

Ref 2692.

Year 1928, No. 1.

January 1st to 7th, 1928.

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	$\epsilon$	$\frac{r}{T_0^2}$
$A_N$	6.58	198	2.288	0.039
$A_E$	7.77	198	1.487	0.049

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.	
1	1	$I_v$	iPE iLE F	9	35	51 36 43				410	
2	1	$I_r$	ePE LE? F	18	51	00 57 11					Very small Move-ments.
3	4	$I_r$	ePN iSN iLN MN1 MN2 F	21	31	54 44 35 51 47 59	12 10	12 16			
4	5	$I_r$	ePNE iLE iLN F	13	59	20 30 39 18				1150	Pacific.
5	6	$I_v$	ePE ePN iLN iLE MN ME F	4	10	14 17 11 14 18 02 29	6 6	19 29		930	Southeastern part of Mindanao.
6	6	$II_u$	ePE ePN iPR <sup>1</sup> N iPR <sup>1</sup> E iSNE eLE eLN ME MN F	19	44	32 35 33 43 08 41 00 58 53 20	19 19	4 7			
7	7	$I_v$	ePE iLE F	1	43	41 27 56				420	SE Luzon.
8	7	$I_v$	ePN F	16	43	14 46				130	



Year 1928, No. 2.

January 8th to 31st, 1928.

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>		
								μ	μ	Km.	
9	8	I <sub>v</sub>	ePNE iLNE F	2	05	34 32 30				530	SE Luzon.
10	8	I <sub>v</sub>	ePNE eLNE F	3	09	33 27 18				490	SE Luzon.
11	18	I <sub>v</sub>	ePNE iLN F	7	49	16 54 01				340	
12	19	I <sub>v</sub>	ePE F	11	03	05 05				80	
13	20	I	e F	6	51	59					Trace only.
14	20	I <sub>v</sub>	ePNE F	10	50	40 54				220	
15	20	II <sub>v</sub>	ePNE iLNE MN ME F	18	36	08 30 54 15 45	3 4	97	71	200	China Sea, near western coast of Luzon.
16	23	I <sub>v</sub>	ePNE F	20	36	01 38				290	
17	23	I <sub>v</sub>	ePNE iLNE F	20	49	45 19 56				310	
18	26	I <sub>v</sub>	ePNE F	4	50	18 53				170	
19	26	I <sub>r</sub>	ePNE eLE F	18	56	02 40 54					
20	26	I <sub>r</sub>	ePNE eLN eLE F	21	58	00 19 14 58					
21	27	I <sub>r</sub>	ePNE iLE iLN F	22	25	11 49 03 08					
22	27 28	I	ePNE F	23	48	46 06					Trace only.
23	30	I <sub>v</sub>	ePNE iLN	3	26	52 02				640	End overtaken by following quake.
24	30	I	ME F	3	37	22 52					



Year 1928, No. 3.

February 1st to 7th, 1928.

M A N I L A , P . I .

SIEMOLOGICAL 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	$\epsilon$	$\frac{r}{T_0^2}$
$A_N$	6.58	198	2.288	0.039
$A_E$	7.77	198	1.487	0.049

No.	Date	Char-acter	Phase	Greenwich mean time		Per-iod.	Amplitude		Dis-tance.	Remarks.
				h. m. s.	s.		$A_N$	$A_E$		
25	3	$I_u$	ePNE eLE eLN ME F	13 57 30 14 19 19 14 20 06 14 21 52 15 02	14		3		Very small move-ments. F from Omori's seismo-graph.	
26	4	$I_r$	ePNE iLN iLE MN ME F	6 14 52 6 22 35 6 22 50 6 25 17 6 25 32 7 25	11 10	15	10			
27	6	$III_r$	ePNE iSE iSN iSRLE iSRLN iLE iLN MN ME F	3 54 34 3 58 17 3 58 22 3 58 32 3 58 37 3 59 39 3 59 53 4 01 26 4 01 34 5 43	7 8	137	145	2270	Felt in the east-ern and south-western part of Mindanao.	
28	6	$I_r$	ePNE iLNE F	22 50 15 22 51 30 23 12				680	Bashi Channel.	
29	7	$II_r$	ePNE iLN iLE ME MN F	0 08 47 0 16 25 0 16 53 0 17 32 0 19 14 1 28	13 13	8	20	3240	Near Timor Island.	
30	7	$I_v$	iPNE iLE F	8 36 06 8 37 44 8 48				900	Celebes Sea.	



Year 1928, No. 4.

February 7th to 22nd, 1928.

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	Km.		
31	7	I <sub>v</sub>	ePNE	19	56	12				675	Near Oriental Negr gros Island.	
			iLN?	19	57	26						
			F	20	12							
32	11	I <sub>v</sub>	ePNE	7	50	37				150	China Sea, near western coast of Luzon.	
			iLNE	7	50	54						
			F	7	57							
33	11	I <sub>v</sub>	ePNE	11	11	48					Trace only.	
			F	11	19							
34	12	I <sub>v</sub>	ePNE	6	37	11				150		
			iLNE	6	37	28						
			F	6	43							
35	13	I	ePNE	4	59	31					Very small move- ments.	
			F	5	07							
36	13	II <sub>r</sub>	iPNE	5	38	28				1995	Pacific, W of Guam Island.	
			iSN	5	41	35						
			iSE	5	41	53						
			iLE	5	43	20						
			iLN	5	43	22						
			F	6	32							
37	13	I <sub>r</sub>	ePNE	16	40	21				1760?	Small movements.	
			eLNE?	16	44	18						
			F	17	02							
38	16	I	e	21	50					Trace only.		
			F	22	05							
39	17	I	eE	12	45					Small movements. Microseisms sin- ce 8th to 17th.		
			F	13	11							
40	21	I <sub>v</sub>	ePNE	10	53	41				150		
			F	10	56							
41	21	I	eNE	20	00	09					It masked by mi- croseisms.	
			F	20	06							
42	21	I <sub>u</sub>	eNE	20	09		13	5	7		Initial phases very indefinite and disturbed by microseisms. Mo- derate microseisms since 18th to 21st.	
			iLE	20	28							00
			eLN	20	29							46
			ME	20	31							40
			MN	20	32							32
			F	21	04							14



Year 1928, No. 5.

February 23rd to 29th, 1928.

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.		$\mu_N$	$\mu_E$		
43	23	II <sub>v</sub>	ePNE	9	22	14	3	53	46	875	Agusan Valley.
			iLE	9	23	48					
			iLN	9	23	50					
			MN	9	24	10					
			ME	9	24	29					
			F	9	44						
44	23	I <sub>r</sub>	iPNE	19	07	00	17			1210	Celebes Sea.
			iLN	19	09	38					
			iLE	19	09	44					
			F	19	29						
45	24	I	eLNE	14	48	17		3		Trace only.	
			ME	14	52						07
			F	15	06						
46	25	I	ePNE	10	58	32					
			iLE	11	02	35					
			iLN	11	02	45					
			F	11	22						
47	25	I	ePNE	19	37	09				50	
			F	19	39						
48	26	I <sub>u</sub>	eNE	1	40	00					Microseisms on the 22nd, 23rd, 24th, 25th and 26th.
			eLNE?	1	57	00					
			F	2	33						
49	29	I	eNE	22	09					Trace only.	
			F	22	58						



Year 1928, No. 6.

March 1st to 11th, 1928.

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	$\epsilon$	$\frac{r}{T_0^2}$
$A_N$	6.58	198	2.288	0.039
$A_E$	7.77	198	1.487	0.049

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod.	Amplitude		Dis-tance.	Remarks.
				h.	m.	s.		$A_N$	$A_E$		
								$\mu$	$\mu$	Km.	
50	2	$I_V$	ipNE F	10 00 22 10 06						570	
51	2	$I_V$	epNE F	18 35 00 18 43						550	
52	7	$I_r$	ipNE iSN iSE iLN iLE MN ME F	22 49 40 22 55 00 22 55 37 23 00 02 23 01 00 23 01 51 23 02 33 0 09	11 12	10		13			
53	9	$I_r$	iPE iPN iSE iSN iLN iLE ME MN F	10 56 35 10 56 38 11 00 08 11 00 11 11 01 10 11 01 25 11 03 28 11 04 32 12 13	6 8	10		14	2150	N Moluccas.	
54	9	$II_r$	ipNE iPR <sup>1</sup> N iPR <sup>1</sup> E iPR <sup>2</sup> E PSE PSN iSE iSN iSR <sup>1</sup> N iSR <sup>1</sup> E iSR <sup>2</sup> N iSR <sup>2</sup> E iLE iLN MN <sup>1</sup> MN <sup>2</sup> F	18 12 35 18 14 11 18 14 16 18 14 56 18 17 51 18 18 08 18 18 48 18 18 53 18 22 14 18 22 16 18 23 10 18 23 42 18 25 25 18 26 00 18 31 12 18 34 28 20 35	15 13	46 76			4910	Indian Ocean?	



Year 1928, No. 7.

March 12th to 17th, 1928.

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	Km.	
55	12	I <sub>v</sub>	ePNE iLNE F	9	52	17 33 57				140	
56	12	II <sub>v</sub>	ePNE iLNE ME F	16	57	25 30 28 56	4		28	590	W Leyte.
57	12	I <sub>v</sub>	ePNE	17	11	22					Aftershock of the preceding quake.
58	12	I <sub>v</sub>	ePNE iLNE F	20	03	49 50 34				550	Aftershock of the No. 56.
59	13	II <sub>r</sub>	ePNE iPR <sup>2</sup> N PSN iSE iSN iSR <sup>1</sup> E iLN iLE ME MN F	18	39	00 36 35 08 10 07 21 35 33 15 42	9 9		17 12	2730	
60	13	I	ePNE F	22	44	54 56					Very small movements.
61	14	I	ePNE F	7	38	38 57					Traces only.
62	16	II <sub>u</sub>	iPE iPN iPR <sup>1</sup> E iPR <sup>1</sup> N iPR <sup>2</sup> N iSNE iSR <sup>2</sup> N iSR <sup>2</sup> E iLNE ME MN FN FE	5	11	21 22 49 03 28 38 49 56 51 25 24 14 42	14 16		19 10	6540	Pacific, near New Hebrides. Microseisms on the 13th, 14th, 15th and 16th.
63	16	I <sub>v</sub>	ePNE iLNE F	15	02	00 04 09				580	
64	17	I <sub>v</sub>	ePNE eLNE F	9	26	49 29 37				920	Slightly felt at Surigao.



Year 1928, No. 8.

March 18th to 26th, 1928.

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.	
65	18	I	ePNE F	3	13	00 41					Small movements.
66	18	I	ePNE F	12	15	08 33					Traces only.
67	20	I <sub>v</sub>	ePNE eLNE F	18	34	08 28 36				180	Slightly felt at Baguio. Very small movements.
68	22	I <sub>u</sub>	ePNE iPR1E iPR2E eSE? eLE? ME F	4	36	25 58 00 04 01 25 07	21		6	13500?	
69	22	II <sub>d</sub>	ePNE iLNE MN ME F	20	53	27 52 42 42 15	4 4	184	131	225	Benguet Province. Felt by some persons in Manila.
70	23	I <sub>v</sub>	ePNE eLNE MN ME F	20	13	47 23 50 08 42	11 13	4	8	880	W Mindanao.
71	26	II <sub>r</sub>	iPNE iSN iSE iLN iLE F	5	29	51 34 37 44 46 18				2370	Moluccas.
72	26	I <sub>r</sub>	ePNE iLE iLN F	6	46	47 51 53 31				2930	Moluccas.
73	26	I <sub>r</sub>	ePNE iLN iLE F	8	09	44 00 51 02				2490	Moluccas.
74	26	I <sub>r</sub>	ePNE iLNE	9	51	22 48				2370	Moluccas. End overtaken by following earthquake.



Year 1928, No. 9

March 26th to April 8th, 1928.

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	Km.	
75	26	I <sub>r</sub>	ePNE F	10	13	20					
76	27	I <sub>r</sub>	ePNE iLE F	14	42	51				1950	
77	27	I	e F	19	18						Traces only.
78	28	I	e F	12	28						Traces only.
79	29	II <sub>r</sub>	iPNE iSN iSE iLN iLE ME MN F	5	10	34					
							7		80		
							7	48			
80	29	I <sub>v</sub>	ePNE iLNE F	13	29	23				170	

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81	1	I	ePNE F	17	55	56					Small movements.
82	2	I <sub>v</sub>	ePNE eLN F	19	31	38				960	
83	7	I <sub>v</sub>	ePNE iLNE F	7	35	27				770	



Year 1928, No. 10.

April 9th to 18th, 1928.

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.		$\mu_N$	$\mu_E$		
84	9	I <sub>u</sub>	ePE eSE eLE F	17	54	20 30 08 51			12483	Peru.	
85	10	I <sub>v</sub>	ePNE LNE F	8	20	28 51 25			210		
86	10	I <sub>v</sub>	ePNE iLE F	10	56	26 33 08			610		
87	11	I	eNE F	21	48	21 02				Traces only.	
88	14	I <sub>u</sub>	ePNE eSE eSN eLN eLE MN ME F	9	12	36 51 46 00 19 42 00 19	18 18	3 5	10530	Bulgaria.	
89	15	I <sub>v</sub>	ePNE eLNE F	10	55	36 30 01			490		
90	16	I	ePNE F	8	18	35 36				Very small move-ments.	
91	17	I	eNE F	3	09	48 26				Traces only.	
92	17	I	eNE F	3	45	00 16				Felt in Mexico.	
93	17	I <sub>v</sub>	ePNE F	10	57	46 01			125		
94	18	I <sub>v</sub>	ePNE F	10	04	15 14				Felt slightly in Agusan Valley.	
95	18	I <sub>v</sub>	ePNE iLNE F	11	17	53 57 38			580		
96	18	I <sub>v</sub>	ePNE eLNE F	11	52	53 10 11			705		



Year 1928, No. 11.

April 18th to May 1st, 1928.

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>		
97	18	I <sub>u</sub>	ePE	19	35	32				10560	Bulgaria.
			ePN	19	35	33					
			eSN	19	47	20					
			eSE	19	47	22					
			eLE	20	08	10					
			eLN	20	08	16					
			ME	20	11	41	30		4		
			MN	20	13	32	31	3			
F	21	12									
98	19	I <sub>v</sub>	ePNE	14	27	51				220	Western Luzon.
			F	14	34						
99	22	I <sub>v</sub>	ePNE	5	01	43				240	
			F	5	05						
100	22	I <sub>v</sub>	ePNE	5	06	40				330	
			F	5	16						
101	23	I <sub>v</sub>	ePNE	0	45	19				160	
			iLNE	0	45	37					
			F	0	51						
102	24	I <sub>r</sub>	ePNE	19	47	42				2540	
			eLNE	19	53	36					
			F	20	34						
103	27	I <sub>v</sub>	ePNE	3	15	15				120	
			F	3	17						
104	27	II <sub>d</sub>	iPNE	12	37	00				160	SW of Luzon in the China Sea.
			iLNE	12	37	18					
			F	12	54						
105	27	I <sub>v</sub>	ePNE	13	50	20				640	Balingtang Channel near S Batan Is-land.
			iLNE	13	51	30					
			F	14	07						
106	27	I <sub>v</sub>	ePNE	15	03	56				180	
			F	15	07						
107	27	I	eNE	20	55	00					Traces only.
			F	21	37						

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108	1	I	eNE	11	43	00					Small movements.
			F	11	58						
109	1	II <sub>v</sub>	iPNE	14	21	55				170	Western Luzon.
			iLNE	14	22	14					
			MN	14	22	17	3	160			
			ME	14	22	17	3		169		
			F	14	35						



Year 1928, No. 12.

May 1st to 20th, 1928.

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>		
							s.	μ	μ	Km.	
110	1	I	eNE MNE F	19	15	00					
111	8	I <sub>v</sub>	ePN iLN	4	58	40				330	End overtaken by the following earthquake.
112	8	I <sub>v</sub>	ePN iLN F	5	01	29				360	Microseisms on the 6th, moderate on the 7th and strong on the 8th and 9th due to a typhoon over the Pacific.
113	9	I <sub>v</sub>	ePNE F	1	38	43					
114	11	I <sub>v</sub>	ePNE eLNE F	15	24	48				410	Microseisms on the 10th and 11th.
115	12	I <sub>v</sub>	ePNE F	12	55	14				120	
116	14	I	ePNE F	6	59	13					Small movements.
117	14	II <sub>u</sub>	ePE ePN iPR1E iPR2E iPR3E SE SN LE LN ME MN F	22	34	46				15600	Chachapoyas (Peru) and Ecuador.
	15			22	34	48					
				22	36	09					
				22	37	31					
				22	42	33					
				22	50	28					
				22	50	43					
				23	28	52					
				23	29	00					
				23	33	45	23		8		
				23	35	32	22	4			
	15		F	1	03						
118	15	I <sub>v</sub>	ePNE F	2	56	16					
				3	10						
119	15	I <sub>v</sub>	ePNE F	9	48	46				225	
				9	52						
120	17	I <sub>r</sub>	ePNE iLNE F	10	59	05					
				11	01	34					
				11	32						
121	18	I <sub>v</sub>	ePNE F	12	57	45				390	Southeastern part of Luzon.
				13	03						
122	19	I <sub>r</sub>	ePNE eLNE F	9	38	45					
				9	44	00					
				10	04						
123	19	I <sub>v</sub>	ePNE F	12	37	33				330	
				12	43						
124	20	I <sub>r</sub>	ePNE eLNE F	16	34	29					
				16	41	20					
				17	03						



Year 1928, No. 13.

May 21st to 31st, 1928.

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		
125	21	II <sub>v</sub>	iPNE	4	01	02		290	217	220	Western part of Luzon.
			iLNE	4	01	26					
			MN	4	01	28	2				
			ME	4	01	30	2				
			F	4	15						
126	23	I <sub>v</sub>	ePNE	18	57	22			50		
			F	19	00						
127	23	I <sub>r</sub>	ePNE	20	59	24					
			eLNE	21	03	13					
			F	21	27						
128	27	II <sub>r</sub>	ePNE	9	56	52			5000		
			PSE	10	02	22					
			iSN	10	03	37					
			SE	10	03	43					
			iSPNE	10	06	46					
			iSRAN	10	07	26					
			iLN	10	10	22					
			iLE	10	10	23					
			ME1	10	12	53	18			33	
			MN1	10	12	56	16	25			
			MN2	10	14	40	15	24			
			ME2	10	15	36	14			60	
			F	12	24						
129	27	I <sub>v</sub>	ePNE	18	30	59				210	
			eLNE	18	31	22					
			F	18	41						
130	28	I	ePNE	6	52	17					Small movements.
			F	7	29				Agusan Valley.		
131	28	I <sub>v</sub>	ePNE	15	02	36				330	Northwestern part of Luzon.
			F	15	07						
132	28	I <sub>u</sub>	eNE	15	42	42					
			eLE?	15	57	32					
			F	16	40						
133	31	I	eNE	7	34	00					Small movements.
			F	8	04						
134	31	I <sub>r</sub>	ePNE	13	52	09					
			eLNE	13	56	35					
			F	14	55						
135	31	I <sub>r</sub>	ePNE	20	57	05					
			iLNE	20	59	50					
			F	21	49						
136	31 June 1	I	eNE	23	38						Traces only.
			F	0	27						



Year 1928, No. 14.

June 1st to 7th, 1928.

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	$\epsilon$	$\frac{r}{T_0^2}$
$A_N$	6.58	198	2.288	0.039
$A_E$	7.77	198	1.487	0.049

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.	
137	1	$I_r$	ePNE iLE F	8	03	36				1380	Pacific, off SE Mindanao.
138	1	$I_v$	ePNE F	11	59	51				160	
139	1	$I_u$	ePNE iSN iSE eLN eLE MN ME F	13	18	47				5620	Near Kuriles Islan.
				13	26	11					
				13	26	14					
				13	34	00					
				13	34	22					
				13	36	36	15	7			
				13	37	44	16		6		
				14	48						
140	2	$II_v$	ePNE iLNE F	8	49	57				320	
				8	50	36					
				9	11						
141	3	$I$	eNE F	3	01	29					Very small move-ments.
				3	26						
142	3	$II_r$	ePNE iLN iLE ME MN F	8	35	17				3630	Japan.
				8	44	00					
				8	44	43					
				8	46	02	11		29		
				8	47	11	11	16			
				10	09						
143	3	$I$	ePNE F?	9	23	10					Small movements.
144	4	$II_v$	ePNE iLNE F	14	30	06				315	
				14	30	41					
				14	41						
145	5	$I$	eNE F	5	59	17					Traces only.
				6	29						
146	5	$I_v$	ePNE F	20	26	49				100	
				20	29						
147	7	$I$	iLNE F	6	34	22					
				6	50						
148	7	$I_v$	ePNE F	18	12	52				310	
				18	16						



## 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.		$\mu_N$	$\mu_E$		
149	8	Iv	ePNE iLNE F	2	28	38 03 39			225		
150	8	I	eNE F	14	50	44 33				Small movements.	
151	14	Iv	ePNE iLNE F	3	33	34 28 44			490	Microseisms on the 12th, 13th and 14.	
152	15	III <sub>d</sub>	iPNE iLNE	6	13	12 34			200	SW Mindoro Island. Maxima and end lost by the force of the shock.	
153	15	Iv	ePNE	6	53	12			210	Aftershock.	
154	15	Iv	ePNE	6	55	53			220	Aftershock.	
155	15	Iv	ePNE	7	04	45			230	Aftershock.	
156	15	II <sub>v</sub>	iPNE F	7	19	30 25			220	Aftershock.	
157	15	Iv	ePNE	7	27	58			215	Aftershock.	
158	15	Iv	ePNE	7	42	06			200	Aftershock.	
159	15	Iv	ePNE	8	29	57			230	Aftershock.	
160	15	Iv	ePNE	8	49	03			220	Aftershock.	
161	15	II <sub>v</sub>	iPNE F	9	10	47 16			240	Aftershock.	
162	15	Iv	ePNE	9	24	47			230	Aftershock.	
163	15	Iv	ePNE	9	31	26			200	Aftershock.	
164	15	Iv	ePNE	9	42	32			210	Aftershock.	
165	15	Iv	ePNE	9	55	03			220	Aftershock.	
166	15	Iv	ePNE	11	20	27			210	Aftershock.	
167	15	Iv	ePNE	11	22	43			220	Aftershock.	
168	15	Iv	ePNE	11	47	32			210	Aftershock.	
169	15	Iv	ePNE	11	51	17			220	Aftershock.	
170	15	II <sub>v</sub>	iPNE F	12	11	08 15			225	Aftershock.	
171	15	Iv	ePNE	13	28	02			220	Aftershock.	
172	15	Iv	ePNE	14	53	41			220	Aftershock.	
173	15	Iv	ePNE	14	56	47			230	Aftershock.	
174	15	Iv	ePNE	16	48	35			225	Aftershock.	
175	15	III <sub>d</sub>	iPNE F	17	16	45 47			225	2nd earthquake of SW Mindoro Island	
176	15	Iv	iPNE	17	30	18			230	Aftershock.	
177	15	II <sub>v</sub>	iPNE	17	33	04			230	Aftershock.	
		Iv	ePNE	17	55	11			230	Aftershock.	



Year 1928, No. 16.

June 15th to 19th, 1928.

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.		$\mu$	$\mu$		
179	15	Iv	ePNE	18	00	53			220	Aftershock.	
180	15	Iv	ePNE	18	37	41			230	Aftershock.	
181	15	Iv	ePNE	20	34	29			230	Aftershock.	
182	15	Iv	ePNE	21	24	28			220	Aftershock.	
183	15	Iv	ePNE	21	58	11			220	Aftershock.	
184	16	Iv	ePNE	1	06	35			225	Aftershock.	
185	16	IIv	ePNE F	6	27	09 6 42			230	Aftershock.	
186	16	Iv	ePNE	11	40	33			220	Aftershock.	
187	16	Iv	ePNE	15	00	13			220	Aftershock.	
188	16	IIv	ePNE F	15	37	08 15 49			210	Aftershock.	
189	16	I	ePNE F	18	33	42 18 54					
190	16	Iv	ePNE	19	38	39			220	Aftershock.	
191	17	Iu	ePNE eSN? eSE? eLNE F	3	39	00 3 52 21 3 52 33 4 24 24 6 03			13500?	Pacific, off Mexi- can coast.	
192	17	I	iPNE	6	52	04					
193	17	Iv	ePNE	7	00	08			220	Aftershock.	
194	17	Iv	ePNE	13	21	28			210	Aftershock.	
195	17	Iv	ePNE	17	21	58			220	Aftershock.	
196	17	Iv	ePNE	23	24	00			220	Aftershock.	
197	18	Iv	ePNE	6	31	45			220	Aftershock.	
198	18	Iv	ePNE	8	33	49			210	Aftershock.	
199	18	Iv	ePNE	9	54	00			200	Aftershock.	
200	18	Iv	ePNE F	13	08	01 13 16			380		
201	18	Iv	ePNE	15	30	10			225	Aftershock.	
202	18	Iv	ePNE	17	27	22			220	Aftershock.	
203	18	Ir	ePNE eLNE F	22	00	19 22 07 22 22 58			2940		
204	19	Iv	ePNE	8	15	26			200	Aftershock.	
205	19	I	eNE F	8	29	9 05				Small movements.	
		Iv	ePNE	21	00	00			225	Aftershock.	



Year 1928, No. 17.

June 20th to 27th, 1928.

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.		$\mu$	$\mu$		
207	20	Iv	ePNE	1	57	54				230	Aftershock.
208	20	Iv	ePNE	7	54	54				225	Aftershock.
209	20	Iv	ePNE	13	55	00				210	Aftershock.
210	21	Iu	ePNE	10	51	20				7410	Fiji Island.
			eLNE	11	13	00					
			F	12	14						
211	21	Iu	eNE	16	39	33					
			eLNE	17	10	09					
			F	18	20						
212	21	Iv	ePNE	23	58	21				225	Aftershock.
213	22	Iv	ePNE	9	16	38				540	
			F	9	23						
214	22	Iv	ePNE	9	32	46				220	Aftershock.
215	22	Iv	ePNE	10	18	38				160	
			F	10	22						
216	22	Iv	ePNE	10	23	26				210	Aftershock.
217	22	Iv	ePNE	13	33	09				220	Aftershock.
218	22	Iv	ePNE	15	17	55				230	Aftershock.
219	22	Iv	ePNE	16	54	31				220	Aftershock.
220	22	Iv	ePNE	20	17	18				225	Aftershock.
221	23	Iv	ePNE	1	44	43				220	Aftershock.
222	23	Iv	ePNE	21	40	52				230	Aftershock.
223	24	Ir	ePNE	4	43	29					
			iLNE?	4	50	44					
			F	5	01						
224	24	IIv	ePNE	12	07	33				340	
			iLNE	12	08	11					
			F	12	22						
225	24	I	eNE	20	34	20					
			F	20	52						
226	25	Iv	ePNE	5	58	06				435	
			eLNE	5	58	54					
			F	6	10						
227	26	Iv	ePNE	4	35	26				225	Aftershock.
			F	4	39						
228	27	Iv	ePNE	1	33	00				540	Near Batanes Is-lands.
			iLNE	1	33	59					
			F	1	50						



Year 1928, No. 18.

June 27th to 30th, 1928.

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>		
							s.	y	) <sup>u</sup>	Km.	
229	27	I <sub>v</sub>	ePNE F	16	07	42				225	Aftershock.
				16	11						
230	28	I <sub>v</sub>	ePNE F	4	43	30				240	
				4	50						
231	29	I <sub>v</sub>	ePNE iLNE F	11	33	15				630	
				11	34	24					
				11	44						
232	29	II <sub>r</sub>	iPNE iLNE F	19	42	48				1320	Pacific, off SW coast Mindanao.
				19	45	44					
				20	53						
233	29	I <sub>u</sub>	ePNE iLNE?	22	59	34				5290?	
				23	14	00					
	30		F	0	42						



Year 1928, No. 194

July 1st to 14th, 1928.

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	$\epsilon$	$\frac{r}{T_0^2}$
$A_N$	7.43	184	1.570	0.054
$A_E$	7.59	187	1.576	0.046

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.	$\gamma$	$\gamma$	Km.	
234	2	$I_v$	$\bullet$ PNE F	13	58	09 14 04				210	
235	4	I	$\bullet$ NE F	21	42	48 22 47					Traces only. Dis-tant earthquake.
236	5	$I_v$	$\bullet$ PNE F	3	16	11 3 21				225	
237	5	$I_v$	$\bullet$ PNE F	14	59	21 15 03				210	
238	7	$I_r$	$\bullet$ PNE $\bullet$ LNE F	18	07	00 18 12 22 18 38					
239	8	$I_v$	$\bullet$ NE F	21	27	37 21 32				270	
240	9	$II_u$	iPE iPN iPR1E iSR1N iSR2N iSR2E iLNE ME F	21	31	53 21 31 50 21 34 00 21 42 22 21 43 51 21 44 09 21 47 00 21 48 38 23 27	20		24	5500	Near Solomon Is-lands?
241	10	I	$\bullet$ NE F	9	48	00 10 13					Very small move-ments. Microseis. on the 10th.
242	12	$I_v$	$\bullet$ PNE F	2	57	00 22 59				200	Moderate micros. from 11th to 15th due to a typhoon.
243	13	$I_v$	$\bullet$ PNE F	7	01	31 7 05				240	



Duplicate

Year 1928, No. 19.

July 1st to 14th, 1928.

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	$\epsilon$	$\frac{r}{T_0^2}$
AN	7.43	184	1.570	0.054
AE	7.59	187	1.576	0.046

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod	Amplitude		Dis-tance.	Remarks.
				h.	m.	s.		AN	AE		
							s.	$\mu$	$\mu$	Km.	
234	2	Iv	•PNE F	13 58 09 14 04						210	
235	4	I	•NE F	21 42 48 22 47							Traces only. Dis-tant earthquake.
236	5	Iv	•PNE F	3 16 11 3 21						225	
237	5	Iv	•PNE F	14 59 21 15 03						210	
238	7	Ir	•PNE •LNE F	18 07 00 18 12 22 18 38							
239	8	Iv	•PNE F	21 27 37 21 32						270	
240	9	IIu	iPE iPN iPRLE iSR1N iSR2N iSR2E iLNE ME F	21 31 53 21 31 50 21 34 00 21 42 22 21 43 51 21 44 09 21 47 00 21 48 38 23 27			20		24	5500	Near Solomon Is-lands?
241	10	I	•NE F	9 48 00 10 13							Very small move-ments. Microseis. on the 10th.
242	12	Iv	•PNE F	2 57 00 2 59						200	Moderate micros. from 11th to 15th due to a typhoon.
243	13	Iv	•PNE F	7 01 31 7 05						240	



Year 1928, No. 20.

July 15th to 31st, 1928.

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				
				h.	m.	s.	s.	μ	μ	Km.			
244	15	I <sub>r</sub>	ePNE	23	18	40				1320?	Pacific, SE Min- danao.		
			iLNE?	23	21	37							
			F	23	32								
245	18	II <sub>u</sub>	iPE	19	25	13				17000?	Pacific, NW Peru. Confused by mi- croseisms.		
			ePN	19	25	16							
			eSN?	19	47	17							
			iSE?	19	47	44							
			eLN?	20	21	22							
			eLE?	20	21	30							
F	21	32											
246	19	I <sub>v</sub>	ePNE	3	15	21				240			
			F	3	19								
247	19	I <sub>r</sub>	ePNE	20	19	15							
			eLNE	20	23	24							
			F	20	46								
248	20	I <sub>v</sub>	ePNE	10	57	43				130			
			F	11	00								
249	21	I <sub>r</sub>	ePNE	2	44	09							
			iLNE	2	48	03							
			F	3	21								
250	24	II <sub>v</sub>	iPNE	23	03	14				230	China Sea near w coast of Panga- sinan.		
			iLNE	23	03	40							
			MN	23	03	45						3	118
			ME	23	03	47						3	75
			F	23	16								
251	26	I	iNE	12	20	40					Moderate microseis. on the 26th, 30th and 31st. Heavy microseisms from 27th to 29th.		
			F	12	41								



Year 1928, No. 21.

August 1st to 15th, 1928.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

$\phi=14^{\circ} 34' 51''$  N.  $\lambda=120^{\circ} 58' 33''$  E. h--2.40ms. Alluvium.

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

	$T_0$	V	$\epsilon$	$\frac{r}{T_0^2}$
$A_N$	6.78	194	2.384	0.063
$A_E$	6.72	208	2.088	0.075

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod.	Amplitude		Dis-tance.	Remarks.
				h.	m.	s.		$A_N$	$A_E$		
						s.	$\mu$	$\mu$	Km.		
252	2	I <sub>v</sub>	ePNE	8	19	26				220	
			eLNE	8	19	50					
			F	8	27						
253	3	I <sub>r</sub>	ePNE	18	48	51					
			F	19	07						
254	3	I <sub>r</sub>	ePNE	21	06	32					
			F	21	23						
255	4	II <sub>u</sub>	eNE?	18	47	38				13600?	Mexico, confused by microseisms.
			iSNE?	19	01	00					
			eLNE?	19	31	10					
			F	20	58						
256	5	III <sub>d</sub>	iPNE	14	42	26				190	China Sea near Zambales coasts.
			iLNE	14	42	47					
			F	15	46						
257	7	I	eNE	4	19					Very small, confused by microseisms.	
			F	4	41						
258	9	I <sub>v</sub>	ePNE	18	46	27				190	
			F	18	49						
259	11	I <sub>v</sub>	ePNE	12	24	44				410	NE Luzon.
			iLNE	12	25	29					
			F	12	29						
260	12	II <sub>r</sub>	iPNE	8	12	00				1920	
			iLE	8	16	18					
			iLN	8	16	23					
			MN	8	16	28	7	183			
			ME	8	16	46	6		123		
			F	9	32						
261	12	I <sub>r</sub>	ePNE	15	53	45				1200	
			eLNE	15	56	23					
			F	16	27						
262	15	I	eNE	17	40					Very small disturb- ed by microseisms.	
			F	18	12						



Year 1928, No. 22.

August 16th to 26th, 1928.

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>		
							s.	μ	μ	Km.	
263	16	Iv	iPNE F	11	35	39				10	
264	16	Iv	iPNE iLNE F	23	50	28				180	
265	17	Iv	ePNE F	19	59	26				120	Central Luzon.
266	20	Iv	ePNE F	8	35	47				130	
267	23	I	eNE F	1	31						Small movements.
268	23	I	ME F	4	25	00					
269	23	Iv	ePNE iLNE F	9	39	11				80	
270	24	IIr	ePNE iSN iSE iLNE ME MN F	21	52	45					
				21	57	17					
				21	57	23					
				22	00	10					
				22	00	38	7		58		
				22	00	43	7	26			
				22	58						
271	24	I	eNE ME	23	27	24					Traces only.
	25		F	0	04						
272	25	Iv	ePNE iLNE F	8	47	04				230	
				8	47	26					
				8	52						
273	25	Iv	ePNE eLNE F	12	31	00				850	Western part of Mindanao.
				12	32	32					
				12	47						
274	26	Iv	ePNE F	5	06	51				270	
				5	10						
275	26	Ir	ePNE iLE F	22	13	24					
				22	16	41					
				22	34						



Year 1928, No. 23.

August 27th to 31st, 1928.

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>		
							s.	μ	μ	Km.	
276	27	I <sub>v</sub>	ePNE F	5	38	54				220	
277	27	I <sub>v</sub>	ePNE F	10	57	24				200	
278	28	I <sub>r</sub>	ePNE eLNE? F	8	30	46					Felt slightly at Talacogon (E Mindanao).
279	29	I <sub>r</sub>	ePNE eLNE F	3	32	00					
280	29	I <sub>r</sub>	ePNE iLNE F	17	19	02					
281	30	I <sub>r</sub>	ePNE iSE iLN iLE MN ME F	6	33	07					
				6	36	57					
				6	38	12					
				6	38	38					
				6	40	35	8	33			
				6	40	37	10		31		
				7	55						
282	30	I <sub>v</sub>	ePNE F	7	33	19				160	
283	30	I	eNE F	10	52	26					Small movements.
				11	22						
284	30	I	eNE F	12	21						Traces only.
				12	43						
285	31	I	eNE F	0	49						Small movements.
				1	12						



Year 1928, No. 24.

September 1st to 11th, 1928.

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	$\epsilon$	$\frac{r}{T_0^2}$
$A_N$	6.78	194	2.384	0.063
$A_E$	6.72	208	2.088	0.075

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.	$\mu$	$\gamma$	Km.		
286	1	I <sub>u</sub>	ePNE	6	18	00						
			eSN	6	26	18						
			eSE	6	26	23						
			iLE	6	38	00						
			iLN	6	38	07						
			MN1	6	41	05	15	11				
			ME1	6	44	09	14		9			
			ME2	6	46	13	11		12			
			MN2	6	48	50	10	11				
F	8	26										
287	3	I <sub>v</sub>	ePNE	21	19	07				570	Balingtang Channel.	
			iLNE	21	20	10						
			F	21	42							
288	3	I	eNE	21	53	23					Small movements confused by micro-seisms.	
			F	22	49							
289	4	I <sub>v</sub>	ePNE	5	20	25				300		
			iLNE	5	20	58						
			F	5	27							
290	5	I	eNE	2	29						Small movements confused by micro-seisms.	
			F	2	58							
291	6	I	eE	6	43						Traces only.	
			F	7	04							
292	7	I <sub>r</sub>	eNE	2	54	20						
			eLE	2	58	22						
			F	3	48							
293	7	I <sub>v</sub>	ePNE	20	00	38				180		
			F	20	05							
294	10	I <sub>v</sub>	ePNE	11	38	38				190		
			F	11	42							
295	11	I <sub>r</sub>	ePNE	0	44	23						
			iLNE?	0	50	30						
			F	1	31							



Year 1928, No. 25.

September 11th to 20th, 1928.

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	Km.	
296	11	I <sub>v</sub>	ePNE F	2	49	34				120	
297	11	I	eNE F	12	57						Small movements.
298	12	I <sub>r</sub>	ePNE iLNE F	1	30	40					
299	13	II <sub>r</sub>	ePNE iSNE iLNE ME MN F	3	29	37	12 10	45	53	2280	SE Sangir Island.
300	13	I <sub>v</sub>	ePNE F	10	09	11				125	
301	14	I <sub>v</sub>	ePNE eLNE F	0	52	44				690	Batanes Islands.
302	14	II <sub>d</sub>	iPNE iLNE	21	11	35				160	China Sea near NW Mindoro Island. Maxima and end lost by the force of the shock.
303	14	III <sub>d</sub>	iPNE iLNE F	21	14	54				150	China Sea near NW Mindoro Island.
304	15	I <sub>v</sub>	ePNE iLNE F	3	01	59				125	
305	18	I <sub>u</sub>	eNE eLNE? ME F	17	43	11	28		2		
306	18	I <sub>u</sub>	eNE eLE? F	20	03	37					
307	19	I <sub>r</sub>	ePNE iLN iLE F	8	21	00					Near Formosa.
308	20	I	eNE F	8	47						Traces only.



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		
<del>308</del> 309	<del>20</del> 21	Iv	ePNE	8	00	52				210	
			iLNE	8	01	15					
			F	8	06						
310	22	Iu	ePNE	7	40	37				5195	Near Solomon Is-lands.  Microseisms on the 22nd and 23rd.
			iPR1E	7	42	36					
			iSNE	7	48	00					
			iSR1NE	7	52	02					
			iSR2NE	7	52	51					
			iLN	7	56	13					
			iIS	7	56	21					
			MN1	7	57	05	11	9			
			ME1	7	58	20	14		11		
			MN2	8	05	00	15	11			
ME2	8	05	45	16		12					
		F	9	22							
311	24	Iv	ePNE	9	16	13				830	
			iLNE	9	17	43					
			F	9	54						
312	25	I	MN	5	07	28					
			F	5	20						
313	25	I	eNE	8	07						Traces only.
			F	8	56						
314	25	I	eNE	20	12						Small movements.
			F	21	22						
315	27	I	eE	1	03						Traces only.
			F	1	32						
316	27	Iv	ePNE	20	02	43				340	
			F	20	08						
317	28	Iv	ePNE	5	07	17				160	
			iLNE	5	07	35					
			F	5	13						
318	29	Iv	ePNE	14	09	45				140	
			F	14	15						



Year 1928, No. 27.

October 1st to 12th, 1928.

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	$\epsilon$	$\frac{r}{T_0^2}$
$A_N$	6.85	198	1.960	0.067
$A_E$	6.64	207	2.103	0.054

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod.	Amplitude		Dis-tance.	Remarks.
				h.	m.	s.		$A_N$	$A_E$		
							s.	$\mu$	$\mu$	Km	
319	2	$I_v$	ePNE F	19	31	43				90	
320	4	$I_v$	ePNE F	14	35	27				90	
321	5	$I_v$	ePNE F	20	58	29				300	
322	9	$II_u$	ePNE eP'N eP'E iPR <sub>1</sub> N iPR <sub>2</sub> E PSN PSE PPSNE iSR <sub>2</sub> E iSR <sub>2</sub> N iLE iLN ME MN F	3	20	25				14500	Mexico.
				3	23	25	PKP				
				3	23	29	PKP				
				3	26	00					
				3	28	22					
				3	36	15					
				3	36	18					
				3	37	40					
				3	48	26					
				3	49	00					
				4	05	58					
				4	06	33					
				4	15	57	20		7		
				4	16	30	19	7			
				6	05						
323	10	$I_r$	ePNE eSE eSN iLNE ME F	20	41	53					
				20	46	13					
				20	46	44					
				20	49	25					
				20	51	14	10		11		
				21	48						
324	11	$I$	eNE	23	47						
	12		F	0	31						Small movements.
325	12	$I_u$	ePNE eLNE F	7	32	28					
				7	47	20					
				8	43						



Year 1928, No. 28.

October 13th to 19th, 1928.

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	Km.	
326	13	II <sub>r</sub>	ePNE	15	20	40				1060	Pacific, SE coast of Mindanao.
			iLE	15	22	52					
			iLN	15	23	00					
			F	16	15						
327	14	II <sub>v</sub>	ePNE	12	54	28				290	NW Luzon.
			iLNE	12	55	00					
			ME	12	55	33	5		48		
			MN	12	55	37	5	69			
			F	13	08						
328	15	I <sub>r</sub>	ePNE	8	38	19					
			eLE?	8	45	36					
			eLN?	8	45	58					
			F	9	42						
329	15	I <sub>u</sub>	eNE	14	29	09				5600	Near Baluchistan.
			iSN	14	36	17					
			iSE	14	36	31					
			iLN	14	44	33					
			iLE	14	44	36					
			ME	14	52	08	15		14		
			MN	14	52	09	15	122			
			F	16	04						
330	18	I <sub>v</sub>	ePNE	18	31	14				130	
			F	18	33						
331	19	I	eNE	10	30						Small movements and disturbed by microseisms.
			F	11	32						
332	19	II <sub>v</sub>	ePNE	15	50	25				410	NE Luzon.
			iLNE	15	51	10					
			MN	15	51	23	3	122			
			ME	15	51	28	3		94		
			F	16	11						



Year 1928, No. 29.

October 20th to 31st, 1928.

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	Km.	
333	20	I <sub>r</sub>	ePNE F	12	51	09 13 19					Heavy microseisms.
334	21	I <sub>r</sub>	ePNE F	16	21	30 16 54					
335	22	I <sub>v</sub>	ePNE F	11	25	10 11 34				430	
336	23	I	eNE F	18	02	12 18 20					Traces only. Heavy microseisms.
337	25	II <sub>v</sub>	iPNE iLNE F	3	59	54 4 00 13 4 06				170	
338	26 <i>26</i>	II <sub>v</sub>	ePNE iLNE ME MN F	6	19	32 6 20 01 6 20 09 6 20 19 6 34				260	Tablas Island.
339	26	I <sub>v</sub>	ePNE eLNE F	10	31	16 10 31 42 10 40				230	
340	26	I	ePNE F	11	29	50 11 38				240	From 28th to 31st heavy microseisms.



Year 1928, No. 30.

November 1st to 9th, 1928.

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 (Kg000 Kg.)

	$T_0$	V	$\epsilon$	$\frac{r}{T_0^2}$
$A_N$	6.85	198	1.960	0.067
$A_E$	6.64	207	2.103	0.054

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod	Amplitude		Dis-tance
				h.	m.	s.		$A_N$	$A_E$	
				h.	m.	s.	s.	$\mu$	$\mu$	Km.
341	1	I <sub>v</sub>	ePNE iLNE F	22	05	04				290
342	3	I <sub>v</sub>	ePNE iLNE F	3	16	13				270
343	3	I <sub>v</sub>	ePNE F	4	39	05				190
344	3	II <sub>v</sub>	ePNE iLNE MN ME F	9	07	20	5	78	64	510
345	3	I <sub>v</sub>	ePNE F	12	05	50				125
346	4	I <sub>v</sub>	ePNE F	5	10	15				290
347	5	I <sub>v</sub>	ePNE F	3	54	02				380
348	5	I	eLNE F	14	16					
349	6	I <sub>u</sub>	ePNE iPR <sub>3</sub> N iSE iSN ME MN F	4	14	50	8	24	23	6356
										Near New Hebrides. Compression from SE.
350	7	I <sub>v</sub>	ePNE F	19	29	19				110
351	9	I	ePNE F	11	10	37				Small movements.



Year 1928, No. 31.

November 10th to 20th, 1928.

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	Km.	
352	10	I	eNE F	12	37	51					Traces only.
353	10	I <sub>v</sub>	ePNE F	16	04	49				330	
354	11	I <sub>v</sub>	ePNE iLNE F	20	08	52				320	
355	11	I	eNE F	22	53						
356	14	I	eNE ME F	4	41	42					Very small move-ments.
357	18	II <sub>r</sub>	ePNE iSN iSE iLE iLN F	2	36	23					
358	15	I <sub>r</sub>	ePNE eLNE F	7	41	16					
359	15	I <sub>v</sub>	ePNE F	12	07	25				90	
360	16	I <sub>r</sub>	ePNE iLNE F	11	07	29					
361	18	I <sub>v</sub>	ePNE iLNE F	14	01	22				700	Off SE Samar.
362	19	I	iLNE F	15	47						
363	20	I <sub>u</sub>	iP'N eP'E iScPcPNE eLE ME F	20	55	41				18333	Off western coast of north-ern part of Chile.
							26		3		



Year 1928, No. 32.

November 21st to 30th, 1928.

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.		s.	$\mu$		
				H/	m.	s.	s.	$\mu$	$\mu$	Km.	
364	21	III <sub>d</sub>	iPNE	17	00	19				140	Central Luzon. Heavy micro- seisms. Maxima lost by the force of the shock.
			iLNE	17	00	35					
			F	17	31						
365	22	I <sub>v</sub>	ePNE	7	16	51				125	
			F	7	19						
366	22	I <sub>v</sub>	ePNE	11	02	06				100	Heaviest micro- seisms from 22nd to 25th.
			F	11	04						
367	25	I <sub>v</sub>	ePNE	7	33	53				130	
			F	7	36						
368	25	I <sub>v</sub>	ePNE	7	59	32				150	
			F	8	02						
369	27	I <sub>v</sub>	ePNE	5	53	33				310	Mountain Pro- vince.
			iLNE	5	54	07					
			F	6	01						
370	28	II <sub>v</sub>	iPE	9	04	15				530	N and E records disturbed by microseisms.
			iLE	9	05	13					
			ME	9	05	29					
			F	9	21						
371	28	III <sub>r</sub>	ePE	10	48	20				9	316
			iLE	10	52	39					
			ME	10	53	19					
			F	11	52						
372	28	I	eE	11	56						
			F	12	13						
373	30	I <sub>v</sub>	ePNE	3	36	48				130	
			F	3	40						



Year 1928, No. 33.

December 1st to 9th, 1928.

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	$\epsilon$	$\frac{r}{T_0^2}$
$A_N$	6.85	198	1.960	0.067
$A_E$	6.64	207	2.103	0.054

No.	Date	Char-acter	Phase	Greenwich mean time			Per-iod.	Amplitude		Dis-tance	Remarks.			
				h.	m.	s.		$A_N$	$A_E$					
						s.	$\mu$	$\mu$	Km.					
374	1	IIIu	eP'NE	4	26	10				17000	Pacific near Chi- le.			
			PR <sub>1</sub> E	4	30	36								
			PR <sub>2</sub> E	4	33	59								
			PR <sub>3</sub> E	4	36	53?								
			ScPcPcS	4	37	05?								
			PR <sub>4</sub> E	4	38	47								
			PR <sub>2</sub>	4	40	24								
			PPS	4	43	59								
			PPPS	4	45	14								
			SR <sub>2</sub>	4	56	07	( )							
			e	5	15	00	60ca							3 waves Gutenberg?
			L	5	19	45								
			M	5	31	30								
e	6	02	30							Sinusoidal waves until 6:22:00				
ME	6	09	00	19.7		450								
F	7	19												
375	2	Iu	eP'NE	4	40	51				130	Aftershock of the preceding quake.			
			SNE	4	58	41								
			F	6	50									
376	2	Iv	ePNE	21	36	54				130				
			F	21	40									
377	4	I	eNE	13	01	48					Traces only.			
			F	13	22									
378	4	Iv	ePNE	18	43	06				220				
			iLNE	18	43	30								
			F	18	57									
379	7	IIIr	iPNE	9	19	10				290	249			
			iLNE	9	23	03								
			MN	9	23	35	10							
			ME	9	23	58	8							
			F	10	57									
380	9	Ir	ePNE	0	05	43								
			eLNE	0	12	11								
			F	0	41									
381	9	Ir	ePNE	5	13	17								
			iLNE	5	20	00								
			F	6	18									



Year 1928, No. 34.

December 9th to 25th, 1928,

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		
							s.	$\mu$	$\mu$	Km.	
382	9	I <sub>r</sub>	ePNE iLN F	18	18	39					
383	10	I <sub>r</sub>	ePNE eLNE F	4	39	22					
384	11	I <sub>v</sub>	ePNE iLNE F	16	59	15				160	
385	12	I <sub>r</sub>	ePNE iLNE? F	20	31	23					Records disturbed by microseisms.
386	13	I <sub>v</sub>	ePNE F	18	00	50				90	
387	14	I	eE F	0	43	35					Small movements.
388	14	I	ME F	2	14	48					Traces only.
389	15	I <sub>v</sub>	ePNE F	20	15	33				125	
390	16	I	ePNE F	4	51	28				90	
391	19	III <sub>r</sub>	ePNE iSE F	11	39	18				1040	N Celebes Sea, S Mindanao.
392	19	I <sub>r</sub>	ePNE F	14	52	41				1040	Aftershock of the No. 391.
393	19	I <sub>r</sub>	ePNE F	15	20	39				1040	Aftershock of the No. 391.
394	19	I	eE F	23	15						
395	20	I	eE F	2	50	14					Small movements.
396	20	I	eE F	17	30	04					Small movements.
397	21	I <sub>r</sub>	eE F	3	35	17					Aftershock of the No. 391.
398	23	I <sub>v</sub>	ePNE F	18	08	23				125	



Year 1928, No. 35.

December 26th to 31st, 1928.

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.		N	E		
				h.	m.	s.	s.	$\mu$	$\mu$	Km.	
399	26	Iv	ePNE F	9	55	23				240	
400	28	IIIv	ePNE iLE iLN F	14	21	26				930	Near Illana Bay.
401	28	Iv	ePE eLE F	17	40	46				940	Aftershock of the No. 400.
402	28	Iv	ePE iLE F	18	46	45				940	Aftershock of the No. 400.
403	29	Ir	ePNE iLNE	2	07	33					End overtaken by the following earthquake.
404	29	Ir	ePNE eLNE MN F	2	12	18	11	8			
405	29	I	eNE F	9	33						Traces only.
406	30	I	iNE F	1	06	00					Small movements.
407	30	Iv	ePNE F	11	55	42				120	
408	30	Iv	ePNE F	17	33	06				40	

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