



OBSERVATIONS

MADE AT THE

ROYAL MAGNETICAL AND METEOROLOGICAL OBSERVATORY

AT

BATAVIA.

PUBLISHED BY ORDER OF THE GOVERNMENT OF NETHERLANDS INDIA.

BY

Dr. S. FIGEE

Acting Director.

VOL. XXII. 1899.

PART I.

**Containing the Meteorological and Magnetical Observations and Seismometric Records made in 1899,
and two Appendices.**

BATAVIA.

PRINTED AT THE GOVERNMENT PRINTING OFFICE.

1900.

PREFACE.

This volume, the XXIIth of the series, is published in two parts, the first part containing the usual data for the year 1899 and two Appendices.

Hourly Magnetical Observations as recorded by Adie's Magnetograph are given for the first three months of the year only. As has been mentioned in the former volume, the magnets afterwards have been disturbed to such a degree by the influence of the *Batavia* Electric Railway's traffic, that I was compelled to stop the reduction to absolute value, partly because absolute determinations proved impossible, partly because the photographic curves showed disturbance in such a degree that reducing individual hourly readings had no scientific value at all. The Declination and Horizontal Force curves however allowed an equilibrium-line to be traced, from which hourly readings have been tabulated for the remaining months. The differences of the means of these hourly readings with their mean monthly value have been reduced to absolute value by means of the known constants of the instrument.

The mean diurnal inequality to be found in Tables 3 and 4 (pgs 146 and 147) has been obtained in this way; the constants of the harmonic formula given in the tables 20 and 21 have been calculated therefrom. I venture to presume, that, treated in this way, they possess sufficient value to justify their publication.

It is to be observed that, in consequence of electric tramway traffic being at a standstill from 9 p. m. till 5 a. m. a slight alteration both in Declination and in Horizontal Force is perceptible, amounting to one minute of arc in easterly direction for the Declination, and for the Horizontal Force to a decrease of 0.00005 c. g. s. unity, as also shown by tables 3 and 4. In consequence of their variability, these slight differences have not been taken into account in computing the harmonic constants.

Next year I hope the Magnetograph will be removed to *Buitenzorg* at a distance of about 50 Kilometers from *Batavia*, far away from all disturbing influences.

Magnetic work at the *Batavia* Observatory is to be extended in other directions. An Eschenhagen Mikro-Variometer has been ordered in *Potsdam* to study the interesting smaller variations of the earth's magnetic force, i. e. pulsations and spasms and if possible too, to conduct simultaneous observations carried on with other observatories.

A polygon of telegraph wire, ending in a delicate galvanometer at the Observatory, is now laid around the *Koningsplein*, a vast plain in the centre of *Batavia* of about 1.3 square kilometer, to study the same variations, if they exist, in a vertical direction.

Milne's Seismograph has been kept in good working order throughout the year, only some interruptions being caused by the erection, in the same room, of an Ehlert's Tripendulum Seismograph. The same effect as has been observed by Dr. *Chree* at *Kew*-Observatory and mentioned in the report for the year 1899 (pg. 7) has been disturbing the records at the *Batavia*-Observatory, and has been remedied in the same way.

VIII

The records taken with *Milne's* Seismograph are published at pgs. 154 sqs, according to the instructions given by Prof. *Milne* in his circular of this year. In a subjoined column earthquakes recorded in the Archipelago, probably agreeing with the seismometric records, are to be found.

Copies of seismograms have been sent every three months to Prof. *Milne* and the *Strasburgh* Imperial Central Seismologic Institute and occasionally to other institutions and persons.

Two Appendices have been added to this first part of Vol. XXII, the former one containing a paper in German, by Dr. *van Bemmelen*, the latter giving a Catalogue of the Observatory's library. In view of the great distance which separates *Batavia* from more important libraries it is strongly recommended to students in geophysics to complete our library by sending in copies of their publications to the Observatory.

Part II of this Volume will give the results of magnetic observations for the period April 1885—March 1899.

BATAVIA, November 1900.

S. FIGEE.

Acting Director of the Observatory.

BATAVIA
SEISMOMETRIC RECORDS
1899.

Earthquakes and Tremors registered at the Batavia Observatory by means of the selfrecording
Seismograph—Milne during the year 1899.

Greenwich mean Civil Time

Batavia Observatory = 7^h 7^m 3 E. of Gr.

N ^o .	Date.		Commencement.		Durat. prel. tremors	Maxima.		Amplitude.		Duration.	Remarks.	Earthquake felt at:	
						h.	m.	mM.	"			min.	Island.
	1899.		h.	m.	min.	h.	m.	mM.	"	min.			
42	January	3	6	28.5	no	6	35.0	2.7	1.1	26	Moderate.		Island.
43	"	7	8	37.6		8	38.6	0.7	0.3	2	Very small.		Timor.
44	"	11	3	42.3	no	3	43.3	6.8	2.9	12	Large.	Preanger Reg.	Java.
45	"	12	8	4.3	4.5	8	8.9	3.0	1.3	19	Moderate.		Halmahera.
46	"	13	1	11.9		1	11.9	1.0	0.4	2	Very small. (dubious)		
47	"	15	6	35.2	no	6	35.2	1.7	0.7	2	Small.	Preanger Reg.	Java.
48	"	18	3	53.0		3	54.6	0.9	0.4	4	Small.	Preanger Reg.	Java.
49	"	20	22	43.2	1.0	22	45.0	3.0	1.3		Moderate.		
						22	46.1	4.0	1.7				
50	"	23	1	52.7	2.3	1	56.0	1.8	0.8		Moderate.		
						1	57.0	4.7	2.0				
51	"	25	0	5.4		0	16.7	1.0	0.4	32	Small.		
52	"	25	23	13.5		23	14.0	0.7	0.3	1	Very small.		
53	"	28	17	8.4	3.4	17	13.8	1.6	0.7	22	Moderate.		
54	"	29	20	35.8	3.0	20	38.8	1.8	0.8	21	Moderate.		Dammer.
						20	42.8	1.8	0.8				
55	"	30	0	49.4		0	50.6	0.7	0.3	2	Very small.		
56	"	30	17	46.5	1.1	17	51.4	2.1	0.9	50	Moderate.	Atjeh.	Sumatra.
57	February	4	18	17.7	0.1	18	17.8	2.6	1.1	5	Moderate.	Preanger Reg.	Java.
						18	18.1	2.6	1.1				
58	"		19	53.7		19	57.7	6.0	?	40	Large.		
		10			0.6	19	59.4	6.0	?				
59	"		9	5.0		9	7.0	1.3	?	6	Small.		
		12				9	7.6	1.3	?				
60	"		22	1.7		22	1.8	0.6	0.2	4	Very small.	Kota Agung.	Sumatra.
61	"	17	21	46.7		21	48.8	1.5	0.6	15	Moderate.		
		23				21	50.3	1.5	0.6				
62	"		0	3.2		0	5.4	1.1	0.4	4	Small.		
63	"	27	2	48.8		2	53.9	1.9	0.7	37	Moderate.		
		28			6.5								
64	March		1	8.3		1	9.7	8.7	3.4	44	Large.	Kroë.	Sumatra.
65	"	1	6	45.4	0.6	6	46.3	0.8	0.3	3	Very small.	Kepahiang.	Sumatra.
66	"	2	0	53.0		1	0.6	1.0	0.4	11	Small.	Donggala.	Celebes.
67	"	3	1	33.7		1	37.5	1.4	0.5	8	Small.		
68	"	3	14	31.4		14	37.3	1.5	0.6	29	Moderate.		
69	"	6	19	51.5	5.3	19	56.6	2.0	0.8	51	Moderate.		
70	"	6	22	43.0	4.7	22	43.2	0.7	0.3	5	Very small.		
71	"	6	1	3.3		1	10.5	1.0	0.4	46	Small.		
72	"	7	10	8.2		10	12.7	0.7	0.3	25	Very small.		
73	"	12	14	40.3		14	46.3	1.0	0.4	40	Small.		
		21			5.3	14	51.7	1.1	0.4				
						14	55.5	1.0	0.4				
74	"		12	22.7		12	32.7	1.1	0.4	29	Small.		Banda.
75	"	23	16	14.2	3.8	16	15.5	0.6	0.2	36	Very small.		
		24				16	34.3	0.6	0.2				
76	"		10	41.1		10	41.1	0.7	0.3	1	Very small.		
		28											
77	April		8	35.4		8	35.6	1.4	0.5	5	Small.	Bintuhan.	Sumatra.
78	"	5	12	31.1		12	40.4	1.1	0.4	6	Small.		
79	"	15	1	48.0		1	58.0	0.7	0.3	37	Very small (dubious)		
80	"	17	13	46.1		13	52.9	1.7	0.7	24	Moderate.		Banda.
		26				13	54.2	1.8	0.7				
						13	55.3	1.9	0.7				
81	May	1	19	30.7		19	31.2	0.8	0.3	1	Very small.		
82	"	2	14	33.3		14	38.1	1.8	0.7	33	Small.		
83	"	8	3	42.7		3	42.7	1.3	0.5	38	Small.		
84	"	11	23	13.9		23	18.9	0.7	0.3	12	Very small.		

Earthquakes and Tremors—Batavia.

No.	Date.	Commen- cement.		Durat. prel. tremors.	Maxima.		Amplitude.		Duration.	Remarks.	Earthquake felt at:
		h.	m.		h.	m.	mM.	"			
	1899.			min.					min.		Island.
85	May	14	13 57.4	2.8	14	9.7	3.0	1.2	35	Moderate.	
86	"	15	12 56.8	5.1	13	2.0	1.6	0.6	32	"	
87	"	17	10 2.2		10	3.4	0.8	0.3	4	Very small.	
88	"	17	19 7.3		19	8.5	0.7	0.3	2	"	
89	"	27	15 21.9		15	22.0	0.6	0.2	1	"	
90	"	29	8 5.7		8	5.8	0.5	0.2	1	Very small (dubious).	
91	June	2	6 28.3		6	32.2	1.0	0.4	27	Small.	
92	"	5	5 3.1		5	5.3	0.9	0.4	35	Very small.	
93	"	5	15 39.7		15	49.7	0.6	0.2	15	"	
From June 9 till June 20 Seismograph dismantled.											
94	"	24	17 1.0	2.0	17	3.5	5.0	2.0	19	Moderate.	
95	"	26	15 46.0		15	47.0	0.4	0.2	8	Very small.	
96	"	29	22 53.2	2.5	22	59.5	5.0	2.0	66	Moderate.	Singkel.
97	July.	1	12 36.0		12	36.9	0.6	0.2	4	Very small.	Tontoli.
98	"	5	19 36.3		19	37.9	0.6	0.2	2	"	Serang.
99	"	7	9 34.3		9	35.7	0.6	0.2	5	"	
100	"	11	7 46.2	9.0	7	54.2	1.5	0.6	57	Small.	
					7	55.3	1.5	0.6			
101	"	11	21 11.4		21	11.9	0.4	0.2	10	Very small.	
102	"	13	15 1.5?	10.0?	15	11.5	1.8	0.7	24	Small.	
					15	12.5	1.8	0.7			
103	"	13	21 1.6	4.0	21	6.6	1.2	0.5	14	Small.	Amboina.
104	"	14	13 45.2	10.2?	13	57.7	3.2	1.3	88	Moderate.	
					14	0.3	3.4	1.4			
105	"	17	5 41.6		5	54.6	0.7	0.3	20	Small.	
106	"	17	10 42.5	8.4	11	2.7	1.5	0.6	54	Moderate.	
107	"	17	13 25.5		13	28.0?	3.0	1.2	12	"	
108	"	17	17 7.3		17	16.1	0.9	0.3	4	Very small.	
109	"	20	9 12.6		9	20.6	0.5	0.2	44	"	
					9	50.6	0.6	0.2			
110	"	29	20 23.0		20	24.4	0.6	0.2	2	"	
111	August.	4	4 51.0		4	53.6	4.8	1.9	76	Large.	
					5	1.2	6.0	2.4			
112	"	20	17 13.5		17	16.9	1.3	0.5	23	Small.	
113	"	24	15 18.4		15	30.0	2.0	0.8	85	"	
114	September	10	17 30.2		18	8.2	2.0	0.8	38	Moderate.	
115	"	10	21 56.1	2.9	22	7.2	2.2	0.9	134	Large.	
					22	8.7	2.6	1.0		A very remarkable di- sturbance.	
					22	53.4	7.0	2.8			
					22	55.2	9.2	3.7			
					22	56.9	6.4	2.6			
115 ^{his}	"	17	1 57.9		2	6.3	0.6	0.2	14	Very small.	
115 ^{ter}	"	20	± 2 30.0		?	?	?	?	90	Moderate.	
										Record partly inter- cepted.	
116	"	24	12 14.8		12	15.0	0.6	0.2	1	Very small.	
117	"	24	23 6.4		23	7.1	1.3	0.5	7	Small.	Saleijer.
118	"	26	20 33.2		20	47.8	0.9	0.4	27	"	
					20	59.5	1.1	0.4			
119	"	29	4 30.0		4	33.3	1.0	0.4	7	"	
120	"	29	17 7.3	?	17	11.7	18.0	7.2	101	Very large.	Ceram.
					17	17.0	22.0	8.8			
					17	18.3	20.0	8.0			
					17	20.4	21.0	8.4			
					17	21.5	22.0	8.8			
					17	24.2	26.0	10.4			

Earthquakes and Tremors—Batavia.

N ^o .	Date.	Commencement.		Durat. prel. tremors.	Maxima.		Amplitude.		Duration.	Remarks.	Earthquake felt at:
		h.	m.		h.	m.	mM.	.			
	1899.			min.	h.	m.	mM.	.	min.		Island.
121	October	11	19 53.5		19	53.7	0.8	0.4	8	Very small.	
122 ^(*)	"	13	13 55.2		13	55.5	1.0	0.5	23	Very small.	
123	"	13	15 53.0		15	53.5	0.6	0.3	4	Very small.	
124	"	13	18 10.3		18	10.5	1.0	0.5	7		
125	"	19	9 28.1	no.	9	39.3	3.6	1.8	109	Moderate.	
126	"	24	4 0.9	no.	4	6.5	8.0	4.0	63	Strong.	
					4	11.0	10.0	5.0			Timor. Moluccos.
127	"	27	17 44.5		17	44.6	0.6	0.3	1	Very small.	Gedeh. (Estate).
128	"	27	18 39.7		18	49.1	0.6	0.3	20	Very small.	Java.
129	"	28	3 41.3		3	49.4	1.0	0.5	15	Very small.	
130	"	29	11 43.9		11	44.6	1.2	0.6	2	Very small.	Preanger Rég.
131	"	29	14 6.3	4.5	14	12.3	1.0	0.5	12	Small.	Java
					14	13.3	1.0	0.5			
					14	14.5	1.0	0.5			
					14	16.5	1.0	0.5			
132	"	31	3 12.3		3	13.0	0.6	0.3	8	Very small.	
133	November	3	4 32.5	3.3	4	35.8	1.4	0.7	7	Small.	Ternate.
134	"	7	23 53.7	4.0	24	4.4	0.6	0.3	16	Very small.	
135	"	10	20 28.0	no.	20	28.9	2.2	1.1	8	Small.	
136	"	11	22 52.7		22	54.1	1.0	0.5	5	Very small.	
137	"	12	0 16.7		0	17.2	0.6	0.3	1	Very small.	
138	"	16	14 59.0		15	0.7	1.0	0.5	4	Very small.	Soekaneegara.
139	"	23	10 0.5	no.	10	21.0	1.8	0.9	95	Moderate.	Java.
140	"	24	10 0.7	4.5	10	6.3	3.2	1.6	78	Moderate.	
					10	7.6	4.8	2.4			
141	"	24	18 50.7	no.	18	57.6	3.4	1.7	52	Moderate.	
					18	58.7	3.4	1.7			
142	"	30	17 58.4	no.	17	59.4	0.6	0.3	2	Small.	
143	December	2	8 15.4		8	16.6	1.2	0.6	7	Very small.	
144	"	6	7 19.9	0.7	7	19.9	1.6	0.8	13	Small.	
					7	20.5	1.2	0.6			
145	"	10	14 29.1	5.6	14	34.7	1.6	0.8	20	Small.	
146	"	12	6 37.2		6	39.3	1.0	0.5	4	Very small.	
147	"	25	20 2.3	no.	20	2.8	1.8	0.9	24	Small.	
					20	7.5	4.6	2.3			
					20	9.4	4.0	2.0			
148	"	30	4 11.7	1.0	4	15.7	1.2	0.6	16	Small.	
149	"	31	20 27.6	6.9	20	41.2	1.6	0.8	26	Small.	
					20	42.2	1.6	0.8			
					20	32.4	1.8	0.9			

(*) From Oct. 13 till 21 the registration has been disturbed more or less, daily from 0^h till 10^h T. of Gr. by the foundation and erection of a new pillar close to the instrument's one.