

# ANNUAL REPORT

OF THE

METEOROLOGICAL OBSERVATIONS

MADE AT THE

INTERNATIONAL LATITUDE OBSERVATORY

OF MIZUSAWA

FOR

THE YEAR 1903.

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APPENDIX.

SEISMOLOGICAL OBSERVATIONS

FOR

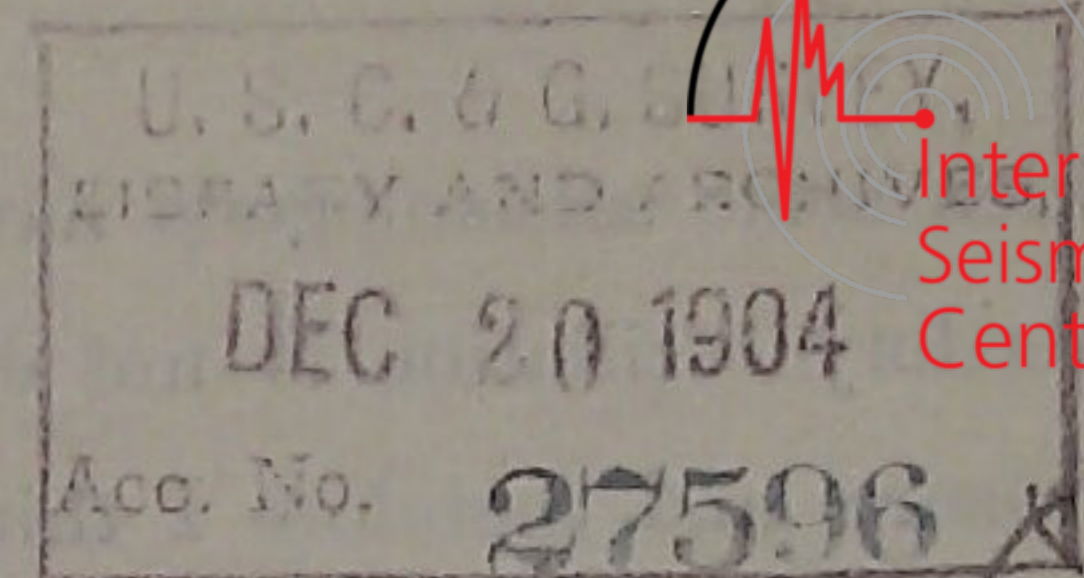
THE YEARS 1902-03.

LATITUDE  $39^{\circ} 8' N.$ , LONGITUDE  $141^{\circ} 7' E.$

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PUBLISHED BY THE INTERNATIONAL LATITUDE OBSERVATORY  
OF MIZUSAWA.

1904.



The present report contains the tables of the meteorological observations in the observatory during the year 1903. The observers, the instruments, and the method of computations are throughout the same as in the preceding year.

## APPENDIX.

The seismological observations, whose results are summarized in Tables A and B, were made by Ōmori's horizontal pendulums. These instruments have been set up in the cellar under the central room of the office building, one in the E.W., and the other in the N.S. direction.

The E.W. component horizontal pendulum is of the same type as that described in page 8 of No. 5, "Publication of the Earthquake Investigation Committee in Foreign Language":—

Period of free oscillation of the pendulum	=	13 <sup>s</sup>
Multiplication of the pointer	=	6
Weight of the heavy cylinder	=	6.5 <sup>kg</sup>
Length of the horizontal strut	=	12 <sup>cm</sup>
Vertical distance between the points of support and of suspension	=	88 <sup>cm</sup>

The N.S. component apparatus is of the form, whose description is given in p.p. 6—8 of the same number of the above named publication:—

Period of free oscillation of the pendulum	=	30 <sup>s</sup>
Multiplication of the pointer	=	9
Weight of the heavy cylinder	=	6.5 <sup>kg</sup>
Length of the horizontal strut	=	79 <sup>cm</sup>
Vertical distance between the points of support and of suspension	=	109 <sup>cm</sup>

Table A gives the list of the earthquakes observed during the years 1902 and 1903.

Table B gives the list of the non-seismic micro-pulsations of the ground, called *pulsatory oscillations*. The table only relates to the results from the N.S. component apparatus, which gives finer and more accurate records than the other, on account of the larger multiplication and greater sharpness of the writing index. The last column in this table, which gives the days and hours of the barometric minima taken from the barograph, is for the special important purpose of the direct comparisons with those of the maxima of the pulsatory oscillations. Thus from the table it can be seen that the barometric minima are almost always followed by the pulsatory oscillations. This fact affirms strongly the existence of the relation between the low pressure and the pulsatory oscillations,



which some seismologists have announced. I have to note, moreover, that the amplitude of the pulsatory oscillation is not exactly proportional to the amount of the change of the barometric pressure, and therefore I think that it may depend also upon the mode of the motion of the center of the low pressure and the coexisting distribution of the pressures in the wide range of the surroundings. It is also to be noted that the ground in which the observatory lies consists of the soft soil of quaternary formation.

H. KIMURA,

*Director of the International Latitude Observatory  
of Mizusawa.*

April, 1904.

APPENDIX

The following table shows the results of the observations made by the International Latitude Observatory at Mizusawa. The observations were made by the International Latitude Observatory at Mizusawa. The observations were made by the International Latitude Observatory at Mizusawa. The observations were made by the International Latitude Observatory at Mizusawa.

10'	=	Vertical distance between the points of support and of suspension = 100"
6	=	Length of the horizontal arm
6.5	=	Weight of the heavy cylinder
15"	=	Radius of the pointer
35"	=	Radius of the oscillation of the pendulum

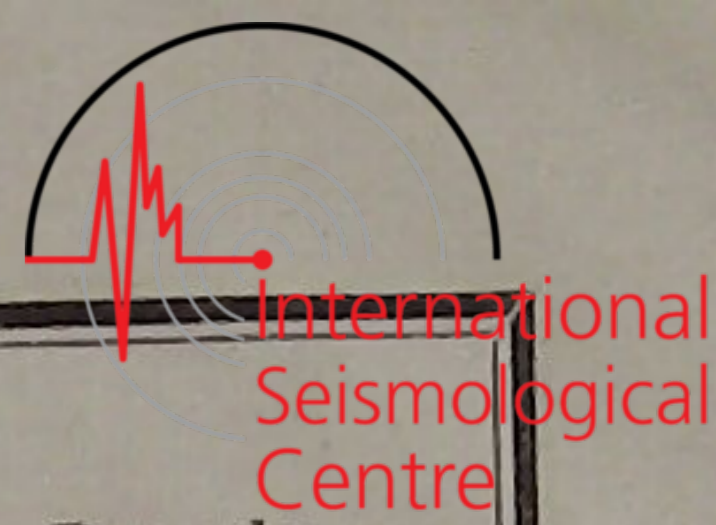
The following table shows the results of the observations made by the International Latitude Observatory at Mizusawa. The observations were made by the International Latitude Observatory at Mizusawa. The observations were made by the International Latitude Observatory at Mizusawa.

30'	=	Vertical distance between the points of support and of suspension = 100"
6	=	Length of the horizontal arm
6.5	=	Weight of the heavy cylinder
15"	=	Radius of the pointer
35"	=	Radius of the oscillation of the pendulum

The following table shows the results of the observations made by the International Latitude Observatory at Mizusawa. The observations were made by the International Latitude Observatory at Mizusawa. The observations were made by the International Latitude Observatory at Mizusawa. The observations were made by the International Latitude Observatory at Mizusawa.



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)			
1	1902 Jan. 1	h m s 2 27 4 pm	m s 26 51	m 50.8	mm 0.22	mm 0.01	Slow	Feeble	
2	2	0 15 22 am	15 20	2.6	0.17	0.08	Quick	"	
3	4	6 9 51 am	10 0	7.2	0.39	0.25	"	"	
4	12	6 30 18 am	30 40	3.0	0.13	0.07	"	"	
5	13	7 29 1 am	28 56	2.2	0.06	0.03	Slow	"	
6	18	4 48 58 am	48 58	17.0	4.28	3.28	Quick	Weak	
7	18	5 59 8 pm	59 6	2.6	0.11	0.03	"	Feeble	
8	20	5 14 38 pm	14 40	3.8	0.04	0.03	"	"	
9	20	6 43 10 pm	43 14	4.5	0.11	0.07	Slow	"	
10	20	7 6 13 pm	6 22	4.0	0.22	0.17	Quick	"	
11	20	9 9 46 pm	9 46	3.0	0.03	0.02	"	"	
12	22	6 46 56 am	46 56	9.1	0.94	0.63	"	"	
13	24	1 43 18 am	43 40	5.2	0.44	0.33	"	"	Felt.
14	25	8 35 49 am	35 35	84.2	1.09	0.65	Slow	"	"
15	29	10 14 6 am	14 6	21.0	0.07	0.07	Quick	"	
16	29	11 25 52 pm	26 1	5.5	0.63	0.23	"	"	
17	30	7 31 32 pm	31 36	8.0	0.02	Very small	Slow	"	
18	30	11 0 54 pm	1 2	45.0	18.44*	—	Quick	Strong	
19	31	10 42 16 am	42 14	28.0	8.71	5.08	"	Weak	
20	Feb. 2	2 51 54 am	51 49	6.4	0.55	0.32	"	Feeble	
21	3	9 47 52 pm	47 53	5.6	0.11	0.05	"	"	
22	4	8 27 19 am	27 23	4.3	0.08	0.03	"	"	
23	4	10 46 7 am	—	2.0	0.04	Very small	"	"	
24	7	10 0 46 pm	0 46	5.2	0.33	0.17	Quick	"	
25	8	0 32 41 pm	32 44	5.8	0.11	0.06	Slow	"	
26	9	4 45 24 pm	45 33	45.8	0.22	0.01	"	"	
27	10	10 19 22 pm	19 27	1.2	0.09	0.03	Quick	"	
28	15	9 37 29 pm	37 13	3.1	0.11	0.07	Slow	"	
29	17	2 15 40 pm	15 40	6.3	0.44	0.25	Quick	"	Felt.
30	20	10 50 22 am	50 23	12.7	0.13	0.13	Slow	"	Not well registered, amplitudes uncertain.
31	20	5 46 42 pm	46 49	4.3	0.21	0.22	Quick	"	
32	21	0 38 31 am	38 32	18.4	3.14	2.83	"	Strong	
33	21	8 28 45 am	28 52	9.1	1.06	0.73	"	Weak	
34	24	4 42 24 am	42 20	3.6	0.09	0.05	"	Feeble	
35	26	10 26 2 am	26 6	5.0	0.16	0.22	"	"	
36	27	0 2 1 pm	2 31	3.9	0.17	0.07	Slow	"	
37	27	11 17 27 pm	17 54	2.5	0.04	0.03	"	"	
38	28	5 51 38 am	51 40	1.5	0.04	0.03	Quick	"	
39	28	7 55 25 am	55 47	1.9	0.03	0.02	"	"	
40	March 1	1 32 41 pm	32 46	5.6	0.23	0.25	"	"	
41	3	9 12 31 am	12 33	10.7	0.38	0.40	"	"	Felt.
42	3	10 38 9 pm	38 12	4.2	0.26	0.15	"	"	"
43	10	2 34 26 pm	34 26	4.1	0.09	0.03	"	"	
44	11	0 6 24 pm	6 3	3.6	0.01	0.05	"	"	
45	12	5 0 18 pm	0 42	4.5	0.08	0.03	Slow	Feeble	
46	12	5 45 0 pm	45 2	14.6	0.37	0.17	"	"	
47	17	11 — am	0 1	9.0	—	0.08	"	"	
48	19	2 14 56 pm	—	2.0	Very small	—	Quick	"	
49	19	10 58 13 pm	—	1.8	"	—	"	"	
50	20	10 11 3 pm	11 6	2.9	0.11	0.05	Slow	"	
51	22	4 27 36 pm	27 15	5.7	0.02	0.02	"	"	
52	23	0 30 30 pm	30 25	5.2	0.49	0.38	Quick	"	Felt.
53	23	4 0 45 pm	0 46	4.2	0.20	0.08	"	"	
54	24	1 — am	6 21	3.3	—	0.05	"	"	
55	25	2 35 47 pm	35 31	7.7	0.20	0.13	"	"	
56	26	9 42 45 pm	42 43	2.0	0.03	0.02	"	"	
57	28	6 32 41 pm	32 38	18.8	0.03	0.02	Slow	"	

† Japanese standard time, 9<sup>h</sup> from Greenwich.

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)			
58	1902 March 28	<sup>h</sup> 11 <sup>m</sup> 52 <sup>s</sup> 19 pm	<sup>m</sup> 52 <sup>s</sup> 14	<sup>m</sup> 59.3	<sup>min</sup> 0.99	<sup>mm</sup> 0.18	Slow	Feeble	
59	29	1 45 13 am	45 25	16.0	0.03	0.02	"	"	
60	31	7 56 33 am	56 51	3.6	0.01	0.05	"	"	
61	April 1	0 59 29 am	59 21	4.6	0.12	0.07	"	"	
62	5	7 24 11 pm	24 8	3.5	0.09	Very small	Quick	"	
63	6	2 15 7 am	15 8	2.5	0.07	"	"	"	
64	8	11 18 43 am	18 41	4.5	0.17	0.05	"	"	
65	12	3 11 0 pm	—	2.4	0.03	—	"	"	
66	19	10 48 54 am	49 16	3.7	0.11	0.03	Slow	"	The ending portion blends with pul- satory oscillations, the termination is not therefore well defined.
67	25	9 40 37 am	—	2.4	0.02	—	"	"	
68	May 2	8 31 23 pm*	31 21	40.	3.70	3.83	Quick	Weak	
69	2	10 16 59 pm	17 14	3.9	0.10	0.05	"	Feeble	
70	3	1 7 1 am	6 51	3.0	0.06	0.02	"	"	
71	5	0 16 54 am	16 12	5.4	0.12	0.07	Slow	"	
72	5	7 5 13 am	5 15	2.6	0.08	0.05	Quick	"	
73	6	11 53 22 pm	53 37	15.5	1.01	0.50	"	"	
74	7	1 18 8 am	18 18	6.0	0.18	0.15	"	"	
75	8	11 22 6 am	22 6	12.3	0.06	0.03	Slow	"	
76	12	11 3 32 pm	3 30	6.0	0.11	0.13	Quick	"	
77	14	0 37 59 am	38 24	2.9	0.20	0.12	"	"	
78	15	8 52 54 pm	—	2.2	0.01	—	Slow	"	
79	15	11 38 46 pm	38 16	3.5	0.04	0.02	"	"	
80	15	11 50 11 pm	50 22	5.9	0.28	0.17	"	"	
81	17	7 5 17 am	5 36	2.2	0.10	Very small	"	"	
82	25	0 53 54 pm	53 55	1.6	0.03	"	Quick	"	
83	25	8 30 52 pm	30 52	5.3	0.08	0.05	Slow	"	
84	25	9 8 23 pm	8 20	2.9	0.03	0.02	"	"	
85	26	1 51 26 am	51 32	7.5	0.10	0.06	"	"	
86	28	6 2 59 pm	3 0	14.9	0.61	0.66	Quick	"	
87	June 1	9 44 37 pm	44 43	4.3	0.03	0.03	Slow	"	
88	6	11 — am	30 49	5.3	0.06	Very small	Quick	"	
89	11	3 16 40 pm	—	19.0	0.39	0.42	Slow	"	
90	13	9 23 0 am	23 1	13.0	0.67	0.66	Quick	Weak	
91	17	10 28 56 am	28 44	3.8	0.07	Very small	"	Feeble	
92	18	3 43 47 am	43 42	1.5	0.03	"	Slow	"	
93	20	5 5 40 am	5 59	2.6	0.07	Very small	Quick	Feeble	
94	20	5 50 2 pm	50 15	3.4	0.08	0.08	"	"	
95	23	7 43 37 am	43 37	7.4	0.22	0.23	Slow	"	
96	23	4 41 56 pm	—	6.3	0.20	0.08	Quick	"	
97	25	7 55 27 am	55 27	4.2	0.16	0.05	"	"	
98	28	7 53 59 pm	53 59	5.0	0.43	0.27	Quick	"	
99	29	2 28 20 am	28 21	3.3	0.24	0.17	"	"	Felt.
100	July 1	5 16 43 pm	16 41	12.4	1.73	0.92	"	Weak	
101	6	10 14 22 pm	14 15	2.5	0.06	0.03	"	Feeble	
102	8	11 7 6 pm	7 11	11.7	1.41	0.53	"	Weak	
103	10	9 28 23 am	—	1.8	Very small	—	"	Feeble	
104	10	7 57 17 pm	57 18	9.0	0.59	0.45	"	Weak	
105	21	1 0 37 am	—	2.3	0.02	—	"	Feeble	
106	21	1 15 42 am	15 45	4.1	0.04	0.02	"	"	
107	21	3 52 24 am	52 37	3.9	0.06	0.03	"	"	
108	26	4 29 39 am	29 45	4.2	0.04	0.03	"	"	
109	26	6 22 20 pm	22 32	6.4	0.47	0.30	"	"	Felt.
110	Aug. 2	4 26 48 am	—	0.6	Very small	—	"	"	
111	3	10 42 39 am	42 48	7.0	0.06	0.03	Slow	"	
112	4	1 51 58 am	52 5	12.0	0.56	0.67	Quick	"	Felt.
113	4	6 52 55 pm	52 57	13.2	0.50	0.53	"	"	
114	7	0 37 21 pm	37 14	2.1	0.03	0.02	"	"	

\* The minute is doubtful, whether it is 31 or 32.

TABLE A.  
(Earthquakes)



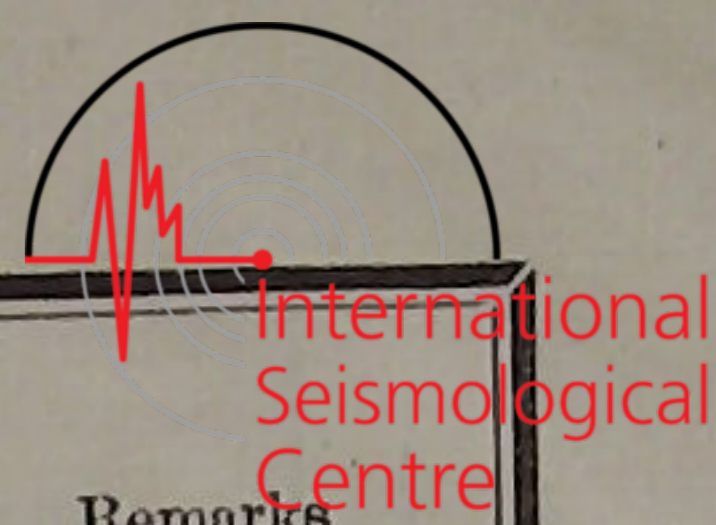
No.	Date	Time of Occurrence		Duration of Total Earthquake	Maximum Range of Motion		Character of Motion	Intensity	Remarks
		(NS)	(EW)		(NS)	(EW)			
115	1902 Aug. 7	h m s 6 20 6 pm	m s 20 5	m 9.1	mm 2.38	mm 1.05	Quick	Weak	
116	7	6 47 37 pm	47 34	2.0	Very small	Very small	"	Feeble	
117	8	8 37 42 am	38 6	2.9	0.03	0.02	"	"	
118	8	10 24 32 am	24 36	2.8	0.08	0.03	"	"	
119	14	8 12 1 am	12 1	2.1	0.08	0.03	Slow	"	
120	19	8 43 8 pm	43 15	3.3	0.06	0.05	Quick	"	
121	22	0 9 20 pm	9 23	2.2	5.00	7.08	Slow	"	
122	29	6 19 6 pm	—	1.3	Very small	—	Quick	"	{ Beginnings of the earthquake are not well defined.
123	31	7 19 8 am	20 41	24.0	0.18	0.20	Slow	"	
124	Sept. 3	11 54 38 am	54 29	4.1	0.20	0.07	Quick	"	
125	12	4 7 31 am	7 49	10.2	0.22	0.10	"	"	{ No trace in EW diagram.
126	13	4 6 7 pm	—	1.3	Very small	—	"	"	
127	14	6 20 41 am	—	5.6	0.01	—	"	"	
128	16	8 2 4 pm	2 25	13.0	Very small	Very small	"	"	
129	17	11 55 9 pm	—	1.0	0.02	—	"	"	
130	19	4 53 53 am	54 1	3.5	0.06	0.03	"	"	
131	22	5 42 1 am	42 4	8.0	0.97	0.72	"	Weak	
132	22	9 35 29 am	35 49	3.3	0.14	0.07	"	Feeble	Felt.
133	22	10 52 45 am	53 1	151.8	—	14.00	"	Strong	{ Resembling to pulsatory oscillations.
134	24	5 42 11 am	42 19	—	0.33	0.17	Slow	Feeble	
135	24	10 6 4 pm	6 6	2.3	0.02	0.02	Quick	"	
136	Oct. 5	4 40 6 pm	40 7	6.0	0.20	0.17	"	"	
137	6	6 23 31 pm	23 23	17.5	0.10	0.12	"	"	
138	13	1 17 26 pm	16 43	43.3	0.50	0.37	Slow	"	
139	13	2 12 15 pm	13 1	11.5	0.06	0.07	"	"	
140	26	6 33 7 am	33 0	3.3	0.28	0.02	Quick	"	
141	27	6 57 56 pm	57 47	3.1	0.03	Very small	"	"	
142	27	8 59 16 pm	59 24	3.7	Very small	"	"	"	
143	28	2 51 33 pm	51 57	3.8	"	"	"	"	
144	Nov. 6	11 — am	16 43	3.3	0.02	0.02	"	"	
145	7	2 58 56 pm	59 5	4.0	—	0.05	"	"	
146	12	9 42 50 am	42 49	1.5	0.02	0.02	"	"	
147	20	8 35 13 am	35 35	3.8	0.04	0.06	Slow	"	
148	21	5 37 3 am	37 18	14.0	Very small	0.05	"	"	
149	21	4 8 19 pm	8 15	23.3	0.11	0.30	"	"	
150	Dec. 6	0 48 39 pm	48 39	3.3	Very small	0.03	Quick	"	
151	6	4 0 6 pm	0 1	2.5	"	0.05	"	"	
152	23	4 47 33 am	47 33	—	0.07	0.08	Slow	"	
153	24	9 55 54 am	55 41	5.3	0.09	0.02	"	"	
154	31	2 43 57 am	43 56	3.0	0.11	0.05	Quick	"	
155	31	2 39 51 pm	39 51	6.8	0.39	0.33	"	Weak	
1	1903 Jan. 18	9 13 14 pm	—	5.0	0.40	—	Quick	Feeble	
2	22	9 38 58 pm	39 7	6.0	0.10	0.08	"	"	
3	27	4 1 56 am	1 47	4.0	0.02	0.03	"	"	
4	30	1 44 42 pm	44 45	7.0	0.22	0.17	"	"	
5	31	1 47 33 am	47 38	13.5	0.67	0.75	"	Weak	
6	Feb. 1	6 40 28 pm	40 33	30.0	0.23	0.23	Slow	Feeble	
7	3	2 — am	52 34	3.5	Very small	0.02	Quick	"	
8	3	3 — am	0 59	3.8	0.03	0.03	"	"	
9	3	4 — pm	38 10	2.0	0.01	Very small	"	"	
10	3	9 14 9 pm	14 12	13.0	0.78	0.66	"	Weak	
11	6	3 57 5 am	56 53	25.5	0.18	0.08	Slow	Feeble	
12	8	4 45 6 am	44 46	6.3	0.22	0.12	Quick	"	
13	8	3 27 59 pm	27 57	5.0	0.12	0.08	"	"	
14	9	1 22 24 am	22 23	5.0	0.12	0.12	Slow	"	
15	10	5 28 55 am	28 55	16.5	0.89	0.83	Quick	Weak	

**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)			
16	1903 Feb. 10	h m s 11 58 12 am	m s 58 25	m 17.5	mm 0.17	mm 0.33	Slow	Feeble	
17	11	1 37 54 pm	37 48	6.0	0.03	0.03	Quick	"	
18	12	1 12 47 am	12 42	13.8	0.06	0.05	Slow	"	
19	12	4 34 18 am	34 23	9.5	0.26	0.17	Quick	Weak	
20	12	5 4 32 am	4 39	18.0	0.44	0.50	"	"	
21	12	5 25 41 am	25 57	4.3	0.06	0.02	Slow	Feeble	
22	12	6 54 43 am	54 34	3.3	0.06	0.02	"	"	
23	12	9 20 18 pm	20 13	7.0	0.22	0.25	Quick	"	Felt.
24	13	3 33 12 am	33 22	9.8	0.66	0.75	"	Weak	
25	13	5 6 15 am	6 11	3.0	0.09	0.07	"	Feeble	
26	13	5 27 9 am	27 17	2.5	0.02	0.02	"	"	
27	14	4 49 28 pm	49 38	3.8	0.06	0.03	"	"	
28	14	8 15 56 pm	15 56	2.4	0.08	0.03	"	"	
29	18	1 53 10 am	53 13	6.0	0.17	0.15	"	"	
30	18	11 36 22 am	36 23	2.0	0.02	0.02	"	"	
31	20	7 29 50 pm	29 53	3.0	0.09	0.02	"	"	
32	25	2 41 19 am	41 33	3.0	0.02	0.02	Slow	"	
33	26	0 18 27 am	18 35	5.7	0.27	0.17	Quick	"	Felt.
34	28	10 41 17 am	41 16	7.7	0.13	0.17	"	"	
35	28	10 54 59 am	55 18	2.3	0.03	0.03	"	"	
36	March 3	1 36 58 am	37 0	2.5	0.07	0.03	"	"	
37	5	9 54 32 pm	54 31	3.3	0.16	0.08	"	"	
38	6	0 10 28 am	10 36	2.6	0.08	0.05	Slow	"	
39	13	8 56 15 pm	56 22	5.2	0.12	0.07	"	"	
40	15	0 50 35 am	50 35	1.4	0.04	0.05	"	"	
41	17	9 41 30 pm	41 28	2.3	0.03	0.02	Quick	"	
42	18	7 45 16 pm	45 18	2.3	0.06	0.03	"	"	
43	21	7 38 30 pm	38 34	6.8	0.09	0.08	Slow	"	
44	24	7 37 4 am	37 3	5.6	0.08	0.03	"	"	
45	25	1 52 3 am	52 9	5.4	0.09	0.10	Quick	"	Felt.
46	26	0 — am	59 58	7.0	0.09	0.12	"	"	"
47	26	8 — am	21 18	10.8	0.42	0.42	"	"	"
48	30	0 30 25 pm	30 28	16.0	0.06	0.05	Slow	"	
49	30	1 55 38 pm	55 35	5.5	0.06	0.05	"	"	
50	31	10 0 31 am	0 33	11.3	0.54	0.42	Quick	"	Felt.
51	April 1	11 9 9 pm	9 13	13.3	2.24	1.13	"	Weak	
52	4	0 34 16 am	34 26	6.8	0.01	Very small	Slow	Feeble	
53	4	2 31 4 am	31 6	5.2	0.04	0.03	"	"	
54	4	5 31 45 am	32 2	12.5	0.11	0.08	"	"	
55	4	8 42 39 am	42 40	10.0	0.06	0.03	"	"	
56	6	8 30 53 am	30 58	7.0	0.04	0.03	"	"	
57	9	3 6 44 pm	6 51	2.5	0.03	Very small	Quick	"	
58	14	11 — pm	42 50	2.0	—	0.02	"	"	
59	16	11 52 7 pm	52 2	11.5	0.10	0.13	Slow	"	
60	17	4 20 31 am	19 57	5.8	0.06	0.02	"	"	
61	19	7 49 4 pm	49 25	6.5	0.09	0.07	"	"	
62	May 6	1 14 51 am	14 41	2.7	0.08	0.07	"	"	
63	10	3 18 39 am	18 45	10.9	0.39	0.27	Quick	"	
64	13	3 42 57 pm	43 5	30.0	0.11	0.12	Slow	"	
65	15	8 52 42 pm	52 41	11.0	0.57	0.83	"	"	
66	24	7 16 30 am	16 26	14.0	0.08	0.05	"	"	
67	25	9 31 14 am	31 11	3.0	0.04	0.03	"	"	
68	29	1 40 58 pm	41 6	6.8	0.04	0.03	"	"	
69	30	5 49 44 pm	49 49	2.5	0.06	0.05	Quick	"	
70	June 2	7 58 26 pm	58 30	4.4	0.06	0.05	"	"	
71	2	10 25 36 pm	25 38	31.0	0.12	0.08	Slow	"	
72	3	0 28 44 pm	29 7	8.0	0.06	0.05	"	"	



TABLE A.  
(Earthquakes)

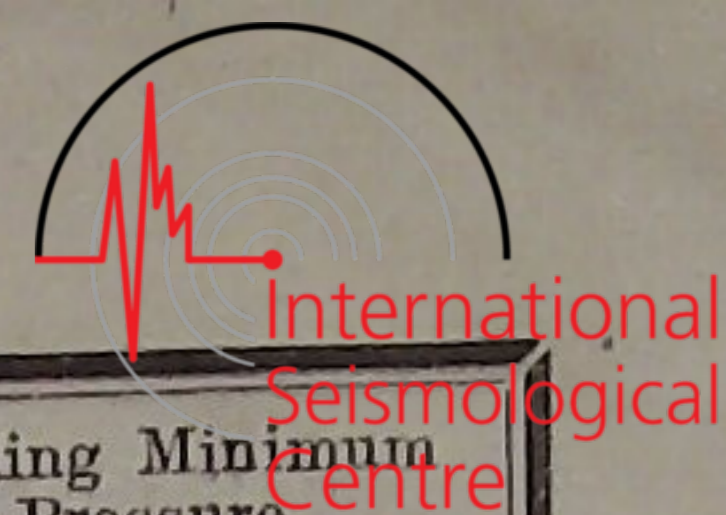


No.	Date	Time of Occurrence		Duration of Total Earthquake	Maximum Range of Motion		Character of Motion	Intensity	Remarks
		(NS)	(EW)		(NS)	(EW)			
73	1903 June 7	h m s 6 11 53 pm	m s 11 51	m 12.0	mm 0.03	mm 0.03	Slow	Feeble	
74	10	2 0 22 am	0 24	3.3	0.04	0.02	"	"	
75	16	1 22 29 am	22 17	7.3	0.17	0.08	"	"	
76	27	11 58 23 am	58 24	2.5	0.03	Very small	Quick	"	
77	27	0 57 46 pm	57 46	3.8	0.07	0.08	"	"	
78	July 1	9 10 43 am	10 47	10.8	0.39	0.18	"	"	Felt.
79	12	8 58 32 am	58 35	5.0	0.03	0.02	"	"	
80	12	2 27 34 pm	27 38	9.3	0.03	0.02	Slow	"	
81	14	11 32 18 am	32 18	18.3	0.07	0.05	"	"	
82	Aug. 3	7 34 14 am	—	17.5	0.01	—	"	"	
83	10	1 41 25 pm	41 30	8.0	Very small	Very small	Quick	"	
84	10	6 12 25 pm	—	1.0	"	—	"	"	
85	14	0 47 44 am	47 58	16.5	0.31	0.60	"	Weak	
86	14	1 8 18 am	8 22	10.5	0.28	0.25	Slow	Feeble	
87	14	2 7 45 am	7 53	4.3	0.03	0.03	"	"	
88	14	10 16 46 am	17 15	5.5	0.06	0.05	"	"	
89	15	5 38 28 pm	—	3.5	0.02	—	Quick	"	
90	16	0 7 50 pm	7 55	7.0	0.04	0.05	"	"	
91	23	9 33 40 pm	33 36	3.3	0.04	0.03	Slow	"	
92	29	1 4 56 am	—	2.0	Very small	—	Quick	"	
93	29	6 17 17 am	17 13	6.3	0.04	0.07	"	"	
94	Sept. 3	1 25 53 am	25 56	6.0	0.27	0.23	"	"	
95	14	2 41 42 am	41 39	3.5	0.08	0.17	Slow	"	
96	18	7 44 1 pm	44 5	9.8	0.63	0.53	Quick	"	
97	20	9 12 50 pm	12 49	6.5	0.07	0.08	"	"	
98	21	7 — pm	32 30	2.5	—	0.02	"	"	
99	22	2 21 26 am	—	3.0	0.02	—	"	"	
100	25	1 41 59 pm	41 56	5.4	0.12	0.15	Slow	"	} Resembling to plusatory oscillations.
101	Oct. 11	1 43 27 am	—	9.0	0.04	—	"	"	
102	11	5 11 26 am	—	3.8	0.03	—	Quick	"	
103	20	1 6 58 am	6 54	6.5	0.13	0.07	"	"	
104	26	11 32 10 pm	32 20	2.6	0.08	0.07	Slow	"	
105	27	9 57 19 pm	57 29	7.0	0.13	0.12	"	"	
106	31	1 41 21 am	41 30	2.8	0.06	0.08	Quick	"	
107	Nov. 20	4 15 57 pm	15 56	10.3	1.33	1.67	"	"	
108	24	10 45 41 pm	45 40	12.5	0.04	0.03	Slow	"	
109	26	8 53 58 am	—	21.0	0.21	—	"	"	
110	Dec. 6	6 — am	10 45	5.0	—	0.07	"	"	
111	15	1 47 9 am	47 9	2.8	0.02	0.02	Quick	"	
112	18	11 — am	20 5	5.0	—	0.18	"	"	
113	28	7 5 7 pm	5 11	4.0	0.20	0.12	"	"	
114	28	11 25 24 pm	25 28	3.8	0.22	0.13	"	"	

**TABLE B.**  
(Pulsatory Oscillations)

Beginning		Ending		Maximum			Corresponding Minimum of Air Pressure	
Date	Hour	Date	Hour	Date	Hour	Double Amplitude	Date	Hour
1902 Jan. 3	0.8 pm	1902 Jan. 4	6.5 pm	1902 Jan. 3	(3-4) pm	0.01	1902 Jan. 3	1 pm
8	11.4 am	11	2.0 pm	8	(10-11) pm	0.04	8	6 pm
17	1.8 pm	22	5.0 am	17	(9-10) pm	0.03	17	0 pm
23	0.4 pm	27	1.0 am	24	(4-5) pm	0.01	19	0 pm
28	0.3 pm	29	7.4 pm	28	6 pm	0.01	23	4 pm
Feb. 1	2.6 am	Feb. 1	11.7 pm	29	7 am	0.01	29	0 am
2	0.4 am	4	5.4 pm	Feb. 1	(1-2) pm	0.03	Feb. 1	0 am
11	10.7 am	16	6.3 am	3	6 pm	0.01	2	1 pm
16	10.0 pm	18	2.4 am	14	3 pm	0.06	14	4 am
18	8.1 pm	19	10.2 pm	17	(11-12) am	0.01	17	0 am
26	0.7 am	26	11.5 pm	19	10am-1 pm	Very small	18	10 pm
28	4.9 pm	March 3	5.9 am	26	3 pm	0.02	26	3 am
March 3	8.0 pm	5	7.9 pm	March 2	0 am	0.04	March 1	6 pm
6	10.2 pm	8	6.8 pm	4	(4-5) pm	0.02	5	0 am
10	10.6 am	12	8.9 am	7	5 pm	0.01	7	1 pm
13	10.1 am	16	2.0 am	11	0 am	0.03	10	4 am
17	5.5 pm	18	11.5 pm	14	(5-6) am	0.03	14	2 am
19	9.7 pm	20	3.7 pm	18	(2-3) pm	0.01	17	10 pm
24	2.0 pm	26	5.7 pm	Uncertain	Uncertain	Very small	17	11 pm
30	10.0 am	31	9.2 pm	25	(6-7) pm	0.02	26	2 am
April 2	5.8 am	April 5	7.5 pm	31	2 am	0.02	30	6 pm
7	7.0 pm	12	2.2 pm	April 3	(3-4) pm	0.04	April 3	0 pm
15	0.1 pm	17	0.3 pm	8	(2-3) pm	0.02	8	3 am
19	11.6 am	23	4.0 am	16	7 pm	0.02	15	4 pm
26	0.1 pm	27	8.0 am	20	2 pm	0.04	19	6 pm
29	7.9 pm	May 1	2.3 pm	26	5 pm	0.01	20	4 am
May 2	3.9 pm	5	0.1 am	30	noon	0.03	26	6 pm
5	0.1 pm	7	1.0 am	May 3	(4-6) pm	0.03	29	11 pm
8	11.4 am	10	2.6 pm	6	11am-1 pm	0.02	May 3	3 am
15	8.9 pm	18	9.7 pm	9	(8-9) pm	0.02	5	10 pm
22	3.4 pm	24	5.6 pm	16	11 pm	0.02	9	0 am
29	8.8 am	30	1.3 pm	22	10 pm	0.01	17	2 am
June 5	2.0 am	June 6	2.5 pm	29	(2-4) pm	0.03	20	4 pm
14	11.8 am	15	6.0 am	Uncertain	small	Very small	29	6 pm
24	0.9 am	25	9.7 pm	14	3 pm	0.01	June 5	2 pm
July 4	0.7 pm	July 5	10.3 am	25	4 pm	0.02	14	3 pm
10	10.0 am	11	1.0 am	July 5	1 am	Very small	24	5 pm
14	8.4 am	15	2.4 am	Uncertain	Uncertain	Very small	July 4	4 pm
16	0.5 am	17	1.6 am	15	3 pm	Very small	10	3 pm
19	11.6 am	21	4.2 pm	17	3 pm	Very small	13	5 pm
24	6.0 am	25	11.5 pm	20	11 am	0.09	15	4 pm
31	10.0 pm	Aug. 1	2.0 pm	24	11 am	Very small	19	3 pm
Aug. 10	5.7 am	13	11.2 pm	Uncertain	Uncertain	Very small	24	6 pm
19	8.7 pm	22	10.1 pm	Aug. 12	0 pm	0.01	July 31-Aug. 1	—
Sept. 4	11.5 pm	Sept. 10	7.9 am	21	(6-7) am	0.02	Aug. 9	2 pm
16	8.0 pm	19	11.5 pm	Sept. 7	(9-11) am	0.06	22	3 pm
22	10.9 am	24	7.0 pm	17	2 pm	0.04	Sept. 5	2 pm
27	3.0 pm	Oct. 1	4.5 pm	23	(3-5) pm	0.02	18	2 pm
Oct. 6	6.4 pm	9	7.7 pm	28	(8-10) pm	0.04	23	4 pm
11	10.0 am	12	3.0 pm	Oct. 7	(2-3) pm	0.03	28	2 pm
15	4.0 am	19	6.0 am	11	4 pm	Very small	Oct. 7	4 pm
24	8.9 am	26	6.7 am	18	(1-7) am	0.02	15	3 pm
29	5.3 pm	31	5.9 am	25	(9-10) am	0.02	17	10 pm
Nov. 2	6.7 pm	Nov. 5	2.0 am	30	(2-3) pm	0.03	24	7 pm
14	8.0 pm	15	4.0 pm	Nov. 3	(3-4) am	0.02	30	4 am
22	9.9 am	22	11.2 pm	4	(9-10) pm	0.02	Nov. 4	2 pm
Dec. 2	11.5 am	Dec. 2	11.0 pm	15	(9-10) am	0.01	14	4 pm
4	2.5 pm	8	11.0 pm	22	2 pm	0.01	22	4 am
10	0.0 pm	17	4.5 pm	Dec. 2	4 pm	0.01	Dec. 2	11 am
18	9.4 am	29	11.4 am	7	5 pm	0.03	4	1 pm
				10	(2-4) pm	0.02	7	1 am
				15	(7-8) am	0.06	10	2 pm
				20	2 pm	0.01	15	2 pm
				23	(2-3) pm	0.07	20	0 am
							22	7 pm
							25	11 pm
1903 Jan. 2	2.0 pm	1903 Jan. 3	0.0 pm	1903 Jan. 3	10 am	0.04	1903 Jan. 3	0 pm
3	8.5 pm	5	3.0 pm	4	8 am	0.07	—	—
6	10.0 pm	13	1.5 pm	8	10 pm	0.09	9	8 am

**TABLE B.**  
(Pulsatory Oscillations)



Beginning		Ending		Maximum			Corresponding Minimum of Air Pressure	
Date	Hour	Date	Hour	Date	Hour	Double Amplitude	Date	Hour
1903 Jan. 17	8.0 pm <sup>h</sup>	1903 Jan. 23	1.0 am <sup>h</sup>	1903 Jan. 18	2 pm	0.07	1903 Jan. 19	2 pm <sup>h</sup>
	25 8.0 am		29 8.0 am		26 5 pm	0.04		26 5 pm
Feb. 1	10.7 am	Feb. 2	6.0 pm	Feb. 1	2 pm	0.02	Feb. 1	3 pm
	3 4.5 pm		7 9.0 am		4 3 pm	0.04		4 7 am
	8 6.0 pm		10 11.5 pm		9 3 am	0.09		8 (4-5) pm
	11 11.7 pm		13 4.0 pm	Uncertain	Uncertain	0.02		13 2 pm
	19 3.5 am		21 9.8 pm		19 4 pm	0.02		18 9 pm
	22 0.2 pm		28 4.4 pm		27 3 am	0.08		26 11 pm
March 2	2.0 pm	March 4	0.0 am	March 3	1 am	0.01	March 2	2 pm
	4 8.9 pm		7 4.9 pm		5 8 pm	0.06		5 2 pm
	10 5.6 am		11 1.7 pm		10 1 pm	0.03		10 5 am
	13 11.7 am		15 0.3 am		13 Uncertain	0.02		12 11 pm
	15 11.5 pm		18 10.4 pm		16 8 am	0.03		16 6 am
	19 7.6 pm		22 6.4 am		21 6am-5 pm	0.06		21 1 am
	25 10.1 am		26 11.0 am		25 10 pm	0.01		24 4 pm
	29 11.5 pm	April 2	6.2 pm		31 0 am	0.02	April. 1	3 am
April 9	6.5 pm		10 6.1 pm	April 10	3 am	0.01		6 5 pm
	11 7.9 pm		13 4.5 am		12 1 pm	0.03		11 7 pm
	14 11.8 pm		18 1.3 am		15 6 pm	0.03		15 1 am
	22 0.4 am		26 3.1 pm		22 (4-10) pm	0.03		22 2 pm
	27 10.1 am		28 11.7 pm		27 7 pm	0.02		26 4 pm
May 30	3.7 am	May 3	0.4 am		30 3 pm	0.02		29 6 pm
May 5	2.6 am		9 1.1 am	May 5	3 pm	0.08	May 6	0 am
	9 11.3 pm		10 3.2 pm	Uncertain	Uncertain	Very small		—
	13 9.3 am		24 1.5 pm		{ 15 1 pm	0.09		15 1 am
	26 9.5 am		27 1.5 pm		{ 20 5 pm	0.04		26 4 pm
	30 8.5 am	June 2	0.8 am		26 3 pm	0.02		31 3 pm
June 5	8.0 pm		6 7.0 pm	May 31	4 pm	0.03	June 5	6 pm
	12 8.3 am		14 6.4 am	Uncertain	Uncertain	Very small		12 1 pm
	21 0.0 pm		30 1.2 pm		June 25 5 am	0.02		21 3 am
July 1	11.2 pm	July 6	11.7 pm	July { 2 2 pm		0.10	July { 2 10 am	
	8 6.5 pm		10 9.1 pm	{ 5 3 pm		Very small	{ 5 4 pm	
	20 2.2 pm		21 0.2 pm	9 8 pm		0.08	9 3 pm	
	22 0.0 pm		23 2.6 pm	21 4 am		0.01	20 9 am	
Aug. 3	7.4 pm	Aug. 4	4.9 pm	Uncertain	Uncertain	0.01	22 4 am	
	19 10.5 am		22 2.7 pm	" "		0.01	Aug. 4 3 am	
Sept. 5	0.4 pm	Sept. 11	0.2 pm	" "		0.03	19 3 pm	
	14 1.9 pm		17 7.6 pm	Sept. 9 8 am		0.04	Sept. 11 0 pm	
	19 9.8 am		26 9.3 am	Uncertain	Uncertain	Very small	17 4 pm	
Oct. 1	7.1 pm	Oct. 4	7.1 pm	Sept. 24 0 am		0.08	23 11 pm	
	8 10.0 am		10 1.3 pm	Oct. 3 3 am		0.04	Oct. 2 0 pm	
	12 5.5 am		21 2.6 am	8 —		0.02	8 1 pm	
	22 7.8 am		29 6.4 pm	14-15 —		0.03	12 3 pm	
	30 6.2 pm	Nov. 3	0.7 pm	Uncertain	Uncertain	0.03	{ 23 3 am	
Nov. 5	4.9 pm		15 2.3 pm	" "		0.03	{ 26 11 am	
	16 7.2 pm		18 9.5 am	Nov. 8-9 —		0.04	Nov. 1 2 pm	
	18 1.0 pm		21 9.6 pm		17 (2-7) pm	0.02	{ 10 4 pm	
	25 0.6 pm		27 1.4 am		19 (5-11) am	0.06	{ 14 6 pm	
	28 0.1 am	Dec. 4	0.5 pm	Uncertain	Uncertain	0.01	16 11 pm	
Dec. 5	11.3 am		8 9.7 am	{ Nov. 29 4 am		0.09	18 2 pm	
	9 2.0 pm		20 10.8 pm	{ Dec. 2 10 pm		0.06	25 2 pm	
	21 10.1 pm		24 4.6 am	Uncertain	Uncertain	0.02	{ Nov. 28 0 pm	
	26 7.5 pm	1904 Jan. 1	2.9 pm	{ 11 11 am		0.03	{ Dec. 2 9 am	
				{ 16 11 pm		0.09	Dec. 5 9 pm	
				Uncertain	Uncertain	0.01	{ 10 1 pm	
						0.03	{ 16 5 pm	
						0.03	—	
						0.03	{ 26 2 pm	
						0.03	{ 29 6 pm	

Note:—Beside these, there are only two pretty considerable barometric minima, not accompanied by pulsatory oscillations. These occurred on February 9, 2<sup>h</sup> a.m., and August 29, 5<sup>h</sup> p.m., 1902.