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RECORDS OF MILNE SEISMOGRAPHS, 1906-11.

By H. F. SKEY and G. HOGBEN.

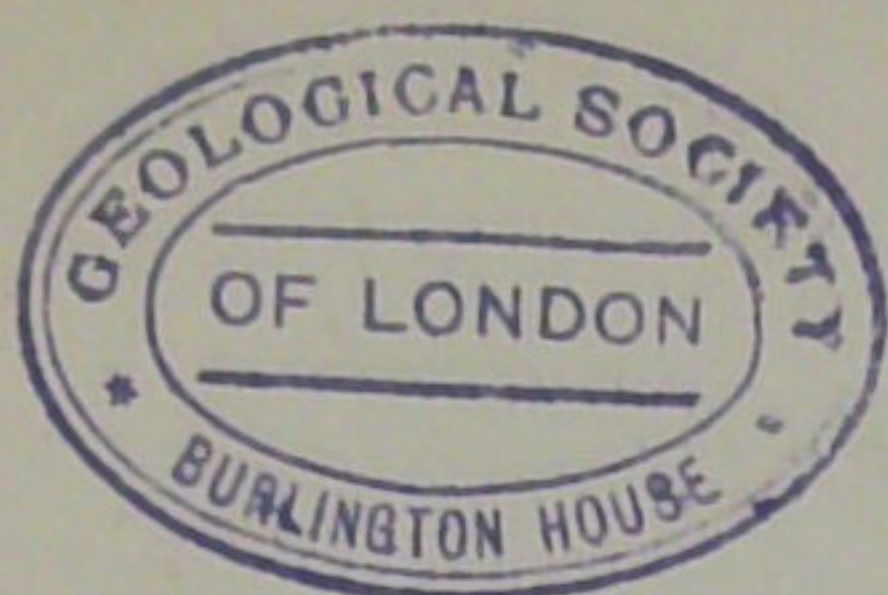
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APPENDIX.

RECORDS OF MILNE SEISMOGRAPHS, 1906-1911.

RECORDS OF THE MILNE SEISMOGRAPHS NOS. 16 AND 20, TAKEN AT CHRISTCHURCH AND WELLINGTON BY H. F. SKEY AND G. HOGBEN.

Communicated by G. Hogben, M.A., F.G.S.

P₁, first phase; P₂, second phase; P₃, P₄, P₅, large waves. Time is Greenwich mean civil time, given in hours, minutes, and decimals of minutes; 0 or 24R. = midnight. B.P., boom period.

Records of Milne Seismograph No. 16, at the Magnetic Observatory, Christchurch, New Zealand. (Latitude, 43° 32' S.; longitude, 172° 37' E. Director, Henry F. Skey, B.Sc.)

Date.	Commencement.	Max.	Max. Amplitude.	Duration.	Remarks.
1906.	H. m.	H. m.	Mm.	H. m.	
Jan. 3	2 03.7	2 09.9	0.4	1 10	
" 4	4 08.7	4 33.5	0.3	0 51	
" 18	1 35.3	..	..	0 28	Thickening of line.
" 22	4 16.9	4 23.1	1.5	0 44	
" 24	7 46.2	..	..	0 49	Thickening of line.
" 24	22 01.2	22 04.3	0.4	..	End between 22h. 09.4m. and 22h. 13.6m. while attending instrument.
" 25	1 53.9	..	..	0 16	Slight thickening.
" 30	..	23 00.5	..	..	Slight swelling.
" 31	?	16 03.0	15.5	?	? P ₂ . Beginning and end obscured by tremors.
Feb. 1	2 30.9	..	..	..
	2 36.1	2 39.2	2.95	..	
		2 42.3	..	1 09	
" 2	0 21.6	..	..	0 19	Thickening of line.
" 5	4 29.1	..	..	..	P ₁ .
	4 33.2	4 34.3	3.45	1 15	
" 8	0 20.7	..	..	0 52	Thickening of line.
" 10	9 16.3	9 29.7	0.4	0 22	
" 12	6 46.2	..	..	..	P ₁ .
	6 49.3	6 53.4	1.5	0 52	
" 14	0 40.7	0 45.9	1.0	0 26	
" 16	23 28.7	..	..	..	P ₁ .
	23 32.8	23 38.0	1.4	0 56	
" 19	2 07.2	..	..	..	P ₁ .
	2 12.4	2 22.7	17.0+	..	
		2 24.1	..	2 54	
" 20	6 07.2	6 11.8	0.2	0 14	
Mar. 3	?	9 51.3	0.7	?	Beginning and end obscured by night tremors.
" 8	21 27.5	21 32.7	0.5	0 09	
" 9	?	19 32.6	5.4	?	Beginning and end obscured by night tremors.
" 10	6 40.8	..	..	..
	6 48.1	6 51.2	5.3	?	Beginning and end obscured by night tremors.

Records of Milne Seismograph No. 16—continued.

Date.	Commence- ment.	Max.	Max. Ampli- tude.	Duration.	Remarks.
1906. Mar. 10	H. m. 16 33.6	H. m. 16 35.7	Mm. 8.5	H. m. ?	Beginning and end obscured by night tremors.
„ 11	3 35.7	3 38.8	0.85	0 36	
„ 11	8 49.1	8 52.2	0.9	0 30	
„ 11	?	21 52.4	0.5	?	Beginning and end obscured by tremors.
„ 20	2 24.8	2 34.1	0.45	?	End obscured by second quake.
„ 20	3 31.0	3 32.5	0.75	..	
		3 33.6	..	0 57	
(Mean boom period, 15.4 sec. 1 mm. = 0.66" of tilt.)					
April 14	4 02.9	..	..	..
	4 07.5	4 11.1	17.0+	1 56	? Origin, New Hebrides.
„ 18	13 33.6	..	..	..	San Francisco. Subsequent tremors at 17 17.6, 18 19.7, 19 20.7.
	14 01.0	14 30.0	6.7	3 21	
„ 19	6 15.4	..	..	..
	6 21.6	7 10.3	7.0	4 09	
„ 29	6 44.9	6 47.0	0.4	0 38	
May 2	13 18.1	13 24.8	1.4	0 41	
„ 12	8 11.5	8 13.1	0.45	0 21	
„ 13	..	12 01.3	0.55	..	) Small, and in middle of night tremors.
„ 15	..	13 23.2	0.5	..	
„ 17	5 28.4	5 34.6	1.2	0 42	
„ 18	23 41.9	23 43.9	0.9	0 28	
„ 19	0 41.9	0 43.9	0.45	0 22	
„ 19	2 31.5	2 32.6	0.4	0 26	
„ 19	..	11 38.8	0.8	..	In middle of night tremors.
„ 21	12 58.8	13 16.9	1.0	0 46	B.P., 15.1 sec.
June 1	4 40.2	..	..	..	B.P., 15 sec.
	5 01.4	5 02.9	3.5	0 43	
„ 2	4 29.8	4 34.0	0.5	0 56	
„ 2	6 28.8	..	..	0 18	Thickening of line.
„ 2	14 43.2	14 48.4	0.9	?	End obscured by night tremors.
„ 5	0 28.0	0 32.2	0.5	0 48	
„ 6	0 00.1	..	..	0 04	Very slight.
„ 9	23 18.6	..	..	0 04	Very slight thickening.
„ 22	?	12 35.2	0.4	?	In middle of night tremors.
„ 24	7 38.1	7 49.5	0.35	0 25	
„ 30	10 21.5	..	..	0 05	Thickening merely.
July 12	10 21.5	10 41.0	0.1	0 42	
„ 12	..	11 21.5	..	..	Very slight thickening.
„ 17	?	15 45.7	0.4	..	) Beginning and end obscured by night tremors.
		15 52.9	..	?	
„ 19	8 19.6	8 24.7	0.1	0 18	
„ 22	7 18.7	7 25.9	0.4	0 16	
„ 22	8 14.1	..	..	0 05	Very slight.
„ 23	6 26.2	6 41.6	0.35	0 43	
„ 31	11 32.5	11 39.6	0.45	0 24	
Aug. 3	3 20.3	3 21.8	0.9	0 41	
„ 3	..	4 53.4	..	..	Slight swelling.
„ 5	1 24.0	..	..	..
	1 27.1	1 28.6	3.4	0 58	
„ 7	22 46.8	22 48.6	0.35	0 11	
„ 8	1 13.6	1 18.8	0.25	0 18	
„ 9	11 20.1	11 23.2	0.6	0 15	
„ 12	6 25.8	6 27.8	0.2	0 14	
„ 12	9 25.8	9 36.0	0.25	0 30	

Records of Milne Seismograph No. 16—continued.

Date.	Commence- ment.	Max.	Max. Ampli- tude.	Duration.	Remarks.
	H. m.	H. m.	Mm.	H. m.	
1906. Aug. 17	0 33.3	..	..	..	Valparaiso.
	0 57.3	1 36.1 1 39.8 1 44.4	.. .. 12.0	.. .. 4 18	(Subsequent tremors: 6 33 to 7 14, minute; 7 41 to 8 07, minute; 9 22 to 10 12, minute; 13 23 to 13 25, large; and minute to 14 15.2.
" 18	6 56.8 7 01.5	.. 7 03.5	.. 1.85	.. 1 39	
" 22	? 19 45.6	.. 19 48.7	.. 5.4	.. ?	) P ₁ . Beginning and end obscured by continuous tremors.
" 23	1 44.6	1 48.8	0.8	0 21	
" 23	16 29.6	16 30.6	1.25	?	P ₁ . Beginning and end obscured by continuous tremors.
" 26	6 16.7 6 30.7	.. 6 34.8 6 45.2	.. 3.3 ..	.. .. 2 23	
" 30	3 03.5 3 38.7	.. 3 46.5	.. 1.4	.. 1 28	
Sept. 6	19 06.0	..	..	..	B.P., 15 sec.
	19 11.2	19 11.7	2.4	0 10	
" 14	13 34.8	13 53.0	0.8	?	End obscured by night tremors.
" 14	16 12.1 16 19.3	.. 16 30.2 16 31.7 16 35.9	.. 20.2 .. ..	.. .. .. ?	End obscured by night tremors.
" 15	2 43.2	..	..	0 03	
" 16	4 24.2	4 26.8	0.4	0 12	
" 17	8 52.8 9 02.6	.. 9 06.2	.. 3.2	.. ?	End obscured by night tremors.
" 21	1 28.0 1 49.7	.. 1 53.3	.. 1.7	.. 0 27	
" 21	..	20 08.2	..	..	Minute tremor. Shock noted at 20 10.0 at Christchurch, Cheviot, and Kaikoura.
" 29	?	14 12.7	0.8	?	Probably night tremors.
Oct. 2	0 10.2	0 13.8	0.3	0 33	B.P., 15 sec.
" 2	1 59.8 2 07.1	.. 2 22.1	.. 17.0+	.. 3 18	Subsequent tremors.
" 2	?	12 34.0	0.85	?	Possibly night tremors.
" 2	?	14 51.6	0.85	?	"
" 3	0 18.1	0 29.4 0 45.5	0.4 ..	.. 1 03	
" 4	5 06.5	..	..	0 10	Thickening of line.
" 11	5 18.8	5 36.9	0.4	0 55	
" 18	3 06.3	..	..	0 19	Thickening of line.
" 27	3 52.5	4 08.0	0.45	0 30	
" 29	1 33.9	1 58.5	0.4	0 55	
Nov. 5	23 06.2	23 34.2	0.95	1 16	B.P., 15 sec.
" 9	?	..	..	..	) P ₁ . Beginning and end obscured by night tremors.
	15 09.6	15 11.5	2.8	?	
" 10	5 16.2	5 26.5	1.1	0 41	
" 12	4 12.5	4 14.6	2.5	0 09	
" 14	?	..	..	..	) P ₁ . Beginning and end obscured by night tremors.
	17 50.2	17 57.9	5.6	?	
" 19	7 31.0 7 39.6	.. 8 01.7 8 07.3	.. 10.0 ..	.. .. 3 27	
" 19	22 05.6	22 10.7	1.2	0 52	

Records of Milne Seismograph No. 16—continued.

Date.	Commence- ment.	Max.	Max. Ampli- tude.	Duration.	Remarks.
1906.	H. m.	H. m.	Mm.	H. m.	
Dec. 7	23 51.1	23 52.1	0.9	0 12	B.P., 15 sec.
" 15	3 12.2	..	..	0 29	Thickening of line.
" 17	22 09.4	22 12.5	0.75	0 59	
" 18	?	..	..	..	} P ₁ . In middle of continuous tre- mors
	20 30.1	20 30.6	2.5	..	
		20 35.7	..	?	
" 19	0 31.6	..	..	..
	0 36.8	0 44.5	8.5	3 18	
1907.					
Jan. 4	5 31.9	..	..	..
	5 43.4	6 07.0	4.5	..	
		6 12.2	..	..
		6 22.6	..	3 55	
" 7	?	..	..	..	} P ₁ . Beginning and end obscured by night tremors.
	13 59.5	14 02.7	14.0	?	
" 8	5 42.0	6 21.3	0.5	1 36	
" 14	9 54.7	9 56.8	1.0	0 37	
Feb. 3	?	..	..	..	} B.P., 15 sec. Beginning and end obscured by night tremors.
	20 01.3	20 01.8	2.05	?	
" 16	21 23.4	..	..	..
	21 29.1	21 31.7	4.5	1 32	
" 27	..	9 19.1	..	..	} Very small.
		9 21.1	..	..
Mar. 13	0 46.3	..	..	1 03	B.P., 15 sec. Thickening of line merely.
" 15	5 08.4	5 10.0	..	0 07	Very slight.
" 18	7 34.9	..	..	0 10	Minute.
" 27	0 59.1	..	..	0 32	Minute swellings.
" 29	6 06.8	6 08.6	1.25	0 08	
" 31	?	22 13.8	..	..	} In middle of night tremors.
		22 17.9	2.5	?	
April 7	9 54.4	10 02.7	..	?	Followed by continuous tremors.
" 15	6 32.5	..	..	..
	7 02.0	7 30.9	4.1	2 53	
" 18	21 11.4	..	..	..
	21 39.8	21 48.6	1.5	1 39	
" 19	0 07.2	..	..	..
	0 32.0	0 36.2	1.5	1 53	
" 20	2 13.5	2 21.8	1.3	1 14	
" 22	?	18 10.7	0.7	?	In middle of night tremors.
" 24	23 40.9	..	..	..
	24 02.6	24 04.7	1.1	0 58	
May 4	5 58.3	..	..	..
	6 08.7	6 18.0	2.7	?	End obscured by night tremors.
" 9	8 29.9	8 33.0	..	0 07	Very slight.
" 12	?	..	..	..
	8 04.6	8 06.1	1.1	?	Beginning and end obscured by night tremors.
" 13	?	..	..	..	} Ditto.
	21 23.5	21 26.7	1.9	?	
" 14	3 50.3	4 02.9	0.45	0 32	
" 17	1 22.6	1 24.6	0.4	0 09	
" 23	?	11 21.8	0.4	?	In middle of minute night tremors.
" 27	5 08.6	..	..	..	} End obscured by night tremors.
	5 13.5	5 13.8	1.4	..	
		5 15.8	..	?	
" 30	?	22 04.9	0.7	?	In middle of continuous tremors.
" 31	?	..	..	..	} Beginning and end obscured by night tremors.
	12 51.8	12 58.0	4.9	?	
June 5	3 46.2	4 23.9	0.4	1 54	

Records of Milne Seismograph No. 16—continued.

Date.	Commence- ment.	Max.	Max. Ampli- tude.	Duration.	Remarks.
1907.	H. m.	H. m.	Mm.	H. m.	
June 13	9 57.2	10 10.7	0.7	1 52	
" 13	12 17.9	12 21.0	0.3	0 18	
" 18	9 06.3	9 07.9	1.9	0 11	Felt in towns south of Timaru.
" 19	17 28.6	..	..	0 05	Very small, carrot-shaped.
" 19	19 03.8	..	..	..
" 19	19 30.7	19 32.2	1.9	1 34	
" 27	?	..	..	..
" 27	22 43.0	22 49.2	6.0±	?	In middle of continuous tremors.
July 18	0 48.1	0 51.2	0.25	0 20	
" 18	5 06.7	5 10.8	0.8	0 38	
" 20	..	14 21.5	0.8	..	In middle of night tremors.
" 29	0 55.7	1 27.3	0.6	0 25	
" 29	19 51.4	20 11.0	0.4	0 53	
Aug. 4	6 39.1	6 44.8	0.3	1 00	
" 5	7 02.7	7 04.7	0.3	1 10	
" 13	21 54.4	..	..	..
" 13	22 05.7	22 06.8	2.4	1 17	
" 16	3 57.7	..	..	..	Small, sudden.
" 18	6 17.6	6 21.7	..	0 15	Swelling.
" 19	6 09.5	6 16.8	..	0 21	Very small.
" 23	7 10.0	7 13.1	..	0 28	"
" 23	13 38.0	13 47.3	0.1	0 23	
" 28	19 20.8	19 23.9	0.3	0 50	
" 31	8 43.8	8 48.9	0.3	0 16	
Sept. 2	16 26.3	..	..	..
" 2	16 54.3	16 55.7	1.5	?	After-tremors for about two hours.
" 15	5 28.3	..	..	..
" 15	5 32.9	5 36.6	2.2	1 30	
" 24	6 00.7	..	..	0 32	Thickening of line.
" 24	16 58.6	17 03.8	1.4	0 34	
" 29	5 03.8	..	..	0 08	Swelling.
Oct. 2	1 35.6	2 05.8	1.9	..	B.P., 15 sec.
" 2	..	2 07.7	..	1 49	
" 10	?	..	..	..
" 10	22 05.1	22 05.8	3.5	?	In middle of continuous tremors.
" 11	?	14 54.9	5.9	?	In middle of night tremors.
" 17	4 15.6	4 18.1	0.2	0 19	
" 17	9 00.2	9 02.3	0.4	0 08	
Nov. 3	?	..	..	..	Beginning and end obscured by
" 3	18 06.3	18 10.9	2.5	?	night tremors.
" 8	12 37.9	12 43.1	0.4	?	Followed by continuous tremors.
" 8	21 49.3	21 59.7	0.3	0 23	
" 12	7 10.0	7 14.2	0.9	1 12	Followed by continuous tremors.
" 13	3 26.7	3 34.9	0.8	1 03	
" 19	4 54.6	4 59.8	0.9	0 43	
" 19	..	5 11.7	..	..
" 19	21 49.4	22 06.5	0.45	0 45	
" 21	9 04.9	9 14.8	0.45	0 49	
" 21	20 48.4	21 12.2	0.6	0 49	
" 25	0 29.7	0 33.8	0.3	0 36	
" 26	3 05.8	3 14.0	0.8	0 46	
" 27	2 06.7	2 09.8	0.35	0 08	
" 28	3 41.9	3 55.3	0.2	0 27	
Dec. 11	1 09.0	1 27.3	0.6	0 53	
" 12	22 13.9	22 18.0	0.1	0 06	
" 15	?	..	..	..	Beginning and end obscured by
" 15	17 55.3	18 07.8	4.8	?	night tremors.
" 18	1 41.3	1 46.5	0.15	0 09	
" 23	1 36.6	..	..	0 29	Thickening of line.

Records of Milne Seismograph No. 16—continued.

Date.	Commence- ment.	Max.	Max. Ampli- tude.	Duration.	Remarks.
1907.	H. m.	H. m.	Mm.	H. m.	
Dec. 30	6 45.3 7 27.8	.. 7 35.5	.. 1.9	.. 2 22	
1908.					
Jan. 19	7 33.7	7 42.0	0.1	0 33	
" 20	0 46.5	..	..	0 06	Small, carrot-shaped.
" 24	0 46.8	0 53.0	0.9	0 56	
Feb. 6	1 50.4	..	..	0 37	Thickening of line.
" 6	6 00.2	..	..	0 06	Small, carrot-shaped.
" 7	2 56.5	3 00.6	0.15	0 07	
" 14	1 03.1	1 06.2	0.7	0 24	
" 24	23 57.8 24 01.5	.. 24 02.5	.. 1.6	.. 0 38	
" 27	0 21.6	..	..	0 03	Minute.
" 27	9 19.6	..	..	0 44	Swellings.
" 27	..	12 30.4	1.4	?	In middle of continuous tremors. Maximum appears at beginning of quake.
" 29	21 49.6	21 55.8	0.4	0 12	
Mar. 5	2 28.8 2 52.1	.. 2 59.8	.. 1.6	.. 1 53	
" 15	? 10 19.4	.. 10 20.4	.. 2.7	.. ?	Beginning and end obscured by night tremors.
" 19	3 08.1	3 11.7	0.5	0 48	
" 21	4 25.8	..	..	0 38	Thickening of line preceded and followed by minute tremors.
" 23	? 11 46.6	.. 12 06.2	.. 2.9	.. ?	Beginning and end obscured by night tremors.
" 26	23 16.3 23 27.6	.. 24 09.0	.. 4.25	.. ..
" 27	4 11.6	24 29.7 4 53.5	.. 0.55	2 59 ..	
April 7	1 26.2	5 15.2 1 37.5	.. 0.5	2 07 0 43	B.P., 15.4 sec.
" 10	0 03.6 0 20.0	.. 0 31.8	.. 1.55	.. 1 40	
" 12	9 09.1	9 14.8	0.1	0 17	
" 12	19 18.4	19 36.0	0.75	0 40	
" 15	6 06.1	6 17.4	0.4	0 28	
" 23	0 07.0 0 09.6	.. 0 39.9	.. 1.85	.. 2 05	
May 5	5 28.8	6 03.8 6 05.4	1.0 ..	.. 1 40	
" 20	8 00.9	8 24.7	0.8	?	Followed by night tremors.
" 21	7 19.1	..	..	0 15	Slight.
June 3	?	21 25.3	1.0	?	In middle of continuous tremors.
" 18	1 39.6	1 43.7	0.25	0 14	
Aug. 17	10 50.8 10 59.5	.. 11 28.4	.. 5.5	.. ..
Sept. 2	?	11 34.1 21 15.8	.. 0.9	2 44 ?	Beginning and end obscured by night tremors.
" 14	3 32.5	3 36.7	0.4	0 19	
" 21	6 55.7	7 11.8	0.9	1 44	
" 22	3 11.8	3 23.7	0.35	0 30	
" 26	5 27.4 5 32.0	.. 5 34.1	.. 4.9	.. 1 13	
Oct. 7	1 00.7	1 21.9	0.8	0 46	
" 13	5 31.0	..	..	1 42	Swellings.

Records of Milne Seismograph No. 16—continued.

Date.	Commence- ment.	Max.	Max. Ampli- tude.	Duration.	Remarks.
1908.	H. m.	H. m.	Mm.	H. m.	
Nov. 11	21 22.3	21 30.0	1.0	0 59	Preceded by night tremors. Slight swelling.
" 15	2 00.8	..	..	0 21	
" 22	22 52.7	22 58.4	0.25	0 21	
" 27	0 38.0	0 41.1	0.3	0 24	
" 30	21 24.1	21 27.2	1.9	0 28	
Dec. 1	3 05.4	..	..	0 38	Swellings.
" 2	15 12.5	15 15.6	0.25	0 23	
" 7	2 00.3	2 06.9	0.15	0 28	
" 8	0 26.1	0 26.4	6.0	..	) Severe shock in North Canterbury) and slight in South Canterbury. In middle of continuous tremors.
" 16	..	0 27.5	..	0 15	
" 28	4 40.9	4 55.3	} 0.6	2 22	Subsequent tremor at 7 17.1. Origin, Italy.
		5 00.5			
		5 07.8			
		5 20.9			
		5 30.0			
		6 07.2			
		6 13.4			
		6 17.1			
		6 20.2			
		6 24.3			
1909.					
Jan. 1	4 11.7	..	..	0 07	Swelling.
" 3	21 46.5	..	..	..
	21 51.2	21 52.2	6.4	..	) In progress while attending to) instrument.
		21 54.3	..	0 23	
" 17	3 17.9	3 28.2	0.4	0 25	
" 21	2 38.4	2 47.7	0.5	0 29	
" 23	3 49.6	..	..	1 37	Tremors.
" 28	0 38.5	..	..	0 04	Thickening merely.
" 29	0 59.8	1 15.9	0.3	0 45	
" 29	?	13 33.4	1.5	?	In middle of night tremors.
Feb. 11	?	..	..	..	) Beginning and end obscured by) night tremors.
	18 24.2	18 25.8	2.3	?	
" 22	9 26.7	..	..	..
	9 31.3	9 37.0	3.4	1 53	
" 27	?	13 33.4	1.5	?	Beginning and end obscured by night tremors.
Mar. 8	11 45.7	..	..	..	) B.P., 15.4 sec. End obscured by) night tremors.
	11 56.0	11 56.5	1.9	..	
		11 59.1	..	?	
" 10	7 37.4	7 38.4	0.45	0 05	
" 17	23 05.2	..	..	..
	23 32.3	23 35.9	3.3	3 56	
" 22	22 05.3	..	..	..
	22 06.4	22 07.4	17.0+	2 16	Direction N. and S. Felt in south- ern towns.
" 26	1 53.8	..	..	0 06	Maximum at beginning. Ampli- tude very slight. Felt in Christ- church; direction N. and S.
April 10	5 33.4	..	..	..	B.P., 15.5 sec.
	5 43.8	5 45.9	6.0	..	
		5 46.9	..	2 05	
" 12	1 14.3	..	..	..
	1 18.5	1 22.6	3.95	1 29	
" 22	7 14.8	7 15.8	0.2	0 27	
" 27	12 54.7	..	..	..
	13 09.0	13 19.3	6.8	2 01	

Records of Milne Seismograph No. 16—continued.

Date.	Commence- ment.	Max.	Max. Ampli- tude.	Duration.	Remarks.
1909.	H. m.	H. m.	Mm.	H. m.	
May 2	7 06.1	..	..	..
	7 12.3	7 15.4	1.9	1 25	
" 2	..	15 24.4	..	..	Very slight.
" 2	18 20.3	..	..	..
	18 25.4	18 29.6	2.5	0 57	
" 11	?	13 21.7	1.75	?	In middle of air-tremors.
" 12	0 57.2	1 19.3	0.3	0 55	
" 17	8 20.2	8 31.0	0.9	1 37	
" 24	7 13.4	7 17.0	0.5	0 12	
" 25	4 59.7	5 27.6	1.1	1 08	
" 30	?	..	..	..
	21 35.9	21 37.9	2.9	?	Beginning obscured by air-tremors.
June 3	18 52.7	..	..	..
	19 24.8	19 37.7	2.2	2 52	
" 8	6 09.7	6 11.8	..	..
		6 39.7	0.7	..	
		6 55.2	..	..
		7 13.9	..	?	End obscured by air-tremors.
" 9	0 51.0	..	..	0 04	Very small ; maximum at beginning.
" 12	20 25.5	..	..	..
	20 29.1	20 34.3	7.5	1 36	
" 14	7 31.1	7 38.4	0.4	0 22	
" 15	1 19.8	..	..	0 40	Thickening merely.
" 26	9 35.8	9 36.6	0.1	0 04	
" 27	7 22.0	..	..	..
	7 30.3	7 35.5	4.7	1 59	
" 28	?	15 29.0	0.7	?	Beginning and end obscured by air-tremors.
July 1	13 03.7	13 10.9	0.3	0 28	
" 2	6 25.9	6 28.5	0.1	0 31	
" 5	?	17 55.3	3.5	?	Beginning and end obscured by air-tremors.
" 10	13 40.3	13 42.8	0.4	..	
		14 11.3	..	0 33	
" 26	22 06.6	22 08.1	..	0 16	Slight thickening.
" 27	4 34.5	4 36.1	0.2	0 29	
" 30	11 16.5	11 16.5	0.8	..	First maximum at beginning.
		11 31.2	..	2 34	? Origin, Mexico.
Aug. 4	6 18.3	6 20.4	0.1	0 06	
" 6	5 46.0	5 49.1	0.4	0 11	
" 10	6 56.1	7 01.2	0.25	0 22	
" 13	12 19.7	12 21.7	0.25	0 06	
" 16	7 54.6	8 17.7	0.4	0 42	
" 18	0 35.4	..	..	..
	0 46.2	0 56.4	3.9	0 29	In progress while attending to instrument.
" 29	23 59.5	..	..	1 34	Thickening of line
Sept. 3	8 11.2	8 18.4	0.35	0 19	B.P., 15.5 sec.
" 25	12 29.6	12 32.7	0.5	0 14	
Oct. 3	1 28.8	..	..	2 15	Thickening.
" 4	13 53.2	14 07.0	0.9	?	End obscured by air-tremors.
" 21	0 45.5	..	..	0 55	Thickenings.
" 23	?	21 28.9	..	?	Beginning obscured by air-tremors.
" 27	1 32.3	1 33.3	0.35	0 36	
" 30	10 33.8	11 02.0	0.9	?	End obscured by air-tremors.
Nov. 3	6 19.0	..	..	..
	6 23.9	6 25.4	3.25	1 16	
" 10	5 55.6	..	..	0 11	Thickening of line.
" 10	6 26.4	..	..	..
	6 35.6	6 38.2	1.4	1 57	

Appendix



Records of Milne Seismograph No. 16—continued.

Date.	Commencement.	Max.	Max. Amplitude.	Duration.	Remarks.
1909. Nov. 12	H. m. 10 04.4	H. m. 10 05.7	Mm. 1.0	H. m. 0 18	Severe shock; felt in Wellington, New Zealand.
" 14	9 47.3	9 49.7	0.15	0 07	
" 27	21 19.1	..	..	0 28	Slight thickening. Possibly air-tremors.
" 28	1 07.8	..	..	..
" 28	1 14.5	1 15.6	1.6	1 24	
" 28	8 28.3	8 34.0	0.5	0 31	Preceded and followed by minute air-tremors.
Dec. 3	3 25.0	3 33.3 3 34.8	0.9 ..	0 40 ..	
" 8	9 17.6	..	..	..
" 9	9 23.8	9 25.8	2.1	1 01	
" 9	? 15 50.6	.. 15 59.1	.. 5.75	.. ?	Beginning and end obscured by air-tremors.
" 9	21 23.3 21 27.4	.. 21 31.0	.. 2.0	.. ..
" 9	22 04.0	22 29.0	1.0	0 40 1 21	? Origin, Ladrone Islands.
" 9	? 23 49.1	.. 24 03.0	.. 1.4	.. ?	? Origin, Ladrone Islands. Began while attending to instrument.
" 22	? 13 01.3	.. 13 02.8	.. 5.9	.. ?	Preceded and followed by air-tremors.
" 23	19 30.2	19 36.4	2.3	1 03	
" 23	22 32.3	22 45.1	1.0	0 58	
" 28	? 19 56.5	.. 19 56.5	.. 1.0	.. ?	In middle of air-tremors.
1910. Jan. 10	? 19 27.8	.. 19 27.8	.. 0.3	.. ?	Beginning and end obscured by air-tremors.
" 13	0 22.2	0 34.6	0.45	0 42	
" 15	? 10 58.1	.. 10 58.1	.. 0.65	.. ?	Beginning and end obscured by air-tremors.
" 15	22 52.9	..	..	0 20	Thickening of line.
" 19	15 01.1	..	..	..
" 19	15 07.7	15 09.3	1.5	1 22	
" 29	5 03.7	5 11.9	1.0	1 01	
" 30	3 49.2	..	..	..
" 30	3 52.2	3 54.0	17.0+	2 31	? Origin, Samoa.
Feb. 3	9 57.9	10 05.8	0.75	0 27	
" 3	? 16 50.7	.. 16 51.9	.. 17.0+	.. ?	Beginning and end obscured by air-tremors.
" 4	14 07.5	..	..	..
" 4	14 09.9	14 14.2	17.0+	?	End obscured by air-tremors.
" 4	? 14 52.4	.. 14 55.5	.. 5.0 about	.. ?	Beginning obscured by air-tremors.
" 4	17 44.2	..	..	..
" 4	17 48.3	17 50.9	2.75	?	End obscured by air-tremors.
" 4	? 18 46.3	.. 18 47.8	.. 1.4	.. ?	Beginning obscured by air-tremors.
" 6	2 13.7	2 15.2	0.25	0 11	
" 6	4 41.5	4 45.1	0.2	0 10	
" 6	7 16.2	..	..	0 21	Thickening of line
" 7	23 03.2	23 04.7	0.1	0 10	
" 13	10 04.9	10 08.5	0.45	0 34	
" 15	1 27.1	1 31.2	0.25	0 31	
Mar. 1	11 37.8	11 44.0	0.5	1 15	

Records of Milne Seismograph No. 16—continued.

Date.	Commence- ment.	Max.	Max. Ampli- tude.	Duration.	Remarks.
1910.	H. m.	H. m.	Mm.	H. m.	
Mar. 29	..	8 48.9	0.25	..	} Sharp and sudden. Felt at Christ- church.
		8 50.4	0.15	..	
„ 30	17 01.5	..	..	..
„ 30	17 05.6	17 10.0	17.0+	?	End obscured by air-tremors.
„ 30	23 59.4	24 02.7	0.4	0 28	
„ 31	5 37.2	5 40.9	0.2	0 14	
April 1	13 35.3	14 27.8	0.9	1 38.5	
„ 4	5 23.7	..	..	0 08.2	Slight thickening.
„ 8	?	16 55.2	0.9	?	P ₁ and duration obscured by air-tremors.
„ 12	0 50.3	0 50.6	1.5	1 04.4	Preceded and followed by minute air-tremors.
„ 13	5 56.6	5 58.7	0.4	0 18.5	
„ 16	?	13 09.3	..	?	P ₁ and duration obscured by air-tremors.
„ 18	7 34.9	..	..	0 41.0	Thickening of line.
„ 20	22 28.5	22 49.0	..	1 14.4	Preceded by continuous air-tremors.
„ 23	?	15 52.8	1.3	?	P ₁ and duration obscured by air-tremors.
„ 27	2 16.3	..	..	0 35.1	Thickenings.
May 1	4 44.7	4 46.3	0.25	0 11.8	
„ 1	?	18 45.7	5.5	?	P ₁ and duration obscured by air-tremors.
„ 5	0 57.4	1 09.8	0.2	0 41.0	
„ 6	23 22.9	23 29.1	0.4	0 38.0	
„ 8	18 25.2	18 34.4	0.1	0 20.0	
„ 10	18 32.7	..	..	0 35.4	Small swellings.
„ 13	2 33.6	2 36.2	0.3	0 12.8	
„ 15	4 42.0	4 49.5	0.15	0 26.4	
„ 21	22 58.3	23 07.5	0.2	0 22.5	
„ 22	6 48.1	7 10.6	0.4	1 11.2	
„ 29	8 38.4	..	..	1 26.1	Minute tremors, possibly air-tremors.
„ 29	11 12.2	..	..	0 06.1	Slight swellings.
„ 31	5 19.8	5 21.3	0.15	0 06.6	
„ 31	5 32.6	6 01.8	..	..
		6 09.3	..	..
		6 22.9	0.7	1 29.2	
June 1	6 00.7	6 12.5	5.1	3 00.0	? Origin, Fiji.
„ 2	10 30.5	10 32.0	0.2	0 06.1	
„ 5	5 02.6	5 04.6	0.1	0 27.1	
„ 9	6 50.0	..	..	0 05.1	Minute.
„ 9	8 10.5	..	..	0 02.5	„
„ 13	13 08.1	13 13.2	0.3	0 39.5	
„ 23	10 16.6	10 20.7	0.4	0 26.9	
„ 24	2 58.9	..	..	0 14.3	Very slight.
„ 29	10 51.5	11 03.8	..	..
		11 08.7	17.0+	?	End obscured by quake following.
„ 29	?	14 28.9	4.2	?	P ₁ obscured by preceding quake ended 15h. 49.5m.
July 5	10 42.1	10 46.0	1.0	..	
		10 54.4	1.1	..	
		10 59.3	0.9	1 11.0	
„ 7	8 26.8	8 58.7	1.0	..	
		9 14.1	0.8	..	
		9 23.3	1.1	1 57.5	
„ 11	20 36.0	20 39.4	1.2	..	
		20 47.3	1.5	0 53.5	
„ 12	21 08.0	21 12.1	7.0	..	
		21 37.7	3.5	1 47.2	

Records of Milne Seismograph No. 16—continued.

Date.	Commence- ment.	Max.	Max. Ampli- tude.	Duration.	Remarks.
1910.	H. m.	H. m.	Mm.	H. m.	
July 15	12 08.5	12 14.0	1.0	..	
		12 21.8	1.0	..	
		12 25.3	1.0	1 19.5	
.. 15	21 48.7	21 51.9	0.2	..	Swellings.
		21 56.7	0.3	0 14.8	Preceded and followed by minute tremors.
.. 19	19 33.5	19 39.3	0.2	..	
		19 52.2	0.2	0 22.0	
.. 24	15 27.7	15 38.9	2.0	0 31.9	
.. 29	10 38.1	11 01.3	2.5	..	
		11 14.3	2.3	1 14.3	
Aug. 5	15 38.3	15 39.5	0.6	0 05.9	
.. 10	20 49.6	21 08.2	0.4	0 38.3	
.. 21	5 36.3	5 53.6	7.0	..	
		5 55.1	5.0	2 31.1	
Sept. 7	7 33.9	7 51.4	7.0	1 25.0	
.. 9	9 00.0	9 19.8	5.1	..	
		9 28.4	3.0	0 55.3	
.. 10	12 21.9	12 33.4	1.4	0 38.3	
Oct. 7	7 05.8	7 11.0	2.4	..	End obscured by air-tremors.
		8 26.5	1.0	0 57.0	
.. 7	11 54.4	12 07.9	2.2	0 53.0	
.. 12	8 00.2	8 06.8	1.0	0 28.6	
.. 18	2 42.5	2 47.7	4.0	1 10.4	
.. 30	7 47.5	7 53.7	2.5	0 51.7	
Nov. 9	6 09.8	6 32.1	17.5	3 03.1	Reproduced.
.. 10	12 28.4	12 40.4	2.0	0 30.6	Duration doubtful owing to air tremors.
.. 26	4 50.4	5 04.8	10.8	..	
.. 26	..	5 49.2	2.0	..	
		4 01.6	2.1	..	End obscured by air-tremors.
		6 38.9	1.5	3 27.7	
Dec. 1	3 52.3	3 55.4	0.6	0 16.5	
.. 2	3 20.2	3 26.4	1.5	0 25.9	
.. 3	7 58.3	8 04.5	16.4	..	
		8 38.0	1.0	1 21.7	
.. 3	4 13.8	4 30.3	0.8	0 21.7	
.. 4	11 05.4	11 10.6	17.0	..	
		11 30.0	3.5	1 45.6	
.. 10	9 37.4	9 47.0	17.5	..	
		10 00.2	5.0	11 36.3	
.. 11	3 57.0	4 04.2	0.7	0 20.5	
.. 12	23 55.9	0 21.7	0.8	0 42.3	
.. 13	12 25.6	12 58.6	1.6	1 16.5	
.. 14	20 54.4	21 02.7	1.5	1 07.3	
.. 16	14 55.3	15 26.3	5.1	..	
		15 41.8	3.5	2 17.6	
1911.					
Jan. 2	22 59.7	23 05.9	14.0	1 52.7	
.. 3	23 46.3	0 26.6	1.4	..	Duration uncertain.
.. 4	..	1 05.9	1.5	2 33.8	
.. 7	2 33.2	3 05.2	1.0	1 13.5	
.. 8	16 24.7	16 27.8	0.8	?	End obscured by air-tremors.
.. 8	9 26.8	9 32.0	2.5	..	
		9 41.4	1.5	0 38.2	
.. 10	16 37.7	16 46.2	7.4	0 55.0	
.. 16	9 08.8	9 37.8	1.0	0 41.4	
Feb. 7	9 42.4	9 46.5	0.8	0 12.4	



Records of Milne Seismograph No. 16—continued.

Date.	Commence- ment.	Max.	Max. Ampli- tude.	Duration.	Remarks.
1911.	H. m.	H. m.	Mm.	H. m.	
Feb. 7	9 59.9	10 02.0	0.6	0 10.4	
„ 17	10 14.6	10 29.1	0.5	0 51.7	
„ 17	23 23.9	23 50.8	2.0	0 47.6	
„ 21	23 46.0	23 49.1	0.2	0 07.0	
„ 25	16 12.7	16 17.1	0.8	0 01.5	
Mar. 11	3 29.5	3 43.9	1.5	0 52.7	
„ 17	9 28.2	9 30.3	1.0	0 07.3	
„ 21	4 04.2	4 22.4	0.2	0 42.5	
April 6	9 55.1	10 01.3	0.3	0 14.5	Duration uncertain owing to tremors.
„ 7	7 33.2	7 36.5	0.2	..	
		7 41.6	0.2	0 50.7	
„ 8	2 16.2	2 18.4	0.5	0 09.3	Excellent record.
„ 11	13 40.0	13 41.9	1.5	0 24.0	In middle of tremors.
„ 13	10 14.7	10 18.3	1.1	0 19.6	Excellent record.
„ 15	4 59.9	5 05.0	2.5	..	
		5 13.4	1.6	0 50.5	L.W. commence 5h. 02.5m.
„ 21	2 15.5	2 20.4	1.5	..	
		2 33.0	1.0	1 17.5	
„ 23	12 43.3	12 50.6	2.1	0 23.8	Duration uncertain.
„ 26	1 18.3	1 27.5	0.4	0 59.5	
„ 27	3 03.3	3 04.8	0.2	0 06.9	
May 1	12 27.4	12 32.6	0.3	0 10.3	
„ 20	16 19.6	16 20.4	0.2	0 06.3	
„ 23	4 33.1	4 37.8	0.1	..	
		4 40.3	0.1	0 19.2	
June 3	..	20 39.1	1.5	..	Commencement and duration un- certain owing to tremors.
		20 41.6	2.0	..	
		20 45.6	1.7	..	
		20 47.5	1.5	..	
„ 6	13 05.1	13 06.6	0.5	..	
		13 12.6	0.5	0 18.0	
„ 7	11 17.5	11 31.5	0.7	..	
		12 00.5	1.0	..	
		12 09.5	0.8	..	
		12 14.5	0.8	2 52	
„ 10	17 00.8	17 07.6	1.1	1 14	
„ 12	7 12.6	7 17.6	0.1	0 14	
„ 15	14 36.4	14 46.9	5.5	..	
		14 48.7	4.0	..	
		14 52.4	3.0	..	
		15 04.5	3.8	3 08	
„ 28	19 57.3	19 40.4	1.5	0 28.5	
July 12	4 19.1	4 38.0	2.1	..	L.W. begin 4h. 28.2m.
		4 45.0	4.5	..	
		4 49.3	9.0	3 26	
„ 19	9 02.2	9 05.8	1.2	..	
		9 07.3	1.0	..	End obscured by tremors.
Aug. 6	1 26.0	1 28.6	0.4	0 17.5	
„ 10	0 33.4	0 45.9	0.4	0 31	
„ 16	22 51.2	23 18.3	9.0	..	L.W. commence 22h. 59.8m.
		23 21.7	6.0	..	
		23 23.7	6.0	..	
		23 27.4	6.2	4 40.5	
„ 19	2 21.8	2 24.8	0.3	0 13	Duration approximate.
„ 21	16 38.0	16 41.6	4.0	..	Duration obscured by tremors.
Sept. 6	1 17.9	1 20.7	0.6	1 12	
„ 12	..	14 07.7	1.5	..	Beginning and end obscured by tremors.

Appendix.



Records of Milne Seismograph No. 16—continued.

Date.	Commence- ment.	Max.	Max. Ampli- tude.	Duration.	Remarks.
1911.	H. m.	H. m.	Mm.	H. m.	
Sept. 15	12 25.2	12 25.4	0.6	..	End obscured by following quake.
„ 15	13 44.8	13 48.8	2.0	0 11	
Oct. 5	7 38.9	7 41.3	1.0	..	
		7 44.5	0.5	0 55.4	Shock felt at Hastings, Hawke's Bay, New Zealand.
Nov. 2	0 56.2	1 01.1	2.1	0 33	End uncertain.
„ 16	11 45.9	11 47.9	1.7	..	
		11 49.6	1.8	0 11.3	
„ 30	10 29.2	10 33.2	11.5	0 27	Duration uncertain owing to tremors.
Dec. 3	11 50.3	11 52.0	4.5	0 11.7	
„ 13	12 01.8	12 03.2	0.9	0 01.9	Small local quake.
„ 23	21 52.4	22 09.0	1.1	..	End uncertain owing to tremors.

NOTE.—Previous to 11th May, B.P. = 14.5 secs. 1 mm. = 0.49" static tilt.

On 11th May, 1911, the new type of recording apparatus giving a time scale approximately four times as open as the old type, was installed. With this recorder the time scale is 241 mm. to the hour.

After 11th May, B.P. = 16.5 secs. 1 mm. = 0.4" static tilt.

Principal Records of Milne Seismograph No. 20, at Wellington, New Zealand. (Latitude, 41° 17' S.; longitude, 174° 47' E. Observer, George Hogben.)

(The instrument is placed in a special room below a house standing about 30 ft. from the edge of a rocky cliff about 50 ft. high, situated about 250 yards from the shore-line of Wellington Harbour.)

Date.	Commence- ment.	Max.	Max. Ampli- tude.	Duration.	Remarks.
1906.	H. m.	H. m.	Mm.	H. m.	
Jan. 10	16 16.3	..	0.6	0 03	B.P., 19.6 sec.
„ 26	8 04.2	..	..	..	P ₁ . Several previous slight shocks.
	8 21.1	8 21.8	3.8	..	
		8 26.5	..	0 57	
„ 31	15 00.4	..	..	..
	15 57.6	16 03.3	1.2	3 23	
		16 22.6	..	..
Feb. 1	2 29.8	..	..	..	B.P., 19.6 sec.
	2 33.9	2 34.2	2.8	0 18	
„ 3	9 55.1	..	8.0	0 04	
„ 19	?	..	..	..	P ₁ .
	2 17.3	..	..	..
	2 27.0	2 30.9	10.0	..	
		2 48.0	..	1 45	
Mar. 19	19 24.9	..	..	..	B.P., 19.6 sec. P ₁ .
	20 04.9	20 06.9	0.6	2 35	Probably Formosa.
„ 28	17 13.2	..	..	..	P ₁ .
	18 11.5	18 13.8	16.0	..	
	18 24.5	..	..	13 36	
April 5	22 37.8	..	..	..	B.P., 18.7 sec. P ₁ . Previous tre- mors.
	22 46.3	22 48.4	1.0	..	
	22 52.8	..	..	?

Principal Records of Milne Seismograph No. 20—continued.

Date.	Commence- ment.	Max.	Max. Ampli- tude.	Duration.	Remarks.
1906.	H. m.	H. m.	Mm.	H. m.	
April 14	?	..	..	..	B.P., 19.6 sec. P ₁ .
	3 59.6	..	..	..	P ₂ .
	4 02.3	4 05.4	7.5	..	
	4 08.1	..	..	?
„ 18	13 26.6	..	..	..	..
	13 30.1	..	..	..	..
	14 01.9	..	..	..	P ₄ } San Francisco earthquake.
	14 10.5	14 11.9	9.0	..	P ₅ }
	14 39.7	..	..	17 03	End overlapped by beginning of next quake.
„ 19	6 27.3	..	..	..	P ₁ ?
	7 06.1	7 08.4	8.5	..	Probably S.E. Asia.
	7 15.1	..	..	1 30	
June 1	4 43.6	..	..	..	B.P., 18.6 sec. P ₁ .
	4 47.8	..	..	..	P ₂ .
	5 02.3	5 07.3	2.1	..	
		5 24.0	..	1 12	
„ 2	4 28.1	..	..	..
	4 30.6	4 33.7	0.6	0 41	
„ 27	0 39.1	..	..	..	P ₁ .
	1 56.5	2 00.2	0.6	..	
		2 02.1	..	?	
July 15	16 01.2	..	..	..	B.P., 18.5 sec. P ₁ .
	16 08.8	16 10.6	1.6	..	
		16 15.4	..	?	
„ 17	15 37.3	..	..	..	P ₁ .
	15 38.9	..	..	..	P ₂ .
	15 41.0	15 42.8	1.1	..	
		15 49.1	..	..
„ 18	?	..	..	..	P ₁ .
	19 42.4	19 43.3	0.5	..	P ₃ .
	19 48.2	..	..	?
Aug. 5	1 00.6	..	..	..	B.P., 18.5 sec. P ₁ .
	1 14.9	..	..	..	P ₂ .
	1 22.7	1 24.8	1.5	..	
	1 31.4	..	..	3 01	
„ 8	5 13.5	5 14.6	0.5	..	
„ 17	0 27.2	..	..	..	P ₁ .
	0 33.5	..	..	..
	1 19.6	1 23.8	18.0	..	Valparaiso earthquake; evidently two or three shocks overlap.
		2 03.8	..	29 03	
„ 18	6 03.9	..	..	..	P ₁ .
	6 26.3	..	..	..	P ₂ .
	6 58.3	7 04.7	3.0	..	
	7 08.4	..	..	?
„ 23	16 23.5	..	..	..	P ₁ .
	16 26.6	16 29.4	0.6	..	? Calabria.
	16 35.5	..	..	..
„ 23	19 41.2	..	..	..	B.P., 18.5 sec. P ₁ .
	20 05.8	..	..	..	P ₂ .
	21 47.3	21 51.0	0.8	..	
„ 26	?	..	..	..	P ₁ ; obscured by tremors.
	6 30.0	6 35.7	3.2	..	
		6 40.5	..	..
Sept. 7	19 08.0	..	..	..	B.P., 18.5 sec. P ₁ .
	19 41.7	19 54.3	1.0	..	
„ 14	13 41.3	..	..	..	? Obscured by tremors.
	16 12.8	..	..	..	P ₂ ?
	16 27.1	16 30.9	20.0+	7 36	B.P., 15.9 sec.

Appendix.



Principal Records of Milne Seismograph No. 20—continued.

Date.	Commencement.	Max.	Max. Amplitude.	Duration.	Remarks.
1906.	H. m.	H. m.	Mm.	H. m.	
Oct. 2	1 58.6	..	..	..	B.P., 18.5 sec. Probably Indian Ocean.
	2 04.6	..	..	..
	2 15.1	2 19.9	13.0	2 31	
„ 15	?	..	..	..	P ₁ .
	13 27.9	?	2.5	?	Obscured by tremors.
„ 21	2 05.1	..	..	..	P ₁ .
	2 17.6	2 19.9	13.0	1 56	
„ 29	1 39.8	..	..	..	P ₁ .
	1 52.4	1 53.6	1.4	?	Obscured by tremors.
„ 30	19 13.7	..	..	..
	19 18.5	19 19.4	1.0	..	
	19 23.6	..	..	..
Nov. 6	20 06.1	..	..	..	B.P., 18.5 sec. P ₁ .
	20 17.2	20 20.5	2.1	..	
	20 36.9	..	..	..
„ 14	17 22.4	..	..	..	P ₁ .
	17 47.2	17 50.6.	7.8	..	
	18 10.6	..	..	5 25	
„ 19	7 27.5	..	..	..	P ₁ .
	7 35.2	..	..	..	P ₂ .
	7 48.0	7 53.1	10.5	..	
	8 05.3	..	..	..
	8 14.3	..	..	3 13	
1909.					
Mar. 17	23 17.4	..	..	..	) Or P.T. commence 23 12.8, or even 23 05.0.
	23 27.2	23 30.4	6.0	1.24 about	
April 10	5 40.9	..	..	..
	5 49.9	5 51.0	5.6	2 42	
May 30	21 20.1	..	..	..	) Repeats at 23 55.1, 24 53.5, 25 19.8, 26 26.0, &c.
	21 32.2	21 35.5	4.0	..	
June 11	10 09.4	..	..	..
	11 02.1	?11 16.8	0.5	} 2 02.6	S. France.
		11 40.4	0.5		
Nov. 3	6 21.7	6 26.5	2.0	0 15	Tremors before and after.
Dec. 9	15 45.2	..	..	..
	15 55.8	15 58.6	4.5	..	
1910.					
June 1	5 30.1	..	..	..	B.P., 13.5 sec. P ₁ . S.W. Pacific, near New Hebrides. (Probably S.W. Pacific, about 450 miles north of New Zealand. Followed by tremors and repeats until 5 55 on 17th June. Origin, 11° S., 172° E.
	5 40.2	5 43.7	7.5	1 27	
„ 16	6 34.1	..	..	1 40	
	6 45.2	6 49.3	14.5	..	
„ 29	10 50.5	..	..	..	Origin, 51° S., 173½° E.
	11 02.8	11 06.9	12.5	2 14	
„ 29	14 24.8	..	..	..
	14 27.8	14 29.5	9.0	1 38	
July 29	10 43.7	..	..	..	P ₁ .
	10 52.3	..	..	..	P ₃ .
	10 57.4	10 58.0	3.0	..	P ₅ .
Aug. 18	12 40.5	..	..	..	} Local.
	12 41.1	..	1.0	..	
„ 31	21 49.5	..	..	17 40	Almost continuous tremors.
Sept. 7	7 04.5	..	..	..	} Origin, 32° S., 179° W.
	7 11.7	..	..	..
	7 28.7	..	..	..
	7 34.8	7 39.4	4.0	..	

Principal Records of Milne Seismograph No. 20—continued.

Date.	Commence- ment.	Max.	Max. Ampli- tude.	Duration.	Remarks.
1910.	H. m.	H. m.	Mm.	H. m.	
Sept. 9	9 13.4	..	..	..	P ₁ .
	9 19.2	..	..	..	P ₃ .
	9 25.2	9 27.4	1.8	..	P ₅ .
Oct. 18	2 33.8	..	..	..	P ₁ .
	2 42.3	2 44.5	2.8	..	P ₃ .
	2 49.5	..	..	..	P ₅ .
Nov. 9	6 07.3	..	..	..	P ₁ .
	6 11.4	..	..	..	P ₂ .
	6 13.3	..	..	..	P ₃ .
	6 15.4	..	..	..	P ₄ .
	6 18.6	?	17.0+	..	P ₅ .
.. 26	4 46.5	..	..	..	P ₁ .
	4 51.2	..	..	..	P ₃ .
	4 54.8	4 56.1	17.0+	..	P ₅ .
Dec. 10	9 38.1	..	..	..	P ₁ .
	9 41.7	..	..	..	P ₃ .
	9 44.9	9 46.5	7.0	..	P ₅ .
.. 13	12 03.2	..	..	..	P ₁ .
	12 37.5	12 49.8	6.3	..	Probably P ₅ or P ₃ .
.. 16	14 56.2	..	..	..	P ₁ .
	15 09.0	..	..	..	P ₃ .
	15 25.3	15 27.5	15.3	..	P ₅ .
NOTE.—1 mm. of amplitude = 0.70" of tilt (static).					
1911.					
Jan. 2	22 53.4	..	..	0 41	B.P., 18.3 sec.
	22 59.2	..	..		Distance, about 2,100 km.
	23 01.4	23 04.1	12.3		
.. 3	2 24.7	..	..	..
	2 59.7	..	..	..
	3 32.0	..	0.5	..	
	3 48.5	..	0.6	..	
	4 27.3	..	..	..
.. 3	23 51.6	..	..	..	P ₁ .
	24 14.5	..	..	..	P ₂ ?
	24 28.2	..	..	..	P ₃ ?
	24 42.7	..	..	..	P ₄ ?
	24 45.2	24 46.7	4.0	..	P ₅ .
.. 9	17 43.0	17 43.5	0.6	1 02	Local. Principal shock, 2.3 sec., Rossi-Ford, V.
.. 10	16 35.9	..	..	0 24	Distance, about 1,200 km. B.P., 20.7 sec.
	16 37.1	..	..
	16 38.6	..	..
	16 40.8	..	2.2		
April 17	23 08.0	..	..	0 10 about	Distance, about 1,500 km.
	23 10.9	..	..
	23 12.6	..	..
	23 13.8	23 14.4	3.0		
.. 21	2 16.2	..	..	0 22 about	Distance, about 1,150 km.
	2 17.4	..	..
	2 19.2	..	..
	2 20.5	2 22.5	1.4		
May 4	14 01.4	..	..	0 21	Distance, about 2,100 km.
	14 04.4	..	..
	14 09.7	14 12.8	1.0		
.. 5	23 59.0	..	..	1 02	Distance, about 8,000 km. B.P., 19.5 sec.
	24 22.4	..	..
	24 28.9	..	1.5		

NOTE.—1 mm. of amplitude = 0.70" of tilt (static).

Appendix.



Principal Records of Milne Seismograph No. 20—continued.

Date.	Commence- ment.	Max.	Max. Ampli- tude.	Duration.	Remarks.	
1911. June 7	H. m. 11 27.8 11 49.8 11 53.7 12 03.9	H. m. 11 56.2 ..	Mm. 13.0 ..	H. m. .. 2 30	B.P., 18.4 sec. P ₁ . P ₄ . P ₅ . Long waves. P ₈ . Probably transverse waves.	} Origin, Mexico. Times uncer- tain.
„ 10	16 59.1 17 04.1	17 00.1 17 05.2	1.2 0.8	0 07	? Local.	
„ 16	14 30.2 14 32.4 14 47.9	.. .. 14 49.3	.. .. 8.0	3 07	Beginning obscured by tremors.	
„ 21	16 33.9 16 43.6	.. 16 44.9	.. 2.5	.. 0 44		
July 12	4 18.6 4 49.2	.. 4 51.3	.. 8.0	.. 1 08	B.P., 17.5 sec. P ₁ . P ₅ .	
Aug. 16	22 51.4 23 00.0 23 12.8 23 15.7 23 19.5	.. .. .. 23 16.7 23 22.2	.. .. .. 7.0 10.0	3 18	B.P., 17.0 sec. P ₁ . P ₂ . P ₃ . P ₄ . P ₅ .	
Oct. 5	7 36.7	7 37.5 7 39.0	.. ..	.. ..	B.P., 12.5 sec. Origin, about 200- 250 miles east of Wellington.	
„ 17	9 41.9	9 46.4	2.0	0 36	? Origin, about 550 miles from Wel- lington.	