	ePNE	21 09 40					
			eSNE?	21 15 35					
			F	22 22					
187	28	I_v	ePNE	7 39 34				250	
			iSNE	7 40 02					
			F	7 49					
188	28	I_v	ePNE	13 17 09				160	
			iSNE	13 17 27					
			F	13 23					
189	28	I_r	iPNE	14 38 19					
			iSNE	14 42 27					
			F	15 32					
190	30	I	ePNE	18 53 44					
			F	20 00					

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase.	Green. Time h. m. s.	Per. s.	Amplitude N μ	Amplitude E μ	Dist. Km.	Remarks.
191	1	I	eNE	7 41 01					
			F	9 13					
192	1	II_u	ePNE	15 47 48				7728	Aleutian Islands?
			ePgPE	15 48 26					
			iPR1E	15 50 47					
			iPR2NE	15 52 16					
			mN	15 56 17	7.6	6.4mm			
			mE	15 56 38	10.2		5.9mm		
			iSNE	15 57 03					
			iPPPSNE	15 57 47					
			iPcSScPNE	16 03 23					
			iSR2E	16 05 08					
			iINE	16 10 15					
			MN	16 16 40	17.9	9.1mm			
			ME	16 16 48	15.4		18.2mm		
			F	18 15					
193	2	I	eNE	4 53 52					
			F	5 42					
194	2	I_v	iPE	6 14 34				130	
			F	6 20					
195	2	I_r	iPNE	14 33 22					
			iSNE	14 39 32					
			F	15 41					
196	4	I_r	ePNE	8 58 36					
			iSNE?	9 00 56					
			F	9 58					
197	4	I_v	ePNE	12 41 10				110	
			F	12 48					
198	5	I_v	ePNE	5 27 33				390	
			F	5 36					
199	5	I_v	ePNE	6 21 29				300	
			F	6 28					
200	5	I_v	ePNE	8 29 56				620	
			F	8 39					
201	5	I_v	ePNE	13 35 41				560	
			F	13 42					
202	6	I_r	iPNE	5 13 44					
			iSE	5 17 51					
			F	7 44					
203	7	I	ePNE	8 47 54					
			F	9 42					

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Green. Time h. m. s.	Per. s.	Amplitude N μ	Amplitude E μ	Dist. Km.	Remarks.
204	7	II_r	iPE	16 40 27					
			iSNE	16 44 32					
			iLNE	16 46 50					
			F	18 14					
205	10	I	iPE	17 29 14					
			F	17 56					
206	11	I_v	ePNE	11 40 23				315	
			F	11 59					
207	12	I_v	ePNE	2 43 00				225	
			iSN	2 43 25					
			F	2 59					
208	13	I	eNE	13 45 00					
			F	14 47					
209	14	I_v	ePNE	0 32 42				240	
			iSNE	0 33 09					
			F	0 46					
210	15	I_v	ePNE	13 21 03				80	
			F	13 23					
211	17	I	eNE	17 32					
			F	18 03					
212	18	I_u	ePNE	6 49 38					
			iSNE	6 59 19					
			iLNE?	7 03 49					
			F	8 13					
213	19	I	ePNE	5 01 01					
			F	7 ca					
214	20	I_v	ePNE	4 46 52				310	
			F	4 58					
215	20	I_u	iPNE	5 03 36				6589	Aleutian Islands.
			iSNE	5 11 44					
			F	6 53					
216	21	II_r	iPNE	16 40 23				2200	
			iSNE	16 44 00					
			F	18 47					
217	22	I_u	ePNE	0 35 40					
			iSNE	0 42 41					
			F	1 22					
218	22	I	eNE	2 05 21					
			F	2 19					

BULLETINS RECEIVED

We thankfully acknowledge the receipt of the following and hope for their continuance in the future.

APRIL, 1929.

STATIONS.	BULLETINS.
Ottawa	February, 1929.
Sucre	May 20th to December 31st, 1928.
La Paz	Sept. 3rd to Dec. 31st, 1928.
St. Louis, Jes. Seis. Sec	Prel. Bull. Feb. 22 & 26 and March 1, 7, 19 & 21, 1929.
Georgetown	January, 1929.
Taihoku	Feb. 8 to March 13, 1929.
Hongkong	December, 1928.
Firenze	April to December, 1928 and its record.
Wien	May 27, 1928 to Jan. 30, 1929.
Graz	Aug. 25, 1928 to Feb. 3, 1929.
Lemberg	May 28, to Dec. 31, 1928.
Innsbruck	Oct. 3 to Dec. 31, 1926 and the whole year of 1927.
Zikawei	Jan. 16 to Feb. 9, 1929.
Kew	February, 1929.
Oxford	International Seis. Summary for 1925 July, August, September.
Florissant	August, 1928.

MAY, 1929.

Riverview College	July 1st to Sept. 7th, 1926.
Königsberg i/Pr	July to Dec., 1926.
Washington	Feb. & March, 1929.
Parc St. Maur	February, 1929.
Strasbourg	
L'Institut	Jan and Feb., 1929.
Bureau Central	Jan and Feb., 1929.
Union International	Jan. and Feb., 1929.
La Plata	January, 1929.
Kew	March, 1929.
Hamburg	January-March, 1929.
Zagreb	July-September, 1928.
Kobe	July-December, 1928.
Denver	Nov. 1 to Dec. 19, 1928.
Saint Louis	Sept. 1-26, 1928.
Riverview	Jan. 1 to March 16, 1929.
Uccle, Belgium	Jan. 1 to July 7, 1928.

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M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Green. Time h. m. s.	Per. s.	Amplitude N	Amplitude E	Dist. Km.	Remarks.
						μ	μ		
219	22	I_u	ePNE	20 18 41					
			iLNE?	20 34 10					
			F	21 30					
220	22	I_r	ePNE	22 47 35					
			iSNE	22 53 00					
			F	23 33					
221	24	I_r	ePNE	18 41 39					
			iLNE?	18 51 30					
			F	19 19					
222	25	I	eNE	12 19					
			F	12 54					
223	26	I_r	iPNE	8 46 57				2150	
			iSNE	8 50 33					
			F	9 57					
224	26	II_u	ePNE	22 53 00				9311	Gulf of Alaska.
			iPR$_3$E	23 00 03					
			iSNE	23 03 30					
			iLNE	23 20 47					
			mE	23 24 57	9.6		4.0mm		
			mN	23 25 17	15.9	2.8mm			
	27		F	1 40					
225	30	I_v	ePNE	3 16 24				140	
			F	3 21					
226	30	I	eNE?	6 04					Disturbed by microseisms.
			F	6 38					
227	30	I	eNE?	8 34					Do.
			F	9 22					
228	30	I	eNE?	10 03					Do.
			F	12 04					

F 11 47

Year 1929, No.19. June 1st to 6th, 1929.

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 m. Alluvium.

Instrument: Wiechert Inverted Pendulum (1000 Kg.)

	T_o	V	ε	$\frac{r}{T_o^2}$
N-S	6.31	133	3.568	0.025
E-W	6.22	131	2.852	0.033

No.	Date	Character	Phase	Green Time h. m. s.	Per. s.	Amplitude N	Amplitude E	Dist. Km.	Remarks.
						μ	μ		
229	1	I_r	ePNE	7 48 34					
			iSNE	7 52 40					
			F	8 10					
230	1	I_r	iPNE	18 02 27					
			iSNE	18 05 08					
			F	18 57					
231	1	I_v	ePE	23 10 22				820	Near NE coast of Mindanao.
			iSE	23 11 51					
			F	23 24					
232	2	I	eNE	4 24					
			F	4 39					
233	2	II_r	iPNE	21 43 20				3500	Near Japan.
			mE	21 47 30	5.2		72		
			iSNE	21 48 23					
			mN	21 50 06	7.2	70			
			mE	21 51 09	6.4		79		
			iLNE	21 52 06					
			mN	21 52 30	7.4	75			
			mE	21 53 52	5.3		71		
			MN	21 54 42	7.9	32			
			F	22 56					
234	3	I_u	iPNE	20 39 37					
			iSNE	20 46 56					
			F	21 32					
235	4	I	eNE	7 47					Disturbed by micro-seisms.
			F	8 32					
236	4	II_v	iPNE	15 18 07				980	
			iSNE	15 19 53					
			mN	15 19 57	5.2	204			
			mE	15 19 58	3.5		157		
			MN	15 20 26	7.4	198			
			ME	15 21 24	7.0		184		
			F	16 42					
237	6	I	eNE	11 13 00					
			F	11 47					

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Green. Time h. m. s.	Per. s.	Amplitude N μ	Amplitude E μ	Dist. Km.	Remarks.
238	6	I	eNE	14 30 38					
			F	14 47					
239	6	I	ePNE	15 48 50					
			iSE	15 52 28					
			iLNE	15 54 22					
			F	16 48					
240	8	I_v	iPNE	12 32 50				340	
			F	12 40					
241	9	I_r	iPNE	9 15 31					
			iPR_2N	9 16 46					
			iSNE	9 20 43					
			iSR_2N	9 23 13					
			iSR_3E	9 23 33					
			iSR_3N	9 23 35					
			iLNE	9 24 43					
			MN	9 27 22	9.0	180			
			F	11 31					
242	10	I	eNE	19 54					
			F	20 15					
243	10	I	eNE	22 37					
			F	22 54					
244	10	I	eNE	23 15					
	11		F	0 26					
245	12	I_r	iPNE	11 49 00				1120	
			iSE	11 51 00					
			F	13 22					
246	12	I	ePNE	14 35 40					
			F	15 11					
247	13	II_u	iPNE	0 19 56					
			iPR_1N	0 22 48					
			iPR_1E	0 22 51					
			iPR_3N	0 25 16					
			iSN	0 29 05					
			iLN	0 42 02					
			mN	0 43 14	14.6	94			
			mE	0 45 00	15.0		112		
			F	3 08					
248	13	III_v	iPNE	9 26 42				950	Pacific.
			iSNE	9 28 25					
				9 30	Pens thrown off.				
			F	12 22					
249	13	II_r	iPNE	19 49 44				1270	Related to the preceding quake.
			iSNE	19 52 00					
			F	22 14					

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Green. Time h. m. s.	Per. s.	Amplitude N μ	Amplitude E μ	Dist. Km.	Remarks.
250	13	II_r	iPNE	23 02 46				1430	Related to No.248.
			iSNE	23 05 11					
			iLNE	23 06 08					
			ME	23 06 30	10		395		
			MN	23 06 30	12	700			
251	14	I_r	P?	0 38 58					Phases confused by cauda of preceding earthquake. Related to No.248?
252	14	I	eN	4 34					
			F	5 22					
253	14	I_r	ePNE	7 55 48				1310	Related to No.248.
			iSNE	7 58 07					
			F	9 19					
254	14	I	eNE	9 44					
			F	10 27					
255	14	I	eNE	10 40					
			F	11 22					
256	14	II_r	iPNE	23 15 35				1140	Related to No.248.
			iSN	23 17 37					
	15		F	0 58					
257	15	I	eNE	5 59					
			F	6 22					
258	15	I_v	iPNE	8 59 52				410	Near Iloilo.
			iSN?	9 00 31	In hour gap.				
			F	10 08					
259	15	I_r	iPNE	11 11 38				1300	Related to No.248.
			F	11 34					
260	15	I_r	iPNE	16 04 12				1150	Related to No.248.
			iSN	16 06 15					
			F	17 20					
261	15	I_v	ePNE	17 43 08				300	
			F	18 26					
262	15	II_r	ePNE	19 37 31				1320	Related to No.248. End overtaken by following quake.
			iSN	19 39 48					
263	15	I_r	ePNE	21 10 ca				1290	Begins in minute gap. Related to No. 248.
			iSN	21 12 14					
			F	23 08					
264	16	I_r	ePNE	5 29 11				1280	Related to No.248.
			F	6 02					
265	16	I_r	ePNE	14 54 00				1320	Related to No.248.
			F	15 58					

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Green. Time h. m. s.	Per. s.	Amplitude N μ	Amplitude E μ	Dist. Km.	Remarks.
266	16	III_u	iPNE	22 58 ca				8056	Begins in minute gap.
			PcPN	22 59 21					0=22:47:37.
			iN	23 01 31					Near New Zealand.
			iPR_1N	23 02 10					
			iSNE	23 08 46					
			iPSNE	23 09 20					
			iScSNE	23 09 42					
			iNE	23 13 48					3 waves about 30" period enter.
			SR_2N	23 17 40					
			mE	23 18 24	13.7		310		
			LNE	23 23 00					
			mN	23 25 58	19.7	800			
			MN	23 28 19					
	17		F	2 34					
267	17	I_r	ePNE	4 04 44				1360	Related to No.248.
			F	4 56					
268	17	III_r	iPNE	10 18 34				1410	Related to No.248.
			iSNE	10 21 ca					S begins in minute gap.
			MN	10 23 54	7.7	320			
			F	12 49					
269	17	I_v	ePNE	21 17 16				435	
			F	21 26					
270	18	I	eNE	3 57					
			F	4 23					
271	18	I_v	ePNE	12 13 30				440	N Luzon.
			iSNE	12 14 19					
			F	12 28					
272	18	I	eE	16 45 45					
			F	17 26					
273	18	I	ePE	18 22 56					
			F	18 52					
274	18	I_v	ePE	18 56 58				400	
			F	19 08					
275	19	II_r	iPNE	7 32 53				1410	Related to No.248.
			iSNE	7 35 16					
			iSR_1E	7 36 46					
			mN	7 37 27	9.2	460			
			iLNE	7 38 00					
			mE	7 38 09	10.5		468		
			F	10 19					
276	19	I	eNE	19 24 58					
			F	19 54					
277	19	I	ePNE	21 45 23					
			F	22 03					

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Green. Time h. m. s.	Per. s.	Amplitude N μ	Amplitude E μ	Dist. Km.	Remarks.
278	19	I	ePNE	22 39 27					
			F	23 28					
279	20	I_r	ePNE	18 28 06					
			iSNE	18 32 10					
			F	19 02					
280	20	I_r	ePNE	20 12 41					
			iSN	20 14 41					
			iLN	20 15 47					
			F	22 01					
281	21	II_r	iPNE	4 43 04				1416	Related to No.248.
			iSNE	4 [illegible] 30					
			F	6 38					
282	21	I_r	ePN	13 22 22				1422	Related to No.248.
			iSN	13 24 50					
			F	14 20					
283	21	I	eNE	15 24 48					
			F	15 45					
284	22	I	eNE	1 37					
			F	2 05					
285	22	I	eE	3 41					
			F	4 14					
286	22	I	iPNE	15 41 40					
			F	16 48					
287	22	I_r	ePNE	17 41 44					
			iSNE	17 43 48					
			F	19 19					
288	23	I_r	ePNE	3 14 22					
			iSN	3 17 17					
			F	4 34					
289	23	II_r	iPNE	21 49 22				1500	Related to No.248.
			iSNE	21 51 38					
			LNE	21 52 32					
	24		F	0 11					
290	25	I	eE	7 39 37					
			F	8 00					
291	25	I_v	ePE	18 48 36				400	
			iSNE	18 49 20					
			F	19 07					
292	26	I_v	ePNE	3 18 09				230	
			iSNE	3 18 35					
			F	3 29					

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Green. Time h. m. s.	Per. s.	Amplitude N μ	Amplitude E μ	Dist. Km.	Remarks.
293	26	I_V	ePNE	11 29 57					
			eSE	11 31 18				740	
			F	11 51					
294	26	I_V	ePNE	15 54 42					
			eSN	15 56 18				880	
			F	16 18					
295	26	I_V	ePNE	16 55 23					
			eSE	16 56 52				820	
			F	17 28					
296	26	I	eNE	22 15					
			F	23 53					
297	27	II_u	eN	13 06 21					
			iPE	13 06 28					
			iPN	13 06 33					
			iN	13 09 44					
			iNE	13 10 58					
			iNE	13 12 34					
			F	16 22					
298	28	I_r	ePNE	9 07 47					
			iSNE	9 09 50				1150	
			F	10 04					
299	30	III_r	iPNE	2 46 48					
			iSNE	2 49 00				1240	
			iLNE	2 50 12					
			mE	2 51 48	7.8		225		End overtaken by following quake.
300	30	I_r	iPNE	5 15 53					
			iSN	5 18 07				1260	
			F	7 27					
301	30	I	eNE	11 47 30					Disturbed by micro-seisms.
			F	12 43					
302	30	I	e?N	22 21 06					
			F	23 02					

BULLETINS RECEIVED

JUNE, 1929.

We thankfully acknowledge the receipt of the following and hope for their continuance in the future.

STATIONS	BULLETINS
Ottawa	March and April, 1929.
Cartuja(Granada)	Nov., 1928 to March 14th, 1929.
Taihoku, Taiwan	April 10th to June 4th, 1929.
Zikawei	March 7th to May 1st, 1929.
Taunus	August 30th to December 28th, 1928.
Apia	October to December, 1928.
Florissant	August, 1928 to March, 1929.
Denver	November, 1928 to February 22, 1929.
New Zealand and Fiji	January to June, 1928.
Jena	April to December, 1928.
Leipzig	Years 1925, 1926 and 1927.
Athenes	March to December, 1926.
Hongkong	January and February, 1929.
La Plata	February and March, 1929.
Stations of J. S. Ass	Prel. Bull., March 19 and 21, and May 1 and 20, 1929.
Kew	April, 1929.
California	Bull. of the Seis. Society of America, Vol. 18, No. 4, 1928.
Nagasaki	April and March, 1929.
Washington	April, 1929.

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B U L L E T I N S R E C E I V E D

JULY, 1929.

We thankfully acknowledge the receipt of the following and hope for their continuance in the future.

STATIONS	BULLETINS
Beograd	July 15, 1928 to February 26, 1929.
Madagascar	Sept., Nov. and Dec., 1928.
Irkutsk	September to December, 1927.
Adelaide	Year 1926.
Melbourne	Jan., Feb. and March, 1929.
Hongkong	March, April and May, 1929.
Sydney	June 16 and 17, 1929.
Spain, Seis. Sevice	Nos. 50, 51, 52 and 53.
U. S. C. and G. S.	Prel. Det. Epic. June 12 and 13,1929
Tiflis	Nos. 8 and 9, 1927.
Saint Louis	Sept.-Dec., 1928.
Saint Louis	Prel.Bull. June 9, 12, 13 and 16,1929
U. S. C. and G. S.	Radio Report for July 17, 1929.
Ottawa,Halifax,Saskatoon,Canada	May, 1929.
St. Louis University, U.S.A.	Jan. and Feb., 1929.
Georgetown University, U.S.A.	Seismological Despatches, May, 1929.
Kew	May, 1929.
U.S.C. and G.S.	March, 1929: Reports of Honolulu, Charlottesville, Tucson, Sitka, and Chicago.
Zikawei	May, 1929.
STRASBOURG	
L'Institut	May, 1929.
Bureau Central	May, 1929.
Union International	May, 1929.
Parc St. Maur	May, 1929.
Fordham University, New York	Nov.Dec.,1927 and Jan,-May, 1929.
St. Xavier Coll. Cinc.Ohio	Dec.20,1928-June, 1929.
Phu-Lien	February-December, 1928.
Tananarive	July-December, 1928.
Taihoku	June 4-28, 1929.

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318	5	ePNE iPR, NE eSNE PSNE iLNE F	14 29 19 14 31 18 14 37 35 14 37 51 14 47 45 16 57				6730	Aleutian Islands. 0=14:19:06 Lat. 50°N, longitude 177°W, J.S.A.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Phase	Green. Time h. m. s.	Per. s.	A_N μ	A_E μ	Dist. Km.	Remarks.
333	13	ePNE	14 56 30					Overtaken by following earthquake.
		iSNE	14 56 48					
334	13	S?	14 59 54					
335	13	eNE	18 51					
		F	19 17					
338	14	iPNE	9 45 ca	in minute gap.			4867	2nd shock? 10:16:24.
		iSNE	9 51 28					Kurile Islands?
		M	10 01 25					Batavia 9:47:56
		F	11 00					
339	15	iPNE	7 55 16					Disturbed by microseisms and continuing until the 20th.
		iSE?	8 04 11					
		F	9 02					
340	15	ePNE	20 26 22				1711	Batavia P_E 20:26:59
		iSN	20 29 19					
		F	20 48					
341	18	iPNE	18 04 14				160	Off E Luzon.
		iSNE	18 04 34					
		F	18 09					
342	21	iPNE	13 16 55				325	Compression. Southeastern part of Luzon.
		iSNE	13 17 37					
		iSNE	13 17 44					Shanghai P 13:20:04
		L?	13 17 52					
		MN	13 18 ca					Pens swings to limit 162mm, double amplitude.
		ME	13 18 06	1.5		340		
343	21	iPNE	13 22 30					Superposed on preceding record. Southeastern part of Luzon.
344	21	ePNE	22 02 51				170	
		iSNE	22 03 12					
		F	22 07					
345	23	ePNE	14 48 30				1694?	
		iSN?	14 51 25					
		F	16 03					
346	23	eLNE	19 38 00					
		F	20 07					
347	24	ePNE	2 37 28					
		F	3 54					

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Phase	Green. Time h. m. s.	Per. s.	A_N μ	A_E μ	Dist. Km.	Remarks.
348	24	iPNE	5 07 23				350?	Southeastern part of Luzon.
		iSNE	5 08 10					
		L?	5 08 16					
		F	5 34					
349	25	iPNE	18 31 12	i	10	4	180	Compression.
		iSNE	18 31 36	i	48			
		mE	18 31 38	1.0		95		
		F	18 41					
350	26	e(P?)NE	22 54 38				3450	Shanghai P 22:51:54, 1900 Km.
		iSNE	22 59 39					
		iLE?	23 02 45					
		F	0 06					
351	29	ePNE	10 57 56				210	Disturbed by micro-seisms.
		iSNE	10 58 22					
352	29	ePNE	11 00 42					disturbed by micro-seisms.
		F	11 04					

Nine insignificant or undecipherable disturbances, on the following days of July: 2nd (4), 4th, 10th (2) and 14th (2).

Year 1929, No. 29. August 1st to 16th, 1929.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

φ=14° 34' 42" N. λ=120° 58' 41" E. h=2.40 m. Alluvium.

Instrument: Wiechert Inverted Pendulum (1000 Kg.)

	T_o	V	ε	$\frac{r}{T_o^2}$
N-S	7.38	159	4.276	0.025
E-W	7.49	146	4.423	0.028

No.	Date	Phase	Green. Time h. m. s.	Per. s.	A_N μ	A_E μ	Dist. Km.	Remarks.
354	1	PNE	5 07 41				3530	Zikawei-Hongkong-Manila give epicenter about 16°N, 89°E.
		iNE	5 09 08					
		iSNE	5 12 33					
		LNE	5 16 00					
		MNE	5 18 50					Zikawei 5:08:03,3711Km
		M_1N	5 20 13	9.5	10			
		M_2E	5 20 19	13.0		40		
		F	6 25					
355	3	ePNE	12 59 50					
		F	13 39					
356	3	ePE	15 04 32				5078	
		eSNE	15 11 13					
		F	15 53					
360	8	ePNE	6 36 27				400	Felt in Masbate.
		F	6 41					
361	8	PNE	13 01 37				2711	Hongkong-Manila give epicenter in Bay of Bengal.
		PR_1NE	13 02 08					
		iSNE	13 05 49					
		iSR_1	13 06 55					
		iLNE	13 08 17					Distance from Zikawei 3305 Km.
		iP_cSNE	13 08 43					
		M_1N	13 13 44	9.5	310			
		M_1E	13 13 44	10.3		305		
		F	14 12					
362	12	ePNE	7 42 23				100	
		F	7 45					
364	12	ePNE	12 53 ca	in minute gap.			165	
		F	12 59					
365	12	ePNE	14 55 58				125	
		F	14 59					
367	16	ePNE	16 09 16				325	
		iSNE	16 10 04					
		F	16 22					

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Phase.	Green. Time h. m. s.	Per. s.	A_N μ	A_E μ	Dist. Km.	Remarks.
368	16	ePNE	21 34 48				630	
		iSNE?	21 36 29					
		F	22 12					
369	17	ePNE	14 20 24				85	
		iSNE	14 20 36					
		F	14 23					
371	18	ePNE	5 51 18				175	
		iSE	5 51 40					
		F	5 57					
372	18	ePN	8 43 39				4944	
		iSNE	8 5o 12					
		F	9 45					
373	18	ePNE	15 39 29				125	
		iSE	15 39 45					
		F	15 44					
374	19	ePNE	2 45 22				1035	0=2:43:06. Manila-Zikawei-Hongkong-PhuLien give an epicenter at 23° 50' N, 122° 05' E.
		iSNE	2 47 12					
		LNE	2 48 09					
		MNE	2 49 13					
		M_1E	2 52 48	11		215		
		M_2N	2 52 56	13	345			
		F	4 49					
375	19	ePNE	20 46 51					Manila-Hongkong-Zikawei give epicenter at 24° 05' N, 121° 50' E.
		SNE	20 48 43					
		LNE	20 49 36					
		iMNE?	2o 52 18					
		M_1N	20 53 11	11.6	38			
		F	22 05					
376	20	ePNE	5 17 52				155	
		iSNE	5 18 11					
		F	5 24					
377	20	ePNE	16 4o 34					0=16:38:15. Manila-Hongkong-Zikawei give epicenter at 24° N 122° E.
		SNE?	16 42 25					
		iLN	16 43 21					
		iLE	16 43 22					
		iMNE	16 44 38					
		M_1E	16 46 37	15.4		115		
		M_2E	16 48 00	14.5		142		
		M_3N	16 48 45	15/0	97			
		F	18 13					
378	21	PNE	9 27 ca	in minute gap.			150ca	East end Of Verde Island Passage. Felt on the S.S. "Vizcaya" 13°4 N, 121°5 E. After S pens swing to limit, 9 cm. Two very small aftershocks. Zikawei 9h 30m 45s.
		iSNE	9 27 18					

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Phase	Green. Time h. m. s.	Per. s.	A_N μ	A_E μ	Dist. Km.	Remarks.
379	21	iP̄N	9 53 04				150	
		RiP̄	9 53 08					
		iS̄NE	9 53 23					
380	21	iP̄N	10 34 53				150	
		iS̄N	10 35 13					
382		eP̄NE	20 52 39				142	
		iS̄NE	20 52 57					
383	22	iP̄NE	20 54 53				150	recording.
		iS̄NE	20 55 14					No. 381 still recording.
		F	21 03					
384	23	eNE	15 17					
		mNE	15 21 52					
385	23	ePNE	15 26 56				2178	
		eSN	15 30 31					
		eLN	15 32 27					
		F	16 00					
387	24	ePNE	6 32 ca	in minute gap.			465ca	
		eS̄E	6 33 11					
		F	6 46					
390	27	eP̄NE	7 13 28				142	
		iS̄NE	7 13 47					
		F	7 25					
391	27	eP̄E	12 51 42				142	
		iS̄NE	12 52 ca	in minute gap.				
		F	13 02					
392	28	ePE	6 01 ca	in minute gap.				Small movements.
		ePN	6 01 10					
		F	6 21					
393	28	ePNE	18 58 11				3833	0=18:51:05. Hokkaido?
		SNE	19 03 37					
		LNE?	19 07 55					
		M?	19 10 55					
		M_1E	19 12 28	15.2		28		
		M_2N	19 14 38	15.8	38			
		M_3N	19 17 12	15.0	50			
		M_4E	19 17 16	14.7		50		
		F	20 42					

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Phase	Green. Time h. m. s.	Per. s.	A_N μ	A_E μ	Dist. Km.	Remarks.
395	29	ePNE	10 48 10				1689	0 =10:44:34
		PR_2NE	10 48 21					
		eSNE	10 51 04					
		SR_1NE	10 51 24					
		eLN	10 52 30					
		F	11 39					
396	29	ePNE	19 49 41				2111	0= 19:45:16
		iSE	19 53 11					
		SR_1N	19 53 45					
		iLNE	19 55 00	in minute gap.				
		MN	19 56 58	13.6				
		F	20 52					

Eleven insignificant or undecipherable disturbances, on the following days of August: 4th, 5th (2), 12th, 13th, 17th, 22nd, 24th (2), 26th and 29th.

Year 1929, No. 33. September 1st to 12th, 1929.

M A N I L A , P . I .

SEISMOLOGICAL BULIETIN OF THE OBSERVATORY.

ϕ=14° 34' 42" N. λ=120° 58' 41" E. h=2.40 m. Alluvium.

Instrument; Wiechert Inverted Pendulum (1000 Kg.)

	T_o	V	ε	$\frac{r}{T_o^2}$
N-S	7.56	130	3.584	0.026
E-W	7.75	141	4.407	0.027

No.	Date	Phase	Green. Time h. m. s.	Per. s.	A_N. μ	A_E μ	Dist. Km.	Remarks.
397	1	eNE	3 23 21					Disturbed by heavy microseisms.
		F	3 42					
399	2	iPN	11 14 54				860	0=11:12;40
		ePE	11 14 54					Epicenter 8° 30' N; 125° 50' E by Phu-Lien, Zi-Ka-Wei, Batavia, Hongkong.
		iSNE	11 16 27					
		F	13 10					
400	3	ePN	16 34 42				305?	Disturbed by heavy microseisms.
		iSN?	16 35 26					
		F	16 44					
401	7	ePNE	2 29 26				125	
		iSNE	2 29 42					
		F	2 33					
402	9	ePNE	21 43 04				235	
		iSNE	21 43 36					
		F	21 57					
403	10	ePNE	12 05 24				310	Microseisms decrease.
		eSNE	12 06 09					
		F	12 16					
404	11	ePN	22 21 00	in minute gap.			3422	0=22:18:34
		eSNE	22 22 53					24° N; 124° 30' E by Manila, Phu-Lien and Zikawei.
		MN	22 35 15	9.5	42			
	12	F	0 31					
406	12	ePNE	9 06 52				200	
		iSNE	9 07 18					
		F	9 17					
407	12	ePNE	21 35 21				200	
		eSNE	21 35 47					
408	12	ePNE	21 39 15				200	
		iSNE	21 39 41					
409	12	ePNE	21 50 14				200	
		iSNE	21 50 40					
		F	22 00					

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Phase	Green. Time h. m. s.	Per. s.	A_N μ	A_E μ	Dist. Km.	Remarks.
413	15	ePNE	0 05 42				100	Felt in southern Batangas.
		iSNE	0 05 55					
		MN	0 06 55	5.2	130			
		F	0 24					
414	15	ePNE	5 36 48				100	Felt in southern Batangas.
		iSNE	5 37 ca	in minute gap.				
		MN	5 38 05	4.7	45			
		ME	5 38 06	5.3		70		
		F	6 00					
415	15	ePNE	9 35 56				144?	Felt in southern Batangas.
		iSNE?	9 36 14					
		ME	9 37 22	4.7		170		
		MN	9 37 54	5.5	100			
		F	9 57					
416	15	ePNE	13 14 34				100	Felt in southern Batangas.
		iSNE	13 14 47					
		F	13 22					
417	16	ePNE	1 01 23				100	Felt in southern Batangas.
		iSNE	1 01 36					
		F	1 16					
418	17	ePNE	19 30 47				9756	O=19:17:57 U.S.C.& G.S. 52° N; 134° W.
		iSNE	19 41 35					
		F	21 19					
419	19	PNE	11 06 00	in minute gap.			1140	O=11:03 31 8° N; 129° E by Manila, Batavia and Zikawei. Disturbed by microseisms.
		iSE	11 07 59					
		mE	11 08 45	6.4		20		
		LN	11 09 00					
		mN	11 09 06	9.2	28			
		F	11 22					
420	21	ePNE	5 20 15				210	Disturbed by microseisms.
		eSE	5 20 42					
		F	5 31					
421	21	iPNE	18 55 49	i	14	25	655	Sharp compression at Manila; dilatation at Zikawei. Felt in Samar. Approx. epicenter, 11° 30' N; 126° 10' E by Manila, Batavia, Medan and Zikawei.
		iSNE	18 57 09					
		mN	18 57 23	7.2	73			
		mE	18 57 32	7.2		82		
		F	19 36					
422	21	ePNE	21 59 00				165	Extraordinary S. P too small for measurement.
		iSNE	21 59 21	1.5		22		
		F	22 02					

Year 1929, No. 36. October 1st to 15th, 1929.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY

ϕ=14° 34' 42" N. λ=120° 58' 41" E. h=2.40 m. Alluvium.

Instrument: Wiechert Inverted Pendulum (1000 Kg.)

	T_o	V	ε	$\frac{\varepsilon}{T_o^2}$
N-S	7.54	150	4.131	0.029
E-W	7.48	164	4.471	0.030

No.	Date	Phase	Green. Time h. m. s.	Per. s.	Amplitude N μ	Amplitude E μ	Dist. Km.	Remarks.
429	1	ePN	11 44 00	in minute gap.				Felt at Zamboanga. E-W component confused by overlapping lines.
		F	11 59					
430	3	ePNE	5 50 47				190	
		iSNE	5 51 11					
		F	6 00					
431	3	ePNE	23 58 57				190	
		iSNE	23 59 21					
	4	F	0 06					
434	5	ePNE	17 08 45				6811	O=16:58:27
		eSE	17 17 06					
		LNE	17 28 06					
		MN	17 33 05	16.4	15			
		F	18 47					
435	5	ePNE	19 07 50				3700	
		SE	19 13 07					
		F	19 32					
436	6	ePNE	8 03 42				8511	O=7:51:54
		iSNE	8 13 36					U.S.C.G.S. O=7:52:12,
		PSE	8 14 14					19°N., 154°W. 8967 Km.
		iNE	8 16 04					
		LE	8 28 27					
		F	9 55					
438	7	ePNE	22 23 23				150	Felt at Iba, W coast of Luzon.
		iSNE	22 23 42					
		F	22 28					
439	8	ePNE	17 27 56				8465	O=17:16:10. Diturbed by microseisms.
		iSNE	17 37 49					
		LE	17 52 08					
		F	18 24					
440	11	ePNE	10 04 55				142	Disturbed by microseisms
		eSNE	10 05 13					
		F	10 08					

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Phase	Green. Time h. m. s.	Per. s.	Amplitude N μ	Amplitude E μ	Dist. Km.	Remarks.
443	16	ePNE	20 32 58	in minute gap.			2778	0=20;27:25
		iPR_1E	20 33 28					Phu-Lien - Hongkong -
		iPR_2E	20 33 39					Manila give epicenter
		iSE	20 37 16					approx. 24°N, 97° E.
		LNE	20 39 45					
		mN	20 41 24	11.2	50			
		MN	20 42 10	13.1				
		mN	20 45 16	12.4	70			
		mE	20 46 16	12.4		70		
		F	21 25					
444	17	PNE	1 14 ca	in minute gap.			150	Felt at Boac, island of
		iSNE	1 14 19					Marinduque.
		F	1 18					
445	17	ePE	23 25 32				150	Felt at Boac, island of
		SE	23 25 51					Marinduque.
		F	23 29					
446	19	iPNE	10 33 00					Disturbed by heavy mi-
		SPSNE	10 59 20					croseisms.
		LE	11 31 00					U.S.C.G.S. 0=10:13:00,
		LN	11 32 00					Lat.20°S, long.72?5 W.
		F	12 35					
447	22	ePNE	9 32 57				465?	Felt at Laoag, NW coast
		eSNE?	9 34 09					of Luzon. Heavy micro-
		F	9 40					seisms.
448	22	ePNE	18 45 00	in minute gap.				Heavy microseisms.
		F	18 58					
449	24	ePNE	6 36 10				860	Hongkong-Manila-Zikawei
		iSNE?	6 37 43					give epicenter approxi-
		F	7 18					mate 20° 50' N; 116°
								10' E. Disturbed by
								heavy microseisms.
450	24	ePNE	16 14 13				296	
		iSNE	16 14 56					
		F	16 20					
451	27	ePNE	19 32 47				1189	0=19:30;11
		eSNE	19 34 50					
		F	19 58					

Year 1929, No. 38. October 29th to 31st, 1929.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Phase	Green. Time h. m. s.	Per. s.	Amplitude N μ	Amplitude E μ	Dist. Km.	Remarks.
452	29	ePNE	4 43 09				166	
		iS̄NE	4 43 30					
		F	4 50					
454	29	ePNE	21 53 42				166	
		iS̄NE	21 54 03					
		F	22 01					
455	30	ePNE	5 45 38				67	
		iS̄NE	5 45 47					
		F	5 47					
456	31	ePNE	8 17 04				210	
		eS̄NE	8 17 31					
		F	8 20					

Six insignificant or undecipherable disturbances on the following days of October: 5th (2), 6th, 14th (2) and 29th.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Phase.	Green. Time h. m. s.	Per. s.	Amplitude N μ	Amplitude E μ	Dist. Km.	Remarks.
483	17	ePNE	19 04 34					
		F	19 26					
486	18	ePNE	2 07 49				1220	0=2:05:09
		eSNE	2 09 56					
		eLE	2 11 05					
		iLN	2 11 05					
		MN	2 12 27	10.3	15			
		F	3 06					
487	18	ePNE	4 09 00	in minute gap.			1256	0=4:06:16
		eSNE	4 11 12					
		iLN	4 12 27					
		MN	4 13 53	10.9	25			
		F	5 26					
488	18	iPNE	5 43 28				1333	0=5:40:35.
		iSNE	5 45 46					Felt at Butuan and
		iLNE	5 46 57					Davao.
		MNE	5 48 13					
		M_1N	5 48 44	9.0	75			
		M_2E	5 49 18	11.2		65		
		F	7 24					
489	18	ePNE	12 11 24				257	
		iPNE	12 11 28					
		iSNE	12 12 00					
		F	12 21					
490	18	ePNE	14 47 58				160	
		eSNE	14 48 18					
		F	14 50					
491	18	ePNE	19 12 12				180	
		eSNE	19 12 34					
		F	19 19					
492	18	eP'NE	20 51 10				13156	Disturbed by mi-
		PR_1NE	20 52 34					cro seisms.
		iNE	21 02 22					U.S.C.G.S. 0=20:32:08,
		PPSN	21 03 24					47°.5 N, 58° W.
		SR_2NE?	21 13 53					
		eLE	21 28 20					
		eLN	21 39 ca					
		MNE	21 39 ca					
		M_1N	21 47 01	20.2	150			
		M_2N	21 48 51	18.1	105			
		M_3E	21 49 53	15.9		80		
		M_4N	21 52 35	16.2	80			
		M_5E	21 53 25	15.9		80		
		F	22 56					
494	22	ePNE	4 19 24				150	
		iSNE	4 19 43					
		F	4 24					

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Phase	Green. Time h. m. s.	Per. s.	Amplitude N μ	Amplitude E μ	Dist. Km.	Remarks.
495	22	ePNE	10 06 46				200	
		iSNE	10 07 12					
		F	10 14					
496	23	iPE	0 07 10				2765	0=0:01:37. About 1° 45' S; 140° E. By Zikawei -Phu-Lien-Hongkong-Manila.
		ePN	0 07 10					
		PR_1E	0 07 43					
		PR_2E	0 07 52					
		PR_2N	0 07 54					
		iSNE	0 11 26					
		SR_1NE	0 12 30					
		mN	0 12 42	9.9	150			
		mE	0 12 47	11.8		115		
		mE	0 13 47	9.4		95		
		iLN	0 13 58					
		mN	0 14 33	9.9	155			
		mE	0 14 34	9.6		105		
		F	1 21					
501	28	ePNE	20 15 35				360	
		iSNE	20 16 29					
		F	20 28					

Eleven insignificant or undecipherable disturbances on the following days of November: 3rd, 4th, 9th(2), 17th (2), 22nd, 23rd, and 25th (3).

CORRECTION TO PREVIOUS REPORT.

Correction to September 11th, 1929: Distance 1100 Km.

Correction to October 16th, 1929: Distance 2775 Km. Phu-Lien, Hongkong, Batavia, Zikawei, Manila give epicenter at 25° 30' N; 97° E. 0=20:27:13.

BULLETINS RECEIVED

NOVEMBER, 1929.

We thankfully acknowledge the receipt of the following and hope for their continuance in the future.

STATIONS	BULLETINS
Wellintong	-Prel.Bull. of July and August, 1929.
Kobe	-April to June, 1929.
U.S.C.G.S.	-Prel. Determ. of Epicenter of October 6th, 1929.
Hongkong	-August, 1929 and Prel. reprt of principal earthquakes of Oct., 1929.
Ottawa	-September, 1929.
Florissant	-May 26 to July 11, 1929.
Florissant	-July 1st to July 17th, 1929.
Vienne	-May 11th to July 15th, 1929.
Graz	-June 18th to August 31st, 1929.
Denver	-May 26th to August 17th, 1929.
Saint Louis J.S.A.	-Prel.Bull.Sept, 27 and October 5th and 6th, 1929.
Zikawei	-July 13th to August 3rd, 1929.
Wellinteng	-Prel.Bull. fron Sept.15 to Oct.12,1929.
Sydney	-September 9th to December 31st, 1926.
Melbourne	-July 1st to September 28th, 1929.
Hamburg	-July, August and September, 1929.
Frdham Univ. New York	-June 2nd to September 27th, 1929.
Hongkong	-September, 1929.
Parc St. Maur	-September, 1929.
STRASBOURG	
L' Institut	-September, 1929.
Bureau Central	-September, 1929.
Union International	-September, 1929.
Barcelona	-June 1st, 1928 to June 27th, 1929.
San Fernando	-April to September, 1929.

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Year 1929, No. 43. December 1st to 9th, 1929.

M A N I L A . P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

ϕ=14° 34' 42" N. λ=120° 58' 41" E. h=2.40 m. Alluvium.

Instrument: Wiechert Inverted Pendulum (1000 Kg.)

	T_o	V	ε	$\frac{r}{T_o^2}$
N-S	7.74	153	4.794	0.020
E-W	7.78	157	6.253	0.019

No.	Date	Phase	Greenwich Time h. m. s.	Per. s.	Amplitude N μ	Amplitude E μ	Dist. Km.	Remarks.
502	1	ePNE	0 25 30				117	
		iSNE	0 25 45					
		F	0 29					
503	1	iPNE	0 29 58				117	
		iSNE	0 30 13					
		F	0 33					
504	3	ePNE	7 40 21				2722	0=7:34:51
		PR_3N	7 41 05					
		iSNE	7 44 34					
		iE	7 45 24	4.9		25		
		SR_1E	7 45 36					
		F	8 19					
505	3	ePNE	9 24 47				320	Felt at Legaspi.
		SNE	9 25 34					
		F	9 29					
506	5	ePNE	13 02 21				50	
		iSNE	13 02 28					
		F	13 05					
508	6	eNE	17 09 ca					Distant earthquake disturbed by microseisms.
		F	18 25					
509	6	eNE	20 43 ca					Disturbed by microseisms.
510	7	eNE	13 56 46					Do.
		F	14 11					
511	9	ePNE	6 07 ca in minute gap.				1178	0=6:04:25
		eSNE	6 09 02					Pacific, near SE coast
		iLE	6 10 10					of Mindanao. Felt at
		ME	6 11 59	8.5		15		Davao.

BULLETINS RECEIVED

DECEMBER, 1929.

We thankfully acknowledge the receipt of the following and hope for their continuance in the future.

STATIONS	BULLETINS
Nagasaki	September, 1929.
Kew	September and October, 1929.
Belgium	January 1st to May 21st, 1929.
Wellington	October 12th to November 10th, 1929, Preliminary Bulletin of principal earthquakes.
Osaka	January, February and March, 1929.
U.S.C.G.S.	
Tucson	July and August, 1929.
Honolulu	July and August, 1929.
Sitka	July and August, 1929.
Chicago	July and August, 1929.
Charlettesville, Va.	July and August, 1929.
Berkeley	October 1st to March 31st, 1929.
Ottawa	October, 1929.
Hongkong	Preliminary Bulletin of November, 1929.
Oxford	Seismological Summary for April, May and June, 1926.
Granada	June 30th to August 1st, 1929.
INDIA WEATHER REVIEW	
Kodaikanal	Seismic Records of 1928.
Colaba	Seismic Records of 1928.
Calcuta	Seismic Records of 1928.
Strasbourg	Annuaire de l'Institut de Physique du Globe, 1927.-Part II, Seismologie.
Zikawei	August 23rd to October 6th, 1929.
Florissant	Galitzin.-July 18th to Sept. 28, 1929.
Saint Louis, J.S.A.	Prel.Bull. Nov. 15, 17, and 18, 1929.
Washington	September, 1929.
Beograd	March 7th to September 17th, 1929.

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M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Phase	Green. Time h. m. s.	Per. s.	Amplitude N μ	Amplitude E μ	Dist. Km.	Remarks.
512	9	ePNE	6 55 53				3610	No. 511 still recording. Approx. 5° N, 88° E by Batavia, Hongkong, Manila, Zikawei.
		iN	6 57 39	4.4	18			
		SNE	7 01 05					
		mN	7 02 43	6.9	30			
		iLN	7 04 45					
		mN	7 05 03	9.9	85			
		M_1E	7 07 23	14.8		240		
		M_2N	7 07 51	13.9	175			
		M_3E	7 09 37	15.2		255		
		M_4E	7 11 14	15.7		350		
		M_5N	7 11 35	11.6	180			
		M_6E	7 13 48	12.3		160		
		F	9 18					
513	9	ePNE	22 35 42				218	
		iSNE	22 36 11					
		F	22 44					
515	13	ePNE	8 31 21				2656	0=8:25:57
		eSNE	8 35 30					
		MN	8 40 44					
		F	9 06					
516	13	ePNE	9 49 19					
		F	10 32					
517	14	iPNE	15 31 04				140	
		iSNE	15 31 22					
		F	15 48					
518	14	ePNE	15 50 42				134	
		iSNE	15 50 59					
		F	16 00					
519	14	ePNE	19 18 30				100	
		iSNE	19 18 43					
		F	19 23					
520	15	ePNE	18 12 56				117	
		iSNE	18 13 11					
		F	18 16					
523	16	ePNE	7 32 31				167	
		iSNE	7 32 52					
		F	7 37					
524	16	ePNE	11 32 40				3244	0=11:26:21
		eSNE	11 37 28					
		eLNE	11 40 57					
		M_1E	11 43 51	9.7		160		
		M_2E	11 44 24	14.2		25		
		M_3N	11 46 19	11.7	20			
		F	12 55					

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Phase	Green. Time h. m. s.	Per. s.	Amplitude N μ	Amplitude E μ	Dist. Km.	Remarks.
525	16	ePE	15 03 44					
		F	15 44					
526	17	iPE	11 08 14				6160	Disturbed by microseisms.
		ePN	11 08 14					U.S.C.G.S. 0=10:58:42, 53° N, 172° E. Hongkong, Zikawei, Phu-Lien, Manila give 0=10:58:38.
		PR_1N	11 10 26					
		PR_2E	11 11 22					
		iSNE	11 15 56					
		PSN	11 16 09					
		SR_1	11 19 58					
		mE	11 20 37	8.9		155		
		mN	11 21 39	11.6	210			
		SR_2NE	11 21 56					
		mE	11 25 12	11.7		255		
		mN	11 25 35	11.7	210			
		LNE	11 26 ca					
		mN	11 29 38	13.7	290			
		MNE	11 30 ca					
		M_1E	11 32 31	15.2		375		
		M_2N	11 37 30	13.6	285			
		F	15 20					
527	17	ePNE	21 35 43				6667?	
		eSE?	21 43 55					
		F	22 22					
528	18	ePNE	7 01 12				1100	0=6:58:47, 24° 30' N; 121° 30' E by Zikawei, Hongkong, Manila.
		iSNE	7 03 09					
		iLN	7 04 10					
		MNE	7 05 15					
		M_1N	7 07 22	11.8	55			
		M_2E	7 08 10	14.7		70		
		F	8 10					
532	19	ePNE	19 07 41				1505	0=19:04:27.
		iSNE	19 10 16					
		F	19 57					
533	21	ePNE	9 37 36					
		F	9 57					
535	22	iPNE	13 11 35				420	
		iSNE	13 12 39					
		F	13 36					
538	24	ePNE	16 02 29				328	
		iSE?	16 03 17					
		F	16 14					
539	24	iPN	17 28 06				240	
		iSNE	17 28 36					
		F	17 32					

17693

17696

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Phase	Green. Time h. m. s.	Per. s.	Amplitude N μ	Amplitude E μ	Dist. Km.	Remarks.
540	24	ePNE	22 47 31				135	
		iSNE	22 47 48	i	10			
		F	22 50					
541	26	iPNE	1 13 21				230	
		iSNE	1 13 50					
		F	1 17					
542	27	iPNE	13 36 32				2089	0=13:32:09
		iNE	13 36 35					
		PR_1N	13 36 49					
		PR_2NE	13 36 53					
		iSNE	13 40 ca in minute gap.					
		SR_1NE	13 40 33					
		mN	13 40 43	6.7	25			
		SR_3N	13 40 47					
		iLNE	13 41 41					
		mN	13 42 35	7.9	32			
		MN	13 43 49	6.7	18			17697
		F	14 26					
543	28	ePNE	1 33 11					
		F	2 18					
544	28	eNE	11 44					
		F	12 12					
545	28	eNE	16 12					
		F	16 20					
546	31	iPE	1 08 35				2311	0=1:03:48
		ePN	1 08 35					
		PR_1NE	1 08 53					
		PR_3E	1 09 07					
		iSNE	1 12 20					
		mN	1 12 37	7.5	47			
		SR_1NE	1 13 07					
		mE	1 13 45	8.6		37		
		LNE	1 14 16					
		MN	1 16 16	8.0	60			
		ME	1 16 24	10.1		32		
		F	2 51					17699
547	31	iPNE	4 50 08					
		F	6 06					

Eleven insignificant or undecipherable disturbances on the following days of December: 5th, 11th, 15th, 16th 18th (2), 19th, 22nd (2), 24th and 31st.