

SEISMOLOGICAL BULLETIN.

JANUARY 1920.

BATAVIA OBSERVATORY, JAVA.

Foundation: River Quartair.

Greenwich Mean 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 1920.	Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.		Amplitude (half)		Distance of epi- centrum.	Remarks.
				h	m	s			A _E	A _N		
1	Jan. 1	I _u	e	12	16	30					9200?	E — W.
			M	12	18	15						
			e S?	12	26	44						
			M	12	28	9						
			L ₁	12	49.2							
			L ₂	12	55.2							
			L ₃	12	59.2							
F	13	4										
2	• 2	I	e	16	47	50						Felt on the Isle of Kisar (Timor).
			F	16	50							
5	• 6	I _v	e	5	45	25						Felt on the West Coast of Su- matra.
			M	5	46	25						
			F	5	50							
4	• 8	I _v	e	9	4	18					190	
			S	9	4	59						
			F	9	7							
5	• 10	I	e	1	30	14						Felt in Benkoelen, Sumatra.
			eM	1	32	1						
			F	1	34							
6	• 10	I _v	i	18	30	16						Felt in the resid. of Kedoe and Banjoemas, Java.
			M	18	31	52						
			F	18	56							
7	• 12	I _r	eP	2	59	57					5950	
			M	5	2	44						
			eS	5	5	20						
			M	5	6	21						
			F	5	14							
8	• 12	I _r	eP	12	32	20						SE-Borneo.
			eM	12	33	57						
			F	12	42							
9	• 12	I _r	P	13	48	29	6.0	11.5	—		4990	E — W.
			iS	13	55	11	6.0	27.0	24.5			
			M ₁	13	55	36						
			M ₂	13	58	59						
			F	14	13							
10	• 12	I	e	14	44	28						Felt at Padang, Sumatra.
			M	14	45	54						
			F	14	53							

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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), that 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 through a drop of mercury.

For each month the mean constants for that month are applied. T_0 and ϵ , the oscillation period and the coefficient of damping, are determined every week. V , the magnification for very short waves, is determined occasionally only. It is found by direct measurement, giving the pendulum a displacement by means of the horizontal adjusting screws, the value of which can be determined easily from the pitch (a), 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 1919 are given below.

1919.	E-W component.			N-S component.		
	V.	T_0 .	ϵ .	V.	T_0 .	ϵ .
January 1 — 12.	218	6.6	4.4	195	6.6	5.0
" 13 — 31.	228	8.0	4.5	192	8.0	4.5
February	"	7.8	3.8	"	"	"
March.	"	"	4.7	"	"	4.9
April.	"	"	5.0	"	"	4.7
May.	"	7.9	4.2	"	7.8	4.2
June.	"	7.6	4.9	"	7.6	5.4
July.	"	"	4.8	"	"	5.4
August.	"	"	5.2	"	"	5.1
September	216	"	5.1	193	"	4.9
October.	"	7.5	4.7	"	"	5.2
November	"	7.6	4.8	"	8.2	6.0
December.	"	"	4.9	"	7.9	4.5

No.	Date 1920.	Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epicentrum	Remarks.
				h	m	s		A_E	A_N		
11	Jan. 12	I,	iP M F	16	5	28 6 54 16		μ		SSW.	
12	" 13	I,	e F	6	13	44 6 17				Malabar e — S = 14 sec. $\Delta = 120$.	
13	" 13	I	e M ₁ M ₂ M ₃ F	14	31 34 36 37	57 28 20 21 48	6.0	31.1	23.4	Malabar: NS Component very faint.	
14	" 13	I _u	e iS M ₁ M ₂ M ₃ F	25	9 16 16 19 20 38	54 40 57 19 58 38				5450 Malabar e ₁ — e ₂ = 6 ^m 42 sec. $\Delta = 4990$.	
15	" 15	I	e F	11	55	57 6					
16	" 18	I,	i S F	20	1	47 9 51				190 N — S. Malabar iP — iS = 12 sec. $\Delta = 100$; SW. Felt at Sindangbarang, (Preanger) Java.	
17	" 20	I,	e eS M ₁ M ₂ F	1	46	42 25 49 40 6	5.9 6.0	18.0 63.8	57.0 69.9	2230 E — W. Malabar e — eS = 3 ^m 16 sec. $\Delta = 1920$.	
18	" 21	I _u	P iS F	6	15	53 14 35				7520	
19	" 22	I	e F	21	31,4	8					
20	" 25	I	i F	5	57	50 6					
21	" 26	I	e F	20	16	33 20					
22	" 28	I,	e S F	2	31	56 40 39				960 Malabar faint.	
23	" 29	I	e F	22	5	17 7					

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.

MALABAR.

July 1911 an astatic WIECHERT pendulum of 100 K.G. which is the possession of Mr. K. A. R. BOSSCHA, chief administrator of the tea estate Malabar (Preanger, Java; E. Long. 107° 37'; S. Lat. 7° 13') has been erected.

Particulars about the registrations have been put under the remarks.

Year	Month	Day	Time	Duration	Intensity	Remarks
1911	July	1	10.15	1.30	III	First registration with astatic pendulum.
1911	July	2	10.15	1.30	III	Second registration.
1911	July	3	10.15	1.30	III	Third registration.
1911	July	4	10.15	1.30	III	Fourth registration.
1911	July	5	10.15	1.30	III	Fifth registration.
1911	July	6	10.15	1.30	III	Sixth registration.
1911	July	7	10.15	1.30	III	Seventh registration.
1911	July	8	10.15	1.30	III	Eighth registration.
1911	July	9	10.15	1.30	III	Ninth registration.
1911	July	10	10.15	1.30	III	Tenth registration.
1911	July	11	10.15	1.30	III	Eleventh registration.
1911	July	12	10.15	1.30	III	Twelfth registration.
1911	July	13	10.15	1.30	III	Thirteenth registration.
1911	July	14	10.15	1.30	III	Fourteenth registration.
1911	July	15	10.15	1.30	III	Fifteenth registration.
1911	July	16	10.15	1.30	III	Sixteenth registration.
1911	July	17	10.15	1.30	III	Seventeenth registration.
1911	July	18	10.15	1.30	III	Eighteenth registration.
1911	July	19	10.15	1.30	III	Nineteenth registration.
1911	July	20	10.15	1.30	III	Twentieth registration.
1911	July	21	10.15	1.30	III	Twenty-first registration.
1911	July	22	10.15	1.30	III	Twenty-second registration.
1911	July	23	10.15	1.30	III	Twenty-third registration.
1911	July	24	10.15	1.30	III	Twenty-fourth registration.
1911	July	25	10.15	1.30	III	Twenty-fifth registration.
1911	July	26	10.15	1.30	III	Twenty-sixth registration.
1911	July	27	10.15	1.30	III	Twenty-seventh registration.
1911	July	28	10.15	1.30	III	Twenty-eighth registration.
1911	July	29	10.15	1.30	III	Twenty-ninth registration.
1911	July	30	10.15	1.30	III	Thirtieth registration.
1911	July	31	10.15	1.30	III	Registration on 31st July.



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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 1920.	Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epi- centrum.	Remarks.
				h	m	s		A _E	A _N		
24	Febr. 1	I _r	iP	13	35	11		μ	μ	5950	Malabar P — S = 5 ^m 36 sec. Δ = 3800.
			M ₁	13	34	40					
			M ₂	13	36	54					
			S	13	38	54					
			M ₃	13	40	33	5.7	51.4	65.5		
			M ₄	13	42	7	5.5	45.8	19.9		
25	" 1	I _r	iP	17	55	40				3550	
			S=M	18	0	59					
			F	18	4						
26	" 2	III _u	P	11	30	38				5320?	E — W. Malabar e — S = 6 ^m 59 sec. Δ = 4930.
			i	11	31	30					
			M _m	11	52	24	6.0	138.8	107.2		
			S?	11	57	59					
			eL	11	42	12					
			M ₁	11	45	45	53.2	5310	5860		
			M ₂	11	51	30	31.0	6070	4650		
			M ₃	11	58	16	31.0	7140	3350		
27	" 2	I _v	e	15	48	18				240	Malabar iP — S = 11 sec. Δ = 94 Felt in Preanger and Banjoemas, Java.
			M ₁	15	48	50					
			M ₂	15	49	51					
			F	15	55						
28	" 2	I	e ₁	16	55						
			e ₂	16	59						
			F	17	12						
29	" 2	I	e	18	56						
			F	19	0						
30	" 3	I _v	e	11	19	27				240	E — W.
			iS=M	11	19	54					
			eL	11	20	29					
			F	11	24						
31	" 3	I	e	15	1	28					
			M	15	9	36					
			F	15	18						
32	" 3	II _r	P	18	57	25				2490	
			iS=M	19	1	29					
			P	19	11						

No.	Date 1920.	Character.	Phase.	Time (Greenwich).			Amplitude (half)		Distance of epicentrum.	Remarks.
							A _E	A _N		
33	Febr. 4	I	e M F	h 12 12 13	m 52 57 4	s				
34	" 6	I	e F	5	12 16	6			Malabar e — iS = 20 sec. Δ = 180 KM. Felt in Banjoemas and Preanger, Java.	
35	" 7	I	e ₁ e ₂ e ₃ e ₄ F	15 15 15 15 16	16 25 32 39 7	8 5 42 48				
36	" 8	I _r	P M ₁ M ₂ eL F	5	30 32 36 42 53	53 26 56 24				
37	" 8	I _r	e S M F	7	2 2 7 7	24 46 1 9		180	Malabar i — S = 9 sec. Δ = 78; WSW. Felt in the Preanger, Java.	
38	" 9	I _r	e S F	2	39 45 57	50 28		5840		
39	" 9	I _r	e S F	19	17 23 34	8 18		4400		
40	" 10	I	e M F	9	22 32 40					
41	" 10	I	e M F	10	11 23 27					
42	" 10	I _r	e M ₁ M ₂ M ₃ eL ₁ M eL ₂ F	22	27 36 44 52 59 44 59 7	5 1 43				
43	" 12	H _r	i S M F	10	34 35 37 47	33 49 17		720	E — W.	
44	" 14	I _r	e S F	12	14 15 18	48 7		170	Malabar iP — S = 15 sec. Δ = 150. Felt in the Preanger, Java.	
45	" 14	I	e F	13	48 52	19				
46	" 16	I	e F	9	57 1	9				

No.	Date 1920.	Character	Phase.	Time (Greenwich).			Amplitude (half)		Distance of epicentrum.	Remarks.
							A _E	A _N		
47	Febr. 18	I _r	e M F	h 25 23 23	m 17 18 25	s 22 26			Malabar P — S = 29 sec. Δ = 260.	
48	" 19	I	e F	12	40 45	57				
49	" 20	I _u	e S M F	11	56 6 7 12	31 4 47		8460		
50	" 22	I _u	iP S=M ₁ M ₂ F	17	45 53 57 2	45 49 7		6570	SW — NE.	
51	" 25	II _r	iP M S eL F	22	45 46 49 53 12	6 25 21		2650	ENE.	
52	" 26	III _r	iP ₁ P ₂ S ₁ eS ₂ M F	1	28 29 30 31 32 27	56 26 40 32 7		1160 1180	No minute marks. ENE Malabar record very uncertain. Felt in SE Borneo. Computed epicentrum 2,1° S; 116,5 E.	
53	" 26	I	eP S M F	18	15 15 16 24	32 32 32	5.3	420 > 550	1120 Felt in SE Borneo.	
54	" 29	I	eP S M F	6	4 6 7 15	10 14 16		1160	Felt in SE Borneo.	
55	" 29	I	e M F	22	5 6 15	15 57			Felt in SE Borneo.	

No.	Date 1920.	Character.	Phase	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epicentrum	Remarks.
								A _E	A _N		
65	March 17	II _r	eP S? M ₁ M ₂ eL F	18 18 18 18 18 19	40 44 45 48 56 27	17 8 30 38	6.0	84.0 44.0	2320?	Malabar very faint. Felt in Northern Sumatra.	
66	" 17	I _r	P iS F	22 22 23	54 58 5	8 36			2710	Malabar P — iS = 265 sec. △ = 2770.	
67	" 18	II _r	eP iS M ₁ M ₂ F	1 1 1 1 1	25 25 25 26 37	5 30 41 44			220	Malabar iP — iS = 18 sec △ = 160. Felt in Central Java.	
68	" 18	I	e S? M F	7 7 7 7	59 59 40 44	20 46 52			250?	Malabar iP — S = 20 sec. △ = 180.	
69	" 20	III _r	iP iS M F	1 1 1 1	5 3 5 13	21 44 56	5.8	382.7 444.0	200	E — W. Malabar faint.	
70	" 20	I	e F	14 14	5 7	47				Malabar faint. Felt in Bantam and the Preanger, Java.	
71	" 20	II _r	iP iS=M F	14 14 14	14 15 25	44 1			150	E — W. Malabar iP — S = 26 sec. △ = 250. Felt at Lebak Parai (Bantam), Java	
72	" 20	I _r	e _r M i M ₁ M ₂ M ₃ L ₁ ML ₁ L ₂ L ₃ F	18 18 18 19 19 19 19 19 19 20 20	52 55 59 0 2 18 51 43 48 1 37	16 28 24 28 46 44 16 24 52 24	6.2	55.8 33.2		18.0	
73	" 22	I _r	e S F	3 3 5	22 24 28	24 21			1090		
74	" 22	I	iP F	4 4	45 45	6 56				Malabar faint.	
75	" 22	I _r	e eS M F	7 7 7 8	25 27 28 4	7 6 58			1110	SE-Borneo.	

No.	Date 1919.	Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epicentrum.	Remarks.
								A _E	A _N		
76	March 22	I	P M _N M M eL F	20 20 20 20 20 20	15 18 22 25 45 50	0 45 26 18 14		μ	μ		
77	" 25	I _r	eP eS M F	21 21 21 21	52 55 54 7	5 45 50			950	Malabar eP — eS = 67 sec. △ = 610. Felt in Eastern Java.	
78	" 28	I _r	eP i eS i M F	0 0 0 1 1 1	57 58 59 0 1 18	57 28 31 26 55			1060 1100?	two shocks?	

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APRIL 1920.

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

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

WIECHERT Horizontal Pendulum, 1000 kilograms.

The symbols are according to WIECHERT.

No.	Date 1920.	Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epi- centrum.	Remarks.
								A _E	A _N		
79	April 2	I _r	P	h	m	s	6.1 5.9	22.5 21.2	10.7 11.6	1050	E — W.
			S	1	12	25					
			M ₁	1	14	18					
			M ₂	1	14	20					
			F	1	17	7					
80	" 4	I	eP	17	4	23					SE-Borneo.
			M	17	6	2					
			F								
81	" 5	I _r	e	15	58	45				1000	E — W.
			eS	16	0	31					
			F	16	12						
82	" 5	I	e	16	40	45					
			F	16	42						
83	" 6	I _u	P	19	10	50				5050	E — W.
			M	19	11	59					
			S	19	17	55					
			eL _E	19	25						
			F	19	37						
84	" 7	I _v	eP	17	31	9				190	Malabar P — iS = 11 sec. Δ = 100. Felt in the Preanger, Java.
			S	17	31	50					
			F	17	34						
85	" 9	I _v	e	19	11	50				920	E — W. SE-Borneo
			S	19	15	29					
			F	19	17						
86	" 11	I _u	eP	23	14	41	70	49.9	6.1	6700	
			eS	23	22	52					
			M	23	23	54					
			eL	23	28						
			F	23	48						
87	" 17	I	e	5	24	59					Probably felt in Benkoelen, Su- matra.
			F	5	30						
88	" 18	I _v	P	8	45	6				190	Felt in Benkoelen, Sumatra.
			S	8	45	28					
			M	8	47	13					
			F	8	55						



No.	Date 1920.	Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epi- centrum.	Remarks.
								A _E	A _N		
89	April 19	I _v	P iS=M F	h 5 5 in	m 24,3 24 next	s 57		μ μ	± 190	P begins in minute mark. Azimuth S 34, 3 W. Malabar iP — iS = ± 22 sec. (iS in minute mark) $\Delta = \pm 190$. Felt in the Preanger and Ban- tam, Java.	
90	" 19	I _v	P iS F	5 5 3	54,3 55,2 39				± 570	disturbed by 89. Malabar P — S = 23 sec. $\Delta = 200$.	
91	" 19	II _v	P iS F	3 3 4	36,3 36 12	37			± 190	P begins in minute mark. Azimuth S 34,3 W. Malabar P — S = 20 sec. $\Delta = 180$. Felt in the Preanger and Ban- tam, Java.	
92	" 19	I	i F	14 15	58 1	54					
95	" 19	II _v	P S? M F	17 17 17 18	47 48 48 1	5 22 54			710?	E — W. Malabar faint.	
94	" 19	I	e M F	21 21 21	25 28 37	36 36					
95	" 21	I _v	eP iS F	21 21 21	5 5 11	51 48			1090	Malabar eP — cS = 107 sec. $\Delta = 990$.	
96	" 25	I	i F	15 15	52 55	0					
97	" 25	I _v	P i M ₁ M ₂ M ₃ F	16 16 16 16 16 17	50 51 55 56 59 7	56 20 57 49 6	6.0 5.9	17.8 50.5	42.5 24.5	Malabar eP — S = 3 ^m 54 sec. $\Delta = 2360$. Felt in the Isle of Jamdena, Tanimbar Isles, Moluccas.	
98	" 29	I	i F	6 6	56 39	3					
99	" 29	I	P F	16 16	18 32	39					
100	" 30	I _v	e M F	5 5 6	55 57 1	12 30				Malabar P — iS = 17 sec. $\Delta = 150$. Felt at Tjikadjang (Preanger), Java.	

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MAY 1920.

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E. Longitude $7^{\circ} 7' 19''$.

WIECHERT Horizontal Pendulum, 1000 kilograms.

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No.	Date 1920.	Character.	Phase.	Time (Greenwich).			Period in seconds.		Distance of epicentrum.	Remarks.
							A_V	A_N		
101	May 2	I	e	h	m	s		μ	μ	
			e	8	45	30				
			M	8	49	56				
			eL	8	51	32				
102	" 2	I	F	8	52	56				
			F	9	2					
			e	15	6	2				
			e	15	9	36				
103	" 2	I,	eL	15	12	2				
			F	15	18					
			e	18	45	56				
			F	18	47					
104	" 5	I,	e	3	18	18			110	Azimuth about N-S. Malabar i P - i S = 10 sec. $\Delta = 90$. Azimuth SW. Felt at Sindang Barang 'Pre-anger', Java.
			S	3	18	34				
			M	3	19	40				
			F	3	22					
105	" 5	I	e	8	43	49	5.8	24.4	8.2	
			e	8	48	38				
			M ₁	8	53	49				
			M ₂	8	55	17				
			F	8	59					
106	" 6	I	e	9	49	1	5.7	14.8	16.0	5180
			S	9	55	54				
			M ₁	9	56	6				
			M ₂	9	57	46				
			F	10	13	18				
107	" 7	III,	iP	5	46	2	5.9	422	402	2600
			S	5	50	14				
			M ₁	5	50	27				
			M ₂	5	53	11				
			eL	6	1	17				
			F	6	41	17				
108	" 7	II	P	21	40	2	5.8	428	446	N 69.7 E. Malabar confused record. Butuan, Mindanao. Felt at Taroenaa, Sangi Isles, Menado.
			i	21	42	23				
			i	21	44	32				
			i _N	21	47	14				
			i _E	21	48	54				
			eL	21	52	35				
			F	23	7					
									E - W. Malabar faint.	

No.	Date 1920.	Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epicentrum	Remarks.
				h	m	s		A _E	A _N		
109	May 9	I	P M F	17 17 17	15 20 25	3 54 38		μ	μ		
110	" 10	III,	P iP iS M eL F	18 18 18 19 19 19	54 55 59 0 11 32	22 11 36 7 7 32				2770?	E — W; two shocks? Malabar P — eS = 224 sec. Δ = 2240. Felt in the Moluccas and Western N. Guinea.
111	" 12	I	i F	22 22	9 11	1 43					
112	" 13	II	P M ₁ M ₂ M ₃ M ₄ eL F	1 1 1 2 2 3	55 57 58 0 10 9	54 56 35 19 8 10 9	6.5 6.2 6.2 6.3	43.0 95.5 104 75.6	10.2 26.6 53.2 32.8		
113	" 13	I,	P eS? M F	8 8 8 8	36 37 39 42	11 49 9 17				910?	E — W. Felt in Benkoelen, Sumatra.
114	" 16	I,	P iS M F	21 21 21 21	15 19 24 28	56 56 18 29				2440	
115	" 19	II,	iP S? M ₁ M ₂ F	5 5 5 5 5	14 17 19 20 42	24 31 2 58 42	5.8 6.0	157 191	122 164	1830?	NE. Malabar faint. Felt in Menado, Banggai Isles and Halmaheira.
116	" 19	I	e M ₁ M ₂ F	4 4 4 4	4 5 9 17	15 54 2 17					
117	" 19	II,	P i i iS? M ₁ M ₂ M ₃ M ₄ M ₅ F	12 12 12 12 12 12 12 12 12 13	45 46 49 49 50 51 55 54 56 15	56 49 0 54 48 49 15 56 52 15	6.8 6.9 6.3 6.3	96.4 72.6 108 172	151 143 151 105	2410?	Felt on the whole isle of Celebes.
118	" 20	I	P S F	0 0 0	45 46 50	52 15 50				180	
119	" 20	II,	iP i S eL F	7 7 7 7 8	56 39 44 54 12	0 42 2 42 42				6530	ENE.



No.	Date 1919.	Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epicentrum.	Remarks.
								A _E	A _S		
120	May 22	I.	P S F	h 18 18 18	m 19 20 24	s 56 19		μ μ	200	Malabar P — eS = 29 sec. Δ = 260.	
121	" 23	I	e F	20 20	21 35					No minute marks.	
122	" 23	II	P i M F	13 13 13 13	27 28 30 59	57 16	5.2	137 89.1		E — W. Malabar faint.	
123	" 26	I.	iP iS F	12 12 12	33 44 52	8 7			7700	E — W.	
124	" 26	I	e M F	22 22 22	30 51 55	11 36				Malabar P — iS = 12 sec. Δ = 100. Felt in the Preanger, Java.	
125	" 27	III.	iP iS = M ₁ M ₂ F	5 5 5 6	50 51 55 14	1 25 10	5.8 5.6	461 507 457 434	750	ESE. Malabar P — iS = 80 sec. Δ = 750. Felt as weak or moderate shocks from Preanger to Pasoeroean, Java	

SEISMOLOGICAL BULLETIN.

JUNE 1920.

BATAVIA OBSERVATORY, JAVA.

Foundation: River Quartaair.
Greenwich Mean Time. S. Latitude $6^{\circ} 11' 0''$. Height above sealevel
E. Longitude $7^{\circ} 7^m 19^s$.

WIECHERT Horizontal Pendulum, 1000 kilograms.

The symbols are according to WIECHERT.

No.	Date 1920.	Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.		Amplitude (half)		Distance of epi- centrum.	Remarks.
							A _E	A _N	μ	μ		
126	June 4	I	i F	18	4	55					NE.	
127	" 4	I	eL F	25	57							
	" 5			0	17							
128	" 8	III _n	iP M ₁ M ₂ S? M [✓] eL F	4	28	13				6800?	NE. Malabar, confused record.	
				4	30	13	6.7	201	242			
				4	34	20						
				4	36	29	6.7	255	269			
				4	36	44						
				4	43	9						
				6	27							
129	" 8	II _r	iP M F	6	42	53					NE. overlapped by 128. Malabar P — eS? = 189 sec. Δ = 1850?	
				6	47	53						
				7	5							
130	" 8	I	e i F	16	47	2					Felt in Menado, Celebes.	
				16	51	57						
				16	59							
131	" 7	I _v	eP S F	10	46	43				550?	S in hour eclipse. Malabar eP — eS = ± 42 sec. Δ = ± 370. Felt at Tandjoeng Sakti, Ben- koelen, Sumatra.	
				10	47	43						
				10	56							
132	" 9	III _r	P ₁ P ₂ ? M eS ₁ S ₂ ? M eL F	11	55	40				2490 2350?	E — W. Malabar iP ₂ — S ₂ = 240 sec. Δ = 2440. Felt on the Isles of Amboina and Ceram, Moluccas.	
				11	56	50	4.9	112	82.6			
				11	57	58	6.1	145	245			
				11	59	46						
				11	40	45	8.5	592	575			
				11	43	14	6.3	272	413			
				11	55							
				12	50							
133	" 10	I	L F	2	24	19						
				2	26	11						
134	" 10	II _r	iP S M F	2	36	2	6.2	87.0	77.4	1970	N 56.8 E. Malabar faint.	
				2	39	24						
				2	42	14						
				3	10							

No.	Date 1920.	Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epi- centrum.	Remarks.
				h	m	s		A _E	A _N		
135	June 11	I	e M _E F	10	46	7		μ	μ		Felt probably at Taloe, Sumatra's Westcoast.
136	" 12	I	P M F	15	56	56					
137	" 15	I _r	e M ₁ M ₂ M ₃ F	5	18	14	5.8				Felt on the Isles of Amboina and Ceram, Moluccas.
138	" 19	I _v	eP S? F	10	58	59				840?	Felt in Benkoelen, Sumatra.
139	" 20	I	e M F	0	18	12					
140	" 24	I	e M F	9	6	59					
141	" 26	II _r	P iS M F	13	2	9	6.1			1360	Malabar faint. Felt in Eastern Java, Madoera and Bali.
142	" 26	I _r	e F	14	18	47					Felt in Eastern Java and Madoera.
143	" 27	I _r	P S F	16	21	25					Felt in Tandjong, SE-Borneo.



SEISMOLOGICAL BULLETIN.

JULY 1920.

BATAVIA OBSERVATORY, JAVA.

Foundation: River Quartair.

Greenwich Mean 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 1920.	Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epi- centrum.	Remarks.
				h	m	s		A_E	A_N		
144	July 1	I _v	P iS M F	21 21 21 21	46 46 47 51	18 32 49			120	Malabar iP — S? = 8 sec. $\Delta = 80?$ Felt in the Preanger, Java.	
145	" 2	I	eP i M F	8 9 9 9	54 5 4 6	46 28 48					
146	" 2	II _r	iP i i S? F	10 10 10 10 10	11 12 15 15 28	6 40 27 55			5100?	ca E-W. Malabar very faint.	
147	" 2	I _u	e M iS M ₁ M ₂ eL F	18 18 18 18 18 19 19	48 50 55 56 57 5 17	48 17 39 52 29			5140	ca E-W. Malabar iP — iS = 405 sec. $\Delta = 5010$.	
148	" 2	II _r	P ₁ iP ₂ iS ₁ S ₂ M ₁ M ₂ M ₃ M ₄ L F	21 21 21 21 21 21 21 21 22 22	41 42 45 45 46 47 49 58 0 27	51 17 54 57 46 52 5 45 52	6.6 6.5 6.2 6.5 6.4	159 270 235 210 63.9	81.1 159 255 270 42.7	2250 2200	Felt on the Isle of Amboina, Moluccas.
149	" 3	I	e ₁ e ₂ F	15 16 16	55 4 12	42 34					Very faint traces of EW-com- ponent.
150	" 4	I	e F	17 17	14,0 20						
151	" 5	I	e F	3 3	6,1 15						

No.	Date 1920.	Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epicentrum	Remarks.
								A _E	A _N		
152	July 5	I	e F	h 11	m 58	s 1		μ μ			
153	" 6	I	e M F	5	11,3						
154	" 7	I	e M F	9	58	59					
155	" 7	I	e M F	20	4	21					
156	" 8	III	iP ₁ i ₁ i ₂ M ₁ M ₂ F	4	41	11	5.9 6.3	>499 110	480 484	N 69° W.	
157	" 8	I _v	P iS M ₁ M ₂ F	19	41	41			1560	E — W. Felt on Eastern Java and Bali.	
158	" 8	I	e F	20	11	13				Bali.	
159	" 8	I	e F	22	14	49					
160	" 9	I _v	P i S=M ₁ M ₂ F	0	59	16			1140	SE-Borneo.	
161	" 9	I _v	eP iS F	15	47	55			270	Malabar faint.	
162	" 9	I	e M F	23	19	8					
163	" 10	I	e M F	9	42	40					
164	" 11	I	e M F	8	18	45					
165	" 18	I	e F	11	47	56				Malabar P — S = 35 sec. Δ = 310.	
166	" 18	I _v	eP S M ₁ M ₂ F	12	25	40			350	Malabar P — S = 17 sec. Δ = 150. Felt in Central Java.	

No.	Date 1919.	Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epicentrum.	Remarks.
								A _E	A _N		
167	July 20	I	e F	h 23	m 10	s 20		μ μ		Malabar faint. Felt at Tjikentjreng (Preanger), Java.	
168	" 26	I _v	eP iS M F	10	12	47			210	ca E-W.	
169	" 26	I _v	e F	20	5	59				Probably felt at Tandjong Sakti (Benkoelen), Sumatra.	
170	" 26	I	e eL F	21	16	55					
171	" 28	I	P F	25	14	8				ca E-W.	

SEISMOLOGICAL BULLETIN

AUGUST 1920.

BATAVIA OBSERVATORY, JAVA.

Foundation: River Quartair.

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

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

WIECHERT Horizontal Pendulum, 1000 kilograms.

The symbols are according to WIECHERT.

No.	Date 1920.	Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epi- centrum.	Remarks.	
								A _E	A _N			
172	Aug. 3	H _r	iP	5	7	20	6.1	288	294	2270	ENE. Malabar faint.	
			M	5	8	12						
			S	5	11	7						
			M	5	15	3						
			eL	5	19							
F	5	37										
173	" 3	I _u	i	20	17	6	6.0	27.9	38.6		traces on EW.	
			M	20	18	23						
			e _E	20	39	46						
			eL _N	21	9	33						31.5
			M	21	22	4						20.4
			eL _E	21	42	41						26.2
F	21	57										
174	" 8	I _r	eP	10	34	10					Menado.	
			S	10	37	13						
			F	10	43							
175	" 9	I _v	e	1	24	30					Malabar P — iS = 12 sec. Garoet $\Delta = 100$. (Preanger), Java.	
			M	1	25	55						
			F	1	28							
176	" 11	I	e	13	13	33						
			F	13	17							
177	" 13	I	P	2	22	47						
			F	2	31							
178	" 15	I	e?	7	6	14						
			M	7	13	14						
			F	7	27							
179	" 15	I	iP	8	25	59					ESE — WNW.	
			M	8	36	45						
			eL	8	43	14						
			F	8	53							
180	" 15	I	e	8	55,8							
			F	9	1							
181	" 16	I	i	22	39,8							
			F	22	41							

No.	Date 1920.	Cha- racter.	Phase.	Time (Greenwich)			Period in seconds.	Amplitude (half)		Distance of epi- centrum.	Remarks.
				h	m	s		A _E	A _N		
181	Aug. 20	I _u	e	16	36	21		μ	μ		
			M	16	37	53					
			eL ₁	17	26	53	21.0				
			eL ₂	17	33	53	19.8				
			F	17	47						
183	» 23	I _v	P	2	30	22				Malabar iP — iS = 12 sec. Δ = 100. Tjireng (Preanger), Java.	
			iS=M	2	30	37					
			F	2	33	15					
184	» 23	II _v	P	6	18	0			270?	E-W. Benkoelen and Lompons, Su- matra.	
			S?	6	18	31					
			M	6	19	27	6.0	184	173		
			F	6	31						
185	» 25	I _v	P	3	54	28			200		
			iS=M	3	54	51					
			F	4	6						
186	» 25	I	e	17	30						
			F	17	33						
187	» 25	I	e	22	1	48					
			i ₁	22	2	55					
			M ₁	22	4	52					
			i ₂	22	7	24					
			M ₂	22	7	31					
			M ₃	22	10	24					
			eL	22	17	56					
F	22	28									
188	» 26	I	e ₁	23	16	33					
			e ₂	23	24	35					
			F	23	32						
189	» 27	I	e	3	31						
			eL _E	3	40	51					
			F	3	43						



SEISMOLOGICAL BULLETIN.

SEPTEMBER 1920.

BATAVIA OBSERVATORY, JAVA.

Foundation: River Quartair.

Greenwich Mean 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.

No.	Date 1920.	Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epi- centrum.	Remarks.
				h	m	s		A _E	A _N		
190	Sept. 3	II _v	iP	19	36	7		μ	α	150	Malabar iP — iS = 16 sec. Δ = 140. Bantam and Preanger, (Java).
			iS=M	19	36	24					
			F	19	48						
191	" 4	I _u	i ₁	14	25	59					
			i ₂	14	33	34					
			M	14	36	0					
			eL	14	48	2					
			F	15	8						
192	" 7	I _v	eP	4	58	50				220	Malabar iP — iS = 15 sec. Δ = 110. Preanger, (Java).
			iS	4	59	15					
			M	5	0	14					
			F	5	8						
193	" 7	III _v	iP	6	47	49				210	Azimuth NS. Malabar iP — iS? = 10 sec. Δ = 90? Azimuth S 65 W. Preanger, Batavia, (Java).
			iS=M ₁	6	48	15					
			M ₂	6	50	54					
			F	7							
194	" 7	I _v	e	12	55	45				170	Malabar P — S = 15 sec. Δ = 110.
			S	12	56	4					
			M ₁	12	56	57					
			M ₂	12	57	5	6.0				
			F	12	58						
195	" 9	II _u	i ₁	1	57	21	6.0			8000?	
			M ₁	1	58	26	6.4	46.0	32.0		
			M ₂	1	59	16					
			i ₂	2	0	57					
			M _E	2	3	2	5.8	65.2			
			i ₃	2	6	53					
			M ₃	2	6	38	6.5	59.5	64.8		
			M ₄	2	7	58	6.4	70.8	56.7		
			eL	2	19						
			ML	2	25	52	19.0	108	122		
			i	2	48	19					
F	5	7									
196	" 9	I _u	i	19	6	22					
			eL	19	22	22					
			M	19	25	22					
			F	19	52						

No.	Date 1920.	Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epicentrum	Remarks.
				h	m	s		A _E	A _N		
197	Sept. 10	I,	e	15	30	21				Malabar P — i S = 14 sec Δ = 120.	
			i	15	30	27					
			M	15	30	47					
			F	15	32	5					
198	" 11	I	?	17	46.7					In hour mark.	
			F	17	52						
199	" 12	I	e	8	0	41			1610?	Felt at Mamasa and Tapalang, Central Celebes.	
			eS?	8	5	58					
			M	8	5	59					
			F	8	17						
200	" 12	I	e	15	58	17					
			F	16	2						
201	" 15	I,	e	12	32	7			190	Malabar P — i S = 13 sec. Δ = 110.	
			S	12	32	29				Preanger (Java).	
			F	12	35						
202	" 15	I,	P	15	26	8			180	Malabar i P — i S = 14 sec. Δ = 120.	
			iS=M	15	26	28				Preanger (Java).	
			F	15	35						
205	" 15	I,	i	15	30	22					
			F	15	35						
204	" 14	I,	e ₁	25	30	18				Malabar e ₁ — e ₂ about 11 mi- nutes. Amboina records two shocks at 23 ^h 28 ^m and 23 ^h 38 ^m .	
			e ₂	25	41	30					
			M	25	42	22					
			S ₂	25	45	8					
			F	25	55						
205	" 15	I	e	7	39	9			2170?		
			eL	8	1	10					
			F	8	6						
206	" 20	III _a	i ₁	14	49	18					
			M ₁	14	50	56	5.6	141	69.4		
			i ₂	14	51	53					
			i ₃	14	57	53					
			M ₂	15	0	28	6.0	178	146		
			i ₄	15	1	27					
			L	15	5	55					
			M _E	15	15	17	25.4	2580	682		
			M _N	15	15	41	20.0	648	1870		
			M	15	18	32					
			C	17	5	55					
			M	17	21	39	21.0				
			F	17	35						
207	" 20	I	e	17	58	22					
			F	17	54	2					
208	" 21	I	e	2	44	25					
			i _N	2	52	57					
			F	3	2						
209	" 21	I	i ₁	17	52	58					
			i ₂	18	1	46					
			F	18	8						

No.	Date 1919.	Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epicentrum.	Remarks.
				h	m	s		A _E	A _N		
210	Sept. 25	I	e	1	42	17					
			M	1	44	39					
			F	1	48						
211	" 23	I	P	5	43	52			7900		
			S	5	52	59					
			F	5	58						
212	" 25	I	e	17	56	30					
			i	17	56	57					
			F	17	12	44					
213	" 25	I	e	19	44	50					
			eL	20	9	42					
			F	20	17						
214	" 24	I	eP	4	22	31					
			M	4	27	0					
			F	4	38						
215	" 27	I,	e	15	21	7				Paloe (Menado), Celebes.	
			M	15	27	35					
			F	15	37						
216	" 30	I	P	17	27	57			190	Azimuth WSW. Malabar P — S? = 22 sec. Δ = 200.	
			S	17	28	18					
			M	17	29	2					
			F	17	34						

SEISMOLOGICAL BULLETIN

OCTOBER 1920.

BATAVIA OBSERVATORY, JAVA.

Foundation: River Quartaïr.

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

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

WIECHERT Horizontal Pendulum, 1000 kilograms

The symbols are according to WIECHERT.

No.	Date 1920.	Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epi- centrum.	Remarks.	
				h	m	s		A _E	A _N			
217	Oct. 2	I _v	iP	13	45	13	5.5 6.3	438 388	494 371	250	Azimuth ESE. Malang (Paseroean), Eastern Java.	
			i	13	45	31						
			M ₁	13	47	44						
			M ₂	13	48	34						
		F	14	1	26							
218	" 4	I _v	eP	22	1	29				250	E — W. Kota Agoeng (Lampongs), Su- matra.	
			iS	22	1	57						
			eL	22	2	42						
			F	22	6							
219	" 7	I	e	0	15	25						
			M	0	16	47						
			F	0	21							
220	" 7	I	e	21	15,9							
			F	21	24							
221	" 7	I _v	eP	23	12	11				1400	SE-Borneo.	
			eS	23	14	38						
			M	23	17	23						
			F	23	27							
222	" 8	I	e	7	59,9							
			F	7	47							
223	" 8	I	e	8	6	54						
			F	8	11							
224	" 8	I	e	19	21	6.3						
			i	19	23							15
			F	19	27							
225	" 9	I	e	11	31	57						
			iM	11	32	57						
			F	11	36							
226	" 10	I	e	9	24	4						
			F	9	30							
227	" 12	I	i	8	8	24						
			M	8	12	41						
			F	8	14							
228	" 13	I _v	e	11	25	41						
			F	11	26							

No.	Date 1920.	Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epi- centrum.	Remarks.
				h	m	s		A _E	A _N		
229	Oct. 18	H _u	iP	8	22	15	6.3	117	96.7	7010	Azimuth N 53 W.
			i _E	8	23	15					
			i _W	8	25	49					
			iS	8	30	41					
			M	8	30	49					
			eL	8	49						
			e	8	52						
M	8	52	51	5.5							
F	9	9									
230	" 18	I	e	15	28	13					
			F	15	30						
231	" 19	I	e	21	56	14					
			M	21	57	58					
			F	22	1						
232	" 20	I	e	10	8	30					
			M	10	12	22					
			eL	10	22						
			F	10	37						
233	" 22	I	e	10	58	28					
			e	11	0	21					
			M ₁	11	1	24	5.7				
			M ₂	11	4	48					
			M ₃	11	8	26					
			F	11	16						
234	" 22	I	P	12	29	45	6.0	31.9	55.8		
			M	12	30	59					
			F	12	55						
235	" 24	I	e	1	48	25					
			S	1	56	26					
			F	2	12						
236	" 25	I	e	8	20,2						
			M	8	26	47					
			F	8	29						
237	" 26	I	eP	3	30	54				820	
			iS	3	32	5					
			F	3	41						
238	" 27	I	eP	4	5	8					
			M	4	7	6					
			F	4	6						
239	" 28	I _u	i	15	9	50	6.0	40.2	27.6		
			M	15	12	21					
			eL	14	2	29					
			F	14	11						
240	" 28	I	e	16	19						
			F	16	24						

Probably felt in Tapanoeli, Su-
matra.



SEISMOLOGICAL BULLETIN.

NOVEMBER 1920.

BATAVIA OBSERVATORY, JAVA.

Foundation: River Quartair.

Greenwich Mean Time. S. Latitude $6^{\circ} 11' 0''$. Height above sea-level 8 m.

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

WIECHERT Horizontal Pendulum, 1000 kilograms.

The symbols are according to WIECHERT.

No.	Date 1920.	Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epi- centrum.	Remarks.
								A _E	A _N		
241	Nov. 1	I _r	i	h	m	s		μ	μ	Taroena (Sangi isles).	
			M ₁	8	58	12					
			M ₂	9	0	52					
			F	9	4	10					
242	" 3	II	P	15	40	35				Malabar P — eS = 150 sec. Δ = 1430.	
			i ₁	15	43	0					
			i ₂	15	44	40					
			i ₃	15	46	56					
			M	15	47	18	6.8	88.1	67.8		
			L	15	52	49					
243	" 4	I _v	eP	18	38	31			140		
			iS	18	38	47					
			L	18	39	1					
			F	18	41						
244	" 5	I	eP	6	14	50					
			S	6	16	16					
			F	6	20						
245	" 9	II _v	eP	5	49,1				130	No hour marks. Malabar P — iS = 24 sec. Δ = 210. Preanger, Java.	
			iS	5	49,5						
			M	5	50,2						
			F	5	59						
246	" 14		eP	25	17	21					
			i	25	18	4					
			eL	25	20						
			F	25	23						
247	" 16	I	e ₁	8	48,9					No hour marks.	
			e ₂	9	7,5						
			F	9	9						
248	" 19	I	e	9	54	41			110	Malabar P — iS = 15 sec. Δ = 150.	
			S	9	55	54	5.5				
			F	10	2						
249	" 25	II _v	iP	6	49	1			650	Azimuth S 57 E. Malabar iP — S = ± 44 sec. Δ = 700	
			iS	6	50	12					
			M	6	51	7	6.2	540	156		
			F	7	14						

No.	Date 1919.	Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epi- centrum.	Remarks.
				h	m	s		A _v	A _u		
250	Nov. 50	I	e i M eL F	11 11 11 11	12 14 18 21 31	51 8 51					

The symbols are according to Wicquart.
 Wicquart Horizontal Bandwidth 1000 Kilograms.
 E. Longitude 77° 19'.
 Greenwich Mean Time 2. Latitude 8° 11' 0". Height above sea level 8 m.

No.	Date 1920.	Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epi- centrum.	Remarks.
				h	m	s		A _v	A _u		
241	Nov. 1	I		8	58	13				Tarawa (Solari isles)	
242	" 2	II		18	40	25				Malabar P - 62 = 180 sec Δ = 1430	
243	" 4	I		18	28	21			150		
244	" 8	I		6	14	20					
248	" 9	II		8	49.1					130 No hour marks Malabar P - 12 = 24 sec Δ = 210 Pacanger Java	
249	" 14			22	17	21					
247	" 16	I		8	48.0					No hour marks	
248	" 19	I		9	28	24				110 Malabar P - 12 = 18 sec Δ = 130	
249	" 23	II		6	49	1				280 Azimuth 27 E. Malabar P - 2 = ± 44 sec Δ = 260 Central and Eastern Java	



Infern

SEISMOLOGICAL BULLETIN

DECEMBER 1920.

BATAVIA OBSERVATORY, JAVA.

Foundation: River Quartair.
 Greenwich Mean Time. S. Latitude $6^{\circ} 11' 0''$. Height above sealevel
 E. Longitude $7^{\text{h}} 7^{\text{m}} 19^{\text{s}}$.

WIECHERT Horizontal Pendulum, 1000 kilograms

The symbols are according to WIECHERT.

No.	Date 1920.	Character.	Phase.	Time (Greenwich).			Period in seconds.		Amplitude (half)		Distance of epicentrum.	Remarks.
							A _E	A _N	A _E	A _N		
251	Dec. 1	I	e M F	h	m	s	μ	μ				
				4	31	4						
				4	31	42						
252	" 1	I	e i M F	13	18	57						
				13	19	48						
				13	20	24						
253	" 1	I,	P iS L F	19	25	32			190	Malabar P — iS = 18 sec. △ = 160 KM.		
				19	25	53						
				19	26	51						
254	" 2	I	e M F	12	54	56						
				12	55	42						
				12	58							
255	" 2	I	e _E M F	18	54	52						
				18	55	25						
				18	58							
256	" 3	I,	e i L M F	19	50	9				Malabar e — S = 56 sec. △ = 310 KM. Eastern Java.		
				9	50	51						
				9	51	17						
257	" 4	I	e F	2	16	31						
				2	21							
258	" 4	I	e i ₁ i ₂ F	6	4	13						
				6	5	6						
				6	13	57						
259	" 4	I	e M ₁ M ₂ F	18	54	53						
				18	56	47						
				18	58	45						
260	" 5	I	e M _N F	22	4	37						
				22	15	37						
				22	25							



No.	Date 1920.	Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epicentrum.	Remarks.
				h	m	s		A _E	A _N		
61	Dec. 6	I	e	10	42	55					
			i	10	25	12					
			M ₁	10	44	56	6.0	41.0	45.6		
			M ₂	10	45	48	6.4	50.0	45.0		
			eL	10	51						
			F	11	0						
62	" 7	I	e	6	5	47					
			i	6	7	9					
			F	6	10						
63	" 7	I	e	15	24	20					
			i	15	52	35					
			F	15	58						
64	" 8	I	e	5	39	56				SE-Borneo.	
			i	5	41	21					
			M	5	41	51					
			F	5	47						
65	" 8	I _v	e	16	40	20				N-S.	
			i	16	40	44				Malabar P - i S = 18 sec.	
			M	16	41	25				Δ = 160 KM.	
			F	16	47						
66	" 8	I	e	16	55	15				Malabar P - i S = 16 sec.	
			M	16	56	19				Δ = 140 KM.	
			F	16	59						
67	" 8	I	e	20	39	15				Malabar e - e = 61 sec.	
			i	20	40	16					
			F	20	45						
68	" 9	I	e	14	8	40				Malabar P - S = 45 sec.	
			M	14	10	15				Δ = 400 KM.	
			F	14	15						
69	" 10	I _u	i ₁	4	48	46					
			i ₂	4	50	52					
			i _{3E}	4	52	29					
			L _E	5	22	22					
			M _E	5	22	28					
			L	5	56	45					
			M	5	58	25	21.0	120	62		
			eL	5	58	41					
			eL _E	6	8	41					
			eL _E	6	14						
			eL _E	6	21						
			F	6	28						
70	" 10	I	e _E	20	55	7					
			i	20	56	10					
			M	20	57	47					
			F	20	45						
71	" 13	I	e	3	51	58					
			M ₁	3	39	7	6.0	20.5	24.4		
			M ₂	4	1	56					
			L	4	6	54					
			F	4	10						

No.	Date 1920.	Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epicentrum.	Remarks.
				h	m	s		A _E	A _N		
272	Dec. 16	III _r	iP	12	13	49				4800	Azimuth S 72 E.
			i ₁	12	15	25					± 18° S; ± 150° E.
			M	12	15	58					
			i ₂	12	18	46					
			S	12	20	21					
			M ₁	12	20	42	6.7	425	478		
			M ₂	12	28	5	5.0	250	383		
			L	?							
			F	15	52						
272	—	—	iP	12	15	58				4800	Malabar records.
			i	12	14	26					
			i _N	12	15	18					
			i _E	12	16	15					
			i _N	12	16	38					
			i _N	12	17	38					
			eS	12	20	30					
			M	12	20	58					
			L	12	22,7						
			LM _E	12	24	27					
			iL _E	12	27	41					
			iL	12	31	4					
			M	12	15	41					
			F	15	40						
275	" 16	I	P	21	20	6					
			M	21	22	31					
			i	21	28	11					
			F	21	58						
274	" 17	III _r	P	9	25	15				170	Azimuth S 78,6 E.
			iS	9	25	52					Malabar e - i = 46 sec.
			M	9	27	19	5.8	422	485		Δ = 410.
			F	9	45						
275	" 17	I	e	19	22	46					
			i	19	25	5					
			F	19	28						
276	" 18	I	P	10	8	20					Menado, Celebes.
			i ₁	10	9	7					
			i ₂	10	12	58					
			L	10	18	24					
			M	10	18	48					
			F	10	52						
277	" 19	I _u	eP	20	20	17				5950	
			iS	20	27	49					
			M	20	28	16					
			F	20	55						
278	" 21	I _v	eP	5	48	56				520	E-W.
			S?	5	49	15					Tandjong Sakti, (Benkoelen)
			F	5	53						Sumatra.
279	" 22	I	e	6	57	7					
			F	6	41						
280	" 22	I _v	e	22	16	11					Pekalongan, Central Java.
			M	22	17	53					
			F	22	20						



No.	Date 1920.	Cha- racter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epi- centrum.	Remarks.
				h	m	s		A _E	A _N		
281	Dec 24	III _v	iP	17	29	51		μ	μ	320	Azimuth S 69 W. Malabar P—iS = 44 sec. Δ = 390. KM.
			S	17	30	28					
			M	17	50	35					
			F	18	0						
282	» 25	II _r	iP	11	41	21	6.0	124	117	4690	NNW—SSE. Malabar faint.
			i	11	44	8					
			iS	11	47	47					
			i	11	49	16					
			i	11	57	20					
			M	11	58	11					
283	» 28	I	iP	3	24	54					
			S?	3	40	32					
			eL	3	44						
			F	3	50						
284	» 30	I	e	16	25	58					
			M	16	28	18					
			F	16	50						

