

Double

SEISMOGRAPH RECORDS

August & Sept. 1939

From HELWAN OBSERVATORY, EGYPT.

Λ 29° 51' N. Φ 31° 20' E., h = 115m.

Director : Dr. M.R. Madwar

Seismograph Milne-shaw recording E-W motion

Theoretical magnification = 250

Period of undamped pendulum = 12.0

Times are expressed in Greenwich Civil Mean Time

Date 1939	Phase	Time			Period s	Amplitude A _E	Remarks.
		h	m	s			
August 1	i e F	16	08	24			
			18	45			
		16.6					
2	P PcP	00	58	32			
				45			
	i		59	32			
	i	1	01	06			
	PP			48			
	S		08	35			
	PS		09	10			
	i		13	25			
	F	5.5					
2	iP PP PPP	13	08	36			Dilatation
				58			
			09	06			
	i		10	27			
	i		11	00			Large impulse
	S		12	30			
	F	13.6					
3	PKP ₁ PKP ₂ PP	2	48	33			
				51			
			52	25			
	e		53	15			
	e		54	20			
	SKS		55	30			
	SKKS		59	15			
	SS	3	11	(58)			
	e		12	20			
	e		13	20			
	F	5.0					
3	e e e F	11	08	20			
				37			
			09	40			
		11.3					
3	iPn R _s 2P4S R _s 2P3S R _s 2P3S R _s S R _s F	12	35	13			Compression
			36	50			h = 25 Km.
			37	02			Δ = 1040 Km.
				45			
			38	07			
		13.7					

Double

Date 1939	Phase	Time	Period	Amplitude	Remarks.
		h m s	s	$\frac{A}{E}$	
August 18/19	I	22 57 10			
	S	23 01 06			
	SE				
	i	02 27			
	F	1.0			
/19	I	1 07 00			
	i	10 06			
	i				
	F	3.0			
21	e	6 53 24			Local (very weak)
/21	i	15 42 54			
	e	43 18			
	F	17.0			
/22	i	00 19 05			Dilatation
	i				
	e	22 24			
	II	27			
	SXS	29 24			
	S	30 00			
	IS	55			
	F	1.5			
/23	e	4 56 27			
	e	57 06			
	F	7.1			
/23	e	21 43 02			
	e	46 42			
	F	22.5			
/25	e	4 08 24			
	i	15 54			
	i	15 24			
	F	6.0			
	e	11 40 12			
	e	41 00			
	i	46 30			
	F	12.2			
/28	i	21 40 43			Compression
	e	41 12			
	e	44 37			
	S	45 27			
	e	47 09			
	L	49 00			
	F	22.4			
29	i	18 41 27			Very near
	i	42 00			
	i	15			
29	e	21 39 27			" "
	i	40 25			
/30	I	00 24 44			
	e	33 12			
	F	1.1			

Tremors were also recorded at :-

D	H	D	H	D	H	I	H	I	H
2	9	5	2	10	6	11	4	13	2
20	20, 21	21	20	22	2	23	17		

3

Date 1959	Phase	Time			Period s	Amplitude μ	Remarks.
		h	m	s			
August 8	eP	00	08	40			
	e		18	54			
	e		16	09			
	F	0.7					
9	eP	3	33	51			
	e		36	29			
	F	4.0					
9/10	iP	23	46	09			Compression
	(S)		48	00			
	e			15			
	e			36			
	F	0.3					
	i	6	25	00			
12	iP	2	26	27			" h=200Km. Δ=80°
	PcP			35			
	iP		27	20			
	sP			39			
	(iP)		29	20			
	i		30	09			
	e		31	05			
	S		36	00			
	(sS)		37	30			
	F	4.6					
12	iP	10	02	42			
	i		03	24			
	e		05	16			
	(SKS)		15	10			
	S			35			
	e		14	10			
	IS			45			
	F	11.5					
16	eP	9	40	24			
	i		42	05			
	i			48			
	(S)		43	05			
	F	10.1					
16	e	17	32	18			
	F	19.2					
18	eP	5	12	08			
	i			45			
	i		13	06			
	F	5.3					
18	e	12	00	09			
	i		01	12			
18	iPKI	22	55	22			Dilatation earthquake
	i			42			
	iP		38	24			
	SKI		39	09			
	ISKS		48	50			

Checar

2

Date 1939	Phase	Time			Period	Amplitude A_E	Remarks
Sept.		h	m	s	s	μ	
/ 2	iF i i F	9	18	09 43 40			Compression
		11.5					
/ 3	eF i i (S) F	7	56	17 27 39 18			
		9.0					
4	i L F	15	27	08 16			Near earthquake
		13.7					
/ 6	e F	11	39	48			
		12.2					
8	F e F	7	01	29 17			
		8.0					
/ 8	F i II e III i SKS S FS SS SSS G L M F	12	18	00 30 48 42 42 32 37 12 18 43 24 18 35 12	22	+62	
		16.0					
/ 12	eF i e F	12	26	06 30 11			
		14.3					
/ 14	e M F	9	11	18 36	15	+ 4	
		10.5					
15	eF F	12	08	10			
		14.3					
/ 15/16	iF II III i e e S e e F	23	18	52 05 34 38 25 36 51 07 36			Compression
		0.4					

A

Date 1939	Phase	Time			Period	Amplitude $\frac{A}{E}$ μ	Remarks.
		h	m	s			
Sept. 16	eP	5	23	21	s		
	e			30			
	FF			42			
	e	24		08			
	e			42			
	S	25		39			
	SS	26		10			
L			27				
L			41				
F	5.8						
19	iP	3	29	09	15	\pm 11	
	e			12			
	i			30			
	i	30		15			
	i			54			
	(S)	33		24			
	e	34		00			
	L	37		50			
M	41		33				
F	4.5						
/20	iP	00	22	16			Compression
	i			30			
	e	25		03			
	e	24		03			
	(S)			15			
F	1.2						
/20	e	7	22	06			
	e		28	04			
	e		41	30			
	F	9.8					
/21	iP	12	53	13			Dilatation
	e		54	21			
	i	13	00	42			
	F	13.5					
/22	iP	00	38	54	12	\pm 69	Compression
	FF		39	40			
	e		41	00			
	e			28			
	iS		43	54			
	M		50	54			
F	3.1						
22	e	15	10	36			
	e		14	28			
	F	13.4					
24	M	1	18				
	F	1.9					
25	i	13	57	07			
	i			33			
	i		58	36			
	F	14.1					
/25	P	15	41	24			
	e			41			
	e		49	48			
	M	16	10				
	F	17.0					

5

Doble

Date 1939	Phase	Time	Period	Amplitude A _E	Remarks
Sept. 28	e e F	h m s 13 23 57 24 18 13.6	s	μ	
30	e e F	23 36 39 38 24 23.9			

Tremors were also recorded at:-

D	H	D	H	D	H	D	H
4	17	11	15	18	11	23	12
24	8,19	25	19,22	28	15	30	3

.....0.....

6

Double

SEISMOGRAPH RECORDS

October & November, 1939

From
HELWAN OBSERVATORY, EGYPT.

29° 51' N, 31° 20' E, h= 115 m.

Director: Ir. M. R. Madwar

Seismograph Milne-shaw recording E-W motion
Theoretical magnification = 250
Period of undamped pendulum = 12.0
Times are expressed in Greenwich Civil Mean Time

Date 1939	Phase	Time			Period s.	Amplitude A _E	Remarks
		h.	m.	s.			
October 2	M F	19	34				
				19.9			
3	eP i e F	14	00	06 21 48			
				14.4			
6	e e	2	56	51 40			
7	eP e FP SKYS FS IFS F	20 21	56 00	45 51 22 24 02 02 23.2			
8	i i F	9	10	16 48			Near earthquake
				9.3			
9	i e e M F	2	41	40 10 30			
				3.38 5.0			
9	e e e F	14	51	46 08 30			
				15.0			
10	e e e F	9	50	37 09 33			
				10.1			
10	e F	11	12	09			
				11.5			
10	i i i i F	15	13	16 28 42 22			
				14 15.4			

7

Double

Date 1939	Phase	Time			Period s.	Amplitude A_E μ	Remarks
		h.	m.	s.			
10	iP IcP e e II PTP (SKS) S PS SS M F	18	44	40 49 15 03 05 55 05 20 05 10 35	20	+ 40	Dilatation
12	M F	9	49				
12	e e F	12	39	47 24			
13	eP i e F	20	31	30 44 17			
15	eP e e F	4	46	13 41 40			Confused with microseisms
17	e e F	9	21	54 09			
19	iPn i Sp S* Sg F	21	35	09 06 56 42 15			Dilatation $\Delta = 9^{\circ}.8$
20	Pn Sn F	17	14	45 57			$\Delta = 6^{\circ}.2$
20	e e F	20	31	00 06			
22	eP e F	14	52	09 30			very weak
22	M F	23	23				
26	P PP e S F	1	07	03 15 23 52			

8

Double

Date 1939	Phase	Time			Period s.	Amplitude $\frac{A_E}{\mu}$	Remarks
		h.	m.	s.			
30	eF	2	48	00	10	± 2	
	IF			33			
	e		49	27			
	S		52	35			
	M		57	15			
	F	3.2					
30	iF	13	32	15			Dilatation h= 150 Km. $\Delta = 100^\circ$
	(sF <i>c</i> F)			35			
	(rF)			54			
	SI		33	09			
	<u>iii</u>		36	06			
	irII			42			
	SKS		42	44			
	S		43	30			
	(ScS)			45			
	<u>sS</u>		44	40			
	IIS		46	25			
	F	15.5					
30/31	e	23	19	28			
	F	0.4					

Tremors were also recorded at:-

1	E	I	H	D	H
3	10	4	12	7	8
8	1	16	13	17	earthquake lost in changing the paper
18	00	26	23	50	18

9

Double

Date 1939	Phase	Time			Period s.	Amplitude A_E	Remarks
		h.	m.	s.			
November							
/ 4	iF i PF e i S F	10	19	00 15 39 20 21 23 (48)			Dilatation
		12.3					
4	e e i F	12	39	40 50 44 36			
		13.1					
/ 5	P H S M F	2	12	50 15 15 21 37 38 52	15	+ 16	Preceded by microseisms
		3.4					
/ 7	e e F	4	05	23 15 18			Very weak
		5.1					
/ 8	P S e SS L M F	17	26	20 30 33 00 30 33 50 37 22	10	+ 10	Preceded by microseisms
		18.6					
/ 10	e e e e F	20	40	57 46 34 47 24 48 06			
		22.1					
/ 17	P i e F	18	58	21 28 47			Very weak
		19	00				
/ 18	e e F	00	33	00 08 34			" "
		00	34				
/ 18	iP i PF SKS S e F	1	45	28 52 48 51 55 48 56 10 57 18			Dilatation
		3.0					
/ 21	P PP i i S e IcF F	8	51	50 08 52 05 53 05 54 39 55 12 56 12 33			
		10.0					

10

Double

Date 1939	Phase	Time			Period	Amplitude A _E	Remarks
		h.	m.	s.			
21	iF	11	08	09		<i>μ</i>	Dilatation Δ = 46° h = 200Km.
	iP			53			
	sF		09	18			
	IcF			36			
	FF		10	00			
	FFF			54			
	i		11	30			
	i		13	13			
	S		14	42			
	sS		16	00			
	F	13.0					
24/25	eP	23	41	38			
	e		42	21			
	e		43	24			
	e		48	30			
	F	1.6					
26	eF	7	29	54			
	e		30	03			
	e		31	05			
28	iP	14	25	57			Compression
	FF		26	15			
	e			42			
	e		27	00			
	e		28	54			
	S		29	20			
	PcF		30	45			
	M		34	12			
F	15.6			12	+ 27		

Tremors were also recorded at :-

F	E	I	E	L	H
1	11	18	8	27	12

11