DURHAM UNIVERSITY OBSERVATORY, ENGLAND.

Position:- 54°46'N, 01°35'W, height above M.S.L. 103 metres.

SEISMOLOGICAL BULLETIN FOR JANUARY 1961

Instrument:- Wilson-Lamison seismometer free period 1 sec. coupled to G.E. galvanometer free period 3.4 sec., recording vertical component of velocity.

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 1 | iPKPZ | 16 56 55 | | - | 143° | H 16 38 29 .10 deep (USCGS) |
| 2 | iPKPZ | 10 31 07 | | - | 136°.5 | H 10 11 57 .03 deep (USCGS) |
| | ipPKPZ | 31 29 | | + | | |
| | iPPZ | 34 45 | | - | | |
| | ipPPZ | 34 52 | | + | | |
| 5 | iPZ | 14 18 04 | | + | 73°.5 | H 14 06 26 (USCGS) |
| 5 | ePKPZ | 16 12 29 | | | 122° | H 15 53 56 .02 deep (USCGS) |
| 5 | iPKPZ | 18 17 26 | | - | 146° | H 17 57 57 .02 deep (USCGS) |
| | iPKPZ | 18 08 | | - | | |
| 5 | iPKPZ | 18 34 13 | | - | 146° | H 18 14 43 .02 deep (USCGS) |
| | iPKPZ | 34 50 | | - | | |
| | ipPKPZ | 35 28 | | + | | |
| 10 | iPZ | 14 33 54 | | + | 73°.5 | H 14 22 18 (USCGS) |
| | iXZ | 34 28 | | + | | |
| | iXZ | 35 00 | | - | | |
| | iPPZ | 36 38 | | - | | |
| | iSZ | 43 23 | | - | | |
| | MZ | 15 12 | | | | |
| 11 | iPZ | 12 11 49 | | - | 73° | H 11 59 55 .01 deep (USCGS) |
| | iPPZ | 14 33 | | - | | |
| 12 | ePZ | 14 24 49 | | | 66° | H 14 13 28 .01 deep (USCGS) |
| 14 | iPZ | 16 50 11 | | + | 70° | H 16 38 56 (USCGS) |
| | iPcPZ | 50 29 | | - | | |
| | iPPZ | 52 34 | | + | | |
| 15 | ePKPZ | 17 04 04 | | + | 145° | H 16 44 45 .03 deep (USCGS) |
| | iPKPZ | 04 05 | | - | | |
| | ePKPZ | 04 37 | | + | | |
| | iPKPZ | 04 38 | | - | | |
| | ipPKPZ | 04 57 | | - | | |
| 16 | iPZ | 07 32 44 | | + | 84° | H 07 20 19 .02 deep (USCGS) |
| | iXZ | 32 57 | | - | | |
| | iPPZ | 35 59 | | + | | |
| | ipPPZ | 36 16 | | + | | |
| | iSZ | 43 28 | | + | | |
| | MZ | 08 14 | 19 | 60 | | |

/2.

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| '16 | iPZ | 11 31 41 | | + | 84° | H 11 19 47 .02 deep (USCGS) |
| | ipPZ | 32 43 | | - | | |
| 16 | iPZ | 12 24 47 | | + | 84° | H 12 12 34 .02 deep (USCGS) |
| | MZ | 13 06 | 19 | 40 | | |
| 16 | iPZ | 14 56 48 | | - | 84° | H 14 44 15 .02 deep (USCGS) |
| 16 | ePZ | 15 53 42 | | - | 84° | H 15 41 23 .02 deep (USCGS) |
| | iPZ | 53 43 | | + | | |
| | iXZ | 53 57 | | - | | |
| 17 | iPZ | 01 54 29 | | - | 10° | H 01 52 05 (BCIS) |
| 19 | iPKPZ | 06 14 07 | | - | 146° | H 05 54 25 .02 deep (USCGS) |
| 19 | iPZ | 17 33 57 | | + | 73°.5 | H 17 22 17 (USCGS) |
| 20 | iPZ | 17 20 09 | | - | 67° | H 17 09 16 (USCGS) |
| | iPcPZ | 20 38 | | - | | |
| | iSZ | 28 55 | | - | | |
| | iSPZ | 29 31 | | - | | |
| 22 | iPKPZ | 03 43 32 | | + | 136° | H 03 24 05 (USCGS) |
| | iPKPZ | 43 48 | | + | | |
| | iXZ | 49 40 | | - | | |
| 26 | iPKPZ | 16 32 57 | | - | 146° | H 16 13 25 .02 deep (USCGS) |
| | iPKPZ | 33 04 | | - | | |
| | ipPKPZ | 33 30 | | - | | |
| 26 | iPKPZ | 19 08 27 | | - | 146° | H 18 48 57 .02 deep (USCGS) |
| | iPKPZ | 08 46 | | - | | |
| | ipPKPZ | 09 06 | | - | | |
| 28 | iPKPZ | 20 02 41 | | - | 146° | H 19 43 01 .01 deep (USCGS) |
| | iPKPZ | 03 00 | | - | | |
| 31 | ePZ | 00 59 43 | | | 66°.5 | H 00 48 37 (USCGS) |

15 March 1961

D-F.

UNIVERSITY OBSERVATORY, ENGLAND

Position:- 54°46'N, 01°35'W, height above M.S.L. 103 metres.



SEISMOLOGICAL BULLETIN FOR FEBRUARY 1961

Instruments:- Wilson-Lamison seismometer free period 1 sec. coupled to G.E. galvanometer free period 3.4 sec., recording vertical component of velocity.
Milne-Shaw free period 12 sec. damping ratio 20:1, magnification 250, recording N and E component displacement.

| Date | Phase and component | Time G.M.T. | Period Sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| | Correction to 1960 January bulletin. Delete Jan 12 iPKPZ 22 42 55 | | | | | |
| | No Z recording 3 Feb 18 hrs to 4 Feb 19 hrs. | | | | | |
| 4 | MNE | 20 07 | | | 88°.5 | H 19 09 13 (USCGS) |
| 5 | ePZ | 15 50 32 | | | 79° | H 15 38 34 .01 deep (USCGS) |
| 6 | iPKPZ | 22 04 18 | | + | 129°.5 | H 21 45 13 .01 deep (USCGS) |
| | ipPKPZ | 04 32 | | - | | |
| | MN | 23 01 | 22 | 9 | | |
| 8 | ePKPZ | 02 55 58 | | | 140° | H 02 36 41 .03 deep (USCGS) |
| 8 | iPKPZ | 18 09 28 | | - | 146° | H 17 50 45 .09 deep (USCGS) |
| | iPKPZ | 09 29 | | - | | |
| 9 | iPKPZ | 02 28 14 | | - | 154° | H 02 08 16 .01 deep (USCGS) |
| | ipPKPZ | 28 25 | | + | | |
| | iPPZ | 32 13 | | - | | |
| | ipPPZ | 32 26 | | - | | |
| 11 | iPKPZ | 21 21 03 | | + | 153°.5 | H 21 01 06 .01 deep (USCGS) |
| | iPKPZ | 21 16 | | + | | |
| | iPPZ | 24 44 | | - | | |
| 12 | iPZ | 22 05 43 | | - | 77° | H 21 53 43 .01 deep (USCGS) |
| | iPcPZ | 05 55 | | + | | |
| | ipPZ | 06 07 | | + | | |
| | iSN | 15 35 | | - | | |
| | iSPE | 15 55 | | + | | |
| | isSN | 16 14 | | - | | |
| | iSSN | 20 46 | | - | | |
| | LN | 21 13 | 25 | 40 | | |
| | ME | 22 38 | 21 | 200 | | |
| | MN | 22 46 | 15 | 220 | | |
| | MZ | 22 46 | 15 | | | |
| 12/13 | ePZ | 23 38 36 | | | 77° | H 23 26 35 (USCGS) |
| | iPZ | 38 39 | | - | | |
| | iSN | 48 25 | | - | | |
| | MN | 00 19 | 15 | 10 | | |
| 13 | ePZ | 07 05 17 | | | 143° | H 06 45 20 .01 deep (USCGS) |
| | ME | 08 02 | 22 | | | |

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 13 | iPZ | 16 39 24 | | + | 77° | H 16 27 21 (USCGS) |
| | iPcPZ | 39 35 | | - | | |
| | MN | 17 19 | 15 | 7 | | |
| 14 | iPZ | 03 34 09 | | - | 78° | H 03 22 01 (USCGS) |
| | MN | 04 14 | | | | |
| 15 | iPZ | 10 57 16 | | + | 77° | H 10 45 16 .01 deep (USCGS) |
| | iPcPZ | 57 25 | | + | | |
| | ipPZ | 57 40 | | + | | |
| | iXZ | 59 27 | | - | | |
| | iPPZ | 11 00 13 | | + | | |
| | iSE | 07 20 | | - | | |
| | iSKSE | 07 34 | | + | | |
| | MN | 11 37 | 18 | 17 | | |
| 16 | iPZ | 14 06 51 | | - | 77° | H 13 54 54 .01 deep (USCGS) |
| | iPPZ | 09 26 | | - | | |
| | iSE | 16 23 | | - | | |
| 18 | ePE | 17 11 53 | | - | 58° | H 17 02 10 (USCGS) |
| | eSNE | 19 58 | | | | |
| 21 | ePEZ | 03 07 18 | | | 25° | H 03 01 50 (BCIS) |
| | iXZ | 07 32 | | - | | |
| 22 | iPKPZ | 22 13 40 | | + | 156° | H 21 53 35 .01 deep (USCGS) |
| | iPKPZ | 13 59 | | - | | |
| 23 | iPZ | 04 29 12 | | - | 83° | H 04 16 25 .02 deep (USCGS) |
| | ME | 05 01 | 25 | 8 | | |
| | MN | 05 16 | 12 | 3 | | |
| 23 | iPZ | 21 51 42 | | - | 23° | H 21 46 30 (BCIS) |
| 26 | iPEZ | 18 23 26 | | + + | 85° | H 18 10 49 .01 deep (USCGS) |
| | ipPEZ | 23 55 | | - - | | |
| | iPPE | 26 43 | | - | | |
| | iPPPE | 28 47 | | + | | |
| | iXE | 30 25 | | - | | |
| | iSE | 33 44 | | - | | |
| | ME | 18 57 | 25 | 545 | | |
| | ME | 19 03 | 24 | 530 | | |
| | ME | 19 05 | 20 | 310 | | |
| | MZ | 19 05 | 20 | | | |

26th April, 1961.

D 7.

# UNIVERSITY OBSERVATORY, ENGLAND



Position:- 54°46'N, 01°35'W, height above M.S.L. 103 metres.

## SEISMOLOGICAL BULLETIN FOR MARCH, 1961

Instruments:- Wilson-Lamison seismometer free period 1 sec. coupled to G.E. galvanometer free period 3.4 sec., recording vertical component of velocity.
Milne-Shaw free period 12 sec. damping ratio 20:1, magnification 250, recording N and E component displacement.

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 3 | eSN | 00 56 56 | | - | 11° | H 00 52 27 (BCIS) |
| 7 | ePKPZ | 10 30 28 | | + | 153° | H 10 10 39 (USCGS) |
| | iPKPZ | 30 29 | | - | | |
| | iXZ | 30 38 | | - | | |
| | iXZ | 30 52 | | + | | |
| | ePKPZ | 31 12 | | + | | |
| | iPKPZ | 31 13 | | - | | |
| | iPPZ | 34 19 | | + | | |
| | iSKSE | 37 14 | | - | | |
| | iPPPZ | 37 39 | | - | | |
| | iPaZ | 41 14 | | - | | |
| | iSSE | 53 59 | | + | | |
| | iSSSE | 59 53 | | + | | |
| | ME | 11 35 | 20 | 27 | | |
| | ME | 12 01 | 19 | 40 | | |
| 7 | iPKPZ | 23 30 59 | | + | 127° | H 23 12 00 .01 deep (USCGS) |
| 9 | ePZ | 04 08 43 | | | 55° | H 03 59 09 (USCGS) |
| | ME | 04 28 | | | | |
| 11 | iPZ | 01 43 17 | | + | 75° | H 01 31 34 (USCGS) |
| 11 | ?ePZ | 08 50 39 | | | 55° | H 08 41 06 (BCIS) |
| | iPZ | 50 45 | | - | | |
| | eSNE | 58 37 | | | | |
| | ME | 09 15 | | | | |
| 12 | ePKPZ | 23 41 40 | | | 154° | H 23 21 43 .02 deep (USCGS) |
| 13 | ePZ | 08 16 18 | | | 84° | H 08 03 44 (USCGS) |
| | ME | 08 50 | | | | |
| 13 | ePNZ | 19 23 25 | | | 29° | H 19 17 16 (USCGS) |
| 15 | iPKPZ | 10 34 06 | | - | 125° | H 10 14 55 (USCGS) |
| 16 | iPPZ | 14 05 39 | | - | 116° | H 13 45 36 (USCGS) |
| | ME | 14 52 | 25 | 20 | | |
| 18 | iPKPZ | 15 16 26 | | + | 170° | H 14 54 59 (USCGS) |
| | iPPZ | 20 21 | | - | | |
| | iSSE | 41 16 | | + | | |

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| | ME | 16 10 | 60 | 50 | | |
| | ME | 16 18 | 25 | 13 | | |
| | ME | 16 36 | 20 | 17 | | |
| 20 | iPZ | 06 27 55 | | - | 78° | H 06 16 24 .02 deep (USCGS) |
| | iSE | 37 22 | | + | | |
| | ME | 06 58 | 20 | 2 | | |
| 20 | iPKPZ | 16 12 27 | | - | 143°.5 | H 15 53 10 .03 deep (USCGS) |
| | iSSE | 33 59 | | - | | |
| | iXE | 35 30 | | - | | |
| 20/21 | iPKPZ | 00 02 26 | | - | 149°.5 | H 23 42 34 (USCGS) |
| | iPKPZ | 02 53 | | + | | |
| | iPPZ | 06 07 | | - | | |
| | eSKSE | 09 34 | | | | |
| | ME | 01 17 | 19 | | | |
| 24 | iPZ | 23 09 40 | | - | 85° | H 22 57 14 .02 deep (USCGS) |
| | ME | 23 50 | 20 | .4 | | |
| 28 | iPZ | 09 50 22 | | - | 109° | H 09 35 55 .01 deep (USCGS) |
| | iPKPZ | 54 38 | | - | | |
| | iPPZ | 55 00 | | - | | |
| | iPPPZ | 57 17 | | - | | |
| | iXZ | 10 01 01 | | + | | |
| | iXZ | 01 24 | | + | | |
| | iSKSE | 01 38 | | + | | |
| | iPSE | 04 34 | | - | | |
| | ME | 10 36 | 20 | 45 | | |
| | ME | 11 55 | 20 | 7 | | |
| 28 | ePZ | 12 40 45 | | | 74° | H 12 29 13 .01 deep (USCGS) |
| 30 | ME | 08 31 | 15 | 3 | 89° | H 07 42 59 (USCGS) |
| 30 | ME | 10 18 | 18 | | 140° | H 08 49 46 (USCGS) |

26th May 1961.

# [DURHAM] UNIVERSITY OBSERVATORY, ENGLAND

Position:- 54°46'N, 01°35'W, height above M.S.L. 103 metres.

## SEISMOLOGICAL BULLETIN FOR APRIL, 1961

Instruments:- Wilson-Lamison seismometer free period 1 sec. coupled to G.E.galvanometer free period 3.4 sec., recording vertical component of velocity.
Milne-Shaw free period 12 sec. damping ratio 20:1, magnification 250, recording N and E component displacement

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 1 | iPZ | 15 27 44 | | + | 52° | H 15 18 23 (USCGS) |
| | iPcPZ | 28 47 | | + | | |
| | iPPZ | 29 18 | | + | | |
| | iScPZ | 32 28 | | + | | |
| | iSPZ | 35 07 | | - | | |
| | iSE | 35 12 | | + | | |
| | iScSE | 37 32 | | - | | |
| | iSSE | 39 22 | | + | | |
| | LE | 41 05 | | + | | |
| | ME | 15 52 | 13 | 36 | | |
| | ME | 15 56 | 10 | 18 | | |
| | ME | 15 59 | 14 | 25 | | |
| 3 | iPZ | 16 43 26 | | - | 71°.5 | H 16 32 04 (USCGS) |
| 4 | PZ | 01 27 18 | | | 53° | H 01 17 59 .01 deep (USCGS) |
| 4 | iPZ | 09 56 00 | | + | 53° | H 09 46 37 (USCGS) |
| | iSE | 10 03 32 | | - | | |
| | iGE | 07 43 | 16 | 6 | | |
| | ME | 10 20 | 14 | 28 | | |
| 4 | iPnZ | 22 44 27 | | - | 07° | H 22 42 30 (BCIS) |
| | iP*Z | 44 43 | | - | | |
| 6 | ME | 04 07 | 16 | | 77° | H 03 18 28 (USCGS) |
| 6 | ePZ | 18 21 34 | | | 50° | H 18 12 41 (USCGS) .02 deep |
| | ME | 18 49 | 18 | 2 | | |
| 7 | ePE | 20 06 40 | | | 71°.5 | H 19 54 52 (USCGS) |
| | ME | 20 40 | 20 | | | |
| | ME | 20 44 | 14 | | | |
| 7 | iPZ | 21 26 42 | | - | 51° | H 21 17 44 (USCGS) |
| 8 | ePPZ | 18 18 54 | | | 111° | H 17 59 47 .01 deep (USCGS) |
| | ME | 19 05 | 19 | 9 | | |
| | ME | 19 09 | 19 | 11 | | |
| 8 | eSE | 22 02 24 | | | 104° | H 21 36 42 .02 deep (USCGS) |
| 9 | iSE | 07 44 49 | | + | 75°.5 | H 07 23 16 (USCGS) |
| | ME | 08 05 | 16 | | | |

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 9 | iPZ | 15 47 59 | | + | 86°.5 | H 15 35 05 |
| | iPPZ | 51 25 | | - | | (USCGS) |
| | iSKSE | 58 21 | | - | | |
| | eSE | 58 39 | | | | |
| | ME | 16 32 | 15 | 52 | | |
| | MZ | 16 32 | 15 | | | |
| 12 | ePZ | 22 32 21 | | | 78° | H 22 20 34 |
| | iSE | 42 04 | | - | | .02 deep |
| | ME | 23 00 | 22 | 4 | | (USCGS) |
| 13 | iPZ | 16 43 56 | | + | 51° | H 16 34 39 |
| | iPcPZ | 45 08 | | - | | (USCGS) |
| | iPPZ | 45 52 | | - | | |
| | eSE | 51 31 | | | | |
| | iScSE | 53 43 | | + | | |
| | GE | 55 43 | 12 | 14 | | |
| | ME | 17 08 | 15 | 96 | | |
| | MZ | 17 08 | 15 | | | |
| 16 | ePZ | 11 51 58 | | | 70°.5 | H 11 40 41 |
| | | | | | | (USCGS) |
| 17 | ePZ | 16 31 17 | | | 57° | H 16 21 10 |
| | | | | | | (USCGS) |
| 19 | eSE | 00 20 26 | | | 10° | H 00 16 12 |
| | | | | | | (BCIS) |
| 19 | | 10 hrs to 22 hrs breakdown of timing system | | | | |
| 20 | MN | 22 55 | 20 | 2 | 140° | H 21 39 07 |
| | | | | | | (USCGS) |
| 21 | iXZ | 20 23 15 | | | 75° | H 20 10 38 |
| | MN | 21 02 | 20 | | | (USCGS) |
| 23 | iPZ | 05 27 19 | | - | 89° | H 05 14 31 |
| | iSE | 38 10 | | - | | .02 deep |
| | ME | 06 14 | 18 | 4 | | (USCGS) |
| 23 | iPZ | 09 13 39 | | - | 78° | H 09 01 42 |
| | iPcPZ | 13 48 | | - | | (USCGS) |
| | ipPZ | 13 55 | | + | | |
| | iPPZ | 16 30 | | - | | |
| | iSN | 23 29 | | - | | |
| | iSSN | 29 03 | | - | | |
| | MN | 09 55 | 16 | 29 | | |
| 23 | ePZ | 17 02 52 | | | 78° | H 16 51 04 |
| | MN | 17 44 | 14 | | | .01 deep |
| | | | | | | (USCGS) |
| 25 | iPZ | 01 29 37 | | + | 78° | H 01 17 43 |
| | eSN | 39 20 | | | | .01 deep |
| | iSKSE | 39 32 | | - | | (USCGS) |
| | MN | 02 10 | 16 | 2 | | |
| 26 | iPZ | 07 50 56 | | - | 78° | H 07 38 54 |
| | iPcPZ | 51 04 | | - | | (USCGS) |
| | iSNE | 08 00 51 | | + - | | |
| | iSKSN | 01 10 | | - | | |
| | MN | 08 32 | 16 | 7 | | |
| 26 | iPZ | 19 44 32 | | + | 78° | H 19 32 34 |
| | MN | 20 25 | 16 | | | (USCGS) |

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 28 | iPZ | 20 51 07 | | - | 10° | H 20 48 50 (BCIS) |
| | iPZ | 09 31 09 | | - | | |
| 29 | iXZ | 31 15 | | + | 74° | H 09 19 28 (USCGS) |
| | iXZ | 31 17 | | - | | |
| 29 | iPNZ | 09 33 07 | | - - | 17°.5 | H 09 29 05 (BCIS) |
| | iPPZ | 33 31 | | - | | |
| | iPPPZ | 33 40 | | + | | |
| | iXZ | 33 52 | | - | | |
| | iSE | 36 18 | | + | | |
| | iSE | 36 21 | | - | | |
| | iLQE | 38 10 | | + | | |
| | ME | 09 38 | 14 | 40 | | |
| | MN | 09 41 | 10 | 21 | | |
| | ME | 09 42 | 10 | 24 | | |
| | MZ | 09 42 | 10 | | | |
| 30 | iFE | 07 38 01 | | + | 18°.5 | H 07 33 53 (USCGS) |
| | iSN | 41 31 | | - | | |
| | MN | 07 43 | 16 | 5 | | |
| | MN | 07 45 | 12 | 4 | | |
| | MN | 07 46 | 11 | 4 | | |
| 30 | ePZ | 11 27 15 | | | 78° | H 11 15 20 .01 deep (USCGS) |
| | MN | 12 05 | 18 | 3 | | |
| 30 | ePKPZ | 15 07 47 | | | 140° | H 14 48 11 (USCGS) |
| | iPPZ | 10 47 | | - | | |
| | ME | 16 06 | 20 | | | |

27th June, 1961.

# DURHAM UNIVERSITY OBSERVATORY, ENGLAND

Position:- 54°46'N, 01°35'W, height above M.S.L. 103 metres.

## SEISMOLOGICAL BULLETIN FOR MAY, 1961

Instruments:- Wilson-Lamison seismometer free period 1 sec. coupled to G.E.galvanometer free period 3.4 sec., recording vertical component of velocity.
Milne-Shaw free period 12 sec. damping ratio 20:1, magnification 250, recording N and E component displacement.

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 2 | ePZ | 03 15 46 | | | 15°.5 | H 03 11 46 |
| | ME | 03 24 | 10 | 2 | | (USCGS) |
| 2 | ePKPZ | 23 04 40 | | | 153° | H 22 44 44 |
| | iPKPZ | 04 47 | | - | | (USCGS) |
| | iPKPZ | 04 56 | | - | | No recording |
| | iXZ | 05 43 | | - | | of horizontal |
| | iXZ | 05 48 | | - | | components |
| | iPPZ | 08 38 | | - | | |
| 3 | iPZ | 00 36 13 | | - | 59° | H 00 26 17 |
| | iXZ | 36 37 | | - | | (USCGS) |
| | | | | | | No recording of horizontal components |
| 7 | iPPZ | 04 51 00 | | - | 111° | H 04 32 15 |
| | iSKSZ | 56 09 | | - | | .02 deep |
| | iSKSZ | 56 26 | | + | | (USCGS) |
| | | | | | | No recording of horizontal components. |
| 7 | ME | 15 50 | | | 15°.5 | H 15 40 53 .01 deep (USCGS) |
| 8 | ME | 20 17 | | | 99° | H 19 23 35 (USCGS) |
| 11 | eSKSE | 09 03 34 | | | 111° | H 08 38 27 |
| | ME | 09 42 | 19 | 5 | | (USCGS) |
| 13 | iPKPE | 14 38 40 | | + | 155° | H 14 18 42 |
| | iPKPE | 39 02 | | + | | (USCGS) |
| 13 | iPKPE | 15 11 27 | | + | 142°.5 | H 14 52 55 |
| | ME | 15 51 | 20 | 1 | | .09 deep (USCGS) |
| 13 | ePZ | 16 01 33 | | | 77°.5 | H 15 49 30 (USCGS) |
| 14 | eSE | 15 14 11 | | | 14°.5 | H 15 08 04 |
| | ME | 15 17 | 12 | 1 | | (USCGS) |
| 14 | ePE | 15 41 49 | | | 14°.5 | H 15 38 07 |
| | eSE | 44 42 | | | | (USCGS) |
| | ME | 15 49 | 9 | 2 | | |
| 15 | iPKPZ | 21 12 31 | | + | 145° | H 20 53 05 .01 deep (USCGS) |

| Date | Phase and components | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 16 | iPZ | 21 58 07 | | + | 86°.5 | H 21 45 24 (USCGS) |
| | iXZ | 58 20 | | - | | |
| | iSKSE | 22 08 28 | | - | | |
| | iSE | 08 38 | | + | | |
| | GE | 20 01 | 15 | 7 | | |
| | ME | 22 33 | 26 | 9 | | |
| | ME | 22 35 | 20 | 6 | | |
| 17 | iPZ | 19 40 55 | | + | 73° | H 19 29 19 (USCGS) |
| | iXZ | 41 02 | | - | | |
| | iPPZ | 43 49 | | - | | |
| | iSE | 50 24 | | + | | |
| | iSKSE | 51 15 | | + | | |
| | ME | 20 11 | 16 | 1 | | |
| | ME | 20 22 | 17 | 3 | | |
| | ME | 20 24 | 15 | 3 | | |
| | ME | 20 31 | 15 | 2 | | |
| 19 | ePE | 16 51 00 | | | 88°.5 | H 16 37 29 .01 deep (USCGS) No recording of vertical component |
| | eSE | 17 01 05 | | | | |
| | ME | 17 25 | 25 | | | |
| 20 | ME | 18 36 | | | 68°.5 | H 17 52 05 .01 deep (USCGS) No recording of vertical component |
| 22 | iPKPZ | 14 04 10 | | + | 147° | H 13 44 36 .01 deep (USCGS) |
| | iPKPE | 04 13 | | - | | |
| | iXZ | 04 25 | | + | | |
| | iXZ | 04 42 | | + | | |
| | iXZ | 05 02 | | - | | |
| | ME | 15 12 | 20 | 3 | | |
| 22 | iPKPZ | 17 52 05 | | | 149° | H 17 32 22 (USCGS) |
| | iXZ | 52 23 | | - | | |
| | iXZ | 52 39 | | + | | |
| | iSSE | 18 14 35 | | | | |
| | ME | 19 01 | 20 | 2 | | |
| 23 | iPZ | 02 50 59 | | + | 26° | H 02 45 19 .01 deep (BCIS) |
| | iPZ | 51 00 | | - | | |
| | ipPZ | 51 22 | | + | | |
| | iPcPZ | 54 19 | | - | | |
| | eSE | 56 00 | | - | | |
| | iSE | 56 01 | | + | | |
| | GE | 56 23 | 12 | 36 | | |
| | ME | 03 04 | 15 | 75 | | |
| 23 | iPZ | 03 52 13 | | | 78° | H 03 40 26 ,02 deep (USCGS) |
| | iPPZ | 54 57 | | - | | |
| | iSKSE | 04 02 22 | | + | | |
| | iXE | 04 43 | | - | | |
| 23 | iPZ | 16 56 43 | | + | 78° | H 16 44 59 .02 deep (USCGS) |
| | iPPZ | 59 42 | | + | | |
| | eSE | 17 06 20 | | | | |
| | eSSE | 11 31 | | | | |
| | ME | 17 37 | 20 | | | |

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 28 | iPZ | 09 01 38 | | + | 14° | H 08 59 16 |
| | iXZ | 01 48 | | - | | (BCIS) |
| | eSE | 04 55 | | | | |
| 29 | ME | 08 34 | 18 | | 92° | |
| 29 | ME | 11 28 | 16 | | 92° | H 10 29 28 (USCGS) |
| 31 | iSE | 14 38 58 | | - | 77° | H 14 17 44 .01 deep |
| | SKSE | 39 13 | | | | |
| | ME | 15 03 | 19 | 5 | | (USCGS) |
| 31 | iPKPE | 19 34 35 | | | 127° | H 19 15 57 |
| | ME | 20 31 | 21 | | | (USCGS) |
| 29 | ME | 20 00 | | | | |

CORRECTION TO 1960 MARCH BULLETIN

| | | | | | | |
|---|---|---|---|---|---|---|
| Delete | | | | | | |
| 12 | iPZ | 00 31 41 | | | | |
| | iSE | 41 18 | | | | |
| insert | eSE | 00 36 54 | | | 15°.5 | H 00 30 38 (BCIS) |
| Delete | | | | | | |
| 31 | iXN | 20 18 30 | | | | |
| | iXZ | 18 40 | | | | |
| insert | iPZ | 20 08 25 | | | 79° | H 19 56 14 (USCGS) |
| | iSN | 18 30 | | | | |
| | MN | 20 37 | 19 | 4 | | |
| | MN | 20 40 | 12 | 3 | | |

17th August, 1961.

# DURHAM UNIVERSITY OBSERVATORY, ENGLAND

Position:- 54°46'N, 01°35'W, height above M.S.L. 103 metres.

## SEISMOLOGICAL BULLETIN FOR JUNE, 1961.

Instruments:- Wilson-Lamison seismometer free period 1 sec. coupled to G.E. galvanometer free period 3.4 sec., recording vertical component of velocity. Milne-Shaw free period 12 sec. damping ratio 20:1, magnification 250, recording N and E component displacement.

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 1 | ePEZ | 23 38 54 | | | 56° | H 23 29 21 (BCIS) |
| | iPEZ | 39 00 | | - - | | |
| | iXZ | 39 04 | | - | | |
| | iXZ | 39 33 | | + | | |
| | iPcPZ | 40 05 | | + | | |
| | iPPZ | 41 01 | | - | | |
| | iPPPE | 42 30 | | - | | |
| | iSE | 46 50 | | + | | |
| | ME | 24 04 | 15 | 20 | | |
| 2 | iPE | 05 00 46 | | + | 56° | H 04 51 14 (BCIS) |
| | ePZ | 00 46 | | | | |
| | iPcPZ | 01 46 | | - | | |
| | iPPZ | 02 54 | | + | | |
| | iSE | 08 28 | | - | | |
| | ME | 06 30 | 12 | 12 | | |
| 2 | ePZ | 05 32 04 | | | 56° | H 05 22 33 (BCIS) |
| | iPZ | 32 09 | | + | | |
| | iPPZ | 34 03 | | - | | |
| 2 | iPZ | 05 54 28 | | - | 56° | H 05 44 57 (BCIS) |
| 2 | PZ | 07 12 06 | | | 56° | H 07 02 52 (USCGS) |
| 3 | ePEZ | 01 25 03 | | | 69°.5 | H 01 13 25 (USCGS) |
| | eSE | 33 35 | | | | |
| | ME | 01 58 | 19 | | | |
| | ME | 02 05 | 12 | | | |
| 3 | iPZ | 15 30 01 | | - | 55°.5 | H 15 20 25 .01 deep (USCGS) |
| 3 | iPZ | 15 32 54 | | - | 55°.5 | H 15 23 17 .01 deep (USCGS) |
| | ME | 16 04 | | | | |
| 4 | iPZ | 07 43 09 | | + | 60° | H 07 33 05 (USCGS) |
| | iXZ | 43 13 | | + | | |
| | iXZ | 43 47 | | + | | |
| | iPcPZ | 43 54 | | - | | |
| | iPPE | 45 27 | | - | | |
| | iXE | 46 45 | | - | | |
| | iSE | 51 37 | | + | | |
| | iScSE | 53 07 | | - | | |
| | ME | 08 13 | 12 | 13 | | |
| 4 | iPZ | 07 53 50 | | - | 60° | H 07 43 44 (USCGS) |

| Date | Phase and component | Time G.M.T. | Period sec | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 4 | iPZ | 14 01 36 | | - | 60° | H 13 51 27 (USCGS) |
| 5 | ePZ | 03 39 45 | | | 49° | H 03 31 01 .01 deep (USCGS) |
| 6 | ePZ | 21 05 32 | | | 54°.5 | H 20 56 15 .01 deep (USCGS) |
| 7 | iPZ | 14 25 31 | | - | 61° | H 14 15 19 (USCGS) |
| | iXN | 25 43 | | + | | |
| | iXN | 25 47 | | - | | |
| | iXN | 27 41 | | + | | |
| | iPPZ | 27 50 | | + | | |
| | eSNE | 33 51 | | + + | | |
| | iSN | 33 58 | | - | | |
| | ME | 14 49 | 12 | 2 | | |
| 9 | ePZ | 04 05 10 | | | 55° | H 03 55 51 .02 deep (USCGS) |
| 9 | iPZ | 09 43 54 | | - | 37° | H 09 36 49 (USCGS) |
| | iSE | 49 32 | | + | | |
| 10 | eSKSE | 20 57 00 | | | 121° | H 20 31 51 (USCGS) |
| | ME | 21 41 | 20 | | | |
| | MN | 21 43 | 15 | | | |
| 11 | iPZ | 05 19 07 | | - | 49° | H 05 10 23 (BCIS) |
| | iXZ | 19 21 | | + | | |
| | iPcPZ | 20 36 | | + | | |
| | iPPZ | 21 06 | | + | | |
| | iXZ | 21 28 | | - | | |
| | iPcSE | 24 33 | | + | | |
| | iXZ | 24 52 | | - | | |
| | eXN | 26 06 | | | | |
| | iSN | 26 12 | | - | | |
| | iScSN | 29 15 | | - | | |
| | iSSN | 29 53 | | - | | |
| | MN | 05 37 | 30 | 120 | | |
| | ME | 05 39 | 26 | 70 | | |
| | MN | 05 40 | 15 | 34 | | |
| | MZ | 05 43 | 12 | | | |
| 11 | MN | 10 29 | | | 19° | H 10 19 24 (USCGS) |
| 11 | iPE | 12 40 07 | | + | 49° | H 12 31 23 (BCIS) |
| | iSN | 47 03 | | - | | |
| | iSE | 47 06 | | - | | |
| | ME | 13 06 | 13 | 2 | | |
| | MN | 13 06 | 16 | 3 | | |
| 11 | ePZ | 14 06 38 | | | 49° | H 13 57 56 (BCIS) |
| | iSN | 13 47 | | - | | |
| 12 | ePZ | 10 10 37 | | | 82°.5 | H 09 58 18 .01 deep (USCGS) |
| | eSNE | 20 59 | | | | |
| | MN | 10 51 | 12 | | | |

13 12 hrs to 24 hrs timing system faulty.

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 14 | iPE | 20 41 51 | | - | 54°.5 | H 20 32 24 .01 deep (USCGS) |
| | eSN | 49 28 | | | | |
| | ME | 20 28 | 12 | 2 | | |
| 15 | iPZ | 23 36 26 | | - | 78° | H 23 24 41 (USCGS) |
| | iPZ | 36 27 | | + | | |
| | MN | 24 14 | | | | |
| 16 | iPKPE | 07 26 52 | | + | 115° | H 07 08 17 (USCGS) |
| | ME | 08 17 | 18 | | | |
| 16 | iPZ | 10 43 15 | | + | 73° | H 10 31 56 .02 deep (USCGS) |
| | iPZ | 43 17 | | - | | |
| | iXZ | 43 27 | | + | | |
| | iPcPZ | 43 33 | | - | | |
| | iXZ | 43 44 | | + | | |
| | ipPZ | 43 55 | | + | | |
| | ipPZ | 43 57 | | - | | |
| | iSN | 52 29 | | - | | |
| | isSNE | 53 09 | | + | | |
| | iXN | 54 02 | | - | | |
| 16 | 15 hrs to June 17 12 hrs breakdown of timing system. | | | | | |
| 17 | iPZ | 15 19 29 | | + | 79° | H 15 07 36 .03 deep (USCGS) |
| | iPPZ | 22 27 | | - | | |
| | iXE | 56 17 | | - | | |
| | ME | 16 00 | | | | |
| 19 | MN | 02 42 | 18 | 3 | | |
| 19 | MN | 08 34 | 19 | | 82° | H 07 59 38 .01 deep (USCGS) |
| 19 | iPZ | 17 13 13 | | + | 51° | H 17 04 30 .03 deep (USCGS) |
| | ipPZ | 14 08 | | - | | |
| | iPcPZ | 14 28 | | + | | |
| | iPPZ | 15 23 | | - | | |
| 20 | iPZ | 03 31 11 | | + | 56°.5 | H 03 21 27 (USCGS) |
| | iSN | 39 07 | | + | | |
| | MN | 04 00 | | | | |

No timing system for rest of month.

24th August, 1961.

# URHAM UNIVERSITY OBSERVATORY ENGLAND

Position:- 54°46'N, 01°35'W, height above M.S.L. 103 metres.

## SEISMOLOGICAL BULLETIN FOR JULY, 1961



Instruments:- Wilson-Lamison seismometer free period 1 sec. coupled to G.E. galvanometer free period 3.4 sec., recording vertical component of velocity.
Milne-Shaw free period 12 sec. damping ratio 20:1, magnification 250, recording N and E component displacement.

| Date | Phase and comonent | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| No timing system before 17th | | | | | | |
| 17 | ePZ | 01 13 16 | | | 80° | H 01 01 11 .01 deep (USCGS) |
| | eSE | 23 31 | | | | |
| | ME | 01 52 | 17 | | | |
| 17 | ePZ | 16 32 58 | | | 85° | H 16 20 23 .01 deep (USCGS) |
| | eSKSE | 43 09 | | | | |
| | iSE | 43 39 | | - | | |
| | MNE | 17 14 | 17 | 1 | | |
| 18 | iPNEZ | 14 16 28 | | + + + | 88° | H 14 03 37 (USCGS) |
| | iXNEZ | 16 50 | | + + + | | |
| | iXZ | 17 05 | | + | | |
| | iPPNZ | 19 51 | | + + | | |
| | iSKSNE | 26 50 | | - - | | |
| | iSNE | 27 05 | | + + | | |
| | iSPZ | 28 05 | | - | | |
| | iXE | 30 05 | | - | | |
| | iXE | 31 48 | | + | | |
| | iSSE | 32 44 | | - | | |
| | ME | 14 51 | 26 | 175 | | |
| | ME | 15 02 | 13 | 90 | | |
| | MZ | 15 02 | 13 | | | |
| 18 | iPZ | 14 46 52 | | - | 88° | H 14 34 07 (USCGS) |
| | iXZ | 46 55 | | - | | |
| | iPcPZ | 46 57 | | + | | |
| | iXZ | 47 02 | | - | | |
| | iPPZ | 50 16 | | - | | |
| 18 | iPZ | 15 29 05 | | + | 88° | H 15 16 12 (USCGS) |
| | iXZ | 29 08 | | - | | |
| | iPcPZ | 29 12 | | + | | |
| | iXZ | 29 19 | | - | | |
| 18 | iPZ | 23 55 30 | | - | 88° | H 23 42 37 (USCGS) |
| 19 | ePNZ | 23 05 09 | (?error of 1 min.) | | 22° | H 23 00 58 (BCIS) |
| | iSNE | 09 11 | | - + | | |
| No timing system 20 July 00 hrs to 25 July 09 hrs. | | | | | | |
| 26 | ?ePZ | 12 03 09 | | | 11° | H 12 00 39 (BCIS) |
| 28 | iPZ | 01 17 45 | | - | 83°.5 | H 01 05 30 .02 deep (USCGS) |
| | ipPZ | 18 21 | | + | | |
| | iPPZ | 20 58 | | - | | |
| | iSE | 27 52 | | + | | |

Further readings for this earthquake on sheet 2.

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 28 | iXE | 28 08 | | - | Further readings from sheet 1 | |
| | isSE | 28 50 | | + | | |
| | ME | 01 48 | 18 | 2 | | |
| 28 | ePKPN | 06 31 23 | | | 143° | H 06 11 39 (USCGS) |
| | iPPN | 34 27 | | + | | |
| | iXN | 35 27 | | + | | |
| | iSSE | 53 15 | | - | | |
| 28 | ePZ | 10 24 15 | | | 84° | H 10 13 51 (USCGS) |
| | eSE | 36 45 | | | | |
| | ME | 11 03 | 15 | 1 | | |
| 28 | ME | 11 28 | 15 | | 84° | H 10 38 28 (USCGS) |
| 29 | iPKPZ | 16 47 10 | | + | 149°.5 | H 16 27 19 (USCGS) |
| | iPKPZ | 47 25 | | + | | |
| | ME | 18 01 | 16 | | | |

24th October, 1961.

DURHAM UNIVERSITY OBSERVATORY ENGLAND

Position:- 54°46'N, 01°35'W, height above M.S.L. 103 metres

SEISMOLOGICAL BULLETIN FOR AUGUST, 1961.

Instruments: - Wilson-Lamison seismometer free period 1 sec. coupled to G.E.galvanometer free period 3.4 sec., recording vertical component of velocity. Milne-Shaw free period 12 sec.damping ratio 20:1 magnification 250, recording N and E component displacement.

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude micron and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 1 | ePKPZ | 05 59 09 | | | 133°.5 | H 05 39 53 |
| | ipPKPZ | 59 26 | | - | | .01 deep |
| | iPPN | 06 01 37 | | + | | (USCGS) |
| | eXE | 02 12 | | | | |
| | iSKSE | 06 00 | | + | | |
| | iXE | 18 25 | | - | | |
| | iSSN | 19 22 | | - | | |
| | ME | 06 47 | 22 | 8 | | |
| 1 | iPPN | 07 40 39 | | + | 113° | H 07 21 12 |
| | ME | 08 21 | 20 | 4 | | .01 deep |
| | ME | 08 24 | 15 | 4 | | (USCGS) |
| | ME | 08 26 | 15 | 4 | | |
| | MN | 08 27 | 16 | 4 | | |
| | ME | 08 29 | 15 | 4 | | |
| 2 | iPNZ | 12 23 57 | | + - | 78° | H 12 12 04 |
| | | | | | | .01 deep |
| | | | | | | (USCGS) |
| 3 | iPZ | 03 18 06 | | - | 61° | H 03 08 02 |
| | eSNE | 26 14 | | - + | | .02 deep |
| | iSKSN | 27 48 | | + | | (USCGS) |
| 4 | ePN | 18 41 43 | | | 32° | H 18 35 21 |
| | MN | 18 50 | 18 | 5 | | (USCGS) |
| | ME | 18 51 | 15 | 2 | | |
| 4 | iPZ | 23 04 47 | | - | 78° | H 22 52 49 |
| | eSN | 14 40 | | | | (USCGS) |
| 8 | iPZ | 12 30 01 | | - | 74°.5 | H 12 18 19 |
| | iPcPZ | 30 19 | | - | | (USCGS) |
| | iXN | 30 51 | | + | | |
| | iXZ | 32 49 | | + | | |
| | iSNE | 39 34 | | + + | | |
| | iSKSN | 40 11 | | + | | |
| | ME | 13 07 | 18 | 5 | | |
| 9 | ePKPZ | 16 22 03 | | | 144° | H 16 02 36 |
| | | | | | | .01 deep |
| | | | | | | (USCGS) |
| 11 | iXN | 06 48 56 | | + | 84° | H 06 08 18 |
| | MN | 07 03 | 15 | | | (USCGS) |

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 11 | iPZ | 16 03 32 | | − | 78° | H 15 51 35 .01 deep (USCGS) |
| | ipPZ | 03 52 | | + | | |
| | iXZ | 04 19 | | − | | |
| | iXZ | 04 37 | | + | | |
| | iPPPZ | 08 20 | | − | | |
| | iPaE | 10 07 | | − | | |
| | iSE | 13 25 | | + | | |
| | iSKSE | 13 47 | | + | | |
| | iSPZ | 14 05 | | − | | |
| | iXE | 17 51 | | − | | |
| | iSSE | 19 12 | | − | | |
| | ME | 16 36 | 21 | 70 | | |
| | ME | 16 42 | 21 | 80 | | |
| | MZ | 16 42 | | | | |
| 11 | ePE | 22 52 07 | | | 111° | H 22 37 22 (USCGS) |
| | eXE | 56 07 | | | | |
| | ME | 23 06 | 12 | | | |
| 11 | iPZ | 23 45 48 | | − | 78° | H 23 33 52 .01 deep (USCGS) |
| | ipPZ | 46 06 | | + | | |
| 13 | ME | 06 50 | 20 | | 67° | H 06 08 18 (USCGS) |
| | ME | 06 57 | 15 | | | |
| 14 | iPKPZ | 19 10 40 | | − | 149° | H 18 50 50 (USCGS) |
| | iPKPZ | 10 55 | | + | | |
| | ME | 20 42 | 18 | | | |
| 14 | MN | 23 00 | 14 | | 85° | H 22 04 59 (USCGS) |
| 14/15 | iPKPZ | 23 48 16 | | + | 145° | H 23 28 47 .01 deep (USCGS) |
| | iXZ | 48 18 | | + | | |
| | ipPKPZ | 49 02 | | − | | |
| | iPPZ | 50 25 | | − | | |
| | iSKSN | 55 01 | | − | | |
| | MN | 00 53 | 18 | | | |
| 15 | iPZ | 19 16 41 | | − | 87° | H 19 03 56 (USCGS) |
| | iSE | 27 20 | | − | | |
| | ME | 20 00 | 20 | 2 | | |
| | ME | 20 03 | 20 | 2 | | |
| 16 | ME | 16 57 | 12 | | 69°.5 | H 16 15 57 (USCGS) |
| 17 | iPZ | 21 28 04 | | + | 76°.5 | H 21 16 30 .03 deep (USCGS) |
| | iXZ | 28 05 | | − | | |
| | iPcPZ | 28 11 | | + | | |
| | ipPZ | 28 55 | | − | | |
| | iPPZ | 30 55 | | − | | |
| | iSN | 37 33 | | + | | |
| | iSKSN | 38 00 | | − | | |
| | iXN | 38 31 | | + | | |
| | isSN | 39 11 | | + | | |
| | iSSN | 42 26 | | + | | |
| | MN | 22 05 | 18 | 5 | | |
| | iPPPZ | 33 25 | | − | | |

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 19 | iPZ | 05 21 35 | | + | 87° | H 05 09 49 .10 deep (USCGS) |
| | ipPZ | 23 44 | | + | | |
| | iPPE | 24 52 | | - | | |
| | iXN | 26 07 | | - | | |
| | iSKSE | 31 02 | | + | | |
| | iSN | 31 23 | | - | | |
| | iXE | 32 28 | | + | | |
| | iXN | 34 21 | | - | | |
| | iXE | 35 16 | | - | | |
| | isSN | 35 28 | | + | | |
| | iSSE | 37 32 | | + | | |
| | iSSSE | 41 18 | | + | | |
| | iGE | 44 37 | 16 | 30 | | |
| 19 | iPZ | 05 45 59 | | - | 82°.5 | H 05 33 31 (USCGS) |
| | iPPZ | 49 46 | | - | | |
| | iSN | 56 20 | | + | | |
| | iSKSN | 56 46 | | + | | |
| | ME | 06 19 | 20 | 100 | | |
| | ME | 06 27 | 14 | 55 | | |
| 19 | iPN | 15 02 25 | | - | 61°.5 | H 14 52 31 .02 deep (USCGS) |
| | iSN | 10 25 | | - | | |
| 20 | iPKPZ | 05 22 42 | | - | 144° | H 05 04 14 .10 deep (USCGS) |
| 21 | iPKPZ | 16 26 17 | | - | 144° | H 16 06 55 .01 deep (USCGS) |
| 21 | ePZ | 17 12 36 | | | 79° | H 17 00 37 .01 deep (USCGS) |
| 23 | ePZ | 04 21 30 | | | 48° | H 04 12 36 (USCGS) |
| | eSE | 28 18 | | | | |
| | ME | 04 43 | 18 | 2 | | |
| 27 | iPZ | 16 34 01 | | - | 77° | H 16 22 08 (USCGS) |
| | ME | 17 14 | 15 | | | |
| 27 | iPZ | 17 01 38 | | + | 103° | H 16 47 45 (USCGS) |
| 28 | iPKPZ | 10 02 47 | | + | 145° | H 09 44 13 .09 deep (USCGS) |
| 30 | ME | 04 04 | 18 | | 54° | H 03 35 08 .01 deep (USCGS) |
| 31 | iPZ | 02 00 23 | | + | 86° | H 01 48 37 .10 deep (USCGS) |
| | ipPZ | 02 33 | | - | | |
| | iSKSE | 09 50 | | - | | |
| | iSN | 10 09 | | - | | |
| | isSN | 13 56 | | - | | |

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 31 | iPZ | 02 08 50 | | + | 86° | H C1 57 08 .10 deep (USCGS) |
| | ipPZ | 10 58 | | + | | |
| | iPPZ | 12 04 | | - | | |
| | iSKSN | 18 22 | | + | | |
| | iSN | 18 39 | | - | | |
| | isSN | 22 27 | | - | | |
| 31 | iPZ | 02 34 48 | | + | 86° | H 02 23 03 |
| | ipPZ | 37 11 | | - | | |

22nd November, 1961.

# DURHAM UNIVERSITY OBSERVATORY ENGLAND

Position:- 54°46'N, 01°35'W, height above M.S.L. 103 metres

## SEISMOLOGICAL BULLETIN FOR SEPTEMBER, 1961

Instruments:- Wilson-Lamison seismometer free period 1 sec. coupled to G.E. galvanometer free period 3.4 sec., recording vertical component of velocity. Milne-Shaw free period 12 sec. damping ratio 20:1 magnification 250, recording N and E component displacement

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 1 | eXZ | 00 28 07 | | - | 115°.5 | H 00 09 35 .02 deep (USCGS) |
| | iXZ | 28 10 | | - | | |
| | iPPZ | 29 13 | | + | | |
| | iPPPZ | 31 34 | | - | | |
| | iXN | 35 59 | | + | | |
| | iSE | 36 56 | | - | | |
| | isSE | 37 57 | | - | | |
| | iPSN | 39 00 | | + | | |
| | MN | 01 12 | 20 | 11 | | |
| | ME | 01 15 | 17 | 10 | | |
| 1 | iPZ | 19 02 43 | | - | 79°.5 | H 18 50 35 (USCGS) |
| | iXZ | 02 52 | | - | | |
| | iSE | 12 38 | | - | | |
| | ME | 19 40 | 18 | 4 | | |
| 2 | iPZ | 00 37 38 | | + | 73° | H 00 26 06 (USCGS) |
| | MN | 01 15 | 16 | | | |
| 2 | iPZ | 14 21 04 | | - | 23° | H 14 16 09 (USCGS) |
| | iXZ | 21 15 | | - | | |
| | iPPZ | 21 42 | | - | | |
| 4 | ePZ | 00 31 25 | | | 12°.5 | H 00 28 18 (BCIS) |
| | eXN | 37 07 | | | | |
| 4 | iPZ | 10 00 46 | | + | 73°.5 | H 09 49 11 (USCGS) |
| 5 | iPZ | 06 21 54 | | - | 51° | H 06 12 55 .01 deep (USCGS) |
| | ipPZ | 22 25 | | + | | |
| | iXE | 25 39 | | - | | |
| | iSN | 29 04 | | - | | |
| | MN | 06 34 | | | | |
| 5 | ePZ | 11 45 02 | | | 62°.5 | H 11 34 37 (USCGS) |
| | iXZ | 45 06 | | - | | |
| | iXNZ | 45 15 | | - - | | |
| | iXZ | 45 22 | | - | | |
| | iXZ | 45 58 | | + | | |
| | iXZ | 46 05 | | + | | |
| | iPPZ | 47 41 | | - | | |
| | iSN | 53 35 | | - | | |
| | iXE | 53 48 | | - | | |
| | iPSE | 54 10 | | - | | |
| | MN | 12 13 | 19 | 5 | | |

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 8 | ME | 05 29 | 18 | | 65° | H 04 52 10 .01 deep (USCGS) |
| 8 | ePN | 11 41 30 | | | 112°.5 | H 11 26 33 .02 deep (USCGS) |
| | iPZ | 41 31 | | - | | |
| | iPKPZ | 44 51 | | - | | |
| | ipPKPZ | 45 20 | | + | | |
| | iPPZ | 45 51 | | - | | |
| | iXZ | 46 18 | | + | | |
| | iXZ | 46 36 | | - | | |
| | iSKSN | 51 31 | | - | | |
| | iSKSN | 52 37 | | - | | |
| | iPSN | 55 31 | | + | | |
| | iSSN | 12 00 14 | | - | | |
| | ME | 12 26 | 19 | 54 | | |
| 9 | iPZ | 09 21 45 | | - | 72° | H 09 10 25 .01 deep (USCGS) |
| 10 | iPZ | 04 57 54 | | - | 93°.5 | H 04 45 27 .08 deep (USCGS) |
| 11 | iPZ | 02 58 28 | | - | 74° | H 02 46 43 (USCGS) |
| 12 | iPZ | 12 39 03 | | - | 77°.5 | H 12 27 09 .01 deep (USCGS) |
| 13 | MN | 22 25 | | | 114° | H 21 19 26 .02 deep (USCGS) |
| 14 | iPZ | 08 10 49 | | - | 40° | H 08 03 09 (USCGS) |
| 15 | iPZ | 01 52 30 | | - | 32°.5 | H 01 46 10 .02 deep (BCIS) |
| | iSE | 57 31 | | | | |
| | MN | 02 08 | 11 | 21 | | |
| 17 | iPZ | 08 54 36 | | - | 87° | H 08 4154 (USCGS) |
| | ME | 09 37 | 16 | 8 | | |
| 18 | ME | 03 01 | | | 67° | H 02 25 19 (USCGS) |

18 September 08 hrs to 19 September 09 hrs no recording;
19 September 09 hrs to 24 September 09 hrs timing unreliable.

| | | | | | | |
|---|---|---|---|---|---|---|
| 24 | iPZ | 19 16 34 | | + | 78°.5 | H 19 04 41 (USCGS) |
| | iXN | 25 31 | | + | | |
| | iSN | 26 34 | | + | | |
| 24 | iPZ | 21 53 45 | | + | 86°.5 | H 21 40 59 .01 deep (USCGS) |
| | ipPZ | 54 01 | | - | | |
| | eSN | 22 04 06 | | | | |
| | ME | 22 35 | 20 | | | |
| 27 | iPPZ | 12 27 12 | | + | 115°.5 | H 12 07 39 .02 deep (USCGS) |
| | MN | 13 12 | | | | |
| 27 | iPZ | 19 38 31 | | + | 72° | H 19 27 01 (USCGS) |
| | iSKSN | 49 12 | | + | | |

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 28 | iPN | 22 45 18 | | - | 50° | H 22 36 27 .01 deep (USCGS) |
| | ipPE | 46 03 | | - | | |
| 29 | iPZ | 17 02 37 | | - | 78° | H 16 50 33 (USCGS) |
| 28 | ePZ | 03 37 42 | | | 89° | H 03 24 43 .02 deep (USCGS) |
| | iSE | 48 21 | | - | | |
| | MN | 04 23 | 15 | | | |

2nd January, 1962.

# DURHAM UNIVERSITY OBSERVATORY ENGLAND

Position:-54°46'N, 01°35'W, height above M.S.L. 103 metres

## SEISMOLOGICAL BULLETIN FOR OCTOBER, 1961

Instruments:- Wilson-Lamison seismometer free period 1 sec. coupled to G.E.galvanometer free period 3.4 sec., recording vertical component of velocity. Milne-Shaw free period 12 sec. damping ratio 20:1 magnification 250, recording N and E component displacement.

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 2 | iPZ | 07 26 58 | | + | 23°.5 | H 07 21 44 (BCIS) |
| | iXZ | 27 04 | | - | | |
| | eSE | 31 14 | | | | |
| | GNE | 31 19 | | | | |
| | MN | 07 38 | 12 | 6 | | |
| | ME | 07 39 | 11 | 6 | | |
| 5 | eXZ | 22 43 02 | | - | | |
| | eXE | 58 27 | | | | |
| | ME | 23 31 | 16 | | | |
| 5 | iPKPZ | 18 28 10 | | - | 143° | H 18 08 43 .01 deep (USCGS) |
| 13 | iPKPZ | 17 47 47 | | + | 147° | H 17 28 21 .02 deep (USCGS) |
| 17 | MN | 05 27 | 20 | | | H 04 27 33 (USCGS) |
| 18 | eXN | 17 09 30 | | | | H 16 52 00 |
| | iSSN | 26 35 | | - | 111° | .01 deep |
| | ME | 17 58 | 18 | 25 | | (USCGS) |
| 22 | ePKPZ | 10 09 56 | | | 145° | H 09 50 44 |
| | ipPKPZ | 10 15 | | - | | .03 deep |
| | iXZ | 11 57 | | - | | (USCGS) |
| 23 | ePN | 00 22 31 | | | 100°.5 | H 00 08 33 |
| | iSE | 33 57 | | + | | (USCGS) |
| | ME | 01 15 | 20 | | | |
| 23 | iXN | 08 52 05 | | | | H 03 31 26 Atomic bomb. (B.C.I.S.) |
| | iXN | 53 04 | | | | |
| 23 | ME | 15 39 | | | 107° | H 14 39 33 (USCGS) |
| 26 | MN | 01 47 | 22 | | 122° | H 00 38 20 (USCGS) |
| 26 | eSN | 15 51 55 | | | 95° | H 15 27 02 |
| | ME | 16 26 | 22 | | | (USCGS) |

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 28 | iPN | 10 54 21 | | + | 40° | H 10 46 40 (USCGS) |
| | eSE | 11 00 31 | | | | |
| | ME | 11 15 | | | | |
| 28 | ME | 23 26 | | | 138° | H 22 44 32 (USCGS) |
| 29 | iSN | 09 32 10 | | - | 67° | H 09 12 16 (USCGS) |
| | iSKSN | 33 12 | | - | | |
| | ME | 09 49 | 19 | 10 | | |
| 29 | iSE | 15 06 50 | | - | 67° | H 14 47 18 .01 deep (USCGS) |
| | ME | 15 27 | | | | |
| 30 | iPZ | 02 28 26 | | - | 72° | H 02 16 33 (USCGS) |
| | iSN | 37 54 | | - | | |
| | iSKSN | 38 51 | | - | | |
| | ME | 02 58 | 19 | | | |
| 30 | MN | 08 54 | 18 | 7 | | H 08 33 30 Atomic bomb. (B.C.I.S.) |
| | MN | 08 55 | 15 | 7 | | |
| 30 | ePN | 21 28 42 | | | 90° | H 21 15 35 (USCGS) |
| | eSN | 39 37 | | | | |
| 31 | MN | 08 51 | | | | H 08 29 26 Atomic bomb (B.C.I.S.) |

2nd January, 1962.

DURHAM UNIVERSITY OBSERVATORY ENGLAND

Position:- 54°46'N, 01°35'W, height above M.S.L. 103 metres

SEISMOLOGICAL BULLETIN FOR NOVEMBER,1961

Instruments:- Wilson-Lamison seismometer free period 1 sec. coupled to G.E. galvanometer free period 3.4 sec., recording vertical component of velocity. Milne-Shaw free period 12 sec. damping ratio 20:1 magnification 250, recording N and E component displacement.

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 6 | ePKPN | 05 47 49 | | | 137° | H 05 28 10 (USCGS) |
| | MN | 06 53 | | | | |
| 6 | eXZ | 11 34 35 | | | | |
| | iXZ | 35 05 | | + | | |
| 10 | ePKPZ | 18 19 20 | | | 143° | H 18 00 50 .09 deep (USCGS) |
| 12 | iSE | 02 33 27 | | - | 61° | H 02 15 17 (USCGS) |
| | isSE | 33 35 | | + | | |
| | ME | 02 53 | | | | |
| 14 | iSN | 05 04 31 | | - | 79° | H 04 42 27 (USCGS) |
| 15 | iPZ | 07 29 12 | | - | 78° | H 07 17 12 (USCGS) |
| | ipPZ | 29 25 | | - | | |
| | iSNE | 39 05 | | - + | | |
| | iSKSE | 39 25 | | - | | |
| | iSSE | 44 17 | | - | | |
| | ME | 08 03 | 20 | 23 | | |
| | MN | 08 08 | 19 | 33 | | |
| | MZ | 08 08 | 19 | | | |
| 17 | iPKPZ | 19 23 12 | | - | 145° | H 19 03 55 .03 deep (USCGS) |
| 18 | PKPZ | 11 36 41 | | - | 152° | H 11 16 57 .01 deep (USCGS) |
| 18 | ME | 22 58 | | | 87° | H 22 09 53 .01 deep (USCGS) |
| 19 | eSKSE | 23 46 23 | | | 108° | H 23 21 55 .02 deep (USCGS) |
| | MN | 24 22 | 20 | | | |
| 20 | MN | 04 34 | | | 70° | H 04 03 56 .01 deep (USCGS) |
| 20 | iPKPZ | 12 04 01 | | + | 146°.5 | H 11 44 19 (USCGS) |
| | iPKPZ | 04 20 | | + | | |
| | iXZ | 04 30 | | - | | |
| | MN | 13 15 | 20 | | | |

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 20 | ePZ | 18 05 27 | | | 36° | H 17 58 15 (BCIS) |
| | iPZ | 05 29 | | + | | |
| | iPPZ | 06 47 | | - | | |
| | iSNE | 11 17 | | - - | | |
| | iSSN | 14 00 | | - | | |
| 23 | iPZ | 01 14 28 | | + | 11° | H 01 12 05 (BCIS) |
| 27 | ePZ | 06 09 40 | | | 84° | H 05 57 08 (USCGS) |
| | iSN | 19 58 | | - | | |
| | MN | 06 53 | 15 | 4 | | |
| 27 | iPPN | 17 29 51 | | - | 111° | H 17 10 33 (USCGS) |
| | iPSE | 39 23 | | - | | |
| | ME | 18 17 | | | | |

28 no recording from 00 hrs. to 11 hrs.

15th February, 1962.

DURHAM UNIVERSITY OBSERVATORY ENGLAND

Position:- 54°46'N, 01°35'W, height above M.S.L. 103 metres

SEISMOLOGICAL BULLETIN FOR DECEMBER, 1961

Instruments:- Wilson-Lamison seismometer free period 1 sec. coupled to G.E. galvanometer free period 3.4 sec., recording vertical component of velocity. Milne-Shaw free period 12 sec. damping ratio 20:1 magnification 250, recording N and E component displacement.

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 1 | iPZ | 21 25 18 | | - | 86° | H 21 13 04 .03 deep (USCGS) |
| | ipPZ | 26 11 | | - | | |
| | iSKSE | 35 35 | | + | | |
| | iSE | 35 51 | | - | | |
| | isSE | 37 28 | | + | | |
| | ME | 22 04 | 17 | | | |
| 2 | iPZ | 12 44 49 | | - | 19° | H 12 40 18 (BCIS) |
| | iSE | 48 45 | | - | | |
| | MN | 12 52 | 10 | 7 | | |
| 3 | No recording 12 hr. to 19 hr. | | | | | |
| 4 | ePN | 12 49 07 | | | 67° | H 12 38 12 (USCGS) |
| | MN | 13 16 | 20 | 20 | | |
| | MN | 13 22 | 15 | 12 | | |
| 6 | No recording 09 hr. to 7 December 09 hr. | | | | | |
| 9 | ePZ | 02 26 08 | | | 67° | H 02 15 22 (USCGS) |
| 9 | iPPZ | 11 37 55 | | - | 116° | H 11 18 09 (USCGS) |
| | eSSE | 53 56 | | | | |
| | ME | 12 26 | 18 | 28 | | |
| | ME | 12 32 | 19 | 35 | | |
| 9 | iPKPZ | 20 08 20 | | + | 147° | H 19 49 41 .10 deep (USCGS) |
| | iPKPZ | 08 22 | | + | | |
| 12 | iPZ | 23 18 16 | | - | 78° | H 23 06 18 (USCGS) |
| 20 | iPZ | 13 37 10 | | + | 76° | H 13 25 34 .03 deep (USCGS) |
| | iXE | 37 15 | | + | | |
| | iPcPZ | 37 23 | | + | | |
| | iXEZ | 37 54 | | - - | | |
| | ipPZ | 38 08 | | - | | |
| | iSN | 46 45 | | - | | |
| | iSKSN | 47 15 | | + | | |
| | isSN | 47 55 | | - | | |
| | iXN | 49 41 | | - | | |
| | iGNE | 57 25 | | - - | | |
| 24 | ME | 24 48 | 19 | 7 | 111° | H 23 43 19 (USCGS) |
| | ME | 24 58 | | | | |
| 25 | ePKPZ | 14 15 37 | | | 144°.5 | H 13 55 39 .01 deep (USCGS) |

| Date | Phase and component | Time G.M.T. | Period sec. | Amplitude microns and direction | Epicentral distance | Notes |
|---|---|---|---|---|---|---|
| 27 | iPPZ | 24 13 27 | | + | 168° | H 23 48 01 .01 deep (USCGS) |
| | ME | 25 22 | 20 | 5 | | |
| | ME | 25 32 | 18 | 9 | | |
| | ME | 25 35 | 17 | 8 | | |
| | ME | 25 40 | 16 | 6 | | |
| | ME | 25 45 | 19 | 8 | | |
| 30 | iPSE | 01 01 06 | | + | 73° | H 00 39 24 .01 deep (USCGS) |
| | iXE | 01 27 | | + | | |
| | iSSE | 05 18 | | - | | |
| | MN | 01 34 | 16 | 18 | | |
| 30 | MN | 07 41 | | | 52° | H 07 08 29 (USCGS) |

1st March 1962.