

## RECORD

OF THE

## Seismographic Station, Department of Geology and Geography

HARVARD UNIVERSITY, CAMBRIDGE, MASS., U.S.A.

LATITUDE  $42^{\circ} 22' 56''$  N., LONGITUDE  $71^{\circ} 06' 59''$  W. Greenwich; ALTITUDE 5.367 M.

TIME: Mean Greenwich, midnight to midnight.

INSTRUMENTS: Two Bosch-Omori horizontal pendulums (mechanical registration).

From

to

No.	Date	Comp.	Phase	Time	Periods		Amplitudes	REMARKS
					h.	m.	s.	

Post-office Address.

Harvard Seismographic Station,  
Geological Museum, Cambridge, Mass.

Remarks.

This record was first issued for the month of January 1911. The sheets are numbered consecutively from the beginning. A summarized annual report is issued in the Bulletin of the Museum of Comparative Zoology.

The station is located on Pleistocene sands and clays ca 20 meters thick overlying tilted Carboniferous shales in the valley of the Charles River.

The Bosch-Omori Tromometer of 100 kg. is adjusted as follows:-

	North	East
Period	25s	25s
Magnification	80	50
Damping ratio	4:1	0

The following peculiar abbreviations appear in Remarks.  
 Q, Quake, Earthquake; Qr, earthquake reported by press; Ql, local earthquake; Qf, felt earthquake; O, origin or epicentre; T0, time at origin. @ in column of phases means initial shock at origin. Micros., microseisms.

If agreeable and convenient, an exchange of Records will be greatly appreciated.



Associate Professor of Geology  
in charge of Station.

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From Jany. 31st, 1913 to Feb. 28, 1913.

No.	Date	Comp.	Phase	Time	Periods	Amplitudes	REMARKS					
							h.	m.	s.	s.	mm	
286	Jan. 31	N	eP	22 54 52	6	10	4120 kms.					
			S	23 00 46								
			eL?	23 10 21								
			F	23 30 ca								
		E	eL?	23 08 45				E-W record masked by wind effects.				
287	Feb. 9	E	e?				e in wind effects ?					
			eS?	8 23 02		88						
			eL	8 29 20		28-24						
			F?	8 32 00								
288	Feb. 17	E	e?	20 56 36			Micros. Hour doubtful and mins. and secs. subject to correction for parallax.					
			eL	20 59 48		13						
			F	21 08 41			Very faint N-S.					
289	Feb. 20	E	eS?	9 22 53		6	Not shown N-S on damped pendulum.					
			L	9 41 54		30						
				9 50 44		20						
			F	10 23 ca								

*J.B. Woodworth.*

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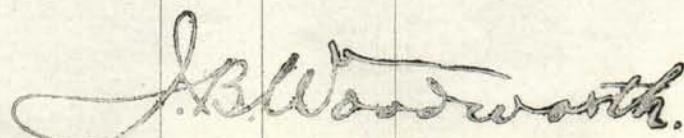
TIME: Mean Greenwich, midnight to midnight.

INSTRUMENTS: Two Bosch-Omori horizontal pendulums (mechanical registration).

From January 1, 1913

to January 31st, 1913.

No.	Date	Comp.	Phase	Time	Periods	Amplitudes	REMARKS
278	Jan. 7	E	e	23 52 17	s.	III.	Record masked by micros.
			L	23 52 25	20		Not shown N-S by damped pendulum.
	8		F	0 05 15			
279	11	N	eL	13 57 04	22		Pendulum damped 4:1.
		E	eS?	13 21 15	6		Undamped pendulum.
			eL	13 55 52	20		
			L	15 22 50	19		
			F	16 03 21			Apparently same record.
280	15	N	iP	18 58 56	2		Strong.
			PR <sub>1</sub>	19 00 16	4		
			S	19 04 28	6		Distance.
			L	19 12 20	20	0.2	Damped 4:1. 3700 kms.
			F	19 28			
		E	P	18 59 00	2		
			PR <sub>1</sub>	19 00 18			
			S	19 04 28	8		
			L	19 12 57	16	0.7	Undamped.
			F	20 07			
281	19	N	eL	18 16 30			In micros. 4 secs. period.
			F	18 50 50			
			e	17 43 54			
		E	eL	18 12 18	20		
			L	18 36 28	17		
			F	18 52 ca			
282	19	N	eL	19 12 14	16		If W <sub>1</sub> of 281. Distance
			F	19 13 28			13,300 kms.?
283	22	E	e	18 30 06	var.		
			F	18 35 34			
284	23	E	e	12 29 07	var.		
			F	12 32			
285	23	N	eS?	14 45 12			Distance 10,800 ? kms.
			L	15 05 32			
			F	15 51 47			
		E	eS?	14 46 31			
			L	15 04 37			
			F	15 51 48			


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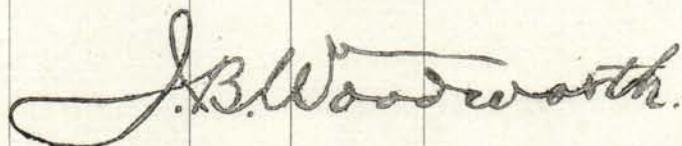
TIME: Mean Greenwich, midnight to midnight.

INSTRUMENTS: Two Bosch-Omori horizontal pendulums (mechanical registration).

From March 1st 1913

to

No.	Date	Comp.	Phase	Time	Periods	Amplitudes mm. $\mu$ .	REMARKS					
							h.	m.	s.	s.		
290	Mar. 3	N	e	3 27 41	9-8							Among microseisms of 3 to 4 secs. period.
			F	3 29 14								E record in tangled lines of undamped pendulum.
291	Mar. 4	E	S?	11 40 21	6							L-S? 4m.24s.: 4500? kms.
			L	11 42 40	18							Micros. E-W damped 4:1.
			F	11 44 43	20	0.15						
				11 59 25								
291a	Mar. 8	E	eL	15 31 18	24-12							Very faint.
			F	15 35 31								
292	Mar. 8	E	eP	15 59 46	3							Undamped. D 3440 kms.
			S	16 04 59	26							Qr Guajinquilapa, Guatemala
			eL	16 07 14								
			M?	16 09 56	27	2.2						Faint LL on N-S masked by microseisms.
			F	16 46 30								
			E	16 52 31								
			e	16 56 09								
293	Mar. 10	E	eL	14 45 41	18-20							Very flat waves. Micros. N-S 3,51s pd.
			F	15 05 03								
294	Mar. 14	N	P	9 04 19	2-3							Periods and A in sections.
				9 07 12	3							L?-PN, 5m 28s: 2600?kms.
				9 08 22	6							T <sub>2</sub> ? Origin ? 8h 59m 49s
				9 08 38	4-3							Cf. No.295, 8h 58m 36s.
				9 09 27	4							
				9 09 57	3-6							
			C?	9 12 02								P? of No.294. F later.
			E	9 04 21	2							
			eP	9 05 09	6							
				9 05 55	2-4							
			L?	9 06 35	8-10							
				9 09 47	6-8							
			C?	9 12 19								P? of No.294. F later.


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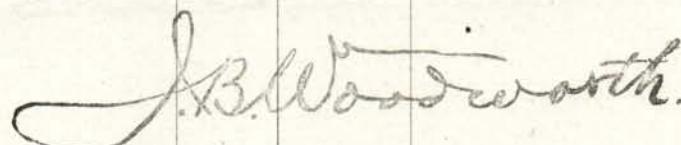
TIME: Mean Greenwich, midnight to midnight.

INSTRUMENTS: Two Bosch-Omori horizontal pendulums (mechanical registration).

From March 14, 1913

to March 31, 1913

No.	Date	Comp.	Phase	Time	Periods	Amplitudes	REMARKS	
							h.	m.
295	Mar. 14	N	eP?	9 12 05				
			S?	9 23 59				
			L?	9 42 44				
			eP?	9 12 19				
			S	9 23 51	35	20		
		E	L	9 42 44				
			M	9 50 10				
			L	9 53 44	26-20			
				10 21 25	100	2		
			F?	10 26 35	15			
296	Mar. 15	N	eL?	22 37 41	4			
			F	22 41 18	6			
			eP	22 47				
				22 38 16	4			
		E		22 39 44	6			
			eL	22 41 50	8			
			F	22 48 ca				
297	Mar. 17	E	e	13 55 54	40-			
			eL?	13 59 48	20-13			
			F	14 19 30				


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*From* March 31 1913 *to*

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From April 1,

to

April 30, 1913.

No.	Date	Comp.	Phase	Time	Periods	Amplitudes	REMARKS	
							mm	μ.
Supplementary. 292a	Mar. 9	E	L	16 23 40	20		Very faint on undamped pendulum.	
			F	16 34 ?				
300	Apr. 25	E	eP??	18 18 37	5-4		Undamped pendulum. Readings doubtful.	
			S?	18 34 37	10			
			eL	19 01 34	20			
			F	20 36				
		N	e	18 55			Damped 4:1.	
			eL	19 03 52				
			M	19 10 41				
			F	19 38				
301	Apr. 29	N	P	0 30 03	0.7		Slight earthquake felt at Montreal, Quebec and Ogdensburg, N.Y.	
			(S)(M)	0 30 53	0.5			
			F	0 33 34				
		E	P	0 30 02	0.8			
			(S)M	0 30 50				
			F	0 33 34				
302	Apr. 30	N	eL	0 06 59			Masked by microseism.	
			M	0 12.5				
			F	0 16 21				
		E	eL	0 06 43				
			F	0 31 40				
303	Apr. 30	N	eL	12 11 31	16			
			F	12 18 49				
		E	eS?	11 53 48	8			
			L	12 06 01	25			
			F	12 55			eL-S? 6m 13s D 5250 ? kms.	


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From May 1st to May 31st, 1913

No.	Date	Comp.	Phase	Time	Periods	Amplitudes	REMARKS
304	May 8	E	eP	18 54 00	s.	mm.	Very faint LL. N-S damped
			?P, R	18 55 05			4 : 1.
			S	19 01 30	10		Distance 6000 kms.
				19 03 34	06		
			eL	19 09 32	20		
				19 16 29	24		
				19 34 50	18		
			F	20 10 ca			
305	May 16	N	e	12 13 42	3		
				12 15 45	6		
			F	12 30 44			
306	May 18	N	eL	3 08 19	24		Very faint NS micros 3-4s pd
			F	3 17 06			
		E	e?	2 59 47			
			L?	3 02 56	24		eEW in tangled lines.
			L	3 08 07	20		
				3 11 31	20		
			F	3 43			
307	May 24	E	eL	8 00 07	18		
			F	8 15 45			
308	May 30	N	eL	12 24 58	25		Micros. mask P and S.
				12 39 58	42		
			F	12 59 56	20		
		E	eP?	12 09 32	2		Masked by microseisms.
			S	12 18 12	6		
			eL	12 37 42			
			M	12 42 30	38	0.9	
			L	12 52 33	20		
				13 00 21	16		
			F	14 08 39			


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From July 1, 1913

to July 31, 1913

No.	Date	Comp.	Phase	Time	Periods	Amplitudes	REMARKS
318	July 7	E	e?	17 47 44	11	mm.	Undamped pendulum.
			eL?	18 30 42	30		
				18 41 19	20		
				19 16 09	16		
			F	19 53			
319	8	E	eP?	8 54	3		
			S?	8 56	6		
			F	9 04			
320	8	E	eL	22 03 10	28		
				04 00	20		
			F	22 35 ca			
321	9	N	e	0 26 25	3		Lost in wind waves of long periods.
			S?	0 26 40	6		Damped 4:1.
			F	0 39			
		E	e?	0 22 14			
			S	0 24 10			Undamped pendulum.
			L?	0 25 17			
			F	0 58			
322	9	E	eL	12 47 19	10		
			F	12 54			
323	12	E	eL	10 56 09			
			F	12 ca			
324	22	E	P	6 46 04			Recorded in tangled lines.
			S	6 54 04			
			L	6 59 55			
			F				
325	24	E	P?	9 04 28			
			S	9 09 46	8		3550 ? kms.
			eL	9 11 07	16		
			F	9 23			
326	25						Present, but in tangled lines.
327	26	E	P?	20 58 29			
			S	21 04 24	6		4140 kms.
			L	21 11 09			
			F?	21 45			
328	28	E	P?	5 49 36			6450 kms.
			S	5 57 35			
			L	6 07 19			
			F	7 03			


 Willardworth

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From      August 1, 1913      to      August 12, 1913

No.	Date	Comp.	Phase	Time	Periods	Amplitudes	REMARKS	
							h.	m.
329	Aug. 1	E	eP	17 23 24			8090 kms. to, 12h 11m 04s.	
			S	17 33 25				
			L	17 48 55				
			F	18 59				
330	Aug. 5	E	eS?	2 05		1.25	6520 kms. to: 22h 14m 50s	
			N	2 16				
			E	2 52				
			P	22 24 30				
331	Aug. 6	N	S	22 32 34	1.25	Damped 4:1. Qr Caraveli and Quicacha, Peru.	1.25	10750 ? kms.
			L	22 46 18				
			M	22 49 19				
			F	23 49 16				
			E	22 24 36				
			P	22 32 36				
			S	22 42 12				
			L	22 50 51				
			M	22 50 51				
			F	22 50 51				
			P	22 50 51				
332	Aug. 7	E	eP?	2 16 36	3-4		5500? kms.	
			L	2 39 36				
			F	3 22				
			P	4 44 55				
333	Aug. 12	N	L	4 15 58		10750 ? kms.		
			E	4 42				
			N	5 33				
			F	5 33				

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From Aug. 15

to Oct. 1, 1913

No.	Date	Comp.	Phase	Time	Periods	Amplitudes	REMARKS					
							h.	m.	s.	s.	mm	
334	Aug. 15	E	P?	19 27 24	4	0.25	Undamped pendulum.					
			S?	19 35 00	8							
			L	19 46 59	28							
				19 54 34	20							
			F	20 39 19								
335	Aug. 17	E	e	17 59 53	6							do
			L	18 04 08	10							
			F	18 09 43								
336	Aug. 31	E	Ee	18 01 01	10							do
			L	18 07 34	26							
			F?	18 48								
337	Sept. 3	N	NP	21 17 29?								do
		E	S?	21 26 03?								
			L?	21 54 25?								
338	Oct. 1	N	P	4 30 53								S-P, 5m 45s, 3975 kms.
			S	4 36 38								
			L?	4 45 05								
			M	4 50 36								
			F	5 25								
		E	P	4 30 36								Undamped pendulum
			S	4 36 18								
			L	4 47 36								
			F	5 35								



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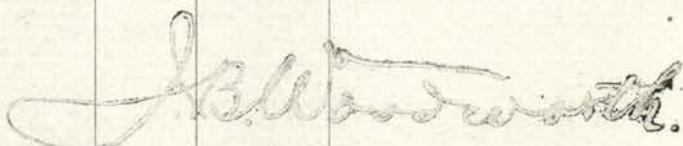
INSTRUMENTS: Two Bosch-Omori horizontal pendulums (mechanical registration).

October 1st

From

to

No.	Date	Comp.	Phase	Time	Periods	Amplitudes <small>mm/m</small>	REMARKS
338	Oct. 2	N	P	4 30 53			S-P, 5m 45s. 3910 kms.
			S	4 36 38	s.	$\mu$ .	N.B. Correct date of
			L?	4 45 05			Record on sheet 42 as of
			M	4 50 36			Oct. 1.
			F	5 25			
		E	P	4 30 36			Undamped pendulum and so
			S	4 36 18			for rest of this month.
			L	4 47 36			
			F	5 35			
339	Oct. 4	E	P?	22 12 26			P and S in micros.
			S?	22 17 57			Qr Panama.
			eL?	22 20 53			Distance 3725 ? kms.
			F	22 46 ca			
339a	Oct. 8	E	eL?	1 50 15	34		
				1 52 09	16		
			F?	1 55 03			
340	Oct. 9	E	eP?	18 39 04	4-3		But Cf. Ottawa eP? 18-41-
			S	18 48 07	9		52. Distance 7670 ? kms.
			L	18 51 25	12		
				57 16	20		
			F	19 13 29			
341	Oct. 11	E	e				
			S	2 08 13			
			eL	2 13 05			
				2 29 56			
			L	3 30 47			
			F	3 49			
342	Oct. 11	E	eP	4 27 30	3		
				4 28 50			
			S?	4 39 32			
			eL	4 45 07	20		
				5 12 02			
			F	6 10			
							Sinusoidals begin.
							E-W comp. not recording
							between Oct. 11d 13h 15m
							and 12d 14h 26m.


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From

to

Oct. 11, 1913

Oct. 31, 1913

No.	Date	Comp.	Phase	Time	Periods	Amplitudes	REMARKS
				h. m. s.	s.	$\mu$ .	
						mm.	
343	Oct. 11	E	eS	9 33 34			
			eL	10 00 02			Sinusoidals set in.
			F	10 48 ca			
344	Oct. 12	E	e	17 50 12			N.B.
			eL	17 56 18	20		The construction of the Ethnological section of the Agassiz Museum, adjoining the Station, during the months July -
			F	18 05			Oct. 1913 has greatly interfered with the clear-
345	Oct. 14	E	eP?	8 28 23			ness of our records. JBW
			S?				
			eL	8 42 24	36		
			M	8 48 02			
			L	9 07 05	60		
			L	10 56 40			
			F	11 38 ca			
346	Oct. 23	E	eS	15 13 22			
			eL	15 17 10			
			F	15 39			
347	Oct. 26	E	e	22 46 38			Nos. 347-350 have short periods up to 15 secs.
			F	22 52 08			Stylus caught fuzz and dropped it during these
348		E	e	22 57 05			records which may thus be artificial; but Cf. Cornell
			F	23 02 10			(Ithaca) No. 119 e23-17-41; F 23-25.
349		E	e	23 16 36			
			F	23 53 30			
350	Oct. 27	E	e	0 21 20			
			F	0 42 04			


 Bill Anderson

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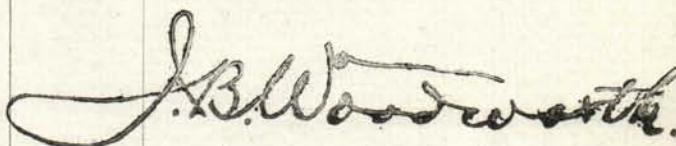
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No.	Date	Comp.	Phase	Time	Periods	Amplitudes	REMARKS		
							mm.	μ.	
351	Nov. 4	E	eL	10 31 02	24		P and S obscured by micro-seisms and diurnal wave entanglement of lines.		
			F	10 55 ca					
352	Nov. 10	E	eL	22 11 32	24	22-24 1.5	Record faint; on undamped pendulum only.	P and S obscured by micro-seisms.	
			M	22 14 59					
353	Nov. 19	E	eP?	3 44 41	10		No record E-W from Nov. 13d 14h 16m until Nov. 14d 13h 53m. Stylus tilted over on joint in smoked paper.		
			S?	4 00 18					
354	Nov. 23	E	eL?	4 14 18	20		No record N-S from Nov. 17d 20h 53m until Nov. 18d 13h 45m.	e is eS?	
			eL	4 23 26					
				4 27 00	30-24				
				5 12 33					
				5 13 45	17				
				5 32 ca					
				21 38 36	28-30		On E-W comp. from 4h 45m Nov. 26 to end of run, stylus was held against rim of drum by excessive diurnal and cyclonic tilt.		
				21 42 42					
				21 52 41					
				22 02 01					
				22 05 56	18				
				22 10 31					
				22 22 07					
No records	on N-S component damped 4:1.								


 J.B. Woodworth

## RECORD

OF THE

## Seismographic Station, Department of Geology and Geography

HARVARD UNIVERSITY, CAMBRIDGE, MASS., U.S.A.

LATITUDE  $42^{\circ} 22' 56''$  N., LONGITUDE  $71^{\circ} 06' 59''$  W. Greenwich; ALTITUDE 5.367 M.

TIME: Mean Greenwich, midnight to midnight.

INSTRUMENTS: Two Bosch-Omori horizontal pendulums (mechanical registration).

From December 1, 1913

to December 31, 1913

No.	Date	Comp.	Phase	Time			Periods	Amplitudes	REMARKS
				h.	m.	s.			
355	Dec. 22	E	eS? eL	16 32 13	12				Comp. set up shortly before 16-28-40. P and S in microseisms.
				16 35 12	16-34				
				16 40 18		20			
				16 44 12		20			
			F	17 06 58					


 J.B. Woodworth

## RECORD

46 re-issue

OF THE

## Seismographic Station, Department of Geology and Geography

HARVARD UNIVERSITY, CAMBRIDGE, MASS., U.S.A.

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From Dec. 1, 1913

to Dec. 31, 1913

No.	Date	Comp.	Phase	Time	Periods	Amplitudes	REMARKS
				h. m. s.	s.	mm.	
355	Dec 21	EeS? eL	16 32 13	12			Then 32-34.
			16 35 12	16			
			16 40 18	20			
			16 44 12	20			
			17 06 58?				
		F					
356	Dec 25	Ee	7 01 56				
		L	7 08 16				
		F	7 10 26				

Please substitute this sheet for that of same No. previously issued.

