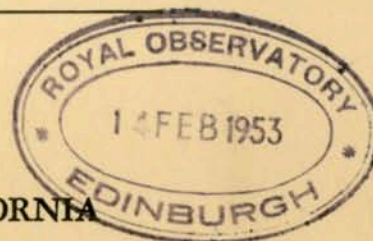


Bulletin of the Seismographic Stations

Volume 15, No. 1, pp. 1-41



EARTHQUAKES IN NORTHERN CALIFORNIA
AND
THE REGISTRATION OF EARTHQUAKES
AT
BERKELEY—MOUNT HAMILTON—PALO ALTO
SAN FRANCISCO—FERNDAL—FRESNO—MINERAL

From January 1, 1945, to March 31, 1945

BY
CHARLES E. HERRICK
AND
CAROLYN H. PENDERY

UNIVERSITY OF CALIFORNIA PRESS
BERKELEY AND LOS ANGELES
1951

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BULLETIN OF THE SEISMOGRAPHIC STATIONS

CALIFORNIA

CAMBRIDGE UNIVERSITY PRESS

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MADE IN THE UNITED STATES OF AMERICA

EARTHQUAKE INTENSITY SCALE

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Intensities are given by Roman numerals in the list of California earthquakes on the following page when sufficient information on the effects of the quake is available, criteria of the Modified Mercalli Scale which are used to rate the intensity.

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The letter represents the excellence with which the epicenter has been located, a indicating excellent, b good, c fair, d poor.

EARTHQUAKES IN NORTHERN CALIFORNIA

1945 - Pacific Standard Time

<u>No.</u>	<u>Date</u>	<u>Origin Time</u>	<u>Richter Magnitude</u>	<u>Latitude North</u>	<u>Longitude West</u>	<u>Quality</u>
1	Jan. 7	14-25-33	4.7	36° 44'	121° 12'	b
<p>Felt as far north as San Rafael, as far south as San Ardo, and as far east as Yosemite National Park. A maximum intensity of VI reported from Hollister, Paicines and San Benito.</p>						
2	Feb. 2	15-09-18	2.4	37.5°	121.5°	d
3	10	06-10-37	2.6	37° 16'	121° 47'	b
4	11	11-32-36	3.2	36.7°	121.2°	d
5	13	13-19-31	3.2	37° 59'	121° 57'	c
6	17	11-44-50	3.0	36° 56'	121° 39'	c
7	26	15-07-35	2.7	37° 12'	122° 12'	b
8	Mar. 4	13-00-42	4.0	39.9°	119.4°	d
9	5	04-12-32	2.2	37° 24'	121° 48'	b
10	14	15-24-12	2.8	36° 58'	121° 37'	c
<p>Foreshock of 3/19/45.</p>						
11	16	04-49-26	2.3	37° 13'	121° 46'	c
12	19	06-50-00	3.3	36° 55'	121° 37'	b
13	19	11-00-19	3.3	36° 44'	121° 38'	b
14	27	09-06-47	4.1	40.2°	124.3°	d

SYMBOLS AND NOTATIONS EMPLOYED

1. Character of the Earthquake--

I. Perceptible. II. Moderately Strong. III. Strong

THE REGISTRATION OF EARTHQUAKES

d (terrae motus do)	Less than 100 kilometers distant),
v (terrae motus vicinus)	Near shock (origin from 100 to 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 or teleseism (origin more than 5,000 kilometers distant),

2. Nature of the Motion--

i (impetus)	Sudden beginning of the motion,
e (exercitio)	Gradual beginning of the motion.

BERKELEY

THE BERKELEY STATION, UNIVERSITY OF CALIFORNIA
BERKELEY, CALIFORNIA

CONSTANTS

CONSTANTS OF THE STATION

Latitude and Longitude:

$$\begin{aligned} \phi &= 37^{\circ} 52' 3'' \text{ N.} \\ \lambda &= 122^{\circ} 15' 6'' \text{ W.} \end{aligned}$$

Time -- All determinations are reduced to Universal Time.

Altitude -- 81 meters (266 feet) above mean sea level.

CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	V		T_0	ϵ		
Bosch-Omori 100 kg. ..	E	45		12	10		
	N	45		12	10		
Wiechert 80 kg.	Z	44		4	5		
Wood-Anderson	E	3000		0.9	15		
	N	3000		0.9	15		
Galitzin		K	T	T_1	μ^2	A_1 (cm)	l (cm)
	E	112	12	11.8	0.00	115	11.3
	N	122	12	12.4	0.03	119	11.2
	Z	109	12	11.9	0.01	131	14.9
Benioff	Z	V		Coupled Period		ϵ region	
				0.7	5		

The letter G before a reading designates that the seismogram was from the Galitzin instrument; W, Wiechert; B, Bosch-Omori; A, Wood-Anderson; H, Benioff.

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.	s		
12	Jan. 6	Iu?	eLZ eLN eE	G 10 01 03 G 02 35 09 G 02 28			
13	Jan. 7	IIIv	iPZ ePN ePNEZ MN iSN	H 22 25 57.2 A 57.5 AG 00 37 58.5 A 00 26.0 G 26 15.8		c c 45	See list, p. 5 S-P = 18 sec. ca.
14	Jan. 9	Id	ePZ F	H 21 43 28.3 H 21 44			
15	Jan. 9	Id	ePZ F	H 22 14 43.1 H 22 15			
16	Jan. 11	I?	iPZ F	H 00 42 24.2 H 00 43			
17	Jan. 11	I?	ePZ iZ iZ F	H 00 47 21.1 H 00 48 02.3 H 00 43 15.7 H 00 49			
18	Jan. 11	Iu	iPZ F	H 01 18 22.7 H 01 19			Apia: 15.8°S, 173.2°W
19	Jan. 11	Id	iPZ F	H 20 41 02.7 H 20 41			Pasadena: Atlantic?
20	Jan. 11	Id	iPZ iSZ F	H 22 37 17.7 H 22 38			
21	Jan. 12	IIu	ePZ iPE iSE iSN iSZ eZ	G 18 50 20.0 G 26.0 G 19 00 12 G 13 G 11 33 15 G 09 57		d	U.S.C.G.S.: 34°N, 139°E
22	Jan. 13	Id	eLNE eLZ F	G 11 11 29 G 11 13 50 G 19 55	18		
23	Jan. 13	Id	iPZ F	H 02 17 32.9 H 02 18			

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
40	Jan. 22	Iu	eLN eLE eLZ F	G 08 G G 08	12.6 16.0 18.8 30	30 15 12		Pasadena: Roughly 21°N, 73°W
41	Jan. 23	Id	iPZ iSZ F	H 22 H 0	30 38.3 40.3 31	26 30 30		Pasadena: Roughly 22°S, 170°E
42	Jan. 24	Iu?	iPZ iZ F	H 09 H 09	42 01.2 02.5 42.5	26 14	15	
43	Jan. 24	Iv	ePZ F	H 12 12	02 20.4 04		d	
44	Jan. 24	Id	ePZ iSZ F	H 20 H 20	43 45.6 52.1 44			See list, p. 5
45	Jan. 25	I?	eE eN eLNZ eLE F	G 00 G G G 0	48.9 50.1 52.4 52.5 01 11			
46	Jan. 25	Ir?	ePZ iZ F	H 06 G 06	12 25.1 25.5 13		c	Pasadena: near 22°S, 170°E
47	Jan. 27	Id	iPZ F	H 12 12	23 43.2 24			
48	Jan. 27	Id	ePZ F	H 20 0	12 22 13		d	U.S.C.O.S.: 41.5°N, 142.0°E Pasadena: h = 60 km, ca.
49	Jan. 31	Id	ePZ F	H 22 22	02 27.8 03		c	
50	Feb. 1	Id	iPZ F	H 00 00	48 55.0 49		c	
51	Feb. 1	Id	iPZ iZ F	H 01 H 0	07 02.1 04.3 07.5			
52	Feb. 1	Id	iPZ iSZ F	H 01 H 0	13 40.5 14 43.0 14		12	
53	Feb. 10	Id	iPZ iSZ F	H 11 H 11	10 50.7 12 02.2 11.5			See list, p. 5

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.	s		
61	Feb. 10	Id	iPZ F	H 19 12 12.2 19 12.5			See list, p. 5
62	Feb. 11	Iv	ePZ iPZ F	H 19 33 02.1 H 00 03 03.6 19 19		d	See list, p. 5
63	Feb. 12	Id	iPZ F	H 18 17 34.1 18 18			J.S.A.: 8°N, 122.5°W
64	Feb. 13	Ir?	eN eN eE eZ eE eZ eN F	G 11 58 49 G 12 01 03 G 11 11 G 04.4 G 07 06.7 G 07 07.5 G 10 08.1 12 13			Pasadena: Atlantic
65	Feb. 13	IIu?	eNE eLE eLN eLZ F	G 13 39.9 G 40 53 G 41 03 G 19 13 48	17 20 18		
66	Feb. 13	Id	iPNEZ iSNE F	AH 21 19 36.8 A 21 41.0 21 20			See list, p. 5
67	Feb. 14	Id	ePNEZ iSNE F	AH 00 30 25.9 A 30.4 00 31	22 18		Aftershock
68	Feb. 14	Iv	eN eN iSE iSN eN	A 03 03 30 A 49 G 17 05 20.5 G 17 22 21.5 A 41			U.S.C.G.S.: 44.7°N, 115.4°W
69	Feb. 14	Id	iPZ iSZ F	H 22 29 11.4 H 22 13.0 22 29.5		c	
70	Feb. 17	Iu?	eLZ eLN eLE F	G 19 15 01 G 45 G 47 19 20			

BERKELEY

No.	Date	Char acter	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.	s		
71	Feb. 17	Iv	ePN iSN F	A 19 45 07 A 23.0 C 19 45.5			See list, p. 5
72	Feb. 18	Iv	eN	A 00 51			
73	Feb. 18	Iu	eSN eSZ eN eE eLZ eLE eLN F	G 07 02 05.3 G 09.3 G 08.2 G 08.7 G 11.4 G 11.5 G 11.7 07 29			J.S.A.: 8°N, 82.5°W
74	Feb. 18	Iu	iPEZ iSE iSN iSZ eE eZ eN eLE eLZ eLE F	G 10 19 20.2 G 28 14.2 G 19.2 G 23 08 20.2 G 35 54 G 07 31 57 G 35 59 G 38.2 G 07 40.0 G 40.7 0 12 16		c	Pasadena: 42°N, 142°E
75	Feb. 18	I?	eE eN eLZ eLE eLN F	G 13 44 55 G 02 45 54 G 49.5 G 12 51.8 G 53.0 14 41			
76	Feb. 19	Id	iPZ F	H 17 21 59.4 17 22			
77	Feb. 19	Id	iPZ F	H 22 38 00 22 38.5			
78	Feb. 19	Id	iPZ iZ iZ F	H 22 55 13 H 11 30 14 H 15.7 22 56			
79	Feb. 20	Id	iPZ F	H 03 18 03 19			See list, p. 5
80	Feb. 20	Id	iPZ F	H 04 45.8 04 46			Aftershock?

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.	s		
81	Feb. 26	IIu	iPZ	H 22 26 22.4		c	Pasadena: Approx. 27°N, 142°E
			ePE	G 34			
			eZ	G 27 22		d	
			eZ	G 28 37			
			eSE	G 35 00			
			eSZ	G 22			
			eN	G 45			
			eNE	G 40 26			
			eZ	G 44 15			
			iE	G 20			
			eN	G 25			
			eLN	G 45 26	20		
			iLE	G 46 29	15		
			MN	G 51.9	10	22	
			F	00 49			
82	Feb. 26	Id	iPZ	H 23 07 47.6			See list, p. 5
			iZ	H 47.9			
			iZ	H 48.9			
			F	23 08			
83	Feb. 27	Ir	eE	G 07 31.4			Pasadena: Roughly 38°N, 141°E
			eN	G 34.1			
			eZ	G 37.2		c	
			F	07 47			
84	March 1	Ir?	eLN	G 02 24.8			
			eLZ	G 25.1			
			eLE	G 26.0			
			F	02 36.3			
85	March 2	Id	iPZ	H 12 27 50.2			See list, p. 5
			iZ	H 53.9			
			F	12 28			
86	March 2	Iv	ePZ	H 14 20 42.7			See list, p. 5
			eSZ	H 21 12			
			F	14 22			
87	March 2	Id	ePZ	H 14 22 47			U.S.G.O.S. 16.9°N, 78.0°W
			F	14 23			
88	March 2	Id	iPZ	H 14 34 29.2			
			iZ	H 32.0			
			F	14 35			
89	March 4	Iv	ePZ	H 21 01 29.9		d	See list, p. 5
			iZ	H 32.5			
			F	21 03			
90	March 4	Iv?	ePZ	H 21 49 33			Aftershock?
			F	21 50			

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h. m. s.	s			
	1945							
91	March 5	Id	iPZ iZ iZ F	H 12 12 H H 12 13	43.5 48.2 54.1 38.5	18 16 22	c	See list, p. 5 57°N, 157°W
92	March 7	Id	ePZ iSZ F	H 00 18 H 20 00 00 19	50.0 54.0			
93	March 7	Id	iPZ eSZ F	H 00 48 H 00 49	18.4 24.8		c	Coincidence: Felt in Azores
94	March 8	Id	iPZ iZ iZ iZ F	H 23 16 H H H 23 17	21.0 21.8 23.3 24.3 35.3			See list, p. 5
95	March 11	Id	iPZ iSZ F	H 18 54 H 18 54.5	00.1 01.7 54.0			See list, p. 5
96	March 11	IIu	iPZ ePN eSN eSE iSN iSE iGNE eLZ eE F	GH 21 49 G G G G G G G G G 23 58	14.5 18 58 36 46 59 16 23 08 27 11.5 12.5	22 18 18	c	Pasadena: Roughly 38°N, 141°E
97	March 14	Id	iPZ iZ F	H 23 24 H 23 25.3	30.3 44.5			See list, p. 5
98	March 16	Id	ePZ eSZ F	H 12 49 H 12 50	41.4 52.5			See list, p. 5 37°N, 35°E
99	March 18	IIu	iPZ eZ eN eN eE eZ F	G 00 06 G G G G G 01 15	53.4 14 08.5 19.5 17.7 20.4 22.7 15	30 18 24 30ca	c	U.S.C.G.S.: 16.9°N, 78.0°W New Zealand
100	March 25	Id	iPZ iZ eSZ F	H 17 07 H H 07 08.5	32.2 50.5 08 05			See list, p. 5

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)	Period	Trace motion	Remarks
1945				h. m. s.	s		
100	March 18	Ir	eSE	G 19 05 40.5	28		Pasadena: Roughly 57°N, 157°W
			eSN	G 30 46.5	27		
			eZ	G 30 58.5	27		
			eZ	G 06 38.5	18		
			eLN	G 07.4	16		
	March 21	Iv	eLE	G 11 07.9	22		Pasadena: Roughly 31°N, 121°W
			F	20 00	16		
101	March 18	Iu	eN	G 23 48.1	19		Coimbra: Felt in Azores
	March 21	Iv	eE	G 11 49.1	19		Pasadena: Roughly 31°N, 121°W
			eZ	G 00 52.6	18		
			F	00 02	15		
102	March 19	Iv	iPnLOZ	H 14 50 19.0			See list, p. 5
			ePnLON	A 19.5			
			iPZ	H 20.0			
			iSEZ	AH 34.5			
			iSN	A 35.3			
			F	14 52			
103	March 19	Iv	iPZ	H 19 00 41.6			See list, p. 5
			eN	A 42.0			
			iZ	H 44.1			
			iZ	H 47.7			
			iSN	A 57.6			
			iSZ	H 58.1			
			F	19 02			
104	March 19	Iv	iPZ	H 20 05 27.3			Aftershock
			iSZ	H 43.9			
			F	20 06			
105	March 20	Iu	eZ	G 08 57.7	22		Pasadena: Region of 37°N, 35°E Surface waves
			eE	G 58.6	18		
			eN	G 58.8	18		
			F	09 18			
106	March 20	Iv	ePZ	H 21 56 39.0			Pasadena: 34°15'N, 116°10'W
			ePN	A 56.7			
			eE	A 58.0			
			F	21 59			
107	March 24	IIu	eMZ	G 00 08.9	30		Pasadena: Southwest of New Zealand
			iMZ	G 16 24	18		
			F	01 55			
108	March 25	Id	iPZ	H 22 55 46.1			
			eSZ	H 49.9			
			F	22 56			
109	March 27	Iv	iPZ	H 17 07 32.2			See list, p. 5
			iZ	H 50.5			
			eSZ	H 08 05			
			F	07 08.5			

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.	s		
110	March 31	Ir?	eZ eE eN F	G 07 32.1 G 32.4 G 33.4 08 12	28 27 27ca		Surface waves
111	March 31	Iv	eNE eZ F	G 18 56.0 G 57.1 19 10	20 16		Pasadena: Roughly 31°N, 114°W
112	March 31	Iv	eE eN eZ F	G 19 32.6 G 32.7 G 33.8 19 49	19 18 15		Pasadena: Roughly 31°N, 114°W

Latitude and longitude
 37° 20' N.
 121° 38' W.
 Time — All determinations are reduced to Universal Time.
 Altitude — 1281.7 meters (4205 feet) above mean sea level.

CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	F	T _c	t
Wood-Johnson	E	3000	1	15
	N	3000	1	15

MT. HAMILTON

No.	Date	Char-acter	Phase	Time	Place	Remarks
MOUNT HAMILTON						
THE LICK OBSERVATORY STATION, UNIVERSITY OF CALIFORNIA MOUNT HAMILTON, CALIFORNIA						
1	Jan. 1	Iv	ePNE eSE eSN eLN eLE F	01 28 51.8 35.9 39.6 43.4 47.0 02 09		U.S.G.O.S. 73°N, 70°W
CONSTANTS						
CONSTANTS OF THE STATION						
3	Jan. 6	Iv	ePN	04 29 12.0		
Latitude and longitude:						
					$\phi = 37^{\circ} 20' 4''$ N.	
					$\lambda = 121^{\circ} 38' 6''$ W.	
Time -- All determinations are reduced to Universal Time.						
Altitude -- 1281.7 meters (4205 feet) above mean sea level.						
5	Jan. 7	IIId	ePNE ePN eLN eLE F	22 35 16.4 47 50.5 54.1 57.7 17 50		See list, p. 5 Small shocks etc: 21 39 Jan. 7, 1945 22 04 Jan. 7, 1945 22 14 Jan. 7, 1945
CONSTANTS OF THE SEISMOGRAPHS						
		Apparatus	Component	V	T ₀	ϵ
6	Jan. 7	Iv	ePNE	22 06 05.0		
		Wood-Anderson	E	3000	1	15
			N	3000	1	15
7	Jan. 7	Id	ePN ePN eLN eLE F	23 23 31 15 21.7 22.7 23 24		
8	Jan. 8	Id	ePN ePN eLN eLE F	01 16 33.7 21.3 23.8 31.8 32.4 39.9 01 18		IV at Hollister
9	Jan. 8	Id	ePN eLE eLN F	01 59 40 46 45.9 02 00		Small quakes at: 02 00 Jan. 8, 1945 02 30 Jan. 8, 1945 02 45 Jan. 8, 1945

MT. HAMILTON

No.	Date	Character	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.	s		
1	Jan. 1	Ir	ePNE eSE eSN eLN eLE F	01 28 51.8 35.5 35.6 43.4 43.6 02 09 05.2			U.S.C.G.S.: 73°N, 70°W IV at Hollister Small quakes at: 10 13 Jan. 8, 1945 10 25 Jan. 8, 1945
2	Jan. 5	Id	iPNE iSNE F	20 37 09.4 11.8 20 38			
3	Jan. 6	Iv	ePN eE iSN iSE F	04 29 41.0 44.0 53.7 55.2 04 31			
4	Jan. 7	Id	ePNE iSN iSE F	17 55 58.5 56 55.1 55.7 17 58			
5	Jan. 7	IIIId	iPNE iNE iNE iSNE iN MNE F	22 25 46.4 47 49.6 58.5 59.5 26 07 21 41		65	See list, p. 5 Small shocks at: 21 39 Jan. 7, 1945 22 04 Jan. 7, 1945 22 14 Jan. 7, 1945 23 37 Jan. 7, 1945
6	Jan. 7	Id	ePNE iSN iSE F	22 06 05.0 11.5 12.0 22 07			
7	Jan. 7	Id	ePE ePN iSN iSE F	23 23 14 15 21.7 22.7 23 24			
8	Jan. 8	Id	ePN ePE iN iSN iSE iE F	01 16 23.7 24.3 28.8 31.8 32.4 39.9 01 18			IV at Hollister
9	Jan. 8	Id	ePN eSE iSN F	01 59 40 46 46.9 02 00			Small quakes at: 02 00 Jan. 8, 1945 02 30 Jan. 8, 1945 02 45 Jan. 8, 1945

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.	s		
10	Jan. 8	IId	iPNE iSNE F	04 16 44.7 47.1 04 17			
11	Jan. 8	Id	iPN ePE iSN iSE F	10 23 05.3 06.2 13.1 14.3 10 24			IV at Hollister Small quakes at: 10 19 Jan. 8, 1945 10 25 Jan. 8, 1945
12	Jan. 9	Id	ePN iSE iSN F	05 44 00.5 11.5 12.0 05 45			
13	Jan. 11	Iu	ePNE eE eN F	01 18 24 32 33.5 01 20			Apia: 15.8°S, 173.2°W
14	Jan. 12	Id	ePN eE iSE iSN F	02 54 58.0 55 01.0 07.3 08.3 02 56			
15	Jan. 13	Id	iPNE iSNE F	15 12 06.2 08.0 15 13			
16	Jan. 19	Iv	ePN ePE eSNE F	14 32 38.0 39.5 33 06.3 14 35			
17	Jan. 19	Iv	iPN eSE eSNE eNE F	14 47 30.0 30.8 14 57 57.2 48 01.0 14 50			
18	Jan. 21	Iv	ePNE iSNE F	15 13 52.2 14 05.2 15 15			See list, p. 5
19	Jan. 22	Id	ePN ePE iSNE F	00 41 13 14 24.5 00 42			
	Feb. 3	Id	F	00 42			
	Feb. 3	Id	iSNE F	19 17 37.3 19 18			

MT, HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h, m, s.	s		
20	Jan. 24	Iv	ePN eE iNE iN iE F	12 02 17.2 24.5 49.5 55.7 56.4 12 04			U.S.G.O.S.: 41.5°N, 112.0°E Focality: h = 60 km. ca.
21	Jan. 25	Id	eE eN F	02 42 27.3 29.3 02 43			Foreshock
22	Jan. 25	Id	ePN eSNE F	02 59 24.8 32.7 03 00			See list, p. 5
23	Jan. 26	Id	ePN eSN eSE iSNE F	05 11 45.7 56.3 56.7 57.9 05 12			San Benito County See list, p. 5
24	Jan. 26	Id	ePN eE eNE iSNE F	05 15 08.7 10.2 19.1 21.1 05 16			See list, p. 5
25	Jan. 27	Iv	ePN iN iN eE F	17 50 34 46.9 56.2 51 30.9 18 04			Aftershock
26	Jan. 28	Id	ePN iSNE F	00 54 25.3 29.4 00 55			U.S.G.O.S.: 42.7°N, 115.6°W
27	Feb. 1	Id	iSNE iNE F	14 57 17.7 21.4 14 58			
28	Feb. 2	IIId	iPNE iSNE F	23 09 21.7 24.4 23 11			See list, p. 5
29	Feb. 3	Id	eSN F	08 44 29.4 08 45			Focality: 42°N, 112°E
30	Feb. 3	Id	iPNE iSNE F	14 13 58.9 14 11.0 14 15			
31	Feb. 3	Id	iSNE F	19 17 37.3 19 18			

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.	s		
32	Feb. 10	Iu	ePNE ipPNE eSN	05 09 09.9 23 28 29.3 18 12.9			U.S.C.G.S.: 41.5°N, 142.0°E Pasadena: h = 60 km.ca.
	Feb. 10	Iv	eSE eLNE eN eE	21 30 18.9 30.2 21 39.7 41.7			
	Feb. 10	Iv	F	05 57			Pasadena: 36°00'N, 120°29'W
33	Feb. 10	Id	iPNE iSNE F	14 09 32.4 34.2 14 10			Foreshock
34	Feb. 10	IIId	iPNE! iSNE F	14 10 39.4 41.3 14 11			See list, p. 5
35	Feb. 11	Id	ePNE iE iSNE F	19 32 50.4 32 59.4 02.0 19 34			See list, p. 5 Pasadena: approx. 27°N, 142°E
36	Feb. 13	Id	ePNE iN iSNE F	21 19 44.6 23 07 53.9 56.1 21 21			See list, p. 5 See list, p. 5
37	Feb. 14	Id	iPN eN iSNE F	00 30 34.6 42.1 45.1 00 31			Aftershock p. 5
38	Feb. 14	Iv	ePN ePE iNE eSE eSN eLN eLE F	03 03 25 27 12 13 58.3 05 47.1 21 09 49.6 08.3 21 08.6 03 15			U.S.C.G.S.: 44.7°N, 115.4°W
39	Feb. 17	IIId	iPNE iSNE F	19 44 58.3 45 03.9 19 47			See list, p. 5
40	Feb. 18	Iu	ePE ePN eSE eSN eE eN F	10 19 16.3 21 23 23.3 28.4 23 28.5 41.9 23 43.2 10 47			Pasadena: 42°N, 142°E

MT, HAMILTON

No.	Date	Character	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h, m, s.	s		
41	Feb. 19	Id	eSNE F	23 25 37.9 23 26			See list, p. 5
42	Feb. 22	Iv	eN eSNE F	21 56 25.5 57 08.0 21 58			
43	Feb. 25	Iv	ePNE iSN iSE F	20 19 12.2 11 29 28.7 20 20 29.7 20 20			Pasadena: 36°00'N, 120°29'W See list, p. 5
44	Feb. 26	Id	INE iN F	01 08 26.3 35.9 01 09			U.S.C.G.S.: 16.9°N, 78.0°W
45	Feb. 26	Iu	ePNE iE iN ePPN eLNE F	22 26 27.7 31.5 24 30 33.7 29 32.7 14 49.6 23 37			Pasadena: Approx. 27°N, 142°E See list, p. 5
46	Feb. 26	Id	ePNE eSNE F	23 07 43.8 23 08 50.5 23 08			See list, p. 5 See list, p. 5
47	March 4	Iv	ePNE eSN eSE F	21 01 32.2 20 02 08.0 09.9 21 03			Aftershock See list, p. 5 Pasadena: 34°15'N, 116°10'W
48	March 5	Id	iPNE iSNE F	12 12 34.3 36.2 12 13			See list, p. 5
49	March 5	Id	ePN iSNE F	21 09 36.8 22 02 46.3 21 10			Surface waves
50	March 9	Id	ePN iSN iSE F	06 41 25.6 13 01 32.1 32.5 06 42			Pasadena: Roughly 31°N, 114°W
51	March 11	Iu	ePNE F	21 49 18.7 21 53			Pasadena: Roughly 38°N, 141°E
52	March 13	Id	iPNE iSNE F	23 23 18.2 19.9 23 24			

MT, HAMILTON

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(U.T.)			
				h. m. s.	s		
53	1945 March 14	Id	e \bar{P} N i \bar{P} N i \bar{S} N F	23 24 19.2 20.2 25.2 23 26			See list, p. 5
54	March 15	Id	i \bar{P} N iE i \bar{S} N F	11 27 59.4 59.8 28 01.4 11 29			
55	March 16	IIId	i \bar{P} N i \bar{S} N F	12 49 28.2 29.6 12 50			See list, p. 5
56	March 18	Iu	ePE ePN F	00 06 51.2 53.2 00 08			U.S.C.G.S.: 16.9°N, 78.0°W
57	March 19	IIId	i \bar{P} N i \bar{S} N F	14 50 08.4 14.2 14 52			See list, p. 5
58	March 19	Id	i \bar{P} N i \bar{S} N F	19 00 31.0 39.2 19 02			See list, p. 5
59	March 19	Id	i \bar{P} N i \bar{S} N F	20 05 17.0 23.9 20 07			Aftershock
60	March 20	Iv	e \bar{P} N iN iE iN iE i \bar{S} N eN F	21 56 29.7 40.0 42.2 48.1 50.5 57 51.9 22 00.5 22 02			Pasadena: 34°15'N, 116°10'W Surface waves
61	March 31	Id	i \bar{P} N i \bar{S} N F	12 59 52.5 54.1 13 01			
62	March 31	Iv	eSE eSN eN eE F	19 32 14.5 21.0 34.1 34.2 19 48			Pasadena: Roughly 31°N, 114°W

PALO ALTO

No.	Date	Character	Name	Time (U.T.)	Depth	Trace section	Remarks	
	1945							
1	Jan. 1	Iv	THE BRANNER STATION, STANFORD UNIVERSITY PALO ALTO, CALIFORNIA				U.S.G.O.S.: 73°W, 70°W	
				01 31 59				
				02 00				
2	Jan. 2	Id	CONSTANTS CONSTANTS OF THE STATION	19 14 57				
3	Jan. 7		Latitude and longitude: $\phi = 37^{\circ} 25' 1'' N.$ $\lambda = 122^{\circ} 10' 8'' W.$				See list, p. 5	
4	Jan. 8	Iv	Time -- All determinations are reduced to Universal Time. Altitude -- 82 meters (272 feet) above mean sea level.	02 16 31			Aftershock	
5	Jan. 8	IId	CONSTANTS OF THE SEISMOGRAPHS	18 56 23			S-P = 1.2 sec.	
6	Jan. 9	Iv		05 43 35			S-P = 1.5 sec.	
7	Jan. 11		Apparatus		Component	V	T ₀	ϵ
8	Jan. 12	Iv	Wood-Anderson	02 55 05 ca	E	3000	1	15
					N	3000	1	15
9	Jan. 13	Id		02 31 27.5 ca				
				02 35.5				
10	Jan. 16	Id		13 43 52 ca				
				13 45				
11	Jan. 17	Id		19 10 42 ca				S-P = 3.3 sec.
				19 12 ca				
12	Jan. 22	Iv		15 14 01				S-P = 17.5 sec. ca.
				15 16				
13	Jan. 23	Iv		00 42 21				S-P = 14 sec. ca.
				00 43				
14	Jan. 26	Iv		05 21 50				San Benito County
				05 12 05				
				05 13				

PALO ALTO

No.	Date	Character	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.	s		
1	Jan. 1	Ir	ePN ePE ePPN eLN eLE eE eNE F	01 28 52.5 53.5 30 45.0 43 56.0 59 44 31 47 34 02 00			U.S.C.G.S.: 73°N, 70°W S-P = 3.8 sec. ca. S-P = 2.0 sec. ca.
2	Jan. 2	Id	ePNE iSNE F	19 14 54.0 57.0 19 16			S-P = 2.7 sec. ca.
3	Jan. 7	IIId	ePNE iPNE MNE F	22 25 52.4 52.8 26.5 22 35			See list, p. 5 5°N, 142.0°E Pasadena: h = 60 km. ca. See list, p. 5 S-P = 5.1 sec.
4	Jan. 8	Iv	ePN ePE iSNE F	02 16 31 32 45 02 18			Aftershock
5	Jan. 8	IIId	ePNE F	18 56 23 18 57			S-P = 1.2 sec.
6	Jan. 9	Iv	ePNE F	05 43 35 05 45			S-P = 15 sec.
7	Jan. 11	Iv	ePNE F	06 12 21 06 13			S-P = 13 sec.
8	Jan. 12	Iv	ePNE F	02 55 05 ca 02 56			S-P = 15 sec.
9	Jan. 13	Id	iSNE F	02 34 27.5 ca 02 35.5			Pasadena: 36°00'N, 120°29'W
10	Jan. 16	Id	iSNE F	13 43 54 ca 13 45			See list, p. 5 S-P = 3.7 sec.
11	Jan. 17	Id	iPNE F	19 10 42 ca 19 12 ca			S-P = 3.3 sec. See list, p. 5
12	Jan. 21	Iv	ePNE F	15 14 01 15 16			S-P = 17.5 sec. ca.
13	Jan. 22	Iv	ePNE F	00 41 21 00 43			See list, p. 5 S-P = 14 sec. ca.
14	Jan. 26	Iv	ePNE eSNE F	05 11 50 12 05 05 13			San Benito County

PALO ALTO

No.	Date	Char-acter	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.	s		
15	Jan. 27	IId	iPNE iSNE F	21 18 42.1 43.4 21 20			Pasadena: Roughly 38°N, 112°E
16	Feb. 3	Id	iPNE F	23 03 ca 0 23 05 ca 5 23 27			S-P = 3.8 sec. ca.
17	Feb. 7	Id	iPNE	17 30 ca			S-P = 2.0 sec. ca.
18	Feb. 9	Id	iPNE	16 30 ca			S-P = 2.7 sec. ca.
19	Feb. 10	Iu	ePNE F	05 10 ca 5 05 15 ca			U.S.C.G.S.: 41.5°N, 112.0°E Pasadena: h = 60 km. ca.
20	Feb. 10	Id	ePNE	14 10 45 ca			See list, p. 5 S-P = 5.1 sec.
21	Feb. 16	Id	iPNE iSNE F	19 24 47.7 51.2 19 26			
22	Feb. 17	Id	iPNE iNE iE iSNE iN F	19 45 02.8 03.2 18 35 11.0 11.8 18.8 19 47			See list, p. 5
23	Feb. 20	IId	iPE iSE iE F	18 04 15.5 16.8 17.3 18 05			
24	Feb. 25	IV	ePNE F	20 19 18 ca 20 21			Pasadena: 36°00'N, 120°29'W
25	Feb. 26	IId	iPNE MNE F	23 07 39.5 ca 46.5 ca 23 09		7.0	See list, p. 5 S-P = 3.7 sec.
26	March 4	Iv	ePNE eSNE F	21 01 36.0 02 18.5 21 04			See list, p. 5
27	March 5	Id	ePNE ePNE eSE eSN F	12 12 37.7 38.1 43.5 44.0 12 13			See list, p. 5

PALO ALTO

Date	Character	Phase	Time (U.T.)	Period	Trace motion	Remarks
1945			h. m. s.	s		
March 11	Iu	ePN eN F	21 49 17 32 21 53			Pasadena: Roughly 38°N, 141°E
March 14	Id	ePNE eSNE F	23 24 24.0 31.5 23 27			See list, p. 5
March 16	Id	ePN ePE	12 49 33 ca 38 ca			See list, p. 5 S-P = 5.5 sec.
March 19	IIId	iPNE iSNE eNE F	14 50 13.2 22.5 32 14 54			See list, p. 5
March 19	Id	ePNE iPNE iSNE F	19 00 35.1 35.6 46.6 19 43			See list, p. 5
March 20	Id	iPNE iSN eSE F	18 34 02.7 03.9 04.5 18 35			

Apparatus

Component

V

 T₀

c

Wood-Anderson

E 15° S

500

1

15

 N

500

1

15

The letters II before a reading designates that the seismogram was from a Hansen-Waller instrument.

SAN FRANCISCO

No.	Date	Char-acter	Phase	Time (U.T.)	Remarks	Remarks
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SAN FRANCISCO

THE SAN FRANCISCO STATION, UNIVERSITY OF SAN FRANCISCO
SAN FRANCISCO, CALIFORNIA

1 Jan. 7

2 Jan. 11 Id 1PE 21 25 53.5

3 Jan. 13 Id 1PE 02 17 21

CONSTANTS

CONSTANTS OF THE STATION

4 Feb. 13

Latitude and longitude:

$$\phi = 37^{\circ} 46' 4'' \text{ N.}$$

$$\lambda = 122^{\circ} 27' 2'' \text{ W.}$$

5 Feb. 13

Time -- All determinations are reduced to Universal Time.

Altitude -- 100 meters (328 feet) above mean sea level.

6 Feb. 14 Id 1PE 00 30 29.3

Aftershock

CONSTANTS OF THE SEISMOGRAPHS

7 Feb. 17 Iv 1PE 19 25 00.0

Apparatus	Component	V	T ₀	ε
Wood-Anderson	E 15° S	1500	1	15
	N	3000	1	15

9 March 19

The letters NL before a reading designates that the seismogram was from a Neuman LaBarre instrument.

SAN FRANCISCO

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(U.T.)			
	1945			h. m. s.	s		
1	Jan. 7	IIId	ePE iPE F	22 25 59.5 26 00.9 22 32			See list, p. 5
2	Jan. 11	Id	iPE eE iSE F	21 25 59.8 26 00.7 02.7 21 26.3			
3	Jan. 13	Id	iPE iSE F	02 17 29.2 31.7 02 18			
4	Feb. 13	Id	iPE iSE F	21 17 21.0 27.4 21 18			
5	Feb. 13	Id	ePE iSE F	21 19 39.8 46.0 21 20			See list, p. 5
6	Feb. 14	Id	ePE iSE F	00 30 29.3 35.5 00 31			Aftershock
7	Feb. 17	Iv	iPE eSE iSE iE F	19 45 09.8 23.7 25.0 27.7 19 46			See list, p. 5
8	March 19	IIv	iPNONE iPE iSNE F	ANL 14 50 18.3 NL 18.8 ANL 33.7 14 52			See list, p. 5
9	March 19	Iv	iPE ePN iSE iSN F	NL 19 00 42.8 A 48 NL 57.0 A 57.9 19 02			See list, p. 5

FERNDALE

No.	Date	Char-acter	Phase	Time	Period	Trace section	Remarks
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THE FERNDAL STATION
FERNDAL, CALIFORNIA

U.S.G.C.S. : 73°N, 70°W

1	Jan. 1	Tr	eSW	19 27			
			eE	19 28			
			eS	19 29			
			F	19 30			

2	Jan. 7	Iv	ePNS	21 30			See list, p. 5
			eSW	21 30			
			eE	21 31			
			eS	21 32			
			F	21 33			

CONSTANTS

3	Jan. 10	III	1FE	22 37			V at Upper Station
			1SE	22 37			

CONSTANTS OF THE STATION

Latitude and longitude:

4	Jan. 11	Id	1W	20 24			$\phi = 40^{\circ} 34' N.$
			F	20 25			$\lambda = 124^{\circ} 16' W.$

Time -- All determinations are reduced to Universal Time.

Altitude -- 17 meters (55 feet) above mean sea level.

6	Jan. 21	Id	1FN	20 26	28.6		
			1FN	20 26	27.6		
			1SSE	20 26	28.6		

CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	V	T ₀	ϵ
Bosch-Omori 25 kg.	E	12	11	5
	N	12	8	6

7 Feb. 5 Id eSW 21 15 40
The station is operated by Mr. Joseph Bognuda, of
10 Feb. Ferndale, in cooperation with the University of California. 114.7°N,
115.4°W

11	Feb. 19	III	1FE	07 47	49.6		
			1FN	07 47	50.6		
			1SSE	07 47	51.5		
			F	07 49			

12	Feb. 21	Id	1SE	12 50	47.8		
			1SE	12 50	48.2		
			F	12 53			

FERNDALE

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(U.T.)			
				h. m. s.	s		
	1945						
1	Jan. 1	Ir	eLN eE eN F	01 43 16.0 36.0 46 32.0 02 04			U.S.C.G.S.: 73°N, 70°W
2	Jan. 7	Iv	ePNE eSN eE eE F	22 26 28 27 30 28 39 46.0 22 37			See list, p. 5
3	Jan. 10	IIId	iPE iSE F	18 34 08.8 14.8 18 35			V at Upper Matole
4	Jan. 11	Id	iN F	20 14 47.8 20 15			
5	Jan. 16	Iv	iPE iSE F	20 59 30.0 46.2 22 01			
6	Jan. 21	Id	iPE iPN iSNE F	20 15 28.6 29.6 34.6 20 16			
7	Jan. 23	Id	iPNE iSNE F	10 26 44.2 50.9 10 27			Passages; Southwest of New Zealand See list, p. 5
8	Jan. 29	Id	iPN iSN F	19 26 34.5 40.4 19 27			
9	Feb. 8	Id	eSN F	21 15 40 21 16			
10	Feb. 14	Iv	eNE F	03 05 40 03 09			U.S.C.G.S.: 44.7°N, 115.4°W
11	Feb. 19	IIId	iPE iPN iSNE F	07 47 49.6 50.6 54.5 07 49			
12	Feb. 21	Id	iSN iSE F	12 52 47.8 48.2 12 53			

FERNDALE

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(U.T.)			
	1945			h. m. s.	s		
13	Feb. 24	Id	iPN	02 21 29.4			
			iPE	31.3			
			iSN	34.6			
			iSE	36.8			
			F	02 22			
14	Feb. 24	Id	iE	16 55 09.5			
			F	16 56			
15	Feb. 26	Id	iSNE	15 05 52.5			
			F	15 07			
16	Feb. 26	Id	iPN	16 53 45.5			
			iSN	49.5			
			iSE	50.3			
			F	16 54			
17	March 4	Id	ePN	17 38 14.6			
			iSN	19.3			
			iSE	20.1			
			F	17 39			
18	March 10	Id	eE	19 48 49			
			iN	54.5			
			iE	55.5			
			F	19 49			
19	March 24	Iu	eE	00 23 ca			Pasadena: Southwest of New Zealand
			F	00 37			
20	March 27	Id	iPNE	17 06 54.8			See list, p. 5
			iSNE	07 01.2			
			F	17 08			

FRESNO

No.	Date	Char-acter	Hour	Time (U.T.)	Period	Trace motion	Remarks
1	Jan. 1	Iv		01 57			THE FRESNO STATION, FRESNO STATE COLLEGE FRESNO, CALIFORNIA U.S.C.O.S.: 73°W, 70°N

CONSTANTS

CONSTANTS OF THE STATION

Latitude and longitude:

$$\phi = 36^{\circ} 46'.1 \text{ N.}$$

$$\lambda = 119^{\circ} 47'.8 \text{ W.}$$

Time -- All determinations are reduced to Universal Time.

Altitude -- 88.4 meters (290 feet) above mean sea level.

CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	V	T ₀	ε
Wood-Anderson	N	3000	0.9	15

7	Feb. 16	Iv		03 03 21.5			U.S.C.O.S.: 14.7°N, 115.4°W
8	Feb. 16	Iv		02 17 21.0			See list, p. 5
9	Feb. 17	Iv		12 15 20			See list, p. 5
10	Feb. 18	Iv		10 19 35			Pasadena: 42°N, 112°E

FRESNO

No.	Date	Char-acter	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.	s		
1	Jan. 1	Ir	ePN ePPN eSN eLN eN eN F	01 28 54 30 42 35 34 43 16 44 08 48 36 01 57			U.S.C.G.S.: 73°N, 70°W
2	Jan. 7	IIv	ePN iPN iN iSN MN iKN eAN F	22 25 54.0 55.4 26 02.4 21 58 11.0 22 22 53.5 27 24 22 35		55	See list, p. 5 Pasadena: Approx. 27°N, 142°E
3	Jan. 25	Id	iPN eSN F	02 41 51.5 57.7 02 43			
4	Feb. 3	Iv	iN eN F	08 43 37.2 44 53 08 52			See list, p. 5
5	Feb. 10	Iu	ePN epPN eSN F	05 09 20.4 35.9 18 48 05 26			U.S.C.G.S.: 41.5°N, 142.0°E Pasadena: h = 60 km. ca.
6	Feb. 11	Id	eN iSN F	19 33 09.2 16.0 19 19			See list, p. 5
7	Feb. 14	Iv	iPN iN eN eN eSN F	03 03 24.5 37.4 51.5 04 32.6 05 51.0 03 17			U.S.C.G.S.: 44.7°N, 115.4°W See list, p. 5
8	Feb. 16	Id	ePN eSN F	22 17 21.0 23.0 22 18			U.S.C.G.S.: 16.9°N, 78.0°W
9	Feb. 17	Iv	ePN iSN F	19 45 20 36.3 19 47			See list, p. 5 See list, p. 5
10	Feb. 18	Iu	ePN eN eN F	10 19 35 37.2 57 23 36 10 25			Pasadena: 42°N, 142°E See list, p. 5

FRESNO

30.

No.	Date	Character	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.	s		
11	Feb. 19	Iv	eSN F	23 25 35 23 27			Aftershock
12	Feb. 20	Id	eN iSN F	12 36 05 11.0 12 37			Pasadena: 34°15'N, 116°10'W
13	Feb. 22	Iv	ePN iSN iN iN F	21 56 08.6 41.7 44.9 55.5 21 58			
14	Feb. 26	I	ePN eN eN eN F	22 26 36.4 48.4 30 33.4 36 48 53.4 23 07			Pasadena: Approx. 27°N, 114°E
15	March 2	Iv	eN	20 18			Pasadena: 34°17'N, 116°11'W
16	March 4	Iv	ePN eSN iSN iN F	21 01 31 02 08.5 10.0 18.0 21 06			See list, p. 5 Pasadena: Roughly 31°N, 114°W
17	March 10	Iv	ePN iSN F	09 29 15 30.2 09 31			Pasadena: Roughly 31°N, 114°W
18	March 11	Iu	ePN F	21 49 29 21 57			Pasadena: Roughly 38°N, 114°E
19	March 14	Id	ePN eSN F	23 24 39 57.0 23 27			See list, p. 5
20	March 18	Iu	ePN F	00 06 37 00 26			U.S.C.G.S.: 16.9°N, 78.0°W
21	March 18	Iu?	eN eN F	00 33 05 19 00 36			
22	March 19	Iv	ePN eSN F	14 50 31 47.5 14 55			See list, p. 5
23	March 19	Iv	ePN eSN F	19 00 49 01 03.6 19 03			See list, p. 5

FRESNO

No.	Date	Char-acter	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.	s		
24	March 19	Iv	ePN eSN F	20 05.3 05.8 20 07			Aftershock
25	March 20	IIv	ePN iSN iSN iSN iSN eN F	21 56 08 31.1 57 04.1 10.9 30.6 37.0 22 07			Pasadena: 34°15'N, 116°10'W
26	March 25	Id	eSN F	12 45 15 12 46			
27	March 29	Iv	ePN eN eSN F	04 20 05.9 16.1 57.4 04 26			
28	March 29	Iv	ePN F	17 54 17 57			Pasadena: 34°17'N, 116°11'W
29	March 31	Id	iSN F	12 10 06.3 12 11			
30	March 31	Ir	ePN eN F	18 54 47 56 29 Obscured by train			Pasadena: Roughly 31°N, 114°W
31	March 31	Ir	ePN eN eN eN eN F	19 30 10 31 33 32 12.5 33 35.3 34 27.8 19 46			Pasadena: Roughly 31°N, 114°W

No.	Date	Char-acter	Time	MINERAL	Remarks
1	Jan. 7	IIV	20 15 20.0 20 15 20.2 20 17	THE MINERAL STATION MINERAL, CALIFORNIA	See list, p. 5
2	Jan. 11	Iv	23 00 00 23 00 02 23 00 04	CONSTANTS CONSTANTS OF THE STATION	Series of earthquakes between 1500 UT and 2100 UT Jan. 22, 1945. 52 Id's and 7 IId's
3	Jan. 16	Iv	23 00 00 23 00 02 23 00 04	CONSTANTS CONSTANTS OF THE STATION	Series of earthquakes between 1500 UT and 2100 UT Jan. 22, 1945. 52 Id's and 7 IId's
4	Jan. 31			Latitude and longitude: ca $\phi = 40^{\circ} 21' N.$ $\lambda = 121^{\circ} 35' W.$	S-P = 3.0 sec.
5	Feb. 11	IId	13 10 12.0 13 12	Time -- All determinations are reduced to Universal Time. Altitude -- 1195 meters (1,906 feet) above mean sea level.	S-P = 3.3 sec.
6	Feb. 25	IId	13 10 12.0 13 12		S-P = 3.0 sec. ca.
7	March 4	IIV	17 07 22 17 07 26 17 10	CONSTANTS OF THE SEISMOGRAPHS	See list, p. 5

Apparatus	Component	V	T _o	ϵ
Wood-Anderson	E	3000	1	15

8	March 11	Iv	17 07 22 17 07 26 17 10		See list, p. 5
---	----------	----	-------------------------------	--	----------------

MINERAL

No.	Date	Char-acter	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.	s		
1	Jan. 7	IIv	ePE eP*E ePE eS*E F	22 26 34.0 40.0 46.0 27 23.0 22 34			See list, p. 5
2	Jan. 11	Iv	iPE iSE F	20 15 42.0 16 16.2 20 17			
3	Jan. 16	Iv	ePE iE iE F	23 00 02 37 41 23 02			Swarm of earthquakes between 1500 UT and 2400 UT Jan. 22, 1945. 51 Id's and 7 IIId's
4	Jan. 31	IIId	iPE	11 13 30 ca			S-P = 3.0 sec.
5	Feb. 11	IIId		18 47 ca			S-P = 3.3 sec. 5 Id's from same origin within 2 hours following the quake listed
6	Feb. 25	IIId	iPE F	13 10 42.0 13 12			S-P = 3.0 sec. ca.
7	March 4	IIv	ePE iE iSE iE iP*E F	21 01 11.5 15.0 32.0 36.5 37.5 21 03			See list, p. 5
8	March 9	IIId	iPE F	00 01 03 ca 00 01			S-P = 1.9 sec.
9	March 27	Iv	ePE eE iSE F	17 07 22 26 49.5 17 10			See list, p. 5

Bulletin of the Seismographic Stations

Volume 15, No. 2, pp. 42-86

**EARTHQUAKES IN NORTHERN CALIFORNIA
AND
THE REGISTRATION OF EARTHQUAKES
AT
BERKELEY—MOUNT HAMILTON—PALO ALTO
SAN FRANCISCO—FERNDALE—FRESNO—MINERAL**

From April 1, 1945, to June 30, 1945

BY
CHARLES HERRICK
AND
CAROLYN H. PENDERY

UNIVERSITY OF CALIFORNIA PRESS
BERKELEY AND LOS ANGELES
1951



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BERKELEY AND LOS ANGELES

CALIFORNIA

CAMBRIDGE UNIVERSITY PRESS

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PRINTED IN THE UNITED STATES OF AMERICA

1951

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BERKELEY AND LOS ANGELES

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EARTHQUAKE INTENSITY SCALE

EARTHQUAKES IN NORTHERN CALIFORNIA

Intensities are given by Roman numerals in the list of California earthquakes on the following page, when sufficient information on the effects of the quake is available. Criteria of the Modified Mercalli Scale which are used to rate the intensity are:

Intensity

- II Felt by a few people only. Duration or direction not appreciable.
- III Duration or direction appreciable.
- IV Rattling of doors and windows; swinging of suspended objects.
- V Disturbance of movable objects; plaster cracked.
- VI Overthrow of movable objects; cracking of chimneys and other brickwork.
- VII Fall of some chimneys; some damage to buildings.

EARTHQUAKE MAGNITUDE SCALE

Richter magnitudes given in the list of epicenters on the next page are found from the Wood-Anderson amplitudes, using the nomogram by Nordquist, "Bulletin of the Seismological Society of America," 32:164.

Latitude and longitude are given for each epicenter in the following list. Only those earthquakes are given numbers for which epicenters were located. The letter represents the excellence with which the epicenter has been located, a indicating excellent, b good, c fair, d poor.

EARTHQUAKES IN NORTHERN CALIFORNIA

1945 - Pacific Standard Time

No.	Date	Origin Time	Richter Magnitude	Latitude North	Longitude West	Quality
1	April 13	06-39-31	3.5	36° 36'	121° 06'	c
2	16	18-23-20	1.9	37° 25'	122° 19'	c
3	19	02-10-48	3.0	37° 11'	121° 50'	b
4	22	13-20-00	2.5	36° 40'	121° 37'	c
5	May 1	22-25-26	2.7	37° 15'	121° 54'	b
6	2	11-47-54	5.0	41.2°	123.5°	d

This earthquake was felt over an area of about 3500 square miles. The outer limits of the felt area included Hornbrook, southeast to Round Mountain, to Redding west through Hyampom to Eureka to Happy Camp to Hornbrook. A maximum intensity of VI was reported from Burnt Ranch and Etna.

7	6	01-49-16	2.8	36.7°	120.9°	d
8	8	16-55-27	2.6	37° 59'	122° 15'	c
9	10	14-45-50	2.6	37° 13'	122° 13'	b
10	13	02-25-07	2.7	36° 31'	121° 08'	c
11	17	07-06-47	4.6	36° 49'	121° 22'	b

Felt as far north as San Francisco, as far east as Stockton, and as far south as San Ardo. A maximum intensity of VI was reported from Gilroy, Hollister and San Martin.

12	19	07-07-00	6.0	40.4°	126.9°	d
----	----	----------	-----	-------	--------	---

Felt in most of the coastal towns from Crescent City to Fort Bragg. A maximum intensity of V was reported from Upper Mattole.

13	25	11-41-56	2.2	37° 58'	121° 33'	c
14	June 14	14-57-48	3.7	36° 42'	121° 27'	b

IV at Hollister.

15	18	14-06-26	2.7	36.7°	121.1°	d
16	21	16-16-35	2.6	37° 59'	122° 35'	b

SYMBOLS AND NOTATIONS EMPLOYED

1. Character of the Seismogram

I. Perceptible. II. Moderately Strong. III. Strong

d (terrae motus domus)	THE REGISTRATION OF EARTHQUAKES	more than 100 kilometers distant),
v (terrae motus violentae)	Near shock (origin from 100 to 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 or teleseism (origin more than 5,000 kilometers distant).	

2. Nature of the Motion

i (impetus)	Sudden beginning of the motion.
g (gradus)	Gradual beginning of the motion.

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SYMBOLS AND NOTATIONS EMPLOYED

1. Character of the Seismogram--

I. Perceptible. II. Moderately Strong. III. Strong

- d (terrae motus domesticus) Local shock (origin less than 100 kilometers distant),
- v (terrae motus vicinus) Near shock (origin from 100 to 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 or teleseism (origin more than 5,000 kilometers distant).

2. Nature of the Motion--

Instrument	Component	V	T_0	τ	$\frac{\tau}{T_0}$		
Galitzin	E	112	12	10	0.001		
	N	122	12	10	0.002		
Wood-Anderson	E	3000	0.9	15	0.005		
	N	3000	0.9	15			
Galitzin	E	112	12	11.8	0.00	115	11.3
	N	122	12	12.4	0.03	119	11.2
	Z	109	12	11.9	0.01	131	14.9
Benioff	E			Coupled Period			
	Z			0.7		5	

The letter G before a reading designates that the seismogram was from the Galitzin instrument; W, Wiechart; B, Bosch-Oenari; A, Wood-Anderson; H, Benioff.

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Latitude and Longitude:

$$\phi = 37^{\circ} 52' 13'' \text{ N.}$$

$$\lambda = 122^{\circ} 15' 16'' \text{ W.}$$

Time -- All determinations are reduced to Universal Time.

Altitude -- 81 meters (266 feet) above mean sea level.

CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	V		T ₀	ε	r	
		T ₀				T ₀ ²	
Bosch-Omori 100 kg. ..	E	45		12	10	0.001	
	N	45		12	10	0.001	
Wiechert 80 dg.	Z	44		4	5	0.005	
Wood-Anderson	E	3000		0.9	15		
	N	3000		0.9	15		
Galitzin	E	K	T	T ₁	μ ²	A ₁ (cm)	l (cm)
		112	12	11.8	0.00	115	11.3
		122	12	12.4	0.03	119	11.2
	Z	109	12	11.9	0.01	131	14.9
Benioff	Z	V		Coupled Period		ε	
				0.7		5	

The letter G before a reading designates that the seismogram was from the Galitzin instrument; W, Wiechert; B, Bosch-Omori; A, Wood-Anderson; H, Benioff.

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1945								
1	Apr. 1	I Iv	ePNZ iPZ eZ iZ ePNZ iNEZ	AHG H G H AHG AHG	23 44 49.2 55 55.2 45 03.0 08.1	48.6 0.5	d	Pasadena: 34°00'N, 120°01'W	
7	Apr. 13	Iv	iNEZ eSE eSN	HG A A	14 49.1 11 59.5 46 03.5		c	See list, p. 46	
8	Apr. 14	I Iv	iZ eEZ ME F	G AH H H	07 09.5 15.0 46.8 24 00		7.5	U.S.C.G.S.: 56°N, 162°E J.S.A.: 54.8°N, 162.4°E h = 150 km.	
2	Apr. 5	Iu?	eLE eLNZ F	G G H	23 47.5 48.2 24 00	26	3 7.5 11		
3	Apr. 8	Iu?	eLE eZ eN eME F	G G G G H	01 37.4 37.8 37.9 39.4 02 30	30 22			
4	Apr. 11	Iv	ePE ePZ eN iE eZ eE	G H G G G G	02 04 08 11.5 05 11 23.0 06 06.0 18.0	18 ca	35 55	Foreshock	
9	Apr. 15	Iu	iN eZ iNE F	G G G H	03 50 23.0 03 53 29.0 02 16 30.0	16 10.5		Aftershock	
10	Apr. 15	I Iv						U.S.C.G.S.: 22.5°N, 108.0°W	
5	Apr. 11	Iv	eZ eNE iPZ iZ eN iEZ eNE iNEZ	G G H H A HA A G	11 23 25 27.0 20 00 32.0 35.3 40.0 40.9 52 24 24.5	1.5	2.50 c	Off Oregon Coast	
11	Apr. 17	I Iv	eE iN eZ eE	G G G A	02 23 40.0 43.0 02 25 50.5 51			See list, p. 46	
12	Apr. 18	Iv	iNE eN F	G A H	04 59 57.5 05 59 11 50	10		Pasadena: 34°26'N, 116°59'W	
13	Apr. 18	Iu							

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h. m. s.	s.			
	1945							
6	Apr. 11	Iu	iE iN eEZ eN F	G 15 40 G G 56.3 G 56 30 16 45	40 42 30		d	See list, p. 46
7	Apr. 13	Iv	iPZ F	H 14 40 14 42	01.6 16.0		c	See list, p. 46
8	Apr. 14	IIu	iPEZ iN ipPZ iZ iPcPE ePcPNZ eSN iSZ iSE iScSNEZ eSSN eSSE eSSZ iZ iNE iLZ eZ MN ME F	GH 02 44 G H H 45 G 47 G 22 G 51 G G 36 G 54 G 55 G G G 03 00 G G 11 10 G G 01 G 02 G 06 G 09 06 30	21.5 22.0 40.0 39.4 19.0 22 40.0 41.5 42.0 18.0 14 19 24 16 ca 14 34.0 20 17 14 11	17 13 16 22 17 13 16 16 14 14 16 14 27 20 17 14	3 7.5 11 35 55	U.S.C.G.S.: 56°N, 164°E J.S.A.: 54.8°N, 162.4°E h = 150 km.
9	Apr. 15	Iu	iPZ F	H 03 50 03 53	25.8 21.1			Aftershock
10	Apr. 15	IIr	ePEZ iPZ iSE eSNE iN eZ iNEZ ME F	GH 19 55 GH G 59 A G 20 00 G G 17 19 G 03 00 21 14	20.5 21.0 14.5 16 17 22 16.5 14 14	1.5 18 20 14	d 2.5c 6.5 60	U.S.C.G.S.: 22.5°N, 108.0°W
11	Apr. 17	Id	iPZ iSZ F	H 02 23 H 02 25	29.6 36.4 25.0			See list, p. 46
12	Apr. 18	Iv	iPZ F	H 04 59 05 02	20.5 23.5			Pasadena: 34°26'N, 116°59'W
13	Apr. 18	Iu	eLNEZ F	G 14 23 G 15 15	20.0 26.0			

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
14	Apr. 19 (cont.)	Id	iPZ iSZ F	H 10 11 H 10 12	03.1 17.8		d	See list, p. 46
15	Apr. 19	Iu	ePEZ iPNZ eZ eZ	GH 13 16 GH 17 17 H 17 17 G 17 17	43.0 50.0 27.5 46.0			Pasadena: Region of: 22°S, 170°E
18	Apr. 22	Ir	ePPN eEZ ePPPEZ eSE eSN iPSNEZ	G 05 20 G 05 21 G 05 22 G 05 27 G 10 26 G 10 28	16 11 22.7 25 26 36.0	18 12 22		Pasadena: 31.5°N, 114.0°W
19	Apr. 22	Id	eN eSSE eSSN	G 17 31 G 17 33 G 17 37	56 06 09			
20	Apr. 22	Iv	eSSSN eSSSE eLN eLE eLN	G 21 36 G 21 37 G 21 40 G 21 44 G 21 44	9 1.6 38 12 22			See list, p. 46
21	Apr. 22	I	eNE eZ F	G 22 45 G 22 50 14 30	43 50	21 24		Surface waves Pasadena: 31.5°N, 114.0°W
16	Apr. 20	I	eN eEZ eN eE eE eNE eEZ	G 22 56 G 22 57 G 23 00 G 23 08 G 23 08 G 23 09 G 23 11	54 00 14 37 48 31 54	15		Pasadena: Mexico
24	Apr. 23	Iu	eN eLNE eLZ ME F	G 06 14 G 06 14 G 06 19 G 23 23	56 03 14 19.2 50	18	6.5	Pasadena: Solomon Islands
17	Apr. 21	Ir	ePNEZ ePZ iZ epPZ epPE iEZ iN iSNE eSZ isSE isSNZ eLNEZ iEZ	G 17 17 H 17 17 H 17 20 G 17 20 G 17 17 G 17 05 G 17 13 G 24 24 G 24 37 G 25 25 G 25 25 G 27 27 G 28 28	57 58.5 15.2 16 17 52.0 55.0 36.0 37 23.5 24.5 27.1 34.0		c	U.S.C.G.S.: 19.3°N, 100.6°W h = 80 km.

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No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
17	Apr. 21 (cont.)	Ir	iZ eMN F	G 17 28 G 29 42 17 50	40.0 42 50			
18	Apr. 22	I	eN eLEZ F	G 04 29.9 G 31.9 04 50				
19	Apr. 22	Ir	eN eE eN eN F	G 09 50 G 51 07 G 09 G 57 10 00	41 18 12		Pasadena: 31.5°N, 114.0°W	
20	Apr. 22	Id	iPZ iZ F	H 17 26 H 12.6 17 27	02.8 12.6		c	U.S.G.S.S.: VII at North Bend, Washington
21	Apr. 22	Iv	iPZ iPZ F	H 21 20 H 25.9 21 22	23.6 25.9			See list, p. 46
22	Apr. 22	I	eE eN eZ F	G 22 18 G 54 G 19 09 22 24	44 54 09 24			Surface waves Pasadena: 31.5°N, 114.0°W
23	Apr. 23	Ir	eLE eLN iN eEZ F	G 06 01 G 01.9 G 03 03 G 13 06 15	44 01.9 03 13 15	15		Pasadena: Mexico
24	Apr. 23	Iu	ePZ iSE iSN eN eEZ eE iN eZ eLN eLE eE iEZ eLNZ eLE eZ eNE eE eN eZ F	H 06 35 G 45 G 37.5 G 47 G 49 G 48 G 54.0 G 49 00 G 07 04 G 13 G 39 G 06 G 13 G 43.0 G 17 38 G 54 G 26 47 G 52 G 26.9 07 45	11.5 32.0 37.5 48.0 49 44 54.0 00 08.0 13 39 48.0 40.0 43.0 38 54 47 52 26.9 45	9 9 7 18 26 22 18 19 17 18		Pasadena: Solomon Islands Pasadena: roughly 22°S, 178°W h = 550 km.
								See list, p. 46

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.	s.		
25	Apr. 23	Iu	iN iE F	G 07 55 G 08 10	40.0 50.0		Aftershock?
26	Apr. 25	Id	iPZ iSZ F	H 00 25 H 00 27	48.3 52.8		
27	Apr. 28	Id	iPZ iSZ F	H 07 31 H 07 32	17.8 23.5		
28	Apr. 29	Ir	iPZ iZ iZ iZ eN iZ eN eE eN iZ iE eNEZ eLE eLN F	H 20 18 G H H G H G G G G G G G G G G G	37.4 45.0 56.0 58.2 59.0 24.0 27 29 50.0 52.5 59.0 57 49.0 57 21 00	c	U.S.C.G.S.: VII at North Bend, Washington
29	Apr. 29	Iv	iPZ F	H 23 39 23 41	47.0	c?	
30	Apr. 29	Iv	iPZ iZ F	H 23 44 H 23 45	04.2 24.4	d	See list, p. 46
31	Apr. 30	Iu	iPZ F	H 17 38 17 39	29.2	d	Pasadena: Roughly 22°S, 178°W h = 550 km.
32	Apr. 30	Id	iPZ iZ F	H 23 04 H 23 06	55.1 00.3		
33	May 1	Id	iPZ F	H 00 01 00 02	14.2		
34	May 1	Id	iPZ F	H 00 54 00 56	58.6		
35	May 2	Id	iPZ iSN eE F	H 06 25 A A 06 27	38.9 48.1 48.5		See list, p. 46

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
36	May 2	Iv	ePZ iPZ eE eNE iNZ iNE iNE iNE iNE iN iN iE iNEZ iE iEZ iNEZ F	G H A AG AG G A A A A A AG G G A AG G	19 48 48.3 48.6 56.3 49 03.0 04.8 08.3 15.2 22.5 26.3 20 25 29.7 20 26 40.0 40.7 23 17 44.5 45.0 23 50 06.0 21	1.2	d	See list, p. 46
37	May 4	Id	iPZ F	H	23 04 32.3 23 05.5			
38	May 5	Id	iPZ F	H	22 50 11.8 22 51			
39	May 5	Id	iPZ iSZ F	H	23 22 38.8 40.0 23 23			
40	May 6	Iv	iPZ F	H	14 14 53.0 14 16		d	
41	May 9	IIId	iPNEZ iSNE F	AH A A	00 55 28.7 30.2 00 57		8	See list, p. 46
42	May 12	Id	iPZ F	H	02 00 28.1 02 01			
43	May 12	Id	iPZ iSZ F	H	18 35 48.9 58.2 18 37			
44	May 12	Id	iPZ iZ F	H	21 50 25.3 31.5 21 51			
45	May 17	Id	iPZ F	H	13 56 01.2 13 56.4		c	
46	May 17	Id	iPZ iSNE F	H A A	15 00 34.3 38.1 15 01			

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
47	May 17	IId	iPNEZ iPNZ iPN iPE iSE	GH 15 07 AG 11 G G 15 15 A	10.2 12.3 13.0 13.5 26.8		c	See list, p. 46
	May 20	Iv	iSNZ iNZ F	G 00 59 AG 15 11	28.5 38.5			See list, p. 46
48	May 17	Id	iPZ F	H 20 25 20 26	14.5			See list, p. 46
49	May 17	Id	iPZ iSZ F	H 23 17 H 23 18	17.4 23.3			
50	May 18	Iv	iPZ F	H 09 45 09 50	40.2			Pasadena: 36°12'N, 118°23'W
51	May 18	Iu	iPZ F	H 23 46 23 48	12.7		c	Pasadena: Between Fiji and Loyalty Islands
52	May 19	Iu?	eE eN eE eN eLNE F	G 03 03 G G 07 G 08 58 03 35	18 44 53 17 58			
53	May 19	Id	iPZ F	H 03 09 03 09.5	57.9 5			
54	May 19	Ir	iPEZ ePN iSN iSE eZ iNZ eE eLNE iEZ iNZ ME F	G 08 01 G G 06 G 23 G G 09 G G 10 G 10 G 12 G G 14.1 08 30	02.0 05 09.5 10.5 20 08.5 10 28 08.5 30.5 14.1 30		d c c c c c c c c c c c	U.S.C.G.S.: 16.0°N, 98.4°W Pasadena: Eastern Aleutian Islands L = 30 km.
55	May 19	IIv	ePNEZ iPZ iPNE iNE iSE iSN eE	AH 15 08 H A A A A A	03.7 05.5 06.4 15.7 49.4 54.2 09 16.5		d c	See list, p. 46

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
55	May 19 (cont.)	IIv	eLE iE iN F	A 15 09 A 11 31 A H 16 15	57.0 31.0 39.0			
56	May 20	Iv	iPZ iZ eZ F	H 00 59 H H H 01 00	12.2 13.8 32		See list, p. 46	
57	May 25	Id	iPZ iSZ F	H 19 42 H H 19 42.4	00.6 04.6		See list, p. 46	
58	May 28	Iu	eLE eLNZ F	G 10 17.0 G G 10 29	17.5			
59	May 28	Iu	eN eNE eNE eLNE F	G 10 30 G G G G 11 14	33.5 23.5 42.4 46.4		Pasadena: Between Fiji and Loyalty Islands	
60	May 29	Id	iPZ iSZ F	H 23 59 H H 00 00	31.3 34.8			
61	June 1	IIr	ePNEZ iSNE eLNEZ eMEZ F	G 15 20 G G G H 17 01	36 17 29.0 30.1			
62	June 1	Id	iPZ F	H 23 02 H 23 03.3	59.5		c	
63	June 1	Ir	ePEZ ePN eN eZ eNE iSNE iN eE eLN eLE iE iN ME F	G 15 19 G G G G G G G G G G G G G G G 17 00	35.0 36.0 50 21 01 03 25 16.0 28 02.0 28.1 48 55 57.0 29 36.0 30.1		d	Pasadena: Eastern Aleutian Islands h = 80 km.
						18	(-N) (+E)	
								near Soledad Monterey County

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
64	June 2	Id	iPZ F	H 00 27 00 28	34.9			See list, p. 46
65	June 2	Id	iPZ iSNE F	H 22 25 A 22 26	00.5 01.4			
66	June 2	Id	iPZ iSEZ iNE F	H 23 40 AH A 23 41	51.7 54.7 55.5			See list, p. 46
67	June 3	IIr	iPNEZ iSNE eLNE eME F	G 13 14 02 G 20 42 G 27.1 G 32.0 15 21			c	U.S.C.G.S.: 8.3°N, 82.6°W See list, p. 46
68	June 4	IIId	iPNEZ iSNE F	AH 03 05 A 03 06	13.1 14.2		5	U.S.C.G.S.: 43°N, 112°W
69	June 7	Iu	eNE eSNE eE eNZ eNEZ eNEZ eEZ F	G 12 09 59 G 15 47 G 20.8 G 21.3 G 21.8 G 24.8 G 27.8 13 10		13 24		Magawa 33°N, 77°E L? U.S.C.G.S.: 26°N, 110°W
70	June 14	Iv	ePZ iPZ eSNE i(S)E F	H 03 32 17 H 19 A 33 06 A 15 12 03 40				Pasadena: 37°05'N, 117°30'W U.S.C.G.S.: 37°N, 112°W
71	June 14	Iv	iPZ iPNEZ eNE eSNE eSNE eNE iE F	W 22 58 BOW BO BO BO BO BO 22 59	11.4 13.1 18.0 29.5 32.0 35.0 49.1		c	See list, p. 46 U.S.C.G.S.: 17°N, 116°W
72	June 16	Iv	ePZ ePN eE eN eNE F	H 15 18 A 26 A 38 A 39 A 46 07 20	23.5			Near Soledad Monterey County

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.	s.		
73	June 18	Iv	iPZ iZ eSN iZ eE F	H 22 06 H A 07 H A 22 09	51.8 57.0 10.5 15.4 16		See list, p. 46
74	June 20	IIu	iPNEZ eSE iSNEZ eGN F	G 17 45 G G G 18 01 20 45	22 34 37		U.S.C.G.S.: 45°N, 153°E
75	June 22	IIId	iPZ iSNE F	H 00 16 A 00 18	39.1 42.0		See list, p. 46
76	June 22	Iu	iPZ iNZ ipPNZ iSNE F	GH 09 29 AH G G 11 10	16 18.0 46 37 57		U.S.C.G.S.: 43°N, 142°E
77	June 22	Iu	iPZ iNE ePPZ eLE F	G 18 19 G G G 19 45	43 56 57 52		Moscow: 33°N, 77°E
78	June 27	IIr	iPNEZ ePNE iPNEZ eSE eLN F	G 13 11 A AH A A 15 30	44.5 45 49 53 55		U.S.C.G.S.: 26°N, 110°W
79	June 27	IIr	ePEZ eNZ iSE eLNE F	G 18 11 G G G 19 50	37 58 23 15.4		U.S.C.G.S.: 27°N, 112°W
80	June 30	IIr	iPNZ iPE iSNZ eLNE eLZ F	G 05 36 A AG A G 09 10	14 18.9 23 40.9 41.7		U.S.C.G.S.: 17°N, 116°W

MOUNT HAMILTON

THE LICK OBSERVATORY STATION, UNIVERSITY OF CALIFORNIA
MOUNT HAMILTON, CALIFORNIA

No.	Date	Char-acter	Phase	Period	Trace	Remarks
1	Apr. 1	Iv	ePN	23 44 10.0		Pasadena: 34°00'N, 120°01'W
			ePE	40.5		
			eNE	48.5		
			1PN	56.3		
			eE	15 32		
			eN	34		
			1EN	52.5		
			eSE	56		
			1N	16 15	12	
			1E	16 15	8.7	

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Latitude and Longitude:

$$\phi = 37^{\circ} 20' 14'' \text{ N.}$$

$$\lambda = 121^{\circ} 38' 16'' \text{ W.}$$

Time -- All determinations are reduced to Universal Time.

Altitude -- 1281.7 meters (4205 feet) above mean sea level.

CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	V	T ₀	ε
Wood-Anderson	E	3000	1	15
	N	3000	1	15

7	Apr. 15	Ia	ePNE	02 44 29		U.S.C.G.S.: 56°N, 161°E J.S.A.: 56.8°N, 162.4°E h = 150 km.
			eSNE	51 51		
			F	03 38		
8	Apr. 15	Ir	ePNE	19 55 14		U.S.C.G.S.: 22.5°N, 108.0°W
			eSNE	59 14	18	
			eLNE	20 06.3		
			F	20 13		
9	Apr. 17	Ia	eNE	02 23 35.3		See list, p. 46
			eSE	38.0		
			F	02 24		
10	Apr. 18	Iv	1PNE	05 00 15.7		Pasadena: 34°26'N, 116°59'W
			eN	01 35.7		
			1N	11.8		
			F	05 01		

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.	s.		
1	Apr. 1	IIV	ePN ePE eNE	23 44 40.0 17 23 40.5 48.5			Pasadena: 34°00'N, 120°01'W h = 80 km.
12	Apr. 21	Id	iPN eE eN iSN	21 20 56.1 45 32 21 21 34 52.5			See list, p. 46
13	Apr. 27	Ir	eSE MN ME F	20 18 56 46.4 46.4 00 07	3.5 3.0	12 8.7	U.S.C.G.S.: VII at North Bead, Washing- ton
2	Apr. 6	Id	iPNE iSN F	14 10 05.7 07.0 14 11			
3	Apr. 11	Iv	ePNE eN eE eNE eLE F	11 23 43.5 21 44 54.5 55.0 23 24 47.5 25.5 11 27			Off Oregon Coast Forenoon See list, p. 46
4	Apr. 12	Id	iPNE iSNE F	03 41 18.4 21.3 03 42			Pasadena: 37.5°N, 118.3°W
5	Apr. 13	Iv	ePN eSN F	14 39 48.6 40 01.9 14 41	0.5		See list, p. 46 See list, p. 46
6	Apr. 14	Id	iPNE iSN iSE F	11 04 08.0 09.7 10.1 11 05	1.0 .5 .5	1 2.6 2.4	
7	Apr. 15	Iu	ePNE eSNE F	02 44 29 51 54 03 38	1.3	1.2	U.S.C.G.S.: 56°N, 164°E J.S.A.: 54.8°N, 162.4°E h = 150 km.
8	Apr. 15	Ir	ePNE eSNE eLNE F	19 55 14 01 59 14 20 06.3 20 13	18		U.S.C.G.S.: 22.5°N, 108.0°W
9	Apr. 17	Id	eNE eSN F	02 23 35.3 38.0 02 24			See list, p. 46
10	Apr. 18	Iv	iPNE eE iN F	05 00 15.7 01 35.7 13 16 41.8 05 03			Pasadena: 34°26'N, 116°59'W

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1945								
11	Apr. 21	Ir	ePN F	17 19 17 23	53.0			U.S.C.G.S.: 19.3°N, 100.6°W h = 80 km.	
12	Apr. 22	Id	iPNE iSNE F	21 20 21 21	13.2 22.4			See list, p. 46	
13	Apr. 29	Ir	ePN ePE eN eE F	20 18 20 19 20 20 20 21	43.4 49.4 58.3 59.4	0.9 0.9 1.0 1.0	1.3 2.0	U.S.C.G.S.: VII at North Bend, Washington	
14	May 1	Id	eSN eSE F	16 48 16 49	29.0 29.5			See list, p. 46	
15	May 1	Id	iPNE iSNE F	21 44 21 45	55.8 57.9			Foreshock p. 46	
16	May 2	IIId	iPNE iSNE F	06 25 06 26	29.7 32.6			See list, p. 46	
17	May 2	Iv	ePNE iSNE F	09 58 09 59 10 00	14.4 49.8	0.7 1.0	3.4 56 63	Pasadena: 37.5°N, 118.3°W	
18	May 2	IIv	ePNE eNE eE iN eE iNE iSE iSN	19 48 19 49 09 49 09 50 09 51 09 52 09 53 09 54	57.5 03.5 07.8 15.6 16.2 38.4 58.3 58.8	0.5 1.0 0.8 0.6	0.7	See list, p. 46	
19	May 4	Id	ePNE iSN F	01 42 01 43	09.7 14.8	2.0		See list, p. 46	
20	May 4	Id	ePNE eSNE F	02 14 02 15	27.4 29.8			See list, p. 46	
21	May 4	Id	ePN eSNE F	11 45 11 46 11 47 11 48 11 49 11 50	36.9 38.1 41.0 44.0 47.0			San Benito County	

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1945								
22	May 6	Iv	ePNE eNE eSNE iNE F	09 49	34.5 36.0 47.5 50.5			See list, p. 46	
23	May 8	Iv	ePNE eE eN iSE iSN F	18 09	29 31.1 32.0 10 02.9 03.1	0.9 0.9 1.0 1.0	1.3 2.0	Pasadena: 37°30'N, 118°34'W	
24	May 9	Id	eSN eSE F	00 55	54.5 55.5			See list, p. 46	
25	May 10	Id	ePNE eSNE F	22 45	59.1 05.5			See list, p. 46	
26	May 13	Id	ePNE iSNE F	10 25	25.5 38.5	0.7 1.1	0.4 3.8	See list, p. 46	
27	May 17	IIIId	iPNE iSNE iSN iNE F	15 06 07	59.3 08.1 09.2 15.7	0.7 1.0	3.4 56 63.8	See list, p. 46	
28	May 18	Iv	ePN ePE eSE eSN F	09 45	31.7 32.0 46 09.7 10.3	0.6	0.7	Pasadena: 36°12'N, 118°23'W	
29	May 19	IIv	ePNE iNE iNE iSE iSN eLNE F	15 08	14.7 16.0 16.8 09 11.5 12.0 39	0.7 0.6	1.0	See list, p. 46	
30	May 20	Id	ePE iSE F	00 59	02.0 10.0 01 03			See list, p. 46	
31	May 22	Iv	ePNE eSE eSN iSNE F	14 52	58.5 53 13.5 14.0 17.0	1.4	0.4	San Benito County	

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1945								
32	June 3	Ir	ePE ePN eN F	13 14	56.1 56.6 07 15 13 18	0.5	+2.2	U.S.C.G.S.: 8.3°N, 82.6°W	
33	June 6	Iv	ePE eSE eSN F	09 56	36.9 51.1 15 51.3 09 59	0.5	1.4 2.2	U.S.C.G.S.: 26°N, 110°W	
34	June 7	Id	ePNE iSE F	00 57	34.1 38.2 00 59	1.7	6.5	U.S.C.G.S.: 17°N, 116°W	
35	June 11	Iv	ePE eSN eSE F	11 23	17.8 38.6 39.4 11 25	7.5	1.4 1.2 1.4		
36	June 14	IIv	ePNE iE iN iSNE F	03 32	11.5 16.0 17.3 33 01.7 03 39	0.7 1.1	0.4 0.9 3.8	Pasadena: 37°05'N, 117°30'W	
37	June 14	IIId	ePNE iNE iNE iSNE iMNE eE F	22 58	00.7 02.2 03.7 09.4 11.8 13.0 23 02		0.8	See list, p. 46	
38	June 18	Id	ePNE eNE iSN iSE MN F	22 06	41.0 43.0 51.8 52.7 54.3 22 10	0.7 0.6	1.0	See list, p. 46	
39	June 22	Id	ePNE eN eE eSNE F	00 16	54.5 17 05.5 06.5 08.0 00 18			See list, p. 46	
40	June 22	Iu	ePNE iN iE F	09 29	22.3 25.1 26.9 09 33	1.4	0.4	U.S.C.G.S.: 43°N, 142°E	

MP. HAMILTON

No.	Date	Character	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.	s.		
41	June 26	Id	ePE iSE F	07 21 21 23.7 07 22	0.5	+2.2	
42	June 27	IIr	ePNE eSE eSN eSNE eSN ME MN F	13 11 37 14 40 43 15 06 17 16.3 16.5 14 45	2.5 25 22 17 17	1.4 2.2 12 6.5	U.S.C.G.S.: 26°N, 110°W
43	June 30	Ir	ePN ePE eSNE eN eE ME MN F	05 36 08 11 40 15 42 04 07 43.2 43.5 07 08	7 7.5 8 7.5 7.5	1.4 1.2 1.4 1.2 2.2	U.S.C.G.S.: 17°N, 116°W

CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	V	T ₀	s
Woodward	E	3000	1	15
	N	3000	1	15

No.	Date	Character	Phase	Time (h:m)	Amplitude (mm)	Trace Duration (min)	Remarks
PALO ALTO							
THE BRANNER STATION, STANFORD UNIVERSITY PALO ALTO, CALIFORNIA							
1	Apr. 1	IIv	LPV	23 12	11.5		Paradise: 34°00'N, 120°01'W
			LPV		11.8		
			LPV		57.1		
			LPV		15 00.5		
			LPV		00.7		
			LPV		16.7		
			LPV		38.7		
			LPV		13.7		
			LPV		16.2	3.5	
			LPV		00.04	58	

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Latitude and Longitude:

$$\phi = 37^{\circ} 25' 11'' \text{ N.}$$

$$\lambda = 122^{\circ} 10' 18'' \text{ W.}$$

Time -- All determinations are reduced to Universal Time.
Altitude -- 83 meters (272 feet) above mean sea level.

CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	V	T ₀	ε
Wood-Anderson	E	3000	1	15
	N	3000	1	15

6	Apr. 11	IV	ePH	02 03	16.5		
			ePH		22.0	1.3	
			IV		26.8	1.3	
			F	02 07			
7	Apr. 11	IV	ePH	11 23	38.5		Off Oregon Coast
			ePH		10.0		
			IV		17.7		
			IV		18.1		
			IVS	24	24.4		
			IVS		39.6		
			IVS		42.1	0.9	
			IV		14.4	1.6	
			eS	25	10.2		
			F	11 33			
8	Apr. 11	III	LPV	22 03	35.2		
			IV		36.7	0.5	1.7
			IV		38.6	0.5	6.2
			F	22 04			

PALO ALTO

No.	Date	Char-acter	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.			
1	Apr. 1	IIv	iPN iPE iPNE eN iNE iN iNE eNE iSNE MN ME F	23 44 44.3 44.8 57.1 45 00.5 08.7 23 00 16.7 38.7 23 01 43.7 55.7 02 46.2 46.2 00 04	1.6 0.7 3.5 3.5	58 49	Pasadena: 34°00'N, 120°01'W Sn? U.S.G.C.S.: 56°N, 162°E J.S.A.: 54.0°N, 162.1°E h = 150 km.
2	Apr. 4	Id	ePNE eSNE F	01 01 41.4 45.0 01 02			
3	Apr. 4	IIId	iPNE iSN iSE F	18 15 45.5 48.2 48.7 18 17	0.4 0.3	8 13	
4	Apr. 6	Iv	ePN ePE iNE F	16 09 11.7 12 02 58.6 16 10			Small shock at 01-55.7 UT, April 17, 1945 See list, p. 46
5	Apr. 9	Id	iPNE iSNE iN F	19 49 54.9 56.5 57.9 19 50			Time may not be accurate
6	Apr. 11	Id	ePNE eE iN F	02 04 16.5 22.6 19 26.8 02 07	1.3 1.3		Foreshock
7	Apr. 11	Iv	ePE ePN iE iN iNE iNE iNE iN eE F	11 23 38.5 40.0 47.7 48.1 24 24.4 39.6 19 42.1 44.4 25 40.2 11 33	0.9 1.6	1.3	Off Oregon Coast See list, p. 46
8	Apr. 11	IIId	iPE iE iE F	22 03 35.2 36.7 38.6 22 04	0.5 0.5	1.7 6.2	U.S.G.C.S.: VII at North Bend, Washing- ton

PALO ALTO

No.	Date	Character	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.	s.		
9	Apr. 13	Iv	ePNE iSNE iE F	14 39 53.7 40 09.7 29.4	1.6		See list, p. 46
10	Apr. 14	Id	ePNE iSNE F	23 00 59.0 01 02.7	0.7	1.2	See list, p. 46
11	Apr. 15	Iu	ePE eSE F	02 44 27.5 51 51 03 29			U.S.C.G.S.: 56°N, 164°E J.S.A.: 54.8°N, 162.4°E h = 150 km.
12	Apr. 15	Ir	ePNE eSNE F	19 55.5 20 00 20 08			See list, p. 46
13	Apr. 16	IIId	iPNE iSE iNE F	20 13 51.1 52.3 54.3	0.4 0.5	2.3 5.2	
14	Apr. 17	Id	iPNE iSNE F	02 23 20.6 22.4 02 24			Small shock at 01-55.7 UT, April 17, 1945
15	Apr. 19	Id	ePNE iSNE F	10 10 55.4 11 00.5 10 13			See list, p. 46
16	Apr. 19	Id	iPNE iSNE F	23 59 47 50 23 01			Time may not be accurate
17	Apr. 20	IIId	iPNE iSNE F	19 52 59.8 53 01.2 19 54	1.0		
18	Apr. 22	Id	iPNE iSN iSE F	21 20 20.1 30.9 31.4 21 22	ca 1.0 ca	1.2 5.0	See list, p. 46
19	Apr. 24	Id	ePNE iSNE F	19 04 46.4 49.9 19 06	0.7	3.7	
20	Apr. 29	Ir	ePNE eE eN F	20 18 45 56.5 59.0 20 26	0.5	3.7	U.S.C.G.S.: VII at North Bend, Washing- ton

PALO ALTO

No.	Date	Char-acter	Phase	Time (U.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1945								
21	Apr. 30	Iu	ePNE	17	38	31			Pasadena: 22°S, 178°W, Roughly h = 550 km.
22	Apr. 30	Id	iPNE iSNE F	19	43	45.1 47.1	0.6	3.7	
23	May 2	Id	iPNE iSN iSE F	06	25	34.2 39.0 39.4			See list, p. 46
24	May 2	IIv	ePNE iNE iNE iSN iNE F	19	48	54 57.9 03.0 34.2 51	0.5	1.2 1.9	See list, p. 46
25	May 4	Id	ePNE iSNE F	23	02	16 23.7	1	1.2	
26	May 6	Iv	ePNE eSNE eN F	09	49	42.5 03.5 08.3			See list, p. 46
27	May 7	IIId	iPNE iSNE F	19	55	28.7 29.8	0.4	2.4	See list, p. 46
28	May 8	Iv	ePNE iE iNE iNE F	18	09	32 10 10.0 13.4 58.3	1.0		Pasadena: 37°30'N, 118°34'W
29	May 10	IIId	iPNE iSNE iNE iE iN F	22	45	54.2 57.5 01.6 09.8 10.2	1.0 0.7	1.2 5.0 3.7	See list, p. 46
30	May 11	IIId	iPNE iSNE F	18	45	10.5 12.2	0.5	3.7	
31	May 13	Id	ePNE eSN iSE iNE F	10	25	31.5 52 53.6 06.0	1.8		See list, p. 46
				10	27				

PALO ALTO

No.	Date	Char-acter	Phase	Time (U.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1945								
32	May 17	IIIv	ePN ePE iPNE iNE iSNE F	15 07	04.6 04.9 05.3 13.4 16.5			See list, p. 46	
33	May 18	Iv	ePNE eSNE F	09 45 46 09 47	36 30			Pasadena: 36°12'N, 118°23'W	
34	May 18	Id	iPNE iSNE iN F	15 36 05 23	16.6 18.4 19.7	0.5	1.1 1.9		
35	May 19	IIIv	ePNE iPNE iN iE iN iE iSN iSE i?SE i?SN F	15 08 20 17 03 32 03 33 03 34 09 01 03 39 03 39 22 58 22 58	10.5 11.6 15.8 17.6 22.4 33.0 04.6 05.1 40.0 45		1.2 1.2 1.2 2.6 7.2	See list, p. 46	
36	May 20	Iv	ePNE iSNE F	00 59 01 00	08.5 22.7			See list, p. 46	
37	May 22	Iv	ePNE eSE eSN F	14 53 22 58 22 58 14 55	02 21.7 22.7			San Benito County	
38	May 24	IIId	iPNE iSNE iMN F	19 01 15 13 15 13 19 03	47.3 50.8 55.5	0.4 0.3	2.3	Near Soledad, Monterey County	
39	May 25	Id	ePNE F	19 42 19 43	3 39.4	0.2 0.6	1.7 2.0	See list, p. 46	
40	May 31	IIId	iPNE iNE iSNE iNE F	18 30 22 06 22 06 18 32	34.9 36.4 37.2 38.0			See list, p. 46	

PALO ALTO

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
41	June 2	Id	ePNE eSE eSN F	23 41	00.8 10.0 11.0			See list, p. 46
42	June 3	Ir	ePNE iE eSNE F	13 13 14 20	59.7 10.3 48.5			U.S.C.G.S.: 8.3°N, 82.6°W
43	June 9	Id	iPNE iSNE MNE F	23 04 05 23 06	52.4 56.4 03.8			U.S.C.G.S.: 26°N, 110°W
44	June 11	IIId	iPNE iSNE F	20 45 47	41.6 43.3		1.2	
45	June 14	IIv	ePNE iNE iSNE MN F	03 32 33 03 39	16.1 27.6 07.4 34.0	1.2 1.2 3	1.2 2.6 7.2	Pasadena: 37°05'N, 117°30'W
46	June 14	IIv	ePNE iNE iNE iN iSNE iNE F	22 58 18 23 19 06 23 01	06.3 07.0 11.0 18.3 19.6 21.5			See list, p. 46 Aftershock
47	June 15	Id	ePE ePN iSNE iMN F	22 58 21 23 00	40.8 41.1 44.2 49.0			U.S.C.G.S.: 17°N, 116°W
48	June 16	Iv	ePNE iSNE F	15 18 15 21	17.7 33.9	0.4 0.8	2.8	Near Soledad, Monterey County
49	June 18	IIId	iSNE iSNE F	20 37 38 20 39	59.6 01.1	0.2 0.6	1.7 9.0	
50	June 18	Iv	ePNE eSN eSE F	22 06 07 22 09	45.0 00.0 00.5			See list, p. 46

PALO ALTO

72.

No.	Date	Char-acter	Phase	Time (U.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1945								
51	June 22	Id	ePNE eSNE F	00 16	48.5 56.5			See list, p. 46	
52	June 22	Iu	ePNE eNE eNE F	09 29	20 22 31.7			U.S.C.G.S.: 43°N, 142°E	
53	June 27	Iir	iPN eE iN iE iN iE eN eNE eME eMN F	13 11	45.3 49 54.8 12 13.6 54.8 14 51.0 55 15 35 17 40 19 24 14 29	4.8 2.3 12 10	5.7 23 22	U.S.C.G.S.: 26°N, 110°W	
54	June 27	Ir	ePN eN eN F	18 11	03.0 14.6 16 28 18 30	4 6		U.S.C.G.S.: 27°N, 112°W	
55	June 27	Ir	eNE F	18 15	09 18 23	20		Aftershock	
56	June 29	IId	ePNE iSNE F	19 02	56.1 59.9	0.6	2.5		
57	June 30	Ir	ePNE eSNE eN F	05 36	14.3 40 19 41 35 06 27	7.5 10	2.1	U.S.C.G.S.: 17°N, 116°W	

SAN FRANCISCO

No.	Date	Character	Phase	Time	Location														
THE SAN FRANCISCO STATION, UNIVERSITY OF SAN FRANCISCO SAN FRANCISCO, CALIFORNIA																			
1	Apr. 11	Iv	eT	12 02 15	Forelock														
2	Apr. 11	Iv	eFN eH F	11 23 36 11 28 57	Off Oregon Coast														
3	Apr. 15	Iu	eFN LFE eSE eSSE F	02 14 21 30 51 54 12	U.S.C.G.S.: 56°N, 164°E J.B.A.: 56.0°N, 162.6°E h = 150 km.														
CONSTANTS CONSTANTS OF THE STATION																			
4	Apr. 15			Latitude and Longitude:	U.S.C.G.S.: 22.5°N, 108.0°W														
				$\phi = 37^\circ 46' 14''$ N.															
				$\lambda = 122^\circ 27' 12''$ W.															
Time -- All determinations are reduced to Universal Time.																			
Altitude -- 100 meters (328 feet) above mean sea level.																			
5	Apr. 19	Iu	eFN LFE F	10 11 13.0 13.3 10 11	See list, p. 46														
6	Apr. 22	Iv	eFN F	21 22	See list, p. 46														
CONSTANTS OF THE SEISMOGRAPHS																			
7	May																		
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;">Apparatus</th> <th style="width: 15%;">Component</th> <th style="width: 10%;">V</th> <th style="width: 10%;">T₀</th> <th style="width: 10%;">ε</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Wood-Anderson</td> <td>E 15° S</td> <td>1500</td> <td>1</td> <td>15</td> </tr> <tr> <td>N</td> <td>3000</td> <td>1</td> <td>15</td> </tr> </tbody> </table>						Apparatus	Component	V	T ₀	ε	Wood-Anderson	E 15° S	1500	1	15	N	3000	1	15
Apparatus	Component	V	T ₀	ε															
Wood-Anderson	E 15° S	1500	1	15															
	N	3000	1	15															
8	May 9	Iu	eFN F	00 58 36.0 01 02	See list, p. 46														
9	May 14	Iu	eFN F	16 33 16 16 36	See list, p. 46														
10	May 14	Iu	eFN F	16 35 26 16 36	See list, p. 46														
11	May 17	Iv	eFN eFN eFN LFE LFE F	15 07 10.4 11.4 11.9 30.5 08 36 15 12	See list, p. 46 See list, p. 46 1.5 56														

SAN FRANCISCO

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h. m. s.	s.			
	1945							
1	Apr. 11	Iv	eN	02 04 18				Foreshock
2	Apr. 11	Iv	ePN eN F	11 23 34 57 11 26				Off Oregon Coast
3	Apr. 15	Iu	ePE iPE eSE eScSE F	02 44 21 30 51 42 54 12 03 22	18			U.S.C.G.S.: 56°N, 164°E J.S.A.: 54.8°N, 162.4°E h = 150 km.
4	Apr. 15	Ir	ePE iE	19 55 17.0 25.0				U.S.C.G.S.: 22.5°N, 108.0°W
	June 2	Id	eE eE eE eE F	04 29 53.5 59 25 20 00 25 03.5 20 15	26 11			
5	Apr. 19	Id	eSN iSE F	10 11 13.0 13.5 10 12				See list, p. 46
6	Apr. 22	Iv	iSNE F	21 20 43.6 21 22				See list, p. 46
7	May 2	Iv	ePE iPNE iN iSN iN F	19 48 52.0 56.8 49 40.0 47.0 50 12.1 19 57				See list, p. 46
8	May 9	Id	iSNE F	00 55 36.0 01 02				See list, p. 46
9	May 14	Id	ePE F	16 33 46 16 34				
10	May 14	Id	ePE F	16 35 26 16 36				
11	May 17	IIv	ePE ePN iPNE iSNE ME F	15 07 10.4 11.4 11.9 30.5 08 38 15 12	1.5	56		See list, p. 46
	June 22	Id	ePNE F	09 29 19 09 31				U.S.C.G.S.: 43°N, 142°E

SAN FRANCISCO

15.

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
12	May 19	Iiv	iPNE iNE iSNE iNE eNE F	15 08 05.7 06.2 54.5 09 15.2 13 11 00 15 27	13 8.5		See list, p. 46 U.S.C.G.S.: 26°N, 110°W	
13	May 20	Id	iSN F	00 59 28.1 01 01		1.5	See list, p. 46	
14	May 25	Id	ePN iSN F	19 42 00 03.4 19 42			See list, p. 46 U.S.C.G.S.: 27°N, 116°W	
15	June 2	Id	ePN eSN F	04 29.5 29 36.5 04 30				
16	June 2	Id	iSNE	22 25 06.1				
17	June 2	Id	ePNE iSNE F	23 40 52.5 56.1 23 41			See list, p. 46	
18	June 4	Id	ePE iSNE F	03 05 16.2 19.1 03 06				
19	June 5	Id	ePE iSE iE F	12 30 09.5 12.1 14.7 12 31				
20	June 14	Iv	ePE ePN iSNE F	03 32 19 23 33 18.5 03 37			Pasadena: 37°05'W, 117°30'W	
21	June 14	Iv	ePNE ePNE eN iSNE iNE F	22 58 13.0 14.5 16.5 32.2 33.4 23 01			See list, p. 46	
22	June 22	IIId	iPNE iE iSNE F	00 18 09.0 12.4 17.5 00 20			See list, p. 46	
23	June 22	Iu	ePNE F	09 29 19 09 31			U.S.C.G.S.: 43°N, 142°E	

SAN FRANCISCO

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
24	June 22	Id	ePE eSE F	23 55 56 23 56	59.8 02.7 56			
25	June 27	Ir	ePNE eSE eSN eNE eNE F	13 11 14 50 55 15.1 15.9 14 02	49 50 55 1 9 2		U.S.C.G.S.: 26°N, 110°W	
26	June 30	Ir	ePNE eSE eSN eE F	05 36 40 26 27 41 10 06 12	14 26 27 10 12		U.S.C.G.S.: 17°N, 116°W	

Time — All determinations are reduced to Universal Time.
 Altitude — 17 meters (55 feet) above mean sea level.

Apparatus	Component	V	T ₀	c
Boscé-Croci 25 kg.	E	12	11	5
	N	12	8	6

The station is operated by Mr. Joseph Reynolds, of Pasadena,
 in cooperation with the University of California.

FERNDALE

 THE FERNDALE STATION
 FERNDALE, CALIFORNIA

No.	Date	Char-acter	Phase	Time	Trace section	Remarks
1	Apr. 1	Ir	eE	23 17 00 ca		Pasadena: 34°N, 120°W
			eE	19 52		
			eE	52 40		
			F	00 03		

2	Apr. 11	Iv	eE	02 03 48		Forshock
			eE	04 00		
			F	02 19		

CONSTANTS

CONSTANTS OF THE STATION

Latitude and Longitude:

$$\phi = 40^{\circ} 34' N.$$

$$\lambda = 124^{\circ} 16' W.$$

4	Apr. 15	Ir	eSE	19 56		U.S.G.G.S.: 22.5°N, 100.0°W
			eSE	20 00 16		
			F	20 15		

Time -- All determinations are reduced to Universal Time.

Altitude -- 17 meters (55 feet) above mean sea level.

5	Apr. 23	Ir	eSE	06 01.3		Pasadena: Mexico
			F	06 12		

6	Apr. 23	Iu	eSE	06 15 20		Pasadena: Solomon Islands
			eSH	46 28		
			eE	46 28		
			F	46 28		

CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	V	T ₀	ε
7 Apr. Bosch-Omori 25 kg.	E	12	11	5
	N	12	8	6

8 May 2 The station is operated by Mr. Joseph Bognuda, of Ferndale, in cooperation with the University of California.

9	May 19	IIId	ePE	15 07 33		See list, p. 46
			1PE	35		
			LSYE	50		
			F	16 30		

10	June 27	Iir	ePE	13 12 26		U.S.G.G.S.: 26°N, 110°W
			ePW	28		
			eSE	15 58		
			LSN	16 02		
			LSN	19.0		
			LSYE	20.1		
			F	15 00		

FERNDALE

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
1	Apr. 1	Ir	eN eN eN F	23 47 00 49 52 52 40 00 03	ca			Pasadena: 34°N, 120°W
2	Apr. 11	Iv	eE eN F	02 03 48 04 00 02 19				Foreshock
3	Apr. 11	Iv	eE eN eE eN F	11 23 02 20 27 25 07 11 39				Off Oregon Coast
4	Apr. 15	Ir	ePE eSE eE F	19 56 03 20 00 16 01.5 20 18				U.S.C.G.S.: 22.5°N, 108.0°W
5	Apr. 23	Ir	eNE F	06 01.3 06 12				Pasadena: Mexico
6	Apr. 23	Iu	eSE eSN eE eN eE F	06 45 20 32 46 28 46 47 15 06 58				Pasadena: Solomon Islands
7	Apr. 23	Iu?	eNE eN eE F	07 54 00 18 40 08 07				
8	May 2	IIId	ePE iSE F	19 48 11 23 20 00				See list, p. 46
9	May 19	IIIId	ePE iPE iS?E F	15 07 33 35 50 16 30				See list, p. 46
10	June 27	IIr	ePE ePN eSE iSN iNE iMNE F	13 12 26 28 15 58 16 02 19.0 20.1 15 00				U.S.C.G.S.: 26°N, 110°W

FERNDALE

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
11	June 30	Ir	ePN ePE eSN eSE F	05 36 41 04 06 30	44 48 16			U.S.C.G.S.: 17°N, 116°W

CONSTANTS OF THE STATION

Latitude and Longitude:

$\phi = 36^{\circ} 46' 11''$ N.
 $\lambda = 115^{\circ} 47' 23''$ W.

Time — All determinations are reduced to Universal Time.

Altitude — 63.4 meters (209 feet) above mean sea level.

CONSTANTS OF THE SEISMOGRAPH

Apparatus	Component	V	T_0	ϵ
Wood-Anderson	N	300	0.9	15

FRESNO

 THE FRESNO STATION, FRESNO STATE COLLEGE
 FRESNO, CALIFORNIA

No.	Date	Char-acter	Phase	Time	Remarks
1	Apr. 13	Iv	ePW eSW F	16 39 51.0 16 40 08.9 16 41	See list, p. 16
2	Apr. 15	Ia	ePW eSW F	02 48 01.5 02 49 03 18	U.S.G.C.S.: 36°N, 119°W J.S.A.: 36.8°N, 119.1°W h = 150 km.
3	Apr. 15	Ia	ePW F	03 50 03 53	CONSTANTS Aftershock
4	Apr. 15	Ia	ePW F	03 51 03 54	CONSTANTS OF THE STATION U.S.G.C.S.: 22.5°N, 105.0°W
Latitude and Longitude:					
$\phi = 36^{\circ} 46' 11''$ N. $\lambda = 119^{\circ} 47' 18''$ W.					
Time -- All determinations are reduced to Universal Time.					
5	Apr. 15	Iv	ePW eSW F	03 51 51.0 03 52 10.0 03 53	Foreforeshock U.S.G.C.S.: 36°N, 119°W
Altitude -- 88.4 meters (290 feet) above mean sea level.					
6	Apr. 21	Ia	ePW eSW F	17 19 15.7 17 19 17 40	U.S.G.C.S.: 19.3°N, 109.6°W h = 80 km.
CONSTANTS OF THE SEISMOGRAPHS					

Apparatus	Component	V	T ₀	ε
Wood-Anderson	N	3000	0.9	15

FRESNO

No.	Date	Char-acter	Phase	Time (U.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1945								
1	Apr. 13	Iv	ePN iSN F	14 39 40 14 41	54.0 08.9 41			See list, p. 46	
2	Apr. 15	Iu	ePN eSN F	02 44 51.9 03 18	41.5 18			U.S.C.G.S.: 56°N, 164°E J.S.A.: 54.8°N, 162.4°E h = 150 km.	
3	Apr. 15	Iu	ePN F	03 50 04 03	49.2	0.8	6.7	Aftershock	
4	Apr. 15	Ir	ePN eN eN eN iN F	19 54 55 57 20 00 03 20 18	58.0 15.2 32.0 45.0 18.0 18	2.3	2.0	U.S.C.G.S.: 22.5°N, 108.0°W	
5	Apr. 18	Iv	ePN iSN iSN F	04 59 44.9 49.6 05 06	04.0 49.6	1.0	0.8 2.2	Pasadena: 34°26'N, 116°59'W	
6	Apr. 21	Ir	ePN eN F	17 19 22.4 17 40	45.9			U.S.C.G.S.: 19.3°N, 100.6°W h = 80 km.	
7	Apr. 22	Iv	eSN F	21 20 21 21	44			See list, p. 46	
8	Apr. 22	Iv	ePN eN F	22 17 19 22 22	22 07 22			Pasadena: 31.5°N, 114.0°W	
9	Apr. 23	Id	ePN eSN F	03 04 43.6 03 07	28			Pasadena: 31.6°N, 115.6°W	
10	Apr. 23	Iu	ePN eN eN	06 35 47.0 07 55	20			Pasadena: Solomon Islands	
11	Apr. 29	Ir	ePN eN eN F	20 18 21 22 20 32	59 59.5 25.0 32			U.S.C.G.S.: VII at North Bend, Washing- ton	
12	May 2	Iv	ePN iSN F	08 35 44.8 08 37	29.1 44.8			See list, p. 46 Foreshock	

FRESNO

No.	Date	Char-acter	Phase	Time (U.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1945								
13	May 2	Iv	ePN iSN F	09 57 53.8 58 08.9 10 01		1.5 3.5	3.5 7	Pasadena: 37.5°N, 118.3°W	
14	May 2	IIv	ePN eN iN iSN iN F	19 49 15.7 25.3 31.4 50 11.4 25.5 52 38.7 20 07		0.8 0.8	6.7 0.9	See list, p. 46 U.S.G.C.S.: 16.0°N, 98.1°W	
15	May 4	Iv	ePN iSN F	01 41 19.0 33.2 01 43			2.0	See list, p. 46	
16	May 6	Id	ePN iSN eKN eAN F	09 49 43 45.6 51 19 51 09 54				See list, p. 46 San Berdo County	
17	May 8	Id	ePN iSN F	17 06 29 30.7 17 07	0.6		2.8	Pasadena: 37°30'N, 118°34'W	
18	May 8	IIv	ePN iSN F	18 09 19.9 25.4 Obscured by train				Pasadena: 37°30'N, 118°34'W	
19	May 11	Iv	iPN iSN F	00 10 33.3 11 00.1 00 26				Pasadena: 35°26'N, 117°40'W	
20	May 12	Ir	ePN iSN F	07 34 44 36 17.7 07 42				Pasadena: 31.6°N, 115.6°W	
21	May 13	Iv	iSN eAN F	10 25 43.7 27 20.5 Obscured by train				See list, p. 46	
22	May 13	Id	ePN iSN F	14 29 13.6 14.4 14 30					
23	May 17	IIId	ePN iPN iPN iN iSN	15 07 10.3 10.9 12.2 22.8 25.3			23	See list, p. 46 Pasadena: 37°05'N, 117°30'W	

FRESNO

No.	Date	Char-acter	Phase	Time (U.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1945								
23	May 17 (cont.)	IIId	iKN eAN iN F	15 09	04.3 28.5 54.0	1.5 5 3.5	3.5 7	See list, p. 46	
24	May 18	IIv	iPN iSN F	09 45	04.0 19.6			Pasadena: 36°12'N, 118°23'W	
25	May 19	Ir	ePN eLN eN F	08 01	53 11 10 14 03	0.8	2.5 0.5	U.S.C.G.S.: 16.0°N, 98.4°W	
26	May 19	IIv	ePN iN iN	15 08	38.0 40.8 45.4			See list, p. 46	
27	May 22	Iv	iSN iN iN F	09 09	52.8 10 15.8 11 11.9	1.8	0.5	U.S.C.G.S.: 13°N, 112°E	
28	May 22	Iv	ePN iSN F	14 52	37 53 03.9	0.6	0.1	San Benito County	
29	June 2	Iv	iPN iSN F	06 11	02.6 37.4			Pasadena: 35°07'N, 117°14'W	
29	June 3	Ir	ePN eN eN F	13 13	48.2 53.7 14 52.1		2.2	U.S.C.G.S.: 8.3°N, 82.6°W	
30	June 6	Id	ePN iSN F	09 55	23 33.6		3.3		
31	June 6	Id	ePN iSN F	19 14	31 42.5				
32	June 13	IIv	ePN eSN iN F	09 21	25 47.8 22 00.3				
33	June 14	IIv	ePN iN iN iSN iN F	03 31	48.9 49.0 52.0 32 12.2 33 57.7		1.5	Pasadena: 37°05'N, 117°30'W	
			F	03 41					

FRESNO

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
34	June 14	IIv	ePN iPN iN iSN eAN F	22 58	11.7 13.4 16.4 28.2			See list, p. 46
				23 00	50			
				23 06				
35	June 16	Iv	ePN eN iSN eAN F	15 18	17 19.5 35.0	0.4	2.5	Near Soledad, Monterey County
				20 40				
				15 22				
36	June 18	Iv	eSN F	22 07	01.5			See list, p. 46
				22 08				
37	June 22	Iu	ePN eN eN eSN F	09 29	36 42.7 55.1	1.8	0.5	U.S.C.G.S.: 43°N, 142°E
				33 24				
				09 43				
38	June 22	Iv	ePN iSN F	13 17	46.4	0.5	0.2	
				18 02	7			
				13 19				
39	June 30	Ir	ePN iN eN eN F	05 35	29 37.1 43 28.7 26.7	7	2.2	U.S.C.G.S.: 17°N, 116°W
				06 33				

MINERAL

 THE MINERAL STATION
 MINERAL, CALIFORNIA

Duration 30 sec.

02 04 10

02 08 59.5

02 08

11 23 31

11 24 10

11 30

CONSTANTS

CONSTANTS OF THE STATION

S-P = 8.5 sec.

 VI at Paradise, Butte
 County

Latitude and Longitude:

15 16

 $\phi = 40^{\circ} 21' N.$
 $\lambda = 121^{\circ} 35' W.$

15 16.5

Time -- All determinations are reduced to Universal Time.

Altitude -- 1495 meters (4906 feet) above mean sea level.

15 18

15 25

Run into next quake

CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	V	T ₀	ϵ
Wood-Anderson	E	3000	1	15

20 21

20 21

20 21

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20 21

20 21

MINERAL

No.	Date	Char-acter	Phase	Time (U.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1945								
1	Apr. 1	IId	iPE F	17	22	ca	80 sec.	S-P = 4.0 sec.	
						Duration			
2	Apr. 11	Iv	ePE eSE F	02	04	10 59.5		Foreshock	
				02	08				
3	Apr. 11	Iv	ePE eE F	11	23	31 24 18		Off Oregon Coast	
				11	30				
4	Apr. 20	IId	ePE F	05	36	04 05 37		S-P = 8.5 sec. VI at Paradise, Butte County	
5	Apr. 24	IId	ePE iSE F	15	16	14 16 15 16.5		Foreshock	
6	Apr. 24	IId	iPE iSE iE iE F	20	26	20 22 24.5 25		Foreshock	
				Runs into next quake					
7	Apr. 24	IId	iSE iE F	20	26	40 43 20 27		Foreshock	
8	Apr. 24	IId	iPE iE F	21	23	20 21 21 24		Intensity IV at Mineral	
9	Apr. 29	Iv	eE F	20	18	07 20 24		U.S.C.G.S.: VII at North Bend, Washing- ton	
10	May 2	IId	iPE iE iE iE ME F	19	48	22.7 25.2 35.2 38.4 46 19 53	0.7	c See list, p. 46 52	
11	May 14	IId	iPE iSE iE F	20	50	25.2 27.5 31.7 20 51	0.6	8.0	
12	May 19	IIV	iPE iE iE iSE ME F	15	08	02.5 04.9 14.8 46.5 50 15 25		See list, p. 46 36	

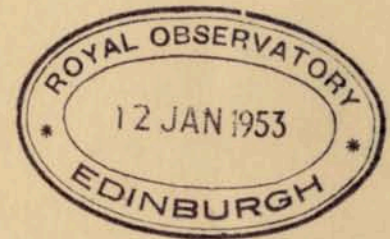
Bulletin of the Seismographic Stations

Volume 15, No. 3, pp. 87-134

EARTHQUAKES IN NORTHERN CALIFORNIA
AND
THE REGISTRATION OF EARTHQUAKES
AT
BERKELEY—MOUNT HAMILTON—PALO ALTO
SAN FRANCISCO—FERNDALE—FRESNO—MINERAL

From July 1, 1945, to September 30, 1945

BY
CHARLES HERRICK



UNIVERSITY OF CALIFORNIA PRESS
BERKELEY AND LOS ANGELES
1951

BULLETIN OF THE SEISMOGRAPHIC STATIONS

CALIFORNIA

CAMBRIDGE UNIVERSITY PRESS
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AND

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AT

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UNIVERSITY OF CALIFORNIA PRESS
BERKELEY AND LOS ANGELES

1951

Issued October 23, 1951

Price, 50 cents

MADE IN THE UNITED STATES OF AMERICA

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EARTHQUAKES IN NORTHERN CALIFORNIA

EARTHQUAKE INTENSITY SCALE

Intensities are given by Roman numerals in the list of California earthquakes on the following page, when sufficient information on the effects of the quake is available. Criteria of the Modified Mercalli Scale which are used to rate the intensity are:

Intensity

- II Felt by a few people only. Duration or direction not appreciable.
- III Duration or direction appreciable.
- IV Rattling of doors and windows; swinging of suspended objects.
- V Disturbance of movable objects; plaster cracked.
- VI Overthrow of movable objects; cracking of chimneys and other brickwork.
- VII Fall of some chimneys; some damage to buildings.

EARTHQUAKE MAGNITUDE SCALE

Richter magnitudes given in the list of epicenters on the next page are found from the Wood-Anderson amplitudes, using the nomogram by Nordquist, "Bulletin of the Seismological Society of America," 32:164.

Latitude and longitude are given for each epicenter in the following list. Only those earthquakes are given numbers for which epicenters were located. The letter represents the excellence with which the epicenter has been located, a indicating excellent, b good, c fair, d poor.

EARTHQUAKES IN NORTHERN CALIFORNIA

1945 - Pacific Standard Time

No.	Date	Origin Time	Richter Magnitude	Latitude North	Longitude West	Quality
1	July 4	04-08-10	2.4	37° 08'	121° 36'	c
2	7	15-54-29	3.0	36° 34'	121° 28'	c
3	8	12-56-17	2.8	37° 56'	121° 47'	b
4	13	16-37-01	2.7	38.2°	123.0°	d
5	23	09-13-48	2.5	37° 47'	121° 24'	b
6	29	05-50-19	2.6	37° 23'	121° 32'	b
7	31	19-46-26	2.6	37° 20'	122° 19'	b
8	31	21-23-20	2.4	37° 35'	122° 29'	c
9	Aug. 3	17-01-27	2.4	37° 12'	122° 12'	b
10	6	20-38-27	2.5	37° 31'	121° 46'	b
11	7	15-37-01	2.6	37° 31'	121° 46'	b
12	13	11-03-16	2.8	38° 30'	122° 08'	b
13	17	13-06-54	2.5	37° 34'	122° 39'	c

Blast? REGISTRATION OF EARTHQUAKES

14	22	00-18-03	1.4	37° 18'	122° 17'	c
15	23	09-33-51	3.7	36° 35'	121° 18'	c
16	24	17-53-22	2.7	37.3°	122.2°	d
17	26	23-10-42	2.8	37° 34'	121° 53'	b
18	27	01-13-04	4.5	37° 16'	121° 48'	c

Felt as far north as St. Helena, as far east as Huntington Lake and as far south as Big Sur. A maximum intensity of VI reported from San Jose.

19	29	11-40-07	3.6	38° 29'	121° 56'	c
20	Sept. 6	16-36-44	3.5	38° 34'	122° 07'	c
21	9	03-15-24	2.9	36.7°	121.7°	d
22	11	15-49-47	2.6	38° 04'	122° 30'	b
23	16	15-55-35	3.3	38° 29'	122° 00'	c
24	17	23-05-28	2.5	37° 30'	121° 33'	b
25	20	14-45-37	2.9	37° 27'	121° 45'	b
26	20	16-28-23	2.9	38° 28'	121° 52'	c

Quakes Nos. 12, 19, 20, 23 and 26 may have had a common focus.

27	24	07-10-28	2.9	36° 38'	121° 59'	b
28	24	11-52-18	2.8	36.8°	121.7°	d
29	26	21-24-47	3.5	37° 04'	121° 05'	b
30	28	14-24-05	6.0	41.9°	126.7°	d

U.S.C.G.S. gives 41.7° N, 126.9° W.

SYMBOLS AND NOTATIONS EMPLOYED

1. Character of the Seismogram --

I. Perceptible. II. Moderately Strong. III. Strong.

d (terras notae distantes)	Local shock (origin less than 100 kilometers distant),
v (terras notae vicinas)	Near shock (origin from 100 to 1,000 kilometers distant),
r (terras notae remotas)	Distant shock (origin from 1,000 to 5,000 kilometers distant),
u (terras notae ultimas)	Very distant shock or teleseism (origin more than 5,000 kilometers distant).

THE REGISTRATION OF EARTHQUAKES

2. Nature of the Motion --

i (impetus)	Sudden beginning of the motion.
g (gradatio)	Gradual beginning of the motion.

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SYMBOLS AND NOTATIONS EMPLOYED

 1. Character of the Seismogram --

I. Perceptible. II. Moderately Strong. III. Strong.

d (terrae motus domesticus)	Local shock (origin less than 100 kilometers distant),
v (terrae motus vicinus)	Near shock (origin from 100 to 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 or teleseism (origin more than 5,000 kilometers distant).

 2. Nature of the Motion --

Apparatus	Component	T		a ²		A ₂ (cm)	l (cm)
	i (impetus)	Sudden beginning of the motion.					
	e (emersio)	Gradual beginning of the motion.					
Busch-Gural 100 kg. ...	A	15	12	10		0.001	
	H	15	12	10		0.001	
Michart 50 kg.	Z	14	6	5		0.005	
	H	1000	0.9	15			
	H	3000	0.9	15			
		K	T	T ₁	a ²	A ₂ (cm)	l (cm)
Galitzin	H	112	12	11.6	0.00	115	11.3
	H	122	12	12.4	0.03	119	11.2
	Z	109	12	11.9	0.01	131	14.9
		T		Coupled Period		s	
Benioff	Z			0.7		5	

The letter G before a reading designates that the seismogram was from the Galitzin instrument; M, Michart; Z, Busch-Gural; A, Wood-Anderson; H, Benioff.

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CONSTANTS

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Latitude and Longitude:

$$\phi = 37^{\circ} 52'13'' \text{ N.}$$

$$\lambda = 122^{\circ} 15'16'' \text{ W.}$$

Time -- All determinations are reduced to Universal Time.

Altitude -- 81 meters (266 feet) above mean sea level.

CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	V		T ₀	ε	r	
						T ₀	T ₀ ²
Bosch-Omori 100 kg. ...	E	45		12	10	0.001	
	N	45		12	10	0.001	
	Z	44		4	5	0.005	
Wood-Anderson	E	3000		0.9	15		
	N	3000		0.9	15		
Galitzin	E	K	T	T ₁	μ ²	A ₁ (cm)	l (cm)
	N	112	12	11.8	0.00	115	11.3
	Z	122	12	12.4	0.03	119	11.2
Benioff	Z	V		Coupled Period		ε	
				0.7		5	

The letter G before a reading designates that the seismogram was from the Galitzin instrument; W, Wiechert; B, Bosch-Omori; A, Wood-Anderson; H, Benioff.

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No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
1	July 2	Ir	ePZ iSE eLN F	G 08 35 G 39 48 G 41.7 10 05	44 48 7 05			
2	July 2	Id	iPNEZ iSNEZ F	AH 23 24 AH 50.0 23 25	46.3 50.0 25			Marin County
3	July 4	Iv	iPZ iSZ F	H 12 08 H 50.1 12 10	27.7 50.1 10			See list, p. 91
4	July 5	IV	iPZ eSNEZ F	H 22 04 AH 05 14.7 22 06	49.7 14.7 06			Providence; Near 61°N 118°W
5	July 7	Id	ePZ F	H 00 06 00 07	30.2 07			
6	July 7	Id	ePZ F	H 18 35.1 18 36	1 36			
7	July 7	Iv	ePNZ eFN ePZ eN eSN eSE eSEZ iSN F	AH 23 54 A H A A A AH A 23 56	54.0 56.0 4 01.0 13.0 13.5 17.5 18.0 56			See list, p. 91 Providence; 35°10'N 121°15'W
8	July 8	Id	iPNEZ iSNE iN eE F	AH 20 56 A A A 20 57	24.4 29.8 34.0 34.3 57			See list, p. 91 See list, p. 91
9	July 8	Id	ePN ePZ ePE eSN eSE F	A 21 11 H 20.7 A 22 A 26 A 27.1 21 12	21 20.7 22 26 27.1 12			Aftershock
10	July 9	Id	iPNEZ iSN iSE iN eE F	AH 01 58 A A A 01 59	15.7 21.0 21.3 24.3 25.0 59			Aftershock

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No.	Date	Char-acter	Phase	Time (U.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1945								
11	July 9	Id	ePZ [*] F	H 16	51	30 16 52			
12	July 9	Id	iPNZ ePN eSNE F	AH 20	22	53 A 23 05.5 A 07.0 20 24			
13	July 9	Iu	iPNEZ ipPZ eSNE eLNE F	G 16	51	30 G 52 20 G 59 04 G 17 10 18 14	d c	USCGS: 1°N 77°W	
14	July 11	Ir	ePZ ePZ ipPNEZ eSNE eZ iSSNE F	H 00	36	35 G 36 GH 49.3 G 41 21 G 42 50 G 43 05 02 15 ca		Pasadena: Near 61°N 148°W	
15	July 11	Id	iPZ eSZ F	H 12	58	00.9 H 15.0 12 59			
16	July 11	Iv	ePZ ePE eZ eSE F	H 16	13	29.7 A 36 H 32.8 A 14 03 16 16		Pasadena: 35°40'N 121°15'W Sanoma County	
17	July 12	Ir	ePZ ePE F	H 09	22	27.3 A 22.3 09 23		See list, p. 91	
18	July 14	Id	ePZ ePN ePE iSNE iSE F	H 00	37	15.4 A 15.5 A 16 A 25.3 A 25.8 00 38		See list, p. 91 Pasadena: 37°10'N 118°04'W	
19	July 14	Iv	ePZ ePN ePE iSE iSN iSNE F	H 02	21	32.0 A 41 A 43 A 22 00.4 A 00.6 A 02.4 02 22			

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No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
20	July 15	Iu	ePEZ eP iPZ ipPEZ eSNEZ iPSEZ F	AH 05 47 G G G G G G	14 16 19 48 09 09 ca		USCGS: 17°N 145°E	
21	July 16	Id	ePZ ePNE F	H A H	00 11 15 00 12		See list, p. 91	
22	July 21	Id	iPNEZ eSNE F	AH A H	00 28 56.3 59.6 00 29		See list, p. 91	
23	July 21	Id	ePNEZ eSE F	AH A H	07 19 12.0 13.4 07 20		USCGS: 54.2°N 133.1°W	
24	July 23	Id	ePZ F	H H	17 14 02 17 15		See list, p. 91	
25	July 24	Id	iPZ F	H H	13 03 10.2 13 04		USCGS: 4.4°N 32.1°W	
26	July 24	Id	iPZ F	H H	13 09.6 13 10			
27	July 29	Id	iPNZ ePE eSNE F	AH A A H	00 37 14.9 15.5 24.5 00 38		Sonoma County	
28	July 29	Id	iPZ ePN iSN eSE F	H A A A H	13 50 33.6 34.0 45.3 45.5 13 51		See list, p. 91	
29	July 30	Iv	ePZ ePNZ eNE F	H AH A H	06 07 07.4 10.4 52.4 06 10		Pasadena: 37°10'N 118°04'W	
30	July 31	Id	ePZ eSZ F	H H H	05 07 37.4 08 38.1 05 09		See list, p. 91	

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No.	Date	Char-acter	Phase	Time (U.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1945								
31	Aug. 1	Id	ePN iPNEZ iSNE iSN F	A AH A A F	03 24 51.0 51.4 03.6 04.5 03 28			Sonoma County	
32	Aug. 1	Id	iPZ eSNE iSNE F	H A A F	03 46 44.5 45.4 03 48			See list, p. 91	
33	Aug. 1	Id	iPZ iSNE F	H A F	05 23 26.7 31.3 05 24			See list, p. 91	
34	Aug. 2	I	ePZ F	H F	13 20 00 13 23				
35	Aug. 2	I Ir	ePNZ iPNEZ eSNEZ iSN F	G G G G F	20 48 53 56 52 17 30 22 31			USCGS: 54.2°N 133.1°W	
36	Aug. 3	Iu	ePEZ eSNE eLNEZ eMNE F	G G G G F	04 20 14 27 14 33.5 37 05 41			USCGS: 4.4°N 82.1°W	
37	Aug. 4	Ir	ePZ ePNE F	H A F	06 48 02 03 06 50				
38	Aug. 4	Id	ePZ ePN eSN eSE F	H A A A F	22 37 24.5 25 34.8 35.0 22 38				
39	Aug. 6	Id	ePZ F	H F	00 31 26.9 00 32				
40	Aug. 7	Id	iPZ eSNE F	H A F	04 38 38.1 47.0 04 39			See list, p. 91	
41	Aug. 7	Id	iPZ eNZ F	H AH F	23 37 12.5 22 23 38			See list, p. 91	
42	Aug. 10	Id	ePZ iNEZ F	H AH F	21 03 46.5 48.0 21 04				

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
43	Aug. 10	Ir	iPNEZ iPPNEZ iSNEZ eSSNEZ eLNEZ F	G 11 27 29 G 28 59 G 33 17 G 36 04 G 11 40 12 26		c	USCGS: 15.4°N 88.8°W	
44	Aug. 11	Ir	ePNEZ ePPE eSNEZ eSSNE eLNE eMNZ F	G 00 42 30 G 44 24 G 49 31 G 53 01 G 55.3 G 59.0 01 56			USCGS: 4.4°N 82.1°W	
45	Aug. 12	Id	iPZ F	H 18 10 25 18 11			See list, p. 91	
46	Aug. 12	Id	iPZ F	H 18 17 37 18 18				
47	Aug. 12	Id	iPZ F	H 20 40 13 20 41				
48	Aug. 13	Id	iPNZ eSNE F	AH 19 03 27.9 A 37.0 19 04			See list, p. 91	
49	Aug. 14	Iu	ePNZ eSN eE ePSEZ eN eLNE F	GH 12 23 34 G 33 15 G 35 G 34 18 G 30 G 46.5 14 26			Pasadena: South of Japan	
50	Aug. 15	Iv	iPZ eN eE eN iN iE iN F	H 17 58 09 A 14.5 A 15.0 A 59 40.5 G 41.0 G 59 G 18 00 04 18 35			Pasadena: 33.1°N 116.1°W	
51	Aug. 17	Iu	ePZ F	H 19 11 27 19 13			See list, p. 91	
52	Aug. 17	I	ePZ F	H 20 22 00 20 24			Pasadena: 37°25'N 118°35'W	

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No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
63	Aug. 27	Iu	ePEZ eSN eLEZ F	GH 07 46 43 G 56 37 G 08 10.3 08 49				Pasadena: Japan?
64	Aug. 27	IIId	iPNEZ iE iSN iSE eME iE F	AH 09 13 17.4 A 18.6 A 27.0 A 27.6 A 14 36.7 A 47 09 23				See list, p. 91
65	Aug. 27	Id	iPZ eSNE F	H 09 24 19.1 A 30.7 09 25				Aftershock Wellington: 46.7°S 166.7°E
66	Aug. 28	Ir	iPZ eSN eSSN eSSSN eGN F	G 13 02 24 G 12 52 G 18 24 G 22 28 G 27 14 00		d		
67	Aug. 28	Iu	ePZ ePNEZ eSZ iSE eLN F	H 19 33 06.5 G 07 G 42 46 G 54 G 52 22 41		d		Pasadena: Riu Kiu Islands
68	Aug. 29	Iv	iPZ iZ eN eE iZ F	H 03 28 59.1 H 29 23.7 A 30.3 A 32.6 H 34.1 03 33				Pasadena: 37°20'N 118°07'W
69	Aug. 29	Iu	ePZ iPZ ePNE iZ iNZ iE eNE ePPZ eSE eSN eLNEZ F	H 10 35 05.5 H 06.6 A 07.5 H 36 10.0 G 24.5 G 26.5 A 36 H 38 13 A 45 31 A 45.8 AH 11 01.8 11 41		c		USCGS: 14°S 166°E U.S.A.: 5°S 154°E

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No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
70	Aug. 29	IIId	iPNEZ iSNE F	AH A 19 43	19 40 19.8 29.7			See list, p. 91
71	Aug. 30	Id	iPZ F	H 06 47	06 46 37.6			San Mateo County
72	Aug. 31	Iu	ePNEZ eSE eSZ eNE eLNEZ eNZ F	G G G G G G 01 15	23 41 51 51 33 34 00 01 21 04.7 24.8			Afterstock?
73	Sept. 1	IIu	ePNZ ePE iPPNEZ iSKSEZ iSKSN iPSEZ iPSN iPPSNEZ iSSE iSSN iSSZ eSSSSE eSSSSN eGNEZ MN F	G G G G G G G G G G G G G G G 03 16	22 58 20 22 23 02 47.5 09 19 20.0 12 10.0 20.0 13 00.0 18 06.0 12.0 29. 27 34 27.9 32.9 48.4	c		Wellington: 46.7°S 165.7°E
74	Sept. 4	Iv	iPZ ePNE eSNE F	H A A 11 18	11 14 56.0 57 15 37			Pasadena: 37°20'N 118°07'W
75	Sept. 4	Iu	eZ eN eE eEN eE eN eNEZ F	G G G G G G G 18 45	17 41 19 42 15.5 17.5 48 04 18 02 16 04.0 07 34			Pasadena: Region of 18°S 117°E
76	Sept. 5	IIu	ePE iPZ ePPZ ePPE ePPN eE eZ	G G G G G G G	22 01 30.0 41.0 05 07 25 47 07 11 07 15	c		J.S.A.: 5°S 154°E

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1945								
76	Sept. 5 (cont.)	IIu	eSZ iSNE iPPSE ePPSZ ePPSN iSSE eSSN eLEZ eLN eEZ F	G G G G G G G G G G G	12 07 12.0 13 27.0 33 42 18 39.0 40 25 22 43 28.7 00 50			See list, p. 91	
77	Sept. 6	Iu	eN iE eN eE eLE F	G G G G G G	01 50 08 51 17.5 54 33 38 02 07.1 02 50			Aftershock? See list, p. 91	
78	Sept. 6	Iu	eNE eE eLNEZ F	G G G G	15 13 19.0 19.1 30.1 16 20			Pasadena: 35°50'N 120°45'W	
79	Sept. 7	Id	iPNZ iSNE F	AH A A	00 36 57.8 37 07.5 00 39			See list, p. 91	
80	Sept. 7	Iv	iPZ iZ eNE iZ eE iZ F	H H A H A H H	11 24 59.9 25 10.2 29.5 45.0 52.5 54.0 11 28	c		Pasadena: 35°50'N 120°45'W	
81	Sept. 9	IIu	ePZ eNE eZ eN eE eZ ePPZ ePPZ eSE eSN eSSE eN eSSSN eN eLE F	GH G H G G G H G G G G G G G G G G	04 15 35.0 42 16 27.5 31 32 34 19 08.5 16 26 02 04 27 38 49 37 30 38 28 41.5 07 06	c		Pasadena: Region of 18°S 173°E See list, p. 91	

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
82	Sept. 9	Iv	iPZ eZ F	H 11 15 H 16 02 11 17	47.0 02.0			See list, p. 91
83	Sept. 10	Iu	ePZ eZ F	H 08 11 H 12 11 08 13	59.0 11.4			pP?
84	Sept. 11	Iu	ePZ ePN ePE epPZ epPN iZ esPZ F	H 19 22 A A H 24 A H 24 H 26 19 27	48.1 48.6 49 42.5 46 47 01.5	c		Pasadena: Tonga Region h = 530 km
85	Sept. 11	Id	iPNEZ iN iSNE F	AH 23 49 A A 23 51	52.1 55.3 55.8			See list, p. 91
86	Sept. 13	Iu	iPZ iPZ ipPZ ipPNEZ eNZ eE ePPPZ ePPPE iSNEZ ePPSNZ eN eE eSSE eLNE eE eN F	H 11 29 G H 17 30 G AH 17 33 G G G G G G G G G G G G G G 13 11	43.6 46.4 08.1 08.5 19 25 20 25 00 55 25 32 13 52.9 57 58.5	d d		USCGS: 34°S 70°W h = 90 km
87	Sept. 14	Id	ePZ F	H 03 59 03 60	25			See list, p. 91
88	Sept. 16	Id	iPNZ ePE iNE iSNE F	H 23 55 A A A 23 59	47.1 47.4 55.3 57.3			See list, p. 91
89	Sept. 18	Id	iPZ F	H 07 05 07 07	41.0			See list, p. 91

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
90	Sept. 19	Iu	iPZ F	H 12 38 12 43	44.6		c	Pasadena: Northern Japan
91	Sept. 20	Id	iPZ eSNE eSNE F	H 22 45 A A 22 48	48.6 57.7 59.0			See list, p. 91
92	Sept. 21	Id	iPNZ iSNE F	AH 00 28 A 00 30	37.0 47.0			See list, p. 91
93	Sept. 22	IIu	ePZ iSE iScSEZ eScSN iE iE eNZ eLN iN iEZ F	H 09 23 G 33 G 34 G 35 G 40 G 47.4 G 50 G 51 11 52	03.0 44.0 06.0 07 18.0 21.0 22 47.4 02.0 50 52			Pasadena: Roughly 2°S 147°E PSPS?
94	Sept. 23	Ir	ePZ ePME F	H 17 26 A 17 29	07 08			
95	Sept. 24	Iu	ePZ ipPZ F	H 12 46 H 12 51	51 21.5			
96	Sept. 24	Iv	ePZ eN eSZ F	H 13 13 A H 13 14	11.5 28 28.1			
97	Sept. 24	Iv	ePZ eSN F	H 15 10 A 15 12	50.0 06.5			See list, p. 91
98	Sept. 24	Iv	ePZ eSNEZ F	H 19 52 AH 19 53	40.0 57			See list, p. 91
99	Sept. 25	Id	iPNZ ePE iN iN iSNE F	AH 19 30 A A A A 19 33	31.5 32.0 39.7 41.0 42.3			Napa County

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
100	Sept. 27	Iv	iPZ ePN eNZ eE iN eNE eNE iZ F	H 05 25 A AH A A A A H 05 28	09.4 10 12.5 21.8 23.2 31.5 41.5 42.0			See list, p. 91
101	Sept. 27	Iv	ePZ F	H 05 30 05 31	19.5			Aftershock
102	Sept. 28	Iv	ePZ eSZ F	H 05 10 H 05 11	03.0 16.3			
103	Sept. 28	IIv	iPNEZ eNE iN iE iNE eNE eNE eN eE eSNE iN eLNE iLNE iMN F	GH 22 25 A G G G A A A A A G A G A 00 15	23.0 32.0 32.0 33.0 41.5 42.5 52.0 26 00.0 03 19.5 25.0 39.0 42.0 27 31.0	6 10	c	See list, p. 91 P? F? F?
104	Sept. 29	Id	iPNZ ePE iSNE F	AH 19 09 A A 19 11	14.9 15.1 25.2			
105	Sept. 30	Id	iPZ ePN F	H 01 38 A 01 38	03.6 38.9			

MOUNT HAMILTON

THE LICK OBSERVATORY STATION, UNIVERSITY OF CALIFORNIA
MOUNT HAMILTON, CALIFORNIA

No.	Date	Char-acter	Phase	Time	Remarks
1	July 1	M	1902	21 12 39.5	Monterey County
			1902	21 13 11.0	
			1902	21 15 12.0	
2	July 3	M	1902	01 02 03.0	
			1902	01 02 03.0	
			1902	01 02 03.0	
3	July 4	M	1902	12 06 14.3	See list, p. 91

CONSTANTS

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Latitude and Longitude:

$$\phi = 37^{\circ} 20' 14'' \text{ N.}$$

$$\lambda = 121^{\circ} 38' 16'' \text{ W.}$$

Time -- All determinations are reduced to Universal Time

Altitude -- 1281.7 meters (4205 feet) above mean sea level.

CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	V	T ₀	ε
Wood-Anderson	E	3000	1	15
	N	3000	1	15

4	July 5	M	1902	22 04 51.0	
			1902	22 04 51.0	
			1902	22 04 51.0	
5	July 7	M	1902	05 15.7	See list, p. 91
			1902	05 15.7	
			1902	05 15.7	
6	July 8	M	1902	00 57	See list, p. 91
			1902	00 57	
			1902	00 57	
7	July 9	M	1902	20 22 12.0	Monterey County
			1902	20 22 17.9	
			1902	20 23 17.9	
8	July 11	M	1902	02 06 53.0	
			1902	02 07 08.0	
			1902	02 08 08.0	
9	July 11	M	1902	12 57 53.0	Monterey County
			1902	12 57 53.0	
			1902	12 59 53.5	

MT. HAMILTON

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(U.T.)			
				h. m. s.	s.		
1	July 1	Id	ePNE iSN eSE F	21 42 59.5 43 11.0 12.0 21 45			Monterey County 122°15'W
2	July 3	Id	iPNE iSNE F	01 01 01.6 03.0 01 02			
3	July 4	IID	iPNE iNE iSNE F	12 08 14.3 16.3 17.4 12 09			See list, p. 91
4	July 5	Iv	ePN ePE eSNE F	22 04 51.0 52 05 15.7 22 06			
5	July 7	Id	ePNE eNE iE iSNE iN F	00 54 43.9 45.5 53.8 55.0 55 02.8 00 57			See list, p. 91
6	July 8	Id	ePNE iSNE eN eE F	20 56 29.2 39.3 45.1 46.5 20 58			See list, p. 91 at 05 30 P.S.T. Aftershock of July 29, 1945 at 05 30 P.S.T.
7	July 9	Id	ePN ePE eSNE iSNE eE F	01 58 20.7 21.4 29.3 30.0 37.2 02 00			Aftershock See list, p. 91
8	July 9	Id	ePNE iSNE F	20 22 42.0 47.9 20 23			Paradise: 37°10'N 118°01'W
9	July 11	Id	ePNE iSNE F	02 06 58.0 07 05.0 02 08			
10	July 11	Id	ePN ePE F	12 57 53.0 54.5 12 59			Sonoma County

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
11	July 11	Iv	ePN ePE iNE eSE eSN iNE F	16 13	24.0 24.5 26.5 42.0 44.0 47.2			Pasadena: 35°40'N 121°15'W
12	July 14	Iv	ePE eN eSE eSN F	00 37	30.5 32 43.0 43.5			See list, p. 91
13	July 14	Iv	ePN ePE eN eE eSN iSE F	02 21	24 25.0 38.0 38.5 02 22 02.5 03.0			See list, p. 91
14	July 23	Id	ePNE iSNE F	17 13 14	57.5 04.5			See list, p. 91
15	July 24	Id	iPNE	23 32	25.2			Foreshock of July 29, 1945 at 05 50 P.S.T.
16	July 24	IIId	iPNE	23 32	36.4			Foreshock of July 29, 1945 at 05 50 P.S.T.
17	July 29	Iv	ePNE eSNE F	00 37	29 41.0			Sonoma County
18	July 29	IIId	iPNE F	13 50 13 51	20.7			See list, p. 91
19	July 30	Iv	ePE ePN eNE iNE iN iE F	06 06 20 07	59.0 59.5 33.7 37.2 40.4 40.7			Pasadena: 37°10'N 118°04'W Pasadena: 37°25'N 118°35'W
20	Aug. 1	Iv	ePNE iSNE F	03 25 03 28	01.8 27.6			Sonoma County

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
21	Aug. 1	Id	ePE ePN eE eN eSE eSN F	03 46 39 41.0 42.0 44.3 44.5	37.5		See list, p. 91	
22	Aug. 1	Id	ePE iSE iSN F	05 23 43.8 44.0	34		See list, p. 91	
23	Aug. 2	Ir	ePE eSE eE F	20 49 52 35 56.7	05		USCGS: 54.2 N 133.1°W See list, p. 91	
24	Aug. 4	Id	ePE eSE F	01 01 44.0	37.5		See list, p. 91 7 aftershocks between 01:00 P.S.T. to 05:00	
25	Aug. 7	Id	iPNE iSNE F	04 38 33.3	30.6		See list, p. 91	
26	Aug. 7	IIId	iPNE iSNE F	23 37 07.6	05.0		See list, p. 91 aftershock	
27	Aug. 13	Iv	ePNE eSN eSE F	19 03 54.0 56.5	44.0		See list, p. 91	
28	Aug. 15	Iv	ePNE iNE iNE iNE F	17 58 06.0 13.0 59 41.5	05.0		Pasadena: 33.1°N 116.1°W USCGS: 14°S 166°E	
29	Aug. 17	Iv	ePNE eSNE F	20 21 31.0	55.0		Pasadena: 37°25'N 118°35'W	
30	Aug. 17	Id	eSNE F	21 07 21 08	22.0		See list, p. 91 See list, p. 91	
31	Aug. 22	Id	iPNE iSNE F	08 15 27.4	26.2		San Mateo County	

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
32	Aug. 23	IIId	ePN iN iSN F	17 34	07.5 09.5 19.0			See list, p. 91
33	Aug. 25	Id	iPNE iSNE F	17 53	29.0 34.7			See list, p. 91
34	Aug. 25	Iv	ePNE eNE eSN eSE F	22 32	33 38 09 10			See list, p. 91
35	Aug. 27	Id	ePNE iSNE F	07 10	46 50			See list, p. 91
36	Aug. 27	IIId	iPNE iE iN iE iE iNE F	09 13	05.9 38.6 51.8 52.5 18.3 34.4			See list, p. 91 7 aftershocks between 01:00 P.S.T. to 05:00 P.S.T.
37	Aug. 27	IIId	iPN iPE F	09 24	06.3 06.8			Aftershock
38	Aug. 29	Iv	ePN eNE eSNE eN F	03 29	07 17.0 43.0 51.0			See list, p. 91
39	Aug. 29	Iu	ePNE eN eE eN eE F	10 35	09.0 25.0 26 01 01			USCGS: 14°S 166°E
40	Aug. 29	Iv	ePNE eSNE F	19 40	30.0 47.0			See list, p. 91
41	Aug. 30	Id	eSE eSN F	06 46	44.5 45.5			San Mateo County

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.	s.		
42	Sept. 1	Iu	eLNE F	23 44.5 58.5			Wellington: 46.7°S 165.7°E
43	Sept. 4	Iv	ePNE iN eE eNE F	11 14 48.3 54.0 54.5 15 23.0 11 18			Pasadena: 37°20'N 118°07'W
44	Sept. 5	Iu	eSE eLE F	22 12 13 29 45 22 47			J.S.A.: 5°S 154°E Harris County
45	Sept. 7	Iv	ePNE eSNE F	00 37 08.0 26.0 00 39			See list, p. 91
46	Sept. 7	Iv	ePNE eNE eSNE iNE F	11 24 53.5 55.5 05 25 11.7 11 27 18.6			Pasadena: 35°50'N 120°45'W See list, p. 91
47	Sept. 9	Id	ePN iNE iSNE F	11 15 35.6 42.0 44.2 11 16	0.7		See list, p. 91
48	Sept. 11	Iv	ePNE eSE eSN F	23 50 06.5 59 19.2 23 51 19.9			Aftershock See list, p. 91
49	Sept. 16	Iv	ePE eNE eSNE F	23 55 58.0 56 00.0 15 58 14.0			See list, p. 91 See list, p. 91
50	Sept. 18	IIId	iPNE iSNE F	07 05 31.3 36.1 07 06			See list, p. 91
51	Sept. 20	IIId	iPNE iSNE F	22 45 39.2 41.2 22 47	1.4		See list, p. 91
52	Sept. 21	Id	eN eE eSNE F	00 28 52.0 54.0 29 00.0 00 30			See list, p. 91

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h. m. s.	s.			
	1945							
53	Sept. 24	Id	ePE F	15 10 15 12	43.0			See list, p. 91
54	Sept. 24	Id	ePNE eN eE iSE iSN F	19 52 19 54	29.5 33.1 34.1 37.0 37.4			
55	Sept. 25	Iv	ePN ePE iNE iSNE eNE iN eE F	19 30 31 19 32	42.5 43.0 48.8 54.8 59.0 00.8 01.0			Napa County
56	Sept. 27	IIId	ePE ePE eE eE iE iE F	05 25 05 27	01.5 02.0 03.5 09.8 13.2 15.1	0.7		See list, p. 91
57	Sept. 27	Id	ePE iE F	05 30 05 31	07.0 18.0			Aftershock
58	Sept. 28	Id	eE iE iE F	05 09 10 05 11	56.3 58.8 12.0			
59	Sept. 28	IIv	iPNE eE eN eNE iNE eE eN eN eE iNE iNE eE eSNE eLN eLE F	22 25 26 22 46	34.4 41.0 41.5 45.0 47.7 51.5 53.5 11.0 12.0 20.9 31.4 36.2 40.5 47 57	1.4	c	See list, p. 91

PALO ALTO

PALO ALTO

THE BRANNER STATION, STANFORD UNIVERSITY
PALO ALTO, CALIFORNIA

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Latitude and Longitude:

$$\phi = 37^{\circ} 25' 11'' \text{ N.}$$

$$\lambda = 122^{\circ} 10' 18'' \text{ W.}$$

Time -- All determinations are reduced to Universal Time.

Altitude -- 83 meters (272 feet) above mean sea level.

CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	V	T ₀	ε
Wood-Anderson	E	3000	1	15
	N	3000	1	15

PALO ALTO

No.	Date	Char-acter	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.	s.		
1	July 1	Id	ePNE iPNE eSE eSN iN F	21 43 00 29 02 21 21 44	04.0 04.9 20.0 22.0 24.3		Monterey County
2	July 3	Id	iSN iSE F	11 14 11 15	19.0 19.3		
3	July 4	Id	ePN iPNE eSNE F	12 08 12 09 12 10	21.0 21.6 30.0		See list, p. 91 S-P = 1.8 sec.
4	July 5	Iv	eE eN eE iNE F	22 04 17 05 22 07	53.0 54 22.4 30.0		S-P = 3.5 sec. See list, p. 91
5	July 7	IIv	iPN iPNE iSE eSN F	23 54 00 00 55 23 57	49.1 49.7 02.1 02.5		See list, p. 91 Sanoma County
6	July 8	Id	ePNE eSNE iN eN F	20 56 20 58	29 35 42 46		See list, p. 91 Pasadena: 37°10'N 118°04'W
7	July 9	Id	ePNE iSNE F	01 58 02 00	21.2 28		Aftershock
8	July 9	Id	ePNE eNE iN eE F	20 22 20 23	47 49 52 53		Sanoma County
9	July 11	IIv	ePN eE iNE iSE iNE F	16 13 03 18 03 18 05 23 16 17	26.5 27.0 29.0 51.5 53.3		Pasadena: 35°40'N 121°15'W See list, p. 91 S-P = 2.0 sec. See list, p. 91

PALO ALTO

No.	Date	Char-acter	Phase	Time (U.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1945								
10	July 14	Id	ePNE iSNE F	00	37	23 38 39		See list, p. 91	
11	July 14	Iv	ePE ePN eN iN eE iNE F	02	21	38 39 01 08 09 11 24		See list, p. 91	
12	July 17	IIId	iPNE F	19	17.5	18		S-P = 1.4 sec.	
13	July 21	IIId	iPNE F	02	54	55		S-P = 3.5 sec.	
14	July 23	Id	ePE ePN eSNE F	17	14	02.5 03.0 11.5 15		See list, p. 91	
15	July 29	Iv	ePNE iSNE F	00	37	23.0 37.5 39		Sonoma County	
16	July 29	Id	iPNE eSNE F	13	50	28.5 35.5 52		See list, p. 91	
17	July 30	Iv	ePN eE iNE eE iN F	06	07	08 11 12.9 46.5 51.0 10		Pasadena: 37°10'N 118°04'W	
18	July 31	IIv	iPE iN iN iE eN F	03	24	57.1 57.3 25 09.8 19.5 20.5 03 28		Sonoma County	
19	Aug. 1	IIId	iPNE F	03	46	30 ca 48		See list, p. 91 S-P = 2.0 sec.	
20	Aug. 1	Id	ePE eN iSNE F	05	23	26.5 47.2 30.3 05 25		See list, p. 91	

PALO ALTO

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
21	Aug. 1	Ir	ePN eN eN F	20 49 01 52 55.7 21 06	03.5 48.0 55.7 06.0			USCGS: 54.2°N 133.1°W
22	Aug. 4	IIId	iPNE iSNE F	01 01 01 03 01 03	32.6 35.4 37.4			See list, p. 91
23	Aug. 7	Id	iPNE iNE iSN F	01 04 01 04 01 04 01 05	06.6 07.1 10.6 05.0			Aftershock
24	Aug. 7	Id	iPNE iSNE iNE F	04 38 04 38 04 38 04 40	33.8 38.8 49.8 40.0			See list, p. 91
25	Aug. 7	Id	iPNE iSNE F	23 37 23 37 23 38	08.5 13.5 08.5			See list, p. 91
26	Aug. 13	Iv	iPNE iSNE F	19 03 19 03 19 05	36.0 50.7 36.0			See list, p. 91
27	Aug. 15	IIv	ePE ePNE eN eE F	17 57 03 58 03 58 03 58 18 03	55 11.5 42.5 43.0 03.0			Pasadena: 33.1°N 116.1°W
28	Aug. 17	Iv	ePNE eN eE F	20 22 20 22 20 22 20 25	02 09 11 02.0			Pasadena: 37°25'N 118°35'W
29	Aug. 17	Id	iPNE eSNE F	21 07 21 07 21 09	03.0 09.0 03.0			See list, p. 91
30	Aug. 22	Id	iPN F	08 18 08 19	07.2 07.2	ca		See list, p. 91 S-P = 2.0 sec.
31	Aug. 23	IIv	ePNE iPNE iNE iSNE F	17 34 17 34 17 34 17 34 17 36	13.4 13.8 25.6 28.1 36.0			See list, p. 91

PALO ALTO

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
32	Aug. 24	Id	ePNE F	00 59	56.5 01 01			S-P = 3.5 sec.
33	Aug. 25	Id	iSNE F	01 37	20.0 01 38			Foreshock
34	Aug. 25	IIId	iPNE iSNE F	01 53	25.1 27.6 01 55			See list, p. 91
35	Aug. 25	Id	ePNE iSNE F	03 04	57.5 05 00.0 03 06			Aftershock
36	Aug. 27	IIId	iPNE iSNE eSE F	07 10	46.8 50.9 51.5 07 12			See list, p. 91
37	Aug. 27	IIId	iPNE iN F	09 13	12.4 16.0 09 23			See list, p. 91
38	Aug. 27	Id	ePN iNE iE F	09 24	13.8 14.3 17.8 09 25			Aftershock
39	Aug. 29	Iv	ePNE eSN eSE F	03 29	08.0 44.0 44.5 03 32			
40	Aug. 29	Iu	ePNE ePNE iE eN eN eLE eLN F	10 35	07.5 11.0 27.0 36 59 44 11 00 30 45 11 30			USCGS: 14°S 166°E
41	Aug. 29	IIv	ePNE iSN eSE F	19 40	27.0 41.5 42.5 19 43			See list, p. 91
42	Aug. 30	Id	iPNE iSNE F	06 46	30.2 32.2 06 47			San Mateo County

PALO ALTO

No.	Date	Char-acter	Phase	Time (U.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1945								
43	Sept. 1	Iu	ePSN ePSE eLN eLE eN eE F	23	12	08 18 33.6 34.0 44.9 45.2 00 00		Wellington: 46.7°S 165.7°E See list, p. 91	
44	Sept. 4	Iv	ePNE iNE eSNE F	11	14	54.5 03.7 34.0 11 18		Pasadena: 37°20'N 118°07'W	
45	Sept. 5	Iu	eSE eLE F	22	12	15.0 29.6 23 00		J.S.A.: 5°S 154°E	
46	Sept. 7	Iv	ePN iNE eSNE F	00	37	05.3 05.8 17.0 00 39		See list, p. 91 See list, p. 91	
47	Sept. 7	Iv	ePE ePN iPN ePE eNE iE iN iSNE F	11	24	55.6 58 59.7 25 00.0 03.3 21.6 22.3 25.2 11 28		Pasadena: 35°50'N 120°45'W See list, p. 91 S*? Yuba County	
48	Sept. 9	Id	ePE ePN eNE eN iNE iSE eNE F	11	15	40.5 41.0 42.0 48.3 50.9 51.7 53.9 11 17		See list, p. 91 See list, p. 91 Depressed on the later S arrivals is a wave with a period of about 5 seconds	
49	Sept. 11	Id	ePNE eE iSN iE F	23	50	01.1 01.7 08.5 10.4 23 52		See list, p. 91 Aftershock	
50	Sept. 16	Iv	iPN iPE eN eE iSN eSE F	23	55	54.5 54.9 56 04.0 04.5 09.2 09.5 23 58		See list, p. 91	

PALO ALTO

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
51	Sept. 18	Id	iSNE F	07 05 07 07	45.3			See list, p. 91
52	Sept. 20	IIId	iPNE iN iSNE F	22 45 22 48	43.5 47.5 49.0			See list, p. 91
53	Sept. 21	Id	ePN iPE eE iSN iSE F	00 28 00 30	43.7 44.2 57.0 59.0			See list, p. 91
54	Sept. 24	Id	eE eN iSN F	13 13 13 14	05.0 06.5 16.0			Long period waves
55	Sept. 24	Id	ePNE iSNE F	15 10 15 12	44.0 55.0			See list, p. 91
56	Sept. 24	Id	ePNE iSN iSE F	19 52 19 54	34.5 46.0 46.5			See list, p. 91
57	Sept. 25	Iv	iPNE eSNE iN F	19 30 19 41	39.0 51.2 54.1			Napa County
58	Sept. 27	IIId	iPNE iNE iE iN iE iNE iNE iNE F	05 25 05 28	05.5 08.5 12.5 14.3 19.5 20.5 21.5 39.5			See list, p. 91 Superposed on the later S arrivals is a wave with a period of about 5 seconds
59	Sept. 27	Id	ePE ePN iNE eE iN F	05 30 05 32	10.5 11.0 13.3 24.7 27.3			Aftershock

SAN FRANCISCO

SAN FRANCISCO

THE SAN FRANCISCO STATION, UNIVERSITY OF SAN FRANCISCO
SAN FRANCISCO, CALIFORNIA

CONSTANTS

CONSTANTS OF THE STATION

Latitude and Longitude:

$$\phi = 37^{\circ} 46' 14'' \text{ N.}$$

$$\lambda = 122^{\circ} 27' 12'' \text{ W.}$$

Time -- All determinations are reduced to Universal Time.

Altitude -- 100 meters (328 feet) above mean sea level.

CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	V	T ₀	ε
Wood-Anderson	E 15° S	1500	1	15
	N	3000	1	15

SAN FRANCISCO

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
1	July 2	Id	iPN iE iNE iN F	23 24	45.3 45.8 48.8 50.3			Marin County
2	July 7	Iv	ePE ePN eSN iSE iSNE F	23 54	57.0 57.5 13.0 13.7 15.1			See list, p. 91
3	July 8	Id	iPE iSNE eE F	20 56	28.3 35.1 46.3			See list, p. 91
4	July 9	Id	eN eE iE eN eE F	01 58	20 20.4 24.4 26.5 27.3			Aftershock
5	July 9	Iv	ePNE eSE eSN F	20 22	52.5 06.0 07.0			
6	July 11	Iv	eE eN iSE iSNE F	16 13	35.0 35.5 03.3 04.5			Pasadena: 35°40'N 121°15'W
7	July 29	Iv	eN eSN F	00 37	20.0 30.0			Sonoma County
8	July 29	Id	ePN eN F	13 50	35.0 44.5			See list, p. 91
9	Aug. 1	Iv	iPN iSN F	03 24	50 ca 01.5			Sonoma County
10	Aug. 7	Id	eSNE iSNE F	04 38	48.0 50.2			See list, p. 91

SAN FRANCISCO

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
11	Aug. 7	Id	e \bar{S} NE iE iN F	23 37	22.3 24.6 24.8			See list, p. 91
12	Aug. 13	Id	i \bar{S} NE F	19 03 19 06	42.0			See list, p. 91
13	Aug. 15	Iv	ePN eN eSNE F	17 58 59	11.5 53.5			Pasadena: 33.1°N 116.1°W
14	Aug. 17	Iv	ePNE eSN F	20 22 20 24	06 49.0			Pasadena: 37°25'N 118°35'W
15	Aug. 17	Id	iPN ePE iSNE F	21 06 07	59.3 00.0 03.2			See list, p. 91
16	Aug. 23	Iv	ePN ePE eSNE iSNE F	17 34	18.5 20.5 35.0 38.8			See list, p. 91
17	Aug. 25	Id	ePNE iSNE F	01 53 01 55	31.8 39.2			See list, p. 91
18	Aug. 27	Id	i \bar{S} NE iSNE F	07 10 07 12	58.5 51.0			See list, p. 91
19	Aug. 27	IIId	e \bar{P} N iPNE iSN iSE F	09 13 09 23	17.4 17.8 27.7 28.7			See list, p. 91
20	Aug. 27	Id	ePNE eSNE F	09 24 09 25	20.9 29.5			Aftershock
21	Aug. 29	Iu	ePN ePE eLN eLE F	10 35 11 00 11 12	10 15 01.0			USCGS: 14°S 166°E

SAN FRANCISCO

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
22	Aug. 29	Iv	ePNE iSNE F	19 40 19 42	23.1 34.6			See list, p. 91
23	Sept. 7	Id	ePN eSN iSE iN F	00 37 00 38	00.5 12.5 12.8 13.1			See list, p. 91
24	Sept. 7	Iv	eN eNE eNE eSN eSE eNE F	11 25 11 27	12.0 13.0 14.8 36.0 37.0 44.5			Pasadena: 35°50'N 120°45'W
25	Sept. 11	IIId	ePNE iSNE F	23 49 23 51	52.8 56.8			See list, p. 91
26	Sept. 16	Id	ePN iSNE F	23 55 23 57	51.0 56 02.5			See list, p. 91
27	Sept. 20	Id	ePE iSE F	22 45 22 47	49.5 58.8			See list, p. 91
28	Sept. 21	Id	eE iSE F	00 28 00 30	43.0 51.4			See list, p. 91
29	Sept. 24	Id	eSE F	15 11 15 12	05.3			See list, p. 91
30	Sept. 24	Id	eSE F	19 52 19 54	56.0			See list, p. 91
31	Sept. 25	Iv	ePE iSE F	19 30 19 32	34.9 46.7			Napa County
32	Sept. 27	Iv	eE eSE eE F	05 25 05 27	17.4 25.0 30.0			See list, p. 91

SAN FRANCISCO

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
33	Sept. 28	Iv	ePN	22	25 26.0	17		See list, p. 91
			ePE		26.5			
			eNE		30.5			
			eE		38.5			
			eE		42.5			
			eN		44.5			
			eNE		59.0			
			eN	21	18.5			
			eE		20.5			
			eN		21.0			
			eLNE		23			
F	22	42						

CONSTANTS OF THE STATION

Latitude and Longitude

$\phi = 37^{\circ} 34' 15''$
 $\lambda = 122^{\circ} 16' 15''$

Time — All determinations are reduced to Universal Time.

Altitude — 17 meters (55 feet) above mean sea level.

CONSTANTS OF THE SEISMOGRAPH

Apparatus	Component	V	T_0	μ
Reschi-Corri 25 kg	E	12	13	5
	N	12	8	6

The station is operated by Dr. Joseph Bognuda, of Pasadena, in cooperation with the University of California.

FERNDALE

No.	Date	Observer	Phase	Time (U.T.)	Period	Trans action	Remarks
FERNDALE							
1	Aug. 8	Dr	all	20 52.5			USCGS: 54.2°N 133.1°W
THE FERNDALE STATION FERNDALE, CALIFORNIA							
2	Aug. 15	Dr	all	16 01 22			Pasadena: 31.1°N 116.1°W
			all	16 10			
3	Aug. 27	Dr	all	10 35 31			USCGS: 34°S 166°E
			all	10 45 50			
			all	10 46 00			
			all	11 00.5			
			all	01 00			
			F	12 00			

CONSTANTS

CONSTANTS OF THE STATION

Latitude and Longitude:

$$\phi = 40^{\circ} 34' N.$$

$$\lambda = 124^{\circ} 16' W.$$

Time -- All determinations are reduced to Universal Time.

Altitude -- 17 meters (55 feet) above mean sea level.

CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	V	T ₀	ε
Boschi-Omori 25 kg	E	12	11	5
	N	12	8	6

The station is operated by Mr. Joseph Bognuda, of Ferndale, in cooperation with the University of California.

FERNDALE

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(U.T.)	s.		
	1945			h. m. s.	s.		
1	Aug. 2	Ir	eSN F	20 51.5 21 10			USCGS: 54.2°N 133.1°W
2	Aug. 15	Iv	eE eNE F	18 01 22 42 18 10			Pasadena: 31.1°N 116.1°W
3	Aug. 29	Iu	ePNE iNE eN eE eLN eLE F	10 35 14 34 45 50 46 00 11 00.5 01 00 12 00			USCGS: 14°S 166°E
4	Sept. 1	Iu	eE eE eE F	23 04.6 13.3 32.0 00 20			Wellington: 46.7°S 165.7°E
5	Sept. 5	Iu	eSE eLE F	22 12.0 29.0 23 45			J.S.A.: 5°S 154°E
6	Sept. 28	IIId	ePNE iE iN iN iE F	22 24 41 57 58 25 08 23 22 55	7 8 8 10 12		See list, p. 91 ?

FRESNO

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(U.T.)			
				h. m. s.	s.		
1	1945 July 7	Id	ePN eN iSN eN eN F	23 54 56.0 55 02.0 08.5 56 40 57 15 23 59			See list, p. 91
2	July 9	Iu	eN eN F	16 51 13 35 16 54			USCGS: 1°N 77°W
3	July 9	Id	ePN iSN eN F	20 23 16 25.0 25 05 20 27			Pasadena: 37°25'N 117°20'W
4	July 11	Ir	ePN eN eSN F	00 36.2 38 51 41.2 00 45			Pasadena: 33.1°N 116.1°W
5	July 11	Iv	ePN iN iSN eN eN F	16 13 24.8 28.2 41.2 15 34 16 11 16 18			Pasadena: 35°40'N 121°15'W Pasadena: 37°25'N 118°35'W
6	July 14	Iv	ePN eSN F	02 21 42 22 12.5 02 24			See list, p. 91
7	July 15	Ir	ePN ePPN eSN eLN F	05 47 29.5 48 06.0 50 45.5 57 34 06 08			USCGS: 17°N 145°E See list, p. 91
8	July 25	Iv	ePN eSN eN F	00 08 45.5 09 20.0 29.0 00 10			
9	July 28	Iv	iSN F	23 50 31.5 23 51			USCGS: 18°S 166°E
10	July 29	Iv	eN F	00 38.0 00 39			Sonoma County
11	July 30	Iv	ePN ePN eN eSN eN F	06 06 36.0 37.1 45.0 52 07 27.0 06 09			Pasadena: 37°10'N 118°04'W

FRESNO

No.	Date	Char-acter	Phase	Time (U.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1945								
12	Aug. 2	Ir	ePN eN eN eSN F	20	49	18 14 47 19 08		USCGS: 54.2°N 133.1°W	
13	Aug. 10	Ir	ePN eN eN F	11	27.2	28 34 29.8 11 45		USCGS: 15.4°N 88.8°W	
14	Aug. 11	Ir	eN F	00	42	12 00 45		USCGS: 4.4°N 82.1°W	
15	Aug. 11	Iv	ePN eSN iN F	11	15	39 16 04 08.5 11 17		Pasadena: 37°25'N 117°20'W	
16	Aug. 15	IIv	iPN iN iSN F	17	57	43.0 50.5 49.0 18 14		Pasadena: 33.1°N 116.1°W	
17	Aug. 17	IIv	iPN iSN F	20	21	36.5 51.0 20 26		Pasadena: 37°25'N 118°35'W	
18	Aug. 23	Iv	ePN eSN F	17	34	18 34.0 17 39		See list, p. 91	
19	Aug. 25	Iv	iPN eSN F	22	32	27.6 33 07 22 34			
20	Aug. 27	IIv	ePN iN iSN F	09	13	32.7 34.3 53.8 09 25		See list, p. 91	
21	Aug. 29	Iv	ePN eSN F	03	29	31 30 16.0 03 32			
22	Aug. 29	Iu	ePN eN F	10	35	17 11 01 05 11 28		USCGS: 14°S 166°E	
23	Aug. 29	Iv	eN eSN F	19	41	10 35 19 43		See list, p. 91	

FRESNO

No.	Date	Char-acter	Phase	Time (U.T.)		Trace motion	Remarks
				h. m. s.	s.		
	1945						
24	Sept. 1	Iu	eN ePSN eLN F	23 02 53 12 12 37.9 24 10			Wellington: 46.7°S 165.7°E
25	Sept. 4	IIv	iPN iSN F	11 14 27.2 34.0 11 19			Pasadena: 37°20'N 118°07'W
26	Sept. 7	IIv	iPN iN iSN F	11 24 40.8 51.8 54.0 11 29			Pasadena: 35°50'N 120°45'W
27	Sept. 24	Iv	ePN eN F	15 11 04.0 17.0 15 12			See list, p. 91
28	Sept. 25	Iv	eN eSN F	19 31 37 32 02 19 33			Napa County
29	Sept. 27	IIv	iPN eN eN iN iN iSN iN iN eN F	05 25 07.7 10.0 11.0 17.2 21.9 23.0 23.5 29.7 27 21 05 29	5.0		See list, p. 91 Valley waves
30	Sept. 27	Iv	iSN F	05 30 28.5 05 31			Aftershock
31	Sept. 28	IIv	ePN eN eN eSN iN iN F	22 25 56 26 00.5 12 27 22 29.4 51.4 22 50			See list, p. 91

MINERAL

THE MINERAL STATION
MINERAL, CALIFORNIA

See list, p. 91
No time correction available

CONSTANTS

CONSTANTS OF THE STATION

Latitude and Longitude:

$$\begin{aligned} \phi &= 40^{\circ} 21' \text{ N.} \\ \lambda &= 121^{\circ} 35' \text{ W.} \end{aligned}$$

Time -- All determinations are reduced to Universal Time.

Altitude -- 1495 meters (4906 feet) above mean sea level.

CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	V	T ₀	ε
Wood-Anderson	E	3000	1	15

MINERAL

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
1	Aug. 29	Id	iPE	16	36	22.0		
			iSE			24.0		
			F	16	37			
2	Sept. 28	Iv	iPE	22	25	07 ca	c	See list, p. 91 No time correction avail- able
			iE			09 ca		
			iSE			55 ca		
			F	22	50			

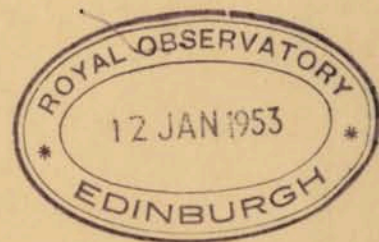
Bulletin of the Seismographic Stations

Volume 15, No. 4, pp. 135-179

EARTHQUAKES IN NORTHERN CALIFORNIA
AND
THE REGISTRATION OF EARTHQUAKES
AT
BERKELEY—MOUNT HAMILTON—PALO ALTO
SAN FRANCISCO—FERNDALE—FRESNO—MINERAL

From October 1, 1945, to December 31, 1945

BY
CHARLES E. HERRICK
AND
CAROLYN H. PENDERY



UNIVERSITY OF CALIFORNIA PRESS
BERKELEY AND LOS ANGELES
1951

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BERKELEY AND LOS ANGELES,

CALIFORNIA

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EARTHQUAKE INTENSITY SCALE

CONTENTS

Intensities are given by Roman numerals in the list of California earthquakes on the following page, when sufficient information on the effects of the quake is available or the modified Mercalli scale which is used in the United States.

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EARTHQUAKE INTENSITY SCALE

EARTHQUAKE SWARM IN LASSEN VOLCANIC NATIONAL PARK

Intensities are given by Roman numerals in the list of California earthquakes on the following page, when sufficient information on the effects of the quake is available. Criteria of the Modified Mercalli Scale which are used to rate the intensity are:

Intensity

- II Felt by a few people only. Duration or direction not appreciable.
- III Duration or direction appreciable.
- IV Rattling of doors and windows; swinging of suspended objects.
- V Disturbance of movable objects; plaster cracked.
- VI Overthrow of movable objects; cracking of chimneys and other brickwork.
- VII Fall of some chimneys; some damage to buildings.

EARTHQUAKE MAGNITUDE SCALE

Richter magnitudes given in the list of epicenters on the next page are found from the Wood-Anderson amplitudes, using the nomogram by Nordquist, "Bulletin of the Seismological Society of America," 32: 164.

Latitude and longitude are given for each epicenter in the following list. Only those earthquakes are given for which epicenters were located. The letter represents the excellence with which the epicenter has been located, a indicating excellent, b good, c fair, d poor.

EARTHQUAKE SWARM IN LASSEN VOLCANIC NATIONAL PARK*

1945 - Pacific Standard Time

Beginning in the last quarter of 1945, swarms of small earthquakes were recorded at the Mineral Seismograph Station in Lassen Volcanic National Park. These earthquakes were mostly of the tiny local type which, on an average, are normally recorded perhaps once a week. During the first three months of the swarm period 642 shocks were recorded. Of the swarm, only 4 were reported felt. The reports came from park headquarters at Mineral and were for the shocks of October 15, 21^h 11^m (P.S.T.); October 18, 21^h 07^m; October 25, 08^h 43^m; December 4, 13^h 08^m.

Large sinusoidal surface waves on all records.

Intensity VI at Mineral.

*Earthquake Swarm in Lassen Volcanic National Park, by Harry B.

Robinson and Perry Byerly, Bulletin of the Seismological Society of America, Vol. 38, No. 3, pp. 179-193, July, 1948.

Number of additional shocks not listed which were recorded from the vicinity of Mineral during the last three months of 1945:

<u>Month</u>	<u>Additional shocks</u>
October	123
November	118
December	192

EARTHQUAKES IN NORTHERN CALIFORNIA

1945 - Pacific Standard Time

<u>No.</u>	<u>Date</u>	<u>Origin Time</u>	<u>Richter Magnitude</u>	<u>Latitude North</u>	<u>Longitude West</u>	<u>Quality</u>
1	Oct. 1	09-26-17	3.4	38° 16'	122° 11'	b
		Depth about 10 km.				
2	11	12-37-40	3.2	38° 29'	121° 55'	b
3	16	14-12-28	2.5	37° 27'	121° 48'	c
4	16	16-08-15	2.4	37° 12'	122° 12'	b
5	22	11-26-06	4.3	40.7°	124.7°	d
6	Nov. 3	07-50-22	4.2	36° 38'	121° 15'	c
		Intensity V 7 1/2 miles south of Hollister.				
7	3	16-46-34	3.3	36° 23'	121° 17'	c
8	7	16-45-19	3.4	38° 32'	122° 06'	c
		Large sinusoidal surface waves on all records.				
9	8	12-09-17	4.2	37° 10'	121° 31'	c
		Intensity VI at Madrone.				
10	17	17-12-08	3.7	37° 38'	121° 49'	b
11	21	14-56-10	3.5	38° 25'	122° 47'	b
		Intensity III at Santa Rosa.				
12	25	14-40-49	3.5	37° 15'	121° 34'	c
13	Dec. 2	20-30-21	2.9	37° 53'	122° 12'	a
		Intensity III at Berkeley, Oakland and San Francisco.				
14	5	23-00-07	2.3	37° 29'	121° 49'	c
15	13	19-17-24	2.5	37° 09'	121° 54'	c
		Intensity IV at Holy City.				

SIGNS AND NOTATIONS EMPLOYED

 1. Character of the Earthquake --

	I. Perceptible	II. Moderately Strong	III. Strong
d (terras motus domesticus)		Local shock (origin less than 100 kilometers distant).	
v (terras motus vicinus)		Near shock (origin from 100 to 1,000 kilometers distant).	
r (terras motus remota)		Shock (origin from 1,000 to 5,000 kilometers distant).	
a (terras motus/ultimus)		Very distant shock or teleseism (origin more than 5,000 kilometers distant).	

THE REGISTRATION OF EARTHQUAKES

 2. Nature of the Motion --

i (impetus)	Sudden beginning of the motion.
e (escruido)	Gradual beginning of the motion.

BERKELEY
 THE BERKELEY STATION, UNIVERSITY OF CALIFORNIA
 BERKELEY, CALIFORNIA

CONSTANTS
 SYMBOLS AND NOTATIONS EMPLOYED

1. Character of the Earthquake --

I. Perceptible II. Moderately Strong III. Strong

- | | |
|-----------------------------|--|
| d (terrae motus domesticus) | Local shock (origin less than 100 kilometers distant). |
| v (terrae motus vicinus) | Near shock (origin from 100 to 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 or teleseism (origin more than 5,000 kilometers distant). |

2. Nature of the Motion --

- | | |
|-------------|----------------------------------|
| i (impetus) | Sudden beginning of the motion. |
| e (emersio) | Gradual beginning of the motion. |

Apparatus	Component	ν	τ	ν_1	μ^2	A_1 (cm)	l (cm)
Galibain	E	112	12	11.5	0.00	115	11.5
	N	122	13	12.1	0.03	119	11.9
	S	119	12	11.7	0.01	121	11.9
Wood-Anderson	E	3000		0.9		15	
	N	3000		0.9		15	
Berloff	E						
	S						

The letter G before a reading designates that the seismogram was from the Galibain instrument; W, Wood-Anderson; S, Bosch-Chari; A, Wood-Anderson; U, Berloff.

BERKELEY

145.

BERKELEY

 THE BERKELEY STATION, UNIVERSITY OF CALIFORNIA
 BERKELEY, CALIFORNIA

CONSTANTS

CONSTANTS OF THE STATION

Latitude and Longitude:

$$\begin{aligned} \phi &= 37^{\circ} 52' 13'' \text{ N.} \\ \lambda &= 122^{\circ} 15' 16'' \text{ W.} \end{aligned}$$

Time -- All determinations are reduced to Universal Time.

Altitude -- 81 meters (266 feet) above mean sea level.

CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	V		T ₀		ε	
Bosch-Omori 100 kg. ...	E	45		12		10	
	N	45		12		10	
Wiechert 80 kg.	Z	44		4		5	
Wood-Anderson	E	3000		0.9		15	
	N	3000		0.9		15	
Galitzin		K	T	T ₁	μ ²	A ₁ (cm)	l(cm)
	E	112	12	11.8	0.00	115	11.3
	N	122	12	12.4	0.03	119	11.2
	Z	109	12	11.9	0.01	131	14.9
Benioff.....	Z	V		Coupled Period		ε	
				0.7		5	

The letter G before a reading designates that the seismogram was from the Galitzin instrument; W, Wiechert; B, Bosch-Omori; A, Wood-Anderson; H, Benioff.

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.	s.		
1	Oct. 1	IIId	ePN iPNZ iSN iNE F	A 17 26 25.0 AH 25.6 A 30.2 A 32.7 17 28		d	See list, p. 140.
2	Oct. 5	Id	iPZ F	H 01 23 46.2 01 24.5			
3	Oct. 5	Id	iPZ eSNE F	H 20 01 45 A 55.0 20 02.5	1.2		
4	Oct. 6	Id	iPZ F	H 00 55 48 00 57			
5	Oct. 7	Id	ePN iPZ iSNE F	A 00 29 35 H 35.5 A 45.5 00 30.5			
6	Oct. 7	Ir	iPNEZ iNZ eZ iSE eSZ eSN iE eLNE iME iMN F	GH 13 30 52.2 AH 31 03.0 H 33 02.2 G 36 51.5 G 56 G 58 G 37 14.5 G 42.7 G 46 02 G 12 14 50		d	USCGS: 12.3°N 89.0°W PPP?
7	Oct. 9	Iu	iPZ ePNE F	H 11 08 00.0 A 01.0 11 08.5		c	Japan?
8	Oct. 9	Iu	iPZ iNE eSE iSNE eSZ eN eSSE eZ eLNZ F	GH 14 47 08.5 G 10.0 G 55 46.0 G 48.5 G 50.0 G 15 02 55 G 03 01.0 G 15 G 05.1 16 47	1.5	d	USCGS: 43°N 150°E Passama: Near Apia.
9	Oct. 11	Id	ePZ ePE eSN F	H 00 18 27.5 A 30 A 34.6 00 19			USCGS: 59.0°N 140.0°W Felt at Sitka, Alaska

BERKELEY

No.	Date	Character	Phase	Time (U.T.) h. m. s.	Period s.	Trace motion	Remarks
	1945						
19	Oct. 15	Id	iPZ eSE eN eN F	H 21 25 09.4 A 13.9 A 15.9 A 25.1 21 26		c	USGS: 56.1°N 167°E
20	Oct. 16	Id	iPZ iSNE iNE F	H 22 12 39.1 A 48.3 A 49.8 22 14			See list, p. 140.
21	Oct. 16	Id	iPZ eSN F	H 00 00 09.3 A 11.6 00 01			USGS: 11°N 37°E
22	Oct. 17	Id	iPZ eSE eSN F	H 00 08 26.9 A 37.0 A 37.5 00 09		c	See list, p. 140. h = 100 km.
23	Oct. 17	Id	ePZ eSNE F	H 20 04 09.6 A 21.1 20 05			
24	Oct. 20	Ir	iPNEZ eZ eNEZ i(S)EZ iN F	GH 00 35 49.0 H 36 16.5 G 18.5 G 38 11.5 G 05 13.5 01 30		c	Deep
25	Oct. 21	Iu?	ePZ eE eN eE eN eLNE F	H 03 34 35 G 45 38 G 53 G 00 51 45 G 52 01 G 04 05.2 04 50			Deep County
26	Oct. 22	IV	iPNEZ eN eN eSNE iNE eNE iE eNE eN eE iN F	AH 19 26 56.5 A 00 27 12.5 A 25 A 30.5 A 32.0 A 11 00 36.0 A 38.3 A 40.5 A 47.0 A 47.5 A 28 09.1 19 30			See list, p. 140 P?
	Oct. 29	Ir	iNE eNE iE eNE eN eE iN F	A 10 57 30.5 A 32.0 A 11 00 36.0 A 38.3 A 40.5 A 47.0 A 47.5 A 28 09.1 19 30	0.7 1.5 1.5		USGS: 52°N 131°W

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.) h. m. s.	Period s.	Trace motion	Remarks
	1945						
27	Oct. 25	IIu	iPZ ePZ iNEZ iE iSN iSE eZ eE F	G 15 07 43.5 G 14.0 G 50.0 G 08 49.0 G 15 10.0 G 12.0 G 17 44 G 18.9 17 07		c c	USCGS: 56.1°N 162°E
28	Oct. 26	Iu	eE eE eLE F	G 14 27 42.0 G 36 57 G 42.2 14 32			Moscow: 41°N 37°E
29	Oct. 27	Ir	iPZ iNEZ ipPNEZ iPcPZ iEZ iSNE iNE iN iScSNEZ eEZ eNZ F	GH 11 31 20.0 AGH 23.1 GH 32 05.6 GH 33 45.0 G 36 07.5 AG 44.5 G 38 06.5 G 39 43.5 G 41 17.5 G 43 44 G 47 05 12 30		c d	USCGS: 15°N 91°W h = 100 km.
30	Oct. 28	Iu	iPZ epPZ ipPZ eZ eIZ F	GH 05 49 52.1 H 50 37.3 GH 38.3 G 06 19 03 G 21 07 06 37		c d c	Deep
31	Oct. 29	Id	iPZ iN iSN iE iN iN F	H 00 46 57.6 A 47 03.3 A 06.7 A 07.6 A 13.1 A 20.9 00 48			Napa County with sharp cut off.
32	Oct. 29	Ir	iPZ ePNE eSEZ eSN eLNZ eLE F	H 10 57 52.3 A 52.5 AH 11 00 51.5 A 53.5 AH 02.6 A 03.1 11 43		c	USCGS: 52°N 131°W Aftershock
33	Oct. 29	Id	iPZ iNE F	H 11 51 28.7 A 29.8 11 52			

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
34	Nov. 3	Iv	iPEZ eNE iSNE iNE iSNE iNE F	AH 15 50 A A 51 A A A 15 53	47.0 54.0 06.4 08.5 11.0 16.7			See list, p. 140.
35	Nov. 3	Ir	ePNEZ ePNZ ipPNEZ iNEZ eSN eSE eN eLZ eLN eLNZ F	G 22 14 AH G 15 GA 16 G 19 G 19 G 21 G 22 G G 23 18	57.0 58.0 12.0 00.5 45.5 48.5 19 23 25 49	d		USCGS: 59.1°N 151.0°W. PPP? G?
36	Nov. 4	Iv	ePZ eSE eE iN iN F	H 00 47 A A A A 00 48	02 31.5 32.5 32.7 35.7			See list, p. 140. Aftershock of Nov. 23, 1945.
37	Nov. 7	Id	iPZ eN iSEZ F	H 00 32 A AH 00 33	14.2 24.0 24.9			See list, p. 140.
38	Nov. 8	Id	iPNEZ iSNE iN iNE iN iNE F	AH 00 45 A A A A A 00 47	18.8 28.3 29.6 33.5 34.3 42.8			See list, p. 140. Sharp arrival with sharp cut off.
39	Nov. 8	IIId	iPNEZ iNE iSNE iNE F	AH 20 09 A A A 20 12	34.5 35.2 46.8 47.5			See list, p. 140.
40	Nov. 12	Id	iPZ eSNEZ F	H 16 06 AH 16 08	38.6 51.2			See list, p. 140. Aftershock

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
41	Nov. 13	Id	iPNEZ iN iSE iNE iNE eE F	AH 01 12 A A A A A 01 16	16.1 18.3 21.1 24.1 29.6 07.6			See list, p. 140.
42	Nov. 16	Ir	ePZ eSZ eLEZ F	GH 18 07 G G 18 30	22.5 42.0 43.0	d		USCGS: 57.7°N 135.8°W USCGS: 57.7°N 135.8°W USCGS: 57.7°N 135.8°W
43	Nov. 16	Id	iPNZ eN eSE iSNE eN eE F	AH 19 24 A A A A A 19 26	31.6 37.5 40.5 41.7 47.3 51.3			
44	Nov. 17	Id	iPZ iSNE eE eN eN F	H 03 31 A A A A 03 33	32.1 39.6 40.1 46.0 49.0			Aftershock of Nov. 13, 1945.
45	Nov. 21	Id	iPZ iNE eSNE iNE F	H 22 56 A A A 22 57	23.6 25.4 33.0 34.4			See list, p. 140.
46	Nov. 23	Id	iPZ F	H 21 35 21 37	23.3			See list, p. 140.
47	Nov. 23	Id	iPZ F	H 23 51 23 53	45.1			
48	Nov. 25	Id	iPZ eZ iZ F	H 20 40 H H 20 41	12.1 13.3 16.7			Felt at Mineral
49	Nov. 25	Id	iPZ eSNE F	H 22 41 A 22 42	04.4 16.6			See list, p. 140.

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
58	Dec. 6	Id	ePZ eN F	H 07 00 A 07 01	18.0 29.5			See list, p. 140.
59	Dec. 8	IIu	iPE iZ iPPE iSKSE iSKKSN iSE iPPSE iN iZ eSSE eGN eGE iLE iIZ F	G 01 17 G G 20 G 27 G G 28 G 29 G G 30 G 34 G G G G 04 15	00.5 16.5 49.5 19.0 47.5 06.5 23.5 33.5 05.0 19.5 41.7 42.0 45.9 46.1	c	USCGS: 1°S 148°E USCGS: 10.2°N 81.7°W h = 100 km, ca.	
60	Dec. 8	Iv	eSN F	A 21 56 21 58	37.7			Pasadena: 38°09'N. 118°03'W.
61	Dec. 9	Ir	iPZ iPPE eSN iSE eLE eLN eZ F	G 20 52 G G G G 21 G G 22 44	48.0 05.5 31.5 35.5 03.3 04.3 06.7	c	USCGS: 15°N 92°W.	
62	Dec. 10	Id	iPZ eSNE F	H 00 51 A 00 52	01 03.8			USCGS: 8°S 148°E
63	Dec. 12	Id	iPZ eSN F	H 21 55 A 21 56	18.9 27			
64	Dec. 13	Id	iPZ eSN F	H 00 09 A 00 11	12.3 19.2			
65	Dec. 14	Id	iPNZ eN eSNE F	AH 03 17 A A 03 19	38.5 46.5 49.7			See list, p. 140.

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)		Trace motion	Remarks
				h. m. s.	s.		
	1945						
66	Dec. 20	IIu	ePZ ePPZ ePPE iSE eN iPPSE ePPSZ iN eSSNE eP'P'N eLNE eLrE eEZ eEZ eNZ F	G 04 12 06.0 G 17 09 G 16 G 23 42.5 G 24 00.5 G 26 01.0 G 10 G 27 01.0 G 30.4 G 37 54 G 41 47 G 43 50 G 44.9 G 45.9 G 48.0 06 54		c	Pasadena: Off Mindanao.
67	Dec. 23	Iu	iPZ iPPNE eNEZ eNE eSE eN eNE eZ eLNEZ F	GH 08 20 06.0 G 22 27.5 G 23 55 G 28 00 G 29 28 G 40 G 35 17.5 G 34 G 39.0 09 05		c	USCGS: 10.2°N 61.7°W h = 100 km. ca. PPP? SSS?
68	Dec. 25	Ir?	eZ eZ eN F	G 01 33 10 G 35 03 G 44.7 02 00			P?
69	Dec. 27	IIu	iPZ eSNEZ iSKSN iPPSE eN eZ isSE eSSN eGNE eN eLrZ iLrE MN F	G 04 54 12.5 G 05 04 37 G 05 13.5 G 07 20.0 G 25 G 33 G 11 25.0 G 27.0 G 18 43.0 G 21.7 G 23.2 G 23.4 G 27.4 07 29		c	USCGS: 6°S 148°E

BERKELEY

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(U.T.)			
				h. m. s.	s.		
70	Dec. 28	IIu	iPZ	G 18 01 55.0		c	USCGS: 6°S 151°E
			ePZ	H 57.0			
			eZ	H 03 04			
			eSE	A 12 23			
			eSN	G 28			
			ePSNE	G 14 18			
			ePPSN	G 15 13			
			eSSNE	G 19.2			
			ePSPSNE	G 21.2			
			eSSSNE	G 23.2			
			eGNE	G 25.7			
			eLE	G 27.0			
			eN	G 34.9			
			F	19 30			
71	Dec. 31	Id	iPZ	H 23 20 50.4			
			eSNE	A 54			
			F	23 21			

Time -- All determinations are reduced to Universal Time.
 Altitude -- 281.7 meters (4205 feet) above mean sea level.

Apparatus	Component	V	T ₀	ε
Wood-Andrews	E	3000	1	15
	N	3000	1	15

MOUNT HAMILTON

THE LICK OBSERVATORY STATION, UNIVERSITY OF CALIFORNIA
MOUNT HAMILTON, CALIFORNIA

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Latitude and longitude:

$$\phi = 37^{\circ} 20' 14'' \text{ N.}$$

$$\lambda = 121^{\circ} 38' 16'' \text{ W.}$$

Time -- All determinations are reduced to Universal Time.

Altitude -- 1281.7 meters (4205 feet) above mean sea level.

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Apparatus	Component	V	T ₀	ε
Wood-Anderson	E	3000	1	15
	N	3000	1	15

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h. m. s.	s.			
	1945							
1	Oct. 1	Iv	ePn1ONE eE eN iSNE F	17 26	35.0 36.2 36.7 53.2			See list, p. 140.
2	Oct. 4	Id	iSNE F	09 40 09 41	44.5			See list, p. 140.
3	Oct. 5	Id	eSE eSN F	20 02	09 11			See list, p. 140.
4	Oct. 5	Id	iPNE iSNE iNE F	20 07	51.4 53.7 54.7			
5	Oct. 5	Id	iPN iSN iN F	20 28	27.0 29.5 30.6			
6	Oct. 7	Ir	ePE ePN F	13 30	49.5 50.0			USCGS: 12.3°N 89.0°W.
7	Oct. 9	Iu	eNE eN eE F	14 47	15 37.0 38.0			USCGS: 43°N 150°E
8	Oct. 11	Iv	ePNE epPE epPN F	16 58	48 09.5 10.0			Pasadena: 17½°N 98½°W. h = 90 km.
9	Oct. 11	Iv	ePN ePE eSN iSNE eN eE eN eNE F	20 38	01.5 02 18.5 20.5 28.0 35.5 36.5 48.5			See list, p. 140.
10	Oct. 12	Id	ePNE iSNE F	00 06	20.5 26.6			

MT. HAMILTON

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(U.T.)			
	1945			h. m. s.	s.		
11	Oct. 12	Iv	iPN iNE iNE iSNE F	14 23 36.3 49.2 24 02.0 07.2			
12	Oct. 16	IId	iPNE iSNE iN F	22 12 31.0 33.6 38.3			See list, p. 140.
13	Oct. 17	Id	iPNE iSNE F	00 08 23.9 30.5			See list, p. 140.
14	Oct. 19	Id	iPNE iSNE F	10 13 54.7 57.3			Deep
15	Oct. 20	Ir	ePNE F	00 35 58 00 38			Wyo County
16	Oct. 21	Id	iSNE F	23 13 25.4			
17	Oct. 22	Iv	ePNE iNE iNE iNE eSNE iNE iNE iE iN iE F	19 27 07.3 12.5 18.5 26.0 50.8 54.0 59.5 28 02.5 03.0 21.0			See list, p. 140. P? S?
18	Oct. 25	Iu	eSNE eE eE eN eNE F	15 07 49 08 21.0 11 15.0 16 12 05			USCGS: 56.1°N 162°E A very distinct arrival
19	Oct. 25	Iv	ePNE iSE iSN F	15 23 21 38.7 40.4			See list, p. 140.

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.	s.		
20	Oct. 27	Ir	ePNE iNE eSN eSE	11 31 14.0 17.0 36 27 34			USCGS: 15°N 91°W. h = 100 km.
29	Nov. 12	IId	eN eE eScSNE F	14 37 09.0 37 41 12.5 11 42			Aftershock
30	Nov. 13	IId	ePNE iNE eSN eSE eN eE F	01 12 31.3 12.3 12.3 12.3 12.3 12.3 12.3			See list, p. 140.
21	Oct. 28	Id	eN eE eE eN F	00 03 57 04 00 08.0 01 15 08.5 00 05			
22	Oct. 28	Iu	epPE eNE F	05 50 39 43 05 53			USCGS: 57.7°N 135.0°W Deep
23	Oct. 29	Iv	eE eN eN eE iNE F	00 47 11 13 19 26 19.3 19.5 03 31 24.4 00 49			Napa County S? Aftershock of Nov. 12, 1945.
24	Nov. 3	IId	iPNE iN iSNE iSNE F	15 50 37.1 40.7 22 56 48.3 50.4 15 03			See list, p. 140.
25	Nov. 3	Ir	ePNE epPN F	22 15 05.0 28.5 22 17			USCGS: 59.1°N 151.0°W. See list, p. 140.
26	Nov. 4	Iv	ePNE iNE iN iE eSN iSE iNE F	00 46 53.7 54.5 47 00.0 05 01.0 09.8 22 35 10.4 12.0 00 57			See list, p. 140. USCGS: 28°N 140° h = 600 km. USCGS: 27°N 62°W A very distinct arrival
27	Nov. 8	Iv	ePNE eNE eN eE eSE eSN F	00 45 27.7 31.5 34.5 35.5 40.5 01 00 41.0 00 47			See list, p. 140.

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)		Trace motion	Remarks
				h. m. s.	s.		
	1945						
28	Nov. 8	IIId	iPNE iSNE F	20 09 20 12	21.8 24.8		See list, p. 140
29	Nov. 12	IIId	iPNE iSNE F	16 06 16 07	25.2 28.2		Aftershock
30	Nov. 13	IIId	iPNE iN iNE iSNE F	01 12 01 13 01 14 01 15	14.3 16.2 17.9 19.7		See list, p. 140. Felt at Mineral.
31	Nov. 16	Ir	ePNE F	18 07 18 37	30 37		USCGS: 57.7°N 135.8°W
32	Nov. 16	Iv	eE eN eN iNE F	19 24 19 25 19 26	45.0 47.5 55.5 58.3		See list, p. 140. USCGS: 6°S 151°E.
33	Nov. 17	IIId	iPNE eN iSNE F	03 31 03 41	27.1 31.0 32.9		Aftershock of Nov. 12, 1945.
34	Nov. 21	Iv	ePNE iNE ePNE iE F	22 56 23 06	35.0 36.0 38.0 41.4		See list, p. 140.
35	Nov. 25	IIId	iPNE iSNE F	22 40 22 42	51.5 53.6		See list, p. 140.
36	Nov. 26	Iu	iPNE F	05 24 05 25	23.1		USCGS: 28°S 180° h = 600 km.
37	Nov. 27	IIu	eP'NE ePPN eE eSKKSE eN ePPSN eSSSNE eNE eLE F	22 15 22 17 22 17 22 45 23 08 26 08 26 08 34 00 38 05 47 08 01 00	8 17.0 17.1 45 08 8 00		USCGS: 22°N 62°E BCIS: 25.0°N 62.2°E

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
38	Dec. 3	IIId	iPNE iSN F	04 19 27.2 28.7 04 20				
39	Dec. 3	Id	ePNE iSNE iNE F	04 30 34.5 45.0 46.0 04 32				See list, p. 140.
40	Dec. 4	Iv	ePNE eSNE F	21 08 27 09 04.5 21 11				Felt at Mineral.
41	Dec. 6	Id	iPNE iSNE F	07 00 11.4 14.7 07 01				See list, p. 140.
42	Dec. 14	Id	iPNE iSNE F	03 17 28.9 34.3 03 19				See list, p. 140.
43	Dec. 28	IIu	ePNE ePPNE eE eSNE eNE ePSE eGN eLrNE F	18 02 02 05 38 12.1 12.5 13 52 14.2 26.9 30.4 19 23				USCGS: 6°S 151°E.

PALO ALTO

PALO ALTO

THE BRANNER STATION, STANFORD UNIVERSITY
PALO ALTO, CALIFORNIA

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Latitude and longitude:

$$\phi = 37^{\circ} 25' 11'' \text{ N.}$$

$$\lambda = 122^{\circ} 10' 18'' \text{ W.}$$

Time -- All determinations are reduced to Universal Time.

Altitude -- 83 meters (272 feet) above mean sea level.

CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	V	T ₀	ε
Wood-Anderson	E	3000	1	15
	N	3000	1	15

PALO ALTO

No.	Date	Char-acter	Phase	Time (U.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1945								
1	Oct. 1	Id	ePE ePN iSNE iE iN F	17 26	34.0 34.5 45.8 46.9 47.7			See list, p. 140	
2	Oct. 3	IIId	iPNE iSNE F	01 06 01 07	24.8 26.3			B-P = 2.1 sec.	
3	Oct. 5	IIId	iPNE iNE iNE F	18 43 18 44	33.6 34.8 36.6			USCGS: 15°N 91°W h = 100 km.	
4	Oct. 7	Ir	ePE iPN F	13 30 13 36	52.5 53.3			USCGS: 12.3°N 89.0°W	
5	Oct. 9	Iu	ePE ePN eNE eSN eSE F	14 47 14 59	11.0 11.5 35 55 51 54			USCGS: 43°N 150°E	
6	Oct. 11	Iv	ePNE iSNE iSNE iE eE F	20 38 20 40	00.5 15.1 18.5 25.5 32.6	1.0		See list, p. 140 Sage County USCGS: 52°N 131°W	
7	Oct. 12	Id	iPNE iNE iNE F	00 06 00 07	14.7 17.4 18.3			See list, p. 140	
8	Oct. 16	Id	iPNE iSNE F	22 12 22 14	34.1 39.1			See list, p. 140	
9	Oct. 17	IIId	iPN iPNE iSNE F	00 08 00 10	18.5 18.8 21.6			See list, p. 140	
10	Oct. 20	Ir	ePN ePE eSNE eLNE F	00 35 00 50	59 36 00 38 28 40 17				

PALO ALTO

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
11	Oct. 22	Iv	ePNE iNE iE eN eE iSE iSN F	19 27	03.3 10.1 21.6 22.0 43.0 45.6 46.0			See list, p. 140 P?
12	Oct. 25	IIId	iPNE F	01 05 01 06	17			S-P = 2.1 sec.
13	Oct. 27	Ir	ePNE epPE epPN iSNE eScSNE F	11 31 32 36 41	18.5 03 04 41.0 15.0			USCGS: 15°N 91°W h = 100 km. See list, p. 140
14	Oct. 28	Iv	iPNE eE iSE iSN F	00 04 00 05	04.0 14.5 16.7 17.2			
15	Oct. 28	Iu	epPNE F	05 50 05 53	39.0			Deep Aftershock of Nov. 13, 1945
16	Oct. 29	Iv	iPNE iN iE F	00 47 00 49	05.9 20.4 21.6			Napa County See list, p. 140
17	Oct. 29	Ir	ePNE eSNE eNE F	10 58 11 01 11 20	05.0 08 02.4			USCGS: 52°N 131°W
18	Nov. 3	IIv	iPNE iSN iSE F	15 50 15 53	42.3 56.8 57.2			See list, p. 140 USCGS: 28°N 134°W h = 600 km
19	Nov. 3	Ir	ePN ePE eSNE eLNE F	22 15 22 19 22 25	00 01 46 21.5			USCGS: 59.1°N 151.0°W USCGS: 22°N 52°E USCGS: 25.0°N 67.2°E

PALO ALTO

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
20	Nov. 4	Iv	ePN ePE iNE iSNE F	00 46 57.5 58.0 47 01.6 18.9 00 49			See list, p. 140 S?	
21	Nov. 5	IIId	iPNE	20 23 26.4			S-P = 1.5 sec.	
22	Nov. 8	Iv	iPNE iSNE F	00 45 26.7 41.6 00 47			See list, p. 140	
23	Nov. 8	IIId	iPNE F	20 09 28.9 20 13			See list, p. 140	
24	Nov. 13	IIId	iPNE iNE iSNE F	01 12 15.0 17.0 19.5 01 14			See list, p. 140	
25	Nov. 16	Id	ePN ePE iSE eSN F	19 24 28.0 28.5 43.0 44.0 19 26				
26	Nov. 17	Id	ePN eNE iSNE F	03 31 29.0 30.0 34.7 03 32			Aftershock of Nov. 13, 1945	
27	Nov. 21	Id	iPNE iN eN iNE F	22 56 32.2 34.8 45.5 47.0 22 58			See list, p. 140	
28	Nov. 25	Id	iPNE eSNE F	22 40 59.1 41 05.5 22 43			See list, p. 140	
29	Nov. 26	Iu	iPNE eE eNE F	05 24 22.4 30.8 33 30 05 36			USCGS: 28°S 180° h = 600 km	
30	Nov. 27	IIu	ePPNE eN ePPSNE eE eSSSN F	22 16 59 22 34 26 34 28 45 33.9 23 45		50	USCGS: 22°N 62°E BCIS: 25.0°N 62.2°E	

PALO ALTO

No.	Date	Char-acter	Phase	Time (U.T.)		Trace motion	Remarks
				h. m. s.	s.		
	1945						
31	Dec. 1	IIId	iPNE iSNE F	22 17 22 19	44.3 45.6		
32	Dec. 3	Id	ePNE eN F	04 19 04 20.5	30.0 36.5		
33	Dec. 3	Id	ePNE iSNE F	04 30 04 32	29.7 35.4		See list, p. 140
34	Dec. 6	Id	iSNE F	07 00 07 01	18.2		See list, p. 140
35	Dec. 14	Id	iPNE iSNE F	03 17 03 19	30.6 35.5		See list, p. 140
36	Dec. 28	IIu	eSN ePSE eGN F	18 12 14 05 19 30	35 26.5		USCGS: 6°S 151°E

SAN FRANCISCO

No.	Date	Class-	Phase	Time	True	Remarks
		action		(h. m. s.)	motion	

SAN FRANCISCO

THE SAN FRANCISCO STATION, UNIVERSITY OF SAN FRANCISCO
SAN FRANCISCO, CALIFORNIA

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Latitude and longitude:

$$\phi = 37^{\circ} 46' 14'' \text{ N.}$$

$$\lambda = 122^{\circ} 27' 12'' \text{ W.}$$

Time -- All determinations are reduced to Universal Time.

Altitude -- 100 meters (328 feet) above mean sea level.

CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	V	T ₀	ε
Wood-Anderson	E 15° S	1500	1	15
	N	3000	1	15

SAN FRANCISCO

No.	Date	Char-acter	Phase	Time (U.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1945								
1	Oct. 1	IId	ePN ePE iSNE iNE iNE F	17	26	28.0 28.5 35.3 36.8 38.1			See list, p. 140
2	Oct. 4	Id	ePNE eSN F	13	23	15.8 17.8			See list, p. 140
3	Oct. 7	I	eSNE F	00	29	49.0			See list, p. 140
4	Oct. 7	Ir	ePE F	13	30	54			USCGS: 12.3°N 89.0°W
5	Oct. 8	I	eE F	18	37	39			See list, p. 140
6	Oct. 9	Iu	ePE F	14	47	08			USCGS: 43°N 150°E
7	Oct. 11	Id	ePNE eN eE eN eE iSNE iE iN iE F	20	37	56.5 38 00.8 01.5 05.0 06.2 08.0 11.5 12.0 16.8			See list, p. 140
8	Oct. 12	Id	ePE ePN eSN eSE iNE F	00	52	54.0 55.0 59 53 00.2 06.4			USCGS: 15°N 171°W h = 100 km.
9	Oct. 13	Id	eN F	17	48	07			Napa County
10	Oct. 13	Id	iPE ePN iSNE F	22	05	02.9 06 15.9			USCGS: 52°N 131°W

SAN FRANCISCO

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
11	Oct. 15	Id	ePE eN eN iE F	21 25 13 17 24.0 24.5 21 26				See list, p. 140
12	Oct. 16	Id	ePE ePN iE iN F	22 12 41.0 41.5 49.1 51.4 22 13				See list, p. 140 See list, p. 140
13	Oct. 17	Id	eSE F	00 08 35.0 00 09				See list, p. 140
14	Oct. 19	Id	iSNE F	17 47 30.1 17 48				
15	Oct. 22	Iv	ePN ePE eNE eN eE	19 26 58 58.5 27 07.5 24.5 27.0				See list, p. 140 See list, p. 140 F?
	Nov. 13	Id	eSN iSE iN iNE eE eN eE eN eNE F	01 17 30.0 31.8 36.8 38.5 47.0 47.5 53.5 54.0 28 16 19 30				See list, p. 140 S?
16	Oct. 27	Ir	ePN ePE eSNE eScSN F	11 31 21 24 36 42 41 19 11 42				USCGS: 15°N 91°W h = 100 km.
	Nov. 23	Id						See list, p. 140
17	Oct. 29	Id	ePE eN iE iN F	00 47 00 02 11.0 11.8 00 48				Napa County See list, p. 140
18	Oct. 29	I	ePN ePE eSN eSE F	10 57 54 55 11 01 01 08 11 15				USCGS: 52°N 131°W h = 600 km

SAN FRANCISCO

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
19	Nov. 3	Iv	ePN eE iSNE iE iSNE F	15 50 51 57.1 51 06.7 08.0 10.5 15 53	s.		See list, p. 140	
20	Nov. 4	Iv	eE eNE iNE F	00 46 49 47 24.0 30.5 00 48			See list, p. 140 No time correction available S? face waves well recorded USCGS: 6°S 151°E	
21	Nov. 8	Id	iPE eNE iSNE iE iE F	00 45 21.9 29.0 33.1 43.8 52.8 00 47			See list, p. 140	
22	Nov. 8	IIv	iPNE iSNE F	20 09 34.4 48.2 20 12			See list, p. 140	
23	Nov. 13	Id	ePNE iNE iN iSNE F	01 12 17.0 21.3 23.8 25.7 01 14			See list, p. 140	
24	Nov. 16	Id	ePE iSNE iE F	19 24 35 46.5 55.8 19 26				
25	Nov. 17	Id	eSNE F	03 31 38.5 03 33			Aftershock of Nov. 13, 1945	
26	Nov. 21	Id	ePN iPNE iSNE F	22 56 24.0 25.5 36.1 22 58			See list, p. 140	
27	Nov. 25	Iv	iPNE eNE iSE iNE F	22 41 06.3 16.5 18.5 19.9 22 42			See list, p. 140	
28	Nov. 25	Iu	ePNE F	05 24.3 05 26			USCGS: 28°S 180° h = 600 km	

SAN FRANCISCO

No.	Date	Char-acter	Phase	Time (U.T.)		Trace motion	Remarks
				h. m. s.	s.		
	1945						
29	Nov. 27	Iu	ePPNE e(S)N ePPSNE eLE eN eNE F	22 17 20 23 21 26 44 51.1 54.6 57.0 23 45			USCGS: 22°N 62°E BCIS: 25.0°N 62.2°E
30	Nov. 28	Iu		18 25 ca			No time correction available Surface waves well recorded USCGS: 6°S 151°E

CONSTANTS

CONSTANTS OF THE STATION

Latitude and longitude:

$\phi = 37^{\circ} 36' N.$
 $\lambda = 122^{\circ} 16' W.$

Time — All determinations are reduced to Universal Time.

Altitude — 7 meters (55 feet) above mean sea level.

CONSTANTS OF THE SEISMOGRAPH

Apparatus	Component	V	γ_0	E
Bechdel-Cord 5 kg.	S	12	11	5
	N	12	8	6

The station is operated by Mr. Joseph Dagnuda, of Purdiale,
in cooperation with the University of California.

No.	Date	Char-acter	Phase	Time (U.T.)	Period	Trac-section	Remarks
				FERNDALE			
1	Oct. 28	IIn	17E 15 10E 7	THE FERNDALE STATION FERNDALE, CALIFORNIA			See list, p. 110
2	Oct. 29	Ir	17E 15 10E 7	-----			USCIB: 52°N 131°W
3	Nov. 27	IIn	17E 15 10E 7	CONSTANTS			USCIB: 52°N 131°W BCIB: 55.0°N 62.2°E

CONSTANTS
CONSTANTS OF THE STATION

Latitude and longitude:

$$\phi = 40^{\circ} 34' N.$$

$$\lambda = 124^{\circ} 16' W.$$

Time -- All determinations are reduced to Universal Time.

Altitude -- 17 meters (55 feet) above mean sea level.

CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	V	T ₀	ε
Bosch-Omori 25 kg.	E	12	11	5
	N	12	8	6

The station is operated by Mr. Joseph Bognuda, of Ferndale, in cooperation with the University of California.

FERNDALE

No.	Date	Char-acter	Phase	Time (U.T.)		Trace motion	Remarks
				h. m. s.	s.		
	1945						
1	Oct. 22	IIId	iPE iE iSE F	19 26 08.0 11.0 13.0 19 29			See list, p. 140
2	Oct. 29	Ir	ePE eSE F	10 57 22 59 45 11 30			USCGS: 52°N 131°W
3	Nov. 27	IIu	ePPNE eSKKSNE ePSE ePSN eE eNE eSKPP'E eLNE eN eNE F	22 17.0 23.0 26.0 26.3 33.3 38.0 39 32 43 51 54.0 00 45			USCGS: 22°N 62°E BCIS: 25.0°N 62.2°E
4	Dec. 28	IIu	ePE eE eN eSNE ePSE eSSE eN eE eGNE eLE eLN eME F	18 00.5 04.5 05.0 12 40 14.0 19.0 21.9 23.5 25.8 28.7 29.0 40.0 19 30			USCGS: 6°S 151°E

FRESNO

No.	Date	Char-acter	Phase	Time (U.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1945								
1	Oct. 7	Ir	ePN eN F	13	30	34 57.5 35			USCGS: 12.3°N 89.0°W
2	Oct. 9	Iu	ePN eN eN eN eSN F	14	47	24.5 46 48 06 54 55.0 56 16 15 00			USCGS: 43°N 150°E
3	Oct. 11	Ir	ePN F	16	58	37 17 04			Pasadena: 17½°N 98½°W h = 90 km
4	Oct. 22	Iv	ePN eSN eN eN F	19	27	30 28 33.0 40.5 54.0 19 32			See list, p. 140
5	Oct. 27	Ir	ePN epPN eN eN eN eScSN eN eN F	11	31	01 25.0 36 06 37 06.0 21 38 28 41 03 42 08 46 04 11 50			USCGS: 15°N 91°W h = 100 km
6	Oct. 28	Iu	epPN F	05	50	47 05 53			Deep
7	Oct. 29	Ir	ePN eSN F	10	58	16.0 11 01 05 11 20			USCGS: 52°N 131°W
8	Nov. 3	IIv	ePN iN iSN eN eN eN eN F	15	50	44 45.8 59.3 52 17.5 29.5 37.8 53 05 15 55	4.5		See list, p. 140 P
9	Nov. 3	Ir	ePN epPN eN eN F	22	15	18 32.5 16 28 18 08 22 27			USCGS: 59.1°N 151.0°W PPP?

FRESNO

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
10	Nov. 4	Iv	iSN iN F	00 47	14.0 15.5			See list, p. 140 A very clear arrival
11	Nov. 8	Iv	eN eN eN iN F	00 46	04 10 29.5 45.1			See list, p. 140 S?
12	Nov. 8	IIv	ePN iN iSN iN eN eN F	20 09	42.0 45.0 59.3 10 01.8 11 36 12 19	2 3		See list, p. 140 "Valley waves"
13	Nov. 16	Ir	ePN eN F	18 07	42.0 09 10.5 18 20			USCGS: 57.7°N 135.8°W
14	Nov. 25	Ir	ePN eN eN F	19 15	00 21 29 19 21			
15	Nov. 25	Iv	eSN F	22 41	35.5 22 43			See list, p. 140
16	Nov. 26	Iu	ePN eN eN eN eN F	05 24	28.0 25 15 26 36 28 55 33 52.0 05 40			USCGS: 23°S 180° h = 600 km
17	Nov. 27	Iu	ePPN eN e(S)N eN eN eN eSSSN eLN F	22 17	55 21 08 23 41 24 05 27 44 33 06 35.5 55.5 23 30	50		USCGS: 22°N 62°E BCIS: 25.0°N 62.2°E
18	Dec. 8	Iv	iPN eSN F	21 55	30.0 53.5 21 57			Pasadena: 38°09'N 118°03'W

FRESNO

No.	Date	Char-acter	Phase	Time (U.T.)			Trace motion	Remarks
				h.	m.	s.		
	1945							
19	Dec. 28	Iu	ePN	18	02	08		USCGS: 6°S 151°E
			eN		04	59		
			ePPN		06	19		
			eN		08	29		
			eN		13	04		SKS?
			eSN		13	34		
			eGN		27	.2		
			eL _r N		31	.6		
			F	19	21			

COMMENTS
 CONSTANTS OF THE STATION
 Latitude and longitude
 = 36° 21' N,
 = 121° 15' W.
 Time — All determinations are reduced to Universal Time.
 Altitude — 3105 meters (10006 feet) above mean sea level.
 CONSTANTS OF THE SEISMOGRAPH
 Apparatus
 Component
 V
 T₀
 L
 Wood-ward
 3000
 1
 15

No.	Date	Char-acter	Phase	Time (U.T.)	Period	Trace notation	Remarks										
MINERAL																	
1	Oct. 7	Ic	III				WOOD: 12.3°N 89.0°W										
2	Oct. 9	Ic	III				WOOD: 13°N 130°E										
3	Oct. 16	IIIa	III				Intensity III at Mineral										
CONSTANTS																	
CONSTANTS OF THE STATION																	
5	Oct.			Latitude and longitude:			Intensity III at Mineral										
				$\phi = 40^{\circ} 21' N.$													
				$\lambda = 121^{\circ} 35' W.$													
6	Oct. 22	IIIa	III				See list, p. 110										
Time -- All determinations are reduced to Universal Time.																	
Altitude -- 1495 meters (4906 feet) above mean sea level.																	
7	Oct. 25	IIIa	III				Intensity IV at Mineral										
CONSTANTS OF THE SEISMOGRAPHS																	
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 45%;">Apparatus</th> <th style="width: 15%;">Component</th> <th style="width: 10%;">V</th> <th style="width: 10%;">T₀</th> <th style="width: 10%;">ε</th> </tr> </thead> <tbody> <tr> <td>Wood-Anderson</td> <td>E</td> <td>3000</td> <td>1</td> <td>15</td> </tr> </tbody> </table>								Apparatus	Component	V	T ₀	ε	Wood-Anderson	E	3000	1	15
Apparatus	Component	V	T ₀	ε													
Wood-Anderson	E	3000	1	15													
10	Oct. 28	Ic	III				Deep										
11	Oct. 29	Ic	III				WOOD: 52°N 131°W										
12	Nov. 3	Ic	III				WOOD: 51.1°N 151.0°W										

MINERAL

No.	Date	Character	Phase	Time (U.T.)	Period	Trace motion	Remarks
	1945			h. m. s.	s.		
1	Oct. 7	Ir	ePE F	13 31 01 13 34			USCGS: 12.3°N 89.0°W
2	Oct. 9	Iu	ePE eE F	14 47 05 18 14 51			USCGS: 43°N 150°E
3	Oct. 16	IIId	iPE iSE F	05 10 51.8 54.8 05 12			Intensity III at Mineral
4	Oct. 16	IIId	iPE iSE F	05 51 49.6 52.6 05 53			USCGS: 23°N 180° h = 600 km.
5	Oct. 19	IIId	iPE iSE F	05 07 05.4 07.8 05 08			Intensity III at Mineral
6	Oct. 22	IIv	iPE iE iE iE F	19 26 43.8 45.7 27 06.0 10.0 19 30			See list, p. 140. S?
7	Oct. 25	IIId	iPE iSE F	16 44 09.6 12.2 16 47			Intensity IV at Mineral
8	Oct. 25	IIId	iPE iSE F	16 51 29.2 31.3 16 53			
9	Oct. 27	Ir	ePE eSE eE eE F	11 31 28.0 36 55 37 18 38 11 39.9 11 45	1		USCGS: 14°N 91°W h = 100 km
10	Oct. 28	Iu	epPE F	05 50 45.0 05 53			Deep
11	Oct. 29	Ir	ePE eSE F	10 57 35.0 11 00.4 11 30			USCGS: 52°N 131°W
12	Nov. 3	Ir	ePE epPE eSE F	22 14 42.5 55.5 19.5 22 24			USCGS: 51.1°N 151.0°W h = 3.0 sec. h = 3.0 sec.

MINERAL

No.	Date	Char-acter	Phase	Time (U.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1945							
13	Nov. 8	Iv	ePE eE F	20 10	14.0 13.5			See list, p. 140
				20 12				
14	Nov. 16	Ir	ePE eE F	18 06	59.5 10.9			USCGS: 57.7°N 135.8°W
				18 20				
15	Nov. 17	IIId	iPE iSE F	03 10	16.7 24.6			
				03 11				
16	Nov. 26	Iu	ePE F	05 24	26.5			USCGS: 23°S 180° h = 600 km.
				05 26				
17	Nov. 27	IIId	iPE iSE F	11 21	47.5 50.7			
				11 23				
18	Nov. 28	IIId	iPE iSE F	02 54	20.8 23.1			
				02 55				
19	Nov. 27	IIu	ePPE ePPSE eE eLE eE F	22 16	44 26 14 32 41 48 16 54			USCGS: 22°N 62°E BCIS: 25.0°N 62.2°E
				23 45				
20	Nov. 28	IIId	iPE iSE F	08 59	55.2 57.2			
				09 01				
21	Dec. 2	IIId	iPE iSE F	04 55	04.9 07.0			
				04 56				
22	Dec. 4	IIId	iPE F	21 07	38.1			Felt at Mineral
				21 10				
23	Dec. 4	IIId	iPE	21 26				
24	Dec. 5	IIId	iPE iE iSE F	05 29	05.4 07.2 08.2			
				05 30				
25	Dec. 5	IIId	iPE	10 51				S-P = 3.0 secs.
26	Dec. 5	IIId	iPE	10 54				S-P = 3.0 secs.

MINERAL

No.	Date	Char-acter	Phase	Time (U.T.)		Trace motion	Remarks
				h. m. s.	s.		
	1945						
27	Dec. 6	IId	iPE	03	54		S-P = 3.0 secs.
28	Dec. 6	IId	iPE	06	54		
			iSE		47.6		
			F	06	55		
					51.6		
29	Dec. 6	IId	iPE	06	56		S-P = 3.0 secs.
30	Dec. 6	IId	iPE	07	28		S-P = 3.0 secs.
31	Dec. 6	IId	iPE	09	18		S-P = 2.8 secs.
32	Dec. 20	IId	iPE	07	24		S-P = 3.0 secs.