

NESA BULLETIN

January 1 - 15, 1940

Bulletin No. 37



***** (January 2) *****

Weston

e 00 19 19

***** (January 2) *****

Harvard

iP 02 05 45.5
iS 46.5
 $\Delta = 8$ km. (5 mi.)

Weston

eP 02 05 47.5 H = 02 05 44.3
iS 49.9 $\phi = 42^{\circ}31'$ N.
eL 51.0 $\lambda = 71^{\circ}28'$ W.
 $\Delta = 19$ km. (12 mi.) Littleton, Mass.

(This solution courtesy of Dr. L. D. Leet, Harvard).

***** (January 5) *****

Ottawa

iP₂ 00 34 58
iS_n 35 26
iS₂ 30
F 37

Temiskaming, P.Q. reports
"slight tremor" at this time.

H = 00 34 12.5
 $\Delta = 290$ km. (181 mi.)

***** (January 5) *****

Fordham

i? 18 14 33

Weston

e 18 15 42

***** (January 9) *****

Fordham

i? 19 45 04

Weston

eS? 19 46 27

***** (January 12) *****

Fordham

i 19 39 02?
i 22
i 23.5

Weston

eS? 19 40 29

Laurence C. Langguth, S.J.

N E S A BULLETIN

January 16 - 31, 1940

Bulletin No. 38



***** (January 20) *****

Weston

eS? 15 41 05

***** (January 28) *****

Weston

Harvard

Williamstown

iP₁ 23 12 06.1
iS₁ 16.8

$\Delta = 88.3$ km. (55 mi.)

iP₁ 23 12 10
iS₁ 24

$\Delta = 114.5$ km. (72 mi.)

H = 23 11 51

$\phi = 41^{\circ}38'$ N.

$\lambda = 70^{\circ}48'$ W.

Vicinity of Mattapoisett, Mass.

eP₁ 23 12 33.5
iS₁ 57 (3 mm.)
i 59
 $\Delta = 230$ km. (144 mi.)
from S₁-H.

Ottawa

i 23 14 31
F 15.5

(This solution courtesy of Dr. L.D. Leet, Harvard. Weston is conducting a survey of the neighborhood of the quake by post card questionnaires, and the area of strongest felt motion seems to agree very closely with the instrumental epicentre.

***** (January 30) *****

Fordham

Weston

iP₂ 19 05 19 Comp.
i2P₁P₁ 21
iS₂ 37
iS₁ 38.5
i 39.5 max.
 $\Delta = 152$ km. (95 mi.)
H = 19 04 54.3

e 19 06 35 (?)
eS₁? 45 -
 $\Delta = \text{ca. } 380$ km. (237 mi.) ?
from S₁-H.
Az. W or NW of Fordham.

***** (January 30) *****

Ottawa

i 19 07 23.5
i 36
i 40
F 08.5

This does not appear to be connected with the preceding.

Laurence C. Langguth, S.J.

NESA BULLETIN

February 1 - 15, 1940

Bulletin No, 39

***** (February 7) *****

Pittsburgh

i 21 09 31 May be blast.

***** (February 9) *****

Fordham

iP 13 32 20
i? 33 31

Weston

iP 13 33 18.6

***** (February 9) *****

Fordham

iP 14 06 08

Weston

iP 14 06 52.0
i 07 06.5

***** (February 10) *****

Ottawa

iP₂ 20 57 40.7
iP₁ 41.5
i 43.5
iS₂ 58.5
iS₁ 59.5

Weston

eS? 21 00 10
i 16.8
i 23.7

Fordham

iS? 21 00 19

Δ = 149.5 km. (94 mi.) Az. apparently NW of Ottawa.

H = 20 57 16.5

***** (February 12) *****

Weston

e 05 36 37
i 37 06.5

Fordham

i 05 36 40
i 44
i 09

On vertical short period records only.

***** (February 12) *****

Fordham

iP 16 55 54

***** (February 13) *****

Fordham

Weston

iP₂ 20 53 58 Dil.
iS₂ 54 16
 $\Delta = 152$ km. (95 mi.)
H = 20 53 33.3

eP 20 54 05
iP₁ 05.6
eS₂ 27.5
iS₁ 30.6

$\Delta =$ ca. 194 km. (122 mi.)

Probably blast in Columbia County, southeast of Hudson, N.Y.

***** (February 14) *****

Weston

Fordham

iP 02 17 21.3 (10 mm.)
i 22.9
i 27.0

iP 02 17 22 Comp.
i 25 Deep focus
i 28.5

***** (February 15) *****

Ottawa

i(P₁) 08 59 57
i 58
i 59.5
i(S₁) 09 00 09
F 01

$\Delta =$ (98 km.) (62 mi.)
H = (08 59 41)

***** (February 15) *****

Ottawa

iP₂ 10 59 01
i 09.5
i 13.5
iS₂ 45
iS₁ 54
F 00.5
 $\Delta = 393$ km. (246 mi.)
H = 10 58 00

Laurence C. Langguth, S.J.

NESA BULLETIN

February 16 - 29, 1940

Bulletin No. 40

***** (February 17) *****

Ottawa

i 16 23 52
i 24 02.5
F 24.5

***** (February 26) *****

Ottawa)

iP₁ 19 05 24
iS₁ 35.5
iS₁S₁ 37
i2S₁S₁ 40.5
F 06

$\Delta = 94 \text{ km. (58 mi.)}$
 $H = 19 \text{ } 05 \text{ } 08.3$

***** (February 29) *****

Fordham

iP 07 50 36 Dil.
ipP 42

***** (February 29) *****

Fordham

Weston

iP₁? 23 23 39
iS₁? 57

eS₁? 23 25 05

$\Delta = \text{ca. } 149 \text{ km. (94 mi.)}$

$\Delta = \text{ca. } 382 \text{ km. (238 mi.)}$

$H = \text{ca. } 23 \text{ } 23 \text{ } 14$

Az, W or NW of Fordham. Cf. January 30, 1940, 19h 05m

NESA Bulletin No. 38

NOTICE From:

Fordham For the shock of January 28, 1940, 23^h 12^m,
NESA Bulletin No. 38 -- iS 23 13 08

Laurence C. Langguth, S.J.

March 1 - 15, 1940

Bulletin No. 41



***** (March 2) *****

Fordham

iP 04 15 58 Comp.
iS₂ 16 15
 $\Delta = 135$ km. (85 mi.)

Williamstown

iP₂ 04 16 00.6
iF 17.0
iS₁ 18.8
 $\Delta = 147$ km. (93 mi.)

Harvard

iP₁ 04 15 59
iF 16 13.8
iS₂ 15.0
iS₁ 15.5
 $\Delta = 135$ km. (85 mi.)

H = 04 15 36.5
Near Moodus, Conn.
 $\phi = 41^{\circ}29'$ N.
 $\lambda = 72^{\circ}29'$ W.

Weston

eP 04 15 59
iP₁ 59.8
iF 16 14.5
iS₁ 16.9
i 18.5
 $\Delta = 139$ km. (88 mi.)

***** (March 6) *****

Weston

e 05 51 03
e 52 10

***** (March 6) *****

Fordham

i 06 08 18 Dil.
i 23

Weston

e 06 09 15

***** (March 7) *****

Weston

iP 19 46 03 Deep focus?

***** (March 13) *****

Harvard

iP 01 29 22.1
iF 37.3
iS₂ 38
iS₁ 39.2
i 47

$\Delta = 135$ km. (85 mi.)

H = 01 29 00

Near Moodus, Conn.

See March 2^d 04^h above.

Weston

eP₂ 01 29 22.5
iF₁ 23.2
iP₁P₁ 23.6
iF 37.6
iS₁ 40.0

$\Delta = 138$ km. (87 mi.)

Fordham

iP₂ 01 29 23
iS₂ 40
 $\Delta =$ ca. 140 km.
(88 mi.)

Williamstown

iP₂ 01 29 24.2
iF 39.1

$\Delta = 148$ km. (93 mi.)

NOTICE From:

Harvard

Dr. Leet offers a revision and extension of his "New England Travel Times" for use by NESA stations. They imply velocities and layer thicknesses as follows -

From P		From S	
$V_1 = 6.13$ km./sec.	16 km.	$V_1 = 3.45$ km./sec.	15 km.
$V_2 = 6.77$	13	$V_2 = 3.93$	10
$V_3 = 7.17$	8	$V_3 = 4.27$	10
	<u>37</u> km.		<u>35</u> km.
$V_n = 8.43$		$V_n = 4.62$	

The following formulae will be useful for plotting charts -

$P_1 = 0 + \Delta/6.13$ (km./sec.)	$S_1 = 0 + \Delta/3.45$
$P_2 = 2.2 + \Delta/6.77$	$S_2 = 4.1 + \Delta/3.93$
$P_3 = 4.0 + \Delta/7.17$	$S_3 = 7.0 + \Delta/4.27$
$P_4 = P_n = 7.0 + \Delta/8.43$	$S_4 = S_n = 10.0 + \Delta/4.62$

Laurence C. Langguth, S.J.

March 16 - 31, 1940

Bulletin No. 42



***** (March 16) *****

Fordham

iP₂ 18 53 20
iP₁P₁ 21.5
i 53 23
i 37 ?
iS₂ 40
i 41 max.
i2S₁S₁ 44.5
Δ = 170 km. (106 mi.)

Weston

eP₁ 18 53 32
iS₃ 55.7
iS₂ 57.3
i 54 05
Δ = ca. 240 km. (150 mi.)
H = 18 52 52.5
Blast in Albany County, N.Y.

***** (March 18) *****

Williamstown

e 21 25 06
i 10
iS₁ 16

Weston

iS 21 25 40.3
i 41.7

***** (March 19) *****

Weston

iP 00 45 43
eS 49 50
e 01 07 58

Harvard

iP 00 45 45
eS 49 38
e 01 07 53

A slight shock was reported felt in Anthony, R.I., at about the time of the first of the above disturbances, and from the records it might be regarded as S phases of such a local. However, the periods are a little long, and a consideration of the polarity of the phases designated P and S suggests that it is better to consider them traces of a teleseism, Δ order of 22°, with epicenter in the vicinity of the Caribbean Sea, of the type discussed in the Supplement to Bulletin 17.

***** (March 19) *****

Fordham

iP₂ 19 34 14.5 Comp.
i2P₁P₁ 17.5
iS₂ 35.5
i2S₁S₁ 40

Δ = 180 km. (112 mi.)
Periods are long for local.

***** (March 22) *****

Fordham

i 18 11 33 ?

***** (March 22) *****

Fordham

iP₂ 21 02 47 Dil.
iS₁P₂S₁ 52
iS₂ 03 05.5
iS₁S₁ 08
i 09 max. 17 mm.
Δ = 155 km. (97 mi.)

Weston

eP₃ 21 02 54.6
iP₂ 55.5
iP₁ 56.6
eS₃ 18.3
iS₂ 19.6
iS₁ 22.4
Δ = 207 km. (129 mi.)

Williamstown

iS₁S₁ 21 02 44.4
Δ = 72 km. (45 mi.)
H = 21 02 22.6
Blast, Hudson, N.Y.

***** (March 28) *****

Harvard

iP₁ 11 43 18.5
i 37
iS_n 44
iS₂ 47
iS₁ 53
Δ = 270 km. (169 mi.)

Weston

eP 11 43 16 ?
iS₂ 47.8
i 50.5
iS₁ 53.7
Δ = 273 km. (171 mi.)

Williamstown

eP₃ 11 43 25.8
iP₁ 29.1
iS₁ 44 09.8
iS₁ 11.8

Δ = 335 km. (209 mi.)

H = 11 42 34.5

φ = 44°7 N.

λ = 69°9 W.

Felt in Stark and New Vineyard, Maine.

Laurence C. Langguth, S.J.

NESA BULLETIN

April 1 - 15, 1940

Bulletin No. 43

Addendum to Bulletin No. 41

***** (March 12) *****

Ottawa

i 19 56 25
F 48

Addenda to Bulletin No. 42

***** (March 22) *****

Ottawa

i 21 04 04
i 09
F 04.5

***** (March 28) *****

Ottawa

e? 11 44 17
i 20
L 32
F 45.5

Fordham

iS₁ 11 45 05.0
i 08.0
i 10.6

***** (March 29) *****

Ottawa

i 04 36 07
i 13
F 36.5

***** (April 8) *****

Fordham

iS 20 15 09

Weston

eS 20 16 22

***** (April 11) *****

Weston

i_Z 09 16 25 Deep focus? Amplitude very small.

***** (April 11) *****

Harvard

Weston

iP₁ 11 39 28.5
iS₁ 29.2

iP 11 39 30.4
iS₁ 32.1

$\Delta = 6$ km. (3.5 mi.)

$\Delta = 16$ km. (10.5 mi.)

H = 11 39 27.5

Probably a blast in West Acton, Mass. But the interpretation is not entirely correct; Harvard and Weston are very nearly 26 km. apart, which is evidently more than the sum of the distances given above. Arrival times have been carefully checked at both stations. A possible solution would be to postulate a positive velocity anomaly in the region between the stations.

***** (April 11) *****

Fordham

Williamstown

Weston

iP₁ 14 58 51.5
i 52.6
i 59 03.8
iS₁S₁ 06.1
i 06.7 max.

iP₂ 14 59 00
iS₂ 18.7
 $\Delta = 160$ km. (100 mi.)

iP₂ 14 59 01.5
i 01.8
iP₁ 02.6
i 20.5
iS₂ 21.5
iS₁ 23.6

$\Delta = 106$ km. (66 mi.)

Harvard

$\Delta = 171$ km. (106 mi.)

H = 14 58 34
 $\phi = 41^{\circ}20'$ N.
 $\lambda = 72^{\circ}47'$ W.

iP₂ 14 59 00.5
iP₁ 01.1
iS 19.2
iS₁ 21.5

$\Delta = 165$ km. (103 mi.)

Blast at North Branford, Conn.; 35,000 lbs. Felt in Guilford and other nearby towns, and first reported by the press as an earthquake.

***** (April 12) *****

Harvard

Weston

Fordham

eP₁ 01 58 48 very small
e 59 15.1
iS₁ 16.1

e 01 58 58
iS 59 19.7
iS₁ 20.5

iS₁ 01 59 11
 $\Delta = \text{ca. } 215$ km. (134 mi.)
H = ca. 01 58 10

$\Delta = \text{ca. } 230$ km. (144 mi.) $\Delta = \text{ca. } 243$ km. (152 mi.) $\phi = \text{ca. } 42^{\circ}8'$

Apparently a local shock in West Central New York State.

$\lambda = \text{ca. } 74^{\circ}6'$

***** (April 13) *****

<u>Fordham</u>		<u>Harvard</u>		<u>Weston</u>	
i	01 59 56	iS ₂	02 00 25.9	i	02 00 30.8
i	02 00 20	iS ₁	27.4	i	33.4
				i	37.7

***** (April 13) *****

<u>Ottawa</u>		<u>Weston</u>	
i	08 15 28	eS	08 16 12
i	45	iS	20
F	16.5		

***** (April 13) *****

<u>Ottawa</u>		<u>Weston</u>	
i	08 23 41	i	08 25 12
i	52	iS	15
F	24.5		

***** (April 15) *****

<u>Weston</u>		<u>Harvard</u>	
iP ₁	18 34 08.0	iP ₁	18 34 11.6
iS ₁	11.3	iS ₁	16.1
i	14.2	iL	18.1
$\Delta = 20$ km. (12.5 mi.)		$\Delta = 36$ km. (22.5 mi.)	
Probably blast near E. Holliston, Mass.			

***** (April 15) *****

<u>Ottawa</u>	
i	21 21 20
i	23
F	40

Laurence C. Langguth, S.J.

NESA BULLETIN

April 16 - 31, 1940

Bulletin No. 44

***** (April 16) *****

Ottawa

i 00 05 39
i 41
F 06 24

***** (April 16) *****

Fordham

e 06 46 09

***** (April 16) *****

Fordham

iz 07 59 51
iz 08 02 55

Weston

iz 07 59 51 Both are almost imper-
iz 08 02 55 ceptible on NS and EW.

Apparently aftershocks of the teleseism in the Aleutian Islands at
06^h07^m.7 (USCGS); similar to the principal shock in identical
arrival times at both stations and steep angle of emergence.

***** (April 16) *****

Fordham

iz 08 14 42

Weston

iz 08 14 43 Single sharp dilatation.

No apparent connection with the preceding.

***** (April 19) *****

Harvard

e 11 23 34

Weston

e 11 23 34

L from blast or P from teleseism?

***** (April 20) *****

Weston

eP 14 43 20.0
iP₁ 20.3
iP₁P₁ 21.2
iS₁ 35.2
iS₁S₁ 36.3

Fordham

iS₂ 14 43 44.0
iS₁ 45.5 $\Delta = 156$ km. (98 mi.)

$\Delta = 122$ km. (76 mi.)
H = 14 43 00

Blast in Connecticut River
valley, ca. 10 miles north of
Hartford.

***** (April 20) *****

Fordham
iP₂ 14 49 39.8
iP₁ 41.0
i 44.5
iS₂ 50 02.5
iS₁ 05.5
Δ = 190 km. (119 mi.)

Weston
eP 14 49 45
iP₂ 45.9
iP₁ 46.6
i 50 07.7
iS₃ 09.8
iS₂ 11.4
iS₁ 15.5
Δ = 225 km. (140 mi.)

Ottawa
i 14 50 47
i 49
iS₁ 52
F 51.6
Δ = ca. 350 km. (219 mi)
H = 14 49 10
Blast in Albany County,
northwest of S. Bethle-
hem, N.Y.

***** (April 20) *****

Weston
i_Z 16 04 56 Similar to April 19, 11^h23^m.

***** (April 20) *****

Ottawa
i 18 52 37
F 53
i 19 39 42
F 40.3
i 20 31 26.5
F 31.7

***** (April 23) *****

Fordham
iP₂ 20 50 20.0
iS₂ 38.5
Δ = 159 km. (100 mi.)
Weston
eS? 20 50 55

***** (April 24) *****

Fordham
iP₂ 20 08 45.5
iS₂ 09 04.0 Δ = 159 km. (100 mi.)

***** (April 25) *****

Fordham
i 16 43 34
i 36 S phases?

***** (April 25) *****

Ottawa

i 19 29 54
i 30 00.5
F 30.5

***** (April 26) *****

Fordham

i 15 14 19
i 27

Weston

e 15 15 18 S phases?

***** (April 26) *****

Fordham

i 20 59 31
i 35
i 38

***** (April 27) *****

Fordham

iP 13 27 50

Weston

iP 13 27 49
ipP 28 18 Deep focus

***** (April 27) *****

Fordham

iP₂ 22 13 35
iS₂ 58
 $\Delta = 207$ km. (129 mi.)
H = 22 13 01

Weston

eP₂ 22 13 45
iP₁ 47.2
iS₃ 14 14.4
iS₂ 16.7 $\Delta = 280$ km. (175 mi.)
i 19.8
eS₁ 23.4

iP₂ 22 14 24
iS₂ 47
 $\Delta = 207$ km. (129 mi.)
H = 22 13 50

iP₂ 22 14 33.9
iP₁ 36.4
iS₃ 15 03.2
iS₂ 05.9 $\Delta = 280$ km. (175 mi.)
i 07.1
iS₁ 12.3

***** (April 27) *****



Fordham

iP₂ 22 31 39
iS₃ 32 03
Δ = 225 km. (140 mi.)
H = 22 31 03

Weston

eP₂ 22 31 50.5
iP₁ 53.4
iS₂ 32 26.0
iS₁ 32.5 Δ = 310 km. (193 mi.)

eP₂ 22 37 49
iP₁ 51.0
iS₂? 38 20.1 Δ = 270 km. (169 mi.)
iS₁? 25.3 H = 22 37 07
Amplitude very small

iP₂ 22 43 17
iS₃ 39
Δ = 205 km. (128 mi.)
H = 22 42 44

eP₃ 22 43 29.2
iP₁ 32.5
eS₃ 44 01.5
iS₂ 04.3 Δ = 300 km. (187 mi.)
i 08.0
iS₁ 11.0

iP₂ 22 44 52
iS₂ 45 13
Δ = 185 km. (115 mi.)
H = 22 44 22

eP₂ 22 45 03.0
iP₁ 04.6
eS₂ 32.0
i 34.4 Δ = 260 km. (162 mi.)
iS₁ 37.9

Amplitudes are all very small. Epicenters about 110 miles off the coast of central New Jersey, in the Atlantic Ocean, between Lat. 39°6 and 40°1 N. and Long. 71°8 and 72° W.

***** (April 29) *****

Ottawa

i 16 21 28
F 36

i 16 32 22
F 40

i 17 49 40
F 51

i 17 53 07
F 16

***** (April 30) *****

Weston

iP₂ 19 29 17.3
iP₁P₁ 18.2 Δ = 139 km. (88 mi.)
iS₂ 33.8 H = 19 28 54.6
iS₁ 34.7

Laurence C. Langguth, S.J.

NESA BULLETIN

May 1 - 15, 1940

Bulletin No. 45

***** (May 1) *****

Weston

eS? 15 09 10
eS 16

***** (May 2) *****

Weston

i 15 07 48.6
iS? 50.0
iS 53.7

***** (May 3) *****

Fordham

i 21 47 05.0 ?
i 07.5 ?
i 11.0
i 42.0

***** (May 3) *****

Weston

eP₂ 21 48 32.8
iP₁ 34.3
i 53.1
iS₂ 54.6
iS₁ 57.5

Δ = ca. 190 km. (119 mi.)

H = 21 48 02.5

Interpretation not certain; amplitudes small
and periods long.

***** (May 4) *****

Fordham

iP? 13 56 15.5
i 22.5
i 25.8
i 30.0 max.

Weston

eS 13 57 12
iS 13.3

***** (May 4) *****

<u>Fordham</u>					<u>Weston</u>			
iP ₁	16	31	33.7		iP ₂	16	31	38.9
iS ₁			48.0	$\Delta = 118$ km. (74 mi.)	iS ₂	16		57.0
i			50.0	max.	iS ₁			58.2
i			53.0	Blast at Meriden, Conn.				H = 16 31 14.0

***** (May 4) *****

<u>Fordham</u>					<u>Weston</u>			
iS	17	53	32		iS	17	55	33.5
					iS			38

***** (May 6) *****

<u>Ottawa</u>																		
i	14	21	23		i	14	59	21		i	16	37	10		i	16	39	56
F			35		F			30		F			22		F		40	06
i	17	37	01		i	18	28	10		i	19	37	42		i	19	37	42
F			11		F			17		F			50		F			50

***** (May 8) *****

<u>Fordham</u>					<u>Harvard</u>					<u>Weston</u>			
iP ₁	20	59	17.2		iP ₂	20	59	23.4		eP?	20	59	23.6
iS ₁			30.5		iS ₂			41.6		iP ₂			24.0
i			33.0	max.	$\Delta = 152.5$ km. (95.5 mi.)					iP ₁			24.7
$\Delta = 110$ km. (69 mi.)					H = 20 58 58.7					iS ₂			42.3
					$\phi = 41^{\circ}28'00''$ N.					iS ₁			43.7
					$\lambda = 72^{\circ}44'10''$ W.					$\Delta = 155$ km. (97 mi.)			

Blast at Reeds Gap near E. Wallingford, Conn.; timed by Dr. Leet

***** (May 9) *****

<u>Harvard</u>					<u>Weston</u>			
eP ₁ ?	03	23	02		eP ₁ ?	03	23	03
eS _n ?			58	$\Delta = 940$ km. (587 mi.)	eS ₁		24	58
eS ₂	24	32		H = 03 20 29	iS ₁ ?		25	03.5
iS ₁	25	01						
e		15		Interpretation doubtful.				

***** (May 9) *****

Weston

iS? 07 18 10.4
i 16.3

iS? 07 29 32.5
i 39.4

***** (May 9) *****

Fordham

iP₂ 15 59 17.5
iS₂ 37.1
 $\Delta = 165$ km. (103 mi.)
H = 15 58 50.8

Weston

iS₂? 15 59 48.1
i 49.7
iS₁? 52.0
 $\Delta =$ ca. 212 km. (132 mi.)

***** (May 10) *****

Harvard

iP₂ 18 42 05.3
 $\Delta = 142$ km. (89 mi.)
H = 18 41 42

Weston

eP₃ 18 42 06.5
iP₂ 06.9
iP₁ 07.6
iS₂ 24.8
iS₁ 26.2
 $\Delta = 152$ km. (95 mi.)
 $\phi = 41^{\circ}40'13''$ N.
 $\lambda = 72^{\circ}49'58''$ W.
Plainville, Conn.

The first of a series of four blasts, whose times at origin were determined by Dr. Leet from strong motion records taken by him at the quarry - H = 18 41 42; 18 41 48.28; 18 41 57.95; 18 42 20.27.

***** (May 10) *****

Weston

iP₃ 19 23 47.4
iP₁ 50.0
iS₃ 24 15.5
iS₁ 24.6
 $\Delta =$ ca. 270 km. (169 mi.)
H = ca. 19 23 06

iP₂ 19 24 32.5
iP₁ 34.5
eS₃ 25 00.5
iS₂ 02.5
i 06.2
iS₁ 08.2
 $\Delta =$ ca. 265 km. (165 mi.)
H = ca. 19 23 51

Probably in Atlantic Ocean off coast of New Jersey. Cf. NESA No. 44, April 27, 22^h. Amplitudes very small.

- 4 -

***** (May 12) *****

Fordham

eP 17 13 26
i 40
eS 17 10
e 22
i 24
i 38

$\Delta = \text{ca. } 20^{\circ}6$

Weston

eP 17 13 37
eS 17 29
i 41

$\Delta = \text{ca. } 21^{\circ}4$

Cf. Supplement to NESAs No. 17

***** (May 13) *****

Fordham

iP₁ 16 29 38.0
i 42.3
iS₁ 52.0
i 55.5

$\Delta = 115 \text{ km. (72 mi.)}$

Weston

eP 16 30 20.5
iP₁ 21.4
eS₂ 31 00.0
iS₁ 09.5

$\Delta = \text{ca. } 378 \text{ km. (236 mi.)}$

H = 16 29 19

Blast in Northampton County, in east central Pennsylvania?

***** (May 14) *****

Weston

eP₂ 20 00 43.6
iP₁ 44.0
iP₁P₁ 44.5
iS₁ 58.8
iS₁S₁ 01 00.0

$\Delta = 123 \text{ km. (77 mi.)}$

H = 20 00 23.5

Az. W. ?

Laurence C. Langguth, S.J.

NESA BULLETIN

May 16 - 31, 1940

Bulletin No. 46



***** (May 16) *****

Shawinigan Falls

eP₁ 14 00 31
iS₁ 42
F⁻ 02

Δ = 87 km. (54 mi.)

Ottawa

iP₁ 14 00 48
e 54
iS₁ 01 13
F⁻ 03

Δ = 193 km. (121 mi.)

Harvard

eP₁ 14 01 22
e 43
e 49
eS₃? 59
iS₂ 02 02

Δ = 398 km. (249 mi.)

Weston

iP₁ 14 01 24.6 ?
iS₂ 02 07
i 11
iS₁? 18

Δ = 420 km. (262 mi.)

Fordham

iS 14 02 49
iS₁ 56

Δ = 549 km. (344 mi.)

H = 14 00 17
φ = 45°50' N.
λ = 73°20' W.

Epicenter in the valley of the St. Lawrence River, vicinity of L'Assomption, P.Q.?

***** (May 16) *****

Fordham

iP₂ 19 44 50.5
iS₂ 45 12.5
i 14.5

Δ = 186 km. (115 mi.)
H = 19 44 21.5

Weston

eS₃? 19 46 10
iS₁? 28
i 29.2

Δ = ca. 430 km. (270 mi.)

***** (May 18) *****

Harvard

iP₁ 20 01 01.4
iS₁ 14.0

Δ = 103 km. (65 mi.)
H = 20 00 44.0

Blast between Westfield and Springfield, Mass.?

Weston

iP₁ 20 01 03.8
iP₁P₁ 04.4
iF⁻ 17.5
iS₁ 18.4
iS₁S₁ 19.5

Δ = 120 km. (75 mi.)

***** (May 23) *****

Fordham

i 17 19 08 S phases ?

***** (May 25) *****

Fordham

iP₁ 13 14 11.5
iS₁ 24.5
i 26.5
i 27.5 max.

Δ = 106 km. (66 mi.)

H = 13 13 53.8

Weston

eP₃ 13 14 20.0
iP₂ 20.4
iP₁ 21.2
iS₂ 41.8
iS₁ 42.5

Δ = 172 km. (107 mi.)

H = 13 13 52.7

Blast at North Branford, Conn.

***** (May 28) *****

Fordham

i_z 20 06 46 Followed by about 15 sec. of activity.

***** (May 28) *****

Fordham

iP₁ 21 00 42
iS₁ 52.5
 Δ = 85 km. (53 mi.)
H = 21 00 27.5 Weak blast.

Weston

iS 21 01 34.8
iS 38.0
 Δ order of 250 km. (155 mi.)

Laurence C. Langguth, S.J.

NESA BULLETIN

June 1 - 15, 1940

Bulletin No. 47

***** (June 1) *****

Weston

eS? 16 48 02

***** (June 2) *****

Weston

iP₁ 23 58 54.3
iS₁ 56.1
iP₁S₁ 59.1

$\Delta = 14$ km. (9.5 mi.)
H = 23 58 51.8

***** (June 3) *****

Fordham

i_z 14 47 40

i_z? 19 30 42
i_z 45.5

***** (June 4) *****

Weston

iP₁ 18 13 51.8
iS₂ 14 24.3
i 26.0
iS₁ 31.9

$\Delta =$ ca. 310 km.
(193 mi.)
H = ca. 18 13 01

iP₁ 18 14 50.5
iS₂ 15 21.3
i 22.1
iS₁ 27.5

$\Delta =$ ca. 290 km.
(181 mi.)
H = ca. 18 14 04

Probably in Atlantic Ocean off the coast of New Jersey.
Cf. NESA No. 45, May 10, 19^h. Amplitudes very small.

***** (June 8) *****

Williamstown

iP₁ 12 55 16.3
i 17.8
i 22.8
i 26.3

$\Delta = 59$ km. (37 mi.)
H = 12 55 06.7

Fordham

iP_n 12 55 36.0
iP₁ 37.3
iS_n 57.5
iS₂ 58.8
i 59.5 max.

$\Delta = 188$ km. (117 mi.)

Weston

eP_n 12 55 38.9
iP₂ 39.9
iP₁ 40.8
iS₂ 56 03.8
iS₁ 07.5

$\Delta = 210$ km. (131 mi.)

Blast near S. Bethlehem, Albany County, N.Y.

***** (June 10) *****

Weston

iS? 21 05 37.0

***** (June 10) *****

Williamstown

iP₁ 21 24 57.6
i 00.1
i 07.2
iS₁S₁? 09.1
iL? 13.6

$\Delta = 87$ km. (54 mi.)

Weston

iP₁ 21 25 03.6
iS₁ 18.7
iS₁S₁ 19.8

$\Delta = 123$ km. (77 mi.)
H = 21 24 43.1

***** (June 11) *****

Fordham

i 16 00 00 S phases of blast?

***** (June 14) *****

Fordham

iP 17 23 42
i 24 02

Weston

iP 17 23 42
ipP 54 Deep focus.

Laurence C. Langguth, S.J.

NESA BULLETIN

June 16 - 30, 1940

Bulletin No. 48



***** (June 17) *****

Weston

eP ₂ 17 10 57	
iP ₁ P ₁ 58.0	$\Delta = 147$ km. (92 mi.)
iS ₂ 11 14.5	H = 17 10 22.9
iS ₁ 15.3	Az. SW? Amplitudes very small.
iS ₁ S ₁ 16.3	

***** (June 18) *****

Fordham

i 16 57 30 S phases?

***** (June 20) *****

Fordham

iP₁ 16 00 53.0
i 55.0
iS₁ 01 06.0 max.

$\Delta = 106$ km. (66 mi.)

Weston

eP₂? 16 01 33.5
i 12.5
i 18.5
iS₁? 02 23.4

$\Delta =$ ca. 370 km. (231 mi.)
H = 16 00 35.2

Probably blast near Pennsylvania - New Jersey state line,
ca. $\phi = 40^{\circ}30'$ N. $\lambda = 75^{\circ}$ W.

***** (June 20) *****

Fordham

iP₂ 17 34 16.0
i 17.5
iS₂ 36.0
i 37.0 max.

$\Delta = 170$ km. (106 mi.)

Weston

iP₁? 17 34 25.4
iS₂ 50
iS₁ 54
i 59

$\Delta =$ ca. 225 km. (140 mi.)
H = 17 33 48.5

Probably blast in Greene County, New York, vicinity of
 $\phi = 42^{\circ}20'$ N. $\lambda = 74^{\circ}$ W.

***** (June 24) *****

Weston

eS ? 15 01 52
iS 58

***** (June 24) *****

Weston

iP₁ 20 42 03.5
iF? 07.2
iS₁ 07.6
i 08.6
iL? 09.0

$\Delta = 34$ km. (22 mi.)
H = 20 41 57.7
Az. N.

***** (June 25) *****

Weston

iP 03 04 13
i 27.3
i 34

Fordham

iP 03 04 15
i 29
i 35 Depp focus

***** (June 28) *****

Weston

eP₂ 19 40 30.8
iP₁ 31.8
eS₂ 52.9
iS₁ 54.7

$\Delta = 180$ km. (112 mi.)
H = 19 40 02.4

***** (June 29) *****

Weston

eP₂ 12 54 51
iP₁ 52.5
iS₃ 55 14.9
i 17.1
iS₁ 20.4

$\Delta = 218$ km. (136 mi.)
H = 12 54 17.0

NOTICE From:

Williamstown : The following are readings for May from this station -

May 3	i	21 48 17	May 13	iP	16 30 10.6
				iS	43.8
May 4	iS	13 56 51.5			
May 4	iP ₁	16 16 35.8	May 14	iP	20 00 37.2
	iS ₁	52.3		iS	46.3
				L	54.0
May 4	eS	17 53 56			
May 8	iP	20 59 21.7	May 16	i?	14 01 40.8
	iS	38.7		iS ₁ ?	50
May 10	iS ₁ ?	18 42 17.5	May 25	iP	13 14 18.8
				iS	31.8
May 10	iS ₁ ?	18 42 55.5			
			May 28	iS ₁	21 01 17

Laurence C. Langguth, S.J.

NESA BULLETIN

July 1 - 31, 1940

Bulletins Nos. 49 and 50

***** (July 11) *****

Weston

iP ₁	16 59	41.6	Compression to NE. $\Delta = 125$ km. (78 mi.) Quarry blast.
eS ₁		57.0	

***** (July 11) *****

Weston

eP ₂	21 20	48.7	Compression to NE. $\Delta = 172$ km. (107 mi.) Quarry blast at North Branford, Conn.
iP ₁		49.9	
eS ₂	21	08.8	
iS ₁		10.0	
iL		18.1	

***** (July 17) *****

Weston

e	20 58	23	S phases?
i		24	

***** (July 19) *****

Weston

i	16 35	38
e		54

***** (July 20) *****

Weston

i	13 45	17.5	S phases?
i		20.0	

***** (July 25) *****

Weston

iS? 17 47 55

Daniel Linehan, S.J.

August 1 - 31, 1940

Bulletins Nos. 51 and 52

International
Seismological
Centre

Addendum to Bulletin 50

***** (July 17) *****

Williamstown

eP 20 57 39
i 57.5
iS₁? 58 00
iL? 07.5

***** (August 1) *****

Weston

eP₁? 15 55 52
eS₂ 56 08.2
iS₁ 09.3

Δ = ca. 144 km. (50 mi.)
H = ca. 15 55 28
Perhaps quarry blast.

***** (August 3) *****

Williamstown

iP₁ 12 12 31.0
i 32.6
iS₁ 37.8
iS₁S₁? 40.5

Δ = 56 km. (35 mi.)

Weston

eP_n 12 12 53.7
iP₂ 54.6
iP₁ 55.5
eS_n 16.3
iS₂ 18.6
iS₁ 22.0

Δ = 207 km. (129 mi.)
H = 12 12 21.8
Near S. Bethlehem,
N.Y.

***** (August 4) *****

Weston

e 13 58 25
i 31
i 59 22

***** (August 5) *****

Weston

e 08 30 55
e 31 10

***** (August 6) *****

Weston

iP₁ 22 56 09.0
eS₁ 17.0
iL 21.0
 Δ = 66 km. (42 mi.)
H = 22 55 57.9

***** (August 7) *****

Weston

e	19 08	09.5	
i		10.5	S phases?
i		11.4	

***** (August 7) *****

Williamstown

iP ₁ ?	23 57	31.0
i	58	09.5
i		13.7
iS ₁ ?		17.7

Weston

eS	23 58	38
iS		42

Apparently not a quarry blast.

***** (August 9) *****

Weston

iP ₁	17 12	26.2	$\Delta = 138$ km. (87 mi.)
eS ₂		42.5	H = 17 12 03.1
iS ₁		43.1	Blast?

***** (August 13) *****

Weston

iP ₁	17 55	33.2	$\Delta = 93$ km. (58 mi.)
i		40.5	H = 17 55 17.7
iS ₁		44.6	Blast?

***** (August 16) *****

Weston

iP ₁	15 04	47.9	
iS ₁		55.8	$\Delta = 65$ km. (41 mi.)
iS ₁ S ₁		56.3	H = 15 04 37
iL		59.5	Blast?

***** (August 16) *****

Williamstown

iP ₁	19 57	09.7	
i		12.3	
iS ₁		20.3	$\Delta = 85$ km.
i		23.7	(53 mi.)
i		24.2	
i		27.7	

Weston

ePn	19 57	30	
eP2		30.5	
iP ₁		31.5	$\Delta = 217$ km. (135 mi.)
eSn		53.0	H = 19 56 56
iS ₃		54.0	
iS ₂		55.5	

***** (August 21) *****

Weston

iP ₁	12 24	16.5	$\Delta = 67$ km. (42 mi.) $H = 12$ 24 05.6 Blast?
eS ₁		24.3	
iS ₁		25.0	
iL		28.7	

***** (August 22) *****

Ottawa

i	15 38	06	i	17 06	48	i	18 32	16.5
F		19	F		07 03	F		31

***** (August 23) *****

Williamstown

Faint local at 10^h56^m ?

***** (August 23) *****

Ottawa

i	15 29	00	i	17 04	31.5	i	18 31	55.5	i	19 26	42
F		16	F		55	F		32 09	F		27 00

***** (August 23) *****

Williamstown

eP	21 12	34	Faint
iS ₁		54.5	
iL	13 02		

Weston

eS 21 13 15

***** (August 24) *****

Williamstown

iS 14 46 26.5

Weston

e	14 46	59	S phases
i		47 00.2	
i		08.9	

***** (August 24) *****

Weston

eP? 21 48 41 ?
iS 49 06.0
iS 08.6

Williamstown

eP 21 48 52.1
iP 53.1
iS₂? 49 24.9
iS₁ 26.6

***** (August 25) *****

Weston

e 15 51 40
i 50.5

***** (August 26) *****

Weston

i 02 42 16.5

***** (August 28) *****

Weston

e 20 50 40
i 51 01 S phases
i 04.5

Daniel Linehan, S.J.

NESA BULLETIN

September 1 - 15, 1940

Bulletin No. 53

***** (September 3) *****

Weston

eS 15 55 12
iS 14.0

eS 16 58 04
iS 06

***** (September 4) *****

Fordham

iP₂ 15 10 11.5 $\Delta = 156$ km. (97 mi.)
iS₂ 30.0 H = 15 09 46.4
Record not clear.

Weston

iS₁? 15 11 38.7
 $\Delta = \text{ca. } 380$ km. (240 mi.)
Az. W. of Fordham.

***** (September 7) *****

Weston

iP₁ 17 53 37.7
iP₁P₁ 39.0 $\Delta = 45$ km. (28 mi.)
iS₁ 43.3 H = 17 53 30.2 Blast.

***** (September 11) *****

Seven Falls

iP₁ 01 06 59.5
i 07 00.5
iS₁ 02
 $\Delta = 20$ km. (12.5 mi.)
H = 01 06 56

Shawinigan Falls

i 01 07 16
iP₁? 18
i 31.5
 $\Delta = \text{ca. } 153$ km. (83 mi.)

Ottawa

iP₃ 01 07 55
iP₁ 08 01
iS₃ 35
iS₂ 42
 $\Delta = \text{ca. } 395$ km.
(247 mi.)

Williamstown

eS₁? 01 09 13.3
 $\Delta = \text{ca. } 480$ km. (300 mi.)
 $\phi = \text{ca. } 47^\circ$ N.
 $\lambda = \text{ca. } 71^\circ$ W.

Weston

eS 01 09 16
i 18.9
iS₁ 22.3
 $\Delta = \text{ca. } 505$ km. (316 mi.)

Harvard

iS₁ 01 09 17
 $\Delta = \text{ca. } 485$ km.
(303 mi.)

Reported felt in the area between Quebec City and Beupre, Quebec.

***** (September 11) *****

Williamstown

iP 17 06 21.6 $\Delta = 15$ km. (10 mi.) Blast, perhaps in lime
iS 23.4 quarry in Adams, Mass.

***** (September 12) *****

Weston

e 00 40 21
i 28.3
i 42 07

Fordham

i 00 40 23
e 43 04 Deep focus.
i 41

***** (September 12) *****

Fordham

i? 16 06 41
iS? 49 Early explosion at Kenvil, New Jersey?

Fordham

i 17 29 31
i 38
i 43
i 46

Weston

e? 17 30 49
i? 56

Confused record.

Explosion in Hercules powder works, Kenvil, N.J.

***** (September 13) *****

Fordham

iP₂ 15 08 36.5
iS₂ 56.5
 $\Delta = 170$ km. (106 mi.)
H = 15 08 09

Weston

eP 15 08 43
iS₂ 09 07
 $\Delta = \text{ca. } 210$ km. (131 mi.)
Blast in Greene County, N.Y.

***** (September 14) *****

Williamstown

iP₁ 14 01 07.6 Blast.
i 21.6 $\Delta = 120$ km.
iS₁ 23.2 (75 mi.)

Weston

iP₁ 14 01 10.2
eS 25.5 $\Delta = 135$ km. (85 mi.)
iS₁ 26.6 H = 14 00 48.2

- 3 -

***** (September 15) *****



NOTICES From:

Harvard: For the local blast of June 2, 1940, Bulletin No. 47.

Harvard

iP 23 58 52.8
iS 53.9
 $\Delta = 9$ km. (6 mi.)
 $\phi = 42^{\circ}28'$ N. ca.
 $\lambda = 71^{\circ}28'$ W. ca.

Weston

iP 23 58 53.7
iS 55.5
 $\Delta = 14.7$ km. (10 mi.)
H = 23 58 51.3

Blast in South Acton, Mass.

(This solution by Miss Mary P. Collins, Harvard. Refer to the disturbance of April 11, 1940, 11^h, Bulletin No. 43)

Fordham: The following are readings from this station for recent bulletins.

Bulletin No. 48

June 28 iP₂ 19 40 25
 iS₂ 44.5 $\Delta = 165$ km. (103 mi.)
 iS₁ 46

Bulletin No. 49

July 1	iP ₂ 16 39 09	July 11	iP ₁ 21 20 39
	iS ₂ 30		iS ₁ 51.5
	iS ₁ 32.5		$\Delta = 101$ km. (63 mi.)
	$\Delta = 180$ km. (112 mi.)		North Branford, Conn.
July 8	iP ₂ 15 47 41	July 12	iP ₂ 15 33 21
	iS ₂ 48 01		iS ₂ 39
	$\Delta = 168$ km. (105 mi.)		$\Delta = 152$ km. (95 mi.)

Bulletin No. 50

July 17	e _Z S? 20 57 32	July 25	e _Z S? 21 33 56
July 18	e _Z S? 18 36 03	July 29	e _Z S? 16 19 13

Bulletin No. 51

August 3

iP₂ 12 12 49.2
iP₁ 50.3
i 54.5
iS₂ 13 10.8
i 12.0
i 12.5 max.
i 19.0

$\Delta = 185$ km. (115 mi.)

August 6

i_z 16 38 27
i_z 30

Bulletin No. 52

August 16

iP₂ 19 57 22.5
iP₁P₁ 23.8
iS₂ 42.0
iS₁ 44.0
i 49.0

$\Delta = 165$ km. (103 mi.)

Greene County, N.Y.

August 22

i_z 06 04 04
i_z 18

August 24

iP₂ 15 46 24.5
i 26.2
iS₂ 42.0
iS₁ 43.0
i 45.0

$\Delta = 147$ km. (92 mi.)

Daniel Linehan, S.J.

NESA BULLETIN

September 16 - 30, 1940

Bulletin No. 54

***** (September 20) *****

Weston

iP₁ 15 17 55.0
iS₁ 58.6
iP₁S₁? 59.2
iL 18 00.3

$\Delta = 30$ km. (19 mi.)
H = 15 17 50

***** (September 21) *****

Fordham

iP₂ 16 01 57
iS₂ 02 20
 $\Delta = 199$ km. (125 mi.)

Weston

eS? 16 03 20

***** (September 25) *****

Fordham

iP₂ 15 20 31.5
iS₂ 51.0
 $\Delta = 165$ km. (103 mi.)
H = 15 20 05

Weston

eP₁? 15 20 37 Amplitudes very
iS₁ 21 00.4 small
 $\Delta =$ ca. 190 km. (119 mi.)
Blast Columbia County, N.Y.?

***** (September 25) *****

Fordham

iS 16 07 28

Weston

eS? 16 08 25

***** (September 26) *****

Weston

eP? 20 12 08.5
iP₁ 09.3
iS₁ 21.0
i 22.9

$\Delta =$ ca. 96 km. (60 mi.)
H = ca. 20 11 53.5
Az. W.

***** (September 26) *****

Weston

eS 23 31 34
iS₂? 36
i 39.5 $\Delta = \text{ca. } 325 \text{ km.}$
(203 mi.)

Williamstown

iP_n? 23 30 43.8
iP₂ 45.8
iP₁ 47.2 max. P
i 50.8
i 31 10.1 $\Delta = \text{ca. } 230 \text{ km.}$
(144 mi.)
iS₃ 10.8
iS₂ 12.6 H = ca. 23 30 09.
i 14.3 Reported felt on

west shore of Grand Isle County, Vt., and
in Plattsburg, W. Chazy, Beekmantown, and
Elizabethtown, N.Y.

***** (September 27) *****

Fordham

iP₂ 17 53 29.0
i 30.0
iS₂ 47.5
i 48.5
i 49.5 max.
i 53.5

$\Delta = \text{ca. } 155 \text{ km. (97 mi.)}$
H = ca. 17 53 04

Weston

eS₂? 17 54 44
iS₁? 55 $\Delta = \text{ca. } 380 \text{ km.}$
(240 mi.)

$\phi = \text{ca. } 75^{\circ}7' \text{ W.}$

$\lambda = \text{ca. } 41^{\circ}2' \text{ N.}$

Cf. Sept. 4, 1940, 15^h

NESA Bulletin No. 53

***** (September 29) *****

Fordham

i 01 32 55
i 33 00

Weston

i 01 33 03

Deep focus

***** (September 30) *****

Fordham

iP₁ 21 41 26
iS₁ 33
 $\Delta = 59 \text{ km. (38 mi.)}$
H = 21 41 16

Weston

eS 21 42 21
 Δ order of 230 km. (144 mi.)
Putnam County, N.Y.?

Daniel Linehan, S.J.

NESA BULLETIN

October 1 - 15, 1940

Bulletin No. 55

***** (October 1) *****

Fordham

i 19 29 30 S phases?

***** (October 2) *****

Fordham

i 23 00 28.5
i 33.5
i 36.5
i 01 03.0
i 07.0
i 09.0 max.

Weston

i? 23 01 29 S phases?
e 54
i 02 14.0
i 18.5
i 22.8

***** (October 3) *****

Ottawa

iP₁ 11 00 55.5
iP₁S₁? 01 02
iS₂ 12
i 18.5
F 02

$\Delta = 135$ km. (85 mi.)
H = 11 00 33

***** (October 3) *****

Weston

iS 15 35 45

***** (October 5) *****

Weston

i_z 09 43 29

Fordham

i_z 09 43 30 Deep Focus

***** (October 7) *****

Fordham

i 16 10 36 S phases?

***** (October 7) *****

Weston

eP₁ 19 01 24
eS₁ 33 Δ = ca. 75 km. (47 mi.)
eL 38 H = ca. 19 01 11.5

***** (October 10) *****

Weston

eP ₂ 13 25 39	iP ₁ 13 26 32.6
iP ₁ 41.2	i 38
eS 26 20	iS 27 09.5
iS ₁ 22	iS ₁ 12.7
Δ = ca. 318 km. (199 mi.)	Δ = ca. 315 km. (197 mi.)
H = ca. 13 24 49	H = ca. 13 25 41

Amplitudes very small, interpretation doubtful. Similar in appearance to the disturbances reported in NESA No. 44, April 27, 22^h; No. 45, May 10, 19^h; No. 47, June 4, 18^h,

***** (October 10) *****

Fordham

iS 21 11 24

Weston

eS 21 12 23

***** (October 11) *****

Harvard

iP₁ 22 26 26.0
iS₁ 29.8
iL 31.0
 Δ = 31.1 km. (19.5 mi.)
H = 22 26 21

Weston

iP₁ 22 26 27.0
iS₁ 31.0
iL 34.0
 Δ = 33 km. (21 mi.)

Blast, north of Dracut, Mass., on Mass. - N.H. state line.

***** (October 12) *****

Fordham

i 03 53 48

Weston

i 02 54 09 Deep Focus

***** (October 13) *****

Weston

eP₁? 19 52 12
eP? 20
iS 53 33
iS₁? 42 Az. N.

Δ = ca. 710 km. (443 mi.)

Fordham

iS 19 54 36 Series of sharp phases.

NOTICE From:

Fordham The disturbance reported from this station in NESA
No. 53, September 12, 16^h, has been definitely established
not to have been an early explosion at the Hercules
powder plant in Kenvil, N.J.

Daniel Linehan, S.J.

NESA BULLETIN

October 16 - 31, 1940

Bulletin No. 56

***** (October 19) *****

Fordham

iPn 13 58 58.0
iSn 59 20.0
iS₂ 21.5
i2S₁S₁ 25.0

$\Delta = 188$ km. (117 mi.)

Weston

ePn 13 59 01.8
iP₁ 03.7
iS₂ 27.1
i 28.3
iS₁ 30.5

$\Delta = 210$ km. (131 mi.)
H = 13 58 29.3
Blast at South
Bethlehem, N.Y.

***** (October 21) *****

Weston

eS? 01 23 54

***** (October 23) *****

Fordham

i 02 31 05
i 36

Weston

i 02 31 21
i 51 Deep focus?

***** (October 23) *****

Fordham

iP₂ 18 59 48.5
iS₂ 19 00 05.5
i 08.0

$\Delta = 140$ km. (88 mi.) Az, SW of Fordham?

Weston

iS 19 01 17

***** (October 25) *****

Fordham

iP₁ 20 14 58.5
i 15 11.0
iS₁ 12.3

$\Delta = 105$ km. (66 mi.)

Weston

eP 20 15 08
iP₁ 09
iS₂ 29.0
iS₁ 30.3
 $\Delta = 171$ km. (106 mi.)
H = 20 14 41.3
Blast at N. Branford, Conn.

***** (October 26) *****

Fordham

i_z 06 15 23 S phases? Apparently not deep focus; no trace on
i_z 28 Weston records.

***** (October 28) *****

Fordham

i 18 53 37.0 S phases?
i 39.5

***** (October 28) *****

Fordham

iP₁ 21 45 20.0
iS₁ 27.5
iS₁S₁ 30.0
Δ = 59 km. (38 mi.)

Weston

eP₁? 21 45 49
eS 46 14.5
iS₁? 18.7
Δ = ca. 235 km. (147 mi.)
H = 21 45 10.5

Blast--Putnam County, N.Y.?

***** (October 30) *****

Weston

iP 10 25 29
eS 29 15 Δ order of 21°, in Carribbean Sea region.
iS 20

***** (October 30) *****

Fordham

iP₂ 18 25 45
iS₂ 26 05
Δ = 168 km. (105 mi.)
Blast--Greene County, N.Y.

Weston

eP 18 25 51.4
iP₁ 51.9
iS₂ 26 15.0
iS 16.5
Δ = 208 km. (130 mi.)
H = 18 25 18
Amplitudes small.

Laurence C. Langguth, S.J.

NESA BULLETIN

November 1 - 15, 1940

Bulletin No. 57

***** (November 1) *****

Weston

eS? 18 40 46

***** (November 4) *****

Fordham

iS? 21 04 00

***** (November 5) *****

Fordham

iP₁? 19 00 00.5
i 02.0
i 10.5
iS₁? 14.0
i 17.5

Δ = ca. 100 km. (63 mi.)

Weston

eP? 19 00 43.5
e 01 00
iS₃? 16.7
iS₁? 30.0

Δ = ca. 365 km. (228 mi.)

H = ca. 18 59 44

Az. SW of Fordham, interpretation doubtful.

***** (November 7) *****

Fordham

i 18 29 31.0
i 32.5
i? 48.0
i 51.0

Weston

eS 18 30 04
iS 05.7

***** (November 12) *****

Fordham

i? 20 52 18

***** (November 13) *****

Fordham

i 17 13 30

NOTICES From:

Fordham Referring to NESA Bulletin No. 46, the disturbance for 28^d20^h - a slight earthquake was reported felt at about that time in Harrisburg, Pa., according to H. Landsberg in Seismographic Report VI of the Pennsylvania State College. Fordham's readings are:

i 20 06 45.2
i 47.7
i 50.2
i 57.0
i 58.5

Harrisburg is about 160 miles from New York City.

Ottawa Referring to NESA Bulletin No. 55, the disturbance reported for 13^d19^h -

Seven Falls
iP₁ 19 51 04
iS₁ 16.5
F 54
Δ = 97 km. (60 mi.)
H = 19 50 48

Shawinigan Falls
iP₃? 19 51 27
iS₃? 55
iS₂ 56.5
iS₁ 52 02
F 59
Δ = 253 km. (158 mi.)

Ottawa
iP_n 19 51 58
iP₂ 52 07.5
iS_n 52.5
i 53 09
F 20 00
Δ = ca 520 km. (325 mi.)
φ = ca 47°7 N.
λ = ca 69°7 W.

Weston
iS₁? 19 53 38.5
Δ = ca 590 km. (368 mi.)

Fordham
iS₁? 19 54 36
Δ = ca 815 km. (510 mi.)

Weston A resident of Peterboro, N.H., reported that his house was shaken twice on November 24 about 04^h04^m and about 21^h20^m G.C.T. No trace of any disturbance on Weston records.

Laurence C. Langguth, S.J.

NESA BULLETIN

November 16 - 30, 1940

Bulletin No. 58

***** (November 22) *****

Fordham

iP₂ 16 01 49.0
iP₁ 50.0
iS₃ 02 09.0
iS₂ 10.2
iS₁ 12.0
i 14.5

Δ = 170 km. (106 mi.)

H = 16 01 22.5

Weston

eP 16 01 58
iP₁ 58.8
iS₃ 02 21.6
iS₂ 23.0
 Δ = 220 km. (137 mi.)

Blast, Greene County, N.Y.

***** (November 28) *****

Weston

eP₁? 19 39 07.5
iS₂ 31.3
iS₁ 34.6

Δ = ca. 210 km. (131 mi.)

H = 19 38 33.4

Az. W; amplitudes very small.

***** (November 28) *****

Fordham

iP₁ 21 53 30.5
iS₁ 37.8
iS₁S₁ 40.0
i₂S₁S₁ 44.5
 Δ = 57 km. (36 mi.)
H = 21 53 21.5

Weston

eS₃? 21 54 23
iS₁? 29
 Δ = ca. 232 km. (145 mi.)

Probably blast in Putnam County, N.Y.

***** (November 30) *****

Fordham

iS ? 15 05 58.5

Weston

eS ? 15 07 00

Laurence C. Langguth, S.J.

NESA BULLETIN

December 1 - 15, 1940

Bulletin No. 59



***** (December 3) *****

Weston

eP₂ 17 35 08.7
iP₁P₁ 10.4
iS₂ 27.7
iS₁ 28.9

Δ = 155 km. (97 mi.)

H = 17 34 43.8

Harvard

iP₁ 17 35 13
iS₂ 32.6
iS₁ 35.0

Δ = 175 km. (109 mi.)

Weston

eP₂ 17 36 10.6
iP₁P₁ 12.3
iS₂ 29.7
iS₁ 30.8

Δ = 155 km. (97 mi.)

H = 17 35 45.7

Harvard

iP₁ 17 36 14.3
iS₂ 34.3
iS₁ 36.8

Δ = 175 km. (109 mi.)

Apparently two shocks in the Atlantic Ocean, about
85 miles east of Boston, ca. $\phi = 42^{\circ}5$ N., $\lambda = 69^{\circ}4$ W.

***** (December 5) *****

Fordham

i 20 06 44.0
i 46.0
i 48.0
i 52.6
i 56.3
i 07 05.0

***** (December 5) *****

Harvard

iP₁ 20 07 54.2
e₂P₁P₁ 57
iS₁ 08 04
eS₁S₁ 05.2

Δ = 75 km. (47 mi.)

H = 20 07 42

Weston

eP₁ 20 07 56
iS₁ 08 08.6

Δ = 92 km. (57 mi.)

Probably blast, near Palmer, Mass.

***** (December 8) *****

<u>Weston</u>	<u>Fordham</u>
i 06 30 38	i 06 30 41 Deep focus?

***** (December 11) *****

Weston
iS? 17 06 24.0

***** (December 11) *****

<u>Fordham</u>	<u>Weston</u>
i 18 02 10.8 (?)	eS? 18 03 35 On North-South
i 11.9	eS? 38 component only.
iS ₂ 30.0	
iS ₁ 30.8	
$\Delta = 150 - 160$ km.	

***** (December 12) *****

Weston
iP₁ 15 15 09.2
iS₁ 12.8
iL 14.5
i 17.0
 $\Delta = 30$ km. (19 mi.)
H = 15 15 04.1

Laurence C. Langguth, S.J.

NESA BULLETIN

December 16 - 31, 1940

Bulletin No. 60

***** (December 20) *****

Burlington

iP₁? 07 27 50
Δ = 156 km. (97 mi.)

Harvard

iP₂ 07 27 51.4
iS₂ 28 11
Δ = 167 km. (104 mi.)

Weston

iP₃ 07 27 52.4
iS₃ 28 12.5
Δ = 173 km. (108 mi.)

Williamstown

iP₃ 07 27 57
iS₃ 28 20
Δ = 210 km. (131 mi.)

East Machias, Me.

iP₁ 07 28 19.5
iS₁ 29 04
Δ = 335 km. (209 mi.)

Ottawa

iP 07 28 20
iP₂ 25
iS 58
iS₂ 29 09
M 29.4
F 08 00 ca.
Δ = 390 km. (244 mi.)

Fordham

iP_n 07 28 20.0 H = 07 27 24.8
iS_n 29 03 φ = 43°9' N.
λ = 71.3 W.
Δ = 408 km. (255 mi.)
(U.S.C.G.S. gives φ = 44°0' N., λ = 71°1' W.)

***** (December 20) *****

Fordham

i 08 17 43
i 20 11

***** (December 20) *****

Weston

eP 19 10 46.0
iP₁ 46.2
iP₁P₁ 46.9 Δ = 69 km. (43 mi.)
iS₁ 54.5 H = 19 10 34.5
iL 58.5

Harvard

iP₁ 19 10 46.6
iP₁P₁ 47.2
iS₁ 56.2 Δ = 78.5 km. (49 mi.)
iS₁S₁ 58.0 H = 19 10 34
iL 11 00

This and the two shocks immediately following are apparently from the same epicentre, in the Atlantic Ocean off the coast of northern Massachusetts, near Newburyport, ca. φ = 42°50' N.
λ = 70°42' W.

***** (December 21) *****

Weston

eP? 13 36 59
iP₁ 37 01.1
iP₁P₁ 01.9
iS₁ 09.5
iL 13.5
 $\Delta = 69$ km. (43 mi.)
H = 13 36 49.6

iP₁ 15 15 37.7
iP₁P₁ 38.4
iS₁ 46.2
iL 50.0
 $\Delta = 69$ km. (43 mi.)
H = 15 15 26.5

Harvard

iP₁ 13 37 01.0
iS₁ 10.6
iS₁S₁ 12.7
iL 14.4
 $\Delta = 78.5$ km. (49 mi.)
H = 13 36 48.3

iP₁ 15 15 37.7
iP₁P₁ 38.3
iS₁ 47.3
iS₁S₁ 49.2
iL 51.3
 $\Delta = 78.5$ km. (49 mi.)
H = 15 15 25.0

***** (December 22) *****

Weston

eP₁ 21 12 29
i 31.0 $\Delta = 160$ km. - (100 mi.)
eS₃ 47.4
iS₁ 49.3 H = 21 12 03

***** (December 24) *****

Weston

iP₁ 13 01 00.0
iS₂ 19.3
iS₁ 22.1
 $\Delta = 175$ km. (108 mi.)
H = 13 00 32

Williamstown

eP₂ 13 01 04.2
eP₁ 05.0
eS₂ 27.7
iS₁ 30.5
 $\Delta = 202$ km. (127 mi.)

Foreshock of the following?

***** (December 24) *****

Burlington

iP? 13 44 15
 $\Delta = 156$ km. (97 mi.)

Weston

iP₂ 13 44 11.8
iS₃ 31.5
 $\Delta = 172$ km. (107 mi.)

Williamstown

iP₃ 13 44 16.2
 $\Delta = 210$ km. (131 mi.)

***** (December 24) *****

<u>Ottawa</u>	<u>Fordham</u>	<u>Pittsburgh</u>
iP 13 44 39	iP _n 13 44 59	eP _n 13 45 26
iP ₂ 44	i 54	e 35
iS 45 18	iS _n 45 23	eP ₁ 56
iS ₂ 29	i 26	eS ₃ 47 01
F 14 18	i 29	i 18

Δ = 390 km. (244 mi.) Δ = 405 km. (253 mi.) Δ = 800 km. (499 mi.)
H = 13 43 44.5 Epicentre approx. same as 20^d07^h.

***** (December 24) *****

Weston

eP ₁ 14 33 14	
i 16.1	Δ = 160 km. (100 mi.)
iS ₃ 32.7	H = 13 32 48
iS ₁ 34.9	Aftershock of the above?

***** (December 24) *****

<u>Weston</u>	<u>Williamstown</u>
eP ₂ 18 12 34.2	iP ₂ 18 12 39
i 36.5	iP ₁ 40.2
iS ₃ 53.5	iS _n ? 13 00.7
iS ₁ 56.0	iS ₂ 03.5

Δ = 173 km. (108 mi.) Δ = 210 km. (131 mi.)
H = 18 12 06 Aftershock of 24^d13^h43^m.

***** (December 25) *****

<u>Weston</u>	<u>Williamstown</u>
eP 05 04 14	iP ₃ 05 04 19.4
iP ₁ 16.0	iP ₁ P ₁ 22.3
iF? 33.9	iS ₃ 42.1
iS ₃ 35.7	iS ₂ 45.0
iS ₂ 36.4	iS ₁ 48.0

Δ = 176 km. (110 mi.) Δ = 210 km. (131 mi.)

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***** (December 25) *****

Ottawa

iP₂ 05 04 47
iS₃ 05 26
iS₃ 35
F 08 ca.

Δ = 390 km. (244 mi.)

H = 05 03 47

Fordham

iP₁ 05 04 53
iS₂ 05 34
i 37

Δ = 405 km. (253 mi.)

Aftershock of 24^d13^h43^m.

***** (December 25) *****

Pittsburgh

iP 06 48 41
iS 49 58

Δ = ca. **730** km. (456 mi.)

Fordham

e 06 49.5
i 51 14
i 51 51

Williamstown

iP 06 49 49
iS 52 27

Weston

e 06 52 05
i 45
i 53 11

***** (December 25) *****

Pittsburgh

iP 12 17 41

Weston

iP 12 17 51
ipP? 18 01 Deep focus?

***** (December 25) *****

Fordham

i_z 19 54 50
i_z 55 05

Apparently not deep focus; no trace on Weston records.

***** (December 26) *****

Weston

eP₁ 10 28 13.7
iS₂ 30.8
iS₁ 32.4

Δ = ca. 150 km. (94 mi.)
H = 10 27 48.5 Az. N?

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***** (December 27) *****

Ottawa

i 00 18 22
e 47
F 19.3

***** (December 27) *****

Weston

eP₂ 18 51 46
iP₁ 47.1
iS₂? 52 10
iS₁? 13
 $\Delta = 205 \text{ km. (128 mi.)}$
H = 18 51 14
Az. E. or W.

***** (December 27) *****

Weston

iP₂ 19 56 43.8
i 47.1
iS 57 03.0
iS₂ 04.7
 $\Delta = 172 \text{ km. (107 mi.)}$

Williamstown

iP₃ 19 56 48.5
i 51.7
i 57 06.0
i 11.0
iS_n? 12.6
iS₂? 15.0
 $\Delta = 213 \text{ km. (133 mi.)}$

Ottawa

iP₂ 19 57 16.5
iS₂ 58 00.5
F 20 02

$\Delta = 390 \text{ km. (244 mi.)}$

H = 19 56 16.5 Aftershock of 24^d13^h43^m.

Fordham

iP 19 57 26
iS₂ 58 04
iS₁ 14

$\Delta = 405 \text{ km. (253 mi.)}$

***** (December 31) *****

Weston

iP₁ 19 55 30.4
iS 46.2
iS₁ 47.2
 $\Delta = 130 \text{ km. (81 mi.)}$
H = 19 55 09 Az. SW? Amplitude very small.

NOTICES From:

Harvard A correspondent from Verona, N.J., who has been reliable on several past occasions, reports an earth tremor on Monday, Dec. 23, about 10:54 A.M.

Weston The solutions offered herein for the series of New Hampshire shocks is tentative only. Harvard and Weston are jointly undertaking a further study of them from instrumental and non-instrumental reports, and from an examination of the epicentral region. Mr. R. L. Arringdale of Portland toured the district on the morning of December 21, immediately after the first shock, and his findings indicated that the region of strongest felt motion lay between the towns of Tamworth, West Ossipee, and Chocorua.

Laurence C. Langguth, S.J.