

## SEISMOGRAPH RECORDS.

For the Month of JANUARY, 1934.

FROM HELWAN OBSERVATORY, EGYPT.

 $\phi = 29^{\circ} 51' N$  ,  $\lambda = 31^{\circ} 20' E$  ,  $h = 115$  m.Director M. R. MADWAR.

Seismograph Milne-Shaw recording E—W motion.

Theoretical magnification = 250.

Period of undamped pendulum = 12<sup>s</sup>.0.

Times are expressed in Greenwich Civil Mean Time.

| DATE<br>193 <u>4</u> .                  | PHASE.             | TIME.                                        |    |    | PERIOD.<br>s. | AMPLITUDE<br>A <sub>E</sub> .<br>$\mu$ . | REMARKS.                            |
|-----------------------------------------|--------------------|----------------------------------------------|----|----|---------------|------------------------------------------|-------------------------------------|
|                                         |                    | h.                                           | m. | s. |               |                                          |                                     |
| January 2                               | 1P<br>1S<br>M<br>F | 21 00 43?                                    |    |    | 14            | + 53                                     | no cutting at the preceding minute. |
| " 3                                     | 1P<br>1S<br>F      | 9 54 33<br>10 04 23<br>11.5h                 |    |    |               |                                          | no definite maximum.                |
| " 15                                    | P<br>S<br>M<br>F   | 8 51 04<br>8 58 05<br>out of scale.<br>14.0h |    |    |               |                                          | difficult to measure                |
| " 28                                    | P<br>S<br>M<br>F   | 19 29 34<br>19 39 04<br>20 26 40<br>21.7h    |    |    | 17            | + 23                                     | Record confused with microseisms.   |
| Smaller tremors were also recorded at : |                    |                                              |    |    |               |                                          |                                     |
| D                                       | H                  | D                                            | H  | D  | H             |                                          |                                     |
| 1                                       | 22                 | 17                                           | 08 | 21 | 07            |                                          |                                     |
| 6                                       | 14                 | 19                                           | 13 | 23 | 05            |                                          |                                     |
| 12                                      | 13                 | 19                                           | 19 | 28 | 15            |                                          |                                     |
| 16                                      | 05                 | 20                                           | 18 | 30 | 20            |                                          |                                     |
| 16                                      | 18                 | 20                                           | 23 | 31 | 11            | ✓                                        |                                     |
| Smaller tremors were also recorded at : |                    |                                              |    |    |               |                                          |                                     |
| D                                       | H                  | D                                            | H  | D  | H             | D                                        | H                                   |
| 1                                       | 17                 | 2                                            | 15 | 3  | 19            | 4                                        | 09                                  |
| 6                                       | 13                 | 7                                            | 16 | 8  | 09            | 9                                        | 11                                  |
| 12                                      | 13                 | 13                                           | 18 | 14 | 21            | 15                                       | 18                                  |
| 16                                      | 05                 | 17                                           | 00 | 18 | 05            | 19                                       | 10                                  |
| 16                                      | 18                 | 19                                           | 13 | 20 | 23            | 21                                       | 04                                  |
|                                         |                    | 21                                           | 15 | 22 | 05            | 23                                       | 16                                  |

SEISMOGRAPH RECORDS.

For the Month of FEBRUARY, 1934.

FROM HELWAN OBSERVATORY, EGYPT.

φ = 29° 51' N , λ = 31° 20' E , h = 115 m.

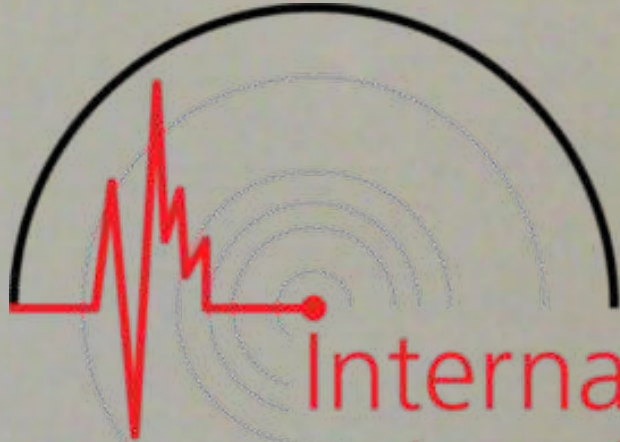
Director M. R. MADWAR

Seismograph Milne Shaw recording E—W motion.

Theoretical magnification = 250.

Period of undamped pendulum = 12<sup>s</sup>.0.

Times are expressed in Greenwich Civil Mean Time.



International  
Seismological  
Centre

| DATE<br>193 4                           |    | PHASE. | TIME. |            |     | PERIOD.                 | AMPLITUDE<br>A <sub>E</sub> . | REMARKS.                                                     |    |
|-----------------------------------------|----|--------|-------|------------|-----|-------------------------|-------------------------------|--------------------------------------------------------------|----|
|                                         |    |        | h.    | m.         | s.  | s.                      | μ.                            |                                                              |    |
| Feb.                                    | 3  | P      | 14    | 53         | 23  | 25                      | ± 18                          | Preceded by microseisms                                      |    |
|                                         |    | S      | 15    | 03         | 15  |                         |                               |                                                              |    |
|                                         |    | L      | 15    | 10         | 22  |                         |                               |                                                              |    |
|                                         |    | M      | 15    | 43         | 28  |                         |                               |                                                              |    |
|                                         |    | F      | 17.3h |            |     |                         |                               |                                                              |    |
| "                                       | 4  | iP     | 13    | 31         | 23  | 15                      | ± 300                         |                                                              |    |
|                                         |    | iS     | 13    | 34         | 44  |                         |                               |                                                              |    |
|                                         |    | M      | 13    | 40         | 00  |                         |                               |                                                              |    |
|                                         |    | F      | 15.5h |            |     |                         |                               |                                                              |    |
| "                                       | 14 | iP     | 4     | 11         | 46  |                         |                               | other details lost owing to widening of lines on the record. |    |
|                                         |    | iS     | 4     | 21         | 48  |                         |                               |                                                              |    |
| "                                       | 21 | iP     | 11    | 39         | 18  | 10                      | ± 10                          |                                                              |    |
|                                         |    | iS     | 11    | 40         | 56  |                         |                               |                                                              |    |
|                                         |    | M      | 11    | 45         | 42  |                         |                               |                                                              |    |
|                                         |    | F      | 12.5h |            |     |                         |                               |                                                              |    |
| "                                       | 22 | iP     | 8     | 10         | 37  |                         |                               |                                                              |    |
|                                         |    | S      | 8     | 13         | 21  |                         |                               |                                                              |    |
|                                         |    | F      | 9.3h  |            |     |                         |                               |                                                              |    |
| "                                       | 24 | P      | ---   |            |     | Lost in changing paper. |                               |                                                              |    |
|                                         |    | iS ?   | 6     | 47         | 45  |                         |                               |                                                              |    |
|                                         |    | M      | 7     | 28         | 08  |                         |                               |                                                              |    |
|                                         |    | F      | 10.3h |            |     |                         |                               |                                                              |    |
| "                                       | 28 | eP     | 14    | 42         | 07  | 21                      | ± 35                          |                                                              |    |
|                                         |    | S      | 14    | 52         | 02  |                         |                               |                                                              |    |
|                                         |    | M      | 15    | 37         | 02  |                         |                               |                                                              |    |
|                                         |    | F      | 17.7h |            |     |                         |                               |                                                              |    |
| Smaller tremors were also recorded at : |    |        |       |            |     |                         |                               |                                                              |    |
| D                                       | H  | D      | H     | D          | H   | D                       | H                             | D                                                            | H  |
| 1                                       | 17 | 2      | 15    | 2          | 19  | 4                       | 09                            | 4                                                            | 22 |
| 6                                       | 13 | 7      | 16    | 9          | 09  | 9                       | 11                            | 9                                                            | 22 |
| 16                                      | 08 | 17     | 18    | 17         | 21  | 18                      | 16                            | 19                                                           | 10 |
| 20                                      | 13 | 21     | 00    | (23        | 05, | 30m.Local)              | 24                            | 06                                                           | 25 |
| 26                                      | 14 | 26     | 19,   | 22m.Local) | 26  | 23                      | 27                            | 22                                                           |    |

## SEISMOGRAPH RECORDS.

For the Month of MARCH, 1934.

FROM HELWAN OBSERVATORY, EGYPT.

$$\varphi = 29^{\circ} 51' \text{ N} \quad , \quad \lambda = 31^{\circ} 20' \text{ E} \quad , \quad h = 115 \text{ m.}$$

Director \_\_\_\_\_ M. R. MADWAR

Seismograph Milne-Shaw recording E—W motion.

Theoretical magnification = 250.

Period of undamped pendulum =  $12^s.0$ .

Times are expressed in Greenwich Civil Mean Time.

| DATE<br>193 4                           |                 | PHASE. | TIME.    | PERIOD. | AMPLITUDE<br>A <sub>E</sub> . | REMARKS.                                                                                                  |                 |
|-----------------------------------------|-----------------|--------|----------|---------|-------------------------------|-----------------------------------------------------------------------------------------------------------|-----------------|
|                                         |                 |        | h. m. s. | s.      | μ.                            |                                                                                                           |                 |
| March                                   | 1               | eP     | 22 05 20 |         |                               |                                                                                                           |                 |
|                                         |                 | S      | 22 10 50 |         |                               |                                                                                                           |                 |
|                                         |                 | i      | 22 12 13 |         |                               |                                                                                                           |                 |
|                                         |                 | i      | 22 13 04 |         |                               |                                                                                                           |                 |
|                                         |                 | i      | 22 15 03 |         |                               |                                                                                                           |                 |
|                                         |                 | L      | 22 42 07 |         |                               |                                                                                                           |                 |
|                                         |                 | F      | 24.0h    |         |                               |                                                                                                           |                 |
| / "                                     | 5               | P      | 12 06 05 |         |                               | Record confused with<br>microseisms.                                                                      |                 |
|                                         |                 | iPr    | 12 16 26 |         |                               |                                                                                                           |                 |
|                                         |                 | iS     | 12 19 52 |         |                               |                                                                                                           |                 |
|                                         |                 | L      | 12 30 15 |         |                               |                                                                                                           |                 |
|                                         |                 | M1     | 13 14 22 | 24      | ± 179                         |                                                                                                           |                 |
|                                         |                 | M2     | 13 18 12 | 20      | ± 124                         |                                                                                                           |                 |
|                                         |                 | M3     | 13 24 30 | 17      | ± 97                          |                                                                                                           |                 |
|                                         |                 | F      | 16.0h    |         |                               |                                                                                                           |                 |
| "                                       | 24              | eP     | 13 25 50 |         |                               | Preceded by microseisms.<br>Probably two earthquakes<br>seems to be superposed<br>as shown on the record. |                 |
|                                         |                 | S      | 13 29 15 |         |                               |                                                                                                           |                 |
|                                         |                 | F      | 17.0h    |         |                               |                                                                                                           |                 |
| / "                                     | 29              | iP     | 20 10 32 |         |                               |                                                                                                           |                 |
|                                         |                 | iS     | 20 13 26 |         |                               |                                                                                                           |                 |
|                                         |                 | F      | 20.8h    |         |                               |                                                                                                           |                 |
| Smaller tremors were also recorded at : |                 |        |          |         |                               |                                                                                                           |                 |
| D                                       | H               | D      | H        | D       | H                             | D                                                                                                         | H               |
| 1                                       | 09              | 1      | 15       | 1       | 20                            | 2                                                                                                         | 11              |
| (5                                      | 18, 36m. Local) | 6      | 15       | 7       | 23                            | (8                                                                                                        | 02, 59m. Local) |
| 8                                       | 12              | 8      | 23       | 9       | 14                            | 10                                                                                                        | 09              |
| 12                                      | 08              | 12     | 15       | 12      | 19                            | 12                                                                                                        | 22              |
| 14                                      | 05              | 15     | 10       | 15      | 12                            | 16                                                                                                        | 14              |
| 18                                      | 10              | 18     | 22       | 18      | 22                            | 19                                                                                                        | 03              |
| 20                                      | 23              | 22     | 09       | 22      | 13                            | 22                                                                                                        | 21              |
|                                         |                 |        |          |         |                               | 25                                                                                                        | 13              |
|                                         |                 |        |          |         |                               | 27                                                                                                        | 05              |

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## SEISMOGRAPH RECORDS.

For the Month of APRIL, 1934.

FROM HELWAN OBSERVATORY, EGYPT.

 $\varphi = 29^{\circ} 51' N$  ,  $\lambda = 31^{\circ} 20' E$  ,  $h = 115$  m.Director M. R. MADWAR

Seismograph Milne-Shaw recording E-W motion.

Theoretical magnification = 250.

Period of undamped pendulum = 12<sup>s</sup>.0.

Times are expressed in Greenwich Civil Mean Time.

| DATE<br>193 4                           | PHASE.                                     | TIME.<br>h. m. s.                                                 | PERIOD.<br>s.                   | AMPLITUDE<br>A <sub>E</sub> .<br>μ.  | REMARKS.                             |                                      |                                 |                                |                                             |
|-----------------------------------------|--------------------------------------------|-------------------------------------------------------------------|---------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|---------------------------------|--------------------------------|---------------------------------------------|
| April 6                                 | P<br>eS<br>L<br>M<br>F                     | 15 41 08<br>15 43 27<br>15 46 34<br>15 47 30<br>15.9h             | 6                               | ± 5                                  | Record confused with<br>microseisms. |                                      |                                 |                                |                                             |
| " 10                                    | iP<br>iPr<br>iS<br>M<br>F                  | 10 35 52<br>10 39 22<br>10 47 46<br>11 15 30<br>12.1h             | 21                              | ± 254                                |                                      |                                      |                                 |                                |                                             |
| " 15                                    | iP<br>iS<br>L<br>M1<br>M2<br>F             | 22 28 20<br>22 39 02<br>23 02 50<br>23 08 42<br>23 17 40<br>25.8h | 29<br>20                        | ± 116<br>± 63                        |                                      |                                      |                                 |                                |                                             |
| Smaller tremors were also recorded at : |                                            |                                                                   |                                 |                                      |                                      |                                      |                                 |                                |                                             |
| D<br>2<br>6<br>12<br>16<br>(25<br>26    | H<br>05<br>19<br>09<br>04<br>15.05m Local) | D<br>3<br>9<br>14<br>16<br>26                                     | H<br>08<br>15<br>03<br>14<br>21 | D<br>3<br>11<br>11<br>24<br>26<br>28 | H<br>22<br>21<br>02<br>07<br>16      | D<br>4<br>12<br>15<br>24<br>26<br>26 | H<br>13<br>03<br>10<br>18<br>08 | D<br>6<br>12<br>15<br>24<br>26 | H<br>06<br>04<br>10<br>21, 49m Local)<br>09 |

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SEISMOGRAPH RECORDS.

For the Month of May, 1934

FROM HELWAN OBSERVATORY, EGYPT.

$\varphi = 29^{\circ} 51' N$  ,  $\lambda = 31^{\circ} 20' E$  ,  $h = 115$  m.

Director M. R. Madwar

Seismograph Milne-Shaw recording E-W motion.  
Theoretical magnification = 250.  
Period of undamped pendulum = 12<sup>s</sup>.0.  
Times are expressed in Greenwich Civil Mean Time.

Govt. Press 7884 A. 1933-125 ex.

| DATE<br>1934                           | PHASE                         | TIME<br>h. m. s.                          | PERIOD<br>s.                              | AMPLITUDE<br>A <sub>E</sub><br>μ | REMARKS                           |                         |                           |                           |                                  |
|----------------------------------------|-------------------------------|-------------------------------------------|-------------------------------------------|----------------------------------|-----------------------------------|-------------------------|---------------------------|---------------------------|----------------------------------|
| May 1                                  | 1P<br>1S<br>F                 | 7 15 42<br>7 24 27<br>8.4h                |                                           |                                  | No definite M                     |                         |                           |                           |                                  |
| / 4                                    | eP<br>S<br>F                  | 4 49 03<br>4 59 46<br>8.0h                |                                           |                                  |                                   |                         |                           |                           |                                  |
| 12                                     | eP<br>S<br>M<br>F             | 16 47 05<br>16 47 33<br>16 48 02<br>16.9h | very small                                | + 10                             | Very indistinct<br>Probably Local |                         |                           |                           |                                  |
| / 13                                   | 1P<br>1S<br>M<br>F            | 9 22 23<br>9 32 08<br>10 9 18<br>11.7h    | 27                                        | + 16                             |                                   |                         |                           |                           |                                  |
| Smaller tremors were also recorded at: |                               |                                           |                                           |                                  |                                   |                         |                           |                           |                                  |
| D<br>1<br>7<br>11<br>18<br>22          | H<br>3<br>11<br>18<br>7<br>11 | D<br>(3<br>8<br>12<br>19<br>23            | H<br>0, 24m Local)<br>15<br>21<br>1<br>23 | D<br>3<br>9<br>14<br>21<br>31    | H<br>1<br>17<br>6<br>10<br>13     | D<br>5<br>9<br>14<br>21 | H<br>15<br>21<br>22<br>10 | D<br>(6<br>11<br>15<br>22 | H<br>23.7m Local)<br>3<br>0<br>1 |

SEISMOGRAPH RECORDS.

For the Month of June, 1934

FROM HELWAN OBSERVATORY, EGYPT.

$\varphi = 29^{\circ} 51' N$  ,  $\lambda = 31^{\circ} 20' E$  ,  $h = 115$  m.

Director M. R. Haqwer

Seismograph Milne-Shaw recording E—W motion.  
Theoretical magnification = 250.  
Period of undamped pendulum = 12<sup>s</sup>.0.  
Times are expressed in Greenwich Civil Mean Time.

Govt. Press 7884 A, 1933-125 ex.

| DATE<br>1933                               | PHASE                                                   | TIME                                                       | PERIOD | AMPLITUDE<br>A <sub>E</sub> | REMARKS                                            |
|--------------------------------------------|---------------------------------------------------------|------------------------------------------------------------|--------|-----------------------------|----------------------------------------------------|
|                                            |                                                         | h. m. s.                                                   | s.     | μ                           |                                                    |
| June 2                                     | eP<br>is<br>P                                           | 13 51 17<br>13 58 13<br>15.5h                              |        |                             | Preceded by microseisms                            |
| / 13                                       | eP<br>is<br>P                                           | 2 3 27<br>2 13 45<br>3.5h                                  |        |                             |                                                    |
| / 13                                       | P<br>S<br>M<br>P                                        | 22 16 07<br>22 20 41<br>22 30 30<br>24.6h                  | 11     | ± 84                        |                                                    |
| / 19                                       | eP<br>S<br>M<br>P                                       | 18 45 32<br>18 47 00<br>18 47 42<br>19.5h                  | 4      | ± 6                         |                                                    |
| / 24                                       | eP<br>Pr <sub>1</sub><br>Pr <sub>2</sub><br>S<br>M<br>P | 6 14 20<br>6 18 24<br>6 24 14<br>6 28 25<br>7 6 14<br>8.5h | 17     | ± 42                        | indistinct<br>doubtful<br>Paper changed probable M |
| / 29                                       | P<br>S<br>P                                             | 8 37 30<br>8 47 05<br>10.2h                                |        |                             |                                                    |
| tremors<br>Smaller/were also recorded at : |                                                         |                                                            |        |                             |                                                    |
| D                                          | H                                                       | D                                                          | H      | D                           | H                                                  |
| 2                                          | 6                                                       | 2                                                          | 21     | 5                           | 23                                                 |
| 8                                          | 2                                                       | 8                                                          | 4      | 8                           | 5                                                  |
| 18                                         | 11                                                      | 20                                                         | 6      | 20                          | 9                                                  |
| 23                                         | 5                                                       | 24                                                         | 2      | 24                          | 4                                                  |
| D                                          | H                                                       | D                                                          | H      | D                           | H                                                  |
| 7                                          | 16.30m                                                  | Local                                                      |        |                             |                                                    |
| 17                                         | 4                                                       | 18                                                         | 9      |                             |                                                    |
| 20                                         | 14                                                      | 21                                                         | 6      |                             |                                                    |
| 28                                         | 1                                                       | 30                                                         | 13     |                             |                                                    |

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## SEISMOGRAPH RECORDS.

For the Month of J U L Y, 1934.

FROM HELWAN OBSERVATORY, EGYPT.

 $\varphi = 29^{\circ} 51' N$  ,  $\lambda = 31^{\circ} 20' E$  ,  $h = 115$  m.Director M. R. MADWAR

Seismograph Milne-Shaw recording E-W motion.

Theoretical magnification = 250.

Period of undamped pendulum = 12<sup>s</sup>.0.

Times are expressed in Greenwich Civil Mean Time.

Govt. Press 7884 A. 1933-125 ex.

| DATE<br>1934 | PHASE | TIME<br>h. m. s.                                        | PERIOD<br>s. | AMPLITUDE<br>A <sub>E</sub><br>$\mu$ | REMARKS                       |
|--------------|-------|---------------------------------------------------------|--------------|--------------------------------------|-------------------------------|
| July 18      | P     | 1 50 40                                                 |              |                                      |                               |
|              | Pr    | 1 55 03                                                 |              |                                      |                               |
|              | S     | 2 01 30                                                 |              |                                      |                               |
|              | SS    | 2 04 25                                                 |              |                                      |                               |
|              | L     | 2 27 07                                                 |              |                                      |                               |
|              | M1    | 2 40 17                                                 | 21           | $\pm 165$                            |                               |
|              | M2    | 2 51 12                                                 | 16           | $\pm 124$                            |                               |
|              | F     | 7.2h                                                    |              |                                      |                               |
| " 18         | P     | 16 37 47                                                |              |                                      |                               |
|              | S     | 16 49 38                                                |              |                                      |                               |
|              | F     | confused with the beginning of the following earthquake |              |                                      |                               |
|              | i     | 17 18 28                                                |              |                                      |                               |
|              | i     | 17 24 38                                                |              |                                      |                               |
|              | i     | 17 27 50                                                |              |                                      |                               |
|              | L     | 17 50 22                                                |              |                                      |                               |
|              | M     | 18 14 40                                                | 17           | $\pm 23$                             |                               |
|              | F     | confused with the beginning of the following earthquake |              |                                      |                               |
|              | e     | 19 59 41                                                |              |                                      |                               |
|              | i(S)  | 20 02 02                                                |              |                                      |                               |
| " 19         | F     | confused with the beginning of the following earthquake |              |                                      |                               |
|              | e     | 0 28 35                                                 |              |                                      |                               |
|              | i     | 1 53 00                                                 |              |                                      |                               |
|              | M     | 2 30 50                                                 | 22           | $\pm 40$                             |                               |
|              | F     | 4.7h                                                    |              |                                      |                               |
| " 21         | L     | 7 26 03                                                 |              |                                      | P & S lost in changing paper. |
|              | M1    | 7 39 43                                                 | 21           | $\pm 51$                             |                               |
|              | M2    | 8 09 08                                                 | 16           | $\pm 31$                             |                               |
|              | F     | confused with the beginning of the following earthquake |              |                                      |                               |
|              | P     | 10 53 23                                                |              |                                      | P, doubtful, confused         |
|              | Pr1   | 10 57 46                                                |              |                                      | with the ending of the        |
|              | Pr2   | 11 04 10                                                |              |                                      | previous earthquake.          |
|              | S     | 11 06 53                                                |              |                                      |                               |
|              | M     | 11 42 52                                                | 19           | $\pm 21$                             |                               |
|              | F     | 14.2h                                                   |              |                                      |                               |
| " 22         | iP    | 20 03 17                                                |              |                                      |                               |
|              | iPr   | 20 04 35                                                |              |                                      |                               |
|              | iS    | 20 08 26                                                |              |                                      |                               |
|              | M     | 20 11 10                                                | 8            | $\pm 8$                              |                               |
|              | F     | 21.0h                                                   |              |                                      |                               |

## SEISMOGRAPH RECORDS.

For the Month of J U L Y, 1934

FROM HELWAN OBSERVATORY, EGYPT.

 $\varphi = 29^{\circ} 51' N$  ,  $\lambda = 31^{\circ} 20' E$  ,  $h = 115$  m.

Director \_\_\_\_\_

Seismograph Milne-Shaw recording E-W motion.

Theoretical magnification = 250.

Period of undamped pendulum = 12<sup>s</sup>.0.

Times are expressed in Greenwich Civil Mean Time.

| DATE<br>193 <u>4</u> .                  | PHASE. | TIME.    | PERIOD. | AMPLITUDE<br>A <sub>E</sub> . | REMARKS. |
|-----------------------------------------|--------|----------|---------|-------------------------------|----------|
|                                         |        | h. m. s. | s.      | μ.                            |          |
| July 28                                 | eP     | 21 50 03 | 19      | ± 16                          |          |
|                                         | Pr     | 21 54 22 |         |                               |          |
|                                         | S      | 22 01 45 |         |                               |          |
|                                         | M      | 22 44 30 |         |                               |          |
|                                         | F      | 24.7h    |         |                               |          |
| Smaller tremors were also recorded at : |        |          |         |                               |          |
| D                                       | H      | D        | H       | D                             | H        |
| 1                                       | 20     | 13       | 22      | 20                            | 17       |
| 4                                       | 02     | 15       | 01      | 20                            | 18       |
| 5                                       | 12     | 15       | 08      | 22                            | 03       |
| 6                                       | 23     | 16       | 09      | 23                            | 18       |
| 7                                       | 15     | 18       | 13      | 27                            | 14       |
| 10                                      | 02     | 19       | 06      | 28                            | 02       |
| 12                                      | 10     | 19       | 08      | 28                            | 18       |
| 12                                      | 14     | 19       | 23      | 29                            | 09       |
| 13                                      | 11     | 20       | 03      |                               |          |

## SEISMOGRAPH RECORDS.

For the Month of AUGUST, 1934.

FROM HELWAN OBSERVATORY, EGYPT.

 $\phi = 29^{\circ} 51' N$  ,  $\lambda = 31^{\circ} 20' E$  ,  $h = 115$  m.Director M. R. MADWAR

Seismograph Milne-Shaw recording E-W motion.

Theoretical magnification = 250.

Period of undamped pendulum = 12<sup>s</sup>.0.

Times are expressed in Greenwich Civil Mean Time.

| DATE<br>193 4                           | PHASE. | TIME.      | PERIOD. | AMPLITUDE<br>A <sub>E</sub> . | REMARKS. |
|-----------------------------------------|--------|------------|---------|-------------------------------|----------|
|                                         |        | h. m. s.   | s.      | μ.                            |          |
| August 7                                | e      | 3 59 30    |         |                               |          |
|                                         | S      | 4 02 03    |         |                               |          |
|                                         | M      | 5 07 16    | 20      | ± 23                          |          |
|                                         | F      | 6.6h       |         |                               |          |
| " 13                                    | eP     | 0 02 23    |         |                               |          |
|                                         | S      | 0 13 15    |         |                               |          |
|                                         | M1     | 0 44 27    | 26      | ± 56                          |          |
|                                         | M2     | 0 46 37    | 23      | ± 43                          |          |
|                                         | F      | 2.3h       |         |                               |          |
| / " 21                                  | eP     | 19 37 37   |         |                               |          |
|                                         | eXS    | 19 46 41   |         |                               |          |
|                                         | M      | 20 08 40   | 20      | ± 26                          |          |
|                                         | F      | 21.4h      |         |                               |          |
| / " 31                                  | eP     | 0 44 26    |         |                               |          |
|                                         | S      | 0 47 58    |         |                               |          |
|                                         | F      | 1.4h       |         |                               |          |
| / " 31                                  | P      | 5 13 26    |         |                               |          |
|                                         | S      | 5 22 13    |         |                               |          |
|                                         | F      | 7.1h       |         |                               |          |
| / " 31                                  | P      | 15 04 22   |         |                               |          |
|                                         | S      | 15 09 53   |         |                               |          |
|                                         | M      | 15 22 14   | 15      | ± 43                          |          |
|                                         | F      | 17.1h      |         |                               |          |
| Smaller tremors were also recorded at : |        |            |         |                               |          |
| D                                       | H      | D          | H       |                               |          |
| 2                                       | 03     | 11         | 12 22   |                               |          |
| 2                                       | 07     | 14         | 09      |                               |          |
| 4                                       | 13     | 18         | 03      |                               |          |
| 6                                       | 13     | 19         | 00      |                               |          |
| 7                                       | 12     | 23         | 23      |                               |          |
| 8                                       | 08,    | 55m Local. | 25      | 11                            |          |
| 11                                      | 08     |            | 29      | 04                            |          |

## SEISMOGRAPH RECORDS.

For the Month of SEPTEMBER, 1934.

FROM HELWAN OBSERVATORY, EGYPT.

 $\varphi = 29^{\circ} 51' N$  ,  $\lambda = 31^{\circ} 20' E$  ,  $h = 115$  m.Director M. R. MADWAR.

Seismograph Milne-Shaw recording E--W motion.

Theoretical magnification = 250.

Period of undamped pendulum = 12<sup>s</sup>.0.

Times are expressed in Greenwich Civil Mean Time.

| DATE<br>1934                                             | PHASE.                                                                                  | TIME.                                                         | PERIOD.                                                       | AMPLITUDE<br>A <sub>E</sub> .                     | REMARKS.                                          |
|----------------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------|
|                                                          |                                                                                         | h. m. s.                                                      | s.                                                            | μ.                                                |                                                   |
| Sept. 21                                                 | 1P<br>1S<br>M<br>F                                                                      | 12 49 58<br>12 58 53<br>13 23 28<br>13.7h                     | 16                                                            | ±6                                                |                                                   |
| " 26                                                     | P<br>S<br>M<br>F                                                                        | 7 38 11<br>7 47 05<br>8 07 53<br>9.0h                         | 16                                                            | ±16                                               | Preceded by microseisms.                          |
| Smaller tremors were also recorded at :                  |                                                                                         |                                                               |                                                               |                                                   |                                                   |
| D<br>1<br>1<br>1<br>1<br>1<br>1<br>3<br>4<br>4<br>5<br>6 | H<br>08<br>11<br>12, 01m Local).<br>20<br>21<br>12<br>04, 00m Local).<br>16<br>02<br>02 | D<br>7<br>7<br>8<br>8<br>8<br>9<br>11<br>12<br>12<br>12<br>15 | H<br>03<br>20<br>07<br>11<br>12<br>05<br>08<br>15<br>17<br>07 | D<br>16<br>22<br>23<br>23<br>23<br>23<br>24<br>25 | H<br>14<br>04<br>01<br>04<br>08<br>09<br>12<br>19 |

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SEISMOGRAPH RECORDS.



For the Month of OCTOBER, 1934

FROM HELWAN OBSERVATORY, EGYPT.

$\varphi = 29^{\circ} 51' N$  ,  $\lambda = 31^{\circ} 20' E$  ,  $h = 115$  m.

Director M. R. MADWAR

Seismograph Milne-Shaw recording E—W motion.

Theoretical magnification = 250.

Period of undamped pendulum = 12<sup>s</sup>.0.

Times are expressed in Greenwich Civil Mean Time.

Govt. Press 7884 A. 1933-125 ex.

| DATE<br>193 <u>4</u>                    |       | PHASE | TIME  |    |    | PERIOD | AMPLITUDE<br>A <sub>E</sub> | REMARKS                  |
|-----------------------------------------|-------|-------|-------|----|----|--------|-----------------------------|--------------------------|
|                                         |       |       | h.    | m. | s. | s.     | $\mu$                       |                          |
| Oct.                                    | 5     | iP    | 20    | 38 | 28 |        |                             |                          |
|                                         |       | S     | 20    | 48 | 50 |        |                             |                          |
|                                         |       | F     | 21.8h |    |    |        |                             |                          |
| "                                       | 6     | eP    | 12    | 59 | 10 |        |                             | Preceded by microseisms. |
|                                         |       | eS    | 13    | 07 | 25 |        |                             |                          |
|                                         |       | L     | 13    | 20 | 43 |        |                             |                          |
|                                         |       | M     | 13    | 28 | 07 | 12     | $\pm 14$                    |                          |
|                                         |       | F     | 14.5h |    |    |        |                             |                          |
| "                                       | 10    | P     | 16    | 01 | 00 |        |                             | " " "                    |
|                                         |       | iS    | 16    | 03 | 15 |        |                             |                          |
|                                         |       | M     | 16    | 06 | 50 | 6      | $\pm 8$                     |                          |
|                                         |       | F     | 18.3h |    |    |        |                             |                          |
| "                                       | 26    | eP    | 14    | 59 | 10 |        |                             |                          |
|                                         |       | iS    | 15    | 06 | 28 |        |                             |                          |
|                                         |       | F     | 16.0h |    |    |        |                             |                          |
| "                                       | 26    | iP    | 17    | 23 | 37 |        |                             |                          |
|                                         |       | iS    | 17    | 33 | 58 |        |                             |                          |
|                                         |       | M     | 18    | 08 | 17 | 19     | $\pm 9$                     |                          |
|                                         |       | F     | 20.2h |    |    |        |                             |                          |
| "                                       | 29    | P     | 16    | 19 | 53 |        |                             |                          |
|                                         |       | i     | 16    | 23 | 17 |        |                             |                          |
|                                         |       | iS    | 16    | 24 | 36 |        |                             |                          |
|                                         |       | M ?   | 16    | 28 | 47 | 17     | $\pm 20$                    |                          |
|                                         |       | F     | 17.3h |    |    |        |                             |                          |
| Smaller tremors were also recorded at : |       |       |       |    |    |        |                             |                          |
| D                                       | H     |       | D     | H  |    |        | D                           | H                        |
| 1                                       | 03    |       | 5     | 22 |    |        | 6                           | 17                       |
| 9                                       | 22 12 |       | 12    | 06 |    |        | 15                          | 08                       |
| 18                                      | 08    |       | 19    | 21 |    |        | 21                          | 12                       |
| 21                                      | 18    |       | 22    | 01 |    |        | 24                          | 07                       |
| 25                                      | 07    |       | 27    | 10 |    |        | 28                          | 02                       |
| 29                                      | 00    |       | 29    | 03 |    |        | 30                          | 21                       |

## SEISMOGRAPH RECORDS.

For the Month of November, 1934

FROM HELWAN OBSERVATORY, EGYPT.

 $\varphi = 29^{\circ} 51' N$  ,  $\lambda = 31^{\circ} 20' E$  ,  $h = 115$  m.Director M. R. M.

Seismograph Milne-Shaw recording E-W motion

Theoretical magnification = 250.

Period of undamped pendulum = 12<sup>s</sup>.0.

Times are expressed in Greenwich Civil Mean Time.

Govt. Press 7884 A. 1933-125 ex.

| DATE<br>193 <u>4</u> | PHASE                   | TIME<br>h. m. s.                                   | PERIOD<br>s. | AMPLITUDE<br>$A_E$<br>$\mu$ | REMARKS                                                                                         |
|----------------------|-------------------------|----------------------------------------------------|--------------|-----------------------------|-------------------------------------------------------------------------------------------------|
| <u>Nov. 4</u>        | ep<br>es<br>M<br>F      | 2 13 20<br>2 24 51<br>3 19 12<br>5.8h?             | ?<br>20      | $\pm 16$                    | There appears to be two earthquakes superposed as shown on the record. Lost in changing record. |
| <u>9</u>             | ip<br>is<br>M<br>F      | 13 42 52<br>13 44 13<br>13 44 21<br>14.3h          | very small   | $\pm 27$                    | Felt in Cairo.                                                                                  |
| <u>12</u>            | ip<br>pr<br>S<br>M<br>F | 7 22 07<br>7 24 35<br>7 25 55<br>7 27 45<br>9.0h   | 10           | $\pm 45$                    |                                                                                                 |
| <u>18</u>            | ep<br>S<br>M<br>F       | 3 27 43<br>3 32 55<br>3 45 36<br>4.7h.             | 11           | $\pm 6$                     | record confused with microseisms.                                                               |
| <u>18</u>            | ep<br>i<br>i<br>e<br>F  | 23 0 21<br>23 5 53<br>23 7 23<br>23 7 52<br>25.1h. |              |                             | No definite maximum                                                                             |
| <u>21</u>            | P<br>S<br>M<br>F        | 22 27 51<br>22 28 57<br>22 33 42<br>23.1h.         | 7            | $\pm 7$                     |                                                                                                 |
| <u>26</u>            | ip<br>S<br>F            | 12 21 30<br>12 31 43<br>13.6h.                     |              |                             |                                                                                                 |
| <u>27</u>            | ep<br>S                 | 6 27 32<br>6 37 54                                 |              |                             | Other details lost in changing the record.                                                      |

SEISMOGRAPH RECORDS.

For the Month of November, 1934

FROM HELWAN OBSERVATORY, EGYPT.

$\varphi = 29^{\circ} 51' N$  ,  $\lambda = 31^{\circ} 20' E$  ,  $h = 115 \text{ m.}$

Director M. H. M.

Seismograph Milne Shaw recording E—W motion.

Theoretical magnification = 250.

Period of undamped pendulum = 12<sup>s</sup>.0.

Times are expressed in Greenwich Civil Mean Time.

| DATE<br>193 <u>4</u> | PHASE.                                 | TIME. |        |       | PERIOD.<br>s. | AMPLITUDE<br>A <sub>E</sub> .<br>μ. | REMARKS.                                 |
|----------------------|----------------------------------------|-------|--------|-------|---------------|-------------------------------------|------------------------------------------|
|                      |                                        | h.    | m.     | s.    |               |                                     |                                          |
| November<br>30       | e                                      | 2     | 22     | 26    |               |                                     | Probably another quake<br>is superposed. |
|                      | p                                      | 2     | 23     | 22    |               |                                     |                                          |
|                      | ep <sub>1</sub>                        | 2     | 24     | 53    |               |                                     |                                          |
|                      | ep <sub>2</sub>                        | 2     | 20     | 59    |               |                                     |                                          |
|                      | S                                      | 2     | 24     | 54    | 20            | ± 20                                |                                          |
|                      | M                                      | 3     | 15     | 10    |               |                                     |                                          |
|                      | F                                      | 5.8h. |        |       |               |                                     |                                          |
|                      | Smaller tremors were also recorded at: |       |        |       |               |                                     |                                          |
|                      | D H                                    | D     | H      | D     | H             | D                                   | H                                        |
|                      | 2 16                                   | 2     | 22     | 3     | 13            | 4                                   | 7                                        |
|                      | 4 12                                   | 5     | 3      | 5     | 23            | 6                                   | 1                                        |
|                      | 7 14                                   | 9     | 4      | 10    | 9             | 12                                  | 17                                       |
|                      | 14 18                                  | 14    | 19     | 15    | 23            | 16                                  | 10                                       |
|                      | 16 14                                  | 16    | 9      | 18    | 14            | 19                                  | 8                                        |
|                      | 23 <sup>2</sup> 3                      | 24    | 13     | 27    | 01            | 27                                  | 2                                        |
|                      | 27 14                                  | 29    | 15.30m | Local |               | 30                                  | 12                                       |

SEISMOGRAPH RECORDS.

For the Month of December, 1934

FROM HELWAN OBSERVATORY, EGYPT.

$\phi = 29^{\circ} 51' N$  ,  $\lambda = 31^{\circ} 20' E$  ,  $h = 115 \text{ m.}$

Director M. R. M.

Seismograph Milne-Shaw recording E—W motion.

Theoretical magnification = 250.

Period of undamped pendulum = 12<sup>s</sup>.0.

Times are expressed in Greenwich Civil Mean Time.

| DATE<br>193 4.                          | PHASE.                        | TIME.                                                             | PERIOD.         | AMPLITUDE<br>A <sub>E</sub> . | REMARKS.                  |
|-----------------------------------------|-------------------------------|-------------------------------------------------------------------|-----------------|-------------------------------|---------------------------|
|                                         |                               | h. m. s.                                                          | s.              | μ.                            |                           |
| Dec. 4                                  | eP<br>i<br>i<br>S<br>M<br>F   | 17 43 20<br>17 49 28<br>17 50 04<br>17 53 20<br>18 29 57<br>19.3h | 22              | ± 34                          | Preceded by microseisms   |
| 15                                      | iP<br>Pr<br>S<br>Sr<br>M<br>F | 2 6 33<br>2 8 31<br>2 13 30<br>2 17 41<br>2 29 54<br>5.7h         | 18              | ± 190                         |                           |
| 15                                      | P<br>S<br>i<br>F              | 19 35 28<br>19 43 11<br>19 46 36<br>20.7h                         |                 |                               |                           |
| 31                                      | eP<br>S<br>L<br>M<br>F        | 19 4 54<br>19 16 43<br>19 20 33<br>19 50 38<br>22.7h              | ?<br><br><br>22 | ± 53                          | Confused with microseisms |
| Smaller tremors were also recorded at : |                               |                                                                   |                 |                               |                           |
|                                         | D H                           | D H                                                               | D H             | D H                           |                           |
|                                         | 1 12                          | 3 2                                                               | 5 22            | 7 11                          |                           |
|                                         | 9 11                          | 11 2                                                              | 12 9            | 14 2                          |                           |
|                                         | 14 21                         | 14 23                                                             | 15 10           | 17 16                         |                           |
|                                         | 22 13                         | 24 15                                                             | 25 0            | 25 6                          |                           |
|                                         | 28 4                          | 28 7                                                              | 30 14           |                               |                           |