

TORONTO

1933

SEISMOGRAPHIC STATION, METEOROLOGICAL SERVICE OF CANADA

LAT., 43° 39' 53" N. LONG., 79° 23' 46" W. H = 111m.

INSTRUMENTS—Two Milne-Shaw

SUBSOIL, Sand and Clay

No. AND DATE	PHASE	G. M. TIME			PERIOD	Δ	Period 12 seconds. Magnification 150 Damping 20-1
		h.	m.	s.			
1933.							
JANUARY.							
1st.	iE	9	09	29			Phases from NS if not otherwise noted. <u>More distinct on EW. Small micros mask record.</u>
	iE	9	13	45			
	eE	9	18	37			
	iN	9	25	19			
	LE	9	39				
	F	11	15				
4th	eN	1	42	30			First phase may be microseismic. F at 3h 30m.
	i	1	49	23			
	e	1	57	08			
	L	2	10	11			
4th	O	3	59	21			P quite small and not well marked. amp 28 microns.
	ePNE	4	07	31			
	PR1	4	09	14	4733		
	iSNE	4	13	52			
	SR1	4	17				
	L	4	20		8		
	F	5	30				
4th	O	21	10	31			P & S quite small on NS component. Small amp.
	ePE	21	18	29	4556		
	eSE	21	24	39			
	L	21	32				
	F	22	10				
5th	e	6	54	22			Small initial and trailer phases, indistinct. L was large & pronounced.
	e	7	02	32			
	L	7	06	30			
	F	8	40				
9th	i	2	25				Irregular movements, masked by micros.
	i	2	28	37			
	F	3	25				
21st.	O	19	20	58			A small movement, (microseismic) at 19h 40m 31s may be P'1, with phase at 52s as a P'2
	iP'	19	40	52			
	iP'E	19	40	51			
	i	19	42	44			
	PR1	19	44	29			
	PR1E	19	44	16			
	ScP6P	19	44	57	16,300		
	PPS	19	56	37			
	SR1	20	03	07			
	SR2	20	08	22			
	eL	20	30	45			
	M	20	41				
	F	22	38				
27th	e	22	59	17			Microseisms mask phases. Phases indistinct. Felt in Samoa Islands.
	e	23	01	25			
	i	23	09	17			
	L	23	24	47			
	F	23	40				

Minor quakes, and indistinct, recorded on the 7th, 12th, 15th, 17th, 18th, 23rd, & 24th.

Microseismic storms on 11th & 12th, 24th & 25th, 26th to 29th, & 30th & 31st.

Wm. G. Carroll.

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INSTRUMENTS—Two Milne-Shaw

SUBSOIL, Sand and Clay

NO. AND DATE	PHASE	G. M. TIME			PERIOD s.	▲	REMARKS
		h.	m.	s.			
1933							
FEBRUARY.							
3rd	eP	22-23-53					Readings from NS component unless noted.
	iS	22-33-50			8578		
	eL	22-55-15					
	F	23-54					Surface waves smaller in amp. than P & S.
18th	eP	19-51-22					
	iS	19-56-16					
	L	19-59-45					Small amplitude.
	F	20-30					
23rd.	O	8-09-28					Marked intensity. Chili, P. & S phases quite large. Surface waves proportionately small. Small quakes on 13th, 14th, 18th, and 28th.
	iPEN	8-19-54					
	iSE	8-28-24					
	iSN	8-28-25					
	iN	8-32-43			6967		
	iSR1E	8-32-54					
	iSR2E	8-35-44					
	LN	8-40-02					
	F	12-ca.					
MARCH.							
2nd	O	17-31-17					Pronounced quake, all phases of large amp, making inter- pretations difficult by mingling of vibs. JAPANESE quake. Amp. 713 microns.
	iPNE	17-43-53					
	iPRI	17-47-28					
	iS	17-54-25			9400		
	iSR1	18-00-25					
	iL	18-12					
	M	18-18		15-20			
	F	23-ca.					
11th	O	1-55-52					LONG BEACH, California Early phases rather indistinct. Amp. L wave 244 micron
	ePN	2-00-33					
	iPE	2-00-29					
	PRI	2-01-27			3511		
	iSEN	2-05-38					
	iSR1	2-07-41					
	iSR3	2-08-21					
	iL	2-09-48		13			
	M	2-12-05					
	F	5-06					
17th	e	13-55-20					Small amplitude ending about 14h 20m.
	i	13-56-32					
	i	13-58-49					
17th	O	15-55-43					7411 F at 18h 06m.
	iPE	16-06-34					
	iPN	16-06-35					
	iPR3E	16-12-10					
	iSEN	16-15-31					
	SR1N	16-20-16					
	iSR2E	16-23-32					
	LN	16-28					
17th	e	19-53-17					Small amplitude, ending 21h 56m
	i	20-03-12					
18th	e	3-34-45					Small ampl. ending 5h 27m.
	e	3-41-02					
18th	e	23-38-25					Small, with F about 0h 21m.
	i	23-43-37					
	L?	23-47-58					

Minor disturbances, and after-shocks recorded as follows;
2nd, 3rd (two); 9th; 11th (thirteen); 12th (three); 13th (two);
14th (two); 15th (four); 23rd, 26th; 28th.

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LAT., 43° 39' 53" N. LONG., 79° 23' 46" W. H = 111m.

INSTRUMENTS—Two Milne-Shaw

Periods ~~SC12, Second~~ 61ayDamping ~~20-1~~

Magnification 150

REMARKS

NO. AND DATE	PHASE	G. M. TIME			PERIOD s.	Δ	REMARKS
		h.	m.	s.			
1933.							
APRIL							
9th	O	3	57	32			
	PE	4	04	43			
	PRLE	4	05	51			
	iSE	4	10	13			
	iSRLE	4	12	27		3900	Preliminaries confused with trailers of earlier shock.
	L	4	14	38			
	F	5	40				
April 9th	e	21	10	27			
	i	21	15	47			
	L	21	21	50			
	F	22	18				
April 19th	e	7	03	40			
	e	7	13	02			Small amp.
	F	9	10				
April 23rd.	O	5	57	31			
	eP	6	09	16			
	iS	6	19	07			
	eSR1	6	24	10		8444	
	SR2	6	27	28			
	L	6	34	15			
	M	6	39	19			
	F	7	36	ca.			
April 27th	O	2	35	54			
	iPN	2	44	16			
	iPE	2	44	19			
	iPR1NE	2	46	15			Well marked, Max. of large amp.
	i	2	49	58		4944	
	iSE	2	50	52			
	iSN	2	50	57			
	SR1N	2	54	07			
	SR2N	2	55	52			
	LN	2	57	22			
	F	6	40	ca.			

Quakes of lesser intensity recorded on the 2nd, 4th; 8th; 9th;
16th (2); 19th (2); 22nd; 23rd; 24th (2); 25th; 27th (5); 28th (6)
29th (2); 30th (3).

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LAT., 48° 39' 53" N. LONG., 79° 23' 46" W. H = 111m.

INSTRUMENTS—Two Milne-Shaw

SUBSOIL, Sand and Clay

No. AND DATE	PHASE	G. M. TIME			PERIOD s.	Δ	REMARKS
		h.	m.	s.			
<u>1933 MAY</u>							
May 1st	ePN	19	00	30			Trailers mixed with preliminaries of later quake.
	iSN	19	08				
	L	19	17	08			
	M	19	20	52			
	F	20	30	ca.			
May 3rd.	i	12	56	07			Phases indistinct, blurred.
	i	12	58	54			
	F	13	30				
May 5th	e	4	26	26			
	i	4	32	33			
	F	5	32				
May 6th.	H	5	33	36			The symbol H is being used in connection with Macelwane's tables to signify hypocentral or focal time, in place of the former O.
	iPN	5	40	47	4110		
	PRL	5	42	16			
	iS	5	46	41			
	L	5	52				
	iL	5	55	34			
May 8th.	F	7	ca.				
	H	10	33	29			
	iPN	10	40	08			
	iSN	10	45	36			
	L	10	49	50	3665		
	M	10	53	17			
May 8th	F	13	16				Small indistinct phases.
	e	18	07	44			
	i	18	19	30			
May 9th	F	19	07				
	e	2	46	17			
	L	2	53	40			
May 11th	F	3	18				
	eN	19	19	48			
	i	19	30	31			
	L	19	41				
May 19th	F	20	21				Small.
	H	17	58	14			
	ePN	18	09	34			
	iSN	18	19	01	8000		
	SRP	18	23	31			
	L	18	32	30			
F	20	20					

Minor disturbances on the 1st (2); 6th; 9th; 14th; 16th; (2); 20th; 21st (2); 22nd; 23rd; & 30th.

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LAT., 43° 39' 53" N. LONG., 79° 23' 46" W. H = 111m.

Period 12 seconds
 Damping 20% POIL, Sand and Clay
 Magnification 150.

INSTRUMENTS—Two Milne-Shaw

No. AND DATE	PHASE	G. M. TIME			PERIOD s.	Δ	REMARKS
		h.	m.	s.			
1933 JUNE 12 th	e	15	38	30			Readings from NS unless otherwise recorded. "H" (Hypocentral time from Macelwane.)
	e	15	46	37			
	L	15	50				
	F	16	32				
13 th.	H	22	19	31			
	eP	22	27	44			
	eS	22	34	29			
	SR1	22	37	51		5000	
	L	22	42	45			
	F	23	50				
16 th	e	1	10	41			
	L	1	13	52			Small amplitude.
	F	1	40				
18 th	H	21	37	59			
	P	21	50	27			
	PR1	21	54				
	iS	22	00	54		9335	
	PS	22	01	41			
	SR1	22	06	42			
	LEN	22	17	50			
	F	1	50				
19 th	e	19	02	36			
	e	19	05	51			
	eL?	19	11	21			
	F	20	08				
24 th	eP'	22	14	19			
	i	22	18	16			
	i	22	29	49			
	i	22	41	52			Destructive, Sumatra.
	L	22	58	35			
	F	1	50				
25 th	e	20	56	30			
	L	21	01				
	F	22	10				
28 th	H	23	34	53			
	eP?	23	44	28			
	eS	23	52	19			
	SR1	23	56	42		6220	
	L	0	02	27			
	F	1	10				

Minor disturbances shown on the 2nd, 3rd, 4th(2); 6th; 7th (2);
 8th (3); 10th(2); 11th(2); 12th; 13th(2); 18th; 20th; 21st;
 23rd; 27th (2); 28th (2); 29th.

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SUBSOIL, Sand and Clay

NO. AND DATE	PHASE	G. M. TIME			PERIOD s.	A	REMARKS
		h.	m.	s.			
1933 JULY.							
9th	H	1	30	51			
	eP	1	42	52			
	ePR1	1	46				
	S	1	52	55		8780	Small amp.
	L	2	08	37			
	F	3	48				
9th	H	5	35	30			
	eP	5	42	49			
	i	5	47	04		4220	F 6h 46m.
	S	5	48	48			
	L	5	53	05			
9th	H	9	28	43			
	iP?	9	40	55			
	S	9	51	16		9000	Small amp. F at 11h 18m.
	L	10	07	25			
9th	H	12	31	32			
	eP	12	43	50			
	ePR1	12	46	58			
	eS	12	53	50		9110	F 15h 30m.
	iS	12	54	05			
	L	13	10	43			
10th	H	3	20	11			
	iP	3	25	16			
	iPE	3	25	20			
	iSNE	3	29	22		2555	F 5h-06m.
	eL	3	32	18			
	iL	3	34				
19th	H	5	09	01			
	eP	5	15	13			
	eS	5	19	29			Small amp. P & S very faint.
	L	5	24	38		2630	
	F	6	10				
19th	e	11	03	22			
	e	11	02	14			
	F	12	56				
19th	iS	13	50	40			P lost in changing paper.
	L	14	01	14			
	F	15	10				
19th	H	15	00	18			Small amplitude.
	iP	15	10	07			"i" 15h 19m 47s
	iS	15	18	13		6445	F 17-38
	L	15	28	30			
	M	15	33				
21st.	e	20	25	43			iE 20-47-12
	iNE	20	31	49			F 23-12
	e	20	35	20			
	?LEN	20	59				
22nd	H	20	55	27			Well marked.
	iPNE	21	04	55			Other phases.
	ePR1	21	07	05		6110	iE 21-14-31
	iSNE	21	12	43			iN 21-14-46
	SR1	21	17	02			SR1E 21-17-18
	LE	21	22	14			F 0-42
	MN	21	26	35			
24th	eE	19	14				Distant quake, small amp. eE19-23-05
	eE	19	20	15			
	?E1NE	19	40	30			F 22-00

Minor quakes on 5th, 9th, 10th, 15th, 18th, 20th, 21st, 23rd, (2), 26th, 28th, 30th, 31st (3).

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TORONTO**SEISMOGRAPHIC STATION, METEOROLOGICAL SERVICE OF CANADA**

LAT., 45° 39' 53" N. LONG., 79° 23' 46" W. H = 111m.

INSTRUMENTS—Two Milne-Shaw

SUBSOIL, Sand and Clay

No. AND DATE	PHASE	G. M. TIME			PERIOD s.	▲	Period 12 seconds Magnification 150 Damping 20-1
		h.	m.	s.			
1933							
<u>AUGUST</u>	H	3	03	15			
7 th	eP	3	09	38			
	eS	3	14	52			Phases from NS
	L?	3	24				component, unless
	F	4	08				<u>noted.</u>
11 th	e	9	13		3445		Small amp.
	e	9	22	41			
	F	10	40				
25 th	H	7	50	35			
	eP	8	04	35			Large amplitude.
	ePR1	8	08	36			
	i	8	09	05			
	ePR2	8	11	15			
	iScPcS	8	15	21			
	iSE	8	16	30	11,445		
	iSN	8	16	38			
	iPPS	8	18	37			
	iSR1	8	24				
	L	8	39	22			
	M	8	47				
	F	11	16				
28 th	H	21	19	35			
	ePN	22	34	18			
	ePE	22	34	21			
	P'	22	38				
	PR1	22	38	53			
	PR1E	22	38	45	12,445		Large amplitude.
	i	22	39	09			
	iScPcS	22	44	53			
	iPS	22	48	21			
	iSR1	22	54	45			
	L	22	13				
	M	23	20	30			
	F	3	30				
29 th	H	14	52	46			
	F	15	01	08			iPR1 15-03-00
	iS	15	07	57			
	i	15	09	42			
	SR2	15	12	34			
	L	15	15				
	F	16	02				
31 st.	eN	3	07	08			
	L	3	11	17			
	F	3	55				

Minor seismic disturbances also on, 5th, 6th (2); 12th; 13th; 15th (4); 20th; 22nd; 26th; 28th; 31st.

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No. AND DATE	PHASE	G. M. TIME			PERIOD s.	Δ	REMARKS
		h.	m.	s.			
1933							
<u>SEPTEMBER.</u>							
2nd.	eH	16	56	27			
	i	16	58	16			
	i	17	04				
	i	17	04	58			
	F	18	32				
6th	e	22	23	25			
	e	22	24	16			
	i	22	27	23	12,780?		H? 22h 08m 29s
	iScattered	22	33	45			
	eS?	22	35	46			
	i	22	37	38			
	i	22	41	45			
	SR1?	22	44	13			
	L	23	03	24			
	M	23	12	30			
	F	0	46				
7th	e	22	49	23			
	e	23	01	13			F 0h 06m.
	iL?	23	11				Small amplitude.
9th	e	21	39	29			
	e	21	47	18			
	e	21	49	09			F. 23h 46m.
	eL?	22	05				Small amp.
Heavy microseismic storm from 11th to 13th, minor one 15th-18th.							
19th	e	23	53	06			
	L?	23	59				
	F	0	33				
24th	iP	15	29	53			S, and other early phases lost,
	iL?	15	51	41			changing paper at
	M	15	55	24			15h 38m.
	F	17	46				
25th	e	19	08	42			
	e	19	15	19			
	eL	19	37				
	F	21	17				
27th	iEH	1	46	04			
	eEH	1	52	19			Irregular
	F	2	40				

Small seismic movements also shown on: 8th; 9th; 21st; 22nd; 25th; 27th (2); 28th; 30th (2).

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NO. AND DATE	PHASE	G. M. TIME			PERIOD s.	Δ	REMARKS
		h.	m.	s.			
OCTOBER 1933.							
2nd	eN	9	25				
	eN	9	26	49			
	iN	9	27	20			
	F	10	03				
2nd	H	15	29	17			
	iP	15	37	47			
	iPR1	15	39	31		5220	Changing at 15h 42m record interfered with.
	iPR2	15	40	22			
	F	19	20				
3rd	H	10	21	29			
	eP	10	29	42			
	ePR1	10	31	37		5000	
	S	10	36	25			
	SR1	10	39	34			
	L	10	43	18			
	F	11	44				
14th	H	22	19	50			
	PEN	22	28	27			
	SEN	22	35	27		5335	Small amplitude.
	LE	22	43	20			
17th	F	0	15				
	eE	13	22	09			
	iNE	13	23	25			
	LNE	13	46	25			Long distant quake poorly defined.
25th	F	15	47				
	H	23	28	16			
	iPNE	23	38	51			
	iN	23	39	46			
	iPR1	23	41	23			
	iSN	23	47	37			
	iPSE	23	48	14		7220	
	iPSN	23	48	25			
	iN	23	49	01			
	SR1N	23	52	12			
	SR2N	23	54	23			
	LN	23	59	22			
	M	24	04	44			
26th	F	1	00				
	eN	12	26				
	eN	12	31	39			
	eN	12	39	39			Early phases masked by micros.
	F	13	00				

Minor disturbances shown on the 1st; 2nd (2); 3rd (2); 5th (2);
11th; 12th; 16th; 21st; 22nd; 23rd; 30th.
Microseismic storms on 5th to 10th; 26th to the 28th.

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NO. AND DATE	PHASE	G. M. TIME			PERIOD s.	Δ	REMARKS
		h.	m.	s.			
NOVEMBER 1923.							
2nd	H	12-27-14					
	ePNE	12-37-09					
	iSN	12-45-20					
	iSE	12-45-22			6555		
	LN	12-55					
	MN	13-02					
	F	14-40					
4th	eN	8-48-20					
	eN	8-53-53					
	F	9-46					
14th	H	14-05-26					
	iPEN	14-16-52					
	iN	14-17-21			8110		L phases lost, changing paper 14h 28m.
	ePR2E	14-21-42					
	iSE	14-26-24					
	F	15-ca					
17th	iN	4-09-20					
	eN	4-18-35					
	L?	4-24-05					Microseisms mask phases
	F	4-40					
19th	eN	3-30-27					
	iN	3-36-04					Long distant quake. Preliminaries indistinct.
	L?	3-57					
	F	5-50					
20th	H	23-21-48					
	iPEN	23-27-42					
	iEN	23-32-28					Baffin's Bay.
	iSEN	23-32-33	18		500		S on NS particularly
	iLN	23-34-56	9		3110		500 microns.) intense,
	MN	25-37 ca.	9				92 microns.) with series
	F	3-50					662 microns.) of Max. beginning at 23h37m.
21st.	H	23-45-45					
	ePN	23-51-39					
	PR2	23-52-39					
	eS	23-56-28			3110		From same source as quake above, much smaller amplitude.
	iSR2	23-57-23					
	L	24-00					
	F	1-10					
22nd	eN	5-00-29					
	L?	5-05					
	F	5-58					Likely after-shock of above.
22nd.	eE	13-02-27					
	eE	13-03-10					
	iE	13-09-42					
	L?	13-35					Phases indistinct.
	F	14-25					
23rd.	H	18-57-45					
	iPN	19-04-45					
	iS	19-10-20			3955		Movement at 19h02m10s. ePR1N 19h 05m 58s.
	L	19-15-11					
	F	20-15					
29th	iN	5-02-45					
	i	5-06-47					Masked by heavy microseismic storm.
	L?	5-19-10					
	L	5-22-38					

Minor disturbances on the 3rd; 4th; 19th; 22nd (3); 28th.
 Microseismic storms from the 5th to 7th; 9th to 10th; 12th & 13th;
 15th to 17th and 28th to 30th.

William G. Carroll.

TORONTO

SEISMOGRAPHIC STATION, METEOROLOGICAL SERVICE OF CANADA

LAT., 43° 39' 53" N. LONG., 79° 23' 46" W. H = 111m.

INSTRUMENTS—Two Milne-Shaw

SUBSOIL, Sand and Clay

NO. AND DATE	PHASE	G. M. TIME			PERIOD	Δ	REMARKS
		h.	m.	s.			
1933.							
December.							
2nd	cN	20	30	14			
	L	20	46				
	F	22	40				
4th.	H	19	34	07			
	cPN	19	45	39			Slight energy.
	iS	19	55	16			
	eL	20	09	48	8220		
	iL	20	15	40			
	F	20	42				
12th	iN	14	33	39			Phases interfered with
	F	16	32				at change time.
13th	H	21	23	38			(Re-measured)
	ePNE	21	30	09			
	iPR1NE	21	31	10			
	iNE	21	35	17			Jesuit Seis. Assoc.
	SN	21	35	29	3565		gives 18.5 N.
	LN	21	39				103.5 W.
	iLN	21	41	22			
	M	21	42				
	F	23	50				
14th	H	7	16	26			
	cPN?	7	23	02			Indefinite.
	iPR1	7	24	16			
	iS	7	28	26	3620		
	L	7	34				
	M	7	35	06			
	F	8	55				
15th	H	7	42	08			
	cPN	7	48	29			
	ePR1	7	49	13	3445		
	iS	7	53	41			
	L	7	57	35			
	F	8	48				
19th	iN	17	59	36			
	i	18	03	43			Indefinite.
	L	18	05	24			
	F	18	36				

27th-29th- Heavy microseismic storm.

Minor disturbances on 2nd, 3rd, 14th, 19th and 24th

Wm. G. Carroll.