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. *Subal Mac Toney sch.* Abbreviations on the other side.

Date 1922	P₁ H. M.	P₂ H. M.	P₃ H. M.	Maximum H. M.	2 A mm	End H. M.	Boom Deviation, 1 mm = 22·" arc / Boom Period = 18·0 sec. / Pillar Inclination 1 mm = ·44" arc
Jan.							January.
1.		21. 2·5		21. 13·5	1·0	22.14	masked by micros
3.	1. 43¾			1. 50			small
6.	14. 25·7 ε	14. 35·0	15.10	15. 11	1·5		
				15. 17·5	1·2	17.25	
"	20.10·5 ṁ					20.48	small
7.	5. 17·9 ἰ	5. 24·5 ι	5. 32·0	5. 35·5	3·5	5. 53	
13.	14. 23·3 ε			14. 33·0	1·0		
				14. 34·5	1·0	15. 0	
16.	3. 52·5 ε			3. 53·2	0·5	4. 0	time uncertain
17.	4. 1·7 ἰ	4. 4·3	4. 10·8	4. 12·2	8·5		
				4. 16·3	7·2	8.36	" " but intervals correct
19.	18. 21 ¾ ε			18. 39			small
	20. 21·7 ¾ ε			23. 8·5	0·7		
				23. 19·0	0·7	24.48	
21.	4. 0 ¾ ε			4. 47	1·0		
				4. 53·5	1·0		
				4. 58·0	0·8	6. 24	
23.	21. 23 ¾ ε			22. 8·5	0·5		
				22. 15·5	0·7	23.36	
24.	20. 53·5 ¾ ε			21. 27·3	0·6		Continuous disturbance
				21. 44·0	0·6		with numerous small
				22. 44·5	0·7		maxima
				23. 57·5	0·5		
				0. 38·0	0·5		
				0. 56·5	0·7	5. 55	
25.	14. 2·5 ¾ ε			17. 46·5		23.36	small
26.	7. 38·5 ¾ ε			10. 13·0	1·0	11. 54	Micros 26ᵗʰ — 28ᵗʰ
31.	13. 28·9	13. 38·2	13. 47·5	14. 2·7	7·0		Δ = 74° = 8220 Km.
				14. 5·2	6·0	18. 0	
Feb							February
5.	4. 9 ᵐ ε			5. 1·5			small
6.	5. 17·5 ⁱ ε			5. 5·8			"
7.				20. 7·5			"
10.	0. 14·5			0. 42	0·4	1. 8	
"	13. 53·5			13. 55	0·3		
"				21. 45			small.
11.	-			3. 42	0·4		
13.	19. 44·5 ṁ			19. 56·5	0·6	20.12	
14.				0. 14·0			small
				12. 34	1·0		Earlier phases lost
				13. 47	0·8		L̠ changing
				13. 54·5	0·8	15. 18	

ABBREVIATIONS.

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

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Date 1922	P_1 H. M.	P_2 H. M.	P_3 H M.	Maximum H. M.	2 A mm	End H. M.	Boom Deviation, 1 mm = 220" arc / Boom Period 18·0 sec / Pillar Inclination 1 mm = 440" arc
Feb							February.
14				0.140 -			Small
15	9.17.5 $\frac{In}{2}$			9.46 } 0.9 to 8·55 }		10.39	
	15.45.5 $\frac{In}{2}$			16.2.5	0·5	16·17	
16	2.53.5 $\frac{In}{2}$			3.1.3	1·0	3·11	
	3.37 $\frac{In}{2}$			4. 0	1·2	5·55	
19	22.2 $\frac{In}{2}$			22. 8	0·9	22.37	
20	8.57			9.14	0·7	11.15	
Mar							March.
2.	9.11 $\frac{In}{2}$						very small.
"	10.16 $\frac{In}{2}$					11.37	Small.
4	12.45 $\frac{In}{2}$	13.28·0		13.29·8	1·0		
				13.34·5	0·9		
				13.40·0	0·8	17.35	
8	14.34·5 $\frac{In}{2}$						Small
	17. 1 $\frac{In}{2}$			17.54.5	0·2	18.45	
10				12. 2	1·0		Earlier phases lost
				12.10·5	0·8	12.48	Lin changing
	17.11·5 $\frac{In}{2}$			17.33·5	0·5	14·0	
12	17.16·5 $\frac{In}{2}$	17.49.5		18.2	4·2	20.11	
15	3.36·5 $\frac{In}{2}$			3.47·5	0·4	4.27	
26.	Small disturbances 11ʰ–17ʰ with several small max 15ʰ.2-15.30						
28.	3.53 $\frac{In}{2}$ 4.21·5			4.49.5	1·0		
				4.58	1·0	6. 32	

J Rowland S.J.

Observer.

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Date 1922	P₁ H. M.	P₂ H. M.	P₃ H. M.	Maximum H. M.	2 A mm	End H. M.	Boom Deviation, 1 mm = " arc / Boom Period = sec / Pillar Inclination 1 mm = " arc
April							*April*
2.	19.29.3 e	19.38.5		20. 4.5	2·0	22.35	
3.	20.17.5 I/2			20.44.5		22.0	Small.
5.	10.20 e			(11.13.	1·0)	13.37	
8.	20.47.0		20.51.5	20.52.7	7·0		
				21. 8.5	2·7	22.44	
11.	0.41 I/2			1.55	0·9	3.3	
	4.44.5 I/2			4.50	1·0	5.20	
	8.23 I/2			8.32.5	0·4	9.47	
13				15.35	0·4		
16	12.50.5 I/2			13.59	0·4	13.19	
23	22.7 I/2			22.29.5	0·3	22.59	
25	21.42.0 In/2			22.54.5	1·0		
				23.16.5	1·0		
26	1.3 In/2			2. 6.5	0·6	2.39	
	4.17.5 e	4.22.2	4.48.6	4.52.5	1·0		
				4.49.5	1·0	7.3	
30.	23.11 In/2			23.19			very small.
May 2	11.32.4 e		11.55.1	12. 3.5	0·8	12.15	Large.
	No Record 2ᵉⁿᵈ 14ʰ30ᵐ to 3ʳᵈ 11ʰ30ᵐ						
4,	8.40.5 I/2 ?			10.7	1·0		
5.	0.13.5 I/2			1.13	0·3		
				1.28	0·4	3.4	
11.	1.12.5 I/2			1.57.5	0·7	2.22	
11.	6.54.7			7.20.0	1·0	8.21	
12.	18.59.5 In/2			20.12.0	0·8		
				20.17.5	1·0		
				20.30.0	1·1	21.47	
15.	20.44.5 e	20.55.1		21.14.2	0·5	21.57	
16.	8.37.4 e			4. 6.5	0·8		
				9.13.0	0·7	9.56	
	21ˢᵗ 22ⁿᵈ No Record						
22	18.29 I/2			18.57	1·0		
				19. 3	0·8	19.30	
June 2,	20.20.0 I/2			20.28.5	1·0	23.0	*June.*
3	5.40.2 I/2			5.52	0·4	6.7	
5	4.14.0	4.45.5		4.50.5	1·0	5.4	
12	5.8.2	5.15.3	5.28.0	5.34.8	2·8		
				5.53.0	5·0		
				5.31.7	4·5	7.41	
27	14.48.5 I/2			15.39.8	1·0		
				15.48.5	0·8		
				15.55.2	0·5	17.10	
	29ᵗʰ — 30ᵗʰ. No Record						

J. Rowland S.J.

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Date	P₁ H. M.	P₂ H. M.	P₃ H. M.	Maximum H. M.	2 A mm	End H. M.	Boom Deviation, 1 mm = 220 " arc / Boom Period 780 sec / Pillar Inclination 1 mm = 40 " arc
1922 July							*July.*
2.	13.47.5	13.56.5	14.12.0	14.18.7	2.0		
				14.22.3	2.0		
				14.32.7	1.0		
				14.42.5	1.0	16.53	
3.	5.52.5 ¼			6.25.5	0.3	7.11	
5				21.14	0.2		
9				17.8.5			very small confused by wind tremors.
13				2.5.9			very small
13	5.24.5 & 5.40.5		5.55.5	6.4	0.6	7.39	
19	13.40.5 ½			13.46.5	0.9		
				13.52.8	0.6	14.17	
Aug							*August*
8.		3.58.8	4.3.0	4.6.0	0.8	4.21	
11.	8.26.3	8.30.3	8.35.1	8.35.7	3.0	10.18	
13	0.18.9	0.21.0	0.25.5	0.26.2	11.8		$T_0 = 0.9.3, \Delta = 31°$
				0.27.9	8.8		
				0.30.0	4.0		
				0.32.0	2.7		
				0.34.3	3.0	4.4	
"	12.49.5 ½	12.51.0		13.2.5	0.7	13.40	
16	12.57.5 ½				small		Doubtful
"	13.38.0 ᵈⁿ				"		"
"	15.13.0 ᵈⁿ				"		"
				16.45.3	1.7		Earlier phases masked
				16.47.5	1.1		by local disturbances
				16.50.0	1.1	18.51	
18.	6.46.0 ½			6.54.7			small.
20.	16.48.7 ½			16.53.5	0.4	17.45	
	20.11.0 ½						very small.
25.	19.46.4 & 19.50.5		20.0.0	20.2.0	1.5	21.39	
26.	7.47 ½			8.1.7	0.3	8.45	
29.	17.26.5 ½		17.55.2	17.0.5	1.9	19.38	
30.	11.25 ½			11.35.5	0.5	12.3	

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Date	P₁ H.	M.	P₂ H.	M.	P₃ H.	M.	Maximum H.	M.	2 A mm	End H.	M.	Boom Deviation, 1 mm ≥ 20 " arc / Boom Period F 80 sec / Pillar Inclination 1 mm = 40 " arc

1922
July

Date	P₁		P₂		P₃		Maximum		2 A	End		Notes
2.	13. 47·5		13. 56·5		14 12·0		14 18·7		2·0			July.
							14. 22·3		2·0			
							14·32·7		1·0			
							14.42·5		1·0	16·53		
3.	5. 52·5 ¼						6.25·5		0·3	7.11		
5							21.14		0·2			
9							17. 8.5					very small confused by wind Tremors.
13							2. 5·9					very small
13	5. 24·5 & 5. 40·5				5. 55· 5		6. 4		0·6	7. 34		
19	13. 40·5 ¼						13. 46·5		0·9			
							13. 52·8		0·6	14·17		

Aug

Date	P₁		P₂		P₃		Maximum		2 A	End		Notes
8.			3. 58·8		4. 3·0		4. 6·0		0·8	4. 21		August
11.	8. 26·3		8. 30·3		8. 35·1		8. 35·7		3·0	10, 18		
13	0. 15·9		0. 21·0		0. 25·5		0. 26·2		11·8			T₀ = 0·9·3, Δ = 31°
							0·27·9		8·8			
							0. 30·0		4·0			
							0. 32·0		2·7			
							0. 34·3		3·0	4· 7		
"	12.49·5 ¼		12, 51·0				13. 2·3		0·7	13·40		
16	12·52·5 ¼								small			Doubtful
"	13. 38·0 ᵈⁿ								"			"
"	15. 13·0 ᵈⁿ								"			"
							16. 45·3		1·7			Earlier phases masked by local disturbances
							16. 47·5		1·1			
							16. 50·0		1·1	18·51		
18.	6. 46·0 ⅝						6. 54·7					small.
20.	16. 48·7 ¼						16. 55·5		0·4	17·45		
	20.11·0 ¼											very small.
25.	19. 46·4 & 19. 50·5		20. 0·0				20. 2·0		1·5	21·39		
26.	7. 47 ᵈⁿ						8. 1·7		0·3	8·45		
29.	17. 26·5 ¼		17. 55·2				17. 0·5		1·9	19·38		
30	11. 23 ¼						11. 35·3		0·5	12·3		

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Date	P_1		P_2		P_3		Maximum		2 A	End		Boom Deviation, 1 mm = $220''$ arc
												Boom Period = $18''$. 0 sec
	H.	M.	H.	M.	H	M.	H.	M.	mm	H.	M.	Pillar Inclination 1 mm = $.44''$ arc
1922.												
Sept.												September.
1.	19.18.0	+	19.28.9		20. 0.2		20. 8.0		15.0			$\Delta = 89°$
							20.14.0		10.0			$T_0 = 19^h . 4^s.$
							20.16.5		3.8			
							20.19.7		3.7			
							20.21.4		4.0			
							20.26.0		2.0	23.	47.	
4.	17.25 $\frac{1}{2}$						18.45.5		1.1	19.	23.	
6.	22.54 $\frac{1}{2}$						23. 4		1.0	23.	23	
14.	19.15.3 ...											very small
	19.53.0 ...				20.19.5		20.23.3		5.2	22.	58.	
16.	23.13.0		23.14.5		23.31.0		23.36		4.0	2.	52	
17.	7.46.5 $\frac{1}{2}$						8.15.7		1.0			
							8.21.0		2.2	9.	30	
28.	20.10 $\frac{1}{2}$											very small.
	22.18 $\frac{1}{2}$						22.55		0.5	23.	25	
30.	19.5 $\frac{1}{2}$						19.18.5		0.8	19.	47	

Morland SJ.
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1922. Sep. 1.	19. 18·0 +	19. 28·9	20. 0·2	20. 8·0	15·0		September.
				20. 14·0	10·0		Δ = 89°
				20. 16·5	3·8		T₀ = 19ʰ 43ᵐ
				20. 19·7	3·7		
				20. 21·4	4·0		
				20. 26·0	2·0	23. 47.	
4.	17. 25 ½			18. 45·5	1·1	19. 23.	
6.	22. 59 ½			23. 4	1·0	23. 23.	
14.	19. 15·3 im						very small
	19. 55·05 im		20. 14·5	20. 23·3	5·2	22. 38.	
16.	23. 13·0 e	23. 19·5	23. 31·0	23. 36	4·0	2. 52	
17.	7. 46·5 ½			8. 15·7	1·0		
				8. 21·0	2·2	9. 50	
28.	20. 10 ½						very small.
	22. 18 ½			22. 55	0·5	23. 25	
30.	19. 5 ½			19. 18·5	0·8	19. 47	

J. Morland S.J.

(Curo).

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Oct							Celebes
14	4.41.5 ᵀ			4.48	1·0	5.13	
24	21.32.7	21.42.4		22.21	1·1		
				23.57.5	0·8	24.41	
27	13.40 ᴵⁿ						
	14.34.2 e	14.40.7	15.11.0	15.21	1·1	16.57	
Nov							November
4	3.57.5 ᴵⁿ		4.30.7	4.34.3	0·7	5.21	
7	7.16 ᴵⁿ			17.16.5	0·5		Doubtful
"	23.14.0 e	23.23.0		23.58.5	3·0	24.30	
11	4.40.3	4.57.0	5.19.2	5.28.2	>25		Δ = 89° (Chili)
	Boom adhering to stop at time of traverse and rest of record. Lost from this cause.						
"	15.27.4 e	15.34.0		17.10	2·8	21.15	
"	21.35 ᴵⁿ		*small tremors*		1·6	24	
12	0.15 ᴵⁿ			0.27	0·5	0.38	
	7.53.3 ᴵⁿ			8.11	0·7	8.34	
13	4.3.5 ᴵⁿ			4.42	0·7		
				5.14.5	0·7	5.54	
17				12.0.5	3·0	13.16	*earlier phases lost in changing*
18				19.48	0·5		
Dec							December
2	4.10.8 ᴵⁿ			4.38.5	2·0	5.14	
6	14.4.3	14.11.5		14.17.0	2·0	16.14	
7	14.57.0 ᴵⁿ			16.36.0	1·0	17.1	
	17.15.5			17.34.5	1·0	19.56	
8	15.48.5 ᴵⁿ			16.6.0		16.21	small
	22.52.5 ᴵⁿ			23.14.7	0·8	24.41	
14	23.34 ᴵⁿ			24.21.5	0·5		
				24.57.0	0·6		
				25.16.5	0·3	25.43	
17	1.0.0 ᴵⁿ			1.13.5	0·5	2.20	
18	12.38 ᴵⁿ			13.17	0·5	14.10	*Moon throughout day*
23				13.23	0·8		
				23.14.5	0·8		
25				5.10.5	0·5		*No phases visible*
	Beginning and end masked by microns.						
				5.20.5	0·5		
				5.27.5	0·5		
31	7.32.0 e	7.42.0 e	8.1.5	8.8.0	2·0		
				8.10.7	2·5	10.30	

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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.