British Association for the Advancement of Science.

Circular No. 5, *issued by the Seismological Committee*, Professor J. W. JUDD, *C.B., F.R.S.* (*Chairman*), Mr. JOHN MILNE, *F.R.S.*, *Shide, Isle of Wight* (*Secretary*).

CONTENTS.

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 four circulars and in the Reports of the Association, 1896 to 1899.

In the next circular these registers should be continued up to June 30, 1902, and, so far as possible, supplemented by corresponding registers from the following places: Paisley, Coimbra, Beyrut, Tokio, Vizagapatam (Madras), Ceylon, Mexico, Swarthmore (Philadelphia), Melbourne, Sydney, New Zealand (two stations), Cordova (Argentina), Mauritius, Arequipa, Tiflis, Taschkent, and Honolulu.

If observers at these and other places 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 from 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.

D. First P.T.s.—This refers to the duration of the *first* preliminary tremors or the first uniform thickening of the line. It may be noted under the head of remarks.

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

As 1° turn of the test 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 one millimetre displacement. This quantity should be stated at the end of each register.

II. *Registers.*

The Register from Shide, Isle of Wight, England.

Observer, JOHN MILNE. *Assistant*, SHINOBU HIROTA.

Y.P. (Yarrow Pendulums) refers to the records of an instrument in which there are two Milne pendulums. One records East West (E.W.) and the other North South motion. A = amplitude in mm., and D = duration in hours and minutes.

Shide No.	Date	Commencement	Maximum	Amplitude	Duration	Remarks
			1901.			
		H. M.	H. M.	MM.	H. M.	
506	July 2	14 28·1	—	—	—	Also at 15·47. Both minute.
507	„ 3	23 7·9	—	0·5	0 5	Doubtful. Y.P. shows slight sudden movements about 21·49, 23·11, and 24·28. Also on the 9th about 16·0, 17·0, and 21·30.
508	„ 18	10 7·0	—	0·25	0 3	Y.P. shows slight E.W. motion about 9·30 and 10·5 to 10·20.
509	„ 26	19 39·4	—	0·25	0 12	—
510	„ 29	1 48·0	—	0·5	0 50	Y.P. (E.W. only) 1 48·0. A. 0·5; D. 3 or 4 hrs. like tremors.

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

Shide No.	Date	Commencement	Maximum	Amplitude	Duration	Remarks
		H. M.	H. M.	MM.	H. M.	
—	—	3 58·2	—	—	—	—
511	July 30	23 2·0	—	0·5	0 25	Time approx. Also seen on the Y.P. records E.W. and N.S.
512	„ 31	10 46·1	—	0·25	0 5	Y.P. (E.W. only) 10 16·4.
—	—	11 29·7	—	0·25	0 5	—
513	Aug. 6	18 52·0	19 12	0·5	0 58	Y.P. both components, 19 0·6; max. 19·14, both approximate. E.W. A. 0·75; N.S. 1·0; E.W. D. 55; N.S. D. 60m.
514	„ 9	9 36·8	10 14·6	8·0	3 10	Y.P. both components 9 36·1; max. 10 14·4; D. 3 20; E.W. A. 0·12; N.S. 10.
—	—	—	10 19·7	—	—	N.S. (only) shows a repetition 1 43 after the max.
515	Aug. 9	13 20·6	14 33·5	> 9·0	4 20	Y.P. both components 13 22·6; max. 14·32; A. 18, the N.S. component being the larger; D. 4 34. A possible repetition 3 14 after the max.
516	„ 9	18 46·0	19 27·0	> 8·0	3 29	Y.P. both components 18 48·3; max. 19 22·5 and 19 29·8; A. 21; D. > 3 10.
517	„ 10	11 18·5	—	0·25	1 25	—
518	„ 11	15 9·4	16 11·5	0·5	2 0	Y.P. N.S. 15 14·5; max. 15 58·3; A. 1·5; D. > 1 30; E.W. A. 0·5.
519	„ 18	3 6·6	—	0·25	0 10	Y.P. E.W. and N.S. 3·30; A.0·25; D 10.
520	„ 18	6 0·0	—	0·25	0 4	Not shown on Y.P.
521	„ 18	20 50·2	—	0·25	0 13	Y.P E.W. 20 42·0; A. 0·5; D. 20; N.S. slightly larger.
522	„ 20	4 11·4	—	0·25	0 20	Y.P. E.W. 3 13·7; max. 4 11·6; A. 0·5; D. > 30; N.S. slightly smaller.
523	„ 21	9 32·0	9 38·0	1·0	0 25	Y.P. E.W. 9 25·0 ca.; A. 1; D. 15; N.S. working irregularly.

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

Shide No.	Date	Commencement	Maximum	Amplitude	Duration	Remarks
		H. M.	H. M.	MM.	H. M.	
524	Aug. 25	—	—	—	—	Y.P. E.W. (only) 3·26; A. 1; D. 30; earthquake?
525	„ 29	12 35·9	13 12·0	0·5	0 55	Y.P. light out.
526	—	23 21·9	—	0·25	0 10	„ „
527	Sept. 3	12 11·0	—	—	—	Earthquake? Y.P. shows air tremors.
528	„ 6	12 0·0 (abt.)	12 40 (abt.)	0·5	1 20	Y.P. E.W. A. 0·5; D. 1 15; N.S. A. 1; D. 1 15; repetition 110 min. later.
529	„ 7	23 17·5	—	0·25	1 32	Y.P. E.W. 23 34·2; A. 0·5; D. 45; N.S. 23 3·1; A. 0·75; D. 1 15.
530	„ 8	18 4·1	18 56·0	0·75	2 20	Y.P. E.W. 18 17·6; max. 19 5·2; A. 0·5; D. 60; N.S. 18 23 9; max. 19·0; A. 1; D. 1 40.
531	„ 9	23 46·2	—	0·25	0 15	Y.P. with air tremors; E.W. 23 47·6; N.S. larger; A. 0·5.
532	„ 10	5 13·4	—	0·25	0 15	Y.P. with air tremors; E.W. and N.S. 5 20·7; A. 0·25.
533	„ 22	23 53·8	—	0·25	0 10	Y.P. E.W. and N.S. 23 47·6; A. 0·25; D. 10.
534	„ 30	10 31·9	11 1·49	1·5	1 45	Y.P. E.W. 10 38·4; max. 11 14·5; A. 2; D. 1 35. N.S. 10 31·1; max. 11 11·5; A. 2; D. 2 12.
535	Oct. 1	—	—	—	—	Y.P. E.W. 20 15·6; A. 0·5; D. 30; N.S. A. 0·25.
536	„ 8	2 33·1	3 7·0	3·5	> 2 0	Y.P. E.W. 2 33·1; max. 3 0·6 and 3 10·6; A. 3·5; D. > 1 35;
—	—	—	3 14·1	—	—	N.S. A. = 2·5, otherwise like E.W.
537	Oct. 11	3 35·0	3 55·5	1·0	1 10	Repetition 6 13·9; A. 0·25; D. 4. Y.P. E.W. 3 36·0; max. 3 52·4; A. 1; D. 1 3; repetition 6 13·5; N.S. 3 26·8; A. 0·5; D. 60; repetition 6 13·5.
538	„ 13	18 41·1	—	0·25	0 15	Y.P. E.W. 18 39·1; A. 0·25; D. 15. N.S. 18 43·2; A. 0·25; D. 15.

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

Shide No.	Date	Commencement	Maximum	Amplitude	Duration	Remarks
		H. M.	H. M.	MM.	H. M.	
539	Oct. 15	13 57·6	14 7·8	0·5	0 25	Y.P. E.W. 13 58·6; max. 14 6·3; A. 0·5; D.40. N.S. like E.W. but with A. 0·25 and D. 20.
540	„ 15	15 35·0	—	0·25	0 10	Y.P. E.W. 15 35·0: A. 0·5; D. 12. N.S. 15 35·0; A. 0·5; D. 7.
541	„ 17	2 0·2	—	0·25	0 5	Y.P. not visible.
542	„ 17	6 10·4	—	0·5	0 35	Y.P. E.W. 6 23·7; A. 0·5; D. 35. N.S. 6 15·5; A. 0·5; D. 30.
543	„ 19	10 19·6	—	0·75	0 35	Y.P. E.W. 10 14·5; A. 0·75; D. 1·20. N.S. 10 25·8; A. 1; D. 1 30.
544	„ 19	20 52·5	—	0·75	0 7	Y.P. E.W. 20 53·5; A. 0·75; D. 5. N.S. 20 49·4; A. 0·25; D. 10.
545	„ 23	6 14·5	—	0·25	0 5	Y.P. air tremors.
546	„ 23	—	—	—	—	Y.P. E.W. only 16 38·4; A. 0·25; D. 25.
547	„ 25	15 51·9	—	0·25	0 20	Y.P. E.W. only.
548	„ 29	8 30·9	8 56·6	0·25	0 45	Y.P. N.S. the larger, 8 21·9; max. 8 52·9 and 9 8·4; A. 0·5; D. 1 50. Repetition 55 to 65 min. later.
549	„ 30	14 56·6	—	0·25	0 5	Y.P. E.W. and N.S. equal 14 41·6; A. 0·25; D. 20.
550	„ 31	18 41·2	—	0·25	0 5	Not shown by the Y.P.
551	Nov. 8	6 22·7	7 7·3	0·75	1 0	Y.P. 6 44·6; max. 6 54·9; D. 30. N.S. A.0·75. E.W. A.0·5.
552	„ 8	10 10·3	11 2·2	0·5	1 50	Y.P. 10 37·2; max. 10 58·9; D. 55. N.S. A. 0·5. E.W. A. 0·75.
553	„ 9	20 47·3	—	0·5	0 10	Y.P. 20 42·5; max. 20 49·6; D. 15. N.S. and E.W. A. 1·0.
554	„ 10	13 8·3	—	0·5	0 40	Y.P. about 13 hrs. Air tremors.
555	„ 13	Air tremors	—	—	—	Y.P. 11 19·4; max. 11·30; A. 0·5; D. 1 15. N.S. the larger. Also at 14 49·7.
556	„ 15	„ „	—	—	—	Y.P. 16 38·3; max. 16 53·9; A. 0·5; D. 40. N.S. the larger.

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

Shide No.	Date	Commencement	Maximum	Amplitude	Duration	Remarks
		H. M.	H. M.	MM.	H. M.	
557	Nov. 15	20 45·2	22 22 6	1·0	2 30	Y.P. 20 42·6; max. 22 5·2; N.S. A. 1·8; E.W. A. 0·75; D. 2 5.
558	„ 18	0 19·5	0 39·0	1·5	1 16	Y.P. 0 18·6; max. 0 36·3; N.S. A. 2·5; E.W. A. 1·5; D. 60.
559	„ 18	22 58·5	—	0·25	0 5	Y.P. max. 21·0; A. 0·25; D. 5.
560	„ 21	0 35·8	0 40·9	0·5	0 20	Y.P. max. 0 39·2; N.S. A. 0·25; E.W. A. 0·5. Merge into air tremors.
561	„ 21	17 43·9	—	0·5	0 10	Y.P. 17 46·4; N.S. A. 0·5; E.W. A. 0·25; D 5.
562	„ 25	—	2 55 ca.	1·0	—	Y.P. 2 41·1; max. 2 56·6; N.S. A. 1·0; E.W. A. 0·5; D. 40.
563	Dec. 6	15 27·9	15 49·2	1·0	1 5	Y.P. 14 51·8; max. 15·50; N.S. A. 3; E.W. A. 1·7; D. 1 25.
564	„ 9	2 44·0	3 5·3	3·7	1 30	Y.P. 2 36·5 ca.; max. 2 59·3 ca.; N.S. A. 3·0; E.W. A. 2·5; D. > 1 30.
565	„ 14	23 11·4	0 2·2	2·5	1 40	Y.P. 23 10·5; max. 0 2·2; N.S. A. 2·5; E.W. A. 4; D. 2 h.
566	„ 18	1 0 (abt.)	—	—	—	Y.P. 0 51·7; N.S. A. 0; E.W. A. 0·25; D. 10.
567	„ 18	3 55 (abt.)	—	0·75	0 15	Y.P. 4·0; N.S. A. 0·5; E.W. A. 0·25; D.10.
568	„ 24	22 4·8 (abt.)	23 53	0·5	0 20	Y.P. 23 51; A. 0·5; N.S. the larger; D. 15.
569	„ 30	{ 22 25·3 / 23 15·1 }	23 39·7	0·5	1 5	Y.P. 22 32·9; N.S. and E.W.
570	„ 31	6 1·7	6 53·6	—	—	Y.P. N.S. 6 39·1.
571	„ 31	9 17·1	9 58·1	1·5	2 5	Y.P. 9 15·4; max. 9 47 to 9 57; N.S. A. 4; E.W. A. 0·5; D. 2 35. Also on both instruments slight movements at 6 1, 6 29, 6 58, &c.

1 mm. amplitude = 0″·47.

Register at National Physical Laboratory (Kew Observatory), Richmond, Surrey, from July to December, 1901. *Director*, R. T. GLAZEBROOK, *Sc.D., F.R.S. Superintendent of Observatory*, C. CHREE, *Sc.D., F.R.S. Assistant*, E. G. CONSTABLE.

No. in Register	Date	Commencement of P.T.s	Duration of P.T.s	1st Max.	2nd Max.	Amplitude	Total Duration
		1901.					
		H. M.	M.	H. M.	H. M.	MM.	H. M.
305	July 9	16 57·0 17 33·5	—	—	—	—	0 7
306	„ 29	1 49·4	—	—	—	0·4	0 35
307	„ 30	22 56·3	—	—	—	—	0 8
308	„ 31	9 28·3 10 15·8	—	—	—	—	0 8
309	August 6	19 6·3	3·0	19 10·5	—	0·5	0 23
310	„ 6	20 20·0 20 46·3	—	—	—	—	0 7
311	„ 9	9 36·0	10·5	10 15·6	10 21·8	7·5	2 52
312	„ 9	13 23·8	?51·0	Time uncertain		6·1	3 35
313	„ 9	?18 50·0	?	19 28·5	—	8·0	?2 47
314	„ 10	11 18·0	—	—	—	—	1 8
315	„ 11	15 34·2	—	16 23 0	—	0·5	1 21
316	„ 29	12 34·3	—	13 18·0	—	0·4	0 54
317	September 6	12 18·0	—	—	—	—	0 20
318	„ 8	18 57·2	—	—	—	0·4	1 8
319	„ 10	5 17·3	—	—	—	—	0 5
320	„ 30	? 10 28·5	34·5	11 14·5	—	1·3	1 33
321	October 8	2 36·8	20·4	3 5·2	3 21·5	1·5	1 48
322	„ 10	18 28·7	—	—	—	—	0 6
323	„ 11	3 42·5	—	—	—	—	0 54
324	„ 13	18 46·0	—	—	—	—	0 10
325	„ 15	13 59·7	—	—	—	—	0 20
326	„ 19	10 23·8	—	—	—	0·4	0 21
327	„ 19	20 52·0	—	—	—	0·4	0 6
328	„ 29	8 33·5	—	—	—	—	0 30
329	„ 30	14 56·5	—	—	—	—	0 5
330	November 8	6 47·3	5·0	7 5·2	—	0·5	0 42
331	„ 8	10 21·8	—	11 11·0	—	0 5	0 51
332	„ 9	20 47·2	—	—	—	—	0 9
333	„ 10	13 6·0 14 4·0	—	—	—	—	0 37 0 5
334	„ 14	5 12·2	—	5 18·0	—	0·4	0 26
335	„ 15	20 50·4	—	21 5 0	—	0·4	0 43
336	„ 18	0 19·2	14·0	0 38·5	—	1·0	1 4
337	„ 21	0 37·3	—	0 42·5	—	0·6	0 14
338	„ 21	17 46·5	—	—	—	—	0 7
339	„ 25	2 39·2	—	—	—	—	0 31
340	December 6	15 31·3	—	—	—	—	0 57
341	„ 9	2 38·3	17·0	3 7·0	3 13·3	3·0	1 18
342	„ 14–15	23 15·7	39·2	0 2·3	0 10·5	1·8	1 15
343	„ 18	4 1·0	—	—	—	—	0 5
344	„ 30	23 16·2	—	23 39·5	—	0·5	1 1
345	„ 31	6 27·0	—	—	—	—	0 25
346	„ 31	9 24·7	27·8	9 56·7	—	1·2	2 22

Up to the end of September 1mm. amplitude = 0″ 75; subsequently 1mm. = 0″·80.

Notes on Seismograph Observations at Kew Observatory, July to December 1901.

Register No.	Remarks
305	Movements very slight, merely a broadening of the normal line.
306	Not of large extent, with a maximum apparently at 1h. 54m.
307, 308, 310	As 305.
309	Commencement of P.T. somewhat uncertain, movement small.
311	Mainly noticeable for the suddenness of the maximum phase movement; there are several repetitions.
312	The time of the maximum phase cannot be given, as, owing to defective manufacture, the photographic band jammed in the rollers. There were a large number of oscillations exceeding 4mm.
313	The beginning of the P.T. and their duration is uncertain. The maximum of 8 mm. (or 6 seconds of arc) is the largest for the second half of the year; L.W. of 4 to 5 mm. amplitude were recorded from 19h. 28m. to 19h. 33m.
314	Small and somewhat indefinite bead-like thickenings.
315	The commencement of this disturbance is ill-defined, and there is no marked movement till 16h. 10m. The records from August 17–21 cannot be tabulated owing to the frequent sticking of the photographic paper in the rollers.
316, 318	Small and ill-defined throughout.
317	This is a small and doubtful movement.
319	As 305.
320	The beginning of the P.T. follows so quickly after the time of changing the paper that the duration and commencement is rendered uncertain. The disturbance was of an ordinary type.
321	The oscillations after the secondary maximum phase are extremely small.
322, 324, 325	As 305.
323	Of but slight extent, with a maximum apparently at 3h. 50m. There are some small movements on October 14, between 16h. 16m. and 18h. 10m., but it is doubtful if they are seismic in character.
324	Of slight extent, with a maximum about 14h. 10m. The Boom went out of action on October 16, 22h. 14m.; it was put right at 10.25 on 17th.
326	Isolated swings, of slight extent.
327	Small, reaching a maximum about 21h. 55m.
328, 329	As 305.
330, 331	Of slight extent, and ill-defined.
332, 333	As 305.
334	Small bead-like thickenings.
335	A long series of small oscillations.
336	A well-defined disturbance, but not of great extent.
337	A short movement, rising quickly to the maximum.
338, 339	As 305. There are a number of swings on November 27, between 15h. 5m. and 16h. 47m., and again, more marked, between 8.20 and 10h. 20m. on 28th, but their character is doubtful.
340	A considerable number of oscillations, but all small.
341	A clear and well-marked disturbance, quickly reaching the maximum phase, after the arrival of the L.W. The swings were very small after 4h. 26m.
342	A rather long series of P.T., then reaching the maximum in four increasing groups of swings.
343, 345	As 305.
344	Small swings, and rather ill-defined.
346	Although the disturbance was of long duration, the oscillations during the final hour were very small.

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

No.	Date	First Disturbance	Maximum Effect	Duration	Amplitude	Remarks
			1901.			
		H. M.	H. M.	H. M.	MM.	
60	June 30	1 38·0	2 31·0	2 5	—	Line thickening.
61	July 1	13 1·3	13 4·3	0 10	0·3	—
62	August 9	11 22·0	12 32·6	—	9·0	First part lost.
63	„ 9	13 23·6	14 22·5	4 16	12·2	—
64	„ 9	18 48·0	19 20·5	4 50	13·0	—
65	„ 10	11 19·3	11 51·0	1 24	5·0	—
66	„ 10	17 0·5	17 5·5	0 21	—	Small, but distinct.
67	„ 11	—	13 42	0 10	—	Small.
68	„ 11	15 12·0	15 51·3	1 19	1·2	—
69	„ 15	10 58·7	11 8·8	0 24	0·8	—
70	„ 16	9 31·4	9 44·0	0 58	0·7	—
71	„ 18	2 58·1	3 7·0	0 19	0·5	—
72	„ 18	18 44·1	18 53·6	0 23	0·6	—
73	„ 20	—	4 5·2	0 13	0·4	Small, but apparently real.
74	„ 21	9 31·7	9 38·0	1 1	1·0	Insect effects?
75	„ 22	1 30·0	1 43·4	0 29	1·2	„ „
76	„ 22	—	3 45	—	—	Possibly insect.
77	„ 29	12 49·2	13 1·3	0 24	1·3	Possibly began at 12.40.
78	Sept. 5	—	12 33	—	—	Doubtful, perhaps A.T.
79	„ 7	0 8·5	0 32·0	1 4	1·0	—
80	„ 7	23 34·2	23 43·7	0 28	0·6	True time of max. doubtful.
81	„ 8	18 16·5	18 56·2	1 36	1·2	Several maxima.
82	„ 10	0 35·0	0 42·4	0 17	0·6	Distinct.
83	„ 10	—	5 25	—	—	Doubtful, possibly insect.
84	„ 15	1 41·7	1 59·0	0 48	—	Slight.
85	„ 18	1 40	2 27	—	—	Very small, possibly not real.
86	„ 22	23 49·4	—	0 32	—	Doubtful.
87	„ 24	8 28·0	8 33·5	1 8	1·3	Several maxima.
88	„ 26	1 50·7	1 57·0	0 13	—	Small, but evident.
89	„ 28	16 42·2	16 58·0	0 41	0·6	Several maxima.
90	„ 30	10 32·5	11 12·7	1 38	2·0	Good trace.
91	Oct. 8	2 39·1	3 3·0	0 54	1·9	—
92	„ 10	9 54	9 59	0 13	—	Small and doubtful. Similar disturbance at 12.30.
93	„ 12	—	2 5	—	—	Small.
94	„ 13	18 44	—	—	—	„
95	„ 15	—	15 0	—	—	—
96	„ 17	1 38	—	0 26	—	Looks like air tremors.
97	„ 17	6 9·2	6 23·1	0 28	0·5	—
98	„ 17	10 26	11 15	—	—	—
99	„ 19	20 47·0	20 55·5	0 10	0·3	Doubtful.
100	„ 23	6 6	—	—	—	„
101	„ 25	16 3	—	—	—	Like an insect effect.
102	„ 29	8 22	8 23	0 56	—	—
103	„ 30	14 55·6	—	0 10	—	—
104	„ 31	18 56	—	1 14	—	Distinct.

Register from the Liverpool Observatory, Bidston, England—continued.

No.	Date	First Disturbance	Maximum Effect	Duration	Amplitude	Remarks
		H. M.	H. M.	H. M.	MM.	
105	Nov. 8	6 43	6 50	0 25	0·5	Damaged film.
106	„ 8	10 35	10 50	0 55	0·5	„ „
107	„ 9	20 43·2	20 47·0	0 17	0 3	—
108	„ 10	13 10·2	13 16·4	0 19	0·3	—
109	„ 13	11 12·7	11 26 4	1 18	0·3	—
110	„ 14	4 6·2	4 20·0	0 20	0·5	Damaged film.
111	„ 15	21 1·8	22 4·4	1 36	1 4	Several maxima.
112	„ 18	0 21·0	0 36·7	0 57	1·0	—
113	„ 21	0 30·2	0 50·8	0 33	0·4	The end doubtful
114	„ 21	18 46·0	—	—	—	—
115	„ 25	2 9·2	2 50·0	0 57	0·6	—
116	Dec. 5	18 38·2	18 44·1	0 16	0·3	—
117	„ 6	14 53·0	15 51·3	1 29	1·0	May be two small earthquakes.
118	„ 9	2 45·1	3 12·8	1 2	2·1	—
119	„ 9	4 18·3	4 29·5	0 48	0·3	Perhaps continuation of preceding.
120	„ 17	8 55·9	9 1·3	0 15	0·2	Very small.
121	„ 19	7 15·4	7 21·7	0 15	0·2	Somewhat doubtful.
122	„ 21	—	17 2·6	—	—	Record faint.
123	„ 24	23 56·2	23 59·7	0 11	—	Small.
124	„ 26	11 36·3	12 1·8	0 39	0·4	Several maxima.
125	„ 30	22 59·1	23 23·2	2 11	0·7	—
126	„ 31	6 14·4	6 35·2	1 4	0·4	—
127	„ 31	9 19·2	9 56·0	3 13	2·3	Probably two distinct earthquakes.
128	„ 31	13 48·7	14 1·9	0 34	0·3	—
129	„ 31	16 59·0	17 4·4	0 19	—	Small.
			1902.			
130	Jan. 1	5 5·0	6 15·2	2 35	1·6	The end difficult to decide.

Amplitude of 1 mm. = 0″·3.
From July 5 to August 8 the instrument was not in use.

Register from the Royal Observatory, Edinburgh, Scotland.
Director, RALPH COPELAND. *Observer,* THOMAS HEATH.

No.	Date	Commencement	Maximum	Semi-amplitude	Duration	Remarks
			1901.			
		H. M.	H. M.	MM.	H. M.	
49	July 18	9 56	—	—	—	A zigzag, just visible.
50	„ 19	3 49·3	3 51·5	0·33	0 5·7	—
51	„ 29	1 50·0	1 51·5	0·5	0 38·0	—
52	„ 30	23 2·5	—	—	—	Tiny zigzag.
53	Aug. 6	18 58·5	19 12·5	0·6	0 45·5	—
54	„ 9	9 36·5	10 13·8	5·0	2 58·3	—

Register from the Royal Observatory, Edinburgh, Scotland—continued.

No.	Date	Commencement	Maximum	Semi-amplitude	Duration	Remarks
		H. M.	H. M.	MM.	H. M.	
55	Aug. 9	13 24·0	14 50·5	5·5	4 15·5	—
56	„ 9	18 47·0	19 33·5	8·5	3 17·0	—
57	„ 10	11 18·0	12 52·0	4·0	1 48·0	—
58	„ 11	15 22 0	16 0·0	0·25	1 50·5	—
59	„ 18	3 4·0	—	—	—	Slight thickening also at 3h. 12m.
60	„ 18	20 45·0	—	—	—	Small zigzag. Thickening at 20h. 50·5m. and 21h. 2·5m.
61	„ 20	4 10	—	—	—	Little bulb. Thickenings at 4h. 14m., 4h. 25m., and 4h. 33m.
62	„ 21	9 37·0	9 40·5	0·25	0 29·5	—
63	„ 25	3 17·0	—	—	—	Very small zigzag.
64	„ 29	12 59·0	13 10·2	0·4	0 30·0	—
65	Sept. 7	0 21·0	0 42·0	0·4	0 58·0	—
66	„ 7	23 45·5	23 53·0	0·2	0 22·0	—
67	„ 8	17 58·5	19 13 0	0·3	2 14·5	A large number of small but well-marked tremors.
68	„ 12	0 48·0	—	—	0 1·5	Two slight tremors.
69	„ 12	2 2·0	—	—	0 2·0	
70	„ 15	1 41·5	—	—	0 26·5	Thickenings.
71	„ 22	23 49	—	—	—	Distinct zigzag. Also at 23h. 56m. and 0h. 3m.
72	„ 24	8 29·5	8 32·0	0·7	0 55·5	—
73	„ 26	1 54 0	—	—	—	Two small but distinct tremors.
74	„ 26	2 2·5	—	—	—	
75	„ 28	12 1·0	—	—	1 19·0	Very slight thickenings.
76	„ 28	16 3·0	17 0·0	0·4	1 50·5	—
77	„ 30	10 34·5	11 9·0	2·0	2 22·5	—
78	Oct. 2–5	—	—	—	—	Few slight A.T.'s.
79	„ 6–7	—	—	—	—	Frequent A.T.'s.
80	„ 8	2 28·0	3 6·5	2·8	2 10·0	—
81	„ 8–10	—	—	—	—	Frequent A.T.'s.
82	„ 11	3 41·0	3 50·5	1·0	0 57·0	—
83	„ 13	18 42·5	—	—	—	Slight thickenings and at intervals to 19h. 0m.
84	„ 15	14 2·5	—	—	—	Thickening also at 15h. 33m.
85	„ 17	2 0·5	—	—	—	Hardly visible.
86	„ 17	6 12·5	6 33·0	0·5	0 39·5	—
87	„ 19	10 9·5	10 29·5	0·9	1 49·5	—
88	„ 19	20 49·0	20 55·0	0·4	0 15·5	—
89	„ 23	16 31	—	—	—	Roughness hardly visible.
90	„ 25	15 55	—	—	—	Roughness hardly visible.
91	„ 29	8 43·0	—	—	0 1·5	Slight zigzag line.
92	„ 29	8 52·0	—	—	0 18·0	Slight thickenings.
93	„ 30	3 0·0	—	—	0 3·0	„ „

Register from the Royal Observatory, Edinburgh, Scotland—continued.

No.	Date	Commencement	Maximum	Semi-amplitude	Duration	Remarks
		H. M.	H. M.	MM.	H. M.	
94	Oct. 30	14 58·5	—	—	—	Thickening.
95	Nov. 8	6 21·5	7 10·0	0·5	0 58·0	—
96	„ 8	10 37·0	11 18·0	0 4	1 31·0	—
97	„ 9	18 46·5	—	0·2	0 11·5	—
98	„ 10	13 15·0	13 23·0	0·5	0 38·0	—
99	„ 13	2 12·0	8 53·3	0 55	9 38·0	Tremors nearly constant from 2h. 12 0m. to 11h. 50m. Gale from N E.
100	„ 13	11 19·0	—	—	—	Line thickened and rough.
101	„ 14	5 9·0	5 16·0	1·1	0 28·0	—
102	„ 15	16 15·0	—	—	—	Tiny zigzag.
103	„ 15	20 54·5	22 13·0	0·4	1 54·5	—
104	„ 18	0 16·5	0 42 8	1·0	1 9·5	—
105	„ 18	18 0·0	—	—	—	Frequent slight tremors, possibly A.T.'s to November 23. 10h.
106	„ 21	0 35·0	—	0·45	0 8·0	
107	„ 21	17 44·0	—	—	—	Single very small notch.
108	„ 25	2 37·0	2 56·0	0·25	0 36·0	—
109	„ 26	—	—	—	—	Occasional very slight air tremors to December 3.
110	Dec. 6	15 43·0	15 53·5	0·5	0 49·0	—
111	„ 8	17 52·0	—	—	—	Frequent A.T.'s to December 9, 2h. 3m.
112	„ 9	2 38·5	3 12·5	1·9	1 36 5	—
113	„ 10	—	—	—	—	Occasional A.T.'s.
114	„ 14	23 15·0	0 12·5	1·4	1 48·0	—
115	„ 17	9 2·5	—	—	—	A.T.'s.
116	„ 18	1 2·0	—	—	—	Slight thickenings, similar to others on the same day.
117	„ 18	3 59·0	4 1·5	0·4	0 11·0	Slight thickenings from 17th, 23h. 30m.
118	„ 19	7 21·0	7 22·0	0·6	0 6·0	—
119	„ 24–25	—	—	—	—	Frequent A.T.'s.
120	„ 30	22 56·5	23 28·2	0·5	2 20·5	—
121	„ 31	6 19·0	6 48·5	0·25	0 52·0	—
122	„ 31	9 17·5	9 50·0	1 6	2 39·5	—
123	„ 31	13 51·5	14 13·5	0·25	0 38·0	Probably A.T.'s.

1 mm. of amplitude = 0″·715.

Abstracts relating to the Milne Pendulum from Registers published at the Strassburg University, K. Hauptstation für Erdbebenforschung. Director, Professor Dr. G. GERLAND.

Date	Commencement	Maximum	Duration	Amplitude
	1901.			
	H. M.	H. M.	H. M.	MM.
June 13	1 19·0		1 8	
„ 13	4 7·0		0 21	
„ 24	7 16·5	8 2·7	2 24	11·0
„ 24	14 2·5	14 36·5	0 52	1·7
„ 26	3 14·5		0 3	0·5
„ 30	2 36·5			
July 10	4 5·7		0 5	
„ 26	19 37·0		0 6	
„ 28	18 8·5		0 4	
„ 29	1 49·5			
„ 31	10 43·0		0 49	1·2
August 6	18 50·0			
„ 18	2 27·1			
„ 21	9 27·3			
„ 29	13 24·6			
Sept. 7	0 33 0			
„ 15	1 5·9			
„ 28	15 59·2			

From August 6 up to September 28 refer to the Rebeur-Ehlert pendulum records. The Strassburg register does not give the times recorded by the Milne H.P.

The Register from Toronto, Canada. Director, Professor R. F. STUPART.

No.	Date	Commencement of P.T.s	Beginning of Large Waves.	Maximum	Ending	Amp.	Remarks
		1901.					
		H. M. S.	H. M. S.	H. M. S.	H. M. S.	MM.	
330	July 11	17 58 0	—	—	—	0·1	Minute hitch.
331	„ 14	1 26 3	—	—	1 36 0	0·1	Mere thickening.
332	„ 16	1 6 0	—	—	1 8 0	0·2	Small, but marked.
333	Aug. 3	20 15 0	—	—	—	0·05	Very small hitch.
334	„ 6	19 40 8	—	—	—	0 05	Just noticeable.
335	„ 9	No P.T.s	9 47 0	10 17 0	To next quake slightly disturbed	1·7	Medium.
336	„ 9	13 20 1	—	14 25 1	17 45 0	5·5	Large.
337	„ 9	No P.T.s	18 57 8	19 30 9	21 13 5	2·4	Medium.
338	„ 10	11 35 8	—	11 40 5	12 38 0	0·25	Very small.
339	Sept. 6	24 7 0	—	24 25 0	25 10 abt.	0·35	Small and prolonged.
340	„ 8	18 40 8	—	—	19 26 abt.	0·1	Number of small vibrations.
341	„ 9	11 45 0	—	—	—	0·1	Small vibration.

Toronto Register—continued.

No.	Date	Commencement of P.T.s	Beginning of Large Waves	Maximum	Ending	Amp.	Remarks
		H. M. S.	H. M. S.	H. M. S.	H. M. S.	MM.	
342	Sept. 12	17 2 0	—	—	17 14 0	0·05	Very minute vibration.
343	Oct. 8	Missed. Clock stopped by paper being too wide. Nicaragua earthquake.					
344	„ 11	3 13 1	3 19 0	3 23 8	4 20 0	1·9	Moderate quake.
345	„ 11	6 43 0	—	—	6 50 0	0·05	Slight thickening.
346	„ 15	13 31 5	13 45 0	13 47 5	—	1·0	Small, but marked.
347	„ 15	15 18 5	—	—	—	0·6	Small, but marked.
348	„ 19	10 9 0	—	10 20 3	11 40 2 about	1·0	Medium and extended.
349	Nov. 8	6 51 7	—	—	6 53 0	0·1	Very small.
350	„ 8	10 44 0 Uncertain	—	—	11 54 abt.	0·15	Very small and prolonged.
351	„ 10	12 45 5	—	—	13 7 abt.	0·4	Small.
352	„ 13	10 42 0	—	11 25 abt.	13 0 abt.	0·4	Small and prolonged.
353	„ 14	No P.T.s	4 43 6	4 48 9	5 48 9	2·5	Medium. Utah quake.
354	„ 15	21 23 5	—	21 26 5	21 29 0	0·2	Small (air c. around).
355	„ 18	1 1 4	—	1 9 0	1 35 4	0·3	Small, but marked.
356	„ 21	0 17 5	0 19 6	0 19 8	1 5 8	2·0	Medium.
357	„ 25	0 13 5	—	—	0 15 5	0·1	Minute thickening.
358	„ 25	2 4 0	—	—	2 25 abt.	0·05	Thickening.
359	Dec. 5	18 29 0	—	—	18 59 0	0·1	Prolonged thickening.
360	„ 7	6 33 2	—	—	6 36 0	0·1	Thickening.
361	„ 9	2 29 3	2 37 2	2 37 7	4 42 abt.	7·3	Large vibrations after max. Larger than at Victoria.
362	„ 13	5 21 0	—	—	—	0·05	Very small.
363	„ 13	5 23 4	—	—	— 15 Dec. abt.	0·05	Two distinct oscillations.
364	„ 14	23 20 5	—	—	24 10 0	0·15	Small oscillations continued for a long time.
365	„ 17	8 32 7	—	8 35 2	8 40 abt.	0·6	Sharp little movements.
366	„ 22	20 27 0	—	—	—	0·05	Very minute hitch.
367	„ 22	21 48 0	—	—	—	0·05	Wavy.
368	„ 22	22 7 5	—	—	—	0·05	Minute hitch.
369	„ 26	11 26 2	—	11 41 2	— (Dec. 31)	0·15	Series of thickenings.
370	„ 30	22 25 4	Gradual increase	23 18 7	1 11 0	2·1	Medium and prolonged.

Toronto Register—continued.

No.	Date	Commencement of P.T.s	Beginning of Large Waves	Maximum	Ending	Amp.	Remarks
		H. M. S.	H. M. S.	H. M. S.	H. M. S.	MM.	
371	Dec. 31	6 0 7	—	6 21 3	7 24 0	1·0	Small, but decided.
372	„ 31	9 13 0	9 21 1	9 53 3	11 52 abt.	8·7	Large and important.
373	„ 31	13 24 5	—	13 45 3	14 34 0	1·0	Small series of small oscillations at first.
374	„ 31	16 49 8	—	17 0 0	17 30 0	0·5	Smaller quake.

From September 23 to 30, boom anchored by spider webs.

The Register from Victoria, B.C., Canada. E. Baynes Reid, *Superintendent.*

No.	Date	Commencement of P.T.s	Beginning of Large Waves	Maximum	Ending	Amp.	Remarks
				1901.			
		H. M. S.	H. M. S.	H. M. S.	H. M. S.	MM.	
303	July 11	23 54 3	—	—	—	0·1	Thickening.
304	„ 13	14 25 5	—	—	—	0·1	„
305	„ 14	1 18 3	1 25 7	1 27 2	1 42 5	1·8	Moderate, lasting a short time.
306	„ 15	15 14 0	—	—	15 21 5	0·1	Marked thickening.
307	„ 16	1 12 5	—	—	1 22 5	0·1	Marked thickening.
308	„ 22	1 33 5	—	—	1 40 0	0·25	Very small.
309	„ 24	11 41 0	—	—	11 46 0	0·05	Thickening.
310	„ 26	23 25 0	—	—	24 27 0	0·05	Small vibration movements. Nevada quake.
311	„ 29	1 39 0	—	—	—	0·1	Small vibration.
312	„ 29	1 47 6	—	—	2 17 abt.	0·25	A large one.
313	Aug. 3	20 18 2	-	20 22 0	20 27 0	2·0	Moderate. Well defined.
314	„ 6	19 31 5	—	19 42 5	19 52 abt.	0·2	Thickening.
315	„ 9	9 34 4	9 42 3	9 43 8	12 37 9	1·9	Medium.
316	„ 9	13 14 2	—	14 14 4	18 2 6	30·0	Very large.
317	„ 9	18 44 7	18 52 9	19 23 1	22 19 1	2·5	Medium.
318	„ 10	11 0 4	—	11 41 0	12 27 0	0·9	Moderate.
319	„ 11	14 51 9	—	15 29 6	16 47 4	0·7	Medium and prolonged.
320	„ 16	9 23 1	—	—	9 26 abt.	0·1	Thickening.
321	„ 21	9 54 0	—	20 0 0	20 21 0	0·4	Small.
322	„ 29	12 44 7	—	—	13 19 5	0·05	Thickenings.
323	Sept. 6	23 59 1	—	24 21 9	25 24 5	1·0	Small.
324	„ 8	18 05 0	—	18 32 8	20 35 abt	1·0	Medium and extended.
325	„ 9	11 50 3	—	—	12 0 0	0·2	Very small.
326	„ 12	17 14 0	—	—	17 16 5	0·05	Mere thickening.

The Register from Victoria, B.C., Canada—continued.

No.	Date	Commencement of P.T.s	Beginning of Large Waves	Maximum	Ending	Amp.	Remarks
		H. M. S.	H. M. S.	H. M. S.	H. M. S.	MM.	
327	Sept. 23	22 0 8	—	—	22 3 5	0·15	Very small, but marked
328	„ 23	22 20 0	—	—	22 23 0	0·1	Very small, but marked.
329	„ 23	22 45 0	—	—	22 48 0	0·1	Very small, but marked.
330	„ 24	8 13 7	—	—	9 26 8	0·2	Very small & extended.
331	„ 28	15 58 4	—	—	17 16 4	0·15	Very small and extended.
332	„ 30	10 30 8	10 38 8	10 40 6	12 22 abt.	0·7	Small. Largest vibration at beginning.
333	Oct. 2	9 12 0	—	—	—	0·05	Thickening.
334	„ 8	1 52 3	2 44 0	2 59 5	4 49 9	7·2	Large Nicaragua.
335	„ 8	14 47 0	—	—	15 14 abt.	0·05	Thickenings.
336	„ 10	10 44 3	—	—	10 46 abt.	0·1	Marked thickening.
337	„ 11	3 8 4	—	3 36 3	abt. 4 36	1·0	Medium quake.
338	„ 11	6 55 4	—	—	7 11 abt.	0·15	Marked thickening.
339	„ 15	—	13 23 6	13 27 3	14 27 abt. about	3·4	Medium.
340	„ 15	—	14 57 1	14 58 9	15 38 3	2·2	„
341	„ 17	6 54 3	—	—	7 18 0	0·15	Marked thickening.
342	„ 19	10 1 3	10 10 0	10 11 0	11 15 5	1·0	Small and prolonged.
343	„ 20	2 32 3	—	—	2 35 3	0·1	Marked thickening.
344	Nov. 5	14 40 0	—	—	14 49 0	0·2	Marked thickening.
345	„ 7	0 45 0	—	—	—	0·01	Minute vibration.
346	„ 8	6 15 7	—	—	6 54 abt.	0·15	Very small.
347	„ 8	10 20 0	—	10 43 0	12 13 abt. about	0·25	Small and extended.
348	„ 10	12 46 5	—	13 18 7	13 42 4	0·4	Small.
349	„ 13	10 30 3	—	11 21 4	11 59 5	0·4	Small and prolonged.
350	„ 14	4 38 6	4 39 9	4 41 7	5 47 0	8·0	Large, followed by small vibrations. Utah quake.
351	„ 18	0 54 8	—	1 4 7	1 31 3	0·2	Very small.
352	„ 20	No P.T.s	23 58 9	0 0 1 (21st)	1 0 0	3·5	Medium and well marked.
353	„ 24	23 54 0	—	23 55 0	24 6 abt.	1·5	Small and well marked.
354	„ 25	2 8 0	—	2 11 5	3 14 abt.	0·3	Very small, followed by minute vibrations

The Register from Victoria, B.C., Canada—continued.

No.	Date	Commencement of P.T.s	Beginning of Large Waves	Maximum	Ending	Amp.	Remarks
		H. M. S.	H. M. S.	H. M. S.	H. M. S.	MM.	
355	Dec. 4	11 23 2	—	—	11 33 abt.	0·25	Very small.
356	„ 5	17 58 3 Uncertain	—	18 34 3	19 8 abt.	0·3	Pronounced thickenings.
357	„ 7	6 27 2	—	—	6 33 3	0·1	Very small, but decided.
358	„ 9	2 22 2	2 29 5	2 33 3	4 23 5	28·0	Very large. One of the largest.
359	„ 13	5 16 3	—	—	5 21 3 about	0·2	Small, but well defined.
360	„ 14	23 11 0	—	23 32 0	25 1 abt.	0·9	Moderate. Extended succession of oscillations.
361	„ 17	8 27 1	—	—	8 36 5	0·5	Several sharp little displacements.
362	„ 25	7 1 2	—	—	7 11 0	0·1	Very gradual thickening.
363	„ 30	22 39 8	Gradual	23 8 5	24 55 abt.	1·5	Medium and extended.
364	„ 31	5 53 8	Gradual	6 15 3	7 7 0	1·1	Medium and well defined.
365	„ 31	9 8 5	9 13 5	9 38 3	11 36 5 about	6·0	Large and extended.
366	„ 31	13 17 1	—	13 42 5	14 34 5	0·25	Series of small rumblings.
367	„ 31	16 26 5	—	—	17 20 abt.	0·2	Small and extended.

Register from San Fernando, Spain.
Instituto y Observatorio de Marina. Director, Commodore J. Viniègra.

No.	Date	Commencement	Maxima	Amplitude	Duration	Remarks
		1901.				
		H. M.	H. M.	"	H. M.	
103	Aug. 6	—	—	—	—	Small movements from 14h. to 15h.
104	„ 6	19 07·6	19 16·1	0·26	0 59·6	—
105	„ 9	9 38·1	10 26·1	3·44	2 31·0	—
106	„ 9	13 22·1	14 47·1	11·18	3 37·0	—
107	„ 9	18 52·1	19 40·6	12·04	2 29·6	—
108	Sept. 8	—	—	—	—	Small movements from 18h. 30m. to 21h. 30m.
109	„ 24	—	—	—	—	Small movements from 8h. to 9h. 30m.
110	„ 26	—	—	—	—	Small movements from 1h. 30m. to 2h. 30m.
111	„ 30	3 58·6	10 54·8	0·43	1 1·0	—
112	Oct. 8	2 49·6	3 24·6	0·39	1 32·0	—
113	„ 19	9 51·2	10 37·2	0·48	1 15·0	—
114	Nov. 8	6 56·3	—	—	0 25·6	Very small movement.

Register from San Fernando, Spain—continued.

No.	Date	Commencement	Maxima	Amplitude	Duration	Remarks
		H. M.	H. M.	"	H. M.	
115	Nov. 8	11 4·8	—	—	0 43·0	Very small movement.
116	„ 15	20 40·8	21 55·8	—	2 28·0	„ „
117	„ 18	0 20·8	0 49 8	—	1 14·0	„ „
118	„ 25	2 34·6	2 58·1	0·39	1 19·5	—
119	„ 28	—	—	—	—	Small movement from 1h. 30m. to 10h. 30m.
120	Dec. 2	15 7·8	15 14·3	0 34	1 7·0	—
121	„ 6	15 52·2	16 47·2	3·22	1 33·5	—
122	„ 7	6 10·2	8 12·5	0·34	4 5·0	—
123	„ 9	2 39·4	4 7·4	2·15	3 49·0	—
124	„ 10	4 24·8	—	—	4 0·0	Small and continued movement from 4h. 30m. to 8h. 30m.
125	„ 14	23 12·2	0 19·2	0·56	1 29·5	—
126	„ 31	9 15·5	9 59·5	1·07	1 41·0	—

Register from Abbassia Observatory, Cairo, Egypt. Survey Department Director-General, Captain H. G. Lyons, *R.E.*; *Superintendent,* E. B. H. Wade, *M.A.*

No.	Date	Commencement	Duration of P.T.	Maxima	Amplitude	Total Duration	Remarks
				1901.			
		H. M.	H. M.	H. M.	"	H. M.	
72	Sept. 8	18 03	—	18 04	0·2	1 2	
73	„ 10	5 00	—	5 02 5 04	0·2	13 0	
74	„ 13	5 20	1 0	5 22	0·2	10 0	
75	„ 15	3 02	—	3 03	0·4	1 0	
76	„ 29	2 14	—	—	—	—	Small doubtful movement.
77	Oct. 1	13 13	0 5	13 16	0·3	31 0	
78	„ 2	10 13	—	—	—	—	Small doubtful movement.
79	„ 6	9 29	—	—	—	—	„ „ „
80	„ 24	1 30	—	1 37	0·5	25 0	
				1 48	—	—	
81	„ 24	1 59	—	2 02	0·04	12 0	
82	Nov. 3	4 06	—	4 45	0·4	3 5	
83	„ 7	14 12	2 0	14 16	0·3	35 0	
84	„ 15	14 46	—	14 46·3	0·1	0 5	
85	„ 15	21 35	—	21 48 21 51 21 56 21 59 22 02	0·3	0 55	
86	Dec. 18	0 27	—	41 4 46 5 55 0	0·3	1 7	
87	„ 20	4 40	15 0	4 57 5 00 5 09	0·2	35 0	
88		6 50	7 0	6 56·5 7 00·5	0·3	10 0	
89	„ 24	23 54	—	23 54·5 23 59·0	0·3	7 0	

Register from the Royal Observatory, Cape of Good Hope.
Director, Sir DAVID GILL, *K.C.B., F.R.S.*

No.	Date	Commencement	D. 1st P.T.s	Maxima	Semi-amplitude	Duration	Remarks
				1901.			
		H. M.	M.	H. M.	"	H. M.	
116	Aug. 9	9 45·5	—	10 47·5	0·20	2 10	—
117	„ 9	13 23·1	50	14 21·9 14 25·4 14 28·3 14 31·0	1·00 1·75 1·35 0·80	3 37	—
118	„ 9	18 57·0	66	20 4·5	2·15	—	—
119	„ 10	11 28·5	—	11 40·6	—	0 26	Very slight.
120	„ 11	15 39·0	—	—	—	0 40	Very slight tremors.
121	Sept. 7	11 24·7	—	11 33·8	0·21	0 22	—
122	„ 8	6 33·1	13	6 50·9 6 56·7	0·22 0·26	1 43	After the maxima the remainder is merely a thickening of the trace.
123	„ 9	17 8·4	—	17 9·8	—	0 14	Very slight.
124	„ 23	20 30·8	—	—	—	0 55	Slight thickening of trace.
125	„ 29	22 59·2	—	23 48·7	0·13	1 30	—
126	Oct. 7	14 43·1	27	15 11·3 15 12·7 15 15·4 15 18·7	0·24 0·29 0·38 0·18	2 10	—
127	„ 16	18 10·2	22	18 35·1 18 38·8	0·08 0·08	0 55	—
128	„ 18	22 13·4	23	22 38·2 22 40·4 22 54·0 23 4·1	0·10 0·08 0·10 0·08	2 38	—
129	„ 28	20 12·2	26	20 41·8	0·16	0 53	—
130	Nov. 13	10 43·8	—	—	—	0 36	A series of slight thickenings of trace.
131	„ 15	17 1·1	—	17 4·3	0·05	0 7	—
132	„ 15	20 45·3	12	20 57·7 21 0·2 21 11·3	0·12 0·12 0·11	1 57	—
133	„ 18	0 33·0	6	0 44·0 0 53·0	0·08 0·08	0 42	Times approximate. Hour marks not recorded on slip through change in level.
134	„ 25	2 7·2	29	2 38·3	0·07	1 40	—
135	Dec. 6	14 27·5	7	14 40·6	0·29	0 48	—
136	„ 9	3 10·0	20	4 6·0	0·09	1 16	—
137	„ 14	23 15·6	10	23 27·3 23 32·8	0·57 0·76	2 12	From Dec. 19d. 8h. to 20d. 8h., no record through boom dropping.
138	„ 25	0 18·0	2	0 21·0	0·23	0 10	Times approximate. Hour marks not recorded through change in level.
139	„ 26	10 33·5	5·5	10 39·5 10 44·5	0·10 0·10	0 16	—
140	„ 30	23 13·5	46	0 5·0	0·15	2 5	—

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

No.	Date	Commencement	D. 1st P.T.s	Maxima	Semi-amplitude	Duration	Remarks
		H. M.	M.	H. M.		H. M.	
141	Dec. 31	7 6·6	7	7 16·5 7 19·5 7 23·5	0·09	0 23	Three slight thickenings at times noted for maxima.
142	„ 31	9 22·8	61	10 30·4 10 35·2	1·52 1·52	6 4	—
				1902.			
143	Jan. 1	5 51·6	54	6 52·2	0·63	1 50	—

Register from the Alipore Observatory, Calcutta. (1 mm. = 0″·48.)
G. W. KÜCHLER, *Assistant Meteorological Reporter.*

No.	Date	Commencement G.M.T.	Duration First P.T.	Maxima	Amplitude	Duration	Remarks
				1901.			
		H. M. S.	H. M. S.	H. M. S.	MM.	H. M. S.	
87	July 4	21 54 49	0 5 9	22 0 29	0·75	0 15 26	—
88	Aug. 6	10 4 16	—	10 6 4	1·25	0 18 46	—
89	„ 6	17 18 25	—	—	—	0 3 51	Thickening of the line.
90	„ 6	18 50 9	0 5 9	18 57 52	3·00	0 34 28	—
91	„ 8	8 58 9	0 13 8	9 12 49	0·75	1 26 45	Doubtful.
92	„ 8	12 19 31	—	—	—	1 31 6	Thickening of the line.
93	„ 9	1 50 12	—	—	—	1 19 49	„
94	„ 9	9 32 23	—	9 56 38	16·00	2 12 26	—
95	„ 9	13 14 23	—	14 16 57	12·50	4 8 13	—
96	„ 9	18 42 47	—	19 8 15	25·00	3 12 5	—
97	„ 10	11 0 47	—	—	—	1 25 59	Thickening of the line
98	„ 11	14 51 32	—	—	—	1 37 33	„
99	„ 18	2 28 28	0 4 35	2 33 33	1·00	0 22 22	Doubtful.
100	„ 18	20 2 33	0 4 45	20 19 34	0·50	1 11 42	—
101	„ 20	3 52 55	—	—	—	0 10 10	Thickening of the line.
102	„ 29	12 24 9	0 19 20	12 50 5	0·50	0 51 22	—
103	Sept. 7	22 46 54	—	—	—	0 47 47	Thickening of the line.
104	„ 9	4 45 55	0 4 4	4 50 29	0·50	0 6 6	Doubtful.
105	„ 10	4 25 37	0 8 39	4 35 17	2·50	0 34 4	—
106	„ 22	23 2 40	0 7 7	23 11 19	1·50	0 23 54	—
107	„ 24	8 10 50	0 7 38	8 20 30	0·50	0 25 56	—
108	„ 27	12 4 21	—	—	—	0 32 33	Thickening of the line.
109	„ 30	10 28 22	0 18 49	10 53 17	2·00	1 13 44	—
110	Oct. 4	14 46 51	—	—	—	0 57 58	Thickening of the line.
111	„ 8	3 12 27	0 22 22	3 42 57	2·25	1 17 47	—
112	„ 14	8 52 58	0 38 8	9 40 16	0·50	2 44 45	Doubtful.
113	„ 17	6 0 11	0 1 32	6 8 50	2·25	0 32 2	—
114	„ 19	20 30 49	—	20 32 20	1·00	0 4 4	—
115	Nov. 13	10 26 39	0 9 9	10 40 23	0·50	0 36 7	—
116	„ 15	0 21 5	—	—	—	0 9 39	Thickening of the line.
117	„ 15	20 51 5	0 22 53	21 19 3	0·24	1 6 36	—
118	„ 16	5 50 4	—	—	—	0 8 38	Thickening of the line.
119	„ 17	23 32 18	24 37 7	24 10 57	2·88	1 24 55	—
120	„ 22	5 7 26	0 6 37	5 15 34	0·24	0 12 43	—
121	„ 22	6 23 42	0 1 32	6 26 15	0·36	0 4 4	—
122	„ 25	1 11 56	0 44 14	2 6 51	1·68	2 12 12	—
123	Dec. 9	3 8 6	0 20 50	3 36 34	0·84	0 52 52	—
124	„ 14	23 4 8	—	23 19 23	5·28	0 58 59	—
125	„ 26	10 43 56	0 6 37	10 58 41	0·48	0 48 49	—

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

Observatory Number	Date	Time of Disturbance in G.M.T. Beginning	Maximum	End	Amplitude in mm. and in Arc of Maximum Movement
	1901.				
		H. M. S.	H. M. S.	H. M. S.	MM. ″
431	August 6	18 46 0	18 51 40	19 17 5	1·5 = 1·14
437	„ 9	9 34 21	10 3 46	11 21 16	2·8 = 2·13
438	„ 9	13 15 36	14 19 54	16 39 9	5·1 = 3·88
439	„ 9	18 44 40	19 14 27	20 47 48	10·6 = 8·06
522	September 7	0 42 1	—	1 41 19	—
524	„ 7	22 52 54	—	23 38 17	—
526	„ 8	17 55 54	—	19 16 57	—
531	„ 10	4 31 42	4 37 36	4 54 38	0·7 = 0·53
563	„ 24	8 18 8	—	9 0 9	—
579	„ 30	10 28 50	10 58 25	11 31 58	1·0 = 0·62
597	October 8	2 38 33	—	4 43 40	—
610	„ 17	5 54 6	6 4 59	7 21 33	1·5 = 0·93
612	„ 19	9 14 54	—	11 26 54	—
624	November 8	6 37 52	—	7 18 32	—
625	„ 8	10 29 41	—	11 31 43	—
634	„ 15	20 46 15	—	22 31 5	—
638	„ 18	0 7 27	0 12 39	1 13 43	4·0 = 2·48
645	„ 25	1 58 45	—	2 41 58	—
662	December 6	14 51 44	—	15 25 23	—
666	„ 9	3 21 17	—	4 6 56	—
669	„ 14–15	23 6 41	23 31 23	0 46 4	3·3 = 2·05
678	„ 26	10 41 40	—	11 39 6	—
683	„ 30–31	22 56 39	23 33 24	0 41 35	0·7 = 0·43
687	„ 31	9 15 28	10 0 40	11 35 25	2·6 = 1·61

Register from the Kodaikánal Observatory, Madras.
Director, C. Michie Smith.

No.	Date	Begins G.M.T.	Maxima G.M.T.	Amplitude Mm.	Amplitude ″	Duration	Remarks
	1901.						
		H. M.	H. M.	MM.	″	H. M.	
59	July 16	0 16·3	0 16·3	1· 0	0·5		
			1 29·2	1·25	0·6	2 25	
			2 08·6	0·25	0·1		
			2 32·9	1· 0	0·5		
60	„ 16	3 31·0	3 32·1	1· 0	0·5		
			34·0	0·75	0·4	0 15	
			42·3	0· 5	0·2		
61	„ 21	3 51·6	3 52·6	0·75	0·5	0 05	
			53·8	1· 1	0·6		
62	„ 22	8 55·9	8 55·9	0·25	0·2		
			9 24·1	0·75	0·5	1 05	
			25·6	0· 5	0·3		

Register from the Kodaikánal Observatory, Madras—continued.

No.	Date	Begins G.M.T.	Maxima G.M.T.	Amplitude Mm.	Amplitude ″	Duration	Remarks
		H. M.	H. M.	MM.	″	H. M.	
63	July 30	21 35·4	21 35·4	0·75	0·4		
			36·9	0·75	0·4	1 14	
			53·5	1· 0	0·5		
			22 19·3	1· 0	0·5		
65	Aug. 2	11 28·0	11 53·9	1· 0	0·5		
			12 50·7	1· 5	0·8	1 24	
			59·0	1· 0	0·5		
66	„ 3	12 12·7	—	—	—	0 07	Widening of line.
68	„ 4	8 05·6	8 05·6	0·75	0·6	—	
			07·7	1· 0	0·9	—	Single marks.
			12·8	0· 3	0·3	—	
69	„ 6	18 47·5	18 55·3	1· 2	1·0	0 40	P.T.s 6m.
70	„ 9	9 33·8	9 43·2	1· 0	1·0	1 25	P.T.s 8m. Many small maxima. Actual maximum probably lost as sheet was marked at 9h. 57m.
			10 13·1	1· 0	1·0		
71	„ 9	13 14·2	13 26·6	1· 5	1·5		P.T.s 6m.
			29·7	1· 5	1·5		
			32·3	2· 0	2·0		
			40·1	1·75	1·8	2 45	
			55·6	1·25	1·3		
			56·8	1· 5	1·5		
			59·5	1· 5	1·5		
			14 01·7	1·75	1·8		
72	„ 9	18 53·5	19 17·3	2· 0	2·0		
			19·3	1· 5	1·5	1 20	
			21·8	1·25	1·3		
			25·6	2· 0	2·0		
73	„ 11	15 15·2	—	—	—	0 20	Slight.
79	Sept. 10	4 23·7	4 37·5	2· 0	1·3	0 43	P.T.s 5m. Port Blair Tide gauge clock stopped at 10.32 A.M. (probably local time)
80	„ 24	8 17·3	8 22·9	1· 0	0·5	0 15	
82	„ 30	10 39·0	10 58·3	0· 5	0·3		P.T.s 17m.
			11 00·4	0· 5	0·3	1 00	
			02·4	0· 5	0·3		
			05·4	1· 0	0·5		
84	Oct. 4	11 12·6	11 14·6	—	—	0 08	Slight.
			19·7	—	—		
86	„ 17	6 00·5	6 07·0	0· 5	0·4	0 30	P.T.s 6m.
			13·1	1· 0	0·7		
87	„ 19	10 10·6	10 10·9	1· 0	0·7	1 00	Maximum probably lost. Sheet marked 10h. 20m.
88	„ 26	19 22·1	19 25·7	3· 0	1·5	†	A series of large movements which drove the boom over to the East, where it was caught. Maximum at least 5mm.
89	„ 29	8 01·5	8 29·1	0· 5	0·2	1 00	Small but well marked.
90	Nov. 15	20 44·2	21 16·1	0· 5	0·2	0 50	Widening of line.
91	17–18	23 59·4	0 15·1	4· 5	2·2	1 11	
			17·7	3· 5	1·7		

Register from the Kodaikánal Observatory, Madras—continued.

No.	Date	Begins G.M.T.	Maxima G.M.T.	Amplitude Mm.	Amplitude "	Duration	Remarks
		H. M.	H. M.	MM.	"	H. M.	
92	Nov. 25	1 50·9	1 54·5	1· 0	0·5	1 08	
			2 01·2	1· 5	0·7		
93	Dec. 12	3 22·6	3 22·6	—	—	0 03	Slight.
94	„ 14	23 05·0	23 11·6	1· 5	0·9	1 25	P.T.s 3m.
			13·2	1· 5	0·9		
			27·5	2· 0	1·3		
97	„ 30	23 01·3	23 27·0	0· 3	0·1	1 20	P.T.s 24m.
			32·6	0· 3	0·1		
			37·2	0· 5	0·3		
98	„ 31	6 30·1	—	—	—	0 40	Slight but quite distinct.
99	„ 31	9 14·7	9 28·1	0· 8	0·4	3 00	P.T.s 12m.
			10 00·9	2· 5	1·4		
			04·0	2· 0	1 1		
			06·1	2· 0	1·1		
100	„ 31	13 54·2	14 08·6	0· 5	0·3	1 05	Slight.
				1902.			
101	Jan. 1	5 43·7	6 18·1	1· 0	0·5	2 31	P.T.s 29m.
			23·2	1· 3	0·7		

Register from Batavia, R. Magn. and Met. Observatory.
Director, S. Figee.

No.	Date	Commencement	Durat. P.T.	Maxima	Amplitude	Total Durat.	Remarks
				1901.			
		H. M.	M.	H. M.	MM. "	MIN.	
317	July 4	14 20·1	—	14 22·6	0·9 0·4	5	Very small.
318	„ 14	9 44·2	—	9 44·8	1·7 0·7	8	„ „
319	„ 15	14 50·7	—	14 51·0	1·1 0·5	5	„ „
320	Aug. 9	9 33·2	2·0	9 41·7	4·2 1·8	130	Moderate.
				10 4·6	6·8 2·9		
321	„ 9	13 11·3	—	13 28·4	26·0 11·2	260	Very strong.
				41·4	30·0 12·9		
				48·4	32 6 14·0		
				51·0	36 0 15·5		
				14 2·9	20·4 8·8		
322	„ 9	18 42·4	9·5	19 13·2	14 0 6·0	130	Strong.
323	„ 10	10 48 0	11·6	10 59·4	0·7 0·3	90	Moderate.
				11 30·2	0·6 0·3		
324	„ 11	14 38·3	—	15 17·5	1·0 0·4	90	„
325	„ 18	2 8·2	5·2	2 16·1	2·6 1·3	40	„
				18·2	2·5 1·3		
326	„ 18	19 49·4	4·7	19 57·0	4·2 2·1	40	„
				20 0·4	3·0 1·5		
327	Sept. 7	22 40·9	3·7	22 46·7	26·0 13·0	70	Strong.
				50·7	26·0 13·0		
				59·9	12·0 6·0		
				23 2·5	7·3 3·7		
328	„ 8	17 51·7	—	18 20·7	3·0 1·5	90	Moderate.
329	„ 9	23 56·7	—	24 9 0	1·2 0·6	20	Small.

Register from Batavia, R. Magn. and Met. Observatory—continued.

No.	Date	Commencement	Durat. P.T.	Maxima	Amplitude	Total Durat.	Remarks
		H. M.	M.	H. M.	MM "	MIN.	
330	Sept. 10	4 33·7	—	4 39·7	2·2 1·1	20	Small.
331	„ 24	7 4·5	—	7 9·6	1·4 0·7	50	„
332	Oct. 8	2 41 1	—	3 3·7	1·0 0 5	120	„
				4 9·0	1·0 0·5		
333	„ 9	3 31·5	—	3 32·7	0·6 0·2	3	Very small.
334	„ 13	18 25 (?)	—	18 27·0	0·6 0·2	6	„ „
335	„ 19	9 1·7	—	9 8·2	1·0 0·4	25	Small.
				0 10·2	1·0 0·4		
336	„ 19	9 58·7	—	10 8·7	4·0 1·6	60	Moderate.
337	„ 22	7 59·7	—	8 0·0	1·0 0 4	2	Very small.
				0 0·9	0·9 0 4		
338	Nov. 13	9 31·7	9·0	9 47·5	2·0 1 0	80	Small.
339	„ 17	5 30·7	—	5 33·2	1 0 0·5	15	Very small.
340	„ 25	1 54·7	—	2 5·2	18·0 9·0	70	Strong.
				0 9·5	10·0 5·0		
341	Dec. 9	13 43·3	—	13 43·5	1·0 0·6	3	Very small.
				0 44 6	1·8 1·1		
342	„ 14	23 2·7	4·3	23 8·3	40 0 16·0	100	Strong.
343	„ 25	10 14·8	—	10 29·0	1·0 0·4	60	Small.
344	„ 30	± 5 35·0	—	5 50·1	1·2 0·5	100	„
				6 28·2	1 2 0·5		

Register from the Johns Hopkins University, Baltimore, Md., U.S.A.
Professor H. F. Reid.

No.	Date	P. T. commence	Second group commence	Large waves commence	Maximum	End	Maximum Amplitude	Remarks
				1901				
		H. M.	H. M.	H. M.	H. M.	H. M.	MM.	
1	Apr. 5	23 22	23 49·5	24 22	24 24·5	26 37+	2·8	E.Q.
2	„ 6	21 14	—	21 45	21 47·5	22 55+	1·2	E.Q.
3	„ 8	—	—	—	—	—	—	Two small disturbances.
4	„ 10	—	—	—	—	—	—	One small disturbance.
5	May 18	14 14·6	—	—	—	14 58±	Small	Small disturbances.
6	„ 19	2 40·6	—	—	—	—	—	„ „
7	„ 21	16 55·3	—	—	—	—	—	„ „
8	„ 25	0 49·5	—	1 20	1 37·5	3 30	1·8	E.Q.
9	„ 26	7 58	—	—	8 21·7	9 0	1·0	„
10	„ 27	16 31·8	—	16 35·7	16 36·3	17 17·6	1·6	E.Q. probably.
11	June 5	22 40	22 50	—	—	—	—	Irregular disturbance.
12	„ 7	22 15	—	—	—	—	—	Irregular disturbance. Not E.Q.
13	„ 8	19 8	—	—	—	—	—	Irregularity.
14	„ 12	22 40	—	—	—	—	—	Not E.Q.
15	„ 13	3 39·7	—	4 2·3	4 4·8	5 17	0·3	Probably E.Q.
17	„ 23	21 58	—	—	—	22 16·5±	0·1	Small.
18	„ 24	7 28·9	—	8 10·8	8 13·8	9 49	2·5	E.Q.
19	„ 24	14 47	—	—	—	15 5±	0·1	Small.
20	„ 24	23 19·3	—	—	—	—	—	Small. Probably not E.Q.
22	July 3	20 4	—	—	—	—	—	„ „
23	„ 4	0 36	—	—	—	—	—	„ „
24	„ 4	0 52	—	—	—	—	—	„ „

Register from the Johns Hopkins University, Baltimore, Md., U.S.A.—continued.

No.	Date	P.T. commence	Second group commence	Large Waves commence	Maximum	End	Maximum Amplitude	Remarks
		H. M.	H. M.	H. M.	H. M.	H. M.	MM.	
26	July 4	11 28 / 11 50	—	—	—	—	1·0 / 1·3	Probably not E.Q. Small.
27	„ 4	21 5	—	—	—	—	—	„ „
29	„ 14	1 23·1	—	—	—	1 51·5	0·4	Probably E.Q.
30	„ 15	0 59·5	—	—	—	1 1·5	0·2	Possibly E.Q.
32	„ 29	1 43·5	—	—	1 43·5	2 12	0·4	Small E.Q.
33	Aug. 3	23 13	—	—	—	—	0·1	Small disturbance.
34	„ 6	19 31·4	—	—	19 38·6	20 3·5	0·3	„ „
		No record from August 7, 5h. 45m., to October 30, 12h. G.M.T. No record November 2, 10h. 40m., to November 4, 9h. 10m.						
36	Nov. 8	6·8±	—	—	7 0	7·2±	0·3	Small E.Q.
37	„ 8	10·4±	—	—	11 1	12·2±	0·5	„
38	„ 10	12±	—	—	—	Nov.12 8	0·3	Probably air currents.
		No record November 11, 0h., to November 11, 8h.						
39	„ 11	20 58	—	—	—	21 10	0·1	Slight disturbance.
40	„ 22	10½	—	—	—	11½	0·2	Slowly increasing and decreasing amplitude.
42	„ 24	1±	—	—	—	8±	0·3	Probably air currents.
43	„ 24	16 9	—	—	—	—	—	Probably not E.Q.
44	„ 25	2 10±	—	—	—	3 30	—	Probably air-currents.
45	„ 25	11 44	—	—	12 20	12 30	0·4	—
49	Dec. 5	5	—	—	—	Dec. 5 13	—	Probably air currents.
51	„ 6	5	—	—	—	Dec. 6 13	—	„ „
52	„ 6	15 28	—	—	15 46	15 54	0·4	Probably E.Q.
54	„ 8	1½	—	—	—	Dec. 9 10½	—	Probably air currents.
55	„ 9	2 33·2	—	2 35·1	2 39·6	—	4·5	E.Q. Air currents mask begin and end.
56	„ 10	10	—	—	—	12	0·2	Small disturbance.
57	„ 10	14½	—	—	—	14½	—	„ „
58	„ 11	5 27·3	—	—	5 27·6	5 30	0·2	„ „
59	„ 13	5 22	—	—	—	—	0·2	„ „
60	„ 14	23 19·2	—	—	—	Dec. 15 2	—	Probably air currents.
		No record December 14, 16h., to December 30, 9h. 20m.						
61	„ 30	22 45	—	23 13·7	23 14·2	Dec. 31 1 8	1·7	E.Q. Another group begins December 30, 12h. 14m.
62	„ 31	4 44	—	—	—	5 18	0·3	Several widenings of line.
63	„ 31	6 2·1	—	6 22·9	6 26	7 27	1·9	E. Q.
64	„ 31	9 13·3	9 21·9	9 42·8	9 43·4	11 51	4·9	„
65	„ 31	12 41·5	—	—	—	—	—	Small disturbance.
66	„ 31	13 25·3	—	13 46·7	13 47·1	15	1·1	E.Q.
67	„ 31	16 56·5	—	—	—	17 49	0·5	Several widenings of line.
		1902						
68	Jan. 1	5 32·2	5 40·5	6 1	6 2	8	5·8	E.Q.
69	„ 1	12	—	—	—	Jan. 2 8½	—	Air currents.

Times for Nos. 1 to 20 are fairly good; for Nos. 22 to 34 are not very good. Those for Nos. 36 to 45 are bad, whilst the remainder, Nos. 49 to 69, are as accurate as could be measured. Period of the pendulum, April 5 to August 6, was 16·4 seconds. From November 8 to January 1 it was 15 seconds.

Register from the Perth Observatory, W. Australia. Director, W. E. Cooke.
Observations commenced on September 30, 1901.

No.	Date	Commencement of P.T.'s	Commencement of Decided Motion	Time of Max. Motion	Amplitude	End of Disturbance	Remarks
			1901.				
		H. M.	H. M.	H. M.	"	H. M.	
1	Oct. 8	2 12	3 32	3 42	0·60	4 40	—
2	„ 19	8 59	10 10	10 23	1·68	11 15	—
3	„ 29	7 59	8 2	8 16	1·08	9 6	—
4	„ 31	6 5	6 17	6 25	0·60	6 45	—
5	Nov. 13	10 23	10 33	10 37	2·88	11 5	—
6	„ 15	20 21	20 27	20 53	2·46	21 36	—
7	„ 25	?	1 54	2 1	0·60	5 5	There is a slight thickening of line at 0·25, which might be commencement of P.T.'s
8	Dec. 2	14 3	14 18	14 22	0·48	14 34	—
9	„ 2	—	15 6	15 13	0·30	15 36	—
10	„ 5	17 39	17 48	17 55	2·10	18 36	—
11	„ 6	?	?	15 (45)	1·38	17 (25)	Times very rough. Film sticking.
12	„ 14	—	18 (17)	18 (27)	3·60	20 (5)	„ „ Watch away for repair.
13	„ 31	—	9 30	10 20	0·60	11 45	—

Register from the Botanical Department, St. Clair, Trinidad, B.W.I. Director, J. H. Hart, *F.L.S.*

No.	Date	Commencement Greenwich Mean Time	Duration	Amplitude in Millimetres	Comments
			1901.		
		H. M.	H. M.	MM.	
27	July 1	14 4	0 5	9	—
28	„ 2	20 5	0 16	7	—
29	„ 3	7 21	0 29	11	—
30	„ 4	16 21	0 2	3	—
31	„ 4	16 41	0 3	2	From the 5th to the 22nd of July the clock was out of order and stopped at intervals. It was repaired on the 24th.
32	„ 5	21 27	0 5	4	
33	„ 9	18 3	0 18	15	
34	„ 28	11 46	0 12	12	
35	„ 28	13 40	0 18	2	—
36	Aug. 9	9 36	1 7	2½	—
37	„ 9	12 58	3 23	10	Very large disturbance.
38	„ 9	19 6	1 30	2	—
39	„ 28	15 21	0 3	1	—
40	„ 29	15 4	0 12	10	—
41	Oct. 8	2 20	0 55	9	4 maxima 2.27, 2.30, 2.37, 2.43.
42	„ 11	3 9	0 17	3	—
43	Nov. 12	13 4	0 5	1½	—

Register from the Botanical Department, St. Clair, Trinidad, B.W.I.—continued.

No.	Date	Commencement Greenwich Mean Time	Duration	Amplitude in Millimetres	Comments
		H. M.	H. M.	MM.	
44	Nov. 14	13 38	0 4	$1\frac{1}{2}$ [1]	—
45	„ 17	12 35	30 secs.	$3\frac{1}{2}$	—
46	„ 30	12 58	0 6	1	—
47	Dec. 3	1 35	0 2	$1\frac{1}{2}$	—
48	„ 6	15 0	0 49	$1\frac{1}{2}$	—
49	„ 10	21 44	0 3	1	—
50	„ 14	23 19	*0 47 ?	$1\frac{1}{2}$	* Merged in morning tremors.
51	„ 30	23 16	0 43	$1\frac{1}{2}$	—
52	„ 31	1 30	0 28	1	—
53	„ 31	9 36	* ?	—	Maximum at 10–6.

[1] Morning tremors occur regularly from about 12 midnight to 8 or 9 A.M. (local time) to considerable amplitude, and a special lamp kept burning during these hours has no apparent effect.

Register from the Magnetical and Meteorological Observatory, Irkutsk, Eastern Siberia. Director, A. V. VOZNESSENSKY, *Assistant E.C.*

No.	Date	Beginning of P.Ts.	Maximum Phase: Beginning	Maximum Phase: Time of Maximum	Maximum Phase: Amplitude of Maximum	Maximum Phase: End	End of Disturbance	Remarks
				1901.				
		H. M.	H. M.	H. M.	MM.	H. M.	H. M.	
1	Dec. 5	17 41·1	—	18 10·2	< 0·2	—	19 31·2	Very slight.
2	„ 6	15 23·6	—	15 49·1	< 0·2	—	17 00·3	„ „
3	„ 9	2 43·7	3 11·6	3 19·0	1·4	3 39·2	End lost	—
4	„ 14	{ Out of order, lost. Registers of other pendulums 23h. 05·2m. to 24h. 10·8m.						
5	„ 25	6 59·5	7 04·5	7 06·5	< 0·5	7 09·0	7 13·5	} Slight thickenings
6	„ 26	10 40·7	—	10 57·0	< 0·2	—	11 56·7	
7	„ 26	—	—	14 28·8	—	—	—	Very slight.
8	„ 30	22 46·7	22 54·7	{ 23 07·7 2·0 / 24 31·9 2·0 }		0 32·4	1 13·6	—
9	„ 31	5 59·8?	9 10·9	9 36·1	7·9	10 20·7	12 39·4	End lost.
10	„ 31	13 25·6	13 34·5	13 38·4	0·9	13 58·8	14 32·8	—
11	„ 31	15 24·4	—	15 30·4	0·5	—	15 41·2	—
12	„ 31	16 34·9	16 38·4	16 47·2	0·6	16 57·9	17 12·4	—

Nos. 1, 2, 5, 6, 7, 12 were not registered by other seismographs.

III. *Records.*

Earthquakes of Local Origin recorded by a Gray-Milne Seismograph at the Central Meteorological Observatory, Tokio, Japan, in the year 1901. ***The records for*** 1900 ***are in Circular No.*** 3.

$2a$ = Range of motion or double amplitude.
T = Complete period.
* refers to earthquakes which were not felt.
I. = slight. II. = weak. III. = strong.
Hm = Horizontal motion.
Vm = Vertical motion.

Dr. F. ŌMORI.

No.	Month	Day	Tokio Mean Time. 9 hrs. fast on Greenwich	Duration	Direction	Max. Hm. $2a$	Max. Hm. T	Max. Vm. $2a$	Max. Vm. T	Intensity	Remarks
			H. M. S.	M. S.		MM.	S.				
2401	I.	5	1 52 57 A.M.	—	—	—	—	—	—	I.	*
2402	„	6	4 49 14 P.M.	1 23	SSW–NNE	0·4	0·2	—	—	II.	Motion small for the first 4s., when the maximum motion took place. The motion was active for 15s.
2403	„	7	2 21 46 „	—	—	—	—	—	—	I.	*
2404	„	10	1 57 04 A.M.	—	—	—	—	—	—	I.	—
2405	„	14	7 42 28 „	—	—	—	—	—	—	I.	—
2406	„	30	2 22 18 P.M.	—	—	—	—	—	—	II.	—
2407	II.	18	9 28 42 A.M.	—	—	—	—	—	—	I.	*
2408	„	28	2 53 07 „	—	—	—	—	—	—	I.	—
2409	III.	1	6 49 07 „	—	—	—	—	—	—	I.	*
2410	„	19	8 56 53 „	—	—	—	—	—	—	I.	*
2411	„	20	0 34 39 P.M.	—	—	—	—	—	—	I.	—
2412	„	30	10 05 33 A.M.	—	—	—	—	—	—	I.	*
2413	IV.	5	11 49 27 „	—	—	—	—	—	—	I.	*
2414	„	6	8 36 26 „	—	—	—	—	—	—	I.	*
2415	„	8	5 06 12 P.M.	—	—	—	—	—	—	I.	—
2416	„	10	11 42 44 A.M.	2 55	NE–SW	2·8	0·4	0·3	0·2	II.	The preliminary tremor lasted for 5s., after which the motion increased suddenly. The maximum vibration took place at the sixth sec., the motion being active for the next 20s.
2417	„	10	2 22 07 P.M.	—	—	—	—	—	—	I.	*
2418	„	21	0 45 46 „	—	—	—	—	—	—	I.	—
2419	„	23	3 09 32 A.M.	4 49	—	—	—	—	—	II.	The preliminary tremor lasted for 14s.
2420	„	26	3 24 29 „	—	—	—	—	—	—	I.	—
2421	V.	3	10 46 30 P.M.	—	—	—	—	—	—	I.	—
2422	„	10	6 24 50 „	—	—	—	—	—	—	I.	*
2423	„	14	5 10 37 A.M.	3 15	—	—	—	—	—	I.	The preliminary tremor lasted for 9s.
2424	„	21	1 15 01 P.M.	—	—	—	—	—	—	I.	*
2425	„	22	11 07 21 A.M.	—	—	—	—	—	—	I.	—
2426	„	25	10 51 55 P.M.	—	—	—	—	—	—	I.	*
2427	„	28	4 47 50 „	—	—	—	—	—	—	I.	—
2428	VI.	3	5 08 19 „	—	—	—	—	—	—	I.	—
2429	„	14	3 40 23 A.M.	—	—	—	—	—	—	I.	—
2430	„	30	7 37 01 „	—	—	—	—	—	—	I.	—
2431	VII.	11	7 34 09 P.M.	3 20	—	—	—	—	—	II.	The preliminary tremor lasted for 10s., when the maximum vibration took place, the motion being active for the next 40s.
2432	„	15	2 28 09 A.M.	—	—	—	—	—	—	I.	—
2433	„	18	7 41 41 P.M.	—	—	—	—	—	—	I.	—
2434	„	25	7 04 58 „	—	—	—	—	—	—	I.	*
2435	„	28	5 03 47 „	—	—	—	—	—	—	I.	*
2436	„	30	5 07 53 A.M.	—	—	—	—	—	—	I.	*
2437	„	31	2 55 44 „	—	—	—	—	—	—	I.	*
2438	„	31	8 59 30 „	—	—	—	—	—	—	I.	*
2439	„	31	7 09 24 „	—	—	—	—	—	—	I.	*
2440	„	31	0 00 09 P.M.	—	—	—	—	—	—	I.	—
2441	„	31	7 35 39 „	—	—	—	—	—	—	I.	*
2442	VIII.	9	6 25 03 „	—	—	—	—	—	—	I.	—
2443	„	10	1 15 32 A.M.	—	—	—	—	—	—	I.	*
2444	„	10	3 35 47 „	—	—	—	—	—	—	II.	—
2445	„	10	4 09 39 „	—	—	—	—	—	—	I.	*

Earthquakes of Local Origin recorded at Central Meteorological Observatory, Tokio—continued.

No.	Month	Day	Tokio Mean Time. 9 hrs. fast on Greenwich	Duration	Direction	Max. H*m.* 2*a*	Max. H*m.* T	Max. V*m.* 2*a*	Max. V*m.* T	Intensity	Remarks
			H. M. S.	M. S.		MM.	S.				
2446	VIII.	10	5 01 55 A.M.	—	—	—	—	—	—	I.	—
2447	,,	10	5 49 45 ,,	—	—	—	—	—	—	I.	*
2448	,,	10	6 11 06 ,,	—	—	—	—	—	—	I.	*
2449	,,	10	8 34 23 ,,	—	—	—	—	—	—	I.	*
2450	,,	10	5 40 03 P.M.	—	—	—	—	—	—	I.	*
2451	,,	11	1 03 12 ,,	—	—	—	—	—	—	I.	*
2452	,,	11	8 31 37 ,,	—	—	—	—	—	—	I.	*
2453	,,	20	0 26 04 ,,	—	—	—	—	—	—	I.	*
2454	,,	20	11 25 04 ,,	—	—	—	—	—	—	I.	—
2455	,,	21	4 16 29 ,,	—	—	—	—	—	—	I.	—
2456	,,	25	11 43 57 A.M.	—	—	—	—	—	—	I.	*
2457	,,	26	3 31 07 ,,	—	—	—	—	—	—	I.	—
2458	,,	26	3 43 40 ,,	—	—	—	—	—	—	I.	—
2459	,,	29	6 54 22 P.M.	1 10	WNW–ESE	1·1	0·3	—	—	II.	The preliminary tremor lasted for 5s., when the maximum vibration took place, the motion being active for the next 9s.
2460	,,	22	9 15 34 ,,	—	—	—	—	—	—	I.	*
2461	IX.	4	9 10 16 ,,	—	—	—	—	—	—	I.	—
2462	,,	8	6 35 03 A.M.	—	—	—	—	—	—	I.	*
2463	,,	8	3 11 42 P.M.	—	—	—	—	—	—	I.	*
2464	,,	9	3 16 41 A.M.	—	—	—	—	—	—	I.	—
2465	,,	10	3 12 24 P.M.	—	—	—	—	—	—	I.	*
2466	,,	11	0 24 27 A.M.	—	—	—	—	—	—	I.	*
2467	,,	11	5 54 24 ,,	—	—	—	—	—	—	I.	*
2468	,,	13	1 10 ? ,,	—	—	—	—	—	—	I.	*
2469	,,	14	4 43 07 ,,	—	—	—	—	—	—	I.	*
2470	,,	14	8 42 00 ,,	—	—	—	—	—	—	I.	*
2471	,,	15	9 55 59 ,,	—	—	—	—	—	—	I.	*
2472	,,	16	1 34 20 ,,	—	—	—	—	—	—	I.	—
2473	,,	18	10 23 36 ,,	—	—	—	—	—	—	I.	—
2474	,,	18	2 38 21 P.M.	—	—	—	—	—	—	I.	—
2475	,,	23	8 35 23 A.M.	—	—	—	—	—	—	I.	*
2476	,,	23	3 00 55 P.M.	—	—	—	—	—	—	I.	*
2477	,,	28	10 46 00 A.M.	—	—	—	—	—	—	I.	—
2478	,,	29	6 39 44 ,,	—	—	—	—	—	—	I.	—
2479	,,	30	7 21 16 P.M.	—	—	—	—	—	—	II.	—
2480	,,	30	7 45 27 ,,	—	—	—	—	—	—	I.	—
2481	X.	8	5 39 42 A.M.	—	—	—	—	—	—	I.	*
2482	,,	10	4 01 43 P.M.	—	—	—	—	—	—	I.	*
2483	,,	10	7 27 11 ,,	—	—	—	—	—	—	I.	*
2484	,,	14	0 55 12 ,,	—	—	—	—	—	—	I.	—
2485	,,	15	6 25 17 ,,	—	—	—	—	—	—	I.	—
2486	,,	24	1 06 37 ,,	—	—	—	—	—	—	I.	*
2487	,,	24	4 49 17 ,,	—	—	—	—	—	—	I.	*
2488	,,	24	7 45 16 ,,	—	—	—	—	—	—	I.	—
2489	,,	31	6 29 07 ,,	—	—	—	—	—	—	I.	—
2490	XI.	4	7 42 53 A.M.	—	—	—	—	—	—	I.	—
2491	,,	4	4 56 33 P.M.	—	—	—	—	—	—	II.	—
2492	,,	4	5 18 25 ,,	—	—	—	—	—	—	I.	*
2493	,,	4	5 20 06 ,,	—	—	—	—	—	—	I.	*
2494	,,	4	11 39 28 ,,	—	—	—	—	—	—	I.	—
2495	,,	5	2 45 28 ,,	—	—	—	—	—	—	I.	*
2496	,,	6	7 47 18 A.M.	—	—	—	—	—	—	I.	*
2497	,,	6	2 41 26 P.M.	—	—	—	—	—	—	I.	*
2498	,,	6	5 25 30 ,,	—	—	—	—	—	—	I.	*
2499	,,	8	9 43 35 A.M.	—	—	—	—	—	—	I.	*
2500	,,	8	8 50 27 P.M.	—	—	—	—	—	—	II.	The motion was active for the first 13s.
2501	,,	8	10 26 53 ,,	—	—	—	—	—	—	I.	*
2502	,,	9	6 56 07 ,,	2 50	SSW–NNE	0·6	0·2	—	—	II.	—
2503	,,	11	7 14 23 ,,	—	—	—	—	—	—	I.	*
2504	,,	13	8 11 18 A.M.	—	—	—	—	—	—	I.	—
2505	,,	13	0 44 53 P.M.	—	—	—	—	—	—	I.	*
2506	,,	13	5 06 50 ,,	—	—	—	—	—	—	I.	*
2507	,,	14	10 37 35 A.M.	—	—	—	—	—	—	I.	*
2508	,,	16	5 56 42 ,,	—	—	—	—	—	—	I.	—
2509	,,	21	8 32 36 ,,	3 57	SE–NW	3·1	0·5	—	—	II.	The maximum vibration took place at the ninth sec., the motion being active for the next 50s.
2510	,,	23	3 23 09 P.M.	—	—	—	—	—	—	I.	*

Earthquakes of Local Origin recorded at Central Meteorological Observatory, Tokio—continued.

No.	Month	Day	Tokio Mean Time. 9 hrs. fast on Greenwich	Duration	Direction	Max. H*m.* 2*a*	Max. H*m.* T	Max. V*m.* 2*a*	Max. V*m.* T	Intensity	Remarks
			H. M. S.	M. S.		MM.	S.				
2511	XI.	26	8 36 28 P.M.	—	—	—	—	—	—	I.	*
2512	,,	27	11 09 56 A.M.	—	—	—	—	—	—	I.	*
2513	,,	27	6 53 04 P.M.	—	—	—	—	—	—	I.	*
2514	,,	28	11 32 03 ,,	—	—	—	—	—	—	I.	*
2515	,,	29	4 08 43 A.M.	—	—	—	—	—	—	I.	—
2516	XII.	6	11 06 55 P.M.	—	—	—	—	—	—	I.	*
2517	,,	15	0 05 56 A.M.	—	—	—	—	—	—	I.	*
2518	,,	17	1 34 15 ,,	4 05	NNE–SSW	2·1	0·5	—	—	II.	The preliminary tremor lasted for 16s., the maximum vibration having occurred at the 20th sec.
2519	,,	20	3 48 10 A.M.	—	—	—	—	—	—	I.	—
2520	,,	20	6 35 30 ,,	—	—	—	—	—	—	I.	—
2521	,,	26	11 09 06 P.M.	—	—	—	—	—	—	I.	*

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