

ESKDALEMUIR OBSERVATORY.
Seismological Bulletin for February-1923.



Stn.	Phase.	G. h	M. m	T. s	Period secs.	An	Ae	Az	Remarks.
1	L	20	26						Masked by microseisms and wind disturbance
	F	21	30						
2	?S	1	27	14					Records greatly confused by microseisms and wind effects.
	L	?							
	F	3							
2	PZ	5	19					8050	
	iSE	5	28	17					
	SR _Q	5	33	11					
	SR _B	5	36	15					
	F	9							
3	iP	16	12	58					Very severe earthquake. Records too confused to allow of identification of other phases.
4		13	to						Slight disturbance confused by microseisms.
		14							
5		23	to						Small disturbance confused by microseisms.
		24							
6		15	31	to					Trace of waves-greatly confused by microseisms.
		15	33						
11	LE	23	5	52					Confused by microseisms.
	eN	23	11						
	L	23	25						
	F	24	15						
12	i (?S)	2	18	57					
	?SR ₁	2	23	37					
	L	2	31						
	ME	2	34&35		20			9	
	MN	2	39&40		20	-10			
	MN	2	49		16	-12			
	F	3	30						
15		23	to						Slight disturbance.
		24							
16	eN	7	2	57					
	M	7	22		18	2	3		
	F	7	50						
16	e	9	37	23					
	L	9	52						
	F	10	40						
19		0	to						Very slight disturbance confused by microseisms.
		1							

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Seismological Bulletin for February 1923.



Date.	Phase.	G.	M.	T.	Period	An	A _e	A _z	Remarks.
		h	m	s	secs.				
Feb.									
21		1	to						Slight disturbance masked by heavy microseisms.
		2							
23	?APN	6	18	31					
	e?S	6	26	35					Confused by microseisms.
	e?SR ₁	6	30	9					
	L	6	42						
	MN	7	3		20		12		
	F	7	30						
24	iP	7	45	50					7650 The traversing <i>clock</i> movement failed, with result that traces overlapped badly and it was impossible to assign times to the maxima. The amplitude given is the largest recorded.
	iS	7	54	52					
	SR ₁	8	0	6					
	L	8	8						
	MN				18		68		
	F	11	30						
28	e _N ?S	22	27	8					
	L	22	28	28					
	MN	22	31		12		5		
	F	22	50						

Seismological Bulletin March 1923.

Mar.									
1	?e _N	8	37	48					Record defective by reason of clock failure and loss of record during changing of sheets.
	F	10							
2	S ₁₁	17	14	45					Initial phases masked by microseisms.
	SR ₁	17	22	21					
	SR ₂	17	26	21					
	L	17	37						
	MN	17	42	43	36		110		
	MN	17	49	41	24		70		
	MN	17	54	44	21		59		
	MN	17	56	56	18		65		
	F	19	30						
3	e _N	22	36						
	e _N	22	43						
	L	22	53						
	F	23	25						
4	e?S	0	27	12					
	L	0	34						
	F	1	30						
4		7	30	to					Small disturbance.
		8	30						

ESKDALEMUIR OBSERVATORY.
Seismological Bulletin March 1923.



Phase.	G.	M.	T.	Period	A _n	A _e	A _z	Remarks.
	h	m	s	secs.				
r. 13	20	to						Very slight disturbance.
	21							
14	21	to						Disturbance with well-marked L phase. Record confused by overlapping.
	23							
15	PN	5	44	26			2010	
	P ₂	5	44	24				
	eN	5	47	45				
	SN	5	47	50				
	iN	5	47	55				
	LN	5	48	50				
	MN	5	51		18	29		
	MN	5	51	58	18	-33		
	MN	5	52	37	14	-38		
	F	7						
16	ePZ	22	15	39				Only V record available and the times are rather doubtful.
	e _Z (?PR ₁)	22	20	7				
24	eP	12	51	(30)			8120	P masked by microseisms.
	S	13	0	54				
	SR ₁	13	5	(40)				
	SR ₂	13	9					
	L	13	12					
	MN	13	19	18	26	-150		
	MN	13	24	38	20	-100		
	MN	13	27	22	20	-96		
	MN	13	34	2	20	-48		
	F	16						
26		4	24	to				Traces of feeble disturbance.
		4	52					
26		6	0	to				Traces of feeble disturbance.
		6	15					
26		14	30	to				Traces of feeble disturbance.
		15	15					

ESKDALEMUIR OBSERVATORY.

Earthquake Bulletin for April 1923.



Date.	Phase.	G. M. T. h m s	Period. secs.	Δ_n μ	Δ_e μ	Δ_z μ	Δ km	Remarks.
April. 5	e(L) F	22 54 23 10						
13	erN iSN iN(SR ₁) LN MN MN MN F	15 42 15 51 1 15 55 31 16 4 16 15 4 16 17 7 16 26 24 18 30	18 16 18	28 -29 -23		7600		erN very indistinct. Time approximate
13		21 15 to 21 50						Trace of slight disturbance.
19	iZ F	3 28 39 5						No Horizontal component recorded
23	eP _E eE eSE eZ SR ₁ L ME ME F	3 29 40 3 33 11 3 40 7 3 41 17 3 46 5 3 59 4 6 19 4 14 15 6	20 15	-28 20		9340		
23	eE eE eL F	7 4 7 10 30 7 20 7 35						Very feeble movement.
24	eL F	22 38 22 52						Slight disturbance.
24	eL F	23 16 23 25						Slight disturbance.
25	L F	20 0 20 30						
27	L F	11 23 12						
29		3 to 3 30						Slight disturbance.
29	S L F	9 45 30 9 50 10 45						L phase irregular.
30	L F	20 55 21 15						

Earthquake Bulletin for May 1923.

May. 1	?S e?SR L F	11 5 46 11 11 46 11 29 12 15						The most marked movement was that commencing at 11h 5m 46s on E-W. L not well developed
2		16 50 to 17 20						Slight disturbance.

Earthquake Bulletin for May, 1923.

Date.	Phase.	G. h	M. m	T. s	Period. secs	A_n	A_e	A_z	Δ Km	Remarks.
May. 4	iP	16	37	38					7560	
	PR ₁ N	16	40	15						
	PR ₂ N	16	41	49						
	iS	16	46	36						
	L	16	59							
	MN	17	2	29	30	-185				
	M _E	17	2	19	28		-127			
	MN	17	5		25	-174				
	MN	17	10	4	18	83				
	F	?								
		Wave motion continued until 21h.								
4	e	22	40	57						
	e	22	45	17						
	i _E (?S)	22	51	3						
	L	23	10							
5	F	1	0							
5		15	35	tp						Trace of slight disturbance.
		15	55							
		19	42	to						Trace of L waves. Very feeble.
		20								
10	?e _E	4	12	14						
	e _N	4	14	4						
	e _E	4	20	18						
	F	5	45							
12	?e _E	1	45							
	L	?2	8							
	MN	2	21	50	26	15				
	MN	2	26	49	22	9				
	F	3								
12		23	8	to						Feeble disturbance.
		23	35							
15	L	5	12							Very feeble.
	F	5	40							
15	?e _N	21	53							Slight disturbance.
	e _E	22	10	30						
	L	22	45							
	F	23	30							
22		13	to							Slight disturbance.
		13	30							
23	ePN	22	48	20					8120	
	eSN	22	57	46						
	L	23	13							
	MN	23	23	19	17	-9				
	MN	23	29	9	17	13				
24	F	2								
25	?e	22	41							Confused by wind and microseisms.
	L	22	50							Destructive earthquake in Persia.
	MN	22	54		17	7				
	F	23	30							
25		4	to							Disturbance - confused by wind and microseisms.
		5								



Earthquake Bulletin for May, 1923.

Date.	Phase.	G. M. T. h m s	Period. secs.	Δ_n <i>μ</i>	Δ_e <i>μ</i>	Δ_z <i>μ</i>	Δ km	Remarks.
May. 28	iPZ	1 39 6					9740	eS and L not clearly defined.
	PR1Z	1 42 50						
	eSN	1 49 53						
	L	2 12						
	MN	2 21 46	22	16				
	MN	2 26 26	20	13				
	F	3 30						
30	ePZ	8 38 46					No horizontal component records. From P and PR ₁ $\Delta = 5600$ km.	
	PR1Z	8 40 55						
30	PZ	18 5 8				4740		
	PR1	18 6 59						
	eS	18 11 36						
	F	19 30						
		6 40 to 7 20					Slight disturbance Shown on V trace. No horizontal records.	
31	ePZ	22 13 9					No horizontal records.	

Earthquake Bulletin for June 1923.

June. 1	P	17 37 16				9340	
	S	17 47 43					
	L	18 5 33 58					
	MN	18 12 40	20	36			
	MN	18 19 41	18	43			
	MN	18 22 18	16	42			
	F	(20 30)					
1	P	20 28 16				9320	Apparently of same origin as previous shock. The initial movements of P and S in the two cases were very similar in form.
	S	20 38 42					
	L	20 57					
	MN	21 5 25	20	-16			
	MN	21 10 11	17	18			
F	23 30						
2		2 to 2 50					Trains of L waves of low amplitude.
	3	?eZ	11 50				
F		13 10					
7		23 30 to 23 35					Trace of slight disturbance on V record.
	17	e	18 10 6				
F		18 30					
18	P	8 35 19					
	iZ	8 36 6					
	eN	8 38 29					
	?L	8 58					
	F	10 30					
19	iP	22 53 44				6730	
	eN?(PR1)	22 55 55					
	PR2	22 57 25					
	eS	23 1 59					
	SR1	23 6 15					
	L	23 13					

ESKDALEMUIR OBSERVATORY.

Earthquake Bulletin for June, 1923.

No.	Phase.	G. M. T.	Period	A_n	A_e	A_z	Δ	Remarks.
		h m s	secs.	μ	μ	μ	km	
21	e(?L) F	12 56 13 15						Small disturbance.
22	iS SR ₁ L M _N M _N F	7 6 35 7 12 7 21 7 27) 28) 7 30) 21) 31) ?	28 21	190 150				P indiscernible owing to wind disturbance. Δ probably about 8000 km. (revolving clocks failed before end of disturbance).
28	eE(?S) L F	15 17 20 15 19 15 26						Very feebly developed.
29		11 30 to 12						Trace of disturbance.



H. L. Absalom

Assistant Superintendent

14.8.23



Seismological Bulletin for July 1923.



Date	Phase	G. M. T. h. m. s.	Period secs.	A _n	A _e	A _z	Δ Km.	Remarks.
2	Earthquake in early hours. No time marks on sheet.							
2	e _z	23 42 14						
5	L	2 27						
	F	2 33						
10	?e _n	0 43 11						
	e _n	0 47 4						
	e _n (?S)	0 53 54						
	e	0 56 38						
	L	1 14						
	M _n	1 27 42	20	3				
	F _n	3 30						
12	e	10 20						
	F	11 20						
13	iP	11 26 16		-		+ 9280		
	PR ₁	11 29 37						
	S	11 36 40						
	SR ₁	11 43 ¹ / ₂						
	L	11 54						
	M _n	12 1 22	26	63				
	M _n	12 6 48	21	69				
	M _n	12 10 40	17	69				
	F	14 30						
14	?eP _z	0 9						
	?eS	0 19 33						
	L	0 36						
	M _n	0 {48	26	11				
		{49						
	M _n	0 {53	17	7				
		{54						
	F	1 15						
23	e _n	21 51						
	F _n	22 8						
29		10 to						Traces of slight disturbance.
		10 30						
31	e	5 58 7						
	F	6 40						
31	e	15 19 31						
	e	15 28 47						
	?L	15 43						
	F	17						

During this month the action of the driving clocks of the recording drums was frequently defective and records of several earthquakes were spoiled or lost.

Seismological Bulletin for August 1923.



Date	Phase	G.M. T. h.m. s.	Period secs.	A _n	A _e	A _z	△ Km	Remarks.
1	L F	5 21 6 25						
1	eP iS L F	8 22 21 8 27 0 8 30 9					72950	
4	L F	17 38 18 20						
8	e ?P e e e e ?S L M F	12 11 56 12 20 24 12 21 8 12 28 12 35½ 12 42 12 {50 51 12 45	17	5	10			Trace of low amplitude waves. ? two earthquakes.
10	L F	1 27 1 45						
10	?e e e L M _n F	2 28 40 2 34 20 2 38 2 43 2 47 3 10	23					
10	e L F	16 19 27 16 36 17½						
10 11	e F	22 37 23 0 30						
11	e e L M _n M _e F	1 13 1 19 12 1 45 1 51 59 1 52 40 3 20	28 26	28	24			
12	e L F	6 33 27 6 56 7 35						
12	?eP ?ePR ₁ eS e?SR ₁ L F	10 19 3 10 22 37 10 29 29 10 36 10 50 12					79310	

August 1923 (continued)



Date	Phase	G. M. T. h. m. s.	Period secs.	A _n	A _e	A _z	△ Km.	Remarks.
12	e L F	17 34 32 17 41 18 15						
14	e?S L F	18 0 39 18 2 $\frac{1}{2}$ 18 25						
16	?eP S e(SR ₁) L F	20 34 30 20 44 12 20 49 40 21 0 21 45					†8400	L doubtful - changing sheets.
16	e e L F	1 29 23 1 31 40 1 49 2 40						
17		13 to 14						Slight disturbance.
19	L F	13 14 14 40						
23		6 to 6 30						Traces of long waves.
27	L F	11 58 12 25						
28	?S L M _e M _n F	23 37 3 23 49 23 55 22 23 55 49 2 25						
28			21		26			
29			20	32				

Seismological Bulletin for September 1923.



Date	Phase	G. M. T. h. m. s.	Period secs.	A _n	A _e	A _z	△ Km.	Remarks.
1	The clock and drum recorder (horizontal) was being overhauled for two days prior to 1st September. Record resumed at 9h 47m on 1st. The V recorder was also out of action. Hence no record of the great Japan Earthquake of 1st September.							
1		12 1 to 12 12						Trace of waves of small amplitude.
1		14 33 to 15						Waves of small amplitude.
1		22 35 to 23 5						Slight disturbance.
1		23 34 to 0 5						Slight disturbance.
2		1 50 to 2 20						Waves of small amplitude.
2	iP	2 59 15					9200	S was followed immediately by two or three large sinusoidal movements. On the N-S trace the period was 20 secs and the amplitude 145 μ.
	PR ₁	3 2 34						
	PR ₂	3 4 29						
	iS	3 9 35						
	SR ₁	3 14 34						
	SR ₂	3 19 4						
	L	3 27 1/2						
	M _n	3 34 40	24	-120				
	M _e	3 34 47	22		-109			
	M _n	3 36 23	21	-136				
	M _e	3 36 40	19		-168			
	M _n	3 39 56	19	-119				
	M _n	3 43 24	17	-110				
	M _e	3 43 19	17		-105			
	M _n	3 49 35	16	-104				
	F	7 30						
2	P	9 39 25 ⁵					9170	
	PR ₁	9 42 44						
	iS	9 49 44						
	SR ₁	9 55 35						
	L	10 6						
	M _e	10 13 56	24		-25			
	M _n	10 15 25	26	22				
	M _n	10 20 18	21	-28				
	F	12 30						
2	L	13 50						
	F	14 35						
2	L	14 57						
	F	15 35						
2	eP	22 50 54					9150	L irregular.
	iS	23 1 12						
3	F	1 30						

September (continued).



Date	Phase	G. M. T. h. m. s.	Period secs.	A _n	A _e	A _z	Δ Km.	Remarks.
9	eP S L M _n M _n M _n F	22 15 13 22 24 28 22 37 22 42 4 22 46 4 22 48 19 1 30	30 21 21	-110 -73 -61			7910	
10	L F	9 44 ¹ / ₂ 10 10						
11		9 15 to 9 25						Small disturbance.
13		13 27 to 13 52						Small disturbance confused by microseisms.
17	e _n e _n L F	4 2 27 4 8 52 4 23 4 50						
17		7 to 9						Disturbance with well developed L waves. Record spoiled by clock defects.
21	e e L F	20 17 56 20 22 20 26 21						
22		21 to 22						Fairly large disturbance: earlier parts missing on account of clock failure.
23	e L F	17 48 18 18 0 18 40						
26	?S L F	2 47 8 2 54 4						
26	eP S L M _e M _n M _e M _n F	8 37 8 46 49 9 2 9 7 55 9 9 8 9 10 32 9 11 34 10	30 28 22 22	37 31 29 -20				
30		Early hours: considerable disturbance. No time marks.						



Seismological Bulletin for October 1923.

Date	Phase	G. M. T. h. m. s.	Period secs.	A _n	A _e	A _z	△ Km.	Remarks.
1		8 to 9						Moderate disturbance. No time marks.
1 2		23 45 to 0 10						L waves confused by wind and microseismic effects.
3	L F	16 35 17 10						
4	e F	17 54 19 18 30						
7	e S ?SR L M _n M _n M _n F	3 49 16 3 59 4 5 4 20 4 32 3 4 34 23 4 40 52 6 30	24 24 20	-157 -105 -96				
10	iP	7 15 11						Record too faint to permit of identification of subsequent phases.
11	?L F	12 43 13 10						
13	e e L F	4 48 4 52 30 5 0 5 20						
13		4 14 to 4 33						Traces of waves.
15	e e e L F	7 52 8 2 8 28 8 54 10						
20	e F	0 30 0 45						
20	L F	3 55 30 4 30						
23	L F	16 43 17						



Seismological Bulletin for November 1923.



Date	Phase	G. M. T. h. m. s.	Period secs.	A _n	A _e	A _z	△ Km.	Remarks.
1		7 30 to 7 45						Traces of waves.
1	L F	8 49 79 10						
1	?e L F	20 21 20 35 21						
2	e?P L F	21 29 21 5 0 30						Record very confused.
3	eP PR ₁ PR ₂ S SR ₁ L M _h M _h M _h M _h M _h F	16 32 0 16 36 16 39 12 16 42 48 16 49 17 17 7 11 17 10 1 17 11 52 17 16 0 17 17 6 18	26 24 24 20 20	45 46 60 -41 -60			9740	Confused by wind and microseismic effects.
4	i _n i _n e _n e _n e _n L F	0 25 35 0 35 34 0 37 12 0 43 0 48 1 0 2 40						
5	P PR ₁ e S i SR ₁ L M _h M _h M _h M _h F	21 40 51 21 44 26 21 48 21 51 20 21 51 30 21 57 26 22 8 22 20 23 22 21 40 22 26 11 22 27 16 0 10	24 23 18 17	-91 -63 -76 -55			79380	
6	e e e e L F	17 34 40 17 41 17 44 10 17 50 ? 18 50						
6	e L F	19 41 45 20 0 20 50						

November (continued).



Date	Phase	G. M. T. h. m. s.	Period secs.	A _n	A _e	A _z	Km.	Remarks.
25	e L F	17 27 3 17 43 18 35						
26		7 35 to 8 0						Traces of disturbance.
26	e e e L F	12 43 4 12 45 34 12 51 9 13 7 14						
26		14 13 to 15						Traces of disturbance.
	e L F	3 44 40 4 3 4 35						
28		0 20 to 0 23						Traces.
28	e e L F	0 38 47 0 42 19 0 43 1 5					72100	
28	e _e e _n L F	15 58 19 16 1 52 16 2 42 16 13					72100	
29	L F	4 5 4 30						
30	e _e e _n L F	0 40 2 0 43 36 0 44 (30) 0 55					72120	
30	e _e L F	5 13 17 5 17 (40) 5 27						



Date	Phase	G. M. T. h. m. s.	Period secs.	A _n	A _e	A _z	△ Km.	Remarks.
8	L F	0 31 1 5						
9	e?S e e L F	3 42 31 3 48 2 3 51 29 3 59 1/2 4 30						
10 11		22 to 0						Traces of waves.
11		5 58 to 6 20						Trace of disturbance.
Obsv	e(?) e(?) e L F	3 4 53 3 14 18 3 19 28 3 28 4 25					78200 (approx.)	
18	L M _n F	22 11 22 {26 27 23	17	21				Earlier phases confused by wind and microseismic effects.
19	M _n	4 0 to 4 5 4 2 12	10	8				Traces of disturbance.
21	L F	11 20 11 40						
21	L F	14 5 14 23						
22	e e e L M F	7 44 25 7 51 7 54 1/2 8 4 8 18 8 40	16	4				
23	e L F	2 56 28 3 14 4 0						
23	e L L F	17 43 18 5 18 16 18 40						
24	e F	8 3 0 8 10						
24	L F	18 56 19 6						
24	e e	19 40 18 19 42 33						? seismic disturbance.



Seismological Bulletin for December 1923.



Date	Phase	G. M. T. h. m. s.	Period secs.	A _n	A _e	A _z	Δ Km.	Remarks.
1	e e L F	7 21 7 26 31 7 44 8 15						
2		15 40 to 16 30						Slight disturbance masked by microseisms.
5	iP S L M _n M _n F	21 1 56 21 6 3 21 7 58 21 10 24 21 11 18 22	19 11	-57 -39			2520	Slight uncertainty about the absolute accuracy of the times.
5	L	23 32						
6	F	0 30						
6	? L F	22 49 22 53 23 10						
11	e e L F	0 11 40 0 18 7 ?0 24 0 50						
11		6 to 7						Traces, confused by microseisms.
	L M _e F	11 11 11 15 11 16 11 30	20		7			Earlier phases masked by microseisms and wind effects
20	L F	15 38 16						
27	P eS SR ₁ L F	14 51 32 15 1 50 15 7 41 15 19 16 15					9150	
28	i?S ?SR ₁ L F	22 40 37 22 44 0 22 48 23 45						

H. L. Absalom.

Assistant Superintendent

METEOROLOGICAL OFFICE OBSERVATORIES.



Station :—

LANGHOLM (N.B. Ry.) 16 MILES.
LOCKERBIE (Caledn. Ry.) 18 „

THE OBSERVATORY,
ESKDALEMUIR,
LANGHOLM,
DUMFRIESSHIRE.
SCOTLAND.

Post and Money Order Office :—
ESKDALEMUIR.

Telegrams :—
OBSERVATORY, ESKDALEMUIR.

Please refer to

No.....

192 .

SEISMOLOGICAL BULLETINS.

1923. July - December.

Lat: 55° 19' N. Long: 3° 12' W.

Height above mean sea level: 237 m.

Equipment. Three Galitzin seismographs, with galvanometric registration, arranged to record displacements in north, east and vertical directions.