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ANNUAL REPORT

OF THE

METEOROLOGICAL

AND THE

SEISMOLOGICAL OBSERVATIONS

MADE AT THE

MIZUSAWA. INTERNATIONAL LATITUDE OBSERVATORY

OF MIZUSAWA

FOR

THE YEAR 1905.

LATITUDE 39° 8' N., LONGITUDE 141° 7' E.,

HEIGHT ABOVE MEAN SEA LEVEL 61 METRES.

PUBLISHED BY THE INTERNATIONAL LATITUDE OBSERVATORY

OF MIZUSAWA.

1906.

The present report contains the summaries of the meteorological and the seismological observations at the observatory during the year 1905.

The observations and the calculations were wholly carried out by the assistants Messrs. T. Ito and S. Ono under the superintendance of Dr. T. Nakano.

The mercurial mountain barometer for measuring the atmospheric pressure was set formerly in the iron house of the zenith telescope. But in January 1905, a barometer-room with thick walls and double window panes was specially made within a small house then newly built for our laboratory. A new mercurial mountain barometer (by Suzuki of Tokio) was bought and therein set, and since February 1, the atmospheric pressure was observed solely by means of this instrument. The room lies in the north-north-east of, and at the distance of about 110 metres from, the house of the zenith telescope. The height of the new barometer is about 0.6 metres higher than that of the old, and is therefore of 63.1 metres above the mean sea level.

Next, the following three additional observations were begun on May 1; they are:

1. *Amount of Ozone.* This is observed by means of *Sedan's ozonometer*. A piece of ozonometric paper is suspended within a small jalousied box which is placed on the roof of the office building, at the height of 7 metres above the ground. The amount of ozone is at once given by comparing, with an ozonometric scale, the intensity of colouration which is thus imparted to the paper in a complete day.
2. *Duration of Sunshine.* This is observed by a *sunshine-recorder of Jordan's pattern* (made by A. Nakamura of Tokio), which has been set also on the roof of the office building where it is quite free from any shadow.
3. *Amount of Evaporation.* This is observed by an *evaporation-gauge* (made by the Surveying Instrument Making Company of Tokio). It is set by side of, and in just the same way as, the rain-gauge. The observation is done once a day: viz. at 10 a.m.

The results of these observations are tabulated in p. 6.

Lastly what is necessary here to be mentioned is that our former EW component horizontal pendulum was replaced by a new one in September. Our new horizontal pendulum is of the same type

as our NS component horizontal pendulum, and is as follows :

Period of free oscillation = 20 seconds,

Multiplication of the pointer = 20 times,

Weight of the heavy cylinder = 15 kilograms,

Length of the horizontal strut = 0.404 metres,

Vertical distance between the points of support and of suspension = 0.866 metres.

In the last page, we have given the table of pulsatory oscillations obtained from the records of the EW component apparatus, since October 3, besides the results of observations only by the NS component apparatus.

Now, by comparing the common part of these tables, of all the pulsatory oscillations, the EW component apparatus gives earlier times of occurrences and later times of endings, in a marked degree, than the NS component apparatus. This fact enables us at least to suppose that the surface of the ground is incessantly oscillating more or less according to the changes of the air pressure, and that, therefore, the greater the magnifying power of the apparatus, the longer the duration of the record taken.

H. KIMURA, *Rigakuhakushi*

*Director of the International Latitude Observatory
of Mizusawa.*

April, 1906.

SEISMOLOGICAL TABLES.

TABLE A.

(Earthquakes)

No.	Date.	Time of Occurrence. †					Duration of Total Earthquake.	Maximum Range of Motion.		Character of Motion.	Intensity.	Remarks.
		(NS)			(EW)			(NS)	(EW)			
		h	m	s	m	s	m	mm	mm			
1	1905 Jan. 2	16	29	1	29	3	4.1	0.69	0.50	Quick	Weak	Felt
2	13	10	28	32	28	44	25.0	0.04	0.03	Slow	Feeble	
3	14	3	36	29	36	33	14.4	0.13	0.10	Quick	"	
4	14	21	25	30	25	27	3.2	0.02	0.03	"	"	
5	22	11	51	42	51	43	36.0	0.67	0.35	Slow	"	
6	26	16	3	31			4.6	0.02		"	"	
7	26	17	19	57	19	58	5.0	0.08	0.07	"	"	
8	27	10	48	32	48	40	2.0	0.01	0.01	"	"	
9	Feb. 2	8	15	35	15	43	5.2	0.17	0.06	"	"	
10	2	9	7	9	7	11	1.6	0.03	0.03	Quick	"	Felt
11	5	3			44	35	3.8		0.03	Slow	"	
12	7	14	47	39	47	39	3.1	0.03	0.03	"	"	
13	11	7	5	29	6	2	2.4	0.03	0.01	"	"	
14	13	14	32	47	32	55	30.0	0.03	0.03	"	"	
15	14	17	52	37	52	43	106.0	0.89	0.23	"	"	
16	14	22	55	38	55	48	5.8	0.07	0.07	"	"	
17	15	13	5	7	5	16	8.1	0.06	0.05	"	"	
18	15	15	55	1			1.8	0.01		"	"	
19	17	3	26	36	26	33	6.1	0.11	0.08	"	"	
20	17	18	44	19	44	23	3.0	0.04	0.03	"	"	
21	17	20	49	13	49	12	31.8	1.32	0.13	"	"	
22	18	13	17	18	17	35	7.8	0.07	0.05	"	"	
23	18	18	55	40			2.9	0.04		"	"	
24	19	13	47	34	47	26	45.0	0.02	0.02	"	"	
25	19	15	57	44			3.5	0.02		"	"	
26	21	14			25	5	7.3		0.23	Quick	"	
27	24	8	46	3			2.3	0.02		Slow	"	
28	25	6	44	12			1.5	0.01		"	"	
29	26	20	43	57	43	59	5.4	0.34	0.28	Quick	"	Felt
30	28	5	24	26	24	27	3.5	0.11	0.08	Slow	"	
31	Mar. 2	3	50	27	50	30	3.9	0.02	0.02	Quick	"	
32	6	10	31	34	31	36	2.7	0.04	0.03	"	"	Felt
33	8	6	56	51	56	51	3.2	0.06	0.05	Slow	"	
34	9	3	33	33	33	45	3.2	0.03	0.01	"	"	
35	12	1	11	18			1.6	0.02		"	"	
36	16	3	55	31	55	38	33.2	0.08	0.08	"	"	
37	18	4	39	56	40	1	4.9	0.02	0.02	"	"	
38	19	9	8	14	8	14	57.1	0.04	0.07	"	"	
39	22	12	44	42	44	42	71.5	0.82	0.15	"	"	
40	22	21	41	32	41	32	1.6	0.01	0.00	"	"	
41	28	4	6	44			9.5	0.02		"	"	
42	Apr. 4	9	59	7			64.5	4.81		very Slow	"	
43	16	8	2	9			6.7	0.19		Quick	"	Felt,
44	20	18	22	39	22	37	3.7	0.06	0.05	Slow	"	
45	May 6	16	45	2	45	1	5.2	0.11	0.07	Quick	"	
46	8	20	12	59	13	0	5.0	0.03	0.13	"	"	
47	9	2	54	13	54	18	8.8	0.19	0.17	Slow	"	
48	17	2	4	42	4	45	5.8	0.08	0.07	Quick	"	
49	18	22	54	16	54	13	30.8	0.08	0.05	Slow	"	
50	26	15	46	52	47	8	4.7	0.08	0.05	"	"	
51	31	11			10	49	2.5		0.03	"	"	
52	June 2	14	41	45	41	48	24.2	1.13	1.22	"	"	
53	6	0	42	51			7.4	0.02		"	"	
54	6	1	52	35	52	45	5.5	0.04	0.03	"	"	
55	6	2	6	28	6	36	2.7	0.02	0.02	"	"	
56	6	2	25	2	24	54	3.5	0.07	0.03	"	"	
57	6	5	18	5	18	3	5.1	0.02	0.02	"	"	
58	7	14	40	32	40	34	22.0	0.44	0.63	"	"	
59	9	21	38	14	38	20	14.8	0.04	0.03	"	"	
60	10	15			11	36	3.0		0.07	"	"	
61	12	17	16	48	16	50	13.8	1.72	1.87	Quick	"	Felt
62	13	14	48	14	48	14	1.9	0.02	0.02	Slow	"	
63	18	1	16	20			4.3	0.09		"	"	
64	20	5	30	26	30	29	3.5	0.09	0.10	"	"	
65	20	12	36	29	36	26	2.0	0.03	0.03	"	"	
66	24	5	31	32	31	38	2.0	0.01	0.01	"	"	
67	26	3	23	8			2.3	0.00		"	"	
68	27	1	11	32	11	32	16.0	5.69	5.00	Quick	Weak	Felt
69	July 1	2	18	13	18	7	11.4	0.03	0.03	Slow	Feeble	
70	1	7	2	1	2	0	1.4	0.05	0.03	Quick	"	
71	5	8	56	38			3.5	0.01		"	"	
72	5	10	3	24			3.5	0.02		"	"	
73	6	21	26	3	26	5	3.2	0.08	0.07	"	"	
74	7	1	21	33	21	33	71.5		17.05	Quick	Weak	Felt
75	7	4	51	5	51	7	5.3	0.04	0.02	Slow	Feeble	
76	7	7	18	25	18	31	12.8	0.44	0.60	"	"	Felt

† Japanese Central Standard Time (9^h east from Greenwich), reckoned from Midnight.

TABLE A.

(Earthquakes)

No.	Date.	Time of Occurrence. †					Duration of Total Earthquake.	Maximum Range of Motion		Character of Motion.	Intensity.	Remarks.
		(NS)			(EW)			(NS)	(EW)			
		h	m	s	m	s	m	mm	mm			
77	1905 July 7	10	18	56	19	3	10.8	0.14	0.12	Slow	Feeble	
78	7	22	38	14	38	17	4.8	0.04	0.07	"	"	
79	8	3	11	6	11	9	5.8	0.05	0.07	"	"	
80	9	7	12	59	12	59	12.8	1.40	1.08	Quick	"	Felt
81	9	8	5	25	5	25	4.1	0.06	0.05	Slow	"	
82	9	18	47	17	47	18	100.0	9.58	1.67	"	"	
83	10	2	48	32	48	39	5.0	0.04	0.07	"	"	
84	10	7	53	0	52	57	4.0	0.05	0.08	"	"	
85	11	6	18	55	18	54	17.0	1.00	0.97	Quick	"	Felt
86	12	0	41	27	—	—	19.5	0.83	—	"	"	"
87	12	16	—	—	55	37	4.5	—	0.01	"	"	
88	13	5	5	4	—	—	2.5	0.01	—	"	"	
89	13	13	49	14	49	21	7.6	0.33	0.23	"	"	
90	14	17	58	30	—	—	21.4	0.01	—	Slow	"	
91	15	7	18	20	18	16	11.4	0.06	0.03	"	"	
92	16	18	48	14	48	13	5.7	0.18	0.23	"	"	Felt
93	21	18	18	55	18	55	3.6	0.05	0.08	Quick	"	
94	23	11	—	—	53	11	180.0	—	6.23	Slow	"	
95	24	7	—	—	0	21	4.0	—	0.07	Quick	"	
96	25	15	5	34	5	35	11.8	0.12	0.15	Slow	"	
97	Aug. 4	3	40	8	40	10	14.4	0.20	0.20	"	"	
98	4	8	49	3	49	2	15.4	0.24	0.30	"	"	
99	6	9	17	13	17	14	4.9	0.07	0.07	"	"	
100	6	12	51	29	51	41	4.0	0.02	0.02	"	"	
101	11	12	20	54	21	9	13.1	0.08	0.08	"	"	
102	15	17	11	24	11	19	9.0	0.28	0.20	"	"	
103	16	9	2	56	3	9	3.9	0.05	0.03	"	"	
104	17	21	37	46	37	47	5.8	0.05	0.05	"	"	
105	21	2	28	16	28	17	2.4	0.04	0.02	"	"	
106	22	23	31	36	31	39	3.5	0.04	0.05	Quick	"	
107	25	18	48	42	—	—	16.2	0.33	—	Slow	"	
108	28	4	12	10	12	10	2.4	0.02	0.02	Quick	"	
109	Sept. 1	11	46	37	46	30	16.3	2.28	1.78	"	"	Felt
110	2	0	50	29	50	30	3.3	0.22	0.20	"	"	"
111	2	15	47	40	47	42	3.1	0.08	0.07	"	"	"
112	3	2	4	27	4	27	2.1	0.01	0.02	Slow	"	
113	7	8	25	37	—	—	0.7	0.01	—	"	"	
114	8	10	59	48	56	12	55.1	0.09	0.03	Very Slow	"	
115	11	16	38	18	38	24	3.8	0.05	0.05	Quick	"	
116	13	2	16	7	16	9	1.6	0.01	0.02	"	"	
117	15	1	16	10	16	7	1.4	0.01	0.00	"	"	
118	15	4	47	44	47	49	21.0	0.03	0.08	Slow	"	
119	15	15	8	5	8	5	117.7	2.78	0.83	"	"	
120	16	7	43	25	43	25	10.8	0.02	0.02	"	"	
121	16	15	2	21	—	—	5.5	0.01	—	"	"	
122	16	16	3	44	—	—	3.0	0.01	—	"	"	
123	18	20	59	31	—	—	4.7	0.11	—	Quick	"	
124	21	22	0	5	—	—	4.8	0.07	—	"	"	
125	22	18	6	34	—	—	2.3	0.04	—	"	"	
126	29	21	0	49	—	—	19.5	0.05	—	Slow	"	
127	30	20	42	49	—	—	1.4	0.00	—	Quick	"	
128	30	23	28	34	—	—	3.7	0.04	—	"	"	
129	Oct. 2	10	54	24	—	—	8.8	0.28	—	Slow	"	Felt
130	4	8	14	53	—	—	16.0	1.22	—	Quick	"	"
131	7	21	52	30	52	29	2.7	0.07	0.15	"	"	
132	10	10	54	21	54	22	9.2	0.13	0.12	Slow	"	
133	10	13	48	43	48	43	8.3	0.14	0.13	"	"	
134	10	14	7	37	7	41	10.2	0.22	0.20	"	"	
135	10	14	28	16	28	16	6.2	0.11	0.15	"	"	
136	10	14	36	11	36	10	7.3	0.10	0.11	"	"	
137	10	14	58	53	58	53	5.8	0.03	0.03	"	"	
138	10	15	21	45	21	46	10.1	0.15	0.14	"	"	
139	10	16	51	5	51	3	7.0	0.03	0.04	Quick	"	
140	10	20	—	—	50	14	7.8	—	0.01	Slow	"	
141	10	21	—	—	48	29	3.9	—	0.01	"	"	
142	13	15	13	36	13	33	4.7	0.04	0.06	"	"	
143	13	21	—	—	27	36	2.2	—	0.02	"	"	
144	14	4	24	56	25	0	3.9	0.02	0.02	Quick	"	
145	14	11	55	20	—	—	2.3	0.01	—	Slow	"	
146	15	19	53	41	53	43	3.4	0.02	0.03	"	"	
147	17	20	1	53	2	0	4.0	0.01	0.01	"	"	
148	19	6	59	24	59	22	5.0	0.04	0.03	"	"	
149	20	13	—	—	40	28	2.8	—	0.02	"	"	
150	22	11	—	—	51	56	3.3	—	0.01	"	"	
151	24	12	47	48	—	—	14.6	0.17	—	"	"	
152	25	14	—	—	43	38	20.0	—	0.01	"	"	

TABLE A.
(Earthquakes)

No.	Date.	Time of Occurrence. †		Duration of Total Earthquake.	Maximum Range of Motion.		Character of Motion.	Intensity.	Remarks.
		(NS)	(EW)		(NS)	(EW)			
153	1905 Oct. 25	h m s	m s	m	mm	mm	Quick	Feeble	
154	26	23 12 2	12 1	7.0	0.06	0.07	"	"	
155	28	6 0 7	0 6	6.7	0.04	0.05	"	"	
156	28	14 22 40	22 40	1.9	0.03	0.03	"	"	
157	Nov, 1	18 44 48	44 21	3.5	0.03	0.03	"	"	
158	2	14 0 30	0 36	14.6	0.31	0.70	"	"	
159	4	11 21 48	21 47	10.1	0.08	0.10	"	"	
160	7	3 35 58	36 1	13.7	0.02	0.02	Slow	"	
161	8	2 35 46	—	3.6	0.01	—	"	"	
162	9	11 49 50	—	3.4	0.02	—	"	"	
163	9	7 18 9	18 8	58.7	0.03	0.05	"	"	
164	9	15 —	18 55	2.8	—	0.01	"	"	
165	10	19 —	20 2	4.2	—	0.02	Quick	"	
166	10	4 —	45 48	3.4	—	0.01	"	"	
167	18	9 —	51 9	6.7	—	0.04	"	"	
168	22	0 49 15	49 11	2.0	0.02	0.04	"	"	
169	22	8 12 8	11 57	9.6	0.02	0.02	Very Slow	"	
170	23	8 46 51	46 56	36.0	0.10	0.19	Slow	"	
171	23	7 31 3	31 5	9.8	0.04	0.03	"	"	
172	24	15 34 58	35 1	9.2	0.01	0.06	"	"	
173	27	0 1 46	1 42	4.3	0.50	0.40	Quick	"	Felt
174	27	4 37 59	37 51	7.1	0.02	0.02	Slow	"	
175*	29	12 35 5	35 8	3.9	0.01	0.03	"	"	
176	Dec. 2	9 —	—	—	—	—	Quick	"	
177	3	6 35 5	35 2	8.6	0.02	0.02	Slow	"	
178	4	13 44 42	44 48	11.5	0.44	0.40	Quick	"	Felt
179	4	16 —	17 20	14.1	—	0.02	Slow	"	
180	5	23 —	56 48	17.5	—	0.04	"	"	
181	5	1 17 19	17 19	10.2	0.13	0.17	Quick	"	Felt
182	8	4 36 14	36 14	4.2	0.08	0.06	"	"	
183	10	19 —	32 5	1.3	—	0.02	"	"	
184	11	21 43 11	43 16	22.8	0.02	0.02	Slow	"	
185	23	3 17 22	17 11	22.0	0.04	0.03	"	"	
186	26	11 37 5	37 4	9.9	4.55	4.50	Quick	Weak	Felt
187	29	12 12 8	12 7	12.2	0.30	0.34	"	Feeble	"
188	31	6 57 30	57 31	1.9	0.03	0.75	"	"	
		19 41 28	41 27	1.7	0.04	0.06	"	"	

* Not well registered in consequence of instrumental defects.

TABLE B.
(Pulsatory Oscillations)
NS Component.

Beginning		Ending		Maximum		
Date	Hour	Date	Hour	Date	Hour	Double Amplitude.
	h		h		h	mm
1905 Jan.	1 5.0	1905 Jan.	2 15.2	1905 Jan.	1 16.0	0.03
	5 11.4		6 11.2		5 20.7	0.02
	7 2.9		9 9.5		7 13.3	0.03
	14 16.2		16 11.5		15 0.3	0.03
	19 11.4		21 15.7		20 1.2	0.04
	21 23.7		24 13.7		23 2.2	0.06
	27 8.2		28 14.9		27 21.8	0.03
	29 10.9		31 7.0		29 24.0	0.02
Feb.	2 14.0	Feb.	3 13.5	Feb.	2 17.5	0.01
	4 24.0		5 11.4		5 14.0	0.01
	6 3.4		8 9.0		6 17.0	0.01
	8 10.9		11 22.3		10 17.9	0.02
	12 14.0		13 19.6		12 22.6	0.02
	17 7.4		19 19.8		18 23.8	0.04
	27 10.0	Mar.	2 9.2		27 20.7	0.06
Mar.	4 3.3		6 23.6	Mar.	5 1.7	0.04
	12 9.3		13 1.7		12 21.3	0.01
	14 0.2		15 23.0		14 18.3	0.03
	26 8.9		28 21.6		26 15.0	0.02
	31 14.3	Apr.	4 23.9	Apr.	2 2.2	0.07
Apr.	7 4.9		9 1.4		7 22.0	0.04
	10 15.3		11 8.6		10 23.0	0.01
	11 23.7		13 5.0		12 6.9	0.01
	13 11.8		14 14.8		14 7.5	0.02
	17 7.5		20 11.0		17 23.2	0.06
	20 11.0		23 3.0		21 14.0	0.06
	30 23.4	May	3 11.0	May	1 13.0	0.02
May	6 17.0		8 18.2		7 12.1	0.03
	10 5.3		11 19.0		10 13.0	0.02
	18 5.7		20 11.7		19 3.4	0.06
	21 8.0		22 10.2		21 21.0	0.02
	27 9.0	June	28 11.6	June	27 15.3	0.02
June	3 18.2		5 9.0		4 11.5	0.04
	11 20.0		13 12.0		12 15.5	0.02
	14 1.5		15 22.1		14 13.0	0.02
	19 11.5		23 3.0		20 14.0	0.04
	28 7.9	July	2 7.0		30 8.9	0.06
July	10 0.4		13 3.6	July	11 16.0	0.02
	13 15.7		14 3.5		14 6.0	0.01
	18 22.0		21 13.0		20 1.0	0.02
	24 21.3		26 18.3		25 23.9	0.02
	28 5.8		29 11.4		28 16.5	0.02
	29 22.7		31 1.2		30 8.4	0.03
Aug.	1 10.0	Aug.	2 5.1	Aug.	2 14.0	0.01
	4 15.5		7 20.0		5 14.2	0.02
	9 22.0		12 4.9		10 21.0	0.06
	13 12.5		14 9.8		13 24.0	0.01
	17 23.9		21 15.8		18 12.0	0.07
	26 11.3		31 18.0		27 2.0	0.02
Sept.	19 11.0	Sept.	21 8.7	Sept.	19 18.2	0.02
	27 0.4		29 9.0		27 14.4	0.02
	29 19.5		30 6.0		30 3.8	0.01
Oct.	3 8.7	Oct.	3 21.0	Oct.	4 4.7	0.01
	6 15.7		9 13.5		7 11.0	0.03
	14 6.1		15 6.7		14 18.1	0.01
	15 18.5		17 7.0		16 13.5	0.02
	18 10.0		20 0.8		18 20.3	0.02
	20 9.8		22 15.0		21 12.8	0.02
	27 7.8		28 6.0		27 22.2	0.01
	30 10.0	Nov.	1 8.4		31 6.2	0.06
Nov.	4 9.0		6 5.4	Nov.	5 0.2	0.02
	6 17.0		8 0.4		7 3.8	0.02
	11 7.0		12 16.0		12 9.0	0.03
	13 14.0		14 17.0		14 7.0	0.04
	19 13.0		21 22.4		21 12.6	0.02
	24 0.4		24 19.0		24 8.0	0.02
	28 18.0	Dec.	1 6.4		29 17.0	0.03
Dec.	3 19.3		4 21.8	Dec.	4 10.0	0.01
	6 11.0		10 18.5		8 17.0	0.04
	11 22.5		16 23.0		13 19.9	0.03
	20 15.0		23 3.3		22 18.6	0.02
	25 20.2		27 8.3		26 6.0	0.02
	30 3.5	1906 Jan.	4 8.0		30 17.5	0.06

TABLE B.
(Pulsatory Oscillations)
EW Component.

Beginning		Ending		Maximum		
Date	Hour	Date	Hour	Date	Hour	Double Amplitude.
1905 Oct.	3	1905 Oct.	6	1905 Oct.	4	
	h		h		h	mm
	9.0		11.5		11.7	0.01
	11.5		10.6		11.0	0.03
	10.6		9.8		13.6	0.02
	9.8		20		21	0.02
	22.7		20		27	0.02
	19.6		28		31	0.05
Nov,	2	Nov.	2	Nov.	5	0.03
	11.0		6		7	0.03
	9.0		8		12	0.06
	3.8		13		14	0.04
	10.0		16		21	0.03
	13.0		21		21	0.03
	11.3		26		24	0.02
	13.0		2		29	0.03
Dec.	3	Dec.	2	Dec.	4	0.01
	16.8		5		8	0.05
	1.5		11		13	0.03
	9.2		17		22	0.02
	10.6		24		26	0.02
	10.6		27		31	0.04
	22.4	1906 Jan.	5			
			3.0			

明治三十九年六月三十日印刷
明治三十九年七月五日發行

岩手縣水澤町

臨時緯度觀測所

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