ANNUAL REPORT

OF THE

METEOROLOGICAL

AND THE

SEISMOLOGICAL OBSERVATIONS

MADE AT THE

INTERNATIONAL LATITUDE OBSERVATORY

OF MIZUSAWA

FOR

THE YEAR 1904.

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

HEIGHT ABOVE MEAN SEA LEVEL 61 METRES.

PUBLISHED BY THE INTERNATIONAL LATITUDE OBSERVATORY

OF MIZUSAWA.

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The present report contains the summaries of the meteorological and the seismological observations at the observatory during the year 1904.

Mr. T. Shimotomai, assistant, who sincerely served in the observations from the outset, resigned his post in April 1904, and Mr. S. Ono has taken his place thenceforth.

Some alterations are done in the order of tables, and the tables for the numbers of observations of motions of the upper, the middle, and the lower cloud in the eight principal directions are added.

The observations of the earth temperature were begun from the middle of August 1904. The spot at which they are done is 20 metres northwest of the room of the zenith-telescope. The ground consists of soft soil and the surface is covered with lawn grass.

The observations include the temperatures on the surface, and at the depths 0.3, 1, 3, and 6 metres. The temperatures on the surface is observed by an ordinary mercurial thermometer, laid obliquely with its bulb just covered with earth. The temperatures at the depths 0.3, 1, 3, and 6 metres are observed by means of slow-acting thermometers, suspended by chains within the iron tubes, 3.0 centimetres in diameter, which are inserted in the earth to the respective depths below the surface, sealed at the lower end, and closed above the ground by copper cups.

The surface temperature is observed six times daily; but the other temperatures, as they are subject to no considerable diurnal variations, are observed only twice daily: viz. at 10^h a. m. and 10 p. m.

The results of these observations are tabulated for the last four months in page 5.

The observations of the earthquakes and the pulsatory oscillations were made by means of the same instruments as in the preceeding two years. The concurrences of the pulsatory oscillations with minima of the barometric pressure were also almost always marked in this year.

H. KIMURA, *Rigakuhakushi*

Director of the International Latitude Observatory

of Mizusawa.

May, 1905.

SEISMOLOGICAL TABLES

TABLE A.

(Earthquakes)

No.	Date.	Time of Occurrence. † (NS)	Time of Occurrence. † (EW)	Duration of Total Earthquake.	Maximum Range of Motion. (NS)	Maximum Range of Motion. (EW)	Character of Motion.	Intensity.	Remarks.
		h m s	m s	m	mm	mm			
1	1904 Jan. 16	13 2 59	2 53	7.8	0.04	0.03	Quick	Feeble	
2	17	22 26 45	26 37	4.0	0.03	0.02	Slow	,,	
3	19	16 9 18	—	2.9	0.02	—	,,	,,	
4	29	9 17 7	—	12.2	0.03	—	,,	,,	
5	Feb. 24	20 31 53	31 49	9.0	1.70	1.45	Quick	Weak	Felt
6	Mar. 8	3 40 28	40 30	15.5	0.83	0.75	,,	,,	,,
7	11	6 10 20	10 16	5.0	0.03	0.01	,,	Feeble	
8	14	10 30 56	31 43	4.5	0.04	0.02	Slow	,,	Time from (EW) uncertain.
9	17	16 49 34	49 30	14.3	0.03	0.02	,,	,,	
10	18	22 44 56	44 56	21.5	2.67	1.88	Quick	Weak	Felt
11	25	2 55 32	55 29	3.5	0.03	00.3	,,	Feeble	
12	27	2 34 56	35 11	7.5	0.19	0.10	,,	,,	
13	27	13 32 20	—	3.5	0.04	—	,,	,,	
14	April 4	19 38 24	38 21	49.0	0.04	0.03	Slow	,,	
15	8	8 22 1	22 6	7.0	0.11	0.12	Quick	,,	
16	13	14 37 57	37 57	14.0	0.64	0.50	,,	,,	
17	14	10 11 43	11 45	13.0	0.04	0.07	Slow	,,	
18	18	19 52 29	52 27	3·6	0.20	0.17	Quick	,,	
19	19	13 22 15	22 14	4.2	0.03	0.07	,,	,,	
20	23	4 51 39	51 39	16.0	0.58	0.75	,,	,,	
21	24	8 8 26	8 23	9.0	3.11	1.20	,,	Weak	Felt
22	26	9 46 28	46 52	10.5	0.11	0.17	Slow	Feeble	
23	May 2	0 37 21	37 8	13.5	0.03	0.05	,,	,,	
24	7	5 34 25	34 20	5.6	0.07	0.05	,,	,,	
25	7	17 24 21	—	2.0	0.01	—	Quick	,,	
26	8	4 24 22	24 25	16.0	0.86	1.32	Slow	,,	
27	8	8 1 22	—	3.0	0.02	—	,,	,,	
28	18	19 54 41	54 44	4.3	0.08	0.07	,,	,,	
27	21	5 24 17	24 28	2.7	0.11	0.07	Quick	,,	Felt
30	27	5 42 4	42 10	4.0	0.03	0.02	Slow	,,	
31	31	18 15 47	15 45	4.5	0.11	0.08	,,	,,	
32	June. 1	21 6 59	6 56	4.4	0.06	0.05	Quick	,,	
33	7	17 19 32	19 33	22.0	3.22	2.67	,,	Weak	Felt
34	9	2 41 56	41 58	5.8	0.09	0.08	Slow	Feeble	
35	11	2 56 2	—	3.2	0.06	—	Quick	,,	
36	14	10 —	38 26	14.8	—	0.87	Slow	,,	
37	15	2 16 15	—	3.5	0.02	—	,,	,,	
38	22	11 26 47	26 52	5.5	0.36	0.25	Quick	,,	Felt
39	24	10 8 45	8 48	12.0	0.09	0.08	Slow	,,	
40	25	23 50 17	50 14	60.0	1.18	0.28	,,	,,	
41	26	6 5 4	5 9	90.0	2.39	0.37	,,	,,	
42	26	10 47 49	47 51	6.0	Small	Small	,,	,,	
43	26	19 45 17	45 19	8.0	0.08	0.07	,,	,,	
44	27	4 43 18	48 24	13.0	0.04	0.03	,,	,,	
45	27	9 13 47	13 55	16.0	0.41	0.17	,,	,,	
46	July 1	12 18 28	18 33	17.0	0.06	0.08	,,	,,	
47	1	22 29 31	29 34	11.0	0.89	0.58	Quick	,,	Felt
48	12	19 40 53	40 54	9.0	0.21	0.25	Slow	,,	
49	13	16 13 11	13 11	6.8	0.21	0.22	,,	,,	Felt
50	15	3 45 43	—	4.8	0.02	—	,,	,,	
51	16	10 9 20	9 24	7.0	0.19	0.15	,,	,,	
52	16	10 35 22	35 18	3.0	0.02	0.02	,,	,,	
53	17	4 28 13	28 14	6.0	0.08	0.07	,,	,,	
54	19	18 21 30	21 26	4.0	0.07	0.05	,,	,,	
55	20	12 31 0	31 0	5.5	0.06	0.07	,,	,,	
56	20	13 20 15	—	2.0	0.02	—	,,	,,	
57	20	23 3 43	3 43	8.0	0.06	0.07	,,	,,	

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

TABLE A.

(Earthquakes)

No.	Date.	Time of Occurrence. (NS) h m s	Time of Occurrence. (EW)	Duration of Total Earthquake.	Maximum Range of Motion. (NS)	Maximum Range of Motion. (EW)	Character of Motion	Intensity	Remarks.
58	July 23	9 51 57	—	8.0	0.04	—	Slow	Feeble	
59	24	16 23 19	23 19	2.8	0.06	0.03	,,	,,	
60	24	19 47 10	47 12	16.0	0.11	0.12	,.	,,	
61	25	10 34 58	34 58	1.5	0.17	0.25	,,	,,	
62	26	21 2 20	2 27	5.0	0.06	0.08	Quick	,,	
63	28	4 24 28*	24 8	5.0	0·11*	0.07	,,	,,	*NS-Comp. not well registered.
64	30	13 43 46	—	3.6	0.04	—	Slow	,,	
65	Aug. 4	15 24 30	—	8.6	0.16	—	,,	,,	
66	4	21 49 43	—	5.7	0.10	—	,,	,,	
67	5	7 4 14	—	4.5	0.05	—	,,	,,	
68	7	5 25 25	—	8.4	0.48	—	Quick	,,	Felt
69	11	13 6 20	6 32	4.0	0.03	0.03	Slow	,,	
70	15	22 30 20	30 22	8.6	0.39	0.33	Quick	,,	Felt
71	21	6 48 11	48 10	8.4	0.11	0.07	,,	,,	,,
72	22	22 1 52	1 51	9.8	0.38	0.10	,,	,,	,,
73	25	6 3 3	3 9	44.8	2.67	0.47	Slow	,,	
74	23	9 21 43	21 46	3.9	0.06	0.05	Quick	,,	
75	27	17 30 49	30 56	4.5	0.03	0.03	Slow	,,	
76	28	7 4 27	4 30	7.0	0.07	0.07	,,	,,	
77	30	20 59 44	59 44	16.0	0.41	0.15	,,	,,	
78	Sept. 8	11 40 25	40 28	9	0.06	0.07	,,	,,	
79	11	14 53 30	53 49	25.0	0.16	0.07	,,	,,	
80	12	19 3 9	3 6	6.5	0.07	0.08	Quick	,,	
81	25	10 35 21	35 23	5.5	0.17	0.15	,,	,,	
82	Oct. 3	6 47 29	47 28	44.2	0.66	0.50	Slow	,,	
83	21	12 26 50	26 50	11 1	0.11	0.27	Quick	,,	
84	21	17 4 59	5 0	2.3	0.02	0.07	,,	,,	
85	25	0 27 37	27 38	8.5	0.33	0.32	,,	,,	Felt
86	27	19 —	2 0	1.5	—	0.03	,,	,,	
87	28	7 —	11 16	5.6	—	0.25	,,	,,	Felt
88	28	12 —	39 30	1.7	—	0.02	,,	,,	
89	Nov. 3	17 45 41	45 43	3.9	0.06	0.08	,,	,,	
90	4	1 45 28	45 27	4.3	0.08	0.07	,,	,,	Felt
91	6	13 27 25	27 21	16.7	0.18	0.07	Slow	,,	
92	11	16 —	5 2	5	—	0.17	Quick	,,	Felt
93	16	8 43 19	43 22	4.0	0.08	0.08	,,	,,	
94	21	7 12 25	12 21	5.0	0.06	0.05	Slow	,,	
95	23	19 21 43	21 44	4.0	0.06	0.07	Quick	,,	
96	28	9 3 29	3 31	4.7	0.11	0.02	,,	,,	
97	Dec. 17	16 3 46	3 50	13.0	0.89	1·25	,,	,,	Felt
98	24	11 46 22	46 19	14.5	2.50	4.17	,,	Weak	,,
99	28	7 48 32	48 39	15.0	0.51	0.75	Slow	Feeble	

TABLE B.

(Pulsatory Oscillations)

Beginning				Ending				Maximum				
Date			Hour	Date			Hour	Date			Hour	Double Amplitude.
			h				h				h	mm
1904	Jan.	1	21.2	1904	Jan.	4	11.0	1904	Jan.	2	8.0	0.04
		5	10.5			6	19.0			5	16.0	0.02
		10	1.8			12	10.7			11	5.0	0.03
		12	24.0			14	10.5			13	9.0	0.03
		17	11.0			19	20.6			19	5.0	0,03
		20	11.3			24	12.5			22	23.0	0.04
		25	11.0			27	2.2			26	5.0	0.02
		27	14.0			29	8.0			28	3.0	0.02
		30	15.0		Feb.	2	8.5		Feb.	1	4.0	0.02
	Feb.	3	8.0			8	11.0			9	3.0	0.04
		9	7.5			10	11.1			9	15.0	0.03
		11	1.6			15	7.5			13	15.0	0.04
		17	8,7			19	21.0			18	8.0	0.04
		21	3.9			23	17.0			22	1.0	0.04
		29	11.1		Mar.	1	16.5			29	17.0	0.04
	Mar.	2	7.2			4	19.5		Mar.	3	6.0–8·0	0.06
		6	1.3			7	13.5			6	17.0–18.0	0.06
		9	11.1			10	21.0			9	16.0	0.02
		11	11.4			12	19.8			12	6.0	0·04
		14	11.9			15	3.7			14	20.0	0.01
		17	3.4			18	6.0			17	17.0	0.02
		18	10.8			23	18.0			20	5.0	0.08
		25	1.0			31	14.6			29	16.0	0.06
	April	1	23.8		April	9	11.4		April	3	3·0–4.0	0·09
		9	15.7			11	12.8			10	10.0	0.03
		14	9.0			15	23.0			14	16.0	0.03
		16	11.4			19	16.5			17	11.0	0.02
		20	7.7			21	13.6			20	20.0	0.02
		24	19.8			28	14.6			26	13.0	0.04
		29	14.2		May	1	17.0			30	8.0	0.02
	May	2	17.5			5	11.0		May	3	16.0	0.03
		5	11.0			6	21.3			6	1.0	0.03
		11	4.3			13	20.4			13	10.0	0.06
		16	11.0			20	5.1			16	17.0	0.01
		23	1.9			24	1.8			23	17.0	0.02
		30	4.7			31	0.3			30	15.0	0.01
	June	5	0.2		June	5	22.0		June	5	6.0	0.01
		8	11.0			11	5.3			8	18.0	0.01
		12	16.8			13	16.7			13	6.0	0.03
		16	17.7			18	10.0			17	16.0	0.02
		18	20.9			20	10.9			19	16.0	0.03
	July	2	15.7		July	3	7.5		July	2	11.0	0.03
		8	10.8			12	2.5			10	15.0	0.03
		14	4.3			15	7.0			14	18.0	0.02
		26	3.3			28	14.2			27	14.0–15.0	0.06
	Aug.	4	9.2		Aug.	7	0.5		Aug.	5	9.0	0.03
		21	22.0		Sept.	3	16.5		Sept.	1	6.0	0.07
	Sept.	4	2.2			8	4.0			4	15.0	0.02
		13	1.0			15	11.5			13	9.0	0.03
		15	21.0			24	10.0			18	18.0	0,06
		26	16.0			30	11.2			29	9.0	0.02
	Oct.	2	12.9		Oct.	8	5.8		Oct.	6	19.0	0.05
		8	11.1			13	13.6			11	10.0	0.04
		16	2.0			20	13.0			17	14.0	0.03
		21	2.8			23	11.0			22	14.0	0.02
		24	11.8			26	1.0			25	3.0	0.03
		30	0.5			31	8.0			30	9.0	0.02
	Nov.	2	24.0		Nov.	10	3.0		Nov.	6	14.0	0.06
		14	9.5			19	2.2			15	10.0	0.05
		21	18.5			24	11.0			22	23.0	0.02
		26	12.7			30	3.2			27	7.0	0.07
	Dec.	2	1.5		Dec.	6	10.5		Dec.	5	3.0	0.03
		6	18.7			11	9.2			9	11.0	0.03
		12	7.0			14	17.0			12	18.0	0.02
		15	19.2			16	11.9			16	6.0	0.01
		17	4.0			20	19.0			18	8.0	0.02
		22	17.5			29	13.2			24	1.0	0.08