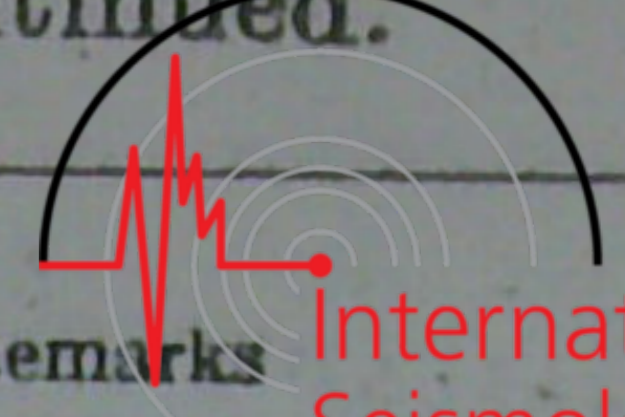


## Register of earthquakes recorded at the Honolulu Observatory—Continued.

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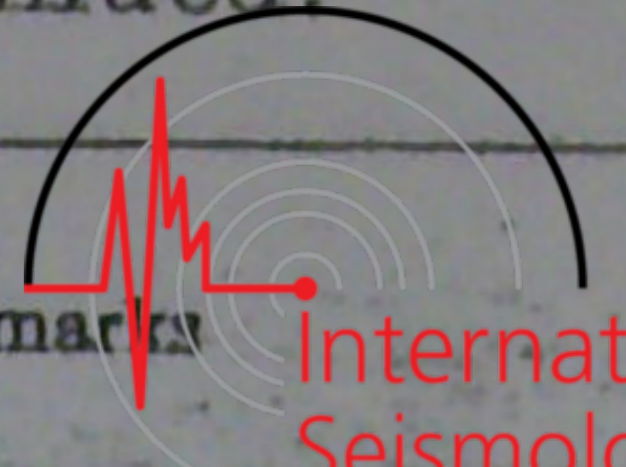
No	Date	First P. T. begin		Large waves begin		Maximum		End		Max. ampli- tude  mm.	Remarks
		h.	m.	h.	m.	h.	m.	h.	m.		
	1909.										
670	Nov. 21	..	.....	8	11.1	8	18.8	8	29	1.7	
671	Dec. 3	..	.....	3	25.5	3	41.1	4	09	0.4	Tremors.
672	6	..	.....	18	13.8	18	26.5	18	32	0.5	Do.
673	8	9	09.7	9	27.3	9	32.3	10	14	1.0	Second P. T. at 9 <sup>h</sup> 17.1 <sup>m</sup> .
674	9	15	28.3	15	57.8	16	04.3	20	17	7.8	Second P. T. at 15 <sup>h</sup> 51.3 <sup>m</sup> .
675	9	21	23.0	21	32.3	21	37.8	22	07	1.3	Second P. T. at 21 <sup>h</sup> 28.8 <sup>m</sup> .
676	9	22	09.8	22	26.1	22	31.3	23	11	1.3	
677	9	23	39.8	23	58.6	24	00.8	25	00	2.7	Second P. T. at 23 <sup>h</sup> 47.8 <sup>m</sup> .
678	22	13	05.3	13	14.5	13	18.3	13	52	0.8	Second P. T. at 13 <sup>h</sup> 10.3 <sup>m</sup> .
679	23	..	.....	22	11.3	22	47.3	23	18	0.4	Tremors.
680	28	..	.....	19	56.8	20	08.8	20	13	0.2	Do.
681	30	..	.....	21	47.3	21	47.6	21	58	0.3	Do.
	1910.										
682	Jan. 1	11	12.8	11	36.3	11	39.8	12	53	5.5	Second P. T. at 11 <sup>h</sup> 21.3 <sup>m</sup> .
683	15	..	.....	22	39.8	23	04.0	23	14	0.3	Tremors.
684	16	23	12.2	23	16.6	23	17.4	23	25	1.5	
685	19	..	.....	15	08.2	15	09.2	15	12	0.3	Do.
686	22	9	12.6	9	24.2	9	25.6	11	34	1.5	Second P. T. at 9 <sup>h</sup> 18 <sup>m</sup> .
687	23	..	.....	19	14.2	19	50.6	21	31	0.5	Tremors.
688	26	..	.....	1	12.2	1	13.8	1	50	0.1	Do.
689	26	..	.....	16	46.0	16	47.8	16	51	0.2	Do.
690	29	5	10.4	5	12.6	5	15.4	6	03	1.2	
691	30	..	.....	4	09.6	4	30.8	6	27	0.8	Do.
692	Feb. 2	..	.....	11	11.8	11	12.6	11	48	0.2	Do.
693	3	..	.....	10	12.2	10	16.2	10	24	0.4	Tremor.
694	4	14	09.6	14	22.2	14	30.6	17	02	3.0	Second P. T. at 14 <sup>h</sup> 16.8 <sup>m</sup> .
695	4	17	46.2	18	03.2	18	06.8	19	29	2.8	Second P. T. at 17 <sup>h</sup> 54.6 <sup>m</sup> .
696	9	..	.....	8	08.2	8	14.2	8	23	0.5	Tremor.
697	12	18	19.0	18	36.6	18	42.6	..	..	1.5	
698	28	21	12.6	21	14.6	21	15.0	22	22	1.2	
699	Mar. 1	..	.....	11	45.4	11	45.8	12	20	0.4	Tremors.
700	11	17	48.6	..	.....	18	08.0	18	12	0.5	
701	14	..	.....	3	58.2	4	06.4	4	12	0.3	Tremor.
702	15	19	15.8	..	.....	19	17.2	19	25	0.5	
703	19	..	.....	0	26.0	0	29.8	0	35	0.4	Do.
704	22	20	57.5	21	02.0	21	02.0	21	09	0.4	Do.
705	25	15	49.7	16	08.5	16	13.2	17	12	3.7	Second P. T. at 16 <sup>h</sup> 04.8 <sup>m</sup> .
706	30	17	05.8	17	21.3	17	26.5	20	11	16.8	Second P. T. at 17 <sup>h</sup> 13.2 <sup>m</sup> .
707	31	18	59.0	19	35.5	19	39.7	20	52	0.4	Second P. T. at 19 <sup>h</sup> 12.3 <sup>m</sup> .
708	Apr. 1	14	24.0	14	33.5	14	36.3	14	52	0.5	Second P. T. at 14 <sup>h</sup> 29.5 <sup>m</sup> .
709	2	..	.....	12	35.0	12	37.5	12	44	0.4	
710	3	..	.....	19	18.0	19	24.0	19	30	0.3	Tremor.
711	8	..	.....	16	48.0	16	49.0	17	46	0.4	Do.
712	12	0	34.0	0	57.3	1	02.0	2	21	2.9	Second P. T. at 0 <sup>h</sup> 43.2 <sup>m</sup> .
713	12	..	.....	19	16.0	19	29.0	19	34	0.4	Tremor.
714	16	12	53.0	13	16.0	13	19.3	13	39	0.9	Second P. T. at 13 <sup>h</sup> 08 <sup>m</sup> .
715	17	..	.....	1	49.0	1	52.0	2	10	0.4	Tremors.
716	18	..	.....	7	31.0	7	32.5	7	38	0.3	Tremor.
717	20	..	.....	22	35.8	22	36.3	22	50	0.4	Do.
718	May 1	18	41.0	18	57.2	19	00.3	21	48	6.2	
719	4	..	.....	16	02.5	16	07.5	16	15	0.2	Do.
720	4	..	.....	18	16.5	18	21.0	18	26	0.2	Do.
721	5	0	49.0	..	.....	1	05.0	1	16	0.2	Second P. T. at 1 <sup>h</sup> 01.5 <sup>m</sup> .
722	10	..	.....	17	26.5	17	27.2	..	..	0.4	Possibly air tremors.
723	13	8	07.0	8	12.0	8	13.3	10	10	1.9	Second P. T. at 8 <sup>h</sup> 11 <sup>m</sup> .
724	15	..	.....	4	57.5	5	01.5	5	10	0.4	Tremor.
725	18	..	.....	10	33.7	10	42.5	10	51	0.3	Do.
726	20	12	24.5	12	39.0	12	41.7	13	22	0.7	Second P. T. at 12 <sup>h</sup> 37.5 <sup>m</sup> .
727	22	6	32.7	6	44.7	6	52.0	8	30	3.2	Second P. T. at 6 <sup>h</sup> 40.2 <sup>m</sup> .
728	23	19	02.5	19	14.5	19	16.3	19	48	0.3	Second P. T. at 19 <sup>h</sup> 10 <sup>m</sup> .
729	31	5	04.5	5	22.3	5	25.0	6	46	2.8	Second P. T. at 5 <sup>h</sup> 12.3 <sup>m</sup> .
730	June 1	6	04.3	6	21.0	6	25.0	9	37	8.1	Second P. T. at 6 <sup>h</sup> 12.3 <sup>m</sup> .
731	3	..	.....	23	46.0	23	50.0	23	56	0.4	Tremor.
732	9	12	06.0	12	16.2	12	20.0	13	00	1.6	Second P. T. at 12 <sup>h</sup> 13.5 <sup>m</sup> .
733	14	..	.....	19	56.0	20	37.5	20	42	0.2	Tremors.
734	16	6	39.0	6	46.5	7	00.0	10	37	19.5	
735	17	..	.....	5	48.0	6	08.0	6	24	0.2	Do.
736	17	..	.....	17	02.5	17	10.3	17	23	0.4	Tremor.
737	22	..	.....	19	38.7	19	42.0	19	46	0.2	Do.
738	23	..	.....	3	28.0	3	35.0	3	40	0.2	Do.

## Register of earthquakes recorded at the Honolulu Observatory—Continued.



No	Date	First P. T. begin		Large waves begin		Maximum		End		Max. amplitude	Remarks
		h.	m.	h.	m.	h.	m.	h.	m.		
	1910.										
39	June 23	..	....	10	21.0	10	29.0	10	38	0.4	Tremor.
40	24	..	....	14	29.8	14	36.6	14	48	0.3	Do.
41	29	..	....	8	34.0	8	37.0	9	30	0.5	Tremors.
42	29	10	55.5	11	07.0	11	17.2	16	12	1.9	Second P. T. at 11 <sup>h</sup> 03.5 <sup>m</sup> .
43	30	3	15.7	3	32.5	3	37.0	3	53	0.4	Second P. T. at 3 <sup>h</sup> 30.5 <sup>m</sup> .
44	July 3	..	....	18	00.0	18	03.4	18	05	0.2	Tremors.
45	5	..	....	11	00.0	11	08.2	11	18	0.2	Do.
46	7	4	53.2	4	55.7	4	56.3	5	17	0.6	Small shock.
47	7	8	41.0	9	07.2	9	22.0	10	58	0.5	
48	11	..	....	20	51.0	20	52.7	21	10	0.1	Very small tremor.
49	12	..	....	21	39.0	21	53.1	22	30	0.2	Tremors.
50	15	..	....	12	18.5	12	35.4	13	19	0.3	Do.
51	15	..	....	22	02.0	22	05.2	22	18	0.5	Do.
52	21	7	28.5	7	37.0	7	42.8	8	16	1.1	
53	22	..	....	0	07.0	0	14.5	0	23	0.2	Do.
54	29	10	36.9	10	54.4	11	04.6	13	28	2.0	Second P. T. at 10 <sup>h</sup> 45.4 <sup>m</sup> .
55	Aug. 1	..	....	23	41.8	24	13.3	24	26	0.1	Tremors.
56	2	..	....	7	05.0	7	09.0	7	29	0.1	Do.
57	5	1	38.4	1	45.2	1	49.0	4	37	2.1	
58	6	..	....	20	30.0	20	38.0	20	50	0.4	Do.
59	7	..	....	20	52.0	21	03.5	21	10	0.2	Do.
60	8	..	....	0	17.8	0	18.0	0	20	0.1	Do.
61	8	17	36.3	17	44.6	17	47.7	17	58	0.5	Second P. T. at 17 <sup>h</sup> 40.6 <sup>m</sup> .
62	11	16	51.4	17	05.5	17	08.5	17	41	0.3	
63	15	..	....	15	32.2	15	35.5	15	48	0.4	Tremors.
64	17	..	....	23	37.9	23	45.8	23	52	0.3	Do.
65	21	5	45.7	5	51.0	5	51.3	8	35	2.5	
66	Sept. 1	0	56.2	1	24.0	1	28.0	3	36	0.7	Second P. T. at 1 <sup>h</sup> 06.5 <sup>m</sup> .
67	1	14	39.5	14	57.2	15	05.7	17	55	1.1	
68	3	..	....	1	40.0	1	49.8	1	55	0.2	Tremors.
69	5	..	....	23	41.0	23	47.5	23	52	0.2	Do.
70	6	20	27.0	20	49.5	20	53.4	22	40	2.1	
71	7	7	19.9	7	40.2	7	45.0	11	20	4.2	Second P. T. at 7 <sup>h</sup> 28.2 <sup>m</sup> .
72	8	5	43.5	..	....	6	02.6	6	07	0.2	Tremors.
73	9	0	55.5	1	27.2	1	33.5	5	00	7.7	
74	9	9	17.2	9	25.7	9	26.5	10	50	0.6	Second P. T. at 9 <sup>h</sup> 22.5 <sup>m</sup> .
75	10	12	35.5	12	55.5	12	57.8	13	32	0.6	Second P. T. at 12 <sup>h</sup> 42.8 <sup>m</sup> .
76	16	23	30.5	23	45.8	23	51.5	24	20	0.3	
77	18	1	40.0	2	02.1	2	05.5	2	27	0.7	Second P. T. at 1 <sup>h</sup> 54.8 <sup>m</sup> .
78	24	3	38.8	3	59.4	4	03.7	5	24	0.6	Second P. T. at 3 <sup>h</sup> 52 <sup>m</sup> .
79	24	..	....	11	25.0	11	29.5	11	33	0.1	Tremors.
80	24	..	....	16	01.8	16	06.7	16	18	0.4	Do.
81	24	..	....	19	20.0	19	25.0	19	28	0.2	Do.
82	Oct. 2	..	....	21	54.0	22	00.5	22	20	0.2	Do.
83	3	..	....	11	12.4	11	21.7	11	27	0.2	Do.
84	4	23	17.4	23	25.0	23	50.7	25	12	0.3	Possibly second P. T. at 23 <sup>h</sup> 25 <sup>m</sup> .
85	6	..	....	22	30.0	22	34.3	22	38	0.2	Tremors.
86	7	7	03.5	7	11.6	7	13.8	8	18	0.2	Second P. T. at 7 <sup>h</sup> 08 <sup>m</sup> .
87	7	12	01.6	12	16.0	12	18.2	13	09	0.2	Second P. T. at 12 <sup>h</sup> 09.4 <sup>m</sup> .
88	11	..	....	20	47.0	20	48.1	21	20	0.2	Tremors.
89	12	..	....	3	32.0	3	32.5	3	35	0.1	Do.
90	14	..	....	4	27.5	4	29.0	4	32	0.1	Do.
91	18	2	53.0	3	06.0	3	07.5	4	04	0.5	Do.
92	20	5	53.4	..	....	6	13.2	7	18	0.2	Do.
93	25	..	....	4	40.7	4	44.5	4	52	0.2	Do.
94	30	7	50.2	7	53.9	7	56.5	8	51	0.4	Do.
95	Nov. 2	..	....	13	55.0	14	00.4	14	28	0.3	Do.
96	4	..	....	6	20.0	6	24.0	6	28	0.2	Do.
97	6	20	43.8	20	46.0	20	48.5	22	00	2.0	
98	9	6	11.1	6	26.7	6	30.0	..	..	6.0	Second P. T. at 6 <sup>h</sup> 19 <sup>m</sup> .
99	9	..	....	8	53.0	9	00.5	10	30	1.5	Second P. T. at 8 <sup>h</sup> 44 <sup>m</sup> .
00	10	..	....	1	17.0	1	24.0	1	29	0.2	Tremors.
01	10	12	29.0	12	45.0	12	48.4	14	10	6.2	Second P. T. at 12 <sup>h</sup> 36 <sup>m</sup> .
02	14	7	55.0	8	10.8	8	19.9	9	17	0.8	
03	15	14	45.0	..	....	15	29.0	17	00	0.6	Obscured by air tremors.
04	17	..	....	22	20.0	22	20.4	22	24	0.2	Tremors.
05	25	19	22.0	19	31.0	19	33.8	20	27	0.2	Second P. T. at 19 <sup>h</sup> 27 <sup>m</sup> .
06	26	4	49.3	5	03.9	5	07.7	9	15	16.9	Second P. T. at 4 <sup>h</sup> 57.1 <sup>m</sup> .
07	29	2	47.2	3	05.0	3	06.6	3	45	0.7	Second P. T. at 2 <sup>h</sup> 59.4 <sup>m</sup> .
08	Dec. 1	..	....	3	59.5	4	02.5	4	16	0.2	Tremors.
09	1	..	....	16	21.5	16	27.0	..	..	1.6	Second P. T. at 16 <sup>h</sup> 14.5 <sup>m</sup> .

## Register of earthquakes recorded at the Honolulu Observatory—Continued

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No	Date	First P. T. begin		Large waves begin		Maximum		End	Max. ampli- tude	Remarks	
		h.	m.	h.	m.	h.	m.				h.
810	1910. Dec. 2	..	....	3	57.5	4	00.0	4	19	0.1	Tremors.
811	3	4	17.2	4	28.5	4	33.0	4	47	0.4	Second P. T. at 4 <sup>h</sup> 24 <sup>m</sup> .
812	3	8	18.0	8	33.0	8	38.5	9	07	0.3	Second P. T. at 8 <sup>h</sup> 27 <sup>m</sup> .
813	4	11	25.7	11	51.5	11	53.0	13	45	0.5	Second P. T. at 11 <sup>h</sup> 41.1 <sup>m</sup> .
814	5	16	43.5	16	53.7	16	58.5	17	33	1.2	
815	10	9	36.0	9	49.4	9	54.5	13	22	20	Second P. T. at 9 <sup>h</sup> 43.3 <sup>m</sup> .
816	11	..	....	4	03.8	4	10.0	4	23	0.2	Tremors.
817	11	..	....	23	57.6	24	08.5	24	57	0.2	Do.
818	13	11	57.5	12	57.0	13	21.3	14	30	3.4	Second P. T. at 12 <sup>h</sup> 30 <sup>m</sup> .
819	14	..	....	17	20.5	17	21.6	..	..	0.7	
820	14	..	....	21	00.0	21	03.4	21	58	1.0	
821	16	14	57.4	15	20.4	15	26.2	20	40	10.6	Second P. T. at 15 <sup>h</sup> 06.5 <sup>m</sup> .
822	16	..	....	23	55.0	23	58.0	24	30	0.2	Tremors.
823	18	2	57.5	3	22.7	3	27.0	4	15	1.6	Second P. T. at 3 <sup>h</sup> 07 <sup>m</sup> .
824	18	..	....	21	30.0	21	32.5	21	38	0.2	Tremors.
825	21	..	....	10	57.0	11	01.0	11	09	0.3	Do.
826	23	0	48.2	0	58.3	1	02.2	1	45	0.5	Second P. T. at 0 <sup>h</sup> 53 <sup>m</sup> .
827	26	5	43.8	6	00.0	6	04.0	6	45	0.4	Second P. T. at 5 <sup>h</sup> 52.3 <sup>m</sup> .
828	27	..	....	4	33.5	4	34.0	4	38	0.2	Tremor; doubtful.
829	27	..	....	19	14.0	19	39.3	19	53	0.2	Do.
830	29	..	....	8	22.0	8	31.5	9	10	0.6	
831	29	13	27.7	13	45.4	13	47.0	14	15	0.4	Tremor.
832	30	0	02.0	1	08.7	1	10.0	1	55	1.0	
833	30	..	....	3	31.0	3	32.0	3	46	0.2	Do.

## REMARKS.

- Nos. 583, 598, 620, 623, 652, 658, 674, 767, 819, 820, 821. Beginning and end obscured by air tremors.  
 Nos. 585, 589, 590, 613, 624, 682, 697, 702, 818. End obscured by air tremors.  
 No. 584. Only a few waves, probably from principal portion.  
 No. 588. Local shock, felt generally over the Island of Hawaii. Recorded also on the magnetograph.  
 No. 596. Interrupted by daily care of instrument.  
 No. 597. Beginning involved with end of No. 596.  
 No. 603. End involved with beginning of No. 604.  
 No. 610. Air tremors at beginning; daily care of instrument at time of maximum.  
 No. 631. Sumatra earthquake. Beginning just after daily inspection of instrument.  
 No. 670. Began during daily inspection.  
 Nos. 684, 700, 704. Possibly artificial.  
 No. 718. Beginning of second p. t. occurred during daily inspection of instrument.  
 No. 797. Secondary maximum at 7.32. End confused with beginning of No. 798.  
 No. 798. Secondary maximum at 10.05.  
 No. 806. Secondary maximum at 6.41, 7.37, and 8.57.  
 No. 815. Amplitude too great to be measured accurately.

## MAGNETIC STORMS.

Magnetic disturbances of considerable magnitude were recorded on the days tabulated below. The relative magnitude of the disturbance is indicated by the figures 1, 2, 3, 4. When the storm began abruptly, the time of beginning is given to the nearest minute.

On the succeeding pages will be found reproductions of the magnetograms showing principal magnetic storms. A storm selected for reproduction is indicated in the table by asterisk after the date. For convenience in comparing with similar reproductions for other observatories, the time scale has been marked for Greenwich mean time. An upward motion of the curves corresponds to decreasing east declination, increasing  $H$  and decreasing  $Z$ .