

SEISMOLOGICAL BULLETIN.

JANUARI 1917.

BATAVIA OBSERVATORY, JAVA.

Foundation: River Quartair.

Mean Greenwich time. S. Latitude $6^{\circ} 11' 0''$. Height above sealevel 8 m.

E. Longitude $7^{\text{h}} 7^{\text{m}} 19^{\text{s}}$.

WIECHERT Horizontal Pendulum, 1000 kilograms.

The symbols are according to WIECHERT.

N ^o .	Date 1917.	Character.	Phase.	Time (Greenwich).			Period in seconds.	Distance of epicentrum.	Amplitude (half)		Remarks.
				h	m	s			A _E	A _N	
1	4	Jan.	I	iP	16	56	59				
				F	17	44					
2	7	"	I	e	0	15	42				Felt in Bali and Lombok
				F	0	25					
5	9	"	I _v	iP	18	59	59	55 ⁰	15.5	14.0	
				S	19	0	36				
				M	19	2.9		5.5			
				F	19	12					
4	10	"	I _v	eP	15	24	36	700			
				S?	15	25	55				
				M	15	27.9		7.5	17.2	15.2	
				F	15	45					
5	11	"	I	e	11	52	45				
				M	12	0.2		5.0	15.5	8.4	
				F	12	4					
6	11	"	II _v	iP	16	9	22	155			Malabar S—P = 18 sec.
				S,M	16	9	40	0.8	90.0	58.1	△ = 160 km.
				F	16	17					Rather strongly felt at Djampang, Preanger.
7	12	"	I	e	15	46	51				
				M	15	46	44	4.0	6.5	2.9	
				F	15	49					
8	12	"	III _v	iP	21	8	59	175			Destructive earthquake in the southern Preanger mountains.
				S	21	9	19	1.0	53.2	—	Direction after record of iP S 7° E. At Malabar tremors came from W 22° S, distance 100 km. However macroseismic reports locate the epicentrum at a distance of 120 km., both from Batavia and from Malabar. The N S and E W-boom were thrown off, resp. after 24 and 95 seconds; at Malabar after 12 sec. Record restored at 5 ^h 37 ^m

SEISMOLOGICAL BULLETIN 1917.

BATAVIA OBSERVATORY, JAVA.

PREFACE.

The astatic Seismograph of WIECHERT of 1000 K.G. has been registering regularly since December 6th 1908. The results are published from the beginning of 1909 (the Messina earthquake included) in a monthly bulletin.

The instrument is mounted on a heavy brick pillar in a room with thick walls (about 70 centimeters) which is protected against the sun's heat by open galleries around it. The components are placed in E.-W. and N.-S. direction respectively.

The pins are lifted electrically every hour for a period of 10 seconds by the Javanese observer on duty. A lifting of two seconds every minute is given by an electrical clock of PEYER FAVARGER by means of the second-dial passing every minute through a drop of mercury.

For each month are applied the mean constants for that month. T_0 and ϵ , the oscillation period and the coefficient of damping, are determined every week. V , the magnification for very short waves, has been determined anew on Sept. 12, 1916. It is found by direct measurement by giving the pendulum a displacement by means of the horizontal adjusting screws, of which the value can be determined easily from the pitch (a) and the angle of displacement of the screws and the height of the screws (b) and of the centre of gravity (c) above the Cardanic suspension apparatus.

It was found:

(a) = 1.407 millimeters.

(b) = 1225 "

(c) = 895 "

The constants used in last year are given below.

1916.	E-W component.			N-S component.		
	V.	T_0 .	ϵ .	V.	T_0 .	ϵ .
January	217	7.0	5.6	186	7.0	5.2
February	"	"	5.5	"	"	5.3
March	"	"	5.4	"	"	4.9
April	"	"	5.6	"	"	4.7
May	"	"	5.1	"	"	4.6
June	"	"	5.0	"	"	4.9
July	190	"	4.4	203	"	4.6
August	"	"	5.0	"	"	4.7
September	"	"	5.2	"	6.7	4.2
October	"	"	4.8	"	"	4.0
November	"	7.0	5.1	"	6.8	5.5
December	"	7.1	4.5	"	6.9	4.2



No.	Date 1917.	Character.	Phase.	Time (Greenwich).			Period in seconds.	Distance of epicentrum.	Amplitude (half)		Remarks.
				h	m	s			A_E	A_N	
9	17	Jan.	II.	eP	2	42	52	6.1	97.0	95.1	
			S	2	45	50					
			M	2	48.2						
			F	3	19						
10	17	"	I	P	5	55	20	0.7	3.2	9.4	
			M	5	53	45					
			F	5	56	16					
11	20	"	I	e	2	47	56	0.5	6.5	5.9	
			M	2	51.8						
			F	2	54						
12	21	"	III.	iP	0	15	55	5.2	66.6	62.5	Destructive earthquake in Bali. Direction after record of iP: E 19° S. NS-boom thrown off at 0 ^h 20 ^m . F masked by next record.
			S	0	16	2					
			M	0	18	40					
13	21	"	II	e	0	52	56	6.0	147.0	157.0	
			M	1	1.0						
14	24	"	II.	e	0	57	50	5.9	26.0	24.5	Hankow-earthquake.
			M	1	15	4					
			F	1	34						
15	25	"	I	iP	10	55	57	1.6	6.5	6.1	
			M	10	54.5						
			F	10	57						
16	27	"	I	e	25	57	55	6.0	5.5	5.0	
	28	"	M	0	6.9						
			F	0	55						
17	29	"	III.	iP	18	55	59	5.0	327.0	249.0	
			S	18	56	1					
			M	18	57.9						
			F	19	17						
18	30	"	III.	iP	2	57	55	15.0	51.3	22.8	
			S	3	7	20					
			M	3	42.0						
			F	5	57						
19	31	"	III.	iP	5	5	9	5.2	459.0	191.0	Direction after P: E 17° N. At 5 ^h 11 ^m NS-boom disordered. Milne seismograph S—P = 4 min. At Malabar record small. Felt in the Minahassa, Celebes.
			S?	3	9	16					
			M	3	6.9						
			F	4	12						

The notation employed is that of the Göttingen Geophysical Institute.
The following abbreviations are employed:

CHARACTER OF THE EARTHQUAKE.

I = perceptible; II = moderately strong; III = strong.

d (terrae motus domesticus) = local.

v (vicinus) = near (less than 1000 K.M.).

r (remotus) = distant (1000 to 5000 K.M.).

u (ultimus) = very distant (over 5000 K.M.).

PHASES.

P (undae primae) = 1st preliminary tremors.

S (secundae) = 2nd " "

L (longae) = principal phase, long waves.

M (maximae) = maximum amplitude.

C (coda) = prominent waves among the after tremors.

F (finis) = end of perceptible movement.

PR₁, PR₂, SR₁, SR₂, = 1st, 2nd reflected waves of P and S.

PS = waves changed by reflection from longitudinal to transversal oscillation.

WAVE-ELEMENTS, UNITS.

T = complete period in seconds.

A = amplitude, measured from median position in microns.

A_E = E.-W. component of A.

A_N = N.-S. " " "

i (impetus) = abrupt commencement, clearly defined.

e (emersio) = gradual " , not clearly defined.

Year	E-W component		N-S component	
	T	A	T	A
1918	1.0	1.0	1.0	1.0
1919	1.0	1.0	1.0	1.0
1920	1.0	1.0	1.0	1.0
1921	1.0	1.0	1.0	1.0
1922	1.0	1.0	1.0	1.0
1923	1.0	1.0	1.0	1.0
1924	1.0	1.0	1.0	1.0
1925	1.0	1.0	1.0	1.0
1926	1.0	1.0	1.0	1.0
1927	1.0	1.0	1.0	1.0
1928	1.0	1.0	1.0	1.0
1929	1.0	1.0	1.0	1.0
1930	1.0	1.0	1.0	1.0
1931	1.0	1.0	1.0	1.0
1932	1.0	1.0	1.0	1.0
1933	1.0	1.0	1.0	1.0
1934	1.0	1.0	1.0	1.0
1935	1.0	1.0	1.0	1.0
1936	1.0	1.0	1.0	1.0
1937	1.0	1.0	1.0	1.0
1938	1.0	1.0	1.0	1.0
1939	1.0	1.0	1.0	1.0
1940	1.0	1.0	1.0	1.0
1941	1.0	1.0	1.0	1.0
1942	1.0	1.0	1.0	1.0
1943	1.0	1.0	1.0	1.0
1944	1.0	1.0	1.0	1.0
1945	1.0	1.0	1.0	1.0
1946	1.0	1.0	1.0	1.0
1947	1.0	1.0	1.0	1.0
1948	1.0	1.0	1.0	1.0
1949	1.0	1.0	1.0	1.0
1950	1.0	1.0	1.0	1.0

SEISMOLOGICAL BULLETIN.

FEBRUARI 1917.

BATAVIA OBSERVATORY, JAVA.

Foundation: River Quartair.

Mean Greenwich time. S. Latitude $6^{\circ} 11' 0''$. Height above sealevel 8 m.

E. Longitude $7^{\text{h}} 7^{\text{m}} 19''$.

WIECHERT Horizontal Pendulum, 1000 kilograms.

The symbols are according to WIECHERT.

N ^o .	Date 1917.		Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.	Distance of epi- centrum.	Amplitude (half)		Remarks.
										A _E	A _N	
20	2	Febr.	I	i P	h	m	s	0.5	km.	μ	μ	Malabar S-P = 12 sec. △ = 110 km. Felt at Lebak Parai, Ban- tam. Felt in Bali and Lombok.
				M	19	38.5	5.5			4.9		
				F	19	40.9						
21	4	"	II _v	P	9	45	45	5.6	1100	55.5	49.8	Felt in Bali and Lombok.
				S	9	45	41					
				M	9	48.7						
				F	10	14						
22	4	"	II _v	i P	10	32	37	5.0	580?	80.0	21.7	Direction after P.: E 18° N. Felt in Bali and Lombok.
				S?	10	33	41					
				M	10	39.7						
				F	10	54						
23	5	"	I	e	1	54	45	5.4		11.6	9.4	
				M	1	40.5						
				F	1	50						
24	5	"	I	e	12	25	26	6.0		12.7	8.7	
				M	12	29.1						
				F	12	41						
25	7	"	I _v	P	1	4	40	2.8	480?	15.2	11.2	
				S?	1	5	33					
				M	1	12.0						
				F	1	18						
26	12	"	I	e	9	12	45	5.2		16.1	8.2	
				M	9	25.2						
				F	9	50						
27	15	"	I	e	1	6	59	4.5		11.8	8.7	
				M	1	14.0						
				F	1	50						
28	15	"	I	e	25	8	48	5.2		4.5	4.1	
				M	25	12.8						
				F	25	16						
29	16	"	I	e	11	0	56	4.5		1.7	1.6	Recorded clearly at Malabar. Felt in Banjoemas.
				M	11	2.2						
				F	11	10						
50	16	"	I	e	12	17	57	5.4		1.5	1.4	Idem.
				M	12	19.5						

No.	Date 1917.		Char-acter.	Phase.	Time (Greenwich).			Period in seconds.	Distance of epi-centrum.	Amplitude (half)		Remarks.
										A _E	A _N	
31	17	Febr.	I _v	i S? M F	h m s 22 22 48 22 23 7 22 51		0.7	km. 170	μ μ 23.7 23.2		Direction after P: W 44°S. Felt in West Preanger and Bantam.	
32	18	"	II	iP M F	1 28 1 1 30.4 1 39		5.2		83.7 50.7		Direction after P: W 52°S. After Milne-record, Δ = 1240 km. At Malabar S-P = 19°, Δ = 170 km.	
33	20	"	I	e M C F	19 50 50 20 2.5 20 31.7 21 50		5.5 34.0		12.8 10.0 0.12 0.04			
34	21	"	I	e M F	10 50 59 11 5.6 11 15		5.5		7.7 8.2			
35	21	"	I	e M F	14 8 59 14 15.1 14 27		4.5		5.6 5.8		Felt in Atjeh.	
36	22	"	I	e F	9 28 11 9 48						Felt in Pekalongan.	
37	25	"	I	e M F	5 6 54 5 9.5 5 11		4.0		4.9 2.8			
38	25	"	II	P M	5 26 10 5 54.5		5.9		27.9 35.6		F masked by next record.	
39	25	"	II	M F	5 58.4 6 54							
40	25	"	I	e M F	10 13 4 10 20.5 10 57		6.1		43.7 60.1			
41	25	"	I	e M F	14 11 53 14 16.5 14 25		4.2		4.4 4.0			
42	26	"	II _v	iP S M F	10 0 58 10 1 39 10 10.0 10 24		5.9	350	24.1 12.2			
43	28	"	I _v	P S M F	15 12 15 15 12 44 15 12.8 15 17		1.6	290	5.9 5.6		Recorded at Malabar.	

SEISMOLOGICAL BULLETIN.

MARCH 1917.

BATAVIA OBSERVATORY, JAVA.

Foundation: River Quartair.

Mean Greenwich time. S. Latitude $6^{\circ} 11' 0''$. Height above sealevel 8 m.

E. Longitude $7^{\text{h}} 7^{\text{m}} 19''$.

WIECHERT Horizontal Pendulum, 1000 kilograms.

The symbols are according to WIECHERT.

N ^o .	Date 1917.		Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.	Distance of epi- centrum.	Amplitude (half)		Remarks.
										A _E	A _N	
44	2	March	I	e M F	h m s 2 42 57 2 52 3 2		5.6		μ μ 2.8 3.0			
45	6	"	I	e M F	3 24 54 3 29 4 7		5.0		3.1 4.3			
46	6	"	III _v	iP S-M F	6 53 55 6 54 11 6 46		2.0	160	160.7 167.4	Felt at several places in Bantam.		
47	8	"	II _v	P S M F	9 31 56 9 31 55 9 52 12 9 38		2.4	160	15.1 17.4	Begins during eclipse of minute mark. Malabar: S-P = 20 sec. Δ = 180 Felt at Lebak Parai res. Bantam.		
48	9	"	II _v	iP S M F	12 5 51 12 4 55 12 7 12 27		5.6	530	9.1 11.6	Direction E 28° S.		
49	10	"	I _v	P S M F	19 53 3 19 53 22 19 53 28 19 58		2.0	170	10.6 6.4			
50	14	"	II _v	P S M F	5 41 7 5 41 22 5 41 24 5 47		2.0	150	41.8 49.2	Malabar: S-P = 19 sec. Δ = 170 Strong microseismic movement. Felt at Lebak Parai res. Bantam and at Pitjoeng Poeger res. Preanger.		
51	18	"	I _v	P S M F	4 7 49 4 8 5 4 8 5 4 11		1.0	140	11.4 15.2			

N ^o .	Date 1917.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Distance of epicentrum.	Amplitude (half)		Remarks.	
										A _E	A _N		
52	21	March	I	eP	h	m	s	5.4		μ	μ		
				M	14	41	25			7.8	4.5		
				F	14	45	36						
55	31	"	I _v	P	11	5	50	4.0	550	14	1	13.2	
				S	11	4	49						
				M	11	6	16						
				F	11	14							

Remarks	Amplitude (half)		Distance of epicentrum.	Time (Greenwich)	Phase.	Character.	Date 1917.		N ^o .
	A _E	A _N					Day	Month	
	2.8	2.0		14 45 36	eP	I	21	March	52
	14	1		11 5 50	P	I _v	31	"	55
				11 4 49	S	I _v	31	"	55
				11 6 16	M	I _v	31	"	55
				11 14	F	I _v	31	"	55



SEISMOLOGICAL BULLETIN.

APRIL 1917.

BATAVIA OBSERVATORY, JAVA.

Foundation: River Quartair.

Mean Greenwich time. S. Latitude $6^{\circ} 11' 0''$. Height above sealevel 8 m.

E. Longitude $7^{\text{h}} 7^{\text{m}} 19^{\text{s}}$.

WIECHERT Horizontal Pendulum, 1000 kilograms.

The symbols are according to WIECHERT.

N ^o .	Date 1917.		Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.	Distance of epi- centrum.	Amplitude (half)		Remarks.
										A _E	A _N	
54	2	April	II.	P	h	m	s	5.5	900	12.0	13.9	
				S	7	55	28					
				M	7	57	5					
				F	7	59	45					
55	2	"	II.	P	14	58	15	5.2	440	41.9	69.4	Felt at Lahat res. Palembang, Sumatra.
				S	14	59	5					
				M	15	0	35					
				F	15	16						
56	2	"	I.	P	19	52	12	2.4	490	18.5	9.6	
				S	19	53	6					
				M	19	54	7					
				F	19	58						
57	3	"	II	eP	12	59	41	5.5		9.2	9.8	
				M	12	46						
				F	19	46						
58	3	"	I.	P	22	9	45	4.0	550	15.5	14.6	
				S	22	10	24					
				M	22	11	11					
				F	22	19						
59	7	"	I.	P	5	52	22	4.6	360	8.9	10.5	
				S	5	53	3					
				M	5	54	47					
				F	5	57						
60	7	"	I.	P	8	55	49	4.4	360	6.1	6.5	
				S	8	56	29					
				M	8	58	35					
				F	8	41						
61	10	"	I.	eP	18	15	57	4.4	830	18.6	15.1	Felt in Bali and Lombok and at Loemadjang res. Pasoeroean.
				S	18	17	8					
				M	18	18	54					
				F	18	30						
62	12	"	II.	eP	5	1	56	5.7	1650	18.0	14.9	
				S	5	4	44					
				M	5	17						
				F	5	57						

No.	Date 1917.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Distance of epicentrum.	Amplitude (half)		Remarks.
										A _E	A _N	
63	14	April	I,	iP	h	m	s	5.5	590	μ	μ	
				S	11	14	16			5.2	4.6	
				M	11	15	21					
				F	11	21	29					
64	16	"	I,	P	1	13	18	4.0	250			
				S	1	13	45			6.1	5.7	
				M	1	14	52					
				F	1	21						
65	16	"	II,	iP	18	46	19	5.6	950			
				S	18	48	2			125.7	106.4	
				M	18	51	50					
				F	19	51	50					
66	17	"	I	e	13	44	1	6.4				
				M	13	47				12.0	5.7	
				F	13	59						
67	19	"	I	e	4	20	10	4.8				
				M	4	21	25			8.8	14.1	
				F	4	25						
68	20	"	I	iP	17	25	58	4.5				
				S	17	25	58			15.7	12.9	
				M	17	27	55					
				F	17	56						
69	21	"	I	e	0	59	40	5.0				
				M	1	15				21.2	15.8	
				F	1	50						
70	21	"	I,	iP	22	49	58	4.8	460			
				S	22	50	50			15.2	11.1	
				M	22	51	20					
				F	23	1						
71	25	"	II	i	7	47	12	5.5				
				M	7	55	18			20.4	12.6	
				F	8	12						
72	26	"	I,	eP	17	40	40	4.4	440			Felt at several places in Madioen and at Loemadjang res. Pasoeroean.
				S	17	41	29			17.0	20.5	
				M	17	43	54					
				F	17	50						
73	26	"	I	e	25	53	28	4.2				Felt at Lebak Parai res. Bantam.
				M	25	55				8.1	7.9	
				F	0	15						
74	28	"	II,	iP	12	38	0	5.0	370			
				S	12	38	41			151.7	144.7	
				M	12	40	57					
				F	15	22						
75	29	"	I	e	12	14	50	7.0				
				M	12	50				4.4	4.8	
				F	12	47						

No.	Date 1917.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Distance of epicentrum.	Amplitude (half)		Remarks.	
										A _E	A _N		
76	30	April	I	P	h	m	s			μ	μ	Felt in Bali, Lombok and Soemba.	
				M	9	21	55	3.0		6.4	7.0		
				F	9	25	51						
					9	52							

SEISMOLOGICAL BULLETIN.

MAY 1917.

BATAVIA OBSERVATORY, JAVA.

Foundation: River Quartair.

Mean Greenwich time. S. Latitude $6^{\circ} 11' 0''$. Height above sealevel 8 m.

E. Longitude $7^{\text{h}} 7^{\text{m}} 19^{\text{s}}$.

WIECHERT Horizontal Pendulum, 1000 kilograms.

The symbols are according to WIECHERT.

N ^o .	Date 1917.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Distance of epi- centrum.	Amplitude (half)		Remarks.
										A _E	A _N	
77	1	May	II _r	P	h	m	s	6.2		μ	μ	Strong long waves.
				M	18	38	48			165.9	106.5	
				e _L	18	50						
				M _L	18	53						
				F	19	10				24	1322.0	
78	1	»	I	e	20	57					The registration of N ^o . 78 and N ^o . 79 is obscured by the end of N ^o . 77.	
				F	20	53						
79	1	»	I	e	21	4						
				M	21	14						
				F	21	35						
80	1	»	I	e	1	52						
				F	2	19						
81	2	»	I	e	14	25						
				F	15	5						
82	4	»	I	e	0	56		16				
				M	1	34						
				F	1	57						
83	6	»	I _v	iP	16	20	59	6.5	550	40.8	67.2	Direction: E W. Malabar iP = 16 20 41
				iS	16	21	58					
				M	16	25						
				F	16	41						
84	6	»	I	e	23	3	22	6.4				
				M	23	9			12.2	12.3		
				F	23	36						
85	7	»	I	e	8	18						
				F	8	56						
86	9	»	I	P	16	2	36	6.5		70.9	77.0	
				M _E ^m	16	5						
				M _S	16	6						
				F	17	7						
87	9	»	I _v	P	17	19	8	6	215	9.8	4.9	
				S	17	19	55					
				M	17	20	58					
				F	17	29						

No.	Date 1917.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Distance of epicentrum.	Amplitude (half)		Remarks.
										A _E	A _N	
					h	m	s			μ	μ	
88	9	May	I	e	20	41						
				F	21	55						
89	12	"	I	e	22	11						
				F	22	19						
90	12	"	I _v	P	22	40	17		180			Malabar:
				S	22	40	58					i P = 22 59 25
				M	22	42		6		9.8	7.1	S = 22 59 56
				F	22	50						Δ = 120
91	14	"	I	e	22	11						
				M	22	19		6		9.8	8.5	
				F	22	47						
92	25	"	I	e	21	51						
				M	22	2		6		10.5	8.0	
				F	22	10						
95	24	"	I	P	19	51	29					
				M	19	55						
				M _L	20	1		24				
				F	20	16						
94	25	"	I	e	7	11						
				F	7	26						
95	28	"	I	e	12	6						
				M	12	8		6		5.6	6.3	
				F	12	22						
96	29	"	I	e	6	14						
				M	6	22		6		7.2	8.9	
				F	6	44						
97	29	"	II _v	iP	15	2	1		180			
				iS	15	2	21					
				M	15	5		5.8		111.8	143.5	
				F	15	25						
98	31	"	I _u	e	9	1						
				M	9	16		6.2		15.4	15.1	
				M _{L1}	9	40		50		125.2	156.1	
				M _{L2}	9	48		50		217.4		
				F	10	54						

SEISMOLOGICAL BULLETIN.

JUNE 1917.

BATAVIA OBSERVATORY, JAVA.

Foundation: River Quartair.

Mean Greenwich time. S. Latitude $6^{\circ} 11' 0''$. Height above sealevel 8 m.

E. Longitude $7^{\text{h}} 7^{\text{m}} 19^{\text{s}}$.

WIECHERT Horizontal Pendulum, 1000 kilograms.

The symbols are according to WIECHERT.

No.	Date 1917.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Distance of epi- centrum.	Amplitude (half)		Remarks.
										A _E	A _N	
99	1	June	I	e M F	8 8 8	32 38 50	34			μ μ		
								5.5		11.2	12.8	
100	3	"	I	e P M F	14 14 15	58 45 12	22			54.8	71.1	Felt at Paloe and Dong- gala, Celebes.
								5.5				
101	6	"	I	e M F	9 9 9	54 41 51	46			7.8	4.7	
								6.0				
102	7	"	II _v	i P i S M F	5 5 5 5	59 59 41 59	7 25		160			Direction ESE-WNW.
								6.2		179.1	184.4	
103	7	"	I _v	P S-M F	18 18 18	55 55 59	4 19		150			Very small.
104	7	"	I	e M F	19 19 20	56 47 7						
105	13	"	I _u	P S? M _m e _L M _{L1} M _{L2} F	6 7 7 7 7 7 8	55 5 5 21 26 50 17	51 15		8420?			
								6		22.7	17.2	
								19.6		105.8	155.5	
								19.6		157.2	78.6	
106	15	"	I	e F	17 17	12 21						
107	18	"	I	e M F	22 22 22	18 21 57				14.1	8.5	
								5.6				
108	21	"	I _r	P S? M F	17 17 17 18	45 47 49 10	2 22		1520?			
								5.7		71.7	75.0	

No.	Date 1917.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Distance of epicentrum.	Amplitude (half)		Remarks.
										A _E	A _N	
109	24	June	I	e	h	m	s			μ	μ	
				P	2	26	0					
					2	35						
110	24	"	I	i	20	0	57					
				M	20	10		6.2		36.3	37.1	
				F	20	52						
111	25	"	I	e	10	51						
				F	10	41						
112	26	"	II _n	iP	6	1	43		8740?			
				S?	6	11	50					
				M	6	14		6.5		128.7	97.5	
				eL	6	22						
				M _{L1}	6	27		44.0		1521.0	1231.0	
				M _{L2}	6	37		18.0		347.0	594.0	
				F	8	57						

SEISMOLOGICAL BULLETIN.

JULY 1917.

BATAVIA OBSERVATORY, JAVA.

Foundation: River Quartair.

Mean Greenwich time. S. Latitude $6^{\circ} 11' 0''$. Height above sealevel 8 m.

E. Longitude $7^{\text{h}} 7^{\text{m}} 19^{\text{s}}$.

WIECHERT Horizontal Pendulum, 1000 kilograms.

The symbols are according to WIECHERT.

No.	Date 1917.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Distance of epicentrum.	Amplitude (half)		Remarks.
										A _E	A _N	
					h	m	s			μ	μ	
113	4	July	I _r	iP iS M F	0	45	29	6.0	5810			Registration fails from July 1, 8 ^h till July 2, 8 ^h .
					0	51	10					
					0	52	59					
					1	47						
114	4	"	I _r	P S? M F	5	45	38	6.0	3690	28.6	15.8	
					5	49	8					
					5	50						
					6	27						
115	4	"	I _r	P M F	22	14	58	5.5		38.8	41.6	
					22	27						
					22	47						
116	7	"	I _v	P S M F	12	55	40	5.2	450	40.1	44.3	Malabar iP — iS = 40 sec. △ = 560 Felt in the res. Banjoemas, Kedoe, Madioen, Kediri and Pasoeroean.
					12	54	27					
					12	55	31					
					12	52						
117	9	"	I _v	P iS=M F	19	6	45	2.1	140			Malabar iP — iS = 12 sec. △ = 110 k m.
					19	7	2					
					19	11						
118	12	"	I	e F	11	51						
					12	27						
119	15	"	I	e F	10	58						
					11	16						
120	22	"	I _v	P iS M F	7	0	51	2.1	200	22.5	12.7	Malabar P — S = 25 sec. △ = 215
					7	1	14					
					7	2						
					7	8						
121	27	"		e F	1	27						
					1	55						
122	27	"	I	e M ^m e _L M _L F	3	9		5.6		8.7	17.5	
					3	14						
					4	0						
					4	4						
					4	37		24.0		37.1	60.9	
123	27	"	I	e	25	43						
	28	"		F	0	14						

No.	Date 1917.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Distance of epicentrum.	Amplitude (half)		Remarks.
										A _E	A _N	
124	28	July	I,	iP	h	m	s	4.2	190	56.5	59.7	Malabar iP — iS = 9 sec. △ = 80
				iS	20	10	41					
				M	20	11	1					
				F	20	11	41					
125	29	»	I	P	14	42	17	6.1				
				M	14	50						
				F	15	37						
126	29	»	II,	iP	21	59	15	6.1	810	163.7	119.5	Direction E-W.
				iS	22	0	43					
				M ₁	22	2						
				M ₂	22	8						
				F	23	47						
127	30	»	I	e	15	51		12.0	525.8	230.5		
				M	13	59						
				F	14	24						
128	30	»	I	e	16	29						
				F	16	50						
129	31	»	II,	P	0	0	55	12.0	3670?	525.8	230.5	
				S?	0	6	24					
				M	0	15						
				F	1	2						
130	31	»	I	e	3	20	46	6.0		49.9	40.9	
				M	3	40						
				F	4	12						
131	31	»	I,	P	12	20	25	5.1	250	7.6	6.4	Malabar P — S = 50 sec. △ = 270
				S	12	20	57					
				M	12	22						
				F	12	27						

SEISMOLOGICAL BULLETIN.

AUGUSTUS 1917.

BATAVIA OBSERVATORY, JAVA.

Foundation: River Quartair.

Mean Greenwich time. S. Latitude $6^{\circ} 11' 0''$. Height above sealevel 8 m.

E. Longitude $7^{\text{h}} 7^{\text{m}} 19^{\text{s}}$.

WIECHERT Horizontal Pendulum, 1000 kilograms.

The symbols are according to WIECHERT.

No.	Date 1917.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Distance of epi- centrum.	Amplitude (half)		Remarks.
										A _E	A _N	
152	5	Aug.	I	eP F	18 19	40 2			μ	μ	N- Mindanao.	
153	5	"	I _n	P S M e _L M _L F	16 16 16 16 17	1 10 11 27 40 24	45 55 57	5.6 16.0	28.4 44.7	34.0 52.6	7770 North Island (New-Zealand).	
154	7	"	I	e M F	16 16 16	0 6 39	23	6.0	20.4	21.4		
155	10	"	I _v	iP iS M F	5 5 6 6	58 58 0 10	16 42 4	4.0	18.4	15.1	Malabar iP = 5 58 7 iS = 5 58 15 $\Delta = 110$	
156	10	"	I	eP M F	22 22 22	10 16 30	28 11	6.0	25.5	40.2	Felt at Paleleh, Sumatra.	
157	14	"	I _v	iP iS M F	19 19 19 19	32 33 34 47	39 17 21	5.6	45.4	90.0	Felt at Moeara Doea res. Palembang, Sumatra.	
158	21	"	I	e M F	15 15 15	27 34 50	30	5.1	14.2	17.2	Felt at Babar, res. Amboina.	
159	26	"	I	e F	5 4	50 9						
140	29	"	I	e M F	15 15 15	29 32 50	26	4.6	12.4	16.1	Felt at Babar, res. Amboina.	
141	30	"	III _r	P S M F	4 4 4 5	11 15 17 57	54 55	6.0	>359.2	>365.9	Direction E 17° S. Rather severely felt at Ti- mor, Roti the Zuid-Wes- ter eil. and at sea near Serwaroe.	
142	31	"	I _r	e M _{av} e _L M _L F	11 12 15 15 15	56 11 2 16 47	55	5.6 24	19.7 45.9	56.6 50.8	Also at Dobo, Neira and Kaimana	

SEISMOLOGICAL BULLETIN.

SEPTEMBER 1917.

BATAVIA OBSERVATORY, JAVA.

Foundation: River Quartair.
 Mean Greenwich time. S. Latitude $6^{\circ} 11' 0''$. Height above sealevel 8 m.

E. Longitude $7^{\text{h}} 7^{\text{m}} 19^{\text{s}}$.

WIECHERT Horizontal Pendulum, 1000 kilograms.

The symbols are according to WIECHERT.

No.	Date 1917.		Character.	Phase	Time (Greenwich).			Period in seconds	Distance of epi- centrum.	Amplitude (half)		Remarks.
										A _E	A _N	
143	2	Sept.	I _v	P iS M F	h 14 14 14 14	m 20 20 21 26	s 30 54 38		220	μ 11.4	μ 11.0	
144	6	"	II _v	iP iS M F	1 1 1 1	38 38 41 54	52 52	4.8	190	108.2	111.1	
145	7	"	I	e F	22 22	25 47						S.E-Luzon.
146	9	"	I	e M F	0 1 1	59 5 24		4.4		25.4	25.2	
147	9	"	I	e F	4 4	6 17						
148	10	"	I _v	iP iS-M F	22 22 22	47 47 54	54 50	1.0	140	15.9	15.2	Felt at Pitjoeng-Poeger Preanger.
149	12	"	I	e F	4 4	13 24						Felt at several places on Bali.
150	14	"	I	e M F	18 18 18	9 14 25		6.0		9.1	11.9	
151	16	"	I _v	eP S-M F	12 12 12	35 35 39	41 58		145			
152	17	"	I	e M F	10 10 10	4 8 18		4.6		6.5	6.1	Felt at Singkel, Atjeh, Su- matra.
153	17	"	I	e M F	22 22 22	16 25 28		5.4		13.5	21.6	

No.	Date 1917.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Distance of epicentrum.	Amplitude (half)		Remarks.
					h	m	s			A _E	A _N	
154	20	Sept.	I	e	3	1			μ	μ		
				M	3	11	6.0		7.5	9.1		
				F	3	47						
155	24	"	I _r	iP	20	16	21	4950				
				iS	20	23	0					
				M	20	25		5.5	58.2	62.2		
				F	20	48						



SEISMOLOGICAL BULLETIN.

OCTOBER 1917.

BATAVIA OBSERVATORY, JAVA.

Foundation: River Quartair.

Mean Greenwich time. S. Latitude $6^{\circ} 11' 0''$. Height above sealevel 8 m.

E. Longitude $7^{\text{h}} 7^{\text{m}} 19^{\text{s}}$.

WIECHERT Horizontal Pendulum, 1000 kilograms.

The symbols are according to WIECHERT.

No.	Date 1917.		Character.	Phase.	Time (Greenwich)			Period in seconds.	Distance of epi- centrum.	Amplitude (half)		Remarks.
										A _E	A _N	
156	3	Oct.	I	i	h	m	s	5.2		μ	μ	Felt at Paleleh and Gorontalo, Celebes.
				M	7	20	49			18.5	13.4	
				F	7	25						
157	9	»	I	e	9	1						
				F	9	12						
158	14	»	I	e	2	59	42	5.2		16.5	23.3	
				M	2	42						
				F	2	59						
159	14	»	I	e	6	12					Felt at Paleleh, Celebes.	
				F	6	20						
160	17	»	I	e	8	11						
				F	8	16						
161	17	»	I	e	15	58						
				F	15	56						
162	19	»	I	e	17	20	10	6.0		8.7	5.0	
				M	17	24						
				F	17	36						
163	20	»	I	e	17	45						
				F	17	56						
164	29	»	I	e	20	44	37	5.2		13.1	23.7	
				M	20	52	37					
				F	21	9						

SEISMOLOGICAL BULLETIN.

NOVEMBER 1917.

BATAVIA OBSERVATORY, JAVA.

Foundation: River Quartair.

Mean Greenwich time. S. Latitude $6^{\circ} 11' 0''$. Height above sealevel 8 m.

E. Longitude $7^{\text{h}} 7^{\text{m}} 19^{\text{s}}$.

WIECHERT Horizontal Pendulum, 1000 kilograms.

The symbols are according to WIECHERT.

No.	Date 1917.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Distance of epi- centrum.	Amplitude (half)		Remarks.	
										A _E	A _N		
165	2	Nov.	I _v	iP	h	m	s	3.1	185	μ	μ	Direction E-W.	
					25	44	41			94.7	98.2		
				iS	25	45	1						
				M	25	46	55						
	3	"		F	0	5							
166	3	"	II	eP	12	6	47	6.0	187.0	106.0		Probably felt at Sinabang on Simeuloe W. of Su- matra.	
					12	12	26						
					13	27							
167	3	"	I _v	iP	21	18	22	3.8	225	99.4	125.7	Felt in Bantam, Java and Lampongsche Distr., Su- matra. Malabar: $\Delta = 510$	
					21	18	47						
					21	19	55						
					21	34							
168	15	"	I	eP	20	3	41	6.0	12.7	6.5			
					20	9							
					20	20							
169	15	"	I	e	17	8							
					17	29							
170	16	"	I _u	iP	3	51	9	6.0	8000?	31.5	22.6		
					M _m	3	40						
					e _L	3	50						
					M _{L1}	4	2						24.0
					M _{L2}	4	7						19.5
					F	5	17						
171	16	"	I _v	iP	19	37	10	5.2	190	54.5	50.2	Direction E-W.	
					S	19	37						51
					M	19	39						
					F	19	46						
172	16	"	II _r	P	22	21	58	6.0	2500?	89.9	60.5		
					S?	22	26						5
					M	22	28						
					F	23	0						
173	18	"	II _r	iP	5	2	51	6.6	216.0	231.0		Direction SW-NE.	
					M	3	8						
					F	4	2						
174	20	"	I	e	15	40							
					F	15	57						

No.	Date, 1917.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Distance of epicentrum.	Amplitude (half)		Remarks.
										A _E	A _N	
175	21	Nov.	I,	P	h	m	s	2.0	155	15.9	14.6	Felt at Lebak Parai, Bantam and Bodjong Aseh, Preanger. Malabar: $\Delta = 160$
				S	13	24	20					
				M	13	24	57					
				F	13	25	17					
176	22	"	I	e	6	23	6.5		21.3	41.0		
				F	6	59						
177	24	"	I	e	11	18	6.5		21.3	41.0		
				M	11	23						
				F	11	45						
178	30	"	I	e	17	14						
				F	17	55						

SEISMOLOGICAL BULLETIN.

DECEMBER 1917.

BATAVIA OBSERVATORY, JAVA.

Foundation: River Quartair.

Mean Greenwich time. S. Latitude 6° 11' 0". Height above sealevel 8 m.

E. Longitude 7^h 7^m 19^s.

WIECHERT Horizontal Pendulum, 1000 kilograms.

The symbols are according to WIECHERT.

N ^o .	Date 1917.		Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.	Distance of epi- centrum.	Amplitude (half)		Remarks.
										A _E	A _N	
179	1	Dec.	I	e	h	m	s			μ	μ	
				F	18	28						
					18	41						
180	2	"	I	e	4	41	25	4.8	190	24.6	17.2	
				M	4	48						
				F	5	2						
181	9	"	I	e	5	37						
				F	5	49						
182	9	"	I	e	16	8						
				F	16	16						
183	12	"	I	e	8	5	20					
				M	8	10						
				F	8	30						
184	18	"	I _v	iP	23	26	9	5.7	190	56.5	39.5	Felt at Growong, Preanger.
				iS	23	26	29					
				M	23	27	57					
				F	23	35						
185	29	"	I _v	iP	17	7	1	2.0	165	20.9	14.1	
				iS = M	17	7	21					
				F	17	11						
186	29	"	I _u	e	23	8	15	4.5		10.0	11.2	
				M _m	23	12						
	50	"		M _L	0	52	20.0					
				F	1	2						