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The Registration of Earthquakes

and

Press Dispatches on Earthquakes

from

JANUARY 1st, 1921, TO JANUARY 1st, 1922

by

F. A. TONDORF, S. J., Chief Seismologist

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THE REGISTRATION OF EARTHQUAKES

at the

GEORGETOWN UNIVERSITY STATION

and

PRESS DISPATCHES ON EARTHQUAKES

received at the

GEORGETOWN STATION

from

January 1, 1921, to January 1, 1922

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CONTENTS

INSTALLATION AND EQUIPMENT OF THE SEISMOLOGICAL OBSERVATORY OF GEORGETOWN UNIVERSITY.

On the basis of a gift from Patrick H. O'Donnell, A.B., '92, A.M., '93, LL.B., '94, the foundation of the Georgetown University Seismological Observatory became possible. The original installation consisted of an horizontal and vertical seismograph after Wiechert, each carrying a stationary mass of 80 kilos. These instruments were tentatively placed, January, 1911, at the base of the South Tower of the Healy building. It was soon ascertained that this choice of position was unfortunate because of the rocking of the tower, 212 feet in height, under heavy wind conditions. A cave was promptly excavated beneath the quadrangle, measuring 12 ft. 4 in. in width, 30 ft. 10 in. in length and 11 ft. high. This station is designated as Station A. Care was taken to make this new home of the seismographs heat and damp proof. A new Wiechert horizontal seismograph, with a stationary mass of 200 kilos, was purchased to replace the one of 80 kg. mass. This smaller instrument is now installed in Guatemala City, Guatemala, and is in charge of Senor Claudio Urrutia, consulting engineer to the Guatemalan Government. The cave also houses a vertical seismograph after Wiechert, two Bosch-Omori pendulums of 25 kilos each, and two conical pendulums after Mainka, of 135 kgs. mass. A concrete building, situated on observatory hill, at an altitude of 159 feet above sea level, designated as Station B, shelters a Bosch photographic instrument with pendulums of 200 grams each. The time is automatically registered on these instruments by five contact clocks noting minutes and hours. The clocks are corrected daily by signals, received through the courtesy of the Western Union telegraph Company and the Arlington Wireless Station.

CONSTANTS

CONSTANTS OF THE STATION.

Latitude and longitude of the seismograph room:

$\phi = 38°\ 54'\ 25''$ N. Lat.

$\lambda = 77°\ 04'\ 24''$ W. from Greenwich.

TIME. All determinations are reduced to Greenwich mean civil time.

ALTITUDE, Station A— 42.4 meters above mean sea level.
Station B—48.2 meters above mean sea level.

GEOLOGY, subsoil of piers: decayed diorite.

CONSTANTS OF THE SEISMOGRAPHS.

BOSCH-OMORI TROMOMETERS (25 Kilos).

	Period.	*Magnification.*
N-S Component.....	11	13.5
E-W Component.....	11	13.7

WIECHERT HORIZONTAL SEISMOGRAPH (200 Kilos).

	Period.	*Magnification.*
N-S Component.....	5	143
E-W Component.....	5	165

MAINKA CONICAL PENDULUM (135 Kilos).

	Period.	*Magnification.*
N-S Component.....	9	70
E-W Component.....	9	93

WIECHERT VERTICAL SEISMOGRAPH (80 Kilos).

Period.	*Magnification.*
4	80

BOSCH PHOTOGRAPHIC SEISMOGRAPH (200 gms).

	Period.	*Magnification.*
N-S Component.....	5	133
E-W Component.....	5	133

SYMBOLS AND NOTATIONS.

1. *Character of the Earthquake.*

ROSSI-FOREL SCALE OF EARTHQUAKE INTENSITIES:

I. *Microseismic shock:* recorded by a single seismograph or by seismographs of the same model, but not by several seismographs of different kinds; the shock felt by an experienced observer.

II. *Extremely feeble shock:* recorded by several seismographs of different kinds; felt by a small number of persons at rest.

III. *Very feeble shock:* felt by several persons at rest; strong enough for the direction or duration to be appreciable.

IV. *Feeble shock:* felt by persons in motion; disturbances of movable objects, doors, windows; creaking of ceilings.

V. *Shock of moderate intensity:* felt generally by everyone; disturbance of furniture, beds, etc., ringing of swinging bells.

VI. *Fairly strong shock:* general awakening of those asleep; general ringing of house bells; oscillation of chandeliers; stopping of pendulum clocks; visible agitation of trees and shrubs; some startled persons leave their dwellings.

VII. *Strong shock:* overthrow of movable objects; fall of plaster; ringing of church bells; general panic, without damage to buildings.

VIII. *Very strong shock:* fall of chimneys, cracks in walls of buildings.

IX. *Extremely strong shock:* partial or total destruction of some buildings.

X. *Shock of extreme intensity:* great disaster, buildings ruined, disturbance of the strata, fissures in the ground, rock-falls from mountains.

d (terrae motus domesticus)	Local shock (origin nearby, perceptible at the station).
v (terrae motus vicinus)	Near shock (origin less than 1,000 kilometers distant).
r (terrae motus remotus)	Distant shock (origin from 1,000 to 5,000 kilometers distant).
u (terrae motus ultimus)	Very distant shock (origin more than 5,000 kilometers).

?. *Phases of the Seismogram.*

P (undae primae)	First phase, or first preliminary tremors.
PR_n	Waves n-times reflected at the earth's surface.
S (undae secundae)	Second phase, or second preliminary tremors.
SR_n	Waves n-times reflected at the earth's surface.
PS	Waves changed from longitudinal to transverse oscillation, or vice versa, through reflection at the earth's surface.
L (undae longae)	Long waves, chief phase, or principal part.
M (undae maximae)	Greatest motion in the chief phase.
C (cauda)	Tail or end portion.
F (finis)	End of discernible movement.

3. *Nature of the Motion.*

i (impetus) Sudden beginning of the motion.

e (emersio) Gradual beginning of the motion.

T (period) Time of one complete oscillation.

A amplitude of the motion, measured from the median line in millimeters. Instrumental trace.

A_E N-S component of A.

A_N E-W component of A.

A_Z Vert. component of A.

ERRATA

(Page 7, Lines seven and eight.)

A_E E-W component of A.

A_N N-S component of A.

REGISTRATION OF EARTHQUAKES AT THIS STATION

From January 1, 1921, to January 1, 1922

Date.	Character.	Phase.	Time.	Periods.	Amplitude.* A_N	Amplitude.* A_E	Amplitude.* A_Z	Remarks.
†Jan. 2		e_E	7 29 43					Not discernible n N-S.
		F	7 45					
Jan. 8		eP_E	6 40 46					Heavy micros.
		eP_N	6 40 46					S_N very doubtful
		eS_E	6 46 44					
		eS_N?	6 46 17					
		eL_E	6 50.4	6				
		eL_N	6 50.4	6				
		F	7 10					
Jan. 9		eP_E	13 04 21					Sheets off at 13 hs. 44 min. Quake still on. Micros.
		eP_N	13 04 17					
		S_E	13 11 42					
		S_N	13 11 41					
		eL_E	13 18.4					
Jan. 15		e_N	15 20 13					
		F	15 35					
Jan. 20		eP_E?	21 10 44					
		eP_N?	21 10 42					
		L_E	21 20.3	22				
		L_N	21 21.7	21				
		F	21 30					

* Instrumental trace.

† All records, unless otherwise noted, are from grams on Wiechert Horizontal (200) and Vertical (80) Seismographs.

Date.	Character.	Phase.	Time.	Periods.	Amplitude. A_N	Amplitude. A_E	Amplitude. A_Z	Remarks.
Feb. 4	.	P_E	8 28 21					
		P_N	8 28 17					
		S_E	8 33 38					
		S_N	8 33 51					
		M_{E1}	8 38 22			15.3mm		
		M_N	8 40 27		6.7mm			
		M_{E2}	8 42 27			7.5mm		
		F	9 45 (ca)					
Feb. 6		L_E	5 19 37	10				
		L_N	5 19 16	10				
Feb. 11		L_E	22 57 33	16				Heavy micros.
		F	23 03					
Feb. 19		e_E	18 34					Heavy micros. Nothing on E-W. comp.
		i_E	18 37 25					
		L_E	19 20 17	26				
		F	20 20					
Feb. 21		e_E	11 55					Very heavy. micros.
		eL_E?	12 2.4	9				
		eL_N?	12 2.4	8				
		F	12 10					
Feb. 21		e_E	16 11					Very heavy. micros. F lost in second quake.
		e_N	16 11					
		S_E?	16 17					
		S_N?	16 17					
		eL_E?	16 19.9					
		M_E	16 20 46			2.9mm		

Date.	Character.	Phase.	Time.	Periods.	Amplitude. A_N	Amplitude. A_E	Amplitude. A_Z	Remarks.
Feb. 21		S_E?	16 36 44					P lost in F of preceding quake. Very heavy micros.
		S_N?	16 36 44					
		eL_E?	16 39.4	11				
		eL_N?	16 39.4	11				
		M_E	16 42 05			1.3mm		
		F	17 15					
Feb. 21		e_E	19 44 20					Very heavy. micros. Difficult.
		e_N	19 44 20					
		i_E	19 45 15					
		F	20 20					
Feb. 27		eP_E	18 41 11					
		eP_N	18 41 11					
		S_E	18 49 44					
		S_N	18 49 49					
		S_R	18 57 26					
		eL_E	18 0.6	22				
		eL_N	18 1.2	23				
		M_E	19 18 40	24		1.4mm		
		M_N	19 21 46	18	0.9mm			
		F	20 10					
Feb. 27		eP_Z	18 41 16					
		L_Z	19 15 05	28				
		F	20 15					
Mar. 3		e_E	9 01 44					Heavy micros.
		e_N	9 01 33					

Date.	Character.	Phase.	Time.	Periods.	Amplitude.* A_N	Amplitude.* A_E	Amplitude.* A_Z	Remarks.
Mar. 6		eP_E	7 31 24					Heavy micros.
		eS_E	7 36 46					
		eS_N	7 36 36					
		eL_E	7 41 48	16				
		eL_N	7 41 48	11				
		M_E	7 44 25	11		2.1mm		
		M_N	7 44 12	9	2.07mm			
		F	8 35					
Mar. 12		S_E?	10 42 24					Heavy micros. S_E, S_N indicated may be eL. P?
		S_N?	10 42 24					
		eL_E?	10 46 18	25				
		L	10 48 08	27				
		F	11 03					
Mar. 21		e_N	4 14 14					E-W does not show.
		eL_N?	4 19 24	9				
		F	4 40					
Mar. 24		L_E	10 26 15 to 10 40	18				N-S does not show.
Mar. 24		P_E	14 53 49					
		P_N	14 53 50					
		S_E	15 03 42					
		S_N?	15 03 42					
		eL_E	15 17 24	11				
		L_E	15 20 11	14				
		L_N	15 22 27	20				
		F	16 10					
Mar. 25		e_E	0 48 40					
		e_N	0 48 40					
		eL_E	0 50 24	13				
		eL_N	0 50 24	11				
		F	1 15					

Date.	Character.	Phase.	Time.	Periods.	Amplitude. A_N	Amplitude. A_E	Amplitude. A_Z	Remarks.
Mar. 25		e_E	22 20 40					Heavy micros. N-S does not show
		L_E	22 33 44	11				
		F	?					
Mar. 28		iP_E	7 55 10					
		iP_N	7 55 10					
		i_E	7 56					
		i_N	7 56					
		iS_E	8 00 56					
		iS_N	8 00 55					
		M_{E1}	8 02 15	6		9.8mm		
		M_{N1}	8 00 54	11	4.7mm			
		M_{E2}	8 03 05	6		9.7mm		
		M_{N2}	8 02 46	8	3.2mm			
		M_{E3}	8 04 08	8		9.1mm		
		M_{N3}	8 04 16	8	4.0mm			
		M_{E4}	8 05 55	9		7.4mm		
		F	9 45					
Mar. 30		eP_E	15 21 31					Heavy micros.
		eP_N	15 21 31					
		S_E?	15 25 09					
		S_N?	15 25 09					
		F	17 (ca)					
Apr. 1		e_E	4 53					Heavy micros.
		e_N	4 53					
		eL_N	5 8.5	23				
		F	6 10					
Apr. 1		L_E	13 06	22				Sheet; put on at 12 hrs. 50 m. Quake then on. Heavy micros.
		L_N	13 10	22				
		F	13 50					

Date.	Character.	Phase.	Time.	Periods.	Amplitude.* A_N	Amplitude.* A_E	Amplitude.* A_Z	Remarks.
Apr. 2		L_E	10 38	10				Very heavy micros. Very difficult.
		L_N	10 38	10				
		F	10 50					
Apr. 3		e_N	2 57 22					E-W does not show. Heavy micros.
		eL_N	3 02					
		L_N	3 05 06	11				
		F	3 15					
Apr. 10		eP_E	13 47 10					Heavy micros.
		eP_N	13 47 10					
		S_E?	13 53 54					
		eL_E	13 57.1	8				
		eL_N	13 57.1	8				
		L_E	14 02 13	11				
		L_N	14 02 13	11				
		M_{E_1}	14 05 35	8			13.0mm	
		M_{N_1}	14 05 20	9	2.3mm			
		M_{E_2}	14 06 38	8			4.6mm	
		F	14 50					
		e_E	7 48					
		e_N	7 48					
		i_E	7 56					
		F	8 18					
Apr. 20		L_E	19 00	24				N-S does not show. Heavy micros.
		F	19 15					

Date.	Character.	Phase.	Time.	Periods.	Amplitude. A_N	Amplitude. A_E	Amplitude. A_Z	Remarks.
May 1		P_E	5 46 18					
		P_N	5 46 18					
		S_E	5 50 50					
		S_N	5 50 48					
		S_R	5 56 44					
		eL_E	5 59.0	9				
		eL_N	5 59.0	9				
		M_{E1}	6 00	10		2.9mm		
		M_N	6 01 05	7	1.0mm			
		M_{E2}	6 00 33	9		2.9mm		
		F	7 25					
May 14		e_E	21 15					Heavy micros.
		e_N	21 15					
		eL_E	21 20	19				
		L_N	21 25 11	19				
		F	21 55					
May 14		e_E	22 16 11					Difficult. Heavy micros.
		e_N	22 16 11					
		L_E	22 30 07	8				
		L_N	22 30 03	11				
		F	23 10					
May 20		e_N	0 59 44					Very heavy. micros.
		iS_E	1 07 04					
		iS_N	1 07 04					
		F	2 (ca)					
May 21		e_E	9 01					Heavy micros.
		e_N	9 01					
		eL_N?	9 31 27					
		F	10 (ca)					

Date.	Character.	Phase.	Time.	Periods.	Amplitude.* A_N	Amplitude.* A_E	Amplitude.* A_Z	Remarks.
May 21		e_E	22 44 47					Heavy micros.
		e_N	22 47 10					
		L_E	23 16 33	16				
		L_N	23 17 16	16				
		F	23 45					
May 28		e_N	21 08 49					First portion very doubtful. Heavy micros.
		S_E?	21 12 16					
		S_N?	21 12 09					
		eL_E	21 13.5	7				
		eL_N	21 13.5	6				
		M_E	21 13 55	6		1.9mm		
		M_N	21 13 54	6	2.7mm			
		F	21 58					
June 4		e_N	1 45					Very heavy micros.
		F	2 50					
June 15		e_N	19 03					E-W does not show.
		eL_N	19 6.6					
		F	19 25					
June 17		e_E	8 26					e may possibly be S. Difficult.
		e_N	8 25 55					
		L_E	8 29 33	7				
		F	8 45					
June 17		e_E	10 35					Heavy micros.
		e_N	10 34 58					
		eL_N	10 37.5					
		F	10 50					

Date.	Character.	Phase.	Time.	Periods.	Amplitude.* A_N	Amplitude.* A_E	Amplitude.* A_Z	Remarks.
June 25		e_E	2 15 52					Heavy micros.
		e_N	2 15 52					
		eL_E	2 25.2					
		eL_N	2 25.0					
		L_E	2 28 44	16				
		L_N	2 28 00	14				
		F	2 54					
June 28		eL_E?	14 10.0					Sheets put on at 14 hrs. 8 m. Quake then on apparently.
		eL_N?	14 10.6	19				
		F	15 (ca)					
July 4		e_E	14 35 45					Micros.
		e_N	14 35 45					
		S_E	14 41 37					
		S_N	14 41 36					
		F	15 (ca)					
July 8		e_E	10 56					Heavy micros.
		e_N	10 56					
		S_E?	10 58 23					
		eL_E?	11 1.0	11				
		eL_N?	11 1.1	11				
		F	11 15					
July 9		e_E	7 19 56					
		e_N	7 10 18					
		F	7 16					
July 12		e_E	20 21 38					
		e_N	20 21 38					
		F?						

Date.	Character.	Phase.	Time.	Periods.	Amplitude. A_N	Amplitude. A_E	Amplitude. A_Z	Remarks.
Aug. 7		i_E	6 33 09					Felt in Virginia.
		i_N	6 33 09					
		i_E	6 33 36					
		F	6 36					
Aug. 19		e_E	8 34 40					Heavy micros.
		e_N	8 35 00					
		eL_E	8 38.8	16				
		eL_N	8 39.0					
		F	8 56					
Aug. 23		P_N	20 25 29					
		S_N?	20 32					
		eL_N	20 38.3					
		eL_E	20 38.3					
		L_E	20 40	22				
		L_N	20 40 27	22				
		F	21 05					
Aug. 29		e_E	19 09 15					Heavy micros.
		e_N	19 09 15					
		F	19 20					
Sept. 5		e_E	20 19 50					Heavy micros.
		e_N	20 19 50					
		eL_E?	20 35.1					
		L_E	20 42 38	21				
		L_N	20 47 09	13				
		L_E	20 48 18	22				
		F	21 10					
Sept. 8		e_N	19 39 20					Difficult. E-W does not show.
		F	20 (ca)					

Date.	Character.	Phase.	Time.	Periods.	Amplitude. A_N	Amplitude. A_E	Amplitude. A_Z	Remarks.
Sept. 11		eP_E	4 21 33					Heavy micros.
		iP_N	4 21 [illegible]					
		S_E?	4 32 37					
		S_N?	4 32 47					
		eL_E	4 51.0	26				
		eL_N	4 51.1	26				
		L_E	5 13	32				
		L_N	5 11 16	27				
		L_E	5 30	22				
		F	6 50					
Sept. 13		e_E	2 55 24					Heavy micros.
		e_N	2 55 32					
		S_E?	3 01 31					
		S_N?	3 01 31					
		eL_E	3 9.8					
		eL_N	3 9.8					
		F	3 45					
		P_E?	4 30 37					
		P_N?	4 30 37					
		L_E	4 42 21	16				Heavy micros.
		L_N	4 42 07					
		F	5 10					
Sept. 19		e_E?	23 45 31					Heavy micros.
		e_N?	23 45 31					
		S_E?	23 52 22					
		S_N?	23 52 14					
		eL_N?	0 2.2					
		L_E	0 13 38	22				
		F	0 35					

Date.	Character.	Phase.	Time.	Periods.	Amplitude. A_N	Amplitude. A_E	Amplitude. A_Z	Remarks.
Oct. 15		eP_E?	5 20 27					Very heavy micros. P very doubtful.
		eP_N?	5 20 30					
		S_E	5 28 27					
		S_N	5 28 27					
		eL_E	5 35.2					
		eL_N	5 35.6					
		L_E	5 59 07	32				
		L_N	5 59 27	27				
		L_E	6 06 33	20				
		F	7 20					
Oct. 20		iP_Z	6 13 07					
		i_Z	6 13 40					
		S_Z	6 21 05					
		eL_Z?	6 27.7					
		L_Z	6 35 33	19				
		F	6 57					
Oct. 20		eP_E	6 13 13					Micros.
		iP_N	6 13 13					
		i_N	6 13 44					
		iS_E	6 21 10					
		iS_N	6 21 09					
		eL_E	6 28.5					
		eL_N	6 28.5					
		L_E	6 41 26	21				
		F	7 (ca)					
Oct. 25		L_E	16 02 40	20				Very heavy micros.
		F	16 12					
Nov. 2		e_E?	3 57					Very heavy micros.
		e_N?	3 57					
		F	4 10					

Date.	Character.	Phase.	Time.			Periods.	Amplitude.			Remarks.
							A_N	A_E	A_Z	
Nov. 11		e_E	18	55	30					Heavy micros. S_E does not show. F lost in second quake. P_Z 18:55:21.
		e_N	18	55	25					
		S_N	19	06	32					
		eL_E?	19	27.7						
		eL_N?	19	26.6						
		L_E	19	41	33	27				
		L_N	19	42	26	23				
Nov. 11		e_E	19	57	36					Heavy micros.
		e_N	19	57	36					
		F	20	10						
Nov. 15		e_E	8	47	2?					Very heavy micros.
		e_N	8	47	26					
		eL_E?	8	52	31					
		eL_N?	8	52	55					
		L_E	8	55		20				
		L_N	9	01	16	11				
		F		?						

Date.	Character.	Phase.	Time.	Periods.	Amplitude. A_N	Amplitude. A_E	Amplitude. A_Z	Remarks.
Nov. 15		eP_E	20 50 00					Very heavy micros. No distinct M.
		eP_N	20 50 00					
		i_E	20 56 11					
		i_N	20 56 11					
		S_E	21 00 14					
		iS_N	21 00 15					
		eL_N?	21 17.2					
		L_E	21 21 15	24				
		L_N	21 26 18	15				
		L_E	21 33 08	15				
		L_N	21 42 16	16				
		F?	22 (ca)					
		eP_Z	20 50 00					
		i_Z	20 56					
		S_E	21 00					
		eL_Z	21 17.7	21				
		L_Z	21 26					
		F_Z	21 50					
Dec. 18		eP_E	15 15 40					Heavy micros. No distinct M_N. Mainka shows. P_E 15 36 35 iS_E 15 43 03
		iP_N	15 36 40					
		i_N	15 39 35					
		i_N	15 41 13					
		iS_E	15 42 19					
		iS_N	15 42 23					
		eL_E	15 51.0					
		M_E	15 51 50	9		2.2mm		
		F	17 (ca)					

DISPATCHES OF EARTHQUAKES AT THIS STATION

From January 1, 1921, to January 1, 1922.

Place	Date	Time.*	Character.	Source of Information†	Remarks.
LaValle, Argentina.	Jan. 3.	3h. p.m. (L.T.)	Strong.	A.P.	Buildings destroyed.
New Madrid, Mo., U.S.A.	Jan. 9.	21h. 40m.	Very feeble.	S.O.	
Willows, Calif., U.S.A.	Jan. 13.	10h. 30m.	Sharp.	S.O.	
Lone Pine, Calif., U.S.A.	Jan. 14.	13h. 50m.	Moderate.	S.O.	
Faenza, Italy	Jan. 14.	7h. p.m.	Pronounced.	A.P.	No damage.
		9h. 30m. p.m. (L.T.)			
Santiago, Chile	Jan. 17.	9h. 30m. p.m. (L.T.)	Violent.	A.P.	No serious damage.
Devonshire Dock, Bermuda	Jan. 18.	6h. 16m. p.m. (L.T.)	Slight.	S.O.	
Corinth, New York, U.S.A.	Jan. 19.	5h. a.m. (L.T.)	Pronounced.	A.P.	
Lake George, N. Y., U.S.A.	Jan. 19.	7h. a.m. (L.T.)	Pronounced.	A.P.	
Calexico, Calif., U.S.A.	Jan. 20.	19h. 46m.	Feeble.	S.O.	
Calexico, Calif., U.S.A.	Jan. 25.	21h. 24m.	Very feeble.	S.O.	
Philadelphia, Pa., U.S.A.	Jan. 26.	6h. 45m. p.m. (L.T.)	Moderate.	A.P.	
Glen Falls, N. Y., U.S.A.	Jan. 27.	Morning.	Moderate.	A.P.	
Valencia, Spain.	Feb. 3.	2h. p.m. (about) (L.T.)	Slight.	R.T.	No damage.
St. Elmo, Colo., U.S.A.	Feb. 6.	6h. 15m.	Moderate.	S.O.	
St. Elmo, Colo., U.S.A.	Feb. 6.	6h. 30m.	Moderate.	S.O.	
Farensa, Italy.	Feb. 11.	Not indicated.	Not indicated.	A.P.	
Garfield, Colo., U.S.A.	Feb. 17.	1h. 45m.	Feeble.	S.O.	
Garfield, Colo., U.S.A.	Feb. 17.	13h. 5m.	Feeble.	S.O.	
San Salvador, Rep. Salvador.	Feb. 18.	Night.	Not indicated.	A.P.	No damage.
Cascadia, Oregon, U.S.A.	Feb. 25.	8h.	Moderate.	S.O.	
Garfield, Colo., U.S.A.	Feb. 26.	15h. 55m.	Very feeble.	S.O.	
Garfield, Colo., U.S.A.	Feb. 27.	17h.	Very feeble.	S.O.	
Cairo, Ill., U.S.A.	Feb. 27.	22h. 16m.	Very feeble.	S.O.	
Garfield, Colo., U.S.A.	Mar. 4.	6h.	Extremely feeble.	S.O.	
Portland, Oregon, U.S.A.	Mar. 4.	20h.	Very feeble.	S.O.	
Garfield, Colo., U.S.A.	Mar. 8.	19h. 15m.	Feeble.	S.O.	
Garfield, Colo., U.S.A.	Mar. 9.	1h. 25m.	Very feeble.	S.O.	
Fairbanks, Alaska.	Mar. 11.	10h. p.m. (L.T.)	Severe.	A.P.	No damage.
Garfield, Colo., U.S.A.	Mar. 12.	7h.	Extremely severe.	S.O.	
Terre Haute, Ind., U.S.A.	Mar. 14.	6h. 15m. (L.T.)	Feeble.	A.P.	
Chilecito, Buenos Aires.	Mar 15.	Shortly before midnight.	Severe.	A.P.	
Sioux Falls, S. Dak., U.S.A.	Mar 16.	23h. 45m.	Feeble.	S.O.	
Eureka, Calif., U.S.A.	Mar. 22.	15h. 33m.	Extremely feeble.	S.O.	
Garfield, Colo., U.S.A.	Mar. 22.	21h. 45m.	Very feeble.	S.O.	
Hilo, T. H.	Mar. 24.	Not indicated.	Severe.	A.P.	Local volcanic origin.
Yuma, Ariz., U.S.A.	Mar. 25.	0h. 35m.	Feeble.	S.O.	
Pot Holes, Calif., U.S.A.	Mar. 25.	1h. 25m.	Feeble.	S.O.	
Yuma, Ariz., U.S.A.	Mar. 26.	23h. 11m.	Very feeble.	S.O.	
Maricopa, Calif., U.S.A.	Mar. 27.	2h. 10m.	Feeble.	S.O.	
San Juan del Sur, Nicaragua.	Mar. 28.	2 a. m. (L.T.)	Strong.	A.P.	No damage.
Syracuse, N. Y., U.S.A.	Mar. 30.	7 p. m. (L.T.)	Slight.	S.O.	

*Time unless otherwise indicated is G.M.T.
L.T.—Local Time.
†A.P.—Associated Press.
S.O.—Special Observer.
U.P.—United Press.
R.T.—Reuter Telegram.
E.T.—Exchange Telegraph Co.
R.P.—Observatory Roca di Pappa.

Place	Date	Time.*		Character.	Source of Information†	Remarks.
Mt. Vernon, Ind., U.S.A.	Mar. 31.	20h. 3m.		Not indicated.	S.O.	
St. Michaels, Ariz., U.S.A.	April 6.	21h. 7m.		Moderate.	S.O.	
Masaya, Central America.	April 15.	Various.		Pronounced.	A.P.	Volcanic origin.
Summerville, S. C., U.S.A.	April 19.	23h. 45m.		Not indicated.	S.O.	
Los Angeles, Calif., U.S.A.	April 21	7h. 37m.	(L.T.)	Slight.	A.P.	No damage.
Summerville, S. C., U.S.A.	April 23.	23h. 48m.		Not indicated.	S.O.	
Eureka, Calif., U.S.A.	April 24.	15h. 16m.		Feeble.	S.O.	
Trona, Calif., U.S.A.	May 12.	4h. 5m.		Very feeble.	S.O.	
San Salvador, Rep. Salvador.	May 14.	Not indicated.		Strong.	A.P.	Three quakes. No damage.
Jaliaco, Mexico.	May 14.	Evening.		Not indicated.	A.P.	Volcanic origin.
Cedar City, Utah, U.S.A.	June 2.	21h. 30m.		Very feeble.	S.O.	
Santa Cruz, Calif., U.S.A.	June 11.	7h. 24m. p.m.	(L.T.)	Slight.	A.P.	Second quake followed sharp.
San Jose, Calif., U.S.A.	June 12.	3h. 24m.		Very feeble.	S.O.	
Messina, Italy.	June 19.	0h. (ca)		Strong.	A.P.	No damage.
Susanville, Calif., U.S.A.	June 21.	20h. 30m.		Feeble.	S.O.	Light shocks on several days.
San Francisco, Calif., U.S.A.	July 24.	9h. 5m.	(L.T.)	Slight.	A.P.	
Garfield, Colo., U.S.A.	July 27.	21h. 30m.		Extremely feeble.	S.O.	
Garfield, Colo., U.S.A.	July 29.	2h. 55m.	(L.T.)	Extremely feeble.	S.O.	
Senorito, N. M., U.S.A.	July 31.	3h. 55m.	(L.T.)	Feeble.	S.O.	
Bari, Italy.	Aug. 1.	Not indicated.		Destructive.	A.P.	Collapse of buildings. Dispatch via London.
New Canton, Va., U.S.A.	Aug. 7.	6h. 30m.		Pronounced.	S.O.	
Calexico, Calif., U.S.A.	Aug. 9.	13h. 43m.		Extremely feeble.	S.O.	
		13h. 46m.		Extremely feeble.		
		20h. 46m.		Very feeble.		
Julian, Calif., U.S.A.	Aug. 10.	19h. 6m.		Moderate.	S.O.	
		21h. 51m.		Moderate.		
Fort De France, Martinique.	Aug. 17.	11h. 15m. a.m.	(L.T.)	Light.	A.P.	
Eureka, Calif., U.S.A.	Aug. 29.	2h. 5m.		Very feeble.	S.O.	
Statesville, Tenn., U.S.A.	Sept. 2.	14h. (ca)		Not indicated.	S.O.	
Pomona, Calif., U.S.A.	Sept. 8.	19h. 24m.		Very feeble.	S.O.	
Waterloo, Ill., U.S.A.	Sept. 9.	2h. 54m.		Feeble.	S.O.	
Richfield, Utah, U.S.A.	Sept. 13.	9h. 30m.		Moderate.	S.O.	
Portland, Ore., U.S.A.	Sept. 22.	19h. 20m.		Feeble.	S.O.	
White Lake, S. Dak., U.S.A.	Sept. 24.	0h. 30m.		Feeble.	S.O.	
Hollister, Calif., U.S.A.	Sept. 25.	23h. 5m.		Very feeble.	S.O.	
San Bernardino, Calif., U.S.A.	Sept. 26.	2h. 45m. p.m.	(L.T.)	Feeble.	S.O.	
Erie, Pa., U.S.A.	Sept. 27.	4h. 32m.		Very feeble.	S.O.	
Kanosh, Utah, U.S.A.	Sept. 29.	14h. 13m.		Moderate.	S.O.	
Riverside, Calif., U.S.A.	Sept. 29.	16h. 55m.		Slight.	S.O.	
Salt Lake City, Utah, U.S.A.	Oct. 1.	8h. 27m. a.m.	(L.T.)	Strong.	A.P.	Damage.
		8h. 45m. a.m.	(L.T.)			
		8h. 57m. a.m.	(L.T.)			
Harrisburg, Ill., U.S.A.	Oct. 1.	Farly morning.		Moderate.	A.P.	No damage.
San Juan del Sur, Nicaragua.	Oct. 1.	4h. 55m. a.m.	(L.T.)	Not indicated.	A.P.	No damage.
Waterloo, Ill., U.S.A.	Oct. 9.	7h. 50m.		Very feeble.	S.O.	
		11h. 50m.				

DISPATCHES OF EARTHQUAKES RECEIVED AT THIS STATION—*Continued*

Place	Date	Time.*		Character.	Source of Information†	Remarks.
Eastport, Me., U.S.A.	Oct. 10.	8h. a.m.	(L.T.)	Slight.	A.P.	
Eads, Colo., U.S.A.	Oct. 15.	2h. 55m.		Not indicated.	S.O.	
Iquique, Chile.	Oct. 20.	1h. 45m. a.m.	(L.T.)	Violent.	A.P.	No damage.
Carrara, Italy.	Oct. 25.	Night.		Severe.	A.P.	Considerable damage.
Richfield, Utah, U.S.A.	Oct. 27.	14h. 15m.		Very strong.	S.O.	
Greenwich, Utah.	Nov. 1.	15h. 35m.		Moderate.	S.O.	
Lima, Peru.	Nov. 2.	2h. 49m. a.m.	(L.T.)	Violent.	A.P.	
		2h. 56m. a.m.	(L.T.)	Distinctly felt.		
		3h. 23m. a.m.	(L.T.)	Violent.		
		11h. 20m. a.m.	(L.T.)	Distinctly felt.		
Mexico City, Mexico.	Nov. 4.	Not indicated.		Varying intensity.	A.P.	Felt on Nov. 2, 3, 4.
Nicaragua.	Nov. 13.	Not indicated.		Considerable violence.	A.P.	Felt in several towns.
Bakersfield, Calif. U.S.A.	Nov. 15.	14h. 25m.		Very feeble.	S.O.	
Calexico, Calif., U.S.A.	Nov. 17.	19h. 58m.		Moderate.	S.O.	
Trona, Calif., U.S.A.	Nov. 17.	22h. 11m.		Extremely feeble.	S.O.	
Calexico, Calif., U.S.A.	Nov. 17.	23h. 23m.		Moderate.	S.O.	
Calipatria, Calif., U.S.A.	Nov. 18.	16h. 51m.		Very feble.	S.O.	
Sheridan, Wyoming, U.S.A.	Nov. 23.	Not indicated.		Feeble.	A.P.	No damage.
Guatemala City, Guatemala.	Nov. 25.	Not indicated.		Not indicated.	A.P.	Over several days.
Kingston, Jamaica.	Nov. 25.	Afternoon.		Sharp.	A.P.	No damage.
Calexico, Calif., U.S.A.	Nov. 26.	6h. 21m.		Very feeble.	S.O.	
Calexico, Calif., U.S.A.	Nov. 29.	7h. 1m.		Extremely feeble.	S.O.	
Eureka, Calif., U.S.A.	Nov. 29.	9h. 29m.		Very feeble.	S.O.	
Calexico, Calif., U.S.A.	Dec. 2.	19h. 30m.		Extremely feeble.	S.O.	
Tokio, Japan.	Dec. 8.	9h. 25m. p.m.	(L.T.)	Severe.	A.P.	Damage.
Knoxville Tenn., U.S.A.	Dec. 15.	9 a.m. (ca)		Varying intensity.	A.P.	
Guam.	Dec. 16.	Noon.		Severe.	A.P.	No damage.
Renovo, Pa., U.S.A.	Dec. 26.	1h. to 1:30 p.m.	(L.T.)	Not indicated.	A.P.	