1923 Duplicate
Ref 2266 (Jan-March.

Year 1923, [illegible] January 1st to [illegible]4th, 1923.

M A N I L A, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

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

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

	T_o	ζ	$\frac{\zeta}{T_o^2}$
A_N	6.94	2.212	0.048
A_E	6.90	1.787	0.043

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	8 25 28					
			F	29					
2	2	I	e	22 48					
			F	56					
3	5	I	e	17 58 20					
			F	18 27					
4	6	I	e	8 48 52					
			F	9 03					
5	9	I	e	13 50					
			F	14 04					
6	9	I_V	eP	23 50 50				550	
			L	51 51					
	10		F	0 05					
7	13	I_V	eP	15 43 21				220	
			L	43 46					
			F	48					
8	14	I	e	5 59					
			F	6 12					
9	19	II_V	eP	11 06 10				450	Felt at Laoag (NW Luzon).
			L	07 00					
			M_E	07 29	5		24		
			M_N	07 46	4	28			
			F	18					
10	22	I	e	1 15					
			F	28					
11	22	I	eI?	9 29					Kurile Islands?
			F	10 08					
12	23	I_V	eP	6 56 49				130	
			L	57 04					
			F	7 00					
13	24	I_r	eP	0 10 45				1620	Felt at Butuan (N Mindanao).
			L	14 24					
			F	32					

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.-- Continued.

No.	Date	Character	Phase	Greenwich mean time h. m. s.	Period. s.	Amplitude A_N μ	Amplitude A_E μ	Distance. Km.	Remarks.
14	24	I_V	eP	20 05 52				140	
			L	06 08					
			F	11					
15	26	II_r	eP	21 35 18				1020	
			L	37 30					
			M_E	38 00	7		58		
			M_N	38 15	7	44			
			F	54					
16	27	I_V	eP	3 57 23					
			F	59					

FEBRUARY, 1923.

17	1	II_r	e	19 35 00					
			F	20 18					
18	2	I_r	eS?	1 16 00					
			F	2 32					
19	2	III_u	eP	5 16 47				7020?	Kurile Islands?
			iS?	25 19					
			iL?	37 07					
			M_E1	37 25	16		22		
			M_N1	37 51	19	31			
			M_N2	40 52	17	47			
			M_E2	46 27	19		24		
			F	7 27					
20	3	I	e	5 34					
			F	46					
21	3	III_u	e	16 10 48				5400?	End uncertain.
			L?	25 40					
			M_E1	26 23	11		198		
			M_E2	28 21	14		202		
22	3	I_u	e	16 51 45					Distant earthquake. The strong amplitude of the preceding quake concealed the L, M and F.
23	3	I_r	e	18 51 56					Do. Do.
24	4	I	e	0 49					
			F	1 38					
25	4	I_V	eP	5 13 33				130	
			F	16					
26	4	I	e	12 46					
			F	13 38					
27	5	I	e	3 35					
			F	57					
28	5	I	e	11 56					
			F	12 07					

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Greenwich mean time h. m. s.	Period s.	Amplitude A_N μ	Amplitude A_E μ	Distance Km.	Remarks.
29	5	I	e	22 33					
			F	56					
30	5	I	e	23 05					
	6		F	0 08					
31	8	I_V	eP	2 27 00				80	
			F	28					
32	8	I_V	eP	6 54 36				70	
			F	56					
33	8	I	e	8 05					
			F	58					
34	11	I	e	22 55 20					
			F	0 06					
35	12	I	e	2 07 51					
			F	3 39					
36	13	II_V	eP	21 43 50				230	Felt in the south-eastern part of Luzon.
			L	44 16					
			M_E	44 17	3		129		
			M_N	44 19	3	89			
			F	59					
37	14	I	e	3 37					
			F	51					
38	15	I_r	eP	9 47 32				1820	
			L	51 40					
			M_E	51 46	7		23		
			M_N	52 08	10	23			
			F	10 32					
39	15	I	e	22 48					
			F	23 51					
40	16	I_r	eP	9 24 43				2550	
			L	30 43					
			F	10 37					
41	16	I_r	eP	21 57 11				1080	
			L	59 34					
			F	22 22					
42	18	I_r	eP	10 36 41				1450	
			L	40 00					
			F	11 02					
43	18	I_V	eP	18 40 03				170	
			L	40 22					
			F	43					
44	18	I_V	eP	19 06 39				210	
			L	07 02					
			M_E	07 06	3		26		
			M_N	07 08	3	52			
			F	20					
45	19	I	e	23 49					
			F	0 55					

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	19	II_r	eP	6 21 52				1780	
			S	25 02					
			L	26 00					
			M_E	26 12	7		152		
			M_N	26 13	7	144			
			F	7 18					
47	20	II_v	eP	10 08 16				780	
			L	09 54					
			M_N	09 57	6	47			
			M_E	10 11	6		40		
			F	44					
48	20	I	e	12 54 42					
			F	13 12					
49	23	III_r	eP	5 55 33				1320	NE Borneo. Registered at Butuan (N Mindanao).
			L	58 25					
			M_E	59 48	6		329		
			M_N	6 00 01	7	347			
			F	7 30					
50	23	I_v	eP	19 33 32				210	
			L	33 35					
			F	43					
51	24	II_r	i	7 43 55					
			F	10 04					
52	25	I_v	eP	9 09 01				130	End overtaken by following Eqke.
			L	09 16					
53	25	I_v	eP	9 16 11				150	End overtaken by following Eqke.
54	25	I_v	eP	9 19 22				150	
			F	22					
55	25	I_v	eP	10 42 10				110	
			F	44					
56	25	I_v	eP	15 52 58				420	Felt at Iloilo (SE Panay).
			L	53 44					
			F	16 04					
57	26	I_v	eP	4 21 39				200	
			F	25					
58	26.	I_v	eP	12 51 46				970	Felt at Butuan and Mambajao (N Mindanao).
			L	52 31					
			F	13 03					

Year 1923, No. 5. March 1st to 11th, 1923.

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's astatic pendulum (1,000 Kg.)

	T_o	$\frac{1}{T_o}$	$\frac{1}{T_o^2}$
A_N	6.94	2.212	0.048
A_E	6.90	1.787	0.043

No.	Date	Character	Phase	Greenwich mean time h. m. s.	Period. s.	Amplitude A_N μ	Amplitude A_E μ	Distance. Km.	Remarks.
59	1	I_V	eP	8 46 33					
			L	48 38					
			F	57					
60	1	I_r	eP	19 50 34					Pacific, E of Philippines.
			L	52 48					
			F	20 18					
61	2	I	e	1 38					
			F	49					
62	2	I	e	6 09					
			F	21					
63	2	I_V	eP	11 54 42					
			F	57					
64	2	III_r	iP	16 51 13					Celebes Sea. Maxima and end lost by the force of the shock.
			L	53 42					
65	2	I_V	eP	18 52 13					
			F	54					
66	3	I	e	10 35					
			F	49					
67	3	I_r	e	21 58 40					
			L	22 03 08					
			F	51					
68	4	I	e	7 04					
			F	48					
69	5	I_V	eP	5 01 25					
			F	05					
70	5	I	e	8 44 30					
			F	9 08					
71	8	I_V	eP	3 28 00					
			F	31					
72	8	I	e	14 31					
			F	43					

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.
73	12	I	e	9 51					
			F	10 13					
74	13	I	e	5 25					
			F	6 02					
75	13	I_V	eP	18 55 44				490	China Sea, felt in Ilocos (N Luzom).
			L	56 38					
			F	19 00					
76	14	III_r	iP	20 46 40					Pacific, E of Philippines.
			iL	51 28					
			M_N	51 52	12	403			
			M_E	52 04	9		231		
			F	22 41					
77	15	I	e	3 02					
			F	16					
78	16	III_r	eP	22 04 06				1600	Felt E Mindanao. Origin Pacific.
			L	07 42					
			M_E	09 00	9		258		
	17		F	0 26					
79	17	I_V	eP	6 03 42				960	Felt SW Mindanao. Origin Celebes Sea.
			L	05 47					
			F	36					
80	17	I_V	eP	13 21 24					
			F	24					
81	17	I	e	16 06 44					
			F	29					
82	18	I_V	eP	14 38 24					
			F	44					
83	18	I	e	22 34					
			F	46					
84	20	I_V	eP	22 06 00				290	Lightly felt W Luzan.
			L	06 32					
			M_N	06 40	3	44			
			M_E	06 44	3		25		
			F	14					
85	22	I_r	e	7 52 43					
			F	8 25					
86	22	I_V	eP	10 22 13				225	
			L	22 38					
			F	30					
87	24	III_r	eP	12 45 37				2790	S Mongolia.
			L	52 11					
			M_N	52 24	8	590			
			M_E	53 19	9		338		
			F	14 40					

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Greenwich mean time h. m. s.	Period. s.	Amplitude A_N μ	Amplitude A_E μ	Distance. Km.	Remarks.
88	24	I_V	eP	23 48 42				230	
			F	54					
89	26	I_M	eP	1 39 49				180	
			F	42					
90	26	I	e	13 57					
			F	14 15					
91	28	II_r	eP	4 33 36					Pacific, SE of Philippines.
			L	38 03					
			M_N	39 17	8	69			
			M_E	39 35	8		42		
			F	5 03					
92	28	I_r	eP	20 34 18					
			L	38 21					
			M_N	38 28	7	50			
			M_E	38 29	6		54		
			F	49					

APRIL, 1923.

93	2	I_V	eP	17 26 44				260	
			L	27 13					
			F	32					
94	3	I_r	e	14 37 54					
			L	40 49					
			F	15 14					
95	4	I	e	7 54					
			F	8 18					
96	5	I_r	e	22 12 34					Near N Formosa. P masked by slight tremors.
			F	23 24					
97	6	I_V	eP	6 52 49				130	
			L	53 04					
			M_N	53 06	3	36			
			M_E	53 06	3		40		
			F	58					
98	8	I	e	21 07 56					
			F	25					
99	9	II_V	eP	7 59 56				600	
			S	8 00 56					
			L	01 12					
			F	17					
100	9	II_V	eP	8 22 0$				225	Felt in Camarines.
			L	22 34					
			M_E	23 03	5		52		
			M_N	23 04	5	87			
			F	33					
101	9	I	e	13 51 25					N Celebes Sea.
			F	14 07					

April 1923...
Ref 2811

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character	Phase	Greenwich mean time h.	m.	s.	Period. s.	Amplitude A_N μ	Amplitude A_E μ	Distance. Km.	Remarks.
102	10	I_V	eP	17	33	23				170	
			L		33	42					
			F		38						
103	11	I	e	4	28						
			F		50						
104	12	I_V	iP	7	58	24				20	
			F	8	01						
105	12	I_V	eP	11	34	42				360	N Luzon.
			L		35	22					
			M_N		35	26	4	52			
			M_E		35	28	3		37		
			F		49						
106	13	I_V	eP	1	43	12				850	
			L		44	52					
			F		56						
107	13	I_r	e	2	32	55					
			F	3	08						
108	13	I	e	10	14	24					
			F		56						
109	13	I_u	e	15	40	30				5910?	W Aleutian Islands.
			S?		48	00					
			L?		57	00					
			M_E1		59	25	20		9		
			M_N1	16	00	55	19	10			
			M_E2		01	12	20		10		
			M_N2		03	29	20	10			
			F	17	23						
110	15	I_V	eP	21	08	29				130	NE Mindoro Island.
			L		08	44					
			F		15						
111	16	I_V	eP	12	40	33				510	Samar Island.
			L		41	30					
			F		56						
112	17	I	eP	16	58	47					
			F	17	42						
113	19	II_r	iP	3	12	13				2400	W of New Guinea.
			L		17	47					
			M_N1		19	45	12	200			
			M_N2		21	04	12	242			
			M_E1		21	18	14		122		
			M_E2		22	51	11		275		
			M_E3		23	45	11		254		
			M_N3		24	09	11	222			
			F	5	15						
114	22	I_V	eP	10	31	58				90	
			F		34						
115	23	II_r	e	3	20	15					
			F	5	18						

Year 1923, No. 9. April 23rd to May 4th, 1923.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.-- Continued.

No.	Date	Character	Phase	Greenwich mean time h. m. s.	Period. s.	Amplitude A_N μ	Amplitude A_E μ	Distance. Km.	Remarks.
116	23	I_V	eP	12 07 50				430	Felt NW Luzon. Ori-
			L	08 37					China Sea.
			F	22					
117	24	I_I	eP	5 35 23					
			L?	40 55					
			F	6 24					
118	24	I_V	eP	9 23 54				80	
			F	27					
119	24	I	e	22 15 43					
			F	43					
120	25	I_V	eP	11 33 58					
			F	36					
121	27	I	e	10 30 14					
			F	11 22					
122	27	I_V	eP	23 32 39				220	
			L	33 03					
			F	39					
123	30	I_I	e	19 57 22				1800	
			L	20 01 28					
			F	24					

MAY, 1923.

Ref. 2669

124	1	I_V	eP	2 05 56					
			F	09					
125	1	I_V	eP	2 19 14				140	
			F	22					
126	1	I	e	10 57 49					
			F	11 26					
127	2	II_V	eP	13 01 32				320	N Luzon.
			L	02 08					
			M_E	02 55	5		143		
			M_N	03 26	4	142			
			F	19					
128	2	I_V	eP	23 23 36				90	
			F	25					
129	3	I_V	eP	17 07 46				210	
			F	12					
130	4	I	e	10 43					
			F	11 11					

Year 1923, No. 9. May 4th to 15th, 1923.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Character.	Phase.	Greenwich mean time.			Period.	Amplitude A_E	A_N	Distance.	Remarks.
				h.	m.	s.	s.	μ	μ	km.	
131	4	I_u	eP	16	38	19					SW Alaska.
			S		47	43					
			L?	17	01	00					
			E1 M1		01	04	15		11		
			N1 M1		02	12	20	7			
			N2 M2		19	32	17	11			
			E2 M2		24	38	13		10		
			F	18	08						
132	4	I_v	eP	17	34	29					
			F		37						
133	4	I	e	22	46	43					
			F	23	23						
134	10	I_v	e?	6	33	30					
			L		35	08					
			F		44						
135	11	I_v	eP	2	14	54					And overtaken by following earthquake.
			L		15	04					
136	11	I_v	eP	2	15	29					
			L		15	40					
			F		20						
137	11	I	e	8	32	37					
			F	9	02						
138	11	I_v	eP	18	26	24					W Samar.
			L		27	22					
			F		35						
139	12	II_r	eP	1	25	45					
			L		32	06					
			M		32	25	11	33			
			M		32	55	10		31		
			F	2	51						
140	12	I_v	eP	15	40	56					
			F		45						
141	12	I_v	eP	19	14	24					
			F		17						
142	14	I	e	7	14	31					
			F		46						
143	15	I_v	eP	1	52	49					
			L		53	10					
			F	2	01						
144	15	I_v	eP	4	17	23					
			L		22	31					
			F	5	04						

ERRATUM; Time of the earthquake No. 127 was inadvertently printed with $13^h\ 01^m\ 32^s$ local time instead $5^h\ 01^m\ 32^s$ Greenwich time.

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.
145	15	I	e	21	40	42					
			F	22	08						
146	16	I	e	20	41						
			F	21	10						
147	17	I_V	eP	2	24	51					
			F		28						
148	17	I	e	15	15						Near Formosa.
			F		44						
149	19	I_V	eP	16	23	46					
			F		30						
150	19	I_V	eP	23	30	47					
			L		33	37					
	20		F	0	0..						
151	20	I_V	eP	3	53	29					
			F	4	00						
152	21	I	e	10	53						
			F	11	04						
153	21	I_V	eP	21	34	30					
			F		37						
154	23	I_V	eP	20	10	30					
			F		15						
155	23	Iu	e	22	46	14					Kurile Islands.
			L?	23	03	25					
			M		04	28	15		7		
			M		04	44	13	7			
	24		F	1	36						
156	24	I_V	eP	21	45	42					
			F		46						
157	25	I	e	22	31	55					
			F	23	29						
158	25	I	eP	23	38	40					SE of Mindanao.
	26		F	0	33						
159	26	I	e	3	20	00					
			F	4	38						
160	26	I	e	8	49						
			F	10	11						
161	26	I_V	eP	20	20	58					E of Samar and Leyte.
			L		21	33					
			F		43						
162	28	I	e	1	33	10					Indian Ocean.
			L?		48	20					
			M		50	07	15	13			
			M		51	02	15		8		
			F		3	10					
163	29	I_V	eP	1	01	46					
			F		10						

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF MEI OBSERVATORY.--Continued.

No.	Date	Character	Phase	Greenwich mean time h. m. s.	Period. s.	Amplitude N A_N	Amplitude E A_E	Distance. Km.	Remarks.
164	29	I_V	eP	23 58 48					
	30		F	0 05					
165	30	I		2 53 00					
			F	3 02					
166	30	I	e	8 41					Asia.
			F	9 48					
167	30	I	e	15 08					
			F	26					
168	30	I	e	18 07 32					
			F	19 18					
169	30	I_V	eP	21 58 14					
			F	22 01					
170	31	I	e	6 02 45					
			F	7 10					
171	31	I_V	eP	17 03 32					
			L	09 14					
			F	22					
172	31	II_V	eP	23 47 18					
			L	47 36					
			MN	47 38	2	42			
			ME	47 38	2		71		
			F	55					

JUNE, 1923.

173	1	III_r	eP	17 30 40					Probable near Japan.
			L?	37 48					
			ME	39 14	8		110		
			MN	39 18	8	203			
			F	20 02					
174	1	II_r	eP	20 21 38					Near Japan.
			L	29 15					
			MN	29 58	7	80			
			ME	30 16	7		62		
			F	22 32					
175	6	I	e	17 45					
			F	18 24					
176	10	I	e	10 57					
			F	11 35					
177	12	I	e	1 56					
			F	2 29					
178	16	I_V	eP	11 20 47					
			F	29					
179	17	I_V	eP	0 23 42					
			L	24 49					
			F	42					

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date.	Char-acter.	Phase.	Greenwich mean time. h.	m.	s.	Period. s.	Amplitude A_N. μ	Amplitude A_E. μ	Distance. Km.	Remarks.
180	18	II	e	8	27	25					
			F	9	54						
181	19	I	e	22	55	26					
			F	23	44						
182	20	Iv	eP	22	15	45					
			L		16	38					
			F		25						
183	22	III_r	eP	6	49	41					
			L		53	58					
			[illegible]1		55	10	9	320			
			[illegible]1		55	57	8		275		
			[illegible]2	7	00	09	11	320			
			[illegible]P		00	48	10		365		
			[illegible]		9	03					
184	22	I_r	e	10	02	02					
			F		51						
185	22	I_r	e	12	09	30					
			F		45						
186	22	I	e	21	03						
			F		22						
187	23	I	e	15	21						
			F		46						
188	25	I	e	10	03						
			F		27						
189	25	I	e	11	36						
			F	12	07						
190	27	I_v	eP	3	14	14					
			L		14	5					
			F		15						
191	29	I_r	e	10	55						
			[illegible]	11	01	05					
			F		15						
192	30	I_v	eP	7	31	27					
			F		34						

J U L Y , 1 9 2 3 .

No.	Date.	Char-acter.	Phase.	Greenwich mean time. h.	m.	s.	Period. s.	Amplitude A_N. μ	Amplitude A_E. μ	Distance. Km.	Remarks.
193	1	I_r	eP	7	5[illegible]	[illegible]					
			L	8	03	4[illegible]					
			F		4[illegible]						
194	2	III_r	eP	2	33	55					
			L		34	30					
			[illegible]		39	10	15	217			
			[illegible]		39	54	12		140		
			F	2	23						
195	2	I	e	13	[illegible]	53					
			F	14	04						
196	2	I	e	15	14	13					
			F		35						

Year 1923, No, 13. July 4th to 15th, 1923.

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.
197	4	I	e	11	40	41					
			F	12	03						
198	5	I_V	eP	1	30	31					
			F		33						
199	5	I	e	1	43						
			F	2	12						
200	6	I_V	eP	9	40	12					
			L		40	54					
			F		47						
201	6	I	e	20	36	37					
			F	21	09						
202	7	I	e	3	56	42					
			F	4	16						
203	7	I	e	7	47						
			F	8	14						
204	8	II_V	eP	7	04	13					Belt N Luzon.
			L		05	09					
			M_E		05	23	4		180		
			M_N		05	41	5	233			
			F		44						
205	10	I	e	0	54						
			F	1	36						
206	11	I_V	eP	17	51	55					Camotes Islands.
			L		52	58					
			F	18	02						
207	12	I	eP	3	26	27					
			F	5	04						
208	12	I	e	7	02	46					
			F	8	08						
209	13	III_r	eP	11	17	56					
			S		20	51					
			L		21	37					
			M_N1		21	43	3	255			
			M_E1		21	53	6		208		
			M_N2		23	00	7	231			
			M_E2		23	12	7		27		
			F	13	10						
210	13	III_d	eP	13	37	00					China Sea; WSW of Manila. Station and not lost by the noise on the shock.
			[illegible]		37	00					
211	14	I_N	eP		00	35					
			L		04	13					
			F	1	03						
212	14	I	eP	4	32	00					
			F	5	00						
213	14	I	•	6	22	00					
			[illegible]		57						
			F	13	18						

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.
214	16	I	eP	13 48 10					
			F	14 57					
215	16	I_V	eP	14 18 09					
			L	18 30					
			F	26					
216	16	I_V	eP	16 29 06					
			L	29 32					
			F	43					
217	17	I_r	e	0 25 50					
			L	29 55					
			F	1 06					
218	18	I_V	eP	0 08 13					SW Luzon.
			L	08 31					
			F	18					
219	18	III.	eP	2 44 07					Pacific.
			L	47 25					
			ME	47 53	8		120		
			MN	49 18	8	206			
			F	4 08					
220	18	II_V	eP	3 34 18					Off NE Luzon.
			L	35 24					
			F	45					
221	19	III_V	eP	7 14 47					Sulu Sea.
			L	15 48					
			MN	16 16	6	153			
			ME	16 39	5		250		
			F	8 02					
222	20	I_V	eP	12 24 14					SW Luzon.
			L	24 35					
			F	28					
223	20	I_V	eP	16 25 46					SW Luzon.
			L	26 01					
			F	29					
224	20	I	e	16 55 41					
			F	17 07					
225	22	I	e	14 27 51					
			L?	35 30					
			F	15 43					
226	24	I_V	eP	0 35 54					
			L	36 27					
			F	40					
227	25	I	eP	4 12					
			F	20					
228	26	I	eP	3 23					
			F	30					
229	27	I_V	eP	11 34 37					
			L	36 25					
			F	44					
230	31	I	e	15 21					
			F	15 18					

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
231	1	I	e?	5 44					
			F	55					
232	2	I_V	eP	1 27 25					
			F	29					
233	2	I_V	eP	17 55 09					
			L	56 18					
			M_N	57 16	6	61			
			M_E	57 21	6		52		
			F	18 09					
234	3	I	e?	17 07					
			F	18 11					
235	5	I	e?	6 55					
			F	7 15					
236	5	I_V	eP	14 45 18					SE Panay.
			L	46 05					
			F	56					
237	6	I	e?	22 23					
			F	34					
238	10	I	e	16 04 28					
			F	50					
239	10	I_V	eP	19 34 14					
			F	37					
240	10	I	e	22 23					
			F	54					
241	11	II_r	eP	0 57 00					
			L	1 01 16					
			M_N1	03 47	13	147			
			M_E1	03 30	12		63		
			M_N2	05 46	12	167			
			M_E2	09 18	10		129		
			F	2 04					
242	12	I	eP	6 14 48					
			F	7 06					
243	12	II_r	eP	10 09 14					
			L	13 22					
			Me	14 29	9		54		
			M_N	15 00	9	89			
			F	12 02					
244	14	I_r	eP	12 56 25					
			L	59 25					
			F	13 13					
245	14	I_V	eP	22 02 22					
			L	03 25					
			F	10					
246	15	I	eP	7 05 00					
			F	12					
247	15	I	e	10 46					
			F	11 05					

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 μ	Amplitude T μ	Distance Km.	Remarks
248	16	I_V	eP	6	20	07					
			L		21	06					
			M_L		21	15	4		26		
			M_T		21	19	4	34			
			F		29						
249	17	I_V	e	12	17	00					
			L?		25	30					
			F	13	22						
250	19	I_V	e?	12	32	11					
			L?		37	33					
			F	13	31						
251	20	I_V	eP	18	15	00					
			L?		20	30					
			F		45						
252	20	I_V	eP	19	19	55					
			L?		23	25					
			F		43						
253	24	IIId	iP	7	26	21					W Luzon. Maxima lost by the force of the shock.
			iL		26	57					
			F	8	05						
254	24	IIId	iP	9	03	00					W Luzon. Maxima lost by the force of the shock.
			iL		03	36					
			F		44						
255	24	IId	eP	13	05	00					
			L		05	17					
			M_L		05	20	3	128			
			F		16						
256	27	I	e	7	48						
			F	8	31						
257	27	I_V	eP	11	17	09					
			L		19	11					
			F	12	11						
258	27	I	L	12	13						
			F		45						
259	28	I	e?	23	35						
	29		L?	0	10						
			F	1	22						
260	29	I_V	eP	4	38	16					
			L		42	12					
			F		58						
261	30	II_V	eP	2	49	24					E Mindanao.
			L		51	11					
			M_L		51	46	7		51		
			M_T		52	15	7	7.8			
			F	4	10						
262	30	I_V	eP	12	52	13					
			L		52	34					
			F		58						
263	30	I_V	eP	14	07	15					
			L		07	34					
			F		11						
264	30	I_V	eP	20	10	16					
			L		11	56					
			F		22						
265	31	I	e	11	12	26					
			F	13	16						

Year 1923, No. 17. September 1st to 5th, 1923.

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 Kgs.)

	T_o	ε	V	$\frac{r}{T_o^2}$
A_N	6.94	2.212	180	0.048
A_E	6.90	1.787	240	0.043

No.	Date	Character	Phase	Greenwich mean time h m. s.	Period. s.	Amplitude A_N μ	Amplitude A_E μ	Distance. Kms.	Remarks.
266	1	III_r	iP	3 04 11				3640	Earthquake in Japan.
			L	13 14					
			F	9 18					
267	1	II_r	e	3 54 27					Aftershock of the No. 266.
			F	-- -- --					
268	1	I_r	eP	7 44 18					Aftershock of the No. 266.
			F	9 18					
269	1	I_r	e	13 58					Aftershock of the No. 266.
			F	14 31					
270	1	I	e	16 37					
			F	17 40					
271	2	I	e	1 11 40					
			F	57					
272	2	III_r	eP	2 52 05				3060	Aftershock of the No. 286.
			L	59 30					
			M_E	3 01 02	11		260		
			M_N	01 04	11	244			
			F	5 28					
273	2	I_r	eP	9 33 12					Aftershock of the No. 266.
			F	11 06					
274	2	I_r	eP	13 15 11					Aftershock of the No. 266.
			F	14 18					
275	2	I_r	eP	14 23 43					Aftershock of the No. 266.
			F	15 06					
276	2	I	eL?	22 48 04					
	3		F	0 10					
277	3	I	e	8 04					
			F	52					
278	4	I_V	eP	3 30 10				110	
			L	30 22					
			F	35					
279	5	I_r	eP	6 05 24				1590	Pacific, SE Philippines.
			L	08 56					
			F	31					
280	5	I_r	eP	15 26 43				3380	Aftershock of the No. 266
			L	35 00					
			F	16 10					

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. Kms.	Remarks.
281	5	I_r	eP	18 36 20					Aftershock of the No. 266.
			F	19 08					
282	8	I	e	7 14 32					
			F	38					
283	8	I	e	9 16					
			F	42					
284	9	I	e	17 19					
			F	48					
285	9	II_r	eP	22 09 58				720?	Calcutta?
			L?	19 14					
			M_N	23 37	11	111			
			M_E	24 21	13		70		
			F	23 58					
286	11	I_v	eP	18 29 15				150	
			L	29 32					
			F	34					
287	12	I	e	6 05 09					
			F	33					
288	12	II_r	eP	8 07 55				1170?	
			L?	10 27					
			M_E	11 32	7		17		
			M_N	12 09	6	41			
			F	54					
289	14	I_v	eP	3 20 12				200	
			F	23					
290	14	I	e	13 14 28					Chihli, China?
			F	42					
291	14	I_v	eP	18 47 39				130	
			L	47 54					
			F	51					
292	16	II_r	eP	16 40 06				1980	
			L	44 35					
			M_E	46 16	8		42		
			M_N	46 20	7	50			
			F	18 04					
293	16	I_v	eP	21 43 32				420	NW of Luzon.
			L	44 18					
			F	47					
294	16	I_v	eP	23 08 37				240	
			F	11					
295	17	I_r	eP	3 44 25					Aftershock of the No. 266.
			F	4 30					
296	17	I_u	e	7 20					Persia?
			F	8 38					
297	19	Iv	eP	4 00 58				200	
			L	01 20					
			F	08					

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. Kms.	Remarks.
298	19	Ir	e?	8 35 51				2190?	
			L	40 53					
			F	9 10					
299	21	Iv	eP	9 24 10				140	
			F	27					
300	21	Iv	eP	9 49 52				190	
			F	54					
301	21	I	L	20 25					
			F	52					
302	21	Iv	eP	23 33 27				180	
			F	40					
303	22	I	e	15 08 34					
			F	52					
304	22	Ir	e	20 58 18					Persia.
			F	22 08					
305	23	Iv	eP	3 50 51				440	Panay Island.
			L	53 43					
			F	4 02					
306	24	Iv	eP	22 53 30				150	
			F	56					
307	26	IIr	eP	8 29 51					Aftershock of the No. 266.
			F	9 25					
308	27	IIr	eP	7 03 22				1740	Pacific, E of Mindanao.
			L	07 20					
			M_N	07 35	8	168			
			M_E	07 51	9		100		
			F	8 37					
309	29	Ir	e?	~~6~~ $^h53^m$					E of Formosa.
			F	7 24					
310	29	IIv	eP	18 03 48				400	NW Luzon.
			L	04 32					
			M_N	05 21	5	84			
			M_E	06 08	5		62		
			F	20					
311	30	I	e?	1 40					Very distant earthquake.
			F	2 56					

Year 1923, No. 20. October 1st to 15th, 1923.

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 Kgs.)

	T_o	V	γ	$\frac{r}{T_o^2}$
A_N	6.94	180	2.212	0.048
A_E	6.90	240	1.787	0.043

No.	Date	Character	Phase	Greenwich mean time h. m. s.	Period s.	Amplitude A_N μ	Amplitude A_E μ	Distance Kms.	Remarks.
312	1	I	e?	8 32					
			F	9 11					
313	1	I	e?	22 39					Celebes Sea.
			F	23 12					
314	3	Iv	eP	14 31 00				110	
			F	34					
315	3	Ir	e	16 00 11				3120	Near Japan.
			L	07 44					
			F	54					
316	4	Ir	eP	7 40 00				1410?	
			L?	43 10					
			F	8 26					
317	4	IId	eP	10 32 02				90	
			L	32 12					
			M_N	32 15	2	72			
			M_E	32 15	2		96		
			F	37					
318	4	I	e	17 51					
			F	18 27					
319	7	IIIr	eP	3 33 40				2340	Pacific. Maxima and end lost by the force of the shock.
			L	39 04					
320	10	I	eL?	7 56					Distant earthquake,
			M_N	8 07					
			F	36					
321	12	IIv	iP	10 16 53				200	
			iL	17 14					
			M_N	17 17	2	97			
			M_E	17 17	2		99		
			F	29					
322	14	Iv	eP	2 02 07				780	Pacific.
			L	03 47					
			F	18					
323	15	I	e	7 37 31					End overtaken by following quake.
			M_N	43 26					

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. Kms.	Remarks.
324	15	I	e	8	03	42					
			F	9	14						
325	15	Iv	eP	12	49	51				720	Pacific Deep.
			L		51	20					
			F	13	21						
326	17	I	e	13	08	49					
			F		24						
327	20	Ir	eP	3	24	41				2040	
			L		29	20					
			M_N		29	39	7	14			
			M_E		30	17	8		12		
			F	4	18						
328	20	Ir	eP	10	06	27				2160?	Pacific.
			L?		11	27					
			M_N		12	35	9	54			
			M_E		13	23	9		32		
			F	11	42						
329	21	Iv	eP	2	51	54				70	
			F		54						
330	23	Iv	eP	22	18	04				260	Pacific.
			L		18	33					
			F		26						
331	26	Ir	eP	6	46	40				1470?	Pacific.
			L?		50	00					
			F	7	48						
332	26	Iv	eP	8	34	55				910	Pacific.
			L		36	35					
			F	9	03						
333	26	Ir	eP	9	06	00				1010?	Pacific.
			L?		08	00					
			F		24						
334	26	Iv	eP	13	28	35				910	
			L		30	15					
			F		52						
335	28	Iv	eP	20	52	26				260	
			L		52	55					
			F	21	00						
336	29	IIId	iP	12	51	38				110	W Luzon coast. Maxima and end lost by the force of the shock.
			iL		51	50					
337	29	IIv	eP	19	50	59				290	NW Luzon, China Sea.
			iL		51	31					
			M_N		51	47	4	86			
			M_E		52	17	5		98		
			F	20	12						

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. Kms.	Remarks.
338	30	I_v	eP	21 51 23				125	Near S Luzon coast.
			iL	51 37					
			F	58					
339	30	III_d	eP	21 59 07				150	Near S Luzon coast. Maxima and end lost by the force of the shock.
			iL	59 24					
340	31	II_d	eP	1 30 40				150	Near S Luzon coast.
			iL	30 57					
			M_N	31 09	2	122			
			F	52					
341	31	I_v	eP	2 39 04				150	Do.
			F	44					

N O V E M B E R , 1 9 2 3 .

342	1	III_d	iP	6 39 37				140	Near S Luzon coast. Maxima and end lost by the force of the shock.
			iL	39 53					
343	1	I_v	eP	7 02 00				140	Near S Luzon coast.
			F	07					
344	1	I_v	eP	7 09 38				140	Do.
			F	15					
345	1	III_d	iP	7 59 31				150	Do.
			iL	59 48					
			F	8 46					
346	1	I_v	eP	8 48 51				150	Do.
			F	52					
347	1	I_v	eP	10 17 18				150	Do.
			F	21					
348	1	I_v	eP	11 30 04				150	Do.
			F	33					
349	1	I_v	eP	11 47 35				150	Do.
			F	52					
350	1	I_v	eP	12 09 12				150	Do.
			F	12					
351	1	I_v	eP	12 53 19				150	Do.
			F	56					
352	1	I_v	eP	12 25 28				150	Do.
			F	29					
353	1	I_v	eP	15 55 09				140	Do.
			F	16 00					
354	1	I_v	eP	16 29 37				120	Do.
			F	35					
355	1	I_v	eP	16 45 09				140	Do.
			F	50					

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. Kms.	Remarks.
356	1	I_V	eP	20 37 26				140	Near S Luzon coast.
			F	41					
357	2	III_r	eP	21 15 15				3700?	N of New Guinea?
			iL?	24 38					
			M_N	25 51	5	115			
			M_E	26 01	6		71		
			F	23 34					
358	3	I	e	4 39					
			F	5 22					
359	3	II	e	16 23 20					
			F	17 52					
360	4	II	e	0 11 47					
			F	1 32					
361	4	III_d	eP	1 37 34				130	Near S Luzon coast.
			iL	37 49					
			F	2 03					
362	4	I_V	eP	4 49 29				160	Do.
			L	49 47					
			F	59					
363	4	I	e	20 11 00					
			F	21 14					
364	4	I	e	22 20 55					
			F	54					
365	5	I_V	eP	11 05 11				130	Do.
			F	11					
366	5	II_d	eP	20 39 12				125	Do.
			iL	39 24					
			M_E	40 26	4		62		
			M_N	40 37	4	109			
			F	53					
367	5	II	e	21 31 56					
			F overtaken by following quake.						
368	5	I_V	eP	23 15 02				130	Do.
			eL	15 17					
			F	24					
369	6	I_V	eP	5 15 34				150	
			iL	15 51					
			F	22					
370	6	I	e	19 22 42					
			F	20 25					
371	7	I_r	eP	3 54 00					
			L	57 32					
			F	4 09					
372	8	I_V	eP	4 10 00				120	Do.
			F	17					
373	8	I_V	eP	22 37 01				120	Do.
			F	43					

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 μ	Amplitude A μ	Distance. Kms.	Remarks.
374	8	Ir	eP	22 46 03				1260	
			L	48 45					
			F	23 18					
375	9	Iv	eP	12 45 48				110	
			F	45					
376	10	IIIv	eP	11 28 49				140	Near S Luzon coast.
			iL	29 05					
			MN	30 24	5	378			
			ME	30 24	5		312		
			F	46					
377	10	I	e	21 38					
			F	56					
378	11	I	e	5 18					
			F	40					
379	11	Iv	eP	17 55 02				120	Do.
			F	59					
380	12	Iv	eP	4 55 30				225	NW Luzon.
			F	5 03					
381	16	IIv	iP	22 18 37				150	Near S Luzon coast.
			iL	18 54					
			F	27					
382	18	Ir	e	21 31 44				2520?	
			L?	36 34					
			F	22 42					
383	19	I	e	2 24					
			F	55					
384	20	Iv	eP	4 58 32				330	
			L	59 09					
			F	5 04					
385	20	Iv	eP	16 27 55				130	Do.
			L	28 10					
			F	31					
386	22	Iv	eP	0 39 07				130	Do.
			L	39 22					
			F	45					
387	22	I	e	7 23					
			F	51					
388	22	IIv	eP	15 37 20				360	NW Luzon.
			L	38 00					
			F	52					
389	23	I	e	2 40					
			F	3 03					
390	23	Iv	eP	3 11 35				150	
			F	15					

M A Y S L A . P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY. --Continued.

	T_o	V	ε	$\frac{r}{T_o^2}$
A_N	6.75	151	2.844	0.053
A_E	6.70	214	2.006	0.056

No.	Date	Character	Phase	Greenwich mean time	Period.	Amplitude A	Amplitude A	Distance.	Remarks.
				h. m. s.	s.	μ	μ	Kms.	
391	25	II_r	eP	17 05 31				2160	
			S	09 06					
			L	10 30					
			M_E	11 07	11		38		
			M_N	12 12	10	49			
			F	18 16					
392	25	I_V	eP	23 42 42				130	
			L	42 57					
			F	47					
393	27	III_V	eP	8 46 58				290	
			L	47 30					
			M_E	48 36	6		313		
			M_N	48 37	6	308			
			F	57					
394	28	I_V	eP	12 55 37					
			L	16 00					
			F	19					

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395	2	I_V	eP	12 03 19				190	
			L	03 40					
			F	08					
396	3	I_V	e	22 13 22				810	Pacific, E of Samar.
			L	14 50					
			F	27					
397	5	II_r	eP	22 39 06				1500	NE Menado.
			L	42 24					
			MN	43 17	8	152			
			ME	43 43	8		136		
			F	23 30					
398	7	I_V	eP	23 42 18				490	End overtaken by following quake.
			L	43 12					
399	7	I_V	eP	23 45 46				420	
			L	46 32					
	8		F	0 05					
400	8	I	L	17 26					
			F	44					
401	8	I	e	19 10 41					
			F	32					

MANILA, P. I.

SEISMOLOGICAL BULIETIN 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.	
402	9	I_V	eP	12 35 54				110	
			F	40					
403	10	I_V	eP	22 50 08				170	
			F	54					
404	11	I	e	5 18 55					
			F	52					
405	15	I_V	eP	6 31 15				440	NW Luzon.
			L	32 04					
			F	40					
406	17	I_V	eP	15 16 19				210	
			L	16 42					
			F	22					
407	19	I_V	eP	12 17 46				400	NW Luzon.
			F	22					
408	19	I	e	15 42 12					
			F	16 22					
409	19	I	e	19 06 40					
			F	29					
410	21	III_d	iP	20 35 09				120	Near S Luzon coast. Maxima and end lost by the force of the shock.
			iL	35 22					
411	22	I_V	eP	21 06 36				110	
			F	09					
412	27	Ir	e	10 37 29				2940	
			L	44 34					
			F	11 02					
413	27	I	e	14 45 30					
			F	15 21					
414	28	I	e	22 41 17					
			F	23 12					
415	29	I_V	eP	3 54 05				670	
			L	55 18					
			F	4 01					
416	30	I_V	eP	13 58 11				160	
			F	14 02					