

Double

Earthquake Records by Milne Seismograph Meridian Boom. Stonyhurst College Observatory.

Lat. 53° 50' 7" N., Long 2° 28' 2" W., Above Sea, 363 feet.

Time, Greenwich, 0 or 24 = Midnight. *Subsidiary. Muston Grit.* Abbreviations on the other side.

Date	P ₁		P ₂		P ₃		Maximum		2A	End		Boom Deviation, 1 mm = 228 arc Boom Period = 180 sec. Pillar Inclination 1 mm = 440 arc
	H.	M.	H.	M.	H.	M.	H.	M.	mm	H.	M.	
1921 Jan												January
2	7.	25.8					7.	58			8.45	Small
"	9.	39.4									11.18	"
6	23.	51.2									24.6	Very small
7	2.	21.5					2.	34.0	0.5		3.3	
"	3.	41.2					4.	30.5	1.2		5.9	
"	10.	22.2					10.	28.5	0.7		10.42	
9	13.	39.5					13.	47.5	1.2		14.31	In. masked by wind tremors.
"												
19	15.	16.0					15.	51	0.7		17.0	
"	18.	47.5									19.11	Small
20	21.	30.0									22.18	Very small.
Feb.												February
4	8.	34.8	8.	44.4	8.	59.5	9.	10.9	6.1		11.40	$\Delta = 75^\circ$ (Pinnacly).
6	4.	58.4					5.	12.5	0.5			
"							5.	21.0	0.5		5.53	
10	18.	23.0										Very small
"	20.	26.0										Very small
"	20.	56.0					21.	9.0	0.7		22.5	
11	0.	19.5	0.	26.5			1.	6.5	0.7		2.29	
14	1.	35.5					2.	2.0	2.5			
"							2.	8.5	0.6		2.37	
19	14.	52.5					15.	49.5	0.9		17.7	
"	18.	35.3	18.	45.5	19.	16.5	19.	32.0	1.5		21.16	
21.	Several very small disturbances between 12 ^h or 16 ^h .											
"	16.	26.2	16.	28.5	16.	33.0	16.	33.3	1.0			
"							16.	37.0	0.9		17.16	
"	17.	42.0										Very small.
"	19.	53.4					20.	3.0	0.5		20.19	
27.	Light foiled 2 ^h to 11 ^h 30 ^m											
"	18.	43.5	18.	52.9	19.	15?						$\Delta = 75^\circ$
"			(19.	5.4)?			(19.	7.0)	(2.0)			apparently a second shock.
"							19.	43.5	2.0			
"							19.	46.8	4.2			
"							19.	48.7	2.0			
"							19.	51.4	4.0			
"							19.	53.5	4.1			
"							20.	12.7	3.0			
"							20.	15.6	5.7			
"							20.	18.5	6.5			
"							20.	22.5	3.4			
"							20.	35.3	2.4			
"							20.	43.2	1.9		22.44	

J. Rowland S. J.
Observer.

ABBREVIATIONS.

$P_1 P_2 P_3$ = 1st, 2nd and 3rd phases (arrivals).

M.—Maximum.

A.—Amplitude. Greatest Displacement.

i.—(Impetus). Sudden shock. Well defined.

e.—(Emersio). Emerging. Gradual Development. (Quoted time therefore not certain).

In.—(Initium). Commencement, without statement of phase.

Roman Numerals in the margin for days of the month.

×—Reference to date in margin.

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Date	P ₁		P ₂		P ₃		Maximum		2A	End		Boom Deviation, 1 mm = 220" arc Boom Period = 180 sec. Pillar Inclination 1 mm = 440" arc	
	H.	M.	H.	M.	H.	M.	H.	M.	mm	H.	M.		
1921													
May												May	
7	5	57·5	6	2·4	6	26·0	0	25·5	3·2		8·27		
12	4	25					5	5·5	0·8		6·27		
14							13	29·5	0·9		15·40	Commencement lost during change.	
"	21	43·5					22	50·0	1·0				
"							23	57·0	1·0		24·42		
			16 th - 17 th No record.										
17	23	57·0					24	21·5	0·6		24·51		
20	0	22·2	0	27·2	1	3·6	1	5·0	1·5		2·14	[Change P, doubtful. End during	
21	9	65					9	47·5	2·0		10·20		
"	22	47·5					23	21·5	1·2		1·14		
28	19	59					21	33	0·5		22·14		
June												June	
5	19	22·9									22·5	Very Small	
14	1	56·3										"	
28	14	19·2					14	46	0·5				
"							14	57	0·5				
"							10	39·5	0·5				
"							13	40	0·5				
"							5	55·5	0·3		16·21		
29	23	29·5					23	53·3				Very Small	
30	2	14·5					2	20·8	1·1		2·44		
July												July	
7	14	41·3									15·57	Small	
7	11	23					11	41	0·9		13·20		
11	16	15									16·46	Small, Probably local	
12	13	21										very small	
15	18	25					18	36			21·48	" "	
16	15	40·3											
"	15	47·0									16·8	small, doubtful	
18	17	33·0					17	56	1·0		18·16		
25	14	17										very small	
"	16	25									16·21	" "	
"	19	47·3					20	19	1·0				
"							21	50	0·3		22·19		
29	1	38					1	49	0·5		2·55		
31	11	1					11	26	0·7		12·18		

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Date	P ₁		P ₂		P ₃		Maximum		2 A	End		Boom Deviation, 1 mm = 220" arc Boom Period = 180 sec. Pillar Inclination 1 mm = 440" arc	
	H.	M.	H.	M.	H.	M.	H.	M.	mm	H.	M.		
1921													
May												May	
7	5.	57.5	6.	2.4	6.	26.0	0.	28.5	3.2	8.	27		
12	4.	25					5.	5.5	0.8	6.	27		
14							13.	27.5	0.9	15.	40	Commencement lost during change.	
"	21.	43.5					22.	50.0	1.0				
"							23.	57.0	1.0	24.	42		
			16 th - 17 th No record										
17	23.	57.0					24.	21.5	0.6	24.	51		
20	0.	52.2	0.	57.2	1.	3.6	1.	5.0	1.5	2.	14	Change I, doubtful. End during	
21	9.	6.5					9.	47.5	2.0	10.	20		
"	22.	47.5					23.	21.5	1.2	1.	14		
28	19.	59					21.	33	0.6	22.	14		
June												June	
5	19.	22.9								20.	5	Very Small	
14	1.	56.3										"	
28	14.	19.2					14.	46	0.5				
"							14.	51	0.5				
"							15.	55.5	0.5				
"							15.	46	0.5				
"							15.	55.5	0.3	16.	21		
29	23.	29.5					23.	55.3				Very Small	
30	2.	14.5					2.	20.8	1.1	2.	44		
July												July	
4	14.	41.5								15.	57	Small	
7	11.	28					11.	41	0.9	13.	20		
11	16.	15								16.	46	Small, Probably local	
12	13.	21										very small	
15	18.	25					18.	36		21.	48	" "	
16	15.	40.3											
"	15.	47								16.	8	small, doubtful	
18	17.	33.0					17.	56	1.0	18.	16		
25	14.	17										very small	
"	16.	25								16.	21	" "	
"	19.	47.3					20.	19	1.0				
"							21.	50	0.3	22.	19		
29	1.	38					1.	49	0.5	2.	55		
31	11.	1					11.	26	0.7	12.	18		

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Date	P ₁		P ₂		P ₃		Maximum		2 A	End		Boom Deviation, 1 mm = 22" arc Boom Period = 18.1 sec. Pillar Inclination 1 mm = 44" arc
	H.	M.	H.	M.	H.	M.	H.	M.	mm	H.	M.	
1921												
Aug	August											
4	3.51										1.12	very small
10	14.15	14.19	14.19	14.20	14.20	14.25	0.8			14.46		Disturbed by seismic.
14	13.28	13.31	13.31	13.40	13.40	13.47	0.9			13.56		Phases ill defined.
15	15.24										17.45	Very small.
21	1.30											" "
23	5.16					5.22	0.5			5.31		
	20.21				20.24	20.47	10.4			22.17		
31	21.57									22.54		small
Sept.	September											
5	20.37											No definite phases
"	20.18											
"	20.23											
"	20.28					20.31	0.5					
"						20.40	1.0					
"						20.44	1.1					
"						20.50	1.2					
"						21.3	2.0					
"						21.7	1.1			22.3		
11	4.21					5.40	7.0			14.55		It large earthquake which our record is almost illegible owing to partial failure of light.
12-13	No record.											
19	4.28					5.0	0.5			6.48		No clear phases.
"	23.23											
"	23.58											
20						8.47	1.0					
"						1.18	1.0			2.14		
21						11.34	0.8			13.58		Earlier Phases lost.
23	11.38									15.42		Continuous, small
	Disturbances of somewhat irregular and unusual character.											
27	17.8					17.10	0.5			17.55		
29	15.30					14.2	0.5			15.20		

Issued Oct 14th 1921

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Subsidiary Millstone, Brit.

Abbreviations on the other side.

Date	P ₁		P ₂		P ₃		Maximum		2A	End		Boom Deviation, 1 mm = $\frac{22}{7}$ arc
	H.	M.	H.	M.	H.	M.	H.	M.	mm	H.	M.	Boom Period = 18.0 sec.
1921												Pillar Inclination 1 mm = $\frac{4}{7}$ arc
Aug												August,
9	0.	51 ²									1. 12	very small
10	14.	15.3 ^e	14.	19.2	14.	20.5	14.	25	0.8		14. 46	Doubtful if seismic.
14	13.	26.5 ^e	13.	31.8	13.	45.5	13.	47.5	0.9		15. 16	Phases ill-defined.
15	15.	29.5 ^e									17. 45	Very small.
21	1.	30 ^{In}										" "
23	5.	16. 2 ¹					5.	22.5	0.5		5. 51	
"	20.	21.3 ^e			20.	24.2 ^e	20.	27.0	10.4		22. 17	
31	21.	39.5 ^e									21. 59	Small
Sept.												September,
5	20.	13.7 ^{In}										No definite phases
"	20.	18.7										
"	20.	23.8										
"	20.	28.0					20.	31	0.5			
"							20.	40	1.0			
"							20.	44	1.1			
"							20.	50	1.4			
"							21.	3	0.9			
"							21.	7	1.0		22. 3	
11	4.	21 ^{In}					5.	16.0	7.0		14. 53.	A large earthquake of which our record is almost illegible owing to partial failure of light.
12-13												No Record.
19	4.	28.0 ^{In}					5.	0	0.5		6. 48	
"	23.	23 ^{In}										No clear Phases.
"	23.	58.5 ^e										
20							0.	47	1.0			
"							1.	18.5	1.0		2. 14	
21							11.	34	0.8		13. 58	Earlier Phases lost.
23.	11.	38 ^{In}									15. 42	Continuous small disturbances of somewhat irregular and unusual character.
27	17.	8 ^{In}					17.	10.5	0.5		17. 55	
29	13.	30.5 ^{In}					14.	2	0.5		15. 20.	

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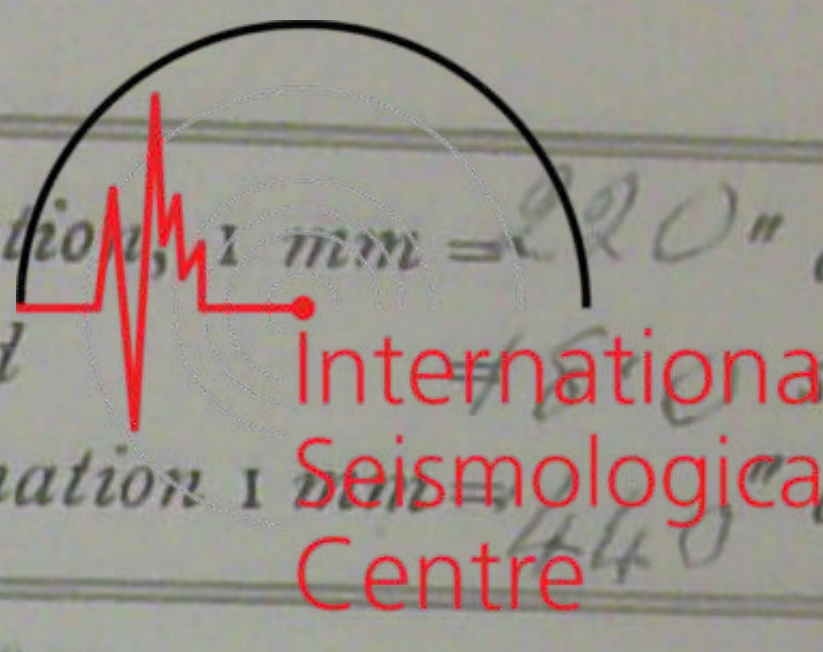
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Abbreviations on the other side.



Date	P ₁		P ₂		P ₃		Maximum		2 A mm	End H. M.	Boom Deviation Boom Period Pillar Inclination
	H.	M.	H.	M.	H.	M.	H.	M.			
1921 Oct											October.
1.	21.	26								22. 17	Very small
10	2.	26.5					2. 38.5	0.7			
	3.	5.4					3. 24.5	0.9			
							4. 23.0	0.6		4. 40	
							12 th - 13 th No Record.				
14.	17.	4.5					17. 25	1.0			
15.	5.	20.3	5.	33.8	6.	8.4	6. 32.0	1.9		18. 31	
							6. 54.0	1.3			
							7. 2.0	2.0		8. 36	
18	1.	51.3								2. 33	Very small
20.	6.	16.3	6.	20.0	6.	26.7	6. 27.9	1.1			
							6. 29.8	1.1			
							6. 34.0	0.9			
							6. 54.3	1.0			
							6. 56.9	1.0		8. 44	
21	22.	30					22. 31.5	0.3		22. 39	
25	1.	26					1. 48	0.5		2. 19	

Nov 1st - 26th Instrument dismantled

Dec											Small
1	18.	51									"
6	13.	42.5					13. 50				" doubtful
8	14.	1.5					14. 7				" very small
										20. 6	
											Strong Micros. probably due to wind, throughout 17 th - 15 th . Interpret ⁿ difficult.
18	15.	40.8	15.	44.2	15.	50.0	15. 51.5	2.0			
							15. 57.7	2.3			
							16. 0.5	2.3			
							16. 7.5	1.8			
							16. 13.5	1.6			
							16. 18.5	1.0			
							16. 22.0	1.0		18. 0	
26-27							No Record.				

Issued. 25/1/22.

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