A[illegible] MINISTRY, METEOROLOGICAL OF[illegible]

# KEW [illegible]BSERVATORY, RICHMOND, SURREY, ENGLAND.

## SEISM[illegible]OGICAL BULLETIN FOR JANUARY, 1932.

Lat. 51° 28′ 6″ N, Long. 0° 18′ 47″ W, Height above M.S.L. 5m.

[illegible]THOLOGIC FOUNDATION : RIVER GRAVEL RESTING ON LONDON CLAY,

INSTRUMENTS : GALI[illegible]APERIODIC SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

CONSTANTS : FOR NO[illegible]ON SEE FÜRST B. GALITZIN "VORLESUNGEN ÜBER SEISMOMETRIE" (LEIPZIG, 1914)
[illegible] G. W. WALKER "MODERN SEISMOLOGY" (LONDON, 1913).

| COMPONENT. | [illegible] | [illegible]TE FROM [illegible]H CONSTANTS APPLY. | GALVANOMETER FREE PERIOD $T_1$. | PENDULUM FREE PERIOD T. | DAMPING CONSTANT $\mu^2$ | $\frac{Ak}{\pi l}$ |
|---|---|---|---|---|---|---|
| N. | 1[illegible] | OCT. 8 | sec. 24·7 | sec. 25·0 | +0·01 | sec$^{-1}$ 46·2 |
| E. | 1[illegible] | OCT. 8 | 24·8 | 24·9 | +0·02 | 44·0 |
| Z. | 1[illegible] | SEPT. 30 | 13·0 | 12·6 | +0·02 | 114· |

TIME SERVICE : MIN[illegible] TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK (MORRISON);
TIME CON[illegible]ISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY.
SEISM[illegible]TRIC READINGS CAN BE DETERMINED TO THE NEAREST SECOND.

| DATE. | PHASE. | | G.M.T. m. | G.M.T. s. | PERIOD. sec. | AMPLITUDES. AN. μ | AE. μ | AZ. μ | Δ km. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| Jan. 1 | eL | | 9 | | | | | | | |
| | F | | 15 | | | | | | | |
| 2/3 | eL | 2 | 45 | | | | | | | |
| | $M_1$ | | 47 | 24 | 16 | +20 | | | | |
| | $M_2$ | | 49 | 21 | 17 | | −37 | | | |
| | $M_3$ | | 49 | 29 | 16 | | | −46 | | |
| | $M_4$ | | 49 | 41 | 14 | +21 | | | | |
| | F | 0 | 0 | | | | | | | |
| 5 | eL | 2 | 53 | | | | | | | |
| | F | 3 | 20 | | | | | | | |
| 9 | $i_Z$ | 1[illegible] | 40 | 13 | | | | | | |
| | e | | 42 | 32 | | | | | | |
| | i | | 43 | 4 | | | | | | |
| | $i_{NE}$ | | 43 | 38 | | | | | | |
| | $e_{NE}$ | | 52 | 32 | | | | | | |
| | eL | 11 | 2 | | | | | | | |
| | M | | 28 | 54 | 14 | | −12 | | | |
| | F | 12 | 45 | | | | | | | |
| 13 | eL | 1[illegible] | 58 | | | | | | | Confused by microseisms. |
| | F | 1[illegible] | 30 | | | | | | | |
| 18 | eL | 13 | 20 | | | | | | | |
| | M | | 23 | 59 | 16 | | −10 | | | |
| | F | | 35 | | | | | | | |
| 20 | eL | 3 | 8 | | | | | | | |
| | F | | 30 | | | | | | | |
| 24 | e | 4 | 3 | 58 | | | | | | |
| | $i_Z$ | | 4 | 14 | | | | | | |
| | $e_{NE}$ | | 5 | 11 | | | | | | |
| | $e_E$ | | 6 | 3 | | | | | | |
| | eL | 5 | [illegible] | | | | | | | |
| | $M_1$ | | [illegible] | 45 | 22 | −8 | | | | |
| | $M_2$ | | [illegible] | 29 | 22 | | +7 | | | |
| | F | 6 | 5 | | | | | | | |

P1435,14982,6027,100,2/32

# KEW OBSERVATORY, RICHMOND, SUR

## SEISMOLOGICAL BULLETIN.

JANUARY, 1932.

| DATE. | PHASE. | G.M.T. HR. | MIN. | SEC. | PERIOD. SEC. | AMPLITUDE. An μ | Ae μ | Az μ | Δ KM. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| Jan. 25 | e | 3 | 14 | | | | | | | Very small. |
| | F | | 35 | | | | | | | |
| 27 | $i_{ZE}$ | 19 | 45 | 10 | | | | | | |
| | e | | 48 | 36 | | | | | | |
| | L | | 49 | | | | | | | |
| | $M_1$ | | 49 | 57 | 18 | -21 | | | | |
| | $M_2$ | | 50 | 22 | 17 | | +9 | | | |
| | $M_3$ | | 51 | 39 | 13 | | | +9 | | |
| | F | 20 | 30 | | | | | | | |
| 29 | $e_Z$ | 14 | 0 | 37 | | | | | | Possibly more than one shock. |
| | e | | 3 | 56 | | | | | | |
| | $e_E$ | | 14 | 18 | | | | | | |
| | $e_N$ | | 20 | 53 | | | | | | |
| | $L_{NE}$ | | 37 | | | | | | | Bombay telegraphs :- |
| | $M_1$ | | 42 | 48 | 36 | -65 | -95 | | | iP . $13^h 53^m 46^s$. |
| | $M_2$ | | 43 | 8 | 38 | | | | | iS-iP . $10^m 17^s$. |
| | $L_Z$ | | 45 | | | | | | | Δ . 9200 km. |
| | $M_3$ | | 50 | 25 | 29 | +56 | | | | |
| | $M_4$ | | 54 | 33 | 20 | | +52 | | | |
| | $M_5$ | 15 | 0 | 50 | 22 | +35 | | | | |
| | $M_6$ | | 24 | 15 | 19 | | | +43 | | |
| | F | 18 | 10 | | | | | | | |
| 30 | eL | 4 | 5 | | | | | | | |
| | F | 5 | 25 | | | | | | | |
| 31 | e | 17 | 7 | | | | | | | Very small. |
| | F | | 40 | | | | | | | |

J. J. W. Shipp.
Supt.
5. 2. 32.

FORM : ~~0747~~

AIR MINISTRY, METEOROLOGICAL OFFICE

# KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

## SEISMOLOGICAL BULLETIN FOR FEBRUARY, 1932.

Lat. 51° 28′ 6″ N, Long. 0° 18′ 47″ W, Height above M.S.L. 5m.

LITHOLOGIC FOUNDATION : RIVER GRAVEL RESTING ON LONDON CLAY,

INSTRUMENTS : GALITZIN APERIODIC SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

CONSTANTS : FOR NOTATION SEE FÜRST B. GALITZIN "VORLESUNGEN ÜBER SEISMOMETRIE" (LEIPZIG, 1914) OR G. W. WALKER "MODERN SEISMOLOGY" (LONDON, 1913).

| COMPONENT. | DATE FROM WHICH CONSTANTS APPLY. | GALVANOMETER FREE PERIOD $T_1$. | PENDULUM FREE PERIOD T. | DAMPING CONSTANT $\mu^2$. | $\frac{Ak}{\pi l}$ |
|---|---|---|---|---|---|
| | | sec. | sec. | | sec$^{-1}$ |
| N. | 1931, Oct. 8 | 24·7 | 25·0 | + 0·01 | 46·2 |
| E. | 1931, Oct. 8 | 24·8 | 24·9 | +0·02 | 44·0 |
| Z. | 1931, Sept. 30 | 13·0 | 12·6 | +0·02 | 114· |

TIME SERVICE : MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK (MORRISON) ; TIME COMPARISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY. SEISMOMETRIC READINGS CAN BE DETERMINED TO THE NEAREST SECOND.

| DATE. | PHASE. | G.M.T. h. | m. | s. | PERIOD. sec. | AMPLITUDES. AN. μ | AE. μ | AZ. μ | Δ km. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| Feb. 1 | e | 8 | 10 | | | | | | | Very small. |
| | F | | 30 | | | | | | | |
| 3 | $iP_{EZ}$ | 6 | 26 | 45 | | | | | 7350 | Compression. |
| | $i_{EZ}$ | | 26 | 49 | | | | | | |
| | eS | | 35 | 32 | | | | | | Destructive in |
| | L | | 43 | | | | | | | SANTIAGO DE CUBA. |
| | $M_1$ | | 46 | 36 | 17 | -17 | | | | |
| | $M_2$ | | 57 | 55 | 18 | | +24 | | | Epicentre 20·5° N, 74·5° W. |
| | $M_3$ | | 57 | 58 | 17 | | | -23 | | (Strasbourg.) |
| | F | 8 | 35 | | | | | | | |
| 3 | e | 9 | 59 | | | | | | | |
| | F | 10 | 10 | | | | | | | |
| 3 | e | 13 | 21 | | | | | | | |
| | F | | 45 | | | | | | | |
| 5 | eL | 14 | 24 | | | | | | | |
| | F | | 35 | | | | | | | |
| 12 | e | 1 | 17 | | | | | | | |
| | F | | 25 | | | | | | | |
| 13 | e | 8 | 22 | | | | | | | |
| | F | | 25 | | | | | | | |
| 16 | eL | 14 | 55 | | | | | | | |
| | M | 15 | 6 | 26 | 23 | -6 | | | | |
| | F | 16 | 20 | | | | | | | |

P1450,14982,50 27, 100,3/32, M & S

# SEISMOLOGICAL BULLETIN.



| DATE. | PHASE. | G.M.T. HR. | MIN. | SEC. | PERIOD. SEC. | AMPLITUDE. An μ | Ae μ | Az μ | △ KM. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| Feb. 17 | e | 16 | 41 | | | | | | | |
| | F | 17 | 5 | | | | | | | |
| 21 | e | 12 | 59 | | | | | | | |
| | F | 13 | 5 | | | | | | | Very small. |
| 22 | e | 1 | 28 | | | | | | | |
| | F | | 35 | | | | | | | |
| 23 | $ePR_{1Z}$ | 0 | 32 | 40 | | | | | | |
| | $ePR_2$ | | 35 | 17 | | | | | | |
| | $e_E$ | | 40 | 35 | | | | | | |
| | $ePS_N$ | | 42 | 15 | | | | | | |
| | $eSR_{1NE}$ | | 48 | 10 | | | | | | |
| | $eSR_{2N}$ | | 52 | 17 | | | | | | |
| | L | | 58 | | | | | | | |
| | $M_1$ | 1 | 1 | 18 | 35 | -28 | | | | |
| | $M_2$ | | 1 | 34 | 41 | | -57 | | | |
| | $M_3$ | | 4 | 6 | 29 | | +34 | | | |
| | $M_4$ | | 17 | 18 | 17 | | | +9 | | |
| | $eL_2$ | 2 | 16 | | | | | | | Via Antipodes. |
| | F | | 50 | | | | | | | |
| 23 | $e_{ZN}$ | 20 | 33 | 2 | | | | | | |
| | eL | 21 | 18 | | | | | | | |
| | M | | 27 | 51 | 26 | +5 | | | | |
| | F | 23 | 25 | | | | | | | |
| 24 | e | 1 | 40 | | | | | | | |
| | F | | 55 | | | | | | | Very small. |

F. J. W. Whipple
Supt.
2-3-32.

# KEW OBSERVATORY, RICHMOND, S

## SEISMOLOGICAL BULLETIN FOR MARCH, 1932.

Lat. 51° 28′ 6″ N, Long. 0° 18′ 47″ W, Height above M.S.L. 5m.

LITHOLOGIC FOUNDATION : RIVER GRAVEL RESTING ON LONDON CLAY,

INSTRUMENTS : GALITZIN APERIODIC SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

CONSTANTS : FOR NOTATION SEE FÜRST B. GALITZIN "VORLESUNGEN ÜBER SEISMOMETRIE" (LEIPZIG, 1914) OR G. W. WALKER "MODERN SEISMOLOGY" (LONDON, 1913).

| COMPONENT. | DATE FROM WHICH CONSTANTS APPLY. | GALVANOMETER FREE PERIOD $T_1$. | PENDULUM FREE PERIOD T. | DAMPING CONSTANT $\mu^2$. | $\frac{Ak}{\pi l}$ |
|---|---|---|---|---|---|
| | | sec. | sec. | | sec$^{-1}$ |
| N. | 1931, OCT. 8 | 24·7 | 25·0 | +0·01 | 46·2 |
| E. | 1931, OCT. 8 | 24·8 | 24·9 | +0·02 | 44·0 |
| Z. | 1931, SEPT. 30 | 13·0 | 12·6 | +0·02 | 114· |

TIME SERVICE : MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK (MORRISON) ; TIME COMPARISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY. SEISMOMETRIC READINGS CAN BE DETERMINED TO THE NEAREST SECOND.

| DATE. | PHASE. | G.M.T. h. | m. | s. | PERIOD. sec. | AMPLITUDES. AN. μ | AE. μ | AZ. μ | Δ km. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| MAR. 3 | – | – | – | – | | | | | | No records, 9h30m to 17h40m. |
| 4/5 | $e_Z$ | 23 | 30 | 54 | | | | | | |
| | eL | | 52 | | | | | | | |
| | F | 0 | 10 | | | | | | | |
| 5 | $e_N$ | 2 | 15 | | | | | | | |
| | eL | | 17 | | | | | | | Not very distant. |
| | M | | 18 | 31 | 15 | | −10 | | | |
| | F | | 25 | | | | | | | |
| 5 | e | 3 | 15 | | | | | | | Very small. |
| | F | | 40 | | | | | | | |
| 8 | e | 5 | 7 | | | | | | | |
| | F | | 50 | | | | | | | |
| 8 | $e_Z$ | 18 | 20 | 56 | | | | | | |
| | $e_{NE}$ | | 48 | 42 | | | | | | |
| | eL | 19 | 17 | | | | | | | |
| | M | | 21 | 38 | 20 | −3 | | | | |
| | F | 20 | 15 | | | | | | | |
| 9 | e | 3 | 27 | | | | | | | |
| | F | | 35 | | | | | | | |
| 9 | $eP_Z$ | 10 | 21 | 29 | | | | | 2020 | Destructive in Greek Island of Cephalonia. |
| | $eS_{NE}$ | | 24 | 54 | | | | | | |
| | L | | 27 | | | | | | | |
| | M | | 31 | 32 | 10 | | | +4 | | |
| | F | | 40 | | | | | | | |
| 10 | $e_Z$ | 5 | 45 | | | | | | | |
| | eL | 6 | 32 | | | | | | | |
| | F | 7 | 45 | | | | | | | |

FORM M.O.349.



# KEW OBSERVATORY, RICHMOND, SUR

## SEISMOLOGICAL BULLETIN. MARCH, 1932.

| DATE. | PHASE. | G.M.T. HR. | MIN. | SEC. | PERIOD. SEC. | AMPLITUDE. An μ | Ae μ | Az μ | △ KM. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| MAR. 14 | $eL_{NE}$ | 4 | 44 | | | | | | | |
| | $eL_Z$ | | 49 | | | | | | | |
| | F | 5 | 10 | | | | | | | |
| 14/15 | iP | 22 | 54 | 19 | | | | | 8100 | |
| | $i_{ZE}$ | | 54 | 25 | | | | | | |
| | $eS_E$ | 23 | 3 | 44 | | | | | | |
| | $e_E$ | | 4 | 31 | | | | | | |
| | L | | 15 | | | | | | | |
| | $M_1$ | | 18 | 36 | 27 | | -11 | | | |
| | $M_2$ | | 25 | 5 | 18 | | | -11 | | |
| | F | 0 | 10 | | | | | | | |
| 15 | $iP_Z$ | 4 | 51 | 26 | | | | | | |
| | $eL_{NE}$ | 5 | 23 | | | | | | | |
| | $eL_Z$ | | 30 | | | | | | | |
| | M | | 37 | 39 | 23 | -6 | | | | |
| | F | 6 | 0 | | | | | | | |
| 18 | $e_{NE}$ | 5 | 40 | 14 | | | | | | |
| | eL | | 53 | | | | | | | |
| | F | 6 | 30 | | | | | | | |
| 19 | e | 11 | 18 | 24 | | | | | | |
| | $e_Z$ | | 27 | 38 | | | | | | |
| | $eL_{NE}$ | | 54 | | | | | | | |
| | M | | 55 | 31 | 27 | +9 | -5 | | | |
| | $eL_Z$ | | 56 | | | | | | | |
| | F | 13 | 35 | | | | | | | |
| 20 | eL | 0 | 5 | | | | | | | |
| | F | | 55 | | | | | | | |
| 26 | $i_{ZN}$ | 0 | 9 | 11 | | | | | | Confused by microseisms. |
| | $i_N$ | | 18 | 37 | | | | | | |
| | $e_{ZE}$ | | 22 | 11 | | | | | | |
| | $L_E$ | | 25 | 25 | | | | | | |
| | $L_N$ | | 30 | 3 | | | | | | |
| | $M_1$ | | 30 | 13 | 35 | -50 | -70 | | | |
| | $L_Z$ | | 31 | | | | | | | |
| | $M_2$ | | 31 | 6 | 31 | | +87 | | | |
| | $M_3$ | | 33 | 43 | 27 | +46 | | | | |
| | $M_4$ | | 36 | 22 | 22 | -42 | | | | |
| | $M_5$ | | 38 | 14 | 20 | | | -36 | | |
| | $eL_2$ | 2 | 30 | | | | | | | Via the Antipodes. |
| | F | 3 | 0 | | | | | | | |
| 26 | e | 10 | 21 | | | | | | | Confused by microseisms. |
| | $eL_{NE}$ | | 46 | | | | | | | |
| | $eL_Z$ | | 56 | | | | | | | |
| | M | 11 | 7 | 14 | 22 | -24 | | | | |
| | F | 12 | 15 | | | | | | | |

F.J.W. Whipple.
SUPT.
4/4/32.

P.1460, 190, 6024, 100, 4/32.

# KEW OBSERVATORY, RICHMOND,



## SEISMOLOGICAL BULLETIN FOR APRIL 1932.

Lat. 51° 28′ 6″ N, Long. 0° 18′ 47″ W, Height above M.S.L. 5m.

LITHOLOGIC FOUNDATION : RIVER GRAVEL RESTING ON LONDON CLAY,

INSTRUMENTS : GALITZIN APERIODIC SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

CONSTANTS : FOR NOTATION SEE FÜRST B. GALITZIN "VORLESUNGEN ÜBER SEISMOMETRIE" (LEIPZIG, 1914) OR G. W. WALKER "MODERN SEISMOLOGY" (LONDON, 1913).

| COMPONENT. | DATE FROM WHICH CONSTANTS APPLY. | GALVANOMETER FREE PERIOD $T_1$. | PENDULUM FREE PERIOD T. | DAMPING CONSTANT $\mu^2$. | $\frac{Ak}{\pi l}$ |
|---|---|---|---|---|---|
| | | sec. | sec. | | sec$^{-1}$ |
| N. | 1931, Oct. 8 | 24·7 | 25·0 | +0·01 | 46·2 |
| E. | 1931, Oct. 8 | 24·8 | 24·9 | +0·02 | 44·0 |
| Z. | 1931, Sept. 30 | 13·0 | 12·6 | +0·02 | 114· |

TIME SERVICE : MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK (MORRISON) ; TIME COMPARISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY. SEISMOMETRIC READINGS CAN BE DETERMINED TO THE NEAREST SECOND.

| DATE. | PHASE. | G.M.T. h. | m. | s. | PERIOD. sec. | AMPLITUDES. AN. μ | AE. μ | AZ. μ | Δ km. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| APR. 3 | $e_{NE}$ | 21 | 23 | | | | | | | |
| | $eL$ | 23 | 3 | | | | | | | |
| | $M$ | | 11 | 42 | 20 | +6 | | | | |
| | $F$ | | 40 | | | | | | | |
| 4 | $e_Z$ | 19 | 34 | | | | | | | |
| | $e_{NE}$ | | 38 | 46 | | | | | | |
| | $i_{NE}$ | | 39 | 12 | | | | | | |
| | $e_N$ | | 41 | 46 | | | | | | |
| | $e_E$ | | 42 | 3 | | | | | | |
| | $eL_{NE}$ | 20 | 1 | | | | | | | |
| | $eL_Z$ | | 8 | | | | | | | |
| | $F$ | | 35 | | | | | | | |
| 6 | $e$ | 9 | 57 | | | | | | | |
| | $F$ | 10 | 10 | | | | | | | |
| 8 | $e$ | 13 | 20 | | | | | | | |
| | $F$ | | 30 | | | | | | | |
| 13 | $e_Z$ | 0 | 14 | (53) | | | | | | |
| | $L_{NE}$ | | 57 | | | | | | | |
| | $L_Z$ | 1 | 0 | | | | | | | |
| | $M$ | | 2 | 11 | 26 | −10 | | | | |
| | $F$ | | 35 | | | | | | | |
| 14 | $eP_{ZE}$ | 1 | 42 | 49 | | | | | 2250 | Compression. |
| | $i_{ZE}$ | | 42 | 53 | | | | | | |
| | $iS_{NE}$ | | 46 | (33) | | | | | | In minute break. |
| | $S_Z$ | | 46 | 42 | | | | | | |
| | $L$ | | 48 | | | | | | | |
| | $M_1$ | | 48 | 23 | 19 | +12 | | | | |
| | $M_2$ | | 48 | 56 | 16 | | +12 | | | |
| | $F$ | 2 | 20 | | | | | | | |

H.I. W.1/po. 100. 8/32. 03 23

# KEW OBSERVATORY, RICHMOND, SUR

## SEISMOLOGICAL BULLETIN.

APRIL, 1932.

| DATE. | PHASE. | G.M.T. HR. | MIN. | SEC. | PERIOD. SEC. | AMPLITUDE. An μ | Ae μ | Az μ | △ KM. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| APR. 18 | eL | 12 | 0 | | | | | | | |
| | F | | 15 | | | | | | | |
| 22 | e | 5 | 50 | | | | | | | |
| | F | 6 | 15 | | | | | | | |
| 24 | eL | 6 | 45 | | | | | | | |
| | M | | 59 | 24 | 19 | +5 | | | | |
| | F | 7 | 15 | | | | | | | |
| 26 | e | 8 | 39 | | | | | | | |
| | eL | | 44 | | | | | | | |
| | M | | 47 | 17 | 27 | | -7 | | | |
| | F | 9 | 10 | | | | | | | |
| 29 | e | 18 | 59 | | | | | | | |
| | $eL_{NE}$ | 19 | 3 | | | | | | | |
| | $eL_Z$ | | 10 | | | | | | | |
| | F | | 40 | | | | | | | |
| 30 | $e_Z$ | 1 | 16 | 10 | | | | | | |
| | eL | | 31 | | | | | | | |
| | F | | 55 | | | | | | | |

J. W. Shipp.
Supt.
4.5.32.

Hl. Wt 1pa. 100. 2/32. Gp p23

FORM : ~~0747.~~



AIR MINISTRY, METEOROLOGICAL OFFICE

# KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

## SEISMOLOGICAL BULLETIN FOR MAY 1932.

Lat. 51° 28′ 6″ N, Long. 0° 18′ 47″ W, Height above M.S.L. 5m.

LITHOLOGIC FOUNDATION : RIVER GRAVEL RESTING ON LONDON CLAY,

INSTRUMENTS : GALITZIN APERIODIC SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

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|---|---|---|---|---|---|
| | | sec. | sec. | | sec$^{-1}$ |
| N. | 1931, Oct. 8 | 24·7 | 25·0 | +0·01 | 46·2 |
| E. | 1931, Oct. 8 | 24·8 | 24·9 | +0·02 | 44·0 |
| Z. | 1931, Sept. 30 | 13·0 | 12·6 | +0·02 | 114· |

TIME SERVICE : MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK (MORRISON); TIME COMPARISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY. SEISMOMETRIC READINGS CAN BE DETERMINED TO THE NEAREST SECOND.

| DATE. | PHASE. | G.M.T. h. | m. | s. | PERIOD. sec. | AMPLITUDES. An. μ | Ae. μ | Az. μ | Δ km. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| May 1 | e | 2 | 47 | 45 | | | | | | Not very distant. |
| | F | | 53 | | | | | | | |
| 3 | e | 0 | 8 | | | | | | | |
| | eL | | 21 | | | | | | | |
| | F | | 40 | | | | | | | |
| 4 | – | – | – | – | | | | | | No records, $10^h19^m$ to $12^h39^m$. |
| 14 | eL | 3 | 55 | | | | | | | |
| | F | 4 | 5 | | | | | | | |
| 14 | eP | 13 | 25 | 38 | | | | | (12000) | Compression. |
| | $iPR_{1Z}$ | | 30 | 16 | | | | | | East Indian Archipelago. |
| | $iPR_{2Z}$ | | 32 | 53 | | | | | | |
| | $iS_cP_cS_E$ | | 36 | 6 | | | | | | |
| | $iS_cP_cS_N$ | | 36 | 14 | | | | | | Bombay telegraphs :- |
| | $i(S)_E$ | | 37 | 52 | | | | | | iP. $13^h20^m37^s$. |
| | $i(S)_N$ | | 37 | 58 | | | | | | iS-iP. $7^m22^s$. |
| | $iPS_{NE}$ | | 39 | 34 | | | | | | Δ. 5700 km. |
| | $iSP_Z$ | | 39 | 40 | | | | | | |
| | $i_{NE}$ | | 41 | 22 | | | | | | |
| | $i_E$ | | 44 | 46 | | | | | | |
| | $iSR_1$ | | 46 | 5 | | | | | | |
| | $iSR_2$ | | 51 | 17 | | | | | | |
| | $i_{NE}$ | | 53 | 37 | | | | | | |
| | $i_Z$ | | 53 | 45 | | | | | | |
| | $L_Q$ | | 58 | | | | | | | |
| | $L_R$ | 14 | 6 | | | | | | | |

H22.Wt190.100.6/32.Gp923.

## SEISMOLOGICAL BULLETIN.

..... 19...

| DATE. | PHASE. | G.M.T. HR. | MIN. | SEC. | PERIOD. SEC. | AMPLITUDE. An μ | Ae μ | Az μ | △ KM. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| May 14 (ctd) | $M_1$ | 14 | 6-8 | | (44) | | (760) | | | Amplitudes doubtful; |
| | $M_2$ | | 7 | 24 | 36 | (-740) | | | | traces very faint and |
| | $M_3$ | | 13 | 10 | 35 | (-640) | | | | confused by overlapping. |
| | $M_4$ | | 15 | 40 | 17 | | | (+130) | | |
| | $M_5$ | | 16 | 2 | 30 | (+280) | | | | |
| | $M_6$ | | 22 | 59 | 27 | | (350) | | | |
| | $M_7$ | | 23 | 11 | 19 | (-280) | | | | |
| | $M_8$ | | 23 | 18 | 12 | | | (+110) | | |
| | F | 17 | 30 | | | | | | | |
| 18 | eL | 20 | 4 | | | | | | | |
| | F | | 35 | | | | | | | |
| 21 | $iP_{EZ}$ | 10 | 22 | 3 | | | | | 8520 | Amplitudes of iP as |
| | $iPcP_{EZ}$ | | 22 | 26 | | | | | | read in mm :- |
| | $ePR_{1EZ}$ | | 25 | 3 | | | | | | N. E. Z. |
| | $iS_E$ | | 31 | 49 | | | | | | 0·0 +1·7 +3·0 |
| | $eSR_{1E}$ | | 37 | 20 | | | | | | giving azimuth about |
| | $eSR_{2E}$ | | 40 | 27 | | | | | | west. |
| | $L_N$ | | 43 | | | | | | | |
| | $L_{EZ}$ | | 46 | | | | | | | Destructive in |
| | $M_1$ | | 47 | 34 | 31 | -68 | | | | Central America. |
| | $M_2$ | | 49 | 26 | 26 | | -52 | | | |
| | $M_3$ | | 49 | 31 | 24 | | | -72 | | 13°N., 88°W. (U.S.C.G.S.) |
| | $M_4$ | | 50 | 15 | 26 | -54 | | | | |
| | $M_5$ | | 51 | 58 | 23 | | | +56 | | |
| | $M_6$ | | 56 | 49 | 18 | | -38 | | | |
| | $M_7$ | | 56 | 55 | 25 | -39 | | | | |
| | F | 13 | 20 | | | | | | | |
| 21 | e | 16 | 3 | | | | | | | |
| | F | | 40 | | | | | | | |
| 22 | eL | 1 | 50 | | | | | | | |
| | F | 2 | 5 | | | | | | | |
| 22 | $e_Z$ | 11 | 49 | 9 | | | | | | |
| | $e_Z$ | | 49 | 35 | | | | | | |
| | L | 12 | 51 | | | | | | | |
| | F | 13 | 50 | | | | | | | |
| 22 | $e_Z$ | 17 | 9 | 24 | | | | | | |
| | eL | | 12 | | | | | | | |
| | F | | 30 | | | | | | | |
| 22 | eL | 23 | 17 | | | | | | | |
| | F | | 30 | | | | | | | |
| 26 | eL | 5 | 50 | | | | | | | |
| | F | 6 | 10 | | | | | | | |

H22.We190.100.6/32.Gp923.

FORM : ~~3710~~

# KEW OBSERVATORY, RICHMOND, SUR



## SEISMOLOGICAL BULLETIN.

MAY 1932.

| DATE. | PHASE. | G.M.T. HR. | MIN. | SEC. | PERIOD. SEC. | AMPLITUDE. An μ | Ae μ | Az μ | △ KM. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| May 26 | e | 16 | 28 | 26 | | | | | | |
| | $i_Z$ | | 28 | 35 | | | | | | |
| | $i_{NZ}$ | | 30 | 50 | | | | | | |
| | $i_N$ | | 32 | 50 | | | | | | |
| | $i_{NE}$ | | 35 | 27 | | | | | | |
| | $e_{NE}$ | | 38 | 45 | | | | | | |
| | $i_N$ | | 42 | 25 | | | | | | |
| | $i_N$ | | 45 | 32 | | | | | | |
| | $e_{EZ}$ | | 50 | 14 | | | | | | |
| | $L_E$ | | 51 | | | | | | | |
| | $L_N$ | | 55 | | | | | | | |
| | $M_1$ | | 57 | 30 | 25 | | −59 | | | |
| | $M_2$ | 17 | 1 | 45 | 28 | +115 | +54 | | | |
| | $L_Z$ | | 3 | | | | | | | |
| | $M_3$ | | 5 | 4 | 30 | +90 | +155 | | | |
| | $M_4$ | | 12 | 28 | 33 | | | | | |
| | $M_5$ | | 17 | 13 | 30 | +84 | | | | |
| | $M_6$ | | 32 | 28 | 22 | | | +31 | | |
| | F | 20 | 15 | | | | | | | |
| 26 | e | 22 | 40 | 39 | | | | | | |
| | F | 23 | 5 | | | | | | | |
| 28 | $eP_Z$ | 2 | 34 | 14 | | | | | (9500) | |
| | $ePR_1$ | | 37 | 49 | | | | | | |
| | $eSPS_{NE}$ | | 44 | 38 | | | | | | |
| | $L_{NE}$ | 3 | 3 | | | | | | | |
| | $M_1$ | | 7 | 29 | 35 | | +22 | | | |
| | $L_Z$ | | 10 | | | | | | | |
| | $M_2$ | | 10 | 29 | 28 | +21 | | | | |
| | $M_3$ | | 13 | 8 | 23 | | −40 | | | |
| | $M_4$ | | 20 | 16 | 17 | | | +18 | | |
| | $M_5$ | | 20 | 22 | 17 | +15 | | | | |
| | F | 4 | 10 | | | | | | | |
| 28 | e | 6 | 1 | | | | | | | |
| | F | | 15 | | | | | | | |
| 31 | e | 8 | 54 | | | | | | | |
| | eL | 9 | 0 | | | | | | | |
| | F | | 30 | | | | | | | |

F.J.W. Whipple.
Supt.
6.6.32.

H22 WE190.100 6/32 Gp923

# KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

## SEISMOLOGICAL BULLETIN FOR JUNE, 1932.

Lat. 51° 28′ 6″ N, Long. 0° 18′ 47″ W, Height above M.S.L. 5m.

LITHOLOGIC FOUNDATION : RIVER GRAVEL RESTING ON LONDON CLAY,

INSTRUMENTS : GALITZIN APERIODIC SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

CONSTANTS : FOR NOTATION SEE FÜRST B. GALITZIN "VORLESUNGEN ÜBER SEISMOMETRIE" (LEIPZIG, 1914) OR G. W. WALKER "MODERN SEISMOLOGY" (LONDON, 1913).

| COMPONENT. | DATE FROM WHICH CONSTANTS APPLY. | GALVANOMETER FREE PERIOD $T_1$. | PENDULUM FREE PERIOD T. | DAMPING CONSTANT $\mu^2$. | $\frac{Ak}{\pi l}$ |
|---|---|---|---|---|---|
| | | sec. | sec. | | sec$^{-1}$ |
| N. | 1931, Oct. 8 | 24·7 | 25·0 | +0·01 | 46·2 |
| E. | 1931, Oct. 8 | 24·8 | 24·9 | +0·02 | 44·0 |
| Z. | 1931, Sept. 30 | 13·0 | 12·6 | +0·02 | 114· |

TIME SERVICE : MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK (MORRISON) ; TIME COMPARISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY. SEISMOMETRIC READINGS CAN BE DETERMINED TO THE NEAREST SECOND.

| DATE. | PHASE. | G.M.T. h. | m. | s. | PERIOD. sec. | AMPLITUDES. AN. μ | AE. μ | AZ. μ | Δ km. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| June 2 | e | 20 | 20 | | | | | | | |
| | F | | 35 | | | | | | | |
| 3 | $e_E$ | 0 | 31 | 26 | | | | | | |
| | $eL$ | 1 | 7 | | | | | | | |
| | F | | 25 | | | | | | | |
| 3 | $eP_{EZ}$ | 10 | 49 | 17 | | | | | 9430 | |
| | $iP_{EZ}$ | | 49 | 24 | | | | | | |
| | $i$ | | 49 | 41 | | −4·3* | +10·0* | + | | *Amplitudes as read in mm. |
| | $iPR_{IE}$ | | 53 | 4 | | | | | | Azimuth about 293°. |
| | $i_E$ | | 58 | 45 | | | | | | Destructive in Mexico. |
| | $iS_E$ | 11 | 0 | 3 | | | | | | 16° N., 104° W. (U.S.A.) |
| | $i_Z$ | | 6 | 31 | | | | | | |
| | $eL$ | | 11 | | | | | | | |
| | $M_1$ | | 19-38 | | | | >200 | | | |
| | $M_2$ | | 17 | 22 | 19 | −150 | | | | Maxima doubtful; |
| | $M_3$ | | 21 | 8 | 15 | −145 | | | | traces very faint and |
| | $M_4$ | | 23 | 28 | 14 | −165 | | | | confused by overlapping |
| | $M_5$ | | 25 | | 22 | | | −670 | | |
| | $M_6$ | | 32 | | 24 | | | −790 | | |
| | $M_7$ | | 35 | | 11 | | | −220 | | |
| | F | 16 | 20 | | | | | | | |
| 3 | e | 17 | 12 | | | | | | | Very small. |
| | F | | 25 | | | | | | | |
| 3 | $eP_Z$ | 17 | 52 | 28 | | | | | 9330 | |
| | $eS_{NE}$ | 18 | 2 | 55 | | | | | | |
| | $eL$ | | 26 | | | | | | | |
| | F | 19 | 0 | | | | | | | |
| 3 | $eL$ | 21 | 0 | | | | | | | |
| | F | | 5 | | | | | | | |

H36.W6.190. 100. 7/32. CP. 923.

M.O.349.
FORM : ~~0340.~~



# KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

## SEISMOLOGICAL BULLETIN. JUNE, 1932.

| DATE. | PHASE. | G.M.T. HR. | G.M.T. MIN. | G.M.T. SEC. | PERIOD. SEC. | AMPLITUDE. An μ | AMPLITUDE. Ae μ | AMPLITUDE. Az μ | Δ KM. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| June 4 | eL | 2 | 49 | | | | | | | |
| | F | 3 | 0 | | | | | | | Very small. |
| 4 | e | 19 | 49 | | | | | | | |
| | F | | 55 | | | | | | | |
| 4 | eL | 22 | 21 | | | | | | | |
| | F | | 45 | | | | | | | |
| 5 | $eP_Z$ | 9 | 17 | 11 | | | | | 9330 | |
| | $eS_{NE}$ | | 27 | 38 | | | | | | |
| | eL | | 50 | | | | | | | |
| | F | 10 | 35 | | | | | | | Very small. |
| 5 | e | 14 | 4 | | | | | | | |
| | F | | 20 | | | | | | 8550 | Northern California. |
| 6 | $eP_Z$ | 8 | 56 | 8 | | | | | | 42°N., 123°W. (U.S.C.G.S.) |
| | eS | 9 | 5 | 56 | | | | | | |
| | $eL_{NE}$ | | 18 | | | | | | | |
| | $eL_Z$ | | 23 | | | | | | | |
| | $M_1$ | | 28 | 49 | 20 | +20 | | | | |
| | $M_2$ | | 29 | 0 | 18 | | | +15 | | |
| | F | 10 | 30 | | | | | | | |
| 6 | e' | 12 | 28 | | | | | | | |
| | F | | 50 | | | | | | | |
| 8 | $e_Z$ | 4 | 53 | | | | | | | |
| | F | 5 | 0 | | | | | | | |
| 8 | e | 7 | 8 | | | | | | | |
| | F | | 15 | | | | | | | |
| 8 | $e_Z$ | 8 | 3 | | | | | | | Very small. |
| | eL | | 30 | | | | | | | |
| | F | 9 | 0 | | | | | | | |
| 8 | e | 11 | 25 | | | | | | | |
| | F | 12 | 0 | | | | | | | |
| 8 | e | 15 | 53 | | | | | | | |
| | F | 16 | 10 | | | | | | | |
| 9 | eL | 7 | 22 | | | | | | | |
| | F | | 40 | | | | | | | |
| 10 | e | 4 | 0 | | | | | | | |
| | F | | 5 | | | | | | | Very small. |
| 10 | $e_Z$ | 20 | 39 | | | | | | | |
| | $e_{NZ}$ | | 49 | 25 | | | | | | |
| | eL | 21 | 20 | | | | | | | |
| | F | | 50 | | | | | | | |
| 10 | eL | 22 | 17 | | | | | | | |
| | F | | 25 | | | | | | | |
| 11 | $e_Z$ | 8 | 42 | 43 | | | | | | |
| | eL | 9 | 1 | | | | | | | |
| | F | | 40 | | | | | | | |
| 11 | $e_Z$ | 17 | 18 | | | | | | | |
| | eL | | 54 | | | | | | | |
| | F | 18 | 35 | | | | | | | |
| 12 | e | 23 | 34 | | | | | | | |
| | F | | 50 | | | | | | | |

436.We. 150. 100. 7/38. G.P. 923.

# KEW OBSERVATORY, RICHMOND, SUI

## SEISMOLOGICAL BULLETIN. ..... JUNE, ..... 1932.

| DATE. | PHASE. | G.M.T. HR. | MIN. | SEC. | PERIOD. SEC. | AMPLITUDE. An μ | Ae μ | Az μ | △ KM. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| June 13 | $e_Z$ | 21 | 11 | | | | | | | |
| | $eL_{NE}$ | | 44 | | | | | | | |
| | $eL_Z$ | | 51 | | | | | | | |
| | $M_1$ | | 57 | 24 | 14 | | | -7 | | |
| | $M_2$ | | 57 | 27 | 16 | | -8 | | | |
| | F | 22 | 35 | | | | | | | |
| 14 | $iP_Z$ | 6 | 12 | 48 | | | | | 9350 | |
| | $i_Z$ | | 13 | 18 | | | | | | |
| | $i_Z$ | | 16 | 34 | | | | | | |
| | $iS_{NE}$ | | 23 | 16 | | | | | | |
| | $i_{NE}$ | | 23 | 55 | | | | | | |
| | $L_{NE}$ | | 45 | | | | | | | |
| | $L_Z$ | | 48 | | | | | | | |
| | M | | 57 | 34 | 23 | +6 | | | | |
| | F | 7 | 30 | | | | | | | |
| 14 | e | 12 | 10 | | | | | | | |
| | eL | | 15 | | | | | | | |
| | F | | 45 | | | | | | | |
| 16 | $iP_Z$ | 1 | 31 | 52 | | | | | 9310 | |
| | $i_Z$ | | 32 | 11 | | | | | | |
| | $iS_E$ | | 42 | 18 | | | | | | |
| | $e_{NE}$ | | 42 | 40 | | | | | | |
| | $L_{NE}$ | 2 | 9 | | | | | | | |
| | $L_Z$ | | 14 | | | | | | | |
| | F | | 45 | | | | | | | |
| 18 | e | 1 | 3 | | | | | | | |
| | F | | 10 | | | | | | | |
| 18 | e | 2 | 19 | | | | | | | |
| | F | | 35 | | | | | | | |
| 18 | eP | 10 | 24 | 34 | | | | | 9850 | |
| | i | | 25 | 0 | | -1·7* | +6·1* | +15* | | *Amplitudes as read in mm. |
| | $i_{NZ}$ | | 25 | 55 | | | | | | |
| | $iPR_1$ | | 28 | 21 | | | | | | Azimuth about 286°. |
| | $iS_E$ | | 35 | 25 | | | | | | Destructive in Mexico. |
| | $iPS_{NZ}$ | | 35 | 55 | | | | | | |
| | $i_E$ | | 40 | 25 | | | | | | 19°N., 104°W. (U.S.C.G.S.). |
| | $iSR_{INE}$ | | 41 | 49 | | | | | | |
| | $iSR_{2E}$ | | 44 | 53 | | | | | | |
| | L | | 49 | | | | | | | |
| | $M_1$ | 11 | 1-3 † | | (22)† | | >210 | -590 | | †Doubtful; trace very faint. |
| | $M_2$ | | 1 | 27 | 23 | | | | | |
| | $M_3$ | | 1 | 47 | 17 | -300 | | | | |
| | $M_4$ | | 3 | 59 | 16 | | | -360 | | |
| | $M_5$ | | 4 | 21 | 16 | -270 | | | | |
| | $M_6$ | | 6 | 34 | 11 | | | -250 | | |
| | F | 15 | 15 | | | | | | | |
| 18 | e | 22 | 14 | | | | | | | |
| | F | 23 | 10 | | | | | | | |
| 20 | $e_Z$ | 4 | 7 | 36 | | | | | | |
| | F | | 15 | | | | | | | |
| 20 | eL | 5 | 3 | | | | | | | |
| | F | | 55 | | | | | | | |

H36.Wt.190.100. 7/32. GP. 923.

# SEISMOLOGICAL BULLETIN.

.....JUNE, ... 1932.

| DATE. | PHASE. | G.M.T. HR. | MIN. | SEC. | PERIOD. SEC. | AMPLITUDE. An μ | Ae μ | Az μ | △ KM. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| June 20 | e | 6 | 38 | | | | | | | |
| | F | 7 | 20 | | | | | | | |
| 20 | $e_Z$ | 9 | 38 | 16 | | | | | | |
| | eL | 10 | 5 | | | | | | | |
| | F | | 50 | | | | | | | |
| 20 | eL | 20 | 20 | | | | | | | |
| | F | | 35 | | | | | | | |
| 21 | e | 4 | 57 | | | | | | | |
| | eL | 5 | 20 | | | | | | | |
| | F | | 40 | | | | | | | |
| 21 | e | 7 | 57 | | | | | | | Very small. |
| | F | 8 | 15 | | | | | | | |
| 21/22 | e | 23 | 49 | | | | | | | |
| | F | 0 | 10 | | | | | | | |
| 22 | $e_{NZ}$ | 0 | 48 | 41 | | | | | | |
| | eL | 1 | 20 | | | | | | | |
| | F | | 50 | | | | | | | |
| 22 | $eP_Z$ | 13 | 11 | 56 | | | | | 9430 | Destructive in Mexico. |
| | $i_Z$ | | 12 | 31 | | | | | | |
| | $i_Z$ | | 12 | 47 | | | | | | 19°N., 104°W. (U.S.C.G.S) |
| | $i_Z$ | | 13 | 42 | | | | | | |
| | $iS_E$ | | 22 | 28 | | | | | | |
| | $SR_{1E}$ | | 28 | 54 | | | | | | |
| | $iSR_{2E}$ | | 32 | 53 | | | | | | |
| | $L_N$ | | 37 | | | | | | | |
| | $L_{EZ}$ | | 39 | | | | | | | |
| | $M_1$ | | 41 | 18 | 35 | +35 | | | | |
| | $M_2$ | | 43 | 21 | 33 | | | −78 | | |
| | $M_3$ | | 43 | 32 | 29 | | +76 | | | |
| | $M_4$ | | 48 | 22 | 21 | | −38 | | | |
| | $M_5$ | | 50 | 24 | 16 | | | +32 | | |
| | F | 16 | 10 | | | | | | | |
| 23 | e | 2 | 32 | 20 | | | | | | |
| | F | 4 | 20 | | | | | | | |
| 25 | e | 3 | 17 | | | | | | | Very small. |
| | F | | 30 | | | | | | | |
| 25 | e | 12 | 30 | | | | | | | |
| | F | | 40 | | | | | | | |
| 26 | e | 19 | 31 | 18 | | | | | | |
| | $e_E$ | | 41 | (12) | | | | | | |
| | eL | | 59 | | | | | | | |
| | F | 20 | 55 | | | | | | | |
| 29 | $e_Z$ | 2 | 33 | | | | | | | |
| | $e_{NE}$ | | 39 | 59 | | | | | | |
| | $e_Z$ | | 40 | 12 | | | | | | |
| | eL | | 42 | | | | | | | |
| | M | | 44 | 22 | 15 | +6 | | | | |
| | F | 3 | 10 | | | | | | | |
| 29 | $e_{EZ}$ | 18 | 43 | 29 | | | | | | |
| | $e_N$ | | 46 | 57 | | | | | | |
| | eL | | 58 | | | | | | | |
| | M | 19 | 3 | 52 | 20 | | −6 | | | |
| | F | | 45 | | | | | | | |
| Addition :- | | | | | | | | | | |
| June 9 | $eP_Z$ | 4 | 48 | 11 | | | | | 9100 | F. J. W. Whipple |
| | $eS_{NE}$ | | 58 | 27 | | | | | | Supt. |
| | eL | 5 | 20 | | | | | | | 6. 7. 32. |
| | F | | 45 | | | | | | | |

M36-Wt.190./100. 7/33. GP.925.

# KEW OBSERVATORY, RICHMOND,

## SEISMOLOGICAL BULLETIN FOR JULY, 1932.

Lat. 51° 28′ 6″ N, Long. 0° 18′ 47″ W, Height above M.S.L. 5m.

LITHOLOGIC FOUNDATION : RIVER GRAVEL RESTING ON LONDON CLAY,

INSTRUMENTS : GALITZIN APERIODIC SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

CONSTANTS : FOR NOTATION SEE FÜRST B. GALITZIN "VORLESUNGEN ÜBER SEISMOMETRIE" (LEIPZIG, 1914) OR G. W. WALKER "MODERN SEISMOLOGY" (LONDON, 1913).

| COMPONENT. | DATE FROM WHICH CONSTANTS APPLY. | GALVANOMETER FREE PERIOD $T_1$. | PENDULUM FREE PERIOD T. | DAMPING CONSTANT $\mu^2$. | $\frac{Ak}{\pi l}$ |
|---|---|---|---|---|---|
| | | sec. | sec. | | sec$^{-1}$ |
| N. | 1931, Oct. 8 | 24·7 | 25·0 | +0·01 | 46·2 |
| E. | 1931, Oct. 8 | 24·8 | 24·9 | +0·02 | 44·0 |
| Z. | 1931, Sept. 30 | 13·0 | 12·6 | +0·02 | 114· |

TIME SERVICE : MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK (MORRISON) ; TIME COMPARISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY. SEISMOMETRIC READINGS CAN BE DETERMINED TO THE NEAREST SECOND.

| DATE. | PHASE. | G.M.T. | | | PERIOD. | AMPLITUDES. | | | Δ | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | AN. | AE. | AZ. | | |
| | | h. | m. | s. | sec. | μ | μ | μ | km. | |
| July, 2 | e | 3 | 12 | | | | | | | |
| | F | | 35 | | | | | | | |
| 5 | $e_Z$ | 10 | 54 | | | | | | | |
| | F | 11 | 0 | | | | | | | |
| 5 | e | 11 | 49 | | | | | | | |
| | F | 12 | 20 | | | | | | | |
| 7 | eP | 16 | 28 | 10 | | | | | 8800 | Lower California. |
| | $eS_{NE}$ | | 38 | 10 | | | | | | 28°N., 113·5°W. |
| | $eSR_{1NE}$ | | 43 | 20 | | | | | | (J.S.A.) |
| | $eSR_{2NE}$ | | 46 | 56 | | | | | | |
| | $L_{NE}$ | | 48 | | | | | | | |
| | $L_Z$ | | 53 | | | | | | | |
| | $M_1$ | | 55 | 43 | 25 | | +37 | | | |
| | $M_2$ | | 56 | 11 | 25 | +65 | | | | |
| | $M_3$ | | 59 | 56 | 19 | +69 | | | | |
| | $M_4$ | 17 | 2 | 6 | 21 | | +46 | | | |
| | $M_5$ | | 2 | 32 | 16 | | | +34 | | |
| | $M_6$ | | 5 | 52 | 16 | | | +36 | | |
| | F | 19 | 35 | | | | | | | |
| 8 | e | 11 | 26 | | | | | | | |
| | F | | 40 | | | | | | | |
| 9 | $e_Z$ | 11 | 45 | | | | | | | |
| | F | | 55 | | | | | | | |
| 9 | $e_Z$ | 13 | 15 | 25 | | | | | | |
| | e | | 18 | 23 | | | | | | |
| | $e_{NE}$ | | 25 | 19 | | | | | | |
| | eL | 14 | 4 | | | | | | | |
| | F | 15 | 5 | | | | | | | |

# SEISMOLOGICAL BULLETIN.



| DATE. | PHASE. | G.M.T. HR. | MIN. | SEC. | PERIOD. SEC. | AMPLITUDE. An μ | As μ | Az μ | △ KM. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| July, 10 | e | 1 | 16 | | | | | | | |
| | $L_{NE}$ | | 21 | | | | | | | |
| | $L_Z$ | | 29 | | | | | | | |
| | F | 2 | 0 | | | | | | | |
| 10 | $e_{NE}$ | 8 | 7 | | | | | | | |
| | $eL_{NE}$ | | 25 | | | | | | | |
| | $M_1$ | | 32 | 6 | 25 | | +11 | | | |
| | $M_2$ | | 33 | 5 | 23 | +5 | | | | |
| | F | 9 | 15 | | | | | | | |
| 11 | e | 9 | 15 | | | | | | | Very small. |
| | F | | 45 | | | | | | | |
| 12 | eP | 19 | 36 | 23 | | | | | 9070 | |
| | eS | | 46 | 37 | | | | | | |
| | $L_{NE}$ | | 58 | | | | | | | |
| | $L_Z$ | 20 | 3 | | | | | | | |
| | $M_1$ | | 4 | 9 | 26 | +64 | | | | |
| | $M_2$ | | 4 | 31 | 25 | | +41 | | | |
| | $M_3$ | | 6 | 39 | 21 | −62 | | | | |
| | $M_4$ | | 11 | 49 | 16 | | | +53 | | |
| | $M_5$ | | 11 | 54 | 16 | | −88 | | | |
| | F | 22 | 45 | | | | | | | |
| 13 | e | 4 | 43 | | | | | | | |
| | F | 5 | 5 | | | | | | | |
| 13 | e | 9 | 25 | | | | | | | |
| | F | | 35 | | | | | | | Very small. |
| 16 | e | 21 | 15 | | | | | | | |
| | F | 22 | 15 | | | | | | | |
| 20 | e | 5 | 21 | | | | | | | |
| | F | | 45 | | | | | | | |
| 20 | $e_Z$ | 20 | 25 | 24 | | | | | | |
| | e | | 29 | 25 | | | | | | |
| | e | | 35 | 29 | | | | | | |
| | $e_Z$ | | 38 | 31 | | | | | | |
| | $e_Z$ | | 39 | 25 | | | | | | |
| | eL | 21 | 25 | | | | | | | |
| | F | 22 | 0 | | | | | | | |
| 21 | e | 13 | 0 | 6 | | | | | | |
| | $L_{NE}$ | | 35 | | | | | | | |
| | $L_Z$ | | 42 | | | | | | | |
| | $M_1$ | | 52 | 48 | 22 | +6 | | | | |
| | $M_2$ | | 56 | 14 | 20 | | | +7 | | |
| | F | 15 | 10 | | | | | | | |
| 21 | $e_Z$ | 16 | 46 | 28 | | | | | | |
| | eL | 17 | 24 | | | | | | | |
| | F | 18 | 45 | | | | | | | |
| 23 | e | 1 | 35 | | | | | | | |
| | F | 2 | 5 | | | | | | | Very small. |
| 24 | e | 19 | 29 | | | | | | | |
| | F | | 40 | | | | | | | |
| 25 | $e_Z$ | 8 | 36 | 36 | | | | | | |
| | $e_{NE}$ | | 46 | 25 | | | | | | |
| | e | | 47 | 32 | | | | | | |
| | F | — | — | — | | | | | | Overlapped by next shock. |

H.46.Wt.190.100.8/32.Gp923

# KEW OBSERVATORY, RICHMOND, SU

## SEISMOLOGICAL BULLETIN. JULY, 1932.

| DATE. | PHASE. | G.M.T. HR. | MIN. | SEC. | PERIOD. SEC. | AMPLITUDE. An μ | Ae μ | Az μ | △ KM. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| July, 25 | iP | 9 | 25 | 17 | | | | | 9500 | Compression. |
| | $e_Z$ | | 27 | 58 | | | | | | |
| | iS | | 35 | 52 | | | | | | Pacific Ocean off |
| | SR, | | 42 | 9 | | | | | | Central America. |
| | $e_N$ | | 44 | 27 | | | | | | |
| | $e_E$ | | 45 | 21 | | | | | | |
| | $L_{NE}$ | | 50 | | | | | | | |
| | $L_Z$ | | 55 | | | | | | | |
| | $M_1$ | 10 | 2 | 48 | 17 | -45 | | | | |
| | $M_2$ | | 2 | 51 | 17 | | | +94 | | |
| | F | 12 | 25 | | | | | | | |
| 27 | e | 21 | 39 | 45 | | | | | | |
| | F | 22 | 50 | | | | | | | |
| 29 | e | 2 | 24 | | | | | | | |
| | F | | 30 | | | | | | | |
| 29 | e | 21 | 17 | | | | | | | |
| | eL | 22 | 5 | | | | | | | |
| | F | | 20 | | | | | | | |
| 30 | $e_Z$ | 12 | 42 | 2 | | | | | | |
| | eL | 13 | 20 | | | | | | | |
| | F | | 35 | | | | | | | |

F.J.W.W.
Supt.
2.8.32.

H.&S.W.: 190. 100. 8/32. Op 923

# KEW OBSERVATORY, RICHMOND,

## SEISMOLOGICAL BULLETIN FOR AUGUST, 1932.

Lat. 51° 28′ 6″ N, Long. 0° 18′ 47″ W, Height above M.S.L. 5m.

LITHOLOGIC FOUNDATION : RIVER GRAVEL RESTING ON LONDON CLAY,

INSTRUMENTS : GALITZIN APERIODIC SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

CONSTANTS : FOR NOTATION SEE FÜRST B. GALITZIN "VORLESUNGEN ÜBER SEISMOMETRIE" (LEIPZIG, 1914) OR G. W. WALKER "MODERN SEISMOLOGY" (LONDON, 1913).

| COMPONENT. | DATE FROM WHICH CONSTANTS APPLY. | GALVANOMETER FREE PERIOD $T_1$. | PENDULUM FREE PERIOD T. | DAMPING CONSTANT $\mu^2$. | $\frac{Ak}{\pi l}$ |
|---|---|---|---|---|---|
| | | sec. | sec. | | sec$^{-1}$ |
| N. | 1931, Oct. 8. | 24·7 | 25·0 | +0·01 | 46·2 |
| E. | 1931, Oct. 8. | 24·8 | 24·9 | +0·02 | 44·0 |
| Z. | 1931, Sept. 30. | 13·0 | 12·6 | +0·02 | 114· |

TIME SERVICE : MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK (MORRISON); TIME COMPARISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY. SEISMOMETRIC READINGS CAN BE DETERMINED TO THE NEAREST SECOND.

| DATE. | PHASE. | G.M.T. h. | m. | s. | PERIOD. sec. | AMPLITUDES. AN. μ | AE. μ | AZ. μ | Δ km. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| Aug. 1 | eL | 11 | 8 | | | | | | | |
| | F | | 45 | | | | | | | |
| 2 | $e_Z$ | 4 | 40 | 5 | | | | | | |
| | e | | 54 | 0 | | | | | | |
| | $L_{NE}$ | 5 | 21 | | | | | | | |
| | $L_Z$ | | 28 | | | | | | | |
| | F | 6 | 0 | | | | | | | |
| 3 | e | 11 | 51 | | | | | | | |
| | L | | 54 | | | | | | | |
| | F | 12 | 5 | | | | | | | Not very distant. |
| 5 | $eL_{NE}$ | 1 | 37 | | | | | | | |
| | $eL_Z$ | | 46 | | | | | | | |
| | F | | 55 | | | | | | | |
| 5 | eL | 21 | 33 | | | | | | | |
| | F | | 50 | | | | | | | |
| 10 | e | 1 | 20 | 32 | | | | | | |
| | F | 3 | 10 | | | | | | | |
| 10 | e | 17 | 20 | | | | | | | |
| | F | | 40 | | | | | | | |
| 12 | iP | 3 | 35 | 46 | | | | | | |
| | eS | | 45 | 33 | | | | | 8540 | Compression. |
| | eL | | 54 | | | | | | | |
| | $M_1$ | 4 | 15 | 9 | 19 | | | +21 | | |
| | $M_2$ | | 15 | 11 | 19 | −15 | | | | |
| | $M_3$ | | 17 | 7 | 17 | | +16 | | | |
| | F | 6 | 55 | | | | | | | |
| 13 | $e_Z$ | 21 | 16 | | | | | | | |
| | eL | 22 | 19 | | | | | | | No 'N' record. |
| | $M_1$ | | 34 | 31 | 22 | | −8 | | | |
| | $M_2$ | | 39 | 6 | 19 | | | −11 | | |
| | F | 23 | 45 | | | | | | | |

H bu., 190, 100 p'32, e.g. 922.

# SEISMOLOGICAL BULLETIN.

| DATE. | PHASE. | G.M.T. HR. | MIN. | SEC. | PERIOD. SEC. | AMPLITUDE. An μ | As μ | Az μ | △ KM. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| Aug. 14 | $eP_{ZE}$ | 4 | 50 | 58 | | | | | 8040 | Compression. |
| | $i_{ZE}$ | | 51 | 26 | | | | | | No "N" record. |
| | $ePR_{1ZE}$ | | 53 | 57 | | | | | | Eastern Himalayas. |
| | $ePR_{2ZE}$ | | 55 | 50 | | | | | | 27·5°N., 95°E. (Strasbourg) |
| | $iS_E$ | 5 | 0 | 20 | | | | | | Bombay telegraphs:- |
| | $eL$ | | 9 | | | | | | | |
| | $M_1$ | | 20 | 36 | 31 | | −58 | | | iP. $4^h\,44^m\,24^s$. |
| | $M_2$ | | 24 | 58 | 17 | | | −21 | | iS-iP. $3^m\,53^s$. |
| | F | 8 | 0 | | | | | | | Azimuth. 64°. |
| 14 | $e_Z$ | 12 | 46 | | | | | | | |
| | F | 13 | 35 | | | | | | | |
| 15 | $e_{ZE}$ | 4 | 39 | | | | | | | |
| | F | 5 | 0 | | | | | | | |
| 15 | e | 15 | 30 | | | | | | | |
| | F | | 50 | | | | | | | |
| 16 | e | 22 | 25 | | | | | | | Very small. |
| | F | | 35 | | | | | | | |
| 17 | eL | 9 | 26 | | | | | | | |
| | F | 10 | 0 | | | | | | | |
| 18 | e | 20 | 49 | | | | | | | |
| | F | 21 | 15 | | | | | | | |
| 19 | e | 3 | 53 | | | | | | | |
| | F | 4 | 5 | | | | | | | |
| 19 | e | 18 | 30 | | | | | | | Very small. |
| | F | | 50 | | | | | | | |
| 20 | e | 17 | 3 | | | | | | | |
| | F | | 25 | | | | | | | |
| 21 | $iP_Z$ | 4 | 28 | 31 | | | | | 9350 | Compression. |
| | $ePR_1$ | | 32 | 2 | | | | | | |
| | $eS_{NE}$ | | 38 | 59 | | | | | | |
| | eL | | 58 | | | | | | | |
| | $M_1$ | 5 | 12 | 20 | 19 | | +24 | | | |
| | $M_2$ | | 12 | 46 | 18 | | | −21 | | |
| | $M_3$ | | 12 | 51 | 18 | −22 | | | | |
| | F | 7 | 5 | | | | | | | |
| 22 | $e_Z$ | 11 | 24 | 47 | | | | | | |
| | $eL_{NE}$ | | 54 | | | | | | | |
| | $eL_Z$ | | 58 | | | | | | | |
| | $M_1$ | 12 | 4 | 8 | 16 | −14 | | | | |
| | $M_2$ | | 4 | 19 | 15 | | | −16 | | |
| | F | | 50 | | | | | | | |
| 24 | e | 4 | 23 | | | | | | | Very small. |
| | F | 5 | 5 | | | | | | | |
| 24 | $eL_{NE}$ | 12 | 56 | | | | | | | |
| | $eL_Z$ | 13 | 3 | | | | | | | |
| | F | | 45 | | | | | | | |
| 25 | e | 8 | 40 | | | | | | | |
| | F | 9 | 25 | | | | | | | |
| 28 | e | 11 | 40 | | | | | | | Very small. |
| | F | 12 | 0 | | | | | | | |

F. J. Scrase
for Supt.
3.4.32.

H.B.O. 1931. 100 952, 4/31. 932.

# KEW OBSERVATORY, RICHMOND,

## SEISMOLOGICAL BULLETIN FOR SEPTEMBER, 1932.

Lat. 51° 28′ 6″ N, Long. 0° 18′ 47″ W, Height above M.S.L. 5m.

LITHOLOGIC FOUNDATION : RIVER GRAVEL RESTING ON LONDON CLAY,

INSTRUMENTS : GALITZIN APERIODIC SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

CONSTANTS : FOR NOTATION SEE FÜRST B. GALITZIN "VORLESUNGEN ÜBER SEISMOMETRIE" (LEIPZIG, 1914) OR G. W. WALKER "MODERN SEISMOLOGY" (LONDON, 1913).

| COMPONENT. | DATE FROM WHICH CONSTANTS APPLY. | GALVANOMETER FREE PERIOD $T_1$. | PENDULUM FREE PERIOD T. | DAMPING CONSTANT $\mu^2$. | $\frac{Ak}{\pi l}$ |
|---|---|---|---|---|---|
| N. | 6 SEPT. 1932 | sec. 24·7 | sec. 25·1 | 0·00 | sec$^{-1}$ 47·2 |
| E. | 5 SEPT. 1932 | 24·8 | 25·1 | +0·01 | 43·4 |
| Z. | 7 SEPT. 1932 | 13·0 | 12·8 | +0·07 | 109· |

TIME SERVICE : MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK (MORRISON) ; TIME COMPARISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY. SEISMOMETRIC READINGS CAN BE DETERMINED TO THE NEAREST SECOND.

| DATE. | PHASE. | G.M.T. h. | m. | s. | PERIOD. sec. | AMPLITUDES. AN. μ | AE. μ | AZ. μ | Δ km. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| Sept. 3 | e | 12 | 12 | | | | | | | |
| | $e_{NE}$ | | 21 | 30 | | | | | | |
| | $L_{NE}$ | | 37 | | | | | | | |
| | $L_z$ | | 44 | | | | | | | |
| | $M_1$ | | 44 | 44 | 27 | | +16 | | | |
| | $M_2$ | | 53 | 21 | 19 | +15 | | | | |
| | $M_3$ | | 58 | 1 | 17 | | | +14 | | |
| | F | 13 | 20 | | | | | | | |
| 5 | e | 3 | 51 | | | | | | | |
| | F | 4 | 10 | | | | | | | |
| 5 | – | – | – | – | | | | | $9^h 39^m$ | to $15^h 9^m$ } No records |
| 6 | – | – | – | – | | | | | $8^h 32^m$ | to $15^h 56^m$ } during |
| 7 | – | – | – | – | | | | | $9^h 6^m$ | to $14^h 52^m$ } standardisation, etc. |
| 8 | $iP_{ZE}$ | 1 | 53 | 41 | | | | | 9270 | |
| | $eS_E$ | 2 | 4 | 5 | | | | | | |
| | $eSR_{1E}$ | | 10 | 10 | | | | | | |
| | $eSR_{2E}$ | | 13 | 36 | | | | | | |
| | $eL_{NE}$ | | 21 | | | | | | | |
| | $eL_z$ | | 26 | | | | | | | |
| | $M_1$ | | 31 | 9 | 16 | | +12 | | | |
| | $M_2$ | | 31 | 11 | 16 | | | +10 | | |
| | F | 3 | 5 | | | | | | | |
| 8 | e | 7 | 44 | | | | | | | |
| | F | 8 | 25 | | | | | | | |
| 9 | e | 13 | 58 | | | | | | | |
| | $eL_{NE}$ | 14 | 33 | | | | | | | |
| | $eL_z$ | | 41 | | | | | | | |
| | F | 16 | 5 | | | | | | | |
| 11 | e | 14 | 38 | | | | | | | Disturbed by wind and microseisms. |
| | F | 15 | 5 | | | | | | | |

H bgw, 190 100. 1932 Sep. 923.

# SEISMOLOGICAL BULLETIN.



| DATE. | PHASE. | G.M.T. HR. | MIN. | SEC. | PERIOD. SEC. | AMPLITUDE. An μ | Ae μ | Az μ | △ KM. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| Sept. 12 | – | – | – | – | | | | | | $9^h 25^m$ to $11^h 56^m$, no records. |
| 14 | e | 9 | 16 | | | | | | | |
| | F | | 30 | | | | | | | |
| 15 | e | 11 | 38 | | | | | | | |
| | $eL_{NE}$ | 12 | 3 | | | | | | | |
| | $eL_Z$ | | 9 | | | | | | | |
| | F | | 50 | | | | | | | |
| 15 | e | 14 | 15 | | | | | | | Destructive around Gisborne and Hawke's Bay, New Zealand. |
| | $eL_{NE}$ | 15 | 9 | | | | | | | |
| | $eL_Z$ | | 14 | | | | | | | |
| | $M_1$ | | 30 | 27 | 24 | +31 | | | | |
| | $M_2$ | | 38 | 42 | 19 | | | −30 | | |
| | $M_3$ | | 47 | 30 | 18 | | +20 | | | |
| | F | 16 | 55 | | | | | | | |
| 18 | e | 14 | 47 | | | | | | | Very small. |
| | F | | 55 | | | | | | | |
| 23 | iP | 14 | 33 | 39 | | | | | 8600* | Compression. Focus about 250 km below normal. Probably near Sea of Japan. Distance and focal depth from diagrams by Mr. F.J. Scrase. L waves poorly developed. |
| | $ePP_Z$ | | 34 | 49 | | | | | | |
| | iS | | 43 | 5 | | | | | | |
| | $iSP_{NE}$ | | 43 | 29 | | | | | | |
| | $e_{NE}$ | | 54 | 1 | | | | | | |
| | L | – | – | – | | | | | | |
| | F | 16 | 15 | | | | | | | |
| 25 | e | 23 | 1 | | | | | | | Amplitudes as read in mm: N. E. Z. |
| | F | | 20 | | | | | | | |
| 26 | eP | 19 | 25 | 18 | | | | | 2270 | −1·0 +2·2 −2·2 |
| | iP | | 25 | 22 | | | | | | +7·3 −14·3 +9· |
| | i | | 25 | 38 | | | | | | +15·8 −33·2 — |
| | iS | | 29 | 4 | | | | | | Azimuth = 114° ± 2°, giving epicentre near 40°N., 24°E. |
| | i | | 29 | 23 | | | | | | |
| | $L_E$ | | 30 | 42 | | | | | | Destructive in Chalcidice Peninsula, Greece. |
| | $L_Z$ | | 30 | 56 | | | | | | |
| | $L_N$ | | 31 | 10 | | | | | | |
| | $M_1$ | | 32 | 15 | 18 | | >210 | | | |
| | $M_2$ | | 34 | 3 | 20 | +210 | | | | |
| | $M_3$ | | 34 | 9 | 15 | | | +280 | | |
| | $M_4$ | | 34 | 12 | 15 | | >200 | | | |
| | $M_5$ | | 36 | 23 | 13 | | | −220 | | |
| | $M_6$ | | 36 | 26 | 16 | +150 | | | | |
| | F | – | – | – | | | | | | Overlapped by next shock. |
| 26 | iP | 21 | 31 | 32 | | | | | 2250 | Repetition of preceding shock. |
| | $eS_{NE}$ | | 35 | 16 | | | | | | |
| | $eS_Z$ | | 35 | 24 | | | | | | |
| | L | | 37·6 | | | | | | | |
| | M | | 38 | 31 | 13 | | −26 | | | |
| | F | 23 | 10 | | | | | | | |
| 27/28 | – | $20^h$ to $8^h$ | | | | | | | | Numerous small disturbances, probably further repetitions. |

169.w.190, 100, 1932 Gp. 922.

# KEW OBSERVATORY, RICHMOND, SUR

## SEISMOLOGICAL BULLETIN. SEPTEMBER, 1932.

| DATE. | PHASE. | G.M.T. HR. | MIN. | SEC. | PERIOD. SEC. | AMPLITUDE. An μ | Ae μ | Az μ | △ KM. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| Sept. 28 | eP | 16 | 56 | 42 | | | | | 2200 | |
| | eS | 17 | 0 | 22 | | | | | | |
| | eL | | 2 | | | | | | | |
| | $M_1$ | | 3 | 25 | 13 | +23 | | | | |
| | $M_2$ | | 4 | 34 | 9 | | | +10 | | |
| | F | | 45 | | | | | | | Amplitudes as read in mm:- N. E. Z. |
| 29 | eP | 4 | 1 | 52 | | | | | 2200 | −0·5 +0·9 −1· |
| | iP | | 1 | 55 | | | | | | +2·2 −3·9 +5 |
| | i | | 1 | 59 | | | | | | −4·2 +6·9 −12· |
| | iS | | 5 | 32 | | | | | | Azimuth = 118°±2°, giving |
| | eL | | 6 | | | | | | | epicentre near 40°N., 23°E. |
| | $M_1$ | | 8 | 30 | 14 | | −125 | | | |
| | $M_2$ | | 9 | 3 | 12 | −40 | | | | Felt in Salonica. |
| | $M_3$ | | 9 | 50 | 8 | | | +42 | | |
| | F | 5 | 30 | | | | | | | |
| 29 | e | 7 | 2 | | | | | | | |
| | F | | 15 | | | | | | | |
| 29 | e | 12 | 12 | | | | | | | |
| | F | | 35 | | | | | | | |
| 29 | e | 14 | 34 | | | | | | | |
| | F | | 50 | | | | | | | |
| 29 | eP | 17 | 58 | 40 | | | | | 8830 | |
| | $eS_{NE}$ | 18 | 8 | 42 | | | | | | |
| | $eL_{NE}$ | | 22 | | | | | | | |
| | $eL_Z$ | | 31 | | | | | | | |
| | $M_1$ | | 29 | 25 | 27 | | +9 | | | |
| | $M_2$ | | 39 | 42 | 20 | | | +7 | | |
| | $M_3$ | | 40 | 5 | 18 | +7 | | | | |
| | F | 19 | 55 | | | | | | | |
| 29 | e | 21 | 55 | | | | | | | Not very distant. |
| | F | | 58 | | | | | | | |
| 30 | e | 6 | 21 | 15 | | | | | | |
| | eL | | 24 | | | | | | | |
| | F | | 35 | | | | | | | |
| 30 | e | 7 | 41 | | | | | | | } Not very distant. |
| | F | | 44 | | | | | | | |
| 30 | e | 7 | 48 | | | | | | | |
| | F | | 51 | | | | | | | |

F. J. W. Whipple
Supt.
5.10.32.

M.B.G.W. 150, 100, 10'32. Sp. 928.

AIR MINISTRY, METEOROLOGICAL OFFICE

# KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

## SEISMOLOGICAL BULLETIN FOR OCTOBER, 1932.

Lat. 51° 28′ 6″ N, Long. 0° 18′ 47″ W, Height above M.S.L. 5m.

LITHOLOGIC FOUNDATION : RIVER GRAVEL RESTING ON LONDON CLAY,

INSTRUMENTS : GALITZIN APERIODIC SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

CONSTANTS : FOR NOTATION SEE FÜRST B. GALITZIN "VORLESUNGEN ÜBER SEISMOMETRIE" (LEIPZIG, 1914) OR G. W. WALKER "MODERN SEISMOLOGY" (LONDON, 1913).

| COMPONENT. | DATE FROM WHICH CONSTANTS APPLY. | GALVANOMETER FREE PERIOD $T_1$. | PENDULUM FREE PERIOD T. | DAMPING CONSTANT $\mu^2$. | $\frac{Ak}{\pi l}$ |
|---|---|---|---|---|---|
| | | sec. | sec. | | sec$^{-1}$ |
| N. | 6 SEPT. 1932 | 24·7 | 25·1 | 0·00 | 47·2 |
| E. | 5 SEPT. 1932 | 24·8 | 25·1 | +0·01 | 43·4 |
| Z. | 7 SEPT. 1932 | 13·0 | 12·8 | +0·07 | 109· |

TIME SERVICE : MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK (MORRISON) ; TIME COMPARISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY. SEISMOMETRIC READINGS CAN BE DETERMINED TO THE NEAREST SECOND.

| DATE. | PHASE. | G.M.T. h. | m. | s. | PERIOD. sec. | AMPLITUDES. AN. μ | AE. μ | AZ. μ | Δ km. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 1 | e | 13 | 47 | | | | | | | |
| | F | | 50 | | | | | | | |
| 2 | $eP_{ZE}$ | 3 | 11 | 12 | | | | | 9870 | |
| | $ePR_{IZE}$ | | 14 | (0) | | | | | | |
| | $eS_cP_cS_E$ | | 21 | 38 | | | | | | |
| | $iS_E$ | | 22 | 4 | | | | | | |
| | $i_E$ | | 22 | 22 | | | | | | |
| | $eSR_1$ | | 26 | 16 | | | | | | |
| | $eSR_{2\,NE}$ | | 29 | 56 | | | | | | |
| | eL | | 32 | | | | | | | Long waves on "Z" and "E" very regular from $3^h 41^m$ to $47^m$. |
| | $M_1$ | | 40 | 55 | 21 | −37 | | | | |
| | $M_2$ | | 43 | 3 | 19 | | −88 | | | |
| | $M_3$ | | 43 | 9 | 17 | | | −77 | | |
| | F | 5 | 20 | | | | | | | |
| 9 | e | 6 | 35 | | | | | | | |
| | F | | 45 | | | | | | | |
| 9 | $eL_{NE}$ | 13 | 33 | | | | | | | |
| | M | | 38 | 29 | 25 | −6 | +5 | | | |
| | $eL_Z$ | | 40 | | | | | | | |
| | F | 14 | 0 | | | | | | | |
| 11 | e | 19 | 45 | | | | | | | |
| | F | 20 | 5 | | | | | | | |
| 12 | e | 3 | 10 | | | | | | | |
| | F | | 20 | | | | | | | |
| 12 | e | 20 | 30 | | | | | | | Very small. |
| | F | | 35 | | | | | | | |
| 15 | e | 22 | 32 | | | | | | | Not very distant. |
| | F | | 38 | | | | | | | |

HB2, 190, 100, 1932. G.p. 983.

FORM : 5113.

# KEW OBSERVATORY, RICHMOND, SU



## SEISMOLOGICAL BULLETIN.

OCTOBER, 1932.

| DATE. | PHASE. | G.M.T. | | | PERIOD. | AMPLITUDE. | | | Δ | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | An | Ae | Az | | |
| | | HR. | MIN. | SEC. | SEC. | μ | μ | μ | KM. | |
| Oct. 16 | $iP_{ZN}$ | 12 | 19 | 31 | | − | | + | 8150 | Compression. |
| | $iS_E$ | | 28 | 58 | | | | | | Azimuth about North. |
| | $i_E$ | | 29 | 12 | | | | | | |
| | $i_E$ | | 29 | 52 | | | | | | |
| | $e_N$ | | 33 | | | | | | | |
| | $eSR_{ZNE}$ | | 37 | | | | | | | |
| | $eL$ | | 43 | | | | | | | |
| | $M_1$ | | 46 | 43 | 28 | | −28 | | | |
| | $M_2$ | | 51 | 16 | 22 | +38 | | | | |
| | $M_3$ | | 51 | 32 | 22 | | | +25 | | |
| | $M_4$ | | 52 | 15 | 19 | | +28 | | | |
| | $eL_2$ | 14 | 44 | | | | | | | Via the Antipodes. |
| | $F$ | 15 | 0 | | | | | | | |
| 17 | $e$ | 14 | 37 | | | | | | | |
| | $F$ | 15 | 10 | | | | | | | |
| 23 | $e_Z$ | 13 | 45 | | | | | | | |
| | $eL$ | | 51 | | | | | | | |
| | $F$ | 14 | 10 | | | | | | | |
| 23 | $eL_{NE}$ | 22 | 10 | | | | | | | |
| | $eL_Z$ | | 17 | | | | | | | |
| | $M_1$ | | 24 | 27 | 19 | | +9 | | | |
| | $M_2$ | | 24 | 58 | 16 | −9 | | | | |
| | $M_3$ | | 26 | 10 | 16 | | | −11 | | |
| | $F$ | | 45 | | | | | | | |
| 29 | $e_Z$ | 11 | 19 | (45) | | | | | | |
| | $e_{NE}$ | | 25 | 4 | | | | | | |
| | $-e_{NE}$ | | 28 | 44 | | | | | | |
| | $L_{NE}$ | | 34 | | | | | | | |
| | $L_Z$ | | 38 | | | | | | | |
| | $M_1$ | | 38 | 1 | 20 | −16 | | | | |
| | $M_2$ | | 41 | 43 | 15 | | +16 | | | |
| | $M_3$ | | 41 | 45 | 15 | | | −16 | | |
| | $F$ | 12 | 10 | | | | | | | |
| 30 | $iP_Z$ | 20 | 58 | 26 | | | | | 8130 | Compression. |
| | $ePR_2$ | 21 | 3 | 4 | | | | | | |
| | $eS_E$ | | 7 | 52 | | | | | | |
| | $eL$ | | 22 | | | | | | | |
| | $M$ | | 25 | 40 | 28 | | −17 | | | |
| | $F$ | 22 | 15 | | | | | | | |

F.J.W. Whipple
Supt.
4.11.32.

H&S.108. 180/11'32 G.P. 923.

AIR MINISTRY, METEOROLOGICAL OFFICE

# KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

## SEISMOLOGICAL BULLETIN FOR NOVEMBER, 1932.

Lat. 51° 28′ 6″ N, Long. 0° 18′ 47″ W, Height above M.S.L. 5m.

LITHOLOGIC FOUNDATION: RIVER GRAVEL RESTING ON LONDON CLAY,

INSTRUMENTS: GALITZIN APERIODIC SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

CONSTANTS: FOR NOTATION SEE FÜRST B. GALITZIN "VORLESUNGEN ÜBER SEISMOMETRIE" (LEIPZIG, 1914) OR G. W. WALKER "MODERN SEISMOLOGY" (LONDON, 1913).

| COMPONENT. | DATE FROM WHICH CONSTANTS APPLY. | GALVANOMETER FREE PERIOD $T_1$. | PENDULUM FREE PERIOD T. | DAMPING CONSTANT $\mu^2$. | $\frac{Ak}{\pi l}$ |
|---|---|---|---|---|---|
| | | sec. | sec. | | sec$^{-1}$ |
| N. | 6 SEPT. 1932 | 24·7 | 25·1 | 0·00 | 47·2 |
| E. | 5 SEPT. 1932 | 24·8 | 25·1 | +0·01 | 43·4 |
| Z. | 7 SEPT. 1932 | 13·0 | 12·8 | +0·07 | 109· |

TIME SERVICE: MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK (MORRISON); TIME COMPARISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY. SEISMOMETRIC READINGS CAN BE DETERMINED TO THE NEAREST SECOND.

| DATE. | PHASE. | G.M.T. h. | m. | s. | PERIOD. sec. | AMPLITUDES. An. μ | Ae. μ | Az. μ | Δ km. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| Nov. 1† | $ePN_E$ | 16 | 24 | 6 | | | | | 2100 | Destructive in Greece. |
| | $eS_{NE}$ | | 27 | 38 | | | | | | |
| | $L_{NE}$ | | 29 | (47) | | | | | | |
| | M | | 31 | 0 | 12 | +15 | | | | |
| | F | | 50 | | | | | | | |
| 2† | $e_E$ | 11 | 33 | 51 | | | | | | Disturbed by wind. |
| | $e_{NE}$ | | 39 | 44 | | | | | | |
| | eL | | 54 | | | | | | | |
| | F | 12 | 40 | | | | | | | †No "Z" record, Nov. 1d to 11d. |
| 3† | $eL_{NE}$ | 20 | 33 | | | | | | | |
| | F | 21 | 5 | | | | | | | |
| 6† | $e_{NE}$ | 17 | 12 | | | | | | | |
| | F | | 20 | | | | | | | |
| 9† | $e_{NE}$ | 19 | 10 | | | | | | | |
| | F | | 25 | | | | | | | |
| 13 | iP | 4 | 58 | 24 | | | | | 8600* | Dilatation. Focus about 250 Km. below normal. |
| | ipP | | 59 | 37 | | | | | | |
| | $esP_{ZN}$ | 5 | 0 | 11 | | | | | | Probably near Sea of Japan. |
| | $iPR_{IZ}$ | | 1 | 28 | | | | | | |
| | iS | | 7 | 50 | | | | | | |
| | $i_E$ | | 8 | 6 | | | | | | *Distance and focal depth from diagrams by Mr. F.J. Scrase. |
| | $i_{ZE}$ | | 8 | 26 | | | | | | |
| | $i_{NE}$ | | 9 | 21 | | | | | | |
| | $eSR_{IN}$ | | 12 | 50 | | | | | | |
| | $e_E$ | | 18 | 12 | | | | | | |
| | $e_{ZN}$ | | 18 | 32 | | | | | | |
| | $e_E$ | | 18 | 52 | | | | | | L waves poorly developed. |
| | $e_N$ | | 22 | 36 | | | | | | |
| | $e_N$ | | 26 | 18 | | | | | | |
| | $e_E$ | | 29 | | | | | | | |
| | F | 4 | 30 | | | | | | | |

1.94.190,100,1232.69.923.

# KEW OBSERVATORY, RICHMOND, SUR

## SEISMOLOGICAL BULLETIN.

NOVEMBER, 1932.

| DATE. | PHASE. | G.M.T. HR. | MIN. | SEC. | PERIOD. SEC. | AMPLITUDE. An μ | Ae μ | Az μ | Δ KM. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| Nov. 13 | e | 16 | 50 | | | | | | | |
| | F | 17 | 30 | | | | | | | |
| 17 | i ZE | 6 | 15 | 25 | | | | | | |
| | e | | 25 | 43 | | | | | | |
| | eL NE | | 45 | | | | | | | |
| | eL Z | | 48 | | | | | | | |
| | M1 | | 52 | 55 | 16 | | +13 | | | |
| | M2 | | 53 | 2 | 17 | +6 | | | | |
| | M3 | | 53 | 7 | 16 | | | -11 | | |
| | F | 7 | 30 | | | | | | | |
| 20 | eP ZE | 23 | 37 | 56 | | | | | 550 | Felt in Western Germany |
| | eP* | | 38 | 12 | | | | | | and the Netherlands. |
| | e ZE | | 38 | 44 | | | | | | |
| | S | | 38 | 57 | | | | | | |
| | e N | | 39 | 2 | | | | | | |
| | eS* NE | | 39 | 14 | | | | | | |
| | e E | | 39 | 20 | | | | | | |
| | e N | | 39 | 26 | | | | | | |
| | e NE | | 39 | 35 | | | | | | |
| | F | | 41 | | | | | | | |
| 26 | eP Z | 4 | 36 | 37 | | | | | 8330 | Disturbed by wind |
| | eS NE | | 46 | 13 | | | | | | and microseisms. |
| | eL | 5 | 4 | | | | | | | |
| | M | | 7 | 45 | 28 | | +23 | | | |
| | F | | | | | | | | | |
| 29 | e | 3 | 6 | | | | | | | |
| | F | | 20 | | | | | | | |
| 29 | eL | 7 | 17 | | | | | | | |
| | F | | 30 | | | | | | | |
| 29 | e | 8 | 44 | | | | | | | |
| | F | | 55 | | | | | | | |
| 29 | e NE | 11 | 35 | 32 | | | | | | Confused by microseisms. |
| | e NE | | 36 | 6 | | | | | | |
| | e NE | | 44 | 9 | | | | | | |
| | e Z | | 46 | 52 | | | | | | |
| | L NE | | 58 | | | | | | | |
| | L Z | 12 | 5 | | | | | | | |
| | M1 | | 6 | 57 | 23 | | -20 | | | |
| | M2 | | 7 | 13 | 23 | | | +25 | | |
| | M3 | | 9 | 39 | 21 | +17 | | | | |
| | F | | 50 | | | | | | | |

F.J.W. Whipple.
Supt.
3.12.32.

H 94. 100,100.12'32.Gp.923.

FORM : ~~3445~~

AIR MINISTRY, METEOROLOGICAL OFFICE

# KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

## SEISMOLOGICAL BULLETIN FOR DECEMBER, 1932.

Lat. 51° 28′ 6″ N, Long. 0° 18′ 47″ W, Height above M.S.L. 5m.

LITHOLOGIC FOUNDATION : RIVER GRAVEL RESTING ON LONDON CLAY,

INSTRUMENTS : GALITZIN APERIODIC SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

CONSTANTS : FOR NOTATION SEE FÜRST B. GALITZIN "VORLESUNGEN ÜBER SEISMOMETRIE" (LEIPZIG, 1914) OR G. W. WALKER "MODERN SEISMOLOGY" (LONDON, 1913).

| COMPONENT. | DATE FROM WHICH CONSTANTS APPLY. | GALVANOMETER FREE PERIOD $T_1$. | PENDULUM FREE PERIOD T. | DAMPING CONSTANT $\mu^2$. | $\frac{Ak}{\pi l}$ |
|---|---|---|---|---|---|
| N. | 6 SEPT. 1932 | sec. 24·7 | sec. 25·1 | 0·00 | sec$^{-1}$ 47·2 |
| E. | 5 SEPT. 1932 | 24·8 | 25·1 | +0·01 | 43·4 |
| Z. | 7 SEPT. 1932 | 13·0 | 12·8 | +0·07 | 109· |

TIME SERVICE : MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK (MORRISON); TIME COMPARISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY. SEISMOMETRIC READINGS CAN BE DETERMINED TO THE NEAREST SECOND.

| DATE. | PHASE. | G.M.T. h. | m. | s. | PERIOD. sec. | AMPLITUDES. An. μ | Ae. μ | Az. μ | Δ km. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| Dec. 4 | $e_{NE}$ | 4 | 15 | 16 | | | | | | Atlantic Ocean, west of |
| | eL | | 17 | | | | | | | |
| | $M_1$ | | 17 | 55 | 20 | +42 | | | | Azores. 38°N., 35°W. (J.S.A) |
| | $M_2$ | | 20 | 0 | 13 | | +31 | | | |
| | $M_3$ | | 20 | 4 | 12 | | | +18 | | |
| | F | 5 | 15 | | | | | | | |
| 4 | $eP_{ZE}$ | 8 | 25 | 32 | | | | | 11750 | Sea of Celebes. |
| | $ePR_1$ | | 30 | 5 | | | | | | |
| | $eS_N$ | | 37 | 43 | | | | | | 2°N., 122°E. (Strasbourg). |
| | $eSP_2$ | | 38 | 46 | | | | | | |
| | $iPPS_{NE}$ | | 39 | 26 | | | | | | |
| | $i_Z$ | | 40 | 43 | | | | | | |
| | $eSR_1$ | | 44 | 44 | | | | | | Bombay telegraphs :- |
| | $e_{NE}$ | | 46 | 3 | | | | | | |
| | $eSR_2$ | | 49 | 34 | | | | | | iP. 8h 20m 10s. |
| | $e_{NE}$ | | 55 | 15 | | | | | | iS. 27 20. |
| | $L_{NE}$ | | 57 | | | | | | | |
| | $L_Z$ | 9 | 3 | | | | | | | |
| | $M_1$ | | 11 | 8 | 27 | +57 | | | | |
| | $M_2$ | | 11 | 26 | 28 | | −79 | | | |
| | $M_3$ | | 16 | 18 | 23 | +56 | | | | |
| | $M_4$ | | 16 | 45 | 25 | | | +75 | | |
| | $M_5$ | | 17 | 17 | 24 | | +57 | | | |
| | $M_6$ | | 20 | 35 | 20 | +54 | | | | |
| | $M_7$ | | 21 | 26 | 19 | | | +54 | | |
| | $M_8$ | | 22 | 31 | 20 | +74 | | | | |
| | $M_9$ | | 24 | 4 | 19 | | +45 | | | |
| | F | | - | - | | | | | | Overlapped by next shock. |
| 4 | $eL_{NE}$ | 11 | 27 | | | | | | | |
| | $eL_Z$ | | 33 | | | | | | | |
| | M | | 42 | 53 | 21 | +10 | | | | |
| | F | 12 | 5 | | | | | | | |

H.106 W.190.100.133.G.2.23.

# KEW OBSERVATORY, RICHMOND, SURR

## SEISMOLOGICAL BULLETIN. DECEMBER, 1932.

| DATE. | PHASE. | G.M.T. HR. | MIN. | SEC. | PERIOD. SEC. | AMPLITUDE. An μ | Ae μ | Az μ | Δ KM. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| Dec. 7 | $iP_{ZN}$ | 16 | 34 | 43 | | | | | 9370 | Pacific Ocean off Mexico. |
| | $iS_{NE}$ | | 45 | 12 | | | | | | 18°N., 103°W. (J.S.A.) |
| | $eSR_{1\,NE}$ | | 51 | 28 | | | | | | |
| | $eSR_{2\,NE}$ | | 54 | 16 | | | | | | |
| | $L_{NE}$ | 17 | 2 | | | | | | | |
| | $L_Z$ | | 4 | | | | | | | |
| | $M_1$ | | 12 | 12 | 16 | | +90 | | | |
| | $M_2$ | | 12 | 19 | 17 | +36 | | | | |
| | $M_3$ | | 12 | 23 | 17 | | | +85 | | |
| | F | 18 | 10 | | | | | | | |
| 9 | eL | 9 | 21 | | | | | | | Confused by microseisms. |
| | F | | 35 | | | | | | | |
| 15 | eL | 20 | 20 | | | | | | | |
| | F | | 50 | | | | | | | |
| 19 | e | 7 | 6 | | | | | | | |
| | F | | 40 | | | | | | | |
| 21 | $iP_Z$ | 6 | 21 | 50 | | | | | 8540 | Compression. |
| | $i_Z$ | | 22 | 43 | | | | | | Nevada, U.S.A. |
| | $iS_{NE}$ | | 31 | 37 | | | | | | 38°N., 115°W. (Strasbourg.) |
| | $SR_1$ | | 36 | 31 | | | | | | |
| | $SR_2$ | | 39 | 14 | | | | | | |
| | $L_{NE}$ | | 41 | | | | | | | |
| | $L_Z$ | | 45 | | | | | | | |
| | $M_1$ | | 48 | 30 | 29 | | +165 | | | |
| | $M_2$ | | 48 | 49 | 27 | +145 | | | | |
| | $M_3$ | | 48 | 55 | 31 | | | −240 | | |
| | $M_4$ | | 52 | 3 | 20 | | +135 | | | |
| | $M_5$ | | 52 | 43 | 19 | | | +170 | | |
| | $M_6$ | | 52 | 58 | 21 | −195 | | | | |
| | $M_7$ | | 54 | 31 | 20 | | +98 | | | |
| | $M_8$ | | 56 | 50 | 19 | −90 | | | | |
| | $M_9$ | | 58 | 54 | 17 | | +77 | +92 | | |
| | $M_{10}$ | 7 | 1 | 47 | 15 | | | | | |
| | F | 9 | 25 | | | | | | | |
| 24. | $e_E$ | 7 | 9 | | | | | | | Confused by microseisms. |
| | $eL_{NE}$ | | 27 | | | | | | | |
| | $eL_Z$ | | 34 | | | | | | | |
| | $M_1$ | | 30 | 6 | 37 | +15 | −27 | | | |
| | $M_2$ | | 37 | 45 | 25 | | +20 | | | |
| | $M_3$ | | 43 | 48 | 21 | +19 | | | | |
| | F | 8 | 45 | | | | | | | |
| 25 | iP | 2 | 15 | 4 | | −2·4* | −3·4* | +5·5* | 7320 | Compression. |
| | i | | 15 | 9 | | +5·4* | +7·6* | −26·2* | | *Amplitudes as read in mm. |
| | i | | 15 | 14 | | | | | | Azimuth about 57°, |
| | $iP_CP_{ZN}$ | | 15 | 53 | | | | | | giving epicentre near |
| | $i_E$ | | 16 | 2 | | | | | | 39°N., 99°E. (Kan Su, China) |
| | $iPR_1$ | | 17 | 28 | | | | | | |
| | $iPR_2$ | | 18 | 54 | | | | | | |
| | $iS_{NE}$ | | 23 | 49 | | | | | | |
| | $i_Z$ | | 23 | 58 | | | | | | |
| | $i_{NE}$ | | 24 | 45 | | | | | | Bombay telegraphs :- |
| | $i_{NE}$ | | 24 | 52 | | | | | | iP. 2h 10m 23s |
| | $i_{NE}$ | | 26 | 52 | | | | | | iS. 15 17 |
| | $iSR_{1\,NE}$ | | 28 | 14 | | | | | | |
| | $i_E$ | | 30 | 24 | | | | | | |
| | $i_N$ | | 30 | 31 | | | | | | |
| | $i_Z$ | | 30 | 39 | | | | | | |

H.186.W.190,100,133.Gp.923.

FORM : ~~3713.~~



# KEW OBSERVATORY, RICHMOND, SUF

## SEISMOLOGICAL BULLETIN. DECEMBER, 1932.

| DATE. | PHASE. | G.M.T. HR. | MIN. | SEC. | PERIOD. SEC. | AMPLITUDE. An μ | As μ | Az μ | △ KM. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| Dec. 25 (ctd.) | $eL_{NE}$ | 2 | 34 | | | | | | | |
| | $eL_Z$ | | 39 | | | | | | | |
| | $M_1$ | | 44 | | (22) | | >330† | | | † Off lower edge of chart. |
| | $M_2$ | | 46 | 55 | 14 | | | −220 | | |
| | $M_3$ | | 48 | 37 | 18 | | −195 | | | Maxima doubtful; traces |
| | $M_4$ | | 49 | 17 | 14 | −230 | | | | faint and confused by |
| | $M_5$ | | 49 | 28 | 14 | | | −260 | | overlapping. |
| | $M_6$ | | 52 | 10 | 18 | +210 | | | | |
| | $M_7$ | | 57 | 15 | 17 | | −220 | | | |
| | F | 6 | 30 | | | | | | | |
| 26 | e | 19 | 16 | | | | | | | |
| | F | | 25 | | | | | | | |
| 26 | $e_{NE}$ | 21 | 39 | 15 | | | | | | |
| | F | 22 | 20 | | | | | | | |
| 31 | $e(S)_{NE}$ | 6 | 54 | 13 | | | | | | Confused by microseisms. |
| | $eL_{NE}$ | 7 | 9 | | | | | | | |
| | $eL_Z$ | | 15 | | | | | | | Widely felt in |
| | $M_1$ | | 20 | 16 | 20 | +36 | | | | South Africa. |
| | $M_2$ | | 20 | 30 | 16 | | +39 | | | |
| | F | | 50 | | | | | | | |

J. W. Whipple
Supt.
4.1.33.

H.100.W.190.100.1/33.Gp.923.