

# KÔBE JAPAN.

## SEISMOLOGICAL BULLETIN

of the Imperial Marine Observatory and the Kobe Meteorological Observatory of Japan.

$\varphi = 34^{\circ} 41' 18''N$   $\lambda = 135^{\circ} 10' 51''E$   $h = 58.3$  m Underground : Diluvial Series.

Instruments : Omori's Seismograph.  
(Horizontal Pendulum)

Wiechert Seismograph.  
(Horizontal & Vertical)

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#### Jan.

	$T_o$	$\varepsilon$	$\frac{r}{T_o^2}$	V
AE:	19.6		0.001	20
AN:	20.0		0.001	20

	$T_o$	$\varepsilon$	$\frac{r}{T_o^2}$	V
AE:	6.6	Aperiodic	0.007	100
AN:	6.5	"	0.006	97
AZ:	4.3	6	0.002	96

#### Feb.

	$T_o$	$\varepsilon$	$\frac{r}{T_o^2}$	V
AE:	19.5		0.001	20
AN:	21.0		0.001	20

	$T_o$	$\varepsilon$	$\frac{r}{T_o^2}$	V
AE:	6.6	Aperiodic	0.005	105
AE:	6.2	"	0.007	95
AZ:	4.2	6	0.005	101

#### Mar.

	$T_o$	$\varepsilon$	$\frac{r}{T_o^2}$	V
AE:	18.9		0.001	20
AN:	19.6		0.001	20

	$T_o$	$\varepsilon$	$\frac{r}{T_o^2}$	V
AE:	6.2	Aperiodic	0.007	16
AN:	6.2	"	0.005	14
AZ:	4.7	6	0.003	81

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks		
			G.	M.	T.		AE	AN	AZ				
1	Jan.	3	iPE	9	47	22	1.4	+3.0			km. 2350	Southwestern coast of Kamchatka (about $53^{\circ}40'N$ , $156^{\circ}40'E$ according to the data from Fordham, Neuchatel, St. Louis, Ottawa, Simizu, Taikyu, Manila, Victoria, Padova and Geor-	
			iPN	9	47	22	1.2		-5.8				
			iPZ	9	47	22	2.1			-6.5			
			iEN	9	47	22		-19	+11				
			iE	9	48	18		+10					
			iN	9	48	14			-9				
			iZ	9	48	13				-6			

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
		iSE	9	51	14		+16				getown) Deep focus earthquake.
		iSN	9	51	15			-10			
		SZ	9	51	14				+6		
		ME	9	53	03	10.8	+27				
		MN	9	52	56	6.5		$\pm 19$			
		MZ	9	53	03	4.7			-8		
		eF	10	12	$\pm$						
* 2	Jan. 8	ePEN	23	07	27	0.8	-0.8	-4.5		108	Perceptible.
		iPz	23	07	27				-2.2		Near Tudi, upper basin of the Yosino River, Sikoku district.
		iE	23	07	28		-8				
		iN	23	07	27			+8			
		iz	23	07	28	1.0			+5		Felt in Sikoku and Tyû-goku district.
		iN	23	07	30			-17			
		iS	23	07	41		+273	-166	+70		
		ME	23	07	53	2.4	+325				
		MN	23	07	53	1.8		-256			
		MZ	23	07	54	1.7			-140		
		eF	23	18	$\pm$						
3	Jan. 12	eLN	13	46	16						Yunnan, China. 25°N 103°E.
		MN	13	48	54	15.0	$\pm 3$				
		MZ	13	50	42	10.9		$\pm 3$			
		ME	13	51	45	13.5			-6		
		eF	14	11	$\pm$						
4	Jan. 15	PE	8	51	13		+0.7			4705	Destructive at Sitamarhi, Maduban, Darbhanga and Monghyr, basin of the Ganges River, Bihar, India.
		iPNZ	8	51	13			+3.0	+2.8		
		iE	8	51	27	5.7	-95				
		iz	8	51	27	5.6			-82		
		iN	8	52	47	3.5		+35			
		iz	8	52	44						
		iPR1E	8	52	57	4.8	+88				
		iPR2Z	8	53	15	5.2			+110		
		iS	8	57	39		-80	-50			
		iEN	8	57	56	7.0	+95	+120			
		iE	8	58	14		-195				
		eL(Q)N	9	00	49	67.0					

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
		eL(Q)Z	9	00	43						
		iE	9	01	03		-130				
		iE	9	03	15						
		eL(R)N	9	06	39						
		M1N	9	07	44	15.7		-175			
		M2N	9	08	30	15.8		-160			
		M1E	9	09	40	10.9	-180				
		M1Z	9	09	43	11.0			+63		
		M2E	9	10	59	13.4	-150				
		M2N	9	10	44	13.6		-143			
		M2Z	9	11	36	14.8			-80		
		eE	10	05	30	20.9	+7				
		ez	11	19	08	25.0			$\pm 2$		
		ez	11	24	36	24.0			$\pm 3$		
		eN	11	28	16	21.5		$\pm 3$			
		ez	11	32	01	20.5			$\pm 3$		
		eF	12	15	$\pm$						
5	Jan. 20	ME	18	11	15	11.4	-9				Felt at Tai-yuan, Sui-yuan and slightly destructive in Wooyuan.
		MN	18	10	51	11.0		$\pm 3$			
		MZ	18	11	17	11.9			$\pm 5$		
		eF	18	20	$\pm$						
6	Jan. 20	ePE?	22	57	10						North far off to Keelung, Formosa.
		ePZ?	22	57	03						
		eE	23	00	49						
		eN	23	00	51						
		ez	23	01	09						
		ME	23	03	25	11.4	-4				
		MN	23	03	35	11.4		+6			
		MZ	23	07	29	8.6			$\pm 2$		
		eF	23	23	$\pm$						
7	Jan. 21	ez	7	03	38						Northern part of the Formosa Channel.
		eE	7	04	15						
		MEEN	7	06	38	10.7	$\pm 2$	$\pm 2$			
		eF	7	25	$\pm$						

No.	Date	Phase	Time G. M. T.	Period s	Amplitude			$\Delta$ km.	Remarks
					A <sub>E</sub> $\mu$	A <sub>N</sub> $\mu$	A <sub>Z</sub> $\mu$		
8	Jan. 22	M <sub>E</sub>	8 00 45	11.2	$\pm 2$			Ditto.	
		M <sub>N</sub>	8 01 01	11.5		+2			
		eM <sub>Z</sub>	8 05 02	9.8			$\pm 2$		
		eF	8 12 ±						
9	Jan. 23	P <sub>Z</sub>	2 02 39				+1.0	72 In the Kii Channel.	
		iP <sub>E</sub>	2 02 40		-3.8				
		eP <sub>N</sub>	2 02 40						
		iP <sub>N</sub>	2 02 40	0.7		-5.5			
		iz	2 02 40				$\pm 5$		
		iS <sub>EN</sub>	2 02 50		+4	-5			
		S <sub>Z</sub>	2 02 49				-2		
		M <sub>E</sub>	2 02 51	0.7	-16				
		M <sub>N</sub>	2 02 50	0.7		-12			
		M <sub>Z</sub>	2 02 50	0.4			$\pm 4$		
		M <sub>2E</sub>	2 02 53	0.8	-14				
F	2 05 04								
10	Jan. 28	e <sub>E</sub>	19 55 00					Felt in State of Guerrero, Mexico (U.S.C.G.S.)	
		e <sub>N</sub>	19 55 06						
		e <sub>E</sub>	20 02 09						
		e <sub>N</sub>	20 07 11						
		e <sub>Z</sub>	20 06 45						
		e <sub>E</sub>	20 07 56						
		eL <sub>N</sub>	20 13 15						
		eL <sub>Z</sub>	20 13 51						
		M <sub>N</sub>	20 20 49	16.0	$\pm 1$				
		M <sub>Z</sub>	20 20 13	17.0		$\pm 1$			
eF <sub>N</sub>	20 53 ±								
11	Jan. 29	P <sub>EN</sub>	1 39 49		+2	(-)		439 Western part of Mt. Aso. Felt in northern part of Kyūshyū.	
		P <sub>Z</sub>	1 39 47						
		iS <sub>E</sub>	1 40 48		-7				
		S <sub>N</sub>	1 40 45			-5			
		S <sub>Z</sub>	1 40 47				-3		
		M <sub>1E</sub>	1 40 58	2.0	-28				
		M <sub>N</sub>	1 41 06	6.6		-20			
		M <sub>Z</sub>	1 41 12	8.9			-13		

No.	Date	Phase	Time G. M. T.	Period s	Amplitude			$\Delta$ km.	Remarks
					A <sub>E</sub> $\mu$	A <sub>N</sub> $\mu$	A <sub>Z</sub> $\mu$		
		M <sub>2E</sub>	1 41 18	6.3	-15			1 m.	
		i <sub>N</sub>	1 42 13	2.4		-23			
		i <sub>Z</sub>	1 42 11	2.8			+15		
		i <sub>E</sub>	1 42 58	3.0	-19				
		eF	1 53 ±						
12	Jan. 29	eP <sub>EN</sub>	12 36 49					ESE off Kinkwazan, Miyagi Prefecture.	
		eP <sub>Z</sub>	12 36 51						
		e <sub>E</sub>	12 38 23						
		e <sub>N</sub>	12 38 15						
		e <sub>Z</sub>	12 40 06						
		e <sub>E</sub>	12 40 50	8.3					
		e <sub>N</sub>	12 40 41						
		e <sub>Z</sub>	12 40 55						
eF	12 55 ±								
13	Feb. 1	e <sub>2E</sub>	15 29 03	2.0	-0.9			South off Hatidyō Isl., Record is deep focus type.	
		i <sub>E</sub>	15 30 12	1.9	-5				
		i <sub>N</sub>	15 30 10						
		i <sub>Z</sub>	15 30 11						
		e <sub>N</sub>	15 31 05						
14	Feb. 2	e <sub>Z</sub>	15 31 23	2.7				A distant earthquake. Near Geelvink-bay, New Guinea. Faint record.	
		M <sub>E</sub>	15 31 58	3.4	$\pm 2$				
		eF	15 36 ±						
		L <sub>E</sub>	15 21 45						
15	Feb. 3	eL <sub>N</sub>	15 24 31					A distant earthquake. East off New Guinea. Faint record.	
		eL <sub>Z</sub>	15 24 40						
		M <sub>N</sub>	15 28 50	16.5	+4				
		M <sub>Z</sub>	15 34 42	18.0		+2			
		eF	15 45 ±						
		eP <sub>2E</sub>	14 43 17					A distant earthquake. East off New Guinea. Faint record.	
		e <sub>Z</sub>	14 43 15						
		eL <sub>E</sub>	14 51 50						
		M <sub>1N</sub>	14 55 20	22.7		+6			
		M <sub>Z</sub>	14 55 25	24.5			+5		

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
16	Feb. 4	M <sub>E</sub>	14	56	58	19.5	+5				
		M <sub>2N</sub>	14	57	37	22.6		-4			
		eF	15	15	±						
		e <sub>N</sub>	14	03	50						A distant earthquake.
		eL <sub>E</sub>	14	06	36						Northern part of Persia.
		M <sub>E</sub>	14	11	01	14.8	±1				Faint record.
		M <sub>N</sub>	14	11	28	15.0					
* 17	Feb. 4	M <sub>Z</sub>	14	10	51	14.0			±1		
		eF	14	18	±						
		iP	16	09	13		-6.7	+8.1	-11.0	116	Perceptible.
		iS <sub>EN</sub>	16	09	29		-4.5	+28			Near Okayama City.
		iS <sub>Z</sub>	16	09	28				+23		Felt in eastern part of Tyūgoku district.
		M <sub>E</sub>	16	09	30		-8.6				
		M <sub>N</sub>	16	09	30	0.8		-67			
18	Feb. 4	M <sub>Z</sub>	16	09	30	1.0			-46		
		eF	16	16	±						
		eP <sub>N</sub>	22	08	58					5295	SE off Banda-neira, Dutch east Indies.
		P <sub>Z</sub>	22	08	53						
		eS <sub>E</sub>	22	15	31						
		S <sub>N</sub>	22	15	51						
		S <sub>Z</sub>	22	15	50						
19	Feb. 7	eL <sub>N</sub>	22	20	35						
		M <sub>N</sub>	22	23	58	21.0		-3			
		eF	22	35	±						
		i <sub>EN</sub>	22	31	56	0.4					SW off Yaku Isl, Ryūkyū Is.
		i <sub>Z</sub>	22	31	56						
		e <sub>E</sub>	22	32	10	2.1	+5				
		e <sub>Z</sub>	22	32	09	1.5			+2		
20	Feb. 8	M <sub>2N</sub>	22	33	47	2.9		-2			
		eF	22	38	±						
		P <sub>N</sub>	6	02	15					58	Lower basin of the Arita River, Wakayama Prefec-
		F <sub>Z</sub>	6	02	14						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks	
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>			
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.		
21	Feb. 10	iS <sub>EN</sub>	6	02	23	0.6		+4				ture.
		S <sub>Z</sub>	6	02	25							Felt at Sumoto.
		i <sub>E</sub>	6	02	27	0.4						
		i <sub>N</sub>	6	02	26	0.4						
		M <sub>E</sub>	6	02	28	0.4	+7					
		M <sub>N</sub>	6	02	27	0.4		-10				
		M <sub>Z</sub>	6	02	27					-3		
		F	6	03	13							
		eP <sub>EN</sub>	22	03	25						705	East off Siويا Cape, Huku-
		e <sub>EN</sub>	22	04	39							sima Prefecture. Felt in
22	Feb. 12	i <sub>Z</sub>	22	03	41							Kwanto and southern part
		eS <sub>N</sub>	22	04	48							of Ōou district.
		S <sub>E</sub>	22	05	00							
		S <sub>N</sub>	22	05	02							
		S <sub>Z</sub>	22	04	59							
		M <sub>1E</sub>	22	05	05	1.9	+11					
		M <sub>N</sub>	22	05	28	2.6		-16				
		M <sub>Z</sub>	22	05	10	2.1				-10		
		i <sub>E</sub>	22	05	35	2.6	+13					
		M <sub>2E</sub>	22	06	14		±12					
23	Feb. 12	eF	22	16	±							
		eL <sub>N</sub>	11	47	56							A distant earthquake.
		e <sub>Z</sub>	11	47	56							Yunnan, China?
		M <sub>E</sub>	11	52	25	10.8	±2					
		M <sub>1N</sub>	11	49	55	11.6		-14				
		M <sub>Z</sub>	11	51	08	12.0			+1			
		M <sub>2N</sub>	11	51	18	10.5		-12				
23	Feb. 12	eF	12	07	±							
		iP <sub>E</sub>	21	45	28		+2			370	North off Hatidyō Isl.	
		P <sub>NZ</sub>	21	45	28			-2	-2		Record is deep focus type.	
		i <sub>E</sub>	21	45	38		-10					
		S <sub>N</sub>	21	46	18							
		M <sub>N</sub>	21	46	19	1.6		+8				
		M <sub>Z</sub>	21	46	20							

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
24	Feb. 13	iE	21	46	45						
		eF	21	55	±						
		iE	5	43	38						
		ME	5	43	40	1.4	±2				
		MN	5	43	43	0.6		±2			
		eE	5	44	20						
25	Feb. 13	eE	5	45	01						
		F	5	45	29						
		ME	6	15	04	1.6	-2				Near Motoyama, Kōti Prefecture.
25	Feb. 13	MN	6	15	08			±1			
		F	6	15	36						
		PN	4	04	37						
26	Feb. 14	Pz	4	04	35						
		iEN	4	04	41		-50	-38			
		iz	4	04	39				-38		
		PM <sub>E</sub>	4	04	48	5.4	+86				
		PM <sub>N</sub>	4	04	48	5.2		+106			
		PM <sub>Z</sub>	4	04	46	5.8			-89		
		eEN	4	05	14						
		iSEN	4	08	41		+105	+127			
		eSz	4	08	43						
		M <sub>1E</sub>	4	08	59	6.3	+181				
		M <sub>1N</sub>	4	08	46	9.4		-322			
		M <sub>1Z</sub>	4	09	07	8.0			-100		
		M <sub>2E</sub>	4	13	40	17.2	+52				
		M <sub>2N</sub>	4	12	47	21.4		-68			
		M <sub>2Z</sub>	4	12	56	22.0			-30		
M <sub>2E</sub>	4	16	11	13.1	+78						
M <sub>2Z</sub>	4	16	06	16.3			+35				
eZ	4	47	40		(Short Period Wave.)						
eF	5	47	±								
27	Feb. 14	eEN	7	39	39						Local shock?
		eZ	7	39	42						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
		ME	7	39	48	0.8	+3				
		MN	7	39	47	0.9		+4			
		MZ	7	39	47	0.7			+3		
		F	7	40	10						
28	Feb. 16	eiz	6	41	49						
		eZ	6	44	32						
		eZ	6	45	45	4.2					
		eSN	6	47	59						
		eSZ	6	48	06						
		ME	6	49	21	6.7	-2				
		MN	6	49	22	8.1		+3			East off Formosa?
		MZ	6	48	20	4.3			+1		
		eF	7	11	±						
		eN	3	11	39						
29	Feb. 17	eFz	3	11	45						
		ePE	3	11	50						
		ePN	3	11	54						
		SN	3	12	47						
		Sz	3	12	52						
		ME	3	14	17	3.1	-4				
		MN	3	13	12	2.4		+8			
		MZ	3	13	10	2.7			±2		
		eF	3	20	±						
		eZ	9	17	37						
30	Feb. 17	ePE	9	17	46						
		iN	9	17	54						
		iz	9	17	55						
		eSN	9	18	43						
		Sz	9	18	57						
		ME	9	20	23	3.2	±4				
		MN	9	19	16	2.4		+6			
		MZ	9	19	15	2.8			+3		
		eF	9	28	±						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
31	Feb. 17	ePN	12	07	49					620	In the Kasima-nada, east off Ibaraki Prefecture.
		S	12	08	57						
		M <sub>E</sub>	12	10	20	3.1	$\pm 1$				
		M <sub>N</sub>	12	09	17	1.8		$\pm 2$			
		eF	12	12	$\pm$						
32	Feb. 19	eL <sub>E</sub>	10	57	36					14.2	A distant earthquake. SW off Sumatra? By Omori's seismograph.
		M <sub>E</sub>	11	01	06						
		eF	11	20	$\pm$						
33	Feb. 24	P	6	27	02					1500	SSE off Bonin Isl. Felt in Bonin, abnormal felt area in Hukusima Prefecture.
		eN	6	29	09						
		S <sub>1</sub> Z	6	29	40						
		eL <sub>E</sub>	6	29	40	32.8					
		LZ	6	30	55	23.4					
		M <sub>E</sub>	6	32	01	18.6	+146				
		M <sub>1</sub> N	6	31	49	20.8		+139			
		MZ	6	32	02	18.5			-62		
		i <sub>E</sub>	6	34	59						
		M <sub>2</sub> N	6	34	26	13.9		-95			
		eF	8	35	$\pm$						
34	Feb. 25	eP	16	27	57					12.1	Near Luzon, Philippine.
		eE	16	32	03						
		eN	16	32	05						
		eM <sub>Z</sub>	16	43	06						
		eF	16	59	$\pm$						
35	Feb. 28	P <sub>EN</sub>	7	48	20					58	Near Hikata, South of Wakayama City.
		P <sub>Z</sub>	7	48	19						
		iS <sub>EN</sub>	7	48	27						
		i <sub>Z</sub>	7	48	20						
		M <sub>1</sub> E	7	48	40		+7				
		M <sub>N</sub>	7	48	33			+8			
		M <sub>Z</sub>	7	48	30				$\pm 3$		
		i <sub>N</sub>	7	48	36						
M <sub>2</sub> E?	7	49	56	1.8	-4						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
36	Feb. 28	M <sub>2</sub> N	7	49	46	2.2		+3		5275	A distant earthquake. East off New Guinea.
		eF	7	54	$\pm$						
37	Mar. 1	eP <sub>E</sub>	14	29	43					10.0	A distant earthquake. Near New Britain, New Guinea. Faint record.
		eP <sub>N</sub>	14	29	42						
		P <sub>Z</sub>	14	29	43	3.0			+2		
		eN	14	30	24						
		eN	14	31	41						
		P <sub>R2</sub> N	14	31	47	3.9		+8			
		eS <sub>E</sub>	14	36	39						
		eS <sub>N</sub>	14	36	37				+8		
		eS <sub>Z</sub>	14	36	36						
		eL <sub>EN</sub>	14	42	46						
		eL <sub>Z</sub>	14	41	55	18.8		+10			
M <sub>E</sub>	14	45	50	18.8	+10						
M <sub>1</sub> N	14	45	40	19.4		-16					
M <sub>Z</sub>	14	45	42	21.8			$\pm 7$				
M <sub>2</sub> N	14	51	42	17.3	-10						
eF	15	53	$\pm$								
38	Mar. 2	M <sub>E</sub>	20	05	39					93	Southern part of the Kii Channel.
		M <sub>N</sub>	20	05	28	21.6					
		M <sub>Z</sub>	20	06	00	16.8					
		eF	20	20	$\pm$						
39	Mar. 4	eP <sub>N</sub>	10	45	15					0.7	Aleutian IIs. P and S phases is not distinct.
		eP <sub>E</sub>	10	45	20						
		eN	10	45	21						
		S <sub>EN</sub>	10	45	27						
		Z	10	45	26						
		M <sub>E</sub>	10	45	29	0.7	$\pm 3$				
M <sub>N</sub>	10	45	28	0.5		$\pm 3$					
eF	10	46	19								
39	Mar. 4	eL <sub>E</sub>	11	31	47					11.0	Aleutian IIs. P and S phases is not distinct.
		eL <sub>N</sub>	11	31	45						
		eL <sub>Z</sub>	11	32	26						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			g.	m.	s.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
40	Mar. 5	ME	11	13	37	20.0				9190	New Zealand.
		MN	11	35	47	17.1					
		MZ	11	36	09	16.1					
		eF	11	51	±						
		PEN	11	58	46						
		PZ	11	58	44			+3			
		PcPE	11	59	18						
		eE	12	01	05						
		iE	12	01	46						
		eSEN	12	09	06						
		eE	12	10	06						
		eLE	12	22	22						
		eLN	12	22	31						
		eE	12	23	02	26.3	-4				
		eN	12	23	01	29.0		-4			
ME	12	30	50	20.5	+4						
M1N	12	34	14	19.8		-7					
MZ	12	32	14	22.2			+6				
M2N	13	01	19	20.8		+4					
eF	13	32	±								
41	Mar. 9	ePE	9	33	50				62	Near Kyoto City.	
		PZ	9	33	50						
		SEN	9	34	00						
		SZ	9	33	58						
		MEN	9	34	00		-6	+7			
		MZ	9	33	59						
eF	3	35	06								
42	Mar. 10	eMN	15	15	05	10.8				North off Bonin Isl.	
		eMZ	15	14	02	15.2					
		eF	15	25	±						
43	Mar. 11	PE	10	44	37		-2			Epicenter in Nerodeep, SE off Guam Isl. Felt at Guam.	
		iPNZ	10	44	37			+1			+2
		ez	10	45	08						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks			
			g.	m.	s.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>					
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.				
44	Mar. 13	ez	10	45	13					2.7	±2	(According to Manala's report).		
		en	10	45	39									
		eMN	10	46	14									
		eF	10	52	±									
		SEN	0	13	25									
45	Mar. 13	M1E	0	13	27		±5			0.5	±3	Near Sisikui, southern part of Tokushima Prefecture.		
		MN	0	13	27									
		M2E	0	13	32		±5							
		M2N	0	13	34				±4					
		F	0	13	58									
		PE	13	21	24		-2	+2					5580	A distant earthquake. Coral sea, SE off New Guinea?
		iPZ	13	21	24				+4					
PR1N	13	22	31											
PR1Z	13	22	29			5.8								
eSN	13	28	38											
eLEN	13	34	40											
ME	13	36	13	23.5	-2									
46	Mar. 13	M1N	13	35	49	24.6			-3					
		M2N	13	39	51	16.0			+5					
		MZ	13	40	05	22.3								
		eF	13	57	±				±2					
		ePEN	16	59	01							125	Near Siomisaki, south end of the Kii Peninsula.	
		ePZ	16	59	00									
		iEN	16	59	06									
iz	16	59	05											
SEN	16	59	18											
M1N	16	59	19	0.5			-8							
ME	16	59	26	3.1	+6									
47	Mar. 16	M2N	16	59	24				+8					
		MZ	16	59	29	1.3			+2					
		F	17	01	15									
47	Mar. 16	P?N	14	21	22				-4	4380?	Near Solomon IIs.			
		iP?Z	14	21	22				-6			Record is deep focus type.		

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	T.	M.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s		$\mu$	$\mu$	$\mu$	km.	
		ez	14	23	38						
		eS <sup>?</sup> <sub>EN</sub>	14	27	31						
		e <sub>N</sub>	14	28	22						
		eF	14	33	±						
48	Mar. 17	iS <sub>EN</sub>	8	46	11						Near Kyôto City.
		M	8	46	11		±3	±3	±1		
		F	8	46	49						
49	Mar. 17	e <sub>E</sub>	18	37	30						Off the Kudyûkuri-hama,
		eM <sub>E</sub>	18	39	44		±2				Tiba Prefecture.
		eM <sub>N</sub>	18	39	28	4.2		±2			
		eF	18	47	±						
50	Mar. 18	iP <sub>EN</sub>	4	38	02		-5	-3		2575	Southern part of the Okho-
		iP <sub>Z</sub>	4	38	03				+5		tsk Sea.
		PM <sub>E</sub>	4	38	06	2.8	+14				Deep focus earthquake.
		PM <sub>N</sub>	4	38	06	1.4		+7			
		PM <sub>Z</sub>	4	38	07	1.8			-20		
		i <sub>N</sub>	4	39	26						
		iS <sub>EN</sub>	4	42	04						
		iS <sub>Z</sub>	4	42	03						
		ePcP <sup>?</sup> <sub>EZ</sub>	4	42	36						
		M <sub>Z</sub>	4	45	55	23.4			±1		
		ScS <sub>EN</sub>	4	49	15						
		eF	5	03	±						
51	Mar. 20	P <sub>EN</sub>	2	31	06					111	Upper valley of the Yosino
		P <sub>Z</sub>	2	31	08						River, Nara Prefecture.
		S <sub>EN</sub>	2	31	21						
		M <sub>E</sub>	2	31	21	0.7	-3				
		M <sub>N</sub>	2	31	21						
		M <sub>Z</sub>	2	31	22				±1		
		F	2	32	08						
52	Mar. 20	P <sub>N</sub>	2	46	19					4540	Western part of the Caro-
		P <sub>Z</sub>	2	46	17						line IIs, Pacific Ocean.

No	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
		e <sub>EN</sub>	2	49	30						
		S <sub>N</sub>	2	52	35						
		M <sub>E</sub>	2	56	48	12.4	+2				
		M <sub>1N</sub>	2	56	48	12.9		+2			
		M <sub>2N</sub>	3	07	07	17.0		±1			
		M <sub>Z</sub>	3	07	02	16.0			±1		
		eF	3	25	±						
53	Mar. 21	eP	3	40	40					320	Near Mt. Amagi.
		eS <sub>E</sub>	3	41	23						Weak shocks were felt in
		eS <sub>N</sub>	3	41	25						the Izu Peninsula.
		S <sup>?</sup> <sub>E</sub>	3	41	29						
		M <sub>N</sub>	3	41	33	4.0		+23			
		M <sub>Z</sub>	3	41	33	2.8			-22		
		M <sub>E</sub>	3	41	49	8.0	-32				
		eF	3	54	±						
54	Mar. 24	eP <sub>N</sub>	12	13	29					5560	A distant earthquake.
		eP <sub>Z</sub>	12	13	30						Near Solomon IIs.
		P <sub>EN</sub>	12	13	35						10°S 161°E (U.S.C.G.S.)
		P <sub>Z</sub>	12	13	37						
		i <sub>EN</sub>	12	13	37		+2	-3			
		i	12	13	42		+4	-7			
		i <sub>N</sub>	12	14	58	3.2		-7			
		i <sub>Z</sub>	12	14	00						
		S <sub>N</sub>	12	20	42						
		eS <sub>Z</sub>	12	20	45						
		S <sup>?</sup> <sub>Z</sub>	12	20	53						
		eL <sub>N</sub>	12	27	11						
		M <sub>E</sub>	12	28	48	23.9	±3				
		M <sub>N</sub>	12	28	59	22.6		±5			
		M <sub>Z</sub>	12	32	05	24.4			±4		
		eF	13	37	±						
55	Mar. 25	iS <sub>EN</sub>	2	47	33						Near Siomisaki, south end
		S <sub>Z</sub>	2	47	33						of Kûp eninsula.
		M <sub>EN</sub>	2	47	33	0.6	-2	-4			



No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
56	Mar. 26	MZ	2	47	35	0.5			$\pm 1$		
		F	2	48	05						
		SE <sub>N</sub>	20	11	00						Near Ootu, Siga Prefecture.
		ME <sub>N</sub>	20	11	00		$\pm 1$	$\pm 1$			
		F	20	11	27						
57	Mar. 30	eSE	14	56	02						Northern part of the
		eSN	14	56	04						Hyūga-nada.
		ME	14	56	10	1.7	$\pm 3$				Felt in eastern part of
		MN	14	56	08	1.5		+6			Kyūsyū district.
		eF	15	02	$\pm$						

# SUMOTO JAPAN.

## SEISMOLOGICAL BULLETIN

A Branch Station of the Kobe Meteorological Observatory of Japan.

$\varphi=34^{\circ} 21'$   $\lambda=134^{\circ} 53'$   $h=109.0$  m. Underground: Cretaceous.

Instrument: Omori's Seismograph.

Wiechert Seismograph.

(Horizontal Pendulum.)

(Horizontal & Vertical)

### Jan.

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>E</sub> :	17.1	2.1	0.0002	20
A <sub>N</sub> :	17.1	1.6	0.0001	20

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>E</sub> :	4.8	Aperiodic	0.002	112
A <sub>N</sub> :	4.3	"	0.002	115
A <sub>Z</sub> :	4.3	"	0.001	65

### Feb.

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>E</sub> :	17.3	2.1	0.0002	20
A <sub>N</sub> :	17.3	2.2	0.0002	20

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>E</sub> :	4.7	Aperiodic	0.003	119
A <sub>N</sub> :	4.4	"	0.002	106
A <sub>Z</sub> :	4.2	"	0.002	60

### Mar.

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>E</sub> :	18.7	3.3	0.0003	20
A <sub>N</sub> :	17.3	2.3	0.0003	20

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>E</sub> :	4.8	Aperiodic	0.001	106
A <sub>N</sub> :	4.4	"	0.002	108
A <sub>Z</sub> :	4.1	"	0.001	66

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
1	Jan. 3	PEN	9	47	24		+1.3	+1.7		2410	Southwestern coast of Kamchatka (about $53^{\circ}40'N$ $156^{\circ}40'E$ ).
		SE	9	51	21						
		SN	9	51	23						
		ME	9	52	08	9.4	+44				
		MN	9	53	19	7.5		-14			
		eF	10	06	$\pm$					Deep focus earthquake.	

No.	Date	Phase	Time G. M. T.	Period s	Amplitude			$\Delta$ km.	Remarks
					A <sub>E</sub> $\mu$	A <sub>N</sub> $\mu$	A <sub>Z</sub> $\mu$		
2	Jan. 6	ePEN	1 12 38					44	Basin of the Arita R., Wakayama Prefecture.
		SEN	1 12 44						
		MEN	1 12 44	0.4	$\pm 1$	-2			
		F	1 13 13						
*3	Jan. 8	iPEN	23 07 23		+25.0	+9.6		85	Weak shocks were felt in Awaji Isl.  Near Tudi, upper basin of the Yosino River, Sikoku district.  Felt in Sikoku and Tyû- goku district.
		iPz	23 07 22				+19.4		
		iSEN	23 07 33						
		iSz	23 07 34						
		ME	23 07 43	1.3	-206				
		MN	23 07 35	2.5		-561			
		MZ	23 07 40	1.5			$\pm 129$		
		F	23 21 ±						
4	Jan. 8	SEN	23 57 44					An after shock of No. 3.	
		MEN	23 57 45						
		F	23 58 09						
5	Jan. 10	PEN	23 30 38		+1.8	+2.2		283	Off the Sima Peninsula, Mie Prefecture.  Deep focus earthquake.
		Pz	23 30 37				-3.2		
		SEN	23 31 16						
		ME	23 31 17	2.0	-1				
		MN	23 31 17	2.4		+3			
6	Jan. 12	ePN	13 44 10					2230	Yunnan, China.
		ePE	13 44 17						
		SE	13 48 03						
		SN	13 47 48						
		iz	13 48 31						
		ME	13 49 07	11.5	-10				
		MN	13 48 48	11.5		+39			
MZ	13 48 57	10.9			$\pm 7$				
7	Jan. 12	S	17 17 55					Upper valley of the Yosino River, Sikoku district.	
		ME	17 17 58		-2				

No.	Date	Phase	Time G. M. T.	Period $\mu$	Amplitude			$\Delta$ km.	Remarks
					A <sub>E</sub> s	A <sub>N</sub> $\mu$	A <sub>Z</sub> $\mu$		
8	Jan. 15	MN	17 17 58	0.4		$\pm 2$		4440	Destructive at Sitamarhi, Maduban, Darbhanga and Monghyr. basin of the Ganges River, Bihar, India.
		F	17 18 29						
		P	8 51 11		+1.8	+0.9 <sup>(?)</sup>	+3.2		
		iE	8 53 10						
		iN	8 53 15						
		iz	8 53 12						
		Sz	8 57 06						
		SE	8 57 26						
		SN	8 57 36						
		Lz	8 59 41						
		LE	9 04 03						
		LN	9 03 44						
		M <sub>1</sub> E	9 07 44	18.9	-1200				
M <sub>1</sub> N	9 07 32	13.3		-747					
M <sub>1</sub> Z	9 09 15	11.8			-386				
M <sub>2</sub> E	9 10 35	14.2	-942						
M <sub>2</sub> N	9 09 29	11.8		+500					
M <sub>2</sub> Z	9 11 11	12.2			-400				
M <sub>3</sub> E	9 11 28	12.7	-763						
eF	12 00 ±								
9	Jan. 16	PEN	12 06 18				30	Lower basin of the Arita River, Wakayama Prefec- ture.	
		SEN	12 06 22						
		ME	12 06 23	0.8	$\pm 1$				
		MN	12 06 22	0.3		-3			
F	12 06 46								
10	Jan. 16	SEN	12 09 14				Local shock.		
		ME	12 09 14	0.4	$\pm 2$				
		MN	12 09 15			-1			
		F	12 09 29						
11	Jan. 17	SEN	13 25 42				Near Wakayama City.		
		ME	13 25 42		+1				
		MN	13 25 42			$\pm 1$			
F	13 26 04								

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			h	m	s		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			G.	M.	T.	s	$\mu$	$\mu$	$\mu$	km.	
12	Jan. 17	SEN	19	30	34						In the Kii Channel.
		ME	19	30	34		+1				
		MN	19	30	34	0.3		$\pm 2$			
		F	19	30	50						
13	Jan. 19	iEN	12	49	24						Northern part of Burma?
		LN	12	50	43						
		eF	13	11	$\pm$						
14	Jan. 20	eEN	18	05	$\pm$						Felt at Tai-yuan, Suei-yuan and slightly destructive in Woo-Yuan.
		SE	18	10	42						
		SN	18	10	56						
		SZ	18	10	44						
		ME	18	11	02	12.6	-32				
		MN	18	12	29	10.3		+11			
		MZ	18	11	04	13.1			-43		
15	Jan. 20	eE	22	55	41						North far off to Keelung, Formosa.
		eN	22	55	42						
		eE	23	02	18						
		eN	23	02	33						
		ME	23	04	04	10.9	-17				
		MN	23	04	41	8.8		$\pm 9$			
		MZ	23	03	02	11.3			$\pm 15$		
16	Jan. 20/21	ePE	23	45	35				8120?	A distant earthquake. Turkey?	
		PN	23	45	40						
		ez	23	46	03						
		eSE	23	55	09						
		eSN	23	54	58						
		eF	0	11	$\pm$						
17	Jan. 21	eE	6	59	28					Northern part of the Formosa Channel.	
		eN	6	59	30						
		SE	7	05	12						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			h	m	s		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			G.	M.	T.	s	$\mu$	$\mu$	$\mu$	km.	
18	Jan. 22	SN	7	04	46						Ditto.
		SZ	7	04	24						
		eFEZ	7	19	$\pm$						
		eFN	7	51	$\pm$						
		eEN	7	55	50						
19	Jan. 23	LE	7	59	41						In the Kii Channel.
		LZ	7	59	40						
		ME	8	00	30	11.1	$\pm 11$				
		MN	8	02	04	10.9		$\pm 7$			
		MZ	8	00	34	10.3			$\pm 8$		
20	Jan. 23	eF	8	13	$\pm$						Local shock.
		P	2	02	33		+0.9	-1.7		42	
		S	2	02	38						
		M <sub>1E</sub>	2	02	38	0.4	+17				
		M <sub>N</sub>	2	02	39	0.5		+27			
		M <sub>Z</sub>	2	02	39				-6		
21	Jan. 27	M <sub>2E</sub>	2	02	41	0.5	+12				Near Wakayama City.
		F	2	04	19						
		ePN	4	33	01					23	
		SEN	4	33	04						
22	Jan. 28	ME	4	33	04		$\pm 0.4$				Near Hinomisaki, Wakayama Prefecture.
		MN	4	33	04	0.6		+2			
		F	4	33	16						
		ePEN	10	37	59					36	
23	Jan. 28	SEN	10	38	04						Near Wakayama City.
		ME	10	38	05	0.4	-3				
		MN	10	38	05	0.5		-4			
		F	10	38	33						
24	Jan. 28	ePEN	16	57	16					33	Near Hinomisaki, Wakayama Prefecture.
		S	16	57	20						
		ME	16	57	21		+2				
		MN	16	57	21	0.2		-2			

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
23	Jan. 29	F	16	57	37					409	Western foot of Mt. Aso. Felt in northern part of Kyûsyû.
		P <sub>E</sub>	1	39	43		-0.9				
		eP <sub>N</sub>	1	39	42			?			
		eP <sub>Z</sub>	1	39	43				(-)		
		P <sub>N</sub>	1	39	44						
		S <sub>EN</sub>	1	40	37						
		S <sub>Z</sub>	1	40	39						
		M <sub>E</sub>	1	40	55	2.4	-24				
		M <sub>N</sub>	1	40	46	2.2		+37			
		M <sub>Z</sub>	1	40	46	2.1			-16		
eF	1	51	±								
24	Jan. 29	eP <sub>E</sub>	12	36	56		-0.8			2425	ESE off Kinkwazan, Miyagi Prefecture.
		P <sub>N</sub>	12	37	02			-0.9			
		e <sub>Z</sub>	12	39	23						
		S <sub>E</sub>	12	41	06						
		S <sub>N</sub>	12	40	50						
		eF	12	51	±						
		eP <sub>E</sub>	0	17	20						
e <sub>N</sub>	0	17	34								
eS <sub>E</sub>	0	17	50								
S <sub>N</sub>	0	17	48								
M <sub>E</sub>	0	18	08	2.1	±0.4						
M <sub>N</sub>	0	17	50	1.7		+1					
eF	0	21	±								
26	Feb. 1	e <sub>E</sub>	15	30	02						South off Hatidyô Isl.
		e <sub>N</sub>	15	30	01						
		S <sub>E</sub>	15	30	07						
		S <sub>N</sub>	15	30	08						
		M <sub>E</sub>	15	30	09	1.5	-4				
		M <sub>N</sub>	15	30	09	2.0		+2			
		eF	15	34	±						
27	Feb. 1	P	16	37	12				65	In the Kii Channel.	

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
		S	16	37	20						
		M <sub>E</sub>	16	37	20	0.4	+4				
		M <sub>N</sub>	16	37	20	0.5		±14			
		M <sub>Z</sub>	16	37	21	0.5			-3		
		F	16	38	27						
28	Feb. 2	e <sub>N</sub>	15	18.5							A distant earthquake. Near Geelvink Bay, New Guinea.
		e <sub>E</sub>	15	21.5							
		L <sub>N</sub>	15	25	59						
		eF	15	38	±						
29	Feb. 3	eP <sub>EN</sub>	14	41	24						A distant earthquake. East off New Guinea.
		e <sub>Z</sub>	14	42	07						
		e <sub>EN</sub>	14	50	49						
		L <sub>E</sub>	14	52	24						
		L <sub>N</sub>	14	54	48						
		L <sub>Z</sub>	14	54	24						
		M <sub>E</sub>	14	56	42	21.4	+29				
M <sub>N</sub>	14	56	54	21.4		±55					
M <sub>Z</sub>	14	57	01	22.3			±67				
eF	15	20	±								
30	Feb. 4	e <sub>E</sub>	13	47	28						A distant earthquake, Northern part of Persia.
		e <sub>N</sub>	13	47	42						
		L <sub>N</sub>	14	00	39						
		eF	14	38	±						
*31	Feb. 4	iP	16	09	12		-4.2	+2.8	-5.0	112	Perceptible. Near Okayama City. Felt in eastern part of Tyûgoku district.
		iS <sub>EZ</sub>	16	09	27						
		iS <sub>N</sub>	16	09	28						
		M <sub>E</sub>	16	09	28	1.1	-55				
		M <sub>N</sub>	16	09	29	0.6		±36			
		M <sub>Z</sub>	16	09	28	1.5			-22		
32	Feb. 4	eP <sub>E</sub>	22	08	49		(+)			5280?	SE off Banda-neira, Dutch east Indies.
		eP <sub>N</sub>	22	08	47				-0.9		

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks	
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>			
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.		
33	Feb. 7	PZ	22	08	47				+1.7			
		SEN	22	14	51							
		eF	22	30	±							
		PEN	22	30	38						487	SW off Yaku Isl, Ryūkyū IIs.
		SEN	22	31	44							
		SZ	22	31	40							
		ME	22	31	50	2.2	-4					
*34	Feb. 8	MN	22	32	07	2.2		-3				
		MZ	22	32	11	2.1			-1			
		eF	22	37	±							
		iP	6	02	08		+1.7	-2.8	-3.3	35	Perceptible.	
		iS	6	02	13						Lower basin of the Arita River, Wakayama Prefecture.	
		ME	6	02	13	0.4	-13					
		M <sub>1</sub> N	6	02	14	0.5		-19				
35	Feb. 9	MZ	6	02	14	0.3			-5			
		M <sub>2</sub> N	6	02	16	0.4			-16			
		F	6	06	01							
		ePEN	9	37	±						Western part of the Caroline IIs., Pacific Ocean.	
		eSN	9	43	22							
		LN	9	50	±							
		Lz	9	49	±							
36	Feb. 9	eFz	10	00	±							
		eFEN	10	49	±							
		PEN	20	51	09						36	Near Wakayama City.
		PZ	20	51	08							
		S	20	51	13							
		ME	20	51	14	0.4	+4					
		MN	20	51	13	0.4		-6				
37	Feb. 9	MZ	20	51	13				±1			
		F	20	52	15							
		eE	22	42	42						Near Mt. Asama?	
		SEZ	22	43	11							

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks	
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>			
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.		
38	Feb. 10	SN	22	43	12							
		F	22	45	±							
		PEZ	22	03	29		+0.4				720	East off Siويا Cape, Fuku-sima Prefecture.
		PN	22	03	32				-0.9?			Fet in Kwanto and southern part of Ōou district.
		SE	22	05	07							
		SN	22	05	08							
		Sz	22	05	06							
		ME	22	05	31							
		MN	22	05	24							
		MZ	22	05	20							
39	Feb. 12	eF	22	15	±							
		eE	11	43	41							
		eN	11	43	33							
		LN	11	46	45							
		eZ	11	48	01							
		M <sub>1</sub> N	11	49	42	12.7			+65			
		LE	11	49	49							
		ME	11	51	54	10.9	-30					
		MZ	11	51	58	12.4				-25		
		eF	12	11	±							
40	Feb. 12	PE	21	45	30		+1.7			380	North off Hatidyō Isl..	
		PNZ	21	45	31				+0.9	+3.3		
		S	21	46	22							
		ME	21	46	24	1.7	+3					
		MN	21	46	23	2.4			+7			
		MZ	21	46	37							
		eF	21	51	±							
41	Feb. 13	FEN	5	43	10		+0.4			115	Near Motoyama, Koti Prefecture.	
		SEZ	5	43	26							
		SN	5	43	24							
		ME	5	43	27	0.4	-3					
		MN	5	43	30	0.7			+2			
		MZ	5	43	30	0.9					±1	

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
42	Feb. 13	eF	5	44	±						Ditto.
		eEN	6	14	50						
		SEN	6	14	53						
		ME	6	14	53	0.4	-3				
		MN	6	14	58	0.4		+2			
		F	6	15	45						
43	Feb. 14	eP	4	04	32		+0.4	+0.9	+2.5	2450	West off Luzon, Philippine. Slight damage in Some towns on NW coast of Luzon. 17°30'N 119°25'E. (according to Manila's re- port.)
		P	4	04	33		-2.5	-2.8	-5.0		
		SEN	4	08	30						
		Sz	4	08	40						
		M <sub>1E</sub>	4	08	51	6.8	-237				
		M <sub>N</sub>	4	08	40	5.3		-250			
		M <sub>Z</sub>	4	08	55	6.6			-133		
		M <sub>2E</sub>	4	16	12	16.9	-720				
		eF	5	38	±						
44	Feb. 14	eEN	5	00	15					In the Kii Channel.	
		eSEN	5	00	45						
		Sz	5	00	56						
		eF	5	03	±						
45	Feb. 16	eEN	6	44	±					A distant earthquake. East off Formosa?	
		eF	7	09	±						
46	Feb. 17	ePE	3	11	50				450	In the Kasima-nada, east off Ibaraki Prefecture.	
		ePN	3	11	57						
		ez	3	12	10						
		SEZ	3	12	53						
		SN	3	12	54						
		ME	3	13	20	1.8	-1				
		MN	3	13	20	2.9		-5			
		MZ	3	13	18	2.4			±1		
eF	3	19	±								
47	Feb. 17	ePE	9	17	57				466	Ditto.	

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	$\mu$	
48	Feb. 17	ePN	9	18	02						Ditto.
		ez	9	18	11						
		SE	9	18	56						
		SN	9	19	08						
		ME	9	19	31	2.8	±2				
		MN	9	19	17	2.8		-3			
		MZ	9	19	21	2.8			-1		
		eF	9	25	±						
		eE	12	09	26						
		eN	12	09	13						
49	Feb. 19	eE	12	00	16						A distant earthquake SW off Sumatra, Indian Ocean?
		eN	12	10	13						
		ME	12	10	32	2.1	+1				
		MN	12	10	26	2.6		-1			
		MZ	12	10	23	2.3			-1		
		eF	12	14	±						
		eEN	10	54	±						
		LN	10	58	37						
		eF	11	42	±						
		50	Feb. 22	eE	1	51	50				
eN	1			51	52						
SE	1			52	27						
SN	1			52	30						
ME	1			52	36	2.4	±1				
MN	1			52	45	2.4		±1			
eF	1	56	±								
51	Feb. 24	iP	6	27	00					SSE off Bonin Isl. Felt in Bonin, abnormal felt area in Hukusima Pre- fecture.	
		eSEN	6	29	38		-3.4	+2.8	+1.7		1510
		LE	6	31	11						
		LN	6	31	15						
		LZ	6	30	50						
		ME	6	31	31	19.1	-1014				
		MN	6	31	38	16.7		-667			
		MZ	6	31	34	20.3			+1067		

No.	Date	Phase	Time			Period	Amplitude			Δ	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	μ	μ	μ	km.	
52	Feb. 25	eF <sub>EN</sub>	8	36	±					2500?	Near Luzon, Philippine.
		eF <sub>Z</sub>	8	01	±						
		eP	16	27	53						
		eS <sub>E</sub>	16	31	57						
		eS <sub>N</sub>	16	32	00						
53	Feb. 28	P <sub>EN</sub>	4	50	36					32	Local shock.
		S <sub>EN</sub>	4	50	41						
		M <sub>E</sub>	4	50	41		+1				
		M <sub>N</sub>	4	50	41	0.4		-2			
		F	4	51	09						
*54	Feb. 28	iP <sub>EN</sub>	7	48	16		+2.6	-3.8		29	Perceptible. Near Hikata, south of Wakayama City.
		iF <sub>Z</sub>	7	48	15			+1.7			
		S <sub>EN</sub>	7	48	20						
		S <sub>Z</sub>	7	48	19						
		M <sub>E</sub>	7	48	22	0.5	+17				
		M <sub>N</sub>	7	48	21	0.4		-26			
		M <sub>Z</sub>	7	48	21	0.6			-18		
		F	7	51	40						
55	Feb. 28	P <sub>EZ</sub>	14	29	41		-0.9	-2.8	+1.7	5035	A distant earthquake. East off New Guinea.
		eP <sub>N</sub>	14	29	42						
		S <sub>E</sub>	14	36	26						
		S <sub>N</sub>	14	36	25						
		L <sub>E</sub>	14	43	19						
		L <sub>N</sub>	14	42	39						
		L <sub>Z</sub>	14	42	07						
		M <sub>E</sub>	14	47	23	15.5	+46				
		M <sub>N</sub>	14	46	24	18.8		+221			
		M <sub>Z</sub>	14	46	20	18.8			-200		
eF	15	26	±								
56	Mar. 1	P	14	03	34			+0.9		40	In the Wakaura Bay, Kii Channel.
		S <sub>EN</sub>	14	03	39						

No.	Date	Phase	Time			Period	Amplitude			Δ	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	μ	μ	μ	km.	
57	Mar. 1	M <sub>E</sub>	14	03	40	0.4	±1				A distant earthquake. Near New Britain, east off New Guinea.
		M <sub>N</sub>	14	03	41	0.3		+3			
		F	14	04	23						
58	Mar. 1	eP <sub>E</sub>	19	49	12						By Omori's seismograph. Pacific coast of Chile. 39°S 73°W. (U.S.C.G.S.)
		eP <sub>N</sub>	19	49	04						
		eZ	19	49	±						
		S <sub>N</sub>	19	55	51						
		L <sub>N</sub>	20	04	44						
59	Mar. 2	L <sub>Z</sub>	20	03	48					25	Local shock.
		eF	20	33	±						
		eP <sub>?N</sub>	22	04	54						
		eF	23	09	±						
		eP <sub>N</sub>	0	05	05						
60	Mar. 2	S <sub>EN</sub>	0	05	08					0.4	±1
		M <sub>E</sub>	0	05	09						
		M <sub>N</sub>	0	05	09				-1		
		F	0	05	26						
		eP <sub>EN</sub>	10	45	07						
61	Mar. 2	S <sub>EN</sub>	10	45	18					0.5	±2
		eS <sub>Z</sub>	10	45	17						
		M <sub>E</sub>	10	45	23						
		M <sub>N</sub>	10	45	20	0.4			+5		
		M <sub>Z</sub>	10	45	20						
62	Mar. 4	F	10	46	22						±1
		eE	12	40	41						
		eN	12	40	45						
		S	12	41	34						
		M <sub>E</sub>	12	41	35	1.5	±1				
63	Mar. 2	M <sub>N</sub>	12	41	35	1.9			+1		SSW off Hatidyō Isl.
		eF	12	44	±						
		eE	11	24	41						
62	Mar. 4	eE	11	24	41						Aleutian Is.

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
							AE	AN	Az		
			G.	M.	T.	s	$\mu$	$\mu$	$\mu$	km.	
		eN	11	24	42						
		ez	11	24	51						
		eSN	11	31	48						
		LN	11	34	23						
		LE	11	36	25						
		ME	11	38	00	15.9	$\pm 15$				
		MN	11	37	17	16.1		$\pm 8$			
		eFz	11	44	$\pm$						
		eFEN	12	21	$\pm$						
63	Mar. 5	ePE	11	58	44					9250	New Zealand.
		ePN	11	58	40						
		Pz	11	58	42				$+1.5$		
		eSEN	12	09	05						
		ME	12	36	21	15.0	$-15$				
		MN	12	33	59	18.8		$\pm 58$			
		Mz	12	31	16	19.7			$-83$		
		eF	13	39	$\pm$						
64	Mar. 7	ePEN	9	53	16					19	Near Wakayama City.
		SEN	9	53	18						
		ME	9	53	19		$-2$				
		MN	9	53	19	0.4		$-2$			
		F	9	53	44						
65	Mar. 8	ePEN	11	31	18					20	Ditto.
		eSEN	11	31	21						
		ME	11	31	21		$-1$				
		MN	11	31	21	0.3		$-3$			
		F	11	31	43						
66	Mar. 11	S	10	44	34						Near Nero-deep, felt in Guam, Pacific Ocean.
		ME	10	44	36	1.9	$+2$				
		MN	10	44	37	2.5		$-2$			
		Mz	10	44	36	2.1			$-5$		
		eF	10	50	$\pm$						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
							AE	AN	Az		
			G.	M.	T.	s	$\mu$	$\mu$	$\mu$	km.	
67	Mar. 12	ePEN	12	29	06					24	Near Wakayama City.
		SEN	12	29	10						
		ME	12	29	10		$\pm 1$				
		MN	12	29	10	0.3		$\pm 1$			
		F	12	29	22						
68	Mar. 12	SEN	16	27	52						In the Kii Channel.
		ME	16	27	53	0.4	$-2$				
		MN	16	27	53	0.3		$+1$			
		F	16	28	03						
69	Mar. 13	P	0	13	00				$+0.9$	88	Near Sisikui, Southern part of Tokushima Prefecture.
		SEN	0	13	12						
		ME	0	13	14	0.4	$-5$				
		MN	0	13	15	0.4		$-7$			
		Mz	0	13	24	0.9			$-2$		
		F	0	14	18						
70	Mar. 13	ePEN	1	10	17					11	Local shock.
		S	1	10	18						
		F	1	10	24						
71	Mar. 13	SEN	4	37	53						Near Wakayama City.
		ME	4	37	54		$\pm 1$				
		MN	4	37	54	0.4		$-2$			
		F	4	38	07						
72	Mar. 13	ePEN	13	21	15					5085	Coral Sea, SE off New Guinea?
		ePz	13	21	17						
		eSE	13	27	24						
		eSN	13	28	40						
		eF	13	57	$\pm$						
73	Mar. 13	PEN	16	47	38					30	Near Wakayama City.
		SEN	16	47	42						
		ME	16	47	43		$\pm 1$				
		MN	16	47	43	0.4		$-3$			



No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
74	Mar. 13	F	16	48	01					105	Near Siomisaki, south end of the Kii Peninsula.
		P	16	58	58		-0.9	+1.2	+1.5		
		S	16	59	12						
		ME	16	59	13	1.5	+6				
		MN	16	59	13	1.9		-9			
		MZ	16	59	14	1.7			+2		
		F	17	01	11						
75	Mar. 15	eP <sub>EN</sub>	15	13	55					0.4	Near Wakayama City.
		SE <sub>N</sub>	15	13	57						
		ME	15	13	57		$\pm 1$				
		MN	15	13	57			-1			
		F	15	14	12						
76	Mar. 16	eP <sub>EN</sub>	14	21	19					4330	A distant earthquake. Near Solomon IIs.
		iP <sub>Z</sub>	14	21	20				-4.5		
		SE	14	27	27						
		SN	14	27	25						
		SZ	14	27	23						
		eF	14	39	$\pm$						
77	Mar. 16	P <sub>EN</sub>	18	58	52					0.4	Near Wakayama City.
		S	18	58	57						
		M <sub>EN</sub>	18	58	58		+2	$\pm 3$			
		F	18	59	16						
78	Mar. 17	cP <sub>N</sub>	4	33	33					0.4	In the Kii Channel.
		S	4	33	38						
		ME	4	33	38		+4				
		MN	4	33	38	0.3		-7			
		F	4	34	06						
79	Mar. 18	FE	4	38	09		+2.8			2875	Southern part of the Okhotsk Sea.
		PNZ	4	38	06			-3.7	+30		
		eSE	4	42	40						
		eSN	4	42	44						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
80	Mar. 20	eF	4	55	$\pm$					0.4	81
		eP <sub>N</sub>	2	31	13						
		SE <sub>N</sub>	2	31	24						
		ME	2	31	24		-2				
		MN	2	31	24	0.5		-3			
		F	2	32	12						
81	Mar. 20	eP <sub>EN</sub>	2	46	14					0.4	4480
		eP <sub>Z</sub>	2	46	13						
		SE <sub>N</sub>	2	52	27						
		eF	3	19	$\pm$						
82	Mar. 20	P	17	19	33					0.4	24
		S	17	19	36						
		ME	17	19	36		+4				
		MN	17	19	37			$\pm 7$			
		MZ	17	19	37				$\pm 2$		
		F	17	20	19						
83	Mar. 20	eP <sub>N</sub>	17	20	35					0.4	18?
		SE <sub>N</sub>	17	20	37						
		ME	17	20	37		$\pm 1$				
		MN	17	20	37			$\pm 1$			
		F	17	20	50						
84	Mar. 21	eP <sub>EN</sub>	3	40	43					0.4	Near Mt. Amagi. Weak shocks were felt in the Izu Peninsula.
		eP <sub>Z</sub>	3	40	42						
		eE	3	41	47						
		eN	3	41	46						
		ME	3	41	48	2.5	$\pm 9$				
		MN	3	41	52	2.7		+20			
85	Mar. 23	MZ	3	42	28	3.6			-2		
		eF	3	51	$\pm$						
		cP <sub>EN</sub>	12	49	01					0.4	In the Kii Channel.
SE <sub>N</sub>	12	49	06								

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks	
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>			
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.		
86	Mar. 24	M <sub>EN</sub>	12	49	07	0.3	-2	$\pm 2$				
		F	12	49	30							
		P <sub>EN</sub>	12	13	29		+0.5			5580	A distant earthquake.	
		P <sub>Z</sub>	12	13	28						Near Solomon IIs.	
		e <sub>SE</sub>	12	20	45							
		e <sub>SN</sub>	12	20	38							
		e <sub>SZ</sub>	12	20	46							
		L <sub>EN</sub>	12	27	09							
		M <sub>E</sub>	12	28	36	21.5	-29					
		M <sub>N</sub>	12	28	50	21.5		+45				
87	Mar. 25	M <sub>Z</sub>	12	32	18	20.6			-67			
		e <sub>F</sub>	13	20	$\pm$							
		e <sub>PEN</sub>	3	29	17					49	Local shock?	
		S <sub>EN</sub>	3	29	24							
		M <sub>E</sub>	3	29	21	0.5	-2					
		M <sub>N</sub>	3	29	24	0.3		-3				
88	Mar. 29	F	3	29	46							
		e <sub>PEN</sub>	23	26	24					32	In the Kii Channel.	
		S <sub>EN</sub>	23	26	28							
		M <sub>E</sub>	23	26	29		-2					
		M <sub>N</sub>	23	26	29	0.3		-2				
89	Mar. 30	F	23	26	58							
		e <sub>PE</sub>	14	55	04					289	Northern part of the Hyūga-nada. Felt in eastern part of Kyūsyū district.	
		e <sub>PN</sub>	14	55	06							
		e <sub>Z</sub>	14	55	18							
		S <sub>E</sub>	14	55	43							
		S <sub>N</sub>	14	55	44							
		S <sub>Z</sub>	14	55	47							
		M <sub>E</sub>	14	55	57	1.7	-3					
		M <sub>N</sub>	14	55	58	1.9		-3				
M <sub>Z</sub>	14	55	57	2.4			+2					
e <sub>F</sub>	15	02	$\pm$									

# TOYOOKA JAPAN.

## SEISMOLOGICAL BULLETIN

A Branch Station of the Kobe Meteorological Observatory of Japan.

$\varphi = 35^{\circ} 32'$   $\lambda = 134^{\circ} 49'$   $h = 32.2$  m. Underground: Tertiary.

Instruments: Omori's Seismograph.  
(Horizontal Pendulum)

Wiechert Seismograph.  
(Horizontal & Vertical)

### Jan.

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>E</sub> :	22.5	3.0	0.001	20
A <sub>N</sub> :	20.8	3.0	0.001	20

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>E</sub> :	5.8	10	0.006	91
A <sub>N</sub> :	6.2	10	0.005	87
A <sub>Z</sub> :	3.4	3.1	0.003	62

### Feb.

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>E</sub> :	20.0	3.0	0.001	20
A <sub>N</sub> :	20.0	3.0	0.001	20

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>E</sub> :	5.6	$\infty$	0.007	96
A <sub>N</sub> :	6.0	$\infty$	0.005	104
A <sub>Z</sub> :	3.6	3.3	0.003	56

### Mar.

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>E</sub> :	20.1	3.0	0.001	20
A <sub>N</sub> :	20.8	3.0	0.001	20

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>E</sub> :	5.6	$\infty$	0.007	81
A <sub>N</sub> :	6.2	$\infty$	0.006	100
A <sub>Z</sub> :	3.5	3.0	0.003	58

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
1	Jan. 3	P <sub>NZ</sub>	9	47	17					2280	Southwestern coast of Kam-chatka (about $53^{\circ} 40' N$ $156^{\circ} 40' E$ .) Deep focus earthquake.
		e <sub>PE</sub>	9	47	20						
		S <sub>E</sub>	9	51	06						
		S <sub>N</sub>	9	51	04						
		M <sub>EN</sub>	9	52	47		-26	+5			
		e <sub>F</sub>	10	00	$\pm$						

No.	Date	Phase	Time			Period	Amplitude			Δ	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
*2	Jan. 8	P	h	m	s	s	μ	μ	μ	km.	Perceptible. Near Tudi, upper basin of the Yosino River, Sikoku district. Felt in Sikoku and Tyû-goku district.
		i <sub>Z</sub>	23	07	33		-7.7	-21.8	-19.4	226	
		i <sub>N</sub>	23	07	40			+58			
		i <sub>Z</sub>	23	07	45				-32		
		i <sub>EN</sub>	23	07	53		+81	+46			
		S <sub>EN</sub>	23	08	04						
		M <sub>E</sub>	23	08	09	2.9	-464				
		M <sub>NZ</sub>	23	08	08	1.6		+346	-118		
eF	23	15	±								
3	Jan. 12	eL <sub>N</sub>	13	48	15						A distant earthquake. Yunnan, China.
		M <sub>N</sub>	13	49	02	13.4		-17			
		eF	14	58	±						
4	Jan. 15	eF <sub>Z</sub>	8	51	18					4380	Destructive at Sitamarhi, Maduban, Darbhanga and Monghyr, basin of the Ganges River Bihar, India.
		eP <sub>EN</sub>	8	51	20						
		P <sub>EN</sub>	8	51	24						
		P <sub>Z</sub>	8	51	23						
		c <sub>Z</sub>	8	57	05						
		S <sub>E</sub>	8	57	29						
		S <sub>N</sub>	8	57	36						
		L <sub>E</sub>	9	00	49						
		L <sub>N</sub>	9	00	42						
		e <sub>Z</sub>	9	04	49						
		M <sub>E</sub>	9	09	01	14.0	+149				
		M <sub>N</sub>	9	09	08	13.2		-349			
		M <sub>Z</sub>	9	10	24	13.0			+89		
		M <sub>2E</sub>	9	10	41	13.0	+248				
		M <sub>2N</sub>	9	10	53	12.4		+322			
M <sub>2Z</sub>	9	11	30	13.0			-100				
M <sub>3E</sub>	9	10	53	10.4	+167						
eF	10	13	±								
5	Jan. 20	L <sub>N</sub>	18	08	±					Faint record. Felt at Tai-yuan, Suei-yuan and slightly destructive in Wooyuan	
		M <sub>N</sub>	18	10	52						
		eF	18	22	±						

No.	Date	Phase	Time			Period	Amplitude			Δ	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
6	Jan. 20	eL <sub>EN</sub>	h	m	s	s	μ	μ	μ	km.	North far off to Keelung, Formosa.
		eF <sub>N</sub>	22	58	±						
7	Jan. 21	eL <sub>N</sub>	23	16	±						Northern part of the Formosa Channel.
		eF	6	59	±						
8	Jan. 22	eL <sub>N</sub>	7	16	±						Ditto.
		eF	7	16	±						
9	Jan. 23	e <sub>EN</sub>	2	03	10						In the Kii Channel.
		S <sub>E</sub>	2	03	14						
		S <sub>N</sub>	2	03	15						
		M <sub>1E</sub>	2	03	17		+4				
		M <sub>N</sub>	2	03	16				±3		
		M <sub>2E</sub>	2	03	20		+4				
10	Jan. 29	P	1	39	51					480	Western foot of Mt. Aso. Felt in northern part of Kyûsyû.
		S	1	40	55						
		M <sub>E</sub>	1	41	11	2.1	-25				
		M <sub>N</sub>	1	41	08	1.7			-31		
		M <sub>Z</sub>	1	41	00	1.9				-19	
		eF	1	45	±						
*11	Feb. 4	P	16	09	10		-5.3	-3.8	-7.1	97	Perceptible. Near Okayama City. Felt eastern part of Tyû-goku district.
		S	16	09	23						
		M <sub>EN</sub>	16	09	24	1.1	+48	-67			
		M <sub>Z</sub>	16	09	25	1.1			+36		
		eF	16	14	±						
12	Feb. 10	P	22	03	24					601	East off the Siويا Cape, Hukusima Prefecture. Felt in Kwanto and southern part of Ôou district.
		eS <sub>E</sub>	22	04	45						
		eS <sub>N</sub>	22	04	44						
		S <sub>Z</sub>	22	04	35						
		M <sub>EN</sub>	22	05	17	1.2	-7	+16			
		M <sub>Z</sub>	22	05	13					-11	
eF	22	11	±								

No.	Date	Phase	Time G. M. T.	Period s	Amplitude			$\Delta$ km	Remarks
					A <sub>E</sub> $\mu$	A <sub>N</sub> $\mu$	A <sub>Z</sub> $\mu$		
13	Feb. 12	LN	11 48 21					A distant earthquake. Yunnan, China?	
		M <sub>N</sub>	11 49 47		-20				
		eF	12 03 ±						
14	Feb. 14	ePz	4 04 40				-28.6	2460 West off Luzon, Philippine. Slight damage some towns on NW coast of Luzon. 17°30'N 119°25'E. (accord- ing to Manila's report.)	
		P <sub>EN</sub>	4 04 45	-5.3	-16.3				
		Pz	4 04 43						
		i <sub>EN</sub>	4 04 49						
		iz	4 05 05						
		iz	4 05 18						
		S <sub>EN</sub>	4 08 47						
		Sz	4 08 56						
		LE	4 10 23						
		LN	4 10 19						
		M <sub>1Z</sub>	4 15 10	18.5		+19			
		M <sub>E</sub>	4 16 30	17.2	+34				
		M <sub>1N</sub>	4 17 37	14.0		-77			
		M <sub>2Z</sub>	4 17 35	14.9		+27			
M <sub>2N</sub>	4 18 21	15.0		+58					
eF	5 12 ±								
15	Feb. 17	eP <sub>N</sub>	9 17 55				492	In the Kasima-nada, east off Ibaraki Prefecture.	
		ePz	9 17 50						
		S <sub>N</sub>	9 19 01						
		Sz	9 19 03						
		M <sub>N</sub>	9 19 17		+7				
		Mz	9 19 15			+4			
eF	9 21 ±								
16	Feb. 19	eLN	10 17 37					A distant earthquake SW off Sumatora, Indian Ocean?	
		eF	10 25 ±						
17	Feb. 24	P <sub>NZ</sub>	6 27 13				1072	SSE off Bonin Isl.. Felt in Bonin, abnormal felt area in Hukusima Pre- fecture.	
		P <sub>E</sub>	6 27 22						
		LE	6 30 23						
		LN	6 30 17						
		eLz	6 30 14						

No.	Date	Phase	Time G. M. T.	Period s	Amplitude			$\Delta$ km.	Remarks
					A <sub>E</sub> $\mu$	A <sub>N</sub> $\mu$	A <sub>Z</sub> $\mu$		
18	Feb. 28	M <sub>1E</sub>	6 32 30	17.6	-97			5360 A distant earthquake. East off new Guinea.	
		M <sub>N</sub>	6 32 54	17.0		+267			
		Mz	6 32 36	17.8			-102		
		M <sub>2E</sub>	6 34 21		+94				
		eF	7 30 ±						
		P	14 29 49						
19	Mar. 1	S <sub>E</sub>	14 36 49					Near New Britain, east of New Guinea.	
		S <sub>N</sub>	14 36 51						
		LN	14 42 54						
		M <sub>E</sub>	14 47 14		-70				
		M <sub>1N</sub>	14 46 24	18.0		-140			
		M <sub>2N</sub>	14 47 49	17.9		-150			
		Mz	14 47 33			-7			
		M <sub>3N</sub>	14 52 02	17.5		+80			
eF	15 10 ±								
20	Mar. 4	eLN	19 55 54					Aleutian IIs. Faint record, By Omori's seismograph.	
		M <sub>N</sub>	20 06 49	18.8		-6			
		eF	20 16 ±						
21	Mar. 5	LE	11 31 25					A distant earthquake. New Zealand.	
		LN	11 31 37						
		M <sub>E</sub>	11 36 19	17.5	-8				
		M <sub>N</sub>	11 35 17			+14			
		eF	11 55 ±						
22	Mar. 8	eE	12 07 16					Local shock.	
		S <sub>N</sub>	12 09 15						
		LN	12 23 11						
		M <sub>1N</sub>	12 32 31	18.6		-8			
		M <sub>2N</sub>	12 39 45	18.6		+8			
eF	13 41 ±								
22	Mar. 8	P	7 07 56				20	Local shock.	
		S <sub>EN</sub>	7 07 58						
		Sz	7 07 59						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
23	Mar. 9	M	7	07	59		-33	+27	$\pm 10$		
		F	7	08	45						
		P <sub>EN</sub>	9	34	06					6	Ditto?
		S <sub>EN</sub>	9	34	07						
		M <sub>EN</sub>	9	34	07		$\pm 5$	$\pm 3$			
24	Mar. 13	F	9	34	24						
		P <sub>Z</sub>	13	21	16					5850	A distant earthquake.
		F <sub>E</sub>	13	21	29						Coral Sea, SE off New Guinea?
		P <sub>N</sub>	13	21	31						By Omori's seismograph.
		S <sub>E</sub>	13	28	59						
		S <sub>N</sub>	13	28	56						
		L <sub>E</sub>	13	35	25						
		L <sub>N</sub>	13	34	48						
		M <sub>E</sub>	13	36	41		-16				
		M <sub>1N</sub>	13	36	30			+26			
		M <sub>2N</sub>	13	42	02	15.0		-20			
25	Mar. 18	eF	14	43	$\pm$						
		eP <sub>Z</sub>	4	37	57						Southern part of Okhotsk Sea.
		P	4	37	59						
26	Mar. 20	eF	4	50	$\pm$						
		e <sub>N</sub>	2	50	23						Western part of Caroline IIs, Pacific Ocean.
		eL <sub>N</sub>	2	56	34						
27	Mar. 21	eF	3	07	$\pm$						
		eM <sub>N</sub>	0	59	07						A distant earthquake.
		eF	1	12	$\pm$						By Omori's seismograph.
28	Mar. 21	P <sub>EN</sub>	3	40	46					393	Near Mt. Amagi.
		P <sub>Z</sub>	3	40	47						Weak shocks were felt at Izu Peninsula.
		i <sub>EN</sub>	3	40	55		(+)	(-)			
		Z	3	40	53				(-)		
		S <sub>E</sub>	3	41	34						
S <sub>N</sub>	3	41	32								

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
29	Mar. 21	i <sub>SN</sub>	3	41	39						
		S <sub>Z</sub>	3	41	39						
		M <sub>EN</sub>	3	41	54	1.4	-36	+53			
		M <sub>Z</sub>	3	41	43	1.5					-35
		eF	3	48	$\pm$						
30	Mar. 24	eL <sub>N</sub>	5	43	08						A distant earthquake.
		eF	5	50	$\pm$						By Omori's seismograph.
31	Mar. 30	P <sub>N</sub>	12	13	38					5620	A distant earthquake.
		P <sub>Z</sub>	13	13	36						Near Solomon IIs.
		P <sub>E</sub>	12	13	45						
		S <sub>E</sub>	12	21	03						
		S <sub>N</sub>	12	21	01						
		eL <sub>N</sub>	12	27	32						
		M <sub>1N</sub>	12	32	56	20.6		+9			
		M <sub>2N</sub>	12	36	41	15.5		+9			
32	Mar. 30	eF	13	00	$\pm$						
		P <sub>N</sub>	14	55	31					300	Northern part of the Hyûganada.
		S <sub>EN</sub>	14	56	12						
		S <sub>Z</sub>	14	56	17						
		M <sub>E</sub>	14	56	26		+7				Felt in eastern part of Kyûsyû district.
		M <sub>N</sub>	14	56	31			-6			
		M <sub>Z</sub>	14	56	24						+3
F	14	57	54								

昭和十年六月廿五日印刷發行

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# SEISMOLOGICAL BULLETIN

OF THE

IMPERIAL MARINE OBSERVATORY

AND

KOBE METEOROLOGICAL OBSERVATORY.

KOBE, JAPAN.

VOL. X No. 2.

From April 1 1934, to June 30 1934.

KOBE  
—  
June, 1935.

# KÔBE JAPAN.

## SEISMOLOGICAL BULLETIN

of the Imperial Marine Observatory and the Kobe Meteorological Observatory of Japan.

$\phi=34^{\circ} 41' 18''N$   $\lambda=135^{\circ} 10' 51''E$   $h=58.3$  m Underground : Diluvial Series.

Instruments : Omori's Seismograph.  
(Horizontal Pendulum)

Wiechert Seismograph.  
(Horizontal & Vertical)

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### April

	$T_0$	$\varepsilon$	$\frac{r}{T_0^2}$	V
AE:	18.5		0.001	20
AN:	20.4		0.001	20

	$T_0$	$\varepsilon$	$\frac{r}{T_0^2}$	V
AE:	6.8	Aperiodic	0.005	95
AN:	6.1	"	0.005	98
AZ:	4.7	4	0.003	83

### May

	$T_0$	$\varepsilon$	$\frac{r}{T_0^2}$	V
AE:	19.4		0.001 <sup>(-)</sup>	20
AN:	21.0		0.001	20

	$T_0$	$\varepsilon$	$\frac{r}{T_0^2}$	V
AE:	6.4	Aperiodic	0.006	117
AE:	6.1	"	0.005	116
AZ:	4.7	5	0.002	83

### June

	$T_0$	$\varepsilon$	$\frac{r}{T_0^2}$	V
AE:	19.7		0.001 <sup>(-)</sup>	20
AN:	21.7		0.001	20

	$T_0$	$\varepsilon$	$\frac{r}{T_0^2}$	V
AE:	6.5	Aperiodic	0.008	116
AN:	6.6	"	0.006	104
AZ:	4.8	6	0.004	86

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	S.		AE	AN	AZ		
58	April 3	eE	h	m	s	s	$\mu$	$\mu$	$\mu$	km.	Near Inubô Cape, Tiba Prefecture.
		ME	1	12	49		$\pm 5$				
		MN	1	13	07	3.1		$\pm 4$			
		MZ	1	13	00	3.0					
		eF	1	17	$\pm$	2.3					
59	April 3	PEN	22	34	09		-2	+2		NW off Bonin Isl..	

No.	Date	Phase	Time G. M. T.	Period s	Amplitude			$\Delta$ km.	Remarks
					A <sub>E</sub> $\mu$	A <sub>N</sub> $\mu$	A <sub>Z</sub> $\mu$		
60	April 5	FZ	22 34 10				+2		Record is irregular.
		iz	22 35 00						
		iz	22 35 21						
		iE	22 35 33						
		iE	22 35 53						
		M <sub>1</sub> N	22 39 38	9.1		-5			
		M <sub>1</sub> Z	22 39 40	8.5					
		ME	22 41 16	9.4	+4				
		eF	23 11 ±						
				iz	8 59 02				
		eE	8 59 28						
		eNZ	3 59 27						
		ME	8 59 56	3.5	+5				
		M <sub>1</sub> N	8 59 46	3.0		-4			
		M <sub>1</sub> Z	8 59 07	2.2			±3		
		eF	9 07 ±						
61	April 6	P	19 11 01					860	NE off Sioya Cape. Moderate shocks were felt in Hukusima Prefecture., Felt in Oôu and Kwantô district.
		iE	19 11 21						
		iE	19 11 42						
		iz	19 11 41						
		iSE	19 12 34						
		Sz	19 12 37						
		M <sub>1</sub> IE	19 12 50	4.5	+74				
		M <sub>1</sub> N	19 12 58	3.5		-45			
		M <sub>1</sub> Z	19 12 57	4.0			+32		
		M <sub>2</sub> E	19 14 08	4.2	+64				
M <sub>2</sub> N	19 14 08	4.4		-39					
		eF	19 39 ±						
62	April 8	PEN	2 53 50		-1.2	-1.7		44	Near Wakayama City. Time is uncertain.
		Pz	2 53 48				+2.4		
		SEN	2 53 56						
		Sz	2 53 55						
		ME	2 53 57		-4				
		M <sub>1</sub> N	2 53 58	0.3		±6			

No.	Date	Phase	Time G. M. T.	Period s	Amplitude			$\Delta$ km.	Remarks		
					A <sub>E</sub> $\mu$	A <sub>N</sub> $\mu$	A <sub>Z</sub> $\mu$				
63	April 8	MZ	2 53 57	0.4			±2				
		F	2 57 31								
		ePEN	3 22 55						54	Near Wakayama City.	
		eFz	3 22 56								
		SEN	3 23 02								
		M <sub>1</sub> EN	3 23 03	0.4	±3	±3					
		M <sub>1</sub> Z	3 23 05					±1			
		eF	3 28 ±								
				PE	15 40 05					111	In the Kumano-nada, SE off Kii Peninsula.
				iPN	15 40 05						
		iFz	15 40 07				-1.5				
		eN	15 40 19								
		SEN	15 40 20								
		Sz	15 40 21								
		ME	15 40 21	0.8	-8						
		M <sub>1</sub> N	15 40 22	0.8		±5					
		M <sub>1</sub> Z	15 40 23	0.5			±1				
		eF	15 44 ±								
65	April 10	P <sub>1</sub> N	10 31 18						A distant earthquake. Near Bali Isl., east off Java, Felt in east Java, Bali, and Lombok Isl..		
		eN	10 41 42	9.2							
		eE	10 42 35								
		M <sub>1</sub> N	11 00 26	12.8							
		eF	11 15 ±								
66	April 11	eN	21 30 30						A distant earthquake. Near New Hebrides IIs.. Very faint record.		
		iE	21 31 57	4.1	-7						
		eF	21 40 ±								
67	April 12	eE	9 29 11						A distant earthquake. Upper valley of the Yang- tze River, China.		
		eLN	9 28 43								
		ME	9 31 10	12.0							
		M <sub>1</sub> N	9 31 03	11.8		±10					
		eF	9 40 ±								



No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
68	April 14	P	17	45	35					36	Northern part of the Harima-nada, Inland Sea.
		S	17	45	39						
		M <sub>E</sub>	17	45	41		+3				
		M <sub>N</sub>	17	45	40			+3			
		F	17	46	08						
69	April 14	S <sub>N</sub>	18	21	14						Ditto.
		M <sub>N</sub>	18	21	15			$\pm 1$			
		F	18	21	31						
70	April 14	P	18	50	12					36	Ditto. Felt in Akasi City.
		S	18	50	17						
		M <sub>E</sub>	18	50	21	0.9	-12				
		M <sub>NZ</sub>	18	50	18			+10	+6		
		F	18	51	35						
71	April 14	iP <sub>EN</sub>	20	36	04					33	Northern part of the Harima-nada, Inland Sea.
		Pz	20	36	03						
		S <sub>EN</sub>	20	36	09						
		Sz	20	36	08						
		M <sub>E</sub>	20	36	13	0.7	+4				
		M <sub>N</sub>	20	36	09			$\pm 4$			
		Mz	20	36	09				+3		
F	20	36	44								
72	April 15	P <sub>E</sub>	10	34	22					366	SSE off Nozima Cape, Tiba Prefecture. Felt in Kwantô district.
		P <sub>NZ</sub>	10	34	23						
		iS <sub>EN</sub>	10	35	11						
		S <sub>iz</sub>	10	35	12						
		SM <sub>E</sub>	10	35	16	1.8	+40				
		i <sub>N</sub>	10	35	16	1.6		+30			
		i <sub>Z</sub>	10	35	29	3.0			+37		
		M <sub>E</sub>	10	35	54	3.1	+63				
		M <sub>N</sub>	10	35	39	3.6		-44			
		Mz	10	35	39	3.1			-25		
		eF	11	03	$\pm$						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
73	April 15	P <sub>E</sub>	22	21	08					3205	Felt in Mindanao. 6°N 127°E. (according to Manila's report)
		iP <sub>N</sub>	22	21	08			+10			
		iPz	22	21	06				+8		
		i <sub>N</sub>	22	21	30						
		i <sub>Z</sub>	22	21	29				+15		
		i <sub>E</sub>	22	22	52						
		eS <sub>?N</sub>	22	26	06						
		e <sub>Z</sub>	22	26	29						
		eL <sub>E</sub>	22	26	48						
		M <sub>1E</sub>	22	27	23	29.9	+26				
		eL <sub>N</sub>	22	28	11						
		eLz	22	28	31						
		M <sub>1N</sub>	22	29	59	22.0		-46			
M <sub>1Z</sub>	22	29	54	21.6			+30				
i <sub>E</sub>	22	32	13			-29					
M <sub>2E</sub>	22	35	02	18.8	+23						
M <sub>2N</sub>	22	33	00	16.5			+31				
eF	23	49	$\pm$								
74	April 16	eM <sub>N</sub>	4	17	24	15.1		$\pm 1$			An after shock of previous earthquake.
		eMz	4	17	30	16.0			$\pm 1$		
		eF	4	36	$\pm$						
75	April 16	eP	13	44	37						SE off Goarampii south end of Formosa. Record is deep focus type.
		P <sub>EN</sub>	13	44	38				-7		
		iPz	13	44	38				-6		
		e <sub>Z</sub>	13	44	54						
		e <sub>E</sub>	13	48	07						
e <sub>Z</sub>	13	48	06								
eF	13	58	$\pm$								
76	April 19	ePz	2	38	30					351?	SE off Osia Izu province.
		e <sub>E</sub>	2	38	35						
		eS <sub>E</sub>	2	39	17						
		eM <sub>E</sub>	2	39	29						
		eM <sub>N</sub>	2	39	32	2.8		$\pm 1$			
		eMz	2	39	41	2.7			$\pm 1$		

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		$A_E$	$A_N$	$A_Z$		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
77	April 19	$M_{2E}$	2	41	27	3.0	$\pm 1$			680	South off Hatidyô Isl. Felt in Bonin Isl., abnormal felt area in Kwantô dis- trict.  Focal depth about 350 km.
		eF	2	47	$\pm$						
		iP $_{EN}$	16	15	02.9		+1.5	-5.0			
		iP $_Z$	16	15	02.9				+8.1		
		iP $_{EN}$	19	15	03.1		-63	+79			
		eE	16	16	09						
		S $_E$	16	16	17		+222				
		iS $_N$	16	16	17			+169			
		eS $_Z$	16	16	11						
		$M_{1E}$	16	16	18	2.5	-251				
		$M_{1N}$	16	16	18	3.9		+163			
		$M_Z$	16	16	19	3.2			-87		
		$M_{2E}$	16	17	05	4.4	-125				
		$M_{2N}$	16	17	06	3.7		-117			
eF	16	32	$\pm$								
78	April 22	P $_E$	19	10	17					81	Lower basin of the Hidaka River, Wakayama Prefec- ture.
		iP $_N$	19	10	18						
		iP $_Z$	19	10	17			+1.3			
		S $_E$	19	10	28						
		iS $_N$	18	10	29						
		e $_Z$	19	10	28						
		M $_E$	19	10	32	0.6	+5				
		M $_N$	19	10	31	0.6		+6			
		$M_Z$	19	10	30				$\pm 2$		
		eF	19	13	$\pm$						
79	April 26	eP $_N$	21	10	08			(-)			A distant earthquake. Near New Hebrides, IIs.
		P $_Z$	21	10	08				-1.0		
		P $_{EN}$	21	10	10						
		iE	21	10	26						
		e $_Z$	21	13	19	4.6					
		e $_Z$	21	15	45						
		eE	21	19	52						
		eS $_E$	21	19	59	5.4					
		eS $_N$	21	19	54	5.4					

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		$A_E$	$A_N$	$A_Z$		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
80	April 26	$M_N$	21	30	55	15.7		$\pm 1$		419	South off the Nozima Cape, Tiba Prefecture.
		eF	21	39	$\pm$						
		eP $_E$	22	48	38						
		eP $_N$	22	48	36						
		eP $_Z$	22	48	37						
		e $_Z$	22	48	39						
		i $_N$	22	48	48						
		S $_E$	22	49	35						
		S $_N$	22	46	47						
		S $_Z$	22	49	38						
		M $_E$	22	49	53	3.8	-6				
		M $_N$	22	49	51	3.3		+3			
		$M_Z$	22	50	07	2.2			+2		
		eF	22	58	$\pm$						
81	April 27	eP $_N$	8	41	47					88	Near Kyôto City.
		S	8	47	59						
		M $_E$	8	48	00	0.4	$\pm 2$				
		M $_N$	8	48	00	0.4		$\pm 3$			
		F	8	48	31						
82	April 27	eP $_Z$	9	18	51						SE off Miyako, Iwatae Pre- fecture.
		eE	9	19	01						
		e $_N$	9	19	08						
		eS $_N$	9	20	57						
		eS $_Z$	9	20	55						
		M $_E$	8	21	19	4.6	+2				
		M $_N$	8	21	22	6.0		+2			
		$M_Z$	8	21	14	8.6			$\pm 1$		
eF	8	32	$\pm$								
83	April 28	eS $_{?E}$	2	03	39						Near Fukuoka City.
		M $_E$	2	03	44	1.6	+1				
		M $_N$	2	03	55			-1			
		eF	2	07	$\pm$						

No.	Date	Phase	Time G. M. T.	Period s	Amplitude			$\Delta$ km.	Remarks
					A <sub>E</sub> $\mu$	A <sub>N</sub> $\mu$	A <sub>Z</sub> $\mu$		
84	April 30	ez	15 21 56					South off Bonin Isl.	
		eN	15 23 17						
		eSz	15 23 07						
		ME	15 24 06	4.4	+4				
		MN	15 24 02	4.3		+3			
		MZ	15 23 41	5.3		$\pm 1$			
		eF	15 32 $\pm$						
85	May 1	ePE	7 13 11		0.0?			A distant earthquake. North Sumatora.	
		iPN	7 13 11			+4.3			
		iPz	7 13 10	2.3			+7.2		
		iPE	7 13 13		-4.3				
		iz	7 14 43						
		eN	7 15 04						
		eZ	7 15 02						
		iz	7 18 24						
		eN	7 22 33						
		MN	7 37 57	13.1			$\pm 1$		
		MZ	7 37 52						
		eF	7 49 $\pm$						
		86	May 3	ePEN	1 33 31				
ePz	1 33 29								
iPEN	1 33 32								
Pz	1 33 32								
iN	1 34 39								
S <sup>?</sup> E	1 35 32								
S <sup>?</sup> N	1 35 29								
LE	1 35 52								
eLz	1 36 02								
ME	1 36 35			19.0	-8				
M <sub>1</sub> N	1 36 56			18.5		+5			
MZ	1 37 06			17.9		-6			
M <sub>2</sub> N	1 38 23			12.0		+7			
eF	2 13 $\pm$								
87	May 4	Pz	4 45 30				5980	A distant earthquake.	

No.	Date	Phase	Time G. M. T.	Period s	Amplitude			$\Delta$ km.	Remarks
					A <sub>E</sub> $\mu$	A <sub>N</sub> $\mu$	A <sub>Z</sub> $\mu$		
		iPE	4 45 33		+1.6			Alaska. S phase is very sharp.	
		PN	4 45 32			+1			
		iPz	4 45 32				-5		
		iPN	4 45 34				-3		
		iN	4 45 44						
		iz	4 45 42	5.0					
		eS	4 53 07						
		iSN	4 53 07	7.5			+14		
		Sz	4 53 06						
		eE	4 53 32						
		eE	4 54 54						
		eLE	5 03 58						
		eLN	5 04 03						
		eLz	5 04 10						
		ME	5 04 43	27.2	+3				
M <sub>1</sub> N	5 06 04	22.0			-4				
M <sub>1</sub> Z	5 05 33	24.8			-2				
M <sub>2</sub> N	5 09 13	21.0			+5				
M <sub>2</sub> Z	5 09 06	21.6			+3				
iz	5 15 28								
eF	5 39 $\pm$								
88	May 5	eN	14 44 21				8690	A distant earthquake. Near New Zealand?	
		PE	14 44 25		+0.5				
		PNz	14 44 24			-0.5			-1.3
		PRE	14 45 27	2.9					
		PRN	14 45 27	3.0					
		eSEN	14 56 16						
		eF	15 05 $\pm$						
		89	May 9	ePE	16 18 02				
ePN	16 18 07								
eZ	16 18 03								
eSE	16 21 53								
SN	16 21 50								
eLE	16 24 18								
ME	16 26 08			17.3	$\pm 5$				

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			h	m	s		$\mu$	$\mu$	$\mu$		
90	May 11	M <sub>N</sub>	16	26	54	17.0		$\pm 7$		Near Bonin Isl.	
		M <sub>Z</sub>	16	26	57	16.0			$\pm 1$		
		eF	16	38	$\pm$						
		e <sub>N</sub>	0	46	55						
		e <sub>N</sub>	0	49	11	3.7					
		e <sub>E</sub>	0	50	48						
		M <sub>N</sub>	0	51	57	8.6	$\pm 1$				
		M <sub>E</sub>	0	53	53	7.4					
91	May 11	M <sub>Z</sub>	0	53	26				$\pm 1$	Near Turuga, Hukui Prefecture.	
		eF	1	09	$\pm$						
		F <sub>EN</sub>	18	42	58						
		F <sub>Z</sub>	18	42	51						
		e <sub>N</sub>	18	43	14						
		e <sub>SZ</sub>	18	43	13						
		i <sub>SEN</sub>	18	43	15						
		i <sub>SZ</sub>	18	43	13		-10				
*92	May 12	M <sub>E</sub>	18	43	15					Near Tosima, Northern part of Awadi Province. Felt in southern part of Hyogo Prefecture.	
		M <sub>N</sub>	18	43	15	0.5	+6				
		M <sub>Z</sub>	18	43	14	0.6		-6			
		F	18	45	09						
		iP	3	50	52		-2	+1	-7.2		25
		iz	3	50	55						
		i <sub>SE</sub>	3	50	56		-111				
		e <sub>SN</sub>	2	50	55						
93	May 12	S <sub>Z</sub>	3	50	55					Southern part of the Osaka Bay.	
		M <sub>EN</sub>	3	50	56		+138	-84			
		M <sub>Z</sub>	3	50	55	0.6			-39		
		eF	3	57	$\pm$						
		iP	4	16	00						28
		S	4	16	03						
		M <sub>EN</sub>	4	16	04		+43	-31			
		M <sub>Z</sub>	4	16	04	0.8			-8		

The end part overlapped by the following earthquake.

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			h	m	s		$\mu$	$\mu$	$\mu$		
94	May 12	M <sub>E</sub>	4	18	29		$\pm 2$			An after shock of previous earthquake.	
		M <sub>N</sub>	4	18	28			$\pm 1$			
		F	4	19	38						
95	May 12	e <sub>Z</sub>	10	54	57					Faint record. Near Bonin Isl?	
		M <sub>E</sub>	11	00	13	8.3	$\pm 1$				
		M <sub>N</sub>	10	58	29	7.3		$\pm 1$			
		eF	11	09	$\pm$						
96	May 13	i <sub>E</sub>	0	16	33					Upper basin of the Gô River, Simane Prefecture.	
		i <sub>N</sub>	0	16	36						
		e <sub>Z</sub>	0	16	38						
		M <sub>E</sub>	0	16	41	0.5	$\pm 3$				
		M <sub>N</sub>	0	16	41			-1			
		M <sub>Z</sub>	0	16	40	0.8			+2		
		eF	0	18	35						
		97	May 13	eP <sub>N</sub>	9	10	04				
F <sub>Z</sub>	9			10	07						
e <sub>N</sub>	9			11	46						
e <sub>Z</sub>	9			11	45						
e <sub>S</sub>	9			15	49						
e <sub>Z</sub>	9			16	06						
e <sub>E</sub>	9			17	58						
M <sub>E</sub>	9			24	04	22.1	$\pm 1$				
M <sub>N</sub>	9			20	36	23.4		$\pm 2$			
M <sub>Z</sub>	9			22	37	26.3			$\pm 1$		
eF	9			35	$\pm$						
98	May 13	P <sub>E</sub>	17	07	36					Very faint record. Luzon, Philippine.	
		P <sub>N</sub>	17	07	34						
		e <sub>E</sub>	17	09	28						
		eF	17	17	$\pm$						
99	May 13	i <sub>EN</sub>	23	11	36		-4	-4		NW off Bonin Isl.	
		i <sub>Z</sub>	23	11	35				-6		
		M <sub>?N</sub>	23	12	30	3.8		$\pm 3$			
		eF	23	22	$\pm$						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks	
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>			
100	May 14	eEN	h	m	s	s	$\mu$	$\mu$	$\mu$	5770	A distant earthquake. Gulf of Alaska. Surface wave is very faint.	
		iPE	22	21	50							
		PN	22	22	01							
		iFz	22	22	00		2.8					+4
		eSE	22	29	23							
		iSE	22	29	26		5.4		+3			
		Sz	22	29	25							
		Mz	22	43	14		23.4					
		eF	22	50	±							
101	May 19	eE	1	35	08	2.6					A distant earthquake. Very faint record.	
		iz	1	35	25				+2			
		eE	1	35	49							
		eN	1	35	47							
		eF	1	48	±							
102	May 19	eN	10	48	18						South off Bonin Isl..	
		eN	10	49	05							
		ME	10	52	31		7.7					
		M <sub>1N</sub>	10	51	30		8.3					
		M <sub>2N</sub>	10	55	20		7.5					
		eF	11	09	±							
103	May 20	eE	7	06	02	2.4	±1				SE off Miyako, Iwate Prefecture. Felt in Kwantô, Oôu, and Hokkaidô.	
		eN	7	06	17	2.0		±1				
		ez	7	05	59	2.6			±1			
		eF	7	15	±							
104	May 25	eN	6	32	00					790	Local shock. Very faint record.	
		eE	6	32	06		0.9	±1				
		eN	6	32	03		1.0		+2			
		ez	6	32	05		0.8					±1
		eF	6	32	42							
105	May 25	PE	16	20	55					790	SSE off Hatidyô Isl.. Obscured by Microseismo.	
		PN	16	20	56							
		Pz	16	20	57							

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks	
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>			
106	May 28	PMz	h	m	s	s	$\mu$	$\mu$	$\mu$	1730	SE off Yutorofu Isl., Kurile IIs..	
		S	16	20	59		1.8					-3
		ME	16	22	26		2.8	+13				
		MN	16	22	25		3.3		±5			
		Mz	16	22	45		2.9					±3
		eF	16	26	±							
		ePE	5	36	22							
107	May 30	Fz	5	36	22						In the Kii Channel.	
		SEN	5	39	21							
		eSz	5	39	21							
		ME	5	39	23		2.6	+6				
		MN	5	39	26		2.5		±1			
		Mz	5	39	24		2.1					±1
108	May 30	eF	5	46	±					534	Near Mito City, Ibaraki Prefecture. Moderate shocks were felt in Kwanto district.	
		eN	18	50	02							
		ez	18	49	57							
		SEN	18	50	09							
		eSz	18	50	09							
		MN	18	50	11				-5			
109	May 30	Mz	18	50	10	1.1			±3			
		F	18	51	40							
		ePEN	23	05	00							
		eEN	23	05	08							
		iE	23	05	25		-9					
110	May 30	iz	23	05	24					534	Near Mito City, Ibaraki Prefecture. Moderate shocks were felt in Kwanto district.	
		iSEN	23	06	12		-14	+22				
		Sz	23	06	14							
		M <sub>1E</sub>	23	06	47		4.7	-32				
		M <sub>1N</sub>	23	06	28		3.5		+19			
		M <sub>1Z</sub>	23	06	31		4.0					-30
		M <sub>2E</sub>	23	07	46		3.1	±56				
		M <sub>2N</sub>	23	07	39		3.5		+22			
111	May 30	M <sub>2Z</sub>	23	07	40	3.3			-25			
		eF	23	28	±							

No.	Date	Phase	Time G. M. T.	Period s	Amplitude			$\Delta$ km	Remarks
					$A_E$ $\mu$	$A_N$ $\mu$	$A_Z$ $\mu$		
109	June 1	$\epsilon_E$	1 36 33					ENE off Miyake Isl, south of Izu Peninsula.	
		$\epsilon_Z$	1 36 42						
		eSEN	1 37 28						
		iZ	1 37 26						
		eSZ	1 37 35						
		ME	1 38 13	2.7	+6				
		MN	1 37 59	3.1		-4			
		MZ	1 38 10	3.1		$\pm 3$			
		eF	1 55 $\pm$						
110	June 2	$\epsilon_E$	21 30 34				416	In the Hyûga-nada. Felt in Kyûsyû district.	
		$\epsilon_N$	21 30 33						
		$\epsilon_Z$	21 30 31						
		$\epsilon_E$	21 30 58						
		eSN	21 31 24						
		eSZ	21 31 30						
		ME	21 31 38	2.1	+9				
		MN	21 31 38	1.6		-9			
		MZ	21 31 46	1.5		-12			
eF	21 52 $\pm$								
111	June 3	P	7 18 38				450	Near Sawara, Tiba Pref.. Felt in Kwantô district.	
		$\epsilon_E$	7 19 29						
		iSE	7 19 39			-8			
		eSN	7 19 37						
		SZ	7 19 36						
		ME	7 19 46	1.8	-20				
		MN	7 19 53	2.1		+11			
		MZ	7 19 45	3.4		+12			
		eF	7 47 $\pm$						
112	June 5	$\epsilon_{EN}$	18 47 53	6.0			Near Wakamatu, Hukus'ma Prefecture. Obscured by Microseismo. SE of Otiisi Cape, Hokkaidô.		
		eF	18 54 $\pm$						
113	June 6	$\epsilon_E$	6 30 30	21.0					
		$\epsilon_N$	6 30 52	18.5					
		$\epsilon_Z$	6 32 29						

No.	Date	Phase	Time G. M. T.	Period s	Amplitude			$\Delta$ km.	Remarks
					$A_E$ $\mu$	$A_N$ $\mu$	$A_Z$ $\mu$		
114	June 9	ME	6 33 02	16.3	$\pm 2$			4365	A distant earthquake. Near New Guinea.
		MZ	6 34 14	13.0			$\pm 1$		
		eF	6 42 $\pm$						
		PE	13 06 28						
		PNZ	13 06 27				+3.3		
		S	13 12 36		+8	+6			
		$\epsilon_{EN}$	13 13 30						
		$\epsilon_Z$	13 13 53						
		iE	13 16 51	9.6		-7			
115	June 13	$\epsilon_Z$	13 17 04				1585	Near Sikotan Isl, southern part of Kurile IIs. Moderate shocks were felt in eastern part of Hokkaidô, felt in NE Japan.	
		ME	13 17 26	14.0	$\pm 2$				
		MN	13 19 02	18.9		$\pm 1$			
		eF	13 34 $\pm$						
		PEZ	1 54 04						
		$\epsilon_N$	1 54 01						
		SE	1 56 49		-8				
		SN	1 56 51			+12			
		eSZ	1 56 42						
116	June 13	ME	1 58 35	23.4	-7		Lower basin of the Arita River, Wakayama Prefecture.		
		MN	1 57 35	12.0		+5			
		MZ	1 57 29	5.2				-5	
		iN	1 57 57						
		ScSEN	2 06 29		-3	+6			
		eF	2 51 $\pm$						
		$\epsilon_Z$	2 18 12						
		iEN	2 18 16						
		ME	2 18 21	0.9	+4				
117	June 13	MN	2 18 20	0.8		$\pm 4$	6720	A distant earthquake. Afganistan, 29.°5N 63.°5E (J.S.A.)	
		MiZ	2 18 26						-2
		F	2 19 25						
		ePE	22 20 38						
		iPN	22 20 38						-1.7
		Fz	22 20 38						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
		iz	22	20	38	5.3			-7		
		iPE	22	20	40		+3				
		iE	23	20	56	3.6	-5				
		iz	22	20	55	3.8			-14		
		iSE	22	28	55	9.7	-4				
		iSN	22	28	53	11.0		+7			
		Sz	22	28	55						
		eE	22	29	32	8.4	-5				
		eZ	22	29	32				+4		
		MN	22	45	11	22.5		$\pm 1$			
		ME	22	49	45	19.4	$\pm 1$				
		MZ	22	49	59	17.4			$\pm 2$		
		eZ	22	50	13						
		eF	23	27	$\pm$						
118	June 15	eZ	5	32	38					423	Near Mamada, southern part of Totigi Prefecture.
		ePEN	5	32	46						Moderate shocks were felt in northern part of Kwanto district.
		iN	5	32	55						
		SEN	5	33	43						
		Sz	5	33	39						
		MEN	5	33	48	1.9	-9	+8			
		eF	5	46	$\pm$						
119	June 17	eZ	9	14	25						Local shock.
		iE	9	14	28	0.2	+6				
		iN	9	14	28	0.3		-6			
		F	9	17	41						
120	June 19	ePN	15	48	37						South off Hatidyô Isl.
		iSEN	15	49	49		+9	-11			Deep focus earthquake.
		SME	15	49	51	2.6	-32				
		ME	15	50	56	3.7	-25				
		MN	15	51	05	2.9		-14			
		eF	16	06	$\pm$						
121	June 21	PE	23	51	14					79	In the Kii Channel.
		PNZ	23	51	13						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
		SE	23	51	24						
		iSNZ	23	51	24						
		MEN	23	51	25	0.5	+5	-10			
		MZ	23	51	30	0.8			$\pm 2$		
		F	23	53	39						
122	June 22	eN	18	04	33						Southwest of Manzanillo, Mexico. (J.S.A.)
		eE	18	05	25						
		eN	18	05	16						
		eE	18	05	52	5.1					
		eN	18	06	04	4.3		$\pm 1$			
		eF?	18	11	$\pm$						
123	June 23	eE	5	35	57						A distant earthquake.
		eE	5	38	08	7.3					Tibet, China.
		eN	5	37	36						Very faint record.
		ME	5	40	15	17.7					
		MN	5	39	35	17.4		$\pm 2$			
		eZ	5	41	00	13.4					
		eF	6	01	$\pm$						
124	June 24	ePE	6	19	24						A distant earthquake.
		PN	6	19	21						Northern part of Chile.
		Fz	6	19	19						
		iz	6	19	47				+5		
		eE	6	20	28						
		eN	6	20	32						
		iz	6	20	28						
		iz	6	24	03	5.9			+5		
		eE	6	32	03						
		eN	6	32	55						
		eZ	6	32	52	5.2					
		e(SSS)?	6	43	57	17.4					
		eF	7	08	$\pm$						
125	June 26	eP	20	35	10						In the Bungo Channel.
		iE	20	35	28		+2				

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks	
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>			
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.		
126	June 26	SEN	20	35	38							
		ME	20	35	56	1.1	+4					
		MN	20	36	02	1.1		-4				
		MZ	20	36	01	1.0			$\pm 3$			
		eF	20	40	$\pm$							
		ePE	20	41	00							In the Kasima-nada, east off Ibaraki Prefecture.
		eFN	20	41	04							
		ez	20	41	03							
		eSE	20	41	39							
		eL <sub>1</sub> E	20	41	54	5.8						
		eLN	20	41	58							
		eLz	20	41	55	5.0						
		ME	20	42	30	2.8	+4					
		MN	20	43	11	3.6		$\pm 2$				
MZ	20	42	30	5.0			$\pm 2$					
eF	20	54	$\pm$									
127	June 28	eE	1	04	52	3.2					A distant earthquake. Very faint record. Near Solomon IIs?	
		eE	1	05	39							
		eN	1	05	38							
		ez	1	05	36							
		eF	1	12	$\pm$							
128	June 29	iPEN	8	32	21		+2.6	-7.0		3875	A distant earthquake. New Guinea, record is deep focus type. S phase is very sharp. Z component is stopped.	
		PMN	8	32	25	4.1		-7				
		iE	8	33	40							
		iE	8	34	03							
		iN	8	34	14							
		iSEN	8	38	01		-64	-50				
		SME	8	38	03	3.7	+109					
		SMN	8	38	03	3.7		-50				
		ME	8	39	43	4.3	+34					
		MN	8	39	43	3.8		+22				
		CE	8	41	55							
eP'F'N	9	04	45									
eF	9	08	$\pm$									

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks	
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>			
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.		
129	June 29	ePE	12	41	47						3755	A distant earthquake. New Guinea. Record is deep focus type.
		PN	12	41	47			+1?				
		ePz	12	41	49							
		iN	12	43	26							
		eN	12	44	53	2.5						
		iSEN	12	44	20	2.5	-3	-3				
		iz	12	47	20					+1		
		iN	12	48	32							
		eM <sub>1</sub> E	12	48	59	3.5	$\pm 1$					
		eM <sub>2</sub> N	12	49	01	3.3		$\pm 1$				
		ez	12	51	33							
eF	12	58	$\pm$									



From No. 90. to No. 209, 1934.

# SUMOTO JAPAN.

## SEISMOLOGICAL BULLETIN

A Branch Station of the Kobe Meteorological Observatory of Japan.

$\varphi = 34^\circ 21'$   $\lambda = 134^\circ 53'$   $h = 109$  m. Underground: Cretaceous.

Instrument: Omori's Seismograph.  
(Horizontal Pendulum.)

Wiechert Seismograph.  
(Horizontal & Vertical)

### April

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
AE:	19.8	2.6	0.0003	20
AN:	17.6	2.8	0.0003	20

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
AE:	4.6	Aperiodic	0.003	117
AN:	4.4	"	0.002	118
Az:	4.2	"	0.002	64

### May

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
AE:	17.8	2.4	0.0002	20
AN:	17.4	1.8	0.0001	20

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
AE:	4.7	Aperiodic	0.004	115
AN:	4.5	"	0.002	97
Az:	4.2	"	0.002	66

### June

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
AE:	18.9	1.5	0.0002	20
AN:	19.1	1.9	0.0003	20

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
AE:	4.7	Aperiodic	0.004	117
AN:	4.5	"	0.003	110
Az:	4.2	"	0.002	65

No.	Date	Phase	Time G. M. T.	Period s	Amplitude			$\Delta$ km.	Remarks
					AE $\mu$	AN $\mu$	Az $\mu$		
90	April 2	ePEN	22 04 28	0.6	+1		$\pm 1$	41	Near Wakayama City.
		S	22 04 34						
		ME	22 04 36						
		MN	22 04 34						
		F	22 04 56						
91	April 3	ePN	1 12 06						Near Inubô Cape, Tiba

No.	Date	Phase	Time G. M. T.	Period s	Amplitude			$\Delta$ km.	Remarks
					AE $\mu$	AN $\mu$	Az $\mu$		
92	April 3	ePE	1 12 23	2.5 2.4	$\pm 1$	+0.4			Prefecture.
		eSE	1 13 03						
		eSN	1 13 01						
		ME	1 13 37						
		MN	1 13 14						
		eF	1 17 $\pm$						
		PE	22 34 07						
PNZ	22 34 08								
SN	22 36 12								
eSE	22 36 23								
ME	22 41 02								
MN	22 41 02								
MZ	22 39 19								
eF	23 05 $\pm$								
93	April 3	ePEN	22 54 34	0.4	$\pm 1$	-3			In the Kii Channel.
		SEN	22 54 36						
		ME	22 54 36						
		MN	22 54 36						
		F	22 54 49						
94	April 4	ePEN	7 08 05	0.4	+1	-2		39	Lower basin of the Arita River, Wakayama Prefecture.
		SEN	7 08 10						
		ME	7 08 11						
		MN	7 08 11						
		F	7 08 47						
95	April 5	ePEN	1 47 10	0.4	-2	-3		47	Lower basin of the Arita River, Wakayama Prefecture.
		SEN	1 47 16						
		ME	1 47 16						
		MN	1 47 16						
		F	1 47 44						
96	April 5	ePEN	4 38 33		+2			43	Near Tadono, middle basin of the Arita R., Wakayama Prefecture.
		SEN	4 38 39						
		ME	4 38 40						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	S.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
97	April 5	M <sub>N</sub>	4	38	40	0.3	$\mu$	$\mu$	$\mu$	400?	Off the Kujūkuri-hama, Tiba Prefecture.
		F	4	38	47						
		eP <sub>E</sub>	8	59	07						
		eP <sub>N</sub>	8	59	08						
		eS <sub>E</sub>	9	00	03						
		eS <sub>N</sub>	8	59	59						
		eS <sub>Z</sub>	9	00	09						
		M <sub>E</sub>	9	00	23	2.7	-1				
		M <sub>N</sub>	9	00	20	2.3		$\pm 1$			
		M <sub>Z</sub>	9	00	16	2.4			-1		
eF	9	05	$\pm$								
98	April 5	eP <sub>N</sub>	9	42	26					17?	Local shock.
		S <sub>EN</sub>	9	42	28						
		M <sub>E</sub>	9	42	28	0.3	+2				
		M <sub>N</sub>	9	42	29	0.4		-3			
		F	9	42	47						
99	April 5	eP <sub>N</sub>	23	17	33					29	Near Wakayama City.
		S <sub>EN</sub>	23	17	37						
		M <sub>E</sub>	23	17	38	0.3	$\pm 0.4$				
		M <sub>N</sub>	23	17	38			$\pm 2$			
		F	23	17	55						
100	April 6	e <sub>N</sub>	0	23	18						Near Misumi Peninsula, Kumamoto Prefecture.
		e <sub>E</sub>	0	23	30						
		S <sub>E</sub>	0	24	27						
		S <sub>N</sub>	0	24	23						
		M <sub>E</sub>	0	24	28	1.9	$\pm 1$				
		M <sub>N</sub>	0	24	27	2.3		$\pm 1$			
		eF	0	28	$\pm$						
101	April 6	P <sub>EZ</sub>	19	11	07					695	NE off Sioya Cape. Moderate shocks were felt in Hukusima Prefecture. Felt in Oôu and Kwantô
		iP <sub>N</sub>	19	11	06						
		S <sub>EZ</sub>	19	12	41						
		S <sub>N</sub>	19	12	38						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	S.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
102	April 8	M <sub>E</sub>	19	12	48	4.1	-26			33	Near Wakayama City.
		M <sub>1N</sub>	19	13	04	4.3		-25			
		M <sub>Z</sub>	19	12	45	3.8			-11		
		M <sub>2N</sub>	19	13	34	3.9		+22			
		eF	19	32	$\pm$						
		P	2	53	45		+0.4	-0.4			
103	April 8	S	2	53	49					33	Ditto.
		M <sub>E</sub>	2	53	50	0.4	+8				
		M <sub>N</sub>	2	53	51	0.2		-13			
		M <sub>Z</sub>	2	53	50				$\pm 2$		
		F	2	55	09						
		P	3	22	51						
104	April 9	S	3	22	55					126	Near Koti City, Sikoku.
		M <sub>E</sub>	3	22	59	0.4	-6				
		M <sub>N</sub>	3	22	57	0.4		-8			
		M <sub>Z</sub>	3	22	56				$\pm 2$		
		F	3	24	03						
		P <sub>EN</sub>	6	00	22						
105	April 9	e <sub>Z</sub>	6	00	26					106	In the Kumano-nada, SE off Kii Peninsula.
		S	6	00	39						
		M <sub>E</sub>	6	00	40	0.4	-5				
		M <sub>N</sub>	6	00	42	0.4		-5			
		M <sub>Z</sub>	6	00	40	0.6			$\pm 2$		
		F	6	01	46						
106	April 10	P <sub>EN</sub>	15	40	07					106	Local shock.
		S <sub>EN</sub>	15	40	21						
		M <sub>E</sub>	15	40	22	0.6	-14				
		M <sub>N</sub>	15	40	22	0.4		+10			
		F	15	41	18						
106	April 10	e <sub>N</sub>	2	46	40						Local shock.
		F	2	47	01						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
107	April 10	eN	6	10	38						Ditto.
		F	6	13	±						
108	April 10	FEN	6	55	20					90	Near Motoyama, Koti Prefecture.
		eS	6	55	33						
		ME	6	55	42	1.4	+1				
		MN	6	55	40	0.8		±1			
		F	6	56	38						
109	April 10	ePEN	10	31	17					4830	A distant earthquake. Near Bali Isl, east off Java. Felt in East Java, Bali, and Lombok IIs.
		ePz	10	31	15						
		eSE	10	37	51						
		eSN	10	37	48						
		eF	11	13	±						
110	April 10	SEN	13	14	42					0.4	Near Hasikami, north side of the Mouth of the Arita river, Wakayama Prefecture.
		ME	13	13	43		+2				
		MN	13	14	43			-3			
		F	13	15	13						
111	April 12	eN	9	25	±						A distant earthquake. Upper valley of the Yang-tze River, China.
		eLEN	9	28	20						
		F	9	45	±						
112	April 14	PEN	3	13	17					0.3	Near Wakayama City.
		SEN	3	13	21						
		ME	3	13	21	0.3	±2				
		MN	3	13	22	0.3		-3			
		F	3	13	50						
113	April 14	ePEN	17	45	35					0.3	Northern part of the Harima-nada, Inland Sea.
		SEN	17	45	40						
		ME	17	45	40	0.3	-4				
		MN	17	45	40	0.4		-3			
		F	17	46	21						
114	April 14	SEN	18	21	15						Ditto.

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks	
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>			
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.		
		ME	18	21	15	0.4	-2					
		MN	18	21	15	0.3		-1				
		F	18	21	30							
115	April 14	PEN	18	50	13					0.4	32	Ditto. Felt in Akasi City.
		SEN	18	50	17							
		MEN	18	50	18	0.4	-15	-10				
		F	18	51	27							
116	April 14	PEN	20	36	04					0.4	39	Ditto.
		SEN	20	36	10							
		ME	20	36	10	0.4	+3					
		MN	20	36	10	0.3		±3				
		F	20	36	56							
117	April 14	ePEN	21	03	39					0.4	30	Northern part of the Harima-nada, Inland Sea.
		SEN	21	03	43							
		MEN	21	03	43	0.4	-2	-2				
		F	21	04	10							
118	April 15	iPE	10	34	24					3.6	460	SSE off Nozima Cape, Tiba Prefecture. Felt in Kwantô district.
		iPN	10	34	27							
		iPz	10	34	25				-1.5			
		SEZ	10	35	26							
		SN	10	35	30							
		ME	10	35	34	3.6	-19					
		MN	10	35	49	2.9		+15				
Mz	10	35	30	3.4			-9					
		eF	10	49	±							
119	April 15	ePE	22	21	04		+0.4			3.4	3110	Felt, in Mindanao. 6°N 127°E (according to Manila's report.)
		iPNZ	22	21	04			+4.2	+7.8			
		SEZ	22	25	55							
		SN	22	25	56							
		LE	22	26	41							
		LN	22	27	51							
		Lz	22	26	56							

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
		M <sub>E</sub>	22	30	30	13.5	-121				
		M <sub>N</sub>	22	32	30	11.1		+128			
		M <sub>Z</sub>	22	29	46	21.6			+333		
		eF	23	55	±						
120	April 16	eP <sub>EN</sub>	4	04	39						An after shock of the previous earthquake.
		eF	5	02	±						
121	April 16	P	13	44	31		+0.9	+0.8	+1.6	2030	SE off Goarampii, south end of Formosa.
		eS	13	47	56						
		F	14	17	±						
122	April 17	eP <sub>EN</sub>	13	50	38					32	Near Wakayama City.
		S	13	50	42						
		M <sub>E</sub>	13	50	43		-1				
		M <sub>N</sub>	13	50	42	0.4		+2			
		F	13	51	02						
123	April 18	eP <sub>N</sub>	11	57	33					287	In the Hyûga-nada, SE off Miyazaki Prefecture.
		e <sub>E</sub>	11	57	40						
		e <sub>Z</sub>	11	58	06						
		S <sub>E</sub>	11	58	15						
		S <sub>N</sub>	11	58	12						
		S <sub>Z</sub>	11	58	16						
		M <sub>E</sub>	11	58	29	2.1	+1				
		M <sub>N</sub>	11	58	26	2.1		±3			
		M <sub>Z</sub>	11	58	28	2.0			±1.		
		eF	12	01	±						
124	April 19	eP <sub>EN</sub>	2	38	43						SE of Osima, Izu Province.
		S <sub>EZ</sub>	2	39	22						
		S <sub>N</sub>	2	39	21						
		eF	2	43	±						
125	April 19	iP	16	15	02		-29.9	+16.1	+42.2	530	South off Hatidyô Isl.
		PM <sub>EN</sub>	16	15	03	3.0	+36	-20			Felt in Bonin Isl., abnormal felt area in Kwantô district.
		PM <sub>Z</sub>	16	15	03	1.5			-56		

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
		iS	16	16	13						Focal depth about 350 km.
		M <sub>E</sub>	16	16	17	3.4	+97				
		M <sub>N</sub>	16	16	17	4.1		-95			
		M <sub>Z</sub>	16	16	16	2.6			+27		
		eF	16	32	±						
126	April 22	P	19	10	12					45	Lower basin of the Hidaka River, Wakayama Prefecture.
		S	19	10	18						
		M <sub>EZ</sub>	19	10	18	0.4	+10		+2		
		M <sub>N</sub>	19	10	19	0.4		-14			
		F	19	11	45						
127	April 24	S <sub>EN</sub>	10	46	53						Local shock.
		M <sub>EN</sub>	10	46	53	0.3	-1	+1			
		F	10	47	17						
128	April 25	P <sub>EN</sub>	5	07	02					1660	South off Bonin Isl.
		eP <sub>Z</sub>	5	07	03						
		S <sub>EN</sub>	5	09	54						
		M <sub>E</sub>	5	10	00	2.6	±1				
		M <sub>N</sub>	5	10	03	3.0		+1			
		eF	5	15	±						
129	April 26	S <sub>EN</sub>	4	55	44						Local shock.
		M <sub>N</sub>	4	55	44	0.4		±1			
		F	4	56	03						
130	April 26	eP <sub>EN</sub>	22	48	40					496	South off the Nozima Cape, Tiba Prefecture.
		eP <sub>Z</sub>	22	48	38						
		S <sub>E</sub>	22	49	46						
		S <sub>N</sub>	22	49	48						
		M <sub>E</sub>	22	50	03	2.1	+1				
		M <sub>N</sub>	22	50	05	2.1		+2			
		M <sub>Z</sub>	22	49	52	1.9			±1		
		eF	22	57	±						
131	April 27	eP <sub>EN</sub>	9	19	14					930?	SE off Miyako, Iwate Pre-

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
132	April 28	ez	9	20	59					455	Near Hukuoka City.
		eSE	9	21	19						
		SN	9	21	19						
		eF	9	31	±						
		ePE	2	02	27						
133	April 28	ePN	2	02	24					1.7	Near Wakayama City.
		ez	2	03	24						
		SEN	2	03	27						
		ME	2	03	40	1.7	+1				
		MN	2	03	36	1.5		+1			
		eF	2	06	±						
		SEN	0	50	39						
134	April 28	ME	0	50	39	0.4	+2			0.4	Local shock?
		MN	0	50	40	0.4		±1			
		F	0	51	05						
135	April 30	P	17	01	50					0.4	Near Wakayama City.
		S	17	01	54						
		ME	17	01	54		±1				
		MN	17	01	56	0.4		±2			
		Mz	17	01	55	0.4			+1		
		F	17	02	42						
136	April 30	ePEN	12	19	57					0.5	South off Bonin Isl.
		S	12	20	01						
		ME	12	20	01		-3				
		MN	12	20	01			-2			
		F	12	20	40						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
137	May 1	ePN	7	11	35					0.3	Near Hinomisaki, Wakayama Prefecture.
		PN	7	11	42						
		SEN	7	11	45						
		ME	7	11	45		-1				
		MN	7	11	45			±2			
		F	7	12	10						
138	May 1	PEN	7	13	07		+1.7	+1.0		0.3	A distant earthquake. North Sumatora.
		iPz	7	13	08				+45		
		ez	7	14	44						
		EE	7	18	22						
		eN	7	18	27						
		ez	7	18	23						
		eEN	7	22	48						
		eF	8	00	±						
139	May 3	PE	1	33	29					13.1	848 NNW off Bonin Isl.
		PN	1	33	30						
		Pz	1	33	27						
		SE	1	35	26						
		SN	1	35	23						
		eSz	1	35	20						
		Lz	1	36	21						
		LE	1	38	10						
		LN	1	37	51						
		Mz	1	39	25	11.3			±14		
		ME	1	42	53	10.3	-5				
		MN	1	43	11			-9			
eF	2	06	±								
140	May 4	PEN	4	45	35		+0.9	+1.0		18.8	6030 A distant earthquake. Alaska.
		Pz	4	45	34				-3.0		
		SEN	4	53	12						
		Sz	4	53	13						
		LEN	5	04	05						
		eLz	5	04	19						
ME	5	10	52		±29						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
		M <sub>N</sub>	5	09	30	22.2		+113			
		M <sub>Z</sub>	5	09	26	18.8			$\pm 50$		
		eF	5	40	$\pm$						
141	May 7	eP <sub>EN</sub>	16	42	27					28	In the Kii Channel.
		S <sub>EN</sub>	16	42	31						
		M <sub>E</sub>	16	42	32		+1				
		M <sub>N</sub>	16	42	32	0.3		$\pm 2$			
		F	16	42	59						
142	May 9	P	16	18	08					2170	Southern part of Okhotsk Sea.
		S <sub>E</sub>	16	21	46						
		S <sub>N</sub>	16	21	45						
		eL <sub>N</sub>	16	26	36						
		eL <sub>E</sub>	16	28	$\pm$						
		eF	16	39	$\pm$						
143	May 11	e <sub>EN</sub>	0	01	41						In the Bungo Channel.
		F	0	02	24						
144	May 11	e <sub>EN</sub>	18	43	16						Near Turuga, Hukui Prefecture.
		S <sub>EN</sub>	18	43	21						
		M <sub>E</sub>	18	43	22	0.5	$\pm 1$				
		M <sub>N</sub>	18	43	23	0.5		-2			
		F	18	44	18						
145	May 11	S <sub>EN</sub>	23	51	43						Basin of the Arita R., Wakayama Prefecture.
		M <sub>E</sub>	23	51	45	0.4	+2				
		M <sub>N</sub>	23	51	43	0.4		$\pm 1$			
		F	23	52	27						
146	May 11	e <sub>EN</sub>	23	57	14						Local shock.
		F	23	57	34						
*147	May 12	P	3	50	52		+1.7	-3.1	+3.0	25	Perceptible.
		S	3	50	56						Near Tosima, northern part of Awaji Province.
		M <sub>E</sub>	3	50	56	0.4	+37				

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
		M <sub>N</sub>	3	50	57	0.5		$\pm 36$			Felt in southern part of Hyogo Prefecture.
		M <sub>Z</sub>	3	50	57	0.3			-12		
		F	3	53	26						
148	May 12	eP <sub>EN</sub>	4	02	55					29	Local shock.
		S <sub>EN</sub>	4	02	58						
		M <sub>E</sub>	4	02	59	0.3	$\pm 1$				
		M <sub>N</sub>	4	02	59			$\pm 2$			
		F	4	03	16						
149	May 12	P	4	16	01					21	Southern part of the Osaka Bay.
		S	4	16	03						
		M <sub>EN</sub>	4	16	04	0.4	+4	+5			
		M <sub>Z</sub>	4	16	04	0.5			-1		
		F	4	17	16						
150	May 12	S <sub>EN</sub>	4	18	16						An after shock of the previous earthquake.
		M <sub>E</sub>	4	18	17		-1				
		M <sub>N</sub>	4	18	17	0.4		+1			
		F	4	18	44						
151	May 13	e <sub>EN</sub>	0	16	29						Upper basin of the Gô R., Simane Prefecture.
		S <sub>EN</sub>	0	16	31						
		M <sub>E</sub>	0	16	38	0.7	-1				
		M <sub>N</sub>	0	16	34	0.9		-3			
		F	0	17	30						
152	May 13	eP	9	10	01					4460	A distant earthquake. East off New Guinea.
		S <sub>E</sub>	9	16	12						
		S <sub>N</sub>	9	16	15						
		L <sub>N</sub>	9	22	06						
		F	9	33	$\pm$						
153	May 13	eP <sub>E</sub>	17	07	12					2510	Luzon, Philippine.
		eP <sub>N</sub>	17	07	17						
		eZ	17	07	29						
		eS <sub>EN</sub>	17	11	21						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
154	May 13	eF	17	19	±						
		SEN	19	59	45		-2	-1			Near Ougo, Middle basin of the Kii R., northern part of Wakayama Pref.
		ME	19	59	45	0.5	-2				
		MN	19	59	46			+2			
		F	20	00	05						
155	May 13	eEN	23	09	58						NW off Bonin Isl.
		eSE	23	11	33						
		eSN	28	11	32						
		MEN	23	11	34	2.5	±2	+2			
		F	23	17	±						
156	May 14	P	22	22	03		-0.9	-1.0	+1.4	5850	A distant earthquake. Gulf of Alaska.
		SEN	22	29	31						
		eLEN	22	37	±						
		eF	22	59	±						
157	May 16	SEN	0	09	49						Near Wakayama City.
		ME	0	09	50		±0.4				
		MN	0	09	50	0.2		±1			
		F	0	10	14						
158	May 16	PEN	17	09	26					28	Near Wakayama City.
		SEN	17	09	30						
		ME	17	09	31	0.5	-2				
		MN	17	09	31	0.3		-3			
159	May 17	PEN	0	07	41					41	Ditto.
		SEN	0	07	47						
		MEN	0	07	47	0.3	-1	+2			
		F	0	08	08						
160	May 17	eN	0	51	05						Local shock?
		eEN	0	51	21						
		F	0	52	19						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
161	May 17	ePEN	5	16	35					42	Near Wakayama City.
		SEN	5	16	41						
		ME	5	16	41		±1				
		MN	5	16	41	0.4		-2			
162	May 17	F	5	17	13						Northern part of the Tokyo Bay.
		ePEN	11	54	42					559	
		eSE	11	55	53						
		eSN	11	56	01						
		ME	11	56	17	1.7	±1				
		MN	11	56	02	1.7		±1			
163	May 17	eF	11	59	±						In the Bungo Channel.
		eN	13	57	44						
		eSEN	13	58	18						
164	May 18	eF	14	00	±						Near Nagasaki City.
		eE	11	19	31						
		eN	11	19	47						
		SE	11	20	05						
		SN	11	19	58						
		ME	11	20	05	1.7	±0.4				
165	May 19	MN	11	20	08	1.7		±1			South off Bonin Isl.
		F	11	21	56						
		ePEN	10	46	33					2305	
		eFZ	10	46	32						
166	May 20	eSE	10	50	22						Local shock.
		eSN	10	50	23						
		eF	11	09	±						
		F	15	03	57						
167	May 22	SEN	15	03	27						Lower basin of the Arita
		ME	15	03	27		+1				
		MN	15	03	29	0.3		+2			

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
168	May 25	S	23	25	37					613	River, Wakayama Prefecture.  SSE off Hatidyô Isl.
		ME	23	25	37	0.4	+3				
		MNZ	23	25	37	0.5		+4	-1		
		F	23	26	46						
		PE	16	20	53						
		PNZ	16	20	56				+1.5		
		SEN	16	22	17						
169	May 28	ME	16	22	24	3.3	+4				Local shock. SE off Yetorofu Isl., Kurile IIs.
		MN	16	22	20	2.4			-5		
		eF	16	29	±						
		eE	5	39	29		+2				
		eN	5	39	28						
		ME	5	39	31	2.9	+1				
		MN	5	39	39	2.3			-2		
170	May 30	eF	5	43	±						Local shock.
		SEN	1	02	49						
		ME	1	02	50	0.4	+1		-3		
171	May 30	F	1	03	17						In the Kii Channel.
		SEN	18	50	07						
		ME	18	50	08	0.5	+1				
		MN	18	50	08	0.3			+3		
172	May 30	F	18	51	03					527	Near Mito City, Ibaraki Prefecture. Moderate shocks were felt in Kwantô district.
		P	23	05	10		+0.4	(+)	(-)		
		S	23	06	21						
		ME	23	06	40	2.6	+23				
		MN	23	06	36	2.9			-30		
		MZ	23	06	37	3.2			-12		
173	May 31	eF	23	19	±						Near Wakayama City.
		SEN	17	23	06						
		ME	17	23	07		±1				
		MN	17	23	07	0.4			±2		

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
174	June 1	F	17	23	28					409	ENE off Miyake Isl., South off Izu Peninsula.
		PEN	1	36	49						
		PZ	1	36	48				-0.8		
		SE	1	37	41						
		SN	1	37	46						
		SZ	1	37	44						
		ME	1	37	49	2.9	±3				
		MN	1	37	50	2.7			-1		
		MZ	1	37	49	1.9			-2		
175	June 2	eF	1	45	±						Near Wakayama City.
		SEN	13	57	28						
		ME	13	57	28		±1				
		MN	13	57	28	0.4			±1		
176	June 2	F	13	57	54					64	In the Kii Channel.
		PEN	20	50	41						
		PZ	20	50	40				-0.8		
		S	20	50	49						
		ME	20	50	49	0.4	±3				
		MN	20	50	49	0.5			+4		
177	June 2	MZ	20	50	51	0.5			+2		In the Hyûga-nada. Felt in Kyûsyû district.
		F	20	51	50						
		PE	21	30	14						
		PN	21	30	12						
		PZ	21	30	10						
178	June 3	SE	21	30	56					571	Near Sawara, Tiba Pref.
		SN	21	31	02						
		SZ	21	31	04						
		ME	21	31	18	1.8	-9				
		MN	21	31	18	1.9			-11		
		MZ	21	31	18	2.2			+7		
		eF	21	44	±						
		ePE	7	18	27						



No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
		ePNZ	7	18	30						Felt in Kwantô district.
		eE	7	19	30						
		SN	7	19	45						
		Sz	7	19	48						
		ME	7	20	03	2.4	-3				
		MN	7	19	59	2.8		-5			
		Mz	7	20	01	2.1			-3		
		F	7	29	±						
179	June 5	SEN	0	04	50						Near Tadono; Middle basin of the Arita R., Wakayama Prefecture.
		MEN	0	04	50		±1	-2			
		F	0	05	10						
180	June 5	eEN	12	38	02						In the Kumano-nada, SE off the Kii Peninsula.
		ez	12	38	02						Deep focus earthquake.
		ME	12	38	07	1.0	-1				
		MN	12	38	04	0.6		+2			
		Mz	12	38	02	1.0			+1		
		eF	12	39	±						
181	June 5	SEN	14	54	53						Near Koti City, Sikoku.
		ME	14	54	54		±0.4				
		MN	14	54	54	0.4		±1			
		F	14	55	25						
182	June 5	ePN	18	46	39						Near Wakamatu, Hukusima Prefecture.
		ePE	18	46	46						
		SE	18	47	49						
		SN	18	47	44						
		ME	18	48	03	1.8	±1				
		ez	18	48	04						
		MN	18	48	13	2.6		+1			
		eF	18	52	±						
183	June 6	e	6	29	±						SE off Otiisi Cape, Hokkaidô.
		eLE	6	31	01						
		eLN	6	31	32						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km	
		ME	6	33	28	13.5	±4				
		MN	6	33	47	13.5		±4			
		Mz	6	33	45	15.5			±8		
		eF	7	01	±						
184	June 6	ePN	13	35	50						Near Wakayama City?
		SE	13	36	01						
		SN	13	36	02						
		ME	13	36	03	0.6	±0.4				
		MN	13	36	03	0.4		-1			
		F	13	36	31						
185	June 6	P	18	48	29				+0.8	373	NNW off Hatidyô Isl.
		SEN	18	49	19						
		ME	18	49	24	1.6	±0.4				
		MN	18	49	21	1.4		±1			
		F	18	51	±						
186	June 7	P	17	05	34		-0.4	+0.9		30	Near Wakayama City.
		S	17	05	38						
		ME	17	05	38	0.4	-3				
		MN	17	05	39	0.4		-3			
		F	17	06	27						
187	June 8	SEN	21	59	15						Local shock.
		MEN	21	59	16	0.4	-2	+3			
		F	21	59	45						
188	June 9	P	13	06	25		-0.9	+1.4	+3.1	4365	A distant earthquake. New Guinea.
		SE	13	12	31						
		SN	13	12	33						
		Sz	13	12	35						
		SM <sub>E</sub>	13	12	39	3.9	-5				
		SM <sub>N</sub>	13	12	37	3.9		-11			
		L	13	15	46						
		ME	13	17	14	11.6	-10				
		MN	13	16	06	11.6		+12			

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
189	June 13	MZ	13	19	06	13.1			-14	1570	Near Sikotan Isl, Southern part of Kurile IIs. Moderate shocks were felt in eastern part of Hokkaidô, felt in NE Japan.
		eF	13	33	±						
		FE	1	54	13						
		PN	1	54	12						
		eFz	1	54	14						
		SE	1	56	52						
		SN	1	56	57						
		eSz	1	57	01						
		ME	1	57	44	5.1	-3				
		MN	1	57	04	5.8		-4			
		MZ	1	57	20	4.9			±2		
		ScSEN	2	06	30						
eF	2	27	±								
190	June 13	P	2	18	04		(+)	(-)	48	48	Lower basin of the Arita River, Wakayama Prefecture.
		SE	2	18	10						
		Sz	2	18	11						
		ME	2	18	11	1.1	-3				
		MN	2	18	11	0.4		±2			
		MZ	2	18	11				±1		
		F	2	19	22						
191	June 13	ePEN	2	31	09				19	19	Local shock.
		SEN	2	31	12						
		ME	2	31	12		±1				
		MN	2	31	12	0.5		+2			
		F	2	31	39						
192	June 13	PEZ	22	20	35		-0.4		-1.5	6740	A distant earthquake. Afganistan, 29.5N 63.5E (J.S.A.)
		PN	22	20	36			-0.4			
		SE	22	28	53						
		SN	22	28	52						
		Sz	22	28	51						
		LE	22	44	21						
		LN	22	44	07						
		MN	22	45	24	21.3			±40		

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
193	June 15	ME	22	52	44	15.5	±9			437	Near Mamada, southern part of Totigi Prefecture. Moderate shocks were felt in Northern part of Kwantô district.
		MZ	22	50	19	15.5			±15		
		eF	23	16	±						
		eP	5	32	50						
		S	5	33	49						
		ME	5	34	07	2.1	±3				
		MN	5	34	02	1.4		+3			
MZ	5	34	00	1.7			+2				
eF	5	38	±								
194	June 16	SEN	19	10	33					Near Wakayama City.	
		ME	19	10	33	0.4	+1				
		MN	19	10	34	0.4		±2			
		F	19	10	49						
195	June 17	ePEN	11	14	11				80	80	Near the Tanabe Bay, Wakayama Prefecture.
		SEN	11	14	22						
		ME	11	14	22		+2				
		MN	11	14	22	0.4		-3			
		F	11	14	43						
196	June 18	PEN	1	23	02				7	7	Local shock.
		SEN	1	23	03						
		ME	1	23	03	0.5	+1				
		MN	1	23	03	0.4		-1			
F	1	23	27								
197	June 19	ePEN	2	06	13				33	33	Lower basin of the Arita River, Wakayama Pref.
		S	2	06	18						
		MEN	2	06	18	0.4	-2	-4			
F	2	06	47								
198	June 19	P	15	48	35		-1.7	-0.9	+1.5	514	South off Hatidyô Isl. Deep focus earthquake.
		SE	15	49	45						
		SN	15	49	43						
		Sz	15	49	44						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
		M <sub>E</sub>	15	49	46	3.8	$\pm 26$				
		M <sub>N</sub>	15	49	46	2.8		+6			
		M <sub>Z</sub>	15	49	47	2.5			+6		
		eF	15	57	$\pm$						
199	June 21	S <sub>EN</sub>	23	16	21						Near Wakayama City.
		M <sub>E</sub>	23	16	21	0.4	$\pm 0.4$				
		M <sub>N</sub>	23	16	21	0.3		-2			
		F	23	16	46						
200	June 21	P <sub>EN</sub>	23	51	06		(+)	(-)		50	In the Kii Channel.
		eP <sub>Z</sub>	23	51	07						
		S	23	51	13						
		M <sub>E</sub>	23	51	14	0.5	-9				
		M <sub>N</sub>	23	51	14	0.4		-18			
		M <sub>Z</sub>	23	51	14	0.3			+5		
		F	23	52	31						
201	June 22	eP <sub>EN</sub>	1	34	29					29	Near Wakayama City.
		S <sub>EN</sub>	1	34	33						
		M <sub>E</sub>	1	34	34	0.3	+2				
		M <sub>N</sub>	1	34	34	0.4		-2			
		F	1	35	01						
202	June 22	P <sub>EN</sub>	17	37	08					33	Near Wakayama City.
		S	17	37	13						
		M <sub>E</sub>	17	37	13		$\pm 1$				
		M <sub>N</sub>	17	37	13	0.3		+3			
		F	17	37	53						
203	June 23	e <sub>EN</sub>	5	34	03						A distant earthquake. Tibet, China.
		e <sub>N</sub>	5	37	17						
		e <sub>LN</sub>	5	38	40						
		e <sub>LE</sub>	5	39	51						
		e <sub>Z</sub>	5	40	02						
		M <sub>E</sub>	5	40	40	14.1	$\pm 4$				
		M <sub>N</sub>	5	40	27	15.0		$\pm 13$			

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
		M <sub>Z</sub>	5	42	10	15.0			$\pm 8$		
		eF	5	57	$\pm$						
204	June 24	eP <sub>E</sub>	6	19	05						A distant earthquake. Northern part of Chile.
		eP <sub>N</sub>	6	19	11						
		i <sub>EN</sub>	6	19	18						
		eP <sub>Z</sub>	6	19	18						
		e <sub>EN</sub>	6	24	05						
		e <sub>Z</sub>	6	24	04						
		eF	6	57	$\pm$						
205	June 24	e <sub>N</sub>	15	00	22						Local shock.
		S <sub>EN</sub>	15	00	26						
		M <sub>E</sub>	15	00	27		+1				
		M <sub>N</sub>	15	00	27	0.4		+2			
		F	15	01	15						
206	June 26	P	20	35	00					207?	In the Bungo Channel.
		e <sub>N</sub>	20	35	11						
		S <sub>E</sub>	20	35	28						
		S <sub>N</sub>	20	35	27						
		S <sub>Z</sub>	20	35	29						
		M <sub>E</sub>	20	35	28	0.4	-5				
		M <sub>N</sub>	20	35	28	0.5		+8			
		M <sub>Z</sub>	20	35	50	0.6			$\pm 1$		
		F	20	38	33						
207	June 26	eP <sub>E</sub>	20	40	50					531	In the Kasima-nada, east off Ibaraki Pref.
		eP <sub>N</sub>	20	40	49						
		S <sub>E</sub>	20	42	02						
		S <sub>N</sub>	20	42	00						
		M <sub>E</sub>	20	42	10	2.9	+2				
		M <sub>N</sub>	20	42	09	3.1		-2			
		eF	20	50	$\pm$						
208	June 29	iP <sub>EN</sub>	8	32	18		+1.9	-2.8		3810	A distant earthquake. New Guinea.
		iF <sub>Z</sub>	8	32	17				-8.2		

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			g.	m.	t.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
		iS	8	37	54						
		ME	8	37	57	3.5	+68				
		M <sub>1N</sub>	8	37	57	3.7		+52			
		M <sub>Z</sub>	8	37	57	3.2			-20		
		M <sub>2N</sub>	8	38	14	3.5		+26			
		eF	9	02	±						
209	June 29	eEN	12	46	18						Ditto.
		iEZ	12	47	13						
		iN	12	47	11						
		eE	12	47	15	2.4	+2				
		eN	12	47	14	2.9		-1			
		eZ	12	47	14	2.3			±1		
		eF	12	51	±						

# TOYOOKA JAPAN.

## SEISMOLOGICAL BULLETIN

A Branch Station of the Kobe Meteorological Observatory of Japan.  
 $\phi = 35^{\circ} 32'$   $\lambda = 134^{\circ} 49'$   $h = 32.2$  m. Underground: Tertiary.

Instruments: Omori's Seismograph.  
 (Horizontal Pendulum)

Wiechert Seismograph.  
 (Horizontal & Vertical)

### April

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>E</sub> :	20.8	3.1	0.001	20
A <sub>N</sub> :	20.1	3.0	0.001	20

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>E</sub> :	5.8	Aperiodic	0.006	86
A <sub>N</sub> :	6.4	"	0.005	79
A <sub>Z</sub> :	3.5	3.1	0.003	61

### May

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>E</sub> :	21.0	3.0	0.001	20
A <sub>N</sub> :	20.5	3.0	0.001	20

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>E</sub> :	6.0	Aperiodic	0.005	89
A <sub>N</sub> :	5.9	"	0.006	111
A <sub>Z</sub> :	3.6	3.5	0.003	57

### June

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>E</sub> :	20.8	3.0	0.001	20
A <sub>N</sub> :	20.8	3.0	0.001	20

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
A <sub>E</sub> :	5.8	Aperiodic	0.006	96
A <sub>N</sub> :	5.9	"	0.006	94
A <sub>Z</sub> :	3.6	4.0	0.003	56

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			g.	m.	t.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
32	April 3	P <sub>E</sub>	22	34	21						NW off Bonin Isl.
		P <sub>N</sub>	22	34	20						
		P <sub>Z</sub>	22	34	19						
		eF	23	03	±						
33	April 6	P <sub>EN</sub>	19	10	57					464	NE off Sioya Cape. Moderate shocks were felt
		I <sub>Z</sub>	19	10	56						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
34	April 10	eSE	19	12	00						in Hukusima Pref. Felt in Oou and Kwanto district.
		SN	19	11	59						
		SZ	19	12	00						
		ME	19	13	23	4.6	-65				
		MN	19	13	14	4.6		+111			
		MZ	19	13	21	4.8			-44		
		eF	19	29	±						
35	April 12	PN	10	31	25						A distant earthquake. Near Bali Isl, East off Java. Felt in East Java, Bali, and Lombok Isl. By Omoris seismograph.
		eN	10	41	18						
		MN	11	00	39	12.6		-25			
		eF	11	25	±						
36	April 14	eLE	9	28	15						A distant earthquake. Upper valley of the Yangtze River, China. By Omori's seismograph.
		LN	9	27	50						
		ME	9	30	00	12.9	+13				
		MN	9	30	02	15.5		+30			
		eF	9	40	±						
37	April 15	PEN	18	50	22					79	Northern part of the Harima-nada, Inland sea. Felt in Akasi City.
		SEN	18	50	32						
		MEN	18	50	33		-3	±3			
		F	18	51	22						
38	April 15	PEN	10	34	30					428	SSE off Nozima Cape, Tiba Prefecture. Felt in Kwantô district.
		PZ	10	34	28						
		SN	10	35	28						
		SZ	10	35	27						
		ME	10	36	04		+20				
		MN	10	35	53			+104			
		MZ	10	35	52	2.8			+23		
eF	10	44	±								
38	April 15	ePE	22	21	13					3295	A distant earthquake. Felt in Mindanao, 6°N 137°E (according to Manila's report).
		PNZ	22	21	14			+3.2	+4.1		
		SEN	22	26	18						
		SZ	22	26	07						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
39	April 19	LN	22	29	16						SE off Osima, Izu Province. Faint record.
		LZ	22	29	07						
		MN	22	29	37	25.0		-51			
		MZ	22	32	03				+13		
		eF	23	27	±						
40	April 19	eFN	2	38	50					386	South off Hatidyô Isl. Felt in Bonin Isl., abnormal felt area in Kwantô district. Focal depth about 350 km.
		SN	2	39	42				+3		
		MN	2	39	47						
		eF	2	42	±						
41	April 24	P	16	15	12		-16.6	+39.3	+42.6	583	Local shock?
		S	16	16	31						
		ME	16	16	36	3.3	-53				
		MN	16	16	37	4.7		+264			
		MZ	16	16	35	3.2			+38		
42	April 26	ePN	16	55	33					49	South off the Nozima Cape, Tiba Prefecture.
		SEN	16	55	40						
		M	16	55	40		-2	+6			
		F	16	56	09						
43	April 27	PE	22	48	50					400?	SE off Miyako, Iwate Prefecture.
		PN	22	48	52						
		PZ	22	48	51						
		SN	22	49	46						
		SZ	22	49	43						
		ME	22	50	01		-2				
		MN	22	49	58			+7			
		MZ	22	50	03				+2		
F	22	53	±								
43	April 27	ePN	9	18	47						SE off Miyako, Iwate Prefecture.
		eMN	9	21	33						
		eF	9	37	±						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
44	April 28	SEN	h	m	s	s	$\mu$	$\mu$	$\mu$	km.	Near Hukuoka City.
		ME	2	03	36		-2				
		MN	2	03	43			-3			
		F	2	04	±						
45	May 3	ePEN	1	33	32	s				km.	NNW off Bonin Isl.
		iz	1	33	42						
		LE	1	36	14						
		LN	1	36	50						
		eLz	1	37	07						
		MN	1	38	28			-5			
46	May 4	ePE	4	45	29	s				km.	A distant earthquake. Alaska.
		PN	4	45	28						
		Pz	4	45	29						
		eSE	4	53	01						
		SN	4	53	00						
		eLN	5	01	26						
		MN	5	07	44		21.0		-8		
47	May 11	PEN	18	42	52	s				km.	Near Turuga, Hukui Prefecture.
		SEN	18	43	06						
		MEN	18	43	06		+7	+11			
		F	18	43	58						
48	May 12	PEN	3	51	06	s				km.	Near Tosima, northern part of Awadi Province. Felt in southern part of Hyôgo Prefecture.
		SEN	3	51	19						
		Sz	3	51	18						
		MEN	3	51	19		±8	-17			
		Mz	3	51	18				±5		
49	May 13	PE	0	16	10	s				km.	Upper basin of the Gô River, Simane Pref.
		SEN	0	16	30						
		ME	0	16	35		-3				

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
		MN	h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
		F	0	16	37			-4			
50	May 13	ePN	9	10	10	s				km.	A distant earthquake. East off New Guinea
		eF	9	50	±						
51	May 19	PEN	7	06	14	s				km.	27 Northern part of Tango Province.
		SEN	7	06	18						
		MEN	7	06	18		-11	+4			
		F	7	06	52						
52	May 20	ePE	7	04	31	s				km.	SE off Miyako, Iwate Prefecture. Faint record.
		ePN	7	04	13						
		eF	7	07	±						
53	May 20	P	15	02	48	s				km.	28 Near Mineyama, Tango Province.
		SEN	15	02	52						
		Sz	15	02	51						
		ME	15	02	52		-70				
		MNZ	15	02	53			±12	±9		
		F	15	03	45						
54	May 21	eLN	4	45	17	s				km.	North off Formosa.
		eF	5	00	±						
55	May 25	PEN	16	21	06	s				km.	665 SSE of Hatidyô Isl.
		Pz	16	21	04						
		iz	16	21	06						
		eSE	16	22	38						
		SN	16	22	35						
		Sz	16	22	43						
56	May 30	MN	16	22	46	s				km.	Near Mito City, Ibaraki Prefecture. Moderate shocks were felt
		eF	16	26	±			+5			
		ePE	23	05	07						
		iPEN	23	05	09						
		Pz	23	05	08						

No.	Date	Phase	Time G. M. T.	Period s	Amplitude			$\Delta$ km.	Remarks
					$A_E$ $\mu$	$A_N$ $\mu$	$A_Z$ $\mu$		
		iE	23 06 05						in Kwantô district.
		SN	23 06 15						
		SZ	23 06 04						
		ME	23 06 42	2.1	+24				
		MN	23 06 44	4.2		-55			
		MZ	23 06 43				-23		
		eF	23 14 ±						
57	June 1	ePE	1 36 48					463	ENE off Miyake Isl, South off Izu Province.
		FN	1 36 53						
		SN	1 37 56						
		MN	1 38 09						
		eF	1 41 ±						
58	June 2	PE	21 30 25					490	In the Hyûga-nada. Felt in Kyûsyu district.
		PN	21 30 23						
		ePZ	21 30 20						
		SEN	21 31 30						
		SZ	21 31 31						
		ME	21 32 02	1.8	-16				
		MN	21 31 49			-18			
		MZ	21 31 43				-9		
		eF	21 36 ±						
59	June 3	PE	7 18 35					507	Near Sawara, Tiba Prefecture. Felt in Kwantô district.
		FZ	7 18 32						
		eS?Z	7 19 28						
		SE	7 19 43						
		ME	7 19 45		-8				
		MZ	7 19 56				-9		
		eF	7 22 ±						
60	June 9	PEN	13 06 36					4440	A distant earthquake. New Guinea.
		SEN	13 12 49						
		eF	13 28 ±						
61	June 13	P	1 53 58					1340	Near Sikotan Isl, southern

No.	Date	Phase	Time G. M. T.	Period s	Amplitude			$\Delta$ km.	Remarks
					$A_E$ $\mu$	$A_N$ $\mu$	$A_Z$ $\mu$		
		SE	1 56 18						part of Kurile IIs. Moderate shocks were felt in eastern part of Hokkaidô, felt in NE Japan.
		SN	1 56 23						
		SZ	1 56 24						
		eLE	1 57 41						
		ScSEN	2 06 28						
		F	2 13 ±						
62	June 13	iE	22 30 34					6690	A distant earthquake. Afganistan, 29.5°N 63.5°N (J.S.A.)
		iz	22 30 32						
		iE	22 30 52						
		iz	22 30 50						
		SEN	22 38 47						
		eF	23 15 ±						
63	June 15	PE	5 32 42					483	Near Mamada, southern part of Totigi Prefecture. Moderate shocks were felt in northern part of Kwantô district.
		PN	5 32 40						
		FZ	5 32 45						
		SEN	5 34 47						
		eSN	5 34 47						
		ME	5 34 51		-6				
		MN	5 34 49			-5			
		MZ	5 34 54				-5		
		eF	5 37 ±						
64	June 19	P	15 48 45					518	South off Hatidyô Isl.
		SEN	15 50 04						
		SZ	15 50 02						
		MEN	15 50 11		-8	-3			
		Mz	15 50 09				+12		
		eF	15 55 ±						
65	June 23	eLN	5 37 40						A distant earthquake. Tibet, China. By Omori's seismograph.
		MN	5 42 17	14.4		+25			
		eF	5 55 ±						
66	June 24	ePE	6 19 51						A distant earthquake. Northern part of Chile.
		eS?E	6 38 33						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			g.	m.	s.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km	
		eL <sub>2</sub> E	6	45	00						
		eF	7	07	±						
67	June 26	PE	20	35	13					364	In the Bungo Channel.
		FN	20	35	16						
		Fz	20	35	17						
		SE	20	36	02						
		eSN	20	36	00						
		Sz	20	36	00						
		ME	20	36	03		-7				
		MN	20	36	02			-10			
		Mz	20	36	05				-5		
		F	20	37	29						
68	June 26	eE	20	41	38						In the Kasima-nada, east off Ibaraki Prefecture.
		eSN	20	41	57						
		eF	20	44	±						
69	June 29	PE	8	32	27						A distant earthquake.
		PNZ	8	32	26			-3.1	-6.3		New Guinea. Record is deep focus type.
		iz	8	33	57						
		SEN	8	38	06						
		Sz	8	38	04						
		ME	8	38	12	4.0	+92				
		MN	8	38	12			+60			
		Mz	8	38	18				+20		
		eF	8	53	±						



昭和十一年五月十三日發行

神戸市神戸區中山手通七丁目  
神戶測候所

印刷者 神戸市神戸區花隈町三三二  
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松井印刷所

# SEISMOLOGICAL BULLETIN

OF THE

IMPERIAL MARINE OBSERVATORY

AND

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KOBE, JAPAN.

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From Oct. 1 1934, to Dec. 31 1934.

KOBE

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# KÔBE JAPAN.

## SEISMOLOGICAL BULLETIN

of the Imperial Marine Observatory and the Kobe Meteorological Observatory of Japan.

$\varphi=34^{\circ} 41' 18''N$   $\lambda=135^{\circ} 10' 51''E$   $h=58.3$  m Underground: Diluvial Series.

Instruments: Omori's Seismograph.  
(Horizontal Pendulum)

Wiechert Seismograph.  
(Horizontal & Vertical)

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### Oct.

	$T_0$	$\varepsilon$	$\frac{r}{T_0^2}$	V
AE:	19.1		0.001 <sup>(-)</sup>	20
AN:	20.4		0.001	20

	$T_0$	$\varepsilon$	$\frac{r}{T_0^2}$	V
AE:	6.2	5	0.003	108
AN:	6.2	6	0.003	99
AZ:	4.0	6	0.003	85

### Nov.

	$T_0$	$\varepsilon$	$\frac{r}{T_0^2}$	V
AE:	19.8		0.001 <sup>(-)</sup>	20
AN:	20.4		0.001	20

	$T_0$	$\varepsilon$	$\frac{r}{T_0^2}$	V
AE:	6.7	7	0.004	107
AN:	6.6	6	0.004	103
AZ:	4.2	6	0.003	77

### Dec.

	$T_0$	$\varepsilon$	$\frac{r}{T_0^2}$	V
AE:	19.7		0.001 <sup>(-)</sup>	20
AN:	21.4		0.001	20

	$T_0$	$\varepsilon$	$\frac{r}{T_0^2}$	V
AE:	6.1	5	0.004	109
AN:	6.4	6	0.003	105
AZ:	3.9	5	0.004	85

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks		
			G.	M.	T.		AE	AN	AZ				
216	Oct. 2	eSE	h	m	s	s	$\mu$	$\mu$	$\mu$	km.	Northern part of Kuzyûkuri hama, Tiba Prefecture.		
		eSN	21	06	41								
		eSZ	21	06	43								
		ME	21	06	44								
		MX	21	07	06							+6	
		MZ	21	06	52							4.4	+8
		eF	21	06	51							2.7	+2
		eF	21	14	±								

No.	Date	Phase	Time G. M. T.	Period s	Amplitude			$\Delta$ km.	Remarks
					$A_E$ $\mu$	$A_N$ $\mu$	$A_Z$ $\mu$		
217	Oct. 5	P <sub>EN</sub>	16 06 01					102	Near Amino, NW of Kyôto Prefecture.
		S <sub>EN</sub>	16 06 15						
		M <sub>E</sub>	16 06 17		±3				
		M <sub>N</sub>	16 06 16			-3			
		M <sub>Z</sub>	16 06 18				±1		
		F	16 07 06						
218	Oct. 5	P <sub>EN</sub>	20 28 23					1730?	South off Erimo Cape, Hokkaido. 143°4E 41°6N. Felt in Pacific Coast of Oou and Hokkaido.
		i <sub>E</sub>	20 28 58		-5				
		i <sub>N</sub>	20 29 01			+7			
		e <sub>N</sub>	20 30 32						
		iS <sub>E</sub>	20 31 22		+18				
		M <sub>E</sub>	20 32 27	18.1	+15				
		M <sub>N</sub>	20 32 20	16.8		-8			
		eF	20 49 ±						
219	Oct. 10	iP	15 52 39		+5.2	-6.8	-7.1	7190	South off Fiji IIs. deep focus earthquake.
		iP <sub>EN</sub>	15 52 43		+12.1	-15.0			
		iP <sub>Z</sub>	15 52 42	4.4			-18.8		
		PM <sub>E</sub>	15 52 47	4.4	+14				
		PM <sub>N</sub>	15 52 47	4.6		+22			
		PM <sub>Z</sub>	15 52 44	4.6			+22		
		eE	15 53 29						
		e <sub>N</sub>	15 54 02						
		e <sub>Z</sub>	15 54 36						
		eE <sub>Z</sub>	15 55 32						
		i <sub>E</sub>	16 01 16						
		eS <sub>Z</sub>	16 01 13						
		iS <sub>EN</sub>	16 01 18		-17	+37			
		iS <sub>Z</sub>	16 01 17				-7		
		SM <sub>E</sub>	16 01 26	5.6	+65				
		SM <sub>N</sub>	16 01 26	4.8		-49			
		SM <sub>Z</sub>	16 01 20	2.8			-1.6		
i <sub>E</sub>	16 02 09		-34						
i <sub>N</sub>	16 02 01			-25					
i <sub>Z</sub>	16 02 02	3.7			-20				

No.	Date	Phase	Time G. M. T.	Period s	Amplitude			$\Delta$ km.	Remarks
					$A_E$ $\mu$	$A_N$ $\mu$	$A_Z$ $\mu$		
220	Oct. 15	P'P' <sub>N</sub>	16 20 20					5880	Near New Hebrides IIs.
		iP'P' <sub>Z</sub>	16 20 19						
		P'P'M <sub>Z</sub>	16 20 26	3.3			-7		
		eP'P' <sub>E</sub>	16 20 59	3.6	±4				
		eF	16 34 ±						
		e <sub>N</sub>	8 27 48						
221	Oct. 18	eL <sub>E</sub>	8 30 38					5880	Near New Hebrides IIs.
		eL <sub>N</sub>	8 30 48						
		M <sub>E</sub>	8 31 57	14.2	+2				
		M <sub>N</sub>	8 31 28	15.5		+2			
		eF	8 41 ±						
		P <sub>N</sub>	7 57 47						
222	Oct. 18	P <sub>Z</sub>	7 57 46					5880	Near New Hebrides IIs.
		P <sub>RE</sub>	7 59 07						
		P <sub>RN</sub>	7 59 02						
		P <sub>RZ</sub>	7 59 01						
		S <sub>EN</sub>	8 05 17						
		eS <sub>Z</sub>	8 05 23						
		SM <sub>E</sub>	8 06 00	4.9	-2				
		SM <sub>N</sub>	8 05 33						
		eL <sub>E</sub>	8 11 35						
		eL <sub>N</sub>	8 11 47						
		M <sub>E</sub>	8 14 42	17.0	±1				
		M <sup>1</sup> <sub>N</sub>	8 15 49	17.7		±1			
M <sup>2</sup> <sub>N</sub>	8 19 56	18.0							
M <sub>Z</sub>	8 19 50	17.0			±1				
eF	8 43 ±								
222	Oct. 18	i <sub>EN</sub>	22 54 54		+1.2	-2.0		5880	In the Kii Channel.
		i <sub>Z</sub>	22 54 53				+0.9		
		M <sub>E</sub>	22 54 55	0.3	-8				
		M <sub>N</sub>	22 54 55			-6			
		M <sub>Z</sub>	22 54 54	0.8			+1		
		eE	22 55 04						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	S.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
223	Oct. 21	i <sub>N</sub>	22	55	04	0.7		-3			
		e <sub>Z</sub>	22	55	03				-1		
		F	22	56	02						
		eP <sub>E</sub>	17	58	00						Marianne IIs.
		eP <sub>Z</sub>	17	57	55						
		e <sub>E</sub>	17	58	09						
		i <sub>N</sub>	17	58	24						
		e <sub>N</sub>	17	58	58	4.4		$\pm 3$			
		M <sub>E</sub>	18	01	15	6.0	+4				
		M <sub>N</sub>	18	02	22	4.5		-4			
224	Oct. 21	eM <sub>Z</sub>	18	01	30	5.1			-2		
		e <sub>F</sub>	18	23	$\pm$						
		e <sub>N</sub>	18	35	23						ESE off Sioya Cape, Huku-
		eE <sub>N</sub>	18	35	35						sima Prefectures. Felt in
		e <sub>Z</sub>	18	35	37						North of Kwanto and South
		e <sub>Z</sub>	18	35	48	3.1			$\pm 1$		of Oou district.
		eM <sub>E</sub>	18	37	46	2.5	-2				
225	Oct. 23	eM <sub>N</sub>	18	37	38	2.7		+1			
		e <sub>F</sub>	18	43	$\pm$						
		e <sub>N</sub>	22	28	24	4.5		$\pm 2$			ESE off Siroya Cape, NE of
		e <sub>E</sub>	22	29	24	3.0	$\pm 3$				Aomori Prefecture.
226	Oct. 26	e <sub>N</sub>	22	29	20	3.9		$\pm 3$			
		e <sub>F</sub>	22	34	$\pm$						
		e <sub>Z</sub>	14	51	30					3810	Probable epicenter, Celebes
		i <sub>N</sub>	14	51	35						Sea.
227	Oct. 26	iP <sub>E<sub>N</sub></sub>	14	51	36		+0.9	-6.0			Deep focus earthquake.
		iP <sub>Z</sub>	14	51	35				-3.6		
		i <sub>NZ</sub>	14	51	40				-3.9	-3.2	
		PP?	14	53	12						
		e <sub>N</sub>	14	54	27						
		iS <sub>E<sub>N</sub></sub>	14	57	11		-16	-11			
		S <sub>Z</sub>	14	57	14						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks	
			G.	M.	S.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>			
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.		
227	Oct. 26	SM <sub>E<sub>N</sub></sub>	14	57	14	4.2	+33	+14				
		SP?	14	57	29							
		i <sub>Z</sub>	14	58	26	2.9				+2		
		ScS <sub>E?</sub>	14	58	53	4.2	+11					
		ScS <sub>N?</sub>	14	58	56	4.0		+6				
		e <sub>F</sub>	15	07	$\pm$							
		P <sub>NZ</sub>	17	12	43				-3.0	-2.1	710	E off Tanegasima, northern
		eP <sub>E</sub>	17	12	44		+2.2					part of Ryūkyū IIs.
		i <sub>NZ</sub>	17	12	44				-8.0	+1.9		Felt in Kyūsyū and Sikoku
		iE <sub>Z</sub>	17	12	45		-3			-2		district.
228	Oct. 26	P?	17	12	45		+18	+25	+15			
		S <sub>E</sub>	17	13	50							
		eS <sub>N</sub>	17	13	50							
		S <sub>Z</sub>	17	13	49							
		S̄ <sub>E</sub>	17	13	58							
		S̄ <sub>Z</sub>	17	13	56							
		eL <sub>E<sub>N</sub></sub>	17	14	23							
		M <sup>1</sup> <sub>E</sub>	17	15	02	19.4	+47					
		M <sup>1</sup> <sub>Z</sub>	17	14	57	20.4				+23		
		M <sup>1</sup> <sub>N</sub>	17	15	25	19.4			-73			
229	Oct. 26	M <sup>2</sup> <sub>Z</sub>	17	15	24					-33		
		M <sup>2</sup> <sub>E</sub>	17	16	13	13.0	-57					
		M <sup>2</sup> <sub>N</sub>	17	17	47				+48			
		e <sub>F</sub>	17	58	$\pm$							
228	Oct. 26	e <sub>N</sub>	19	30	22	4.1		$\pm 3$			Local shock?	
		P	20	52	38							
229	Oct. 26	i <sub>N</sub>	20	52	54					497	E off Tanegasima, northern	
		e <sub>Z</sub>	20	52	54	1.0				-2	part of Ryūkyū IIs,	
		iE <sub>N</sub>	20	53	43							
		S <sub>E<sub>N</sub></sub>	20	53	45							
		i <sub>Z</sub>	20	53	47							
		M <sub>E</sub>	20	53	47	1.0	+2					

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
		M <sub>N</sub>	20	53	48	0.5		-2			
		M <sub>Z</sub> <sup>2</sup>	20	53	47	1.0			-2		
		F	20	54	38						
230	Oct. 29	e <sub>E</sub>	17	25	29						Western part of Tugaru Strait. Felt in NE of Oou and S of Hokkaido. Focal depth about 140KM.
		S <sub>EN</sub>	17	26	17						
		S <sub>M<sub>N</sub></sub>	17	26	19	4.0		$\pm 2$			
		e <sub>E</sub>	17	27	53	3.7	$\pm 2$				
		e <sub>F</sub>	17	37	$\pm$						
231	Nov. 3	e <sub>E</sub>	3	37	28						Off the mouth of the Kaibu R., southern part of Tokushima Prefecture. Very faint record.
		e <sub>N</sub>	3	37	39						
		e <sub>E</sub>	3	37	47		$\pm 1$				
		F	3	38	16						
232	Nov. 3	P	15	05	25					60	Lower basin of the Arita R., Wakayama Prefecture.
		S <sub>EN</sub>	15	05	33						
		e <sub>Sz</sub>	15	04	34						
		M <sub>E</sub>	15	05	34	0.8	-6				
		M <sub>N</sub>	15	05	34	0.7		-6			
		M <sub>Z</sub>	15	05	35	1.3			+3		
		M <sup>2</sup> <sub>E</sub>	15	05	38	0.8	+5				
		M <sup>2</sup> <sub>N</sub>	15	05	38	0.5		-6			
		e <sub>F</sub>	15	09	$\pm$				+3		
233	Nov. 4	e <sub>Z</sub> <sup>2</sup>	2	04	39					7390	Near New Hebrides IIs. Record is deep focus type.
		P <sub>Z</sub>	2	04	54						
		P <sub>E</sub>	2	05	03						
		P <sub>N</sub>	2	05	02						
		e <sub>Z</sub>	2	11	41						
		S <sub>E</sub>	2	13	52						
		e <sub>S<sub>N</sub></sub>	2	13	59						
		e <sub>F</sub>	2	23	$\pm$						
234	Nov. 4	e <sub>E</sub>	3	25	21					4520	South off Fiji IIs.
		P <sub>Z</sub>	3	25	24						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
		P <sub>E<sub>Z</sub></sub>	3	25	27				+3		
		P <sub>N</sub>	3	25	28				+3		
		e <sub>E</sub>	3	26	18						
		e <sub>N</sub>	3	26	19						
		e <sub>EN<sub>Z</sub></sub>	3	26	31						
		i <sub>S<sub>E</sub></sub>	3	34	23		+5				
		S <sub>N</sub>	3	34	19						
		S <sub>M<sub>E</sub></sub>	3	34	32	8.1	-9				
		S <sub>M<sub>N</sub></sub>	3	34	26	8.2			-4		
		i <sub>E</sub>	3	35	32						
		i <sub>E<sub>N</sub></sub>	3	36	04	3.7					
		e <sub>M<sub>E<sub>N</sub></sub></sub>	3	50	$\pm$						
		e <sub>M<sub>Z</sub></sub>	3	49	04	23.0					
		e <sub>F</sub>	3	58	$\pm$						
235	Nov. 5	e <sub>E</sub>	6	08	26						A distant earthquake? Record is deep focus type.
		e <sub>N</sub>	6	08	21	4.0					
		i <sub>E</sub>	6	10	01	4.2	$\pm 1$				
		i <sub>N</sub>	6	10	01	4.4			$\pm 1$		
		e <sub>F</sub>	6	17	$\pm$						
236	Nov. 5	P	23	09	51					4195	In the Aleutian IIs.
		e <sub>N</sub>	23	11	46						
		S <sub>EN</sub>	23	15	50						
		e <sub>Sz</sub>	23	15	46						
		i <sub>E</sub>	23	16	09						
		i <sub>N</sub>	23	16	05						
		i <sub>N</sub>	23	20	20						
		e <sub>L<sub>N</sub></sub>	23	20	35						
		e <sub>L<sub>Z</sub></sub>	23	21	00						
		M <sub>N</sub>	23	21	00	20.0		+2			
		M <sub>Z</sub>	23	22	55	23.2			$\pm 1$		
		M <sup>2</sup> <sub>N</sub>	23	25	35	16.0		-2			
		e <sub>F</sub>	23	43	$\pm$						
237	Nov. 7	e <sub>E</sub>	11	33	22						ENE off Sioya Cape, Huku-

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks	
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>			
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.		
238	Nov. 8	eN	11	33	23	2.6		$\pm 5$			sima Prefectdre. Masked by microseisms.	
		ez	11	33	12	2.0			$\pm 3$			
		eN	11	33	55	4.6		$\pm 3$				
		eF	11	39	$\pm$							
		i <sup>?</sup> EZ	3	26	35		-3			-1		Off the Nadati, Niigata Prefecture.
		ez	3	26	50							
		SE	3	27	34							
		SN	3	27	36							
		Sz	3	27	33							
		ME	3	27	57	5.2	+28					
Mz	3	27	49	2.7		+19						
iE	3	28	37									
MN	3	28	39	4.2		-25						
eF	3	38	$\pm$									
239	Nov. 10	S <sup>?</sup> EN	16	14	57						Local Shock.	
		ME	16	14	59	0.8	+2					
		MN	16	14	59	0.7		-1				
		F	16	15	15							
240	Nov. 11	iP	5	47	28					29	Near Arima, northern foot of Mt. Rokko.	
		SEN	5	47	32							
		Sz	5	47	31							
		ME	5	47	33		$\pm 3$					
		MNZ	5	47	32			+3	-4			
F	5	48	02									
241	Nov. 16	ePE	13	50	36						North of Fiji IIs. Faint record.	
		ePN	13	50	56							
		ePz	13	51	01							
		eE	13	51	48							
		ez	13	54	18							
		eSN	13	57	19							
eL <sup>?</sup> E	14	01	40									
eME	14	04	13									

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks	
			G.	T.	M.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>			
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.		
242	Nov. 18	MN	14	05	54	14.0					Turkestan. 37°N 66°5E (Strasbourg)	
		eMz	14	06	07	17.0?						
		eF	14	22	$\pm$							
		PN	3	30	14			+0.8				6840
		iPz	3	30	13	2.4				+2.2		
		iE	3	30	15		-1.7					
		ePcPEN	3	31	01							
		PcPz	3	31	00							
		iE	3	31	04							
		eE	3	37	18							
243	Nov. 18	eN	3	37	16						Kamchatka.	
		eSE	3	38	33							
		SN	3	38	35	3.9		$\pm 2$				
		eE	3	38	52	3.7	$\pm 2$					
		eSz	3	38	53							
		eE	3	39	41							
		eN	3	39	39							
		eF	3	51	$\pm$							
		iPE	9	24	10		-2.0					
		PN	9	24	10			+1.2				
244	Nov. 18	iPz	9	24	09					+2.0	A distant earthquake.	
		PM <sub>E</sub>	9	24	13	1.5	+6					
		iN	9	24	12			+2				
		PM <sub>Z</sub>	9	24	13	1.6			+8			
		eE	9	24	34							
		ez	9	24	29							
		eS <sup>?</sup> ENZ	9	28	40							
		eF	9	35	$\pm$							
		PNZ	22	48	07					8590		
		eN	22	49	55							
ez	22	49	56									
eE	22	50	58									
eN	22	51	03									

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
245	Nov. 20	eN	22	53	54						
		iz	22	53	48						
		eS <sub>N</sub>	22	57	58						
		eL <sub>N</sub>	23	00	32						
		M <sub>N</sub>	23	00	37	31.2	$\pm 4$				
		M <sub>Z</sub>	23	01	37	25.1		$\pm 2$			
		eF	23	11	$\pm$						
246	Nov. 22	iE <sub>N</sub>	3	04	45					22?	Local Shock.
		eN	3	04	46						
		e	3	04	49						
		eN	3	04	48						
		eS <sub>Z</sub>	3	04	49						
		eL <sub>E</sub>	3	04	52						
		M <sub>E</sub>	3	04	53	0.7	$\pm 2$				
		M <sub>NZ</sub>	3	04	51	0.8		+3	+1		
247	Nov. 22	F	3	05	02						
		eN <sub>Z</sub>	3	44	19						Ditto.
		eM <sub>E</sub>	3	44	24	0.7	$\pm 1$				
		M <sub>N</sub>	3	44	22	1.0		-2			
		eM <sub>Z</sub>	3	44	24	0.8			$\pm 1$		
248	Nov. 24	F	3	44	32						
		P	19	19	29						Near Turuga, Hukui Prefecture.
		eS <sub>EN</sub>	19	19	31						
		eS <sub>Z</sub>	19	19	32						
		M <sub>E</sub>	19	19	33	0.5	+2				
		M <sub>N</sub>	19	19	32	0.6		-1			
		M <sub>Z</sub>	19	19	33				$\pm 1$		
248	Nov. 24	F	19	19	48						
		iE	8	22	30						Near Katada, Siga Prefecture.
		iN <sub>Z</sub>	8	22	31						
		iS?	8	22	31						
248	Nov. 24	M <sub>EZ</sub>	8	22	32		-3		$\pm 1$		

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
249	Nov. 24	M <sub>N</sub>	8	22	32	0.5		+3			
		F	8	23	12						
		e?	12	47	15						
		eS <sub>E</sub>	12	58	26						
		eS <sub>N</sub>	12	58	22	6.5		$\pm 1$			
		ez	12	58	50						
		eF	13	08	$\pm$						
250	Nov. 26	eP <sub>E</sub>	12	14	31		+2.0			3095	Strong shocks were felt in near Manila. Philippine.
		iP <sub>N</sub>	12	14	31			+4.9			
		P <sub>Z</sub>	12	14	31				+1.7		
		i <sub>N</sub>	12	14	50						
		iz	12	14	48						
		i <sub>N</sub>	12	15	04						
		i <sub>N</sub>	12	15	34						
		iE <sub>Z</sub>	12	16	17						
		i <sub>N</sub>	12	16	15						
		eS <sub>EN</sub>	12	19	22						
		ez	12	19	32						
251	Nov. 27	M <sub>N</sub>	12	25	38	15.3		$\pm 2$			
		eF	12	37	$\pm$						
		eP <sub>E</sub>	5	51	05						Near Kuzyokuri hama, Tiba Prefecture.
		eP <sub>N</sub>	5	51	09						
		P <sub>Z</sub>	5	51	06					-1	
		iE	5	51	17						
		iz	5	51	15						
252	Nov. 27	eS <sub>EN</sub>	5	52	14						
		eS <sub>Z</sub>	5	52	17						
		M <sub>E</sub>	5	52	40		-10				
		M <sub>N</sub>	5	52	28	3.9		+10			
		M <sub>Z</sub>	5	52	39	2.4			+8		
		eF	6	05	$\pm$						
		iP <sub>E</sub>	6	20	52		-3.4?			3470	Malucca Passage.

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
		iP <sub>N</sub>	6	20	51			-80			Felt in N Celebes, N Molucca, and Sangi IIs, East Indies.
		iP <sub>Z</sub>	6	20	50				-5.8		
		i <sub>E</sub>	6	21	59						
		i <sub>N</sub>	6	22	14						
		i <sub>E</sub>	6	22	50						
		e <sub>Z</sub>	6	22	46						
		e <sub>Z</sub>	6	23	24						
		e <sub>Z</sub>	6	24	05						
		eS <sub>E</sub>	6	26	06						
		eS <sub>N</sub>	6	26	41						
		eS <sup>?</sup> <sub>Z</sub>	6	26	30						
		eL <sub>N</sub>	6	30	14						
		M <sup>1</sup> <sub>N</sub>	6	31	00	23.5	$\pm 3$				
		M <sub>Z</sub>	6	30	49	21.1		$\pm 2$			
		i <sub>EN</sub>	6	31	11					} ScS Wave?	
		i <sub>Z</sub>	6	31	09						
		e <sub>N</sub>	6	32	23						
		e <sub>E</sub>	6	34	21						
		M <sup>2</sup> <sub>N</sub>	6	40	23	18.0					
		e <sub>F</sub>	6	51	$\pm$						
253	Nov. 27	eP <sub>EN</sub>	15	57	55					393	Middle basin of the Kinu River, Kwantô district.
		eP <sub>Z</sub>	15	57	54						
		eS <sub>EN</sub>	15	58	45						
		eS <sub>Z</sub>	15	58	46						
		M <sub>E</sub>	15	58	50	1.9	$\pm 6$				
		M <sub>N</sub>	15	59	06	4.1		+7			
		M <sub>Z</sub>	15	58	48	1.6			$\pm 3$		
		e <sub>F</sub>	16	02	$\pm$						
254	Nov. 29	P <sub>E</sub>	12	56	17					780	NE off Hatidyô Isl.
		P <sub>Z</sub>	12	56	15						
		i <sub>E</sub>	12	56	29						
		S <sup>?</sup> <sub>E</sub>	12	57	42						
		eS <sup>?</sup> <sub>Z</sub>	12	57	36						
		M <sub>E</sub>	12	58	25	3.1	+4				

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
		M <sub>N</sub>	12	58	07	2.8		$\pm 4$			
		M <sub>Z</sub>	12	57	40	2.7			$\pm 3$		
		e <sub>F</sub>	13	05	$\pm$						
255	Nov. 30	S <sub>EN</sub>	22	30	31						Felt in Kakogawa, Hyôgo Prefecture.
		M	22	30	32		$\pm 3$	$\pm 3$	$\pm 3$		
		F	22	31	07						
256	Nov. 30	e <sub>P</sub>	23	06	55					153?	Near Kôti City, Sikoku district.
		e <sub>P</sub>	23	06	57						
		e <sub>P</sub>	23	07	00						
		S <sub>E</sub>	23	07	16						
		S <sub>N</sub>	23	07	15						
		M <sub>E</sub>	23	07	19	0.5	+5				
		M <sub>N</sub>	23	07	18	0.4		+6			
		M <sub>Z</sub>	23	07	20	0.8			$\pm 3$		
		F	23	08	02						
257	Dec. 2	S <sub>E</sub>	12	07	48						Near Arita River, Wakayama Prefecture.
		iS <sub>N</sub>	12	07	48						
		M <sub>EN</sub>	12	07	49	0.5	+3	+3			
		M <sub>Z</sub>	12	07	48				$\pm 1$		
		F	12	08	22						
258	Dec. 2	S <sub>E</sub>	13	08	32						In the Kii Channel.
		eS <sub>N</sub>	13	08	31						
		M <sub>E</sub>	13	08	35	0.4	$\pm 1$				
		F	13	09	05						
259	Dec. 7	P	1	07	11					114	Northeastern part of Biwa Lake, Siga Prefecture.
		i <sub>N</sub>	1	07	12			-3.1			
		S <sub>EZ</sub>	1	07	26						
		S <sub>N</sub>	1	07	27						
		M <sub>E</sub>	1	07	32	1.2	$\pm 6$				
		M <sub>N</sub>	1	07	29	1.3		$\pm 8$			
		M <sup>1</sup> <sub>Z</sub>	1	07	27	0.8			-4		



No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
260	Dec. 9	M <sup>2</sup> Z	1	07	31	0.8			+4	84	Near Yuasa Bay, Kii Channel.
		eF	1	11	±						
		P	3	16	22						
		iE	3	16	23		±1				
		iN	3	16	24	0.4		±2			
		S <sub>EN</sub>	3	16	33						
		M <sup>1</sup> E	3	16	33	0.4	-6				
		M <sup>1</sup> N	3	16	34			+5			
		M <sup>2</sup> E	3	16	41		±3				
		M <sup>2</sup> N	3	16	42	0.5		-3			
		M <sub>Z</sub>	3	16	46	0.6			±2		
		F	3	18	19						
261	Dec. 10	iP	10	03	23		-1.2	+2.0	+1.8	Celebes Sea.	
		iN	10	04	47						
		iz	10	04	47	2.5			±2		
		iN	10	04	49	3.9			±2		
		eE	10	06	31						
		eN	10	06	29	3.3			±2		
262	Dec. 11	eP <sup>2</sup> N	21	43	40					67?	Southeastern part of Tokushima Prefecture.
		SE	21	43	49						
		M <sub>E</sub>	21	43	52	0.9	-1				
		i	21	43	53	0.5		-1			
		F	21	44	56						
263	Dec. 15	eP <sub>Z</sub>	2	05	02					4105	Tibet, China.
		P <sub>E</sub>	2	05	06		+3.0				
		iP <sup>2</sup> Z	2	05	06				+5.8		
		iEZ	2	06	39						
		S <sub>EN</sub>	2	10	55						
		S <sub>REN</sub>	2	13	42						
		iE	2	14	03						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
264	Dec. 15	iN	2	14	00					70	Lower basin of the Hidaka River, Wakayama Prefecture.
		iz	2	13	55	10.5					
		iN	2	16	25						
		L <sup>2</sup> N	2	16	59	33.0					
		eL <sup>2</sup> E	2	18	31						
		eL <sup>2</sup> Z	2	19	05						
		M <sub>E</sub>	2	19	38	16.7	-57				
		M <sub>N</sub>	2	19	16	18.6		+101			
		M <sup>1</sup> Z	2	19	52	20.3			-14		
		M <sup>2</sup> Z	2	23	04	12.0			+21		
		eF	3	22	±						
		265	Dec. 15	P <sub>E</sub>	19	19	39				
S <sub>EN</sub>	19			19	48						
M <sub>E</sub>	19			19	49	0.5	-4				
M <sub>N</sub>	19			19	49			-3			
266	Dec. 17	F	19	20	37					4105	Near New Ireland, Melanesia.
		P <sub>EN</sub>	19	25	03		+3.5	-5.0			
		S <sub>E</sub>	19	33	43						
		S <sub>M<sub>N</sub></sub>	19	33	47	4.4		-7			
		eF	19	49	±						
267	Dec. 17	eE	19	54	34					4105	Tibet, China.
		P <sub>N</sub>	16	00	19						
		P <sub>Z</sub>	16	00	14						
		eS?	16	06	12						
		S <sub>R<sup>2</sup>E</sub>	16	09	21						
		ez	16	09	26						
		eM <sub>N</sub>	16	15	29	15.0			±1		
268	Dec. 17	eM <sub>Z</sub>	16	17	15	18.0				4105	Tibet, China.
		eF	16	42	±						
		S <sup>2</sup> E	23	06	21						
		M <sub>EN</sub>	23	06	22	1.4	±2	±1			
F	23	06	28							Local Shock.	

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			g.	m.	s.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
268	Dec. 21	P <sup>2</sup> EN	2	39	12					300?	Off the Note Peninsula.
		S <sup>2</sup> EN	2	39	52	2.0	+4				Very faint record.
		ez	2	39	52						
		eF	2	44	±						
269	Dec. 21	ePEN	6	45	06					60	In the Kii Channel.
		ePz	6	45	05						
		iz	6	45	07						
		SEN	6	45	14						
		M <sup>1</sup> E	6	45	15	0.7	-4				
		M <sup>2</sup> E	6	45	21	0.5	+4				
		M <sub>N</sub>	6	45	21	0.6		±3			
		Mz	6	45	19	0.8			±2		
270	Dec. 24	eN	15	42	13						Marianne IIs?
		ez	15	42	17						
		eN	15	43	09	5.0		±1			
		eE	15	45	56	3.9	±1				
		eF	15	52	±						
271	Dec. 25	eP <sub>E</sub>	6	31	49						Marianne IIs.
		eP <sub>N</sub>	6	31	47						
		Pz	6	31	46						
		eE	6	35	19						
		eN	6	35	46						
		M <sub>N</sub>	6	39	28	18.8		±1			
272	Dec. 26	P	22	55	34					81	Mouth off the Yosino R., Tokushima Prefecture.
		S	22	55	45						
		M <sup>1</sup> E	22	55	46	0.4	+16				
		M <sup>1</sup> N	22	55	46			-13			
		Mz	22	55	46	0.8			+9		
		M <sup>2</sup> E	22	55	48		+23				
		M <sup>2</sup> N	22	55	50			-15			

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			g.	m.	s.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
273	Dec. 30	eF	23	00	±						
		eE	8	59	54						Local shock.
		eSE	8	59	46	1.3					
		eSN	8	59	59	1.3					
		eSZ	8	59	58	1.3					
		M <sub>E</sub>	9	00	03	0.8	±1				
		M <sub>NZ</sub>	9	00	02	0.8		±2	±1		
274	Dec. 30	P <sub>E</sub>	12	10	34					48	Felt at Sumoto, Awadi Province.
		P <sub>NZ</sub>	12	10	33			-1			
		SEN	12	10	40						
		M <sub>E</sub>	12	10	43	0.4	±3				
		M <sub>N</sub>	12	10	43	0.3		+3			
		F	12	11	08						
275	Dec. 31	i <sub>N</sub>	19	09	29						Damage in NW of Mexico.
		eN	19	30	12	20.0		+3			
		ez	19	31	00						
		eF	19	47	±						

From No. 323 to No. 389, 1934.

# SUMOTO JAPAN.

## SEISMOLOGICAL BULLETIN

A Branch Station of the Kobe Meteorological Observatory of Japan.

$\varphi=34^{\circ} 21'$   $\lambda=134^{\circ} 53'$   $h=109.0$  m. Underground: Cretaceous.

Instrument: Omori's Seismograph.  
(Horizontal Pendulum.)

Wiechert Seismograph.  
(Horizontal & Vertical)

### Oct.

	$T_0$	$\varepsilon$	$\frac{r}{T_0^2}$	V
AE:	17.4	2.3	0.0004	20
AN:	17.2	1.9	0.0002	20

	$T_0$	$\varepsilon$	$\frac{r}{T_0^2}$	V
AE:	4.6	Aperiodic	0.004	121
AN:	4.4	"	0.002	114
Az:	4.4	"	0.001	58

### Nov.

	$T_0$	$\varepsilon$	$\frac{r}{T_0^2}$	V
AE:	17.3	2.1	0.0002	20
AN:	17.0	1.7	0.0002	20

	$T_0$	$\varepsilon$	$\frac{r}{T_0^2}$	V
AE:	4.8	Aperiodic	0.003	111
AN:	4.5	"	0.002	108
Az:	4.3	"	0.002	61

### Dec.

	$T_0$	$\varepsilon$	$\frac{r}{T_0^2}$	V
AE:	16.2	3.0	0.0001	20
AN:	17.3	2.1	0.0002	20

	$T_0$	$\varepsilon$	$\frac{r}{T_0^2}$	V
AE:	4.6	Aperiodic	0.004	118
AN:	4.4	"	0.003	102
Az:	4.3	"	0.001	60

No.	Date	Phase	Time G. M. T.	Period s	Amplitude			$\Delta$ km.	Remarks
					AE $\mu$	AN $\mu$	Az $\mu$		
323	Oct. 3	ePEN	1 47 07		$\pm 0.4$	+2		25	Near Siomisaki, south end Kii Peninsula.
		SEN	1 47 12						
		ME <sub>N</sub>	1 47 12						
		F	1 47 38						
324	Oct. 3	ePEN	22 58 48					25	In the Kii Channel.
		SEN	22 58 51						

No.	Date	Phase	Time G. M. T.	Period s	Amplitude			$\Delta$ km.	Remarks
					AE $\mu$	AN $\mu$	Az $\mu$		
325	Oct. 5	ME	22 58 51		+3			126	Near Amino, northern part of Kyōto Prefecture.
		ME <sub>N</sub>	22 58 52						
		F	22 59 34						
		ePN	16 06 08						
326	Oct. 5	SEN	16 06 25		+2			1400	South of Erimo Cape, Hok- kaido. Felt in the Pacific coast of Oou and Hokkaido.
		ME	16 06 26						
		ME <sub>N</sub>	16 06 27						
		F	16 07 18						
		ePE	20 28 00						
		ePN	20 28 03						
		ez	20 28 16						
		SE	20 30 26						
		SN	20 30 30						
		Sz	20 30 36						
327	Oct. 7	ME	20 32 41		-5			59	Southeastern part of Toku- sima Prefecture.
		ME <sub>N</sub>	20 32 16						
		MZ	20 34 01						
		F	20 52 ±						
		P	3 01 27						
		S	3 01 35						
		ME	3 01 36						
		ME <sub>NZ</sub>	3 01 36						
F	3 02 58								
328	Oct. 10	iPEZ	15 52 37		+41	-0.9	-6.9	7210	South off Fiji Is.
		iPN	15 52 38						
		iSEZ	16 01 18						
		iSz	16 01 16						
		ME	16 01 24						
		ME <sub>N</sub>	16 01 26						
		ME <sub>Z</sub>	16 01 23						
		P'PENZ	16 20 21						
eF	16 42 ±								

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
329	Oct. 11	S?	1	05	37						Local shock.
		M <sub>EN</sub>	1	05	37		-3	-5			
		F	1	05	50						
330	Oct. 13	S	13	11	56						Near Wakayama City.
		M <sub>EN</sub>	13	11	56		±1	-2			
		F	13	12	07						
331	Oct. 13	S	14	04	18						Lower basin of the Arita River, Wakayama Prefecture.
		M <sub>E</sub>	14	04	18		±2				
		M <sub>N</sub>	14	04	18	0.4		-3			
		F	14	04	51						
332	Oct. 18	P <sub>E</sub>	7	57	45		(+)	-0.9		5810	Near New Heblides IIs.
		P <sub>N</sub>	7	57	49						
		S <sub>E</sub>	8	05	13						
		S <sub>N</sub>	8	05	12						
		M <sub>P<sub>E</sub></sub>	8	05	33	8.1	+2				
		M <sub>P<sub>N</sub></sub>	8	05	30	8.4		+2			
		F	8	40	±						
333	Oct. 18	P <sub>EN</sub>	22	54	30			+0.4		97	In the Kii Channel.
		e <sub>Z</sub>	22	54	38						
		S <sub>E</sub>	22	54	43						
		S <sub>NZ</sub>	22	54	44						
		M <sub>E</sub>	22	54	44	0.4		-3			
		M <sub>N</sub>	22	54	45	0.5		+11			
		F	22	55	56				+3		
334	Oct. 19	e <sub>EN</sub>	2	47	39						Near Akana, Simane Prefecture.
		S <sub>EN</sub>	2	47	48						
		M <sub>E</sub>	2	47	50	0.4	±0.4				
		M <sub>N</sub>	2	40	50	0.6		-1			
		F	2	48	15						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks	
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>			
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.		
335	Oct. 20	e <sub>PEN</sub>	15	00	40						35	Near Siga, Wakayama Prefecture.
		S <sub>EN</sub>	15	00	44							
		M <sub>E</sub>	15	00	45	0.5	-2					
		M <sub>N</sub>	15	00	45	0.4			-3			
		F	15	01	17							
336	Oct. 20	S <sub>EN</sub>	22	25	39						Near Tadono, Wakayama Prefecture.	
		M <sub>N</sub>	22	25	40	0.3		+2				
		F	22	25	59							
337	Oct. 21	S <sub>EN</sub>	3	44	35						Local shock.	
		M <sub>EN</sub>	3	44	35		+2	+4				
		F	3	44	52							
338	Oct. 21	P <sub>Z</sub>	17	57	47					1860	Marianne IIs.	
		P <sub>EN</sub>	17	57	52							
		e <sub>SE</sub>	18	01	04							
		e <sub>SN</sub>	18	01	03							
		M <sub>E</sub>	18	06	27	7.5						
		M <sub>N</sub>	18	06	18	8.4			±1			
		e <sub>F</sub>	18	40	±							
339	Oct. 21	i <sub>E</sub>	18	35	23						ESE off Siyoa Cape, Hukushima Prefecture.	
		i <sub>N</sub>	18	35	27							
		e <sub>F</sub>	18	40	±							
340	Oct. 23	e <sub>P<sub>E</sub></sub>	7	47	42						Near Mt. Aso, Kyûsyû district.	
		e <sub>P<sub>N</sub></sub>	7	47	41							
		S <sub>EN</sub>	7	47	50							
		S <sub>Z</sub>	7	47	51							
		M <sub>E</sub>	7	47	53	0.6	±2					
		M <sub>N</sub>	7	47	51	0.5			±3			
341	Oct. 23	M <sub>Z</sub>	7	48	08	0.9				-1	In the Kii Channel.	
		F	7	49	53							
		e <sub>PEN</sub>	20	34	48					66		

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
342	Oct. 25	SEN	20	34	57						
		SZ	20	34	56						
		ME	20	34	57	0.4	+5				
		MN	20	34	58	0.4		+4			
		F	20	36	00						
		S	22	54	36						Local shock.
		MEZ	22	54	38	0.3	-6		-3		
343	Oct. 26	MN	22	54	38	0.2		-5			
		F	22	55	05						
		PE	14	51	32					3755	Probable epicenter, Celebes Sea.
		PN	14	51	31						
		PZ	14	51	30						
		S	14	57	04						
		ME	14	57	08	3.6	+8				
344	Oct. 26	MN	14	57	09	4.0		+6			
		MZ	14	57	08	4.0			-3		
		F	15	06	±						
		iP	17	12	37		-2.9	-1.8	-3.5	462	East off Tanegasima, northern part of Ryûkyû IIs. Felt in Kyûsyû and Sikoku district.
		ez	17	12	52						
		eEN	17	13	00						
		SE	17	13	39						
345	Oct. 26	SN	17	13	38						
		eSz	17	13	40						
		eLE	17	14	40						
		eLN	17	14	44						
		ME	17	15	58	9.5	-29				
		MN	17	14	57	4.0		-28			
		MZ	17	14	58	14.6			-29		
eF	17	59	±								
345	Oct. 26	P	20	52	32				443	Ditto.	
		SEN	20	53	31						
		Sz	20	53	32						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks	
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>			
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.		
346	Oct. 27	ME	20	53	35	0.5	-2					
		MN	20	53	34	0.5		+3				
		MZ	20	53	46	0.9			+4			
		eF	20	59	±							
		P	5	11	11						27	Near Wakayama City.
347	Oct. 30	S	5	11	14							
		ME	5	11	14	0.6	+3					
		MN	5	11	15	0.4		-5				
		MZ	5	11	17	0.6			+1			
		F	5	12	05							
348	Nov. 1	ePEN	21	43	17						34	Near the Arita River, Wakayama Prefecture.
		S	21	43	21							
		ME	21	43	22	0.4	-3	-5				
		F	21	44	09							
349	Nov. 3	eS <sup>2</sup> EN	10	22	53							
		MN	10	22	55	0.9		+2				
		F	10	23	43							
350	Nov. 3	PEN	3	37	14						80	Mouth off the Kaibu R., Tokushima Prefecture.
		SE	3	37	24							
		SNZ	3	37	25							
		ME	3	37	25	0.5	+2	-2				
		MZ	3	37	25				+1			
350	Nov. 3	F	3	38	04							
		iPEN	15	05	19		+2.3	-2.8	-3.3	37	Lower basin of the Arita River, Wakayama Prefecture.	
		iPZ	15	05	20							
		iSEN	15	05	24							
		Sz	15	05	25							
		M <sup>1</sup> E	15	05	24	0.8	-14					
		M <sup>1</sup> N	15	05	25	0.7		-28				
M <sup>2</sup> N	15	05	27	0.4		-19						
M <sup>2</sup> E	15	05	28	1.0	+15							

No.	Date	Phase	Time			Period	Amplitude			Δ	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	μ	μ	μ	km.	
351	Nov. 4	M <sub>Z</sub>	15	05	29	0.6			±6	7640	Near New Hebrides IIs.
		F	15	08	06						
		eP <sub>EZ</sub>	2	04	38						
		eP <sub>N</sub>	2	04	37						
		S <sub>E</sub>	2	13	39						
		S <sub>N</sub>	2	13	40						
		M <sub>E</sub>	2	14	01	11.3	±2				
M <sub>N</sub>	2	14	01	12.2		±3					
eF	2	46	±								
352	Nov. 4	P <sub>E</sub>	3	25	21				7580	South off Fiji IIs.	
		P <sub>N</sub>	3	25	20						
		P <sub>Z</sub>	3	25	22						
		S <sub>E</sub>	3	34	19						
		S <sub>N</sub>	3	34	20						
		M <sub>E</sub>	3	34	28	8.4	-6				
		M <sub>N</sub>	3	34	26	8.4		-5			
eF	4	06	±								
353	Nov. 5	S <sub>EN</sub>	16	43	22					In the Iyo nada, Inland Sea.	
		M <sub>E</sub>	16	43	24		±1				
		M <sub>N</sub>	16	43	27	1.2		+1			
		F	16	43	45						
354	Nov. 5	P <sub>EZ</sub>	23	09	52				4330	In the Aleutian IIs.	
		P <sub>N</sub>	23	09	50						
		e <sub>N</sub>	23	11	27						
		eS <sub>EN</sub>	23	15	57						
		eL <sub>E</sub>	23	19	58						
		eL <sub>N</sub>	23	20	14						
		eL <sub>Z</sub>	23	23	±						
eF	23	46	±								
355	Nov. 6	S <sub>EN</sub>	12	53	04					In the Kii Channel.	
		M <sub>E</sub>	12	53	04		-1				

No.	Date	Phase	Time			Period	Amplitude			Δ	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	μ	μ	μ	km.	
356	Nov. 7	M <sub>N</sub>	12	53	04	0.2			-2		ENE off Siyoa Cape, Fukushima Prefecture.
		F	12	53	45						
		e <sub>N</sub>	11	32	34						
		eS <sub>N</sub>	11	33	04						
		e <sub>E</sub>	11	33	14						
e <sub>Z</sub>	11	33	23								
F	11	36	±								
357	Nov. 8	eP <sub>E</sub>	3	26	52				348	Off the Nadati, Niigata Prefecture.	
		eP <sub>N</sub>	3	26	53						
		eP <sub>Z</sub>	3	27	00						
		S <sub>EN</sub>	3	27	42						
		eS <sub>Z</sub>	3	27	41						
		M <sub>E</sub>	3	28	11	3.1	+12				
		M <sub>N</sub>	3	27	59	3.6		+13			
M <sub>Z</sub>	3	28	03	3.4			-4				
eF	3	41	±								
358	Nov. 15	P <sub>EN</sub>	22	05	33				35	Near Wakayama City.	
		S	22	05	37						
		M <sub>E</sub>	22	05	38	0.5	+1				
		M <sub>N</sub>	22	05	38			±2			
		F	22	06	33						
359	Nov. 16	eP <sub>N</sub>	13	50	59				4295	North off Fiji IIs.	
		eP <sub>Z</sub>	13	50	57						
		eP <sub>E</sub>	13	51	06						
		S <sub>E</sub>	13	57	09						
		S <sub>N</sub>	13	57	04						
		L <sub>EN</sub>	14	00	38						
		M <sub>E</sub>	14	01	28	20.2	+25				
M <sub>N</sub>	14	02	59	13.0		±8					
eF	14	23	±								
360	Nov. 16	eP <sub>N</sub>	23	11	53				26	Local shock.	

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
361	Nov. 18	SEN	23	11	57	0.4				5440	Turkestan. Epicenter 37°N 66.5E, (Strasbourg)
		ME	23	11	58		±1				
		MN	23	11	58			±1			
		F	23	12	23						
		PE	3	30	14						
		PN	3	30	12						
		Pz	3	30	13						
		eSE	3	37	17						
		eSN	3	37	20						
		eSz	3	37	19						
		eN	3	38	40						
		eE	3	38	57						
		eP	3	45	±						
362	Nov. 18	PE	9	24	16						Kamchatka.
		PN	9	24	14						
		Pz	9	24	13						
		eF	9	40	±						
363	Nov. 18	ePEZ	22	48	07					8590	A distant earthquake.
		ePN	22	48	09						
		SE	22	58	49						
		SN	22	58	06						
		eF	23	18	±						
364	Nov. 21	ePEN	12	11	27	0.5				38	Near Wakayama City.
		SEN	12	11	33		±1				
		ME	12	11	33						
		MN	12	11	33			+1			
		F	12	12	05						
365	Nov. 26	P	12	14	26					2825	Strong shocks were felt at Manila, Philippine.
		eSEN	12	18	55						
		eLE	12	22	12						
		eLN	12	22	31						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
366	Nov. 27	eF	11	40	±					588	Near Kujuakuri hama, Tiba Prefecture.
		ePE	5	51	07						
		ePN	5	51	03						
		ePz	5	51	10						
		SE	5	52	24						
		SN	5	52	25						
		Sz	5	52	28						
		ME	5	52	57		3.5	±4			
		MN	5	52	54		3.8		-6		
		Mz	5	52	54		4.2				
367	Nov. 27	PE	6	20	44		-0.9?			3435	Molucca Passage. Felt in N. Celebes, N. Molucca and Sangi IIs, East Indies.
		iPN	6	20	43			-4.6			
		iPz	6	20	42				-6.6		
		eSE	6	25	55						
		eSN	6	25	57						
		ez	6	26	12						
		eLE	6	28	17						
		eLN	6	28	40						
		iE	6	31	05						
		iN	6	31	04						
368	Nov. 29	PEZ	12	56	18					450	NE off Hatidyô Isl.
		PN	12	56	20						
		eSE	12	57	18						
		eSN	12	57	21						
		ME	12	57	31		2.1	-2			
		MN	12	57	54		2.8		±1		
369	Nov. 30	Mz	12	57	26	2.7			±3		
		eF	13	04	±						
		eE	2	44	01						A distant earthquake. Mexico?

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks	
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>			
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.		
370	Nov. 30	eN	2	43	50						Time is uncertain.	
		eF	3	48	±							
		ePN	23	06	50					102		Near Kōti City, Sikoku district.
		ez	23	07	00							
		SEN	23	07	04							
		ME	23	07	04	0.4	+6					
		MN	23	07	05	0.6		±5				
		MZ	23	07	06	0.8			+2			
F	23	07	46									
371	Dec. 2	PEN	12	07	41					60	Near the Arita River, Wakayama Prefecture. Time is uncertain.	
		S	12	07	50							
		ME	12	07	50	0.6	±6					
		MN	12	07	50	0.4		-8				
		MZ	12	07	50				±2			
		F	12	08	33							
372	Dec. 2	P	13	08	18					57	In the Kii Channel. Time is uncertain.	
		S	13	08	25							
		ME	13	08	26	0.5	+10					
		MNZ	13	08	26	0.4		+20	+3			
		F	13	09	35							
373	Dec. 2	SEN	22	50	36		+1.7	+2.0			Basin of the Arita River, Wakayama Prefecture. Time is uncertain.	
		MEN	22	50	36	0.4	-3	±2				
		F	22	50	54							
374	Dec. 5	ePEN	3	54	52					21?	Near Wakayama City.	
		SEN	3	54	54							
		ME	3	54	54	0.4	+1					
		MN	3	54	55	0.5		±2				
		F	3	55	18							
375	Dec. 7	ePEN	1	07	15					123	Northern part of the Biwa Lake, Siga Prefecture.	
		ez	1	07	27							

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
376	Dec. 7	eSE	1	07	32						North off Amamiosima, Ryūkyū Is.
		eSN	1	07	31						
		ME	1	07	42	0.9	-1				
		MN	1	07	45	0.7		+2			
		MZ	1	07	48	0.8			-1		
		F	1	09	41						
377	Dec. 9	eN	10	45	43						Near Yuasa Bay, Wakayama Prefecture.
		eSE	10	48	38						
		eSN	10	48	11						
		eF	10	57	±						
378	Dec. 9	PEN	3	16	16					48	Near Yuasa Bay, Wakayama Prefecture.
		S	3	16	22						
		ME	3	16	22	0.4	+15				
		MN	3	16	23	0.5		-14			
		MZ	3	16	22	0.7			±3		
		F	3	18	05						
379	Dec. 10	eEN	5	48	00						Ditto.
		SEN	5	48	03						
		ME	5	48	03	0.3	+2				
		MN	5	48	04	0.4		±2			
		F	5	48	35						
380	Dec. 11	PE	10	03	20				-0.9?		Celebes Sea.
		PNZ	10	03	19				+1.0	+3.3	
		iENZ	10	04	43						
		iE	10	04	46	3.1	+1				
		iN	10	04	45	2.5		-2			
		iz	10	04	45	2.3			-3		
		eE	10	08	40						
		eN	10	08	39						
		eF	10	11	±						
		ePN	21	43	29					59	



No.	Date	Phase	Time G. M. T.	Period s	Amplitude			$\Delta$ km.	Remarks
					$A_E$ $\mu$	$A_N$ $\mu$	$A_Z$ $\mu$		
381	Dec. 15	ePz	21 43 31					4245	Tibet, China.
		S	21 43 39						
		ME	21 43 39	0.6	-5				
		MN	21 43 40	0.4		+8			
		MZ	21 43 40	0.7		-3			
		F	21 45 03						
		PE	2 04 55						
PX	2 04 58								
PZ	2 04 57								
SEN	2 10 51								
Sz	2 11 09								
LE	2 13 38								
LN	2 13 29								
LZ	2 13 36								
MN	2 19 14	18.8		-717					
ME	2 23 19	10.9	-143						
MZ	2 23 22	10.6		-109					
eF	3 26 ±								
382	Dec. 15	P	19 19 31				43	Lower basin of the Hidaka River, Wakayama Prefecture.	
		S	19 19 37						
		ME	19 19 37	0.6	+7				
		MN	19 19 38	0.5		-9			
		MZ	19 19 38	0.6		+2			
		F	19 20 51						
383	Dec. 15	PE	19 24 59				7190	SW off Fiji Is.	
		PXZ	19 25 00						
		S	19 33 39						
		eF	19 46 ±						
384	Dec. 17	P	16 00 00				3775	Near New Ireland, Melanesia.	
		S	16 05 34						
		eF	16 36 ±						
*385	Dec. 21	iP	6 44 59				37	Perceptible.	

No.	Date	Phase	Time G. M. T.	Period s	Amplitude			$\Delta$ km.	Remarks
					$A_E$ $\mu$	$A_N$ $\mu$	$A_Z$ $\mu$		
386	Dec. 22	S	6 45 04				135	In the Bungo Channel.	
		ME	6 45 04	0.3	+8				
		M <sup>1</sup> N	6 45 05	0.4		±12			
		MZ	6 45 08			±3			
		M <sup>2</sup> N	6 45 08	0.4		±13			
		F	6 46 23						
		ePE	0 41 38						
ePX	0 41 37								
SEN	0 41 56								
Sz	0 41 55								
ME	0 42 23	1.1	+2						
MN	0 42 02	0.9		±1					
F	0 43 57								
387	Dec. 25	PEZ	6 31 44		+0.9		(+)?	2090	Marianne Is.
		PX	6 31 42			+1.0			
		SEN	6 35 15						
		SN	6 35 14						
		LE	6 38 05						
		LN	6 38 46						
		ME	6 39 49	13.6	±4				
		MN	6 39 05	13.6		±8			
MZ	6 39 08	13.1			-7				
eF	7 00 ±								
388	Dec. 26	P	22 55 26				40	Off the mouth of the Yosi-no River, Tokushima Prefecture.	
		S	22 55 31						
		MEN	22 55 32	0.5	-5	-14			
		MZ	22 55 35	0.7					+4
F	22 57 26								
389	Dec. 30	P	12 10 30				27	Perceptible. Local shock.	
		S	12 10 33						
		MEN	12 10 33	0.4	+4	-13			
		MZ	12 10 33						±2
		F	12 11 32						

# TOYOOKA JAPAN.

## SEISMOLOGICAL BULLETIN

A Branch Station of the Kobe Meteorological Observatory of Japan.

$\varphi = 35^{\circ} 32'$   $\lambda = 134^{\circ} 49'$   $h = 32.2$  m. Underground : Tertiary.

Instruments : Omori's Seismograph.  
(Horizontal Pendulum)

Wiechert Seismograph.  
(Horizontal & Vertical)

### Oct.

	$T_o$	$\varepsilon$	$\frac{r}{T_o^2}$	V
AE:	21.0	3.0	0.001	20
AN:	20.8	3.0	0.001	20

	$T_o$	$\varepsilon$	$\frac{r}{T_o^2}$	V
AE:	5.9	Aperiodic	0.005	95
AN:	5.1	„	0.007	96
AZ:	4.0	7	0.003	67

### Nov.

	$T_o$	$\varepsilon$	$\frac{r}{T_o^2}$	V
AE:	21.0	3.0	0.001	20
AN:	20.8	3.0	0.001	20

	$T_o$	$\varepsilon$	$\frac{r}{T_o^2}$	V
AE:	5.9	Aperiodic	0.005	95
AN:	5.1	„	0.007	96
AZ:	4.0	7	0.003	67

### Dec.

	$T_o$	$\varepsilon$	$\frac{r}{T_o^2}$	V
AE:	21.0	3.0	0.001	20
AN:	20.8	3.0	0.001	20

	$T_o$	$\varepsilon$	$\frac{r}{T_o^2}$	V
AE:	5.8	Aperiodic	0.005	95
AN:	5.9	„	0.007	96
AZ:	3.6	7	0.003	67

No.	Date	Phase	Time G. M. T.	Period s	Amplitude			$\Delta$ km.	Remarks
					A <sub>E</sub> $\mu$	A <sub>N</sub> $\mu$	A <sub>Z</sub> $\mu$		
104	Oct. 5	P	16 05 45	0.5	-2.1	-3.1	+5.2	30	Near Amino, NW of Kyoto-Prefecture.
		S <sub>EN</sub>	16 05 49						
		S <sub>Z</sub>	16 05 50						
		M <sub>EN</sub>	16 05 50						
		F	16 09 29						
105	Oct. 5	P <sub>E</sub>	20 28 09					South off Erimo Cape,	

No.	Date	Phase	Time G. M. T.	Period s	Amplitude			$\Delta$ km.	Remarks	
					A <sub>E</sub> $\mu$	A <sub>N</sub> $\mu$	A <sub>Z</sub> $\mu$			
106	Oct. 10	P <sub>NZ</sub>	20 28 08		+7			7250	Hokkaido. Felt in Pacific coast of Oou and Hokkaido.	
		S <sub>Z</sub>	20 31 02							
		eL <sub>E</sub>	20 30 48							
		eL <sub>N</sub>	20 31 29							
		M <sub>E</sub>	20 32 26							
		eF	20 41 ±							
		P	15 52 44							(+)
iz	15 52 47									
107	Oct. 15	S <sub>E</sub>	16 01 26					3895	A distant earthquake, By Omori's Seismograph.	
		S <sub>N</sub>	16 01 27							
		S <sub>Z</sub>	16 01 28							
		P'P'N	16 20 20							
		iP'P'Z	16 20 19							
108	Oct. 21	eF	16 31 ±						Marianne IIs.	
		eL <sub>N</sub>	8 30 24							-20
		eM <sub>N</sub>	8 30 57							
109	Oct. 26	eF <sub>N</sub>	8 42 ±						Probable epicenter, Celebes Sea. S phases in distinct.	
		eP <sub>E</sub>	14 51 42							
		P <sub>N</sub>	14 51 41							
		P <sub>Z</sub>	14 51 58							
110	Oct. 26	S <sub>E</sub>	14 57 21					571	East off Tanegasima, northern part of Ryūkyū IIs. Felt in Kyūshū and Sikoku district.	
		S <sub>N</sub>	14 57 22							
		S <sub>Z</sub>	14 57 18							
		eF	15 12 ±							
		P <sub>EZ</sub>	17 12 52							
105	Oct. 5	P <sub>N</sub>	17 12 51							
		S <sub>E</sub>	17 14 11							

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.	
		SN	17	14	08	5.0	+74	+47	-22		
		Sz	17	14	06						
		LE	17	15	09						
		LN	17	15	11						
		ME	17	16	02						
		MN	17	15	52						
		MZ	17	16	56						
		eF	17	44	±						
111	Nov. 1	PN	7	33	03	±2	±2		27	Near Ikuno, Hyôgo Prefecture.	
SEN	7	33	06								
ME <sub>N</sub>	7	33	06								
F	7	33	22								
112	Nov. 8	PE	3	26	48	-16	-27	+8		266	Off the Nadati, Niigata Prefecture.
		PNZ	3	26	47						
		eSE	2	27	22						
		SNZ	3	27	23						
		ME	3	27	53						
		MN	3	27	40						
		MZ	3	27	58						
eF	3	33	±								
113	Nov. 18	PEN	9	24	06						Kamchka. Very faint record.
		Pz	9	24	05						
		eF	9	27	?						
114	Nov. 26	PEN	12	14	38						Strong shocks were felt in near Manila, Philippine. By Omori's Seismograph.
		SN	12	19	53						
		eF	12	33	±						
115	Nov. 27	PE	5	51	09					623	Near Kuzyukuri hama, Tiba Prefecture.
		ePN	5	51	10						
		Pz	5	51	08						
		SE	5	52	32						
		SN	5	52	29						

No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks		
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>				
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.			
		Sz	5	52	28		+10	-18	+10				
		ME	5	52	44								
		MN	5	52	33								
		MZ	5	52	41								
		eF	5	55	±								
116	Nov. 27	PE	6	20	59					3500	Molucca Passage. Felt in N. Celebes, N. Molucca and Sangi IIs., East Indies.		
		PNZ	6	20	57								
		SE	6	26	16								
		eSN	6	26	17								
		LE	6	28	43								
eF	6	38	±										
117	Nov. 29	PE	12	56	29						NE off Hatidyô Isl. Masked by microseisms.		
		ePN	12	56	33								
		Pz	12	56	28								
		eF	13	00	±								
118	Dec. 7	PEN	1	07	10		( + )	(-)		116	Northern part of Biwa Lake, Siga Prefecture.		
		Pz	1	07	11								
		S	1	07	26								
		ME	1	07	28							0.4	-21
		MN	1	07	28							0.2	+17
		MZ	1	07	27							1.2	-20
		F	1	08	33								
119	Dec. 15	ePE	2	05	03						Tibet, China.		
		Pz	2	05	01								
		SE	2	13	39								
		SN	2	13	40								
		eLE	2	17	09								
		LN	2	16	06								
		ME	2	19	03							16.8	-92
MN	2	19	45	16.0	-138								
MZ	2	20	47		+40								
eF	2	55	±										

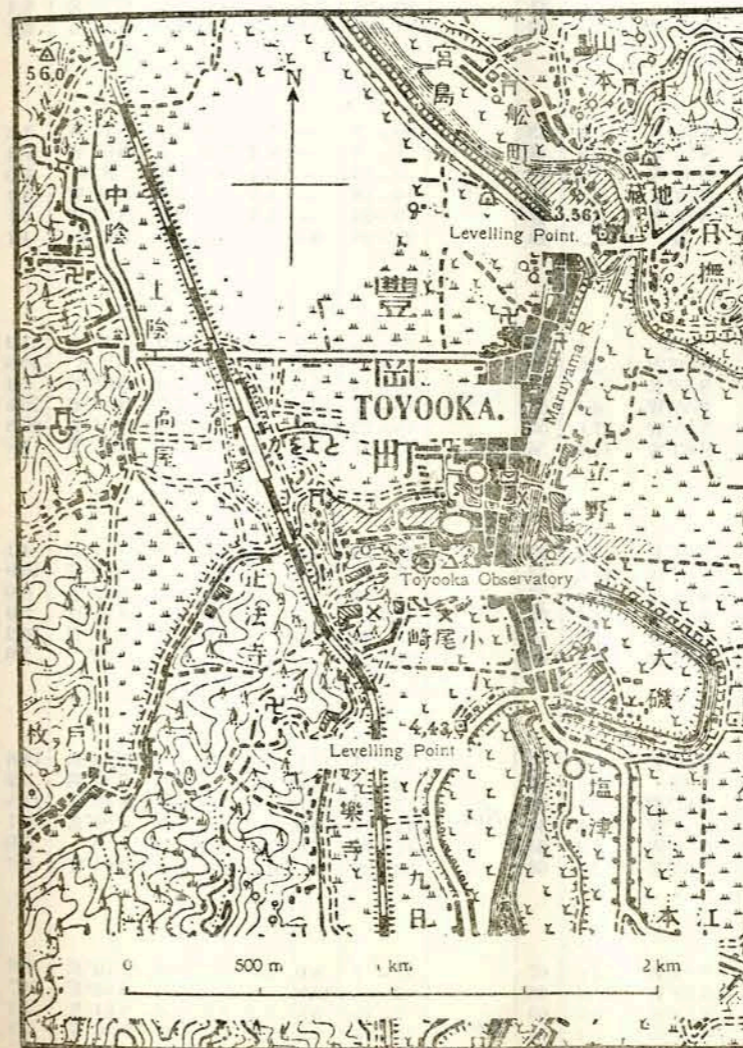
No.	Date	Phase	Time			Period	Amplitude			$\Delta$	Remarks	
			G.	M.	T.		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>			
			h	m	s	s	$\mu$	$\mu$	$\mu$	km.		
120	Dec. 17	ePz	16	00	20						Near New Ireland, Melanesia. Very faint record.	
		P <sub>EN</sub>	16	00	28							
		eF	16	24	±							
121	Dec. 19	P	3	47	47					27	Near Miyazu, Kyōto Prefecture.	
		S <sub>EN</sub>	3	47	51							
		M <sub>EN</sub>	3	47	51	±4	+12					
		F	3	48	18							
122	Dec. 25	eF <sub>E</sub>	6	31	12						Marianne Is.	
		eL <sub>E</sub>	6	36	00							
		eF <sub>E</sub>	6	46	±							
123	Dec. 31	eE	19	08	21						Damage in NW of Mexico.	
		eN	19	08	37							
		eF	20	11	±							

# TOYOOKA JAPAN.

## The Observation of the Tilting of the Earth Crust at the Toyooka Observatory.

On the 23rd May, 1925 there occurred a great earthquake at the northern part of the Tazima province, the epicenter was 13 kilometers north of Toyooka, and on the 7th March, 1927 again a destructive earthquake occurred at the northern part of the Tazima and Tango Provinces and its epicenter was about 22 kilometers east of Toyooka. To investigate the after effects of those earthquakes, the observations of the tilting of the earth surface were made at the Toyooka observatory by the Ishimoto's tiltmeter. The details of the instrument were described by Dr. M. Ishimoto in Jap. Journ. of Astro. and Geophys, Vol 6, Page 83 (1928). The Toyooka

observatory is the branch office of the Kobe Met. Observatory, and is situated at the western part of the hill Zimmu-yama, Toyooka. The instruments were installed in the seismometre house of the observatory, in which the temperature is kept nearly constant. Topographical features of the neighbourhood of Toyooka can be seen in the figure, in which the site of the observatory is indicated by ⊙. The next tables are the results of the observations, which were made by Mr. Hyōzirō Yamazaki, the superintendent of the Toyooka observatory.



# TOYOOKA JAPAN.

## Tilting of Earth at Toyooka (1934)

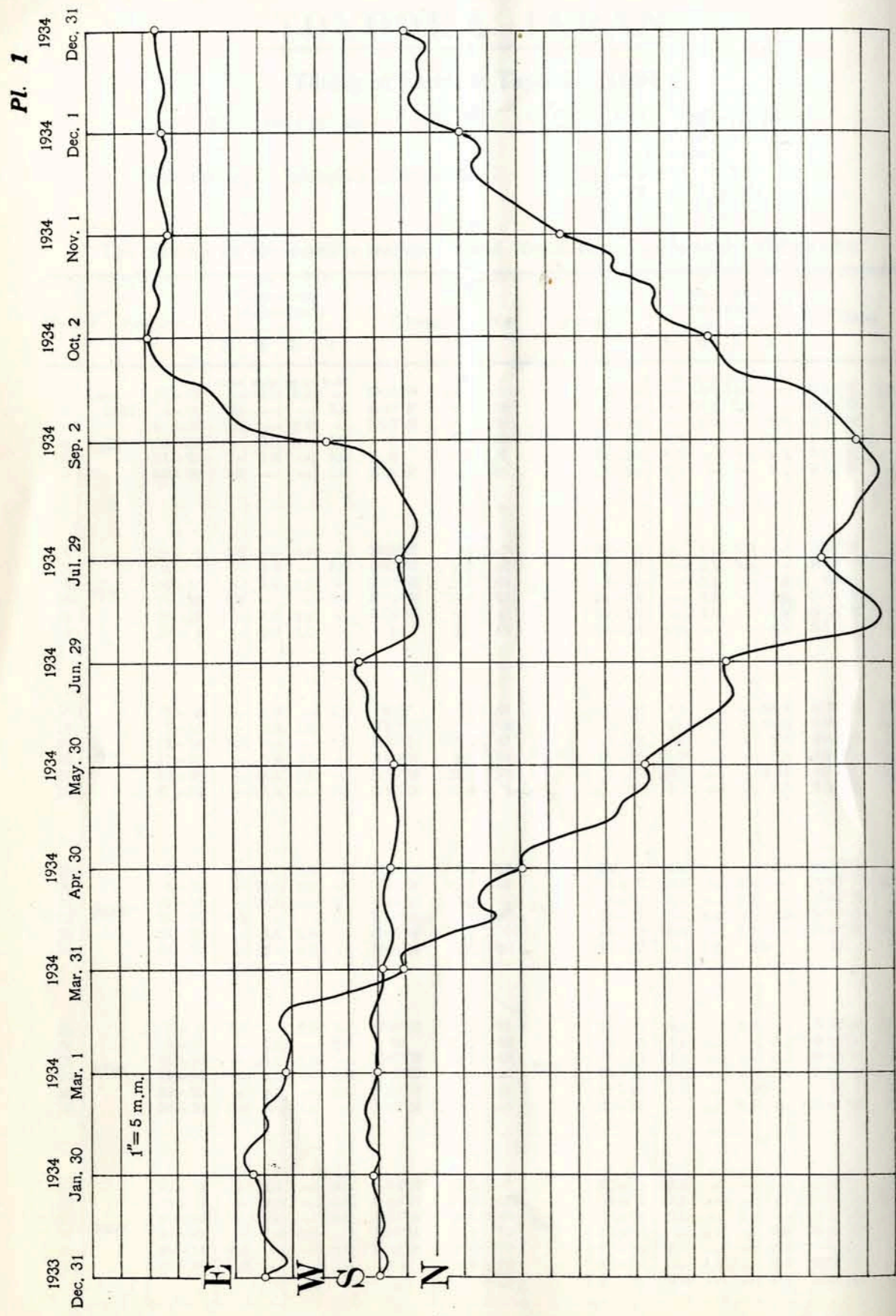
$\phi = 35^\circ 32'$   $\lambda = 134^\circ 49'$   $h = 32.2m$ . Underground: Diluvial Series.

Constants.

Instruments: Isimoto's Tiltmeter  
Component T°  
E—W 15.0s  
S—N 16.7s

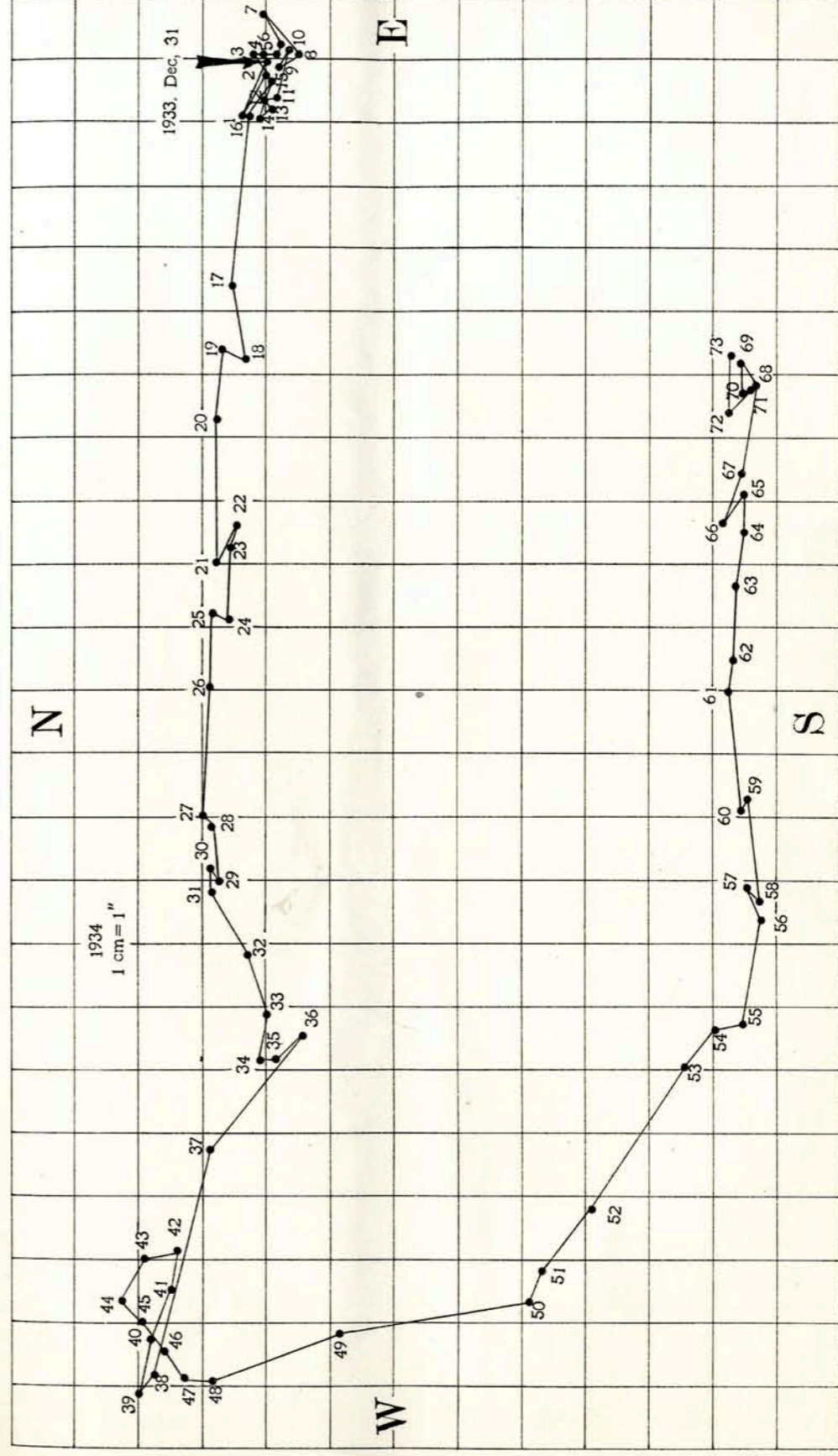
The reading are expressed in millimeters and 10m.m corresponds to the Tilting of 1".

No.	Period	Component (downward)				Tilting	No.	Period	Component (downward)				Tilting		
		E	W	N	S				E	W	N	S			
1	Dec. 31-5	9.5	3.5			N70°W	10.1	37	30-4	18.0	14.0			N53°W	22.9
2	1933 6-10	7.5		3.5		S65°E	8.3	38	5-9	36.0	9.0			N76°W	37.0
3	11-15	3.0	2.0			N56°E	3.6	39	10-14	2.5		2.0		S52°W	3.2
4	Jan. 16-20		0.0	1.0		S	1.0	40	July 15-19	8.0			2.0	S76°E	8.3
5	21-25		0.0	2.0		S	2.0	41	20-24	8.0		2.5		S73°E	8.4
6	26-30	1.5		1.0		S55°E	1.8	42	25-29	6.0		1.5		S76°E	6.2
7	31-4	5.0	3.0			N59°E	5.8	43	Aug. 30-3	1.5	5.0			N17°W	5.3
8	5-9	6.5	5.0			S53°W	8.2	44	4-8	6.5	3.5			N62°W	7.4
9	10-14	3.0	1.5			N63°W	3.4	45	9-13	3.5	3.5			S	5.0
10	15-19	3.0		1.0		S72°E	3.2	46	14-18	4.5	3.0			S56°W	5.4
11	20-24	8.0	2.0			N76°W	8.2	47	19-23	4.5	3.5			S52°W	5.7
12	25-1	0.0	1.5			N	1.5	48	24-28	0.5		4.0		S7°E	4.1
13	2-6	1.0	1.0			SW	1.4	49	29-2	7.0		20.0		S19°E	21.2
14	7-11	2.0	1.5			N52°W	2.5	50	3-7	4.5		30.0		S9°E	30.3
15	12-16	5.5		3.5		S58°E	6.5	51	8-12	5.0		2.0		S68°E	5.4
16	17-21	5.0	3.5			N55°W	6.1	52	13-17	10.0		7.5		S53°E	12.5
17	22-26	26.5	2.0			N85°W	27.0	53	18-22	22.5		14.0		S57°E	26.8
18	27-31	11.5	1.5			S83°W	11.6	54	23-27	6.0		5.0		S50°E	7.8
19	1-5	1.5	3.0			N26°E	3.4	55	28-2	1.0		4.0		S14°E	4.1
20	6-10	11.5	1.0			N85°W	11.6	56	3-7	16.5	3.0			N80°E	16.9
21	11-15	23.0	0.5			S89°W	23.0	57	8-12	4.5		2.0		N66°E	5.0
22	16-20	6.5		3.0		S66°E	7.2	58	13-17	2.5	1.5			S59°W	2.9
23	21-25	2.5	1.0			N68°W	2.7	59	18-22	16.0	2.0			N83°E	16.2
24	26-30	12.5	0.5			N88°W	12.5	60	23-27	1.0	0.0			W	1.0
25	1-5	1.0	2.0			N26°E	2.3	61	28-1	18.5	2.0			N84°E	18.6
26	6-10	12.5	0.0			W	12.5	62	2-6	5.0		0.5		S84°E	5.2
27	11-15	20.0	1.0			N87°W	20.1	63	7-11	11.5		0.5		S88°E	11.5
28	19-20	1.5	1.0			S57°W	1.8	64	12-16	9.0		1.0		S84°E	9.1
29	21-25	9.0	1.5			S81°W	9.2	65	17-21	6.0	0.0			E	6.0
30	26-30	2.0	1.0			N63°E	2.3	66	22-26	4.5	2.5			N61°W	5.3
31	31-4	4.5	0.5			S84°W	4.6	67	27-1	8.0		3.0		S70°E	8.6
32	5-9	9.0	5.5			S59°W	10.6	68	2-6	13.5		1.5		S84°E	13.7
33	10-14	10.5	3.0			S74°W	10.9	69	7-11	3.5	2.5			N61°E	4.3
34	15-19	7.0	0.5			N86°W	7.1	70	12-16	4.5	0.5			S84°W	4.5
35	20-24	0.5	2.5			S11°E	2.6	71	17-21	0.5		0.5		S	0.7
36	25-29	3.0	3.0			S	4.8	72	22-26	4.0	3.0			S54°W	5.0
								73	27-31	9.0		0.5		S87°E	9.1



**1934**

**Pl. 2**



**1934**