

No. 1.

from Jan 10th, to Feb 1st, 19 1924.

# OSAKA JAPAN.

## SEISMIC BULLETIN

of the Osaka Meteorological Observatory of Japan.

$\phi=34^{\circ} 39' N.$   $\lambda=135^{\circ} 26' E.$  Gr.  $h=3.$  om Underground:

Instrument: Omori Horizontal Pendulum.	$T_0$	$s$	$\frac{r}{T_0^2}$	V
A <sub>N</sub> :	30			20
A <sub>E</sub> :	30			20
A <sub>Z</sub> :				

No.	Date	Phase	Time			Period s	Amplitude			$\Delta$ k.m.	Remarks
			h	m	s		A <sub>N</sub> $\mu$	A <sub>E</sub> $\mu$	A <sub>Z</sub> $\mu$		
1	Jan 10	P e	23	47	21				430		
		L		48	19						
		MN		49	29	4.5	-175				
	II	FN	0	5	41						
2	14	P	20	51	13				356		
		L		52	1						
		ME		52	24	1.8		-35500			
		MN		52	31	2.1	+ 25000				
		F		.	.						
3	14	P		.	.				-		
		L	21	8	22						
		MN		9	16	1.0	+ 479				
		FN		23	20						
4	14	P	21	20	53				334		
		L		21	38						
		MN		21	48	1.1	+ 17				
		FN		23	56						
5	15	P	0	8	44				356		
		L		9	32						
		MN		10	6	2.5	-100				
		ME		9	46	1.4		-88			
		FE		21	5						
		FN		17	13						
6	15	P	6	49	24				304		
		L		50	5						
		ME		50	30	1.0		-18			
		MN		50	25	1.1	+ 25				
		FE		53	29						
		FN		55	45						
7	15	P	19	25	22				416		
		L		26	18						
		ME		26	31	7.0		+ 148			
		MN		26	34	6.0	+ 295				
		FE		43	31						
		FN		44	12						
8	16	P	2	148	52				765	21h 48m 52s	
		L		57	57						
		ME		58	38	5.1		+ 33			
		MN		57	59	7.2	-50				
		FE	22	25	36						
		FN		31	28						
9	19	P e	6	47	35				237		
		L		48	7						
		ME		49	4	0.9		-29			
		MN		48	21	1.0	+ 26				
		FE		52	33						
		FN		52	56						
10	20	P	15	34	37				334		
		L		35	22						
		ME		36	0	1.3		+ 50			



No. I

from

to

19 24

# OSAKA JAPAN.

## SEISMIC BULLETIN

of the Osaka Meteorological Observatory of Japan.

$\varphi=34^{\circ} 39' N.$      $\lambda=135^{\circ} 26' E. Gr.$      $h=3. om$     Underground:

Instrument: Omori Horizontal Pendulum.	T.	$\epsilon$	$\frac{r}{Tc^2}$	V
A <sub>N</sub> :	30			20
A <sub>E</sub> :	30			20
A <sub>Z</sub> :				

No.	Date	Phase	Time			Period s	Amplitude			$\Delta$ k.m.	Remarks
			h	m	s		A <sub>N</sub> $\mu$	A <sub>E</sub> $\mu$	A <sub>Z</sub> $\mu$		
18	Feb 1	P	22	26	43				445		
		L		27	43						
		ME		28	7	3.4		- 425			
		MN		28	1	2.4	+ 550				
		FE		53	33						
19	5	FN		48	45				74		
		P	23	28	47						
		L		28	57						
		ME		28	58	0.5		- 70			
		MN		28	59	0.5	-43				
20	10	FE		32	44				22		
		FN		33	24						
		P	9	25	47						
		L		25	50						
		ME		25	50	0.8		- 50			
21	11	MN		25	50	1.0	-75		341		
		FE		28	3						
		FN		27	34						
		P	17	50	23						
		L		51	9						
22	20	ME		51	41	2.8		+ 17	89		
		MN		51	48	2.8	+ 35				
		FE		53	50						
		FN		53	17						
		P	11	0	58						
23	21	L		1	10				97		
		ME		1	39	3.8		- 50			
		MN		1	15	3.6	+ 38				
		FE		6	12						
		FN		6	41						
24	22	P	22	43	52				200		
		L		44	5						
		ME		44	38		+ 68				
		MN		45	14	2.2	- 52				
		FE		52	24						
25	March 4	FN		52	40				-		
		P	1	44	7						
		L		44	34						
		ME		45	26	2.0		+ 29			
		MN		45	11	2.0	+ 38				
26	5	FE		47	30				445		
		FN		47	24						
		P	10	37	34						
		L	11	13	7						
		ME		16	44	23.0		+ 25			
26	5	MN		34	44	19.2	+ 25		-		
		FE	12	34	44	<del>19.2</del>					
		FN		0	32						
		P	3	8	19						
		L		9	19						
26	5	ME		10	14	1.8		-67	-		



No.

from ..... to ..... 19

# OSAKA JAPAN.

## SEISMIC BULLETIN

of the Osaka Meteorological Observatory of Japan.

$\phi = 34^\circ 39' N.$      $\lambda = 135^\circ 26' E.$  Gr.     $h = 3.$  om    Underground:

Instrument: Omori Horizontal Pendulum.

	T.	$\epsilon$	$\frac{r}{T^2}$	V
A <sub>N</sub> :	30			20
A <sub>E</sub> :	30			20
A <sub>Z</sub> :				

No.	Date	Phase	Time			Period s	Amplitude			$\Delta$ k.m.	Remarks
			h	m	s		A <sub>N</sub> $\mu$	A <sub>E</sub> $\mu$	A <sub>Z</sub> $\mu$		
11	21	MN	36	11		0.8	+ 42			2350	
		FE	40	22							
		FN	39	53							
		P	1	57	56						
		L	2	1	58						
		ME	4	2		5.5		+ 150			
12	22	MN	4	4		6.3	-200			490	
		FE	36	17							
		FN	36	53							
		P	11	41	31						
		L	42	37							
		ME	42	45		4.8		-53			
13	27	MN	43	18		7.5	+ 63			438	
		FE	59	23							
		FN	51	47							
		P	4	26	58						
		L	27	57							
		ME	28	11		2.3		+ 38			
14	30	MN	28	24		2.3	+ 47			378	
		FE	34	51							
		FN	34	51							
		P	4	52	58						
		L	53	49							
		ME	54	24		2.3		+ 113			
15	30	ME 2	57	59		6.9		-115		237	
		MN	54	40		2.9	-138				
		MN 2	57	45		3.8	+120				
		FE	5	26	13						
		FN	20	11							
		P	13	8	41						
16	30	L	9	13						297	
		MN		54		1.0	-9				
		FN	14	14							
17	Feb 1	P	13	37	55					275	
		L	38	35							
		MN	39	15		1.5	-17				
		N	45	48							
		P	6	25	54						
18	1	L	26	31						445	
		ME	26	54		2.3		+ 33			
		MN	27	8		3.7	+ 50				
		FE	30	25							
		FN	32	9							
		P	22	26	43						
18	1	L	27	43						445	
		ME	28	7		3.4		-425			
		MN	28	1		2.4	+ 550				
		FE	53	33							
		FN	48	45							



from ..... to ..... 19.....

# OSAKA JAPAN.

## SEISMIC BULLETIN

of the Osaka Meteorological Observatory of Japan.

39' N.  $\lambda=135^{\circ} 26'$  E. Gr. h=3.0 m Underground:

Instrument: Ômori Horizontal Pendulum.	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A N:	30			20
A E:	30			20
A Z:				

Phase	Time			Period s	Amplitude			$\Delta$ k.m.	Remarks
	h	m	s		A <sub>N</sub> $\mu$	A <sub>E</sub> $\mu$	A <sub>Z</sub> $\mu$		
P	19	50	28				1390		
L		53	13						
Me		55	15	108		-1125			
Mn		54	7	133	-1250				
Fe	21	41	59						
Fn		43	9						
P	22	16	10				1580		
L		19	12						
Me		22	45	165		-100			
Mn		19	56	184	-75				
Fe		44	36						
Fn		45	29						
P	I	54	49				497		
L		55	56						
Me		56	24	55		+28			
Mn		56	8	92	-25				
Fe	2	I	59						
Fn		2	13						
P	10	10	53				2280		
S		14	47						
L		18	46						
Me		21	0	69		+13			
Mn		20	6	57	+13				
Fe		34	28						
Fn		32	58						
P	17	12	45				586		
L		14	4						
Me		14	47	23		-280			
Mn		14	22	21	-388				
Fe		42	37						
Fn		41	12						
P	18	23	7				2350		
L		26	56						
Mn		27	54	138	+75				
Fn	19	0	56						
P	14	20	22				-		
L		-							
Me		34	59	160		+15			
Mn		48	4	192	-25				
Fe	15	10	5						
Fn		20	36						
P	7	14	35				334		
L		15	22						
Me		15	48	38		+25			
Mn		15	48	20	+25				
Fe		20	22						
Fn		22	28						



from ..... to ..... 19.....

# OSAKA JAPAN.

## SEISMIC BULLETIN

of the Osaka Meteorological Observatory of Japan.

$\phi=34^{\circ} 39' N.$      $\lambda=135^{\circ} 26' E.$  Gr.     $h=3.0 m$     Underground:

Instrument: Omori Horizontal Pendulum.

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>N</sub> :	30			20
A <sub>E</sub> :	30			20
A <sub>Z</sub> :				

Date	Phase	Time			Period s	Amplitude			$\Delta$ k.m.	Remarks
		h	m	s		A <sub>N</sub> $\mu$	A <sub>E</sub> $\mu$	A <sub>Z</sub> $\mu$		
Feb. 13	P	14	1	16				2400		
	L		5	46						
	Me		11	52	58		- 25			
	Mn		12	4	44	+ 12				
	Fe		36	22						
14	Fn		37	15				468		
	P	0	43	2						
	L		44	5						
	Me		44	48	14		- 38			
	Mn		44	21	12	- 30				
15	Fe		51	2						
	Fn		49	19				45		
	P	7	48	32						
	L		48	38						
	Me		49	8	10		- 155			
20	Mn		49	1	10	+ 100				
	Fe		59	53						
	Fn		59	5						
	P	1	6	4				1650		
	L		9	10						
23	Me		12	17	125		- 1425			
	Mn		9	11	130	+ 1525				
	Fe	2	28	25						
	Fn		27	37						
	P	0	10	43				5000		
March 1	L		17	29						
	Me		30	43	120		+ 45			
	Mn		26	11	216	+ 100				
	Fe	1	0	4						
	Fn	0	53	20						
5	Pe	12	19	13						
	L		33	27						
	Me		40	10	147		- 20			
	Mn		38	29	154	+ 23				
	Fe	13	23	36						
9	Fn		22	58						
	Pe	10	3	11						
	L		3	32						
	Mn		3	46	20	+ 30				
	Fn		7	59						
10	Pe	19	51	43						
	L		52	23						
	Me		52	43	18		- 67			
	Mn		53	1	18	+ 42				
	Fe		58	21						
10	Fn		58	0						
	P	1	35	52				534		
	L		37	4						
	Me		37	38	24		- 32			
	Fe		42	57						



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from ..... to ..... 19.....

# OSAKA JAPAN.

## SEISMIC BULLETIN

of the Osaka Meteorological Observatory of Japan.

$\phi=34^{\circ} 39' N.$      $\lambda=135^{\circ} 26' E.$  Gr.     $h=3.$  om    Underground:

Instrument: Omori Horizontal Pendulum.	T.	$\epsilon$	$\frac{r}{T^2}$	V
A <sub>N</sub> :	30			20
A <sub>E</sub> :	30			20
A <sub>Z</sub> :				

No.	Date	Phase	Time			Period s	Amplitude			$\Delta$ k.m.	Remarks
			h	m	s		A <sub>N</sub> $\mu$	A <sub>E</sub> $\mu$	A <sub>Z</sub> $\mu$		
27	5	MN	3	10	7	1.8	-83			4000	
		FE		15	48						
		FN		16	25						
		P	4	33	2						
		L		38	48						
28	II	ME		43	3	9.2		-55		2200	
		MN		42	37	5.5	-53				
		FE	5	1	10						
		FN		5	50						
		P	14	42	32						
29	II	L		46	20					6	
		ME		47	22	5.8		+ 30			
		MN		46	43	4.8	+ 28				
		FE	15	4	28						
		FN	14	59	28						
30	I2	P	18	10	8					-	
		L		10	9						
		MN		10	9	0.8	+ 10				
		FN		10	55						
		P	II	7	4						
31	I2	L		8	35					453	
		ME		13	20	5.5		-37			
		MN		14	38	5.8	+ 50				
		FE		32	4						
		FN		24	24						
32	I3	P	23	5	26					-	
		L		6	27						
		ME		7	11	3.7		+ 102			
		MN		7	14	3.6	+ 80				
		FE		20	42						
33	I5	FN		15	37					1720	
		P	10	38	11						
		L		-							
		FE		48	23						
		FN		48	14						
34	20	P	10	35	2					341	
		L		38	14						
		ME		39	4	13.3		- 1425			
		MN		40	33	13.0	+ 700				
		FE		54	16						
35	23	FN		44	38					356	
		P	10	53	8						
		L		53	54						
		ME		54	24	1.2		+ 30			
		MN		54	40	2.1	-42				
35	23	FE		58	24					-	
		FN	11	4	10						
		P	13	47	48						
		L		48	36						
		ME		49	48	1.8		-71			
35	23	MN		49	57	2.3	+ 100				
		FE		54	21						



No. 3

from ..... to ..... 19.....

# OSAKA JAPAN.

## SEISMIC BULLETIN

of the Osaka Meteorological Observatory of Japan.

$\phi=34^{\circ} 39' N.$      $\lambda=135^{\circ} 26' E.$  Gr.     $h=3.$  om    Underground:

Instrument: Omori Horizontal Pendulum.

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>N</sub> :	30			20
A <sub>E</sub> :	30			20
A <sub>Z</sub> :				

No.	Date	Phase	Time			Period s	Amplitude			$\Delta$ k.m.	Remarks
			h	m	s		A <sub>N</sub> $\mu$	A <sub>E</sub> $\mu$	A <sub>Z</sub> $\mu$		
36	24	FN		54	48					289	
		P	0	52	42						
		L		53	21						
		ME		54	34	2.4		- 50			
		MN		54	13	2.4	+ 30				
37	25	FE	I	1	43					1000	
		FN		2	14						
		P	21	8	48						
		L		11	1						
		ME		11	48	2.5		-25			
38	28	MN	21	11	48	2.5	+ 23			237	
		FE		17	38						
		FN		18	20						
		P	13	55	59						
		L		56	31						
39	30	MN		58	28	2.4	-54			-	
		FN	14	9	22						
		P	0	12	58						
		F	I	5	13						
		40	31	P	16	8	47				
L		8		54							
ME		10		35	2.4		+ 52				
MN		9		23	1.9	+ 48					
FE		14		50							
41	31	FN		14	4					6	
		P	20	11	30						
		L		11	31						
		ME		11	31	0.6		+ 25			
		MN		11	31	0.6	+ 8				
42	April I	F		12	18					-	
		P	7	6	22						
43	3	L		-						401	
		F		10	59						
		P	2	31	42						
		L		32	36						
		ME		33	20	2.4		+ 178			
		MN		33	23	2.3	-150				
		FE		41	11						
		FN		44	<del>34</del> 53						



No.

from April 10, to April 29, 1924.

# OSAKA JAPAN.

## SEISMIC BULLETIN

of the Osaka Meteorological Observatory of Japan.

$\phi = 34^{\circ} 39' N.$      $\lambda = 135^{\circ} 26' E.$  Gr.     $h = 3.$  om    Underground:

Instrument: Omori Horizontal Pendulum.

	$T_p$	$\sigma$	$\frac{r}{T_p^2}$	V
A <sub>N</sub> :	30			20
A <sub>E</sub> :	30			20
A <sub>Z</sub> :				

No.	Date	Phase	Time			Period s	Amplitude			$\Delta$ k.m.	Remarks
			h	m	s		A <sub>N</sub> μ	A <sub>E</sub> μ	A <sub>Z</sub> μ		
44	April 10	P	14	58	57					445	
		L		59	57						
		ME	15	1	0	2.1		-46			
		MN		1	2	2.3	- 58				
		FE		6	44						
45	II	FN		10	23					423	9h 25m 32s
		P	9	25	32						
		L		26	29						
		ME		26	47	2.2		+ 35			
		MN		27	7	2.2	+ 25				
46	I2	FE		32	1					74	
		FN		31	3						
		P	I3	1	30						
		L		1	40						
		ME		2	16	2.4		+ 21			
47	I2	MN		1	52	2.4	+ 17			267	
		FE		7	6						
		FN		7	30						
		P	I9	9	12						
		L		9	48						
48	I3	ME		10	33	2.4		-100		4000	
		MN		10	38	2.4	-92				
		FE		18	21						
		FN		18	12						
		P	I3	55	24						
49	I4	L	I4	1	12					3500	
		MN		3	20	4.3	+ 50				
		FN		21	44						
		P	I6	26	42						
		L		31	57						
50	I5	ME		35	38	14.4		+ 5675		3720	
		MN		35	5	19.2	+ 5550				
		FE	I8	43	36						
		FN	I9	2	57						
		P	I21	6	41						
51	I9	L		12	12					393	( 15m 47s
		MN		17	7	12.8		-21			
		FN	I23	0	5						
		P	I16	14	33						
		L		15	26						
52	21	ME		18	47					-	
		MN		16	19	1.4	+ 25				
		FE		20	45						
		FN		22	53						
		eP	I16	18	2						
		L		22	36					-	
		ME		27	10	4.8		-13			
		FE		48	7						





from \_\_\_\_\_ to \_\_\_\_\_ 19

# OSAKA JAPAN.

## SEISMIC BULLETIN

of the Osaka Meteorological Observatory of Japan.

$\phi = 34^{\circ} 39' N.$      $\lambda = 135^{\circ} 26' E.$  Gr.     $h = 3.$  om    Underground:

Instrument: Omori Horizontal Pendulum.

	$T_c$	$\varepsilon$	$\frac{r}{T_c^2}$	V
A N :	30			20
A E :	30			20
A Z :				

Date	Phase	Time			Period s	Amplitude			$\Delta$ k.m.	Remarks
		h	m	s		A <sub>N</sub> $\mu$	A <sub>E</sub> $\mu$	A <sub>Z</sub> $\mu$		
April 21	eP	20	22	41	4.8		- 15		-	
	L		26	58						
	ME		29	41						
25	FE		44	4	12.5 14.4	-125	-125		972	
	P	18	7	20						
	L		9	31						
	ME		10	7						
	MN		10	37						
	FE		56	35						
29	FN		41	14	19.2 17.6	-23	- 33		4042	
	P	20	57	50						
	S	21	2	5 0						
	L		6	18						
	ME		10	33						
	MN		11	6						
	FE		37	53						
	FN		37	51						





No.

from May 1st, to May 31st, 1924.

# OSAKA JAPAN.

## SEISMIC BULLETIN

of the Osaka Meteorological Observatory of Japan.

$\phi=34^{\circ} 39' N.$      $\lambda=135^{\circ} 26' E.$  Gr.     $h=3.0$  m    Underground:

Instrument: Omori Horizontal Pendulum.	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>N</sub> :	30			20
A <sub>E</sub> :	30			20
A <sub>Z</sub> :				

No.	Date	Phase	Time			Period s	Amplitude			$\Delta$ k.m.	Remarks
			h	m	s		A <sub>N</sub> $\mu$	A <sub>E</sub> $\mu$	A <sub>Z</sub> $\mu$		
56	May 1st,	P	20	11	54				7600		
		L	20	58							
		ME	25	46	7.2		-25				
		MN	22	46	4.6	+ 13					
		FE	51	34							
57	4	FN	21	0	21				2750		
		P	17	2	15						
		S	6	44							
		L	10	48							
		ME	13	19	14.4		+ 125				
58	6	MN	15	55	7.9	- 75			267		
		FE	18	8	46						
		FN	8	28							
		P	12	14	47						
		L	15	23							
59	6	ME	15	43	1.9		-21		2700		
		MN	16	3	1.9	+ 30					
		FE	19	44							
		FN	20	24							
		P	16	14	43						
60	10	L	19	6					4580		
		ME	20	17	12.0		-213				
		MN	21	19	16.8	+ 425					
		FE	17	39	15						
		FN	34	44							
61	11	P	3	20	14				764		
		L	27	4							
		ME	28	18	4.6		+ 75				
		MN	29	25	6.9	+ 100					
		FE	56	50							
62	16	FN	50	46					2850		
		P	15	54	48						
		L	56	31							
		ME	57	49	5.3		+ 125				
		MN	57	29	7.2	-175					
63	16	FE	16	37	30				7020		
		FN	20	50							
		P	12	56	52						
		L	13	1	28						
		ME	5	33	11.5		-20				
63	16	MN	4	43	8.8	+ 25			7020		
		F	.								
		P	13	18	12						
		L	26	49							
		ME	31	21	9.6		-15				
63	16	ME	29	33	5.3	+ 14			7020		
		FE	14	1	21						
		FN	0	38							



No.

from ..... to ..... 19

# OSAKA JAPAN.

## SEISMIC BULLETIN

of the Osaka Meteorological Observatory of Japan.

$\phi = 34^{\circ} 39' N.$      $\lambda = 135^{\circ} 26' E. Gr.$      $h = 3.0 m$     Underground:

Instrument: Omori Horizontal Pendulum.	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>N</sub> :	30			20
A <sub>E</sub> :	30			20
A <sub>Z</sub> :				

No.	Date	Phase	Time h m s	Period s	Amplitude			$\Delta$ k.m.	Remarks
					A <sub>N</sub> $\mu$	A <sub>E</sub> $\mu$	A <sub>Z</sub> $\mu$		
64	May 17	P	5 19 56					2490	
		L	24 7						
		ME	37 28	8.3		+ 25			
		MN	39 1	9.6	+ 33				
		FE	6 29 7						
65	18	FN	22 52					668	
		P	14 20 37						
		L	22 7						
		ME	25 42	4.4		+ 50			
		MN	23 19	4.8	+ 15				
66	22	FE	40 53					764	
		FN	35 19						
		P	18 12 6						
		L	13 49						
		ME	15 1	4.3		+ 70			
67	23	MN	15 45	2.9	-65			1820	
		FE	32 55						
		FN	31 57						
		P	14 39 1						
		L	41 43						
68	24	ME	43 58	4.8		+ 75		3250	
		MN	41 49	7.2	+ 50				
		FE	15 8 25						
		FN	2 33						
		P	2 23 23						
69	25	L	28 22					408	
		ME	32 23	9.6		+ 15			
		MN	33 8	4.3	+ 21				
		FE	3 0 59						
		FN	2 45						
70	25	P	3 10 46					2020	
		L	11 41						
		ME	15 47	2.5		-50			
		MN	18 <sup>2</sup> 38 <sup>7</sup>						
		FN	18 52						
71	27							5250	
		P	14 1 32						
		L	5 13						
		ME	6 18	4.8		-25			
		MN	6 2 1	5.8	+ 25				
72	28	FE	15 59					1400	
		FN	14 12						
		P	2 32 55						
		L	39 56						
		ME	41 56	6.4		-20			
72	28	MN	41 41	6.9	+ 15			1400	
		FE	3 0 22						
		FN	2 56 57						
72	28	P	9 55 30					1400	
		L	58 15						

*FE 18m 38s*



No.

from ..... to ..... 19

# OSAKA JAPAN.

## SEISMIC BULLETIN

of the Osaka Meteorological Observatory of Japan.

$\varphi=34^{\circ} 39' N.$      $\lambda=135^{\circ} 26' E.$  Gr.     $h=3.0 m$     Underground:

Instrument: Omori Horizontal Pendulum.

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>N</sub> :	30			20
A <sub>E</sub> :	30			20
A <sub>Z</sub> :				

No.	Date	Phase	Time			Period s	Amplitude			$\Delta$ k.m.	Remarks
			h	m	s		A <sub>N</sub> $\mu$	A <sub>E</sub> $\mu$	A <sub>Z</sub> $\mu$		
73	May 30	ME		58	27	5.1		- 625		386	
		MN		59	26	4.6	+ 488				
		FE	10	36	15						
		FN		29	22						
		P	0	44	56						
		L		45	48						
		ME		48	40	5.0		- 48			
74	31	MN		47	19	3.8	+ 85			542	
		FE	I	10	18						
		FN		7	30						
		P	12	4	I						
		L		5	14						
		ME		7	11	9.6		+ 613			
		MN		6	56	2.9	+ 700				
75	31	P	12	29	10					490	
		L		30	16						
		ME		31	10	5.1		+ 325			
		MN		30	56	3.5	+ 625				
		FE	13	33	29						
		FN		9	11						



from

to

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# OSAKA JAPAN.

## SEISMIC BULLETIN

of the Osaka Meteorological Observatory of Japan.

$\phi = 34^{\circ} 39' N.$

$\lambda = 135^{\circ} 26' E.$

Gr. h = 3. om

Underground:

Instrument: Omori Horizontal Pendulum.

	$T_c$	$\epsilon$	$\frac{r}{T_c^2}$	V
A <sub>N</sub> :	30			20
A <sub>E</sub> :	30			20
A <sub>Z</sub> :				

Date	Phase	Time h m s	Period s	Amplitude			$\Delta$ k.m.	Remarks
				A <sub>N</sub> $\mu$	A <sub>E</sub> $\mu$	A <sub>Z</sub> $\mu$		
June 1	P	15 41 36					386	
	L	42 28						
	ME	43 41	2.3		+ 20			
	MN	42 57	3.8	-25				
	FE	51 30						
3	FN	53 34						
	P	2 42 36					312	
	L	43 18						
	ME	43 40	1.9		-150			
	MN	44 1	2.4	-150				
7	FE	57 18						
	FN	3 0 20						
	P	16 49 58					430	
	L	50 56						
	ME	52 16	8.3		- 25			
9	MN	51 31	7.2	-65				
	FE	17 12 57						
	FN	17 42						
	P	7 45 3					297	
	L	45 43						
9	ME	46 9	2.2		+ 20			
	MN	45 53	2.4	+ 20				
	FE	53 50						
	FN	53 50						
	P	19 49 53					1940	
10	L	53 22						
	MN	54 44	5.2	-51				
	FN	20 30 20						
	P	18 21 46						
	L	21 53						
22	ME	22 1	1.2		+ 45			
	MN	21 53	1.2	+ 65				
	FE	30 24						
	FN	27 45						
	P	13 25 40					876	
26	L	27 38						
	ME	28 34	14.4		+ 88			
	MN	27 53	15.4	+ 125				
	FE	55 13						
	FN	57 34						
26	P	1 50 45					5287	
	S	55 35						
	L	2 2 8						
	ME	8 53	12.0		+ 350			
	MN	8 50	12.0	+ 813				
26	FE	4 38 45						
	FN	27 16						
	P	3 29 22					364	
	L	30 11						
	ME	30 35	2.8		+ 58			
MN	30 48	2.8	+ 54					



No.

from ..... to ..... 19 24

# OSAKA JAPAN.

## SEISMIC BULLETIN

of the Osaka Meteorological Observatory of Japan.

$\phi = 34^{\circ} 39' N.$      $\lambda = 135^{\circ} 26' E. Gr.$      $h = 3. om$     Underground:

Instrument: Omori Horizontal Pendulum.	T.	$\epsilon$	$\frac{r}{T^2}$	V
A <sub>N</sub> :	30			20
A <sub>E</sub> :	30			20
A <sub>Z</sub> :				

No.	Date	Phase	Time			Period s	Amplitude			$\Delta$ k.m.	Remarks
			h	m	s		A <sub>N</sub> $\mu$	A <sub>E</sub> $\mu$	A <sub>Z</sub> $\mu$		
85	30	FE		38	50					3500	
		FN		39	6						
		P	9	7	10						
		L		12	26						
		ME		15	12	4.4		+ 25			
86	30	MN		13	9	4.8	+ 38			1220	
		FE		30	39						
		FN		29	28						
		P	15	47	32						
		L		50	4						
87	July 1	ME		52	12	14.4		+ 1550		104	
		MN		52	40	13.9	+ 1563				
		FE	18	4	49						
		FN	17	55	25						
		P	12	33	55						
88	3	L		34	9	1.9	+ 10			5599	
		MN		34	55						
		FN		38	48						
		P	4	48	7						
		S		54	14						
89	3	L	5	0	33					349	
		ME		3	33	12.0		- 975			
		MN		3	40	12.0	+ 2750				
		FE	6	27	50						
		FN		26	48						
90	5	P	21	32	45					275	
		L		33	32						
		ME		33	47	1.9		- 33			
		MN		33	32	2.6	- 38				
		FE		38	34						
91	5	FN		34	13					193	
		P	10	31	35						
		L		32	12						
		ME		32	32	1.5		- 30			
		MN		32	32	0.7	+ 25				
92	5	F		37	7					252	
		P	18	32	43						
		L		33	9						
		ME		33	26	2.5		- 21			
		MN		33	21	2.5	+ 21				
93	5	F		39	23					1050	
		P	20	42	12						
		L		42	46						
		ME		43	3	1.4		- 10			
		MN		42	55						
93	5	P	22	54	10					1050	
		L		56	25						
		ME		56	54	4.8		- 120 (-120)			
		MN		56	40	7.2	+ 188				
		FE	23	41	4						
FN		27	54								



No.

from \_\_\_\_\_ to \_\_\_\_\_ 19 <sup>24</sup>

# OSAKA JAPAN.

## SEISMIC BULLETIN

of the Osaka Meteorological Observatory of Japan.

$\phi=34^{\circ} 39' N.$      $\lambda=135^{\circ} 26' E. Gr.$      $h=3.0 m$     Underground:

Instrument: Ōmori Horizontal Pendulum.	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>N</sub> :	30			20
A <sub>E</sub> :	30			20
A <sub>Z</sub> :				

No.	Date	Phase	Time			Period s	Amplitude			$\Delta$ k.m.	Remarks
			h	m	s		A <sub>N</sub> $\mu$	A <sub>E</sub> $\mu$	A <sub>Z</sub> $\mu$		
86	June 30	P	15	47	38				1220		
		L		50	04						
		Me		52	12	144		+1550			
		Mn		52	40	139	+1563				
		Fe	18	4	49						
		Fn	17	55	25						
87	July 2	P	12	33	48				156	Tromometer mag=120	
		L		34	9						
		Mn		34	55	18	+ 10				
		Fn		38	48						
88	3	P	4	48	7				4380		
		S		54	14						
		L	5	0	33						
		Me		3	33	120		- 975			
		Mn		3	40	120	+ 2750				
		Fe	6	27	50						
		Fn		26	48						
89	3	P	21	32	45				349		
		L		33	32						
		Me		33	47	19		- 33			
		Mn		33	32	26	- 38				
		Fe		38	34						
		Fn		34	13						
90	5	P	10	31	35				275		
		L		32	12						
		Me		32	32	15		- 30			
		Mn		32	32	07	+ 25				
		Fe		37	7						
		Fn		37	7						
91	5	P	18	32	43				193		
		L		33	9						
		Me		33	26	25		- 21			
		Mn		33	21	25	+ 21				
		Fe		39	23						
		Fn		39	23						
92	5	P	20	41	30				564		
		L		42	46						
		Me		43	3	14		- 10			
		Mn		42	55	19	+ 17				
		Fe		46	15						
		Fn		46	15						
93	5	P	22	54	10				1002		
		L		56	25						
		Me		56	54	48		-120			
		Mn		56	40	72	+ 188				
		Fe	23	41	4						
		Fn		27	54						
94	6	P	18	40	47				5250		
		S		47	45						



No.

from ..... to ..... 19.....

# OSAKA JAPAN.

## SEISMIC BULLETIN

of the Osaka Meteorological Observatory of Japan.

$\varphi=34^{\circ} 39' N.$      $\lambda=135^{\circ} 26' E. Gr.$      $h=3.0 m$     Underground:

Instrument: Ômori Horizontal Pendulum.	T.	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>N</sub> :	30			20
A <sub>E</sub> :	30			20
A <sub>Z</sub> :				

No.	Date	Phase	Time h m s	Period s	Amplitude			$\Delta$ k.m.	Remarks
					A <sub>N</sub> $\mu$	A <sub>E</sub> $\mu$	A <sub>Z</sub> $\mu$		
95	July 6	L	18 59 28						
		Me	19 4 40	120		+38			
		Mn	4 9	106	+25				
		Fe	25 13						
		F <sub>n</sub>	24 34						
96	7	P	2 51 33				8300		
		L	3 10 52						
		Me	18 23	192		+20			
		Mn	16 17	168	+23				
		Fe	34 9						
97	7	F <sub>n</sub>	36 15				1320		
		P	8 55 37						
		L	58 49						
		Me	9 1 0	59		-13			
		Mn	1 46	93	-15				
98	II	Fe	29 35						
		F <sub>n</sub>	24 39						
		P	19 52 40				4400		
		S	58 50						
		L	20 7 24						
99	13	Me	7 24	120		-800			
		Mn	8 14	115	+1313				
		Fe	21 28 40						
		F <sub>n</sub>	32 51						
		P	17 20 47				482		
100	22	L	21 52						
		Me	22 24	18		-50			
		Mn	22 33	43	-75				
		Fe	31 18						
		F <sub>n</sub>	31 56						
101	24	P	14 28 0				1890		
		L	31 25						
		Me	33 53	115		+163			
		Mn	32 19	173	-150				
		Fe	15 51 33						
100	24	F <sub>n</sub>	27 47				9500		
		P	5 8 8						
		S	18 36						
		L	28 10						
		Me	31 46	228		-200			
101	29	Mn	33 4	207	-125				
		Fe	7 47 48						
		F <sub>n</sub>	22 24						
		P	5 26 56				5700		
		L	34 22						
101	29	Me	36 13	288		+88			
		Mn	36 33	216	+63				
		Fe	32 54						
		F <sub>n</sub>	43 7						



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from

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19 24

# OSAKA JAPAN.

## SEISMIC BULLETIN

of the Osaka Meteorological Observatory of Japan.

$\varphi=34^{\circ} 39'$  N.  $\lambda=135^{\circ} 26'$  E. Gr.  $h=3.0$  m Underground:

Instrument: Omori Horizontal Pendulum.

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>N</sub> :	30			20
A <sub>E</sub> :	30			20
A <sub>Z</sub> :				

No.	Date	Phase	Time h m s	Period s	Amplitude			$\Delta$ k.m.	Remarks
					A <sub>N</sub> $\mu$	A <sub>E</sub> $\mu$	A <sub>Z</sub> $\mu$		
I52	Sept. 24	P	18 42 38					564	
		L	43 54						
		Me	44 50	32		- 258			
		Mn	44 46	34	+ 313				
		Fe	19 6 45						
I53	Oct. 2	Fn	10 10					378	
		P	16 32 57						
		L	33 48						
		Me	34 19	24		+ 82			
		Mn	34 12	24	- 73				
I54	Oct. 5	Fe	39 38					490	
		Fn	40 14						
		P	13 22 51						
		L	23 57						
		Me	24 14	48		- 125			
I55	5	Mn	24 51	40	- 220			460	
		Fe	39 2						
		Fn	38 45						
		P	13 47 51						
		L	48 53						
I56	8	Me	48 55	38		- 45		460	
		Mn	48 50	43	- 55				
		Fe	55 54						
		Fn	48 38						
		P	14 2 20						
I57	8	L	3 22					2500	
		Me	4 58	23		- 40			
		Mn	3 34	32	+ 50				
		Fe	12 29						
		Fn	10 13						
I58	13	P	20 48 16					5080	
		L	52 26						
		Me	55 58	144		- 75			
		Mn	54 7	96	+ 325				
		Fe	21 21 58						
I59	18	Fn	22 18					430	
		P	16 26 59						
		L	33 50						
		Me	35 26	69		+ 30			
		Mn	35 59	82	+ 25				
I59	18	Fe	17 18 14					430	
		Fn	11 0						
		P	16 24 27						
		L	25 25						
		Me	26 38	36		+ 28			
I59	18	Mn	25 57	48	+ 38			430	
		Fe	39 17						
		Fn	34 50						



No.

from ..... to ..... 19

# OSAKA JAPAN.

## SEISMIC BULLETIN

of the Osaka Meteorological Observatory of Japan.

$\phi=34^{\circ} 39' N.$      $\lambda=135^{\circ} 26' E. Gr.$      $h=3.0 m$     Underground:

Instrument: Ômori Horizontal Pendulum.

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>N</sub> :	30			20
A <sub>E</sub> :	30			20
A <sub>Z</sub> :				

No.	Date	Phase	Time h m s	Period s	Amplitude			$\Delta$ k.m.	Remarks
					A <sub>N</sub> $\mu$	A <sub>E</sub> $\mu$	A <sub>Z</sub> $\mu$		
60	Oct. 18	P	19 38 55					905	
		L	40 57						
		Me	42 42	50		- 63			
		Mn	41 29	84	+ 50				
		Fe	20 3 0						
61	19	Fn	6 50					104	
		P	21 15 41						
		L	15 55						
		Me	16 17	10		+ 28			
		Mn	16 24	10	+ 38				
62	20	Fe	21 6					3200	
		Fn	21 0						
		P	19 58 48						
		S	20 3 44						
		L	6 52						
63	21	Me	9 28	192		+ 125		371	
		Mn	9 16	259	+ 125				
		Fe	21 53 8						
		Fn	50 20						
		P	9 30 42						
64	23	L	31 32					371	
		Me	31 44	25		- 11			
		Mn	31 51	31	- 23				
		Fe	37 10						
		Fn	35 50						
65	23	P	12 48 50					1940	
		L	49 40						
		Me	50 3	41		+ 75			
		Mn	50 35	49	- 70				
		Fe	13 3 30						
66	27	Fn	0 28					1940	
		P	21 40 10						
		L	43 40						
		Me	44 4	48		+ 40			
		Mn	43 48	64	- 40				
67	27	Fe	54 37					1940	
		Fn	54 59						
		Pe	17 50 54						
		L	51 9						
		Mn	51 10	08	+ 13				
67	27	Fn	54 57					3000	
		P	20 3 31						
		L	8 16						
		Me <sub>1</sub>	9 34	67		+ 43			
		Me <sub>2</sub>	14 53	72		+ 25			
		Mn <sub>1</sub>	10 0	67	- 40				
		Mn <sub>2</sub>	12 16	192	+ 50				
		Mn <sub>3</sub>	17 43	165	- 40				
Fe	21 19 29								
Fn	16 44								



No.

from ..... to ..... 19

# OSAKA JAPAN.

## SEISMIC BULLETIN

of the Osaka Meteorological Observatory of Japan.

$\phi = 34^{\circ} 39' N.$      $\lambda = 135^{\circ} 26' E.$  Gr.     $h = 3.0 m$     Underground:

Instrument: Omori Horizontal Pendulum.	T.	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>N</sub> :	30			20
A <sub>E</sub> :	30			20
A <sub>Z</sub> :				

No.	Date	Phase	Time h m s	Period s	Amplitude			$\Delta$ k.m.	Remarks
					A <sub>N</sub> $\mu$	A <sub>E</sub> $\mu$	A <sub>Z</sub> $\mu$		
68	Nov. 6	Pe	20 46 14					37	
		L	46 19						
		Me	46 19	10		+ 35			
		Mn	46 20	10	- 50				
		Fe	50 55						
69	23	Fn	49 8					52	
		Pe	23 28 13						
		L	28 20						
		Me	29 13	19		+ 125			
		Mn	29 3	19	+ 125				
170	25	Fe	33 37					1009	
		Fn	34 7						
		P	17 29 37						
		L	31 53						
		Me	32 32	67		+ 138			
171	28	Mn	32 38	53	+ 213			82	
		Fe	18 6 20						
		Fn	6 50						
		P	I 25 47						
		L	25 58						
172	30	Me	26 31	15		- 38		408	
		Mn	25 58	15	- 53				
		Fe	30 42						
		Fn	30 51						
		P	I 23 50						
173	30	L	24 45					445	
		Me	25 30	29		+ 27			
		Mn	25 31	25	+ 25				
		Fe	32 19						
		Fn	33 50						
174	Dec. 4	P	I 34 37					438	
		L	35 37						
		Me	37 26	48		+ 18			
		Mn	36 15	41	+ 19				
		Fe	43 44						
175	5	Fn	42 2					1800	
		P	23 23 49						
		L	24 48						
		Me	25 9	43		- 33			
		Mn	25 16	55	+ 38				
175	5	Fe	29 45					1800	
		Fn	31 52						
		P	4 48 35						
		L	51 56						
		Me	53 41	51		- 13			
175	5	Mn	53 19	77	+ 16				
		Fe	5 9 48						
		Fn	9 0						



No.

from ..... to ..... 19

# OSAKA JAPAN.

## SEISMIC BULLETIN

of the Osaka Meteorological Observatory of Japan.

$\phi=34^{\circ} 39' N.$   $\lambda=135^{\circ} 26' E.$  Gr.  $h=3.0 m$  Underground:

Instrument: Omori Horizontal Pendulum.	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>N</sub> :	30			20
A <sub>E</sub> :	30			20
A <sub>Z</sub> :				

No.	Date	Phase	Time h m s	Period s	Amplitude			$\Delta$ k.m.	Remarks
					A <sub>N</sub> $\mu$	A <sub>E</sub> $\mu$	A <sub>Z</sub> $\mu$		
I76	Dec. 5	P	9 42 53	66 60	- 30	+ 25	3650		
		L	48 17						
		Me	52 15						
		Mn	50 55						
		Fe	10 10 8						
		Fn	10 10 48						
I77	9	P	12 1 28	69 48	+ 29	+ 33	3250		
		L	6 28						
		Me	9 56						
		Mn	7 20						
		Fe	22 22						
		Fn	24 40						
I78	13	P	20 25 19	19 23	- 213	+ 163	297		
		L	25 59						
		Me	26 38						
		Mn	26 44						
		Fe	35 38						
		Fn	35 7						
I79	15	P	21 2 3	86 44	+ 21	+ 25	3180		
		L	6 58						
		Me	9 51						
		Mn	9 34						
		Fe	25 50						
		Fn	25 32						
I80	21	P	12 59 18	12 12	- 125	+ 88	126		
		L	59 35						
		Me	13 0 1						
		Mn	12 59 47						
		Fe	13 7 54						
		Fn	5 25						
I81	21	P	21 32 44	48 48	+ 63	- 25	364		
		L	33 33						
		Me	34 47						
		Mn	34 0						
		Fe	42 55						
		Fn	40 46						
I82	24	P	22 15 14	55 48	- 25	- 20	-		
		L	-						
		Me	25 22						
		Mn	24 45						
		Fe	52 40						
		Fn	38 55						



from ..... to ..... 19 24

# OSAKA JAPAN.

## SEISMIC BULLETIN

of the Osaka Meteorological Observatory of Japan.

$\phi = 34^{\circ} 39' N.$      $\lambda = 135^{\circ} 26' E.$  Gr.     $h = 3.0$  m    Underground:

Instrument: Omori Horizontal Pendulum.	T <sub>0</sub>	ε	r/T <sub>0</sub> <sup>2</sup>	V
A <sub>N</sub> :	30			20
A <sub>E</sub> :	30			20
A <sub>Z</sub> :				

Date	Phase	Time h m s	Period s	Amplitude			Δ k.m.	Remarks
				A <sub>N</sub> μ	A <sub>E</sub> μ	A <sub>Z</sub> μ		
Dec. 26	P	5 21 43					134	
	L	22 1						
	Me	22 7	09		-113			
	Mn	22 8	11	-93				
	Fe	33 7						
	F <sub>n</sub>	28 42						
27	P	11 25 6					942	
	L	27 13						
	Me	28 42	53		-565			
	Mn	29 4	29	+495				
	Fe	12 5 10						
	F <sub>n</sub>	14 33						
28	P	22 57 58					1800	
	L	23 1 17						
	Me	2 1	143		+2000			
	Mn	2 7	148	+3100				
29	Fe	0 59 59	3					
	F <sub>n</sub>	1 2 51						
29	Pe	1 14 45					-	
	L	17 34						
	Mn	18 17	40	+21				
	F <sub>n</sub>	26 9						
30	P	12 45 47					482	
	L	46 52						
	Me	47 29	24		+28			
	Mn	47 46	24	+40				
	Fe	53 19						
	F <sub>n</sub>	51 34						
31	P	4 44 32					2020	
	L	48 9						
	Me	48 56	46		+20			
	Mn	48 29	44	+17				
	Fe	58 19						
	F <sub>n</sub>	57 10						
31	P	-					-	
	L	9 46 32						
	Me	46 45	05		+10			
	Mn	46 33	05	+13				
	Fe	49 35						
	F <sub>n</sub>	49 11						