

British Association for the Advancement of Science.

*Circular No. 21, issued by the Seismological Committee, Professor
H. H. TURNER, F.R.S. (Chairman), Mr. JOHN MILNE, F.R.S.,
Shide, Isle of Wight (Secretary).*

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I. *General Notes on Registers from Similar Horizontal Pendulums (Milne Type).*

The following registers are continuous with those published by the Seismological Investigation Committee in their first twenty circulars and in the Reports of the Association, 1896 to 1899.

If observers will kindly send a copy of their register, together with copies of their more important seismograms, to the Secretary of the Seismological Investigation Committee, British Association, Burlington House, London, W., as early as possible after June 30, and again after December 31 of each year, the interval of time which must elapse before they receive copies of the registers of co-workers in various parts of the world will be considerably reduced.

The time employed is Greenwich mean time (civil), expressed in hours, minutes, and in decimals of minutes. 24 or 0 hours = midnight.

Amplitude indicates half of the complete range of the maximum motion, and is expressed in millimetres. Values less than 1 millimetre refer to the thickening of the line or minute ripples, and indicate half its width.

As 1° turn of the calibrating screw in the bed-plate of the instrument causes a tilt of 1"·9, and as this is accompanied by a measurable displacement of the outer end of the boom, it is easy to determine the angular value corresponding to a 1 millimetre displacement. This quantity should be stated at the end of each register.

II. *Registers.*

The Register from Shide, Newport, Isle of Wight, England.

Director, JOHN MILNE; Assistants, MESSRS. S. HIROTA AND J. H. BURGESS.

The following entries refer to records obtained from three pendulums, A, B, and C. The periods and "sensibilities" or deflections for 1° turn of the calibrating screw were as follow:—

A. Period 20 seconds. 1° turn = 7·5mm., July 1 to July 5, 1909;

" 17 " " 1·5mm., July 5 to August 1;

" 18 " " 16mm., August 1 to December 31.

B. Period 18 seconds. 1° turn = 6mm.

C. Period 18 seconds. This pendulum records N.S. motion and is without a calibrating screw. A and B record E.W. motion.

Ats. = Air tremors. P₂ refers to the commencement of the second phase of motion. d. = duration. a. = amplitude.

All entries refer to disturbances recorded not only at Shide, but also at one or more other stations. Records only obtained at Shide have been excluded.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
1909						
1915	July 1	H. M.	H. M.	MM.	H. M.	A.
1916		—	6 13	0·1	—	A. Max. B. and C. 6h. 36m.
1917	"	6 28·5	6 32	0·1	0 30	A. Max. for B and C. 18h. 25m.
1918		—	16 24	—	—	A, B, and C.
1919	"	—	18 20	0·1	—	A, B, and C.
1920		—	20 29·5	0·1	—	" "
1921	2	—	6 11	0·3	—	" "
1922		—	6 34	0·3	—	" "
1923	"	—	7 35	0·3	—	A and C.
1924		21 45	21 55	0·1	0 42	A. Com. for B and C, 21h. 35m., and d., 48m.
1924	3	1 39	1 45	0·1	0 22	C. Max. for A, 1h. 38·5m.

The Register from Shide, Newport, Isle of Wight, England—continued.

No.	Date	Com-mencement			Max.	Max. Amplitude	Duration	Remarks
		H. M.	H. M.	MM.				
2012	Aug. 14	—	20 51	0.1	—	—	A.	
2013	—	—	23 31	0.1	—	—	A.	
2014	„ 15	—	0 50	0.1	—	—	A, B, and C.	
2015	—	—	1 19	0.1	—	—	A.	
2016	„ 16	7 4.5	7 41	1.0	1 30	—	A.	
		7 10	7 42.5	1.5	3 0	—	B.	
		7 10	7 44	3.2	3 0	—	C.	
2017	„ 17	—	3 38	0.2	—	—	A, B, and C.	
2018	„ 18	0 57.5	1 54	0.1	—	—	A.	
		0 56	1 37	0.2	—	—	B and C.	
2019	„ 18	—	2 6	0.2	—	—	A, B, Max., C, 2h. 0m.	
2020	—	—	2 20	0.4	—	—	B and C. 2nd Max., 2h. 38m.	
2021	—	—	15 15.5	0.1	—	—	B and C.	
2022	—	—	23 22.5	0.1	—	—	A, B, and C.	
2023	„ 22	—	6 59	0.1	—	—	C.	
2024	—	15 51	16 13.5	0.5	1 20	—	B and C.	
2025	—	17 57	18 17	0.4	—	—	A.	
		17 57	18 18.5	0.4	1 40	—	B, Max., C, 18h. 15m.	
2026	„ 23	—	15 48	0.1	—	—	C.	
2027	„ 24	4 37.5	4 45	0.2	0 25	—	B and C.	
2028	—	—	12 13	0.2	—	—	„	
2029	—	—	13 15	0.2	—	—	„	
2030	—	—	14 22	0.2	—	—	„	
2031	„ 25	0 21	0 29	0.2	0 44	—	A. Central Italy.	
2032	„ 26	—	3 16	0.1	—	—	Com., B, C, 0h. 23m.	
		—	—	—	—	—	A, B, & C. 2nd Max., 3h. 20m.	
2033	„ 27	—	19 10	0.1	—	—	A, B, and C.	
2034	—	—	21 12	0.1	—	—	A and C.	
2035	—	—	21 52	0.1	—	—	A.	
2036	„ 28	—	2 0	0.1	—	—	A.	
2037	—	—	4 56	0.1	—	—	A, B, and C.	
2038	—	—	5 23	0.1	—	—	„	
2039	„ 29	11 11	11 29	0.3	1 0	—	A and C.	
		11 14	11 29	0.4	1 0	—	B.	
2040	—	—	22 6.5	0.2	—	—	A and C.	
2041	—	—	23 17	0.1	—	—	A. Jamaica.	
2042	„ 30	—	0 11.5	0.1	—	—	A.	
2043	—	—	0 41.5	0.1	—	—	A.	
2044	—	—	1 4	0.1	—	—	A, B, and C.	
2045	—	—	5 41.5	0.1	—	—	A.	
2046	—	13 14.5	13 50	0.4	1 25	—	A, B, and C.	
2047	„ 31	9 4	9 12	0.1	0 25	—	„	
2048	—	—	10 8	0.1	—	—	„	
2049	—	12 5	12 30	0.5	2 0	—	„	
2050	—	—	14 35	0.1	—	—	„	
2051	Sept. 1	—	3 3	0.2	—	—	B and C.	
2052	—	—	3 19	0.3	—	—	B and C.	
2053	—	—	3 36	0.3	—	—	B and C.	
2054	„ 4	—	7 56	0.2	—	—	A, B, and C.	
2054a	„ 5	9 8	9 48	0.1	2 0	—	A. Max., B, C, 9h. 54m.	
2055	„ 5	—	14 23	0.2	—	—	A.	
2056	„ 6	—	11 25	0.1	—	—	B, C, Max., 11h. 27.5m.	
2057	„ 7	—	14 29	0.2	—	—	B and C.	
2058	„ 7	—	15 55	0.2	—	—	B.	
2059	„ 8	17 0	17 12	0.3	3 0	—	B and C.	

The Register from Shide, Newport, Isle of Wight, England—continued.

No.	Date	Com-mencement			Max.	Max. Amplitude	Duration	Remarks
		H. M.	H. M.	MM.				
2060	Sept. 8	23 40	0 35	0.7	3 0	—	A, B, & C. a=0.2. A.	
2061	„ 9	—	1 45	0.2	—	—	B and C.	
2062	„ 10	18 45.5	19 11.5	0.5	1 15	—	B and C. Com., C, 18h. 43m.	
2063	—	—	20 50	0.1	—	—	A, B, and C.	
2064	„ 11	5 7	5 34	0.5	1 17	—	A, B, and C. Com., C, 5h. 6m.	
2065	—	11 0	12 3	0.1	—	—	A. Com., B, 11h. 24m. Max., 12h. 4m. a=0.5	
2066	„ 11-12	23 59	0 43	0.1	3 0	—	A, B, & C. a=0.2 for C.	
2067	„ 12	—	10 34	0.1	—	—	B.	
2068	—	—	15 58	0.1	—	—	A, B, and C.	
2069	„ 16	—	6 43.5	0.1	—	—	„	
2070	—	—	16 42	0.1	—	—	„	
2071	—	19 12	19 26	0.1	—	—	„	
2072	—	19 55	20 37	0.3	>2 0	—	A, B & C com. 19. 47m. Max., 20h. 33.5m. a=0.5.	
2073	„ 19	20 27	21 3	0.2	—	—	B and C.	
2074	—	—	22 6	0.3	—	—	„	
2075	„ 21	—	8 55	0.1	—	—	A, B, and C.	
2076	—	19 7	20 3	0.1	2 0	—	A, B, and C. a=0.2 for B, C.	
2077	„ 22	14 53.5	15 30	0.5	2 30	—	B and C.	
2078	„ 23	—	7 27	0.1	—	—	„	
2079	—	—	15 44	0.2	—	—	„	
2080	—	16 0	16 40	0.2	2 50	—	A, B, and C.	
2081	„ 25	—	19 35	0.1	—	—	B and C.	
2082	„ 28	—	21 0	0.1	—	—	A, B, and C.	
2083	„ 29	18 13	18 56.5	0.2	1 0	—	„	
2084	Oct. 2	18 10	18 29	0.2	1 8	—	B and C. 2nd Max. at 18h. 49m.	
2085	—	21 39	21 46	0.5	0 45	—	C. a=0.1 for A, and 0.3 for B.	
2086	„ 3	2 40	2 55	0.1	1 5	—	A, B, and C.	
2087	—	—	4 43	0.1	—	—	„	
2088	—	—	14 25	0.1	—	—	C. 2nd Max., 14h. 37m.	
2089	—	21 0	21 32	0.2	2 0	—	A, B, and C.	
2090	„ 4	—	0 4	0.1	—	—	„	
2091	—	14 39	14 58	0.2	—	—	B and C.	
2092	„ 8	10 3	10 7	1.0	0 45	—	A, B, & C. a=0.6, B.	
2093	—	—	11 2	0.1	—	—	„	
2094	„ 9	—	4 3	0.2	—	—	„	
2095	„ 10	—	5 29	0.1	—	—	A.	
2096	—	—	5 45	0.1	—	—	A, B, and C.	
2097	—	—	6 35	0.1	—	—	„ Max. for B, 6h. 5m.	
2098	„ 11	—	14 34	0.1	—	—	B and C.	
2099	„ 12	—	9 46	0.1	—	—	A.	
2100	„ 13	—	12 56	0.1	—	—	A.	
2101	—	23 3.5	23 20	0.1	0 45	—	A, B, and C.	
2102	„ 17	22 36.5	22 56	0.2	1 10	—	A and C.	
2103	„ 18	—	9 12	0.2	—	—	A. Max., C, 9h, 9m. and 9h. 18m.	
2104	„ 20	—	0 22	0.1	—	—	A and C.	
2105	—	—	5 27.5	—	—	—	A. Slight on C.	

The Register from Slide, Newport, Isle of Wight, England—continued.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
2106	Oct. 20	H. M. —	H. M. 6 10	MM. 0.1	H. M. —	A and C.
2107		18 47	19 15.5	0.2	1 25	A. Com., C, 18h. 53m. a=0.1. d=1h.
2108	„ 20-21	23 51	0 22	15.0	>4 0	A and C. Max. for C, 0h.18m. a=7.0, C.
2109	„ 21	—	5 22.5	0.1	—	A.
2110		—	11 20	0.1	—	A and C. Max. for C, 1h.22m.
2111		16 52.5	16 58	0.2	0 55	A and C. a=0.1, C.
2112	„ 23	—	17 53	0.1	—	A.
2113	„ 27	—	0 14	0.1	—	A.
2114	„ 27	2 56.5	3 16	0.2	1 10	A, B, and C. a=0.1, B and C.
2114a	„ 27	—	7 38	0.1	—	A and B.
2115		8 37	8 48	0.2	0 35	A and C. a=0.1, C.
2116		—	22 0	0.1	—	A, B, & C.
2117	„ 28	3 49	4 43	0.5	3 3	„ „ a=0.3, B.
2118	„ 29	—	7 34	0.5	—	A, B, and C.
2119		16 11.5	16 19	0.6	0 40	B & C. d. for C, 50m.
2120		17 46	17 54	0.8	—	B and C.
2121	„ 30	—	10 37.7	0.2	—	A. 2nd Max., 11h.27m.
2122	„ 31	10 29	11 16	1.5	>4 0	A, B, and C. Com. for B and C, 10h. 32m.
2123	Nov. 1	6 21	6 56	1.0	2 0	A.
		6 27	6 55	0.7	1 30	B and C. a=0.5, C.
2124		9 16	9 39	0.3	1 10	A, B, & C. Com. for B and C, 9h.19m.
2125	„ 3	6 36.5	6 52	0.1	0 30	A, B, & C. Max. for B and C, 6h.50m.
2126	„ 3	—	7 45	0.1	—	A, B, & C. Also Max. at 8h.2m., 8h.6m., and 8h.45m.
2127	„ 5	6 46	6 52	0.1	0 15	A, B, and C.
2128		9 23	9 26	0.2	0 20	„ „
2129		—	15 9	0.2	—	„ „
2130	„ 6	—	7 52.5	0.2	—	A.
2131	„ 7	—	5 19	0.1	—	A. Max. for B, 5h.16m. C, 5h.15m.
2132	„ 8	20 52	21 29	0.2	1 5	A, B, and C. a. for B & C, 0.5. d. 1h.53m.
2133	„ 10	5 53	5 56	0.1	0 21	A. Also Max. at 6h.2m.
2134		6 26	7 5	7.0	3 40	A, B, and C. Com. for A, 6h. 16m. a. for B and C, 3mm. and 4mm.
2135		10 30	11 8	0.2	—	A, B, and C.
2136	„ 12	4 24	4 39	0.2	—	B and C.
2137	„ 12	20 10	20 26	1.0	—	A.
		20 14	20 29	0.5	—	B and C.
2138	„ 13	—	20 14	0.1	—	A, B, and C.
2139	„ 17	—	20 50	0.5	—	„ „
2140	„ 18	—	8 3	0.1	—	A and B.
2141	„ 20	13 32	13 49	0.3	1 15	A, B, and C. Max. for A, 13h.37m. a=0.1.
2142	„ 21	7 49	8 34	3.0	1 0	A, B, and C. a. for B and C, 2mm.

The Register from Slide, Newport, Isle of Wight, England—continued.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
2143	Nov. 22	H. M. —	H. M. 9 37	MM. 0.1	H. M. —	A, B, & C; also 10.40.
2144		19 48.5	19 59	0.2	—	A and B.
2145	„ 24	—	7 54	0.1	—	A.
2146	„ 27	3 54.5	4 8	0.2	2 10	A, B, and C.
2147	„ 28	—	2 38	0.5	—	B and C. Max. for A, 2h.35.5m.
2148	„ 30	—	1 48	0.1	—	A, B, and C.
2149	„ 30	—	9 15	0.2	—	C.
2150	Dec. 1	—	8 10	0.1	—	A, B, and C.
2151		—	9 5	0.1	—	A and B.
2152		—	11 40	0.1	—	„ „
2153	„ 2	—	10 58	0.1	1 0	A and C.
2154	„ 3	4 10	4 41	0.2	—	„ „
2155		—	7 31	—	—	„ „
2156		—	9 20	0.2	—	„ „
2157		—	10 38	0.2	—	„ „
2158	„ 8	—	8 0	0.2	—	A, B, and C.
2159		—	10 41.5	0.3	—	„ „
2160	„ 9	15 50	17 0	1.2	>4 0	„ „
2161		21 28	22 32	0.3	—	„ „ P ₂ , 21h.39m.
2162		—	23 2	0.3	—	„ „
2163	„ 10	23 34	0 4	0.7	3 30	„ „ 2 Eqks. P ₂ , 23h.47m. Max., A. 23h.59.5m. a=1.2.
		—	0 33	1.0	—	„ „
2164		—	8 8	0.2	—	A, B, and C.
2165	„ 11	—	20 25	0.1	—	A only.
2166		—	20 54	0.1	—	„ „
2167	„ 12	—	18 58.5	0.2	—	A, B, and C.
2168		—	19 12	0.2	—	„ „
2169	„ 13	—	0 29.5	0.1	—	„ „
2170		—	22 0	0.1	—	„ „
2171	„ 14	—	19 14	0.1	—	„ „
2172	„ 18	—	7 30	0.1	—	A only.
2173	„ 19	—	1 57.5	0.2	—	„ „
2174	„ 20	—	11 18	0.1	—	A, B, and C.
2175		—	15 1	0.1	—	„ „
2176	„ 21	—	15 44	0.1	—	A only.
2177		—	22 13	0.1	—	A, B, and C.
2178		—	22 54.5	0.1	—	A.
2179	„ 22	—	11 44	0.1	—	A, B, and C.
2180		13 43	14 26	0.2	—	„ „
2181	„ 23	—	19 35.5	0.1	—	A only.
2182		—	23 39	0.3	—	A, B, and C.
2183	„ 24	—	17 16	0.3	—	C only.
2184	„ 27	—	8 31	0.1	—	A, B, and C.
2185	„ 28	—	2 31	0.1	—	A and C.
2186		—	20 1	0.1	—	C.
2187		—	20 43.5	0.1	—	B and C.
2188	„ 29	—	12 55	0.1	—	„ „
2189		—	13 22	0.2	—	„ „
2190		18 12.5	18 38	0.5	—	A, B, & C. P ₂ 18h.15.5m. Pendulums displac- ed, A, B, 1mm. to the W. C to the N.
2191		—	19 6.5	0.2	—	B and C.
2192	„ 31	—	9 35.5	0.1	—	A, B, and C.
2193		—	21 30	0.1	—	„ „

Register from The National Physical Laboratory, Kew Observatory.
 Director, R. T. GLAZEBROOK, D.Sc., F.R.S.; Superintendent,
 C. CHREE, LL.D., F.R.S.; Observer, E. G. CONSTABLE.

B.O.T. = Broadening of trace or isolated thickening.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
1909						
—	July 3	H. M. 9 19.5	H. M. —	MM. 0.3	H. M. 0 5	Seismic character doubtful.
965	" 3	14 20.5	—	—	0 4	Isolated thickening.
966	" 3	20 3	—	—	0 5	"
967	" 4	21 35	—	—	0 4	"
—	" 5	9 40	—	0.3	0 5	Seismic character doubtful.
968	" 6	11 25	—	—	0 5	Isolated thickening.
969	" 7	21 38.5	22 0	6.0	2 9	"
970	" 8	19 10	—	—	0 5	Isolated thickening.
—	" 8	19 32	—	—	0 5	"
—	" 8	21 5	—	—	0 4	"
971	" 15	0 48.0	0 50.7	1.0	0 18	"
—	" 16	19 26	—	0.5	0 15	Seismic character doubtful.
972	" 18	8 35.5	—	0.4	0 15	Ill-defined.
973	" 20	11 24.5	—	—	0 5	Isolated thickening.
—	" 20	11 35	—	—	0 7	"
974	" 30	11 4.6	11 45.0	6.6	2 57	"
975	" 31	19 41.8	20 10.4	2.0	1 21	"
976	Aug. 2	11 11	—	—	0 3	Isolated thickening of trace.
—	" 2	11 42	—	—	0 3	"
—	" 2	12 13	—	—	0 3	"
977	" 2	15 50.5	—	—	0 3	"
—	" 2	21 35	—	—	0 4	"
978	" 4	13 36.5	—	—	0 4	"
979	" 5	17 5.5	—	—	0 6	"
—	" 5	20 44	—	—	0 4	"
980	" 6	12 46	—	—	0 5	"
—	" 6	21 0	—	—	0 8	"
981	" 7	8 11	—	—	0 4	"
—	" 7	16 21.5	—	—	0 4	"
—	" 7	18 20	—	—	0 3	"
982	" 12	12 32	—	—	0 4	"
983	" 14	7 14.5	7 29.2	1.6	0 40	Commencement masked by Ate.
—	" 14	11 0	—	—	0 4	Isolated thickening of trace.
984	" 16	7 27.2	7 45.8	2.6	1 0	"
—	" 16	7 47.7	—	—	1 0	"
985	" 22	16 12	—	—	0 5	Isolated thickening of trace.
986	" 23	15 46	—	—	0 3	"
987	" 27	21 45	—	—	0 5	"
988	" 29	11 29	—	—	0 5	"
989	" 29	22 10	—	—	0 4	"
990	" 30	9 9.5	—	—	0 5	"
991	" 31	9 5	—	—	0 3	"
992	Sept. 4	7 35	—	—	0 7	B.O.T.
993	" 4	14 23	—	—	0 3	"
994	" 6	14 5	—	—	0 14	"
995	" 7	16 7	—	—	0 7	"
996	" 8	17 25.5	17 41.3	0.6	1 4	"
997	" 9	0 31	—	—	0 7	B.O.T.
998	" 10	21 11	—	—	0 4	"
999	" 11	5 29	—	—	0 3	"
1000	" 12	10 32	—	—	0 5	"
—	" 14	12 0	—	—	0 7	Seismic character doubtful.
1001	" 16	7 25.4	7 27.3	0.6	0 12	"
1002	" 16	20 26.2	20 32.0	0.4	0 11	"
1003	" 19	22 12	—	—	0 3	B.O.T.
1004	" 21	8 58	—	—	0 12	"
1005	" 22	15 24.5	—	—	0 19	"
1006	" 23	16 35	—	—	0 15	"
—	" 28	8 38	—	—	0 7	Seismic character doubtful.
1007	" 28	20 56	—	—	0 12	B.O.T.
—	Oct. 1	7 24.8	7 30.0	0.5	0 32	Seismic character doubtful.
1008	" 2	21 46	—	—	0 3	B.O.T.
1009	" 4	14 56	14 59.0	0.3	1 2	Curve indistinct.
1010	" 3	10 5.5	10 8.8	0.5	0 8	"
1011	" 20-21	23 59.1	0 20.6	6.5	1 23	"

Register from the National Physical Laboratory, Kew Observatory—continued.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude.	Dura- tion	Remarks
1012	Oct. 28	H. M. 4 44	H. M. —	MM. —	H. M. 0 14	B.O.T.
1013	" 29	16 8	—	—	0 29	"
1014	" 29	17 41.2	17 51.5	0.4	0 15	"
1015	" 31	10 45.3	11 13.5	1.5	1 3	Curve masked by changing paper.
1016	Nov. 5	9 21	—	—	0 22	B.O.T.
1017	" 10	6 25.8	7 4.8	2.4	2 4	"
1018	" 12	20 20	—	—	0 18	B.O.T.
1019	" 21	8 18.7	8 34.4	1.6	0 41	"
1020	Dec. 8	9 27	—	—	0 11	B.O.T.
—	" 8	10 40	—	—	0 8	"
1021	" 9	16 49.2	17 20.5	0.9	1 43	"
1022	" 9	22 49	—	—	0 10	B.O.T.
1023	" 9-10	23 51.5	0 41.0	0.6	1 2	"
—	" 22	12 22	—	—	0 6	Seismic character doubtful.
1024	" 22	14 29	—	—	0 9	B.O.T.

November 10. 1mm. amplitude = 0°55 of arc.

Register from Liverpool Observatory, Bidston. Director, W. E. PLUMMER.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
1909						
1326	July 1	H. M. 18 20 to 18 25	H. M. —	MM. —	H. M. —	Slight irregularities.
1327	" 2	7 35 to 7 41	—	—	—	"
1328	" 2	—	21 57	—	—	Decided thickening.
1329	" 3	—	1 40	—	—	Possible disturbance.
1330	" 3	—	6 50	—	—	"
1331	" 3	—	9 25	—	—	"
1332	" 3	—	20 1	—	—	"
1333	" 4	2 50	—	—	—	Possible.
1334	" 4	—	12 4	—	—	Slight irregularity.
1335	" 5	15 55.4	16 5	—	0 25	Possible.
1336	" 6	—	6 2	—	—	Small and doubtful.
1337	" 6	16 56.5	17 0.6	0.2	0 14	"
1338	" 6	—	18 38	—	—	"
1339	" 6	—	19 9	—	—	"
1340	" 7	—	16 56.5	—	—	"
1341	" 7	21 45.3	21 54.7	5.2	2 5	"
1342	" 8	0 20.6	0 34.8	0.2	0 26	"
1343	" 8	—	12 40	—	—	"
1344	" 9	—	2 4	—	—	"
1345	" 11	—	0 10	—	—	Slight.
1346	" 11	2 27.2	2 33.4	0.1	0 14	"
1347	" 11	—	11 35	—	—	"
1348	" 11	—	13 58	—	—	"
1349	" 13	—	13 40	—	—	"
1350	" 15	0 45.7	0 51.2	0.6	0 17	"
1351	" 15	—	20 3	—	—	"
1352	" 16	—	20 17	—	—	"
1353	" 16	—	21 25	—	—	"
1354	" 18	—	4 26	—	—	"
1355	" 20	—	0 46	—	0 10	Small.
1356	" 22	—	23 30	—	—	"
1357	" 23	17 57.8	18 2.0	0.2	0 12	"
1358	" 23	—	21 24	—	—	"
1359	" 25	—	4 58	—	—	"

Register from Liverpool Observatory, Bidston—continued.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
1369	July 26	H. M.	H. M.	MM.	H. M.	
1361	" 29	11 26.7	11 35.2	0.4	0 41	
1362	" 30	11 4.6	11 41.8	9.0	3 10	
1363	" 30	11 30.7	14 35.6	0.3	0 32	
1364	" 31	19 11.3	20 9	2.6	2 11	
1365	Aug. 2	—	14 57	—	—	
1366	" 5	—	4 8	—	—	
1367	" 6	—	21 38	—	—	
1368	" 6	—	21 30	—	—	
1369	" 7	—	3 50	—	—	
1370	" 7	—	5 56	—	—	
1371	" 7	18 8.3	18 14.1	0.2	0 13	
1372	" 10	—	8 6	—	—	
1373	" 11	12 51.2	12 55.0	—	0 17	Small.
1374	" 13	12 22	12 26	—	0 9	"
1375	" 13	7 26.2	7 32.3	—	0 17	"
1376	" 14	6 53.8	7 24.9	1.3	1 31	
1377	" 14	—	16 9	—	—	
1378	" 14	—	20 51	—	—	
1379	" 15	—	0 50	—	—	
1380	" 16	7 30	—	—	1 0	Large, but light feeble and trace bad.
1381	" 18	—	1 54	—	—	Earthquake may have commenced earlier.
1382	" 18	2 8	2 38	0.3	0 52	
1383	" 18	—	15 15	—	—	
1384	" 22	16 10.9	16 15.8	0.2	0 11	
1385	" 22	—	18 29	—	—	
1386	" 25	0 20	0 22.3	—	0 22	Small.
1387	" 27	—	21 12	—	—	
1388	" 28	—	5 25	—	—	
1389	" 29	11 26.4	11 33.8	—	0 16	
1390	" 29	—	23 17	—	—	
1391	" 30	0 53.8	0 59.6	—	0 17	
1392	" 30	—	6 0	—	—	
1393	" 30	13 33	13 45.7	0.6	0 25	Very doubtful.
1394	" 31	—	10 8	—	—	
1395	" 31	12 22	12 29.6	—	0 20	Small.
1396	Sept. 1	2 56.2	3 4.3	—	0 18	
1397	" 1	3 35.6	3 46.2	—	0 20	
1398	" 9	0 23.3	0 32	0.2	0 25	
1399	" 9	—	1 46	—	—	
1400	" 11	—	11 26	—	—	
1401	" 16	20 0	20 27	—	—	
1402	" 21	—	8 52	—	—	
1403	" 21	—	20 0	—	—	
1404	" 22	—	15 9	—	—	
1405	" 23	—	16 39	—	—	
1406	" 29	18 27	18 31.2	—	0 13	Small.
1407	" 30	—	11 50	—	—	Thickening.
1408	Oct. 2	—	14 33	—	—	
1409	" 2	18 42.1	18 47	0.1	0 9	
1410	" 2	21 41.6	21 47.2	0.1	0 16	
1411	" 4	—	15 28	—	—	
1412	" 6	17 13	17 18.7	—	0 19	Possibly air tremor.
1413	" 8	10 6.2	10 10	0.3	0 14	
1414	" 10	—	6 0	—	—	
1415	" 12	9 43.8	9 46.2	—	0 12	Small.
1416	" 13	—	23 13	—	—	
1417	" 17	—	22 51	—	—	
1418	" 18	9 12.2	9 15.3	0.1	0 15	
1419	" 20	23 50.6	0 18.7	5.0	1 20	
1420	" 28	4 42	4 53.1	0.2	0 27	
1421	" 29	7 19.7	7 53	0.2	0 35	
1422	" 29	16 14.3	16 29.7	0.3	0 31	
1423	" 29	17 42	17 53.3	0.5	0 42	
1424	" 30	10 50	10 53.8	0.2	0 13	Continued till noon.
1425	" 31	10 46.7	11 17	1.3	1 14	
1426	Nov. 1	6 43.2	6 52.7	0.2	0 27	
1427	" 3	14 37	15 2	1.8	0 38	Light feeble.
1428	" 5	23 34.7	23 43	0.2	0 36	
1429	" 10	5 22	6 21.3	2.6	3 13	
1430	" 13	—	6 58	—	—	Doubtful.
1431	" 18	—	8 26	—	—	
1432	" 18	17 13.2	17 18.4	0.2	0 21	
1433	" 21	8 22	8 31.7	1.7	9 29	

Register from Liverpool Observatory, Bidston—continued.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
1434	Nov. 22	H. M.	H. M.	MM.	H. M.	
1435	Dec. 1	—	19 19	—	—	
1436	" 2	—	9 9	—	—	
1437	" 3	—	10 58	—	—	
1438	" 3	—	4 46	—	—	
1439	" 3	—	7 31	—	—	
1440	" 8	10 39.6	10 43	0.1	0 45	
1441	" 9	16 19.3	17 8.2	0.8	2 7	
1442	" 9	21 49.7	0 37.8	0.7	1 38	
1443	" 10	3 26.2	3 33	0.1	0 32	Very uncertain.
1444	" 10	—	11 23	—	—	
1445	" 11	—	20 25	—	—	
1446	" 11	—	20 54	—	—	
1447	" 12	—	18 58	—	—	
1448	" 12	19 15	19 23.4	0.1	1 33	Possibly air tremor.
1449	" 16	11 26.7	11 37.1	1.2	—	
1450	" 17	15 29	15 36.3	0.3	0 21	
1451	" 20	—	11 22	—	—	
1452	" 20	—	15 1	—	—	
1453	" 21	—	15 44	—	—	
1454	" 21	—	17 50	—	—	
1455	" 21	—	22 13	—	—	
1456	" 21	—	22 54	—	—	
1457	" 22	—	13 43	—	—	
1458	" 22	14 0.9	14 8	0.2	0 40	
1459	" 22	—	20 41	—	—	
1460	" 23	—	19 35	—	—	
1461	" 23	23 22.7	23 35.1	0.3	0 29	
1462	" 24	—	3 35	—	—	
1463	" 24	17 2.5	17 6	0.2	0 12	
1464	" 28	—	4 54	—	—	
1465	" 28	—	20 6	—	—	
1466	" 28	20 35	20 40	—	—	
1467	" 29	—	12 37	—	—	
1468	" 29	—	13 22	—	—	
1469	" 29	—	18 39	—	—	
1470	" 29	—	19 3	—	—	
1471	" 30	0 5	0 12.1	0.2	0 21	

Period, 16 secs. $P^3 = 4$ mm. to December 15, 1909.
18 secs. $P^3 = 6$ mm. from December 16 to 31, 1909.

Register from Royal Observatory, Edinburgh.
Director, F. W. DYSON, M.A., F.R.S.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
1909						
109	July 1	H. M.	H. M.	MM.	H. M.	
110	" 2	18 11.2	—	—	0 9.0	Small.
111	" 3	7 26.8	—	—	0 6.7	
112	" 3	6 52.2	—	—	0 1.1	Smallest perceptible.
113	" 3	19 18.6	—	—	—	
114	" 3	20 1.1	—	—	0 6.2	Very small.
115	" 4	4 0.0	—	—	—	
116	" 4	21 25.1	—	—	—	Almost imperceptible.

Register from Royal Observatory, Edinburgh--continued.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
116	July	5	H. M. 19 30.6	MM. —	H. M. 0 10.1	Very small.
117	"	6	5 56.3	—	—	"
118	"	6	16 56.7	—	0 8.6	Very slight.
119	"	6	18 34.0	—	—	"
120	"	6	19 39.5	—	0 11.5	Very slight.
121	"	7	21 46.7	21 58.5	4.5 3 38.2	—
122	"	9	2 0.3	2 1.6	—	Very slight.
123	"	10	21 0.5	—	—	"
124	"	13	13 32.5	—	0 17.5	Small.
125	"	15	0 44.6	0 49.6	—	"
126	"	15	21 17.4	—	0 3.5	Smallest perceptible.
127	"	16	20 29.1	—	0 3.9	"
128	"	17	20 54.8	—	0 4.1	Small.
129	"	19	0 4.0	—	0 2.6	Smallest perceptible.
130	"	21	1 1.3	—	0 15.5	Small.
131	"	21	4 44.6	—	0 9.7	Small.
132	"	22	23 43.6	—	0 6.1	Very slight.
133	"	23	17 50.7	17 54.1	0.2 0 11.1	—
134	"	24	5 56.4	—	0 8.6	Very small.
135	"	26	11 16.5	11 31.3	0.2 0 35.4	—
136	"	27	16 19.4	—	0 29.5	Very small.
137	"	30	11 4.0	11 41.3	5.2 4 44.2	—
138	"	31	19 26.2	20 8.3	1.8 2 32.0	—
139	Aug.	2	10 45.0	—	0 27.2	Very small.
140	"	3	14 48.4	—	0 7.0	"
141	"	7	17 28.6	18 14.6	0.3 1 52.7	—
142	"	14	6 52.0	7 24.8	0.6 2 29.3	—
143	"	16	7 10.6	7 47.2	1.3 2 57.1	—
144	"	18	1 0.5	2 14.8	0.2 2 11.1	—
145	"	22	7 2.4	7 11.5	—	Very small.
146	"	22	15 58.5	16 12.4	0.2 0 35.2	"
147	"	22	18 12.6	18 21.7	0.1 0 21.5	Small.
148	"	23	16 15.7	—	0 6.1	"
149	"	25	6 30.0	—	0 7.1	Small.
150	"	26	3 5.3	—	0 15.7	Line very slightly irregular.
151	"	29	11 15.0	11 26.5	0.2 0 20.0	—
152	"	30	1 5.0	—	0 29.5	Small.
153	"	30	1 48.1	—	0 11.4	"
154	"	30	7 59.2	—	3 45.1	Small, irregular.
155	"	30	13 24.2	13 47.8	0.3 0 49.8	—
156	"	31	12 3.3	12 22.7	0.2 1 49.1	—
157	"	31	14 36.2	—	0 2.8	Very minute.
158	Sept.	3	6 55.6	7 3.7	0.3 0 21.9	—
159	"	7	15 49.4	16 3.9	0.3 0 51.5	—
160	"	8	17 1.2	17 40.2	0.8 3 8.3	—
161	"	8-9	23 46.1	0 31.5	0.2 2 12.8	—
162	"	10	18 54.5	19 6.2	—	Very minute.
163	"	10	20 44.7	—	0 13.2	"
164	"	11	5 24.8	5 37.7	0.2 0 37.7	—
165	"	11	11 13.5	—	1 15.2	Small tremors.
166	"	12	0 53.3	—	0 12.7	Very small.
167	"	12	15 57.0	—	0 3.2	"
168	"	16	16 28.2	—	0 17.8	"
169	"	16	19 38.5	20 28.6	0.3 1 47.3	Very small.
170	"	19	22 3.9	—	0 6.7	"
171	"	21	19 40.5	—	0 49.4	Small tremors.
172	"	22	14 53.9	15 30.9	0.3 1 21.1	—
173	"	23	7 18.4	—	0 17.4	Very small.
174	"	23	16 31.1	—	0 45.6	"
175	Oct.	2	18 24.2	18 26.9	0.2 0 5.8	—
176	"	2	18 44.1	18 46.7	0.3 0 7.6	—
177	"	2	21 43.8	21 44.5	0.2 3 2.2	—
178	"	3	21 24.3	—	0 12.2	Very small.
179	"	3-4	23 52.6	—	—	"
180	"	4	14 42.5	—	0 42.4	"
181	"	8	10 7.2	10 9.1	0.7 0 16.3	—
182	"	—	—	—	—	—
183	"	10	5 45.7	—	0 3.4	Very minute.
184	"	—	—	—	—	—
185	"	10	6 3.5	—	0 5.2	Very minute.
186	"	12	9 43.2	9 50.8	0.2 0 10.2	—
187	"	18	8 45.5	9 14.1	—	Very small.
188	"	20-21	23 51.2	0 19.0	6.1 3 58.2	—
189	"	21	5 18.8	—	0 1.7	Very minute.

Register from Royal Observatory, Edinburgh--continued.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks	
190	Oct.	26	H. M. 5 19.7	H. M. —	MM. —	H. M. 0 4.9	Very small.
191	"	27	2 38.4	—	—	0 44.3	"
192	"	28	4 5.8	4 56.6	—	1 32.2	Small.
193	"	29	7 48.3	7 31.5	—	0 50.7	"
194	"	29	16 12.2	16 23.6	0.3	0 35.0	"
195	"	29	17 46.6	17 56.9	0.4	0 40.2	—
196	"	30	10 36.8	—	—	2 23.0	Very small.
197	"	31	10 32.4	11 15.4	1.0	3 10.0	—
198	Nov.	1	6 36.1	6 54.4	0.3	0 49.5	—
199	"	1	9 32.6	—	—	0 22.5	Very small.
200	"	3	6 45.7	7 4.4	—	0 28.2	"
201	"	3	7 50.1	8 3.3	—	0 20.6	"
202	"	5	15 20.6	—	—	0 3.7	Smallest possible.
203	"	7	5 12.3	—	—	0 11.4	"
204	"	8	21 3.4	21 32.7	—	1 15.6	Very small.
205	"	10	6 25.5	7 4.1	2.5	3 30.8	—
206	"	10	11 7.1	—	—	0 5.5	Very small.
207	"	12	4 37.4	5 7.8	0.4	1 22.2	"
208	"	13	20 4.2	—	—	0 42.5	"
209	"	17	20 45.9	—	—	0 6.5	"
210	"	20	13 11.1	—	—	1 17.1	"
211	"	21	7 49.0	8 32.6	2.4	2 16.5	—
212	"	22	19 54.5	—	—	1 22.5	Very small.
213	"	27	4 0.6	4 8.8	—	1 56.6	"
214	"	28	1 37.6	2 30.5	—	2 33.9	"
215	"	29-30	—	—	—	—	Thickenings, probably Ats.
216	Dec.	3	4 22.5	—	—	1 11.0	Very small.
217	"	3	10 27.6	—	—	0 50.4	"
218	"	8	19 35.8	10 39.3	0.2	2 1.9	—
219	"	9	15 55.6	17 6.9	0.6	3 31.2	—
220	"	9-10	22 5.5	0 3.1	0.5	4 23.1	—
221	"	13	0 30.5	—	—	0 3.6	Very minute.
222	"	13	21 46.3	—	—	0 34.7	"
223	"	13	23 56.2	—	—	0 22.5	"
224	"	21	22 12.6	—	—	0 21.5	"
225	"	22	10 41.9	11 7.6	—	1 39.1	Small.
226	"	22	13 7.8	14 29.7	—	2 58.3	"
227	"	23-24	22 49.3	—	—	2 11.2	Very small.
228	"	28	7 30.8	—	—	5 37.7	"
229	"	28	19 43.3	20 31.6	—	2 13.4	"
230	"	30-31	—	—	—	—	Frequent thickenings.

Register from the Coats Observatory, Paisley.
Observer to the Board of Directors, DONALD MACLEAN.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks	
1909							
648	July	1	H. M. —	H. M. 6 12.5	MM. —	H. M. —	Thickening of trace.
649	"	1	—	6 33.0	—	—	"
650	"	1	—	20 30.0	—	—	"
651	"	6	—	17 4.5	0.3	0 16.5	Small, but very distinct.
652	"	6	—	18 36.0	—	—	"
653	"	6	—	19 26.0	—	—	"
654	"	7	21 42	22 0.5	5.5	>2 26	—
655	"	8	—	12 40.5	—	—	Small.
656	"	8	19 17.5	19 26.0	0.2	0 23	—
657	"	13	13 29	13 38.5	0.2	0 32	—
658	"	15	—	0 51.5	0.4	—	Commencement and end lost in Ats.
659	"	16	—	21 22.0	0.5	—	"
660	"	19	—	0 7.5	0.2	—	"

Register from the Coats Observatory, Paisley—continued.

No.	Date	Com-mence-ment		Max. Ampli-tude	Dura-tion	Remarks
		H. M.	H. M.			
661	July 21	—	4 26.5	—	—	Small.
662	" 21	—	4 46.0	0.2	—	—
663	" 22	—	23 49.5	0.4	—	Commencement and end lost in Ats.
664	" 29	—	13 25.5	0.1	—	Small.
Instrument under repair from July 30 to August 2.						
665	Aug. 6	2 29.0	2 31.5	0.2	0 5.5	—
666	" 6	—	21 28.5	0.4	—	—
667	" 7	—	17 32.5	0.2	—	—
668	" 7	—	18 26.0	0.1	—	—
669	" 10	6 10.0	6 12.0	0.2	0 5.5	—
670	" 12	—	12 32.0	0.1	—	—
671	" 13	—	4 0.5	0.2	—	—
672	" 13	—	4 30.5	0.2	—	—
673	" 13	7 29.5	7 32.0	0.1	0 5.0	—
674	" 14	6 1.0	7 27.0	0.65	0 53.5	—
675	" 14	—	10 25.0	—	—	Slight thickening of line.
676	" 14	—	12 22.5	0.1	—	—
677	" 14	—	16 9.5	—	—	Slight thickening of line.
678	" 14	23 34.5	23 36.5	0.2	0 9.5	—
679	" 15	—	0 52.5	0.1	—	—
680	" 16	7 25.0	7 48.5	0.4	>0 56.5	Commencement and end lost in Ats.
681	" 17	—	3 38.5	0.5	—	Slight thickening of line.
682	" 18	—	1 55.5	—	—	—
683	" 18	—	2 4.5	—	—	—
684	" 18	—	2 15.5	0.1	—	—
685	" 18	—	2 20.0	0.1	—	—
686	" 18	—	15 15.5	—	—	Slight thickening of trace.
687	" 18	—	23 21.0	—	—	—
688	" 22	—	6 58.5	—	—	—
689	" 22	16 6.0	16 13.5	0.3	0 17.5	—
690	" 22	—	18 18.0	—	—	—
691	" 25	0 28.5	0 30.5	0.2	0 12.5	—
692	" 26	—	3 16.0	0.3	—	Commencement and end lost in Ats.
693	" 27	20 57.0	21 11.0	0.5	>0 20.5	Slight thickening of trace.
694	" 28	—	5 23.5	—	—	—
695	" 29	—	11 39.0	—	—	—
696	" 30	0 7.5	0 11.0	0.4	0 8.0	—
697	" 30	—	0 32.5	0.3	—	—
698	" 30	—	1 4.5	0.2	—	—
699	" 30	13 23.5	13 41.0	0.5	0 24.0	—
700	" 31	12 22.0	12 30.5	0.2	0 17.5	—
701	Sept. 1	—	14 35.5	0.1	—	—
702	" 1	—	16 6.5	0.1	—	—
703	" 6	—	11 28.0	0.1	—	—
704	" 6	14 24.5	14 30.0	0.3	0 11.5	—
705	" 7	—	15 56.5	0.1	—	—
706	" 7	17 5.0	17 10.0	0.3	0 18.5	—
707	" 8	17 9.5	17 11.5	0.5	>1 8.5	—
708	" 9	0 16.5	0 36.0	0.4	1 4.5	—
709	" 9	—	1 43.0	—	—	Very small tremor.
710	" 10	—	19 10.5	—	—	—
711	" 11	—	5 34.0	0.1	—	—
712	" 12	0 28.0	0 36.0	0.4	0 20.5	—
713	" 12	—	10 33.5	—	—	Very small tremor.
714	" 12	—	15 18.5	—	—	—
715	" 16	19 17	20 53.0	0.2	1 58.0	—
716	" 19	—	21 13.5	—	—	Distinct, but very small.
717	" 19	—	21 25.0	—	—	—
718	" 21	19 21.0	20 2.5	0.2	1 10.0	—
719	" 22	14 54.0	15 30.0	0.6	2 30.5	—
720	" 23	7 15.5	7 21.0	0.1	0 15.0	—
721	" 23	—	15 44.5	0.2	—	—
722	" 25	—	19 35.0	0.1	—	—
723	" 28	—	20 59.0	—	—	Very small tremors.
724	" 29	18 26.0	18 31.5	0.2	0 14.5	—
725	Oct. 2	18 27.0	18 28.0	0.2	0 11.5	—
726	" 2	18 42.5	18 47.5	0.4	0 14.0	—
727	" 2	21 35.0	21 45.5	0.3	0 15.5	—
728	" 3	—	2 56.5	0.1	—	—
729	" 4	—	4 54.5	0.1	—	—
730	" 4	—	14 58.0	—	—	—
731	" 8	10 3.5	10 9.5	0.3	0 21.5	—
732	" 8	—	11 2.5	—	—	—

Register from the Coats Observatory, Paisley—continued.

No.	Date	Com-mence-ment		Max. Ampli-tude	Dura-tion	Remarks
		H. M.	H. M.			
733	Oct. 10	—	5 28.0	0.1	—	—
734	" 10	—	5 46.0	0.1	—	—
735	" 10	—	6 4.0	—	—	—
736	" 17	22 19.5	22 57.0	0.2	0 28.0	—
737	" 18	8 47.0	9 11.5	0.2	0 55.5	—
738	" 20	—	3 27.0	—	—	—
739	" 20	—	6 10.0	0.2	—	—
740	" 20	23 54.5	24 23.0	3.3	>2 2.0	—
741	" 27	—	3 16.0	0.2	—	—
742	" 28	—	4 43.5	0.1	—	—
743	" 29	—	7 30.5	0.1	—	—
744	" 29	—	16 20.0	0.1	—	—
745	" 29	17 48.5	17 54.0	0.3	0 36.0	—
746	" 29	—	17 59.0	0.4	—	—
747	" 30	—	10 37.5	—	—	—
748	" 31	10 38.5	11 17.0	0.8	1 47.0	—
749	Nov. 1	6 34.5	6 52.0	0.3	1 28.0	—
750	" 1	—	9 39.0	0.1	—	—
751	" 3	—	7 46.5	—	—	—
752	" 5	—	6 53.0	0.2	—	—
753	" 5	—	9 25.5	0.1	—	—
754	" 8	21 7.5	21 28.5	0.5	1 18.0	—
755	" 10	6 23.0	7 5.5	1.6	>3 23.0	—
756	" 12	4 3.0	4 39.0	0.2	1 47.5	—
757	" 12	20 5.0	20 27.0	0.4	1 12.0	—
758	" 13	—	20 14.0	—	—	—
759	" 17	—	29 51.0	—	—	—
760	" 18	—	8 4.0	—	—	—
761	" 18	—	21 25.0	—	—	—
762	" 22	—	19 56.5	—	—	—
763	" 24	—	7 54.0	—	—	—
764	" 27	—	4 8.5	0.1	—	—
765	" 28	2 8.5	2 38.0	0.3	1 10.0	—
766	" 30	—	1 49.0	0.1	—	—
767	Dec. 1	—	11 39.0	—	—	—
768	" 1	—	15 2.5	—	—	—
769	" 3	—	4 41.5	—	—	—
770	" 3	—	6 30.5	—	—	—
771	" 3	—	7 31.0	—	—	—
772	" 8	9 50.0	10 40.5	0.2	1 50.0	—
773	" 9	16 37.0	17 18.5	0.8	>2 58.0	—
774	" 10	—	0 31.0	0.9	>1 35.0	—
775	" 11	—	20 25.0	—	—	—
776	" 14	—	0 25.5	—	—	—
777	" 14	—	13 28.5	—	—	—
778	" 17	—	20 21.0	—	—	—
779	" 18	—	8 23.5	—	—	—
780	" 22	—	14 51.0	0.2	—	—
781	" 23	—	23 2.0	0.2	—	—
782	" 28	2 20.0	2 42.5	0.2	>1 30	—
783	" 29	—	13 22.0	—	—	—
784	" 31	—	9 36.5	—	—	—
785	" 31	—	21 30.0	—	—	—

mm. of amplitude = 0.63.
Period of Pendulum = 18 secs.

Register from Eskdalemuir Observatory,
Superintendent, GEORGE W. WALKER.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks.
1909						
1	July 7	H. M. 21 43.5	H. M. 21 56	MM. 9.3	H. M. 3 41	N.S. imm. = 0°38.
2	" 7	21 43.5	21 56.5	6.4	3 45	E.W. 0°38.
3	" 15	0 43	0 47.5	0.4	0 26	N.S. 0°37.
4	" 15	0 43	0 50.5	0.4	0 26	E.W. 0°38.
5	" 30	11 4	11 42	2.3	5 1	N.S. 0°37.
6	" 30	11 4	11 42.5	7.5	4 54	E.W. 0°37.
7	" 31	19 31	20 9.5	2.3	2 29	E.W. 0°37.
8	Aug. 14	6 53	7 19	0.6	1 41	N.S. waves, boom not working.
9	" 14	6 53	7 19	0.6	1 59	E.W. 0°37.
10	" 16	7 21	7 47	1.1	1 0	N.S. 0°37.
11	" 16	7 22	7 44	1.9	0 59	E.W. 0°37.
12	Oct. 20-21	23 59	0 20.5	11.5	1 31	N.S. 0°36.
13	" 20-21	53 50	0 19	5.6	1 31	E.W. 0°37.
14	" 29	?	18 58	0.6	?	N.S. 0°38.
15	" 29	?	18 58	0.3	?	E.W. 0°39.
16	Nov. 1	?	6 53	0.2	?	N.S. 0°38.
17	" 1	?	6 53	0.6	?	E.W. 0°39.
18	" 10	6 25	7 2	2.6	2 40	N.S. 0°36.
19	" 10	6 25	7 1	2.5	2 40	E.W. 0°38.
20	" 21	?	8 33	2.3	?	N.S. 0°37.
21	" 21	?	8 33	1.8	?	E.W. 0°36.
22	Dec. 9	15 55	16 55	0.8	?	E.W. 0°39.
23	" 9	?	17 6.5	0.8	?	E.W. 0°39.
24	" 9	?	17 43.5	0.8	?	E.W. 0°39.
25	" 9	15 55	16 55.5	1.0	?	N.S. 0°37.
26	" 9	?	17 6.5	0.6	?	N.S. 0°37.
27	" 10	?	0 31.5	1.4	?	N.S. 0°37.
28	" 10	?	0 29	0.9	?	E.W. 0°39.

Register from Stonyhurst College Observatory,
Director, WALTER SIDGREAVES, S.J.

Ats. = Air tremors. s = clear, but too small for measurement. P₁, P₂, P₃, beginnings of 1st, 2nd, and 3rd Phases. No Duration entry = <3 minutes D. Hours G.M.T. 0 or 24 = Midnight.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
1909						
1	July 6	H. M. 16 55.5	H. M. 17 1.5	MM. 0.23.5	H. M. 0 23.5	Boom period, 15.0 secs. Imm. amp. = 0°50.
2	" 6	19 25.5	19 35	s	0 20	—
3	" 7	21 44	22 7.5	7.5	2 24	P ₁ , A, 1.1mm. P ₂ at 21h. 51.2m. India, North.
4	" 8	—	12 42	s	—	—
5	" 8	19 25.5	19 35.5	0.2	0 30	Film 12, 13 failed.
6	" 13	18 32.0	18 40.5	0.2	0 30	—
7	" 15	0 44.2	0 51.5	0.5	0 30	Greece.
8	" 18	—	8 42.0	s	—	—
9	" 21	4 1.0	4 53.2	0.1	1 0.0	—
10	" 22	23 48	—	s	0 4.0	—
11	" 30	11 4.5	11 55.0	7.0	4 36.0	P ₁ , A, 0.5mm. P ₂ at 11h. 15m. P ₃ at 11h. 41m! Max. uncertain at change of film. Mexico.

Register from Stonyhurst College Observatory—continued.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks.
12	July 31	H. M. 19 28.7	H. M. 20 15.2	MM. 2.0	H. M. 2 38.0	P ₁ s, P ₂ at 19h. 42m., P ₃ at 20h. 8.5m. Mexico.
13	Aug. 2	11 2.0	—	s	—	Boom period, 16.2 secs.
14	" 7	18 5.6	18 24.5	0.1	1 2	—
15	" 10	—	—	—	—	Hours 12 to 15.40 lost by smoky flame.
16	" 11	—	17 4.0	s	—	—
17	Aug. 13	—	4 3.0	—	—	—
18	" 14	6 53.7	7 24.0	0.65	2 0.0	P ₁ , s & sharp; P ₂ , P ₃ , uncertain. Japan.
19	" 14	and	7 38.5	0.6	—	—
20	" 16	7 10.5	7 48.5	2.7	2 47.0	P ₁ s, P ₂ at 7h. 21.5m. P ₃ at 7h. 39.5m. Boom period, 17.0 secs. Imm. = 0°47.
21	" 18	1 12.0	2 15.0	0.3	2 9.0	20d. to 21d. 21h., boom not free.
22	" 25	0 29.5	0 33.0	s	0 10.0	Italy!
23	" 30	0 58.0	1 17.7	0.1	0 57.5	Boom period, 18.6 secs. Imm. = 0°42.
24	" 30	13 21.0	13 42.2	0.5	1 41.0	—
25	" 31	12 12.5	12 21.5	0.1	1 30.0	Beginning and end uncertain on account of Ats. all p.m.
26	Sept. 8	17 19.5	17 45.0	0.6	2 50.0	P ₁ , A, 0.3mm.
27	" 9	0 29.0	0 36	0.5	1 30.0	Times approximate; shutter failing.
28	" 9	—	—	—	—	Boom not free; films 10-11, 11-12, 12-13.
29	" 16	19 16.5	20 31	0.2	2 21.5	—
30	" 19	—	21 2.4	s	—	—
31	" 19	—	21 13	s	—	—
32	" 19	—	21 23.7	s	—	—
33	" 21	19 20.2	20 3.0	0.1	1 7.8	—
34	" 21	23 13.3	—	s	0 10.7	—
35	" 22	14 53.5	15 29.2	0.6	2 40.0	P ₁ , A, s; P ₂ , 15h. 3.5m.; P ₃ ?
36	" 23	7 15	7 20.5	0.1	0 15.2	—
37	" 23	16 30.3	16 40.0	0.2	0 44.0	25th. Boom period raised to 19.2 secs. Imm. amp. = 0°39.
38	" 28	20 42.0	—	s	—	—
39	Oct. 29	18 25.7	18 31	0.2	0 12.0	—
40	" 2	18 26.5	18 28.0	0.2	0 10.0	—
41	" 2	18 41.5	18 47.8	0.6	0 16	—
42	" 2	21 39.5	21 45.5	0.4	0 16.5	—
43	" 4	14 44	14 54	0.1	1 8	—
44	" 17	22 20.7	22 58	0.2	0 27.5	P ₂ at 22h. 43m.
45	" 18	8 46.2	9 10.5	0.2	—	—
46	" 20	23 51	24 21	8.0	2 36	P ₂ at 24h. 4m.
47	" 27	?	2 49.5	0.2	?	Amidst Ats.
48	" 28	4 7.7	4 46.5	0.6	2 42	P ₂ at 4h. 20.6m. California.
49	" 29	7 21.5	7 27.3	0.1	0 30	—
50	" 29	17 47	17 53.2	0.4	0 29	—
51	" 30	10 38	11 30.5	0.2	2 17	P ₂ at 10h. 46m.
52	" 31	10 39	11 18.7	2.6	3 21	P ₂ at 10h. 46m.
53	Nov. 1	6 36.0	6 51.0	0.3	1 30.0	P ₂ at 6h. 43m.
54	" 1	9 37.5	6 53	0.3	—	Bad uncertain.
55	" 5	—	6 52	—	—	—
56	" 5	—	15 23	—	—	—
57	" 7	—	5 16	—	—	—
58	" 8	21 8.2	21 28	0.6	1 26	P ₂ at 21h. 18m.
59	" 10	6 26.2	7 3.2	5.1	3 30	P ₁ very sharp at 6h. 37.5m. Very irregular large waves.
60	" 10	—	10 54.5	—	—	—
61	" 10	—	—	—	—	—
62	" 12	4 38	5 8.2	0.2	1 43	—
64	" 12	20 4.5	20 27.2	0.2	1 8	—
65	" 21	8 0	8 34	3.6	2 22	P ₂ at 8h. 24m. P ₃ at 8h. 33m.
66	" 22	—	9 17	—	—	—
67	" 28	2 10.5	2 39	0.2	1 5.5	—
68	Dec. 8	9 40.5	10 34.0	0.4	2 0.0	—
69	" 9	15 56.2	17 8.0	3.7	3 16	P ₂ at 16h. 32.5m.
70	" 9	22 4	23 9	0.3	?	Overlapping the next.
71	" 9	23 48	24 30	1.3	3 3	Max. uncertain in irregular waves. Guam.
72	" 10	—	11 21	—	—	—
73	" 11	—	20 52	—	—	—
74	" 13	—	0 30	—	—	—

Register from Stonyhurst College Observatory—continued.

No.	Date	Com-mence-ment		Max.	Max. Ampli-tude		Dura-tion	Remarks
		H. M.	M. M.		H. M.	M. M.		
75	Dec. 21	14 3	14 29.5	1.0	1.0	1 56	Very irregular.	
			15 7.5	1.0	1.0			
			15 23	1.0	1.0			
76	" 23	22 5.1	23 40.5	0.2	0.2	2 37		
77	" 23	—	19 24	—	—	—		
78	" 28	2 32.5	2 42	<0.1	0.1	1 22	Switzerland, 2h. 29m.	
79	" 29	5 3	—	—	—	—		
80	" 29	19 13	—	—	—	—		
81	" 30	9 9.5	—	—	—	—		
82	" 31	21 56	—	—	—	—		

Period 18 secs. Imm. = 0"44.
Air tremors frequent on October 5, 7, 9 to 15 inclusive, 19, 20 to 24.
Air tremors frequent on November 9, 10, 12, 27, 29, 30.

Register from Hill Top, West Bromwich.
Observer, J. J. SHAW.

A=N-S Component. B=E-W Component.

No.	Date	Com-mence-ment		Max.	Max. Ampli-tude		Dura-tion	Remarks
		H. M.	M. M.		H. M.	M. M.		
1909								
39	July 3	19 58	20 4	0.5	0.5	0 20	B. Only a trace on A.	
40	" 6	16 56.5	17 2.25	2.0	2.0	—	A.	
		17 0	17 1.75	0.5	0.5	—	B.	
41	" 6	19 28.5	19 35.5	0.2	0.2	—	B.	
42	" 7	21 46.7	22 4.5	47.75	2 30	—	A.	
		21 46.7	22 14	32.75	2 30	—	B.	
43	" 15	0 42	0 47	4.25	0 28	—	A.	
		0 42	0 48	1.5	0 19	—	B.	
44	" 30	10 45	11 45	7.5	10.0	—	Times very approximate, as both needles & motion-work out of order July 21-30.	
45	" 31	19 31	20 9	3.0	3.0	—	—	
		19 31	20 9	2.0	1 9	—	—	
46	Aug. 14	6 43.5	7 29	5.5	—	—	Occurred in Japan at 15h.31m. = 6h.31m. G.M.T Propagation of Pts, 480 miles per minute.	
		6 43.5	7 29	3.0	1 15	—	—	
47	" 16	7 32	7 42	2.5	1 42	—	A.	
		—	7 42	1.25	—	—	B.	
48	" 25	0 27	0 31	0.5	0 15	—	Sienna, Italy.	
		0 28.5	0 30.5	0.2	0 14	—	—	
		—	0 32	—	—	—	—	
49	" 31	12 0	13 0	—	—	—	Long swelling of the trace.	
49	Sept. 8	17 1.4	17 45	1.25	1 40	—	—	
		17 1.0	17 10.5	1.5	1 40	—	—	
		—	17 42.5	0.4	—	—	—	
50	" 16	19 54	20 33.5	0.6	1 6	—	—	
		19 50.5	20 35.8	0.15	1 10	—	—	
51	" 22	14 37.5	15 22	—	—	—	A. Small disturbance.	
		14 54	15 32	—	—	—	B.	
52	Oct. 2	18 27.5	18 47.5	0.1	—	—	A.	
		18 27.7	18 52.7	0.3	—	—	B.	
53	" 8	9 53	10 7.5	2.25	0 37	—	A.	
		9 53	10 7.5	2.5	0 37	—	B.	
54	" 20	23 41.8	0 19.7	55.75	—	—	A.	
		23 41.8	0 23.3	23.25	1 40	—	B.	
55	" 29	—	16 19	—	—	—	A. Faulty record.	
56	" 29	—	17 54	3.5	—	—	A.	
57	" 30	10 48	11 13	—	—	—	B.	
58	" 31	10 34.8	11 10.5	2.5	2 6	—	A.	
		10 34.8	11 15	1.0	1 38	—	B.	

Register from Hill Top, West Bromwich—continued.

No.	Date	Com-mence-ment		Max.	Max. Ampli-tude		Dura-tion	Remarks
		H. M.	M. M.		H. M.	M. M.		
59	Nov. 1	—	6 53	1.25	1.25	—	A.	
		6 36	7 1	0.3	1 29	—	B.	
60	" 10	6 25.9	7 2	8.0	2 35	—	A.	
		—	7 13	9.5	—	—	—	
		6 25.9	6 43	7.25	—	—	B.	
		—	7 13	7.75	—	—	—	
61	" 21	7 57.9	8 32.5	5.25	1 17	—	A.	
		7 58.3	8 33	8.5	1 52	—	B.	
62	Dec. 9	—	17 14	10.0	—	—	A.	
		—	17 35	9.0	—	—	—	
63	" 9-10	15 52.3	17 16	2.0	2 38	—	B.	
		—	0 33	11.0	about	—	A.	
		23 39	0 45	10.5	2 30	—	B.	

Sensibility:—A, Imm.=0"094 after Nov. 20th.
B, Imm.=0"15.

Period, A and B, 16 seconds.

Register from Frensham Hall, Haslemere, Surrey, England.
Observer, SAML. KEVAN.

No.	Date	Com-mence-ment		Max.	Max. Ampli-tude		Dura-tion	Remarks
		H. M.	M. M.		H. M.	M. M.		
1909								
322	July 5	—	19 17.0	0.3	0 23	—	—	
	" 6	6 3	6 7	0.2	0 10	—	—	
323	" 7	21 47.9	22 0.0	9.0	3 0	—	Bokhara.	
		—	22 15.5	10.0	—	—	—	
	" 8	—	4 17.0	0.1	0 10	—	—	
	" 8	—	12 33.0	0.3	0 6	—	—	
	" 9	—	2 4.0	0.2	0 3	—	—	
	" 11	—	5 3.0	0.1	0 9	—	—	
324	" 15	0 45.0	0 45.3	0.8	0 29	—	—	
325	" 15	19 49.6	19 54.0	0.5	0 10	—	—	
	" 16	21 21.0	21 28.0	0.3	0 13	—	—	
	" 19	0 1	0 7.0	0.1	0 6	—	—	
326	" 21	4 19.0	4 24.6	0.3	0 16	—	—	
	" 22	23 25.0	23 29.0	0.2	0 11	—	—	
	" 23	—	21 23.5	0.2	0 7	—	—	
327	" 25	—	4 56.0	0.3	0 4	—	—	
	" 26	11 37.0	11 23.5	0.1	0 21	—	—	
328	" 30	10 53.15	11 45.0	7.0	6 44	—	Mexico.	
	" 31	18 9.0	20 10.2	3.0	3 51	—	—	
329	Aug. 2	—	11 55.0	0.2	0 3	—	—	
	" 4	17 1.0	17 6.0	0.3	0 7	—	—	
330	" 5	—	15 3.4	0.4	0 8	—	—	
	" 19	—	15 10.0	0.2	0 2	—	—	
331	" 12	—	7 59.0	0.2	0 11	—	—	
	" 13	—	20 13.0	0.2	0 6	—	—	
332	" 14	12 52.0	12 55.0	0.2	0 6	—	—	
	" 14	6 44.0	7 18.4	1.0	1 34	—	Japan.	
	" 16	7 25.8	7 42.5	4.0	1 33	—	—	
	" 17	2 17.0	3 20.0	0.5	7 36	—	—	
335	" 26	—	3 20.6	0.1	0 12	—	—	
	" 27	—	21 10.0	0.1	0 4	—	—	
	" 28	—	4 45.0	0.1	0 22	—	—	
	" 28	5 7.0	5 16.0	0.2	—	—	—	
	" 29	—	11 30.5	0.2	0 31	—	—	
336	Sept. 4	—	7 53.5	0.2	0 12	—	—	
337	" 6	—	11 25.0	0.2	0 7	—	—	
	" 7	15 50.0	15 55.2	0.1	0 5	—	—	

Register from Frensham Hall, Haslemere, Surrey, England—continued.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
338	Sept. 8	H. M. 17 10.0	H. M. 17 42.6	MM. 1.0	H. M. 1 33	—
	" 9	0 13.0	0 30.0	0.2	0 22	—
	" 11	5 27.0	5 30.0	0.2	0 8	—
339	" 11	11 48.2	11 54.0	0.5	0 19	—
	" 11	—	12 4.0	0.1	0 6	—
	" 11	19 50.8	20 21.0	1.0	1 4	—
340	" 18	—	7 52.2	0.3	0 8	—
	" 21	—	8 55.0	0.1	0 7	—
341	" 21	19 12.0	20 1.0	4.0	1 28	—
	" 22	14 51.0	15 20.4	4.0	1 54	—
	" 23	—	7 39.0	0.1	0 6	—
	" 23	—	15 44.0	0.5	0 7	—
	" 23	—	16 36.4	0.4	0 8	—
345	Oct. 8	—	10 7.6	1.4	0 25	—
	" 9	—	4 3.0	0.7	?	—
	" 10	—	6 3.0	0.1	0 2	—
346	" 13	12 53.0	12 56.0	0.1	0 3	—
347	" 18	9 7.0	9 10.0	0.1	0 15	—
	" 20-21	23 53.0	0 16.0	5.0	1 40	—
348	" 21	—	11 21.0	0.1	0 4	Many Ats.
349	" 27	—	3 16.0	0.1	0 5	—
	" 28	4 37.7	4 40.0	0.7	0 25	—
	" 29	7 26.2	7 34.0	0.6	0 37	—
350	" 30	10 31.0	10 36.0	0.5	0 27	—
	" 31	10 43.0	11 0.0	1.5	1 58	Beginning and ending lost in tremors.
351	Nov. 1	6 53.0	6 50.0	0.4	0 29	—
352	" 5	7 49.0	7 52.0	0.1	0 9	—
	" 7	5 10.0	5 17.0	0.3	0 17	—
	" 8	21 23.0	21 29.0	0.3	0 14	—
	" 10	6 27.0	7 5.7	5.5	2 29	Japan.
	" 10	11 0.0	11 8.0	0.2	0 36	—
353	" 12	20 14.0	20 20.0	0.2	0 16	—
354	" 18	—	8 3.0	0.1	0 6	—
355	" 20	13 45.0	13 50.0	0.1	0 8	—
	" 21	8 20.0	8 31.7	1.4	0 43	—
	" 22	—	9 35.0	0.2	0 8	—
356	" 27	—	4 8.0	0.3	0 17	—
357	" 28	2 23.0	2 26.0	0.2	0 17	—
	Dec. 1	8 10.0	8 13.0	0.1	0 16	—
359	" 9	15 42.0	16 44.3	1.5	2 22	—
	" 9-10	23 47.5	0 30.2	2.0	2 12	—
360	" 12	18 54.0	18 57.0	0.2	0 8	—
	" 14	—	0 23.0	0.1	0 9	Boom tilted to W. through frost.
361	" 18	7 29.0	7 32.0	0.1	0 19	—
	" 19	—	1 48.0	0.2	0 23	—
362	" 22	—	11 45.0	0.2	0 11	—
363	" 23	—	19 36.3	0.1	0 5	—
	" 23	23 27.0	23 33.0	0.2	0 13	—

Clock became detached from axle on December 27, 28, and 29.
Boom period = 20 secs.

Register from the Observatorio de Marina de San Fernando, Spain.
Director, Commodore T. DE AZCÁRATE.

Pendulum A records N-S motion (new model).
Pendulum B records E-W motion (old model).

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
1909						
1037	July 7	H. M. 21 48.1	H. M. 22 3.7	MM. 1.9	H. M. 0 59.6	B.
1038	" 30	11 9.0	11 34.0	0.85	1 7.3	B. Mexico.
1039	" 31	20 1.2	—	—	0 9.8	B. Small movement.
1040	Aug. 6	1 24.4	—	—	6 42.3	B. Tremors.
1041	Sept. 22	15 6.2	—	0.5	1 8.0	A. Small movement.
1043	Oct. 20	6 16.8	—	—	2 32.7	A. Tremors.
1044	" 21	0 0.3	0 27.3	4.0	1 38.5	A.
1045	" 27	10 43.5	11 16.5	0.5	8 56.4	A.
1046	" 28	4 18.8	4 36.5	2.5	0 38.2	A.
1048	" 29	16 17.5	—	—	0 15.0	A. Small movement.
1049	" 29	17 55.2	—	0.75	0 21.5	A. Small movement.
1051	Nov. 3	0 56.7	—	—	0 38.0	A. Tremors.
1053	" 3	7 38.2	7 47.7	0.75	0 37.5	A.
1057	" 7	0 10.0	—	—	0 53.0	A. Tremors.
1060	" 10	6 26.8	6 43.1	3.2	2 23.7	A. P ₂ = 6h. 33.6m.
			6 51.6	4.0		
			7 12.1	4.2		
			7 17.0	2.75		
			7 20.1	3.65		
			7 25.6	2.5		
1061	" 12	4 36.0	—	0.75	0 42.0	A.
1062	" 12	20 10.5	—	1.0	0 31.0	A.
1065	" 15	18 20.3	18 37.9	2.5	0 27.8	A.
1066	" 19	0 7.1	—	—	0 8.0	A. Small movement.
1067	" 19	6 36.6	—	—	0 13.0	A. Tremors.
1070	" 21	8 19.7	8 40.3	1.1	1 40.0	A. P ₂ = 8h. 27.7m.
			8 44.2	1.3		
1071	" 21	8 27.6	8 40.4	0.45	0 38.5	B.
			8 44.6	0.65		
1083	Dec. 3	4 27.4	—	—	0 47.5	A. Tremors.
1084	" 4	7 56.8	7 57.3	0.9	0 10.8	A.
1086	" 9	16 5.1	17 5.1	3.1	1 48.0	A.
			17 11.1	3.8		
			17 29.6	3.0		
			17 28.8	0.8		
			17 36.3	1.39		
1087	" 9	23 24.7	—	—	—	B. A stopped.
	" 10	—	0 44.0	1.0	1 45.5	
1089	" 11	12 30.8	—	—	0 6.5	A. Small movement.
1092	" 19	18 18.0	—	—	0 12.0	A. " "
1093	" 22	12 22.9	14 36.6	1.0	3 57.7	A.
	" 22	12 15.7	14 39.5	0.4	3 8.8	B.
1094	" 23	13 20.7	—	—	1 8.0	A. Tremors.
1095	" 23	22 53.5	—	—	1 36.5	A.
1096	" 24	21 58.5	—	—	0 24.0	A.
1101	" 28	20 35.0	—	—	14 18.9	A.
1102	" 29	14 0.7	—	—	0 34.3	A.

Pendulum A: Period = 20secs.; 1mm. = 0°27.
Pendulum B: Period, July 1 to Sept. 21 = 18s.; 1mm. = 0°40.
Period, Sept. 21 to Dec. 31 = 16s.; 1mm. = 0°50.

Register from Ponta Delgada, St. Miguel, Azores.
Director, Lieutenant-Colonel F. A. CHAVES.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion.	Remarks
1909						
343	July 6	H. M. 16 58.2	H. M. —	MM. —	H. M. 0 09.1	I. of Mercalli's scale. Thickening of line.
"	" 7	21 47.7	22 00.1	4.0	1 08.7	I. of Mercalli's scale.
346	" 30	11 03.8	11 27.6	2.0	1 17.1	"
"	" 31	19 38.6	—	—	0 30.4	I. of Mercalli's scale. Thickening of line.
352	Sept. 8	17 12.2	17 12.2	1.2	0 16.9	"
355	Oct. 2	18 45.0	—	—	0 01.9	I. of Mercalli's scale. Thickening of line.
358	" 10	19 30.3	19 30.3	2.6	0 02.5	IV. of Mercalli's scale.
359	" 21	0 06.0	—	—	0 51.4	I. of Mercalli's scale. Thickening of line.
"	" 25	5 10.5	—	—	0 10.7	"
"	" 31	10 30.0	—	—	0 28.0	"
361	Nov. 1	6 34.8	6 38.4	1.2	0 31.0	I. of Mercalli's scale.
"	" 10	6 32.2	—	—	0 57.2	I. of Mercalli's scale. Thickening of line.
"	" 10	10 57.0	—	—	0 08.8	"
363	" 27	3 58.2	3 59.7	1.5	0 17.6	I. of Mercalli's scale.
365	Dec. 8	11 12.0	—	—	4 54.0	I. of Mercalli's scale. Thickening of line.
"	" 9-10	23 52.4	—	—	0 50.1	"

Register lost from: 4h. 45.0m. on November 18 to 15h. 39.0m. on November 19.
0h. 15.0m. to 3h. 39.0m. and 6h. 54m. to 9h. 47.0m. on November 24.
12h. 30.0m. to 15h. 53.0m. on November 28.
16h. 0.6m. on December 8 to 17h. 22m. on December 9.
7h. 55.0m. to 8h. 30.0m., 9h. 20.0m. to 9h. 30.0m., 10h. 40.0m. to 11h. 45.0m., 13h. 00.0m. to 14h. 40.0m., and 15h. 30.0m. to 16h. 14.0m. on December 10.

Mean scale value: 1mm. = 0".48.

Register from Toronto, Ont., Canada.
Director, R. F. STUPART, F.R.S.C.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks	
1909							
861	July 7	H. M. 11 2.0	H. M. —	MM. 0.1	H. M. 0 13.5	—	
862	" 7	21 57.0	22 3.0	1.1	1 31.5	Small and prolonged; well-defined.	
865	" 30	10 58.2	11 23.0	5.0	2 41.8	Mexico. P ₂ , 11h.4.0m., P ₃ , 11h.12.5m.	
864	" 30	14 7.0	—	—	0.1	0 15.0	Marked thickening.
865	" 31	19 30.0	19 41.5	2.1	1 46.0	Mexico.	
866	Aug. 13	21 0.1	21 36.0	0.25	0 51.0	—	
867	" 16	7 14.1	7 20.2	1.6	1 19.7	Small and extended.	
868	" 18	1 40.3	1 57.4	0.15	0 31.5	—	
869	" 30	13 13.0	13 22.0	0.25	0 19.0	—	
870	" 31	12 10.5	12 15.6	1.0	0 33.5	—	
871	Sept. 8	17 7.5	17 19.7	0.95	1 21.0	—	
872	Oct. 3	21 2.0	—	—	0 1.0	—	
873	" 17	1 0.0?	—	—	—	Doubtful.	
874	" 18	8 40.4	—	—	0 4.0	—	
875	" 21	0 26.4	0 50.4	—	0 7.0	—	
876	" 29	7 6.4	—	—	0 15.0	Brief thickening. Eureka, California.	
877	" 31	10 5.2	—	—	0 10.0	—	

Register from Toronto, Ont., Canada—continued.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
878	Oct. 31	H. M. 10 35.1	H. M. 10 43.0	MM. 1.6	H. M. 1 20.9	—
879	Nov. 10	6 37.6	—	—	0 4.1	1 38.9
880	" 12	4 33.2	—	—	0.1	0 14.8
881	" 21	8 39.4	—	—	0.07	0 17.5
882	" 22	20 9.2	—	—	0.10	0 29.0
883	Dec. 9	16 1.5	—	—	0.8	2 00
884	" 9	22 ?	—	—	?	?
885	" 9	23 55.0	—	—	0.15	1 5.0

From September 14 to 20, instrument was dismantled preparatory to moving it into the basement of the new Observatory.
Period up to September 14: 14.9 secs. Imm. = 0".70.
Afterwards, period: 14.8 secs. Imm. = 0".64.
Nature of subsoil, sand and blue clay.

Register from Victoria, B.C., Canada.
Superintendent, E. BAYNES REID.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
1909						
886	July 7	H. M. 21 53.0	H. M. 22 25.3	MM. 1.5	H. M. 1 29.0	—
887	" 21	4 16.0	—	—	0.2	0 8.5
888	" 30	10 59.4	11 13.3	—	>20.0	2 31.6
"	" 30	14 4.8	11 27.7	1.8	0 13.4	Double max. across the paper. Mexican Earthquake.
889	" 31	19 31.3	19 43.4	4.5	1 14.8	Fairly large. Mexico.
891	Aug. 1	21 34.1	21 48.1	0.2	0 8.8	—
892	" 3	10 45.1	—	—	0.95	0 5.1
893	" 16	7 26.0	7 41.8	0.80	1 1.6	Small and extended.
894	" 18	1 3.7	—	—	0.05	0 48.2
895	" 31	11 30.2	12 4.0	0.85	1 0.8	Slight thickening at intervals. Panama.
896	Sept. 8	16 55.6	17 3.2	1.60	1 19.9	—
897	" 19	20 28.8	—	—	0.05	0 10.2
898	" 22	15 1.6	—	—	0.10	0 27.2
899	Oct. 2	7 54.8	—	—	0.10	0 5.0
900	" 3	20 57.8	—	—	0.06	0 4.5
901	" 15	9 54.0	—	—	0.08	0 8.6
902	" 17	1 43.0	—	—	0.05	0 7.0
903	" 18	8 40.0	—	—	0.5	0 15.0
904	" 21	0 29.0	0 52.0	0.9	1 1.0	Well defined.
905	" 29	6 51.1	—	—	0.9	0 13.9
906	" 31	10 39.5	—	—	3.1	1 19.0
907	Nov. 10	6 25.2	6 34.6	1.0	1 48.2	Small and decided.
908	" 21	8 27.4	—	—	0.05	0 12.0
909	" 22	19 48.5	—	—	0.05	0 49.0
910	Dec. 4	1 34.9	—	—	0.15	0 11.0
911	" 9	15 47.7	—	—	0.6	1 49.0
912	" 9	22 2.2	—	—	0.05	0 24.5
913	" 9	23 50.7	—	—	0.1	0 53.3

Period, 15 seconds. Imm. = 0".76

Register from St. Clair Experiment Station, Trinidad, B.W.I.
Director, F. EVANS.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
1909						
443	June 7	H. M. 21 19	H. M. 21 31	MM. 4.0	H. M. 0 37	Followed by slight tremors for twenty minutes.
444	" 8	None	16 9	1.0	0 4	Followed by slight tremors for about ten minutes.

Register from the University, Valletta, Malta.
Observer, C. LEACH.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
1909						
235	July 1	H. M. —	H. M. 6 38.7	MM. —	H. M. —	—
236	" 3	—	19 55	0.5	—	—
237	" 6	—	9 08	—	—	—
			9 18.5	—	—	—
			11 15.5	—	—	—
			19 21	—	—	—
238	" 7	21 47.7	21 57.5	4.0	3 30.8	Turkestan.
239	" 8	—	8 20	—	—	—
			21 58	—	—	—
240	" 9	—	3 10.5	—	—	—
			7 37.5	0.5	0 30.5	—
241	" 13	13 37.7	13 51.5	0.5	0 43.5	—
242	" 15	0 37.5	0 42	1.0	0 18.5	—
243	" 16	—	17 10.7	—	—	—
244	" 18	—	8 52.2	—	—	—
245	" 22	—	—	—	—	Shutter over slit.
246	" 25	—	8 50	—	—	—
247	" 26	11 00	11 23.5	1.0	0 43	—
248	" 27	—	19 8	—	—	—
249	" 30	11 10.5	11 55	3.5	4 11.5	Mexico.
250	" 31	19 41.5	20 22.2	2.5	1 20	—
251	" 30	11 10.5	11 55	3.5	4 11.5	5700 miles.
252	" 31	19 41.5	20 22.2	2.5	1 20.0	—
253	Aug. 4	—	11 59	—	—	15h. 27m. to 17h. 13m. and 18h. 25m. to 2h. 2m. of the 5th. Tremors.
254	" 5	4 55	5 17	0.5	—	—
			5 44	—	—	—
			15 18	—	—	—
255	" 6	—	2 27.5	—	—	—
			18 7.5	—	—	—
256	" 7	17 30	18 25	0.5	1 19	—
			2 43.3	—	—	—
257	" 10	—	6 17.5	—	—	—
258	" 11	—	3 9.5	—	—	—
259	" 14	7 7.5	7 24	0.7	1 8	—
260	" 16	7 11	7 50	3.0	3 17	Japan.
261	" 18	1 7	1 24.5	0.7	1 42	—
			2 15	—	—	—
			2 32	—	—	—
			6 17	—	—	—
262	" 26	—	—	—	—	—
263	Sept. 7	6 25	7 15	0.5	2 36	—
264	" 8	17 14.5	18 4	—	2 25	—
			19 17	—	—	—
265	" 15	—	15 7.5	—	—	—

Register from the University, Valletta, Malta—continued.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
266	Sept. 16	H. M. 6 49	H. M. 7 52	MM. 0.5	H. M. ?	—
			8 20	—	—	—
			19 44	0.5	1 29.5	—
267	" 22	15 6.5	15 23	9.5	—	—
			15 35	—	—	—
268	" 28	—	8 30	—	—	—
269	Oct. 20	23 51.5	0 13.5	3.0	2 24.5	Very good record.
270	" 23	4 8.5	4 44.5	9.7	1 23.5	—
271	" 29	17 45.2	17 51	1.0	0 17.8	—
272	" 31	10 51	11 24	1.5	2 26	Distinct.
			11 32	—	—	—
273	Nov. 8	20 55	21 30.5	1.0	1 4	—
274	" 10	6 56.5	7 40	5.0	?	—
275	" 12	18 50	20 15	2.0	3 39	—
276	" 16	—	7 40	—	—	—
277	" 27	4 1	4 17	1.0	0 23	—
278	" 10	6 12.5	6 40	5.0	—	Distance about 5000 miles.
279	Dec. 1	17 35	?	—	—	—
280	" 3	?	9 17	0.5	—	—
281	" 8	10 30	10 58	2.0	—	—
282	" 9	—	—	—	—	13 to 4 a.m. on the 10th, slit closed.
283	" 12	3 41	4 10	1.5	0 50	—
284	" 20	6 32	?	0.5	4 9.5	—
285	" 22	10 32.5	11 2	0.5	0 30	—
			12 47.5	1.0	1 39	—
286	" 23	—	23 5	—	—	—
			23 37.5	—	—	—
287	" 27	8 16	8 25	3.0	1 32	—
288	" 29	20 26	20 33	0.5	—	—

Period, 21 secs. 1° = 6mm.; 1mm. = 0°31.

Register from the Syrian Protestant College Observatory, Beirut, Syria.
Director, ALFRED H. JOY, M.A.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
1909						
414	June 27	H. M. 7 59.5	H. M. 8 37	MM. 0.5	H. M. 0 52.5	—
415	July 7	22 19	—	4.0	1 40	Light poor.
416	" 15	0 43	0 45.5	—	0 18.5	Thickening.
417	" 26	11 3.5	11 10	1.0	0 22	—
418	" 31	19 37	19 48	0.3	0 16	—
419	" 31	20 20.5	20 37	0.4	1 12.5	—
420	Aug. 16	7 56	8 8.5	0.5	0 46	—
421	Sept. 5	9 55.5	9 57	0.6	0 9	—
422	" 7	15 41	15 50.5	0.3	0 18.5	—
423	" 8	17 14	—	1.0	1 9	Interrupted by cleaning lamp.
424	" 8	19 10	19 20	—	0 21	Thickening.
425	" 16	19 30.5	19 56.5	0.3	0 12.5	—
426	Oct. 8	10 10	10 12.5	0.3	0 5	—
427	" 20	23 48.5	24 1	6.1	1 36	—
428	" 28	4 33	4 42.5	0.8	0 25	—
429	" 29	16 6	16 8	1.2	0 19	—
430	" 29	17 40	17 42	2.0	0 19	—
431	" 30	10 39	10 44	0.3	0 21	—
432	" 31	10 49.5	11 39.5	0.4	1 37.5	—
433	Nov. 1	6 56	7 2	0.3	0 15	—
434	" 1	9 21.5	9 22.5	0.5	0 13.5	—
435	" 10	6 24	6 44	1.1	1 37	—
436	" 12	20 10	20 11.5	0.7	0 12	—
437	" 21	8 20	8 26	0.3	0 26	—
438	Dec. 9	16 11	17 4.5	0.7	1 40	—
439	" 9	22 0	22 12	0.3	0 15.5	—
440	" 9	22 35.5	22 52.5	0.3	0 35.5	—
441	" 9	23 46	24 9	0.4	1 24	—

Period, 15 seconds. 1 mm. = 0°33.

Register from Helwan Observatory, Cairo, Egypt.
Superintendent, B. F. E. KEELING.

A is mounted North and South. B is mounted East and West

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
1909						
720b	July 1	H. M. 6 59 6 49	H. M. — —	MM. 0 1 0 1	H. M. 0 5 0 13	A. B.
720c	" 3	6 53 6 52	— —	0 1 0 1	0 14 0 11	B. A.
720d	" 3	20 06 20 07	— —	0 2 0 2	0 9 0 8	A. B.
720e	" 6	6 01 6 01	— —	0 1 0 1	0 5 0 13	A. Doubtful. B.
720f	" 6	6 58 6 57	— —	0 1 0 1	0 3 0 08	A. Doubtful. B.
721	" 6	19 20.5 19 18.0	19 29 19 30	0 2 0 3	0 33 0 32	A. B.
721a	" 7	6 11 6 10	— —	0 1 0 1	0 3 0 18	A. B.
722	" 7	21 41.1 21 43.4	21 49.6 22 04	5.5 8.0	3 16 3 25	A. Two Maxima. B. " "
722a	" 11	6 50 6 57	— —	0 1 0 1	0 50 0 31	A. Doubtful. B.
723	" 13	13 28 13 30	13 39 —	0 1 0 2	0 49 0 35	A. B.
724	" 15	0 41.2 0 40.1	0 53 0 52.1	0.4 0.8	0 57 0 44	A. B.
725	" 17	6 52 6 52	— —	0 1 0 1	0 11 0 12	A. B.
726	" 18	20 30 20 31	— —	0 2 0 2	0 20 0 15	A. B.
726a	" 20	0 57 0 53	— —	0 1 0 1	0 19 0 17	A. B.
726b	" 20	17 07 17 07	— —	0 1 0 1	0 6 0 6	A. B.
726c	" 22	23 35 23 29	— —	0 2 0 1	0 8 0 11	A. B.
727	" 23	17 58 18 00	— —	0 2 0 2	0 20 0 15	A. B.
728	" 26	11 00 11 0.9	11 12.8 11 12.0	3.0 3.6	1 30 1 21	A. B.
729	" 30	11 06.9 11 07.5	12 07 12 04	0.8 0.8	3 58 0 58	A. B.
730	" 31	19 39 19 37	20 37 20 31	0.3 0.3	2 34 2 56	A. B.
730a	Aug. 2	10 37 10 38	10 54 —	0 2 0 2	0 22 0 31	A. B.
731	" 7	—	—	0 2	—	B only. End at 10h. 34m.
732	" 7	16 31 17 32	— 17 53	0 1 0 1	0 7 1 53	B only. A.
733	" 7	17 32 6 54.1	— 7 31.0	0 1 0 5	1 53 2 01	A. B.
734	" 14	6 53.7 7 25	7 26.2 8 03.5	0.5 0.3	2 01 —	B. End lost in changing lamp. A.
735	" 16	7 27 8 02	— —	0 2 0 2	— 2 02	A. A.
736	" 18	0 59 1 03	1 24.2 1 20.4	0 2 0 2	1 54 —	A. B.
737	" 30	1 15 3 31	— —	0 1 0 1	0 7 3 3	B only. A only.
738	Sept. 2	17 02 8 36	— —	0 1 0 1	0 5 0 28	B. A.
740	" 4	14 58 15 38	— —	0 1 —	0 5 0 07	B. A. Minute tremor.
741	" 6	15 39 15 39	15 59 —	0 4 —	0 58 0 13	A. B.
742	" 7	15 39 15 48	— —	0 4 —	0 58 0 48	A. A. Minute tremor.
743	" 7	17 05 18 5	— —	0 2 —	0 48 —	A. —
744	" 8	17 06 23 43	— —	0 4 0 1	0 38 1 02	B. A only.
746	" 8	23 43 13 00	— —	0 1 0 1	1 02 0 06	A only. A only.
747	" 9	—	—	—	—	—

Register from Helwan Observatory, Cairo, Egypt—continued.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
748	Sept. 10	H. M. 5 11.7 5 12.5	H. M. 5 17.1 —	MM. 0 9 1 5	H. M. 1 33 0 48	A. B.
749	" 11	11 11 0 04	— —	0 2 0 1	1 43 0 19	A only. A.
750	" 12	0 04 0 04	— —	0 1 0 1	0 06 0 06	B. B.
751	" 12	10 44 10 46	10 55.3 —	0 3 0 6	0 43 0 48	A. B.
752	" 12	19 02 19 13	— —	0 2 —	0 16 0 04	A. B. Minute tremor.
753	" 16	20 02 15 07	— —	0 2 0 2	0 08 1 31	B. A only.
754	" 22	6 41 6 49	— —	0 2 0 2	0 35 0 17	A. Minute tremor. B. " "
755	" 23	6 49 16 35	— —	0 2 0 1	0 17 1 08	B. " " A.
756	Oct. 3	13 54 17 52	— —	0 2 0 1	0 50 0 09	B only. B only.
757	" 3	10 07.3 10 07	— —	0 2 0 2	0 31 0 42	A. B.
759	" 8	10 07.3 4 16	— —	0 2 0 2	0 31 0 42	A. B.
760	" 9	6 59 2 37	— —	0 1 0 1	0 42 0 09	B. A only.
761	" 13	0 21 22 37	— —	0 1 —	0 42 0 39	B only. A. Slight thickening.
762	" 14	0 21 22 38	— —	0 1 —	0 09 0 15	A only. B. " "
763	" 17	3 28 13 26	— —	0 1 0 1	1 54 0 05	B only. A.
764	" 19	13 26 13 26	— —	0 1 0 1	0 03 0 03	B. B.
765	" 19	16 57 20-21 23 47.2	— 0 04.7	— 12.0	0 02 3 07	B. Slight thickening. A.
766	" 19	16 57 20-21 23 47.2	— 0 06.0	— 11.5	— —	— —
767	" 20-21	23 52 21 31	0 26.5 0 01.9	1.2 11.0	1 28 0 50	B. A only.
768	" 23	16 34 4 06	— 4 06	0 1 0 4	0 5 2 05	A only. A.
769	" 25	4 07 16 07	— —	0 1 0 4	1 12 0 45	B. A.
770	" 28	16 07.8 16 07	16 14.4 —	0 4 0 1	0 15 0 13	A. B.
771	" 29	17 41 17 39	17 48.5 —	0 5 0 1	0 59 0 32	A. B.
772	" 29	10 34 10 43	— —	0 2 —	1 47 0 17	A. B. Slight thickening.
773	" 30	10 40 10 51	— —	0 2 —	3 02 0 19	A. B. Slight thickening.
774	" 31	14 04 6 45	— —	— —	0 19 1 40	B. A.
775	Nov. 3	6 45 6 38	— —	— —	0 10 1 42	B. B.
776	" 3	6 38 8 18	— —	— —	1 40 0 17	A. A.
777	" 5	8 18 15 00	— —	— —	0 06 0 29	B. A.
778	" 5	15 00 15 09	15 03 —	0 2 —	0 29 0 08	A. B.
779	" 7	4 58 4 58	5 01 —	0 2 —	0 33 0 06	A. B.
780	" 10	6 25.0 6 21.4	6 52.8 6 26.7	1.0 0.6	3 20 2 06	A. B.
781	" 12	4 33.8 20 05.5	8 28 20 11.2	0.5 1.5	2 01 1 36	A. B lamp out. A.
782	" 12	20 04.3 20 04.3	20 12.2 —	0.9 —	0 47 0 20	B. A.
783	" 13	15 50 15 51	— —	0 1 —	0 20 0 11	A. B.
784	" 13	16 36 16 36	— —	— —	0 05 0 05	A. B.
785	" 13	21 11 11 45	— —	— —	0 09 0 06	A only. A only.
786	" 15	7 48 7 52	8 32.8 8 28	0.5 0.4	2 21 1 14	A. B.
787	" 21	10 36 13 45	— —	— —	0 06 1 58	A only. A only.
788	" 21	6 12 6 12	4 16.5 —	0.5 —	2 00 2 00	A only. A only.
789	" 27	0 18 10 39.5	— —	— —	5 01 0 32	A only. B only.
790	Dec. 8	15 55.5 15 56.6	— —	— —	3 04 2 56	A. B.
791	" 8	—	—	—	—	—
792	" 9	—	—	—	—	—
793	" 9	—	—	—	—	—

Register from Helwan Observatory, Cairo, Egypt—continued.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
794	Dec. 9	H. M. 22 03.7 23 03.2	H. M. 24 07.0 23 56.7	MM. 0.6 0.4	H. M. 3 57 3 59	A. B.
795	" 14	10 59.2	—	0.1	0 07	A.
796	" 18	10 59.5 7 45.0 7 46.4	— — —	0.1 0.2 0.2	0 02 0 49 0 24	B. A. B.
797	" 22	10 29.6 19 39.0	— —	0.1 0.1	0 24 0 23	A. B.
798	" 22	11 33.5	—	0.1	0 19	A only.
799	" 22	13 09.0 13 15.4	— —	0.1 0.1	2 19 2 01	A. B.
800	" 23	13 54.5 13 54.2	— —	0.1 0.1	0 11 0 15	A. B.
801	" 23	22 47.0 23 04.2	— —	0.1 0.1	0 23 0 19	B. B.
802	" 27	7 37.0	—	0.1	0 05	B only.
803	" 28	12 07.8 12 07.0	12 12.8 12 11.7	0.2 0.2	0 30 0 33	A. B.
804	" 28	22 12.4	—	0.1	0 28	A only.

August 6th, 9h.30m., to August 7th, 9h.30m., instruments out of order.

September 29th, 22h., to September 30th, 9h., both A and B out of order.

Sei-mograph B was not working from October 21st, 10h.17m., to October 23rd, 12h.1m.

November 19th, 18h., to November 20th, 7h.30m., A lamp out. The sensitivity of Sei-mograph B was causing trouble throughout the month.

* Slight thickening of line.

Register from the Royal Observatory, Cape of Good Hope, South Africa—continued.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
629	Oct. 29	H. M. —	H. M. 18 22	MM. 0.1	H. M. 0 5	—
630	" 30	—	10 44	0.1	0 6	—
631	" 31	10 51	11 36	0.6	1 42	—
632	Nov. 1	6 36	6 51	0.4	0 21	—
633	" 1	9 50	—	0.1	0 17	—
634	" 3	—	7 5.5	0.1	0 4	—
635	" 5	9 29.7	9 29.7	0.5	0 7	Sudden disturbance.
636	" 8	20 58	—	0.1	0 16	—
637	" 10	6 34	7 30.5	0.7	2 25	—
638	" 12	4 36	4 37.2	0.3	1 6	—
639	" 12	20 8.2	20 10.2	1.0	0 20	—
640	" 21	8 36	8 43.6	0.3	0 34	—
641	" 24	—	8 14	0.1	0 5	—
642	" 27	—	4 12	0.1	0 6	—
643	" 28	2 13	—	0.1	0 11	—
644	" 29	3 54	3 57.5	0.2	0 7	—
645	" 29	16 40.5	16 43.5	0.3	0 6	—
646	Dec. 2	—	7 28	0.1	0 3	—
647	" 8	—	10 9	0.1	0 16	—
648	" 9	16 3.8	16 43.8	1.0	2 16	—
649	" 9-15	22 10.3	22 45.8	0.6	3 36	—
650	" 20	—	11 45.7	0.1	0 2	—
651	" 20	—	14 51.5	0.1	0 2	—

July 1mm. boom motion = 0^m.36. Boom period, 21 secs.
 August " = 0^m.45. " 19 secs.
 September " = 0^m.49. " 18 secs.
 October " = 0^m.39. " 20 secs.
 November " = 0^m.38. " 19 secs.

Register from the Royal Observatory, Cape of Good Hope, South Africa.
Director, S. S. HUGHES, M.A., F.R.S.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
1909						
603	July 6	H. M. —	H. M. 17 8.0	MM. 0.1	H. M. 0 6	—
604	" 7	21 51.7	22 0.9	4.3	2 1.8	—
605	" 15	—	1 15.5	0.3	0 20	—
606	" 26	—	11 32.2	0.1	—	—
607	" 30	11 12.0	12 5.0	1.5	3 37	—
608	" 31	20 5.7	20 37.0	0.5	1 33.8	—
609	Aug. 7	—	18 25.5	0.1	0 6	—
610	" 7	—	18 55.3	0.1	0 5	—
611	" 14	7 47.5	8 0.3	0.3	0 17	—
612	" 16	7 39.0	8 7.0	0.8	1 17	—
613	" 18	—	1 50.5	0.1	0 5	—
614	Sept. 5	9 38.0	9 40.0	0.4	0 14	—
615	" 8	—	18 31.5	0.2	0 20	—
616	" 11	5 43.0	5 50	0.3	0 15	—
617	" 13	16 51.5	—	0.1	0 3	—
618	" 16	7 33.2	7 33.2	0.5	0 5	Sudden disturbance. ? Seismic origin.
619	" 16	—	17 18.0	0.1	0 3	—
620	" 16	19 31.0	19 36.0	0.2	0 14	—
621	" 22	15 38	15 47.0	0.1	0 43	—
622	" 23	6 55	7 1.5	0.5	0 11	—
623	" 23	—	16 25	0.1	0 4	—
624	" 25	—	19 43	0.1	0 3	—
625	Oct. 12	—	10 9.5	0.1	0 7	—
626	" 15	—	8 36	0.2	0 1	—
627	" 21	0 2	0 36	1.5	1 31	—
628	" 28	3 54.5	4 7	0.5	1 0.5	—

Register from the Government Observatory, Bombay.
Director, N. A. F. MOOS.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
1909						
196	July 7	H. M. 21 41.9	H. M. 21 45.7	MM. 15.2	H. M. 1 51.5	—
222	" 23	20 27.2	20 40.2	0.2	0 31.6	—
227	" 23	10 58.6	11 4.3	1.1	3 36.6	—
241	" 31	—	12 25.1	0.9	—	Beginning mixed up in tremors.
243	" 31	—	12 8.0	0.3	—	Beginning and end mixed up in tremors.
245	" 31	20 35.0	20 51.6	0.2	1 3.0	—
248	Aug. 2	10 27.1	10 29.1	0.2	0 14.8	—
254	" 15	6 49.1	7 4.5	1.0	0 43.2	—
259	" 16	8 21.6	8 30.3	0.3	0 40.7	—
265	" 22	15 48.5	15 51.4	0.3	0 7.9	—
277	Sept. 8	17 12.9	17 48.5	0.6	1 1.2	—
288	" 16	19 4.3	19 13.1	0.2	0 15.9	—
336	Oct. 20-21	23 45.3	23 47.9	10.1	1 45.4	—
345	" 30	10 36.5	10 54.6	0.3	0 39.1	—
347	" 31	11 43.8	11 49.9	0.5	0 53.3	—
349	Nov. 7	6 22.7	6 42.3	1.8	1 26.2	—
357	" 21	8 2.4	8 2.4	0.8	0 25.8	—
372	Dec. 9	16 19.5	16 48.9	0.7	1 9.8	—
373	" 9	22 8.1	22 30.8	0.4	0 35.7	—
374	" 9-10	23 48.1	0 6.0	0.5	0 43.1	—
379	" 22	13 47.5	13 58.6	0.3	0 26.0	—

Between July 1st and July 20th, 1909, 1.6mm. of amplitude = 0^m.37; and between July 21st and December 31st, 1909, 1.6mm. of amplitude = 0^m.36.

Register from the Solar Physics Observatory, Kodaikānal, Madras.
Director, C. MICHE SMITH.

W.L. = Widening of Line.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
1909						
35	July 7	H. M. 21 43.3	H. M. 21 51.0	MM. 12.0	H. M. 1 54	---
36	" 26	10 39.2	11 04.4	1.6	1 06	L.W., 1lh. 3.3m.
37	" 30	11 07.6	12 40.2	1.5	2 47	Mexico City.
38	" 31	20 43.7	21 05.7	0.5	1 00	---
39	Aug. 1	10 31	---	---	0 24	W.L.
40	" 4	7 58.7	---	---	0 11	W.L.
41	" 14	6 44.6	7 14.1	1.1	1 20	Japan.
42	" 16	8 18.5	8 31.0	0.5	0 55	---
43	" 22	?	6 34.6	0.6	?	L.W., 6h. 33.1m.
44	" 22	15 48.5	15 54.1	---	0 28	W.L.
45	Sept. 3	11 33.0	---	---	0 08	W.L.
46	" 5	9 20.6	10 00.0	1.1	0 17	L.W., 9h. 26.4m.
47	" 6	8 36.1	8 42.3	---	0 22	W.L.
47a	" 7	15 36.2	15 44.0	0.4	0 31	---
48	" 8	17 02.3	---	---	0 44	W.L.
49	" 8	19 56.7	---	---	0 23	W.L.
50	" 11	5 18.7	---	---	0 23	W.L.
51	" 11	11 09.0	---	---	1 07	W.L.
52	" 16	19 09.2	19 10.0	0.5	0 28	---
53	" 16	19 57.7	20 24.4	0.4	0 41	---
54	" 21	19 09.0	---	---	0 42	W.L.
55	" 23	6 31.0	6 36.2	0.6	0 26	---
56	" 27	6 02.7	---	---	0 15	W.L.
57	Oct. 17	22 34.1	---	---	0 09	W.L.
58	" 20-21	23 44.9	23 52.7	1.5 +	1 36	Quetta.
59	" 23	10 05.4	---	---	0 08	W.L.
60	" 30	10 22.5	10 39.3	0.6	1 05	---
61	" 31	11 06.9	12 14.1	0.5	1 30	---
62	Nov. 10	6 22.3*	6 31.0	1.6	1 34	* Possibly 2nd P.Ts.
63	" 21	7 49.7	8 06.2	1.1	1 03	---
64	Dec. 9	15 46.9	16 45.4	0.7	1 58	L.W., 16h. 42.8m.
65	" 9	21 48.5	22 24.4	1.0	1 35	† Possibly these two run into each other.
66	" 9-10	23 39.2	23 52.8	1.1	1 45	---
67	" 29	19 35.1	---	---	0 24	W.L.

1mm. = 0".46.

Register from Alipore Observatory, Calcutta.
Director, C. W. PEAKE, ESQ.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
1909						
642	July 7	H. M. 21 43.2	H. M. 21 47.4	MM. 12.0	H. M. 1 49.3	Begins with P ₃
643	" 22	4 14.5	4 26.1	1.25	0 13.7	" " P ₁
644	" 23	7 4.2	?	?	0 8.1	" " P ₁
645	" 24	10 47.5	---	---	0 42.7	B.L.
646	" 26	10 57.5	---	---	0 36.1	B.L.
647	" 31	19 24.4	---	---	0 6.1	B.L.
648	" 31	20 5.6	20 38.8	1.00	1 27.1	B begins with P ₁ , P ₃ at 20h. 36.7m.
649	Aug. 2	9 34.7	10 22.0	1.30	1 2.1	Begins with P ₁
650	" 9	4 29.0	4 30.6	0.50	0 6.1	" " P ₁
651	" 11	11 53.1	---	---	0 42.7	B.L.
652	" 12	11 41.2	---	---	0 10.2	B.L.
653	" 14	6 30.6	6 59.1	2.00	1 5.1	Begins with P ₁ , P ₃ at 6h. 49.4m.
654	" 15	10 28.3	10 32.9	0.75	0 11.7	Begins with P ₁

Register from Alipore Observatory, Calcutta—continued.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
655	Aug. 16	H. M. 8 13.8	H. M. 8 29.6	MM. 1.25	H. M. 0 54.4	Begins with P ₁
656	" 22	15 48.8	15 50.9	0.50	0 19.2	" " P ₁
657	" "	17 54.9	---	---	0 7.7	B.L.
658	" 28	7 17.6	7 19.1	3.00	0 8.1	Begins with P ₁
659	" "	8 1.3	8 3.9	4.00	0 9.2	" " P ₁
660	Sept. 7	15 37.7	15 41.3	2.25	0 24.4	Begins with P ₁ , P ₃ at 15h. 39.8m.
661	" "	17 11.8	17 18.4	0.50	0 39.1	Begins with P ₁
662	" 11	11 1.4	11 21.7	0.50	0 42.8	" " P ₁
663	" 16	19 1.1	19 18.4	0.50	0 37.6	" " P ₁
664	" 16	19 53.9	20 9.7	0.50	0 34.1	" " P ₁
665	" 21	19 6.7	---	---	0 37.2	B.L.
666	" 23	6 42.8	6 44.8	0.75	0 6.6	Begins with P ₁
667	" 26	5 11.1	---	---	0 4.1	B.L.
668	" 27	7 42.0	7 40.1	2.00	0 15.2	Begins with P ₁
669	Oct. 20	23 46.2	23 34.8	9.50	2 14.7	Begins with P ₁ , P ₃ at 23h. 49.7m.
670	" 31	11 16.3	11 42.3	0.75	1 35.5	Begins with P ₁
671	Nov. 10	4 17.2	6 31.4	10.00	3 48.7	Begins with P ₁ , P ₃ at 6h. 20.7m.
672	" 20	13 5.8	---	---	0 17.3	B.L.
673	" 21	7 47.6	7 56.2	5.50	1 9.5	Begins with P ₁ , P ₃ at 7h. 55.2m.
674	Dec. 9	15 46.5	16 32.6	0.75	2 43.3	Begins with P ₁
675	" 9	21 41.1	---	---	1.9	Begins with P ₁ . Two edges. Ends in the morning air tremor.
676	" 11	9 39.3	9 41.3	0.50	0 16.7	Begins with P ₁
677	" 23	6 45.1	6 47.1	1.25	0 4.0	" " P ₁

B.L. = Broadening of Line.
Sensibility: 1mm. = 0".38 of ill.

Register from Colombo Observatory.
Superintendent, H. O. BARNARD.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
1909						
1	July 7	H. M. 21 45.0	H. M. 21 57.4	MM. 12.0	H. M. 1 5	---
2	" 26	11 1.5	11 5.5	0.9	0 15	---
3	" 30	11 33.9	12 47.7	1.1	2 0	---
4	Aug. 9	4 12.0	4 13.0	0.7	0 6	---
5	" 9	5 49.0	5 51.0	0.5	0 6	---
6	" 14	6 51.3	7 15.0	1.0	0 31	---
7	" 27	---	---	---	0.2	---
8	" 31	12 51.2	12 54.7	0.2	0 14	Continuous small but definite tremors.
9	Sept. 3	11 33.0	11 34.5	0.4	0 6	---
10	" 5	9 22.6	9 44.0	0.5	0 9	---
11	" 7	15 41.5	15 48.0	0.6	0 18.5	---
12	" 8	17 21.0	17 58.9	0.4	0 56	---
13	" 11	11 8.5	11 9.5	0.2	0 29	---
14	" 16	18 59.0	19 4.0	0.3	0 12	---
15	" 16	19 58.5	20 3.2	0.2	0 31	---
16	" 23	6 31.0	6 37.2	0.9	0 14	---
17	Oct. 10	5 27.0	8 28.2	0.5	---	Small thickenings all day.
18	" 14	8 33.1	8 37.5	0.2	0 9	---
19	" 15	11 48.5	11 59.5	0.4	0 15	---
20	" 16	7 59.2	8 19.5	0.6	1 2	---
21	" 16	11 1.5	11 2.5	0.2	0 4	---
22	" 16-17	17 32.0	---	---	0.2	Small continuous thickenings. Symmetrical.
23	" 20	23 47.0	23 52.0	7.0	2 0	---

Register from Colombo Observatory—continued.

No.	Date.	Com- mence- ment.	Max.	Max. Ampli- tude.	Dura- tion.	Remarks.
24	Oct. 29	H. M. 10 28.0	H. M. 10 40.9	M.M. 0.7	H. M. 0 55	—
25	" 31	11 7.4	12 3.1	0.3	1 25	—
26	Nov. 8	11 45.0	—	0.3	—	Small thickenings all night.
27	" 10	6 21.0	6 36.7	1.7	1 39	—
28	" 21	7 49.5	8 4.5	0.3	0 39.5	—
29	" 26	1 51.0	—	0.3	0 25	Also small (air?) tremors before and after.
30	Dec. 9	15 43.0	16 38.0	0.6	2 7	—
31	" 9	21 51.1	22 18.0	0.9	1 10	—
32	" 9-10	23 36.5	23 48.9	0.9	1 9	—
33	" 16	1 39.0	3 36.0	0.2	3 0	—

Value of 1mm. at end of boom = 0.55secs. arc.

Register from the Royal Magnetical and Meteorological Observatory, Batavia.
Director, DR. W. VAN BEMMELN; Acting-Director, DR. C. BRAAK.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
1909						
1	Jan. 1	H. M. 16 38.5	H. M. 16 39.9	M.M. 0.5	H. M. 0 5	—
2	" 2	16 24.3	16 25.4	0.5	0 3	Preanger, S.E. of Batavia.
3	" 7	13 21.0	13 33.1	0.2	0 2	Probably in Preanger.
4	" 10	2 48.3	2 48.5	9.5	0 5	Bantam, S.W. of Batavia.
5	" 12	14 31.3	14 36.3	0.6	0 12	Kolaka, S.E. Celebes.
6	" 15	16 42.0	16 49.4	1.3	0 29	Talau Islands, N.N.E. of Menado.
7	" 22	*12 39.7	12 50.4	2.5	0 44	P ₂ at 12h.47.0m. Laristan, S.W. Persia. * P ₁
8	" 23	* 3 8.2	3 11.4	0.5	1 5	Persia. * P ₂
9	" 26	11 22.9	11 29.6	0.5	0 17	Bulongan, N.E. Borneo.
10	" 27	11 57.2	—	0.2	0 4	S.W. Celebes.
11	" 29	0 53.7	0 59.9	0.5	0 32	—
12	" 29	13 3.6	13 9.5	0.3	0 8	—
13	" 31	2 11.5	2 13.9	0.5	0 9	S.E. Preanger.
14	Feb. 2	15 18.2	15 23.8	2.0	—	N.W. Celebes.
15	" 2	19 2.2	19 3.9	28.0	0 43	Lampoung, S. Sumatra.
16	" 3	6 52.4	6 53.2	0.5	0 4	Palembang, Sumatra.
17	" 9	12 12.4	12 16.2	0.3	—	—
18	" 15	1 6.1	1 8.3	1.3	0 15	—
19	" 15	9 49.1	9 49.2	0.4	0 26	Talau Islands, N.N.E. of Menado.
20	" 16	8 14.0	8 21.2	1.5	0 21	—
21	" 22	* 9 31.4	9 41.7	2.8	—	P ₂ at 9h.40.5m. Sivas, Asia Minor. * P ₁ .
22	" 21	4 41.7	4 46.2	0.5	0 24	P ₃ at 4h.44.7m.
23	Mar. 2	7 11.7	7 13.3	0.4	0 6	—
24	" 7	20 23.7	20 23.1	0.5	0 8	—
25	" 8	11 39.7	11 44.8	0.3	0 8	—
26	" 8	12 4.0	12 4.0	0.6	0 56	—
27	" 8	16 21.5	16 23.2	0.8	0 12	Tjilatjap, S.E. of Batavia.
28	" 9	20 7.6	± 20 12	0.1	0 7	—
29	" 10	8 56.7	8 58.7	0.4	0 5	Same origin as No. 26.
30	" 11	± 0 9.9	0 27.5	0.8	0 34	Commencement doubtful.
31	" 12	*23 34.2	23 55.2	2.0	1 5	Commence perhaps P ₂ ? Origin, S.E. of Japan. * P ₃
31	" 18	3 24.7	± 3 27.2	0.1	0 4	N.W. Celebes.

Register from the Royal Magnetical and Meteorological Observatory, Batavia—continued.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks.
32	Mar. 13	H. M. *14 38.2	H. M. 15 7.5	M.M. 2.4	H. M. 1 21	P ₂ at 14h.46.1m. Origin, S.E. of Japan. * P ₁
33	" 16	21 47.7	21 50.0	0.4	0 5	N.W. Celebes.
34	" 17	*22 56.7	23 2.7	—	—	P ₂ at 23h.0.5m.; P ₃ at 23h.1.4m. Central and North Celebes. * P ₁
		—	23 3.5	3.4	—	—
		—	23 4.9	—	1 28	—
35	" 18	5 42.7	5 47.8	2.4	—	Same origin as No. 34.
		—	5 50.2	2.2	0 30	—
36	" 18	8 30.9	8 36.2	0.5	0 19	E. of Agusan River Valley, Philippines.
37	" 22	20 19.0	20 40.8	0.4	0 45	Japan.
38	" 22	22 21.7	22 49.5	0.8	0 40	—
39	" 24	*17 53.0	18 1.4	1.7	0 22	P ₂ at 17h.56.5m.; P ₃ at 17h.59.7m. * P ₁
40	April 10	* 5 48.9	6 24.0	—	—	* P ₂
		—	6 29.8	1.0	1 30	—
41	" 10	18 58.9	19 39.1	1.0	± 0 55	End dubious by commencement of next earthquake.
42	" 10	*19 56.4	20 23.3	1.7	—	P ₁ not visible by former earthquake. * P ₂ .
		—	20 28.9	1.6	1 10	—
43	" 11	14 45.9	± 14 54.4	0.2	0 20	—
44	" 12	* 1 23.7	1 39.3	0.5	0 52	* P ₂
45	" 13	*22 46.8	± 22 53.7	0.1	0 15	Origin, S.E. of Luzon, Philippines. * P ₂
46	" 14	20 0.4	20 8.3	0.8	0 40	P ₃ at 20h.5.2m. Origin, N. of Formosa.
47	" 18	* 0 4.1	0 10.6	0.3	> 0 8	End lost by rolling sheet. Talau Islands, N.N.E. of Menado. * P ₂ !
48	" 25	21 53.3	22 3.0	1.4	—	—
		—	22 4.3	1.2	0 29	—
49	" 25	22 40.7	22 50.9	3.8	1 17	Same origin as No. 48.
50	" 27	*12 50.2	12 59.2	3.9	—	P ₂ at 12h.15.6m. * P ₁
		—	13 4.2	5.3	1 37	—
51	" 29	*22 58.2	23 6.7	1.3	1 4	* P ₂
52	May 2	3 49.3	3 51.8	0.2	0 4	Gunungstoli, Nias, West of Sumatra.
53	" 2	* 7 8.2	7 23.8	0.5	0 48	P ₂ at 7h.15.8m. * P ₁ ?
		—	7 43.8	0.5	1 5	—
54	" 2	*18 21.7	18 50.6	0.5	1 5	P ₂ at 18h.30.0m. Same origin as former one? * P ₁ !
55	" 4	15 2.4	15 3.2	0.1	0 6	—
56	" 8	10 58.2	10 58.9	0.5	0 11	—
57	" 10	*20 24.7	20 40.7	0.5	0 33	P ₂ ! at 20h.29.4m. * P ₁ !
58	" 11	15 39.1	15 39.7	0.3	0 7	—
59	" 11	*16 10.1	16 11.0	1.5	0 19	* P ₂ !
60	" 12	0 20.5	0 53.9	0.2	—	—
		—	1 59.7	0.5	1 52	—
61	" 13	15 20.8	15 32.7	0.1	0 15	—
62	" 14	0 6.0	?	?	> 0 17	Commencement lost by rolling sheet.
		0 12	—	—	—	—
63	" 14	*20 24.0	20 26.2	0.3	0 9	* P ₂ !
64	" 16	*20 20.2	20 26.7	0.8	0 8	Pageralam, Palembang, Sumatra. * P ₂ ?
65	" 17	* 8 22.6	8 47.3	2.5	—	P ₂ ! at 8h.36.0m. * P ₁ !
		—	9 3.2	2.4	2 2	—
66	" 20	21 51.4	21 52.1	0.3	0 11	—
67	" 25	5 6.3	5 13.1	0.5	0 29	—
68	" 26	2 12.8	2 31.5	1.5	0 46	—
69	" 30	21 6.1	21 15.2	4.8	—	Banda, Kei Islands, West New Guinea.
		—	21 16.5	5.0	—	—
		—	21 21.7	4.5	1 16	—
70	" 31	0 4.0	0 5.3	0.1	0 5	—
71	June 3	5 46.1	5 47.3	0.3	0 18	Korintji!
72	" 3	18 42.2	18 44.2	> 24.0	> 2 0	P ₃ ! at 18h.44.0m. End uncertain by No. 73. Origin in Korintji, Djambi, Sumatra; ± 750 km. from Batavia. Two hundred people were killed.
		—	to 18 50.2	—	—	Waves visible until 22h.23m. Korintji.
73	" 3	30 50.7	30 55.0	0.4	—	—
74	" 3	22 31.3	22 33.7	3.8	0 28	—
75	" 4	17 58.9	± 18 2.2	0.1	0 6	—
76	" 5	17 40.2	17 42.5	0.2	0 4	Korintji.
77	" 6	1 36.5	1 36.9	0.1	0 2	Korintji!
78	" 6	5 8.4	5 19.2	0.3	0 37	—
79	" 8	6 7.1	7 17.5	2.1	2 17	Chili.
80	" 9	1 41.1	1 55.4	0.4	0 36	—
81	" 12	*20 39.1	21 0.6	1.0	—	* P ₂ !
		—	21 4.1	1.2	1 16	—
82	" 14	22 48.4	22 49.1	0.7	0 4	Preanger, S.S.E. of Batavia.

Register from the Royal Magnetical and Meteorological Observatory, Batavia—continued.

No.	Date	Com-mence-ment		Max.	Max. Ampli-tude		Dura-tion	Remarks
		H. M.	H. M.		N.M.	H. M.		
83	June 16	17 22.7	17 23.2	0.7	0 7			
84	" 18	7 45.4	7 52.1	0.5	0 13			
85	" 22	14 32.2	14 34.2	0.2	0 9			
86	" 23	1 49.0	1 52	0.1	0 5			
87	" 27	7 25.3	7 46.4	3.2	1 16			
88	" 30	16 47.1	16 48.5	0.9	0 8			P ₂ at 7h.33.6m.; P ₃ at 7h.38.1m. * P ₁

No record on April 2nd from 1h. 23m. to 23h. 59m.

January 1—15, period 15.7 secs. Imm. = 0°46.
 January 16—February 2, period 12.0 secs. Imm. = 0°77.
 February 3—March 7, period 16.1 secs. Imm. = 0°44.
 March 8—June 30, period 17.6 secs. Imm. = 0°36.

Errata:—

Circular No. 17, page 204, No. 1028, for 14h.43.7m. and 14h.47.9m. read 13h.43.7m. and 13h.47.9m.
 Circular No. 18, page 242, No. 1007, for ±18h.2.5m. read ±18h.29m.

Register from Honolulu, T.H.
 Observer-in-Charge, OSCAR H. GAARDEN.

P₂ - Commencement of second P.T's. P₃ = Commencement of Large Waves.

No.	Date	Com-mence-ment		Max.	Max. Ampli-tude		End.	Remarks
		H. M.	H. M.		N.M.	H. M.		
1909								
645	July 7	11 29.8	11 23.6	0.4	11 27.8			
646	" 7	21 52.4	22 22.4	2.0	24 21.6			P ₂ 21 56.8; P ₃ 22 2.2.
647	" 21	4 29.8	4 33.2	0.4	4 27.6			
648	" 25	8 13.4	8 17.2	0.8	8 23.0			
649	" 27	15 54.2	16 1.2	0.7	16 13.4			P ₃ 15 56.2.
650	" 30	11 1.6	11 21.4	11.3	14 16.2			P ₂ 11 9.4; P ₃ 11 16.8.
651	" 31	19 44.3	19 58.4	1.2	21 12.3			P ₃ 19 52.8.
652	Aug. 7	—	17 6.3	3.0	17 32.3			P ₃ 17 5.3.
653	" 14	6 49.8	7 5.8	1.2	7 54.3			P ₂ 6 53.3; P ₃ 7 1.3.
654	" 16	7 18.6	7 47.3	0.7	8 27.8			P ₃ 7 32.3.
655	" 18	0 49.2	1 11.1	2.2	2 8.3			P ₂ 0 56; P ₃ 0 59.3.
656	" 26	20 54.3	20 58.3	0.3	21 9.3			
657	" 31	12 0	12 5.3	1.0	13 2.3			P ₃ 12 2.8.
658	Sept. 8	16 54.3	17 8.8	4.7	18 32.3			P ₂ 17 0.3; P ₃ 17 4.5.
659	" 8	23 39.8	23 59	1.8	24 22.3			P ₃ 23 55.0.
660	" 11	11 0.8	11 28.8	0.7	11 50.3			
661	" 16	19 40.3	20 10.1	0.9	20 27.3			P ₂ 19 56.3; P ₃ 20 3.3.
662	Oct. 18	8 44.3	8 47.8	0.8	8 53.3			
663	" 21	0 10.3	0 50	0.9	2 9.3			P ₂ 0 32.3; P ₃ 0 41.8.
664	" 30	14 40.1	11 6.8	1.1	11 28.3			P ₃ 10 57.8.
665	" 31	10 33.3	10 50.3	2.9	12 27.3			P ₂ 10 41.3; P ₃ 10 48.8.
666	Nov. 8	21 11	21 14.3	0.4	21 50.3			
667	" 10	6 23.2	6 39.3	9.0	8 59.3			P ₂ 6 31.1; P ₃ 6 38.3.
668	" 12	4 38.3	5 3.2	0.7	5 22.0			P ₃ 5 0.6.
669	" 20	13 5.3	13 12.3	1.9	13 27.3			
670	" 21	—	8 18.8	3.5	8 29.3			P ₃ 8 11.1.
671	Dec. 3	3 25.5	3 41.1	0.8	4 9.3			
672	" 6	18 13.8	18 26.5	1.1	18 32.3			
673	" 8	9 9.7	9 32.3	2.0	10 14.3			P ₂ 9 17.1; P ₃ 9 27.3.
674	" 9	15 28.3	16 4.3	15.5	20 17.3			P ₂ 15 51.3; P ₃ 15 57.8.
675	" 9	21 23	21 37.8	2.7	22 7.3			P ₂ 21 28.8; P ₃ 21 32.3.

Register from Honolulu, T.H.—continued.

No.	Date	Com-mence-ment		Max.	Max. Ampli-tude		End.	Remarks
		H. M.	H. M.		N.M.	H. M.		
676	Dec. 9	22 9.8	22 31.3	2.6	23 11.3			P ₂ 22 26.1.
677	" 9	23 39.8	24 0.3	5.5	25 0.3			P ₂ 23 47.8; P ₃ 23 58.8.
678	" 22	13 5.3	13 19.3	1.7	13 52.3			P ₂ 13 10.3; P ₃ 13 14.5.
679	" 23	22 14.5	22 47.3	0.9	22 18.3			
680	" 28	19 56.8	20 8.8	0.4	20 13.3			
681	" 30	21 47.3	21 47.3	0.5	21 58.3			

Period of Pendulum, 19 seconds.

Sensitiveness up to October 21, 0°52; after October 21, 0°36.
 Nos. 682, 658, and 674. Beginning and end confused by air tremors.

No. 670 began while clock was not running.
 The amplitude and duration of the air tremors have been very much reduced since the pendulum was inclosed in a case, in the manner suggested by Professor Inamura.

Register from Sydney Astronomical Observatory, New South Wales.
 Acting-Director, W. E. RAYMOND. Observer, W. C. GRAHAM.

No.	Date	Com-mence-ment		Max.	Max. Ampli-tude		Dura-tion	Remarks
		H. M.	H. M.		N.M.	H. M.		
1909								
304	July 5	5 58.9	3 59.9	0.6	0 10.3			
305	" 7	11 54.9	12 23.2	0.5	1 6.5			P ₂ 12 1.9.
308	" 11	18 18.5	19 37.8	0.15	1 45.8			
309	" 12	18 45.4	19 49.7	0.1	1 51.1			
310	" 15	19 34.7	20 53.9	0.25	2 8.4			
314	" 17	21 46.3	21 56.3	0.1	0 25.5			
316	" 20	19 59.0	20 13.6	0.15	0 54.0			
319	" 26	19 53.3	20 2.8	0.25	0 54.3			
321	" 27	13 7.7	13 11.9	0.2	0 21.5			
322	" 27	15 48.9	16 3.9	0.2	0 29.1			P ₃ 16 0.4.
326	" 30	11 17.5	11 43.3	0.4	1 58.6			P ₃ 11 39.8.
328	Aug. 2	19 18.4	10 39.9	0.1	0 52.0			
329	" 2	11 42.9	11 49.5	0.15	1 22.6			
330	" 2	18 10.9	18 20.5	0.1	2 24.2			
331	" 2-3	23 8.3	23 38.7	0.2	3 25.4			
335	" 4	14 29.7	14 39.7	0.1	0 25.6			
336	" 4-5	23 54.6	0 9.6	0.15	0 19.8			
337	" 8	17 9.0	17 19.0	0.3	1 37.2			
338	" 8	19 39.9	20 27.1	0.1	1 19.5			
339	" 13	4 6.9	3 18.1	0.2	0 55.5			
340	" 14	6 50.1	7 9.7	0.25	0 36.9			
341	" 18	0 44.4	0 49.9	2.8	1 10.2			P ₂ 0 46.6; P ₃ 0 47.9.
342	" 18	21 35.5	20 47.8	0.2	1 39.7			
343	" 23	14 51.9	15 24.4	0.2	2 14.7			
345	Sept. 6	14 43.8	14 50.8	1.35	0 24.2			P ₂ 14 46.4; P ₃ 14 48.8.
346	" 8-9	23 32.9	23 45.9	3.0	0 52.2			P ₂ 23 39.6; P ₃ 23 43.9.
347	" 10	22 56.5	22 57.8	0.3	0 5.0			
348	" 11	11 9.7	11 26.4	1.1	0 43.2			P ₂ 11 19.0; P ₃ 11 25.0.
349	" 20	4 5.0	4 19.4	0.25	4 7.6			
350	" 21	4 28.3	4 31.1	0.25	0 14.3			
351	Oct. 1	11 17.5	11 21.5	0.5	0 54.2			P ₃ 11 20.5.
352	" 1	12 48.5	12 50.9	0.5	0 11.5			P ₃ 12 49.1.
354	" 3	1 34.2	1 38.8	0.1	0 12.5			
355	" 3	2 11.5	2 15.1	0.45	0 24.8			P ₃ 2 13.9.
356	" 3	3 1.0	3 9.0	0.2	1 1.0			
357	" 3	5 8.3	5 34.7	0.2	0 31.3			
358	" 3	6 26.9	7 1.6	0.5	4 26.6			P ₃ 6 47.4.
359	" 3	12 51.8	13 35.3	0.2	1 49.2			
360	" 3	15 27.6	15 45.4	0.15	1 15.2			
361	" 3	17 26.6	18 12.1	0.15	1 44.9			

Register from Sydney Astronomical Observatory, New South Wales—continued.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
362	Oct. 3	H. M. 20 3-1	H. M. 22 44-3	MM. 0-2	H. M. 3 38-8	—
363	" 4	15 48-6	15 54-9	0-9	0 59-1	P ₃ 13 53-3.
364	" 4	17 30-9	18 21-1	0-2	2 29-8	—
365	" 20	21 55-4	21 56-8	2-5	0 23-9	P ₃ 21 55-9.
366	" 23	21 19-6	21 21-1	0-4	0 23-6	P ₃ 21 20-6.
367	" 30	10 28-8	10 41-3	1-6	0 59-8	P ₂ 10 31-0; P ₃ 10 38-0.
368	" 31	16 59-5	17 2-5	0-4	0 9-5	P ₃ 17 0-7.
370	Nov. 1	19 16-3	19 28-1	0-15	1 49-0	—
371	" 2	4 11-7	4 13-9	0-3	0 3-8	—
372	" 3	6 24-3	6 25-8	2-7	0 49-7	P ₂ 6 24-9.
373	" 7	23 44-0	23 49-0	0-25	0 15-4	P ₃ 23 48-0.
374	" 8	0 43-3	0 54-7	0-35	1 13-0	—
375	" 8	4 12-9	5 33-3	0-2	2 45-3	—
376	" 19	6 25-1	6 34-3	2-0	1 28-0	P ₂ 6 27-9; P ₃ 6 32-7.
377	" 11	0 4-5	0 5-7	0-2	6 8-6	—
379	" 29	13 2-3	13 11-9	0-3	0 18-4	P ₃ 13 8-5.
383	" 28	1 9-5	1 16-1	0-8	1 6-9	P ₂ 1 12-1; P ₃ 1 14-5.
384	" 30	2 41-6	2 47-1	0-25	0 9-0	P ₃ 2 45-6.
385	" 30	6 55-3	8 9-7	0-2	5 2-5	—
386	Dec. 1	1 25-4	1 31-9	0-2	3 7-9	—
387	" 3	3 18-0	3 24-7	0-7	1 27-2	P ₂ 3 20-8; P ₃ 3 22-3.
388	" 4	16 27-9	16 31-3	1-1	0 19-8	P ₂ 16 29-4; P ₃ 16 30-1.
389	" 8	9 9-9	9 16-9	1-0	1 11-0	P ₂ 9 12-3; P ₃ 9 14-2.
390	" 9	15 39-3	15 51-0	9-0	2 25-2	P ₂ 15 44-8; P ₃ 15 47-3.
391	" 9	21 14-6	21 20-1	1-5	—	P ₂ 21 17-1; P ₃ 21 18-3.
392	" 9	21 59-3	22 8-8	2-2	1 5-5	P ₂ 22 2-8; P ₃ 22 7-9.
393	9-10	23 39-6	23 55-6	2-5	1 6-8	P ₂ 23 40-3; P ₃ 23 49-6.
394	" 11	19 21-5	19 22-8	0-35	0 8-5	—
399	" 22	12 33-3	13 9-9	2-0	1 22-7	P ₂ 12 57-3; P ₃ 13 5-0.
400	" 23	19 30-6	19 42-9	1-1	0 44-5	P ₂ 19 36-3; P ₃ 19 40-6.
401	" 23	22 25-5	22 30-6	0-7	0 36-2	P ₂ 22 27-8; P ₃ 22 30-2.
402	" 28	19 27-0	19 37-7	2-7	0 45-5	P ₂ 19 33-3; P ₃ 19 36-0.

Notes:—July, clock stopped from 23rd, 19h.64m., to 25th, 1h.30-5m., owing to paper mounting rim of tension cylinder.
 July, instrument under repair from 31st, 0h.15-6m., to August 1st, 1h.15-6m.
 October, clock stopped from 9th, 16h.44-0m., to 10th, 0h.15-0m., and from 10th, 8h.22-0m., to 11th 1h.20-0m., owing to paper mounting the rim of tension cylinder.
 December, tremor No. 391. The after tremors were lost in the preliminary tremors of No. 392, the time of the P.T.'s of the latter disturbance is therefore doubtful.
 Mean displacement value, 1mm. = 0".62.

Register from the Magnetic Observatory, Christchurch, New Zealand
 Observer, HENRY F. SKEY, B.Sc.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
1909						
39	July 1	H. M. 13 03-7	H. M. 13 10-9	MM. 0-3	H. M. 0 27-9	—
40	" 2	6 25-9	6 28-5	0-1	0 31-1	—
41	" 5	Indefinite	17 55-3	3-5	Indef.	P ₁ and D obscured by Ats.
42	" 19	13 40-3	13 42-8	0-4	0 33-1	—
		—	13 58-9	—	—	—
		—	14 11-3	—	—	—
43	" 26	22 06-6	22 08-1	—	0 15-5	Slight thickening.
44	" 27	4 34-5	4 36-1	0-2	0 29-0	—
45	" 30	11 16-5	11 16-5	0-8	2 34-2	1st Max. at beginning of quake. (Origin, Mexico.)
46	Aug. 4	6 18-3	6 20-4	0-1	0 06-2	—

Register from the Magnetic Observatory, Christchurch, New Zealand—continued.

No.	Date	Com- mence- ment	Max.	Max. Ampli- tude	Dura- tion	Remarks
47	Aug. 6	H. M. 5 46-0	H. M. 5 49-1	MM. 0-4	H. M. 0 11-4	—
48	" 10	6 56-1	7 01-2	0-25	0 21-7	—
49	" 13	12 19-7	12 21-7	0-25	0 06-2	—
50	" 16	7 54-6	8 17-7	0-4	0 42-0	—
51	" 18	0 35-4	0 56-4	3-9	1 29-2	In progress while attending instrument.
52	" 29	23 59-5	—	—	1 33-9	Thickening of line.
53	Sept. 3	8 11-2	8 18-4	0-35	0 18-5	—
54	" 25	12 29-6	12 32-7	0-5	0 14-4	—
55	Oct. 3	1 28-8	—	—	1 15-4	Thickenings.
56	" 4	13 53-2	14 07-0	0-9	Indef.	Followed by Ats.
57	" 21	0 45-5	—	—	0 54-9	Thickenings.
58	" 23	Indefinite	21 28-0	—	—	Ended at 21h.56-6m. Preceded by Ats.
59	" 27	1 32-3	1 33-3	0-35	0 36-2	—
60	" 30	10 33-8	11 02-0	0-9	Indef.	End obscured by Ats.
61	Nov. 3	6 19-0	6 25-4	3-25	1 15-7	—
62	" 10	5 55-6	—	—	0 11-3	Thickening of line.
63	" 10	6 26-4	6 38-2	1-4	1 57-4	—
64	" 12	10 04-4	10 05-7	1-0	0 17-5	Very severe shock felt at Wellington, N.Z.
65	" 14	9 47-3	9 49-7	0-13	0 07-2	—
66	" 27	21 19-1	—	—	0 28-2	Slight thickening. Possibly Ats.
67	" 27	—	22 23-2	—	—	" "
68	" 28	1 07-8	1 15-6	1-6	1 24-2	—
69	" 28	8 28-3	8 34-0	0-5	0 30-8	Preceded and followed by minute Ats.
70	Dec. 3	3 25-0	3 33-3	0-9	0 39-5	—
		—	3 34-8	—	—	—
71	" 8	9 17-6	9 25-8	2-1	1 01-0	—
72	" 9	Indefinite	15 39-1	5-75	Indef.	P.T. and end obscured by Ats.
73	" 9	21 23-3	21 31-0	2-0	0 39-7	—
		—	21 32-3	—	—	—
74	" 9	22 04-0	22 30-0	1-0	1 20-9	—
75	" 9	Indefinite	24 03-0	1-4	—	P ₁ began while attending to instrument. End at 1h.23-6m.
76	" 22	Indefinite	13 02-8	5-9	Indef.	P ₁ and end obscured by Ats.
77	" 23	19 30-2	19 36-4	2-3	1 02-6	—
78	" 23	22 32-3	22 45-1	1-0	0 58-4	—
79	" 28	Indefinite	19 56-5	1-0	Indef.	In middle of Ats.