

SEISMOLOGICAL BULLETIN 1922.

BATAVIA OBSERVATORY, JAVA.

Foundation: River Quartair.

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

E. Longitude $7^{\text{h}} 7^{\text{m}} 21^{\text{s}}$.

WIECHERT Horizontal Pendulum, 1000 kilograms.

PREFACE.

The astatic seismograph of WIECHERT of 1000 K.G. is registering regularly since December 6th 1908.

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

$$(a) = 1.407 \text{ mm}; (b) = 1225 \text{ mm}; (c) = 895 \text{ mm}.$$

The constants used in 1921 are given below.

1921.	E-W component.			N-S component.		
	V.	T_0 .	ϵ .	V.	T_0 .	ϵ .
January	218	8.0	4.7	209	8.0	4.2
February	"	7.8	4.5	"	7.9	"
March	"	7.6	4.2	"	7.7	4.0
April	"	7.1	4.6	"	7.9	4.1
May	"	7.0	4.4	"	7.6	4.7
June	"	7.2	4.0	"	7.7	5.0
July	"	7.0	4.2	"	"	5.2
August	"	"	4.1	"	7.8	4.8
September	214	"	4.8	195	7.6	4.5
October	"	6.9	4.1	"	7.3	4.1
November	"	6.7	"	"	7.0	3.9
December	"	6.6	"	"	"	4.0

The constants for 1922 will be given at the end of the year

The notation used 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 manager of the tea estate Malabar (Præanger, Java; E. Long. 107° 37'; S. Lat. 7° 13') has been erected.

Particulars about the registrations have been put under the remarks.

Month	1	2	3	4	5	6	7	8	9	10	11	12
January	2.4	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7
February	3.8	3.9	4.0	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9
March	5.0	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9	6.0	6.1
April	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9	7.0	7.1	7.2	7.3
May	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3	8.4	8.5
June	8.6	8.7	8.8	8.9	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7
July	9.8	9.9	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9
August	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9	12.0	12.1
September	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	13.0	13.1	13.2	13.3
October	13.4	13.5	13.6	13.7	13.8	13.9	14.0	14.1	14.2	14.3	14.4	14.5
November	14.6	14.7	14.8	14.9	15.0	15.1	15.2	15.3	15.4	15.5	15.6	15.7
December	15.8	15.9	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9

JANUARY 1922.

No.	Date 1922.	Char-acter.	Phase	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epi-centrum	Remarks.
								A _E	A _N		
1	Jan. 1	I	e _E i _E i F	h 12 12 12	m 11 12 15	s 36 36 49		μ μ			
2	" 1	I	i _E i i _E eL F	19 20 20 20	58 7 9 17	15 50 7 17					
5	" 5	I _n	iP i iS iN F	21 21 21 21	7 10 16 16	32 44 11 32			7260	ESE -- WNW.	
4	" 5	II	iP _E iS _N M F	23 25 25 0	53 54 56 27	59 32 46	6.4	567 290	500	EW. Benkoelen (Sumatra).	
5	" 8	II _n	P iN M F	23 23 23 23	10 10 12 28	21 40 50	5.5	210 264		± EW.	
6	" 6	I	e i eL M C _E C _E F	14 14 15 15 15 15	30 36 29 34 40 56	43 52 53 23 53 9 53					
7	" 6	II	P F	16 16	44 50	15					
8	" 7	I	e M F	8 8 8	33 40 42	29 30					
9	" 7	I	P _E iN i F	9 9 9 9	25 38 32 41	50 29 37					
10	" 8	I	e i F	2 2 2	7,8 17,9 22					e and i troubled by street traffic.	
11	" 9	I _n	e L eL _N F	5 6 6 6	28 27 53 56	16 14 43					
12	" 10	I	e F	15 14	47 2	36					

No.	Date 1922.	Character.	Phase.	Time (Greenwich).	Period in seconds.	Amplitude (half)		Distance of epicentrum.	Remarks.
						A _E	A _N		
13	Jan. 14	I _u	P iS i _N F	h m s 6 36 40 6 45 35 6 46 51 6 54		μ	μ	7570	
14	" 14	I _u	e ₁ e ₂ M ₃ F	20 31 47 20 35 42 20 37 0 20 54					
15	" 17	II _u	P i ₁ i ₂ i ₃ i ₄ i ₅ i _E eL F	4 9 59 4 10 10 4 11 42 4 14 59 4 15 50 4 19 42 4 35 15 4 43 5 54					EW.
16	" 19	I	e F	1 5 5 1 9					
17	" 19	I	e F	3 36 27 3 39 4					Southern Celebes.
18	" 19	I	i F	6 35 4 6 58					
19	" 19	II	e _E i _E i _N i _N F	22 5 47 22 7 16 22 13 59 22 15 6 0 28					
20	" 20	I	i _E M F	7 0 54 7 8 23 7 27					
21	" 22	I	i eL F	3 35 38 3 36 59 4 15					
22	" 22	I	e i _N M F	14 40 27 14 44 16 14 46 39 14 53					
23	" 22	I	e c _N i _E F	20 56 20 21 5 38 21 6 26 21 18					
24	" 22	I	e F	21 23 25 21 58					
25	" 22	I	e i F	22 14 46 22 22 18 22 50					
26	" 23	I	e i F	3 42 52 3 47 27 3 57					

No.	Date 1922.	Character.	Phase.	Time (Greenwich).	Period in seconds.	Amplitude (half)		Distance of epicentrum.	Remarks.
						A _E	A _N		
27	Jan. 23	I	i F	h m s 16 44 26 16 56		μ	μ		
28	" 26	I _r	P iS F	8 40 59 8 44 54 8 49				2450	troubled by street traffic. Taroena, (Sangi Isles).
29	" 27	I _v	eP iS M F	18 27.5 18 27.7 18 28.9 18 50				± 200	no minute marks. NS. Malabar iP — iS = 11 sec. Δ = 90. Preanger (Java).
30	" 27	I _v	eP _N iS i F	18 50.4 50.8 52.5 18 54.9				± 200	no minute marks. Malabar P — S = 11 ec. Δ = 90. Tjisaroeni (Preanger) Java.
31	" 28	I _v	eP iS M F	6 23 54 6 24 17 6 25 56 6 28				200	
32	" 31	I	P F	2 12 51 2 18					
33	" 31	I _u	P _E i ₁ i ₂ i ₃ eL L eL _N F	15 58 41 13 48 54 13 54 46 13 56 46 14 8 41 14 20 41 14 29 41 14 48					
34	" 31	I _v	eP i F	15 47 25 15 47 45 16 50					
FEBRUARY 1922.									
35	Feb. 3	II _r	P eS i F	3 42 23 3 44 55 3 47 31 4 8				1470	Malabar P — S = 1 ^m 53 sec. Δ = 1070. South Celebes and Eastern Soenda Isles.
36	" 7	I	e F	5 20 18 5 24					
37	" 14	I	e i F	12 52 53 13 0 7 13 36					
38	" 14	I _v	P iS F	18 49 9 18 50 1 18 53				470	Malabar iS — eP = 46 sec. Δ = 410.
39	" 19	I _v	P F	18 50 25 18 58					

No.	Date 1922.	Char-acter.	Phase.	Time (Greenwich).			Periode in seconds.		Amplitude (half).		Distance of epi-centrum	Remarks.
				h	m	s	μ	μ				
40	20	I _u	i _E i ₁ i ₂ F	7	55	46						
41	27	I _r	iP i F	20	45	5					ENE. Eastern Menado.	
MARCH 1922.												
42	March 2	I _u Δ	iP F	14	33	27						
43	4	I	e F	5	20	53						
44	4	II _u	iP iS F	13	18	47				7720	SW — NE. Malabar S — P = 9 ^m 6 sec. PR ₁ — P = 2 ^m 49 sec. Δ = 7790.	
45	4	I	i _N i _E F	22	26	50						
46	5	I	e i F	9	22	30						
47	5	I	e i _E i F	10	15	9						
48	6	I	i _E i _E F	21	31	2						
49	7	I	i _E i _E i _E i _E F	22	27	55						
50	8	I _v	iP iS F	11	16	48				180	NS. Malabar iS — iP = 16 sec. Δ = 150; ± EW. Preanger.	
51	10	I _u	iP iS i F	17	3	8				7300	EW. Malabar iP — iS = 8 ^m 56 sec. Δ = 7200.	
52	17	I Δ	i F	21	10	8						
53	26	I _r	P S F	11	18	15				1990	± EW. Wonreli (Kisar).	

No.	Date 1922.	Char-acter.	Phase.	Time (Greenwich).			Periode in seconds.		Amplitude (half).		Distance of epi-centrum.	Remarks.
				h	m	s	μ	μ				
54	March 26	I	e F	14	1	51						
55	28	I	P F	4	17	56						
56	29	I	e i M F	7	42	12						
57	30	I	P e _N F	15	38	54						
58	31	I	e i F	20	42	38						
APRIL 1922.												
59	April 1	I _v	iP _N iS F	7	9	41					190 NS. Malabar iS — eP = 20 sec. Δ = 180. Tjiletoeh (Preanger), Java.	
60	2	I	e ₁ e ₂ F	19	54	0						
61	3	I _v	i _E F	9	50	54					Malabar iS — P = 11 sec. Δ = 90. Preanger (Java).	
62	3	II _u	i _E i _N i _E i i eL F	10	5	47				6.3	Malabar i — P = 10 ^m 38 sec.	
63	6	I _v	e F	22	11	24					Mamoedjoe (Central Celebes).	
64	7	I _v	P F	0	4						P during changing of papers. Mamoedjoe (Central Celebes).	
65	7	I	P F	16	4	46						
66	8	III _v	iP iS? M F	3	34	6				350?	± WNW. Benkoelen.	
67	10	I	P F	4	5						P disturbed by street traffic.	

No.	Date 1922.	Char-acter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epi-centrum.	Remarks.
				h	m	s		A _E	A _N		
68	April 10	I _v	P iS F	16 16 16	16 16 28	20 48			250	Malabar S — iP = 28 sec. Δ = 250; EW.	
69	" 11	I _u	e _E e i F	0 0 0 0	28 36 37 41	42 28 51					
70	" 13	I	i _E i F	5 6 6	15 18 28	5 38					
71	" 17	I	iP i M F	20 20 20 20	58 58 40 51	22 40 47	5.0			EW.	
72	" 19	I	e F	16 17	58 5	48					
73	" 19	I _v	P iS F	19 19 19	26 27 31	52 15			190		
74	" 22	I _v	iP iS M F	2 2 9 9	27 28 29 35	51 11 21 35	5.7		180	NS. Malabar iS — P = ± 14 sec. Δ = 120. Preanger and Buitenzorg (Java).	
75	" 22	I _v	eP F	10 10	20 27	36				Taroena, Sangi Isles.	
76	" 22	I _v	i _N F	21 21	14 17	30					
77	" 25	I	i ₁ i ₂ i ₃ i ₄ i ₅ eL F	21 21 21 21 21 21 22	56 57 58 40 45 51 8	21 4 5 38 39					
78	" 25	I	e _E i i _N eL F	21 21 21 21	29 56 38 44	7 10 1 2				no minute marks. in next.	
79	" 25	I	e _E i _N i eL F	21 21 22 22 22	49 56 1 8 58	32 59 25 5 5				no minute marks.	
80	" 26	I	e i F	4 4 4	15 24 29	54 50					
81	" 29	I	eP F	25 25	37 46	44					

MAY 1922.

No.	Date 1922.	Char-acter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epi-centrum.	Remarks.
				h	m	s		A _E	A _N		
82	May 2	II _u	eP i eS? M F	11 11 11 11	16 22 25 28	57 11 52 5 57	6.2	176	255	7570? Malabar i _N — e _N = 9 ^m 15 sec. i — e _N = 9 ^m 29 sec. L — e _N = 14,1 ^m .	
83	" 2	I _v	e S	21 21 21	10 11 14	50 6				140 ± EW. Malabar iS — iP = 10.5 sec. Δ = 150. Preanger (Java).	
84	" 3	I	e F	16 16	23 58	46					
85	" 4	I	e i ₁ i ₂ F	0 0 0 0	40 41 43 49	38 43 2					
86	" 4	I _v	P iS F	2 2 2	35 37 43	(57) 10			(110)	EW; troubled by street traffic. Kroe (Benkoelen), Sumatra.	
87	" 4	I _u	iP i iS F	9 9 9 9	23 26 32 44	45 23 35			7480		
88	" 5	I _v	eP i _N eL F	14 14 14 15	50.1 54.0 58.4 4					EW. no minute marks. Amboina and Amahei (Ceram).	
89	" 6	I	iP F	3 3	8 12	42					
90	" 7	I	e F	16 17	54.7 6					no minute marks.	
91	" 8	I _v	e iS F	2 2 2	4 5 10	49 30			360	Malabar iS — eP = 40 sec. Δ = 350.	
92	" 8	I	P F	15 15	54 41	38					
93	" 9	III _v	P eS M F	13 13 13 14	53 55 57 53	24 53 50	5.6	415	538	1230 EW. Malabar S — P = 2 ^m 2 sec. Δ = 1160. Kediri (Java) — Soemba Isles and Southern Celebes.	
94	" 10	III _v	iP iS M F	9 9 9 9	21 22 24 50	56 42 47	6.2	178	510	Malabar S — iP = 1 ^m 24 sec. Δ = 590. Preanger (Java) — Bali Isles.	

No.	Date 1922.	Char-acter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epi-centrum.	Remarks.
				h	m	s		A _E	A _N		
95	May 11	I _v	e i ₁ i ₂ i ₃ L M ₁ M ₂ i eL _N F	9	25.5		6.6	118	45.8		Troubled by street traffic.
				9	34	1					
				9	34	32					
				9	35	44					
				9	45	32					
				9	49	40	6.6	118	45.8		
				9	50	42	6.6	67.2	149		
				9	54	36					
				10	8	32					
				10	15						
96	" 12	I _v	i i _E iS i L M ₁ M ₂ F	18	49	52				7160	Malabar i ₁ — i _N = 2 ^m 12 sec. i ₂ — i _N = 8 ^m 16 sec. eL — i _N = 15 ^m .
				18	55	5					
				18	58	26					
				19	0	59					
				19	3	7					
				19	10	57	30.0				
				19	15	37	17.6	94.9	117		
				19	48						
97	" 14	I _v	iP _E iS _N F	15	0	14				170	
				15	0	33					
				15	9						
98	" 14	I _v	e _E F	15	44	41					Lais (Benkoelen) Sumatra.
				15	51						
99	" 16	I _v	eP iS F	8	13	2				4070	
				8	18	42					
				8	27						
100	" 17	I _v	e _E F	11	51	50					Malabar iS — eP = 7 sec. Δ = 60. Tjikentjreng (Preanger) Java.
				11	55						
101	" 18	I _v	eP iS i F	15	16.2					2540	no minute marks. Malabar iS — eP = 2 ^m 49 sec. Δ = 1660. Menado (Celebes).
				15	20.0						
				15	24.4						
				15	36.6						
102	" 21	I _v	eP i iS F	5	14.1					2520	Taroena (Sangi I.) and Menado.
				5	16	18					
				5	18	6					
				5	26						
103	" 24	I	i ₁ i ₂ F	15	29	21					
				15	33	35					
				15	41						
104	" 25	I _v	i F	20	10	55					Malabar iS — eP = 14 sec. Δ = 120.
				20	14						
105	" 29	I	i _N F	20	33	50					Gorontalo (Menado)?
				20	39						
JUNE 1922.											
106	June 2	II _v	iP i ₁ i ₂ iS M F	20	17	7				2720	NE. Malabar S — P = 4 ^m 12 sec. Δ = 2690.
				20	18	28					
				20	18	47					
				20	21	25					
				20	24	6	6.1	253	87.7		
				20	35						

No.	Date 1922.	Char-acter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epi-centrum.	Remarks.
				h	m	s		A _E	A _N		
107	June 4	I _v	iP iS F	25	54.9					180	EW; troubled by street traffic.
	" 5			0	0						
108	" 8	I _v	eP i _E F	18	9.1						Malabar S — eP = 49 sec. Δ = 450. Pekalongan and Madioen-Besoeki (Java).
				18	10	6					
				18	14						
109	" 12	I	i _E	5	9	16					other phases troubled by street traffic.
110	" 16	I	e F	12	33	42					
				12	41						
111	" 17	I _v	iP i _E iS? F	2	59	28				2780?	EW. Kau (Tobelo), Halmaheira.
				2	41	7					
				2	43	47					
				2	50						
112	" 24	I _v	P iS F	16	32	18				2500	EW. Malabar S — P = 3 ^m 55 sec. Δ = 2450.
				16	36	18					
				16	50						
115	" 25	I _v	eP i F	16	54	53					Pino (Benkoelen) Sumatra.
				16	55	46					
				17	1						
114	" 26	I _v	P F	12	3.0						troubled by street traffic. Madioen-Paseroean (Java).
				12	5						
115	" 27	II _v	iP i S? F	14	35	9				2750?	
				14	37	1					
				14	39	26					
				15	8						

LOGICAL BULLETIN 1922.

BATAVIA OBSERVATORY, JAVA.

JULY à décembre.

No.	Date 1922.	Char-acter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epi-centrum	Remarks.
				h	m	s		A _E	A _N		
116	July 2	I _u Δ	e i eL F	15 14 14 14	53 2 25 57	45 45					
117	" 2	I _v	iP F	15 16	58 0	7					Malabar S — P = 44 sec. Δ = 120.
118	" 3	I	i _E i F	5 5 5	37 37 59	0 45					
119	" 3	I _r Δ	e F	13 13	45 57	56					Golohaya (Soela I, Moluccas)?
120	" 5	I	P i F	6 6 6	58,5 59 44	+0					in minute mark.
121	" 5	I _v	eP _E i _N S i F	14 14 14 14 14	44 45 45 46 57	18 4 59 2			950		Malabar S — P = 1 ^m 57 sec. Δ = 910. Den Pasar (Bali Isles).
122	" 9	I _r	P _r iS F	3 3 3	44 47 57	42 48			1850		
123	" 11	I	iP F	14 14	20 35	47					
124	" 13	II _r Δ	P iS eL F	5 5 5 5	5 7 21 38	(9) 7 27			2490		Troubled by street traffic.
125	" 13	I _r	e F	10 10	52 58	10					Northern Sumatra.
126	" 14	I	e _E F	2 2	42 47	49					
127	" 14	I _v	e i F	3 3 3	50 35 48	52 22					
128	" 18	I _r	P _E S F	18 18 18	30 50 55	42 57			130		
129	" 18	I Δ	e i F	22 22 22	16 16 24	14 46					Menado

No.	Date 1922.	Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epicentrum.	Remarks.
				h	m	s		A _E	A _N		
147	Aug. 10	I _v	P F	11	26	7				Malabar iS — P = 13 sec. Δ = 110.	
148	" 11	I	e F	8	42	37					
149	" 11	I	e F	13	37	47					
150	" 11	I _r	e _E P i _N S F	19	45	17			2590	Taroena, Sangi Isles.	
151	" 13	I _u	e i ₁ i ₂ i ₃ eL F	0	22	26					
				0	24	4					
				0	29	42					
				1	15		5.9 18.0				
				1	27						
152	" 14	I	i i _E F	11	51	38					
153	" 16	I _u	iP iS? i _N i _N eL _E F	16	8	1			7200?		
				16	17	31	7.0	26.3	17.7		
				16	19	12					
				16	20	32					
				16	35	7					
				16	57						
154	" 18	I _v	eP F	23	33	7				Troubled by street traffic. Malabar S? — P = 70 sec. Δ = 650. Paseroean and Besoeki, Eastern Java.	
				23	37						
155	" 22	I _v	P F	14	41	10				Malabar iS — iP = 16 sec. Δ = 140. Papandajan Tea Estate (Preanger) Java.	
				14	45						
156	" 22	I	P F	20	8	11					
				20	13						
157	" 22	I	P F	20	18	22					
				20	21						
158	" 22	I _r	P iS _N F	21	35	11			500		
				21	35	45					
				21	40						
159	" 23	I _v	eP S _N M F	0	18	41			540		
				0	19	20					
				0	19	57	6.6	86.4	23.2		
				0	28						
160	" 23	I	e _E i _E F	14	5	55					
				14	9	25					
				14	15						
161	" 23	I	i _E F	15	21	0					
				15	40						

No.	Date 1922.	Char- acter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epi- centrum.	Remarks.
				h	m	s		A _E	A _N		
176	Sept. 3	I _v	P iS F	10	0	0			±250	in minute mark. Bantam (Java)	
177	" 4	I	iP F	2	41	46				Preanger (Java)	
178	" 4	I	i _E F	17	25	9				Preanger (Java)	
179	" 6	I	e F	13	45	17				Preanger (Java)	
180	" 8	I	i _E i eL F	14	21	39					
181	" 9	I _v	P iS F	4	54	40			160		
182	" 9	II _v	iP iS i _N M F	6	7	52	58	119	178	± EW. Malabar S — P = 34 sec. △ = 300. Parangkoedjang (Bantam), Java.	
183	" 9	I _v	e F	13	37	32				Malabar iS — P = 10 sec. △ = 90. Neglasari (Preanger) Java.	
184	" 11	I	e i F	12	54	15					
185	" 11	II _v	eP iS iS _N M F	14	48	21	6.2	182	400	Malabar S — P = 3 ^m 11 sec. △ = 1920. Northern Celebes.	
186	" 11	I _r	eP i _N i _N F	16	26	59				Northern Celebes.	
187	" 11	I _r	iP i F	18	51	43					
188	" 14	I	P i ₁ i ₂ i ₃ eL F	19	38	22					
189	" 16	I	P i L F	22	51	5					

No.	Date 1922.	Char- acter.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epi- centrum.	Remarks.
				h	m	s		A _E	A _N		
204	Oct. 9	II _v	P iP S M F	8	20	35 34 34 43 41		μ	560	S 59.8 E. Malabar S — iP = 31 sec. Δ = 270; S 79.5 E. Preanger — Pasoeroean (Java).	
205	" 10	I _v	P _N S _E M F	12	20	47 15 13 25			250	Malabar iS — iP = 15 sec. Δ = 110. Preanger (Java).	
206	" 11	I _v	e F	12	41	35 46					
207	" 11	I _v	i eL _E L eL F	15	10	14 40 4 39 46					
208	" 14	I	eP F	9	3	17 7					
209	" 14	I	i M F	25	55	27 0 28	6.5	38.8	27.2		
210	" 16	I _n	e i L F	16	10	17 8 8 34					
211	" 16	I	i F	16	47	18 51					
212	" 17	II	P i ₁ i ₂ i ₃ F	6	42	48 54 28 46 8	8.6	156	104		
213	" 17	I	eP i _E i ₁ i ₂ F	10	0	50 35 23 16 22					
214	" 17	I	P _N F	18	51	8 7					
215	" 17	I	P i F	21	19	49 12 27					
216	" 19	I	P iS F	14	32	28 19 59			450	Malabar S _N — P = 41 sec. Δ = 560.	
217	" 25	I _v	P F	1	59	22 2				S troubled by street traffic. Malabar iS — P = 24 sec. Δ = 210. Taradjoe (Preanger) Java.	

No.	Date 1922.	Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epicentrum.	Remarks.
				h	m	s		A _E	A _N		
218	Oct. 24	II _n	iP i ₁ iS eL i F	21	51	48	6.1	39.6	35.3	7280	N 43.9° E. i new shock?
219	» 27	I	P _N i L _E F	14	29	25					
220	» 28	I _v	e F	11	49	31					Malabar S — P = 5.2 sec. △ = 46; NS. Eastern Preanger (Java).
221	» 28	I _v	e F	19	5	51					Malabar iS — iP = 12 sec. △ = 100; NS. Eastern Preanger (Java).
NOVEMBER.											
222	Nov. 3	I _r	i _N F	12	55	7					New Guinea?
223	» 7	I	P _E i F	5	24	54					
224	» 7	I	P _E M F	9	30	18	5.0	51.1	15.7		
225	» 7	I	e eL F	17	8	16					
226	» 7	I	e F	17	40	1					
227	» 7	II _v	P _E i _N i _N M F	18	18	20					Malabar iS _E — P = 1 ^m 4 ^s sec. △ = 950.
228	» 7	I _v	iP iS F	22	43	2	5.8	118	99.5	150	Bantam and Preanger, (Java).
229	» 7	I	i F	23	19	57					
230	» 9	I _v	eP F	21	50	43					Malabar iS — P = 33 sec. △ = 290. Preanger.
231	» 10	I	e F	12	58	28					
232	» 25	III _v	i ₁ i ₂ i ₂ i _N	4	52	14	7.3	35.9	59.9		Azimuth S 59 E. Malabar i ₁ 4 ^h 52 ^m 14 sec. i _N 5 58 8 i _E 5 14 55

No.	Date 1922.	Character.	Phase.	Time (Greenwich).			Period in seconds.	Amplitude (half)		Distance of epicentrum.	Remarks.
				h	m	s		A _E	A _N		
			i ₄ L ₁ L ₂ L ₃ M L ₄ L ₅ L ₆ F	5	21	19					Malabar L _E 5 ^h 24 ^m 55 sec. L 5 46 ^m 9 sec.
233	Nov. 11	I	i	7	2	43					in N ^r 232.
234	» 11	I	iP i F	7	46	23					
235	» 11	I _v	iP iS i F	17	18	13				220	± NS. Malabar iS — iP = 14 sec. △ = 120. Preanger.
236	» 11	I	P F	18	29	14					± NS.
237	» 16	I _r	e i F	4	50	22					Menado.
238	» 16	I _v	eP F	15	41	55					Malabar iS — iP = 21 sec. △ = 180. Preanger.
239	» 16	I	P i F	22	23	0					
240	» 17	I _v	i _N i i _N eL eL F	11	22	26					Malabar i 11 ^h 22 ^m 46 sec.
241	» 18	I _v	P _N iS F	2	12	19				180	Malabar iS — iP = 12 sec. △ = 100. Preanger.
242	» 19	I	i F	7	45	28					troubled by street traffic.
243	» 21	I	P M F	0	25	52	6.0	26.3	32.3		Malabar i — P = 31.6 sec.
244	» 22	II	iP i M F	5	55	0					NNE.
245	» 26	I	i F	15	49	35					
246	» 27	I _v	P S F	10	34	29				200	

No.	Date 1922.	Char-acter.	Phase.	Time (Greenwich).	Period in seconds.		Amplitude (half).		Distance of epi-centrum.	Remarks.
					A _E	A _N	A _E	A _N		
247	Nov. 29	I	e i ₁ i ₂ F	h m s 16 42 47 16 44 58 16 48 12 16 51						
DECEMBER.										
248	Dec. 1	I	i ₁ i ₂ i _E F	25 35 51 25 35 26 25 40 11 0 7						
249	" 2	I _u	P L _E F	5 55 21 4 12 25 4 22						
250	" 2	I _v	P i F	18 28.1 18 28 56 18 42						Troubled by street traffic. Malabar iS — P = 17 sec. Δ = 150.
251	" 4	I _r	e _E i ₄ i ₂ F	22 55 26 22 57 8 25 0 25 25 6						Parigi (Menado).
252	" 6	I _v	eP iS M F	15 44 48 15 45 8 15 46 12 15 48	5.7			170		Malabar iS — iP = 12 sec. Δ = 100; WSW. Preanger (Java).
253	" 6	II	P _N i M F	14 4 56 14 13 33 14 15 20 14 42	5.8	128	45.4			
254	" 7	I _u	iP iS L _E F	16 58 24 17 5 3 17 20 0 17 37				5000		
255	" 8	I	e F	22 43 5 22 59						
256	" 8	I	e F	25 34 51 23 47						
257	" 11	II _d	iP iS i M F	11 49 58 11 50 17 11 50 45 11 51 2 12 12				160		Malabar iS — iP _E = 26 sec. Δ = 250. West Java.
258	" 11	I _r	iP iS F	18 9 47 18 10 8 18 19				180		WSW. Malabar S — P _E = 21 sec. Δ = 180. Moentjang (Bantam), Java.
259	" 12	I _r	e F	17 2 0 17 13						Menado.

No.	Date 1922.	Char-acter.	Phase.	Time (Greenwich).	Period in second.	Amplitude half.		Distance of epi-centrum.	Remarks.	
						A _E	A _N			
260	Dec. 15	I _v	i _E i iS _N F	h m s 16 38 41 16 38 59 16 59 56 16 46 58				700		
261	" 14	I	e i F	22 49.4 23 14 12 23 52						troubled by street traffic.
262	" 16	I	i F	10 54 31 10 58	6.1					
263	" 17	I	e _E i _E F	1 1 9 1 10 55 1 20						
264	" 17	I	eP i ₁ i ₂ F	4 42 12 4 43 17 4 43 59 4 54						
265	" 17	I	e i F	12 5 35 12 5 45 12 9						
266	" 17	II	i _N i ₁ i ₂ M F	14 5 36 14 4 12 14 5 8 14 5 38 14 24	6.7	74.2	141			
267	" 18	I _v	eP e F	25 25 56 25 29 27 23 55						Malabar iS — iP = 13 sec. Δ = 110. Preanger (Java).
268	" 19	I _v	e F	8 46 7 8 48						Malabar S — iP _N = 20 sec. Δ = 170.
269	" 21	I	e _E i ₁ i ₂ F	11 19 40 11 20 55 11 21 38 11 27						
270	" 23	III _v	iP iS _E M ₁ M ₂ F	17 11 25 17 12 10 17 12 55 17 13 56 in next.	6.1	557	498			420 Malabar S — P = 25 sec. Δ = 200. Preanger-Kedoe (Java).
271	" 23	I _v	P M ₁ M ₂ F	17 30 5 17 31 57 17 32 48 17 40						Malabar S — P = 20 sec. Δ = 170. Banjoemas (Java).
272	" 23	I _v	iP F	19 1 35 19 14						Malabar S — P = 23 sec. Δ = 200. Banjoemas.
273	" 23	I _v	i F	25 21 17 25 24						Malabar iS — P = 8 sec. Δ = 70. Kadoepandak (Preanger).
274	" 23 " 24	I _r	i F	25 56 37 0 5						Beo (Talaud Isles)?

No.	Date 1922.	Character.	Phase.	Time (Greenwich).			Period in second.	Amplitude (half).		Distance of epicentrum.	Remarks.
				h	m	s		A _E	A _N		
275	Dec. 23	I	e ₁	22	7	38	18.5	μ	μ	160	Malabar iS — P = 14 sec Δ = 120. Bantam and Preanger (Java).
			e ₂	22	16	38					
			F	22	21						
276	" 24	I	e	0	17	40	6.0			190	
			i	0	22	5					
			F	0	37						
277	" 25	I _u	i _N	3	44	20	12.5			190	
			i _E	3	55	15					
			i	3	54	9					
			L	4	9	15					
			F	4	54						
278	" 25	I	e	11	50	25	12.5			190	
			i _E	11	51	47					
			F	11	42						
279	" 26	I _v	iP	9	24	58	12.5			190	
			iS	9	24	56					
			F	9	28						
280	" 31	I _u	i ₁	7	50	45	12.5			190	
			i ₂	7	55	5					
			i ₃	7	54	28					
			i ₄	7	59	26					
			eL _E	7	57	19					
			M	8	8	19					
281	" 13	I	i _E	11	46	37	12.5			190	
			i	11	52	44					
			F	11	58						

CONSTANTS

1922.	EW Component.			NS Component.		
	V	T ₀	ε	V	T ₀	ε
January	214	6.8	4.1	195	7.0	4.0
February	"	6.6	4.2	"	"	4.2
March	"	6.7	4.6	"	"	4.1
April	"	6.8	4.5	"	"	"
May	"	6.6	3.9	"	"	"
June	190	7.4	2.8	188	7.6	"
July	"	8.0	4.6	"	8.0	3.1
August	"	"	4.5	"	"	"
September	"	7.8	4.1	"	"	3.0
October	"	7.9	4.2	"	8.1	3.1
November	"	8.0	4.4	"	8.0	3.3
December	"	7.8	3.9	"	"	3.7

ERRATA: 1922, N° 102, May 21; read: e P 5^h 15,1^m; i S 5^h 19^m 6 s.