

# LITTLE ROCK



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## LITTLE ROCK COLLEGE SEISMOLOGICAL OBSERVATORY, PULASKI HEIGHTS, LITTLE ROCK, ARK., U. S. A.

(In cooperation with St. Louis University, St. Louis, Mo.—Records kept in St. Louis)

Two Wood-Anderson short-period seismographs, Howard clock, time checked by radio signals.

Bulletin for January-May, 1933

No.	Date	Inst.	C/D	Phase	G.M.C.T.	S-P	$\Delta$	P-H	H--Remarks
1	Jan. 3	W-A W-A		eP <sub>EN</sub> eE F	15 31 11 15 50 43 15 55 <sup>+</sup> <sub>-</sub>				
2	Jan. 4	W-A W-A W-A		eP <sub>E</sub> iE eS <sub>E</sub> F	1 38 29 1 42 33 1 49 22 1 55 <sup>+</sup> <sub>-</sub>				
3	Jan. 4	W-A W-A W-A		eP <sub>EN</sub> iEN iEN F	4 07 35 4 14 20 4 22 31 5 00 <sup>±</sup>		42.4		Epicenter: 60.3 N. 145° W.
4	Jan. 5	W-A W-A W-A		iP <sub>EN</sub> eS <sub>EN</sub> iEN F	6 55 18 6 59 18 7 01 41 9 05 <sup>+</sup>				
5	Jan. 7	W-A W-A W-A		eP <sub>E</sub> iEN eS <sub>EN</sub> F	4 19 44 4 20 02 4 30 24 5 30 <sup>+</sup> <sub>-</sub>				
Jan. 9-11 Heavy Microseisms									
6	Jan. 21	W-A W-A W-A W-A W-A W-A W-A		eP <sub>1E</sub> eN' eP' 2E iP <sub>1E</sub> iS <sub>cPc</sub> SE iS <sub>cPcPc</sub> SE eSR <sub>1E</sub> eM <sub>EN</sub> F	19 41 07 19 41 18 19 41 28 19 45 08 19 48 06 19 51 50 20 04 27 20 37 00 21 40 <sup>±</sup>		156°		Epicenter: 33.1 S. 57.5 E.

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7	Jan. 24	W-A	iP <sub>EN</sub>	15 43 16				Felt in Arteaga, Michoacan, Mexico
		W-A	i <sub>EN</sub>	15 43 22				
		W-A	i <sub>EN</sub>	15 43 25				
		W-A	iS <sub>E</sub>	15 46 36				
			F	16 00 <sup>±</sup>				
8	Jan. 27	W-A	eP <sub>E</sub>	22 49 38		91°		Epicenter: 14°5 S. 173° W.
		W-A	e <sub>E</sub>	23 00 21				
			F	23 10 <sup>±</sup>				
Traces of seismic movement also at 1d. 9.1h-9.2h.; 2d. 3.6h-3.8h.; 3d. 1.3h-1.5h.; 17d. 1.1h-1.3h.; 25d. 11.5h-11.6h.								
9	Feb. 3	W-A	eP <sub>EN</sub>	22 23 58		81°		Epicenter: 47° N. 147° E. Deep focus
		W-A	eS <sub>N</sub>	22 34 01				
			F	22 40 <sup>±</sup>				
10	Feb. 13	W-A	e <sub>E</sub>	22 13 47				
		W-A	eS <sub>EN</sub>	22 20 09				
			F	22 30 <sup>±</sup>				
11	Feb. 18	W-A	eP <sub>N</sub>	19 50 03		21°		Epicenter: 13° N. 90° W.
		W-A	eS <sub>E</sub>	19 53 45				
			F	20 00 <sup>±</sup>				
12	Feb. 19	W-A	eP <sub>EN</sub>	4 25 19				
		W-A	e(S) <sub>E</sub>	4 31 24				
			F	4 35 <sup>±</sup>				
13	Feb. 23	W-A	eP <sub>N</sub>	8 19 13				Deep focus Destructive at Iquique, Chile
		W-A	i <sub>EN</sub>	8 19 18				
		W-A	i <sub>EN</sub>	8 19 33				
		W-A	e <sub>N</sub>	8 21 28				
		W-A	iS <sub>EN</sub>	8 27 11				
		W-A	i <sub>E</sub>	8 27 37				
		W-A	i <sub>E</sub>	8 27 52				
		W-A	e <sub>N</sub>	8 31 10				
		W-A	eM <sub>E</sub>	8 37 30				
	F	9 30 <sup>±</sup>						



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No.	Date	Instr. GVD Phase	G.M.O.T.	S-P	A	P-H	H-Remarks
Traces of seismic movement also at 184, 18.11.-12.3h.							
14	Mar. 2	W-A	17 43 55				30° Potent: 30° N. 145° E. A very violent quake due to destructive in Japan
		W-A	17 44 03				
		W-A	17 54 37				
		W-A	17 54 45				
		W-A	18 08 30				
		W-A	18 17 50				
			22 00				
15	Mar. 2	W-A	22 32 53				
		W-A	22 33 38				
			22 30				
16	Mar. 11	W-A	1 58 58				Potent: 30° N. 117° W. H-1-54-04 Destructive at Long Beach California
		W-A	2 02 54				
		W-A	2 02 37				
			2 14				
Astronomical observations: 18.05m; 21.05m; 21.55m.							
17	Mar. 11	W-A	19 43 58				
		W-A	19 53 58				
			20 30				
18	Mar. 12	W-A	4 30 58				
		W-A	4 34 00				
			4 43				
19	Mar. 13	W-A	18 08 42				
		W-A	18 18 52				
		W-A	18 38 00				
			19 14				
20	Mar. 18	W-A	22 37 12				
		W-A	22 40 18				
			24 01				

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No.	Date	Inst.	C/D	Phase	G.M.C.T.	S-P	$\Delta$	P-H	H--Remarks
21	Mar. 28	W-A		ePEN F	4 28 13 5 00 $\pm$				
Traces of seismic movement also at 13d. 13.3h.-13.5h.; 14d. 19.2h.-19.4h.; 15d. 23.3h.-23.5h.; 17d. 13.9h.-14.3h.; 17d. 19.8h.-21.5h.									
22	Apr. 9	W-A W-A W-A		ePN eS <sub>c</sub> P <sub>c</sub> SEN eME F	2 59 48 3 10 29 3 35 00 3 50 $\pm$				
23	Apr. 9	W-A W-A W-A W-A W-A		iPEN iEN iSEN eLN eM <sub>N</sub> F	4 02 46 4 02 57 4 06 32 4 08 15 4 10 20 5 10 $\pm$				Epicenter: 18°7 N. 106°8 W.
24	Apr. 9	W-A W-A		ePE eSEN F	15 17 43 15 21 41 15 40 $\pm$				
25	Apr. 9	W-A W-A W-A		ePN iPEN eSEN F	21 08 19 21 08 22 21 12 15 21 50 $\pm$				Epicenter: 18°5 N. 107° W.
26	Apr. 23	W-A W-A W-A W-A W-A		ePN iPN eN eSN eM <sub>N</sub> F	6 10 29 6 10 34 6 21 05 6 21 19 6 43 00 7 10 $\pm$				Epicenter: 37° N. 27° E. Destructive at Is. of Kos and on mainland. of Asia Minor.
27	Apr. 24	W-A W-A W-A		iPN iN iSN F	13 45 12 13 45 54 13 48 24 13 55 $\pm$				Deep focus.

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No.	Date	Instr. C/D	Phase	G.M.C.T.	S-P	A	P-H	H-Residuals
21	Mar. 28	W-A	open	4 28 13	5 00			
Traces of seismic movement also at 13d. 13.2h.-13.5h.; 14d. 18.2h.-19.5h.; 15d. 23.2h.-23.5h.; 17d. 13.2h.-14.5h.; 18d. 18.2h.-19.5h.								
22	Apr. 2	W-A	open	4 58 48	5 10 28			
23	Apr. 3	W-A	open	4 08 46	4 08 57			
24	Apr. 3	W-A	open	4 08 35	4 08 15			
25	Apr. 3	W-A	open	4 40 20	5 10			
26	Apr. 3	W-A	open	4 17 42	4 21 41			
27	Apr. 3	W-A	open	4 08 18	4 08 33			
28	Apr. 23	W-A	open	4 10 32	4 10 34			
29	Apr. 24	W-A	open	4 45 12	4 45 24			

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No.	Date	Inst.	C/D	Phase	G.M.C.T.	S-P	$\Delta$	P-H	H--Remarks
28	Apr. 27	W-A		iP <sub>N</sub>	2 44 23		45°		Epicenter: 61° N. 149° W.
		W-A		iN	2 46 22				
		W-A		eS <sub>N</sub>	2 51 07				
		W-A		eM <sub>N</sub>	3 01 30				
				F	5 20 <sup>±</sup>				

Traces of seismic movement also at 7d. 0.8h.-1.0h.; 27d. 7.5h.-7.8h.; 12.4h-13.0h.; 14.6h.-14.8h.; 20.0h.-20.3h. 28d. 3.2h.-3.4h.; 7.2h.-7.8h.

29	May 3	W-A		eP <sub>EN</sub>	12 41 08				Alaska
		W-A		eM <sub>EN</sub>	12 58 25				
				F	13 20 <sup>±</sup>				
30	May 5	W-A		eP <sub>E</sub>	4 20 24				
		W-A		eS <sub>N</sub>	4 25 33				
				F	5 10 <sup>±</sup>				
31	May 6	W-A		eP <sub>N</sub>	5 39 47				Epicenter: 6° N. 82.5° W
		W-A		iP <sub>N</sub>	5 39 48				
		W-A		iS <sub>E</sub>	5 44 42				
				F	6 30 <sup>±</sup>				
32	May 8	W-A		iP <sub>E</sub>	10 38 03	3-35	19°7		100 km. deep Epicenter: 16°3 N. 101°2 W.
		W-A		iE	10 38 10				
		W-A		iE	10 38 15				
		W-A		iE	10 38 27				
		W-A		iS <sub>E</sub>	10 41 38				
		W-A		iE	10 41 52				
				F	6 00 <sup>±</sup>				
33	May 8	W-A		eP <sub>E</sub>	18 05 38	3-38			
		W-A		eS <sub>E</sub>	18 09 16				
				F	18 30 <sup>±</sup>				

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No.	Date	Time	C/D Phase	G.M.C.T.	S-P	A	P-H	M-Remarks
28	April 27	7-4	W-A	8 20 <sup>+</sup>	3 01 30			Stationer: 61° N. 149° W.
		7-4	W-A	3 51 07				
		7-4	W-A	3 48 35				
		7-4	W-A	3 44 33				
				8 20 <sup>+</sup>				
				3 01 30				
				3 51 07				
				3 48 35				
				3 44 33				
				8 20 <sup>+</sup>				
				3 01 30				
				3 51 07				
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				3 0				



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No.	Date	Inst.	C/D	Phase	G.M.C.T.	S-P	$\Delta$	P-H	H--Remarks
34	May 9	W-A		eP <sub>N</sub>	4 58 34	3-38			
		W-A		iP <sub>N</sub>	4 38 46				
		W-A		eS <sub>E</sub>	4 42 12				
		W-A		iS <sub>E</sub>	4 42 23				
				F	5 00 <sup>±</sup>				
35	May 11	W-A		eP <sub>EN</sub>	19 22 16				time uncer- tain
		W-A		eS	19 32 39				
				F	20 10 <sup>±</sup>				
36	May 14	W-A		iP <sub>EN</sub>	10 17 53				time uncer- tain
		W-A		S <sub>E</sub>	10 21 30				
				F	10 40 <sup>±</sup>				
37	May 17	W-A		e <sub>EN</sub>	0 06 48				time uncer- tain
		W-A		i <sub>E</sub>	0 15 49				
				F	0 20 <sup>±</sup>				
38	May 19	W-A		eP <sub>N</sub>	18 10 20				Epicenter: 1. <sup>0</sup> 9 S. 14. <sup>0</sup> 3 W. time uncer- tain
		W-A		eS <sub>N</sub>	18 20 21				
				F	19 30 <sup>±</sup>				

Seismic movement also at ld. 18.9h.-19.3h.; ld. 20.0h.-20.3h.; 9d. 9.9h.-10.1h.; 16d. 1.5h.-2.8h.; 16d. 11.8h.-12.1h.; 20d. 4.9h.-5.8h.

# LITTLE ROCK

LITTLE ROCK COLLEGE SEISMOLOGICAL OBSERVATORY, PULASKI HEIGHTS, LITTLE ROCK, ARK., U. S. A.  
 (In cooperation with St. Louis University, St. Louis, Mo.—Records kept in St. Louis)

Two Wood-Anderson short-period seismographs, Howard clock, time checked by radio signals.

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No.	Date	Inst.	C/D	Phase	G. M. C. T.	H--Remarks
	Nov. 1	W-A		Seismic activity around 15h11m.		
39	Nov. 2	W-A		eP <sub>N</sub>	12-36-57	H = 12-27-06 $\Delta = 58^{\circ}3$ Epicenter: 45° N, 168° W. Depth of focus 100-130 km.
	Nov. 3	W-A		Seismic activity around 10h37m.		
	Nov. 4	W-A		Seismic activity around 20h38m29s and also around 20h44m37s.		
40	Nov. 14	W-A		iP <sub>N</sub> eS <sub>N</sub>	14-16-15 14-25-22	H = 14-05-13 $\Delta = 71^{\circ}$ Epicenter: 32.7° S, 70° W. Depth of focus 100 km.
41	Nov. 16	W-A		iP <sub>NE</sub>	14-29-47	$\Delta = 3^{\circ}$ . Epicenter: 38.6° N, 90.6° W. Grover, Missouri.
	Nov. 19	W-A		Seismic activity around 3h30m09s.		
	Nov. 21	W-A		Long waves at 0h0m0s, corresponding to Baffin Bay earthquake. Records sent to England (Kew Observatory) for study.		
	Nov. 21	W-A		Seismic activity at: 2h07m14s. } 2h51m07s. } Possibly near quake. 11h03m00s. } 14h08m06s. }		
42	Nov. 21 Nov. 22	W-A		eP <sub>E</sub> e(?) <sub>E</sub> e(?) <sub>E</sub>	23-54-52 00-00-15 00-02-24	
43	Nov. 22	W-A		eP <sub>N</sub> iS <sub>E</sub>	04-57-33 05-02-12	H = 04-51m24s. $\Delta = 26^{\circ}4$
44	Nov. 22	W-A		iSKS <sub>EN</sub> iSKKS <sub>E</sub> ePS <sub>E</sub>	13-07-23 13-08-33 13-12-16	

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No.	Date	Inst.	C/D	Phase	G. M. C. T.	H--Remarks
45	Nov. 23	W-A		eP <sub>N</sub> eP <sub>E</sub> eL <sub>N</sub>	19-03-45 19-03-49 19-08-53	Epicenter: 8°8 N, 83°5 W.
	Nov. 29	W-A		Seismic activity around 05h10m46s and also around 05h54m06s.		
46	Dec. 4	W-A		iP <sub>N</sub> iS <sub>E</sub>	19-45-52 19-55-40	H = 19-34-07 Δ = 76°2 Time uncertain.
47	Dec. 9	W-A		eP <sub>N</sub> eS <sub>N</sub>	08-53-27 08-53-53	H = 08-52-54 Δ = 199. Probably in New Madrid.
48	Dec. 13	W-A		iP <sub>EN</sub> iP <sub>1EN</sub> iP <sub>2E</sub> eS <sub>N</sub> iL <sub>E</sub> iL <sub>N</sub>	21-28-12 21-28-30 21-28-36 21-31-49 21-38-11 21-38-15	H = 21-23-47 Δ = 19°3 Epicenter: 18°5 N, 103°5 W.
49	Dec. 14	W-A		eP <sub>N</sub> sS <sub>N</sub> iL <sub>E</sub> iL <sub>N</sub>	07-20-49 07-24-16 07-27-14 07-27-20	H = 07-16-24 Δ = 19.3
50	Dec. 15	W-A		eP <sub>EN</sub> eS <sub>N</sub>	07-50-18 07-56-54	H = 07-42-14 Δ = 43°6 Epicenter: 54°2 N, 35° W.
	Dec. 16	W-A		Seismic activity around 14h02m38s.		
	Dec. 17	W-A		Seismic activity around 14h25m00s.		
51	Dec. 19	W-A		eP <sub>NE</sub> L(?) <sub>N</sub>	18-01-14 18-14-10	Possibly deep. Characterized by long continuations of the P phases.
	Dec. 21	W-A		Seismic activity around 04h48m15s.		
	Dec. 29	W-A		Seismic activity around 10h30m35s.		

 James B. Macelwane, S. J.  
 Director

 George A. O'Donnell, S. J.  
 Assistant

Little Rock Bulletin for 1953

No.	Date	Instr. O/D	Phase	G.M.O.T.	H-Remarks
45	Nov. 23	W-A	epH epF epL	19-03-45 19-03-45 19-03-52	Epilcenter: 828 N. 83°E W.
	Nov. 29	W-A			Seismic activity around 08h30m and also around 08h50m.
46	Dec. 4	W-A	epH epF	19-12-23 19-12-40	H = 18-34-07 Δ = 79°E Time uncertain.
47	Dec. 9	W-A	epH epF	08-23-37 08-23-53	H = 08-52-52 Δ = 19°E. Probably in New Madrid.
48	Dec. 13	W-A	epH epF epL epM epN epO	21-28-18 21-28-36 21-28-36 21-28-43 21-28-13 21-28-15	H = 21-23-47 Δ = 18°E Epilcenter: 181°E W. 103°E W.
49	Dec. 14	W-A	epH epF epL epM	07-20-49 07-24-18 07-27-14 07-27-30	H = 07-18-24 Δ = 18°E
50	Dec. 15	W-A	epH epF	07-20-18 07-28-54	H = 07-12-1A Δ = 43°E Epilcenter: 64°E N. 38° W.
	Dec. 16	W-A			Seismic activity around 14h00m.
	Dec. 17	W-A			Seismic activity around 14h30m.
51	Dec. 19	W-A	epH epF L(?)	18-01-14 18-14-10	Possibly deep. Characterized by long continuations of the P phases.
	Dec. 21	W-A			Seismic activity around 04h30m.
	Dec. 22	W-A			Seismic activity around 10h30m.

James B. Macéwicz, S.J. Director  
George A. O'Donnell, S.J. Assistant