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EXCHANGE PUBLICATIONS

REQUESTED.

SEISMOLOGICAL BULLETIN.

JANUARY 1910.

BATAVIA OBSERVATORY, JAVA.

 Mean Greenwich time. S. Latitude $6^{\circ} 11' 0''$.

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

WIECHERT Horizontal Pendulum, 1000 kilograms.

The symbols are according to WIECHERT.

No.	Date 1910.	Character.	Phase.	Time (Greenwich).			Period in seconds.		Amplitude		Remarks.
							A _E .	A _N .	A _E .	A _N .	
1	1 January.	II _a	P	11	22	35					P not quite certain. In L periods of 19—25 and 30 seconds.
			M ₁		47		11	12.4	14.0		
			e L		54		23				
			M ₂	12	45		19	21.0	21.6		
			F	15	31						
2	6	I _r	P	20	2	12					
			S, M		7	29	6	6.2	8.7		
			P S?		8	36					
			F		25						
3	5	I		0	46	till				Strengthening of the microseismic movement.	
				00	56						
4	" "	I		10	22	till				As preceding disturbance.	
				10	30						
5	" "	I _r	P	14	37	13					In Shanghai. P very small, somewhat uncertain.
			S, M ₁	13	5	44	6.3	8.5	5.6		
			e L		14						
			M ₂		19		10	6.7	10.9		
			F		45						
6	9	I _r	P	9	15	14					P and S uncertain.
			S		20	14					
			M		22	22	5.5	7.1	9.5		
			F		41						
7	15	I _r	P	0	22	22					
			S		30	21					
			M		31		6.5	12.8	10.7		
			F		34						
8	15	I _n	P	10	43	36					P and S very uncertain.
			S, M		49	32	6	3.1	3.6		
			F		11	6					

N ^o .	Date 1910.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude		Remarks.
									A _E .	A _N .	
9	15	January.	II _r	i P	22	24	6		μ	μ	Philippines Felt in Hal- maheira and Talaud is- lands.
				i S		28	7				
				P R		24	59				
				S R?		30	17				
				M _E		28	17	6	150.5		
				M _N		29	37	6		113.8	
10	19	»	I	begin- ning	15	2	54				
				M		13	14	5	6.6	6.2	
				F		22					
11	19	»	I _v	P	19	59	4				
				S	20	0	12				
				M		1	15	5.5	27.5	29.4	
				F		8					
12	21	»	I	P	2	55	56				P uncertain.
				M	5	4		10.0	9.5	8.5	
				F	5	23					
13	22	»	I _u	begin- ning	9	8	38				Amplitude and period in- crease regularly L in the beginning 60 sec., afterwards 15 seconds.
				L		41	28	60			
				M		55		15	14.2	14.6	
				F	11	18					
14	23	»	I _u	P	19	9	53				P uncertain. L in the be- ginning 60 sec., than 45 sec., afterwards 15—20 sec.
				M		18		5.5	9.9	9.5	
				L		58					
				F	20	48					
15	25	»	I _v	P	15	19	41				
				S		20	35				
				M		21	40	6	15.5	14.6	
				F		52					
16	30	»	II _u	P	3	54	53				Registered in Ambon. P uncertain.
				L	4	9					
				M _E		13		21	77.0		
				M _N		19		21		67.6	
				F	5	32					
17	31	»	I		16	1	till				Strengthening of the mi- croseismic movement.
					16	6					

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FEBRUARY 1910.

BATAVIA OBSERVATORY, JAVA.

Mean Greenwich time. S. Latitude $6^{\circ} 11' 0''$.

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 1910.		Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Remarks.
									A _E .	A _N .	
18	2	February.	I	P	h	m	s		μ	μ	P uncertain.
				M	4	27	2				
				F		30		5	10.8	8.9	
19	2	"	I	P	11	10	40				P very uncertain, ampli- tude is very small.
				e L		33	40				
				F		45					
20	3	"	I		10	5	till				Very small.
						9					
21	5	"	I _u	P	16	54	31				
				S	17	5	4				
				M ₁		5		5.5	22.8	17.8	
				e L		12					
				M ₂		22		14		13.5	
				F		54					
22	4	"	II _u	P	14	10	42				The end of the earthquake dissolves in the next one.
				P R		14	2				
				S		19	5				
				M ₁		20	18	6	42.7	32.1	
				L		22	18				
				M ₂		58		20	67.8	82.5	
25	4	"	I	P	14	50	52				
				S		59	16				
				F	15	52					
24	4	"	I _u	P	17	47	29				Dissolves in the next one.
				S, M		55	47	6	15.0	18.5	
25	4	"	I _u	P	18	42	41				
				S, M ₁		51	40	6	12.5	16.1	
				M ₂	19	11		21	9.2	8.3	
				F		52					
26	8	"	I _u	P	11	55	21				P not quite certain by mi- croseismic movement.
				S		56	40				
				M		40		6	7.9	8.9	
				F		40					
				F		52					

No.	Date 1910.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Remarks.
									A _E .	A _N .	
27	10	February.	I _u	P S M F	h 8	m 4	s 44	6	μ 2.7	μ 4.9	P and S uncertain.
28	12	"	III _u	P P R? S, M F	18	18	29	6	166.5	291.8	
29	12	"	I		22	27	till				Very small.
30	15	"	I		16	21	till				Very small.
					16	42					
					16	58	till				
					17	6					
31	14	"	I		17	24	till				Very small.
					17	30					
32	15	"	I	P M F	10	25	45	6	3.4	6.7	
						31					
						55					
33	17	"	I _u	P S M F	18	8	16	6	19.5	25.4	
						9	15				
						10	27				
						21					
34	18	"	I _u	P S M F	4	17	5	5.5	8.8	8.7	S uncertain.
						27	31				
						29					
						38					
35	25	"	I		25	41	till				Very small.
					25	55					
36	25	"	I	P M F	4	7	45	6	11.3	11.6	P very uncertain.
						15	8				
37	27	"	I _u	P S M F	14	34	5	10	3.8	4.7	
						55	49				
						45					
						15	15				
38	28	"	I	L F	22	4		15			Long waves of small amplitude.
						50					

Dr. W. VAN BEMMELEN.

SEISMOLOGICAL BULLETIN.

MARCH 1910.

BATAVIA OBSERVATORY, JAVA.

Mean Greenwich time. S. Latitude $6^{\circ} 11' 0''$.

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

WIECHERT Horizontal Pendulum, 1000 kilograms.

The symbols are according to WIECHERT.

No.	Date 1910.	Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Remarks.
								A _E .	A _N .	
39	1 March.	I		h	m	s		μ	μ	Small waves.
				21	47					till
				22						
40	2 "	I		15	6					Small waves.
					till					
				15	22					
41	4 "	I		25	5					Small waves.
					till					
				25	15					
42	7 "	II _v	P	1	58	45				P small and uncertain.
			S	1	40	6				
			M	1	42		5.5	82.0	70.5	
			F	2	5					
45	7 "	I	P	16	10	55				
			M		22		10	9.8	7.5	
			F		56					
44	11 "	I _v	i P	9	24	49				Felt in the Preanger Re-
			i S		25	11				gencies.
			M		26.5		5.5	17.5	10.7	
			F		52					
45	15 "	I _r	P	14	51	40				
			S, M		55	57	5	8.5	11.0	
			F	15	8					
46	15 "	I		21	5					Small waves.
					till					
				22						
47	17 "	I		9	56					Small waves.
					till					
				10	5					
48	17 "	I		11	26					Small waves.
					till					
				11	37					

No.	Date 1910.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Remarks.
									A _E .	A _N .	
49	18	March.	I	P M F	h 5	m 59	s 56	6	μ 5.1	μ 5.2	P uncertain.
50	18	"	I	P F	15	21	40				Very small.
51	24	"	I _v	i P i S, M F	20	27	50	1	45.3	54.5	
52	24	"	I _v	P i S, M F	21	30	53	1	12.5	11.7	Is just like the preceding diagram.
53	25	"	I	P M F	15	44	4	6	2.7	5.2	P uncertain.
54	27	"	I _v	P S M F	4	35	54	7	26.7	33.1	Felt in South-Sumatra.
55	29	"	I		6	1	till				Small waves.
56	30	"	II _u	P S M ₁ e L M ₂ F	17	6	13	6.5	45.7	54.4	
57	31	"	I _u	P S M ₁ L M ₂ F	18	37	23	6.5	5.5	20.8	P and S uncertain.
					19	5	23	28	29.1	34.8	
						9		28			
						45					

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APRIL 1910.

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Mean Greenwich time S. Latitude $6^{\circ} 11' 0''$.

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

WIECHERT Horizontal Pendulum, 1000 kilograms.

The symbols are according to WIECHERT.

No.	Date 1910.		Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.		Amplitude (half)		Remarks.	
								A _E .	A _N .	A _E .	A _N .		
					h	m	s			μ	μ		
58	1	April.	II _r	P	13	55	48						S uncertain. Felt in Banda Neira, Molucas.
				P R		55	22						
				S		58	19						
				M		59	22	6	69.6	62.0			
				L	14	1		13					
			F	14	40								
59	2	»	I _r	P	12	19	51					P and S uncertain.	
				S		24	57						
				M		25		6	5.8	4.5			
				F		41							
60	4	»	I	P	7	58	55					P and S very uncertain.	
				S		8	4	25					
				M			3		4.9	4.9			
				F		16							
61	8	»	I _r	P	10	25	21					Felt in Tjikembang and Tjipetir, Preanger.	
				S		25	40						
				M		26	18	6	12.5	11.6			
				F		30							
62	8	»	I _u	P	16	46	10					S uncertain.	
				S		53	36						
				M ₁		57		6	16.6	15.8			
				M ₂	17	17		28	18.2	16.8			
				F		50							
63	9	»	I	P	9	39	25					P very uncertain.	
				M		47			5.5	4.0			
				F	10	1							
64	12	»	III	P	0	28	49					P is very strong, S is im- perceptible. Felt in N.-Formosa.	
				P R		30	55						
				M		38	27	6	150.6	138.5			
				e L		41							
				F	1	58							
65	14	»	I _r	P	21	29	2						
				M		52	31	4	52.7	28.9			
				F	22	0							

N ^o .	Date 1910.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Remarks.
									A _E .	A _N .	
66	15	April.	I,	P iS. M F	h 5 53 55 6 1	m 55 52	s 55 52	1	50.8	51.9	Felt in Tjipetir, Preanger.
67	16	"	II,	P S M F	12 34 44 58 34 44	15 35		12	56.8	66.1	S. uncertain. Felt in Banda Neira, Moluccas.
68	17	"	I	L	1 39 till 2 8			17	2.5	5.6	Only long waves.
69	17	"	I,	P S M F	6 11 25 11 48 12 55 25			5.5	28.7	20.6	P uncertain. Felt in Tjilatjap, Banjoemas.
70	17	"	I		11 8 till 11 15						Short waves of small amplitude.
71	17	"	I		11 58 11 42						Small waves, period 6 seconds.
72	18	"	I,	P S M F	20 55 55 55 50 56 16 21 0			6 (and 1)	6.6	6.7	S a little uncertain by minute mark. Felt in Malingping, Bantam.
73	20	"	I _u	P S, M _N M _E F	22 35 5 42 7 45 2 23 6			6.5 6.5	46.2 15.0		
74	22	"	I	Beginning M F	2 41 4 45 47			6.0	5.5	4.5	Felt in Paleleh, Celebes.
75	22	"	I,	P M F	14 52 54 55			5	12.7	8.8	Felt in Lembang, Preanger.
76	27	"	I	L	5 2 till 5 16			22			Long waves of small amplitude.
77	29	"		P F	17 11 25 17 15						Very small short waves.

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MAY 1910.

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

WIECHERT Horizontal Pendulum, 1000 kilograms.

The symbols are according to WIECHERT.

No.	Date 1910.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Remarks.
									A _E .	A _N .	
78	1	May.	II _r	P	18	40	57	7	22.7	27.7	Earthquake in New Guinea.
					P R	44	57				
					S, M ₁	49	14				
					e L	54	29				
					M ₂	19	16				
F	20	3									
79	1	"	I		21	41					
					21	till 45					
80	1	"	II _v	P	22	28	57	5.5	94.6	87.0	Long waves of 10.5 seconds are beginning at the same time as P.
					S	29	14				
					M	31					
					F	31					
81	1	"	I _v		25	48					Felt in Friesland estate, Preanger Regencies.
					25	till 52					
82	3	"	I		25	58					
					4	till 15					
83	4	"	I		15	26					
					15	till 55					
84	7	"	I _v	P	10	39	11	6	8.8	10.5	
					M	40	6				
					F	45					
85	10	"	I _n	i P	9	39	57	6	15.2	14.8	
					i S, M _E	45	45				
					M _N	47	4				
					F	55					
86	10	"	I		14	12					
					14	till 19					

N ^o .	Date 1910.		Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.		Amplitude (half)		Remarks.
								A _E .	A _N .	μ	μ	
87	10	May.	I		h	m	s					Felt in Mindanao, Philip- pines.
					14	33						
					till							
					14	48						
88	10	"	I _r	P S M F	15	11	17					P and S a little uncertain. Felt in Mindanao, Philip- pines.
								6	11.1	12.6		
89	10	"	I _r	P S M F	16	21	57					P uncertain. Felt in Butuan Bay, Phi- lippines.
								6	11.8	14.8		
90	11	"	I		16	7						
					till							
					16	14						
91	15	"	I		8	12						The first part waves of 6 seconds, the second part long waves. The diagram is disturbed by strong microseismic mo- vement.
					8	46						
					9	6						
					9	till						
					9	25						
92	15	"	II _r	P P R S M F	16	8	50					S uncertain.
						10	4					
						12	6					
						14			6	72.3	62.7	
						52						
93	16	"	I _r	P S M F	14	19	56					
						22	59		6	6.8	7.8	
						51						
94	18	"	I	P e L M F	9	12	48					P uncertain.
						38	48					
						48			16	5.7	6.5	
					10	9						
95	20	"	I		4	7			6			
					till							
					4	18						
96	20	"	I _r	P S M F	15	28	54					Felt in Tasikmalaja, Prean- ger. P a little uncertain.
						29	19		6	3.0	3.1	
						50	22					
						52						
97	20	"	I _r	P S M F	16	29	53					Felt in Tasikmalaja and Malabar, Preanger. P and S uncertain.
						30	52					
						51	36		6	2.0	2.6	
						55						

N ^o .	Date 1910.		Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Remarks.	
									A _E .	A _N		
98	21	May.	I	Beginning M F	h	m	s				Small amplitude.	
					22	52	5					
					23	2						
					23	11						
99	22	"	I _u	P S M ₁ e L M ₂	6	34	35				S a little uncertain. Dissolves into next one.	
						42	58		6	6.8	8.7	
						45			26	32.9	37.1	
						47	4					
						58						
100	22	"	I	P e L F	7	4	3				P uncertain.	
						55	29					
						58						
101	28	"	I	P F	5	48	46					
						52						
102	29	"	I	P F	6	3	50					
					6	6						
103	31	"	I _u	P M ₁ e L M ₂ F	5	15	55				P uncertain. At 5 ^h 50 the movement becomes im- perceptible.	
						20	0		5	6.5	6.8	
						6	19		25			
						6	48					
						7	8					
104	31	"	I	P M F	9	46	50				P uncertain.	
					9	55						
					10	8						

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JUNE 1910.

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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 1910.		Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Remarks.		
									A _E .	A _N .			
					h	m	s		μ	μ			
105	1	June.	II _n	P	6	5	54						
				P R		10	47						
				S, M _N		14	17	6.5		43.6			
				M _E		16		7	55.7				
				e L		18	50	17					
				M ₂		34		20	63.7	47.7	Dissolves into next one.		
106	1	»	I _n	P	6	58	37						
				S, M _N		7	6	57	6		45.9		
				M _E		7	9		6.5	29.9			
				F		7	58						
107	1	»	I _r	P	18	20	17						
				S		23	57					S uncertain.	
				M _E		24		6	29.4			Felt on the isle of Wetter.	
				M _N		25		6		41.8			
				F		41							
108	2	»	II _v	P	11	26	33						
				S		27	29					S not quite certain. At	
				M		29		5.5	109.3	102.4		11 ^h 28 ^m 9 ^s waves with	
				F		47						period of 11 seconds.	
109	5	»	II _v	P	21	30	4						
				S		30	59					Felt on Java in the Resi-	
				M		35		5.5	110.1	153.6		dencies of Preanger, Che-	
				F		55						ribon, Pekalongan, Se-	
110	9	»	I _n	P	11	56	49						
				S, M ₁		12	5	55	6	5.1	14.5	P and S a little uncertain.	
				e L		11							
				M ₂		14		31	2.4	2.4			
				F		32							
111	11	»	I _v	P	6	5	42	5 (and 6)					
				S		6	34						
				M		7							
				F		16							

No.	Date 1910.		Character.	Phase.	Time (Greenwich).			Period in seconds.		Amplitude (half)		Remarks.
								A _E .	A _N .	μ	μ	
112	11	June.	I _v	P S M F	h 14	m 0	s 52	5 (and 6)	50.5	28.0	Felt in the Residencies of Preanger, Cheribon, Banjoemas, Kedoe, Djokakarta and Madioen.	
115	13	"	I _v	P M F	2	11	52	6	6.1	7.9	P uncertain. Felt in Wates, Djokakarta.	
114	14	"	I	P M F	7	42	9	4	7.2	7.5	P uncertain.	
115	16	"	III _u	i P i P' i S M e L M ₂ P	6	40	37	6	151.7	291.9	i P' seems to be the beginning of a second shock.	
116	17	"	I _v	P S M F	5	55	26	6	15.5	12.4	Earthquake in the northern part of Luzon, Philippines.	
117	21	"	I	P M F	7	50	54	6	8.1	10.8	P uncertain. Felt in Paleleh, Gorontalo and Kwandang, Menado, Celebes.	
118	22	"	II _v	P S, M F	1	56	56	5	91.5	125.7	Felt in Malabar, Preanger.	
119	22	"	I _v	P S M F	14	57	29	6	11.8	16.6	P uncertain.	
120	25	"	II _v	P S M F	2	52	51	6.5	61.2	66.5	Felt in Posso and Paleleh, Menado, Celebes.	
121	24	"	I	P M F	2	29	55	6.5	9.5	9.7	P uncertain.	
122	25	"	I	P M F	19	44	59	6.5	5.6	5.2	P uncertain.	

No.	Date 1910.		Character.	Phase.	Time (Greenwich).			Period in seconds.		Amplitude (half)		Remarks.
								A _E .	A _N .	μ	μ	
123	29	June.	I _u	P M ₁ e L M ₂ F	h 10	m 56	s 52	7 22 18	13.6	12.2	P uncertain.	
124	29	"	I _u	P M ₁ e L M ₂ F	14	29	22	6	10.5	7.5	P very uncertain. Resembles the preceding one.	
125	29	"	I _u	P S M F	18	12	55	6	18.6	52.7	P uncertain.	
126	30	"	II _v	P S M ₁ e L M ₂ F	2	58	55	6	66.5	72.5	Felt on the Talaud Isles.	
					3	2	45	16	48.5	56.4		

SEISMOLOGICAL BULLETIN.

JULY 1910.

BATAVIA OBSERVATORY, JAVA.

Mean Greenwich time. S. Latitude $6^{\circ} 11' 0''$.

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

WIECHERT Horizontal Pendulum, 1000 kilograms.

The symbols are according to WIECHERT.

No.	Date 1910.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Remarks.
									A _E .	A _N .	
127	2	July.	I,	P	h	m	s	6	15.1	17.1	P and S uncertain.
				S	5	41	35				
				M		46	12				
				e L		49					
128	3	"	I	P	6	6		6	6.3	7.4	P uncertain.
				M	2	2	35				
				F		7					
						20					
129	3	"	I	e L	6	48		6	7.7	6.5	
						56					
130	3	"	I,	P	17	27	52	6	7.7	6.5	
				S		32	15				
				M		32	25				
				F		44					
131	4	"	I	P	19	35	30	6	3.3	3.2	
				M		38	5				
				F		42					
132	5	"	II,	P	3	28	36	5	44.8	42.1	S uncertain.
				S		29	41				
				M		31	14				
				F		58					
133	5	"	I	P	4	16	15	6	15.4	8.8	
				M		19					
				F		32					
134	5	"	I	e L	11	18		18			
						till					
135	5	"	I		11	22					
					18	39					
					18	till					
136	6	"	I	P	2	25	5	4	6.3	5.9	P very uncertain.
				M		28					
				F		45					

No.	Date 1910.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Remarks.
									A _E .	A _N .	
137	6	July.	I,	P M F	h m s 21 20 7	3	15.0	13.3			
138	7	"	I	S? M F	7 54 31 55 4	6	7.0	5.6			
139	7	"	III,	P S M	8 18 4 19 17	6	>260	>520		Felt in Kediri, Soerakarta probably from the Indian Ocean. No registration from July 7, 8 ^h 20 — July 8, 1 ^h 5.	
140	8	"	II,	P S M	2 50 55 52 9 55	6	79.4	98.5		Dissolves into next one. Felt in Djebeng and Poeloeng, Madioen.	
141	8	"	II,	P S M	3 27 44 29 1	5	80.9	90.8		Dissolves into next one.	
142	8	"	III,	P M F	3 59 54 5 18	6	>280	>550		Felt in Madioen and Pasoe-roean. 139, 140, 141 and 142 are probably from the same origin.	
143	8	"	I	P M F	5 54 43 57 6 10					P very uncertain.	
144	8	"	I	P M F	8 24 12 26 35	6	7.7	11.6			
145	8	"	I		10 46 till 10 54						
146	8	"	I		16 19 till 16 36						
147	9	"	II,	P M F	7 26 21 29 53	5	40.6	57.5			
148	10	"	II,	P S M F	2 59 3 3 0 3 1 51	6	107.7	110.5			
149	11	"	I		16 37 till 16 46						

No.	Date 1910.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Remarks.
									A _E .	A _N .	
150	11	July.	I		h m s 22 42 till 23 8						
151	11	"	II,	P S M F	2 55 50 55 48 57 58 3 5	5	41.0	47.5			
152	12	"	I _u	P S M F	7 45 5 51 58 56 8 15	6	7.0	6.5		P very uncertain.	
153	12	"	I,	P S M ₁ M ₂ F	21 15 51 19 53 27 40 22 5	6 20	7.0 5.5	7.9 17.1			
154	13	"	I	P M F	12 44 51 46 15 2	6	9.6	12.0		P uncertain.	
155	13	"	I		21 57 till 21 46						
156	15	"	I		4 58 till 4 45						
157	15	"	I _u	P M ₁ M ₂ F	12 15 44 18 48 15 3	6 21	6.6 17.4	7.4 15.4		P a little uncertain.	
158	17	"	I	P F	19 22 35 28					Very small.	
159	17	"	I	i P, M F	19 50 37 39	5	14.7			No registration of the E-W component.	
160	17	"	I	P F	19 52 25 57					Very small.	
161	18	"	II,	P M F	5 7 50 5 9 5 26	6	26.8	34.7			
162	19	"	I	P M F	14 47 29 49 50 15 0	5.5	14.1	14.5			

N ^o .	Date 1910.		Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Remarks.
									A _E .	A _N .	
163	20	July.	I,	P	h	m	s	5.5	16.7	13.6	P uncertain.
				M	6	0	50				
				F	6	2	35				
164	20	»	I,	P	7	5	31	5.5	10.8	8.9	P uncertain.
				M	7	7	15				
				F	7	14	15				
165	22	»	II,	P	4	55	2	6	105.5	168.8	
				S	5	55	55				
				M	5	55	12				
				F	5	21					
166	22	»	I		14	4					
					14	till	20				
167	24	»	I,	P	4	20	10	5	16.9	13.7	P a little uncertain. Felt in Palembang and Benkoelen.
				S	4	21	59				
				M	4	22	8				
				F	4	28					
168	24	»	I	L	15	51		19	12.5	4.5	
					16	till	13				
				M	16	4					
169	26	»	I	P	21	22	52	5	9.4	8.5	
				M	21	25					
				F	21	30					
170	28	»	I,	P	19	1	55	5	37.2	41.6	Felt in Preanger, Djokja- karta, Kediri, Madioen and Pasoeroean.
				M	19	4	26				
				F	19	15					
171	29	»	II _n	P	10	55	31	7	51.8	50.4	P uncertain. Long waves of 15 seconds. Diagram with very indistinct phases.
				M	10	44					
				F	12	8					

Dr. W. VAN BEMMELEN.

N ^o .	Date 1910.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Remarks.
									A _E .	A _N .	
181	13	August.	I _v	P S M F	h m s 11 17 9 18 17 20 17 37	6	41.4	37.4			
182	13	"	I		11 59 till 11 48						
183	16	"	II _v	P S M F	7 50 49 32 43 55 52 8 20	5	71.5	87.1			
184	16	"	I _v	P M F	10 54 8 56 46	6	7.5	10.9	P uncertain.		
185	17	"	I		12 24 till 12 48 12 29	21					
186	17	"	I _v	P S L M F	25 5 59 9 27 14 47 15 7 28	15	50.9	28.4	P and S uncertain. Felt in Ambon.		
187	19	"	I _v	P M F	19 56 43 37 17 40	6	2.6	2.8	P uncertain. Felt in the Preanger Re- gencies.		
188	21	"	II _v	P P R P R S M F	5 49 9 55 2 55 23 57 50 58 2 7 0	6	151.6	148.1			
189	21	"	I _v	P M F	15 28 10 30 33 42	6	15.4	14.7			
190	22	"	I	S?, M F	8 54 38 9 4	6	7.9	4.5	Only faint traces of P at 8 ^h 48.		
191	22	"	I		10 0 till 10 6						

N ^o .	Date 1910.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Remarks.
									A _E .	A _N .	
192	22	August.	I _v	P S M F	h m s 11 57 24 57 59 12 11	6	12.0	9.9	Felt in the Preanger Re- gencies.		
193	27	"	I		7 18 till 7 30 7 22	6.5	6.0	5.7			
194	29	"	I _v	P M F	2 1 13 5 11	6	7.9	11.4			

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SEPTEMBER 1910.

BATAVIA OBSERVATORY, JAVA.

Mean Greenwich time. S. Latitude $6^{\circ} 11' 0''$.

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 1910.	Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Remarks.
								A _E .	A _N .	
195	1		P e L M ₂ F	0	51	17	19 17	47.9	36.5	
				1	7					
				1	48					
196	1	"	P M F	14	28	1	16	15.4	9.5	P uncertain.
				15	11					
197	5	"	P F	15	17	1			Small and short waves. Felt in Malabar, Preanger Regencies.	
					22					
198	4	"	P M F	21	55	15	6.5	10.0	12.5	Felt on the isle of Soem- bawa.
					58	56				
					55					
199	6	"	P? S? M ₁ M ₂ F	20	22	40	6 21	19.5 5.8	18.7 9.6	From 20 ^h 58 ^m till 21 ^h 15 ^m nothing to be seen, af- terwards rather strong long waves.
					24	56				
				21	22					
				21	45					
200	7	"	P M ₁ S e L M ₂ F	7	19	17	6 22	60.6 71.8	47.2 42.6	S uncertain.
					22					
					26					
					32	56				
					37					
				8	28					
201	9	"	P S M ₁ M ₂ F	1	26	7	7 27	17.8 19.7	22.2 40.9	
					36	37				
					58					
					59					
				2	56					
202	9	"	P M F	9	19		6.5	8.5	6.5	P very uncertain. Faint long waves.
					30					
				10	8					

No.	Date 1910.	Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Remarks.
								A _E .	A _N .	
205	10		P S M F	h	m	s	6	16.1	21.5	P uncertain.
				12	56	3				
					43	25				
				15	15					
204	11	»	P S M F	2	1	44	5	51.2	29.2	
				2	2	14				
					2	55				
					17					
205	14	»	P S M F	13	57	44	15	71.9	177.7	Felt on the isles of Soem- bawa and Bali.
					59	55				
				14	2	55				
					55					
206	14	»	P S M F	19	19	57	6	4.2	6.1	
					20	27				
					21	21				
					27					
207	16	»	P M F	25	14	59	6	10.9	11.7	P uncertain.
					22	39				
				17	0	5				
208	18	»	P S, M F	4	25	59	1	8.5	2.7	
					26					
					29					
209	22	»	P S M F	1	7	19	5	52.9	50.7	Felt at Kota Agoeng, Lam- pong districts, Sumatra.
				1	7	48				
				1	8	54				
				1	22					
210	25	»	P S M F	7	51	55	6.5	15.9	15.9	
					51	50				
					52	22				
					57					
211	24	»		5	48					
					till					
212	27	»	P M F	11	9	29	6	5.6	5.2	P uncertain.
					11	55				
				11	19					

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SEISMOLOGICAL BULLETIN.

OCTOBER 1910.

BATAVIA OBSERVATORY, JAVA.

Mean Greenwich time. S. Latitude $6^{\circ} 11' 0''$.

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

WIECHERT Horizontal Pendulum, 1000 kilograms.

The symbols are according to WIECHERT.

No.	Date 1910.	Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Remarks.
				h	m	s		A _E .	A _N .	
213	2	I _r	P	21	22	21		μ	μ	P and S uncertain.
			S		27	56				
			M		29		6	10.4	10.7	
			e L		34		15			
			F		53					
214	4	»	I	25	19	57				
			M		22		6	10.4	12.9	
			F		0	8				
215	7	»	I	16	7					
			e L		11					
			M		16		14	14.9	13.1	
			F		57					
216	8	»	I _r	20	52					P very uncertain. Felt in N.E.-Celebes.
			S, M		57	2	6.5	10.6	4 4	
			F	21	18					
217	9	»	I	7	9					Probably from the same origin as n°. 216
					7	55				
218	15	»	I	15	12					
					15	22				
219	18	»	II _v	5	18	55				
			S, M		18	55	6	114.2	102.6	
			F		28					
220	19	»	I _v	25	57	11				S uncertain by time-mark. Felt in the residencies of Preanger and Bantam, Java.
			S, M		57	25	1	55.0	82.5	
			F		48					
221	20	»	II	5	4	28				Long waves of only 8 se- conds. Felt in the Pa- dangsche Bovenlanden, Sumatra
			S		6	48				
			M	5	11		6.5	46.2	43.7	
			F	6	28					

No.	Date 1910.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Remarks.
									A _E .	A _N .	
					h	m	s				
222	21	October.	I _v	P S M F	15	15	58 18 41 54	5	50.2	50.0	Felt in the residencies of Madioen, Kedoe, Djokjakarta, Pasoeroean and Kediri, Java.
223	22	"	II _v	P S M F	20	9	7 53 55 44	4.5	85.5	112.6	Felt in the Lampong districts, S.E.-Sumatra.
224	22	"	I _v	P S, M F	16	54	52 52 41	6	5.1	2.7	P begins with waves of short period The end of P and S waves of 6 seconds with short ones upon them.
225	22	"	I _v	P M F	19	52	15 31 40	6	8.7	8.0	Felt in Malabar and Friesland, Preanger Regencies.
226	25	"	I	P	25	50	41				P uncertain.
	"	"		M		55		6	9.4	13.4	
	24	"		F	0	4					
227	24	"	I	P M F	10	7	58 2 18	5	14.5	11.7	
228	24	"	I		14	41	till				Very small. 14 ^h 55 ^m —15 ^h 8 ^m no movement to be seen.
				L	14	55		25			
					15	8					
					15	25					
229	25	"	I		17	52	till				
					17	58					
230	29	"	I _v	P S M F	10	42	5 25 38 47	11.9	13.5		
231	50	"	I	P M ₁ e L M ₂ F	7	46	19 58 20 21 48	6 20	7.5	6.7	P uncertain.
232	31	"	I _v	P S M F	6	42	19 18 32 9	6.5	21.2	18.1	S uncertain.

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NOVEMBER 1910.

BATAVIA OBSERVATORY, JAVA.

Mean Greenwich time. S. Latitude $6^{\circ} 11' 0''$.

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 1910.		Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Remarks.
									A _E .	A _N .	
233	1	November.	I		h	m	s		μ	μ	
					7	8					
						till					
					7	22					
234	2	"	I _v	P	8	24	15				Felt in Kota Agoeng, Lam- pong districts, Sumatra.
				S		24	57				
				M		26	12	7	42.5	58.7	
				F		40					
235	2	"	I _v	P	11	18	28				Felt in Malabar, Preanger Regencies, Java.
				S		18	48				
				M		20	5	6	20.5	17.6	
				F		27					
236	2	"	I		13	45					
						till					
					14	28					
				e L	15	8					
237	2	"	I	P	18	25	51				P uncertain. Probably from N-E Celebes.
				M		29		6	7.2	8.5	
				F		48					
238	4	"	I	P	15	23	5				
				M		24	9	4	5.7	5.5	
				F		30					
239	7	"	I		15	2					Felt in Banda Neira, Mo- luccas.
						till					
					15	16					
				M	15	7		6.5	4.7	5.9	
240	8	"	I		16	59					
						till					
					17	20					
				M	16	59	51	6	5.8	5.5	
241	9	"	III _u	P	6	11	57				
				S		19	51				
				M ₁		22	14	6	155.9	127.0	
				e L		24	51				

No.	Date 1910.		Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Remarks.
									A _E .	A _N	
252	26 November.		I _n	P	h	m	s		μ	μ	
				S	6	25	6				
				M ₁		51	9	6	33.9	28.7	
				M ₂		52		16	20.1	14.1	
253	26 »		I _r	F	7	59					
				P	8	20	41				
				S		24	49	6	43.1		30.7
				M		27					
254	26 »		I	F		43				Felt in the Residencies of Pasoeroean and Madioen, Java.	
				P	14	0					
				M	14	6					
				M	14	2	6	7.9	8.4		
255	28 »		I		15	58					
					16	8					
256	28 »		I		22	55					
					22	45					
257	29 »		I _r	P	2	52	57			S very uncertain.	
				S		58	15	6	16.8		15.4
				M ₁		59		14	18.1		25.2
				M ₂		52					
258	29 »		I _r	F	3	24					
				P	11	49	55				
				S		52	58	6	42.7		36.9
				M		57					
258	29 »		I _r	F	12	17					

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SEISMOLOGICAL BULLETIN.

DECEMBER 1910.

BATAVIA OBSERVATORY, JAVA.

Mean Greenwich time. S. Latitude $6^{\circ} 11' 0''$.

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

WIECHERT Horizontal Pendulum, 1000 kilograms.

The symbols are according to WIECHERT.

No.	Date 1911.	Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Remarks.	
								A _E .	A _N .		
259	1	December.	II,	P	15	46	48		μ	μ	
				P R		47	56				
				S, M _N		50	22	6		270.0	
				M _E		48		6	180.0		
				e L		54	18				
			F	16	58						
260	1	"	I	P	18	5	59				
				M		9	56	6	2.8	2.6	
				F		18					
261	2	"	I	P	5	22	58				P and S uncertain. In Ambon recorded as rather strong; P—S 1 ^m 8 ^s .
				S		30	57				
				M		32		5.5	7.1	6.7	
				F		45					
262	2	"	I _v	P	7	57	28				
				S		58	9				
				M		59	25	6.5	4.2	3.9	
				F		46					
263	2	"	I _v	P	12	26	17				
				S, M		26	37	6	6.6	6.1	
				F		32					
264	3	"	I	P	4	10				P very uncertain.	
				e L		24		36	26.5		24.8
				F		36					
265	3	"	I _n	P	8	6	24				
				S		15	1				
				M ₁		16		6	26.0	32.2	
				e L		21					
				M ₂		25		24	19.7	24.7	
			F	9	15						
266	4	"	I _n	P	11	15	27				Recorded in Ambon; rather weak.
				S, M ₁		22	8	6	43.3	24.4	
				M ₂		30		15	24.9	25.1	
				F		12	44				
267	7	"	I _v	P	10	55	0				
				S		55	17				
				M		55		5.5	58.5	64.5	
				F		11	8				

No.	Date 1911.	Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Remarks.
				h	m	s		A _E .	A _N .	
268	10 December.	II _u	P S e L M F	9	36	15 45 50 55 21	52	265.0	600.0	The long waves are relatively strong. At the end is the period 11 seconds. Recorded in Ambon.
269	10 11	I		25	55	till 0 8				
270	12	I _v	P S M F	17	22	37 5 24 26	5	2.0	1.5	
271	13	III _v	P S	8	48	27 48	1.5			Felt as a weak shock in Batavia. No registration from 8 ^h 49 ^m till 10 ^h 11 ^m . Felt more strongly in the western part of the Preanger Regencies and in Bantam.
272	13	II _u	P S e L M F	10	49	14 58 5 20 13	17	15.0	56.5	Very regular long waves.
273	14	I		7	1	till 7 10				
274	14	I _v	P S, M F	17	53	27 48 59	1.5 (and 6)	8.4	5.8	
275	14	I _u	P S M ₁ e L M ₂ F	20	56	59 7 26 19 15 57	6 20	67.2	51.8 28.2	28.4
276	15	I _v	P S, M F	5	4	58 18 12	1 (and 6)	42.5	31.4	Felt in Goenoeng Walet, Preanger Regencies.
277	15	I	P M F	18	8	5 11 19	6	8.7	7.0	P uncertain.
278	16	III _v	P S F	14	49	49 20 1	6	>550	>700	The pendulum is swinging against the stopping screws. The time of S is according to <i>Milnes</i> pendulum. Felt on the isle of Halmaheira, Moluccas. Recorded in Am-

No.	Date 1911.	Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Remarks.
				h	m	s		A _E .	A _N .	
279	16 December.	I		18	31	till 18 43 18 57				bon, as a strong earthquake, in Padang as rather strong. In Ambon P-S ± 1 ^m 42 ^s , in Padang ± 4 ^m 48 ^s .
280	16	II _v	P S M F	18	57	26 1 40 2 12 59	6	287.4		In the E-W component M cannot be determined as the diagram is covered by n°. 278.
281	16	I		21	42	till 21 53 21 45				
282	16	I _v	P S M e L F	23	21	45 25 21 31 35 0 5	6	57.7	54.4	S uncertain.
283	16	I		23	31					
284	17	I		1	56	till 1 48				
285	17	I _v	P S M e L F	6	26	13 30 19 55 0	6	24.9	35.1	
286	17	I		14	37					
287	17	I	M	14	43		6	6.6	7.0	
288	18	I _v	P S M F	1	41	12 56 45 47	4	8.9	10.2	P uncertain. Felt in Tjipatat and Radjamandala, Preanger Regencies.
289	18	II _v	P S M _N M _E e L F	2	49	54 57 27 56 31 0 41	6.5 6.5	101.2	158.7	Recorded in Ambon as a weak earthquake.
290	20	I		23	10	till 23 17				

N ^o .	Date 1911.	Character.	Phase.	Time (Greenwich).			Amplitude (half)		Remarks.
							A _E .	A _N	
				h	m	s	μ	μ	
291	21	December.	I	1	1				
					till				
				1	11				
292	21	"	I	10	44				
					till				
				11	8				
			M	10	56		6	3.1	1.7
293	22	"	I _v	5	45	15			
					45	50			
					45	59	7.5	7.9	11.2
					50		(and 1)		
294	22	"	I _v	7	27	18			
				7	52				
295	23	"	I	1	6				
			e L		11		17	13.2	8.5
			M		45				
			F						
296	26	"	I	5	52				
					till				
				6	2				
297	27	"	I	2	50				
					45		6	17.0	17.9
					50				
298	27	"	II _r	18	57	0			
				19	1	7			
				19	5		6	83.1	96.7
				19	55				
299	28	"	I	6	42	26			
					48		6	10.7	7.0
					59				
500	29	"	II _r	15	11	24			
					15	24		173.8	
			M _N		16		6	157.2	
			M _E		18		6		
			F	14	16				
301	30	"	I	0	57	34			
				0	57	48	7	104.3	152.7
				1	45				
302	30	"	II	12	27	57			
					52		6	8.5	15.1
					47				
303	30	"	I _v	18	57	18			
	"	"		19	1	24			
	"	"		19	2		5.5	57.7	47.5
	"	"		19	52				
	31	"							

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