

## INSTRUMENTS—Two Milne-Shaw

No. AND DATE	PHASE	TIME	PERIOD	AMPLITUDE			Δ	REMARKS
				A N μ	A E μ	A Z μ		
January 1930.		h. m. s.	s.	μ	μ	μ		
5th	e i eL F	1-31-19 1-40-45 1-53-19 3-00						Readings are from NS instrument unless otherwise noted. Small amp.
14th	e L F	21-51-29 21-52 22-03						Small.
14th	eE iE iE LE LE F	22-25-30 22-29-22 22-34-26 22-47 23-07 23-57	20 15					More marked on EW component.
16th.	iE eN eN iLN iE LE	0-33-26 0-33-27 0-39-24 0-40-31 0-41 0-43	14 11					In Pacific near Los Angeles. Trailers lost in second shock from St. vicinity.
16th	iLN F	0-50-31 1-15	15					Second shock from same vicinity as previous.
17th.	i iS? eL L F	17-04-12 17-08-41 17-15 17-21-22 18-03						Small amplitude.
18th	e e i L L F	7-25-09 7-33-50 7-40-46 7-55 7-59-54 8-48	30					Small amp.
20th	e eL F	7-43-24 8-09 8-57						Minor disturbances on: 5th, (2); 7th; 12th; 13th (2); 15th; 17th; 21st (2); 25th and 28th.
21st.	e L F	3-57-29 3-59-48 4-18	11					
FEBRUARY.								
1st	e i L	19-10-11 19-15-13 19-21-23	15					F 20h 06m.
2nd.	iPNE eSN PS SRL eL M F	15-06-25 15-14-44 15-15-11 15-19-51 15-25-44 15-31-22 16-54	18				6767	
9th	i e L	1-15-38 1-25-12 1-26-12						F 1h 54m
12th	e L F	6-47-39 7-26 9-04						

Time: Mean Greenwich, MIDNIGHT TO MIDNIGHT

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				A N	A E	A Z		
		<small>h. m. s.</small>	<small>s.</small>	<small>μ</small>	<small>μ</small>	<small>μ</small>		
FEBRUARY 1930. (continued)								
14th	eP	18-49-34						(O-18h38m10s) Destructive Crete. Felt in Athens
	iSNE	18-59-15						
	L	19-13-07						
	M	19-18-38					8044	
	F	19-59						
14th	i	21-07-45						
	L	21-37-30						
	iLE	21-38-30	15					
	F	23-26						
26th.	eP?	2-35-06						Felt in California.
	eS	2-40-38						
	L	2-45-15						
	iLE	2-45-30	10					
	ME	2-48-09	6					
	F	3-35						
Other minor quakes recorded, but phases indistinct as follows: 3rd; 7th; 13th; 9th; 23rd (2); 24th (2); 26th (3); 27th (2); 28th (2).								
Wm. G. Carroll.								



Time: Mean Greenwich, MIDNIGHT TO MIDNIGHT

INSTRUMENTS—Two Milne-Shaw

Period 12 seconds  
Damping 20-1

Magnification 150  
REMARKS

NO. AND DATE	PHASE	TIME h. m. s.	PERIOD s.	AMPLITUDE			Δ	REMARKS
				A <sub>N</sub> μ	A <sub>E</sub> μ	A <sub>Z</sub> μ		
March 1930								
1st	e	23-47-21						NS record.
	i	23-48-34						
	e	23-55-21						
	L	23-59-45						
	F	0-24						
6th	iN	16-11-16						Early phases missed when changing paper, abt. 15-52
	eE	16-15-09						
	LN	16-28-26	15					
	LE	16-37-15	19					
	LE	16-51-15	15					
	LN	16-54-30	14					
	F	16-50						
8th	iPN	3-52-21						Reported from Panama
	iPN	3-53-22						
	iSE	3-57-28						
	iSN	3-57-30						
	LN	4-01-45	22			3578		
	MN	4-06-37	15					
	F	5-15						
10th	eE	16-47-25						
	iE	16-51-08						
	eE	16-59-12						
	F	17-33						
26th	eN	7-31-22						Winds and microseism effect EW.
	iE	7-34-16						
	iN	7-34-18						
	iN	7-35-03						
	eN	7-47-15						
	iN	7-47-30						
	iN	7-52-26						
	iN	7-57-30						
	iN	8-04						
	LN	8-09-45						
	LN	8-16-45						
	F	10-00						
30th	e	8-44-39						Phases small and indefinite.
	i	8-51-05						
	i	8-54-12						
	i	9-00-05						
	L	9-16-30						
	F	11-07						
30th	iE	15-42-30						L waves of small amplitude.
	eE	15-53-30						
	LE?	16-25						
	F	17-30						
Minor disturbances On the following days:								
1st at 1h 30m; 2nd at 0h 47m; 3rd at 11h-31m; 10th at 15h 21m								
13th at 8h 48m; 15th at 6h 15m; 20th at 13h 35m; 29th at 6h 40m								
30th at 1h 17m; 30th at 15h 01m; 31st at 13h 11m.								
Wm. G. Carroll.								

Time: Mean Greenwich, MIDNIGHT TO MIDNIGHT

INSTRUMENTS—Two Milne-Shaw

NO. AND DATE	PHASE	TIME	PERIOD	AMPLITUDE			Δ	REMARKS
				A <sub>N</sub>	A <sub>E</sub>	A <sub>Z</sub>		
		h. m. s.	s.	μ	μ	μ		
April 1930.								
16th	ePNE	14-36-36						
	eSN	14-40-44						
	eSE	14-40-50						
	eLE	14-43-06					2644	
	LE	14-49-21	9					
	F	15-58						
21st.	eE	12-08-15						
	eE	12-09-12						
	iZ	12-19-40						
	iE	12-25-21						South Atlantic.
	LE	12-41-00						
	ME	12-46-30						
	F	15-00						
23rd	PE	22-01-22						
	iSE	22-11-08						
	SR1E	22-16-35						
	LE	22-27					8344	Kuriles. Cut-off on NS component out of order.
	LE	22-33-07						
	F	24-12						
26th	O	16-18-18						
	iN?	16-28-07						P on EW blurred.
	iPN	16-28-44						
	iN	16-29						
	eE	16-29-15						NS shows three sharp impulses, the first at 16-28-07 a bit blurred, but otherwise similar to those at 28m44s and 29m.
	iSE	16-37-07						
	iSN	16-37-14					6967	
	iN	16-38-31						
	SR2E	16-44-03	18					
	SR2N	16-44-11	20					
	LN	16-48-13						
	MN	16-53-30						
	F	19-22						
28th	eNE	19-00						Cities near Vesuvius badly shaken. Much damage.
	LN	19-30-30						
	MN	19-39						
	F	20-36						
30th	eN	16-32						
	iN	16-39-30						
	LN	16-54-45						
	F	17-36						
<p>Minor disturbances on the following days: 2nd at 21h 02m; 4th at 9h 44m; 9th at 17h 47m; 10th at 15h 10m; 13th at 1h 04m; 13th at 3h 47m; 15th at 11h 37m; 15th; 21st at 11h; 23rd at 18h 47m; 24th at 1h 04m; 26th at 7h 03m; 26th at 15h 13m; 27th at 14h 46m; 27th at 8h 48m. Heavy microseismic storm on the 5th when small quake was reported.</p>								
<p>Wm. G. Carroll.</p>								



NO. AND DATE	PHASE	TIME	PERIOD	AMPLITUDE			Δ	REMARKS
				A <sub>N</sub>	A <sub>E</sub>	A <sub>Z</sub>		
1930								
May 1st	i	1-21-32	s.	μ	μ	μ		Phases from NS instrument unless otherwise mentioned
	e	1-28-29						
	L	1-45-52						
	F	2-48						
5th	eE	14-05-25						Operator changing film, some phases lost.
	eE	14-13-47						
	iSR1E	14-22-19						
	LE	14-44						
	F	18-20						
6th	O	22-34-49						
	ePNE	22-47-07						
	iSNE	22-57-27						
	iPS	22-58-12						
	iE	22-59-12						
	SR1	23-03-25						
	L	23-14-21						
	M	23-24-45						
	F	2-30						
8th	e	14-05-34						Operator changing film. Trailers mixed with next quake.
	eL	14-26-30						
8th	i	15-58-15						
	L	16-20						
	F	17-30						
8th	e	22-58-30						Small amp.
	i	23-03-37						
	L	23-05						
	F	23-24						
9th	e	14-15-17						Small amp.
	i	14-21-06						
10th	i	22-22-28						
	i	22-25-07						
	L	22-27-20						
	F	23-10						
14th	i	19-51-09						
	eLNE	19-07						
	i	19-09-29						
	F	21-15						
20th	e	8-20-28						
	eL?	8-41						
	F	9-20						
20th	O	11-15-02						
	ePN	11-25-29						
	ePE	11-25-31						
	iSEN	11-34						
	SR2	11-41-09						
	LNE	11-44-08						
	M	11-50-16						
	F	14-14						
31st.	e	10-34-23						
	L	10-36						
	F	11-50						
Minor quakes recorded on 2nd at 2h 25m; at 6h-31m; 9th at 7h-29m; 11th at 23h-25m; 12th at 22h-33m; 13th at 8h-38m; at 17h-28m; 16th at 2h-58m-40s; 17th at 0h 21m; 19th at 3-31; at 15h 30m; 21st at 12-25; at 22h 17m; 22nd at 17h; 23rd at 0h 38m; at 17h 01m; 26th at 22h 44m; 27th at 6h 15m; 29th at 8h 38m; 31st at 18h 22m.								

Wm. G. Carroll.

Time: Mean Greenwich, MIDNIGHT TO MIDNIGHT

Period 12 seconds  
Magnification 150  
Damping 20-1

INSTRUMENTS—Two Milne-Shaw

No. AND DATE	PHASE	TIME	PERIOD	AMPLITUDE			Δ	REMARKS
				A <sub>N</sub>	A <sub>E</sub>	A <sub>Z</sub>		
1930 JUNE		h. m. s.	s.	μ	μ	μ		
1st.	eN	13-38						
	eLN	13-54-30						
	F	16-30						Small amp.
5th	eE	12-02-13						
	eE	12-11-39						
	LE	12-36						
	F	14-33						
11th	eN	1-08-44						
	iN	1-10-22						
	eN	1-15-37						
	eE	1-20-22						
	iN	1-22-45						
	iLN	1-41-22	33					
	LN	1-50	22					
	F	3-40						
12th	O	9-46-14						P not recorded
	ePE	9-51-42						on NS. Felt at
	iSE	9-55-53						Grover, Wyoming.
	LE	9-58-22					2700	Well marked.
	ME	10-00-38						Two other shocks
	F	10-28						from same vic-
13th	O	0-53-49						ity shown at
	ePN	1-03-48						10-32-30 & 10-52
	iSN	1-11-50						Small amp.
	LN	1-22-44						
	MNE	1-26					6489	
	F	2-57						
18th	eN	16-00-35						
	LN?	16-07-61	9					F 16h 35m.
25th	O	10-17-37						
	PNE	10-27-36						
	SNE	10-35-38						
	SRN	10-40-22						
	LN	10-45-44						
	MN	10-50					6489	
	F	11-50						
25th	O	12-05-52						
	ePN?	12-11-51						
	iSN	12-16-24					3022	
	LN	12-19-15						
	F	13-20						
25th	O	21-21-35						
	iPN	21-31-33						
	PR2N	21-35-24						
	iSE	21-39-29					6456	
	SN	21-39-32						
	SR1N	21-44-08						P on EW component
	LN?	21-50						not clear.
	MN	21-55-14						
	F	23-55						
Minor records on the 4th at 10h 12m; 12th at 9h 23m 30s.; 15th at 8h 23m; 15th at 21h 17m; 18th at 3h 07m; 19th at 14h 27m; 23rd at 20h 04m 30s; 26th at 19h 22m 30s; 27th at 5h 14m 30s; 27th at 10h 22m; 28th at 7h 01m.								

Wm. G. Carroll,





No. AND DATE	PHASE	TIME	PERIOD	AMPLITUDE			Δ	REMARKS
				A N	A E	A Z		
		h. m. s.	s.	μ	μ	μ		
1930 JULY								
1st	O ePE eSE eSN LE ME F	1-08-58 1-16-13 1-21-46 1-21-40 1-26-32 1-30 3-24				3956	P quite weak. NS early phases not clear.	
2nd.	eN eN iN LN F	21-18-21 21-22-47 21-32-28 21-50 0-20					Probably S.W. Assam. Several shocks superposed.	
7th.	eN iN iLN F	13-39-15? 13-44-20? 13-47-15? 15-15					Magneto coils in time clock burned out. Time approx- imate.	
13th.	O ePE SE LE ME F	0-58-56 1-04-26 1-08-39 1-11-08 1-13-07 1-50 ca.				2722	Trailers mixed with next quake.	
13th	eN eN LN F	19-51-30 20-06-06 20-13-51 21-50					Small amplitude	
14th	O iPN iN iSN iLN MN F	22-40-13 22-46-52 22-51-19 22-51-55 22-54-59 22-59-52 2-20	18			3478	Well marked.	
22nd	O ePN iSN LN F	19-26-06 19-38-05 19-48-10 20-04-32 21-13				8733	Small amplitude.	
23rd	O ePN SN LN F	0-08-58 0-19-34 0-28-15 0-40 2-10				7144		
25th	eN eN iLN	21-46-00 21-48-45 21-50-56					eL 21-50-30 F 22-44	
27th	ePN SN eLN F	19-05-03 19-10-11 19-13-29 20-30				3556	O 18h 58m 18s iL 19-17-42	
29th	O PN iSN LN F	6-23-46 6-30-25 6-35-28 6-39-33 7-26				3478	iN 6-30-42 MN 6-42-13	
Minor disturbances recorded on the 5th (2); 7th; 13th; 17th; 20th (2)								
and 26th; 27th; 28th (3); and 30th.								
Wm. G. Carroll								

Time: Mean Greenwich, MIDNIGHT TO MIDNIGHT

Period 12 seconds

Magnification 150

Damping 20-1

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NO. AND DATE	PHASE	TIME	PERIOD	AMPLITUDE			Δ	REMARKS
				A <sub>N</sub>	A <sub>E</sub>	A <sub>Z</sub>		
		h. m. s.	s.	μ	μ	μ		
1930	AUGUST,							
2nd	eN iN LN F	16-31-08 16-40-23 16-54-30 19-00						
4th	iPN iN iSN F	5-12-56 5-15-57 5-19-29 6-05					4944	Irregular, sharp impulses, L quite indefinite Felt in Lima.
18th	ePN iPR <sub>1</sub> iN iPS iSR <sub>1</sub> L F	10-08-18 10-12-36 10-18-36 10-22-01 10-27-50 10-44-20? 13-10						
20th	eN eN L? F	21-12-39 21-22-30 22-02-15 23-24						
29th	ePN eSN LN F	8-34-27 8-40-00 8-43-36 Merged into following.					3956	
29th	eN F	9-10-09 9-54						
<p>Seismic movements of small amplitude recorded also on the                      1st at 7h 32m; 1st at 22h 18m; 3rd. at 2h 03m; 3rd at 23h 37m;                      4th at 16h-08m; 5th at 0h 23m; 10th at 20h 06m; 13th at 1h 18m;                      13th at 5h 34m; 13th at 22h 03m; 17th at 12h 53m; 19th at 5h 30m;                      19th at 23h 45m; 20th at 9h 22m; 21st at 20h 14m; 23rd at 11h 17m 22s;                      24th at 9h 57m 30s; 24th at 11h 50m 25s; 25th at 8h 26m 23s; 31st at                      0h 56m 09s.</p>								
								Wm. G. Carroll.



Time: Mean Greenwich, MIDNIGHT TO MIDNIGHT Damping 20-1  
Magnification 150

INSTRUMENTS—Two Milne-Shaw

NO. AND DATE	PHASE	TIME	PERIOD	AMPLITUDE			Δ	REMARKS
				A <sub>N</sub>	A <sub>E</sub>	A <sub>Z</sub>		
1930 SEPTEMBER		h. m. s.	s.	μ	μ	μ		
2nd	eN iN F	16-02-45 16-07-26 16-42						
17th	O ePN eSN LN MN F	3-13-55 3-20-29 3-25-29 3-29-15 3-32 4-17				3422		
21st.	eN eN LN	23-22-24 23-32-46 23-41						Max period 21 sec. Trailers lost in following quake.
22nd	ePN? ePE iSN LN PR2E PR3E SE F	1-51-19 1-51-32 2-01-25 2-18 1-57-16 1-58-42 2-01-23 4-44						
23rd	to	3-13-18 3-25						Small amp. This is likely the quake which shook Eureka, Cal.
30th	eN iN iN LN? F	21-41-45 21-50-32 21-58-16 22-12 0-17						
<p>Minor quakes recorded on the 1st at 18h 39m; 11th at 12h 58m 30s; 13th (2) at 1h and at 2h 52m; 14th (2) at 3h 34m and 17h 43m; 16th at 0h 30m; 18th at 18h 11m; 20th at 2h 17m; 21st at 7h 43m; 22nd at 5h 15m &amp; at 1h 35m; 23rd at 23h 54m; 24th at 12h 33m 30s; 25th at 18h 47m 30s; 26th at 4h 33m and 30th at 20h 42m.</p>								
								Wm. G. Carroll.

1930  
OCTOBER  
8th

eP? 10-35-17  
eE 10-37-46  
eE 10-38-15  
eSE? 10-48-31  
iSN? 10-48-33  
iN 10-54-46  
iE 10-54-49  
eLE 11-13-24  
F 13-20

New Hebrides.  
If phases shown are  
P and S, time at  
Origin would be  
10h 19m 20s.  
Some suggestion of  
two shocks superposed.

11th O 3-06-07  
ePN 3-14-14  
eSN 3-20-31  
eLN 3-26-40  
MN 3-30-32  
F 4-16

4678

More marked on  
the NS component.

17th O 8-46-54  
iPN 8-52-21  
iN 8-58-38  
iN 8-59-18  
iSE 9-07-54  
iSN 9-07-55  
iN 9-08-04  
iE 9-08-24  
iN 9-08-27  
LN 9-22-22  
F 10-28

8100

Reported from Central  
Chili. P phase quite  
small on EW.  
S, a relatively large  
movement, particularly  
on EW, as also the  
"iE"  
Characteristics of  
a deep focus.

24th. O 20-14-51  
iPNE 20-29-29  
iNE 20-32-27  
iScPcSE 20-39-51  
iScPcSN 20-39-53  
PSN 20-42-59  
PPSN 20-43-32  
SR1N 20-49-06  
L? 21-01  
LN 21-06-51  
F 0-57

7498

Region of Marianne  
Islands.  
Readings of other  
stations not con-  
cordant.

25th O 12-02-57  
ePN 12-11-32  
ePE 12-11-34  
PR1 12-13-12  
S 12-18-14  
SR1N 12-21-29  
SR1E 12-21-31  
LN 12-25-39  
F 13-45

5100

Well marked.

28th ePE? 21-35-08  
iSN? 21-43-41  
iSE? 21-43-53  
LE? 21-57  
F 23-35

(7211)

Sinusoidal.

Micros mask phases.

30th iSN 7-32-08  
LN 7-40-23  
F 8-26

P not shown. Eq.  
reported from Reading,  
Cal.,

Minor seismic movements on the 1st, 2nd, 3rd, 4th, 5th, 8th, 9th,  
10th, 15th, 16th, 19th (2), 20th, 21st, 22nd, 23rd (2), 24th (3),  
26th, 31st (3).

Wm. G. Carroll



1930 NOVEMBER.

9 th	eN	19-29-43	Long series of L waves.
	eN	19-34-48	
	eN	19-47-30	
	F	22-48	
10 th	iN	14-02-21	
	iE	14-36-51	
	F	16-30	
12 th	iN	19-24-09	
	iN	19-27-57	
	iL?	19-38-25	
	F	21-20	
25 th	O	19-03-17	10,056 Wind vibrations mar readings.
	ePN	19-16-22	
	ePE	19-16-24	
	PR <sub>1</sub> N	19-20-08	
	iN	19-25-20	
	iSN	19-27-22	
	iSE	19-27-20	
	LN	19-48	
28 th	F	22-40	3744
	O	7-32-35	
	ePN	7-39-34	
	PR <sub>1</sub>	7-40-37	
	SN	7-44-54	
	eLN	7-49	
30 th	iLN	7-50-15	3878
	F	9-20	
	O	21-30-15	
	ePN	21-37-16	
	eSN	21-42-38	
	iS	21-43	
	eSE	21-42-44	
eLN?	21-47		
F	22-52	Likely the same locality as eq. on 28th.	

Minor shocks on the 1st, 2nd (2); 3<sup>rd</sup>, 4th (2); 5th (2) 17th, 21st (3), 22nd, 23<sup>rd</sup>, 24th (2), 25th.

DECEMBER.

3rd.	eN	19-11-45	Max. movement at 20h 04m 30s with period of 16 secs. and amp. of 154 microns.  Reported Burma.
	iSE?	19-19-33	
	iSN?	19-19-38	
	iN	19-21-45	
	iN	19-27-42	
	iE	19-28	
	M	19-54	
	F	22-10	
6 th.	iE	7-21-11	F 8h 29m. Small amp.
	eE	7-31-21	
	eLE	7-34-30	
24 th	eN	6-22-47	Small amp. F 7h 30m.
	eN	6-30-44	
	eL?N	6-33	
25 th.	iPN?	22-09-28	705 Minor quake. Felt at Baie St. Paul, Quebec, and in vicinity.
	PE?	22-09-34	
	eSN?	22-10-45	
	SE	22-10-49	
	eLN	22-11-08	
	LE	22-11-13	
	F	22-16-30	

Quakes of small amplitude on the 2nd, 8th, 9th, 10th, (2) 11th, 12th, 21st, 22nd (2).

Wm. G. Carroll.