double

CORRELATION OF EARTHQUAKES

June, 1939.

****

N O T E S

A : Ottawa — Δ = 3620 km. — H = $23^h03^m.4$ U.T.

B : Victoria — Δ = 8390 km. — H = $20^h47^m.0$ U.T.

C : Victoria — Δ = 5280 km. — H = $0^h13^m.0$ U.T.

D : Ottawa — Δ = 2835 km. — H = $4^h05^m.3$ U.T.
Victoria — Δ = 5810 km. — H = 4 05.2 U.T.
Toronto — Δ = 2900 km. — H = 4 05.1 U.T.
Halifax — Δ = 2655 km. — H = 4 05.3 U.T.
Shawinigan Falls — Δ = 3065 km. — H = 4 05.0 U.T.

E : Ottawa — Δ = 3850 km. — H = $16^h46^m.2$ U.T.
Toronto — Δ = 3535 km. — H = 16 46.2 U.T.

G : Ottawa — Δ = 8340 km. — H = $19^h19^m.6$ U.T.
Victoria — Δ = 12,150 km. — H = 19 19.2 U.T.

I : Ottawa — Δ = 485 km. — H = $17^h20^m19^s$ U.T.
Shawinigan Falls — Δ = 218 km. — H = 17 20 23 U.T.

J : Victoria — Δ = 11,000 km. — H = $23^h04^m.1$ U.T.

Dominion Observatory,
Ottawa, Canada.

double

SEISMOLOGICAL BULLETINS RECEIVED

June, 1939.

We acknowledge, with thanks, the receipt of the following seismological publications and bulletins:-

STATIONS	BULLETINS	RECEIVED
Taihoku	April, 1939	June 5
Manila	March, 1939	" 5
Sydney	December, 1938	" 6
Helwan	March and April, 1939	" 7
Brisbane	April, 1939	" 7
Melbourne	January to March, 1939	" 7
Eger	Year 1938	" 8
Weston	November and December, 1938	" 8
Matsuyama	July to December, 1937	" 9
Kobe	April to December, 1937	" 9
Stuttgart	May, 1939	" 14
Prague	April 1, 1938. to March 31, 1939	" 15
Perth	April, 1939	" 17
Riverview	February to April, 1939	" 17
Weston	Preliminary May Bulletin, 1939	" 19
Collmberg	May, 1939	" 20
Strasbourg) Paris) Bureau Central)	April, 1939	" 21
Algiers	May, 1939	" 21
Zurich	April and May, 1939	" 26
Hamburg	January to March, 1939	" 26
Helgoland	January to March, 1939	" 26
Richmond	May, 1939	" 26
Ksara	May, 1939	" 27
Uccle	January 1 to March 22, 1939	" 28
Bucarest	February to May, 1939	" 28
Dublin	May 1 to June 12, 1939	" 29

DOMINION OBSERVATORY,
OTTAWA - CANADA.

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

R. Meldrum Stewart, Dominion Astronomer
Ernest A. Hodgson, Seismologist
W. W. Doxsee, Station Superintendent
M. J. S. Innes, Assistant Seismologist.

S T A T I O N S

OTTAWA

ϕ = 45°23'38" N. λ = 75°42'57" W. h = 83 m.
Time correction within 0.10 s.
Foundation: boulder clay over limestone
Instruments: Milne-Shaw NS and EW components, designated 23 and 17, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 1 lb.

Benioff Vertical, short and long period, designated BS and BL, photographic registration, BS a paper speed of 60 mm. per min., BL a paper speed of 30 mm. per min., mass 235 lbs.

HALIFAX

Dalhousie University

ϕ = 44°38' N. λ = 63°36' W. h = 46 m.
Time correction from recorded railroad time signals
Foundation: carbonaceous slate
Instruments: Bosch NS and EW components, designated HN and HE, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 200 g.

SEVEN FALLS

Quebec Power Company

ϕ = 47°07!4 N. λ = 70°49!6 W. h = 232 m. ca.
Time correction from recorded radio time signals
Foundation: solid granite of Canadian Shield
Instruments: Wood-Anderson and Milne-Shaw, both EW component, designated SF and SM, respectively, each with photographic registration, magnetic damping, SF a paper speed of 60 mm. per min. and mass 15 g., SM a paper speed of 6 mm. per min. and mass 1 lb.

VICTORIA

Meteorological Service

ϕ = 48°24'49" N. λ = 123°19'26" W. h = 67 m.
Time correction from radio time signals
Foundation: rock
Instruments: Milne-Shaw NS and EW components, designated 21 and 20, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

Wiechert Vertical, designated WV - not operating.

SHAWINIGAN FALLS

Shawinigan Water and Power Company

ϕ = 46°33'.1 N. λ = 72°45'.8 W. h = 60 m. ca.
Time correction from recorded radio time signals
Foundation: solid granite of Canadian Shield
Instruments: Wood-Anderson NS component, designated SA, photographic registration, magnetic damping, paper speed of 60 mm. per min., mass 15 g.

SASKATOON

University of Saskatchewan

ϕ = 52°08' N. λ = 106°38' W. h = 515 m.
Time correction from radio time signals
Foundation: clay and sand.
Instruments; Mainka NS and EW components, designated SN and SE, respectively, each with smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 139 kg.

TORONTO

ϕ = 43°40' N. λ = 79°24' W. h = 111 m.
Time correction from radio time signals
Foundation: sand and clay
Instruments: Milne-Shaw NS and EW components, designated 18 and 22, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

DETERMINED CONSTANTS

INSTRUMENT	T_o	V	ε	DISPLACEMENT FOR 1" ARC TILT	DISPLACEMENT FOR 10^{-5} g.
17	12.0	250	20:1	44 mm.	
23	12.0	250	20:1	44 mm.	
BS					7.0 mm.
BL					55.0 mm.
HN	5.0	125	20:1		
HE	5.0	125	20:1		
SA	1.0	1800			
18	12.0	150	20:1		
22	12.0	150	20:1		
20	12.0	250	20:1		
21	12.0	250	20:1		
WV					
SF	1.0	1800			
SM	12.0	250	20:1	43 mm.	
SN	9.3	58	Aper.		
SE	9.1	56	"		

NOTE: Universal Time used throughout.

EARTHQUAKE CORRELATION TABLE

January, 1938.

No.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls		Shawinigan	**
							M. S.	W. A.		
1	1	.....	1 03+0 05L	.....	.....	.....	.....	.....	.....	..
2	1	11 32+0 55r	11 39+0 47r	11 37+0 42r	11 45+0 11L	.....	11 40+0 58r	.....	.....	..
3	1	.....	14 39+0 09L	.....	.....	.....	.....	.....	.....	..
4	1	16 03+0 31u	16 16+0 10L	.....	.....	.....	.....	.....	.....	..
5	1	23 53+1 40u	23 40+1 49u	23 53+1 27u	.....	.....	23 53+2 00u	.....	.....	..
6	2	.....	6 30+0 08L	.....	.....	.....	.....	.....	.....	A
7	2	13 19+0 01v	.....	.....	.....	.....	.....	.....	.....	..
8	2	22 34+1 41R	23 35+1 51R	22 34+1 11R	22 34+0 56R	.....	.....	.....	13 20+0 0.4v	B
9	3	22 23+0 46u	22 05+0 36L	.....	.....	.....	22 35+1 38R	22 35+0 46R	22 35+0 46R	C
10	5	.....	8 39+0 09L	.....	.....	.....	22 27+0 24L	.....	.....	..
11	6	.....	13 11+0 01v	.....	.....	.....	.....	.....	.....	..
12	6	13 29+0 01.3d	.....	.....	.....	.....	.....	.....	.....	E
13	7	15 54+1 47u	15 51+1 22u	15 57+1 53u	.....	.....	.....	13 30+0 0.2v	13 30+0 0.4v	F
14	8	.....	13 22+0 11L	.....	.....	.....	16 04+1 42u	.....	.....	..
15	10	17 59+0 48u	.....	.....	.....	.....	.....	.....	.....	..
16	10	.....	.....	.....	.....	.....	18 19+0 23L	.....	.....	..
17	11	15 36+1 20u	15 33+1 20u	15 36+1 05u	.....	.....	21 47+0 23L	.....	.....	..
18	16	.....	14 32+0 43L	.....	.....	.....	15 36+1 24u	.....	.....	..
19	16	21 51+0 35u	.....	.....	.....	.....	14 49+0 48L	.....	.....	..
20	18	5 30+0 25L	5 23+0 23L	5 32+0 18L	.....	.....	22 13+0 09L	.....	.....	..
21	22	.....	.....	.....	.....	.....	5 21+0 33L	.....	.....	..
22	22	3 05+0 13L	3 19+0 08L	3 07+0 07L	.....	.....	1 30+0 15L	.....	.....	..
23	22	.....	.....	.....	.....	.....	.....	.....	.....	..
24	23	8 44+2 50u	8 40+3 08r	8 44+2 11u	8 42+0 55u	.....	4 20+0 05L	.....	.....	...
25	24	5 29+0 01.6d	.....	.....	.....	.....	8 44+2 59u	8 44+0 54u	8 44+0 54u	G
26	24	10 50+3 19U	10 51+3 00U	10 51+3 02U	11 10+0 53u	.....	.....	.....	5 30+0 0.2v	H
27	25	17 10+2 13L	17 17+2 02L	17 20+1 20L	.....	.....	10 51+3 21U	.....	10 51+0 54U	..
28	26	4 09+0 23L	4 20+0 33L	.....	.....	.....	17 12+2 20L	.....	.....	..
29	29	.....	.....	.....	.....	.....	4 10+0 26L	.....	.....	..
30	30	18 07+0 40L	17 58+0 24L	.....	.....	.....	5 09+2 21L	.....	.....	..
							18 09+0 42L	.....	.....	..

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM June 1, 1939 to June 8, 1939 No. 35

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
231 June 2	e_Z	3 52 15		
	L	3 55		
	F	5 30		
		Victoria		
	e_N	3 50.5		
	i e	3 57 23		
	e	3 58.3		
	L	4 00		
	F	4 05		
		6 00		
		Ottawa		
232 June 3	i_Z	15 06 24		Nearby quake.
	i_Z	15 06 24.5		
	i_Z	15 06 25.3		
	F	15 06.7		
		Ottawa		
233 June 3	i_Z	16 13 08		Nearby quake.
	i_Z	16 13 09		
	i_Z	16 13 09.5		
	F	16 13.3		
		Ottawa		
234 June 4	e	1 33.8		
	L	1 36		
	F	1 44		
		Ottawa		
237 June 5	H	23 03.4	3620	
	eP	23 10.0		
	eS	23 15.4		
	SS	23 17.3		
	eL	23 19		
	F	0 00		
		Victoria		
	e	23 22.5		
	L	23 33		
	F	0 08		
		Victoria		
240 June 8	e	15 48.0		
	L	16 02		
	F	16 54		

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM June 8, 1939 to June 10, 1939 No. 36

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
241 June 8	e	21 01.5		USCGS. gives:-
	e	21 05.9		ϕ = 15° S.
	e	21 11.5		λ = 173° W.
	e	21 12.5		H = 20 47.1
	e	21 20.2		
	L	21 32		
	F	23 25		
		Victoria		
	H	20 47.0	8390	
	iP	20 58 38		
	e	20 59.1		
	iS	21 08 22		
	PS	21 09.1		
	SS	21 13.4		
	L	21 19		
	F	23 42		
		Toronto		
	e	21 01.2		
	e	21 11.3		
	e	21 12.0		
	L	21 34		
	F	23 30		
		Saskatoon		
	e	21 00		
	e	21 11		
	F	21 27		
		Ottawa		
242 June 9	e	0 22.5		
	e	0 28.2		
	L	0 37		
	F	1 04+		
		Victoria		
	H	0 13.5	5280	
	eP	0 22.1		
	PP	0 24.6		
	S	0 29.1		
	eL	0 35		
	F	1 11+		
		Ottawa		
245 June 10	iZ	15 24 30		Nearby quake.
	iZ	15 24 31		
	F	15 24.7		

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM June 10, 1939 to June 12, 1939 No. 37

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
247 June 12	H	4 05.3	2835	USCGS. gives:-
	P	4 10 47		ϕ = 21°.8 N.
	iZ	4 11 15		λ = 66°.0 W.
	S	4 15 18		H = 4 05.2
	i	4 15 48		
	eL	4 18		
	F	5 45		
		Victoria		
	H	4 05.2	5810	
	P	4 14.4		
	S	4 21.9		
	eN	4 30		
	F	6 18		
		Toronto		
	H	4 05.1	2900	
	iP	4 10 42		
	e	4 13.5		
	S	4 15.3		
	SS	4 17.3		
	L	4 19.6		
	F	5 25		
		Saskatoon		
	e	4 23		
	e	4 26.5		
	eL	4 29		
	F	5 00		
		Halifax		
	H	4 05.3	2655	
	iP	4 10 32		
	iS	4 14 51		
	SSN	4 16.5		
	eL	4 18.5		
	F	5 00		
		Shawinigan Falls		
	H	4 05.0	3065	
	P	4 10 52		
	PP	4 11 26		
	eS	4 15 40		
	i	4 15 47		
	i	4 16 02		
	eL	4 18.4		
	F	4 34		
		Ottawa		
248 June 12	i	16 04 48		
	eZ	16 05.1		
	eL	16 06		
	F	16 16		

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM June 12, 1939 to June 19, 1939 No. 38

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
251 June 15	iZ	19 01 42		Quarry blast
	F	19 02.0		ϕ = 42°13!61
				λ = 73°46!70
				H = 18 56.62
		Victoria		
252 June 17	e	12 24.2		
	L	12 36		
	F	13 27		
		Ottawa		
253 June 18	iZ	2 23 16		Nearby quake.
	iZ	2 23 32		
	iZ	2 23 39		
	iZ	2 24 07		
	F	2 25		
		Ottawa		
254 June 18	H	16 46.2	3850	
	P	16 53 04		
	PPP	16 54.4		
	S	16 58 42		
	e	17 01.8		
	L	17 04		
	F	17 38		
		Victoria		
	e	16 55.1		
	e	17 02.1		
	e	17 04.7		
	eL	17 10		
	F	17 54		
		Toronto		
	H	16 46.2	3535	
	eP	16 52.7		
	PPP	16 54.0		
	S	16 58.0		
	eL	17 02		
	F	17 28		
		Ottawa		
255 June 19	iZ	15 27 30.5		Nearby quake.
	iZ	15 27 35.5		
	iZ	15 27 51		
	iL	15 27 53		
	F	15 29		

Lobb

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM June 19, 1939 to June 24, 1939 No. 39

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
256	iZ	21 47 13		
June	e	21 52.0		
19	F	22 00		
		Shawinigan Falls		
	e	21 51.2		
	i	21 53 20		
	F	22 02		
		Ottawa		
258	H	19 19.6	8340	USCGS. gives:-
June	P	19 31 18		ϕ = 5° N.
22	S	19 41.0		λ = 1° W.
	eL	19 54		
	F	21 00		
		Victoria		
	H	19 19.2	12,150	
	P	19 33.7		
	PP	19 38.2		
	SKS	19 44.2		
	PS	19 47.5		
	PPS	19 48.4		
	eL	20 07		
	F	22 00		
		Toronto		
	e	19 31.5		
	e	19 41.2		
	eL	19 56		
	F	20 00		
		Halifax		
	e	19 30		
	e	19 38		
	eL	19 52		
	F	20 18		
		Ottawa		
259	iZ	(10 10 35)		Nearby quake.
June	iZ	(10 10 41)		
23	iZ	(10 10 54)		
	F	10 11.3		
		Ottawa		
260	i	0 03 09		
June	e	0 08.5		
23	e	0 12.5		
and	eL	0 14		
24	F	1 00		

double

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM June 24, 1939 to June 28, 1939 No. 40

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Victoria		
260	e	23 47		
June	eL	0 06		
23	F	0 50		
and				
24				
(Cont'd)		Shawinigan Falls		
262	e	11 59.4		
June	e	12 02 43		
24	F	12 10		
		Ottawa		
264	e	16 42		
June	eL	16 46		
24	F	17 20		
		Victoria		
	:e	16 31		
	eL	16 36		
	F	17 20		
		Ottawa		
265	H	17 20 19	485	Δ and H based on Joliat's Tables for Nearby Earth-
June	P_n	17 21 26		quakes. Felt at Baie St.
24	iZ	17 21 35		Paul, P.Q., and Shawinigan
	iZ	17 21 47		Falls, P.Q.
	iZ	17 21 55		
	iZ	17 22 18		
	S_n	17 22 31		
	F	17 30		
		Shawinigan Falls		
	H	17 20 22	218	
	Pn	17 20 55		
	Sn	17 21 20		
	F	17 28		
		Ottawa		
266	iZ	14 18 08		Nearby quake.
June	iZ	14 18 08.7		
26	F	14 18.6		
		Ottawa		
267	iZ	23 23 19		
June	e	23 25.0		
27	e_N	23 35		
and	L	23 42		
28	F	1 35		

Double

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM June 28, 1939 to June 30, 1938 No. 41

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Victoria		
267 June 27 and 28 (Cont'd)	H	23 04.1	11,000	
	P	23 17 48		
	PP_E	23 21 40		
	PPP_E	23 24.0		
	SKS_E	23 28.4		
	PS	23 30.6		
	L	23 45		
	F	1 44		
		Toronto		
	e	23 25.7		
	e	23 35.7		
	L	23 57		
	F	1 06		
		Halifax		
	e	23 25.5		
	L	0 06		
	F	0 38		

W. W. Doxsee.

EARTHQUAKE CORRELATION TABLE

Month June, 1939

No.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls		Shawinigan	**
							M. S.	W. A.		
228	1	.....	.....	.....	.....	.....	.....	.....	7 53+0 02P	..
229	1	.....	12 39+0 15L	.....	.....	.....	.....	.....	.....	..
230	1	.....	13 00+0 30L	.....	.....	.....	.....	.....	.....	..
231	2	3 52+1 38u	3 50+2 10u	4 04+1 08L	.....	.....	.....	.....	.....	..
232	3	15 06+0 0.4d	.....	.....	.....	.....	.....	.....	.....	..
233	3	16 13+0 0.3d	.....	.....	.....	.....	.....	.....	.....	..
234	4	1 33+0 11u	1 17+0 23L	.....	.....	.....	.....	.....	1 34+0 05L	..
235	4	.....	12 20+0 22L	.....	.....	.....	.....	.....	.....	..
236	4	.....	15 57+0 37L	.....	.....	.....	.....	.....	.....	..
237	5	23 10+0 50r	23 22+0 46r	23 15+0 40L	.....	.....	.....	.....	.....	..
238	7	2 14+0 34L	2 16+0 46L	.....	.....	.....	.....	.....	.....	A
239	8	.....	8 38+0 14L	.....	.....	.....	.....	.....	.....	..
240	8	16 13+0 49L	15 48+1 06r	.....	.....	.....	.....	.....	.....	..
241	8	21 01+2 24u	20 58+3 44u	21 01+2 29u	21 00+0 27u	.....	.....	.....	.....	..
242	9	0 22+0 42r	0 22+0 49u	0 27+0 35L	0 36+0 20L	.....	.....	.....	.....	B
243	9	1 04+0 56L	1 11+0 28L	1 02+0 31L	1 12+0 28L	.....	.....	.....	.....	C
244	9	.....	19 55+0 29L	.....	.....	.....	.....	.....	.....	..
245	10	15 24+0 0.3d	.....	.....	.....	.....	.....	.....	.....	..
246	11	.....	7 23+0 18L	.....	.....	.....	.....	.....	.....	..
247	12	4 10+1 35r	4 14+2 04u	4 10+1 15r	4 23+0 37u	4 10+0 50r	.....	.....	.....	..
248	12	16 04+0 12r	15 49+0 29L	16 05+0 11L	15 54+0 09L	.....	.....	.....	4 11+0 23r	D
249	13	17 34+0 08L	.....	.....	.....	.....	.....	.....	16 05+0 05L	..
250	13	20 59+0 03P	.....	.....	.....	.....	.....	.....	.....	..
251	15	19 01+0 0.4v	.....	.....	.....	.....	.....	.....	21 02+0 03P	..
252	17	.....	12 24+1 03u	.....	.....	.....	.....	.....	.....	..
253	18	2 23+0 02d	.....	.....	.....	.....	.....	.....	.....	..
254	18	16 53+0 45r	16 55+0 59u	16 53+0 35r	.....	16 54+0 16L	.....	.....	16 53+0 07P	E

EARTHQUAKE CORRELATION TABLE

Month June, 1939.

No.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls		Shawinigan	**
							M. S.	W. A.		
255	19	15 27+0 02d	.....	.....	.....	.....	.....	.....	.....	..
256	19	21 47+0 13v	.....	.....	.....	.....	.....	.....	.....	..
257	19	.....	22 46+0 32L	.....	.....	.....	.....	.....	21 51+0 10v	..
258	22	19 31+1 29u	19 33+2 27u	19 31+0 29u	.....	19 30+0 48u	.....	.....	.....	..
259	23	10 10+1 1.3d*	.....	.....	.....	.....	.....	.....	.....	G
260	23	0 03+0 57r	23 47+1 07u	0 12+0 18L	0 12+0 11L	0 21+0 14L	.....	.....	.....	..
261	24	.....	.....	.....	.....	.....	.....	.....	0 13+0 09L	..
262	24	12 02+0 16L	11 53+0 13L	12 02+0 09L	11 54+0 06L	.....	.....	.....	11 34+0 02P	..
263	24	.....	13 08+0 20L	.....	.....	.....	.....	.....	11 59+0 11P	..
264	24	16 42+0 38r	16 31+0 49r	16 44+0 16L	16 39+0 21L	16 34+0 12L	.....	.....	.....	..
265	24	17 21+0 09v	.....	.....	.....	.....	.....	.....	16 46+0 05r	..
266	26	14 18+0 0.6d	.....	.....	.....	.....	.....	.....	17 23+0 08v	I
267	27	23 23+2 12u	23 17+2 27u	23 25+1 41u	.....	23 25+1 13u	.....	.....	.....	..
268	29	10 08+0 12L	10 02+0 11L	.....	.....	.....	.....	.....	.....	J
							.....	.....	.....	..

double

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM July 1, 1939 to July 5, 1939 No. 42

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Victoria		
271 July 2	H	19 43.0	3720	
	eP	19 49.7		
	eS	19 55.2		
	eL	19 58		
	F	20 53		
		Ottawa		
272 July 4	H	18 26.4	6845	
	iP	18 36 34		
	e_N	18 37.7		
	e_N	18 41.5		
	iS	18 45 03		
	(L)	18 53		
	F	20 00		
		Victoria		
	H	18 26.4	8735	
	P	18 38.4		
	e	18 39.6		
	e	18 42.7		
	S	18 48.4		
	e	18 50.0		
	e	19 02		
	F	20 14		
		Toronto		
	H	18 26.5	6645	
	iP	18 36 30		
	e	18 38		
	iS	18 44 48		
	e	18 45.9		
	e	18 46.7		
	L	18 53		
	F	19 20		
		Halifax		
	i	18 37.5		
	e	18 45.8		
	eL	18 53		
	F	19 11		
		Shawinigan Falls		
	H	18 26.5	6860	
	P	18 36 42		
	eS	18 45.2		
	L	18 54		
	F	19 ca		
		Ottawa		
273 July 5	iZ	13 52 43		Nearby quake.
	iZ	13 52 43.5		
	F	13 53		

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM July 12, 1939 to July 18, 1939 No. 44

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Toronto		
278	e	23 20		
July	L	23 52		
12	F	1 30		
and				
12				
(Cont'd)				
		Ottawa		
280	e	8 51.3		
July	L	9 06		
14	F	9 52		
		Ottawa		
281	i_Z	15 46 34		Nearby quake,
July	i_Z	15 46 35		
15	F	15 47		
		Ottawa		
282	e	8 43 44		
July	L	9 26		
16	F	9 46		
		Victoria		
	e	8 48		
	L	9 03		
	F	9 50		
		Victoria		
283	e	12 41.4		
July	eL	13 31		
16	F	14 32		
		Ottawa		
284	H	3 26.7	3910	U.S. Hydrographic Office
July	iP	3 33 42		reported discoloration
18	PPP_N	3 35.4		of water over area of 2
	eS	3 39.4		sq. miles at 54°40' N.
	SS_N	3 41.5		130°33'30" W.
	eL	3 44.5		
	F	6 36		
		Victoria		
	i	3 27 36		
	i	3 28 00		
	i	3 28 40		
	L	3 29 12		
	F	7 05		
		Toronto		
	H	3 26.6	3790	
	P	3 33 26		
	S	3 39.0		
	SS_N	3 41.0		
	L	3 43		
	F	6 ca		

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM July 18, 1939 to July 20, 1939 No. 45

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Halifax		
284 July 18 (Cont'd)	e	3 35.2		
	e	3 41.5		
	e	3 44.6		
	e	3 48		
	F	5 10		
		Shawinigan Falls		
	e	3 33.9		
	i	3 35 22		
	e	3 41.7		
	L	3 45		
	F	4 39		
		Seven Falls		
	H	3 26.7		
	iP	3 34 05	4220	
	eS	3 40.1		
	eL	3 46		
	F	4 35		
		Ottawa		
285 July 19 and 20	e	23 35 26		
	i	23 35 32		
	eL	0 34		
	F	0 48		
		Ottawa		
286 July 20	i_Z	2 40 34		USCGS. gives:-
	i_Z	2 41 40		H = 2 23.0
	$e_{(S)}$	2 48 32		ϕ = 21° S.
	e_E	2 50.4		λ = 179° W.
	e_E	2 51.6		
	e_N	2 52.7		
	e_N	2 56.7		
	F	4 00		
		Victoria		
	i	2 34 38		
	e_E	2 36		
	e_E	2 38		
	i	2 44 16		
	i	2 48 21		
	e	2 50		
	F	4 00		
		Seven Falls		
	e	2 45		
	e	2 51		
	e	2 55		
	F	4 07		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM July 20, 1939 to July 28, 1939 No. 46

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
289 July 23	e_Z	15 17 45		
	e	15 26.2		
	L	15 42		
	F	16 46		
		Victoria		
	e	15 18		
	e	15 25.5		
	L	15 36		
	F	16 57		
		Seven Falls		
	e	15 31.2		
	L	15 38		
	F	15 54		
		Ottawa		
291 July 25	i_Z	20 01 39		Quarry blast at North Branford, Conn.
	e_Z	20 02 14		
	F_Z	20 03		
		Ottawa		
292 July 27	i_Z	19 07 35		Nearby quake.
	i_Z	19 07 36		
	F	19 08		
		Ottawa		
293 July 27	i_Z	19 50 25		Nearby quake.
	i_Z	19 50 26		
	F	19 50.7		
		Ottawa		
294 July 27	i_Z	20 59 24		Nearby quake.
	i_Z	20 59 25		
	F	21 00.0		
		Ottawa		
295 July 28	i_Z	13 42 59		Nearby quake.
	i_Z	13 43 00		
	F	13 43.4		
		Ottawa		
296 July 28	iZ	14 55 00.5		Nearby quake.
	iZ	14 55 01		
	F	14 55.5		

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM July 28, 1939 to July 31, 1939 No. 47

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
297	i_Z	16 11 51		Nearby quake.
July	i_Z	16 11 52		
28	F	16 12.2		
		Ottawa		
298	i_Z	19 25 59		Nearby quake.
July	i_Z	19 26 00		
28	F	19 26.5		
		Ottawa		
299	i_Z	21 22 00.5		Nearby quake.
July	i_Z	21 22 01.5		
28	F	21 22.4		
		Ottawa		
300	e_Z	2 15 35		
July	e	2 21		
31	L	2 32		
	F	2 47		
		Ottawa		
301	e	19 20.7		
July	L	19 26		
31	F	20 06		
		Seven Falls		
	e	19 24.5		
	L	19 26		
	F	19 55		

W. W. Doxsee

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

R. Meldrum Stewart, Dominion Astronomer
Ernest A. Hodgson, Seismologist
W. W. Doxsee, Station Superintendent
M. J. S. Innes, Assistant Seismologist.

S T A T I O N S

OTTAWA

ϕ = 45°23'38" N. λ = 75°42'57" W. h = 83 m.
Time correction within 0.10 s.
Foundation: boulder clay over limestone
Instruments: Milne-Shaw NS and EW components, designated 23 and 17, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 1 lb.

Benioff Vertical, short and long period, designated BS and BL, photographic registration, BS a paper speed of 60 mm. per min., BL a paper speed of 30 mm. per min., mass 235 lbs.

HALIFAX

Dalhousie University

ϕ = 44°38' N. λ = 63°36' W. h = 46 m.
Time correction from recorded railroad time signals
Foundation: carbonaceous slate
Instruments: Bosch NS and EW components, designated HN and HE, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 200 g.

SEVEN FALLS

Quebec Power Company

ϕ = 47°07'.4 N. λ = 70°49'.6 W. h = 232 m. ca.
Time correction from recorded radio time signals
Foundation: solid granite of Canadian Shield
Instruments: Wood-Anderson and Milne-Shaw, both EW component, designated SF and SM, respectively, each with photographic registration, magnetic damping, SF a paper speed of 60 mm. per min. and mass 15 g., SM a paper speed of 6 mm. per min. and mass 1 lb.

VICTORIA

Meteorological Service

ϕ = 48°24'49" N. λ = 123°19'26" W. h = 67 m.
Time correction from radio time signals
Foundation: rock
Instruments: Milne-Shaw NS and EW components, designated 21 and 20, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

Wiechert Vertical, designated WV - not operating.

double

S T A T I O N S (Cont'd)

SHAWINIGAN FALLS

Shawinigan Water and Power Company

ϕ = 46°33'.1 N. λ = 72°45'.8 W. h = 60 m. ca.
Time correction from recorded radio time signals
Foundation: solid granite of Canadian Shield
Instruments: Wood-Anderson NS component, designated SA, photographic registration, magnetic damping, paper speed of 60 mm. per min., mass 15 g.

SASKATOON

University of Saskatchewan

ϕ = 52°08' N. λ = 106°38' W. h = 515 m.
Time correction from radio time signals
Foundation: clay and sand.
Instruments: Mainka NS and EW components, designated SN and SE, respectively, each with smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 139 kg.

TORONTO

ϕ = 43°40' N. λ = 79°24' W. h = 111 m.
Time correction from radio time signals
Foundation: sand and clay
Instruments: Milne-Shaw NS and EW components, designated 18 and 22, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

DETERMINED CONSTANTS

INSTRUMENT	T_o	V	ε	DISPLACEMENT FOR 1" ARC TILT	DISPLACEMENT FOR 10^{-5} g.
17	12.0	250	20:1	44 mm.	
23	12.0	250	20:1	44 mm.	
BS					7.0 mm.
BL					55.0 mm.
HN	5.0	125	20:1		
HE	5.0	125	20:1		
SA	1.0	1800			
18	12.0	150	20:1		
22	12.0	150	20:1		
20	12.0	250	20:1		
21	12.0	250	20:1		
WV					
SF	1.0	1800			
SM	12.0	250	20:1	43 mm.	
SN	9.3	58	Aper.		
SE	9.1	56	"		

NOTE: Universal Time used throughout.

double

Ex 1939

SEISMOLOGICAL SERVICE OF CANADA

SEISMOLOGICAL BULLETIN

August

1939

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DOMINION OBSERVATORY

OTTAWA, CANADA

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SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

R. Meldrum Stewart, Dominion Astronomer
Ernest A. Hodgson, Seismologist
W. W. Doxsee, Station Superintendent
M. J. S. Innes, Assistant Seismologist.

S T A T I O N S

OTTAWA

ϕ = 45°23'38" N. λ = 75°42'57" W. h = 83m.
Time correction within 0.10s.
Foundation: boulder clay over limestone
Instruments: Milne-Shaw NS and EW components, designated 23 and 17, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 1 lb.

Benioff Vertical, short and long period, designated BS and BL, photographic registration, BS a paper speed of 60 mm, per min., BL a paper speed of 30 mm. per min., mass 235 lbs.

HALIFAX

Dalhousie University

ϕ = 44°38' N. λ = 63°36' W. h = 46m.
Time correction from recorded railroad time signals
Foundation: Carbonaceous slate
Instruments; Bosch NS and EW components, designated HN and HE, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 200 g.

SEVEN FALLS

Quebec Power Company

ϕ = 47°07!4 N. λ = 70°49!6 W. h = 232m. ca.
Time correction from recorded radio time signals
Foundation: solid granite of Canadian Shield
Instruments: Wood-Anderson and Milne-Shaw, both EW component, designated SF and SM, respectively, each with photographic registration, magnetic damping, SF a paper speed of 60 mm. per min. and mass 15 g., SM a paper speed of 8 mm. per min. and mass 1 lb.

VICTORIA

Dominion Astrophysical Observatory

ϕ = 48°31'14" N. λ = 123°24'56" W. h = 197m.
Time correction from radio time signals
Foundation: rock
Instruments: Milne-Shaw NS and EW components, designated 21 and 20, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

Wiechert Vertical designated WV, smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 80 kg.

double

S T A T I O N S (Cont'd)

SHAWINIGAN FALLS

Shawinigan Water and Power Company

ϕ = 46°33'.1 N. λ = 72°45'.8 W. h = 60m. ca.
Time correction from recorded radio time signals
Foundation: solid granite of Canadian Shield
Instruments: Wood-Anderson NS component, designated SA, photographic registration, magnetic damping, paper speed of 60 mm. per min., mass 15 g.

SASKATOON

University of Saskatchewan

ϕ = 52°08' N. λ = 106°38' W. h = 515m.
Time correction from radio time signals
Foundation: clay and sand
Instruments: Mainka NS and EW components, designated SN and SE, respectively, each with smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 139 kg.

TORONTO

ϕ = 43°40' N. λ = 79°24' W. h = 111m.
Time correction from radio time signals
Foundation: sand and clay
Instruments: Milne-Shaw NS and EW components, designated 18 and 22, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

DETERMINED CONSTANTS

INSTRUMENT	T_0	V	ε	DISPLACEMENT FOR 1" ARC TILT	DISPLACEMENT FOR 10^{-5} g
17 (Ottawa)	12.0	300	20:1	50 mm.	
23 (Ottawa)	12.0	250	20:1	44 mm.	
BS (Ottawa)	1.0				53 mm.
BL (Ottawa)	1.0				162 mm.
HN (Halifax)	5.0	125	20:1		
HE (Halifax)	5.0	125	20:1		
SA (Shawinigan)	1.0	2000			
18 (Toronto)	12.0	180	20:1		
22 (Toronto)	12.0	180	20:1		
20 (Victoria)	12.0	300	20:1		
21 (Victoria)	12.0	300	20:1		
WV (Victoria)	4.0	120	15:1		
SF (Seven Falls)	1.0	2000			
SM (Seven Falls)	12.0	300	20:1	50 mm.	
SN (Saskatoon)	9.2	59	Aper.		
SE (Saskatoon)	9.2	60	"		

NOTE: Universal Time used throughout.

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM August 1, 1939 to August 15, 1939 No. 48

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
303 Aug. 2	e_E	1 04		
	e_N	1 08		
	L	1 25		
	F	2 18		
		Toronto		
	e	1 12.7		
	eL	1 27		
	F	2 13		
		Seven Falls		
	e	1 10.6		
	e	1 17.6		
	L	1 24		
	F	3 17		
		Ottawa		
306 Aug. 5	i_Z	9 35 42		
	e	9 41		
	F	10 02		
		Ottawa		
307 Aug. 5	i_Z	15 36 30		Nearby quake.
	i_Z	15 37 06		
	i_Z	15 37 07.5		
	F	15 38.2		
		Ottawa		
313 Aug. 12	e	2 27		
	e	2 32.7		
	L	3 06		
	F	4 00 ca.		
		Toronto		
	e_E	2 32.4		
	e_N	2 34.7		
	e_N	2 36.0		
	L	2 58		
	F	3 30		
		Seven Falls		
	e	2 28		
	i	2 32 48		
	e	2 34.4		
	i	2 37 38		
	L	2 57		
	F	4 35		
		Ottawa		
316 Aug. 15	i	3 57 39		
	e	4 05.0		
	L	4 07		
	F	4 19		

double

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM August 15, 1939 to August 19, 1939 NO. 49

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
319 Aug. 15	H	8 37.2	160	
	Pn	8 37 36		
	P*	8 37 37		
	Pg	8 37 40		
	i	8 37 42		
	Sn	8 37 55		
	Sg	8 37 59		
	F	8 39.0		
		Ottawa		
320 Aug. 16	H	17 07.2	3700	USCGS. gives:
	iP	17 13 55		ϕ = 13° N.
	PPP	17 15.5		λ = 91° W.
	eS	17 19.4		
	L	17 24		
	F	19 00 ca.		
		Toronto		
	H	17 07.1	3500	
	P	17 13 32		
	S	17 18.8		
	eL	17 24		
	F	18 11		
		Seven Falls		
	H	17 07.3	3980	
	P	17 14 23		
	PPP	17 15 55		
	S	17 20 09		
	L	17 24		
	F	19 14 ca.		
		Shawinigan Falls		
	e	17 14 13		
	L	17 25		
	F	17 42		
		Ottawa		
323 Aug. 18 and 19	H	22 15.9	13,780	USCGS. gives:
	P'Z	22 34 50		ϕ = 18° S.
	PP	22 36.4		λ = 168° E.
	SKS	22 42.0		
	SKKS	22 43.5		
	PS	22 46.3		
	SS	22 53		
	eL	23 10		
	F	1 30		
		Toronto		
	e_N	22 42.8		
	e_E	22 45.9		
	e_E	22 53		
	L	23 09		
	F	0 45		

double

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM August 18, 1939 to August 25, 1939 No. 50

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Halifax		
323 Aug. 18 and 19 (Cont'd)	e_E	22 38.7		
	L	23 10		
	F	0 34		
		Seven Falls		
	e	22 36.3		
	e	22 46 34		
	e	22 54.3		
	L	23 14		
	F	1 37 ca.		
		Ottawa		
327 Aug. 21	e_Z	15 29 45		
	e	15 39.6		
	e_L	15 49		
	F	16 50		
		Seven Falls		
	e	15 38.6		
	L	15 50		
	F	16 39		
		Ottawa		
328 Aug. 22	e_Z	0 19 21		
	e	0 30.2		
	F	1 12		
		Ottawa		
329 Aug. 22	i_Z	17 35 03		Nearby quake.
	i_Z	17 35 04		
	F	17 36		
		Ottawa		
330 Aug. 22	i_Z	19 40 24		Nearby quake.
	i_Z	19 40 25		
	F	19 41		
		Ottawa		
338 Aug. 25	i	4 07 04		
	e_Z	4 16		
	L	4 25		
	F	6 00 ca.		
		Victoria		
	e_E	4 05		
	e	4 11		
	L	4 25		
	F	5 11		
		Seven Falls		
	e	4 18.8		
	L	4 26		
	F	6 02		

double

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM August 25, 1939 to August 31, 1939 No. 51

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
341 Aug. 31	H	7 52.0	415	Rockburst at Lake Shore Mines, Kirkland Lake, Ont.
	iPn	7 52 57		
	iP*	7 53 05		
	iSn	7 53 42		
	i	7 53 56		
	i	7 53 58		
	F	7 55		
		Ottawa		
342 Aug. 31	H	8 02.0	415	Rockburst at Lake Shore Mines, Kirkland Lake, Ont.
	iPn	8 02 59		
	iP*	8 03 07		
	iSn	8 03 44		
	i	8 03 50		
	i	8 03 58		
	i	8 04 00		
	F	8 06		
		Shawinigan Falls		
	i	8 04 14		
	e	8 04 34		
	F	8 06		

W. W. Doxsee.

EARTHQUAKE CORRELATION TABLE

Month August, 1939

No.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls		Shawinigan	**
							M. S.	W. A.		
302	1	16 07+0 05P	.....	.....	.....	.....	.....	.....	16 07+0 05P	..
303	2	1 04+1 14u	.....	1 13+1 00u	.....	.....	1 11+2 06u	.....	.....	..
304	3	.....	.....	3 24+0 13L	.....	.....	3 27+1 01L	.....	.....	..
305	3	.....	.....	.....	.....	.....	13 05+0 16L	.....	.....	..
306	5	9 36+0 26u	.....	.....	.....	.....	.....	.....	.....	..
307	5	15 36+0 02d*	.....	.....	.....	.....	.....	.....	.....	A
308	6	18 03+0 01P*	.....	.....	.....	.....	.....	.....	.....	..
309	7	.....	.....	.....	.....	.....	2 13+0 16L	.....	.....	..
310	7	5 35+0 1.5P*	.....	.....	.....	.....	.....	.....	.....	..
311	8	.....	.....	.....	.....	.....	21 04+0 28L	.....	.....	..
312	11	.....	.....	.....	.....	.....	8 17+0 07L	.....	.....	..
313	12	2 27+1 33u	.....	2 32+1 08u	.....	.....	2 28+2 07u	.....	.....	..
314	12	10 12+1 50L	.....	.....	.....	.....	10 12+1 28L	.....	10 02+0 13L	..
315	12	19 52+0 04P*	.....	.....	.....	.....	.....	.....	.....	..
316	15	3 58+0 21r	.....	.....	.....	.....	4 07+0 07L	.....	3 58+0 15P	..
317	15	6 57+0 03P*	.....	.....	.....	.....	.....	.....	.....	..
318	15	7 06+0 02P	.....	.....	.....	.....	.....	.....	.....	..
319	15	8 38+0 01d	.....	.....	.....	.....	.....	.....	.....	B
320	16	17 14+1 46r	.....	17 14+0 57r	.....	.....	17 14+2 00r	.....	17 14+0 28r	C
321	17	15 58+0 0.5P*	.....	.....	.....	.....	.....	.....	.....	..
322	18	2 11+0 01P*	.....	.....	.....	.....	.....	.....	.....	..
323	18	22 35+2 55U	.....	22 43+2 02U	.....	22 39+1 55U	22 36+3 01U	.....	.....	E
324	19	1 45+1 03L	.....	1 45+0 50L	.....	1 57+0 20L	1 48+0 54L	.....	.....	..
325	19	19 52+0 0.7P*	.....	.....	.....	.....	.....	.....	.....	..
326	20	7 27+0 05P	.....	.....	.....	.....	.....	.....	.....	..

double

EARTHQUAKE CORRELATION TABLE

Month August, 1939

No.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls M. S.	Seven Falls W. A.	Shawinigan	**
327	21	15 30+1 20u	.....	15 50+0 36L	.....	.....	15 39+1 00u	.....	.....	..
328	22	0 19+0 53u	.....	.....	.....	.....	0 51+0 16L	.....	.....	..
329	22	17 35+0 01d	.....	.....	.....	.....	.....	.....	.....	A
330	22	19 40+0 0.6d	.....	.....	.....	.....	.....	.....	.....	A
331	23	2 58+0 32L	2 41+0 19L	.....	.....	.....	3 01+0 13L	.....	.....	..
332	23	5 00+2 01L	4 59+1 16L	.....	.....	.....	5 03+2 03L	.....	.....	..
333	23	15 34+0 1.5P*	.....	.....	.....	.....	.....	.....	.....	..
334	23	21 40+0 03P*	.....	.....	.....	.....	.....	.....	.....	..
335	24	7 49+0 02P	.....	.....	.....	.....	.....	.....	.....	..
336	24	14 58+0 02P*	.....	.....	.....	.....	.....	.....	.....	..
337	24	.....	.....	23 41+0 26L	.....	.....	.....	.....	.....	..
338	25	4 07+1 53u	4 05+1 06u	.....	.....	.....	4 19+1 43u	.....	.....	..
339	26	.....	.....	.....	.....	.....	8 49+0 09L	.....	.....	..
340	27	11 36+0 04P	.....	.....	.....	.....	.....	.....	.....	..
341	31	7 53+0 02v	.....	.....	.....	.....	.....	.....	.....	F
342	31	8 03+0 03v	.....	.....	.....	.....	.....	.....	8 04+0 02v	F

double

double

double

SEISMOLOGICAL SERVICE OF CANADA

SEISMOLOGICAL BULLETIN

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DOMINION OBSERVATORY

OTTAWA, CANADA

******
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double

CORRELATION OF EARTHQUAKES

September, 1939.

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N O T E S

A ; Epicentre probably within 100 miles of the Ottawa station.

B : Δ = 160 km. H = $8^h37^m.2$ U.T.

C : Ottawa Δ = 3700 km. H = $17^h07^m.2$ U.T.
Toronto Δ = 3500 km. H = 17 07.1 U.T.
Seven Falls Δ = 3980 km. H = 17 07.3 U.T.

E : Ottawa Δ = 13780 km. H = $22^h15^m.9$ U,T.

F : Ottawa Δ = 415 km. H_1 = $7^h52^m.0$ U.T.
H_2 = 8 02.0 U.T.
Rockbursts at Lakeshore Mines, Kirkland Lake, Ont.

Dominion Observatory,
Ottawa, Canada,
October 5, 1939.

double

SEISMOLOGICAL BULLETINS RECEIVED
August, 1939.

We acknowledge, with thanks, the receipt of the following seismological publications and bulletins:-

STATIONS	BULLETINS	RECEIVED	
Pasadena and Auxiliary Stations	September, 1938	August	1
Sydney	March and April, 1939	"	1
Apia	April to June, 1939	"	1
New Zealand Stations	May, 1939	"	1
Saint Louis and Auxiliary Stations	Supplement for March, 1939 and Preliminaries for May 6, June 8, 12, 22, 27, and July 4, 5, 1939	"	2
Florissant	October and November, 1938	"	2
Pasadena	September, 1938 and Preliminaries February to July/39	"	9
Toledo	January to March, 1939	"	9
Martinique	April to June, 1939	"	9
Brisbane	June, 1939	"	12
Tiflis	October to December, 1937	"	12
Manila	May, 1939	"	12
Perth	June, 1939	"	12
Zurich	June and July, 1939	"	14
Weston	July, 1939	"	14
Stuttgart	July, 1939	"	16
La Plata	February to June, 1939	"	16
Chiufeng	Year 1935	"	17
Helgoland	April to June, 1939	"	21
Hamburg	April to June, 1939	"	21
Richmond	July, 1939	"	23
Ksara	July, 1939	"	24
Algiers	July, 1939	"	24
Bucarest	July, 1939	"	25
Strasbourg) Paris) Bureau Central)	June, 1939	"	26
Batavia	July to September, 1938	"	30
New Zealand Stations	June, 1939	"	30
Saint Louis and Auxiliary Stations	Preliminaries for April 30, 1939	"	30
Denver	August to December, 1938	"	30
Saint Louis	October to December, 1938	"	30
Pasadena	Local Shocks for June, 1939	"	30

Dominion Observatory,
Ottawa, Canada.

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

R. Meldrum Stewart, Dominion Astronomer
Ernest A. Hodgson, Seismologist
W. W. Doxsee, Station Superintendent
M. J. S. Innes, Assistant Seismologist.

S T A T I O N S

OTTAWA

ϕ = 45°23'38" N. λ = 75°42'57" W. h = 83m.
Time correction within 0.10s.
Foundation: boulder clay over limestone
Instruments: Milne-Shaw NS and EW components, designated 23 and 17, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 1 lb.

Benioff Vertical, short and long period, designated BS and BL, photographic registration, BS a paper speed of 60 mm. per min., BL a paper speed of 30 mm. per min., mass 235 lbs.

HALIFAX

Dalhousie University

ϕ = 44°38' N. λ = 63°36' W. h = 46m.
Time correction from recorded railroad time signals
Foundation: Carbonaceous slate
Instruments: Bosch NS and EW components, designated HN and HE, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 200 g.

SEVEN FALLS

Quebec Power Company

ϕ = 47°07!4 N. λ = 70°49!6 W. h = 232m. ca.
Time correction from recorded radio time signals
Foundation: solid granite of Canadian Shield
Instruments: Wood-Anderson and Milne-Shaw, both EW component, designated SF and SM, respectively, each with photographic registration, magnetic damping, SF a paper speed of 60 mm. per min. and mass 15 g., SM a paper speed of 8 mm. per min. and mass 1 lb.

VICTORIA

Dominion Astrophysical Observatory

ϕ = 48°31'14" N. λ = 123°24'56" W. h = 197m.
Time correction from radio time signals
Foundation: rock
Instruments: Milne-Shaw NS and EW components, designated 21 and 20, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

Wiechert Vertical designated WV, smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 80 kg.

double

S T A T I O N S (Cont'd)

SHAWINIGAN FALLS

Shawinigan Water and Power Company
ϕ = 46°33'.1 N. λ = 72°45'.8 W. h = 60m. ca.
Time correction from recorded radio time signals
Foundation: solid granite of Canadian Shield
Instruments: Wood-Anderson NS component, designated SA, photographic registration, magnetic damping, paper speed of 60 mm. per min., mass 15 g.

SASKATOON

University of Saskatchewan
ϕ = 52°08' N. λ = 106°38' W. h = 515m.
Time correction from radio time signals
Foundation: clay and sand
Instruments: Mainka NS and EW components, designated SN and SE, respectively, each with smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 139 kg.

TORONTO

ϕ = 43°40' N. λ = 79°24' W. h = 111m.
Time correction from radio time signals
Foundation: sand and clay
Instruments: Milne-Shaw NS and EW components, designated 18 and 22, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

DETERMINED CONSTANTS

INSTRUMENT	T_o	V	ε	DISPLACEMENT FOR 1" ARC TILT	DISPLACEMENT FOR 10^{-5} g
17 (Ottawa)	12.0	300	20:1	50 mm.	
23 (Ottawa)	12.0	250	20:1	44 mm.	
BS (Ottawa)	1.0				53 mm.
BL (Ottawa	1.0				162 mm.
HN (Halifax)	5.0	125	20:1		
HE (Halifax)	5.0	125	20:1		
SA (Shawinigan)	1.0	2000			
18 (Toronto)	10.0	165	20:1	20 mm.	
22 (Toronto)	10.0	165	20:1	20 mm.	
20 (Victoria)	12.0	300	20:1		
21 (Victoria	12.0	300	20:1		
WV (Victoria)	4.0	120	15:1		
SF (Seven Falls)	1.0	2000			
SM (Seven Falls)	12.0	300	20:1	50 mm.	
SN (Saskatoon)	9.2	59	Aper.		
SE (Saskatoon)	9.2	60	"		

NOTE: Universal Time used throughout

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM September 1, 1939 to September 8, 1939 No. 52

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
343	i_Z	20 00 23		Nearby quake.
Sept.	i_Z	20 01 02		
1	i_Z	20 01 07		
	F	20 02		
		Ottawa		
344	i_Z	9 17 32		
Sept.	e	9 24		
2	L	9 42		
	F	11 30		
		Seven Falls		
	e	9 19 30		
	e	9 24 35		
	e	9 29.0		
	e	9 36.4		
	L	9 48		
	F	11 35		
		Ottawa		
346	H	18 44.9	415	Rockburst at Lake Shore
Sept.	iPn	18 45 53		Mines, Kirkland Lake, Ont.
2	i	18 46 02		
	iSn	18 46 38		
	i	18 46 52		
	F	18 48		
		Ottawa		
348	H	5 17.0	77	Felt at Kazabazua, Que.
Sept.	iP*	5 17 13		
4	iPg	5 17 14.5		
	i	5 17 17		
	iS*	5 17 22		
	F	5 19		
		Ottawa		
349	H	12 05.0	7180	USCGS gives:
Sept.	P	12 15 30		ϕ = 51° N.
8	PP	12 18.0		λ = 175° E.
	PPP	12 19.6		
	iS	12 24 17		
	PS	12 24.6		
	SS	12 29.0		
	SSS,	12 31.8		
	eL	12 33		
	F	16 15		

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM September 8, 1939 to September 8, 1939 No. 53

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Victoria		
349 Sept. 8 (Cont'd)	H	(12 05.2)	4100	
	P	(12 12 24)		
	PPP	(12 13.9)		
	S	(12 18 18)		
	SS	(12 20.3)		
	SSS	(12 20.8)		
	L	(12 22.5)		
	F	16 ca.		
		Toronto		
	H	12 05.0	7160	
	eP	12 15.5		
	eN	12 18.7		
	eE	12 20.1		
	iS	12 24 16		
	SS	12 28.4		
	SSS	12 31.0		
	eL	12 36		
	F	15 33		
		Saskatoon		
	H	12 04.6	5060	
	P	12 12 57		
	S	12 19 45		
	SS	12 23.1		
	eL	12 26.0		
	F	14 ca.		
		Halifax		
	H	(12 04.4)	7720	
	P	(12 15.5)		
	S	(12 24.7)		
	SS	(12 29.7)		
	SSS	(12 33.0		
	L	(12 38)		
	F	(14 10 ca.		
		Seven Falls		
	H	12 05.2	7200	
	P	12 15 43		
	S	12 24 31		
	SS	12 28.6		
	SSS	12 31.1		
	L	12 34		
	F	16 46		
		Shawinigan Falls		
	H	12 05.0	7240	
	P	12 15 37		
	S	12 24 27		
	SS	12 29.0		
	L	12 39		
	F	13 57		

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM September 8, 1939 to September 15, 1939 No. 54

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
351 Sept. 10	e_Z	17 52 46		
	L	18 08		
	F	18 28		
		Ottawa		
352 Sept. 11	i_Z	8 03 14		
	e	8 11.1		
	L	8 23		
	F	9 30		
		Seven Falls		
	e	8 11.3		
	L	8 24		
	F	9 20		
		Victoria		
353 Sept. 12	e	11 30.5		
	L	11 47		
	F	12 18		
		Ottawa		
355 Sept. 12	i_Z	20 12 23		Nearby quake.
	i_Z	20 12 24		
	F	20 13		
		Ottawa		
356 Sept. 12	i_Z	20 46 19		Nearby quake.
	i_Z	20 46 20		
	F	20 46.8		
		Victoria		
359 Sept. 15	e	12 10.4		
	L	12 28		
	F	13 19		
		Ottawa		
361 Sept. 15	i_Z	18 27 18		Nearby quake.
	i_Z	18 27 19		
	F	18 28		
		Ottawa		
363 Sept. 15	i_Z	21 11 53		Nearby quake.
	i_Z	21 11 54		
	F	21 12.4		
		Ottawa		
364 Sept. 15	i_Z	21 59 42		
	L	22 22		
	F	23 02		

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM September 15, 1939 to September 20, 1939 No. 55

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Seven Falls		
364 Sept. 15 (Cont'd)	e	22 08.8		
	L	22 21		
	F	23 05		
		Ottawa		
366 Sept. 15 and 16	i_Z	23 27 53		
	e	23 37		
	F	0 13		
		Ottawa		
373 Sept. 18	i_Z	20 36 44		Nearby quake.
	i_Z	20 37 01		
	F	20 37.5		
		Ottawa		
374 Sept. 18	i_Z	20 40 03		
	L	20 57		
	F	21 16		
		Victoria		
	e	20 35.2		
	e	20 39.5		
	L	20 41		
	F	21 12		
		Seven Falls		
	e	20 51		
	L	20 56		
	F	21 21		
		Ottawa		
376 Sept. 20	i_Z	0 30 29		
	e	0 39.8		
	F	0 46		
		Ottawa		
377 Sept. 20	H	3 54.7	440	Rockburst at Lake Shore Mines, Kirkland Lake, Ont.
	iPn	3 55 46		
	iP*	3 55 55		
	iSn	3 56 33		
	iS*	3 56 46		
	iSg	3 57 00		
	F	4 07		
		Seven Falls		
	e	3 57 29		
	L	3 58 01		
	F	4 00 ca.		

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM September 20, 1939 to September 21, 1939 No. 56

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Shawinigan Falls		
377 Sept. 20 (Cont'd)	H	3 54.8	530	
	Pn	3 56 01		
	Sn	3 56 57		
	L	3 57 20		
	F	4 04		
		Toronto		
	i	3 57 00		
	F	3 57.5		
		Ottawa		
378 Sept. 20	i_Z	4 08 10		Rockburst at Lake Shore Mines, Kirkland Lake, Ont.
	i_Z	4 08 47		
	e	4 09.0		
	F	4 11		
		Ottawa		
379 Sept. 20	i_Z	7 02 54		
	e	7 11.3		
	F	7 26		
		Ottawa		
380 Sept. 20	e_E	7 51.6		
	L	8 34		
	F	9 12		
		Ottawa		
381 Sept. 21	i_Z	11 24 27		
	e_N	11 29		
	L	11 34		
	F	11 47		
		Ottawa		
382 Sept. 21	i_Z	11 48 36		
	e	11 53.5		
	L	11 58		
	F	12 14		
		Seven Falls		
	e	11 52		
	L	11 55		
	F	12 10		
		Ottawa		
383 Sept. 21	i	12 49 37		
	e	12 54.3		
	L	12 58		
	F	13 16		

double

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM September 21, 1939 to September 22, 1939 No. 57

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Victoria		
383 Sept. 21 (Cont'd)	e	12 59.6		
	L	13 09		
	F	13 38		
		Halifax		
	i	12 48 40		
	e	12 52.5		
	L	12 56		
	F	13 03		
		Seven Falls		
	e	12 49 04		
	e	12 53.4		
	L	12 56		
	F	13 18		
		Ottawa		
384 Sept. 21	i	21 34 12		
	e_E	21 35.7		
	e	21 39.7		
	L	21 45.5		
	F	22 43		
		Victoria		
	H	21 27.2	2420	
	P	21 32.1		
	S	21 36.1		
	L	21 38		
	F	22 31		
		Toronto		
	e	21 39.0		
	e	21 43.5		
	L	21 44.5		
	F	22 33		
		Seven Falls		
	e	21 40.7		
	L	21 47		
	F	22 45		
		Ottawa		
385 Sept. 22	i	0 47 54		
	e	0 57.3		
	e_E	1 02		
	e	1 05		
	L	1 09		
	F	2 20		

double

SEISMOLOGICAL SERVICE OF Canada

DOMINION OBSERVATORY, OTTAWA

FROM September 22, 1939 to September 28, 1939 No. 58

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Victoria		
385 Sept. 22 (Cont'd)	e	1 00.1		
	L	1 15		
	F	2 27		
		Toronto		
	e	0 57.7		
	L	1 09		
	F	2 12		
		Halifax		
	e	0 55		
	L	1 06		
	F	1 38		
		Seven Falls		
	e	0 47		
	e	0 56		
	e	1 01		
	L	1 08		
	F	2 22		
		Ottawa		
386 Sept. 23	i_Z	16 13 39		Nearby quake.
	i_Z	16 13 42		
	i_Z	16 13 54		
	i_Z	16 13 59		
	i_Z	16 14 02		
	F_Z	16 14.5		
		Victoria		
387 Sept. 25	e	16 36.0		
	L	16 42		
	F	17 08		
		Toronto		
389 Sept. 28	e_N	15 05.5		
	e	15 09.2		
	L	15 16		
	F	15 30		
		Seven Falls		
	e	15 07.0		
	e	15 11.1		
	L	15 16		
	F	15 40		

Double

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM September 28, 1939 to September 30, 1939 No. 59

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Shawinigan Falls		
389 Sept. 28 (Cont'd)	e	15 05 19		
	L	15 15		
	F	15 21		
		Ottawa		
390 Sept. 28	iZ	19 06 20		Nearby quake.
	iZ	19 06 25		
	iZ	19 06 36		
	F	19 07		

W. W. Doxsee.

EARTHQUAKE CORRELATION TABLE

Month September, 1939

No.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls		Shawinigan	**
							M. S.	W. A.		
343	1	20 00+0 02d	.....	.....	.....	.....	.....	.....	.....	A
344	2	9 18+2 12u	.....	9 48+0 56L	.....	.....	9 19+2 14u	.....	.....	..
345	2	18 04+0 0.5P*	.....	.....	.....	.....	.....	.....	.....	..
346	2	18 46+0 02v	.....	.....	.....	.....	.....	.....	.....	B
347	2	21 26+0 01P*	.....	.....	.....	.....	.....	.....	.....	..
348	4	5 17+0 02d	.....	.....	.....	.....	.....	.....	.....	C
349	8	12 15+4 00U	12 12+3 48R	12 15+3 00U	12 13+1 47U	12 15+1 40U	12 16+4 29U	12 16+1 36U	12 16+1 42U	E
350	10	.....	.....	2 55+0 05L	.....	.....	.....	.....	.....	..
351	10	17 53+0 35u	.....	.....	.....	.....	18 11+0 19L	.....	.....	..
352	11	8 03+1 27u	8 01+1 15L	8 22+0 50L	.....	.....	8 11+1 08u	.....	.....	..
353	12	.....	11 30+0 48u	.....	.....	.....	.....	.....	.....	..
354	12	.....	.....	.....	.....	.....	13 03+0 48L	.....	.....	..
355	12	20 12+0 0.6d	.....	.....	.....	.....	.....	.....	.....	A
356	12	20 46+0 0.5d	.....	.....	.....	.....	.....	.....	.....	A
357	13	18 14+0 05P	.....	.....	.....	.....	.....	.....	.....	..
358	14	21 16+0 01P*	.....	.....	.....	.....	.....	.....	.....	..
359	15	12 44+0 38L	12 10+1 09u	.....	.....	.....	12 45+0 41L	.....	.....	..
360	15	17 20+0 01P	.....	.....	.....	.....	.....	.....	.....	..
361	15	18 27+0 01d	.....	.....	.....	.....	.....	.....	.....	A
362	15	20 35+0 02P	.....	.....	.....	.....	.....	.....	.....	..
363	15	21 12+0 0.5d	.....	.....	.....	.....	.....	.....	.....	A
364	15	22 00+1 02u	22 00+0 40L	22 21+0 35L	.....	22 26+0 12L	22 09+0 56u	.....	.....	..
365	15	23 15+0 02P	.....	.....	.....	.....	.....	.....	.....	..
366	15	23 28+0 45u	0 00+0 20L	23 50+0 24L	.....	.....	23 36+0 46L	.....	.....	..
367	16	7 35+0 05P	.....	.....	.....	.....	.....	.....	.....	..
368	17	7 48+0 02P	.....	.....	.....	.....	.....	.....	.....	..
369	17	8 05+0 01P	.....	.....	.....	.....	.....	.....	.....	..
370	17	.....	.....	.....	.....	.....	20 31+0 23L	.....	.....	..
371	18	.....	.....	.....	.....	.....	10 56+0 13L	.....	.....	..
372	18	19 22+0 02P	.....	.....	.....	.....	19 35+0 15L	.....	.....	..

EARTHQUAKE CORRELATION TABLE

Month September, 1939

No.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls		Shawinigan	**
							M. S.	W. A.		
373	18	20 37+0 0.5d	.....	.....	.....	.....	.....	.....	.....	A
374	18	20 40+0 36u	20 35+0 37r	20 58+0 16L	.....	.....	20 51+0 30u	.....	.....	..
375	19	.....	.....	.....	.....	.....	4 06+0 22L	.....	.....	..
376	20	0 30+0 16u	0 49+0 27L	.....	.....	.....	0 46+0 18L	0 30+0 01P	0 30+0 01P	..
377	20	3 56+0 11v	.....	3 57+0 05v	.....	.....	3 58+0 0.2v	3 57+0 03v	3 56+0 08v	F
378	20	4 08+0 03v	.....	.....	.....	.....	.....	.....	4 09+0 01v	..
379	20	7 03+0 23u	.....	.....	.....	.....	.....	7 03+0 01P	7 03+0 03P	..
380	20	7 52+1 20u	8 23+0 21L	8 35+0 19L	.....	.....	8 38+0 36L	.....	.....	..
381	21	11 24+0 23r	.....	.....	.....	.....	11 30+0 09L	.....	.....	..
382	21	11 49+0 25r	11 47+0 32r	.....	.....	.....	11 52+0 18r	.....	.....	..
383	21	12 50+0 26r	13 00+0 38r	.....	.....	12 49+0 14r	12 49+0 29r	12 50+0 14L	12 49+0 07L	..
384	21	21 34+1 09r	21 32+0 59r	21 39+0 54r	.....	21 48+0 22L	21 41+1 04r	21 47+0 10L	21 46+0 14L	G
385	22	0 48+1 32u	1 00+1 26u	0 58+1 14u	.....	0 55+0 43u	0 56+1 35u	0 47+0 38u	0 47+0 04P	..
386	23	16 14+0 0.8d	.....	.....	.....	.....	.....	.....	.....	A
387	25	16 40+0 36L	16 36+0 32u	16 43+0 16L	.....	.....	16 47+0 23L	.....	.....	..
388	26	10 54+0 18L	10 56+0 14L	10 56+0 10L	.....	.....	11 00+0 14L	.....	.....	..
389	28	15 05+0 22L	15 12+0 26L	15 06+0 24u	.....	.....	15 07+0 33u	.....	15 05+0 16u	..
390	28	19 06+0 0.7d	.....	.....	.....	.....	.....	.....	.....	A
391	30	20 33+0 02P*	.....	.....	.....	.....	.....	.....	.....	..

double

double

CORRELATION OF EARTHQUAKES

September, 1939.

.....

N O T E S

A : Origin probably within 100 miles of the Ottawa station.

B : Ottawa Δ = 415 km. H = $18^h44^m.9$ U.T.
Rockburst at Lake Shore Mines, Kirkland Lake, Ont.

C : Ottawa Δ = 77 km. H = $5^h17^m.0$ U.T.
Felt at Kazabazua, P.Q.

E :	Ottawa	Δ = 7180 km.	H = $12^h05^m.0$ U.T.
	Victoria	Δ = 4100 km.	H = (12 05.2) U.T.
	Toronto	Δ = 7160 km.	H = 12 05.0 U.T.
	Saskatoon	Δ = 5060 km.	H = 12 04.6 U.T.
	Halifax	Δ = 7720 km.	H = (12 04.4) U.T.
	Seven Falls	Δ = 7200 km.	H = 12 05.2 U.T.
	Shawinigan Falls	Δ = 7240 km.	H = 12 05.0 U.T.

F :	Ottawa	Δ = 440 km.	H = $3^h54^m.7$ U.T.
	Shawinigan Falls	Δ = 530 km.	H = 3 54.8 U.T.

Rockburst at Lake Shore Mines, Kirkland Lake, Ont.

G : Victoria Δ = 2420 km. H = $21^h27^m.2$ U.T.

Dominion Observatory,
Ottawa, Canada,
October 27, 1939.

Double

SEISMOLOGICAL BULLETINS RECEIVED

September, 1939.

We acknowledge, with thanks, the receipt of the following seismological publications and bulletins:-

STATIONS	BULLETINS	RECEIVED	
Helwan	July, 1939	September	6
Weston	Preliminary Bulletin for August, 1939	"	8
Florissant	December, 1938 to February, 1939	"	8
Cape Girardeau	November, 1938 to January, 1939	"	8
Perth	July, 1939	"	9
Brisbane	July, 1939	"	9
Melbourne	April to June, 1939	"	11
Pasadena	Preliminary July 25 to August 31, 1939	"	13
Manila	June, 1939	"	13
Graz	January 1 to May 18, 1938	"	18
Eger	January to June, 1939	"	20
Dublin	July 12 to August 31, 1939	"	21
Riverview	May and June, 1939	"	28
Toledo	January to June, 1937 and April to June, 1939	"	30

DOMINION OBSERVATORY,
OTTAWA - CANADA.

double

SEISMOLOGICAL SERVICE OF CANADA

SEISMOLOGICAL BULLETIN

October

1939

DOMINION OBSERVATORY

OTTAWA, CANADA

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

R. Meldrum Stewart, Dominion Astronomer
Ernest A. Hodgson, Seismologist
W. W. Doxsee, Station Superintendent
M. J. S. Innes, Assistant Seismologist.

S T A T I O N S

OTTAWA

ϕ = 45°23'38" N. λ = 75°42'57" W. h = 83m.
Time correction within 0.10s.
Foundation: boulder clay over limestone
Instruments: Milne-Shaw NS and EW components, designated 23 and 17, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 1 lb.

Benioff Vertical, short and long period, designated BS and BL, photographic registration, BS a paper speed of 60 mm. per min., BL a paper speed of 30 mm. per min., mass 235 lbs.

HALIFAX

Dalhousie University

ϕ = 44°38' N. λ = 63°36' W. h = 46m.
Time correction from recorded railroad time signals
Foundation: Carbonaceous slate
Instruments: Bosch NS and EW components, designated HN and HE, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 200 g.

SEVEN FALLS

Quebec Power Company

ϕ = 47°07!4 N. λ = 70°49!6 W. h = 232m. ca.
Time correction from recorded radio time signals
Foundation: solid granite of Canadian Shield
Instruments: Wood-Anderson and Milne-Shaw, both EW component, designated SF and SM, respectively, each with photographic registration, magnetic damping, SF a paper speed of 60 mm. per min. and mass 15 g., SM a paper speed of 8 mm. per min. and mass 1 lb.

VICTORIA

Dominion Astrophysical Observatory

ϕ = 48°31'14" N. λ = 123°24'56" W. h = 197m.
Time correction from radio time signals
Foundation: rock
Instruments: Milne-Shaw NS and EW components, designated 21 and 20, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

Wiechert Vertical designated WV, smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 80 kg.

double

S T A T I O N S (Cont'd)

SHAWINIGAN FALLS

Shawinigan Water and Power Company
ϕ = 46°33!1 N. λ = 72°45!8 W. h = 60m. ca.
Time correction from recorded radio time signals
Foundation: solid granite of Canadian Shield
Instruments: Wood-Anderson NS component, designated SA, photographic registration, magnetic damping, paper speed of 60 mm. per min., mass 15 g.

SASKATOON

University of Saskatchewan
ϕ = 52°08' N. λ = 106°38' W. h = 515m.
Time correction from radio time signals
Foundation: clay and sand
Instruments: Mainka NS and EW components, designated SN and SE, respectively, each with smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 139 kg.

TORONTO

ϕ = 43°40' N. λ = 79°24' W. h = 111m.
Time correction from radio time signals
Foundation: sand and clay
Instruments: Milne-Shaw NS and EW components, designated 18 and 22, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

DETERMINED CONSTANTS

INSTRUMENT	T_o	V	ε	DISPLACEMENT FOR 1" ARC TILT	DISPLACEMENT FOR 10^{-5} g
17 (Ottawa)	12.0	300	20:1	50 mm.	
23 (Ottawa)	12.0	250	20:1	44 mm.	
BS (Ottawa)	1.0				53 mm.
BL (Ottawa	1.0				162 mm.
HN (Halifax)	5.0	125	20:1		
HE (Halifax)	5.0	125	20:1		
SA (Shawinigan)	1.0	2000			
18 (Toronto)	10.0	165	20:1	20 mm.	
22 (Toronto)	10.0	165	20:1	20 mm.	
20 (Victoria)	12.0	300	20:1		
21 (Victoria	12.0	300	20:1		
WV (Victoria)	4.0	120	15:1		
SF (Seven Falls)	1.0	2000			
SM (Seven Falls)	12.0	300	20:1	50 mm.	
SN (Saskatoon)	9.2	59	Aper.		
SE (Saskatoon)	9.2	60	"		

NOTE: Universal Time used throughout

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM October 1, 1939 to October 10, 1939 No. 60

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
392		Ottawa		
Oct.	i_Z	8 33 38		Nearby quake.
1	i_Z	8 33 47		
	F	8 35		
		Ottawa		
393	i_Z	13 18 46		Nearby quake.
Oct.	i_Z	13 19 02		
4	F	13 19.3		
		Victoria		
394	e	22 32.8		
Oct.	L	22 35		
4	F	22 50		
		Ottawa		
398	i_Z	21 02 08		
Oct.	e	21 06.0		
7	L	21 17		
	F	22 30		
		Victoria		
	e	21 01.7		
	L	21 21		
	F	22 17		
		Seven Falls		
	e	21 18		
	L	21 44		
	F	22 51		
		Ottawa		
401	i_Z	18 44 53		USCGS. gives:
Oct.	e	18 55.5		ϕ = 41°.0 N.
10	e_E	19 01.7		λ = 143° E.
	e	19 08		H = $18^h 32^m 03^s$ G.M.T.
	F	21 28		
		Victoria		
	H	18 32.0	7080	
	eP	18 42.4		
	eS	18 51.1		
	e_E	18 55		
	SSS	18 58		
	eL	19 01		
	F	21 ca.		
		Toronto		
	e	18 53.7		
	e	18 59.7		
	L	19 14		
	F	21 00		

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM October 10, 1939 to October 17, 1939 No. 61

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Halifax		
401 Oct. 10 (Cont'd)	e	18 48		
	e	18 56.6		
	L	19 18		
	F	20 20		
		Seven Falls		
	e	18 44.2		
	iS	18 55 11		
	SS	19 01 15		
	SSS	19 04.6		
	i	19 07 53		
	L	19 14		
	F	22 23		
		Shawinigan Falls		
	e	18 45.0		
	i	18 55 22		
	L	19 31		
	F	19 55		
		Ottawa		
406 Oct. 17	H	6 22.0	13,300	USCGS. gives:
	iP'	6 40 47		ϕ = 16° S.
	PP	6 42.2		λ = 168° E.
	i_Z	6 44 14		H = $6^h 22^m.0$ G.M.T.
	SKS	6 47 32		
	$SKKS_E$	6 49		
	i_Z	6 51 04		
	PS	6 51.8		
	i_Z	6 54 38		
	SS	6 58.5		
	SSSS	7 09		
	L	7 13		
	F	9 ca.		
		Victoria		
	e	6 34.8		
	e	6 45.2		
	e	6 53.4		
	e	7 02		
	F	9 00		
		Toronto		
	e_E	6 47.2		
	e	6 51.4		
	e	6 57.8		
	L	7 10		
	F	8 15		
		Halifax		
	e	6 43		
	L	7 12		
	F	8 06		

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM October 17, 1939 to October 19, 1939 No. 62

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Seven Falls		
406 Oct. 17 (Cont'd)	H	6 21.2	13,300	
	PP	6 41.4		
	SKS	6 47 02		
	SKKS	6 48 31		
	PS	6 51 31		
	SS	6 58.0		
	eL	7 12		
	F	10 20		
		Shawinigan Falls		
	i	6 40 55		
	e	6 47 40		
	(L)	6 55		
	F	7 05		
		Ottawa		
408 Oct. 19	H	11 53 56	525	ϕ = 47°.8 N. λ = 69°.9 W. Δ and H based upon Jeffreys' Tables 1939.
	iPn	11 55 06		
	iSn	11 56 00		
	F	12 30		
		Victoria		
	i	(12 08)		No time signals on records.
	i	(12 10.7)		
	F	(12 15)		
		Toronto		
	i	11 57 15		
	i	11 57 52		
	F	12 03		
		Saskatoon		
	S	12 03.5		
	L	12 06		
	F	12 25		
		Halifax		
	i	11 55 22		
	i	11 56 10		
	F	12 08		
		Seven Falls		
	iP_n	(11 54 23)	90	Time correction uncertain.
	iS_n	(11 54 35)		
	F	12 01		
		Shawinigan Falls		
	H	11 53 55	277	
	iPn	11 54 34		
	iSn	11 55 04		
	F	12 29		
		Ottawa		
409 Oct. 19	e_Z	14 14 20		Nearby quake
	i_Z	14 14 33		
	i_Z	14 14 38		
	F	14 15.8		

Double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM October 19, 1939 to October 21, 1939 No. 69

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
410 Oct. 19	iZ	18 38 22		Nearby quake.
	iZ	18 39 09		
	iZ	18 39 21		
	iZ	18 39 26		
	F	18 40		
		Ottawa		
411 Oct. 20	i	20 13 20		
	e	20 14.9		
	e	20 19.3		
	e	20 20.3		
	e	20 22		
	L	20 28		
	F	21 15		
		Toronto		
	e	20 12.8		
	e	20 18.4		
	L	20 22		
	F	21 00		
		Halifax		
	i	20 15 08		
	L	20 28		
	F	20 42		
		Seven Falls		
	e	20 14.4		
	e	20 22.4		
	L	20 25		
	F	21 15		
		Ottawa		
412 Oct. 21	iZ	8 08 12		Nearby quake.
	iZ	8 08 17.5		
	iZ	8 09 02		
	iZ	8 09 13		
	iZ	8 09 19		
	F	8 12		
		Shawinigan Falls		
	H	8 07 00	277	
	iPn	8 07 39		
	iSn	8 08 09		
	e	8 08 13		
	F	8 11		
		Ottawa		
413 Oct. 21	iZ	19 17 14		Nearby quake.
	iZ	19 17 50		
	iZ	19 17 53		
	iZ	19 17 55		
	F	19 19		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM October 21, 1939 to October 31, 1939 No. 64

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
416	iZ	17 15 53		Nearby quake.
Oct.	iZ	17 15 54		
24	F	17 16.3		
		Ottawa		
417	iZ	18 16 36		Nearby quake.
Oct.	iZ	18 16 37		
24	F	18 17		
		Ottawa		
418	iZ	19 01 24		Nearby quake.
Oct.	iZ	19 01 25		
24	F	19 01.5		
		Ottawa		
419	iZ	1 08 27		
Oct.	L	1 34		
26	F	1 44		
		Ottawa		
421	iZ	17 55 39		Nearby quake.
Oct.	iZ	17 56 15		
26	iZ	17 56 29		
	iZ	17 56 32		
	F	17 58		
		Ottawa		
423	H	1 36 34	525	Δ and H based upon
Oct.	iPn	1 37 44		Jeffreys' Tables 1939.
27	P*	1 37 55		
	i	1 38 02		
	iSn	1 38 38		
	iS*	1 38 53		
	F	1 54		
		Seven Falls		
	i	(1 36 57)		
	i	(1 37 06)		
	F	1 38		
		Shawinigan Falls		
	H	1 36 34	277	
	Pn	1 37 13.5		
	P*	1 37 15.5		
	Pg	1 37 21.5		
	i	1 37 34		
	Sn	1 37 43.5		
	F	1 49		

W. W. Doxsee

EARTHQUAKE CORRELATION TABLE

Month October, 1939

No.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls		Shawinigan	**
							M. S.	W. A.		
392	1	8 33+0 1.5d*	.....	.....	.....	.....	.....	.....	.....	..
393	4	13 18+0 01d*	.....	.....	.....	.....	.....	.....	.....	..
394	4	22 40+0 20L	22 32+0 18u	22 38+0 14L	.....	22 44+0 09L	22 44+0 21L	.....	22 42+0 08L	..
395	5	4 06+0 2.5P*	.....	.....	.....	.....	.....	.....	.....	..
396	5	7 01+0 02P*	.....	.....	.....	.....	.....	.....	.....	..
397	6	2 13+0 1.2P*	.....	.....	.....	.....	.....	.....	.....	..
398	7	21 02+1 28u	21 02+1 15u	.....	.....	.....	21 18+1 33u	.....	.....	..
399	8	0 01+0 05P*	.....	.....	.....	.....	.....	.....	.....	..
400	9	3 11+0 49L	2 42+1 18L	3 10+0 46L	.....	.....	2 49+2 06L	.....	.....	..
401	10	18 45+2 43U	18 42+2 18U	18 53+2 06U	.....	18 48+1 32u	18 44+3 11U	.....	18 45+1 10u	A
402	10	19 03+0 04P*	.....	.....	.....	.....	.....	.....	.....	..
403	11	.....	5 58+0 15L	.....	.....	.....	.....	.....	.....	..
404	13	.....	.....	.....	.....	.....	6 17+0 14L	.....	.....	..
405	16	23 45+0 02P*	.....	.....	.....	.....	.....	.....	.....	..
406	17	6 40+2 20U	6 34+2 26U	6 47+1 28U	.....	6 43+1 23U	6 41+3 39U	.....	6 41+0 24u	B
407	18	.....	11 06+0 15L	.....	.....	.....	.....	.....	.....	..
408	19	11 55+0 35V	12 08+0 07r	11 57+0 06v	12 03+0 22r	11 55+0 13v	11 54+0 07D	.....	11 54+0 33V	C
409	19	14 14+0 02v*	.....	.....	.....	.....	.....	.....	.....	..
410	19	18 38+0 02v*	.....	.....	.....	.....	.....	.....	18 38+0 02v	..
411	20	20 13+1 02u	20 40+0 30L	20 12+0 47u	.....	20 15+0 27u	20 14+1 02u	.....	.....	..
412	21	8 08+0 09v*	.....	.....	.....	.....	8 07+0 0.4d	8 07+0 05d	8 07+0 03v	E
413	21	19 17+0 02v*	.....	.....	.....	.....	.....	.....	.....	..
414	22	11 51+0 02P*	.....	.....	.....	.....	.....	.....	.....	..
415	22	.....	.....	.....	.....	15 21+0 17L	.....	.....	.....	..
416	24	17 16+0 1.3d*	.....	.....	.....	.....	.....	.....	.....	..
417	24	18 16+0 0.5d*	.....	.....	.....	.....	.....	.....	.....	..
418	24	19 01+0 0.5d*	.....	.....	.....	.....	.....	.....	.....	..
419	26	1 08+0 41u	1 43+0 28L	.....	.....	.....	1 24+0 35L	.....	.....	..
420	26	.....	4 36+0 10L	.....	.....	.....	.....	.....	.....	..
421	26	17 55+0 03d*	.....	.....	.....	.....	.....	.....	.....	..
422	26	22 28+0 32L	22 16+0 18L	22 04+0 18L	.....	.....	22 29+0 44L	.....	.....	..
423	27	1 37+0 16v	.....	.....	.....	.....	1 37+0 01d	1 37+0 04d	1 37+0 12d	G
424	30	.....	15 34+0 14L	.....	.....	.....	.....	.....	.....	..
425	30	.....	22 52+0 18L	.....	.....	.....	23 07+0 32L	.....	.....	..

double

CORRELATION OF EARTHQUAKES

October, 1939.

N O T E S

A :	Victoria	Δ = 7,080 km.	H = $18^h32^m.0$ U.T.
B ;	Ottawa	Δ = 13,300 km.	H = $6^h22^m.0$ U.T.
	Seven Falls	Δ = 13,300 km.	H = 6 21.2 U.T.
C :	Ottawa	Δ = 525 km.	H = $11^h53^m56^s$ U.T.
	Shawinigan Falls	Δ = 277 km.	H = 11 53 55 U.T.
E ;	Shawinigan Falls	Δ = 277 km.	H = $8^h07^m00^s$ U.T.
G :	Ottawa	Δ = 525 km.	H = $1^h36^m34^s$ U.T.
	Shawinigan Falls	Δ = 277 km.	H = 1 36 34 U.T.

Dominion Observatory,
Ottawa - Canada,
November 30, 1939.

double

SEISMOLOGICAL BULLETINS RECEIVED

October, 1939.

We acknowledge, with thanks, the receipt of the following seismological publications and bulletins:-

STATIONS	BULLETINS	RECEIVED
San Fernando	July and August, 1939	October 2
Manila	July, 1939	" 3
Weston	September, 1939	" 10
Sydney	May and June, 1939	" 10
Budapest	September, 1939	" 18
Batavia	October to December, 1938	" 20
Brisbane	August, 1939	" 25
Perth	August, 1939	" 25
De Bilt	Year 1937	" 28

DOMINION OBSERVATORY
OTTAWA, CANADA

Dominion Observatory,
Ottawa, Ontario.

30 JAN. 1940

SEISMOLOGICAL SERVICE OF CANADA

SEISMOLOGICAL BULLETIN
November
1939

°°°°°°°

DOMINION OBSERVATORY
OTTAWA, CANADA

*****

Double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

R. Meldrum Stewart, Dominion Astronomer
Ernest A. Hodgson, Seismologist
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Time correction from recorded railroad time signals
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Instruments: Bosch NS and EW components, designated HN and HE, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 200 g.

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Time correction from recorded radio time signals
Foundation: solid granite of Canadian Shield
Instruments: Wood-Anderson and Milne-Shaw, both EW component, designated SF and SM, respectively, each with photographic registration, magnetic damping, SF a paper speed of 60 mm. per min. and mass 15 g., SM a paper speed of 8 mm. per min. and mass 1 lb.

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Time correction from radio time signals
Foundation: rock
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Wiechert Vertical designated WV, smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 80 kg.

double

S T A T I O N S (Cont'd)

SHAWINIGAN FALLS

Shawinigan Water and Power Company
ϕ = 46°33'.1 N. λ = 72°45'.8 W. h = 60m. ca.
Time correction from recorded radio time signals
Foundation: solid granite of Canadian Shield
Instruments: Wood-Anderson NS component, designated SA, photographic registration, magnetic damping, paper speed of 60 mm. per min., mass 15 g.

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ϕ = 52°08' N. λ = 106°38' W. h = 515m.
Time correction from radio time signals
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Instruments: Mainka NS and EW components, designated SN and SE, respectively, each with smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 139 kg.

TORONTO

ϕ = 43°40' N. λ = 79°24' W. h = 111m.
Time correction from radio time signals
Foundation: sand and clay
Instruments: Milne-Shaw NS and EW components, designated 18 and 22, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

DETERMINED CONSTANTS

INSTRUMENT	T_o	V	ε	DISPLACEMENT FOR 1" ARC TILT	DISPLACEMENT FOR 10^{-5} g
17 (Ottawa)	12.0	300	20:1	50 mm.	
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BL (Ottawa	1.0				162 mm.
HN (Halifax)	5.0	125	20:1		
HE (Halifax)	5.0	125	20:1		
SA (Shawinigan)	1.0	2000			
18 (Toronto)	10.0	165	20:1	20 mm.	
22 (Toronto)	10.0	165	20:1	20 mm.	
20 (Victoria)	12.0	300	20:1		
21 (Victoria	12.0	300	20:1		
WV (Victoria)	4.0	120	15:1		
SF (Seven Falls)	1.0	2000			
SM (Seven Falls)	12.0	300	20:1	50 mm.	
SN (Saskatoon)	9.2	59	Aper.		
SE (Saskatoon)	9.2	60	"		

NOTE: Universal Time used throughout

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM November 1, 1939 to November 13, 1939 No. 65

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
429 Nov. 2	i_Z	17 02 23.5		Nearby quake
	i_Z	17 02 24		
	F	17 03		
		Ottawa		
430 Nov. 2	i_Z	18 17 16		Nearby quake
	i_Z	18 17 17		
	F	18 17.5		
		Ottawa		
431 Nov. 2	i_Z	19 34 15		Nearby quake
	i_Z	19 34 16		
	F	19 34.6		
		Cttawa		
432 Nov. 2	i_Z	20 40 59		Nearby quake
	i_Z	20 41 00		
	F	20 41.3		
		Cttawa		
435 Nov. 7	i_Z	2 41 49		Nearby quake
	i_Z	2 42 46		
	F	2 45		
		Ottawa		
439 Nov. 8	H	6 04 38	213	Nearby quake
	iP_n	6 04 10.5		Δ and H based on Joliat's Tables.
	i_Z	6 04 15		
	iS_n	6 04 35		
	F	6 08		
		Ottawa		
440 Nov. 11	i_Z	12 53 05		Nearby quake
	i_Z	12 53 18		
	F	12 54.5		
		Ottawa		
443 Nov. 13	H	7 45.9	3500	USCGS. gives:
	iP_Z	7.52 20		ϕ = 47°35'N.
	eS_E	7 57.6		λ = 123°15 W.
	e	8 00.6		H = 7 45 49
	(eL)	8 02.5		
	F	8 17		
		Victoria		
	H	(7 46.5)	(120)	No time on record.
	iP	(7 46 48)		
	iS_Z	(7 47 03)		
	F	(8 30		

Double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM November 13, 1939 to November 21, 1939 No. 66

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Toronto		
443 Nov. 13 (Cont'd)	e	7 57.1		
	L	8 02		
	F	8 22		
		Saskatoon		
	H	7 45 49	1345	
	iP	7 48 44		
	iS	7 51 09		
	L	7 52		
	F	8 30		
		Shawinigan Falls		
	(H)	7 46.0	(3850)	
	eP	7 52 34		
	e(S)	7 57 55		
	L	8 03		
	F	8 25		
		Ottawa		
444 Nov. 15	H	2 54 27	455	USCGS. gives:
	iP_n	2 55 31		ϕ = 39°45' N.
	iS_n	2 56 20		λ = 75°18' W.
	S*	2 56 32		H = 2 53 48
	i	2 56 43		
	S_g	2 56 46		
	F	2 59		
		Ottawa		
447 Nov. 18	iZ	1 44 15		
	L	1 53		
	F	2 40		
		Toronto		
	e	1 53.0		
	L	2 09		
	F	2 28		
		Ottawa		
449 Nov. 21	i	11 14 38		USCGS. gives:
	i	11 15 26		ϕ = 10° N.
	e	11 25.5		λ = 60° E.
	e_N	11 26.4		Δ = 12,500 km.
	e_N	11 27.5		H = 11 01.2
	i_N	11 28 06		
	L	11 35		
	F	12 30		
		Toronto		
	i	11 26 37		
	i_N	11 27 23		
	i_N	11 28 13		
	i_E	11 28 31		
	L	11 34		
	F	12 35		

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM November 21, 1939 to November 26, 1939 No. 67

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
449		Halifax		
449 Nov. 21 (Cont'd)	e	11 14.3		
	i	11 15 14		
	e	11 24.9		
	i	11 26 29		
	F	12 00		
		Seven Falls		
	e	11 14.3		
	L	11 27		
	F	11 39		
		Shawinigan Falls		
	e	11 14.5		
	e	11 15.4		
	e	11 27		
	F	11 35		
		Ottawa		
450 Nov. 22	i	3 33.06		
	e	3 37.5		
	F	3 39		
		Ottawa		
451 Nov. 23	H	15 14 59	1320	
	iPn	15 17 50.5		
	iSn	15 20 13.5		
	iL	15 21 30		
	F	15 44		
		Shawinigan Falls		
	e	15 20.7		
	e	15 20.9		
	e	15 21.9		
	L	15 23		
	F	15 30		
		Ottawa		
452 Nov. 24	iZ	17 51 39		Nearby quake
	iZ	17 51 48		
	iZ	17 51 51		
	eZ	17 52.1		
	F	17 53		
		Ottawa		
456 Nov. 26	iZ	19 01 18		Nearby quake
	iZ	19 01 19.5		
	iZ	19 01 33		
	iZ	19 01 42		
	iZ	19 01 51		
	F	19 04		

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM November 26, 1939 to November 30, 1939 No. 68

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s Ottawa	km.	
457 Nov. 28	(H) i(P)Z i(S)E L F	2 07.6 2 16 54 2 24 32 2 29 2 34	(5960)	

Thorris J. S. Innes.

EARTHQUAKE CORRELATION TABLE

Month November, 1939

No.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls		Shawinigan	**
							M. S.	W. A.		
426	1	0 43+0 05L	.....	.....	.....	.....	.....	.....	.....	..
427	1	.....	.....	.....	.....	.....	7 14+0 25L	.....	.....	..
428	2	15 29+0 02P	.....	.....	.....	.....	.....	.....	.....	..
429	2	17 02+0 0.5d	.....	.....	.....	.....	.....	.....	.....	..
430	2	18 17+0 0.5d	.....	.....	.....	.....	.....	.....	.....	..
431	2	19 34+0 0.5d	.....	.....	.....	.....	.....	.....	.....	..
432	2	20 41+0 0.3d	.....	.....	.....	.....	.....	.....	.....	..
433	3	19 57+0 03P*	20 21+0 39L	.....	.....	.....	20 40+0 25L	.....	.....	..
434	4	10 28+0 03P*	11 10+0 20L	.....	.....	.....	10 55+0 25L	.....	.....	..
435	5	2 45+0 15L	.....	.....	.....	.....	3 20+0 10L	.....	.....	..
436	7	2 41+0 03v	2 45+0 15L	.....	.....	.....	.....	2 40+0 0.3d	.....	..
437	7	.....	.....	.....	.....	.....	4 46+0 25L	.....	.....	..
438	7	15 49+0 01P*	.....	.....	.....	.....	15 56+0 23L	.....	.....	..
439	8	6 04+0 04d*	.....	.....	.....	.....	.....	.....	.....	A
440	8	.....	.....	.....	.....	.....	18 00+0 27L	.....	.....	..
441	8	.....	.....	.....	.....	.....	20 08+0 32L	.....	.....	..
442	11	12 53+0 1.5d	.....	.....	.....	.....	.....	.....	.....	..
443	13	7 52+0 25r	7 46+0 45d	7 57+0 25r	7 48+0 42r	8 00+0 17L	.....	8 02+0 10r	7 52+0 33r	B
444	15	2 55+0 04v*	.....	.....	.....	.....	.....	.....	.....	C
445	17	18 57+0 01P*	.....	.....	.....	.....	.....	.....	.....	..
446	17	19 58+0 12L	.....	19 52+0 07L	.....	.....	.....	.....	.....	..
447	18	1 44+0 56u	11 35+0 55L	1 53+0 35u	.....	.....	.....	.....	.....	..
448	21	.....	9 35+0 25L	.....	.....	.....	.....	.....	.....	..
449	21	11 14+1 16u	11 10+1 20u	11 26+1 04u	.....	11 14+0 46u	.....	11 14+0 25u	11 14+0 20u	..
450	22	3 33+0 06P*	.....	.....	.....	.....	.....	.....	.....	..
451	23	15 18+0 26v	.....	.....	.....	.....	.....	.....	15 20+0 09v	E
452	24	17 51+0 02d*	.....	.....	.....	.....	.....	.....	.....	..
453	24	0 13+0 42L	23 35+0 55L	0 14+0 30L	.....	.....	.....	.....	.....	..
454	26	6 35+0 03P*	.....	.....	.....	.....	.....	.....	.....	..
455	26	7 39+0 02P*	.....	.....	.....	.....	.....	.....	.....	..
456	26	19 01+0 02v	.....	.....	.....	.....	.....	.....	.....	..
457	28	2 16+0 18u	.....	.....	.....	.....	.....	.....	.....	G
458	29	4 49+0 09L	.....	4 46+0 06L	.....	.....	.....	.....	.....	..

double

double

CORRELATION OF EARTHQUAKES
November, 1939

N O T E S

A :	Ottawa	Δ = 213 km.	H = $6^h04^m38^s$ U.T.
B :	Ottawa	Δ = 3500 km.	H = $7^h45^m.9$ U.T.
	Victoria	Δ = (120 km.)	H = (7 46.5) U.T.
	Saskatoon	Δ = 1345 km.	H = 7 45 49 U.T.
	Shawinigan Falls	Δ =(3580 km.)	H = (7 46.0) U.T.
C :	Ottawa	Δ = 455 km.	H = $2^h54^m24^s$ U.T.
E :	Ottawa	Δ = 1320 km.	H = $15^h14^m59^s$ U.T.
G :	Ottawa	Δ =(5960 km.)	H = ($2^h07^m.6$) U.T.

Dominion Observatory,
Ottawa - Canada,
December 19, 1939.

J

double

SEISMOLOGICAL SERVICE OF CANADA

SEISMOLOGICAL BULLETIN

December

1939

°o°o°o°o°o°

DOMINION OBSERVATORY

OTTAWA, CANADA

*****

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

R. Meldrum Stewart, Dominion Astronomer
Ernest A. Hodgson, Seismologist
W. W. Doxsee, Station Superintendent
M. J. S. Innes, Assistant Seismologist.

S T A T I O N S

OTTAWA

ϕ = 45°23'38" N. λ = 75°42'57" W. h = 83m.
Time correction within 0.10s.
Foundation: boulder clay over limestone
Instruments: Milne-Shaw NS and EW components, designated 23 and 17, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 1 lb.

Benioff Vertical, short and long period, designated BS and BL, photographic registration, BS a paper speed of 60 mm. per min., BL a paper speed of 30 mm. per min., mass 235 lbs.

HALIFAX

Dalhousie University

ϕ = 44°38' N. λ = 63°36' W. h = 46m.
Time correction from recorded railroad time signals
Foundation: Carbonaceous slate
Instruments: Bosch NS and EW components, designated HN and HE, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 200 g.

SEVEN FALLS

Quebec Power Company

ϕ = 47°07!4 N. λ = 70°49!6 W. h = 232m. ca.
Time correction from recorded radio time signals
Foundation: solid granite of Canadian Shield
Instruments: Wood-Anderson and Milne-Shaw, both EW component, designated SF and SM, respectively, each with photographic registration, magnetic damping, SF a paper speed of 60 mm. per min. and mass 15 g., SM a paper speed of 8 mm. per min. and mass 1 lb.

VICTORIA

Dominion Astrophysical Observatory

ϕ = 48°31'14" N. λ = 123°24'56" W. h = 197m.
Time correction from radio time signals
Foundation: rock
Instruments: Milne-Shaw NS and EW components, designated 21 and 20, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

Wiechert Vertical designated WV, smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 80 kg.

S T A T I O N S (Cont'd)

SHAWINIGAN FALLS

Shawinigan Water and Power Company
ϕ = 46°33'.1 N. λ = 72°45'.8 W. h = 60m. ca.
Time correction from recorded radio time signals
Foundation: solid granite of Canadian Shield
Instruments: Wood-Anderson NS component, designated SA, photographic registration, magnetic damping, paper speed of 60 mm. per min., mass 15 g.

SASKATOON

University of Saskatchewan
ϕ = 52°08' N. λ = 106°38' W. h = 515m.
Time correction from radio time signals
Foundation: clay and sand
Instruments: Mainka NS and EW components, designated SN and SE, respectively, each with smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 139 kg.

TORONTO

ϕ = 43°40' N. λ = 79°24' W. h = 111m.
Time correction from radio time signals
Foundation: sand and clay
Instruments: Milne-Shaw NS and EW components, designated 18 and 22, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

DETERMINED CONSTANTS

INSTRUMENT	T_o	V	ε	DISPLACEMENT FOR 1" ARC TILT	DISPLACEMENT FOR 10^{-5} g
17 (Ottawa)	12.0	300	20:1	50 mm.	
23 (Ottawa)	12.0	250	20:1	44 mm.	
BS (Ottawa)	1.0				53 mm.
BL (Ottawa	1.0				162 mm.
HN (Halifax)	5.0	125	20:1		
HE (Halifax)	5.0	125	20:1		
SA (Shawinigan)	1.0	2000			
18 (Toronto)	10.0	165	20:1	20 mm.	
22 (Toronto)	10.0	165	20:1	20 mm.	
20 (Victoria)	12.0	300	20:1		
21 (Victoria	12.0	300	20:1		
WV (Victoria)	4.0	120	15:1		
SF (Seven Falls)	1.0	2000			
SM (Seven Falls)	12.0	300	20:1	50 mm.	
SN (Saskatoon)	9.2	59	Aper.		
SE (Saskatoon)	9.2	60	"		

NOTE: Universal Time used throughout

Audible

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM December 1, 1939 to December 5, 1939 No. 69

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
460	i_Z	16 39 13.5		Nearby quake.
Dec.	i_Z	16 39 15		
1	F	16 40		
		Ottawa		
461	i_Z	16 43 43		Nearby quake.
Dec.	i_Z	16 43 44.5		
1	F	16 44.5		
		Ottawa		
462	i_Z	19 23 05		Nearby quake.
Dec.	i_Z	19 23 06.5		
1	F	19 23.7		
		Ottawa		
463	i_Z	19 28 23		Nearby quake.
Dec.	i_Z	19 28 24.5		
1	F	19 29		
		Ottawa		
464	i_Z	21 36 33		Nearby quake.
Dec.	i_Z	21 36 34		
1	F	21 37		
		Ottawa		
465	i_Z	21 42 05		Nearby quake.
Dec.	i_Z	21 42 06.5		
1	F	21 42.7		
		Ottawa		
466	H	20 25.3	76	
Dec.	iP*	20 25 27		
2	iPg	20 25 28		
	iS*	20 25 36		
	F	20 28		
		Ottawa		
467	i	0 02 17		
Dec.	e	0 08		
5	L	0 13		
	F	0 45		
		Ottawa		
468	H	8 30.3	3620	USCGS. gives:
Dec.	iP	8 36 53		ϕ = 14°.5 N.
5	PP_N	8 37.5		λ = 92°.5 W.
	iS	8 42 17		
	L	8 43		
	F	11 00 ca.		

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM December 5, 1939 to December 7, 1939 No. 70

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Victoria		
468 Dec. 5 (Cont'd)	H	(8 30.4)	4620	
	P	(8 38.0)		
	PP	(8 39.4)		
	S	(8 44.4)		
	SSS	(8 48.2)		
	L	(8 52.4)		
	F	(10 30)		
		Toronto		
	H	8 30.3	3310	
	P	8 36 28		
	PPPN	8 37.6		
	S	8 41 32		
	L	8 44		
	F	11 15		
		Saskatoon		
	e	8 39.6		
	e	8 43.7		
	L	8 46		
	F	9 50		
		Halifax		
	H	8 30.5	4035	
	iP	8 37 34		
	PPP	8 39.1		
	iS	8 43 24		
	L	8 48		
	F	9 45		
		Seven Falls		
	H	8 30.3	3980	
	P	8 37 22		
	S	8 43 08		
	L	8 46.4		
	F	9 14		
		Shawinigan Falls		
	H	8 30.3	3860	
	P	8 37 11		
	S	8 42 50		
	L	8 47.5		
	F	9 17		
		Ottawa		
469 Dec. 5	i_Z	17 58 32		
	e_N	18 03		
	e_E	18 10.5		
	F	18 26		
		Ottawa		
470 Dec. 7	e_Z	11 26 44		
	e_E	11 29		
	L	11 40		
	F	12 35		

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM December 7, 1939 to December 16, 1939 No. 71

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Victoria		
470 Dec. 7 (Cont'd)	H	(11 11.0)	6750	Time correction uncertain.
	P	(11 21 04)		
	S	(11 29 28)		
	e	(11 30.8)		
	SS	(11 33.5)		
	F	(12 00)		
		Ottawa		
471 Dec. 8	i_Z	1 19 03		
	i_Z	1 19 09		
	i_Z	1 19 48		
	i_Z	1 20 03		
	F	1 22		
		Seven Falls		
	i	1 18 12		
	F	1 18 46		
		Shawinigan Falls		
	e	1 18.4		
	i	1 18 52		
	F	1 21		
		Ottawa		
473 Dec. 16	H	10 46.6	9060	USCGS. gives:
	iP	10 58 53		ϕ = 41°.9 N.
	iPP_Z	11 01 59		λ = 147°.3 E.
	iS_N	11 09 07		
	SSS_E	11 18		
	L	11 24		
	F	12 20		
		Victoria		
	e_E	(11 11.0)		
	e	(11 15.4)		
	L	(11 19)		
	F	(11 37)		
		Toronto		
	H	10 46.6	9090	
	iP_N	10 58 54		
	PP	11 02.1		
	iS	11 09 09		
	SS_N	11 14.1		
	SSS_N	11 17.4		
	L	11 23		
	F	12 00 ca.		
		Halifax		
	S?	11 09 45		
	L	11 30		
	F	11 50		

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM December 16, 1939 to December 21, 1939 No. 72

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Shawinigan Falls		
473 Dec. 16 (Cont'd)	H	11 46.6	9070	
	P	10 58 55		
	S	11 09 09		
	F	11 15		
		Ottawa		
474 Dec. 16	iZ	18 03 13		
	eN	18 08.0		
	L	18 14		
	F	18 30		
		Toronto		
	i	18 03 38		
	L	18 18		
	F	18 36		
		Ottawa		
477 Dec. 18	iZ	6 45 09		
	L	7 24		
	F	7 52		
		Ottawa		
479 Dec. 18	iZ	12 29 28		Nearby quake.
	iZ	12 30 08		
	iZ	12 30 15		
	F	12 33		
		Ottawa		
483 Dec. 21 and 22	H	20 54.9	3910	USCGS. gives:
	iP	21 01 52		ϕ = 10°.0 N.
	PPP	21 03.5		λ = 85°.0 W.
	iS	21 07 34		
	L	21 12		
	F	1 30 ca.		
		Victoria		
	H	(20 54.8)	5660	
	P	(21 03 48)		
	PP	(21 05.7)		
	i	(21 07.2)		
	S	(21 11.2)		
	L	(21 19)		
	F	(0 30)		
		Toronto		
	H	20 55.0	3540	
	P	21 01 31		
	PPP	21 02 41		
	i	21 05 09		
	S	21 06 49		
	SS	21 08.6		
	L	21 11.5		
	F	1 00 ca.		

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM December 21, 1939 to December 21, 1939 No. 73

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Saskatoon		
483 Dec. 21 and 22 (Cont'd)	e	21 03.0		
	e	21 05		
	L	21 10		
	F	0 00 ca.		
		Halifax		
	H	20 54.6	4550	
	iP	21 02 20		
	PP	21 03 49		
	PPP	21 04 14		
	S	21 08 40		
	SSS	21 11.8		
	L	21 14		
	F	23 45		
		Seven Falls		
	H	20 55.0	4140	
	P	21 02 15		
	PPP	21 03 53		
	S	21 08 11		
	SSS	21 11 07		
	L	21 13		
	F	1 36		
		Shawinigan Falls		
	H	20 55,0	4020	
	P	21 02 07		
	PPP	21 03 41		
	S	21 07 56		
	L	21 14		
	F	23 10 ca.		
		Ottawa		
484 Dec. 21 and 22	e	21 19.2		Superimposed on preceding record.
	F	Lost in record of preceding quake		USCGS. gives: ϕ = 2° S. λ = 122° E.
		Saskatoon		
	e	21 20		
	F	?		
		Halifax		
	e	21 19		
	F	?		
		Seven Falls		
	e	21 19 26		
	i	21 22 52		
	L	21 40		
	F	?		
		Shawinigan Falls		
	e	21 19 27		
	i	21 19 42		
	i	21 23 07		
	F	?		

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM December 21, 1939 to December 22, 1939 No. 74

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
485 Dec. 22	H	4 44.1	3910	
	iP	4 51 04		
	PPP	4 52 34		
	S	4 56 46		
	L	5 00		
	F	7 06		
		Victoria		
	H	(4 43.8)	5800	
	P	(4 52 54)		
	PP	(4 55.0)		
	PPP	(4 56.3)		
	S	(5 00 24)		
	L	(5 07)		
	F	7 00 ca.		
		Toronto		
	H	4 44.2	3540	
	P	4 50 42		
	PPP	4 52 05		
	S	4 56 00		
	SS	4 58 37		
	L	5 00		
	F	7 10		
		Saskatoon		
	e	4 52		
	e	4 54.4		
	L	5 03		
	F	6 20		
		Halifax		
	H	4 44.2	4280	
	P	4 51 33		
	PP	4 53 00		
	S	4 57 38		
	L	5 02		
	F	6 25		
		Seven Falls		
	H	4 44.2	4200	
	P	4 51 30		
	PPP	4 53 10		
	S	4 57 30		
	SSS	5 00 32		
	L	5 02		
	F	7 19+		
		Shawinigan Falls	-	
	H	4 44.2	4030	
	P	4 51 21		
	PPP	4 52.9		
	S	4 57.2		
	L	5 02		
	F	5 52		

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM December 22, 1939 to December 25, 1939 No. 75

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
486 Dec. 22	eZ	7 06 07		
	e	7 11		
	L	7 17		
	F	8 00 ca.		
		Toronto		
	e	7 10		
	L	7 15		
	F	8 00 ca.		
		Saskatoon		
	e	7 04.5		
	e	7 08.8		
	L	7 12		
	F	8 00 ca.		
		Ottawa		
487 Dec. 23	H	17 10.9	4160	
	iPZ	17 18 08		
	PPP	17 19.8		
	S	17 24.1		
	L	17 29		
	F	18 00 ca.		
		Toronto		
	e	17 25.0		
	L	17 31		
	F	18 00 ca.		
		Seven Falls		
	e	17 20.3		
	e	17 24.3		
	e	17 27.3		
	L	17 33		
	F	18 13		
		Ottawa		
488 Dec. 24	iZ	18 59 58		Deep Focus ?
	iZ	19 05 13		
	F	19 12		
		Shawinigan Falls		
	e	18 59 57		
	e	19 05 37		
	F	19 12		
		Ottawa		
489 Dec. 25	iZ	10 30 28		Nearby quake.
	iZ	10 31 16		
	F	10 36		

double

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM December 25, 1939 to December 26, 1939 No. 76

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Seven Falls		
489	e	10 29 29		
Dec.	e	10 29 32		
25	e	10 29 42		
(Cont'd)	F	10 33		
		Shawinigan Falls		
	e	10 29 52		
	e	10 30 20		
	F	10 33		
		Ottawa		
490	eZ	12 58 53		
Dec.	L	13 04		
25	F	13 20		
		Ottawa		
492	H	11 55.2	3680	USCGS. gives:
Dec.	iPZ	12 01 52		ϕ = 13°.5 N.
26	PPPZ	12 03 22		λ = 88°.4 W.
	iS	12 07 19		
	SS	12 09.5		
	L	12 12		
	F	12 30		
		Toronto		
	i	12 01 44		
	i	12 06 32		
	e	12 09 14		
	L	12 10.5		
	F	12 32		
		Seven Falls		
	e	12 03.8		
	e	12 08.1		
	e	12 10.8		
	L	12 12		
	F	12 37		
		Ottawa		
493	iZ	21 56 51		
Dec.	e	21 58.5		
26	e	22 02.5		
	L	22 07		
	F	22 30		
		Ottawa		
494	H	23 57.3	8580	USCGS. gives:
Dec.	iP	0 09 12		ϕ = 39° N.
26	iZ	0 09 17		λ = 39° E.
and	iS	0 19 05		
27	PS	0 19 30		
	SS	0 24.5		
	SSS	0 27.5		
	F	5 00 ca.		

double

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM December 26, 1939 to December 31, 1939 No. 77

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Victoria		
494 Dec. 26 and 27 (Cont'd)	H	23 57.4	9780	
	iP	0 10 15		
	SKS?	0 20.2		
	iS	0 21 00		
	L	0 35		
	F	4 30		
		Toronto		
	H	23 57.4	8760	
	eP	0 09 22		
	i	0 09 34		
	i	0 16 01		
	iS	0 19 23		
	SSS	0 30		
	F	4 30		
		Saskatoon		
	H	(23 57.8)	9310	
	eP	(0 10.3)		
	eS	(0 20 43)		
	SSS	(0 30)		
	L	(0 34)		
	F	3 00 ca.		
		Halifax		
	H	23 57.8	7660	
	P	0 08 51		
	i	0 09 08		
	eS	0 18.0		
	PS	0 18 28		
	SS	0 22.5		
	L	0 28		
	F	3 00 ca.		
		Seven Falls		
	H	23 57.5	8200	
	iP	0 08 59		
	i	0 09 14		
	iS	0 18 35		
	PS	0 19 11		
	SS	0 23.9		
	SSS	0 27.2		
	L	0 35		
	F	5 10 ca.		
		Shawinigan Falls		
	H	23 57.3	8380	
	eP	0 09 00		
	i	0 09 05		
	S	0 18 44		
	SS	0 23.2		
	L	0 30		
	F	1 40		
		Ottawa		
498 Dec. 28	iZ	0 15 38		
	L	0 56		
	F	1 24		

W. W. Doxsee.

double

CORRELATION TABLE

This tabulation not only provides a yearly numbered list of all earthquakes recorded in Canada but also correlates the seismic registrations of the seven Canadian stations. Entries for each station show in hours and minutes the time of beginning of the tremors in Greenwich Mean Time. The appearance of entries in two or more columns in the same line indicates that these are known to be concerned with the same earthquake even though the times of beginning may differ slightly. The figures after the plus sign show the duration of the record in hours and minutes. The earthquake number and the day of the month on which it occurred are listed in the first and second columns respectively, while the extreme right hand column is reserved for index letters to a series of notes following the tabulation. Certain letters are reserved for the purpose of classifying the entries: these are as follows:-

d (domesticus) epicentre less than 100 km.
v (vicinus) epicentre between 100 and 1000 km.
r (remotus) epicentre between 1000 and 5000 km.
u (ultimus) epicentre beyond 5000 km.

(above lower-case letters apply to earthquakes of the lowest order of intensity on a scale of three.)

D, V, R, U : distance as above, intensity intermediate.

D, V, R, U : distance as above, intensity - top of scale.

L Long (or surface waves) alone recorded.
Q Questionable (may not be seismic).
T Time uncertain.
P Preliminary tremors alone recorded.
* Recorded only by short period seismograph.

EARTHQUAKE CORRELATION TABLE

Month December, 1939.

No.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls		Shawinigan	**
							M. S.	W. A.		
459	1	7 31+0 29L	7 10+0 25L	7 20+0 52L	.....	.....	.....	.....	.....	..
460	1	16 39+0 0.8d	.....	.....	.....	.....	.....	.....	.....	..
461	1	16 44+0 0.8d	.....	.....	.....	.....	.....	.....	.....	..
462	1	19 23+0 0.6d	.....	.....	.....	.....	.....	.....	.....	..
463	1	19 28+0 0.6d	.....	.....	.....	.....	.....	.....	.....	..
464	1	21 36+0 0.5d	.....	.....	.....	.....	.....	.....	.....	..
465	1	21 42+0 0.6d	.....	.....	.....	.....	.....	.....	.....	..
466	2	20 25+0 2.5d	.....	.....	.....	.....	.....	.....	.....	A
467	5	0 02+0 43u	0 00+0 12L	.....	.....	.....	.....	.....	.....	..
468	5	8 37+2 23R	8 38+1 52R	8 36+2 39R	8 40+1 10R	8 38+1 07R	.....	8 37+0 37R	8 37+0 40R	B
469	5	17 59+0 27u	.....	.....	.....	.....	.....	.....	.....	..
470	7	11 27+1 08u	11 21+0 39u	11 44+0 28L	.....	.....	.....	.....	.....	C
471	8	1 19+0 03v	.....	.....	.....	.....	.....	1 18+0 0.6d	1 18+0 03v	E
472	13	18 55+0 05P*	.....	.....	.....	.....	.....	.....	.....	..
473	16	10 59+1 21u	11 11+0 26u	10 59+1 00u	.....	11 10+0 40u	.....	.....	10 59+0 16u	F
474	16	18 03+0 27r	.....	18 04+0 32r	.....	18 18+0 06L	.....	.....	18 14+0 07L	..
475	17	7 49+0 03P*	.....	.....	.....	.....	.....	.....	.....	..
476	17	8 08+0 06P*	.....	.....	.....	.....	.....	.....	.....	..
477	18	6 45+1 07u	.....	.....	.....	.....	.....	.....	.....	..
478	18	10 40+0 02P*	.....	.....	.....	.....	.....	.....	.....	..
479	18	12 29+0 04d*	.....	.....	.....	.....	.....	.....	.....	..
480	19	19 56+0 02P*	.....	.....	.....	.....	20 09+0 14L	.....	.....	..
481	20	13 22+0 08P*	.....	.....	.....	.....	.....	.....	.....	..
482	21	1 57+0 02P*	.....	.....	.....	.....	.....	.....	.....	..
483	21	21 02+4 28R	21 04+3 26U	21 02+3 58R	21 03+2 57U	21 02+2 43R	21 02+4 34R	21 02+2 04R	21 02+2 07R	G
484	21	21 19+? ?u	.....	.....	21 20+? ?u	21 19+? ?u	.....	21 19+0 20+u	21 19+? ?u	..
485	22	4 51+2 15R	4 53+2 07U	4 51+2 19R	4 52+1 28U	4 52+1 33R	4 51+2 28R	4 51+0 48R	4 51+1 00R	J

double

EARTHQUAKE CORRELATION-TABLE

Month December, 1939.

No.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls		Shawinigan	**
							M. S.	W. A.		
486	22	7 06+0 54r	7 07+0 53L	7 10+0 50r	7 04+0 56r	7 21+0 39L	7 19+1 14L	7 18+0 17L	7 17+0 32L	..
487	23	17 18+0 42r	17 30+0 15L	17 25+0 35r	.....	.....	17 20+0 53r	.....	.....	K
488	24	19 00+0 12P*	.....	.....	.....	.....	.....	19 06+0 02P	19 00+0 12P	..
489	25	10 30+0 06v	.....	.....	.....	.....	.....	10 29+0 03d	10 30+0 03v	E
490	25	12 59+0 21r	13 14+0 22L	13 06+0 16L	.....	.....	13 03+0 11L	12 58+0 03P	12 59+0 08P	..
491	25	16 44+0 02P*	17 07+0 43L	17 28+0 27L	.....	.....	17 28+0 32L	.....	.....	..
492	26	12 02+0 28r	12 17+0 23L	12 02+0 30r	.....	.....	12 04+0 33r	.....	12 02+0 10P	N
493	26	21 57+0 33u	.....	22 01+0 29u	.....	.....	22 06+0 27L	.....	.....	..
494	27	0 09+4 50U	0 10+4 20U	0 09+4 20U	0 10+2 50U	0 09+2 50U	0 09+5 00U	0 09+1 44U	0 09+1 31U	S
495	27	3 00+0 02P*	.....	.....	.....	.....	.....	.....	.....	..
496	27	3 22+0 03P*	.....	.....	.....	.....	.....	.....	.....	..
497	27	.....	.....	.....	.....	.....	.....	15 39+0 0.2d	.....	E
498	28	0 16+1 08u	0 33+0 27L	.....	.....	.....	0 56+0 33L	.....	.....	..
499	28	4 00+0 24L	4 06+0 14L	4 09+0 17L	.....	.....	3 54+0 30L	.....	.....	..
500	28	12 33+0 17L	12 22+0 12L	.....	.....	.....	12 36+0 06L	.....	.....	..
501	28	16 58+0 02P*	.....	.....	.....	.....	.....	.....	.....	..
502	29	17 34+0 07P	.....	.....	.....	.....	.....	.....	17 34+0 02P	..
503	29	21 20+0 15L	.....	.....	.....	.....	.....	.....	.....	..
504	31	.....	.....	22 47+0 24L	.....	.....	.....	.....	.....	..

double

CORRELATION OF EARTHQUAKES

December, 1939.

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N O T E S

A :	Ottawa	Δ = 76 km.	H = $20^h25^m.3$ U.T.
B :	Ottawa	Δ = 3620 km.	H = $8^h30^m.3$ U.T.
	Victoria	Δ = 4620 km.	H = (8 30.4) U.T.
	Toronto	Δ = 3310 km.	H = 8 30.3 U.T.
	Halifax	Δ = 4035 km.	H = 8 30.5 U.T.
	Seven Falls	Δ = 3980 km.	H = 8 30.3 U.T.
	Shawinigan Falls	Δ = 3860 km.	H = 8 30.3 U.T.
C :	Victoria	Δ = 6750 km.	H =($11^h11^m.0$) U.T.
E :	Epicentre probably within 100 km. of the Seven Falls station.		
F :	Ottawa	Δ = 9060 km.	H = $10^h46^m.6$ U.T.
	Toronto	Δ = 9090 km.	H = 10 46.6 U.T.
	Shawinigan Falls	Δ = 9070 km.	H = 10 46.6 U.T.
G :	Ottawa	Δ = 3910 km.	H = $20^h54^m.9$ U.T.
	Victoria	Δ = 5660 km.	H =(20 54.8) U.T.
	Toronto	Δ = 3540 km.	H = 20 55.0 U.T.
	Halifax	Δ = 4550 km.	H = 20 54.6 U.T.
	Seven Falls	Δ = 4140 km.	H = 20 55.0 U.T.
J :	Ottawa	Δ = 3910 km.	H = $4^h44^m.1$ U.T.
	Victoria	Δ = 5800 km.	H = (4 43.8) U.T.
	Toronto	Δ = 3540 km.	H = .4 44.2 U.T.
	Halifax	Δ = 4280 km.	H = 4 44.2 U.T.
	Seven Falls	Δ = 4200 km.	H = 4 44.2 U.T.
	Shawinigan Falls	Δ = 4030 km.	H = 4 44.2 U.T.
K :	Ottawa	Δ = 4160 km.	H = $17^h10^m.9$ U.T.
N :	Ottawa	Δ = 3680 km.	H = $11^h55^m.2$ U.T.
S :	Ottawa	Δ = 8580 km.	H = $23^h57^m.3$ U.T.
	Victoria	Δ = 9780 km.	H = 23 57.4 U.T.
	Toronto	Δ = 8760 km.	H = 23 57.4 U.T.
	Saskatoon	Δ = 9310 km.	H =(23 57.8) U.T.
	Halifax	Δ = 7660 km.	H = 23 57.8 U.T.
	Seven Falls	Δ = 8200 km.	H = 23 57.5 U.T.
	Shawinigan Falls	Δ = 8380 km.	H = 23 57.3 U.T.

Dominion Observatory,
Ottawa - Canada,
February 15, 1940.

SEISMOLOGICAL BULLETINS RECEIVED
December, 1939.

We acknowledge, with thanks, the receipt of the following seismological publications and bulletins:-

STATIONS	BULLETINS	RECEIVED
Sydney	July and August, 1939	December 1
Manila	September, 1939	" 6
Weston	November, 1939	" 7
Saint Louis	January to April, 1939	" 7
Florissant	March to May, 1939	" 7
Denver	January and February, 1939	" 7
Saint Louis and Auxiliary Stations	Supplement to July, 1939 and preliminary for September 8, 1939	" 7
Cape Girardeau	February to April, 1939	" 7
Trieste	January to April, 1939	" 9
Algiers	September, 1939	" 15
Strasbourg) Paris) Bureau Central)	July, 1939	" 15
Ksara	October, 1939	" 18
Perth	October, 1939	" 19
Brisbane	October, 1939	" 20
Zurich	October and November, 1939	" 26
Pittsburgh	November, 1939	" 26
Bucarest	November, 1939	" 27
Richmond	November, 1939	" 27

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