

Year 1924, No. 1.

January 1st to 25th, 1924.

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.)

	$T_0$	V	$\epsilon$	$\frac{r}{T_0^2}$
$A_N$	6.75	151	2.844	0.053
$A_E$	6.70	214	2.006	0.056

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod.	Amplitude		Dis-tance.	Remarks.
				h.	m.	s.		$A_N$	$A_E$		
							$\mu$	$\mu$	Km.		
1	1	III <sub>d</sub>	iP iL	17	54	42 57					Central Luzon. Max- ima and end lost by the force of the shock.
2	4	I <sub>v</sub>	eP L F	5	24	06 10 31					Philippine Deep.
3	7	I <sub>v</sub>	eP F	10	07	18 12					
4	7	I <sub>v</sub>	eP F	10	15	42 24					
5	8	I <sub>v</sub>	eP iL F	15	05	13 29 13					S Luzon.
6	14	II <sub>r</sub>	eP iS MN ME	20 21	56	00 33 12 29	8 8	108	191	3,660	Japan. End overta- ken by following earthquake.
7	14	I <sub>v</sub>	eP L F	22	23	46 27 40					E China Sea.
8	15	I <sub>v</sub>	eP L F	11	39	01 33 51					
9	16	I	e F	21	48	43 51					
10	20	I	e F	12	54	12 14					
11	21	I	e F	2	01	16 23					
12	24	I <sub>r</sub>	e L F	18 18	40 45	36 22 14				2,070	Moluccas Islands.
13	25	I	e F	6	32	29 28					

Ref 2677.

Year 1924, No. 2.

January 26th to February 4th, 1924.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod.	Amplitude		Dis-tance.	Remarks.
				h.	m.	s.		A <sub>N</sub>	A <sub>E</sub>		
				h.	m.	s.	s.	μ	μ	Km.	
14	26	I	e F	3	30	00					
15	26	I <sub>v</sub>	eP L F	8	41	46				180	
16	27	III <sub>v</sub>	eP iL ME F	4	23	31				610	Near N coast of Luzon.
					24	38					
					25	07	3		374		
17	28	I <sub>v</sub>	eP iL F	13	38	44				120	
18	29	I <sub>u</sub>	e eL? ME1 MN1 ME2 MN2 F	2	15					17000?	South America.
				3	12						
				13	34	25			1		
				17	42	23		2			
				22	31	23			2		
				28	09	22		2			
19	29	I <sub>v</sub>	eP L F	15	19	57				220	
20	30	I	e F	0	11	44					
21	30	II <sub>r</sub>	iP L? F	4	52	42				1800?	
22	31	I	e F	1	24	16					
23	31	I <sub>v</sub>	eP L F	16	21	50				740	
24	31	I	e F	16	57	44					

FEBRUARY, 1924.

25	2	I	e F	22	31						Japan.
26	3	II <sub>v</sub>	eP L F	9	58	55				400	Pacific.
27	3	I <sub>v</sub>	eP L F	13	40	10				450	Pacific.

Year 1924, No. 3.

February 5th to 21st, 1924.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod.	Amplitude		Dis-tance.	Remarks.
				h.	m.	s.		$A_N$	$A_E$		
				h.	m.	s.	s.	$\mu$	$\mu$	Km.	
28	5	2v	eP F	15	13	44				180	
29	5	Iv	eP L F	17	30	55				1010	
30	6	I	e F	14	44						
31	7	Iv	eP F	16	30	50					
32	9	I	e F	23	12						
33	11	Iv	eP L? F	6	07	32				3480?	
34	13	Iv	eP L F	19	35	38				910	Pacific.
35	13	IIv	iP iL MN ME F	22	54	21				1440	Celebes Sea.
	14						7 8	66	96		
36	14	Iv	eP F	3	51	36				520	
37	14	I	e F	19	04	22					
38	16	I	e F	0	30						
39	16	Iv	eP F	1	51	38				300	
40	16	I	e F	14	46						
41	16	Iv	eP L F	17	50	18				450	
42	16	Iv	eP L F	18	14	00				850	Agusan Valley.
43	18	Iv	eP L F	0	13	45				170	
44	18	I	ME F	18	00						
45	19	I	e F	7	11						
46	19	Iv	eP F	14	12	16				390	Near SE coast of Luzon.
47	19	Iv	eP F	19	34	08				125	
48	21	I	eP F	14	35	42					

Year 1924, No. 4.

February 22nd to March 15th, 1924.

M A N I L A . P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod.	Amplitude		Dis-tance.	Remarks.
				h.	m.	s.		$\mu$ <sub>AN</sub>	$\mu$ <sub>AE</sub>		
49	22	I	L F	17	24						
					48						
50	22	Iv	eP L F	19	23	18			300	N Luzon.	
					23	51					
					32						
51	26	I	e F	23	52						
	27			0	12						
52	27	Iv	eP L F	16	06	57					
					08	00					
					12						
53	28	Iv	eP L F	9	09	49			350	N Luzon.	
					10	28					
					19						
54	28	Iv	eP L F	21	51	34			490		
					52	28					
				22	10						
55	29	I	L? F	8	56						
				9	23						

M A R C H , 1 9 2 4 .

56	3	Iv	eP L F	21	46	51			280	
					47	22				
					50					
57	4	IIu	eP L? F	10	27	30			15000?	Costa Rica.
				11	17	46				
				12	10					
58	4	Iv	eP L ME F	12	42	00			160	
					42	18				
					42	20	2		29	
					46					
59	5	II	eP F	4	29	55				
				5	32					
60	7	Iv	eP L F	21	04	26			870	
					06	00				
					23					
61	8	Iv	eP L F	20	45	26			460	Near SE Luzon.
					46	17				
				21	02					
62	11	Iv	eP F	11	01	29				
					13					
63	11	Iv	eP F	14	53	00				
				15	02					
64	13	Iv	eP F	6	17	18			110	
					20					
65	13	Iv	eP F	15	14	06			150	
					19					
66	15	Ir	eP L ME MN F	2	48	55			1170	
					51	00				
					52	45	8			
					53	00	11			
				3	40			33	21	

Year 1924, No. 5.

March 15th to 31st, .924.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY. -- Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod.	Amplitude		Dis-tance.	Remarks.
				h.	m.	s.		A <sub>N</sub>	A <sub>E</sub>		
				h.	m.	s.	s.	μ	μ	Kn.	
67	15	I <sub>r</sub>	eP	10	38	48				4740?	Japan.
			S		44	49					
			L?		53	00					
			F	11	52						
68	18	I	e	19	41						
			F	20	00						
69	21	I <sub>v</sub>	eP	13	27	00				290	
			L		27	31					
			F		35						
70	23	I <sub>r</sub>	eP	21	57	48				1610	
			L	22	00	35					
			F		08						
71	24	I	M	6	59	30					
			F	7	12						
72	24	I	M	20	48	55					
			F	21	05						
73	25	I <sub>r</sub>	eP	10	59	00				1560	
			L	11	02	25					
			F		25						
74	25	I <sub>v</sub>	eP	14	26	29				875	
			L		28	04					
			F		34						
75	25	I	eP	15	23	08					
			F		32						
76	26	I	e	20	14						
			F	21	10						
77	30	I	eP	0	12	54					
			F	1	34						
78	30	I	e	20	41						
			F	21	12						
79	30	I <sub>v</sub>	eP	22	05	48				110	
			L		06	00					
			F		09						
80	30	I <sub>v</sub>	eP	23	19	35				180	
			L		19	55					
			F		25						
81	31	I <sub>v</sub>	eP	15	29	23				50	
			F		30						
82	31	II <sub>d</sub>	eP	15	30	41				130	SE Luzon.
			L		30	56					
			ME		31	06	2		47		
			MN		31	09	2	53			
			F		43						

MIGUEL SADERRA MASÓ  
 Chief, Seismic and Magnetic Divisions,  
 Weather Bureau.

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.)

	$T_0$	V	$\epsilon$	$\frac{r}{T_0^2}$
$A_N$	6.75	151	2.844	0.053
$A_E$	6.50	214	2.006	0.056

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod.	Amplitude		Dis-tance.	Remarks.
				h.	m.	s.		$A_N$	$A_E$		
				h. m. s.			s.	$\mu$	$\mu$	Km.	
83	3	I	e F	1	27	41					
84	4	Iv	eP F	14	01	00				90	
85	4	Iv	eP F	14	24	09				100	
86	4	I	eP F	21	59	41					
87	6	I	eP F	20	59	52					
88	7	Iv	eP F	9	49	31				50	
89	8	Iv	eP F	22	19	12				380	NE Luzon.
90	9	Iv	eP F	19	53	47				130	
91	10	I	eP F	22	33	00					
92	11	Iv	eP L F	16	25	25				380	
93	12	I	eP F	5	49	58					
94	12	Iv	eP F	18	48	18					
95	12	I	e F	21	58	57					
96	13	II	i F	13	51	24					
97	14	I	e F	9	18	36					Pacific, Philip- pine Deep.
98	14	III <sub>r</sub>	iP iL? F	16	22	48					Pacific.
99	14	Iv	eP F	18	28	12				290	

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

## SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod.	Amplitude		Dis-tance.
				h.	m.	s.		A <sub>N</sub>	A <sub>E</sub>	
							s.	μ	μ	Km.
100	15	I	eP F	11	42					Aftershock of the No. 98.
101	15	I	eP F	12	08	12				Aftershock of the No. 98.
102	15	II <sub>r</sub>	eP L F	12	38	44				Aftershock of the No. 98.
103	15	I <sub>r</sub>	eP F	13	48	23				Aftershock of the No. 98.
104	15	I <sub>r</sub>	eP F	14	52	07				Aftershock of the No. 98.
105	15	I <sub>r</sub>	eP F	16	01	14				Aftershock of the No. 98.
106	15	I <sub>v</sub>	eP F	17	56	35				410
107	15	I <sub>r</sub>	eP F	20	46	30				Aftershock of the No. 98.
108	15	II <sub>r</sub>	eP L F	21	02	48				1450 Aftershock of the No. 98.
109	16	I <sub>r</sub>	eP F	4	54	00				Aftershock of the No. 98.
110	16	I <sub>r</sub>	eP F	10	58	00				Aftershock of the No. 98.
111	16	I <sub>r</sub>	eP F	14	24	46				Aftershock of the No. 98.
112	16	I <sub>v</sub>	eP F	19	01	06				120
113	16	I <sub>r</sub>	eP F	19	17	26				Aftershock of the No. 98.
114	17	I <sub>r</sub>	eP F	0	45	08				Aftershock of the No. 98.
115	17	I <sub>r</sub>	eP F	16	20	01				Aftershock of the No. 98.
116	20	I <sub>r</sub>	eP F	3	47	22				Aftershock of the No. 98.
117	20	I	e F	14	38	00				
118	21	I <sub>r</sub>	e F	16	18	38				
119	21	I <sub>u</sub>	e F	20	23					Mexico.
120	22	I <sub>v</sub>	eP F	14	47	11				140

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued,

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod.	Amplitude		Dis-tance.	Remarks.
				h.	m.	s.		$\mu_N$	$\mu_E$		
121	23	Iv	eP L F	10	37	00 41 50				370	
122	23	Ir	eP L F	23	57	51 48				1090	
	24			0	29						
123	24	Iv	eP L F	3	09	56 13 18				150	
124	24	IIId	iP iL MN MF F	7	42	31 50 55 53 00	3 3	272	110	170	Central Luzon. Felt at Baguio and Echa-gue.
125	24	Iv	eP F	12	22	02 26				180	
126	25	I	M F	14	14	00 31					
127	25	Ir	eP L F	18	10	28 29 19				2190	Japan.
128	26	Ir	eP L F	20	14	51 48 32				1350	Southern part of Mindanao.
129	30	Iv	eP F	4	11	23 19				250	
130	30	Iv	eP F	4	21	05 38				500	

M A Y , 1 9 2 4 .

131	1	Iu	e F	20	13	52 00					Central America?
132	2	Iv	eP F	22	39	16 43				125	
133	3	I	eP L? F	11	23	18 45 31					
134	3	IIIId	iP iL	15	15	02 20				160	Western Luzon. Maxi- and end lost by the force of the shock.
135	4	Ir	eP L F	3	13	28 50 27				1080	
136	4	IIr	e L? F	17	02	04 27 34					Pacific Ocean?



MANILA. P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.---Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod.	Amplitude		Dis-tance.	Remarks.
				h.	m.	s.		A <sub>N</sub>	A <sub>E</sub>		
				h.	m.	s.	s.	μ	μ	Km.	
137	5	I	eP L F	16	04	08 08 55 32					
138	6	III <sub>d</sub>	iP	16	10	06					Probably, Pacific Ocean. All the phases lost by the force of the shock.
139	6	I <sub>r</sub>	eP F	16	34	15 44					Aftershock of the No. 138. From Vicentini's seismograph.
140	6	I <sub>r</sub>	eP F	17	03	07	Overtaken by following quake,				Aftershock of the No. 138. From Vicentini's seismograph.
141	6	I <sub>r</sub>	eP F	17	06	54 17					Aftershock of the No. 138. From Vicentini's seismograph.
142	6	II <sub>v</sub>	eP L MN ME F	23	11	02 12 29 12 43 13 25 31	8 6	89	58	800	
143	7	I <sub>v</sub>	eP F	0	25	09 37				280	
144	7	II <sub>v</sub>	eP L F	12	22	14 22 42 41				250	
145	7	I <sub>v</sub>	eP F	19	39	23 52				270	
146	8	I <sub>v</sub>	eP F	22	07	59 22				270	
147	8	I <sub>v</sub>	eP F	22	25	29 31				280	
148	8	I <sub>v</sub>	eP F	22	46	37 50				270	
149	8	I <sub>v</sub>	eP F	23	05	36 11				280	
150	8	II <sub>v</sub>	eP L MN ME F	23	12	33 13 05 13 07 13 09 21	3 3	88	79	290	Western Luzon.
151	8	I <sub>v</sub>	eP F	23	23	32 30				270	Western Luzon.
152	9	I <sub>v</sub>	eP F	4	59	10 5 02				250	
153	10	I <sub>r</sub>	eP F	3	01	39 4 03				1400	Off E coast of Min- Sanao.
154	10	I <sub>v</sub>	eP L F	4	11	26 12 41 26				680	
155	10	I <sub>v</sub>	eP L F	4	33	46 35 14 50				810	

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod	Amplitude		Dis-tance	Remarks
				h.	m.	s.		A <sub>N</sub>	A <sub>E</sub>		
156	10	Iv	eP F	8	54	11			580		
157	10	Iv	eP F	9	11	10			600		
158	10	IIv	eP L MN ME F	9	19	07	9	165	860		
					20	40	7	140			
					20	56					
					21	45					
					54						
159	10	Iv	eP F	15	42	02			640		
160	10	Iv	eP L F	17	21	39			675		
					22	53					
					36						
161	11	I	e F	16	00					Near Japan.	
					28						
162	12	Ir	e L F	2	26	51			1140		
					29	23					
					57						
163	12	Iv	eP F	20	04	28			550	Visayan earthquake.	
164	12	Iv	eP L F	23	12	40			440		
					13	29					
					26						
165	13	Iv	eP F	0	40	32			330		
					47						
166	13	Iv	eP F	4	07	47			315		
					15						
167	13	Iv	eP F	21	53	28			580	Visayan earthquake.	
					22	02					
168	15	Ir	eP L F	4	26	26			1140		
					29	00					
					5	17					
169	15	Iv	eP F	6	10	56			705		
					17						
170	15	Iv	eP F	10	14	51			270		
					25						
171	16	IIr	eP L MN ME	12	52	26	7	150	1140	Pacific. End over-taken by following earthquake.	
					55	00	7	103			
					56	32					
					56	42					
172	16	IIr	eP L F	13	18	14			1260	Pacific.	
					21	00					
					14	22					
173	17	Iv	eP F	0	12	00			540	Visayan earthquake,	
					44						
174	17	II <sub>z</sub>	iP L ME MN F	5	20	50	8		1650	Pacific?	
					24	33	9	83			
					26	11		64			
					26	14					
					7	13					

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

## SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod.	Amplitude		Dis-tance.	Remarks.
				h.	m.	s.		$\mu$ <sub>N</sub>	$\mu$ <sub>E</sub>		
175	17	Iv	eP F	11	41	14				500	
176	21	Iv	eP F	10	02	26				200	
177	22	Iv	eP F	14	48	00				125	
178	22	Iv	eP F	15	57	52				90	
179	22	I	e F	17	27						
180	22	I	e F	18	16						Near Japan.
181	23	Ir	eP L F	14	20	48				1320	
182	23	Ir	eP L ME MN F	21	03	39				1180	Off SE coast of Min- danao.
					06	15	10		96		
					07	18	10	102			
					07	41					
					59						
183	24	Ir	eP L F	2	22	30				2950	
					29	34					
					3	55					
184	24	IIIv	iP iL ME MN F	5	26	12				360	China Sea.
					26	52	6		331		
					27	25					
					27	44		375			
					6	09					
185	24	Iv	eP L F	23	50	06				450	
	25				50	56					
					0	04					
186	25	Iv	eP L F	7	20	30				970	Off E coast of Min- danao.
					22	15					
					8	08					
187	25	I	e F	13	56	51					Near Formosa.
					14	38					
188	26	I	e F	13	05	00					
					28						
189	26	Iv	eP L F	21	23	30				560	
					24	46					
					40						
190	27	I	eP F	2	31	23					
					3	51					
191	27	Iv	eP F	6	09	10				320	
					19						
192	27	Iv	eP F	7	49	57				280	
					55						
193	27	I	eP F	9	18	58					
					39						
194	27	Iv	eP F	16	36	17				220	
					49						

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod	Amplitude		Dis-tance	Remarks
				h.	m.	s.		$\gamma_N$	$\gamma_E$		
195	27	Iv	eP F	19	40	35 47			130		
196	28	Iv	eP L F	0	37	48 39 58			680		
197	28	Iv	eP F	5	10	00 16			120		
198	28	Iv	eP F	9	24	55 32			435		
199	28	II	eP F	9	58	51 11 06				NE Asia (Amour)?	
200	28	Iv	eP F	14	12	58 27			200		
201	28	Iv	eP F	15	48	12 55			140		
202	31	IIv	eP L F	0	08	02 08 35 30			300		
203	31	Ir	e F	12	10	00 13 21				Near Japan.	
204	31	Iv	eP F	15	31	25 42			290		

J U N E , 1 9 2 4 .

	$T_0$	V	$\epsilon$	$\frac{r}{T_0^2}$
$A_N$	3.01	180	1.390	0.168
$A_E$	2.86	160	1.865	0.267

205	1	I	eP F	1	43	37 2 17				
206	1	Iv	eP F	19	02	19 10			220	
207	1	Iv	eP F	23	08	34 16			260	
208	1	Iv	eP F	23	38	09 52			225	
209	2	I	e F	19	45	 20 18				
210	4	Iv	eP F	6	54	07 58			110	
211	5	Iv	eP L F	1	03	45 04 15			240	
212	5	I	e F	3	17	 35				

200	06	IIu	iP F	1	49	32 5 07				Pacific, near New Zealand.
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Year 1924, No. 13.

June 5th to 30th, 1924.

## M A N I L A . P . I .

## SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod.	Amplitude		Dis-tance.	Remarks.
				h.	m.	s.		$\gamma_N$	$\gamma_E$		
213	5	Iv	eP L	12	57	02 57 28			230	End overtaken by following earthqua.	
214	5	IIv	eP L F	13	01	00 01 27 27			240		
215	6	Iv	eP F	16	44	54 53			240		
216	9	IIv	eP iL F	19	44	53 45 34 20 20			385	Visayan earthquake.	
217	10	Iv	eP F	11	51	57 12 00			190		
218	10	Iv	eP F	12	43	04 49			180		
219	10	Iv	eP F	13	51	54 58			180		
220	15	Iv	eP F	5	24	18 38			370		
221	15	Iv	eP F	5	50	55 6 00			350		
222	15	Ir	eP L F	13	16	51 21 12 14 22			1920	Pacific.	
223	15	Ir	eP L F	18	51	54 54 15 19 36			1080		
224	17	I	M F	16	45	 17 09				Distant earthquake.	
225	22	Ir	eP L F	13	29	40 34 25 14 11			2060	Near Japan.	
226	22	Ir	eP L F	16	42	57 47 33 17 17			2130		
227	23	Iv	eP L F	4	48	04 49 24 5 37			730	Mindanao earthqua- ke. From Omori's seismograph. The Wiechert's seismo- graph is out of or- der.	
228	25	Iv	eP L F	21	40	28 41 03 51			315		
229	26	IIu	iP F	1	49	32 5 07				Pacific, near New Zealand.	
230	30	IIr	eP F	15	51	29 17 32				Pacific, near Ku <sup>si</sup> - les Islands.	

## M A N I L A . P . I .

## SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod.	Amplitude		Dis-tance.	Remarks.
				h.	m.	s.		$\mu$ <sub>N</sub>	$\mu$ <sub>E</sub>		
243	14	Iv	eP iL MN ME F	2	58	15 00 10 16 11				410	Northeastern part of Luzon.
							4 5	72	45		
244	14	I	e F	10 11	36 26						
245	15	I	e F	17	22 38						
246	17	I <sub>r</sub>	eP iL F	1	21	32 02 37				1560	
247	18	I	e F	14	09	08 25					Off E coast of Mindanao.
248	20	I	e F	9	28	51					
249	21	Iv	eP L F	3	26	51 38 37				430	Panay earthquake.
250	21	Iv	eP L F	6	23	48 39 31				460	Aftershock of the No. 249.
251	22	I <sub>u</sub>	e F	4	26	5 05					Quito, Ecuador.
252	22	I	e F	10	20	36					
253	22	I	e F	11	01	12 22					
254	22	Iv	eP F	13	28	19 35				190	
255	22	II <sub>r</sub>	eP L F	14	26	09 09 56				1050	Formosa.
256	24	II <sub>u</sub>	eP eS iL F	5	06	45 00 36 42				8150	Pacific, near New Zealand.
257	24	Iv	eP L F	17	34	38 20 47				380	Off SE coast of Luzon.
258	25	I	e F	8	09	9 13					
259	26	II <sub>r</sub>	eP L MN ME F	3	02	46 06 15 23 17	6 7	44	41	1500	
260	29	II	i F	5	22	47 09					

Year 1924, No. 16.

July 29th to August 17th, 1924.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.---Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod.	Amplitude		Dis-tance.	Remarks.
				H.	m.	s.		A <sub>N</sub>	A <sub>E</sub>		
261	29	I	e F	15	32	10					
262	30	Iv	eP F	2	19	34				130	
263	30	I	e? F	13	50						
				14	08						

AUGUST, 1924.

264	1	Iv	eP F	8	01	33				130	
265	2	Iv	eP L F	22	29	22				190	
266	5	Iv	eP L F	5	29	39				400	Pacific, near SE coast of Luzon.
267	6	Iv	eP L F	14	28	45				480	
268	7	Iv	eP iL MN ME F	8	45	21				590	
				46	26		6	54			
				46	55		6		46		
				47	48						
				58							
269	8	Iv	eP L F	17	16	52				435	Sulu Sea.
				17	40						
				24							
270	10	Ir	e L? F	6	23	34					
				33	14						
				7	19						
271	12	Iv	eP L F	14	56	01				450	Western part of Sa-mar.
				15	02	51					
272	12	Iv	eP F	18	27	51				360	
				36							
273	14	I	e F	0	13						
				35							
274	14	IIIr	eP iL MN ME F	18	08	44				3740	Japan.
				18	04		10	60			
				20	10		10		79		
				20	12						
				20	07						
275	14	Ir	e L? F	23	33	34				3120?	Japan.
	15			41	00						
				0	29						
276	16	Iv	eP F	23	47	18				225	
				51							
277	17	I	e	1	52	48					Japan. End overtaken by following quake.

Year 1924, No. 17.

August 17th to 31st, 1924.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod.	Amplitude		Dis-tance.	Remarks.
				h.	m.	s.		AN	AE		
278	17	Ir	e L F	2	17					3090	Japan.
					24	30					
				3	25						
279	19	IIv	iP iL ME MN F	11	20	27				225	
					20	52					
					20	55	3				
					20	58	3	251	230		
					39						
280	22	IIv	eP L F	6	36	22				270	Camarines Sur.
					36	52					
					42						
281	23	Iv	eP F	7	55	28				320	
				8	02						
282	25	I	e F	2	37						
				3	52						
283	25	Iv	eP F	4	09	09				435	
					22						
284	25	IIr	eP L F	14	36	58				2850	Near Japan.
					43	45					
				16	10						
285	25	Ir	eP L F	23	16	04				3060	
					23	28					
				0	08						
286	26	Iv	eP F	19	50	58				180	
					58						
287	28	IIv	eP L F	8	00	47				900	Southeastern coast of Mindanao.
					02	40					
				9	02						
288	28	Iv	eP L F	21	24	29				835	Zamboanga.
					26	06					
					53						
289	28	Ir	eP F	23	55	18					Near Japan.
	29			0	52						
290	29	Iv	eP L F	11	58	06				890	
					59	45					
				12	10						
291	30	IIIv	iP iL F	3	07	00				790	Pacific. Maxima lost by the force of the shock.
					08	26					
				6	02						
292	30	Ir	eP eL F	7	52	45				1030	
					55	00					
				8	07						
293	30	Iv	eP L F	10	37	15				990	
					39	01					
					49						



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.)

	$T_0$	V		$\frac{r}{T_0^2}$
$A_N$	3.01	180	1.390	0.168
$A_E$	2.86	160	1.865	0.267

No.	Date	Char- acter	Phase	Greenwich Per- mean time. iod.				Amplitude		Dis- tance.	Remarks.
				h.	m.	s.	s.	$A_N$	$A_E$		
								$\mu$	$\mu$	Km.	
294	1	$I_V$	eP L F	22	23	03				290	
295	2	$I_V$	eP L F	9	46	42				160	
296	2	$II_r$	eP L MN ME	21	58	46		193	130	1320	Pacific. End overta- ken by following earthquake,
297	2	$I_r$	eP L F	23	04	51				1080	
298	3	I	e F	8	22						
299	3	$I_V$	eP F	10	33	56				80	
300	3	$I_r$	e F	12	39	00				1150	Pacific?
301	3	I	e F	16	13						
302	3	$I_r$	eP L F	21	16	00				1200	Pacific?
303	4	I	eP F	9	57	21					
304	5	I	eP F	11	04	22					
305	5	$II_r$	eP iL MN ME F	14	49	58		60	52	1320	Pacific.
306	6	$I_V$	eP L F	19	45	00				950	

Year 1924, No. 19.

September 7th to 12th, 1924.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued,

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod	Amplitude		Dis-tance	Remarks
				h.	m.	s.		A <sub>N</sub>	A <sub>E</sub>		
307	7	II <sub>r</sub>	eP iL MN ME F	1	47	57 34 26 19 50		191	131	1200	Pacific.
308	7	I <sub>r</sub>	eP L F	9	23	06 53 39				1260	Pacific?
309	7	I <sub>r</sub>	eP L F	14	13	47 39 02				1320	Pacific?
310	7	I	eP F	17	16	24 32					
311	8	I <sub>v</sub>	eP F	6	03	39 13				660	
312	8	I <sub>v</sub>	eP L MN ME F	15	38	23 50 51 51 44	2 2	64	34	240	
313	9	I <sub>v</sub>	eP F	12	39	46 48					
314	9	I <sub>r</sub>	eP L F	14	44	18 46 14				1140	Pacific?
315	9	I <sub>v</sub>	e F	17	30	32 45					
316	10	II <sub>r</sub>	eP iL MN ME F	4	45	30 15 18 32 48	6 6	75	34	1650	
317	10	I <sub>r</sub>	eP L F	5	59	19 15 27				1710	
318	10	I <sub>v</sub>	eP F	6	38	11 41				90	
319	10	I <sub>v</sub>	eP F	7	46	32 49				60	
320	11	III <sub>r</sub>	iP iL ME MN F	3	28	20 33 19 38 03	8 8	264	200	1860	Pacific.

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

## SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod.	Amplitude		Dis-tance.	Remarks.
				h.	m.	s.		$A_N$	$A_E$		
				h.	m.	s.	s.	$\mu$	$\mu$	Km.	
321	13	I <sub>u</sub>	eP L? F	14	45	12 18 28					
322	13	I <sub>r</sub>	eP L F	17	39	30 00 55				1140	
323	13	II <sub>r</sub>	iP iL ME MN	19	14	46 28 31 00	7 5	118	109	1260	End overtaken by following earthquake.
324	13	I <sub>v</sub>	eP L F	20	48	13 14 03				950	
325	13	I <sub>v</sub>	eP L F	21	05	23 20 18				520	Sulu Sea.
326	14	I	eP F	8	13	54 42					
327	14	I <sub>v</sub>	eP F	10	05	05 17				550	
328	14	I <sub>u</sub>	e L	13	23	42 30				5400	End overtaken by following earthquake.
329	14	III <sub>r</sub>	iP iL MN ME F	14	10	02 25 47 39 40	7 9	489	360	1080	
330	16	I <sub>v</sub>	eP F	0	18	22 23				110	
331	16	I <sub>u</sub>	e L? F	2	45	00 09 47				7530?	
332	16	I <sub>v</sub>	eP L F	4	19	11 15 38				580	Sulu Sea.
333	17	I <sub>v</sub>	eP L F	1	02	51 13 19				750	
334	17	I <sub>r</sub>	eP L F	10	29	37 13 46				1180	
335	18	I <sub>r</sub>	eP L	1	15	12 43				3090	Japan. End overtaken by following earthquake.
336	18	I <sub>r</sub>	eP L F	1	45	23 51 06				1520	

Year 1924, No. 21.

September 19th to 30th, 1924

M A N I L A, P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod	Amplitude		Dis-tance	Remarks
				h.	m.	s.		A <sub>N</sub>	A <sub>E</sub>		
				h.	m.	s.	s.	y	u	Km.	
337	19	Iv	eP F	18	57	52				90	
338	19	Ir	eP L F	23	19	51				1080	Pacific.
					22	16					
					51						
339	20	IIIId	iP iL	6	17	47				160	China Sea, near southwestern coast of Luzon. Maxima and lost by the force of the shock.
					18	05					
340	20	I	eP F	16	54	46					
				17	08						
341	21	I	e F	0	46						
					58						
342	22	IIv	iP iL MN ME F	2	02	42	5	81	50	710	Philippine Deep.
					04	00	6				
					04	09					
					04	51					
					43						
343	22	I	e F	7	45	48					
				8	05						
344	25	Iv	eP L F	20	49	51				410	Northwestern part of Samar.
					50	36					
				21	04						
345	26	Iv	eP F	12	35	27				125	
					39						
346	26	Iv	eP L F	21	43	48				705	Batanes Islands.
					45	05					
					54						
347	27	Ir	eP L F	4	02	26				1920	
					06	50					
					44						
348	27	Iv	eP L F	6	15	05				290	
					15	37					
					25						
349	27	Iv	eP L F	18	03	41				810	Agusan Valley.
					05	09					
					15						
350	29	Iv	eP L F	20	16	13				250	
					16	41					
					20						
351	30	I	e F	7	13						
					21						
352	30	IIv	eP iL ME MN F	9	46	44	3		41	400	Northwestern part of Luzon.
					47	28	4	91			
					47	44					
					47	55					
				10	00						

Year 1924, No. 22.

October 1st to 19th, 1924.

MANILA, 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.)

	$T_0$	V	$\frac{r}{T_0^2}$
A <sub>N</sub>	3.01	180	1.390
A <sub>E</sub>	2.86	160	0.267

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod	Amplitude		Dis-tance	Remarks
				h.	m.	s.		A <sub>N</sub>	A <sub>E</sub>		
							y	u	Kn.		
353	6	I	e? F	6	30	42					
354	8	I <sub>r</sub>	e? L? F	20	40	48					
				21	28						
355	11	I <sub>v</sub>	eP L F	4	11	46				250	
					12	14					
					18						
356	11	I <sub>r</sub>	eP L? F	14	41	29					
					43	41					
					56						
357	12	I <sub>v</sub>	eP L F	14	18	18				250	Western part of Lu- zon.
					18	46					
					24						
358	12	I	e F	19	54	26					
					20	31					
359	12	I	L F	20	51						
					21	24					
360	13	I <sub>v</sub>	eP L ME MN F	16	26	27				900	
					28	18					
					28	56	4		19		
					29	06	4	26			
					17	08					
361	14	I	e F	5	22						
					51						
362	14	I	M F	6	19						
					47						
363	16	I <sub>v</sub>	eP L F	10	39	02				430	
					39	49					
					56						
364	17	I	e F	5	19	30					
					28						
365	17	I	e F	16	18	00					Near Guam (Mariana Islands).
					31						
366	18	I <sub>v</sub>	eP L F	4	52	58				225	
					53	23					
					56						
367	18	I <sub>r</sub>	eP L F	19	39	58					Pacific, near Ja- pan.
					43	12					
					20	14					

Year 1924, No. 23.

October 20th to 31st, 1924.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod.	Amplitude		Dis-tance.	Remarks.
				h.	m.	s.		A <sub>N</sub>	A <sub>E</sub>		
				h.	m.	s.	s.	μ	μ	Km.	
368	20	I <sub>r</sub>	eP L? F	20	02	06 09 20 21 18					
369	21	II <sub>v</sub>	iP L Mn ME F	12	12	00 41 49 13 17 26	4 4	83	55	370	Northwestern part of Luzon.
370	23	I <sub>r</sub>	eP L F	21	48	46 50 49 22 02					
371	26	I <sub>v</sub>	iP iL F	18	23	10 24 50 19 00				920	
372	26	I <sub>v</sub>	eP L F	20	40	58 41 25 45				240	
373	27	II <sub>r</sub>	iP iL MN ME	19	59	19 20 01 54 02 27 02 32	6 6	233	441	1200	Celebes Sea? End overtaken by following quake.
374	27	I <sub>r</sub>	eP iL F	20	51	51 54 05 21 49				1020	Celebes Sea?
375	31	I <sub>r</sub>	eP iL ME MN F	3	03	47 07 46 08 22 08 26 32	6 5	55	36		
376	31	I <sub>v</sub>	eP F	20	09	48 12				110	

Year 1924, No. 24.

November 1st to 13th, 1924.

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.)

	$T_0$	V	$\frac{r}{T_0^2}$
AN	3.01	180	1.390
AE	2.86	160	1.865

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod	Amplitude		Dis-tance	Remarks
				h.	m.	s.		$A_N$	$A_E$		
377	1	Iv	eP F	11	07	13 12	s.	$\mu$	$\mu$	Kn. 160	
378	1	Iv	eP F	15	51	10 16 04				330	
379	2	Iv	eP L F	11	28	00 29 18 57				710	S Formosa.
380	2	Iv	eP F	19	59	33 20 04				300	
381	2	Iv	eP F	21	21	56 32				390	
382	4	Iv	eP L F	3	14	28 15 59 29				840	
383	5	Iv	eP L F	8	42	54 44 25 9 04				840	
384	9	Iv	eP L F	6	36	11 37 46 49				875	Pacific.
385	10	Iv	eP F	6	14	26 19				225	
386	12	I	e F	6	29	25 51					
387	13	Iv	eP L F	6	52	38 53 06 59				250	
388	13	I	e F	8	42	 9 53					
389	18	I <sub>r</sub>	eP L F	11	44	30 47 53 12 01				1500	
390	18	I <sub>r</sub>	eP L F	12	10	28 14 22 24				1730	

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod	Amplitude		Dis-tance	Remarks
				h.	m.	s.		A <sub>N</sub>	A <sub>E</sub>		
391	19	I <sub>v</sub>	eP L F	1	08	25 09 57 17		γ	γ	850	Illana Bay.
392	20	I <sub>v</sub>	e F	19	06	53 12				440	
393	20	I	e F	20	40	55 51					Distant earthquake.
394	23	I <sub>v</sub>	eP F	15	29	41 34				230	
395	26	I <sub>v</sub>	eP L F	9	35	08 35 39 42				280	From Vicentini's seismograph.
396	28	I <sub>v</sub>	eP F	13	34	43 37				220	

DECEMBER, 1924.

397	1	I <sub>v</sub>	eP F	6	07	02 21				830	Agusan Valley.
398	2	I <sub>v</sub>	eP F	3	13	40 16				110	From Vicentini's seismograph.
399	2	I <sub>v</sub>	eP L F	22	24	14 24 52 34				340	
400	5	II <sub>r</sub>	iP iL MN ME	9	39	46 42 27 42 37 42 37	5 6	231	125	1230	Pacific, E Minda-nao. End overtaken by following earthquake.
401	5	I <sub>v</sub>	eP L F	10	02	04 02 39 16				315	
402	6	I <sub>r</sub>	eP iL MN ME F	4	46	50 51 22 52 11 52 36 5 58	6 5	31	21	1980	
403	9	I <sub>r</sub>	e L? F	12	01	06 42				2160?	
404	9	I	e F	16	31	16 53					
405	11	I	e F	17	44	18 23					Distant earthquake.
406	12	II <sub>v</sub>	iP iL MN ME F	11	05	05 05 22 05 38 05 42 14	3 3	67	60	150	



Year 1924, No. 26.

December 12th to 31st, 1924.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod	Amplitude		Dis-tance	Remarks
				h.	m.	s.		A <sub>N</sub>	A <sub>E</sub>		
407	12	I <sub>Ir</sub>	eP iL MN ME F	23	52	25				1460	
	13				55	35	7	94			
					56	02					
					56	07	6		140		
				0	35						
408	15	I <sub>r</sub>	eP iL F	20	59	19				2880	Pacific.
				21	06	11					
					34						
409	17	I <sub>v</sub>	eP iL F	8	39	29				190	
					39	50					
					42						
410	17	I <sub>r</sub>	eP iL F	17	14	41				1060	SE Mindanao.
					16	35					
					26						
411	24	I <sub>III<sub>v</sub></sub>	iP iL F	17	02	45				340	NW Luzon. From Vi-centini's seis-mograph.
					03	23					
					20						
412	25	I <sub>v</sub>	eP iL F	15	03	44				380	
					04	26					
					14						
413	26	I <sub>v</sub>	eP F	8	29	00				150	
					31						
414	26	I <sub>v</sub>	eP F	10	33	49				180	
					38						
415	26	I <sub>r</sub>	eP iL F	23	42	16				3090	Pacific.
	27				50	50					
					0	22					
416	27	I <sub>II<sub>r</sub></sub>	iP iS iL ME1 MN1 MN2 ME2 MN3 ME3 F	11	28	57				2200	Pacific.
					32	35					
					54	00					
					34	32	6		109		
					34	33	6	98			
					35	24	5	119			
					35	36	7		134		
					36	16	6	120			
					36	34	7		139		
				12	36						
417	28	I <sub>v</sub>	eP L F	19	37	28				400	Masbate Island.
					38	12					
					41						
418	28	I <sub>I<sub>u</sub></sub>	iP iS iL MN ME F	23	02	08				5250	Pacific.
					09	22					
					17	28					
					21	32	18	16			
					23	00	16				
	29			1	02				18		
419	30	I	e F	14	43						
				15	09						