

THE REGISTRATION OF EARTHQUAKES AT THE DETROIT OBSERVATORY DURING THE YEARS 1914 AND 1915

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The record is in the same form as for preceding periods, as given in Volume I of these *Publications*, pp. 54-72 and 191-199, except that, commencing with January 1, 1914, all times are given in Greenwich Civil Time, counted from midnight to midnight. The recorded amplitude is the semi-amplitude of the oscillation of the pen. The character * denotes well defined; † gradual.

On December 31, 1914, the magnification of all three components of the Wiechert instruments was changed from 40 to 80. The weight of the horizontal Wiechert was taken apart and readjusted on February 2, 1915. The magnifications and periods of the instruments are now as follows:

	MAGNIFICATION.	PERIOD.
B—EW	40	11.5 sec.
B—NS	50	12.0
W—EW	80	4.9
W—NS	80	6.0
W—V	80	4.2

There is no applied damping.

The distance between the recording pen and the time indicator on each of the Bosch machines is found as follows: Every morning before removing the sheets the pen is swung by a touch of the finger at the exact instant of the minute signal; the distance between this sudden departure from the record line and the preceding minute mark is the "parallax" to be applied to the times read from the sheet.

REMARKS.

110. Another maximum occurred at 4^h 26^m with amplitude 0.2 mm. Period at first maximum (M) 30 ± sec., at second maximum 18 sec. Some additional very weak waves a few minutes after F. W—NS shows a trace of S but L is not visible. Bosch instruments were not running at this time.

111. Minutes assumed on W—horizontal records, since hour signals are missing. The main portion consists of very short period vibrations superposed on longer waves. This earthquake was reported by Ottawa observers as "local."

112. A very peculiar disturbance, possibly of artificial origin, (blasting?). Preliminaries very feeble and doubtful.

113. Distance probably accurate. W—NS shows one group of waves 5^h 15^m.0 to 16^m.3, amplitude 0.4 mm; another group 5^h 17^m.4 to 18^m.3, amplitude 1.0 mm.

114. There are two distinct parts to the main portion: M in the table, records the first maximum; the second maximum occurs about 3.5 min. later.

115. A slow flat shock or groups of slow regular sinusoidal microseisms. B—EW waves from 17^h 37^m.2† to 43^m† having a maximum from 40-42^m, amplitude 0.35 mm., period 18 sec., with other smaller groups a few minutes later. B—NS waves from 17^h 32^m.2† to 39^m.2†, having a maximum at 32^m.9; amplitude 0.3 mm., period 19 sec.

W—EW waves from 17^h 32-33^m; from 37^m.4† to 42^m.7†; from 47^m to 49^m. Maximum amplitude 0.15 mm., period 18 sec.

116. Shock apparently in progress when record began. Long waves end at 13^h 56^m. F is indeterminate, the tail running into irregular microseisms. On W—EW small vibrations began at 13^h 39^m or before, stronger motion at 45^m.6, amplitude 0.5 mm. The W—NS record is weak; the stronger motion began at 44^m.4.

117. S uncertain; no well marked phases.

118. A very long flat shock. A slight trace on W—V. S possibly misidentified.

119. The Panama earthquake.

120. A long weak shock about 18 hrs. June 2 Very strong irregular disturbances about 13 hrs. Perhaps artificial.

122. A feeble indefinite shock, being somewhat better marked on EW instruments.

123. Horizontal W not running.

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NO.	DATE.	INST. COMP.	P	S	L	M	F	A	Δ
			h m	h m	h m	h m	h m	mm.	mgm.
110	1914 Jan. 30	W—EW	3 57.9*	4 3†	4 14	4 59	0.1	...
111	Feb. 10	B—EW	.. .. .	18 33.9	18 34.6	18 35.1	18 40	1.2	...
		B—NS	.. .. .	33.9	34.4	35.1	39	1.3	...
		W—EW	.. .. .	33.8	34.5	35.2	40	1.5	Small
		W—NS	.. .. .	33.8	34.5	35.1	39	1.0	...
		W—V	.. .. .	33.8	34.5	35.1	36.3	0.2	...
112	Feb. 26	B—EW	5 8.5	.. .. .	5 16.8	.. .. .	.. .. .	0.5	...
		B—NS	9.4	.. .. .	17.0	.. .. .	.. .. .	2.9	...
		W—EW	8.3	.. .. .	16.8	.. .. .	.. .. .	1.0	...
		W—NS	8.5	.. .. .	16.8	.. .. .	.. .. .	0.5	...
113	Feb. 28	B—EW	5 8.4	5 12.4	5 15.0	5 16.2	5 29	3.2	...
		B—NS	8.3	12.5	17.4	17.9	34	14.0	2.4
		W—EW	8.3	12.3	15.0	15.7	34	3.9	...
		W—NS	.. .. .	Remark					
114	Mar. 30	B—EW	0 47.4	0 52.3	0 58.7?	1 0.4	1 58	6.2	...
		B—NS	0 47.3	52.2	1 1.0	2.4	59	13.3	3.7
		W—EW	.. .. .	52.3	0 58.7†	0.1	56	0.7	...
		W—NS	.. .. .	52.2	59.7†	2.2	20	1.5	...
115	April 11	B—EW	.. .. .	.. .. .	17 37.2†	17 41	.. .. .	0.35	...
		B—NS	.. .. .	.. .. .	32.2†	32.9	.. .. .	0.2	...
116	April 20	B—EW	.. .. .	.. .. .	.. .. .	13 49.5	.. .. .	2.6	...
		B—NS	.. .. .	.. .. .	.. .. .	50.6	.. .. .	2.2	...
117	April 24	B—EW	.. .. .	8 48.3?	8 51.1	8 51.6	9 1	0.25	...
		B—NS	.. .. .	47.5?	48.5	48.7	8 57	0.3	...
		W—EW	.. .. .	48.5?	51.3	51.7	58	0.2	...
118	May 26	B—EW	.. .. .	14 44.3†	15 28.7	15 32.8	16 43	2.6	...
		B—NS	.. .. .	44	29.3	32.5	44	2.0	...
		W—EW	.. .. .	44.7†	28.9	32.7	45	0.4	...
		W—NS	.. .. .	.. .. .	.. .. .	32.3	.. .. .	0.3	...
119	May 28	B—EW	.. .. .	3.35.8*	3 43.4	3 44.5	3 55	0.4	...
		B—NS	3.30.4	.. .. .	42.9	44.4	57	0.6	4.
		W—EW	31.6†	35.9*	43.6	44.6	55	0.2	...
120	May 28	B—NS	.. .. .	.. .. .	.. .. .	18 0±	.. .. .	...
121	May 29	B—EW	.. .. .	.. .. .	.. .. .	6 13	.. .. .	...	...
		B—NS	.. .. .	.. .. .	.. .. .	6 13	.. .. .	...	...
122	June 20	B—EW	7 { 40.1? 45.6?	7 49.1?	8 14.7	8 19.9	8 51	0.15	...
		B—NS	.. .. .	.. .. .	.. .. .	29.1	.. .. .	0.1	...
		W—EW	{ 40.4? 45.7?	49.4	13.1	19.6	.. .. .	0.1	...
123	June 25	B—EW	19 26.8	19 48.1	20 11.5	20 19.0	21 11	1.0	...
		B—NS	26.2	15.0	28.5	5	1.5	...
124	June 26	B—EW	5 49	

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NO.	DATE.	INST. COMP.	P	S	L	M	F	A	Δ
	1914		h m	h m	h m	h m	h m	mm.	mgm.
125	July 3	B—EW		} 21 0±
		B—NS
		W—NS
126	July 5	B—EW	3 15.7	0.15	..
		B—NS	.. .. .	.. .. .	15.4	3 15.7	.. .. .	0.2	..
		W—NS	.. .. .	.. .. .	15.6	.. .. .	.. .. .	0.05	..
127	July 5	B—EW	.. .. .	.. .. .	4 9.7	.. .. .	.. .. .	0.1	..
		B—NS	.. .. .	.. .. .	9.8	.. .. .	.. .. .	0.15	..
		W—NS	.. .. .	.. .. .	9.9	.. .. .	.. .. .	0.05	..
128	July 17	B—EW	.. .. .	.. .. .	7 35.6	7 43.4	.. .. .	0.05	..
		B—NS	7 20.8	.. .. .	34.8	44	.. .. .	0.05	..
129	July 21	B—EW	22 36.8	22 48.4	22 51.1	22 51.5	23 20	2.0	..
		B—NS	35.9	48.2	50.8	51.2	22	1.0	..
		W—EW	.. .. .	48.7	51.4	51.8	22 56	0.2	..
		W—NS	.. .. .	48.4	51.3	51.4	23 16	0.4	..
130	Aug. 3	B—EW	11 32.0	11 37.7?	11 41.4	11 41.6	11 54	0.3	..
		B—NS	30.9	?	39.4	41.7	.. .. .	0.2	3½
		W—EW	.. .. .	.. .. .	41.5	41.6	43	0.05	..
		W—NS	31.1*	.. .. .	40.9	41.8	51	0.1	..
131	Aug. 4	B—EW	23 4.9?	.. .. .	23 24†	23 29.7	0 21	1.5	..
		B—NS	5.6*	.. .. .	29†	38.7	30	1.5	7?
		W—EW	.. .. .	.. .. .	28.0	45.7	23 49	0.25	..
		W—NS	5.6	.. .. .	29	} 35.9 } 43.6 }	0 29	0.3	..
		W—V		44.7	0.1
132	Aug. 8	B—EW	19 16.0	.. .. .	19 25.1	19 28.4	20 23	2.0	..
		B—NS	.. .. .	.. .. .	25.2	27.3	7	5.6	..
		W—EW	.. .. .	.. .. .	25.4	26.0	19 39	0.5	..
		W—NS	.. .. .	.. .. .	25.0	27.3	20 8	0.7	..
133	Aug. 22	B—EW	5 34.8*	5 45.7*	5 48.0	5 48.8	6 32	9.2	..
		B—NS	40.2	45.6†	48.1	48.5	28	8.8	..
		W—EW	37.7	45.7	47.7	48.6	12	0.9	..
		W—V	.. .. .	.. .. .	48.0	48.6	5 57	0.4	..
134	Aug. 28	B—NS	.. .. .	.. .. .	.. .. .	9 6.0	.. .. .	..
135	Aug. 28	B—NS	.. .. .	.. .. .	.. .. .	16 4.5	.. .. .	0.1	
136	Aug. 28	B—NS	.. .. .	.. .. .	17 34	.. .. .	.. .. .	..
137	Sept. 25	B—NS	.. .. .	.. .. .	.. .. .	10 53	.. .. .	0.1	
138	Oct. 3	B—EW	17 30.6*	17 35.9	17 40.9†	17 42.9	18 41	3.9	..
		B—NS	30.7	36.1	40.4?	41	37	3.0	..
		W—EW	30.7	36.0	41.0†	42.6	46	0.7	3.5
		W—NS	30.9	36.0	40.5	41	17 58	0.5	..
		W—V	.. .. .	.. .. .	40.7	.. .. .	.. .. .	0.1	..
139	Oct. 22	B—EW	6 57.7	.. .. .	7 0.7	7 2.9	7 10	0.2	..
		B—NS	57.7	.. .. .	1.3	2.6	6	0.15	..

NO.	DATE.	INST. COMP.	P	S	L	M	F	A	Δ
			h m	h m	h m	h m	h m	mm.	mgm.
140	1914 Oct. 23	B—EW	.. .. .	.. .. .	.. .. .	7 24	.. .. .	0.2	...
		B—NS	.. .. .	.. .. .	.. .. .	24	.. .. .	0.2	...
141	Nov. 10	B—EW	.. .. .	11 22.7	11 25.8?	.. .. .	.. .. .	0.6	...
		B—NS	11 19.0	23.0	25.8	11 26.1	.. .. .	0.5	2.4
		W—EW	.. .. .	23.0	?	.. .. .	.. .. .	0.8	...
142	Nov. 18	B—EW	9 52.1	micros.	?	9 58.9	? micros.	0.8	...
		W—EW	52.2	9 55.9	9 57.3	58.8	10 8	0.4	2.
143	Nov. 24	B—EW	.. .. .	12 17.4	.. .. .	.. .. .	13.21	(2.5)	...
		B—NS	.. .. .	17.2	.. .. .	.. .. .	24	(4.5)	...
		W—EW	.. .. .	17.2	.. .. .	.. .. .	12 55	(1.5)	...
		W—NS	.. .. .	17.2	.. .. .	.. .. .	13 15	(1.1)	...
144	Dec. 4	B—EW	.. .. .	22 43.9	22 46.6†	22 46.8	? micros.	0.15	...
		B—NS	.. .. .	44.3	46.4	47.2	.. .. .	0.1	...
145	Dec. 20	B—EW	.. .. .	.. .. .	.. .. .	} 15 0±	.. .. .	...	...
		B—NS	.. .. .	.. .. .	.. .. .		.. .. .	...	...
		W—NS	.. .. .	.. .. .	.. .. .		.. .. .	...	...
146	Dec. 25	B—EW	.. .. .	3 51.4	3 53.8	3 54.3	.. .. .	1.3	...
		B—NS	.. .. .	54.2	56.7	57.4	.. .. .	0.3	...
		W—EW	.. .. .	.. .. .	.. .. .	54.9	.. .. .	0.6	...
		W—NS	.. .. .	.. .. .	.. .. .	55.2	.. .. .	0.2	...
147	1915 Jan. 13	B—EW	.. .. .	.. .. .	7 28	7 39.6	7 46	0.2	...
		B—NS	.. .. .	.. .. .	7 24	7 30.3	>8 0	0.5	...
		W—EW	.. .. .	.. .. .	7 25	7 33	7 44	...	...
148	Mar. 5	B—EW	.. .. .	.. .. .	4 32.8	.. .. .	.. .. .	0.7	...
		B—NS	.. .. .	.. .. .	4 32.9	.. .. .	.. .. .	0.6	...
		W—EW	.. .. .	.. .. .	4 32.9	.. .. .	.. .. .	0.4	...
		W—NS	.. .. .	.. .. .	4 33.0	.. .. .	.. .. .	0.4	...
149	April 23	B—EW	15 37.5*	15 43.9*	.. .. .	.. .. .	16 3+	...	...
		B—NS	15 37.4*	15 44.0*	.. .. .	.. .. .	16 0+	...	4.8
		W—EW	15 37.5*	15 44.0*	.. .. .	.. .. .	16 2	...	...
		W—NS	15 37.5*	15 44.0	.. .. .	.. .. .	? micros.	...	...
150	May 1	B—EW	5 12.0*	5 21.6*	5 43.3	5 43.7	8 6	9.5	...
		B—NS	5 12.1*	5 22.1	5 42.4	5 46.3	7 24	13.6	7.8
		W—EW	5 12.0*	5 21.6	5 43.2	5 43.6	8 6	1.6	...
		W—NS	5 12.0*	5 21.7	5 42†	5 46.3	8 6	3.5	...
151	May 3	B—EW	.. .. .	.. .. .	.. .. .	5 11†	.. .. .	...	...
		B—NS	.. .. .	.. .. .	.. .. .	5 11	.. .. .	...	...
		W—EW	.. .. .	.. .. .	.. .. .	5 12	.. .. .	...	...
		W—NS	.. .. .	.. .. .	.. .. .	5 11+	.. .. .	...	...
152	May 6	B—EW	.. .. .	12 15.6?	.. .. .	12 29.1	13 0±	0.9	...
		B—NS	.. .. .	.. .. .	12 25.8	12 28.0	13 0±	1.2	7.1?
		W—EW	.. .. .	12 15.5?	12 28	12 29.0	13 0+	0.5	...
		W—NS	.. .. .	12 15.5?	12 27.7	12 30.5	13 0+	1.8	...