550.34

SECTION V.—SEISMOLOGY.

SEISMOLOGICAL REPORTS FOR AUGUST, 1917.

W. J. HUMPHREYS, Professor in Charge.

[Dated: Weather Bureau, Washington, D. C., Oct. 2, 1917.]

TABLE 1.—*Noninstrumental earthquake reports, August, 1917.*

Day.	Approximate time, Greenwich Civil.	Station.	Approximate latitude.	Approximate longitude.	Intensity Rossi-Forel.	Number of shocks.	Duration.	Sounds.	Remarks.	Observer.
1917.	*H. m.*	CALIFORNIA.	° ′	° ′			*M. s.*			
Aug. 3	4 20	Cahuilla	33 32	116 43	4	1	0 3	Rumbling		Dr. Wm. L. Shawk.
19	6 00	Boulevard	32 38	116 15	3	1	1	None		J. J. Schwartzberg.
19	7 10	Julian	33 05	116 37	5	2	30	Rumbling		J. H. L. Vogt.
		Julian	33 03	116 37		2	8	Rumbling		W. J. Norman.
28	0 35	Bishop	37 22	118 24	5	4		None		E. L. Herzinger.
28	8 40	Bishop	37 22	118 24	4	1	1		Awakened people	E. L. Herzinger.
		Bishop Creek	37 15	118 17	3			None		Wm. Barth.
31	19 20	Ojai	34 25	119 12	4	1	1	None		Wm. H. Duncan.
31	20 25	Ojai	34 25	119 12	4	1	1	None		Wm. H. Duncan.

TABLE 2.—*Instrumental reports, August, 1917.*

[Time used: Mean Greenwich, midnight to midnight. Nomenclature: International.]

[For significance of symbols see REVIEW for July, 1917, p. 373.]

Alaska. *Sitka. Magnetic Observatory.* U. S. Coast and Geodetic Survey. J. W. Green.

Lat., 57° 03′ 00″ N.; long., 135° 30′ 06″ W. Elevation, 15.2 meters.

Instruments: Two Bosch-Omori, 10 and 12 kg.

Instrumental constants... E: V 10, T_0 16.7; N: V 10, T_0 15.4

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E	Amplitude. A_N	Distance.	Remarks.
1917.			*H. m. s.*	*Sec.*	*μ*	*μ*	*km.*	
Aug. 5		e_N	16 42 22	21		10		
		F	16 58 ..					
30		eP_E	4 25 07					
		eL_E	4 32 21	14				
		eL_N	4 34 45	18				
		M_E	4 35 01	14	40			
		M_N	4 40 20	18		20		
		F_N	5 35 ..					
31		eP_E	11 47 44					
		eP_N	11 48 20					
		S	11 57 05	10				
		eL_E	12 15 ..	18				
		eL_N	12 16 ..	20				
		M_N	12 20 02	17		60		
		C_N	12 27 ..	16				
		M_E	12 28 42	15	10			
		C_E	12 29 ..					
		F_E	12 55 ..					
		F_N	13 02 ..					

Arizona. *Tucson. Magnetic Observatory.* U. S. Coast and Geodetic Survey. F. P. Ulrich.

Lat., 32° 14′ 48″ N.; long., 110° 50′ 06″ W. Elevation, 769.6 meters.

Instruments: Two Bosch-Omori, 10 and 12 kg.

Instrumental constants... E: V 10, T_0 13.9; N: V 10, T_0 18.9

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E	Amplitude. A_N	Distance.	Remarks.
1917.			*H. m. s.*	*Sec.*	*μ*	*μ*	*km.*	
Aug. 30		e_E	4 28 22	4				
		e_N	4 28 44	5				
		M_N	4 45 04	14		10		
		M_E	5 09 04	20	10			
		F_E	5 36 ..					
		F_N	5 45 ..					
31		P	11 44 35	5				
		S	11 51 20	8				
		eL_N	11 58 00	28				
		eL_E	11 59 02	28				
		M_E	11 59 43	13	30			
		M_N	12 03 49	24		20		
		F_N	12 54 ..					
		F_E	13 04 ..					

California. *Berkeley. University of California.*

Lat., 37° 52′ 16″ N.; long., 122° 15′ 37″ W. Elevation, 85.4 meters.

(See Bulletin of the Seismographic Stations, University of California.)

TABLE 2.—*Instrumental reports, August, 1917*—Continued.

California. *Mount Hamilton. Lick Observatory.*
Lat., 37° 20′ 24″ N., long., 121° 38′ 34″ W. Elevation, 1,281.7 meters.
(See Bulletin of the Seismographic Stations, University of California.)

California. *Point Loma. Raja Yoga Academy.* F. J. Dick.
Lat., 32° 43′ 03″ N.; long., 117° 15′ 10″ W. Elevation, 91.4 meters.
Instrument: Two-component, C. D. West seismoscope.
(Report for August, 1917, not received.)

California. *Santa Clara. University of Santa Clara.* J. S. Ricard, S. J.
Lat., 37° 26′ 36″ N.; long., 121° 57′ 03″ W. Elevation, 27.43 meters.
(See record of the Seismographic Station, University of Santa Clara.)

Colorado. *Denver. Sacred Heart College.* Earthquake Station. A. W. Forstall, S. J.
Lat., 39° 40′ 36″ N.; long., 104° 56′ 54″ W. Elevation, 1,655 meters.
Instrument: Wiechert 80 kg., astatic, horizontal pendulum.
(No earthquake recorded during August, 1917.)

District of Columbia. *Washington. U. S. Weather Bureau.*
Lat., 38° 54′ 12″ N.; long., 77° 03′ 03″ W. Elevation, 21 meters.
Instrument: Marvin (vertical pendulum, undamped. Mechanical registration).

	V	T_0
Instrumental constants:	110	6.4

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E	Amplitude. A_N	Distance.	Remarks.
1917.			*H. m. s.*	*Sec.*	*μ*	*μ*	*km.*	
Aug. 5	I_r	P	16 11 18				4,080?	
		S?	16 17 10					
		L	16 28 20	16				
		L	16 54 20					
		F	17 40 00					
9		P	16 18 ..					No time marks: values approximate.
		S	16 22 ..					
		L	16 24 ..					
		F	16 40 ..					
11								No record obtained; instrument not recording properly.
21		P	10 49 30					Time correction uncertain: time values approximate.
		L	11 10 30	16				
		F	11 30 ..					S uncertain.
22		L_E	22 13 30	20				
		F	22 25 00					
30		iP	3 31 06				3,910	
		iS	3 36 48					
		L	3 41 00					
		F	4 00 ..					
30		P	4 26 24				8,510?	
		PR	4 29 30					
		S?	4 36 10					
		L	4 47 15					
		L	5 05 00	24				
		L	5 21 00	20				
		F	6 30 00					
31	II_r	iP	11 43 14				3,740	
		iS	11 48 46					
		L	11 52 30	20				
		L	12 07 03	16				
		F	13 30 00					

District of Columbia. *Washington. Georgetown University.* F. A. Tondorf, S. J.
Lat., 38° 54′ 25″ N.; long., 77° 04′ 24″ W. Elevation, 42.4 meters. Subsoil: decayed diorite.
Instruments: Wiechert 200 kg. astatic horizontal pendulums, 80 kg. vertical.

		V	T_0	ε
Instrumental constants:	E	165	5.4	0
	N	143	5.2	0
	Z	80	5.0	0

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E	Amplitude. A_N	Distance.	Remarks.
1917.			*H. m. s.*	*Sec.*	*μ*	*μ*	*km.*	
Aug. 5		eP_E	16 11 12					Microseisms present. P possibly earlier. No distinct maximum.
		eP_N	16 11 15					
		eL	16 54 18	24				
		F	17 45 ..					
		VERTICAL.						
		eP	*16 11 21*					e? 16h 09m 38s.
		eL	*16 54 21*	*20–24*				
		F	*17 50 00*					
11		eP_W?	14 44 06					Heavy microseisms present; entire record doubtful.
		eP_E?	14 44 36					
		S_N?	14 49 22					
		S_E?	14 49 43					
		eL_N?	15 00 21					
		eL_E?	15 00 23					
		F	16					
30		e_E	3 30 55					Microseisms present. e shows on vertical at 3h 31m 13s. F lost in succeeding quake.
		e_N	3 31 08					
		S_N	3 36 39					
		S_E	3 36 46					
		eL	3 39 24					
30		eP_E	4 26 28					Microseisms present. No distinct maximum.
		eP_N	4 26 29					
		S	4 30 05					
		eL_E	4 31 18					
		eL_N	4 31 30					
		L	4 58 ..	30				
		F	6 22 ..					
		VERTICAL.						
		eP	*4 26 50*					
		S	*4 30 05*					
		L	*4 42 20*	*21*				
		L	*5 20 48*	*22*				
		F	*5 40 ..*					
31		iP_N	11 43 19					Microseisms present.
		eP_E	11 43 21					
		iS	11 48 49					
		eL?	11 51 30					
		M_E	11 54 17		*1700			
		M_N	11 54 43			*600		
		F	13 54 ..					
		VERTICAL.						
		eP	*11 43 22*					
		L	*11 56 ..*					
		F	*12 25 ..*					

* Trace amplitude.

Hawaii. *Honolulu. Magnetic Observatory.* U. S. Coast and Geodetic Survey. Frank Neuman.
Lat., 21° 19′ 12″ N.; long., 158° 03′ 48″ W. Elevation, 15.2 meters.
Instrument: Milne seismograph of the Seismological Committee of the British Association.

	T_0
Instrumental constant..	18.5

(Report for August, 1917, received too late.)

Kansas. *Lawrence. University of Kansas.* Department of Physics and Astronomy. F. E. Kester.
Lat., 38° 57′ 30″ N.; long., 95° 14′ 53″ W. Elevation, 301.1 meters.
Instrument: Wiechert.

		V	T_0	ε
Instrumental constants:	E	177	3.4	4.1
	N	205	3.4	4.1

(Report for August, 1917, not received.)

TABLE 2.—*Instrumental reports, August, 1917*—Continued.

Maryland. *Cheltenham. Magnetic Observatory.* U. S. Coast and Geodetic Survey. George Hartnell.

Lat., 38° 44′ 00″ N.; long., 76° 50′ 30″ W. Elevation, 71.6 meters.
Instruments: Two Bosch-Omori, 10 and 12 kg.

Instrumental constants.. E: V 10, T_0 32; N: V 10, T_0 27

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E	Amplitude. A_N	Distance.	Remarks.
1917			*H. m. s.*	*Sec.*	μ	μ	*km.*	
Aug. 30	.....	eP....	4 26 44	2	.....	.....	.....	
		eS_N...	4 30 20	2	.....	.....	.....	
		eS_E...	4 30 26	2	.....	.....	.....	
		M_E....	4 36 28	6	20	.....	.....	
		C_E....	4 40 ..	.....	.....	.....	.....	
		F_N....	6 10 ..	.....	.....	.....	.....	
31	.....	P.....	11 43 18	4	.....	.....	.....	
		S.....	11 48 52	8	.....	.....	.....	
		eL_E...	11 53 25	12	.....	.....	.....	
		M_N....	11 57 22	16	.....	140	.....	
		M_E....	11 58 01	16	80	.....	.....	
		C.....	12 09 ..	15	.....	.....	.....	
		F.....	12 41 ..	.....	.....	.....	.....	

Massachusetts. *Cambridge. Harvard University Seismograph Station.* J. B. Woodworth.

Lat., 42° 22′ 36″ N.; long., 71° 06′ 59″ W. Elevation, 5.4 meters. Foundation: Glacial sand over clay.

nstruments: Two Busch-Omori 100 kg. horizontal pendulums (mechanical registration).

Instrumental constants.. E: V 80, T_0 23, ϵ 0; N: V 50, T_0 25, ϵ 4:1

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E	Amplitude. A_N	Distance.	Remarks.
1917			*H. m. s.*	*Sec.*	μ	μ	*km.*	
Aug. 5	.....	*O*?....	*15 45* ..	.....	.....	.....	13,000+	
		e_E?....	15 59 58	.....	.....	.....	.....	
		eS_E...	16 12 51	10	.....	.....	.....	
		eL_E...	16 59 17	24	.....	.....	.....	
		L.....	17 02 33	18	.....	.....	.....	Sinusoidals set in.
		L.....	17 06 51	18	.....	.....	.....	
		L.....	17 16 14	15	.....	.....	.....	
		L.....	17 49 25	15	.....	.....	.....	
		F.....	18 49 ..	.....	.....	.....	.....	
5	.....	L_E....	20 00 16	20	.....	.....	.....	Possibly LR of preceding quake.
		L.....	20 24 40	20	.....	.....	.....	
		F.....	20 58 ..	.....	.....	.....	.....	
5	.....	L_E....	23 22 49	12–14	.....	.....	.....	This and the next possibly LR of first quake.
		F.....	23 29 31	.....	.....	.....	.....	
6	.....	L_E....	1 18 51	12	.....	.....	.....	
		L_E....	1 22 38	12	.....	.....	.....	
		F.....	1 25 37	.....	.....	.....	.....	
21	.....	L_E....	22 13 37	24–18	.....	.....	.....	E–W component stopped at 22^h, 27^m, 53^s.
		L_N....	22 15 48	24	.....	.....	.....	
		F?....	22 27 17	.....	.....	.....	.....	
30	.....	*O*?....	*3 23 35*	.....	.....	.....	4,340?	L–S_E interval gives 4425km
		P_E?...	3 31 18	3	.....	.....	.....	eL_E—*O* gives
		S_E....	3 37 24	9	.....	.....	.....	speed of L as
		S_N....	3 37 51	6	.....	.....	.....	as 230km. per
		eL_E...	3 42 26	24	.....	.....	.....	minute.
		eL_N...	3 42 18	.....	.....	.....	.....	F lost in succeed-
		L_N....	3 46 16	16	.....	.....	.....	ing quake.
30	.....	*O*.....	*4 06 23*	.....	.....	.....	7,550	
		eS_E...	4 26 17	8	.....	.....	.....	
		S_N....	4 26 40	6	.....	.....	.....	
		iSR_E?..	4 29 53	12	.....	.....	.....	
		iSR_N..	4 30 24	14	.....	.....	.....	
		eL_E...	4 39 26	12	.....	.....	.....	Followed by a
		eL_N...	4 40 23	.....	.....	.....	.....	long series of
		F.....	5 46 ..	.....	.....	.....	.....	irregular L
31	.....	*O*.....	*11 36 33*	.....	.....	.....	4,120	waves.
		P_N....	11 44 00	.....	.....	.....	.....	
		P_E....	11 44 07	.....	.....	.....	.....	
		iS_N....	11 49 54	.....	.....	.....	.....	First movement
		iS_E....	11 50 27	6	.....	.....	.....	pendulum to
		SR2...	11 52 57	10	.....	.....	.....	north. First
		eL_E?..	11 54 29	24	.....	.....	.....	movement of
		eL_N...	11 54 36	.....	.....	.....	.....	pendulum in
		M_N....	11 59 42	.....	.....	.....	.....	iS_E to east.
		M_E....	11 59 48	.....	.....	.....	.....	
		M_E....	12 01 56	.....	.....	.....	.....	
		F_E....	13 56 ..	.....	.....	.....	.....	

Missouri. *Saint Louis. St. Louis University.* Geophysical Observatory. J. B. Goesse, S. J.

Lat., 38° 38′ 15″ N.; long., 90° 13′ 58″ W. Elevation, 160.4 meters. Foundation: 12 feet of tough clay over limestone of Mississippi system, about 300 feet thick.

Instrument: Wiechert, 80 kg. astatic, horizontal pendulum.

Instrumental constants.. V 80, T_0 7, ϵ 5:1

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E	Amplitude. A_N	Distance.	Remarks.
1917.		*e*	*H. m. s.*	*Sec.*	μ	μ	*km.*	
Aug. 30	I.....	e_N....	16 27 30	.....	.....	.....	.....	Barely perceptible.
		F_N....	16 33 ..	.....	.....	.....	.....	
31	II_u....	iP_E...	11 47 00	.....	.....	.....	.....	
		iP_N...	11 47 45	.....	.....	.....	.....	
		S_E....	11 56 30	.....	.....	.....	.....	
		S_N....	11 57 00	.....	.....	.....	.....	
		M_N....	11 58 30	.....	.....	63	.....	
		M_E....	12 00 06	.....	.....	.....	.....	
		F_E....	12 22 ..	.....	.....	.....	.....	
		F_N....	12 30 ..	.....	.....	.....	.....	

New York. *Buffalo. Canisius College.* John A. Curtin, S. J.

Lat., 42° 53′ 02″ N.; long., 78° 52′ 40″ W. Elevation, 190.5 meters.

Instrument: Wiechert 80 kg. horizontal.

Instrumental constants.. V 80, T_0 7, ϵ 5:1

(Report for August, 1917, not received.)

New York. *Fordham. Fordham University.* Daniel H. Sullivan, S. J.

Lat., 40° 51′ 47″ N.; long., 73° 53′ 08″ W. Elevation, 23.9 meters.

Instrument: Wiechert, 80 kg.

Instrumental constants.. E: V 72, T_0 6.6, ϵ 1.5:1; N: V 72, T_0 7.1, ϵ 3.8:1

(Report for August, 1917, not received.)

New York. *Ithaca. Cornell University.* Heinrich Ries.

Lat., 42° 26′ 58″ N.: long., 76° 29′ 09″ W. Elevation, 242.6 meters.

Instruments: Two Bosch-Omori, 25 kg., horizontal pendulums (mechanical registration).

Instrumental constants.. E: V 13, T_0 22, ϵ 4:1; N: V 14, T_0 25, ϵ 4:1

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E	Amplitude. A_N	Distance.	Remarks.
1917.			*H. m. s.*	*Sec.*	μ	μ	*km.*	
Aug. 3	.....	e_N.....	22 48 32	4	.....	.....	.....	Absolute times inaccurate throughout month. Repairs being made in seismograph room. Master clock not running.
		e_N.....	22 51 36	4	.....	.....	.....	
		L_N....	23 01 52	44	.....	.....	.....	
		F_N....	23 42 ..	.....	.....	.....	.....	
5	.....	eL_E...	16 53 50	22	.....	.....	.....	
		eL_N...	16 54 40	27	.....	.....	.....	
		F_E....	17 22 ..	.....	.....	.....	.....	
		F_N....	17 26 ..	.....	.....	.....	.....	
30	.....	eP_N...	3 30 12	3	.....	.....	.....	
		S_N....	3 36 12	6	.....	.....	.....	
		e_N.....	3 40 20	7	.....	.....	.....	
		eL_N...	3 44 10	16	.....	.....	.....	
		F_N....	4 17 ..	.....	.....	.....	.....	
30	.....	e_N.....	4 26 16	4	.....	.....	.....	
		i_N.....	4 28 40	3	.....	.....	.....	
		L_N....	4 46 03	13	.....	.....	.....	
		L_N....	5 01 32	34	.....	.....	.....	
		F_N....	6 17 ..	.....	.....	.....	.....	
31	.....	P_N....	11 43 15	3	.....	.....	.....	
		S_N....	11 49 05	6	.....	.....	.....	
		M_N....	12 00 14	19	.....	*1,000	.....	
		F_N....	13 20 ..	.....	.....	.....	.....	

*Trace amplitude.

TABLE 2.—*Instrumental reports, August, 1917*—Continued.

Panama Canal Zone. *Balboa Heights.* Isthmian Canal Commission.
Lat., 8° 57′ 39″ N.; long., 79° 33′ 29″ W. Elevation, 27.6 meters.
Instruments: Two Bosch-Omori, 100 kg.
Instrumental constants.. V 10, T_0 20

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E	Amplitude. A_N	Distance.	Remarks.
1917.			*H. m. s.*	*Sec.*	*μ*	*μ*	*km.*	
Aug. 30		P_E	3 26 08				950	Direction probably south.
		P_N	3 26 10					
		L_N	3 28 10					
		L_E	3 28 20					
		M_E	3 28 42		*1500			
		M_N	3 28 54			*3000		
		F_E	3 47 00					
		F_N	3 51 00					
31		P_E	11 38 08				910	Direction probably south.
		P_N	11 38 12					
		S	11 39 44					
		L_E	11 40 10					
		L_N	11 40 12					
		M_N	11 40 49			*62000		
		M_E	11 41 52		*46000			
		F_E	12 34 00					
		F_N	12 36 00					

Porto Rico. *Vieques.* *Magnetic Observatory.* U. S. Coast and Geodetic Survey. F. L. Adams.
Lat., 18° 08′ 48″ N.; long., 65° 26′ 54″ W. Elevation, 19.8 meters.
Instruments: Two Bosch-Omori.
Instrumental constants.. E: V 10, T_0 17.5; N: V 10, T_0 18.2

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E	Amplitude. A_N	Distance.	Remarks.
1917.			*H. m. s.*	*Sec.*	*μ*	*μ*	*km.*	
Aug. 7		e_N	11 27 53					Local quake.
		e_E	11 28 15					
		eL	11 28 40	2				
		M_N	11 28 50			20		
		M_E	11 28 55		20			
		F	11 35 ..					
9		eP_E	16 15 26					Very small waves superimposed on others having a period of 6 to 10 seconds.
		eP_E	16 15 31					
		eL_N	16 16 25					
		eL_E	16 16 35	6				
		M_E	16 16 40	7	50			
		M_N	16 16 50	7		40		
		C	16 20 ..	6				
		F	16 26 ..					
30		eP_E	3 28 18	4				
		eL_E	3 33 33	17				
		M_E	3 34 24	17	70			
		M_N	3 35 20	18		20		
		C_E	3 41 ..	13				
		F_E	3 52 ..					
31		eP_N	11 40 17	4				The drums were taken off to change the paper at 12h 22m, while the quake was still in progress.
		eP_E	11 40 23	4				
		eS_N	11 43 42	8				
		eL_E	11 44 15	30				
		eL_N	11 45 23	19				
		M_N	11 48 10	21		*3090		
		M_E	11 49 55	17	*3520			
		C_E	12 00 ..					

Vermont. *Northfield.* *U. S. Weather Bureau.* Wm. A. Shaw.
Lat., 44° 10′ N.; long., 72° 41′ W. Elevation, 256 meters.
Instruments: Two Bosch-Omori, mechanical registration.
Instrumental constants.. E: V 10, T_0 15; N: V 10, T_0 16

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E	Amplitude. A_N	Distance.	Remarks.
1917.			*H. m. s.*	*Sec.*	*μ*	*μ*	*km.*	
Aug. 5		e_E	16 11 58					Does not show on N-S.
		L_E	16 57 00	20				
		L_E	17 11 00	20				
		F	17 30 ..					F in microseisms.
30		P	4 26 36				7,780?	
		PR	4 29 36					
		S?	4 35 45					
		L	4 47 ..					
		L	5 12 ..	20				
		F	6 15 ..					
31	11_F	iP	11 44 00				4,120?	
		S?	11 49 54					
		L	11 53 00					
		L_N	11 59 50	20				
		L_E	12 03 15	20				
		F	12 45 ..					

* Trace amplitude.

Canada. *Ottawa.* *Dominion Astronomical Observatory.* Earthquake Station. Otto Klotz.
Lat., 45° 23′ 38″ N.; long., 75° 42′ 57″ W. Elevations, 83 meters.
Instruments: Two Bosch photographic horizontal pendulums, one Spindler & Hoyer 80k. vertical seismograph.
Instrumental constants., V 120, T_0 26

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E	Amplitude. A_N	Distance.	Remarks.
1917.			*H. m. s.*	*Sec.*	*α*	*α*	*km.*	
Aug. 5		*O*	*15 50 48*				14,000	In New Zealand, from press reports.
		e_N	16 09 52					
		iPR1	16 11 45					
		iS	16 21 50	8				
		e_N	16 29 ..	11				
		e_E	16 30 ..	20				
		L	16 51 ..	15				From 16h 50m onwards the L waves are more or less continually sinuous.
		L	17 00 ..	18–19				
		L	17 08 ..	17				
		L	17 11 ..	17				
		L	17 17 ..	15				
		L	17 27 ..	15				
		L	17 35 ..	15				
		LR1	17 56 ..	20				
		F	18 10 ..					
9		eL_N	16 30 ..	14				
		L_N	16 40 ..	14				
		F	17 00 ..					
21		*O*?	*10 44 38*				4,450?	
		eP?	10 52 22					
		eS	10 58 34					
		eL_N	11 06 36	20				
		L	11 09 ..	14				
		F	11 25 ..					
21		L	22 17 ..	20–22				
		F	22 30 ..					
30		*O*	*3 24 10*				4,530	Fairly strong microseisms prevail.
		iP	3 32 06	2				
		iS	3 38 22					
		eL?	3 41 18	16				
		L	3 51 ..					
		F	4 07 ..					
30		*O*	*4 15 36*				7,650	
		P	4 26 38					
		iPR1	4 29 53					
		PR2	4 31 11					
		S	4 35 40					
		eL	4 48 18	20				
		L	4 53 ..	20				
		L	5 03 ..	15				
		L	5 20 ..	20				
		L	5 33 ..	17				
		L	5 49 ..	17				
		LR1?	6 06 ..	30				
		F	6 35 ..					
31		*O*	*11 36 20*				4,470	In Colombia.
		iP_N	11 44 12	2–4				
		iS	11 50 25	6–8				
		eL_E	11 56 30	20				
		eL_N	11 57 ..	20				
		L	12 02 ..	20				
		L	12 05 ..	16–15				
		L	12 13 ..	16–15				
		L	12 24 ..	15				
		L	12 44 ..	13				
		F	13 10 ..					

Canada. *Toronto.* *Dominion Meteorological Service.*
Lat., 43° 40′ 01″ N.; long., 79° 23′ 54″ W. Elevation, 113.7 meters. Subsoil: Sand and clay.
Instrument: Milne horizontal pendulum, North; in the meridian.
Instrumental constant.. T_0 18. Pillar deviation, 1 mm. swing of boom=0.50″.

(Report for August, 1917, not received.)

Canada. *Victoria, B. C.* *Dominion Meterological Service.*
Lat., 48° 24′ N.; long., 123° 19′ W. Elevation, 67.7 meters. Subsoil: Rock.
Instruments: Wiechert, vertical. Milne horizontal pendulum, North; in the meridian.
Instrumental constant.. T_0 18. Pillar deviation: 1 mm. swing of boom=0.54″.

(Report for August. 1917, not received.)

TABLE 3.—*Late seismological reports (instrumental).*

Hawaii. *Honolulu. Magnetic Observatory.* U. S. Coast and Geodetic Survey. Frank Neuman.

Lat., 21° 19′ 12″ N.; long., 158° 03′ 48″ W. Elevation, 15.2 meters.

Instrument: Milne seismograph of the Seismological Committee of the British Association.

Instrumental constant.. T_0 18.5

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E	Amplitude. A_N	Distance.	Remarks.
			H. m. s.	*Sec.*	*μ*	*μ*	*km.*	
1917. July 1		eL	1 10 30	20				Only E-W motion recorded.
		M	1 18 00		*200			
		C	1 21 12					
		F	1 26 ..					
4		eP	0 50 18					Trace in jerks. Waves indistinct.
		eS	0 56 48					
		eL	1 11 54	21				
		M	1 22 18		*2100			
		C	1 29 00					
		F	2 14 ..					
4		eP	5 57 00					Trace in jerks. Waves indistinct.
		L	6 11 12					
		M	6 20 12		*600			
		C	6 27 ..					
		F	6 56 ..					
4		eL	22 57 42					
		M	23 12 ..	20	*100			
		C	23 15 ..					
		F	23 19 ..					
7								Light failed on the the 7th from 13h 40m to 18h 33m.
11		L	22 59 00					
		M	23 05 18	19	*700			
		C	23 08 ..					
		F	23 29 ..					
12		eP	11 51 48					
		eL	12 09 30	21				
		M	12 13 12		*800			
		C	12 18 ..					
		F	13 50 ..					
18		P	8 08 48					
		eL	8 16 54	23				
		M	8 24 12	20	*300			
		C	8 29 ..					
		F	9 11 ..					
25		L	3 31 06					
		M	3 37 00	18	*400			
		C	3 41 12					
		F	5 12 ..					
25		L	22 46 ..	18				
		M	22 54 48		*100			
		F	23 03 ..					
27		P	1 13 54					
		S	1 24 18					
		L	1 41 18	21				
		M	1 49 42	19	*1600			
		C	2 02 ..					F in next quake.
27		L	3 37 24	22				P and S lost in preceding quake.
		M	3 42 06		*3400			
		C	3 50 00					
		F	6 00 ..					
27		eP	23 54 00					
28		eL	0 04 36	18				
		M	0 10 00		*700			
		C	0 13 00					
		F	0 48 ..					
29		eP	14 42 12					
		S	14 49 42					
		eL	14 57 24	18				
		M	14 50 00		*600			
		M	15 15 24		*400			
		F	16 28 ..					
29		P	22 03 54					
		S	22 12 12					
		L	22 22 30	22				
		M	22 29 00		*13000			
		C	23 18 ..					
30		F	2 15 ..					
30		eL	16 55 00					
		M	16 58 48	18	*200			
		F	17 17 ..					

*Trace amplitude.

Hawaii. *Honolulu. Magnetic Observatory*—Continued.

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E	Amplitude. A_N	Distance.	Remarks.
			H. m. s.	*Sec.*	*μ*	*μ*	*km.*	
31		eP	0 16 18					
		eL	0 30 36	18				
		M	0 53 12		*900			
		C	0 58 00					
		F	1 39 ..					
31		eP	3 33 06					
		eL	3 46 54	20				
		M	3 50 18		*1600			
		C	3 52 ..					
		F	4 45 ..					

* Trace amplitude.

Panama Canal Zone. *Balboa Heights.* Isthmian Canal Commission.

Lat., 8° 57′ 39″ N.; long., 79° 33′ 29″ W. Elevation, 27.6 meters.

Instruments: Two Bosch-Omori, 100 kg.

Instrumental constants.. V 10 T_0 20

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E	Amplitude. A_N	Distance.	Remarks.
			H. m. s.	*Sec.*	*μ*	*μ*	*km.*	
1917. May 1		P_N	18 43 20				5,310	Direction?
		P_E	18 43 37					
		S_N	18 51 04					
		S_E	18 51 24					
		L_N	18 59 10					
		L_E	18 59 32					
		M_E	19 24 10		*3,000			
		M_N	19 35 50			*1,500		
		F_E	21 01 00					
		F_N	21 54 00					

* Trace amplitude.

Canada. *Toronto. Dominion Meteorological Service.*

Lat., 43° 40′ 01″ N.; long., 79° 23′ 54″ W. Elevation, 113.7 meters. Subsoil: Sand and clay.

Instrument: Milne horizontal pendulum, North; in the meridian.

Instrumental constant.. T_0 18. Pillar deviation, 1 mm. swing of boom=0.50″.

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E	Amplitude. A_N	Distance.	Remarks.
			H. m. s.	*Sec.*	*μ*	*μ*	*km.*	
1917. July 1		P?	13 27 48				5,220?	Felt in south end of Graham Island in Queen Charlotte Islands.
		S	13 34 42					
		L	13 38 48					
		M	13 39 06		*200			
		F	13 53 12					
4		S?	1 04 30					Distant quake.
		eL	1 12 06					
		L	1 25 12					
		L	1 31 18					
		M	1 38 18		*400			
		F	2 44 12					
4		P or S	6 29 24					Distant quake.
		L	6 39 48					
		M	6 54 00		*200			
		F	7 14 30					
9		L	0 17 48					
		L	0 55 30		*50			
11		eL	23 34 36					Quake and tidal wave reported from the Samoan Islands; damage done. Also felt in Friendly Is.
		eL	23 40 12					
		M	23 43 00		*300			
12		F	0 05 30					
12		L	13 57 54		*50			
		F	14 06 18					
13		P?	5 27 30					
		L?	5 30 24					
		M	5 35 18		*50			
		F	5 42 24					
15								No record obtained on 15th: clock stopped.
21		P	3 24 12					
		S	3 35 42					
		L	3 47 06					
		iL	3 50 18					
		M	3 51 36		*1,800			
		L_{rep}	5 01 36					
		F?	5 18 36					

*Trace amplitude.

TABLE 3.—*Late seismological reports (instrumental)*—Continued.

Canada. *Toronto. Dominion Meteorological Service*—Continued.

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E	Amplitude. A_N	Distance.	Remarks.
			H. m. s.	*Sec.*	*μ*	*μ*	*km.*	
25	.....	P.....	22 42 42	.....	.....	.....	.....	
		S?.....	22 52 54	.....	.....	.....	.....	
		L.....	23 01 42	.....	.....	.....	.....	
		eL.....	23 03 18	.....	.....	.....	.....	
		M.....	23 04 24	.....	*300	.....	.....	
		F?.....	23 31 24	.....	.....	.....	.....	
27	.....	P.....	1 06 54	.....	.....	.....	2,990	
		S.....	1 11 36	.....	.....	.....	.....	
		L.....	1 13 24	.....	.....	.....	.....	
		iL.....	1 17 06	.....	.....	.....	.....	
		iL.....	1 18 00	.....	.....	.....	.....	
		M.....	1 21 06	.....	*9,300	.....	.....	F merges into next quake.
27	.....	P?.....	3 01 42	.....	.....	.....	10,740?	A quake of much intensity reported from Chile.
		iS.....	3 13 12	.....	.....	.....	.....	
		L.....	3 25 30	.....	.....	.....	.....	
		L.....	3 41 00	.....	.....	.....	.....	
		M.....	3 48 00	.....	*800	.....	.....	
		L_{rep}.....	4 54 30	.....	.....	.....	.....	
		F.....	5 36 12	.....	.....	.....	.....	
27	.....	P.....	16 20 24	.....	.....	.....	3,810	
		S.....	16 26 00	.....	.....	.....	.....	
		L.....	16 28 24	.....	.....	.....	.....	
		M.....	16 28 48	.....	*300	.....	.....	
		F.....	17 14 12	.....	.....	.....	.....	
28	.....	L.....	0 40 06	.....	.....	.....	.....	Thickenings.
		L.....	0 47 54	.....	.....	.....	.....	
		F.....	1 06 30	.....	.....	.....	.....	
28	.....	eL.....	1 44 24	.....	.....	.....	.....	
		M.....	1 45 42	.....	*200	.....	.....	
		F.....	1 57 48	.....	.....	.....	.....	
29	.....	P.....	{14 51 54 14 55 54}	.....	.....	.....	.....	Possibly two quakes overlapping.
		S?.....	15 08 36	.....	.....	.....	.....	
		eS.....	15 19 42	.....	.....	.....	.....	
		L.....	15 21 48	.....	.....	.....	.....	
		iL.....	15 25 00	.....	.....	.....	.....	
		M.....	15 28 36	.....	*1,600	.....	.....	
		F.....	16 53 18	.....	.....	.....	.....	
29	.....	P?.....	22 11 42	.....	.....	.....	11,330?	
		iP.....	22 15 24	.....	.....	.....	.....	
		iS.....	22 23 36	.....	.....	.....	.....	
		iS.....	22 31 18	.....	.....	.....	.....	
		L.....	22 35 36	.....	.....	.....	.....	
		L.....	22 59 12	.....	.....	.....	.....	
		M.....	23 08 48	18–48	*4,300	.....	.....	
		eL.....	23 16 06	.....	.....	.....	.....	
		L_{rep}.....	23 56 00	.....	.....	.....	.....	Either L_{rep} or another quake.
30		iL.....	0 02 12	.....	.....	.....	.....	
		iL.....	0 05 48	18	*2,500	.....	.....	F lost in microseisms.
30	.....	L.....	17 31 00	.....	.....	.....	.....	
		L.....	17 35 36	.....	.....	.....	.....	F?.
31	.....	P?.....	0 21 06	.....	.....	.....	.....	Strong microseisms going on.
		S?.....	0 29 00	.....	.....	.....	.....	
		L.....	0 41 12	.....	.....	.....	.....	
		L.....	0 46 00	.....	.....	.....	.....	
		M.....	0 58 12	.....	*900	.....	.....	
		L.....	1 30 12	.....	.....	.....	.....	F in microseisms.
31	.....	P?.....	3 25 12	.....	.....	.....	7,380?	Microseisms going on.
		S.....	3 34 00	.....	.....	.....	.....	
		L.....	3 45 48	.....	.....	.....	.....	
		M.....	3 46 00	.....	*400	.....	.....	
		L.....	3 59 00	.....	.....	.....	.....	
		eL.....	4 34 12	.....	.....	.....	.....	F in microseisms.

* Trace amplitude.

Canada. *Victoria, B. C. Dominion Meteorological Service.*

Lat., 48° 24′ N.; long., 123° 19′ W. Elevation, 67.7 meters. Subsoil: Rock.
Instruments: Wiechert, vertical. Milne horizontal pendulum, North; in the meridian.
Instrumental constant.. T_0 18. Pillar deviation: 1 mm. swing of boom=0.54″.

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E	Amplitude. A_N	Distance.	Remarks.
1917.			*H. m. s.*	*Sec.*	*μ*	*μ*	*km.*	
July 1	.....	P.....	13 21 37	.....	.....	.....	.....	Felt at south end of Graham Island in Queen Charlotte Islands, Wireless operator reported sharp quake at 13h 20m.
		S or L	13 22 17	.....	.....	.....	.....	
		M.....	13 23 06	.....	*600	.....	.....	
		F.....	13 32 26	.....	.....	.....	.....	
			VERTICAL.		A_Z			
		P.....	*13 21 37*	*2*	.....	.....	.....	
		L.....	*13 22 37*	*3–4*	.....	.....	.....	
		M.....	*13 22 55*	*6*	*1*	.....	.....	
		F.....	*13 27 55*	.....	.....	.....	.....	

* Trace amplitude.

Canada. *Victoria, B. C. Dominion Meteorological Service*—Con.

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E	Amplitude. A_N	Distance.	Remarks.
			H. m. s.	*Sec.*	*μ*	*μ*	*km.*	
4	.....	P.....	0 50 42	.....	.....	.....	9,190	Probably in Chile or Philippines.
		S.....	1 01 02	.....	.....	.....	.....	
		L.....	1 18 15	.....	.....	.....	.....	
		M.....	1 41 51	.....	*500	.....	.....	
		F.....	2 28 05	.....	.....	.....	.....	
4	.....	L.....	6 29 04	.....	.....	.....	.....	
		M.....	6 40 22	.....	*200	.....	.....	
9	.....	P?.....	0 47 58	.....	.....	.....	.....	
		L.....	0 50 27	.....	.....	.....	.....	
		M.....	0 51 27	.....	*200	.....	.....	
		F.....	0 54 55	.....	.....	.....	.....	
11	.....	P?.....	23 14 54	.....	.....	.....	.....	
		L.....	23 17 23	.....	.....	.....	.....	
		M.....	23 22 20	.....	*300	.....	.....	
		F.....	23 34 14	.....	.....	.....	.....	
12	.....	P.....	12 06 57	.....	.....	.....	4,120	
		S.....	12 12 51	.....	.....	.....	.....	
		L.....	12 23 10	.....	.....	.....	.....	
		M.....	12 31 47	.....	*600	.....	.....	
		F.....	12 59 34	.....	.....	.....	.....	
12	.....	L?.....	13 27 06	.....	.....	.....	.....	Probably distinct from above.
		M.....	13 30 03	.....	*200	.....	.....	
		F.....	13 37 55	.....	.....	.....	.....	
15	.....	P?.....	11 37 52	.....	.....	.....	.....	
		L?.....	11 44 18	.....	.....	.....	.....	
		M.....	11 48 20	.....	*300	.....	.....	
		F.....	12 14 37	.....	.....	.....	.....	
25	.....	P.....	3 25 50	.....	.....	.....	1,710	
		S.....	3 28 47	.....	.....	.....	.....	
		L.....	3 30 45	.....	.....	.....	.....	
		M.....	3 32 43	.....	*1,500	.....	.....	
		F.....	4 32 43	.....	.....	.....	.....	
			VERTICAL.		A_Z			
		P.....	*3 25 50*	*3*	.....	.....	*2,080*	
		S.....	*3 29 00*	*4–6*	.....	.....	.....	
		L.....	*3 31 42*	*18–20*	.....	.....	.....	
		M.....	*3 32 30*	*20*	*10*	.....	.....	
		F.....	*3 48 00*	.....	.....	.....	.....	
27	.....	.....	.....	.....	.....	.....	.....	[Other components lost; clock stopped.]
			VERTICAL.		A_Z			
		P.....	*1 10 28*	*5–6*	.....	.....	*9,000*	
		S.....	*1 20 48*	*12*	.....	.....	.....	
		L.....	*1 29 42*	*18*	.....	.....	.....	
		M.....	*1 36 18*	*18*	*8*	.....	.....	
		F.....	*2 16 00*	.....	.....	.....	.....	
27	.....	M.....	3 44 56	.....	*3,500	.....	.....	Earlier records missed; clock stopped.
		F.....	5 36 17	.....	.....	.....	.....	
			VERTICAL.		A_Z			
		L.....	*5 36 00*	*18–20*	.....	.....	.....	
		M.....	*3 41 00*	*20*	.....	.....	.....	*F?*.
27	.....	S?.....	16 42 48	.....	.....	.....	.....	
		L.....	16 48 30	.....	.....	.....	.....	
		M.....	16 54 06	.....	*100	.....	.....	
		F.....	17 08 42	.....	.....	.....	.....	
28	.....	.....	.....	.....	.....	.....	.....	Clock stopped on 28th.
29	.....	P.....	14 51 27	.....	.....	.....	5,730	
		S.....	14 58 49	.....	.....	.....	.....	
		L.....	15 05 43	.....	.....	.....	.....	
		M.....	15 10 53	.....	*400	.....	.....	
		F.....	16 17 31	.....	.....	.....	.....	
29	.....	P?.....	22 06 43	.....	.....	.....	7,420?	P uncertain.
		S.....	22 15 34	.....	.....	.....	.....	
		L.....	22 35 14	.....	.....	.....	.....	
		M.....	22 50 58	.....	*3,500	.....	.....	
30		L_{rep}.....	0 25 24	.....	*1,500	.....	.....	
		F.....	1 16 33	.....	.....	.....	.....	
			VERTICAL.		A_Z			
		P.....	*22 04 24*	*3–6*	.....	.....	*12,400*	
		S.....	*22 17 00*	*6–8*	.....	.....	.....	
		L.....	*22 35 06*	*30–32*	.....	.....	.....	
		M.....	*22 45 00*	*24*	*16*	.....	.....	*F?*.
30	.....	M.....	17 21 29	.....	*50	.....	.....	Thickening.
31	.....	P or S.	3 33 47	.....	.....	.....	.....	
		L.....	3 40 09	.....	.....	.....	.....	
		M.....	4 22 28	.....	*200	.....	.....	
		F.....	4 39 41	.....	.....	.....	.....	
31	.....	P?.....	0 36 14	.....	.....	.....	7,420	
		S.....	0 45 05	.....	.....	.....	.....	
		L.....	0 50 00	.....	.....	.....	.....	
		M.....	0 58 51	.....	*600	.....	.....	
		F.....	1 40 10	.....	.....	.....	.....	

* Trace amplitude.